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Vol. 1195 Number 1

OFFICIAL GAZETTE

of the

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OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
February 4, 1997 Volume 1195 Number 1

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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1194 O.G. 618, on January 21, 1997.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on September 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective July 1, 1996, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1187 O.G. 73, on June 25, 1996.

International fees were changed, effective on February 1, 1997, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1194 O.G. 617, on January 21, 1997.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective October 1, 1996, and were announced in the *Official Gazette* at 1189 O.G. 62, on August 20, 1996.

The schedule of PCT fees (in U.S. dollars), effective February 1, 1997, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	230.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
— No corresponding prior U.S. national application filed	680.00
— Corresponding prior U.S. national application filed	440.00
— Supplemental search fee, per additional invention (payable only upon invitation)	200.00
European Patent Office as ISA	1585.00
International fees	
Basic fee	590.00
Basic supplemental fee (for each page over 30)	12.00
Designation fee per country or region	
— For the first 11 national or regional offices designated	143.00
— For each designation in excess of 11 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
— Designation fee	143.00
— Confirmation fee	71.50
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	180.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
— USPTO was ISA in PCT Chapter I	480.00
— Additional examination fee, per additional invention (payable only upon invitation)	140.00
— USPTO was not ISA in PCT Chapter I	730.00
— Additional examination fee, per additional invention (payable only upon invitation)	260.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
— All claims presented satisfied provisions of PCT Article 33(2) to (4)	48.00	96.00
— All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	350.00	700.00
USPTO was ISA but not IPEA	385.00	770.00
USPTO was neither ISA nor IPEA		
— Search report has not been prepared by the European Patent Office or the Japanese Patent Office	520.00	1040.00
— Search report has been prepared by the European Patent Office or the Japanese Patent Office	455.00	910.00
Other National fees		
— For each independent claim in excess of 3	40.00	80.00
— For each claim in excess of 20	11.00	22.00
— For each application containing a multiple dependent claim	130.00	260.00
— Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(I)	65.00	130.00
— Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(I)	130.00	130.00

Dec. 26, 1996

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on February 1, 1994 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,282,276 through 5,283,907
Reissue Patents based on the above identified patents.

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Attention is drawn to the patents which were issued on January 30, 1990 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,896,375 through 4,897,884
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on January 28, 1986 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,566,136 through 4,567,610
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1996, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $510.00
By other than a small entity $1,020.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,025.00
By other than a small entity $2,050.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,540.00
By other than a small entity $3,080.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:
(1) unavoidable $680.00
(2) unintentional $1,600.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED November 27, 1996
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 33,869	07/495,995	04/07/92
(4,785,619)	(07/155,284)	(11/22/88)
Re. 34,095	07/583,805	10/13/92
(4,786,764)	(07/028,494)	(11/22/88)
Re. 34,420	07/616,649	10/26/93
(4,786,055)	(06/876,982)	(11/22/88)
4,484,359	06/499,323	11/27/84
4,484,364	06/456,354	11/27/84
4,484,365	06/438,287	11/27/84
4,484,369	06/489,960	11/27/84
4,484,370	06/516,795	11/27/84
4,484,371	06/422,974	11/27/84
4,484,372	06/422,980	11/27/84
4,484,373	06/479,934	11/27/84
4,484,381	06/399,960	11/27/84
4,484,387	06/525,430	11/27/84
4,484,391	06/434,575	11/27/84
4,484,393	06/527,116	11/27/84
4,484,401	06/501,472	11/27/84
4,484,406	06/368,830	11/27/84
4,484,413	06/488,806	11/27/84
4,484,415	06/555,325	11/27/84
4,484,416	06/373,879	11/27/84
4,484,423	06/314,823	11/27/84
4,484,444	06/402,970	11/27/84
4,484,450	06/430,766	11/27/84
4,484,452	06/506,965	11/27/84
4,484,454	06/573,200	11/27/84
4,484,458	06/550,323	11/27/84
4,484,460	06/514,142	11/27/84
4,484,462	06/374,579	11/27/84
4,484,466	06/458,834	11/27/84
4,484,475	06/444,391	11/27/84
4,484,497	06/541,039	11/27/84
4,484,498	06/543,055	11/27/84
4,484,506	06/461,161	11/27/84
4,484,508	06/464,673	11/27/84
4,484,510	06/413,916	11/27/84
4,484,511	06/450,651	11/27/84
4,484,516	06/403,146	11/27/84
4,484,522	06/472,044	11/27/84
4,484,524	06/513,681	11/27/84
4,484,528	06/310,056	11/27/84
4,484,533	06/310,457	11/27/84
4,484,539	06/532,431	11/27/84
4,484,540	06/575,991	11/27/84
4,484,545	06/419,522	11/27/84
4,484,551	06/511,023	11/27/84
4,484,554	06/571,767	11/27/84
4,484,556	06/449,228	11/27/84
4,484,565	06/520,777	11/27/84
4,484,568	06/297,553	11/27/84
4,484,576	06/538,749	11/27/84
4,484,586	06/438,057	11/27/84
4,484,587	06/498,440	11/27/84
4,484,591	06/363,394	11/27/84
4,484,597	06/443,151	11/27/84
4,484,602	06/458,628	11/27/84
4,484,610	06/419,334	11/27/84

Patent Number	Serial Number	Issue Date
4,484,614	06/395,177	11/27/84
4,484,617	06/272,525	11/27/84
4,484,620	06/316,147	11/27/84
4,484,625	06/370,056	11/27/84
4,484,632	06/412,930	11/27/84
4,484,639	06/516,812	11/27/84
4,484,641	06/265,997	11/27/84
4,484,652	06/412,505	11/27/84
4,484,653	06/387,208	11/27/84
4,484,655	06/455,225	11/27/84
4,484,658	06/537,675	11/27/84
4,484,664	06/410,598	11/27/84
4,484,666	06/440,807	11/27/84
4,484,676	06/508,993	11/27/84
4,484,681	06/532,372	11/27/84
4,484,682	06/501,496	11/27/84
4,484,688	06/466,510	11/27/84
4,484,694	06/398,345	11/27/84
4,484,695	06/416,476	11/27/84
4,484,697	06/459,705	11/27/84
4,484,700	06/549,005	11/27/84
4,484,703	06/420,840	11/27/84
4,484,704	06/328,762	11/27/84
4,484,709	06/339,366	11/27/84
4,484,713	06/481,229	11/27/84
4,484,714	06/516,226	11/27/84
4,484,720	06/363,005	11/27/84
4,484,725	06/308,598	11/27/84
4,484,728	06/406,566	11/27/84
4,484,729	06/340,517	11/27/84
4,484,733	06/365,566	11/27/84
4,484,734	06/400,286	11/27/84
4,484,748	06/363,936	11/27/84
4,484,749	06/483,762	11/27/84
4,484,763	06/347,192	11/27/84
4,484,770	06/366,988	11/27/84
4,484,779	06/398,409	11/27/84
4,484,781	06/371,975	11/27/84
4,484,785	06/408,625	11/27/84
4,484,786	06/568,522	11/27/84
4,484,787	06/372,977	11/27/84
4,484,788	06/415,914	11/27/84
4,484,792	06/335,656	11/27/84
4,484,803	06/443,238	11/27/84
4,484,804	06/279,185	11/27/84
4,484,810	06/496,373	11/27/84
4,484,820	06/381,891	11/27/84
4,484,821	06/587,867	11/27/84
4,484,824	06/521,122	11/27/84
4,484,825	06/498,678	11/27/84
4,484,827	06/464,279	11/27/84
4,484,831	06/423,066	11/27/84
4,484,841	06/353,352	11/27/84
4,484,844	06/383,539	11/27/84
4,484,852	06/369,803	11/27/84
4,484,863	06/273,221	11/27/84
4,484,864	06/452,334	11/27/84
4,484,865	06/496,963	11/27/84
4,484,866	06/500,516	11/27/84
4,484,873	06/328,796	11/27/84
4,484,885	06/502,358	11/27/84
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4,484,955	06/560,321	11/27/84
4,484,959	06/394,984	11/27/84
4,484,964	06/513,275	11/27/84
4,484,967	06/489,413	11/27/84
4,484,968	06/328,025	11/27/84
4,484,969	06/428,176	11/27/84
4,484,980	06/537,889	11/27/84
4,484,984	06/497,374	11/27/84
4,485,004	06/415,194	11/27/84
4,485,005	06/589,278	11/27/84
4,485,008	06/483,076	11/27/84
4,485,013	06/297,733	11/27/84
4,485,015	06/451,879	11/27/84
4,485,017	06/452,189	11/27/84
4,485,021	06/533,551	11/27/84
4,485,023	06/516,880	11/27/84
4,485,028	06/474,169	11/27/84
4,485,029	06/591,043	11/27/84
4,485,043	06/399,232	11/27/84
4,485,044	06/351,842	11/27/84
4,485,061	06/532,349	11/27/84
4,485,066	06/464,820	11/27/84
4,485,069	06/341,036	11/27/84
4,485,076	06/526,809	11/27/84
4,485,080	06/560,403	11/27/84
4,485,095	06/405,770	11/27/84
4,485,099	06/504,768	11/27/84
4,485,103	06/385,428	11/27/84
4,485,127	06/380,660	11/27/84
4,485,130	06/473,299	11/27/84
4,485,146	06/403,282	11/27/84
4,485,150	06/413,132	11/27/84
4,485,163	06/384,232	11/27/84
4,485,164	06/511,080	11/27/84
4,485,165	06/580,400	11/27/84
4,485,174	06/427,470	11/27/84
4,485,179	06/380,458	11/27/84
4,485,184	06/492,153	11/27/84
4,485,192	06/504,186	11/27/84
4,485,194	06/542,803	11/27/84
4,485,196	06/536,136	11/27/84
4,485,197	06/456,289	11/27/84
4,485,199	06/448,887	11/27/84
4,485,201	06/553,821	11/27/84
4,485,209	06/537,513	11/27/84
4,485,212	06/498,613	11/27/84
4,485,215	06/493,458	11/27/84
4,485,216	06/529,389	11/27/84
4,485,217	06/484,732	11/27/84
4,485,228	06/538,630	11/27/84
4,485,238	06/511,411	11/27/84
4,485,255	06/444,886	11/27/84
4,485,269	06/365,086	11/27/84
4,485,273	06/422,037	11/27/84
4,485,277	06/350,028	11/27/84
4,485,292	06/548,756	11/27/84
4,485,299	06/404,704	11/27/84
4,485,301	06/344,448	11/27/84
4,485,303	06/403,473	11/27/84
4,485,316	06/275,623	11/27/84
4,485,329	06/375,902	11/27/84
4,485,336	06/470,954	11/27/84
4,485,339	06/502,997	11/27/84
4,485,343	06/330,660	11/27/84
4,485,349	06/483,313	11/27/84
4,485,350	06/384,717	11/27/84
4,485,355	06/345,265	11/27/84
4,485,358	06/306,507	11/27/84
4,485,365	06/466,198	11/27/84
4,485,371	06/368,141	11/27/84
4,485,376	06/457,846	11/27/84
4,485,381	06/385,103	11/27/84
4,485,385	06/388,688	11/27/84
4,485,396	06/418,903	11/27/84
4,485,401	06/416,742	11/27/84
4,485,406	06/427,061	11/27/84
4,485,413	06/303,558	11/27/84
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4,485,436	06/295,182	11/27/84
4,485,438	06/393,008	11/27/84
4,485,442	06/305,182	11/27/84
4,485,446	06/299,901	11/27/84
4,485,455	06/359,556	11/27/84
4,485,458	06/274,543	11/27/84
4,485,460	06/376,318	11/27/84
4,485,462	06/426,534	11/27/84
4,485,464	06/431,022	11/27/84
4,485,472	06/373,648	11/27/84
4,485,476	06/505,607	11/27/84
4,485,483	06/476,738	11/27/84
4,785,476	07/105,618	11/22/88
4,785,478	07/127,688	11/22/88
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Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

5,025,855, Re. S.N. 08/746,921, Nov. 18, 1996, Cl. 165/156, CONDENSER FOR USE IN A CAR COOLING SYSTEM, Ryoichi Hoshino, Owner of Record: *Showa Aluminum Corp., Osaka, Japan,* Attorney or Agent: Vasilios D. Dossas, Ex. Gp.: 3407

5,045,105, Re. S.N. 08/618,334, March 19, 1996, Cl. 504/169, USE OF DERIVATIVE OF N-PHENYL-3,4,5,6-TETRAHYDROPHTHALIMIDE FOR THE DESICCATION AND ABSCISSION OF PLANT ORGANS, Klaus Grossmann, et. al., Owner of Record: *Basf Aktiengesellschaft, Rheinland-Pfalz, Federal Republic of Ger.,* Attorney or Agent: Herbert B. Keil, Ex. Gp.: 1209

5,045,105, Re. S.N. 08/618,335, March 19, 1996, Cl. 504/169, USE OF DERIVATIVE OF N-PHENYL-3,4,5,6-TETRAHYDROPHTHALIMIDE FOR THE DESICCATION AND ABSCISSION OF PLANT ORGANS, Klaus Grossmann, et. al., Owner of Record: *Basf Aktiengesellschaft, Rheinland-Pfalz, Federal Republic of Ger.,* Attorney or Agent: Herbert B. Keil, Ex. Gp.: 1209

5,162,248, Re. S.N. 08/759,058, Oct. 7, 1996, Cl. 437/52, OPTIMIZED CONTAINER STACKED CAPACITOR DRAM CELL UTILIZING SACRIFICIAL OXIDE DEPOSITION AND CHEMICAL MECHANICAL POLISHING, Charles H. Dennison, et. al., Owner of Record: *Micron Technology, Inc., Boise, Idaho,* Attorney or Agent: Michael L. Lynch, Ex. Gp.: 1104

5,171,056, Re. S.N. 08/749,390, Nov. 7, 1996, Cl. 296/163, RETRACTABLE AWNING FOR SLIDE-OUT UNIT ON MOBILE HOME, RECREATION VEHICLE OR THE LIKE, Thomas G. Faludy, et. al., Owner of Record: *CarefreeIScott Fetzer Co., Broomfield, Colo.,* Attorney or Agent: Gary M. Polumbus, Ex. Gp.: 3102

5,207,544, Re. S.N. 08/656,903, June 3, 1996, Cl. 411/348, FASTENER ASSEMBLY, Albert K. Yamamoto, et. al., Owner of Record: *Fairchild Holding Corp., Chantilly, Va.,* Attorney or Agent: James R. Brueggemann, Ex. Gp.: 3508

5,304,676, Re. S.N. 08/634,991, April 19, 1996, Cl. 562/414, PROCESS FOR THE PRODUCTION TEREPHTHALIC ACID, Eric Hindmarsh, et. al., Owner of Record: *Imperial Chemical Industries PLC, London, England,* Attorney or Agent: Donald J. Bird, Ex. Gp.: 1204

5,348,344, Re. S.N. 08/718,194, Sept. 19, 1996, Cl. 280/737, APPARATUS FOR INFLATING A VEHICLE OCCUPANT RESTRAINT USING A MIXTURE OF GASES, Jack L. Blumenthal, et. al., Owner of Record: *TRW Vehicle Safety Systems, Inc., Lyndhurst, Ohio,* Attorney or Agent: Thomas L. Tarolli, Ex. Gp.: 3106

5,370,250, Re. S.N. 08/753,060, Nov. 20, 1996, Cl. 215/100R, COLLAPSIBLE CONTAINER, Neil Y. Gilbert, et. al., Owner of Record: *Inventor,* Attorney or Agent: Neil Y. Gilbert, et. al., Ex. Gp.: 3207

5,316,563, Re. S.N. 08/655,935, May 31, 1996, Cl. 65/32.5, VACUUM DEGASSING METHOD AND ITS APPARATUS, Kazuhiko Ishimura, et. al., Owner of Record: *Asahi Glass Co., Ltd., Tokyo, Japan,* Attorney or Agent: Richard L. Treanor, Ex. Gp.: 1304

5,405,371, Re. S.N. 08/658,356, June 5, 1996, Cl. 607/107, THERMAL BLANKET, Scott D. Augustine, et. al., Owner of Record: *Augustine Medical, Inc., Eden Prairie, Minn.,* Attorney or Agent: Terrance A. Meador, Ex. Gp.: 2311

5,454,595, Re. S.N. 08/708,470, Sept. 5, 1996, Cl. 280/743.00R, HIDDEN VOLUME CUSHION, Brent K. Olson, Owner of Record: *Morton International, Inc., Chicago, Ill.,* Attorney or Agent: Taylor J. Ross, Ex. Gp.: 3106

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

5,073,142, Reexam. No. 90/004,499, Dec. 27, 1996, Cl. 452/051, METHOD AND APPARATUS FOR SUSPENDING CASING PRODUCTS FILLED WITH MATERIAL, Minoru Kasai, et. al., Owner of Record: *Hitec Co. Ltd., Tokyo, Japan,* Attorney or Agent: Kevin H. Rhodes, Kirkland & Ellis, Chicago, Ill., Ex. Gp.: 3203, Requester: Kirk M. Hartung, Zarley, McKee, Thomte, Vorhees & Sease, Des Moines, Iowa

5,074,146, Reexam. No. 90/004,498, Dec. 26, 1996, Cl. 073/149, GAS COMPARISON PYCNOMETER, Clyde Orr, et. al., Owner of Record: *Micromeritics Instrument Corp., Norcrass, Ga.,* Attorney or Agent: Jeffrey E. Young & Holmes J. Hawkins, Jones & Askew, Atlanta, Ga., Ex. Gp.: 2212, Requester: Robert M. Schwartz, Miami, Fla.

5,514,200, Reexam. No. 90/004,497, Dec. 20, 1996, Cl. 071/011, NOVEL FORMULATION OF PHOSPHORUS FERTILIZER FOR PLANTS, Carol J. Lovatt, Owner of Record: *Regents of The University of California, Oakland, Calif.,* Attorney or Agent: Flehr, Hohbach, Test, Albritton & Herbert, San Francisco, Calif., Ex. Gp.: 1103, Requester: Owner

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED OCTOBER 21, 1996
DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
104,146	71/073,601	05/04/1915
108,100	71/076,818	01/18/1916
108,120	71/088,555	01/18/1916
108,123	71/085,977	01/18/1916
108,183	71/089,330	01/18/1916
108,210	71/089,845	01/18/1916
108,233	71/086,463	01/18/1916
331,511	71/369,185	01/14/1936
331,521	71/369,044	01/14/1936
331,539	71/368,940	01/14/1936
331,543	71/368,866	01/14/1936
331,544	71/368,864	01/14/1936
331,591	71/368,452	01/14/1936
331,604	71/366,043	01/14/1936
331,615	71/366,572	01/14/1936
619,229	71/681,002	01/17/1956
619,232	71/661,886	01/17/1956
619,238	71/676,362	01/17/1956
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Reg. Number	Serial Number	Reg. Date
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619,255	71/667,661	01/17/1956
619,256	71/669,329	01/17/1956
619,258	71/670,274	01/17/1956
619,259	71/670,781	01/17/1956
619,264	71/674,609	01/17/1956
619,265	71/675,388	01/17/1956
619,267	71/677,715	01/17/1956
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619,303	71/684,206	01/17/1956
619,308	71/688,194	01/17/1956
619,311	71/688,486	01/17/1956
619,339	71/688,536	01/17/1956
619,359	71/679,472	01/17/1956
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619,375	71/683,600	01/17/1956
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619,408	71/680,854	01/17/1956
619,410	71/680,856	01/17/1956
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619,424	71/681,357	01/17/1956
619,429	71/682,303	01/17/1956
619,431	71/602,925	01/17/1956
619,433	71/635,579	01/17/1956
619,434	71/635,581	01/17/1956
619,435	71/650,518	01/17/1956
619,436	71/663,108	01/17/1956
619,445	71/671,659	01/17/1956
619,448	71/680,439	01/17/1956
619,449	71/680,775	01/17/1956
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619,558	71/667,559	01/17/1956
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619,574	71/680,331	01/17/1956
619,576	71/680,886	01/17/1956
619,581	71/681,506	01/17/1956
619,583	71/681,604	01/17/1956
619,584	71/681,605	01/17/1956
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1,030,052	73/040,223	01/13/1976
1,030,053	73/040,328	01/13/1976
1,030,054	73/041,722	01/13/1976
1,030,057	73/043,385	01/13/1976
1,030,063	73/034,250	01/13/1976
1,030,064	73/034,385	01/13/1976
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1,030,088	73/021,378	01/13/1976
1,030,091	73/034,439	01/13/1976
1,030,093	73/035,908	01/13/1976
1,030,096	73/036,718	01/13/1976
1,030,102	73/043,771	01/13/1976
1,030,103	73/043,772	01/13/1976
1,030,110	73/028,067	01/13/1976
1,030,113	73/040,420	01/13/1976
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1,030,128	73/034,600	01/13/1976
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1,030,136	73/041,774	01/13/1976
1,030,137	73/044,550	01/13/1976
1,030,142	73/047,406	01/13/1976
1,030,146	73/035,504	01/13/1976
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1,030,153	73/045,665	01/13/1976
1,030,163	73/045,917	01/13/1976
1,030,164	73/020,944	01/13/1976
1,030,177	73/040,633	01/13/1976
1,030,179	73/041,582	01/13/1976
1,030,180	73/042,186	01/13/1976
1,030,181	73/042,475	01/13/1976
1,030,183	73/046,968	01/13/1976
1,030,189	73/029,491	01/13/1976
1,030,192	73/037,400	01/13/1976
1,030,195	73/044,565	01/13/1976
1,030,197	73/048,875	01/13/1976
1,030,199	73/050,902	01/13/1976
1,030,201	73/033,687	01/13/1976
1,030,207	73/052,570	01/13/1976
1,030,214	73/035,620	01/13/1976
1,030,215	73/037,979	01/13/1976
1,030,216	73/052,875	01/13/1976
1,030,218	73/052,877	01/13/1976
1,030,219	73/052,878	01/13/1976
1,030,227	73/032,030	01/13/1976
1,030,228	73/040,842	01/13/1976
1,030,229	73/041,702	01/13/1976
1,030,231	73/045,250	01/13/1976
1,030,238	73/047,912	01/13/1976
1,030,242	73/054,894	01/13/1976
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1,030,265	73/047,286	01/13/1976
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1,030,273	73/037,982	01/13/1976
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1,030,292	73/035,596	01/13/1976
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1,030,311	73/030,920	01/13/1976
1,030,320	73/049,089	01/13/1976
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1,030,328	72/465,106	01/13/1976
1,030,329	72/456,194	01/13/1976
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1,030,331	72/433,629	01/13/1976
1,030,332	72/453,837	01/13/1976
1,030,333	72/450,333	01/13/1976
1,030,339	72/465,592	01/13/1976
1,030,341	72/394,862	01/13/1976
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1,030,398	73/035,880	01/13/1976
1,030,403	72/451,385	01/13/1976

Service by Publication

A petition to cancel the registrations identified below having been filed, and the notice of such proceeding sent by certified mail to registrants at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will proceed as in the case of default.

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Mediapoint, Inc., Alhambra, Calif., Reg. No. 1,920,727, for the mark "ZIPCOMM", Canc. No. 25,245.

Rochester Razor, Inc., Rochester, N.Y., Reg. No. 670,207, for the mark "CASTAWAY", Canc. No. 25,656.

American International Industries, New York, N.Y., Reg. No. 637,310, for the mark "SOFT 'N' SMOOTH", Canc. No. 25,644.

Berol Corporation, Danbury, Conn., Reg. No. 838,401, for the mark "ALL-RITE", Canc. No. 25,646.

JEAN BROWN
Technical Program Manager,
Trademark Trial
and Appeal Board, for
ROBERT M. ANDERSON
Deputy Assistant Commissioner for Trademarks

37/CFR § 1.47 Notice by Publication

Notice is hereby given of the filing of the following applications with a petition under 37 CFR § 147 requesting the acceptance of the application without the signature of all inventors or, if the inventor is deceased, the legal representative of the deceased inventor. The petition in each application has been granted. A notice has been sent to the last known address of the non-signing inventor or legal representative. The inventors or legal representatives whose signatures are missing may join in the application by promptly filing an oath or declaration complying with 37 CFR § 1.63.

Application No.	Filing Date	Non-Signing Inventor(s)	Title of Invention
08/284,347	Aug. 1, 1994	Nikos Troullinos	A Content Addressable Memory Array Integrated With General Logic Block
08/427,333	April 24, 1995	Kenneth Baker	Fluid Additive Supply System for Life Fighting Mechanisms
08/431,737	May 1, 1993	Kenju Yomoda	Lens Drive Apparatus
08/469,211	June 6, 1995	Elliott C. Gates	Golf Training Device
08/476,826	June 7, 1995	Alexander N. Jourgine	A Real Time Handwriting Recognition System
08/477,123	June 8, 1993	Yeong C. Park	Air Treatment Device and Method for Using Same
08/477,826	June 7, 1995	Burgess Clayton Harris	Piston Cylinder Clamping Motor
08/484,207	June 8, 1995	Edwin Eliot Green	Vacation and Holiday Scheduling System
08/485,472	June 7, 1995	Frank J. Giordano	Gene Therapy For Myocardial Ischemia
08/485,818	June 7, 1995	Chritopher G. Keller	Microfabricated Device For Therapeutic And Diagnostic Application
08/502,623	July 14, 1995	Uwe Mischlich	Plug-In Cable Connector
08/504,257	July 17, 1996	L. Gordon Letts	Use of Endothelial-Leukocyte Adhesion . . . Asthma
08/506,879	July 25, 1995	Curtis Dicke	Off-Chip Driver Circuit
08/509/200	July 31, 1995	J. Thomas Schafler Austin A. Saylor	Automatic Mechanical Duct Purging System
08/519,061	August 23, 1995	Kenith Mann	Call Processing to Provide Number Portability
08/523,623	Sept. 5, 1995	Katsutoshi Misuda	Coated Paper And Methods For Its Preparation
08/538,566	Oct. 3, 1995	Richard F. Schiller	Error Rate Monitor
08/547,263	Oct. 24, 1995	Daniel Schindler Zelig Eshhar Tova Waks Gideon Gross	Chimeric Receptor Genes and Cells Transformed

Application No.	Filing Date	Non-Signing Inventor(s)	Title of Invention
08/549,472	Oct. 27, 1995	Christopher R. Miller	Multiple Cone Transducer
08/550,436	Oct. 30, 1995	Si-Chaun Cheou	Size-in-Store Pleated Shade and Method and Apparatus of Sizing
08/557,335	Nov. 14, 1995	James B. Coppinger	Method of Providing Load Information and Services to Truck Drivers
08/561,511	Nov. 21, 1995	David W. Polis	Nonlinear Optical Molecules And Polymers Incorporating Them
08/562,999	Nov. 27, 1995	Ferdinand K. Besik	Low No, Burner
08/564,980	Nov. 30, 1995	Elsa Ballot	Photocrosslinkable Compositions Based on Trifluoroethyl Methacrylate and Process for their Preparation
08/571,001	Dec. 12, 1995	Thomas A. Campbell	Adaptive DPCA System
08/575,357	Dec. 20, 1995	Ed Curran	A Cleaning Plug Assembly
08/587,268	Jan. 16, 1996	John C. Dominy Joel Gardi Tangy M. Verdell	Parallel Job Scheduler for Use In a Distributed Processing Environment
08/595,719	Feb. 2, 1996	Donald M. Davies	Agglutination Reaction And Separation Vessel
08/598,966	Feb. 9, 1996	Terry Semprini	A Dolly for Moving A Snowmobile
08/606,115	Feb. 23, 1996	Stephen D. Dilbeck	Parallel Writer Logic for Multiport Memories
08/608,247	Feb. 28, 1996	Peter Arne Read	Well Treatment
08/614, 127	March 12, 1996	Shih Yung Tong	Voiceband Data Set
08/617,028	March 18, 1996	Adrian F. Ionescu	Power Regulator
08/622,312	March 27, 1996	Patricia B. Zimmerman	Production of Spun-Bonded Web
08/630,543	April 10, 1996	Walter E. Best	Lockset with Disconnecting Clutch Mechanism
08/641,527	May 1, 1996	Kenneth H. Dickenson	Plug-in Mirror
08/654,396	May 28, 1996	Johnny D. Couch	Convertible Perpheral Input Device
08/659,421	June 6, 1996	Philip L. Wolf	A Trocar Including an Obturator with a Removable Knife
08/660,997	June 10, 1996	David Thompson McCalmont	System Method and User Interrace for Date Announced Call Transfer
08/666,190	June 19, 1996	John M. Munsch	Parenteral Fluid Delivery Bag With Integral Line Set
08/669,641	June 24, 1996	Dallas A. King Elizabeth A. Georgia Daniel N. Borgemenke	Apparatus for Controlling the Movement of a Controlled Member

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Patent Terms Extended Under 35 U.S.C. § 156

Certificates extending the terms of the following patents were issued on January 6, 1997.

U.S. Patent No. 4,250,334; Granted: February 10, 1981, to Clifford L. Coon, et al; Owner of Record: Baxter International, Inc; Title: Method of Synthesizing Fluoromethylhexafluoroisopropyl Ether; Classification: 568/683; Product Trade Name: ULTANE™; Original Expiration Date: December 26, 1999; Term Extended: Five Years; Extended Expiration Date: December 26, 2004.

U.S. Patent No. 4,376,858; Granted: March 15, 1983, to Norman L. Colbry; Owner of Record: Warner Lambert Com-

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pany; Title: 2-4 Diamino-5-methyl-6-[(3,4,5-Trimethoxyanilino) Methyl]Quinazoline Salts; Classification: 544/291; Product Trade Name: NEUTREXIN™; Original Expiration Date: October 31, 2000; Term Extended: 1,286 days; Extended Expiration Date: May 9, 2004.

U.S. Patent No. 4,628,098; Granted: December 9, 1986 to Akira Nohara et al.; Owner of Record: Takeda Chemical Industries Ltd.; Title: 2-[2-Pyridylmethylthio-(Sulfinyl)]Benzimidazoles; Classification: 546/273.7; Product Trade Name: PREVACID™ (lansoprazole); Original Expiration Date: July 29, 2005; Term Extended: 1,381 days; Extended Expiration Date: May 10, 2009.

U.S. Patent No. 5,070,877; Granted December 10, 1991, to Syed M. Mohiuddin et al.; Owner of Record: Medco Research Inc.; Title: Novel Method of Myocardial Imaging; Classification: 128/653.4; Product Trade Name: ADENOSCAN®; Original Expiration Date: December 10, 2008; Term Extended: 159 days; Extended Expiration Date: May 18, 2009.

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office who have been given provisional recognition pursuant to 37 CFR 10.9(a) to prepare and prosecute patent applications before the Office until their registration certificates are mailed to them. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before March 21, 1997.

Bousfield, Kenneth L., 161 Princess Ave., North York, Ont., M2N 3R8, Canada
Ditmyer, Paul J., 612 S. 22nd St., Arlington, Va. 22202
Jenkins, Robert W., 1290 Bartonshire Way, Rockville, Md. 20854
Jewik, Patrick R., 2301 S. Jefferson Davis, #1527, Arlington, Va. 22202
Kim, Won Tae C., 13800 Park Center Ln., #433, Tustin, Calif. 92782
Lupien, Marc, 1602 Cartier, Montreal, Que., H2K 4C9, Canada
McIntosh, Andrew I., 36 Hillside Ave., Etobicoke, Ont., M8V 1S6, Canada
Sechley, Konrad A., 1773 Diamondview Rd., Carp, Ont., K0A 1L0, Canada
Snider, Theresa T., 63 Florence St., Chicopee, Mass. 01013
Weldon, Ulysses, 6501 Medwick Dr., Hyattsville, Md. 20783

January 7, 1997 KAREN L. BOVARD, *Director*
Office of Enrollment and Discipline

Status of Certification Services

On November 28, 1995, the Office published an Official Gazette Notice entitled "Temporary Suspension of At Cost Services for Orders for Certified Copies" (1180 OG 121) to advise practitioners and the public of delays in filling orders for certified copies of PTO documents. This is an update of actual days to mail for orders filled during the month of December 1996:

Certified Product	Goal	Actual Calendar Days to Mail
Patent Application-As-Filed, Expedited	7	5
Patent Application-As-Filed, Regular	17	19
Patent Related File Wrapper	25	28
Patent Copy	10	6
Patent Assignments	17	8
Trademark Application-As-Filed, Expedited	7	7
Trademark Application-As-Filed, Regular	17	12
Trademark Related File Wrapper	25	32
Trademark Assignments	17	9
Trademark Registration, Expedited	3*	6*
Trademark Registration, Regular	10*	9*

* Business Days

Due to backlogs and varying availability of media, customers will not be advised when orders are not delivered within the published goal periods. However, customers will be advised if any unexpected delay in their order has been identified. Customers should use the above actual days to mail for each product as a guide as to when they can expect their orders.

Delivery of any specific copy will vary based on the availability of microfilm products and/or file accessibility. Customers are encouraged to fax orders for copies directly to Certification Division at (703) 308-9759 and to pay by PTO Deposit Account, MasterCard, or Visa. Information on the status of pending orders may be obtained by calling (703) 308-9726 or 1 (800) 972-6382 (outside the Washington, DC Metro area).

January 9, 1997 WESLEY H. GEWEHR
Administrator for Information Dissemination

Video Conference Center

In the interest of providing better service to its customers, the Patent and Trademark Office (PTO) has established a Video Conference Center (VCC) to expedite patent and trademark prosecution. The VCC is presently administered by the Patent Academy and is available for authorized official business during normal business hours (8:30 AM - 5:00 PM, EST). The VCC equipment includes a high resolution document camera, direct computer input, VCR display capability and a high speed, high resolution G-4 facsimile machine. At this time, use of the VCC will be limited to our partnership Patent and Trademark Depository Libraries (PTDLs) located at Sunnyvale, Calif. and the Great Lakes Patent and Trademark Center at the Detroit Public Library, which have duplicate video equipment. Customers wishing to utilize the facilities at the above noted PTDLs rather than coming to the PTO for a face-to-face interview, should contact the patent examiner or trademark examining attorney and identify two alternative dates and time for a video conference. The patent examiner or trademark examining attorney will then contact Patent Academy personnel who will, in turn, make all the arrangements. The customer will be notified as to the date and time of the video conference.

Certificates of Correction
For the Week of February 4, 1997

Re. 35,101	5,315,345	5,448,531	5,491,587
D. 365,303	5,316,907	5,449,550	5,493,017
D. 367,303	5,326,526	5,461,053	5,493,516
D. 371,804	5,327,508	5,463,075	5,493,654
D. 372,934	5,365,553	5,463,745	5,494,314
D. 375,164	5,381,344	5,463,975	5,494,439
4,986,677	5,393,517	5,466,350	5,494,686
4,989,466	5,399,726	5,470,679	5,496,795
5,034,662	5,408,626	5,473,767	5,496,803
5,192,777	5,430,158	5,477,518	5,498,871
5,205,290	5,438,147	5,479,667	5,499,178
5,283,791	5,442,039	5,481,116	5,499,560
5,310,719	5,447,425	5,487,133	5,501,427

5,501,903	5,524,047	5,534,899	5,544,188	5,549,260	5,553,880	5,559,338	5,568,325
5,502,160	5,524,902	5,535,134	5,544,654	5,550,015	5,554,365	5,559,481	5,569,759
5,502,567	5,525,023	5,535,420	5,545,428	5,550,330	5,554,498	5,559,772	5,569,893
5,502,886	5,526,133	5,536,136	5,545,486	5,550,579	5,554,829	5,559,965	5,569,894
5,503,481	5,526,281	5,536,621	5,545,925	5,550,739	5,555,163	5,559,966	5,570,186
5,506,428	5,526,721	5,538,699	5,546,048	5,550,955	5,555,350	5,560,076	5,571,138
5,513,922	5,527,738	5,538,871	5,546,220	5,551,359	5,555,391	5,560,150	5,571,189
5,514,360	5,527,877	5,539,576	5,546,224	5,551,928	5,555,549	5,560,764	5,571,858
5,514,728	5,528,671	5,539,603	5,546,470	5,552,180	5,556,019	5,563,838	5,571,963
5,514,906	5,529,428	5,540,984	5,546,649	5,552,418	5,557,110	5,564,056	5,572,050
5,515,604	5,529,759	5,541,171	5,546,769	5,552,428	5,557,691	5,564,828	5,572,708
5,517,739	5,531,182	5,541,312	5,546,786	5,552,949	5,557,705	5,566,051	5,572,924
5,519,436	5,531,345	5,541,508	5,547,346	5,552,956	5,557,731	5,566,245	5,573,041
5,521,591	5,532,111	5,541,795	5,547,969	5,553,260	5,557,734	5,566,298	5,574,496
5,521,707	5,532,246	5,541,871	5,548,051	5,553,374	5,557,804	5,566,439	5,574,583
5,522,109	5,532,469	5,543,186	5,548,282	5,553,440	5,558,302	5,567,323	5,575,260
5,522,803	5,532,816	5,543,319	5,548,549	5,553,483	5,558,518	5,567,404	5,576,543
5,523,018	5,534,069	5,543,903	5,548,792	5,553,731	5,559,035	5,567,816	5,578,840
5,523,161	5,534,377	5,543,933	5,548,955	5,553,855	5,559,164	5,567,818	

Extension of Time for Filing Notices of Opposition to Marks Published in the Official Gazette Dated January 7, 1997

Since copies of the Trademark Official Gazette dated January 7, 1997, were not mailed until January 13, 1997, the thirty-day opposition period for marks published in the Trademark Official Gazette dated January 7, 1997, commenced on January 13, 1997 and will end on February 12, 1997. For information concerning the running of extensions of time to oppose in this situation, see §202.03 of the Trademark Trial and Appeal Board Manual of Procedure (TBMP).

1.17.97
Date

Philip G. Hampton, II
Assistant Commissioner for Trademarks

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Summary of Final Decisions

Issued by the

Trademark Trial and Appeal Board

December 9-13, 1996

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
12-9	EX	74/492,236	Terra Int'l, Inc.	2(d)	Refusal Affirmed		"ACTIVATE PLUS-SUPERIOR 90/10 NONIONIC SPREADER/ ACTIVATOR" (and design) [spreader/activator for use in connection with agricultural herbicides]	"ACTIVATE" [surfactant for use with herbicides, insecticides and fungicides]	No
12-10	EX	74/471,755	Seneca Sports, Inc.	2(d)	Refusal Reversed		"FUTURA" [in-line skates]	"FUTURA" [racquetball rackets, tennis rackets, squash rackets and golf clubs] and "FUTURA PLUS" [golf clubs and golf balls]	No
12-10	EX	74/411,900	Hoechst AG	2(e)(4)	Refusal Affirmed		"HOECHST" [plastic fibers, film, and sheet and microporous film and hollow fibers, for general industrial use; synthetic fibers and filaments, such as acetate staple; acetate yarn]		No
12-10	EX	74/434,469	Thomas J. Herzfeld Advisors, Inc.	2(e)(1)	Refusal Affirmed		"THE CUBA FUND" [fund investment services]		No
12-11	EX	74/184,144	General Electric Co.	whether the application identified applicant's goods with enough specificity	Refusal Affirmed		"WASH DOWN DUTY" (and design) [electric motors]		No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
12-11	EX	74/595,548	Frank's Nursery & Crafts, Inc.	2(d)	Refusal Reversed		"ULTRA BRIGHT" [electric, multi-function, decorative, miniature, Christmas tree lights for indoor/ outdoor use]	"ULTRA BRIGHTS" (and design) [halogen lamps]	No
12-11	EX	74/592,912	No Fear, Inc.	2(d)	Refusal Affirmed (as to both cited registrations)		"NO WEAR" [t-shirts, shirts, shorts, pants, sweat shirts, sweat pants, hats, visors, shoes, sandals and belts]	"NO!" and "NO! JEANS" [men's, women's, and children's jeans, shorts, jumpsuits, sweaters, blouses, tops, jackets, and skirts]	No
12-11	EX	74/420,488	Carl Heyer, Inc.	whether applicant has used the mark it seeks to register (i.e., whether the specimens support registration of the mark shown in applicant's drawing)	Refusal Affirmed		"VALUE FOR MONEY—VFM" [manicure instruments, namely, scissors, toe nail and finger nail nipper, and nail file and pusher and tweezers]		No
12-12	EX	74/488,423	James River Paper Co., Inc	2(d)	Refusal Reversed		"SCEPTER" [printing paper sold in the form of large rolls to commercial printers]	"SCEPTER" [thermal transfer ribbons for use in printers]	No
12-12	EX	74/518,783	Pittsburgh Sports Heritage, Inc.	2(d)	Refusal Affirmed		"PITTSBURGH YELLOW JACKETS" [t-shirts, nightshirts, hats/caps,jackets, etc.]	"YELLOW JACKETS" [t-shirts, hats, jackets, and night shirts]	No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
12-13	EX	74/545,359	Stable Micro Systems Ltd.	2(e)(1)	Refusal Affirmed (but applicant allowed time to submit disclaimer of word "TEXTURE")		"TEXTURE EXPERT" [computer software for use in an analyzer to analyze specific properties of food, pharmaceuticals and cosmetics]		No
12-13	EX	74/499,226	American Builders & Contractors Supply Co., Inc.	whether the term sought to be registered is capable of registration on the Supplemental Register or is, rather, a generic term when applied to applicant's services	Refusal Affirmed		"CONSTRUCTION TRADE TOOLS" [mail order catalog services featuring tools, equipment, clothing and related materials used in the repair, renovation and improvement of real property]		No

(1)EX = EX PARTE APPEAL; OPP = OPPOSITION; CANC = CANCELLATION; CU = CONCURRENT USE; (SJ) = SUMMARY JUDGMENT; (R) = REQ. FOR RECONSIDERATION

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Special box designations should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these special boxes. If any documents other than the specified type identified for each special box are addressed to that box, they will be significantly delayed in reaching the appropriate area for which they are intended.

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Box 7	Reissue applications for patents involved in litigation and subsequently filed related papers.
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Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
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Box Comments Patents	Public comments regarding patent related regulations and procedures.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or materials related to the Disclosure Document Program.
Box Design	The filing of all design patent applications and any communications relating thereto.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62).
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box Issue Fee	All communications following the receipt of a PTOL–85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
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Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box PATENT APPLICATION	New patent applications and associated papers and fees.
Box Patent Ext.	Applications for patent term extension and any communications relating thereto.
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Box TTAB FEE	Oppositions, cancellation petitions, and ex parte appeals.
Box TTAB NO FEE	Interferences, motions, and extension requests.
Box STATUS NO FEE	Written status inquiries.
Box POST REG FEE	Affidavits, renewals, corrections and amendments.
Box RESPONSES NO FEE	Responses to Examining Attorneys' Office actions and Post Registration actions.

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Box 6	Mail for the Office of Procurement.
Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending litigation and disciplinary proceedings*; papers relating to pending litigation in court cases shall be mailed only to Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215 and papers relating to pending disciplinary proceedings before the Administrative Law Judge or the Commissioner shall be mailed only to the Office of the Solicitor, P.O. Box 16116, Arlington, Virginia 22215.
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Box 14	Mail directed to the APS Contracts Office.
Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
Box M Fee	Correspondence regarding patent maintenance fees and related matter.
Box OED	Mail for the Office of Enrollment and Discipline.

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The following libraries, designated as Patent and Trademark Depository Libraries (PTDLs), receive patent and trademark information in various formats from the U.S. Patent and Trademark Office. Many PTDLs have on file all full-text patents issued since 1790, trademarks published since 1872, and select collections of foreign patents. All PTDLs have both the patent and trademark sections of the *Official Gazette of the U.S. Patent and Trademark Office*. The full-text utility and design patents are distributed numerically on 16 mm microfilm, and plant patents on color microfiche. Patent and trademark search systems on CD-ROM (Compact Disc-Read Only) format are available at all PTDLs to increase utilization of and enhance access to the information found in patents and trademarks. It is through the CD-ROM systems that preliminary patent and trademark searches can be conducted through the numerically arranged collections.

All information is available for use by the public free of charge.

In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

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Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	(415) 557-4500
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	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Puerto Rico	Mayaquez General Library, University of Puerto Rico	(787) 832-4040 Ext. 3459
Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Clemson University Libraries	(803) 656-3024
South Dakota	Rapid City: Devereaux Library, South Dakota School of Mines and Technology	(605) 394-6822
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
	Lubbock: Texas Tech University	Not Yet Operational
	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Utah	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 828-1104
Virginia	Seattle: Engineering Library, University of Washington	(206) 543-0740
Washington	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510
West Virginia	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
Wisconsin	Milwaukee Public Library	(414) 286-3051
	Casper: Natrona County Public Library	(307) 237-4935
Wyoming		

PATENT EXAMINING CORPS

BRUCE A. LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner for Patents
EDWARD R. KAZENSKE, Deputy Assistant Commissioner for Patents
STEPHEN G. KUNIN, Deputy Assistant Commissioner for Patent Policy

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, ENGINEERING AND DESIGNS, GROUP 1100—JOHN E. KITTLE, Director	308-0661	06/30/95
ORGANIC CHEMISTRY, DRUG, BIO-AFFECTING AND BODY TREATING COMPOSITION, GROUP 1200—RICHARD V. FISHER, Director	308-1235	09/06/95
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—JOHN F. TERAPANE, Director	308-0651	09/14/95
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	10/13/95
BIOTECHNOLOGY, GROUP 1800—JOHN J. DOLL, Director	308-0196	02/27/95
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director	308-1782	02/27/95
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	07/06/95
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—JOSEPH J. ROLLA, Director	305-9600	03/29/95
SPECIAL COMPUTER APPLICATIONS: COMPUTER GRAPHICS, BUSINESS PRACTICES, & DIAGNOSTIC TESTING, GROUP 2400—GERALD GOLDBERG, Director	305-3800	04/07/95
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	06/12/95
TELECOMMUNICATIONS, GROUP 2600—NICHOLAS P. GODICI, Director	305-4700	04/14/95
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	308-0661	04/21/95
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—MARGARET FOCARINO, Director	308-1113	08/14/95
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—ETHEL CROSS, Director	308-1148	07/27/95
MEDICAL INSTRUMENTS, DIAGNOSTIC EQUIPMENT AND TREATMENT DEVICES; SURGERY AND SURGICAL SUPPLIES; AMUSEMENT AND EXERCISING DEVICES; ANIMAL HUSBANDRY; SPORTING GOODS; TOBACCO PRODUCTS AND MANUFACTURING EQUIPMENT; AND PRINTING, GROUP 3300—J.J. LOVE, Director	308-0858	09/26/95
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	08/04/95
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	10/16/95

*A communication from the examiner should have been received in most applications filed prior to this date.

Patents will Expire as Follows:
(1) The term of any utility or plant patent that is in force on or results from an application filed before June 8, 1995 is the greater of the 20 year term provided in 35 U.S.C. 154(a)(2) or 17 years from grant subject to any terminal disclaimers. 35 U.S.C. 154(c)(1).
(2) All utility and plant patents granted on applications having an actual United States filing date on or after June 8, 1995 are granted for a term which begins on the date on which the patent is granted and ends 20 years from the date on which the application was filed in the United States. If the application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term ends twenty years from that date on which the earliest application was filed. 35 U.S.C. 154(a)(2).
(3) All design patents are granted for a term of 14 years from the date of the grant.
However, the term of any patent may have been curtailed by disclaimer under the provisions of 35 U.S.C. 153, have lapsed due to failure to pay maintenance fees, or have been extended under the provisions of 35 U.S.C. 154, 155, or 156. Thus, if more reliable information is needed with respect to a particular patent, then the specific patent file should be reviewed to determine the actual date of patent expiration.

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TRADEMARK OPERATION

Bruce A. Lehman, Commissioner
Philip G. Hampton, II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Office

Condition of Trademark Applications as of January 1, 1997

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 101—Ron Williams, Managing Attorney, (703) 308–9101—4th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/10/96	10/11/96
Law Office 102—Myra Kurzbard, Managing Attorney, (703) 308–9102—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/07/96	08/02/96
Law Office 103—Kathryn Erskine, Managing Attorney, (703) 308–9103—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/12/96	12/12/96
Law Office 104—Sidney Moskowitz, Managing Attorney, (703) 308–9104—6th Floor Unwrought metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/08/96	10/14/96
Law Office 105—Thomas Howell, Managing Attorney, (703) 308–9105—6th Floor Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/22/96	08/13/96
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308–9106—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/12/96	10/18/96
Law Office 107—Thomas Lamone, Managing Attorney, (703) 308–9107—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/29/96	11/12/96
Law Office 108—David Shallant, Managing Attorney, (703) 308–9108—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions— Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/08/96	10/15/96
Law Office 109—Deborah Cohn, Managing Attorney, (703) 308–9109—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/23/96	11/14/96
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Terron Simms, Director, (703) 308-9100		
Trademark Assistance Center—(703) 308-9000		
Pre-Examination—Alan Lambert, Supervisor, (703) 308-9401 ext. 188		
Intent-To-Use—(ITU)—(703) 308-9500		
Post Registration Section—Mary Bowman, Supervisor, (703) 308-9500 ext. 126		
Affidavits Under Sections 8 & 15 (All Classes)	10/31/96	—0—
Renewals (All Classes)	10/21/96	—0—
Section 12(c) Publications (All Classes)	07/01/96	—0—

1. ** Assigned to all Law Office

2. Applicants with inquiries concerning the status of their applications and a touch telephone should call (703) 305–8747 from 6:30 a.m. to Midnight EST, Monday through Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquiries concerning the status of their applications. See SECTION 411 of the TRADEMARK MANUAL OF EXAMINING PROCEDURE.

3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

REEXAMINATIONS

FEBRUARY 4, 1997

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,443,811 (3115th)

CMOS INTEGRATED CIRCUIT DEVICE

Graham S. Tubbs, Houston, and James E. Ponder, Cat Spring, both of Tex., assignors to Texas Instruments, Inc., Dallas, Tex.

Reexamination Request No. 90/004,252, May 28, 1996.
Reexamination Certificate for Patent 4,443,811, issued Apr. 17, 1984, Ser. No. 310,019, Oct. 13, 1981.
Division of Ser. No. 81,513, Oct. 3, 1979, Pat. No. 4,295,897.
Int. Cl.[6] H01L *27/092;29/06;29/78*
U.S. Cl. 257—372



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–5 is confirmed.

1. A CMOS integrated circuit device having both N-channel and P-channel insulated gate field effect transistors comprising:

(a) a P-type silicon substrate,

(b) an N-type tank region formed in a portion of a face of said substrate, the plane of the face of said substrate above said N-type tank region being slightly displaced from the plane of the remainder of said face to provide a discontinuity for mask alignment,

(c) a first surface area of said face spaced from the tank region for inclusion of the N-channel transistor,

(d) a second surface area of said face within the tank region for inclusion of the P-channel transistor,

(e) thick field oxide separately surrounding the first and second surface areas on said face, said field oxide being spaced on said face from said discontinuity,

(f) first and second conductive gates overlying thin gate insulator on said first and second surface areas, respectively,

(g) N-type source and drain regions in said face at the first surface area on opposite sides of the first gate and aligned therewith,

(h) P-type surce and drain regions in said face at the second surface area on opposite sides of the second gate and aligned therewith,

(i) and metal film overlying said face but insulated therefrom, and contacts from said metal film to selected ones of said source and drain regions.

B1 4,483,905 (3116th)

HOMOGENEOUS IRON BASED POWDER MIXTURES FREE OF SEGREGATION

Ulf F. I. Engström, Höganäs, Sweden, assignor to Hoganas AB, Hoganas, Sweden

Reexamination Request No. 90/003,795, Apr. 17, 1995.
Reexamination Certificate for Patent 4,483,905, issued Nov. 20, 1984, Ser. No. 236,559, Feb. 20, 1981.
Claims priority, application Sweden, Mar. 6, 1980, 8001764
Int. Cl.[6] B22F *1/00*
U.S. Cl. 428—570

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 2, 4, and 6 are cancelled.

Claims 1 and 3 are determined to be patentable as amended.

Claim 5, dependent on an amended claim, is determined to be patentable.

New claims 7, 8 and 9 are added and determined to be patentable.

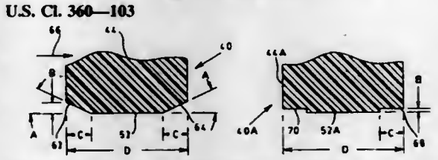
1. In a non-compacted powder composition formed by mechanical mixing primarily comprising an iron-based powder selected from the group consisting of iron and steel powder together with a minor amount of at least one alloying powder, the improvement wherein said composition further comprises in intimate contact with said iron-based powder and said at least one alloying powder from 0.005 to [1.0] *0.2* percent by weight of a binding agent in solid [or liquid] state for said iron-based powder and said alloying powder whereby segregation and/or dusting of the iron-based powder and said at least one alloying powder is essentially precluded, [with said mechanical mixing used to form said composition having been conducted while said binding agent is provided as a liquid] *with said composition having been formed by said mechanical mixing while said binding agent is provided as a liquid, and wherein said non-compacted powder composition is free-flowing and is suitable for forming into a green compact and sintering of said compact.*

B1 4,673,996 (3117th)

MAGNETIC HEAD AIR BEARING SLIDER ASSEMBLY UTILIZING TRANSVERSE PRESSURIZATION CONTOURS

James W. White, 1816 Chicadee Dr., Knoxville, Tenn. 37919

Reexamination Request Nos. 90/003,527, Aug. 10, 1994 and 90/003,734, Feb. 21, 1995 and 90/003,979, Sep. 28, 1995.
Reexamination Certificate for Patent 4,673,996, issued Jun. 16, 1987, Ser. No. 728,311, Apr. 29, 1985.
Int. Cl.[6] G11B *5/60*
U.S. Cl. 360—103



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claim 11 is confirmed.

Claims 2, 4, 10, 12 and 17–20 are cancelled.

Claims 1, 3, 5–9, and 13 are determined to be patentable as amended.

Claims 14–16 dependent on an amended claim, are determined to be patentable.

New claims 21–123 are added and determined to be patentable.

1. A slider assembly for supporting a magnetic transducer in relation to a moving magnetic recording medium, comprising:

a support structure having leading and trailing edges relative to the motion of said recording medium, and a longitudinal axis disposed along the length of said support structure from said leading edge to said [trialing] *trailing* edge;

[at least one rail] *a pair of rails* carried by said support structure, *one along each edge thereof, each of said rails* defining a face

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toward said recording medium, *each of* said [face] *faces of said rails* being provided with a converging portion at said leading edge for pressurizing air between said [face] *faces* and said recording medium causing said *faces of said* slider assembly to fly at *a* close [proximity to] *spacing from* said recording medium [during moving of] *when* said recording medium[; and] *is moving;*

wherein *each of* said [rail] *rails* is provided with transverse pressurization contours along each side edge of said [face] *faces* for producing pressurization *of the air flow* in one of said contours and expansion in the second of said contours *of each of said rails* when air flow across said [face] *faces* has a substantially [undirectional] *unidirectional* transverse component, said transverse pressurization contours having an average angle with respect to said [face] *faces* of about 0.5 to about 2 degrees; *and*

wherein said converging portion of each of said faces of said rails at said leading edge is a linear taper, and each of said transverse pressurization contours along each side edge of said rails is a step having a height and width to establish said average angle of about 0.5 to about 2 degrees with respect to said faces.

B1 4,981,534 (3118th)

OCCUPANT RESTRAINT SYSTEM AND COMPOSITION USEFUL THEREIN

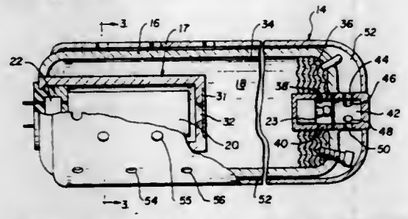
Robert S. Scheffe, Alexandria, Va., assignor to Atlantic Research Corporation, Alexandria, Va.

Reexamination Request Nos. 90/003,008, Mar. 23, 1993 and 90/003,518, Aug. 3, 1994.

Reexamination Certificate for Patent 4,981,534, issued Jan. 1, 1991, Ser. No. 489,968, Mar. 7, 1990.

Int. Cl.[6] **B60R** *21/28;* **C06B** *45/10*

U.S. Cl. 280—741



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–9** is confirmed.

1. A gas-generating composition of matter which burns to produce a non-toxic, non-corrosive, non-flammable combustion product, said composition of matter comprising:

A. plasticized polyvinyl chloride fuel binder; and

B. an inorganic oxidizer salt selected from the group consisting of: alkali metal chlorates, alkali metal perchlorates, alkaline earth metal chlorates, alkaline earth metal perchlorates and mixtures thereof; and,

C. lithium carbonate; and

wherein the oxidizer is present in an amount at least sufficient to convert all available carbon to carbon dioxide and to convert all available hydrogen to water and to fully oxidize all available alkaline earth metal; and

wherein the lithium carbonate is present in an amount at least sufficient to convert all available halogen to lithium halide.

B1 5,091,938 (3119th)

DIGITAL DATA CRYPTOGRAPHIC SYSTEM

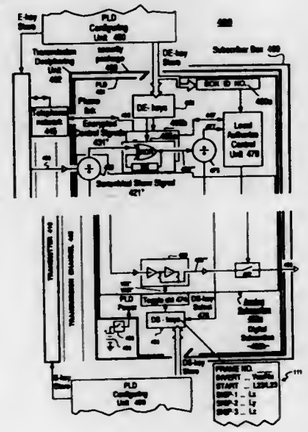
John R. Thompson, La Quinta; C. J. Hunting, Altadena; William L. Phipps, Bermuda Dunes; Steven J. Raynesford, Cathedral City, all of Calif., and Philip H. Rittmueller, St. Charles, Ill., assignors to NEC Home Electronics, Ltd., Osaka, Japan

Reexamination Request No. 90/004,164, Mar. 4, 1996.

Reexamination Certificate for Patent 5,091,938, issued Feb. 25, 1992, Ser. No. 563,165, Aug. 6, 1990.

Int. Cl.[6] **H04L** *9/02;* **H04N** *7/167*

U.S. Cl. 380—21



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **10–11** is confirmed.

Claims **1, 7** are determined to be patentable as amended.

Claims **2–6, 8, 9** dependent on an amended claim, are determined to be patentable.

New claims **12–14** are added and determined to be patentable.

1. A subscription system decoding unit comprising:

subscription show-key storing means for storing a plurality of subscriptions show-keys, selection of a proper one of said show-keys being required to decipher certain received enciphered commands;

show-key selecting means for selecting one of said subscription show-keys as an active show-key;

deciphering functions storage means [for] storing *at one time* a plurality of deciphering functions;

function selecting means for selecting one of said deciphering functions as an active function;

command receiving means for receiving enciphered commands; and

deciphering means for deciphering said commands according to the active subscription show-key, extracting a deciphering function identification from a deciphered command, and supplying said deciphering function identification to said function selecting means to cause said function selecting means to select an active deciphering function.

B1 5,183,539 (3120th)

METHOD OF PURIFYING CRUDE GLYCIDYL (METH)ACRYLATE

Akihiro Honma, and Masahiro Kurokawa, both of Hiratsuka, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Reexamination Request No. 90/003,685, Jan. 11, 1995.

Reexamination Certificate for Patent 5,183,539, issued Feb. 2, 1993, Ser. No. 793,958, Nov. 15, 1991.

Claims priority, application Japan, Nov. 21, 1990, 2-314305

Int. Cl.[6] **B01D** *3/34;* **C07D** *301/36*

U.S. Cl. 203—38

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **5** is cancelled.

Claim **1** is determined to be patentable as amended.

Claims **2–4** dependent on an amended claim, are determined to be patentable.

New claims **6–7** are added and determined to be patentable.

1. A method of purifying a crude glycidyl acrylate or a crude glycidyl methacrylate, which comprises:

(1) subjecting a crude glycidyl acrylate or a crude glycidyl methacrylate containing, as impurities, epichlorohydrin and other chlorine compounds selected from the group consisting of 1,3-dichloro- 2-propanol, 2,3-dichloro-1-propanol, glycerin monochlorohydrin, 2-hydroxy-3-chloropropyl acrylate, 2-hydroxy-3-chloropropyl methacrylate, 3-hydroxy-2-chloropropyl acrylate and 3-hydroxy-2-chloropropyl methacrylate, *having a total chlorine concentration of about 1000 to about 10,000 ppm,* to a stripping treatment with a mixed gas containing oxygen gas in the presence of a quaternary ammonium salt *to reduce the chlorine concentration in the crude glycidyl acrylate or crude glycidyl methacrylate,* and then

(2) distilling the treated product *in which epichlorohydrin has been removed in step (1)*to obtain a purified glycidyl acrylate or a purified glycidyl methacrylate *of further reduced chlorine concentration,*

wherein the mixed gas is used at a flow rate of 0.1 to 500 ml/minute, as a flow rate at 20° c. under atmospheric pressure, per kilogram of the crude glycidyl acrylate or methacrylate.

B1 5,288,048 (3121st)

ERGONOMIC HANDRAIL

Thomas A. Shreiner, Muncy, Pa., assignor to Construction Specialties, Inc., Cranford, N.J.

Reexamination Request No. 90/004,327, Aug. 8, 1996.

Reexamination Certificate for Patent 5,288,048, issued Feb. 22, 1994, Ser. No. 855,905, Mar. 23, 1992.

Continuation-in-part of Ser. No. 679,802, Apr. 3, 1991, Pat. No. 5,165,643.

The portion of the term of this patent subsequent to Nov. 24, 2009, has been disclaimed.

Int. Cl.[6] **E04F** *11/18*

U.S. Cl. 248—251

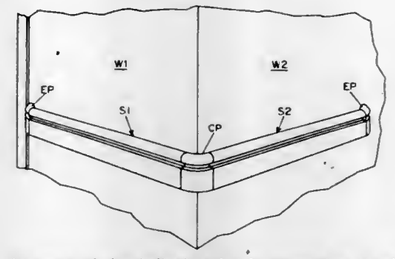
AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **12** and **14** is confirmed.

Claim **1** is determined to be patentable as amended.

Claims **2–11, 13** and **15**, dependent on an amended claim, are determined to be patentable.

New claims **16–18** are added and determined to be patentable.



1. An ergonomic handrail adapted to be mounted on a wall in spaced-apart relation therefrom by means of mounting brackets and comprising an elongated metal retainer of substantially uniform cross-section along its length and having a body portion, upper and lower flange portions extending upwardly and downwardly, respectively, from the body portion, an upper web portion extending upwardly from the body portion from a juncture therewith rearwardly of the upper flange portion and defining with the upper flange portion a slot that opens generally upwardly, and upper front and rear arcuate arm portions extending upwardly from a common juncture with an upper edge of the web portion and defining the major portion of substantially circular cylindrical surface except for a space between upper edges thereof,

the upper front arm portion of the retainer being spaced apart from the upper flange portion of the retainer by a distance great enough to accept a thumb of a person using the handrail,

an elongated bumper cover member of an impact resistant substantially rigid polymeric material and of substantially uniform cross-section along its length, having a front web portion, an upper flange portion of substantially L-shaped cross section received in captured engagement by the upper flange portion of the retainer with a return leg part thereof received in the slot, and a lower flange portion of substantially L-shaped cross section received in captured engagement by the lower flange portion of the retainer, and an elongated upper handgrip cover member of an impact-resistant substantially rigid polymeric material received over the upper arm portions of the retainer in substantially continuous contact therewith along mutually engageable internal surfaces of the handgrip cover member and external surfaces of the arm portions of the retainer.

B1 5,309,983 (3122nd)

LOW PROFILE INTEGRATED HEAT SINK AND FAN ASSEMBLY

Norman W. Bailey, Sacramento, Calif., assignor to PCubid Computer Technology Inc., Reno, Nev.

Reexamination Request No. 90/004,025, Nov. 16, 1995.

Reexamination Certificate for Patent 5,309,983, issued May 10, 1994, Ser. No. 39,940, Mar. 29, 1993.

Continuation-in-part of Ser. No. 902,924, Jun. 23, 1992, abandoned.

Int. Cl.[6] **F28F** *7/00*

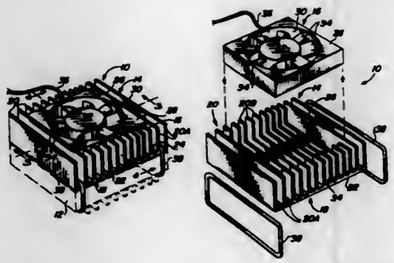
U.S. Cl. 165—80.3

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–27** are cancelled.

1. A low profile integrated assembly for dissipating heat from an electronic component, said assembly comprising:

(a) a heat sink for dissipating heat from an electronic component, said heat sink having a bottom base plate and means attached on said base plate and extending upwardly therefrom for defining a peripheral envelope and a cavity within said envelope; and



(b) a self-contained motorized fan unit disposed substantially within said cavity and said envelope of said heat sink, said fan unit being operable for generating a flow of air into said heat sink to effect impingement cooling of a portion of said heat sink located adjacent to the electronic component;

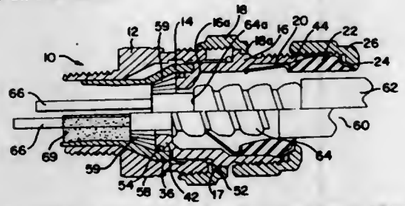
(c) said envelope and cavity defining means of said heat sink including a plurality of elements stationarily attached on said bottom base plate and extending upwardly therefrom for supporting said fan unit in spaced relation above said bottom base plate so as to define a passageway between said bottom base plate and said fan unit for passing the flow of air over said bottom base plate.

B1 5,321,205 (3123rd)

ELECTRICAL CONNECTOR FITTING

Jaspal S. Bawa, Memphis, Tenn.; Luis R. Couto, Hillside, and Giacomo J. Maocini, Piscataway, both of N.J., assignors to Thomas & Betts Corporation, Memphis, Tenn.

Reexamination Request No. 90/003,711, Feb. 28, 1995.
Reexamination Certificate for Patent 5,321,205, issued Jun. 14, 1994, Ser. No. 6,006, Jan. 15, 1993.
Int. Cl.[6] H02G *15/00*
U.S. Cl. 174—65 SS



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–8** and **10** are cancelled.

Claim **9** is determined to be patentable as amended.

New claims **11–17** are added and determined to be patentable.

9. A connector **[**of claim **8** wherein**]** *for terminating an electrical cable having an insulative jacket and plural conductors extending therethrough comprising:*

an elongate generally cylindrical body having a cable receiving end, a hub insertion end, and a central axial bore extending therethrough;

an elongate, generally cylindrical body accommodating hub having a body receiving end, a conductor egressing end, and a central axial bore extending therethrough, said bore of said hub being axially aligned with said bore of said body;

cable sealing means rotatably coupled to said cable receiving end of said body for sealingly coupling said cable to said body; and

an elongate generally cylindrical sealing sleeve having a body accommodating end, a hub accommodating end, and an axial bore extending therethrough, said sealing sleeve permitting passage of said conductors therethrough, said sealing sleeve further accommodating a sealing compound therein to seal said conductors in said sealing sleeve;

said body and said hub including cooperative engagement means for preventing relative axial rotation of said hub and said body upon said rotatable coupling of said sealing means to said body,

said cooperative engagement means including said body having a splined member on an external surface thereof and said hub having a splined member on an internal surface thereof, said splined member of said body and said splined member of said hub being interengageable to prevent said relative rotation of said body within said hub.

said splined member of said body including spaced raised projections extending circumferentially around said external surface adjacent said hub insertion end thereof, said splined member of said hub including spaced raised projections extending circumferentially around said internal surface adjacent said body receiving end thereof, said projections of one of said body and said hub residing within spaces formed between said projections of the other of said body and said hub,

said sealing means including a gland nut rotatably securable to said cable receiving end of said body and a sealing member positioned between said body and said gland nut for sealable engagement with said cable upon said rotatable coupling of said gland nut to said body,

said sealing member including an annular bushing positionable about said insulative jacket of said cable for frictional engagement therewith upon rotatable securement of said gland nut to said body,

said cable receiving end of said body being externally screw threaded and said gland nut being internally screw threaded for screw accommodation with said body,

said connector further including coupling means for securably connecting said body to said hub,

said connector further including hub sealing means for sealing the connection of said body to said hub,

said hub sealing means **[**includes**]** *including* a hub sealing ring positioned about said external surface of said body and engageable with a surface of said hub for forming a seal thereat, *said hub sealing ring being disposed on the external surface of said body at a location farther from the hub insertion end than the splined member of said body.*

B1 5,341,012 (3124th)

CMOS DEVICE FOR USE IN CONNECTION WITH AN ACTIVE MATRIX PANEL

Toshiyuki Misawa, and Hiroyuki Oshima, both of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo-to, Japan

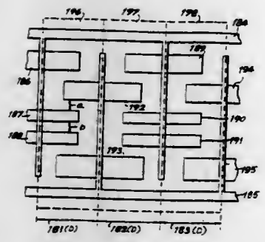
Reexamination Request Nos. 90/003,846, May 30, 1995 and 90/004,195, Mar. 8, 1996.
Reexamination Certificate for Patent 5,341,012, issued Aug. 23, 1994, Ser. No. 923,751, Jul. 31, 1992.
Division of Ser. No. 351,758, May 15, 1989, Pat. No. 5,250,931.
Claims priority, application Japan, May 17, 1988, 63-119919
Int. Cl.[6] H01L *27/01;27/12*
U.S. Cl. 257—351

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–3** are determined to be patentable as amended.

New claim **4** is added and determined to be patentable.

1. A *liquid crystal device for an electro-optical device comprising a plurality of picture elements each having a liquid crystal cell,*



and a driving means for driving the picture elements, the driving means including a plurality of CMOS devices, the CMOS **[**device,**]** *devices* comprising:

1) a substrate;

2) a thin silicon film carried by said substrate;

3) a *plurality of first* thin film **[**transistor**]** *transistors* formed from said thin silicon film *in each of a plurality of first type transistor islands*, and carried by the substrate, said *first* thin film **[**transistor**]** *transistors each* having a *first* source region and a *first* drain region formed from at least a first type of impurity; and

4) a *plurality of* second *thin film* **[**transistor.**]** *transistors* formed from said thin silicon film *in each of a plurality of second type transistor islands*, and carried by the substrate, said second *thin film* **[**transistor**]** *transistors each* having a *second* source region and a *second* drain region formed from at least said first type of impurity and a second type of impurity;

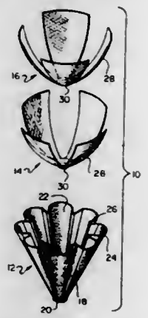
wherein the concentrations of the first type of impurity and second type of impurity are different from each other, *adjacent ones of a same type of the first type transistor islands and the second type transistor islands are separated by a first distance and adjacent ones of a different type of the first type transistor islands and the second type transistor islands are separated by a second distance, the first and second distances being substantially the same.*

B1 5,356,432 (3125th)

IMPLANTABLE MESH PROSTHESIS AND METHOD FOR REPAIRING MUSCLE OR TISSUE WALL DEFECTS

Ira M. Rutkow, Marlboro, and Alan W. Robbins, Freehold, both of N.J., assignors to C. R. Bard, Inc., Murray Hill, N.J.

Reexamination Request No. 90/003,812, May 1, 1995.
Reexamination Certificate for Patent 5,356,432, issued Oct. 18, 1994, Ser. No. 14,343, Feb. 5, 1993.
Int. Cl.[6] A61F *2/02;2/00;13/00*
U.S. Cl. 623—11



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–18** and **21–26** is confirmed.

Claims **19** and **20** are determined to be patentable as amended.

19. An implantable prosthesis for repairing a tissue or muscle wall defect, comprising:

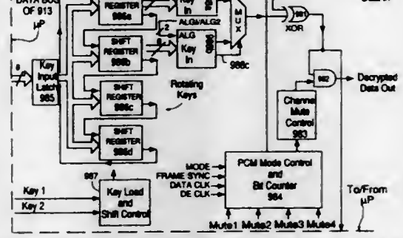
a hollow plug, formed of a surgical mesh fabric having openings therein for tissue ingrowth, constructed and arranged to securely fit within and occlude the tissue or muscle wall defect and which is radially compressible upon insertion into the defect from a first configuration which is larger than the defect into a second configuration which approximates the shape of the defect, wherein the surface of said hollow plug **[**further**]** includes means for conforming to irregularities in the tissue or muscle wall defining the defect *upon insertion of said plug into the defect, said means for conforming making the hollow plug extremely pliable and allowing localized portions of the hollow plug to adapt to irregularities in the tissue or muscle wall defect.*

B1 5,406,627 (3126th)

SYSTEM AND METHOD FOR TRANSMITTING ENTERTAINMENT INFORMATION TO AUTHORIZED ONES OF PLURAL RECEIVERS

John R. Thompson, La Quinta; C. J. Hunting, Altadena; William L. Phipps, Bermuda Dunes; Steven J. Raynesford, Cathedral City, all of Calif., and Philip H. Rittmueller, St. Charles, Ill., assignors to NEC Home Electronics, Ltd., Osaka, Japan

Reexamination Request No. 90/004,165, Mar. 4, 1996.
Reexamination Certificate for Patent 5,406,627, issued Apr. 11, 1995, Ser. No. 999,757, Dec. 28, 1992.
Division of Ser. No. 764,557, Sep. 20, 1992, Pat. No. 5,267,312, which is a division of Ser. No. 563,165, Aug. 6, 1990, Pat. No. 5,091,938.
Int. Cl.[6] H04N *7/167;* **H04L** *9/02*
U.S. Cl. 380—20



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1**, **13**, **18** are determined to be patentable as amended.

Claims **1–12**, **14–17**, **19–22**, dependent on an amended claims, are determined to be patentable.

1. A system comprising:

a receiving means for receiving a transmitted signal, said transmitted signal including encrypted digital data and including commands for designating one of a plurality of decryption keys stored in said receiving means, said receiving means comprising;

decryption key storage means for storing a plurality of decryption keys;

decryption key selection means for selecting one of said plurality of decryption keys as an active key based upon said commands received by said receiving means;

decryption function storage means **[**for**]** storing **[**one or more**]** *a plurality of* decryption functions *at one time*; and

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digital data decryption means for decrypting said encrypted digital data based upon one of said functions and said active key.

B1 5,420,927 (3127th)

METHOD FOR CERTIFYING PUBLIC KEYS IN A DIGITAL SIGNATURE SCHEME

Silvio Micali, 459 Chestnut Hill Ave., Brookline, Mass. 02146

Reexamination Request No. 90/004,215, Apr. 10, 1996.

Reexamination Certificate for Patent 5,420,927, issued May 30, 1995, Ser. No. 189,248, Feb. 1, 1994.

Int. Cl.[6] H04K *1/00*

U.S. Cl. 380—23

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1**, **9**, **10**, **15**, **18**, **19**, **21–23** are determined to be patentable as amended.

Claims **2–8**, **11–14**, **16**, **17**, **20**, dependent on an amended claim, are determined to be patentable.

New claims **24–47** are added and determined to be patentable.

1. A method for certifying pieces of data in a secure communications system with at least two levels of authorities, comprising the steps of:

presenting a piece of data requiring certification to a first-level authority for inspection of a given property;

if the piece of data passes the inspection of the first-level authority, having the first-level authority send to a higher authority a digital signature evidencing that the piece of data has passed the inspection of the first-level authority; and

if the digital signature of the first-level authority is correct, having the higher authority issue a certificate, which does not include a signature of the first level authority, that the piece of data possesses the given property, *wherein the first-level authority is kept accountable for the pieces of data that the first-level authority causes to be certified.*

STATUTORY INVENTION REGISTRATIONS

PUBLISHED FEBRUARY 4, 1997

A statutory invention registration is not a patent. It has the defensive attributes of a patent but does not have the enforceable attributes of a patent. No article or advertisement or the like may use the term patent, or any term suggestive of a patent, when referring to a statutory invention registration. For more specific information on the rights associated with a statutory invention registration see 35 U.S.C. 157.

H1631

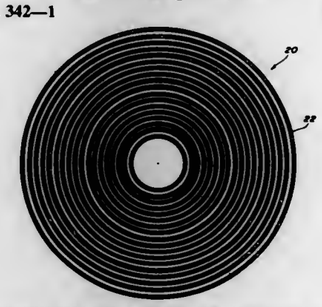
METHOD OF FABRICATING RADAR CHAFF

John A. Montgomery, Reston; Jack D. Ayers, Oakton, and Gregory Cowart, Alexandria, all of Va., assignors to United States of America, Washington, D.C.

Filed Oct. 27, 1995, Ser. No. 563,086

Int. Cl.[6] H01Q *17/00;7/04*

U.S. Cl. 342—1 **22 Claims**



1. A method for making radar chaff comprising metal rings having varying diameters, comprising the steps of:

providing a metal foil having a thickness suitable for use in radar chaff;

overcoating said metal foil with a photoresist, thereby forming a layered structure;

undercoating said metal foil with a removable backing;

exposing said photoresist to a quantity of actinic radiation for chemically modifying said photoresist into a photoproduct suitable for subsequent development, wherein said actinic radiation is patterned into a series of concentric rings;

developing said photoresist, thereby exposing said underlying metal in a series of concentric rings;

removing said exposed metal to form a series of concentric metal rings on said removable backing; and

removing said removable backing.

H1632

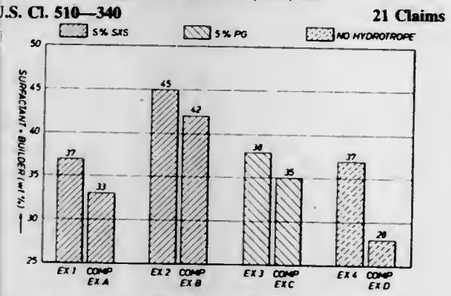
LIQUID LAUNDRY DETERGENT FORMULATIONS

Anne M. Brun, Houston, and Kirk H. Raney, Sugarland, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Aug. 15, 1994, Ser. No. 290,657

Int. Cl.[6] C11D *1/12;1/24;1/83*

U.S. Cl. 510—340 **21 Claims**



1. A clear, flowable built liquid laundry detergent formulation which comprises one or more C_{11} alcohol ethoxylate compounds, one or more alcohol ethoxysulfate compounds, one or more alkylaryl sulfonate compounds, and water.

H1633

DEODORIZING POLYSULFIDE MATERIALS

Gregory L. Hiebert, Mentor, and Karl F. Johnson, Willoughby Hills, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Filed Mar. 8, 1995, Ser. No. 400,728

Int. Cl.[6] C08G *18/18*

U.S. Cl. 528—373 **11 Claims**

1. A deodorized polysulfide composition, comprising:

(A) a polysulfide material;

(B) an effective amount of a deodorizing composition comprising:

(i) 0.25 to 0.5%, based on the weight of the sulfided composition, of an oil-soluble tertiary alkanolamine of the formula

$$R_2—N(R_3)—R_4—OH$$

wherein R_2, R_3 and R_4 are independently alkyl; groups of about 1 to 6 carbon atoms; and

(ii) 1.5 to 3% of a monohydric alkyl alcohol containing up to about 12 carbon atoms.

H1634

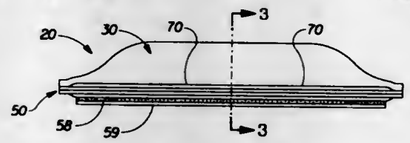
COMPOUND SANITARY NAPKIN

David C. Oetjen; Ronald R. McFall, and Richard G. Coe, all of The Procter & Gamble Company, Winton Hill Technical Center, 6100 Center Hill Ave., Cincinnati, Ohio 45224

Filed Feb. 24, 1995, Ser. No. 394,102

Int. Cl.[6] A61F *13/15*

U.S. Cl. 604—385.1 **1 Claim**



1. A compound sanitary napkin comprising:

a primary absorbent member including an absorbent core and an outer cover which substantially encircles said absorbent core, said outer cover comprising a film having apertured regions and unapertured regions, said apertured regions being liquid pervious and said unapertured regions being liquid impervious; and

a secondary absorbent member joined with said primary absorbent member, said secondary absorbent member including a liquid impervious backsheet and an absorbent element joined to said backsheet.

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REISSUES

Maner enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; maner printed in italics indicates additions made by reissue.

Re. 35,436

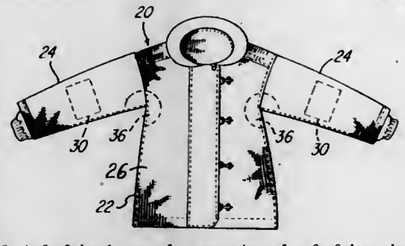
FIREFIGHTER'S GARMENTS HAVING ENHANCED FLEXIBILITY AND MINIMUM WEIGHT

William L. Grilliot, and Mary I. Grilliot, both of West Milton, Ohio, assignors to Morning Pride Manufacturing, Inc., Dayton, Ohio

Original No. 4,922,552, dated May 8, 1990, Ser. No. 345,668, May 1, 1989. Division of Ser. No. 182,398, Apr. 18, 1988, Pat. No. 4,843,646. Application for reissue Dec. 20, 1993, Ser. No. 170,410

Int. Cl.[6] A41D *13/00*

U.S. Cl. 2—93 **10 Claims**



20. A firefighter's coat for protection of a firefighter during firefighting activity and to create minimum stress within the firefighter during firefighting activity, the firefighter's coat having sleeves and an elbow region and comprising an outer shell of flexible abrasion resistant and flame resistant material, a layer of flexible high temperature thermal insulation material enclosed by the outer shell, the layer of flexible high temperature insulation material including a major portion which is relatively bulky and which has limited flexibility, the major portion of the layer of flexible high temperature thermal insulation material having given thermal insulation qualities, the layer of flexible high temperature thermal insulation material also including a minor portion of flexible high temperature thermal insulation material, the minor portion of flexible high temperature insulation material being within the elbow region and being less bulky in character and having greater flexibility than the major portion of the layer of flexible high temperature thermal insulation material, the minor portion of the layer of flexible high temperature thermal insulation material having lesser thermal insulation qualities than the major portion of the layer of flexible high temperature thermal insulation material.

Re. 35,437

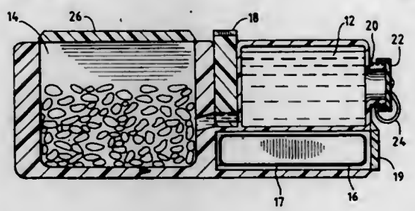
MILK AND CEREAL CONTAINER

David Ascone, 2115 Caton, Apt. 1, Chicago, Ill. 60647

Original No. 5,241,835, dated Sep. 7, 1993, Ser. No. 998,547, Dec. 30, 1992. Application for reissue Feb. 17, 1995, Ser. No. 390,512

Int. Cl.[6] F25D *3/08*

U.S. Cl. 62—372 **6 Claims**



1. A container for milk and cereal comprising:

a milk reservoir having an opening and a resealable fluid-tight cap means removably secured over said opening [and fastened to said container];

at least one freeze pack adjacent to the milk reservoir and filled with a freezable substance;

a cereal compartment adjacent the milk reservoir and having an opening and a cover removably secured over the cereal compartment opening; and

at least one valve interposed between the milk reservoir and the cereal compartment, said at least one valve having a closed position for keeping the milk and cereal separate and an open position for allowing the milk to enter the cereal compartment.

Re. 35,438

Patent Not Issued For This Number

Re. 35,439

GERMICIDAL DENTAL FLOSS AND METHOD FOR FABRICATION

Edwin D. Rosenberger, 540 W. Boston Post Rd., Mamaroneck, N.Y. 10543

Original No. 5,174,313, dated Dec. 29, 1992, Ser. No. 741,585, Aug. 7, 1991. Continuation-in-part of Ser. No. 459,181, Dec. 29, 1989, Pat. No. 5,040,554, which is a continuation-in-part of Ser. No. 243,621, Sep. 13, 1988, abandoned. Application for reissue Dec. 22, 1994, Ser. No. 362,822

Int. Cl.[6] A61C *15/00*

U.S. Cl. 132—321 **19 Claims**

14. A germicidal dental floss comprising a flexible length of floss having at least on the exterior thereof a coating comprising a germicidal phenol derivative/compound and a binder of microcrystalline wax having a low melting point removably securing said material to said length of floss.

Re. 35,440

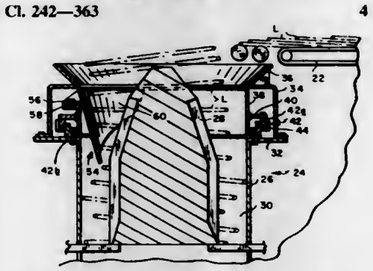
LOOP DISTRIBUTOR FOR REFORMING STATION

Raymond R. Starvaski, Worcester, Mass., assignor to Morgan Construction Company, Worcester, Mass.

Original No. 5,273,231, dated Dec. 28, 1993, Ser. No. 924,146, Aug. 3, 1992. Application for reissue Jan. 19, 1995, Ser. No. 374,063

Int. Cl.[6] B21C *47/02*

U.S. Cl. 242—363 **4 Claims**



1. In an apparatus for receiving a series of loops descending along a vertical path from a delivery device, and for accumulating

the thus received loops in the form of an annular coil, a device for horizontally distributing the loops as they descend into the apparatus, said device comprising:

a) means defining a circular path surrounding said vertical path;

b) a [curved] *rotatable* guide member having a three dimensionally *shaped* guide face [formed as a segment of the interior surface of an inverted hollow cone], said guide face having: (i) a top edge extending from a front end to a rear end along a segment *of* said circular path; (ii) a trailing edge extending downwardly from said rear end to a lower end; and (iii) a leading edge extending upwardly from said lower end and angularly with respect to said trailing edge to said front end, said guide face *extending into said vertical path and* being arranged to be contacted by and to horizontally deflect the descending loops away from *the said segment of* said circular path; and

c) means for rotating said guide member around said circular path to circumferentially distribute the thus deflected loops around the axis of the accumulating annular coil.

Re. 35,441

THERMOELECTRIC SEMICONDUCTOR HAVING A POROUS STRUCTURE DEAERATED IN A VACUUM AND THERMOELECTRIC PANEL USING P-TYPE AND N-TYPE THERMOELECTRIC SEMICONDUCTORS

Youichirou Yokotani; Kouichi Kugimiya, and Hamae Ando, all of Osaka, Japan, assignors to Matsushita Electrical Industrial Co., Ltd., Osaka, Japan

Original No. 5,168,339, dated Dec. 1, 1992, Ser. No. 688,424, Apr. 22, 1991. Application for reissue Oct. 28, 1994, Ser. No. 330,565

Claims priority, application Japan, Apr. 20, 1990, 2-103030; Nov. 29, 1990, 2-335911; Nov. 29, 1990, 2-335925; Nov. 29, 1990, 2-335926

Int. Cl.[6] H01L *23/56*

U.S. Cl. 257—64 **22 Claims**

11. An electronic refrigeration panel in which p-type and n-type semiconductor elements are electrically connected alternatively in series to form p-n junctions for causing energy conversions between thermal energy and electrical energy characterized in

that each of said p-type and n-type semiconductor elements is comprised of semiconductor layers formed on surfaces of support particles *selected from the group consisting of hollow particles and porous particles*, and

wherein said elements are in contact with each other.

Re. 35,442

MIXED TECHNOLOGY INTEGRATED CIRCUIT COMPRISING CMOS STRUCTURES AND EFFICIENT LATERAL BIPOLAR TRANSISTORS WITH A HIGH EARLY VOLTAGE AND FABRICATION THEREOF

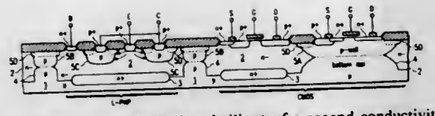
Claudio Contiero, Buccinasco; Paola Galbiati, Monza, and Lucia Zullino, Milan, all of Italy, assignors to SGS-Thomson Microelectronics, S.r.l., Agrate Brianza, Italy

Original No. 5,081,517, dated Jan. 14, 1992, Ser. No. 548,711, Jul. 6, 1990. Application for reissue Jan. 14, 1994, Ser. No. 183,011

Int. Cl.[6] H01L *29/76*

U.S. Cl. 257—370 **34 Claims**

1. An integrated circuit, monolithically integrated in an epitaxial layer of lightly doped silicon of a first conductivity type grown on



a monocrystalline, lightly doped silicon of a second conductivity type and comprising complementary, superficial field effect-transistors and bipolar lateral transistors [(]*of* said second conductivity type, each bipolar lateral transistor of said second conductivity type being formed in a region of said epitaxial layer, electrically isolated from said substrate by a heavily doped layer of said first conductivity type formed at the bottom of said region and laterally by bottom isolation diffusions and top isolation or well diffusions merging to form walls of doped silicon of said second conductivity type extending through the entire thickness of said epitaxial layer around said region, each of said bipolar transistors comprising a heavily doped, base contact diffusion of said first conductivity type, a heavily doped emitter diffusion of said second conductivity type and heavily doped, annular collector diffusion of said second conductivity type formed around said emitter diffusion, said base contact, emitter and collector diffusions having respective profiles identical to respective diffusion profiles of source and drain regions of said complementary [filed] *field* effect transistors,

and characterized by comprising

at least a second annular diffusion of said second conductivity type, having the same diffusion profile of said top isolation or well diffusion of said second conductivity type and extends beyond the profile of the [latter,] *collector diffusion*, deeply within said epitaxial layer, for intercepting [electric current] *carrier flow* originating from said emitter diffusion and for gathering the same to the transistor's collector subtracting it from dispersion toward said isolation diffusions surrounding the transistor region.

Re. 35,443

PURIFICATION OF Q BETA REPLICASE

Robert A. DiFrancesco, Flemington, N.J., and Karin Borcherts Mahdavie, Newton, Mass., assignors to Amoco Corporation, Chicago, Ill.

Original No. 5,141,857, dated Aug. 25, 1992, Ser. No. 364,306, Jun. 9, 1989. Application for reissue Aug. 18, 1994, Ser. No. 292,574

Int. Cl.[6] C12N *9/12*

U.S. Cl. 435—194 **6 Claims**

1. A method for purifying Q Beta replicase from cells in which it is produced, comprising the steps of:

a) disrupting cells which produce Q Beta replicase to form a cell lysate;

b) contacting the cell lysate with polyethyleneimine under conditions appropriate for selective precipitation of nucleic acids present in the lysate, resulting in formation of a supernatant containing Q Beta replicase;

c) contacting the supernatant with a [anionic resin] *cationic resin* , under conditions appropriate for binding of Q Beta replicase to the resin;

d) contacting the product of step (c) with a first elution buffer under conditions appropriate for separation of Q Beta replicase from the resin;

e) contacting the product of step (d) with an [cationic resin] *anionic resin* under conditions appropriate for binding of Q Beta replicase to the resin; and

f) contacting the resin of step (e) with a second elution buffer under conditions appropriate for separation of Q Beta replicase from the resin.

PLANT PATENTS

GRANTED FEBRUARY 4, 1997

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

9,790

MINIATURE ROSE PLANT NAMED 'WELANGEL'

Verlie Whitson Wells, Brighton, Tenn., assignor to Nor'East Miniature Roses, Inc., Rowley, Mass.

Filed Jan. 16, 1996, Ser. No. 586,959

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—9 **1 Claim**

1. A new and distinct variety of miniature rose plant of vigorous, hardy, upright, and well branched habit, substantially as illustrated and described, characterized by buds and flowers of a bright medium pink with some yellow/orange at the base of the petals, borne mostly singly on long stems up to 20 inches long for use as cut flowers or for exhibition; also borne in small clusters making it a good specimen plant; and further characterized by a compact plant with ample dark green, matte foliage creating a plant that is attractive as a pot plant or garden perennial, and easy to propagate from cuttings.

9,791

PLANTAIN PLANT 'FHIA-21'

Phillip R. Rowe, La Lima, Honduras, assignor to Fundación Hondureña de Investigación Agrícola, San Pedro Sula, Honduras

Filed Sep. 28, 1995, Ser. No. 535,552

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—33.1 **1 Claim**

1. A new and distinct variety of plantain plant, substantially as illustrated and described, which has a high level of resistance to the black Sigatoka leaf spot disease; the fruit is further characterized by having a very good flavor when fried as green chips, an excellent flavor and texture when microwaved ripe, and to having size and shape characteristics closely resembling those of the reference False Horn variety when the bunches are pruned after emergence to leave only the first 5 hands for development.

9,792

Patent Not Issued For This Number

9,793

CHRYSANTHEMUM PLANT NAMED 'HELEN'

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Mar. 1, 1996, Ser. No. 608,622

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—82 **1 Claim**

1. A new and distinct Chrysanthemum plant named Helen, as described and illustrated.

9,794

LILY PLANT NAMED 'GOLDEN STARGAZER'

Edward A. McRae, Sandy, Oreg., and Judith F. McRae, Vancouver, Wash., assignors to Van der Salm Bulbfarm Inc., Woodland, Wash.

Filed Dec. 29, 1995, Ser. No. 580,617

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—87.4 **1 Claim**

1. A new and distinctive variety of Oriental hybrid lily plant substantially as herein shown and described, characterized by its high resistance to disease; its tolerance of virus; its vigorous growth and rapid natural propagation; the excellence of its flower form, size, and substance; its versatility both as a garden plant and as a cut-flower producer from pre-cooled bulbs forced under glass out of season; and in particular by its outfacing to upfacing buds, its ascending pedicels, and by its unique golden yellow coloration, with deeper orange-gold midrib and soft red papillae, a combination unique among Oriental and Oriental/Aurelian hybrid lilies suited to forcing and to mass commercial cultivation.

9,795

GERANIUM PLANT NAMED 'FISLAIS'

Ingeborg Schumann, Albstadt, and Angelika Utecht, Montabaur, both of Germany, assignors to Florfis AG, Binningen, Switzerland

Filed Sep. 22, 1995, Ser. No. 532,503

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—87.12 **1 Claim**

1. A new and distinct cultivar of geranium plant named Fislais, as illustrated and described.

9,796

GERANIUM PLANT NAMED 'FLOSCALA'

Ingeborg Schumann, Albstadt, and Angelika Utecht, Montabaur, both of Germany, assignors to Florfis AG, Binningen, Switzerland

Filed Sep. 22, 1995, Ser. No. 532,516

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—87.12 **1 Claim**

1. A new and distinct cultivar of geranium plant named Floscala, as illustrated and described.

9,797

ANTHURIUM CULTIVAR NAMED 'TROPIC FIRE'

Haruyuki Kamemoto, and Adelheid R. Kuehnle, both of Honolulu, Hi., assignors to University of Hawaii, Honolulu, Hi.

Filed Jun. 7, 1995, Ser. No. 484,793

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—88.1 **1 Claim**

1. A new and distinct cultivar of *Anthurium andraeanum* plant substantially as described and illustrated, by the cultivar name 'Tropic Fire' and characterized by the combined features of glossy, bright red spathe with tapered and occasionally twisted margins towards the apex, yellow spadix, straight peduncle carrying the spathe at 90 degrees from the peduncle and above the foliage, glossy green leaf blade with upright stature, high flower yield, excellent flower longevity, resistance to anthracnose (spadix rot), and tolerance to the systemic bacterial blight.

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473–436	5,599,017
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473–549	5,599,019
473–216	5,599,021
473–478	5,599,024
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ERRATA–CONTINUED

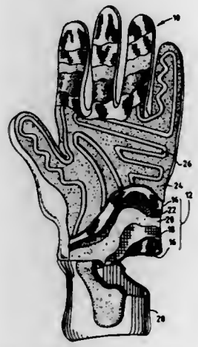
For CLASS	See PATENT NO.
399–113	5,600,410
399–098	5,600,411
399–081	5,600,412
399–174	5,600,413
399–176	5,600,414
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349–054	5,600,460
349–038	5,600,461
349–112	5,600,462
349–112	5,600,463
395–201	5,600,554
395–201	5,600,555
395–803	5,600,556

PATENTS

GRANTED FEBRUARY 4, 1997

GENERAL AND MECHANICAL

5,598,582
HEAT RESISTANT AND CUT AND PUNCTURE PROTECTIVE HAND COVERING
Warren L. Andrews, and Georges N. Karam, both of Chicago, Ill., assignors to Marmon Holdings, Inc., Chicago, Ill.
Filed Mar. 6, 1995, Ser. No. 398,935
Int. Cl.[6] A41D *19/00;13/10*
U.S. Cl. 2—16 **24 Claims**



1. A hand covering having back hand and palm portions, to provide protection of a user's hand from being cut by engagement with sharp objects, from being burned by contact with hot objects, from coming into contact with liquids, and which provides an enhanced gripping surface on the palm side, said hand covering comprising:

a hand covering liner having back and palm portions formed of at least two layers of fabric,

a first inner layer made of a strong, high temperature resistant, cut, puncture and abrasion resistant fabric,

a second outer layer made of a fabric formed from natural fibers, said first inner layer and second outer layer of said back and palm portions being secured to each other so as to form a hand covering,

said second outer layer being coated with a material selected from the group consisting of nitrile compounds, Buna-N synthetic rubbers, neoprene and polyurathane so as to provide a liquid proof outer layer on said hand covering liner,

an outer hand covering having back hand and palm portions made of a strong, high temperature resistant, cut, puncture and abrasion resistant fabric,

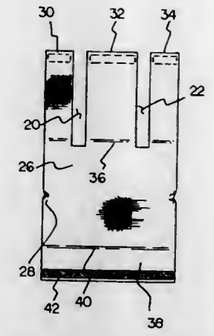
said palm portion being provided with a thin coat of silicone material,

a raised pattern of silicone being provide over said thin coat of silicone material so as to provide an enhanced gripping surface, and improved thermal protection, said hard covering liner being received within said outer hard covering.

5,598,583
BACK SUPPORT BELT COVER
Carol J. Victor, and Michelle A. Carrara, both of 6 S. Cobblers Ct., Niantic, Conn. 06357
Filed Feb. 24, 1995, Ser. No. 393,667
Int. Cl.[6] A41D *13/00;27/12*
U.S. Cl. 2—46 **8 Claims**

1. A back support belt cover comprising:

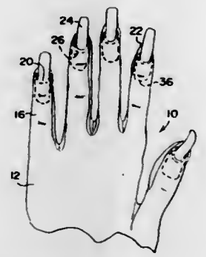
an outer cover web of substantially rectangular configuration having horizontal pleats positioned medially between horizontal longitudinal edges of said web and directed thereinto along laterally opposed edges, said web being coextensive with and



covering the entire belt of a back support device wherein said back support device is adapted to extend horizontally about and to enclose the torso portion of a wearer at the waist thereof;

and a securing means coupled to the outer cover web for securing the outer cover web to the belt of the back support device, said securing means comprising a first lateral web extending from and integral with the upper longitudinal edge of the outer cover web, a medial lateral web extending from and integral with said upper longitudinal edge of said outer web and into a spaced and parallel orientation to said first lateral web so as to define a first vertically opening strap slot therebetween, a third lateral web extending from and integral with said upper longitudinal edge of said outer web into a spaced and parallel orientation to said medial web so as to define a second vertically opening strap slot therebetween, a horizontally extending securing web extending from and integral with the lower longitudinal edge of said outer web and a joining means coupled to the securing web and to each of the lateral and medial webs for adjustably coupling said webs to said securing web about the belt of the back support device.

5,598,584
DESIGNER FINGERNAIL GLOVES
Darrin P. Da Grossa, 71-25 244th St., Douglaston, N.Y. 11362
Filed Feb. 9, 1994, Ser. No. 193,995
Int. Cl.[6] A41D *19/00*
U.S. Cl. 2—159 **2 Claims**



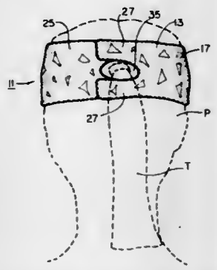
1. A designer fingernail glove comprising:

a) a palm portion for covering a palm of a hand of a wearer;

b) a plurality of finger stalls communicating with said palm portion for covering the fingers of the hand and having tapering distal ends;

c) said finger stalls having top openings at their distal ends to align with elongated fingernails on the fingers;
d) means for expanding said top openings when the elongated fingernails are inserted through said top openings comprising portions of said finger stalls folded over into respective finger stalls and secured by stitching about said top openings to form tubular beads with inner exposed edges;
e) a plurality of elastic rings, each located in one said tubular bead, so that said top openings will fit snugly about the elongated fingernails, to prevent water and dirt from entering said finger stalls, and
f) further including a plurality of liners, each secured by a stitching to an inner top wall of each said finger stall and extending toward said palm portion, so that said liner will cover inner exposed edge of said portion of said finger stall forming said tubular bead about said top opening to protect and guide the elongated fingernail as it moves towards said top opening preventing said fingernail catching on an inner exposed edge during insertion movement of a finger along the finger stall.

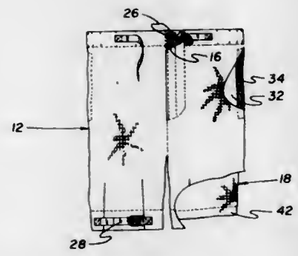
5,598,585
HEADBAND WITH PONYTAIL HOLDER
Katherine L. Stroup, 59 Sheafe St., Portsmouth, N.H. 03801
Filed Jun. 15, 1995, Ser. No. 490,875
Int. Cl.[6] A42C *5/02*
U.S. Cl. 2—171 **2 Claims**



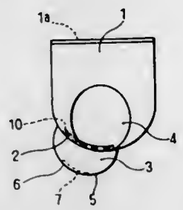
1. A headband designed particularly, but not limited exclusively, for use by a person having a ponytail, comprising:
a) an elongated band having an inner surface, an outer surface, a first generally U-shaped end having a pair of outwardly extending legs disposed in side-by-side relationship, and a second generally U-shaped end having a pair of outwardly extending legs disposed in side-by-side relationship; and
b) means for releasably securing the pair of outwardly extending legs on the first generally U-shaped end to the pair of outwardly extending legs on the second generally U-shaped end, so as to form an opening in between the outwardly extending legs of the first and second U-shaped ends through which the ponytail can pass through.

5,598,586
ATHLETIC SHORTS WITH INNER AND OUTER LAYERS
Deon C. Munjone, 9353 NE. Viewcrest, Bainbridge Island, Wash. 98110
Filed Sep. 5, 1995, Ser. No. 523,777
Int. Cl.[6] A41D *1/06*
U.S. Cl. 2—237 **5 Claims**

2. Athletic shorts with inner and outer layers comprising:
an outer shell fabricated of synthetic materials and including an upper region formed in a cylindrical configuration with an open uppermost extent, the upper region having a front section including a vertical slit with coupling devices and an adjustable strap, the outer shell having at least one pocket including a hook and loop fastener strip to permit releasable closure of the pocket, the lower region of the outer shell including two legs formed in a generally cylindrical configuration with an open lowermost extent having a perimeter and a front section, each front section including an adjustable strap positioned adjacent to the perimeter; and
an inner sports brief fabricated of synthetic materials and positioned inside the outer shell, the sports brief being smaller than and having the same shape as the outer shell, the sports brief having an uppermost extent affixed to the uppermost extent of the outer shell, the sports brief having a lower section comprising two legs, each leg having an open lowermost extent with a perimeter including a elastic strip, in an operative orientation the sports brief form fitting a user's body.

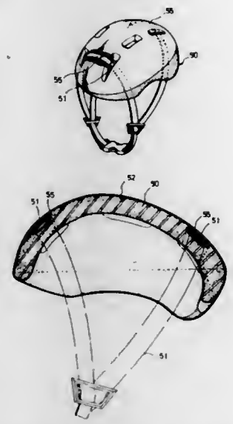


5,598,587
MEN'S UNDERWEAR BRIEFS
Mikuni Wada, 911, Hirabari 3-chome, Tenpaku-ku, Nagoya-shi, Aichi-ken, Japan
Filed Feb. 5, 1996, Ser. No. 596,577
Claims priority, application Japan, Feb. 6, 1995, 7-001890 U
Int. Cl.[6] A41B *9/02*
U.S. Cl. 2—403 **2 Claims**



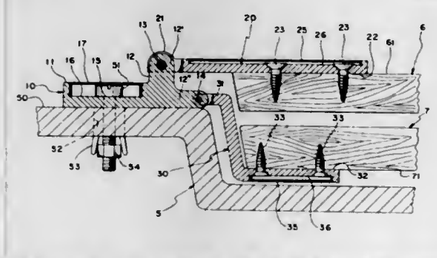
1. Briefs for a human man comprising:
a bag shaped body comprising an upper side, a lower side and a front surface; said bag shaped body having a hole in said upper side for passing a trunk of a human man's body therethrough and two holes in said lower side for passing two thighs of said human man's body, respectively, therethrough;
a small chamber, having a volume sufficient to enclose a pubic region of said human man's body communicating with said bag shaped body through an aperture in said front surface directed to toward said lower side,
said small chamber projecting from the lower front surface of said body and being surrounded by a wall,
said small chamber further comprising lateral edges proximate to said aperture, and
a plurality of permanent magnets enveloped in strips of cloth material sewn, respectively, on said lateral edges of said small chamber.

5,598,588
CYCLING HELMET
Ben H. Lee, Seoul, Rep. of Korea, assignor to Simmons International Korea Ltd., Seoul, Rep. of Korea
Filed Oct. 18, 1995, Ser. No. 544,551
Claims priority, application Rep. of Korea, Sep. 5, 1995, 95-23977
Int. Cl.[6] A42B *3/02*
U.S. Cl. 2—421 **3 Claims**



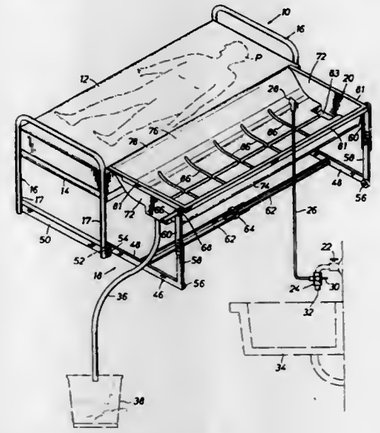
1. A cycling helmet having a PVC cap and a shock absorbing helmet body made of polyurethane foam, said helmet body being made integral with the PVC cap during the foaming of the polyurethane foam to form a unitary body, wherein the improvement comprises:
tunnel means provided by strap guide members disposed in said helmet body for coupling a chin strap to said helmet body and preventing said strap from being exposed at the top of the helmet.

5,598,589
HINGE DEVICE FOR SECURING THE SEAT AND LID TO A WATER CLOSET PAN
Domenico Frettoli, Brescia, Italy, assignor to Ideal Standard SPA, Milan, Italy
PCT No. PCT/IT93/00059, § 371 Date Jan. 9, 1995, § 102(e) Date Jan. 9, 1995, PCT Pub. No. WO94/01033, PCT Pub. Date Jan. 20, 1994
PCT Filed Jun. 10, 1993, Ser. No. 367,161
Claims priority, application Italy, Jul. 9, 1992, RE920061 U
Int. Cl.[6] A47K *13/12*
U.S. Cl. 4—236 **3 Claims**



1. A hinge device for securing a seat and a lid to a water-closet pan comprising:
a first part including a first portion adapted to be fixed in a position in the vertical plane of symmetry of the pan and a second portion joined to the first portion;
a second part adapted to be fixed to the lid and including a rear edge hinged to the second portion of the first part by at least one first pin forming a first horizontal axis;
a seat including a rear end hinged to the second portion of the first part by at least one second pin forming a second horizontal axis, said at least one second pin lying in a position lower and to the front of the at least one first pin with only one hinge device being used for securing the seat and lid to the pan; and
a third part adapted to be fixed to the seat and including a rear edge hinged to the second portion of the first part by said at least one second pin of said second horizontal axis;
said second portion of the first part including two opposing vertical walls wherein the end portions of said at least one first pin project therefrom;
said second part and third part each comprise, on their rear edge, two rearwardly projecting flanges which embrace the second portion of the first part and comprise the seats for receiving said end portions of said at least one first pin and said at least one second pin.

5,598,590
BATHING APPARATUS
Michael K. Crawford; Joseph M. Crawford, and James R. Crawford, all of Houston, Tex., assignors to Easy Lift Care Products, Inc., Houston, Tex.
Continuation-in-part of Ser. No. 241,619, May 12, 1994, abandoned, and Ser. No. 241,723, May 12, 1994. This application Apr. 26, 1995, Ser. No. 429,072
Int. Cl.[6] A47K *3/022*
U.S. Cl. 4—540 **23 Claims**



1. An assembly comprising:
a bed having a patient support surface;
an elongate bath tub positioned adjacent said bed, said elongate bath tub having a bottom and a front side adjacent said bed, said front side sloping upwardly laterally from said bottom along the length of said tub, said front side extending over a portion of said patient support surface of said bed such that said bath tub is partially supported thereby;
support means for providing additional support for said tub, whereby said tub forms a bridge between said bed and said support means with said front side of said tub providing a transfer surface for sidewise prostrate transfer of a patient from said patient support surface of said bed to said bottom of said tub,

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said support means including a pair of lower opposed end frame members mounted on said bed which are designed and arranged for movement between an extended operable position alongside said bed for supporting said tub thereon and a retracted stored position adjacent said bed when said bath tub is moved from said support means, and a connecting frame member which is removably secured to said pair of lower opposed end frame members; and

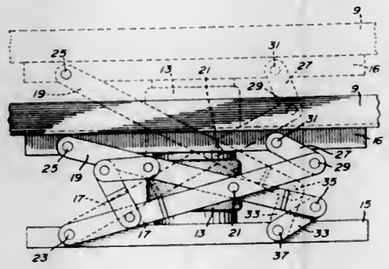
said bath tub including a rear side which is supported on said connecting frame member.

5,598,591

ADJUSTABLE MATTRESS SUPPORT ARRANGEMENT FOR VEHICLES SUCH AS TRUCKS

Roland F. Kelley, 1115 Hwy. 146 #802, Texas City, Tex. 77590

Filed Jan. 13, 1995, Ser. No. 372,099
Int. Cl.[6] A47C *17/64*
U.S. Cl. 5—118 **8 Claims**



1. An adjustable mattress support arrangement for adjustably supporting a mattress in the cab of a truck, comprising:

an elongated mattress support member for supporting the mattress, said mattress support member having a longitudinal axis;

base means spaced below said mattress support member;

at least a first vertical adjusting system located between said base means and said mattress support member for varying a vertical position of said mattress support member relative to said base means, said first vertical adjusting system comprising:

expandable gaseous fluid cushion means being expandable and contractable in the vertical direction located between said base means and said mattress support member;

first and second intersecting link arrangements, each of said first and second intersecting link arrangements having

first and second pivotally interconnected link members oriented for movement in a vertical plane which extends laterally of said longitudinal axis,

a first end of said first link member being pivotally connected to said mattress support member and a first end of said second link member being pivotally connected to said base means,

a second end of said first link member being pivotally connected to a first end of a first short pivot lever and a second end of said second link member being pivotally connected to a first end of a second short pivot lever,

a second end of said first short pivot lever being pivotally connected to said base means and a second end of said second short pivot lever being pivotally connected to said mattress support member, and

a pair of pivoted rigid limit members extending between and pivotally connected to said first and second link members to provide both upper and lower limits to the vertical position,

said first and second intersecting link arrangements being expandable and contractable with the expansion and contraction of said expandable cushion means; and

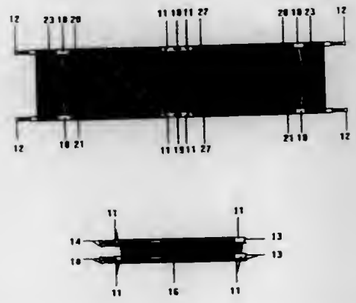
means for applying a gaseous fluid under pressure to said expandable cushion means whereby the vertical position of said mattress support member can be adjusted and whereby said mattress support member is supported by said expandable cushion means and said first and said second intersecting link arrangements of said first vertical adjusting system at all vertical positions thereof.

5,598,592

EASILY DECONTAMINATED STRETCHER

Robert A. Castellani, Elkridge, Md., assignor to North America Rescue Products, Elkridge, Md.

Filed Nov. 13, 1995, Ser. No. 558,259
Int. Cl.[6] A47B *1/00; 1/08*
U.S. Cl. 5—627 **11 Claims**



1. A folding stretcher for transporting injured or contaminated persons who have been exposed to hazardous materials comprising:

a frame constructed of light strong metal comprising tubular poles, spreader bar assemblies attached to said poles for securing the stretcher in a folded or unfolded configuration, the folded configuration having reduced width, and stirrups attached to said poles,

said frame coated with chemical resistant paint to protect said frame from hazardous materials and weathering,

each said tubular pole having at the middle of its length a collapsing assembly whereby the length of said folding stretcher while in the folded configuration may be reduced by half,

a hand grip constructed of fiberglass and polyhexamethylene polyamide to resist hazardous materials and UV light,

said grip having alternate grooves and ridges to provide a firm grip and reduce hand and arm fatigue for a user wearing heavy rubber gloves, and

a grip extension,

said grip attached to said tubular pole by insertion of said grip extension into said tubular pole and securing said grip to said pole by fastening means,

a fabric bed woven of flame retardant and UV protected monofilament polypropylene to resist hazardous materials, fire and UV light,

said bed woven in a blend of mesh and honeycomb weave having 10%–90% of the surface area open to allow liquid to pass through the bed, secure the patient to the bed, and minimize contact of the patient with the bed,

said bed attached to said tubular poles by a sleeve at each side of said bed, and

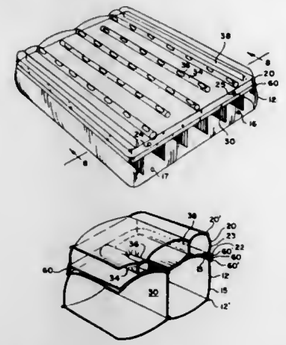
said sleeve comprised of a fold of bed fabric secured to said bed by a hem.

5,598,593

INFLATABLE AIR BED

Henry Wolfe, Palmetto, Fla., assignor to Aqua-Leisure Industries, Inc., Avon, Mass.

Filed Feb. 10, 1995, Ser. No. 387,023
Int. Cl.[6] A47C *27/10*
U.S. Cl. 5—710 **20 Claims**



1. An inflatable air bed, comprising:

an inflatable lower chamber having an outer periphery, at least one valve for inflating and deflating the entire lower chamber, and longitudinally extending retention members to limit outward expansion of said lower chamber upon gas inflation; and

an inflatable upper chamber, having an outer periphery, at least one valve for inflating and deflating the entire upper chamber, and longitudinally extending tubular O-beam retention members to limit outward expansion of said upper chamber,

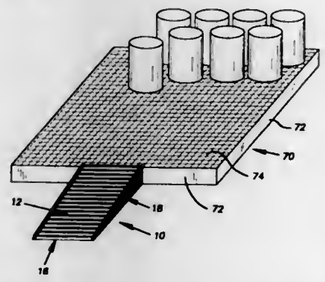
a non-inflatable middle chamber having a central gusset band welded to the outer periphery of said lower and upper chambers.

5,598,594

SPILL CONTAINMENT RAMP

John O. Milliken, Gates Mills, and Darel Taylor, Chardon, both of Ohio, assignors to ENPAC Corporation, Chardon, Ohio

Filed Jun. 5, 1995, Ser. No. 461,058
Int. Cl.[6] E01F *5/00;* **E01D** *1/00*
U.S. Cl. 14—69.5 **12 Claims**



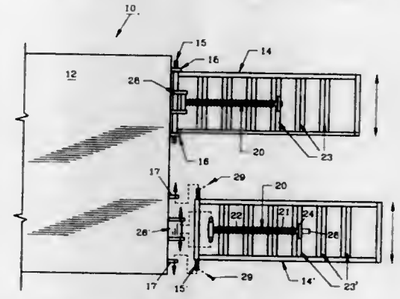
1. A ramp for loading containers on or unloading containers from an elevated surface and for collecting and containing spillage on the ramp comprising a wedge-shaped ramp having an inclined upper load carrying wall, a bottom wall having a ground engaging portion joining the load carrying wall at one end thereof, side walls joining the load carrying and bottom walls, and an end wall joining the sidewalls, the load carrying wall and the ground engaging bottom wall, said walls defining an internal containment chamber, at least one drain opening in said load carrying wall for collecting and for directing any spillage on an upper surface of said load carrying wall to said internal containment chamber, said upper surface defining longitudinal gutters adjacent lateral edges thereof to convey spillage from upstream locations to downstream locations, said at least one drain opening being located in at least one of said gutters and said ramp further including a dam adjacent each said at least one drain opening downstream of each said at least one drain opening.

5,598,595

TRAILER RAMP MECHANISM

Harold C. Flinchum, 6980 Garrett Store Rd., Liberty, N.C. 27298

Filed Nov. 6, 1995, Ser. No. 553,994
Int. Cl.[6] B65G *69/28;* **B62D** *33/03*
U.S. Cl. 14—69.5 **11 Claims**



1. A ramp mechanism comprising:

a ramp which is elongated in a longitudinal direction;

a guide rod which is elongated in said longitudinal direction;

a first coil spring, said rod positioned within said first coil spring;

a spring stop fixed relative to said ramp, said spring stop defining a transverse horizontal slot, said transverse slot substantially perpendicular to said longitudinal direction, said guide rod movably positioned within said slot, said slot having a length greater than the diameter of said guide rod, thereby allowing said guide rod to move horizontally within said slot when said ramp is moved horizontally.

5,598,596

RESILIENT CLUB

Michael R. Jones, and Linda S. Jones, both of 37859 Clark Creek Rd., Burney, Calif. 96013, assignors to Michael R. Jones, and Linda S. Jones, both of Burney, Calif.

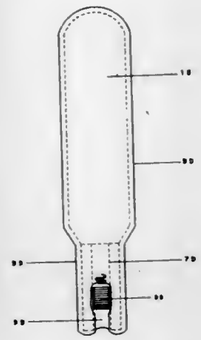
Filed May 31, 1994, Ser. No. 252,617
Int. Cl.[6] A47L *13/16;13/40;13/46;* **A63H** *33/30*
U.S. Cl. 15—1.52 **7 Claims**

1. A resilient club, comprising:

(a) a resilient body including an upper head portion and a lower handle portion operatively connected to said upper head portion, said lower handle portion including a hollow center area opening at an end thereof;

(b) a covering material adapted to enclose said resilient body, said covering material including peripheral edges; and

(c) a plug member adapted to be received in the hollow center area of the lower handle portion, said plug member retaining the edges of the covering material within said hollow center area by forcing the edges of the covering material into the hollow center area whereby the edges of the covering material are frictionally secured between the plug member and an interior wall of the hollow center area.

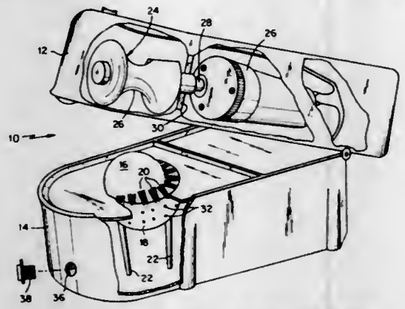


5,598,597

ELECTRIC ROLLER BALL CLEANING DEVICE

Brian C. Templeton, Calgary, Canada, assignor to Valton Enterprises, Inc., Calgary, Canada

Filed Jul. 26, 1995, Ser. No. 509,316
Int. Cl.[6] A63B 47/04
U.S. Cl. 15—21.2 10 Claims



1. A device for cleaning balls and the like comprising:
a water tight housing having a base and a lid adapted to close against said base;
an upwardly opening cup mounted within said base and a cleaning medium mounted within said cup and defining at least a portion of a ball-receiving recess;
a motor having an output shaft mounted within said housing lid; and
means coupled to said output shaft for receiving a portion of a ball therein and for engaging a strip along the upper surface of the ball when the same is disposed in said recess and the lid is closed against the base, and for rotating said ball within the recess against the cleaning medium responsive to rotation of the shaft by said motor.

5,598,598

PAINT APPLICATOR WITH IMPROVED EXTENSIBLE HANDLE

Gregg R. Sorenson, 1201 S. 72nd St., West Allis, Wis. 53214

Continuation of Ser. No. 278,838, Jul. 22, 1994, which is a continuation-in-part of Ser. No. 22,504, Feb. 25, 1993, abandoned. This application Apr. 13, 1995, Ser. No. 421,622
Int. Cl.[6] B25J 1/02; B25G 1/04
U.S. Cl. 15—144.4 19 Claims

1. In an extension handle assembly, the combination of a first member,



gripping means on the exterior of said first member,
a second member,
hand grip means on said second member,
said second member being telescopically received within said first member,
one end portion of said first member being insertable within the hand grip means of the second member when the members are fully telescoped,
whereby the first member may be telescoped to its fullest extent possible with respect to the second member, and thereafter extended, while the two hands of a user, including all fingers thereof, remain in contact with said first and second members at all times and in all relative positions of said first and second members.

5,598,599

TOOTHBRUSH

Herbert Haiduk, Am Einsiedel 24 a, 91785 Pleinfeld, Germany

Filed Mar. 22, 1995, Ser. No. 408,850
Claims priority, application Germany, Mar. 23, 1994, 44 10 003.5
Int. Cl.[6] A46B 9/04
U.S. Cl. 15—176.6 10 Claims



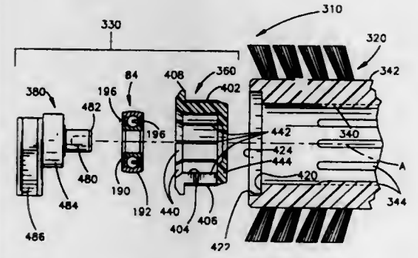
1. A toothbrush comprising:
an elongated brush head having a longitudinal axis;
a support formed from a continuous spring-steel wire and defining an elongated loop constituting a head portion receiving said brush head and a stem portion connected with said head portion and formed by two shanks of said wire, said shanks being formed with respective coil springs, each of said coil springs having a plurality of turns of said wire enabling elastic displacement of said head in all directions transverse to said axis of said head, said shanks having end portions extending away from said springs; and
a handle removably fitting over said end portions for drawing said end portions together and closing said loop to retain said brush head in said head portion, said loop opening to release said brush head upon release by said handle of said end portions, said springs each having a coil axis inclined to said longitudinal axis outwardly toward said end portions, one of said end portions being displaceable toward said longitudinal axis upon sliding of said handle over said end portions, both of said end portions being receivable at least in part in said handle upon shifting of said handle over said end portions, thereby exerting a force on said head portion counter to a spring force of said wire, said handle having a guide track for said end portions formed with openings in which at least one of said end portions is indexable.

5,598,600

BRUSHROLL

Alfred H. Stegens, Olmsted Township, Ohio, assignor to The Scott Fetzer Company, Westlake, Ohio

Division of Ser. No. 101,634, Aug. 4, 1993, Pat. No. 5,465,451, which is a continuation-in-part of Ser. No. 998,791, Dec. 29, 1992, Pat. No. 5,272,785, which is a continuation-in-part of Ser. No. 887,420, May 20, 1992, Pat. No. 5,193,243, which is a continuation of Ser. No. 456,348, Dec. 26, 1989, abandoned. This application Jun. 7, 1995, Ser. No. 478,478
Int. Cl.[6] A46B 13/02
U.S. Cl. 15—179 9 Claims



1. In a vacuum cleaner brushroll including a tufted spindle supported by end assemblies having bearings that rotatably mount the spindle in a vacuum cleaner nozzle and in which rotation of the spindle is effective to pick up debris, the improvement wherein:
a) said spindle comprises a hollow tubular plastic member;
b) each of said end assemblies includes:
i) a plug member fitted into a respective axial end of said tubular plastic member, at least one of said tubular plastic member and said plug member having ribs that engage the other of said members to resist relative rotation therebetween,
ii) a spindle mounting member having a first portion cooperable with brushroll mounting structure of the vacuum cleaner nozzle and a second portion for mounting a bearing, and
c) each bearing of each end assembly has a first bearing portion and a second bearing portion, said first bearing portion being fixed against rotation in one of said plug member and said spindle mounting member and said second bearing portion being rotatable relative to said first bearing portion and carried by said second portion of said spindle mounting member, each said spindle mounting member and said plug member cooperating to form a bearing mounting cavity in which said bearing is enclosed to protect said bearing from debris.

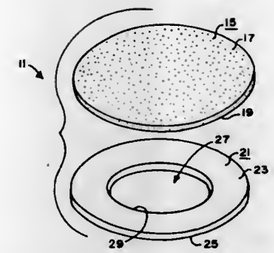
5,598,601

DISPOSABLE CONTACT LENS CLEANING DEVICE AND METHOD OF MAKING THE SAME

David B. Eaton, 314 Wallace Rd., Memphis, Tenn. 38117, and Sandra E. Saunders, 11 Morningside Park, Memphis, Tenn. 38104

Filed Feb. 10, 1995, Ser. No. 386,749
Int. Cl.[6] A47L 25/00
U.S. Cl. 15—214 6 Claims

2. A totally disposable contact lens cleaning device comprising:
(a) a contact lens cleaning pad; and
(b) a soft base member having a top surface thermally bonded to said contact lens cleaning pad; said top surface of said soft



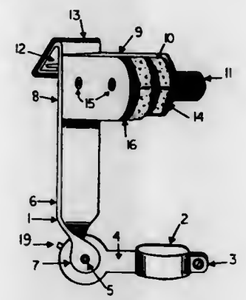
base member having a central portion which allows the portion of said contact lens cleaning pad over said central portion to be easily molded to the contour of a contact lens; said central portion of said top surface of said soft base member having a cavity extending completely through said soft base member for allowing the user of said contact lens cleaning device to insert a finger into said cavity and against the portion of said soft contact lens cleaning pad over said cavity through said soft base member.

5,598,602

DIPSTICK OIL WIPER

Walter L. Gibson, 4082 El Paso St., Jackson, Miss. 39206

Filed Nov. 9, 1995, Ser. No. 556,128
Int. Cl.[6] G01F 15/12; F01M 11/12
U.S. Cl. 15—220.4 8 Claims



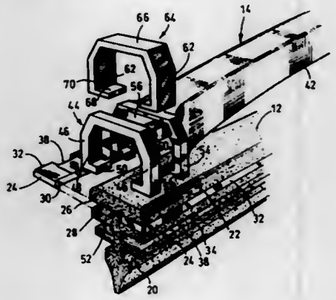
1. A dipstick oil wiper, comprising:
(a) tube connection means to connect the wiper to a dipstick tube on an engine;
(b) a swing arm having an upper end and a lower end, and being pivotally mounted to the tube connection means at the swing arm's lower end;
(c) a frame rigidly mounted to the upper end of the swing arm;
(d) a wiping medium removably attached to the frame by means of a hook and loop fastener element permanently affixed to the frame and a corresponding-hook and loop, fastener element permanently affixed to the wiping medium.

5,598,603

WINDSCREEN WIPER ARM WITH IMPROVED MEANS FOR LONGITUDINAL IMMOBILIZATION OF THE REINFORCED BLADE

Bernard Mege, Clermont-Ferrand, and Jean-Luc Sortais, Beaumont, both of France, assignors to Valeo Systemes D'Essuyage, La Verriere, France

PCT No. PCT/FR95/00214, § 371 Date Oct. 27, 1995, § 102(e) Date Oct. 27, 1995, PCT Pub. No. WO95/23714, PCT Pub. Date Sep. 8, 1995
PCT Filed Feb. 23, 1995, Ser. No. 535,229
Claims priority, application France, Mar. 1, 1994, 94 02430
Int. Cl.[6] B60S *1/38*
U.S. Cl. 15—250.454 **11 Claims**



1. A windscreen wiper blade assembly comprising; a wiper blade which includes a top longitudinal connecting flange connected to a component of a support structure for the wiper blade, the component of the support structure having an open connecting ring substantially in the form of an inverted U which straddles the flange, the connecting ring having a plurality of vertical legs, each of the vertical legs being extended by a transverse lug which is received under a bottom horizontal face of the flange, the flange having at least one longitudinal groove formed in a vertical lateral face of the flange receiving an elongated horizontal reinforcing rib, said rib having an outer lateral edge having a locking notch therein receiving a member for locking the component of the support structure in a longitudinal position with respect to the reinforcing rib, characterized in that each of the vertical legs of the connecting ring defines a housing having an opening in a direction of the outer lateral edge of the reinforcing rib, each housing receiving a vertical locking finger of the locking member which partially projects transversely into the opening of the housing and is received in the locking notch of the reinforcing rib.

5,598,604

PENCIL-SHAPED ERASER

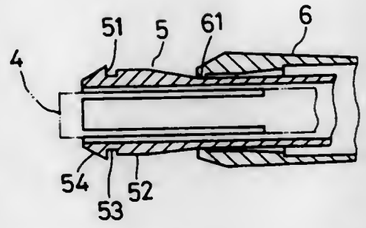
Kun-Chuan Ho, 58 Chung-Chen S. Rd., Yung-Kang City Tainan Shien, Taiwan

Filed May 8, 1995, Ser. No. 436,847
Int. Cl.[6] B43K *21/12;21/18;21/22*
U.S. Cl. 15—433 **4 Claims**

1. An eraser holder comprising:

a) an elongated tubular member having a central passageway extending along the length of the tubular member to accommodate an eraser therein, a first end portion, a second end portion and an annular stop surface extending radially outwardly from the second end portion;

b) a plurality of collet claws formed on the second end portion, adjacent collet claws being separated by slots, distal ends of the collet claws forming an end opening configured to accommodate an eraser, such that the collet claws are movable between loosened positions wherein an eraser may be slid into and out of the end opening and constricted gripping positions wherein an eraser in the end opening is fixedly attached to the eraser holder, the collet claws forming an annular, elongated exterior constricting surface adjacent to the end opening having a diameter d_1 in the loosened positions, an annular, elongated exterior loosening surface having a diameter d_2 less than d_1 in the loosened positions and an annular, tapered exterior surface connecting the constricting surface and the loosening surface;



c) a sleeve slidably located on the elongated tubular member, the sleeve having an annular, inner constricting surface having a diameter d_3 less than d_1 and an inner, annular shoulder, the sleeve slidably movable on the elongated tubular member in first and second directions between a loosened position wherein the inner constricting surface is out of contact with the exterior constricting surface, the collet claws are in their loosened positions and the annular shoulder is in contact with the annular stop surface to limit sliding movement in the first direction and a gripping position wherein the inner constricting surface is in contact with the outer constricting surface so as to move the collet claws to their gripping positions; and,

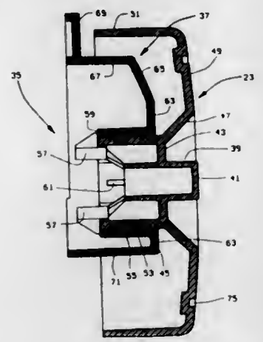
d) stop means on the collet claws and sleeve to prevent sliding movement between the sleeve and the elongated member in the first and second direction when the sleeve is in the gripping position.

5,598,605

WET/DRY UTILITY VACUUM CLEANER WITH A WHEEL MOUNT

Mark J. Tomasiak, O'Fallon, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Division of Ser. No. 303,689, Sep. 9, 1994, Pat. No. 5,528,794.
This application Sep. 14, 1995, Ser. No. 528,356
Int. Cl.[6] A47B *91/00;* **B60B** *33/00*
U.S. Cl. 16—45 **7 Claims**



1. A wheel mount for rotatably mounting a wheel relative to a supporting frame, comprising:

a wheel having an integral centrally positioned axle extending transversely relative to said wheel;

a wheel support for rotatably mounting the wheel relative to the wheel support;

the wheel axle having a transversely extending wall that surrounds the wheel axle and terminates in a generally circular wall that is generally parallel to and radially outwardly spaced from the wheel axle, said generally circular wall being received within a complementary shaped opening of the wheel support for rotatably mounting the wheel;

the wheel axle having an outer free end that extends beyond the complementary shaped opening in the wheel support and is provided with locking means for locking engagement with the wheel support independent of the rotatably mounted wheel; and

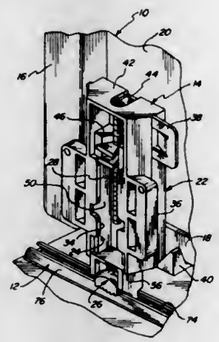
said wheel support including an integral frame plate extending above the wheel for cooperative interengagement with an associated supporting frame.

5,598,606

BOTTOM SLIDE FOR DOORS

Kenneth Jacobs, Guildford, England, assignor to The Stanley Works, New Britain, Conn.

Filed Feb. 15, 1996, Ser. No. 601,709
Int. Cl.[6] A47H *15/00;* **E05D** *15/00*
U.S. Cl. 16—93 R **17 Claims**



1. A bottom door slide comprising:

(a) a bracket having mounting portions for mounting on a door and providing a channel opening at the lower end of the bracket;

(b) a slide guide slidably seated in said channel of said bracket and having a guide portion extending below said bracket and having a lower end adapted to extend within an upwardly opening channel of an associated floor track, said guide portion providing a mounting recess spaced upwardly from said lower end and having an upper surface; and

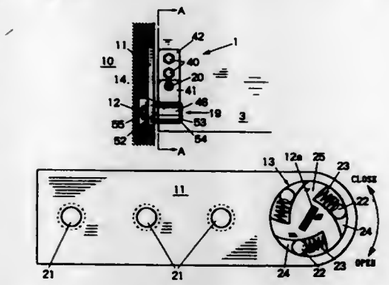
(c) a slide block having an arcuate upper surface abutting said upper surface of said mounting recess and a lower surface adapted to ride on the upper end of the floor track, said slide block being slidable on said upper surface of said recess to align itself on the upper end of the floor track.

5,598,607

CLOSING CONTROL AND OPENING FREE ASSEMBLY FOR A HINGE CONNECTION

Takashi Katagiri, Tokushima, Japan, assignor to Santo Industries Co., Ltd., Japan

Filed Jul. 24, 1995, Ser. No. 505,861
Claims priority, application Japan, Jul. 27, 1994, 6-196128
Int. Cl.[6] E05C *17/64;* **E05D** *11/08*
U.S. Cl. 16—337 **9 Claims**



1. A closing control and opening free assembly for a hinge connection between a first segment and a second segment, said assembly comprising:

a mounting element having a circular hole and connected to the first segment;

a pivot member with a circumference that contacts the inside surface of the circular hole;

a spring and a roller positioned in one or more recesses formed on the periphery of the circular hole so that each spring urges the roller in a forward direction;

a brake member disposed around the pivot member;

a holding member connected to the second segment and disposed around the brake member, said holding and brake members having a barrel portion and two leaf portions, said brake member being rotatable about the pivot member together with said holding member;

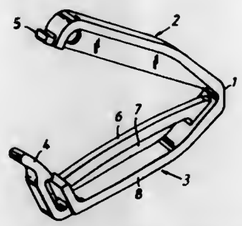
adjusting means for clamping the holding member against the brake member so that the brake member compresses radially into frictional contact with the pivot member.

5,598,608

CLIP, PARTICULARLY A BAG CLIP

Ingemar Naslund, Vassvagen 21, S-141 39 Huddinge, Sweden

PCT No. PCT/SE93/00035, § 371 Date Jun. 21, 1994, § 102(e) Date Jun. 21, 1994, PCT Pub. No. WO93/16930, PCT Pub. Date Sep. 2, 1993
PCT Filed Jan. 21, 1993, Ser. No. 256,017
Claims priority, application Sweden, Feb. 20, 1992, 9200517
Int. Cl.[6] B65D *77/10;63/00;* **A44B** *21/00*
U.S. Cl. 24—30.5 R **6 Claims**



1. A plastic clip for sealing a bag at a location along a height of the bag, said clip being made of a plastics material and as a single piece structure and comprising:

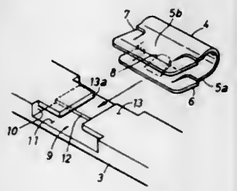
a first limb and a second limb, each said limb having
a hinged end, said hinged ends being mutually hinged together such that said first and second limbs are hinged together,
a free end opposite to said hinged end, and
an engagement surface provided between the hinged end and free end, said engagement surfaces being opposite one another and being selectively brought together by hinged movement of said first and second limbs to trap a part of the bag between said engagement surfaces to seal the bag;
a manually openable and automatically closeable snaplock arrangement at the free ends of said first and second limbs by which the free ends are selectively (a) held together to maintain the part of the bag between said engagement surfaces or (b) opened to release the part of the bag from between said engagement surfaces or to permit insertion of the part of the bag between said engagement surfaces; and
at least one of said first and second limbs including (a) a base extending between and being integrally attached to the respective hinge end and free end thereof and (b) an elastically resilient bridge also extending between and being integrally attached to the respective hinge end and free end thereof and spaced by an opening from said base with said bridge including said engagement surface of the at least one of said first and second limbs such that said resilient bridge is resiliently deformed when the part of the bag is sealed and said free ends are held together.

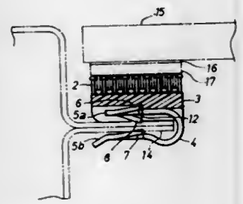
5,598,609

FASTENER INCLUDING CLIPS FOR ENGAGEMENT WITH A FLANGE

Goro Asami, Tochigi-ken, Japan, assignor to Nifco, Inc., Japan

Filed Apr. 8, 1994, Ser. No. 224,916
Int. Cl.[6] E04F *19/00*
U.S. Cl. 24—306 **10 Claims**





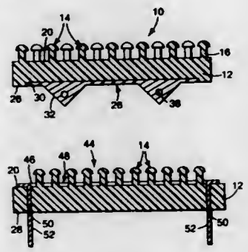
1. A fastener, comprising;
a planar base carrying attaching means on a major surface thereof and provided with a cavity passed through said base substantially in parallel with said major surface, thereby defining a pair of relatively thin walls both substantially in parallel with said major surface, said attaching means being adapted to be temporarily attached to cooperating attaching means provided on a cooperating fastener;
a clip including a pair of clamping pieces having a C-shaped cross-section and provided with a certain elasticity which urges said clamping pieces toward each other; one of said relatively thin walls being interposed between said clamping pieces by pushing on of said clamping pieces into said cavity;
said clamping pieces being provided with a first barb for engaging one of said clamping pieces with one of said relatively thin walls, and a second barb for engaging one of said clamping pieces with a flange on which said fastener is intended to be secured;
wherein an inner surface of one of said relatively thin walls is provided with a step portion which is adapted to be engaged by said first barb; and
wherein said clamping pieces are formed by bending a strip of sheet metal, and said first barb comprises a pair of tongues cut from two side edges of the corresponding clamping piece, and lifted toward said step portion.

5,598,610

INTERENGAGING FASTENER MEMBER, METHOD OF PRODUCING SAME, AND AFFIXATION MEMBER WITH SUCH INTERENGAGING FASTENER MEMBER

Shinji Torigoe, Kanagawa, and Shinichi Tominaga, Tokyo, both of Japan, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 17, 1995, Ser. No. 406,369
Claims priority, application Japan, Apr. 1, 1994, 6-064830
Int. Cl.[6] A44B *18/00*
U.S. Cl. 24—444 **8 Claims**



1. An interengaging fastener member comprising:
(a) a base having a major surface and a back surface opposed to the major surface, including a plurality of headed elements arranged on the base in a predetermined spaced relationship, each headed element including a stem projecting from the major surface of the base and a head connected to a distal end of the stem: and
(b) fixing means for fixing the base onto a surface of a structure such that the fixing means comprises a plate member which includes a baseplate section connected to either the major surface or the back surface of the base and a rigid protruding section formed on the baseplate section and protruding from the back surface of the base, the rigid protruding section including at least one aperture to enhance fixation with the surface of the structure.

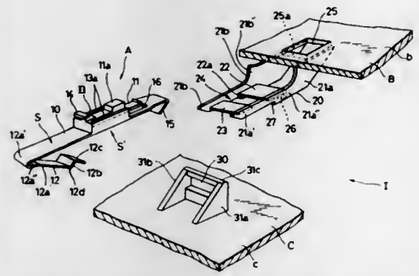
5,598,611

CLIP AND CLIP STRUCTURE

Atsushi Yamada, Toyota, and Tetsuya Kaneko, Yokohama, both of Japan, assignors to Nifco Inc., Yokohama, Japan

Filed Oct. 5, 1995, Ser. No. 539,790
Claims priority, application Japan, Oct. 7, 1994, 6-270443
Int. Cl.[6] A44B *11/25*
U.S. Cl. 24—573.1 **2 Claims**

2. A combination of a clip, a first article and a second article, said first article having a window opening and a support member equipped with a stop member;
said second article having an opening;
said clip fastening said support member of said first article to said second article, said combination comprises:



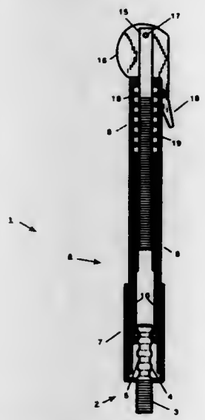
a resilient tongue located at one end of said clip and being provided with an engaging portion engageable with the support member of the first article; and
a resilient engaging portion located at another end of said clip, said resilient engaging portion contacting with said stop member, when said engaging portion of said resilient tongue is in engagement with said window opening of said support member, and being prevented from flexing and engaging with said opening of said second article wherein when said engaging portion is disengaged from said stop member and said clip is moved, said engaging portion is out of contact with said stop member and is permitted to flex, thereby enabling said support member of said first article to be separated from said second article.

5,598,612

QUICK RELEASE BOLT

Douglas R. Sheldon, P.O. Box 141122, Anchorage, Ak. 99514

Filed Sep. 11, 1995, Ser. No. 526,492
Int. Cl.[6] F16B *21/00*
U.S. Cl. 24—635 **5 Claims**



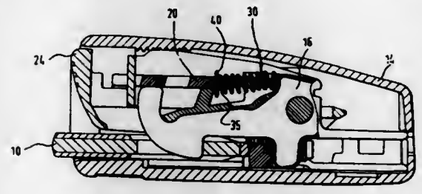
1. A quick-release bolt comprising:
a) a stud bolt having a top portion and a bottom portion, said stud bolt having a plurality of threads formed on said bottom portion, and a plurality of annular grooves formed in said top portion;
b) a removable bolt portion, removably attached to said stud bolt; said removable bolt portion including a lower housing, being cylindrical, and an upper housing, fixedly placed within said lower housing and extending upwardly therefrom, said upper housing having a top portion, a cylindrical wall having a thickness, and a bottom wall section, wherein the thickness of said bottom wall section is tapered;
c) an inner guide rod, slidably installed within said upper housing and including means for lockably engaging the plurality of grooves in said stud bolt, said inner guide rod also having an upper portion extending upwards through said top portion of said upper housing; and
d) a cam, pivotably connected to said upper portion of said inner guide rod, said cam also being in rotatable communication with said top portion of said upper housing such that as the cam is pivoted, it rotates against the top portion of said upper housing, and further such that as said cam rotates, said inner guide rod is raised or lowered within said upper housing.

5,598,613

LATCH MECHANISM FOR A SEAT BELT BUCKLE

Herbert Feile, Schwäbisch Gmünd; Siegfried Bareiss, Alfdorf; Claus Fauser, Böbingen, and Albrecht Schock, Birkenlohe, all of Germany, assignors to TRW Repa GmbH, Alfdorf, Germany

Filed Aug. 23, 1995, Ser. No. 518,248
Claims priority, application Germany, Aug. 30, 1994, 9414029 U
Int. Cl.[6] A44B *11/28*
U.S. Cl. 24—641 **5 Claims**



5. A seat belt buckle for cooperation with an insert tongue, comprising:
a frame;
a swivel latch for engagement with the insert tongue and which is mounted in said frame to be movable in a swivel direction between a locked position and a released position;
a locking member shiftably mounted on said frame transversely to said swivel direction of said swivel latch between an opening position, in which said swivel latch is released and a locking position in which said swivel latch is blocked in said locked position;
a release button mounted on said frame which is movable to shift said locking member from said locking position into said opening position;
a helical pressure spring which has a first end supported by said swivel latch and a second end supported by said locking member, said second end of said spring surrounding a spigot on said locking member; and
a spring receptacle holding said first end of said spring, said spring receptacle being defined by two ridges on said frame;
said second end of said spring and said two ridges of said spring receptacle cooperating to self-center said second end of said spring on said spigot.

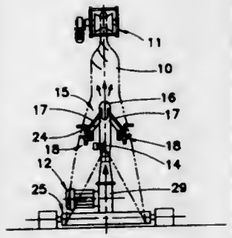
5,598,614

DEVICE FOR CENTERING A TUBULAR FABRIC

Mario Bianco, Alba, Italy, assignor to Bianco S.p.A., Italy

Filed Aug. 24, 1995, Ser. No. 519,079
Claims priority, application Italy, Oct. 21, 1994, TO94A0815
Int. Cl.[6] D06C *5/00*
U.S. Cl. 26—82 **6 Claims**

1. A device for centering a tubular fabric comprising:



two groups of rollers idly mounted on axes transverse with respect to a given direction of advancement of the fabric;

motor driven roller units for carrying the two groups of rollers;

photoelectric cell means positioned along the path of the tubular fabric and for controlling the motor driven roller units;

cutting means for cutting the fabric lengthwise and being downstream of the photoelectric cell means;

said motor driven roller units being controlled by the photoelectric cell means for moving the two groups of rollers sideways relative to their planes of rotation and rotating the fabric about an axis substantially parallel to said given direction; and

stretching means adapted for stretching the tubular fabric transverse to said given direction, said stretching means being connected to said motor driven roller units supporting said groups of rollers.

5,598,615

SILK VELVET TEXTILE AND METHOD OF MANUFACTURING THE SAME

Tooru Takada, Nerima-ku, Japan, assignor to K. K. Age, Tokyo, Japan

Filed Sep. 27, 1995, Ser. No. 534,649

Claims priority, application Japan, Jul. 7, 1995, 7 -194005

Int. Cl.[6] D06C *11/00;13/00;23/02;* **D06M** *11/00*

U.S. Cl. 28—159 **15 Claims**



1. A silk velvet textile comprising:

a textile ground consisting essentially of natural silk; and

a plurality of piles consisting essentially of natural silk, wherein said plurality of piles extend from at least one side of said textile ground, said plurality of piles and said textile ground being fastened together due to shrinkage treatment.

5,598,616

Patent Not Issued For This Number

5,598,617

WIRE INSERTION APPARATUS

Klaus Ritter, and Gerhard Ritter, both of Graz, Austria, assignors to EVG Entwicklungs-u.Verwertungs-Gesellschaft m.b.H., Raaba, Austria

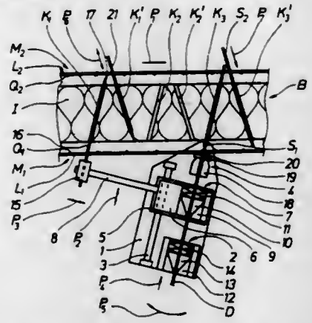
PCT No. PCT/AT94/00132, § 371 Date May 17, 1995, § 102(e) Date May 17, 1995, PCT Pub. No. WO95/09704, PCT Pub. Date Apr. 13, 1995

PCT Filed Sep. 16, 1994, Ser. No. 436,241

Claims priority, application Austria, Oct. 1, 1993, 1974/93

Int. Cl.[6] B23P *15/00;* **A43D** *61/00*

U.S. Cl. 29—33 F **13 Claims**



1. An apparatus for inserting wire into an intermittently fed insulating body of a structural element, with a wire supply device disposed on a pivotable base plate and with a device for forming and shaping a wire receiving duct, wherein, in the feed direction of the structural element, the forming and shaping device is disposed in front of the wire supply device as well as at the same angle as it and on the same side of the insulating body and has a lancing tool, characterized in that the forming and shaping device (**15, 16, 21**), fixedly connected with the wire supply device (**6, 7**), can be moved together with it in the direction toward the insulating body (I) of the structural element (B) and away from it and is pivotable together with it.

5,598,618

MAINROTOR MACHINING PROCESS AND APPARATUS

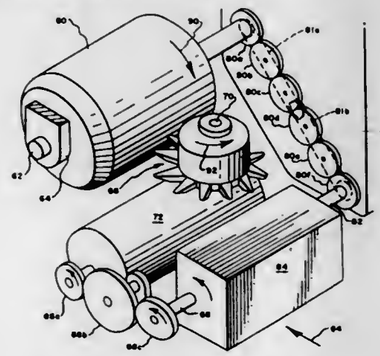
Giovanni Aquino, 29 Byron Ave., Kenmore, N.Y. 14223, and Ewan Choroszylow, 125 Church St., East Aurora, N.Y. 14052

Filed Sep. 29, 1989, Ser. No. 414,708

Int. Cl.[6] B23P *15/02;* **B23F** *15/08*

U.S. Cl. 29—889 **47 Claims**

1. A method of making a globoid screw for use as a mainrotor in



a compressor or expander comprising the steps of:

a) providing a cylindrical rotor body having a longitudinal axis;

b) mounting said rotor body for rotation about said longitudinal axis;

c) providing a cutter having a plurality of teeth at spaced locations around a circumference disposed in a plane and having an axis of rotation disposed perpendicular to said plane;

d) mounting said cutter for rotation about said axis and with said cutter disposed so that the plane thereof is parallel to said rotor body longitudinal axis and so that the rotational axis thereof is perpendicular to said rotor longitudinal axis;

e) rotating said rotor body and said cutter at synchronized speeds; and

f) positioning said rotor body and said cutter relative to each other so that said cutter teeth contact said body to remove material from said rotor body by a milling action to form a globoid screw profile.

5,598,619

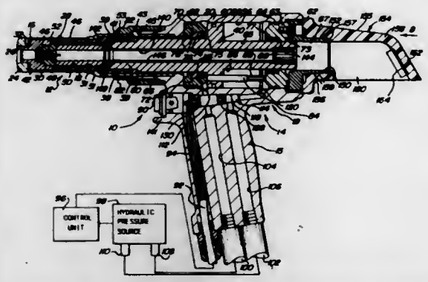
HYDRAULIC INSTALLATION TOOL

Hendrik E. Rosier, Kingston, N.Y., assignor to Huck International, Inc., Irvine, Calif.

Filed May 9, 1994, Ser. No. 239,460

Int. Cl.[6] B21J *15/20*

U.S. Cl. 29—243.523 **15 Claims**



1. A hand held installation tool for installing multipiece fasteners of the type including a pin and a collar and/or sleeve with the pin having a pull portion and with the fastener adapted to be installed by the application of a predetermined relative axial force between the pin and the collar and/or sleeve, the improvement comprising:

power means including a pull piston having an enlarged piston head adapted for reciprocating axial movement and for providing a relative axial force during such axial movement,

installation means including jaw means having opened and closed positions and adapted to grip the pin of the fastener when in said closed position and to release the pin of the fastener when in said opened position,

said installation means further including anvil means adapted to engage the collar and/or sleeve of the fastener,

said installation means being operatively connected to said piston of said power means for transmitting said relative axial force of said piston between said jaw means and said anvil for applying said predetermined relative axial force between the pin and collar and/or sleeve when said jaw means has gripped the pin of the fastener and said anvil means is in engagement with the collar and/or sleeve of the fastener,

said installation means including jaw actuating means operable for moving said jaw means to said opened and closed positions,

said power means further including a power cylinder housing having a cylinder housing section and an integrally formed handle section depending from said cylinder housing section and adapted to be gripped by an operator,

said cylinder housing section having an axially extending cylinder bore adapted to receive said piston head of said pull piston for reciprocating movement therein, and

fluid passage means extending through said handle section, through the juncture integrally connecting said cylinder housing section and said handle section, and radially through said cylinder housing section directly into said cylinder bore for fluid communicating said cylinder bore on opposite sides of said piston head whereby said pull piston can be selectively reciprocated within said power cylinder housing,

said fluid passage means comprising a pair of generally parallely extending forward and rear passageways extending upwardly from the bottom of said handle section towards said cylinder housing section, a crossbore extending transversely to said pair of passageways and intersecting both of said pair of passageways near the juncture of said handle section with said cylinder housing section, a forward connecting passage extending substantially directly in line with the forward one of said passageways and into the forward portion of said cylinder bore, a rearward connecting passage extending angularly from the rearward end of said cylinder bore to said crossbore in communication with said rear passageway, seal means in said crossbore for sealing said pair of passageways from each other.

5,598,620

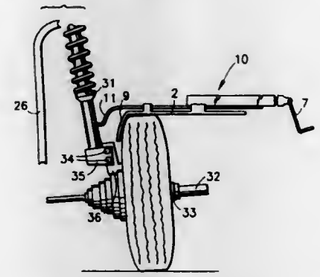
TOOL FOR ADJUSTING CAMBER

Pedro A. Servones, Mount Vernon, N.Y., assignor to Lawrence I. Wechsler, Great Neck, N.Y.

Filed Feb. 13, 1995, Ser. No. 388,198

Int. Cl.[6] B25B *27/14*

U.S. Cl. 29—273 **17 Claims**



1. A tool for adjusting camber of a wheel on a vehicle, comprising:

a body receivable on top of the wheel and having an extension part receivable against a side of the wheel facing inwardly of the vehicle, on a portion thereof disposed above a camber axis of the wheel, the tool further including;

an advancing arm movably mounted to said body, said advancing arm being extendable in a first direction to engage a stop on the vehicle remote from said side of wheel; and

means for extending said advancing arm in said first direction, a continued operation of said extending means following engagement of said advancing arm with said vehicle stop being operable to retract said body in a second direction opposite to said first direction whereby a resultant force in said second direction exerted on said portion of said side disposed above said camber axis by the body extension piece pivots the wheel about said camber axis.

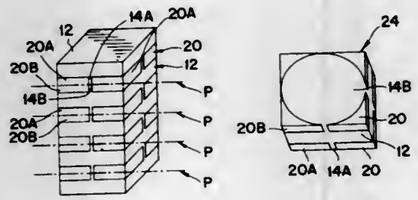
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5,598,621

METHOD OF MAKING METAL CUTTING INSERTS HAVING SUPERHARD ABRASIVE BODIES

Peter Littecke, Huddinge, Sweden; Ronald B. Crockett, Orem, Utah, and Anders Thelin, Vällingby, Sweden, assignors to Smith International Inc., Houston, Tex., and Sandvik Aktiebolag, Sandviken, Sweden

Filed May 22, 1995, Ser. No. 446,487
Int. Cl.[6] B23P *17/00*
U.S. Cl. 29—412 **18 Claims**



1. A method of making a metal cutting insert comprising the steps of:

A) performing an elevated temperature and pressure operation to form a substrate having a longitudinal axis and superhard abrasive bodies bonded thereto at longitudinally spaced locations and;

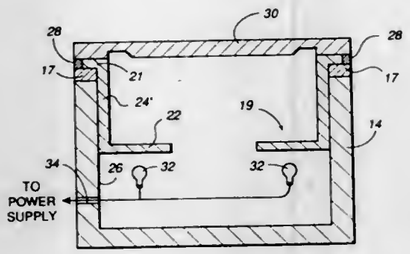
B) slicing through said substrate and superhard abrasive bodies at the longitudinally spaced locations in directions oriented transversely of the longitudinal axis to form at least one insert comprised of a substrate having longitudinally spaced sides and longitudinally spaced superhard abrasive body portions disposed on respective ones of the sides.

5,598,622

TEMPERATURE CLAMPING METHOD FOR ANTI-CONTAMINATION AND COLLIMATING DEVICES FOR THIN FILM PROCESSES

Ivo J. Raaijmakers, San Jose, Calif., assignor to Applied Materials, Inc., Santa Clara, Calif.

Continuation of Ser. No. 198,920, Feb. 18, 1994, Pat. No. 5,419,029. This application Feb. 6, 1995, Ser. No. 384,187
Int. Cl.[6] B23P *11/02*
U.S. Cl. 29—447 **10 Claims**



1. A method of inserting a shield into a thin film processing chamber, said shield being of a size and of a material so that it expands when heated during processing which comprises

a) inserting said shield into said chamber; and

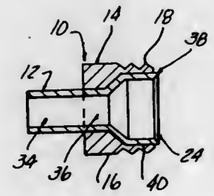
b) heating said shield until said shield contacts an inner portion of a wall of said chamber.

5,598,623

METHOD FOR A UNITARY ASSEMBLY OF TUBING AND A PRESSED ON, INTERFERENCE FIT, TERMINATING FITTING

John G. Panek, Churchville, and Richard L. Gottorff, Rochester, both of N.Y., assignors to ITT Corporation, New York, N.Y.

Division of Ser. No. 155,460, Nov. 19, 1993, Pat. No. 5,487,573. This application May 22, 1995, Ser. No. 445,737
Int. Cl.[6] B23P *17/00*
U.S. Cl. 29—525 **15 Claims**



9. A method for forming a unitary assembly of tubing with a terminating fastener comprising the steps of:

providing a fitting having a tubular opening therein extending through said fitting along a longitudinal axis thereof and an enlarged major inside diameter opening adjacent one end thereof;

providing a tube having an enlarged diameter portion adjacent one end thereof;

inserting said tube through said enlarged major inside diameter opening of said fitting; and

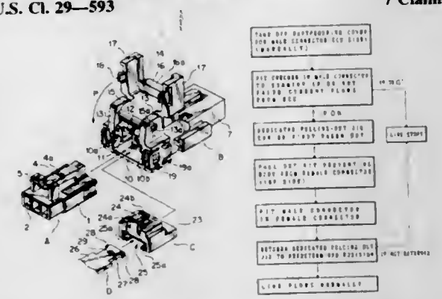
press fitting said enlarged diameter portion of said tube with a face-to-face interference fit within said enlarged major inside diameter opening of said fitting.

5,598,624

METHOD OF CONNECTING AN ELECTRIC CONNECTOR WITH FALSE CONNECTION PREVENTING MECHANISM

Keiichi Ito; Hirotaka Noda; Masao Shibata; Kenichi Yamauchi, all of Aichi; Masaru Fukuda, Shizuoka; Motoyoshi Suzuki, Shizuoka, and Yukio Obta, Shizuoka, all of Japan, assignors to Yazaki Corporation, Tokyo, Japan

Division of Ser. No. 143,905, Nov. 2, 1993, Pat. No. 5,527,186. This application Feb. 24, 1995, Ser. No. 393,830
Claims priority, application Japan, Nov. 5, 1992, 4-295774
Int. Cl.[6] H01R *43/20;43/04*
U.S. Cl. 29—593 **7 Claims**



1. A method of connecting a pair of connector parts to be coupled with each other, one connector element having a locking arm, the other connector element having a hood for receiving the one connector element and a locking projection provided within the hood, comprising the steps of:

(a) inserting, into the hood, fit preventing means for preventing the one connector element being fit into the hood of the other connector element;

(b) examining whether or not a false current is flowing through the other connector element;

(c) in the step (b), if it is confirmed that the false current is not flowing therethrough, pulling out said fit-preventing means from the hood; and

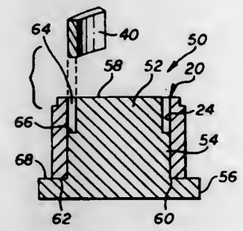
(d) fitting the one connector element into the other connector element whereby the pair of connector elements are locked in engagement by the locking arm with the locking protrusion when they are completely coupled with each other.

5,598,625

METHOD FOR ASSEMBLY OF RADIAL MAGNET VOICE COIL ACTUATORS

Jeff Bluen, 4145 Laurel Grove Ave., Studio City, Calif. 91604, and Emanuel Leibzon, 4750 Corbin Ave., Tarzana, Calif. 91356

Continuation-in-part of Ser. No. 740,068, Aug. 5, 1991, Pat. No. 5,321,762. This application Oct. 20, 1993, Ser. No. 140,231
Int. Cl.[6] H04R *31/00*
U.S. Cl. 29—594 **10 Claims**



1. A method of assembling an annular magnet having a predetermined radial thickness and a lower edge into a cylindrical core such that the magnet lower edge is at a predetermined height of the core comprising the steps of:

providing a cylindrical core having a chamber with an outer wall surface defining a chamber diameter;

inserting a device into the chamber, said device having a first portion with a first diameter approximately equal to the chamber diameter less two times the radial thickness of the annular magnet, and a second portion having an upper surface and a second diameter approximately equal to the chamber diameter, wherein a gap is formed between the outer wall surface and the first portion and said second portion upper surface is level with the predetermined height of the core;

inserting the annular magnet into the gap such that the magnet lover edge contacts the second portion upper surface, and such that the magnet adheres to the outer wall surface; and

removing the device from the chamber.

5,598,626

METHOD FOR SALVAGING CORE LAMINATIONS

Samuel J. Eddy, Copan, Okla., assignor to Submersible Pumps, Inc., Cushing, Okla.

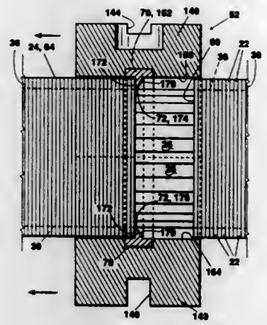
Division of Ser. No. 276,956, Jul. 18, 1994, Pat. No. 5,517,750. This application Sep. 29, 1995, Ser. No. 536,048
Int. Cl.[6] H02K *15/02*
U.S. Cl. 29—596 **13 Claims**

1. Method for salvaging core laminations from the core and windings of an electric motor, the core including a plurality of juxtaposed annular laminations having a central cavity, a plurality of winding slots surrounding an inner periphery of the laminations, and a flux zone extending between the outer edge of the slots and an outer periphery of the laminations, the laminations being fixed about the longitudinal axis of the central cavity by a bonding agent which bonds the windings to the slots, comprising:

(1) inserting a stop between adjacent laminations at a first station, the stop separating the laminations and contacting the flux zone of the laminations in order to prevent motion of the core along the longitudinal axis;

(2) separating adjacent laminations at a second station located between the first station and a free end of the core and windings and thereby breaking the bonding agent at the second station and creating an end section of the core laminations; and

(3) exerting a longitudinal force toward the free end of the windings on the flux zone of the laminations at the second station and thereby moving the end section toward the free end of the windings.

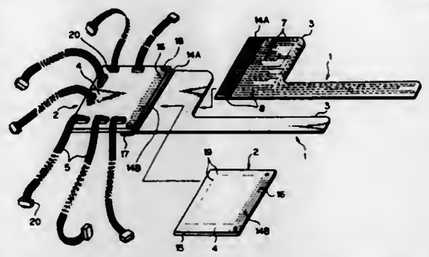


5,598,627

METHOD OF MAKING A WIRE HARNESS

Kazuhito Saka; Masayoshi Hashimoto; Kou Furuta, and Takahiro Okamura, all of Mie-ken, Japan, assignors to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Continuation of Ser. No. 971,991, Oct. 27, 1992. This application Jun. 6, 1995, Ser. No. 471,168
Claims priority, application Japan, Oct. 29, 1991, 3-309814; Mar. 31, 1992, 4-27966
Int. Cl.[6] H01R *43/04*
U.S. Cl. 29—861 **3 Claims**



1. A method of making a wire harness, comprising the steps of:

providing a main circuit part including an insulated conductor wiring circuit plate in which conductors are arranged on a base insulation film to form a wiring circuit, wherein the step of providing the main circuit part further includes forming the wiring circuit of said insulated conductor wiring circuit plate by turning, bending, crossing or branching said conductors;

covering said base insulation film and said conductors of the insulated conductor wiring circuit plate with a flexible insulation material;

removing the flexible insulation material along only a terminal edge of said insulated conductor wiring circuit plate while said base insulation film remains, so that ends of said conductors are exposed above said base insulation film located thereunder to form a connection area having a predetermined width, said connection area being devoid of said flexible insulation material thereby leaving a belt-shaped space across the terminal edge of said insulated conductor wiring circuit plate;

providing a branched connection part including a printed wiring plate having conductive paths;

forming a connection area along an edge portion of said printed wiring plate by disposing ends of the conductive paths in a side-by-side relationship;

overlapping said connection area of said printed wiring plate on said connection area of said insulated conductor wiring circuit plate so as to directly contact and electrically connect said ends of said conductors with the ends of the conductive paths, respectively;

forming a plurality of mounting holes disposed at predetermined positions in said printed wiring plate; and

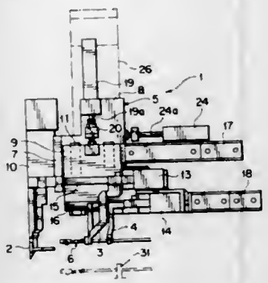
providing a plurality of leading electrical wires connected to at least one connector, said connector having connector pins which are inserted into said mounting holes of said branched connection part so as to connect said leading electrical wires to the conducting paths formed on the printed wiring plate.

5,598,628

TERMINAL INSERTION DEVICE AND AN INSERTING METHOD THEREOF

Takamichi Maejima, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Sep. 29, 1995, Ser. No. 537,121
Claims priority, application Japan, Oct. 7, 1994, 6-243754
Int. Cl.[6] H01R *43/00*
U.S. Cl. 29—868 **5 Claims**



1. A terminal insertion device for inserting a wired terminal into a connector housing, said wired terminal being composed of a terminal portion and one or more than one wire portions, comprising;

a pair of guide arms,

a first holding hand for clamping a part of the wire portion directly behind the terminal portion of the wired terminal,

a second holding hand for clamping a further rear part of the wire portion of the wire terminal, and

a monolithic plate on which said first and second holding hands and said pair of guide arms are integrally disposed, wherein said monolithic plate can be shifted in the forward and backward directions as well as in the upward and downward directions.

4. A method for inserting a wired terminal into a connector housing, said method comprising the steps of;

clamping a wired terminal with a first holding hand and a second holding hand,

lowering a pair of guide arms and said first and second holding hands integrally by activating a monolithic plate with a driving means,

putting a pair of guide arms among a plurality of leading wires extended from the connector housing,

opening the pair of guide arms with a first cylinder mounted to a front wall of said monolithic plate,

inserting a terminal portion of the wired terminal into the connector housing as a preliminary insertion through a space between the opened guide arms,

releasing said first holding hand, and further inserting the wired terminal by said second holding hand as a secondary insertion,

checking the inserted state of the wired terminal by pulling the wire portion of the wired terminal backward with said second holding hand, characterized in that said checking operation of the inserted state is conducted by urging said second holding hand backward integrally with the guide arms to shift them to a position behind the leading wires, and

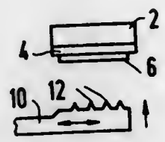
shifting the guide arms and said first and second holding hands integrally to the upward direction.

5,598,629

PROCESS FOR MAKING CONTACT WITH A SILVER CONTACT BASE

Manfred Schneider, Lichtenfels, and Dietmar Clauss, Altenkunstadt, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Jun. 6, 1994, Ser. No. 254,128
Claims priority, application Germany, Dec. 4, 1991, 41 39 998.6
Int. Cl.[6] H01R *43/20*
U.S. Cl. 29—879 **11 Claims**



1. A method for making a contact, which comprises:

pressing an intermediate silver layer onto a silver contact base;

then provisionally fastening a solder in the form of a platelet to the intermediate silver layer; and

subsequently placing a contact carrier on the solder platelet and soldering the contact carrier to the solder platelet.

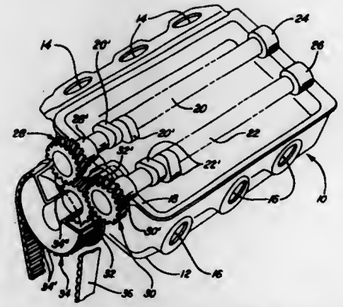
5,598,630

METHOD OF DESIGNING FAMILY OF DOHC CYLINDER HEADS

James P. Savoyard, Fairhaven; Andrew T. Mueller, Richmond, and James R. Klotz, Mt. Clemens, all of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Aug. 11, 1995, Ser. No. 515,178
Int. Cl.[6] B23P *15/00*
U.S. Cl. 29—888.06 **2 Claims**

1. The method of designing a family of DOHC cylinder heads for an internal combustion engine, the family having common valves, base casting, and camshafts but having different lateral spacing between camshafts to create different included angles between the row of intake valves and the row of exhaust valves, the designing method comprising: providing a gear on one end of each of the camshafts so that the peripheries of these gears are spaced in non-meshing relationship with each other; providing a third gear rotative about an axis so that it is in meshing relationship with the camshaft carried gears; changing the lateral spacing between the camshafts from one of the family of cylinder heads to another for changing the included angle between the intake and the exhaust valves; and adjusting the axis of the third gear in a direction substantially normal to a plane including the two camshafts to accommodate the change in lateral spacing between peripheries of the camshaft carried gears.

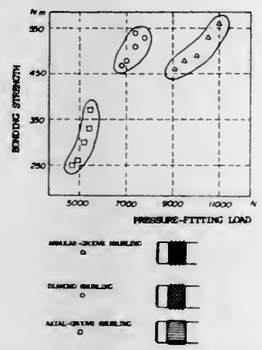


5,598,631

METHOD OF MAKING MACHINE ELEMENT WITH AT LEAST A FITTING MEMBER PRESSURE-FITTED ON A SHAFT

Koji Umezawa, and Tamio Sakurai, both of Tochigi-ken, Japan, assignors to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Division of Ser. No. 83,323, Jun. 29, 1993, Pat. No. 5,419,217, which is a continuation of Ser. No. 791,528, Nov. 14, 1991, abandoned. This application Mar. 3, 1995, Ser. No. 397,931
Claims priority, application Japan, Nov. 19, 1990, 2-311431
Int. Cl.[6] B23P *15/00*
U.S. Cl. 29—888.011 **12 Claims**



1. A method of manufacturing a machine element including a shaft member, and at least one fitting member pressure-fitted on said shaft, said at least one fitting member having a bore for receiving said shaft and said shaft having at least an area formed with diamond knurling protrusions on which the fitting member is fitted, said method comprising the steps of:

forming said bore with alternating arcuate and chordal surfaces on an inner peripheral surface thereof, at least one of said chordal surfaces having a perpendicular chord from a center of the bore shorter than a radius of the diamond knurling protrusions as measured from an axial center of the shaft and the arcuate surfaces being included in a circumcircular inner surface of the bore; and

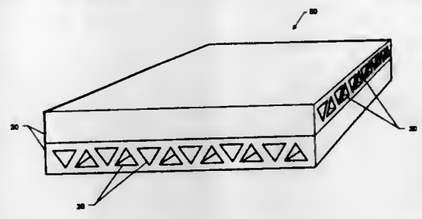
configuring said fitting member to be forced onto the diamond knurling protrusions of the shaft with at least one of said chordal surfaces of the bore engaging a corresponding outer surface on the diamond knurling protrusions.

5,598,632

METHOD FOR PRODUCING MICRO HEAT PANELS

Charles J. Camarda, Virginia Beach, Va.; George P. Peterson, College Station, Tex., and Donald R. Rummler, Hampton, Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C., and Texas A&M, College Station, Tex.

Filed Oct. 6, 1994, Ser. No. 320,622
Int. Cl.[6] B23P *15/26*
U.S. Cl. 29—890.032 **16 Claims**



1. A method of forming micro heat pipe panels having a desired shape and having a desired heat pipe configuration and texture, comprising the steps of:

a. arranging at least one layer of substantially parallel filaments such that the filament arrangement corresponds to the desired shape of the micro heat pipe panel, wherein the size, shape and texture of the filaments correspond to the desired heat pipe configuration and texture, and the filaments are stable during the subsequent deposition step;

b. depositing a thermally conductive material on and around the filaments to form the desired shape of the micro heat pipe panel;

c. removing the filaments from the thermally conductive material to produce tubular passageways within the deposited material, each of the tubular passageways having ends with at least one end open;

d. partially filling the tubular passageways with a working fluid; and

e. sealing the ends of the tubular passageways to prevent loss of the working fluid.

5,598,633

METHOD OF MANUFACTURING A CASTER ROLL CORE AND SHELL ASSEMBLY

Warren C. Hartz, McKenzie, Tenn., assignor to Norandal USA, Inc., Brentwood, Tenn.

Continuation-in-part of Ser. No. 274,186, Jul. 12, 1994. This application Feb. 22, 1995, Ser. No. 392,427
Int. Cl.[6] B23P *15/00*
U.S. Cl. 29—895.212 **7 Claims**

1. A method for manufacturing a roll for making metal sheets or foils, the roll comprising:

a core having a plurality of cooling channels;

a first overlay of stainless steel on the core; and

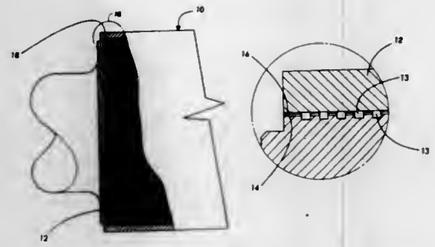
a second overlay of stainless steel on the first overlay of stainless steel, the second overlay having a hardness higher than the hardness of the first overlay, the method comprising the steps of:

heating the core to at least 200° C.;

welding the first overlay on the core;

welding the second overlay on the first overlay;

maintaining the temperature to at least 200° C. for several hours;



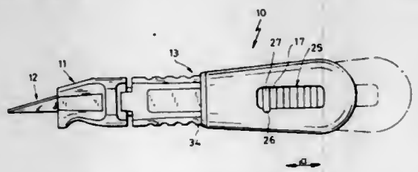
cooling the core to room temperature;
cutting the cooling channels in the first and second overlays and shrink-fitting a shell onto the core.

5,598,634

DEBURRING KNIFE WITH ADJUSTABLE HANDLE

Harald Berns, Wuppertal, Germany, assignor to Martor-Argentax E.H. Beermann KG, Solingen, Germany

Filed Oct. 5, 1995, Ser. No. 539,589
Claims priority, application Germany, Oct. 7, 1994, 44 35 818.0
Int. Cl.[6] B25G *1/06*
U.S. Cl. 30—342 **12 Claims**



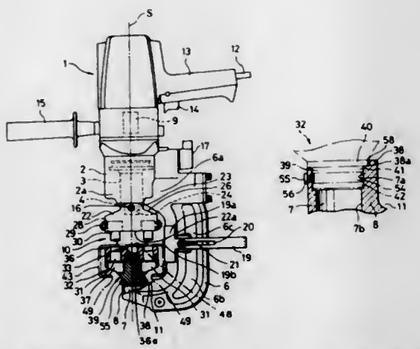
1. A deburring knife comprising:
a body extending along an axis, having a front end, and having a rear end formed with an outer surface;
a hollow handle fitted over the rear end and having an inner surface confronting the outer surface of the body, one of the surfaces being formed with
a row of angularly extending and axially spaced holding ridges having outer edges and defining a row of axially spaced, radially open, and angularly extending holding grooves each extending relative to the axis over substantially less than 360°.
and
an axially extending ridge-free guide, the other of the surfaces being formed with a radially projecting and angularly elongated holding bump engageable in the grooves and on the guide, the guide, the bump, and the ridges being so dimensioned that when the bump is aligned in the guide the handle can move axially on the body; and
a blade affixed to the body front end.

5,598,635

HYDRAULIC PUNCHER

Masayuki Saito, Tokyo, Japan, assignor to Nitto Kohki Co., Ltd., Tokyo, Japan

Filed Apr. 8, 1994, Ser. No. 225,327
Claims priority, application Japan, Apr. 28, 1993, 5-027423 U
Int. Cl.[6] B26F *1/14*
U.S. Cl. 30—362 **13 Claims**



8. A hydraulic puncher which comprises:
a puncher body having one end portion and an axis;
a longitudinally movable ram shaft provided coaxially with said axis in said one end portion of said puncher body and having one end projecting therefrom;
a punch holder having two ends, one end being connected to said one end of said ram shaft rotatably about said axis;
a punch connected to the other end of said punch holder;
a C-shaped frame having an opening opened perpendicularly to said axis and having two ends, one end being integrally connected to said puncher body and the other end facing the other end of said punch holder so as to be coaxial with said axis, said C-shaped frame having an intermediate portion;
a die holder having two ends, one end being removably connected to said other end of said C-shaped frame;
a die connected to the other end of said die holder and having a hole for receiving said punch;
first connecting means for fixing said punch holder to said ram shaft at a position at which said punch fixed to said punch holder extends in parallel with said axis of said punch body; and
second connecting means for fixing said die holder to said other end of said C-shaped frame at a position at which said die fixed to said die holder aligns with said punch; and
wherein said other end of said C-shaped frame comprises a die-holder receiving portion having edge portions, a cylindrical hole formed in said die holder receiving portion and opened toward said ram shaft and coaxial therewith, and a die holder positioning rim formed on one of said edge portions of said die-holder receiving portion which is disposed on a side of said die holder receiving portion which is proximal to said intermediate portion of said C-shaped frame, said die holder positioning rim extending perpendicularly to said axis and directed toward said opening; and
said die holder having an engaging section comprising a plate-like engaging portion which is seated next to and is engageable with said die holder positioning rim, and a circular flange extending from said engaging section and fitted into said cylindrical hole in said die holder receiving portion.

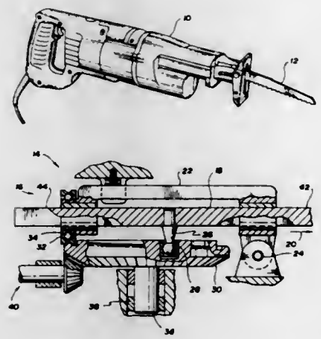
5,598,636

RECIPROCATING DRIVE SAW MECHANISM

Timothy J. Stolzer, Pickens, S.C., assignor to Ryobi Motor Products, Easley, S.C.

Filed Aug. 17, 1994, Ser. No. 291,441
Int. Cl.[6] B27B *11/02*
U.S. Cl. 30—394 **5 Claims**

1. A reciprocating saw for driving a saw blade, comprising:
a housing;
a drive motor located within the housing and having a rotatably driven drive gear;
a blade carrier having a blade receiving portion for receiving the saw blade and a guide portion for slidably receiving the blade receiving portion and for pivotally mounting the blade carrier to the housing;



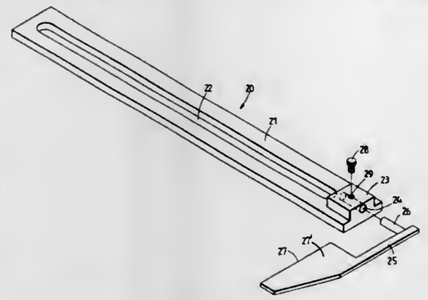
a follower connected to the blade receiving portion of the blade carrier for transmitting reciprocating motion thereto generally along a first axis;
a bearing in engagement with the guide portion of the blade carrier for transmitting transverse motion to the blade carrier in a direction perpendicular to the first axis;
a ring gear rotatably engaged with the drive gear for rotation about an axis of rotation and having a pair of eccentric cam tracks formed on the ring gear operatively engaging the follower and bearing for driving the follower and bearing when the drive motor is rotating the ring gear for moving the blade carrier in an orbital path; and
wherein one of said cam tracks has a non-circular configuration such that the time during which the saw blade moves in a cutting direction is greater than the time during which the saw blade moves in a return direction.

5,598,637

AUXILIARY RULE OF TILE CUTTER

Wun-Hui Liu, No. 2, Jiann Guon Lane, Jiunn Guon Li, Taichung, Taiwan

Filed Oct. 3, 1994, Ser. No. 317,639
Int. Cl.[6] G01B *3/04*; B28D *1/32*
U.S. Cl. 33—526 **10 Claims**



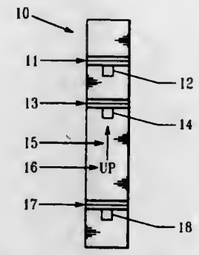
1. An auxiliary rule on a tile cutter, said auxiliary rule having a body provided centrally and axially with a long slot, said body being rotatable on said tile cutter, a connection portion projecting upwards from an upper surface of a first end of said body,
an arm portion detachably engaged downward from and perpendicular to a longitudinal axis of said body at the first end of said body,
connection means on said connection portion and said arm portion for permitting engagement of said arm portion to said body downward and perpendicular to the longitudinal axis of the body when the connection portion is either on a right side or a left side of the tile cutter,
wherein said arm can be positioned on the right side or the left side of the tile cutter to facilitate the use of said auxiliary rule by a left-handed operator or a right-handed operator to cut a tile in the tile cutter.

5,598,638

ELECTRICAL STICK

Anthony L. Plesh, 21 Casper Berger Rd., Whitehouse Station, N.J. 08889

Filed Nov. 30, 1994, Ser. No. 346,767
Int. Cl.[6] B25B *11/00*; B23Q *3/00*
U.S. Cl. 33—528 **10 Claims**



1. An article suitable for use in installation of electrical boxes to supporting members at uniform heights above floor level and as a measuring device comprising:
a substantially rigid, non adjustable rectangular board having a continuous surface throughout and having height generally between about 55 and 75 inches;
a width of between about 2.25 and 3 inches and
a thickness corresponding to the thickness of the wall surface surrounding said box when installed and ranging between about 0.25 inch to about 3 inches;
said board further comprising a first face and a second face to the rear of said first face, each said face having a plurality of markings at predetermined locations which correspond to code requirements for the height of said electrical boxes above floor level; and
immediately below each said marking on said board, a height box indicator is located on said board immediately beneath said markings to insure during installation correct positioning of boxes at the desired predetermined heights.

5,598,639

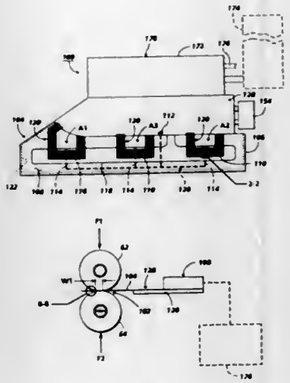
TOOL FOR HIGH TEMPERATURE ROLL NIP MEASUREMENTS

Michael B. Webb, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 7, 1995, Ser. No. 477,686
Int. Cl.[6] G01B *7/14*
U.S. Cl. 33—784 **28 Claims**

1. A roll nip tool for making nip width measurements within a high temperature roll nip, the tool comprising:
(a) a first thin section for inserting into a high temperature roll nip, said first thin section including:
(i) a first thin member having a first surface and a first portion of an electrical circuit on the first surface;
(ii) a second thin member having a second surface and a second portion of the electrical circuit formed on said second surface, said first thin member and said second thin member being arranged such that said first and said second portions of the electrical circuit can be brought into circuit closing contact; and

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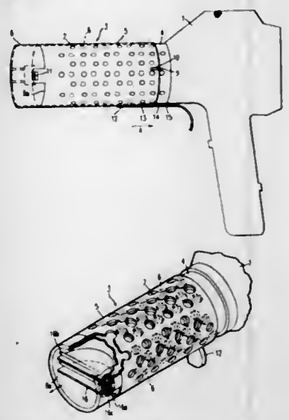
(iii) means for controllably separating said first and said second portions of the electrical circuit; and (b) a second section connected to said first thin section and including means for indicating closing contact between said first and said second portions of the electrical circuit.

5,598,640

HAND HELD BLOW DRYER HAVING AIRFLOW CONTROL MEANS

Natale Schepisi, 22 Tulip Tree La., Mamaroneck, N.Y. 10543

Filed Dec. 21, 1995, Ser. No. 576,592
Int. Cl.[6] H45D *20/00*
U.S. Cl. 34—97 **7 Claims**



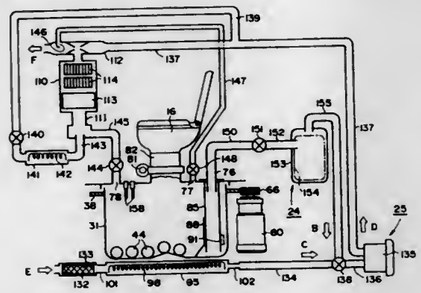
1. A hand held blow dryer comprising:
a body comprising a barrel having a barrel opening, said barrel comprising inner and outer cylinders each having a plurality of holes, said outer cylinder being slidably mounted on said inner cylinder;
pivotable deflecting means positioned at said barrel opening which is pivotable between an opened position in which said barrel opening is opened, and a deflecting position in which said barrel opening is substantially closed by the deflecting means; and
actuation means operationally connected to said outer cylinder and operationally associated with said deflecting means for moving said deflecting means and outer cylinder between a first position in which said holes on said inner and outer cylinders are not aligned and said pivotable deflecting means is in said open position, and a second position in which said holes on said inner and outer cylinders are aligned and said pivotable deflecting means is in said deflecting position.

5,598,641

RAW SEWAGE DISPOSAL APPARATUS

Mitsuhiro Kishi, Ashikaga, Japan, assignor to Nikkeu Corporation, Tokyo, Japan

Filed Aug. 16, 1995, Ser. No. 515,979
Claims priority, application Japan, Aug. 22, 1994, 6-219457
Int. Cl.[6] F26B *3/34*
U.S. Cl. 34—247 **16 Claims**



1. A raw sewage disposal apparatus comprising:
a heat resistant metallic evaporation container having a closed bottom portion and an opened upper portion and defining therein a chamber for raw sewage;
a rotary holding means for holding an upper end of the evaporation container and for permitting horizontal rotation thereof;
a covering means having a lower surface for holding the rotary holding means and for closing off the opened upper portion of the evaporation container from the surrounding atmosphere;
a frame for hanging the evaporation container and supporting the covering means substantially horizontally;
a driving means for rotating the evaporation container; and
an electromagnetic heating means disposed close to a lower surface of the evaporation container for generating a high-frequency electromagnetic wave therein and supplying the high-frequency electromagnetic wave to the evaporation container.

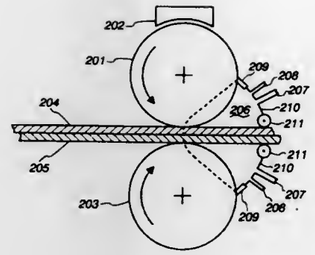
5,598,642

METHOD AND APPARATUS FOR DRYING A FIBER WEB AT ELEVATED AMBIENT PRESSURES

David I. Orloff; Timothy F. Patterson, both of Atlanta, Ga., and Andrew M. Krause, Monroe, La., assignors to Institute of Paper Science and Technology, Inc., Atlanta, Ga.

Filed May 12, 1995, Ser. No. 440,539
Int. Cl.[6] F26B *7/00*
U.S. Cl. 34—388 **5 Claims**

1. A method for drying a web containing an internal fluid comprising the steps of passing the web between a heated surface having a temperanre between the atmosphere boiling temperature of said fluid and a temperature in excess of the thermodynamic critical temperature of said fluid, and a second surface, applying pressure between said surfaces and releasing said pressure, passing the web into a region of treatment gas, immediately after release of said pressure between the surfaces, with the temperature of the treatment gas below the one atmosphere boiling temperature of the internal fluid, and with the treatment gas pressure having a gage pressure between about 0.00 MPa and 0.70 MPa, so that the treatment gas effectively cools the web, by flow and/or expansion of the treatment gas.

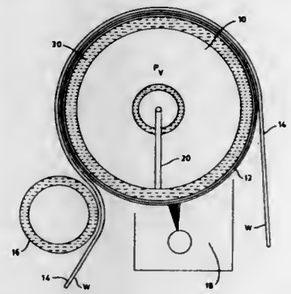


5,598,643

CAPILLARY DEWATERING METHOD AND APPARATUS

Strong C. Chuang, Chadds Ford, Pa.; Kenneth Kaufman, Mount Laurel, N.J., and Robert H. Schiesser, Warrington, Pa., assignors to Kimberly-Clark Tissue Company, Neenah, Wis.

Filed Nov. 23, 1994, Ser. No. 344,219
Int. Cl.[6] F26B *5/04*
U.S. Cl. 34—406 **20 Claims**



1. A method of reducing the moisture content of a fiber web in a webmaking process, comprising the steps of:
(a) supporting the web on an air-permeable fabric;
(b) lightly pressing the web between the air-permeable fabric and a capillary membrane of a capillary dewatering roll that has pores defined therein that are configured to induce a negative capillary suction pressure, wherein the web is transported about a peripheral segment of the capillary dewatering roll; and
(c) drawing a vacuum within the capillary dewatering roll, the vacuum being not greater than the negative capillary suction pressure of the capillary pores.

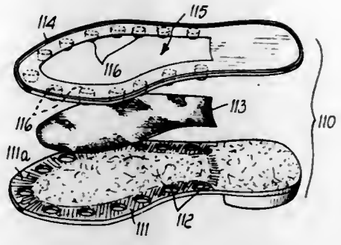
5,598,644

WATERPROOF TRANSPIRING SOLE FOR FOOTGEAR

Mario M. Polegato, Crocetta Del Montello, Italy, assignor to Pol Scarpe Sportive S.r.l., Biadene Di Montebelluna, Italy

Continuation of Ser. No. 200,330, Feb. 23, 1994, abandoned.
This application Oct. 12, 1995, Ser. No. 542,467
Claims priority, application Italy, Mar. 5, 1993, PD93A0051
Int. Cl.[6] A43B *7/06*; **A43C** *15/02*
U.S. Cl. 36—3 B **16 Claims**

9. A multilayer sole for footgear, comprising:
a first external layer constituted by a leather made tread, said tread comprising an upper surface having an outer edge region, and a plantar region;



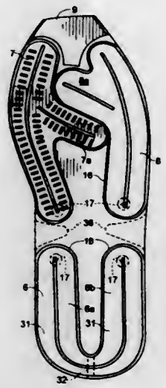
a second layer overlapping said first layer so as to cover said plantar region and to leave uncovered said outer edge region, said second layer being a membrane of vapour-permeable and waterproof material, said membrane being enclosed by a peripheral region thereof and being sealingly joined at said peripheral region thereof to said tread; and a third internal layer constituting an upper part, said third layer being made of waterproof material and having at least one opening at a central region thereof, said upper part being sealingly joined to said tread at said tread edge region, and sealed at said peripheral region of said membrane and said at least one opening of said upper part leaving exposed said membrane covering said plantar region of said tread.

5,598,645

SHOE SOLE, IN PARTICULAR FOR SPORTS SHOES, WITH INFLATABLE TUBE ELEMENTS

Otmar Kaiser, Pegnitz, Germany, assignor to Adidas AB, Germany

Continuation of Ser. No. 108,619, Aug. 27, 1993, abandoned.
This application Jan. 18, 1995, Ser. No. 375,519
Claims priority, application Germany, Jan. 2, 1992, 9200013 U
Int. Cl.[6] A43B *13/20*
U.S. Cl. 36—29 **8 Claims**



1. A shoe sole, comprising:
(a) a sole plate having a lower surface; and
(b) an elongate, horseshoe-shaped tube element adapted to be inflated with air and form a sole tread surface, each element being subdivided by a longitudinal partition into two chambers which extend in the longitudinal direction of the tube element and which are communicated with each other through at least one opening in the longitudinal partition, the tube

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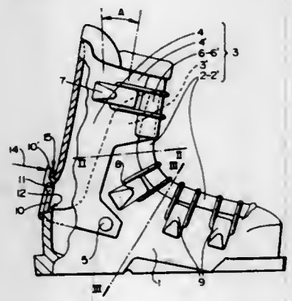
element including a transverse partition internally subdividing the element to form a medial and lateral tube element portion having interior cavities that are closed off relative to each other.

5,598,646

SKI BOOT

Jean Paris, Sevrier, France, assignor to Salomon S.A., Annecy, France

Filed Jun. 5, 1992, Ser. No. 894,627
Claims priority, application France, Jun. 10, 1991, 91 07266
Int. Cl.[6] A43B *5/04*
U.S. Cl. 36—118.7 **17 Claims**



1. A ski boot comprising:

a shell base including a rigid material, said shell base including a top surface, the top surface including an area of flexion, the shell base further including a heel area, the heel area having an upper edge;

an upper, including a front surface, and further comprising:

a front portion comprising an upward extension of the shell base, including two flexible flaps extending at least from the area of flexion of the shell base, the two flexible flaps at least partially overlapping in a tibial support zone of the boot and extending at least partially laterally towards the rear; and

a rear portion comprising a rigid rear spoiler journalled at a journal axis with respect to the shell base, the rear spoiler including a front upper end surrounding the upward extension of the shell base, the rear spoiler also including a rear lower zone;

a plurality of tightening devices, including at least one tightening device positioned at the area of flexion on the top surface of the shell base and at least one tightening device positioned at the front surface of the upper on the front upper end of the rear spoiler; and

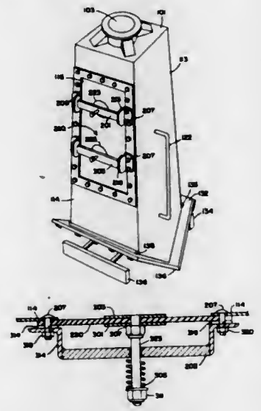
a single manipulable element arranged between a portion of the shell base and a portion of the upper for controlling the position of the upper with respect to the shell base, the single element for controlling the position of the upper with respect to the shell base comprising a releasable catch journalled around an axis located in the rear lower zone of the rear spoiler, the catch being engageable in abutment in a support housing arranged in the upper edge of the heel of the shell base.

5,598,647

MATERIAL TRANSFER APPARATUS AND METHOD

Joseph Marazzo, Basking Ridge, N.J.; Frank Russo, Swiftwater, Pa.; Michael G. Palmer, Easton, Pa., and Gary L. Hartman, East Stroudsburg, Pa., assignors to Brooklyn Union Gas, Brooklyn, N.Y.

Continuation-in-part of Ser. No. 213,520, Mar. 16, 1994, Pat. No. 5,487,228. This application Jun. 7, 1995, Ser. No. 473,988
Int. Cl.[6] B65G *53/14*
U.S. Cl. 37—317 **8 Claims**



1. A material transfer system, comprising:

a vacuum source for applying a suction force; and

a hopper which comprises:

a top section including a vacuum inlet coupled to the vacuum source;

a middle section extending below the top section, the middle section including a plurality of sides, each side extending downward and outward from the top section, a first of the plurality of sides including a material inlet and a second of the plurality of sides opposite the first side including a vibratory portion vibrating in response to vacuum pressure in the middle section caused by the suction force; and

an openable bottom section held in a closed position against the plurality of downward and outward extending sides of the middle section by the suction force applied from the vacuum source to the vacuum inlet,

wherein a material entering the middle section through the material inlet in response to the suction force applied to the vacuum inlet is directed to contact the vibratory portion on the second side and is redirected from the vibratory portion to the bottom section;

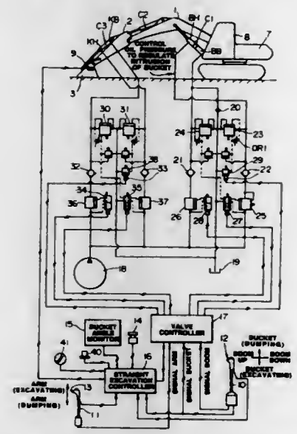
the top section further including valve means coupled between the vacuum source and the vacuum inlet responsive to a predetermined weight of the material in the bottom section for removing the suction force from the vacuum inlet to open the bottom section.

5,598,648

APPARATUS FOR CONTROLLING STRAIGHT EXCAVATING OPERATION WITH HYDRAULIC EXCAVATOR

Yukio Moriya; Shigeru Kinoshita; Takumi Onoda, and Toshio Yokoyama, all of Hirakata, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Hirakata, Japan

PCT No. PCT/JP90/00986, § 371 Date Sep. 9, 1991, § 102(e) Date Sep. 9, 1991, PCT Pub. No. WO91/02125, PCT Pub. Date Feb. 21, 1991
PCT Filed Aug. 2, 1990, Ser. No. 671,795
Claims priority, application Japan, Aug. 2, 1989, 1-200549
Int. Cl.[6] E12F *3/32*
U.S. Cl. 37—348 **4 Claims**



1. An apparatus for controlling a straight excavating operation with a hydraulic excavator wherein a boom, an arm and a bucket are driven by a boom cylinder, an arm cylinder and a bucket cylinder and said hydraulic excavator includes a hydraulic boom driving system, a hydraulic arm driving system and a hydraulic bucket driving system for hydraulically driving said boom cylinder, said arm cylinder and said bucket cylinder acting in response to an actuation signal, respectively, wherein said apparatus comprises:

a first boom meter-out valve disposed on a hydraulic passageway connecting a hydraulic chamber on a head side of said boom cylinder to a drain tank;

a first boom meter-in valve disposed on a hydraulic passageway connecting a hydraulic chamber on a bottom side of said boom cylinder to a hydraulic pump;

a second boom meter-out valve disposed on a hydraulic passageway connecting said hydraulic chamber on the bottom side of said boom cylinder to said drain tank;

a second boom meter-in valve disposed on a hydraulic passageway connecting said hydraulic chamber on the head side of said boom cylinder to said hydraulic pump;

a first pilot valve for opening and closing said first boom meter-in valve and controlling a flow rate thereof;

a boom solenoid pilot valve for cooperatively opening and closing said second boom meter-out valve and said second boom meter-in valve and controlling a flow rate thereof;

a second pilot valve for opening and closing said first boom meter-out valve and controlling a flow rate thereof;

a check valve disposed on a hydraulic passageway between said hydraulic chamber on the bottom side of said boom cylinder and said drain tank, for inhibiting hydraulic oil from flowing from said hydraulic chamber on the bottom side to said drain tank and, when said boom is raised up as being held in a floated state, for opening its valve to supplement the hydraulic oil of said drain tank to said bottom-side of said boom cylinder;

all of said boom valves being included in said hydraulic boom driving system,

means for designating a straight excavating operation mode;

means for instructing start and stop of the straight excavating operation;

first control means, when an instruction for raising said boom is input from a boom actuation lever, for inputting a boom actuation signal corresponding to a displacement of said boom actuation lever to said first pilot valve and said second pilot valve to drive said first boom meter-in valve and said second boom meter-out valve and, when an instruction for lowering said boom is input from a first actuation lever, for inputting a first actuation signal corresponding to a displacement of said first actuation lever to said boom solenoid pilot valve to cooperatively drive said second boom meter-in valve and said second boom meter-out valve, and further, when the straight excavating operation mode is designated by said straight excavating operation designating means and the start of the straight excavating operation is instructed by said straight excavating operation instructing means, for turning on said second pilot valve to open said first boom meter-out valve so as to allow said hydraulic chamber on the head side of said boom cylinder to communicate with said drain tank whereby said boom is controlled to be in the floated state during the straight excavating operation;

a first bucket meter-out valve disposed on a hydraulic passageway connecting a hydraulic chamber on a head side of said bucket cylinder to said drain tank;

a first bucket meter-in valve disposed on a hydraulic passageway connecting a hydraulic chamber on a bottom side of said bucket cylinder to said hydraulic pump;

a second bucket meter-out valve disposed on a hydraulic passageway connecting said hydraulic chamber on the bottom side of said bucket cylinder to said drain tank;

a second bucket meter-in valve disposed on a hydraulic passageway connecting said hydraulic chamber on the head side of said bucket cylinder to said hydraulic pump;

a third pilot valve for opening and closing said first bucket meter-in valve and controlling a flow rate thereof;

a bucket solenoid pilot valve for cooperatively opening and closing said second bucket meter-out valve and said second bucket meter-in valve and controlling a flow rate thereof;

a third bucket meter-out pilot valve for opening and closing said first bucket meter-out valve and controlling a flow rate thereof;

all of said bucket valves being included in said hydraulic bucket driving system,

a bucket angle sensor for detecting a bucket angle;

bucket angle setting means for setting the bucket angle; and

second control means, when an instruction for a bucket excavating operation is input from a bucket actuation lever, for inputting a bucket actuation signal corresponding to a displacement of said bucket actuation lever to said third pilot valve and said third bucket meter-out pilot valve to drive said first bucket meter-in valve and said first bucket meter-out valve and, when an instruction for a bucket dumping operation is input from a second actuation lever, for inputting a second actuation lever signal corresponding to a displacement of said second actuation lever to said bucket solenoid pilot valve to cooperatively drive said second bucket dumping meter-in valve and said second bucket dumping meter-out valve, and further, when the straight excavating operation mode is designated by said straight excavating operation mode designating means and the start of the straight excavating operation is instructed by said straight excavating operation instructing means, for controlling said third bucket pilot valve, said bucket solenoid pilot valve and said third bucket meter-out pilot valve so that a difference between the set bucket angle of said bucket angle setting means and the detected bucket angle of said bucket angle sensor is set to be zero,

wherein said bucket is automatically driven during the straight excavation operation so as to hold said boom to be in the floated state and to keep said bucket to be coincident with the set bucket angle.

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FRICTIONAL FORCE COMPENSATION FOR LAUNDRY MANGLES

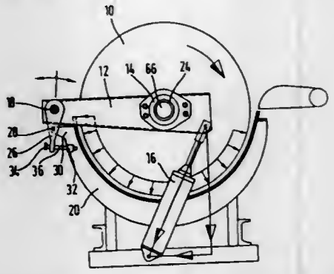
Friedrich Geiger, Todtenweis, Germany, assignor to Böwe-Passat Reinigungs und Wäschereitechnik GmbH, Augsburg, Germany

Continuation of Ser. No. 211,053, Jul. 25, 1994, Pat. No. 5,499,464. This application Dec. 18, 1995, Ser. No. 574,362

Claims priority, application Germany, Sep. 27, 1991, 41 32 213.4

Int. Cl.[6] D06F *63/00*

U.S. Cl. 38—46 **9 Claims**



1. Laundry mangle for counteracting a frictional force generated during service of the laundry mangle, said mangle comprising at least one mangle roller, at least one arm for supporting said mangle roller in a heatable trough in a service position, said mangle roller and said trough being movably positioned relative to each other, inlet and outlet passages for laundry articles provided between said mangle roller and heatable trough; a force generating mechanism which counteracts the frictional force generated during service of the laundry mangle comprising an adjusting device acting on said mangle roller, said force generating mechanism is inclined from a vertical direction and thereby generates forces in both the vertical direction and in a horizontal direction, wherein said adjusting device engages said supporting arm, and said supporting arm is swivelable about a point for a movement selected from the group of movements consisting of translation and rotational movement in the service position, wherein said point is a movable bearing point.

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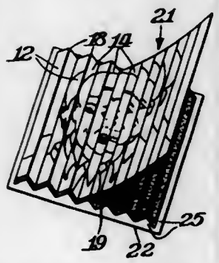
MULTI-ITEM DISPLAY UNIT

Brigitte L. Brown, 33 Dryden Rd., New Castle, Del. 19720

Filed Sep. 26, 1994, Ser. No. 312,540

Int. Cl.[6] G09F *19/14*

U.S. Cl. 40—453 **19 Claims**



1. A multi-item display unit comprising a first display item, said first display item being segmented into a plurality of uniform first elongated strips, a second display item, said second display item being segmented into a plurality of uniform second elongated strips of the same size and shape as said first elongated strips, a flexible support said first elongated strips being mounted to said support in a sequence corresponding to said first display item as a complete integral item, adjacent strips of said first elongated strips being spaced apart by a distance corresponding to the size and shape of individual strips of said second elongated strips, said second elongated strips being mounted to said support in a sequence corresponding to said second display item as a complete integral item, each of said second elongated strips being mounted between and juxtaposed to adjacent first elongated strips at lines of contact, each of said first strips being juxtaposed one of said second strips to provide a combination of alternating first and second adjacent strips mounted to said same support along a length of said support equal to the combined length of said adjacent first and second strips, said flexible support being made of a material capable of being in a flat planar condition for the mounting of said first and second strips thereon, each of said lines of contact comprising a fold line, a rigid carrier having a zig-zag upper surface with uniform V-shaped peaks and valleys, said support being folded in an accordion manner at said fold lines to create a zig-zag viewing surface with uniform V-shaped peaks and valleys of the same size and shape as said V-shaped peaks and valleys of said rigid carrier, each V-shape of said support having a first elongated strip and a second elongated strip, said fold lines permitting the degree of folding of said support film to conform to the angle of said V-shape of said carrier, all of said first elongated strips being parallel to each other, all of said second elongated strips being parallel to each other, said support comprising an integral single continuous one-piece base member for all of said first and said second strips, said base member comprising unitary strip mounting means for properly automatically positioning all of said strips mounted to said carrier along the complete exposed surface area of all of said strips without having to individually mount each strip to said carrier independently of other of said strips, said base member further comprising means to simultaneously hold all of said strips against said carrier and to prevent any of said strips from being independently detached from said carrier, said first display item being entirely and solely visible when viewed at a generally right angle to said first elongated strips, said second display item being entirely and solely visible when viewed at a generally right angle to said second elongated strips, and the viewing image changing as the viewing angle changes.

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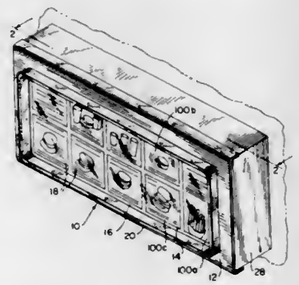
SIGN MECHANISM HAVING TRAVERSABLE WEB

Robert B. Aiken, Mequon, and Robert C. Clapper, Grafton, both of Wis., assignors to Milwaukee Sign Co., Inc., Grafton, Wis.

Filed Dec. 19, 1994, Ser. No. 358,920

Int. Cl.[6] G09F *11/18*

U.S. Cl. 40—518 **30 Claims**



1. A sign mechanism having a web traversable along a direction of movement, said sign mechanism being suitable for use with signage apparatus and comprising:

frame means having an opening through which information displayed by the sign mechanism may be viewed, said frame member having ends spaced apart along the direction movement of said web;

a web roll mechanism mounted at each end of said frame means, each of said web roll mechanisms comprising:

a web roll rotatably mounted in said web roll mechanism and drive means for rotating said web roll;

a web extending between said web rolls and across said opening of said frame means, said web being mounted at each end to one of said web rolls for being wound on and unwound from said web rolls to move said web across said opening, said web having a plurality of viewing areas defined therein;

indicia panels containing information desired to be displayed by said sign mechanism; and

means for mounting said indicia panels on said web in said viewing areas to position said indicia panels in said opening of said frame means when said web is traversed, said mounting means for said indicia panels comprising strips fastened in spaced pairs to said web such that one strip of the pair is adjacent one edge of a viewing area of the web and the other strip of the pair is adjacent an opposite edge of the viewing area, said strips extending across said web parallel to said web rolls and substantially entirely along said edges of said viewing areas, said strips having extensions extending normal to said web rolls adjacent corners of said viewing areas to form pockets extending substantially entirely along the edges of said viewing areas in which one or more indicia panels may be retained between said strips and the adjacent surface of said web for mounting the panels on said web in said viewing areas, said indicia panels being retained at a desired position with respect to said viewing area while relative movement between said indicia panel and said web is permitted as said web is wound on and unwound from said web rolls.

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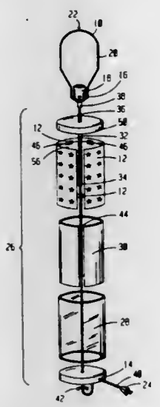
LAMP WITH CHANGEABLE DISPLAY BASE

David F. Nurre, 5810 Oakwood, #3H, Lisle, Ill. 60532

Continuation of Ser. No. 306,769, Sep. 14, 1994, abandoned. This application May 21, 1996, Ser. No. 651,659

Int. Cl.[6] G09F *13/00*

U.S. Cl. 40—553 **19 Claims**



9. A lamp device comprising:

(a) a lamp base having an exterior transparent sleeve having a top end, a decorative material, and an interior sleeve formed of semi-rigid flexible material, the interior sleeve having securing means for producing and exerting outward tension for bearing against and securing the decorative material in confronting engagement with an interior surface of the exterior transparent sleeve;

(b) a light socket;

(c) means for connecting the light socket external to the lamp base with the light socket being disposed outwardly away from the lamp base in a vertically spaced apart relationship from a top end of the exterior transparent sleeve; and

(d) an electric cord electrically connected to the light socket.

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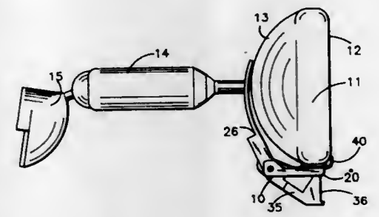
RETRACTABLE SIGNAGE DEVICE

Joyce E. Schaefer, Indianapolis, Ind., assignor to The Schaefer Group, Las Vegas, Nev.

Filed Feb. 27, 1995, Ser. No. 395,087

Int. Cl.[6] G09F *21/04*

U.S. Cl. 40—593 **4 Claims**



1. A retractable sign for a rearview mirror having a planar reflective surface and a non-reflective surface, comprising:

a housing;

means for attaching said housing to said non-reflective surface;

a flexible strap;

means for attaching said strap to said non-reflective surface;

an arm having a generally planar signage portion;

means for attaching said arm to said housing and said strap so that said arm may be rotated with respect to said housing between a retracted first position where said signage portion is disposed proximate to said non-reflective surface and an actuated second position where said signage portion is disposed coplanar with and proximate to said reflective surface; and

a spring means attached to said housing and bearing against said arm so that said arm is urged towards said first position when said arm is disposed proximate to said first position and said arm is urged towards said second position when said arm is disposed proximate to said second position.

5,598,654

SIGN WITH COLLAPSIBLE, FANNING FRAMEWORK

John H. Cowgill, Otis, and Charles W. Elroy, Jr., Depoe Bay, both of Oreg., assignors to Sportniks, Inc., Depoe Bay, Oreg.

Filed Jun. 1, 1994, Ser. No. 252,232

Int. Cl.[6] G09F *21/02*

U.S. Cl. 40—610 **9 Claims**

1. A sign (**20**) comprising:

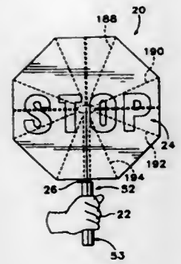
a frame (**120**) having a hub (**122**) and plural arms (**124, 126, 128, 130, 132**), wherein said arms radiate from said hub (**122**), wherein said arms include web-support arms (**128, 130, 132**) and sign-support arms (**124, 126**);

a web (**28**) disposed over said frame (**120**) and secured to at least one of said web-support arms;

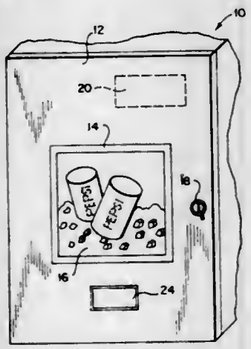
wherein a support (**52**) for the sign is attached at the end of said sign-support arms; and

wherein all of said arms include a hinge element (**124H, 126H, 128H, 130H, 132H**) which is rotatably mounted about a pivot point (**122P**) on said hub (**122**).

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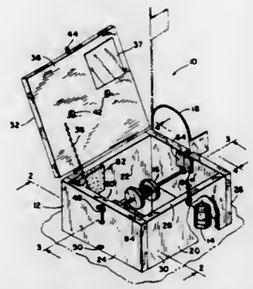
5,598,655
BEVERAGE VENDOR FRONT AND METHOD FOR CHANGEABLE GRAPHICS
Robert G. McGarrah, Brookfield, Conn., assignor to Pepsico, Inc., Purchase, N.Y.
Filed Sep. 21, 1994, Ser. No. 309,719
Int. Cl.[6] G09F *7/02*
U.S. Cl. 40—611 **14 Claims**



1. Apparatus operatively connected to a product vending machine for product graphics display, comprising:
a clear display panel having front and reverse sides;
means for controlling access to the reverse side of the panel;
a graphics frame affixed to the panel on the panel reverse side; and
a product graphics sheet removably adhered to the panel reverse side within the graphics frame,
wherein the product graphics sheet is formed from a material capable of static cling and clings to the panel reverse side within the graphics frame.

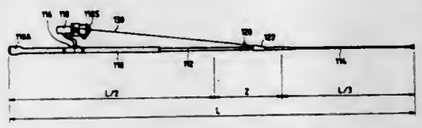
5,598,656
INSULATED TIP-UP
Paul M. Strasser, C4148 Wiesman Rd., Stratford, Wis. 54458
Filed Sep. 11, 1995, Ser. No. 526,159
Int. Cl.[6] A01K *97/12*
U.S. Cl. 43—17 **9 Claims**

1. An insulated fishing tip-up comprising:
an enclosure having two opposing end walls and two opposing side walls, said side walls and said end walls joined to form a rectangular enclosure, said enclosure having an open top and bottom surface;
a cover having an interior and exterior surface, said cover movably attached to said enclosure, said cover movable from an open to a closed position wherein said cover rests upon said top surface of said enclosure;



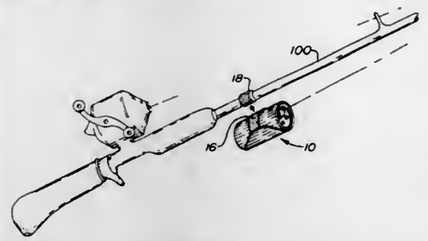
a hanging support securely mounted to the interior of said enclosure;
a heating element, said heating element supported by said hanging support above the bottom surface of said enclosure;
a heat shield affixed to the interior surface of said cover, said heat shield positioned above said heating element when said cover is in a closed position;
a shaft notch, said shaft notch being a removed portion of one said side wall of said enclosure;
a shaft mounted between said side walls, said shaft having a portion extending through said shaft notch to a location on the exterior of said enclosure, said shaft being so mounted to allow free rotation;
insulating flaps affixed to the interior of said enclosure, said insulating flaps located across said shaft notch for use as an insulator to limit air flow into said enclosure;
a spool containing fishing line, said spool being mounted on said shaft;
an elongated flexible rod having a first and second end, said first end securely attached to the exterior of said enclosure and said second end movable from a first set position, wherein said second end is held by the extended portion of said shaft, to a second upright, alert position upon an increase in tension in said fishing line;
a flag affixed to said second end of said elongated flexible rod.

5,598,657
INTER-LINE FISHING ROD
Masaru Akiba, Saitama; Shuichi Kimura; Koichi Ito, both of Tokyo, and Tomoyoshi Tsurufuji, Saitama, all of Japan, assignors to Daiwa Seiko, Inc., Tokyo, Japan
Filed Aug. 18, 1994, Ser. No. 291,994
Claims priority, application Japan, Aug. 23, 1993, 5-050116 U; Oct. 8, 1993, 5-277766; Nov. 16, 1993, 5-311347
Int. Cl.[6] A01K *87/04*
U.S. Cl. 43—24 **9 Claims**



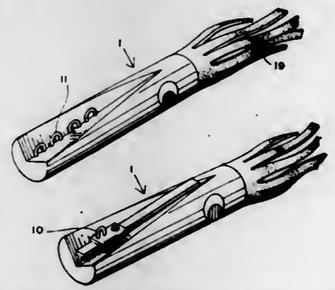
1. An inter-line fishing rod in which a fishline is at least partially passed through the inside thereof, said rod comprising an improvement wherein a line introducing hole for introducing the fishline into the inside of the rod is located within a range between a point distanced forward about ½ of the entire rod length L from the bottom end of the rod and another point distanced rearward about ⅓ of the entire rod length from the tip top of the rod, wherein the location of the line introducing hole is varied within the range depending on the bending characteristic of the inter-line fishing rod.

5,598,658
FISHING LURE WRAP
Wayne M. Walker, 1011 Amherst Rd., Panama City, Fla. 32405
Filed Jan. 20, 1995, Ser. No. 375,609
Int. Cl.[6] A01K *97/06*
U.S. Cl. 43—25.2 **14 Claims**



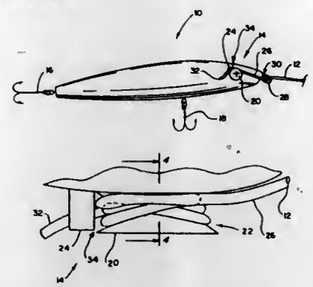
9. A fishing lure wrap comprising:
a generally rectangular-shaped sheet, constructed from a soft pliable material, having an outer surface with a plurality of parallel oriented ribs located thereon and an inner surface having a plurality of teeth located thereon, a tapered top and a bottom, and a middle portion;
a first portion of cooperating hook and loop material, attached to the outer surface beginning at the bottom and terminating at the middle portion;
a second portion of cooperating hook and loop material, corresponding to the first portion, attached to the inner surface beginning at the top and terminating at the middle portion;, and
a slot located on the sheet at the middle portion and wherein an end the second portion is inserted through the slot and secured therebeyond.

5,598,659
DIVING/JUMPING FISHING LURE AND METHOD
Larry E. Vanorden, 161 SE. 5th Ave., #2, Delray Beach, Fla. 33483
Filed Oct. 18, 1995, Ser. No. 544,829
Int. Cl.[6] A01K *85/16*
U.S. Cl. 43—42.23 **25 Claims**



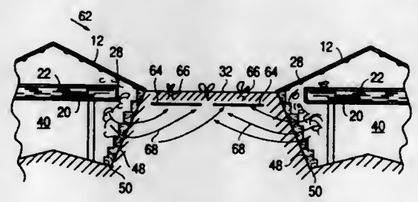
10. An artificial lure for use in a body of water by a fisherman with fishing line, comprising in combination:
a elongated body having both a head and a tail;
said tail having a fish hooking means;
drag means adjacent the fish hooking means;
said body having a diving trough having a bottom that commences near the tail of the body and increases in depth as said trough runs towards the head;
said head having a diving weight to induce a diving action;
said diving trough having a plurality of eyelets laterally spaced along the bottom of the diving trough;
whereby the fisherman may adjust the pattern of movement of the lure in operation by tying the fishing line to one of the eyelets between the head and the tail of the body.

5,598,660
APPARATUS FOR TYING FISHING LINE TO A LURE
Robert T. Walton, 3150 Country Club Rd., Lancaster, Ohio 43130
Filed May 26, 1995, Ser. No. 450,028
Int. Cl.[6] A01K *91/04*
U.S. Cl. 43—44.83 **24 Claims**



21. An apparatus for connecting a fishing line to a piece of fishing equipment, comprising in combination:
(a) a shoulder projecting from the piece of fishing equipment defining a surface having a circumferentially extending groove therein; and
(b) a fishing line, having a free end in relaxed state and a portion in tension extending forwardly from said piece of fishing equipment, said fishing line being wound at least one and one-half times around the shoulder, with a section of the fishing line near said free end being compressed and retained within the groove solely by an overlying generally parallel portion of the fishing line.

5,598,661
SOIL IRRIGATION SOLAR STILL SYSTEM
Boris Elderman, Jerusalem, and Alexander Lukatsky, Gush Etzion, both of Israel, assignors to The Israeli International Company for Investments "Hatchiya Ltd.", Jerusalem, Israel
Filed Feb. 22, 1996, Ser. No. 604,921
Int. Cl.[6] A01G *13/00*
U.S. Cl. 47—27 **7 Claims**



1. A soil irrigation solar still system of the type having a material transparent to solar radiation, supported in a non-planar, arched or sloped roof configuration above a darkened channel containing an impure liquid in such a manner as to allow radiant energy to heat and vaporize said impure water, to provide purified water for irrigation purposes, as the result of purified water which condenses on the underside of said transparent material due to the evaporation of said impure water in said channel rolling down along the

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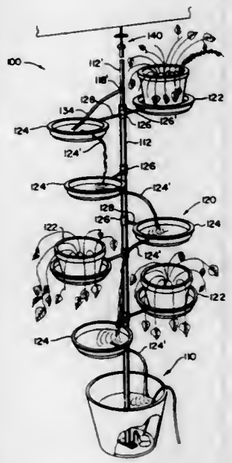
underside of said transparent material, characterized in that said channel is suspended above an excavated area in said soil, said excavated area having side wall rims spaced apart from outer edges of said channel, forming an open chamber there around, and said roof is provided with outer edges extending beyond and terminating adjacent said respective side wall rims of said open chamber, whereby a portion of said vaporized water circulates through said space between said side wall rims and said outer edges of said channel into said chamber, and is absorbed into the side walls of said chamber for condensation along the surface thereof and into the soil forming the same.

5,598,662

POLE GARDEN AND FOUNTAIN

Donna A. Droste, 1101-1A Old Buckingham Dr., Midlothian, Va. 23113

Filed Feb. 26, 1996, Ser. No. 607,040
Int. Cl.[6] A47G 7/00
U.S. Cl. 47—39 **1 Claim**



1. A pole garden and fountain assembly mountable between a floor and a ceiling, comprising in combination:

a) a base water well (**110**) forming a reservoir for continuously supplying water through a hanger pole;

b) a hollow hanger pole (**112**), said hanger pole being stabilized upright against displacement by a foot bracket (**114**) and a ceiling joist mounting bracket (**140**); an extension pole (**112'**) adjustably secured within the hanger pole (**112**), the ceiling joist mounting bracket (**140**) threadingly engaging the extension pole (**112'**) in vertical elongation thereof, said ceiling joist mounting bracket (**140**) defining a mounting screw (**144**) upon a plug (**142**), whereby upon turning a butterfly extension (**146**) of a stud mounting spike (**148**), the ceiling joist mounting bracket may be forced into and out of registry with a ceiling joist;

c) a plant dish and water dish assembly (**120**) mounted upon the hanger pole (**112**), said assembly including plant dishes (**122**) and water dishes (**124**); vertically adjustable pole couplings (**126**) for the respective plant and water dishes, with rod and dish retainers (**128**) threadingly engaging the couplings (**126**) to thereby space the dishes transversely from the hanger pole (**112**); a water transfer conduit (**124'**) spaced above a bottom of each said water dish (**124**) and extending from the interior of each water dish (**124**) in spill-over transfer relationship to a succeeding water dish, said plant and water dishes being arranged vertically about said hanger pole such that plant dishes alternate with water dishes in a decorative fashion, said plant dishes having no water transfer conduits associated therewith; and

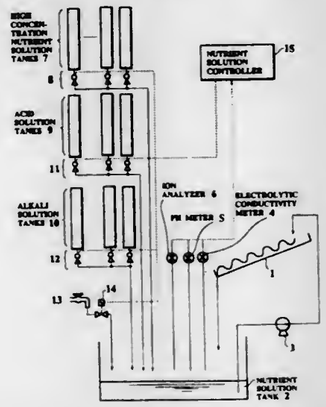
d) a water circulator (**130**) comprising a water circulating pump (**132**), said pump having an output connection with a single-flow water tube (**134**), said tube passing upward through the pole extension (**112'**) and outwardly thereof for continuous supply and recirculation of water to at least one of the respective water dishes (**124**).

5,598,663

HYDROPONIC NUTRIENT SOLUTION CONTROL SYSTEM

Hiroshi Kikuchi, Tokyo-to, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 145,305, Nov. 3, 1993, abandoned, which is a continuation of Ser. No. 622,968, Dec. 6, 1990, abandoned. This application Sep. 6, 1994, Ser. No. 301,039
Claims priority, application Japan, Dec. 12, 1989, 1-320637
Int. Cl.[6] A01G 31/00
U.S. Cl. 47—62 **9 Claims**



1. A hydroponic nutrient solution control system for controlling nutrient solution to be supplied to plants to be grown, comprising:

nutrient solution tank means for containing the nutrient solution to be supplied to the plants, to which the nutrient solution supplied to the plants are returned;

pH meter means for measuring pH of the nutrient solution in the nutrient solution tank means;

an ion analyzer device for measuring an ion concentration of a plurality of nutrient ion ingredients of the nutrient solution in the nutrient solution tank means independent of other nutrient ion ingredients of the nutrient solution in the nutrient solution tank means;

a plurality of acid solution tank means for containing acid nutrient ion ingredient solutions, each acid solution tank means separately containing an acid nutrient ion ingredient solution comprising a compound selected from the group consisting of HNO_3, H_3PO_4, and H_2SO_4, to be supplied to the nutrient solution in the nutrient solution tank means;

a plurality of alkali solution tank means for containing alkali nutrient ion ingredient solutions, each alkali solution tank means separately containing an alkali nutrient ion ingredient solution comprising a compound selected from the group consisting of KOH, $Ca(OH)_2$, $Mg(OH)_2$, and NH_4OH, to be supplied to the nutrient solution in the nutrient solution tank means; and

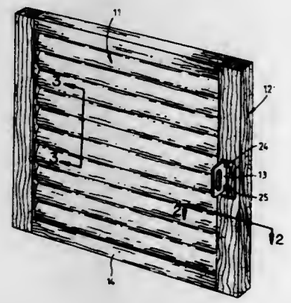
means for automatically controlling supplies of the acid nutrient ion ingredient solutions and the alkali nutrient ion ingredient solutions by selectively operating appropriate ones of the acid solution tank means and alkali solution tank means, according to the pH measured by the pH meter means and the ion concentrations measured by the ion analyzer device.

5,598,664

SLIDING PARTITION CONTAINING ROTATABLE LOUVRES

Neil E. Grice, Indooroopilly, Australia, assignor to Verosol (Australia) Pty Limited, Belmont, Australia

PCT No. PCT/AU93/00451, § 371 Date Nov. 17, 1994, § 102(e) Date Nov. 17, 1994, PCT Pub. No. WO94/05889, PCT Pub. Date Mar. 17, 1994
PCT Filed Sep. 6, 1993, Ser. No. 341,618
Claims priority, application Australia, Sep. 8, 1992, PL4537
Int. Cl.[6] E06B 7/08
U.S. Cl. 49—74.1 **10 Claims**



1. A partition assembly comprising a plurality of parallel longitudinally extending louver blades, the louver blades being housed within a surround frame, the louver blades having longitudinal side edges and transverse end edges, the transverse end edges being pivotally connected to the surround frame to allow louvres to exhibit rotation, reciprocating actuating means to rotate the louvre blades, the reciprocating actuating means being disposed adjacent one transverse end edge of the louver blades and being pivotally coupled to the transverse end edge, the reciprocating actuating means located within a recessed portion in the surround frame, and a handle, the handle having a first portion attached to the actuating means and a second portion hingedly attached to the first portion and moveable between an extended position where the second portion can be pushed upwardly or downwardly to rotate the louver blades, and a folded position where the handle sits in a recess in the surround frame such that it does not protrude from the surround frame.

5,598,665

SLIDING SASH FOR OPTIONAL CLOSING, IN PARTICULAR FOR AN OPEN SIDE OF BALCONIES, SUN PORCHES AND THE LIKE

Juergen Guddas, Contrescarpe 65, 28195 Bremen, Germany

Filed Oct. 6, 1995, Ser. No. 540,049
Claims priority, application Germany, Oct. 6, 1994, 44 35 641.2
Int. Cl.[6] E05D 15/06
U.S. Cl. 49—404 **13 Claims**

1. A sliding sash for optional closing, in particular for closing an open side of balconies, sun porches or the like having a floor therein comprising:

a floor guide rail;

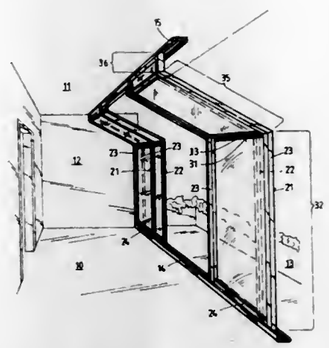
a sash portion projecting from the floor in a vertical plane and a sash portion ascending in an inclined plane relative to the inside adjoining an additional upper sash portion which projects upward in the vertical plane and is set back, said sash portions for supporting said sliding sash at said floor guide rail;

every sash portion being formed by a section bar frame receiving a filling plate of glass, plastic or the like;

said upper sash portion being guided at a ceiling rail with two running paths which are arranged at a distance from one another and parallel to one another;

every running path being formed of two inclined guide paths of a web head of the ceiling rail, said web head having a triangular cross section; and

support rollers which are supported at an inclination run on the guide paths of every web head at a roller holder which is fastened to a terminating section bar of the upper sash portion.

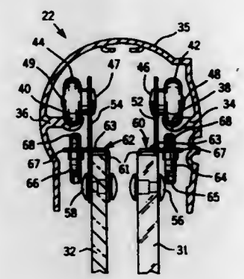


5,598,666

ANTI-DERAILING MECHANISM FOR TRACK MOUNTED BATH DOORS

Michael J. Kurth, Howards Grove, Wis., assignor to Kohler Co., Kohler, Wis.

Filed Jan. 4, 1996, Ser. No. 582,859
Int. Cl.[6] E05D 15/06
U.S. Cl. 49—409 **5 Claims**



1. A door system for a bathing enclosure which has an opening, said door system comprising:

a track extending above the opening and having a rail;

a door;

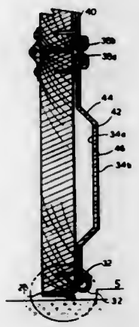
at least one roller attached to the door and engaging the rail, so that the door is suspended from and slidable along the track; and

a stop attached to door and moveable vertically with respect to the door between a first position at which the door may be removed from the track and a second position at which the stop strikes the track preventing removal of the door, said stop comprising a locking bracket fixed to the door with a threaded

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aperture extending through the locking bracket; and a threaded rod inserted into the threaded aperture.

5,598,667
PANEL COVER SYSTEM AND METHOD
Gary M. Dykes, 523 W. 8th., Larned, Kans. 67550
Filed Apr. 21, 1995, Ser. No. 425,878
Int. Cl.[6] E04C *2/32*
U.S. Cl. 52—71 **2 Claims**



1. A cover system mounted on an overhead-type door including a plurality of panels each having inner and outer faces, upper and lower longitudinal edges and opposite side edges, said panels being positioned in juxtaposed relation with adjacent longitudinal edges of respective panels being hingedly interconnected, a lowermost of said panels having a weatherstrip gasket mounted on the lower edge thereof, said overhead door being mounted within a framed opening including a pair of side jamb assemblies and a pair of side weatherstrip gaskets mounted along each side jamb assembly for engaging said panels along their respective side edges, which comprises:

(a) a plurality of panel covers each adapted for mounting on a respective panel and including:
(1) front and back surfaces;
(2) upper and lower longitudinal margins;
(3) first and second side margins;
(4) a field portion adjacent to said margins and generally lying in a first, inner plane; and
(5) a plurality of raised panel sections each including a decorative central portion spaced outwardly from the plane of said field, each said panel cover including a plurality of said raised panel sections positioned in side-by-side spaced relationship and separated by said field portion;

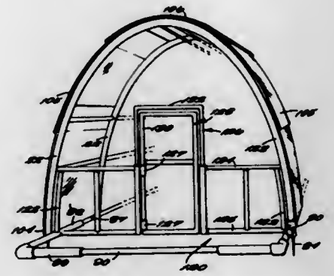
(b) a pair of edge strips mounted on each said panel, each said edge strip including:
(1) a base flange mounted on a respective panel outer face in proximity to a respective longitudinal edge thereof;
(2) a return flange overlying said base flange;
(3) a demarcation fold line whereat said base and return flanges are integrally connected to each other and generally parallel with respect to each other;
(4) a longitudinally extending channel receiving a respective cover longitudinal margin;
(5) a retainer flange positioned within said channel and located generally between said base and return flanges;
(6) an access slot to said channel being formed between said retainer and said base flange;
(7) a curved, free edge formed along a longitudinally-extending intersection of said return flange and said retainer flange; and
(8) said retainer flange contacting a respective panel cover longitudinal margin for retaining said panel cover against said base flange;

(c) edge strip mounting means for mounting said edge strip base flange to said panel outer face with said edge strip fold line positioned in proximity to a respective panel longitudinal edge and terminating generally at the level thereof;

(d) mounting means for mounting each said cover on a respective panel comprising a mechanical fastener extending through said cover in proximity to a side margin thereof and into said panel in proximity to a side edge thereof; and

(e) said field portion having a size adapted to cover and overhang the edges of a panel whereby said cover is adapted for being edge-trimmed to cover a plurality of different-sized door sections.

5,598,668
ADJUSTABLE BUILDING FRAME
Fred S. Isom, 3411 1/2 Heyward St., Columbia, S.C. 29205
Filed Oct. 4, 1995, Ser. No. 539,191
Int. Cl.[6] E04B *1/32*
U.S. Cl. 52—86 **18 Claims**

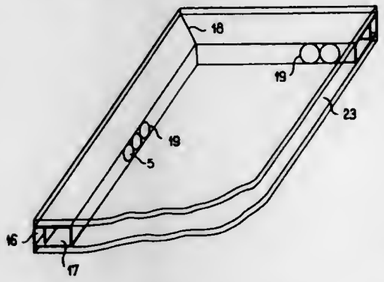


1. A frame for supporting a building, said frame defining a height, a volume, a width, and a length, said frame comprising:

a base having a first bottom member and an opposing second bottom member and a pair of opposing side members connecting said first and said second bottom member, each of said bottom members having a length, each of said side members having a length, said first bottom member defining a first receiving surface, said second bottom member defining a second receiving surface, said first and said second bottom members and said opposing sides each having at least one telescoping section whereby said length of said frame is adjusted by adjusting said length of said first and said second bottom members, and whereby said width of said frame is adjusted by adjusting said length of said opposing side members; and

a plurality of elongated roof members, each roof member of said plurality of roof members having a first end and a second end, each roof member of said plurality of roof members having a length, said first end of said each roof member being received by said first receiving surface, said second end of each of said roof members being received by said second receiving surface, said each roof-member having a plurality of telescoping sections for enabling said length of said each roof member to be adjusted, whereby said height and said volume defined by said frame are adjusted by adjusting said length of said each roof member.

5,598,669
ACOUSTIC INSULATING BOX
Mohamed A. Hamdi, Compiegne; Hamid Bouhioui, Compiegne Cedex, and Marc Rehfeld, Ezanville, all of France, assignors to Saint Gobain Vitrage International "Les Miroirs", Courbevoie, France
Filed Jul. 16, 1993, Ser. No. 91,918
Claims priority, application France, Jul. 16, 1992, 92 08772
Int. Cl.[6] E06B *3/00*
U.S. Cl. 52—144 **13 Claims**



1. A box comprising:

at least one flat cavity comprising two substantially parallel panels connected at their periphery by an insert frame;

a gas filling the cavity;

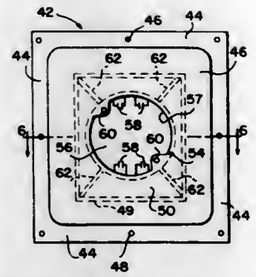
a waveguide means in communication with the cavity via one or more localized orifices formed only at predetermined locations along said waveguide to occupy only a portion of said waveguide, the shape, cross-section and position of the one or more localized orifices, as well as the cross-section of the waveguide, are determined for detuning acoustic and mechanical waves which arise in the cavity and on the panels respectively when the box is subjected to an incident acoustic field;

wherein the box is an insulating glazing whose panels are glass sheets and the waveguide is integrated with the insert frame of the insulating glazing; and

wherein the waveguide and the insert frame comprise a single tubular section comprising an inside compartment and outside compartment formed outside of the inside compartment which are in communication one with the other and in that the outside compartment contains a desiccant.

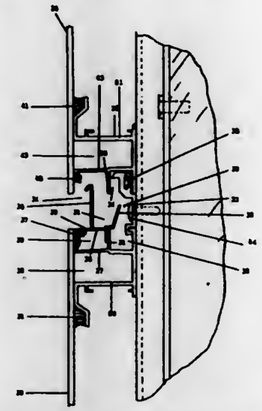
5,598,670
WALL MOUNTING SYSTEM FOR ELECTRICAL DEVICES
Phil A. Humphrey, and Weldon C. Humphrey, both of Lyndonville, N.Y., assignors to Thermo Plastic Works, Inc., Lyndonville, N.Y.
Filed Aug. 16, 1994, Ser. No. 291,398
Int. Cl.[6] H02G *3/12*
U.S. Cl. 52—220.8 **21 Claims**

1. A wall mounting assembly comprising a frame member having an interior flange suitable for mounting to a wall, an exterior flange member opposite said interior flange, said flanges being aligned in parallel planes and spaced from one another, a plurality of inwardly indented axial walls positioned between said flanges to provide a generally U-shaped cross sectional channel encircling said assembly, a front wall surrounded by said exterior flange member, and an electrical box having one or more adjoining side walls, an open end, and a closed end opposite said open end, each of said one or more side walls being spaced from said inwardly indented axial walls, the open end of said electrical box being integral with a central opening in said front wall for access to the interior of said electrical box, the closed end of said electrical box extending rearwardly towards said interior flange but not beyond



the plane of said flange, said interior flange, exterior flange member, inwardly indented axial walls, front wall and electrical box being molded as an integral one piece unit.

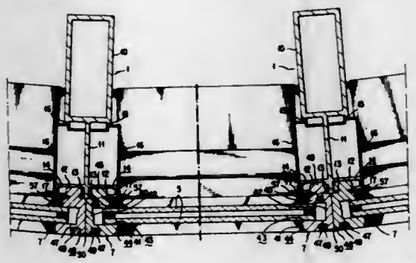
5,598,671
EXTERNALLY DRAINED WALL JOINT
Raymond M. L. Ting, 318 Holiday Dr., Pittsburgh, Pa. 15237
Filed Feb. 9, 1995, Ser. No. 387,043
Int. Cl.[6] E04H *1/00*
U.S. Cl. 52—235 **18 Claims**



1. A system for sealing an opening in a structure including a wall panel assembly formed from individual wall panels from infiltration from the exterior to interior of said structure, each said wall panel having a top and bottom horizontal edge and a pair of vertical side edges, said wall panels being joined along said horizontal edges to form a horizontal wall joint and along said vertical edges to form a vertical wall joint, said wall panel assembly comprising an exterior plate and four perimeter members, said perimeter members comprising a top perimeter member, a bottom perimeter member, and two side perimeter members; pressure equalized seal between said bottom perimeter member, said outer horizontal cavity and said exterior plate and a differential pressure seal between said bottom perimeter member and said exterior plate; a pressure equalized seal between said top perimeter member, said outer horizontal cavity and said exterior plate and a differential pressure seal between said top perimeter member and said exterior plate; for connecting said top and bottom perimeter member to said exterior plate to form a pressure equalized bottom and top perimeter cavity; a means for connecting said side perimeter members to said exterior plate to form two side cavities; a means for connecting said top perimeter member to said supporting member; a means for connecting said side perimeter member to said supporting member; a horizontal wall cavity being formed

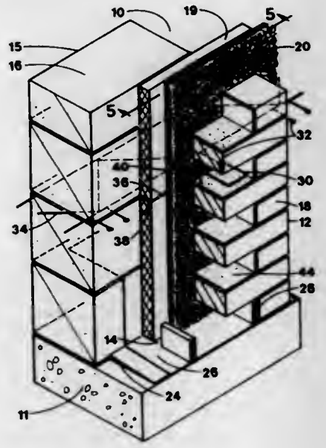
between each said horizontal wall joint between said top perimeter member and said bottom perimeter member across said horizontal wall joint, said bottom perimeter member including at least one pressure equalization hole between said bottom perimeter cavity and said horizontal wall cavity; a vertical wall cavity being formed at each said vertical wall joint between said side perimeter members across said vertical wall joint; said top perimeter member including a rain screen member to separate said horizontal wall cavity into an outer horizontal wall cavity and an inner horizontal wall cavity, said top perimeter member further comprising a rear gutter leg behind said rain screen member and at least one drainage hole between said rain screen member and said rear gutter leg; said top perimeter member including a male horizontal joint spline member behind said inner horizontal cavity; said bottom perimeter member of an adjacent exterior plate including a horizontal female joint to cause engagement with said male horizontal joint spline member; a vertical rain screen member installed within said vertical wall cavity to separate said vertical wall cavity into an outer vertical cavity and an inner vertical cavity; and said side cavity connecting said top perimeter member and said bottom perimeter member.

5,598,672
PANEL MEMBER MOUNTING STRUCTURE OF CURTAIN WALL
Koichiro Nawa, Toyama-ken, Japan, assignor to YKK Architectural Products Inc., Tokyo, Japan
Filed Jun. 1, 1995, Ser. No. 456,928
Claims priority, application Japan, Jun. 17, 1994, 6-135458
Int. Cl.[6] E04B 2/88
U.S. Cl. 52—235 **16 Claims**



1. A panel member mounting structure for a curtain wall comprising:
a frame body formed by a plurality of mullions and a plurality of transoms so as to comprise a plurality of quadrangular frame sections;
a plurality of quadrangular gaskets each formed by a pair of vertical gaskets and a pair of horizontal gaskets integrally connected in a quadrangular configuration and each installed on the exterior side of mullions and transoms defining one of said quadrangular frame sections so as to hold a panel member to be mounted in said quadrangular frame section each of said vertical and horizontal gaskets having a gasket main body and a mounting portion integrally formed with said gasket main body on the interior side thereof, said gasket main body having a panel member receiving groove defined by an interior side receiving piece and an exterior side holding piece integrally connected through a connecting piece and a hollow portion provided in a connecting area of said exterior side holding piece and said connecting piece and opening to the exterior side so as to make said exterior side holding piece deformable toward the exterior side; and
a plurality of zippers each having a pair of fitting projections integrally connected through a connecting plate and fitted between a pair of said hollow portions of horizontally adjacent vertical gaskets so as to join and cover contact edges of said horizontally adjacent vertical gaskets and fitted between a pair of said hollow portions of vertically adjacent horizontal gaskets so as to join and cover contact edges of said vertically adjacent horizontal gaskets.

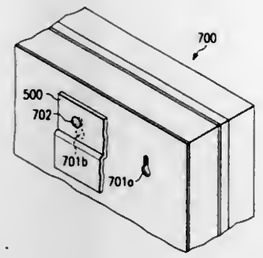
5,598,673
MASONRY CAVITY WALL AIR SPACE AND WEEPS OBSTRUCTION PREVENTION SYSTEM
Mark R. Atkins, 2598 Stagecoach Trail S., Afton, Minn. 55001
Filed Jan. 18, 1994, Ser. No. 182,647
Int. Cl.[6] E04B 1/41;1/70
U.S. Cl. 52—302.1 **20 Claims**



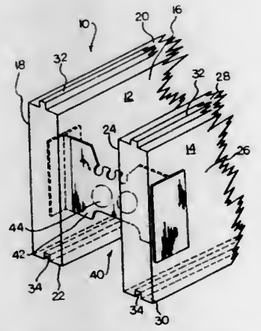
1. A cavity wall comprising:
a first wythe;
a second wythe;
air space between said first wythe and said second wythe;
means for removing water from said air space;
a fluid conducting medium disposed proximate to said second wythe, said fluid conducting medium substantially filling said air space, and having the additional properties of;
allowing air, water and water vapor to flow readily through said fluid conducting medium:
resisting the flow of mortar, and;
holding during construction of said second wythe substantially all mortar proximate to masonry joints from which said mortar may be expressed toward said air space.

5,598,674
GLASS COMPOSITE PANEL
Randy W. Lay, 1204 Churchill Dr., Irving, Tex. 75060, and Beth K. Cunningham, 2403 Hillside Ct., Southlake, Tex. 76092
Filed Jun. 6, 1995, Ser. No. 467,562
Int. Cl.[6] E04C 1/00
U.S. Cl. 52—309.1 **9 Claims**

1. A multilayer structural panel comprising:
a glass layer;
a transparent adhesive layer comprised of polyvinyl chloride; and
a supporting layer attached to said glass layer by said adhesive layer, said supporting layer comprised of a first layer and a second layer of relatively thin structural support material separated by a relatively lightweight core layer.



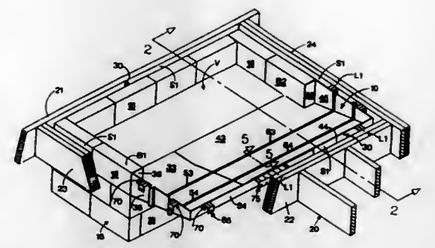
5,598,675
CONCRETE WALL MONOLITHIC BUILDING UNIT
Donald E. Pruss, P.O. Box 223160, Carmel, Calif. 93922-3160
PCT No. PCT/US95/02973, § 371 Date Jun. 7, 1995, § 102(e) Date Jun. 7, 1995, PCT Pub. No. WO95/25207, PCT Pub. Date Sep. 21, 1995
PCT Filed Mar. 14, 1995, Ser. No. 448,400
Claims priority, application Canada, Mar. 16, 1994, 2119180
Int. Cl.[6] E04C 1/00
U.S. Cl. 52—309.4 **19 Claims**



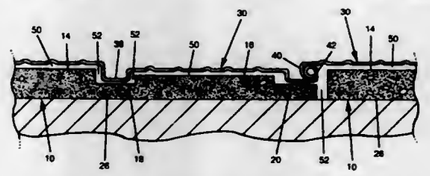
1. An insulated wall construction form comprising:
a pair of spaced apart panels, each having an inside surface and an outside surface adapted to receive concrete therebetween, said panels comprising a first polymer; and
tie means extending between and fusibly interconnecting said panels, said tie means comprising a second polymer fusible with said first polymer of said panels to provide an integral and chemically bonded insulated wall construction.

5,598,676
HEARTH FORM FOR POUR-FORMING A FIREPLACE HEARTH
Damien E. Chaves, 9331 Old Burke Lake Rd., Burke, Va. 22015
Filed Jun. 7, 1995, Ser. No. 480,710
Int. Cl.[6] E04B 1/343;1/16
U.S. Cl. 52—326 **27 Claims**

6. A hearth form for pour-forming a fireplace hearth comprising a body constructed from substantially fire proof material, said body defining a chamber into which concrete can be poured, means for securing said body in spaced relationship to associated floor structure defining an opening within which the fireplace hearth is to be pour-formed, means for reinforcing said body to reduce deflection caused by the weight of poured concrete, and said reinforcing means is defined by at least one reinforcing rib running along a bottom wall of said body and continuing along opposite side walls of said body.



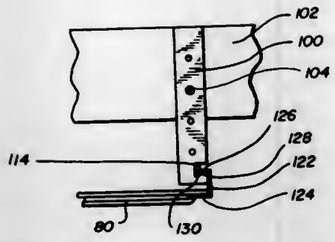
5,598,677
INSULATED COVERING FOR BUILDING SHEATHING
Frederick G. Rehm, III, 2524 Waolani Ave., Honolulu, Hi. 96817
Filed Dec. 19, 1995, Ser. No. 574,933
Int. Cl.[6] E04B 1/74; E04D 1/28
U.S. Cl. 52—407.1 **12 Claims**



1. An insulated covering for solid building sheathing, comprising:
(a) a construction panel having a plurality of raised aspects;
(b) an insert made of insulation material having a density sufficient to support anticipated loads;
(c) wherein said insert is shaped to follow the contours of said construction panel and sized to leave a narrow continuous air-gap between the outside surface of said insert and the inside surface of said raised aspects of said construction panel; and
(d) wherein said insert is allowed to float, freely, within the raised aspects of said panel when said panel is secured to said solid sheathing.

5,598,678
CEILING DEVICES
Henry B. Reynolds, 6517 Millwood Rd., Bethesda, Md. 20817
Filed Jun. 7, 1995, Ser. No. 481,070
Int. Cl.[6] E04B 2/00
U.S. Cl. 52—506.09 **4 Claims**

1. Cooperatively interacting channel hanger and channel devices, for use in ceilings in which tiles that have edge grooves of established depth are supported by a suspension grid that is not visible from the underside of the ceiling, that establish the ceiling level and support the suspension grid in its mid-span regions and, together with wall supports for supporting the ceiling where the grid abuts the walls, form the suspension grid as a whole, said hanger and channel devices comprising
at least one elongated channel which is substantially "U" shaped in cross-section; said channel having an untabbed leg, and a tab-bearing leg with a retaining tab portion positioned at substantially a right article to the outermost end toward said untabbed leg, and which channel is suspended from at least one hanger that is affixed to a support structure at one of its



ends and has a channel-receiving aperture at its other end, which aperture has a floor positioned toward said other end with a vertical slot therein, such that said tab-bearing leg is inserted into said aperture and said retaining tab portion resides in said slot, the vertical height of said aperture when said hanger is vertically oriented being greater than the height of said retaining tab portion of said channel and the depth of said vertical slot being greater than is the height of said retaining tab,

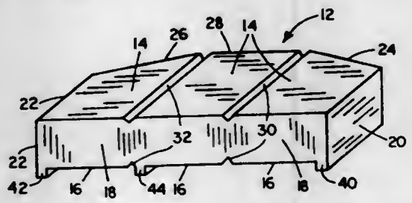
said channel being oriented so that it opens laterally toward said hanger with the untabbed leg of said channel positioned in the edge groove of at least one ceiling tile positioned adjacent to the apertured end of said hanger, while said channel and said ceiling tile are locked into position in proximity to said hanger.

5,598,679

CAST CONCRETE BLOCK AND METHOD OF MAKING SAME

Michael V. Orton, 302 W. 100 South, Manti, Utah 84642, and David S. Orton, 301 S. 6th Ave., Princeton, Minn. 55371

Filed Dec. 20, 1994, Ser. No. 359,915
Int. Cl.[6] E04C *2/04*
U.S. Cl. 52—609 **13 Claims**



10. A solid cast concrete block that can be separated into at least three construction blocks to be used in constructing a retaining wall system, said cast concrete block comprising

a substantially planar top face;

a substantially planar bottom face that is spaced from said top face and is substantially parallel to said top face;

a substantially straight, elongate base side having a first end and a second end;

a first substantially straight, elongate edge side having first and second ends, with the first end of said first edge side being coexistent with the first end of said base side and with the first edge side extending substantially perpendicular from said base side;

a second substantially straight, elongate edge side having first and second ends, with the first end of said second edge side being coexistent with the second end of said base side and with the second edge side extending substantially perpendicular from said base side so that said second edge side is substantially parallel with said first edge side;

a substantially straight, elongate top side having first and second ends, with the first end of said top side being coexistent with the second end of said first edge side and with the second end of said top side being coexistent with the second end of said second edge side, so that said top side is essentially parallel with said base side;

a first elongate face groove in each of said top face and said bottom face, each of said first face grooves extending between said top side and said base side, with each of said first face grooves being substantially perpendicular to said base side and said top side, and further with each of said first face grooves being spaced inwardly from said first edge side so as to be positioned between said first edge side and a central transverse axis through said cast concrete block;

a second elongate face groove in each of said top face and said bottom face, each of said second face grooves extending between said top side and said base side, with each of said second face grooves being substantially perpendicular to said base side and said top side, and further with each of said second face grooves being spaced inwardly from said second edge side so as to be positioned between said second edge side and a central transverse axis through said block;

a first elongate side groove in said top side that extends from the first face groove in said top face to the first face groove in said bottom face;

a second elongate side groove in said top side that extends from the second face groove in said top face to the second face groove in said bottom face;

a first lip projecting downwardly from said bottom face, with the first lip being positioned adjacent to the first edge side;

a second lip projecting downwardly from said bottom face, with the second lip being positioned adjacent to the second edge side; and

a third lip projecting downwardly from said bottom face, with the third lip being positioned adjacent to said second face groove in said bottom face so that said third lip is positioned alongside the side of said second face groove that faces toward said first edge side,

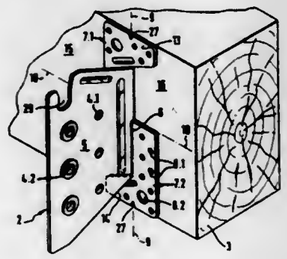
whereby said cast concrete block can be split into three individual construction blocks by breaking the cast concrete block along the first and second grooves.

5,598,680

JOINING ELEMENT FOR JOINING WOODEN COMPONENTS

Jürgen Wilhelmi, Hermann-Löns-Weg 6, D-28857 Syke-Wachendorf, Germany

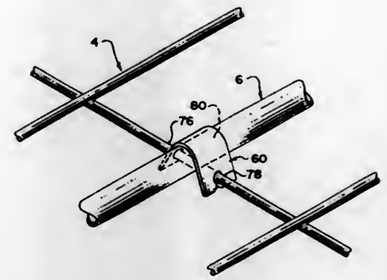
Filed Dec. 13, 1994, Ser. No. 357,190
Claims priority, application Germany, Dec. 13, 1993, 9319125 U
Int. Cl.[6] E04B *1/38*
U.S. Cl. 52—715 **23 Claims**



1. A joining element in combination with wooden components for joining a first wooden component having a slot at an end surface to a second component, said joining element being constructed of a substantially rectangular section of a sheet of metal and comprising:

a planar attachment web provided with through holes, said attachment web being insertable into said slot of said first wooden component;

a first and a second fastening flange fastenable to said second component, each of said fastening flanges being provided with through holes, said fastening flanges being bent away from the plane of said attachment web to opposite sides of said attachment web at a bending line provided by a rear edge of said attachment web, said fastening flanges being substantially congruent, whereby said rear edge of said attachment web is positioned on a first main axis of said joining element and is of a length shorter than a height of said sheet section, and whereby an upper edge of said fastening flanges and a lower edge of said attachment web are cut and extend from said bending line at an obtuse angle to said bending line, and wherein an outer section of each of said fastening flanges extends to opposite sides of said attachment web.

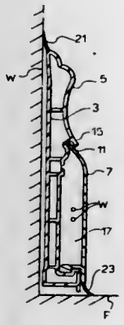


5,598,681

RESIN BASEBOARDS

DiGianni Mike, Woodbridge, Canada, assignor to Imperial Plastics Extrusions Limited, Woodbridge, Canada

Filed Feb. 24, 1994, Ser. No. 201,422
Int. Cl.[6] E04F *19/02*
U.S. Cl. 52—717.05 **1 Claim**



1. A wall provided with a resin material baseboard used at a juncture of the wall and a floor, said baseboard comprising an upright body formed with a back wall extending vertically along the wall, a front cover and an internal hollow space between said back wall and said front cover, said front cover being releasably secured by a snap lock to said upright body for gaining access to and then covering said internal hollow space, said upright body including an undercut recess and said cover including a first end which snaps into said undercut recess.

5,598,682

PIPE RETAINING CLIP AND METHOD FOR INSTALLING RADIANT HEAT FLOORING

Daniel J. Haughian, Mission, Canada, assignor to Haughian Sales Ltd., Mission, Canada

Filed Mar. 15, 1994, Ser. No. 212,799
Int. Cl.[6] E04C *5/16;* **F24D** *13/02*
U.S. Cl. 52—745.21 **15 Claims**

11. In an improved method of constructing radiant heat flooring comprising the steps of:

a) placing a wire grid on a foundation;

b) placing a spaced apart array of heating pipe over the wire grid so that a segment of the heating pipe lies generally transversely over a segment of the wire grid;

c) securing the heating pipe to the wire grid

d) surrounding the wire grid, heating pipe and retaining clip with fluid, hardenable flooring material; and,

e) hardening the flooring material;

the improvement comprising, at the step of securing the heating pipe to the wire grid, the steps of:

i) laying a heating pipe on a wire grid so that a segment of the heating pipe lies generally transversely over a segment of the wire grid;

ii) providing a retaining clip comprising a generally planar resiliently flexible strip having two holes, one hole proximal to each opposing end of the retaining clip, the retaining clip having, two cuts, one cut in each opposing end of the retaining clip, the cuts between the holes and the opposing ends of the retaining clip, forming an intersection between the cut and the hole on each opposing end of the retaining clip;

iii) bending the retaining clip partially around the segment of the heating pipe so that the opposing ends of the retaining clip are biased out of the plane of the retaining clip, with one of the opposing ends of the retaining clip on one side of the heating pipe and the other opposing end of the retaining clip on the other side of the heating pipe; and,

iv) applying force to the opposing ends of the retaining clip to bias the opposing ends of the retaining clip down against the segment of the wire grid, to pass the segment of the wire grid through the cuts into the holes and to allow the cuts to resiliently close; and,

v) releasing the force applied to the opposing ends of the retaining clip to allow the holes to form axial caches for the segment of the wire grid.

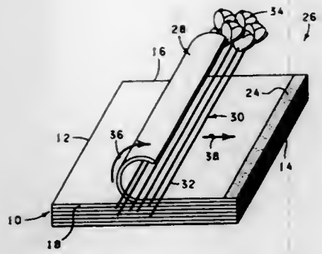
5,598,683

WRAPPING A FLORAL GROUPING WITH SHEETS HAVING ADHESIVE MATERIAL APPLIED THERETO

Donald E. Weder, Highland, Ill., assignor to Southpac Trust International, Inc., Highland, Ill.

Continuation-in-part of Ser. No. 253,648, Jun. 3, 1994, abandoned, which is a continuation of Ser. No. 965,585, Oct. 23, 1992, abandoned, which is a continuation of Ser. No. 893,586, Jun. 2, 1992, Pat. No. 5,181,364, which is a continuation of Ser. No. 707,417, May 28, 1991, abandoned, which is a continuation of Ser. No. 502,358, Mar. 29, 1990, abandoned, which is a continuation-in-part of Ser. No. 249,761, Sep. 26, 1988, abandoned, which is a continuation-in-part of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a continuation of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned, said Ser. No. 502,358is a continuation-in-part of Ser. No. 391,463, Aug. 9, 1989, abandoned, which is a continuation-in-part of Ser. No. 249,761, Sep. 26, 1988, abandoned, which is a continuation-in-part of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a continuation of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned.
This application Oct. 25, 1994, Ser. No. 329,607
Int. Cl.[6] B65B *51/02;61/06*
U.S. Cl. 53—397 **34 Claims**

1. A method for wrapping an item, comprising:



providing a pad comprising a plurality of sheets of material, the pad having a top sheet of material with the other sheets of material being disposed under the top sheet of material, each sheet of material having a first end and a second end, an upper surface and a lower surface, each sheet of material having an adhesive on the upper surface of the sheet of material and a release material on the lower surface thereof, the release material being disposed on the lower surface of the sheets of material so that the release material is in a substantially covering position relative to the adhesive on the upper surface of an adjacently disposed lower sheet of material;

providing a floral grouping having an upper end and a stem end, the floral grouping comprising the item;

placing the floral grouping on the top sheet of material; and

wrapping at least the top sheet of material about the floral grouping and disconnecting the top sheet of material from the pad of sheets of material with a portion of the sheet of material overlapping other portions of the sheet of material and bonding the overlapping portions of the sheet of material by contacting the adhesive on the upper surface with adjacent overlapping portions of the sheet of material whereby the sheet of material is bonded to overlapping portions of the sheet of material and with the sheet of material substantially encompassing and surrounding a substantial portion of the stem end of the floral grouping and being held about the floral grouping by the bonding of the overlapping portions of the sheet of material, the sheet of material wrapped about the floral grouping having an opening extending through the lower end thereof and an opening extending through the upper end thereof with the stem end of the floral grouping extending through the opening in the lower end and the flower end of the floral grouping being exposed near the opening in the upper end thereof.

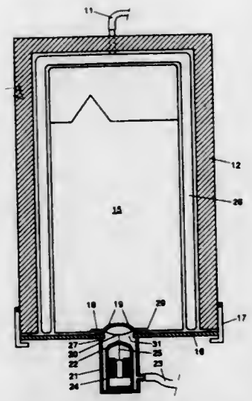
5,598,684

VACUUM PACKAGE, METHOD AND APPARATUS FOR MAKING SUCH VACUUM PACKAGE FILLED WITH GRANULAR MATERIAL

Mathias L. C. Aarts, Bilthoven, Netherlands, assignor to Sara Lee/De N.V., Utretcht, Netherlands

Continuation of Ser. No. 196,832, Feb. 15, 1994, abandoned.
This application Mar. 15, 1996, Ser. No. 616,768
Claims priority, application Netherlands, May 4, 1993, 9300754; Feb. 7, 1994, 9400194
Int. Cl.[6] B65B *31/08; 1/24*
U.S. Cl. 53—434 **29 Claims**

1. A method for making a vacuum package filled with granular material, in which a package made from a flexible packaging material and filled with a granular product which directly contacts the flexible packaging material is evacuated and sealed hermetically, characterized in that the package, before being evacuated, is compressed by applying pressure to the sidewalls of the package, so that the granular product forms a compact whole, that a suction opening in the otherwise airtight package is formed in a wall of the package by providing a perforation in said walls of the package, that the perforation is provided by a needle capable of moving back and forth, arranged in a vacuum element, that subsequently the vacuum element is connected to the suction opening provided in the wall of the package, said vacuum element evacuating the



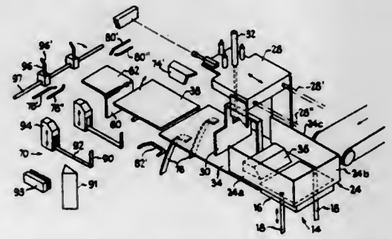
package through the suction opening without the package being otherwise externally subjected to vacuum, and that after the evacuation the suction opening is sealed hermetically by a sealing element arranged in the vacuum element.

5,598,685

APPARATUS AND PROCESS FOR PACKAGING FRAGILE ARTICLES

Thomas Graham, Orlando, Fla., and William J. Courteau, Hugo, Minn., assignors to Stone Container Corporation, Chicago, Ill.

Filed Mar. 14, 1995, Ser. No. 403,646
Int. Cl.[6] B65B *11/00*
U.S. Cl. 53—464 **10 Claims**



1. A process for the facilitated packaging of fragile articles, including sharp and/or fragile food articles, without exposing the fragile articles to undesired physical shock and stress that could otherwise break either the articles or intermediate containers surrounding the articles towards contamination thereof, the process comprising the steps of:

transporting a plurality of the fragile articles, from a source of the fragile articles, to a loading position;

transferring at least one of the fragile articles from the loading position, to a prestaging position, along at least a first of two or more support surfaces, while maintaining the at least one fragile article in substantially continous contact with the first support surface, and without exerting substantial compressive forces on the at least one fragile article which would tend to damage the at least one fragile article, and substantially without elevating the at least one fragile article above the first support surface,

including the steps of positioning the at least one of the fragile articles onto a portion of the first support surface which is configured to be vertically movable relative to at least a remaining portion of the first support surface, vertically moving the portion of the first support surface, and thereafter completing the transfer of the at least one article to the prestaging position;

transferring a substantially flat unarticulated container blank from a source of container blanks to a container forming position, in part, by positioning a first portion of the substantially flat container blank to a position onto a second vertically movable support surface, the second vertically movable support surface being positionable from a first position substantially level with at least a portion of the remaining portion of the first support surface, to a second position below the remaining portion of the first support surface and substantially level with a second support surface;

transferring the at least one fragile article from the prestaging position to the loading position and onto the substantially flat unarticulated container blank at the container forming position, without substantially elevating the article, and without exerting substantial compressive forces on the, at least one fragile article which would tend to damage the at least one fragile article,

the second vertically movable support surface being positioned at the first position while the at least one fragile article is transferred onto the substantially flat container blank;

forming a container around the at least one fragile article with the unarticulated container blank, while the article is maintained in contact with the bottom of the container and without disturbing the at least one article, by moving the second vertically movable support surface to the second position and causing one or more portions of the container blank to come into contact with and pass one or more substantially fixed sequential forming members, so as to cause the one or more portions of the container blank to be moved into articulated positions forming a substantially articulated container about said fragile article, the weight of the at least one fragile article assisting in the articulation of the one or more portions, by restraining the container blank in place on the second vertically movable support surface during the movement of the second vertically movable support surface from the first position to the second position, the forming of the container occurring substantially without the exertion of force upon the at least one fragile article, from outside the container; and

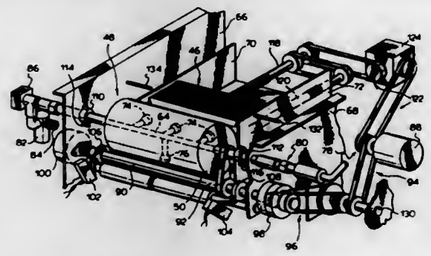
completing closing of the container formed around the at least one fragile article.

5,598,686

MAIL PROCESSING EQUIPMENT

Trevor W. Owen, Mississauga, Canada, assignor to Owen Tri-Cut Limited, Mississauga, Canada

Filed Nov. 13, 1995, Ser. No. 557,868
Int. Cl.[6] B65B *43/40*
U.S. Cl. 53—492 **12 Claims**



1. A method for exposing the contents of envelopes for removal, comprising the steps of:

providing a horizontal stack of envelopes in which the envelopes are generally vertically disposed, each envelope having previously been opened along a first longitudinal edge at the top of the stack and each of two generally vertical side edges, leaving front and rear panels of the envelopes joined along a second longitudinal edge;

progressively advancing the stack to present successive envelopes to a suction roller at an extraction station, the roller being mounted for turning movement about a generally horizontal axis generally parallel to the longitudinal edge of the envelopes; for each successive envelope:

(i) causing a leading one of said panels of the envelope to adhere to the roller by suction;

(ii) while maintaining said suction, turning the roller through a predetermined angular amount and in a first direction to lift the envelope in said first direction from the stack and draw the said panel away from the contents of the envelope, exposing the contents for removal; and,

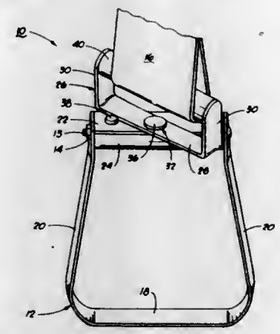
turning the roller in a second direction opposite to said first direction to move said envelope in said second direction, then terminating said suction, and ejecting the empty envelope.

5,598,687

STIRRUP SWIVEL ATTACHMENT

Daniel L. Hester, 15790 SE. 29th St., Choctaw, Okla. 73020

Filed Jun. 5, 1995, Ser. No. 464,549
Int. Cl.[6] B68C *3/00*
U.S. Cl. 54—47 **25 Claims**



1. A stirrup swivel attachment comprising:

a first horizontal web portion having a midpoint and a longitudinal axis;

a horizontal u-shaped member having a second horizontal web portion with a midpoint, a longitudinal axis and two ends, and having flange portions that extend vertically upward from the ends of the second horizontal web portion;

a pivot means for pivotally connecting the first and second horizontal web portions at the midpoints thereof; and

a stop means disposed on the first horizontal web portion at a point removed from the midpoint thereof for stopping the second horizontal web portion when the first horizontal web portion is pivoted about the pivot means so that the longitudinal axes of the first and second horizontal web portions cannot become vertically aligned.

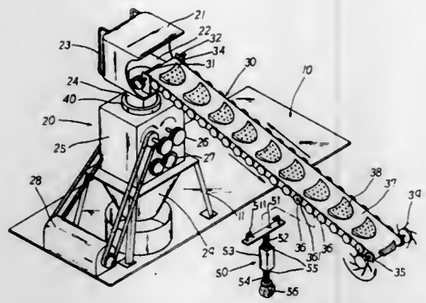
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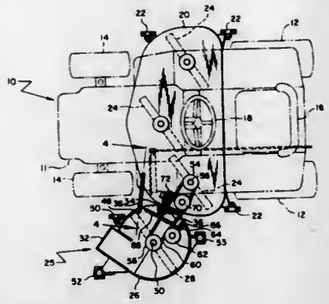
APPARATUS FOR CLEARING WATER CREEPERS

Chih-Hsiung Hsu, Changhua Hsien, Taiwan, assignor to San Hsiung Equipment Co., Ltd., Changhua Hsien, Taiwan

Filed May 2, 1995, Ser. No. 433,919
Int. Cl.[6] A01D *44/00*
U.S. Cl. 56—9 **1 Claim**

1. An apparatus for clearing water creepers, comprising a base, a mashing machine and a conveyor having a conveying belt surrounding an output-end shaft, an input-end shaft and multiple intermediate shafts, wherein:





the base is adapted to be located on a boat or a truck and the mashing machine is fixedly supported on the base by supports;

the mashing machine includes a housing, a head portion formed with an entrance for feeding the creepers into the mashing machine, and a neck portion rotatably disposed in a bearing for the head portion to rotate through 180 degrees, a set of pulling rollers being disposed in an upper section of the housing for breaking the creepers into coarse particles and a set of mashing rollers being disposed in a lower section thereof for mashing the creepers into fine particles, an exhaust funnel being disposed under the housing for discharging mashed creepers;

a first driving motor is disposed on a lateral side of the base, which through belts drives the pulling rollers and mashing rollers;

a pair of fixing seats are disposed in front of the entrance, each of which is formed with a pivot hole for the head shaft of the conveying belt to rotatably fit therein;

the conveying belt is disposed with multiple mesh-like taking spoons on a surface thereof and two rotating propellar-like knife means are respectively disposed on two sides of the input-end shaft of the conveying belt for cutting tangling ones of the creepers into small pieces;

a second motor is disposed behind the fixing seats for driving the conveying belt; and

one of the intermediate shafts, which is located on a lower portion of the conveying belt is formed with rectangular holes, a supporting leg being disposed under the conveying belt, having an upper supporting board with a width larger than that of the conveying belt, two rectangular L-shaped projections being disposed on two ends of the supporting board for fitting into the rectangular holes of the intermediate shaft, under the supporting board being disposed a first thread rod, a thread sleeve, a second thread rod and a brake caster, two nuts being loosenably disposed at two ends of the thread sleeve and screwed respectively on the first and second thread rods, whereby the thread rods are adjustably screwed in the thread sleeve for height-adjustment of the supporting leg and angle-adjustment of the conveyor.

5,598,689

TRIM MOWER ATTACHMENT FOR RIDING MOWERS

Bradley G. Bork, Box 368, Mediapolis, Iowa 52637

Filed May 31, 1995, Ser. No. 455,341
Int. Cl.[6] A01D *34/66*
U.S. Cl. 56—13.7 **9 Claims**

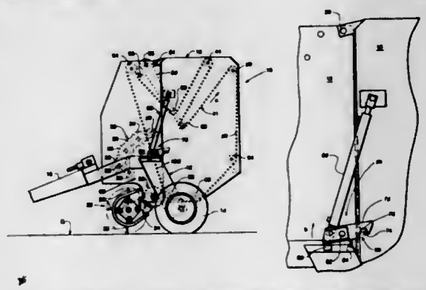
1. An attachment for riding mowers and the like having front and rear ground engaging wheels with a main cutting deck mounted between the front and rear wheels with the sides of the deck extending outwardly beyond the wheels, the main cutting deck having a discharge chute and at least one power driven cutting blade that cuts a path along a cutting plane and discharges the cuttings as the mower moves forwardly and rearwardly, said attachment comprising: an auxiliary cutting deck housing having a forward portion, a rear portion and outside and inside portions between the forward and rear portions; a cutting blade mounted for rotation inside the auxiliary cutting deck housing for cutting a path; a first pivot mounting on the inside portion near the front portion of the auxiliary cutting deck housing for securing the auxiliary cutting deck housing to the side of the main cutting deck opposite the discharge chute of the mower and near the front of the main cutting deck; a second pivot mounting on the inside portion near the rear portion of the auxiliary cutting deck housing for securing the auxiliary cutting deck housing to said side of the main cutting deck; the first and second pivot mountings securing the auxiliary cutting deck housing to the main cutting deck in a position where the path of the main cutting deck and the path of the auxiliary cutting deck housing always overlap; the first and second pivot mountings providing for pivotal upward and downward movement of the auxiliary cutting deck housing relative to the main cutting deck about a substantially horizontal axis to provide for free and continuous floating movement of the auxiliary cutting deck housing upwardly and downwardly relative to the cutting plane of the main cutting deck; a first support wheel secured to the auxiliary cutting deck housing on the front portion of the auxiliary cutting deck housing near the outside portion; and means for connecting the cutting blade of the auxiliary cutting deck housing to the drive system of the mower so as to rotatably drive the cutting blade of the auxiliary cutting deck housing.

5,598,690

TAILGATE LATCHING APPARATUS FOR A ROUND BALER

John R. McClure, New Holland, and H. Nevin Lausch, Denver, both of Pa., assignors to New Holland North America, Inc., New Holland, Pa.

Filed Aug. 7, 1995, Ser. No. 512,257
Int. Cl.[6] A01D *39/00*
U.S. Cl. 56—341 **8 Claims**



1. In a baler for traversing a field to form round bales of crop material, said baler comprising

a main frame,

a tailgate,

shaft means for pivotally coupling said tailgate to said main frame,

means for supporting said frame above the surface of said field,

a pickup mounted forwardly on said main frame for picking up crop material from said field and feeding said crop material rearwardly as said baler traverses said field,

a bale forming chamber defined by means mounted on said frame and said tailgate for forming crop material into a cylindrical package of crop material, said chamber having a generally transverse opening for receiving crop material being fed rearwardly by said pickup,

means for wrapping said cylindrical package of crop material to form a round bale in said bale forming chamber,

lift means for pivoting said tailgate from a closed position to an open position for discharging said bale onto the surface of said field, and

a latching assembly for holding said tailgate in said closed position comprising a latch arm mounted on said main frame, a latch pin mounted on said tailgate in operative relationship with said latch arm, and means for coupling said lift means to said latch arm for moving said latch arm between latched and unlatched positions corresponding to said open and closed positions of said tailgate, the improvement comprising: stop

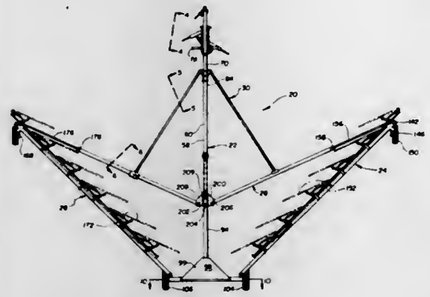
stop means mounted on said main frame for engaging said latch arm to prevent said latch arm from exerting downward force on said tailgate via said latch pin, while maintaining said tailgate in said closed position, to avoid any resulting transmittal of said downward force to said shaft means.

5,598,691

FOLDING HAY RAKE WITH STABILIZING SUPPORT ASSEMBLY

Kenneth J. Peeters, Bear Creek, Wis., assignor to H&S Manufacturing Co., Inc., Marshfield, Wis.

Filed Mar. 1, 1995, Ser. No. 396,568
Int. Cl.[6] A01D *78/14*
U.S. Cl. 56—377 **13 Claims**



1. An agricultural implement comprising:

a primary frame having a front end, a rear end, and opposed sides;

a pair of opposed secondary frames each having an inboard end and an outboard end and each operably supporting a bank of ground driven wheel rakes;

joint means for operably coupling each of said secondary frames adjacent the inboard end to said primary frame adjacent the rear end; and

positioning means to pivotally deploy or retract said secondary frames adjacent relative to said primary frame, the positioning means including:

a deployment slide mounted upon said primary frame and shiftable forward and rearward along said primary frame,

a positioning connector mounted outboard on each of the secondary frames, and

a pair of opposed fixed length spreader bars, each of the spreader bars pivotally connected to the deployment slide at an inboard end and pivotally connected to the positioning connector of the associated secondary frame at an outboard end; and

equalizing means to facilitate dynamic coupling of the secondary frames, when deployed, through coupling of the spreader bars, the equalizing means including:

a ball joint mount intermediate the inboard and outboard ends of the spreader bars,

a dancer assembly slidably mounted on the primary frame for generally unfettered movement forward and rearward along the primary frame, and

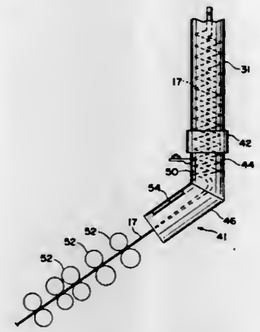
an equalizer bar extending therebetween.

5,598,692

APPARATUS AND METHOD FOR DELIVERY OF SLIVER TO RING SPINNING MACHINES

Kiyohiro Tsuzuki, Greenville, S.C., assignor to TNS Mills Inc., Greenville, S.C.

Continuation of Ser. No. 242,411, May 13, 1994, abandoned, which is a continuation-in-part of Ser. No. 134,461, Oct. 8, 1993, Pat. No. 5,333,440, which is a continuation of Ser. No. 934,877, Aug. 21, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 480,502
Int. Cl.[6] D01H *13/02;5/28*
U.S. Cl. 57—90 **3 Claims**



1. A discrete fitting adapted for engagement with a lower end of a sliver feed tube, sliver being fed through said sliver feed tube from a point adjacent a plant ceiling to a point adjacent a ring spinning device on said plant floor, said fitting comprising:

an inlet directly communicating with said lower end of said sliver tube;

a brake section directly extending vertically downwardly from said inlet, said brake section including a vertically oriented stationary brake to temporarily slow descent of a portion of sliver through said sliver feed tube without blocking said sliver feed tube; and

a slide section extending at an obtuse angle to said brake section, being longer than said brake section and ending immediately adjacent a spinning device.

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5,598,693

RUBBER ARTICLE-REINFORCING STEEL CORDS AND PNEUMATIC TIRES USING SUCH STEEL CORDS

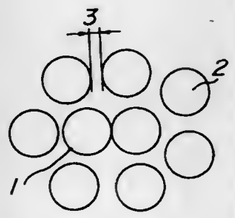
Manabu Yanagisawa, and Kiyoshi Ikehara, both of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Continuation of Ser. No. 840,082, Feb. 24, 1992, abandoned. This application Apr. 5, 1994, Ser. No. 223,130

Claims priority, application Japan, Feb. 25, 1991, 3-050292; Nov. 28, 1991, 3-314613

Int. Cl.[6] D02G *3/36*

U.S. Cl. 57—212 **7 Claims**



1. A steel cord having a core-sheath double layer structure having a 2+7 cord construction, in which a twisting direction of the core is the same as that of the sheath, a forming rate Rc of the filaments of the core is 103 to 120%, and a forming rate Rs of filaments of the sheath is 102 to 115% and Rc≧Rs, the diameter Dc of the filament of the core and the diameter Ds of the filament of the sheath fall within a range of 0.26 to 0.42 mm.

5,598,694

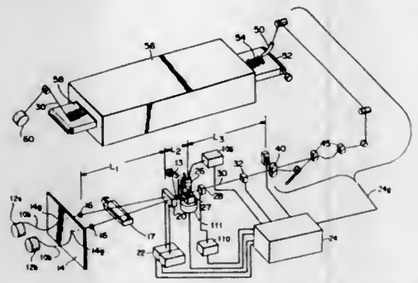
APPARATUS AND METHOD FOR FORMING ALTERNATE TWIST-PLIED YARNS AND PRODUCT

Donald W. Edwards, Wilmington; Judith E. Hodgson, Bear, both of Del.; Steven K. Shibata, Salisbury, Md.; Harold F. Staunton, Avondale, Pa.; Robert E. Taylor, Columbia, and Paul W. Yngve, Chapin, both of S.C., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 72,642, Jun. 8, 1993, Pat. No. 5,465,566. This application May 23, 1995, Ser. No. 447,581

Int. Cl.[6] D01H *5/00;7/46*

U.S. Cl. 57—293 **10 Claims**



1. A method of forming alternate twist-plied yarn wherein yarn strands twisted in one manner are plied together a first amount as they are advanced along a path, the advancing being momentarily stopped and the ply-twisted yarns are bonded to adhesively join the strands before the manner of twisting the yarns is changed and the plying reversed, wherein the improvement comprises the steps of: positioning the plied yarn strands between opposed surfaces axially moveable one toward the other, with at least one yarn-strand overlapping another strand and underlapping another strand; squeezing the positioned strands in a direction aligned with the direction of movement of said opposed surfaces and applying ultrasonic energy to said positioned strands to adhesively join the strands; and permitting balanced expansion of the squeezed strands about said path while preventing lateral movement of the strands from said path between said opposed surface.

5,598,695

ROTOR TYPE OPEN-END SPINNING UNIT HAVING OUTER AND INNER ROTORS

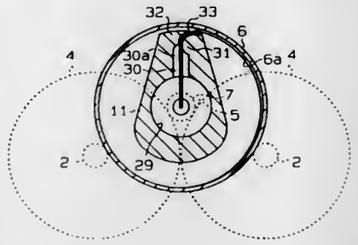
Masashi Kaneko; Noriaki Miyamoto; Yasuyuki Kawai, and Hisaaki Hayashi, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Jul. 26, 1995, Ser. No. 507,094

Claims priority, application Japan, Aug. 5, 1994, 6-184976; Aug. 22, 1994, 6-196677; Apr. 20, 1995, 7-095585

Int. Cl.[6] D01H *4/00*

U.S. Cl. 57—413 **25 Claims**



1. A rotor type open-end spinning unit in which a supply of opened fiber is fed to a collecting section to form a fiber bundle, and in which said fiber bundle is twisted and drawn through a yarn drawing passage to spin a yarn, said spinning unit comprising:

a rotatable outer rotor having an open end, a closed end and a circumferential wall joined to said closed end, said circumferential wall having said collecting section on an inner surface thereof, said collecting section being located in a plane normal to the rotational axis of the rotor;

an inner rotor located inside the outer rotor and being driven independently from the outer rotor, said inner rotor being located at the upstream end of the yarn drawing passage;

a yarn path provided in the inner rotor for guiding the fiber bundle from the collecting section to the yarn drawing passage;

a first guide provided on the inner rotor for contacting the fiber bundle and guiding the fiber bundle to the yarn drawing passage through the yarn path from a leading location in the direction of rotation of the inner rotor relative to the yarn path, said first guide having a curved surface for contacting the fiber bundle; and

a second guide located on the inner rotor radially outward between the first guide and the inner surface of the outer rotor, said second guide serving to guide the fiber bundle toward the yarn path in cooperation with the first guide.

5,598,696

CLIP ATTACHED HEAT SHIELD

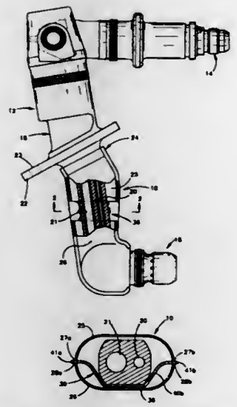
Robert E. Stotts, Newark, N.Y., assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Sep. 20, 1994, Ser. No. 309,382

Int. Cl.[6] F02C *7/22*

U.S. Cl. 60—39.02 **27 Claims**

1. A heat shield assembly for a fuel nozzle of a turbine engine, comprising:



i) a shield housing extending axially along and enclosing at least a portion of the fuel nozzle, and

ii) an isolation member including a base for attachment to the fuel nozzle and at least one flexible arm extending outwardly away from the base and attached to the shield housing at a spaced-apart location from said base, said at least one flexible arm of said isolation member substantially thermally and vibrationally isolating said shield housing from the fuel nozzle.

5,598,697

DOUBLE WALL CONSTRUCTION FOR A GAS TURBINE COMBUSTION CHAMBER

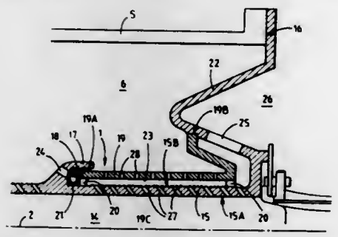
Christine J. M. Ambrogi, Bondoufle; Denis R. H. Ansart, Bois Le Roi; Serge M. Meunier, Le Chatelet En Brie, and Denis J. M. Sandelis, Nangis, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation S.N.E.C.M.A., Paris Cedex, France

Filed Jul. 21, 1995, Ser. No. 505,633

Claims priority, application France, Jul. 27, 1994, 94 09277

Int. Cl.[6] F23R *3/00*

U.S. Cl. 60—39.02 **9 Claims**



1. A wall structure for a wall bounding a combustion chamber of a gas turbine engine comprising:

a) an inner wall having an inner surface facing towards an interior of the combustion chamber and an outer surface facing away from the interior of the combustion chamber, the inner surface forming a boundary of at least a portion of the combustion chamber;

b) an outer wall spaced from the outer surface of the inner wall in a direction away from the interior of the combustion chamber so as to define therebetween a cooling fluid circulatory space, having a forward end and through which circulates a cooling fluid, the outer wall comprising a plurality of files, each tile having supports thereon supporting the tiles on the outer surface of the inner wall, whereby only the outer surface of the inner wall in the cooling fluid circulatory space has a surface roughness Ra of greater than 5;

c) at least one hole in communication with the forward end of the cooling fluid circulatory space to enable passage of a cooling fluid into the cooling fluid circulatory space; and

d) a plurality of first perforations extending through the inner wall in communication with the cooling fluid circulatory space and the combustion chamber to enable passage of the cooing fluid therethrough to form a cooling fluid film on the inner surface to cool same.

5,598,698

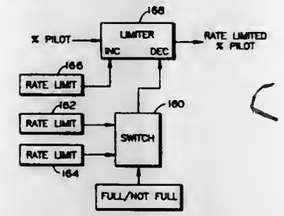
FUEL CONTROL SYSTEM FOR A STAGED COMBUSTOR

John C. Szillat; Nicola Laudadio, both of Rockville, and Teresa Chin, Manchester, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 171,786, Dec. 22, 1993, Pat. No. 5,465,570. This application Apr. 21, 1995, Ser. No. 426,316

Int. Cl.[6] F02C *9/28*

U.S. Cl. 60—39.06 **2 Claims**



1. A method to transition from a pilot mode to a staged mode of a multi-stage combustor for a gas turbine engine, the method including the steps of:

sensing the fill status of the main combustor fuel lines;

reducing the $\%_{pilot}$ flow to the pilot zone; and

flowing the excess fuel into the lines of the main zone;

wherein the step of reducing the $\%_{pilot}$ flow includes the steps of:

(a) rate limiting the reduction of the $\%_{pilot}$ flow by a first rate limit value RL_1 if the main combustor fuel lines are not full;

(b) rate limiting the reduction of the $\%_{pilot}$ flow by a second rate limit value RL_2 for a predetermined amount of time subsequent to an indication that the main combustor fuel lines are full; and

(c) controlling the $\%_{pilot}$ flow as a function of thrust demand thereafter.

5,598,699

LASER INITIATED NON-LINEAR FUEL DROPLET IGNITION APPARATUS

Jimmy D. Few, and James W. L. Lewis, both of Tullahoma, Tenn., assignors to University of Tennessee Research Corporation, Knoxville, Tenn.

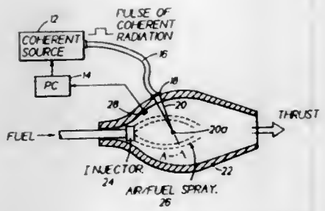
Division of Ser. No. 289,184, Aug. 11, 1994, which is a continuation of Ser. No. 957,613, Oct. 6, 1992, Pat. No. 5,404,712. This application May 31, 1995, Ser. No. 455,200

Int. Cl.[6] F02C *7/266*

U.S. Cl. 60—39.821 **8 Claims**

1. Apparatus for igniting an air/fuel spray comprised of fuel droplets, the apparatus comprising:

coherent optical source means including means for introducing at least one pulse of coherent radiation into the air/fuel spray, the pulse generating free electrons and initiating a development of a plasma within the air/fuel spray;



means for maintaining the pulse of coherent radiation for pumping the plasma; and

means for terminating the pulse of coherent radiation at a time after the plasma has reached a predetermined energy and before a time that an ignition of the air/fuel spray occurs.

5,598,700

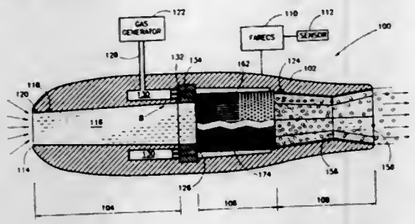
UNDERWATER TWO PHASE RAMJET ENGINE

Hezi Varshay, Netanya, and Alon Gany, Haifa, both of Israel, assignors to Dimotech Ltd., Haifa, Israel

Filed Jun. 30, 1994, Ser. No. 268,586

Int. Cl.[6] B63H *11/00*

U.S. Cl. 60—221 **21 Claims**



1. An underwater two-phase ramjet engine propulsion unit, comprising:

(a) an inlet for receiving a flow of water;

(b) compressed gas injection means for injecting compressed gas into said flow of water;

(c) a mixing chamber for mixing said compressed gas with said flow of water to provide a two-phase flow of working fluid;

(d) a control system for controlling said compressed gas injector means so as to maintain said two-phase flow of working fluid in the bubbly regime; and

a nozzle for accelerating said two-phase flow of working fluid so as to generate a two-phase jet, said compressed gas injection means including a supersonic gas injector.

5,598,701

FRANGIBLE CONNECTION FOR A THRUST REVERSER FOR A DUCTED FAN GAS TURBINE

Arnold C. Newton, Derby, England, assignor to Rolls-Royce plc, London, England

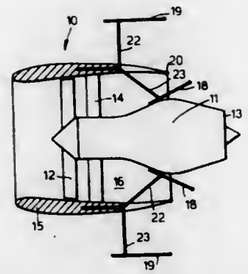
Filed Jan. 31, 1995, Ser. No. 381,493

Claims priority, application United Kingdom, Feb. 1, 1994, 9401836

Int. Cl.[6] F02K *3/02*

U.S. Cl. 60—226.2 **7 Claims**

1. A ducted fan gas turbine engine for aircraft propulsion, said engine including a thrust reverser comprising a plurality of doors which are each pivotable between a first, deployed position in which said doors deflect at least part of the exhaust efflux of said engine to provide aircraft braking, and a second, stowed position in which said doors do not provide such exhaust efflux deflection, said doors being attached to the remainder of said engine for said pivotal movement by frangible couplings, said frangible couplings being selected to be of such strength that said frangible couplings fracture to release said doors from said first, deployed position in the event that said thrust reverser is deployed when the airspeed of said engine is above a predetermined level, means being provided to maintain the attachment of said doors to said engine in a substantially non-thrust deflecting manner following such a fracture of said frangible couplings, by allowing pivoting of said doors to said non-thrust deflecting position.



5,598,702

METHOD AND APPARATUS FOR CONTROLLING THE AIR-FUEL RATIO OF AN INTERNAL COMBUSTION ENGINE

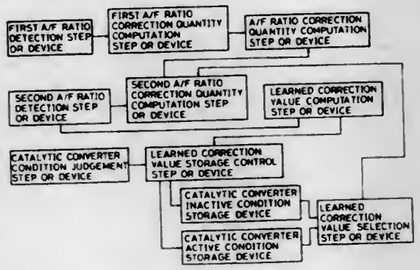
Akira Uchikawa, Atsugi, Japan, assignor to Unisia Jecs Corporation, Atsugi, Japan

Filed Feb. 16, 1995, Ser. No. 389,829

Claims priority, application Japan, Feb. 17, 1994, 6-019720

Int. Cl.[6] F01N *3/18*

U.S. Cl. 60—274 **12 Claims**



1. A method of controlling the air-fuel ratio of an internal combustion engine, said method comprising:

a first air-fuel ratio detection step for detecting air-fuel ratio using a first air-fuel ratio sensor an output value of which changes in response to a concentration of specific gaseous components in an exhaust gas, said concentration changing with air-fuel ratio in an exhaust passage upstream of an exhaust gas purifying catalyst device provided in an exhaust passage of the internal combustion engine,

a second air-fuel ratio detection step for detecting air-fuel ratio using a second air-fuel ratio sensor an output value of which changes in response to a concentration of specific gaseous components in an exhaust gas, said concentration changing with air-fuel ratio in an exhaust passage downstream of said exhaust gas purifying catalyst device,

a first air-fuel ratio correction quantity computation step for computing a first air-fuel ratio correction quantity corresponding to an output value from said first air-fuel ratio sensor.

a learned correction value computation step for updating a learned correction value, based on a comparison of an output value from said second air-fuel ratio sensor and a reference value,

a second air-fuel ratio correction quantity computation step for computing a second air-fuel ratio correction quantity corresponding to said output value from said second air-fuel ratio sensor, and said learned correction value,

an air-fuel ratio correction quantity computation step for computing a resultant air-fuel ratio correction quantity based on said first air-fuel ratio correction quantity and said second air-fuel ratio correction quantity,

a catalytic converter condition judgement step for determining if the exhaust gas purifying catalytic converter is in an active condition,

a learned correction value storage control step for storing said learned correction value for each operation region in a catalytic converter inactive storage means, when judged by said catalytic converter condition judgement step that the exhaust gas purifying catalytic converter is not in an active condition, and for storing said learned correction value for each operation region in a catalytic converter active storage means, when judged by said catalytic converter condition judgement step that the exhaust gas purifying catalytic converter is in an active condition, and

a learned correction value selection step for selecting as a learned correction value for use in said second air-fuel ratio correction quantity computation step, a learned correction value stored in said catalytic converter inactive storage means, when judged by said catalytic converter condition judgement step that said exhaust gas purifying catalytic converter is not in an active condition, or a learned correction value stored in said catalytic converter active storage means, when judged by said catalytic converter condition judgement step that said exhaust gas purifying catalytic converter is in an active condition.

5,598,703

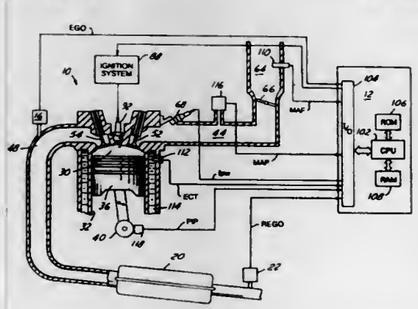
AIR/FUEL CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Douglas R. Hamburg, Bloomfield Hills, and Dennis C. Reed, Plymouth, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 17, 1995, Ser. No. 559,960

Int. Cl.[6] F01N *3/00*

U.S. Cl. 60—285 **10 Claims**



1. An air/fuel control method for an engine responsive to first and second exhaust gas oxygen sensors positioned in the engine exhaust respectively upstream and downstream of a catalytic converter, comprising the steps of:

modulating an engine fuel flow signal;

correcting said fuel flow signal by a feedback variable derived from the first sensor to cause engine air/fuel operation near a desired air/fuel ratio;

offsetting said fuel flow signal by a first value during a first predetermined time to cause a corresponding rich offset in engine air/fuel operation and offsetting said fuel flow signal during a second predetermined time by a second value to cause a corresponding lean offset in engine air/fuel operation; and

biasing said fuel flow signal with a rich fuel bias when the second sensor indicates excessively lean engine exhaust in response to said lean fuel offset and biasing said fuel flow signal with a lean fuel bias when the second sensor indicates excessively rich exhaust gases in response to said rich fuel offset.

5,598,704

HEAT ENGINE AND A METHOD OF OPERATING A HEAT ENGINE

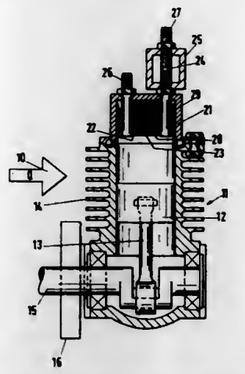
George Sldaway, 24 rue Baudelaire, F-31520 Ramonville, St. Agne, France

Continuation of Ser. No. 827,472, Jan. 29, 1992, abandoned, which is a continuation of Ser. No. 538,537, Jun. 15, 1990, abandoned. This application Dec. 10, 1993, Ser. No. 166,267

Claims priority, application European Pat. Off., Jun. 16, 1989, 89110997

Int. Cl.[6] F02G *1/04*

U.S. Cl. 60—516 **15 Claims**



1. A heat engine having a heat input from an external heat input means, a first working fluid operating in a closed cycle, and a work output means to the surroundings,

said first working fluid being cyclically compressed and expanded in a first subsystem forming a property modulator, thereby cyclically changing at least one of its properties, i.e., pressure, temperature and volume,

said property modulator being connected to a second subsystem forming an energy converter wherein said change of said at least one property of the first working fluid of the property modulator induces a corresponding change in a property of a working substance of said energy converter, said property modulator further being provided with:

(a) an internal work transfer means acting as a work transfer input means to compress said first working fluid during the first portion of a cycle and as a work transfer output means as the first working fluid expands during the second portion of the cycle, the sum of the mechanical work transfer input and output being to zero over the cycle, neglecting friction losses;

(b) the external heat input means; and

(c) heat transfer means transferring heat from said property modulator to said energy converter during the first portion of the cycle and from said energy converter to said property modulator during the second portion of the cycle, thereby inducing the change in the property of the working substance

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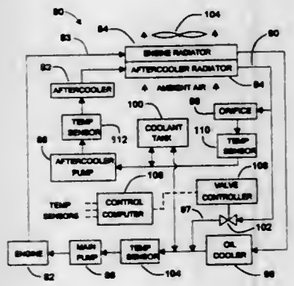
of said energy converter to said property modulator during the second portion of the cycle, thereby inducing the change in the property of the working substance of said energy converter, said energy converter including means for converting said change in property of said working substance of the energy converter to work delivered to said work output means.

5,598,705

TURBOCHARGED ENGINE COOLING APPARATUS

Teoman Uzkan, Indian Head Park, Ill., assignor to General Motors Corporation, Detroit, Mich.

Filed May 12, 1995, Ser. No. 437,391
Int. Cl.[6] F02B *29/04*
U.S. Cl. 60—599 **4 Claims**



1. An internal combustion engine having coolant passages therethrough, a turbocharger for increasing the density of inlet air thereto, an aftercooler for cooling the inlet air from the turbocharger and cooling apparatus comprising:

a main coolant loop comprising a main pump, a main radiator and a main coolant conduit connecting the main pump, the coolant passages of the engine and the main radiator for unidirectional circulation of a liquid coolant;

an aftercooler coolant loop comprising an aftercooler pump, an aftercooler radiator, an aftercooler coolant conduit connecting the aftercooler pump, the aftercooler and the aftercooler radiator for unidirectional circulation of a liquid coolant and a restricted orifice in the aftercooler coolant loop at the inlet of the aftercooler pump, the components of the aftercooler coolant loop providing a lower coolant temperature therein than the coolant temperature provided by the components of the main coolant loop therein when coolant flows of the main and aftercooler coolant loops are maintained separate;

a first linking conduit from the aftercooler loop at the upstream side of the restricted orifice to the inlet of the main pump in the main coolant loop;

a second linking conduit comprising a common coolant tank communicating with the inlets of both the main pump and the aftercooler pump;

valve apparatus comprising a valve in the first linking conduit, the valve having a first condition preventing coolant flow therethrough so as to maintain coolant flows in the main and aftercooler coolant loops separate and a second condition allowing coolant flow therethrough so as to allow mixing of coolant between the main and aftercooler coolant loops; and

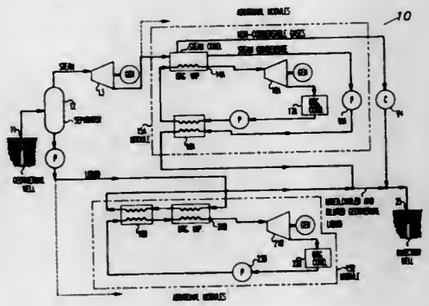
a control responsive to an engine operation related parameter to activate the valve apparatus between its first and second conditions.

5,598,706

METHOD OF AND MEANS FOR PRODUCING POWER FROM GEOTHERMAL FLUID

Lucien Y. Bronicki, Yavne; Moshe Grassiani, Herzliya, and Nadav Amir, Rehovot, all of Israel, assignors to Ormat Industries Ltd., Yavne, Israel

Continuation-in-part of Ser. No. 22,494, Feb. 25, 1993, abandoned. This application Nov. 3, 1993, Ser. No. 145,230
Int. Cl.[6] F03G *4/00*
U.S. Cl. 60—641.2 **13 Claims**



1. A method for producing power from geothermal fluid containing non-condensable gases that include carbon dioxide, said method comprising:

a) separating the geothermal fluid into geothermal steam and geothermal liquid;

b) expanding said steam for producing power and lower pressure steam, condensing said lower pressure steam in a steam condenser using an organic fluid for producing steam condensate and vaporized organic fluid vapor;

c) extracting non-condensable gases from said steam condenser and compressing said non-condensable gases;

d) expanding said organic fluid vapor for producing power and lower pressure organic fluid vapor, condensing said lower pressure organic fluid vapor for producing organic fluid condensate, preheating said organic fluid condensate with said steam condensate for producing cooled steam condensate and preheated organic fluid, and supplying the preheated organic fluid to said steam condenser;

e) supplying said geothermal liquid to a heat exchanger containing additional organic fluid for producing additional organic fluid vapor as well as cooled geothermal liquid;

f) expanding said additional organic fluid vapor for producing power and lower pressure additional organic fluid vapor, condensing said lower pressure additional organic fluid vapor for producing additional organic fluid condensate, and supplying said additional organic fluid condensate to said heat exchanger;

g) introducing the compressed non-condensable gases into said cooled geothermal liquid for forming geothermal liquid effluent; and

h) disposing of said geothermal liquid effluent.

5,598,707

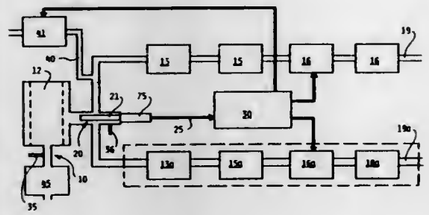
Patent Not Issued For This Number

5,598,708

PHASE RESPONSIVE FLUID DELIVERY

John K. Clark, Kilsyth, Australia, assignor to LPG Engineering Pty Ltd., Kilsyth, Australia

PCT No. PCT/AU93/00402, § 371 Date Jan. 6, 1995, § 102(e) Date Jan. 6, 1995, PCT Pub. No. WO94/03755, PCT Pub. Date Feb. 17, 1994
PCT Filed Aug. 9, 1993, Ser. No. 367,217
Claims priority, application Australia, Aug. 7, 1992, PL4025
Int. Cl.[6] F17C *13/02;7/02*
U.S. Cl. 62—491 **9 Claims**



1. A fluid delivery system for delivering a fluid through a delivery path (**10**), the system in use being in communication with a source of the fluid, the fluid being delivered through the delivery path (**10**) under pressure, the system including a delivery control valve (**16**) associated with the delivery path and which is selectably operable to close and open the delivery path (**10**) for controlling the delivery of fluid through the delivery path, the system being characterised by sensing means (**20**) operatively associated with the delivery path so that, when the delivery control valve is open and the fluid is flowing through the delivery path the fluid passes the sensing means (**20**) in immediate proximity thereto in travelling along the delivery path (**10**) to the delivery control valve (**16**), the sensing means being operative to monitor a dielectric property of the flowing fluid and to sense the presence of vapour or gas phase in the flowing fluid passing the sensing means (**20**) along the delivery path as indicated by a change in the dielectric property being monitored, the sensing means (**20**) being operative to generate an indicating signal indicative of the phase of the fluid, the system further including a control means (**30**) responsive to the indicating signal and operative to cause the delivery control valve (**16**) to close the delivery path upon sensing the presence of a significant proportion of vapour or gas phase in the fluid passing the sensing means (**20**), and being further operative to re-open the delivery control valve (**16**) when a significant proportion of vapour or gas phase is no longer sensed by the sensing means (**20**).

5,598,709

APPARATUS AND METHOD FOR VAPORIZING A LIQUID CRYOGEN AND SUPERHEATING THE RESULTING VAPOR

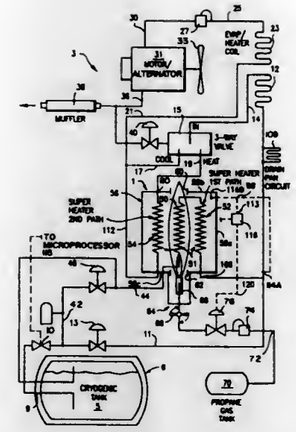
Herman H. Viegas; Bradley G. Ellingson, both of Bloomington, Minn.; Michael A. Aronov, Beachwood, and Roger D. Sheridan, Wadsworth, both of Ohio, assignors to Thermo King Corporation, Minneapolis, Minn.

Filed Nov. 20, 1995, Ser. No. 560,919
Int. Cl.[6] F17C *9/02*
U.S. Cl. 62—50.2 **22 Claims**

1. An apparatus for vaporizing a liquid cryogen and superheating the resulting vapor, comprising:

a combustion type heat source that generates water containing combustion gases;

vaporizer coil means having an inlet conduit for receiving a flow of liquid cryogen, an outlet conduit for expelling vaporized cryogen, and



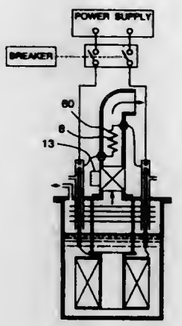
casing means in thermal contact with said heat source for isolating said vaporizer coil means from said water-containing combustion gases while transferring heat from said gases to said coil means substantially by thermal radiation.

5,598,710

SUPERCONDUCTING APPARATUS AND METHOD FOR OPERATING SAID SUPERCONDUCTING APPARATUS

Hiroshi Tomeoku, Hitachi; Kiyoshi Yamaguchi, Mito; Ryukichi Takahashi, Hitachiota; Toshiharu Tominaka, Asaka, and Naoki Maki, Ibaraki-ken, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 22, 1995, Ser. No. 493,402
Claims priority, application Japan, Jul. 4, 1994, 6-152050
Int. Cl.[6] F25B *19/00;* F17C *7/04*
U.S. Cl. 62—51.1 **22 Claims**

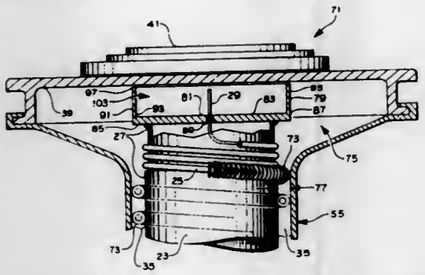


1. A superconducting apparatus comprising a superconducting magnet contained in a cryostat and operated in a very low temperature refrigerant, an emergency gas discharge pipe connected with the cryostat for discharging to the external environment the gas generated in the cryostat at the time of quenching, and an emergency valve provided midway of the emergency gas discharge pipe and adapted to open at the time of quenching;

wherein a gas heating unit for heating the emergency discharge gas is arranged inside the emergency gas discharge pipe.

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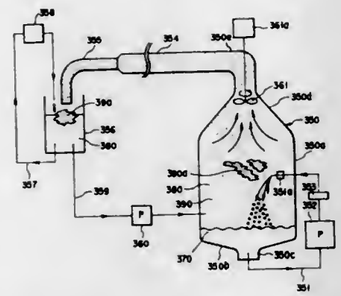
5,598,711
FLUID DEFLECTION METHOD USING A SKIRT
David M. Stubbs, Mountain View, Calif., assignor to Lockheed Martin Corporation, Bethesda, Md.
Filed Dec. 20, 1995, Ser. No. 575,199
Int. Cl.[6] F25B *19/02*
U.S. Cl. 62—51.2 **8 Claims**



1. A method for deflecting flow comprising:
(A) providing a nozzle for directing a fluid, the nozzle having:
(i) an upper end,
(ii) an orifice at the nozzle upper end from which a fluid emanates, and
(iii) an external diameter,
(B) positioning a fluid impinged surface facing the nozzle orifice so that the fluid is directed from the nozzle onto the fluid impinged surface,
(C) positioning a skirt around the exit nozzle, the skirt comprising:
(i) a remote portion having:
(a) an interior surface surrounding the nozzle,
(b) an exterior surface opposite the interior surface,
(c) an outer edge, and
(d) an opening slightly larger than the nozzle external diameter through which the nozzle extends closer to the fluid impinged surface than the remote portion interior surface, and
(ii) a close portion extending from the outer edge of the remote portion towards the fluid impinged surface and extending closer to the fluid impinged surface than the nozzle orifice, the close portion having:
(a) an interior surface facing towards the nozzle, and
(b) an opposite facing exterior surface, and
(D) spacing the close portion a small gap from the fluid impinged surface, the gap directing the flow of the fluid along the fluid impinged surface.

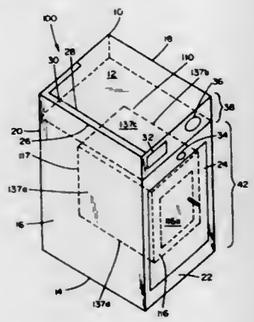
5,598,712
LATENT HEAT ACCUMULATION SYSTEM
Yutaka Watanabe; Takayuki Hachimonji, both of Yokohama; Katsuya Yamashita; Sanae Sekita, both of Tokyo, and Tsuyoshi Noma, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Continuation-in-part of Ser. No. 417,470, Apr. 5, 1995, Pat. No. 5,481,882, which is a continuation of Ser. No. 22,556. Feb. 25, 1993, abandoned. This application Aug. 15, 1995, Ser. No. 518,580
Claims priority, application Japan, Feb. 28, 1992, 4-043720; Mar. 5, 1992, 4-048155; Apr. 1, 1992, 4-078112
Int. Cl.[6] F25D *3/00*
U.S. Cl. 62—59 **11 Claims**

1. A latent heat accumulation system having a transfer mechanism, said system comprising:
a production tank in which a first fluid is put in direct contact with a second fluid, which does not combine with the first fluid, has a specific gravity greater than that of the first fluid



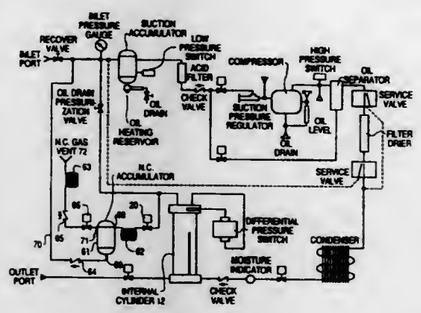
and is cooled to a preset temperature level, thus producing a solid phase material of the first fluid;
a recovery section, formed at a lower part of said production tank, for recovering the second fluid descending within the production tank;
an upward pipe, connected to said production tank, for guiding upward a two-phase stream of said first fluid and said solid phase material within the production tank;
a transfer pipe, connected to said upward pipe, for transferring said two-phase stream to a specified place;
a reservoir tank for storing the two-phase stream transferred via said transfer pipe;
a first fluid circulation system for draining the first fluid from the reservoir tank and introducing the drained first fluid into the production tank; and
a second fluid circulation system for cooling the second fluid recovered by said recovery section and feeding the cooled second fluid into the production tank for bringing the second fluid into direct contact with the first fluid.

5,598,713
PORTABLE SELF-CONTAINED COOLER/FREEZER APPARATUS WITH NITROGEN ENVIRONMENT CONTAINER
Anthony R. Bartilucci, Wantagh, N.Y., assignor to Grumman Corporation, Los Angeles, Calif.
Filed Dec. 1, 1994, Ser. No. 347,700
Int. Cl.[6] F24F *3/16*
U.S. Cl. 62—78 **24 Claims**



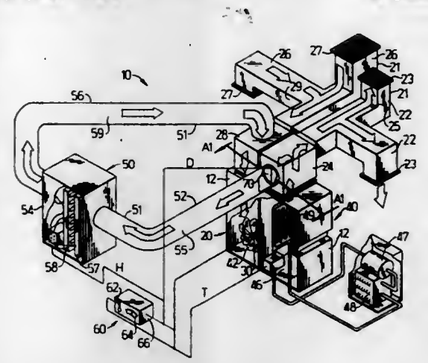
1. A self-contained cooler/freezer apparatus for holding and preserving items which need to be stored at refrigerated or frozen temperatures, said apparatus comprising:
(a) a first insulated container having a first storage compartment and a second coolanat compartment insulated from said first storage compartment for holding cargon dioxide in solid form, a first gas passageway connecting said second coolant compartment to said first storage compartment, a second gas passageway connecting said first storage compartment to said second coolant compartment;
(b) a second container having an enclosed environment for storing said items therin, said second container placed in said first storage compartment of said first insulated container;
(c) at least one temperature sensing device mounted within said apparatus for sensing current temperatures within said second container;
(d) means of circulating gaseous carbon dioxide fromed by the sublimation or said solid carbon dioxide to said first storage compartment from said second coolant compartment, and
(e) control means for maintaing the temperture within said first storage compartment and said second container at a predetermined value, said control means including means for determining the difference between a courrent sensed temperature of said apparatus with said predetermined temperature value and enabling said circulating means to circulate an amount of said gaseous carbon dioxide in accordance with said temperature difference.

5,598,714
METHOD AND APPARATUS FOR SEPARATION OF REFRIGERANT FROM A PURGE GAS MIXTURE OF REFRIGERANT AND NON-CONDENSIBLE GAS
D. Wayne Strout, and Thomas L. Crandall, both of York, Pa., assignors to RTI Technologies, Inc., York, Pa.
Continuation-in-part of Ser. No. 401,263, Mar. 9, 1995, Pat. No. 5,570,590, which is a continuation of Ser. No. 19,659, Feb. 19, 1993, abandoned. This application Sep. 18, 1995, Ser. No. 529,648
Int. Cl.[6] F25B *43/04*
U.S. Cl. 62—85 **15 Claims**



14. A method for separation of non-condensible gas from refrigerant which has been recovered from a refrigerant system, comprising collecting refrigerant recovered from a refrigerant system in a collector tank, said refrigerant containing non-condensible gas as an impurity, blowing off non-condensible gas from the collector tank which has separated from the refrigerant in said collector tank, directing the blow off gas, which may contain at least small amounts of refrigerant liquid and vapor mixed with non-condensible gas, to an unheated accumulator by way of a valved collector tank blow-out pipe and processing the blow off gas in the accumulator in a manner which allows gravity separation of refrigerant liquid and vapor in the blow off gas from the non-condensible gas in the blow off gas, and removing the separated non-condensible gas and refrigerant in the accumulator through respective outlets in said accumulator while said blow-off gas is directed to said accumulator through said valved blow-out pipe.

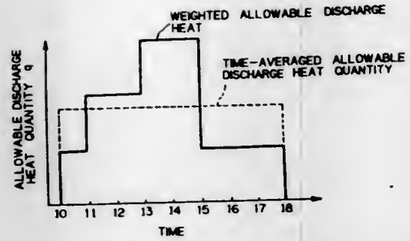
5,598,715
CENTRAL AIR HANDLING AND CONDITIONING APPARATUS INCLUDING BY-PASS DEHUMIDIFIER
John H. Edmisten, P.O. Box 2028, Boone, N.C. 28607
Filed Jun. 7, 1995, Ser. No. 485,729
Int. Cl.[6] F25B *49/00*; G05D *21/00*
U.S. Cl. 62—176.6 **10 Claims**



1. An air handling and conditioning apparatus comprising:
an air handler comprising
an air supply duct;
an air return duct; and
air circulation means disposed between said air supply duct and said air return duct for circulating air through said air supply duct to a plurality of enclosed spaces and from the enclosed spaces through said air return duct;
an air conditioner disposed between said air supply duct and said air return duct for cooling the air passed therethrough by said air circulation means;
by-pass dehumidification means for maintaining the relative humidity of the air in the enclosed spaces below a predetermined value, said dehumidification means comprising
a first heat exchanger for cooling and dehumidifying the air;
a second heat exchanger downstream of said first heat exchanger for reheating the air;
an inlet duct extending between said air supply duct and said first heat exchanger; and
an outlet duct extending between said second heat exchanger and said air return duct, said air circulation means passing air through said dehumidification means at a substantially constant temperature; and control means for controlling the operation of said air circulation means, said air conditioner and said dehumidification means and operable in a first mode where only said air conditioner and said air circulation means operate to cool the air and a second mode where only said by-pass dehumidification means and said air circulation means operate to dehumidify the air.

5,598,716
ICE THERMAL STORAGE REFRIGERATOR UNIT
Syouji Tanaka; Naoyuki Inoue, and Kyoichi Katoh, all of Kanagawa-ken, Japan, assignors to Ebara Corporation, Tokyo, Japan
Filed Jul. 13, 1995, Ser. No. 501,788
Claims priority, application Japan, Jul. 18, 1994, 6-186806; Jun. 15, 1995, 7-171577
Int. Cl.[6] F25D *17/02*
U.S. Cl. 62—185 **14 Claims**

1. A method for operating an ice thermal storage refrigerator unit having a brine path including a refrigerator, an ice thermal storage tank, a water heat exchanger, a brine pump, and control valves,

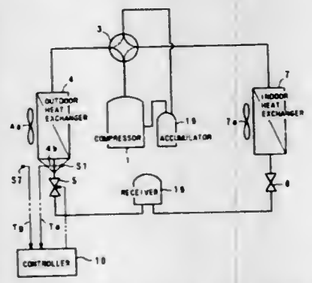


which are connected by piping, and a cold water path including said water heat exchanger, a cooling load, and a cold water pump, which are connected by piping, so that brine is cooled in said refrigerator, and water in said ice thermal storage tank is frozen by said brine, thereby storing heat, and when heat is to be discharged, said brine is cooled by heat of fusion of the ice in said ice thermal storage tank, and said brine is introduced into said water heat exchanger to cool cold water, thereby taking out a cooling capacity, said method comprising the steps of: measuring heat content of said brine in said brine flow path for detecting a quantity of stored heat remaining in said ice thermal storage tank and for detecting a quantity of heat discharged from said ice thermal storage tank, and calculating an allowable discharging heat quantity from the quantity of stored heat remaining in said ice thermal storage tank.

5,598,717
AIR CONDITIONER HAVING FROST PREVENTING MEMBER

Naohito Sakamoto, Ooizumimachi; Ichiro Kamimura, Kasakakemachi; Yukiharu Inoue, Ooizumimachi, and Kazuhiro Shimura, Ojimamachi, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Sep. 29, 1995, Ser. No. 536,441
Claims priority, application Japan, Nov. 29, 1994, 6-295333
Int. Cl.[6] F25B *13/00*
U.S. Cl. 62—211 **4 Claims**

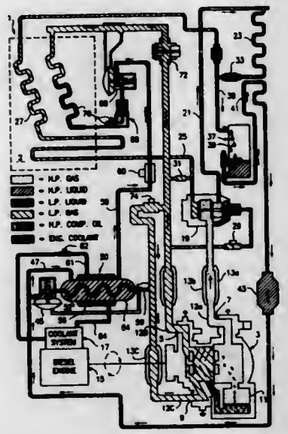


1. An air conditioner in which a non-azeotropic mixture refrigerant formed of a high boiling-point refrigerant and a low boiling-point refrigerant circulates through a refrigerant circuit comprising a compressor, an indoor heat exchanger, an expansion valve and an outdoor heat exchanger which are connected to one another in a loop form, characterized by comprising:
- a first temperature sensor for detecting a temperature at an inlet of said outdoor heat exchanger when said outdoor heat exchanger serves as an evaporator in heating cycle;
- a second temperature sensor for detecting an outside air temperature; and
- a controller for controlling an opening degree of said expansion valve on the basis of a temperature difference between the outside air temperature and the inlet temperature of said evaporator.

5,598,718
REFRIGERATION SYSTEM AND METHOD UTILIZING COMBINED ECONOMIZER AND ENGINE COOLANT HEAT EXCHANGER

Peter W. Freund, Bloomington; Lars I. Sjoholm, Burnsville, and Joseph E. LaBossiere, Lino Lakes, all of Minn., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jul. 13, 1995, Ser. No. 502,043
Int. Cl.[6] B60H *1/32*
U.S. Cl. 62—238.6 **18 Claims**



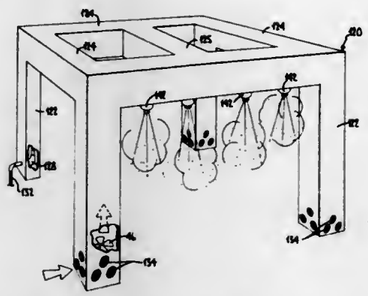
1. A transport refrigeration system for heating and cooling a conditioned space, comprising:
- a refrigerant compressor having a suction port and a discharge port and being driven by an internal combustion engine having a fluid coolant system;
- a refrigeration circuit including a heating coil and an evaporator assembly thermally connected to a conditioned space;
- mode valve means for selectively routing refrigerant from said compressor discharge port in either a heating path to said heating coil or a cooling path to said evaporator assembly via a condenser, and
- a heat exchanger means upstream of said suction port of said compressor for transferring heat from coolant from said engine coolant system to refrigerant entering said suction port when said mode valve means routes refrigerant along said heating path, including a thermal buffer means for moderating the transfer of heat to said refrigerant from said coolant, wherein said heat exchanger means includes a tube means for conducting a flow of refrigerant to said compressor suction port, a shell means surrounding said tube means for containing and conducting refrigerant from said circuit, and a jacket means overlying said shell means for conducting a flow of engine coolant, and said thermal buffer means is formed from refrigerant contained in said shell means.

5,598,719
EVAPORATIVE COOLING APPARATUS

Michael Jones, and Mark Hensley, both of Culver City, Calif., assignors to CZ, LLC, Huntington, N.Y.

Continuation of Ser. No. 261,474, Jun. 17, 1994, Pat. No. 5,497,633. This application Nov. 22, 1995, Ser. No. 562,361
Int. Cl.[6] F28D *5/00*
U.S. Cl. 62—304 **8 Claims**

1. An evaporative cooling unit comprising:
- a hollow structure defining an elongated chamber with at least one air inlet and at least one discharge outlet;

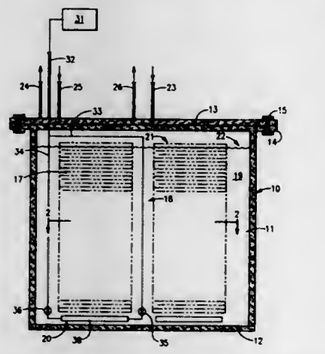


a blower disposed within the structure between the inlet and the outlet, the blower drawing ambient air into the chamber and forcing the air through the outlet to establish an air flow;
- a source of pressurized water;
- at least one atomizing spray nozzle coupled to the source, for emitting atomized water into the air flow; and,
- wherein the discharge outlet is redirectable for establishing an area of cooling adjacent to the structure.

5,598,720
AIR BUBBLE HEAT TRANSFER ENHANCEMENT SYSTEM COOLNESS STORAGE APPARATUS

Mark M. MacCracken, Englewood, N.J.; Brian M. Silvetti, Tompkins Cove, N.Y., and Jose R. Bonet, North Bergen, N.J., assignors to Calmac Manufacturing Corporation, Englewood, N.J.

Filed Aug. 2, 1995, Ser. No. 510,204
Int. Cl.[6] F25D *17/02*
U.S. Cl. 62—434 **15 Claims**

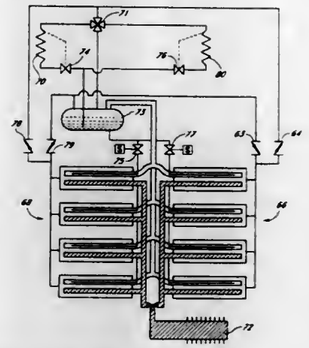


1. In coolness storage apparatus wherein heat exchange tubes are arranged in a tank and wherein inlet and outlet headers are connected to the tubes so that brine flows in the tubes to freeze substantially solid and melt a mass of PCM around the tubes during cycles of coolness charging and discharging respectively, an air bubble heat transfer enhancement system comprising
- a) pressurized air supply conduit means in said tank,
- b) air bubbler means connected to the air supply conduit means and located beneath the heat exchange tubes,
- c) aperture means in the air bubbler means from which bubbles stream upwardly into the liquid PCM during the discharge cycle and upon introduction of pressurized air into the air bubbler means through the air supply conduit means, and
- d) heat transfer elements extending upwardly from adjacent the air bubbler means in thermal conductive contact with the heat exchange tubes for accelerating PCM melting early in the discharge cycle to open channels through which the air bubbles can stream upwardly through the melted PCM.

5,598,721
HEATING AND AIR CONDITIONING SYSTEMS INCORPORATING SOLID-VAPOR SORPTION REACTORS CAPABLE OF HIGH REACTION RATES

Uwe Rockenfeller, and Lance D. Kirol, both of Boulder City, Nev., assignors to Rocky Research, Boulder City, Nev.

Continuation-in-part of Ser. No. 104,427, Aug. 9, 1993, Pat. No. 5,441,716, which is a continuation-in-part of Ser. No. 931,036, Aug. 14, 1992, Pat. No. 5,328,671, and Ser. No. 975,973, Nov. 13, 1992, Pat. No. 5,298,231, which is a continuation of Ser. No. 320,562, Mar. 8, 1989, abandoned, and a continuation-in-part of Ser. No. 327,150, Oct. 21, 1994, Pat. No. 5,477,706, which is a continuation of Ser. No. 59,548, May 11, 1993, abandoned. This application Mar. 28, 1995, Ser. No. 412,147
Int. Cl.[6] F25B *15/00*
U.S. Cl. 62—480 **69 Claims**



1. A heating system comprising:
- (a) one or more reactors or reactor banks each containing a complex compound formed by adsorbing a polar gas on a metal salt, and in which said polar gas is alternately adsorbed and desorbed on said complex compound, said metal salt comprising a halide, nitrate, nitrite, oxalate, perchlorate, sulfate or sulfite of an alkali metal, alkaline earth metal, transition metal, zinc, cadmium, tin or aluminum, or sodium borofluoride or a double metal chloride or bromide, and wherein said complex compound in said one or more reactors is formed by restricting the volumetric expansion and controlling the density thereof, during said adsorption of said polar gas on said metal salt, whereby said complex compound is capable of increased reaction rates in moles of said polar gas adsorbed and/or desorbed per mole of said complex compound per hour at adsorption or desorption times of less than 60 minutes, respectively, as compared to a complex compound formed without restricting the volumetric expansion and controlling the density thereof said one or more reactors each having a heat transfer section for thermally exposing a heat transfer fluid and/or condensed polar gas in heat exchange communication with said complex compound;
- (b) condenser means comprising at least one condenser for condensing said polar gas and heat recovery means cooperating therewith for recovering heat generated in said condenser means;
- (c) evaporator means comprising at least one evaporator for evaporating condensed polar gas;
- (d) a first conduit for directing condensed polar gas from said condenser means to said evaporator means;
- (e) one or more second conduits cooperating with said condenser means and said one or more reactors for directing

condensed polar gas from said condenser means to said reactor heat transfer section and for directing vaporized polar gas therefrom to said condenser means;

(f) one or more third conduits for directing polar gas from said evaporator means to said reactors and from said reactors to said condenser means; and

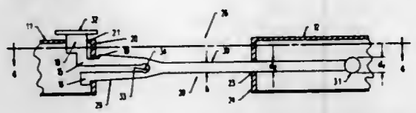
(g) heating means cooperating with said one or more reactors for heating said complex compound therein.

5,598,722

BANGLE CLOSING MECHANISM

Edwin F. Leach, II; Marinko Markic, both of Attleboro, Mass.; Ronald E. Precourt, Jr., Woonsocket, R.I.; Michael A. Gayton, Sandwich, and Dwarika P. Agarwal, Attleboro, both of Mass., assignors to Leach & Garner Company, North Attleboro, Mass.

Filed Apr. 3, 1995, Ser. No. 415,645
Int. Cl.° A44C *5/00*
U.S. Cl. 63—7 **17 Claims**



1. A bangle closing mechanism for releasably holding an arcuate first tubular bangle half to an arcuate second tubular bangle half, said second bangle half having a narrowed opening in a marginal end portion, comprising:

a keeper bar fixedly mounted to said first arcuate bangle half, said keeper bar having an intermediate portion slidably penetrating said narrowed opening and having an enlarged substantially-spherical head mounted on its distal end, the largest diameter of said spherical head when projected into a plane being greater than the largest diameter of said narrowed opening when projected into said plane;

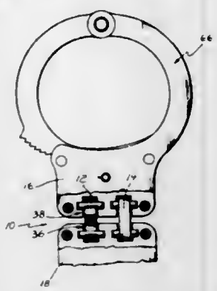
whereby said enlarged head will prevent said keeper bar from being withdrawn from said second arcuate bangle half and will facilitate sliding movement of said keeper bar within said second arcuate bangle half when said arcuate bangle halves are moved relatively toward or away from one another.

5,598,723

HINGE ASSEMBLY FOR HANDCUFFS

Robert J. Ecker, 128 Carriage Rd., Chicopee, Mass. 01013, and Paul W. Koetsch, 43 Treetop Ave., Springfield, Mass. 01118

Filed Jun. 22, 1995, Ser. No. 493,717
Int. Cl.° E05B *75/00*
U.S. Cl. 70—16 **8 Claims**



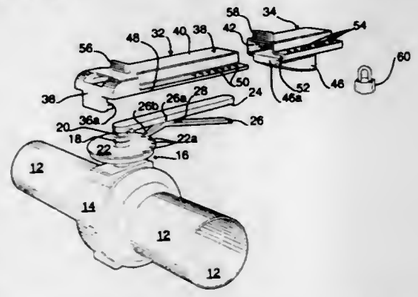
1. A hinge assembly in a pair of handcuffs, said assembly comprising: at least one elongated link pivotally connected, at opposite end portions, to the handcuffs by trunnion pins, wherein the link has at least one oversized slot means, through which one of the trunnion pins extends, to allow the handcuffs to move axially relative to one another, but prevent twisting of the handcuffs, and to allow the handcuffs, when side-by-side, to collapse flush against one another.

5,598,724

BUTTERFLY VALVE SAFETY LOCK

Mario Primeau, 8710, rue Marjolaine, St-Léonard (Québec), Canada

Filed Dec. 26, 1995, Ser. No. 578,778
Int. Cl.° F16K *35/06*
U.S. Cl. 70—177 **8 Claims**



1. A safety lock device for use in releasably locking the head of a butterfly valve in a fluid flow conduit, this valve head of the type having a radial shaft rotatably mounted into a fixed radial tubular extension, a notched discoid plate supported by the fixed tubular extension, a handle transversely carried by the rotatable shaft with an elbowed lever intermediately pivoted to the handle, the lever and handle having distal end portions being divergent in an operative lever condition; wherein said safety lock device comprises:

(a) an elongated male member, having an elongated channel part at one end and a hooking part at the opposite end, said hooking part for releasable hooking engagement with the valve head discoid plate for mounting said male member to the valve head, said elongated channel part being sized for full engagement by the valve handle;

(b) a female member, having a casing part with a mouth, sized for through engagement by said channel part, and a wedge part, integrally depending from said casing part and sized for frictional engagement between the diverging distal end portions of the valve handle and lever; and

(c) locking means, for releasably interlocking said male and female members when said male member channel part is engaged into said female member casing part, and for concurrently locking the diverging valve lever by preventing release of said wedge part from between the valve handle and valve lever.

5,598,725

STEERING WHEEL LOCK WITH ALARMING DEVICE

Chao-Sheng Chang, 6FL. No. 15, Lane 41, Section 4, Tsung-Shing Road, San-Tsung City Taipei Shieng, Taiwan

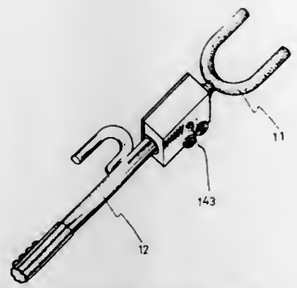
Filed Mar. 28, 1996, Ser. No. 620,548
Int. Cl.° B60R *25/02*
U.S. Cl. 70—209 **2 Claims**

1. A steering wheel lock for use on vehicles, comprising:

a lock stick having a smooth front section connected to

a locking section having a plurality of spaced dentiform protrusions with a recess defined between every pair of protrusions;

a receiving sheath in which said lock stick is movably inserted;



a guard box mounted to said receiving sheath;

a lid engaged with said guard box having an openable gate for easy replacement of battery means housed therein;

a first alarm means in connection to an actuation switch;

a second alarm means in connection to an actuation switch;

a power supply means housed in said guard box for supply of power to said first and second alarm means;

an indirect transmission means disposed in a through hole defined in said receiving sheath; said guard box having a lock mounting hole

a speaker being disposed adjacent to the lock mounting hole;

an LED disposed next to said lock mounting hole being connected to said first alarm means and said second alarm means by wires;

said guard box having a number of retaining members for fixing said first and said second alarm means in place; said first alarm means having an actuation switch which is equipped with a retractable button;

said indirect transmission means having a drive pin having a top head disposed in alignment with said retractable button of said actuation switch in such a manner that as said top head is urged to move upwardly, said retractable button is pushed inwardly;

said transmission means having a driven end which falls into one of said recesses of said dentiform protrusions of said lock stick so as to keep said top head of said drive pin from coming into contact with said actuation switch;

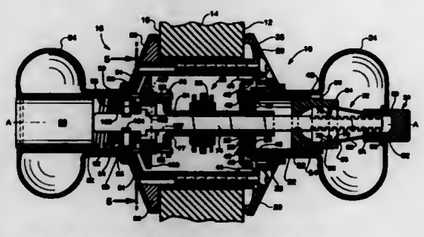
said top head of said drive pin of said transmission means coming into contact with said retractable button, forcing said button to be pressed inwardly, as said driven end of said transmission means is in contact with said smooth front section of said lock stick, rendering said first alarm means in a reset state without being actuated.

5,598,726

PRIVACY LOCKSET FOR A DOOR

William H. Cordle, San Mateo, Calif., assignor to Schlage Lock Company, San Francisco, Calif.

Filed Mar. 29, 1996, Ser. No. 622,909
Int. Cl.° G05G *5/00*
U.S. Cl. 70—224 **26 Claims**



1. A lockset for a door, said lockset comprising:

an outside chassis and an inside chassis;

an outside spindle and an inside spindle, said outside spindle and said inside spindle being mounted in said outside chassis and said inside chassis, respectively, for rotation about a common axis;

a hollow driver spindle rotatable about said axis for driving a latch operating assembly;

a locking slide movable along said axis between an unlocked position in which said locking slide connects said outside spindle in driving relationship with said driver spindle and a locked position wherein said outside spindle is disconnected from said driver spindle;

a plunger bar having a rectangular section, said plunger bar being movable along said axis between a first position and a second position, said plunger bar extending through said driver spindle and having a first end portion extending into said outside spindle and at least one notch located in said first end portion;

a push button coupled to said plunger bar for moving said plunger bar from said first position to said second position as a manual force is applied to said push button;

means for moving said locking slide from said unlocked position to said locked position as said plunger bar is moved from said first position to said second position;

latching means for holding said plunger bar in said second position after the manual pressure is removed from said push button, said latching means including a coupler movably disposed in said outside spindle and a hook spring mounted on said coupler for movement therewith, said hook spring having a leg engaging said notch;

means for unlatching said latching means to permit movement of said plunger bar to said first position; and,

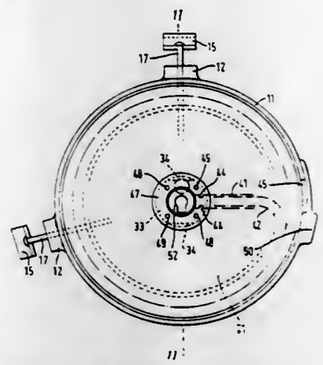
a return spring for moving said plunger bar from said second position to said first position when said latching means is unlatched, said return spring also moving said locking slide from said locked position to said unlocked position.

5,598,727

LOCKS FOR BICYCLES AND THE LIKE

Peter A. White, Harrington House, Harrington Road, Altrincham, Cheshire WA14 14QY, Great Britain

PCT No. PCT/GB94/01076, § 371 Date Jan. 25, 1995, § 102(e) Date Jan. 25, 1995, PCT Pub. No. WO94/28275, PCT Pub. Date Dec. 8, 1994
PCT Filed May 19, 1994, Ser. No. 374,699
Claims priority, application United Kingdom, May 28, 1993, 9311099
Int. Cl.° B62H *5/00;* **E05B** *71/00*
U.S. Cl. 70—233 **7 Claims**



1. A lock for a bicycle, said lock comprising:

a first fixed casing member adapted to be secured to a frame member of a bicycle and a second casing member which is movable relative to said first casing member;

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said first casing member being cup-shaped having a base and a cup wall, wherein frame member mounting means are provided on an outer surface of said cup wall and a raised boss extends from said base at a central region thereof, wherein said second casing member is adapted to fit into said first casing member and to engage with said raised boss in such a manner that said second casing member is rotatable with respect to said first casing member;

a wire cable, one end of which is secured to said second casing member and said wire cable then being wound around said second casing member when said lock is not in use, the other end of said wire cable extending through a slot in said cup wall of said first casing member;

locking means being provided with which said other end of said wire cable is engageable; and

retracting means being provided whereby said second casing member is arranged to rotate with respect to said first casing member to draw said wire cable into said first casing member by being wound round said second casing member as the latter is rotated by said retracting means, wherein said wire cable is arranged to complete an electric circuit when said other end of said wire cable is engaged in said locking means and wherein said lock is provided with an alarm means with an annunciator selected from the group including audible and visual alarms, said alarm means activated by vibration for only a limit pre-set period of time if attempts are made to move said lock and to be activated continually if said wire cable is cut.

5,598,728

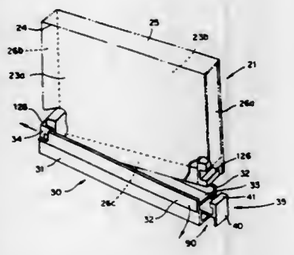
SECURITY CASE

Michael Lax, Westbury, N.Y., assignor to Autronic Plastics, Inc., Westbury, N.Y.

Filed Mar. 3, 1995, Ser. No. 398,280

Int. Cl.[6] E05B *47/00*

U.S. Cl. 70—276 **17 Claims**



6. A locking mechanism for preventing opening of a case having two opposing sidewalls, each with a recess or notch, comprising:

a housing having a main surface;

two generally parallel flanges extending from the main surface of the housing;

a fixed member at one end of the housing for engaging one of the recesses or notches of the case;

a movable member at the other end of the housing for engaging the other recess or notch of the case and being movable between open and closed positions; and

a device in the housing for retaining the movable member closed, wherein the movable member comprises:

an upper surface parallel to the main surface of the housing,

an outer end for engaging said other recess or notch,

an inner end extending downward from the upper surface at a generally right angle, and

a cross element attached beneath the upper surface and extending from the inner end to the outer end.

5,598,729

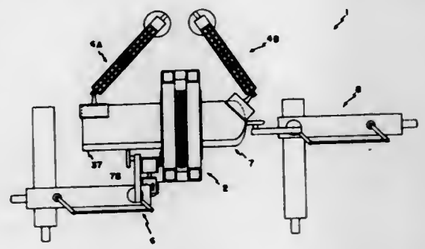
SYSTEM AND METHOD FOR CONSTRUCTING WALL OF A TUBE

Benjamin R. Hoffmann, Hopkins, and David A. Staskelunas, Maple Grove, both of Minn., assignors to Tandem Systems, Inc., Maple Grove, Minn.

Filed Oct. 26, 1994, Ser. No. 329,526

Int. Cl.[6] B21D *41/04*

U.S. Cl. 72—8.5 **33 Claims**



1. An apparatus for constricting an end of a metallic tube to form an arcuate-walled portion, the apparatus comprising:

means for rotating the tube about its longitudinal axis;

a forming roller mechanism including a forming roller adapted for applying pressure to an end portion of the tube, the forming roller mechanism being constructed and arranged to move the forming roller through a succession of angularly-spaced paths along the end portion of the tube, at least some of the paths having straight portions that are generally tangent to the end portion of the tube; and

a heating mechanism including an inductive heating element adapted for providing heat to the end portion of the tube.

5,598,730

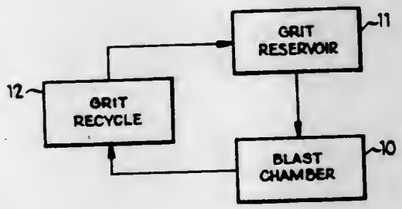
PRE-FORGE ALUMINUM OXIDE BLASTING OF FORGING BILLETS AS A SCALE RESISTANCE TREATMENT

Garry L. Dillon, Gurnee, Ill., assignor to Snap-on Technologies, Inc., Crystal Lake, Ill.

Filed Aug. 30, 1994, Ser. No. 297,982

Int. Cl.[6] B24C *1/00*

U.S. Cl. 72—53 **18 Claims**



1. A method of treating ferrous material to be forged, which may have oxidation scale on the surface thereof, to inhibit the formation of oxides during heating for forging, said method comprising: removing oxidation scale from the surface of the material to form a cleaned surface, and forming on the cleaned surface a deposit of aluminum oxide which covers at least 10 percent of the area of the cleaned surface.

5,598,731

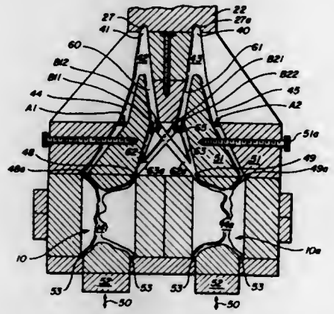
CONTINUOUS EXTRUSION OF COMPLEX ARTICLES

Alfredo Riviere, V., Calle el Lindero, Quinta Aurat Cerro Verde, 20, Caracas, Venezuela, and Navtej S. Saluja, 26 Heath Road, #3, Arlington, Mass. 02174

Continuation-in-part of Ser. No. 65,616, May 21, 1993, Pat. No. 5,383,347. This application Nov. 18, 1994, Ser. No. 342,107

Int. Cl.[6] B21C *31/00*

U.S. Cl. 72—260 **30 Claims**



1. A frictional extrusion apparatus for continuous extrusion of shaped articles, comprising:

a frictional extrusion source;

at least one chamber for holding frictionally extruded material received from the extrusion source, the chamber being connectable in flow communication with at least one die chamber;

means for releasing extruded material from the holding chamber;

sealing means adapted to prevent release of extruded material from the holding chamber; and

means for monitoring the release of extruded material from the holding chamber, the sealing means responsive to the monitoring means.

5,598,732

COMPRESSION TOOL

Helmut Dischler, Droste-Hulshoff-Str. 9, D-4040, Neuss, Germany

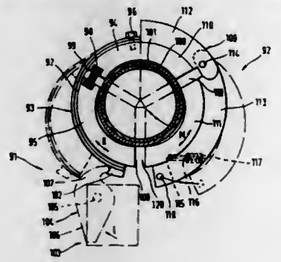
Continuation of Ser. No. 215,969, Mar. 17, 1994, abandoned, which is a continuation of Ser. No. 914,237, Jul. 17, 1992, abandoned, which is a continuation-in-part of Ser. No. 679,943, Apr. 3, 1991, Pat. No. 5,148,698. This application Apr. 12, 1995, Ser. No. 422,605

Claims priority, application Germany, Apr. 20, 1990, 40 11 822.3

Int. Cl.[6] B21D *41/04*

U.S. Cl. 72—292 **27 Claims**

1. A tool for compressing a deformable sleeve about a work-



piece, comprising:

a) a compression ring having a central axis;

b) at least three compression jaws operably associated with said ring, two of said jaws being pivotally associated with opposite ends of the third of said jaws;

c) each of said jaws includes a compression surface and lateral edge surfaces;

d) drive means operably associated with said two jaws for pivoting said two jaws relative to said third jaw between a first open position and a second closed position wherein the edge surfaces contact each other so that said compression surfaces encircle a deformable sleeve to be compressed about a workpiece; and

e) means operably associated with said two jaws for slidably guiding said two jaws toward each other and toward said axis as said two jaws are moved about said ring during pivoting thereof from said open to said closed position.

5,598,733

APPARATUS AND METHOD FOR TRANSFERRING AND FORMING PARTS IN A PRESS

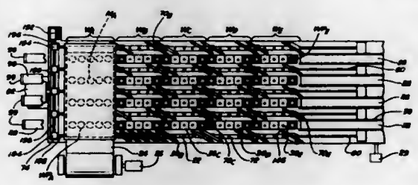
Lester J. Sova, Ray, Mich., assignor to AMSD Partnership, Roseville, Mich.

Continuation of Ser. No. 62,842, May 14, 1993, Pat. No. 5,359,875. This application Oct. 31, 1994, Ser. No. 332,247

The portion of the term of this patent subsequent to May 14, 2013, has been disclaimed.

Int. Cl.[6] B21D *43/05;43/10*

U.S. Cl. 72—336 **21 Claims**



1. An apparatus for progressively forming and moving workpieces through a plurality of longitudinally disposed workstations of a strokable press, the apparatus comprising:

a plurality of forming sets of cooperating upper and lower dies which affix to the press, each forming set of cooperating upper and lower dies being located in a respective one of the plurality of workstations of the press and strokable with the press to create a forming workstation, the forming sets of cooperating dies being longitudinally disposed along the length of the press, each forming set of cooperating upper and lower dies having a matrix of punches and a matrix of cavities therein which move into and out registration with one another during a stroke of the press to form a corresponding matrix of workpieces located in a respective forming workstation, each of the matrices of punches, cavities and workpieces in each forming workstation having at least two longitudinally spaced columns and at least two laterally spaced rows, each of the punches and cavities in each respective forming workstation being configured to produce shaped workpieces while the matrices of punches and cavities in other respective forming workstations are configured differently so that the matrices of workpieces passing downstream through the respective forming workstations are progressively formed; and

a parts transfer system which mounts relative to the press and having a translation base which carries a grasping unit which releasably grasps no underlining the matrices of workpieces in their respective forming workstations of the press, the translation base being sufficiently longitudinally translatable such that each matrix of workpieces in its respective forming workstation may be grasped and transferred from an upstream forming workstation to a downstream workstation;

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wherein when the dies are affixed to the press and the parts transfer system is mounted relative to the press, the cooperating sets of upper and lower dies in the forming workstations simultaneously stamp and form matrices of workpieces in a single stroke of the press and the parts transfer system grasps and transfers the matrices of workpieces between workstations between strokes of the press to form one complete matrix of finished workpieces in the downstream most forming workstation with each stroke of the press.

5,598,734

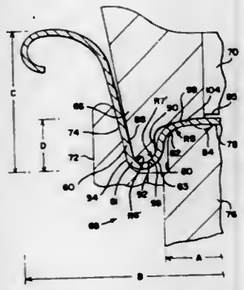
REFORMED CONTAINER END

Randall G. Forrest, Park Ridge; Timothy L. Turner, Cary, both of Ill., and Donald M. Thurman, Valparaiso, Ind., assignors to American National Can Company, Chicago, Ill.

Continuation of Ser. No. 146,234, Nov. 1, 1993, which is a continuation-in-part of Ser. No. 955,921, Oct. 2, 1992, Pat. No. 5,356,256. This application May 25, 1995, Ser. No. 450,863

Int. Cl.[6] B21D *51/44*

U.S. Cl. 72—348 **35 Claims**



1. A method of producing a container end comprising:

providing a shell having a center panel including an integral countersink portion surrounding said center panel, said countersink including an inner wall and an outer wall being joined by a curved countersink bottom having an initial countersink bottom radius, said panel being joined to the inner wall of the countersink by a curved shoulder having an initial shoulder radius;

reforming said shell in a first operation including forming a first arcuate segment having a radius and a second arcuate segment having a radius from said countersink bottom wherein said first arcuate segment is integral with and positioned between said outer wall and said second arcuate segment, and said second arcuate segment is integral with said inner wall, said first operation including moving said shoulder radially outward and forming an annular angled portion between said inner wall and said center panel: and

further reforming said shell in a second operation including reforming said angled portion into said inner wall and said center panel.

5,598,735

HOLLOW STABILIZER MANUFACTURING METHOD

Tsutomu Saito; Takashi Fukui, and Akio Namikiri, all of Yachiyo, Japan, assignors to Horikiri Spring Manufacturing Co., Ltd., Yachiyo, Japan

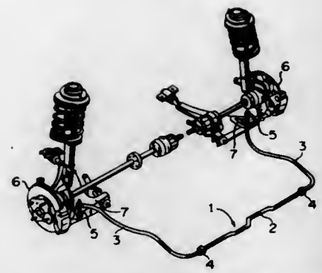
Filed Aug. 9, 1994, Ser. No. 287,955

Claims priority, application Japan, Mar. 29, 1994, 6-083851

Int. Cl.[6] B21D *9/00*

U.S. Cl. 72—369 **12 Claims**

2. A method of manufacturing a hollow stabilizer for a car which comprises the steps of polishing to remove defects of the surface of a heat-finished seamless steel pipe at an inner surface or an outer surface at R portions to be bent; adjusting a surface roughness to not greater than Rmax 50 μm; processing said steel pipe at the R positions to be bent, so that the section which has a certain flat rate is a long ellipse form in an axial direction extending an inner side and an outer side of the bending center; and bending said steel pipe at the R positions to form a stabilizer, whereby the sectional form of the bending R portion after bending is in a nearly circular form.



5,598,736

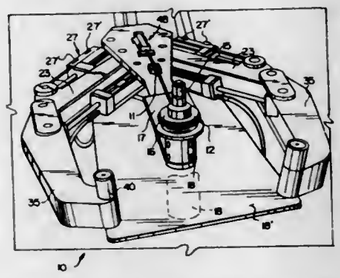
TRACTION BENDING

Edward J. Erskine, Benson, N.Y., assignor to N.A. Taylor Co. Inc., Gloversville, N.Y.

Filed May 19, 1995, Ser. No. 445,171

Int. Cl.[6] B21D *7/06*

U.S. Cl. 72—389.6 **28 Claims**



1. Traction bending apparatus for bending workpieces, comprising:

a stationary die support for mounting a die adjacent a first end thereof and having a second end remote from said first end, and an intermediate section between said first and second ends;

first and second control arms pivotally mounted at first and second pivot axes, respectively, to said die support at a first portion of each, adjacent said die support second end;

first and second linear actuators connected to said first and second control arms, respectively, providing powered pivoting of said control arms about said first and second pivot axes, respectively;

first and second traction arms pivotally mounted at third and fourth pivot axes, respectively, to said first and second control arms at a second portion of said control arms, remote from said first portion of each control arm;

first and second workpiece engaging members associated with said first and second traction arms remote from said third and fourth pivot axes;

third and fourth linear actuators connected to said first and second traction arms, respectively, providing powered pivoting of said traction arms about said third and fourth pivot axes, respectively; and

a control mechanism for allowing at least one of manual, semi-automatic, and automatic control of said linear actuators to move said workpiece engaging members into operative association with a workpiece engaging a die mounted on said die support to effect desired bending of the workpiece.

5,598,737

PORTABLE, POWER DRIVEN PUNCH PRESS FOR WORKING ON STEEL FRAME MEMBERS

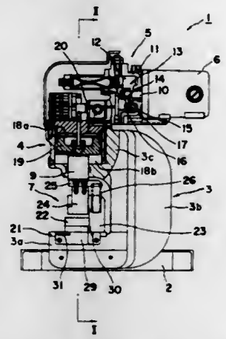
Eisuke Oide, Yokohama, Japan, assignor to Kabushiki Kaisha Ogura, Japan

Filed Nov. 28, 1994, Ser. No. 348,241

Claims priority, application Japan, Dec. 3, 1993, 5-304276; Mar. 16, 1994, 6-046103

Int. Cl.[6] B26B *17/00*

U.S. Cl. 72—453.01 **12 Claims**



1. A punch press for bending, cutting, boring, or otherwise working on blanks, comprising:

(a) frame means including a bed;

(b) a fluid actuated cylinder mounted above the frame means in overlying relationship to the bed and having a piston rod directed downwardly along an axis perpendicular to the bed;

(c) pump means disposed atop the fluid actuated cylinder for supplying pressurized fluid thereto, the pump means being generally disposed parallel to the bed for reduction of the total height of the punch press said pump means comprising:

(1) a drive motor having an axis of rotation extending horizontally; and

(2) a pump directly overlying the fluid actuated cylinder and directly coupled to the drive motor thereby to be driven for supplying pressurized fluid to the fluid actuated cylinder; and

(d) die means mounted on the bed in order to be acted upon by the piston rod of the fluid actuated cylinder for working on a desired blank.

5,598,738

LOAD APPARATUS AND METHOD FOR BOLT-LOADED COMPACT TENSION TEST SPECIMEN

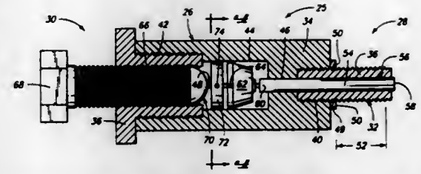
Brent J. Buescher, Jr.; W. Randolph Lloyd; Michael B. Ward, and Jonathan S. Epstein, all of Idaho Falls, Id., assignors to Lockheed Idaho Technologies Company, Idaho Falls, Id.

Filed Apr. 3, 1995, Ser. No. 415,879

Int. Cl.[6] F16B *31/02*

U.S. Cl. 73—761 **19 Claims**

1. A bolt-loaded compact tension test specimen load apparatus, the specimen having a notch and a threaded opening extending to and positioned transversely relative to the notch for receiving a threaded bolt for applying an opening force to the notch, the load apparatus comprising:



a body having first and second opposing longitudinal ends, the first end comprising an externally threaded portion sized to be threadedly received within the test specimen threaded opening;

a longitudinal loading rod having first and second opposing longitudinal ends, the loading rod being slidably received in a longitudinal direction within the body internally through the externally threaded portion and slidably extending longitudinally outward of the body first longitudinal end;

a force sensitive transducer slidably received within the body and positioned to engage relative to the loading rod second longitudinal end; and

a loading bolt threadedly received relative to the body, the loading bolt having a bearing end surface and being positioned to bear against the transducer to forcibly sandwich the transducer between the loading bolt bearing end and second end of the loading rod.

5,598,739

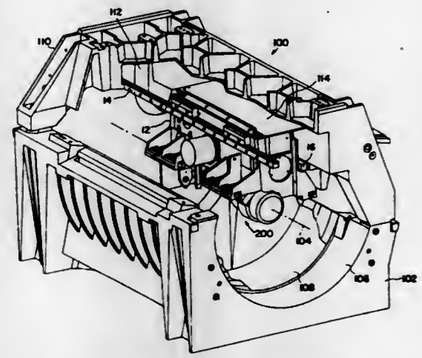
SELF-PROPELLED LINEAR MOTION DRIVE APPARATUS

Lawrence S. Blake, Peabody; Arthur J. Bellemore, Chelmsford; Ralph S. Hanseler, North Andover, and David P. Viola, Andover, all of Mass., assignors to Miles Inc., Wilmington, Mass.

Filed Jan. 14, 1994, Ser. No. 182,484

Int. Cl.[6] F16H *27/02*

U.S. Cl. 74—89 **6 Claims**



1. A linear motion drive apparatus comprising:

(a) a fixed base;

(b) movable carriage means for movement along a linear motion axis;

(c) linear motion drive means including electronic controller means, carried by said movable carriage means, for moving said movable carriage means along said linear motion axis with respect to said fixed base;

(d) support means fixedly mounted to said fixed base for movably supporting said movable carriage means with respect to said fixed base and for guiding said movable carriage means along said linear motion axis;

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(e) friction wheel means rotatably driven by said linear motion drive means and in driving contact with said support means for moving said movable carriage means along said linear motion axis in response to rotation of said friction wheel means; and,

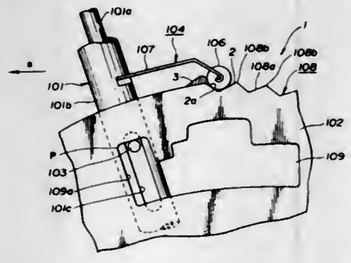
(f) means for urging said friction wheel means into driving contact with said support means.

5,598,740

AUTOMATIC GEAR SHIFT OPERATING MECHANISM

Yasuhiko Itoh, Zama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Sep. 16, 1994, Ser. No. 306,969
Claims priority, application Japan, Oct. 13, 1993, 5-256015
Int. Cl.[6] F16H 59/04; G05G 9/00
U.S. Cl. 74—475 4 Claims



1. An automatic gear shift operating mechanism for a motor vehicle, the automatic gear shift operating mechanism having a shift lever and a knob button, comprising:

a position pin arranged to the shift lever, said position pin being movable in an axial direction of the shift lever when operating the knob button;

a position plate having a speed changeover portion perforated, said speed changeover portion including a plurality of speed ranges, including a parking range, with which said position pin is engaged;

a check cam arranged to said position plate on an outer periphery thereof, said check cam having a plurality of cam grooves which include a foremost cam groove as viewed in a longitudinal direction of the motor vehicle, wherein said foremost cam groove is defined by a first surface and a second surface, said second surface being forward of said first surface as viewed in said longitudinal directional of the motor vehicle, said second surface defining a first slope;

a check spring roller having one end connected to the shift lever and another end with a roller, said roller contacting one of said plurality of cam grooves so as to maintain an engagement of said position pin with one of said plurality of speed ranges of said speed changeover portion of said position plate; and

means for preventing said roller of said check spring roller from overshifting therefrom in a forward direction of the motor vehicle, said preventing means including a projection extending from said second surface, said projection forming a third surface extending from said second surface, said third surface defining a second slope, wherein said second slope is greater than said first slope,

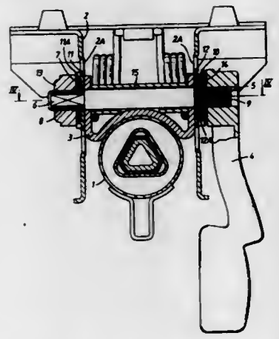
wherein said roller of said check spring roller contacts said foremost cam groove so as to maintain an engagement of said position pin with said parking range of said speed changeover portion of said position plate.

5,598,741

CLAMPING MECHANISM FOR AN ADJUSTABLE STEERING COLUMN FOR A VEHICLE

Colin A. Mitchell, Northamptonshire, and Gerald A. Speich, Warwickshire, both of England, assignors to The Torrington Company, Torrington, Conn.

Filed Mar. 10, 1995, Ser. No. 401,539
Int. Cl.[6] B62D 1/18
U.S. Cl. 74—493 16 Claims



1. A steering column clamping mechanism for use with an adjustable steering column, the adjustable steering column including a support bracket having a thickness and a slot therethrough and a steering column bracket slidable relative to the support bracket, the mechanism having an unclamped condition allowing movement of the steering column and having a clamped condition preventing movement of the steering column, the clamping mechanism comprising:

at least one stop member being positioned in the support bracket slot, wherein the at least one stop member includes a flat rectangular portion, the flat rectangular portion being positioned within the support bracket slot and the thickness of the flat rectangular portion is less than the support bracket thickness; and

an operating mechanism having a shaft extending therefrom, the shaft extending through the support bracket slot, the steering column bracket and the at least one stop member, the operating mechanism being moveable from the unclamped condition to the clamped condition, when the operating mechanism is in the unclamped condition, the at least one stop member slidably engages the support bracket slot, and when the operating mechanism is in the clamped condition, portions of the support bracket are clamped between the operating mechanism and the steering column bracket.

5,598,742

AUXILIARY STEERING DEVICE FOR VEHICLE

Ki W. Kim, Chun Ho Woo Sung Apt. 2-1005, 19-2 Chun Ho 1st Dong, Rep. of Korea

Filed Jan. 25, 1995, Ser. No. 377,739
Claims priority, application Rep. of Korea, Jan. 25, 1994, 1994 1279
Int. Cl.[6] B62D 1/22
U.S. Cl. 74—494 6 Claims

1. An auxiliary steering device for a vehicle comprising:

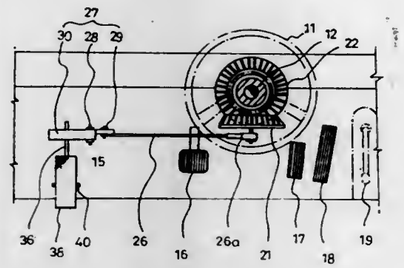
a steering drive shaft;

a driven bevel gear fixed to said steering drive shaft;

a drive bevel gear gearing into said driven bevel gear;

a vertically levered steering pedal being worked by a foot so as to generate a vertical reciprocation angular motion; and

means for converting the vertical reciprocation angular motion of the steering pedal into a rotating motion of said drive bevel gear, said means for converting further comprising:



a recess formed in a front section of said steering pedal;

an arm being turned about a rotating shaft in accordance with a reciprocation angular motion of said steering pedal;

a crank lever for making a reciprocating movement around said rotating shaft in accordance with a turning motion of said arm;

a lift lever for transmitting a reciprocation angular motion of said steering pedal to said arm and having two ends, one end of said lift lever being received in said recess of the steering pedal and pivoted to said pedal in said recess and the other end of said lift lever being connected to the other end of said arm;

a slide hole formed in an end section of said arm for movably receiving said other end of said lift lever; and

a connecting rod for transmitting a turning motion of said crank lever to said drive bevel gear while converting said reciprocating movement of the crank lever into said rotating motion of the drive bevel gear, said connecting rod being eccentrically pivoted to said crank lever and to said drive bevel gear at its opposed ends;

whereby said lift lever is vertically movable with the steering pedal and horizontally rotatable about its pivot point in the recess of the pedal so as to generate a vertical angular motion and a horizontal reciprocation angular motion in accordance with a pedal operation.

5,598,743

CORE WIRE LENGTH ADJUSTER

Tetsuro Yasuda, Sanda, Japan, assignor to Hi-Lex Corporation, Battle Creek, Mich.

Filed Mar. 24, 1995, Ser. No. 410,500
Int. Cl.[6] F16C 1/10;1/26
U.S. Cl. 74—502.4 14 Claims

1. A cable assembly including:

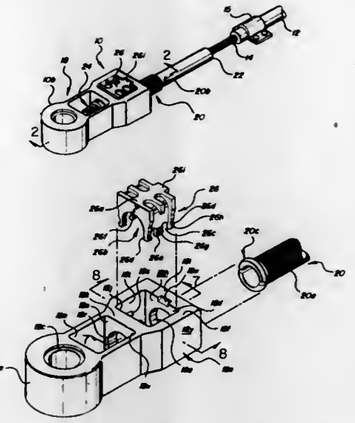
a conduit;

a core wire slidably positioned within the conduit;

a housing including a rear wall having an aperture, a forward wall having an aperture axially aligned with the aperture in the rear wall, and a lock window positioned between said rear and forward walls;

an elongated guide member slidably received in said apertures for axial movement relative to said housing, including a plurality of axially spaced serrations, defining a head portion at its forward end, and fixedly secured at its rearward end to an end portion of the core wire;

a locking clip adapted to pass transversely through said window, including at least one serration for locking coaction with the serrations on the guide member, and mounted on the housing for transverse movement between an engaged position in which said one serration is engaged with said guide member serrations to preclude axial movement of said guide member relative to said housing and a disengaged position in which said one serration is disengaged from said guide member serrations to allow axial movement of said guide member relative to said housing;



a limiting stop surface on a front face of said forward wall in surrounding relation to the forward wall aperture and coacting with said guide member head portion to limit rearward movement of said guide member relative to said housing while allowing forward movement of the guide member relative to the housing; and

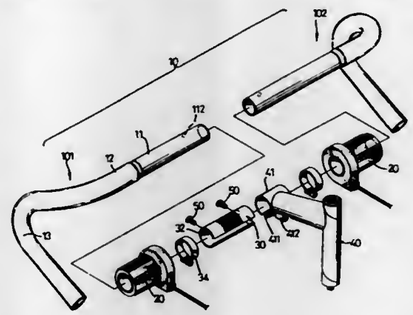
the cable assembly including means biasing said guide member head portion against said stop surface while allowing resiliently resisted forward movement of the guide member relative to the housing.

5,598,744

RACING HANDLEBAR STRUCTURE SUITABLE FOR ROTATION SHIFTERS DISPOSED THERETO

Kun-tsai Chen, No. 106, Nanchuang Village, Ta-ai Hsiang, Taichung Hsien, Taiwan

Filed Jul. 18, 1995, Ser. No. 503,548
Int. Cl.[6] B62K 21/18;23/04
U.S. Cl. 74—551.1 1 Claim



1. A racing handlebar structure suitable for rotation shifters to be disposed thereto, said racing handlebar comprising a first part and a second part of symmetrical construction, each said part including a horizontal portion and a dropped handle portion which extends from an end of said horizontal portion, the other end of said horizontal portion having a neck portion with a smaller diameter, each said neck portion having a first hole defined therein;

a sleeve having a C-shaped cross section and two second holes defined therein corresponding to said first holes respectively, and

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each of said neck portions respectively inserted in an end of said sleeve such that each said first hole is in alignment with each said second hole respectively for a bolt to be inserted therethrough, wherein a handlebar stem securely receives said sleeve, a fastener securely mounted to said sleeve and each said neck portion.

5,598,745

FLYWHEEL WITH FRICTION GENERATING DEVICE

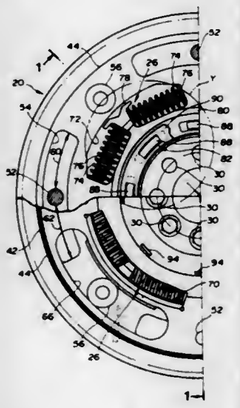
Shouichi Tsuchiya, Atsugi, Japan, assignor to Unisia Jecs Corporation, Atsugi, Japan

Filed May 26, 1994, Ser. No. 249,309

Claims priority, application Japan, May 26, 1993, 5-027569 U

Int. Cl.[6] G05G *1/00*

U.S. Cl. 74—574 **11 Claims**



1. A flywheel comprising:

first and second flywheel elements rotatable about an axis, said first flywheel element having a radially extending wall, said second flywheel element having a disc formed with a plurality of windows;

a spring arrangement operatively disposed between and resiliently coupling said first and second flywheel elements;

a friction ring rotatable with said first flywheel element and maintained firmly against said first flywheel element for limited axial movement toward said radially extending wall;

a plurality of friction blocks interposed between said radially extending wall and said friction ring and received respectively within said plurality of windows, each of the friction blocks being arranged within a corresponding one of said plurality of windows with a play in a circumferential direction of said disc;

a spring acting on said friction ring to bias said friction ring against said plurality of friction blocks to keep said plurality of friction blocks in frictional contact with said radially extending wall and said friction ring;

a first floating ring disposed between said disc and said friction ring but out of driving contact with said friction ring and having a plurality of openings respectively receiving said plurality of friction blocks without any circumferential play to maintain said plurality of friction blocks in their relative circumferential positions and

a second floating ring disposed between said disc and said radially extending wall but out of driving contact with said radially extending wall and having a plurality of openings respectively receiving said plurality of friction blocks without any circumferential play to maintain said plurality of friction blocks in their relative circumferential positions.

5,598,746

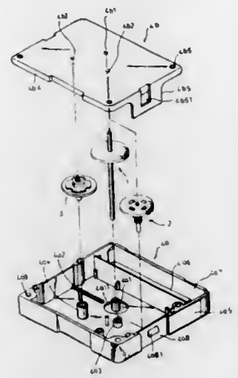
TRANSMISSION ASSEMBLY

Ching-Ti Chen, Suite 1, 11F, 95-8 Chang Ping Road, Sec. 1, Taichung, Taiwan

Continuation of Ser. No. 30,651, Mar. 12, 1993, abandoned. This application Nov. 4, 1994, Ser. No. 334,448

Int. Cl.[6] F16H *57/02*; G09F *19/08*

U.S. Cl. 74—606 R **1 Claim**



1. A transmission assembly for providing bilateral rotations to an ornament comprising a casing enclosing a set of first, second and third pinions therein which are driven by a battery-operated electrical circuit; said casing comprising:

a tray shaped square lower portion, said lower portion being integrally formed with elevational walls on four sides and a compartment in the proximity of a rear side wall to define a battery chamber therein and comprising a tubular sleeve at the center of a circular depression with a pair of tubed tapering pointed plugs in the proximity of and extending upward from the inner surface of said lower portion, an elastic rectangular bar extended on one end from a side wall and terminated at a position in proximity of said circular depression, and a pair of rectangular grooves on the outer surface of two opposing walls of said elevational walls with centrally formed rectangular catches therein;

a rectangular cover, said cover having downward flanges on four sides integral with a pair of downward rectangular lugs on opposite lateral sides, each rectangular lug has a rectangular recess on its upper central portion; a tapering socket and a pair of tapering pointed plugs depending downward from the inner surface of said cover; and a plurality of screw apertures in said top cover;

said first pinion comprising a plastic gear and a metallic spindle perpendicularly secured at the center of said gear;

said plastic gear having on its under side integral with a downward journal, a downward elevationally varied annular ring for reinforcement and a downward stopping rod adjacent the outer periphery of said annular ring which cooperates with said elastic rectangular bar;

said metallic spindle having a tapering pointed plug at the top end and a larger diameter shoulder on an upper portion thereof for abutting against the under side of said downward journal;

said second pinion comprising a main plastic gear integral with a less diameter step gear extended from the center of the under side thereof, a further lesser diameter spindle depending from the lower end of said less diameter step gear, and a pair of the first and second tapering sockets respectively formed at the center of the upper surface of said main gear and the lower end of said spindle, said first tapering socket being slightly protruded from said upper surface of said main gear;

said third pinion comprising a plastic base and a flat magnetic annular ring, wherein said plastic base comprising a circular plate, a less diameter step gear extruding upwardly from the center of said circular plate, a multi-diameter spindle extending downwardly from the center of the under side of said circular plate, a pair of tapering sockets respectively formed on the top of said less diameter step gear and the lower end of said multi-diameter spindle, and four sectorial members spacedly extending radially from the circumference of said circular plate incorporated with a plurality of spacedly outcurved flange members which are extended downwardly from the circumference of said circular plate for forming an annular grasping space to secure said flat magnetic annular ring therein;

wherein said first pinion is rotatable bilaterally and is driven indirectly by said battery-operated electrical circuit via said third pinion and restricted by said elastic rectangular bar and said second pinion.

5,598,747

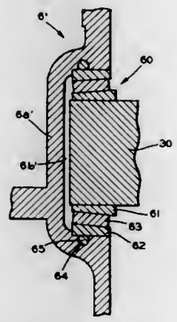
THERMAL COMPENSATING BEARING SUPPORT STRUCTURE FOR TRANSMISSION CASE

George F. Schetter, Holland, and Steven N. Tucker, Jr., Toledo, both of Ohio, assignors to Dana Corporation, Toledo, Ohio

Filed May 4, 1995, Ser. No. 434,657

Int. Cl.[6] F16C *35/077*; F16H *57/02*

U.S. Cl. 74—606 R **20 Claims**



1. A bearing support structure comprising:

a wall having a bore defining an axis formed therein, said bore including a radial side wall having a groove formed therein;

an expandable ring disposed in said groove; and

a bearing including an outer race which is press fit within said bore so as to frictionally engage said side wall in a radial direction when said outer race and said side wall are in a relatively cold condition, said outer race being formed from a first material and said side wall of said bore being formed from a second material having a rate of thermal expansion which is greater than a rate of thermal expansion of said first material such that said expandable ring frictionally engages said outer race in said radial direction when said outer race and said side wall are in a relatively hot condition to prevent rotation therebetween.

5,598,748

AXLE DRIVING APPARATUS

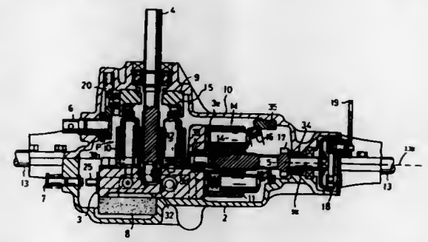
Hideaki Okada, Takarazuka, and Sbusuke Nemoto, Yao, both of Japan, assignors to Kanzaki Kokyukoki Mfg. Co., Ltd., Japan

Continuation of Ser. No. 193,577, Feb. 7, 1994, Pat. No. 5,473,964, which is a continuation of Ser. No. 100,352, Jun. 21, 1993, abandoned, which is a continuation of Ser. No. 518,720, May 4, 1990, abandoned, which is a continuation of Ser. No. 304,581, Feb. 1, 1989, Pat. No. 4,932,209. This application May 30, 1995, Ser. No. 453,778

Claims priority, application Japan, Feb. 3, 1988, 63-24193; Mar. 9, 1988, 63-55828; Mar. 18, 1988, 63-67005; Jun. 16, 1988, 63-79665

Int. Cl.[6] F16H *57/02*; F16D *39/00*

U.S. Cl. 74—606 R **4 Claims**



1. An integrated hydrostatic transaxle comprising:

a transaxle casing including a first casing section and a second casing section joined along a horizontal peripheral junction surface;

a pair of oppositely extending axles disposed within said transaxle casing, said pair of axles having a longitudinal axis;

a hydraulic pump;

a hydraulic motor disposed within said transaxle casing, said hydraulic motor including an associated output shaft having a longitudinal axis; and

a pump mounting surface disposed within said transaxle casing and offset from said peripheral junction surface for mounting said hydraulic pump within one of said first and said second casing sections.

5,598,749

TABLE TURNING APPARATUS

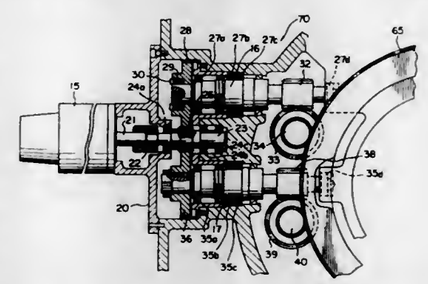
Takeshi Goto, Numazu, Japan, assignor to Toshiba Kikai Kabushiki Kaisha, Japan

Filed Nov. 25, 1994, Ser. No. 348,091

Claims priority, application Japan, Nov. 26, 1993, 5-296858

Int. Cl.[6] B23Q *1/06*

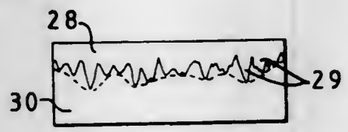
U.S. Cl. 74—820 **4 Claims**



1. A table turning apparatus in a machine tool for transmitting power from a driving source to a table, which comprises:

a driving shaft of said driving source having a pinion gear thereof;
said table of said machine tool which performs positioning in continuous rotation;
a pair of first and second worm shafts, each having a worm, which are rotated in the same direction of rotation as that of said driving shaft;
a first gear means connected at the end of said first worm shaft;
a second gear means fixed at the end of said second worm shaft;
wherein said first and second gear means are engaged respectively with said pinion gear of the driving shaft;
a fastening means for adjustably fixing said first worm shaft, at the end thereof, to said first gear means;
worm wheel means each engaging said worms of said first and second worm shafts;
pinion means each being integral with said worm wheel; and
a ring gear means connected to the table of the machine tool and engaged with said pinion means, wherein said worm shafts consist of an outer first worm shaft and a second worm shaft fitted coaxially inside said first worm shaft, said second worm shaft being fixed to said first worm shaft through said fastening means and, simultaneously, said worms of said first and second worm shafts having helical pitch angle in reverse relation to each other.

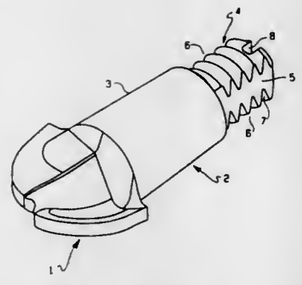
5,598,750
ELEMENTS FACED WITH SUPERHARD MATERIAL
Nigel D. Griffin, Whitminster, and T. Alex Newton, Clifton, both of England, assignors to Camco Drilling Group Limited, Stonehouse, England
Filed Nov. 9, 1994, Ser. No. 337,241
Claims priority, application United Kingdom, Nov. 10, 1993, 9323207; Jun. 18, 1994, 9412248
Int. Cl.[6] E21B *10/46;10/56*
U.S. Cl. 76—108.2 **15 Claims**



1. A preform composite compact element including a facing table of superhard material having a front cutting face, a peripheral surface, and a rear surface bonded to a substrate which is less hard than the superhard material, the facing table and substrate having been bonded together during forming of the element in a high pressure, high temperature forming press, the rear surface of the facing table being integrally formed with a plurality of protuberances which project into the substrate, the depth to which at least certain of said protuberances project into the substrate varying in irregular manner across the facing table, and there being an imaginary surface extending across the substrate and connecting the rearward extremities of the protuberances, which surface is non-planar and discontinuous.

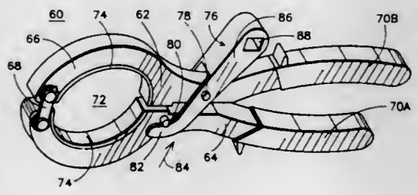
5,598,751
CUTTING INSERT
Moti Ochayon, Nahariya, and Arie Falk, Moshav Merhavia, both of Israel, assignors to Iscar Ltd., Migdal Tefen, Israel
Division of Ser. No. 289,460, Aug. 12, 1994, Pat. No. 5,496,137. This application Nov. 14, 1995, Ser. No. 557,258
Claims priority, application Israel, Aug. 15, 1993, 106697
Int. Cl.[6] B23B *51/00*
U.S. Cl. 76—108.6 **4 Claims**

1. A powder metallurgy process for manufacturing a cutting insert having a cutting head and a coupling shank integral at one



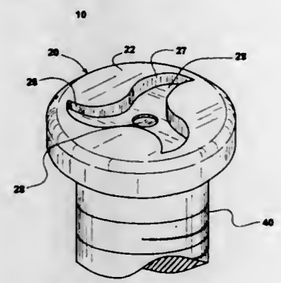
end thereof with said cutting head and including a screw threaded portion, said cutting insert being formed by a powder metallurgy process of compacting and sintering and said screw threaded portion being constituted by a substantially cylindrical body having a pair of diametrically opposed, longitudinally truncated planar portions interposed between substantially curved cylindrical portions having arcuate surfaces on which there are formed a non-continuous screw thread, said arcuate surfaces extending between 50 to 85% of the total peripheral extent of the cylindrical body of which they form part, said process including the steps of compacting a metal powder in a mold cavity of a die set between a pair of die punches displaceable within said cavity, and forming said screw and clamping portions between arcuate surfaces of said punches and substantially planar walls of said mold cavity.

5,598,752
RING PLIER WITH TORQUE WRENCH FITTING
George G. Daniels, Orlando, Fla., and Robert D. Gracey, Jr., Seattle, Wash., assignors to Daniels Manufacturing Corporation, Orlando, Fla.
Filed Aug. 14, 1995, Ser. No. 515,038
Int. Cl.[6] B25B *7/12*
U.S. Cl. 81—381 **10 Claims**



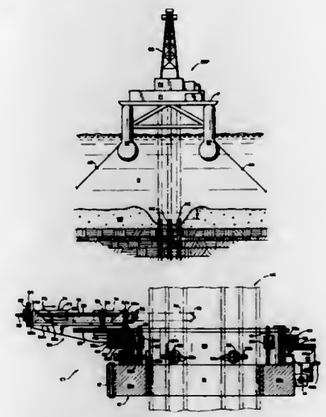
1. A torque-latch ring plier system comprising:
a pair of opposed arms each having opposed semi-circular segments adjacent a first end thereof, the opposed segments forming an annular receptacle;
a connecting link joining said pair of arms at the first ends, said arms being pivotable about said link by movement of second ends of said arms distal from said first ends;
a lever rotatably mounted to one of said arms between said first and second ends thereof;
a reaction device on another of said arms for reacting against one end of said lever when said lever is rotated in a first direction for urging said arms to pivot about said link and close said opposed segments; and
a coupler for coupling a torque wrench to said lever, operation of said torque wrench being effective to operate the pliers and establishing a selected torque at said opposed segments.

5,598,753
EAGLE WING TIPS TAMPER-PROOF FASTENER AND DRIVER TOOL
James S. Lee, 1995 Vanguard Dr., Camarillo, Calif. 93010
Filed Feb. 7, 1995, Ser. No. 384,922
Int. Cl.[6] B25B *23/00*
U.S. Cl. 81—460 **4 Claims**



1. An eagle wing tips tamper-proof fastener in combination with a torque-producing driver tool for operating said fastener comprising:
(A) said eagle wing tips tamper-proof fastener comprising:
(1) a head;
(a) said head having a generally circular shape;
(b) said head having a center point;
(c) wherein said circular shape of said head defines a radius of said head;
(d) said head having a substantially flat top surface;
(e) said head having a bottom side;
(f) said head having a plurality of recessed channels disposed on said top surface of said head;
(g) wherein said channels are three in number;
(h) wherein said three channels are symmetrically arranged on said top surface of said head;
(i) each said channel comprising a right wall, a left wall, a bottom surface and an endpoint;
(j) wherein said channels radially curve outwards from said center point of said head;
(k) wherein said channels curve to their respective said radial endpoints located between half of said radius and said full radius of said head;
(l) wherein said right wall is substantially vertical with respect to said top surface of said head;
(m) wherein said left wall is substantially vertical with respect to said top surface of said head;
(n) said right wall having a constant radius of curvature;
(o) said left wall having a constant radius of curvature;
(p) wherein said radius of curvature of said right wall is equal in magnitude to said radius of curvature of said left wall;
(q) wherein said right wall smoothly curves to right at said radius of curvature as it extends to said endpoint;
(r) wherein said left wall smoothly curves to right at said radius of curvature as it extends to and meets said right wall at said endpoint;
(s) said head having a recessed circular flat surface disposed at said center of said head;
(t) said circular shape of said flat circular surface defining a diameter of said circular flat surface;
(u) wherein magnitude of said diameter of said flat circular surface is approximately half of magnitude of broadest width of said channels;
(v) wherein said circular flat surface is vertically disposed at deepest point with respect to said top surface of said head; and
(w) wherein said bottom surface of each said channel rises linearly from said center of said head to said endpoint of each said channel; and
(2) a conventional threaded shank perpendicularly connected to said bottom side of said head; and
(B) said torque-producing driver tool for operating said fastener comprising:
(1) a conventional handle; and
(2) a shank;
(a) said shank having a first end and a second end;
(b) wherein said first end of said shank is connected to said handle and longitudinally extends therefrom;
(c) said second end of said shank having a cross-sectional signature substantially complementary in size and shape to said three recessed channels of said head of said fastener; and
(d) wherein inserting said second end of said shank into said three recessed channels of said head of said fastener results in a substantially matable engagement.

5,598,754
METHOD FOR THE UNDERWATER CUTTING OF COLUMNAR MEMBERS
Jerry H. Robinson, Mobile, Ala., assignor to Wellcutter, Inc., Brewton, Ala.
Division of Ser. No. 341,048, Nov. 16, 1994, Pat. No. 5,477,759, which is a division of Ser. No. 45,411, Apr. 13, 1993, Pat. No. 5,394,776. This application Aug. 8, 1995, Ser. No. 512,341
Int. Cl.[6] B23B *1/00*
U.S. Cl. 82—47 **4 Claims**



1. A method for underwater cutting of a columnar member comprising:
(i) positioning an orbitally moveable cutting tool relative to an underwater columnar member to be cut thereby such that the cutting tool is disposed in an underwater cutting plane which is substantially transverse to the columnar member to be cut;
(ii) severing the columnar member at the underwater cutting plane by orbitally moving the cutting tool relative to the columnar member within the underwater cutting plane;
wherein step (i) includes the steps of;
(a) mounting a cutting bit at a forward end of a planar bit support block such that a cutting edge dimension of the cutting bit is greater than a thickness dimension of the bit support block as measured transverse to the underwater cutting plane,
(b) orienting the cutting bit in a bit plane which is substantially parallel to the longitudinal axis of the underwater columnar member to be cut and thereby substantially transverse to the cutting plane.

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(c) orienting the bit support block in a support plane which is substantially parallel to the cutting plane and thereby substantially transverse to the columnar member to be cut, and

wherein step (ii) includes the step of,

(1) establishing at least one channel passageway from an exterior surface of the columnar member to the cutting bit having a dimension as measured parallel to the longitudinal axis of the columnar member which is coincident with the cutting edge dimension of the cutting bit, and

(2) advancing said bit support block and said forwardly mounted cutting bit into the established channel passageway.

5,598,755

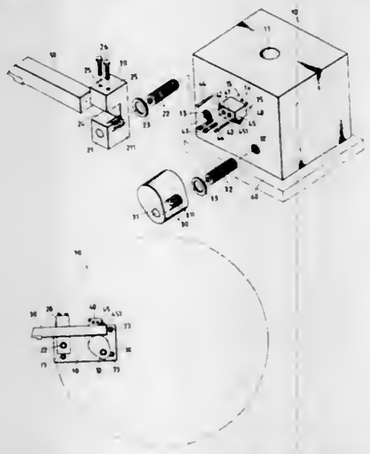
Patent Not Issued For This Number

5,598,756

DEVICE FOR STOPPING AUTOMATICALLY AN OVERLOADED LATHE

Chin-Long Wu, No. 136-12, Young Ho Road, Ta-Ya Hsiang, Taichung Hsien, Taiwan

Filed Mar. 29, 1995, Ser. No. 412,878
Int. Cl.[6] B23B *21/00;29/14*
U.S. Cl. 82—134 **12 Claims**



1. A device fot stopping automatically an overloaded lathe comprising:

a support base of a rectangular construction and provided with two threaded holes;

a front holding base provided at a front end thereof with a through hole having at a rear end thereof a threaded portion engageable with one end of a fastening means having another end engageable with one of said two threaded holes of said support base, said fastening means having a resilient washer fitted thereover and located between said support base and said front holding base, said front holding base further provided centrally at a front end thereof with a front end of a handle of a lathe tool;

a rear holding base eccentric cam provided with a through hole having at a rear end thereof a threaded portion engageable with one end of a fastening means having another end engageable with another one of said two threaded holes of said support base, said fastening means having a resilient washer fitted thereover and located between said support base and said rear holding base eccentric cam which is disposed in such a manner that said handle of said lathe tool is urged at a rear end thereof by said rear holding base eccentric cam; and

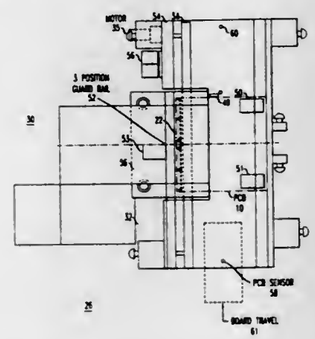
a locating block fastened with said support base such that said locating block is corresponding in location to said rear holding base eccentric cam, and that said rear end of said handle of said lathe tool is urged by said locating block, and further that said locating block is provided adjacently with a proximity switch having a plate capable of pressing one end of said handle of said lathe tool so as to connect an electric circuit of said proximity switch with a main shaft motor of a lathe.

5,598,757

METHOD FOR SHEARING PANELS

James L. Lloyd, Ringoes; Edward M. Olbrick, Ewing, both of N.J.; Ivan Pawlenko, Holland, Pa.; Russell E. Schuss, Cranbury, and Girard Sidone, Hamilton Township, Mercer County, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Feb. 2, 1995, Ser. No. 382,698
Int. Cl.[6] H05K *3/02*
U.S. Cl. 83—23 **6 Claims**



1. A method for shearing an outwardly extending tab, running along, and integral with, an edge of a panel, comprising the steps of:

transporting the panel along a conveyor into a shear in line with the panel while extending an adjustable guide rail on the shear to a first extended position to engage the tab on the panel to guide the panel into the shear;

holding the panel stationary after it has been transported into the shear;

retracting the adjustable guide rail away from the tab after the panel has been held stationary;

shearing the tab from the panel;

extending the adjustable guide rail on the shear to a second extended position to engage the panel at a cut edge that has been integral with the tab; and

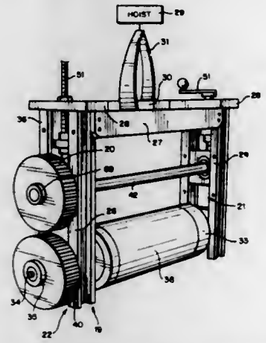
releasing the panel to permit it to be transported by the conveyor away from the shear while the panel is guided by the adjustable guide rail.

5,598,758

QUICK CHANGE CASSETTE HOLE PUNCH UNIT

Joe R. Chmelar, Caldwell, Tex., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Continuation of Ser. No. 94,883, Jul. 22, 1993, abandoned. This application Aug. 31, 1995, Ser. No. 524,167
Int. Cl.[6] B26D *1/62*
U.S. Cl. 83—100 **10 Claims**



1. A removable hole punch cassette adapted to be inserted into and removed from a collator having a vertical slot for receiving the hole punch cassette, said cassette comprising:

a cassette frame having first and second side members and a top member, wherein the first and second side members comprise guide rails to slidably engage the vertical slot of the collator;

an anvil cylinder mounted on an anvil shaft, said anvil shaft mounted in bearings fixed to said side members to define a first substantially horizontal axis stationary with respect to said cassette frame;

an anvil cylinder shaft drive gear mounted on said anvil shaft;

a punch cylinder shaft parallel to said anvil cylinder in said cassette frame and releasably mounted to first and second punch cylinder bearing assemblies;

the punch cylinder bearing assemblies each comprise a bearing block reciprocally mounted in said first and second side respectively, each bearing assembly having an annular outer bearing component mounted within the block and an inner bearing cylindrical component mounted within the annular outer bearing component, wherein the punch cylinder shalt includes opposite ends each releasably mounted in a respective one of the inner bearing cylindrical components;

a punch cylinder releasably mounted on said punch cylinder shaft and the cylinder shaft is slidable in a substantially horizontal direction to release the cylinder from said punch cylinder shaft and from said cassette; and

means for releasably mounting a punch cylinder drive gear on said punch cylinder shaft so that the cylinder shaft is axially removable in a substantially horizontal direction from said cassette.

5,598,759

FOOD SLICING RACK DEVICES

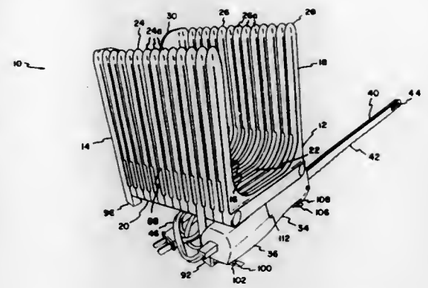
Bradley D. Sie, Mondovi; Jeffry A. Madson, and Maryjo R. Cohen, both of Eau Claire, all of Wis., assignors to National Presto Industries, Inc., Eau Claire, Wis.

Filed May 12, 1994, Ser. No. 241,623
Int. Cl.[6] B26D *1/10*
U.S. Cl. 83—762 **18 Claims**

1. A food slicing rack device comprising:

a base with a top surface; and

two rows of spaced apart fingers defining knife guide slots extending from the base, the two rows of fingers spaced from each other to receive a food item for slicing on the top surface of the base between the two rows of fingers, a plurality of the fingers of each row including an electric knife rivet recess adjacent to an end of the respective fingers near the base, wherein a distance between two adjacent fingers in the same row is greater at the electric knife rivet recess relative to a distance between the two adjacent fingers at a region disposed away from the electric knife rivet recess.

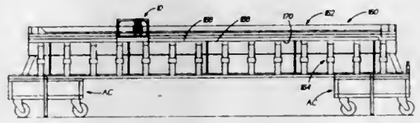


5,598,760

EOP SCRIBE DEVICE

Steve Sucic, 335 Bronson Rd., Southport, Conn. 06490, and Corey D. Jones, 10 Farmwood Dr., Prospect, Conn. 06712

Filed Jul. 15, 1994, Ser. No. 275,557
Int. Cl.[6] B23P *15/00*
U.S. Cl. 83—880 **12 Claims**



1. An edge-of-part (EOP) scribe device for scribing trim lines in exposed segments of an oversized, cured leading-edge sheath mounted on a sheath mold assembly wherein the scribed trim lines correspond to profiles of finished edges of a prefabricated leading-edge sheath, comprising:

a primary carriage assembly mounted in movable combination with the sheath mold assembly;

opposed pairs of guide rails affixed in combination with said primary carriage assembly;

a secondary carriage assembly mounted in movable combination with each said pair of guide rails, each said secondary carriage assembly including

a spring-loaded scribe head mounted in combination with said secondary carriage assembly, said spring-loaded scribe head including a hardened scriber rigidly affixed in combination therewith, and

means for inducing vertical displacements in said secondary carriage assembly that correspond to the profile of one finished edge of the prefabricated leading-edge sheath;

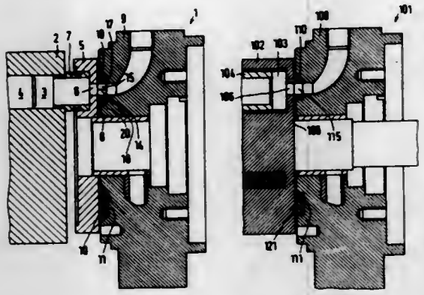
said hardened scribers being operative to scribe trim lines in the exposed segments of the oversized, cured leading-edge sheath as a result of spanwise translation of said primary carriage assembly along the sheath mold assembly, the scribed trim lines corresponding to the profiles of the finished edges of the prefabricated leading-edge sheath.

5,598,761

HYDRAULIC AXIAL PISTON MACHINE WITH CONTROL FACE LOCATED IN REAR FLANGE AND FRICTION-REDUCING PLASTIC INSERT IN REAR FLANGE

Egon Kristensen, Nordborg, and Sten J. Olesen, Sønderborg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Oct. 30, 1995, Ser. No. 550,449
Claims priority, application Germany, Nov. 30, 1994, 44 42 556.2
Int. Cl.[6] F01B 13/04
U.S. Cl. 92—57 8 Claims



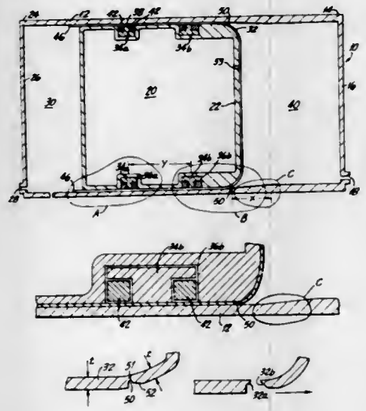
1. A hydraulic axial piston machine having a cylinder drum which is mounted rotatably in a housing and comprises at least one cylinder which, on rotation of the cylinder drum, passes over control kidneys in a control face, the control face being located on a rear flange of the housing, and the control kidneys having a plastic material insert which is arranged in the rear flange of the machine.

5,598,762

FLUID STORAGE TANK EMPLOYING AN ISOLATION SEAL

Kirk Sneddon, Sayville, N.Y., assignor to Arde Inc., Norwood, N.J.

Filed Jul. 31, 1995, Ser. No. 509,568
Int. Cl.[6] F16J 9/00
U.S. Cl. 92—192 12 Claims



1. A cylindrical tank for storing fluid comprising:

a cylindrical body forming a wall of the tank, said cylindrical body defining an interior cavity having a first diameter region, a second diameter region, and a transition region therebetween;

an exit end wall fixedly attached to an exit end of said cylindrical body by a fluid tight seal;

an inlet end wall fixedly attached to an inlet end of said cylindrical body by a fluid tight seal;

a piston slidably disposed within said interior cavity between said exit end wall and said inlet end wall, said piston having a piston head and a circumferential side wall, said circumferential side wall having first and second circumferential recesses;

leading and trailing annular seals mounted within said first and second circumferential seal recesses in said piston; and

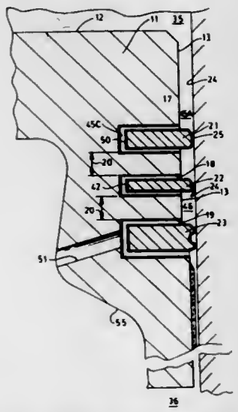
an isolation seal member mounted within said cylindrical tank between said piston and said cylindrical body, said isolation seal covering said piston head and said leading and trailing annular seals, said isolation seal member being fixedly attached by a fluid tight seal to the circumferential inner surface of said cylindrical body at a point between said trailing annular seal and said inlet end wall, wherein said isolation seal member forms a fluid tight storage chamber within said cylindrical body between said isolation seal member and said exit end wall.

5,598,763

FLUTTER FREE PISTON RING ASSEMBLY

V. Durga N. Rao, Bloomfield Township, and David A. Yeager, Plymouth, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 14, 1994, Ser. No. 213,401
Int. Cl.[6] F16J 1/04
U.S. Cl. 92—212 8 Claims



1. A piston and ring assembly operative within a cylindrical bore wall to retain fluids to one side, the piston having a side wall for movement along the cylindrical wall, comprising:

(a) the piston having one or more spaced grooves in said side wall, each groove defining a pair of interior groove surfaces spaced apart a uniform distance;

(b) at least one sealing element presenting a pair of opposed surfaces operating between and along said pair of groove surfaces, said at least one sealing element being capable of engaging said cylindrical wall, the spacing between said opposed surfaces of said at least one sealing element and said pair of interior surfaces of said groove being no greater than ten microns; and

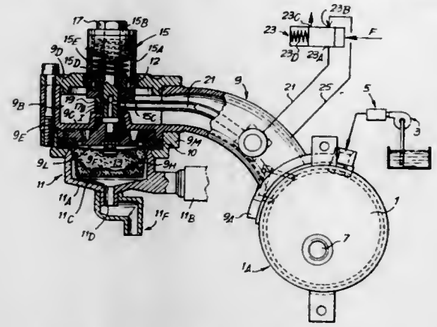
(c) a continuous solid film lubricant mixture coating said groove surfaces and at least the opposed surfaces of said at least one sealing element, whereby surface adhesion of said fluid present in said spacing inhibiting migration of such fluid through said spacing and flutter of said at least one sealing element in said spacing being essentially eliminated.

5,598,764

ESPRESSO COFFEE MACHINE FOR THE DIFFERENTIATED APPLICATION OF THE WATER PRESSURE AND FOR PREINFUSION IN THE DISPENSING GROUP

Piero Bambi, Florence, Italy, assignor to La Marzocco S.r.l., Florence, Italy

Filed Jul. 18, 1995, Ser. No. 503,551
Claims priority, application Italy, Jul. 18, 1994, FI94A0140
Int. Cl.[6] A47J 31/06
U.S. Cl. 99—295 4 Claims



1. An espresso coffee machine, comprising:

a pump which feeds water to a boiler for beating the water;

a delivery pipe for drawing the water from the boiler and conveying it, via a three-way valve, to an infusion group in which coffee powder is infused and from which coffee is dispensed; and

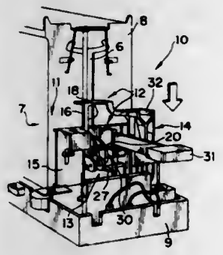
a pressure damping device located on said delivery pipe upstream of the infusion group which ensures that a boiler pressure is not applied abruptly to the coffee powder.

5,598,765

TOASTER

Kit C. Yip, Kowloon, Hong Kong, assignor to G.E.W. Corporation Limited, Kowloon, Hong Kong

Filed Aug. 18, 1995, Ser. No. 516,619
Claims priority, application United Kingdom, Aug. 18, 1994, 9416777
Int. Cl.[6] A47J 37/08
U.S. Cl. 99—327 16 Claims



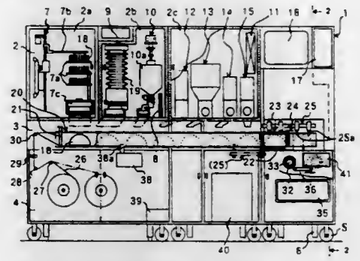
1. A toaster comprising a casing, a carrier for supporting a slice of bread, said carrier being movable between an upper position to expose a said slice of bread outside the casing and a lower position to render a said slice of bread inside the casing, a heating element provided inside the casing for heating a said slice of bread when the carrier is in the lower position, an internal operating mechanism for moving the carrier, said operating mechanism comprising spring means for resiliently biassing the carrier upwards and holding means comprising a stationary solenoid for holding the carrier in the lower position, and a timer for controlling the time period during which a said slice of bread is to be heated by the heating element, characterised in that the holding means is releasable by a user at a point other than the solenoid in order to release the carrier from the lower position at any time during the said time period.

5,598,766

CONTROL CIRCUIT FOR AN AUTOMATIC COOKING APPARATUS

Yoshimasa Yamada, Mie, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed May 20, 1996, Ser. No. 650,307
Claims priority, application Japan, May 24, 1995, 7-124677
Int. Cl.[6] A47J 37/00; A23P 1/00
U.S. Cl. 99—331 5 Claims



1. A control circuit for an automatic cooking apparatus including a plurality of mechanisms for supplying, based on input data, plural kinds of food stuffs to cook various foods, the control circuit comprising:

operating means for operating said plurality of mechanisms;

a first DC power supply connected to a utility power supply, said first DC power supply supplying electric power to said operating means;

driving means for controlling said operating means; and

a second DC power supply connected to the utility power supply, said second DC power supply supplying electric power to said driving means so that if a noise voltage is generated in one of the operating means and the driving means, the noise voltage is not supplied to the other of the operating means and the driving means.

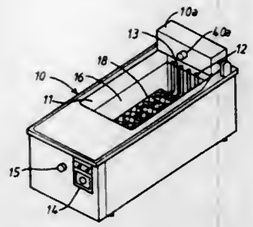
5,598,767

COOKING APPARATUS SUCH AS FRYER OR THE LIKE FOR FRYING FOOD

Katsunobu Minari, Nagoya, and Kaori Ueda, Toyoake, both of Japan, assignors to Hoshizaki Denki Kabushiki Kaisha, Toyoake, Japan

Division of Ser. No. 411,863, Mar. 28, 1995, which is a continuation of Ser. No. 972,017, Nov. 6, 1992. This application Sep. 5, 1995, Ser. No. 523,620
Claims priority, application Japan, Mar. 9, 1992, 4-21342; Mar. 9, 1992, 4-21343; Mar. 9, 1992, 4-86385; Mar. 9, 1992, 4-86386; Sep. 28, 1992, 4-258354
Int. Cl.[6] A47J 37/12
U.S. Cl. 99—332 5 Claims

1. A cooking apparatus for frying food having an oil tank filled therein with cooking oil to be maintained in heated condition by a heating means, the cooking apparatus comprising:

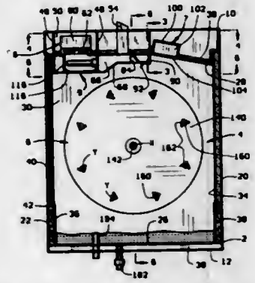


a bousing having said oil tank disposed therein;
detection means disposed adjacent said cooking oil for detecting an amount of vapor rising from the food after the food has been thrown into the heated cooking oil, said detection means having a vapor detecting element mounted on said housing and located above the surface of the cooking oil to be directly exposed to the vapor rising from the food;
first means in said housing for determining if said detected amount of vapor has reached a predetermined amount of vapor immediately after the food has been thrown into the heated oil, and for generating a decision signal if the predetermined amount has been reached; and
second means in said housing, said second means being coupled to said detection means and said first means, said second means responsive to said decision signal for measuring a predetermined time required for frying completion of the food and for determining frying completion of the food at an end of measurement of said predetermined time.

5,598,768

Patent Not Issued For This Number

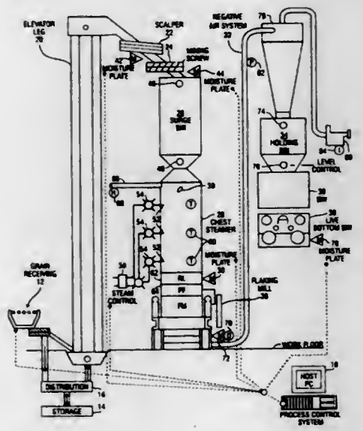
5,598,769
COOKING OVEN
Clement J. Luebke, Indian Rocks Beach, and Keith A. Stanger, New Port Richey, both of Fla., assignors to Foodservice Equipment, Engineering & Consulting, Inc., Oldsmar, Fla.
Filed Apr. 26, 1995, Ser. No. 429,059
Int. Cl.[6] A47J *37/04*; A21B *1/08*
U.S. Cl. 99—395 **27 Claims**



1. A cooking oven comprising: a housing having walls that enclose an oven chamber; food holders mounted on the housing within the oven chamber for supporting food within the chamber; a gas-fired burner located in the housing and having a face exposed to the oven chamber at one of the walls and exposed to food supported on the food holders in the oven chamber, the burner being capable of supporting along its face a flame that creates infrared radiation; a duct located in the housing and having an inlet exposed to the oven chamber and an outlet located along the same wall as that along which the face of the burner is located; and a blower located in the duct for circulating air through the duct and the oven chamber, with the air being drawn into the duct at the inlet and discharged at the outlet; the outlet for the duct being oriented to direct air in the same direction as that toward which the face of the burner is presented, and without having the air flow across or impinge upon the face of the burner with enough intensity to extinguish the flame that is supported along the face of the burner.

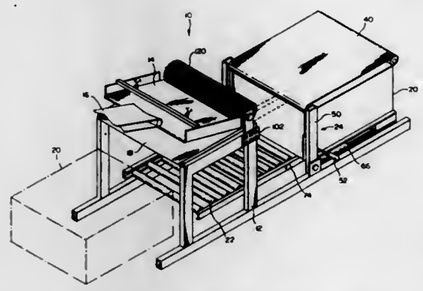
2. A cooking oven according to claim 1 wherein the burner has a plenum and tiles located in front of the plenum, the face of the burner being on the tiles; and wherein the oven further comprises a mixing chamber where a gaseous fuel is mixed with air, the mixing chamber being connected to the plenum of the burner.

5,598,770
AUTOMATED FEED GRAIN PROCESSING APPARATUS AND METHOD
Thomas S. Campbell, Tulia; Ken W. Ridenour, and William F. Casey, both of Amarillo, all of Tex., assignors to Cactus Feeders, Inc., Amarillo, Tex.
Filed Jul. 25, 1995, Ser. No. 506,592
Int. Cl.[6] A23N *17/00*
U.S. Cl. 99—487 **26 Claims**



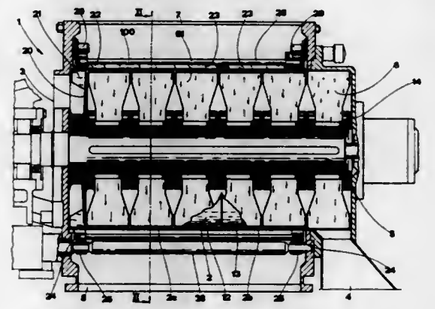
1. An automated, continuous process feed grain conditioning system for manufacturing a flaked grain livestock feed product comprising:
a grain storage facility;
a grain conveyor connected to the storage facility for conveying grain from the storage facility to a wetting system;
a wetting system having an input for receiving grain from the grain conveyor, the wetting system including a mixing chamber, a mixing auger disposed within the mixing chamber, a nozzle for
adding liquid to the grain within the chamber, a liquid control valve coupled
to the nozzle and to a source of liquid, and an output for wetted grain;
a first moisture sensor that generates a first moisture signal indicative of a moisture content of the grain at the input of the wetting system;
a second moisture sensor that generates a second moisture signal indicative of a moisture content of the grain at the output of the wetting system;
a steam chest coupled to the output of the wetting system to receive wetted grain from the wetting system, the steam chest including one or more steam inlet nozzles, one or more steam control valves coupled to the steam inlet nozzles, and an output for steamed grain;
a third moisture sensor that generates a third moisture signal indicative of a moisture content of the grain at the output of the steam chest;
a flaking mill connected to the output of the steam chest to receive steamed grain from the steam chest; and
an automatic electronic control system coupled to the first, second and third moisture sensors for receiving the corresponding moisture signals, the control system also coupled to the liquid and steam control valves for controlling an amount of liquid and steam applied to the grain in response to the moisture signals.

5,598,771
DRY FRUIT BIN FILLING APPARATUS
Tim B. Main, and Scott C. Main, both of 1030 Gibson Rd., P.O. Box 785, Selah, Wash. 98942
Filed Aug. 8, 1995, Ser. No. 512,744
Int. Cl.[6] A23L *1/00*; A23N *15/00*; B65B *1/04*;*39/00*
U.S. Cl. 99—489 **17 Claims**



1. A dry fruit bin filler for rapidly filling standard-sized fruit bins with fruit, while minimizing bruising damage to the fruit, comprising:
a frame supporting a fruit transfer belt, the transfer belt adapted to receive fruit from a fruit transfer source and having a belt width approximately the same as a minimum width of a standard fruit bin;
a fruit distribution belt supported by the frame below the transfer belt, the distribution belt positioned and dimensioned to receive fruit from the transfer belt;
bi-directional, distribution belt reciprocating means for bi-directionally reciprocating the distribution belt relative to the transfer belt, the reciprocating means functional to successively advance, then retract the distribution belt toward, then away from, a bottom of a fruit bin positioned forward of the frame in a sideways bin loading orientation during a bin loading operation;
intermittently operable, transfer belt drive means for driving the transfer belt in a forward direction while the distribution belt reciprocates toward the bottom of the bin, and for discontinuing driving of the transfer belt while the distribution belt reciprocates away from the bottom of the bin;
intermittently operable, distribution belt rotating means for rotating the distribution belt in a forward direction while the distribution belt reciprocates away from bottom of the bin, and for discontinuing rotation of the distribution belt while the distribution belt reciprocates toward the bottom of the bin; and
belt control integration means for integrating control of distribution belt reciprocation with transfer belt driving and distribution belt rotation, so that the transfer belt is driven at a rate that substantially matches a concurrent, forward reciprocation rate of the distribution belt, and the distribution belt is rotated at a rate that substantially matches a concurrent, rearward reciprocation rate of the distribution belt.

5,598,772
DEVICE FOR EXTRACTING JUICE OR PULP FROM FOOD PRODUCE
Camillo Catelli, Parma, Italy, assignor to Rossi & Catelli s.p.A., Parma, Italy
Filed Dec. 27, 1995, Ser. No. 578,940
Claims priority, application Italy, Jan. 10, 1995, MO95A0003; Jan. 10, 1995, MO95A0004; Jan. 10, 1995, MO95A0005
Int. Cl.[6] A23N *1/00*; B30B *9/20*
U.S. Cl. 99—510 **19 Claims**

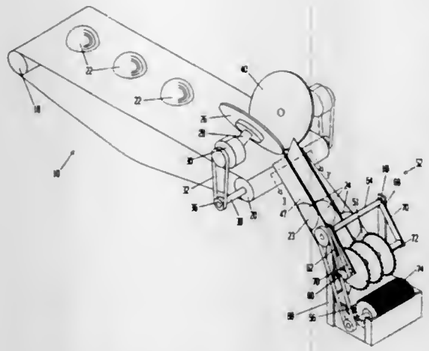


1. A device for extracting juice or pulp from food produce, comprising:
a tubular strain provided with an inlet for a produce to be treated and a first outlet for discharge of waste material, a first rotatable shaft bearing a plurality of spatulas located coaxially with said tubular strain and extending from the inlet to the first outlet, an extremity of each of the plurality of spatulas situated close to a surface of said strain;
a casing surrounding said strain provided with a second outlet for a product extracted from said produce;
wherein said strain is provided with holes having a progressively or step-by-step diminishing diameter going from said inlet to said first outlet.

5,598,773
MELON RIND TRIMMING DEVICE
John J. Hoffseth, P.O. Box 2106, Freedom, Calif. 95019-2106
Continuation-in-part of Ser. No. 153,216, Nov. 15, 1993, abandoned. This application Jul. 13, 1995, Ser. No. 501,904
Int. Cl.[6] A23N *7/00*; A47J *17/00*
U.S. Cl. 99—585 **19 Claims**

1. A device for removal of rind from melons which comprises:
a. a cutting station having:
(1) a cutting member having an upwardly facing cutting edge which is supported on a shoe having a flat planar pressure plate with sufficient rigidity to resist flexing under the applied pressure of said rind;
(2) a rotary feeder having a body with an external surface of revolution with a plurality of teeth distributed about said external surface and rotational mounted in said peeler at said cutting station adjacent to and spaced apart from said cutting member by a distance sufficient to permit passage of separated rind therebetween; and
(3) drive means to rotate said feeder; and

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b. means to introduce melon sectors to said cutting station for engagement with said rotary feeder which comprises a first conveyor to deliver melon sectors to said cutting station with the rind surfaces of said sectors exposed and including a moving member with external teeth located above the first conveyor, said cutting member and said rotary feeder with the teeth of said moving member positioned to engage the rind surfaces of said melon sectors on said conveyor and transfer said melon sectors to said rotary feeder.

5,598,774

DEVICE FOR THE TREATMENT OF FLAT MATERIALS

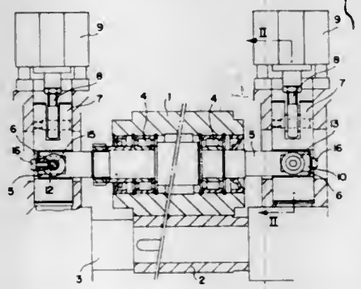
Charles Boegli, Marin, Switzerland, assignor to Boegli - Gravures S.A., Marin, Switzerland

Filed May 24, 1995, Ser. No. 449,819

Claims priority, application Switzerland, Jun. 6, 1994, 01769/94

Int. Cl.[6] B30B *3/04*

U.S. Cl. 100—170 **9 Claims**



1. A device for the treatment of flat materials comprising:

at least one pair of rolls, each roll having an axle; and

a machine frame for supporting the axle of each of the rolls;

wherein the flat material is passed in a travelling direction between at least one pair of rolls under pressure; and

wherein at least one of said axles is supported by means of flexible members in such a manner that a mutual flexible adjusting capacity of the axles is provided in both the pressure direction and in the travelling direction.

5,598,775

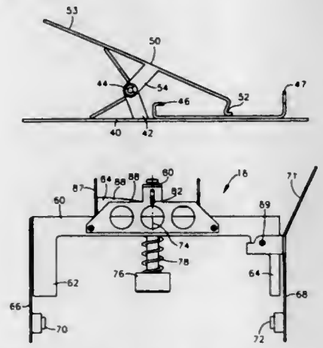
CENTERING LID SEAL CLIP APPARATUS

Sutee Vongfuangfoo, Sunnyvale; Mirek Boruta, Castro Valley, and Galen Kirkpatrick, Fremont, all of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Oct. 4, 1995, Ser. No. 539,189

Int. Cl.[6] B30B *9/00*

U.S. Cl. 100—233 **26 Claims**



1. An apparatus for applying a resilient force bias along a loading axis substantially central of and perpendicular to the lid of an integrated circuit package while such package is confined in a package alignment socket portion of an assembly boat having a substantially uniform width and first and second indexing pin apertures, said apparatus comprising: a frame member for transversely spanning an assembly boat width, a first indexing pin secured to said frame member and aligned along a first direction to penetrate a first indexing pin aperture in an assembly boat, a second indexing pin secured to said frame member and aligned along a second direction to penetrate a second indexing pin aperture in said assembly boat, the second direction of penetration being substantially different from the first direction of penetration; a rocker arm secured to said frame member for pivotal movement about a pivot axis; pressure foot means secured to said rocker arm for bearing against an integrated circuit package lid; and, resilient force means to bias the bearing of said pressure foot against said package lid.

5,598,776

SCREEN PRINTING APPARATUS

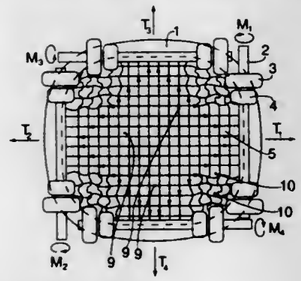
Slobodan Casl, Williamstown, N.J., assignor to Sony Corporation, Tokyo, Japan, and Sony Music Entertainment, Inc., New York, N.Y.

Filed Jun. 21, 1995, Ser. No. 493,031

Int. Cl.[6] B05C *17/08*

U.S. Cl. 101—127.1 **4 Claims**

1. A screen printing apparatus for tensioning a printing area



within a printing screen comprising:

a base frame having an upper curved section spaced apart from a lower curved section and a left curved section spaced apart from a right curved section, wherein said upper and lower curved sections and said left and right curved sections extend outward from each other, respectively, to form a substantially rectangular shape having convex sides;

upper, lower, left and right tensioning rods positioned adjacent said upper, lower, left and right convex sections, respectively, wherein said upper tensioning rod is positioned substantially parallel to said lower tensioning rod and said left tensioning rod is positioned substantially parallel to said right tensioning rod such that said upper, lower, left and right tensioning rods form a substantially rectangular shape and wherein said upper, lower, left and right tensioning rods are adapted for attachment of said printing screen;

locking means for keeping said upper, lower, left and right tensioning rods in place; and

holding means for enabling rotation of said upper, lower, left and right tensioning rods

wherein said upper, lower, left angle right tensioning rods are selectively rotated in a predetermined direction to increase tension in said printing area.

5,598,777

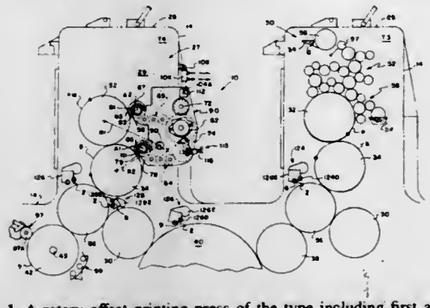
RETRACTABLE PRINTING/COATING UNIT OPERABLE ON THE PLATE AND BLANKET CYLINDERS

Howard W. DeMoore, 10954 Shady Trail, Dallas, Tex. 75220; Ronald M. Rendleman, Dallas, and John W. Bird, Carrollton, both of Tex., assignors to Howard W. DeMoore, Dallas, Tex.

Filed Oct. 2, 1995, Ser. No. 538,274

Int. Cl.[6] B41F *5/02;5/22;31/36*

U.S. Cl. 101—177 **19 Claims**



1. A rotary offset printing press of the type including first and second printing units, the first printing unit comprising:

a plate cylinder having a flexographic printing plate mounted thereon;

a blanket cylinder having a blanket disposed in ink or coating transfer engagement with the flexographic printing plate for receiving aqueous or flexographic printing ink or coating material from the flexographic printing plate;

an impression cylinder disposed adjacent the blanket cylinder thereby forming a nip between the blanket and the impression cylinder whereby the aqueous or flexographic printing ink or coating material can be transferred from the blanket to a substrate as the substrate is transferred through the nip;

inking/coating apparatus movably coupled to the first printing unit for movement to an on-impression operative position and to an off-impression retracted position;

the inking/coating apparatus including container means for containing a volume of aqueous or flexographic ink or coating material, and at least one applicator roller coupled to the container means for applying aqueous or flexographic ink or coating material to the flexographic printing plate or to the blanket when the inking/coating apparatus is in the on-impression operative position;

the container means having a partition dividing the container means thereby defining a first container region and a second container region;

the at least one applicator roller having first and second transfer surfaces and means separating the first and second transfer surfaces; and,

the first and second transfer surfaces of the at least one applicator roller being disposed within the first and second container regions for rolling contact with aqueous or flexographic printing ink or coating material contained within the first and second container regions, respectively.

5,598,778

WIDTH ADJUSTING DEVICE AND METHOD FOR A PAPER WEB, AND LITHOGRAPHIC ROTARY PRESS HAVING SAME

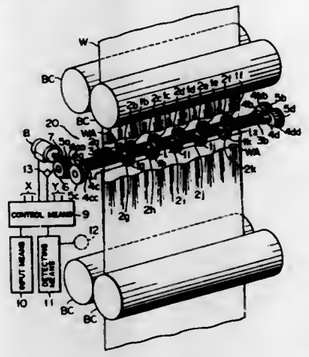
Takashi Iijima, Yokosuka, and Hideo Ohta, Tokyo, both of Japan, assignors to Kabushikigaisha Tokyo Kikai Seisakusho, Tokyo, Japan

Division of Ser. No. 291,470, Aug. 17, 1994, Pat. No. 5,487,335, which is a continuation of Ser. No. 889,906, May 29, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 485,127

Claims priority, application Japan, Dec. 26, 1991, 3-357580

Int. Cl.[6] B41F *5/06*

U.S. Cl. 101—181 **26 Claims**



1. A printing apparatus through which a dampened paper web travels, said printing apparatus comprising:

first and second printing sections which each print an image on said dampened paper web as said dampened paper web travels through said first and second printing sections; and

means for variably changing a width of said dampened paper web by forming said dampened paper web into a wavy surface so that said image formed on said dampened paper web at said first printing section and said image formed on said dampened paper web at said second printing section are properly aligned with each other, said changing means being disposed between said first and second printing sections;

wherein said changing means includes first and second contact devices disposed at opposite first and second surfaces of said dampened paper web such that said dampened paper web travels between said first and second contact devices; and

wherein said first and second contact devices respectively have a plurality of first and second contact members that are eccentrically supported thereon for rotation about same respective first and second shafts.

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5,598,779

SHEET GUIDING APPARATUS FOR A TURNING DEVICE IN A ROTARY PRINTING MACHINE FOR FACE-PRINTING AND/OR PERFECTING

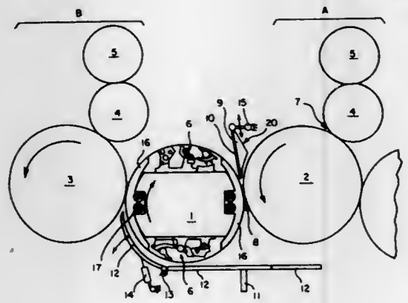
Hanns-Otto Haas, Heusenstamm; Ingo Kobler, deceased, late of Anhausen; Klaus Wolf, Oppenweiler; Peter Mayer, Muhlheim; Josef Mathes, Offenbach; Fred Spies, Muhlheim, and Stephan Kanzler, Langen, all of Germany, assignors to MAN Roland Druckmaschinen AG, Offenbach, Germany

Filed Sep. 29, 1995, Ser. No. 536,427

Claims priority, application Germany, Sep. 29, 1994, 44 34 778.2

Int. Cl.[6] B41F 5/02

U.S. Cl. 101—230 10 Claims



1. Sheet-guiding apparatus for a turning device disposed between two printing units in a rotary printing machine adapted for both face-printing and perfecting printing, said turning device including a turning drum and at least one upstream sheet-guiding cylinder defining a sheet transfer region and a sheet transfer path, said turning drum having both at least one leading edge sheet gripper system disposed thereon for face-printing and sheet transfer and at least one trailing edge gripper system disposed thereon for sheet turning and transfer incident to perfecting printing, and at least one sheet-bearing surface following said gripper systems, said sheet-guiding apparatus comprising, in combination,

air blower means disposed upstream of said sheet transfer region, said air blower means including a first set of air outlet openings for directing compressed air toward said upstream sheet-guiding cylinder and at least a second air outlet opening for directing compressed air into said sheet transfer region in a direction substantially tangential to both of said upstream sheet-guiding cylinder and said turning drum;

at least one switchable blower/suction device disposed within said turning drum and communicating with a plurality of air openings disposed in said sheet bearing surface, said blower/suction device including means for selectively blowing and sucking air through said air openings in said sheet bearing surface, and

a lower sheet-guiding device disposed below said sheet transfer path, said lower sheet-guiding device having a plurality of upwardly directed air openings and including air source means selectively switchable between providing compressed air flow and providing suction air flow through said plurality of upwardly directed air openings.

5,598,780

PLATE CYLINDER

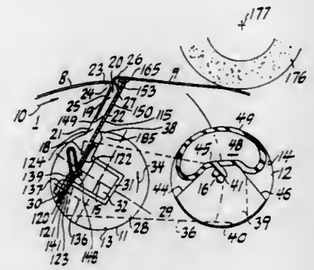
Jean-Claude Marmin, Estrees-Saint-Denis, and Joel Bastard, Thiverny, both of France, assignors to Heidelberg Harris, S.A., and Heidelberg Druckmaschinen AG, both of Germany

Continuation of Ser. No. 293,996, Aug. 22, 1994, abandoned. This application Oct. 30, 1995, Ser. No. 550,489

Claims priority, application France, Aug. 20, 1993, 93 10143

Int. Cl.[6] B41F 27/12

U.S. Cl. 101—415.1 12 Claims



1. A plate cylinder for fastening a printing plate having a posterior end and an anterior end, the plate cylinder having a longitudinal axis of rotation, the plate cylinder comprising:

an external surface, the plate cylinder having a longitudinal bore and a longitudinal slit, the longitudinal slit having a first mouth and a second mouth, the first mouth opening along the external surface of the plate cylinder and the second mouth opening along the longitudinal bore;

the longitudinal slit defining a rear side and a front side, the rear side of the longitudinal slit connecting with the external surface of the printing plate to form a spur for fastening the anterior end of the printing plate;

a leaf having a first end and a second end, the leaf located in the longitudinal slit and having a hook-forming rim at the first end facing rearwardly, the hook-forming rim for contacting the posterior end of the printing plate;

a bar located at least partially in the longitudinal bore and connected to the leaf at the second end of the leaf, the bar moving the leaf between a first limiting position in which the leaf projects with respect to the external surface and a second limiting position in which the leaf is retracted into the longitudinal slit, the leaf being engageable and disengageable from the bar; and

an elastic retaining element securing the leaf to the bar, the leaf being supported in its engaged position by a side wall.

5,598,781

AUTOMATIC PLATE EXCHANGE/PLATE REGISTRATION METHOD AND APPARATUS

Fumio Osawa; Hideo Watanabe; Masatsugu Sekine, all of Ibaraki, and Taro Shimanuki, Yamagata, all of Japan, assignors to Komori Corporation, Japan

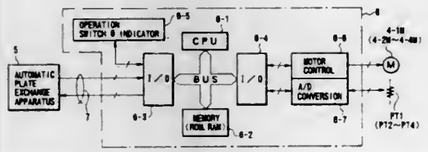
Continuation of Ser. No. 300,074, Sep. 2, 1994, abandoned, which is a continuation of Ser. No. 112,639, Aug. 25, 1993, abandoned, which is a continuation of Ser. No. 947,401, Sep. 18, 1992, abandoned. This application Jul. 3, 1996, Ser. No. 675,417

Claims priority, application Japan, Sep. 19, 1991, 3-266985

Int. Cl.[6] B41F 27/06;33/16

U.S. Cl. 101—477 2 Claims

1. In a printing press with a plate registration control device, an automatic plate exchange method which adjusts the position relationship of a plate cylinder relative to other cylinders in contact with the plate cylinder, said method comprising the steps of:



storing by the plate registration control device of a current position of said plate cylinder relative to the other cylinders when the plate cylinder is selected for plate exchange, said current position capable of dynamically varying from one plate exchange to the next,

resetting by the plate registration control device of said plate cylinder to an origin after storage of said current position of said plate cylinder,

after said plate cylinder is reset to said origin, performing automatic plate exchange to replace an old plate with a new plate in a state in which said plate cylinder is positioned to said origin, and

returning by the plate registration control device of the plate cylinder with said exchanged new plate to said stored current position.

5,598,782

METHODS OF RAILWAY TRACK MAINTENANCE

Paul W. Wiseman, Oldcot, and David C. Marriott, Beeston, both of England, assignors to British Railways Board, London, England

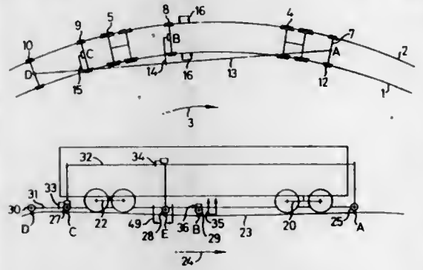
PCT No. PCT/GB93/01174, § 371 Date Nov. 15, 1994, § 102(e) Date Nov. 15, 1994, PCT Pub. No. WO93/25760, PCT Pub. Date Dec. 23, 1993

PCT Filed Jun. 2, 1993, Ser. No. 338,454

Claims priority, application United Kingdom, Jun. 5, 1992, 9211901

Int. Cl.[6] E01B 33/00

U.S. Cl. 104—7.2 15 Claims



1. A method of adjusting a stretch of railway track using a track maintenance machine which runs on the track and which has a) track correcting tools, b) at least one measuring reference system guided by feelers on the track and comprising at least one straight reference line extending from a front position located forwardly of the track maintenance machine on uncorrected track to a rear position located rearwardly of rearmost load bearing wheels of the machine on corrected track and c) a sensor arrangement comprising a first sensor means located adjacent the track correcting tools and a second sensor means located rearwardly of the rearmost load bearing wheels of the track maintenance machine for measuring respective offsets of the track from said line comprising the steps of:

performing a preliminary measuring run to acquire a series of track measurements at spaced points along the track by said first sensor means;

determining a design profile from said measurements;

prescribing correction values necessary to achieve the design profile; and

performing a maintenance run during which the track correcting tools are controlled in accordance with said prescribed correction values whereby to adjust a track geometry, wherein during both the preliminary measuring run and the maintenance run a second series of track measurements is made by said second sensor means at spaced points along the track and offsets measured by said second sensor means during the preliminary measuring run and the maintenance run are used to determine actual adjustment values made at said spaced points along the track.

5,598,783

INTEGRATED TRANSPORTATION SYSTEM INCLUDING TRANSFER VEHICLES

VanMetre Lund, Northbrook, Ill., assignor to Autran Corp., Northbrook, Ill.

Filed Jun. 7, 1995, Ser. No. 475,750

Int. Cl.[6] B61L 3/18

U.S. Cl. 104—88.04 25 Claims



1. A transportation system, comprising: a plurality of carrier vehicles, a guideway for guiding said carrier vehicles for movement therealong and having stop positions therealong, drive means carried by said carrier vehicles for coaction with said guideway for effecting movement of said carrier vehicles along said guideway, control means for controlling said drive means to effect automated movement of each of said carrier vehicles from any one of said stop positions to another of said stop positions, a plurality of bodies of various types each specially adapted to carry a particular type of load, connector means on said bodies and support pad means on said carrier vehicles arranged for interengagement to provide an interconnection between any of said bodies and any of said carrier vehicles, transfer means for effecting guided movement of one of said bodies between a storage position spaced from said guideway and a loading position adjacent one of said carrier vehicles positioned at one of said stop positions, means operable at said one of said positions for interconnecting said connector means of said one of said bodies and said support pad means of said one of said carrier vehicles, releasable locking means for effecting a secure locking interengagement between said connector means and said support pad means to securely connect said one of said bodies and said one of said carrier vehicles, said transfer means including a support element movable horizontally between a first position in supporting relation to said connector means and a second position clear of said supporting relation to said connector means, and said releasable locking means including a locking element operable to a released condition when said support element of said transfer means is moved to said first position and operable to a locked position when said support element of said transfer means is moved to said second position.

5,598,784

EXTRUDED ALUMINUM CONVEYOR WITH TRACK OFFSET

Robert Kubsik, West Bloomfield; Robert Goryca, Farmington Hills; James P. Johnson, Howell, and Eric T. Nemeth, Pinckney, all of Mich., assignors to Jervis B. Webb Company, Farmington Hills, Mich.

Filed Nov. 22, 1994, Ser. No. 346,222

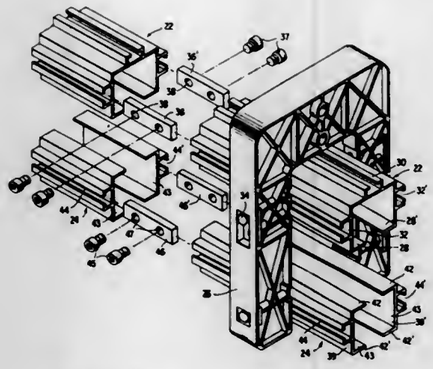
Int. Cl.[6] E01B 25/22

U.S. Cl. 104—111 42 Claims

1. A track segment for a conveyor system, comprising:

a longitudinal track body having

a first side;



a second side; and

a back side;

wherein said first and second sides extend outwardly in the same direction from said back side; and

attachment means disposed on said back side extending oppositely from said first and second sides, for attaching said track body to a support structure;

wherein said attachment means is offset from the centerline between said first and second sides.

5,598,785

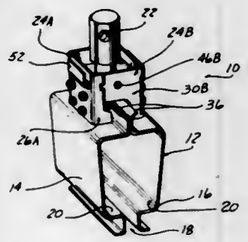
HANGER BRACKET FOR TRACK RAILS

James Zaguroli, Jr., Drayton Plains, Mich., assignor to Knight Industries, Inc., Auburn Hills, Mich.

Filed Nov. 6, 1995, Ser. No. 554,280

Int. Cl.[6] E01B *25/24*

U.S. Cl. 104—111 **12 Claims**



1. A trolley track rail and hanger system comprising:

a generally horizontally extending trolley track rail having a mounting tee flange comprised of a vertical web and oppositely extending flange sides;

a hanger bracket including a pair of U-shaped formed pieces, each having a pair of spaced apart vertical sides and a base portion connecting said vertical sides, such that said formed pieces comprise vertically oriented channels, vertical edges on the end of an upper portion of each of said pair of vertical sides of one piece in abutment with respective vertical edges on the end of an upper portion of each of said pair of sides of the other piece to form an open-topped boxed enclosure, a lower portion of each of said pairs of vertical sides cut away so as to be configured to be fit to said tee flange vertical web by lower portions of each of said pairs of sides extending beneath said flange sides, and defining a space for said vertical web, said formed pieces held together with said upper portions of said side edges in abutment by elongated fasteners extending across said tee flange through said base portion of each formed piece.

5,598,786

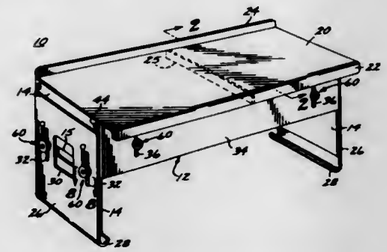
LAPTOP DESK

Lawrence W. Patterson, 251 S. Quintana Dr., Anaheim, Calif. 92807

Filed Jan. 18, 1995, Ser. No. 374,230

Int. Cl.[6] A47B *9/00;23/00*

U.S. Cl. 108—43 **4 Claims**



1. The combination of a portable laptop desk and a bed, chair or the like having an underlying surface, such combination comprising:

a laptop desk frame having a lateral support member which includes a bottom panel, an upstanding front panel fixedly attached to the front edge of the bottom panel and two upstanding side panels fixedly attached to said bottom panel on the lateral opposite ends thereof to form a tray;

a pair of support legs vertically adjustably secured to said side panels with the lower ends of the legs resting upon said underlying surface;

releasable adjustment means interconnecting the upstanding side panels and the legs to hold said legs at a selected vertical spacing relative to said frame and said underlying surface;

a planar article support surface having a forward and rearward edge, said rearward edge being hingedly attached to the lateral support member of said frame so that said article support surface may be tilted relative to said frame;

a tilt arm pivotally mounted to said frame so that when said article support surface is tilted, said tilt arm is engageable with said support surface to hold said support surface at a selected inclination relative to said frame; and,

a thigh rest panel vertically adjustably mounted to the front panel of said frame independent of the vertical adjustment of said legs relative to said frame.

5,598,787

PALLET/SPACER ASSEMBLY

Mattheus A. J. Pronk, Vishouwer 8, NL-1749 HH, Warmenhuizen, Netherlands

PCT No. PCT/NL94/00034, § 371 Date Aug. 14, 1995, § 102(e) Date Aug. 14, 1995, PCT Pub. No. WO94/18082, PCT Pub. Date Aug. 18, 1994

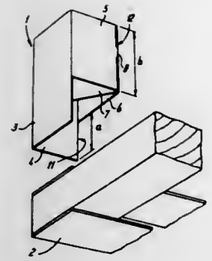
PCT Filed Feb. 11, 1994, Ser. No. 501,092

Claims priority, application Netherlands, Feb. 12, 1993, 9300280

Int. Cl.[6] B65D *19/38*

U.S. Cl. 108—53.1 **11 Claims**

1. Pallets/spacer assembly, comprising a substantially rectangular pallet (2) having a height and four spacers (1) each having a length, one said spacer being fitted at each corner of the pallet, each spacer comprising two walls comprising a first wall (3) and a second wall (4) secured together at substantially right angles, each spacer comprising a first part (11) having a length (a) and a second part (12) having a length (b), only said second part having a third wall (5) secured to a free edge of one of said first and second walls at a right angle, said length (a) of said first part (11) being at least half said height of the pallet, said length (b) of said second part (12) being at least twice said height of the pallet, and means (10) fastening the first part to the pallet.



5,598,788

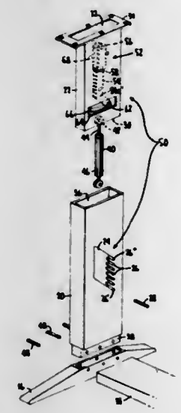
VERTICALLY ADJUSTABLE TABLE

Kurt A. Jonker, Grand Rapids, Mich., assignor to Knoll, Inc., East Greenville, Pa.

Filed Dec. 2, 1994, Ser. No. 348,410

Int. Cl.[6] A47B *9/00*

U.S. Cl. 108—147 **13 Claims**



1. A vertically adjustable workstation comprising:

a pair of vertically adjustable leg assemblies, each leg assembly having a lower end terminating in a foot and an upper end terminating in a bracket, each leg assembly comprising an inner sleeve connected to the bracket and an outer sleeve which is connected to the foot and is hollow such that the inner sleeve is slidably inserted in the outer sleeve;

a work surface, attached between the brackets, for adjusting up and down relative to the feet over a limited range;

each leg assembly including an adjustment assembly which comprises the combination of a gas spring and a ratcheting latch mechanism, which gas spring has one end attached fixed relative to the foot and an opposite end attached fixed relative to the bracket; and

the ratcheting latch mechanism comprising a toggle fixed relative to one of the foot and the bracket, which toggle carries a latch pin, and a member fixed relative to the other of the foot and the bracket, which member is formed with a series of ratchet slots that the latch pin can serially occupy, the ratcheting latch mechanism adjustably interconnecting the bracket with the foot such that the work surface is adjustable up in a series of discrete vertical steps and is adjustable down in one step, during which said one down step the gas spring communicates support from the foot to the work surface.

5,598,789

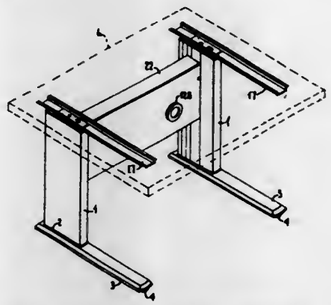
VERTICALLY ADJUSTABLE TABLE

Kurt A. Jonker, Grand Rapids, Mich., assignor to Knoll, Inc., East Greenville, Pa.

Continuation of Ser. No. 213,759, Mar. 15, 1994, abandoned. This application Jan. 18, 1996, Ser. No. 599,433

Int. Cl.[6] A47B *9/00*

U.S. Cl. 108—147 **12 Claims**



1. A vertically adjustable workstation comprising:

a pair of vertically adjustable leg assemblies each having a foot member attached to the lower end and a work surface support member attached to the upper end and a fixed leg portion extending between the foot member and the work surface support member, each fixed leg portion including a closed portion and an open channel portion;

a work surface attached to the work surface support members;

a vertically mounted extension drawer slide assembly housed in one of the closed portion and the open channel portion of each fixed leg portion for assisting in raising and lowering the work surface, each drawer slide assembly comprising an outer channel member and an inner channel member;

a lift bar housed in the other of the closed portion and the open channel portion of each fixed leg portion; and

means connected to the leg assemblies for adjusting the vertical height of the work surface.

5,598,790

FURNITURE WITH A TUBULAR UNDERFRAME

Preben B. Fich, Hillside, United Kingdom, assignor to IDEAssociates Ltd., Dublin, Ireland

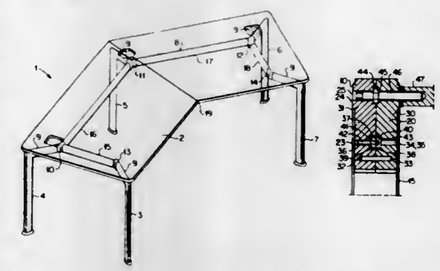
PCT No. PCT/DK93/00123, § 371 Date Sep. 21, 1994, § 102(e) Date Sep. 21, 1994, PCT Pub. No. WO93/19639, PCT Pub. Date Oct. 14, 1993

PCT Filed Apr. 2, 1993, Ser. No. 307,568

Claims priority, application Denmark, Apr. 3, 1992, 0459/92

Int. Cl.[6] A47B *47/00*

U.S. Cl. 108—153 **14 Claims**



1. A piece of furniture (1) comprising an upper part (2) and a lower part, the lower part comprising rails (8) and legs (3, 4, 5, 6,

7) at least partly consisting of tubes; said legs having an upper tubular end comprising a tubular connecting piece (9) fixedly connected with and forming an angle with the leg;

assembly means (10, 11, 12, 13, 14) comprising two connecting members (30, 31) each comprising at least two legs (21, 22), one leg of each member being inserted in an end of the connecting piece (9) and at least one other leg of each member being inserted in a tubular end of a rail (8);

one of the legs of the assembly means forming an angle with at least one other leg of the assembly means;

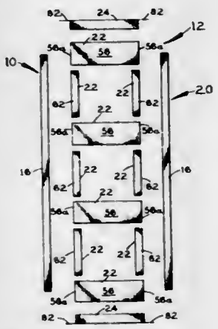
the connecting members being pressed against an inner side of the tubular rails and connecting pieces by means of screws passing through holes in the legs of the connecting members, the legs of the connecting members having a size and shape which substantially fills up an interior of the tubular ends and the screws being accessible through an aperture in a wall of each of the tubular ends of the rails and connecting pieces.

5,598,791

SHELVING APPARATUS AND METHOD OF ASSEMBLY

Alva R. Taylor, 206 SE. 10th St. Apt. 101, Bldg. #3, Dania, Fla. 33004

Filed Mar. 27, 1995, Ser. No. 411,326
Int. Cl.[6] A47B *3/00*
U.S. Cl. 108—193 **11 Claims**



1. A shelving apparatus, comprising:

at least one shelf,

a plurality of elongate channel leg members, each said channel leg member having a substantially U-shaped cross-section, two of each said leg members forming a leg member pair,

a plurality of shelving support elements for each said at least one shelf, each said shelving support element having channel leg member entry portions for mounting within one of said channel leg members, and having shelf support portions extending between the two said channel leg members in each said leg member pair,

wherein there is at least two leg member pairs, said pairs are positioned substantially vertically upright in a spaced apart straight line series,

wherein said shelf members are placed on top of said shelf support portions such that said shelf members extend longitudinally through said series of leg member pairs,

wherein said channel leg members each have a substantially square channel cross section with two substantially parallel, opposing side channel walls connected at corresponding side wall ends by a connecting channel wall, and an open channel side,

and wherein said shelving support elements comprise a series of cross-braces, each in the form of a substantially rectangular planar member having two ends and two longitudinal sides, each of said ends being sized for snugly fitting into said open channel side of each said channel leg member of a leg member pair,

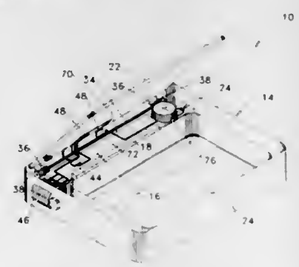
wherein said shelf support portions each include one said longitudinal side, said cross-braces being separated from each other by a certain distance, and additionally comprising a plurality of elongate support pegs each having a length equivalent to said certain distance, sized in cross-section for snug insertion into said leg member open channel sides between said cross-braces, to support said cross-braces and shelves.

5,598,792

CREDIT CARD SECURITY DEVICE HAVING CARD INVALIDATING ELECTROMAGNET

Forrest A. Wales, 2750 Cheyenne Dr., Grand Junction, Colo. 81503

Filed Jan. 9, 1995, Ser. No. 370,378
Int. Cl.[6] E05G *1/14*
U.S. Cl. 109—23 **12 Claims**



1. A credit card security device, comprising:

a case having an access door for storing credit cards,

locking means for releasably locking said door to secure the credit cards therein,

detection means within said case for determining an entry into said case when said door is locked,

invalidating means within said case for invalidating the credit cards,

said detection means operating said invalidating means upon said entry,

said detection means comprising:

a normally open electrical circuit for providing a current flow to operate said invalidating means;

switch means in said circuit and in at least one wall of said case for providing said current flow through said circuit to operate said invalidating means upon said entry, said switch means being normally open to preclude said current flow and closes upon said entry to said case through said wall, whereby to provide said current flow.

5,598,793

ATM ANTI-THEFT DEVICE

Martin Lopez, Jr., 1913 Muny Vista Ct., Alton, Ill. 62002

Continuation-in-part of Ser. No. 408,932, Mar. 22, 1995, Pat. No. 5,537,938, which is a continuation-in-part of Ser. No. 79,098, Jun. 17, 1993, abandoned. This application Jun. 11, 1996, Ser. No. 661,364
Int. Cl.[6] E05G *1/14*
U.S. Cl. 109—25 **12 Claims**

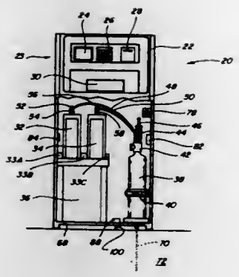
1. An ATM security system comprising:

an ATM housing;

an ATM device disposed within said housing;

a banknote cassette removably disposed within said housing and in communication with said ATM device;

a plurality of holes disposed in and through a surface of said banknote cassette;



a pressurized tank within said housing, said tank including a cap disposed over an outlet opening in said tank;

an indelible liquid ink stored within said pressurized tank;

a manifold positioned adjacent to said holes and in communication with said ink within said pressurized tank via a conduit extending through said cap;

a plurality of extendable ink guides disposed in said manifold, each said ink guide corresponding to one of said holes, said ink guides extendable in reaction to pressure from said ink upon the release thereof, said ink guides contacting said holes upon extension, thereby providing a distribution path for said ink into said banknote cassette in order for said ink to deface the banknotes contained in said banknote cassette upon release of said ink from said tank;

an electrical signal generating device coupled to said housing;

a pyrotechnic initiator coupled to said cap opposite said conduit;

a rupture disc disposed upstream of said conduit; and

an electrical control circuit coupled to said electrical signal generating device, to a source of electrical power, and to said pyrotechnic initiator wherein a signal generated by said electrical signal generating device upon a breach of security of said housing or ATM device is detected by said electrical control circuit and sent to said pyrotechnic initiator that initiates to rupture said rupture disc thereby opening said conduit allowing said pressurized ink to flow from said tank into said cassette.

5,598,794

HIGH ACCURACY AUTOMATICALLY CONTROLLED VARIABLE LINEAR SEED SPACING PLANTING APPARATUS

Louis C. Harms, Evanston, Ill., and Richard Rosenbrock, Bluffton, Ind., assignors to Fluid Power Industries, Inc., Lincolnshire, Ill.

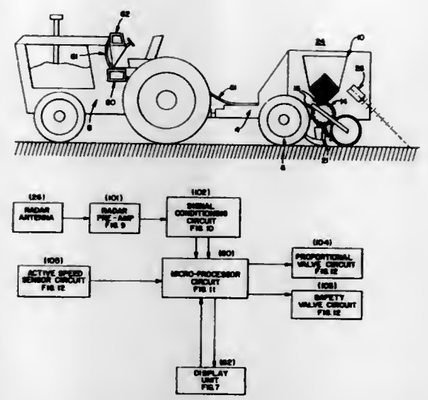
Filed Feb. 13, 1995, Ser. No. 388,214
Int. Cl.[6] G06F *15/20*
U.S. Cl. 111—177 **25 Claims**

1. A control system for a mobile planting permitting discrete plant spacing to be determined and maintained independent of any wheel rotation on said planting apparatus or any towing apparatus, comprising;

(A) a ground speed sensor wherein the rate of movement relative to the ground is determined independent of wheel rotation of said planting apparatus or of wheel rotation of any towing apparatus, wherein said ground speed sensor is a Doppler effect radar;

(B) an input display device for inputting desired linear planting spacing;

(C) a variation speed motor for mechanically driving seed metering devices on said planting apparatus at varying rates independent of any wheel rotation of said planting apparatus or of said towing apparatus, wherein said variable speed motor is capable of changing speeds directly or indirectly in response to an electronic signal; and



(D) a programmable control circuit which communicates electronically with said input/display device, and with said ground speed sensor, wherein said programmable control circuit:

(i) determines the discrete number of seeds to be dispensed by said seed metering devices per linear unit of distance traveled by said planting apparatus based upon the desired linear plant spacing received from the input/display device;

(ii) determines directly or indirectly the number of units of distance traveled by the planting apparatus based upon electronic communications received form said ground speed sensor; and

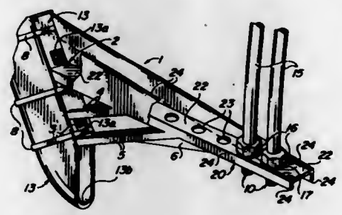
(iii) determines the rate at which said variable speed motor should operate in order to cause said seed metering devices to dispense seeds to achieve said desired linear plant spacing per linear unit of distance traveled by said planting apparatus, and further determines and sends an electronic signal in order to directly or indirectly cause the rate of said variable speed motor to vary in order to correspond to said determined rate at which said variable speed motor is to operate in order to cause said seed metering devices to dispense seeds in order to achieve said desired linear planting spacing; wherein, interposed between said ground speed sensor and said programmable control circuit, and in electronic communication with both, is a signal conditioning circuit.

5,598,795

TUBE ALIGNMENT BRACKET

John L. House, P.O. Box 552, Oak Grove, La. 71263

Continuation-in-part of Ser. No. 348,361, Nov. 30, 1994, Pat. No. 5,490,470. This application May 10, 1995, Ser. No. 438,619
Int. Cl.[6] A01C *15/00*
U.S. Cl. 111—186 **15 Claims**



1. A tube alignment bracket for mounting on a planter having a seed distribution tube including at least one projecting nib for

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dispensing seeds and at least one treatment tube for dispensing treatment liquid, said tube alignment bracket comprising a bracket plate carried by the seed distribution tube, at least one slot provided in said bracket plate for receiving the nib, band means encircling said bracket plate and the seed distribution tube for removably mounting said tube alignment bracket on the seed distribution tube, a leg plate extending from said bracket plate for receiving the treatment tube and locating the treatment tube in substantially fixed proximity with respect to the seed distribution tube and at least one brace connecting said bracket plate and said leg plate, whereby liquid treatment material dispensed from the treatment tubes strike the earth in a selected, close proximity to seeds ejected from the seed distribution tube responsive to operation of the planter.

5,598,796

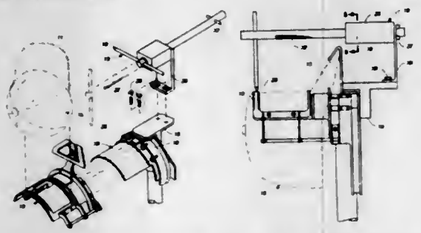
Patent Not Issued For This Number

5,598,797

HAT EMBROIDERY POSITIONING DEVICE AND METHOD

Dennis W. Patterson, 867 August Way, Redding, Calif. 96003

Filed Jul. 20, 1994, Ser. No. 278,373
Int. Cl.[6] D05C *9/04*
U.S. Cl. 112—103 **10 Claims**



10. A method for positioning a hat prior to embroidering on an automatic sewing machine comprising the steps of:

placing a hat onto a cap setting means;

indicating top-dead-center of said cap setting means;

adjusting said hat such that the center of said hat's surface to be embroidered is coincident with the center of said cap setting means;

locking said hat in position in said cap setting device; and

transferring said cap setting means with said hat onto an automatic sewing machine.

5,598,798

SEWING MACHINE ATTACHMENT INCLUDING RECIPROCATING FOLDER AND FEEDER

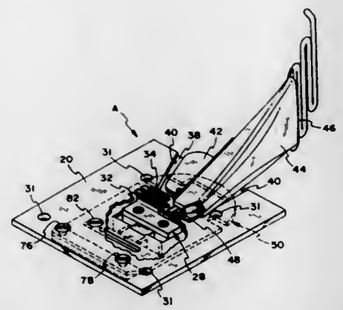
Siu H. Ng, 1621 68th St., Brooklyn, N.Y. 11204

Filed Mar. 18, 1996, Ser. No. 617,150
Int. Cl.[6] D05B *35/06*
U.S. Cl. 112—141 **20 Claims**

1. A sewing machine attachment for sewing a length of hem material onto an edge of a workpiece comprising:

a) means for folding a strip of hem material and aligning the folded hem material with a needle of a sewing machine to enable the sewing of folded hem material onto the edge of a fabric workpiece; and

b) means for operably connecting said folding and aligning means with a workpiece feeder of a sewing machine, said connecting means adapted to provide simultaneous reciprocation of said folding and aligning means with the workpiece feeder whereby movement of the workpiece by the feeder during a sewing operation will cause the strip of hem material to synchronously advance therewith and enable the hem material to be evenly sewn onto the fabric workpiece.

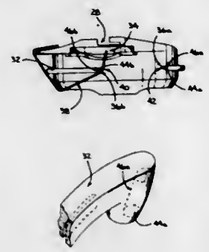


5,598,799

BOBBIN BASKET WITH THREAD GROOVING PROTECTION MEANS

Paul Badillo, Littleton, Colo., assignor to Bakron Corporation, Buffalo Grove, Ill.

Filed Nov. 18, 1994, Ser. No. 342,388
Int. Cl.[6] D05B *57/26*
U.S. Cl. 112—231 **26 Claims**



1. A bobbin basket having a top and a bottom, said bobbin basket comprising:

a cylindrical sidewall that defines a substantially continuous peripheral surface,

a bearing rib having a peripheral surface and spaced end walls;

means for attaching the bearing rib to the cylindrical sidewall in an operative position in which the peripheral surface of the bearing rib extends around at least a portion of the peripheral surface of the sidewall; and

first means separate from the bearing rib defining in conjunction with the peripheral sidewall one of a thread pick up notch and a thread cast off notch at one of the spaced end walls,

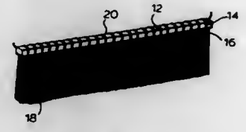
wherein the sidewall has a first receptacle and the bearing rib includes an insert housing that extends into the first receptacle on the sidewall to thereby limit peripheral movement of the bearing rib relative to the cylindrical sidewall.

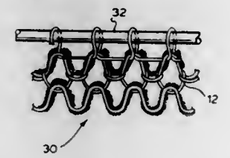
5,598,800

FUR FABRIC AND METHOD OF PRODUCTION

Michel Mosier, Toronto, Canada, assignor to R. B. Management Group Inc., Canada

Division of Ser. No. 135,342, Oct. 13, 1993, Pat. No. 5,466,497.
This application Sep. 12, 1995, Ser. No. 526,934
Claims priority, application Canada, May 19, 1993, 2096577; Jun. 14, 1993, 2098352
Int. Cl.[6] C14B *15/08;* **D05B** *97/00*
U.S. Cl. 112—474.01 **8 Claims**





1. A method of production of a fabric having a furry surface made from an elongated strip of a hair-coated skin of a fur-bearing animal, said strip including base skin layer and a hair coating such that the base skin layer provides a hair-free body portion extending the length of the strip and said hair coating provides a hair-bearing portion extending the length of the strip at the lower part thereof and a non-furry thread of reinforcing material sewn into and extending the length of said hair-free body portion, the method comprising the steps of:

(a) cutting the hair-coated skin to form an elongated strip of said hair-coated skin;

(b) providing a non-furry thread of reinforcing material;

(c) sewing said non-furry thread of reinforcing material into and extending the length of said hair-free body portion in such a manner so as to be free from contact with said hair bearing portion, thereby producing a sewn strip;

(d) twisting said sewn strip, to give a twisted sewn strip such that the skin forms an elongated longitudinally extending core of said sewn strip and the hair stands out radially from the skin and forms a substantially continuous outer layer which encircles the core; and

(e) forming said twisted sewn strip into said fabric.

5,598,801

EASY LOADING SEWING STATION

Ralph F. Conley, Jr.; Ricky J. Frye, both of Miamisburg, and Clint E. Gehres, Moraine, all of Ohio, assignors to MIM Industries, Inc., Miamisburg, Ohio

Division of Ser. No. 945,274, Sep. 14, 1992, Pat. No. 5,441,001.
This application Aug. 14, 1995, Ser. No. 514,536
Int. Cl.[6] D05B *1/00*
U.S. Cl. 112—475.07 **4 Claims**

1. A method of loading workpieces in a sewing station comprising the steps of:

providing a sewing surface defining an edge;

extending a clamp beyond said edge to a loading location;

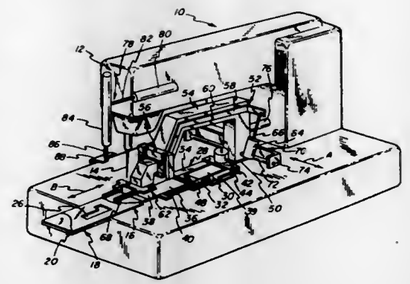
loading a workpiece into said clamp at said loading location;

preclamping said workpiece at said loading location;

transferring the preclamped workpiece into said sewing station;

clamping the workpiece at the sewing station; and

sewing the workpiece at the sewing station.

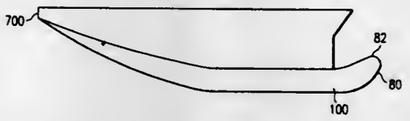


5,598,802

HULL CONFIGURATION

Roar R. Ramde, Rogestien No. 4, Horten, Norway

Filed Apr. 21, 1994, Ser. No. 230,640
Int. Cl.[6] B63B *1/04*
U.S. Cl. 114—56 **16 Claims**



1. A ship of a displacement type with a transom stern, a longitudinal length of L, and defining a base plane, a longitudinal perpendicular center plane, and a design waterline plane, the ship comprising:

approximately sinusoidal waterlines; and

a surface extending from the transom stern at the design waterline plane to the base plane at about L/2 and defining an angle between:

the base plane and

an oblique plane, said oblique plane being defined by:

a line at the intersection of the transom stern and the design waterline plane and

a point located on said surface at about 0.2 L from the transom stern,

a bulge in the hull, arranged along a water-contacting portion of the hull, from about the bow to about the transom stern wherein said bulge is substantially constant in size from about the bow to about L/2 and continuously decreasing in size from about L/2 to about zero at the transom stern.

5,598,803

LOW PROFILE RETRACTABLE LIFTING EYE

John Czipri, Clearwater, Fla., assignor to Accon Marine, Inc., Clearwater, Fla.

Filed Jan. 5, 1996, Ser. No. 583,518
Int. Cl.[6] B63B *21/04*
U.S. Cl. 114—218 **9 Claims**

1. A low profile retractable lifting eye comprising in combination,

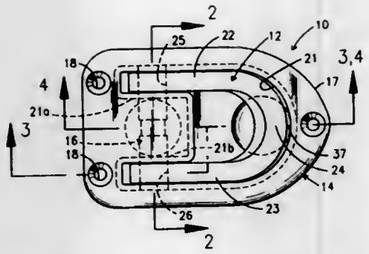
a) a housing adapted to be sealingly and securely received by a boat deck,

b) a lifting eye having a depressed and upright position,

c) a depressed area in said housing for receiving said lifting eye when the latter is in its depressed position,

d) aligned transversely extending openings in said housing,

e) a transversely extending opening means in said lifting eye aligned with the openings in said housing,



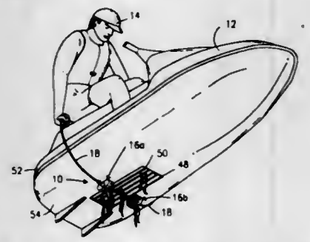
f) transversely extending pin means sealingly and securely received in said housing openings and pivotally received in said lifting eye opening means,
g) a securing portion of said pin means extending out of said housing openings, and
h) a coupling member having a transverse opening therein securely receiving said securing portion of said pin means
i) said coupling member having securing means thereon for directly securing to a hull engaging connecting member whereby a lifting force on said lifting eye is directly imposed through the coupling member to the hull.

5,598,804

DEVICE FOR CLEARING WATER INTAKE GRILLES OF WATER JET WATERCRAFT

Lazaros J. Vostitsanos, 1432 Riverside Dr., Tarpon Springs, Fla. 34689

Filed Sep. 5, 1995, Ser. No. 523,688
Int. Cl.[6] B63B *59/00*
U.S. Cl. 114—222 **12 Claims**



1. A boat hull scraper for clearing grilles covering water intake ports on watercraft, said clearing device comprising:
at least one scraper comprising a base having a pair of generally opposing longitudinal edges and a plurality of teeth, each tooth having a first end and a second end and an axis extending therethrough, and each tooth being attached to and extending outwardly from each edge of said pair of edges of said base, such that said axes of said plurality of teeth are generally parallel to one another; and
a line attached to said scraper, said line extending outwardly in opposing directions therefrom.

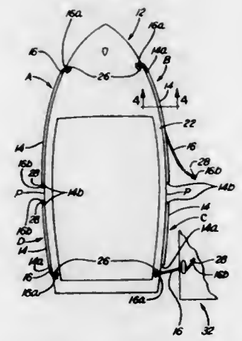
5,598,805

MOORING LINE RECEPTACLE APPARATUS

Bradley A. Obrinski, 38716 Golfview, Clinton Township, Mich. 48038

Filed Oct. 6, 1995, Ser. No. 540,081
Int. Cl.[6] B63B *17/00*
U.S. Cl. 114—230 **14 Claims**

1. A mooring line receptacle for receiving a mooring line of a watercraft comprising:



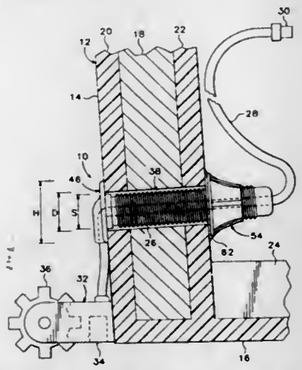
a mooring line having a predetermined cross-section, a proximate end and a distal end;
an elongated sidewall composed of a resilient material, said sidewall having a near end and an opposite far end, said sidewall forming an interior hollow having a predetermined inside diameter, said sidewall having a slot therein which communicates with said interior hollow, said slot extending from said near end to said far end, said slot having a predetermined width;
means for connecting said sidewall to a watercraft, wherein said sidewall is connected to the watercraft lengthwise between said far and near ends thereof wherein said slot is not occluded by the watercraft; and
means for preventing the distal end of said mooring line placed into said interior hollow from sliding into said interior hollow;
wherein said slot has a width less than said cross-section of said mooring line and said inside diameter is larger than said cross-section of said mooring line such that said mooring line is pressed into and pulled out of said interior hollow of said mooring line receptacle by resiliently deforming said sidewall adjacent said slot, wherein said mooring line is placed into said interior hollow to thereby store at least a majority of said mooring line when not berg used to moor the watercraft.

5,598,806

THROUGH-HULL CABLE PLUG

Bradley A. Stivers, 128 N. 31St., Cornelius, Oreg. 97113

Filed Jan. 19, 1996, Ser. No. 588,869
Int. Cl.[6] B63B *59/02*
U.S. Cl. 114—343 **16 Claims**



1. A through-hull cable plug for allowing water-tight passage of a cable through a bore formed in a hull, comprising:

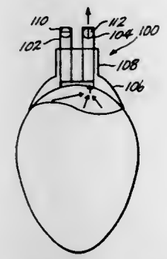
an elongate stuffing tube of a predetermined diameter having a cable-receiving slot therein extending along the length thereof and opening to a side thereof and sized to extend through the hull;
a head of a size greater than said predetermined diameter located at one end of said stuffing tube, having a cable-receiving slot formed therein; and
a fastener received on the other end of said stuffing tube, which is conformal therewith and movable along the length thereof to form a compression, water-tight fitting between said head and said fastener.

5,598,807

APPARATUS FOR NON-INVASIVE FORCED OXYGEN ENRICHMENT OF AVIAN EGGS

James P. Cox, and Robert W. D. Cox, both of 246 E. Bartlett Rd., Lynden, Wash. 98264

Filed Jun. 7, 1995, Ser. No. 485,091
Int. Cl.[6] A01K *45/00*
U.S. Cl. 119—6.8 **16 Claims**



1. An apparatus for non-invasively inducing at least one of negative pressure and a fluid having positive pressure into an egg without compromising the structural integrity of the egg shell comprising:
a cup contoured to fit an end of an egg, said cup having an interior surface adapted to contact the egg;
a plenum on said cup;
a positive pressure line through said plenum and adjacent said interior surface of said cup;
a negative pressure line through said plenum and adjacent said interior surface of said cup;
first valve means in said positive pressure line; and
second valve means in said negative pressure line such that an egg sac of an egg can be evacuated by opening said second valve means and passing negative pressure through said negative pressure line to said interior surface of said cup while said first valve means is closed, and an egg sac can be re-filled with a fluid by opening said first valve means and passing a fluid having positive pressure through said positive pressure line to said interior surface of said cup while said second valve means is closed without compromising the structural integrity of the egg shell.

5,598,808

RIPPLE CONTROL MILKING MACHINE PULSATORS

Allan W. Wilson, Hamilton, New Zealand, assignor to Carter Holt Harvey Plastic Products Group Limited, Hamilton, New Zealand

Filed Aug. 23, 1994, Ser. No. 294,538
Claims priority, application New Zealand, Aug. 23, 1993, 248467
Int. Cl.[6] A01J *5/14*
U.S. Cl. 119—14.28 **7 Claims**

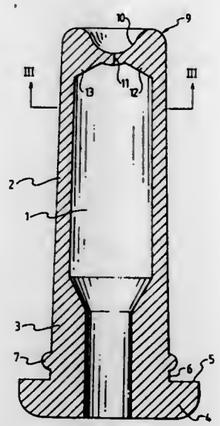
1. An electrically controlled dedicated pulsator suitable for use as one of several pulsators in a milking machine, said dedicated pulsator comprising a computerized processor and timing means, said computerized processor and said timing means being arranged so that said computerized processor determines a pulsation sequence and also determines a start delay of the pulsation sequence, said computerized processor being arranged so as to determine a start time by reference to said timing means, said timing means being initiated solely by reference to the commencement of electrical energization of the computerized processor.

5,598,809

TEAT

Ross G. McInnes, Waipu, New Zealand

PCT No. PCT/NZ93/00065, § 371 Date Feb. 13, 1995, § 102(e) Date Feb. 13, 1995, PCT Pub. No. WO94/04023, PCT Pub. Date Mar. 3, 1994
PCT Filed Aug. 11, 1993, Ser. No. 381,950
Claims priority, application New Zealand, Aug. 12, 1992, 244008; Mar. 24, 1993, 247242
Int. Cl.[6] A01K *9/00*; **A61J** *11/00*
U.S. Cl. 119—71 **20 Claims**



1. A teat adapted to be fastened to a source of liquid in use to project outwardly from the source, the teat having an outer end which is closed apart from a slit in it which slit is itself normally adapted to be closed to provide a sufficient liquid seal, wherein the outer end of the teat is made of a resilient material with an integral unitary reinforcing member on either side of the slit selectively stiffening part of the teat so that if the end of the teat is squashed or compressed by forces with components along the direction of the slit, the reinforcing member stretches the slit open, thereby allowing liquid to flow out of it in use.

5,598,810

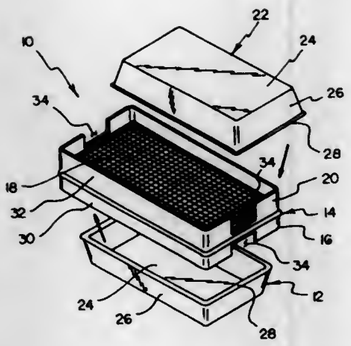
LITTER FILTERING SYSTEM

Glenn S. Lawton, III, 940 Downingtown Pike, West Chester, Pa. 19380

Filed Apr. 10, 1995, Ser. No. 419,463
Int. Cl.[6] A01K *1/035*
U.S. Cl. 119—166 **2 Claims**

1. A litter filtering kit comprising:
a first container adapted for holding litter and having an open end;
a screen assembly including a first receiver adapted to be positioned over the open end of the first container, the screen assembly further including a screen panel extending across

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the first receiver, and a second receiver projecting from the screen panel in a direction opposite relative to a direction of the first receiver; and

a second container adapted for positioning within the second receiver of the screen assembly, whereby the screen assembly can be interposed between the containers such that a rotation of the containers and screen assembly can causes a gravitationally induced biasing of litter from the first container through the screen panel and into the second container to filter the litter and remove impurities therefrom,

wherein the containers each comprises a bottom panel having a perimeter side wall projecting from an outer periphery of the bottom panel; and a gripping flange extending outwardly from a free edge of the perimeter side wall and spaced from the bottom wall,

wherein the screen assembly comprises a continuous vertical side wall having spaced first and second perimeter edges, the screen panel extending across an interior of the vertical side wall and being positioned medially between the first and second perimeter edges so as to define a first vertical side wall extending in a first direction, and a second vertical side wall extending in a second direction opposite relative to the first direction, the first vertical side wall being shaped so as to define a pair of handling apertures directed into opposed sides thereof and terminating proximal to the screen panel, and the second vertical side wall being shaped so as to define a pair of handling apertures directed into opposed sides thereof and terminating proximal to the screen panel such that when the containers are positioned within the screen assembly an individual is permitted to grasp the flanges of the respective containers so as to secure the screen assembly between the containers.

5,598,811

LITTER SAVING WASTE CONTAINER SYSTEM

Mark A. Merchant, P.O. Box 211136, Anchorage, Ak. 99521

Filed May 5, 1995, Ser. No. 435,955

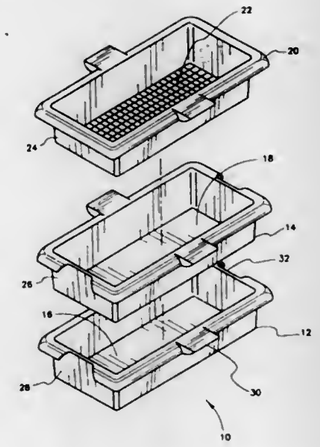
Int. Cl.[6] A01K *29/00;1/035*

U.S. Cl. 119—166 **3 Claims**

1. An animal waste container system comprising:

first and second open top receptacles, each receptacle having a bottom and side wall, a third open top receptacle, the third open top receptacle being nested on top of both said first and second receptacles, the third receptacle having a perforated bottom, the perforated bottom supporting a bed of litter;

a removable top capable of being secured onto either said first, second, or third receptacle, the top having a substantially flat



horizontal wall having its edges defined by a downwardly extending vertical wall, and a pour spout formed in said horizontal wall.

5,598,812

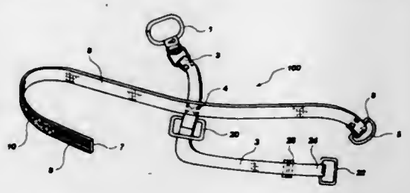
PASSENGER RESTRAINT SYSTEM

Richard D. Graham, 73 N. 300 East, and Jerry D. Mangum, 150 N. 100 West, both of Emery, Utah 84522

Filed Nov. 30, 1994, Ser. No. 346,749

Int. Cl.[6] A62B *35/00*

U.S. Cl. 119—770 **12 Claims**



1. A restraining device used in a vehicle having a seat therein, said restraining device comprising:

a first filament member having a first end and a second end;

a second filament member having a first end and a second end, the second filament member secured to a portion of the first filament member at a location intermediate the first end and the second end of the first filament member, and the second filament member;

a first fastening member connected to a portion of the first filament member;

a second fastening member having a first portion and a second portion thereof, the first portion secured to the first end of the second filament member and the second portion secured to the second end of the second filament member, the first portion and second portion in releasable engagement to secure the first end of the second filament to the second end thereof; and

a third fastening member for securing said restraining device to a portion of said vehicle.

5,598,813

INTERNAL COMBUSTION ENGINE WITH EXHAUST CONTROL DEVICE

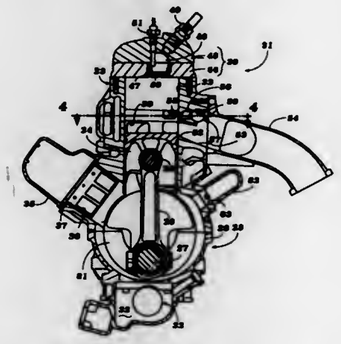
Tatsuyuki Masuda, and Minoru Iida, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Jun. 9, 1994, Ser. No. 257,349

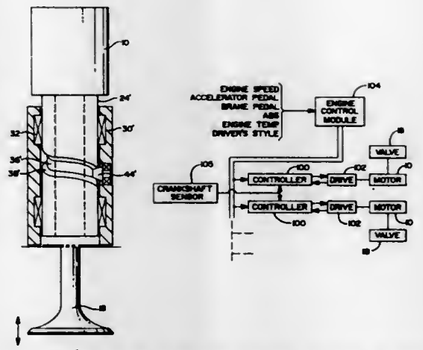
Claims priority, application Japan, Jun. 14, 1993, 5-142158

Int. Cl.[6] F02B *25/00*

U.S. Cl. 123—65 PE **5 Claims**



1. An internal combustion engine comprised of a cylinder block having a plurality of cylinder bores, a cylinder head affixed to said cylinder block and defining a plurality of variable volume combustion chambers with said cylinder bores, a plurality of exhaust ports communicating said combustion chambers with the atmosphere, an exhaust control valve rotatably supported by one of said cylinder head and said cylinder block about an axis extending transversely to said cylinder bores for controlling the effective timing of the opening and closing of said exhaust ports, a crankshaft journaled in said cylinder block for rotation at the end thereof opposite said cylinder head, a flywheel affixed to one end of said crankshaft, an accessory drive at the other end of said crankshaft for driving at least one engine accessory thereof, and a servomotor mounted at the end of said one of said cylinder head and said cylinder block adjacent said flywheel for driving said exhaust control valve through a gear train, the mounting of said servomotor spacing said servomotor from said cylinder head and said cylinder block for providing a cooling air gap therebetween.



dance with engine crankshaft position, wherein the motor control further includes:

an engine control module for defining the required phase relationship of motor position and engine crankshaft position to realize the desired valve operation;

means for comparing the position signals for a plurality of consecutive engine crankshaft positions to determine the phase difference between the engine crankshaft and motor positions; and

a drive responsive to the phase difference and the required phase relationship for generating motor current to control the motor to the required phase relationship.

3. A method of controlling rotary electric motors which control engine valves such that each valve opens and closes for every control cycle of its respective motor, the method comprising the steps of:

generating a train of engine crankshaft position signal pulses;

generating a train of motor position signal pulses for each motor having a number of pulses in each valve cycle equal to the number of engine crankshaft position pulses in two engine crankshaft revolutions;

continually comparing the trains of pulses to determine the actual phase of each motor relative to engine crankshaft position;

establishing a desired valve opening profile by defining the desired phase of each motor for each engine crankshaft position signal pulse; and

driving each motor to control the actual motor phase to the desired phase.

5,598,814

METHOD AND APPARATUS FOR ELECTRICALLY DRIVING ENGINE VALVES

Thaddeus Schroeder, Rochester Hills; Rassem R. Henry, Clinton Twp.; Bruno P. B. Lequesne, Troy, and Balarama V. Murty, West Bloomfield, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 217,779, Mar. 25, 1994, abandoned, which is a continuation of Ser. No. 994,829, Dec. 22, 1992, Pat. No. 5,327,856. This application Dec. 15, 1994, Ser. No. 357,794

Int. Cl.[6] F01L *9/04;13/00*

U.S. Cl. 123—90.11 **7 Claims**

1. A drive for engine valve control comprising:

an engine valve;

a rotary electric motor normally operable in continuous rotary motion and coupled to the valve for opening and closing the valve upon motor rotation; and

a motor control including an engine crankshaft position transducer for producing an engine crankshaft position signal, a motor position transducer for producing a motor position signal, and a controller responsive to the position signals for controlling the motor and thus the valve position in accor-

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5,598,815

ROLLER LEVER OF A CASTING MACHINE

Steffen Hertrich, Herzogenaurach, Germany, assignor to Ina Walzlager Schaeffler KG, Germany

Continuation of Ser. No. 373,748, Jan. 17, 1995, abandoned. This application May 2, 1996, Ser. No. 643,037

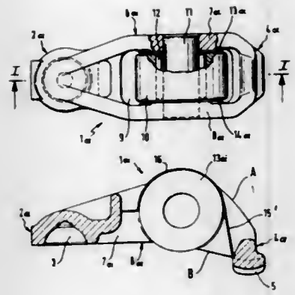
Claims priority, application Germany, Jan. 20, 1994, 9400898 U

Int. Cl.[6] B22C *9/22;* **F01L** *1/18*

U.S. Cl. 123—90.39 **6 Claims**

1. A rollde lever (*1a*) of a casting material configured as a finger lever for a valve drive of an internal combustion engine and comprising a first end portion (*2a*) and a second end portion (*a*) connected to each other by side walls (*7a*, *8a*) whose central portions (*6a*) define a free space (**9**) in which a rotatably mounted supporting roller (**10**) is guided, said side walls (*7a*, *8a*) comprising, in a region of the supporting roller (**10**), circular ring-shaped running surfaces (*13a*, *14a*) facing the free space (**9**), the roller lever (*1a*) further comprising a mold parting line (*15'*; *15"*) resulting from manufacture in a casting mold having a mold parting, characterized in that the mold parting line (*15'*; *15"*) between two halves of the casting mold extends outside of the running surfaces (*13a*, *14a*).

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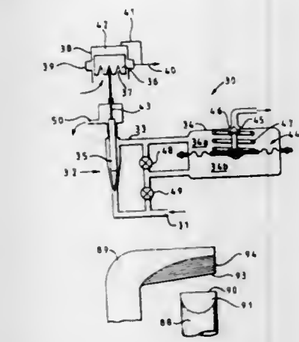


5,598,816

CARBURETOR METERING SYSTEM ALONE AND IN COMBINATION WITH A WICK OR SPARK PLUG

John R. C. Pedersen, No. 3 Priors Road, Cheltenham, England

Division of Ser. No. 56,372, Apr. 30, 1993, Pat. No. 5,384,074, which is a division of Ser. No. 404,839, Sep. 8, 1989, Pat. No. 5,207,207. This application Aug. 12, 1994, Ser. No. 289,889
Int. Cl.[6] F02M 7/17; H01T 13/20
U.S. Cl. 123—169 EL
20 Claims



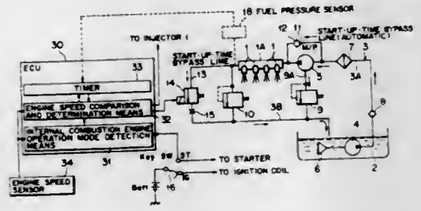
1. A carburetor metering system, comprising:
air flow control valve means, including an air inlet and an air outlet, for metering the flow of air from said air inlet to said air outlet in dependence upon the air pressure differential between the air inlet and air outlet to maintain the pressure differential at a predetermined value;
fuel valve means having an inlet connected to a source of fuel, and an outlet, said fuel valve means being operatively connected to said air flow control valve means so that the fuel valve means provides a respective increase and decrease in fuel flow rate in respective dependence upon an increase and decrease in air flow rate by said air flow control means;
a fuel pressure differential valve means for maintaining the pressure differential across the fuel valve means substantially constant, said fuel pressure differential means comprises a chamber having a diaphragm to define first and second sub-chambers; and
restricter means connected across the fuel valve means at the inlet and outlet, wherein the pressure across the diaphragm is at a fixed predetermined fraction of the total pressure difference across the fuel valve means, to thereby provide a metering system wherein the fuel and air pressures are controlled separately.

5,598,817

FUEL FEEDING SYSTEM FOR INTERNAL COMBUSTION ENGINE

Kyoya Igarashi; Tateo Kume, both of Okazaki; Masato Yoshida, Kyoto; Nobuaki Murakami, Kyoto, and Hideyuki Oda, Kyoto, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 8, 1994, Ser. No. 303,008
Claims priority, application Japan, Sep. 10, 1993, 5-226100; Sep. 10, 1993, 5-226101; Sep. 10, 1993, 5-226102; Sep. 10, 1993, 5-226103; Apr. 12, 1994, 6-083479
Int. Cl.[6] F02N 17/00; F02M 41/00
U.S. Cl. 123—179.17
21 Claims



1. A fuel feeding system for an internal combustion engine, comprising:
a fuel line arranged between a fuel injector, disposed in the internal combustion engine, and a fuel tank and formed as a recirculation circuit extending from said fuel tank to said fuel injector and then returning from said fuel injector to said fuel tank;
a low-pressure fuel pump arranged in an upstream part of said fuel line;
a high-pressure fuel pump arranged in said fuel line between said low-pressure fuel pump and said fuel injector;
high-pressure control means arranged in a fuel line portion on a downstream side of said high-pressure fuel pump to control the pressure of fuel delivered from said high-pressure fuel pump;
a first bypass line connecting another fuel line portion on an upstream side of said high-pressure control means and said fuel line portion on the downstream side of said high-pressure control means to each other;
a switching valve arranged in said first bypass line to open or close said first bypass line;
low-pressure control means for controlling the pressure of fuel in said upstream-side fuel line portion of said first bypass line at a pressure lower than a control pressure set by said high-pressure control means while said switching valve is open; and
control means for performing open/close control of said switching valve so that said switching valve is closed in an ordinary operation state of said internal combustion engine but is opened in a specific operation state of said internal combustion engine, said specific operation state including at least an operation state at a start-up of said internal combustion engine.

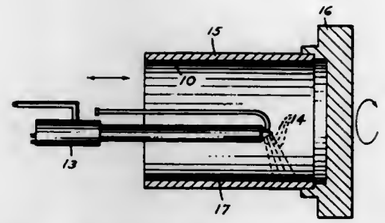
5,598,818

METHOD OF PROVIDING A CYLINDER BORE LINER IN AN INTERNAL COMBUSTION ENGINE

David J. Domanchuk, Grand Haven, Mich., assignor to SPX Corporation, Muskegon, Mich.

Filed Jan. 26, 1996, Ser. No. 592,459
Int. Cl.[6] F02B 77/02
U.S. Cl. 123—193.2
13 Claims

1. The method of making an engine block for an internal combustion engine comprising
making an engine block with cylinder bores,



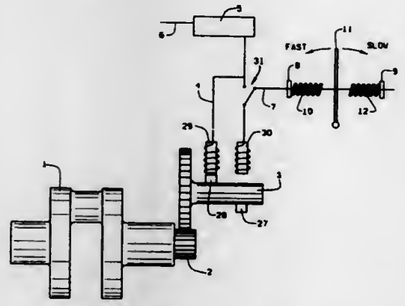
forming a spray-formed cylinder liner with a predetermined internal diameter and a predetermined external diameter,
heating said cylinder block,
inserting the cylinder liner in the bore, and
permitting said cylinder block to cool such that said liner is locked in position in the bore by compressive forces.

5,598,819

PISTON ENGINE CYCLES

Anthony E. Blackburn, 1 Lord Seftpn Way, Liverpool, Merseyside, United Kingdom

PCT No. PCT/EP91/02413, § 371 Date Sep. 3, 1993, § 102(e) Date Sep. 3, 1993, PCT Pub. No. WO92/16729, PCT Pub. Date Oct. 1, 1992
PCT Filed Dec. 16, 1991, Ser. No. 108,692
Claims priority, application United Kingdom, Mar. 16, 1991, 9105602; Jun. 14, 1991, 9112916
Int. Cl.[6] F02B 75/02
U.S. Cl. 123—302
9 Claims



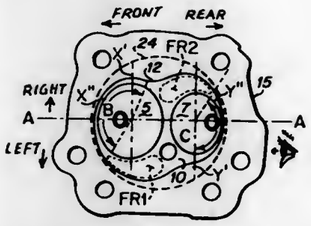
1. An internal combustion engine comprising:
at least one cylinder having a piston mounted therein for reciprocating strokes of the piston in the cylinder, the reciprocating strokes including induction strokes of the piston in the cylinder where at least air is drawn into the cylinder;
a first intake channel communicating with the cylinder;
a second intake channel communicating with the cylinder;
an exhaust channel communicating with the cylinder;
a first intake valve in the first intake channel controlling communication between the first intake channel and the cylinder;
a second intake valve in the second intake channel controlling communication between the second intake channel and the cylinder;
means for supplying fuel to at least the first intake channel; and
means for controlling opening of at least one of the first and second intake valves on each induction stroke of the piston in the cylinder to cause an air and fuel mixture to be drawn into the cylinder when only the first intake valve is opened on an induction stroke and to cause only air to be drawn into the cylinder when only the second intake valve is opened on an induction stroke.

5,598,820

CYLINDER HEAD FOR FOUR STROKE INTERNAL COMBUSTION ENGINE

Rodney Sokoloski, Los Angeles County, Calif., assignor to Edelbrock Corporation, Torrance, Calif.

Filed May 9, 1995, Ser. No. 437,376
Int. Cl.[6] F02B 23/08
U.S. Cl. 123—306
19 Claims



1. An engine cylinder head, comprising a block of metal having a curved wall recessed within said block defining a combustion chamber, said combustion chamber having a chamber window on a bottom side of said metal block for mating connection of said combustion chamber to a main cylinder of an engine;
said combustion chamber having front and rear ends and left and right sides with said ends and sides being coextensive with said periphery of said window and a top side bounded by said curved wall to define a cavity;
an intake port extending through said chamber wall defining an entrance for introducing an air fuel mixture into said combustion chamber;
an exhaust port extending through said chamber wall defining an exit for expressing exhaust gases from said combustion chamber;
said intake port and said exhaust port being located in spaced apart positions in the top side of said chamber with one of said ports being located proximate said front end thereof and the other of said ports being located proximate said rear end thereof;
said right side of said chamber shrouding a first continuous peripheral portion of said inlet port; and said left side of said chamber leaving a second continuous peripheral portion of said inlet port unshrouded, wherein, during engine operation, a major portion of air-fuel mixture entering said chamber through said intake port is diverted toward said left side of said combustion chamber;
said left side of said chamber shrouding a first continuous peripheral portion of said outlet port; and said right side of said chamber leaving a remaining peripheral portion of said outlet port unshrouded, wherein, during engine operation, a major portion of any exhaust gases that backflow from said exhaust port into said combustion chamber is diverted toward said right side of said combustion chamber.

5,598,821

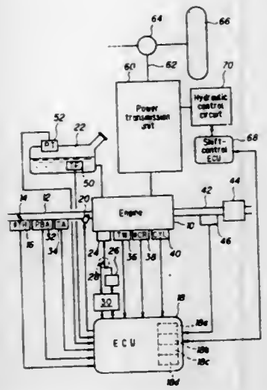
MISFIRE DETECTION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

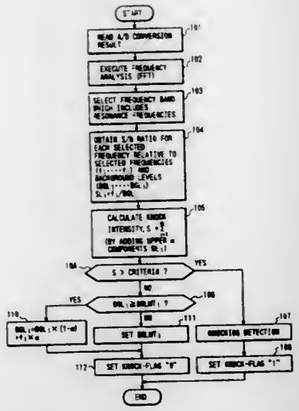
Shukoh Terata; Kenichi Maeda; Shigetaka Kuroda; Yuichi Shimasaki; Masaki Kanehiro; Takuji Ishioka; Takashi Hisaki; Jiro Takagi; Eitetsu Akiyama; Shigeki Baba, and Shigeru Maruyama, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 149,271, Nov. 9, 1993, abandoned.
This application May 18, 1995, Ser. No. 443,567
Claims priority, application Japan, Nov. 10, 1992, 4-326014
Int. Cl.[6] F02P 5/00
U.S. Cl. 123—406
22 Claims

1. A system for controlling a vehicle having an internal combustion engine that is connected to a power train including a transmission, said system comprising:

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vehicle operational condition detecting means for detecting an operational condition of said vehicle;

engine controller means, operatively coupled to said vehicle operation condition detecting means, for controlling said engine, for determining whether said vehicle is under a predetermined operational condition from an output of said vehicle operational condition detecting means, and for deliberately reducing output of said engine in order to decrease vehicle body vibration generated in the power train during a predetermined vehicle operational condition;

an ignition system including at least one spark plug;

engine operating parameter detecting means for detecting operating parameters of said engine;

ignition timing controller means, operatively coupled to said engine operating parameter detecting means, for determining ignition timing of said engine based on said operating parameters of said engine detected by said engine operating parameter detecting means and generating an ignition command signal indicative of said determined ignition timing;

spark voltage generating means, responsive to said ignition command signal, for generating sparking voltage for discharging said at least one spark plug;

misfire detection means for detecting whether a misfire has occurred in said engine; and

misfire detection disablement means for disabling operation of said misfire detection means when said engine controller means deliberately reduces output of said engine.

5,598,822

KNOCKING DETECTION METHOD FOR INTERNAL COMBUSTION ENGINES AND IGNITION TIMING CONTROL METHOD THEREFOR

Masakatsu Fujishita, Mito, and Masahiro Sato, Katsuta, both of Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Automotive Engineering Co., Ltd., Ibaraki, both of Japan

Division of Ser. No. 128,687, Sep. 30, 1993, Pat. No. 5,460,031.
This application Apr. 6, 1995, Ser. No. 417,951
Claims priority, application Japan, Sep. 30, 1992, 4-261075
Int. Cl.[6] F02P *5/15*
U.S. Cl. 123—425 **18 Claims**

17. An ignition timing control method characterized by comprising the steps of:

extracting a plurality of characteristic components indicative of a knocking from physical quantities relating to a knocking state in an internal combustion engine, and a plurality of comparison components to be defined by said physical quantities;

extracting information on the occurrence of a knocking from a relationship between said plurality of characteristic components and said plurality of comparison components;

adjusting an ignition timing in such a manner as to suppress a knocking upon occurrence thereof;

updating said comparison component, when there exists no knocking, with a new value which is within a range of value permitted for said comparison component to take; and

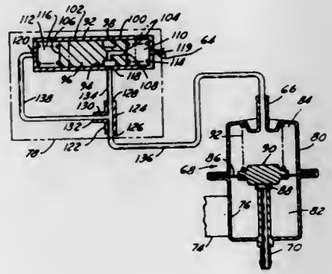
updating said comparison component with a predetermined limit comparison component when said comparison component is outside the permissible extent of values thereof.

5,598,823

PRESSURE RESPONSIVE SHUT-OFF DEVICE

Bela P. Povinger, Grosse Ile, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jun. 5, 1995, Ser. No. 465,297
Int. Cl.[6] F02M *37/04*
U.S. Cl. 123—463 **20 Claims**



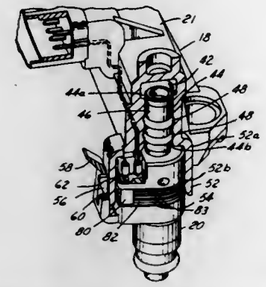
1. In a fuel injection system having a source of liquid fuel under pressure in fluid communication with at least one fuel injector mounted in an engine intake manifold and a pressure regulator having a first pressure chamber in fluid communication with the source of pressurized fuel, a second pressure chamber in fluid communication with the intake manifold, and a diaphragm sealingly engaged therebetween, the diaphragm maintaining a predetermined pressure differential between the pressure chambers; an apparatus operatively connected between the second pressure chamber and the intake manifold to sense when a pressure differential between the second pressure chamber and the intake manifold is above a predetermined level and, in such an event, to responsively block the fluid communication between the second pressure chamber and the intake manifold.

5,598,824

FUEL DELIVERY SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Christopher J. Treusch, St. Clair Shores; James W. Clark, Jr., Ypsilanti, and Gerard N. Panasuk, Commerce Township, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 15, 1996, Ser. No. 632,296
Int. Cl.[6] F02M *37/04*
U.S. Cl. 123—470 **20 Claims**



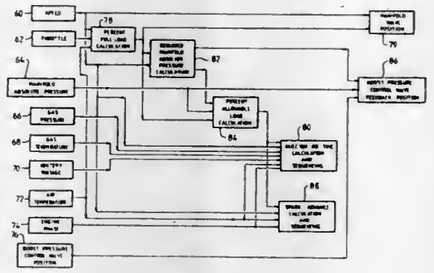
1. An elongate molded plastic fuel rail for delivering fuel and power to a plurality of fuel injectors of an internal combustion engine, the engine having an engine controller, with said fuel rail comprising:

a body having a fluid conduit molded therein;

a plurality of fuel injector receiving portions spaced along the length of said body;

an electrical bus having a plurality of electrical leads integrally molded into said body of said fuel rail, with said leads having first and second ends, said first end being exposed for connection to an electronic controller of the engine and said second end being exposed for connection to a male connector on the fuel injector so that the injector may be controlled by signals received from the engine controller, with each said exposed end of said electrical bus comprising male connectors; and,

an electrical connector assembly for connecting said male connector formed on said body of said fuel rail to the male connector of the fuel injector, with said assembly comprising a U-shaped female connector having a female connector on each leg thereof positioned such that one leg of said female connector engages the male connector of the fuel injector and the other leg of said female connector engages said male connector formed on said body of said fuel rail.



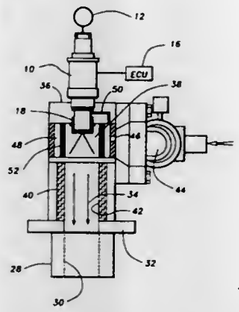
gaseous fuel can be injected into each cylinder responsive to the current throttle position to achieve optimal engine performance.

5,598,826

COLD START FUEL CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Frank W. Hunt, White Lake, and Toshiharu Nogi, Novi, both of Mich., assignors to Hitachi America, Ltd., Tarrytown, N.Y.

Continuation-in-part of Ser. No. 364,893, Dec. 27, 1994. This application Jun. 5, 1995, Ser. No. 465,229
Int. Cl.[6] F02M *51/00*
U.S. Cl. 123—491 **21 Claims**



1. A cold start fuel control system for use with an internal combustion engine of the type having at least one combustion chamber, an air/fuel passageway fluidly connected with the combustion chamber and a source of fuel, said fuel control system comprising:

an annular heater having an interior annular wall disposed in the passageway,

a cold start fuel injector having an inlet fluidly connected to said fuel source and an outlet open to said passageway such that fuel discharge from said outlet enters into an interior of said heater,

means for measuring an operating temperature of the engine and for providing a temperature output signal representative,

means responsive to said temperature output signal whenever said temperature output signal is less than a predetermined amount for selectively activating said cold start fuel injector and for activating said heater,

means for enhancing intermixing of said fuel with said air in said passageway, said intermixing enhancing means comprising means for swirling fuel discharge from said cold start fuel injector such that at least a portion of the fuel charge impinges upon said heater interior annular wall.

5,598,825

ENGINE CONTROL UNIT

Barry R. Neumann, Hillarys, Australia, assignor to Transcom Gas Technologies Pty Ltd., Herdsman, Australia

PCT No. PCT/AU93/00649, § 371 Date Aug. 17, 1995, § 102(e) Date Aug. 17, 1995, PCT Pub. No. WO94/13946, PCT Pub. Date Jun. 23, 1994
PCT Filed Dec. 14, 1993, Ser. No. 448,537
Claims priority, application Australia, Dec. 14, 1992, PL6346
Int. Cl.[6] F02D *19/02;23/02*
U.S. Cl. 123—478 **19 Claims**

1. A method of controlling the operation of a gas fuelled internal combustion engine, the engine having a gas injector for injecting gaseous fuel into each cylinder, the method comprising the steps of:

detecting the current throttle position of the engine;

calculating a percent full load value for the engine, based on said current throttle position; and,

calculating an injector ON time for each cylinder based on said percent full load value whereby, in use, the correct amount of

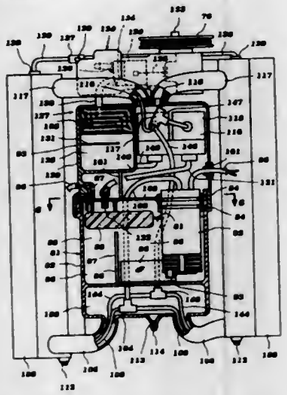
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5,598,827

HIGH PRESSURE FUEL FEEDING DEVICE FOR FUEL INJECTION ENGINE

Naoki Kato, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Division of Ser. No. 959,684, Oct. 13, 1992, Pat. No. 5,404,858.
This application Jan. 4, 1995, Ser. No. 368,598
Claims priority, application Japan, Oct. 18, 1991, 3-297696; Oct. 18, 1991, 3-297697
Int. Cl.[6] F02M *37/04*
U.S. Cl. 123—518 **13 Claims**



1. A high pressure fuel/air injection system for an internal combustion engine comprising a plurality of fuel/air injectors positioned in a vertical array, a vertically extending air delivery manifold for delivering high pressure air to said fuel/air injectors, means for delivering a source of high pressure air to a vertically upper end of said air delivery manifold, an air pressure regulator for regulating air pressure by dumping excess air to a relief, a source of high pressure fuel including a vapor fuel separator for delivering high pressure fuel to said fuel/air injector, and means for returning the return from said air pressure regulator to said vapor fuel separator.

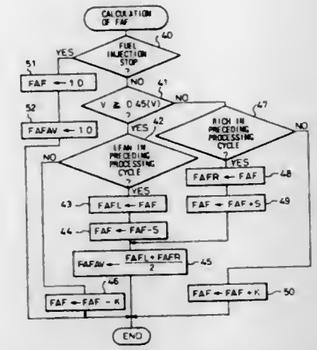
5,598,828

FUEL SUPPLY CONTROL DEVICE FOR AN ENGINE

Akinori Osanai, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Feb. 8, 1996, Ser. No. 599,541
Claims priority, application Japan, Feb. 9, 1995, 7-021860
Int. Cl.[6] F02M *25/08*; **F02D** *41/14*
U.S. Cl. 123—675 **40 Claims**

1. A fuel supply control device for an engine having an intake passage with a throttle valve therein, the device comprising:
a fuel injector for feeding pressurized fuel to the engine;
a canister for temporarily storing fuel vapor therein;
a purge passage connecting the canister to the intake passage downstream of the throttle valve;
purging means for purging fuel vapor stored in the canister to the intake passage via the purge passage;
storing capacity calculating means for calculating a storing capacity of the canister;
engine operating condition parameter obtaining means for obtaining at least one engine operating condition parameter representing the engine operating condition;
reference parameter calculating means for calculating at least one reference parameter, corresponding to the engine operating condition parameter, on the basis of the storing capacity of the canister;
determining means for determining whether an engine operating condition is within a selected condition range in which a fuel injection of the fuel injector is to be stopped, by comparing the at least one engine operating condition parameter with the corresponding reference parameter;
fuel injection control means for controlling the fuel injector to stop the fuel injection when the determining means determines that the engine operating condition is within the selected condition range, and to allow the fuel injection when the determining means determines that the engine operating condition is outside the selected condition range; and
purge control means for controlling the purge means to stop a purging operation of the purge means when the fuel injection control means stops the fuel injection, and to allow the purging operation when the fuel injection control means allows the fuel injection, wherein the reference parameter calculating means calculates the reference parameter to make the selected condition range narrower when the storing capacity of the canister becomes lower.

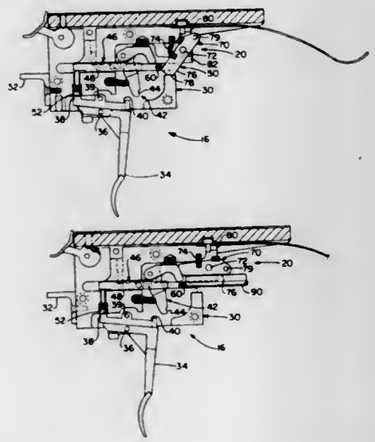


5,598,829

CROSSBOW DRY FIRE PREVENTION DEVICE

William J. Bednar, Akron, Ohio, assignor to Hunter's Manufacturing Company, Suffield, Ohio

Filed Jun. 7, 1995, Ser. No. 479,728
Int. Cl.[6] F41A *17/00*; **F41B** *5/00*
U.S. Cl. 124—25 **16 Claims**



1. A dry fire prevention device for use with a crossbow, comprising,

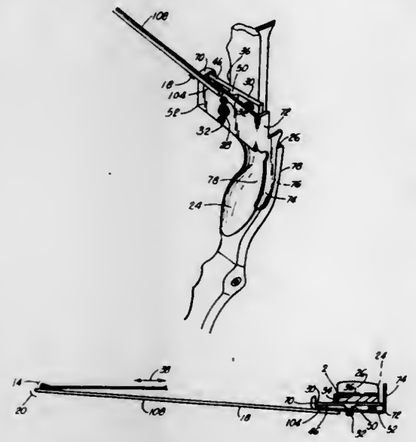
a crossbow trigger housing having a bowstring guide slot into which a bowstring is drawn, and including a trigger mechanism having a pivotal string latch to selectively hold said bowstring in said guide slot, and,
a pivotal string catch member positioned to selectively extend into at least a portion of said guide slot, wherein said string catch member will retain said bowstring when said string catch member extends into said guide slot, said string catch member having an arrow contacting surface to engage an arrow positioned to be fired from said crossbow, wherein movement of said arrow to the firing position causes said string catch member to pivot out of said guide slot to allow selective release of said bowstring from said guide slot.

5,598,830

HAND BOW PRESSURE RELEASE AID

F. Wayne Creel, Sr., 605 W. Howard Ave., Biloxi, Miss. 39530

Filed Jul. 26, 1994, Ser. No. 280,729
Int. Cl.[6] F41B *5/14*
U.S. Cl. 124—86 **9 Claims**



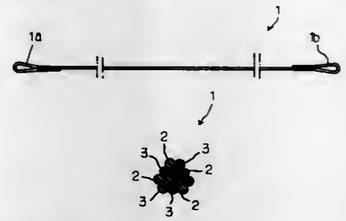
1. An apparatus for holding an archery bow in a cocked position comprising:
a base support fastened to a bow at a bow handle position, having a vertical pivoting ridge thereon;
a pivoting plate fastened to said base support, pivoting about said ridge;
a handle extending from said pivoting plate, in front of said bow handle;
a rod, having first and second ends, affixed to said pivoting plate at said front end, and extending to the rear of said bow;
means for biasing said pivoting plate to position said rod, parallel to the line of an arrow in said bow, said rod in said position parallel having said second end adjacent the position of a fully drawn bow string;
means for receiving and holding said bow string at said second end of said rod; said handle moving said rod away from said bow string against said means for biasing when depressed towards said bow handle.

5,598,831

HYBRID BOW STRING FORMED FROM STRANDS OF POLYETHYLENE RESIN AND POLYPARABENZAMIDE/ POLYBENZOBISOXAZOLE RESIN

Tadao Izuta, Shizuoka, Japan, assignor to Yamaha Corporation, Japan

Filed Jul. 25, 1995, Ser. No. 506,179
Claims priority, application Japan, Jul. 29, 1994, 6-196319
Int. Cl.[6] F41B *5/14*
U.S. Cl. 124—90 **11 Claims**



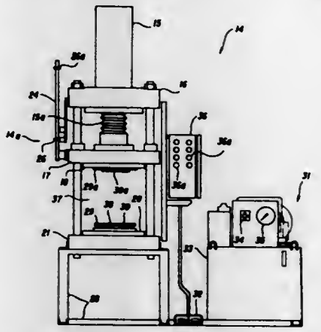
1. A string for a bow comprising:
a plurality of first strands each formed from filaments of ultra high molecular weight polyethylene resin; and
a plurality of second strands bundled with said plurality of first strands, each of said plurality of second strands being formed from filaments of resin selected from the group consisting of polyparabenzamide and polybenzobisoxazole.

5,598,832

METHOD AND APPARATUS FOR CUTTING STONE BASED MATERIAL

Hisaaki Aoki, Ibaraki, Japan, assignor to New Man International Co., Ltd., Shimodate, Japan

PCT No. PCT/JP93/01216, § 371 Date Aug. 18, 1994, § 102(e) Date Aug. 18, 1994, PCT Pub. No. WO94/05476, PCT Pub. Date Mar. 17, 1994
PCT Filed Aug. 30, 1993, Ser. No. 211,628
Int. Cl.[6] B28D *1/00*
U.S. Cl. 125—23.01 **28 Claims**



1. A method of cutting a stone based material, comprising the steps of:
placing on a platform a lower elastic plate having a lower cutting wire having a lower cutting protuberance formed thereon at a predetermined position, said lower cutting protuberance being formed to exhibit a desired contour;
placing on said lower elastic plate a stone based material to be cut;
securing an upper elastic plate having an upper cutting protuberance formed thereon to the moving part of a press machine at a predetermined position positionally coincident with the

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foregoing predetermined position, said upper cutting protuberance being formed to exhibit the same or substantially the same contour as that of said lower cutting protuberance; and operating said press machine to cut said stone based material by bringing said upper cutting protuberance of said upper elastic material in compressing contact with said lower cutting protuberance of said lower elastic plate.

5,598,833

SAFETY DEVICE FOR USE WITH PORTABLE HEATER

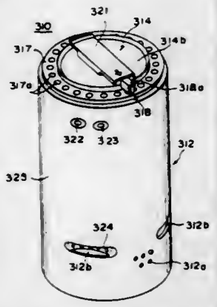
Tomio Nitta; Hideo Mifune; Masato Seki; Yosimitu Kaga, and Noriyuki Serizawa, all of Shizuoka-ken, Japan, assignors to Tokai Corporation, Kanawaga-ken, Japan

Division of Ser. No. 170,225, Dec. 28, 1993, Pat. No. 5,462,044. This application Jul. 26, 1995, Ser. No. 506,895

Claims priority, application Japan, May 1, 1992, 4-112553; Jun. 17, 1992, 4-158044; Jun. 17, 1992, 4-158137; Jul. 22, 1992, 4-216352; Oct. 2, 1992, 4-264655; Nov. 12, 1992, 4-302178; Mar. 31, 1993, 5-073627

Int. Cl.[6] A47G *23/04*

U.S. Cl. 126—262 **4 Claims**



1. A portable heater comprising a combustion cylinder, a burner disposed at a bottom of the combustion cylinder, a container to be heated which is disposed in an upper part of the combustion cylinder for storing contents to be heated when the heater is in use, a fuel tank for storing fuel gas to be supplied to the burner, an ignition means having an igniter and an ignition lever for actuating the igniter which causes the ignition of fuel in the burner and display means disposed on an outer periphery of the combustion cylinder including first display means for displaying an indication that fuel is burning the burner and second display means for displaying an indication that the contents of the container have been heated.

5,598,834

PORTABLE OUTDOOR FIREPLACE WITH CONVERTIBLE GRILL FEATURE

Jeff Grady, 2009 Fair Oak Ct., Naperville, Ill. 60565

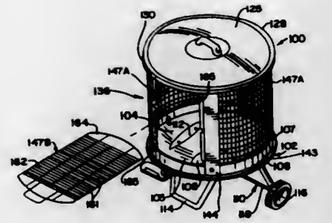
Filed Nov. 24, 1995, Ser. No. 564,379

Int. Cl.[6] F24B *1/182*

U.S. Cl. 126—506 **21 Claims**

1. A portable outdoor fireplace, comprising:

a base member for supporting and burning a combustible material therein, a fire screen assembly supported by the base member, the fire screen assembly defining a fire chamber which contains said combustible material within said base member, said fire screen assembly including first and second fire screens panels extending upwardly from said base member in order to provide a protective screen around said combustible material, said fire screen assembly further including an upright frame having a plurality of first and second frame members, one of the first frame members engaging said base



member and the second frame members extending upwardly from said one first frame member the first and frame members cooperating to hold the first and second fire screen panels in said frame in a vertical orientation with respect to said base member, said first fire screen panels being removable from said vertical orientation and insertable horizontally into slots disposed in said second frame members, said second frame member slots supporting said first fire screen panel in said frame in a horizontal orientation with respect to said base member, said first fire screen panel defining a fire screen when supported in said vertical orientation frame and defining a cooking grill when supported in said horizontal orientation.

5,598,835

INHALER DEVICE

Barthold von Schrader, Ziegelhorst 12, D-23570, Travemünde, Germany

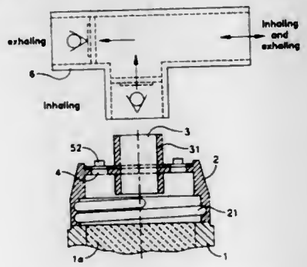
PCT No. PCT/EP92/02679, § 371 Date Aug. 12, 1994, § 102(e) Date Aug. 12, 1994, PCT Pub. No. WO93/15783, PCT Pub. Date Aug. 19, 1993

PCT Filed Nov. 20, 1992, Ser. No. 284,599

Claims priority, application Germany, Feb. 13, 1992, 9201793 U; Jul. 7, 1992, 9209050 U

Int. Cl.[6] A61M *15/02;11/00*

U.S. Cl. 128—200.21 **7 Claims**



1. Inhaler device with a vessel (1) containing the substance to be inhaled and with a lid (2) helping to vaporize the substance to be inhaled, which is provided with a generally central opening (3) and several openings (4) positioned in a ring around the central opening (3), said central opening (3) extending deeper in the vessel (1) than the several openings (4), the cross-sectional area of the central opening being generally equal to the sum of the cross-sectional areas of the several openings for enabling a sufficient quantity air to be drawn into the several openings to vaporize the substance to be inhaled.

5,598,836

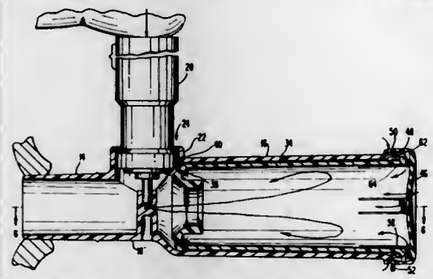
METERED DOSE INHALATION UNIT WITH SLIDE MEANS

Douglas A. Larson, River Forest, and Thomas J. Danowski, Elgin, both of Ill., assignors to Healthscan Products, Inc., Cedar Grove, N.J.

Filed May 26, 1995, Ser. No. 452,139

Int. Cl.[6] A61M *11/00*

U.S. Cl. 128—200.23 **6 Claims**



1. A spacer for an MDI dispenser, comprising a housing having a mouthpiece portion coupled to a main chamber portion, said main chamber portion having a sidewall and an open end; a slide element, and a cover positionable relative to said slide element having a first air passageway therethrough and a peripheral side wall, said cover being mounted upon said open end; second air passageway means upon said main chamber portion comprising a plurality of notches thereon proximate said open end, said cover being movable between a first position wherein said second air passageway means is closed and a second position wherein said second air passageway means is open and coupled to said main chamber; means for mounting an MDI dispenser upon the housing, including means for directing a spray from the dispenser into said main chamber portion; said slide element being engageable with the MDI dispenser to drive said cover into said second position upon activation of the dispenser; and lock means for maintaining said cover in said second position after activation of the dispenser.

5,598,837

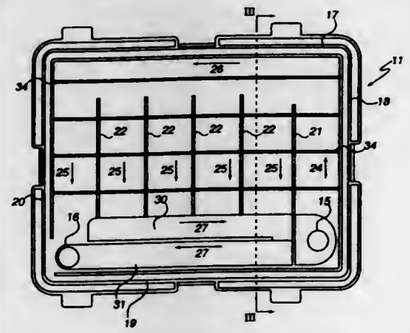
PASSIVE HUMIDIFIER FOR POSITIVE AIRWAY PRESSURE DEVICES

Raymond A. Sirianne, Jr., Evergreen, and Iain S. R. Smith, Boulder, both of Colo., assignors to Respironics, Inc., Murrysville, Pa.

Filed Jun. 6, 1995, Ser. No. 467,017

Int. Cl.[6] A61M *16/16*

U.S. Cl. 128—204.14 **3 Claims**



1. A humidifier for adding moisture to an air flow comprising:

a body formed from a top wall, a substantially upright sidewall and a bottom wall for holding a supply of water having a free water surface;

an air inlet for supplying an air flow to the body;

an air outlet through which moisturized air is discharged from said body;

a plurality of parallel channel members extending from said top wall for forming a plurality of parallel longitudinal channels,

at least one row of spaced apart baffles extending from said bottom wall towards said top wall, said at least one row of spaced apart baffles extending in a direction substantially transverse to said plurality of channel members, wherein the air flow passes through the plurality of channels over the baffles to create localized turbulence at the free water surface so as to promote moisturization of air flow; and

an outlet chamber formed from a raised portion of said top wall, said chamber extending transversely to said plurality of channels and having a first portion open to at least two of said longitudinal channels and a second portion in communication with said outlet.

5,598,838

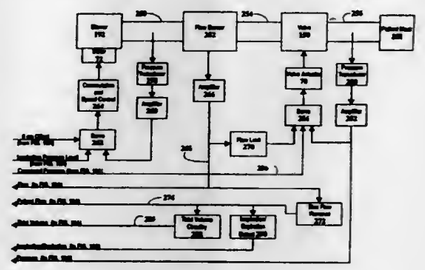
PRESSURE SUPPORT VENTILATORY ASSIST SYSTEM

John L. Servidio, and Bruce Beverly, both of Marietta, Ga., assignors to Healthdyne Technologies, Inc., Norcross, Ga.

Filed Apr. 7, 1995, Ser. No. 419,640

Int. Cl.[6] A61M *16/00*

U.S. Cl. 128—204.23 **6 Claims**



1. A pressure support ventilatory assist device comprising:

a blower;

a patient mask;

a conduit for placing said blower in fluid communication with said patient mask;

a valve disposed in-line of said conduit between said blower and said patient mask;

a flow sensor disposed between said blower and said valve for measuring airflow within said conduit between said blower and said valve, said measured airflow corresponding to air inspired by a patient plus bias flow and leakage;

inspiration/expiration detection means operatively associated with said flow sensor for detecting the beginning and the end of a patient's inspiration;

modeling means operative upon detection of an end of inspiration by said inspiration/expiration detection means for generating a predicted expiration waveform based upon said measured airflow;

comparator means for comparing actual airflow measured by said flow sensor to said predicted expiration waveform; and

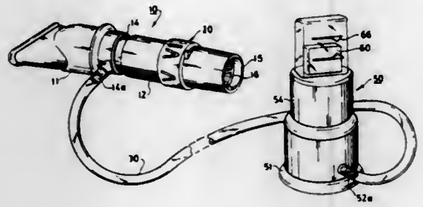
valve control means for operating said valve to conform said actual airflow to said predicted expiration waveform.

5,598,839

POSITIVE EXPIRATORY PRESSURE DEVICE

Rex A. Niles, Oneida; Ronald McHenry, E. Syracuse; George Puderbaugh, Manlius, and Stephen J. Scheuermann, Oneida, all of N.Y., assignors to Diemolding Corporation, Canastota, N.Y.

Filed Apr. 20, 1994, Ser. No. 230,547
Int. Cl.[6] A62B 7/00
U.S. Cl. 128—205.23 10 Claims



1. A respiratory therapy device which monitors selectively controlled resistance exhalation comprising

a housing having an outlet opening through which a patient to be treated passes expiratory air, and an input opening into which a patient to be treated exhales for establishing a patient-generated expiratory air flow,

air flow control means carried by said housing for controlling the flow rate of expiratory air passing from said outlet opening to thereby induce an expiratory pressure in the patient's lungs upon generation of the expiratory air flow, said air flow control means movably operable to selectively vary the flow rate of expiratory air passing from said outlet opening for changing the expiratory pressure in response thereto and including a fixed plate having an orifice formed therein through which expiratory air is passed to said outlet opening, and a rotatable plate coaxially aligned therewith and having a plurality of different sized openings formed therein, each one of said different sized opening in said rotatable plate being mutually exclusively positionable into alignment with said orifice formed in said fixed plate to control the flow rate of expiratory air passed therethrough,

a pressure monitor operatively connected to said housing between said input opening and said outlet opening,

said pressure monitor actuable in response to the expiratory pressure in said housing, and

indicia means integrally connected with said pressure monitor to enable a patient to establish and maintain a desired expiratory air pressure in response to said indicia means.

5,598,840

APPARATUS AND METHOD FOR VENTILATION AND ASPIRATION

Neal A. Lund, Centerville; Francine B. Petersen, Bountiful; Peter W. H. Coles, Salt Lake City; James L. Sorenson, Salt Lake City, and Reed F. Winterton, Salt Lake City, all of Utah, assignors to Sorenson Criticai Care, Inc., Salt Lake City, Utah

Filed Mar. 17, 1995, Ser. No. 405,588
Int. Cl.[6] A61M 1/00;39/00
U.S. Cl. 128—207.14 18 Claims

1. In combination, for use in patient ventilation and aspiration circuits:

a manifold assembly, having a body with a distal end portion, a proximal end portion and an open interior;

said distal end portion of said body being adapted to couple with an intubation device,

said proximal end portion of said body being formed as an open port defined by a continuous wall, said proximal end portion further being approximately axially aligned with said distal end portion so that a catheter may be inserted through said proximal end portion to exit from said distal end portion;

structural means for associating a catheter with said proximal end; and

a catheter assembly comprising:

a flexible tracheal suctioning catheter tube attached at a first end to a proximal coupling and at a second end opposite said first end to a distal coupling,

said proximal coupling being structurally adapted releasably to connect to first connecting structure associated with a vacuum valve, and

said distal coupling being structurally adapted releasably to connect to second connecting structure associated with said manifold assembly;

said vacuum valve comprising:

a flow channel defined by a continuous flexible wall; and associated actuation structure being arranged for selective positive, finger-actuated, adjustment between a first position and a second position, said actuation structure being constructed and arranged such that in said first position said actuation structure presses said flexible wall to occlude said flow channel and in said second position said actuation structure releases said flexible wall to open said flow channel;

a collapsible bag formed of stretchable material enveloping said suctioning catheter tube and attached at opposite ends to said proximal and distal couplings; and

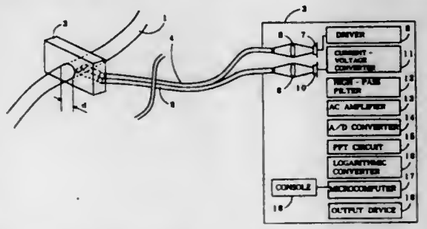
a lanyard element connected in parallel with said bag between said proximal and distal couplings, said lanyard limiting the axial separation of said couplings, said lanyard being adhered directly to a wall forming said bag.

5,598,841

BLOOD FLOW MEASUREMENT SYSTEM

Ayafumi Taniji; Koji Katayama, and Satohiko Takanashi, all of Tsukuba, Japan, assignors to Kowa Company Ltd., Japan

Filed Sep. 15, 1994, Ser. No. 306,379
Claims priority, application Japan, Sep. 24, 1993, 5-237089
Int. Cl.[6] A61B 5/026
U.S. Cl. 128—634 21 Claims



1. A blood flow measurement system for measuring blood flow rate and blood flow velocity comprising:

means for irradiating a in vivo tissue measurement subject with coherent light;

means for receiving scattered light from the in vivo tissue;

means for converting an intensity of the received scattered light into an electrical signal;

means for calculating a power spectrum of the time-course variation of the scattered light intensity based on the electrical signal;

means for plotting the power spectrum in a semilogarithmic coordinate system having a logarithmic vertical axis;

means for linearly approximating a prescribed frequency component of the semilogarithmic power spectrum and calculating a slope and a y intercept of the power spectrum curve; and

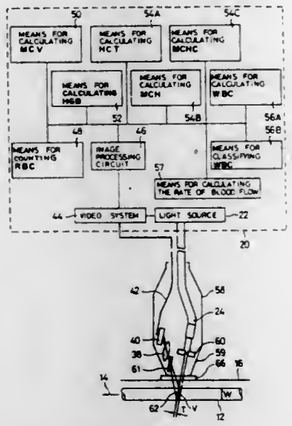
means for calculating blood flow velocity from the slope of the curve approximating the power spectrum and calculating the blood flow rate from the slope and y intercept of the curve approximating the power spectrum.

5,598,842

NON-INVASIVE BLOOD ANALYZER AND METHOD USING THE SAME

Ken Ishihara, Takarazuka; Hiroshi Yamamoto, Kobe; Mitsuru Watanabe, Kobe; Kaoru Asano, Kobe; Akio Suzuki, Akashi, and Yasunori Maekawa, Miki, all of Japan, assignors to Toa Medical Electronics Co., Ltd., Hyogo, Japan

Filed Aug. 29, 1994, Ser. No. 296,897
Claims priority, application Japan, Sep. 3, 1993, 5-220147; Mar. 25, 1994, 6-056259
Int. Cl.[6] A61B 5/00;1/04
U.S. Cl. 128—637 35 Claims



1. A non-invasive blood analyzer comprising:

light application means for applying light to a detection region in a blood vessel contained in a part of a living body and having blood flowing therethrough in a given direction;

imaging means, responsive to light reflected from said detection region, for capturing an image of the detection region from the reflected light, wherein the light applied to the detection region and the light reflected from the detection region travel in nearly mutually exclusive paths;

stabilizing means for stabilizing a focus of said imaging means with respect to the detection region; and

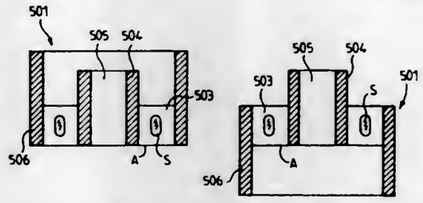
analysis means for analyzing characteristics of blood cells contained in the detection region by processing images captured with said imaging means.

5,598,843

COLORIMETRIC MEASUREMENT HEAD AND METHOD FOR DETERMINING THE INTERNAL COLOR OF A NON-OPAQUE MATERIAL

Laurence Caisey, Vitry-Sur-Seine, and Daniel Bauer, Le Raincy, both of France, assignors to L'Oreal, Paris, France

Filed Nov. 28, 1994, Ser. No. 348,987
Claims priority, application France, Nov. 26, 1993, 93 14165
Int. Cl.[6] A61B 6/00
U.S. Cl. 128—653.1 10 Claims



1. Device for determining the surface and internal color of a non-opaque material, comprising:

a colorimetric measurement head having

an emitter including a light source which emits light towards the material,

a detector which receives the light reflected by the material;

a first opaque wall between the emitter and the detector; and

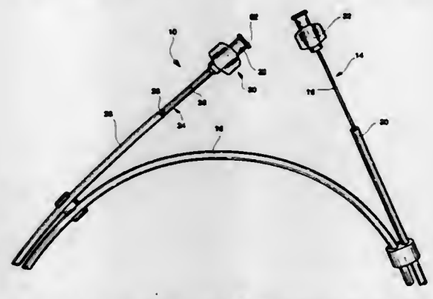
a second opaque wall which is oriented outwardly of the emitter, detector and first opaque wall, and which is slidably mounted for movement between a projecting position wherein the first wall is spaced from the material and the second wall contacts the material to allow material surface color measurement, and a retracted position wherein both the first and second walls contact the material to allow measurement of the internal color of the non-opaque material.

5,598,844

DEVICE FOR FLUSHING A GUIDEWIRE RECEIVING LUMEN OF A MONORAIL OR RAPID EXCHANGE CATHETER

Pedro L. Diaz, Pembroke Pines, Fla., and Mark E. Piper, Waterloo, Belgium, assignors to Cordis Corporation, Miami Lakes, Fla.

Filed Aug. 3, 1995, Ser. No. 510,749
Int. Cl.[6] A61B 5/00
U.S. Cl. 128—657 15 Claims



1. A guidewire receiving lumen flushing device for use with a "monorail" or "rapid exchange" balloon catheter including a distal portion having a guidewire receiving lumen, an outer lumen and a balloon, the guidewire receiving lumen of the catheter having a first opening at a distal end of the catheter and a second opening located proximally of the first opening, the outer lumen of the

catheter being generally parallel with the guidewire receiving lumen of the catheter and the balloon communicating with said outer lumen of the catheter for inflating the balloon, said guidewire receiving lumen flushing device comprising:

a flushing luer; and

a forming tube integrally formed with said flushing luer;

said integrally formed flushing luer and forming tube having a passageway therethrough, said passageway having a first portion in said flushing luer and a second, smaller portion in said forming tube;

said forming tube being adapted to receive a distal portion of the catheter within said second portion of said passageway and form a seal between the forming tube and the distal portion of the catheter including the balloon;

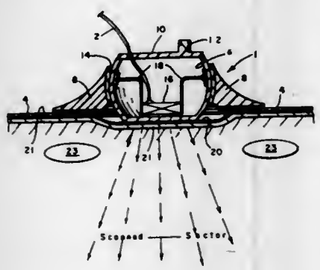
whereby, when the forming tube has received the distal portion of the catheter and formed the seal, fluid that is forced into said passageway is forced through said passageway and flushes said guidewire receiving lumen of the catheter.

5,598,845

ULTRASOUND TRANSDUCER DEVICE FOR CONTINUOUS IMAGING OF THE HEART AND OTHER BODY PARTS

P. Anthony Chandraratna, Rancho Palos Verdes, and Roger A. Stern, Cupertino, both of Calif., assignors to Stellartech Research Corporation, Mountain View, Calif.

Filed Nov. 16, 1995, Ser. No. 558,503
Int. Cl.[6] A61B 8/00
U.S. Cl. 128—662.03 **30 Claims**



1. An ultrasound transducer device for attachment to a surface of the body of a patient, and for providing continuous imaging of organs inside said body surface, said transducer device comprising:

(a) a transducer assembly including

a transducer enclosure;

supporting means for mounting an ultrasound transducer means inside said enclosure;

ultrasound transducer means mounted on said supporting means for transmitting and receiving ultrasound beams from which to create scan lines forming an image of a surface on an organ inside said body surface; and

conductor means for providing electrical signal connections between said transducer means and externally located transducer scanner and display equipment;

(b) a holding pad defining an opening;

(c) means for attaching said holding pad to a surface of the body of a patient; and

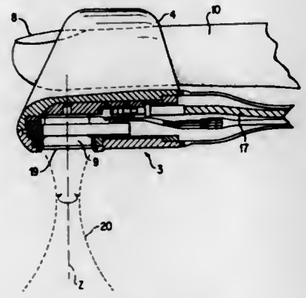
(d) means for movably securing said transducer enclosure to said holding pad such that said transducer enclosure protrudes through said opening, and enabling said transducer enclosure to be rotated to adjust the imaging surface scanned by said ultrasound transducer means while said transducer enclosure is in place against the body surface of a patient, and to provide continuous scanning.

5,598,846

ROTATABLE ULTRASOUND TRANSDUCER FINGER PROBE

Michael Peszynski, Newburyport, Mass., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 21, 1995, Ser. No. 576,659
Int. Cl.[6] A61B 8/12
U.S. Cl. 128—662.06 **12 Claims**



1. A rotatable finger probe, comprising:

a housing;

a rotatable array element within the housing, the array element producing an ultrasound beam;

a finger clip joined to the housing, providing attachment to an operator's finger; and

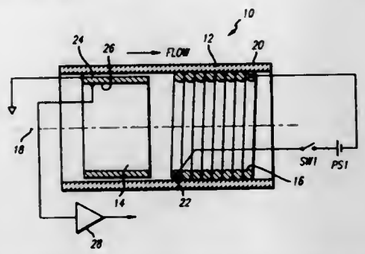
means for rotating the array element wherein rotation of the array element correspondingly rotates the ultrasound beam relative to the housing.

5,598,847

IMPLANTABLE FLOW SENSOR APPARATUS AND METHOD

Herman L. Renger, Calabasas, Calif., assignor to Pacesetter, Inc., Sylmar, Calif.

Filed Dec. 28, 1994, Ser. No. 365,265
Int. Cl.[6] A61B 5/00
U.S. Cl. 128—691 **14 Claims**



1. An implantable flow sensor for measuring a rate of fluid flow within a fluid path, comprising:

a rigid tube sized to fit within the fluid path and to allow the fluid to flow along the tube;

a heater located within the tube and adapted to produce a predetermined amount of heat energy to increase the temperature of fluid within the fluid path;

a first pyroelectric detector adapted to detect changes in temperature caused by the heat energy and to generate a temperature signal based on the temperature change, wherein the first pyroelectric detector is coaxially located within the tube such that external forces applied to the tube are not transferred to the first pyroelectric detector; and

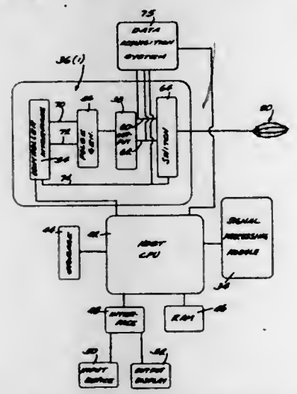
a processor that generates a data signal, based on the temperature signal, that indicates the fluid flow rate within the fluid path.

5,598,848

SYSTEMS AND METHODS FOR POSITIONING MULTIPLE ELECTRODE STRUCTURES IN ELECTRICAL CONTACT WITH THE MYOCARDIUM

David K. Swanson, Mountain View, and Dorin Panescu, Sunnyvale, both of Calif., assignors to EP Technologies, Inc., Sunnyvale, Calif.

Filed Mar. 31, 1994, Ser. No. 221,347
Int. Cl.[6] A61B 5/04
U.S. Cl. 128—696 **32 Claims**



1. A system for evaluating electrical contact between the myocardium and a multiple electrode array inside the heart, the multiple electrode array comprising first and second circumferentially spaced splines for contacting circumferentially spaced endocardial regions, each spline supporting at least one electrode, the system comprising

first means for electrically sensing electrical contact between at least one electrode on the first spline and the myocardium and for generating a first unitary contact-indicating output indicating the presence or absence of the electrical contact, and

second means, operable independently of the first means, for electrically sensing electrical contact between at least one electrode on the second spline and the myocardium and for generating a second unitary contact-indicating output indicating the presence or absence of the electrical contact,

at least one of the first and second means being operable to sense electrical contact by emitting from the respective electrode an electrical signal that activates the myocardium.

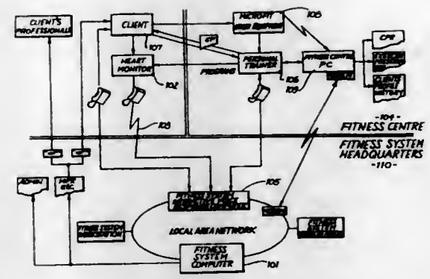
5,598,849

INTERACTIVE EXERCISE MONITORING SYSTEM AND METHOD

Neville J. Browne, Woollahra, Australia, assignor to Hayle Brainpower P/L, Double Bay, Australia

PCT No. PCT/AU93/00367, § 371 Date Jan. 20, 1995, § 102(e) Date Jan. 20, 1995, PCT Pub. No. WO94/02904, PCT Pub. Date Feb. 3, 1994
PCT Filed Jul. 21, 1993, Ser. No. 374,632
Claims priority, application Australia, Jul. 21, 1992, PL 3659; Dec. 31, 1992, PL 6611
Int. Cl.[6] A61B 5/04
U.S. Cl. 128—707 **44 Claims**

1. An exercise monitoring system for monitoring the progress of a user in an exercise regimen, comprising master data processing means and a user monitor, the data processing means having storage means to store a preset physical parameter value relating to the user's exercise regimen and data receiving means to receive data transmitted by the user monitor, and the user monitor having exercise monitoring means to monitor a user's exercise event to measure a parameter value relating to the user exercise event, data storage means to store the measured parameter value and data transmitting means for transmitting the stored measured parameter value to the master data processing means after the exercise event is completed, the master data processing means further including data comparison means to compare the measured parameter value transmitted by the user monitor with the stored preset physical parameter value relating to the user's exercise regimen, and reporting means for reporting deviation of the transmitted parameter value from the stored physical parameter value whereby to monitor the user's progress in the exercise regimen.

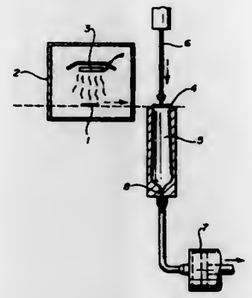


5,598,850

METHOD FOR MAKING THIN WALLED, CLOSED-ENDED, TUBULAR ARTICLES OF THERMOPLASTIC ELASTOMERS

Robert G. Miller, North York; William C. Miller, Windsor, and Oskar T. Tankovitz, North York, all of Canada, assignors to Ortho-McNeil, Inc., Canada

Division of Ser. No. 159,802, Nov. 29, 1993. This application May 31, 1995, Ser. No. 455,791
Int. Cl.[6] A61F 6/02
U.S. Cl. 128—842 **3 Claims**



1. A method to lower the modulus of a thin walled, closed-ended, tubular article of thermoplastic elastomer, said method comprising the steps of:

1) stretching said tubular article onto a forming mandrel; and

2) heating said tubular article and mandrel to a temperature of between 100° and 140° C. for a time sufficient to lower the modulus of said thermoplastic elastomer.

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5,598,851

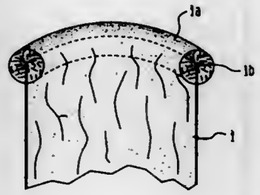
Patent Not Issued For This Number

5,598,852

RECEPTIVE CONDOM ASSEMBLY

Nanette S. Spery, 880 W. 181st St., New York, N.Y. 10033

Division of Ser. No. 950,418, Sep. 23, 1992, Pat. No. 5,433,219.
This application Jun. 7, 1995, Ser. No. 485,408
Int. Cl.[6] A61F 6/04
U.S. Cl. 128—844 2 Claims



1. A condom comprising a thin, uniform elastic sheath having a closed end, an open end, and which has a generally phallic shape, said sheath being sized to receive and enclose, without actively gripping, a male sexual organ via said open end, and

a flexible ring circumferentially affixed to the open end of said sheath, said open end of said sheath attached to and within said ring and having a diameter less than the outer diameter of said ring and greater than the inner diameter of said ring, the ring having an internal diameter adapted to receive and guide the male sexual organ into said sheath, without actively gripping said male sexual organ.

5,598,853

IGNITION DEVICE AND APPARATUS FOR FILTERING AND PURIFYING SIDE-STREAM AND SECOND-HAND TOBACCO SMOKE

Jon Hyre, 5738 Camp Bowie Blvd., Forth Worth, Tex. 76107

Continuation-in-part of Ser. No. 362,972, Dec. 23, 1994, Pat. No. 5,501,234. This application Mar. 25, 1996, Ser. No. 621,231
Int. Cl.[6] A24F 47/00
U.S. Cl. 131—175 9 Claims

1. An ignition-filtering system for lighting a tobacco product and filtering side-stream, second-hand and initial combustion smoke and gasses, said system comprising:

a unitary enclosure including an open end and a base section, said base section having a perforated top and perforated bottom surface;

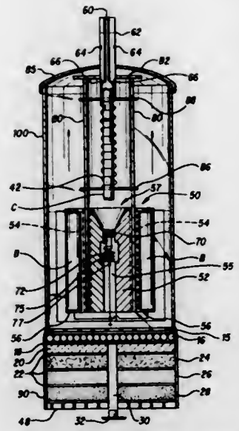
a plurality of filtering elements positioned within said base section and defining an air-permeable filtering passageway, each of said plurality of filtering elements having a central opening therethrough, said central openings, in registration, defining an open central bore through said plurality of filtering elements;

a closure releasably engageable within said open central bore;

a lid having a central aperture therethrough, said lid releasably engageable with said open end of said enclosure;

an inner tube and a concentric outer tube hermetically sealed at both their ends, said inner tube and said outer tube being located within said central aperture of said lid and having a first hermetically sealed end extending within said enclosure, and a second hermetically sealed end extending outside said enclosure;

said outer tube having a plurality of orifices outside said enclosure and a plurality of ports located within said enclosure;



a support connected to said first hermetically sealed end, said support dimensioned and configured to frictionally and releasable engage a smoking product;

a heat-activated catalytic converter adapted and positioned for surrounding the smoking product;

vertical rails extending between said lid and said base section; and

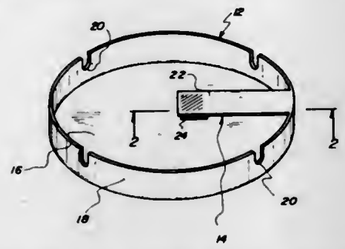
a battery-powered ignition assembly within said enclosure, said ignition assembly being slidable along said vertical rails and including a cylindrical housing having a central aperture.

5,598,854

ASHTRAY CIGARETTE EXTINGUISHING DEVICE

Glenn F. Gillie, 5717 Hawthorne La., Portsmouth, Va. 23703

Filed Mar. 2, 1995, Ser. No. 396,470
Int. Cl.[6] A24F 19/14
U.S. Cl. 131—235.1 4 Claims



1. An ashtray cigarette extinguishing device comprising:

an ashtray means for receiving ashes from a burning cigarette;

an extinguishing means coupled to the ashtray means and projecting into an interior of the ashtray means for mechanically compressing a burning end of a cigarette to extinguish combustion therewithin;

wherein the ashtray means includes a base wall; and a perimeter side wall projecting upwardly from an outer periphery of the base wall;

wherein the extinguishing means comprises a lever arm coupled to and projecting from the perimeter side wall of the ashtray means, the lever arm terminating in a free distal end and being constructed of a substantially resilient material whereby an individual can manually bias the free distal end of the lever arm towards the base wall of the ashtray means; and a lever arm snuffing pad mounted to a lower surface of the lever arm and positioned for engagement against the base wall when the lever arm is deflected towards the base wall; and

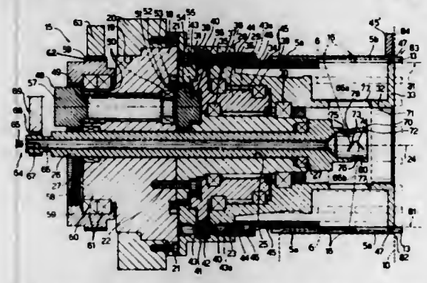
wherein the lever arm snuffing pad is shaped to as to define an angled engaging surface positioned for engagement against the base wall such that the lever arm snuffing pad is of a first thickness at a first end thereof and tapers to a second thickness at a second end thereof.

5,598,855

METHOD AND MACHINE FOR PRODUCING VENTILATED CIGARETTES

Salvatore Rizzoli, Bologna, and Fiorenzo Draghetti, Medicina, both of Italy, assignors to G.D Societa' Per Azioni, Bologna, Italy

Filed Mar. 15, 1995, Ser. No. 404,639
Claims priority, application Italy, Mar. 16, 1994, BO94A0105
Int. Cl.[6] A24C 5/60
U.S. Cl. 131—281 9 Claims



1. A method of producing ventilated cigarettes the method comprising the steps of forming a succession of double cigarettes, each comprising two cigarette portions and an intermediate double filter joined by an intermediate connecting band; feeding the double cigarettes crosswise to their axis to respective supporting means on a rotary conveyor having an axis, the supporting means comprising rotatable supporting means in turn comprising a gondola normally facing outward in relation to the conveyor and rotatable about its axis, and fixed supporting means including rest means fixed in relation to the conveyor; each double cigarette being arranged in engagement with the relevant supporting means so that a first end portion of said double cigarette laterally engages said rotatable gondola, a second end portion of said double cigarette laterally engages said rest means, and an intermediate portion of said double cigarette; including said intermediate double filter, is free; advancing said conveyor to feed the double cigarettes through a perforating station; rotating each double cigarette about its axis at the perforating station by rotating the respective gondola; forming at least two rings of ventilation holes in each double cigarette and at said intermediate portion as said respective gondola is rotated about its axis; and cutting each double cigarette between the two rings of holes to form two ventilated cigarettes, said forming of said rings of ventilation holes comprising directing a pulsed laser beam along said conveyor axis, splitting said beam and directing the resulting beams divergently to concurrently impinge upon and perforate the intermediate portions of widely separated double cigarettes.

5,598,856

Patent Not Issued For This Number

5,598,857

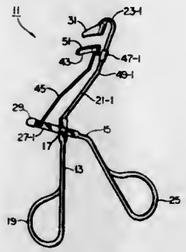
Patent Not Issued For This Number

5,598,858

EYELASH CURLER

Stephanie K. Wainer, Brookline, Mass., assignor to Corionne Consulting Company Inc., Brookline, Mass.

Filed Sep. 22, 1995, Ser. No. 532,892
Int. Cl.[6] A45D 2/48
U.S. Cl. 132—217 20 Claims



1. An eyelash curler comprising:

(a) a curling member, said curling member having a bottom portion, said bottom portion having at least one straight bevelled surface;

(b) a pad, said pad being positioned below said bottom portion of said curling member, said pad having a top portion; and

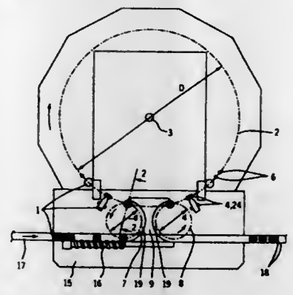
(c) means for vertically controllably opposing said pad and said curling member so as to enable the curling of eyelashes between said bottom portion of said curling member and the top portion of said pad.

5,598,859

CLEANING MACHINE FOR RECEPTACLES

Hermann Kronseder, Regensburger, Germany, assignor to Krones AG Hermann Kronseder Maschinenfabrik, Neutraubling, Germany

Filed Dec. 13, 1995, Ser. No. 571,399
Claims priority, application Germany, Dec. 16, 1994, 44 45 016.8; Apr. 12, 1995, 195 13 221.1
Int. Cl.[6] B08B 9/08
U.S. Cl. 134—62 13 Claims



1. A machine for cleaning an interior surface of receptacles that have an opening, the machine comprising:

a rotor drivable rotationally about a vertical axis and a plurality of nozzles arranged in circumferentially-spaced apart positions about said rotor for projecting respectively a jet of fluid upwardly,

a plurality of devices arranged about said rotor in positions corresponding to said positions of said nozzles, said devices including at least one gripper for gripping a receptacle and a mechanism for swivelling a receptacle about a horizontal axis after said receptacle is gripped to thereby invert said recep-

tacle and place its said opening over a said correspondingly positioned nozzle for receiving a jet of liquid,

said gripper comprising two fingers having corresponding end portions connected to each other and are coupled to said mechanism and having opposite free corresponding end portions spaced from each other and having a region where said end portions of said fingers grip said receptacle, said fingers are comprised of elastic synthetic material to provide for said end portions to deflect apart elastically in response to a receptacle being inserted between said end portions for being gripped and in response to said receptacle being withdrawn from between said end portions of the fingers.

5,598,860

DEVICE FOR CLEANING CONTACT LENSES

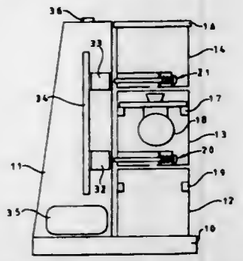
Patricia Wild, Onchan, Great Britain, assignor to Zygi Limited, Isle of Man, United Kingdom

Filed May 19, 1995, Ser. No. 446,067

Claims priority, application United Kingdom, May 19, 1994, 9410020

Int. Cl.[6] B08B *3/04*

U.S. Cl. 134—95.1 **7 Claims**



1. A contact lens cleaning device comprising a support structure, three liquid containers consisting of upper and lower containers and an intermediate container incorporating a contact lens holder, each of the containers having an open top and the upper and intermediate containers each having a valved outlet opening into the open top of the container immediately below, means for detachably mounting the containers one above the other on the support structure, and timed valve control means on the support structure for opening the valved outlets in a predetermined timed sequence to cause a first liquid, within which contact lenses supported by the contact lens holder are immersed, to flow by gravity from the intermediate container to the lower container in a first operating step, and subsequently to cause a second liquid to flow by gravity from the upper container to the intermediate container in a second operating step so as to immerse the contact lenses in the second liquid.

5,598,861

PARTS WASHER WITH SOLVENT FLOW CONTROL

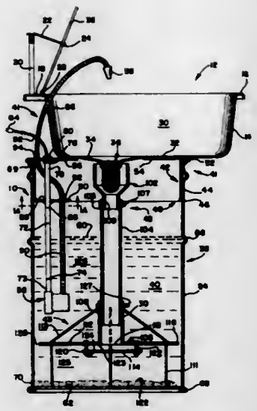
Thomas J. Danowski, Elgin, and Michael R. Dvorak, Lemont, both of Ill., assignors to Safety-Kleen Corp., Elgin, Ill.

Filed Mar. 7, 1995, Ser. No. 399,909

Int. Cl.[6] B08B *3/02*

U.S. Cl. 134—111 **16 Claims**

1. A parts washer for washing mechanical parts, said parts washer comprising, in combination, a parts receiving receptacle positionable atop a reservoir for cleaning liquid, a drain opening formed in a part of said receptacle, a receptacle positioner affixed to a portion of said receptacle and engageable with a portion of the reservoir so as to locate said receptacle with respect to said reservoir, a drain flow control assembly, said drain flow control assembly including a drain downtube having inlet and outlet openings at its respective ends, said downtube inlet being positioned in use adjacent said receptacle drain opening, said drain flow control assembly further including a substantially flat imperforate divider plate surrounding said drain tube outlet and extending radially outwardly from said center opening a distance at least equal to twice the diameter of said outlet opening, and, positioned above said divider plate, a pump and motor assembly secured to a portion of said receptacle positioner, and including a liquid inlet lying radially inside the radially outer edge of said divider plate, a liquid outlet and a liquid conduit extending from said outlet and into an interior portion of said receptacle and terminating in an outlet nozzle assembly, said drain flow control assembly further including an imperforate deflector plate positioned beneath, substantially parallel to and closely spaced apart from said divider plate, said deflector plate having its radially outer edge spaced radially inwardly of said radially outer edge of said divider plate, with said space between corresponding parts of said divider and deflector plates defining a radially extending transfer space with circumferential inlet and outlet passages, whereby, in use, solvent flows through said conduit and into said receptacle vertically downwardly through said downtube, and thereafter radially outwardly through said transfer space, said divider plate serving to divide the subsurface region of said liquid into a lower region wherein particulates in said liquid flow radially over said deflector plate and accumulate in said lower region by sedimentation, and a quiescent upper region containing clarified solvent and lying above said divider plate, said upper region containing a greatly reduced concentration of entrained particulate matter in relation to said lower region.



5,598,862

UMBRELLA HANDLE

Ann S. Cain, Cincinnati, Ohio, and David E. Burbrink, Ft. Thomas, Ky., assignors to 'totes', Incorporated, Loveland, Ohio

Filed Sep. 19, 1995, Ser. No. 530,481

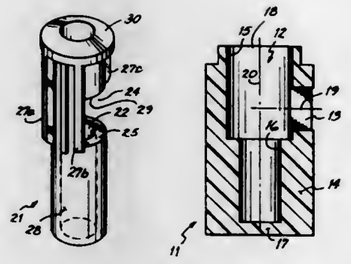
Int. Cl.[6] A45B *25/14*

U.S. Cl. 135—24 **2 Claims**

1. An umbrella handle comprising

a handle shell having a longitudinal bore defined interiorly thereof, and having a latch button hole defined in a side wall thereof which extends through said side wall into said longitudinal bore,

an inner sleeve seated in said longitudinal bore of said handle shell, said sleeve having a longitudinal bore adapted to receive an umbrella centerpost in fixed assembly therewith, and said sleeve having a latch button hole defined in a side wall thereof which is aligned with said shell latch button hole, said sleeve and shell latch button holes allowing a latch button



manually accessible from the exterior surface of said shell to operate an umbrella latch mechanism carried interiorly of said centerpost

a cap fixed to said sleeve, said cap being sized to close off one end of said shell's bore, and plural spacer ribs fixed longitudinally to said sleeve, said spacer ribs functioning to orient said sleeve and said shell substantially coaxially, and at least one of said spacer ribs functioning to enhance the structural stability of said sleeve in the area of said sleeve's latch button hole.

5,598,863

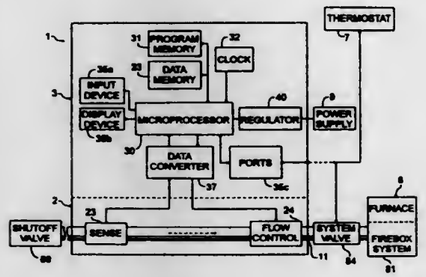
FLUID FLOW VOLUME SCHEDULING CONTROL SYSTEM

Donald Kruto, 431 Easy St., Des Plaines, Ill. 60016

Division of Ser. No. 289,622, Aug. 11, 1994, Pat. No. 5,464,038. This application Jul. 27, 1995, Ser. No. 508,059

Int. Cl.[6] G05D *7/06*

U.S. Cl. 137—1 **3 Claims**



1. A method for providing a time scheduled sequence of fluid flow volumes of fuel to a burner of a host heating appliance and thereby delivering a minimal fuel volume per unit time within each normal host supply cycle and with minimal compromise of heating effectiveness that is easily integrated with a new manufacture and for retrofit comprising placing an electrically controllable, normally open fluid flow volume regulating valve in line with a host heating appliance supply line, scheduling the regulating valve electrically with a microprocessor and controlling the microprocessor with a sequencing program and data comprising a sequence of fuel flow volumes per unit time.

5,598,864

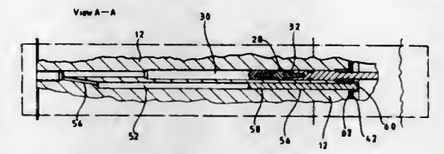
SUBSURFACE SAFETY VALVE

Russell A. Johnston, Alvin, and David A. Bilberry, Houston, both of Tex., assignors to Camco International Inc., Houston, Tex.

Filed Oct. 19, 1994, Ser. No. 326,017

Int. Cl.[6] E21B *34/14*

U.S. Cl. 137—68.16 **15 Claims**



1. A subsurface safety valve comprising:

a tubular valve housing;

a valve closure member movable between an open and a closed position;

an axially shiftable flow tube for opening the valve closure member;

a spring for biasing the flow tube to a closed position;

a hydraulic control line to communicate fluid to move the flow tube to an open position; and

a non-frangible plug inserted within an opening in the valve housing, the opening in fluid communication with the hydraulic control line, and the plug adapted to be withdrawn from the opening to open a fluid passage between the control line and a longitudinal opening extending through the valve housing, and biased out of alignment with the opening in the valve housing to prevent its reinsertion to lock out the safety valve.

5,598,865

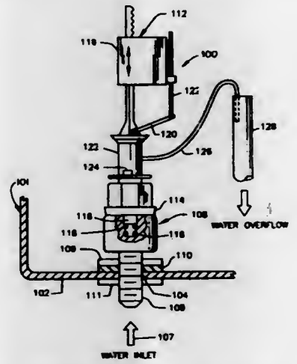
QUICK RELEASE TOILET TANK VALVE

Vincent Musso, 315 W. Stimpson Ave., Linden, N.J. 07036

Filed Jun. 6, 1995, Ser. No. 471,028

Int. Cl.[6] F16K *43/00;31/24;33/00*

U.S. Cl. 137—315 **8 Claims**



1. A quick release toilet tank valve, said valve comprising a housing, a water inlet valve within said housing operatively coupled to a float for filling a toilet tank to a predetermined level, a quick release connector comprising a first component attached to said housing and a second component within said toilet tank attached to a source of water, one of said components comprising a non-threaded male component and the other of said components comprising a non-threaded female component, said first and sec-

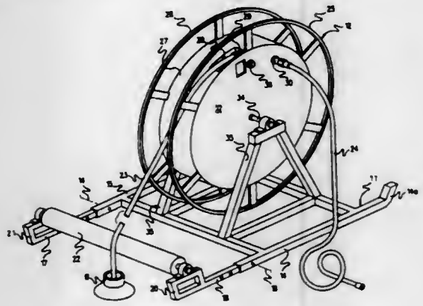
ond components releasably connectable to each other without threaded engagement of said male and female components to provide a water tight seal connection therebetween upon insertion of said male component within said female component with one of said components sealingly engaging a seal means within said connector, said male component when received within said female component preventing relative movement of said valve within said toilet tank, said connector operative by manipulation solely by one's hand without the use of mechanical tools whereby said toilet tank valve is detachable from said second component and said source of said water upon disconnection of said male component from said female component from within said toilet tank for replacement of said toilet tank valve with another one of said toilet tank valve.

5,598,866

PORTABLE WELL TESTING APPARATUS

Cliff H. Nelson, RR 5, Calgary, Alberta, Canada

Filed Nov. 6, 1995, Ser. No. 554,631
Int. Cl.[6] B65H *75/34*
U.S. Cl. 137—355.12 **15 Claims**



1. A portable well testing apparatus, comprising:

support frame means arranged for sliding retrofit within a truck bed,

a first fluid hose and a second fluid hose,

reel means rotatably mounted to the support frame means for the reeling and unreeling of the first fluid hose relative to the reel means, and the reel means arranged for selective mounting of the second fluid hose to the reel means, with the first fluid hose and the second fluid hose in fluid communication relative to one another through the reel means,

said reel means including a first side wall spaced from a second side wall, and a first guide rail extending beyond the first side wall and a second guide rail extending beyond the second side wall, with the first guide rail and the second guide rail spaced relative to one another, and a support surface extending from the first side wall to the second side wall recessed below the first guide rail and the second guide rail to rotatably mount the first hose thereabout,

said support frame means including a plurality of frame extensions projecting above the first tube and the second tube, with an axle rotatably mounted between the frame extensions, and the reel means secured to the axle, and

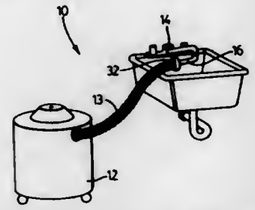
a pump means mounted to a free distal end of the first fluid hose for directing fluid to the first fluid hose.

5,598,867

METHOD AND APPARATUS FOR DRAINING PLUMBING LINES

George Sullivan, 835 Dundas Street East, Whitby, Ontario, Canada

Filed Jan. 17, 1995, Ser. No. 373,160
Int. Cl.[6] F16L *55/00;* **E03B** *7/10*
U.S. Cl. 137—357 **17 Claims**



1. A method for draining water from plumbing lines having an external water supply and a plurality of faucets with valves connected thereto, comprising the steps of:

(a) shutting off the external supply of water to the plumbing lines;

(b) attaching a vacuum generating device to a first one of the plurality of faucets that are connected to said plumbing lines, wherein said vacuum generating device is adapted to collect water through said first faucet;

(c) opening a valve connected to said first faucet to permit air and water flow from said plumbing lines through said first faucet;

(d) actuating said vacuum generating device to establish a pressure drop in said plumbing line at said first faucet;

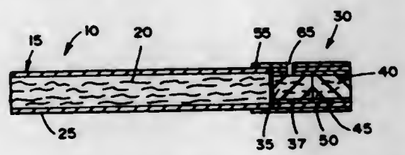
(e) opening at least one valve connected to at least one other faucet of said plumbing lines to establish a pressure differential in said plumbing lines, said pressure differential causing water located in said plumbing lines to flow towards said first faucet to be collected by the vacuum generating device.

5,598,868

CIGARETTE AND SMOKABLE FILLER MATERIAL THEREFOR MATERIAL FOR USE IN SMOKING ARTICLES

Stephen W. Jakob, Winston-Salem; Michael D. Shannon, Lewisville; Olivia D. Furin, Winston-Salem; Paul F. Bernasek, Lexington; Richard L. Blakley, Pfafftown; Johnny L. Brooks; Karen M. Womble, both of Winston-Salem; Gary R. Shelar, Greensboro, and James L. Resce, Yadkinville, all of N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Continuation of Ser. No. 827,230, Jan. 28, 1992, abandoned, which is a continuation of Ser. No. 567,519, Aug. 15, 1990, Pat. No. 5,101,839. This application Nov. 30, 1994, Ser. No. 346,841
Int. Cl.[6] A24B *15/00*
U.S. Cl. 131—359 **34 Claims**



1. An aerosol generating composition for use in smoking articles comprising an intimate admixture of:

(a) at least about 40 weight percent of a polyhydric alcohol aerosol forming material;

(b) at least about 3 weight percent of a binder; and

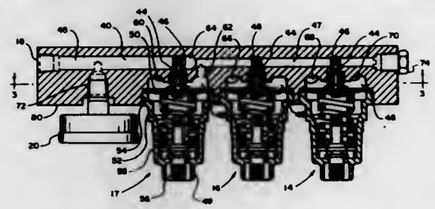
(c) a tobacco material.

5,598,869

PRESSURE REGULATING UNIT

John Nelson, Durham, N.H., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Nov. 30, 1995, Ser. No. 565,321
Int. Cl.[6] G05D *16/06*
U.S. Cl. 137—505.11 **11 Claims**



1. A pressure regulating unit for providing two different controlled pressures, said unit comprising

a block made of a single piece of metal and having a mounting structure integrally provided thereon and a gas flow passage provided therein, said gas flow passage having a high pressure inlet for connection to a source of high-pressure gas having varying pressure and a first port for connection to a pressure regulator, and

first, second and third pressure regulators that are supported by said mounting structure, said first regulator having a gas inlet communicating with said first port, said first regulator being a step-down regulator for supplying a substantially constant pressure gas to said second and third pressure regulators,

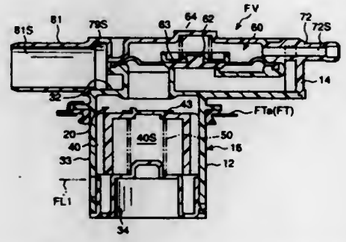
said first, second, and third pressure regulators including pressure adjusters that have been permanently fixed in place after adjustment to a desired setting, said block carrying no more than a single pressure gauge, said single pressure gauge communicating with said first port.

5,598,870

FUEL TANK DEVICE FOR VEHICLE HAVING FLOAT VALVE AND DIAPHRAGM VALVE

Yoshihiro Nagino, Inazawa, Japan, assignor to Toyoda Gosei Co., Ltd., Aichi-ken, Japan

Filed Oct. 20, 1995, Ser. No. 545,933
Claims priority, application Japan, Nov. 1, 1994, 6-293831; Nov. 1, 1994, 6-293832
Int. Cl.[6] F02M *25/08;* **F16K** *17/36*
U.S. Cl. 137—587 **7 Claims**



1. A fuel tank device for a vehicle having a fuel tank, said device comprising:

a float valve constructed and arranged to be mounted within the fuel tank at an upper portion of the fuel tank; and

a diaphragm valve connected to an air outflow passage of said float valve,

said float valve comprising (i) a casing defining a float chamber therein, said casing including a top wall with said air outflow passage disposed therethrough, a side wall extending downwardly from said top wall, and a bottom portion removably mounted on a lower end portion of said side wall, said bottom portion having a through hole, and (ii) a float received in said float chamber for vertical movement therein, said float having a valve portion for opening and closing said air outflow passage in accordance with a change of a fuel liquid level within the fuel tank,

said diaphragm valve including (a) a reference pressure chamber constructed and arranged to be maintained at a predetermined pressure, (b) a fluid pressure chamber in communication with said air outflow chamber, (c) a fluid outflow passage provided at a generally central portion of said fluid pressure chamber, (d) a fluid discharge chamber in communication with said fluid outflow passage, (e) an annular outer extension chamber connected to an outer periphery of said fluid discharge chamber, said outer extension chamber having a height greater than a height of said fluid discharge chamber, (f) a fluid discharge passage connected to said outer extension chamber, said fluid discharge passage having an inner diameter generally equal to the height of said outer extension chamber, (g) a diaphragm separating said reference pressure chamber from said fluid pressure chamber, said diaphragm receiving a pressure of a fluid within said fluid pressure chamber for communicating said fluid pressure chamber with said fluid outflow passage, and (h) urging means for urging said diaphragm into a position to interrupt the communication between said fluid pressure chamber and said fluid outflow passage,

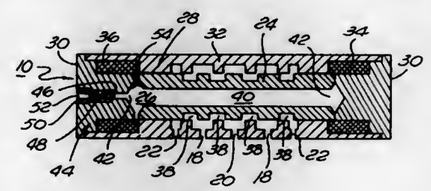
wherein said bottom portion of said float valve includes an upstanding wall fitted in said side wall, and said through hole is formed through said upstanding wall, said through hole having a rectangular shape.

5,598,871

STATIC AND DYNAMIC PRESSURE BALANCE DOUBLE FLOW THREE-WAY CONTROL VALVE

Oded E. Sturman, Newbury Park, and Steven Massey, Camarillo, both of Calif., assignors to Sturman Industries, Camarillo, Calif.

Continuation-in-part of Ser. No. 223,440, Apr. 5, 1994. This application Sep. 13, 1994, Ser. No. 304,879
Int. Cl.[6] F15B *13/044;* **F16K** *3/24;31/06*
U.S. Cl. 137—625.65 **32 Claims**



1. A fluid control valve, comprising:

a housing that has a first external port and a pair of second external ports;

a spool that can move between a first position and a second position within said housing, said spool having a ridge that cooperates with said housing to prevent fluid communication between said first external ports and said second external ports when said spool is in the first position, and a plurality of outer grooves that each have a pair of opposing walls and which provide fluid communication between said first external port and both second external ports when said spool is in

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the second position, wherein fluid flows between said first and second external ports such that the fluid exerts essentially equal and opposite fluid forces on said walls of said outer grooves; and,

a first solenoid that moves said spool to the first position.

5,598,872

CHECK VALVE

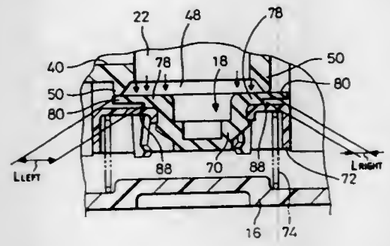
Joji Kasugai; Yoshihiro Nagino, and Hiroshi Nishi, all of Aichi, Japan, assignors to Toyoda Gosei Co., Ltd., Aichi, Japan

Filed Apr. 4, 1995, Ser. No. 416,577

Claims priority, application Japan, Apr. 25, 1994, 6-110328

Int. Cl.[6] F16K *15/14*

U.S. Cl. 137—854 **5 Claims**



1. A check valve which opens and closes a flow path therethrough according to pressures differences, the check valve comprising:

a valve body seal member having an annular seat of predetermined area;

a valve body including a thin annular portion which is flexible in a direction towards said annular seat in response to pressure thereon, said valve body closing the flow path when said thin annular portion is seated on said annular seat of said valve body seal member;

a valve body supporting member which supports said valve body, said valve body supporting member being constructed and arranged to allow said thin annular portion to bend thereby defining a space between a periphery of said thin annular portion and said annular seat to open the flow path; and

a spring associated with said valve body so as to apply an elastic force to said valve body so that said valve body is seated on said annular seat closing the flow path;

a part of said thin annular portion of said valve body being constructed and arranged to be bent-off from contact with said annular seat earlier than other parts thereof when a pressure greater than the elastic force of said spring is applied to said valve body,

wherein said valve body comprises a thick annular portion which is located radially inward with respect to said thin annular portion and is integral with said thin annular portion, said valve body being supported by said valve body supporting member through said thick annular portion, and said thin annular portion being seated on said annular seat of said valve body seal member closing the flow path, and

said thin annular portion being bendable along a boundary between said thin annular portion and said thick annular portion so as to define said space, and

in said predetermined area of said annular seat, the distance between said boundary of said thin and thick annular portions and said annular seat is longer than in other areas thereof.

5,598,873

BRANCH PIPE LINING METHOD AND LINER

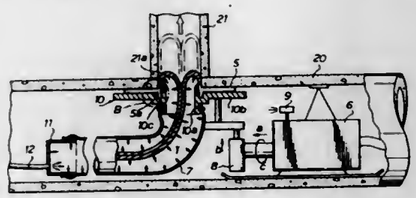
Takao Kamiyama, Hiratsuka; Yasuhiro Yokoshima, Ibaraki-ken, and Shigeru Endoh, Kasukabe, all of Japan, assignors to Shonan Gosei-jushi Seisakusho K.K.; Yokoshima & Company, and Get Inc., all of Japan

Filed Mar. 15, 1994, Ser. No. 212,779

Claims priority, application Japan, Mar. 23, 1993, 5-063596

Int. Cl.[6] F16L *55/162*

U.S. Cl. 138—98 **8 Claims**



1. A method for lining a branch pipe branching off a main pipe comprising the steps of:

(a) attaching an open end of a pressure bag to a set nozzle attached to a work robot which is movably introduced in the main pipe, said set nozzle having a cylindrical portion and a flange portion, an upper surface of said flange portion having a concave groove in said flange along an outer wall of said cylindrical portion;

(b) placing a branch pipe liner bag impregnated with a thermosetting resin in a pressure bag attached to said work robot, said branch pipe liner bag having a flange at one end thereof, said flange having a protrusion in a ring shape over an inner perimeter of a lower surface thereof;

(c) pulling out said flange of said branch pipe liner bag from said pressure bag;

(d) removably engaging said flange of the branch pipe liner bag with said set nozzle in concave-convex relationship such that said protrusion of said flange is inserted in said groove of said set nozzle to form a seal between said branch pipe liner bag and said set nozzle;

(e) supplying a pressurized fluid into said pressure bag with said flange being closely contacted to an inner wall of the main pipe around a perimeter of a branch pipe opening to evert and insert said branch pipe liner bag into the branch pipe;

(f) curing the thermosetting resin impregnated in said branch pipe liner bag while said branch pipe liner bag being is pressed against an inner wall of the branch pipe; and

(g) disengaging said flange from said set nozzle and removing said work robot and said pressure bag from said main pipe.

5,598,874

LOOM PROCESSING OF HOLLOW FIBER MEMBRANES

Philip E. Alei, Oceanside; Jeff C. Schletz, Clayton; John A. Jensvold, Benicia, all of Calif.; Ward E. Tegrotenhuis, Kennewick, Wash.; Wickham Allen, Midland, Mich.; Frederick L. Coan, Antioch, Calif.; Karen L. Skala, Benicia, Calif.; Daniel O. Clark, Pleasanton, Calif., and Harold V. Walt, Jr., Midland, Mich., assignors to MG Generon, Inc., Malvern, Pa.

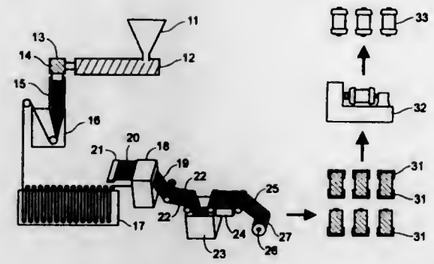
Filed Aug. 11, 1995, Ser. No. 514,035

Int. Cl.[6] D03D *15/00*

U.S. Cl. 139—1 R **25 Claims**

1. A continuous flow method for forming a hollow fiber membrane module, comprising:

(a) feeding hollow fiber membranes containing from about 1% to about 5% nonaqueous but water-miscible solvent by weight to a loom and weaving the hollow fiber membranes on the loom as filling with warp threads to form a web of woven fiber membranes;



(b) passing the web through an aqueous extraction bath to lower the nonaqueous solvent content in the hollow fiber membranes to less than about 0.5% by weight, and drying the web upon emergence from the bath to remove all liquid; and

(c) rolling the web thus dried into a bundle and enclosing the bundle in a casing containing boreside and shellside ports to form a hollow fiber membrane module;

steps (a) through (c) being performed in continuous flow.

5,598,875

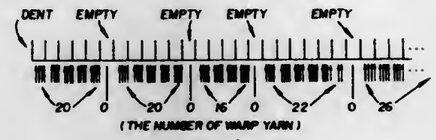
REEDING METHOD FOR 1/F FLUCTUATION WARP YARN DISTRIBUTION

Toshimitsu Musha, Machida; Yuichi Yanai, Okazaki; Shoji Takagi, Okazaki; Yuki Niwa, Okazaki, and Shu Ono, Okazaki, all of Japan, assignors to Nisshinbo Industries, Inc., Tokyo, Japan

Filed May 9, 1995, Ser. No. 437,063

Int. Cl.[6] D03D *49/62*

U.S. Cl. 139—192 **3 Claims**



1. A weaving method for weaving woven goods, comprising;

passing warp yarns through a reed having uniformity spaced reed dents so that the spacings between the yarns are arranged in a pattern having a 1/f fluctuation throughout the reed width;

separating said warp yarns into two sets to form a shed between said two set; and

passing weft yarns through said shed, causing said warp yarns and weft yarns to cross over each other, thereby weaving woven goods in which the arrangement of warp yarns has the 1/f fluctuation.

5,598,876

POWDERED MATERIAL DISPENSING UNIT

Gianpietro Zanini, Montanara, and Carlo Corniani, Marzaiolo, both of Italy, assignors to Azionaria Costruzioni Macchine Automatiche A.C.M.A. S.p.A., Bologna, Italy

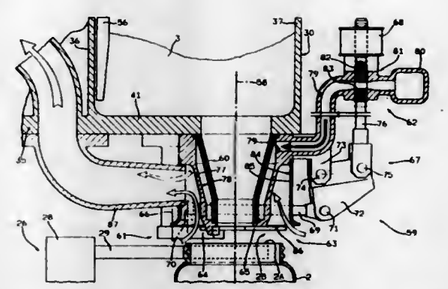
Filed Mar. 27, 1995, Ser. No. 410,698

Claims priority, application Italy, Mar. 28, 1994, BO94A0133

Int. Cl.[6] B65B *1/04*

U.S. Cl. 141—93 **9 Claims**

1. A powdered material gravity dispensing unit for filling containers, the unit comprising a vessel for powdered material, and at least one dispenser connected to the bottom end of the vessel to permit measured quantities of said material to be withdrawn by gravity from the vessel; the dispenser comprising a supply conduit



communicating with the vessel, and a device for selectively closing the supply conduit comprising a shutter, and drive means for moving the shutter to and from a position wherein it closes the supply conduit; wherein the supply conduit is made of porous material; the dispenser comprising a pneumatic circuit for feeding pressurized pneumatic fluid into contact with the outer surface of the supply conduit comprising a pneumatic conduit, and valve means for controlling said pneumatic conduit, and suction means adjacent to the output end of the supply conduit; wherein said drive means comprises an actuator presenting a movable output element connected both to the shutter and to said valve means, for simultaneously opening and closing said supply conduit and said pneumatic conduit.

5,598,877

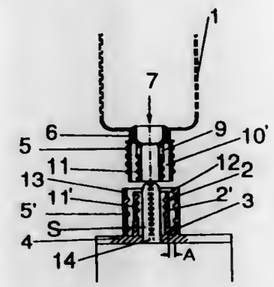
REUSABLE LIQUID DISPENSER

Hermann Reidel, Brunnenstrasse 3a, D - 63791 Karlstein, Germany

Filed Oct. 20, 1994, Ser. No. 326,591

Int. Cl.[6] B65B *1/04*

U.S. Cl. 141—346 **6 Claims**



1. A liquid dispenser comprising:

a batcher having a holder, with the holder having an internal thread and an opening position;

an opening pin centrally arranged within the holder and having a thread;

a reservoir having an outlet side and provided with a connecting neck having a thread and screwable into the internal thread of the holder;

an internal closure displaceably arranged within the connecting neck of the reservoir and having a bottom;

at least one opening located below the bottom of the internal closure and cleared in the opening position of the internal closure; and

a liquid outlet passageway disposed within the holder,

wherein the internal closure is configured as a sleeve open toward the outlet side of the reservoir, with the internal closure provided with a thread screwable onto the opening pin of the holder, with the thread of the internal closure having a

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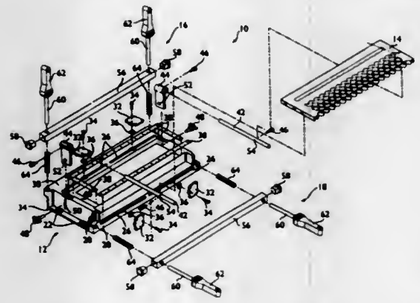
pitch aligned with the thread of the connecting neck of the reservoir, and wherein the pitch of the thread of the internal closure and the thread of the opening pin is lower than the pitch of the thread of the connecting neck and the internal thread of the holder.

5,598,878

BENCH TOP JOINT JIG

John Wirth, Jr.; Jay L. Sanger, and Mark K. McCool, all of Casper, Wyo., assignors to Woodworker's Supply, Wyo.

Filed Oct. 27, 1995, Ser. No. 549,010
Int. Cl.[6] B27M 3/00; B27C 1/00;5/00
U.S. Cl. 144—144.51 **18 Claims**



1. A joint jig and template assembly, comprising:
a base;
first and second clamp assemblies attached to said base, each of said first and second clamp assemblies comprising a clamp member which is capable of moving relative to said base to engage a board placed adjacent said base;
a support structure engagable with said base; and
a template supportable by said support structure, said template having at least one undulating surface to guide a router bit during operation of a router upon the board, and a plurality of bores arranged to guide a bit during operation of a drill upon the board;
whereby movement of the router and drill are limited by the template during operation on the board to cut a particular design in one of the end surfaces of the board to enable the board to mate with another board to form an angled joint.

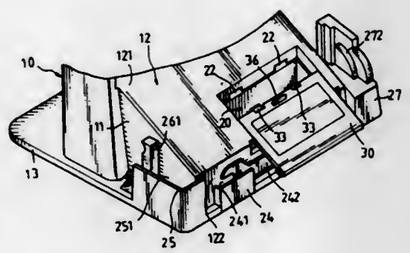
5,598,879

RECEIVING MEANS OF A WOOD WORKING MACHINE

Ruey-Zon Chen, No. 261, Jen Hwa Rd., Tali City, Taichung, Taiwan

Filed Jul. 18, 1995, Ser. No. 502,987
Int. Cl.[6] B25H 3/02
U.S. Cl. 144—285 **7 Claims**

1. A tool storage device for a wood working machine, comprising: a base on which a bench and a wood working mechanism are respectively disposed, said base having two side walls, a front wall and a rear wall, said front wall including an inclined front wall portion and a vertical wall portion which integrally extends from said inclined from wall portion, said inclined front wall portion having a recess therein which is bounded by two side boards, a vertical board and a bottom, each of said side boards having a slot therein and said vertical board having two cavities therein; a cover having two sides and a front end, each of said sides having a first end and a second end, said first end thereof having a hook element extending laterally therefrom and said second end thereof having a protrusion extending laterally therefrom, both of said hook elements and said protrusions slidably received in said slot of said side board, said front end of said cover having two extensions extending longitudinally therefrom being received in said cavities; and a stop extending downwardly from said inclined front wall to partially cover an open end of said slots such that said hook element is limited by said stop when said cover is slid to open said recess.

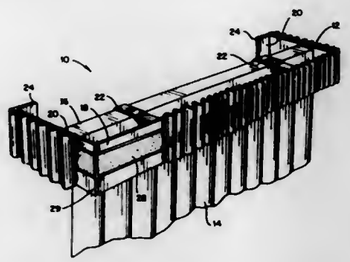


5,598,880

TOP TREATMENT FOR BLINDS AND PACKAGING THEREFOR

David M. Cross, Westport, Conn., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Jun. 2, 1995, Ser. No. 460,597
Int. Cl.[6] E06B 9/00
U.S. Cl. 160—38 **7 Claims**



1. A valance assembly for use with blinds comprising;
an elongated groover valance;
a plurality of slats for insertion along the groover valance, each of said slats having a plurality of one of hooks and loops carried along an outer face thereof;
a valance including an elongated strip of fabric having a plurality of another of said hooks and loops along a backside of said fabric, said fabric being applied to said slats along said groover valance with said plurality of one of the hooks and loops carried by the slats engaging said plurality of said another of said hooks and loops carried by said fabric to secure the fabric to the groover valance.

5,598,881

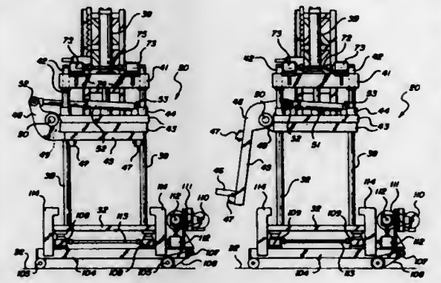
Patent Not Issued For This Number

5,598,882

LOW PRESSURE CASTING ASSEMBLY

Daniel L. Merrill, Montaque, Mich., assignor to CMI International, Inc., Southfield, Mich.

Filed Jan. 30, 1996, Ser. No. 594,310
Int. Cl.[6] B22D 17/12
U.S. Cl. 164—306 **16 Claims**



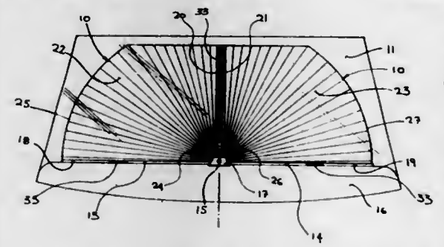
1. A low-pressure casting apparatus for conveying molten metal upwardly from a molten metal bath to a mold thereabove, said apparatus comprising:
a base plate (32) for supporting the drag of a mold above the molten metal bath;
a plurality of guide posts (38) extending upwardly from said base plate (32) and defining an operating area therebetween;
a fixed platen (41) supported by said posts (38) in fixed vertical spacing above said base;
a movable platen (43) guided for vertical movement in said operating area by said guide posts (38);
a ram actuator (39) interconnecting said fixed platen (41) and said movable platen (43) for moving said movable platen (43) vertically on said guide posts (38);
said apparatus characterized by a rack mechanism (60) interconnecting said fixed platen (41) and said movable platen (43) for preventing said movable platen (43) from cocking relative to said posts (38) during vertical movement thereof.

5,598,883

VEHICULAR SUN SHIELD

Kostas I. Platsis, 721 Umbra St., Baltimore, Md. 21224

Filed Jun. 9, 1995, Ser. No. 488,834
Int. Cl.[6] B60J 3/00
U.S. Cl. 160—370.23 **11 Claims**



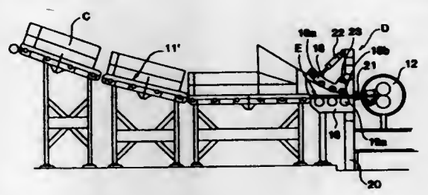
1. A sunshield to be used inside the windshield of a vehicle, the sunshield comprising: means for removably attaching the sunshield to the window, a left portion, a right portion, and a smaller center portion therebetween, said attaching means being located on said center portion; the left portion and the right portion each having respective left channel and right channels connected by first pivot means to the center portion at respective inner ends about horizontally spaced, substantially vertically extending first pivot axis, said respective first pivot axis permitting said channels to adjust to variously curved windshields; the left channel and the right channel each having a left arm and a right arm pivotally joined by second pivot means to the respective channel; further, each channel having a shade comprising a plurality of pleats, each pleat having inner an outer lateral edges; the inner edges of the pleats of the left portion being pivotally joined to the inner end of the left channel at respective said second pivot means; the inner edges of the pleats of the right portion being pivotally joined to the inner end of the right at it's respective second pivot means wherein all the pleats of the left portion and all the pleats of the right portion may be pivotally moved between a substantially vertical and to a horizontal position adjacent to the respective left and right channels by a pivotal circular movement of the left and right arm, thus, permitting alternate shielding and an unobstructed view through the windshield; the respective pleats in the left portion and in the right portion may be independently pivotally moved by the respective left or right arm to a maximum of approximately 90 degrees; whereby when both arms are so pivotally moved so that the left arm is adjacent to the right arm the sunshield is unfolded in an angular shape that covers the entire windshield.

5,598,884

DEVICE FOR GUIDING A CAST BAR FROM THE OUTPUT OF A CASTING WHEEL TO THE INPUT OF A ROLLING MILL

AndréRouzeval, Conflans-Ste-Honorine, and Christian Viel, Houilles, both of France, assignors to Clecim, Cergy-Pontoise, France

Division of Ser. No. 137,421, Oct. 18, 1993, Pat. No. 5,484,010.
This application Jun. 7, 1995, Ser. No. 478,580
Claims priority, application France, Oct. 26, 1992, 92 12755
Int. Cl.[6] B22D 11/128
U.S. Cl. 164—448 **5 Claims**



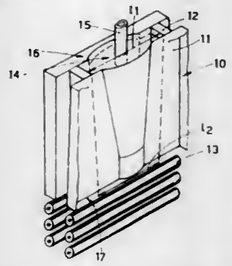
1. A device for guiding a continuously cast strand from a casting wheel to an installation for processing said strand, wherein said strand is supported by a support table during its movement from said casting wheel to said processing installation, said device comprising means for progressively taking charge of said strand for its input into said processing installation, said means comprising a lower and an upper table, said upper table being made up of a chassis articulated about an axis that is horizontal and perpendicular to a feed direction of said strand, said chassis having a convex outer surface facing said strand, and means for controlling the rotation of said chassis about said axis as said strand advances, between a first open position in which said upper table and said lower table jointly define a large opening and a second closed position, in which said upper table pushes said strand against said lower table, said convex surface of said upper table forming a jaw which is open in said first open position of said chassis for introduction of a tip of said strand and which is closed in said second closed position for centering said strand, said means for controlling the rotation of said chassis gradually closing said jaw and straightening said strand from said first open position to said second closed position.

5,598,885

METHOD FOR THE CONTINUOUS CASTING OF HIGH-CARBON STEELS

Umberto Meroni; Domenico W. Ruzza, both of Udine, and Andrea Carboni, Milano, all of Italy, assignors to Danieli & C. Officine Meccaniche SpA, Buttrio, Italy

Filed May 30, 1995, Ser. No. 452,538
Claims priority, application Italy, May 30, 1994, UD94A0091
Int. Cl.[6] B22D *11/00; 11/04*
U.S. Cl. 164—478 **10 Claims**



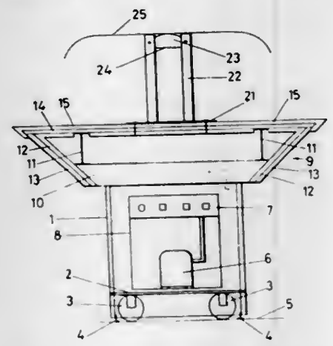
1. Method for the continuous casting of high-carbon steels having a carbon content greater than 0.50% to produce thin slabs, comprising continuously casting the high-carbon steel through a mold having a taper at least in its first segment between 1.5% and 4% per meter while oscillating the mold, the frequency of oscillation of the mold being between 180 and 350 oscillations per minute with a travel upwards and downwards of about ± 5 to 9 mm. and with a total travel of 10 to 18 mm., and very intensely cooling in a primary cooling period, wherein a time of transient state of start-up of the casting is reduced by ⅓ to ¼ as compared to a normal time of transient state of start-up.

5,598,886

FOOD DISPLAY AND PRESERVATION CASE

Antonio Criado-Mellado, Almáchar, 16-18, Polígono Industrial Guadalhorce, 29004 Malaga, Spain

Filed Jun. 13, 1995, Ser. No. 489,949
Claims priority, application Spain, Jun. 15, 1994, 9401658
Int. Cl.[6] F25B *29/00*
U.S. Cl. 165—254 **9 Claims**



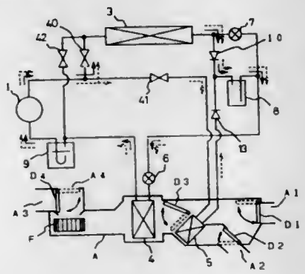
3. A food display and preservation case comprising:
at least one heating means;
at least one refrigeration means;
a refrigeration control panel;
a heating control panel;
a lighting control panel;
at least one support provided with at least one wheel, at least one brake means, and at least one access door, wherein said support houses said refrigeration, heating, and lighting control panels and said refrigeration and heating means; and
a center body or table disposed on top of said support, wherein an upper surface of said table is capable of supporting compartments, trays, plates and the like which may be connected to said heating means or said refrigeration means which is disposed inside of said support;
wherein said heating means further comprises a shielded resistor and a heating thermostat;
wherein said refrigeration means further comprises a compressor, a refrigeration thermostat, and a copper tubing connected to said compressor;
wherein said center body or table further comprises:
a first hot compartment connected to said shielded resistor and said thermostat of a first of said heating means, said hot compartment further comprising a grating which conceals said resistor and said heating thermostat;
a cold compartment connected to said copper tubing and said thermostat of a first of said refrigeration means, said cold compartment further comprising a grating which conceals said copper tubing and said refrigeration thermostat;
a slab or cold granite table connected to a second of said refrigeration means;
a paella cooker or hot granite plate connected to a second of said heating means; and
a second hot compartment connected to a third of said heating means.

5,598,887

AIR CONDITIONER FOR VEHICLES

Susumu Ikeda; Toshimi Isobe; Atsuo Inoue, all of Isesaki; Akihiro Tajiri, Wako; Choji Sakuma, Wako; Nobuyuki Yuri, Wako, and Mitsuru Ishikawa, Wako, all of Japan, assignors to Sanden Corporation, Gunma-ken, and Honda Giken Kogyo Kabushiki Kaisha, Tokyo, both of Japan

Filed Oct. 14, 1994, Ser. No. 323,221
Claims priority, application Japan, Oct. 14, 1993, 5-257226; Feb. 25, 1994, 6-028607
Int. Cl.[6] F25B *29/00;* **F25D** *17/06*
U.S. Cl. 165—202 **42 Claims**



1. An air conditioner of a heat pump type for use in a vehicle, comprising:
a compressor;
an exterior heat exchanger;
a first interior heat exchanger;
a second interior heat exchanger;
first expansion means;
second expansion means;
valve means switchable between respective positions for changing between respective refrigerant cycles thereby enabling heating and cooling in a room of said vehicle, wherein said second interior heat exchanger is used as a heat radiator at least during heating of said room; and

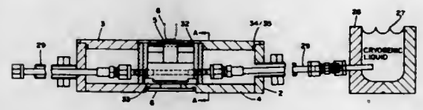
a piping line means;
wherein said piping line means is configured, in a heating mode, for introducing a refrigerant gas which has passed through said second interior heat exchanger into said exterior heat exchanger through said second expansion means;
said piping line means is configured, in a cooling mode, for introducing said refrigerant gas which has passed through said second interior heat exchanger into said first interior heat exchanger through said first expansion means, wherein said refrigerant gas flows from said second interior heat exchanger to said first interior heat exchanger without passing through said exterior heat exchanger or said second expansion means.

5,598,888

CRYOGENIC TEMPERATURE GRADIENT MICROSCOPY CHAMBER

Edward V. Sullivan, Huntington Station; Louis G. Casagrande, Malverne; Fred Edelstein, Hauppauge, and John M. Papazian, Great Neck, all of N.Y., assignors to Grumman Aerospace Corporation, Los Angeles, Calif.

Filed Sep. 23, 1994, Ser. No. 311,429
Int. Cl.[6] F25B *29/00*
U.S. Cl. 165—263 **19 Claims**



1. A controlled low temperature chamber for a microscope, comprising:
a housing forming a vacuum chamber having a top surface and a bottom surface;
mounting means in said chamber for mounting a sample therein for microscopic observation; and
a temperature control system for maintaining a cryogenic temperature in the chamber for applying a temperature gradient along said sample and for moving, and controlling movement of the temperature gradient along said sample to directionally solidify and melt said sample.

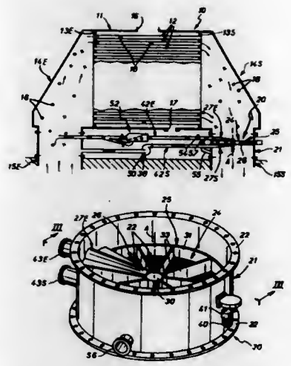
5,598,889

DEVICE FOR RECOVERING SOLID CLEANING MATERIALS CIRCULATING THROUGH A HEAT EXCHANGER

Philip Jackson, Paris, France, assignor to E. Beaudrey & Cie, Paris, France

PCT No. PCT/FR95/00199, § 371 Date Dec. 21, 1995, § 102(e) Date Dec. 21, 1995, PCT Pub. No. WO95/23321, PCT Pub. Date Aug. 31, 1995
PCT Filed Feb. 21, 1995, Ser. No. 537,831
Claims priority, application France, Feb. 24, 1994, 94 02109
Int. Cl.[6] F28G *1/12;* **B08B** *9/04*
U.S. Cl. 165—95 **9 Claims**

1. Device for recovering solid cleaning members circulating in a heat exchanger, the recovery device comprising a sleeve to be mounted in a heat exchanger outlet pipe, filter means for retaining the solid members, the filter means including a rotary member extending transversally across the sleeve and including an annular filter panel disposed annularly inside the sleeve, and a first, upstream pipe in communication with an upstream side of the rotary member and a second, downstream pipe communicating with a downstream side of the rotary member, and the first and second pipes being disposed in corresponding relationship with each other, facing the filter panel of the rotary member and cooperable with the rotary member in the course of the rotation thereof, and a circulation assembly for generating local counter-current flow through the filter panel of the rotary member at the location of the first and second pipes.

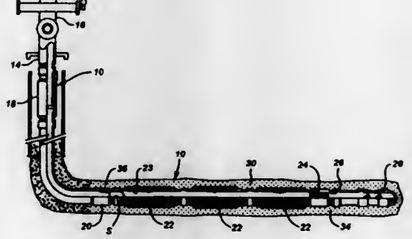


5,598,890

COMPLETION ASSEMBLY

Bennett M. Richard, Kingwood, and Benn A. Voll, Houston, both of Tex., assignors to Baker Hughes Inc., Houston, Tex.

Filed Oct. 23, 1995, Ser. No. 551,931
Int. Cl.[6] E21B *33/16;43/10*
U.S. Cl. 166—276 **19 Claims**



1. A completion method for a deviated wellbore, comprising:
joining at least one screen to tubing;
running the screen to a predetermined depth in the wellbore using said tubing;
pumping a settable permeable material into an annular space in the wellbore outside said screen.

5,598,891

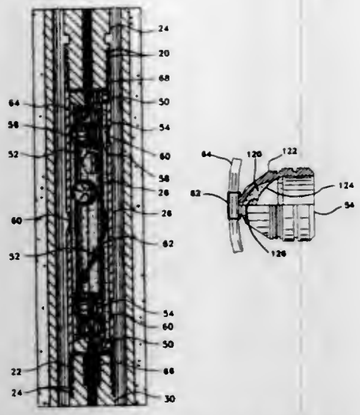
APPARATUS AND METHOD FOR PERFORATING AND FRACTURING

Philip M. Snider, Houston, and David S. Wesson, Waxahachie, both of Tex., assignors to Marathon Oil Company, Findlay, Ohio

Continuation-in-part of Ser. No. 286,154, Aug. 4, 1994, abandoned. This application Jun. 9, 1995, Ser. No. 489,309
Int. Cl.[6] E21B *43/117;43/26;43/267*
U.S. Cl. 166—308 **65 Claims**

1. A punch charge mounted in a charge carrier for use in a well penetrating a subterranean formation and having a casing, the charge comprising: a case containing an unlined shaped explosive, the explosive capable upon detonation of creating an aperture in a wall of the charge carrier while leaving the well casing intact.

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36. A method for creating fractures in an interval of a subterranean formation penetrated by a cased well, the method comprising:

(a) assembling a rigid string comprising:

a tubing string;

at least one punch charge mounted in an punch charge carrier, the carrier having void spaces filed with sand;

st least one perforating charge carrier having a wall and ends enclosing void spaces;

means for detonating the at least one punch charge and the at least one perforating charge;

(b) utilizing the tubing string to position the assembly in the well so that the at least one perforating charge carrier is adjacent the interval;

(c) supplying a liquid under pressure to at least a portion of the well, at least part of the portion adjacent the interval in the formation;

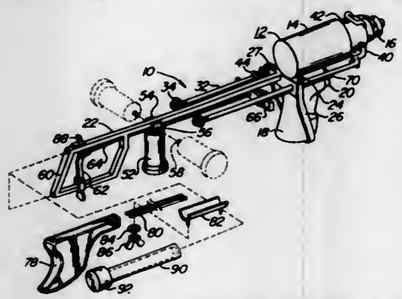
(d) utilizing the detonating means to detonate the at least one punch charge and the at least one perforating charge, thereby releasing sand from the at least one punch charge carrier into the pressurized liquid and creating a pathway for the pressurized liquid to enter and fracture the interval of the formation.

5,598,892

TOOL EXTENDER

Morton H. Fox, Covina, Calif., assignor to Marilyn S. Fox, Covina, Calif.

Filed Jun. 26, 1995, Ser. No. 494,406
Int. Cl.[6] B27C *3/08;* **B25F** *5/02*
U.S. Cl. 173—170 **25 Claims**



1. A tool extender for a portable tool having a body with a front nose portion, a handle and a trigger, said tool extender comprising:

cradle means engageable with said front nose portion of said tool body;

at least one guide rod rigidly attached to said cradle means and extending from said cradle means for positioning under said tool body;

a bridge support slidable on said at least one guide rod and adjustable toward or away from said cradle means;

a strap attached to said bridge support and adjustable to engage said handle of said tool, whereby said strap and cradle means jointly support said tool;

an elongated arm structure extending from said bridge support;

a mount attached to said elongated arm structure remote from said bridge support; and

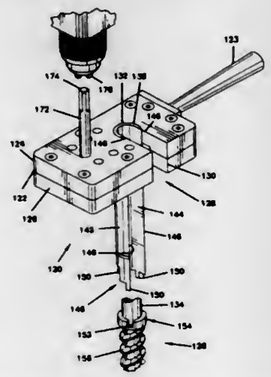
a trigger actuation mechanism extending along said elongated arm structure and having a hook engageable with said tool trigger, and a grip element proximate to said mount, said trigger actuation mechanism being operable by manual squeezing of said grip element toward said mount and away from said hook.

5,598,893

SYSTEM AND METHOD FOR SETTING UP SKI COURSE GATES

Thomas G. Carlson, 8955 138th Street Ct., Apple Valley, Minn. 55124

Continuation-in-part of Ser. No. 411,310, Mar. 28, 1995, abandoned. This application Mar. 6, 1996, Ser. No. 611,711
Int. Cl.[6] B23B *47/02;* **E21B** *3/00*
U.S. Cl. 173—216 **9 Claims**



1. A system for setting up a ski course comprising:

a plurality of ski course gates each having a pole portion and an auger portion; and

a portable driving device for rotationally driving the ski course gates into a snow covered surface, the portable driving device including:

a drive member rotatable about a longitudinal axis, the drive member defining a longitudinal channel configured to receive the portion of each ski course gate;

a gate engaging structure connected to the drive member and being constructed and arranged to form a torque transferring engagement with the auger portion of the gate; and

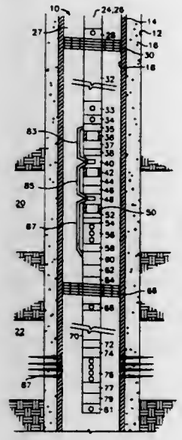
a rotational transference assembly operably connected to the drive member and adapted to be rotationally coupled to a rotational power source, the rotational transference assembly being constructed and arranged to transfer a rotational input from the power source to the drive member causing the drive member to rotate about the longitudinal axis.

5,598,894

SELECT FIRE MULTIPLE DRILL STRING TESTER

John D. Burleson, Denton; Flint R. George, Flower Mound, and Justin L. Mason, Denton, all of Tex., assignors to Halliburton Company, Dallas, Tex.

Filed Jul. 5, 1995, Ser. No. 498,312
Int. Cl.[6] E21B *29/02;43/117;43/1185*
U.S. Cl. 175—4.52 **25 Claims**



1. A system for selectively perforating multiple zones in a well, comprising:

a tubing string;

at least a first and a second perforating gun carried on said tubing string, each said perforating gun having a pressure actuated firing head associated therewith;

a source of actuating fluid pressure for said firing heads;

at least a first and a second packer connected to said tubing string and associated with said first and second perforating guns such that said perforating guns are isolated with respect to the other; and

at least a first and a second communication means for selectively actuating said pressure actuated firing heads to cause said perforating guns to perforate zones in a well.

13. A method of perforating multiple zones in a well comprising the steps of:

(a) running into said well a tubing conveyed multiple zones perforating string including:

a tubing string;

at least a first and a second perforating guns carried by said tubing string;

at least a first and second pressure actuated firing head associated with said first and second perforating guns, respectively; and

at least a first and a second packer connected to said tubing string and associated with said first and second perforating guns, said first packer being positioned above said first perforating gun and said second packer being positioned between said first and said second perforating guns;

(b) isolating said first and said second perforating guns by setting said first and said second packer in the well;

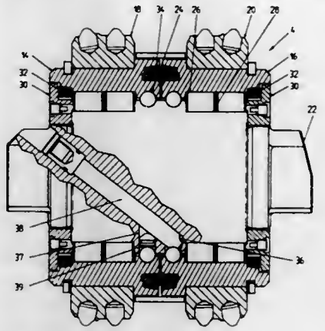
(c) firing said first and said second perforating guns by applying actuating fluid pressure from a source of actuating fluid pressure to said firing heads contained on said perforating guns.

5,598,895

CUTTER ASSEMBLY HAVING A PLURALITY OF INDEPENDENTLY ROTATABLE CUTTING UNITS THEREON

Llewellan Anderson, Renton, and Gregory L. Hern, Auburn, both of Wash., assignors to Atlas Copco Robbins Inc., Kent, Wash.

Filed Jan. 19, 1995, Ser. No. 374,808
Int. Cl.[6] E21B *9/08*
U.S. Cl. 175—373 **17 Claims**



1. A rock cutting tool comprising:

a shaft;

at least two independently rotatable hubs on said shaft adapted for rotation about an axis of rotation with respect to a rock-face, each of said hubs having at least one cutter unit thereon; and

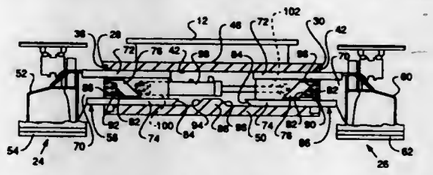
bearing means rotatably supporting said hubs, said bearing means comprising at least one cylindrical roller bearing set and at least one ball bearing set for each of said hubs, said roller bearing set being located substantially entirely under said cutter unit to absorb radial loads, said ball bearing set being located entirely radially and axially remotely from said cutter unit to be isolated from radial loads, and said ball bearing set being located entirely under one of said hubs and located entirely remotely from the other of said hubs to minimize friction between said hubs during rotation thereof.

5,598,896

VARIABLE GAGE UNDERCARRIAGE ARRANGEMENT

Patrick J. Haest, Nalinnes, Belgium, assignor to Caterpillar Inc., Peoria, Ill.

Filed Dec. 2, 1994, Ser. No. 349,109
Int. Cl.[6] B62D *55/084*
U.S. Cl. 180—9.48 **14 Claims**



1. A variable gage undercarriage arrangement for a construction machine, comprising:

a main frame defining first and second opposing sides, each side defining at least one receptacle opening, said receptacle openings defined by an upper and lower wall and opposing side walls positioned therebetween, said upper and lower walls being spaced from one another a preselected distance;

a first subframe having a traction drive means for propelling the machine mounted thereon and at least one beam assembly

defined thereon, said beam assembly being slidably mounted within the receptacle defined in the first side of the main frame for relative movement toward and away from said main frame;

a second subframe having a traction drive means for propelling the machine mounted thereon and at least one beam assembly defined thereon, said beam assembly being slidably mounted within the receptacle defined in the second side of the main frame for relative movement toward and away from said main frame;

at least one hydraulic actuator connected between the first and second subframes and being selectively operable to move the first and second subframes from a first position wherein the respective subframes are spaced from one another a first preselected distance to a second position wherein the respective subframes are spaced from one another a second preselected distance;

an abutment member having an angled face being secured to each beam assembly at a location that is substantially centered between the upper and lower walls of a respective receptacle opening, said angled face having a length greater than one half of the preselected distance between the upper and lower walls; and

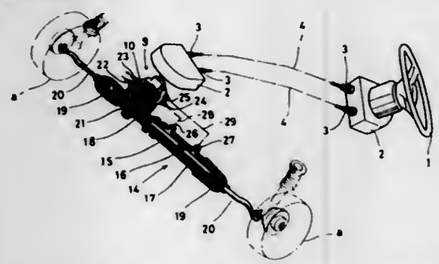
a pair of first stop members secured to the opposing sides of the main frame immediately adjacent a respective receptacle opening, each of said first stop members being positioned at a location that is substantially centered between the upper and lower walls of the respective receptacle opening and having an angled face that is of an angle and length substantially equal to the angled face of the respective abutment members and being sufficient for mating engagement therewith to provide the sole support between the respective subframes and the main frame when the subframes are in their second position.

5,598,897

POWER STEERING DEVICE

Akehito Sagiura, Hekinan, Japan, assignor to Chuouhatsujou Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 7, 1995, Ser. No. 473,749
Claims priority, application Japan, Jun. 21, 1994, 6-163216
Int. Cl.[6] B62D *5/083;5/09;5/30*
U.S. Cl. 180—417 **5 Claims**



1. A power steering device comprising:

a hydraulic power cylinder having a piston and piston rod thereof reciprocably driven by pressurized hydraulic fluid supplied to the power cylinder alternately on opposite sides of the piston while hydraulic fluid is simultaneously discharged from the power cylinder from a side of the piston opposite to the side to which pressurized hydraulic fluid is being supplied, said hydraulic power cylinder having a pair of ports for alternately supplying the pressurized hydraulic fluid through one of the ports while discharging hydraulic fluid through the other of said ports for reciprocating the piston rod thereof alternately in opposite directions of travel,

a rotary direction control valve having ports in communication with said hydraulic power cylinder ports and having other ports for communication with a source of pressurized hydraulic fluid for receiving pressurized hydraulic fluid therefrom and discharging hydraulic fluid thereto, said direction control valve having a rotor rotatable alternately in opposite directions for controlling supplying of pressurized hydraulic fluid to said hydraulic power cylinder and simultaneously discharging of hydraulic fluid alternately through said ports for effecting reciprocating of the piston rod alternately in opposite directions of travel in dependence upon a corresponding direction of rotation of the direction control valve rotor,

a drum rotatable alternately in opposite directions coupled to said direction control valve for rotating the rotor thereof alternately in opposite directions corresponding to the alternate directions of rotation of said drum for controlling the direction of travel of the piston rod in dependence upon the direction of rotation of the direction control valve rotor,

another rotatable drum remote from the first-mentioned drum and having a manually rotatable steering device coupled thereto for manually effecting rotation thereof alternately in opposite directions of rotation for rotating the first-mentioned drum alternately in opposite directions of rotation thereof for controlling the direction of travel of said piston rod,

a pair of flexible cables between the drums and wound thereon for coupling the drums for effecting control of directional travel of the piston rod by the steering device, and

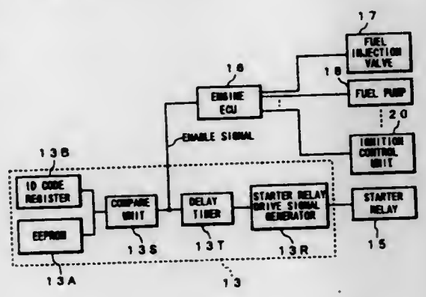
links connected on receptive opposite ends of the piston rod and traveling therewith for connection to respective devices to be actuated thereby.

5,598,898

VEHICLE ANTITHEFT SYSTEM

Eiji Mutoh; Suguru Asakura, and Akira Nagai, all of Saitama-ken, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 6, 1995, Ser. No. 524,449
Claims priority, application Japan, Sep. 9, 1994, 6-240878
Int. Cl.[6] B60R *25/00*
U.S. Cl. 180—287 **5 Claims**



1. A vehicle antitheft system comprising, in a vehicle:

motor starter means;

an ID code compare unit which compares a key ID code with a reference ID code stored in advance in said vehicle and generates an enable signal when said ID codes are in a preset relationship to one another;

an engine ECU which receives and identifies the enable signal, said engine ECU being operative to generate an output signal which activates components in said vehicle other than said starter means when the enable signal has been determined to be correct; and

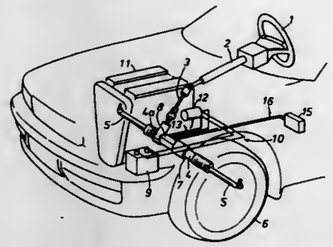
delay means which generates a further signal used to activate said motor starter means after lapse of a preset time period subsequent to generation of the enable signal.

5,598,899

WIRING STRUCTURE FOR AN ELECTRIC POWER STEERING SYSTEM

Tsugio Onodera, and Yoshiaki Taniguchi, both of Gunma-ken, Japan, assignors to Mitsuba Electric Manufacturing Co., Ltd., Gunma-ken, Japan

Filed Jun. 2, 1995, Ser. No. 459,238
Claims priority, application Japan, Jul. 4, 1994, 6-176044
Int. Cl.[6] B62D *5/04*
U.S. Cl. 180—433 **4 Claims**



1. A wiring structure for an electric power steering system of a motor vehicle, comprising:

a starter motor power cable connected between a battery and a terminal of a starter motor for supplying electric current to said starter motor; and

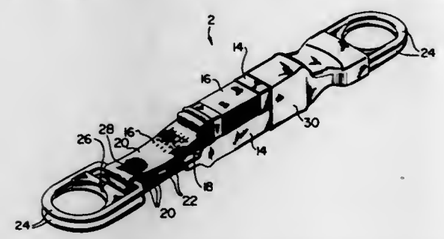
a motor drive power cable connected between said starter motor terminal and an electric power steering system.

5,598,900

HORIZONTAL LIFELINE ENERGY ABSORBER

Michael J. O'Rourke, Beaumont, Canada, assignor to Surety Manufacturing & Testing Ltd., Edmonton, Canada

Filed Oct. 21, 1994, Ser. No. 326,938
Int. Cl.[6] A62B *35/00*
U.S. Cl. 182—3 **8 Claims**



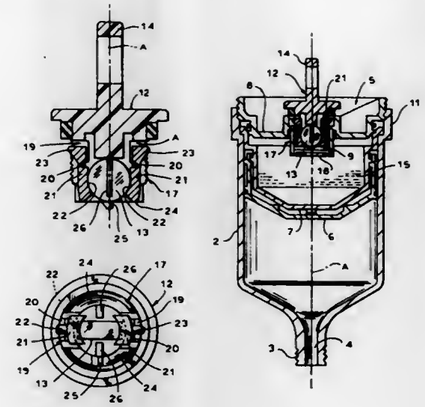
1. An energy absorber for a horizontal lifeline protection system, the energy absorber comprising a pair of independent shock absorbing units of similar construction including corresponding ends, each unit comprising a strip of woven webbing material and a strip of tear-ply webbing material, wherein the corresponding ends of the strip of woven webbing material and the strip of tear-ply webbing material of each unit are secured to each other and to a ring for securing to a portion of the horizontal lifeline fall protection system, the ring at each corresponding end of the units being secured to each other and the pair of units being folded and encased within a single tearable envelope, the absorber constructed to be secured to a horizontal lifeline within a fall protection system so that when a predetermined force is applied to the rings, the envelope tears and the tear-ply webbing separates, resulting in an overall elongation of the absorber, and, in the event the tear-ply webbing separates completely, the remaining force is applied to the woven webbing.

5,598,901

AUTOMATIC LUBRICANT DISPENSER

Walter Graf, Euerdorf, Germany, assignor to Satzinger GmbH & Co., Euerdorf, Germany

Filed Dec. 21, 1995, Ser. No. 576,807
Claims priority, application Germany, Dec. 28, 1994, 44 46 463.0
Int. Cl.[6] F16N *11/10*
U.S. Cl. 184—39 **4 Claims**



1. An automatic pressurizable lubricant dispenser comprising:

a vessel adapted to hold a supply of a fluent lubricant and having one side formed with an outlet adapted to be connected to a machine to be lubricated and another open side;

a cover engaged over the other side;

a cap fittable like a piston in the vessel and forming with the cover a substantially closed compartment holding a supply of a reactive liquid, the cover being formed with a seat opening into the compartment and extending along an axis;

a removable partition closing the seat and segregating it from the liquid-holding compartment; and

a cartridge body fittable in the seat and movable therein between a partially inserted position and a fully inserted position and formed unitarily of plastic with a cylindrical collar formed with a pair of diametrally opposite cutouts and having an outer end, the outer end moving from nonengagement with the partition in the partially inserted position to engagement through the partition in the fully inserted position;

an element capable of reacting with the liquid and forming a gas;

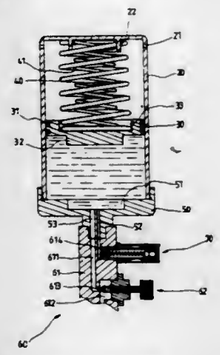
respective arms on the cartridge pivotal on the collar in the cutouts between holding and releasing positions, the arms each having an outer end formed with an inwardly directed retaining formation engaging the reactive element and holding same in the collar only in the holding position and an inner end engageable outwardly with the seat to pivot the respective outer end into the releasing position on movement of the body into the fully inserted position, whereby when the body is moved from the partially to the fully inserted position the collar breaks out the partition and the arms pivot back to release the element so same contacts the liquid for generating gas in the compartment and forces the cap like a piston away from the cover into the vessel to pressurize the fluent lubricant therein.

5,598,902

AUTOMATIC LUBRICATOR

Chen-yu Lin, 235, Yu Chiun Rd., Wu Feng Hsiang Taichung Hsien, Taiwan

Filed Apr. 1, 1996, Ser. No. 625,192
Int. Cl.[6] F16N 11/04
U.S. Cl. 184—45.1 **1 Claim**



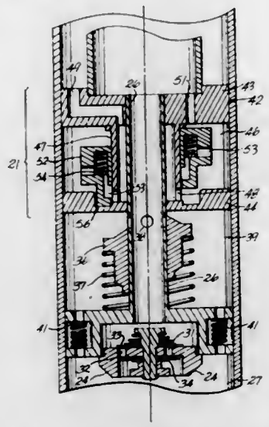
1. An automatic lubricator comprising:
a transparent, cylindrical oil container, said oil container comprising a bottom opening, a closed top side, an air vent on the periphery near said closed top side, and an inside annular flange downwardly raised from said closed top side at the center;
a piston reciprocated in said oil container, said piston comprising two rubber seal rings mounted around the periphery, a top recess, and a rounded bottom projection;
a cylindrical container holder covered on the bottom opening of said oil container, said container holder comprising a top center hole for receiving the rounded bottom projection of said piston, an oil inlet and an oil outlet in communication with said top center hole, said oil inlet and said oil outlet being stopped when the rounded bottom projection of said piston is forced into the top center hole of said container holder;
a first coil spring mounted within said oil container, having a top end mounted around the inside annular flange of said oil container and a bottom end mounted within the top recess of said piston;
a second coil spring mounted within said first coil spring, having a top end mounted within the inside annular flange of said oil container and a bottom end mounted within the top recess of said piston, the winding of said second coil spring being reversed to that of said first coil spring;
a control switch for controlling the opening of the oil outlet of said container holder, said control switch comprising a switch base fixedly connected to said container holder at one end remote from said oil container, a connector, and an adjustment screw, said switch base comprising an opening at a bottom end thereof connected to a machine to be lubricated, an oil passage communicating between the opening of said switch base and the oil outlet of said container holder, a rounded gate disposed between the oil passage of said switch base and the opening thereof, and an oil feeding hole in communication with the oil inlet of said container holder, said connector being a female screw mounted in the opening of said switch base and peripherally sealed with a rubber seal ring, said adjustment screw being threaded into said connector, having a head at one end for turning by hand, a rounded tip at an opposite end moved in said rounded gate to regulate flow rate, and two rubber seal rings mounted around the periphery adjacent to said rounded tip;
a valve assembly mounted in the oil feeding hole of said switch base to control its passage, said valve assembly comprising a cylindrical valve body fastened to the oil feeding hole of said switch base, a spring, and a ball, said valve body comprising a head disposed outside said switch base for the mounting of an oil feeder, an oil feeding passage connected to the oil feeding hole of said switch base and having an outer end terminating in a reduced oil feeding orifice, an outer thread, and an inside annular flange near one end of said oil feeding passage remote from said reduced oil feeding orifice, the spring of said valve assembly being mounted in said oil feeding passage and stopped at the inside annular flange of said valve body, said ball being mounted in said oil feeding passage and forced outwards by the spring of said valve assembly to stop said reduced oil feeding orifice; and
a valve cap covered on said valve body, said valve cap having an inner thread threaded onto the outer thread of said valve body, and a rubber gasket on the inside stopped against the head of said valve body to seal said reduced oil feeding orifice.

5,598,903

ACCELERATION SENSITIVE FLOW SENSITIVE MCPHERSON STRUT

Donald G. Richardson, Sutter Creek, Calif., assignor to Ricor Racing & Development, L.P., Sutter Creek, Calif.

Continuation of Ser. No. 210,716, Mar. 18, 1994, abandoned, which is a continuation-in-part of Ser. No. 958,560, Oct. 8, 1992, abandoned, which is a continuation-in-part of Ser. No. 878,850, May 5, 1992, Pat. No. 5,462,140. This application Aug. 24, 1995, Ser. No. 518,858
Int. Cl.[6] F16F 9/46
U.S. Cl. 188—275 **37 Claims**



1. An acceleration sensitive McPherson strut comprising:
an outer tube including means for connecting the outer tube to the wheel of a vehicle;
an inner tube fixed within the outer tube defining an annular gallery between the inner and outer tubes;
a piston sealed within the inner tube and connected to a piston rod extending out of the strut, the rod including means for connecting the rod to the body of the vehicle, the piston dividing the inside of the inner tube into an upper chamber and a lower chamber, the upper chamber being in fluid communication with the annular gallery;
means for passing fluid through the piston between the upper and lower chambers during either compression or extension of the strut;
a plug in the outer tube at the bottom of the inner tube;
a passage through the top of the plug in fluid communication with the lower chamber;
a conduit concentric with the tubes in fluid communication with the annular gallery;
a first port through the conduit;

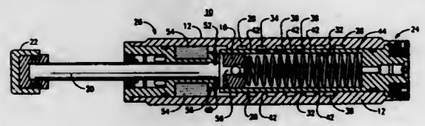
an inertial mass surrounding the conduit and movable between a lower port-closed position and an upper port-open position for opening the rebound bypass passage upon downward acceleration of the strut tubes and increasing flow of fluid from the annular gallery into the lower chamber in the event of downward acceleration of the strut tubes during extension of the strut at more than a preselected magnitude;
a pressure relief valve in the inertial mass for permitting fluid flow from the annular gallery to the lower chamber when fluid pressure in the annular gallery is greater than a selected magnitude;
a second port in the bypass passage which is opened or closed by movement of the inertial mass;
a restricted flow path downstream from the second port, the restricted flow path having a smaller area for fluid flow than the second port during at least a portion of the stroke of the inertial mass from a port-closed position to a port-open position for maintaining the inertial mass in the port-open position in response to fluid flow from the annular gallery into the lower chamber;
an accumulator gallery inside the bottom of the outer tube;
a foot valve between the lower chamber and the accumulator gallery, the foot valve including a compression pressure relief valve for fluid flow from the lower chamber into the accumulator gallery and a rebound check valve for fluid flow from the accumulator gallery into the lower chamber;
a gas in the accumulator gallery and means for separating the gas from liquid shock absorber fluid in the accumulator gallery;
a central tube passing through the plug in fluid communication between the lower chamber and the foot valve;
a third port through a wall of the central tube;
a lower pressure relief valve bypassing the foot valve for flow into the accumulator gallery; and
a movable inertial mass surrounding the central tube and movable between an upper port-closed position and a lower port-open position for opening the third port upon upward acceleration of the strut tubes during compression of the strut and increasing flow of fluid from the lower chamber through the lower pressure relief valve into the accumulator gallery in the event of upward acceleration of the strut tubes at more than a preselected magnitude.

5,598,904

ADJUSTABLE ENERGY ABSORPTION DEVICE

Gerald J. Spyche, Jr., West Seneca, N.Y., assignor to Enidine, Inc., Orchard Park, N.Y.

Filed Jun. 5, 1995, Ser. No. 465,119
Int. Cl.[6] F16F 9/48
U.S. Cl. 188—287 **11 Claims**



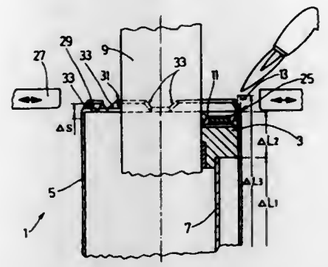
1. An adjustable energy absorption device for dissipating the motion energy of a body in motion, said device comprising:
an outer cylinder housing member having a distal end, a proximal end, and an interior wall;
a shock tube being rotatably secured within the outer cylinder and having an interior surface, an exterior surface, and a series of holes formed in groups, each group having a predetermined number of sequential holes providing an orifice area, each hole passing from the interior surface to the exterior surface of the tube to allow fluid to pass therethrough;
a piston including a head portion and a rod portion, said head portion being slidably retained within said shock tube and said rod portion extending from the piston head portion through the proximal end of the outer cylinder for engaging contact with the body in motion;
an accumulator, contained within the outer cylinder, for collecting fluid from the interior of said shock tube when said piston head portion moves into the tube; and
a spiral groove having turns therein formed on the interior wall of the outer cylinder, said spiral groove extending from adjacent the distal end of the cylinder to said accumulator, and having a corresponding land segment formed between consecutive turns of the groove so that relative rotation between said shock tube and the outer cylinder moves said series of holes relative to the groove from a position where each group of sequential holes opens into a separate corresponding turn of the groove to a position where all the holes are blocked by the land segment thereby varying the orifice area such that relative rotation between said shock tube and the outer cylinder from a position where all holes are open to a position where all holes are closed causes successive holes in each hole group to be sequentially blocked until all holes are blocked to adjustably change the rate of fluid flow out of the interior of said shock tube.

5,598,905

METHOD OF MAKING A SHOCK ABSORBER AND A SHOCK ABSORBER MADE BY THE METHOD

Werner Rudloff, Schraudenbach, Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Germany

Filed Oct. 27, 1994, Ser. No. 330,269
Claims priority, application Germany, Nov. 2, 1993, 43 37 306.2; Mar. 4, 1994, 44 07 261.9
Int. Cl.[6] F16F 9/32
U.S. Cl. 188—322.16 **20 Claims**



1. A shock absorber for a motor vehicle, said shock absorber comprising:
a cylinder defining a chamber therein, said cylinder containing a damping fluid;
a piston rod sealingly projecting into said cylinder and being axially displaceable within said cylinder, said piston rod having a longitudinal axis;
a piston being attached to said piston rod, said piston being slidably disposed within said cylinder to sealingly divide said chamber into first and second chambers;
means for permitting fluid communication between said first chamber and said second chamber;
a first end and a second end;
said cylinder being disposed between said first end and said second end;
said first end comprising first means for connecting said shock absorber to a first body;
said second end comprising second means for connecting said shock absorber to a second body;
said cylinder comprising:
a first end and a second end, said piston rod sealingly projecting into said first end of said cylinder;
means for closing said first end of said cylinder;

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said closing means comprising a portion of said first end of said cylinder;

said portion of said first end of said cylinder comprising:

a first plurality of projections, each one of said first plurality of projections being oriented to extend towards said piston rod and substantially perpendicular to said longitudinal axis of said piston rod;

a second plurality of projections, each one of said second plurality of projections having a surface which lies on a truncated cone;

each one of said second plurality of projections being disposed between two adjacent ones of said first plurality of projections; and

said first plurality of projections and said second plurality of projections enabling said cylinder to have a constant thickness.

5,598,906

FLUID COUPLING CONTROL DEVICE OF AUTOMATIC TRANSMISSION

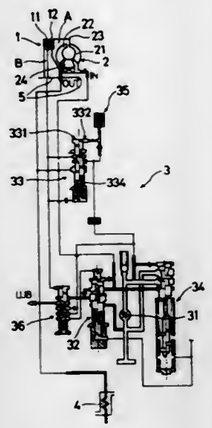
Toshiaki Ishiguro, Chita, and Yoshinobu Iwase, Toyokawa, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Oct. 20, 1994, Ser. No. 326,264

Claims priority, application Japan, Oct. 20, 1993, 5-262668

Int. Cl.[6] F16H *45/02*

U.S. Cl. 192—3.3 **7 Claims**



1. A fluid coupling control device of an automatic transmission comprising:

a turbine chamber into which an operation fluid flows, a driving power being transmitted through the operation fluid from an input member to an output member;

an operation chamber which is separated from the turbine chamber and into which the operation fluid flows;

a clutch mechanism which engages and disengages the input member with the output member;

a slidable piston member which is slid on the basis of a fluid pressure differential between the operation chamber and the turbine chamber to effect engagement and disengagement of the clutch mechanism;

a fluid source for supplying fluid to the operation chamber and the turbine chamber; and

control means connected to the turbine chamber and the operation chamber and disposed between the fluid source and the operation chamber for controlling the fluid pressure in the operation chamber based on the fluid pressure in the turbine chamber so that the fluid pressure differential between the turbine chamber and the operation chamber is proportional to the fluid pressure generated by the fluid source.

5,598,907

APPARATUS AND METHOD FOR DIAGNOSING FAULTS IN A HYDRAULIC TYPE LOCK-UP CLUTCH

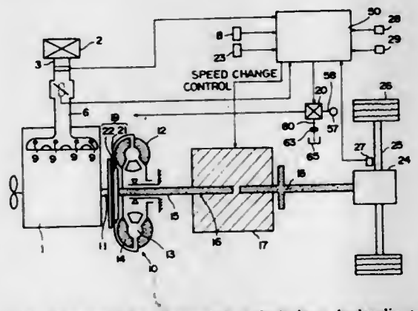
Kenichi Yamaura, Atsugi, Japan, assignor to Unisia Jecs Corporation, Atsugi, Japan

Filed Dec. 28, 1994, Ser. No. 365,147

Claims priority, application Japan, Dec. 28, 1993, 5-336017

Int. Cl.[6] F16D *25/08*

U.S. Cl. 192—3.29 **10 Claims**



1. An apparatus for diagnosing a fault in a hydraulic type lock-up clutch provided in a torque converter disposed between an internal combustion engine and a transmission, for mechanically connecting an output shaft of the engine to an input shaft of the transmission and engaged or disengaged with oil pressure control in accordance with a control signal, said apparatus comprising:

control signal detection means for detecting the control signal which indicates engagement or disengagement of the hydraulic type lock-up clutch,

condition amount detection means for detecting a condition amount in a hydraulic oil line, which changes with the oil pressure control in accordance with the control signal, and

fault diagnosis means which diagnoses a fault in said hydraulic type lock-up clutch based on a comparison of a condition amount estimated according to the detected control signal and the detected condition amount.

5,598,908

MAGNETORHEOLOGICAL FLUID COUPLING DEVICE AND TORQUE LOAD SIMULATOR SYSTEM

Todd M. York, Novi; Curt D. Gilmore, Fenton, and Thomas G. Libertiny, Farmington, all of Mich., assignors to GSE, Inc., Farmington Hills, Mich.

Filed Jun. 5, 1995, Ser. No. 460,968

Int. Cl.[6] F16D *27/00*

U.S. Cl. 192—21.5 **24 Claims**

1. A controllable magnetorheological fluid apparatus, said apparatus comprising at least two relatively spaced, magnetically permeable members, said members rotatably movable relative to each other, a magnetorheological fluid occupying a space between said members for transmitting torque between said members, said fluid providing an increase in yield strength in shear in response to increases in the magnitude of an applied magnetic field, and electromagnetic means for applying the magnetic field between said members and to said fluid for varying the magnitude of torque transmission between said members by said fluid in response to variations in the magnitude of the applied magnetic field,

said members including a rotor member and a housing member, said housing member having a cavity with said rotor member being rotatably supported in said cavity, said space occupied by said fluid being generally defined in said cavity by the clearance between said rotor member and said housing member,

said rotor member having a plate structure with a generally T-shaped cross-section, said cavity having a similarly T-shaped cross-section, said electromagnetic means applying the magnetic field into said space and between said plate structure and said housing member through said magnetorheological fluid, said clearance between said plate structure and said housing member selected to concentrate the magnetic field at the radially outer end of said T-shaped plate structure and said T-shaped cavity, said housing member having a first section at said radially outer end of said T-shaped cavity constructed of a material having a high magnetic permeability and having a second section at the radially inner end of said cavity constructed of a material having a low magnetic permeability, said electromagnetic means comprising coil means located in axially opposite annular grooves in said first section at said radially outer end of said cavity, said plate structure defined by an outer ring part and a generally at center part, the opposite axial ends of said ring part located partially within the confronting one of said annular grooves, the radial clearance between said outer ring part of said plate structure and said housing member at said radially outer end of said cavity being a minimum for substantially maximum magnetic coupling without substantially increasing the magnitude of viscous drag under non-actuated conditions and being no greater than around 30% of the axial clearance of said center part with said housing member.

5,598,909

ROLLER CLUTCH HAVING INDIVIDUAL SNAPPING SEGMENTS

James R. Papania, Bolingbrook, Ill., assignor to Borg-Warner Automotive, Inc., Sterling Heights, Mich.

Filed Mar. 3, 1995, Ser. No. 398,018

Int. Cl.[6] F16D *3/34*

U.S. Cl. 192—45 **15 Claims**

1. A roller clutch having a plurality of rollers located between a cam race and a pathway race, the cam and pathway races being substantially coaxial about a single axis extending in an axial direction and defining an annular space, the cam race defining a plurality of sloped cam ramp surfaces and the pathway race defining a cylindrical path in opposed relationship to the cam ramp surface, each of the rollers being engaged between the cylindrical path on the pathway race and an adjacent cam ramp surface on the cam race, the rollers moving in a circumferential direction in the annular space between the races during clutch operation, each of the rollers being held in position by a cage segment in the annular space between the races, each cage segment being in a spaced apart relationship to an adjacent cage segment, each cage segment having substantially parallel opposed side walls and substantially parallel opposed end walls, the cage segment defining an interior space wherein the roller is circumferentially moved along the annular space between the races, the cage segment having at least one camming surface for slideably engaging the cam ramp surface, the cage segment having at least one engaging means for securing the cage segment to the cam race within the annular space between the races, wherein the segment is secured to the cam race in radial, axial and circumferential directions.

5,598,910

CLUTCH MECHANISM

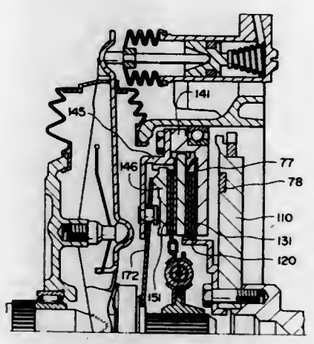
Shuzo Moroto; Koji Sumiya; Mutsumi Kawamoto; Masao Kawai; Hideki Aruga, all of Aichi-ken, and Toshihiro Shimado, Tokyo, all of Japan, assignors to Kabushikikaisha Equos Research, Japan

Filed Aug. 30, 1994, Ser. No. 298,326

Claims priority, application Japan, Nov. 1, 1993, 5-306978; Nov. 27, 1993, 5-340299

Int. Cl.[6] F16D *47/00*

U.S. Cl. 192—48.2 **21 Claims**



21. A clutch mechanism for connecting and disconnecting an output shaft of an internal combustion engine and an input shaft of a transmission unit, said clutch mechanism comprising:

(a) a first clutch assembly adapted to be coupled to the output shaft of the engine;

(b) a second clutch assembly adapted to be coupled to the input shaft of the transmission unit;

(c) a torque conduction member which is between and rotatable relative to said first and second clutch assemblies, said torque conduction member having a first connecting surface for engaging said first clutch assembly and a second connecting surface for engaging said second clutch assembly, said first connecting surface providing a substantially higher engaging force than that provided by said second connecting surface; and

(d) load application means for locking, in succession, first the torque conduction member to the first clutch assembly and then the torque conduction member to the second clutch assembly, said load application means including spring means for biasing and interlocking said torque conduction member and said first and second clutch assemblies and release means for releasing the biasing force of said spring means and thereby unlocking said torque conduction member from said first and second clutch assemblies.

5,598,911

HYDRAULIC SLIDER COUPLING

Clifford A. Joachim, Baulkham Hills, and Stanislaw Spryszynski, Kingswood, both of Australia, assignors to BTR Engineering (Australia) Limited, Fairfield, Australia

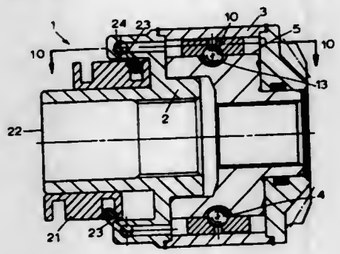
PCT No. PCT/AU92/00209, § 371 Date Dec. 16, 1993, § 102(e) Date Dec. 16, 1993, PCT Pub. No. WO92/19881, PCT Pub. Date Nov. 12, 1992

PCT Filed May 7, 1992, Ser. No. 146,147

Claims priority, application Australia, May 8, 1991, PK 6040

Int. Cl.[6] F16D *25/06*

U.S. Cl. 192—59 **15 Claims**



1. A coupling assembly comprising a first member and a second member disposed for relative rotational engagement, one of said first and said second members including a peripherally extending continuous and generally sinuate track, the other of said first and said second members including a plurality of transverse tracks extending in a direction substantially normal to the general direction of the sinuate track, a corresponding plurality of sliders located respectively in intersecting regions of said sinuate and transverse tracks, a viscous hydraulic fluid medium disposed within said sinuate and transverse tracks, and peripheral throttling clearances defined respectively between said transverse tracks and said sliders, such that relative rotation of said first and said second members causes said sliders to oscillate axially within said transverse tracks while traversing said sinuate track and simultaneously causes an alternating axial transfer of said viscous hydraulic fluid medium past said sliders through said throttling clearances, whereby the resultant resistance to said fluid transfer enables transmission of torque between said first and said second members.

5,598,912

RELEASE COUPLING FOR A CLUTCH RELEASE MECHANISM

Norihisa Uenohara, Ibaraki, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Osaka, Japan

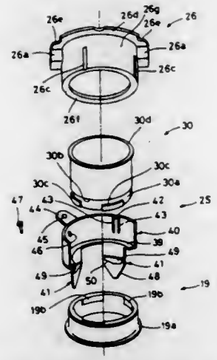
Filed May 31, 1995, Ser. No. 455,817

Int. Cl.[6] F16D *23/14;25/08*

U.S. Cl. 192—91 A **20 Claims**

1. A release coupling apparatus for a clutch release bearing assembly, comprising:

a release bearing assembly engageable with a diaphragm spring of a clutch mechanism;



an annular element engaging a first axial end of said release bearing, having a first projection formed on an inner circumferential surface; and

a cylindrical element having a second projection in its outer circumferential surface insertable into said annular element and releaseably engageable with said first projection;

a cylindrical shaped coupling element disposed around said cylindrical element and at least partially within said annular element, engaging an inner portion of said annular element restricting relative rotation between said coupling element and said annular element;

wherein said coupling element further comprises at least one radially extending portion having an aperture formed therein.

5,598,913

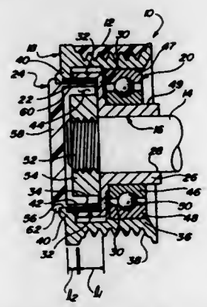
ONE-WAY OVER-RUNNING CLUTCH PULLEY

Russell E. Monahan, Ann Arbor; Scott A. Wojan, Novi; Jonathan M. Adler, Ypsilanti, and Noboru Kashino, Ann Arbor, all of Mich., assignors to NTN Corporation, Osaka, Japan

Filed Jun. 7, 1995, Ser. No. 476,219

Int. Cl.[6] F16D *13/12*

U.S. Cl. 192—41 S **30 Claims**



1. An over-running clutch pulley for attachment to an input member and for causing rotation of an output member, said clutch pulley comprising:

a first pulley portion including attachment means for attaching to the input member, said first pulley portion also including a cylindrical extension defining a first inner cylindrical surface of a first diameter;

a second pulley portion having attaching means for attaching to the output member and causing rotation of said output member, said second pulley portion including a portion defining a second inner cylindrical surface, said second inner cylindrical surface having a diameter substantially the same as said first diameter of said first inner cylindrical surface and being coaxial therewith, said first and second inner cylindrical surfaces being located adjacent to one another and cooperating to define a composite inner cylindrical surface of said first diameter;

single bearing means for permitting relative rotation of said first and second pulley portions; and

a coil spring having a free standing outer diameter being greater than said first diameter of said composite inner cylindrical surface, said coil spring frictionally engaging said composite inner cylindrical surface and being retained in engagement therewith by a radially outward normal force inherently exerted by said spring, said spring being wound and oriented in a direction such that positive driving of said first pulley portion relative to said second pulley portion causes said spring to exert an increased outward normal force against said composite inner cylindrical surface whereby said first and second pulley portions are prevented from rotating relative to one another and torque is transferred from said first pulley portion to said second pulley portion, said spring also being oriented such that deceleration of said first pulley portion relative to said second pulley portion causes a decreased outward normal force to be exerted by said spring on said composite inner cylindrical surface whereby said first and second pulley portions are permitted to rotate relative to one another.

5,598,914

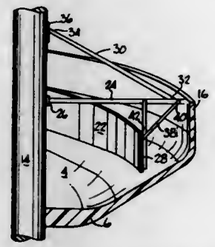
REMOVABLE SIDEWALL FOR A MOLDED SPIRAL CHUTE

James E. Sulzer, Colorado Springs, and John Ivey, Canon City, both of Colo., assignors to Portec, Inc., Oak Brook, Ill.

Filed Apr. 25, 1995, Ser. No. 428,375

Int. Cl.[6] B65G *11/00*

U.S. Cl. 193—12 **11 Claims**



1. In a spiral chute for transporting articles from an upper location to a lower location comprising a plurality of molded spiral sections secured together around a center support pole with each of the spiral sections having an upper surface over which the articles move and an original spiral sidewall having an original radius, which original spiral sidewall is located to be contacted by the articles moving over the upper surface to keep the articles between the original spiral sidewall and the center support pole, the improvement comprising:

a plurality of removable spiral sidewall sections each having the same radius which radius is smaller than said original radius;

support means for supporting each of said removable spiral sidewall sections at a location between said original spiral sidewall and said center support pole to form a new spiral sidewall in order to accommodate articles of various widths; and

each of said removable spiral sidewall sections having an outer surface and an inner surface located to be contacted by said articles moving over said upper surface to control the movement of said articles between said new spiral sidewall and said center support pole.

5,598,915

BELT WASHER

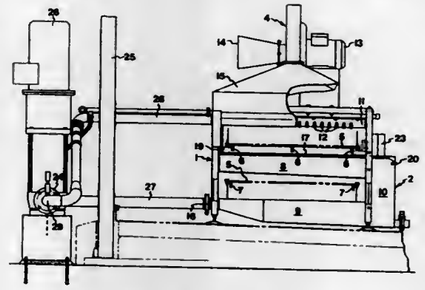
Jonny Malmberg, Redmond; Jon A. Hocker; John R. Strong, both of Kirkland, and Donald L. Hogan, Bellevue, all of Wash., assignors to Frigoscandia Equipment AG, Helsingborg, Sweden

PCT No. PCT/SE92/00693, § 371 Date Apr. 4, 1995, § 102(e) Date Apr. 4, 1995, PCT Pub. No. WO94/07782, PCT Pub. Date Apr. 14, 1994

PCT Filed Oct. 5, 1992, Ser. No. 411,674

Int. Cl.[6] B65G *45/00*

U.S. Cl. 198—495 **14 Claims**



1. A conveyor belt washer, comprising

a plurality of nozzles (12) for ejecting water jets towards an upper side of a foraminous conveyor belt (5); a tank (2) positioned under the foraminous conveyor belt for receiving water ejected from said nozzles, said tank having a foraminous top side (17) for separating particles accompanying said water, an outlet opening (16) in a lower part (9) of the tank and a ventilating opening (21) in an upper part (8) of the tank;

a pump (24) having an inlet and an outlet (29); and

pipings (27, 28) connecting said outlet opening of the tank to said inlet of the pump, and said outlet of the pump to said plurality of nozzles, such that the water is recirculated and air entrained by the water through the foraminous top side of the tank escapes through the ventilating opening thereof.

5,598,916

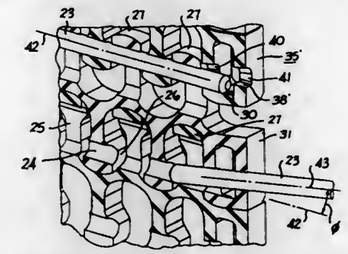
CHANGING HEADLESS PIVOT RODS FROM EDGES OF MODULAR CONVEYOR BELTS

Paul L. Horton, and Christopher J. Verdigets, both of Metairie, La., assignors to The Laitram Corporation, La.

Continuation-in-part of Ser. No. 184,501, Jan. 18, 1994, Pat. No. 5,372,248. This application Dec. 7, 1994, Ser. No. 351,528

Int. Cl.[6] B65G *17/06*

U.S. Cl. 198—852 **29 Claims**



22. In a modular conveyor belt with interconnected end-to-end modules having respective pluralities of interdigitated male link ends mating into female notches between the link ends of adjacent end-to-end modules and pivotably held together between two mod-

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ule ends by a cylindrical pivot rod headless at two ends, the improvement for receiving and retaining the pivot rod in place comprising in combination:

link end structure on the modules disposed with a plurality of pivot rod receiving apertures formed in the link end structure arranged along a linear axis through the link ends of two end-to-end connected modules for receiving the pivot rod to form a pivot joint between modules,

sets of said link ends at respective link end structure locations being of configuration to permit axial movement of a pivot rod except for the vicinity of an edge link end wherein an indention in the link body forms a nest indentation for engaging a substantially cylindrical surface portion of a headless pivot rod end thereby supporting an end portion of said pivot rod in-situ by its cylindrical surface portion to retain the pivot rod in a pivot joint site with a linear pivot axis normal to the edge of the belt,

said nest permitting the rod to slide axially therein a limited distance under normal conditions of belt movement and loading,

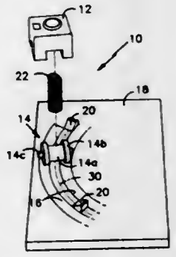
said nest comprising occlusion means in the region of the belt edge for limiting axial motion of the rod and preventing the rod from exiting the belt edges during belt operation.

5,598,917

ELECTRICAL CONTACTOR WITH DETENT

Gary R. Thomas, Livonia, Mich., assignor to United Technologies Automotive, Inc., Dearborn, Mich.

Filed Aug. 10, 1995, Ser. No. 513,244
Int. Cl.[6] H01H *15/02*
U.S. Cl. 200—548 **12 Claims**



1. An electrical contact assembly for electrically coupling a first conductive surface with a second conductive surface, said electrical contact assembly comprising:

(a) a carrier, said carrier being capable of movement along a path intermediate and proximate said first and said second conductive surfaces;

(b) a contact member resiliently supported by said carrier, said contact member being controllably guided by said carrier along said path, said contact member having a first contact surface for contacting said first conductive surface and a second contact surface for contacting said second conductive surface, whereby said contact member electrically couples said first conductive surface with said second conductive surface; and

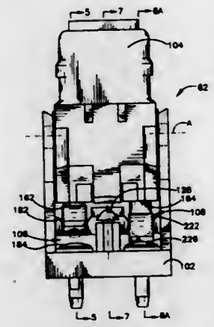
(c) a detent disposed at a location along said path, wherein said detent produces resistance to said relative movement between said carrier and said first and said second conductive surfaces upon contact of said contact member with said detent.

5,598,918

SWITCH FOR VEHICLE POWER WINDOW

Joseph F. Malecke, South Lyon; Dennis D. Kaufman, Farmington, and Rodney A. Dale, Westland, all of Mich., assignors to TRW Inc., Lyndhurst, Ohio

Continuation-in-part of Ser. No. 444,910, May 18, 1995, abandoned. This application Jul. 26, 1995, Ser. No. 506,779
Int. Cl.[6] H01H *21/82*
U.S. Cl. 200—558 **8 Claims**



1. An apparatus for operating a vehicle window in an auto-down mode, said apparatus comprising:

a mechanism adapting to support a vehicle window;

an energizable electric motor coupled with said mechanism and for moving the window between fully open and fully closed positions;

actuatable circuit means for, upon actuation, energizing said motor and for maintaining the energization of said motor for a predetermined time after initial actuation of said circuit means; and

a switch assembly comprising:

a first electrical contact;

a second electrical contact electrically insulated from said first electrical contact;

an electrically conductive disk having a periphery and a domed portion, said disk being in electrical communication with one of said first and second electrical contacts at said periphery, the other of said first and second electrical contacts located adjacent said disk and initially spaced from said disk, said domed portion being resiliently deflectable into contact with the other of said first and second electrical contacts to provide electrical communication between said first and second electrical contacts and initially actuate said circuit means;

a plunger supported for linear movement along a longitudinal axis of said plunger; and

a lever supported for pivotable movement to move said plunger and deflect said domed portion of said disk into contact with said other of said first and second electrical contacts.

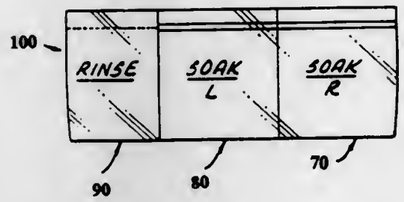
5,598,919

RESEALABLE CONTACT LENS POUCH AND METHOD OF USING

Christy Taylor, Irvine, Calif., assignor to Allergan, Inc., Irvine, Calif.

Continuation of Ser. No. 52,053, Apr. 21, 1993, abandoned. This application Aug. 17, 1994, Ser. No. 291,785
Int. Cl.[6] A45C *11/04*
U.S. Cl. 206—5.1 **19 Claims**

1. A flexible resealable pouch having at least one compartment prefilled with a contact lens care solution for the cleaning and storing of a contact lens comprising:



(a) a top portion which is open at the top thereof and which is equipped with a resealable plastic inter-locking device for achieving a fluid-tight seal;

(b) a bottom portion connected to and in fluid communication with said top portion for containment of said contact lens and said contact lens care solution, wherein said bottom portion comprises two compartments juxtaposed to each other, each in fluid communication with said top portion, with a permanent fluid-tight seal thereinbetween; and

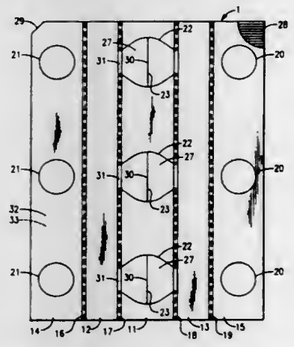
(c) a contact lens care solution disposed within said bottom portion.

5,598,920

CARRIER FOR CARRYING SEVERAL BOTTLES

Finn R. Hansen, Honefoss, Norway, assignor to Rieber & Son A/S, Bergen, Norway

Filed Aug. 3, 1995, Ser. No. 509,761
Int. Cl.[6] B65D *71/00*
U.S. Cl. 206—148 **20 Claims**



1. A carrier, for bottles having conically converging necks terminating with a cylindrical end and provided with a cap, comprising:

a substantially flat sheet having at least five longitudinal sections including a central section having two opposed longitudinal edges, one opposed longitudinal edge being connected to a first intermediate section and the other opposed longitudinal edge being connected to a second intermediate section, each intermediate section having an outer longitudinal edge, one outer longitudinal edge being connected to a first outer section and the other outer longitudinal edge being connected to a second outer section, each longitudinal edge defining a fold line about which the longitudinal sections are foldable;

an aperture provided in each outer section;

an opening cut provided in the central section to define a pair of foldable flaps, each foldable flap being foldable about a base line to provide a central aperture in the central section adapted to receive a conically converging neck of a bottle; and

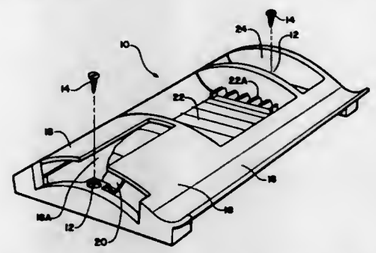
wherein the central aperture is larger than the apertures in the outer sections, and when the flat sheet is folded to form a sleeve having a hollow interior and overlapping outer sections, the opening cut and the apertures in the outer sections are superimposed over one another and adapted to receive a bottle such that the foldable flaps are influenced into the interior of the sleeve when a cap of the bottle penetrates the opening cut.

5,598,921

COMPUTER WORKPLACE ORGANIZER

Thomas A. Hunt, Encinitas, Calif., assignor to Spectrum Concepts, Encinitas, Calif.

Filed Oct. 11, 1995, Ser. No. 540,641
Int. Cl.[6] B43M *17/00*
U.S. Cl. 206—214 **9 Claims**



1. An organizer for a computer workplace, comprising:

a main body, molded as an integral unit from plastic, constructed and arranged to provide a pen and pencil trough, a note pad holder, a diskette rack, a utility compartment for small items, and an upwardly-facing channel formed along a rear region of the main body for supporting business cards and the like;

a pair of support means, formed in said main body at opposite ends thereof and extending downwardly therefrom, constructed and arranged to support said main body at opposite ends thereof so as to hold a major portion of said main body raised above the baseplane sufficiently to provide a front-to-rear passageway, whereby an attachment cord of a mouse unit utilized in conjunction with said mouse pad is provided passage and retained between said pair of support means; and

attachment means for attaching said main body, at each opposite end thereof, to a flat horizontal baseplane;

the diskette rack of said main body being constructed and arranged to provide bistable support to a plurality of 3½ inch computer diskettes such that a nearly upright supported position is provided for a working mode and an inclined supported position is provided for a lower profile storage mode for fitting into a storage region of predetermined height less than three inches.

5,598,922

PRODUCT DISPLAY HANGER

David M. Good, Peachtree City, Ga., assignor to Voxcom, Inc., Peachtree City, Ga.

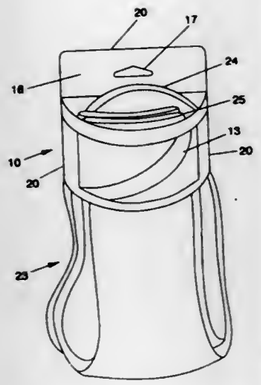
Filed Aug. 21, 1995, Ser. No. 517,346
Int. Cl.[6] B65D *85/18;* **A41D** *27/22*
U.S. Cl. 206—299 **3 Claims**

1. A hanging system for suspending a product from a single wire hanger or a double wire hanger comprising:

a flat sheet of face stock, having a front side and a back side, said flat sheet divided into a hanger portion, a tab portion and a wrap portion,

an image of a billboard containing graphics printed on said front side,

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an adhering region having a coating of pressure sensitive adhesive on said back side,

a plurality of score lines dividing said face stock into said hanger portion, said tab portion and said wrap portion,

a hanging region on said hanger portion, said hanging region having two parts, each of said parts having an opening for engaging a single or a double hanger wire, and being scored at a midpoint between said openings and folded over and joined to form said hanging region into a single product hanger,

said tab portion being folded on, a first of said score lines and adhered to two pairs of the product, said hanger portion also being adhered to said two pairs of the product, and

said wrap portion being folded on a second of said score lines, wrapped snugly around said two pairs of the product and adhered to said tab portion, said wrap portion being further wrapped snugly around a third pair of the product, and adhered to itself at point a circumferentially beyond said hanging region,

thereby completely encircling said product and containing said product firmly within said face stock with said pressure sensitive adhesive.

5,598,923

STORAGE DEVICE FOR MOBILE MEDICAL APPARATUS

Susan S. Owens, 510 University Forest Dr., Conway, S.C. 29526

Filed Jul. 28, 1995, Ser. No. 508,897

Int. Cl.[6] B65D *30/22*; **A45F** *5/00*

U.S. Cl. 206—370 **8 Claims**

1. A storage device for holding and displaying medical protective gear, said storage device comprising:

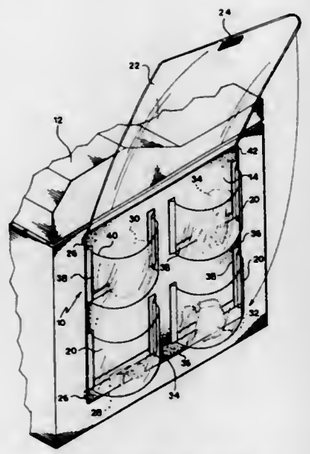
a back opaque vinyl covering sheet having edges;

a front opaque vinyl covering sheet having edges, said edges of said back covering sheet being heat sealed to said edges of said front covering sheet;

a rigid planar stiffening member disposed between said back covering sheet and said front covering sheet;

a plurality of transparent pocket sheets, each of said transparent pocket sheets heat sealed to said front covering sheet, said transparent pocket sheets being dimensioned and configured to form open pockets;

a transparent vinyl overlay heat sealed to a top edge of said front covering sheet, said overlay dimensioned and configured to cover said transparent pocket sheets and having overlay closure means provided on the overlay for releasably fastening the lower portion of the overlay to the lower portion of the storage device;



mounting means for attaching the storage device to a mobile medical apparatus, said mounting means disposed on said back covering sheet.

5,598,924

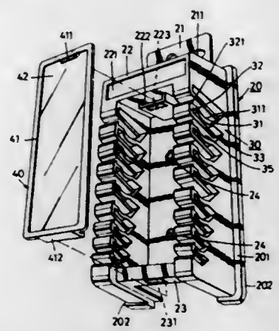
SPANNER HOLDER

Francis E. McCann, Taichung Hsien, Taiwan, assignor to Chiro Tool MFG Corp., Taichung Hsien, Taiwan

Filed Oct. 6, 1995, Ser. No. 540,089

Int. Cl.[6] B65D *85/28*

U.S. Cl. 206—372 **3 Claims**



1. A spanner holder, comprising:

a plate member having a front face and two opposite sides;

a plurality of pairs of retaining members, said retaining members in each pair being formed on said front face at said two opposite sides of said plate member and aligned with one another, each of said retaining members having a spring plate which extends from said front face, said spring plate having a distal edge which is connected to an intermediate portion of a top plate, said top plate being substantially parallel to said front face and having an abutting portion and a connecting portion which are formed at two sides of said intermediate portion of said top plate, said connecting portion having a press plate which extends downward and which is substantially parallel to said spring plate so that a receiving space is formed between said press plate and said spring plate of an adjacent retaining member;

whereby, a handle of a spanner can be clamped in said receiving spaces between said press plates of one of said pairs of retaining members and said spring plates of an adjacent pair of retaining members such that an edge of said handle bears against said abutting portions of said one of said pairs of retaining members.

5,598,925

HOLDER FOR A SOUND RECORDING MEDIUM HOUSING HAVING RATTLING NOISE PREVENTION MEANS

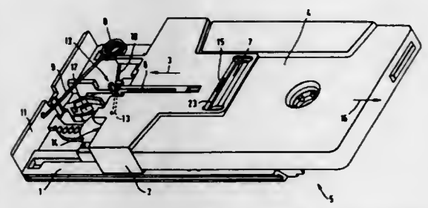
Torsten Bleck, Waldachtal, Germany, assignor to fischerwerke Artur Fischer GmbH & Co. KG, Waldachtal, Germany

Filed Jul. 8, 1994, Ser. No. 273,107

Claims priority, application Germany, Jul. 20, 1993, 43 24 266.9

Int. Cl.[6] B65D *85/672*; **A47B** *81/06*

U.S. Cl. 206—387.1 **11 Claims**



1. A holder for a sound recording medium housing comprising a base plate (1); a slider (2) mounted on said base plate (1) so as to be movable between a storage position and a removal position; releasable locking means (17) for releasably locking said slider (2) in said storage position; spring means (8) for urging said slider (2) from said storage position to said removal position; and clamping means for securing said sound recording medium housing on said slider (1) and for preventing rattling noise due to occurrence of motions including vibration, wherein said clamping means comprises a clamp element (7) on the slider (2), an actuating element (6) engageable with the clamp element (7) and means for pressing said actuating element (6) against said clamp element (7) to press said clamp element (7) against said sound recording medium housing on said slider and thus prevent said rattling noise, when said slider is in the storage position.

5,598,926

DECORATIVE PAGER ORNAMENT COVER

Kathleen D. Vogt, 11415 Longview Dr., Hagerstown, Md. 21740

Filed Jun. 16, 1995, Ser. No. 491,549

Int. Cl.[6] A45F *5/00*

U.S. Cl. 206—457 **2 Claims**

1. A decorative ornament cover and pager comprising:

a housing;

a securing means mounted to a rear face of the housing for securing the housing to an object;

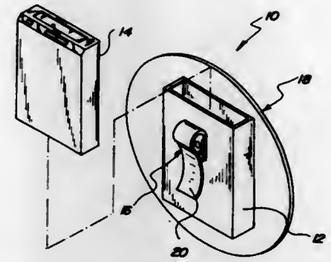
a decorative facia, said decorative facia having a front face and a rear face, said decorative facia having its rear face secured to a front face of the housing for concealing the housing,

and further comprising:

a pager insertable within the housing,

a removable coupling means for removably coupling the decorative facia to the front face of the housing,

wherein the removable coupling means comprises a first portion of fabric fastening material secured to the front face of the housing; and a second portion of fabric fastening material secured to a rear face of the decorative facia, with the portions of fabric fastening material being engaged together,



wherein said housing comprises a first side wall defining said front face of said housing, a second side wall defining said rear face of said housing, a first end wall, a second end wall, and a bottom wall;

wherein said first and second side Walls, said first and second end walls, and said bottom wall are configured to form said housing such that said housing has an opening opposite said bottom wall and extending between said first and second side walls and between said first and second end walls whereby said pager is adapted to be insertable through said opening and into said housing for removable placement therein;

said decorative facia extending beyond said first side wall, said bottom wall and said opening to conceal said housing and said pager insertable therein when said decorative facia is viewed from a position remote with respect to said front face of said decorative facia.

5,598,927

PACKAGING CONTAINER

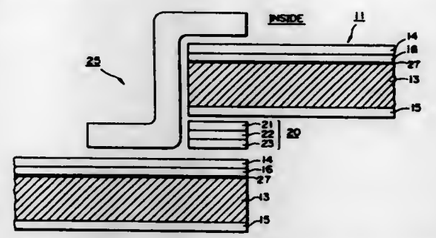
Tadakatsu Ikenoya, and Kazuya Ono, both of Tokyo, Japan, assignors to Tetra Laval Holdings & Finance, S.A., Switzerland

Filed May 16, 1995, Ser. No. 442,107

Claims priority, application Japan, May 23, 1994, 6-108669

Int. Cl.[6] B65D *3/22*

U.S. Cl. 206—484 **3 Claims**



1. A packaging container comprising:

a packaging material having opposite side edges which overlap each other such that an outermost layer and an innermost layer of said packaging material face each other;

an outside strip interposed between said outermost layer and said innermost layer along a longitudinal sealing portion and joined with them by heat fusion to form a packaging container, said outside strip having an outside layer and an inside layer; and

a strip tape joined by heat fusion to the inner surface of the packaging container along the longitudinal sealing portion,

wherein the innermost layer of said packaging material and the outside layer of said outside strip are made of resins which have compatibility with each other, and the outermost layer of said packaging material and the inside layer of said outside strip are made of resins which have compatibility with each other.

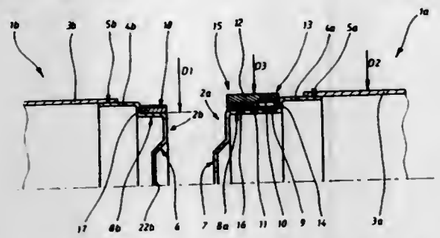
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5,598,928

SLIDING SLEEVE DEVICE FOR JOINING PROPELLANT CHARGE CONTAINERS AND CONTAINER HAVING SUCH A DEVICE

Michel Hossard, Bourges, and Yves Cappy, Saint Denis de Palin, both of France, assignors to Giat Industries, Versailles, France

PCT No. PCT/FR94/01357, § 371 Date May 31, 1995, § 102(e) Date May 31, 1995
PCT Filed Nov. 22, 1994, Ser. No. 448,369
Claims priority, application France, Dec. 1, 1993, 93 14340
Int. Cl.[6] F42B 5/00
U.S. Cl. 206—509 **20 Claims**



1. A device for joining a first container to a second container, a first face of said first container being alignable with a second face of said second container along a longitudinal axis, said device comprising:

a first narrowed portion disposed adjacent said first face of said first container;

a second narrowed portion disposed adjacent said second face of said second container; and

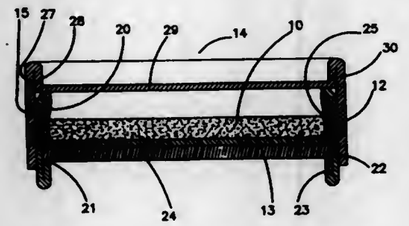
a sleeve disposed around said first narrowed portion, said sleeve being shaped to slide substantially parallel to said longitudinal axis from a first position to a second position, wherein said sleeve in said second position at least partially covers and threadedly engages a corresponding threaded portion of said second container.

5,598,929

TWO-PART CONTAINER

Maren Jensen; Jeanine Lobell, both of Los Angeles, Calif., and Lou Stevens, Cleveland, Ohio, assignors to The Make-Up Group, Inc., Los Angeles, Calif.

Filed Nov. 17, 1994, Ser. No. 341,425
Int. Cl.[6] B65D 75/00
U.S. Cl. 206—527 **1 Claim**



1. A container for cosmetics consisting essentially of:

a base comprising:

a cylinder having a side wall, an open first and an open second end defining an interior space;

a fold, into the interior space, in the side wall at the open first end;

an end panel, disposed in the interior space, abutting the fold in the side wall at the open first end;

a fold, into the interior space, in the side wall at the open second end;

a cosmetics substrate, disposed in the interior space, abutting the fold in the side wall at the open second end and the end panel; and

a lid comprising:

a cylinder having a side wall, an open first and an open second end defining an interior space wherein the diameter of the interior space is dimensioned to slidably engage the base;

a fold, into the interior space, in the side wall at an open first end of the lid; and

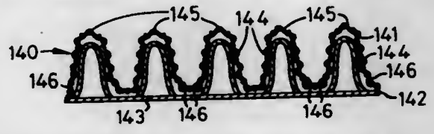
an end panel, disposed in the interior space, abutting the fold in the side wall at the open first end.

5,598,930

SHALE SHAKER SCREEN

Vincent D. Leone, Houston, Tex.; Jeffrey E. Walker, Lafayette, La.; Charles N. Grichar; Kenneth W. Seyffert, both of Houston, Tex., and Guy L. McClung, III, Spring, Tex., assignors to Advanced Wirecloth, Inc., New Iberia, La.

Filed Jul. 20, 1995, Ser. No. 504,495
Int. Cl.[6] B07B 1/49
U.S. Cl. 209—403 **19 Claims**



1. A screen apparatus for a vibratory shaker device, the screen apparatus comprising

screening material with an undulating shape with a series of raised portions, and

at least one support strip beneath said screening material and in contact therewith, said at least one support strip between one half inch to three

inches in width and between one thirty-second of an inch and one-eighth of an inch in thickness, and

said at least one support strip having at least one raised part thereof with a shape corresponding to a shape of a raised portion of the screening material, said at least one raised part positioned beneath and supporting said raised portion.

5,598,931

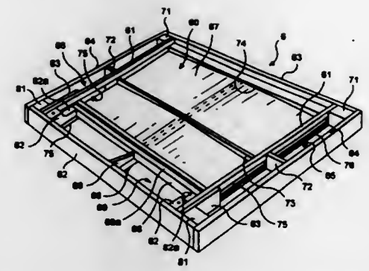
SIFTER FRAME FOR POWDER PARTICLE SIFTER

Yasunobu Hosogoshi; Toshio Maruo; Yasuo Sakata; Katsumasa Morita; Takefumi Ibori; Harumi Kubota, all of Tokyo; Toshio Douzono, Hyogo; Kanemitsu Nakagawa, Hyogo; Kunio Sugihara, Hyogo; Yukio Yoshizawa, Hyogo; Yoshiaki Aridome, Hyogo, and Shoji Yamanaka, Saitama, all of Japan, assignors to Nisshin Flour Milling Co., Ltd., Tokyo, Japan

Filed Nov. 7, 1994, Ser. No. 335,578
Claims priority, application Japan, Oct. 11, 1994, 6-245505; Oct. 28, 1994, 6-265792
Int. Cl.[6] B07B 1/49
U.S. Cl. 209—405 **4 Claims**

1. A sifter frame for a powder particle sifter comprising:

a pair of frame elements including an outer frame and an inner frame, the outer frame having an outer block formed to a rectangular four-sided shape by outer block frame members each having the same height and including in the inner side of the outer block each of a pair of fine powder dropping ports opened in an upward/downward direction along both inner sides of a pair of the confronting sides of the rectangular four sides, a rough powder dropping port opened in an upward/



downward direction along the inner side of one of the other pair of the confronting sides, outer block frame members constituting the sides opposite to the other pair of the confronting sides, and a rectangular fine powder receiving plate horizontally disposed at a position of intermediate height in the region surrounded by the rough powder dropping port and the fine powder dropping ports wherein the space on the receiving plate enables fine powder on the receiving plate to be dropped into the fine powder dropping ports but being partitioned from the rough powder dropping port by a partition wall; and

the inner frame being formed to a substantially rectangular four-sided shape by outer block frame members each having the same height and fitted with the space on the receiving plate of the outer frame without producing any gap therebetween so that the upper surface of said inner frame is flush with said outer frame wherein fine powder is sifted from the rough powder in powder particles moving on a rectangular sifter net stretched over the ceiling surface of said outer block frame members through said sifter net and dropped onto the receiving plate;

said inner frame being provided with a pair of the outer block frame members in contact with the fine powder dropping ports of said outer frame, the outer block frame member projecting more to said rough powder dropping port than the outer block frame members of said inner frame in contact with the rough powder dropping port of said outer frame, as well as said outer frame being provided with a receiving portion on which the projected portions of a pair of the outer block frame members of said inner frame are to be placed and arc-shaped or inclined seal surfaces are formed to the surfaces wherein said projected portions are engaged with said receiving portion.

5,598,932

RACK FOR STORAGE OF FROZEN PIZZAS

Joseph Weidert, 124 N. Green Bay Rd., Appleton, Wis. 54911

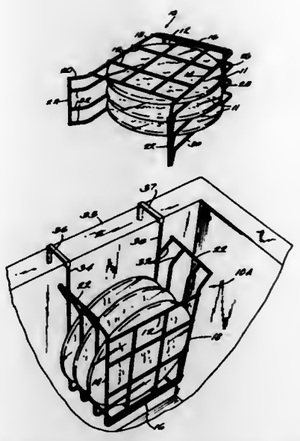
Filed Feb. 9, 1995, Ser. No. 385,770
Int. Cl.[6] A47F 7/00
U.S. Cl. 211—41 **4 Claims**

1. A rack for supporting frozen pizzas comprising a structure having top, bottom, side and rear structural members,

said side and rear structural members being formed from a plurality of elongated rigid generally U-shaped members each in a horizontal plane and arranged in a vertically stacked relationship, an open side of said members forming a frontal opening for loading and unloading said rack, said structural members having first and second opposed sides, each of which are flared outwardly at an obtuse and toward said front opening and which terminate in ends at said frontal opening,

first and second vertical supporting members being attached to said ends of said first and second opposed sides of each of said U-shaped members,

at least one vertical supporting member attached to said U-shaped members and supporting the rear thereof,



said frontal opening allowing for insertion between said first and second vertical supporting members of horizontally oriented frozen pizzas,

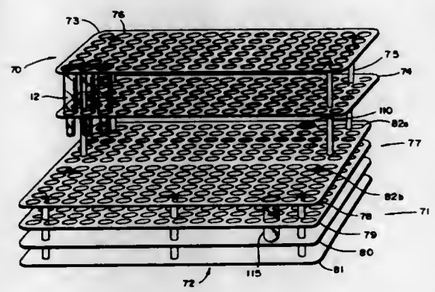
said first and second opposed sides of said U-shaped members forming shelves providing surfaces for storage of pizzas in said rack.

5,598,933

METHOD FOR EXTRACTION, EXTRACTION CARTRIDGE AND AUTOMATED EXTRACTION PROCESSING SYSTEM

Denis Lessard, Vaudreuil, and John H. Burrows, Pierrefonds, both of Canada, assignors to Phoenix International Life Sciences Inc., Montreal, Canada

Division of Ser. No. 235,713, Apr. 29, 1994. This application Apr. 10, 1995, Ser. No. 419,404
Int. Cl.[6] A47F 7/00
U.S. Cl. 211—74 **20 Claims**



1. A rack for holding a plurality of extraction cartridges, collection vessels and sample vessels, comprising:

a lower rack including a back portion, a front portion, and a bottom surface, said back portion including a plurality of openings for receiving collection vessels, and said front portion including a plurality of openings for receiving sample vessels;

an upper rack positioned substantially only above said back portion of said lower rack, said upper rack including a plurality of openings for receiving cartridges; and

said bottom surface comprising at least one element for locking said rack in position.

5,598,934

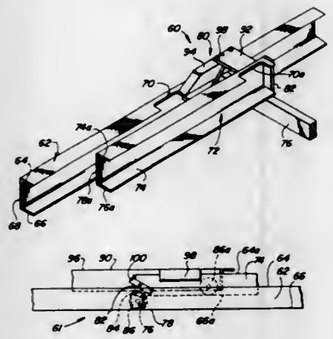
LATCHING DEVICE FOR A PUSH-BACK CART SYSTEM

John V. R. Krummell, 591-102 John K. Dr., Long Beach, Calif. 90803, and Kenneth E. Davison, Hermosa Beach, Calif., assignors to John V. R. Krummell, Long Beach, Calif.

Continuation-in-part of Ser. No. 148,214, Nov. 5, 1993, Pat. No. 5,415,300. This application Aug. 19, 1994, Ser. No. 292,868

Int. Cl.[6] A47F 5/00

U.S. Cl. 211—151 19 Claims



1. A latching mechanism comprising:
an outer side member having a notch;
a cart frame section having a wheel assembly supported on a lower flange of said outer side member; and
a spring assembly engageable with said notch.

5,598,935

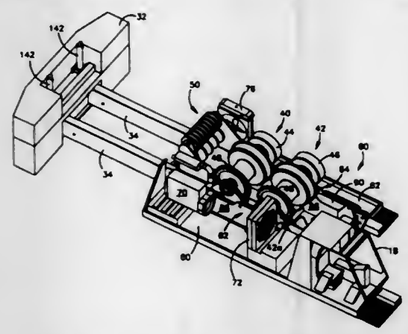
FRAME STRUCTURE FOR LIFT CRANE MACHINERY

Don R. Harrison; Clyde B. Mabry, III; Walter A. Beer, and Keith H. Childers, all of Wilmington, N.C., assignors to American Crane Corporation, Wilmington, N.C.

Filed Mar. 18, 1993, Ser. No. 33,509

Int. Cl.[6] B66C 23/72; B62D 25/20

U.S. Cl. 212—197 2 Claims



1. For use with a crane having upper and lower works, a boom and load lifting assembly mounted on said upper works, boom and load hoist machinery mounted on said upper works, wherein the improvement is a frame structure for supporting the boom and load hoist machinery comprising:
a pair of spaced apart parallel frame members;
each of said frame members including a pair of substantially vertical side plates spaced apart by at least one elongate lateral cross piece, each pair of side plates including integral, parallel flange sections extending upwardly and located above said cross piece, means for interconnecting said frame members;
each pair of said flange sections of each frame member include spaced apart mounting locations for directly mounting and supporting one side of said boom and load hoist machinery, said boom and load hoist machinery spanning a region between said frame members;
said mounting locations including apertures formed in said flange sections, fastening members for interconnecting said boom and load hoist machinery with said apertures;
drip pans extending laterally from said frame members and located below said flange sections, said drip pans being operative to received discharged material from said boom and load hoist machinery;
a portion of each frame member below said cross piece forming an integral housing;
an extendable beam slidably supported within each of said housings;
actuating means for extending and retracting said beams with respect to said frame members; and
a counterweight assembly attached to said beams, such that extending and retracting said beams by said actuating means moves said counterweight assembly relative to said upper and lower works.

5,598,936

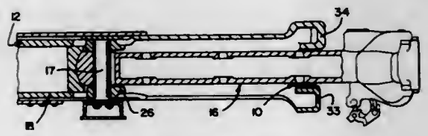
COUPLER CARRIER WEAR PLATE FOR LONG-SHANK COUPLERS

Richard F. Murphy, Batavia, Ill., assignor to Zeftek, Inc., Montgomery, Ill.

Filed Aug. 4, 1995, Ser. No. 511,457

Int. Cl.[6] B61G 7/10

U.S. Cl. 213—61 14 Claims



1. A coupler carrier wear plate for long-shank couplers which comprises:
a steel base plate adapted to be welded to the coupler carrier,
a steel bearing plate adapted to slidably support and engage the coupler shank,
and rubber-type resilient means between the base plate and the bearing plate bonding the bearing plate to the base plate,
whereby the wear plate adapts to the flatness variances encountered during coupler use.

5,598,937

SLACKLESS DRAWBAR ASSEMBLY

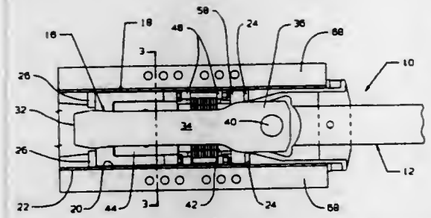
Marlin E. Clark, Dover, Pa., assignor to Keystone Industries, Inc., Camp Hill, Pa.

Filed Feb. 14, 1996, Ser. No. 601,180

Int. Cl.[6] B61G 9/20

U.S. Cl. 213—62 R 26 Claims

1. A slackless and wedgeless drawbar assembly for joining a pair of railcars of the type each having a sill at the end of the railcar and a pocket in the sill having front and rear stops attached to the sill, the assembly comprising,
A) an elongate drawbar having opposed butt ends, each butt end defining a pin aperture and including a generally spherical surface;
B) a pair of cushioning units and a pair of follower blocks, one cushioning unit and one follower block adapted to be positioned in each pocket between the front and rear stops with



the follower block adjacent the front stops and the cushioning unit adjacent the rear stops, each follower block including a generally spherical surface, each cushioning unit including a rear member having a rear member first surface adapted to engage the rear stops, a rear member second surface facing away from the rear member first surface and a rear member body extending continuously between such surfaces, a front member having a front member first surface engaging the follower block, a front member second surface facing away from the follower block and a second body extending continuously between such surfaces, and a compressed stack of elastomer pads sandwiched between said front and rear members and engaging said second surfaces, the stack including a plurality of metal plates interposed between adjacent ones of said elastomer pads;
C) a pair of yokes, each yoke surrounding a respective said cushioning unit and follower block and including a heel engaging the rear member first surface, straps extending from the heel past opposite sides of the cushioning unit and the follower block to a pair of spaced apart yoke ends, said ends defining a pair of pin bores, and a pair of coupler pins; and
D) each drawbar butt end positioned between a respective pair of said yoke ends with the spherical surface of the butt end engaging the spherical surface of an adjacent follower block, and each coupler pin extending through a respective pair of pin bores and an aperture in the adjacent drawbar butt end.

5,598,938

CAPSULES FOR INFUSION AND INJECTION BOTTLES

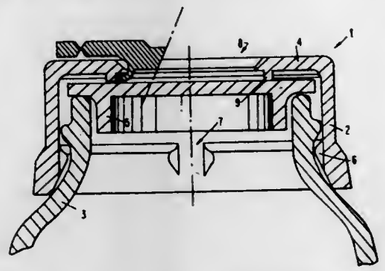
Vanna P. Rizzardi, Milan, Italy, assignor to Capsulit S.p.A., Milan, Italy

Filed May 12, 1994, Ser. No. 241,794

Claims priority, application Italy, May 12, 1993, MI930394 U

Int. Cl.[6] B65D 41/28;51/20

U.S. Cl. 215—249 6 Claims



1. A capsule of plastic material for infusion bottles, comprising a capsule body adapted to be fitted on a neck of a bottle for retaining a pierceable plug in place; and a capsule cap to be fitted on said capsule body, said capsule body having a top wall provided with a hole and a downwardly extending annular ridge formed around said hole at a distance from the latter, said capsule cap having a plug formed so as to fit into said hole of said capsule body and provided with an annular rim on its periphery so as to be folded outwardly and to fit into a space defined by said pierceable plug, said top wall of said capsule body and said annular ridge of said capsule body, said plug of said capsule cap having a height which is equal to a thickness of said top wall of said capsule body plus a height of said annular ridge, so that when said capsule cap has been fitted on said capsule body, a lower wall of said plug and the bottom edge of said annular rim are on a same plane to rest against the plug.

5,598,939

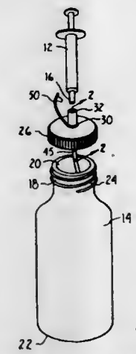
BOTTLE WITH CLOSURE ELEMENT FOR RECEIVING SYRINGE AND METHOD THEREFOR

Thomas L. Watson, and Jaleh Shaban-Watson, both of 12318 Rue Fontainbleau, San Diego, Calif. 92131-2261

Continuation of Ser. No. 174,874, Dec. 28, 1993, abandoned. This application Aug. 18, 1995, Ser. No. 516,818

Int. Cl.[6] B65D 51/16

U.S. Cl. 215—307 12 Claims



1. A liquid medicament dispensing apparatus, comprising:
a bottle formed with a neck defining an opening and a closed bottom opposite the opening, the bottle defining a chamber for holding liquid;
a needleless syringe formed with a hub and a barrel, the barrel being radially larger than the hub;
a resilient stopper positioned in the opening, the stopper defining a passageway;
a hollow fitting engaged with the stopper and defining a proximal end for receiving the hub, the fitting defining a continuous, unblocked fluid pathway both when the proximal end receives the hub and when the proximal end does not receive the hub; and
a tube in fluid communication with the fluid pathway of the fitting and distanced from the barrel of the syringe when the hub of the syringe is received in the fitting, the tube having a distal end disposed near the bottom of the bottle.

5,598,940

CAP LINER FOR HOT FILLED CONTAINER AND METHOD OF MAKING

Harvey Finkelstein, Washington Township, N.J.; Victor Flores, Goldens Bridge, N.Y.; Murray Singer, Clark, and Anatoly Verdel, Fairlawn, both of N.J., assignors to Tri-Seal International, Inc., Blauvelt, N.Y.

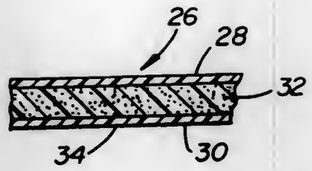
Division of Ser. No. 214,273, Mar. 16, 1994, which is a continuation-in-part of Ser. No. 755,733, Sep. 6, 1991. This application May 16, 1995, Ser. No. 442,037

Int. Cl.[6] B65D 53/04

U.S. Cl. 215—348 15 Claims

1. Closure liner for a container having a neck portion and a rim portion which defines a container opening, said closure liner com-

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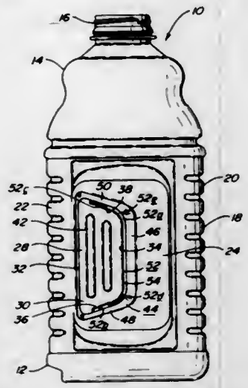
prising a cap which is operable to be received on the neck portion, a cap liner positioned inside said cap comprising a disk having a pair of outer layers and an intermediate layer sandwiched between said outer layers and co-extruded thereto, said outer layers comprising a substantially homogenous admixture of polyethylene and 10–98% by weight of polypropylene and said intermediate layer is a resilient foamed admixture comprising 15–40% by weight low density polyethylene, 15–40% ethylene vinyl acetate, and 15–40% of a copolymer of 10–90% polyethylene with the balance polypropylene, said liner being positioned in said cap such that when said cap is positioned on the neck portion, one of said outer layers is positioned against an inside top portion of said cap, the other outer layer engages the container rim portion and covers the opening, and said intermediate layer is compressed to provide an effective seal between said cap liner and the container which does not structurally or functionally degrade when exposed to heat from a hot filled container.

5,598,941

GRIP PANEL STRUCTURE FOR HIGH-SPEED HOT-FILLABLE BLOW-MOLDED CONTAINER

Frank E. Semersky, Toledo, Ohio, and John W. Tobias, Lancaster, Pa., assignors to Graham Packaging Corporation, York, Pa.

Filed Aug. 8, 1995, Ser. No. 512,532
Int. Cl.[6] B65D *23/00;23/10*
U.S. Cl. 215—384 **3 Claims**



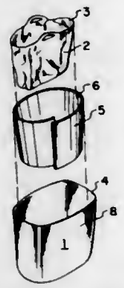
1. In a hot-fillable, blow-molded plastic container for containing a liquid filled initially in a hot state and subsequently sealed so that the cooling of the liquid creates a reduced volume in the container having a bottom portion, a shoulder portion above the bottom portion, a closable neck portion on the shoulder portion permitting filling and discharge of the liquid, and a body portion connecting the bottom and shoulder portions, the body portion having an arcuate front panel extending between the bottom and shoulder portions and an arcuate rear panel located diametrically opposite the front panel and extending between the bottom and shoulder portions, the body portion having a pair of flex panels set inwardly from and extending between the shoulder and bottom portions on opposite sides of the container, the flex panels extending between the front and rear panels and each flex panel having formed therein an inwardly recessed rigid grip panel for receiving a person's thumb and fingers on opposite sides of the container when the rear panel is engaged by a person's palm, the improvement wherein each of the grip panels has an elongate rib along an inwardly most recessed edge of each of the grip panels to prevent inverting of the grip panels, each of the grip panels having a planar grip surface defined by a plurality of coplanar flat portions, and a continuous narrow transitional wall section extending around said planar grip surface away from the rear panel, said planar grip surface intersecting said transitional wall section at an included obtuse angle of up to about 120°, said rib extending inwardly into the interior of the container and out of the plane of the planar grip panel and being located at the intersection of said planar grip panel and said transitional wall section, whereby the container grip panel maintains its structural integrity against everting during hot-filling and after being cooled, and later opened.

5,598,942

WASTE BASKET LINER SYSTEM

Ross Cowie, 1069 Borden Side Road, Ottawa, Ontario, Canada

Filed Sep. 25, 1995, Ser. No. 533,088
Int. Cl.[6] B65F *1/06*
U.S. Cl. 220—404 **5 Claims**



1. A waste disposal bin assembly, comprising:
an outer casing having a sidewall and an open top;
a self-supporting insert member conforming to the internal shape of said sidewall and having an upper rim located below a top edge of said sidewall;
a disposable bag inserted in said insert member and having an upper portion folded over said rim of said insert member and tucked between said insert member and an inner surface of said sidewall; and
wherein said insert member is flexibly and resiliently deformable to conform to the internal shape of said sidewall, and to spring into contact with said sidewall after being compressed for insertion into said bin.

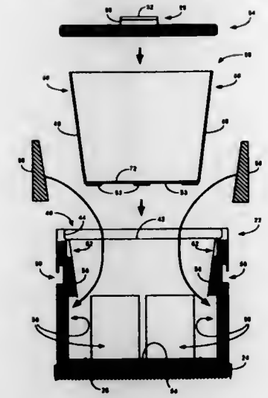
5,598,943

CONTAINER FOR CARRYING GROCERIES AND OTHER OBJECTS

Theodore Markus, 157 Willow Creek Ave., Schenectady, N.Y. 12304

Filed Aug. 10, 1993, Ser. No. 105,019
Int. Cl.[6] B65D *90/04*
U.S. Cl. 220—410 **11 Claims**

1. A container for holding and carrying objects and for enabling objects placed within it to better maintain their temperature, said container comprising:
an insulated body having a first cavity and an opening to that cavity which points upward when said container is in an upright position;



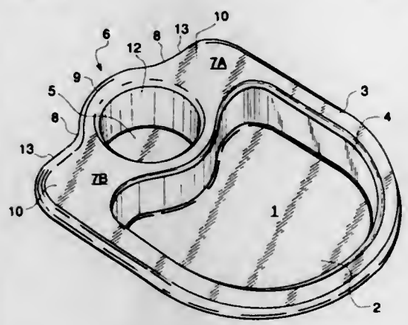
a movable lid which can be positioned to fit across said opening and to close said cavity;
two removable baskets which are shaped and sized, so that one of them fits within the other, and so that when said one of them is fitted within the other they can both be inserted through said opening and fitted within said first cavity when said lid is positioned to close said cavity, wherein said baskets are:
shaped to generally fit against the interior walls of said insulated body which form said first cavity;
have sides which extend in a direction generally perpendicular to said insulating body's opening when said basket is positioned in said insulating body, and which are tapered, so that the basket is narrower at its bottom, which is positioned further away from said opening, than it is at its top, which is nearer said opening, when said basket is positioned in said cavity.

5,598,944

SINGLE HAND USE FOOD TRAY

James Aragona, 4 Maywood Ct., North Caldwell, N.J. 07076

Filed Apr. 17, 1995, Ser. No. 422,887
Int. Cl.[6] B65D *21/032*
U.S. Cl. 220—575 **8 Claims**



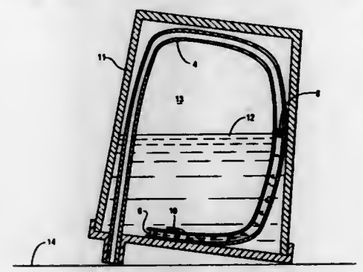
1. A food tray comprising:
food holding means for holding food, said food holding means including a food bowl base, lying in a food bowl base plane, a food bowl wall extending away from said food bowl base, and a food bowl rim positioned on an opposite side of said food bowl wall from said food bowl base, said food bowl rim lying in a food bowl rim plane, said food bowl base plane being parallel to said food bowl rim plane;
right hand grip means connected and positioned with respect to said food bowl wall for providing a grip to a right hand of a user with a thumb griping on one side of the tray and all other fingers of the hand griping another side of the tray, said grip means including a thumb grip edge and a thumb grip surface for gripping by the thumb of the hand to position all other fingers of the hand on said another side of the tray, said thumb grip surface being in said food bowl rim plane, said grip means being adjacent to said food bowl wall;
left hand grip means connected and positioned with respect to said food bowl wall for providing a grip to a left hand of a user with a thumb griping on one side of the tray and all other fingers of the hand griping another side of the tray, said grip means including a left thumb grip edge and a left thumb grip surface for gripping by the left thumb of the left hand to position all other fingers of the left hand on said another side of the tray, said thumb grip surface being in said food bowl rim plane, said right grip means being adjacent to said food bowl wall;
a palm fitting means connected to each of said right grip means and said left grip means for fitting into a palm of the hand of the user, said palm fitting means including a palm extension edge extending into the palm of the user, said palm extension edge merging on one end with said right thumb grip edge to form a concave curve and merging on another end with said left thumb grip edge to form another concave curve;
cup holder means for holding a cup; said cup holder means being positioned between said palm extension edge and said food holding means, said cup holder means including a cup bowl base, a cup bowl wall extending away from said cup bowl base, and a cup bowl rim positioned on an opposite side of said cup bowl wall from said cup bowl base, said cup bowl base and said cup bowl wall forming a protrusion graspable by said all other fingers of either the right hand or the left hand, on said another side of the tray, wherein the tray is supportable by either said right hand or said left hand, wherein the tray is symmetrical about a centerline passing through the centers of said food bowl base and said cup bowl base.

5,598,945

NON VENTED SPILL-PROOF LID

Mark S. Gracy, 2121 Noblestown Rd., Suite 200, Pittsburgh, Pa. 15205

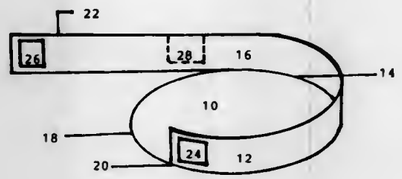
Filed Oct. 10, 1995, Ser. No. 541,296
Int. Cl.[6] A47G *19/22*
U.S. Cl. 220—707 **5 Claims**



1. A spill proof lid for use with a container for liquids, said lid comprising:
a cover plate for covering an open end of said container, said cover plate having a periphery constructed to sealingly engage the wall of said container; and
a single closed tubular liquid chamber which runs through the upper surface of said cover plate downward, then looping up

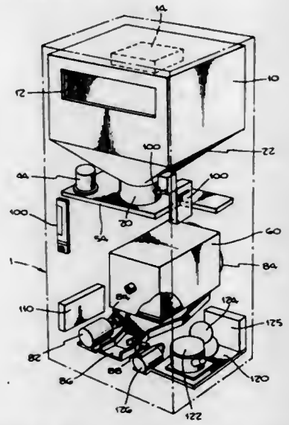
to the under side of said cover plate, said chamber having a single inlet opening below the lower surface of said plate and affixed to said lower surface, said single inlet opening further being in communication with the interior of said container when said lid is in place on said container and an outlet opening in said upper surface of said plate, in communication with the space outside said container, said inlet opening and outlet opening being closely adjacent one another and said liquid chamber being constructed and arranged such that when the container is tilted from the vertical, liquid moving from said inlet opening to said outlet opening of said container must rise above the level of liquid in the container, thereby preventing leaking or spilling of the liquid from said container.

5,598,946
INSULATED FABRIC SERVING DISH HOLDER
MaryAnn Davis, 138 W. Central Ave., Delaware, Ohio 43015
Filed Jan. 29, 1996, Ser. No. 592,918
Int. Cl.[6] B65D *25/34*
U.S. Cl. 220—739 **2 Claims**



1. An insulated fabric serving dish holder comprising:
a bottom panel made of an outwardly disposed first fabric layer and at least one inwardly disposed first insulative layer;
a side panel, perpendicular to said bottom panel, made of an outwardly disposed second fabric layer, an inwardly disposed lining fabric layer and a second insulative layer disposed between said second fabric layer and said lining fabric layer;
said side panel is attached to said bottom panel by a sewn seam connecting only a portion of the bottom edge of said side panel to only a portion of the peripheral edge of said bottom panel, an unattached portion of the bottom edge of said side panel and an unattached portion of the peripheral edge of said bottom panel are adjacent to each other and allow said side panel to wrap around and enclose the serving dish, a first end of said side panel which is adjacent to the unattached portion of the bottom edge overlaps a second opposite end of said side panel;
a first fastening means located on the outside wall of said side panel adjacent said second end;
a second fastening means located upon the inside wall of said lining fabric layer of said side panel adjacent said first end;
said side panel being adapted to be positioned and formed snugly around the exterior surface of the serving dish with said first and second fastening means engaged with each other, said unattached portions of the bottom edge of said side panel and of the peripheral edge of said bottom panel allow movement of said second fastening means in relation to said first fastening means to allow said side panel to adjust to the size of the serving dish by adjusting the degree of overlap of the first end with the second end to hold the serving dish tightly, to insulate the dish from the environment and to protect the hands of a user.

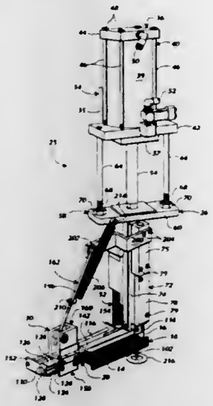
5,598,947
AUTOMATIC HOT FOOD VENDING MACHINE
Patrick Smith, 7726 W. Norton Ave., Los Angeles, Calif. 90046
Filed Jan. 24, 1995, Ser. No. 377,449
Int. Cl.[6] B65D *83/00*
U.S. Cl. 221—150 HC **9 Claims**



1. An automatic hot food vending machine, comprising in combination:
hopper means for holding an inventory of uniformly sized, individual refrigerated or frozen portions of said food and for maintaining said inventory in a refrigerated or frozen condition;
dispenser means for selectively dispensing one of said portions from said inventory by gravity;
oven means for receiving said one portion from said dispenser means, for heating said portion by irradiation thereof with microwave energy for a predetermined length of time, and for discharging said heated one portion from said machine thereafter by gravity;
changer means for receiving, counting, authenticating, and storing money inserted into said machine, and for refunding counterfeit money inserted therein or genuine money upon command; and
control and monitor means for:
receiving a signal from said changer means that a predetermined amount of said authenticated money has been inserted into said machine;
actuating said dispenser means upon receipt of said signal to dispense said one portion into said oven means; and
activating said oven means to receive, heat, and discharge said portion from said machine,
wherein said dispenser means further comprise:
said hopper means including a lower, inverted frusto-pyramidal chamber having a flat bottom with a generally semicircular opening therethrough guarded by a quadrant-shaped closure and defining an inwardly flanged lip about said opening, said opening having a diameter at least twice a largest dimension of one of said portions;
an upright conical member having a largest diameter about equal to that of said semicircular opening, said member being positioned generally centered within said chamber above and spaced apart from said opening;
a cylindrical pan having a diameter coextensive with said opening, an open top in communicating engagement with said opening, a depth below said opening, and a generally flat bottom having a quadrant shaped aperture therein in vertical alignment with said quadrant-shaped closure defining a dispenser opening;
a shaft rotatably-mounted coaxially within said semicircular opening and extending from above said opening, through said pan, to below said bottom of said pan;

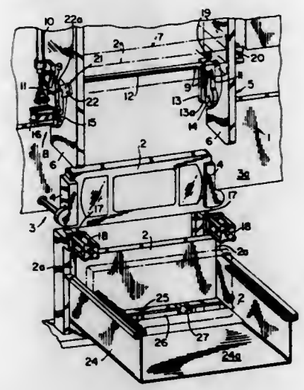
a quartet of elongated rollers extending radially outward from said shaft in even distribution within a common plane normal to said shaft and rotatably journaled thereon for rolling movement of an outer portion of each said rollers upon an upper surface of said flanged lip above said semicircular opening;
a paddle wheel having four paddles, each said paddle extending radially outward from said shaft in alignment with one of said rollers and having a width and radial extent sufficient to sweep substantially all of a quartic volume defined within said pan between adjacent said paddles into alignment with said dispenser opening upon successive 90° incremental rotations of said shaft; and
means for selectively rotating said shaft through said successive 90° incremental rotations when actuated.

5,598,948
FASTENER DISPENSER
Brooks Rizer, Dalton, Ga., assignor to Textile & Industrial Sales, Inc., Dalton, Ga.
Filed May 18, 1995, Ser. No. 443,724
Int. Cl.[6] B65H *1/00*
U.S. Cl. 221—198 **25 Claims**



1. Apparatus for dispensing dual head fasteners from a fastener stock comprising a plurality of the fasteners, the fasteners comprising a first head, a second head, and a filament connecting the first and second heads so that the first and second heads are substantially parallel to one another and the filament is substantially perpendicular to the first and second heads, the fastener stock comprising a runner bar having a longitudinal axis, each of the fasteners removably attached to the runner bar with severable necks connecting respective first heads of the fasteners to the runner bar opposite the filaments so that (1) the fasteners extend outwardly from the runner bar substantially parallel with one another and substantially perpendicular to the runner bar, (2) the first heads are side-by-side and have longitudinal axes substantially perpendicular to the longitudinal axis of the runner bar, and (3) the second heads are side-by-side, the apparatus comprising:
an actuator comprising:
a casing having a longitudinal axis, a plunger passage extending along the longitudinal axis of the casing, a fastener port proximate one end of the casing for receiving the first heads of the fasteners;
a hollow slotted needle having an elongate slotted needle passage, the needle passage having a slot extending along the needle passage, an inlet and an outlet, the needle fixed to the casing so that the inlet of the needle communicates with the port and the needle extends from the one end of the casing toward the needle outlet along a longitudinal axis substantially parallel to the longitudinal axis of the casing;
a plunger disposed in the plunger passage and extendable into the slotted passage of the needle for reciprocation within the plunger passage and slotted needle passage; and
means for reciprocating the plunger;
a magazine for feeding fasteners from the fastener stock to the inlet of the hollow slotted needle comprising an elongate guide member extending laterally from the actuator casing at the port and defining a chute having an elongate slotted runner passage for receiving the runner bar of the fastener stock and an elongate slotted head passage for receiving the first heads of the fasteners, the slotted runner passage of the magazine being in communication with the port and having a slot through which the severable necks of the fastener stock project, and the slotted head passage being in communication with the port of the casing and having a slot through which the filaments of the fasteners project; and
a slide assembly comprising:
a slide including a foot selectively and slidably engagable in the slotted head passage and alternatively removable from the slotted head passage; and
a spring for forcing the foot through the slotted head passage and against the fastener stock to force the fasteners into the casing port for dispensing fasteners through the hollow slotted needle.

5,598,949
CASSETTE FEEDING SYSTEM AND METHOD
Luciano Perego, Mezzayo, Italy, assignor to Tapematic U.S.A., Inc., Orlando, Fla.
Filed Feb. 17, 1995, Ser. No. 390,055
Int. Cl.[6] B65G *59/00*
U.S. Cl. 221—290 **8 Claims**



1. A cassette feeding apparatus in an automatic machine for loading tape into cassettes comprising a magazine located above a loading station of the cassette loading machine and engaging a plurality of horizontally oriented cassettes disposed consecutively upon each other to form an upright stack;
transferring means for picking up a cassette situated at the bottom of the stack and transferring it to the loading station, while disposing the cassette in a substantially vertical orientation, wherein said transferring means comprises:
a collapsible support oscillatably engaged under said magazine;
drive means for moving said collapsible support between a rest position in which it is substantially oriented in a horizontal plane for supporting at least one cassette disposed at a lowermost position in said stack, and a dropped position in which it

is oriented in a substantially vertical plane for vertically orienting said cassette;

at least one retention element operatively associated with the collapsible support and movable between a thrust position in which it acts on said cassette to retain it on the collapsible support, and a release position in which it is disengaged from said cassette;

first actuating means acting on the first retention element for selectively moving it to the thrust position when the collapsible support is in its rest position, and to the release position when the collapsible support is in the dropped position, to let the cassette fall vertically into the loading station.

5,598,950

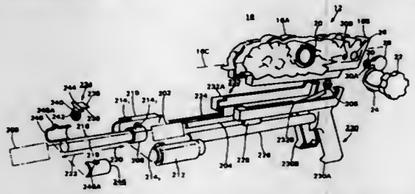
TOY FOR EJECTING A STREAM OF CHILLED WATER

Dexter C.-T. Liu, Portsmouth; David Weindel, East Greenwich, both of R.I., and Peter Cooper, Granby, Conn., assignors to LCD International, L.L.C., Newport, R.I.

Continuation of Ser. No. 292,440, Aug. 18, 1994, abandoned. This application Jun. 13, 1996, Ser. No. 662,888

Int. Cl.[6] A63H *3/18*

U.S. Cl. 222—79 **18 Claims**



1. In a water toy having a predetermined configuration to eject a stream of water under pressure an improvement comprises:

a reservoir having an opening with a first mouth, said reservoir being capable of holding water;

a first fluid conduit having a first end fluidly connected to said reservoir;

a first valve piston having a first end connected to a second end of said first fluid conduit, said first valve piston having flexible sidewalls and a chamber, said flexible sidewalls and said chamber being adapted to be movable in a linear manner to establish a partial vacuum in said chamber and to also elevate the pressure in said chamber;

a first cylinder having a first end and sidewalls that engage said flexible sidewalls, said first cylinder being movable in a linear, pump-action manner, and in a first direction to effectively enlarge said chamber to fill with water and in a second direction to effectively reduce said chamber and to expel said water therein;

a clamping member having a first hollow with a first end connected to the second end of said first valve piston and locking means for connecting to said first cylinder; and

a first valve adapted to move between an open position and a closed position, said first valve being correspondingly moved toward said closed position when said first cylinder is being moved in said first direction, and said first valve being correspondingly moved toward said open position when said first cylinder is being moved in said second direction.

5,598,951

OIL FILTER DRAINING DEVICE

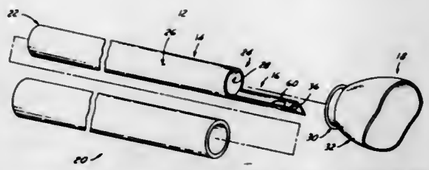
Richard J. DeBano, Jr., Waterford, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 2, 1995, Ser. No. 537,345

Int. Cl.[6] B67D *5/00*

U.S. Cl. 222—83 **20 Claims**

1. An oil filter draining device comprising:



a hollow shaft, having a closed end and an open end, said shaft having an inner and an outer longitudinal surface, said inner longitudinal surface and said ends generally defining an interior cavity of said shaft, said inner and outer longitudinal surfaces generally defining a longitudinal wall therebetween, the shaft further having a longitudinal axis, thereby defining longitudinal, radial, and transverse directions, each of said ends having a generally transverse terminal edge therein, said shaft further having a top portion and an under-portion, said portions being defined by two portions of said shaft as divided by a plane containing said longitudinal axis and passing through said shaft;

piercing means for piercing the outer wall and inner chamber wall of an oil filter, said piercing means being rigidly attached to and extending longitudinally outward from the under-portion of the open end of said shaft; and

a flexible polymeric boot having a neck portion and a shroud portion attached to said neck portion, said shroud portion having a top portion and an under-portion substantially corresponding in spatial relationship to the top and under-portions of said shaft, said neck portion sealably affixed to the outer longitudinal surface of said shaft at said open end, said shroud portion flaring outward from said neck portion both longitudinally and radially in a substantially bell-like shape so as to enshroud said piercing means when said device is not being used and to provide means for both sealing the device against the outer wall of a filter and for conveying oil from the filter to said interior cavity when the device is being used, said boot being constructed of a material that allows collapse from and substantial return to said boot's preformed shape when force is applied thereto and removed therefrom, respectively, thereby providing resilient, cup-like engagement with the outer wall of an oil filter.

5,598,952

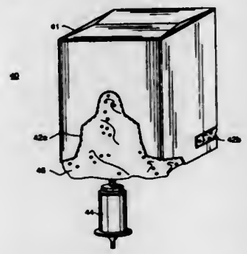
SOAP BOX FOR A SOAP DISPENSER

Warren S. Daansen, P.O. Box 614, Nashua, N.H. 03061

Filed Nov. 17, 1995, Ser. No. 560,377

Int. Cl.[6] B67D *5/06*

U.S. Cl. 222—105 **3 Claims**



1. A box-in-a-bag liquid soap container for use in a soap dispenser having a container cavity with intruding left and right sidewall strakes and intruding hinge point structure at the lower front corners, comprising a box sized to fit the full dimensions of said container cavity, said box having a collapsible plastic bag therein, said lower front corners of said box being removable so as to provide clearance for said hinge point structure, portions of the sidewalls and back wall of said box being removable so as to provide clearance for said left and right sidewall strakes, and said bag being readily conformable to the presence of said hinge point structure and said strakes.

5,598,953

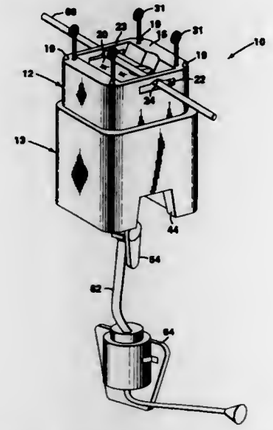
RETURNABLE DRY PRODUCT CONTAINER

William F. Megargle, Beverly; Wayne M. Bruhn, Sewell, both of N.J., and Steven L. Clements, Dunlap, Ill., assignors to FMC Corporation, Chicago, Ill.

Filed Dec. 19, 1994, Ser. No. 359,179

Int. Cl.[6] B67D *5/06*

U.S. Cl. 222—143 **4 Claims**



1. An apparatus for containing dry products, comprising:

a container, comprising:

a cone shaped bottom with an opening in the cone shaped bottom, wherein the dry product has an angle of repose and wherein the sided of the cone shaped bottom are at angles greater than the angle of repose;

a box shaped top; and

an opening in the box shape top, wherein the container further comprises a first slot with a notch forming a first handle and a second slot with a notch forming a second handle;

a cap, which mates with the opening in the box shape top;

a base, comprising;

box shaped sides; and

an opening for receiving the cone shape bottom of the container;

means for attaching the container to the base; and

a valve mechanically connected to the opening in the cone shaped bottom.

5,598,954

DOOR ACTUATED DEVICE FOR DISPENSING FLUID FROM A CONTAINER

Vincenzo Salzano, 68 Showground Road, Castle Hill NSW 2154, Australia

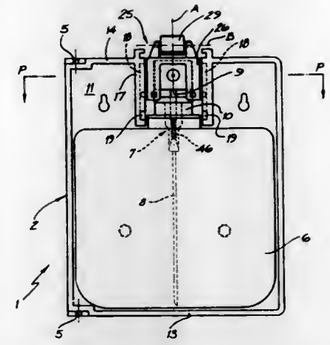
Filed Mar. 29, 1995, Ser. No. 411,586

Claims priority, application Australia, Mar. 30, 1994, 59192/94

Int. Cl.[6] B67D *5/00*

U.S. Cl. 222—162 **19 Claims**

1. A door actuated device for dispensing a fluid from a container, comprising:



a holder receiving the container and being mountable to a door or a structure adjacent to the door; and

a plunger assembly for actuating a dispensing means of the container and being displaceable between first and second positions relative to the container, the plunger assembly having a longitudinal axis and contact means arranged to be able to contact a foreign surface when the door is opened and/or closed and so cause the plunger assembly to be displaced;

wherein the holder has guide means for guiding the plunger assembly between the first and second positions and the fluid is dispensed from the container by the dispensing means through a nozzle on the plunger assembly when the plunger assembly is displaced by the contact of the contact means with the foreign surface, and wherein the plunger assembly is able to be slidably received by the guiding means of the holder in a plurality of different rotational positions obtainable by rotating the plunger assembly about the longitudinal axis.

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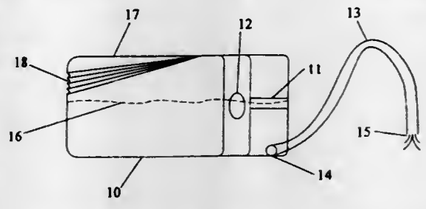
GASOLINE DISPENSING CONTAINER WITH SAFETY FEATURE

Peter Reilley, 20 King Arthur Dr., Londonderry, N.H. 03053

Filed Jul. 18, 1995, Ser. No. 503,866

Int. Cl.[6] B65D *37/00*

U.S. Cl. 222—209 **20 Claims**



1. A liquid container system comprising:

a container which is capable of being set in a storage position and in a different, dispensing position;

a first port in said container which is situated above a liquid level within said container when said container is in said storage position;

a discrete second port which is situated a greater distance from said liquid level than said first port when said container is in said storage position, and which is situated below said liquid level when said container is in said dispensing position; and

a pumping device integral with said container for producing a positive pressure in said container when said container is in said dispensing position.

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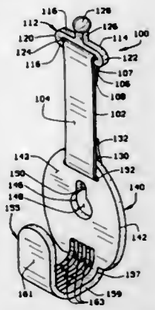
PORTABLE GARMENT HANGER DEVICE

Gene B. Schenberg, 12315 Montsouris, St. Louis, Mo. 63141

Continuation-in-part of Ser. No. 251,612, May 31, 1994, abandoned. This application Feb. 1, 1995, Ser. No. 382,142

Int. Cl.[6] A47G *25/06*

U.S. Cl. 223—1 **6 Claims**



1. A suspendable hanger device for suspending from a rod, comprising:
a flexible strap for positioning around the rod;
a retainer element at a first end of the strap, said retainer element having a latch element formed thereon;
a substantially rigid hanger receiving member at a second end of the strap, said banger receiving member having a substantially flat body portion and a rigid hook protruding therefrom, said body portion having a latch element receiving means formed therein, the flexible strap being configured so that the retainer element at the first end of the strap engages the latch element receiving means on the body portion when the flexible strap is positioned around the rod.

5,598,957

ADJUSTABLE HANGER

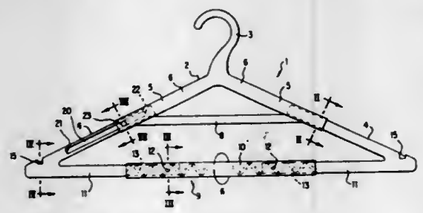
David C. Bell, 168a Page Street, Middle Park, Victoria 3206, Australia

Filed Jan. 13, 1995, Ser. No. 395,241

Claims priority, application Australia, Jul. 16, 1992, PL3552

Int. Cl.[6] A47G *25/40;25/14*

U.S. Cl. 223—94 **14 Claims**



1. An adjustable hanger, comprising:
a hanger body,
hanging means for suspending said hanger body,
carrying means, and
adjustment means,
wherein said carrying means and said hanger body cooperate to provide a support surface for supporting articles of clothing, said carrying means including first and second carry members located on opposite sides of said hanger body, each said carry member having two legs, the first of said carry member legs having grooves extending longitudinally therealong and being in adjustable, telescopic engagement with said hanger body and the second of said carry member legs being in adjustable, telescopic engagement with said adjustment means, said adjustment means including an elongate connection member having a longitudinal axis which engages the second of said carry member legs of each said carry member on opposite sides thereof in said adjustable telescopic engagement, wherein rotation of said connection member about said longitudinal axis adjusts the position of the second of said carry member legs of each carry member relative to said connection member and wherein said rotation also results in adjustment of the relative position of the first of said carry member legs of each said carry member relative to the hanger body, so that the position of each of said carry members relative to said hanger body can be altered to increase or decrease the width of the adjustable hanger.

5,598,958

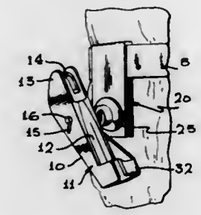
COMPETITION HOLSTERS

Willis N. Ryan, III, 40790 Hwy. 49, Oakhurst, Calif. 93644, and Kerby C. Smith, 42827 Bean Gulch Ranch Rd., Coarsegold, Calif. 93614

Filed Sep. 12, 1994, Ser. No. 304,589

Int. Cl.[6] F41C *33/02*

U.S. Cl. 224—198 **32 Claims**



1. A handgun carrier to be worn on the belt of a wearer comprising:
a belt loop assembly;
a handgun holder secured to said belt loop assembly;
said belt loop assembly including means defining a belt loop dimensioned to receive a waist worn belt to suspend the handgun carrier and a handgun holder attachment means;
said handgun holder attachment means including a first partial spherical surface and a second partial spherical surface mating with said first partial spherical surface;
one of said surfaces secured to said belt loop assembly and the other of said surface secured to said handgun holder; and
adjustable means for engaging said first and second partial spherical surfaces for spherical angular adjustment between the belt loop assembly and the handgun holder.

5,598,959

ARTICLE-CARRYING RACK WITH LOCKABLE MOUNT

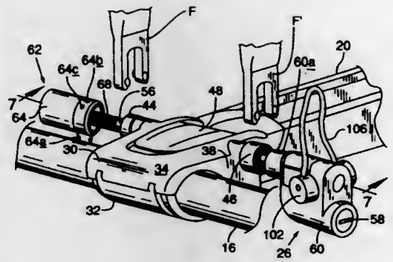
Robbin R. Lorensen, and Joseph J. Settelmayer, both of Eureka, Calif., assignors to Yakima Products, Arcata, Calif.

Filed Jul. 6, 1995, Ser. No. 499,037

Int. Cl.[6] B60R *9/00*

U.S. Cl. 224—315 **20 Claims**

1. A lockable mount for securing an article carrier to an external bar on a vehicle, the mount comprising:
a first half;
a second half connected to the first half for movement relative thereto between an opened and a closed position, wherein when the second half is in the closed position it is selectively engageable by the first half for securing the halves around the bar; and



a lock-carrying member having a first and second end, wherein the member is mounted on the first half and includes a lock mounted adjacent the first end which is selectively movable along the member for varying the distance between the lock and the first half, and wherein the member may be locked to restrict such movement, and further wherein the lock-carrying member includes an engagement member mounted adjacent the second end for selectively engaging the first and second halves when the second half is in the closed position and confining the second half in such position when the member is locked.

5,598,960

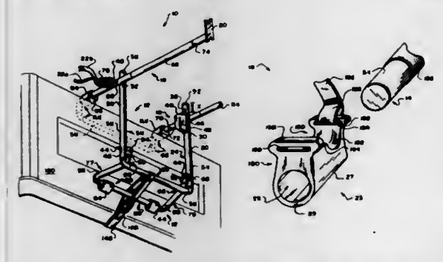
FOLDING CARRIER AND SECURING SYSTEM THEREFOR

Richard A. Allen; Christopher B. Allen, and Alexander R. Allen, all of 29 Devens St., Concord, Mass. 01742

Continuation of Ser. No. 186,814, Jan. 25, 1994, Pat. No. 5,435,472, which is a continuation of Ser. No. 954,298, Sep. 30, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 476,668

Int. Cl.[6] B60R *9/10*

U.S. Cl. 224—324 **2 Claims**



1. A carrier mountable on a motor vehicle for carrying bicycles, said carrier comprising:
a frame;
a carrying member mounted to said frame, said carrying member having a pair of arms;
a mounting means positioned on each arm of said carrying member, each said mounting means being rotatable about and slidable on and along each said arm of said carrying member, said mounting means having a body with a cradle means, said cradle means having first and second raised ends, and a supporting face positioned between said first and second raised ends, said supporting face being sized and shaped to receive a portion of said bicycles, said first and second raised ends being sufficiently separated to permit said portion of said bicycles to be removably and replaceably positioned on said supporting face;
at least one spacer means positioned on each said arm of said carrying member, said spacer means serving to position each said mounting means at a selected position on each said arm of said carrying members; and
a strap means operatively connected to one of said first and second raised ends of said cradle means for securing said portion of said bicycles on said cradle means, said strap means including a belt means and a fastening means, said belt means engaging said portion of said bicycles received in said supporting face of said cradle means, said belt means being held by said fastening means for securely holding said portion of said bicycles received in said supporting face of said cradle means.

5,598,961

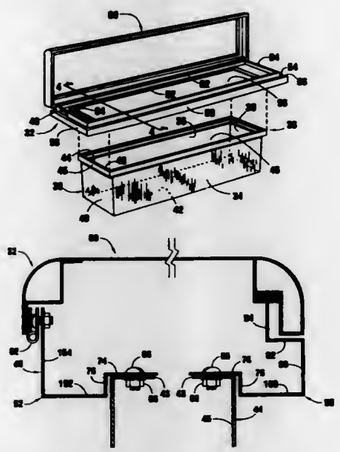
VEHICLE TOOL BOX

Robert L. Sills, Story City, Iowa, assignor to Putco, Inc., Sioux City, Iowa

Filed Jan. 24, 1995, Ser. No. 377,190

Int. Cl.[6] B60R *9/00*

U.S. Cl. 224—404 **7 Claims**



1. A chest for use in a pickup truck having a carrier bed and side walls extending upwardly from opposite sides of said carrier bed, said side walls each having an upper edge, said chest comprising:
a chest bottom having a bottom wall, a front wall, a rear wall, and opposite end walls forming a compartment having an open upper end, said front, rear, and end walls having upper edges which together form a rim which includes in cross section a horizontal surface and a vertical surface extending around said open upper end;
a chest top having a chest lid and a top frame forming a frame opening;
said top frame having in cross section a horizontal surface and a vertical surface engaging said horizontal and vertical surfaces respectively of said rim;
said chest lid being sized to fit in covering relation over said frame opening to enclose said compartment;
a hinge pivotally securing said lid to said top frame for pivotal movement from an open position providing access to said frame opening to a closed position in covering relation over said frame opening; and
first securing means detachably securing said top frame to said rim of said chest bottom whereby said chest top forms a top closure over said open upper end of said chest bottom when said lid is in said closed position.

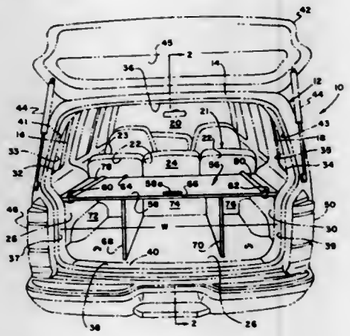
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5,598,962

SECURITY TRUNK FOR SPORT UTILITY VEHICLES

Bradley S. Schlachter, 6211 W. Northwest Hwy., Suite 253D, Dallas, Tex. 75225

Filed Feb. 3, 1995, Ser. No. 383,241
Int. Cl.[6] B62D *33/04*
U.S. Cl. 224—542 **10 Claims**



1. A security trunk for a motor vehicle having a cargo compartment defined at least in part by a generally horizontally extending cargo deck, opposed sidewalls and a rear access opening in said vehicle for loading and unloading cargo with respect to said compartment, said security trunk comprising:

opposed support members adapted to be secured to said sidewalls, respectively;

a generally horizontally extending, top panel member coupled to said support members and disposed between a forward end of said cargo compartment and said access opening;

at least one partition member extending between said top panel member and said cargo deck for dividing the cargo compartment into multiple compartment spaces and for at least partially supporting the panel member;

the at least one partition member being coupled to the top panel member on an underside portion thereof; and,

the at least one partition member and the top panel member including means forming a slidable connection between the at least one partition member and the top panel member along the underside portion of the top panel member.

5,598,963

BODY MOUNTED CAMERA SUPPORT ASSEMBLY

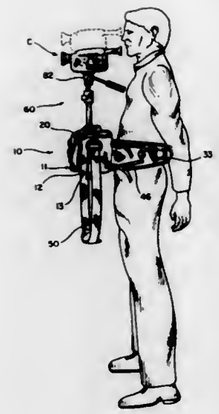
Brian Buswell, Rte. 1, P.O. Box 2440, Show Low, Ariz. 85901

Filed Jun. 6, 1995, Ser. No. 466,618
Int. Cl.[6] A45F *3/00*
U.S. Cl. 224—664 **11 Claims**

1. An apparatus for supporting a camera in a stable position from an individual's torso, comprising:

a storage case having an upper surface, opposed sides and front and rear surfaces, a belt secured to said storage case for attaching said storage case to the individual's torso, and a track attached to said upper surface, said track including opposed flanges defining an open end; and

a unipod stand including a leg having an upper end and a lower end, a post telescopically mounted within said leg, said post having an upper end, camera engaging means mounted to said upper end of said post, a base mounted to said lower end of said leg, said base including opposed flat portions slidingly insertable through said open end such that said opposed flat portions underlie said opposed flanges and said shoulder abuts said open end to mount said stand to said storage case.

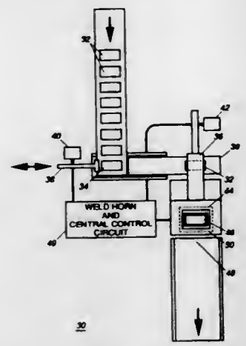


5,598,964

APPARATUS FOR ULTRASONIC WELDING OF BATTERY ASSEMBLIES

Kiron Gore, Libertyville, and Sang Oh, Schaumburg, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 29, 1995, Ser. No. 536,558
Int. Cl.[6] B23K *20/10*
U.S. Cl. 228—1.1 **11 Claims**



1. An apparatus for automated ultrasonic welding of a plurality of battery assemblies, wherein each said battery assembly has a battery cover disposed atop a battery housing, said apparatus comprising:

a moveable ultrasonic welding horn;

a nest, disposed beneath said welding horn, for holding a first battery assembly, said nest having a tiered cavity having first and second portions, said first portion sized and shaped to rigidly support said first battery assembly;

a moveable platform for moving a battery assembly vertically between a raised position and said first portion of said tiered cavity, said platform residing in said second portion of said tiered cavity; and

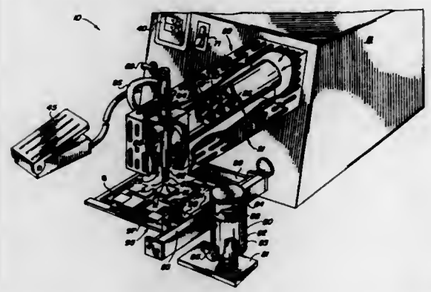
a shuttle for moving an unwelded battery assembly horizontally from a first stage to said platform when said platform is in a raised position, and for simultaneously moving a welded battery assembly from said moveable platform to a second stage.

5,598,965

INTEGRATED CIRCUIT, ELECTRONIC COMPONENT CHIP REMOVAL AND REPLACEMENT SYSTEM

William E. Scheu, 97671 Overseas Hwy., Key Largo, Fla. 33037

Filed Nov. 3, 1994, Ser. No. 333,753
Int. Cl.[6] B23K *3/04*
U.S. Cl. 228—6.2 **25 Claims**



1. To remove and replace an electronic chip from a circuit board, an electronic chip removal and replacement system comprising:

(a) a heater assembly, said heater assembly including:

(i) a heater unit structured and disposed to produce a quantity of heat,

(ii) airflow means structured and disposed to pass air over said heater unit so as to produce heated air, and

(iii) an outlet nozzle structured and disposed to direct said heated air out from said heater assembly;

(b) control means structured and disposed to regulate and control hot airflow exiting said outlet nozzle of said heater assembly, said control means including:

(i) a microprocessor structured to direct a timed and/or ramped increase and decrease of a temperature of said heater unit, said ramped increase and decrease corresponding a specific type of electronic chip being heated,

(ii) removal/replacement time and temperature detection means structured and disposed to identify and transmit for storage to said microprocessor, a temperature of said heater unit and an amount of time at which said heater unit is at that specific temperature until separation of a particular electronic chip from the circuit board, the temperature of said heater unit and the amount of time at which the heater unit is at that specific temperature until separation of the particular electronic chip from the circuit board defining a ramp heating profile corresponding the particular electronic chip being removed or replaced, said ramp heating profile corresponding the particular electronic chip being stored for future retrieval and correlation during replacement of the particular electronic chip and removal and replacement of said specific types of electronic chips which are comparable to the particular electronic chip,

(iii) remote microprocessor switching means structured and disposed to engage and disengage said microprocessor, said microprocessor when engaged directing said heater unit to produce said quantity of heat and when disengaged shutting down said heater unit such that it will not produce said quantity of heat; and

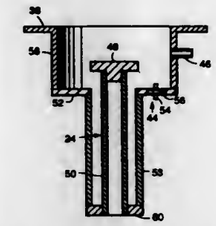
(c) power supply means structured and disposed to provide heat producing power to said heater assembly.

5,598,966

BRAZED LOWER VACUUM HOUSING FOR A DEWAR

Timothy S. Romano; Tom K. Evans; Gary B. Hughes, all of Goleta, and Karl H. Neumann, Santa Barbara, all of Calif., assignors to Santa Barbara Research Center, Goleta, Calif.

Filed Jul. 19, 1994, Ser. No. 277,458
Int. Cl.[6] B23K *1/19*
U.S. Cl. 228—124.6 **15 Claims**



1. A method for preparing a lower vacuum housing of a sensor dewar having an upper vacuum housing and the lower vacuum housing, comprising the steps of:

furnishing the components of the lower vacuum housing, at least some of the components being ceramic and at least some of the components being metallic;

assembling the components together so that the assembly includes at least one ceramic-to-metal interface and at least one metal-to-metal interface; and

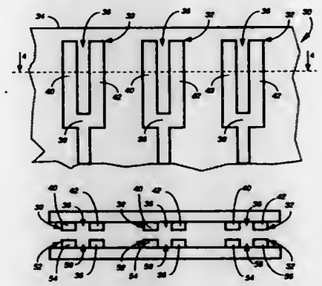
joining the assembled components by a single brazing operation.

5,598,967

METHOD AND STRUCTURE FOR ATTACHING A CIRCUIT MODULE TO A CIRCUIT BOARD

Jonathon G. Greenwood, Boynton Beach; Douglas W. Hendricks, Boca Raton, and Frank Juskey, Coral Springs, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 4, 1995, Ser. No. 418,132
Int. Cl.[6] B23K *1/00;31/02*
U.S. Cl. 228—174 **10 Claims**



1. A method of interconnecting a circuit module board to a mother board, comprising:

forming a solder pad for each lead on each of said circuit module board and on said mother board in a mirror image to each other;

forming each solder pad adjacent at least one edge of one of said boards and forming a venting channel in each solder pad opening toward said edge on the circuit module board and on the mother board;

placing said boards together and reflowing said solder pads on each of said boards to reflow and interconnect said boards, whereby solder medium from said solder pads is allowed to vent through said venting channels during reflow to avoid

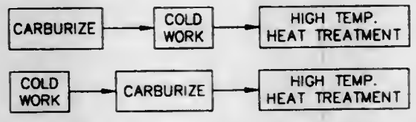
forming defects in interconnections of mating solder pads of the circuit module board and the solder pads of the mother board.

5,598,968

METHOD FOR PREVENTING RECRYSTALLIZATION AFTER COLD WORKING A SUPERALLOY ARTICLE

Jon C. Schaeffer, Milford; Andi K. Bartz, Middletown, and Paul J. Fink, Maineville, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Nov. 21, 1995, Ser. No. 560,780
Int. Cl.[6] B23K *1/20*; C23C *8/34*
U.S. Cl. 228—262.31 20 Claims



1. A method for processing a superalloy article, the method comprising the steps of:

providing a superalloy article having a surface;

introducing cold work into the superalloy article characterized by a cold work depth extending into the surface;

forming recrystallization-preventing precipitates in the surface, the precipitates being formed to a depth of at least the cold work depth; and

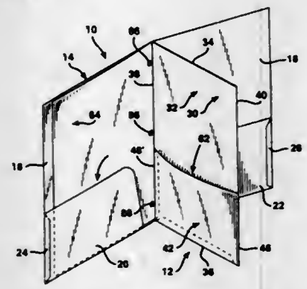
heating the superalloy article such that the precipitates prevent recrystallization of the superalloy article at the surface.

5,598,969

FOLDER INSERT

Bon S. Ong, P.O. Box 4247, Torrance, Calif. 90510

Filed Apr. 11, 1995, Ser. No. 419,900
Int. Cl.[6] B65D *27/08*
U.S. Cl. 229—67.1 4 Claims



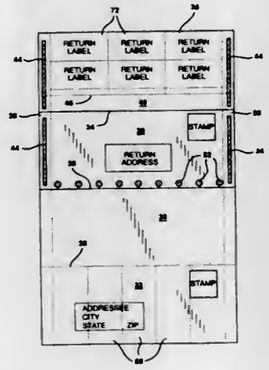
1. In a folder including a folio folded to form front and back covers wherein said folio is formed with at least one folio pocket on the inside of at least one of said front and back covers, the improvement comprising a folder insert formed of a single sheet of flat material folded to delineate at least one rectangular support panel having opposing flat surfaces and bounded by mutually parallel top and bottom edges and mutually parallel lateral edges aligned perpendicular to said top and bottom edges, and further folded to delineate at least one pair of pocket panels extending across both said opposing flat surfaces and held thereto at said bottom edge and along at least one of said lateral edges of said at least one support panel, wherein said at least one support panel is interposed between said pocket panels in said at least one pair of pocket panels, which together with said at least one support panel form separate pockets with both said flat surfaces of said at least one support panel, and wherein said single sheet of flat material also forms a folio attachment flap as an extension from one of said lateral edges of said support panel, and said folio attachment flap is formed as an expansive lateral extension from said support panel and is received within said folio pocket.

5,598,970

BUSINESS FORM OR MAILER INTERMEDIATE

Oleh B. Mudry, Spring Valley; Lawrence J. Schubert, Kettering, and Hugh B. Skees, Dayton, all of Ohio, assignors to The Standard Register Company, Dayton, Ohio

Continuation of Ser. No. 388,303, Feb. 14, 1995, abandoned.
This application May 23, 1996, Ser. No. 652,173
Int. Cl.[6] B65D *27/04*
U.S. Cl. 229—305 12 Claims



1. A mailer or business form intermediate adapted to be folded and mailed comprising:

a substrate sheet having first and second surfaces, first and second opposite parallel longitudinal edges, and first and second opposite end edges;

first, second and third transverse fold lines formed in said substrate perpendicular to said parallel longitudinal edges, dividing said substrate into first, second, third, and fourth panels, said first fold line separating said first and second panels, said second fold line separating said second and third panels, said third fold line separating said third and fourth panels, said second, third and at least one of said first and fourth panels having substantially the same longitudinal dimensions, said second and third panels having an absence of transverse lines of weakness adjacent to said second fold line;

a first adhesive pattern provided on said second surface of at least one of said second and third panels adjacent said longitudinal edges, a second adhesive pattern provided on said second surface of at least one of said first and fourth panels adjacent said longitudinal edges, a third adhesive pattern on said first surface of at least one of said first, second, third and fourth panels so that when said substrate is folded first about said second fold line then about said first and third fold lines said second surfaces of said second and third panels lie in contact forming a reply envelope, and said second surfaces of said first and fourth panels lie in contact;

a transverse line of weakness adjacent to and extending parallel to said first or third fold lines thereby defining a return envelope closure flap; and

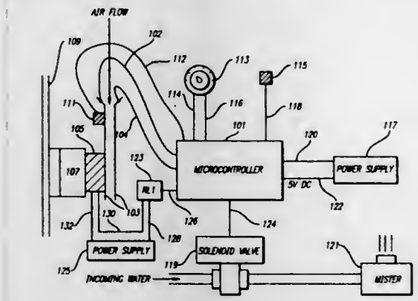
a fourth adhesive pattern disposed on said closure flap.

5,598,971

HUMIDITY CONTROL SYSTEM

Dale E. Winther, La Crescenta, and Robert H. Killen, Pasadena, both of Calif., assignors to Bevles Company, Inc., Chino, Calif.

Filed Aug. 17, 1995, Ser. No. 516,097
Int. Cl.[6] B01F *3/02*; G05D *21/00*
U.S. Cl. 236—44 A 21 Claims



1. Apparatus for measuring humidity in a cabinet, said apparatus comprising:

a capacitor having two spaced electrically conductive plates;

means to cool a selected plate of one of said two plates;

means to measure a change in a capacitance of said capacitor in response to cooling said selected plate;

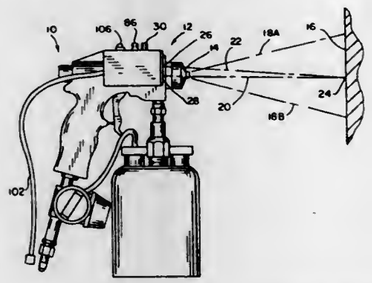
means to convert said change in said capacitance to a humidity value.

5,598,972

OPTICAL SPRAY PAINT OPTIMIZATION SYSTEM AND METHOD

Richard J. Klein, II; Douglas L. Sevey, both of Waterloo; Alireza Badakhshan, and Ricky J. Bauer, both of Cedar Falls, all of Iowa, assignors to University of Northern Iowa Foundation, Cedar Falls, Iowa

Filed Jul. 19, 1995, Ser. No. 504,370
Int. Cl.[6] G01C *3/00*; *5/00*
U.S. Cl. 239—1 12 Claims



1. In a spray painting system having a nozzle from which paint is sprayed onto a surface, an optical spray paint optimization system comprising:

a laser that generates an emitted beam;

a beam splitter that splits the emitted beam into a reference beam and a gauge beam; and

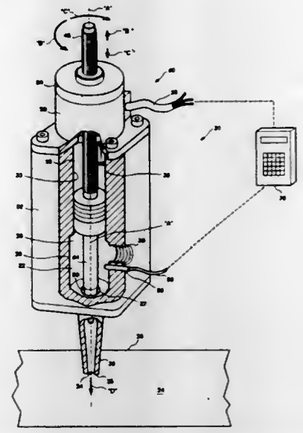
an adjustable mirror that reflects the gauge beam so that the gauge beam and the reference beam converge at a convergence point positioned at a selected distance from the nozzle of the spray painting system.

5,598,973

FLUID FLOW CONTROL DEVICE

Colin K. Weston, 1204 Dreamcrest Rd., Mississauga, Ontario, Canada

Filed Oct. 31, 1994, Ser. No. 331,960
Int. Cl.[6] F16K *31/44*; B05B *12/10*
U.S. Cl. 239—75 6 Claims



1. In an automatic continuous flow liquid dispensing device for dispensing liquid onto a receiving surface of an article, said dispensing device having an input for accepting liquid into a main chamber defined by an external housing and a dispensing output opening in a nozzle in liquid communication with said main chamber, an improved flow control mechanism comprising:

valve means operatively mounted within said external housing for movement between a full flow position where said valve means is retained in spaced relation with respect to said dispensing output opening so as to permit a full flow of liquid from said main chamber through said dispensing output opening, and any one of a plurality of reduced flow positions where said valve means is retained in a reduced spaced relation with respect to said dispensing output opening so as to permit only a reduced flow of liquid from said main chamber through said dispensing output opening;

electrically powered drive means operatively connected to said valve means for positioning said valve means to a selected one of said full flow position and said plurality of reduced flow positions;

control means operatively connected to said drive means for selectively controlling the movement of said valve means between said full flow position and said plurality of reduced flow positions;

a threaded elongate shaft having a front end, a back end, and a first centrally disposed longitudinal axis, said valve means being operatively attached to said threaded elongate shaft at said front end thereof, and said threaded elongate shaft being retained in threadable engagement by a co-operating threaded receiving member mounted on said external housing, for rotation in opposed first and second rotational directions by said electrically powered drive means; wherein rotation of said threaded elongate shaft in said first and second rotational directions causes corresponding axially directed movement of said threaded elongate shaft between a selected one of said full flow position and said plurality of reduced flow positions of said valve means, and another selected one of said full flow position and said plurality of reduced flow positions of said valve means; and

temperature sensor means mounted in said external housing so as to sense the temperature of said liquid in said liquid dispensing device, said temperature sensor means being elec-

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trically connected to said control means so as to provide feedback signals to said control means;

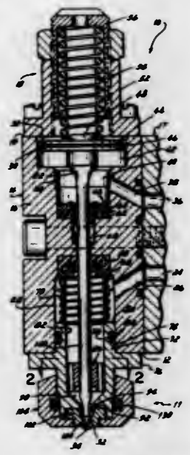
whereby said control means is adapted to provide control signals to said drive means, for controlling said drive means to be positioned at any one of said selected flow positions of said valve means.

5,598,974

REDUCED CAVITY MODULE WITH INTERCHANGEABLE SEAT

William A. Lewis, Lilburn, and Edward C. Taylor, Cumming, both of Ga., assignors to Nordson Corporation, Westlake, Ohio

Filed Jan. 13, 1995, Ser. No. 372,607
Int. Cl.[6] B05B *1/02*
U.S. Cl. 239—135 **25 Claims**



1. An adhesive dispensing valve adapted to be mounted on a valve operating module having an adhesive passageway providing a fluid path between the valve and a supply of adhesive, the adhesive dispensing valve controlling the flow of adhesive through the valve in response to operative states of the operating valve module, the adhesive dispensing valve comprising:

a body having

a first end adapted to be connected to the valve operating module,

an opposing second end,

an adhesive passage extending through the body between the first and the second ends, and

a cavity extending from the second end into the body; and

a valve stem extending through the adhesive passage in the body and having a first end adapted to be connected to the valve operating module, the valve stem having a conically shaped second end;

a plate disposed within the cavity of the body, the plate having

a conically shaped central passage for receiving and mating with the conically shaped second end of the valve stem,

a periphery smaller than a periphery of the cavity thereby permitting the nozzle plate to slidably move within the cavity in a direction generally perpendicular to a longitudinal axis of the valve stem, and

a mounting flange; and

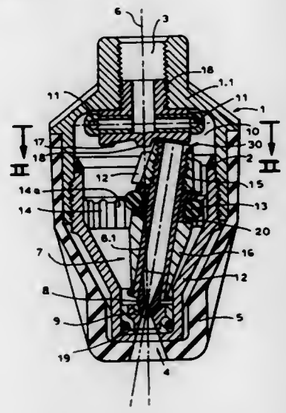
a cap engaging the mounting flange of the plate and releasably attached to the body, whereby initially moving the cap into engagement with the mounting flange so that the plate is loosely disposed within the cavity of the body moves the conically shaped second end of the valve stem into the conically shaped central passage of the plate, thereby bringing the plate into a concentric relationship with respect to the valve stem, and whereby further moving the cap into engagement with the mounting flange tightly secures the plate in the cavity of the body in the concentric relationship with the valve stem.

5,598,975

ROTOR NOZZLE, ESPECIALLY FOR A HIGH PRESSURE CLEANING APPARATUS

Anton Jäger, Krautgartenweg 12, D-89250 Senden, Germany

Filed Sep. 27, 1994, Ser. No. 313,469
Claims priority, application Germany, Sep. 29, 1993, 43 33 154.8
Int. Cl.[6] B05B *3/04*
U.S. Cl. 239—237 **17 Claims**



1. A rotor nozzle assembly for a high-pressure cleaning apparatus, comprising:

a nozzle housing having a longitudinal axis, a central inlet formed at one end of said nozzle housing, and an outlet at an opposite end of said nozzle housing for discharging a jet of a cleaning liquid;

an elongated rotor in said nozzle housing having a throughgoing passage receiving said cleaning liquid at an end proximal to said inlet and discharging said cleaning liquid at an end proximal to said outlet and formed with an orifice producing said jet;

a pocket bearing receiving said end of said rotor proximal to said outlet and enabling orbiting of said rotor about said longitudinal axis;

means for rotating said rotor about a rotor axis inclined to said longitudinal axis;

a radially outwardly projecting drive ring member on said rotor, said drive ring member including

bearing ring mounted rotatably on said rotor and formed with a groove open radially outwardly, and

a drive ring received in said groove; and

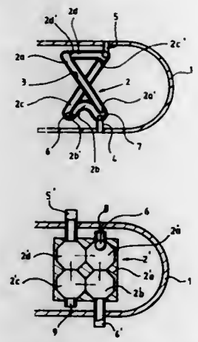
means forming an annular drive-region member on said housing frictionally engaged by said drive ring member to orbit said rotor about said longitudinal axis, at least one of said drive-region and drive ring members being elastically deformable.

5,598,976

SPRAY ARM PULSATION DEVICE OF A DISH WASHER

Jae W. Jang, and See M. Jeon, both of Seoul, Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 2, 1993, Ser. No. 160,127
Claims priority, application Rep. of Korea, Dec. 4, 1992, 1992-23321; Dec. 30, 1992, 1992-26373
Int. Cl.[6] B05B *3/06*
U.S. Cl. 239—246 **5 Claims**



1. A spray arm pulsation device of a dish washer comprising,

first and second rotation nozzles oppositely formed in each end of the spray arm;

a ball moved by washing water fed into the spray arm and the weight of said ball itself, said ball allowing for closing either one of said first and said second nozzles; and

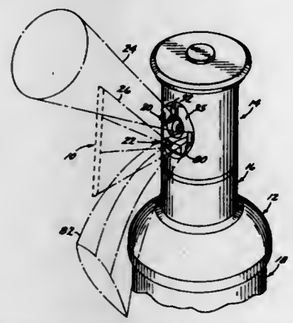
a guide member for guiding said ball to move only in one direction.

5,598,977

ROTARY IRRIGATION SPRINKLER NOZZLE WITH IMPROVED DISTRIBUTION

Charles D. Lemme, Tucson, Ariz., assignor to Anthony Manufacturing Corporation, Tucson, Ariz.

Filed Feb. 7, 1995, Ser. No. 384,918
Int. Cl.[6] B05B *3/00*
U.S. Cl. 239—246 **22 Claims**



1. An irrigation sprinkler nozzle adapted to be mounted to a rotary sprinkler unit for applying water admitted to the sprinkler unit from a pressurized source over an arcuate area extending from the sprinkler unit outwardly a predetermined distance, said irrigation sprinkler nozzle comprising:

a nozzle body adapted to be mounted to said rotary sprinkler unit;

an elongated water flow passageway extending through said nozzle body, one end of said flow passageway being adapted to receive water from said pressurized source, and the other end of said passageway terminating in a range nozzle outlet for projecting a columnated water stream upwardly and outwardly away from said sprinkler unit, said columnated stream being composed of relatively high energy water for irrigating an area extending from a first location away from said sprinkler unit outwardly thereof to said predetermined distance;

a spreader nozzle outlet formed in said nozzle body vertically below said range nozzle outlet, said spreader nozzle outlet communicating with said elongated water flow passageway through a pressure reducing chamber formed in said nozzle body below said passageway to produce a spray composed of relatively lower energy water for irrigating an area extending from a second location away from said sprinkler unit outwardly thereof to approximately said first location, said pressure reducing chamber including an inlet passage communicating with said water flow passageway rearwardly of said range nozzle outlet, said inlet passage being formed to extend downwardly from said passageway into said chamber to cause water flowing therethrough from said flow passageway into said chamber to undergo a directional change of approximately one hundred eighty degrees; and

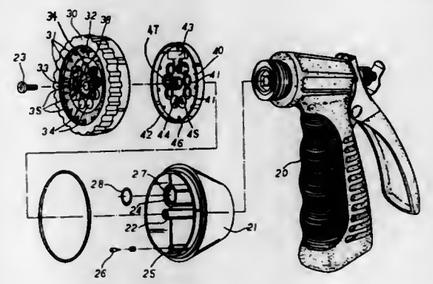
a tertiary nozzle outlet formed in said nozzle body, said tertiary nozzle outlet communicating with said pressure reducing chamber through a flow port dimensioned to substantially reduce the pressure of water flowing from said chamber to said tertiary nozzle outlet to produce a spray of low energy which falls-out over an area extending form immediately adjacent said sprinkler unit outwardly to approximately said second location.

5,598,978

GARDEN SPRINKLER HEAD WITH EXTRA DISCHARGING MEANS

King-Yuan Wang, Changhua Hsien, Taiwan, assignor to Yuan Mei Corp., Changhua Hsien, Taiwan

Filed Jul. 11, 1995, Ser. No. 500,682
Int. Cl.[6] B05B *1/12;1/16*
U.S. Cl. 239—394 **2 Claims**



1. A sprinkler head rotatably mounted to a nozzle head comprising:

a top discharge cover;

a water distributor plate integrally secured to said top discharge cover;

said top discharge cover having a plurality of openings for discharging water and a number of closed round spots which are arranged on a circular periphery;

said water distributor plate having a plurality of round outlets disposed in alignment with said openings and closed spots respectively;

each said opening in alignment with said round outlet respectively having a tubular extension;

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said tubular extensions being disposed in sealing abutment against one another on a circular periphery with two sections thereof left opened;

a first wall section disposed between two spaced tubular extensions at one of said opened sections with a closed round spot located in association therewith at the other side of said top discharge cover;

a second wall section disposed between another two spaced tubular extensions with two closed round spots located in association therewith at the other side of said top discharge cover so that a closed area is formed by a boundary including the first and the second wall sections and the sealedly disposed tubular extensions;

a first ring portion having a plurality of fine meshes being disposed near the center of-said top discharge cover;

a second ring portion having a plurality of fine meshes disposed thereon being concentrically disposed with respect to said first ring portion;

said water distributor plate having a first outlet port and a second outlet port smaller than the former being disposed in correspondence to two consecutive closed round spots of said top discharge cover;

said first outlet port of said water distributor plate being disposed outside of said closed area and the second outlet port thereof being disposed inside of said closed area;

said first outlet port and said second outlet port being able to be put in alignment with said water outlet of said nozzle head respectively or simultaneously;

a closed T-shaped member having a cavity on the rear side of said water distributor plate being disposed in alignment with said single closed round spot of said top discharge cover;

said water distributor plate having a peripheral skirt portion and being secured to said top discharge cover with the skirt portion positioned along the outer periphery of said second ring portion;

a full-discharge opening having a plurality of radially spaced water guide pieces along the periphery thereof being disposed along the edge of said top discharge cover;

a plurality of retaining holes being peripherally disposed next to said skirt portion;

said nozzle head having a water outlet and a locking rod and a receiving hole in which a spring biased retaining means is disposed;

said retaining means being selectively engaged with one of said retaining holes when said sprinkler head is rotated in operation;

whereby water can be jetted from said second ring portion as said first outlet port of said water distributor plate is in alignment to said water outlet of said nozzle head; or water can be jetted from said first ring portion when said second outlet port is in alignment with said water outlet of said nozzle head; or water can be jetted simultaneously from both said first and second ring portions as both said outlet ports are brought in alignment with said water outlet.

5,598,979

CLOSED LOOP GRADIENT FORCE COMMINUTING AND DEHYDRATING SYSTEM

Frank F. Rowley, Jr., Valley Center, Kans., assignor to Vortec, Inc., Valley Center, Kans.

Filed Apr. 20, 1995, Ser. No. 425,830

Int. Cl.[6] B02C *19/06*

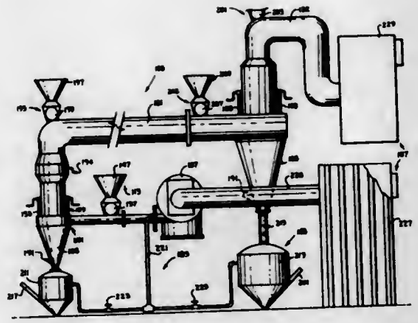
U.S. Cl. 241—5 **16 Claims**

16. A method for comminuting an dehydrating material, comprising the steps of:

(a) providing an apparatus having:

(1) a cylindrical chamber having a diameter and a generally vertically oriented axis;

(2) a body having an inverted, conically shaped cavity presenting a generally vertically oriented axis and having an open truncated lower end; said body being coupled with said chamber in suspended relationship; said cavity having



a base coupled with said chamber, said base presenting a diameter substantially equal to the diameter of said chamber;

(3) first material introducing means for introducing material to be comminuted and dehydrated into said apparatus;

(4) second material introducing means for introducing material to be comminuted and dehydrated into said apparatus, including:

(A) first controlling means for controlling the rate of comminuting the material, said first controlling means including a cylindrically shaped sleeve axially extending through said chamber and partially through said cavity; and

(B) second controlling means comprising dampening means located at least partially within said sleeve;

(5) third material introduction means comprising a material injection port coupled with the lowermost portion of said conically shaped cavity;

(6) containment means coupled with said gravitational discharge means for containing the comminuted material;

(7) air flow means coupled with said cyclone apparatus for causing air to flow through said apparatus;

(8) pressure equalization means intercoupling said containment means and said air flow means;

(b) causing air from said air flow means to cyclonically flow through said chamber and said cavity;

(c) introducing material into said apparatus and comminuting and dehydrating said material;

(d) adjusting said first and second controlling means to select the desired rate of comminuting the material and to select the desired coarseness of the comminuted material, respectively; and

(e) gravitationally discharging comminuted material from said apparatus into said containment means.

5,598,980

PROCESS FOR THE SEPARATION OF CARPET MATERIALS

Wolfgang Dilly-Louis, Friedberg; Joachim Seelig, Bieberge-muend, and Reinhard Wolf, Rodenbach, all of Germany, assignors to Zimmer Aktiengesellschaft, Frankfurt, Germany

Filed Dec. 15, 1994, Ser. No. 356,688

Claims priority, application Germany, May 10, 1994, 44 16 466.1

Int. Cl.[6] B02C *19/12*

U.S. Cl. 241—20 **15 Claims**

1. A process for separating preshredded carpet materials containing first, second and third carpet components of different densities comprising

a) finely comminuting said preshredded carpet materials in a first aqueous phase to form a first suspension,

b) adding a first aqueous salt solution to said aqueous phase of said suspension to adjust the density of the resulting second aqueous phase to a level between the density of said first component and the densities of said second and third components to form a second suspension,

c) feeding said second suspension into a double-cone, full-jacketed screw centrifuge to separate a fraction containing said second and third components from said first component and from said second aqueous phase,

d) suspending said fraction in a third aqueous phase to form a third suspension,

e) adding a second aqueous salt solution to said third aqueous phase of said third suspension to adjust the density of the resulting fourth aqueous phase to a level between the densities of said second and third components to form a fourth suspension,

f) feeding said fourth suspension into a double-cone, full-jacketed screw centrifuge to separate said second component from said third component and from said fourth aqueous phase,

g) recycling separately said first, second and third components, and

h) recycling said separated aqbeous phases within said process.

5,598,981

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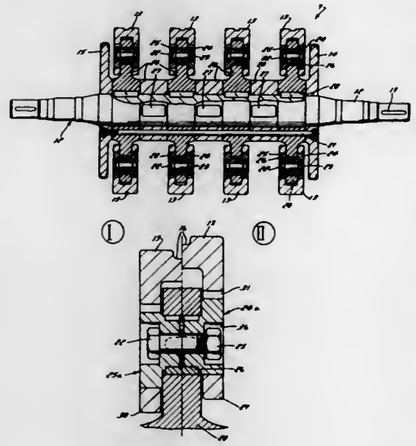
Uwe Hellmich, Hamburg, Germany, assignor to Sivyer Steel Corporation, Bettendorf, Iowa

Filed Sep. 2, 1994, Ser. No. 300,709

Claims priority, application Germany, Sep. 9, 1993, 43 30 962.3

Int. Cl.[6] B02C *13/04;13/28*

U.S. Cl. 241—189.1 **9 Claims**



8. A hammermill comprising:

a housing,

a shaft mounted for rotary motion in said housing,

a number of radially directed rotor arms mounted on said shaft;

a hammer mounted on the outer end of each of said arms and a rod mounted on the end of each arm for supporting said hammers for pivotal motion on the end of said arms, each of said hammers including an opening on each side and a cylindrical member eccentrically mounted on each end of said supporting rod for matingly engaging said openings, wherein the radial position of the hammer can be adjusted by rotating the cylindrical member to compensate for wear on the face of the hammer.

5,598,982

CANTILEVERED SWING JAW CRUSHING APPARATUS

Edmund W. Betts, Taffs Well; Wayne Elliott, Treorchy, and Teddy B. James, Pontypridd, all of United Kingdom, assignors to Brown Lenox & Co. Limited, United Kingdom

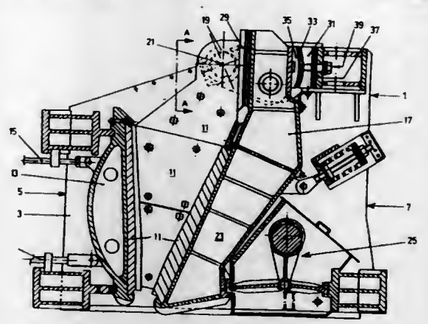
PCT No. PCT/GB94/00147, § 371 Date Sep. 11, 1995, § 102(e) Date Sep. 11, 1995, PCT Pub. No. WO94/17912, PCT Pub. Date Aug. 18, 1994

PCT Filed Jan. 26, 1994, Ser. No. 500,930

Claims priority, application United Kingdom, Feb. 1, 1993, 9301955

Int. Cl.[6] B02C *1/04*

U.S. Cl. 241—264 **12 Claims**



1. A cantilevered swing jaw crushing apparatus (**1**) comprising a main frame (**3**), two jaws (**13,17**) mounted on the main frame (**3**) for crushing material passing through the apparatus (**1**) and means (**25**) for driving the jaws in a crushing action, wherein the cantilevered swing jaw (**17**) comprises an upper portion (**19**) pivotally attached to the main frame (**3**) and a lower portion (**23**) for cooperating with the second jaw (**13**) of the apparatus, the upper and lower portions (**19,23**) defining an elbow (**35**), characterised in that the cantilevered swing jaw (**17**) is mounted on the main frame (**3**) by means of two short stub axles (**27**) extending inwardly from the main frame (**3**), and in that a bearing support (**31,41**) is mounted on the main frame (**3**) and bears against the rear of the elbow (**35**) of the cantilevered swing jaw (**17**) to support the swing jaw (**17**) throughout the motion of the jaw such that at least some forces exerted on the swing jaw (**17**) are transferred to the main frame (**3**) rather than to the stub axles (**27**) mounting the swing jaw (**17**).

5,598,983

BAITCASTING REEL HAVING A CLUTCH MECHANISM FOR TRANSMITTING A DRIVE FROM A HANDLE TO A SPOOL

Jun Sato, Sakai, Japan, assignor to Shimano Inc., Osaka, Japan

Filed May 24, 1994, Ser. No. 248,515

Claims priority, application Japan, May 25, 1993, 5-122261; Aug. 3, 1993, 5-192093; Aug. 3, 1993, 5-192094

Int. Cl.[6] A01K *89/015*

U.S. Cl. 242—261 **11 Claims**

1. A baitcasting reel comprising:

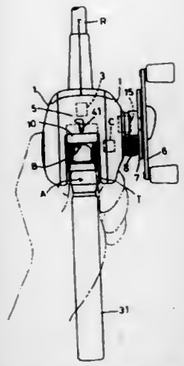
a spool;

right and left frames rotatably supporting said spool therebetween; and

a clutch mechanism for selectively allowing, when disengaged, free rotation of said spool and transmitting, when engaged, a drive force from a handle to the spool, said clutch mechanism being disengaged and engaged respectively by a disengaging portion and an engaging portion disposed distantly from each other;

wherein said engaging portion is disposed above said spool and said disengaging portion is disposed rearwardly of said spool

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with a distance between said engaging portion and said disengaging portion allowing insertion of a thumb or finger therebetween, both of said engaging and disengaging portions being disposed between said right and left frames at an outer periphery of said spool to face said spool, said engaging and disengaging portions and said clutch mechanism being interconnected so that said clutch mechanism is disengaged by a downward operation of said disengaging portion while said clutch mechanism is engaged by a forward operation of said engaging portion; and

wherein said engaging portion is disposed between said spool and a thumb rest extending between upper faces of said right and left frames, said engaging portion projecting rearwardly from a rear end of said thumb rest when said clutch mechanism is disengaged and being covered by said thumb rest when said clutch is engaged.

5,598,984

REEL TABLE MOVING DEVICE FOR VIDEO CASSETTE TAPE RECORDER

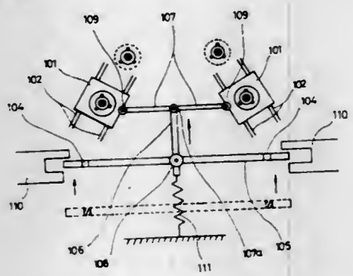
Kyeong-Won Lee, Kyungki-Do, and Dong-Kyu Kim, Seoul, both of Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Jan. 5, 1995, Ser. No. 369,131

Claims priority, application Rep. of Korea, Jan. 7, 1994, 215/1994

Int. Cl.[6] G11B *15/675*

U.S. Cl. 242—338.4 **12 Claims**



1. A reel table moving device for a video cassette tape recorder, comprising:

moving means for moving a pair of reel tables from a first position accommodating a small sized tape cassette to a second position accommodating a large sized tape cassette upon insertion of the large sized tape cassette into an inlet port of the video cassette tape recorder to move the moving means in a rearward direction with respect to the inlet to thereby force the reel tables to automatically move for accommodating different size tape cassettes; and

means for automatically returning the pair of reel tables moved by the moving means to the first position upon ejection of the tape cassette and disengagement of the tape cassette from the moving means.

5,598,985

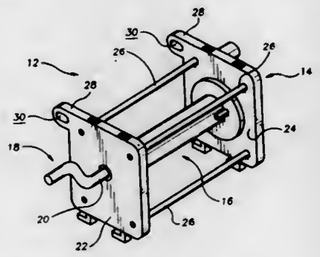
CHRISTMAS LIGHT REEL

Sandy C. Winesett, 6617 Pleasant Plains Way, Las Vegas, Nev. 89108

Filed May 23, 1995, Ser. No. 445,529

Int. Cl.[6] B65H *75/28;75/38*

U.S. Cl. 242—395 **16 Claims**



1. A Christmas light reel comprising:

a spool housing,

a spool disposed within said spool housing; and

a crank having a shaft passing through said spool and said spool housing in a manner such that said spool and said shaft rotate together with respect to said spool housing;

said spool including a spool cylinder, constructed from a resilient material, having an exterior surface coated with a tacky adhesive, and a central pathway formed longitudinally therethrough that is sized to receive said shaft of said crank.

5,598,986

COMPONENT SUPPLY APPARATUS

Takashi Ando; Shuuichi Kubota; Kazuhiko Narikiyo, all of Kofu, and Takao Naito, Yamanashi-ken, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Filed Jan. 24, 1995, Ser. No. 377,150

Claims priority, application Japan, Jan. 24, 1994, 6-005960

Int. Cl.[6] B65H *75/02*

U.S. Cl. 242—597.6 **15 Claims**

1. A component supply apparatus for sequentially supplying components accommodated in a tape having a component covering tape and a component accommodating tape, said component supply apparatus comprising:

a reel for receiving the component covering tape after separating from the component accommodating tape,

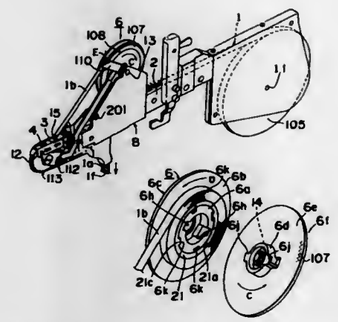
said reel including a drive shaft having first and second ends,

a first guide flange fixedly connected to said drive shaft at said first end of said drive shaft,

a winding barrel removably mounted on said drive shaft, and

a second guide flange connected to said winding barrel and removably positioned at said second end of said drive shaft; and

an inelastic auxiliary ring for receiving the covering tape on a peripheral surface thereof, said inelastic auxiliary ring being removably mounted on an outer peripheral surface of said winding barrel and including a rotation preventing portion, wherein said inelastic auxiliary ring is removable from said winding barrel to remove a covering tape wound around said peripheral surface of said inelastic auxiliary ring.



5,598,987

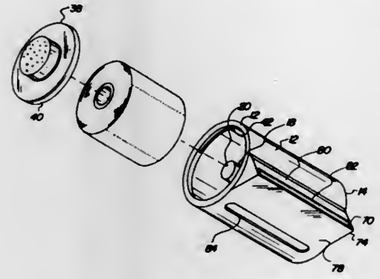
DISPENSER FOR ROLLED PAPER PRODUCTS

Walter J. Wachowicz, 708 Amos St., Rocky Mount, N.C. 27803

Filed Sep. 20, 1995, Ser. No. 530,988

Int. Cl.[6] B65H *16/04;18/04*

U.S. Cl. 242—597.8 **2 Claims**



2. A dispenser for rolled paper products comprising:

a primary cylinder of a rigid material formed in a cylindrical configuration and positionable about a horizontal axis, the cylinder having a closed first end and an opened second end with screw threads, the cylinder also having a cylindrical spindle with a free end located adjacent the opened end of the cylinder and having a secured end mounted to the central portion of the closed end of the cylinder, the spindle adapted to receive a roll of paper to be dispensed;

an intermediate end cap formed of a short cylindrical configuration with screw threads on a periphery thereof adapted to be removably received by the screw threads at the open end of the cylinder, a central aperture formed at the center of the intermediate cap and having threads; and

a hollow cylindrical container with screw threads secured to the intermediate cap at the central aperture with a threaded end cap to be mated to the hollow cylindrical container for maintaining potpourri therein to emit a fragrance, the threaded end cap having a plurality of apertures therethrough.

5,598,988

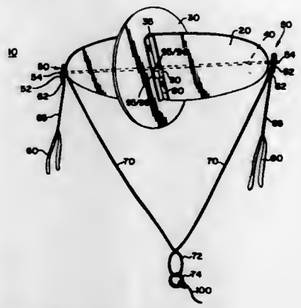
ROTARY FLYER

Thomas J. Bukur, 1455 Mississnewa Ct., Valparaiso, Ind. 46383

Filed Apr. 13, 1995, Ser. No. 421,746

Int. Cl.[6] B64C *31/06*

U.S. Cl. 244—153 A **30 Claims**



26. A rotary flying device comprising:

an airfoil having an axis of rotation means for rotation thereabout;

a bearing assembly means for enabling a streamer to be attached to the flying device;

a stabilizer disk mounted on said airfoil, said stabilizer disk forming an intersection with said airfoil and being pivotable about said intersection from a flying position substantially perpendicular to said airfoil to a portable position substantially parallel to said airfoil; and

at least one stabilizer element removably attached to at least one of said disk and said airfoil at said intersection to securely hold said disk in said flying position and to prevent said disk from pivoting during flight for added stability during flight, said at least one stabilizer element removable to allow said disk to pivot to said portable position while not in flight.

5,598,989

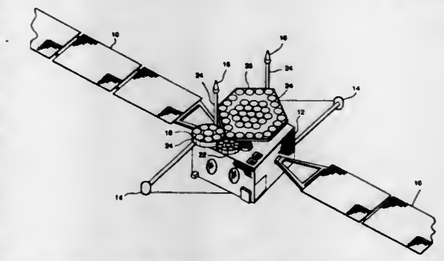
SPACECRAFT PROTECTIVE BLANKET

Barry S. Ross, Manhattan Beach; Robert L. Reynolds, Los Angeles; Glen A. Vanbebber, Torrance, and Daniel A. White, Manhattan Beach, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Oct. 29, 1991, Ser. No. 784,338

Int. Cl.[6] B64G *1/00*

U.S. Cl. 244—158 A **19 Claims**



1. A blanket for protecting a spacecraft form a space environment comprising a carbon loaded plastic sheet wherein the sheet has an external side for facing the space environment and an internal side for facing the spacecraft, and further comprising a second dielectric plastic sheet substantially coextensive with the first sheet adjacent to the internal side of the first sheet.

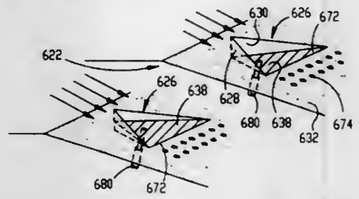
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5,598,990

SUPERSONIC VORTEX GENERATOR

Saeed Farokhi, and Ray R. Taghavi, both of Lawrence, Kans., assignors to University of Kansas Center for Research Inc., Lawrence, Kans.

Filed Dec. 15, 1994, Ser. No. 356,646
Int. Cl.[6] B64C 23/06
U.S. Cl. 244—199 30 Claims



1. A vortex generator for attenuating flow separation which occurs during supersonic flow of fluid in one direction over the surface of a component from the leading edge of the component toward the trailing edge portion thereof, said vortex generator comprising:

structure presenting a cavity in the component located below said surface thereof downstream of said leading edge and upstream of the point on the surface where flow separation would occur without said cavity,

said cavity being defined at least in part by elongated side wall means located in disposition with a major transverse axis thereof extending inwardly of the component from said surface and thereby presenting an elongated margin joining the side wall means to said surface of the component,

said side wall means further being positioned such that a longitudinal axis thereof and thereby said margin are at an angle with respect to the flow of the fluid in said one direction across said surface of the component; and

bottom wall means on the structure, connected to said side wall means, and forming the bottom of the cavity,

said angle being sufficient to cause fluid flowing across the surface of the component from the leading edge and over said margin to generate a spiral vortex trailing therefrom which attenuates said flow separation,

said cavity being of generally triangular configuration defined at least in part by two of said side wall means,

each of said side wall means having a margin which merges with the surface of the component,

both of said side wall means being connected to said bottom wall means and diverging from one another as the trailing edge portion of the component is approached to cause diverging spiral vortices to be generated by fluid flowing across the surface of the component from the leading edge and over respective margins of corresponding side wall means,

said triangular cavity having an apex portion and an opposed base portion with the apex portion thereof being in closest proximity to the leading edge of the component,

the bottom wall means being located to cause the cavity to be of greater depth adjacent the apex portion thereof than at the base portion of the cavity.

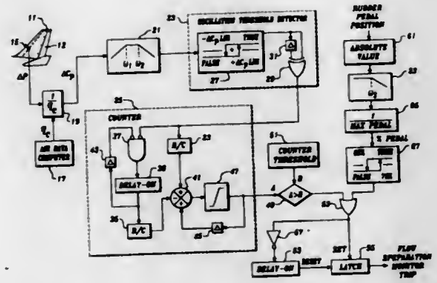
5,598,991

METHOD AND APPARATUS FOR DETECTING OSCILLATORY PHENOMENA INDICATIVE OF AIRFLOW SEPARATION

Arun A. Nadkarni, Kirkland, and William F. Bryant, Bellevue, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed May 12, 1995, Ser. No. 437,405
Int. Cl.[6] B64C 13/16
U.S. Cl. 244—203 30 Claims

1. A method of detecting oscillatory phenomena indicative of airfoil airflow separation or sensor common mode oscillatory failure and producing a trip command comprising:



detecting the differential pressure on opposite sides of an airfoil and producing related differential pressure data;

scaling said differential pressure data for current flight conditions to produce scaled differential pressure data;

bandpass filtering said scaled differential pressure data to eliminate perturbations outside of a frequency range of interest to produce bandpass filtered, scaled differential pressure data;

analyzing said bandpass filtered, scaled differential pressure data to locate excursions of said bandpass filtered, scaled differential pressure data that exceed a predetermined thresbold in both positive and negative directions and producing a pulse each time a threshold exceedance in one direction occurs after a threshold exceedance occurs in the opposite direction; and

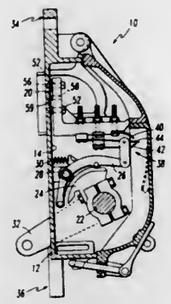
counting said pulses and producing a trip command if said pulse count exceeds a predetermined threshold.

5,598,992

RAILWAY SWITCH CIRCUIT CONTROLLER

James P. Chew, Westmoreland County, Pa., assignor to Union Switch & Signal Inc., Pittsburgh, Pa.

Filed Jul. 26, 1995, Ser. No. 507,549
Int. Cl.[6] B61L 5/00
U.S. Cl. 246—253 5 Claims



1. A railway switch circuit controllers, comprising:

a controller housing having a bottom surface and opposed side surfaces, wherein said side surfaces have respective openings provided therethrough, and wherein said bottom surface has a raised planar boss provided thereon, in which said raised boss is cast upon said bottom surface and is then machined so as to have a flat surface and a selected height;

a shaft rotatably disposed through said side surface openings, wherein said shaft has a plurality of cam segments disposed thereupon;

a plurality of followers that are each movably connected to said controller housing, wherein said plurality of followers are biased through a biasing means to a first position, and wherein selected followers are engageable with selected cam segments when said shaft is rotated a selected amount so as to urge said followers to a second position;

a contact spring assembly that has a set of first and second generally nonmovable electrical contacts and a set of movable contacts disposed therebetween, wherein each of said movable contacts are connected to a respective follower such that each of said movable contacts are moved into contact with a respective first nonmovable contact when said followers are biased into said first position and are each moveable into contact with a respective second nonmovable contact when said followers are urged into said second position;

a terminal board having said contact spring assembly secured thereto, said terminal board has a planar mounting portion that is matable and is securable to said raised boss of said controller housing bottom surface;

wherein said terminal board further has an elongated contact spring mounting portion that extends outward from said planar mounting portion;

wherein said contact spring mounting portion of said terminal board is planar;

wherein said contact spring mounting portion of said terminal board extends outward generally perpendicular from said planar mounting portion; and

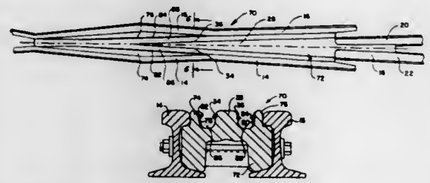
wherein said terminal board is generally L-shaped when viewed in cross section.

5,598,993

PSEUDO HEAVY POINT FROG ASSEMBLY

Stephen R. Kuhn, Richton Park, and Keith Young, Naperville, both of Ill., assignors to ABC Rail Products Corporation, Chicago, Ill.

Filed Feb. 21, 1995, Ser. No. 391,197
Int. Cl.[6] E01B 7/00
U.S. Cl. 246—468 2 Claims



1. In a railroad trackwork frog assembly, in combination:

a pair of wing rail components;

a center body component having integrally formed wing elements which each has a guard surface defining a guard line, a V-shaped integrally formed point element having a pair of gauge surfaces defining gauge lines, and a pair of integrally formed flangeway elements positioned respectively intermediate each said guard line and an adjacent one of said gauge lines;

a constant width of padding material applied to each of said wing element guard surfaces defining said guard lines to thereby increase the wheel contact surface area of said wing element and reduce the width of said flangeway elements a uniform distance to support said wheel on said wing element over a greater distance prior to transfer to said point surface,

fastener means securing said center body component wing elements to said pair of wing rail components; and

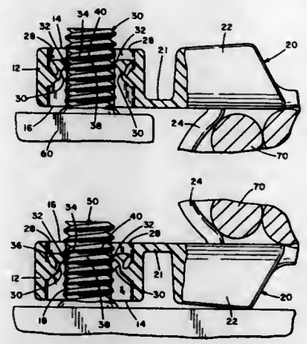
each said point element gauge line being oriented truly parallel to its respective adjacent wing element guard line and being uniformly separated from its respective adjacent wing element guard line by a uniform distance of approximately 1¾ inches.

5,598,994

STUD ENGAGING DEVICE

Stephen Olewinski, Crestwood, and James A. Brownlee, Park Forest, both of Ill., assignors to Panduit Corp., Tinley Park, Ill.

Filed Jun. 29, 1995, Ser. No. 496,777
Int. Cl.[6] F16L 3/00
U.S. Cl. 248—73 20 Claims



1. A stud engaging device for engaging a threaded post comprising:

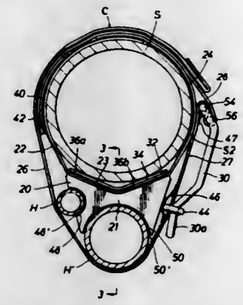
a housing forming a chamber including an axial bore having a top side and a bottom side; a plurality of fingers flexibly connected to an interior wall of the chamber, wherein at least one finger includes a pair of oppositely extending thread engaging tangs both dimensioned so as to substantially fit within and be engageable with a thread groove of the threaded post with either the top side or bottom side facing down and oriented towards the top and bottom sides respectively.

5,598,995

HIGH STRENGTH CLAMP ASSEMBLY WITH FLEXIBLE STRAPS AND METHOD OF USING SAME

Thomas L. Meuth, and Charles A. Biggert, both of Spring, Tex., assignors to Triad Metal Fabricators, Inc., Spring, Tex.

Filed Sep. 14, 1995, Ser. No. 528,318
Int. Cl.[6] F16L 3/08
U.S. Cl. 248—74.3 20 Claims



1. A clamp assembly for clamping an elongate member to a support member, the clamp assembly comprising:

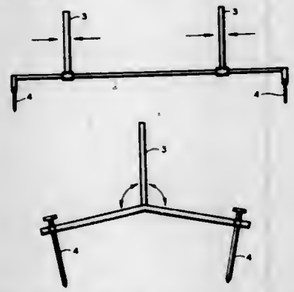
a receptacle adapted to at least partially receive the elongate member;

a pair of flexible support straps connected to said receptacle, said pair of flexible support straps capable of matingly engaging one another around the support member; and

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a pair of flexible clamping straps capable of matingly engaging one another around the elongate member and the support member.

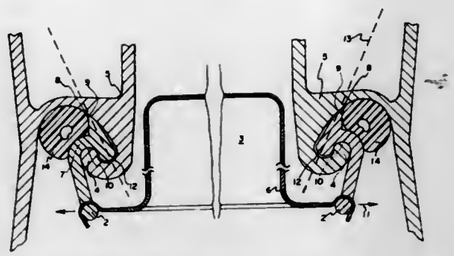
5,598,996
ADJUSTABLE TARGET STAND
Scott A. Rath, 2353 Mehaffey Bridge Rd. NE., North Liberty, Iowa 52317
Filed May 27, 1994, Ser. No. 249,369
Int. Cl.[6] F14J *1/10*
U.S. Cl. 248—163.1 **6 Claims**



1. A target support stand for supporting on a support surface life-size three dimensional archery targets of substantial mass in an upright plumb position on different terrain conditions, said stand comprising: a pair of laterally spaced apart legs adapted to be positioned generally parallel to the support surface, each of said legs having outer ends and a central portion extending upwardly to a level above the outer ends, a crossbar attached to the legs at their central portions and extending between the legs, pivotal attachment means providing for pivotal movement of the legs in planes perpendicular to the crossbar and providing for locking of each leg independent of the other leg in a selected position relative to the crossbar, a pair of target supports pivotally secured at their lower ends to the crossbar and extending upwardly so as to provide for pivotal movement of the target supports in planes substantially perpendicular to the crossbar, adjustable means providing for independent positioning of each target support at a selected position along the crossbar, and anchor means combined with the legs to provide additional stability to the support stand.

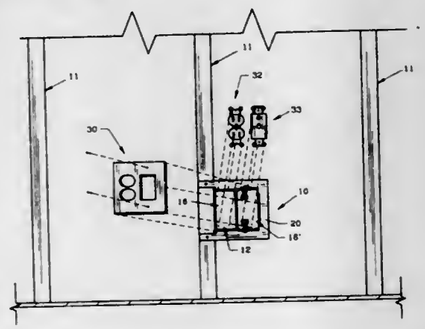
5,598,997
RAIL SECTION FOR A CONTAINER OF AN OXYGEN SUPPLY UNIT
Wolfgang Marquardt, Stockelsdorf/FRG, Germany, assignor to Drägerwerk AG, Lübeck, Germany
Filed Sep. 2, 1994, Ser. No. 300,716
Claims priority, application Germany, Sep. 7, 1993, 43 30 209.2
Int. Cl.[6] B65D *8/00*
U.S. Cl. 248—225.21 **13 Claims**

1. A hanging assembly for an aircraft oxygen supply unit comprising:
a container of the aircraft oxygen supply unit;
a hinge having one part connected to said container and another part pivotable with respect to said one part;
a rail section connected to said another part of said hinge, said rail section including a rail hook
a mount including a mount hook and a mount contact zone, said mount hook having an inside and an outside, said outside of said mount hook facing said hinge, said rail hook being engagable with said mount hook by engaging rotation of said rail hook from a position outside said mount hook to a position inside said mount hook;



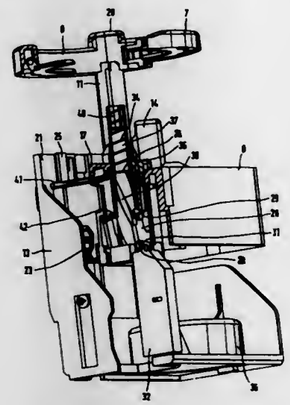
position means mounted on said rail hook and contactable with said mount contact zone to block engaging rotation of said rail hook at an angular position, said angular position being a preselected hanging position of said container, said position means includes a projection, a size and location of said projection on said rail hook being designed to set said angular position, said rail hook includes a curved section and a tip, said tip extends tangentially from an end of said curved section, said projection of said position means is attached to said curved section and substantially aligned with said tip, said tip and said projection form a line which is angularly spaced from a hanging direction of said container.

5,598,998
ELECTRICAL OUTLET BOX MOUNTING BRACKET
David M. Lynn, 401 Craver Rd., Welcome, N.C. 27374
Filed Nov. 20, 1995, Ser. No. 561,041
Int. Cl.[6] H02G *3/08*
U.S. Cl. 248—300 **6 Claims**



1. A bracket for positioning on an electrical outlet box attached to a vertical wall stud for supporting communication lines, said bracket comprising: a c-shaped frame, said c-shaped frame defining a central opening, a pair of opposing tabs, said tabs attached to said c-shaped frame, said tabs effectively dividing said central opening into first and second sections, said c-shaped frame defining an aperture, a first electrical line support, said first line support attached to said c-shaped frame and extending into said second opening section whereby said tabs can contact the electrical outlet box as said c-shaped frame is affixed to the wall stud through said aperture.

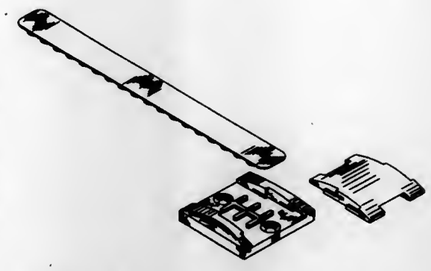
5,598,999
DEVICE FOR HOLDING TWO DRINK CONTAINERS IN CENTRAL CONSOLE OF MOTOR VEHICLE
Bernd Plocher, Waldachtal; Juergen Koerber, and Heinz Koukal, both of Sindelfingen, all of Germany, assignors to fischerwerke, Artur Fischer GmbH & Co. KG, Waldachtal, Germany
Filed Aug. 21, 1995, Ser. No. 517,401
Claims priority, application Germany, Aug. 19, 1994, 44 29 515.4
Int. Cl.[6] A47K *1/08*
U.S. Cl. 248—311.2 **11 Claims**



1. A device for holding two drink containers, comprising a supporting structure insertable into a compartment of a console of a motor vehicle; a holding ring and a holding frame having a receiving opening provided for lateral fixing of a second drink container and movable from a recessed position in which they are recessed in the console and a holding position projecting from the console; a carrier element, said holding ring being formed as a folded-together ring and mounted on said carrier element, said holding ring including a first holding arm and a second holding arm horizontally turnable relative to one another between a folded-together state in which said arms do not exceed external dimensions of said supporting structure and an open-out state in which said arms are arranged besides and above said holding frame, said holding frame with said holding ring in said folded-together state being movable from said recessed position into an end position projecting from the console, in which said receiving opening of said holding frame is initially still masked by said holding arms of said holding ring still in an intermediate position, and subsequently said holding ring is opened-out into said opened-out holding position besides and above said holding frame.

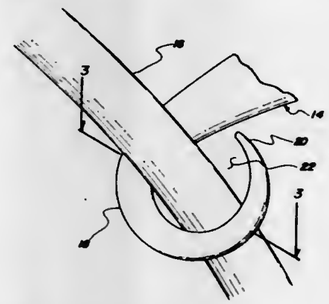
5,599,000
ARTICLE SECURING DEVICE
Terry R. Bennett, 15609 Saul Ct., Canyon Country, Calif. 91352
Filed Mar. 20, 1995, Ser. No. 406,730
Int. Cl.[6] A47B *97/00*
U.S. Cl. 248—500 **13 Claims**

1. An article securing device comprising:
a strap member having a contoured surface,
a pair of retaining members each formed with side walls defining a central channel for receiving said strap and having a surface of said channel formed to mate with the contoured surface of said strap,
means for attaching said retaining members to an article to be secured,



said side walls having portions projecting inwardly to overlie a portion of said channel and forming recesses in said side walls adjacent said channel, and
a latch member having flanges engageable with said recesses to frictionally retain said latch member in engagement with said retaining member.

5,599,001
STUFFED ANIMAL CONDUIT RETAINER
Joseph G. Dwyer, 3 Maple Dr., Catonsville, Md. 21228
Filed May 30, 1995, Ser. No. 452,838
Int. Cl.[6] A47G *1/16*
U.S. Cl. 248—505 **1 Claim**

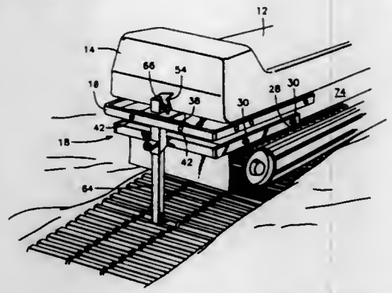


1. A stuffed animal conduit retainer for supporting medical conduits comprising:
a weighted central body gravitationally secured to a horizontal support surface and shaped to resemble a body of an octopus, the weighted central body comprises an exterior web shaped in a substantially spherical configuration and containing a volume of stuffing material therewithin;
a partition web extending across a portion of the weighted central body;
a volume of weight material positioned between the partition web and an interior surface of a portion of the exterior web of the weighted central body;
a plurality of engaging means radiating from the central body for engaging an individual conduit to maintain a plurality of conduits in a desired orientation, each engaging means comprises an elongated projection extending from the central body, each of the elongated projections including a free outer end which is curled back upon itself to define a receiving aperture having an individual conduit positioned within, the elongated projection being formed of an exterior web having a stuffing material secured therewithin; and
a curved spring member extending within a portion of the elongated projection resiliently biasing the outer end into a normally constricted configuration, the curved spring member being secured to an interior surface of the exterior web proximal to the outer end of the elongated projection to cause

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the outer end to bend back upon the elongated projection to define the receiving aperture through which a conduit is positioned.

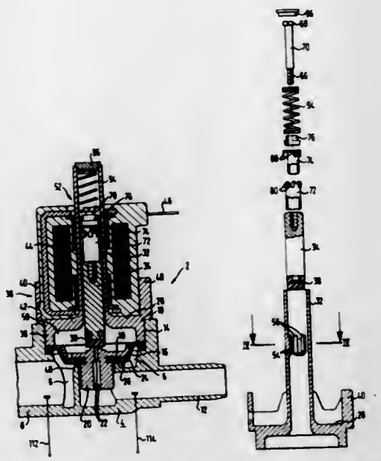
5,599,002
SNOWMOBILE ANTI-THEFT DEVICE
Kenneth J. Knutson, P.O. Box 365, Dawson, Minn. 56232
Filed Jan. 26, 1995, Ser. No. 378,727
Int. Cl.[6] F16M *13/00*
U.S. Cl. 248—552 **9 Claims**



1. An anti-theft device for locking a snowmobile in an elevated position, said anti-theft device comprising:
a bracket for mounting to a tail section of the snowmobile,
a hollow member mounted on said bracket,
two holes in opposed sidewalls of said hollow member,
a lift bar slidably mounted in said hollow member, said lift bar including an opening, and
a latch pivotally mounted on said hollow member and biased to extend over one end of said hollow member for holding said lift bar in said hollow member with said opening of said lift bar being aligned with said holes in said hollow member for receiving a locking bar through said opening of said lift bar and said two holes of said hollow member while the tail section of the snowmobile is elevated,
said latch engaging an end surface of said lift bar when said lift bar is in said hollow member and said lift bar is used for elevating the tail section of the snowmobile.

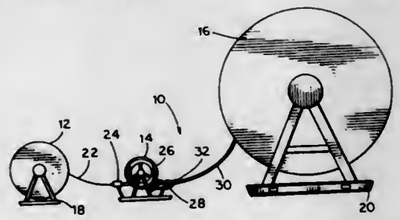
5,599,003
BISTABLE SOLENOID VALVE
Hans Seemann; Hans Ortner, and Walter Pressler, all of Villach, Austria, assignors to Interelektrik Ges. m.b.H. & Co. KG, Villach, Austria
PCT No. PCT/EP94/02626, § 371 Date Apr. 7, 1995, § 102(e) Date Apr. 7, 1995, PCT Pub. No. WO95/04997, PCT Pub. Date Feb. 16, 1995
PCT Filed Aug. 8, 1994, Ser. No. 416,776
Claims priority, application Germany, Aug. 10, 1993, 43 26 838.2
Int. Cl.[6] F16K *31/12;31/02*
U.S. Cl. 251—30.03 **13 Claims**

1. A valve having a valve chamber supporting a valve seat selectively engaged by a valve diaphragm for controlling the flow of a medium comprising
a bistable, eletromagnetic solenoid valve including (i) a longitudinally-extending core guide tube having a first end opening towards the valve chamber and a second closed end, wherein said core guide tube is filled with the medium, (ii) a single electromagnetic winding surrounding said core guide tube, and (iii) an armature comprising a movable core disposed within said core guide tube for opening and closing said valve diaphragm, and (iv) a locking mechanism, coaxially



located with respect to said movable core, within said core guide tube, said locking mechanism comprising:
(a) a first locking member longitudinally displaceable within said core guide tube;
(b) a second locking member longitudinally displaceable against said first locking member and means for rotating said second locking member in a lifted position through a preset angle, whereby said locking mechanism alternates between an engaged and a released state; and
(c) a coil spring for biasing said second locking member and operating as a return spring for resetting said movable core into one of two stable positions corresponding to the engaged and released states and the open and closed positions of said valve diaphragm;
wherein successive excitation of said electromagnetic winding displaces said movable core to lift and rotate said second locking member so that said locking mechanism is alternately engaged and released with said coil spring resetting said movable core to open and close the valve to control the flow of the medium.

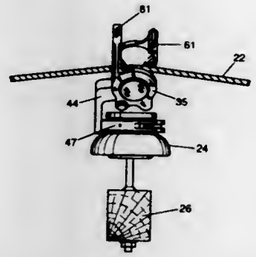
5,599,004
APPARATUS FOR THE INJECTION OF CABLE INTO COILED TUBING
Kenneth R. Newman, Willis; Lyndon Stone, Humble, and David Tong, Conroe, all of Tex., assignors to Coiled Tubing Engineering Services, Inc., Contoe, Tex.
Continuation-in-part of Ser. No. 272,021, Jul. 8, 1994, Pat. No. 5,503,370. This application Dec. 13, 1994, Ser. No. 354,646
Int. Cl.[6] E21C *29/16*
U.S. Cl. 254—134.3 FT **10 Claims**



1. A cable injector for the installation of cable into coiled tubing on a reel, comprising:

a. a stuffing box for receiving cable from the source of cable and for providing a pressure boundary between ambient and the injector;
b. a pressure housing coupled to the stuffing box, the pressure housing comprising first and second seal plates and a seal ring between the first and second seal plates;
c. a drive wheel within the pressure housing upon which the cable is wound;
d. a drive shaft through the second seal plate and detachably mounted to the drive wheel; and
e. an outlet connector coupled to the pressure housing, the outlet connector adapted for connecting to coiled tubing on a reel.

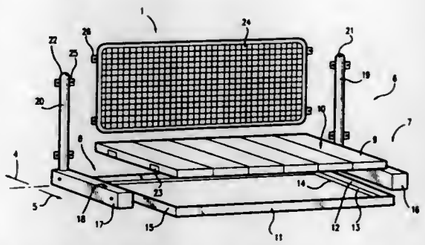
5,599,005
INSULATOR MOUNTABLE CABLE STRINGING ROLLER DEVICE
Charles J. Sauber, 10 N. Sauber Rd., Virgil, Ill. 60182
Continuation-in-part of Ser. No. 402,122, Mar. 10, 1995, Pat. No. 5,533,710. This application May 3, 1995, Ser. No. 434,177
Int. Cl.[6] B65H *59/00*
U.S. Cl. 254—134.3 PA **7 Claims**



1. A cable stringing roller device for temporarily supporting cable on an insulator carried by a cross member of a pole during installation of the cable onto an insulator, said device comprising:
roller means for supporting the cable;
bracket means for supporting said roller means and for containing the cable, said bracket means having upwardly projecting portions disposed on opposite ends of said roller and terminating in inwardly projecting fingers spaced from one another;
support means connecting said bracket means to a clamping means adapted to clamp to said insulator and said clamping means having lever acting releasable latch means to allow the bracket and roller means to be shifted away from the insulator to lower the cable onto the insulator.

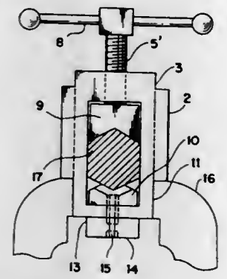
5,599,006
SELF STABLE FENCE
Bernard Gevaux, Prévières, 74250 Ville en Sallaz, and Jacques Masurel, Ferney Voltaire, both of France, assignors to Constructions Metalliques de Bonneville, Bonneville, and Bernard Gevaux, Ville en Sallaz, both of France
PCT No. PCT/FR94/00182, § 371 Date Aug. 17, 1995, § 102(e) Date Aug. 17, 1995, PCT Pub. No. WO94/19545, PCT Pub. Date Sep. 1, 1994
PCT Filed Feb. 18, 1994, Ser. No. 507,350
Claims priority, application France, Feb. 26, 1993, 93 02401
Int. Cl.[6] E04H *17/18*
U.S. Cl. 256—25 **10 Claims**

1. Fence element adapted to be assembled with other similar fence elements in sequence to form a fence between a first part (4) and a second part (5) of an area, comprising:
a rigid first structure part (6) forming an upright wall to separate the first part (4) and the second part (5) of the area,



a rigid second structure part (7) attached to the rigid first structure part (6), said rigid second structure part (7) lying in a plane at an angle to a base (8) of the rigid first structure part (6) and being adapted to rest on the ground,
at least one removable ballast element (9) adapted to lie on the second structure part (7) resting on the ground to prevent tilting of the fence element and to render it self-stable,
each said at least one removable ballast element (9) having a top face (10) forming a generally planar surface on which users can move around,
wherein the rigid second structure part (7) extends from one side of the base (8) of the rigid first structure part (6),
wherein the rigid second structure part (7) comprises a rigid frame (11) formed of a peripheral profiled member having a peripheral vertical flange (12) and an interior bottom horizontal flange (13) the frame (11) being attached externally to two crossmembers (16, 17),
wherein each said at least one removable ballast element (9) rests on the horizontal flange (13) of the frame (11) and is flanked by the vertical flange (12) of the frame (11),
and wherein the crossmembers (16, 17) are attached to respective rights (19, 20) between which panels (24) are fixed, wherein the up-rights and panels together comprise the rigid first structure part (6).

5,599,007
CLAMP
Paul L. Oliveira, 517 Anuhea Pl., Volcano, Hi. 96785
Filed Jun. 22, 1995, Ser. No. 493,591
Int. Cl.[6] B25B *1/24*
U.S. Cl. 269—271 **3 Claims**



1. A clamp comprising:
a main body portion having a top and a bottom, and
a handle operator attached to said top of said main body portion,
a rectangular opening in said main body portion,
a movable jaw attached to said handle operator, and
a fixed jaw attached to said main body portion,
said movable and said fixed jaws being at least partially positioned within said rectangular opening,
said main body portion having a plurality of clamping surface means for attaching said clamp to a vise in a plurality of positions,

said plurality of clamping surface means consist of partial channels,

one of said partial channels is positioned on said main body portion approximately midway between said top and said bottom of said main body portion,

whereby said clamp can be positioned in said vise in an optimum position for performing work on a work piece.

5,599,008

FINISHER WITH A PUNCHING FUNCTION AND A STAPLING FUNCTION, AND SHEET PUNCHING/STAPLING METHOD

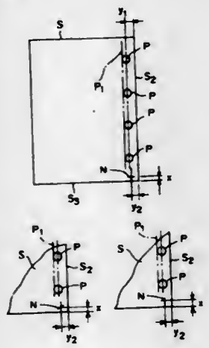
Hiroki Yamashita, Okazaki, Japan, and Yuji Shinohara, Leonberg, Germany, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Feb. 1, 1995, Ser. No. 381,759

Claims priority, application Japan, Feb. 3, 1994, 6-011651

Int. Cl.[6] B65H *37/00*

U.S. Cl. 270—58.16 **14 Claims**



1. A finisher for handling sheets ejected from an image forming machine, the finisher comprising:

a punching mechanism for punching a sheet on a point at a specified distance from a reference side of the sheet; and

a stapling mechanism for stapling sheets by hitting a staple into sheets at a corner portion near the reference side of the sheets such that at least one end of the staple is located between the punched point and the reference side.

5,599,009

STACKING HEIGHT ESTIMATION CORRECTION SYSTEM

Barry P. Mandel, Fairport; John W. Daughton, Rochester, and John D. Hower, Jr., Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 11, 1996, Ser. No. 585,081

Int. Cl.[6] B65H *39/00*

U.S. Cl. 270—58.09 **10 Claims**

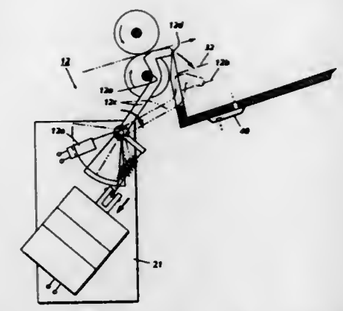
1. In a shared users plural bins mailboxing system adapted to receive and stack plural print jobs of plural sheets, of differing sheet thicknesses, with and without staples, for plural different recipients in plural print job storage mailbox bins, with at least most of said mailbox bins having a preset maximum sheet stacking capacity, said mailboxing system having a sheet distribution system controlled by a control system for automatically variably directing and stacking into different selected said mailbox bins the respective print jobs of different recipients, said control system providing for respective said mailbox bins to be electronically assignable to different respective recipients, a bin stacking level estimation system for indicating to said control system that the height of the stack of sheets stacked in a selected said mailbox bin has reached a preset stacking level, and a stapler system for selectively stapling together plural sheet print jobs for plural said stapled plural sheet print jobs to be stacked in a said mailbox bin, the improvement in said mailbox bin stacking level estimation system comprising:

a point count stack height estimation correction system including;

a print jobs sheets counting system for accumulating a point count of the number of sheets being directed by said sheet distribution system to said selected mailbox bin,

a staple buildup factor input system for inputting staple buildup point count correction factors to said point count stack height estimation correction system to correct for the number of stapled sets of job sheets being directed by said sheet distribution system to said selected mailbox bin;

said point count stack height estimation correction system automatically correcting said print jobs sheets counting system by said staple buildup point count correction factors to more accurately estimate the stack height of the stack of sheets to be stacked in said selected mailbox bin.



5,599,010

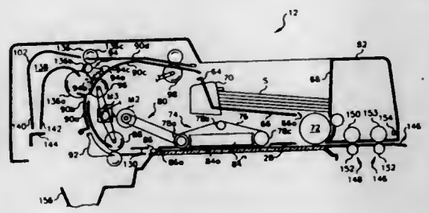
AUTOMATIC LOADING/UNLOADING OF A DOCUMENT FEEDER FOR A REPRODUCTION APPARATUS

Thomas R. Hull, Spencerport; David E. Bettiol, Rush, and Theron W. Genaux, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 23, 1994, Ser. No. 363,050

Int. Cl.[6] B65H *5/02*

U.S. Cl. 271—3.05 **10 Claims**



1. An automatic loader/unloader for a document feeder capable of feeding individual sheets of a document sheet set stack from a supply tray to an exposure station of a reproduction apparatus and return such sheets to such supply tray, in a recirculating manner along a travel path, said automatic loader/unloader comprising:

first transport means for transporting document sheets seriatim along said travel path from said supply tray to said exposure station;

second transport means for transporting document sheets seriatim along said travel path from said exposure station to said supply tray;

diverting means for selectively diverting document sheets into, or out of, said travel path; and

control means for locating said diverting means to sequentially load document sheets, prior to recirculation for copying, in said supply tray by directing individual document sheets transported by said first and second transport means to form a document sheet set stack in said supply tray, or to sequentially unload document sheets, after recirculation for copying, from said supply tray by directing individual document sheets from said travel path while being transported by said second transport means.

5,599,011

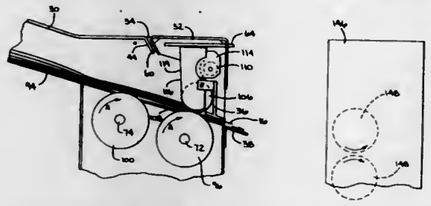
SHEET FEEDER

Richard E. Schnorr, Riverside, and Marland R. Johnson, Orland Hills, both of Ill., assignors to Uarco Incorporated, Barrington, Ill.

Continuation-in-part of Ser. No. 97,846, Jul. 26, 1993, abandoned. This application Nov. 14, 1994, Ser. No. 338,334

Int. Cl.[6] B65H *5/00*

U.S. Cl. 271—10.11 **36 Claims**



1. A sheet feeder for feeding sheets from the bottom of a stack thereof, comprising:

a frame having an inclined surface for supporting a stack of sheets to be fed;

a relatively soft feed roller mounted on the frame;

means for rotating the feed roller;

a stationary relatively hard retard roller mounted adjacent to and at least touching said feed roller and cooperating therewith to define a nip for receiving a forward edge of a bottom sheet of a stack supported on said inclined surface; and

an upright guide on the frame engageable with a forward edge of a stack of sheets supported on the inclined surface, the guide being disposed at an acute angle with respect to the inclined surface so that when the forward edge of the stack engages the guide the sheets shift longitudinally relative to each other to facilitate feeding of a single sheet into the nip.

5,599,012

DECELERATING SYSTEM FOR DECELERATING THE MOVEMENT OF SHEETS INTO THE DELIVERY STATION OF A SHEET FED PRESS

Jean-Claude Rebeaud, Le Mont, Switzerland, assignor to Bobst SA, Lausanne, Switzerland

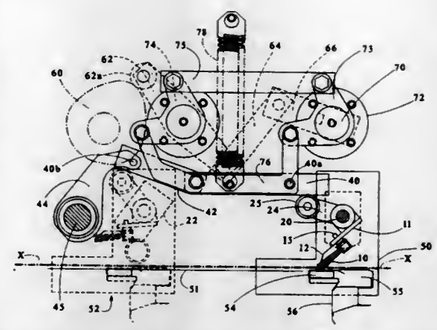
Filed May 11, 1995, Ser. No. 438,771

Claims priority, application Switzerland, May 11, 1994, 01477/94

Int. Cl.[6] B65H *29/68*

U.S. Cl. 271—182 **7 Claims**

1. A decelerating device for decelerating the movement of die cut sheets into the delivery station of a sheet fed die cutter wherein die cut sheets are rapidly pulled along a substantially horizontal path into the delivery station of a die cutting press and then are abruptly stopped at a predetermined stopping point and released at their leading edges to permit them to fall in succession into a vertical pile of die cut sheets, the improvement which comprises a rear tablet underlying the path of travel of the die cut sheets and movable toward and away from said predetermined stopping point to provide support for the trailing edge of a sheet passing into the delivery station in accordance with the length of the sheet, a sheet movement retarding means positionable in the path of movement of a sheet into said delivery station, means carrying both said sheet movement retarding means and said rear tablet and movable toward and away from said predetermined stopping point in dependence on the length of sheets to be fed to said delivery station, and means adjusting the angle of said sheet movement retarding means relative to the path of said sheet in dependence on the relative closeness of said brush and tablet to said predetermined stopping position.



5,599,013

PAPER SHEET GUIDING CYLINDER FOR A PRINTING MACHINE

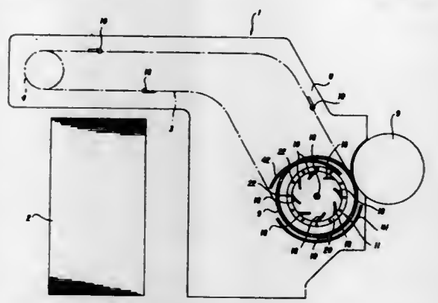
Andreas Detmers, Mauer, and Karl-Heinz Filsinger, Wiesloch, both of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed Jan. 20, 1995, Ser. No. 375,963

Claims priority, application Germany, Jul. 20, 1992, 42 23 839.0

Int. Cl.[6] B65H *29/24*

U.S. Cl. 271—195 **10 Claims**



1. In a printing machine having side frames and a printing machine drive, a paper sheet guiding cylinder assembly comprising:

a paper sheet guiding cylinder being mounted in the side frames of the printing machine and being drivingly connected to the printing machine drive;

said paper sheet guiding cylinder having an axis;

said paper sheet guiding cylinder including a cylinder jacket and side walls with through holes formed therein;

said paper sheet guiding cylinder housing a rotatably mounted radial ventilator being coaxial with the axis of said paper sheet guiding cylinder for supplying blowing air into said

paper sheet guiding cylinder and for deflecting the blowing air inside said paper sheet guiding cylinder towards said cylinder jacket, said radial ventilator communicating with the ambient air through said holes, and said radial ventilator having ventilator blades disposed concentrically about the axis of said paper sheet guiding cylinder and extending along the paper sheet guiding cylinder; and

means being independent of said paper sheet guiding cylinder for driving said radial ventilator with adjustable speed.

5,599,014

SHEET CONVEY APPARATUS

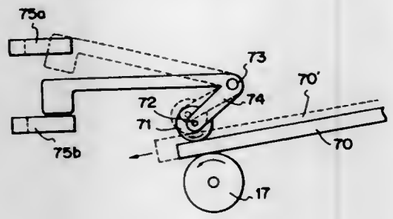
Yoshihiko Kitahara, Ushiku; Yuji Takahashi, Tokyo, and Hitoshi Fujimoto, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 120,915, Sep. 15, 1993, abandoned. This application Sep. 13, 1995, Ser. No. 527,384

Claims priority, application Japan, Sep. 17, 1992, 4-248002

Int. Cl.[6] B65H *5/16*

U.S. Cl. 271—270 **38 Claims**



1. A sheet convey apparatus, comprising:

convey means for conveying a sheet;

guide means for guiding the sheet conveyed by said convey means along a convey path;

detection means for detecting a thickness of the sheet conveyed by said convey means; and

control means for controlling said convey means so that said convey means conveys the sheet at a first speed when the thickness of the sheet detected by said detection means is a first thickness, and conveys the sheet at a second speed faster than the first speed when the thickness of the sheet is a second thickness larger than the first thickness, whereby deformation of the sheet caused by said guide means is avoided.

5,599,015

SHEET FEEDER

Kaoru Shimizu, Osaka, and Yutaka Matsuda, Toyonaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 28, 1995, Ser. No. 495,918

Claims priority, application Japan, Jul. 6, 1994, 6-154660

Int. Cl.[6] B65G *13/12*

U.S. Cl. 271—272 **21 Claims**

1. A sheet feeder comprising:

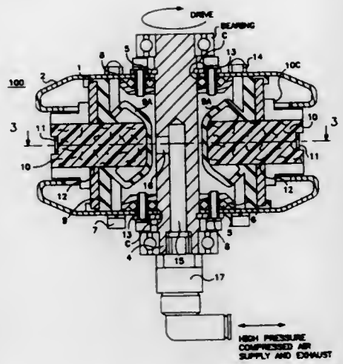
at least a pair of variable outer diameter rollers for catching and conveying sheets; and wherein:

each of said variable outer diameter rollers comprises:

a pipe containing a plurality of penetrating holes disposed radially around the side wall of said pipe;

supporting means having an internal fluid supply passage connected to said penetrating holes; and

a plurality of sliders forming a roller peripheral face, each disposed in one of said penetrating holes so that each slider is able to slide; and wherein:



said sliders are pushed and moved by a fluid supplied through said fluid supply passage in a direction so that the outer diameter of said roller enlarges.

5,599,016

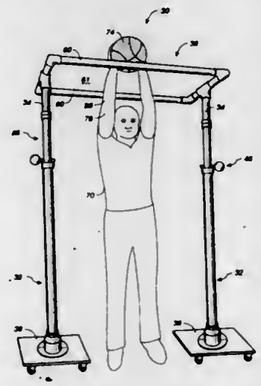
MUSCLE-MEMORY METHOD AND BASKETBALL TRAINING AID

Martin Larkin, 730 Rosemont Ave., Pacific Grove, Calif. 93950

Continuation-in-part of Ser. No. 320,437, Oct. 7, 1994, abandoned. This application Jun. 19, 1995, Ser. No. 492,439

Int. Cl.[6] A63B *69/00*

U.S. Cl. 473—448 **12 Claims**



1. A muscle memory basketball training apparatus comprising:

a pair of base assemblies supporting said apparatus on a ground surface;

a rectangular frame assembly detachably coupled to said base assemblies, said frame assembly comprising a plurality of tubular members defining a rectangular opening therebetween, said plurality of tubular members detachably coupled together to provide a detachable frame; and

support means detachably coupled to said frame assembly and to said base assembly, said support means adjustably supporting said frame assembly at a desired height above the ground surface, said support means including means for supporting said frame assembly obtusely above said ground surface.

5,599,017

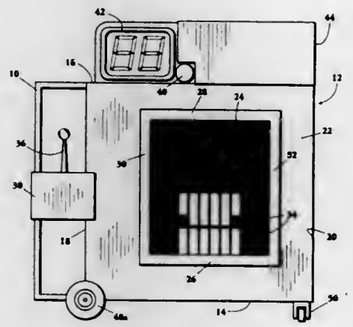
BASEBALL TARGET AND PROJECTOR APPARATUS

Dickie R. Bixler, and Matthew R. Bixler, both of Woods County, Okla., assignors to Dick Bixler Sports, Inc., Alva, Okla.

Filed Jul. 17, 1995, Ser. No. 503,877

Int. Cl.[6] A63B *69/00*

U.S. Cl. 473—436 **7 Claims**



1. An apparatus for practicing the fundamentals of baseball, comprising:

(a) a target area receiving means for accepting and securing baseballs thrown at said apparatus;

(b) pitchback means for propelling baseballs from said apparatus;

(c) a ball holding tray located beneath said receiving means, said ball holding tray having an outlet path;

(d) an agitating means positioned integral to said holding tray for circulating a plurality of balls resting therein and directing said balls to said outlet path;

(e) an auger means for conveying said balls from said outlet path to said pitchback means;

(f) a channel member adapted to receive said balls from said auger means, said channel member having a shut off switch for controlling a flow of said balls down said channel member;

(g) an adjustable ball stop positioned adjacent to said channel member at a distance sufficient for presenting said balls to said pitchback means; and

(h) a means for communicating with and controlling said shut off switch and said auger means such that when one of said balls is released down said channel member, said auger means is activated so as to convey another of said balls to said channel member; and

(i) a transportable frame for supporting said apparatus.

5,599,018

STRUNG RACKET

Harry Radel, Uhrbrook 27 b, D-21502, Geesthacht, Germany

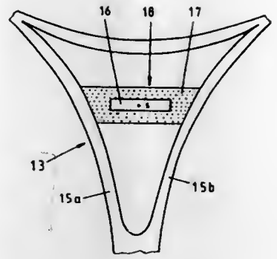
Filed Mar. 28, 1995, Ser. No. 412,284

Claims priority, application Germany, Mar. 31, 1994, 9405479 U; Aug. 25, 1994, 9413688 U

Int. Cl.[6] A63B *49/02*

U.S. Cl. 473—521 **21 Claims**

1. A sports racket with strung netting, comprising a frame which delimits a striking surface formed by strings tautly strung in the frame, a handle with a longitudinal axis as well as a connection region connecting the handle with the frame, wherein, within the connection region a resiliently mounted filler material is fitted, wherein the filler material is configured so as to be tube-shaped and disposed at a right angle to the longitudinal axis of the handle and so as to lie in the plane defined by the striking surface.



5,599,019

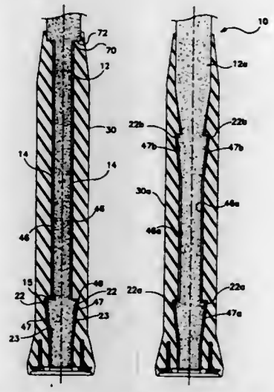
HANDLE PALLET FOR IMPLEMENTS SUCH AS SPORTS RACQUETS

Stephen J. Davis, Washington Crossing, Pa., and Richard Janes, Burlington Township, N.J., assignors to Prince Sports Group, Inc., Bordentown, N.J.

Filed Apr. 3, 1995, Ser. No. 415,348

Int. Cl.[6] A63B *49/08*

U.S. Cl. 473—549 **17 Claims**



1. A handle pallet for use on an implement having a shaft with a butt end and an outer surface which is generally uniform for a distance from said butt end, said pallet comprising a molded, elastomeric sleeve defining a hollow interior with at least one open end, wherein said sleeve, at least over a substantial portion of its length, is defined by a wall that, in cross-section, extends continuously around said bollow interior, wherein said hollow interior has a shape which is generally uniform for a distance from said open end along a central axis, and wherein said molded sleeve further includes a first pawl member, located in said hollow interior, having an engaging surface for engaging a ratchet member on a shaft; whereby when said pallet is slid onto a shaft having a cooperating ratchet member, said pawl member, by virtue of said sleeve being elastomeric, is displaceable away from said axis in order to move into interlocking engagement with the cooperating ratchet member.

5,599,020

FORTUNE TELLING GAME USING CARDS

Sandra Fields, 12 Longwoods La., E. Hampton, N.Y. 11937

Filed Apr. 12, 1995, Ser. No. 420,742

Int. Cl.[6] A63F *9/18*

U.S. Cl. 273—161 **3 Claims**

1. A method of playing a fortune telling card game comprising:

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providing a deck of cards having eighteen people cards, each people card containing indicia depicting an individual, each people card having a name area below the indicia for removably writing a name, one of the people cards being for representing a person whose fortune is to be entertainingly told with the deck of cards, the remaining people cards being for representing other people involved in the fortune;

selecting one of the people card that resemble the person whose fortune is to be entertainingly told;

writing the name of the person whose fortune is to be entertainingly told onto the name area of the selected people card;

further including in the deck of cards: a second plurality of internal condition cards each containing indicia depicting a human emotion or attitude; a third plurality of quantity cards each containing indicia depicting a quantity of time and distance, there being three time cards for three time periods of different lengths and two distance cards for two different distances; a fourth plurality of relationship cards each containing indicia depicting a human relationship; a fifth plurality of external influence or condition cards, each containing indicia depicting an external influence or condition; a sixth plurality of action or interaction cards each containing indicia depicting a human action or interaction; a seventh plurality of result cards each containing indicia depicting a result or outcome; and at least one question card having an area on which a question is depicted;

writing a question onto the question card;

shuffling together at least some of the internal condition cards, the quantity cards, the relationship cards, the external influence or condition cards, the action or interaction cards and the result cards;

placing the shuffled cards face down;

turning over a selected number of the cards that have been placed face down to show the turned over cards: and

entertainingly telling the fortune of the person whose fortune is to be told, using the turned over cards.

5,599,021

GOLF SWING MUSCLE ARTICULATOR AND REHABILITATION DEVICE

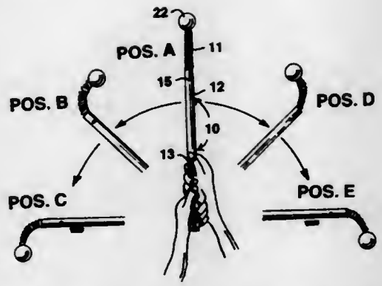
Banning K. Lary, 10100 Rocking Horse Rd., Austin, Tex. 78748, and William M. Stevens, 9717 Oak Hollow Dr., Austin, Tex. 78758

Filed May 8, 1995, Ser. No. 436,654
Int. Cl.[6] A63B *69/36*
U.S. Cl. 473—219 **2 Claims**

1. A golf swing muscle articulation device for use in minimizing the potential for muscle and skeletal injury at the top of the backswing and end of the follow-through, or for use in rehabilitating damaged or injured muscles or skeletal parts, such as the spine, caused by previous overexertion or improper application of the golf swing or related exercise devices, comprising in combination:

a standard hollow golf shaft with a standard golf grip attached thereto at the upper end;

a coiled spring fastened inside the lower end of the shaft at one end and inside a solid ball at the other end, whereby when the device is gripped with the hands at the upper end and swung in the typical arc of a golf swing, the coiled spring acts as a shock absorber at the top of the back swing and end of the follow-through, thereby easing the transition of momentum imposed by the movement of the ball at the ends of its arc, thus minimizing the potentially damaging effect of the momentum upon the muscles and spine.

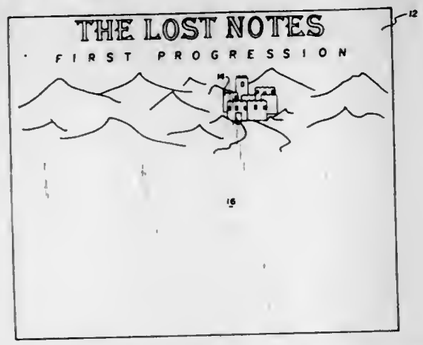


5,599,022

BOARD GAME FOR TEACHING MUSICAL NOTATIONS

Shoshana Ben-Horin, 22736 Carsamba Dr., Calabasas, Calif. 91302

Filed May 28, 1996, Ser. No. 654,162
Int. Cl.[6] A63F *3/00*
U.S. Cl. 273—243 **10 Claims**



1. A new and improved board game for teaching musical notations comprising in combination:

a first generally rectangular game board bearing a representation of musicland with high mountains and a valley therebetween;

a plurality of lost note game cards for matching during game play while being placed on the first game board, each lost note card having a front face divided into two sections, one set of the lost note cards having a staff with a note being represented on each section, another set of the lost note cards having a shield on an upper section and the staff with the note on a lower section;

a second generally rectangular game board bearing a representation of a haunted island near musicland, the second game board having a plurality of game squares with one game square being the starting square, a first portion of the game squares having a blank interior, a second portion of the game squares having a staff with notes thereon, and a third portion of the game squares having musical terms thereon;

a first set of flash cards each bearing a single musical note on a bottom side and a corresponding identifying symbol of the musical note on a top side, each of the first set of flash cards being matched with the game squares of the second portion of the second board, each of the first set of flash cards, when matched having the bottom side being placed on the matching game square prior to game play;

four generally rectangular soldier display cards, each soldier display card having a shield and flash card space holders, the flash card space holders of the soldier display cards being numbered and capable of having the first set of flash cards placed thereon once they are removed from the second game board during game play;

a third generally rectangular game board bearing a representation of a mysterious dungeon on the haunted island near musicland, the third game board having a plurality of dungeon squares, one set of the dungeon squares being blank while another set of the dungeon squares having directions for game play;

a second set of flash cards each bearing a staff with a musical note on a bottom side and dragon indicia on a top side, each of the second set of flash cards being positionable on the blank dungeon squares of the third game board, each of the second set of flash cards having the staff side facing the blank dungeon square prior to game play;

six generally rectangular song display cards, each song display card having a stanza of a song thereon and flash card space holders, the flash card space holders of the song display cards being numbered and capable of having the second set of flash cards placed thereon once they are removed from the third game board during game play;

at least four soldier playing pieces for positioning on the second and third game board to indicate the position of a player during game play, each soldier playing piece being a color; and

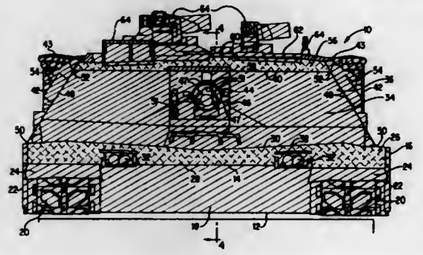
a die having six sides and carrying numerals on its respective sides, the die being rolled for controlling the start of game play, the die being rolled for controlling the movement of the soldier pieces along the second and third game board.

5,599,023

PARTIALLY TRANSLUCENT MURAL DECOY

Jody Loyd, Huntsville, Ala., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Oct. 4, 1995, Ser. No. 539,057
Int. Cl.[6] F41J *1/00*
U.S. Cl. 273—348.1 **18 Claims**



1. A two-dimensional mural simulating a three-dimensional object, the three-dimensional object having horizontal surfaces and non-horizontal surfaces, said mural comprising:

a panel having a first surface and a second surface and having at least one opaque portion and at least one translucent portion, said panel having a graphical representation printed on one of said first and second surfaces on at least one of said opaque portions thereof,

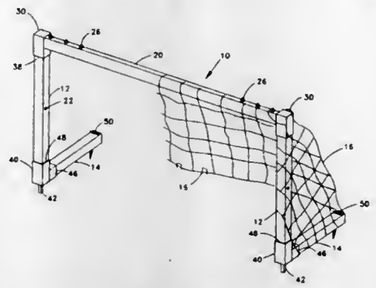
each of said at least one translucent portions and each of said at least one opaque portions extending between said first surface and said second surface such that the horizontal surfaces of the three-dimensional object are simulated by said at least one translucent portion which transmits sunlight therethrough when backlit and which reflects sunlight therefrom when frontlit and the non-horizontal surfaces of the three-dimensional object are simulated by said at least one opaque portion.

5,599,024

PORTABLE SOCCER GOAL

Burnis S. Acuff, 9 Monte Sano Dr., Charleston, S.C. 29406, and Royce B. Charpia, 119 Vision La., Summerville, S.C. 29483

Filed Oct. 31, 1995, Ser. No. 551,118
Int. Cl.[6] A63B *63/00*
U.S. Cl. 473—478 **5 Claims**



1. A portable soccer goal comprising, in combination:

a. a first and second base support leg, each having an anterior end and a posterior end, said first and second base support legs resting on a ground surface;

b. a first and second base support elbow, each said elbow having a vertical and horizontal sleeve at 90 degree configurations, said first and second anterior ends of said first and second base support legs inserting into said first and second horizontal sleeve, respectively, of said first and second base support elbows;

c. a first and second end post, each said end post having an end post head and end post foot, said first and second end post foot inserting into said first and second vertical sleeve, respectively, said first end post and said first base support leg having 90 degree configurations and said second end post and said second base support leg having 90 degree configurations;

d. a first and second crossbar connector, each said crossbar connector having a crossbar connector sleeve and crossbar connector extension, said first and second end post head inserting into said first and second crossbar connector sleeves, respectively;

e. a crossbar with a first and second end and interior and exterior face, said first and second crossbar connector extension fastening to said first and second crossbar end, respectively, said first and second end post forming a 90 degree configuration with said first and second crossbar end, said crossbar and said first and second crossbar connector extensions being channel shaped;

f. a first and second fastener means for securing said first and second base support leg posterior ends to said ground surface;

g. a first and second insertion rod connected to said first and second base support elbows, respectively, said first and second insertion rods being connected opposite said first and second base support vertical sleeves as a means for securing said first and second base support elbows to said ground surface;

h. a net having a ground edge and secured edge, said first and second base support legs, base support elbows, end posts and said crossbar being woven into said net secured edge;

i. A plurality of net stakes designed to secure said net ground edge to a ground surface between said first base support leg and said second base support legs.

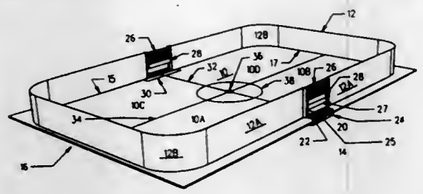
VOL 1195 ISS 1 FEB 4 1997 UMI

5,599,025

METHODS AND APPARATUS FOR PLAYING A BALL GAME

Anthony Pobee-Mensah, 180 Morris St., Albany, N.Y. 12208

Filed Apr. 12, 1996, Ser. No. 631,409
Int. Cl.[6] A63B 71/02
U.S. Cl. 473—471 27 Claims



1. A ball game apparatus comprising:

a playing area substantially defined by two side lines and two end lines, said end lines being longer than said side lines;

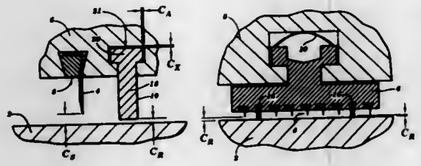
at least one goal having a recess of sufficient size to accept a ball, said recess being disposed below said playing area to allow a ball to roll from said playing area and drop therein.

5,599,026

TURBINE SEAL WITH SEALING STRIP AND RUBBING STRIP

William P. Sanders, Aurora, Canada, and Anthony F. Mitola, Clifton Park, N.Y., assignors to Innovative Technology, L.L.C., Clifton Park, N.Y.

Filed Sep. 6, 1995, Ser. No. 524,258
Int. Cl.[6] F16J 15/447;15/453
U.S. Cl. 277—53 34 Claims



1. A seal for a turbine comprising:

ring means, supportable by a stationary member of said turbine, for encircling a rotating member of said turbine,

at least one substantially circular sealing strip supported by said ring means and extending from said ring means toward an exterior surface of said rotating member, and

a substantially circular rubbing strip supported by said ring means and extending from said ring means toward said exterior surface of said rotating member,

said rubbing strip having a clearance with respect to said exterior surface of said rotating member which is less than the least of clearances of said at least one sealing strip with respect to said exterior surface of said rotating member,

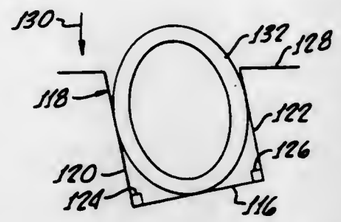
said rubbing strip being axially separated from each of said at least one sealing strips.

5,599,027

GASKET ASSEMBLY FOR SEALING ELECTROMAGNETIC WAVES

Peter J. Balsells, Santa Ana, Calif., assignor to Bal Seal Engineering Company, Inc., Santa Ana, Calif.

Division of Ser. No. 74,384, Jun. 11, 1993, Pat. No. 5,474,309.
This application Jun. 2, 1995, Ser. No. 460,182
Int. Cl.[6] F16J 15/08
U.S. Cl. 277—163 10 Claims



1. A gasket assembly for sealing electromagnetic waves, said gasket assembly comprising:

coil spring means for blocking the propagation of electromagnetic waves therepast, said coil spring means comprising a plurality of individual coils canted along a centerline thereof; and

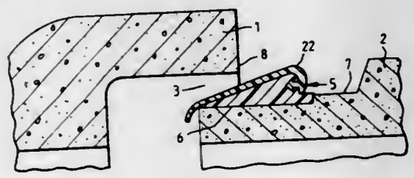
groove means for supporting said coil spring means in a position enabling loading of the coil spring means along a selected direction, said groove means comprising surface means for causing the individual coils to always turn in a selected angular direction in order to control electromagnetic shielding effectiveness of the coil spring means, said groove means comprising a bottom grove surface disposed aslant to said loading direction and generally parallel side grove surfaces adjoining said bottom groove surface and disposed at right angles therewith.

5,599,028

SEAL BETWEEN TWO ELEMENTS, ESPECIALLY BETWEEN CONCRETE PIPES

Wieland Neumann, Mönchengladbach, and Helmut Mehl, Weilburg, both of Germany, assignors to Forsheda AB, Forsheda, Sweden

Filed Sep. 1, 1993, Ser. No. 115,879
Claims priority, application Germany, Sep. 4, 1992, 42 29 609.9
Int. Cl.[6] F16J 15/10
U.S. Cl. 277—199 15 Claims



1. A seal between two portions one introducible in the other, said seal comprising:

a) an elastomeric body which consists essentially of a wedge-shaped cross-section and has a wedge edge end, a wedge base end, a bearing surface and a sliding surface, the wedge edge end being positioned at the front in the direction of the introduction of the two portions one in the other, and the wedge base end having an introduction opening to a reception space; and

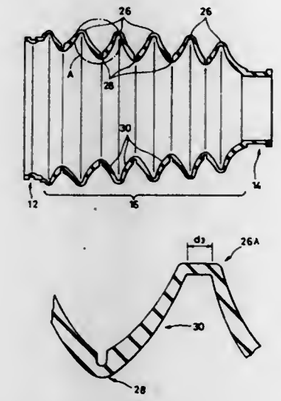
b) a separate, completely detachable attachment portion which is adapted to control the degree of compression of the elastomeric body and the forces established as a consequence of the introduction of the two portions one in the other, said attachment portion being releasably anchored in the reception space.

5,599,029

BOOT HAVING INWARDLY CURVED FLANKS

Seiya Umeno, Shizuoka, Japan, assignor to NOK Corporation, Tokyo, Japan

Filed Oct. 12, 1995, Ser. No. 542,374
Claims priority, application Japan, Oct. 13, 1994, 6-247947
Int. Cl.[6] F16D 3/84
U.S. Cl. 277—212 FB 7 Claims



1. A boot for a universal joint having two rotatable members, said boot comprising:

a first end for engagement with one of said rotatable members, a second end for engagement with the other of said rotatable members, and a resilient bellows structure hermetically interconnecting said first and second ends;

said bellows structure having a plurality of alternating ridge and valley portions, with adjacent ridge and valley portions being interconnected by flank portions;

said flank portions adjacent to one or more of said valley portions being curved inwardly of the boot so as to withstand against a centrifugal force acting radially outwardly on said bellows structure;

said flank portions adjacent to said one or more valley portions having a varying wall thickness that increases from said ridge portions toward said valley portions;

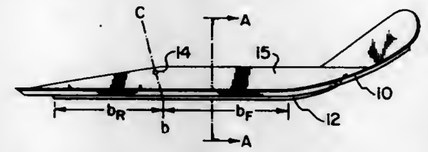
said one or more valley portions having a reduced wall thickness smaller than the wall thickness of the regions of said flank portions immediately adjacent said one or more valley portions.

5,599,030

WEAR RODS FOR SKIS OF SNOWMOBILES AND SIMILAR VEHICLES

Norman A. Campbell, 61 Paget Street, P.O. Box 452, New Liskeard, Ontario P0J 1P0, and Donald G. Campbell, Box 4, King Kirkland, Ontario P0K 1K0, both of Canada

Filed Oct. 14, 1994, Ser. No. 323,013
Claims priority, application Canada, Oct. 15, 1993, 2108537
Int. Cl.[6] B62B 17/02
U.S. Cl. 280—28 10 Claims



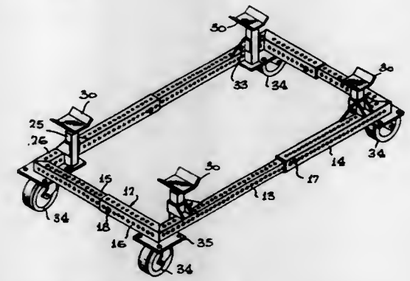
1. A wear rod for skis of snowmobiles and similar vehicles, comprising a generally flat horizontal base for engaging an underside of a ski and a generally vertical wear element projecting downwardly from the horizontal base, wherein said base has dimensions of about ⅛×1×28 inches and said wear element has dimensions of about ¼× ¾×22 inches.

5,599,031

WORK DOLLY HAVING ADJUSTABLE HEIGHT, WIDTH AND LENGTH

Douglas Hodges, 672 W. 12th St., San Pedro, Calif. 90731

Filed Feb. 22, 1995, Ser. No. 392,197
Int. Cl.[6] B62B 1/00;5/00
U.S. Cl. 280—79.11 1 Claim



1. A work dolly comprising:

a rectangular frame having a top side and an underside;

said frame having adjustable side members in spaced-apart parallel relationship and having adjustable end members in spaced-apart parallel relationship;

said side members and said end members having opposite ends whereby adjacent ends of said respective side members and end members are secured together constituting a corner;

each of said end members and said side members consisting of a pair of sections arranged in slidable telescoping relationship whereby the length and width of said frame is adjustable;

fastener means releasably securing said side member sections together to establish a desired frame length and securing said end member sections together to establish a desired frame width;

wheeled means carried at each corner of said frame on said frame underside;

adjustable height means having a fixture secured at each of said frame corners on said frame top side;

said fixture having a receptacle therein;

a leg insertably carried in each of said fixture receptacles;

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additional fastener means releasably securing said leg at a desired height from said frame top side;
a load-bearing support pad movably carried on each of said legs to provide additional height adjustment;
said fastener means includes a plurality of apertures arranged in fixed spaced-apart relationship along each side member section and each end member section whereby selected ones of said apertures in registry and in alignment define an open-ended passageway;
said fastener means further includes a fastener insertable into said open-ended passageway to retain said sections in position; and
each of said fixtures includes a reinforcement flange secured to an adjacent one of said side members with an opening providing a securement for hold-down devices.

5,599,032

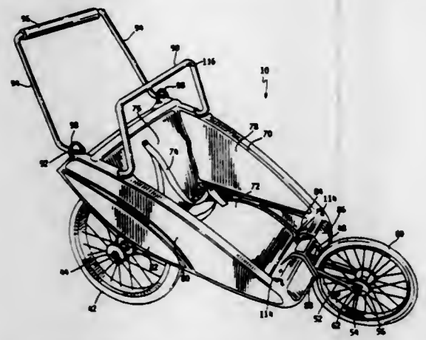
Patent Not Issued For This Number

5,599,033

CONVERTIBLE TRAILER AND JOGGING STROLLER FOR TWO CHILDREN

Brian D. Kolbus, Minneapolis, and Richard H. Jacobs, New Brighton, both of Minn., assignors to TRI Industries, Inc., Bloomington, Minn.

Filed Aug. 30, 1993, Ser. No. 114,738
Int. Cl.[6] B62B *7/12*
U.S. Cl. 280—204 **4 Claims**



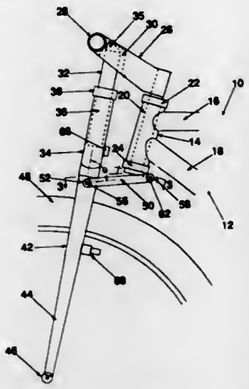
1. A bicycle trailer and jogging stroller for two children convertible between a stroller mode and a trailer mode without removing the rear wheels, comprising:
a) a frame with a fixed rear axle end for fixedly supporting two large diameter rear wheels and a front fork end removably supporting alternatively a front wheel for use in the stroller mode and a trailer cycle hitch assembly attachable to a frame portion of a cycle for use in the trailer mode;
b) a rigid plastic molded shell conformed into a side-by-side two child holder seat portion contoured to the child's body with side, rear and front portions for enclosing two forward facing children, the shell being fastened to the frame wherein the side portions extend upwardly from the child holder seat portion and then downwardly over the rear wheels to form side fenders to protect the children from the rear wheels and the front portion extends upwardly from the child holder seat portion and then downwardly to form a front fender to protect the children from the front wheel, each side fender having a receiving portion formed therein at an upper rearward end thereof, each receiving portion being formed as a linear passageway with forward and rearward openings;
c) a roll bar having a transverse portion extending above the seat portion and two leg portions extending downwardly from opposite ends of the transverse portion, each leg portion being formed with a rearwardly extending portion at a lower end thereof, the rearwardly extending portion extending through the forward opening of the receiving portion of a respective side fender and secured within the receiving portion;
d) a removable handle attachable to the rear portion of the shell for use in the stroller mode, the handle having a pair of leg portions, each leg portion having a forward end portion adapted to be inserted through the rearward opening of a respective receiving portion and tekescopically recieved with in a respective rearwardly extending portion of the rollbar; and
e) a removable trailer hitch assembly attachable to the front fork end.

5,599,034

SINGLE ARM BICYCLE SUSPENSION FORK

Paul H. Brigden, 1167 Valour Rd., Winnipeg, Manitoba, Canada

Filed Feb. 23, 1995, Ser. No. 393,382
Claims priority, application Canada, Feb. 24, 1994, 2116414
Int. Cl.[6] B62K *21/20*
U.S. Cl. 280—276 **12 Claims**



1. A bicycle fork for use with a bicycle having a frame with a head tube, said fork comprising:
a steering assembly including:
a steering column adapted to be mounted rotatably in the head tube; and
steering means secured to the steering column for rotating the steering column;
a strut comprising a linearly extendible and contractible shock absorber with an upper end and a lower end movable linearly with respect to the upper end;
a fork mounted rigidly on the lower end of the strut to prevent any relative movement of the fork on the lower end of the strut, the fork extending downwardly from the strut for mounting a bicycle wheel for rotation about a lateral wheel axis;
upper strut mounting means connecting the upper end of the strut to the steering assembly for pivotal movement only of the strut and fork relative to the steering assembly about a single lateral strut axis fixed with respect to the steering column;
control arm means;
first control arm pivot means connecting the control arm means to the steering column for pivotal movement about a rear lateral axis; and

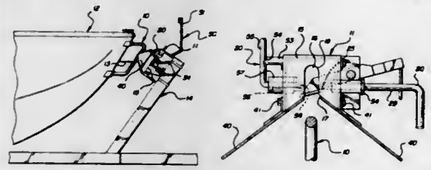
second control arm pivot means connecting the control arm means to the fork below the strut for pivotal movement about a forward lateral axis.

5,599,035

AUTOMATIC BOAT TO TRAILER LATCH

Wendell L. Spence, P.O. Box 1034, East Jordan, Mich. 49727

Filed Apr. 26, 1994, Ser. No. 233,688
Int. Cl.[6] B60P *3/10;7/06*
U.S. Cl. 280—414.1 **8 Claims**



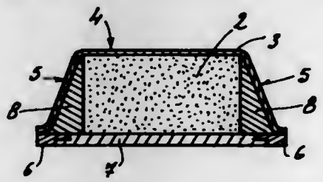
1. A latch assembly for latching a boat to a boat trailer, the latch assembly comprising:
a latch bar adapted to be secured to the prow of the boat and including an elongated generally vertically extending latch bar portion spaced forwardly from the prow; and
a latch structure adapted to be mounted on the forward end of the boat trailer and including
a housing having rear, upper and lower faces defining a vertically extending slot opening in rear, upper, and lower faces of the housing and sized to receive the latch bar portion therein,
a bolt mounted on the housing for horizontal movement along the lengthwise axis of the bolt between a retracted position clear of the slot and a latching position extending across the slot,
means for retaining the bolt in its retracted position, and
trigger means operative in response to movement of the latch bar portion into the slot to move the bolt from its retracted position to its latching position, and
the bolt is further mounted for rotational movement about its lengthwise axis between a first angular position in which the bolt is free to move along its lengthwise axis to its latching position and a second angular position in which the bolt is precluded from moving to its latching position;
the means for retaining the bolt in its retracted position includes means retaining the bolt in said second angular position; and,
the trigger means is operative to move the bolt from its second angular position to its first angular position.

5,599,036

SHAPED SKI OF NON-RECTANGULAR CROSS SECTION

Roger Abondance, La Murette; Jean Bauvois, Mas des Bernards, and Laurent Boix Vives, Grenoble, all of France, assignors to Skis Rossignol S.A., Voiron, France

Filed Oct. 9, 1992, Ser. No. 958,676
Claims priority, application France, Nov. 19, 1991, 91 14749
Int. Cl.[6] A63C *5/07*
U.S. Cl. 280—602 **19 Claims**



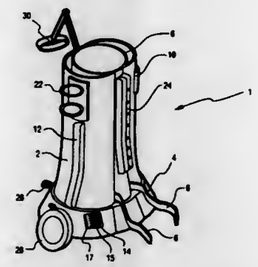
1. A shaped ski of nonrectangular cross section, comprising:
an integral core formed of a foamed filling material and extending along a substantial part of a longitudinal length of the ski,
a unitary outer shell forming an upper wall and lateral walls of the ski, the lateral walls having a greater separation as they extend downwardly from the upper wall,
a lower wall with longitudinal edge members and with a central sliding sole, the upper and lower walls being in contact with the core,
longitudinal reinforcement elements extending along a substantial length of the ski, each reinforcement element including a central portion and end portions, and being arranged on either side of the core, each reinforcement element being in contact at the same time with the core and an inner surface of one of the lateral walls, each reinforcement element comprising a lower surface which extends over a substantial portion of a transverse width of the corresponding edge member, and each reinforcement element extending over at least a part of a height of the ski, wherein each reinforcement element has a tapered width that reduces in an upwardly direction and is within an area between the one of the lateral walls and a plane extending transverse to the lower wall, the plane extending substantially from where the upper wall and the one of the lateral walls join downwardly to the lower wall, a width of the lower surface of each reinforcement element being constant over the longitudinal length of the reinforcement element and a width of the core being variable over the longitudinal length of the core, each reinforcement element being made of a rigid material at least along its central portion and the rigidity of the reinforcement element at least along its central portion being greater than the rigidity of the core.

5,599,037

GOLF BAG HOLDER

Christian D. Spickler, 4009 Meadowood Dr., Eau Claire, Wis. 54701

Filed Mar. 17, 1995, Ser. No. 406,123
Int. Cl.[6] B62B *1/12*
U.S. Cl. 280—652 **15 Claims**



1. A golf bag holder for removably holding and carrying a standard golf bag, said golf bag holder comprising:
a wide, flared, rigid base, said base being generally flat along the bottom surface;
a plurality of vertically elongated rigid side supports in contact with the upper surface of said base;
adjustable retaining means for fittingly holding a golf bag within the confines of the side supports;
a pair of wheels mounted on each end of a long, rod-like axle, said axle penetrating said base and extending beyond said base at each side;
retraction means for extending said wheels below the flat bottom surface of said base and retracting said wheels above the flat bottom surface of said base; and
a handle pivotally attached to one of said vertical side support.

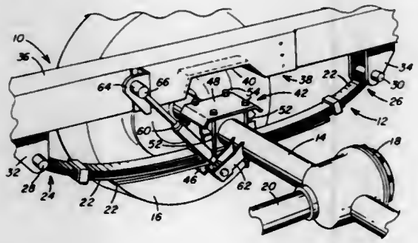
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5,599,038

METHOD AND APPARATUS FOR LOWERING THE SUSPENSION OF A VEHICLE

Mark K. German, 73 Gilmore St., Uniontown, Pa. 15401

Filed Mar. 14, 1995, Ser. No. 403,439
Int. Cl.[6] B60G *11/02*
U.S. Cl. 280—718 20 Claims



1. Apparatus for lowering the suspension system on a vehicle frame comprising,

a vehicle frame,

an axle housing extending transversely relative to said vehicle frame,

a leaf spring assembly extending longitudinally on said vehicle frame underlying said axle housing,

said leaf spring assembly having opposite end portions,

brackets on said frame connected to opposite ends of said leaf spring assembly,

a saddle positioned on said leaf spring assembly,

said axle housing received on said saddle above said leaf spring assembly and removed from contact therewith,

a spring pack supported by said saddle connecting said leaf spring assembly to said axle housing,

said spring pack including a first spring plate underlying said leaf spring assembly below said axle bousing and a second spring plate overlying said saddle above said axle housing,

a plurality of elongated fastening members extending between said first and second spring plates, and

said fastening members being placed under tension to compress said first spring plate into contact with said leaf spring assembly and said second spring plate in contact with said saddle and removed from contact with said axle housing to transfer the weight of said leaf spring assembly through said spring pack and said saddle to said axle housing.

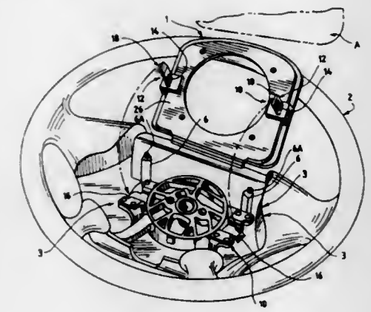
5,599,039

SPRING RETAINER AIR BAG MOUNTING DEVICE

David C. Goss, Rockford, and Steven P. Donovan, Roscoe, both of Ill., assignors to Textron Inc., Providence, R.I.

Filed Jul. 21, 1995, Ser. No. 505,399
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—728.2 15 Claims

1. A fastening assembly for mounting an inflatable module on a vehicle comprising: a support structure arranged for securing the inflatable module to a vehicle component or the like; a coupling member projecting from said support structure and being flexible to accommodate any misalignment thereof and to facilitate assembly thereof and having a coupling aperture; and a coupling element securable to said vehicle component, and arranged for coupling insertion into said coupling aperture to secure fastening of said module to said vehicle component.

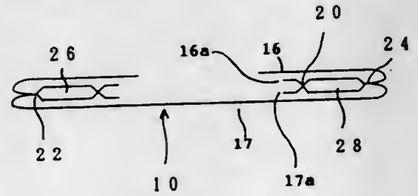


5,599,040

BAG FOR AIR BAG SYSTEM AND MANUFACTURING METHOD THEREOF

Hiroyuki Takahashi, Aichi-Ken; Makoto Hamada, Toyota, and Hiroyuki Kobayashi, Bisai, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, and Toyoda Goesel Co., Ltd., Aichi-ken, both of Japan

Filed Jun. 1, 1995, Ser. No. 457,277
Claims priority, application Japan, Jun. 9, 1994, 6-127626
Int. Cl.[6] B60R *21/24*
U.S. Cl. 280—729 13 Claims



8. A bag for an air bag system comprising:

a main bag having a gas inlet and defined by secured portions which directly connect a first base cloth and a second base cloth and have a first rupture strength; and

at least one auxiliary bag located interiorly of said main bag and defined by secured portions which directly connect said first base cloth and said second base cloth and have a second rupture strength which is less than said first rupture strength.

5,599,041

INFLATABLE VEHICLE OCCUPANT RESTRAINT

Roy C. Turnbull, Troy; Ali S. Emambakhsh, Rochester Hills; Kimberly A. Schwerin, Sterling Heights; Gwendolyn C. Hatten, Utica, and Marie C. Kravetz, Warren, all of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Oct. 24, 1995, Ser. No. 547,608
Int. Cl.[6] B60R *21/24*
U.S. Cl. 280—724 14 Claims

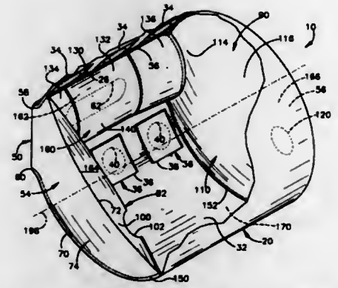
1. An inflatable vehicle occupant restraint for protecting an occupant of a vehicle, said inflatable restraint having a deflated condition and an inflated, occupant protecting condition, said inflatable restraint when in the inflated condition including inboard and outboard side sections and an intermediate section extending between said side sections, said inflatable restraint having an axis which extends between said inboard and outboard side sections, said inflatable restraint comprising:

primary panel means for defining a primary chamber of said air bag, said primary chamber having a generally U-shaped configuration when inflated, said primary panel means including base panel means for defining a base portion of said primary chamber which extends between said inboard and outboard side sections of said inflatable restraint and which receives inflation fluid from an inflator, said primary panel means also including first side panel means and second side panel means for defining first and second axially spaced inflatable side portions of said primary chamber which are in fluid communication with said base portion of said primary chamber at opposite axial ends of said base portion; and

secondary panel means for defining a secondary chamber of said air bag, said secondary panel means including at least one secondary panel having at least one ambient air aspiration opening for aspirating ambient air into said secondary chamber, said secondary chamber being located between said first and second axially spaced inflatable side portions of said primary chamber;

said inboard side section of said inflatable restraint consisting of said first side panel means for defining said first side portion of said primary chamber, and said outboard side section of said inflatable restraint consisting of said second side panel means for defining said second side portion of said primary chamber;

said secondary panel being movable by said first and second side panel means upon inflation of said primary chamber to draw ambient air through said aspiration opening into said secondary chamber to inflate said secondary chamber upon inflation of said primary chamber.



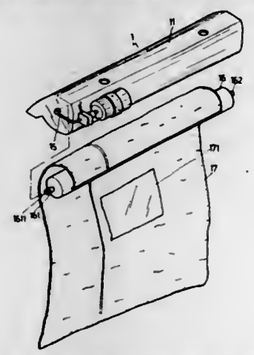
5,599,042

SAFETY AIR CURTAIN FOR VEHICLES

Chorng R. Shyr, and Ming C. Cheng, both of Chie An Hurian, Taiwan, assignors to Chorng Rong Shyr, Furian, Taiwan

Filed Dec. 14, 1995, Ser. No. 572,368
Int. Cl.[6] B60R *21/16;21/06*
U.S. Cl. 280—730.1 3 Claims

1. An inflatable safety air curtain device for vehicles comprising



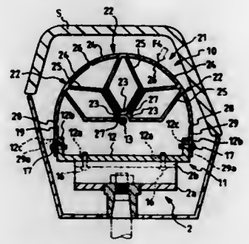
an air curtain device and an infrared detecting device, said air curtain device consisting of a housing for accommodating an air curtain, and a compressed-air cylinder containing high pressure compressed air, an electromagnetic valve and a circuit board mounted at a rear side of said housing, said compressed-air cylinder communicating with said air curtain via said electromagnetic valve and a tubing, said air curtain being provided with a transparent window at a suitable position thereof to prevent obstruction of a driver's vision, said air curtain device capable of being mounted in a car in front and above the driver or passenger, said housing further having a shaft disposed inside, said shaft having a first pin at one end thereof and a second pin at the other end thereof, said first pin being provided with a central opening which communicates with a bollow interior of said shaft in which compressed air may circulate, said air curtain being attached to said shaft with a hose disposed inside said air curtain for permitting compressed air within the bollow interior of said shaft to go into said air curtain, said air curtain being furled on said shaft under normal conditions, said infrared detecting device being mounted at a farthest front end of the car for detecting any car or object to which the car is approaching, said infrared detecting device capable of actuating said electromagnetic valve on said air curtain device via said circuit board upon detecting any car or object within a critical range, so that compressed air from said compressed-air cylinder flows instantly via said tubing through said hose into said air curtain which immediately swells downwardly to form a protective air curtain to protect the driver or the passenger.

5,599,043

IMPACT ENERGY ABSORBER

Yoshiyuki Fujita, Nagoya; Kouichi Kaga, Ama-gun; Sadao Uchida, Ichinomiya; Norio Umemura, Nagoya, and Atsushi Nagata, Inazawa, all of Japan, assignors to Toyoda Gosei Co., Ltd., Aichi-ken, Japan

Filed Oct. 20, 1995, Ser. No. 546,309
Claims priority, application Japan, Oct. 25, 1994, 6-259956; Mar. 30, 1995, 7-073607
Int. Cl.[6] B60R *21/05*
U.S. Cl. 280—750 10 Claims



1. An energy absorber comprising:

an elongate interaction member having an axis therealong; and

a plurality of elongate energy absorbing members provided about said interaction member and extending substantially parallel to said interaction member, each said energy absorbing member comprising:

a contact portion provided on a first radially proximal side of said energy absorbing member adjacent to said interaction member;

a ceiling portion provided on a second radially distal side of said energy absorbing member opposite said first radially proximal side of said energy absorbing member; and

at least one collapsible portion connected to and extending between said contact portion and said ceiling portion.

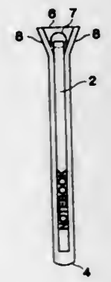
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5,599,044

TRANSPARENT PLASTIC PROTECTOR FOR WIRE BOUND NOTEBOOK

Thomas B. Lykens, 204 Winnebago Dr., Lake Winnebago, Mo. 64034

Filed Nov. 8, 1995, Ser. No. 555,141
Int. Cl.[6] B42D *3/04*
U.S. Cl. 281—19.1 **3 Claims**



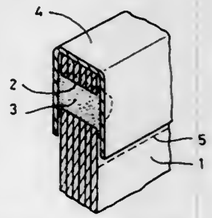
1. A protective casing for a notebook comprising:
an enclosure comprising two sides, two ends, a closed bottom and an open top,
said sides having a first lateral dimension,
said ends having a second lateral dimension which is smaller than said first lateral dimension,
said open top having a third lateral dimension immediately adjacent said sides which is approximately the same as said first lateral dimension, and
said open top having a fourth lateral dimension immediately adjacent said ends which is approximately the same as said second lateral dimension, and
said open top having a fifth lateral dimension removed from said ends which is larger than said fourth lateral dimension,
whereby a notebook may easily be inserted and removed from said protective casing.

5,599,045

BOOK-BINDING STRUCTURE

Kiyomu Asai, 2-402, 30, Mitsuiminamimachi, Neyagawa, Osaka, Japan, and Kaoru Kaji, 18-12, Tanimachi 6-chome, Chuo-ku, Osaka, Japan

Continuation of Ser. No. 288,613, Aug. 10, 1994, abandoned. This application Feb. 15, 1996, Ser. No. 601,844
Int. Cl.[6] B42D *1/00*
U.S. Cl. 281—21.1 **2 Claims**



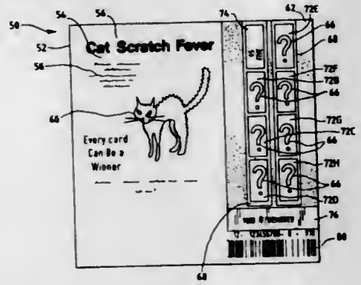
1. A book-binding structure comprising: a plurality of superposed sheets of paper each having a top edge and a plurality of through-holes extending through the sheet from a front surface of the sheet to a rear surface of the sheet, said through-holes in each of said sheets of paper being spaced from one another along the top edge of the sheet, and said through-holes in each of said sheets of paper being aligned with the through-holes in the other said sheets in a direction perpendicular to the front and rear surfaces of the sheets; adhesive more than completely filling said through-holes such that said adhesive at least partially overflows from opposite ends of each set of aligned ones of said through-holes; and a back cover covering said through-holes, said sheets being bonded together by said adhesive, and said back cover being bonded to said sheets at the top edges of said sheets by said adhesive which at least partially overflows.

5,599,046

LOTTERY TICKET STRUCTURE WITH CIRCUIT ELEMENTS

William F. Behm, Marietta; Kenneth E. Irwin, Jr., Alpharetta, and Mark C. Tevis, Cumming, all of Ga., assignors to Scientific Games Inc., Alpharetta, Ga.

Filed Jun. 22, 1994, Ser. No. 263,888
Int. Cl.[6] B42D *15/00*
U.S. Cl. 283—83 **28 Claims**



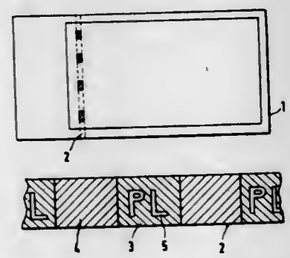
24. A lottery ticket comprising:
a substrate;
printed play indicia; and
a printed circuit element.

5,599,047

MAGNETIC METALLIC SAFEGUARDING THREAD WITH NEGATIVE WRITING AND A METHOD OF MAKING SAME

Wittich Kaule, Lindacher; Michael Boehm, Heimstetten; Walter Schneider, Miesbach, and Theodor Burchard, Gmund, all of Germany, assignors to GAO Gesellschaft Fur Automation und Organisation mbH, Munich, Germany

Continuation of Ser. No. 920,574, Sep. 30, 1992, Pat. No. 5,354,099. This application Aug. 2, 1994, Ser. No. 284,115
Claims priority, application Germany, Dec. 20, 1990, 40 41 025.0
Int. Cl.[6] B42D *15/02*
U.S. Cl. 283—85 **38 Claims**



20. A method for producing a security element to be incorporated into a security document and provided with indicia that are

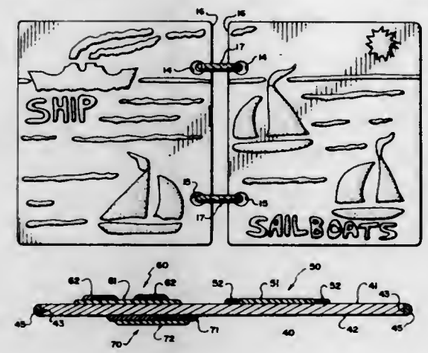
readily visible, both in transmitted light and in incident light, and machine readable, comprising the steps of:
printing on a surface of a transparent carrier film with an activatable ink in form of readable indicia,
applying a metallic layer over the entire carrier film,
activating the ink to produce recesses in the form of the indicia in the metallic layer,
applying a magnetic substance over selected partial areas having gaps therebetween of the carrier film with said indicia being located in said gaps, and
cutting the film into strips of suitable width.

5,599,048

PHOSPHORESCENT BOOK

Thomas Schloler, 194 Douglas Park Road, Winnipeg, Manitoba, Canada

Filed Mar. 6, 1995, Ser. No. 399,719
Claims priority, application Canada, Mar. 4, 1994, 2116993
Int. Cl.[6] B42D *1/00*
U.S. Cl. 283—92 **8 Claims**



1. A book comprising a plurality of pages each formed from a substantially rigid sheet material, means coupling the pages at edges of the pages for opening and closing movement of the pages each relative to the next, and indicia carried on each page, at least some of the pages including indicia thereon which are formed of phosphorescent material of a plurality of different colors wherein the indicia are formed in a raised relief pattern.

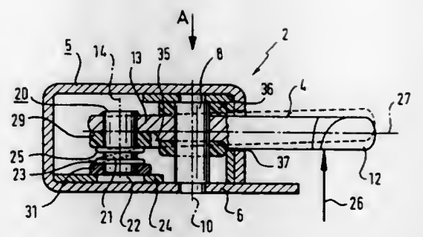
5,599,049

LOCKING MEMBER

Wolfgang Kockel, Erkrath, Germany, assignor to Karl Hildebrand GmbH, Erkrath, Germany

Filed Jul. 25, 1994, Ser. No. 280,763
Claims priority, application Germany, Aug. 6, 1993, 9311767 U
Int. Cl.[6] E05C *19/10*
U.S. Cl. 292—102 **9 Claims**

1. A locking member in combination with vehicle sides and locking said vehicle sides, said locking member comprising:
a hollow stanchion;
a locking lever mounted on said stanchion and having a locking hook and an articulation area, the locking hook engaging, in a locking position, behind an abutment on a vehicle side and pivotable into an open position by a control element engaging in the articulation area of the locking lever;
a shaft, mounted in said stanchion, extending along a pivoting axis, the locking lever being pivotably guided, with clearance, about the shaft extending along the pivoting axis; and
engagement means provided on the stanchion and the articulation area for blocking an opening movement of the locking lever when said locking lever is moved from a pivoting position into an engagement position, the engagement means including an articulation bolt, fixed on the articulation area of the locking lever, having an articulation axis parallel to the pivoting axis when said locking lever is in the pivoting position and an engagement opening defined in a reception element mounted on a surface of the hollow stanchion,
a free end of the articulation bolt engaging the engagement opening when pressure applied to the locking lever moves the locking lever into said engagement position.

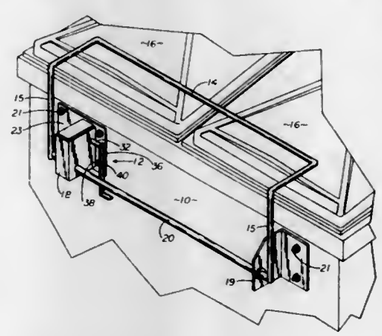


5,599,050

LID-LOCKING DEVICE FOR TRASH CONTAINERS

Harry Tinsley, 65 Potter Dr., Belleville, Mich. 48111

Filed Sep. 27, 1995, Ser. No. 534,737
Int. Cl.[6] E05C *3/02*
U.S. Cl. 292—230 **17 Claims**



1. A trash container automatic lid-locking device comprising a rotatable shaft, a bar attached to the rotatable shaft and extending over at least one lid of a trash container when the rotatable shaft is mounted on the front of a trash container,
a box mountable on the front of a trash container and having the rotatable shaft passing therethrough,
a turn stop attached to the rotatable shaft and located within the box,
a gravity lock rotatably attached within the box so as to naturally hang vertically above the turn stop when the box and trash container are right side up, whereby the turn stop and rotatable shaft are substantially prevented from rotating toward the gravity lock,
and said gravity lock being rotatable to a position sufficient to allow the turn stop and rotatable shaft to turn in response to tilting of the trash container and a stop to limit the rotational movement of the gravity lock and thereby limit the rotational movement of the rotatable shaft and bar.

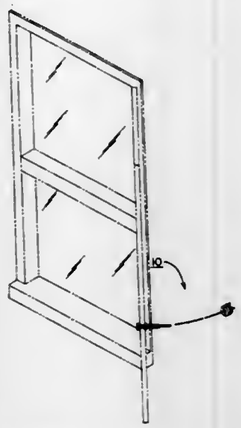
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5,599,051

SECURING DEVICE FOR WINDOW SHUTTERS

Joseph L. Bourgeois, 234 E. 22 St., Cut Off, La. 70345

Filed Apr. 11, 1995, Ser. No. 420,140
Int. Cl.[6] E05C *17/04*
U.S. Cl. 292—262 1 Claim



1. A new and improved securing device for window shutters comprising, in combination:

a wall base unit having an inboard segment and an outboard segment, the outboard segment formed in a generally cylindrical configuration with an upper surface, a lower surface and a cylindrical side wall therebetween, the outboard segment having a centrally positioned hexagonally shaped aperture extending therethrough, the lower surface of the outboard segment including a cylindrical shaped bore extending therein, the side wall of the outboard segment including two apertures extending therethrough and formed contiguously with the bore, the outboard segment including two bolt holes; the inboard segment of the wall base unit formed in a generally cylindrical shaped configuration with an inner surface, an outer surface and a cylindrical side wall therebetween, the inner surface including two bolt holes extending radially therethrough, the outer surface of the inboard segment including a threaded shaft extending therefrom, the inboard segment having a hexagonally shaped bore extending therethrough and axially within the threaded shaft, two bolts and nuts coupling the segments together; and

two pinch bars formed in a planar generally oval configuration with an inboard region, an outboard region and a central region therebetween, the inboard region of each pinch bar including coupling means and being positioned in the bore of the outboard segment of the wall base unit, the inboard region of each pinch bar including resilient means, the central region of each pinch bar including pivot means rotatably coupled within the outboard segment of the wall base unit, the outboard region of the pinch bars extend through the two sidewall apertures of the outboard segment and within the hexagonally shaped bore of the wall base unit, the apparatus being disengaged with the pinch bars being forced together by a user, the resilient means urging the pinch bars apart and into an engaged orientation upon release by the user; and

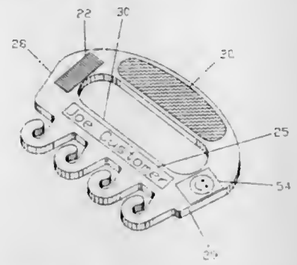
a plurality of insert rods formed in a generally cylindrical configuration with an inboard end and an outboard end, at least one rod including a plurality of external screw threads, the inboard end of each rod including a generally cylindrical shaped tip affixed thereto, each tip having six sides and shaped in a hexagonal configuration with a point, each point adapted to be positioned through an aperture in the outboard segment and releasably coupled within the coupling means of the inboard region of the pinch bars, at least one rod including a hook at the outboard end, at least one rod including adjustable coupling devices adjacent to the inboard end to permit releasable coupling to shutters of varying thicknesses, the diameter of each rod being smaller adjacent to the tip, the smaller diameter permitting locking of the insert rods within the coupling means of each pinch bar.

5,599,052

BAG CARRIER WITH MEANS FOR PROMOTIONAL INDICIA AND/OR CUSTOMER IDENTIFICATION

Peter C. Van Davelaar, 14505 Standing Oak Ct., Midlothian, Va. 23112

Filed Dec. 16, 1994, Ser. No. 357,718
Int. Cl.[6] B65D *33/06*
U.S. Cl. 294—159 15 Claims



1. A bag carrier a comprising:

a horizontal upper handle section having two ends;

a horizontal lower hook support section having two ends;

two substantially vertical connecting member joining the ends of said horizontal upper handle section to the two ends of said horizontal lower hook support section;

a finger receiving opening located in an area between said vertical connecting members, said horizontal upper handle section and said horizontal lower hook support section;

a plurality of hook bases extending down from said horizontal lower hook support section;

a plurality of hook sections extending from the bottom of said hook bases each of said hook sections having an individual flat path including a tapered entrance extending upward and tapering to a width less than the thickness of said bag carrier and dedicated to a single hook, said path extending sideways to a horizontal hook entrance section from said tapered entrance and then downward past a hook pathway constriction section to a hook captive section and said bag carrier being generally flat and having a substantially flat area on one side.

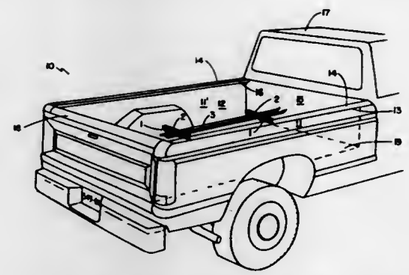
5,599,053

CANTILEVERED SPORT AND UTILITY RACK BRACKET

John T. Wilson, 138 Summer St., N. Easton, Mass. 02356

Filed Oct. 31, 1994, Ser. No. 332,388
Int. Cl.[6] B65D *43/08*; B60P *3/00*
U.S. Cl. 296—3 13 Claims

1. A cantilevered sport and utility rack bracket for mounting on a pickup truck, said truck having a rear cargo area, the interior of which being defined forwardly by a truck cab, rearwardly by a tail gate, along the sides by vertical, opposite side walls, and on the bottom by a cargo bed, the top of each vertical side wall terminating in a horizontal rail running the length of the side wall, said rail being directed horizontally toward the cargo area interior, said rail terminating in a downwardly extending stiffener flange running the length of the rail, said stiffener flange lying in a plane interior to and generally parallel to the plane of the side wall, comprising:



an upper flange positioned horizontally and perpendicularly with reference to a side wall, said upper flange being a flat, generally elongated, member having a top surface, a bottom surface, two sides and two ends, one defined as the free, forward end and the other as the rear, connecting end, wherein an axis from the free, forward end to the rear, connecting end is defined as the upper flange longitudinal axis, wherein a sport and utility rack is attached to the upper flange top surface;

a vertical connecting flange positioned generally vertically with reference to said side wall and connected thereto, said vertical connecting flange being a flat, generally elongated, member having a top end, a bottom end, an inner surface, an outer surface, and two sides, said top end being joined to the upper flange bottom surface at a junction line at a distance of approximately one-fifth of the longitudinal upper flange length from the rear, connecting end, said junction line being transverse to the longitudinal axis of the upper flange, the portion of the upper flange extending from the junction line to the rear, connecting end being defined as the upper flange support portion, the plane of the vertical connecting flange being perpendicular to the plane of the upper flange, wherein an axis between the vertical connecting flange top end and bottom end is defined as the vertical connecting flange longitudinal axis, wherein the side-to-side widths of the upper flange and vertical connecting flange are the same;

a lower flange, connected to said vertical connecting flange at a positioned below said upper flange, said lower flange being a shaped, flat, generally elongated member having a top surface, a bottom surface, and two sides, said member being divided into a forward section with a forward end, and a rear section, wherein an axis along the forward section defines the lower flange longitudinal axis; and

a holding assembly comprised of a shaped block with holding fasteners connected to the vertical connecting flange and adapted to engage said truck borizontal rail and stiffener flange.

5,599,054

VEHICULAR STORAGE APPARATUS FOR ELONGATED OBJECTS

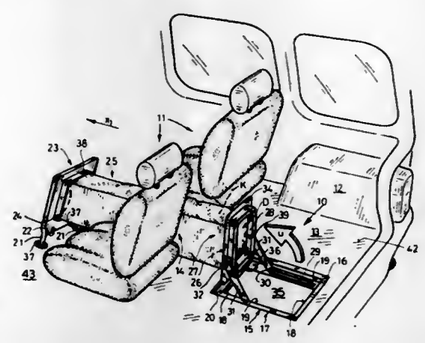
Peter Butz, Langenfeld, and Wolfgang Sitzler, Wuppertal, both of Germany, assignors to Buth Fahrzeugteile GmbH, Ebeleben, Germany

Filed Oct. 27, 1995, Ser. No. 549,627
Claims priority, application Germany, Nov. 3, 1994, 44 38 909.4
Int. Cl.[6] B60R *7/06*
U.S. Cl. 296—37.8 14 Claims

1. An apparatus for storing and transporting elongated objects in a motor vehicle, the apparatus comprising:

a box having a floor and a plurality of sides together defining a chamber, the box being adapted to be secured with the floor horizontal in a motor vehicle;

an open annular frame hinged on one of the sides and displaceable between a down position lying in the box and an up position standing transversely up from the box;



a sleeve-like container having a closed end and an opposite open end secured to the frame, the container being collapsible into a compacted condition and fittable in a stowed position when in the compacted condition in the chamber;

a cover fittable over the box to close the chamber and contain the frame when in the down position of the frame and the stowed position of the container;

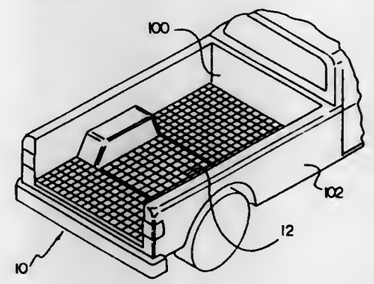
attachment means mounting the cover on the box for movement independent from and relative to the frame.

5,599,055

INSERT FOR A PICKUP TRUCK BED

James F. Brown, 11 N. Adler, Orlando, Fla. 32807

Filed Oct. 23, 1995, Ser. No. 546,707
Int. Cl.[6] B62D *33/02*
U.S. Cl. 296—39.2 6 Claims



2. An insert for a pickup truck bed comprising, in combination:

a truck bed insert comprising a plurality of longitudinally and latitudinally extending rib members, the longitudinally and latitudinally rib members together forming a plurality of square openings, the truck bed insert dimensioned to be received within a truck bed of a pickup truck;

a plurality of attachment brackets adapted for securement of the insert within the pickup truck bed;

lock mechanisms having a key insert through an upper portion, the lock mechanisms having lugs selectively extending outwardly of opposing sides of a lower portion thereof to engage slots within a lower portion of the longitudinally extending rib members of the truck bed insert whereby the lugs cooperate with the key insert to selectively engage or disengage the slots.

5,599,056

ARTICULATED CONNECTION OF TWO ADJOINING COMPONENTS, PARTICULARLY OF A VEHICLE TOP

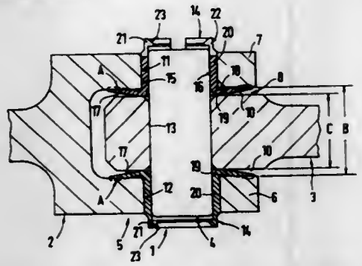
Hans-Juergen Schmitt, Muehlacker, Germany, assignor to Dr. Ing. h.c.F. Porsche AG, Weissach, Germany

Filed Jun. 15, 1995, Ser. No. 490,574

Claims priority, application Germany, Jun. 15, 1994, 44 20 844.8

Int. Cl.[6] B60J 7/08

U.S. Cl. 296—122 12 Claims



1. Articulated connection of first and second adjoining components of a folding vehicle convertible top, the second component being inserted into a recess of the fork-shaped first component and aligned bores being arranged on both components through which bores a pin without a head is guided which connects the two components with one another,

wherein one sleeve respectively which receives the pin is inserted into the two bores of the fork-shaped first component, each sleeve having an outwardly directed elastic ring segment on its side facing the second component, said elastic ring segment being abuttingly supported under pre-stress against the two components to compensate for axial play between the first and second components, and

wherein inwardly directed noses are molded to the sleeves on the side facing away from the second component, which noses reach behind ends of the pushed-in pin without a head and secure the pin with respect to a falling-out.

5,599,057

VEHICLE BODY SIDE STRUCTURE

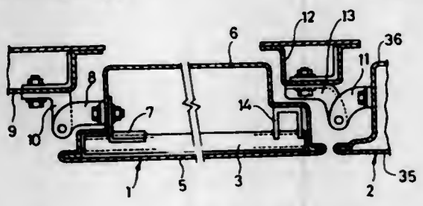
Shinichi Hirahara, and Hiroki Morimoto, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 22, 1994, Ser. No. 264,168

Claims priority, application Japan, Jun. 23, 1993, 5-151721

Int. Cl.[6] B60J 5/04

U.S. Cl. 296—146.6 16 Claims



1. A vehicle body side structure in a vehicle body, comprising:

a door, said door having an outer panel and an inner panel spaced laterally inward therefrom;

a door beam housed in said door, said door beam being an elongated member located in between said outer panel and said inner panel; said door beam having an inner side facing and being spaced laterally from the inner panel and having an outer side which is closely adjacent said outer panel; and said door beam extending in a longitudinal direction of the vehicle body from a rear end of the door beam to a front end of the door beam;

a central pillar extending generally vertically in the vehicle body, said central pillar having an outermost surface thereof spaced laterally inward from said inner side of said door beam, and said door beam having an end portion at said rear end overlapping said outermost surface of said central pillar in said longitudinal direction when said door is closed; and

spacer means mounted on said inner side on said end portion of said door beam and extending laterally inward toward said outermost surface of said pillar, said spacer means having an inner surface which is positioned relatively closely to said outermost surface of said central pillar when said door is closed.

5,599,058

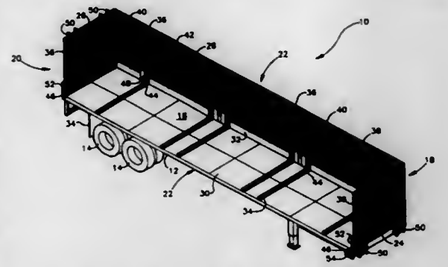
THREE-SIDED CARGO CARRIER

Richardo C. Carter; Richard D. Collins, both of Richmond, and Batin A. Muhammad, both of Gloucester, all of Va., assignors to Peck Recycling Co., Richmond, Va.

Filed Jun. 5, 1995, Ser. No. 462,058

Int. Cl.[6] B60R 27/00

U.S. Cl. 296—181 5 Claims



1. A three-sided cargo carrying vehicle comprising:

a frame having a front end, a rear end, and two elongated sides;

wheels mounted on the underside of said frame;

a floor on the upper side of said frame;

a multiplicity of cross-beams extending across said floor and having a height above said floor to hold bulky cargo above said floor a sufficient distance to permit the insertion of the fork of a forklift truck between said floor and the cargo;

a front wall attached to said front end of said frame;

a rear wall attached to said rear end of said frame;

a side wall attached to one of said elongated sides of said frame with the other of said elongated sides of said frame not having a wall and being an open side whereby cargo can be readily loaded and unloaded from said open side; and

a multiplicity of vertical columns supporting said side wall from the inside and having a sufficient depth to hold bulky cargo away from said side wall a sufficient distance to permit the insertion of a tong of a vertical lift between said side wall and the cargo.

5,599,059

VEHICLE SUNROOF MODULE

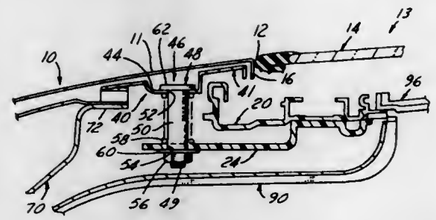
Paul T. E. Shann, Clarkston, Mich., assignor to Chrysler Corporation, Auburn Hills, Mich.

Filed Oct. 2, 1995, Ser. No. 537,377

Int. Cl.[6] B60J 7/00

U.S. Cl. 296—216 5 Claims

1. In combination with a vehicle body having a passenger compartment and upper body portions supporting a roof formed with an opening over the passenger compartment, a reinforcement



frame mounted on an underside of the roof about the periphery of the opening, and a sunroof module having a pair of longitudinally extending side guide rails for guiding the motion of a glass panel between a forward position, closing the opening, and an aft stored position, exposing the opening, the improvement wherein:

said module includes a front and a rear crossmember which, together with said rails, define a module portion underlying a roof area which includes said roof opening, and wherein said rear and an intermediate crossmember, together with said rails, define a storage area for the panel;

said frame has a plurality of energy absorbing resilient fastener assemblies connected to said underlying module portion, and said rear crossmember has each end thereof fixedly connected by a rear fastener to an associated fixed support;

said fastener assemblies each having a bolt and nut assembly including spacer means formed by a tubular sleeve surrounding a stem of said bolt and against which the nut is tightened, and a preloaded resilient member surrounding said bolt and biasing said module away from said frame, said resilient member adapted to be further compressed for at least partially absorbing the energy of a predetermined internal impact upon the sunroof module.

5,599,060

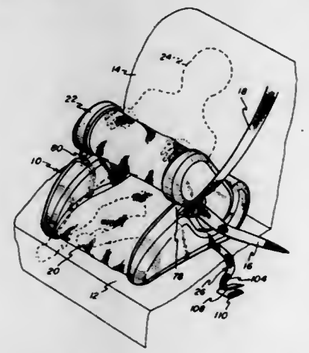
CHILD'S BOOSTER SEAT FOR VEHICLES

William B. Stephens, Boulder, and Joel M. Kramer, Westminster, both of Colo., assignors to Gerry Baby Products Company, Thornton, Colo.

Filed Nov. 6, 1995, Ser. No. 554,266

Int. Cl.[6] B60N 2/28

U.S. Cl. 297—256.15 18 Claims



1. A child's booster seat for use in a vehicle having a vehicle seat and a vehicle passenger restraint system, said booster seat comprising:

a base including an upper surface for receiving a child in a sitting position and a lower surface for supporting said base on a vehicle seat;

said base including opposing sides defining first and second receptor portions;

a shield including opposing ends defining first and second engagement portions for cooperating with said receptor portions to position said shield extending across said base in front of a child seated on said base;

a seat belt receiving area defined by said shield for receiving a lap belt of a vehicle passenger restraint system whereby said booster seat is retained in position on the vehicle seat;

wherein said first and second engagement portions are slidably received in said first and second receptor portions, respectively, for attachment and removal of said shield to and from said base and

wherein said seat belt receiving area comprises first and second slots defined in said opposing ends of said shield adjacent to said first and second engagement portions such that a lap belt located in said slots will be positioned for engagement with the lap of a child seated on said base.

5,599,061

SEAT FOR SITTING IN THE MIDDLE POSITION

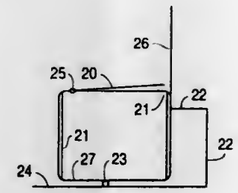
Fritz Curtius, Schachenerstrasse 72, W-8990 Lindau, Germany

Continuation of Ser. No. 55,693, Apr. 20, 1993, abandoned.

This application May 12, 1995, Ser. No. 439,760

Int. Cl.[6] A47C 3/02

U.S. Cl. 297—270.5 5 Claims



1. A chair comprising

(a) a seating part having a forward direction in which an occupant of the chair faces when normally seated on the seating part; said seating part having a forward portion for horizontally supporting thighs of the occupant;

(b) a supporting structure secured to said seating part and extending downwardly therefrom;

(c) a pivot spindle formed of a bar secured to a lower part of said supporting structure; said supporting structure being supported on said pivot spindle; said pivot spindle having a circumferential rolling surface being in a linear rolling contact with a floor in a direction extending transversely to said forward direction for providing a forward and backward swinging motion of said seating part and said support structure about said linear rolling contact;

(d) adjusting means for varying a height position of said seating part relative to the floor such that the occupant's thighs extend substantially horizontally, the occupant's lower legs extend substantially vertically and the occupant's feet are planted on the floor; said seating part and said support structure being free from resetting means, whereby said seating part and said support structure are exposed to pivotal forces derived solely from forces applied by the occupant's body; and

(e) means situated rearwardly of said pivot spindle for limiting a rearward tilting of the chair to prevent a rearward overturning thereof.

5,599,062

SEAT CUSHION STEPLESS ALTERATION DEVICE

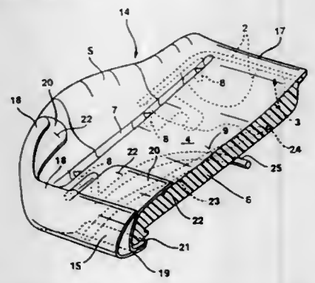
Dieter Hagedorn, Deckenpfronn; Hans-Juergen Schlaffke, Saulgau; Volker Speck, Sindelfingen; Emil Dinkel, Renningen, and Otto Hoelderlin, Deckenpfronn, all of Germany, assignors to Mercedes-Benz AG, Germany

Filed Sep. 29, 1995, Ser. No. 536,187

Claims priority, application Germany, Oct. 26, 1994, 44 38 194.8

Int. Cl.[6] A47C 3/025

U.S. Cl. 297—284.11 6 Claims



1. In combination with a car seat, a device for stepless alteration of a seat depth of a seat cushion of the car seat, the device comprising a variable-pressure air cushion arranged, on a front side of the seat cushion, between a padded rest and a dimensionally stable supporting surface, such that, as a result of an increase in pressure in the air cushion, an associated region of the padded rest is deployed, with the supporting surface being thereby lengthened, and a cover of the padded rest is consequently lengthened by expansion of a fixed end region thereof, wherein the air cushion is approximately U-shaped with legs thereof, oriented in a direction of a rear edge of the seat cushion, bearing on a side support which terminates towards the front side of the seat cushion and is formed by the supporting surface.

5,599,063

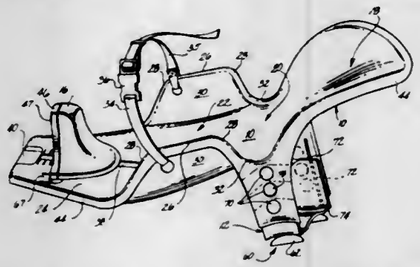
BABY BATHING, FEEDING, SLEEPING AND SEATING CHAIR

Gary Lister; Deirdre Lister, both of 4400 N. Clybourn Ave., Burbank, Calif. 91505; Larry Morris, and Sandra Morris, both of 2435 Cazaux Pl., Los Angeles, Calif. 90068

Filed Mar. 14, 1995, Ser. No. 403,431

Int. Cl.[6] B60N 2/02

U.S. Cl. 297—325 8 Claims



2. An apparatus for supporting an infant to facilitate feeding, bathing or sleeping, comprising an oblong cradling surface comprising a lower section, a middle section, an upper-middle section and an upper section, wherein the cradling surface is inclined, the apparatus comprising:

means for cradling an infant's body;

means for cradling an infant's head extending from an upper portion of the means for cradling an infant's body;

means for accommodating an infant's arms located between the means for cradling an infant's head and the means for cradling an infant's body;

means for supporting an infant's legs extending from a lower portion of the means for cradling an infant's body, forming the lower section of the cradling surface;

means for securing an infant on the cradling surface;

a crotch support comprising,

at least a half-bell shaped shell surface attached upright to the lower section, approximately central, of the cradling surface, facing the upper section of the cradling surface, and

a cover with rounded corners fitted against a edges of the shell surface separate from the infant securing means, the crotch support extending perpendicularly from the lower section of the cradling surface;

means for adjusting the crotch support to accommodate infants of various heights;

means for inclining the whole cradling surface to a plurality of angles;

means for securing the apparatus to a surface; and

means for supporting the cradling surface.

5,599,064

SWIVEL ROCKER

Robert D. Vanderminden, Sr., Granville, N.Y., assignor to Telescope Casual Furniture Co., Granville, N.Y.

Filed Jul. 27, 1995, Ser. No. 508,056

Int. Cl.[6] A47C 1/02

U.S. Cl. 297—344.21 14 Claims



1. A swivel rocker comprising

a base having an upstanding stem;

a chair frame; and

a connection unit connecting said chair frame to said base, said connection unit including a vertical pivot pin rotatably mounted in said stem of said base for rotatably supporting said chair frame on said base, a composite beam secured to and transversely of said pin, said beam including a first flat plate secured to said pivot pin and a second contoured plate transverse to said pivot pin, and a pair of parallel flexures secured to said chair frame and between opposite ends of said plates of said composite beam for supporting said chair frame on said base for rocking in a vertical plane.

5,599,065

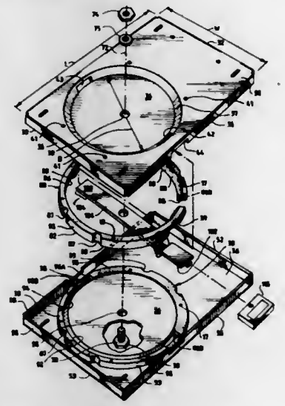
SEAT SWIVEL APPARATUS

Dennis J. Gryp, East Moline, Ill., and Daniel L. Burns, Muscatine, Iowa, assignors to Sears Manufacturing Company, Davenport, Iowa

Filed Dec. 19, 1995, Ser. No. 574,487

Int. Cl.[6] A47C 1/02

U.S. Cl. 297—344.22 13 Claims



1. A seat swivel apparatus, comprising:

upper and lower swivel plates, said upper plate being adapted to support a seat and said lower plate being adapted to mount to a support structure;

a first generally annular bearing disposed in fixed position on said lower plate and having an upward facing generally planar first bearing surface;

a second generally annular bearing disposed in fixed position on said upper plate and having a downward facing generally planar second bearing surface; said first and second bearing surfaces being juxtaposed to permit said upper plate to rotate relative to said lower plate, and each said surface having aligned diametrically opposed recesses;

a swivel actuator lever mounted to and movable with one of said plates, said lever having a latch portion engageable with the recesses of the bearing disposed in the other of said plates to thereby prevent rotation of said upper plate.

5,599,066

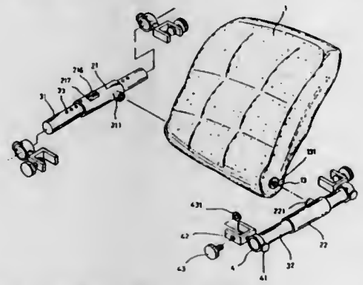
BACKREST ADJUSTING STRUCTURE OF A CHAIR

Chen C. Chih, P.O. Box 82-144, Taipei, Taiwan

Filed Jun. 27, 1996, Ser. No. 671,327

Int. Cl.[6] B60N 2/02

U.S. Cl. 297—383 4 Claims



1. A backrest adjusting structure comprising:

a backrest having a retractable shaft transversely disposed near a bottom side thereof and stop means adapted for stopping said retractable shaft from rotary motion, said retractable shaft comprising a first tube, a second tube slidably inserted into said first tube, a first end cap fixedly secured to said first tube at one end remote from said second tube, a second end cap fixedly secured to said second tube at one end remote from said first tube, a first fixed gear fixedly mounted on said first end cap outside said backrest, and a second fixed gear fixedly mounted on said second end cap outside said backrest;

two guide tubes disposed in parallel and spaced from said backrest at two opposite sides, each of said guide tubes having a longitudinal series of locating holes;

fastening means adapted for securing said guide tubes in place; and

two sliding sleeves respectively and slidably mounted around said guide tubes, each of said sliding sleeves having an internally toothed socket raised from its periphery and engaged with one of said first fixed gear and said second fixed gear, a radial through hole adapted for connecting to one of the locating holes of the corresponding guide tube, an upright lug raised from the periphery adjacent to said radial through hole, a spring, a locating rod pivoted to said upright lug and forced by said spring into engagement with said radial through hole and one of the locating holes of the corresponding guide tube, and a press button mounted on the corresponding sliding sleeve by a frame and supported above said locating rod, said press button being adapted for pressing said locating rod to compress said spring and to release said locating rod from said radial through hole and the locating holes of the corresponding guide tube, for permitting the respective sliding sleeve to be moved along the respective guide tube.

5,599,067

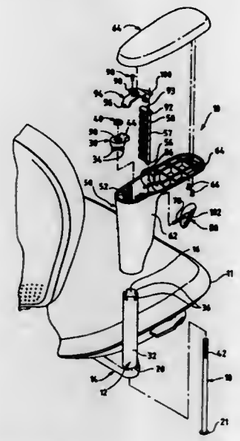
ADJUSTABLE ARM REST ASSEMBLY

David Schuelke, Grand Rapids; Andrew Kurrasch, Saugatuck, and Douglas Brandt, Zeeland, all of Mich., assignors to Herman Miller, Inc., Zeeland, Mich.

Filed Jun. 7, 1995, Ser. No. 484,780

Int. Cl.[6] B60N 2/46

U.S. Cl. 297—411.35 19 Claims



1. An adjustable arm rest assembly for use on a chair, said arm rest assembly comprising:

a support member for attachment to a chair and extending substantially upward therefrom;

an arm rest member extending substantially coaxially with said support member;

a locking element attached to said support member and said arm rest member, said locking element having a projecting portion including an end portion, said end portion including a first mating element;

an adjustment member attached to the other of said support member and said arm rest member, said adjustment member being substantially horizontally pivotable with respect to said locking element, said adjustment member having a plurality of vertically spaced and horizontally extending flanges, said flanges spaced apart so as to form a plurality of recesses, each recess sized to receive said projecting portion of said locking element, each recess having a second mating element corresponding to said first mating element;

whereby said arm rest member is movable in a horizontal plane when said first and said second mating elements are disengaged and said arm rest member is also movable in both a horizontal plane and a vertical plane when said first and second mating elements are disengaged and said projecting portion of said locking element is disengaged from said recess of said adjustment member.

5,599,068

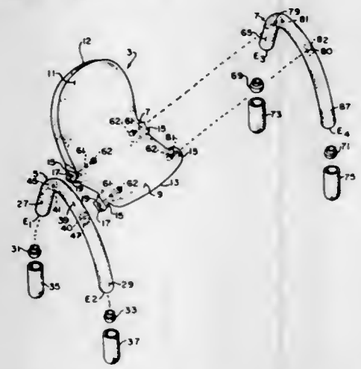
ARCUATELY SUPPORTED CHAIR

Ray G. Kelly; Sharon A. Turnbough, both of St. Louis, Mo., and James McJunkin, San Diego, Calif., assignors to Angeles Group, Inc., Pacific, Mo.

Continuation of Ser. No. 243,761, May 17, 1994, abandoned. This application Apr. 15, 1996, Ser. No. 634,129

Int. Cl.[6] A47C *1/12*

U.S. Cl. 297—448.1 **16 Claims**



1. A chair comprising, a molded plastic body, said body having a seat element and an integral back support, said seat element having a plurality of mounting bosses integrally formed thereon, one of each mounting boss formed proximate a corner of the seat element, each said mounting boss having a hole formed therethrough, a first arch-shaped tubular leg element having a first open-ended leg element and an integral second open-ended leg element adjacent a first side of said seat element, a first and second brace and a fastener element within said first arch-shaped tubular leg element, each said brace and said fastener element positioned adjacent one of said mounting bosses, a fastener inserted through said hole in each said mounting boss and engaging a corresponding fastener element integrally provided in each of said brace, a second arch-shaped tubular leg element having a first and an integral second open-ended leg elements adjacent a second side of said seat element, a third and fourth brace and a fastener element within said second arch-shaped tubular leg element, each said third and fourth brace and said fastener element positioned adjacent one of said mounting bosses formed on the second side of said seat element, a fastener inserted through the hole in each said mounting boss on the second side of said seat element and engaging a corresponding fastener element integrally formed in each said third and fourth brace and fastener element, a plug means closing the open-ended leg elements of the first and second arch-shaped tubular leg elements, whereby said seat element is rigidly secured to said first and second arch-shaped tubular leg elements.

5,599,069

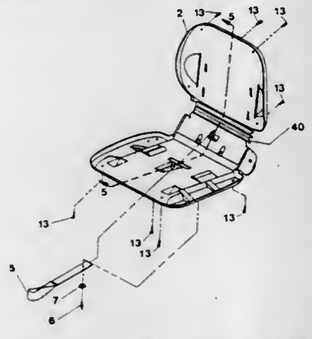
FLEXIBLE UNITARY SEAT SHELL INCLUDING BASE SECTION HAVING FRAME SOCKETS

James R. Lorbiecki, Milwaukee, Wis., assignor to Milsco Manufacturing Company, Milwaukee, Wis.

Division of Ser. No. 339,004, Nov. 14, 1994, Pat. No. 5,538,326. This application Apr. 8, 1996, Ser. No. 629,277

Int. Cl.[6] A47C *7/02*

U.S. Cl. 297—452.15 **18 Claims**



1. A flexible unitary seat shell comprising: a base section defining a base section plane, said base section including two frame sockets for engaging, along axes that are substantially parallel to said base section plane, projections on a seat frame, each of said two frame sockets protruding from a back of said base section and including an encircling aperture that defines a plane that is nonparallel to said base section plane;

a back section in angular relationship to said base section; and an intermediate section connecting said base section to said back section, said intermediate section forming a hinge between said base section and said back section to permit changes in the angular relationship between said base section and said back section.

5,599,070

SEAT AND INTEGRAL SEAT BELT

Tu T. Pham, Troy; Lawrence J. Verellen, Washington, and Gregory A. Wysocki, Sterling Heights, all of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Dec. 12, 1995, Ser. No. 571,129

Int. Cl.[6] B60R *22/00;22/06*

U.S. Cl. 297—483 **20 Claims**

1. An apparatus comprising:

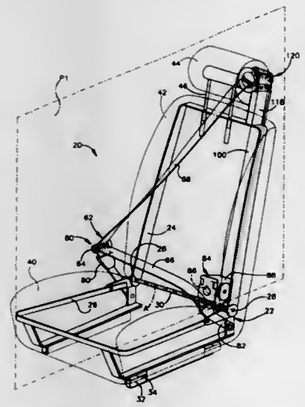
a seat including a frame defining a reference axis and supporting a seat bottom and a seat back;

a seat belt retractor fixed to said frame;

seat belt webbing having one end fixed to said frame and another end operably connected with said retractor, said seat belt webbing carrying a tongue between said ends;

a buckle connected to said frame for receiving and connecting with said tongue;

guide means located in the seat back for guiding movement of said seat belt webbing through the seat back; and



a turning mechanism for directing a portion of said seat belt webbing, said turning mechanism comprising:

a housing fixed to said frame at a location spaced from the reference axis;

a bezel having a surface supporting said seat belt webbing, said bezel being supported by a portion of said housing for rotation relative to the reference axis; and

a member having a curved surface and being supported by said housing to extend at an angle relative to the reference axis, said member directing a portion of said seat belt webbing from said guide means toward said surface of said bezel, a majority of said member being spaced from the reference axis a distance greater than a distance that a majority of said surface of said bezel is spaced from the reference axis.

5,599,071

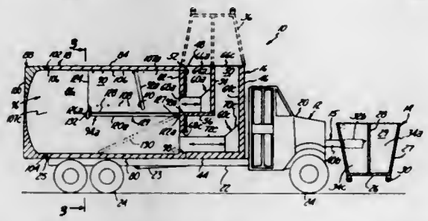
MULTI-COMPARTMENTALIZED DUMPING BODY WITH MOVABLE FLOOR

Dirk Co. Kann, and Virgil L. Collins, both of Guttenberg, Iowa, assignors to Kann Manufacturing Corporation, Guttenberg, Iowa

Continuation of Ser. No. 344,941, Nov. 23, 1994, abandoned. This application Apr. 8, 1996, Ser. No. 628,976

Int. Cl.[6] B60P *1/28*

U.S. Cl. 298—23 R **27 Claims**



1. A multiple compartment storage body for a refuse collection vehicle, the body comprising: a floor; a roof;

a plurality of walls extending between the floor and the roof, the plurality of walls including a front wall, a rear wall, and side walls between the front wall and the rear wall, wherein the roof, floor and walls define an interior storage space and wherein the walls define a discharge opening; and

a vertically movable partition supported adjacent to and extending from the front wall towards the rear wall and positioned between the floor and the roof, wherein the partition divides the interior storage space into an upper compartment having a volume and a lower compartment having a volume and wherein the entire partition is vertically movable between a first raised position intermediate the floor and the roof and a second lowered position so as to increase the volume of one of the upper and lower compartments in communication with the discharge opening and to allow refuse near the front wall in one of the Upper and lower compartments to become less compact for unloading.

5,599,072

PROCESS AND APPARATUS FOR BRAKING A VEHICLE

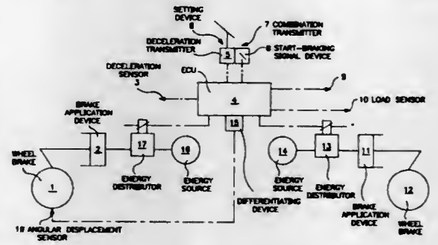
Joachim Feldmann, Neustadt, Germany, assignor to WABCO Standard GmbH, Hanover, Germany

Filed Sep. 17, 1992, Ser. No. 946,740

Claims priority, application Germany, Sep. 19, 1991, 41 31 169.8

Int. Cl.[6] B60T *8/32;13/66*

U.S. Cl. 303—3 **7 Claims**



3. A braking system for actuating at least one brake on a travelling vehicle, comprising:

means for producing a start-braking signal as braking begins,

means for producing a signal indicating actual vehicle deceleration,

means for producing a signal indicating a vehicle deceleration requirement, and

control means responsive to said start-braking signal, said signal indicating actual vehicle deceleration and said signal indicating a vehicle deceleration requirement for setting an initial vehicle deceleration signal equal to said signal indicating actual vehicle deceleration produced at the time said start-braking signal is produced and for actuating said at least one brake when the value of said signal indicating actual vehicle deceleration is different from the sum of said signal indicating a vehicle deceleration requirement and said initial vehicle deceleration signal.

5,599,073

HYDRAULIC SYSTEM FOR CONTROLLING A BRAKE SYSTEM AND A SUSPENSION SYSTEM OF A WHEEL-TYPE EXCAVATOR

Tae-Gyu Huh, Kyung Nam, Rep. of Korea, assignor to Samsung Heavy Industry Co., Ltd., Kyung-Nam, Rep. of Korea

Filed Nov. 16, 1994, Ser. No. 340,629

Claims priority, application Rep. of Korea, Dec. 30, 1993, 1993-31448; Nov. 12, 1994, 94-29679

Int. Cl.[6] B60K *28/16*

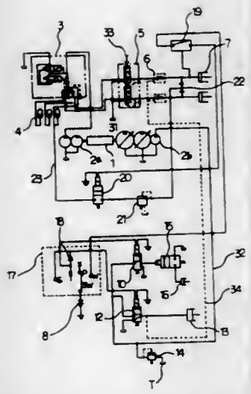
U.S. Cl. 303—3 **7 Claims**

1. A hydraulic system for controlling a brake system and a suspension system comprising:

a first and a second hydraulic pump driven by an engine;

a travel-brake cylinder driven by the first hydraulic pump, and a park-brake cylinder and a suspension system locking cylinder driver by the second hydraulic pump;

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a travel-brake valve disposed between the first hydraulic pump and the travel-brake cylinder;

a pilot check valve disposed between the travel-brake valve and the travel-brake cylinder;

a first solenoid valve disposed between the second hydraulic pump and the park-brake cylinder and switching an oil path therebetween;

a second solenoid valve disposed between the second hydraulic pump and the suspension system locking cylinder and switching an oil path therebetween;

a pilot oil path branched from an oil path between the first solenoid valve and the park-brake cylinder and providing a predetermined oil pressure for operating the pilot check valve;

a third solenoid valve disposed in an oil path between the first hydraulic pump and a predetermined position of another oil path between the pilot check valve and the travel-brake cylinder;

a check valve disposed between the third solenoid valve and the park-brake cylinder;

a pressure reduction valve disposed between the third solenoid valve and the check valve; and

electrical switching means for selectively supplying electric power to operate the first, the second and the third solenoid valves.

5,599,074

VEHICLE BRAKE DEVICE HOUSING WITH PROPORTIONING, TRACTION, INLET AND OUTLET VALVES

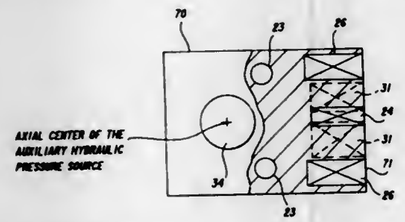
Hisayoshi Mori; Norikata Goto; Nobushige Teraji, and Takashi Fujii, all of Hamakita, Japan, assignors to Nisshinbo Industries Inc., Tokyo, Japan

Filed Jul. 31, 1995, Ser. No. 509,060

Claims priority, application Japan, Aug. 2, 1994, 6-198965

Int. Cl.[6] B60T *8/36*

U.S. Cl. 303—113.2 **1 Claim**



1. A vehicle brake device comprising:

an inlet valve installed in a main brake line connecting a master cylinder to a wheel cylinder of each front wheel;

a proportioning valve, traction valve and inlet valve installed in the main brake line connecting the master cylinder to a wheel cylinder of each rear wheel; and

an outlet valve, auxiliary reservoir, auxiliary hydraulic pressure source, and dumping chamber mounted in a reflux line connecting the wheel cylinder to the main brake line;

wherein the auxiliary hydraulic pressure source and the traction valve are positioned on a side face of an hydraulic pressure box, and the dumping chambers, the auxiliary reservoirs and the proportioning valve are positioned on a bottom face of the hydraulic pressure box such that their axial centers are parallel, and the proportioning valve is arranged below the axial center of the auxiliary hydraulic pressure source and the traction valve, and positioned such that brake fluid therein is capable of flowing from bottom to top when air is exhausted during the brake fluid introduction.

5,599,075

ANTI-SKID BRAKE CONTROL SYSTEM FOR FOUR-WHEEL DRIVE VEHICLES

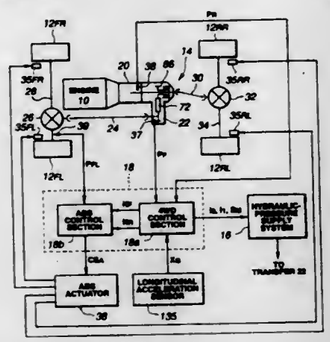
Tomoyuki Hara, Isehara, and Toshiharu Takasaki, Sagamihara, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Aug. 23, 1995, Ser. No. 518,319

Claims priority, application Japan, Sep. 21, 1994, 6-226470

Int. Cl.[6] B60K *17/348*

U.S. Cl. 303—143 **9 Claims**



1. An anti-skid brake control system in combination with a four-wheel drive vehicle employing a transfer for distributing a driving torque passing from a transmission to front and rear differentials, a front-wheel mean revolution-speed sensor for detecting a mean revolution-speed of front road wheels, a rear-wheel mean revolution-speed sensor for detecting a mean revolution-speed of rear road wheels, and four-wheel-drive control means for controlling a driving-torque distribution ratio of said transfer based on the front-wheel and rear-wheel mean revolution-speeds detected by said front-wheel mean revolution-speed sensor and said rear-wheel mean revolution-speed sensor respectively, said system comprising:

anti-skid brake control means communicating with said four-wheel-drive control means for controlling a wheel-brake cylinder pressure of each road wheel based on at least a revolution-speed of a first wheel of the front road wheels, a revolution-speed of a second wheel of the front road wheels, and the mean revolution-speed detected by said rear-wheel mean revolution-speed sensor;

an additional sensor provided at said first wheel for detecting the revolution-speed of said first wheel; and

arithmetic means for calculating the revolution-speed of said second wheel as a function of the revolution-speed of said first wheel, the mean revolution-speed detected by said front-wheel mean revolution-speed sensor, and a predetermined, fixed final drive ratio in the front differential.

5,599,076

PROCESS FOR DETERMINATION OF FRICTION/SLIP CHARACTERISTICS OF THE TIRES OF A ROAD VEHICLE AND SLIP CONTROL SYSTEM FOR CARRYING OUT THE PROCESS

Manfred Burckhardt, Waiblingen; Gerd Eilert, Schwaikheim; Rainer Freitag, Nuertingen; Armin Mueller, Backnang; Reinhold Schoeb, Filderstadt; Rainer Splecker, Kernen; Sinan Kazan, Esslingen, and Richard Zimmer, Fellbach, all of Germany, assignors to Mercedes-Benz AG, Germany

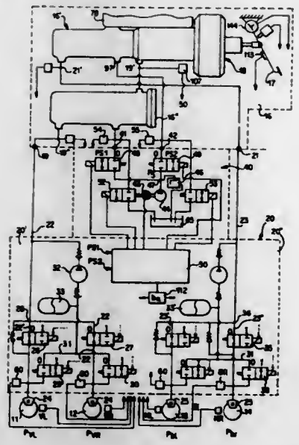
PCT No. PCT/EP93/00005, § 371 Date Oct. 5, 1994, § 102(e) Date Oct. 5, 1994, PCT Pub. No. WO93/12960, PCT Pub. Date Jul. 8, 1993

PCT Filed Jan. 4, 1993, Ser. No. 256,250

Claims priority, application Germany, Jan. 3, 1992, 42 00 046.7

Int. Cl.[6] B60T *8/00*

U.S. Cl. 303—150 **10 Claims**



1. A slip control system for carrying out a process for determining friction/slip characteristics of tires, on a road vehicle equipped both with an antilock system to permit an individual brake pressure control on individual vehicle wheels, comprising an apparatus for electronically controlled distribution of brake forces exertable via front wheel brakes and via rear wheel brakes, a braking device having a tandem master cylinder and a control pressure source with an electrically controllable output pressure configured to be coupled into a control pressure space of the tandem master cylinder and thereby additively superposed upon brake pressure generated by pedal actuation of the braking device alone and is further configured to be coupled into the rear wheel brakes, the control pressure source comprising an electronic control unit configured to generate control signals required for brake force distribution from processing at least wheel speed-of-rotation sensor output signals individually allocated to the vehicle wheels and pressure sensor output signals characteristic of generatable brake pressures wherein the front wheel brakes connected to a primary output pressure space of the tandem master cylinder and the rear wheel brakes are connected to a secondary output pressure space of the tandem master cylinder, a first bore stage of a housing of the tandem master cylinder, forming a housing-defined boundary of the secondary output pressure space, within which first bore stage a secondary piston with an outer piston flange delimits the secondary output pressure space in relation to a pressureless downstream chamber, an inner piston flange movably sealing off the downstream chamber in relation to an inner portion of the first bore stage, an intermediate wall of the housing delimiting the bore stage relative to a central bore stage which extends from a third bore stage receiving a primary piston, a cross-sectional area of the third bore stage is greater than a cross-sectional area of the central bore stage, an actuating piston being displaceably guided in the central bore stage in a pressure tight manner, the actuating piston forming an axially movable, inner boundary of the primary output pressure space relative to a pressureless downstream chamber in the central bore stage which is bounded by the intermediate wall, the actuating piston being provided with a thrust rod configured to axially penetrate the central downstream chamber and to pass displaceably in a pressure tight manner through a central bore of the intermediate wall and being axially supported on an inner piston flange of the secondary piston, an annular space which is bounded in an axially movable manner by the inner piston flange of the secondary piston and by the intermediate wall, centrally penetrated by the thrust rod and is connected to the pressure output of the controllable pressure source.

5,599,077

CABINET LOCKING SYSTEM

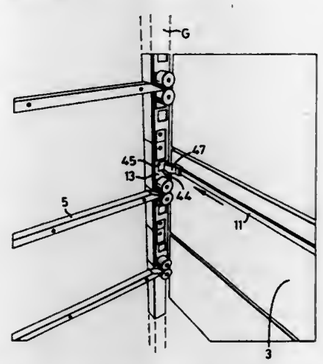
Andrew J. Law, Bradford, and Raymond Parker, Leeds, both of United Kingdom, assignors to Flexiform Business Furniture Limited, Bradford, United Kingdom

Filed Feb. 24, 1995, Ser. No. 393,991

Claims priority, application United Kingdom, Feb. 25, 1994, 9403629

Int. Cl.[6] E05C *7/06*

U.S. Cl. 312—221 **9 Claims**



1. A cabinet provided with a plurality of drawers mounted so as to be slidable out of the cabinet, said cabinet including a combined locking and anti-tilt device which comprises:

a guideway jointed to said cabinet and having first and second ends;

a plurality of block units slidably mounted in adjacent relationship within the guideway, each unit including a projecting portion engageable by an adjacent drawer whereby when one of said drawers is actuated so as to slide out of the cabinet, said block units between said actuated drawer and the first end of the guideway are displaced towards said first end;

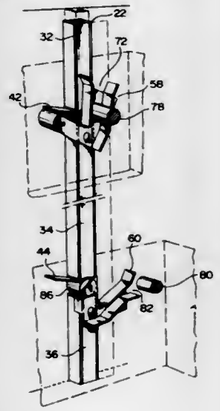
a locking member movable between a locked position, and an unlocked position; and

an elongated locking element extending from the first end of the guideway towards the second end to a location proximate the locking member, the locking element being secured to the block unit closest to the first end of the guideway so as to be movable therewith relative to the remaining block units, said locking element including lock engagement means arranged to contact the locking member when said member is in the locked position and when block units are displaced towards

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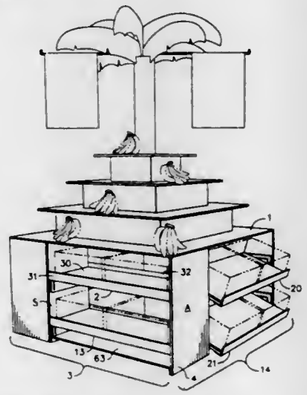
said first end of the guideway to thereby prevent further displacement of the block units.

5,599,078
ANTI-TIP DEVICE FOR FILE CABINETS
Guy Dechene, Laval, and Michel Pichereau, Beaconsfield, both of Canada, assignors to ALB Industries Ltd., Montreal, Canada
Filed Nov. 8, 1995, Ser. No. 555,162
Int. Cl.[6] G05B *65/46*
U.S. Cl. 312—221 **13 Claims**



1. A cabinet comprising
a) a housing;
b) two or more drawers in the housing each having a post mounted thereon;
c) a channel mounted in the housing adjacent said drawers, one side of said channel having a discrete opening of predetermined dimensions associated with each adjacent drawer;
d) a bar of predetermined length associated with each adjacent drawer, each bar being slidingly retained in the channel with at least one end movably abutting an end of an adjacent bar, and each bar having a rigid tongue extending through a respective one of the discrete openings; and
e) a pivot member associated with each drawer having a post retaining channel and an arm, each pivot member being pivotably mounted in the housing such that it has a closed position in which the post of the associated drawer is retained in the post retaining channel and an open position in which said post is free to exit the post retaining channel;
wherein:
i) opening of a drawer causes its post to engage its post retaining channel urging the pivot member to pivot to its open position, and wherein pivoting of the pivot member causes the arm to pivot in engagement with the tongue of the drawer's associated bar thereby slidingly displacing the bar and facilitating insertion of an end of the arm into the channel between adjacent bars, or between the end of a bar and the of the channel; and
ii) when one pivot member is in its open position allowing opening of the drawer it is associated with, the displacement of tongues associated with other drawers is limited by engagement of the tongues with the periphery of the associated opening, engagement of an end of the associated bar with an abutting end of another bar, or engagement of an end of said bar with the arm of the pivot member which is in its open position, thereby preventing pivoting of the other pivot members and accordingly opening of more than one drawer; and
iii) the channel can accommodate only one open pivot member or can partially accommodate two or more partially open pivot members, partially open pivot members not permitting the associated drawers from opening, thereby preventing two or more drawers from being opened simultaneously.

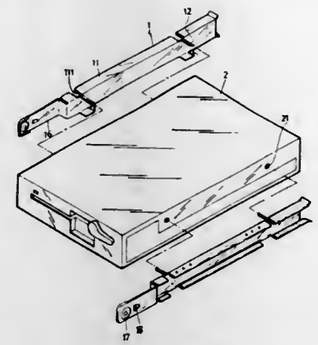
5,599,079
PRODUCT DISPLAY STAND, AND METHOD OF STORING AND DISPLAYING PRODUCTS USING THE SAME
Douglas Ranno, 1247 Martin Dr., Apt. B, Cincinnati, Ohio 45202, and David S. Stevens, 23609 65th St., Salem, Wis. 53168
Filed Aug. 19, 1994, Ser. No. 293,518
Int. Cl.[6] A47F *3/04*
U.S. Cl. 312—323 **13 Claims**



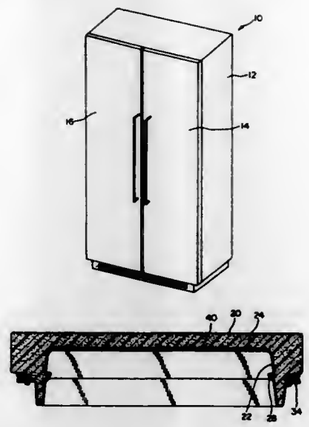
1. A product display stand comprising:
(a) at least one display surface for displaying a product thereupon;
(b) a first vertical face positioned beneath said display surface; and
(c) at least one drawer positioned beneath said display surface for storing said product, said drawer movable between a closed position and an open position and comprising a front face of a height that promotes air circulation across said drawer, wherein said drawer is disposed within said stand when the drawer is at said closed position, wherein said drawer is angled downwardly when the drawer is at said open position, and wherein said drawer may be moved from the closed position to the open position by slideably moving the drawer from the interior of the stand in the direction of said vertical face; and
(d) a cooling unit capable of dispelling cooled air, said cooling unit positioned beneath said display surface and within said stand, such that said cooled air can be dispelled into said drawer, thereby cooling product stored within said drawer.

5,599,080
SLIDING CASE MOUNTING DEVICE
Hsin C. Ho, 20F-1, 268, Sec.1, Wen Hua Road, Pan Chiao City, Taipei, Taiwan
Filed Feb. 8, 1996, Ser. No. 600,098
Int. Cl.[6] A47B *88/00*
U.S. Cl. 312—334.7 **1 Claim**

1. A sliding case mounting device comprising two sliding case mounting rails fixed to two opposite long sides of a rectangular sliding case permitting it to be installed in two tracks inside a mainframe, wherein each sliding case mounting rail comprises a channel-like rail body inserted into said mainframe and forced into



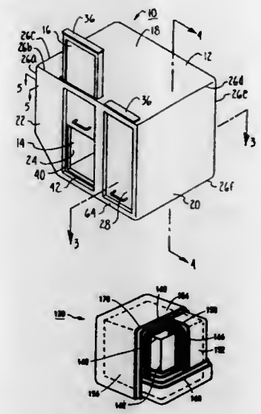
engagement with one track of said mainframe, two inward bends symmetrically disposed at an inner side in a parallel relation, which provide a respective smoothly curved edge two horizontal projecting plug rods perpendicularly raised from two opposite ends of said channel-like rail body at an outer side and respectively plugged into respective mounting holes in one lateral side of said sliding case, a mouth at one end, which guides one track into engagement with said channel-like rail body, two outward hooks respectively raised from two opposite ends of said channel-like rail body at an outer side below said projecting plug rods and respectively hooked in respective bottom mounting holes in said sliding case, a front extension strip extending from one end of said channel-like rail body remote from said mouth, a press portion at one end of said front extension strip remote from said channel-like rail body, and an inward hook raised from said front extension strip at an inner side and hooked in a respective retaining hole in said mainframe said inward hook being released from the respective retaining hole for permitting said sliding case to be removed from said mainframe when said press portion is depressed inwards.



prevent the torsional forces associated with the loading of the shelf from deforming the door to break the seal between the seal and a refrigeration appliance.

5,599,081
REFRIGERATION APPLIANCE DOOR WITH REINFORCEMENT SHEET
John R. Reviett, Henderson County, Ky.; Edward A. Anderson; Patrick A. Braun, both of Warrick County, Ind.; Steve J. Kerwin, and Franklin G. Katje, both of Evansville, Ind., assignors to Whirlpool Corporation, Benton Harbor, Mich.
Continuation of Ser. No. 287,040, Aug. 8, 1994, abandoned. This application Feb. 9, 1996, Ser. No. 599,639
Int. Cl.[6] A47B *96/04*
U.S. Cl. 312—406 **20 Claims**

1. A door for a refrigeration appliance having a cabinet with a least one compartment defined by a peripheral edge, the door comprising:
an exterior shell with a peripheral edge and having an outer surface and an inner surface, a certain degree of rigidity, and a seal provided on the peripheral edge to seal the door with respect to a refrigeration appliance,
an interior liner comprising a peripheral edge and a planar portion and having a front surface and a rear surface, the planar portion of the interior liner being spaced from the exterior shell and being less rigid than the shell,
at least one shelf being provided on the front surface of the interior liner,
a foamed insulation material disposed between the inner surface of the exterior shell and the rear surface of the interior liner, and
a reinforcement sheet provided on and substantially coextensive with the planar portion of the inner liner and having a rigidity greater than said interior liner, wherein the combined rigidity of the inner liner and the sheet material is such that upon the loading of the shelf, the interior liner is sufficiently rigid to



1. A hardened unit load carrying device having a compartment for enclosing the load which comprises:
a plurality of panels, including a first panel, a second panel, and a third panel, one said panel being formed with an opening, said first panel and said second panel being joined, said third panel being joined to said first panel and said second panel to form a corner for said device with a joint between said first panel and said second panel, a joint between said third panel and said first panel and a joint between said third panel and said second panel;
a first plurality of substantially parallel fibers, said first plurality of fibers being integral to said first panel and to said second

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panel with said parallel fibers oriented substantially perpendicularly to said joint between said first panel and said second panel;

a second plurality of substantially parallel fibers, said second plurality of fibers being integral to said second panel and said third panel with said parallel fibers oriented substantially perpendicular to said joint between said second panel and said third panel;

a third plurality of substantially parallel fibers, said third plurality of fibers being integral to said third panel and to said first panel with said parallel fibers oriented substantially perpendicular to said joint between said third panel and said first panel;

a door having an edge;

a rail formed on said door along a portion of said edge;

a cradle bordering said opening; and

a slit formed in said cradle for slidably receiving said door therethrough to position at least part of said rail in said cradle when said door covers said opening to enclose said load in said compartment, and to position said rail for engagement with said cradle in response to an explosive blast within said compartment to resist rupturing said device.

5,599,083

PROJECTION APPARATUS

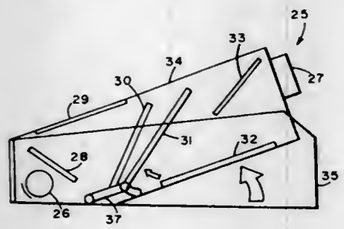
Christopher H. J. Mort, 1A Goetre Fawr Road, Swansea, United Kingdom

Filed Dec. 16, 1994, Ser. No. 357,109

Claims priority, application United Kingdom, Dec. 17, 1993, 9325813; May 6, 1994, 9409025

Int. Cl.[6] G03B *21/14*

U.S. Cl. 353—69 **1 Claim**



1. Projection apparatus comprising:

a base;

projector housing, tiltable relative to the base;

a projection lens carried by the housing arranged to project an image from the apparatus;

an image carrier element carried by the housing spaced from the projection lens and tiltable about a pivot axis;

a linkage connected between the base and the image carrier element, the linkage being arranged to cause automatic tilting of the image carrier element as the housing is tilted relative to the base.

5,599,084

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5,599,085

MOTORCYCLE HEADLIGHT AND METHOD FOR CONTROLLING A LIGHT DISTRIBUTION THEREOF

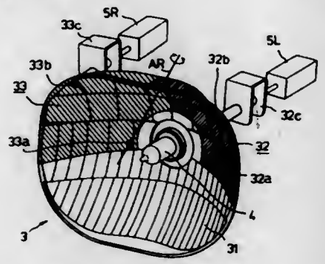
Hajime Tabata, Wakoh; Tetsuya Suzuki, Kawagoe; Yoshihisa Hirose, Tokorozawa; Koichi Nagano, Tokyo; Masaaki Furubayashi, Tokyo, and Tadashi Nomura, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, and Stanley Electric Co., Ltd., both of Tokyo, Japan

Filed Dec. 23, 1994, Ser. No. 363,740

Claims priority, application Japan, Dec. 29, 1993, 5-355456

Int. Cl.[6] F21M *3/18*

U.S. Cl. 362—72 **29 Claims**



1. A headlight of a motorcycle comprising,

at least one housing secured to the motorcycle and having a front aperture,

at least one lens covering the front aperture of the housing,

at least one light source located substantially at a center of the housing,

at least one mirror reflector comprising at least one movable portion having a pivot, said mirror reflector being installed into the housing,

at least one driving mechanism for moving the movable portion of the reflector, so that,

when the motorcycle is tilted, the movable portion of the reflector is turned by the driving mechanism around an axis of rotation that runs through a point where a pivot of the reflector is provided, said axis is inclined from vertical axis of the mirror reflector in upright position and becomes vertical as the motorcycle is tilted so as to obtain an appropriate light distribution of the headlight.

5,599,086

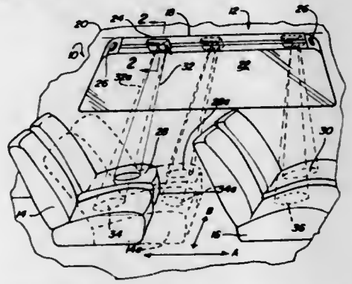
VEHICLE TRACK LIGHTING SYSTEM

Kalyan Dutta, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jun. 6, 1995, Ser. No. 466,509

Int. Cl.[6] B60Q *3/02*

U.S. Cl. 362—74 **1 Claim**



1. A vehicle lighting system for a vehicle having two or more longitudinal seating positions and two or more transverse seating positions comprising:

an elongated track mounted along longitudinal axis of said vehicle and attached to and carried solely by a structural headliner of said vehicle, said track including two elongated rails within said track, said rails conducting power and ground;

a switch attached to said rail interrupting said power; and

an illuminator slidably mounted to said track and communicating with said power and ground rails, said illuminator being movable along said track to illuminate a continuous area between said two or more longitudinal seating positions, and being movable along an arc transverse to said track to illuminate a continuous area between said two or more transverse seating positions.

5,599,087

CORNER OR END POSITION INDICATING APPARATUS FOR A VEHICLE

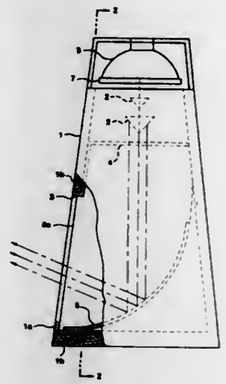
Yasunori Kanno, Yokohama; Yoshiaki Fukatsu, Nagoya, and Shunichi Ogawa, Toyota, all of Japan, assignors to Nippondenso Co., Ltd., Kariya-City, Japan

Filed Jul. 18, 1994, Ser. No. 276,328

Claims priority, application Japan, Jul. 19, 1993, 5-178203

Int. Cl.[6] B60Q *1/32*

U.S. Cl. 362—82 **9 Claims**



1. A corner or end position indicating apparatus for a vehicle comprising:

a light source emitting light;

a plurality of marker point indicators for indicating a corner or end point of a vehicle body, said plurality of marker point indicators including first and second marker point indicators, said first marker point indicator being larger than said second marker point indicator;

a first optical path defined between said first marker point indicator and said light source, and a second optical path defined between said second marker point indicator and said light source, said first optical path being longer than said second optical path; and

a deflecting element altering a direction of the light emitted from said light source.

5,599,088

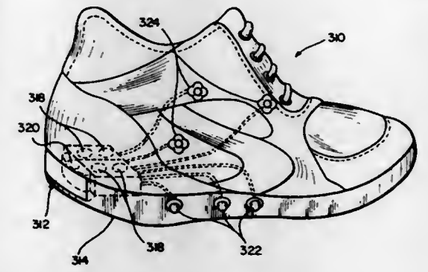
FLASHING FOOTWEAR LIGHT MODULE

Tseng L. Chien, 8F, No. 29, Alley 73, Liu-Shen Street, Shi-Chi Town, Taipei, Haeng, Taiwan

Filed Aug. 21, 1995, Ser. No. 517,502

Int. Cl.[6] F21L *15/06*

U.S. Cl. 362—103 **21 Claims**



1. A flasher module for footwear, comprising:

a main housing;

a removable cap, means for removably attaching the removable cap to the main housing, and at least one upper battery contact affixed to the removable cap and depending from the removable cap;

a printed circuit board positioned in the main housing and including conductive traces on a surface thereof;

a lower battery contact positioned in the main housing and connected to one of said traces;

at least two batteries sandwiched between the upper and lower battery contacts and electrically connected to each other by at least the upper battery contact when the removable cap is secured to the main housing;

a light emitting diode; and

a motion sensitive switch including a first conductive member connected by one of said traces to said lower battery contact and a second conductive member connected by one of said traces to the light emitting diode,

wherein one of said first and second conductive members is a spring and another of said first and second conductive members is fixed relative to the circuit board, said spring being positioned to intermittently contact said fixed conductive member when said module is moved to thereby cause said at least two batteries to be intermittently connected to said light emitting diode.

5,599,089

LIGHT DEVICE WITH EXTENSIBLE AND RETRACTABLE BULB UNIT

Tyng-Jen Sheu, and Jia-Ming Sheu, both of No. 12, Alley 25, Lane 254, Shan-Chiao Rd., Niao-Sung Hsiang, Kaohsiung Hsien, Taiwan

Filed Feb. 13, 1996, Ser. No. 600,517

Int. Cl.[6] F21L *15/00*

U.S. Cl. 362—198 **4 Claims**

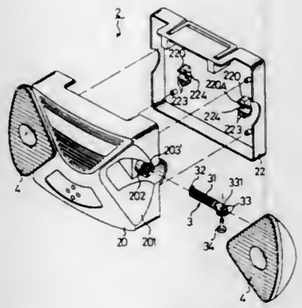
1. A light device comprising:

a casing which has a bulb receiving recess formed in an external surface thereof, and a slide hole formed in said casing, and which is adapted to mount a power supply unit therein;

a bulb holding rod mounted slidably within said slide hole of said casing and having an inner end located in said casing, and an outer end extending from said slide hole, majority of said rod being exposed to an exterior of said casing when said device is in use;

a bulb unit carried on the outer end of said rod and being movable into said recess of said casing when said rod is retracted into said slide hole for storage purposes, said bulb

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unit being adapted to be connected electrically to said power supply unit so as to be energized by said power supply unit in use;

a power supply unit installed within said casing and connected electrically to said bulb unit so as to energize said bulb unit when in use;

a guide device for preventing rotation of said rod within said slide hole of said casing; and

a retainer device for preventing disengagement of said rod from said slide hole of said casing.

5,599,090

LAMP WITH PROTECTIVE TUBE

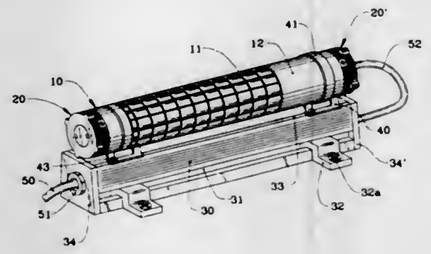
Herbert Waldmann, Bad Dürrbeim, Germany, assignor to Herbert Waldmann GmbH & Co., Villingen-Schwenningen, Germany

Filed Mar. 30, 1995, Ser. No. 413,510

Claims priority, application Germany, Apr. 20, 1994, 9406569 U

Int. Cl.[6] F21V *31/02*

U.S. Cl. 362—267 **12 Claims**



1. A lamp with a protective tube comprising a transparent lamp tube, a bulb installed therein, and multi-part cap members tightly sealing off the lamp tube at both ends, characterized in that both cap members (**20**,**20'**) have inner and outer compression rings (**22**, **22'**;**23**,**23'**) with facing thrush cones (**22***c*,**23***c*), between which a sealing ring (**24**,**24'**) of rubber elastic material is clamped, said inner and outer compression rings (**22**,**22'**;**23**,**23'**) and said sealing ring (**24**,**24'**) being located inside the lamp tube (**10**); said outer compression ring (**22**,**22'**) being part of an actuating ring (**22***a*,**22***a'*) located outside the lamp tube (**10**), said inner compression ring (**23**,**23'**) moveable toward said outer compression ring (**22**,**22'**) by means of an adjusting ring (**21**,**21'**), also located outside the lamp tube (**10**), and a tensioning mechanism (**21***d*, **23***d*), actuateable by said adjusting ring.

5,599,091

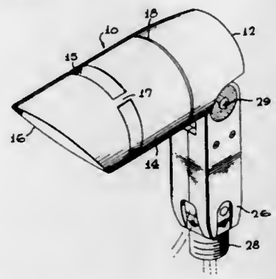
LANDSCAPE LIGHTING FIXTURE

Hiroshi Kira, Westlake Village, Calif., assignor to Lumiere Design & Manufacturing, Inc., Westlake Village, Calif.

Filed Feb. 5, 1996, Ser. No. 597,024

Int. Cl.[6] F21V *21/30*

U.S. Cl. 362—269 **14 Claims**



1. A lamp fixture to be connected to electrical conductors including a lamp housing having a radially extending flange, a lamp assembly in said housing and a base attached to said housing;

characterized in that said base comprises a pair of generally parallel flanges cooperating with said radially extending flange to form a pivot connection between said lamp housing and said base, a pair of contact members having arcuate contact surfaces positioned on opposite sides of said radially extending flange, an adjustable fastening member passing through said radially extending flange, said contact members and said generally parallel flanges to secure said lamp housing in fixed relationship to said base or to permit said lamp housing to be pivoted around said fastening member, a pair of electrical contact pins electrically connected to said lamp assembly making contact with each of said arcuate contact surfaces, electrical terminals having electrical connections with said contact members, ports in said base for receiving said electrical conductors, and means in said base for guiding said electrical conductors to said electrical terminals.

5,599,092

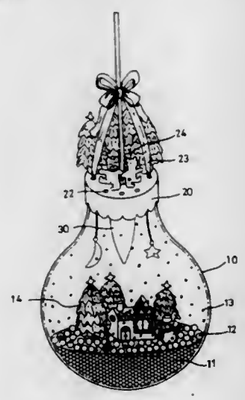
HANGING DECORATION LAMP WITH AN ACTIVE SCENERY

Johnson Yen, No. 189, Min Tsu W. Rd., Taipei, Taiwan

Filed Sep. 8, 1995, Ser. No. 525,028

Int. Cl.[6] F21V *29/00*

U.S. Cl. 362—294 **10 Claims**



1. A hanging lamp decorated with active scenery, comprising:

a transparent shell having an opening;

a lid removably connected to said opening of said shell and having a plurality of apertures;

a light bulb removably attached to said lid and extending into said shell; and

a multiplicity of glittering flakes and a multiplicity of light grains formed of foamed polystyrene disposed inside said shell,

whereby when said light bulb is energized and illuminated and generating heat, heated air within said shell flows outwardly from said shell through said plurality of apertures in said lid while cooler air flows into said shell through said apertures due to the partial vacuum within said shell caused by the outward flow of heated air, such cold and heated air flow resulting in the convection of air within the shell and causing movement of said glittering flakes and said light grains within said shell.

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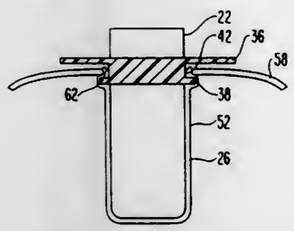
SURGICAL LIGHT COVER AND LIGHT HANDLE ADAPTER

Mike M. Hoftman, Calabasas, and Eli Marmur, Los Angeles, both of Calif., assignors to DeRoyal Industries, Inc., Powell, Tenn.

Continuation of Ser. No. 963,200, Oct. 19, 1992, Pat. No. 5,355,292, which is a continuation-in-part of Ser. No. 843,144, Feb. 28, 1992, Pat. No. 5,156,456. This application Oct. 7, 1994, Ser. No. 320,007

Int. Cl.[6] F21L *15/12*

U.S. Cl. 362—400 **14 Claims**



1. A light handle adapter for attachment to an operating room light fixture having a light handle, the light handle adapter comprising:

a cylindrical body portion having first and second ends, and an inner diameter and an outer diameter, the inner diameter being larger than the widest diameter of the light handle to provide for slidable movement of the cylindrical body portion along the length of the light handle;

an annular ring portion disposed about the cylindrical body portion, the annular ring having an outer diameter larger than the outer diameter of the cylindrical body portion;

a flange portion extending from the second end of the cylindrical body portion; and

a securing means coupled to the light handle adapter for securing the light handle adapter to the light handle.

5,599,094

MOUNTING SYSTEM FOR LIGHT FIXTURE

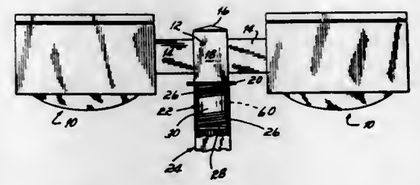
Jerry F. Fischer, West Chester; Robert E. Kaeser, Cincinnati, and James E. Lawrence, Madeira, all of Ohio, assignors to LSI Industries, Inc., Cincinnati, Ohio

Filed Sep. 26, 1995, Ser. No. 533,980

Int. Cl.[6] F21S *1/12*

U.S. Cl. 362—414 **20 Claims**

1. A method for assembling a light fixture comprising:



seating a generally circular clip having a first end within a spiral groove on a generally cylindrical fitting proximate a first end of said fitting, a depth of said groove increasing toward said first end;

inserting said fitting and said clip into a noncircular open end of a tubular pole;

engaging said clip first end with an inner surface of said pole to thereby inhibit rotation of said clip relative to said pole;

rotating said fitting in a first direction relative to said pole thereby advancing said clip within said groove away from said fitting first end, said clip expanding into a friction fit between said fitting and said pole as said clip advances in said groove away from said first end, wherein said clip accommodates a range of sizes of said open end while expanding into said friction fit; and

attaching at least one luminaire assembly to said fitting.

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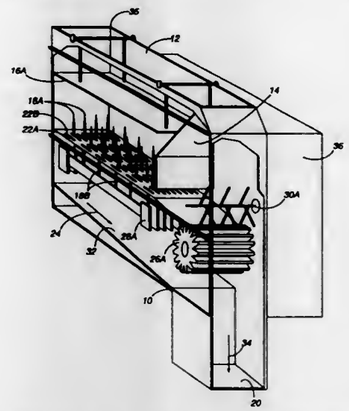
CONCRETE STRENGTHENING AND ADHESION MATERIAL FEEDING APPARATUS

Luther V. Elkin, 1423 Florence Ave., Indiana, Pa. 15701

Filed Jan. 26, 1994, Ser. No. 187,629

Int. Cl.[6] B28C *7/04*

U.S. Cl. 366—30 **1 Claim**



1. An apparatus for delivering concrete strengthening and adhesion material into a concrete mix comprising:

a) a first housing having opposite ends and containing concrete strengthening and adhesion material processing means;

b) a Second housing containing mechanical means for driving said concrete strengthening and adhesion material processing means;

c) at least one ingress means integral with said first housing and positioned at one of said ends of said first housing, above a slotted plate, for receiving said concrete strengthening and adhesion material for processing;

d) at least one compression means, between said ingress means and said slotted plate, for compressing said concrete strengthening and adhesion material, said at least one compression

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means also functioning to enhance movement of said concrete strengthening and adhesion material in a direction of feed;

e) said concrete streogthening and adhesion material processing means comprising

(i) a plurality of bars having opposite ends positioned underneath said at least one compression means and supporting a plurality of spikes extending toward said at lease one compression means and wherein said plurality of spikes function in a reciprocating fashion to separate and move said concrete strengthening and adhesion material in said direction of feed;

(ii) a first camshaft and a second camshaft, having axes transverse to said direction of feed, one of said ends of said bars being attached to said first camshaft and the opposite end of each of said bars being attached to said second camshaft, whereby said bars and said spikes move in said reciprocating fashion in response to movement of said first and second camshafts, thus separating and dragging said concrete strengthening and adhesion material in said direction of feed, maid spikes being capable of protruding through said slotted plate which functions to support said concrete and strengthening and adhesion material to be moved in said direction of feed;

(iii) at least one impeller means and at least one agitator means, each rotatably mounted around a separate axis, each of said axes being transverse to said direction of feed, wherein said at least one impeller means functions to receive said concrete strengthening and adhesion material from said at least one agitator means and evenly distribute said concrete strengthening and adhesion material into an egress means;

f) at least one adjustable metering non-rotating means located between said spikes and said at least one agitator means for regulating an amount of said concrete strengthening and adhesion material to be added to said concrete mix; and

g) said egress means being integral with said first housing and positioned at the end opposite said one end of said first housing to deliver said concrete strengthening and adhesion material to said concrete mix.

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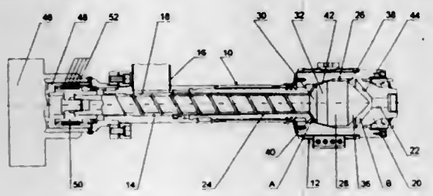
DISC SCREW EXTRUDER WITH FREE-FLOATING OPERATING MEMBER

Aleksandr Rog, 50 Ardmore Rd., West Hartford, Conn. 06119

Filed Mar. 4, 1996, Ser. No. 610,219

Int. Cl.[6] B29B *7/42*

U.S. Cl. 366—78 **11 Claims**



1. An extruder for processing materials comprising:

a casing having an elongate internal chamber with screw and disc sections aligned on the longitudinal axis of said casing in material-flow communication with one another, said disc section lying outwardly of said screw section along said longitudinal axis, said casing defining an intake opening into said screw section, adjacent an inner end of said chamber, and an outlet opening from said disc section adjacent an outer end of said chamber;

an elongate operating member coaxially mounted in said casing chamber for rotation about, and reciprocal movement on, said longitudinal axis, said operating member including a material-advancing screw component and a disc component disposed, respectively, in said screw and disc sections of said casing chamber, said screw and disc components being of generally circular transaxial cross section;

rotary drive means; and

coupling means operatively connecting said drive means and said operating member for effecting rotation of said operating member while permitting limited free axial reciprocation of said operating member in said chamber; said disc component including a central portion of substantially greater diameter than said screw component, a lead-in portion that is progressively enlarged in the axially outward direction, extending from said screw component to said central portion, and a lead-out portion that is progressively diminished in said outward direction, extending from said central portion toward said outlet opening; said disc section of said chamber being defined by wall portions of said casing that are spaced radially from said disc component of said operating member and that cooperate therewith to form inner and outer throat zones extending, respectively, along said lead-in and lead-out portions of said disc component, the gap distances between the surfaces defining both of said throat zones varying at least incrementally and decreasing in said outward direction of said extruder.

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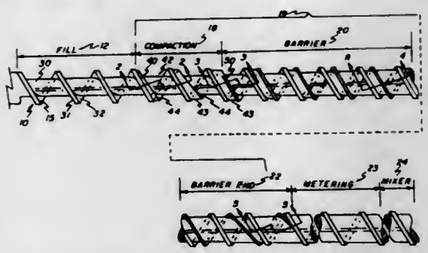
EXTRUDER SCREW FOR PLASTIC EXTRUDERS

Andrew W. Christie, Fulton, N.Y., assignor to The Black Clawson Company, Middletown, Ohio

Filed Dec. 14, 1995, Ser. No. 572,679

Int. Cl.[6] B29B *7/42*

U.S. Cl. 366—88 **3 Claims**



1. An extruder screw for use in the barrel of a plastic materials extruder, said screw having a drive end and having a forward end extended into said barrel, said screw comprising a core, a primary flighting extending along said core and having a generally radially extending rearwardly facing flank which conforms to a substantially uniform pitch throughout a substantial portion of the length of the screw, said screw having a fill section for receiving unmelted plastic material, a melt section adjoining said fill section, and a metering section adjoining said melt section, said melt section being defined by an unmelted plastic material compaction portion adjacent said fill section and by a barrier portion extending from said melt section to said metering section, said compaction portion being further defined by a melt flighting formed in adjacent relation to a forwardly facing flank of said primary flighting and having a radially outer surface forming a melt channel with said primary flighting, said melt flighting having a forwardly facing wall which defines with the adjacent rearward facing flank of said primary flighting a channel for unmelted plastic material, a barrier flight rising radially outwardly from said melt channel forwardly facing wall, and defining a clearance space with the adjacent wall of said barrel, said clearance space varying from a maximum at the junction of said compaction portion with said barrier portion and tapering toward said barrel wall to a minimum clearance at the junction of said barrier portion and said metering section, whereby the clearance between said barrier flight and said barrel wall approximates the change in viscosity of molten plastic material flowing over said barrier flight into said melt channel so that a relative constant shear energy input is applied to molten plastic material.

5,599,098

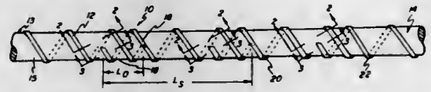
EXTRUDER SCREW WITH MULTIPLE FLIGHTING

Andrew W. Christie, Fulton, N.Y., assignor to The Black Clawson Company, Middletown, Ohio

Filed Dec. 14, 1995, Ser. No. 572,678

Int. Cl.[6] B29B *1/06*

U.S. Cl. 366—90 **6 Claims**



1. A metering section of a plastics material extrusion screw comprising a series of axially extending, partially overlapping discontinuous single flightings, including at least a first flighting and a second flighting, each of said flightings defining a portion of the metering section in which said flighting are arranged in partially overlapping relationship whereby the single flow channel as defined by the first flighting is split into flow channel pairs at said portion in which said flightings are overlapped, and which flow channel pairs recombine as a single flow channel in the non-overlapped portion of the second flighting.

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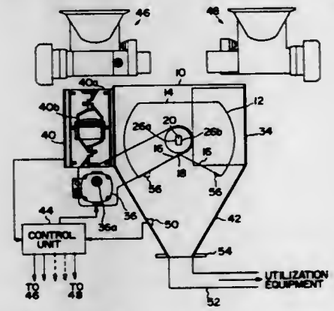
MATERIAL BLENDING APPARATUS HAVING A PIVOTALLY MOUNTED HOPPER

Kenneth W. Bullivant, Chadds Ford, Pa., assignor to K-Tron Technologies, Inc., Wilmington, Del.

Filed Aug. 11, 1995, Ser. No. 514,427

Int. Cl.[6] B01F *11/00;15/02*

U.S. Cl. 366—141 **26 Claims**



1. A weigh batch materials blender comprising:

a housing;

a hopper having:

(a) a top opening through which ingredient materials are introduced individually into said hopper and through which blended ingredient materials are dumped from said hopper, and

(b) a floor composed of two inclined plates forming two compartments in said hopper, each of said inclined plates extending upward from the inside surface of said hopper and meeting along an intersection line;

mounting means for mounting said hopper within said housing for pivotal movement of said hopper relative to said housing about a horizontal pivot axis;

movement means for imparting pivotal movement to said hopper;

a scale having a base mounted to said housing and a sensing portion coupled to said hopper for measuring the weight of said hopper;

a discharge chamber at the bottom of said housing and below said hopper into which blended ingredient materials are dumped from said hopper; and

control means for controlling:

(a) the amounts of said ingredient materials introduced into said hopper,

(b) said movement means to impart pivotal movement over a predetermined range to said hopper at the completion of the introduction of said ingredient materials into said hopper to mix said ingredient materials, and

(c) said movement means to impart additional pivotal movement in one direction beyond said predetermined pivotal range to dump blended ingredient materials from said hopper into said discharge chamber.

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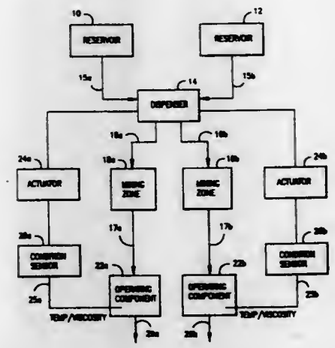
MULTI-PHASE FLUIDS FOR A HYDRAULIC SYSTEM

Andrew Jackson, Pennington, N.J., and Brian K. Peterson, Yardley, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 319,767, Oct. 7, 1994, Pat. No. 5,465,810. This application Sep. 14, 1995, Ser. No. 528,486

Int. Cl.[6] B01F *15/04*

U.S. Cl. 366—152.5 **13 Claims**



1. A hydraulic system in which hydraulic actuation is applied to move at least one part of a system by a circulating hydraulic fluid, comprising:

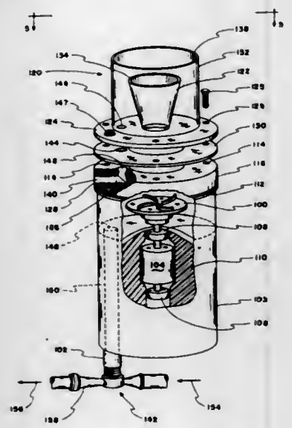
a) an at least partial immiscibility zone which contains a first hydraulic fluid and a second hydraulic fluid under a condition sufficient for at least partial immiscibility of the first and second hydraulic fluids, the second hydraulic fluid is at least partially miscible with the first hydraulic fluid under a condition suitable for at least partial miscibility and under this miscibility condition the second hydraulic fluid changes a physical property of the first hydraulic fluid;

b) at least one hydraulic actuator for providing hydraulic force to the part of the system;

c) a mixing zone associated with the at least partial immiscibility zone, the mixing zone for containing the first and second hydraulic fluids which are in a state of at least partial miscibility when there is a condition for at least partial miscibility; and

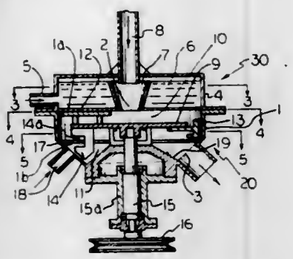
d) at least one pump for transferring the first and second hydraulic fluids which are in a state of at least partial miscibility from the mixing zone to the hydraulic actuator when a condition suitable for miscibility occurs.

5,599,101
DRY POLYMER PROCESSING SYSTEM
Dennis G. Pardikes, 12811 S. 82nd. St., Palos Park, Ill. 60464
Filed Sep. 1, 1995, Ser. No. 522,842
Int. Cl.[6] B01F *15/02*
U.S. Cl. 366—165.1 15 Claims



1. A dry polymer processing system comprising an inverted submersible pump having an impeller at the top of said inverted pump and a discharge at the bottom of said inverted pump, a weir mounted on top of said inverted pump and above said impeller, said weir having a funnel opening leading into an eye of said impeller, means for substantially leveling said weir, and means for depositing dry polymer into said funnel opening.

5,599,102
DEVICE FOR CONTINUOUSLY MIXING LIQUID AND POWDER WITH A SECOND STAGE LIQUID FEED LINE AND NOTCHED SCRAPER
Mitsuo Hamada, Chiba Prefecture, and Hideyuki Mori, Fukui Prefecture, both of Japan, assignors to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan
Filed Jun. 19, 1995, Ser. No. 492,261
Claims priority, application Japan, Jun. 19, 1994, 6-139056
Int. Cl.[6] B01F *7/26*
U.S. Cl. 366—178.1 3 Claims

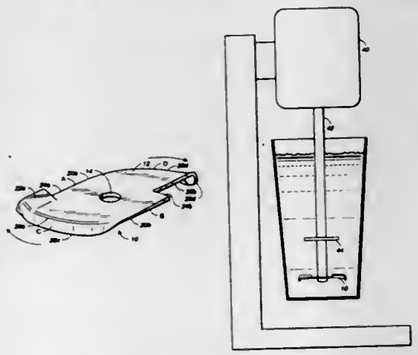


1. A continuous mixing device having a top and a bottom in which a feed opening (2) for the introduction of both liquid and powder resides on the top of a casing (1) and a discharge outlet (3) is installed on the bottom of said casing, a rotating disk (9) having an upper surface and a lower surface is installed within the casing (1) and thereby divides an interior of the casing (1) into an upper mixing compartment and a lower mixing compartment, and scrapers are fixed on both the upper and lower surfaces of said rotating disk,

a liquid feed line is connected to the lower mixing compartment,

a ring plate is installed on an inside wall of the lower mixing compartment, notches are furnished in the scrapers on the lower surface of the rotating disk, and an inner edge of said ring plate is contactlessly inserted into said notches in such a manner that the scrapers, while in this interpenetrated condition, are able to move relative to the ring plate.

5,599,103
MILKSHAKE MIXER BLADE
William D. Linscott, 4877 Grange Rd., Santa Rosa, Calif. 95404
Filed May 10, 1996, Ser. No. 644,117
Int. Cl.[6] B01F *7/16*
U.S. Cl. 366—343 3 Claims



1. A mixer blade for a milkshake machine having a downwardly-depending motor shaft, said mixer blade comprising:

a generally planar body portion having a central aperture for attachment to the motor shaft, said body portion terminating in a pair of opposed straight edge portions each having an upturned tab element along an end thereof, and a pair of curved edge portions each having a downturned skirt along their entire length.

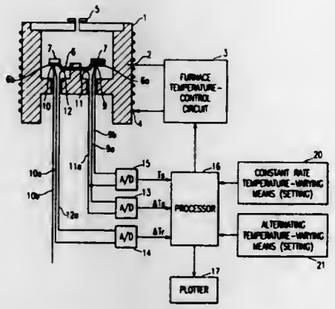
5,599,104
THERMAL ANALYSIS INSTRUMENT
Nobutaka Nakamura, and Yoshihiko Teramoto, both of Tokyo, Japan, assignors to Seiko Instruments Inc., Tokyo, Japan
Filed Sep. 23, 1994, Ser. No. 311,739
Claims priority, application Japan, Sep. 24, 1993, 5-238408
Int. Cl.[6] G01N *25/00;25/20*
U.S. Cl. 374—12 18 Claims

1. A thermal analysis instrument comprising:

a heat reservoir made of a thermal conducting material and having a center;

temperature-varying means coupled to said heat reservoir for varying temperature of said heat reservoir according to a function of time, which function has a linear component that varies at a constant rate and an alternating component that has a given frequency and amplitude and modulates the linear component;

a thermally conductive support member disposed in said heat reservoir for supporting an unknown sample and a reference sample symmetrically with respect to said center of said reservoir, said thermally conductive support member forming heat flow paths;



first temperature difference-measuring means thermally coupled to said thermally conductive support member for measuring a heat flow in one of the heat flow paths between a given point close to the unknown sample and a first fixed point as a temperature difference, the first fixed point being spaced from the location of the unknown sample;

second temperature difference-measuring means thermally coupled to said thermally conductive support member for measuring a heat flow in another one of the heat flow paths between a given point close to the reference sample and a second fixed point as a temperature difference, the second fixed point being spaced from the location of the reference sample, said first and second temperature difference-measuring means being formed and located symmetrically with respect to said center of said reservoir;

sample temperature-measuring means thermally coupled to said support member for measuring temperature at a point that is located on said support member and is close to the unknown sample; and

recording means coupled to said first and second temperature difference-measuring means and said sample temperature-measuring means for recording outputs from said first temperature difference-measuring means, said second temperature difference-measuring means, and said sample temperature measuring means as a function of one of time and temperature of the unknown sample.

10. A thermal analysis method comprising:

providing a heat reservoir made of a thermal conducting material and having a center, and disposing a thermally conductive support member in the heat reservoir for supporting an unknown sample and a reference sample symmetrically with respect to the center of the reservoir, the thermally conductive support member forming heat flow paths;

varying the temperature in the heat reservoir according to a function of time, which function has a linear component that varies at a constant rate and an alternating component that has a given frequency and amplitude and modulates the linear component;

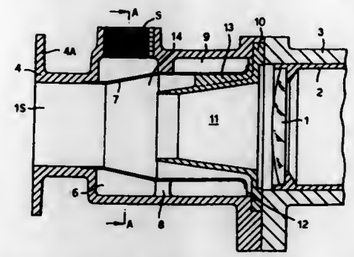
measuring a heat flow in a first one of the heat flow paths between a given point close to the unknown sample and a first fixed point as a first temperature difference, the first fixed point being spaced from the location of the unknown sample;

measuring a heat flow in a second one of the heat flow paths between a given point close to the reference sample and a second fixed point as a second temperature difference, the second fixed point being spaced from the location of the reference sample, the heat flows in the first and second heat flow paths being measured at locations which are symmetrical with respect to the center of the reservoir;

measuring the unknown sample temperature at a point that is located on the support member and is close to the unknown sample; and

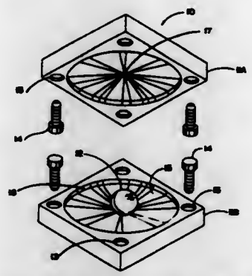
recording the first temperature difference, the second temperature difference and the unknown sample temperature as a function of one of time and temperature of the unknown sample.

5,599,105
PURGE ASSEMBLY
Ian H. Ridley, Sheffield, England, and Peter Fearnehough, Sheffield, United Kingdom, assignors to Land Instruments International Limited, Sheffield, England
Filed Jun. 2, 1995, Ser. No. 460,769
Claims priority, application United Kingdom, Jun. 3, 1994, 9411160
Int. Cl.[6] G01J *5/04*
U.S. Cl. 374—125 10 Claims



1. A purge assembly for mounting to a radiation thermometer, the assembly comprising an elongate purge tube for mounting in front of said radiation thermometer; and at least two axially spaced chambers positioned about said purge tube, said at least two chambers being linked by a respective restrictive opening such that a difference in pressure exists between adjacent chambers in use, an upstream chamber with respect to the flow of purge fluid being connected to a source of purge fluid in use and a downstream chamber with respect to the flow of purge fluid opening into the purge tube via a swirl reducing system whereby purge fluid is emitted into the purge tube in use, and wherein said chambers are positioned such that fluid flows through said chambers generally towards the lens and then through said downstream chamber opening towards an outer end of the purge tube away from the lens.

5,599,106
BALL-IN-CONE SEISMIC ISOLATION BEARING
Zoltan A. Kemeny, Tempe, Ariz., assignor to Tekton, Tempe, Ariz.
Filed Feb. 9, 1994, Ser. No. 194,170
Int. Cl.[6] F16C *29/04*
U.S. Cl. 384—36 7 Claims



1. A seismic isolation bearing assembly, comprising:

an upper load plate secured to a structure to be supported, including a first, downward facing rigid surface;

a second load plate secured to the foundation upon which said structure is supported, including a second, upwardly facing rigid bearing surface disposed opposite said surface and defining a bearing cavity therebetween; and

a ball sandwiched between said first and second surfaces;

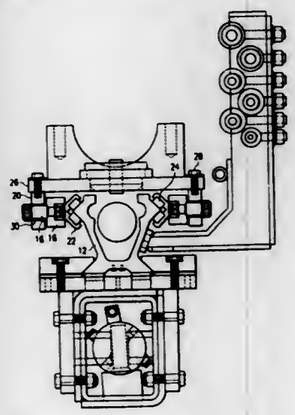
wherein at least one of said surfaces comprises a recessed surface defining a conical cavity within said upper load plate.

5,599,107

SELF-ALIGNING LINEAR BEARING

Alonzo Wireman, Sherman, Tex., assignor to Reedrill Corporation, Denison, Tex.

Filed Jun. 13, 1995, Ser. No. 489,968
Int. Cl.[6] F16C *29/12*
U.S. Cl. 384—57 **7 Claims**



1. A self-aligning linear bearing for use with a feed column of a drilling rig, comprising:

a bearing means for engaging the feed column; and

means for rotatably connecting the bearing means to a mounting plate of a drill head such that the bearing means rotates along a longitudinal axis of the feed column with respect to the mounting plate.

7. A self-aligning linear bearing for use with a drilling rig, comprising:

a bearing having a bearing surface for engaging a feed column of the drilling rig;

bearing inserts mounted within the bearing surface for reducing wear between the bearing and the feed column;

a pivot shaft extending from the bearing; and

a pivot block connected to a mounting plate of a drill head for rotatably engaging the pivot shaft.

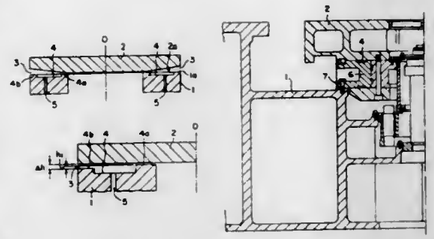
5,599,108

STATIC PRESSURE TABLE DEVICE WITH A TAPERED SURFACE

Akira Ochiai, Susono, and Kouya Watanabe, Numazu, both of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo-to, Japan

Filed Jul. 16, 1992, Ser. No. 913,716
Claims priority, application Japan, Jul. 17, 1991, 3-177027
Int. Cl.[6] F16C *32/06*
U.S. Cl. 384—123 **14 Claims**

1. A static pressure table device having a central portion and a peripheral portion and comprising a bed, a rotary table rotatably supported on said bed with a static pressure gap formed between confronting surfaces of said bed and said table, basically annular recess means formed in said confronting surface of said bed, and static pressure oil supply means for supplying static pressure oil into said recess means to thereby cause said static pressure oil to flow toward said peripheral portion and to thereby rotatably support said rotary table,



wherein said basically annular recess means is a basically annular recess retaining a static pressure oil therein for rotatably supporting said rotary table, said recess being defined between radially outer and inner peripheral lands,

wherein said outer peripheral land is smaller in radial width than said inner peripheral land, and

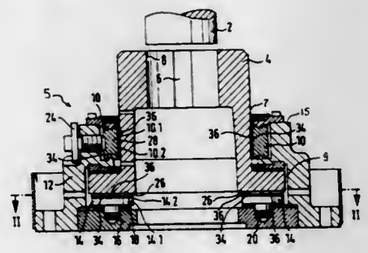
wherein a peripheral portion of one of said confronting surfaces is formed so as to be tapered away from the other confronting surface such that a vertical width of said static pressure gap increases along at least a portion of said static pressure gap positioned between said radially inner peripheral land and said radially outer peripheral land with respect to a radially outward direction.

5,599,109

BEARING ASSEMBLY WITH CERAMIC BEARING FACES

Bernd Negwer, Andernach, Germany, assignor to Renk, Aktiengesellschaft, Augsburg, Germany

Filed Dec. 19, 1995, Ser. No. 574,658
Claims priority, application Germany, Dec. 21, 1994, 44 45 660.3; Jul. 20, 1995, 195 26 497.5
Int. Cl.[6] F16C *17/10;43/02*
U.S. Cl. 384—308 **20 Claims**



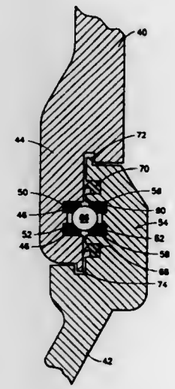
1. In a lubricated bearing assembly having a bearing base and a plurality of shoes, each shoe including a bearing face, means for establishing a fluid lubrication film wedge between each bearing face and a running surface moving relative to the base, the means for establishing a fluid lubrication film wedge including means for tiltably mounting the plurality of shoes relative to the base, the improvement comprising a like plurality of ceramic plates, each plate being formed separately from the shoe, each plate having an exposed face, the exposed plate faces each comprising a bearing face and means for bonding each plate to a shoe after the plate has been formed, each plate having a hardness greater than that of its respective shoe.

5,599,110

BEARING FOR A PRESSURIZED PROTECTIVE SUIT

Robert R. MacKendrick, Milford, Conn., assignor to Airlock, Incorporated, Milford, Conn.

Filed Jun. 7, 1995, Ser. No. 483,387
Int. Cl.[6] F16C *33/61*; A62B *17/00*
U.S. Cl. 384—501 **23 Claims**



1. A pressure sealing bearing for maintaining a predetermined pressure comprising:

(a) an inner race;

(b) at least one inner race wire carried by the inner race;

(c) an outer race;

(d) at least one outer race wire carried by the outer race, said inner and outer race wires defining an annular cavity in the assembled bearing;

(e) a plurality of ball bearings in the annular cavity;

(f) a plurality of spacers between the ball bearings;

(g) at least one pressure seal between the inner race and the outer race; and

(h) interlock means between the inner race and the outer race for restraining deformation of those races relative to one another at pressures above the predetermined pressure.

12. A suit having an internal volume which can be pressurized to a predetermined pressure, said suit comprising:

a first suit section;

a second suit section; and

a rotatable joint between the first suit section and the second suit section, said rotatable joint comprising at least one pressure sealing bearing which comprises:

(a) an inner race;

(b) at least one inner race wire carried by the inner race;

(c) an outer race;

(d) at least one outer race wire carried by the outer race, said inner and outer race wires defining an annular cavity in the assembled bearing;

(e) a plurality of ball bearings in the annular cavity;

(f) a plurality of spacers between the ball bearings; and

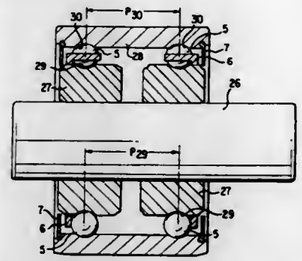
(g) at least one pressure seal between the inner race and the outer race for maintaining the suit's internal pressure upon pressurization.

5,599,111

DOUBLE-ROW, BALL BEARING AND METHOD OF PRODUCING THE SAME

Seizo Miyazaki, Kawasaki; Daijiro Kitahara, and Shiro Saito, both of Tokyo, all of Japan, assignors to NSK, Ltd., Tokyo, Japan

Filed Dec. 19, 1994, Ser. No. 359,451
Claims priority, application Japan, Dec. 17, 1993, 5-318361
Int. Cl.[6] F16C *19/28*
U.S. Cl. 384—512 **2 Claims**



1. A deep groove, double-row ball bearing comprising:

a first member having a first peripheral face,

a second member disposed concentric with the first member and having a second peripheral face opposed to the first peripheral face,

the first peripheral face having a first raceway formed thereon,

the second peripheral face having a second raceway formed thereon so as to face to the first raceway and a third raceway formed thereon and axially displaced from the second raceway,

a third member supported by the first member with a sufficient fitting strength and provided concentric with the first and second members and having a third peripheral face opposed to the second peripheral face,

the third peripheral face having a fourth raceway formed thereon so as to face to the third raceway, and

a plurality of balls provided between the first raceway and the second raceway, and between the third raceway and the fourth raceway, wherein, when the ball bearing is fully assembled, there are a first pitch corresponding to the space between the first raceway and the fourth raceway, and a second pitch corresponding to the space between the second raceway and the third raceway, so that the first pitch and the second pitch are controlled so as not to preload the balls.

5,599,112

AXIAL BEARING HAVING A VARIABLE COEFFICIENT OF FRICTION FOR MONITORING WEAR

Manfred P. Klein, Highland Park, Ill., assignor to Ansimag Inc., Elk Grove Village, Ill.

Filed Aug. 17, 1995, Ser. No. 405,728
Int. Cl.[6] F16C *41/00*; H02H *7/08*
U.S. Cl. 384—624 **43 Claims**

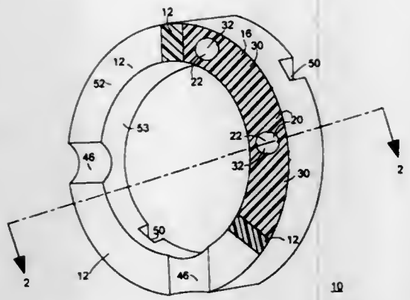
1. An axial bearing comprising:

a first ring having a first wearing layer and a frictional layer, the first wearing layer including a first face of the first ring, the first wearing layer being substantially annular, the first wearing layer axially extending beneath the first face; the frictional layer adjoining the first wearing layer, the frictional layer extending axially from the first wearing layer.

31. A centrifugal pump having a shaft wherein the improvement comprises:

a first ring coaxially disposed about the shaft, the first ring having a first wearing layer and a frictional layer, the first wearing layer including a first face, the first wearing layer being substantially annular, the first wearing layer axially extending beneath the first face; the frictional layer adjoining

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the first wearing layer, the frictional layer axially extending from the first wearing layer; and

a second ring disposed about the shaft, the second ring having a first side, the first side operably associated with the first wearing layer of the first ring for relative rotational movement; the first wearing layer and the first side selected to have a first coefficient of friction of less than approximately one-quarter when a fluid is present at the first wearing layer and the first side.

5,599,113

THERMAL PRINTER

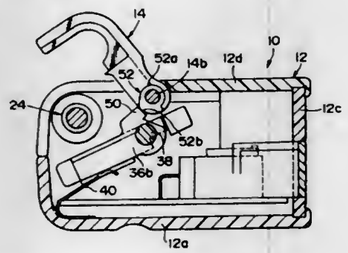
Minoru Suzuki; Kiyoshi Negishi; Katsumi Kawamura; Mikio Horie; Hiroshi Orita, and Katsuyoshi Suzuki, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 3, 1995, Ser. No. 433,566

Claims priority, application Japan, May 18, 1994, 6-128329

Int. Cl.[6] B41J *2/32*

U.S. Cl. 400—120.16 **19 Claims**



1. A thermal printer comprising:

a platen roller rotatably supported in said printer;

a thermal line printhead swingably supported in said printer, said thermal line printhead being contactable to, and swingable towards and away from, said platen roller;

biasing means for biasing said thermal line printhead to swing towards said platen roller;

a covering member rotatably supported in said printer, said covering member being swingable about an axis to allow access to an interior of said printer; and

means for guiding said thermal line printhead away from contact with said platen roller, in response to swinging of said cover member to allow access to said interior of said printer, and against a bias of said biasing means, said guiding means comprising a cam mounted to, and movable unitarily with, said covering member, and a cam follower mounted to, and movable unitarily with, said thermal line printhead, said cam follower following movement of said cam.

5,599,114

PRINTING CONTROL METHOD AND PRINTER

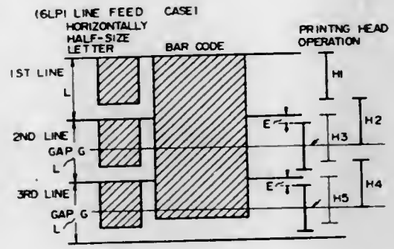
Yoshinori Sugahara, Kawasaki; Koubei Yachi, Kanazawa; Hajime Ishiguro, Kawasaki, and Takashi Murotani, Kanazawa, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 14, 1995, Ser. No. 514,858

Claims priority, application Japan, Nov. 28, 1994, 6-292803; May 30, 1995, 7-132303

Int. Cl.[6] B41J *2/30*

U.S. Cl. 400—124.04 **9 Claims**



1. A printing method for printing lines on a sheet using a head unit, said lines having a pitch larger than a printing width of said head unit, said printing width being a width along a first direction, said method comprising steps of:

a) printing using said head unit on said sheet a first part of a first line along a second direction perpendicular to said first direction;

b) moving a relative position of said head unit with reference to said sheet along said first direction a distance equal to said printing width of said head unit;

c) printing using said head unit on said sheet a remaining part of said first line and at least a first part of a second line along said second direction;

d) moving said relative position of said head unit with reference to said sheet along said first direction a slight distance equal to or shorter than said printing width of said head unit; and

e) printing using said head unit on said sheet a predetermined part of said second line along said second direction, said predetermined part including said first part of said second line.

5,599,115

SUPPLY CARTRIDGE AND METHOD FOR RIBBON DELIVERY SYSTEM

William W. Radcliffe, Pitman, N.J., and Kedar M. Morarka, Aurora, Colo., assignors to NER data products inc., Glassboro, N.J.

Filed Apr. 28, 1995, Ser. No. 431,339

Int. Cl.[6] B41J *35/28*

U.S. Cl. 400—207 **9 Claims**

1. An apparatus for storing and supplying a ribbon containing ink for use in printing section equipment having a take-up spool comprising: a cartridge, a core being rigidly mounted in the cartridge,

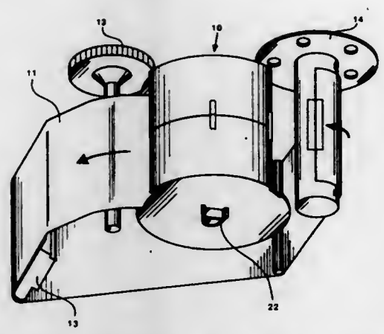
(a) a single roll of single use ribbon wound on said core,

(b) side surface members having a means for supporting and protecting said roll of ribbon wound on said core,

(c) a frame means for connecting said side surface members to form said cartridge,

(d) said frame means providing an aperture for exit of said ribbon,

(e) said frame means providing a second aperture to a volume inside said cartridge that allows ribbon on said take-up spool to partially occupy said cartridge volume previously used by said roll of ribbon and.



(f) a means for mounting said cartridge in said printing section equipment.

5,599,116

PRINTER CARRIAGE MOVEMENT FOR PARTICULAR CHARACTERS

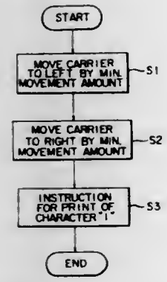
Hiroyuki Ueda, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 20,456, Feb. 22, 1993, abandoned, which is a continuation of Ser. No. 827,916, Jan. 31, 1992, abandoned, which is a continuation of Ser. No. 550,202, Jul. 10, 1990, abandoned, which is a continuation of Ser. No. 290,803, Dec. 23, 1988, abandoned, which is a continuation of Ser. No. 73,306, Jul. 13, 1987, abandoned, which is a continuation of Ser. No. 694,316, Jan. 24, 1985, abandoned. This application Dec. 23, 1993, Ser. No. 171,976

Claims priority, application Japan, Jan. 31, 1984, 59-16283; Jan. 31, 1984, 59-16284

Int. Cl.[6] B41J *19/18*

U.S. Cl. 400—323 **4 Claims**



1. A printer comprising:

printing means capable of performing a printing operation;

a carriage having said printing means mounted thereon, capable of changing its movement direction from a forward direction to a backward direction or from a backward direction to a forward direction along each line of printing;

print control means for moving said carriage in both of said directions and for causing said printing means to effect printing in each direction;

discriminating means for discriminating whether next information to be printed, input by said input means, is particular information, wherein the next information being printed is adjacent to previous information to be printed; and

instruction means arranged in said print control means, responsive to a discrimination by said discriminating means that said particular information is to be printed, for controlling movement of said carriage in a direction, and after moving said carriage to a determined print position, controlling said carriage to move by a minimum amount of movement in a direction from said determined print position and to return said carriage by the minimum amount of movement to said determined print position prior to the printing of said particular information, and then to instruct the printing of said particular information, and then still further to move said carriage in said direction, and responsive to a discrimination by said discriminating means that said information to be printed is not particular information, for controlling movement of said carriage in a direction, to instruct the printing of said information to be printed, and then to move said carriage to a determined print position, and then still further to move said carriage in said direction.

5,599,117

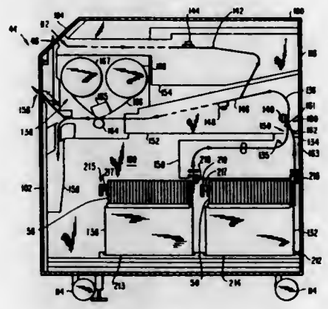
AIRLINE TICKET PRINTER WITH TICKET PRESTAGING

Steven M. Faes, New Market; Alfred L. Fulton; Martin J. Hnetynka, both of Huntsville; Laird Campbell, Laceys Spring; David Preston, Huntsville; Michael Missios, Huntsville, and Scott D. Sampson, Huntsville, all of Ala., assignors to Sci Systems, Inc., Huntsville, Ala.

Division of Ser. No. 934,361, Aug. 25, 1992, Pat. No. 5,309,176. This application Apr. 29, 1994, Ser. No. 235,497

Int. Cl.[6] B41J *11/50;* **B65H** *3/44*

U.S. Cl. 400—605 **5 Claims**



1. A transportation ticket printing device, said device comprising, in combination, a print engine, at least first and second storage bins for storing respective stacks of separate sheets of transportation ticket blanks, each having a magnetic storage area thereon, at least first and second feed devices for feeding said separate sheets from said each of said first and second bins, respectively, along first and second respective separate guide paths toward a common guide path leading to said print engine, at least one magnetic read/write station along said common guide path and a drive for moving respective separate sheets from each of said first and second storage bins to a separate staging point part way along its respective separate guide path, a holding device for holding said respective separate sheets at said respective separate staging points until a printing operation is to be performed on said respective separate sheets by said print engine.

5,599,118

Patent Not Issued For This Number

5,599,119

TAPE PRINTING DEVICE AND TAPE CARTRIDGE USED THEREIN

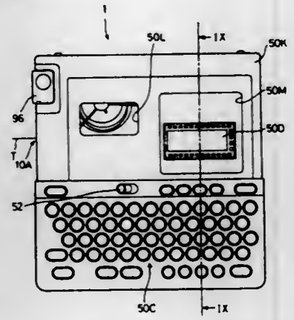
Masahiko Nunokawa, Nagano-ken, and Kenji Watanabe, Tokyo, both of Japan, assignors to Seiko Epson Corporation, and King Jim Co., Ltd., both of Tokyo, Japan

Division of Ser. No. 132,556, Oct. 6, 1993, Pat. No. 5,492,420. This application Jan. 6, 1995, Ser. No. 369,680

Claims priority, application Japan, Oct. 6, 1992, 4-267166; Oct. 13, 1992, 4-300304; Nov. 4, 1992, 4-294991; Feb. 12, 1993, 5-047492

Int. Cl.[6] B41J *11/26*

U.S. Cl. 400—621 **21 Claims**



1. A tape printing device which a tape cartridge accommodating a printing tape is replaceably set in. said tape printing device comprising:

feeding means for feeding said printing tape in a direction; a printing head for printing on said tape being fed; a cutting mechanism having a cutting edge and being located downstream said printing head along said direction of feeding said tape. said cutting mechanism for cutting said tape by moving a cutting edge thereof to a specific position where said cutting edge interrupts feeding of said tape;

detection means for detecting a movement of said cutting edge intended for cutting said tape; and

printing stop means for halting printing being executed by said printing head when said movement of said cutting edge is detected by said detection means.

5,599,120

ADAPTER FOR INK JET PRINTING ONTO ADHESIVE BINDING TAPE

Charles E. Conrad, Scottsville; William A. Sullivan, Rochester, and Robert A. Coons, Bloomfield, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 4, 1993, Ser. No. 130,808

Int. Cl.[6] B41J *11/58*

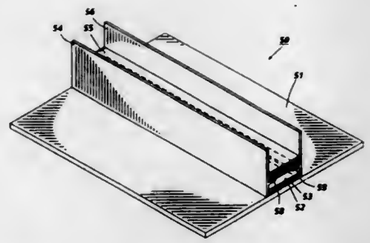
U.S. Cl. 400—624 **15 Claims**

1. An ink jet printer adapted to print onto thermal adhesive binding tape, comprising:

a sheet input tray including a sheet support portion;

a thermal adhesive binding tape feeding adapter that cooperates with said sheet support portion of said sheet input tray in the feeding of said thermal adhesive tape into and out of the printer, said adapter including a base support member configured to fit on top of and touchingly contact said sheet support portion of said sheet input tray of the printer and adapted to support a plurality of narrow width thermal adhesive binding tapes in a substantially horizontal position for feeding into the printer; two tape guide members positioned orthogonally and centrally of said base support member for guiding said thermal adhesive binding tapes into and out of the printer; and at least two support and guide members connected to and extending orthogonally with respect to said two tape guides members for receiving and supporting said thermal adhesive binding tapes between said two tape guides members and above said base support member after said thermal adhesive binding tapes have exited the printer and

feeder means for feeding said thermal adhesive binding tape from said tape feeding adapter into and out of the printer.



5,599,121

Patent Not Issued For This Number

5,599,122

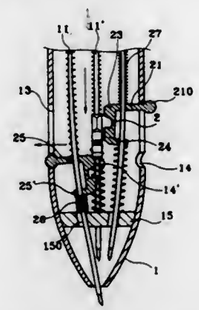
INK CARTRIDGE SELECTION CONTROL MECHANISM OF A MULTI-INK CARTRIDGE WRITING APPARATUS

Andy Yu, No. 21-5, Chi-Chou Sub-Ward, Chu Pei City, Hsin Chu Hsien, Taiwan

Filed Nov. 29, 1995, Ser. No. 563,929

Int. Cl.[6] B43K *24/04;24/12*

U.S. Cl. 401—31 **1 Claim**



1. An ink cartridge selection control mechanism for a writing apparatus having an elongated barrel with a lower, writing end and an upper end, and a plurality of ink cartridges each having a writing end portion and movable between retracted and extended positions, the control mechanism comprising:

a) a locating board mounted in the elongated barrel adjacent to the lower, writing end of the barrel, the locating board having a plurality of through holes each having a writing end portion of an ink cartridge extending therethrough, the through holes located so as to form the writing end portion of each cartridge into a curved configuration;

b) a plurality of slots in the elongated barrel adjacent to the lower, writing end of the barrel, each slot having a lower end terminating with an enlarged, tapered hole;

c) a slide fixedly attached to each ink cartridge at the curved end portion, each slide having spaced apart tapered upper and tapered lower lugs facing a longitudinal axis of the elongated barrel, a driving arm extending through one of the plurality of slots, each driving arm having an enlarged end disposed externally of the elongated barrel; and,

d) a spring mounted around each of the plurality of ink cartridges and extending between the locating board and the associated slide so as to bias the cartridge toward its retracted position;

wherein when a first ink cartridge is moved to the extended position by the respective first slide, the respective spring is compressed, and the enlarged end of the associated driving arm of the respective slide is forced into engagement with the enlarged, tapered hole of the respective slot by the curvature of the writing end portion of the ink cartridge to lock the first ink cartridge in the extended position; and, when a second ink cartridge is moved by the respective second slide toward the extended position, the first slide of the extended first ink cartridge is forced outwards by contact between the tapered lugs of the first and second slides to release the enlarged end of the respective driving arm from the enlarged, tapered hole of the respective slot, thereby enabling the respective spring to push the first slide and first cartridge to the retracted position.

5,599,123

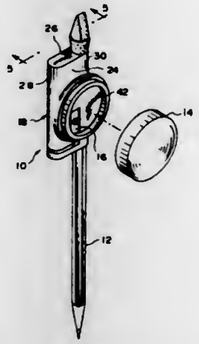
COMBINED PENCIL SHARPENER AND PENCIL STOWAGE APPARATUS

David W. Still, 8926 Yuba River Ave., Fountain Valley, Calif. 92708

Filed May 19, 1994, Ser. No. 245,917

Int. Cl.[6] B43K *29/06;29/02*

U.S. Cl. 401—52 **11 Claims**



1. A combined pencil sharpener and pencil stowage apparatus, comprising:

a) a body;

b) a pencil stowage compartment formed within said body for containing a sharpenable tip of a pencil;

c) a separate pencil sharpener compartment formed within said body, said pencil sharpener compartment containing a pencil sharpener and a volume for retaining pencil shavings; and

d) an openable pencil shaving trap cover engageable with said body and associated with said pencil sharpener compartment for holding pencil shavings.

5,599,124

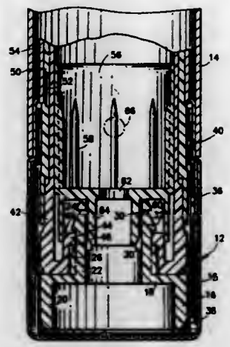
SNAP-TOGETHER LIPSTICK BASE AND CARTRIDGE HAVING SNAP LOCKING MEANS

Walter T. Ackermann, Watertown, and Thomas F. Holloway, Southbury, both of Conn., assignors to Risdon Corporation, Naugatuck, Conn.

Filed Oct. 20, 1995, Ser. No. 546,417

Int. Cl.[6] A45D *40/06*

U.S. Cl. 401—78 **2 Claims**



1. In a lipstick comprising:

a. a cartridge including a tubular inner formed with a longitudinal slot therein and having at its lower end an inward annular wall with an upward tubular socket wall terminating in an annular upwardly facing shoulder, a tubular cam immediately outside the inner and having an internal spiral track therein, and a pomade cup formed with a floor and upward and downward side walls from the floor and having an outward lug fitting through the longitudinal slot and into the spiral track,

b. a base defined by a plug having a transverse wall and a tubular core extending upward centrally from the wall, the core being received into the lower end of the tubular socket wall of the inner, the core having a head with portions cut away to define cantilevered latches extending upward, the lower ends of the latches being unitary with the core and the upper ends being normally adapted to flex inward and having outward hooks thereon adapted to snappingly engage over the shoulder on the inner, the improvement wherein the pomade cup has a downward inner annular wall which is received into the head of the core when the cup is retracted and the downward side wall of the cup and the downward inner annular wall closely laterally confine the head of the core and the tubular socket wall to keep the latches engaged with the shoulder.

5,599,125

LIQUID COSMETICS CONTAINER WITH THIN EDGE SEMI-RIGID WIPER

Martin M. Vasas, Fairfield, and Robert C. Hagemeister, Westbrook, both of Conn., assignors to The Bridgeport Metal Goods Manufacturing Company, Bridgeport, Conn.

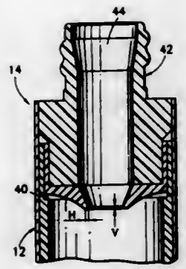
Filed Feb. 1, 1995, Ser. No. 382,139

Int. Cl.[6] A45D *40/00*

U.S. Cl. 401—122 **19 Claims**

1. A wiper diaphragm for use in a cosmetics container of the type comprising a bottle including a bottle neck defining an entry opening, a cap and an applicator rod extending from the cap and mounting an applicator on the distal end thereof, the applicator and applicator rod being inserted through the entry opening as the cap

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is placed on the neck to close the container and the applicator and applicator rod being withdrawn from the neck to remove cosmetics from the bottle, the wiper diaphragm being mounted extending across the entry opening and defining a wiper orifice sized to accept and seal to the applicator and wipe the applicator mounted thereto, the wiper diaphragm having an upper conical surface and a lower surface converging with the upper surface at the wiper orifice to define a thin edge peripherally surrounding and defining the wiper orifice, the thin edge having a vertical surface with a dimension of about 0.015 inches or less, the wiper diaphragm being fabricated of semi-rigid plastic material the thin edge of which flexes and stretches with respect to the applicator rod to achieve good sealing therewith, the thin edge being rigid with respect to the applicator for fixed thin edge wiping action with respect thereto.

5,599,126

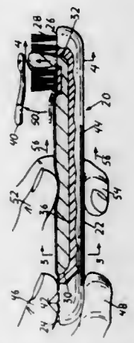
DISPOSABLE TOOTHBRUSH

Cheryl Hough, 285 Bastedo Court, Milton, Ontario, Canada

Continuation of Ser. No. 201,954, Feb. 25, 1994, abandoned. This application Nov. 6, 1995, Ser. No. 554,618

Int. Cl.[6] A46B *11/02*

U.S. Cl. 401—184 **3 Claims**



2. In a disposable toothbrush for single use comprising an elongate handle having a fingergrip at one end and a bristle-carrying head adjacent the other end of the handle, a plurality of bristles extending transversely to the handle from a base for the bristles defined by the head on a top side of the toothbrush, the improvement in which the handle has an elongate shallow recess formed therein which extends along the length of the handle from the fingergrip to the head, and is adapted to receive a predetermined volume of a selected toothpaste sufficient for a single application of toothpaste to the head, the recess being covered by a thin flexible membrane defining a self-contained capsule for receiving the toothpaste, the capsule having an orifice covered by a removable pull tab, and the recess opening onto one side of the handle for access to said capsule for extrusion of the toothpaste to the bristle-carrying head, and the head is hollow to be in fluid communication with the recess in the handle and to receive an end of the capsule having said orifice, the base for the bristles in the head having a key-hole slot to provide access to the pull tab, so that upon removal of the pull tab, any toothpaste contained by the capsule in the recess may be extruded by gliding one hand over the membrane surface of the capsule along the recess from the fingergrip toward the head and into the bristles.

5,599,127

CAP FOR WRITING AND MARKING INSTRUMENTS

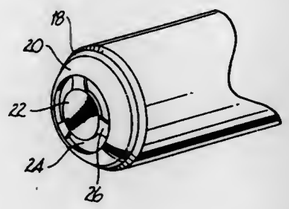
Arthur D. Fuhrmann, III, Northford; Craig Stevens, Bethany, and Glenn Gramolini, Ansonia, all of Conn., assignors to BIC Corporation, Milford, Conn.

Continuation of Ser. No. 78,581, Jun. 16, 1993, abandoned, which is a continuation of Ser. No. 791,895, Nov. 13, 1991, Pat. No. 5,230,578. This application Aug. 24, 1994, Ser. No. 295,472

The portion of the term of this patent subsequent to Nov. 13, 2011, has been disclaimed.

Int. Cl.[6] B43K *9/00*

U.S. Cl. 401—202 **15 Claims**



1. A removable cap for receiving a writing implement, which comprises:

a hollow tubular member defining a longitudinal axis and having first and second end portions, said first end portion defining an opening for receiving the implement, said second end portion including a frusto-conical surface in concentric arrangement with said longitudinal axis and having an outer end which is distal most from said first end portion;

an interior land portion displaced with respect to said longitudinal axis at a position beyond said second end of said tubular member, said land portion having a generally planar outer surface; said land portion and said outer end of said frusto-conical surface being at substantially the same position with respect to said longitudinal axis; and

three connecting portions extending from said land portion to said second end portion of said tubular member, said connecting portions defining three openings extending circumferentially about said land portion to permit air to flow between an exterior side of said land portion and an interior portion of said hollow tubular member said connecting portions being dimensioned such that the combined area of said openings is at least twice the combined upper surface area of said connecting portions.

5,599,128

SEPARATING MEANS FOR BOUND PRINTED WORKS WITH TABS PROJECTING FROM THE PLANE OF THE BOUND PRINTED WORKS

Andreas Steiner, Eichendorffstrasse 28, D-8228 Freilassing, Germany

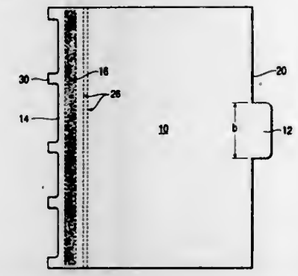
PCT No. PCT/EP93/01345, § 371 Date Feb. 22, 1995, § 102(e) Date Feb. 22, 1995, PCT Pub. No. WO93/24336, PCT Pub. Date Dec. 9, 1993

PCT Filed May 28, 1993, Ser. No. 338,469

Claims priority, application Germany, May 29, 1992, 9207326 U

Int. Cl.[6] B42F *21/00*

U.S. Cl. 402—79 **4 Claims**



1. Separating means for bound printed works having at least one tab which projects out of the plane of the bound printed works, wherein said separating means comprises a separating sheet having an inside edge opposite the at least one tab, the inside edge having a width greater than a width of the at least one tab, an adhesive material provided along the inside edge for enabling attachment of the separating sheet to an inside of the bound printed works, at least one fold provided on a side of said separating sheet facing the inside of the bound printed works, and insert tabs provided on the side of the separating sheet facing the inside of the bound printed works, said insert tabs extending in a direction opposite to an extension direction of said at least one tab.

5,599,129

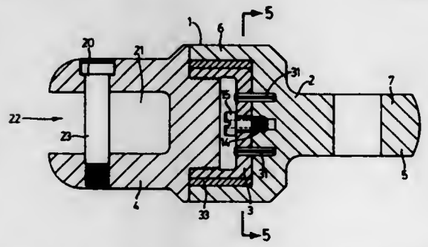
LOAD LIMITED CONNECTOR

David G. Clifton, Delta, and Heiko Epkens, Vancouver, both of Canada, assignors to DCD Design & Manufacturing Ltd., Vancouver, Canada

Filed Jan. 17, 1995, Ser. No. 373,759

Int. Cl.[6] F16P *5/00*

U.S. Cl. 403—2 **13 Claims**



1. A load limited connector, calibrated to fail at a predetermined approximate tensile load, the connector comprising:

a main body having first and second ends, said first end including first attachment means and said second end including a central bore;

a pin chamber constructed to be received in said central bore of said main body, said pin chamber having a central bore extending partially therethrough and at least one passageway therethrough which aligns with at least one longitudinal passageway in said main body, said passageway in said pin chamber and said longitudinal passageway in said main body together forming a pin passageway for receiving a breakaway pin;

a secondary body having first and second ends, said first end of said secondary body including second attachment means and said second end of said secondary body defining a shaft, said shaft being releasably secured within said central bore of said pin chamber;

at least one breakaway pin, said breakaway pin received within said pin passageway, said breakaway pin securing said pin chamber within said central bore of said main body and being calibrated to break at a predetermined approximate tensile load causing said load limited connector to axially separate into two separate components through said main body separating from said secondary body when said connector is subjected to tensile loading that exceeds said predetermined approximate tensile load; and

at least one torsion pin extending through said pin chamber into said main body, parallel to said breakaway pin, thereby preventing rotation of said pin chamber within said main body.

5,599,130

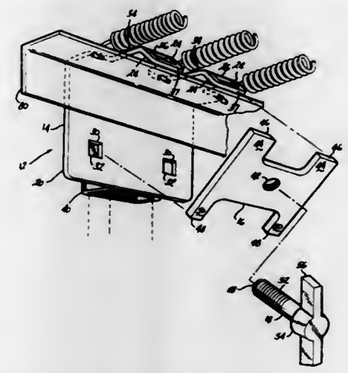
UNIVERSAL BED RAIL MOUNT

Robert A. Solomon, Kalamazoo, and David R. Postma, Grandville, both of Mich., assignors to AM Fab, Inc., Grand Rapids, Mich.

Filed Sep. 7, 1995, Ser. No. 524,713

Int. Cl.[6] A47C *19/22*; F16B *12/32*

U.S. Cl. 403—236 **10 Claims**



1. A universal bed rail mount for securing bedside rail risers to a mattress supporting bed frame comprising:

an L-shaped support for embracing the bed frame and formed of two legs, each leg having an inner surface facing the other leg and adapted to contact the bed frame, an exterior surface facing away from the other leg, and at least one opening at an outer portion of each leg and extending between the inner and exterior surfaces thereof;

at least one tension plate having a hole at a central portion thereof and bearing surfaces at each of opposite ends of the plate adapted to be received in the at least one opening in the outer portion of each of the legs and extending between the inner surfaces of the legs;

a bolt received in the tension plate and adapted to abut the bed frame when embraced by the L-shaped support;

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an adjustable mechanical advantage element between the bolt and the tension plate to selectively adjust the tension between the L-shaped support and the tension plate with the bed frame therebetween; and

a riser guide support affixed to the exterior surface of one of the legs.

5,599,131

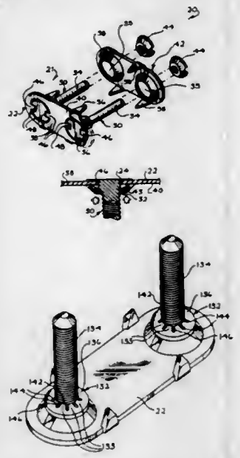
PLATE FASTENER WITH BOLTS PREASSEMBLED

Donald L. Julen, Bolingbrook; Peter M. Ramsey, Glen Ellyn; David F. Drabek, Plainfield, and John H. Winkelman, Naperville, all of Ill., assignors to Flexible Steel Lacing Company, Downers Grove, Ill.

Continuation-in-part of Ser. No. 247,567, May 23, 1994, abandoned. This application Dec. 13, 1994, Ser. No. 354,588

Int. Cl.[6] F16B *35/00*

U.S. Cl. 403—342 2 Claims



1. In a plate fastener having a lower plate with surfaces defining apertures tot use with a belt, the combination comprising:

a pair of bolts disposed within the apertures of the lower plate, the bolts each having a bolt head and a shank portion with threads defining a plurality of roots and crests, the shank portion having a predetermined crest diameter at its crests, and there being a space between each bolt and the surface defining each aperture in the lower plate; and

a washer on each shank portion formed from a plastic material and each comprising an outer annular ring portion defining a central annular ring aperture of diameter greater than said predetermined crest diameter of the bolt shank, with the washers each having a plurality of integral, resilient plastic tabs with inner ends which together define a tab diameter less than said predetermined crest diameter, with the tabs resiliently deflected by the bolt shank received through the washer from a preloaded position in which the tabs extend radially inwardly into the annular ring aperture in substantially the plane of the annular ring portion, to a loaded position in which the tabs are deflected outwardly by the bolt shank to extend at an angle to the plane of the annular ring portion with the inner ends of the tabs engaging the crests of the bolt shank to secure the washers in a stationary position on the bolts, the resilient deflection of the tabs preventing the abrading of the plastic washer material by the bolts during sliding of the washers onto the bolts, in which each washer is deformable so as to extrude under pressure associated with clamping the lower plate against the belt to substantially fill in the space between each bolt and said surface defining the lower plate apertures.

5,599,132

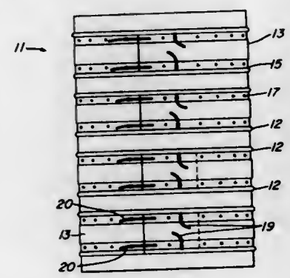
REFLECTIVE BANDS FOR ROADWAY BARRICADE BARRELS AND METHOD OF USE

Robert K. Hughes, Jr., Cape Coral, Fla., assignor to Flexstake, Inc., Fort Myers, Fla.

Filed Jun. 7, 1995, Ser. No. 474,501

Int. Cl.[6] E01F *13/00*

U.S. Cl. 404—6 3 Claims



1. A highway barricade, comprising in combination:

a plastic barrel at least partially filled with a weighting material;

a plurality of flexible bands, each of the bands being a flat strip having an upper edge, a lower edge, an inner side, an outer side, and two terminal ends;

a reflective surface disposed on the outer side of each of the bands;

a hole formed in the band adjacent each of the terminal ends;

mechanical fastening means for insertion through the hole adjacent each of the terminal ends for releasably securing each of the bands, spaced apart, about the exterior of the barrel, with the reflective surfaces facing outward from the barrel; and

wherein the mechanical fastening means comprises rivets which are passed through at least some of the holes in the bands and through apertures in the barrel to secure the bands to the barrel.

3. A method for providing night visibility for a highway barricade barrel, comprising in combination the steps of:

providing a plurality of flexible bands, each having inner and outer sides and two terminal ends;

providing a plurality of holes in the band adjacent each of the terminal ends;

placing reflective surfaces on the outer sides of the bands;

placing the bands circumferentially around the exterior of the barricade barrel, spaced apart from each other, with the reflective surfaces and outer sides facing outward, away from the barricade barrel;

fastening the bands to the exterior of the barricade barrel by inserting at least one mechanical fastener through at least some of the holes; and

wherein the step of fastening the bands to the barricade barrel comprises passing rivets through at least some of the holes and through apertures provided in the barricade barrel.

5,599,133

METHOD AND APPARATUS FOR PAINTING ROAD SURFACES

Bernard J. Costello, Princeton, N.J., and Brendan F. Hogan, Yardley, Pa., assignors to Argus International, Ringoes, N.J.

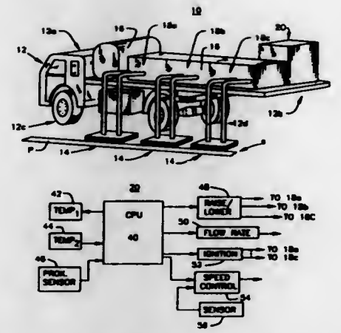
Filed May 25, 1995, Ser. No. 450,700

Int. Cl.[6] E01C *3/06*

U.S. Cl. 404—72 13 Claims

1. A method of coating a road surface with a paint employing a ceramic radiation panel mounted upon a wheeled carriage so as to be positioned above the road surface comprising the steps of:

(a) moving the wheeled carriage along the road surface;



(b) heating the ceramic panel to generate radiant energy and directing radiant energy within the infrared and red wavelength band toward a portion of a road surface to be coated to elevate the temperature thereof;

(c) spraying a coating of paint upon the preheated surface which is elevated to a temperature to promote significantly rapid drying of the paint; and

(d) heating a second ceramic panel to generate radiant energy and heating the coated surface by directing radiant energy in the infrared and red band to heat the road surface and the paint coated thereon.

7. Apparatus for pre-heating a road surface comprising:

a wheeled vehicle;

at least one heating unit mounted upon said wheeled vehicle;

said heating unit being a ceramic radiator panel having radiant energy emitting surface;

means provided on said vehicle for adjusting a spacing the emitting surface relative to said road surface;

an energy source mounted on said vehicle for supplying energy to said heating unit to enable said heating unit to generate radiant energy in infrared and red wavelength bands, which radiant energy is directed toward said road surface;

means mounted on said vehicle for detecting road surface temperature; and

means responsive to a detected road surface temperature for adjusting a position of the emitter surface relative to said road surface to control an amount of energy radiated to said road surface and thereby regulate an increase in temperature level of road surface, said energy source comprising a combustible gas;

means for regulating a rate of flow of gas to said heating unit emitter surface to adjust the level of radiant energy directed to said road surface; and

a unit for spraying a paint upon the road surface;

said heating unit including means for directing the paint toward those portions of the road surface heated by said heating unit.

5,599,134

ASPHALT PAVER WITH COMPACTION COMPENSATING SYSTEM

Charles G. Macku, Cedar Rapids, Iowa, and Alan W. Boyles, Grand Junction, Colo., assignors to Cedarapids, Inc., Cedar Rapids, Iowa

Filed Sep. 15, 1995, Ser. No. 529,147

Int. Cl.[6] E01C *19/48*

U.S. Cl. 404—84.1 19 Claims

19. An asphalt paver for placing a mat of asphalt material on a subgrade having localized irregularities, comprising:

(a) a screed having a variable pull point that determines the thickness of the mat of asphalt material being placed by the paver;

(b) reference means for establishing a nominal surface of the mat of asphalt material being placed by the paver;

(c) compensating means for determining the vertical and longitudinal extent of the localized irregularities of the subgrade; and

(d) control means for varying said pull point in response to inputs from said reference means and said compensating means such that differential compaction is substantially eliminated from the mat of asphalt material being placed by the paver after compaction of the mat.

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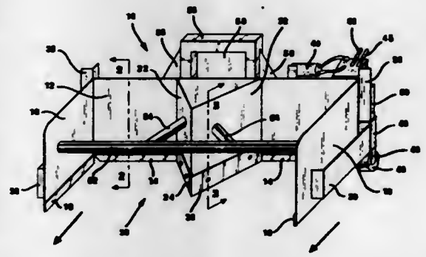
ASPHALT SPREADER

John Delaurenti, 615 Franklin St. SW., Ronan, Mont. 59864

Filed Jun. 8, 1995, Ser. No. 482,417

Int. Cl.[6] E02F *3/76*

U.S. Cl. 404—101 4 Claims



1. An asphalt spreader for spreading asphalt on a groundplane when moved in a forward direction, the asphalt spreader comprising:

an upstanding blade having a pair of side ends, a length, and a bottom;

a first scraping surface extending along the length of the blade adjacent the bottom, the first scraping surface inclined rearwardly with respect to the blade at an acute angle above the groundplane;

an upstanding wing attached to each side end of the blade and extending forwardly from the blade, each said upstanding wing having a base;

a second scraping surface attached to each wing adjacent the base;

an upstanding wedge-shaped center portion connected to the blade intermediate the side ends, the wedge-shaped center portion forming a forwardly extending wedge and having an underside; and

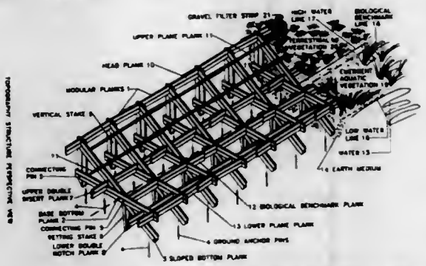
an adjustable third scraping surface adjustably connected to the wedge-shaped center portion adjacent the underside for height adjustments above the groundplane.

5,599,136

STRUCTURE FOR TOPOGRAPHY STABILIZATION AND RUNOFF CONTROL

Douglas A. Wilke, 38 Roosevelt Ave., Glen Head, N.Y. 11545-1531

Filed Apr. 7, 1993, Ser. No. 44,527
Int. Cl.[6] E02B 3/04
U.S. Cl. 405—15 12 Claims



1. A topography structure system to provide means to stabilize earth contours and promote plantlife at the interface of water and landmass at slopes of zero degree to forty-five degrees from the horizontal, set upon earth at a predetermined location and grade, said system comprising:

A plurality preformed of planks, said planks being joined by interlocking notched means, each plank having at least one notch on one longitudinal upper or lower edge and arranged so as to receive the notch of an adjacent plank; said notches being at a predetermined angle so that the plank can be arranged to define three dimensional frames; forming contoured cell means;

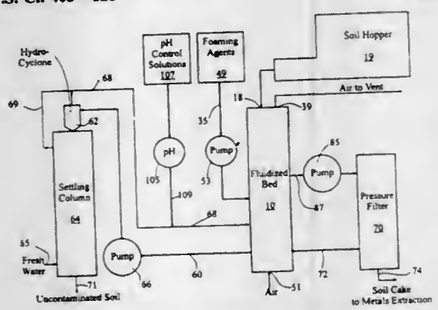
Earth medium within said cell means being arranged at the necessary topographic angles, orientation and elevations to establish a predetermined linear biological benchmark required to provide the nourishment balance of solar insolation, water-cover, atmosphere and nutrient compulsory to sustain aquatic emergent vegetation and terrestrial vegetation and associated micro flora adjacent to and at the land and water interface.

5,599,137

MOBILE SOIL TREATMENT APPARATUS AND METHOD

Robert J. Stephenson; John C. Nelson; Choom J. Lim, and Kok-Seng Lim, all of Vancouver, Canada, assignors to Chemtech Analysis Inc., Richmond, Canada

Filed Sep. 13, 1995, Ser. No. 527,750
Int. Cl.[6] B09B 3/00
U.S. Cl. 405—128 25 Claims



1. An apparatus for treating contaminated soil comprising:

(a) a reactor vessel for holding a volume of water, said vessel having a first chamber and a second chamber;

(b) a baffle partially separating said first and second chambers, wherein said chambers are in fluid communication;

(c) a soil conveyor for conveying a supply of said contaminated soil to said first chamber;

(d) a nozzle for directing a supply of pressurized gas into said first chamber, thereby creating a turbulent mixture of said soil and water in said first chamber to effect segregation of said soil into a substantially small particle size first fraction and a substantially large particle size second fraction;

(e) a first outlet located in an upper portion of said second chamber for withdrawing said first soil fraction from said reactor; and

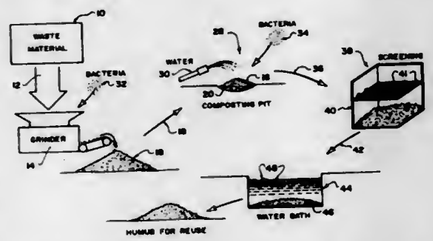
(f) a second outlet located in a lower portion of said second chamber for withdrawing a slurry comprising said second soil fraction from said reactor.

5,599,138

LANDFILL GARBAGE SYSTEM

Stanley M. Kozak; William M. Kozak, and Murray L. Kozak, all of 1520 Percy Street, Brandon, Manitoba, Canada

Filed Mar. 3, 1995, Ser. No. 400,109
Int. Cl.[6] B09B 1/00;3/00
U.S. Cl. 405—129 11 Claims



1. A process for waste reduction of household and other landfill waste material at a landfill waste management site comprising:

grinding of waste materials thereby reducing a volume of the waste material;

placing the waste material in a pit dug into the ground arranged to accept the waste material after grinding;

composting of the waste material in the pit thereby reducing organic material in said waste to humus;

removing the waste material from the pit after composting;

screening of the waste material after composting thus removing glass, metals, concrete, and other dense materials from the humus;

separation of the waste material after composting by floatation means thereby separating and removing plastics and light materials from the humus.

5,599,139

METHOD OF CONSTRUCTING A LINER SYSTEM AND WASTE CONTAINMENT FACILITY INCORPORATING SAME

Raymond J. Chewning, Kennesaw; Peter C. Brown, Atlanta, and Jesse R. Whittemore, Woodstock, all of Ga., assignors to The Tensar Corporation, Atlanta, Ga.

Filed Jun. 7, 1995, Ser. No. 487,640
Int. Cl.[6] E02D 17/20;29/02;31/02
U.S. Cl. 405—129 18 Claims

1. A method of constructing a liner system on a substantially vertically-extending wall, said method comprising:

positioning an impermeable membrane liner adjacent to a substantially vertically-extending wall, and

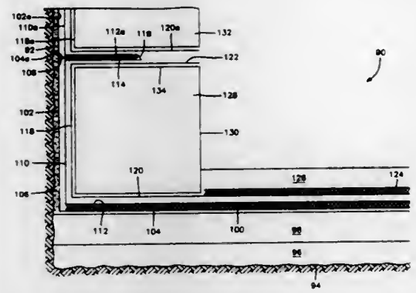
filling an expandable box means with a fill material so as to expand the box means into contact with the membrane liner to hold a portion of the membrane liner in a vertical orientation against the substantially vertically-extending wall with additional portions of the membrane liner extending under and over the box means.

13. A landfill comprising:

a substantially vertically-extending wall,

an impermeable liner, and

a plurality of box means supporting portions of said membrane liner along said substantially vertically-extending wall, remaining portions of said membrane liner extending between juxtaposed tops and bottoms of superimposed box means.

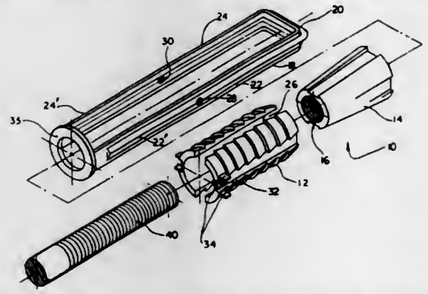


5,599,140

MINE ROOF SUPPORT SYSTEM INCLUDING AN EXPANSION ANCHOR WITH MEANS ASSISTING RESIN COMPONENT MIXING AND METHOD OF INSTALLATION THEREOF

Raymond L. Wright, Syracuse, N.Y., assignor to The Eastern Company, Naugatuck, Conn.

Filed Sep. 13, 1995, Ser. No. 527,779
Int. Cl.[6] E21D 20/00;20/02;21/00
U.S. Cl. 405—259.6 30 Claims



1. A mine roof expansion anchor for anchoring the threaded, distal end of an elongated rod securely in a drill hole in a rock formation, said assembly comprising, in combination:

a) a hollow shell structure having a plurality of leaf members, each having an upper and a lower end and an inner and an outer surface, said leaf members being arranged relative to one another with said inner surfaces radially spaced from a central axis and said upper and lower ends in respective, substantially common, parallel, upper and lower planes;

b) a tapered camming plug having relatively large and small ends and a threaded, through bore for engagement with said threaded end of said rod, said plug being arranged with said small end extending into the space surrounded by said leaf upper ends and said bore substantially coaxial with said central axis, axial movement of said plug toward said lower ends of said leaves in response to rotation of said rod acting to radially expand said leaves into tightly gripping engagement with the wall of said drill hole; and

c) elongated leg means fixed with respect to said shell and extending downwardly from said lower plane for a distance at least about as great as the distance between said upper and lower planes.

22. The method of installing a reinforcing and support system for a rock structure having a surface and a blind drill hole of first length and diameter extending into said rock structure from an open end in said surface, said method comprising:

a) forming external threads on an elongated rod of second length and diameter, said threads extending from a distal end toward a proximal end of said rod;

b) mounting upon said distal end a mechanical expansion anchor including a tapered nut and radially expansible, hollow shell by engagement of internal threads of said nut with said external threads, said shell having a predetermined axial length;

c) providing elongated leg means fixed with respect to said shell to extend from the portion of said shell nearest said distal end toward said distal end for a distance at least about as great as said axial length;

d) inserting into said drill hole a two-compartment cartridge containing respective components of a grouting material, said components being in a flowable state while separate and hardenable to a solid mass of predetermined volume when released from said cartridge and mixed within said drill hole;

e) inserting said distal end of said rod with said expansion anchor and leg means thereon into said drill hole and advancing said rod to a fully inserted position, said first and second lengths being so related that said cartridge is broken against the blind end of said drill hole when said rod is in said fully inserted position with said proximal end remaining outside said drill hole, and said second diameter being smaller than said first diameter to provide an annular space within said drill hole surrounding said rod, said predetermined volume substantially filling said drill hole from said blind end, through said hollow shell and said annular space to cover substantially all of said leg means; and

f) rotating said rod to move said nut axially thereon to effect expansion of said shell into tightly gripping engagement with said drill hole and tensioning of said rod, whereby hydraulic turbulence of said components within said annular space is induced by rotation of said rod and mixing of said components is enhanced by flow of said components about said leg means.

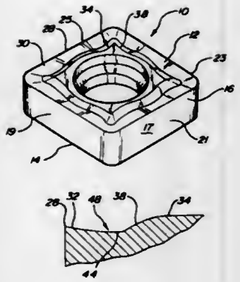
5,599,141

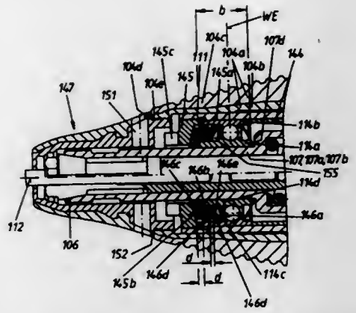
CHIP CONTROL INSERT

Karl Katbi, Troy; John Patterson, Hazel Park; Thomas Bernadic, Madison Hts.; Brendan Brockett, Dearborn Hts., and Tony Lowe, Royal Oak, all of Mich., assignors to Valenite Inc., Madison Heights, Mich.

Continuation of Ser. No. 205,466, Mar. 4, 1994, abandoned.
This application Feb. 16, 1996, Ser. No. 603,017
Int. Cl.[6] B23B 27/22
U.S. Cl. 407—114 6 Claims

1. A polygonal indexable cutting insert, comprising: an upper surface and a lower surface in spaced relationship to each other and separated by a sidewall extending substantially unbroken therebetween to define a body; said sidewall intersecting said upper surface to define a cutting edge extending around a periphery of the insert; a concave radiused cutting land entry surface descending from said cutting edge and intersectining with an inclined, convex radiused chip breaker ramp surface which terminates in a generally planar locating surface on said upper surface projecting from said cutting land entry surface above said periphery; said chip breaker ramp surface intersecting said cutting land entry surface to define a continuous chip groove; said chip breaker ramp surface having radial corner projections and radius bulges intermediate to each polygon side.





5,599,142

DRILLING CONTROL APPARATUS

Akihiko Fujimoto; Takashi Nagatomi, and Naoki Sato, all of Minamitsuru-gun, Japan, assignors to Fanuc Ltd., Yamanashi, Japan

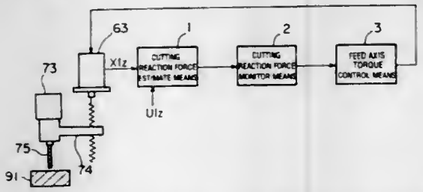
PCT No. PCT/JP94/00981, § 371 Date Feb. 15, 1995, § 102(e) Date Feb. 15, 1995, PCT Pub. No. WO95/02485, PCT Pub. Date Jan. 26, 1995

PCT Filed Jun. 16, 1994, Ser. No. 374,798

Claims priority, application Japan, Jul. 13, 1993, 5-172810; Aug. 6, 1993, 5-196353

Int. Cl.[6] B23B *39/08;49/00*

U.S. Cl. 408—10 7 Claims



1. A drilling control apparatus for controlling drilling of holes to a workpiece using a numerically controlled machine tool, comprising:

cutting reaction force estimate unit for estimating a cutting reaction force along an axis direction generated between a drill and the workpiece;

cutting reaction force monitor unit for monitoring whether said cutting reaction force follows a predetermined command pattern; and

feed axis torque control unit for controlling a torque of a feed axis of said drill to direct said estimated cutting reaction force to follow said command pattern if said cutting reaction force does not follow said command pattern.

5,599,143

MOTORIZED HANDPIECE, IN PARTICULAR FOR MEDICAL PURPOSES, PREFERABLY FOR A MEDICAL OR DENTAL LABORATORY

Josef Düsing, Leutkirch, Germany, assignor to Katenbach & Voigt GmbH & Co., Biberach, Germany

Filed Feb. 17, 1995, Ser. No. 389,958

Claims priority, application Germany, Mar. 2, 1994, 44 06 854.9

Int. Cl.[6] A61C *1/05;1/08;* B23B *19/02*

U.S. Cl. 408—124 25 Claims

1. A motorized handpiece for medical and dental purposes, comprising a sleeve-like casing (**111**); a clamping device (**106**) arranged in said casing (**111**) for the selective mounting of tools (**105**) insertable into the handpiece (**101**) from a front end thereof; a movably mounted actuating part (**104***a*) for opening and closing the clamping device (**106**); said actuating part (**104***a*) being accessible at the circumference of the motorized handpiece (**101**); a drive shaft (**107**) having the clamping device (**106**) arranged thereon; a casing (**101**) including a rear and a forward roller bearing (**113**, **114**) for rotatably mounting said drive shaft; an actuating mechanism (**108**) connecting the actuating part (**104***a*) with the clamping device (**106**); a sealing system (**146**) being connected with the forward roller bearing (**114**) on a forward side of roller bodies of said bearing; said sealing system including at least one sealing disk (**146***a*) which is operative between an inner and an outer ring (**114***a*, **114***b*) of said forward roller bearing; and at least two further sealing elements (**146***b*, **146***c*) being arranged ahead of the sealing disk (**146***a*), of which at least one said sealing element (**146***b*) proximate the sealing disk (**146***a*) operatively cooperates with the inner and outer ring (**114***a*, **114***b*) of the forward roller bearing (**114**).

5,599,144

LOW FRICTION FLUTE TUNGSTEN CARBON MICRODRILL

Michael Bickham, Austin; Richard W. Burns, Round Rock; Glenn D. Johnson, Austin; Joe Negron, Hutto; Oliver K. Sparkman, Georgetown, and Dale W. Wilhite, Round Rock, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 23, 1995, Ser. No. 494,048

Int. Cl.[6] B23B *51/02;* B21K *5/04*

U.S. Cl. 408—144 14 Claims



1. A method of making a drill bit, comprising the steps of:

fabricating a fluted drill with tungsten carbide;

depositing a thin layer of low coefficient of friction silicon enhanced high temperature diamond like carbon on drill surfaces; and

exposing the tungsten carbide at cutting surfaces of the drill while retaining the thin layer of high temperature diamond like carbon at drill flute surfaces.

9. A drill bit, comprising:

a fluted drill body composed substantially of tungsten carbide;

a thin layer of very low friction silicon enhanced high temperature diamond like carbon material deposited on surfaces of the drill body; and

selectively exposed tungsten carbide at the facets of the cutting surfaces of the drill body.

5,599,145

DRILL WITH INTERCHANGEABLE CUTTING INSERT

Josef Reinauer, Sigmaringen, and Hans G. Kuhl, Villingen, both of Germany, assignors to Joerg Guehring, Albstadt, Germany

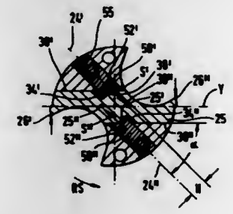
PCT No. PCT/EP93/03118, § 371 Date Aug. 11, 1995, § 102(e) Date Aug. 11, 1995, PCT Pub. No. WO94/12305, PCT Pub. Date Jun. 9, 1994

PCT Filed Nov. 8, 1993, Ser. No. 424,589

Claims priority, application Germany, Nov. 23, 1992, 42 39 311.6

Int. Cl.[6] B23B *51/00;51/06*

U.S. Cl. 408—233 21 Claims



1. A drill, comprising:

a cylindrical holder having a longitudinal axis and a transverse axis that extends perpendicular to said longitudinal axis,

a drill tip inside of which a groove with a groove bottom and groove side walls is formed such that said groove extends along the transverse axis, and

a cutting insert formed of a hard metal, said insert being located in the groove and having two main cutting edges that are arranged point-symmetric to the longitudinal axis, forwardly adjacent cutting surfaces and two rear side surfaces that are arranged opposite each respective cutting surface on the other side of the transverse axis wherein:

the holder is provided with two bores that respectively exit into said groove side walls, said bores lying in one radial plane of the drill and being respectively arranged within a region of one of said rear side surfaces of the insert, and longitudinal axes of said bores respectively extending at an acute angle with respect to the respective groove side walls and the rear side surfaces of the insert,

clamping and stopping elements are provided which respectively protrude out of one of the groove side wall and are arranged in the bores,

at least one of the two stopping elements are one of movable and adjustable in the direction of the longitudinal axis of the bore, and

recesses that form support surfaces that correspond to the stopping elements respectively are one of provided in and formed in the rear side surfaces of the insert.

5,599,146

TOOL COUPLING WITH A RADIALLY ELASTICALLY EXPANDABLE COUPLING SLEEVE AND A SHAFT WITH A CLAMPING BODY

Gerhard Scheer, Loechgau, Germany, assignor to Komet Praezisionswerkzeuge Robert Breuning GmbH, Besigheim, Germany

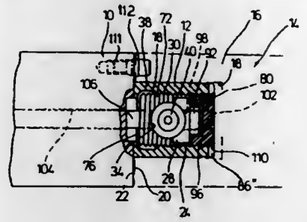
PCT No. PCT/EP92/02701, § 371 Date May 31, 1994, § 102(e) Date May 31, 1994, PCT Pub. No. WO93/10930, PCT Pub. Date Jun. 10, 1993

PCT Filed Nov. 24, 1992, Ser. No. 244,558

Claims priority, application Germany, Dec. 3, 1991, 41 39 795.9

Int. Cl.[6] B23C *5/26*

U.S. Cl. 409—234 39 Claims



1. In a device for connecting two tool parts including a shaft projecting from a first tool part, an annular surface surrounding said shaft at a root of said shaft, said shaft extending from said root terminating in a front-face shaft end, a coupling sleeve projecting from a second tool part and having an end surface and a recess for receiving said shaft in said end surface, said end surface being adapted to be pressed against said annular surface during a clamping operation, said shaft having a cavity therein and a clamping body arranged in said cavity, said cavity having therein means defining at least one inner shoulder facing inclined away from said front-face shaft end, a clamping surface of said clamping body being axially pressed during said clamping operation against said at least one inner shoulder, said cavity having a wall defining a radially facing external face of said shaft and dimensioned such that it will elastically bulge in a radial direction and against an inside wall of said recess in said coupling sleeve in response to said clamping body being pressed in an axial direction thereof, the improvement wherein said cavity of said shaft has an internal thread therein, wherein said clamping body has an external thread threadedly engaged with said internal thread, and wherein said means defining at least one inner shoulder on said shaft and said clamping surface on said clamping body are formed by a plurality of flanks of both said internal and external threads, said plurality of flanks resting against one another and face inclined toward said front-face shaft end.

5,599,147

BLIND RIVET WITH A TAPERED LOCKING MECHANISM

Ralph Luhm, La Habra, Calif., assignor to Allfast Fastening Systems, Inc., City of Industry, Calif.

Filed May 2, 1995, Ser. No. 432,823

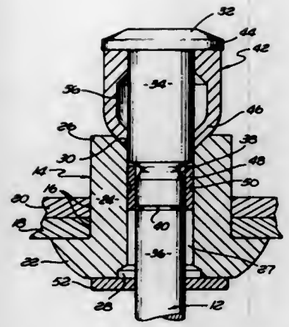
Int. Cl.[6] F16B *13/04*

U.S. Cl. 411—38 4 Claims

1. A blind rivet fastener, comprising:

a sleeve that has a shank that extends from a head and an opening that extends through said sleeve, said sleeve having a longitudinal axis;

a stem that extends through said sleeve opening, said stem having a shoulder, a head located at a first end of said shoulder, and a pull portion located at an opposite second end of said shoulder that can be grasped to pull said stem through said sleeve;



a bulb collar located adjacent to said stem shoulder, said bulb collar having a first end adjacent to said stem head and an opposite inwardly tapered second end that engages and deforms said sleeve when said stem is pulled through said sleeve, said bulb collar has an inner cavity that allows said inwardly tapered second end to deflect in an outward direction essentially perpendicular to the longitudinal axis of said sleeve and toward said head in a direction essentially parallel with the longitudinal axis of said sleeve when said stem is pulled through said sleeve; and,

a locking device that cooperates with said stem and said head to lock said shoulder in place when said stem is pulled through said sleeve.

5,599,148

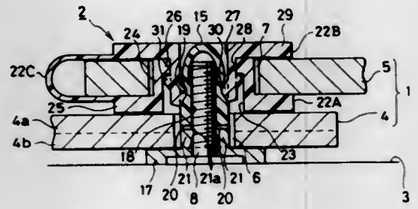
FIXING DEVICE FOR SHEET MEMBER

Akihiko Hirose, Zama, Japan, assignor to Nifco, Inc., Yokohama, Japan

Filed Aug. 30, 1993, Ser. No. 113,130

Int. Cl.[6] F16B *37/04*

U.S. Cl. 411—175 **12 Claims**



1. A fixing device for mounting a sheet member, having a through hole defined therein, upon a base having a stud for passing through said through hole of said sheet member, which comprises:

a plastic cap member for covering said stud and having an engaging portion formed upon a peripheral portion thereof; and

a plastic clip engaged with said cap member;

said plastic clip comprising a first clip member which includes a first cylindrical body provided at the center thereof with a first engaging hole, and disposed within said through hole of said sheet member, and a first flange integrally formed upon the periphery of one end of said first cylindrical body for engaging a first surface of said sheet member; a second clip member which includes a second cylindrical body, provided at the center thereof with a second engaging hole for permitting insertion thereinto and engagement therewithin of said cap member, disposed within said first engaging hole of said first clip member, and a second flange integrally formed upon the periphery of one end of said second cylindrical body for engaging a second surface of said sheet member; and a flexible connecting member which has opposite ends integral with said first flange and said second flange, respectively, so as to connect said first clip member and said second clip member together;

said first cylindrical body of said first clip member being inserted, from one side of said sheet member, into said through hole of said sheet member, and said second cylindrical body of said second clip member being inserted, from the other side of said sheet member, into said first engaging hole of said first cylindrical body disposed within said through hole of said sheet member so as to pinch said sheet member between said first and second flanges of said first and second clip members;

said clip, having said sheet member pinched between said first and second flanges of said first and second clip members, being inserted onto and engaged with said cap member covering said stud through means of said second engaging hole of said second clip member;

whereby said sheet member is mounted upon and fixed to said base by said fixing device.

5,599,149

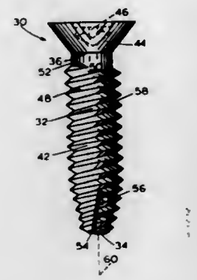
SELF-TAPPING FLOOR SCREW

Vince Clemente, Berwyn, Ill., assignor to Anchor Bolt and Screw Company, Melrose Park, Ill.

Filed Feb. 28, 1995, Ser. No. 395,788

Int. Cl.[6] F16B *25/00;35/04*

U.S. Cl. 411—386 **18 Claims**



1. A self-tapping screw fastener comprising:

a shank having first and second ends, a tapered portion of a predetermined axial length adjacent the first end of the shank and terminating in a substantially circular end surface having a first diameter at the first end, and a substantially cylindrical portion having a second diameter extending from the second end to the tapered portion;

a head disposed at the second end of the shank; and

a threaded portion extending helically along a circumferential outer surface of the shank from a location near the head substantially to the first end such that the threaded portion at least partially covers each of the cylindrical and tapered portions of the shank;

wherein the ratio of the length of the tapered portion to the first diameter of the end surface exceeds substantially 1.5;

wherein the first diameter is less than but substantially equal to the second diameter;

wherein the threaded portion includes threads on the tapered portion of the shank; and

wherein substantially all of the threads on the tapered portion of the shank are fully formed.

5,599,150

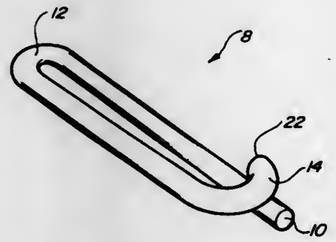
CLEVIS PIN RETAINER CLIPS

David J. Edwards, Shelby, and Charles Giacomazza, Troy, both of Mich., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 53,740, Apr. 27, 1993, abandoned. This application Aug. 31, 1994, Ser. No. 299,218

Int. Cl.[6] F16B *21/14;21/18*

U.S. Cl. 411—530 **2 Claims**



1. A hitch pin for engaging a clevis pin bore, comprising:

a continuous wire member formed to include a first end defining a lead-in;

a first intermediate member extending straight from said lead-in;

said first intermediate member terminating in a hinge portion having a substantially constant radius R_1 extending substantially 180°;

a second intermediate member extending straight from said hinge portion;

said second intermediate member terminating in a barb portion having a substantially constant radius R_2 extending substantially 180° to a termination, wherein R_2 is greater than R_1;

said hinge portion resiliently maintaining said barb portion such that the termination of said barb portion is disposed on a side of said first intermediate member opposite from said second intermediate member; and

said barb portion disposed proximate said lead-in.

5,599,151

SURGICAL MANIPULATOR

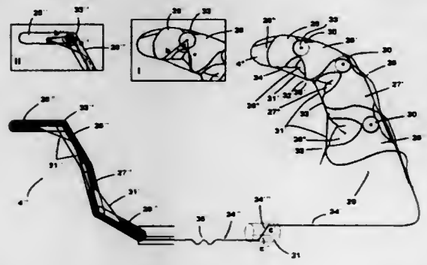
Wolfgang R. Daum, and Jörg Schmiedeke, both of Schwerin, Germany, assignors to Daum GmbH, Germany

Filed Mar. 4, 1994, Ser. No. 206,450

Claims priority, application Germany, Mar. 4, 1993, 43 06 786.7

Int. Cl.[6] B25J *3/00*

U.S. Cl. 414—7 **6 Claims**



1. A mechanical hand surgical manipulator for remotely replicating the movements of a human hand in areas inaccessible to a human hand, comprising:

a. a proximal hand means, said proximal hand means including at least one proximal finger holder sized to fit a human finger and having joints located generally proximate to joints of the human finger, for sensing the movement of at least one finger of the human hand;

b. a distal hand means for replicating the movements sensed by said proximal hand means, said distal hand means including at least one independently moveable distal finger, each having an elastomeric outer covering one portion of which being thicker than other portions;

c. a connecting means for transmitting said sensed movement from said proximal hand means to said distal hand means, said connecting means comprising a first cable proximally affixed to said proximal hand means, distally affixed to a movement reduction means and partially covered by flexible helical guide to limit lateral movement of said cable and direct said sensed movement generally co-linearly with said guide, and a second cable proximally affixed to said movement reduction means and distally affixed to a point distal to said thicker portion of said distal fingers, so that extension of said second cable will cause said finger to be flexed in proportion to said sensed movement with its point of flexure being proximate to said thicker portion, said outer covering being configured such that, when said cable is relaxed, said distal finger returns to an unflexed state.

5,599,152

MULTICOMPONENT ATTACHMENT APPARATUS FOR A MOVEABLE WORKING DEVICE

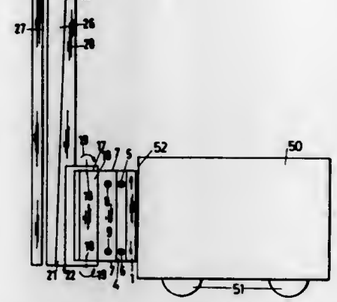
Paul Lingen, Grefratherstr. 42, Wachtendonk, Wankum, Germany

Filed Dec. 15, 1993, Ser. No. 166,877

Claims priority, application Germany, Dec. 17, 1992, 42 42 667.7

Int. Cl.[6] B25J *5/00*

U.S. Cl. 414—10 **3 Claims**



1. The combination of an elongated vehicle that is movable over a ground surface and defines an end and a longitudinal axis that extends through said end, and a multicomponent manipulator apparatus attached to said vehicle for picking up, holding, moving and delivering building components, said manipulator apparatus comprising:

a lifting module attached to said end of the vehicle, said lifting module having a rear end facing the vehicle and a front end, and first drive means for moving the module up and down relative to said longitudinal axis,

a sliding module attached to said lifting module, said sliding module having a rear end facing the front end of the lifting module and a front end, and second drive means for moving the sliding module transversely to said longitudinal axis,

a tilting module attached to said sliding module, said tilting module having a rear end facing the front end of the sliding module and a front end, and third drive means for moving the tilting module about a tilt axis parallel to said longitudinal axis,

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a spacing module attached to said tilting module, said spacing module having rear portion attached to the front end of the tilting module and a front portion, and fourth drive means for moving the front portion toward and away from the tilting module along a spacing axis parallel to said longitudinal axis,

a rotary module defining a rear portion attached to the front portion of said spacing module end a front portion and a fifth drive means for rotating the rotary module about a rotary axis perpendicular to said spacing axis, and

a swivel module having a swivel arm and a support arm, said swivel arm having a first end attached to the front portion of the rotary module to pivot about a first swivel axis perpendicular to said rotary axis and a second end, said support arm having a first end attached to the second end of the swivel arm to pivot about a second swivel axis perpendicular to said rotary axis, said support arm mounting gripping means for gripping a building component, and sixth drive means for moving said swivel arm about said first swivel axis and said support arm about said second swivel axis.

5,599,153

METHOD AND A SYSTEM FOR TRANSPORTING VEHICLES

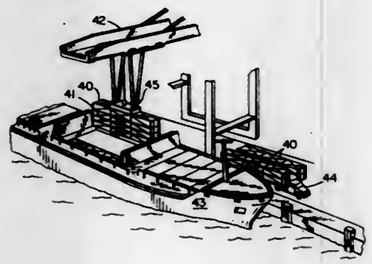
Stig-Åke Svensson, Halmstad, Sweden, assignor to Floatline AB, Halmstad, Sweden

Filed Mar. 22, 1995, Ser. No. 403,926

Claims priority, application Sweden, Sep. 24, 1992, 9202760

Int. Cl.[6] B65G *67/60*

U.S. Cl. 414—143.2 **10 Claims**



6. A system for transporting vehicles, primarily cars, by means of a seagoing vessel, said system comprising: one or more cassettes which include at least one floor, each floor including a vehicle driveway, each driveway connectable to ramps so disposed that the vehicles can be driven onto the ramps and onto said driveways to position the vehicles one after the other until the cassette has been loaded with a desired number of vehicles to allow transporting of the cassette onto the vessel, and to allow the cassette to be transported from the vessel and connected to the ramps to permit driving the vehicles from the cassette and along the ramps, wherein ends of each driveway are connectable to the ramps, wherein the cassettes include means for coupling the cassettes together in a manner to form a multicassette-unit for lifting and transportation as a unit, and wherein the cassettes are constructed so that when positioned one behind the other, the driveways of two sequentially arranged cassettes coact to enable vehicles to be driven on driveways from one cassette over to another cassette and to enable the vehicles to be driven in a forward direction when unloading the vehicles.

5,599,154

HIGH-RISE SHELVING

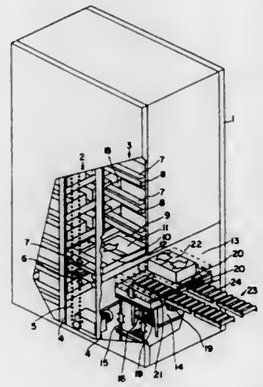
Jürgen Hölscher, Königstein, and Adrian J. Siegler, Bellheim, both of Germany, assignors to Bellheimer Metallwerk GmbH, Pfalz, Germany

Filed Mar. 27, 1995, Ser. No. 411,340

Claims priority, application Germany, Apr. 19, 1994, 44 16 103.4

Int. Cl.[6] B65G *1/04*

U.S. Cl. 414—278 **16 Claims**



1. A high-rise shelving having two shelving columns exhibiting compartments disposed one above the other, of which at least one shelving column is provided with a feed and removal opening and between which shelving columns there is disposed a vertical conveyor which forms á unit with them, said vertical conveyor comprising a horizontal conveying mechanism forming a platform for shelf-racks, which are to be transferred individually from the region of the feed and removal opening into a compartment of one of the columns or from said compartment to the region of the feed and removal opening instead by said vertical conveyor and said horizontal conveying mechanism, and an auxiliary conveyor, wherein the shelf-racks are provided with bases having at least one recess forming a passage arranged in the region of the feed and removal opening for independently movable parts of said auxiliary conveyor, said independently movable parts of the auxiliary conveyor serving to singularly or plurally load or unload objects deposited on the bases of the shelf-racks.

5,599,155

ATTACHMENT FOR INDUSTRIAL TRUCKS

Volker Röhm, Eningen; Gerard Vesin, Reutlingen, and Ulrich Freundt, Sonnenbühl, all of Germany, assignors to Wagner Fördertechnik GmbH, Reutlingen, Germany

Continuation-in-part of Ser. No. 72,521, Jun. 4, 1993, abandoned. This application Jun. 1, 1995, Ser. No. 456,507

Claims priority, application Germany, Jun. 4, 1992, 42 18 416.9

Int. Cl.[6] B65G *1/04*

U.S. Cl. 414—283 **20 Claims**

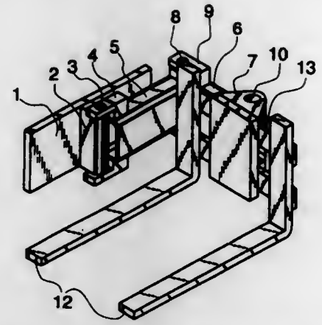
1. An attachment for industrial trucks operating in a narrow side loading and unloading aisle, the attachment comprising:

support plate means for connecting to a side of the industrial truck;

a first axle connected to said support plate;

a first lever arm having an end connected to said support plate by said first axle and rotatable by substantially 180 degrees about said first axle;

a second axle connected to another end of said first lever;



a second lever arm having an end connected to said first lever by said second axle and rotatable by substantially 180 degrees about said second axle;

a third axle connected to another end of said second lever;

a third lever arm having an end connected to said second lever by said third axle and rotatable by substantially 180 degrees about said third axle;

a load pickup means connected to said third lever arm, and for connecting and supporting a load;

first drive means for driving said first lever arm in rotation about said first axle to move said load pickup means with respect to said support plate;

second drive means for driving said second lever arm in rotation about said second axle to move said load pickup means with respect to said support plate;

third drive means for driving said third lever arm in rotation about said third axle to move said low pickup means with respect to said support plate;

control means for controlling said first, second and third drive means and respective said lever arms, said control means having a lateral mode for rotating said lever arms about said axles to substantially only move said load pickup means in a direction substantially parallel to said side of the industrial truck and in a plane adjacent said side of the industrial truck, whereby the industrial truck is able to laterally move loads into and out of a stall through a face of the stall facing parallel to the aisle, the lateral movement of the load being substantially perpendicular to a direction of movement of the industrial truck and the industrial truck moves parallel to the face of the stall.

5,599,156

UNLOADING SHOE SUBASSEMBLY FOR WHEELED HAND TRUCKS

Arnold B. Layne, and Ella L. Layne, both of R.R. 2, Box 28B, Vermillion, S. Dak. 57069

Filed Feb. 24, 1995, Ser. No. 394,158

Int. Cl.[6] B62B *1/06*

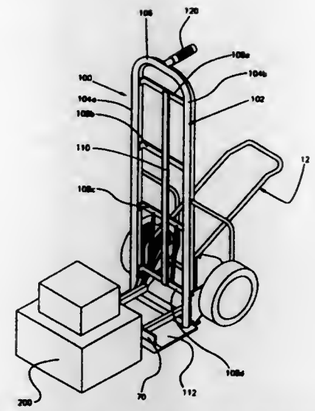
U.S. Cl. 414—490 **7 Claims**

1. An unloading shoe subassembly for use in combination with a hand truck having a frame which includes an upright frame section and a load-carrying platform mounted on said upright frame section at a lower end thereof and having a pair of wheels attached to the frame by an axle, said subassembly comprising:

a pair of sideframe members each having an upper end, a center section and a lower linkage section;

a handle extending between and connecting said upper ends of said sideframe members;

a pair of wheeled track assemblies for mounting on said frame such that each sideframe member is adjacent one of said wheeled track assemblies and said wheeled track assemblies are generally parallel with one another and generally perpendicular to the load-carrying platform;



each of said wheeled track assemblies including upper, middle and lower track means and support means, said upper, lower, and middle track means mounted on said support means in generally coplanar relation with each other;

follower means slidably mounted within each of said track means;

a shoe assembly including shoe means and at least one shoe support strut having upper and lower ends, said shoe means mounted on said lower end of said strut;

said linkage sections of said sideframe members pivotably connected to said follower means in said upper track means and said upper end of said shoe support strut, said pivotable connections spaced and connected at opposite ends of said linkage sections; and

said shoe support strut pivotably connected to said follower means in said middle and lower track means, said pivotable connections spaced from one another and generally adjacent said upper end of said strut whereby as said follower means in said middle and lower track means are moved, said shoe support strut is tilted to move said shoe means generally parallel with the load-carrying platform of a hand truck.

5,599,157

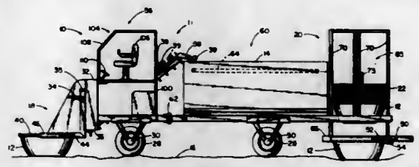
CENTER-LOADING HARVESTER

Robert Ellington, 3334 U.S. Hwy 27 S., Lake Wales, Fla. 33853-8013

Filed Jul. 5, 1994, Ser. No. 270,438

Int. Cl.[6] B60P *1/50*

U.S. Cl. 414—501 **11 Claims**



1. In a self-propelled harvester comprising a vehicle having a front end, a rear end and a longitudinal axis, an improvement comprising a tub catcher attached to the vehicle adjacent the front end thereof, the tub catcher comprising:

two tub catcher rails spaced apart on opposite sides of the longitudinal axis by a first distance equal to a predetermined diameter of a tub;

means for raising the tub catcher rails from a horizontal lowered position, wherein the tub is engaged intermediate the tub catcher rails, to a raised position;

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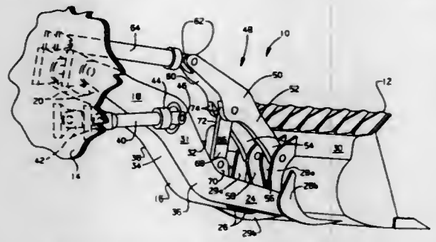
the tub catcher further comprising a front gate adjacent a rear end of one of the tub catcher rails, the front gate comprising a moveable front gate element pivoting about a front gate hinge between a closed position wherein the moveable front gate element retains the engaged tub intermediate the tub catcher rails when in the lowered position, and an open position wherein the moveable front gate element does not retain the engaged tub intermediate the tub catcher rails when in the lowered position.

5,599,158

LINKAGE ARRANGEMENT FOR A WHEEL LOADER

Akin O. Ajilore, Macomb, Mich., assignor to Caterpillar Inc., Peoria, Ill.

Filed Nov. 28, 1994, Ser. No. 345,888
Int. Cl.[6] E02F *3/38*
U.S. Cl. 414—685 **11 Claims**



1. A linkage arrangement for mounting a bucket to a wheel loader for movement in a generally vertical plane, comprising:
a lift arm having a first bifurcated end portion pivotally mountable to the wheel loader at spaced locations and a second bifurcated end portion pivotally mountable to a pair of mounting plates defined by the bucket at spaced locations;
a tilt lever having a first bifurcated end portion pivotally mountable to the mounting plates defined by the bucket at spaced locations that are laterally adjacent and positioned elevationally above the connections between the second end portion of the lift arm and the bucket and a second end portion;
a singular tilt link having a generally uniform configuration, said tilt link having a first end portion pivotally mounted to an upper surface of the lift arm and a second end portion pivotally mounted to the tilt lever at a point that is substantially intermediate the end portions of the tilt lever; and
a tilt cylinder having a first end portion mountable to the wheel loader and a second end portion mounted to the second end portion of the tilt lever.

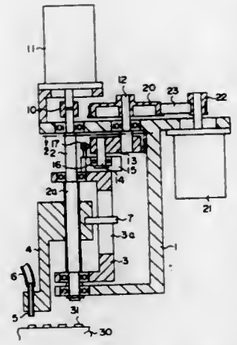
5,599,159

PELLET CONVEYING DEVICE

Kazuo Sugiura; Yoshimitsu Hisajima, both of Tokyo, Japan, and Naoki Kanayama, San Jose, Calif., assignors to Kabushiki Kaisha Shinkawa, Tokyo, Japan, and Shinkawa U.S.A., Inc., Santa Clara, Calif.

Filed Jun. 6, 1995, Ser. No. 470,770
Claims priority, application Japan, Nov. 25, 1994, 6-314280
Int. Cl.[6] B66C *23/00*
U.S. Cl. 414—744.3 **2 Claims**

1. A pellet conveying device comprising:
a screw shaft having a threaded portion;
a first motor for rotating said screw shaft;
a pivot frame rotatably provided on said screw shaft;
a longitudinal groove provided in said pivot frame;
a conveying arm screw-engaged with said threaded portion of said screw shaft and connected to said pivot frame via a rotation-stopping pin guided by said longitudinal groove so



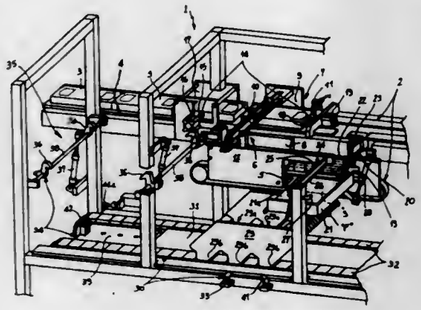
that said conveying arm is pivoted within a predetermined angular range by said pivot frame, said conveying arm being moved in a direction of an axis of said screw shaft when said screw shaft is rotated by said first motor;
a second motor for causing a pivot motion of said pivot frame;
a link means linking said second motor to said pivot frame so that said pivot frame is pivoted within said predetermined angular range; and
a collet provided on said conveying arm.

5,599,160

APPARATUS AND METHOD FOR PUTTING CASSETTES INTO TRAYS

Luciano Perego, Milan, Italy, assignor to Tapematic U.S.A.,, Inc., Orlando, Fla.

Filed Nov. 22, 1994, Ser. No. 343,121
Int. Cl.[6] B65G *60/00*
U.S. Cl. 414—799 **23 Claims**



1. An apparatus for disposing cassettes into trays comprising:
a primary feed conveyor for moving cassettes in a feed direction;
means for moving said primary feed conveyor;
a secondary feed conveyor extending parallel to the primary feed conveyor;
means for moving said secondary feed conveyor;
a guide chute extending laterally from said primary feed conveyor and leading to said secondary feed conveyor;
a pusher element movable over said primary feed conveyor in alignment with said guide chute, between a stand-by position in which it is disposed alongside said primary feed conveyor, and a thrusting position in which it is moved close to said guide chute to push the cassette coming from said primary feed conveyor onto said guide chute;

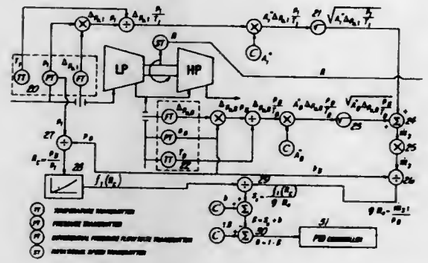
a transferring unit for disposing of cassettes received from said secondary feed conveyor onto a collection element movable between a rest position and a working position;
drive means for moving the collection element, when a given number of cassettes have been transferred thereon, from the rest position to the working position; and
at least one tray for receiving cassettes from the collection element when the collection element is in the working position.

5,599,161

METHOD AND APPARATUS FOR ANTISURGE CONTROL OF MULTISTAGE COMPRESSORS WITH SIDESTREAMS

Brett W. Batson, Dallas Center, Iowa, assignor to Compressor Controls Corporation, Des Moines, Iowa

Filed Nov. 3, 1995, Ser. No. 552,788
Int. Cl.[6] F01D *17/00*
U.S. Cl. 415—17 **24 Claims**



1. A method for antisurge control of a compression unit of one or more combined stages of a multistage compressor comprising the acquisition of a mass flow rate ($\dot{m}$) through, a compression ratio (R_c) across, a rotational speed (N) of, and a pressure (p) in suction or discharge of the compression unit, the method comprising the steps of:
(a) computing a value for $qN_c=(\dot{m}N)/p$ for the compression unit;
(b) computing a surge parameter, $S_s=f(R_c, qN_c)$, for the compression unit; and
(c) using the value of S_s for antisurge control.

13. An apparatus for antisurge control of a compression unit of one or more combined stages of a multistage compressor comprising the acquisition of a mass flow rate ($\dot{m}$) through, a compression ratio (R_c) across, a rotational speed (N) of, and a pressure (p) in suction or discharge of the compression unit, the apparatus comprising:
(a) means for computing a value for $qN_c=(\dot{m}N)/p$ for the compression unit;
(b) means for computing a surge parameter, $S_s=f(R_c, qN_c)$, for the compression unit; and
(c) means for using the value of S_s for antisurge control.

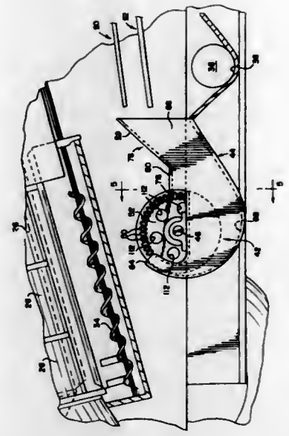
5,599,162

TRANSVERSE BLOWER FAN ASSEMBLY

Jonathan E. Ricketts, Viola; Robert A. Matousek, Milan, and Dan J. Burke, Moline, all of Ill., assignors to Case Corporation, Racine, Wis.

Filed Aug. 9, 1995, Ser. No. 513,013
Int. Cl.[6] F04D *5/00*
U.S. Cl. 415—53.1 **12 Claims**

1. A transverse fan assembly, comprising:
an elongated air plenum defining inlet and outlet openings
a fan rotatably disposed within said air plenum for drawing air in through said inlet and blowing air from said outlet, said fan



defining an elongated axis of rotation, a plurality of elongated fan blades extending in an axial cylindrical pattern about said axis, and two disk shaped fan blade mounting members arranged toward opposite ends of said fan, with each blade mounting member having a centrally disposed hub defining the elongated axis of said fan, and wherein each blade mounting member drives the fan blades whereby establishing an air flow through the inlet opening and from the outlet opening, and wherein each fan blade mounting member is apertured such that air is drawn through the mounting member at opposite ends of the fan to effect a substantially even flow of air from the outlet and along the length of the fan upon rotation of the fan; and
wherein the outlet opening of said air plenum axially extends across the length of said fan and the inlet opening extends axially across the length of and circumferentially about that portion of the fan arranged above the elongated axis of the fan for defining an enlarged air opening, and wherein opposed ends of the air plenum are likewise open in that region extending above the axis of the fan to promote the ingress of air into and through the center of the fan.

5,599,163

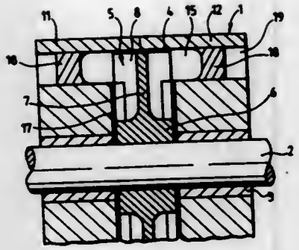
REGENERATIVE PUMP HAVING MOVABLE WALLS ADJACENT OPPOSING FACES OF THE IMPELLER

Ronald A. Heath, Warley; Thomas Llewellyn-Jones, Gloucester; Brian Robins, Solihull, and Trevor S. Smith, Sutton Coldfield, all of United Kingdom, assignors to Lucas Industries PLC, Solihull, United Kingdom

Filed Oct. 11, 1995, Ser. No. 540,672
Claims priority, application United Kingdom, Oct. 13, 1994, 9420653; Apr. 28, 1995, 9508638
Int. Cl.[6] F04D *5/00*
U.S. Cl. 415—55.1 **16 Claims**

1. A regenerative pump, comprising a housing defining a cavity having a fluid inlet and fluid outlet, and a channel extending between said fluid inlet and said fluid outlet, an impeller rotatably mounted within said cavity within the housing and having a plurality of vanes spaced angularly around the impeller axis and opening into said channel formed in the housing and a stripper block located between the inlet and the outlet to restrict direct flow of fluid between the outlet and inlet, in which said impeller is located in a central portion of said cavity, and first and second filler members define walls of the channel, are provided adjacent opposing faces of said impeller and are movable within the channel so as

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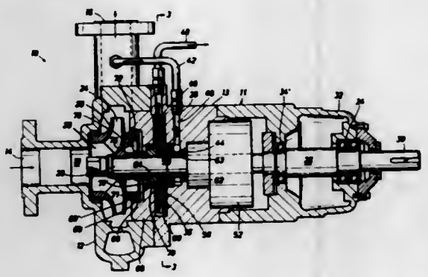
to vary the cross-section of said channel as measured in a first plane containing the axis of rotation of the impeller.

5,599,164

CENTRIFUGAL PROCESS PUMP WITH BOOSTER IMPELLER

William E. Murray, 7002 Dew Bridge Ct., Sugarland, Tex. 77479

Filed Apr. 3, 1995, Ser. No. 415,444
Int. Cl.[6] F04D *13/14*
U.S. Cl. 415—144 **2 Claims**



1. An overhung, centrifugal process pump for separating a liquid into a primary flow stream and into a secondary flow stream having a pressure greater than the primary flow stream pressure, comprising:

a housing having a primary inlet, a primary outlet, a secondary inlet for receiving liquid from said primary flow stream, and a secondary outlet;

a rotatable process pump shaft having a cantilevered portion within said housing;

a seal for preventing liquid flow between said shaft and said housing;

a single primary impeller, engaged with the cantilevered portion of said shaft, for receiving liquid from said primary inlet and for pumping liquid through said primary outlet to create the primary flow stream;

a booster impeller, engaged with the cantilevered portion of said shaft proximate to said primary impeller, for receiving liquid from said secondary inlet and for pumping the liquid through said secondary outlet to create the secondary flow stream, and

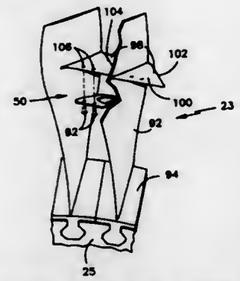
a balance hole for communicating liquid from said booster impeller to said primary impeller.

5,599,165

FRICTION DAMPER FOR GAS TURBINE ENGINE BLADES

Yehia Elaini, and Carl E. Meece, both of Jupiter, Fla., assignors to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 242,388, May 13, 1994, Pat. No. 5,522,765. This application Jan. 31, 1996, Ser. No. 594,200
Int. Cl.[6] F01D *5/26*
U.S. Cl. 416—190 **4 Claims**



1. A friction damper for providing damping to two adjacent airfoils within a gas turbine engine, said airfoils being arranged in a circumferential row, each said airfoil having a pair of mid-span shrouds in a middle section of said airfoil on each side thereof so that any two adjacent said mid-span shrouds are in contact, said mid-span shrouds having contoured underside on a radially inner side thereof, said friction damper characterized by:

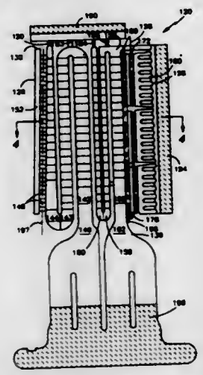
a plate substantially conforming in shape to said contoured underside of said mid-span shroud, said plate being fixedly attached to said underside of one said mid-span shroud of said airfoil and in contact with said adjacent mid-span shroud of said adjacent airfoil wherein a substantial portion of said plate making contact with said adjacent underside of said adjacent mid-span shroud.

5,599,166

CORE FOR FABRICATION OF GAS TURBINE ENGINE AIRFOILS

Donald L. Deptowicz, Hamden, Conn., and Friedrich O. Soechting, Tequesta, Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 1, 1994, Ser. No. 333,157
Int. Cl.[6] F01D *5/18*
U.S. Cl. 416—97 R **3 Claims**



1. An airfoil for a gas turbine engine having a leading edge and a trailing edge extending from a root to a tip, said airfoil having a

plurality of radially extending cooling passages, some of said cooling passages being connected by a plurality of crossover holes allowing flow of air therebetween, said airfoil fabricated from a core having a plurality of core passages representing said plurality of cooling passages of said airfoil and a row of fingers representing said plurality of crossover holes of said airfoil, each said row of fingers having a centerline passing radially therethrough, said airfoil characterized by:

said core having each said row of fingers having

$A_{tot}/L \geq 6.5\times10^{-2}$,

$XL/I_{total} \leq 2.7\times10^{6}$, and

$L/I_{min} \leq 12\times10^{7}$,

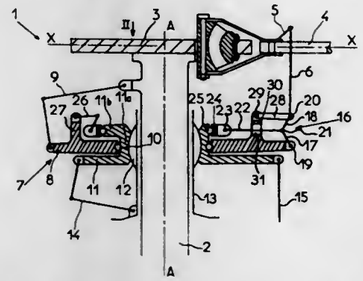
wherein A_{tot} is the total transverse cross-sectional area of said row of fingers; L is the total length of said row of fingers; X is the distance from said centerline of said row passing radially therethrough to the nearest of said trailing edge or said leading edge of said core; I_{tot} is the total sum of all moments of inertia taken at each said finger of said row of fingers along said centerline thereof; and I_{min} is file moment of inertia of the smallest said finger at the ends of said row of fingers.

5,599,167

DEVICE FOR CONTROLLING THE PITCH OF THE BLADES OF A ROTORCRAFT ROTOR

Louis J. Daldosso, Les Milles, France, assignor to Eurocopter France, France

Filed Oct. 6, 1995, Ser. No. 540,070
Claims priority, application France, Oct. 13, 1994, 94 12229
Int. Cl.[6] B64C *11/34*
U.S. Cl. 416—108 **20 Claims**



1. A device for controlling pitch of blades of a rotorcraft rotor, in which each blade is, on the one hand, driven in rotation about an axis of rotation of a rotor mast via a hub and, on the other hand, secured in terms of rotation about a longitudinal pitch-change axis to a pitch lever controlled by a pitch rod joined to a plate which rotates with the rotor mast and belongs to a swashplates mechanism, in which the rotating plate is mounted so that it can rotate on a non-rotating plate which can slide axially along the rotor mast and be inclined in any direction with respect to the rotor mast under the action of flight-control actuators, wherein the device comprises:

an auxiliary plate, secured in terms of rotation to the rotating plate and mounted so that it can rotate with defined eccentricity on the non-rotating plate, and

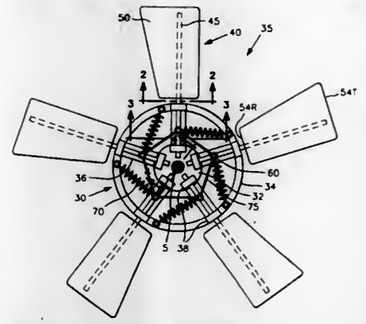
for each blade, an articulated link which comprises at least one arm via which the link is joined to the rotating plate by a first articulation and which link is mounted in series with the corresponding pitch rod, the link being joined to this pitch rod by a second articulation separate from the first articulation, and by a third articulation via which the articulated link is joined to a control lever, which is articulated to the rotating and eccentric auxiliary plate so that the rotation of the latter induces, via each control lever, angular movements of each arm of the corresponding articulated link, which moves the corresponding pitch rod so as to control the pitch of the corresponding blade.

5,599,168

WIND TURBINE ADAPTABLE TO WIND DIRECTION AND VELOCITY

Arnold M. Lund, 1210 Avocado Ave., Escondido, Calif. 92026

Filed Aug. 23, 1995, Ser. No. 518,788
Int. Cl.[6] B63H *1/06*
U.S. Cl. 416—136 **10 Claims**



1. A wind turbine apparatus comprising:

a plurality of wind vanes, each of the vanes including an impeller and an impeller supporting shaft, the impeller and shaft being mutually integrally interconnected and further including a lever arm rigidly extending at a right angle from the supporting shaft;

a frame assembly rotatably mounted upon a drive shaft, the assembly providing vane mounting means for supporting the wind vanes in radial positions around the assembly, each of the impeller supporting shafts axially rotatable within the vane mounting means;

bias means for urging the impellers of the wind vanes into a preferred common angle of attack with respect to a wind vector in order to assume a constant rotational velocity of the turbine;

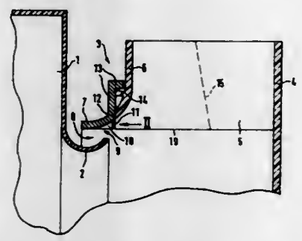
link means providing elongate rods, each one of the rods interconnecting the lever arms between two of the wind vanes, constraining the impellers to simultaneous rotation and to assume a common said preferred angle of attack.

5,599,169

RADIAL IMPELLER FOR A COOLING SYSTEM OF A MOTOR VEHICLE

Kurt Hauser, Stuttgart, Germany, assignor to Behr GmbH & Co., Stuttgart, Germany

Filed Sep. 7, 1995, Ser. No. 524,788
Claims priority, application Germany, Sep. 7, 1994, 44 31 839.1
Int. Cl.[6] F04D *29/28;29/02*
U.S. Cl. 416—186 R **14 Claims**



1. A radial impeller for a cooling system of a motor vehicle, comprising:

a plurality of vanes disposed between an impeller bottom and a cover disk, and

a cover disk intake which is configured to receive a stationary intake nozzle extending axially into the cover disk intake, an annular gap being formed between the cover disk intake and the intake nozzle,

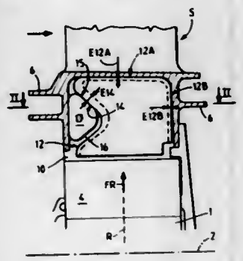
wherein the impeller bottom, the vanes and the cover disk of the radial impeller are made in one piece of a plastic material, and wherein a separate air guide ring is undetachably connected with the cover disk to form the cover disk intake.

5,599,170

SEAL FOR GAS TURBINE ROTOR BLADES

Marc R. Marchi, Le Mee, and Jean-Claude C. Taillant, Vaux le Penil, both of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation S.N.E.C.M.A., Paris Cedex, France

Filed Oct. 17, 1995, Ser. No. 544,019
Claims priority, application France, Oct. 26, 1994, 94 12785
Int. Cl.[6] F01D 5/10
U.S. Cl. 416—190 **25 Claims**



1. A seal for sealing gaps between adjacent turbine blade structures attached to a rotor disc rotatable about an axis, the adjacent turbine blade structures forming a generally axially extending gap and a generally radially extending gap therebetween, the seal comprising:

a) a compartment formed by adjacent turbine blade structures;

b) seal means located in the compartment and having a first sealing surface adjacent to the generally axially extending gap, a second sealing surface adjacent to the generally radially extending gap and a thrust surface extending obliquely to a radius from the axis; and

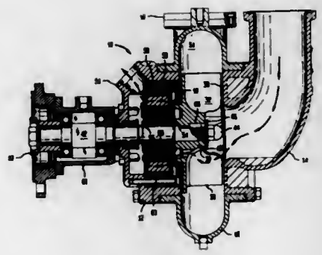
c) a member in the compartment having a reaction surface located such that, during rotation of the rotor disc, centrifugal force in a radial direction is transmitted radially and axially to the seal means via contact between the reaction surface and the oblique thrust surface, thereby causing the first sealing surface to seal the generally axially extending gap and the second sealing surface to seal the generally radially extending gap.

5,599,171

ROTARY, SELF-PRIMING, LIQUIP PUMP, AND AN IMPELLERS AND SHAFT ASSEMBLY THEREFOR, AND A FLEXIBLE-IMPELLER PUMP ASSEMBLY

Robert P. Horwitz, Orange, Calif., assignor to ITT Fluid Technology Corporation, Midland Park, N.J.

Filed May 15, 1995, Ser. No. 440,793
Int. Cl.[6] F04B 23/08
U.S. Cl. 417—199.2 **20 Claims**



1. A rotary, liquid pump, comprising:

a housing, said housing having a pair of liquid-working chambers formed therein;

a shaft journaled in said housing;

a pair of impellers mounted on said shaft, in spaced apart disposition, for rotation in common with said shaft;

means for admitting liquid into said housing; and

means for discharging impelled liquid from said housing;

wherein

one of said impellers has rigid vanes, said one impeller being confined within one of said chambers;

the other of said impellers has flexible vanes, said other impeller being confined within the other of said chambers; and

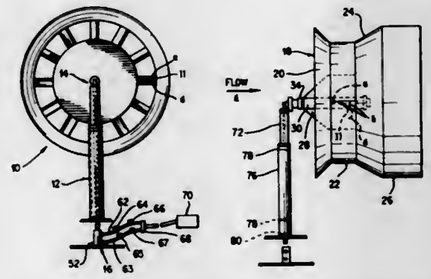
said other chamber having an inner surface which includes cusps formed therein at a plurality of locations along said inner surface of said other chamber.

5,599,172

WIND ENERGY CONVERSION SYSTEM

Francis J. McCabe, #6 Bunker Hill Rd., Ottsville, Pa. 18942

Filed Jul. 31, 1995, Ser. No. 507,129
Int. Cl.[6] F04B 17/02
U.S. Cl. 417—334 **7 Claims**



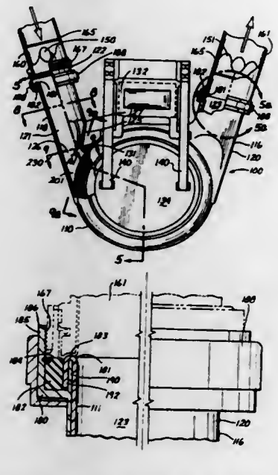
1. A wind energy conversion system comprising a wind turbine means, a transmission means connected to said wind turbine means for transmitting the energy from said wind turbine means to an air compression means connected to said transmission means for compressing air; said wind turbine means comprising a venturi-shaped shroud having an inner core and a plurality of blades fixedly connected between said inner core and said shroud; at least one of said blades having a cross-sectional shape comprising a planar face portion and leading and trailing edges associated with opposite ends of the face portion to form an essentially cross-sectional pan-shaped structure disposed in an inverted position.

5,599,173

BLOOD PUMP SYSTEM

Herbert Chen, Kensington; Ronald A. Ness, Castro Valley, and John C. Woodard, Walnut, all of Calif., assignors to Baxter International, Inc., Deerfield, Ill.

Continuation of Ser. No. 194,481, Feb. 10, 1994, Pat. No. 5,511,958. This application Jun. 7, 1995, Ser. No. 473,220
Int. Cl.[6] F04B 43/00; F01B 19/00; A61M 1/10
U.S. Cl. 417—412 **3 Claims**



1. A blood pump system for internal use in humans, comprising:

a deformable sac, said sac having in the non-deformed configuration a pair of opposite substantially parallel and planar walls of substantially circular shape joined by an annular wall of substantially semi-circular cross-section, said sac being formed in a seamless piece of flexible resilient material,

said sac including inlet and outlet means extending from said annular wall of said sac substantially tangentially with respect to said annular wall;

a pair of plates disposed on opposite sides of said sac, each of said plates being engageable with a respective one of said planar walls of said sac for displacing at least one of said planar walls toward the other to deform said sac;

inlet conduit means removably connected to said inlet means including valve means for controlling inlet flow;

first connecting means for operatively connecting said inlet conduit means to said inlet means, said first connecting means including first sealing means for sealing said inlet conduit means and said inlet means connection, said first sealing means comprising at least two substantially concentric annular seals, one of said seals comprising a semi-circular surface formed by rolling said sac over a portion of said first connecting means, another of said seals contacting and retaining said sac against said portion;

outlet conduit means removably connected to said outlet means including valve means for controlling outlet flow; and

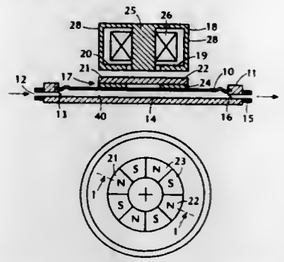
second connecting means for operatively connecting said outlet means, said second connecting means including second sealing means for sealing said outlet conduit means and said outlet means connection, said second sealing means comprising at least two substantially concentric annular seals, one of said seals comprising a semi-circular surface formed by rolling said sac over a portion of said second connecting means, another of said seals contacting and retaining said sac against said portion.

5,599,174

DIAPHRAGM PUMP WITH MAGNETIC ACTUATOR

Stephen J. Cook, Berkshire, and Richard E. Clark, Sheffield, both of United Kingdom, assignors to Huntleigh Technology plc., Luton, United Kingdom

PCT No. PCT/GB95/01123, § 371 Date Jan. 16, 1996, § 102(e) Date Jan. 16, 1996, PCT Pub. No. WO95/31642, PCT Pub. Date Nov. 23, 1995
PCT Filed May 18, 1995, Ser. No. 569,198
Claims priority, application United Kingdom, May 18, 1994, 9409989
Int. Cl.[6] F04B 43/04
U.S. Cl. 417—413.1 **10 Claims**



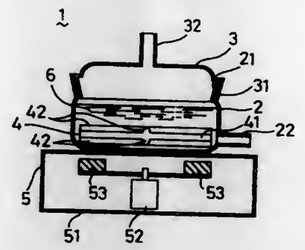
1. A diaphragm pump comprising a housing, a diaphragm mounted in the housing for a reciprocating motion in a predetermined direction, the housing and the diaphragm enclosing a pumping chamber so that the diaphragm has inner and outer surfaces relative to the pumping chamber, a permanent magnet assembly secured to the outer surface of the diaphragm for movement therewith, the magnet assembly providing at least a pair of opposed magnetic poles, having all the pole faces of the assembly being adjacent one another and directed away from the outer surface of the diaphragm so as to extend transversely of said predetermined direction of motion of the diaphragm, and an electromagnet assembly having at least a pair of opposite poles located opposite but spaced in said direction of motion from said pole faces of said pair of poles of the permanent magnet assembly.

5,599,175

MICRO FLOW CONTROLLING PUMP

Kakuji Tojo, 781-304, Kobukuro, Iizuka-shi, Fukuoka 820, and Yoshiaki Hirai, Fukuoka, both of Japan, assignors to Senju Seiyaku Kabushiki Kaisha, and Kakuji Tojo, both of Osaka, Japan

Filed Dec. 8, 1994, Ser. No. 352,379
Claims priority, application Japan, Dec. 9, 1993, 5-309134
Int. Cl.[6] F04B 17/00
U.S. Cl. 417—420 **6 Claims**



1. A micro-flow controlling pump for controlling a microflow of a liquid in an experiment using a chemical agent comprising:

a pump body having a cylindrical wall and a bottom surface, and having an outflow opening in an outer surface of the cylindrical wall;

a cover body detachably attached to the pump body and having an inflow opening therein;

a magnet rotator arranged inside the pump body, the magnet rotator having a disk-shaped base and opposing upper and lower blades extending in opposite directions away from the disk shaped base, the lower blades having criss-crossing blade parts that intersect to define a protruding crossing portion about which the magnet rotator is rotatable relative to the pump body for stable rotation during the experiment; and

a magnet stirrer arranged outside the pump body having magnetic force by which the magnet rotator in the pump body is rotated.

5,599,176
THREADED-ROTOR COMPRESSOR

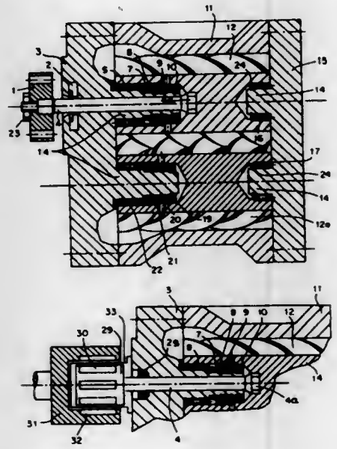
Hans-Hermann Reinersmann, Essen, Germany, assignor to MAN Gutehoffnungshütte Aktiengesellschaft, Oberhausen, Germany

Filed Feb. 3, 1995, Ser. No. 383,247

Claims priority, application Germany, Feb. 5, 1994, 44 03 649.3; Feb. 5, 1994, 44 03 648.5; Feb. 5, 1994, 44 03 647.7

Int. Cl.[6] F04B *17/00*

U.S. Cl. 417—420 **12 Claims**



1. A rotary compressor with enmeshment between a helically geared male rotor and a helically geared female rotor, comprising: a suction side and a pressure side on the compressor; bearing housings on the suction side and the pressure side and having four spigots protruding into bores inside said rotors; said rotors having radial and axial bearings; a torsion shaft with a half clutch for driving the compressor and being guided through a bore in one of said bearing housings and in one of said four spigots; a shaft seal on a side of said bearing housings and at an end of said bore guiding said torsion shaft and having a recess for producing a form-locking connection between a head of the torsion shaft and the rotors.

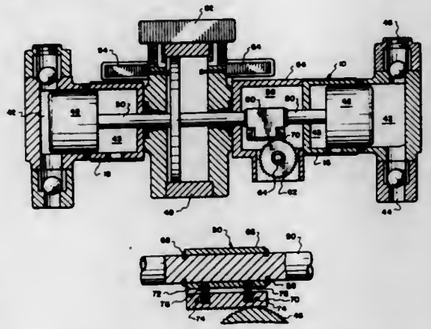
5,599,177
PRECISION METERED MULTIPLE FLUID PUMPING SYSTEM

Robert D. Hetherington, Sunland, Calif., assignor to Binks Manufacturing Company, Franklin Park, Ill.

Division of Ser. No. 424,163, Apr. 19, 1995, Pat. No. 5,522,711, which is a division of Ser. No. 52,405, Apr. 22, 1993, Pat. No. 5,423,662. This application Dec. 29, 1995, Ser. No. 580,745

Int. Cl.[6] F04B *35/00*

U.S. Cl. 417—429 **18 Claims**



1. A precision metering multiple fluid pumping system comprising;

main reciprocating pump means for pumping a primary fluid;

auxiliary pump means for pumping a secondary fluid;

connecting means connecting said auxiliary pump means to said main pump for operation in unison therewith;

said connecting means including self-adjusting link means linking said auxiliary pump to a reciprocating piston rod in said main reciprocating pump means, and continuously adjustable variable means for adjusting the ratio of secondary fluid to primary fluid pumped over a predetermined range;

whereby the amount of secondary fluid pumped may be precisely metered.

5,599,178
SCROLL-TYPE COMPRESSOR HAVING FASTENING BOLTS FOR THE FIXED SCROLL

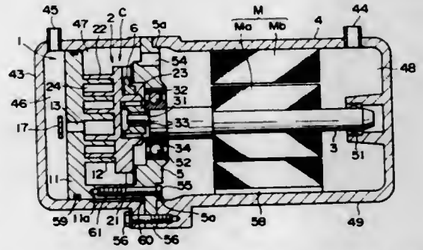
Tsuneo Yuzaki, Aichi, and Masahiro Fukushima, Nagoya, both of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Japan

Filed Jul. 17, 1995, Ser. No. 502,901

Claims priority, application Japan, Sep. 1, 1994, 6-230204

Int. Cl.[6] F04C *18/04*

U.S. Cl. 418—55.1 **3 Claims**



1. A scroll-type compressor having fastening bolts for a fixed scroll including an enclosed housing having a pair of cup-shaped members having a flange at each open portion of said cup-shaped members, a frame having two opposed sides, said frame held in said enclosed housing by the flanges of said pair of cup-shaped members, a rotary shaft rotatably held at said frame, a motor housed in said enclosed housing at one side of said frame and connected to said rotary shaft, and a scroll-type compressing mechanism including an orbiting scroll connected to said rotary shaft and a fixed scroll engaging with said orbiting scroll;

said scroll-type compressor comprising an end plate of said fixed scroll being adapted to divide the inside of said enclosed housing into a high-pressure chamber and a low-pressure chamber, said high-pressure chamber serving as a discharge chamber, and said fixed scroll being fastened to said frame by screwing bolts into said fixed scroll, said bolts being inserted from the side of said frame facing the motor and extending into the fixed scroll, said fixed scroll being located in the low-pressure chamber.

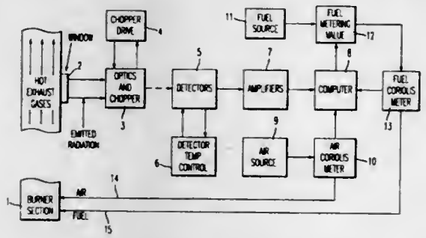
5,599,179
REAL-TIME COMBUSTION CONTROLLER

Jeffrey S. Lindner; W. Steve Shepard; John A. Etheridge; Ping-Rey Jang, and Lawrence L. Gresham, all of Starkville, Miss., assignors to Mississippi State University, Mississippi State, Miss.

Filed Aug. 1, 1994, Ser. No. 283,795

Int. Cl.[6] F23N *5/08*

U.S. Cl. 431—12 **2 Claims**



1. A method of regulating the air to fuel ratio supplied to a burner to maximize combustion efficiency comprising the steps of:

(a) placing optical means in close proximity to the burner but downstream thereof for directing a beam of radiation from hot gases produced by said burner toward a plurality of detectors;

(b) sensing with a first detector the intensity of the infrared radiation emitted from said hot gases in a first wavelength band to determine the concentration of a first constitutent in said hot gases;

(c) sensing with a second detector the intensity of the infrared radiation emitted from said hot gases in a second wavelength band to determine the concentration of a second constituent in said hot gases;

(d) sensing with a third detector the intensity of the infrared radiation emitted from said hot gases in a third wavelength band to determine the concentration of a third constituent in said hot gases;

(e) computing as a first ratio the intensity of the first constituent to the intensity of the second constituent and computing as a second ratio the intensity of the third constituent with respect to the first constituent;

(f) subtracting the second ratio from the first ratio;

(g) comparing the result of step (e) with a known control curve representing the differences between said first and second ratios for stoichiometry values ranging from a fuel rich value of 0.85 to a fuel lean ratio of 1.30; and

(h) adjusting the fuel flow to said burner until the difference between said ratios falls on a desired set point on said control curve.

5,599,180
CIRCUIT ARRANGEMENT FOR FLAME DETECTION

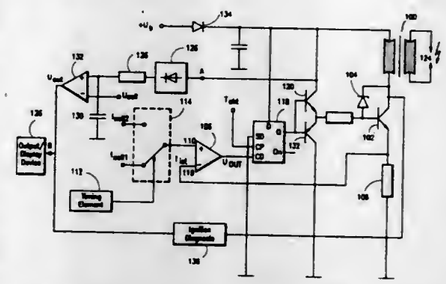
Odd Peters, Bietingheim-Bissingen, and Dieter Teutsch, Sachsenheim, both of Germany, assignors to Beru Ruprecht GmbH & Co. KG, Germany

Filed Jul. 25, 1994, Ser. No. 279,647

Claims priority, application Germany, Jul. 23, 1993, 43 24 863.2

Int. Cl.[6] F23N *5/12*

U.S. Cl. 431—13 **16 Claims**



1. A flame detection circuit for a burner having a transistor coil ignition system that includes a trigger stage which turns off a power transistor located in a power circuit of a primary winding of an ignition coil upon a predetermined current level in the power circuit of the primary winding being attained, wherein a secondary winding of the ignition coil is connected across a spark gap and the predetermined current level is determined such that the voltage induced in the secondary winding upon turning off the power transistor generates an ignition spark over the spark gap, comprising:

current control means located in the trigger stage for restricting the current level flowing in the power circuit of the primary winding of the ignition coil to a current level such that the voltage induced in the secondary winding of the ignition coil when the power transistor is turned off results in a spark discharge only if a flame exists in the burner, and

analysis means for receiving a signal that appears across the primary winding of the ignition coil after the power transistor has been turned off, for analyzing said signal to determine whether a flame exists in the burner, and for transforming said signal into a corresponding output signal.

5,599,181
COMBUSTION APPARATUS HAVING A BUILT-IN STORAGE BATTERY

Yutaka Aoki; Yuzuru Watanabe, and Kouichi Mitsufuji, all of Hokkaido, Japan, assignors to Paloma Industries Limited, Nagoya, Japan

Filed Mar. 8, 1996, Ser. No. 618,418

Claims priority, application Japan, Mar. 9, 1995, 7-079445

Int. Cl.[6] F23N *5/10*

U.S. Cl. 431—80 **7 Claims**

1. A combustion apparatus having a built-in storage battery, said apparatus comprising:

a combustible gas source for supplying a combustible gas;

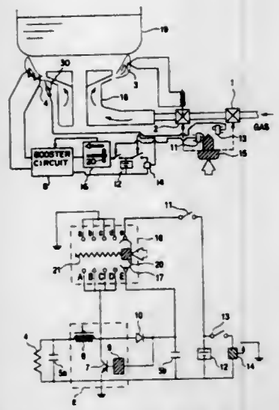
a burner for burning the combustible gas;

a thermoelectric generator element for generating a thermal electromotive force based upon combustion heat produced by said burner;

a storage battery coupled to said thermoelectric generator element and charged thereby, said storage battery for supplying stored electrical energy to electric loads upon a starting of a combustion operation;

a switching element connected to said storage battery and configured to turn ON and OFF by electrical energy supplied thereto from said storage battery; and

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boosting means coupled to said thermoelectric generator element, said switching element, and said storage battery, said boosting means including a boosting coil and a switching element, said switching element turning ON and OFF based upon electrical energy supplied from said storage battery, said boosting means for boosting a voltage generated by said thermoelectric generator element by changing a coil current in said boosting coil, and for supplying the boosted voltage to said storage battery; and

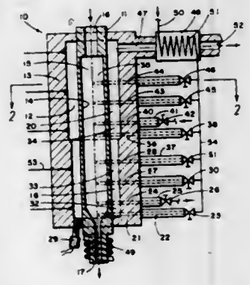
manual switch means coupled to said boosting means for changing the coil current by a manual ON/OFF operation, wherein the manual ON/OFF operation of said manual switch means replaces said switching element when said storage battery is in a low power condition.

5,599,182

ADJUSTABLE THERMAL PROFILE HEATED CRUCIBLE METHOD AND APPARATUS

William C. Andrews, Longwood, and James K. Nabors, Jr., Apopka, both of Fla., assignors to Xothermic, Inc., Apopka, Fla.

Filed Jul. 26, 1995, Ser. No. 507,120
Int. Cl.[6] F27B *14/14*
U.S. Cl. 432—158 **24 Claims**



1. An adjustable thermal profile continuous material heating apparatus comprising:

a combustion chamber having separate primary combustible reactant component inlets including a fuel inlet and an oxidant inlet for feeding fuel and oxidant combustible reactant components to said combustion chamber with a non-stoichiometric mix of components, said combustion chamber also having a plurality of secondary component inlets located downstream from said primary combustible reactant inlets and spaced in a predetermined spaced relationship to each other for feeding a component of said combustible reactants to said combustion chamber to form a generally stoichiometric combustion in said combustion chamber and to provide a thermal profile for controlling the temperature across said combustion chamber;

a combustion chamber outlet for the exhausting of heat from said combustion chamber; and

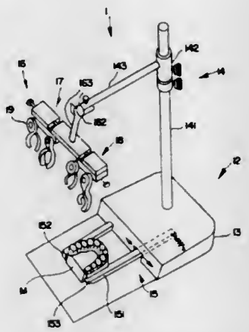
a crucible located in said combustion chamber and extending generally therethrough and being surrounded by said combustion chamber and having an inlet thereinto and an outlet therefrom for passing materials to be heated therethrough, whereby said crucible can have a profiled temperature along its length for providing a controlled heating of materials passing through said crucible.

5,599,183

ASSEMBLY TOOL FOR ASSEMBLING A MANDIBULAR DISTRACTION DEVICE

Yan Razdolsky, 600 Lake Cook Rd., Suite 150, Buffalo Grove, Ill. 60089, and Patrick J. Driscoll, 203 E. Olive, Prospect Heights, Ill. 60070

Filed Apr. 4, 1994, Ser. No. 222,579
Int. Cl.[6] A61C *3/00*
U.S. Cl. 433—53 **22 Claims**



1. An appliance assembly tool, comprising:

a base having a vertical support arrangement thereon;

a mandibular model holding device connected with said base for holding a mandibular model;

a clamp assembly vertically movably mounted on said base above said holding device, said clamp assembly being mounted on said base by said vertical support arrangement, and said clamp assembly comprising first and second clamp supports adjustably mounted with respect to said vertical support arrangement and at least one clamp adjustably mounted on each said clamp support;

wherein said clamp assembly further comprises an adjustable connection connecting said first and second clamp supports for adjustment of said first and second clamp supports toward and away from each other;

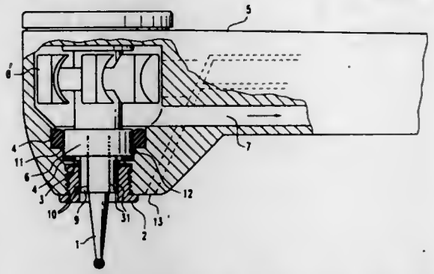
wherein said adjustable connection comprises a central member having said first and second clamp supports on opposite sides thereof, slide rods connected with said central member having said first and second clamp supports slidably mounted thereon and an adjustment mechanism for adjusting the position of said first and second clamp supports along said slide rods.

5,599,184

PROTECTIVE SYSTEM FOR DENTAL DRILL UNITS

Roger C. Field, Postfach 950169, 81517 Munich, Germany

Filed Nov. 9, 1994, Ser. No. 338,109
Claims priority, application Germany, Nov. 16, 1993, 9317549 U
Int. Cl.[6] A61C *1/05*
U.S. Cl. 433—115 **16 Claims**



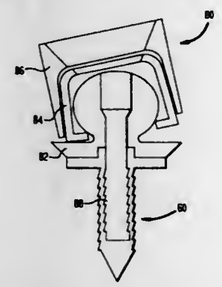
1. A protective system against entrance of undesirable matter such as the HIV virus into a dentist's drilling apparatus, said drilling apparatus including a handpiece with a removeable drill bit having an outside circumference, at least one bearing with a sleeve for attaching said drill bit to said handpiece, said sleeve having an inside and an outside circumference, said bearing having an outside circumference, said handpiece having at least one opening for cooling water, in the vicinity of said sleeve for attaching said drill bit, said handpiece being provided with compressed air, the improvement comprising at least one substance and at least one protective element for the prevention of undesirable matter such as the HIV virus from entering said drilling apparatus by including the interaction of at least one substance and at least one protective element for sealing against entrance of said undesirable matter between said outside circumference of said removeable drill bit and said inside circumference of said sleeve for attaching said drill bit and preventing the entrance of said undesirable matter into said bearing, into the vicinity of said bearing and around said circumference of said bearing, into said handpiece, said compressed air being channelled so as to allow said at least one substance to seal, said at least one opening for cooling water being located outside the sealing area of said substance and said protective element, to provide cooling for said drill bit.

5,599,185

DENTAL IMPLANT HEALING ABUTMENT

Alex M. Greenberg, New York, N.Y., assignor to Greenberg Surgical Technologies, LLC, New York, N.Y.

Filed Sep. 28, 1994, Ser. No. 314,600
Int. Cl.[6] A01C *8/00*
U.S. Cl. 433—173 **13 Claims**



1. A dental implant healing abutment, comprising:

(a) a contact surface connectible to an implant fixture and having a generally spherical portion and a longitudinal opening extending entirely through the contact surface;

(b) a first cap first and to connected to the contact surface in a manner to selectively rotate the cap to a desired angle with respect to the implant fixture; the first cap having a first top, the first top having a first opening; the first opening aligned being with the longitudinal opening; and

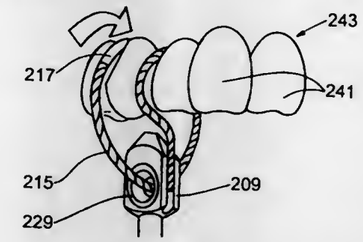
(c) an overcap having an external configuration generally similar to a dental prosthesis and an inner surface designed to contact and compress the deformable cap into secure contact with the contact surface said overcap overlying and in contact with the first cap, and having a second top having a second opening; the second opening aligned with the longitudinal opening and the first opening regardless of the angle between the implant fixture and the deformable cap; whereby a screw may extend through the longitudinal opening, the first opening, the second opening, and enter the implant fixture.

5,599,186

IMPLEMENT FOR EXTRACTING DENTAL BRIDGES AND THE LIKE

Vladimir Andrew, Strasbourg, France, assignor to Anthogyr, Société Anonyme, Sallanches, France

Filed Apr. 6, 1995, Ser. No. 418,059
Int. Cl.[6] A61C *5/00;3/00*
U.S. Cl. 433—215 **12 Claims**



1. An implement or extracting dental prostheses of a type affixed to at least two teeth and having at least one portion spaced apart from the gums of a wearer, comprising a first unit including an elongated flexible element baving a first end and a second end, and a second unit including means for applying to said at least one portion a force in a direction away from the gums of the wearer to thereby separate the prosthesis from the at least two teeth, said force applying means comprising a bousing having means for anchoring said ends therein subsequent to looping of said flexible element around the at least one portion of the prosthesis to be extracted, said housing having an opening therethrough, said opening being sufficiently large to permit the flexible element to pass through the opening at least once after looping around a portion of the prosthesis and before anchoring in said anchoring means.

5,599,187

FIREARM USE TRAINING DEVICE AND METHOD

Dominick N. Meslano, 1976 N. East Ave., Lot 126, Vineland, N.J. 08360

Filed Dec. 21, 1994, Ser. No. 361,318
Int. Cl.[6] F41G *3/26*
U.S. Cl. 434—19 **13 Claims**

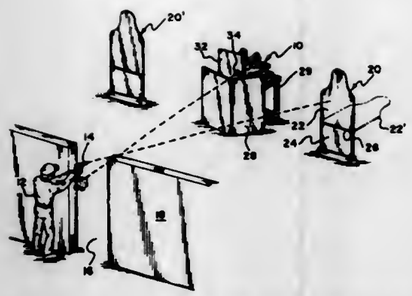
1. A method of training a person in combat comprising:

(a) arming said person with a firearm with live ammunition,

(b) providing a remotely operated projectile shooting device comprising:

(i) gun means to sboot harmless projectiles that will mark said person on impact,

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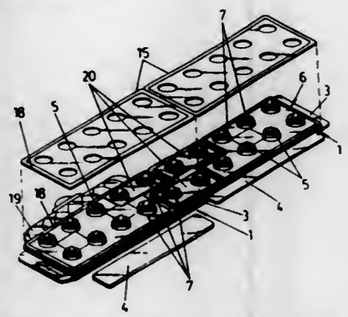
(ii) aiming means to aim the gun means controlled from a remote location, and
(iii) feeding means to hold said projectiles and feed same to said gun means,
(c) plating a supply Of said projectiles in said feeding means,
(d) providing armor means to protect the remotely operated projectile shooting device from the live ammunition fired from the firearm,
(e) locating at least one target proximate the remotely operated projectile shooting device,
(f) aiming and firing the remotely operated projectile shooting device directing fire of the harmless projectiles at said person, and
(g) requiring said person to shoot the firearm and hit said target without being hit by a projectile fired from the remotely operated projectile shooting device.

5,599,188

DIDACTIC-EDUCATIONAL TOY FOR ELEMENTARY ARITHMETIC OPERATIONS, READING AND WRITING

Manuel Lemos Meleudez, J. Cadiz Salvatierra, Edificio Malaga-1, P-1, 5° A, Jerez de la Frontera (Cadiz), Spain

Filed Nov. 21, 1994, Ser. No. 383,050
Claims priority, application Spain, Mar. 23, 1993, 9300595; Mar. 7, 1994, 9400464
Int. Cl.[6] G09B 23/02
U.S. Cl. 434—195 15 Claims



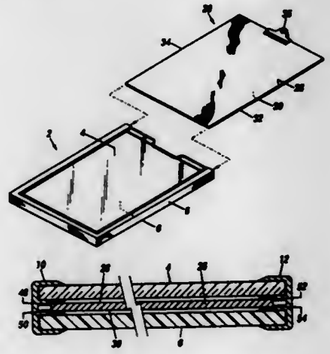
1. A didactic-educational toy for elementary arithmetic operations, said toy comprising:
a plurality of transparent plates, each of said transparent plates having ten circular orifices, said orifices being distributed symmetrically in two rows, each row comprising five of said orifices, each of said orifices having substantially the same diameter;
a plurality of plates having cylindrical stepped protuberances, each of said protuberances having a base with a diameter corresponding to a diameter of the orifices of the transparent plates to provide for close-fitting insertion of said base into a corresponding one of said orifices, each of said protuberances having an upper portion having a diameter smaller than the diameter of its base to facilitate the insertion of the protuberance into a corresponding orifice;
said plurality of plates having cylindrical stepped protuberances including plates having a different number of protuberances, the surface area of each plate being substantially proportional to the number of protuberances, said plurality of plates having cylindrical stepped protuberances including at least a plurality of plates having only one protuberance and a plurality of plates having two protuberances.

5,599,189

REUSABLE LEARNING AID

Max O. Kees, 915 S. 49th St., Temple, Tex. 76054

Filed Sep. 7, 1995, Ser. No. 525,296
Int. Cl.[6] B43L 1/12
U.S. Cl. 434—370 12 Claims



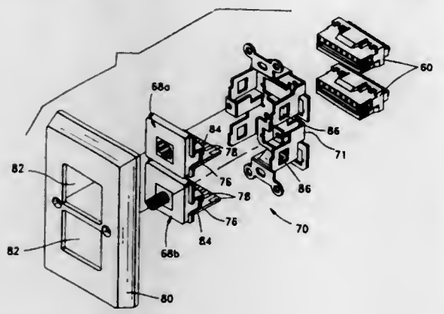
1. An improved learning aid having:
(a) a first panel member having four sides, being substantially rectangular in shape;
(b) a second panel member having four sides, being substantially rectangular in shape and substantially the same size as said first panel member;
(c) a frame having a first leg, a second leg and a bottom leg, a first side surface and a second side surface, and a first end and a second end, said frame being positioned around the periphery of three sides of the first panel member and second panel member leaving an open end, wherein said frame secures said first panel member substantially parallel to said second panel member in spaced apart relationship, forming a compartment defined between the first side surface of the frame, the first panel member and the second panel member,
(d) a third panel member sized for insertion into the compartment, said third panel member having a first side and a second side, a first edge and a second edge, wherein said first edge is generally parallel to said second edge, and a means for securing a sheet of paper to the first side of said third panel member;
wherein the improvement comprises:
an improved frame, wherein the first aide surface of the first leg defines a first slot, and the first side surface of the second leg defines a second slot,
wherein the first edge of the third panel member is closely received by the first slot and the second edge of the third panel member is closely received by the second slot,
said first side of the third panel member is secured in a spaced apart relationship with the first panel member, and said second side of the third panel member is secured in a spaced apart relationship with the second panel member.

5,599,190

COMMUNICATION WIRING SYSTEM INCLUDING A RECONFIGURABLE OUTLET ASSEMBLY

A. David Willette, Winston-Salem, N.C., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Jan. 27, 1995, Ser. No. 379,248
Int. Cl.[6] H01R 29/00
U.S. Cl. 439—49 14 Claims



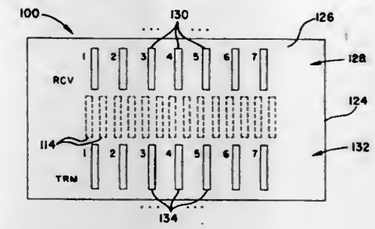
1. A communications wiring system comprising:
a communications network interface device for routing a plurality of source signals from a plurality of types of electrical sources, wherein each source cable transmits a source signal from a predetermined electrical source, said communications network interface device comprising:
subdividing means for splitting each source signal into a predetermined number of subsignals, said subdividing means comprising a plurality of distribution conductors wherein each distribution conductor transmits a predetermined one of said subsignals; and
output means, responsive to said subdividing means, for arranging said plurality of distribution conductors into a plurality of cables wherein each cable includes a plurality of distribution conductors which transmit subsignals originating with a plurality of types of electrical sources; and
a plurality of reconfigurable outlet assemblies for selectably establishing electrical connection with the plurality of electrical sources via a respective cable, each reconfigurable outlet assembly comprising:
an outlet comprising connector means for positioning said distribution conductors of a respective cable in a predetermined order; and
a plurality of interchangeable electrical connectors adapted to be removably mounted to said connector means of said outlet, each said connector including means for establishing electrical connection with the distribution conductors of the respective cable which are connected to a predetermined electrical source such that each electrical connector establishes electrical connection with a predetermined electrical source, each electrical connector also including removal means for disconnecting said connector from the cable such that the electrical connector can be removed from said outlet such that another of said plurality of interchangeable electrical connectors can be mounted to said outlet to thereby establish electrical connection with other distribution conductors of the respective cable which are connected to another predetermined electrical source such that electrical connection is established with the other electrical source.

5,599,191

PATCH PANEL PROVIDING 50-PIN CONNECTORS

Gilberto DeLara, Clarkston, Ga., assignor to BellSouth Corporation, Atlanta, Ga.

Filed Feb. 24, 1995, Ser. No. 396,177
Int. Cl.[6] H01R 29/00
U.S. Cl. 439—49 20 Claims



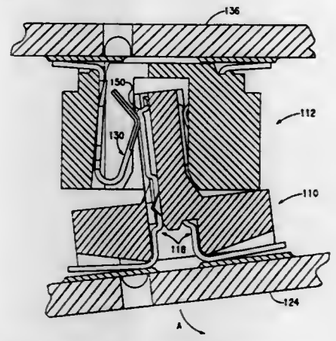
1. A connection panel, comprising:
a frame member;
a plurality of first terminals provided on said frame member and arranged in two horizontal rows on said frame member, said first terminals all being identical, each being a standard type of terminal;
a plurality of second terminals provided on said frame member and arranged in a horizontal row on said frame member, said second terminals all having a position layout that is the same as a position layout of said standard type of terminal; and
means disposed within said frame member providing electrical connections between said first terminals and said second terminals.

5,599,192

BLADE-LIKE TERMINAL HAVING A PASSIVE LATCH

Stanley W. Olson, East Berlin, Pa., assignor to Berg Technology, Inc., Reno, Nev.

Continuation of Ser. No. 20,489, Feb. 22, 1993, Pat. No. 5,310,357. This application Feb. 16, 1994, Ser. No. 197,499
Int. Cl.[6] H01R 9/09
U.S. Cl. 439—65 19 Claims



1. An electrical connector assembly, comprising:
a first connector for mechanical and electrical connection to a first circuit assembly;
a second connector for mating with the first connector and for mechanical and electrical connection to a second circuit assembly, the second connector comprising:
an insulative female connector housing;
a plurality of cantilever beam terminals disposed in said female connector housing, each one of the cantilever beam terminals comprising:

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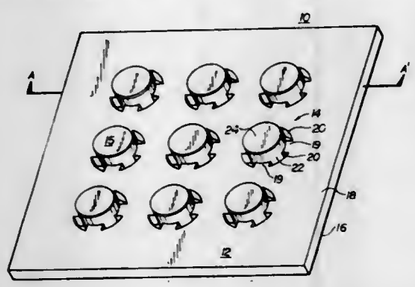
a first beam having a first substantially straight portion and a second substantially straight portion, the first substantially straight portion joined to the second substantially straight portion by a bent first contact portion;
a second beam;
a bent transition portion joining the second substantially straight portion of the first beam with the second beam such that the first contact portion points away from the second beam; and
a solderable tail portion connected to the second beam, the solderable tail portion for mechanical and electrical connection to the second circuit assembly;
the first connector comprising:
an insulative male connector housing;
a plurality of blade terminals disposed in said male connector housing, each one of the blade terminals comprising:
a strip-like contact portion having a substantially flat surface for wiping and contacting one of the first contact portions of one of the cantilever beam terminals of the second connector;
a first transition portion connected to the strip-like contact portion, the first transition portion comprising a retentive bump and a curved surface disposed between the retentive bump and the strip-like contact portion;
a solderable tail portion for mechanical and electrical connection to the circuit assembly; and
a second transition portion connecting the strip-like contact portion and the solderable tail portion.

5,599,193

RESILIENT ELECTRICAL INTERCONNECT

David R. Crotzer, Windham, N.H., assignor to Augat Inc., Mansfield, Mass.

Filed Aug. 23, 1994, Ser. No. 294,370
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—66 **4 Claims**



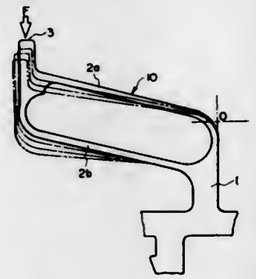
1. An electrical interconnect comprising:
an upper substrate having respective opposite substrate surfaces, said upper substrate having one or more cavities formed therein extending between said respective opposite substrate surfaces, said upper substrate being formed of a non-conductive material;
a lower substrate having respective opposite substrate surfaces, said lower substrate having one or more cavities formed therein extending between said respective opposite substrate surfaces, said one or more cavities formed in said lower substrate being located so as to be aligned with said one or more cavities formed in said upper substrate when said upper substrate and said lower substrate are joined, said lower substrate being formed of a non-conductive material; and
one or more resilient elements each having respective opposite contact surfaces disposed outward from said respective opposite substrate surfaces of said upper and lower substrates, said one or more resilient elements being formed of a non-conductive material, each of said one or more resilient elements having a flexible conductive layer disposed over said respective opposite contact surfaces and extending along at least a portion of a wall of said one or more resilient elements between said respective opposite contact surfaces so as to electrically connect said respective opposite contact surfaces, said one or more resilient elements being retained within said one or more cavities when said upper and lower substrates are joined.

5,599,194

IC SOCKET AND ITS CONTACT PIN

Kazuhisa Ozawa, and Hiroaki Harada, both of Kawagoe, Japan, assignors to Enplas Corporation, Kawagoe, Japan

Continuation of Ser. No. 931,925, Aug. 18, 1992. This application Mar. 3, 1994, Ser. No. 206,080
Int. Cl.[6] H01R *9/00*
U.S. Cl. 439—72 **7 Claims**



1. A contact pin for an IC socket for electrical connecting any one of the leads of an IC device with external electrical circuits comprising; a base; a pair of straight arms disposed parallel to and opposite each other; basal connecting means connecting ends of said pair of straight arms; said basal connecting means being connected to said base; second connecting means connecting the ends of said parallel straight arms opposite said basal connecting means; said straight arms, basal connecting means and second connecting means substantially forming a parallelogram; a contact portion means extending away from said second connecting portion, said contact portion means having an end for receiving a pushing force on said contact pins from a lead of said IC device.

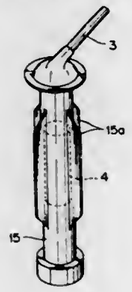
5,599,195

IGNITION PLUG CAP

Tetsuya Mitani, and Hiromitsu Tsuchiya, both of Susono, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Nov. 21, 1994, Ser. No. 345,419
Claims priority, application Japan, Nov. 30, 1993, 5-299883
Int. Cl.[6] H01R *13/533*
U.S. Cl. 439—125 **1 Claim**

1. An ignition plug cap having at least a plug cap terminal and a



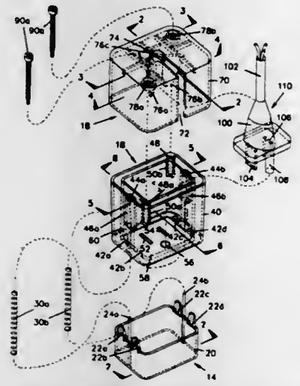
discharge tube disposed in substantially axially aligned, series relation at one end of a high-tension cord for providing high-voltage pulses to an ignition plug, said ignition plug cap further comprising:
an electrically insulating casing for firmly enclosing said plug cap terminal and said discharge tube, said electrically insulating casing being formed with heat dissipating fins having opposed planar surfaces extending radially from the external surface of said casing, said fins extending in a longitudinal direction substantially parallel with the longitudinal axis of said casing to an extent less than the axial length of said casing and being substantially coextensive with the location of said discharge tube within said casing.

5,599,196

ELECTRICAL PLUG SAFETY COVER

Patti J. Powell, and Jack N. Powell, both of 170 Blooming Grove Rd., Hanover, Pa. 17331

Filed May 1, 1995, Ser. No. 432,608
Int. Cl.[6] H01R *13/44*
U.S. Cl. 439—141 **8 Claims**



1. An electrical plug enclosure comprising a body of sufficient size to surround an electrical plug, a cap having a fastening means for joining said cap to said body, securing means for immobilizing said electrical plug within said body, a plurality of biasing elements, a retractable sheath having a guidance means for said sheath and said biasing elements during said sheaths and said biasing elements axial compression into said body and extension from said body, means for said body to retain said sheath at maximum extension.

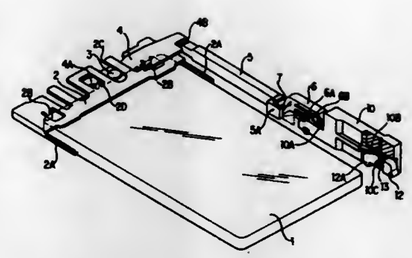
5,599,197

ELECTRICAL CONNECTOR FOR IC CARD

Mitsuo Ishida, and Shoichi Tomioka, both of Tokyo, Japan, assignors to Hirose Electric Co., Ltd., Tokyo, Japan

Filed Jun. 1, 1995, Ser. No. 456,719
Int. Cl.[6] H01R *13/62*
U.S. Cl. 439—159 **1 Claim**

1. An IC card electrical connector comprising:
a housing having a cavity for receiving an IC card,
a movable plate provided in said cavity and having an abutment portion for abutment with a front end of said IC card in said cavity,
an eject lever pivotally attached to said housing for rotation in a plane parallel to a major plane of said IC card, one end of said eject lever engaging said movable plate and another end of said eject lever projecting into an opening within a side wall of said housing,
an eject bar engaging said another end of said eject lever and movable is a lengthwise direction of said IC card,
an ejector button for exerting a force on said eject bar,
a spring member provided between said housing and said ejector button to bias said ejector button in a first direction;
an engaging member provided on said ejector button for engaging said housing to hold said ejector button in place;
cam means provided between said ejector button and said eject bar and having a cam section with a first cam face and a second cam face and an intermediate member with a cam follower to cooperate with said cam section such that when said engaging member is released to allow movement of said ejector button in said first direction, said intermediate member is biased to fit into a space between said ejector button and said eject bar;
said cam follower deflected to pass said first cam face when said ejector button is depressed to move said intermediate member in a second direction opposite to said first direction while said cam follower engages said second cam face to move out of said space when said IC card is inserted to move said eject bar in said first direction.

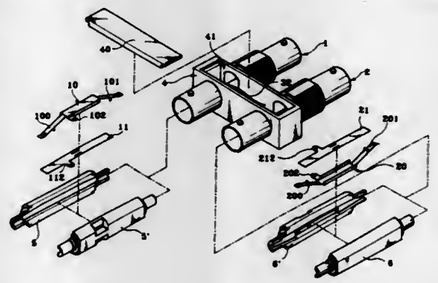


5,599,198

AUTO BY-PASS DISTRIBUTOR FOR COMPUTER NETWORKS

Tsan-Chi Wang, 1Fl., No. 13, Lane 312, Chung Chen Rd., Hsin Tien City, Taipei Hsien, Taiwan

Filed Mar. 10, 1995, Ser. No. 402,530
Int. Cl.[6] H01R *13/703*
U.S. Cl. 439—188 **1 Claim**



1. An auto by-pass distributor for distributing computer network signals to personal computers, comprising:
a first coaxial cable connector and a second coaxial cable connector;
a first signal terminal mounted within the first coaxial cable connector and having a front contact portion arranged to be connected to one of a coaxial cable of a computer network system and a personal computer and a rear contact portion arranged to be connected with the other of the coaxial computer network system and the personal computer;

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a first metal contact plate arranged to be resiliently contacted by both of the rear and front contact portions of the first signal terminal and to disengage from the rear contact portion of the first signal terminal in response to connection of the rear contact portion of the first signal terminal to either the coaxial cable of the computer network or the personal computer, and to disengage from the front contact portion of the first signal terminal in response to connection of the front contact portion of the first signal terminal to either the coaxial cable of the computer network or the personal computer;

a second signal terminal mounted within the second coaxial cable connector and having a front contact portion arranged to be connected either to said one of the coaxial cable of the computer network system and to return computer network signals from said first signal terminal to the computer network system or to said personal computer, and a rear contact portion arranged to be connected to the other of the personal computer and the computer network system; and

a second metal contact plate arranged to contact both of the rear and front contact portions of the second signal terminal and to disengage from the rear contact portion of the second signal terminal in response to connection of the rear contact portion of the second signal terminal to either the coaxial cable of the computer network or the personal computer, and to disengage from the front contact portion of the second signal terminal in response to connection or the front contact portion of the second signal terminal to either the coaxial cable of the computer network or the personal computer;

means for electrically connecting the first signal terminal to the second contact plate such that when either of the front and rear contact portions of the second signal terminal contacts the second contact plate because it is not connected to the coaxial cable of the computer network or to the personal computer, the first and second signal terminals are electrically connected to each other; and

means for electrically connecting the second signal terminal to the first contact plate such that when either of the front and rear contact portions of the first signal terminal contacts the first contact plate because it is not connected to the coaxial cable of the computer network or to the personal computer, the first and second signal terminals are electrically connected to each other.

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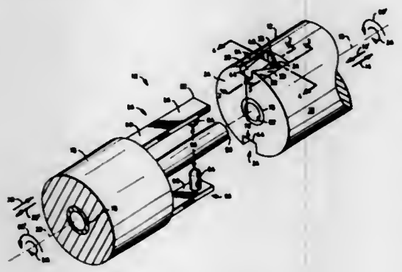
POSITIVE LATCH CONNECTOR

John O. Wright, York, Pa., assignor to Osram Sylvania Inc., Danvers, Mass.

Filed May 10, 1995, Ser. No. 438,859

Int. Cl.[6] H01R *13/627*

U.S. Cl. 439—357 **20 Claims**



1. A positive latch connector, comprising:

a first connector body extending in the direction of a first longitudinal axis and comprising at least one first connector which comprises:

a latch groove extending into an outer surface of said first connector body, said latch groove being spaced from an end of said first connector body in the direction of said first longitudinal axis;

a first ramp inclined away from said first longitudinal axis from said end to said latch groove; and

a second ramp adjacent to said first ramp and inclined away from said first longitudinal axis from said latch groove to said end; and

a second connector body extending in the direction of a second longitudinal axis and comprising at least one second connector which comprises a beam which comprises a pin which engages said first ramp in a connecting mode, engages said first latch groove in a connected mode and engages said second ramp in a disconnecting mode.

5,599,200

CONNECTOR WITH A TERMINAL PROTECTING BOARD

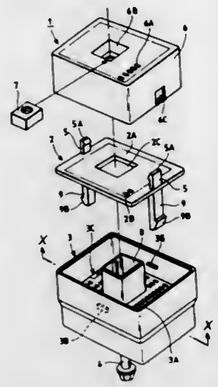
Sakai Yagi; Tamio Watanabe, and Toru Nagano, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Mar. 16, 1995, Ser. No. 405,806

Claims priority, application Japan, Mar. 16, 1994, 6-045940; Sep. 29, 1994, 6-235407

Int. Cl.[6] H01R *13/621*

U.S. Cl. 439—381 **9 Claims**



1. A terminal-protecting-board type connector comprising:

a first connector housing into which male terminals are inserted,

a terminal protecting board fitted in said first connector housing, for protecting the end portions of said male terminals, and

a second connector housing in which female terminals are inserted;

in which,

in said first connector housing, a temporary locking position is provided for said terminal protecting board so that, when said terminal protecting board is temporarily locked in said first connector housing before said first connector housing is engaged with said second connector housing, the end portions of said male terminals inserted in said first connector housing do not protrude through terminal supporting holes formed in said terminal protecting board.

5,599,201

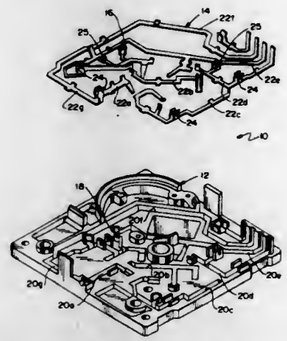
CIRCUIT ASSEMBLY HAVING STAMPED CIRCUITRY WITH A WIRE TRAP

Edward S. Sommer, Addison; Richard R. Edgley, Elmhurst, and Michael D. Driscoll, Naperville, all of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed May 8, 1995, Ser. No. 438,127

Int. Cl.[6] H01R *11/20*

U.S. Cl. 439—441 **9 Claims**



1. In a circuit assembly for terminating an insulated electrical wire having a central conductive core, the assembly including

a generally rigid dielectric base having circuit-receiving channels formed therein, and

stamped and formed conductive circuitry mounted on the base with circuit portions located in said channels said circuitry generally located in one plane of the base and at least one connecting portion for terminating the insulated electrical wire,

wherein the improvement comprises:

said connecting portion of the conductive circuitry, formed integral with the conductive circuitry, being a wire trap for receiving and trapping the conductive core of the insulated electrical wire, and

said base including a wire guide located adjacent the wire trap extending perpendicularly from the plane of the base to guide the insulated electrical wire for insertion of the conductive core into the wire trap perpendicular to the plane of the base and provide stress relief for the insulated electrical wire.

5,599,202

STRAIN RELIEF ELECTRICAL CONNECTOR

Edward Key, Palmyra, Pa., assignor to Electrical Wiring Device Company, Inc., Blue Bell, Pa.

Filed Jan. 22, 1996, Ser. No. 589,511

Int. Cl.[6] H01R *13/58*

U.S. Cl. 439—459 **22 Claims**

1. An electrical connector for securement to at least one electric conductor having an electrically conductive wire with insulation thereon, said at least one electric conductor being a flexible member terminating at a free end, said electrical connector comprising:

(a) a front housing member having a longitudinal axis;

(b) a rear housing member adapted to be releasably secured to said front member to form an interior chamber therebetween for receipt of a portion of the electric conductor oriented generally parallel to said longitudinal axis;

(c) a termination block located within said interior chamber and being adapted to receive and hold an end portion of the electric conductor contiguous with the free end thereof so that said end portion is generally U-shaped having a pair of leg sections extending generally perpendicularly to said longitudinal axis and an intermediate section located between the pair of leg sections and extending generally parallel to said longitudinal axis;

(d) a strain relief keeper member located within said interior chamber and coupled to said termination block to bold the end portion of the electrical conductor in said termination block, and to tightly engage a portion of the insulation on the electrically conductive wire to prevent the electrical conductor from being pulled out of said electrical connector; and

(e) at least one electrically conductive terminal secured to said front housing member, said at least one electrically conductive terminal having a front portion and a rear portion, said front portion being arranged for electrical engagement by another electrically conductive member, said rear portion extending into said interior chamber for electrical connection to the electrically conductive wire of the electrical conductor.

5,599,203

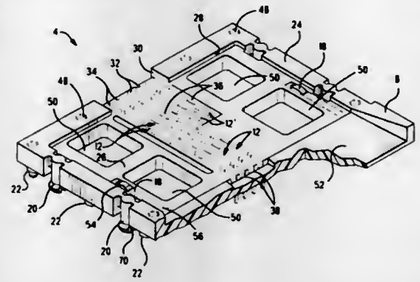
SMART CARD AND SMART CARD CONNECTOR

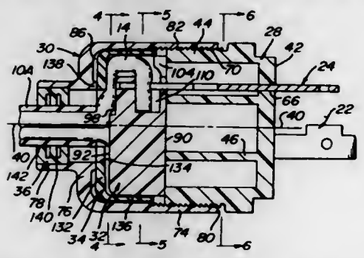
John L. Broschard, III, Hershey, Pa., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Oct. 31, 1995, Ser. No. 590,684

Int. Cl.[6] H01R *3/00*

U.S. Cl. 439—489 **22 Claims**





7. A smart card reader including a plurality of contacts extending into a slot into which a smart card can be inserted, the contacts being arranged so that each contact engages a corresponding electrically conductive contact pad on the smart card when the smart card is positioned in the slot, at least one of the contacts being offset relative to other contacts and defining an end position switch so that the offset contact engages an associated contact pad of the smart card only upon full insertion of the smart card into the card reader and after an electrically conductive engagement has been established between other contacts of the card reader and corresponding contact pads of the smart card, engagement of the associated contact pad and the end position switch affecting circuitry of the card reader to signify full card insertion and permitting data communication between the smart card and the card reader.

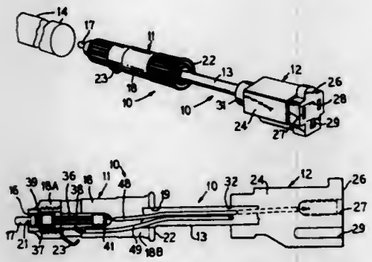
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5,599,204

VOLTAGE ADAPTER

Joseph B. Glassford, 620 N. Arbogast St., Griffith, Ind. 46319

Filed May 1, 1995, Ser. No. 432,027
Int. Cl.[6] H01R *11/00*
U.S. Cl. 439—502 **8 Claims**



1. An adapter for delivering a current of relatively low voltage from a vehicle to a male plug associated with standardized wiring that is adapted for conveying a current of substantially higher voltage, said adapter comprising in combination:

a male type electrical connecting plug for slidable engagement within the socket of a vehicular cigarette lighter, said male plug having:

an electrically insulative housing having a cord aperture at one end thereof and a post aperture at the other end thereof,

a forwardly projecting, electrically conductive post means held in said post aperture for making electrical connection with a contact means that is functionally associated with the central interior end region of said socket,

a laterally outwardly extending electrically conductive leg means held by said housing for making electrical connection with an electrically conductive inside surface portion of said socket;

a female type electrical connecting socket having:

an electrically insulative housing that has a first outside wall portion wherein three contiguous socket channels are adjacently defined, two of said socket channels having opposed flattened sides and the third said socket channel having a rounded side portion, said socket channels being adapted in combination to be connectable with any predetermined standard two or three prong male type electrical connector for a predetermined said higher voltage, and that also has a second outside wall portion wherein a second cord aperture is defined, and

electrical contact means associated with a wall portion of each of said two sockets;

a relative short length of insulated two-wire electrical cord that extends between said first and said second cord apertures,

one of said two wires being interconnected between one of said contact means for one of said two sockets and said post means,

the other of said two wires being interconnected between said contact means for the second of said two sockets and said leg means; and

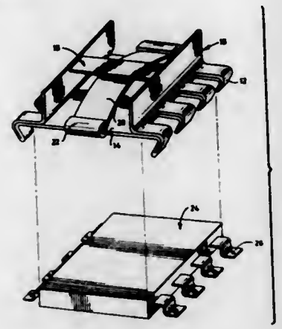
fuse means for limiting the maximum amperage of current which can pass between said male plug and said female socket, said fuse means being connected in parallel with one of said two wires; whereby said low voltage current can pass from said cigarette lighter plug through said female socket, but said higher voltage cannot pass from said female socket through said cigarette lighter plug.

5,599,205

ELECTROSTATIC DISCHARGE PROTECTION DEVICE

David V. Cronin, Peabody, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jul. 20, 1994, Ser. No. 278,063
Int. Cl.[6] H01R *13/703*
U.S. Cl. 439—507 **7 Claims**



1. An electrostatic discharge protection device for use with a semiconductor chip package of a type having a top surface and an opposite bottom surface and a plurality of lateral surfaces integral with said top and bottom surfaces where two or more of said lateral surfaces have extending therefrom a plurality of connector pins disposed in a spaced apart relationship with respect to each other, said electrostatic discharge protection device comprising:

a base section secured to said semiconductor chip package;

grounding means extending from said base section having an operative position for connecting a shunt across the plurality of connector pins, and having an inoperative position for disconnecting said shunt allowing electrical isolation between the plurality of connector pins; and

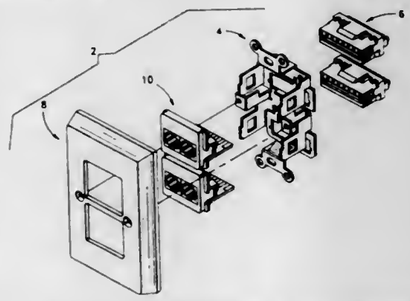
actuation means responsive to a predetermined temperature for moving said grounding means between said operative and inoperative positions.

5,599,206

MODULAR JACK SUBASSEMBLY FOR USE IN A NETWORK OUTLET

Victor E. Slack, Lewisville; Rodney E. Reich, Winston-Salem, and Mitchell E. Miller, Clemmons, all of N.C., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Aug. 4, 1995, Ser. No. 511,199
Int. Cl.[6] H01R *13/66*
U.S. Cl. 439—536 **8 Claims**



1. A modular jack insert subassembly for use in a network outlet assembly comprising:

a modular jack member including a pair of modular jacks each having a respective panel mount stop extending from a respective outer side thereof; and

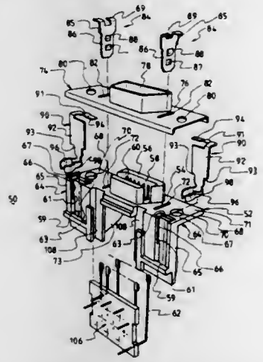
a mounting insert having a front portion defining a window in which a mating face of the modular jack member is positioned, and a pair of resilient latch arms extending rearwardly from the front portion at respective opposite sides of the window, each of the latch arms including a latch member for securing the modular jack insert in the network outlet assembly, and an inwardly facing snap fastener, the snap fasteners being outwardly deflectable upon engagement with respective ones of the panel mount stops during insertion of the modular jack member into the mounting window from the rear, wherein upon complete insertion of the modular jack into the mounting window, the snap fasteners resile behind the panel mount stops to prevent withdrawal of the modular jack from the mounting insert.

5,599,207

ELECTRICAL CONNECTOR WITH IMPROVED MOUNTING DEVICE

Chin T. Lai, 930 W. Maude Ave., Sunnyvale, Calif. 94086

Filed Apr. 24, 1995, Ser. No. 428,780
Int. Cl.[6] H01R *13/73*
U.S. Cl. 439—567 **11 Claims**



1. An electrical connector comprising:

an insulative housing having a plate base and a forward projecting section;

a plurality of contacts positioned within the projecting section;

a pair of L-shaped brackets integrally extending with the plate base adjacent two opposite ends thereof, each bracket including a horizontal section having a horizontal slot on an undersurface thereof receiving a discrete boardlock therein, each bracket further including a vertical section having a screw hole adjacent to the end of the housing; and

a shield having a base section and a tubular section to attachably cover a front surface of the housing; wherein

each boardlock includes a horizontal portion, an engagement section upwardly extending at a front end thereof, mounting means extending downward at a rear end thereof, and a securement tab positioned at a rear tip of the horizontal portion whereby a restraint bar is positioned on the undersurface of the horizontal section of the L-shaped bracket to cooperate with said securement tab for efficiently limiting downward movement of said mounting means.

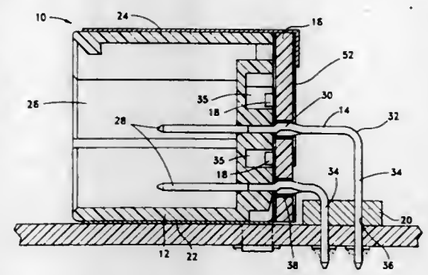
2. The electrical connector as defined in claim **1**, wherein a recess is provided adjacent a front end of the horizontal slot for receiving the engagement section of the boardlock therein, said engagement section of the boardlock further includes a bump for resiliently abutting against the base section of the shield.

5,599,208

ELECTRICAL CONNECTOR WITH PRINTED CIRCUIT BOARD PROGRAMMABLE FILTER

Bobby G. Ward, King, N.C., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Dec. 14, 1994, Ser. No. 355,767
Int. Cl.[6] H01R *13/66*
U.S. Cl. 439—620 **8 Claims**



1. An electrical connector comprising:

a dielectric housing, said housing includes a back wall with at least two apertures therein for receiving respective electrical conductors;

said electrical connector includes a back plate adjacent to said back wall, said back plate comprises an electrical transient suppression circuit for electrically interfacing with said conductors; and

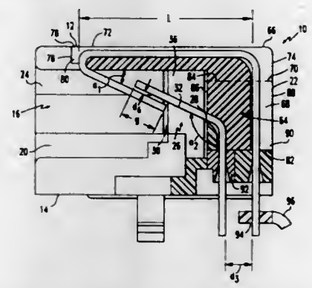
said back wall comprises at least two cavities therein for receiving respective surface mount components of said circuit, each said cavity encloses a respective surface mount component.

5,599,209

METHOD OF REDUCING ELECTRICAL CROSSTALK AND COMMON MODE ELECTROMAGNETIC INTERFERENCE AND MODULAR JACK FOR USE THEREIN

Yakov Belopolsky, Harrisburg, Pa., assignor to Berg Technology, Inc., Reno, Nev.

Filed Nov. 30, 1994, Ser. No. 346,640
Int. Cl.[6] H01R *23/02*
U.S. Cl. 439—676 **20 Claims**



1. A modular jack assembly for receiving for another connecting element having contacts for signal transmission comprising:

(a) an outer insulative housing having top and bottom walls and opposed lateral walls all defining an interior section and said housing also having front and rear open ends;

(b) a first plurality of generally parallel conductive means extending from adjacent the bottom wall of the insulative housing across the rear end to the top wall in a common plane

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and then toward the front end in a common plane then toward the rear end in a common oblique plane having a first terminal edge;

(c) a second plurality of generally parallel conductive means extending from adjacent the bottom wall of the insulative housing across only a part of the rear end in a common plane and then angularly toward the front end in a common oblique plane having a second terminal edge which extends beyond the first terminal edge of the oblique plane of the first plurality of conductive means such that said oblique planes of the first and second plurality of conductive means are positioned in overlapping relation and the portions of both of said first and second pluralities of conductive means that are located in said oblique planes are positioned for engaging the contacts of said other connecting element when said other connecting element is inserted into the front open end of the housing for signal transmission; and

(d) an insulative insert in which said first plurality of conductive means are at least partially positioned said insulative insert has an upper section having a base and upper sides and rear and terminal ends and is positioned so that its base side is superimposed over the rear open end of the insulative housing and its upper end is adjacent the top side of the insulative housing such that its terminal end extends into the interior section of the insulative housing.

5,599,210

BATTERY TERMINAL CONNECTOR

Charles L. Green, 3022 N. Josey La. #105, Carrollton, Tex. 75007

Continuation of Ser. No. 80,211, Jun. 17, 1993, abandoned. This application Feb. 20, 1996, Ser. No. 603,704

Int. Cl.[6] H01R *4/42;9/11*

U.S. Cl. 439—763 **4 Claims**



1. A battery terminal connector for a motor vehicle, comprising:

a battery terminal adapter portion for affixing the terminal connector into electrical contact with a battery terminal;

a body portion connected in electrical contact with the terminal adapter portion; and

a flexible connector portion affixed in electrical contact between the body portion and a vehicle cable, the flexible connector portion comprising at least one flexible connector segment, wherein the segment includes a first end in electrical contact with the body portion, a second end, and a conductive core extending between the first end and second end, wherein the at least one flexible connector segment second end further includes contact means for securing a vehicle cable in electrical contact with the conductive core, wherein the contact means comprises a crimpable female fastener for securely receiving a free end of a vehicle cable.

5,599,211

TERMINAL DEVICE

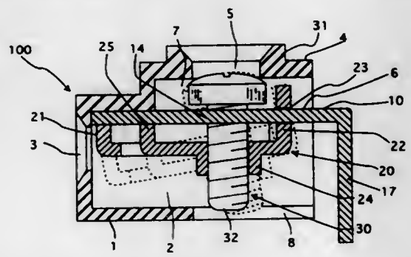
Yoshio Kurahashi, Fujisawa, and Susumu Henmi, Yamato, both of Japan, assignors to Emuden Musen Kogyo Kabushiki Kaisha, Kanagawa, Japan

Filed Sep. 8, 1995, Ser. No. 525,379

Claims priority, application Japan, Sep. 8, 1994, 6-214862; Aug. 7, 1995, 7-201178

Int. Cl.[6] H01R *4/40*

U.S. Cl. 439—806 **2 Claims**



1. A terminal device comprising:

a fixed terminal strip;

a terminal screw insertion hole in said fixed terminal strip;

a movable terminal strip;

means for hinging said movable terminal strip with respect to said fixed terminal strip;

a threaded hole in said movable terminal strip;

a terminal screw passing through said terminal screw insertion hole and threadingly engaging said threaded hole;

a raised portion overlapping said terminal screw;

means in said raised portion for permitting adjustment access therethrough to said terminal screw;

said means in said raised portion having a dimension effective for captivating said terminal screw, whereby said terminal screw, when loosened, is urged against an interior of said raised portion, and said terminal screw urges said movable terminal strip away from said fixed terminal strip;

means for permitting entering of an element to be clamped between said fixed terminal strip and said movable terminal strip when said movable terminal strip is in said loosened condition; and

means on at least one of said fixed terminal strip and said movable terminal strip for clamping said element therebetween when said movable terminal strip is tightened.

5,599,212

SOCKET TERMINAL

Yoshitsugu Sawada, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Continuation of Ser. No. 243,927, May 17, 1994, abandoned. This application Mar. 1, 1995, Ser. No. 396,588

Claims priority, application Japan, May 17, 1993, 5-136966

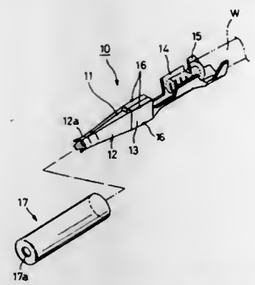
Int. Cl.[6] H01R *13/187*

U.S. Cl. 439—843 **3 Claims**

1. A socket terminal comprising:

a terminal body having:

a cylindrical base portion in a front part, the cylindrical base portion having a plurality of elastic contact pieces which are separated from each other in a peripheral direction by



slits elongating in a longitudinal direction, the cylindrical base portion being formed into a rectangular cylindrical shape;

a wire connection portion in a rear part, a wire being to be connected to the wire connection portion;

a press fitting receiving portion arranged on the cylindrical base portion; and

a circular cylindrical protection sleeve having a terminal insertion hole at a front part and a fitting portion at a rear part, the circular cylindrical protection sleeve being fitted onto the cylindrical base portion by press fitting at a portion corresponding to the press fitting receiving portion.

5,599,213

CONTACT SPRING ARRANGEMENT

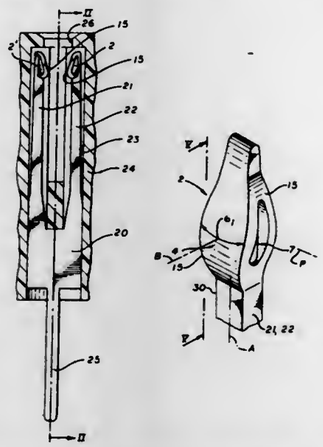
Jurgen Frommer, Fellbach, and Erich Kreutter, Winterbach, both of Germany, assignors to ITT Cannon Electric GmbH, Weinstadt, Germany

Filed Jan. 9, 1995, Ser. No. 370,041

Claims priority, application Germany, Jan. 11, 1994, 44 00 499.0

Int. Cl.[6] H01R *15/10*

U.S. Cl. 439—857 **7 Claims**



1. A contact spring arrangement comprising two oppositely disposed contact springs (21, 22) each having a contact head (2, 2') comprising a contact surface (4) and two side surfaces (15), such that and wherein the two contact surfaces (4) are opposite one another, characterised in that at least one recess (7) is embossed in each side surface (15) and the contact surfaces (4) are smoothed and widened by the flow of material occurring during embossing.

5,599,214

TERMINAL CHAIN AND TERMINAL LUG

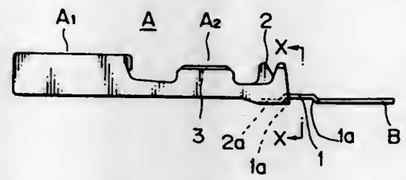
Hitoshi Sakai, and Toshinori Yamamoto, both of Haibara, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Feb. 8, 1995, Ser. No. 385,674

Claims priority, application Japan, Feb. 10, 1994, 6-16122

Int. Cl.[6] H01R *4/18*

U.S. Cl. 439—877 **4 Claims**



1. A chain of terminals comprising:

a terminal carrier; and

a plurality of terminal lugs joined in a row to said terminal carrier, each via a respective joining portion, to form a terminal chain, each of said terminal lugs including a wire connection section having a bottom plate portion and wire holding means formed integral with said bottom plate portion, adapted to cooperate with said bottom plate portion to hold and fix a wire therebetween,

each of said joining portions adjacent said wire holding means containing a section which is raised away from said bottom plate portion so that opposite, laterally spaced ends of each of said joining portions are located inside a contour formed by, and axially extended from, said corresponding wire holding means.

5,599,215

PROPELLER DRIVE SYSTEM

Kauko Järvinen, Helsinki, Finland, assignor to ABB Industry Oy, Helsinki, Finland

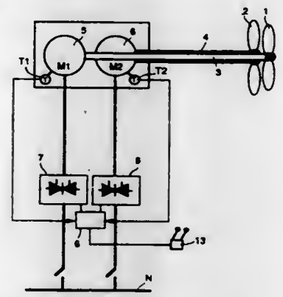
PCT No. PCT/FI93/00553, § 371 Date Sep. 20, 1995, § 102(e) Date Sep. 20, 1995, PCT Pub. No. WO94/14649, PCT Pub. Date Jul. 7, 1994

PCT Filed Dec. 22, 1993, Ser. No. 454,218

Claims priority, application Finland, Dec. 22, 1992, 925829

Int. Cl.[6] B60L *11/02*

U.S. Cl. 440—6 **4 Claims**



1. A propeller drive system for a vessel or the like, which system comprises

a first electric motor connected to a shaft on which a first rotor and a first propeller are disposed,

a second electric motor connected to a hollow shaft on which a second rotor and a second propeller are disposed, whereby the first and second electric motors are arranged in succession and the shaft of the first motor runs coaxially through the rotor of

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the second motor and through the associated hollow shaft, the first and second propellers being arranged in succession,

a first power supply and second power supply for feeding electric power to the first and second motors, respectively, and

a control unit for controlling the first and second power supplies and through them the first and second electric motors to rotate the motors either in the same direction or in opposite directions, wherein

the first and second power supplies comprise first and second frequency converters,

the control unit comprises means for controlling the frequency converters so that the direction of rotation of the motors and their rotational speed from zero up to nominal speed can be chosen so that the motors can be driven independently of each other, and

the means in the control unit for controlling the frequency converters comprise means for electrically preventing the rotation of the propellers independently of each other.

5,599,216

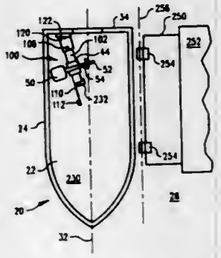
METHOD AND APPARATUS FOR STOWING AND UNSTOWING AN ENGINE IN A DINGHY

Donald R. Reightley, 8408 SE 53rd Pl., Mercer Island, Wash. 98040

Continuation of Ser. No. 242,140, May 13, 1994, abandoned. This application Nov. 7, 1995, Ser. No. 554,872

Int. Cl.[6] B63H *20/08*

U.S. Cl. 440—53 **14 Claims**



1. A method for stowing an outboard propulsion device in a concave boat hull floating in water and having a substantially horizontal longitudinal axis, the outboard propulsion device being fixedly mounted on a motor mount along the longitudinal axis of the boat hull so that the outboard propulsion device has a first portion that is in the water outboard of the hull when the outboard propulsion device is in a deployed position, the motor mount having a first substantially horizontal axis and a second substantially horizontal axis that is substantially perpendicular to the first axis, the first axis being parallel to but separate from the longitudinal axis and the second axis being fixed relative to the hull, the method comprising the steps of:

a) rotating the motor mount about the first axis until the motor mount is above the hull; and

b) rotating the motor mount about the second axis and into the hull so that the first portion of the outboard propulsion device is stowed within the hull in a stowed position.

5,599,217

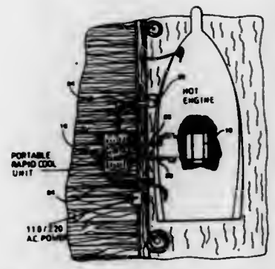
RAPID COOLING SYSTEM FOR LIQUID-COOLED ENGINES

Joseph Ferrante, 1 Landis Ct., Brooklyn, N.Y. 11229

Filed Nov. 8, 1995, Ser. No. 554,759

Int. Cl.[6] B63H *21/10*

U.S. Cl. 440—88 **4 Claims**



1. A rapid cooling system for a liquid-cooled engine comprising:

a) an internal combustion engine having an engine heat exchanger, a radiator, primary coolant liquid, and pump means for circulating said primary coolant liquid through said engine and said radiator to control the temperature of said engine;

b) an external heat exchanger;

c) external coolant conduits to and from said external heat exchanger;

d) quick disconnect means for connecting said external coolant conduits to the engine coolant conduits;

e) external pump means for circulating primary engine coolant through said external heat exchanger; and

f) means for providing a source of a secondary coolant for circulation through said external heat exchanger comprising water conduits to and from said external heat exchanger and means for circulating water from an external source of relatively cool water via said water conduits and through said external heat exchanger.

5,599,218

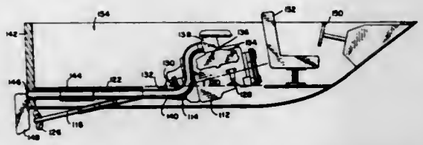
CONFIGURATION FOR A MARINE ENGINE EXHAUST SYSTEM

Keith W. Schmidt; Brian R. White, both of Stillwater, Okla., and Howard F. Africa, Oceanside, Calif., assignors to Brunswick Corporation, Lake Forest, Ill.

Continuation of Ser. No. 441,919, May 16, 1995, abandoned, which is a continuation of Ser. No. 243,402, May 16, 1994, Pat. No. 5,462,465. This application Mar. 29, 1996, Ser. No. 623,730

Int. Cl.[6] B63H *21/30*

U.S. Cl. 440—89 **3 Claims**



1. In a boat having a marine engine and an engine transmission that are mounted to joists in a hull space between a hull and a floor of the boat, the marine engine and engine transmission being mounted in a mid-travel position which is behind a driver seat in the boat and forward of a transom of the boat to leave space available rearward of the engine to attend water skiers, an improved engine exhaust system comprising:

an exhaust manifold that collects exhaust from the engine and directs the exhaust to an upwardly facing opening;

an exhaust elbow that redirects the exhaust rearward from the upwardly facing opening of the manifold; and

an exhaust tube connected to the exhaust elbow that directs the exhaust from the exhaust elbow to the transom of the boat, the exhaust tube passing rearward of the engine from the exhaust elbow and underneath a transmission mount that mounts the engine transmission to one of the joists of the boat located in the hull space between the hull and the floor of the boat.

5,599,219

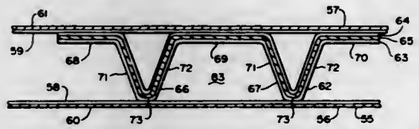
INFLATABLE BLADDER WITH INTERNAL BRACE FOR CONFORMING THE BLADDER TO THE BODY OF A WEARER

Charles T. Green, San Diego, Calif., assignor to Soniform, Inc., El Cajon, Calif.

Filed Mar. 6, 1995, Ser. No. 398,883

Int. Cl.[6] B63C *9/08*

U.S. Cl. 441—106 **7 Claims**



1. An inflatable bladder comprising in liner and a shell, the liner and shell extending generally parallel and being secured together at peripheral portions thereof to form an internal chamber, and an internal brace within the chamber secured to the liner and the shell, the brace including first and second generally V-shaped connecting panels, each of the generally V-shaped connecting panels including a generally V-shaped bight portion secured to the liner by a generally linear weld and first and second end portions adjacent the shell, a first end panel extending between a first end portion of one of the generally V-shaped connecting panels and a second end portion of the other generally V-shaped connecting panel, the first end panel being connected to the shell at plurality of locations between said first and second end portions, and second and third end panels extending outwardly from the other end portions of the generally V-shaped connecting panels and connected to the shell at a plurality of locations.

5,599,220

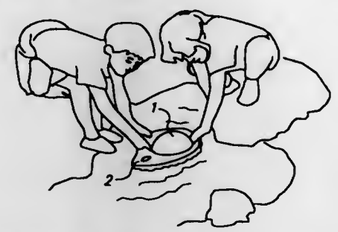
METHOD AND APPARATUS FOR VIEWING OBJECTS UNDERWATER

Nico Smith, 704 Campus Dr. 6H Rains Houses, Stanford, Calif. 94305

Filed Jun. 1, 1995, Ser. No. 455,198

Int. Cl.[6] B63C *11/00*

U.S. Cl. 441—135 **12 Claims**



1. An apparatus for viewing objects under water from above the surface of the water, comprising:

a viewing means, the viewing means being substantially transparent and having a semispherical concave surface and a semispherical convex surface closely spaced from one another and an edge; and

buoyant means for grasping the apparatus coupled to the edge of the viewing means;

wherein when the viewing means is moved from a position submerged in water to a position at least partially above the surface of the water, a lens is formed with the viewing means and the water which is held above the surface of the water using a vacuum formed by the viewing means.

5,599,221

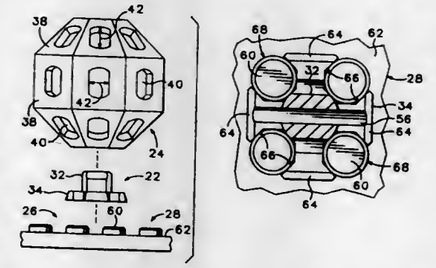
CONNECTORS FOR JOINING CONSTRUCTION TOY JOINT ELEMENT AND BRICK

Richard J. Gabriel, Portland, Oreg., assignor to Matrix Toys, Ltd., Portland, Oreg.

Filed Jul. 7, 1995, Ser. No. 499,387

Int. Cl.[6] A63H *33/08*

U.S. Cl. 446—128 **6 Claims**



1. A female connector for joining a joint element to a toy brick, said joint element defining at least one joint opening having an inner circumference, said brick having a male face with multiple symmetrically arranged cylindrical protrusions, said connector comprising:

(a) a base;

(b) at least two projections which are mounted in spaced relationship with each other on said base, said projections together defining an exterior circumference corresponding to the inner circumference of said joint opening, said projections for frictionally engaging the inner circumference of said joint opening;

(c) a plurality of prongs which project radially outward from and beyond said base, said prongs being perpendicular to each other and perpendicular to said projections;

(d) wherein adjacent prongs are for frictionally griping the cylindrical protrusions of said male face; and

(e) said base defines the intersection of said projections and said prongs.

5,599,222

Patent Not Issued For This Number

5,599,223

METHOD FOR MATERIAL REMOVAL

Gilbert L. Mains Jr., 2642 Joelle Dr., Toledo, Ohio 43617

Continuation-in-part of Ser. No. 986,379, Dec. 7, 1992, Pat. No. 5,341,608, which is a continuation of Ser. No. 684,979, Apr. 10, 1991, Pat. No. 5,222,332. This application Jun. 24, 1994, Ser. No. 265,430

Int. Cl.[6] B24C *1/00*

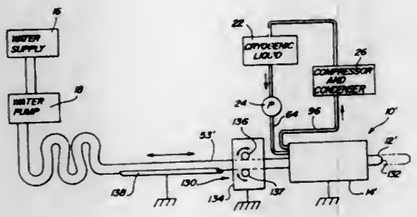
U.S. Cl. 451—39 **12 Claims**

1. A method of cutting a solid workpiece, comprising the steps of:

(a) forcing a stream of liquid working material through a conduit having an orifice for emitting the working material,

(b) cooling a section of said conduit that extends through a heat exchanger having a cryogenic fluid in heat exchange relation-

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ship with said working material to thereby cause solidification of at least some of the working material emitted through said orifice,

(c) impinging said working material on the workpiece to bore a hole that is dimensioned so as to accept said conduit therein, and

(d) extending said conduit out of said heat exchanger and into the hole while maintaining said heat exchange relationship between said cryogenic fluid and said working material, and impinging said working material on the workpiece within the hole.

5,599,224

GROOVING APPARATUS FOR INJECTION MOLDING MACHINE BARREL

Randy L. Conner, Hayward, Wis., assignor to Concor Tool & Machine, Inc., Hayward, Wis.

Filed Apr. 25, 1995, Ser. No. 428,721

Int. Cl.[6] B24B 7/19

U.S. Cl. 451—236 **28 Claims**



1. In combination with a rigid, tubular barrel of an injection molding machine, the barrel having an inside diameter and a cylindrical wall, the wall having inner and outer surfaces, the barrel to be modified by forming a shallow, liquid transporting groove along its inner cylindrical surface, a grooving apparatus for forming the groove comprising:

a. an elongated, cylindrically shaped slide, the slide slidably mounted inside the barrel the slide having an axis, the slide having an outer surface and an inner surface, the outer surface having a predetermined diameter less than the inside diameter of the barrel, the outer surface of the slide having an elongated guide slot extending generally longitudinally thereabong,

b. a grooving device comprising a rotary grooving tool and a motor connected to the rotary grooving tool,

c. a means for mounting the grooving device on the slide to cause the grooving tool to engage and to groove the inner surface of the barrel,

d. means for moving the slide along the inner surface of the barrel, and

e. a guide pin removably fixed in the wall of the barrel, the guide pin protruding through the inner surface of the wall and into the guide slot thereby to limit and control the movement and rotation of the slide in the barrel and cause the liquid transporting groove being formed to have a shape similar to the guide slot.

5,599,225

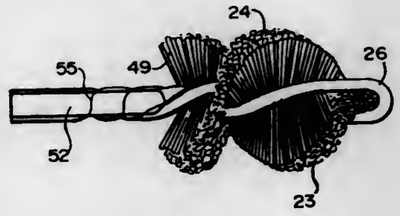
TWISTED STEM ABRADING TOOL

Rueben B. Warner, and James B. Tyler, both of Westlake, Ohio, assignors to Jason Incorporated, Cleveland, Ohio

Division of Ser. No. 326,488, Oct. 20, 1994. This application Oct. 11, 1995, Ser. No. 541,187

Int. Cl.[6] B24D 15/00

U.S. Cl. 451—535 **4 Claims**



1. A twisted stem tool compressing a flat bundle of parallel filaments having a cotter pin wrapped about the center thereof, with the legs of the pin beyond the bundle being twisted to form a twisted stem tool, said stem including longitudinal flats operative to prevent the stem from unwinding when said tool is driven in a direction opposite the twist.

5,599,226

METHOD AND PLANT FOR SEPARATING A PART FROM A CARCASS

Lars-Erik Norling, Valhallsvägen 49, S-262 00 Ängelholm, Sweden

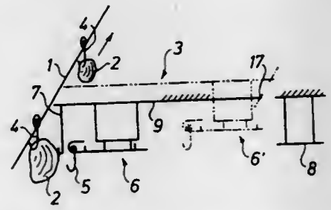
PCT No. PCT/SE94/00694, § 371 Date Jan. 16, 1996, § 102(e) Date Jan. 16, 1996, PCT Pub. No. WO95/02331, PCT Pub. Date Jan. 26, 1995

PCT Filed Jul. 15, 1994, Ser. No. 583,117

Claims priority, application Sweden, Jun. 16, 1993, 9302447

Int. Cl.[6] A22C 17/02

U.S. Cl. 452—149 **24 Claims**



1. Apparatus for separating a part from a carcass, comprising:

a main conveyor for transporting the carcass suspended from a first meat-hook on the main conveyor; a separate work station arranged near the main conveyor for separating and forwarding the separated part said work station comprising a second meat-hook for attaching in the part to be separated, means for moving the second meat-hook substantially in a direction away from the first meat-hook, such that the part is separated from the carcass without any other cutting action; and control means guiding selectively vertically and/or horizontally the movement of the second meat-hook.

5,599,227

CUTTING DEVICE

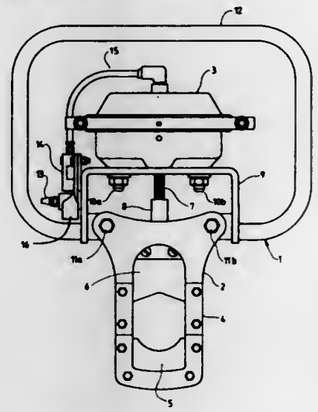
Frank R. C. Vary, P.O. Box 183, Kyogle, Australia

Filed Mar. 17, 1995, Ser. No. 407,388

Claims priority, application Australia, Mar. 17, 1994, PM4515

Int. Cl.[6] B26B 15/00

U.S. Cl. 452—166 **7 Claims**



1. An animal dehorner comprising:

a diaphragm type air brake chamber;

cutting means adapted to be operated by said diaphragm type air brake chamber, said cutting means comprising a frame in which a first blade is fixed and in which a second blade is slidable between a position away from said first blade and a position in which the edge of said second blade overlaps the edge of said first blade, said chamber including a crankshaft coupled to said second blade of said cutting means;

a bracket including a hand grip comprising a continuous member extending in the same plane as said frame from an end of said bracket for supporting said air brake chamber adjacent to said cutting means around the rear of said air brake chamber to the other end of said bracket; and

a trigger-operated air supply control valve mounted to said bracket, said trigger being intermediate between said air brake chamber and said cutting means and spaced laterally inwardly of said hand grip, wherein said spacing between said trigger of said air supply control valve and said hand grip is such that at least partial extension of a thumb of an operator's hand when gripping said hand grip is required to operate said trigger.

5,599,228

CLAMP FOR HOLDING OYSTERS AND LIKE MOLLUSC WHILE BEING PRYED OPENED

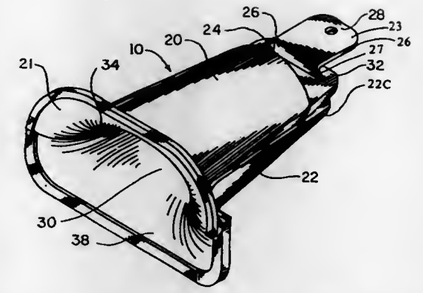
Laurent Thibault, 1400 Ch., Filteau, Berniéres, QC, Canada

Filed Apr. 19, 1996, Ser. No. 634,938

Int. Cl.[6] A22C 29/04

U.S. Cl. 452—185 **13 Claims**

1. A clamp for holding an oyster and like mollusc while being pryed opened, comprising an inner half shell and an outer half shell, each half shell of elongated shape, with a front edge and a rear end and of U-shaped cross-section including two side walls, a central wall and a back wall which define a cavity opened at said front edge, hinge means hinging said two-half shells together at their rear ends said two half shells capable of pivoting to a closed position facing each other with the two cavities forming an enclosure with a front opening, the side walls of said inner half shell nesting within the cavity the outer half shell, whereby the size of said enclosure is variable and said enclosure is accessible at said front opening, and whereby a mollusc of variable size can be located in said enclosure and clamped by inward pressure exerted on said central walls while being exposed to a prying knife at said front opening.



5,599,229

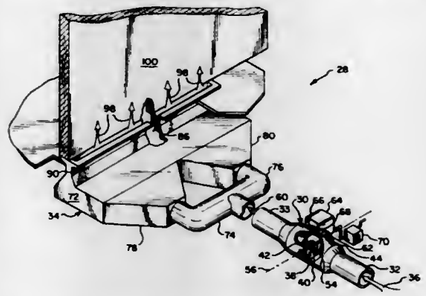
ENHANCEMENT OF WALL JET TRANSPORT PROPERTIES

Scott D. Claunch, Broomfield, and Robert B. Farrington, Golden, both of Colo., assignors to Midwest Research Institute, Kansas City, Mo.

Filed May 8, 1995, Ser. No. 436,144

Int. Cl.[6] B60S 1/54

U.S. Cl. 454—121 **20 Claims**



1. A method for enhancing the transport of heat and mass from a solid surface by minimizing the thickness of the boundary, layer of an air flow that attaches to and spreads out over the surface of said solid comprising the steps of imparting periodic pressure pulsations to the air in the plenum, and impinging said pulsated air on said solid surface.

5,599,230

AIR OUTLET STRUCTURE FOR AUTOMOTIVE AIR CONDITIONERS

Rikibei Naruse, and Akihiko Sugimoto, both of Hamamatsu, Japan, assignors to Hyundai Electronics Industries Co., Ltd., Kyoungki-do, Rep. of Korea

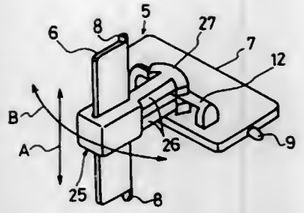
Continuation of Ser. No. 283,156, Aug. 3, 1994, abandoned. This application Apr. 10, 1996, Ser. No. 630,618

Claims priority, application Japan, Sep. 21, 1993, 5-257769

Int. Cl.[6] B60H 1/34

U.S. Cl. 454—155 **1 Claim**

1. An air outlet structure for an instrument panel mounted air outlet automotive air conditioner, comprising:



a plurality of vertical fins turnably disposed in said air outlet for controlling the horizontal flow of the conditioned air; said vertical fins positioned at the front side of a location within said air outlet;

each of said vertical fins including an integral pin;

a plurality of horizontal fins turnably disposed in the deep side of the outlet for controlling the vertical direction of the conditioned air;

each of said horizontal fins including an integral pin;

a knob slidably fitted on one of said vertical fins for turning said fins; and

a pair of parallel legs formed at the back of said knob and engaging with an integral bar of one of said horizontal fins, for turning said horizontal fin, said parallel legs having their leading portions formed into an arcuate portion having a radius taken on said pin of said one of said vertical fins wherein said leading end portions trace a circular arc on said pin.

5,599,231

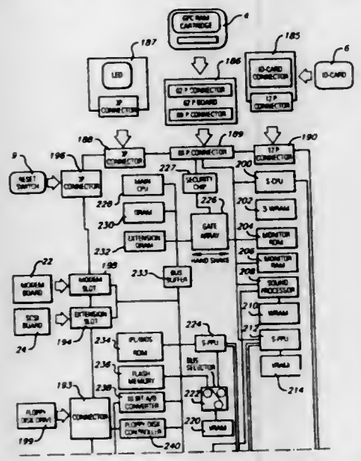
SECURITY SYSTEMS AND METHODS FOR A VIDEOGRAPHICS AND AUTHENTICATION GAME/ PROGRAM FABRICATING DEVICE

Toshiro Hibino, and Satoshi Yamato, both of Kyoto-fu, Japan, assignors to Nintendo Co., Ltd., Kyoto, Japan

Filed Oct. 31, 1994, Ser. No. 332,812

Int. Cl.[6] A63F 9/00

U.S. Cl. 463—29 **28 Claims**



1. A method for restricting the playing and copying of video games to authorized users, wherein users have access to interactive computer systems having a display screen, an identification device interface, a removable disk drive and a game cartridge interface, comprising the following steps:

a. initially inhibiting the computer systems from copying or editing game program files;

b. reading an identification code stored on an identification device inserted into the identification device interface of one of said computer systems;

c. comparing the identification code read from the identification device to an identification code read from a game program file stored on a removable disk inserted in the removable disk drive of the computer system receiving the identification device in step (b);

d. if a predetermined relationship exists between the identification codes read from the identification device and from the game program file stored on the removable disk, enabling the computer system receiving the identification device in step (b) to copy and edit the game program file;

e. editing the game program file to create an edited game program derived from the game program file;

f. authenticating a game cartridge inserted in the game cartridge interface of the computer system receiving the identification device in step (b) and, if the game cartridge is authentic, copying at least a portion of the edited game program to the game cartridge; and

g. playing the edited game program stored on the authenticated game cartridge on any of the computer systems, regardless of whether the computer system receiving the authenticated game cartridge is enabled to copy and edit the game program file in step (d).

5,599,232

MEMORY CARTRIDGE WITH INTERFACE HAVING GRAPHICS CO-PROCESSOR

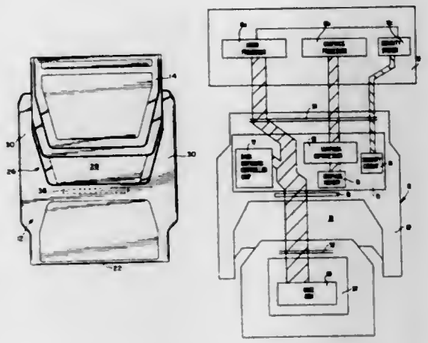
Richard Darling, Moreton Morrell, England, assignor to Codemasters Limited, London, England

Continuation of Ser. No. 42,567, Apr. 5, 1993, Pat. No. 5,395,112. This application Oct. 6, 1994, Ser. No. 318,968

Claims priority, application United Kingdom, May 2, 1992, 9210786

Int. Cl.[6] A63F 9/22

U.S. Cl. 463—44 **23 Claims**



1. A memory cartridge removably received by a predetermined type video game console which has a microprocessor and a graphics processor, said cartridge comprising:

an interface including a graphics co-processor and a first casing with one end received by said predetermined type video game console; and

a game cartridge including a second casing removably attachable to said first casing and including at least one game program therein requiring the combination of said graphics co-processor and said predetermined type video game console graphics processor for execution.

5,599,233

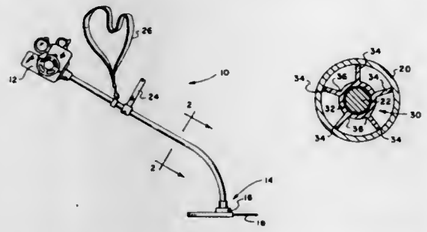
COAXIAL DRIVE CABLE CENTERING APPARATUS

John E. Shaulis, Carrollton, Tex., assignor to Vinylex Corporation, Knoxville, Tenn.

Continuation of Ser. No. 509,893, Apr. 16, 1990, Pat. No. 5,364,307, which is a continuation-in-part of Ser. No. 212,077, Jun. 28, 1988, abandoned, which is a continuation of Ser. No. 786,146, Oct. 8, 1985, abandoned, which is a continuation of Ser. No. 496,826, May 23, 1983, abandoned. This application Aug. 15, 1994, Ser. No. 290,542

Int. Cl.[6] A01G 3/06; F16C 1/06

U.S. Cl. 464—52 **4 Claims**



1. In combination with rotary power transmitting apparatus of the type including drive means, means for being rotatably driven by said drive means, and a flexible, torque transmitting cable between and operably connected to said drive means and said rotatably driven means and mounted for rotation within a generally cylindrical shaped cable housing, said drive means rotating said cable and thereby said rotatably driven means, a flexible centering device extending through said cable housing for concentrically centering said cable with respect to said cable housing, said centering device comprising:

an elongated sleeve defining a generally circular cylindrical passage-way through which said cable passes, said cable being supported by said elongated sleeve in said cylindrical passageway for rotation relative to said elongated sleeve and

a plurality of fins extending radially outwardly from said elongated sleeve and with respect to said cylindrical passageway a sufficient distance to contact the interior surface of said cable housing solely at the outer ends of said fins and to concentrically center said cylindrical passageway with respect to the interior of said cable housing,

adjacent ones of said fins defining a space between one another and between the interior surface of said cable housing and said elongated sleeve,

said fins being unconnected with one another at their outer ends,

said fins each extending continuously longitudinally over a major portion of the length of said elongated sleeve,

said centering device being dimensionally formed to be constrained against rotational movement within said cable housing.

5,599,234

CONSTANT VELOCITY FIXED JOINT

Peter Harz, Hennef; Werner Krude, Neunkirchen, and Herbert Taureg, Hennef, all of Germany, assignors to GKN Automotive AG, Germany

Continuation of Ser. No. 396,549, Mar. 1, 1995, which is a division of Ser. No. 041,544, Apr. 2, 1993, Pat. No. 5,433,668. This application Mar. 21, 1996, Ser. No. 619,999

Claims priority, application Germany, Apr. 3, 1992, 42 22 170.6; Apr. 3, 1992, 42 11 042.4; Feb. 10, 1993, 43 03 901.4

Int. Cl.[6] F16D 3/224

U.S. Cl. 464—145 **14 Claims**

1. A constant velocity fixed joint comprising:

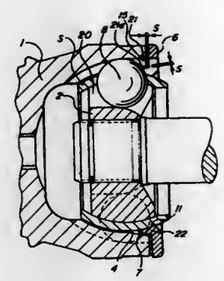
a bell-shaped outer joint part having an open end, a cavity and a plurality of uniformly circumferentially distributed undercut-free outer running grooves, said outer joint part further having inner faces arranged between said outer running grooves said inner faces being designed to be undercut-free;

an inner joint part disposed within said cavity and having a plurality of inner running grooves corresponding to said outer running grooves;

a cage having a plurality of windows and a spherical outer face, said cage being arranged between said outer joint part and said inner joint part;

a torque transmitting ball received in each of said plurality of inner and outer running grooves and guided in a respective window of said cage;

a one piece ring being provided with an annular base and at least two unitary fingers pointing axially and radially inwardly into said cavity of said outer joint part, each of said fingers being held between two adjacent outer running grooves so as to abut said spherical outer face of said cage in order to axially outwardly secure said cage, said ring annular base being welded to said outer joint part to prevent movement of the base with respect to the outer part and to form a gap between said ring and outer joint part such that said ring is arranged at an axial distance from a radial end face located at said open end of said outer joint part, and said fingers observing a predetermined axial play relative to said cage with said spherical outer face of said cage being held at a distance from said inner faces of said outer joint part arranged between adjacent outer running grooves.



5,599,235

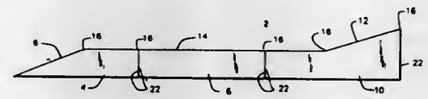
COLLAPSIBLE SKATE RAMP

Roger Lynberg, 157 26th St., Del Mar, Calif. 92014

Filed Aug. 16, 1995, Ser. No. 515,817

Int. Cl.[6] A63C 19/10

U.S. Cl. 472—89 **16 Claims**



1. A collapsible ramp for providing aerial lift to users of skates, skateboards, bicycles and the like comprising at least two lateral sections and attachment means for securing adjacent sections together, each section comprising a riding surface, side walls, support means, and base means for contacting a ground surface, wherein one of said at least two sections comprises a leading section further comprising an incline from the ground surface and another of said two or more sections comprises a final section comprising an incline to a launch height and further wherein the support means comprises one or more of bulkheads, cross braces, retaining ribs and gussets.

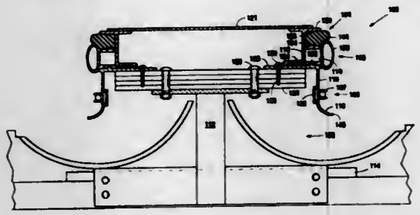
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5,599,236

BUMPER BOWLING SYSTEM

Jon P. File, P.O. Box 1824, Kamuela, HI. 96743

Continuation-in-part of Ser. No. 922,721, Jul. 31, 1992, Pat. No. 5,449,326. This application May 13, 1994, Ser. No. 242,309
Int. Cl.[6] A63D 5/00
U.S. Cl. 473—55 45 Claims



1. A system for use with a bowling lane, the lane having a first edge and a second edge and a first end and a second end, the second end for receiving pins thereon, the lane capable of supporting a rolling, bowling ball on the surface thereof, the system comprising:

first bumper means adjacent the first edge of the lane for deflecting a ball leaving the lane back onto the lane;

second bumper means adjacent the second edge of the lane for deflecting a ball leaving the lane back onto the lane;

first sensor means to detect a ball striking said first bumper means;

second sensor means to detect a ball striking said second bumper means;

first signal means located adjacent the first edge of the lane capable of emitting a signal to the user;

second signal means capable of emitting a signal to the user wherein said first and said second signal means each are comprised of a multiplicity of linear sections;

first frame means for permanently locating said first bumper means, said first sensor means and said first signal means adjacent the first edge of the lane to the floor; and

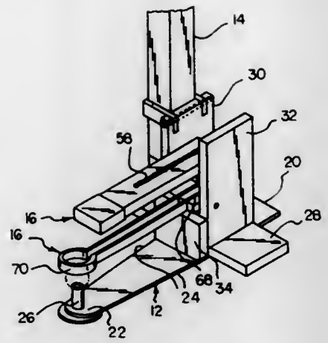
second frame means for permanently locating said second bumper means, said second sensor means and said second signal means adjacent the second edge of the lane and to the floor.

5,599,237

GOLF BALL DISPENSER WITH PIVOTABLE TEEING DEVICE

Robert F. Fetterman, 304 Willowbrooke La., Royersford, Pa. 19468, and Robert E. Fetterman, 2477 11th Ave. SW., Largo, Fla. 34640

Filed Mar. 19, 1996, Ser. No. 617,549
Int. Cl.[6] A63B 69/36
U.S. Cl. 473—137 5 Claims



1. A new and improved golf ball dispenser with pivotable teeing device comprising, in combination:

a base member formed in an elongated planar configuration with a linear rear edge, a rounded front edge, a center point, an upper surface and a lower surface, the base having inwardly angled side walls from the center point to the rounded front end, a golf tee being affixed to the rounded front edge of the base, a horizontally positioned cross support being affixed across the upper surface of the base member between the center point and the rear edge, first and second opposing vertical side walls being positioned between the center point and rear edge of the base, each vertical side wall having an inner surface, an outer surface, an upper extent, a lower extent, a front extent and a rear extent, the first vertical sidewall including a feed hole extending therethrough, a rectangular block with an angled upper section being affixed to the cross support adjacent to the feed hole of the first vertical sidewall, a vertically positioned short front wall being affixed to the front extent of the vertical side walls;

a ball reservoir formed in an elongated hollow generally rectangular configuration with an open upper extent and an open lower extent, the ball reservoir including a feed hole positioned adjacent the lower extent thereof, the ball reservoir being positioned over the angled upper section of the rectangular block and flush against the first vertical side wall, the feed hole of the ball reservoir and rectangular block being positioned in alignment, a bracket being positioned around the ball support and coupled to the first vertical sidewall to secure the ball support in place;

a ball feed assembly including a retractable lever and a ball guide ramp, the retractable lever being formed in a generally J-shaped configuration with a long planar rectangular segment formed contiguously with a short curved segment, the long rectangular segment having a flat upper surface and an outer end including a cushioned pad positioned therearound, a spring having a first end coupled to the upper surface of the retractable lever and a second end coupled to the base adjacent to the rear edge, the short curved segment including a concave upper surface and a front portion having an aperture extending therethrough, the front portion of the short segment also including two slots positioned therein; and

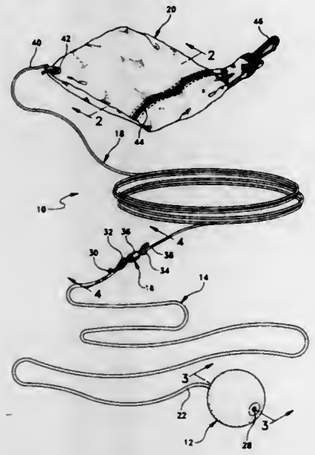
the guide ramp including two opposing rails each having a first and a second end, the first end of each opposing rail being affixed within the slots of the short curved segment of the lever, the second end of each rail being formed contiguously with a ball placement ring, the ball feed assembly being pivotally coupled to the front extent of the vertical side walls by an axle positioned through the aperture in the short curved segment of the lever, the upper surface of the short curved segment serving as a ball receiving area being positioned beneath and adjacent to the feed hole in the first vertical side wall, in an operative orientation a plurality of golf balls being positioned within the ball reservoir one above another, the weight of the balls forcing one ball at a time upon the angled upper section of the rectangular block, through the feed hole and into the ball receiving area of the lever, in an operative orientation a user pivoting the retractable lever and guide ramp downwardly with the head of a golf club, the guide ramp being pivoted to a downwardly pitched angle such that the ball placement ring being positioned at a lower vertical height then the first end of the ramp, a golf ball then rolling down the rails of the downwardly pitched ramp and through the ball placement ring and upon the tee, upon release of the retractable lever the spring forcing the retractable lever and guide ramp back to a vertical orientation.

5,599,238

GOLF PRACTICE DEVICE

Anthony G. Roderick, Scituate, R.I., assignor to Edward J. Field, Scituate, R.I.

Filed Dec. 27, 1995, Ser. No. 578,909
Int. Cl.[6] A63B 69/36
U.S. Cl. 473—147 19 Claims



1. A golf practice device comprising:

a practice ball;

an elastic cord having a first end anchored to said practice ball;

a swivel element having a first swivel end anchored to a second end of said elastic cord;

a non-elastic cord having a first end anchored to a second swivel end of said swivel element;

weight means anchored to a second end of said non-elastic cord for weighing down said practice ball and substantially preventing said practice ball from flying away when hit, said weight means being movable when said ball is hit to absorb energy imparted to the ball, said swivel element permitting relative rotation of said elastic cord with respect to said non-elastic cord when said practice ball moves through the air.

5,599,239

HEADWATCHER

Cheol K. Kim, 175 Solana Dr., Los Altos, Calif. 94022; Lambert A. Ling, 5228 Cass St. #2, San Diego, Calif. 92109, and James J. Kim, 2909 Bay Village Cir. #2003, Santa Rosa, Calif. 95403

Filed Dec. 7, 1995, Ser. No. 568,740
Int. Cl.[6] A63B 69/36
U.S. Cl. 473—208 6 Claims

1. A device which monitors a golfer's head turn during a golf swing which comprises:

(a) a means for detecting when a golf club strikes a golf ball, thereby creating a ball strike time, the ball strike detecting means is connected to a microprocessor;

(b) a means for detecting when the golfer's head is aligned with the ball, the head alignment detecting means is connected to the microprocessor and comprises an optical emitter and an optical sensor, whereby the optical emitter provides a signal which is detected by the optical sensor;

(c) a means for detecting when the head alignment with the ball ceases, thereby creating a head turn time, the head turn detecting means further comprises a reflector, the reflector being fixed on or about the front of the golfer's head for reflecting the signal from the optical emitter thus providing a reflected signal, and the optical sensor detecting the reflected signal;

(d) a means for determining whether the head turn time occurs before or after the ball strike time, whereby the determining means is performed by the microprocessor which receives input of the ball strike time and the head turn time; and (e)

(e) a means for providing/feedback from the microprocessor of whether the head turn time occurred before or after the ball strike time.

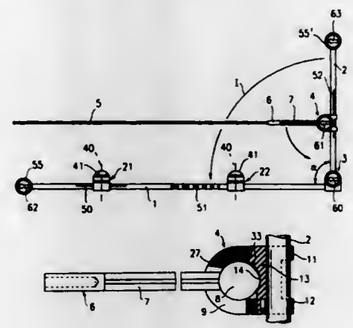


5,599,240

GOLF TRAINING DEVICE

Toni Feldmeier, Frauenried 3, D-83737 Irschenberg, Germany

Filed Nov. 17, 1995, Ser. No. 544,437
Claims priority, application Germany, Nov. 9, 1995, 195 41 842.5
Int. Cl.[6] A63B 69/36
U.S. Cl. 473—218 20 Claims



1. A golf training device including:

a base element (1) resting on the ground, which is directed toward the target hole, a guide rod (2) fastened thereon at an angle by means of an intermediate element (3) also resting on the ground, a barrier in the form of a resilient rod (5) attached by a tensible bearing element (4) wherein,

the guide rod (2), which is a straight rod, can be positioned at a right angle (α) with respect to the base element (1) by said intermediate element (3), and

the tensible bearing element (4) includes a portion which can be connected with the rod (5), by means of which the bearing element (4) can be fixed in place on the guide rod (2) at various angular positions in respect to the base element (1).

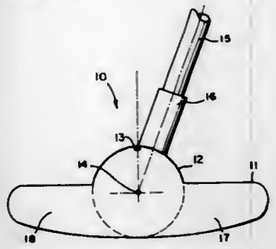
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5,599,241

GOLF CLUB

Ronnie Pritchett, Palm Desert, Calif., and Brenda Morgan, 41-795 Largo, Palm Desert, Calif. 92211, assignors to Brenda Morgan, Palm Desert, Calif.

Filed Nov. 18, 1994, Ser. No. 342,239
Int. Cl.[6] A63B 69/36
U.S. Cl. 473—238 9 Claims



1. In a golf club having a shaft and a flat clubface the improvement which comprises that the center of the shaft is in alignment with the center of the clubface and at an angle and passing through the shaft between 50° and 900° with respect to the vertical, the clubface having an integral middle portion with an arch of at least about 1.62 inches high said shaft being attached to said middle portion, and indicator means for aligning up the golf club with a golf ball.

5,599,242

GOLF CLUB SHAFT AND CLUB INCLUDING SUCH SHAFT

Serge Solviche, Annecy, France; Benoit Vincent, Leucadia, Calif., and Bénédicte Beau, Ceyzerieu, France, assignors to Taylor Made Golf Company, Inc., Carlsbad, Calif.

Filed Feb. 6, 1996, Ser. No. 596,044
Claims priority, application France, Feb. 13, 1995, 95 01809
Int. Cl.[6] A63B 53/10
U.S. Cl. 473—318 16 Claims



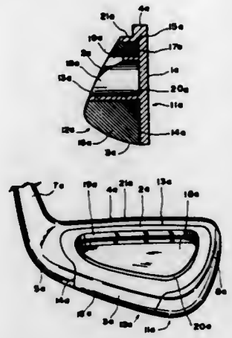
1. A golf club shaft comprising:
an elongated tube extending along an axis, the tube being demarcated by an exterior surface, an interior surface, a tip adapted to be affixed to a club head, and a butt adapted to be affixed to a grip, a predeterminate thickness separating the exterior surface from the interior surface to form a peripheral wall comprising several layers of materials,
wherein on at least 30% of the length of the tube, the peripheral wall comprises at least two layers, a first layer made of a material with a density (ρ1) and a longitudinal Young's modulus (E1) and a second layer made of a material with a density (ρ2) and a longitudinal Young's modulus (E2), the first and second layers being separated by a separation layer made of a substantially isotropic material having a density (ρ3) and a longitudinal Young's modulus (E3), the densities (ρ1, ρ2) of the materials of the first and second layers being greater than the density (ρ3) of the material of the separation layer, the longitudinal Young's moduli (E1, E2) of the materials of the first and second layers being respectively greater than 20 GPa, and the longitudinal Young's modulus (E3) of the material of the separation layer being lower than 20 GPa.

5,599,243

GOLF CLUB HEAD WITH PERIPHERAL WEIGHT

Kenji Kobayashi, Tsubame, Japan, assignor to K. K. Endo Seisakusho, Tsubame, Japan

Division of Ser. No. 250,431, May 27, 1994, Pat. No. 5,564,705. This application Jan. 16, 1996, Ser. No. 584,947
Claims priority, application Japan, May 31, 1993, 5-129627; Jul. 22, 1993, 5-181685; Oct. 4, 1993, 5-248195; Mar. 30, 1994, 6-61178
Int. Cl.[6] A63B 53/04
U.S. Cl. 473—335 6 Claims



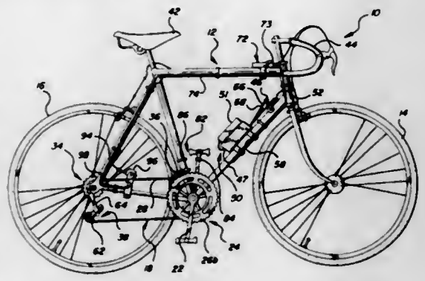
1. A golf club head comprising:
a head body having a face and a back;
an embedding groove formed in a peripheral portion of the back of said head body;
a balance weight formed of a material denser than that of said head body, which is press-fitted into said embedding groove along a peripheral portion of the back of said head body;
a cavity which is machined in an area on the back of said head body, said cavity being provided in the area surrounded by said balance weight.

5,599,244

AUTOMATIC TRANSMISSION SHIFTER FOR VELOCIPEDES

Russell A. Ethington, 190 Garfield Pl. - #5F, Brooklyn, N.Y. 11215

Filed Aug. 14, 1995, Ser. No. 514,657
Int. Cl.[6] F16H 9/06
U.S. Cl. 474—70 9 Claims



1. The method of operating a velocipede of the type comprising a traction wheel, a manually actuated pedal crank, a drive train between the traction wheel and the pedal crank, a speed range changing power transmission operatively connected in the drive

train and a control member for upshifting and downshifting the speed range of the transmission, said method comprising the steps of:
measuring the pedal crank speed and pedal crank force,
pedalling the velocipede in a selected speed range,
producing a first control signal when the time average value of rotational speed of the pedal crank increases to a predetermined value,
initiating actuation of the control member to upshift the transmission when the first control signal is produced,
producing a second control signal when the time average value of pedal crank force increases to a predetermined value,
and initiating actuation of the control member to downshift the transmission when the second control signal is produced.

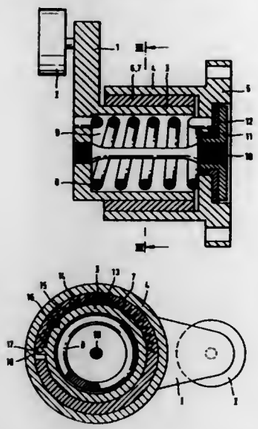
9. An automatic speed range shifter for a velocipede having a traction wheel, a manually actuated pedal crank, a drive train between the pedal crank and the traction wheel and a ratio-changing transmission operatively connected in said drive train and a control member for upshifting and downshifting the speed range of the transmission, said shifter comprising:
means for measuring the pedal crank speed and pedal crank force,
means for producing a first control signal when the time average value of rotational speed of the pedal crank increases to a predetermined value,
means for initiating actuation of the control member to upshift the transmission when the first control signal is produced,
means for producing a second control signal when the time average value of pedal force increases to a predetermined value,
and means for initiating actuation of the control member to downshift the transmission when the second control signal is produced.

5,599,245

BELT TENSIONER WITH LAMELLAR SLIDING BEARING RING

Peter Giese, Herzogenaurach, Germany, assignor to INA Wälzlager Schaeffler KG, Herzogenaurach, Germany

Filed Aug. 7, 1995, Ser. No. 511,946
Claims priority, application Germany, Aug. 12, 1994, 44 28 560.4
Int. Cl.[6] F16H 7/08;7/16
U.S. Cl. 474—135 5 Claims



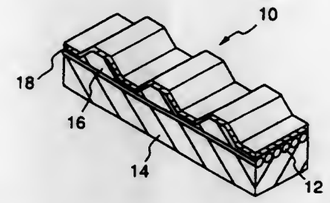
1. A tensioner for traction means such as belts and chains, comprising a tension arm (1) carrying a tension roller (2) for the traction means, said tension arm (1) being urged against the traction means by a spring (8) supported on a housing (5), the tensioner further comprising a pivoting axle (4) rigidly connected to the housing (5), while the tension arm (1) is pivotally mounted on the pivoting axle using a sliding bearing ring (7) arranged in an annular space (6) which is defined radially between a first element rigidly connected to the housing (5) and a second element rigidly connected to the tension arm (1), wherein the sliding bearing ring (7) has a through-slot (17) into which a projection (18) on one of the first element and the second element engages.

5,599,246

TOOTHED BELT

Toru Fujiwara, Tokorozawa; Yoshinori Itoh, Hanno, and Masato Tomobuchi, Sakado, all of Japan, assignors to Tsubakimoto Chain Co., Osaka-fu, Japan

Filed Mar. 15, 1995, Ser. No. 404,829
Claims priority, application Japan, Mar. 16, 1994, 6-070185
Int. Cl.[6] F16G 1/28
U.S. Cl. 474—205 2 Claims



1. A toothed belt including a rubber composition-molded cured material, a tensile body embedded therewithin, and a tooth sheet, wherein said rubber composition-molded cured material comprises:
0.38 to 0.91 g of organic peroxide, based on —O—O-linkage amount, to 100 g of a polymer composition in which zinc polymethacrylate and hydrogenated nitrile rubber with hydrogenation rate of 90 to 95% are compounded in a weight ratio of from 4:96 to 20:80;
0.5 to 2.0 g to 100 g of polymer composition of more than one higher organic acid ester;
0.5 to 2.0 g to 100 g of polymer composition of maleimide compound; and
20 to 40 g to 100 g of polymer composition of calcium carbonate, wherein said polymer composition includes;
(i) polymer complex wherein zinc polymethacrylate and hydrogenated nitrile rubber with hydrogenation rate of 90–95% are polymerized in a compounding weight ratio of from 40:60 to 50:50; and
(ii) hydrogenated nitrile rubber with hydrogenation rate of 90–95%, wherein said polymer complex and said hydrogenated nitrile rubber are compounded in a weight ratio of from 10:90 to 40:60.

5,599,247

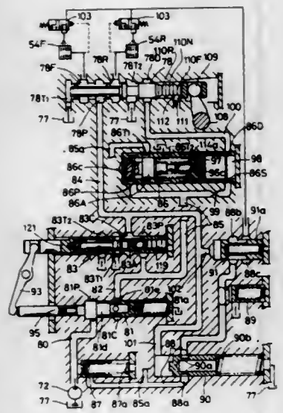
TRANSMISSION ASSEMBLY FOR TRACTORS

Mizuya Matsufuji, Sanda, Japan, assignor to Kanzaki Kokyukoki Mfg. Co., Ltd., Japan

Filed May 15, 1995, Ser. No. 441,438
Claims priority, application Japan, Jun. 15, 1994, 6-158090; Dec. 6, 1994, 6-330106
Int. Cl.[6] F16H 61/26
U.S. Cl. 475—128 25 Claims

23. In a tractor comprising a fluid-operated speed change mechanism (12) which is disposed within a vehicle body housing (1) having an internal partition wall (1a), a fluid supply system characterized in:

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that a fluid pump (**72**) for supplying fluid to said speed change mechanism (**12**) is mounted on said partition wall (*1a*), while a control valve assembly (**63**) which includes a directional control valve (**78**) and is operable to control the operation of said speed change mechanism (**12**) is fixedly supported by said vehicle body housing (**1**) such that a valve housing (**64, 66, 67**) of said control valve assembly is in a close contact at a part thereof with an outer surface (**1c**) of said vehicle body housing, said valve housing (**64, 66, 67**) including in it a fluid inlet port (**71P**) of said control valve assembly (**63**) which opens at said outer surface (**1c**) and is communicated to a fluid discharge port (**72b**) of said fluid pump (**72**) through a fluid passage (**75**) formed in said partition wall (*1a*); and

that a hollow cylindrical filter (**200**) is inserted in said fluid passage (**75**) from the side of said valve housing (**64, 66, 67**), said filter being supported by said valve housing such that said filter is removable from said vehicle body housing (**1**) independently of said valve housing.

5,599,248

Patent Not Issued For This Number

5,599,249

PART-TIME DOUBLE OFFSET TRANSFER CASE

John D. Zalewski, Liverpool, and James S. Brissenden, Baldwinsville, both of N.Y., assignors to New Venture Gear, Inc., Troy, Mich.

Filed Aug. 17, 1995, Ser. No. 516,439
Int. Cl.[6] B60K *17/344;23/08;* **F16H** *37/06*
U.S. Cl. 475—202 **15 Claims**

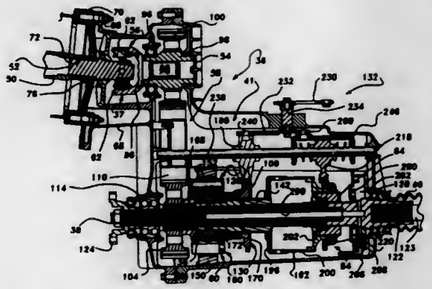
1. A power transfer apparatus for transferring drive torque from a vehicular drivetrain to first and second drivelines, comprising:

an input including a first input member adapted to be rotatably driven by the drivetrain about a first rotary axis, a second input member supported for rotation about a second rotary axis that is angled relative to said first rotary axis, and a constant velocity universal joint interconnecting said second rotary member for rotation with said first input member;

an output including first and second output members adapted to be respectively interconnected to the first and second drivelines, at least one of said output members being supported for rotation about a third rotary axis that is offset from said second rotary axis;

a drive member;

a drive connection interconnecting said drive member for driven rotation with said second input member;



first clutch means operable in a first position for interconnecting said drive member to said first output member for transferring drive torque to the first driveline so as to establish a two-wheel drive mode, and said first clutch means is operable in a second position for interconnecting said drive member to both of said first and second output members for transferring drive torque to both of the first and second drivelines so as to establish a part-time four-wheel drive mode; and

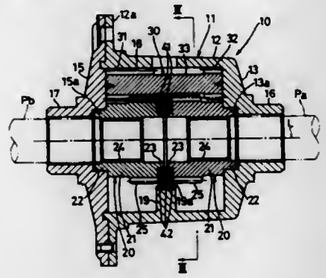
a shift mechanism for moving said first clutch means between said first and second positions.

5,599,250

TORQUE DISTRIBUTION TYPE DIFFERENTIAL GEAR SYSTEM

Shinichiro Nakajima; Hideyuki Sato, both of Saitama, Japan; Makoto Nishiji, and Paolo Sachettini, both of La Louviere, Belgium, assignors to Zexel Corporation, Tokyo, Japan

Filed Mar. 15, 1995, Ser. No. 404,633
Claims priority, application Japan, Apr. 6, 1994, 6-90698; Jan. 23, 1995, 7-27401
Int. Cl.[6] F16H *48/06*
U.S. Cl. 475—249 **7 Claims**



1. A distribution type differential gear system, comprising:

(a) a housing rotated about a rotational axis upon receipt of torque, said housing includes a sleeve portion coaxial with said rotational axis, and a pair of end walls formed on opposite ends of said sleeve portion and mutually spaced away in a direction of said rotational axis;

(b) a pair of generally sleeve-like sun gears received in said housing, wherein the pair of sun gears is coaxial with said rotational axis, one end portion of a pair of drive shafts extends through said pair of end walls of said housing and is inserted in and spline-connected to said pair of sun gears, respectively, each of said pair of sun gears contains helical teeth, at least one of said pair of sun gears further contains a support portion of a reduced diameter formed on one end portion thereof opposing the other sun gear, and projecting in a direction of said rotational axis, said at least one sun gear further contains an annular step formed between said support portion and a remaining portion of said at least one sun gear;

(c) a pair of intermeshing planetary gears received within said housing, wherein the pair of planetary gears are meshed with said pair of sun gears, respectively; and

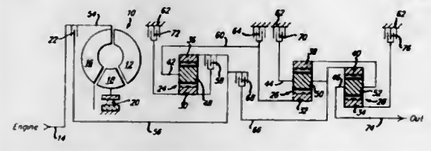
(d) a plurality of washers arranged between said pair of sun gears, wherein said plurality of washers include at least one first washer and at least one second washer, said first washer being engaged with an outer periphery of said support portion of said at least one sun gear, whereby said first washer is capable of moving axially but incapable of rotation relative to said at least one sun gear, said second washer being engaged with said housing, whereby said second washer is capable of moving axially but incapable of rotation relative to said housing, the second washer is further disposed between the first washer and the step of said sun gear.

5,599,251

SIX SPEED AUTOMATIC TRANSMISSION FOR AUTOMOTIVE VEHICLES

Rudolf Beim, Bloomfield Hills, and Daniel W. McCarrick, Canton, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sep. 27, 1995, Ser. No. 535,305
Int. Cl.[6] F16H *3/66;47/08*
U.S. Cl. 475—275 **4 Claims**



1. A multiple speed transmission for an automotive vehicle, comprising:

an input shaft;

an output shaft;

first, second and third gear units, each having a sun gear, ring gear, planet pinions meshing with the sun gear and ring gear, and carrier rotatably supporting the planet pinions;

the ring gear of the first gear unit driveably connected to the input shaft; the carrier of the first gear unit and sun gear of the second gear unit mutually driveably connected; the ring gear of the second gear unit, carrier of the third gear unit, and output shaft mutually driveably connected; the carrier of the second gear unit and ring gear of the third gear unit mutually driveably connected;

a first brake for releasably holding the sun gear of the third gear unit against rotation;

a second brake for releasably holding the sun gear of the first gear unit against rotation;

a first clutch for releasably driveably connecting the input shaft and sun gear of the first gear unit;

a second clutch for releasably driveably connecting the input shaft and the carrier of the second gear unit and ring gear of the third gear unit.

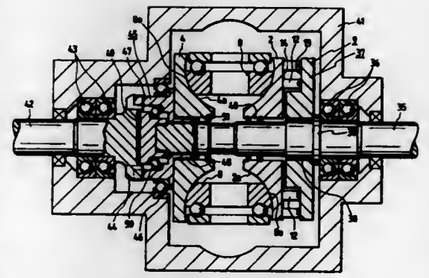
5,599,252

TOROIDAL TYPE CONTINUOUSLY VARIABLE TRANSMISSION

Hiroshi Fukushima, Ayase, Japan, assignor to NSK Ltd., Tokyo, Japan

Filed Oct. 4, 1994, Ser. No. 317,559
Claims priority, application Japan, Nov. 2, 1993, 5-274350
Int. Cl.[6] F16H *15/38*
U.S. Cl. 476—40 **9 Claims**

1. A toroidal type continuously variable transmission comprising:



a first rotation shaft;

a first disk having a toroidal surface and disposed coaxially with said first rotation shaft, said first disk being connected to said first rotation shaft to rotate integrally therewith;

a second rotation shaft disposed coaxially with said first rotation shaft;

a second disk having a toroidal surface facing said toroidal surface of said first disk, said second disk being disposed coaxially with both said first disk and said second rotation shaft and being connected to said second rotation shaft to rotate integrally therewith;

a trunnion rockable around a pivot axis transverse to the axis of said first and second disks;

a power roller rotatably supported by said trunnion and rotatably pressed against said toroidal surfaces of said first and second disks to transmit power between said first and second disks; and

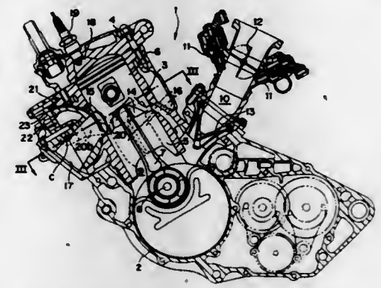
means disposed between and cooperating with one of said first and second rotation shafts and the disk that rotates integrally with the other of said first and second rotation shafts for supporting thrust and radial loads on said first and second rotation shafts.

5,599,253

DECELERATION CONTROL APPARATUS FOR TWO-CYCLE ENGINE OF THE SPARK IGNITION TYPE FOR A VEHICLE

Yoichi Ishibashi; Masahiro Asai; Shinichi Isomura, and Takeshi Koyabu, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 25, 1994, Ser. No. 348,897
Claims priority, application Japan, Nov. 27, 1993, 5-321036
Int. Cl.[6] F02B *9/00;11/00;* **F02M** *17/38*
U.S. Cl. 477—111 **13 Claims**



1. A deceleration control apparatus for a spark ignition two-cycle engine for a vehicle wherein a fresh air/fuel mixture in a combustion chamber can be self-ignited at an ignition timing at least in a low load operation region, comprising:

compression starting in-cylinder pressure adjustment means for adjusting a compression starting in-cylinder pressure by varying an exhaust opening in communication with said combustion chamber;

sudden deceleration requirement discrimination means for discriminating sudden deceleration requirements during the operation of said engine; and

control means for causing, in response to an output signal from said sudden deceleration requirement discrimination means, said compression starting in-cylinder pressure adjustment means to increase said exhaust opening from an opening smaller than an exhaust opening for spark ignition combustion but where self-ignition may occur, to a larger opening to thereby cause said two-cycle engine to operate at an in-cylinder pressure at which self-ignition is prevented.

5,599,254

METHOD AND APPARATUS FOR DIAGNOSING A FAULT IN A LOCK-UP MECHANISM OF A TORQUE CONVERTER FITTED TO AN AUTOMATIC TRANSMISSION

Naoki Tomisawa, and Keita Yoshizawa, both of Atsugi, Japan, assignors to Unisia Jecs Corporation, Atsugi, Japan

Filed Feb. 8, 1995, Ser. No. 385,710

Claims priority, application Japan, Feb. 9, 1994, 6-015393

Int. Cl.[6] F16D *33/00*; **B60K** *41/02*; **F16H** *61/14*

U.S. Cl. 477—176 **24 Claims**

1. A method of diagnosing a fault in a lock-up mechanism of a torque converter in an automatic transmission, the torque converter being connected to an output shaft of a vehicle engine, wherein the lock-up mechanism is provided for mechanically coupling input and output shafts of the torque converter, the method comprising the steps of:

detecting a rotational speed of the input shaft of the torque converter;

detecting a rotational speed of the output shaft of the torque converter;

detecting a slip condition of the torque converter based on the detected input shaft rotational speed and the detected output shaft rotational speed;

diagnosing a fault in the lock-up mechanism by comparing a slip condition of the torque converter after lapse of a predetermined time from issuance of a disengage command to the lock-up mechanism with a previously determined judgment value;

learning a slip condition of the torque converter at a predetermined operating condition with the lock-up mechanism disengaged; and

correcting the predetermined time as a diagnosis condition of the fault diagnosis step in accordance with the learned result of the slip condition.

5,599,255

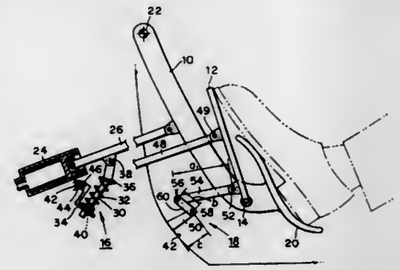
PEDAL ARRANGEMENT FOR AUTOMOBILE ACCELERATION AND BRAKING

Kim Ki-Dong, 355-184, Singil 3-Dong, Yongdungpo-Gu, Seoul 150-053, and Chae Soo-Chul, 13-18, Sinsa-Dong, Unpyong-Gu, Seoul 122-080, both of Rep. of Korea

Filed Dec. 21, 1994, Ser. No. 361,108

Int. Cl.[6] B60K *41/20*

U.S. Cl. 477—211 **2 Claims**



1. A pedal arrangement for accelerating the braking an automobile, comprising a brake pedal having a brake arm connected with a piston rod; an acceleration pedal having one end which is pivotally fixed to a lower end of said brake arm of said brake pedal and another end which extends upwardly beyond said brake pedal; error operation preventing and returning means provided for said brake pedal; and error operation preventing means provided for said acceleration pedal, said error operation preventing and returning means for said brake pedal being connected by a pin to a lower portion of said piston rod and having an L-shaped spring support, a bracket connected by a pin to said spring support, an additional rod having a flange and inserted in said bracket, and a coil spring associated with said rod and located between said support and said flange.

5,599,256

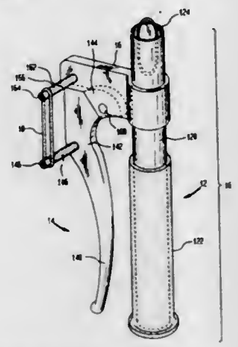
HAND EXERCISER

Brickey J. Hughes, Jr., 28 E. Southhampton Ave., Hampton, Va. 23669

Filed Oct. 24, 1995, Ser. No. 547,400

Int. Cl.[6] A63B *23/16*

U.S. Cl. 482—49 **17 Claims**



1. A hand exercise device, comprising:

a first handle;

a second handle pivotally connected to said first handle at a pivot point;

a first post mounted in fixed relation to said first handle;

a second post mounted in fixed relation to said second handle;

at least one elastic band wrapped in tension about said first post and said second post for biasing the position of said first handle relative to said second handle, wherein movement of said first handle relative to said second handle about said pivot point causes further tensioning of said at least one elastic band; and

a spring mounted at said pivot point and cooperating with said first handle and said second handle to further bias the position of said first handle relative to said second handle.

5,599,257

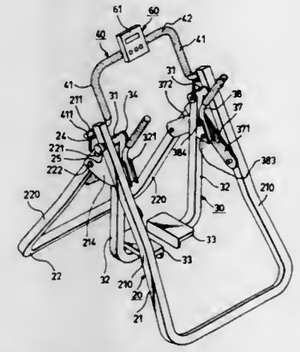
BODY EXERCISER

Sunny Lee, No. 48-26, Ching-Chai Lane, Tsao-Tun Chen, Nan-Tou Hsien, Taiwan

Filed Apr. 5, 1996, Ser. No. 628,888

Int. Cl.[6] A63B *22/00*

U.S. Cl. 482—51 **4 Claims**



1. A body exerciser, comprising:

a frame body having U-shaped first and second support frames, each of said first and second support frames having a spaced pair of upwardly extending branches, each of said branches of said first support frame having an upper section which is formed with a pair of spaced lugs, a hollow pivot tube which extends transversely through and is connected integrally to said upper section below said spaced lugs, and an engaging portion connected to said upper section below said pivot tube, each of said pivot tube having a first end and a second end which has two diametrically opposite notches formed thereon, said second ends of said pivot tubes being extended toward one another, said branches of said second support frame having two upper ends, each of said upper ends being connected pivotally to a respective one of said engaging portions of said first support frame;

means for selectively arresting pivoting movement of said second support frame relative to said first support frame;

a pair of walking units, each having an L-shaped member with upper and lower ends, a sleeve member connected transversely to said upper end of said L-shaped member, a handle connected pivotally adjacent to said upper end of said L-shaped member, means for arresting pivoting movement of said handle relative to said L-shaped member, and a foot-supporting plate connected to said lower end of said L-shaped member, each of said sleeve member being journalled on said pivot tube via a respective one of said second ends of said pivot tubes and having first and second ends, and a hollow cylindrical member with first and second ends, said first end of each of said cylindrical members having two axial projections which extend into a respective one of said second ends of said sleeve members so as to engage said notches of the respective one of said second ends of said pivot tubes, each of said cylindrical members has an annular flange which extends radially from an internal face thereof, thereby forming a counterbore adjacent to a corresponding one of said second ends of said cylindrical members;

two locking bolts, each having a head portion and a threaded shaft extending from said head portion, said head portion of each said locking bolts being received nonrotatably in a respective one of said counterbores of said cylindrical members, said threaded shaft of each of said locking bolts extending through a respective one of said cylindrical members and having a distal end which extends out of a respective one of said pivot tubes, said distal end of each of said threaded shafts of said locking bolts engaging a nut member in order to interconnect pivotally a corresponding one of said walking units and a corresponding one of said branches of said first support frame, thereby permitting a back and forth movement of said walking units relative to said first support frame, said first end of each of said sleeve members abutting against the corresponding one of said branches of said first support frame when a corresponding one of said nut members is tightened to abut against a respective one said first ends of said pivot tubes;

two pairs of elastic bands, each pair of said elastic bands having a first band which has a first end that is connected to a respective one of said L-shaped members and a second end that is connected to the corresponding one of said branches of said first support frame, and a second band which has a first end that is connected to the respective one of said L-shaped members and a second end that is connected to a corresponding one of said branches of said second support frame;

a U-shaped support member having a pair of arm portions, each of said arm portions having a bent distal end which is clamped rotatably between said pair of spaced lugs of a respective one of said branches of said first support frame;

means for selectively arresting pivoting movement of said U-shaped support member relative to said first support frame; and

means for counting the number of said back and forth pivoting movement of said walking units relative to said first support member.

5,599,258

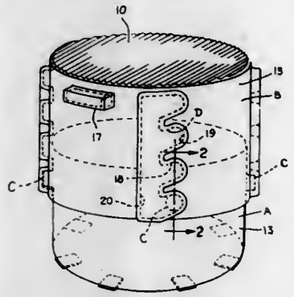
ADJUSTABLE EXERCISE STEP AND METHOD

Michael R. Stone, Elgin, and Mark S. Henriksen, Columbia, both of S.C., assignors to The Firm, Inc., Columbia, S.C.

Continuation-in-part of Ser. No. 58,467, May 6, 1993, abandoned. This application Sep. 23, 1994, Ser. No. 311,556

Int. Cl.[6] A63B *5/00*

U.S. Cl. 482—52 **12 Claims**



1. A height adjustable step for facilitating aerobic exercises thereon comprising:

a substantially cylindrical stationary support including a base and an upwardly extending frame having a single cylindrical wall defining a hollow interior space carried by said base;

a substantially cylindrical moveable upper member including a flat foot receiving upper step surface;

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a mounting member including a single cylindrical wall defining a hollow interior space depending from and extending adjacent an outer periphery of said flat foot receiving upper step surface and being substantially coextensive with the outer periphery, and further carrying said upper member in telescopic relation closely adjacent to said upwardly extending frame carried by said base to be supported thereby at adjusted vertical positions thereon;

interlocking members spaced circumferentially about and being carried by opposed cylindrical wall surfaces of said upwardly extending frame and said depending mounting member respectively, at least one of said wall surfaces including circumferentially spaced groups of successively ascending interlocking members projecting outwardly from a substantially cylindrical opposed wall surface to permit relative rotation between said opposed surfaces; and

said interlocking members being engageable and disengageable responsive to movement of said upper member by the user of said stationary support at multiple vertical positions about said step for varying the height of said depending mounting member upon said upwardly extending frame;

whereby substantially unobstructed access may be had by the user to an upper step surface which is adjustable in height for varying the exertion expended by the user in exercising, and providing a stable step surface which is readily adjustable in height.

5,599,259

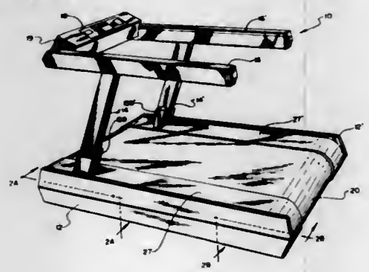
EXERCISE TREADMILL

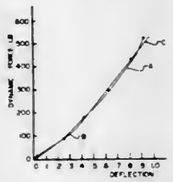
Richard E. Skowronski, Elk Grove Village; Kenneth F. Lantz, Oak Park; Tomas F. Leon, deceased, late of Chicago, all of Ill.; Donald J. Alexander, Milwaukee, Wis.; George Kolomayets, Chicago, Ill.; Vincent C. Adams, Buffalo Grove, Ill.; Eugene B. Szymaczak, Glen Ellyn, Ill.; Edward V. Minnich, Palatine, Ill., and Wade K. Totzke, Algonquin, Ill., assignors to Life Fitness, Franklin Park, Ill.

Division of Ser. No. 254,030, Jun. 3, 1994, Pat. No. 5,484,362, which is a continuation-in-part of Ser. No. 686,906, Apr. 17, 1991, Pat. No. 5,382,207, which is a continuation-in-part of Ser. No. 452,885, Dec. 19, 1989, abandoned, which is a continuation-in-part of Ser. No. 368,450, Jun. 19, 1989, abandoned. This application Nov. 13, 1995, Ser. No. 556,629

Int. Cl.[6] A63B *22/02*

U.S. Cl. 482—54 **17 Claims**





1. An exercise treadmill, comprising:

a frame structure including two rotatable pulleys, said pulleys being positioned substantially parallel to each other, and a pair of spaced apart longitudinal frame members for providing longitudinal structural support for said frame structure;

means for rotating one of said pulleys;

an endless, moveable surface looped around said pulleys to form an upper an and a lower run, said movable surface being rotated when one of said pulleys is rotated, and providing an exercise surface on which a user can walk or run while exercising;

a deck member secured beneath at least a portion of said upper run; and

support means including a plurality of resilient support members for supporting said deck member on said frame structure effective to permit said deck member to deflect downwardly with a variable rate of deflection in response to the impact force of the user's feet on said exercise surface and to permit at least limited longitudinal movement of said deck member with respect to said frame structure when said deck member is deflected downwardly.

5,599,260

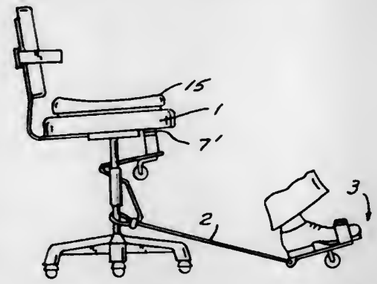
DEVICE FOR EXERCISING DURING OFFICE WORK

William Rovinsky, 212 Heypath Rd., Bethpage, N.Y. 11804, and Ilya Zborovsky, 6 Schoolhouse Way, Dix Hills, N.Y. 11746

Filed Jul. 11, 1994, Ser. No. 273,203

Int. Cl.[6] A63B *21/02*

U.S. Cl. 482—121 **1 Claim**



1. An exercising machine for exercising while doing office work, comprising an exercising element for exercising a part of a user's body while the user works at an article of office furniture; and means for connecting said exercising element with the article of furniture thereby allowing the user to do office work at the article of furniture and simultaneously exercise the part of his or her body with said exercising element, said connecting means including an elastic element having one end connectable with the article of furniture and another end connected with said exercising element, said exercising element including an elongated roller means connected with said elastic element, said elongated roller means being rollable with a user's foot along a ground surface and also being moveable with a user's hand to pull said elastic element and to thereby stretch said elastic element, said exercising element having a support for supporting a user's foot and connected with said elongated roller means, said support has a working position extending horizontally rearwardly beyond a central axis of rotation of said elongated roller means and has a rearward point which it is connected with said elastic element, said exercising element also having means for fastening a user's foot on said support, said support being pivotal between a position in which it extends substantially vertically from said elongated roller means in a working position extending horizontally rearwardly beyond a central axis of rotation of said elongated roller means for placing a user's foot on said support, and another position in which it extends substantially horizontally relative to said elongated roller means when said elongated roller means is used for exercising a user's arms; and means for allowing pivoting of said support between said positons.

5,599,261

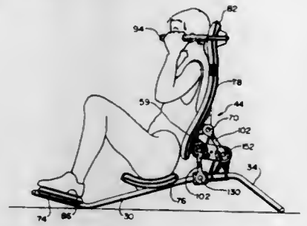
EXERCISE DEVICE WITH TWO-WAY ARTICULATION

James B. Easley, Minneapolis, and Thomas G. Tupper, Eden Prairie, both of Minn., assignors to Fitness Master, Inc., Waconia, Minn.

Filed Dec. 4, 1995, Ser. No. 566,937

Int. Cl.[6] A63B *21/04*

U.S. Cl. 482—130 **5 Claims**



1. An exercise device for exercising at least two groups of muscles, said device comprising:

a frame including a generally tubular support subframe having two ends, said support subframe contacting a support surface adjacent to one end and at the second end, said support subframe generally arcuate and including a location farthest from the support surface generally between the ends, and a movable subframe operably coupled to the support subframe adjacent to said location and movable with respect to the support subframe;

a first body support member carried by the support subframe adjacent to said one end, a second body support member carried by the support subframe generally between said location and the one end, and a third body support member carried by the movable subframe, said first, second and third body support members positionally related to accommodate an exerciser in a sitting position with the exerciser's feet contacting the first body support member, the exerciser's buttocks contacting the second body support member and the exerciser's back generally contacting and resting against at least a portion of the third body support member; and

a double joint coupling the support and movable subframes including a movable arm with two ends, one end coupled to the support subframe generally at said location, the other end coupled to the movable subframe.

5,599,262

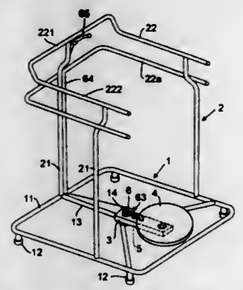
SHAKE AND TWIST EXERCISER

Ching-Fu Shih, 31-42, Nan Tun Road, Sec. 2, Taichung, Taiwan

Filed Dec. 21, 1995, Ser. No. 576,687

Int. Cl.[6] A63B *22/14*

U.S. Cl. 482—147 **5 Claims**



1. A body shake and twist exerciser, comprising:

a base,

a guardrail disposed on said base,

a rotatable, hollow box-type rotating arm having one end pivoted to a fixed shaft at the center of said base,

a rotary disc rotatably supported at a central portion of the rotary disc on a free end shaft of said rotating arm, and

a transmission mechanism comprising:

a drive sprocket fixed on the free end shaft of said rotating arm and located below said rotary disc,

a driven sprocket spaced-apart from and mounted side by side with said drive sprocket on a revolving shaft near a base end of said rotating arm,

a transmission member connecting said drive and driven sprockets,

a transmission gear mounted on said revolving shaft below said driven sprocket,

an intermediate gear rotatably mounted on a layshaft between said fixed shaft and revolving shaft to be engaged with said transmission gear, and

a fixed gear mounted on said fixed shaft said intermediate gear to work as a sun gear;

wherein when said rotary disc revolves, the drive sprocket and said transmission member move driving the driven sprocket and driving said transmission gear through the intermediate gear and further permitting the entire rotating arm to rotate in a corresponding direction to a direction of rotation of the rotary disc.

5,599,263

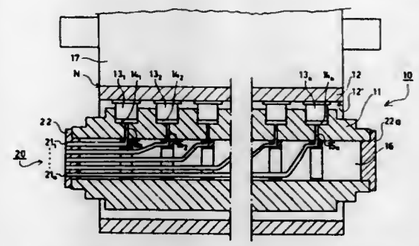
OIL FEED SYSTEM FOR A VARIABLE-CROWN ROLL

Risto Halko, Jyväskylä; Ari Lehto, Leppävesi, and Pekka Kivioja, Muurame, all of Finland, assignors to Valmet Corporation, Helsinki, Finland

Filed May 31, 1995, Ser. No. 456,088

Int. Cl.[6] B21B *13/02*

U.S. Cl. 492—7 **19 Claims**



1. An oil feed system for a variable-crown roll, said roll comprising a stationary roll axle having cylinder bores in an outer surface thereof, a roll mantle revolvingly mounted on said axle, hydraulic loading elements situated in said cylinder bores of said roll axle and acting upon an inner face of the roll mantle to support the roll mantle on the roll axle, said roll axle having an axial through hole communicating with said cylinder bores and a plurality of oil feed pipes extending through said axial through hole through at least one end of said roll, a pressure fluid being passed through said oil feed pipes to said hydraulic loading elements, said system comprising:

a plurality of intermediate flanges, each intermediate flange arranged in said axial through hole in said roll axle at a location of a respective one of said loading elements and having a fluid passage therein,

first means for connecting each of said oil feed pipes to the fluid passage in a respective one of said intermediate flanges, and

second means for connecting the fluid passage in each of said intermediate flanges to a respective one of said cylinder bores such that the pressure fluid is passed from said respective oil feed pipes through the fluid passage of said respective intermediate flanges to said respective cylinder bores.

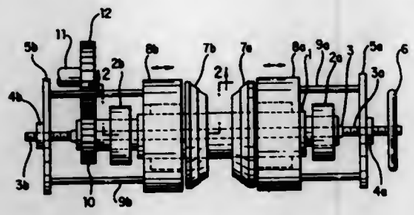
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5,599,264

ROLLER WIDTH ADJUSTING DEVICE FOR A DIVIDED TYPE MOLDING ROLLER

Yuji Hashimoto; Takaaki Toyooka; Susumu Itatani, and Tsutomu Ide, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Hyogo-ken, Japan

Continuation of Ser. No. 386,911, Feb. 8, 1995, abandoned. This application Apr. 3, 1995, Ser. No. 415,470
Int. Cl.[6] B21D *5/12*
U.S. Cl. 492—39 **5 Claims**



1. A roller width adjusting device for a divided type molding roller, comprising:

a hollow main shaft having a first end and a second end, an interior area, an outer periphery and a rotary axis;

a first side bearing journalled to said first end of said hollow main shaft;

a second side bearing journalled to said second end of said hollow shaft;

a gear disposed at said first end of said bollow main shaft for being connected to a drive source for driving said hollow main shaft;

a first hollow cylindrical roller holder axially slidably disposed on said outer periphery of said first end of said hollow main shaft;

a second hollow cylindrical roller holder axially slidably disposed on said outer periphery of said second end of said hollow main shaft;

a first divided type molding roller connected to said first roller holder;

a second divided type molding roller connected to said second roller holder, wherein said first and second divided type molding rollers are disposed with an interval therebetween;

holding means for fixing said first and second roller holders at a plurality of axial positions along said outer periphery of said main shaft;

an adjusting shaft rotatably disposed in said interior area of said main shaft and having a first adjusting shaft end and a second adjusting shaft end, wherein said first adjusting shaft end has a screw thread in a first direction and said second adjusting shaft end has a screw thread in a second direction different from said first direction and a rotatable handle disposed on one of said first and second adjusting shaft ends;

a first screw movable on said screw thread in said first direction in a first expanding direction of movement and a first contracting direction of movement, wherein said first screw transmits said first expanding direction of movement and said first contracting direction of movement to said first roller holder;

a second screw moveable on said screw thread in said second direction in a second expanding direction of movement opposite to said first expanding direction of movement and a second contracting direction of movement opposite to said first contracting direction of movement, wherein said second screw transmits said second expanding direction of movement and said second contracting direction of movement to said second roller holder,

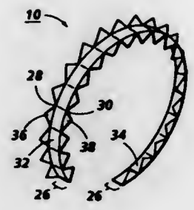
wherein said rotatable handle controls said movement of said first and second screws and thereby said first and second roller holders, wherein said rotatable handle is rotatable in one direction thereby causing said first and second screws to move in said first and second expanding directions of movement and in another direction thereby causing said first and second screw to move in said first and second contracting directions of movement.

5,599,265

BARBED RING FLANGE ASSEMBLY

Robert S. Foltz, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 19, 1994, Ser. No. 359,253
Int. Cl.[6] G03G *15/00*
U.S. Cl. 492—47 **21 Claims**



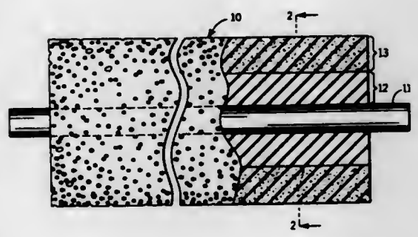
1. A hollow cylinder supporting end flange comprising a disk shaped member, a supporting hub extending axially from said disk shaped member and an annular ring supported on said hub, said ring having an imaginary axis, and a plurality of sharp protrusions extending from said ring in a direction away from said axis for engagement with said hollow cylindrical member upon insertion of said annular ring into said hollow cylindrical member.

5,599,266

FOAM RESERVOIR FLUID TRANSFER ROLLER

Gerald J. Landl, Antioch, Ill., and James R. Carlson, Franksville, Wis., assignors to American Roller Company, Union Grove, Wis.

Continuation-in-part of Ser. No. 263,223, Jun. 21, 1994, Pat. No. 5,415,612. This application Mar. 13, 1995, Ser. No. 402,574
Int. Cl.[6] B23P *15/00*
U.S. Cl. 492—56 **6 Claims**



1. A fluid transfer roller for use in an offset printing press; said improved dampening roller comprising:

(a) a rigid core; and,

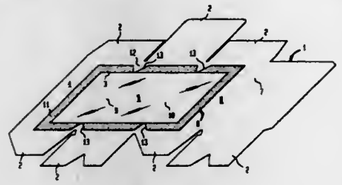
(b) an integral, foamed-in-place, cellular foam outer layer on said core, said foam having a compressibility of about 5 to about 100 psi as measured by ASTM D575-91 and containing about 10% to about 90% open cells at least some of which are interconnected.

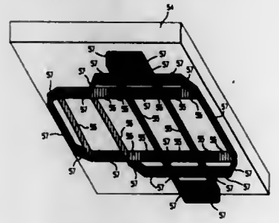
5,599,267

DISPLAY BOXES

Francois Dupuy, Les Grands Moulins-Dignac, France, assignor to Klearfold, Inc., Warrington, Pa.

Division of Ser. No. 305,801, Sep. 13, 1994, Pat. No. 5,540,645, which is a continuation of Ser. No. 993,906, Dec. 18, 1992, abandoned, which is a continuation of Ser. No. 735,299, Jul. 24, 1991, abandoned, which is a continuation of Ser. No. 346,448, May 1, 1989, Pat. No. 5,069,658, which is a continuation of Ser. No. 158,031, Feb. 12, 1988, Pat. No. 4,826,004, which is a continuation of Ser. No. 329,335, Dec. 10, 1981, abandoned. This application Jun. 7, 1995, Ser. No. 472,396
Int. Cl.[6] B31B *1/82*
U.S. Cl. 493—84 **7 Claims**





6. A method of making erectable window cartons from a supply of sheets of substantially rigid plastic material and a supply of sheets of opaque material, said method comprising the steps of supplying a sheet of opaque material having an opening therein, feeding a sheet of substantially rigid transparent plastic material, positioning the sheet of plastic material into juxtaposition with the sheet of opaque material so that the plastic material substantially covers the opening in the opaque material, adhering the plastic material to the opaque material as positioned thereon, and forming at least one co-linear groove line in the adhered sheets extending across said plastic sheet and said opaque material sheet.

5,599,268

BELT DRIVEN LINEAR TRANSPORT APPARATUS FOR PACKAGING MACHINE

Roland J. E. Andersson, Arlington Heights; Shigehiro Kinoshita, Buffalo Grove, both of Ill.; David L. Persells, Twin Lakes, Wis., and Arde Kirka, Algonquin, Ill., assignors to Tetra Laval Holdings & Finance S.A., Pully, Switzerland

Continuation-in-part of Ser. No. 277,614, Jul. 20, 1994, Pat. No. 5,488,308. This application Sep. 28, 1994, Ser. No. 315,410
Int. Cl.[6] B31B *1/52*; B65B *43/28*; B66B *11/06*
U.S. Cl. 493—184 **55 Claims**

1. A linear driven pre-folder apparatus for a packaging machine, the apparatus comprising:

first and second spaced apart guide rods;

an engagement assembly disposed between the first and second spaced apart guide rods for sliding movement along the first and second guide rods between first and second positions, the engagement assembly comprising

a first leg slidably engaging the first guide rod,

a second leg slidably engaging the second guide rod,

a bar extending between the first and second legs,

a folder arm extending from the bar and having a generally V-shape recess shaped to engage and pre-fold a carton as the engagement assembly is moved from the first position to the second position;

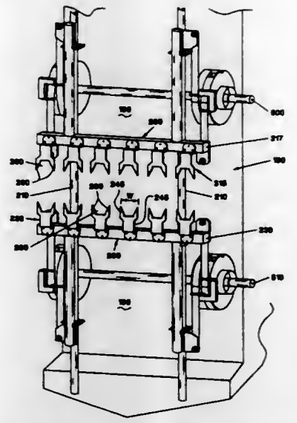
a drive shaft;

a drive roller disposed for co-rotation with the drive shaft;

a first drive belt connected to the drive roller and disposed about the drive roller in a clockwise direction, the first drive belt extending from the drive roller and being connected to a first portion of the engagement assembly;

a second drive belt connected to the drive roller and disposed about the drive roller in a counter-clockwise direction, the second drive belt extending from the drive roller and being connected to a second portion of the engagement assembly opposite the first portion of the engagement assembly; and

rotation of the drive shaft in a clockwise direction causing linear movement of the engagement assembly in a first direction along the guide rods, rotation of the drive shaft in a counter-clockwise direction causing linear movement of the engagement assembly in a second direction opposite the first direction; a further drive roller disposed for co-rotation with the drive shaft.



5,599,269

PRESSER ASSEMBLY

Frank E. Oetlinger, 1433 Fox La., Grafton, Wis. 53024

Continuation-in-part of Ser. No. 183,991, Jan. 18, 1994, Pat. No. 5,529,565. This application Sep. 8, 1994, Ser. No. 303,010
Int. Cl.[6] B65H *35/10*
U.S. Cl. 493—468 **9 Claims**

1. A presser assembly for supporting carton blanking scrap, comprising:

a hollow housing defining an open top and an open bottom;

a longitudinally extending stem slidably received within said housing for reciprocal movement therein and having an upper end projecting from said open top and a lower end projecting from said open bottom;

a presser rail;

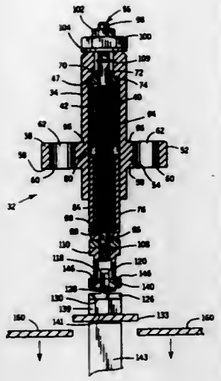
connector means for connecting the lower end of said stem to said presser rail;

bias means for biasing said presser rail away from said housing;

stop means at the upper end of said stem engagable with said housing for limiting the movement of said rail away from said housing;

a guide member surrounding said stem and received within the open bottom of said housing in telescoping relation with said housing for guiding said presser rail during its vertical reciprocating movement and

an anti-rotation mechanism for preventing the relative rotation between said presser rail and said housing.



5,599,270

CENTRIFUGAL SEPARATOR WITH FLOW REGULATOR

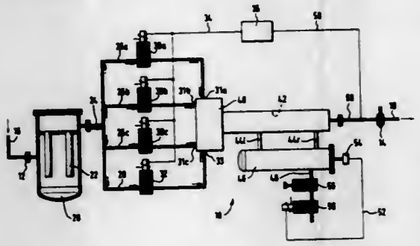
Manfred Lorey, Langenselbold, Germany, assignor to Filtan Filter-Anlagenbau GmbH, Langenselbold, Germany

Filed Jan. 9, 1995, Ser. No. 371,081

Claims priority, application Germany, Jan. 11, 1994, 44 00 489.3

Int. Cl.[6] B04B *11/00*

U.S. Cl. 494—5 **10 Claims**



1. Means for cleansing a fluid of contaminants, comprising in combination:

a) a centrifugal separator for said fluid, said separator having a plurality of inlets for the admission of said fluid, and having an outlet for the discharge of said fluid,

b) a plurality of independently operable fluid valves connected respectively to the said inlets to control fluid flow therethrough,

c) one of said valves being continuously variable and being adapted to vary the rate of flow of fluid therethrough between a given set of parameters, and

d) another valve of said plurality of valves having solely a fully open or else a fully closed position, so as to either block the flow of the fluid to be cleansed, or else pass the fluid to be cleansed therethrough and into the separator,

e) said separator having a surface, and the inlets to the separator being disposed tangentially about the separator's surface and being spaced apart from one another.

5,599,271

METHOD OF REGULATING THE OUTLET FLOW OF A LIQUID SEPARATED IN A CENTRIFUGAL SEPARATOR AND A CENTRIFUGAL SEPARATOR TO CARRY OUT THE METHOD

Jon Elken, Stockholm, Sweden, assignor to Alfa Laval Separation AB, Tumba, Sweden

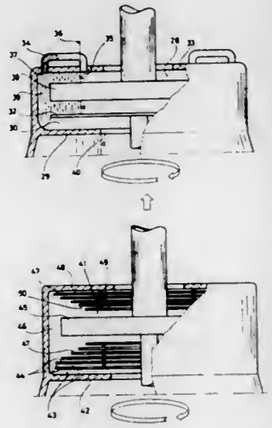
PCT No. PCT/SE94/00466, § 371 Date Feb. 20, 1995, § 102(e) Date Feb. 20, 1995, PCT Pub. No. WO94/27726, PCT Pub. Date Dec. 8, 1994

PCT Filed May 19, 1994, Ser. No. 553,402

Claims priority, application Sweden, May 21, 1993, 9301743

Int. Cl.[6] B04B *11/02*

U.S. Cl. 494—37 **9 Claims**



1. A method of regulating during operation the outlet flow of a liquid separated in a separation chamber in a rotor of a centrifugal separator, the rotor being rotatable around a rotational axis in a predetermined rotational direction, in which method the separated liquid is conducted into an outlet chamber and is brought to form a rotating liquid body in the outlet chamber with a radially inwardly directed free liquid surface and is discharged out of the outlet chamber through a stationary discharge device, which has at least one internal outlet channel with an inlet opening in a radial outer part of the discharge device, said radial outer part during operation is located radially outside the free liquid surface, wherein the separated liquid is charged through the outlet channel with an outlet flow, which is regulated

by bringing at least a portion of the separated liquid present in the outlet chamber to rotate at a lower angular speed than the rotor in an annular zone of the outlet chamber, which coaxially surrounds the rotational axis and is free from elements rotating with the rotor, and in which the inlet opening is located, and

by bringing liquid present in this zone to flow through at least one passage, which is delimited by elements rotating with the rotor, said at least one passage having an inlet and having an outlet located radially outside this inlet in the outlet chamber, when the free liquid surface is located radially inside a predetermined radial level, at which the inlet of the at least one passage is located.

5,599,272

METHOD FOR THE MANUFACTURE OF A SOLID BY THE MIXING OF HYDRATES OF ALKALINE EARTH OXIDES AND HYDRATES OF HEAVY METAL OXIDES

Philippe Pichat, 18, rue des Tournelles, 75004 Paris, France

Filed Nov. 22, 1994, Ser. No. 346,182

Claims priority, application France, Nov. 26, 1993, 93 14192

Int. Cl.[6] A62D *3/00*

U.S. Cl. 588—256 **13 Claims**

1. A method for the manufacture of a solid that is practically insoluble in water and non-pollutant, comprising the steps of:

providing an aqueous medium; and

mixing the aqueous medium with at least first and second compounds in order to obtain a paste, wherein the first compound comprises hydrates of alkaline earth oxides and the second compound comprises hydrates of heavy metal oxides; wherein the mixing is performed so that free water contained in the paste or liquid is present in the liquid in a proportion, in terms of quantities, of 20% to 60% by weight of the total mixture; and wherein the solid obtained is substantially without silicates and aluminates.

5,599,273

Patent Not Issued For This Number

5,599,274

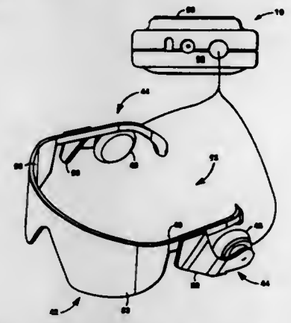
TROPHOTROPIC RESPONSE SYSTEM

Nusa Widjaja, 77 Pond Ave. #401, Brookline, Mass. 02156, and Robert W. Fish, Lowell, Mass., assignors to Nusa Widjaja, Brookline, Mass.

Continuation-in-part of Ser. No. 174,274, Dec. 28, 1993, Pat. No. 5,518,497. This application Feb. 6, 1995, Ser. No. 384,987

Int. Cl.[6] A61M *21/00*

U.S. Cl. 600—27 **16 Claims**



1. A trophotropic response system comprising:

a control module for providing a visual signal and an aural signal, wherein the aural signal includes a left beat signal component and a right beat signal component;

an audio unit for receiving the aural signal from the control module and wherein said left and right beat signal components are selected having frequencies to provide a binaural beat signal to a user; and

a visual unit for receiving the visual signal from said control module and wherein said visual signal is provided from a sinusoidal signal having a first predetermined frequency and a rectangular wave signal having a predetermined duty cycle wherein the duty cycle of said rectangular wave signal increases monotonically from a first duty cycle at a first predetermined frequency to a second different duty cycle corresponding to a predetermined duty cycle at a second predetermined frequency, wherein said rectangular wave signal frequency corresponds to the frequency of the binaural beat signal component of the aural signal and said sinusoidal signal has a random frequency within a predetermined range of frequencies.

5,599,275

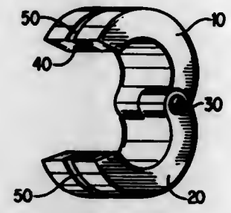
APPARATUS FOR STRETCHING A PENIS

Daniel R. France, Road 2, Box 8061 D, Milford, Pa. 18337

Filed Nov. 7, 1994, Ser. No. 336,670

Int. Cl.[6] A61F *5/00*

U.S. Cl. 600—38 **10 Claims**



1. A device for lengthening the penis comprising:

two semicircular parts connected by a hinge so that said semicircular parts are opened and closed, so that the device is adjustable to a variety of widths; and

means for retaining said semicircular parts in a closed position, wherein said semicircular parts fit around said penis and are weighted to lengthen said penis over time, further comprising a groove formed in the outer circumference of said semicircular parts, for accommodating said retaining means.

5,599,276

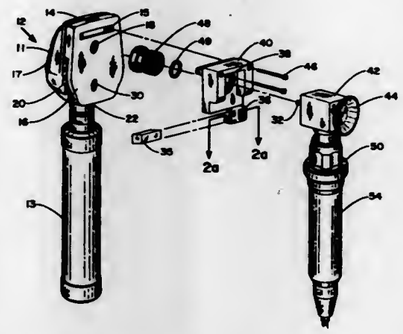
DIOPTER VALUE VIEWING MEANS FOR A VIDEO OPHTHALMOSCOPE

Ronald Hauptli, Warners, and Andrew J. Kugler, Jamesville, both of N.Y., assignors to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Filed Feb. 13, 1996, Ser. No. 600,504

Int. Cl.[6] A61B *3/13*

U.S. Cl. 600—112 **5 Claims**



1. A hand-held opto-diagnostic medical system for viewing a target area, said system comprising:

a medical instrument including a housing having an optical passage through said housing;

a light source for illuminating the target area;

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a plurality of optical lenses fixed to a rotatably mounted lens selection disc, said optical lenses having varying diopters, said disc mounted within said housing and positioned to lie in a plane perpendicular to said optical passage wherein rotation of said disc sequentially disposes one of said lenses into said optical passage;
means to indicate the diopter of one of said lenses selectively disposed in said optical passage, said indicating means located in a window in the front face of said housing;
an adapter coupled to said front face of said housing;
a beam splitter mechanically and optically coupled into said adapter, an optical input originating from said optical passage of said medical instrument and extending into said beam splitter, a first optical output of said beam splitter communicated to a system eyepiece positioned in the front face of said adapter, and a second optical output of said beam splitter communicated to a video camera head positioned within said adapter; and
means for reflecting an image from said window such that said image is visible from the front side of said adaptor, said means positioned on the front face of said housing of said medical instrument.

5,599,277

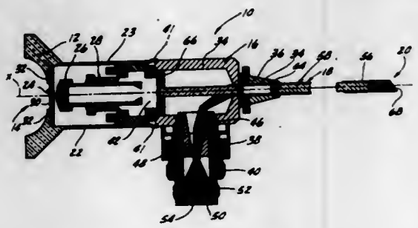
Patent Not Issued For This Number

5,599,278

AUTOCLAVABLE RIGID ENDOSCOPE

Erich M. N. Hibbard, 526 Moorings Cir., Arnold, Md. 21012, assignor to Erich M. N. Hibbard, Arnold, Md.

Continuation-in-part of Ser. No. 213,276, Mar. 15, 1994, abandoned. This application Mar. 15, 1995, Ser. No. 404,576
Int. Cl.[6] A61B *1/04*
U.S. Cl. 600—133 **21 Claims**



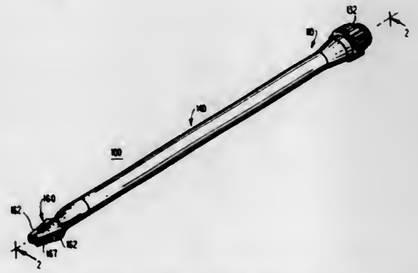
1. An autoclavable endoscope comprising:
a housing defining an optical pathway therein;
a view port in the housing in optical communication with the optical pathway;
an eyepiece operatively connected to the housing adjacent the view port, the eyepiece having an opening in optical communication with the optical pathway;
a transparent proximal window adjacent the opening;
a seal between the proximal window and one of the eyepiece and the housing, the seal being all around the proximal window;
a tube port in the housing;
an elongate insertion tube extending from the tube port outward of the housing, the insertion tube having a proximal end in the optical pathway and within the housing, and a distal end for insertion into a body cavity;
a light port in the housing for passage of light energy from an external source of light energy into the housing;
a light pipe for transmitting light energy passing through the light port out the distal end of the insertion tube to illuminate at least a part of the body cavity, the light pipe having a first end portion in optical communication with the light port, a second end portion adjacent the distal end of the insertion tube, and an intermediate portion extending from the first end portion to the second end portion via the insertion tube;
a distal window adjacent the distal end of the insertion tube;
a seal between the distal window and insertion tube;
a sealed chamber defined at least in part by the housing, proximal window, and distal window;
the arrangement being such that the housing, eyepiece, insertion tube, said windows, and said seals seal against the passage of contaminants into or out of the sealed chamber during autoclaving of the endoscope, and the housing, eyepiece, insertion tube, windows and light pipe are each comprised of a material which withstands a temperature of at least about 1200° F.

5,599,279

SURGICAL INSTRUMENTS AND METHOD USEFUL FOR ENDOSCOPIC SPINAL PROCEDURES

Gus J. Slotman, 705 Mill St., Moorestown, N.J. 08057; Sherman Stein, 310 Spruce St., Philadelphia, Pa. 19106; David T. Green, Westport, Conn.; Salvatore Castro, Seymour, Conn.; Carlo A. Mililli, Huntington, Conn., and Keith Ratcliff, Sandy Hook, Conn., assignors to Gus J. Slotman; Sherman Stein, and United States Surgical Corporation, all of Norwalk, Conn.

Continuation of Ser. No. 214,875, Mar. 16, 1994, abandoned. This application Jan. 29, 1996, Ser. No. 593,191
Int. Cl.[6] A61B *17/00*
U.S. Cl. 600—201 **12 Claims**



1. A method for accessing vertebral structures comprising:
forming an endoscopic channel on an anterior portion of a patient's body;
inserting an endoscopic vertebrae spreading instrument into said endoscopic channel; and
spreading adjacent vertebrae in the spinal column using said endoscopic vertebrae spreading instrument.

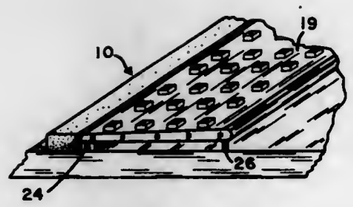
5,599,280

THERAPEUTIC WRIST DEVICE HAVING VIBRATION AND HEAT

Wallace W. Wolden, 50 Sunbeam La., Reno, Nev. 89511

Filed Mar. 20, 1995, Ser. No. 407,140
Int. Cl.[6] A61H *1/00*
U.S. Cl. 601—15 **1 Claim**

1. A therapeutic wrist device in combination with a computer keyboard, said wrist device of said combination comprising:
(a) a body for supporting a person's wrists during the operation of said computer keyboard, said body being formed of soft material and having a substantially rectangular shape, said body being positioned in close relative proximity to said computer keyboard whereby the person may operate said computer keyboard when the person's wrists are supported by said body,



(b) vibrating means located within a cavity within said body for providing physical stimulation to the person's wrists, and
(c) heating means located within said body for providing thermal stimulation to the person's wrists.

5,599,281

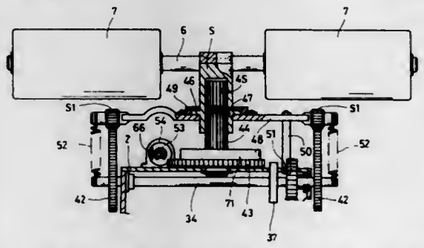
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5,599,282

MASSAGER OF ROLLER TYPE WITH SPLINED SHAFT

Takakazu Ito, 1-866, Kami Higashiozone-cho, Kita-ku, Nagoya (462), Japan

Filed Feb. 3, 1995, Ser. No. 383,194
Int. Cl.[6] A61H *7/00*
U.S. Cl. 601—94 **5 Claims**



1. A massager for incorporation into a seat or back of a chair including an inclinable chair and mat for massaging the back and/or hips of a user sitting upright on a chair or reclining comprising:
a massage unit having mounted thereon two pairs of gears on opposite sides of the unit driven rotationally selectively for reciprocably driving the massage unit along a rectilinear travel path in opposite directions;
a pair of laterally spaced, parallel racks defining said travel path and along which said gears travel for reciprocably driving the massage unit;
a pair of elongate massage rollers mounted rotationally on a common axis extending away from each other in a commmon plane above said massage unit extending in a direction tranversely of said travel path;
a splined shaft having a longitudinal spline and extending upwardly on said massage unit;
a support on said splined shaft for the axis of said massage rollers having a keyway into which said spline fits for rotating the support when the splined shaft is rotated and allowing relative axial movement between the splined shaft and said support;
drive means for selectively effecting massaging on body parts of a user comprising means for selectively rotationally driving said splined shaft for rotating said support for the axis of the massage rollers and rotating the massage rollers about an axis of the splined shaft in said common plane extending transversely of the travel path, and means for selectively reciprocating the support axially of the splined shaft upwardly and downwardly relative to the massage unit for moving the massage rollers upwardly and downwardly while the splined shaft is rotationally driven or alternatively while the splined shaft is stationary;
and said drive means comprising means for effecting said massaging while said massage unit is stationary or reciprocably driven on said travel path.

5,599,283

ORTHOPEDIC APPLIANCE RETAINER

Carl W. Lindenmeyer, 36 W. 270 Crane Rd., St. Charles, Ill. 60175, and Claire L. Watgen, 200 N. Island Ave. #217, Batavia, Ill. 60510

Filed Apr. 25, 1995, Ser. No. 428,347
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—5 **9 Claims**



1. Apparatus comprising:
an orthopedic, appliance attached to a person's limb or other body part;
an outer flexible, inelastic member of sufficient length to encircle the limb or other body part and including fastening means for securely attaching said outer member to the limb or other body part about the periphery thereof;
an inner flexible member disposed in a tight fitting manner about the person's limb or other body part and engaging the person's skin, said inner member including an inner surface material having a high coefficient of friction with human skin to prevent movement of the inner member on the limb or other body part; and
an intermediate flexible member disposed between and attached to said outer and inner members, wherein said intermediate flexible member is of sufficient thickness and width for engaging an end of and supporting the orthopedic appliance and preventing movement of the orthopedic appliance on the limb or body part.

5,599,284

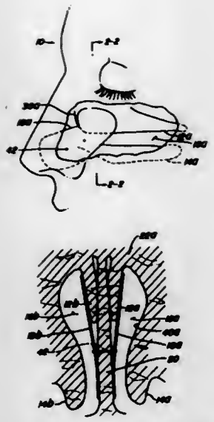
PRE-OPERATIVE NASAL SPLINT FOR ENDOSCOPIC SINUS SURGERY AND METHOD

John P. Shea, 232 SW. Brushy Mound, Burleson, Tex. 76028

Continuation of Ser. No. 385,567, Feb. 8, 1995, abandoned. This application Nov. 13, 1995, Ser. No. 557,680
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—17 **5 Claims**

1. An improved method of performing nasal surgery on a human nose having a nasal septum and a middle turbinate, the method comprising the steps of:
providing a substantially flat nasal splint;
placing the nasal splint inside the nose prior to performing surgery;

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retaining the middle turbinate against the nasal septum by securing the splint to the nasal septum; then

performing surgery while still retaining the middle turbinate against the nasal septum.

5,599,285

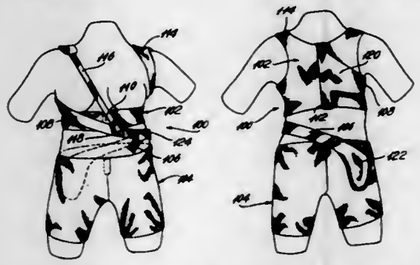
Patent Not Issued For This Number

5,599,286

DEROTATING ORTHOTIC DEVICES FOR THE CORRECTION OF SCOLIOTIC DEFORMITIES

Hubert Labelle, Montréal; Jean Dansereau, Ste-Thérèse; Jacques A. de Guise, Montréal; Charles-Hilaire Rivard, St-Lambert, and Martin LeBlanc, Montréal, all of Canada, assignors to Centre de Recherche de l'Hôpital Ste-Justine, Montréal, Canada

Filed Dec. 22, 1993, Ser. No. 171,169
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—19 **20 Claims**



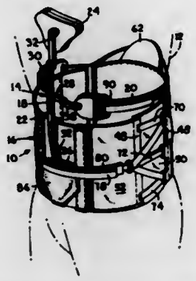
8. An orthotic device for the treatment of scoliotic deformities comprising an upper thoracic attachment means adapted to be removably installed on a user substantially at an upper thorax thereof, a lower pelvic attachment means adapted to be removably installed on the user substantially at the pelvic girdle thereof, and elastic means adapted to be anchored at upper and lower parts thereof respectively to said upper and lower attachment means and to extend substantially obliquely intermediate said upper and lower attachment means in such a manner as to encircle at least part of the trunk of the user, whereby said elastic means exert derotational forces on the thoracic and lumbar spines of the user in opposite directions as well as kyphosing and lordosing forces respectively on the upper thorax and on the lumbar spine of the user.

5,599,287

HYPEREXTENSION ORTHOTIC APPARATUS USEFUL FOR TREATING PAIN ASSOCIATED WITH SPINAL DISORDERS

Terry A. Beczak, Sr., Wichita, Kans., and Thomas E. Szymke, Savannah, Ga., assignors to Peach U.S., Inc., Wichita, Kans.

Filed Oct. 3, 1995, Ser. No. 539,018
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—19 **8 Claims**



1. An orthotic device for treatment of disorders of the spinal column, said device comprising:

a generally rigid brace adapted to overlie an anterior thoracic portion of the human body, said brace comprising a generally vertical arm having an upper pad and a lower pad positioned at opposite ends of the vertical arm, said upper pad being adapted to contact the sternum and the lower pad being adapted to contact the pubic area of the body, said brace further comprising a strap coupled with said vertical arm and being adjustable for placement about the body to cause the upper pad and lower pad to exert a compressive force respectively on the sternum and pubic area with a counterbalancing force being exerted on a back portion of the body to cause hyperextension of a portion of the spinal column; and

a corset coupled with the brace and adapted for wrapping around a torso of the body, said corset comprising a back panel formed to overlie a lumbar region of the spinal column, a front panel joined with the back panel to overlie an abdominal portion of the body, and means coupled with the front and back panels for allowing the front and back panels to be tightened about said the torso to cause an increase in intra-abdominal pressure.

5,599,288

EXTERNAL LIGAMENT SYSTEM

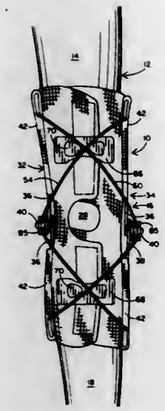
Terry L. Shirley, and Thomas R. Shirley, both of Laguna Hills, Calif., assignors to GSA, Inc., Laguna Hills, Calif.

Filed Nov. 30, 1994, Ser. No. 346,770
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—26 **8 Claims**

6. An external ligament system for bracing a leg having a femoral area, a patellar area and a tibial area, comprising

a) cables extending, respectively, from points on opposing sides of said femoral area, across each other at the front of said leg and around said patellar area via points on the respectively opposite side thereof, and continuing across each other at the front of said leg to points on opposing sides of said tibial area;

b) retaining means on each side of said patellar area for impeding lateral movement of said cables at the sides of said patellar area:



c) tensioning means for tensioning said cables; and

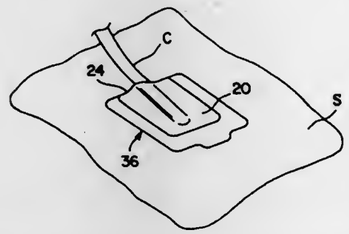
d) means for securing said tensioning means to said leg and for securing said cables to said leg at said points.

5,599,289

MEDICAL DRESSING WITH SEMI-PERIPHERAL DELIVERY SYSTEM

Frank S. Castellana, Princeton, N.J., assignor to Bristol-Myers Squibb Co., Skillman, N.J.

Continuation of Ser. No. 95,121, Jul. 20, 1993, abandoned. This application Jan. 4, 1995, Ser. No. 368,734
Int. Cl.[6] A61F *13/00;15/00*
U.S. Cl. 602—57 **18 Claims**



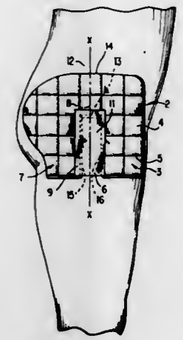
1. A medical dressing system comprising a backing layer, an adhesive layer overlying said backing layer and a release liner overlying a skin-contacting surface of said adhesive layer, said dressing system further comprising a final dressing portion with a selectively removable release liner portion, said final dressing portion being inward of, and partially defined by, a continuous semiperipheral support portion partially surrounding said final dressing portion, said semiperipheral support portion being separable from said final dressing portion and providing support of the edges of said final dressing portion, said edges of said final dressing portion being surrounded by said continuous semiperipheral support portion such that the final dressing portion is prevented from folding upon itself during application, said final dressing portion further defined by at least one unsupported edge extending from a first to a second end of said semiperipheral support portion, which unsupported edge is substantially more comformable than said supported edges during application.

5,599,290

BONE FRACTURE PREVENTION GARMENT AND METHOD

Wilson C. Hayes, Lincoln; Stephen N. Robinovitch, Belmont, and Thomas A. McMahon, Wellesley, all of Mass., assignors to Beth Israel Hospital, Boston, and President and Fellows of Harvard College, Cambridge, both of Mass.

Filed Nov. 20, 1992, Ser. No. 979,154
Int. Cl.[6] A61F *13/00;* A41D *13/00*
U.S. Cl. 602—61 **40 Claims**



1. A garment, for reducing the risk of bone fracture of a human or animal subject due to impact forces on a vulnerable region having a bone part near the skin surface, there being a soft tissue region proximate to the vulnerable region and lacking a bone part near the skin surface, the garment comprising:

shear thickening material disposed in at least one compliant enclosure shaped, in accordance with anatomical features of the vulnerable region and the soft tissue region, so as to shunt a substantial portion of the impact energy from the vulnerable region to the soft tissue region, where such energy may be safely dissipated; and

mounting means for removably mounting the at least one compliant enclosure on the subject in a manner permitting the shunting of impact energy from the vulnerable region to the soft tissue region.

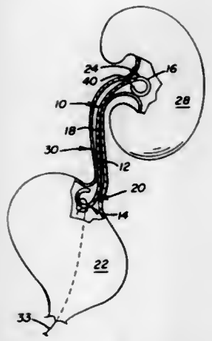
5,599,291

SOFTENING EXPANDING URETERAL STENT

Daniel J. Balbierz, San Carlos; Jack M. Walker, Portola Valley; Joseph R. Thomas, San Carlos, and Robert S. Bley, Menlo Park, all of Calif., assignors to Menlo Care, Inc., Menlo Park, Calif.

Filed Jan. 4, 1993, Ser. No. 274
Int. Cl.[6] A61M *37/00*
U.S. Cl. 604—8 **40 Claims**

1. A ureteral stent comprising an elongated member having a proximal end portion and a distal end portion joined by a body portion, the elongated member having an initial member outer diameter and including retention means for retaining the stent within a ureter, the member being formulated of a physiologically acceptable polymer capable of hydrating with concurrent softening and with concurrent expanding from the initial member outer diameter to form a final member outer diameter, the polymer being formulated such that upon hydration the member softens and expands to different degrees at different locations therealong, wherein the elongated member has an initial stiffness above about



100 Shore A and wherein upon hydration the initial stiffness of the distal end portion softens to a final softness which falls below 100 Shore A.

5,599,292

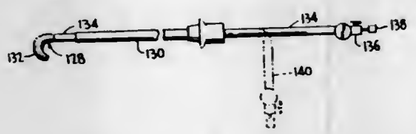
MULTIFUNCTIONAL DEVICES FOR USE IN ENDOSCOPIC SURGICAL PROCEDURES AND METHODS THEREFOR

InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131

Division of Ser. No. 130,484, Oct. 1, 1993, Pat. No. 5,484,426, which is a division of Ser. No. 600,775, Oct. 23, 1990, Pat. No. 5,374,261, which is a continuation-in-part of Ser. No. 556,081, Jul. 24, 1990, Pat. No. 5,074,840. This application Aug. 25, 1994, Ser. No. 295,032

Int. Cl.[6] A61M *35/00;31/00;* **A61F** *13/20*

U.S. Cl. 604—11 **6 Claims**



6. A multifunctional device for use in an endoscopically performed operative procedure in combination with portal sleeve means for establishing communication with an internal operative site from external of the body and said device is introduced to the operative site through said portal sleeve means, said portal sleeve means comprising a structural sleeve having a lumen extending longitudinally entirely through said sleeve, said device comprising sponge means having a first configuration in a dry state to pass entirely through said lumen and a second configuration, different from said first configuration, in a wet state for engaging tissue at the operative site, tubular manipulator means having a distal end attached to said sponge means and extending through said sleeve to a proximal end adapted to extend external of the body, tubular spine means disposed in said sponge means and a tubular connector communicating with said spine means and passing through said manipulator means, said manipulator means moving said sponge means in the body and being adapted to cooperate with equipment external of the body to fix the position of said sponge means in the body.

5,599,293

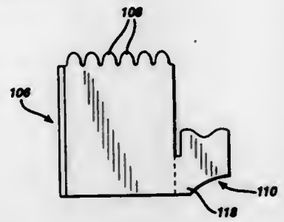
ENVIRONMENTALLY FRIENDLY CATAMENIAL TAMPON ASSEMBLY AND METHOD OF CONSTRUCTION

John Orenga, Channahon, Ill., and Edwin H. Sailer, Ringoes, N.J., assignors to McNeil-PPC, Inc., Skillman, N.J.

Continuation of Ser. No. 998,484, Dec. 31, 1992, abandoned. This application Apr. 27, 1995, Ser. No. 429,980

Int. Cl.[6] A61F *13/20*

U.S. Cl. 604—16 **9 Claims**



1. An environmentally friendly tampon assembly, comprising:

a pledget of absorbent material;

an inner sleeve for containing said pledget, said inner sleeve being fabricated from a biodegradable material and having pushing means at a forward end thereof for pushing said pledget; and

a substantially tubular outer sleeve for slidably containing said inner sleeve, said outer sleeve comprising biodegradable material, said outer sleeve having a longitudinal direction and a tang comprising an inwardly-projecting folded tang-forming portion of said outer sleeve, said tang-forming portion having first and second ends made substantially adjacent by collapsing a portion of the outer sleeve in a longitudinal direction to form a finger grip.

5,599,294

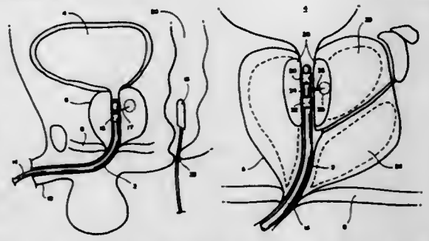
MICROWAVE PROBE DEVICE AND METHOD

Stuart D. Edwards, Los Altos; Ronald G. Lax, Grass Valley; Ingemar H. Lundquist, Pebble Beach, and Hugh R. Sharkey, Redwood City, all of Calif., assignors to Vidamed, Inc., Menlo Park, Calif.

Continuation of Ser. No. 98,921, Jul. 29, 1993, abandoned, which is a continuation of Ser. No. 929,638, Aug. 12, 1992, abandoned. This application Oct. 7, 1994, Ser. No. 320,848

Int. Cl.[6] A61B *17/39*

U.S. Cl. 604—22 **9 Claims**



1. A medical probe for ablating target tissue, comprising an elongated catheter adapted to be inserted into a duct within the body of a patient, a stylet guide housing at one end of the catheter, at least one stylet guide port exiting from the guide housing at an angle on the order of 20° to 160° relative to the central axis of the catheter, an electrically conductive flexible stylet having a sharpened tip disposed within the catheter, a non-conductive sleeve disposed coaxially about the stylet with the sharpened tip of the stylet extending beyond the distal end of the sleeve, means for moving the stylet and the non-conductive sleeve longitudinally of the catheter so that the stylet and the sleeve extend through the guide port and the duct wall to the target tissue, with a portion of stylet extending into the target tissue and the sleeve insulating the stylet from the duct wall and any intervening tissue between the duct wall and the target tissue, and means for applying microwave power to the stylet at a frequency on the order of 900 to 2500 MHz so that the portion of the stylet within the target tissue functions as a microwave antenna for delivering ablating power to the target tissue.

5,599,295

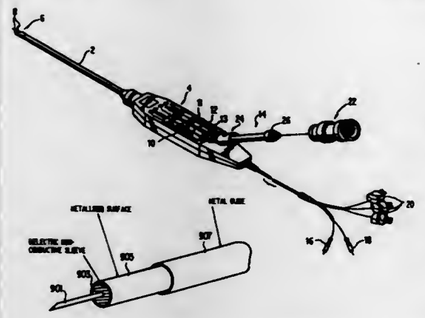
MEDICAL PROBE APPARATUS WITH ENHANCED RF, RESISTANCE HEATING, AND MICROWAVE ABLATION CAPABILITIES

Arye Rosen, Cherry Hill, N.J.; Stuart D. Edwards, Los Altos, Calif.; Ronald G. Lax, Grassvalley, Calif.; Hugh R. Sharkey, Redwood City, Calif.; Ingemar H. Lundquist, Pebble Beach, Calif., and Paul Walinsky, Wyndmoor, Pa., assignors to Vidamed, Inc., Menlo Park, Calif.

Division of Ser. No. 178,176, Jan. 6, 1994, which is a continuation-in-part of Ser. No. 929,638, Aug. 12, 1992, abandoned, and Ser. No. 12,370, Feb. 2, 1993, Pat. No. 5,370,675, and Ser. No. 62,364, May 13, 1993, Pat. No. 5,435,805, and Ser. No. 61,072, May 14, 1993, Pat. No. 5,385,544, and Ser. No. 61,647, May 13, 1993, Pat. No. 5,421,819. This application Nov. 8, 1995, Ser. No. 555,519

Int. Cl.[6] A61B *17/39*

U.S. Cl. 604—22 **6 Claims**



1. A medical probe system for delivering ablative power to target tissue, comprising a catheter having a stylet port, a stylet assembly disposed within the catheter and having a central electrode with a sharp distal tip for puncturing tissue and an outer conductor disposed coaxially about the central electrode, means for advancing the styler assembly outwardly through the stylet port and through intervening tissue with a length of the central electrode extending beyond the outer conductors and into the target tissue, means for applying microwave power to the central electrode so that the central electrode functions as an antenna for radiating microwave energy into the target tissue, and means for adjusting the length of the central electrode extending beyond the outer conductor to thereby adjust the frequency of the microwave power delivered to the target tissue.

5,599,296

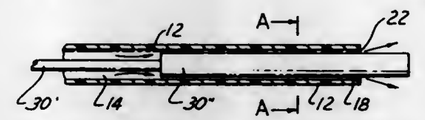
APPARATUS AND METHOD OF DELIVERY OF GAS-SUPERSATURATED LIQUIDS

James R. Spears, Bloomfield Hills, Mich., assignor to Wayne State University, Detroit, Mich.

Continuation-in-part of Ser. No. 273,652, Jul. 12, 1994, which is a continuation-in-part of Ser. No. 152,589, Nov. 15, 1993, Pat. No. 5,407,426, which is a continuation-in-part of Ser. No. 818,045, Jan. 8, 1992, Pat. No. 5,261,875, which is a continuation of Ser. No. 655,078, Feb. 14, 1991, Pat. No. 5,086,620. This application Dec. 9, 1994, Ser. No. 353,137

Int. Cl.[6] A61M *37/00*

U.S. Cl. 604—26 **14 Claims**



1. An apparatus for intra-arterial delivery of an oxygen-saturated solution during angioplasty, the oxygen-saturated solution being stabilized upon emergence from the apparatus without associated cavitation comprising:

a high pressure tubular housing defining a lumen therewithin, the housing having a distal end;

a coiled spring extending from the tubular housing;

a jacket including a proximal sleeve section and a distal perforated section that defines exit ports, the proximal sleeve section being located proximate to the distal end of the tubular housing, the proximal sleeve section of the jacket being placed over the coiled spring to prevent leakage of the solution through the coiled spring, while allowing perfusion of the solution through the exit ports of the perforated section, the exit ports being sized to allow the solution to be delivered so that the solution has a composition characterized by a fluid continuum of uniform density upon emergence from an exit port.

5,599,297

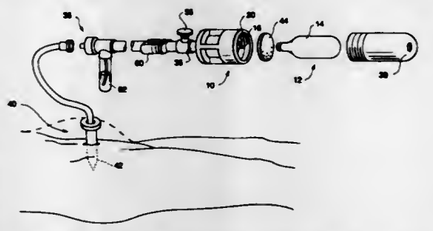
APPARATUS AND METHOD FOR DELIVERING INSUFFLATION GAS AND LOCAL ANESTHESIA TO A BODY CAVITY

Albert K. Chin, Palo Alto, and Phillip K. Hopper, San Carlos, both of Calif., assignors to Origin Medsystems, Inc., Menlo Park, Calif.

Continuation of Ser. No. 39,975, Mar. 30, 1993, Pat. No. 5,399,159. This application Mar. 21, 1995, Ser. No. 408,699

Int. Cl.[6] A61M *37/00*

U.S. Cl. 604—26 **7 Claims**



1. An apparatus for inflating a body cavity with gas, the apparatus comprising:

a source of insufflation gas;

a container containing an anesthetic liquid; and

a hollow tube in fluid communication with the source of insufflation gas and with the container, the hollow tube including atomization means for combining insufflation gas released

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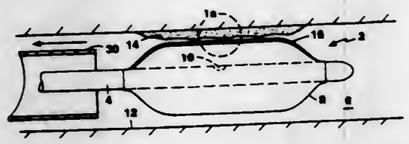
from the source of insufflation gas into the hollow tube with anesthetic liquid from said container to form an atomized mist.

5,599,298

BODILY SAMPLE COLLECTION BALLOON CATHETER METHOD

Ronald A. Sahatjian, Lexington, Mass., assignor to Boston Scientific Corporation, Natick, Mass.

Filed Dec. 30, 1993, Ser. No. 175,791
Int. Cl.[6] A61M *31/00*; A61B *10/00*
U.S. Cl. 604—49 **25 Claims**



1. A method for taking a bodily sample from a blood vessel of a patient and collecting said sample outside the body, comprising:
providing a sampling probe in the form of an elongate vascular catheter having a proximal portion that remains outside the body and a distal portion that can be located in the blood vessel, said distal portion including an expandable portion that can be selectively expanded to larger diameters and contracted to smaller diameters, said expandable portion including a polymer on its outer surface capable of receiving a substantial amount of bodily sample suitable for detecting disease or monitoring a treatment,
positioning said expandable portion at a desired location within said blood vessel, and
taking said sample by expanding said expandable portion to contact the wall Of said blood vessel with said polymer with sufficient force to compress said polymer to a reduced thickness,
contracting said expandable portion to re-expand said polymer and draw said sample into said polymer by suction forces created by said re-expansion,
further contracting said expandable portion to smaller diameter so that said polymer does not contact said wall of said blood vessel,
removing said catheter from said patient,
collecting said sample outside the body, and
analyzing said sample to detect disease or monitor said treatment.

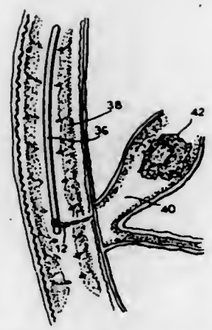
5,599,299

MULTI-LUMEN ENDOSCOPIC CATHETER

George W. Weaver, East Earl, Pa.; Harold Jacob, Lawrence, N.Y.; David F. Leighton, West Lawn, and Damond C. Holsinger, New Holland, both of Pa., assignors to Arrow Precision Products, Inc., Reading, Pa.

Continuation-in-part of Ser. No. 60,434, May 11, 1993, Pat. No. 5,397,302, which is a continuation-in-part of Ser. No. 880,840, May 11, 1992, abandoned. This application Jan. 31, 1994, Ser. No. 189,317
Int. Cl.[6] A61M *31/00*
U.S. Cl. 604—54 **16 Claims**

1. A method of study of a duct of a patient using a catheter having at least three lumens, each having a distal opening at a distal end of said catheter, a first lumen of said catheter having a wire guide threaded therethrough, comprising the steps of:
threading said catheter and said wire guide through an endoscope and into said duct to a desired position;



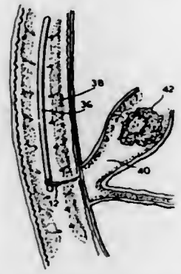
infusing a contrast medium through a second lumen of said catheter to visualize said duct through the use of said contrast medium while maintaining said wire guide in said first lumen of said catheter; and
advancing an instrument through a third lumen of said catheter and through said distal opening of said third lumen and along said duct while maintaining said wire guide in said first lumen of said catheter.

5,599,300

METHOD FOR ELECTROSURGICALLY OBTAINING ACCESS TO THE BILIARY TREE WITH AN ADJUSTABLY POSITIONABLE NEEDLE-KNIFE

George W. Weaver, East Earl; Damond C. Holsinger, New Holland; David F. Leighton, West Lawn, all of Pa., and Harold Jacob, Lawrence, N.Y., assignors to Arrow Precision Products, Inc., Reading, Pa.

Continuation-in-part of Ser. No. 332,836, Nov. 1, 1994, which is a continuation-in-part of Ser. No. 189,317, Jan. 31, 1994, which is a continuation-in-part of Ser. No. 60,434, May 11, 1993, Pat. No. 5,397,302, which is a continuation-in-part of Ser. No. 880,842, May 11, 1992, abandoned. This application May 12, 1995, Ser. No. 440,562
Int. Cl.[6] A61M *31/00*
U.S. Cl. 604—54 **7 Claims**



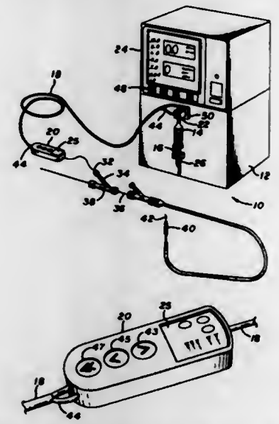
1. A method of electrosurgically obtaining access to the biliary tree of a patient and visualizing a duct thereof using a catheter having at least a first lumen and a second lumen defined therethrough, each lumen terminating in an opening defined at a distal end of said catheter, said first lumen of said catheter having a needle-knife disposed therein, said needle-knife having a distal end and being connected to a deployment means at a proximal end of said catheter for extending and retracting said needle-knife between a deployed position and a fully sheathed position relative to said distal end of said catheter, said deployment means having adjustable stop means for adjusting the distance between said distal end of said needle-knife and said distal end of said catheter, said needle-knife electrically communicating with a power source, said method comprising the steps of:
inserting said catheter and said needle-knife in said sheathed position through an endoscope and into the duodenum of the patient proximal to the entrance to the common bile duct;
deploying said needle-knife from said sheathed position relative to said distal end of said catheter and positioning said distal end of said needle-knife relative to said distal end of said catheter by manipulating said adjustable stop means;
manipulating said needle-knife and applying current thereto to incise tissue proximal to said entrance to said common bile duct;
withdrawing said needle-knife into said sheathed position relative to said distal end of said catheter;
advancing said catheter into said common bile duct to a desired location within said duct; and
infusing a contrast medium through said second lumen of said catheter to visualize said common bile duct through the use of said contrast medium while said needle-knife remains in said first lumen of said catheter.

5,599,301

MOTOR CONTROL SYSTEM FOR AN AUTOMATIC CATHETER INFLATION SYSTEM

James M. Jacobs, Mountain View, and Joseph A. O'Donnell, Escondido, both of Calif., assignors to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.

Filed Nov. 22, 1993, Ser. No. 156,268
Int. Cl.[6] A61M *29/00*
U.S. Cl. 604—65 **33 Claims**



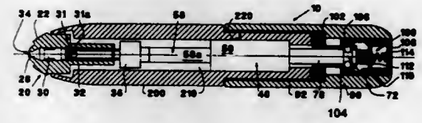
1. An automatic inflation device for a catheter system for use in a body lumen of a patient, comprising:
a catheter having a proximal end and a distal end, and an inflatable member near said distal end;
an inflation lumen within said catheter for providing fluid communication between said proximal end and said inflatable member;
a pump adapted to pressurize fluid in said inflation lumen and said inflatable member, said pump having an associated movement speed and movement directions;
a pressure sensor adapted to measure fluid pressure in said inflatable member; and
a controller adapted to be programmed with a selected rate of fluid pressure change, that receives the measured pressure sensed by the pressure sensor and determines the actual rate of pressure change therefrom, that compares the actual rate of pressure change to the programmed selected rate of change and determines the difference, and that controls the speed of the pump to decrease said difference, whereby said inflatable member is inflated by fluid pressurized at the selected rate of pressure change.

5,599,302

MEDICAL INJECTION SYSTEM AND METHOD, GAS SPRING THEREOF AND LAUNCHING DEVICE USING GAS SPRING

Stephen J. Lilley; Hugh F. Taylor, both of Sawston; David R. Theobald, Huntingdon, all of United Kingdom; Craig J. Carlson, Andover; David I. Rosen, Arlington, both of Mass., and Thomas R. Johnson, Milford, N.H., assignors to Medi-Ject Corporation, Minneapolis, Minn.

Filed Jan. 9, 1995, Ser. No. 369,812
Int. Cl.[6] A61M *5/30*
U.S. Cl. 604—68 **76 Claims**



1. Device for injecting a medical product comprising:
a nozzle assembly having an ampule chamber for holding the medical product, an orifice in said nozzle assembly in fluid communication with said ampule chamber for allowing passage of the medical product through said orifice, and a pressure wall member disposed and movable within said ampule chamber for holding the medical product; and
an energy mechanism dimensioned and configured for selective coupling to said pressure wall member for moving said pressure wall member at a speed sufficient to eject the medical product from said ampule chamber under a substantially uniform pressure which is sufficient to pierce at least one layer of skin, said energy mechanism comprising a gas spring.

5,599,303

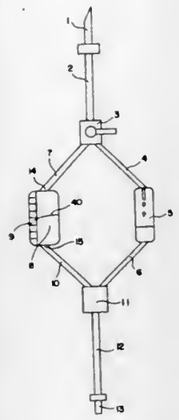
IV ADMINISTRATION APPARATUS

Richard Melker, 6101 NW. 19th Pl., Gainesville, Fla. 32605; Eric J. Hulsman, 1006 Countryside La., Smyrna, Ga. 30080, and Brad D. Wellington, 887 Westmont Dr., Asheboro, N.C. 27203

Filed Nov. 21, 1994, Ser. No. 344,829
Int. Cl.[6] A61M *5/14*
U.S. Cl. 604—80 **21 Claims**

1. An intravenous fluid administration apparatus comprising a main flow line; an airless, dripless, fluid monitoring chamber positioned in said flow line such that fluid flowing through said flow line will pass through said airless, dripless, fluid monitoring chamber; a flow indicator disposed within said airless, dripless, fluid monitoring chamber such that when fluid flows through said chamber said flow indicator evidences fluid flow; and wherein said main flow line diverges into at least two flow limbs, at least one of said limbs being a low-flow limb and at least one of said limbs being a high-flow limb; and wherein said airless, dripless, fluid monitoring chamber is positioned such that fluid flowing through

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the main flow line and down through said high-flow limb will pass through said airless, dripless, fluid monitoring chamber.

5,599,304

SINONASAL SUCTION APPARATUS

Christopher M. Shaari, New York, N.Y., assignor to Mount Sinai School of Medicine of the City University of New York, New York, N.Y.

Filed May 10, 1994, Ser. No. 240,865
Int. Cl.[6] A61M *11/00*
U.S. Cl. 604—94 29 Claims



1. A suction apparatus for suctioning the sinonasal tract comprising:

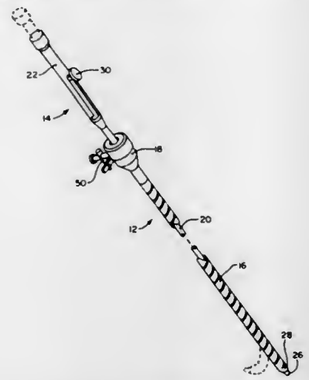
at least one hollow suction tube having an insertion end for insertion into the nasal tract of a subject via the oral cavity so that, when placed in the subject, the insertion end extends at least as far as the nasopharynx, and a suction end for attachment to a suction means, wherein about 1–5 centimeters of the suction tube adjacent to and including the insertion end is directed upward at an angle in relation to the remainder of the suction tube, said suction tube having at least one opening at the insertion end and at least one opening at the suction end, and a lumen between the insertion end and the suction end which allows the suctioning of the sinonasal tract, wherein the suction tube is substantially linear, the suction tube having a trigger means on the upper outer surface of the tube, wherein activation of the trigger means causes the about 1–5 centimeters of the suction tube including and adjacent to the insertion end to angle upwards at least into the nasopharynx.

5,599,305

LARGE-DIAMETER INTRODUCER SHEATH HAVING HEMOSTASIS VALVE AND REMOVABLE STEERING MECHANISM

George D. Hermann, Los Gatos; Kirsten Freislinger, Menlo Park; Steven W. Kim, Cupertino; Jay A. Lenker, Laguna Beach, and Michael A. Evans, Palo Alto, all of Calif., assignors to Cardiovascular Concepts, Inc., Portola Valley, Calif.

Filed Oct. 24, 1994, Ser. No. 330,140
Int. Cl.[6] A61M *37/00*
U.S. Cl. 604—95 29 Claims



1. A catheter introducing system comprising:

a flexible sheath having a proximal end, a distal end, and a lumen extending therebetween; and

an obturator removably receivable in the lumen of the flexible sheath, said obturator having a proximal end, a distal portion, and a deflecting mechanism actuable from the proximal end of the obturator for laterally deflecting at least the distal portion;

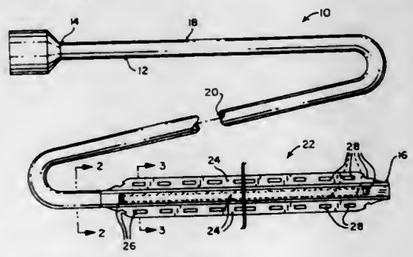
wherein actuation of the deflecting mechanism manipulates the distal end of the sheath when the sheath extends over the distal portion of the obturator.

5,599,306

METHOD AND APPARATUS FOR PROVIDING EXTERNAL PERFUSION LUMENS ON BALLOON CATHETERS

Enrique J. Klein, Los Altos; Jordan Bajor, Palo Alto; Paul Alba, San Jose, and Aaron V. Kaplan, Los Altos, all of Calif., assignors to LocalMed, Inc., Palo Alto, Calif.

Continuation of Ser. No. 461,222, Jun. 5, 1995, abandoned, which is a continuation of Ser. No. 221,613, Apr. 1, 1994, abandoned. This application Sep. 29, 1995, Ser. No. 536,555
Int. Cl.[6] A61M *25/00*
U.S. Cl. 604—96 85 Claims



1. A catheter sleeve comprising:

a flexible tubular body having a proximal end, a distal end, and a central lumen therethrough, wherein at least a portion of the tubular body is radially expansible as a result of a radial expansion force applied in the central lumen within said portion; and

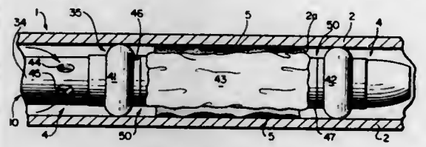
at least one perfusion lumen disposed over said radially expansible portion of the tubular body, wherein said lumen has a plurality of axially spaced-apart ports distributed substantially uniformly over its length which permit blood flow through the lumen.

5,599,307

CATHETER AND METHOD FOR THE PREVENTION AND/OR TREATMENT OF STENOTIC PROCESSES OF VESSELS AND CAVITIES

Peter Bacher, Nürnberg, Germany, and Jeanine M. Walenga, Lombard, Ill., assignors to Loyola University of Chicago, Chicago, Ill.

Continuation of Ser. No. 97,653, Jul. 26, 1993, abandoned. This application Sep. 29, 1995, Ser. No. 537,033
Int. Cl.[6] A61M *29/00*
U.S. Cl. 604—101 44 Claims



1. A catheter device for treating a living body having a treatable surface, comprising:

(a) an elongated flexible shaft having a proximal end and a distal end;

(b) a catheter tip having a proximal end and a distal end, said proximal catheter tip end being joined to said catheter distal shaft end;

(c) said tip comprising at least two spaced, inflatable cheer balloons which, when inflated in said body serve to form a treatment site in the space formed between said chamber balloons;

(d) an inflatable treatment balloon consisting essentially of an inflatable, porous material, said treatment balloon being disposed on said tip and positioned between said spaced cheer balloons;

(e) means associated with said inflatable treatment balloon for treating said treatment site when said chamber and treatment balloons are inflated, said treatment means comprising a material having a structure substantially similar to the physiological structure of said surface of said body;

(f) flushing means for (i) supplying material to and/or (ii) removing fluid and/or debris from said chamber; and,

(g) means for allowing flow of body fluid from the proximal side to the distal side of said catheter tip when any of said balloons is in an inflated state.

5,599,308

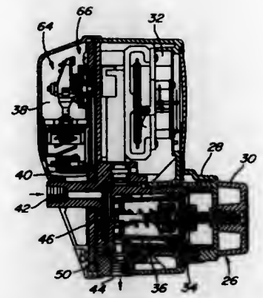
INTERMITTENT VACUUM REGULATOR WITH TIMING MODULE

Michael A. Krupa, 4070 Heather Ct., Northampton, Pa. 18067

Filed Sep. 19, 1995, Ser. No. 530,933
Int. Cl.[6] F16K *17/00*
U.S. Cl. 604—118 6 Claims

1. An intermittent vacuum regulator having a timing module in combination with a valve means for controlling the position of said valve means between one of two states, said module comprising:

a base plate having a plurality of channels and apertures for conveying vacuum pressure in a first state or ambient state in a second state;



a diaphragm assembly coupled thereto;

a gear coupled to a lever arm that is in contact with said valve means;

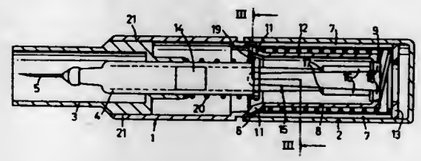
said diaphragm assembly having a diaphragm, coupled to said gear, that is exposed to a vacuum source and ambient pressure alternately said diaphragm disposed within said diaphragm assembly to form a movable wall of said diaphragm assembly, said alternating exposure causing said gear to move in a first direction or a second direction, respectively, movement in said first direction defining an off time and movement in said second direction defining an on time and also defining a timing ratio.

5,599,309

INJECTION DEVICES

Jeremy Marshall, Jericho, and David D. Crossman, Christmas Common, both of United Kingdom, assignors to Owen Mumford Limited, Oxford, United Kingdom

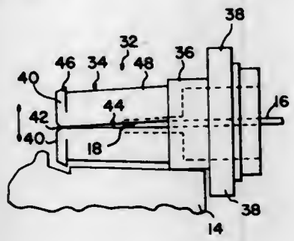
PCT No. PCT/GB94/00616, § 371 Date Sep. 25, 1995, § 102(e) Date Sep. 25, 1995, PCT Pub. No. WO94/21316, PCT Pub. Date Sep. 29, 1994
PCT Filed Mar. 24, 1994, Ser. No. 525,700
Claims priority, application United Kingdom, Mar. 24, 1993, 9306093; Mar. 27, 1993, 9306429
Int. Cl.[6] A61M *5/20*
U.S. Cl. 604—136 5 Claims



1. An injection device comprising an elongate body in which is housed a charged capsule with a needle at the forward end of the capsule and a plunger projecting from the rear end of the capsule, coil spring means arranged between the rear end of the body and a drive member that receives the rear end of the plunger and which spring means, when released from compression, act through the drive member on the plunger to push the plunger forwards and thereby carry out an injection, and a release mechanism for the drive member including a sleeve over part of the body and slidable longitudinally thereof between rearward and forward positions, and a trigger carried by said body and accessible through an aperture in said sleeve, the sleeve being initially in said rearward position where it holds the trigger inoperable and in retaining engagement with the drive member but which when shifted to said forward position allows the trigger to be actuated and thus the drive member to be released.

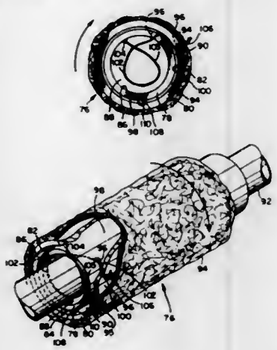
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5,599,310
I.V. CATHETER ASSEMBLY WITH AUTOMATIC CANNULA TIP GUARD
David L. Bogert, Plainville, Conn., assignor to Johnson & Johnson Medical, Inc., Arlington, Tex.
Filed Jun. 7, 1995, Ser. No. 482,590
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—164 **12 Claims**



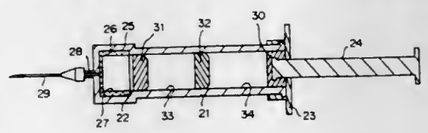
1. A catheter assembly comprising:
a catheter attached to a catheter hub;
a cannula having a distal tip, said cannula being insertable into said catheter through said catheter hub;
a tip guard having a base and a plurality of resilient fingers extending from said base, said plurality of fingers being spring biased so that a distal end of each of said fingers is in contact thereby forming a closed chamber within said tip guard, said fingers being adapted to flex radially outwardly to permit the cannula to be inserted into said catheter hub through said tip guard, said fingers returning to the spring biased contact position when the distal tip of the cannula is withdrawn from the catheter into the tip guard thereby securing the distal tip within the closed chamber; and
locking means engaging said tip guard to said catheter hub when the cannula is inserted through said catheter hub, said locking means being adapted to release said tip guard from said catheter hub when the distal tip of the cannula is withdrawn from said catheter into said tip guard.

5,599,311
SUBCUTANEOUS CATHETER STABILIZING DEVICES
J. Daniel Raulerson, 1205 Belleville Ave., Brewton, Ala. 36426
Division of Ser. No. 280,044, Jul. 25, 1994, Pat. No. 5,509,902.
This application Jun. 7, 1995, Ser. No. 476,478
Int. Cl.[6] A61M *5/32*; A61F *2/06*
U.S. Cl. 604—175 **5 Claims**



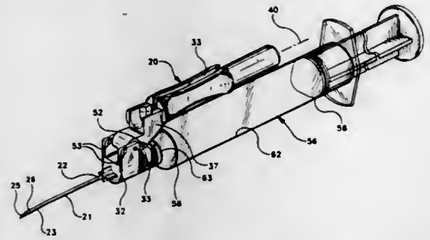
1. A locatable device for subcutaneous securement of a catheter in an area to be catheterized, comprising:
(a) a first tubular member having an exterior surface and an interior surface which defines a passage extending longitudinally through the first tubular member;
(b) a second tubular member having an exterior surface and an interior surface which defines a passage extending longitudinally through the second tubular member, at least a portion of the first tubular member being positioned within the passage of the second tubular member such that a space lies between the exterior surface of the first tubular member and the interior surface of the second tubular member;
(c) a hole in the first tubular member, the hole extending from the exterior surface to the interior surface;
(d) a connecting material fastened at a first end to the interior surface of the first tubular member and having a second end which passes outwardly through the hole and is fastened to the second tubular member, a length of the connecting material within the passage of the first tubular member being formed into a loop, whereby when a catheter is positioned within the loop the second tubular member is rotated with respect to the first tubular member to pull a portion of the length of the connecting material within the passage of the first tubular member into the space between the members and to tighten the loop around the catheter thereby securing the catheter within the passage of the first tubular member, the device maintaining free flow of bodily fluid through the catheter.

5,599,312
SYRINGE
Tetsuro Higashikawa, 21-5, Kamimeguro 5-chome, Meguro-ku, Tokyo 153, Japan
PCT No. PCT/JP93/01742, § 371 Date Jun. 1, 1995, § 102(e) Date Jun. 1, 1995, PCT Pub. No. WO94/12227, PCT Pub. Date Jun. 9, 1994
PCT Filed Nov. 30, 1993, Ser. No. 446,832
Claims priority, application Japan, Dec. 1, 1992, 4-343610; Dec. 16, 1992, 4-353880; Feb. 10, 1993, 5-022736
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—191 **10 Claims**



1. A syringe, comprising:
a cylinder, having a connection portion for a syringe needle at a first end and an opening at a second end; and
a plunger to be inserted into the cylinder from the opening,
wherein a plurality of partitions are slidably provided between said connection portion and said plunger within said cylinder to divide an internal space of said cylinder into plural watertight chambers,
wherein between adjacent partitions or between one of said partition and said plunger, two or more chambers are formed,
wherein the chambers are filled with respective injection agents, and
a passage formed integrally with the cylinder and communicating each of said chambers with said connection portion is provided without distorting said partitions when said plunger is moved within said cylinder toward said first end.

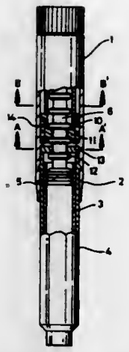
5,599,313
NEEDLE SHIELD ASSEMBLY HAVING SAFETY INDICATION FEATURES
Sandor Gyure, West Orange; Robert B. Odell, Franklin Lakes, and Sandor Szabo, Elmwood Park, all of N.J., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.
Filed Feb. 3, 1995, Ser. No. 384,302
Int. Cl.[6] A61M *5/32*
U.S. Cl. 604—192 **17 Claims**



1. A needle shield assembly having safety indication features comprising:
a needle cannula having a proximal end, a distal end and a lumen therethrough;
a hub having a proximal end for connecting to a medical instrument and a distal end connected to said proximal end of said needle cannula;
a base member connected to said hub;
an elongate needle shield having a proximal end hingedly connected to said base member, a distal end and a longitudinal axis therebetween, said needle shield having a longitudinal opening therein, said needle shield capable of rotating from a first position exposing at least said distal end of said needle cannula to a second position wherein said needle cannula is within said longitudinal opening of said needle shield;
a sleeve having a longitudinal slot rotatably connected to the exterior of said needle shield, said sleeve capable of rotating about said needle shield to an open position wherein said longitudinal slot and said longitudinal opening are sufficiently aligned to allow passage of said needle cannula so that said needle shield can be rotated from said first position to said second position, said sleeve being rotatable to a position which blocks said longitudinal opening of said needle shield; and
color safety indicator means for visually indicating said sleeve is rotated to a position which blocks said longitudinal opening of said needle shield, said color safety indicator means including a color segment on said needle shield which is visible through said sleeve when said sleeve is rotated to a position which blocks said longitudinal opening.

5,599,314
SYRINGE WITH INCREMENTALLY ACTUATED PLUNGER
Peter A. Neill, Stowmarket, Great Britain, assignor to Hypoguard (UK) Limited, Great Britain
PCT No. PCT/GB93/01978, § 371 Date Apr. 26, 1995, § 102(e) Date Apr. 26, 1995, PCT Pub. No. WO94/06494, PCT Pub. Date Mar. 31, 1994
PCT Filed Sep. 20, 1993, Ser. No. 403,892
Claims priority, application United Kingdom, Sep. 19, 1992, 9219849
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—207 **5 Claims**

1. A device for the administration of a medicament by means of a needle adapted to be inserted into the body of a person, which device comprises a cylinder (3) adapted to contain the medicament the cylinder having a bore and having a piston (5) journalled in the

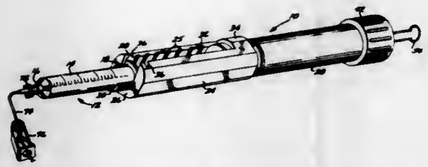


bore of the cylinder for axial movement in the bore towards an outlet provided with the needle or adapted to receive the needle in mounting engagement therewith, a plunger member for moving the piston (5) axially and incrementally within the bore of the cylinder (3) the plunger member (6) carrying one or more radially projecting teeth (12), an axially extending drive member (10) carrying one or more drive teeth (11) adapted to engage with the teeth (12) carried by the plunger member (6) and to move the plunger (6) axially for that distance required to discharge a single dosage of the medicament upon each actuation of the drive member (10) by a user, wherein:
a. the axial spacing between axially adjacent teeth (12 or 11) on one of the plunger member (6) or the drive member (10) corresponds to the forward axial movement of the plunger member (6) required to discharge a single dose of the medicament;
b. forward stop members (13) are provided which define the limits of the forward axial movement of the drive member (10) to a predetermined distance corresponding to one said tooth spacing with respect to the plunger (6), whereby forward axial movement of the drive member (10) with the teeth (11) and 12) of the drive and plunger members (10 and 6) engaged is adapted to administer said single dosage of the medicament;
c. biasing means located within the cylinder and contacting the drive member (10) for biasing the drive member (10) to its axially fully retracted position at which its drive teeth (11) is/are brought into meshing register with the teeth (12) of the plunger member (6) at the start position of the forward movement of the plunger member (6);
d. the drive member (10) and the plunger member (6) are mounted within the cylinder for rotation relative to one another about their longitudinal axes to bring the teeth (11 and 12) of the drive and plunger members (10 and 6) into and out of meshing engagement with each other and means are provided for preventing such relative rotation intermediate the rearward and forward extremes of travel of the drive member (10).

5,599,315
SYRINGE ACTUATION DEVICE
Charles J. McPhee, 8562 Larthorn Dr., Huntington Beach, Calif. 92646, assignor to Charles J. McPhee, Irvine, Calif.
Filed Dec. 1, 1995, Ser. No. 565,874
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—218 **26 Claims**

1. A device for actuating a syringe, wherein the syringe includes a barrel and a plunger movable axially within the barrel from a withdrawn position to an inserted position, the device comprising:
a hollow sleeve having an open proximal end, a distal end opening for receiving the syringe barrel therethrough, and a longitudinal opening extending from the distal end opening

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toward the proximal end and dimensioned to receive the syringe plunger in its withdrawn position;

a hollow cylinder having a proximal end and an open distal end dimensioned to be received in the proximal end of the sleeve, whereby the cylinder is axially movable within the sleeve between a proximal position and a distal position, the cylinder having an internal diameter that gradually decreases from the proximal end thereof to the distal end thereof;

a piston disposed for longitudinal movement within the cylinder between a proximal position and a distal position, the piston including a portion disposed so as to bear against the plunger when the plunger is disposed in the sleeve and the cylinder is at its distal position; and

a spring-biasing element disposed within the cylinder and engaged with the piston so as to bias the piston toward its distal position;

whereby the piston is canted with respect to the longitudinal axis of the cylinder when the piston is in its proximal position, and wherein the piston is oriented substantially coaxially with the cylinder when the piston is in its distal position.

5,599,316

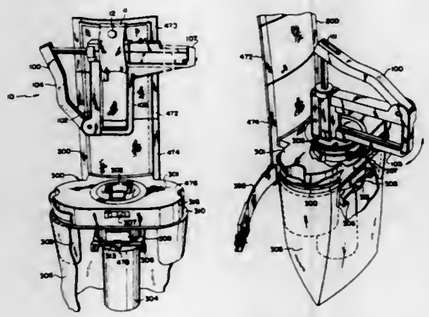
PORTABLE DRUG DELIVERY SYSTEM

David C. Blakely, Mountain View, Calif., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 58,060, May 10, 1993, abandoned, which is a division of Ser. No. 695,495, May 2, 1991, Pat. No. 5,228,883. This application Nov. 14, 1994, Ser. No. 337,906

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—232 **3 Claims**



1. A portable drug delivery system comprising:

an injection device comprising a barrel for receiving a cartridge having a cannula, a cartridge having a cannula, said cartridge and cannula being removably coupled to an end of said injection device, an ejector coupled to said barrel for forceably removing a spent cartridge without cannula from said barrel, and an ejection release device coupled to said barrel for locking and releasing said ejector; and

a holster separate and distinct from said injection device for severing said cannula from said cartridge and disposing of said cartridge and said severed cannula, said holster comprising:

a housing;

at least one blade coupled to said housing wherein said blade severs said cannula from said cartridge when said blade engages said cartridge;

a receptacle rotatably coupled to said housing for receiving said cartridge and said end of said injection device, said cartridge and injection device being rotatable with said receptacle to bring said cartridge into contact with said blade;

a first container coupled to said housing for holding severed cartridges;

a second container coupled to said housing for holding severed cannulas; and

means for engaging said ejector when said blade and cartridge are moved relative to each other after said cannula is severed from said cartridge, whereby said cartridge is ejected from said injection device.

5,599,317

EXTERNALIZED SEALED CATHETER WITH LEAKPROOF ACCESS

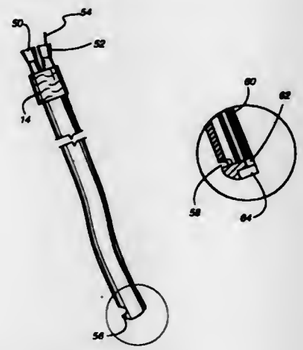
Jean-Luc Hauser, 1499 chemin S. Maymes, F-06600 Antibes, France

Continuation of Ser. No. 170,206, Jun. 9, 1994, abandoned. This application Nov. 24, 1995, Ser. No. 562,625

Claims priority, application France, Apr. 29, 1992, 92/05307; WIPO, Apr. 28, 1993, PCT/FR93/00412

Int. Cl.[6] A61M *5/00;5/14*

U.S. Cl. 604—256 **2 Claims**



1. Catheter apparatus, comprising;

an elongated hollow catheter having a first end, a second end, and an intermediate portion extending between said first and second ends,

said first end being adapted to be implanted inside a patient's body,

said second end being adapted to be external to the patient's body,

a first and a second elongated hollow lumina extending internally through said hollow catheter from said first end to said second end of said catheter,

a self-repairing septum mounted to an end of said first lumina that extends from said second end of said catheter,

a nozzle mounted to an end of said second lumina that extends from said second end of said catheter,

an optical fiber extending through said nozzle and internal of said second lumina from said first end to said second end of said catheter,

a photovoltaic battery mounted at said first end of said catheter and in optical communication with said optical fiber so as to be energized by light received from said optical fiber,

a piezoelectric sensor mounted at said first end of said catheter and energized by said battery,

an optical generator mounted at said first end of said catheter and energized by said battery, and

means connecting a signal from said sensor in controlling relation to said optical generator to thereby convert said signal into an optical signal,

said optical generator being in optical communication with said optical fiber for transmission of said optical signal to said second end of said catheter.

5,599,318

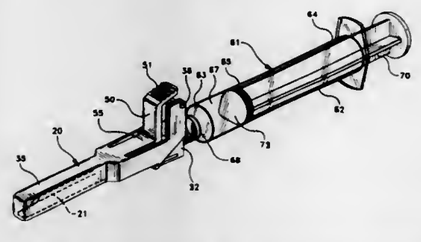
NEEDLE SHIELD ASSEMBLY HAVING A RELEASABLE LOCK

Niall Sweeney; Adriano Morigi, both of Rutherford, and Sandor Gyure, West Orange, all of N.J., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Aug. 29, 1995, Ser. No. 520,523

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—263 **21 Claims**



1. A needle shield assembly having a releasable lock comprising:

a needle cannula having a proximal end, a distal end and a lumen therethrough;

a hub having a proximal end for connecting to a medical instrument and a distal end connected to said proximal end of said needle cannula;

a base member connected to said hub and including a deflectable locking arm having a latch surface,

an elongate needle shield having a distal end and a proximal end hingedly connected to said base member, said needle shield having a longitudinal opening therein, said needle shield capable of rotating back and forth between a first needle protecting position wherein said needle cannula is within said longitudinal opening of said needle shield to a second position exposing at least the distal end of said needle cannula,

said needle shield including a latch surface positioned to engage said latch surface of said base member when said needle shield is in said first needle protecting position for locking said needle shield in said first position,

said needle shield including an activating member movably connected to said needle shield having an outwardly facing finger pad and a tip portion located on the opposite side of said cannula from said finger pad when said needle shield is in said first position, said activating member being positioned so that digital pressure applied to said finger pad causes said tip portion of said activating member to push against said locking arm of said base member and deflect said locking arm so that said latch surface of said locking arm disengages said latch surface of said needle shield and so that continued digital pressure on said finger pad causes said needle shield to rotate toward the side of said needle shield containing said finger pad, from said first needle shielding position to said second needle exposing position, said deflectable locking arm and said needle shield being configured so that rotation of said needle shield from said second position to said first position causes said locking surface of said locking arm and said locking surface on said needle shield to engage to lock said needle shield in said first position.

5,599,319

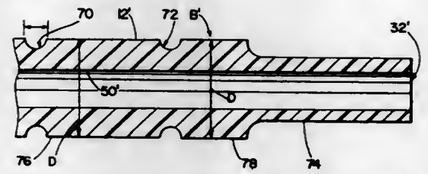
SOFT FLEXIBLE CATHETER TIP FOR USE IN ANGIOGRAPHY

Robert C. Stevens, Williston, Fla., assignor to Cordis Corporation, Miami Lakes, Fla.

Continuation-in-part of Ser. No. 299,841, Sep. 1, 1994, Pat. No. 5,514,108. This application Aug. 29, 1995, Ser. No. 520,576

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—264 **6 Claims**



1. A catheter having a distal end adapted to be guided through blood vessels, comprising:

an elongate tubular member formed of a first polyurethane material and having i) a first innerbore of uniform diameter therethrough along a longitudinal axis of the elongated tubular member and ii) a substantially uniform first transverse rigidity;

a flexible tip portion formed of a second polyurethane material bonded at a distal end of said elongated tubular member and having a second innerbore of uniform diameter therethrough along a second longitudinal axis of the flexible tip portion which is generally coextensive with said first longitudinal axis of the elongated tubular member, said second polyurethane material being softer and more flexible than said first polyurethane material; and,

at least one region of a lesser second transverse rigidity on said flexible tip portion formed by at least two areas of decreasing transverse rigidity, said areas of decreasing transverse rigidity provided by circumferentially extending cut-out portions extending radially into the tip and terminating in a rounded bottom wall, said cut-out portions having a width of 0.100 to 0.150 inches.

5,599,320

Patent Not Issued For This Number

5,599,321

SUSTAINED RELEASE BACTERICIDAL CANNULA

Anthony J. Conway; Philip J. Conway, both of Chatfield, and Richard D. Fryar, Jr., Rochester, all of Minn., assignors to Rochester Medical Corporation, Stewartville, Minn.

Division of Ser. No. 148,995, Nov. 8, 1993, Pat. No. 5,482,740, which is a division of Ser. No. 809,281, Dec. 13, 1991, Pat. No. 5,261,896, which is a continuation-in-part of Ser. No. 489,462, Mar. 6, 1990, abandoned, which is a continuation-in-part of Ser. No. 487,422, Mar. 1, 1990, Pat. No. 5,098,379, which is a continuation-in-part of Ser. No. 462,832, Jan. 10, 1990, Pat. No. 5,137,671. This application Jun. 7, 1995, Ser. No. 484,600

Int. Cl.[6] A61M *5/32;25/00*

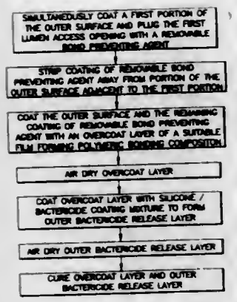
U.S. Cl. 604—265 **8 Claims**

3. A sustained release bactericidal catheter, the catheter being made by the method comprising the steps of:

(a) providing a tube, the tube having an inner surface, defining an inner lumen passing through the tube, and an uncured silicone rubber outer surface;

(b) providing an antibacterial agent containing mixture including uncured silicone rubber, a silicone fluid, and an effective amount of a solid particulate antibacterial agent, wherein the

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antibacterial agent is a nitrofuran compound having a solubility in water of 0.2% by weight or less;

(c) coating at least a portion of the outer surface of the tube with the antibacterial agent containing mixture to form an uncured nitrofuran containing silicone rubber outer layer; and

(d) curing the silicone rubber of both the uncured silicone rubber outer surface and the uncured nitrofuran containing silicone rubber outer layer to form a cured antibacterial agent containing silicone rubber outer layer bonded to the silicone rubber outer surface, wherein the step of providing an antibacterial agent containing mixture includes providing an antibacterial agent containing mixture containing a sufficient amount the nitrofuran compound that the cured antibacterial agent containing silicone rubber outer layer contains about 10 to about 60 percent by weight of the nitrofuran compound.

5,599,322

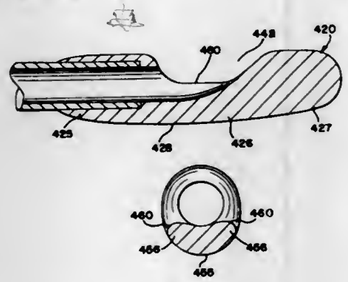
NON-OCCLUDING CATHETER BOLUS

David G. Quinn, Grayslake, Ill., assignor to Radius International Limited, Grayslake, Ill.

Continuation-in-part of Ser. No. 217,446, Mar. 24, 1994, Pat. No. 5,451,216, which is a continuation-in-part of Ser. No. 77,019, Jun. 15, 1993, abandoned. This application Sep. 18, 1995, Ser. No. 530,785

Int. Cl.[6] A61M *25/00*

U.S. Cl. 604—270 **5 Claims**



1. In a catheter for delivering fluid to a body cavity or aspirating the cavity wherein the catheter includes a cylindrical tube having a proximal end for joining the tube to a source of fluid or suction and a distal end connected to a bolus, an improved bolus comprising:

a) a tubular shaped body formed of semi-rigid plastic;

b) said body including a tube connector section at one end, a tip section at the other end and a passage section between the connector section and the tip section, said passage section containing a radial passage portion adjacent said tip section, said radial passage portion forming a port through the side of said body;

c) a bolus body segment in said passage section opposite said port, said body segment connecting said tip section with said tube connector section;

d) said body segment forming a side wall in each side of said passage section, each side wall having a height which is less than 50 percent of the outside radius of said body such that said port extends around more than 180 degrees of the circumference of said body;

e) said side walls having a top surface with a continuously varying slope;

f) said body segment also including a structural component protruding radially outwardly therefrom, and effective to prevent said body segment from bending and restricting said port.

5,599,323

SYRINGE SYSTEM

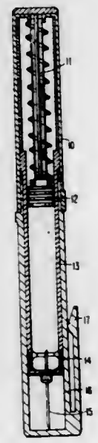
Frits F. Bonnichsen, Lynge, and Peter N. Jørgensen, Broenshoej, both of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

Continuation of Ser. No. 323,401, Oct. 14, 1994, Pat. No. 5,462,535, which is a continuation-in-part of Ser. No. 167,831, Dec. 16, 1993, abandoned. This application Oct. 30, 1995, Ser. No. 550,494

Claims priority, application Denmark, Jul. 12, 1991, 1346/91

Int. Cl.[6] A61M *5/32*

U.S. Cl. 604—272 **4 Claims**



1. A needle assembly comprising:

(a) a needle hub having a base and a standard insulin needle fitting for removably mounting said needle assembly on a pen-type insulin syringe having a standard mounting and which accepts cartridges containing only insulin types that may flow freely through a G30 needle; and

(b) a G30 needle secured in said base and having first and second needle portions extending from said base in opposite directions.

5,599,324

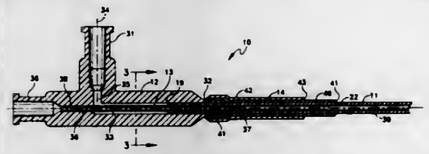
CATHETER FOR ADMINISTERING A LIQUID AGENT

Gary B. McAlister, Franklin; Roy H. Sullivan, III, Millville, and Charles B. Warich, Milford, all of Mass., assignors to Boston Scientific Corporation, Natick, Mass.

Filed May 4, 1995, Ser. No. 434,242

Int. Cl.[6] A61M *25/00*

U.S. Cl. 604—280 **15 Claims**



1. A catheter for the administration of a liquid agent at a target site within a patient comprising:

(A) a catheter tube terminating in proximal and distal ends and having first, second and third lumens extending therethrough and exiting through the proximal and distal ends, said distal end being adapted for location at the target site,

(B) a handle having a central volume and first and second entry ports and a catheter port extending between the exterior of said handle and said central volume, the proximal end of said catheter tube being affixed in said catheter port whereby liquid agent administered through said second port to said central volume transfers through said second and third lumens to the distal end for ejection at the target site,

(C) a conduit extending through said central volume and having one end terminating in said first lumen at the proximal end of said catheter tube and the other end terminating in said first entry port thereby to prevent the transfer of liquid agent from said central volume into said first lumen.

5,599,325

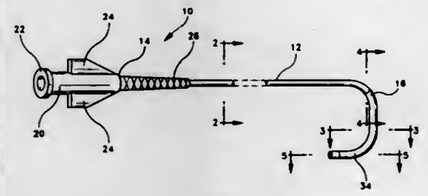
THIN WALL CATHETER WITH REINFORCING SLEEVE

Byung H. Ju, Golden Valley; Michael G. O'Connor, Blaine, and Eric M. Lovgren, Buffalo, all of Minn., assignors to Schneider (USA) Inc, Plymouth, Minn.

Continuation-in-part of Ser. No. 245,428, May 18, 1994, Pat. No. 5,403,292. This application Dec. 7, 1994, Ser. No. 350,779

Int. Cl.[6] A61M *25/00*

U.S. Cl. 604—282 **20 Claims**



1. An intravascular catheter comprising:

an elongated tubular body having a proximal end, a distal end and a lumen extending therebetween, the tubular body comprising:

(a) an inner layer consisting essentially of an unmodified polyamide polymer;

(b) a reinforcing means at least partially surrounding the inner layer;

(c) an outer polymeric layer having a predetermined durometer hardness in the range of from about 50 Shore D to about 75 Shore D, the outer layer at least partially covering said reinforcing means;

(d) an annular soft-tip member bonded to the distal end of the tubular body member; and

(e) a tubular stem member interposed between and bonded to both the tubular body and the soft-tip member, the stem being a copolymer having a Shore hardness in the range of from about 25 D to 72 D.

5,599,326

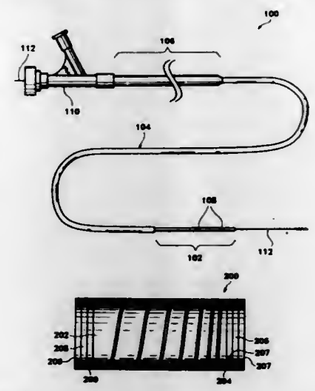
CATHETER WITH MULTI-LAYER SECTION

Mark Carter, Fremont, Calif., assignor to Target Therapeutics, Inc., Fremont, Calif.

Filed Dec. 20, 1994, Ser. No. 359,469

Int. Cl.[6] A61M *25/00*

U.S. Cl. 604—282 **12 Claims**



1. A catheter section comprising:

an elongate tubular member having a proximal end and a distal end and a passageway defining an inner lumen extending between those ends, the elongate tubular member comprising:

a.) an inner stiffener liner of a spirally cut polymeric tubing member of a first liner material having an inner surface, an outer surface, and a longitudinal axis wherein the spiral cut extends from said inner surface to said outer surface and which inner liner is in coaxial relationship with an outer tubular cover, and

b.) an outer tubular cover comprising a polymeric cover material.

5,599,327

CONNECTOR

Michihiro Sugahara, and Toshinobu Ishida, both of Kanagawa-ken, Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 16, 1994, Ser. No. 357,336

Claims priority, application Japan, Dec. 16, 1993, 5-317109

Int. Cl.[6] A61M *25/00*

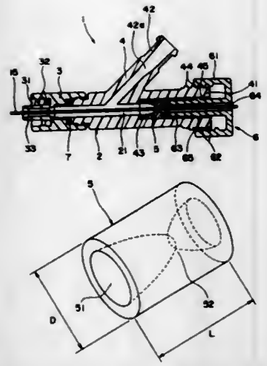
U.S. Cl. 604—283 **19 Claims**

1. A connector, comprising:

a connector body having a tip portion which is adapted to be connected to or integrally formed with an end portion of a tube-shaped body, an end portion from which an instrument which is used by being inserted into the tube-shaped body is inserted, and an insertion passage which extends in an axial direction of the connector body so as to communicate said tip portion of said connector body with said end portion thereof;

a seal member for slidably holding said instrument in a fluid-tight seal condition with an inside of said tube-shaped body, said seal member being formed from a substantially cylindrical elastic member disposed within said insertion passage of said connector body under a condition such that radially

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outward deformation thereof is restricted, said seal member being formed with a seal member passage which is defined by an inner cylindrical surface of said seal member, the seal member passage having an axis that is aligned with an axis of said insertion passage, and said seal member including a contact portion formed on a part of said inner surface, said contact portion being arranged in close vicinity of said instrument so as to provide seal condition by being in contact with said instrument when said seal member is deformed by being compressed, wherein said contact portion is constituted into a narrowed portion formed in said seal member passage so as to have a reduced inner diameter, and said narrowed portion is formed by constituting a shape of said seal member passage so that the inner diameter thereof is gradually reduced until reaching a minimum diameter thereof; and

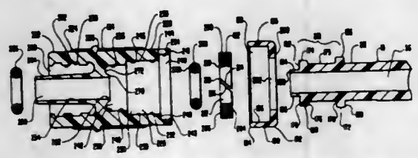
adjustment means for compressing said seal member so as to deform it, thereby providing the fluid-tight seal condition, wherein said contact portion of said seal member is adapted to be deformed such that the contact area between the narrowed portion thereof and said instrument becomes larger as more compressive force is applied on said seal member by said adjustment means.

5,599,328

SPLIT RING ASSEMBLY FOR AN AIRLESS ROTATABLE CONNECTOR

Brian W. Stevens, Pleasant Grove, Utah, assignor to Merit Medical Systems, Inc., South Jordan, Utah

Filed Jul. 14, 1995, Ser. No. 502,481
Int. Cl.[6] A61M *25/00*
U.S. Cl. 604—283 **35 Claims**



1. A rotatable connector for attachment to a medical device, said connector comprising:

(a) a tubular body having a distal end, an exterior surface, and an interior surface defining a passage longitudinally extending therethrough, said tubular body having an enlarged retaining flange with an outer diameter positioned at said distal end and extending radially outward from said exterior surface of said tubular body;

(b) an annular cap having an aperture with an inner diameter larger than said outer diameter of said retaining flange, said cap receiving said distal end of said tubular body through said aperture so as to rotatably encircle said tubular body proximal of said retaining flange;

(c) a split ring rotatably encircling said tubular body between said retaining flange and said cap, said split ring having an inner diameter smaller than said outer diameter of said retaining flange and an outer diameter larger than said inner diameter of said aperture of said cap; and

(d) a tubular hub having a proximal end, an exterior surface, and an interior surface defining a passageway longitudinally extending therethrough, said passageway comprising:

(i) an access chamber positioned at said proximal end of said hub and having a distal end and an inner diameter, said access chamber receiving a portion of said distal end of said tubular body in a mating relationship to enable said proximal end of said hub to be rigidly coupled to said cap so that said hub is rotatable about said tubular body concurrently with said cap; and

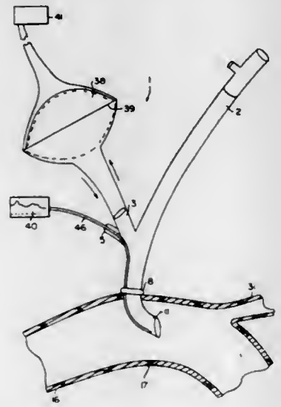
(ii) a transfer duct having a proximal end concentric with said distal end of said access chamber, said transfer duct having an inner diameter smaller than said inner diameter of said access chamber and being rotatably fluid coupled with said passage of said tubular body.

5,599,329

MULTI PURPOSE PERFUSION CANNULA

Shlomo Gabbay, 1 Randall Dr., Short Hills, N.J. 07078

Division of Ser. No. 992,116, Dec. 17, 1992, Pat. No. 5,330,451.
This application Feb. 23, 1994, Ser. No. 200,211
Int. Cl.[6] A61M *25/00*
U.S. Cl. 604—284 **21 Claims**



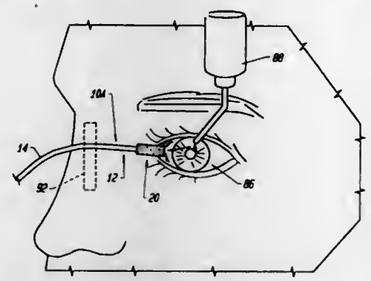
1. A perfusion cannula for insertion into an artery, a main channel fluidly connected to an intra-aortic portion of said cannula, said main channel in fluid connection with an aortic perfusion line of a cardiopulmonary bypass, said portion having a proximal end adjacent said main channel and a distal end remote from said main channel, a first side port adapted for fluid connection to a balloon pump at a remote end and in fluid connection with said portion at a near end, a blood pressure port fluidly connected to a blood pressure monitoring tube, said tube being within said portion and extending to a pressure point upstream of said distal end, said tube being adapted for connection to a blood pressure monitoring device and a girdle surrounding a part of said artery, said cannula extending through said girdle into said artery.

5,599,330

SURGICAL WICKING DEVICE

Edgar A. Rainin, 111 Wild Oak Ct., Danville, Calif. 94526

Continuation-in-part of Ser. No. 156,584, Nov. 23, 1993, abandoned. This application Sep. 14, 1994, Ser. No. 306,173
Int. Cl.[6] A61M *1/00*
U.S. Cl. 604—317 **8 Claims**



1. A surgical fluid aspiration device, comprising:

a. means for providing a suction force;

b. a conduit having a first end portion and a second end portion, terminating in open end, said first end portion being connected to the means for providing a suction force;

c. a porous element possessing an outer surface and a matrix within, said matrix having an inner zone spaced from said outer surface, said porous element being capable of transporting fluids from said outer surface to said matrix inner zone by capillary flow only;

d. fastening means for holding said open end of said second end portion of said conduit to the interior of said porous element adjacent said matrix inner zone to permit flow of fluids from said matrix inner zone to said conduit only by the influence of the suction force; and

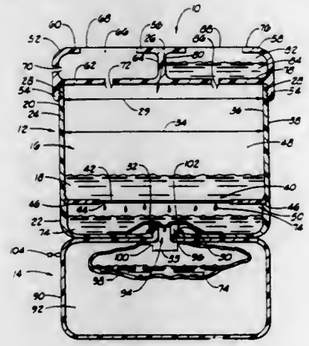
e. means for determining the magnitude of the suction force of the means for providing a suction force, to provide the suction force only to said inner zone of said porous element.

5,599,331

FLUID COLLECTION DEVICE

George P. Hemstreet, Oklahoma City; Karl H. Bergey, Norman; Robert E. Hurst, and Rebecca B. Bonner, both of Oklahoma City, all of Okla., assignors to The Board of Regents of the University of Oklahoma, Norman, Okla.

Division of Ser. No. 5,448, Jan. 19, 1993, Pat. No. 5,380,289.
This application Jan. 9, 1995, Ser. No. 370,149
Int. Cl.[6] A61B *5/00*
U.S. Cl. 604—317 **31 Claims**



1. An apparatus for collecting a biological fluid, the apparatus comprising:

a container having a first end having a first aperture, a second end having a second aperture, and a body extending from the first end to the second end and enclosing a space located therebetween;

filtering means disposed within the space and mounted between the first end of the container and the second end of the container such that the space is subdivided into a first compartment between the filtering means and the first end and a second compartment between the filtering means and the second end, the first compartment for receiving a cell-containing fluid to be filtered by the filtering means and the second compartment for receiving a filtrate; and

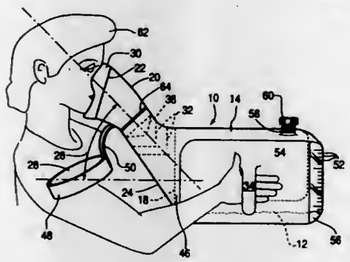
a reactant dispenser comprising means for storing and delivering a reactant into the first compartment of the container for reacting with the cell-containing fluid disposed therein, the reactant dispenser connected to the container and in communication with the space of the body.

5,599,332

PORTABLE RECEPTACLE FOR RECEIVING AND CONTAINING EMESIS

Karen A. Cashel, 1611 Diamond Dr., Newtown, Pa. 18940

Filed Dec. 22, 1995, Ser. No. 577,352
Int. Cl.[6] A61M *1/00*
U.S. Cl. 604—317 **18 Claims**



1. A portable receptacle for receiving and containing emesis comprising:

A. a main body member defining an emesis containment chamber means therein, said main body member defining an chamber opening means therein in fluid flow communication with respect to said emesis containment chamber means to facilitate flow of emesis thereinto;

B. a neck means defining a neck inlet means and a neck outlet means therein and a neck conduit means extending therethrough from said neck inlet means to said neck outlet means, said neck inlet means and said neck conduit means and said neck outlet means being in fluid flow communication with respect to one another, said neck outlet means being attached with respect to said chamber opening means defined in said main body member to facilitate fluid flow communication between said neck conduit means and said emesis containment chamber means, said neck conduit means being oriented angularly oblique with respect to said main body member to facilitate flow of emesis through said neck conduit means into said emesis containment chamber means;

C. a mouthpiece means attached with respect to said neck means at said inlet means thereon to facilitate positioning of said neck inlet means adjacent the mouth of a user for receiving emesis therefrom, said mouthpiece means being rotatably movably mounted with respect to said main housing means to facilitate engagement thereof with respect to the mouth of a patient;

D. a baffle means positioned within said neck conduit means defined in said neck means to allow emesis to move therethrough into said emesis containment chamber means and to

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minimize spillage and leakage outwardly through said neck conduit means from said emesis containment chamber means; and

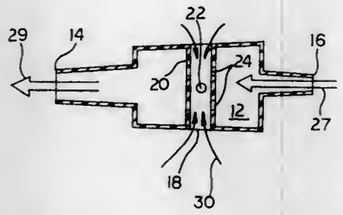
E. a handle means secured to said main body member to facilitate holding and stabilizing of said main body member during usage of the portable emesis receptacle.

5,599,333

SUCTION ADAPTER

Robert W. Atkinson, Dover, Ohio, assignor to Zimmer, Inc., Warsaw, Ind.

Filed Dec. 29, 1994, Ser. No. 366,151
Int. Cl.[6] A61M *1/00*
U.S. Cl. 604—326 **10 Claims**



1. A suction adapter usable by a user for connecting a surgical drain tube to a suction source, the suction adaptor comprising:

a housing defining an interior space;

a fluid port in the housing in fluid communication with the interior space;

a suction port in the housing in fluid communication with the interior space;

a first ventilation port in the housing;

a second ventilation port in the housing opposite to the first ventilation port, the size of the housing and the location of the ports being such that the ports can be readily occluded by fingers of one hand of said user when said user grasps the housing;

a ventilation tube extending through the interior space, the ventilation tube having first and second ends and a side wall, the ventilation tube being open at both the first and second ends, each of the ends communicating with a different one of the first and second ventilation ports, the ventilation tube containing a plurality of ventilation holes in its side wall through which it communicates with the interior space to allow the passage of air from the ventilation port through the ventilation tube and into the interior space.

5,599,334

ABSORBENT ARTICLE WITH SUBSTANTIAL VOLUME CAPACITY AND RETAINABLE SHAPE

Lee W. Johnston, Downingtown; Timothy A. Smith, Sanatoga; Carol A. Gephart, Spring City; Mary E. Doucette, East Lansdowne, and Louis P. Bove, Trappe, all of Pa., assignors to Confab, Inc., King of Prussia, Pa.

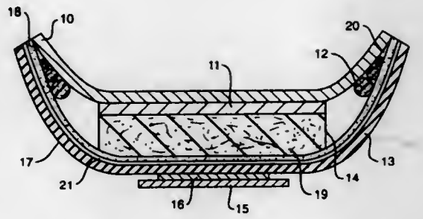
Filed Nov. 12, 1993, Ser. No. 151,385
Int. Cl.[6] A61F *13/15*
U.S. Cl. 604—368 **20 Claims**

1. An absorbent cup-shaped article comprising:

(a) a cover sheet of a fluid pervious material;

(b) an absorbent core permeated with a superabsorbent polymer and having a garment-facing surface and a body-facing surface;

(c) a multi-layered moisture barrier laminate, comprised of a polymeric foam layer and at least one thermally bonded layer, wherein said laminate has a flexural resistance of from about 60 grams to about 106 grams;



(d) said laminate is positioned with said foam layer adjacent the garment-facing surface of said absorbent core, the cover sheet is positioned adjacent the body-facing surface of said absorbent core and the cover sheet and laminate being sealed together to enclose said absorbent core; and

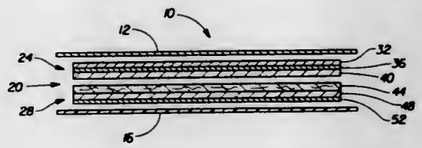
(e) elastic members attached to longitudinal sides of said article to form said cup-shaped article which has a cupping strength of from about 30 grams to about 90 grams.

5,599,335

ABSORBENT MEMBERS FOR BODY FLUIDS HAVING GOOD WET INTEGRITY AND RELATIVELY HIGH CONCENTRATIONS OF HYDROGEL-FORMING ABSORBENT POLYMER

Stephen A. Goldman, Wyoming; Nancy A. Haynes, Okeana; Todd L. Mansfield, Cincinnati, all of Ohio; Manfred Plischke, Steinbach, Germany; Herbert L. Retzsch, Cincinnati, Ohio; Trevor Walker, Cincinnati, Ohio, and Gerald A. Young, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 29, 1994, Ser. No. 219,574
Int. Cl.[6] A61F *13/15;13/20*
U.S. Cl. 604—368 **40 Claims**



1. An absorbent member for the containment of aqueous body fluids, which comprises at least one region comprising hydrogel-forming absorbent polymer in a concentration of from about 60 to 100% by weight, said hydrogel-forming polymer providing a gel continuous fluid transportation zone when in a swollen state and having:

(a) Saline Flow Conductivity (SFC) value of at least about 30×10^{-7} cm^{3}sec/g;

(b) a Performance under Pressure (PUP) capacity value of at least about 23 g/g

under a confining pressure of 0.7 psi (5 kPa);

(c) a basis weight of at least about 50 gsm;

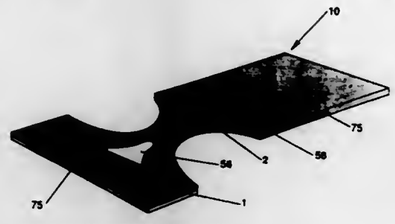
said region having sufficient wet integrity such that said gel continuous zone substantially maintains its ability to acquire and transport said body fluids through said gel continuous zone.

5,599,336

ABSORBENT HYDROGEL FINES IN ABSORBENT STRUCTURES

Manfred Plischke, Steinbach/Ts, Germany, assignor to The Procter & Gamble Company, Cincinnati, Ohio

PCT No. PCT/US93/05940, § 371 Date Dec. 22, 1994, § 102(e) Date Dec. 22, 1994, PCT Pub. No. WO94/01068, PCT Pub. Date Jan. 20, 1994
PCT Filed Jun. 22, 1993, Ser. No. 360,766
Claims priority, application European Pat. Off., Jul. 2, 1992, 92202008
Int. Cl.[6] A61F *13/15;13/20*
U.S. Cl. 604—368 **12 Claims**



1. An absorbent structure comprising:

an absorbent dusting layer, said absorbent dusting layer comprising a fibrous matrix in which absorbent hydrogel particles are distributed, wherein at least about 60% of said absorbent hydrogel particles in said dusting layer have a particular size less than 105 micrometers; and

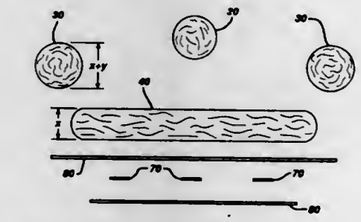
an absorbent primary layer disposed on said dusting layer, said absorbent primary layer comprising a fibrous matrix in which absorbent hydrogel particles are distributed, wherein at least about 70% by weight of said absorbent hydrogel particles in said primary layer have a particle size of 105 micrometers or larger.

5,599,337

RAISED CENTER SANITARY NAPKIN WITH RAISED EDGES

Sherilyn S. Mccoy, Monmouth Junction, N.J., assignor to McNeil-PPC, Inc., Skillman, N.J.

Filed May 2, 1994, Ser. No. 236,310
Int. Cl.[6] A61F *13/15*
U.S. Cl. 604—385.1 **13 Claims**



1. An absorbent article comprising:

a. an elongate napkin base having a body facing surface, a garment facing surface, a front lateral end, a rear lateral end, a raised central member, a first fibrous raised hydrophobic longitudinal edge and a second fibrous raised hydrophobic longitudinal edge;

b. the first and second raised fibrous longitudinal edges having a thickness greater than the thickness of the elongate napkin base;

c. the napkin base having a central portion located in between the first and second fibrous raised longitudinal edges;

d. the raised central member parallel to the first and second fibrous raised longitudinal edges, the distance between the raised central member and the first raised longitudinal edge being equal to the distance between the raised central member and the second raised longitudinal edge;

e. the first hydrophobic longitudinal edge having an inner wall facing the raised central member and an outer wall facing away from the raised central member;

f. the second hydropbobic longitudinal edge having an inner wall facing the raised central member and an outer wall facing away from the raised central member;

g. the inner wall of the first edge having an upper portion and a lower portion;

h. the outer wall of the first edge having an upper portion and a lower portion;

i. the inner wall of the second edge having an upper portion and a lower portion;

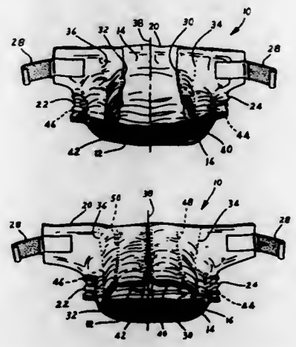
j. the outer wall of the second edge having an upper portion and a lower portion.

5,599,338

DIAPERS WITH ELASTICIZED SIDE POCKETS

Kenneth M. Enloe, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Continuation of Ser. No. 310,106, Feb. 13, 1989, Pat. No. 5,415,644, which is a continuation of Ser. No. 242,460, Sep. 9, 1988, abandoned, which is a continuation of Ser. No. 85,422, Aug. 13, 1987, Pat. No. 4,846,823, which is a continuation of Ser. No. 786,891, Oct. 11, 1985, Pat. No. 4,704,116, which is a continuation-in-part of Ser. No. 627,164, Jul. 2, 1984, abandoned. This application May 9, 1995, Ser. No. 437,397
Int. Cl.[6] A61F *13/15;13/20*
U.S. Cl. 604—385.2 **26 Claims**



1. An integral disposable absorbent article comprising:

a liquid pervious topsheet having a top surface;

a backsheet connected to the topsheet;

an absorbent core disposed between the topsheet and the backsheet;

a pair of elastically contractible gasketing cuffs, each disposed adjacent to a longitudinal edge of the absorbent article;

a pair of barrier cuffs,

(a) each barrier cuff having a proximal edge and a distal edge, and

(b) each barrier cuff being disposed inboard of one of the gasketing cuffs; and

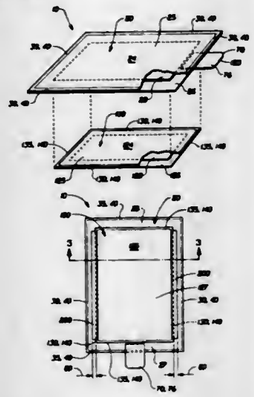
means for tensioning the barrier cuffs, to space a portion of the distal edge of each barrier cuff away from the top surface of the topsheet, whereby a channel is formed by the two barrier cuffs and a portion of the topsheet between the barrier cuffs.

5,599,339

ABSORBENT ARTICLE

James C. Horney, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 31, 1995, Ser. No. 551,238
Int. Cl.[6] A61F 13/15;13/20
U.S. Cl. 604—387 9 Claims



1. An absorbent article, comprising:
a first upper absorbent article having a length, a width, a periphery comprising a pair of end edges and a pair of longitudinal edges, a body facing surface and a garment facing surface, said first absorbent article comprising a liquid pervious topsheet, a liquid impervious backsheet joined to said topsheet, and an absorbent core positioned between said topsheet and said backsheet;
a second lower absorbent article having a length which is less than the length of said first absorbent article, a width which is less than the width of said first absorbent article, a periphery comprising a pair of end edges and a pair of longitudinal edges, a body facing surface and a garment facing surface, said second absorbent article comprising a liquid pervious topsheet, a liquid impervious backsheet joined to said topsheet, and an absorbent core positioned between said topsheet and said backsheet, said garment facing surface of said first absorbent article being positioned adjacent to said body facing surface of said second absorbent article, said longitudinal edges of said first and second absorbent articles being positioned substantially parallel to one another; and
at least two periphery securement members releasably attaching said first and second absorbent articles together, said securement members positioned on said backsheet of said second absorbent article, said securement members extending outwardly from said longitudinal edges of said second absorbent article onto said backsheet of said first absorbent article, said securement members providing a protective seal along said longitudinal edges against contamination of said second absorbent article prior to its use.

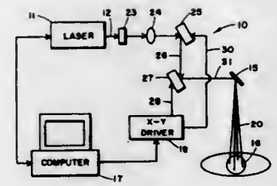
5,599,340

LASER BEAM OPHTHALMOLOGICAL SURGERY METHOD AND APPARATUS

Gabriel Simon, Maestre Nicolau #23-6A, 08021 Barcelona, Spain, and Cheng-Hso Huang, 8843 Larwin La., Orlando, Fla. 32817

Continuation-in-part of Ser. No. 352,357, Dec. 9, 1994, Pat. No. 5,480,396. This application Nov. 13, 1995, Ser. No. 556,489
Int. Cl.[6] A61N 5/06
U.S. Cl. 606—4 18 Claims

12. A laser ophthalmological surgery apparatus comprising:
a laser for generating a laser beam;



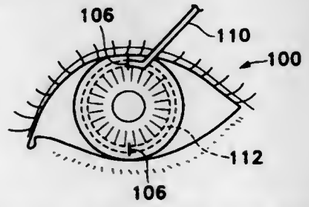
a scanner positioned for receiving said laser beam from said laser and producing a predetermined scanning pattern from the laser beam impinging thereupon;
a computer for generating a random scanning pattern signal therein, said computer being connected to said scanner for controlling said scanner to produce a random overlapping scanning beam pattern from said laser beam over a predetermined area; and
directing optics for directing said random pattern scanning beam onto the cornea of a patient's eye for ablating a portion of the cornea of the eye whereby a laser beam can perform a surgical procedure on a patient's eye.

5,599,341

LASER SURGICAL PROCEDURE AND DEVICE FOR TREATMENT OF THE CORNEA

Mark L. Mathis, Fremont, and Thomas A. Silvestrini, Alamo, both of Calif., assignors to Keravision, Inc., Fremont, Calif.

Filed Jun. 15, 1994, Ser. No. 259,886
Int. Cl.[6] A61B 17/36
U.S. Cl. 606—5 13 Claims



1. A procedure for altering the shape of the anterior corneal surface of an eye having a corneal mass posterior to the anterior corneal surface, comprising the steps of:
producing at least one access site into the corneal mass posterior to Bowman's layer wherein at least a portion of said access site passes through a portion of the eye outside the corneal mass posterior to Bowman's layer;
introducing through said at least one access site a laser probe; and
actuating said laser probe to modify the volume of the corneal mass adjacent to said probe.

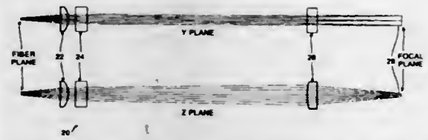
5,599,342

METHOD FOR TREATING PIGMENTATION ABNORMALITIES USING PULSED LASER RADIATION WITH AN ELONGATED CROSS-SECTION AND APPARATUS FOR PROVIDING SAME

James C. Hsia, Andover, and Robert Schiller, Concord, both of Mass., assignors to Candela Laser Corporation, Wayland, Mass.

Filed Jan. 27, 1995, Ser. No. 379,776
Int. Cl.[6] A61N 5/06
U.S. Cl. 606—9 14 Claims

9. A dermatological method of treating a vascular lesion in human skin comprising:



producing a beam of pulsed laser radiation of at least one hundred microseconds in duration and at least one-tenth joule in energy using a pulsed laser and delivery system, the beam of pulsed laser radiation having an elongated cross-sectional area and an aspect ratio greater than two;
irradiating an elongated area of the skin that includes the vascular lesion with the pulsed beam of laser radiation without cutting said skin.

5,599,343

Patent Not Issued For This Number

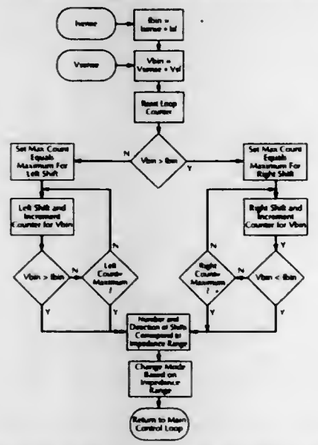
5,599,344

CONTROL APPARATUS FOR ELECTROSURGICAL GENERATOR POWER OUTPUT

William G. Paterson, Longmont, Colo., assignor to Valleylab Inc., Boulder, Colo.

Filed Jun. 6, 1995, Ser. No. 468,950
Int. Cl.[6] A61H 5/00
U.S. Cl. 606—34 8 Claims

1. A power control apparatus for an electrosurgical generator for



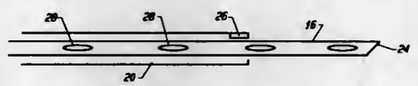
use in controlling output power from the generator to the tissue or bodily fluids of a patient, the power control apparatus comprising:
a radio frequency output stage in the electrosurgical generator for generating an output current and an output voltage;
a current sensor in the electrosurgical generator which is electrically connected to receive the output current and to produce a current signal proportional to the output current;
a voltage sensor in the electrosurgical generator which is electrically connected to receive the output voltage and to produce a voltage signal proportional to the output voltage;
a microprocessor in the electrosurgical generator having a plurality of input ports and at least one output port, wherein a first input port is electrical connection with the voltage signal, a second input port is in electrical connection with the current signal;
an algorithm in the microprocessor for generating signals for the at least one output port of the microprocessor, the algorithm first expressing the voltage signal as a first scaled binary number and expressing the current signal as a second scaled binary number, the algorithm next comparing the first scaled binary number with the second scaled binary number, and if an inequality is found between the first binary number and the second binary number the algorithm will bit shift the first or the second scaled binary number to determine a range of impedance, the algorithm programmed to then generate signals for the output port of the microprocessor based on the range of impedance, and the microprocessor thereby controlling the output power.

5,599,345

RF TREATMENT APPARATUS

Stuart D. Edwards, Los Altos; James Baker; Bruno Strul, both of Palo Alto, and Ronald G. Lax, Grass Valley, all of Calif., assignors to ZoMed International, Inc., Mountain View, Calif.

Continuation-in-part of Ser. No. 148,439, Nov. 8, 1993, Pat. No. 5,458,597. This application Aug. 24, 1994, Ser. No. 295,166
Int. Cl.[6] A61B 17/39
U.S. Cl. 606—41 18 Claims



1. An RF treatment apparatus, comprising:
a catheter including a catheter lumen;
a removable treatment needle electrode positioned in the catheter lumen in a fixed relationship to the catheter, the treatment needle electrode including a needle lumen and a needle electrode distal end;
a return electrode;
a removable introducer slidably positioned in the treatment needle lumen, the introducer including an introducer distal end;
a first sensor positioned on one of a surface of the treatment electrode or the introducer;
an RF power source coupled to the treatment needle electrode and the return electrode; and
resources connected with the first sensor, return electrode and the RF power source for maintaining a selected power at the treatment electrode independent of changes in current or voltage.

5,599,346

RF TREATMENT SYSTEM

Stuart D. Edwards, Los Altos; James Baker; Bruno Strul, both of Palo Alto, and Ronald G. Lax, Grass Valley, all of Calif., assignors to ZoMed International, Inc., Mountain View, Calif.

Continuation-in-part of Ser. No. 148,439, Nov. 8, 1993, Pat. No. 5,458,597. This application Aug. 24, 1994, Ser. No. 295,200
Int. Cl.[6] A61B 17/39
U.S. Cl. 606—41 27 Claims



1. An RF treatment system, comprising:
a first catheter including a first catheter lumen and a first catheter distal end;

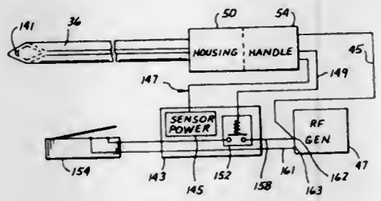
a first needle electrode including a first needle electrode lumen and a first needle electrode distal end, the first needle electrode being at least partially positioned in the first catheter lumen;
a first insulator sleeve positioned in a slideable surrounding relationship to the first needle electrode to define a first needle ablation surface;
a second catheter including a second catheter lumen and a second catheter distal end;
a second needle electrode including a second needle electrode lumen and a second needle electrode distal end, the second needle electrode being at least partially positioned in the second catheter lumen;
a second insulator sleeve positioned in a slideable surrounding relationship to the second electrode to define a second needle ablation surface;
an RF power source connected to the first and second needle electrodes, the first and second needle electrodes providing bipolar RF ablation between the two needles in an ablation volume;
a deflectable introducer with a laterally deflectable distal end and an ablation volume temperature sensor positioned at the deflectable introducer distal end, the deflectable introducer distal end being advanced in and out of one of the distal end of the first or second needle electrodes to measure a temperature of tissue in the ablation volume; and
an apparatus connected to the introducer for advancing the introducer in and out of one of the distal end of the first or second needle electrodes.

5,599,347

SURGICAL TROCAR WITH CUTOFF CIRCUIT

Charles C. Hart, Huntington Beach; Nabil Hilal, Mission Viejo; Martin V. Shabaz, Santa Ana, and Mark A. Ritchart, Murrieta, all of Calif., assignors to Applied Medical Resources Corporation, Laguna Hills, Calif.

Continuation of Ser. No. 45,369, Apr. 9, 1993, abandoned, which is a continuation-in-part of Ser. No. 791,878, Nov. 13, 1991, abandoned, which is a continuation-in-part of Ser. No. 654,815, Feb. 13, 1991, abandoned. This application Sep. 7, 1994, Ser. No. 303,125
Int. Cl.[6] A61B *17/36*
U.S. Cl. 606—42 **41 Claims**



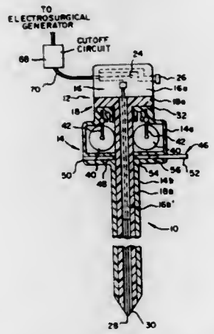
1. A trocar system for penetrating a tissue wall in order to provide access for instruments extending into a body cavity of a patient, comprising:
an obturator having a shaft with a blunt distal tip;
a cannula having a working channel adapted to removably receive the obturator and to receive the instruments after the obturator has been removed from the cannula;
a cutting element disposed at the blunt distal tip of the obturator and extending beyond the cannula when the obturator is disposed in the cannula, the cutting element having properties for being electrically energized to cut tissue;
a power generator for generating a cutting signal;
conduction means for conducting the cutting signal from the power generator to the cutting element at the blunt tip of the obturator; and
means responsive to penetration of the tissue wall for inhibiting further electrical energizing of the cutting element in order to prevent further cutting of tissue by the cutting element.

5,599,348

ELECTROSURGICAL TROCAR ASSEMBLY

John S. Gentella, Madison; Frank Williams, Frankfort; William C. Wheatley, Utica; Ernesto G. Sevilla, Herkimer; Sharyn Longo, Frankfort, and Deborah Forbey, Smyrna, all of N.Y., assignors to Conmed Corporation, Utica, N.Y.

Continuation of Ser. No. 853,149, Mar. 17, 1992, abandoned. This application Jan. 27, 1994, Ser. No. 187,127
Int. Cl.[6] A61B *17/32*
U.S. Cl. 606—45 **24 Claims**



1. A trocar assembly comprising a first trocar comprising a first elongate trocar shaft, of a first outer diameter, including a first tapered surface at the distal end and an electrosurgical cutting element comprising a central conductive rod extending along the longitudinal axis of the first shaft, said rod terminating in a distal end extending beyond said first tapered surface and being adapted to be connected to an electrosurgical generator; and a second trocar comprising a second elongate hollow trocar shaft of a second, larger outer diameter, having a distal end comprising a second tapered surface, and including a longitudinal bore in which, in use, the first trocar shaft of the first trocar is received in nested relation; and a cannula including a longitudinal bore in which, in use, both the first and second trocar shafts can be received.

5,599,349

V SHAPED GROOVED ROLLER ELECTRODE FOR A RESECTOSCOPE

Frank D. D'Amelio, Solvang, Calif., assignor to Circon Corporation, Santa Barbara, Calif.

Filed Sep. 30, 1994, Ser. No. 312,956
Int. Cl.[6] A61B *17/39*
U.S. Cl. 606—46 **12 Claims**



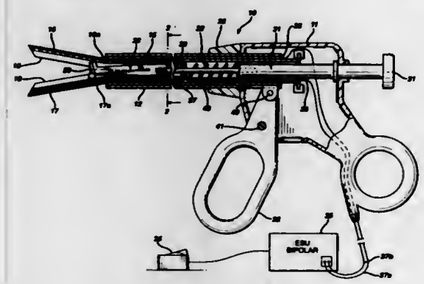
1. An electrode for use with a resectoscope comprising
an electrode lead member terminating in an active member;
an electrode support member operatively connected to said active member having an elongated semi-rigid bifurcated arm terminating in a conductive core spaced a predetermined distance from said active member; and
an electrically conductive grooved roller operatively mounted on the conductive core having an outer surface and at least one circumferentially extending "V" shaped slot defined by a pair of spaced walls having substantially equal depth formed in the outer surface thereof, said grooved roller including a central opening extending therethrough for rotatably mounting said grooved roller on said conductive core.

5,599,350

ELECTROSURGICAL CLAMPING DEVICE WITH COAGULATION FEEDBACK

Dale R. Schulze, Lebanon; James Giordano, Milford, and David Yates, West Chester, all of Ohio, assignors to Ethicon Endo-Surgery, Inc., Cincinnati, Ohio

Filed Apr. 3, 1995, Ser. No. 415,957
Int. Cl.[6] A61B *17/39*
U.S. Cl. 606—51 **1 Claim**



1. An electrosurgical instrument comprising:
a shaft having a distal end and a longitudinal axis;
an end effector located at the distal end of the shaft, adapted to receive bipolar energy therein, said end effector comprising:
a distal end; and
first and second elements comprising first and second opposed tissue contacting surfaces respectively and first and second outer surfaces respectively, said tissue contacting surfaces moveable relative to each other from an open, spaced-apart position for positioning tissue therebetween, to a closed position for approximating the tissue, at least a portion of one of said tissue contacting surfaces comprising a first electrode, and at least a portion of one of said tissue contacting surfaces comprising an electrically isolated second electrode; and
a temperature sensor coupled to at least one outer surface of said elements, said temperature sensor arranged to provide visual indication of the temperature of said end effector.

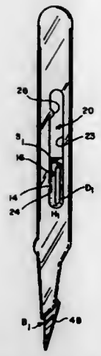
5,599,351

SCALPELS HAVING PERMANENT BLADE RETRACTION

Terry M. Haber, Lake Forest; William H. Smedley, Lake Elsinore, and Clark B. Foster, Laguna Niguel, all of Calif., assignors to Habley Medical Technology Corporation, Laguna Hills, Calif.

Filed Dec. 8, 1993, Ser. No. 163,910
Int. Cl.[6] A61B *17/32*
U.S. Cl. 606—167 **5 Claims**

1. A disposable scalpel comprising:
a scalpel handle defining a first side and a second side;
a scalpel blade;
means securing said scalpel blade to said scalpel handle including;



a body coupled to said handle, said body permitting movement of said scalpel blade relative to said scalpel handle, and
a detent member slidably engaged with said scalpel handle, said detent member exposed for manipulation relative to said scalpel handle from said first side and said second side of said scalpel handle;
first means for disposing said scalpel blade with respect to said scalpel handle between a scalpel storage position where said scalpel blade is covered and a scalpel use position where said scalpel blade is exposed for cutting, said first means including at least one detent on said detent member for co-action with at least one detent member attached to said scalpel handle; and
second means for one-way moving and maintaining said scalpel blade with respect to said scalpel handle from said scalpel use position to a stowed disposition with said blade permanently covered whereby said scalpel can be discarded, said second means including a detent on said detent member for co-action with a detent member attached to said handle.

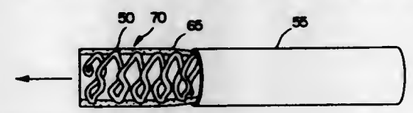
5,599,352

METHOD OF MAKING A DRUG ELUTING STENT

Thomas Q. Dinh, Minnetonka; Ronald J. Tuch, Plymouth, and Robert S. Schwartz, Rochester, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 79,222, Jun. 17, 1993, which is a continuation of Ser. No. 854,118, Mar. 19, 1992, abandoned. This application Sep. 15, 1994, Ser. No. 306,785
Int. Cl.[6] A61F *2/06;2/04*
U.S. Cl. 623—1 **13 Claims**

1. A method for making a drug eluting intravascular stent



comprising the steps of:
(a) providing a generally cylindrical stent body;
(b) applying to the stent body a first layer which is a solid composite of polymer and therapeutic substance; and
(c) applying as a second layer a layer of fibrin over the composite.

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5,599,353

COMPOSITION FOR THE OXIDATION DYEING OF KERATINOUS FIBERS COMPRISING 2-(β-HYDROXYETHYL)-PARA-PHENYLENEDIAMINE, 2-METHYLRESORCINOL AND 3-AMINOPHENOL, AND DYEING PROCESS USING SUCH A COMPOSITION

Jean Cotteret, Verneuil Sur Seine, and Marie-Pascale Audousset, Asnieres, both of France, assignors to L'Oreal, France

Filed Jun. 5, 1995, Ser. No. 460,879

Claims priority, application France, Jun. 6, 1994, 94 06900

Int. Cl.[6] A61K *7/13*

U.S. Cl. 8—412 **13 Claims**

1. An oxidation dyeing composition (A) comprising, in a medium appropriate for dyeing,

at least one oxidation dye precursor selected, from 2-(β-hydroxyethyl)-paraphenylenediamine and it acid addition salts and

at least two couplers selected from a combination of 2-methylresorcinol or at least one acid addition salt thereof with 3-aminophenol or at least one acid addition salt thereof,

said at least one oxidation dye precursor and at least two couplers selected from said combination being present in amounts effective to achieve oxidation dyeing in the presence of an oxidizing agent.

5,599,354

AZO DYE MIXTURES AND THEIR USE

Jean-Marie Adam, Rosenau, France; Peter Sutter, Muttenz, Switzerland, and Francine Casi, Eschnetzwiller, France, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Filed Feb. 5, 1996, Ser. No. 595,439

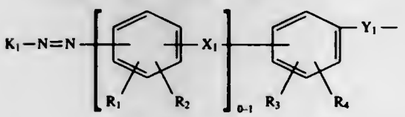
Claims priority, application Switzerland, Feb. 10, 1995, 0407/95

Int. Cl.[6] D06P *3/16;1/06;1/40*

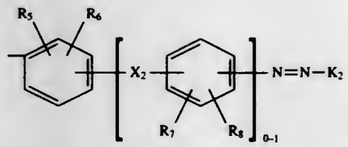
U.S. Cl. 8—641 **12 Claims**

1. A dye mixture consisting of

(a) 0–100% by weight of at least one dye mixture consisting essentially of a compound of the formula



(1)

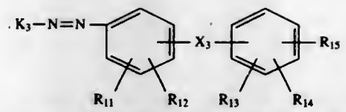


in which

K_1 and K_2 independently of one another are each the radical of a coupling component of the benzene or naphthalene series or of the heterocyclic series,

X_1 and X_2 are each independently of the other a bridging member of the formula $—SO_2—O—$, $—SO_2—N(R_9)—$, —COO— or $—CO—N(R_{10})—$ in which R_9 and R_{10} independently of one another are each hydrogen or C_1–C_4alkyl,

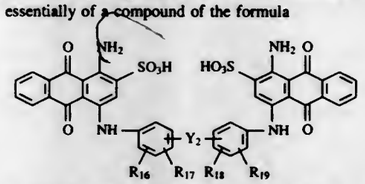
R_1, R_2, R_3, R_4, R_5, R_6, R_7 and R_8, independently of one another are each hydrogen, C_1–C_6alkyl, C_1–C_4alkoxy, halogen, sulfo, unsubstituted or halogen-substituted C_2–C_4alkanoylamino or an unsubstituted or halogen-substituted group $—NHCO—C_2$–C_4alkylene and Y_1 is a direct bond, straight-chain or branched C_1–C_6alkylene or C_5–C_8cycloalkylene, and a compound of the formula



(2)

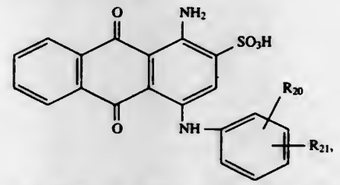
in which K_3 independently is as defined above for K_1; X_3 independently is as defined above for X_1; R_{11}, R_{12}, R_{13} and R_{14} independently of one another are each as defined above for R_1, and R_{15} is C_1–C_{12}alkyl, C_5–C_8cycloalkyl or halogen, in which the dye mixture of the dyes of formulae (1) and (2) contain at least one sulfo group, and wherein the dyes of formulae (1) and (2) are present in a weight ratio of 1:99 to 99:1, and

(b) 0–100% by weight of at least one dye mixture consisting essentially of a compound of the formula



(3)

in which R_{16}, R_{17}, R_{18} and R_{19} independently of one another are each hydrogen, C_1–C_6alkyl, C_1–C_4alkoxy, halogen, unsubstituted or halogen-substituted C_2–C_4alkanoylamino or an unsubstituted or halogen-substituted group $NHCO—C_2$–C_4alkylene and Y_2 is a direct bond, straight-chain or branched C_1–C_6alkylene or C_5–C_8cycloalkylene, and a compound of the formula



(4)

in which R_{20} is as defined above for R_{16}, and R_{21} is C_1–C_{12}alkyl, C_5–C_8cycloalkyl, C_2–C_4alkanoylamino or benzoylamino, and wherein the dyes of formulae (3) and (4) are present in a weight ratio of 1:99 to 99:1;

with the proviso that the sum of (a) and (b) is 100% by weight.

5,599,355

METHOD FOR FORMING THIN COMPOSITE SOLID ELECTROLYTE FILM FOR LITHIUM BATTERIES

Ganesan Nagasubramanian, 12028 Caribou, NE., Albuquerque, N.M. 87111, and Alan I. Attia, 41 Perry Dr., Needham, Mass. 02192

Continuation-in-part of Ser. No. 112,483, Aug. 20, 1993, Pat. No. 5,360,686. This application Jan. 19, 1994, Ser. No. 186,183

Int. Cl.[6] H01M *4/04*

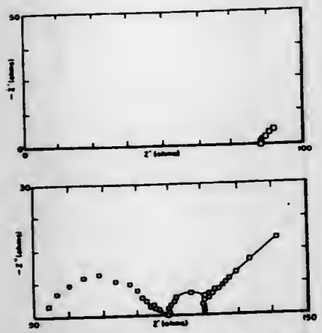
U.S. Cl. 29—623.5 **13 Claims**

1. A method of forming a film of a composite solid electrolyte comprising the steps of:

dissolving a lithium salt in a first solvent to form a solution, the first solvent being a cosolvent for the lithium salt and a binder polymer;

adding particles of a reinforcing filler to the solution to form a suspension;

adding a second solvent to the suspension, the second solvent being a solvent for the binder polymer and having low solubility for the lithium salt;



then adding the binder polymer to the suspension with stirring to dissolve the binder polymer in the suspension and form a uniform suspension of lithium salt coated particles of reinforcing filler in said solution of binder polymer; and

casting the uniform suspension into a film.

5,599,356

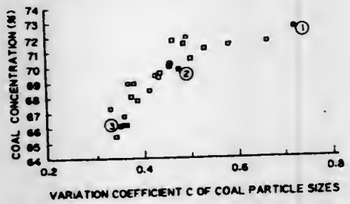
PROCESS FOR PRODUCING AN AQUEOUS HIGH CONCENTRATION COAL SLURRY

Noboru Hashimoto, Yokohama; Koichi Ito, Tokyo; Shinichi Tokuda, and Osamu Matsumoto, both of Yokohama, all of Japan, assignors to JGC Corporation, and Japan Com Company, Ltd., both of Tokyo, Japan

Continuation-in-part of Ser. No. 993,813, Dec. 18, 1992, abandoned, which is a continuation of Ser. No. 493,405, Mar. 14, 1990, abandoned. This application Aug. 1, 1994, Ser. No. 284,085.

Int. Cl.[6] C10L *1/32*; **B02C** *17/00*; **B65G** *53/30*

U.S. Cl. 44—280 **3 Claims**



1. A process for producing an aqueous high concentration coal slurry, comprising the steps of:

(1) pulverizing a coal material at a high concentration of 60 to 80% by weight in an aqueous medium containing a dispersing additive, to provide a slurry moiety (E) consisting of a high concentration aqueous coal slurry containing coal particles having a size of 100 μm or less; and

(2) separately providing a cake moiety (F) consisting of dehydrated coal cakes containing coal particles having a size of 500 μm or less, by pulverizing a coal material in a low concentration of from 30% to 50% by weight in water free from the dispersing additive, and dehydrating the resultant low concentration aqueous coal slurry; and

(3) mixing and kneading the cake moiety (F) with one or both of an aqueous medium and portion of the final high concentration coal aqueous slurry to provide a slurry moiety (G) consisting of an aqueous slurry of coal particles in a concentration of 60% to 80% by weight; and then

(4) mixing the slurry moiety (G) in a mixing ratio such that the ratio in weight of the coal particles in the slurry moiety (E) to those in the cake moiety (F) is in the range of from 8:2 to 5:5,

wherein the resultant aqueous high concentration coal slurry contains coal particles having a size of 5 μm or less in an amount of 15% by weight or more based on the total weight of the coal particles, and the resultant high concentration aqueous coal slurry comprises coal particles having a particle size of 500 μm or less and dispersed in an aqueous medium in the presence of a dispersing additive, at a particle size distribution in which a coefficient of variation in size of the coal particles is from 0.3 to 0.75 determined in accordance with the equation (I):

$$C=\sigma/M \quad (I)$$

wherein C represents the coefficient of variation in the size of the coal particles, M represents an average general logarithmic size of the coal particles calculated in accordance with the equation (II):

$$M=\Sigma(\log_{10}Si)\times Vi \quad (II)$$

in which M is as defined above, Si represents an average size in μm of the coal particles in fraction No. i which is one of a plurality of fractions provided by dividing the entire amount of the coal particles in accordance with the order of the particle size, each fraction consisting of coal particles having a size in a predetermined range, and Vi represents a ratio of the amount in weight or volume of the portion of the coal particles in fraction No. i to the entire amount of the coal particles, and σ represents a standard deviation of the size of the coal particles calculated in accordance with the equation (III):

$$\sigma=(\Sigma((\log_{10}Si-M)^2\times Vi))^{0.5} \quad (III)$$

in which Si, M and Vi are as defined above.

5,599,357

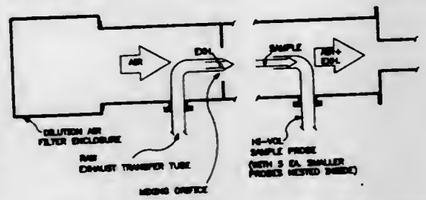
METHOD OF OPERATING A REFINERY TO REDUCE ATMOSPHERIC POLLUTION

Thomas A. Leeper, Baton Rouge, La., assignor to Ehtyl Corporation, Richmond, Va.

Continuation of Ser. No. 749,101, Aug. 23, 1991, abandoned, which is a continuation-in-part of Ser. No. 552,098, Jul. 13, 1990, abandoned. This application May 4, 1995, Ser. No. 434,614

Int. Cl.[6] C10L *1/18*

U.S. Cl. 44—355 **16 Claims**



1. A method of reducing atmospheric pollution which comprises:

a) operating a refinery having a rated crude capacity of more than about 50,000 barrels per stream day, and utilizing in said operation at least 50% of the rated capacity in producing gasoline hydrocarbons, said refinery including at least one reformer operation having a furnace operated on fuel oil;

b) forming a finished gasoline fuel having a target octane number by (1) blending together gasoline hydrocarbon blending components of the gasoline boiling range comprising saturates, olefins and aromatics to form a base fuel, and (2) including in said base fuel at least one cyclopentadienyl manganese tricarbonyl compound in an amount equivalent to up to about 0.03 gram of manganese per gallon to form a finished gasoline fuel, with the proviso that in achieving the

target octane number of said finished gasoline fuel, the amounts of said olefins and said aromatics are minimized and the consequent loss of octane quality resulting from such minimization is compensated for by said inclusion of said at least one cyclopentadienyl manganese tricarbonyl compound;

c) conducting said reformer operation under conditions of reduced severity in producing aromatics for said base fuel and decreasing the amount of atmospheric emissions from the combustion of said fuel oil in said furnace; and

d) delivering said finished gasoline fuel for use as fuel to operate spark ignition internal combustion engines so that combustion of said gasoline fuel in the engines yields tail-pipe exhaust products in which (1) the maximum reactivity of said exhaust products produced by said combustion is reduced, (2) the amount of potential smog-forming components released into the atmosphere in said exhaust products is reduced, and (3) at least the content of NO_x in the said exhaust products is also reduced.

5,599,358

GAS OIL COMPOSITION

Fulvio Giavazzi, San Giuliano Milanese, and Febronio Panarello, Carugate, both of Italy, assignors to Euron S.p.A., Milan, Italy

Continuation of Ser. No. 274,620, Jul. 13, 1994, abandoned. This application Dec. 18, 1995, Ser. No. 573,875

Claims priority, application Italy, Jul. 21, 1993, MI93A1611

Int. Cl.[6] C10L *1/18*

U.S. Cl. 44—388 **7 Claims**

1. Gas oil composition for motor vehicles of petroleum or synthetic origin, comprising a gas oil having a sulfur content equal to, or lower than, about 0.2 per cent by weight, a content of aromatic hydrocarbons lower than about 30% by weight, and up to about 10% by volume of ether containing compounds, characterized in that said composition contains, as a lubricity improver agent, from 100 to 10,000 parts per million parts by weight of C_1–C_5 alkyl esters of a mixture of saturated and unsaturated, straight-chain fatty acids of from C_{12} to C_{22} carbon atoms, derived from vegetable oleaginous seeds.

5,599,359

POLYALKYLPHENYL AND POLYALKYLOXYCARBONYLPHENYL HYDROXYBENZOATES AND FUEL COMPOSITIONS CONTAINING THE SAME

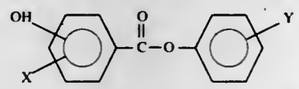
Richard E. Cherpeck, Cotati, Calif., assignor to Chevron Chemical Company, San Ramon, Calif.

Filed Dec. 29, 1995, Ser. No. 580,917

Int. Cl.[6] C10L *1/18*

U.S. Cl. 44—388 **33 Claims**

12. A fuel composition comprising a major amount of hydrocarbons boiling in the gasoline or diesel range and an amount effective to control engine deposits of a compound having the formula:



wherein X is hydrogen or hydroxy, and Y is —R or —C(O)O—R, wherein R is a polyalkyl group having an average molecular weight of about from 450 to 5000; or a fuel soluble salt thereof.

5,599,360

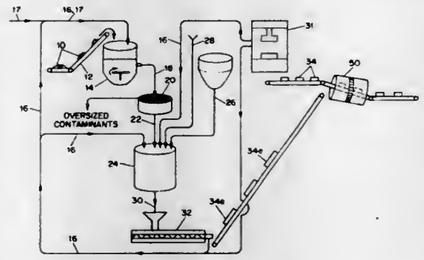
METHOD FOR THE MANUFACTURE OF CHAR-CONTAINING ARTICLES

Robert O. Stillman, 200 E. 62nd St. Apt 22A, New York, N.Y. 10021

Filed Dec. 8, 1994, Ser. No. 351,699

Int. Cl.[6] C10L *5/02*

U.S. Cl. 44—522 **15 Claims**



1. A process for fabricating char-containing combustible products, comprising the steps of:

providing, in a first providing step, an aqueous pulp containing cellulose fibers, said pulp comprising a mixture of water and at least one processed cellulosic material selected from the group consisting of waste paper and paperboard;

providing, in a second providing step, a communited char;

blending the communited char and aqueous pulp to form a slurry; and

conveying said slurry to a press or an extrusion machine to form at least one char-containing product.

5,599,361

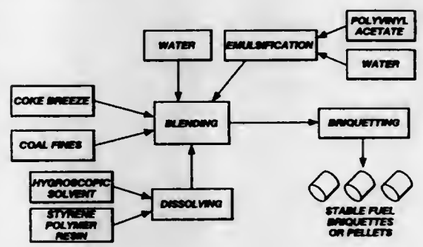
RECLAIMING AND UTILIZING DISCARDED AND NEWLY FORMED COKE BREEZE, COAL FINES, AND BLAST FURNACE REVERT MATERIALS, AND RELATED METHODS

George W. Ford, Jr., Salt Lake City, Utah, assignor to Covol Technologies, Inc, Lehi, Utah

Continuation of Ser. No. 354,693, Dec. 13, 1994, Pat. No. 5,487,764, which is a continuation of Ser. No. 184,099, Jan. 21, 1994, Pat. No. 5,453,103. This application Jan. 25, 1996, Ser. No. 591,851

Int. Cl.[6] C10L *5/02*

U.S. Cl. 44—553 **1 Claim**



1. A solid fuel anti-degradable object comprising a product of:

compressed combustible particulate material comprising particles of carbon selected from the group consisting revert materials, coke breeze, and coal fines;

a binder reacted with and interconnecting the compressed combustible material, the binder comprising a homopolymer.

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5,599,362

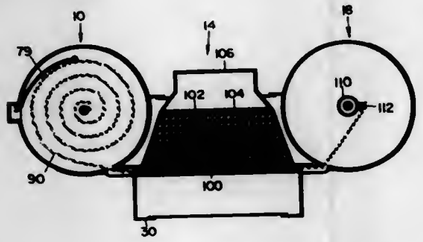
Patent Not Issued For This Number

5,599,363

VACUUM FILTER BELT APPARATUS

Donald W. Percy, 100 Pillsbury Rd., Southview Condo 9 Townhouse, Londonderry, N.H. 03053

Filed Aug. 1, 1994, Ser. No. 283,567
Int. Cl.[6] B01D *46/20*
U.S. Cl. 55—352 1 Claim



1. In a filter device in fluid communication with the vacuum means of an engine serviced thereby and including:

a housing having an upstream fluid inlet and a downstream fluid outlet defining a flow passage therebetween,

a charge of filter medium sequentially movable along a vertical flight path from one side of to the other side of the housing,

support means for supporting a portion of the filter medium across and transversely of the flow passage,

a supply canister and a takeup canister at opposite sides of the flow passage,

a supply spool rotatably mounted within the supply canister for loading the charge of the filter medium thereinto and the payout of the filter medium therefrom,

a takeup spool rotatably mounted within the takeup canister for the takeup of the filter medium thereon,

a motor for driving the takeup spool,

a primary grill having inboard and outboard faces and being extendable transversely of and through the flow passage forwardly of the filter medium for retaining the filter medium in confronting position against the inboard face of the grill,

plural adjacent layers of reticulated polyurethane foam of varying pore densities positioned as a supplemental filter medium intersecting the flow passage outboard of the outboard face of the grill with the foam layer nearest the primary grill having a porosity of 40 pores per inch and the layer farthest from the primary grill having a porosity of 80 pores per inch,

a secondary grill having inboard and outboard faces and being extendable transversely of and through the flow passage with its inboard face being outboard of the foam layers for holding the foam layers against each other and relative to the primary grill,

the engine vacuum means communicating with the fluid outlet for drawing the fluid stream through the filter medium and supplemental filter medium,

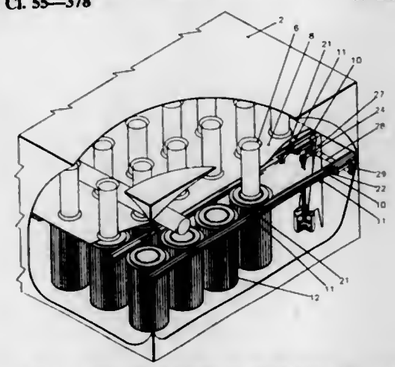
sensing means including a presettable control means cooperant with the engine vacuum means for monitoring the concentration of contaminants collected on the filter medium as a function of the vacuum drawing on the filter medium and responsively generating and ceasing-to-generate signals respectively as the sensing of the contaminant concentration reaches maximum and minimum levels respectively for energizing and deenergizing the motor respectively and driving and stopping the takeup spool respectively in effecting the incremental movement of the filter medium with respect to the flow passage for replacing a spent portion of the filter medium with a fresh unspent portion across the flow passage.

5,599,364

FILTER LOCKING/SUPPORT SYSTEM FOR DUST COLLECTORS

Charles Hawkins, 3097 Ancerson Rd., Green Cove Springs, Fla. 32043

Filed Nov. 14, 1994, Ser. No. 338,244
Int. Cl.[6] B01D *29/13;29/96*
U.S. Cl. 55—378 17 Claims



1. A filter locking/support system including means for releasably urging and maintaining a plurality of separate depending filter elements into and in sealing engagement with a partition in a filter housing, said filter locking/support system comprising:

a plurality of parallel linear trays, each pair of said plurality of trays supporting a plurality of depending filter elements positioned therebetween;

mounting means for said plurality of parallel trays, which mounting means depend from a partition in a filter housing and serve to bring any filter elements supported by said plurality of parallel trays into sealing engagement with said partition when said trays are urged in a first direction and serve to take any filter elements supported by said plurality of trays out of sealing engagement with said partition when said trays are urged in a second direction opposite said first direction;

disengageable means connected to said plurality of parallel trays for urging said plurality trays in said first direction, which disengageable means for urging said plurality parallel trays in said first direction is comprised of: an automatic biasing means connected to said plurality of parallel trays for urging said plurality of parallel trays in said first direction; and an engageable release means connected to said plurality of parallel trays for urging said plurality of parallel trays in said second direction with force sufficient to overcome said automatic biasing means.

5,599,365

MECHANICAL FLUID SEPARATOR

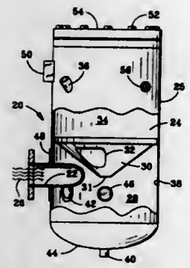
John H. Alday, Charlotte; Richard L. Dishman, Jr.; Mark E. McConnell, both of Huntersville, and William D. Wright, Jr., Charlotte, all of N.C., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Mar. 3, 1995, Ser. No. 398,260
Int. Cl.[6] B01D *45/00*
U.S. Cl. 55—426 14 Claims

1. A mechanical fluid separator defining an interior chamber for centrifugally separating entrained media from a fluid stream, said separator comprising:

a fluid inlet connecting the interior chamber of the mechanical fluid separator with a media entrained fluid source;

an annular chamber surface defining an interior of the interior chamber, said interior chamber having a substantially closed bottom adapted to collect entrained media separated from the fluid stream;



a cone shaped baffle defining a conical surface having a concave inner portion and a convex outer portion, said conical surface defining an annular base side having a base side circumferential length and an annular apex side having an apex side circumferential length, said base side terminating in a circumferential rim contacting the annular chamber surface above the fluid inlet and wherein the circumferential rim of the base side of said conical baffle includes a ridge that is compressed when placed in contact with the annular chamber surface to uniformly contact an annular chamber surface having a variable eccentricity, said apex side terminating in an apex annular hole, wherein said apex side circumferential length is less than said base side circumferential length, said apex side located away from the bottom of said chamber; and

a fluid outlet connecting the interior chamber of the mechanical fluid separator with a fluid outlet passage above the cone shaped baffle;

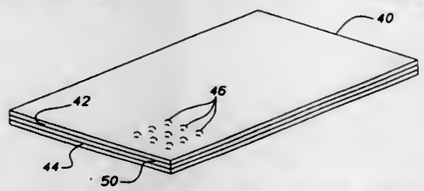
wherein said cone shaped baffle includes a substantially rectangular window adjacent said apex side, said window extends through the concave portion and the convex portion of the conical surface such that the fluid stream passes through the window to exit through the fluid outlet, said window having a first side adjacent said base side, a second side located away from said base, and a third side joining the first and second sides, said first side being longer than said second side, and said third window side being located at least 225 degrees from said fluid inlet.

5,599,366

POST-TREATMENT OF LAMINATED NONWOVEN CELLULOSIC FIBER WEBS

Charles B. Hassenboehler, Jr., and Larry C. Wadsworth, both of Knoxville, Tenn., assignors to The University of Tennessee Research Corporation, Knoxville, Tenn.

Continuation of Ser. No. 95,932, Jul. 22, 1993, Pat. No. 5,443,606, which is a continuation-in-part of Ser. No. 37,288, Mar. 26, 1993, Pat. No. 5,379,261, which is a continuation-in-part of Ser. No. 858,182, Mar. 26, 1992, Pat. No. 5,244,482. This application Aug. 22, 1995, Ser. No. 517,917
Int. Cl.[6] B01D *39/16*
U.S. Cl. 55—486 11 Claims



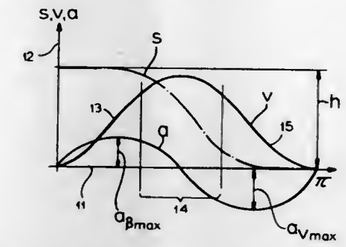
1. A planar nonwoven elastic web made from a laminated precursor nonwoven web which planar nonwoven elastic web is of reduced maximum pore size relative to the precursor nonwoven web, comprising a first layer of randomly deposited nonelastomeric thermoplastic man-made fibers and another layer of cellulose-based staple fibers attached to said first layer, said web being uniaxially drawn and heat set wherein the uniaxial heating and drawing are carried out continuously by passing the precursor web through a lateral strain mechanism, whereby a majority of the thermoplastic fibers are aligned transverse to the direction of draw and a minority of segments of thermoplastic fibers are disposed lengthwise to the direction of draw, whereby the web is consolidated in the longitudinal direction and characterized by a maximum pore size of less than 80% that of the precursor web and has an elasticity in the longitudinal direction of at least 70% recovery from a 50% elongation in the longitudinal direction.

5,599,367

PROCESS FOR OPERATING A GLASS-BENDING PRESS

Dieter Funk, Witten; Dieter Bruns, Rheinberg; Rolf Wenning, Bocholt, and Walter Brans, Recklinghausen, all of Germany, assignors to Flachglas Aktiengesellschaft, Furth, Germany

Filed Apr. 12, 1995, Ser. No. 422,501
Claims priority, application Germany, Apr. 15, 1994, 44 12 746.4
Int. Cl.[6] G05B *15/02*
U.S. Cl. 65—29.11 7 Claims



1. A method of operating a glass-bending press comprising a male press mold movable up and down in a press frame and located above a female press mold, said method comprising the steps of:

(a) feeding a glass sheet to be bent from a continuous furnace horizontally between said male and female molds into said press and pressing said glass sheet into a bent glass sheet between said molds;

(b) raising said male press mold and retaining said bent glass sheet thereon as said male press mold is raised by applying suction to said bent glass sheet with a vacuum-locating device;

(c) positioning a shuttle ring at a constant level above said female press mold and moving said male press mold with the bent glass sheet held by suction thereon downwardly in a downward motion to place said bent glass sheet on said shuttle ring;

(d) displacing said shuttle ring with the bent glass sheet thereon out of said press and into a cooling and toughening station;

(e) controlling downward movement in step (c) of said male press mold and the bent glass sheet held by suction thereon so that said downward movement is effected with a velocity curve having an initial acceleration section, a maximum velocity section and a final deceleration section for soft deposition of said bent glass sheet on said shuttle ring, and the velocity curve has a first derivative with respect to time free from singularities; and

(f) matching a suction force of the suction holding said bent glass sheet on said male press mold to a mass of the bent glass sheet and deceleration of said male press mold so that a retaining force of said suction is always greater than an opposing force of deceleration and said bent glass sheet is not released from said male press mold during deceleration until, as a result of a decrease in said suction force, said bent glass sheet is deposited on said shuttle ring.

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5,599,368

DEVICE AND PROCESS FOR THE PRODUCTION OF MULTIPLE-FOLD, SINGLE-TUBE GLASS VESSELS

Erhard Bernicke; Jurgen Dame; Rainer Munchhausen, and Lothar Jungclaus, all of Berlin, Germany, assignors to Prolux Maschinenbau GmbH, Berlin, Germany

PCT No. PCT/DE92/00484, § 371 Date Jul. 6, 1994, § 102(e) Date Jul. 6, 1994, PCT Pub. No. WO92/21626, PCT Pub. Date Dec. 10, 1992

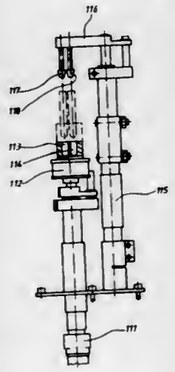
PCT Filed Jun. 5, 1992, Ser. No. 193,089

Claims priority, application Germany, Jun. 6, 1991, 41 19 852.2; Apr. 29, 1992, 42 14 542.2

Int. Cl.[6] C03B *23/043*

U.S. Cl. 65—42

17 Claims



1. A process for manufacturing a multiple-fold single-tube glass vessel from at least four glass tubes, each open at both ends, and each having a diameter comprising:

(a) simultaneously heating two of the glass tubes lying parallel to each other with adjacent ends thereof positioned lower than the rest of said two of the glass tubes;

(b) at adjacent sides of said two of the glass tubes after heating, bonding such tubes together mechanically while cutting such tubes open between each other, from the adjacent ends to a connection point between such tubes along a distance that is essentially equal to the diameter;

(c) spreading apart said two of the glass tubes at the opening between each other thereby forming an oval opening at the adjacent ends by targeted firing from below the oval opening and at the same time fusing a connection between said two of the glass tubes;

(d) fusing shut said two of the glass tubes at the oval opening into a closed U-shaped section by firing into and from below the oval opening and essentially encompassing the entire oval opening with fire, and as the oval opening is fused shut focusing the firing increasingly on a middle of the resulting U-shaped section;

(e) shape blowing the resulting U-shaped section in a closed mold; and

(f) subsequently turning at least two of the glass tubes simultaneously through a 180° rotation thereby selecting a different combination of at least two of the glass tubes with adjacent ends thereof lower than the rest of the corresponding tubes and repeating steps (a) through (e) until a continuous glass tube is formed having two open ends.

5,599,369

HOOD FOR METAL-OXIDE VAPOR COATING GLASS CONTAINERS

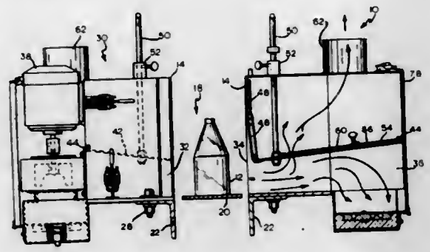
Harry O. Townsend, Perrysburg; Joseph E. Olsavsky, Waterville, and Dana L. Meissner, Toledo, all of Ohio, assignors to Owens-Brockway Glass Container Inc., Toledo, Ohio

Filed Apr. 29, 1994, Ser. No. 236,280

Int. Cl.[6] C03C *17/09*; C23C *16/00*

U.S. Cl. 65—157

14 Claims



1. Apparatus for applying a coating compound to hot, freshly formed glass containers comprising:

a) wall means including spaced apart side walls defining an elongate tunnel;

b) conveyor means for conveying said hot, freshly formed glass containers through said tunnel; and

c) distribution means for causing a plurality of warm vapor streams each containing a coating compound to flow laterally across said tunnel, said distribution means comprising;

a series of vapor inlets arranged along each said side wall of said tunnel,

a series of vapor outlets arranged along each said side wall of said tunnel,

said vapor inlets and said vapor outlets along each said side wall of said tunnel being positioned alternatively with one another along each said side wall,

each said vapor inlet along one said side wall of said tunnel being positioned opposite to one said vapor outlet on the other said side wall of said tunnel,

each said vapor inlet and outlet having a pivotable baffle positioned internally thereof and effective to vary the vertical extent of an opening of each said vapor inlet and each said vapor outlet into said tunnel, and

each said vapor outlet having adjustable flow divider means positioned internally thereof for dividing vapor streams flowing within said vapor outlet into a first portion to be exhausted from said vapor outlet and a second portion to be recirculated through said vapor inlet into said tunnel;

wherein each said vapor inlet is in communication with a corresponding one of said vapor outlets along said side wall through a duct system having a motor driven blower to circulate vapor streams from said tunnel through said corresponding one of said vapor outlets and out said vapor inlet which is in communication with said corresponding one of said vapor outlets and into said tunnel;

wherein said vapor streams contain a metal compound;

wherein said metal compound is vaporized upon contact with a circulating carrier gas which has been heated above a vaporization temperature of said metal compound;

wherein each said vapor inlet is located adjacent said corresponding one of said vapor outlets;

wherein an operating width of each said vapor outlet is substantially wider than an opening width of each said vapor inlet; and

wherein each said baffle is pivotally fixed about a first rod extending through sides of said apparatus and hingedly connected to a front plate which slides within two vertical channels of said apparatus and is effective to vary the vertical extent of said opening into said tunnel.

5,599,370

GOB DELIVERY APPARATUS FOR A GLASSWARE FORMING MACHINE

Manfred Struckmeier, Obernkirchen; Andreas Graefe, Seggebruch, and Eckhard Möller, Obernkirchen, all of Germany, assignors to The Firm Hermann Heye, Obernkirchen, Germany

PCT No. PCT/EP92/00432, § 371 Date Nov. 22, 1993, § 102(e) Date Nov. 22, 1993, PCT Pub. No. WO92/20631, PCT Pub. Date Nov. 26, 1992

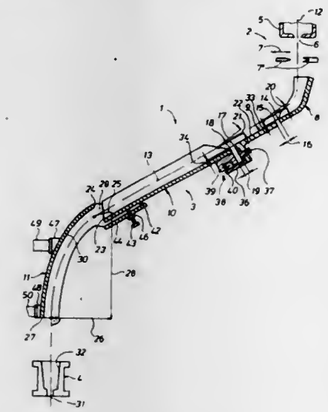
PCT Filed Feb. 28, 1992, Ser. No. 142,386

Claims priority, application Germany, May 22, 1991, 41 16 593.4

Int. Cl.[6] C03B *7/16*

U.S. Cl. 65—207

37 Claims



1. A delivery apparatus for transporting gobs of molten glass from a gob feeder by way of a respective delivery system into molds of a glassware forming machine, said delivery system comprising:

a curved scoop for catching the gobs coming from the gob feeder and directing the gobs downward at an angle;

a trough which is approximately linear and downward sloping, said trough having an upper end for receiving the gobs and a lower end, said trough being mountable at said upper end of said trough in an articulated manner relative to the glassware forming machine;

an adjustment device for raising and lowering said lower end of said trough;

a slide member arranged between a lower end of said scoop and said upper end of said trough for conducting the gobs from said scoop to said trough, said slide member being fixedly supported and remaining stationary relative to the glassware forming machine during operation thereof, and said slide member having a downwardly inclined upper sliding surface for the gobs;

a curved defector for defecting the gobs coming from said lower end of said trough to a downward path which is coaxial with a longitudinal axis of one of the molds; and

a setting device for adjusting said defector in a plane perpendicular to said longitudinal axis of said one mold.

5,599,371

METHOD OF USING PRECISION BURNERS FOR OXIDIZING HALIDE-FREE, SILICON-CONTAINING COMPOUNDS

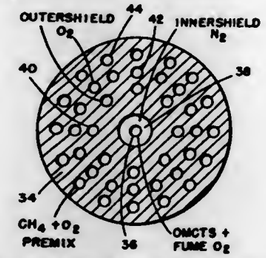
Michael B. Cain; Robert B. Desorice, both of Corning; William J. Kiefer, Horseheads, and Dale R. Powers, Painted Post, all of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Dec. 30, 1994, Ser. No. 367,047

Int. Cl.[6] C03B *37/018*

U.S. Cl. 65—413

13 Claims



1. A method of forming a silicon dioxide containing preform comprising the steps of:

(a) providing an elongated starting member;

(b) providing a soot-producing burner having a burner face that comprises first, second, third, and fourth gas-emitting regions, the second region surrounding the first region, the third region surrounding the second region, and the fourth region surrounding the third region;

(c) providing a mixture comprising oxygen and a halide-free, silicon-containing material to the first region;

(d) providing an inert gas to the second region in an amount sufficient to inhibit soot from contacting the burner's face;

(e) providing oxygen to the third region;

(f) providing a mixture comprising oxygen and a combustible gas to the fourth region; and

(g) depositing silicon dioxide containing soot on the starting member to form the preform by producing relative motion between the soot-producing burner and the starting member.

5,599,372

PROCESS FOR REMOVING METAL CONTAMINANTS FROM SOILS

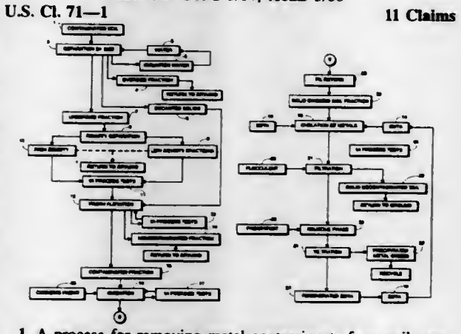
Luis W. Pommier, Rancho Santa Margarita, Calif., assignor to Earth Decontaminators, Inc., Irvine, Calif.

Continuation-in-part of Ser. No. 748,107, Aug. 21, 1991, abandoned. This application Apr. 26, 1993, Ser. No. 54,937

Int. Cl.[6] C05G *3/04*; A62D *3/00*

U.S. Cl. 71—1

11 Claims



1. A process for removing metal contaminants from soil comprising the steps of

removing from the earth a soil composition containing metal contaminants,

separating a first fraction of soil that is free of metal contaminants from said soil composition by a method selected from the group consisting of particle size, particle density, or froth flotation, or mixtures thereof and retaining for further treatment a second fraction that contains metal contaminants,

oxidizing the metal contaminants contained in the second fraction of soil by exposing the second fraction to hydrogen peroxide,

reacting the oxidized metal contaminants with an aqueous solution of the acid form of ethylenediaminetetraacetic acid, and

adding a precipitant to the solution containing the chelated metal contaminants.

5,599,373

SULFUR-BASED CHEMICAL SOIL-CORRECTIVE IN THE FORM OF PELLETS FOR AGRICULTURAL USE

Pietro Zanuccoli, Catania, Italy, assignor to F.P.S.- Finances Products Services, S.r.l., Catania, Italy

Continuation-in-part of Ser. No. 659,290, Apr. 20, 1992, abandoned. This application Oct. 24, 1994, Ser. No. 327,969

Claims priority, application Italy, Sep. 30, 1988, 48406-A/88

Int. Cl.[6] C05F *3/00*

U.S. Cl. 71—21 **14 Claims**

1. A sulfur-based fertilizer product in the form of pellets for alkalinity correcting application to agricultural soils and having a network of pores that assist water penetration and consequent breakdown of the pellets after application, said pellets being formed of constituents consisting essentially of fly sulfur powder combined with between 3% and 5% by weight of an inert product selected from the group consisting of clay, bentonite, kaolin and mixtures thereof, between 0.5% and 2% by weight of a powdered wetting agent, and between 0% and 3.5% by weight of other constituents, said constituents being mixed with one another, made into a paste by adding water in amounts about equal to the weight of the inert product plus the wetting agent, and subjected to wet extrusion and subsequent drying to obtain said pellets.

5,599,374

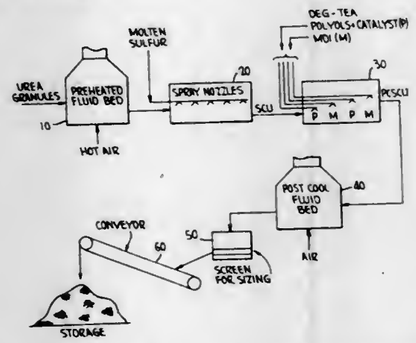
PROCESS FOR PRODUCING IMPROVED SULFUR-COATED UREA SLOW RELEASE FERTILIZERS

John H. Detrick, Birmingham, Ala., assignor to RLC Technologies, L.L.C., Sylacauga, Ala.

Filed Sep. 23, 1994, Ser. No. 311,672

Int. Cl.[6] C05C *9/00*; **C05G** *3/10*

U.S. Cl. 71—28 **8 Claims**



1. A process for the preparation of sulfur-coated urea granular fertilizer products comprising the steps of

1) coating preheated urea granules with molten sulfur to obtain a coating having a predetermined nominal thickness within a range of thicknesses;

2) coating the sulfur-coated urea granules of step 1 with reactive monomers and polymerizing said monomers on the surface of the sulfur-coated urea granules to form an impact resistant polymer sealant coating, said monomers being a diisocyanate and a polyol mixture of diethylene glycol and triethanolamine; and

3) cooling the polymer coated sulfur-coated urea granules product of step 2.

5,599,375

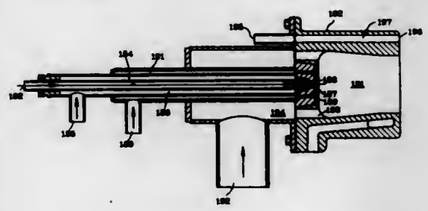
METHOD FOR ELECTRIC STEELMAKING

Gregory M. Gltman, Atlanta, Ga., assignor to American Combustion, Inc., Norcross, Ga.

Continuation-in-part of Ser. No. 297,686, Aug. 27, 1994, abandoned. This application Nov. 10, 1994, Ser. No. 336,984

Int. Cl.[6] C21B *13/12*

U.S. Cl. 75—10.42 **33 Claims**



1. A method of steelmaking carried out in an electric arc furnace, comprising the steps of:

a) heating the furnace using an electric arc;

b) directing, through at least one burner/injector means, controllable flows of hydrocarbon fuel and a first oxidizing gas having an average oxygen content in excess of 30% to mix and to create a high velocity impinging flame directed toward a portion of scrap located at a desired area of the furnace in front of a flame discharge opening of the burner/injector means;

c) maintaining the controllable flows of hydrocarbon fuel and the first oxidizing gas until a portion of scrap located at the desired area of the furnace is at least partially melted, thereby creating an iron-carbon melt and a slag layer covering the iron-carbon melt;

d) then introducing, through the burner/injector means, a stream of solid particles of carbonaceous fuel carried by a compressed carrier gas toward the desired area of the furnace; and

e) introducing, approximately simultaneously with the introduction of the solid carbonaceous fuel, a flow of a high velocity additional oxidizing gas having an average oxygen content in excess of 80% toward the iron-carbon melt at the desired area of the furnace previously occupied by scrap that has been at least partially melted, wherein the additional oxidizing gas at least partially reacts with the iron-carbon melt and the solid particles of carbonaceous fuel to create a stream of hot CO which is further at least partially oxidized to CO_2 and exhausted with other flue gases from the furnace.

5,599,376

PROCESS AND EQUIPMENT TO RECLAIM REUSABLE PRODUCTS FROM EDIBLE OIL PROCESS WASTE STREAMS

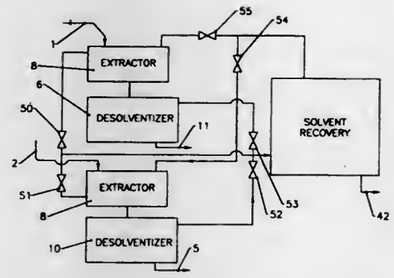
John D. Camp, 168 Weston Rd., Arden, N.C. 28704

Filed Nov. 27, 1995, Ser. No. 563,042

Int. Cl.[6] C22B *4/02*

U.S. Cl. 75—10.65 **6 Claims**

1. A process to reclaim reusable products from two edible oil processing waste streams comprising the steps of:



a) feeding one of said process waste streams containing a filter aid-nickel catalyst and edible oil into a first counter current solvent extractor means;

b) feeding a solvent means into said first extractor to extract said edible oil from said filter aid and said nickel catalyst;

c) pumping said solvent means exiting said extractor to a recovery system means wherein said edible oil is separated from said solvent and said solvent is recycled to said extractor;

d) feeding said filter aid and said catalyst exiting said extractor to a first desolventizer unit means to separate said solvent means in a vapor form from said filter aid and said catalyst;

e) pelletizing a mixture of said filter aid and said catalyst exiting said first desolventizer unit to allow direct feeding into an electromelt furnace for said nickel catalyst recovery;

f) feeding said solvent vapor exiting said desolventizer into said recovery system;

g) feeding a second of said process waste streams containing a used bleaching clay and edible oil into a second counter current solvent extractor means;

h) feeding said solvent means into said second extractor to extract said edible oil from said bleaching clay;

i) pumping said solvent means exiting said second extractor to said recovery system means wherein said edible oil is separated from said solvent and said solvent is recycled to said extractor;

j) feeding said bleaching clay exiting said second extractor to a second desolventizer unit means to separate said solvent means in a vapor form from said bleaching clay;

k) packaging said bleaching clay exiting said desolventizer unit for recycle;

l) feeding said solvent vapor exiting said second desolventizer into said recovery system for recovery of said edible oil and recovery of said solvent.

6. A process to reclaim reusable products from oil processing waste streams comprising the steps of:

a) feeding a first of said processing waste streams containing a filter aid, nickel catalyst, and about 0.1 to 70 percent by weight soybean oil to a first solvent extractor;

b) feeding a second of said process waste streams containing a bleaching clay and about 0.1 to 70 percent by weight soybean oil to a second counter current extractor;

c) feeding a solvent means into said first extractor and said second extractor to extract said soybean oil from both said first and said second process waste streams;

d) feeding said filter aid and said catalyst exiting said first extractor to a first desolventizer unit wherein residual portion of said solvent means in a vapor form is separated from said filter aid and said catalyst;

e) feeding said bleaching clay exiting said second extractor to a second desolventizer unit wherein a residual portion of said solvent means is separated from said bleaching clay in vapor form;

f) feeding said solvent means exiting said first extractor and said second extractor in a liquid form and containing said soybean oil and said solvent means exiting said first and said second desolventizer in a vapor form to a recovery system wherein said solvent means is separated from said soybean oil and recycled to said first and said second extractors.

5,599,377

MIXED IRON POWDER FOR POWDER METALLURGY

Satoshi Uenosono, and Kuniaki Ogura, both of Chiba, Japan, assignors to Kawasaki Steel Corporation, Japan

Filed Jul. 24, 1995, Ser. No. 506,127

Claims priority, application Japan, Jul. 28, 1994, 6-176311; Dec. 16, 1994, 6-313360

Int. Cl.[6] C22C *38/12*

U.S. Cl. 75—252 **8 Claims**

5. A mixed iron powder for powder metallurgy, said mixed iron powder comprising:

an iron powder including less than about 0.1 wt % of Mn,

a total of about 0.03 to 0.15 wt % of at least one element selected from the group consisting of S, Se and Te, and

the balance Fe;

said mixed iron powder also comprising a total of about 0.05 to 0.70 wt % of at least one compound selected from the group consisting of MoO_3 powder and WO_3 powder, said at least one compound present in an amount sufficient for producinga sintered body having excellent machinability and high strength due to dissolution of Mor or W in ferrite particles upon sintering said mixed iron powder in a hydrogen-containing atmosphere, and

about 0.50 to 1.50 wt % of graphite powder.

5,599,378

SPINDLE-SHAPED MAGNETIC IRON BASED ALLOY PARTICLES AND PROCESS FOR PRODUCING THE SAME

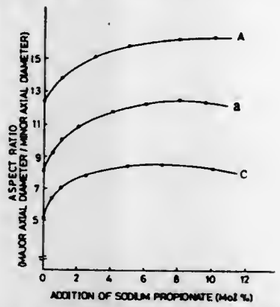
Akio Mishima; Toshiharu Harada, both of Hiroshima; Mamoru Tanihara, Osaka; Yasutaka Ota, Hatsukaichi; Kenji Okinaka; Kohji Mori, both of Hiroshima; Hirofumi Kawasaki, Aki-gun; Norimichi Nagai, Hiroshima; Katsunori Fujimoto, Ube, and Yoshiro Okuda, Hiroshima, all of Japan, assignors to Toda Kogyo Corp., Japan

Division of Ser. No. 118,287, Sep. 9, 1993, Pat. No. 5,466,306, which is a continuation of Ser. No. 712,882, Jun. 11, 1991, abandoned. This application May 25, 1995, Ser. No. 450,285

Claims priority, application Japan, Dec. 22, 1988, 63-325436; Jun. 26, 1990, 2-168684; Jun. 29, 1990, 2-173871

Int. Cl.[6] H01F *1/11; 1/36*

U.S. Cl. 75—348 **8 Claims**



1. A process for producing spindle-shaped magnetic iron based alloy particles comprising the steps of:

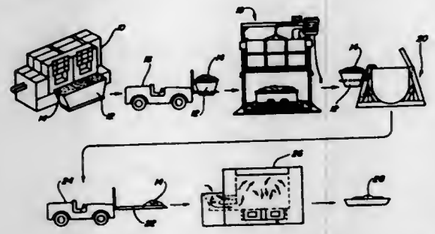
(1) adding an aqueous alkali carbonate solution or a mixture of an aqueous alkali carbonate solution and an aqueous alkali hydroxide solution to an aqueous ferrous salt solution so as to obtain a suspension containing $FeCO_3$ or an Fe-containing precipitate;

(2) aging the thus-obtained suspension containing $FeCO_3$ or an Fe-containing precipitate at 35° to 60° C. for 50 to 800 minutes at a pH of 7 to 11 in a non-oxidizing atmosphere;

(3) oxidizing the suspension by passing an oxygen-containing gas into the aged suspension containing $FeCO_3$ or an Fe-containing precipitate in the presence of 0.1 to 10.0 mol %

of propionic acid or a salt thereof based on Fe at 35° to 70° C. so as to obtain spindle-shaped goethite particles;
(4) coating the thus-obtained spindle-shaped goethite particles with at least one compound selected from the group consisting of Ni, Al, Si, P, Co, Mg, B and Zn compounds; and
(5) heat-treating the coated spindle-shaped particles in a reducing gas to produce reduced particles.

5,599,379
APPARATUS AND METHOD FOR RECOVERING NON-FERROUS METALS FROM HOT DROSS
Han Speel, 210 MacPherson Avenue, Toronto, Ontario, Canada, and William A. Zebedee, 4798 S. Chipping Glen, Bloomfield Hills, Mich. 48302
Filed Mar. 29, 1995, Ser. No. 412,987
Int. Cl.[6] C22B 21/00; C21D 11/00
U.S. Cl. 75—378 **14 Claims**

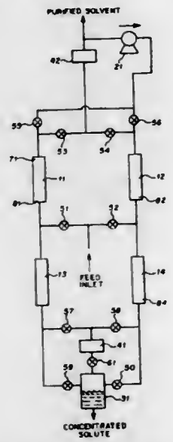


1. A method for recovering free aluminum from a metal bearing dross containing free aluminum metal and oxides of the metal, comprising the steps of:
collecting into a vessel hot dross from a hot dross source in a vessel;
placing the vessel in a generally sealable storage container substantially immediately after collecting the hot dross in the vessel and sealing the storage container, the storage container being insulated to maintain heat generated by the hot dross substantially within an interior of the storage container;
introducing an inert gas into the container to substantially purge the container of all gasses other than the inert gas, the inert gas substantially impeding the hot dross from thermiting and thereby limiting the cooling of the hot dross to maintain the hot dross at a temperature suitable to effect recovery of said free aluminum while the hot dross remains in the storage container; and
removing the vessel containing hot dross from the storage container and introducing the hot dross into a dross processing device while said dross is at a temperature suitable to enable recovery of said free aluminum.

5,599,380
POLYMERIC MEMBRANE
William J. Koros, Austin, Tex., assignor to L'Air Liquide, S.A., Paris, France
Continuation of Ser. No. 247,125, May 20, 1994, abandoned. This application Dec. 18, 1995, Ser. No. 573,657
Int. Cl.[6] B01D 53/22
U.S. Cl. 95—54 **9 Claims**

1. A process for separation of a first gas from a second gas which comprises providing a gas separation membrane comprised of a polymeric separating layer with a selectivity effect greater than 1.3, wherein the first and second gases are contacted with an aperture within said polymeric separating layer which restricts at least one rotational and/or transitional degree of freedom in the second gas relative to the first gas so as to form a permeate gas rich in the first gas and a residue gas rich in the second gas.

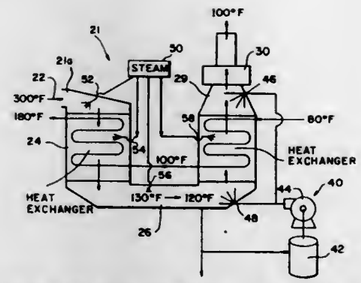
5,599,381
SEPARATION OF SOLUTES IN GASEOUS SOLVENTS
David R. Whitlock, 138 Vassal La., Cambridge, Mass. 02138
Continuation of Ser. No. 27,890, Mar. 8, 1993, Pat. No. 5,470,377. This application Jun. 7, 1995, Ser. No. 478,200
Int. Cl.[6] B01D 53/04
U.S. Cl. 95—90 **35 Claims**



1. A process for separating at least one solute dissolved in a gaseous solvent from the gaseous solvent under conditions where a chemical potential of the at least one solute dissolved in the gaseous solvent decreases as a density of the gaseous solvent increases, the process comprising the steps of:
passing the gaseous solvent containing the at least one solute, the gaseous solvent being at a first density, through a bed of sorbent in a first direction so as to sorb the at least one solute from the gaseous solvent onto the bed of sorbent while producing a purified gaseous solvent reduced in concentration of the at least one solute;
acting upon a portion of the purified gaseous solvent so as to achieve a second density so that the portion of the purified gaseous solvent has an increased solvent capacity for the solute;
passing the portion of the purified gaseous solvent at the second density through the bed of sorbent in a second direction opposite the first direction so as to desorb the at least one solute from the bed of sorbent producing a gaseous solution of the at least one solute dissolved in the portion of purified gaseous solvent; and
recovering the gaseous solution of the at least one solute dissolved in the portion of purified gaseous solvent to form a recovered portion of the gaseous solution at a third density.

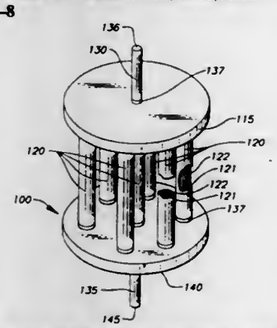
5,599,382
ENHANCED HEAT EXCHANGER FLUE GAS TREATMENT USING STEAM INJECTION
Gregory T. Bielawski, Wadsworth; Dennis W. Johnson, Barberton, and Robert B. Myers, Norton, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.
Division of Ser. No. 304,741, Sep. 12, 1994. This application Jun. 2, 1995, Ser. No. 459,592
Int. Cl.[6] B01D 5/00
U.S. Cl. 95—288 **5 Claims**

1. A method for treating a flue gas, comprising the steps of:
passing a flue gas into a two-stage housing at an inlet of the housing;
channeling the flue gas downwardly through first heat exchanger means at a first stage of the housing for cooling the flue gas;



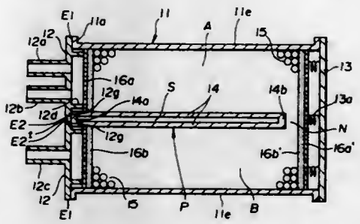
channeling the flue gas upwardly through second heat exchanger means at a second stage of the housing for further cooling the flue gas;
collecting liquids and particulate between the first stage and the second stage of the housing;
positioning at least two steam injection ports for increasing condensate loading on the first and second heat exchanger means in the housing, the first steam injection port being positioned in the inlet of the housing prior to the first heat exchanger means, the second steam injection port being positioned in the first heat exchanger means;
injecting steam into the housing; and
exiting the flue gas from the housing at an outlet near the second stage of the housing.

5,599,383
TUBULAR SOLID-STATE MEMBRANE MODULE
Paul N. Dyer, Allentown, Pa.; Jeffrey D. Bright, Salt Lake City, Utah; Michael F. Carolan, Allentown, Pa.; Eric Minford, Laurys Station, Pa.; Robin E. Richards, Lansdale, Pa.; Steven L. Russek, Allentown, Pa.; Dale M. Taylor, Salt Lake City, and Merrill A. Wilson, West Jordan, both of Utah, assignors to Air Products and Chemicals, Inc., Allentown, Pa.
Filed Mar. 13, 1995, Ser. No. 403,050
Int. Cl.[6] B01D 53/22;63/06;71/02
U.S. Cl. 96—8 **14 Claims**



1. A module for separating oxygen from an oxygen-containing gaseous mixture comprising a plurality of tubular solid-state membrane units, each tubular solid-state membrane unit which comprises a channel-free tubular porous support having connected through porosity which is in contact with a contiguous tubular dense mixed conducting oxide layer having no connected through porosity and at least one channel which is contiguous to the tubular channel-free porous support on a side opposite the tubular dense mixed conducting oxide layer, wherein the tubular dense mixed conducting oxide layer is in flow communication with the oxygen-containing gaseous mixture to be separated and wherein the tubular channel-free porous support of each membrane unit is in flow communication with a removal means for discharging oxygen which has been separated from the oxygen-containing gaseous mixture by permeation through the tubular dense mixed conducting oxide layer of each membrane unit and passage into the removal means via the tubular channel-free porous support of each membrane unit.

5,599,384
FUEL VAPOR TREATMENT DEVICE
Hiroyuki Yoshida, Sayama; Masashi Uchino, Kawagoe, and Yuzi Chino, Yoshimi, all of Japan, assignors to Tsuchiya Mfg. Co., Ltd., Tokyo, Japan
Filed May 22, 1995, Ser. No. 445,537
Claims priority, application Japan, Jun. 15, 1994, 6-155465
Int. Cl.[6] B01D 53/04
U.S. Cl. 96—143 **9 Claims**



1. A fuel vapor treatment device comprising:
a casing formed of a plastic and defining therein a space;
an end wall formed of a plastic and connected to a first end of said casing, said end wall being provided with a first pipe through which fuel vapor is charged to the space, and a second pipe through which the fuel vapor within the space is purged;
a cover plate formed of a plastic and connected to a second end of said casing;
a partition member disposed within the space of said casing and sealingly connected to said casing to define first and second chambers inside said casing, said partition member including first and second partition walls that are parallel with each other and form a desired space therebetween, each of said first and second partition walls extending in a direction from the first end to the second end of said casing, and first and second lateral walls, said first lateral wall extending laterally to connect first ends of said respective first and second partition walls, said second lateral wall extending laterally to connect second ends of said respective first and second partition walls, said second lateral wall being located near said second end of said casing;
a fuel vapor absorbent filled in said first and second chambers of said casing;
means defining a passage between said second lateral wall of said partition member and said cover plate, said first and second chambers being in communication with each other through said passage; and
means for allowing a portion at which said end wall is connected to said first lateral wall, to be exposed to an outside of said casing.

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5,599,385
HIGH TEMPERATURE-RESISTANT CORROSION PROTECTION COATING FOR A COMPONENT, IN PARTICULAR A GAS TURBINE COMPONENT

Norbert Czech, Dorsten, and Friedhelm Schmitz, Dinslaken, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Continuation of Ser. No. 411,459, Mar. 28, 1995, which is a continuation-in-part of Ser. No. 82,602, Jun. 25, 1993, Pat. No. 5,401,307, which is a continuation-in-part of Ser. No. 566,144, Aug. 10, 1990, abandoned. This application Dec. 6, 1995, Ser. No. 568,017

Int. Cl.[6] C09D 5/08; C22C 19/07

U.S. Cl. 106—14.05 15 Claims

1. A protective coating resistant to corrosion consisting essentially of the following elements (in percent by weight):

25 to 40% nickel; 25 to 32% chromium; 7 to 9% aluminum; 0.5 to 2% silicon; 0.3 to 1% of at least one reactive element of the rare earths; selectively from 0 to 15% of at least one of the elements of the group consisting of rhenium, platinum, palladium, zirconium, manganese, tungsten, titanium, molybdenum, niobium, iron, hafnium, and tantalum, the total share of the elements of the group being from 0 to a maximum of 15%; impurities; and a remainder of at least 5% cobalt; and

the coating applied on a nickel-based or cobalt-based superalloy substrate defining a combination comprising the coating and the substrate having a ductile brittle transition temperature below 600° C.

5,599,386
RECORDING LIQUID

Hideo Sano; Yukichi Murata, and Hiroshi Takimoto, all of Yokohama, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

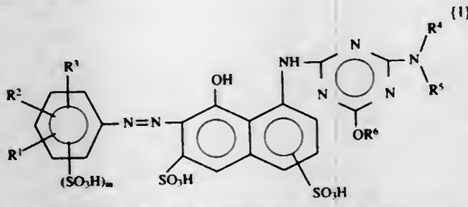
Filed May 4, 1995, Ser. No. 445,797

Claims priority, application Japan, May 12, 1994, 6-098756; Jul. 1, 1994, 6-151162

Int. Cl.[6] C09D 11/02

U.S. Cl. 106—22 R 21 Claims

1. A recording liquid for a writing instrument or an ink-jet recording comprising an aqueous medium and at least one selected from the compounds whose free acid form is represented by the formula {1}:



{1}

wherein, R^1, R^2 and R^3 each independently represent a substituted or unsubstituted C_{1-9} alkyl group, a C_{1-9} alkoxy group, a halogen, hydrogen, a hydroxyl group, a substituted or unsubstituted carbamoyl group, a substituted or unsubstituted sulfamoyl group, a substituted or unsubstituted amino group, a nitro group, a sulfonic ester group, a C_{1-9} alkyl- or C_{6-15} aryl-sulfonyl group, a COOH group or a carboxylic ester group;

m is a number of 0, 1 or 2; and

R^4, R^5 and R^6 each independently represent hydrogen, a C_{1-18} alkyl group, a C_{2-18} alkenyl group, an aryl group, an aralkyl group, an alicyclic group or a heterocyclic group, any of which groups except hydrogen may have a substituent with the proviso that the substituent of R^6 is not an amine.
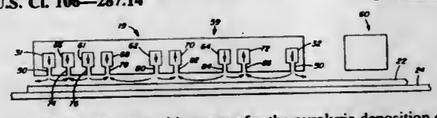
5,599,387
COMPOUNDS AND COMPOSITIONS FOR COATING GLASS WITH SILICON OXIDE

George A. Neuman; Patricia R. Athey, both of Pittsburgh, and Royann L. Stewart-Davis, Springdale, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

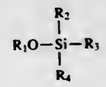
Continuation-in-part of Ser. No. 264,816, Jun. 23, 1994, Pat. No. 5,464,657, which is a division of Ser. No. 17,930, Feb. 16, 1993, Pat. No. 5,356,718. This application Jun. 7, 1995, Ser. No. 472,589

Int. Cl.[6] C09D 5/00

U.S. Cl. 106—287.14 37 Claims



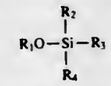
1. In a coating composition vapor for the pyrolyric deposition of silicon dioxide comprising a carrier gas, a source of oxygen and a silicon compound, the improvement wherein said composition comprises at least one silicon compound comprising:



wherein R_1, R_3 and R_4 are to be defined and any substituent, and R_2 is a functional group or atom, excluding hydrogen, capable of withdrawing election density away from the silicon atom to weaken the bond between the R_2 functional group and the Si atom for ease of separating the R_2 functional group from the Si atom.

29. In a coating composition vapor for the pyrolyric deposition of silicon dioxide comprising a carrier gas, a source of oxygen and a silicon compound, the improvement comprising

at least one silicon compound comprising:



wherein R_1 is selected from the group consisting of alkyl and substituted alkyl radicals having from one to 10 carbon atoms; alkenyl and substituted alkenyl radicals having from 2 to 10 carbon atoms; alkynyl and substituted alkynyl radicals having from 2 to 10 carbon atoms; aryl, aralkyl, substituted aryl and substituted aralkyl radicals having from 6 to 11 carbon-atoms;

R_2 is selected from the group consisting of hydrogen; halogen; alkenyl and substituted alkenyl radicals having from 2 to 10 carbon atoms; halogenated alkyl and perhalogenated alkyl radicals having one to 10 carbon atoms; alkynyl and substituted alkynyl radicals having from 2 to 10 carbon atoms,

R_3 and R_4 are to be defined and any substituent, and

an accelerant selected from the group consisting of tetravalent compounds of sulfur and selenium, ozone, a Lewis Acid and a Lewis Base.

5,599,388
ACID RESISTANT CALCIUM CARBONATE COMPOSITION CONTAINING AN ALUMINUM SALT, USES THEREFOR AND PROCESSES FOR ITS PRODUCTION

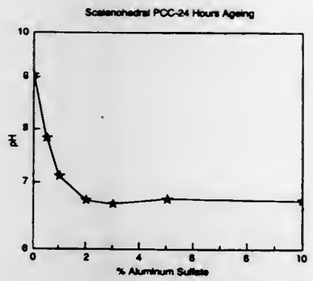
Kuan-Ting Wu, Sandersville, Ga., assignor to ECC International Inc., Atlanta, Ga.

Filed Aug. 24, 1995, Ser. No. 518,763

Int. Cl.[6] C09C 1/02

U.S. Cl. 106—464 17 Claims

1. An acid resistant calcium carbonate composition wherein the composition is made acid resistant by an ingredient consisting



essentially of; at least 0.5 to about 10 percent aluminum salt, based on the dry weight of the calcium carbonate.

5,599,389
COMPOUND SEMICONDUCTOR AND METHOD OF MANUFACTURING THE SAME

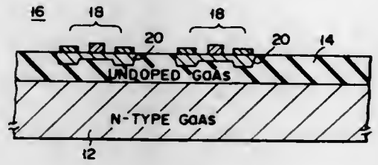
Hiroshi Iwasaki, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 232,583, Apr. 25, 1994, abandoned, which is a continuation of Ser. No. 7,024, Jan. 21, 1993, abandoned, which is a continuation of Ser. No. 653,295, Feb. 11, 1991, abandoned. This application Nov. 14, 1994, Ser. No. 340,478

Claims priority, application Japan, Feb. 14, 1990, 2-032697

Int. Cl.[6] H01L 21/02

U.S. Cl. 117—88 6 Claims



1. A method of manufacturing a compound semiconductor device, said method comprising the steps of:

forming a doped single crystal III-V compound semiconductor ingot containing elements belonging to Groups III and V of the periodic system and impurities of 5×10^{17} cm^{-3} or more for rendering said III-V compound semiconductor ingot conductive and reducing low dislocation density of said III-V compound semiconductor ingot;

slicing said doped ingot to obtain a plurality of doped single-crystal substrates with said substrates having a low dislocation density;

forming a thin semiinsulating epitaxial layer for compound semiconductor devices on one surface of one of said doped single-crystal substrates with said layer including the same elements belonging to Groups III-V as said one substrate, using a method for crystal growth selected from the group consisting of MBE, MOCVD, and MOMBE, with said semiinsulating epitaxial layer having a low dislocation density; and

forming active elements in said semiinsulating epitaxial layer, said semiinsulating epitaxial layer being used as an element-isolating region for isolating said active elements from each other.

5,599,390
APPARATUS FOR CRYSTAL PULLING

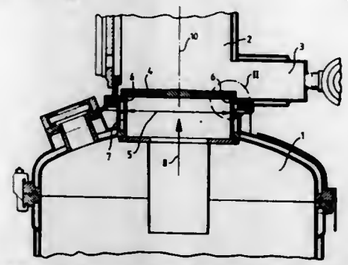
Dieter Drechsel, Bruchköbel, Germany, assignor to Leybold Aktiengesellschaft, Hanau, Germany

Filed Aug. 28, 1991, Ser. No. 751,318

Claims priority, application Germany, Jul. 4, 1991, 41 22 120.6

Int. Cl.[6] C30B 35/00

U.S. Cl. 117—208 4 Claims



1. Apparatus for pulling crystal from a melt, said apparatus being of the type comprising a pulling pot for containing said melt, an upper pull chamber, and a lock valve between said pot and said chamber, said lock valve comprising

wall means defining a vertical connecting passage between the pulling pot and the upper pull chamber, said wall means having an upward facing surface surrounding a lock entrance,

a closure which closes said lock entrance when crystal is not being pulled through said vertical connecting passage,

gasket means which seals said closure against said upward facing surface when said lock entrance is closed, said gasket means being arranged to be exposed solely to pressure without shear stress and friction during opening and closing of said lock entrance, and

shield means between said gasket means and said connecting passage, said shield means being fixed relative to said gasket means for shielding said gasket means from thermal radiation during pulling of said crystal from said melt.

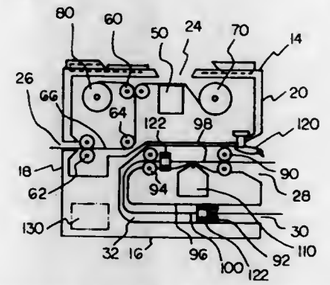
5,599,391
FINGERPRINTING DEVICE

Raymond Lee, 880 Boynton Ave., Apt. 13A, Bronx, N.Y. 10473

Filed Sep. 18, 1995, Ser. No. 529,327

Int. Cl.[6] B41K 1/00

U.S. Cl. 118—31.5 6 Claims



1. A fingerprinting device for acquiring a user's fingerprints in a hard copy form and a digital form comprising, in combination:

a hollow and rigid housing having a top wall, a bottom wall, a front wall, a back wall, and two opposed side walls, a finger receiving entryway formed on the top wall, a first paper exit formed on the front wall, a paper entryway formed on the back wall, a second paper exit formed on the back wall between the paper entryway and the bottom wall, a channel

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extended between the paper entryway and the second paper exit; a charcoal-laden pad coupled to the top wall on one side of the finger receiving entryway and sized for receiving fingers of a user's hand thereupon for transferring charcoal thereto, a first door slidably coupled to the top wall and positionable over the finger receiving entryway for precluding access thereto, and a second door slidably coupled to the top wall and positionable over the pad for precluding access thereto,

a box-shaped press area coupled to the housing at a location offset directly below the finger receiving entryway and with the press area having a top surface with a length of about 12 inches and a width of between about 2½ to 3 inches for receiving charcoal-laden fingers of the user's hand thereupon;

a first pair of opposed and axially-rotatable pressure rollers coupled to the housing between the press area and the front wall;

a second pair of opposed and axially-rotatable pressure rollers coupled to the housing near the first paper exit;

an axially-rotatable guiding roller coupled to the housing at a location offset from the first pair and the second pair of pressure rollers to create a generally L-shaped upper paper pathway, and with the upper paper pathway having an upper vertical portion extended from the first pair of pressure rollers to the guiding roller and a lower horizontal portion extended from the guiding roller to the second pair of pressure rollers and through the first paper exit;

an axially-rotatable tubular roll of clear adhesive tape coupled to the housing at a location between the press area and the back wall with the tape extended over the press area and along the upper paper pathway and with charcoal from the user's charcoal-laden fingers adhering to the tape when the user's fingers are pressed against the top surface of the press area to thereby create a negative print on the tape;

an axially rotatable tubular roll of paper coupled to the housing at a location between the press area and front wall with the paper extended along the upper paper pathway and with the first and the second pair of pressure rollers temporarily adhering the charcoal-laden tape with the paper and fixedly adhering the charcoal with the paper as the tape and paper travel toward the first paper exit to thereby create a positive print on the paper, and with the tape manually removable from contact with the paper to allow the positive print to be directly viewed in hard copy form;

a third pair of axially-rotatable pressure rollers coupled to the housing near the second paper entryway;

a fourth pair of axially-rotatable pressure rollers coupled to the housing near the second paper exit;

a fifth pair of axially-rotatable pressure rollers coupled to the housing at a location offset from the third and the fourth pair of pressure rollers to define a generally U-shaped lower paper pathway and with the lower paper pathway having an upper portion extended through the paper entryway and between the third pair and the fifth pair of pressure rollers and a lower portion extended between the fifth pair and the fourth pair of pressure rollers and through the lower paper exit;

electrically-energizable scanning means couplable to an external computer and further coupled to the housing between the third and the fifth pair of pressure rollers at a location directly below the upper portion of the lower paper pathway for scanning the positive print in hard copy form to thereby create a positive print in digital form;

electrically-energizable sensor means for controlling flow of the positive print in hard copy form along the lower paper pathway and across the scanning means;

electrically-energizable drive means for axially rotating the rollers; and

power supply means coupled to the scanning means, the sensor means, and the drive means for supplying electrical energy thereto for operation.

5,599,392

ROD HOLDER WITH SEPARATE POSITIONABLE CONTACT ELEMENTS FOR ROD METERING

Shihua Liang, Roscoe; Andrew W. Osburn, South Beloit, both of Ill., and Gerald R. Garde, Beloit, Wis., assignors to Beloit Technologies, Inc., Wilmington, Del.

Filed Jul. 24, 1995, Ser. No. 506,408
Int. Cl.[6] B05C *17/00*
U.S. Cl. 118—110 **24 Claims**



1. A rod holder for metering of coatings for application to a moving substrate, the rod holder comprising:

a housing extending in a cross-machine direction, the housing having portions defining a cavity for receiving a cylindrical rod therein; a plurality of contact elements mounted to the housing, the contact elements extending inwardly from the housing for engaging a cylindrical rod within the housing; and

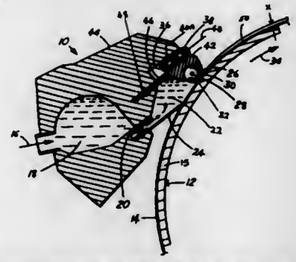
a means for adjusting the position of the contact elements with respect to the housing to sealingly engage a rotating rod within the housing, whereby the means for adjusting allows a seal to be maintained between the contact elements and a rod supported within the housing with extended wear.

5,599,393

METERING ROD COATERS

David R. Elvidge, and Malcolm K. Smith, both of North Vancouver, Canada, assignors to MacMillan Bloedel Limited, Vancouver, Canada

Filed Apr. 25, 1995, Ser. No. 428,437
Int. Cl.[6] B05C *1/00*
U.S. Cl. 118—117 **6 Claims**



1. A metering rod coating applicator for applying coating layer on a receiving surface moving past the coating applicator, said coating applicator comprising a body portion and a metering rod having a peripheral surface in nip forming relationship with said receiving surface, said peripheral surface of said metering rod defining one side of a coating outlet and said receiving surface defining the side of said outlet opposite said metering rod, said receiving surface moving relative to said metering rod in a direction substantially perpendicular to the longitudinal axis of said metering rod, means between said body Portion and said metering rod for biasing said metering rod toward said receiving surface to form said nip, means connected to said metering rod for rotating said metering rod about said longitudinal axis,

said peripheral surface of said metering rod having a texture of

a Ra value of between 0.5 μm and 1.6 μm,

a Rq value of between 0.5 μm and 3 μm,

a Ry value of between 1 μm and 15 μm,

a Rz(DIN) value of between 3 μm and 15 μm, and

a Sm value of between 30 μm and 75 μm,

wherein

Ra is the arithmetic mean of departures of the surface profile from the mean line,

Rq is the root mean square parameter corresponding to Ra,

Ry is the largest peak to valley height in a sample length,

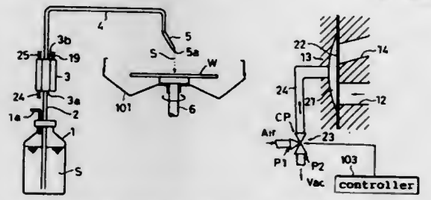
Rz(DIN) is the average of the peak to valley heights.

5,599,394

APPARATUS FOR DELIVERING A SILICA FILM FORMING SOLUTION

Manabu Yabe; Masaru Kitagawa; Takafumi Ohki, and Mitsuhiro Fujita, all of Kyoto, Japan, assignors to Dainippon Screen Mfg., Co., Ltd., Kyoto, Japan

Filed Sep. 27, 1994, Ser. No. 312,733
Claims priority, application Japan, Oct. 7, 1993, 5-059730 U
Int. Cl.[6] B05C *5/00*
U.S. Cl. 118—319 **6 Claims**



1. A dispensing apparatus for causing a silica coating solution to drip onto a surface of a substrate under horizontal spin coating treatment to form a silica film thereon, said apparatus comprising:

a liquid container for storing said coating solution;

a nozzle opposed to said surface of said substrate for discharging said coating solution;

a diaphragm pump for sucking said coating solution from said liquid container, and delivering said coating solution to said nozzle, said diaphragm pump including:

an intake port for receiving said coating solution;

an outlet port for delivering said coating solution;

a pump chamber having a diaphragm extending therethrough;

an intake passage intercommunicating said intake port and said pump chamber, one end of said intake passage communicating with said pump chamber adjacent a first position thereof for supporting said diaphragm, and the other end of said intake passage communicating with said intake port;

a suction valve for opening and closing said intake passage;

an outlet passage intercommunicating said outlet port and said pump chamber, one end of said outlet passage communicating with said pump chamber adjacent a second position thereof for supporting said diaphragm, and the other end of said outlet passage communicating with said outlet port; and

a delivery valve for opening and closing said outlet passage;

a suction pipe having one end thereof extending into said coating solution stored in said liquid container, and the other end connected to an intake port;

a delivery pipe having one end thereof connected to said outlet port, and the other end connected to said nozzle;

pump driver means for reciprocating said diaphragm in said pump chamber;

suction valve driver means for operating said suction valve;

delivery valve driver means for operating said delivery valve; and

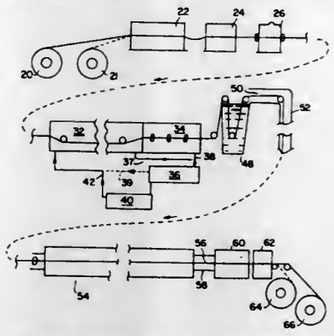
control means for controlling said pump driver means, said suction valve driver means and said delivery valve driver means.

5,599,395

APPARATUS FOR CONTINUOUS FLAT-ROLLED STEEL STRIP CLEANSING AND FINISHING OPERATIONS

Kenneth R. Olashuk, Follansbee, and Lester R. Shields, Weirton, both of W. Va., assignors to Weirton Steel Corporation, Weirton, W. Va.

Filed May 23, 1995, Ser. No. 445,530
Int. Cl.[6] B05C *3/00*
U.S. Cl. 118—405 **17 Claims**



1. Continuously-operable steel strip finishing line apparatus, comprising

A. means supplying coils of flat-rolled steel strip with flat-rolled surface areas contaminated with iron fines and associated debris, such as produced during gauge reduction, each such coil supplying an extended length of such surface contaminated flat-rolled steel;

B. means for uncoiling such flat-rolled steel coils so as to provide for interconnecting flat-rolled steel from successive coils into a unitary continuous-length flat-rolled steel strip for surface preparation and finishing of surface areas;

C. a continuously-operable strip surface cleansing system for such surface-contaminated flat-rolled steel, including:

(i) a main tank of preselected capacity for holding surface-cleaning solution and means for providing sufficient movement of continuous strip through such main tank sufficient for desired dislodging of iron fines and associated debris from surface areas of such strip,

(ii) means for withdrawing a portion of the capacity of such main tank cleaning solution containing dislodged iron fines and associated debris,

(iii) means for receiving such portion, including:

(a) a separating tank having a predetermined internal configuration which presents extended-area surfaces fabricated from paramagnetic material,

(b) inlet means for receiving such portion with dislodged iron fines and associated debris and distributing internally of the separating tank contiguous to at least one extended-area surface of such paramagnetic material, and

(c) magnetic field source means mounted contiguous to such at least one extended-area surface so as to establish lines of magnetic flux, internally of such separating tank, so as to magnetically attract and retain iron fines and associated debris as such portion moves internally of such tank in relation to such at least one extended-area surface, and

(d) means for returning solution, from which iron fines and associated debris have been separated and retained, to

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such main tank for continued in-line use in cleansing flat-rolled steel strip; and

D. means for directing such continuous length of flat-rolled steel strip from such cleansing system to subsequent in-line strip finishing means.

5,599,396

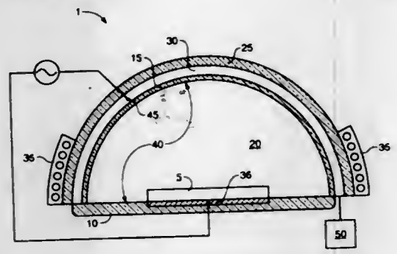
HIGH DENSITY INDUCTIVELY AND CAPACITIVELY COUPLED PLASMA CHAMBER

Gurtej S. Sandhu, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Division of Ser. No. 395,269, Feb. 28, 1995, Pat. No. 5,523,261. This application May 22, 1996, Ser. No. 652,330

Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—723 I **18 Claims**



1. A chamber for operating on a workpiece, comprising:

a) an enclosed chamber adapted to contain a gas;

b) an inductive coil in electromagnetic communication with an interior of the chamber when energized; and

c) a capacitor in electrostatic communication with the interior of the chamber when energized.

5,599,397

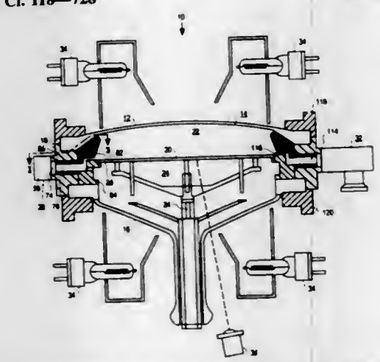
SEMICONDUCTOR WAFER PROCESS CHAMBER WITH SUSPECTOR BACK COATING

Roger N. Anderson; H. Peter W. Hey, both of San Jose; Israel Beinglass, Sunnyvale, and Mahalingam Venkatesan, San Jose, all of Calif., assignors to Applied Materials Inc., Santa Clara, Calif.

Division of Ser. No. 221,118, Mar. 31, 1994, Pat. No. 5,551,982. This application Mar. 27, 1996, Ser. No. 625,271

Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—728 **10 Claims**



1. A susceptor for an apparatus for depositing a layer of a material on a wafer comprising:

a susceptor plate having a surface for supporting a wafer and a back surface opposite the wafer supporting surface;

a layer of the material to be deposited on the wafer on the back surface of the susceptor plate, and a substantial portion of said surface for supporting a wafer formed of a material different than the layer of material on the back surface of the susceptor plate.

5,599,398

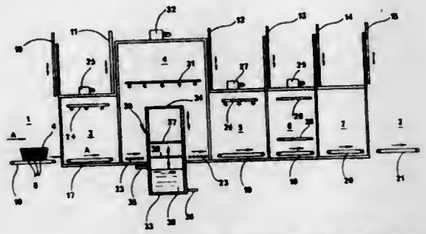
PROCESS AND MACHINE FOR CLEANING PARTS

Jean-Luc Lenglen, 91, rue du Bocage, Merignies, F-59710 Pont-a-Marcq, France

Filed Aug. 9, 1995, Ser. No. 513,172

Int. Cl.[6] B08B *3/12*

U.S. Cl. 134—1 **12 Claims**



1. A method for cleaning parts for example mechanical, electrical, or electronic parts, comprising the sequential steps of a) subjecting the parts, initially at ambient temperature, to a pretreatment for lowering the temperature of said parts to about 0° C., said pretreatment comprises subjecting the parts to a gas in a substantially oxygen free medium; b) subjecting the parts to a cleaning treatment, said cleaning treatment having a temperature which is less than about 0° C. and said ambient temperature; c) conveying said parts from said cleaning treatment to a post treatment comprising said gas in a substantially oxygen free medium, whereby said post treatment increases the temperature of said parts to about 0° C.; and, d) drying and reheating the cleaning parts substantially to ambient temperature by means of a hot gas.

5,599,399

BATHS AND PROCESS FOR THE CHEMICAL POLISHING OF STAINLESS STEEL SURFACES

Francois Dujardin, Brussels; Marianne Reignier, Nivelles, and Nathalie Barthelemy, Orp-Jauche, all of Belgium, assignors to Solvay et Cie (Societe Anonyme), Brussels, Belgium

Continuation of Ser. No. 177,707, Jan. 5, 1994, abandoned, which is a continuation of Ser. No. 920,446, Sep. 8, 1992, abandoned. This application May 25, 1995, Ser. No. 450,811

Claims priority, application Belgium, Feb. 23, 1990, 9000210

Int. Cl.[6] C09K *13/00;13/04;* **C23G** *1/02;* **C23F** *3/06*

U.S. Cl. 134—3 **8 Claims**

1. Process for polishing an austenitic stainless steel surface comprising, bringing the surface into contact with a chemical polishing bath for the chemical polishing of stainless steel surfaces at a slow rate of reaction, said bath comprising, in an aqueous solution,

a mixture of hydrochloric acid, nitric acid and phosphoric acid,

a brightening agent chosen from substituted and unsubstituted hydroxybensoic acids, and at least one quaternary ammonium salt comprising at least one alkyl radical containing 4 carbon atoms, characterized in that they contain, per liter of the aqueous solution,

between 0.005 and 1 g of quaternary ammonium salt, and

between 0.001 and 0.5 moles of an additive chosen from perchloric acid and water-soluble salts of perchloric acid, effective to permit coadsorption of the quaternary ammonium salt

and of the additive chosen from perchloric acid and the water-soluble salts of perchloric acid on the surface of the steel for chemically polishing the steel surface, said bath being at a working temperature of between 20° and 50° C. in use, and said polishing bath being in contact with the stainless steel surface for a period of 5 to 12 hours for effecting said chemical polishing.

5,599,400

LIGHT DUTY LIQUID OR GEL DISHWASHING DETERGENT COMPOSITIONS CONTAINING PROTEASE

Mark H. Mao; Janet L. Marshall, and Martha O: Visscher, all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 121,331, Sep. 14, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 466,946

Int. Cl.[6] B08B *3/00;* **C11D** *3/382*

U.S. Cl. 134—25.2 **9 Claims**

1. A method for soaking hands in the context of a manual dishwashing operation, with reduced skin irritation resulting therefrom, which method comprises:

1) preparing an aqueous dishwashing solution from an effective amount for manual dishwashing of a liquid or gel dishwashing detergent composition comprising:

(a) from about 5% to 99% by weight of detergent surfactant selected from the group consisting of polyhydroxy fatty acid amides; nonionic fatty alkylpolyglycosides; C_{8-22} alkyl sulfates; C_{8-22} alkyl either sulfates; C_{8-22} olefin sulfonates; C_{8-22} paraffin sulfates; C_{8-22} alkyl glyceryl ether sulfonates; fatty acid ester sulfonates; secondary alcohol sulfates; C_{11-16} secondary soaps; and mixtures of said surfactants;

(b) from about 0.001% to 5% by weight of active protease in an amount sufficient to provide reduced skin irritation during manual dishwashing operations; and

(c) from 0% to about 15% by weight of a detergency builder;

(d) from about 1% to about 20% of a suds booster selected from the group consisting of ethylene oxide condensates, fatty acid amides, amino oxide, semipolar nonionics, betaines, sultaines, cationic surfactants, and mixtures thereof; said composition having a pH from about 4 to about 11; and thereafter

2) immersing the hands of the dishwasher in said dishwashing solution for a period of time which is effective to complete hand washing operations.

5,599,401

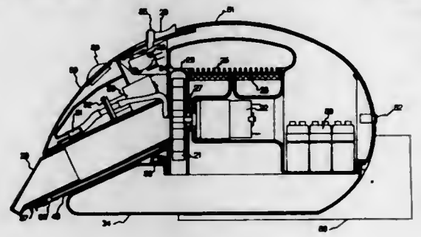
PORTABLE, HAND-HELD, SELF-CONTAINED MULTI-SURFACE, HYDRO-CLEANING APPARATUS

Andrew P. Brosky, Waldorf, Md.; Louis A. Grandelis, Fort Lee, N.J., and Mark E. Radcliffe, Waldorf, Md., assignors to Jancar Industries, Inc., Waldorf, Md.

Filed Aug. 4, 1994, Ser. No. 285,625

Int. Cl.[6] B08B *5/04;3/00;7/04*

U.S. Cl. 134—21 **13 Claims**



1. A method of suctioning hydro-debris containing a quantity of liquid of up to sixteen fluid ounces into a portable, hand-held cleaning apparatus, and of retaining said hydro-debris and quantity of liquid within said portable, hand-held cleaning apparatus without external leakage, said portable, hand-held cleaning apparatus including a vacuum nozzle, an impeller having a plurality of blades, an impeller motor, a deflector housing, a non-porous collection tank, and an exhaust vent, comprising the steps of:

spinning the impeller using the impeller motor to create suction;

forcibly intaking air using the suction created by the spinning impeller to create a suction path;

introducing hydro-debris containing a quantity of up to sixteen fluid ounces of liquid into said portable, hand-held cleaning apparatus through the vacuum nozzle;

conveying the hydro-debris inward along the suction path;

drawing the hydro-debris directly into and through the impeller of said portable, hand-held cleaning apparatus;

deflecting, using the deflector housing, the hydro-debris passing through the plurality of blades, the hydro-debris moving downward responsive to gravity and air flow dynamics, while venting the forcibly intaked air upward and through the exhaust vent; and

containing the hydro-debris without leakage in the non-porous collection tank, located beneath the deflector housing, at a bottom of said portable, hand-held cleaning apparatus.

5,599,402

METHOD FOR CLEANING PLATE HEAT EXCHANGERS

Folmer Greve, Agedrup, Denmark, and Christian Stutz, Ettingen, Switzerland, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

PCT No. PCT/DK92/00072, § 371 Date Aug. 12, 1993, § 102(e) Date Aug. 12, 1993, PCT Pub. No. WO92/15834, PCT Pub. Date Sep. 17, 1992

PCT Filed Mar. 6, 1992, Ser. No. 107,712

Claims priority, application European Pat. Off., Mar. 8, 1991, 91610015

Int. Cl.[6] B08B *9/00;* **C11D** *3/386;* **F28G** *13/00*

U.S. Cl. 134—22.19 **9 Claims**

1. A method for cleaning a plate heat exchanger after a fluid which comprises a vegetable dry matter passes through the plate heat exchanger, comprising a cleaning in place treatment with a solution comprising an enzyme preparation which contains a pectolytic, a cellulolytic, a bemicellulolytic activity and a proteolytic activity, wherein the pectolytic activity is between 10 and 2000 FDU/g, the cellulolytic activity is between 0.1 and 100 FCU/g, the hemicelliulolytic activity is between 1 and 500 FHCU/g, and the proteolytic activity is between 0 and 200,000 HUT/g and wherein the temperature of the solution is between 10° and 70° C. and wherein the plate heat exchanger has contact points and a plurality of plates separated from each other by at least about 2.2 mm.

5,599,403

SEMICONDUCTOR DEVICE CONTAINING MICROCRYSTALLINE GERMANIUM & METHOD FOR PRODUCING THE SAME

Toshimitsu Kariya, Nara, and Keishi Saito, Soraku-gun, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 171,430, Dec. 22, 1993, Pat. No. 5,456,762. This application Jun. 12, 1995, Ser. No. 489,372

Claims priority, application Japan, Dec. 28, 1992, 4-349586

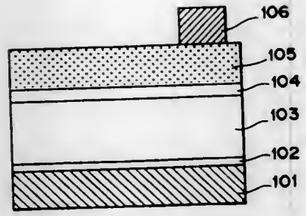
Int. Cl.[6] H01L *31/04;31/20;31/075;31/0368*

U.S. Cl. 136—258 **10 Claims**

1. A semiconductor device comprising a semiconductor layer for generating photocarriers, wherein

said semiconductor layer is a non-monocrystalline silicon germanium layer containing microcrystalline germanium.

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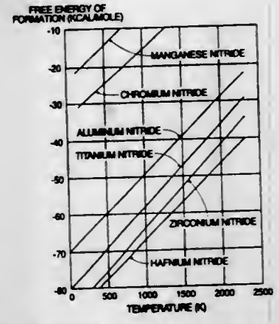
PROCESS FOR FORMING NITRIDE PROTECTIVE COATINGS

Donald L. Alger, 4050 Paradise Rd., Seville, Ohio 44273

Continuation-in-part of Ser. No. 982,485, Nov. 27, 1992, Pat. No. 5,413,642. This application Apr. 25, 1995, Ser. No. 428,570

Int. Cl.[6] **C23C** *8/24*

U.S. Cl. 148—212 **7 Claims**



6. A method of forming a specific reactive element barrier layer on a surface of a substrate material, said substrate material being essentially free of free sulfur and other contaminants capable of segregating to said substrate material surface, and further containing specific reactive elements selected from the group consisting of aluminum, titanium, zirconium, tantalum, columbium, silicon, beryllium, manganese, uranium, vanadium, magnesium, thorium, calcium, barium, rare earth elements, and combinations thereof, and elements whose nitrides are less stable than a corresponding nitride of the specified element, said method comprising the formation of a nitride barrier layer wherein said barrier layer is formed by:

a) removing any specific reactive elements from the near-surface layer of the bulk substrate material up to a thickness of approximately 100 micrometers, by exposing said substrate material for about 30 minutes to a flowing hydrogen/hydrogen chloride atmosphere, at an elevated temperature between about 1000° F. and 2000° F., causing the diffusion of said specific reactive elements to said surface with the subsequent formation of gaseous chlorides and exhausting the gaseous chlorides into a flowing atmosphere and away from said material;

b) adding specific reactive element atoms to said substrate material beneath said substrate surface;

c) placing at least the surface and contiguous region of said substrate material in contact with a static or flowing process medium at a temperature from about 1000° F. to about 2000° F. and containing a specified process medium nitrogen concentration;

d) monitoring and controlling the temperature and concentration of said process medium to maintain the same within the specified ranges;

e) reducing said less stable atom nitrides at the substrate surface and reacting said specific reactive element atom at said substrate surface, said reaction occurring only with said provided by said process medium to form a specific reactive element nitride, such formation causing a specific reactive element atom concentration gradient between the surface and interior of said substrate material; and

f) continuing to maintain said substrate material surface in contact with said process medium within said specific temperature range such that said specific reactive element concentration gradient causes said specific reactive atoms in the substrate material interior to diffuse to the surface of said substrate material, where they react with the nitrogen provided by said process medium until a uniform, lateral growth of specific reactive element barrier layer is formed, said barrier layer being strongly bonded to said substrate material surface,

wherein said process medium is selected from the group consisting of:

1) a hydrogen/ammonia atmosphere having a nitrogen concentration from about 0.01 ppm to about 10 ppm; and

2) liquid lithium having a lithium nitride concentration from about 1 ppm to about 500 ppm.

5,599,405

Patent Not Issued For This Number

5,599,406

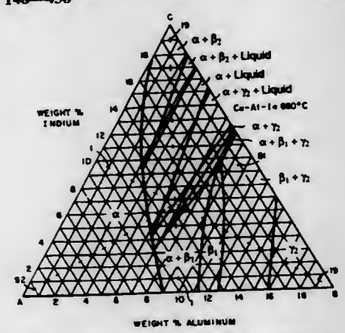
GOLD-COLORED COPPER-ALUMINUM-INDIUM ALLOY

Arun Prasad, Cheshire, Conn.; Michael Weston, Danville, N.Y., and Grant Bauer, Point Pleasant, N.J., assignors to Gemetals Corporation, Danville, N.H.

Filed Jan. 4, 1993, Ser. No. 455

Int. Cl.[6] **C22C** *9/00;9/01*

U.S. Cl. 148—436 **4 Claims**



1. An alloy consisting of the following elements as essential ingredients, said alloy having substantially a single β phase and a microstructure with an average grain size of no more than 1,000 μm in diameter, a chromaticity and specularity closely similar to that of gold, a malleability less than that of gold:

Ingredient	% by Total Weight
Aluminum	7–12
Indium	5–11
Strengtheners	0–3
Stabilizer	0–3
Modifier	0–3
Copper	Remainder

the total percentage of said strengtheners, said stabilizer, and said modifier being from 0.025 to 3, said strengtheners being selected from the class consisting of silver, gold, palladiuum, platinum, iridium, ruthenium and rhodium, said stabilizer being selected from the class consisting of yttrium, cerium, lanthanum, hafnium, zirconium, chromium, titanium, nickel, iron and manganese, and said modifier being selected from the class consisting of boron, silicon, lithium, magnesium, zinc and phosphorus.

5,599,407

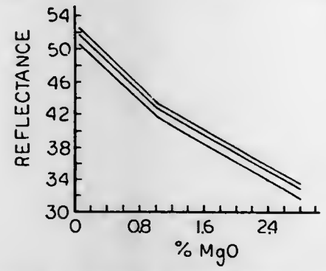
METHOD FOR ESTIMATING INCLUSION CONTENT OF METALS USING REFLECTANCE

Andrew G. Haerle, Houston, and Barry A. Mikucki, Lake Jackson, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 29, 1995, Ser. No. 536,882

Int. Cl.[6] **C22C** *1/00;33/00*

U.S. Cl. 148—508 **17 Claims**



1. A method for estimating the inclusion content in a metal, the method comprising the steps of:

(a) sectioning the metal to create an exposed inner surface of the metal;

(b) measuring the reflectance, r, of the exposed inner surface of the metal;

(c) estimating the inclusion content, i, of the metal from the relationship

$$i=rk$$

where k is a constant.

5,599,408

METHOD OF PRODUCING A STRUCTURAL MEMBER

Akitsugu Fujita; Takayuki Kawano, both of Nagasaki; Makoto Nakamura, Tokyo; Fumikazu Sakai, Nagasaki; Tatsuki Matsumoto, Nagasaki; Shinsuke Oba, Nagasaki; Hidetoshi Sueoka, Nagasaki; Manabu Kimura, Nagasaki, and Masato Zama, deceased, late of Nishisonogi-gun, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP93/01137, § 371 Date May 4, 1994, § 102(e) Date May 4, 1994, PCT Pub. No. WO94/05824, PCT Pub. Date Mar. 17, 1994

PCT Filed Aug. 12, 1993, Ser. No. 232,191

Claims priority, application Japan, Sep. 4, 1992, 4-263158; Feb. 10, 1993, 5-022503

Int. Cl.[6] **C21D** *6/02*

U.S. Cl. 148—607 **14 Claims**

1. A method of producing a structural member comprising the steps of: performing first solution treatment at 1010° to 1050° C. on a stainless steel having a composition of 0.07% or less carbon, 1% or less silicon, 1% or less manganese, 2.5 to 5% copper, 3 to 5.5% nickel, 14 to 17.5% chromium, 0.5% or less molybdenum, 0.15 to 0.45% niobium, by weight, and the balance composed substantially of iron; performing first aging treatment at a temperature not lower than 520° C. and not higher than 630° C; performing second solution treatment at 730° to 840° C.; and performing second aging treatment at a temperature not lower than 520° C. and not higher than 630° C.



(x100)

5,599,409

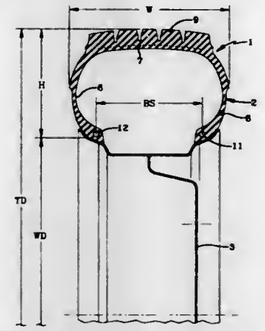
RADIAL TIRE/WHEEL ASSEMBLY FOR HIGH BRAKE HEAT GENERATED SERVICE

Traian Benchea, Brentwood, Tenn., assignor to Bridgestone/Firestone, Inc., Akron, Ohio

Filed Jul. 14, 1995, Ser. No. 502,439

Int. Cl.[6] **B60C** *3/00;3/04;5/00*

U.S. Cl. 152—454 **4 Claims**



1. A vehicle tire and wheel combination wherein the tire ratio of the overall tire diameter (TD) to the overall wheel diameter (WD) is approximately 1.76, said overall tire diameter (TD) being approximately 43 inches and the overall wheel diameter (WD) being approximately 24.5 inches.

5,599,410

METHOD OF AND DEVICE FOR MAKING LABELS

Peter Reinders, Ochtrup, Germany, assignor to Carl Schmale GmbH & Co. KG, Ochtrup, Germany

PCT No. PCT/DE92/00830, § 371 Date Apr. 6, 1994, § 102(e) Date Apr. 6, 1994, PCT Pub. No. WO93/07325, PCT Pub. Date Apr. 15, 1993

PCT Filed Sep. 24, 1992, Ser. No. 211,599

Claims priority, application Germany, Oct. 9, 1991, 41 33 473.6

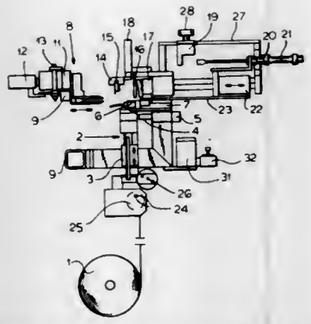
Int. Cl.[6] **D05B** *35/06;* **B32B** *31/26*

U.S. Cl. 156—64 **8 Claims**

1. A method of making labels, comprising the steps of:

(a) feeding from a supply of strip material, a length of said strip material upwardly across a path of a horizontally shiftable folding plate;

(b) pressing a pair of pressure rollers against said strip material close to an upper end thereof, engaging thereby said strip between said pressure rollers advancing upwardly simultaneously with said material strip;



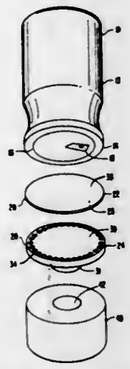
(c) engaging an upper end of said length of said strip material in a gripper at a location above said path whereby said length of said strip material is spanned across said path;
(d) thereafter pulling apart said pressure rollers, thereby releasing said material strip;
(e) thereafter displacing said plate in one direction along said path to deflect said length of said strip material in said direction along said path and said plate between jaws of a pair of positioning tongs open toward said plate;
(f) severing said length from said supply below said plate and only after said plate has deflected said length between said jaws;
(g) retracting said plate in an opposite direction along said path leaving a portion of the deflected length of said strip material between said jaws;
(i) closing said jaws to engage said portion in said positioning tongs; and
(j) releasing said upper end by opening said gripper.

5,599,411

METHOD AND DEVICE FOR ULTRASONIC WELDING

Carol Schembri, San Mateo, Calif., assignor to Abaxis, Inc., Sunnyvale, Calif.

Division of Ser. No. 154,222, Nov. 17, 1993, Pat. No. 5,403,415. This application Dec. 6, 1994, Ser. No. 350,856
Int. Cl.[6] B32B *31/16*
U.S. Cl. 156—73.1 **10 Claims**



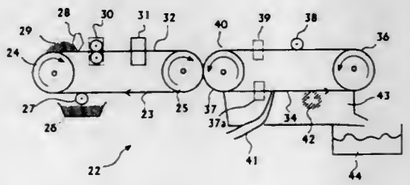
1. A method for joining a first thermoplastic workpiece to a second thermoplastic workpiece said method comprising the steps:
providing an ultrasonic horn comprising a resonant mass having an energy-applying surface with a planar base and at least one coplanar region raised relative to said base, wherein said region comprises a film and is raised from 0.0005 inches to 0.025 inches relative to said base;
disposing the two thermoplastic workpieces so that a pattern of energy directors on a surface of the second workpiece are in contact with a surface of the first workpiece;
contacting the energy-applying surface of the ultrasonic horn against one of the thermoplastic workpieces so that the raised region is generally disposed over the pattern of energy directors;
resonating the ultrasonic horn to deliver ultrasonic energy to the first workpiece for a time sufficient to melt thermoplastic material in each workpiece in said pattern of energy directors;
ceasing resonating the ultrasonic horn to allow the melted thermoplastic material in each workpiece to rigidify and form a weld.

5,599,412

METHOD AND APPARATUS FOR PRODUCING ALIGNED CHOLESTERIC LIQUID CRYSTAL INKS

Sadeg M. Faris, 24 Pocantico River Rd., Pleasantville, N.Y. 10570

Division of Ser. No. 798,881, Nov. 27, 1991, Pat. No. 5,364,557. This application Jun. 27, 1994, Ser. No. 265,949
Int. Cl.[6] B29C *71/00;* **B29D** *9/00*
U.S. Cl. 156—73.3 **35 Claims**



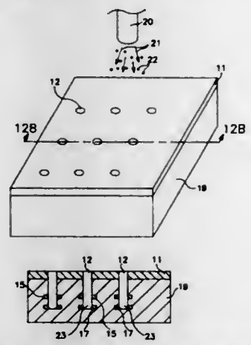
1. Apparatus for producing pre-aligned CLC color platelets comprising:
a container and a means for producing a CLC material ordered in the liquid crystal phase by heating it above its glass temperature and below its clearing temperature;
a film coating means
a first substrate coated by said coating means with a film of said CLC material;
a primary alignment means which turns said CLC film into the desired uniform thickness, and aligns it into a helical configuration with a helix axis perpendicular to said CLC film;
a secondary alignment means to ensure that all the CLC film is in the helical order;
a drying and cooling means for producing a CLC film that maintains its helical order as it is cooled below its glass temperature;
a second substrate is coated with an adhesive by an adhesive application means;
said adhesive, after application to said second substrate, is dried by a drying means;
a means for transferring CLC film from first substrate onto adhesive coated second substrate;
a means for embrittling said CLC film and said adhesive;
a means for breaking into small platelets and removing the brittle CLC film and adhesive from second substrate;
a means for separating the CLC platelets from the adhesive; and
a means for drying the CLC platelets, and breaking them further into smaller platelets.

5,599,413

METHOD OF PRODUCING A CERAMIC ELECTRONIC DEVICE

Keiichi Nakao, Kyoto, and Noboru Mohri, Katano, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 24, 1993, Ser. No. 157,642
Claims priority, application Japan, Nov. 25, 1992, 4-314730
Int. Cl.[6] B32B *31/18;31/26*
U.S. Cl. 156—89 **4 Claims**



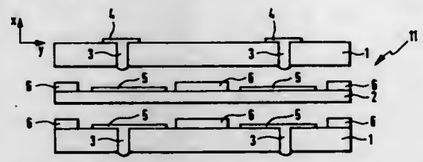
1. A method of producing ceramic electrode devices comprising the steps of:
placing green-form ceramic layers encapsulating internal electrodes one over the other on a substrate which has a plurality of apertures therein so that the internal electrodes are aligned with corresponding apertures of the substrate, said green-form ceramic layers comprising a green sheet layer ceramic material;
making multiple through holes in a structure of the green-form ceramic layers through the apertures of the substrate using a sand blasting apparatus with abrasive particles prepared from the green sheet layer ceramic material;
forming in the through holes external electrodes connected to the internal electrodes; and
baking the green-form ceramic layers structure.

5,599,414

METHOD OF MANUFACTURING MULTILAYERED CERAMIC STRUCTURES

Walter Roethlingsboefer, and Ulrich Goebel, both of Reutlingen, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Oct. 13, 1994, Ser. No. 322,717
Claims priority, application Germany, Nov. 5, 1993, 43 37 749.1
Int. Cl.[6] B32B *31/18;31/26*
U.S. Cl. 156—89 **7 Claims**



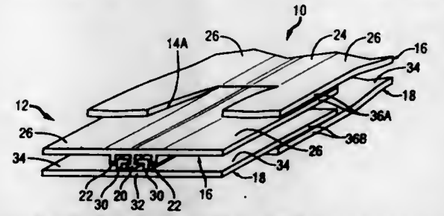
1. A method of manufacturing a multi-layered ceramic structure, comprising the steps of:
arranging a plurality of ceramic sheets and a special sheet in a stack, the special sheet including at least one section upon which a dense mass is disposed; and
joining the ceramic sheets and the special sheet to one another by firing the stack such that, during the firing, the dense mass penetrates into the at least one section of the special sheet and, after the firing, the special sheet forms a porous plate which allows penetration of the porous plate by at least one of fluids, gases, and vapors, except that in the at least one section, the dense mass forms at least one dense region of the porous plate which hinders penetration of the porous plate by at least one of fluids, gases, and vapors.

5,599,415

METHOD OF THERMALLY SPLICING ZIPPERS

Mladomir Tomic, Appleton, and Gregory L. Petkovsek, Menasha, both of Wis., assignors to Reynolds Consumer Products Inc., Appleton, Wis.

Filed Jul. 11, 1995, Ser. No. 501,194
Int. Cl.[6] A44B *19/16;* **B65H** *69/06*
U.S. Cl. 156—159 **26 Claims**



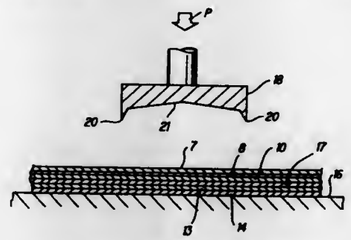
11. A method of thermally splicing a first zipper to a second zipper, said first and second zippers each including interlocked male and female profiles, said method comprising the steps of:
overlapping an end section of the first zipper and an end section of the second zipper; and
thermally fusing portions of the overlapping end sections of the respective first and second zippers, wherein
prior to the step of overlapping the end section of the first zipper and the end section of the second zipper, the step of removing a portion of the interlocked male and female profiles of the first zipper at the end section thereof to form a notch is performed.

5,599,416

THERMALLY TRANSFERABLE TYPE EMBLEM MADE OF THERMOPLASTIC SYNTHETIC RESIN AND METHOD OF MANUFACTURING THE SAME

Eiji Kuwahara, Omiya Mansion, No. 25-18, Nakamiya 2-Chome, Asahi-Ku, Osaka-Shi, Osaka-Fu, Japan

Division of Ser. No. 151,110, Nov. 12, 1993, Pat. No. 5,520,988. This application May 12, 1995, Ser. No. 439,885
Int. Cl.[6] B41M *3/12*
U.S. Cl. 156—219 **5 Claims**



1. A method of manufacturing a thermally transferable emblem made of thermoplastic synthetic resin, comprising the steps of:
(a) placing a hot-melt film on a pole plate of an electrode die for high-frequency-induction;

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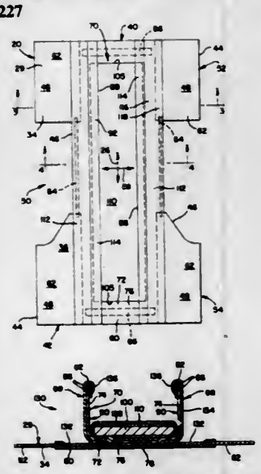
(b) laying a flexible thermoplastic synthetic resin sheet formed with a design thereon on said hot-melt film;
(c) removably bonding a transparent carrier film on the upper surface of said flexible thermoplastic synthetic resin sheet to produce a multilayer structure, said transparent carrier film being more resistive to heat than said hot-melt film and said flexible thermoplastic synthetic resin sheet;
(d) melting and cutting said hot-melt film and said flexible thermoplastic synthetic resin sheet of said multilayer structure along design contours by pressing an engraving die thereon and applying a high frequency wave thereto to produce three-dimensional design elements;
(e) cooling said multilayer structure;
(f) removing unnecessary portions of said multilayer structure other than said design elements.

5,599,417

METHOD OF MANUFACTURE OF LIQUID RETAINING ABSORBENT GARMENT

Frank S. Glaug, Appleton; David A. Kuen, Neenah, and Robert L. Popp, Hortonville, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Division of Ser. No. 171,578, Dec. 22, 1993, Pat. No. 5,476,458. This application May 12, 1995, Ser. No. 440,039
Int. Cl.[6] A61F *13/15;13/20*
U.S. Cl. 156—227 **14 Claims**



1. A method of making an absorbent garment, comprising the steps of:
supplying an outer cover having opposite longitudinally spaced front and back ends with a crotch region therebetween;
supplying a containment trough having a liquid impermeable base portion and integral liquid impermeable retaining walls;
bonding the base portion of the containment trough to the crotch region so that the retaining walls are positioned transversely outward from the base portion and freestanding from the outer cover;
operatively joining elastic members to the retaining walls to define freestanding elasticized flaps, each flap comprising one of the liquid impermeable retaining walls and having an inwardly-directed face that is adapted to transport liquid in the plane of the inwardly-directed face as defined by a first Wicking Value greater than zero;
supplying an absorbent structure having upper and lower surfaces, longitudinally spaced end edges, and side edges extending between the end edges;
covering the upper surface, side edges and at least part of the lower surface of the absorbent structure with a liner formed of a liquid permeable material that is adapted to transport liquid in the plane of the liquid permeable material as defined by a second Wicking Value, the second Wicking Value being at least 2 times greater than the first Wicking Value on a gram per gram basis;
disposing the absorbent structure between the flaps; and
bonding the liner to the base portion.

5,599,418

METHOD FOR MAKING RECOVERABLE ARTICLE FOR ENCAPSULATION

Kenneth B. Pithouse, Lesulis, France; Thomas A. Kridl, Union City, and James T. Triplett, Livermore, both of Calif., assignors to Raychem Limited, Swindon, United Kingdom

Continuation of Ser. No. 168,722, Mar. 16, 1988, Pat. No. 5,002,822, which is a division of Ser. No. 925,349, Oct. 30, 1986, Pat. No. 4,761,193, which is a division of Ser. No. 567,130, Dec. 30, 1983, Pat. No. 5,626,458. This application Nov. 15, 1989, Ser. No. 436,832
Claims priority, application United Kingdom, Jan. 6, 1983, 8300221; Aug. 16, 1983, 8322004
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—273.5 **9 Claims**

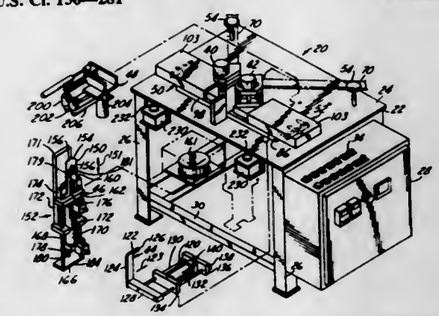
1. A method of making a recoverable composite structure comprising a polymeric material and recoverable fibers by virtue of which the structure is recoverable, which method comprises:
(A) applying to cross-linked recoverable fibers the polymeric material; and then
(B) cross-linking the polymeric material.

5,599,419

METHOD FOR JOINING PLASTIC MATERIALS TOGETHER

Kenneth W. Hunter, Washington, and Gerald Paoletti, Eastpointe, both of Mich., assignors to NEP Systems, Inc., Madison Heights, Mich.

Division of Ser. No. 299,569, Sep. 1, 1994. This application Jun. 7, 1995, Ser. No. 472,180
Int. Cl.[6] B29C *65/20*
U.S. Cl. 156—281 **9 Claims**



1. A method of joining together a pair of plastic members, the method comprising the steps of
locating the plastic members in fixtures at the desired position against a locator member;
clamping the plastic members firmly in position in the fixtures;
withdrawing the locator member;
providing a thin heating member in the intersection between the plastic members;
moving the fixtures until the plastic members contact the heating member;
heating the ends of the plastic members to be joined together with the upper edge of the heating member being positioned slightly below the upper surface of the plastic members;
removing the thin heating member;

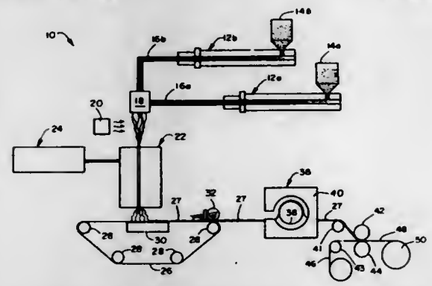
allowing the plastic members to be bonded together and to cool while the plastic members are held in the clamped position; and
removing the joined plastic members from the fixture.

5,599,420

PATTERNED EMBOSSED NONWOVEN FABRIC, CLOTH-LIKE LIQUID BARRIER MATERIAL AND METHOD FOR MAKING SAME

Richard S. Yeo, Dunwoody, Ga.; Duane G. Uitenbroek, Little Chute, Wis., and Jennifer R. Powers, Woodstock, Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation-in-part of Ser. No. 43,335, Apr. 6, 1993, Pat. No. 5,399,174. This application Feb. 15, 1995, Ser. No. 388,770
Int. Cl.[6] A61F *13/15;* **B32B** *31/20*
U.S. Cl. 156—290 **14 Claims**



1. Process for making nonwoven fabric comprising the steps of:
a. melt-spinning continuous spunbond polymeric filaments;
b. drawing the continuous filaments;
c. quenching the filaments;
d. thereafter, collecting the drawn filaments on a moving forming surface to form a nonwoven fabric web of continuous filaments;
e. bonding together the filaments of the web with a heat-activated polymeric adhesive to integrate the web without the application of pressure; and
f. embossing the web wtih a pattern of densified areas separated by high-loft areas which are uncompressed other than by said embossing step with the result that the densified areas have a luster which contrast with the flat appearance of the high-loft areas so that the embossed pattern of the fabric is clearly visible.

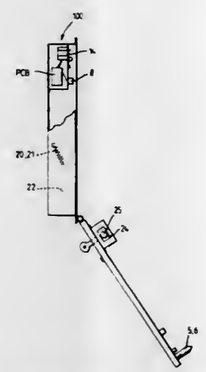
5,599,421

DISPOSAL UNIT

Frederick C. Frost; Edward T. Williams, and Peter Saunders, all of Essex, United Kingdom, assignors to F C Frost Limited, Essex, United Kingdom

PCT No. PCT/GB92/02033, § 371 Date Aug. 10, 1994, § 102(e) Date Aug. 10, 1994, PCT Pub. No. WO93/09043, PCT Pub. Date May 13, 1993
PCT Filed Nov. 4, 1992, Ser. No. 232,220
Claims priority, application United Kingdom, Nov. 5, 1991, 9123445
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—359 **13 Claims**

1. A disposal unit for used sanitary towels comprising:
a housing;
means for supporting a bag for receiving the used towels within the housing;
a door mounted to the housing, in use the door being opened for access to the bag;
heat sealing means operable when the door is in the closed position to seal hermetically the mouth of the bag;



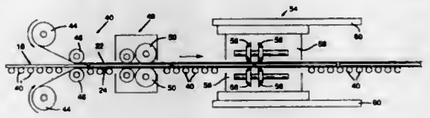
a solenoid-controlled interference member; and
a stop, the interference member in combination with the stop comprising a means for limiting the opening of the door to a predetermined position, and, movable under solenoid control, to a position in which the interference member clears the step, for allowing opening of the door beyond the predetermined position.

5,599,422

METHOD FOR PRODUCING MASKED GLAZING PANELS

Lawrence O. Adams, Jr., Tigard; Kirk C. McCammon, Portland; Larry J. Henry, Tigard, and Wayne C. Metcalfe, Wilsonville, all of Oreg., assignors to Oregon Glass Company, Wilsonville, Oreg.

Filed May 30, 1991, Ser. No. 707,613
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—510 **4 Claims**



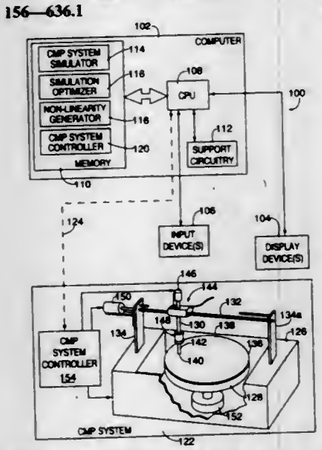
1. A method of making a glazing assembly, the method comprising:
initially applying a sheet of masking material on a first surface of an uninstalled glazing pane that (a) has first and second surfaces each of which has a central region and a perimeter region surrounding the central region and (b) that is sized and shaped to be installed in a frame, the masking material being sized, shaped and positioned to cover at least portions of both the central region and the perimeter region of the first surface; and
then removing portions of the sheet that cover the perimeter region, to leave uncovered at least a portion of the perimeter region of the first surface, the width of the uncovered portion being not less than the distance the first surface will extend along a facing surface of the frame when the pane is installed.

5,599,423

APPARATUS AND METHOD FOR SIMULATING AND OPTIMIZING A CHEMICAL MECHANICAL POLISHING SYSTEM

Norman W. Parker, Fairfield; Robert D. Tolles, Santa Clara, and Harry Q. Lee, Mountain View, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed Jun. 30, 1995, Ser. No. 497,362
Int. Cl.[6] H01L 21/00
U.S. Cl. 156—636.1 29 Claims



1. A method for simulating a chemical mechanical polishing (CMP) system having a polishing pad, a chuck for supporting a substrate, a positioner for positioning the polishing pad relative to the substrate, a chuck rotator for rotating the chuck, and a polishing pad rotator for rotating the polishing pad, said method comprising the steps of:

(a) defining polishing pad and substrate parameters;

(b) defining simulation parameters;

(c) determining, in response to said polishing pad, substrate and simulation parameters, a polishing result; and

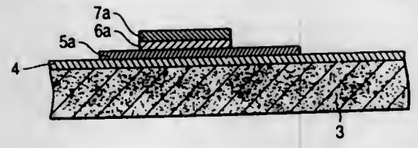
(d) displaying said polishing result.

5,599,424

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICES

Shoji Matsumoto, Kyoto; Yoshihisa Nagano, Suita; Yasuhiro Shimada, Osaka, and Yasufumi Izutsu, Mukou, all of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Division of Ser. No. 412,563, Mar. 29, 1995, Pat. No. 5,527,729. This application Dec. 13, 1995, Ser. No. 571,732
Claims priority, application Japan, Mar. 30, 1994, 6-60883; Apr. 25, 1994, 6-86686; Dec. 28, 1994, 6-327667
Int. Cl.[6] H01L 21/00
U.S. Cl. 156—643.1 9 Claims



1. A method of manufacturing a semiconductor device comprising the steps of:

forming an insulation layer, a first metal layer, a dielectric film, and a second metal layer on a substrate having circuit elements formed thereon;

dry etching said second metal layer and said dielectric film to form a top electrode and a capacitance insulation film, wherein at least this dry etching step is performed using a gas containing hydrocarbon; and

dry etching said first metal layer to form a bottom electrode after dry etching said second metal layer and said dielectric film.

5,599,425

PREDECOMPOSITION OF ORGANIC CHLORIDES FOR SILICON PROCESSING

André Lagendijk, Oceanside, Calif., and Damon K. DeBusk, Austin, Tex., assignors to Air Products and Chemicals, Inc., Allentown, Pa., and Advanced Micro Devices, Austin, Tex.

Filed Feb. 6, 1995, Ser. No. 384,087
Int. Cl.[6] H01L 21/306
U.S. Cl. 156—646.1 17 Claims

1. A process for reaction of a silicon-containing substrate with chlorine and oxygen-containing reactive reagents selected from the group consisting of hydrogen chloride, chlorine, oxygen and mixtures thereof in a main reaction zone, comprising the steps of:

(a) providing a chlorine precursor selected from the group consisting of $C_xH_yCl_z$, C_xCl_z, $C_xO_uCl_{2(x-u+1)}$, $C_xO_uCl_{x-u+1}H_{x-u+1}$ and mixtures thereof, wherein x=1–10;y=x+1, x or x–1; z=1–10; s=2(x+1, x or x–1); r=1–10; u=1,2 and up to r;

(b) providing at least a stoichiometric amount of a source of oxygen to react with said chlorine precursor;

(c) reacting said chlorine precursor and said source of oxygen at least the decomposition temperature of said chlorine precursor to generate said chlorine and oxygen-containing reactive reagents in a distinct decomposition reaction zone;

(d) delivering said chlorine and oxygen-containing reactive reagents to said main reaction zone;

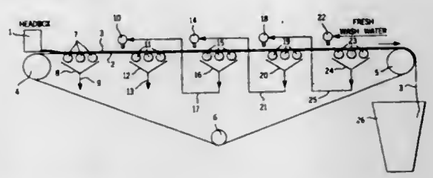
(e) reacting said chlorine and oxygen-containing reactive reagents with said silicon-containing substrate in said main reaction zone at a temperature independent of the temperature of step (c).

5,599,426

METHOD OF WASHING PULP USING A SINGLE ENDLESS SUPPORT FABRIC

Roger P. Hoffman, Green Bay, Wis., assignor to Hoffman Environmental Systems, Inc., Green Bay, Wis.

Filed Oct. 11, 1994, Ser. No. 320,576
Int. Cl.[6] D21C 9/02
U.S. Cl. 162—60 5 Claims



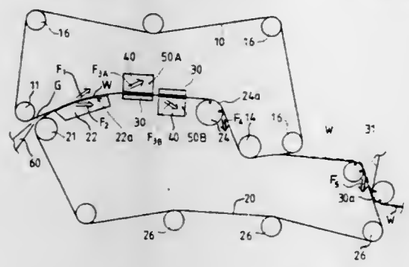
1. A method of washing recycled cellulosic pulp, comprising the steps of forming an aqueous slurry of recycled cellulosic pulp containing inorganic solid fillers and dissolved solids, applying the slurry to the upper surface of a porous belt to provide a pulp mat having a basis weight of 3 to 100 lbs. of dry fiber per 1,000 sq. ft. of mat surface, moving the belt and the mat supported thereon in a path of travel, directing wash water against an exposed upper surface of the mat, moving the belt and the mat supported thereon at a speed of 300 to 400 ft. per minute over a series of spaced idler table rolls to cause the belt and the supported mat to jump vertically to remove the water along with said dissolved solids and said fillers from the mat, and thereafter removing the mat from the belt.

5,599,427

TWIN-WIRE WEB FORMER IN A PAPER MACHINE

Mauri Kolvuranta, Kemi, and Michael Odell, Jyväskylä, both of Finland, assignors to Valmet Corporation, Helsinki, Finland

Filed Mar. 13, 1992, Ser. No. 850,505
Claims priority, application Finland, Mar. 15, 1991, 911281
The portion of the term of this patent subsequent to Jun. 1, 2010, has been disclaimed.
Int. Cl.[6] D21F 1/00
U.S. Cl. 162—301 16 Claims



1. A twin-wire web former in a paper machine, comprising

a covering wire and a carrying wire which define a twin-wire forming zone with one another, said wires being guided by breast rolls, a forming gap being located at the beginning of said twin-wire forming zone,

a headbox having a discharge opening, said headbox being structured and arranged to feed a pulp suspension jet from said discharge opening into said forming gap to form a web,

a forming shoe which follows said forming gap in a running direction of the web and is arranged in said twin-wire forming zone, said forming shoe being provided with a curved, open guide deck,

means for providing negative pressure in an interior of said forming shoe such that water is removed through both of said wires in the area of said forming shoe,

a first forming roll arranged after said forming shoe in the running direction of the web, the web being detached after said first forming roll from said covering wire and passed on said carrying wire to a pick-up point, and

a first and second draining unit provided after said forming shoe in the running direction of the web and before said first forming roll, each of said draining units comprising a press/support unit which guides an associated one of said wires placed in contact with it as a substantially straight run, each of said press/support units structured and arranged to apply an adjustable compression pressure to the web such that said press/support unit is flexible in loading, the distribution of the compression pressure in each of said press/support units also being adjustable in the running direction of the web, each of said draining units further comprising draining equipment provided with suction and foil equipment, said draining equipment placed opposite to said press/support unit in each of said first and second draining units such that said wires run between said draining equipment and said press/support unit, and each of said draining equipments structured and arranged to remove a substantial amount of water out of the web, and

said first draining unit being arranged such that said press/support unit of said first draining unit is located inside a loop of said carrying wire and said draining equipment of said first draining unit is located inside a loop of said covering wire, and

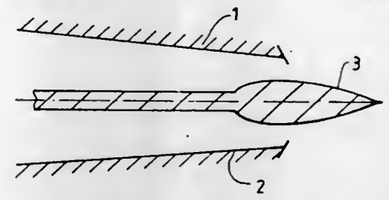
said second draining unit being arranged to operate in an opposite direction to said first draining unit such that said press/support unit of said second draining unit is located inside the loop of said covering wire and said draining equipment of said second draining unit is located inside the loop of said carrying wire.

5,599,428

HEADBOX NOZZLE WITH HEAVY END CONVERGENCE

Albrecht Meinecke, Heidenheim; Helmut Heinzmann, Bohmenkirch; Wolfgang Ruf, Heidenheim; Dieter Egelhof, Heidenheim, and Volker Schmidt-Rohr, Heidenheim, all of Germany, assignors to J. M. Voith GmbH, Heidenheim, Germany

Filed Jul. 12, 1994, Ser. No. 273,808
Claims priority, application Germany, Jul. 12, 1993, 43 23 050.4
Int. Cl.[6] D21F 1/02
U.S. Cl. 162—343 6 Claims



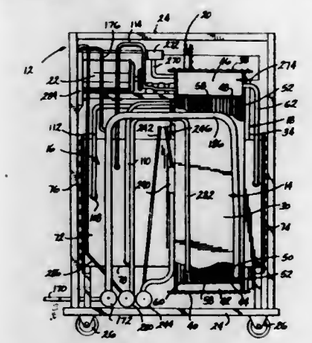
1. A multi-layer headbox for distributing a stock suspension onto a wire and a paper machine, said headbox including a nozzle having a lower convergence upstream inlet area immediately followed by a higher convergence downstream end area, said nozzle comprising at least one machine wide fin that subdivides the nozzle into at least two machine-wide nozzle ducts, the mean value of the clearance of at least one of said ducts diminishes continuously in the flow direction, the percentage decrease of said clearance in the downstream end area of the nozzle being at least twice as large as the percentage decrease of said clearance in the upstream inlet area of said nozzle, said fin having a downstream end area of decreasing thickness immediately preceded by an area of increasing thickness, only the downstream end area of the fin having a single said area of increasing thickness immediateiy followed by a single said area of decreasing thickness.

5,599,429

WATER DISTILLATION SYSTEM

David L. Martin, and Robert C. Martin, both of Lincoln, Nebr., assignors to Martinstill Corporation, Lincoln, Nebr.

Filed Mar. 16, 1994, Ser. No. 214,359
Int. Cl.[6] B01D 1/28;3/42; C02F 1/04
U.S. Cl. 202—176 14 Claims



1. An improved water distillation system comprising:

a preheater having a water chamber, a source water inlet in fluid communication with the water chamber for supplying water to the water chamber so that the water reaches a normal operating water level within the water chamber, a preheated water outlet in fluid communication with the water chamber and a

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heat exchanger provided therein wherein the preheater heats incoming source water;

an evaporator having a preheated water inlet, an evaporator chamber and a heat exchanger chamber mounted therein wherein the evaporator converts the preheated source water into water vapor and volatile gases;

the improvement comprising:

an evaporator volatile gas outlet formed in the heat exchanger chamber of the evaporator;

a preheater volatile gas inlet formed in the preheater, the gas inlet being located below the normal operating water level in the preheater; and

a gas conduit having one end mounted to the evaporator volatile gas outlet and the other end mounted to the preheater volatile gas inlet to create a fluid conduit between the evaporator chamber and the preheater, the gas conduit having an intermediate portion thereof positioned between the evaporator volatile gas outlet and the preheater volatile gas inlet, the intermediate portion also being positioned vertically above the volatile gas inlet to prevent the backflow of water from the preheater to the evaporator;

whereby the gas and water vapor mixture exiting the evaporator and entering the preheater through the gas conduit is forced into solution with the water in the preheater so that the gas and water vapor mixture will give up at least a portion of its latent heat to the preheater water such that at least a portion of the water vapor reverts to the liquid state.

11. An improved water distillation system comprising:

a preheater having a water chamber, a source water inlet in fluid communication with the water chamber, a preheated water outlet in fluid communication with the water chamber and a heat exchanger provided therein wherein the preheater heats incoming source water; and

an evaporator having a preheated water inlet, an evaporated chamber and a heat exchanger chamber mounted therein wherein the evaporator converts the preheated source water vapor and volatile gases;

the improvement comprising;

an evaporator volatile gas inlet formed in the heat exchanger chamber of the evaporator;

a preheater volatile gas inlet formed in the preheater, the gas inlet being located below the water level in the preheater during normal operation of the distillation system;

a gas conduit having one end mounted to the evaporator volatile gas outlet and the other end mounted to the preheater volatile gas inlet to create a fluid conduit between the evaporator chamber and the preheater;

a preheater volatile gas outlet formed in the preheater above the preheated water outlet;

a drain;

a wastewater drain outlet formed in the evaporator to remove wastewater from the evaporator chamber;

a wastewater conduit extending from the wastewater drain outlet to the drain; and

a volatile gas conduit extending from the volatile gas outlet to the drain;

whereby the volatile gas outlet of the preheater is in fluid communication with the drain so that the volatile gases passing through the outlet are combined with the wastewater and the gases are converted to the liquid state rather than being released into the atmosphere.

5,599,430

MATTRESS FOR ELECTROCHEMICAL CELLS

John R. Pimlott, Sweeny; Richard N. Beaver, deceased, late of Angleton, and Harry S. Burney, Richwood, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 820,726, Jan. 14, 1992, abandoned. This application Dec. 24, 1992, Ser. No. 693,851

Int. Cl.[6] C25B *9/00;9/04*

U.S. Cl. 204—252 **16 Claims**

1. In a pressurized electrolysis cell comprising a cell housing containing at least one pair of electrodes which is a cathode and an anode, a current collector and an ion exchange membrane, the improvement which comprises an electrically conductive, hydraulically permeable resilient mattress substantially coplanar with and contacting on one side the current collector and coplanar with and contacting on the other side an electrode, said mattress comprising at least six layers of woven and crimped metal fibers wherein the crimps of the layers are non-aligned, and having a resiliency product of greater than 100 (inches)^2/psi according to the formula:

$$RP=10{,}000\times NS\times CH$$

wherein RP represents the resiliency product in (inches)^2/psi, NS is the negative slope of the mattress height versus compressive load of the mattress, and CH is the compressive height over the range that the mattress will be compressed in millimeters.

13. The electrolysis cell of claim 1 which is monopolar.

5,599,431

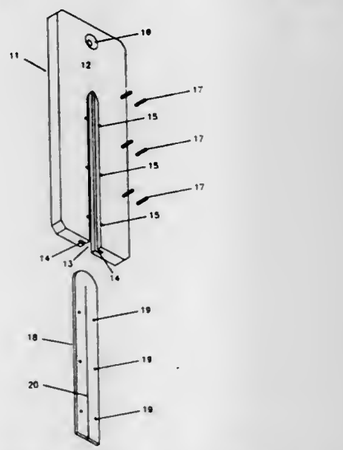
ELECTROPLATING SOLUTION BARRIER DEVICE

Paul B. Scorpio, Coventry, R.I., assignor to Metfab Sales & Service, Inc., Warwick, R.I.

Filed Apr. 18, 1996, Ser. No. 634,240

Int. Cl.[6] C25D *17/00*

U.S. Cl. 204—279 **4 Claims**



1. An electroplating solution barrier device comprising

a rectangular planar polyethylene stabilizer having opposing faces, an opening through which articles to be electroplated can pass, a rectangular channel surrounding the opening, and a plurality of cylindrical stabilizer guide pin holes extending through the opposing faces and passing through the channel;

a silicon rubber solution barrier removably fitted in liquid resistant contact in the channel, the solution barrier having a plurality of solution barrier guide pin holes matched to the stabilizer guide pin holes, and a liquid resistant seam through which articles to be electroplated can pass, the seam being aligned with the opening to permit articles to be electroplated to pass; and

a plurality of cylindrical polyethylene guide pins removably inserted in the stabilizer guide pin holes and through the solution barrier guide pin holes.

5,599,432

DEVICE AND A METHOD FOR THE ELECTROPHORETIC SEPARATION OF FLUID SUBSTANCE MIXTURES

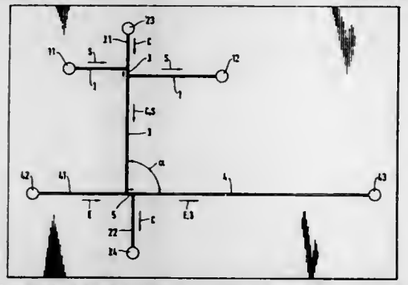
Andreas Manz, Bettingen, Switzerland, and Carlo S. Effenhauser, Weil am Rhein, Germany, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Filed Nov. 8, 1994, Ser. No. 335,610

Claims priority, application Switzerland, Nov. 11, 1993, 3392/93

Int. Cl.[6] G01N *27/26;27/447*

U.S. Cl. 204—451 **22 Claims**



15. A method for the electrophoretic separation of complex fluid substance mixtures along separating paths, in which a complex substance mixture is injected into a first carrier medium upstream of a first separating path and is then separated in an electric field that is applied along the first separating path, wherein the partially separated substance mixture is injected into a second separating path having a second carrier medium, which second carrier medium is different from the first carrier medium, and which second separating path intersects with the first separating path and inclines at an angle with respect to the first separating path such that the region of intersection of the first separating path with the second separating path forms an injection device having an injection volume which is the volume of the second separating path between a point of entry of the first separating path into the second separating path and an opening in the second separating path which leads to an outflow for the first carrier medium, and wherein the substance mixture is further separated in an electric field applied in the second carrier medium along the second separating path.

5,599,433

CAPILLARY ELECTROPHORESIS OF GLYCOSYLATED PROTEINS

Nida Keo, Rialto; Zara Safarian, Brea; Cheng-Ming Liu, and Hann-Ping Wang, both of Yorba Linda, all of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jan. 17, 1995, Ser. No. 373,680

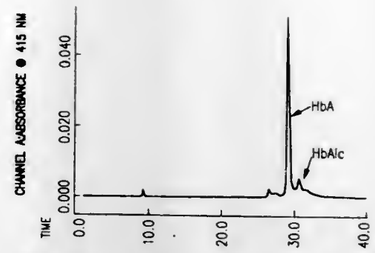
Int. Cl.[6] C25B *7/00*

U.S. Cl. 204—451 **24 Claims**

1. A buffer composition suitable for capillary electrophoresis detection of a glycated hemoglobin, the buffer composition formed by combining:

(a) water;

(b) a sugar complexing compound capable of complexing with sugar moieties of glycoproteins, the sugar complexing compound being present in an amount of from about 50 mM to about 600 mM;



(c) sufficient base compound that the pH of the buffer composition is from about 9 to about 12; and

(d) a zwitterionic buffer compound that has a pK_a of from about 9 to about 12, in a molar ratio to the sugar complexing compound of from 1:10 to 1:1.

5,599,434

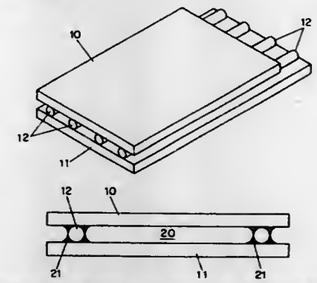
ELECTRODES GELS AND GEL HOLDERS HAVING ADHESIVE AFFIXED FIBER SPACERS AND METHOD OF MAKING SAME

Alexandre M. Izmailov, Toronto, and Henryk Zaleski, Niagara Falls, both of Canada, assignors to Visible Genetics Inc., Toronto, Canada

Filed Dec. 12, 1995, Ser. No. 571,132

Int. Cl.[6] G01N *27/26;27/447*

U.S. Cl. 204—470 **36 Claims**



1. A method for forming a gel holder for an electrophoresis gel comprising the steps of:

(a) placing a plurality of fibers between a first planar substrate and a second planar substrate; and

(b) adhering the fibers to substrates with an adhesive, thereby forming a gel chamber between said first and second substrates, said gel chamber having a thickness defined by the fibers.

5,599,435

AQUEOUS ELECTROCHEMICAL PREPARATION OF INSERTION COMPOUNDS AND USE IN NON-AQUEOUS RECHARGEABLE BATTERIES

Wu Li, Burnaby, and Jeffrey R. Dahn, Surrey, both of Canada, assignors to Moli Energy (1990) Limited, Canada

Filed Jan. 25, 1995, Ser. No. 377,951

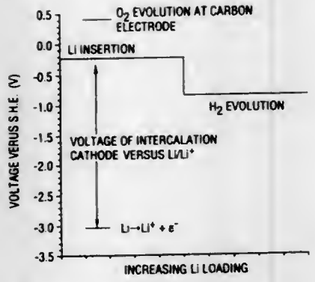
Claims priority, application Canada, Jan. 28, 1994, 2114492

Int. Cl.[6] H01M *4/29*

U.S. Cl. 205—59 **17 Claims**

1. A method for preparing insertion compounds which are unstable in pure water wherein an amount of an alkali metal or an alkaline earth metal is inserted into a first insertion compound thereby forming a second insertion compound which is unstable in pure water, comprising:

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a) preparing in an electrochemical cell having a working electrode collector, a counter electrode, and a basic aqueous electrolyte, the electrolyte comprising a salt of said alkali metal or alkaline earth metal dissolved in water wherein the dissolved alkali metal or alkaline earth metal is at a starting concentration and the electrolyte is at a starting pH;

b) electrically contacting said first insertion compound to the working electrode collector thereby forming a working electrode;

c) charging said cell such that electrons and ions of said alkali metal or alkaline earth metal are supplied to the working electrode thereby inserting an amount of the alkali metal or alkaline earth metal in the first insertion compound and thereby forming the second insertion compound which is less stable in pure water than said first insertion compound, such that degradation of said second insertion compound will occur upon exposure to pure water;

d) maintaining the concentration of the dissolved alkali metal or alkaline earth metal in the electrolyte between the starting concentration and a final concentration; the final concentration being greater than zero, and such that the second insertion compound is stable in the electrolyte;

e) maintaining the pH of the electrolyte between the starting pH and a final pH; the final pH being a value such that the concentration of H^+ in the electrolyte is at least an order of magnitude less than said final concentration, whereby the electrolyte provides greater stability than that provided by pure water, and such that the second insertion compound is stable in the electrolyte; and

f) isolating the second insertion compound from the electrolyte after insertion of the amount of the alkali metal or alkaline earth metal in the first insertion compound to form the second insertion compound is complete.

5,599,436

PROCESS FOR THE PREPARATION OF MANGANESE(III)-CONTAINING NICKEL HYDROXIDE

Peter Axmann, Göttingen, Germany, assignor to H. C. Starck GmbH & Co. KG, Goslar, Germany

Filed Oct. 25, 1995, Ser. No. 547,802

Claims priority, application Germany, Nov. 9, 1994, 44 39 987.1

Int. Cl.[6] C25B *1/20;* **C01G** *45/00;1/00;49/00*

U.S. Cl. 205—509 **9 Claims**

1. A process for the preparation of manganese (III)-containing nickel (II) hydroxide powders, more than 80 mole % of the manganese being present in the trivalent oxidation state, the process comprising the co-precipitation of nickel (II) and manganese (II) salt solutions with alkali liquors, wherein the nickel and manganese salt solutions present in the divalent state are co-precipitated and the manganese contained in the co-precipitate is converted to the trivalent oxidation state by reaction with an oxidizing agent wherein the oxidizing agent is from the group consisting of oxygen, air, hydrogen oxidation is carried out in an alkaline medium.

5,599,437

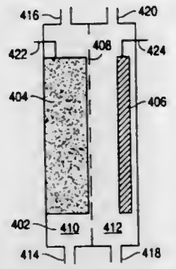
ELECTROLYSIS OF ELECTROACTIVE SPECIES USING PULSED CURRENT

E. Jennings Taylor, Troy; Chengdong Zhou, Centerville; Robert P. Renz, Centerville, and Mahendra K. Sunkara, Fairborn, all of Ohio, assignors to Faraday Technology, Inc., Dayton, Ohio

Filed Jun. 20, 1995, Ser. No. 492,519

Int. Cl.[6] C02F *1/461*

U.S. Cl. 205—744 **27 Claims**



1. A method for producing an electrochemical reaction at an electrode in contact with a solution of an electroactive species comprising

introducing an electrolyte containing an electroactive species into an electrolytic cell having a cathode and an anode,

producing a flow of said electrolyte past at least one of said cathode or said anode at an electrolyte flow rate,

passing an electric current through said solution between said anode and said cathode whereby said electroactive species undergoes an electrochemical reaction at one of said cathode or said anode at an electrochemical reaction rate, wherein said electric current is a pulsed current pulsed at a frequency of about 0.5 to about 1000 Hertz and having a duty cycle of not greater than about 50%, and

adjusting said electrolyte flow rate that said electrochemical reaction rate when said current is pulsed current is greater than said electrochemical reaction rate to maintain microthrowing power effect wherein $k_m A$ for electrolysis using said pulsed current exceeds said $k_m A$ for electrolysis using direct current.

5,599,438

METHOD FOR PRODUCING ELECTROLYZED WATER

Yoshimi Shiramizu; Masaharu Nakamori; Hidemitsu Aoki; Hirofumi Seo, and Haruto Hamano, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Division of Ser. No. 474,910, Jun. 7, 1995, which is a division of Ser. No. 410,309, Mar. 24, 1995, Pat. No. 5,543,030. This application Mar. 27, 1996, Ser. No. 622,138

Claims priority, application Japan, Mar. 25, 1994, 6-56107

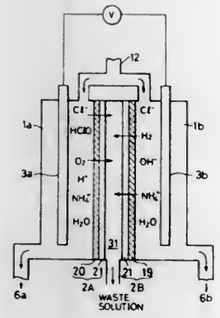
Int. Cl.[6] C02F *1/461*

U.S. Cl. 205—746 **4 Claims**

1. A method for producing electrolyzed water, comprising the steps of:

forming first and second electrolytic sub-cells, wherein a sidewall of each electrolytic sub-cells is composed of a partition membrane and faces to each other in spaced relationship, said partition membrane of said first electrolytic cell being composed of an internal cation exchange membrane and an external gas-permeable membrane, said partition membrane of said second electrolytic cell being composed of an internal anion exchange membrane and an external gas-permeable membrane;

providing purified water in each of said first and second electrolytic cells, said purified water including electrolyte therein;



applying a voltage to both of an anode disposed in said first electrolytic cell and a cathode disposed in said second electrolytic cell; and

discharging waste solution through a space between said sidewalls of said two electrolytic cells.

5,599,439

GASOLINE AND REFORMATE UPGRADING PROCESS

Nick A. Collins, Medford, N.J.; Mohsen N. Harandi, Langborne, Pa.; Edward F. Kondis, Marshall, Va., and Hartley Owen, Worton, Md., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation of Ser. No. 31,446, Mar. 13, 1993, abandoned. This application Oct. 14, 1994, Ser. No. 322,466

Int. Cl.[6] C10G *45/00;69/00*

U.S. Cl. 208—89 **19 Claims**

1. A process of upgrading a sulfur-containing catalytically cracked fraction having at least 95% point of at least about 325° F. and boiling in the gasoline boiling range which comprises:

contacting the sulfur-containing catalytically cracked fraction with a hydrodesulfurization catalyst in a first reaction zone, operating under a combination of elevated temperature, elevated pressure and an atmosphere comprising hydrogen, to produce an intermediate product comprising a normally liquid fraction which has a reduced sulfur content and a reduced octane number and increased paraffins as compared to the feed;

maintaining a second reaction zone comprising a fluidized bed of acidic-functioning catalyst particles in a turbulent reactor bed at a temperature of about 500° to 900° F., said catalyst having an apparent particle density of about 0.9 to 1.6 g/cm^3 and a size range of about 1 to 150 microns, an average catalyst particle size of about 20 to 100 microns containing about 10 to 25 weight percent of fine particles having a particle size less than 32 microns;

co-contacting an aromatics-rich feedstock which contains benzene with the catalytically cracked fraction in the first reaction zone or at least the gasoline boiling range portion of the intermediate product;

passing said intermediate and aromatics-rich feedstock upwardly through the second reaction zone under turbulent flow conditions and reaction conditions sufficient to effect cracking of paraffins and alkylation of benzene with at least a portion of the cracked paraffins and to convert the intermediate to a product comprising a fraction boiling in the gasoline boiling range which fraction has a higher octane number than the gasoline boiling range fraction of the intermediate product;

maintaining turbulent fluidized bed conditions through the reactor bed of the second reaction zone between transition velocity and transport velocity at a superficial fluid velocity of about 0.3 to 2 meters per second; and

recovering the gasoline boiling range hydrocarbon fraction.

5,599,440

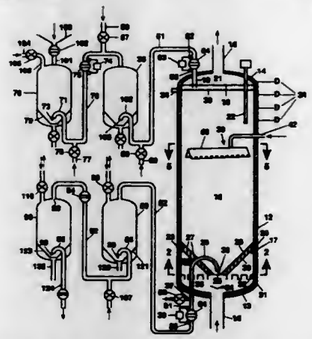
CATALYST METHOD AND APPARATUS FOR AN ON-STREAM PARTICLE REPLACEMENT SYSTEM FOR COUNTERCURRENT CONTACT OF A GAS AND LIQUID FEED STREAM WITH A PACKED BED

Bruce E. Stangeland, Berkeley; David C. Kramer, San Anselmo, both of Calif.; David S. Smith, Kingwood, Tex.; James T. McCall, Colorado Springs, Colo.; Georgieanna L. Scheuerman, Moraga, Calif.; Robert W. Bachtel, El Cerrito, Calif., and David R. Johnson, Petaluma, Calif., assignors to Chevron U.S.A. Inc., San Francisco, Calif.

Continuation of Ser. No. 235,043, Apr. 29, 1994, abandoned, which is a continuation-in-part of Ser. No. 215,254, Mar. 21, 1994, Pat. No. 5,409,598, which is a continuation of Ser. No. 14,847, Feb. 8, 1993, Pat. No. 5,302,357, which is a continuation of Ser. No. 727,656, Jul. 9, 1991, abandoned, which is a division of Ser. No. 381,948, Jul. 19, 1989, Pat. No. 5,076,908. This application Jun. 30, 1995, Ser. No. 497,638

Int. Cl.[6] C10G *35/14*

U.S. Cl. 208—148 **69 Claims**



1. A method for producing an essentially downwardly plug-flowing substantially packed bed of hydroprocessing catalyst within a hydroconversion reaction zone comprising the steps of:

(a) forming a plurality of annular mixture zones under a hydroconversion reaction zone having a substantially packed bed of hydroprocessing catalyst such that each of said annular mixture zones contains a hydrocarbon feed stream having a liquid component and a hydrogen-containing gas component and wherein said annular mixture zones are concentric with respect to each other and are coaxial with respect to said hydroconversion reaction zone;

(b) introducing said hydrocarbon feed stream from each of said annular mixture zones of step (a) into said substantially packed bed of hydroprocessing catalyst to commence upflowing of said hydrocarbon feed stream from each of said annular mixture zones through said substantially packed bed of the catalyst; and

(c) withdrawing a volume of particulate catalyst from said hydroconversion reaction zone to produce an essentially downwardly plug-flowing substantially packed bed of hydroprocessing catalyst within said hydroconversion reaction zone.

5,599,441

ALKYLATION PROCESS FOR DESULFURIZATION OF GASOLINE

Nick A. Collins, Medford, N.J., and Jeffrey C. Trewella, Kennett Square, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed May 31, 1995, Ser. No. 455,747

Int. Cl.[6] C10G *35/04*

U.S. Cl. 208—208 R **22 Claims**

1. A process for upgrading a cracked naphtha sulfur-containing feedstream comprising olefinic gasoline boiling range hydrocar-

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bons rich in olefins and thiophenic sulfur compounds, said process comprising the following serial steps:

first, contacting said feedstream having a boiling range between C_5 and 420° F. with acidic alkylation catalyst particles under alkylation conditions in an alkylation zone wherein said olefins act as alkylating agents to alkylate said thiophenic sulfur compounds to provide an effluent stream comprising alkylated thiophenic sulfur compounds and olefinic gasoline boiling range hydrocarbons;

separating said alkylated thiophenic compounds from said olefinic gasoline boiling range hydrocarbons by fractional distillation; and

recovering a product stream comprising said hydrocarbons containing a reduced amount of said thiophenic sulfur compounds.

5,599,442

COLLECTOR COMPOSITION FOR FLOTATION OF ACTIVATED SPHALERITE

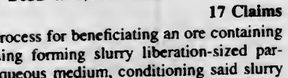
Colin McRae, Maroubra; Danny Lee, Perth, both of Australia, and Peter Avotins, Easton, Conn., assignors to Cytec Technology Corp., Wilmington, Del.

Filed Jun. 14, 1996, Ser. No. 665,170
Int. Cl.[6] B03D *1/02;1/06;1/004*
U.S. Cl. 209—166 **17 Claims**

9. In a froth flotation process for beneficiating an ore containing sulfide minerals comprising forming slurry liberation-sized particles of said ore in an aqueous medium, conditioning said slurry with effective amounts of a frothing agent and a metal collector, respectively, and frothing the desired sulfide minerals by froth flotation, the improvement comprising: employing as the metal collector the combination of 1) at least one allylalkylthionocarbamate compound having the formula



wherein R is a C_2 to C_8 alkyl radical, and 2) a xanthate having from the formula



wherein R' is a C_2 to C_8 alkyl radical.

5,599,443

APPARATUS FOR WASTE WATER TREATMENT USING CHARCOAL BIOLOGICALLY ACTIVATED

Kazuyuki Yamasaki, Hiroshima; Shirou Imazu, Fukuyama, and Takashi Fujiwara, Ashina-gun, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 7, 1994, Ser. No. 336,680
Claims priority, application Japan, Nov. 8, 1993, 5-278181
Int. Cl.[6] C02F *3/06*
U.S. Cl. 210—151 **13 Claims**

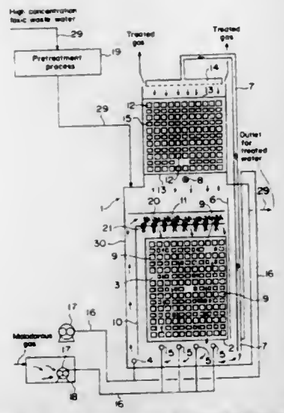
1. An apparatus for waste water treatment, comprising:

a tank;

water introducing means connected to said tank for introducing waste water to be treated into said tank;

cultivation means disposed within said tank for supporting growing aquatic plants;

first charcoal container means disposed within said tank for containing charcoal which contains microorganisms, said water to be treated being introduced into said tank such that said first charcoal container means and said cultivation means supporting said growing aquatic plants are submerged in said water to be treated;



second charcoal container means disposed above said first charcoal container means and said cultivation means for containing charcoal which contains microorganisms; and

sprinkling means for sprinkling water which has contacted said first charcoal container means and said cultivation means onto said second charcoal container means;

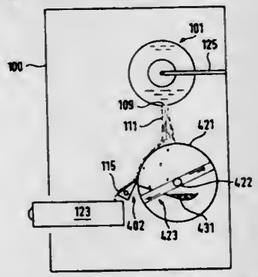
whereby water passes through said second charcoal container means and returns to said first charcoal container means and said cultivation means and said second charcoal container means is not submerged in said water.

5,599,444

APPARATUS FOR REMOVING RESIST PARTICLES FROM STRIPPING SOLUTIONS FOR PRINTED WIREBOARDS

David T. Baron, Worcestershire; Alexander R. Taylor, Ayrshire, and Kuldip S. Johal, Willenhall, all of England, assignors to Atotech USA, Inc., Somerset, N.J.

Division of Ser. No. 207,991, Mar. 8, 1994, Pat. No. 5,531,889.
This application Mar. 30, 1995, Ser. No. 413,760
Int. Cl.[6] B01D *29/90;33/72;* **C23F** *1/00;* **H01L** *21/3105*
U.S. Cl. 210—167 **20 Claims**



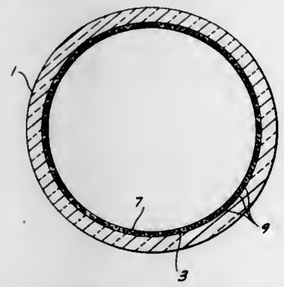
1. Apparatus for the continuous removal of cured resist particles dispersed in a liquid stripping solution for a printed wire board, the apparatus comprising, in combination, means for contacting a treated printed wire board with a stripping solution, solution-movement means for urging the dispersion through a juxtaposed and fluidly connected curtain tube, the dispersion with resist particles dispersed therein depending from the curtain tube, wherein the tube comprises an inner concentric tube with a plurality of holes and an outer concentric tube having a slot, wherein the position of the slot is adjustable, the inner concentric tube being affixed within the outer concentric tube, and thereafter impinging on filter means whereby the resist particles are separated from the liquid stripping solution, the liquid stripping solution being collected in juxtaposed storage means, and recirculation means in fluid connection with the storage means adapted to return filtered stripping solution continuously to the contacting means.

5,599,445

NUCLEOPHILIC BODIES BONDED TO SILOXANE AND USE THEREOF FOR SEPARATIONS FROM SAMPLE MATRICES

William R. Betz, and James L. Desorcie, both of Bellefonte, Pa., assignors to Supelco, Inc., Bellefonte, Pa.

Division of Ser. No. 283,210, Jul. 29, 1994, which is a continuation-in-part of Ser. No. 276,048, Jul. 15, 1994, abandoned, which is a continuation-in-part of Ser. No. 201,752, Feb. 25, 1994, abandoned, which is a continuation-in-part of Ser. No. 191,644, Feb. 4, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 480,880
Int. Cl.[6] B01D *15/08*
U.S. Cl. 210—198.2 **7 Claims**



1. A structure comprising discrete adsorbent bodies bonded to a monolithic substrate through a medium comprising a polysiloxane polymer.

6. A chromatographic apparatus comprising a column containing a substrate having adsorbent bodies bonded thereto through a medium comprising a siloxane polymer, said bodies comprising a nucleophilic composition selected from the group consisting of amorphous carbon, graphite, turbostatic carbon, zeolite, alumina, silica and an organic polymer.

5,599,446

FILTER MEDIUM WITH AN EMBEDDED FRAME MOUNTED TO A SUPPORT HAVING A MATING GROOVE

Jürgen Junker, and Hubertus Schütt, both of Sinsheim, Germany, assignors to Junker Filter GmbH, Sinsheim, Germany

Filed Jul. 28, 1994, Ser. No. 281,697
Claims priority, application Germany, Jul. 28, 1993, 43 25 235.4
Int. Cl.[6] B01D *25/176*
U.S. Cl. 210—230 **5 Claims**

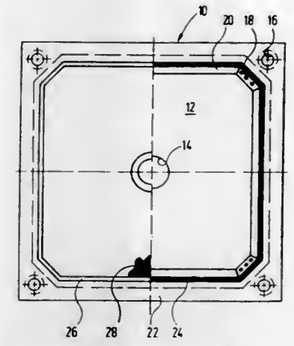
1. A filter element, comprising:

(a) an essentially rigid plate-shaped support body, in which openings are provided to supply a flow of a medium to be filtered and to remove a filtrate separated from the medium to be filtered;

(b) a flexible filter medium blank; and

(c) means for releasably mounting the filter medium blank to the support body, the mounting means comprising a mounting frame which is cast, moulded or welded onto an edge portion of the filter medium blank so as to embed the edge portion of the filter medium blank,

wherein the support body is formed to have a circumferential mounting groove which corresponds in shape and cross-section to the mounting frame,



wherein the mounting frame comprises an elastically flexible material, and

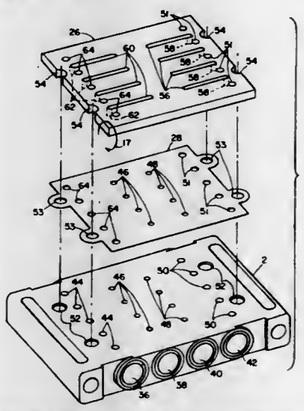
wherein the filter medium blank comprises a material which is selected from a group consisting of woven fabric, non-woven or needle felts consisting of monofilament, multifilament or staple fibres and combinations thereof.

5,599,447

MANIFOLD APPARATUS FOR TANGENTIAL FLOW FILTRATION APPARATUS

Steven R. Pearl, Nashua, N.H.; Andrew G. Proulx, Concord, and Brian Hillier, Chelmsford, both of Mass., assignors to Millipore Investment Holdings Limited, Wilmington, Del.

Filed Jun. 6, 1995, Ser. No. 468,177
Int. Cl.[6] B01D *63/00*
U.S. Cl. 210—321.75 **56 Claims**



1. An apparatus for fluid filtration which comprises:

a manifold segment having a first surface, a second surface, a third surface and a fourth surface,

said third surface and said fourth surface being spaced apart from each other and being positioned between said first surface and said second surface,

at least one of said third surface or said fourth surface having a plurality of fluid feed inlet means, a plurality of filtrate inlet means, a plurality of filtrate outlet means and a plurality of retentate outlet means,

said fluid feed inlet means being in fluid communication with a fluid feed inlet conduit positioned within said manifold segment,

said filtrate inlet means being in fluid communication with a filtrate inlet conduit positioned within said manifold segment,

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said filtrate outlet means being in fluid communication with a filtrate outlet conduit positioned within said manifold segment.,

said retentate outlet means being in fluid communication with a retentate conduit positioned within said manifold segment,

said fluid feed inlet conduit being in fluid communication with a fluid feed inlet on at least one of said first surface or said second surface,

said filtrate inlet conduit being in fluid communication with a filtrate inlet on at least one of said first surface or said second surfaces,

said filtrate outlet conduit being in fluid communication with a filtrate outlet on at least one of said first surface on said second surface,

said retentate outlet conduit being in fluid communication with a retentate outlet on at least one of said first surface or said second surface,

and at least one adaptor manifold having a fifth surface having a first set of slots and a second set of slots,

said first set of slots positioned to effect fluid communication from said filtraie inlet means and through said manifold segment adaptor,

and said second set of slots positioned to effect fluid communication through said adaptor manifold to said filtrate outlet means.

5,599,448

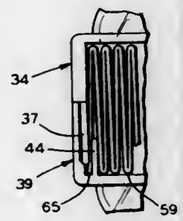
BOX FILTER APPARATUS

Michael R. Spearman, St. Paul, Minn., assignor to Porous Media Corporation, St. Paul, Minn.

Division of Ser. No. 479,863, Jun. 7, 1995, Pat. No. 5,489,352, which is a continuation of Ser. No. 281,364, Jul. 27, 1994, abandoned, which is a continuation of Ser. No. 83,076, Jun. 24, 1993, Pat. No. 5,376,270. This application Oct. 12, 1995, Ser. No. 542,280

Int. Cl.[6] B01D *27/06:27/08*

U.S. Cl. 210—445 **1 Claim**



1. A disposable filter assembly including:

a) a housing comprising mating channel-shaped male and female portions, the mating male and female portions forming a box-shaped fluid chamber defined by an upper plenum wall having an inlet therein, a lower plenum wall having an outlet therein, a pair of opposed side walls connecting the upper plenum wall and the lower plenum wall, and a pair of opposed, open, end walls, each of said pair of opposed side walls including a generally vertical wall portion of an upper housing portion and an upstanding ridge of a lower housing portion along substantially the entire length of said side walls, the generally vertical wall portion of the upper housing portion having moved laterally inwardly toward the upstanding ridge, and away from a generally vertical wall portion of the lower housing portion as a result of an ultrasonic welding process being used to bond the upper housing portion to the lower housing portion,

b) a corrugated filter element extending across said box-shaped fluid chamber, from one of the opposed side walls to the other, and across a line of fluid flow between the inlet and the outlet, a pleat at each end of said corrugated filter element mechanically held in a fluid-tight seal in a generally vertical position, between said generally vertical wall portions of the upper housing portion and the upstanding ridge portions of the lower housing portions, said filter element held in position by lateral forces applied by said generally vertical wall portions and said upstanding ridge portions, and

c) end caps closing said opposed end walls and sealing said filter element to said end caps.

5,599,449

TUBULAR ELASTIC FRAME WITH A CONTINUOUS SLOT SPANNED BY A FILTER MATERIAL

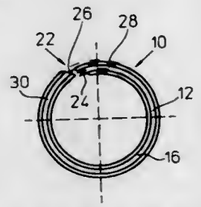
Bernhard Gnamm, and Alexander Bareiss, both of Charleston, S.C., assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Oct. 20, 1995, Ser. No. 546,237

Claims priority, application Germany, Oct. 21, 1994, 44 37 665.0

Int. Cl.[6] B01D *27/08*

U.S. Cl. 210—495 **8 Claims**



1. A tubular elastic filter element (**10**; **50**) comprising a frame (**12**) with an inner radius and an outer radius, said frame (**12**) including openings (**20**), filter material (**14**; **54**) mounted in said openings (**20**) of the frame (**12**), said frame including a rectilinear slit (**22**; **52**) that is continuous in a longitudinal direction of the filter element (**10**; **50**) that forms two opposing ends, the two radii being unchanged over a circumferential region of the frame (**12**) and the two ends of the filter element (**10**; **50**) formed by the slit (**22**; **52**) having flat faces (**24**, **26**) that extend obliquely in a secant direction, of which the face (**24**) on the one end begins at the inner radius of the frame (**12**) and ends, converging to a point, at the outer radius, while the face (**26**) of the other end begins at the outer radius of the frame (**12**) and ends, converging to a point at the inner radius, said filter material (**54**) spans the slit (**52**) and is closed in a peripheral direction.

5,599,450

ANAEROBIC UPFLOW BATCH REACTOR

Yanlong Li, Lenexa, Kans., and Kenneth L. Norcross, Kansas City, Mo., assignors to Jet Tech, Inc., Edwardsville, Kans.

Filed Nov. 20, 1995, Ser. No. 560,740

Int. Cl.[6] C02F *3/30*

U.S. Cl. 210—603 **9 Claims**

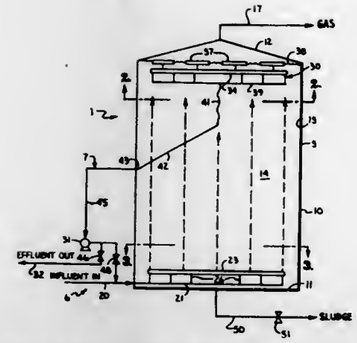
1. A method of operating a batch flow anaerobic waste water treatment reactor comprising the steps of:

a) flowing waste water containing substrate to be treated into a substantially anaerobic reactor containing an active biomass until a preselected batch volume is present in the reactor;

b) flowing the wastewater including the substrate into the reactor near a bottom thereof during filling of the reactor;

c) thereafter flowing the wastewater including the substrate upwardly through the reactor while returning wastewater from a top of the reactor to near a bottom thereof without the addition of substantial wastewater to the reactor once said batch volume is obtained;

d) controlling the flow pattern and velocity of the wastewater so that flow through the reactor is substantially plug flow from near the bottom of the reactor to near the top of a wastewater level therein so as to minimize horizontal movement and



mixing of the wastewater within the reactor and so as to have a relatively higher concentration of substrate within the wastewater near the bottom of the reactor and a relatively lower concentration of substrate near the top of the reactor to selectively enhance the growth of relatively heavy biomass near the bottom of the reactor and to selectively inhibit the growth of relatively light biomass near the top of the reactor; and

e) subsequent to treatment in the reactor, flowing a substantial portion of treated wastewater from the reactor.

5,599,451

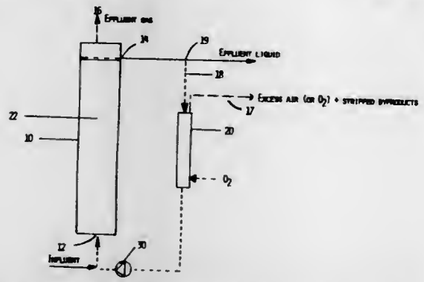
ANAEROBIC AND AEROBIC INTEGRATED SYSTEM FOR BIOTREATMENT OF TOXIC WASTES (CANOXIS)

Serge R. Guiot, Montréal, Canada, assignor to National Research Council of Canada, Ottawa, Canada

Filed Oct. 3, 1994, Ser. No. 316,482

Int. Cl.[6] C02F *3/30*

U.S. Cl. 210—605 **20 Claims**



11. A method for the continuous synchronous anaerobic/aerobic biotreatment of contaminated liquid waste, comprising

(a) providing a bioreactor containing an integrated anaerobic/aerobic biofilm,

(b) oxygenating said waste liquid outside of said bioreactor to introduce into said waste liquid a controlled amount of dissolved oxygen in an amount up to the rate of consumption of oxygen by the biofilm, and

(c) continuously cycling the oxygenated waste liquid through said bioreactor to remove said contaminants and collecting effluent by-product gas containing methane, wherein said biofilm comprises an outer surface area and an inner core area including a decreasing gradient of oxygen concentration toward said core area, the core area being substantially oxygen-free, and being further comprising predominantly strict aerobic bacteria at said outer surface area, predominantly strict anaerobic bacteria at said core area and predominantly facultative anaerobic bacteria therebetween.

5,599,452

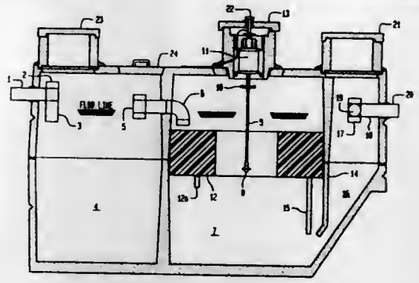
WASTEWATER TREATMENT METHOD

David S. MacLaren, 1055 W. Hill Dr., Gates Mills, Ohio 44040, and Nianfa Tang, Richmond Hts., Ohio, assignors to David S. MacLaren, Gates Mill, Ohio

Continuation of Ser. No. 11,866, Feb. 1, 1993, Pat. No. 5,484,524. This application Aug. 19, 1994, Ser. No. 265,064

Int. Cl.[6] C02F *3/06*

U.S. Cl. 210—615 **20 Claims**



1. A method for treating fluids comprising:

(a) aerating mixed liquor comprising suspended solids and dissolved organic matter in a biofilm aeration chamber with at least one spinning aspirator sufficiently to promote growth of a biofilm and wherein the aspirator comprises a hollow aspirator tip, the aspirator tip further comprising hollow arms protruding radially from a hollow core with an aperture at the end of each arm, the aspirator tip being further attached to a hollow tube exposed to ambient air, low pressure at the spinning aspirator tip causing air to be drawn down the hollow tube to the aspirator tip and expelled radially from the aspirator tip arm apertures:

(b) reducing the particle size of suspended solids and dissolved organic matter in the mixed liquor by action of the spinning aspirator tip which is adapted to spin at a speed sufficient to reduce the size of the suspended solids and dissolved organic matter;

(c) creating a fluid flow in the mixed liquor such that the mixed liquor flows through a biofilm support structure having a top and a bottom and wherein the fluid flow is from the top of the biofilm support structure to the bottom of the biofilm support structure;

(d) growing biomass on the walls of the biofilm support structure, which support structure is stationary and submerged in the mixed liquor to create a biofilm on the surfaces of the submerged biofilm support structure; and

(e) digesting the smaller particles of suspended solids and dissolved organic matter by action of the biomass.

5,599,453

PASSIVATED POROUS SUPPORTS AND METHODS FOR THE PREPARATION AND USE OF SAME

Pierre Girot, Paris, and Egisto Boschetti, Croissy sur Sei, both of France, assignors to BioSepra Inc., Marlborough, Mass.

Division of Ser. No. 90,968, Jul. 13, 1993, Pat. No. 5,470,463, which is a continuation-in-part of Ser. No. 901,326, Jun. 19, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 471,541

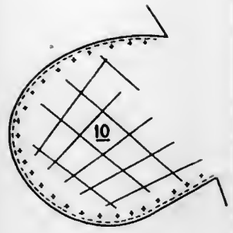
Int. Cl.[6] B01D *15/08*

U.S. Cl. 210—635 **8 Claims**

1. A method of separating a preselected biological molecule from a sample containing same comprising:

(a) loading a column packed with a passivated chromatographic media with a sample containing a preselected biological molecule to be separated from a mixture, wherein said chromatographic media comprises (i) a porous mineral oxide substrate matrix having interior and exterior surfaces and innate groups

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that render said substrate matrix susceptible to undesirable non-specific interaction with biological molecules, and (ii) a three dimensional, pore-filling gel network derived from polymerization of a main monomer, a neutralizing monomer different from said main monomer and having one or more polar and/or cationic functional group(s) and one or more reactive functional group(s), and a crosslinking agent, wherein said monomers and said crosslinking agent have first been allowed to come into intimate contact with the surfaces of said substrate matrix before said polymerization to form said gel network, wherein said polar and/or cationic functional groups of said neutralizing monomer are substantially adjacent to and interact with said innate groups of said substrate matrix, and said reactive functional groups of said neutralizing monomer when polymerized are covalently linked to said main monomers, and wherein said gel network has become associated with said surfaces of said porous substrate matrix by means of non-covalent interactions between said innate groups of said substrate matrix and said neutralizing monomer, and said gel network extends into and throughout the porous volume of said substrate matrix to substantially fill said porous volume, and wherein said innate groups of said matrix become deactivated, resulting in the substantial elimination of said undesirable non-specific interaction; and

(b) passing an eluent solution through said loaded column to effect the separation of said biological molecule.

5,599,454

METHOD FOR TREATING FLUIDS

Don E. Heskett, Constantine, Mich., assignor to KDF Fluid Treatment, Inc., Three Rivers, Mich.

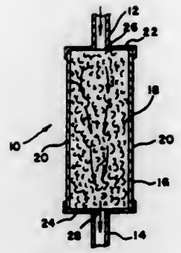
Continuation of Ser. No. 411,588, Mar. 29, 1995, Pat. No. 5,510,034, which is a continuation of Ser. No. 239,339, May 6, 1994, Pat. No. 5,433,856, which is a continuation of Ser. No. 98,463, Jul. 28, 1993, Pat. No. 5,314,623, which is a division of Ser. No. 980,316, Nov. 19, 1992, Pat. No. 5,275,737, which is a continuation of Ser. No. 528,682, May 24, 1990, abandoned, which is a continuation-in-part of Ser. No. 352,719, May 12, 1989, abandoned, which is a continuation of Ser. No. 205,628, May 3, 1988, abandoned, which is a continuation of Ser. No. 70,591, Jul. 8, 1987, abandoned, which is a continuation of Ser. No. 779,226, Sep. 23, 1985, abandoned, which is a continuation of Ser. No. 605,652, Apr. 30, 1984, abandoned.

This application Mar. 18, 1996, Ser. No. 617,115

Int. Cl.[6] C02F *1/50*

U.S. Cl. 210—638 **11 Claims**

I. A method for treating water to kill and inhibit undesirable bacterial constituents contained therein, said method comprising killing and inhibiting said constituents by contacting said water containing said bacterial constituents with a finely divided metal, said metal being comprised of a metal alloy of both copper and zinc, and both of which are present in effective amounts in the alloy relative to each other to kill and inhibit the undesirable bacterial constituents in the water.



5,599,455

DETERGENT-FREE WASHING WATER, METHOD AND APPARATUS FOR MAKING THE WASHING WATER, AND WATER/OIL SEPARATION METHOD FOR SEPARATING MATTERS EMULSIFIED WITH THE WASHING WATER INTO WATER AND OIL PHASES

Toshiharu Hukai, 1112-1, Ooaza-hakeyama, Kitamimakimura, Kitasaku-gun, Nagano, Japan

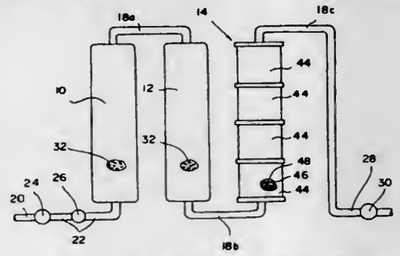
PCT No. PCT/JP94/00272, § 371 Date Mar. 14, 1996, § 102(e) Date Mar. 14, 1996, PCT Pub. No. WO94/19285, PCT Pub. Date Sep. 1, 1994

PCT Filed Feb. 23, 1994, Ser. No. 495,400

Claims priority, application Japan, Feb. 26, 1993, 5-012717 U; Jan. 25, 1994, 6-023066

Int. Cl.[6] C02F *1/42;1/48*

U.S. Cl. 210—663 **13 Claims**



I. A method for making detergent-free washing water, comprising passing water first through an ion exchange resin and then through a powder mixture of tourmaline and a metal.

5,599,456

FLUID TREATMENT UTILIZING A RETICULATED FOAM STRUCTURED MEDIA CONSISTING OF METAL PARTICLES

Chris E. Fanning, Oklahoma City, Okla., assignor to Advanced Waste Reduction, Tulsa, Okla.

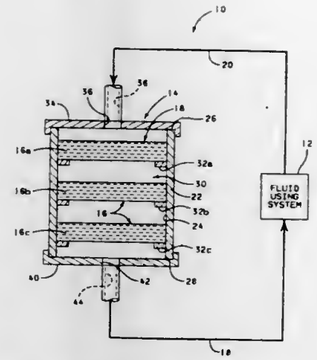
Continuation-in-part of Ser. No. 117,265, Sep. 3, 1993, abandoned. This application Oct. 11, 1994, Ser. No. 321,279

Int. Cl.[6] B01D *15/00;53/04*

U.S. Cl. 210—668 **7 Claims**

I. A method for treating a fluid to substantially prevent growth of microorganism in the fluid and to substantially remove contaminants from the fluid wherein the contaminants are capable of undergoing a reduction/oxidation reaction, the method comprising:

passing the fluid through a contactor having at least one reticulated foam structured fluid treatment element capable of promoting a reduction/oxidation reaction between the reticulated foam structured fluid treatment element and the contaminants present in the fluid, the reticulated foam structured fluid treatment element comprising a foamed substrate formed of zinc or copper having particles of a copper/zinc alloy bound



together in an interconnected form and wherein one cubic inch of the reticulated foam structured fluid treatment element has a surface area of at least about 350 square inches.

5,599,457

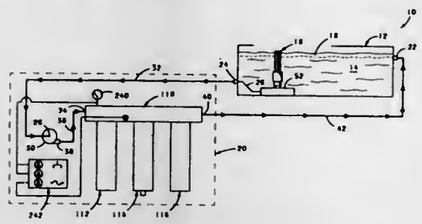
MACHINE COOLANT TREATMENT METHOD

Chris E. Fanning, Oklahoma City, and Gary C. Garrett, Edmond, both of Okla., assignors to Advanced Waste Reduction, Tulsa, Okla.

Continuation-in-part of Ser. No. 117,265, Sep. 3, 1993, abandoned. This application Apr. 21, 1994, Ser. No. 230,677

Int. Cl.[6] B01D *15/00*

U.S. Cl. 210—669 **54 Claims**



I. A method for treating a machine coolant containing tramp oil, particulate matter and dissolved heavy metals comprising:

passing the machine coolant through an oil absorbent filter to produce a first filtrate substantially free of tramp oil;

passing the first filtrate through a particle filter to produce a second filtrate substantially free of particulate matter; and

passing the second filtrate through at least one porous metal sponge-like structure formed of metal particles bound together in an interconnected form to produce a treated machine coolant substantially free of tramp oil, particulate matter and dissolved heavy metals wherein the pH and bacterial growth in the treated machine coolant are controlled without the addition of bactericides or pH control agents to the treated machine coolant by passage of the machine coolant through the porous metal sponge-like structure.

5,599,458

METHOD TO PREVENT THE EXHAUSTION OF ACID COPPER PLATING BATHS AND TO RECOVER METALLIC COPPER FROM SOLUTIONS AND SLUDGES CONTAINING COPPER IN AN IONIC FORM

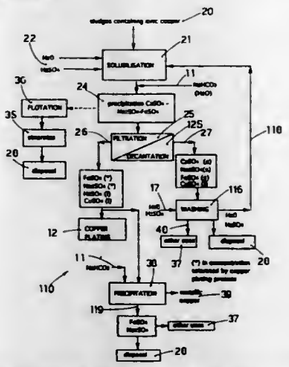
Leandro Taboga, Colloredo di Monte Albano, Italy, assignor to Laboratori Taboga di Taboga Leandro, Colloredo di Monte Albano, Italy

Filed Jul. 22, 1994, Ser. No. 279,098

Claims priority, application Italy, Jul. 29, 1993, UD93A0148

Int. Cl.[6] C02F *1/62*

U.S. Cl. 210—710 **24 Claims**



1. A method to prevent exhaustion of acid copper plating baths, comprising adding a compound to the bath to cause precipitation of iron in the form of ferrous sulphate so as to keep a concentration of iron below a value above which co-deposition of crystals of ferrous sulphate and copper sulphate would occur.

5,599,459

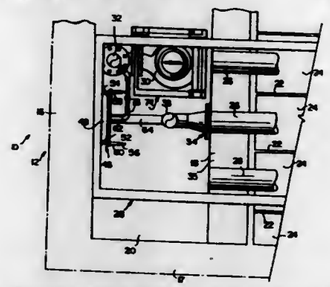
METHOD FOR SEALING A TRAVELING BRIDGE FILTER BACKWASH SHOE

Mack McDougald, Ochlocknee, Ga., assignor to Davis Water & Waste Industries, Inc., Thomasville, Ga.

Continuation-in-part of Ser. No. 179,693, Jan. 11, 1994, Pat. No. 5,431,809. This application Jun. 9, 1995, Ser. No. 488,837

Int. Cl.[6] B01D *24/46*

U.S. Cl. 210—741 **6 Claims**



1. A method of effecting sealing engagement between a backwash shoe and a filter cell outlet port in a traveling bridge filtration system which includes a tank configured to include a plurality of side-by-side filter cells all extending longitudinally in a first direction, and a common filtrate channel extending longitudinally in a second direction perpendicular to said first direction; each filter cell having an outlet extending through an interior wall of the tank thereby establishing fluid communication with said filtrate channel; a traveling bridge mounted atop said tank and movable from cell to cell in said second direction; a backwash pump having an inlet and

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a discharge pipe, the discharge pipe connected to a backwash shoe, the backwash pump and backwash shoe suspended from the bridge and located within the filtrate channel, the method comprising:

(a) moving the bridge into alignment with a filter cell to be backwashed;

(b) pressurizing an actuator to move said backwash shoe into sealing engagement with a tank wall surface surrounding an outlet of said filter cell as a function of pressure developed in said backwash pump and under control of a first valve between said pump and said actuator;

(c) backwashing the filter cell;

(d) relieving the pressure in the actuator and disengaging said backwash shoe from said tank wall surface;

(e) moving the bridge to the next adjacent cell; and

(f) operating the backwash pump top continuously during steps (a) through (e).

5,599,460

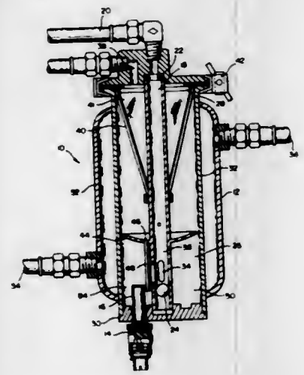
WATER/GLYCOL SENSOR FOR USE IN OIL SYSTEMS

Michael Van Schoiack, 6825 176th Ave. NE., Ste. 100, Redmond, Wash. 98052, and Peter von der Porten, 1902 Matthews Avenue, Vancouver, BC., Canada

Filed Aug. 13, 1993, Ser. No. 106,359

Int. Cl.[6] B01D *35/14*

U.S. Cl. 210—746 **4 Claims**



3. A method for sensing the presence of a contaminant in an oil system, said contaminant including at least one of water and glycol, comprising the steps of:

providing means for concentrating said contaminant from contaminated oil;

passing said contaminated oil through said concentrator means such that the contaminant is concentrated in a designated concentration zone;

providing a contaminant detection probe means including capacitor means for sensing a capacitance of said contaminant in oil; and positioning said detection probe means in said concentration zone,

whereby said capacitance is a function of the amount of contaminant in the oil such that the detection probe means will sense the presence of the contaminant in the concentration zone prior to the concentration of contaminant in said oil system reaching an otherwise detectable level.

5,599,461

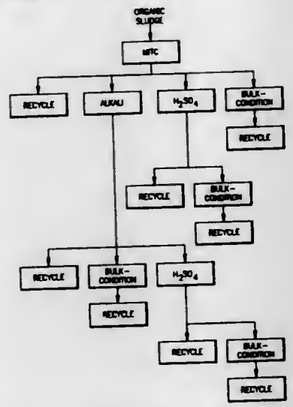
PROCESS AND PRODUCT PRODUCED THEREBY FOR DISINFECTION AND AGRICULTURAL REUSE OF ORGANIC SLUDGES

Morris Peltier, Jr., 1140 Honeycomb Dr., Cade, La. 70519, and Eddie P. Mayeux, Jr., 125 Walker Gravel Pit Rd., Dry Proog, La. 71423

Continuation-in-part of Ser. No. 341,801, Nov. 18, 1994, Pat. No. 5,575,928. This application May 18, 1995, Ser. No. 444,144

Int. Cl.[6] C02F *1/50;11/00*

U.S. Cl. 210—764 **42 Claims**



1. A method for disinfecting organic waste sludge of pathogenic bacteria comprising the step of commingling said sludge with an aqueous based solution having a solute of at least one chemical salt which releases an effective concentration of gaseous methylisothiocyanate in aqueous solution.

5,599,462

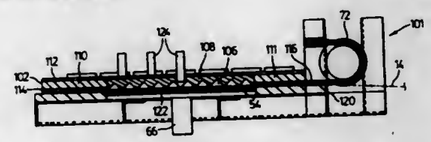
RESTRAINING DEVICE FOR FILTER CLOTH

Geoffrey D. Kemp, Mississauga, Canada, assignor to Komline-Sanderson Limited, Ontario, Canada

Filed Jun. 5, 1995, Ser. No. 461,680

Int. Cl.[6] B01D *33/04;33/056*

U.S. Cl. 210—783 **32 Claims**



1. A vacuum clamp for preventing movement of an elongate, movable filter cloth comprising:

a support frame;

a supporting device having a perforated support surface for supporting said filter cloth, said supporting device being mounted on said support frame and being adapted for connection to a vacuum source, so that a vacuum can be applied to numerous holes in the support surface;

an imperforate sealing sheet extending over said support surface and in close proximity thereto, and

a number of weights on said sealing sheet

wherein said elongate filter cloth can be drawn between said supporting device and said sealing sheet and a vacuum can be applied to said filter cloth by said supporting device in order to prevent movement of said filter cloth in its longitudinal direction, said sealing sheet being pulled against said filter cloth by the vacuum and thereby preventing air from passing through the filter cloth in the area of said perforated support surface.

5,599,463

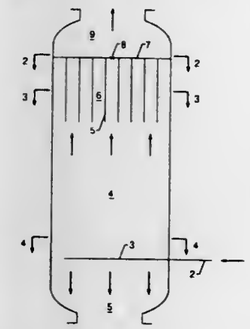
PHASE SEPARATOR APPARATUS AND ITS USE TO SEPARATE A MIXTURE OF LIQUIDS AND FINELY DIVIDED SUSPENDED PARTICLES

Brian W. Hedrick, Rolling Meadows, Ill., assignor to UOP, Des Plaines, Ill.

Filed Dec. 19, 1994, Ser. No. 358,285

Int. Cl.[6] B01D *21/00*

U.S. Cl. 210—800 **3 Claims**



1. A process for the separation of a mixture of liquid and finely divided suspended particles which process comprises:

(a) introducing a first mixture of liquid and finely divided suspended particles into a separator vessel;

(b) passing said first mixture through an inlet distributor located in a lower locus of said separator vessel in a generally upward direction to separate particles from said first mixture and produce a second mixture having a reduced concentration of finely divided suspended particles;

(c) passing said second mixture having a reduced concentration of finely divided suspended particles upwardly through an arrangement of a multiplicity of vertical flow channels defined by vertical baffles arranged in an intersecting pattern located in an upper locus of said separator vessel to thereby provide a uniform superficial flow;

(d) passing said second mixture upwardly from said flow channels through a generally horizontal baffle having a multiplicity of holes to allow the passage of upwardly flowing liquid;

(e) recovering a stream comprising finely divided particles from a lower locus of said separator vessel; and

(f) recovering a third mixture having a further reduced concentration of finely divided suspended particles from an upper locus of said separator vessel above said baffle.

5,599,464

FORMATION OF ATOMIC SCALE VERTICAL FEATURES FOR TOPOGRAPHIC INSTRUMENT CALIBRATION

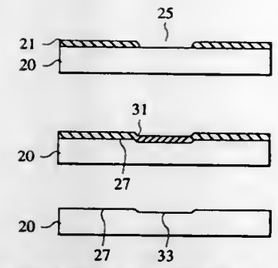
Ellen R. Laird, San Jose; W. Murray Bullis, Sunnyvale; James J. Greed, Jr., Los Gatos, and Bradley W. Scheer, San Jose, all of Calif., assignors to VLSI Standards, Inc., San Jose, Calif.

Filed Oct. 6, 1995, Ser. No. 539,973

Int. Cl.[6] C03C *15/00*

U.S. Cl. 216—2 **24 Claims**

1. A method of making a single material calibration target having atomic scale vertical topographic dimensions for testing instruments capable of measuring such dimensions comprising,



providing a silicon wafer having a major surface and an array of apertures in a thick oxide layer deposited on the surface, the thickness of the layer exceeding 80 Angstroms,

forming a thin oxide layer in said apertures, extending below the thick oxide layer by an atomic scale dimension, the thin oxide layer being substantially thinner than the thick oxide layer by a ratio of at least 10:1, and

removing all oxide from the apertures and the surface, thereby leaving vertical topographic dimensions of atomic scale between the apertures and the surrounding regions.

5,599,465

METHOD FOR PRODUCING HIGH-TEMPERATURE SUPERCONDUCTING JOSEPHSON DEVICES

Chan H. Park, and Jin P. Hong, both of Seoul, Rep. of Korea, assignors to Samsung Electro-Mechanics Co., Ltd., Rep. of Korea

Filed Nov. 28, 1994, Ser. No. 345,179

Claims priority, application Rep. of Korea, Nov. 29, 1993, 93-25721

Int. Cl.[6] B05D *5/12;* **H01L** *39/22*

U.S. Cl. 216—3 **6 Claims**

1. A method for the production of a step-edge superconducting Josephson device wherein a chemical etchant is utilized, comprising:

forming a mask on a predetermined portion of a MgO substrate; and

immersing the MgO substrate having the mask in an aqueous acid solution in which the volume ratio of phosphoric acid to sulfuric acid is approximately 10:1 or more, so as to form a step at the boundary between the masked region and the unmasked region.

5,599,466

METHOD FOR PRODUCING PERFORATED VALVE SPRAY DISK

Martin Maier, Möglingen; Norbert .Belzner, Lauffen; Jörg Heyse, Markgrönigen, and Christian Preussner, Bamberg, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Continuation of Ser. No. 202,416, Feb. 28, 1994, abandoned. This application Jun. 6, 1995, Ser. No. 469,730

Claims priority, application Germany, Mar. 6, 1993, 43 07 159.7

Int. Cl.[6] B23H *1/10;9/14*

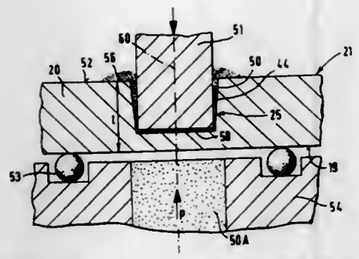
U.S. Cl. 219—69.17 **5 Claims**

1. A method for producing a perforated spray disk with at least one spray opening comprising the steps of:

removing particles from the perforated spray disk by electrical discharge machining perpendicular to a surface of the perforated spray disk;

flushing the detached particles out with a first dielectric so that a conical spray opening results, wherein the particles are flushed out in a direction opposite the electrical discharge machining; and

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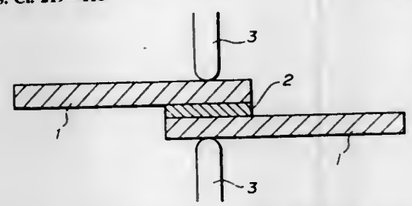
counterflushing with a second dielectric after the perforated spray disk has been broken through by the electrical discharge machining, wherein the second dielectric is conveyed under a pressure into the conical spray opening in the opposite direction from the electrical discharge machining.

5,599,467

ALUMINUM WELDMENT AND METHOD OF WELDING ALUMINUM WORKPIECES

Shinji Okabe; Takashi Iwasa; Takushi Irie, all of Saitama; Yuichi Furukawa, and Ichiro Iwai, both of Tochigi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, and Showa Aluminum Corporation, Osaka, both of Japan

Filed Nov. 16, 1994, Ser. No. 340,520
Claims priority, application Japan, Nov. 19, 1993, 5-290660; Dec. 28, 1993, 5-351886; Feb. 21, 1994, 6-022726
Int. Cl.[6] B23K *11/18*
U.S. Cl. 219—118 **14 Claims**



1. An aluminum weldment comprising aluminum workpieces resistance-welded to each other and a nugget formed between said aluminum workpieces, said nugget containing 7 to 17 wt % of magnesium and said nugget containing more magnesium than the base material of the aluminum workpieces.

5,599,468

PULSED ELECTRON BEAM JOINING OF MATERIALS

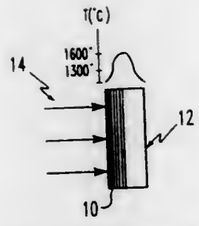
Frederick M. Mako, 6308 Youngs Branch Dr., Fairfax Station, Va. 22039; Richard Silberglitt, Fairfax, Va., and Lek K. Len, Bowie, Md., assignors to Frederick M. Mako, Fairfax Station, Va., and Ansel M. Schwartz, Pittsburgh, Pa.

Filed Oct. 3, 1994, Ser. No. 317,241
Int. Cl.[6] B23K *15/00*
U.S. Cl. 219—121.14 **19 Claims**

1. A method of joining two materials by single pulse electron radiation comprising the steps of:

disposing a first material layer adjacent to a second material layer such that an interface is disposed therebetween; and

irradiating the interface with a pulsed electron beam with a pulse length in the range of 100 nsec (10^{-7} sec) to 100 μsec (10^{4} sec) and a beam current density in the range of 1–1000 amps per square centimeter such that the pulsed electron beam penetrates one of the materials and energy of the pulsed electron beam is selectively deposited in a spatial region and localized at the interface to produce a joint between the first and second material layers in a single pulse.

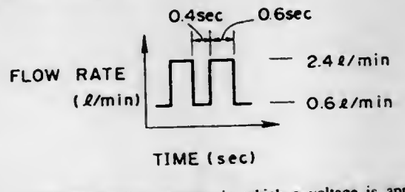


5,599,469

PLASMA WELDING PROCESS

Fumito Yoshino, Fujisawa, Japan, assignor to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Jun. 28, 1994, Ser. No. 266,660
Int. Cl.[6] B23K *10/00*
U.S. Cl. 219—121.55 **12 Claims**



1. A plasma welding process, in which a voltage is applied between an electrode and an object to be welded so as to generate a plasma arc with a plasma gas directed through a torch to surround the electrode, and welding is performed using the plasma arc as a heat source, said plasma welding process comprising the step of:

cyclically varying energy contained in said plasma arc by cyclically varying a plasma gas flow rate,

wherein a period for varying the plasma gas flow rate is less than or equal to 10 Hz, and

wherein a peak gas flow rate is greater than or equal to 1 l/min in the case of plasma keyhole welding and less than or equal to 3 l/min in the case of non-keyhole welding.

5,599,470

BATTERY BOX FOR ENGINE DRIVEN WELDER

Benjamin G. Peotter, Kaukauna, and Harvey R. Johnson, Appleton, both of Wis., assignors to Miller Electric Manufacturing Company, Appleton, Wis.

Filed Sep. 11, 1995, Ser. No. 526,444
Int. Cl.[6] B23K *9/10*
U.S. Cl. 219—133 **8 Claims**

1. An engine driven welding machine comprising:

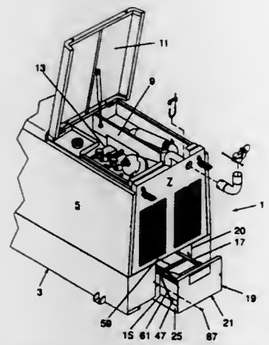
a. a base having a floor;

b. means mounted in the base for producing welding power;

c. battery box means for sliding horizontally within the base between open and closed positions;

d. an electrical storage battery secured to the battery box means, the battery being exposed outside of the base when the battery box means is in the open position and being concealed inside the base when the battery box means is in the closed position, the battery box means further comprising:

i. a carrier having a vertical plate and a horizontal plate that defines a finger hole; and



ii. bracket means joined to the carrier for guiding the battery on the carrier horizontal plate and for surrounding the carrier finger hole on one side of the carrier horizontal plate; and

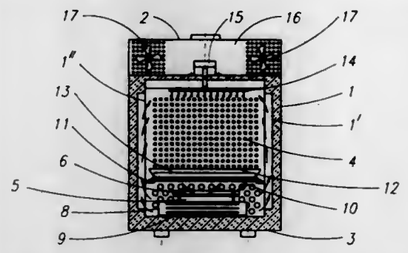
e. panel means assembled to the base for forming a vertical surface from the base with an opening therein in which the battery box slides and for cooperating with the base floor to cantilever support the battery box means in the open position, so that the battery box means is fully supported horizontally by the base floor and the panel means when the battery box means is in the open position.

5,599,471

COMPACT SMOKING OVEN

Mikhail Zaidman, 3029 Brighton 12 St. Apt. C7, Brooklyn, N.Y. 11235

Filed Jun. 13, 1994, Ser. No. 258,732
Int. Cl.[6] F27D *11/00*
U.S. Cl. 219—400 **14 Claims**



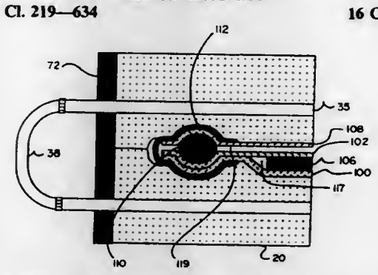
1. A compact smoking oven, comprising a box-shaped housing having a peripheral wall composed of two wall portions spaced from one another and including an inner wall portion provided with a plurality of throughgoing openings and an outer wall portion; a container for accommodating wooden chips and having at least one wall provided with a plurality of openings; means for heating said container so that when said container is heated, wooden chips inside said container are heated to produce a smoke, said smoke enters a space between said inner wall portion and said outer wall portion of said peripheral wall and exits said space through said openings of said inner wall portion into an interior of said inner wall portion of said peripheral wall; means for holding a food product to be smoked by said smoke; and means for cooling said housing, said housing having an upper compartment separated from an interior of said housing by an upper wall, said cooling means being located in said upper compartment and directing cool air toward said upper wall so as to cool said upper wall.

5,599,472

RESEALABLE RETORT FOR INDUCTION PROCESSING OF ORGANIC MATRIX COMPOSITES OR METALS

Ronald W. Brown, and Marc R. Matsen, both of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 169,655, Dec. 16, 1993, Pat. No. 5,530,227, Ser. No. 92,050, Jul. 15, 1993, Pat. No. 5,410,133, and Ser. No. 151,433, Nov. 12, 1993, Pat. No. 5,420,400, said Ser. No. 169,655is a continuation-in-part of Ser. No. 777,739, Oct. 15, 1991, Pat. No. 5,410,132, said Ser. No. 92,050is a division of Ser. No. 681,004, Apr. 5, 1991, Pat. No. 5,229,562. This application Nov. 18, 1994, Ser. No. 341,779
Int. Cl.[6] H05B *6/10*
U.S. Cl. 219—634 **16 Claims**



1. A retort for induction processing, comprising:

a plurality of metal susceptor sheets susceptible to induction heating sealingly arranged to form a sandwicb defining a first pressure zone isolated from a second pressure zone;

clamping means for temporarily sealing the metal sheets around their peripheries, the clamping means including a pliant contact edge strip contacting the outer sheets in the sandwich to press the sheets together and to provide electrical continuity between the outer sheets; and

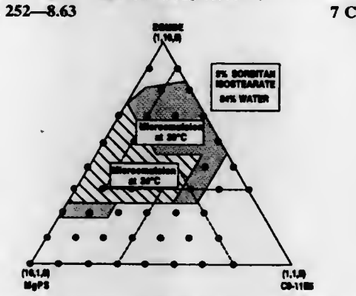
a workpiece in the first zone.

5,599,473

NITROGEN-FREE RINSE CYCLE FABRIC SOFTENERS BASED ON MICROEMULSIONS

André Crutzen, Liege-Sclessin, and France Wouters, Liers, both of Belgium, assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Aug. 4, 1994, Ser. No. 286,036
Int. Cl.[6] B01J *13/00*
U.S. Cl. 252—8.63 **7 Claims**



1. Method of preparing a nitrogen-free rinse cycle softener composition which comprises mixing at ambient room temperature:

(A) water;

(B) from 0 to about 7% of an electrolyte;

(C) about 2 to about 30% of an anionic surfactant;

(D) about 2 to about 30% of a cosurfactant;

(E) about 2 to about 40% of a fatty acid polyol ester; and

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(F) from 0 to about 20% of a nonionic surfactant; wherein the amount of water is sufficient to bring the total composition to 100%.

5,599,474

TEMPERATURE INDEPENDENT MAGNETORHEOLOGICAL MATERIALS

Keith D. Weiss; J. David Carlson, both of Cary; Theodore G. Duclos, Holly Springs, and Kirk J. Abbey, Raleigh, all of N.C., assignors to Lord Corporation, Cary, N.C.

Continuation-in-part of Ser. No. 968,735, Oct. 30, 1992, abandoned. This application Apr. 18, 1994, Ser. No. 229,270

Int. Cl.° H01F *1/44*

U.S. Cl. 252—62.52 **26 Claims**

1. A magnetorheological material comprising:

a) a carrier fluid selected from the group consisting of silicon oils and having a $\Delta\eta/\Delta T$ ratio less than or equal to about 16 centipoise/°C. over a temperature range of about –40° to 25° C.; and,

b) a particle component wherein said particle component consists of particles having diameters from about 1.0 to 250 microns and having magnetorheological activity, wherein said magnetorheological material exhibits minimal variation in force output over a temperature range from about –40° C. to 150° C.

5,599,475

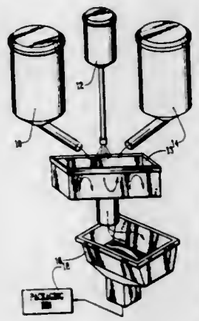
DE-ICING COMPOSITION AND METHOD FOR MAKING SAME

Kenneth C. Ossian, Bettendorf, and Norbert J. Steinhauser, Dubuque, both of Iowa, assignors to Ossian, Inc., Davenport, Iowa

Filed Sep. 15, 1995, Ser. No. 529,007

Int. Cl.° C09K *3/18*

U.S. Cl. 252—70 **5 Claims**



1. A process of preparing a uniform free flowing ice melting composition, said process comprising:

admixing a dry materials mix comprising of ice melters, abrasives and absorbents with an aqueous adhering solution of urea, the amount of adhering solution being from one part to eight parts dry material mix to one part to 15 parts urea solution.

uniformly mixing for a time sufficient such that the dry mix materials are tacky and wetted but such that the adhering solution does not soak into the dry materials; and thereafter

applying 1–50% by weight of a solid coating calcium chloride particles selected from the group consisting of calcium chloride monohydrate, calcium chloride dihydrate and combinations thereof, the size of which are from 80 mesh to 200 mesh, and

quick mixing for from one minute to five minutes to provide a plastic-like coating surrounding the added dry materials mix; and thereafter

screening and packaging the ice melt composition.

5,599,476

DETERGENT COMPOSITIONS

Ansgar Behler, Bottrop; Brigitte Giesen, Duesseldorf; Hans-Christian Raths, Monheim, all of Germany, and Harald P. Wulff, Bryn Mawr, Pa., assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

Continuation of Ser. No. 315,664, Sep. 30, 1994, Pat. No. 5,489,395, which is a continuation of Ser. No. 116,658, Sep. 2, 1993. This application Sep. 1, 1995, Ser. No. 522,031

The portion of the term of this patent subsequent to Sep. 30, 2014, has been disclaimed.

Int. Cl.° C11D *1/18;1/38;1/12;1/755*

U.S. Cl. 510—135 **20 Claims**

1. An aqueous detergent composition in which the surfactant component thereof consists of (a) an alkyl or alkenyl polyglycoside of the formula I

$$R^1O(G)_n \qquad (I)$$

whercin R^1 is an alkyl or alkenyl group containing from about one to about 30 carbon atoms; G represents a moiety derived from a reducing saccharide containing from 5 or 6 atoms; n is a number having an average value from 1 to about 6; and, (b) a monoglyceryl ether sulfate, a monoglyceryl sulfate, or a combination thereof, wherein the amount of component (a) in said composition is from 1 to about 99% by weight based on the solids content thereof, and wherein amount of component (b) in said composition is from 1 to about 75% by weight based on the solids content thereof.

5,599,477

Patent Not Issued For This Number

5,599,478

COMPENSATOR FOR A LIQUID CRYSTAL DISPLAY

Takuya Matumoto; Tadahiro Kaminade; Nishimura Suzushi, and Shigeki Takigawa, all of Yokohama, Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan

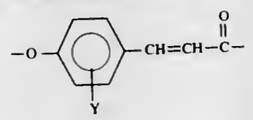
Filed Aug. 14, 1995, Ser. No. 528,241

Claims priority, application Japan, Sep. 14, 1994, 6-255948

Int. Cl.° C09K *11/52;* **G02F** *1/1335*

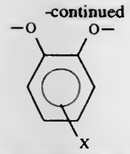
U.S. Cl. 252—249.01 **3 Claims**

1. A compensator for a liquid cystal display comprising a transparent substrate and a liquid crystalline polyester layer laminated thereon, said liquid crystalline polyester layer being obtained by fixing the orientation of a liquid crystalline polyester exhibiting a twisted nematic orientation in the state of liquid crystal, which a glassy state at a temperature below the liquid crystal transition point thereof, and containing 3 to 40 mol % of 4-hydroxycinnamic acid units represented by formula (I) and 15 to 40 mol % of catechol units represented by formula (II):



(I)

-continued



where X and Y are each independently a hydrogen atom, Cl, Br, or an alkyl group having 1 to 4 carbon atoms, the ratio of the value of birefringence for light having a wavelength of 450 nm, Δn (450 nm), to the value of birefringence for light having a wavelength of 600 nm, Δn (600 nm), namely (Δn (450 nm)/Δn (600 nm)), being in the range from 1.14 to 1.30.

5,599,479

FERROELECTRIC CHIRAL SMECTIC LIQUID CRYSTAL COMPOSITION AND LIQUID CRYSTAL DEVICE USING SAME

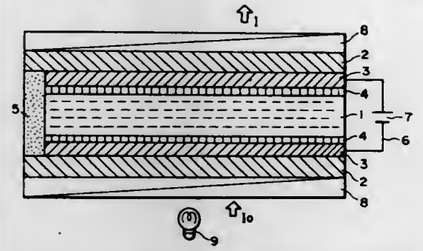
Kenji Shinjo, Atsugi; Takao Takiguchi, Tokyo; Hiroyuki Kitayama, Sagamihara; Kazuharu Katagiri, Tama; Masataka Yamashita, Hiratsuka; Takeshi Togano, Yokohama; Masahiro Terada, Atsugi; Akio Yoshida, Chigasaki, and Yoshiko Kimura, Hiratsuka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 23, 1989, Ser. No. 370,987

Claims priority, application Japan, Jun. 24, 1988, 63-157675; Jul. 13, 1988, 63-175785

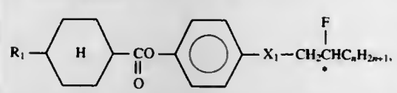
Int. Cl.° C09K *19/34;19/30;19/12;* **G02F** *1/13*

U.S. Cl. 252—299.61 **7 Claims**



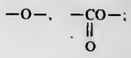
1. A chiral smectic liquid crystal composition, comprising:

at least one optically active compound represented by the following formula (I):



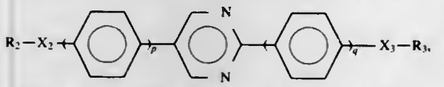
(I)

wherein R_1 denotes an unsubstituted linear alkyl group having 1–18 carbon atoms; X_1 denotes a single bond,



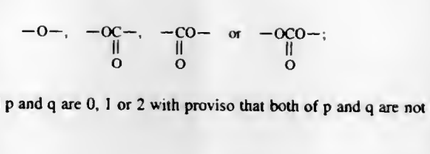
and n is an integer of 1–12; and

at least one compound represented by the following formula (II):



(II)

wherein R_2 and R_3 denote a linear or branched optically inactive alkyl group having 1–18 carbon atoms optionally substituted with an alkoxy group of 1–12 carbon atoms; X_2 and X_3 denote a single bond,



and p and q are 0, 1 or 2 with proviso that both of p and q are not 0.

5,599,480

LIQUID-CRYSTALLINE MEDIUM

Kazuaki Tarumi, Seeheim, and Matthias Bremer, Darmstadt, both of Germany, assignors to Merck Patent Gesellschaft Mit Beschrankter Haftung, Darmstadt, Germany

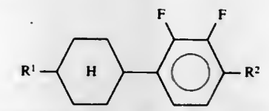
Filed Jul. 27, 1995, Ser. No. 508,100

Claims priority, application Germany, Jul. 28, 1994, 44 26 798.3; Aug. 11, 1994, 44 28 478.0; Dec. 15, 1994, 44 44 813.9

Int. Cl.° C09K *19/30;19/52;* **G02F** *1/13*

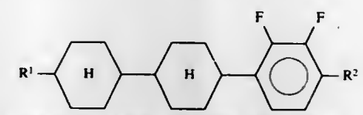
U.S. Cl. 252—299.63 **14 Claims**

1. Liquid-crystalline medium based on a mixture of polar compounds having negative dielectric anisotropy, having a birefringence between 0.04 and 0.10, comprising at least 1 compound of the formula I



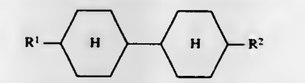
I

with a total of 4 or more compounds selected from formulae I and II



II

and a total of two or more compounds of formula III



III

in which R^1 and R^2 are each, independently of one another,

H, an unsubstituted alkyl or alkenyl radical having up to 18 carbon atoms in

which one or more non-adjacent CH_2 groups may be replaced by a radical

selected from the group consisting of —O—, —S— and —C≡C—.

5,599,481

DEFOAMER

Kristina M. Walger, Charlotte, N.C., assignor to Henkel Corporation, Plymouth Meeting, Pa.

Continuation of Ser. No. 109,799, Aug. 20, 1993, abandoned. This application Jun. 21, 1995, Ser. No. 493,178

Int. Cl.° B01D *19/04*

U.S. Cl. 252—358 **7 Claims**

1. A defoamer composition consisting of:

(a) from 0.8 to 3.0 parts by weight of silicone, wherein the silicone is in aqueous dispersed form employing a nonionic emulsifier;

(b) 5 to 40 parts by weight of mineral oil;

(c) 2 to 20 parts by weight of hydrophobic silica;

(d) 0.7 to 11 parts by weight of at least one nonionic surfactant selected from the group consisting of ethoxylated dioctyl or dinonyl phenols having a degree of ethoxylation of from 6 to

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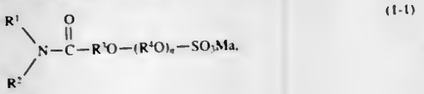
15, dioleate esters of polyethylene glycol, and ethoxylated hydrogenated castor oils;
(e) 0.2 to 4 parts by weight of acrylic polymer;
(f) 0.02 to 0.4 parts by weight of alkali metal hydroxide; and
(g) the balance, water, based on the weight of the defoamer composition.

5,599,482
ANTI-CORROSIVE FORMULATION FOR METAL-COATING OF MIRRORS AND SIMILAR AND PROCEDURE FOR THE PRODUCTION THEREOF
Fernando Fenzi, Milan, Italy, assignor to Fenzi S.p.A. Vernici ed Accessori Vetrari, Italy
Filed Dec. 10, 1992, Ser. No. 988,707
Claims priority, application European Pat. Off., Dec. 24, 1991, 91203405.5
Int. Cl.[6] B05D *5/06*; **C09D** *5/08*; **C23F** *11/14*
U.S. Cl. 252—389.52 **5 Claims**

1. A lead free anticorrosive formulation applied in layer form for the protection of metal films applied to transparent supports wherein said formulation comprises a binder consisting of 15–40% by weight of at least one organic resin selected from the group consisting of isomerized rubber, urethane oil, an alkyd, acrylic, phenol and epoxy resins; 2–12% by weight of a melamine resin; corrosion inhibiting pigment consisting of a mixture of zinc cyanamide and dicyandiamide being present overall within a range of 2 to 5% by weigh; fillers; metal oxides; at least one solvent; and adhesion-promoting additives.

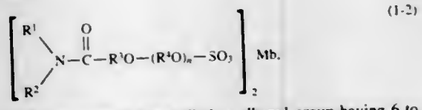
5,599,483
N-ALKYLCARBAMYLALKANOL SULFATE OR SALT THEREOF, PROCESS FOR PRODUCING THE SAME AND DETERGENT COMPOSITION CONTAINING THE SAME
Hiromoto Mizushima; Masakatsu Takahashi; Akira Yamamuro, all of Wakayama; Takashi Matsuo, Chiba, and Kazuyuki Yahagi, Tokyo, all of Japan, assignors to Kao Corporation, Tokyo, Japan
Continuation-in-part of Ser. No. 511,100, Aug. 4, 1995, abandoned, which is a continuation of Ser. No. 230,242, Apr. 20, 1994, abandoned. This application Oct. 11, 1995, Ser. No. 540,977
Claims priority, application Japan, Apr. 23, 1993, 5-97848; Oct. 11, 1994, 6-245178
Int. Cl.[6] C11D *1/18*; **C07C** *305/00*
U.S. Cl. 510—119 **20 Claims**

1. An N-alkylcarbamylalkanol sulfate or a salt thereof represented by the general formulae (1-1) or (1-2):



(1-1)

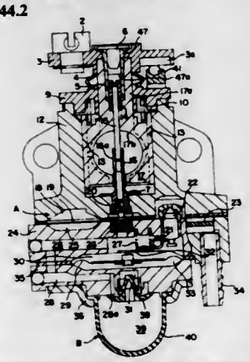
and



(1-2)

wherein R^1 represents a linear alkyl or alkenyl group having 6 to 22 carbon atoms; R^2 represents a hydrogen atom or a methyl group; R^3 represents a linear or branched alkylene group having 1 to 5 carbon atoms; R^4O represents an oxyalkylene group having 2 or 3 carbon atoms; n represents an average addition mole number of the oxyalkylene group and is a number between 0 and 20, and wherein each R^4O group may be the same or different from one another; Ma represents a hydrogen atom, an alkali metal atom, an ammonium group, an alkanol-ammonium group having 2 to 9 carbon atoms in total, an alkylammonium group having 1 to 22 carbon atoms in total, an alkenylammonium group having 2 to 22 carbon atoms in total, a C_1–C_{18} alkyl- or C_2–C_{18} alkenyl-substituted pyridinium group, or a group consisting of a basic amino acid and a hydrogen atom; and Mb represents an alkaline earth metal atom.

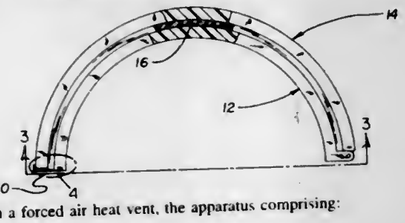
5,599,484
CONSTRUCTION OF A FUEL SUPPLY PIPE IN A ROTARY THROTTLE VALVE TYPE CARBURETOR
Teruhiko Tobinai, Sendai, Japan, assignor to Walbro Japan, Inc., Tokyo, Japan
Filed Aug. 25, 1995, Ser. No. 519,308
Claims priority, application Japan, Oct. 6, 1994, 6-268393
Int. Cl.[6] F02M *9/08*
U.S. Cl. 261—44.2 **6 Claims**



1. In a carburetor with a rotary throttle valve, a fuel supply pipe comprising;
a first tubular portion constructed of metal having a tubular passage to allow fuel flow therethrough and adjacent one end an outside diameter slightly larger than the diameter of the corresponding mounting hole on the carburetor where said portion is fitted to provide an interference fit therein, and a second tubular portion formed of synthetic resin, having a tubular passage to slidably receive a needle valve therein and to allow fuel flow therethrough, and a fuel jet orifice formed in the sidewall of the metering tip portion to allow delivery of fuel from said second portion, said first and second portions are telescopically connected such that the passage of the first portion is in communication with the passage of the second portion.

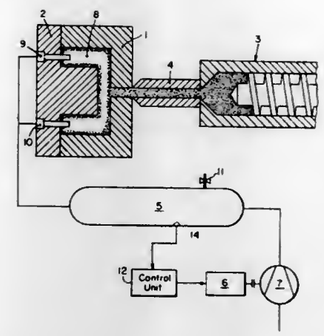
5,599,485
PORTABLE HUMIDIFIER ASSEMBLY
Lothar C. Obermayer, 30 Mercer Dr., Brampton, Ontario, Canada
Filed Dec. 18, 1995, Ser. No. 574,224
Int. Cl.[6] B01F *3/04*
U.S. Cl. 261—107 **5 Claims**

2. A portable humidifier assembly adapted for use in association

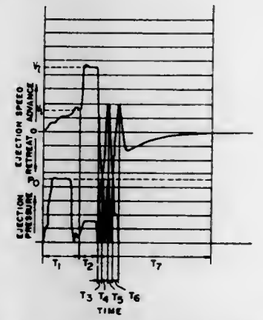


with a forced air heat vent, the apparatus comprising:

an inner frame comprising a rear crossbar, a front crossbar and a plurality of semicircular ribs affixed therebetween, the front crossbar of the inner frame including a coupling device, an outer frame including a rear crossbar, a front crossbar and a plurality of semicircular ribs affixed therebetween, the rear crossbar of the outer frame being hingedly coupled to the rear crossbar of the inner frame, the front crossbar of the outer frame including a coupling device; and
a sponge adapted to retain water, in an operative orientation the sponge being soaked with water and placed between the ribs of the inner and outer frames, the sponge being locked in placed by hingedly closing the outer frame upon the inner frame and coupling the front cross bars of the respective frames together.



5,599,486
METHOD FOR CONTROLLING AN EJECTOR AND INJECTION MOLDING MACHINE
Atsushi Fujishiro; Yukio Ishii, and Hitoshi Hara, all of Chiba, Japan, assignors to Sumitomo Heavy Industries, Ltd., Japan
Continuation-in-part of Ser. No. 132,667, Oct. 6, 1993, abandoned. This application Mar. 7, 1995, Ser. No. 399,584
Claims priority, application Japan, Oct. 9, 1992, 4-271863; Dec. 4, 1992, 4-325291
Int. Cl.[6] B29C *45/40*
U.S. Cl. 264—40.1 **15 Claims**



1. A method for controlling an ejector in a molding apparatus including means defining a mold cavity, the method comprising:
(a) advancing an ejector pin from a withdrawn position to a projected position thereby ejecting a molded product from the mold cavity;
(b) withdrawing said ejector pin from the projected position to the withdrawn position, and
(c) vibrating the ejector pin to cause said ejector pin to undergo reciprocating movements having a period less than 0.1 seconds over a preset range in at least one of said advancing step and said withdrawing step.

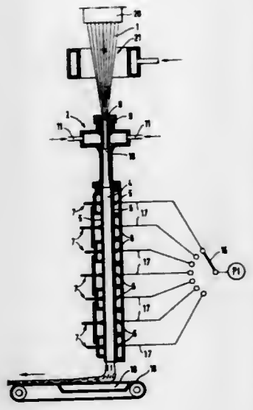
5,599,487
METHOD AND DEVICE FOR FABRICATING PLASTIC OBJECTS FROM THERMOPLASTIC MATERIAL
Michael Goedin, and Helmut Eckardt, both of Meinerzhagen, Germany, assignors to Battenfeld Holding GmbH, Meinerzhagen, Germany
Filed May 5, 1995, Ser. No. 435,986
Claims priority, application Germany, Dec. 21, 1994, 44 45 622.0
Int. Cl.[6] B29C *45/76*
U.S. Cl. 264—40.1 **11 Claims**

1. A method for fabricating plural hollow plastic objects of thermoplastic material, comprising:
a) injecting a sufficient amount of plastic melt into a cavity of a molding tool along a melt flow path which extends from a plasticizing unit, through a plastic injection nozzle, to the molding tool;
b) simultaneously and/or subsequently introducing a pressurized fluid into the melt, so that the melt in the molding tool is distributed in the cavity against the walls of the molding tool, the pressurized fluid being conducted from a pressurized container into the melt, and the pressurized container being supplied with fluid by a compressor including a drive element;
c) allowing the plastic to cool to a temperature below a melting point of the plastic to produce a first one of the hollow plastic objects;
d) relieving the pressure of the pressurized fluid from within the first one of the hollow plastic objects;
e) removing the first one of the hollow plastic objects from the molding tool;
f) repeating steps a) through e) to produce plural ones of the hollow plastic objects; and
g) maintaining a power level of the drive element of the compressor constant over time, at least over the production of the plural ones of the hollow plastic objects.

5,599,488
PROCESS OF DRAWING FILAMENTS
Hans J. Profe, Bobingen, Germany, assignor to Hoechst Aktiengesellschaft, Germany
Filed Mar. 21, 1995, Ser. No. 408,068
Claims priority, application Germany, Mar. 23, 1994, 44 09 940.1
Int. Cl.[6] B29C *47/92*; **D01D** *5/098*
U.S. Cl. 264—40.3 **15 Claims**

1. A process for drawing curtain filament bundles, comprising the steps of:
a) introducing said filament bundles together with aspirated gas into an injector which is rectangular in borizontal section and partially drawing said filament bundles in said injection;
b) fully drawing said filament bundles in a drawing shaft which adjoins said injector and consists of two parallel and close-distance plates,
c) monitoring the pressure profile in said drawing shaft by means of a plurality of pressure measuring means arranged in the form of a grid, and
d) setting a desired pressure profile in said drawing shaft by local variation of the geometry or the amount of drawing gas in said drawing shaft.

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5,599,489

PREPARING MOLDED ARTICLES OF FLUORINE-CONTAINING POLYMER WITH INCREASED WATER-REPELLENCY

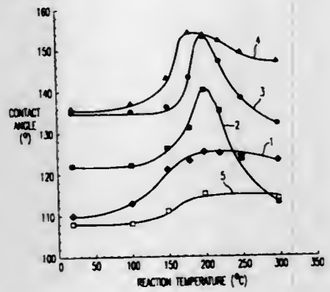
Yukinori Saiki, Chiba; Mina Ichikawa, Yachiyo; Massatsu Shimomura, Tokyo; Masahiro Ono, Kawaguchi, and Nobuatsu Watanabe, Nagaokakyo, all of Japan, assignors to Onoda Cement Co., Ltd., Onoda, and ASK Corporation, Yokohama, both of Japan

Continuation of Ser. No. 181,098, Jan. 13, 1994, abandoned. This application May 25, 1995, Ser. No. 450,990

Claims priority, application Japan, Jan. 18, 1993, 5-005926; Jun. 30, 1993, 5-162017; Nov. 19, 1993, 5-290718

Int. Cl.[6] B29C *59/02;71/02*

U.S. Cl. 264—83 4 Claims



1. A method for preparing a molded article of fluorine-containing polymer having increased water-repellency, which comprises:

(a) roughening a surface of said molded article with a shot blast to an irregularity of 0.1 to 50 μm; and

(b) contacting the roughened surface with fluorine gas at a temperature of about 100° C. to 300° C., using a concentration of said fluorine gas of about 10 to 500 torr, with a treatment time of from about 10 minutes to one hour.

5,599,490

Patent Not Issued For This Number

5,599,491

METHOD AND APPARATUS FOR MAKING A MOLD FOR DUPLICATING A POSITIVE MASTER

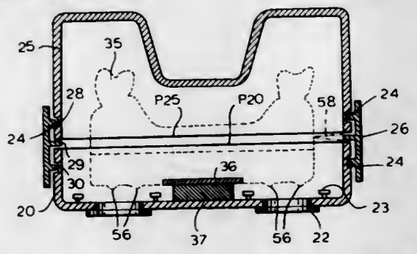
Benedikt Pollock, Essen, and Albert Schröder, Wuppertal, both of Germany, assignors to Krupp Medizintechnik GmbH, Essen, Germany

Filed Sep. 8, 1994, Ser. No. 302,622

Claims priority, application Germany, Sep. 14, 1993, 43 31 148.2

Int. Cl.[6] B29C *33/40;39/22*

U.S. Cl. 264—138 20 Claims



16. A method of making a mold for casting positive models identical to a positive master, the method comprising the steps of sequentially:

a) fitting the master in a lower mold shell;

b) setting an upper mold shell over the lower mold shell so that the mold shells spacedly surround and contain the master;

c) securing the mold shells together so that a lower rim of the upper shell is parallel to and spaced by a gap above an upper rim of the lower shell;

d) filling an interior of the mold shells around the master with a mass of fluent molding compound;

e) curing the mass of compound to a solid;

f) inserting a cutter blade into the gap between the mold shells and cutting the cured mass all around the master to separate the cured mass into an upper part in the upper shell forming therewith an upper mold half and a lower part in the lower shell forming therewith a lower mold half;

g) separating the two mold halves and leaving the master in one of the halves and forming a mold-cavity half in the other half;

h) removing the master from the one half to form therein another mold-cavity half;

i) forming a fill bole from outside into one of the mold-cavity halves and reuniting the two mold halves; and

j) filling the reunited mold-cavity halves with a fluent mass of model material.

5,599,492

METHOD FOR MAKING A GUIDEWIRE WITH A FLEXIBLE DISTAL TIP

Erik T. Engelson, Mountain View, Calif., assignor to Target Therapeutics, Inc., Fremont, Calif.

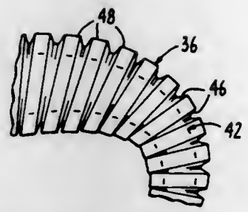
Continuation of Ser. No. 50,718, Apr. 19, 1993, abandoned, which is a continuation of Ser. No. 791,967, Nov. 13, 1991, abandoned, which is a division of Ser. No. 495,567, Mar. 19, 1990, Pat. No. 5,095,915. This application Dec. 16, 1994, Ser. No. 357,975

Int. Cl.[6] B29C *47/02;47/18*

U.S. Cl. 264—167 3 Claims

1. A method of increasing column strength of a tapered distal end section of a catheter guidewire wire core, comprising:

directly securing to said tapered end section of a catheter guidewire wire core, an elongate polymeric sleeve having axially spaced grooves along the length of the sleeve which grooves are of depth and width so to increase the bending flexibility of the resulting distal end section in substantially any bending direction, along the length of the distal end section, over the bending flexibility in the absence of said grooves and to increase the columnar strength of the tapered distal section, said elongate polymeric sleeve being grooved by the step of extruding the elongate polymeric sleeve under conditions of axial oscillation to produce regular and repeated bunching in the extruded elongate polymeric sleeve so to produce the axially spaced grooves.



5,599,493

METHOD OF PRODUCING SILICON NITRIDE CERAMIC COMPONENT

Yasushi Ito; Takehisa Yamamoto; Takao Nishioka; Akira Yamakawa, and Osamu Komura, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan

Filed Apr. 26, 1995, Ser. No. 429,067

Claims priority, application Japan, Apr. 26, 1994, 6-109113

Int. Cl.[6] B29C *71/02*

U.S. Cl. 264—234 16 Claims

1. A method of producing a silicon nitride ceramic component, comprising: grinding a silicon nitride sintered body comprising α-Si_3N_4 having an average grain size of 0.5 μm or smaller and β'-sialon having an average grain size of 3 μm or smaller in its major axis and 1 μm or smaller in its minor axis into a predetermined size with a surface roughness of 1–7 μm in ten-point mean roughness; heat treating the ground sintered body in a temperature range of 800°–1200° C. in air; and allowing the same to be cooled by standing, thereby providing a residual compressive stress in the ground surface before and after the heat treatment at a ratio of 1 or higher (residual compressive stress after the heat treating/residual compressive stress before the heat treating).

5,599,494

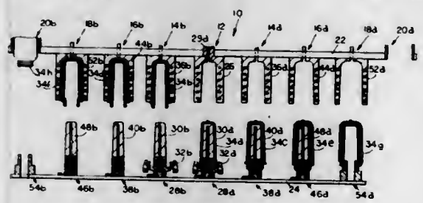
METHOD OF FORMING A PARISON HAVING MULTIPLE RESIN LAYERS

Paul Marcus, 6 Bayberry Dr., Saddle River, N.J. 07458

Filed Oct. 13, 1994, Ser. No. 322,436

Int. Cl.[6] B29C *49/24*

U.S. Cl. 264—513 10 Claims



1. A method of forming a parison having multiple thin resin layers thereby decreasing injection molding cycle time to optimize parison production rates, comprising the steps of:

a) injection molding a first of first parison layers on a first core rod assembly at a first parison injection molding station;

b) providing second parison layer injection stations located on opposite sides of the first parison layer injection molding station;

c) moving the first of the first parison layers, while supporting the first parison layer along its entire length on and cooling the first parison layer by the first core rod assembly, from the first parison layer injection molding station to one of the second parison layer injection molding stations;

d) injection molding a second of the first parison layers at the first parison layer injection molding station on a second core rod assembly while the first of the first parison layers is on the first core rod assembly at the one of the second parison layer injection molding stations at which a second parison layer is injection molded thereon to form a first two layered parison;

e) moving the second of the first parison layers, while supporting the second of the first parison layers along its entire length on and cooling the second of the first parison layers by the second core rod assembly, to the other of the second parison layer injection stations;

f) injection molding a third of the first parison layers on the first core rod assembly at the first parison layer injection molding station while the second of the first parison layers is on the second core rod assembly at the other of the second parison layer injection molding stations at which a second parison layer is injection molded thereon to form a second two layered parison thereon; and

g) repeating steps a) to f) to form other first parison layers and two layered parisons.

5,599,495

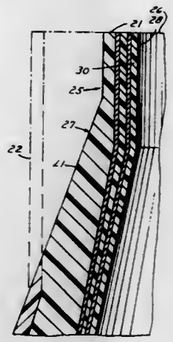
METHOD FOR MOLDING HOLLOW PLASTIC CONTAINER HAVING A FINISH WITH A SMALLER DIAMETER THAN THE BODY OF THE CONTAINER

Thomas J. Krall, Toledo, Ohio, assignor to Owens-Brockway Plastic Products Inc., Toledo, Ohio

Filed Jun. 7, 1995, Ser. No. 473,480

Int. Cl.[6] B29C *49/22;49/50*

U.S. Cl. 264—515 4 Claims



1. A method of forming hollow plastic multi-layer container having a finish which is less in diameter than the diameter of the body portion of the container which is made by

forming a multi-layer parison with a multi-layer neck portion for defining a finish and a multi-layer body portion,

said parison having an inner layer, an outer layer and at least one intermediate layer,

thereafter expanding the body portion to a multi-layer cross section greater than the multi-layer cross section of the neck portion,

thereafter trimming the neck portion by removing plastic material from the outside of the neck portion and from the top of the neck portion to remove material from the finish and form the finish to the final dimensions while leaving the inner layer of the finish unaffected such that said finish has a diameter less than the diameter of the neck portion and of the body portion.

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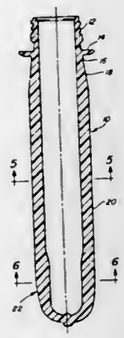
METHOD OF MAKING A REFILLABLE POLYESTER CONTAINER

Suppayan M. Krishnakumar, Nashua; Wayne N. Collette, Merrimack, and Thomas E. Nahill, Amherst, all of N.H., assignors to Continental PET Technologies, Inc., Florence, Ky.

Continuation of Ser. No. 55,860, Apr. 30, 1993, abandoned, which is a continuation of Ser. No. 758,801, Sep. 12, 1991, abandoned, which is a division of Ser. No. 488,247, Mar. 5, 1990, Pat. No. 5,066,528. This application Sep. 27, 1994, Ser. No. 312,890

Int. Cl.[6] B29C *49/08*

U.S. Cl. 264—532 **14 Claims**



1. In a method of blow molding a preform into a returnable and refillable container, the method comprising the steps of:

(a) providing a molded polyester preform (**10**) having a closed bottom end and an open top end, a neck finish (**12**) at the open top end, a body-forming portion, a shoulder-forming portion (**18**) disposed between the neck finish (**12**) and the body-forming portion (**20**), and a base-forming portion (**22**) having generally hemispherical inner and outer surfaces (**28**, **26**) at the closed bottom end and a thickened portion between the bottom end and the body-forming portion (**20**), the thickened portion having an increased wall thickness as compared to the wall thickness of the body-forming portion (**20**);

(b) expanding the preform (**10**) by axial and hoop stretching in a blow mold to form a transparent returnable and refillable container (**52**) having a biaxially oriented body and low orientation base, the container (**52**) including the neck finish (**12**), a shoulder (**60**) formed from the shoulder-forming portion of the preform, a body (**64**) formed from the body-forming portion of the preform, and a base (**56**) formed from the base-forming portion of the preform, the base (**56**) including a central downwardly-opening dome segment (**72**), a chime (rs), and an outer base portion (**68**) gradually increasing in diameter upwardly to the body;

the improvement comprising:

providing the thickened portion of the preform (**10**) with an upper cylindrical portion (RS) of the increased thickness and a lower tapered portion (ST) which gradually reduces in wall thickness towards the bottom end, and wherein during expansion the base-forming portion of the preform is expanded to form the container base with smoothly curved inner and outer surfaces so as to be free of stress concentrations, and the upper cylindrical portion (RS) is stretched to form the chime (rs) and the lower tapered portion (ST) is stretched to form the dome segment (**72**) which generally gradually decreases in wall thickness while increasing in orientation toward the chime (rs), wherein the container is able to withstand a number of reuse cycles without crack failure, wherein in each cycle the container is subjected to a hot caustic wash at a temperature of about 60° C. (140° F.) and product filling and capping at a pressure of at least about $4.05\times10^5 Nm^{-2}$ (4 atmospheres).

5,599,497

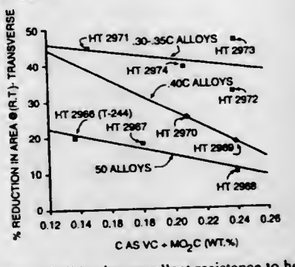
ALLOY STEEL ROLL CASTER SHELL

James N. Cordea, West Chester, Ohio, and Harshad V. Sheth, Rancho Palos Verdes, Calif., assignors to National-Oilwell, L.P., Houston, Tex.

Filed Jul. 26, 1995, Ser. No. 507,630

Int. Cl.[6] C22C *38/44;38/46*

U.S. Cl. 420—109 **9 Claims**



1. A roll caster shell having excellent resistance to heat checking at high shrink-fit stresses consisting essentially of, in weight %, 0.25–0.45% C, 1.75–3.7% Cr, 0.7–2.5% Mo, 0.35–0.8% V, 0.3–1% Mn, greater than 0.4–1% Ni, 0.02% max P, 0.02% max S, up to 0.25% Si and balance essentially Fe.

5,599,498

METHOD FOR CONTINUOUSLY SUPPLYING ACTIVATED AIR AND APPARATUS THEREFOR

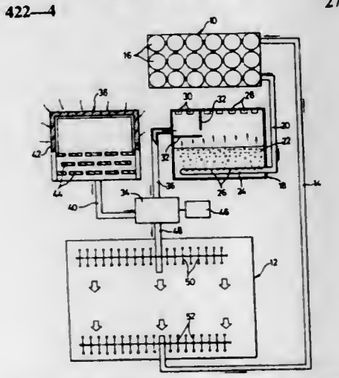
Byeung O. Oh, 10-9, Haewha-Dong, Jongro-Gu, Seoul, Rep. of Korea

Filed Feb. 14, 1995, Ser. No. 388,538

Claims priority, application Rep. of Korea, Oct. 21, 1994, 1994-26922

Int. Cl.[6] A61L *9/20*

U.S. Cl. 422—4 **27 Claims**



25. A process for continuously supplying air containing activated carbon dioxide comprising the steps of:

a) passing air containing carbon dioxide through a sunlight collector to activate the carbon dioxide contained therein;

b) reacting the activated air with a reaction solution to allow at least part of the activated carbon dioxide to exchange react with the carbon dioxide contained within the reaction solution; and

c) introducing the activated air to an indoor space.

5,599,499

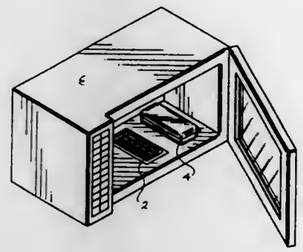
METHOD OF MICROWAVE STERILIZING A METALLIC SURGICAL INSTRUMENT WHILE PREVENTING ARCING

Jeffery S. Held, Chicago, Ill., and Robert F. Schiffmann, New York, N.Y., assignors to Quiclave, L.L.C., Chicago, Ill.

Continuation of Ser. No. 319,944, Oct. 7, 1994. This application Jun. 5, 1995, Ser. No. 461,380

Int. Cl.[6] A61L *2/12*; H05B *6/80*

U.S. Cl. 422—21 **15 Claims**



1. A method of sterilizing a metallic object with microwaves while preventing arcing of the metallic object, said method comprising the steps of:

placing said metallic object within a volume of space defined by a surface of material, wherein said surface comprises a microwave-to-heat transducer that comprises a first susceptor material and a microwave absorbing material positioned between said first susceptor material and said volume of space;

exposing said surface of material to microwave radiation;

converting a portion of said microwave radiation exposing said surface of material to radiant thermal energy within said volume of space;

exposing said metallic object to said radiant thermal energy in an amount sufficient to sterilize said metallic object; and

preventing substantially all of said microwave radiation impinging on said surface of material from entering said volume of space.

5,599,500

FLUID DISPENSING APPARATUS

Donald Jones, Sacramento, Calif., assignor to Dade International Inc., Deerfield, Ill.

Continuation of Ser. No. 89,878, Jul. 9, 1993, abandoned. This application May 10, 1995, Ser. No. 438,459

Int. Cl.[6] G01N *35/10*

U.S. Cl. 422—62 **20 Claims**

16. A fluid dispensing apparatus, comprising:

a fluid dispensing head having a plurality of fluid dispensing nozzles;

a carriage movable along a vertical first axis;

a shuttle member associated with the carriage and movable along a horizontal second axis defined by a portion of the carriage, the horizontal second axis being substantially perpendicular to the first axis; and

means cooperatively defined by said fluid dispensing head and said shuttle member for releasably securing said fluid dispensing head to said shuttle member so that said fluid dispensing head is carried by said shuttle member in response to a predetermined movement of the shuttle member relative to said carriage, said predetermined movement consisting essentially of a movement of said carriage along said horizontal second axis.

5,599,501

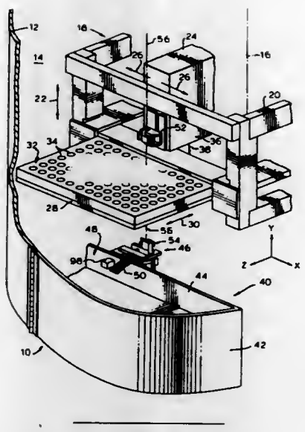
INCUBATION CHAMBER

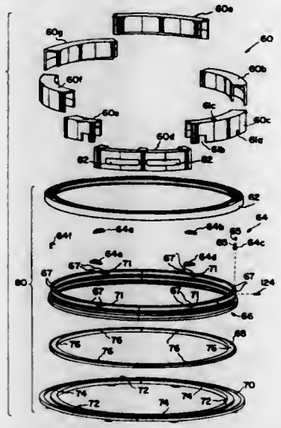
Glen A. Carey, Grafton, and Michael L. Malek, North Olmsted, both of Ohio, assignors to Ciba Corning Diagnostics Corp., Medfield, Mass.

Filed Nov. 10, 1994, Ser. No. 338,022

Int. Cl.[6] G01N *35/04*

U.S. Cl. 422—64 **26 Claims**





1. An incubation assembly for handling biological samples and test reagents in an automated biological testing system, said assembly comprising:

at least first and second rings, relatively rotatable in response to control signals, at least one of which rings is adapted for holding sample cuvettes in spaced cuvette receiving positions and at least one other of said rings has one or more magnets that selectively applies a magnetic force to a combination of a biological sample and a test reagent present in one of said cuvettes by relative rotation of the first and second rings in response to said control signals to place said one or more magnets adjacent to said cuvette holding said combination;

an indexing mechanism having a trigger and that positions the first and second rings relative to each other at any one of a plurality of positions corresponding to the number of cuvette receiving positions;

an escapement operatively connected to said indexing mechanism for selectively coupling and enabling relative motion between the first and second rings by at least a distance

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between adjacent cuvette receiving positions in response to rotation of said first and second rings past said trigger;

at least one sample dosing assembly responsive to said control signals and having a fluid transfer probe for applying a dose of said biological sample to be tested from a sample supply to said sample cuvette in one said ring at at least one first position to which cuvettes in that ring can be rotated;

at least one test reagent dosing assembly responsive to said control signals and having a fluid transfer probe for applying a dose of said test reagent from a reagent supply to said biological sample in said sample cuvette to form said sample and reagent combination in said sample cuvette in one said ring adapted for holding cuvettes at at least one second position to which cuvettes in that ring can be rotated;

a cuvette placement assembly having a supply of cuvettes and a cuvette delivery mechanism delivering cuvettes to at least one third position to which a cuvette receiving position in said at least one ring adapted for holding cuvettes can be placed by rotation of said cuvette holding ring in response to said control signals;

a cuvette extraction assembly that extracts said sample and reagent combination containing cuvettes from at least one fourth position to which a cuvette in said at least one ring adapted for holding sample cuvettes can be placed by rotation of said cuvette holding ring in response to said control signals;

a luminometer for receiving an extracted cuvette and having a doser and photosensor to create and detect luminescence in the cuvette representative of properties of each sample under test;

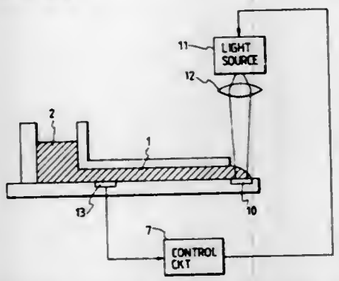
a scheduler of said control signals providing coordinated rotation of said at least first and second rings, sample and reagent dosing assemblies and cuvette placement and extraction assemblies for incubation of said sample and reagent combination in each cuvette for selectable incubation times and positioning of said one or more magnets in said ring that selectively applies a magnetic force adjacent to each said cuvette containing said sample and reagent combination prior to said cuvette extraction by said cuvette extraction assembly.

5,599,502

LIQUID MOVING APPARATUS AND MEASURING APPARATUS UTILIZING THE SAME

Takeshi Miyazaki, Ebina; Matsuomi Nishimura, Ohmiya; Kazuo Isaka, Tokyo; Kazumi Tanaka, Yokohama; Toshikazu Ohnishi, Machida; Yoshito Yoneyama, Kawasaki, and Hidehito Takayama, Chigasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 50,604, Apr. 22, 1993, abandoned.
This application Jul. 25, 1994, Ser. No. 280,132
Claims priority, application Japan, Apr. 27, 1992, 4-107669; Nov. 9, 1992, 4-298718
Int. Cl.[6] G01N *27/00;21/00;21/85*
U.S. Cl. 422—82.01 **8 Claims**



1. A measuring apparatus for measuring biological materials, comprising:

a liquid container for housing a liquid containing biological materials, said liquid container including a flow path having a measuring portion at which the biological materials within the flow path are measured, and an outlet downstream of the measuring portion which the flowed liquid is exposed to outside of the flow path;

a heater for constantly applying heating energy to the liquid exposed outside of the outlet of the flow path so as to constantly evaporate the exposed liquid and to generate smooth flow along the flow path; and

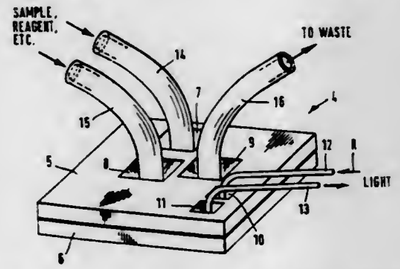
a detector for measuring the biological materials in the liquid at the measuring portion in the flow path.

5,599,503

DETECTOR CELL

Andreas Manz, and Elisabeth Verpoorte, both of Basel, Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Filed Nov. 22, 1991, Ser. No. 797,500
Claims priority, application Switzerland, Nov. 26, 1990, 3741/90
Int. Cl.[6] G01N *21/29;21/64*
U.S. Cl. 422—82.05 **18 Claims**



1. A detector cell for measuring the absorption of ultraviolet and/or visible radiation in substantially liquid samples, comprising:

a) base pan with a groove channel system including a channel piece which is defined by a base region surface and a top face surface, both of which surfaces reflect the measuring radiation, and

b) a lid part, including an inlet opening and outlet opening for the introduction and removal of a sample, and an entry opening and exit opening for ultraviolet and/or visible measuring radiation,

wherein said lid part and base part are cooperatively aligned to define an interaction region wherein the sample may be introduced from the inlet opening, pass through the groove channel system and exit the outlet opening, and also wherein the measuring radiation may be introduced from the entry opening, pass through the channel piece of said groove channel system and exit the exit opening.

5,599,504

APPARATUS FOR DETECTING DENATURATION OF NUCLEIC ACID

Shigeru Hosoi; Tadashi Fukami, and Akihiko Tsuji, all of Hamamatsu, Japan, assignors to Hamamatsu Photonics K.K., Hamamatsu, Japan

Filed Jul. 15, 1994, Ser. No. 275,910
Claims priority, application Japan, Jul. 15, 1993, 5-175730
Int. Cl.[6] G01N *21/64*
U.S. Cl. 422—82.08 **11 Claims**

1. An apparatus for detecting denaturation of a nucleic acid, comprising:

first nucleic acid amplifying means for separating a predetermined site of a first double-stranded nucleic acid to be examined into a first single-stranded nucleic acid and a second single-stranded nucleic acid and producing a plurality of a third single-stranded nucleic acid and a fourth single-stranded nucleic acid, said third single-stranded nucleic acid comprising a base or nucleotide provided with a first label molecule and having a base sequence complementary to that of the first single-stranded nucleic acid, said fourth single-stranded nucleic acid having a base sequence complementary to that of the second single-stranded nucleic acid;

second nucleic acid amplifying means for separating a predetermined site of a second double-stranded nucleic acid as a reference, which is the same or substantially the same as the first double-strand nucleic acid, into a fifth single-stranded nucleic acid which is the same or substantially the same as the first single-stranded nucleic acid, and a sixth single-stranded nucleic acid which is the same as or substantially the same as the second single-stranded nucleic acid, and produceing a plurality of a seventh single-stranded nucleic acid and an eighth single-stranded nucleic acid; said seventh single-stranded nucleic acid comprising a base or nucleotide provided with a second label molecule which is capable of causing energy transfer between itself and the first label molecule located within a predetermined distance, and having a base sequence complementary to that of the fifth single-stranded nucleic acid; said eighth single-stranded nucleic acid having a base sequence complementary to that of the sixth single-stranded nucleic acid;

nucleic acid mixing means for mixing the third single-stranded nucleic acid and the eighth single-stranded nucleic acid after the extraction thereof to produce a third double stranded or partially double-stranded nucleic acid;

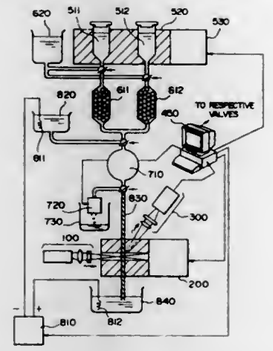
denaturation condition controlling means for controlling a condition for denaturation under which the third double-stranded nucleic acid is separated into the third single-stranded nucleic acid and the eighth single-stranded nucleic acid;

irradiation means for emitting excitation light having a predetermined wavelength to irradiate the third double-stranded nucleic acid before denaturation by the denaturation controlling means, and the third single-stranded nucleic acid and eighth single-stranded nucleic acid after denaturation by the denaturation controlling means;

fluorescence detection means for detecting fluorescence emission based on the excitation light irradiation which emission is capable of being changed depending on a change in the amount of energy transfer between the first label molecule and the second label molecule, whereby a denaturation point is determined on the basis of the change in the fluorescence emission in response to the change in the denaturation condition; and

processing means for receiving, storing and processing a signal supplied from the fluorescence detection means;

whereby the fluorescence emitted from the nucleic acid is observed while changing the denaturation condition by the denaturation condition controlling means to measure the denaturation condition of the third double-stranded nucleic acid.

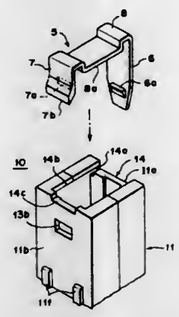


5,599,505

CHEMICAL ANALYSIS ELEMENT CARTRIDGE WITH CAPPING MEMBER

Yasushi Fujisaki, Saitama-ken; Yoshihiro Seto; Seiichi Watanabe, both of Kanagawa-ken, and Kaoru Terashima, Saitama-ken, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 13, 1995, Ser. No. 527,626
Claims priority, application Japan, Sep. 16, 1994, 6-221763
Int. Cl.[6] B01L *9/00*
U.S. Cl. 422—104 **6 Claims**



1. In a chemical analysis element cartridge comprising a box-shaped cartridge body in which a plurality of chemical analysis elements are stacked and from which the chemical analysis elements are taken out one by one through a take-out port formed in one end of the cartridge body, the take-out port having a first opening portion which is opened through a first side wall of the cartridge body and through which one chemical analysis element can be passed and a second opening portion which opened through one end face of the cartridge body, wherein the improvement comprises that

a first engagement portion is formed on an outer surface of the first side wall adjacent the first opening portion and a second engagement portion is formed on the outer surface of a second side wall opposed to the first side wall;

a capping member having third and fourth engagement portions is removably mounted on the cartridge body to cover the first and second opening portions of the take-out port with the third and fourth engagement portions respectively engaged with the first and second engagement portions; and

the capping member is provided with a protruding portion which projects into the cartridge body and pushes inside the chemical analysis element nearest to said one end face away from a take-out position where the protruding portion is aligned with the first opening portion.

5,599,506

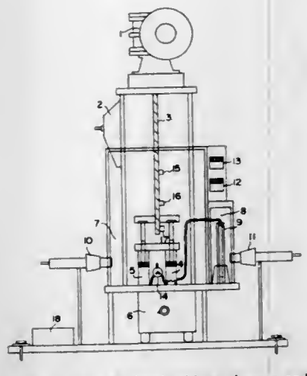
IMMOBILIZED BUFFERED GELS AND MEMBRANES OF HYDROXY GROUPS CONTAINING POLYMERS

Charles Linder, Rehovot; Mara Nemas, Neve Monoson; Mordechai Perry, Petach Tikva, and Reuven Ketrarn, Risbon Letzion, all of Israel, assignors to Aligena AG, Basle, Switzerland

Division of Ser. No. 67,617, May 27, 1993, Pat. No. 5,430,099.
This application Apr. 5, 1995, Ser. No. 417,113
Claims priority, application United Kingdom, May 28, 1992, 9211324
Int. Cl.[6] C08F *8/00*
U.S. Cl. 422—131 **1 Claim**

1. A gradient mixer for the preparation of immobilized pH-gradient gels which comprises

(A) a first temperature-controlled circulating air oven (7) comprising



(a) a glass syringe (4) fitted with a plunger and an output flexible tube, and being adapted to receive a basic or an acidic gel;
(b) a glass syringe (5) fitted with a plunger and adapted to receive a basic or an acidic gel, provided that if syringe (4) contains a basic gel, then syringe (5) contains an acidic gel, and vice versa;
(c) a magnetic mixer (6) adapted to mix said basic and acidic gels;
(d) a load screw (3) driven by a motor (1) at a speed determined by a motor speed controller (2) having an upper limit switch (15) and a stop point (low limit) switch (17), load screw (3) being adapted to depress the respective plungers of the syringes (4) and (5) and eject said basic and acidic gels from the respective syringes (4) and (5);
(e) a rotatable three way valve (14) connecting syringes (4) and (5);
(f) an air jet gun (10) adapted to heat said oven (7); and
(g) a temperature controller and indicator (12) adapted to control the temperature of said oven (7);
(B) a second temperature-controlled circulating air oven (8) comprising
(a) a cassette (9) adapted to receive molten gel directly from syringe (4) via said output flexible tube, and to receive a mixed solution of said basic and acidic gels via said syringe (5), said valve (14), syringe (4) and said output flexible tube, the volume of said mixed solution being controlled by said upper limit switch (15) and said stop point (low limit) switch (17);
(b) an air jet gun (11) adapted to heat said oven (8); and
(c) a temperature controller and indicator (13) adapted to control the temperature of said oven (8); and
(C) an electric switching board (18) adapted to monitor said gradient mixer.

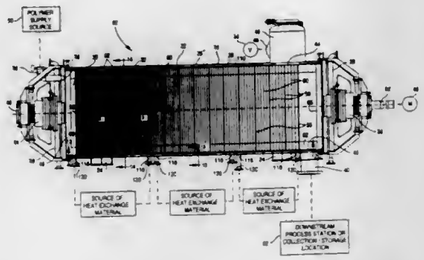
5,599,507

REACTOR APPARATUS FOR PREPARING A POLYMERIC MATERIAL

Gordon Shaw, 6947 Candlewyck La., Charlotte, N.C. 28226; Rainer A. Schaller, Elias-Holl-Str. 7, 86637 Wertingen, Germany; W. Jeffrey Stikeleather, 6826 Windyrush Rd., Charlotte, N.C. 28226; Michael D. Melton, 2515 Grey Rd., Davidson, N.C. 28036; Harmut Hey, Beethovenring 23, D 55283 Nierstein, Germany; Roland Schmidt, Trajanstr. 8, 55737 Mainz, Germany; Rolf Hartmann, Lenthahner Weg 2, 65817 Eppstein, Germany, and Hans Lohe, Kieternweg 18, 61476 Kraberg, Germany

Filed Nov. 9, 1994, Ser. No. 336,446
Int. Cl.[6] B01F *7/10*
U.S. Cl. 422—135 **39 Claims**

1. A reactor apparatus for preparing a polymeric material, comprising:



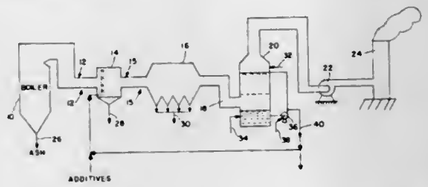
a reactor vessel defining a horizontally-extending interior polymer processing chamber, a polymer inlet opening into the processing chamber and a polymer outlet opening from the processing chamber at a spacing from one another axially along the processing chamber, and a vapor exhaust outlet opening from the processing chamber, and
a polymer agitator rotatably disposed within the chamber, the agitator comprising an annular overflow baffle defining a central polymer overflow opening and an underflow baffle having an outer periphery defining at least one polymer underflow opening between its outer periphery and the vessel, the overflow and underflow baffles being affixed together for unitary rotation in generally parallel axially-spaced relation to one another within the processing chamber to define a portion of a flow path for the polymeric material between the polymer inlet and the polymer outlet extending through the polymer overflow and underflow openings of the overflow and underflow baffles.

5,599,508

FLUE GAS CONDITIONING FOR THE REMOVAL OF ACID GASES, AIR TOXICS AND TRACE METALS

Robert Martinelli, Doylestown; Dennis W. Johnson, Barberton; Robert B. Myers, Copley; Fred C. Owens, II, and Peter V. Smith, both of North Canton, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Continuation of Ser. No. 69,639, Jun. 1, 1993, abandoned. This application Nov. 22, 1994, Ser. No. 343,285
Int. Cl.[6] B01D *50/00*
U.S. Cl. 422—169 **7 Claims**



1. An apparatus for removing acid gases, air toxics, and trace metals from a flue gas, comprising:
a combustion source;
a duct connected to said combustion source for supplying a flue gas stream;
a humidification chamber positioned in the duct immediately downstream of said combustion source with at least one atomizer positioned therein for spraying water into the flue gas stream to precondition the flue gas to a temperature of about 150° F. to about 280° F. to condense air toxics on surfaces of particulates contained within the flue gas stream and to decrease a volume of the flue gas, said humidification chamber having a bottom with means for removing some toxic material collected from the flue gas;

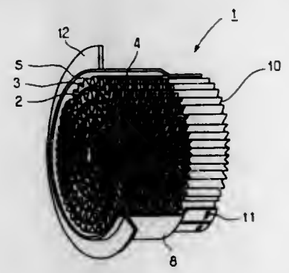
a fabric filter house for removing particulates and condensed air toxics from the flue gas stream, said fabric filter house being located downstream from the humidification chamber and connected thereto for receiving the conditioned flue gas stream therefrom; and
a wet scrubber situated downstream from said fabric filter house and connected thereto for removing acid gases with a scrubbing medium from the flue gas stream to provide a clean flue gas stream for discharge.

5,599,509

HONEYCOMB BODY AND CATALYST CONVERTER HAVING CATALYST CARRIER CONFIGURED OF THIS HONEYCOMB

Tetsuya Toyao, Toyoake; Toshiki Matsumoto, Kariya; Hiromasa Aoki, Nagoya; Tatsuya Fujita, and Senta Tojo, both of Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Continuation-in-part of Ser. No. 213,806, Mar. 16, 1994. This application Apr. 4, 1995, Ser. No. 416,578
Claims priority, application Japan, Mar. 17, 1993, 5-56908; Dec. 27, 1993, 5-350447; Oct. 4, 1994, 6-240231
The portion of the term of this patent subsequent to Mar. 16, 2014, has been disclaimed.
Int. Cl.[6] B01D *53/34;* **B01J** *35/04;* **F01N** *3/10*
U.S. Cl. 422—180 **28 Claims**



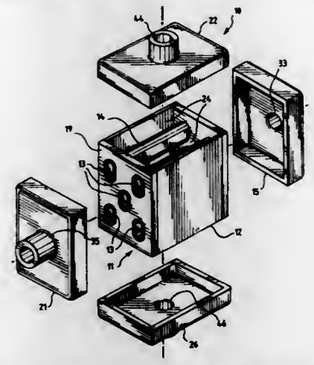
1. A honeycomb body arranged in the exhaust gas passage of an engine, comprising:
at least one flat metal sheet;
at least one corrugated metal sheet superimposed with said flat metal sheet one over the other and defining a metal catalyst carrier having a plurality of axial gas passages to allow exhaust gas to flow axially from an upstream side to a downstream side of said gas passages, said flat metal sheet and said corrugated metal sheet each having an upstream portion and a downstream portion;
wherein said upstream portion is a low heat capacity area which is smaller in heat capacity than said downstream portion;
wherein said carrier is configured by alternately winding or laminating said at least one flat metal sheet and said at least one corrugated metal sheet, said low heat capacity area is configured of a slit matrix created by a plurality of rows of slits which are through-holes, and said rows of slits extend in a direction generally perpendicular to said gas passages.

5,599,510

CATALYTIC WALL REACTORS AND USE OF CATALYTIC WALL REACTORS FOR METHANE COUPLING AND HYDROCARBON CRACKING REACTIONS

Mark P. Kaminsky, Winfield; George A. Huff, Jr., Naperville; Narasimhan Calamur, Willowbrook, and Michael J. Spangler, Sandwich, all of Ill., assignors to Amoco Corporation, Chicago, Ill.

Continuation of Ser. No. 107,912, Aug. 17, 1993, which is a continuation-in-part of Ser. No. 815,244, Dec. 31, 1991, Pat. No. 5,254,781. This application May 23, 1995, Ser. No. 447,434
Int. Cl.[6] C07C *2/00*
U.S. Cl. 422—197 **13 Claims**



1. A process to make olefins which comprises the steps of:
(A) providing a cross-flow chemical reactor fox combined coupling of methane using an oxygen-affording gas and dehydrogenating of saturated hydrocarbon compounds in separated reaction spaces, which reactor comprises;
a vessel having an entrance port, an exit port, and a passageway therebetween containing a stream of one or more gases flowing from the entrance port to the exit port operable to define a direction of stream flow, and
passageway therebetween containing a stream of one or more gases flowing from the entrance port to the exit port operable to define a direction of stream flow, and
at least one reactor core positioned within the vessel comprising an array of tubes having an outer surface including a generally flat entrance surface and a generally flat exit surface spaced apart from and substantially parallel to the entrance surface, and a plurality of tube channels therebetween containing one or more gases flowing from the entrance surface to the exit surface operable to define a direction of channel flow, wherein each channel has a catalytic heat-transfer wall disposed between the channel and a portion of the outer surface of the tubes contacting the gas stream in the passageway, the catalytic heat-transfer wall comprising a ceramic antifoulant coating, a gas-impervious material comprising a high temperature metal or metallic alloy, and, on the portion of the outer surface of the tubes contacting the gas stream in the passageway, a suitable catalyst means for oxidative coupling of methane into higher hydrocarbons, the reactor core further comprising an entrance manifold means in flow communication with channels at the entrance surface of at least one array and an exit manifold means in flow communication with the same channels at one or more exit surface and thereby in flow communication with entrance manifold means, and
wherein the entrance port, the passageways, the outer surfaces of the tubes, and the exit port form a first zone for introducing and reacting at least one compound therein, and expelling a first gas or gas mixture and wherein the entrance manifold means, the tube channels and the exit manifold means form a second zone within the dual-flow

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chemical reactor for introducing, reacting at least one compound therein, and expelling a first gas or gas mixture and wherein the entrance manifold means, the tube channels and the exit manifold means form a second zone within the dual-flow chemical reactor for introducing, reacting at least one compound therein, and expelling a second gas or gas mixture;

(B) introducing a first feed stream which is essentially methane and an oxygen-affording gas into the first zone, coupling the first feed to produce a product containing C_2 hydrocarbons and effectively transferring heat evolved by coupling through the catalytic heat-transfer wall into the second zone, and expelling a residue of the first feed stream,

(C) introducing a second feed stream which contains predominantly saturated hydrocarbons into the second zone, cracking at least one of the saturated hydrocarbons using heat evolved by coupling from the first zone to provide a majority of the heat required by the cracking to form primarily an olefin-containing product, and expelling a product-containing gas mixture,

(D) combining the C_2+ containing portions of the effluents from the first zone and the second zone and individually separating the methane and at least the ethylene and propylene olefinic hydrocarbon components thereof, and

(E) returning unreacted methane contained in the effluent of the first zone together with methane contained in the effluent of the second zone to the first feed stream.

5,599,511

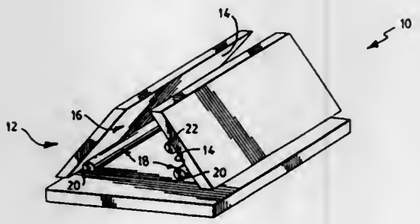
APPARATUS FOR PRODUCING NANOSCALE CERAMIC POWDERS

Joseph J. Helble, Andover, Mass.; Gary A. Moniz, Windham, N.H., and Theodore F. Morse, Little Compton, R.I., assignors to Physical Sciences, Inc., Andover, Mass.

Division of Ser. No. 61,069, May 10, 1993, Pat. No. 5,447,708, which is a continuation-in-part of Ser. No. 7,149, Jan. 21, 1993, Pat. No. 5,358,695. This application May 24, 1995, Ser. No. 449,665

Int. Cl.[6] B01J *8/08;* **B22F** *1/00;* **B29B** *9/00*

U.S. Cl. 422—232 **18 Claims**



1. An apparatus for producing submicron-sized ceramic particles comprising:

a confinement structure having a plurality of surfaces inclined relative to a flame for confining the flame between said surfaces to define a flame zone;

a burner system including at least one burner for providing flame to the flame zone, each burner located in the flame zone in proximity to at least one inclined surface; and

a delivery system disposed adjacent the flame zone for delivering an aerosol, comprising a carrier material and a ceramic precursor, to the flame zone to induce combustion of the carrier material, and either vaporization and nucleation, or diffusion and oxidation, of the ceramic precursor thereby forming submicron-sized ceramic particles.

5,599,512

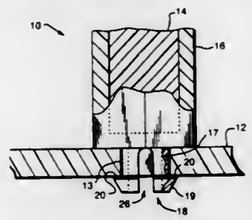
STERILIZATION SUPPORT AND STORAGE CONTAINER SYSTEM

Michael L. Latulippe, Derry, N.H., and Albert A. Lepage, Jr., Norton, Mass., assignors to Poly Vac, Incorporated, Manchester, N.H.

Continuation of Ser. No. 438,604, May 10, 1995, abandoned. This application Apr. 19, 1996, Ser. No. 635,287

Int. Cl.[6] A61L *2/26;* **F16B** *21/04;19/00;13/00*

U.S. Cl. 422—300 **9 Claims**



1. In a combination including a sterilization tray assembly for sterilizing surgical instruments, said assembly including a structure having a plurality of holes and a resiliently deformable member for clasping surgical instruments; the improvement comprising a relatively rigid plastic support element connected to said deformable member and being for predeterminedly positioning said resiliently deformable member with respect to different holes in said structure, and said relatively rigid support element has integrally formed fastening means including fingers having respective tapered heads and downwardly extending from a bottom surface of said support element and positioned to penetrate predetermined holes of said structure to lock said support element in position, said combination also including a removal tool for releasing said fingers from predetermined holes into which said fingers have penetrated, said tool including an opening adapted and operatively positioned to engage the tapered head on each said finger when said fingers penetrate said predetermined holes whereby to deform said fingers to release said fingers from said predetermined holes, said opening being slightly smaller than said hole.

5,599,513

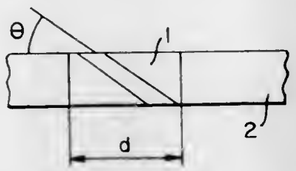
GAS DISTRIBUTION PLATE FOR USE WITH FLUIDIZED-BED GAS-PHASE POLYMERIZER

Toru Masaki; Setuo Kawano; Yuzo Saitoh, and Hirozo Ijiri, all of Oita, Japan, assignors to Showa Denko K.K., Tokyo, Japan

Filed May 7, 1991, Ser. No. 696,800

Int. Cl.[6] B01J *10/00*

U.S. Cl. 422—311 **18 Claims**



1. A gas distribution plate for use with a fluidized-bed gas-phase polymerizer reactor comprising: a flat plate and a plurality of cylindrical or frustoconical pieces each having an oblique hole or a spiral groove cut in a surface of each piece and each piece fitting into a respective hole in said flat plate, said oblique hole or said spiral groove being disposed asymmetrically with respect to the central axis of said piece.

5,599,514

PROCESS FOR RECOVERING COBALT AND TUNGSTEN FROM REACTION LIQUORS

Andrea Gardano, Trino; Sauro Strologo, and Marco Foa', both of Novara, all of Italy, assignors to Novaol S.R.L., Ravenna, Italy

Filed Feb. 6, 1995, Ser. No. 384,427

Claims priority, application Italy, Feb. 7, 1994, MI94A0211

Int. Cl.[6] C01G *41/00;51/00*

U.S. Cl. 423—55 **24 Claims**

1. A process for recovering cobalt and tungsten from reaction liquors containing same, the process comprising the steps of:

(a) (i) adding an alkali-earth metal hydroxide to the reaction liquors to precipitate the cobalt and tungsten as a, cobalt salt and a tungsten salt, (ii) separating the precipitate, (iii) adding a strong mineral acid to the precipitate to dissolve the cobalt salt and the tungsten salt and (iv) precipitating tungstic acid from the solution formed in step (a) (iii) or

(b) (i) adding an alkali metal hydroxide to the reaction liquor to produce an alkali metal solution and a precipitate selected from the group consisting of cobalt oxide, cobalt hydroxide, and mixtures thereof, (ii) separating the precipitate from the alkali metal solution, (iii) adding an alkali-earth metal compound to the alkali metal solution to precipitate an alkali-earth metal tungstate; (iv) separating the alkali-earth metal tungstate from the alkali metal solution, and (v) adding a strong mineral acid to the alkali earth metal tungstate to obtain tungstic acid.

5,599,515

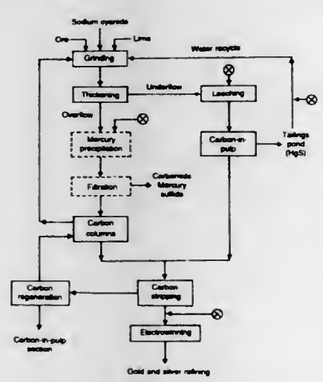
METHOD OF REMOVING MERCURY FROM SOLUTION

Manoranjan Misra, Reno, and Jerry A. Lorengo, Elko, both of Nev., assignors to Board of Regents of the University and Community College System of Nevada, Reno, Nev.

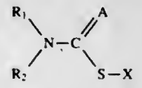
Filed Apr. 19, 1995, Ser. No. 424,997

Int. Cl.[6] C22B *43/00*

U.S. Cl. 423—101 **16 Claims**



1. A method of selectively removing mercury from a solution also containing gold comprising contacting said solution with a precipitating agent having the formula:



where R_1 and R_2 are independently, C_1–C_4 straight or branched alkyl or alkenyl, A is S or O, and X is K or Na, to form a mercury-carbamate precipitate.

5,599,516

RECOVERY OF LITHIUM VALUES FROM BRINES

William C. Bauman, Midland, Micb., and John L. Burba, III, Newtown, Pa., assignors to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 65,586, May 24, 1993, Pat. No. 5,389,349. This application Feb. 13, 1995, Ser. No. 387,178

Int. Cl.[6] C01D *15/00;* **B01J** *20/00;* **C09K** *3/00*

U.S. Cl. 423—179.5 **20 Claims**

1. A composition comprising pellets, each of said pellets consisting essentially of an integral mass of polycrystalline material of randomly disposed crystals of hydrated alumina infused with an amount of LiX to produce $LiX/Al(OH)_3$ having up to a mol fraction of 0.33 of LiX in the so-produced $LiX/Al(OH)_3$, wherein LiX is at least one compound selected from the group consisting of Li hydroxide, Li halide, Li nitrate, Li sulfate, and Li bicarbonate, said pellets being of a particle mesh size not smaller than about 140 United States Standard Sieve Size.

5,599,517

CATALYST FOR STEAM REFORMING OF HYDROCARBONS

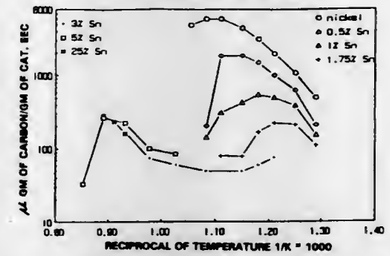
Israr Ul-Haque, Baulkham Hills, and David L. Trimm, Watsons Bay, both of Australia, assignors to Haldor Topsøe A/S, Denmark

Division of Ser. No. 887,610, May 22, 1992, which is a division of Ser. No. 743,120, Aug. 9, 1991, abandoned. This application Dec. 13, 1995, Ser. No. 571,780

Claims priority, application Denmark, Aug. 9, 1990, 1898/90

Int. Cl.[6] C01B *3/26;31/18*

U.S. Cl. 423—418.2 **4 Claims**



1. A process for the production of hydrogen and/or carbon monoxide rich gas with reduced formation by steam reforming of a hydrocarbon feedstock, the process comprising the step of contacting at 450°–800° C. the hydrocarbon feedstock and steam with a catalyst comprising nickel as a main catalytic component, a refractory carrier material for the nickel, and at least one catalytic element for the steam reforming of the hydrocarbon feedstock, said catalytic element being selected from the group consisting of germanium, tin and lead in proportions, calculated on the amount of metallic nickel in the catalyst, of 1–5%, 0.5–3.5% and 0.5to 1%, respectively.

5,599,518

CATALYTIC PROCESS FOR CHLORINE DIOXIDE GENERATION FROM CHLORIC ACID

Jerry J. Kaczur; David W. Cawlfield; Sudhir K. Mendiratta, and Kenneth E. Woodard, Jr., all of Cleveland, Tenn., assignors to Olin Corporation, Cheshire, Conn.

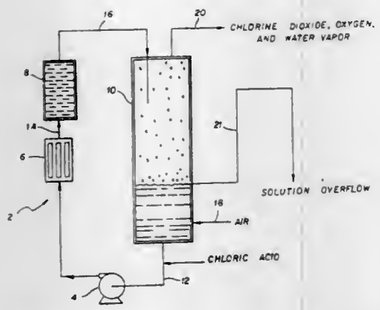
Filed Dec. 1, 1994, Ser. No. 348,012

Int. Cl.[6] C01B *11/02*

U.S. Cl. 423—477 **15 Claims**

1. A process for producing chlorine dioxide comprising:

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(a) introducing an aqueous chloric acid solution into a reaction zone containing an oxygen-evolving catalyst;

(b) chemically reducing chloric acid with water in said reaction zone in the presence of said oxygen-evolving catalyst and in the absence of another acid or an added reducing agent, thereby producing a reaction product comprising a gas phase product and a liquid phase product, wherein said gas phase product comprises chlorine dioxide, oxygen, water vapor, and said liquid phase product comprises a spent aqueous chloric acid solution;

(c) transferring said reaction product to a disengagement zone;

(d) separating said phase product from said liquid phase product; wherein said reaction zone is physically separate, but hydraulically connected to said disengagement zone and said reaction zone immediately drains empty when said aqueous chloric acid solution is no longer introduced, thereby immediately stopping the chemical reduction of said aqueous chloric acid solution.

5,599,519

OXIDATION OF TITANIUM TETRACHLORIDE TO FORM TITANIUM DIOXIDE

Andrew J. Haddow, Cleveland, England, assignor to Tioxide Group Services Limited, London, England

Continuation of Ser. No. 102,791, Aug. 6, 1993, abandoned. This application Mar. 27, 1995, Ser. No. 412,228

Claims priority, application United Kingdom, Aug. 10, 1992, 9216933

Int. Cl.[6] C01G *23/047*

U.S. Cl. 423—613 **20 Claims**

1. A process for the production of titanium dioxide comprising reacting titanium tetrachloride with oxygen in an oxidation reactor operated at a pressure of at least 0.2 MPa above atmospheric pressure and at a reaction temperature of at least 700° C., the titanium tetrachloride being introduced into the oxidation reactor at a first inlet point and at least one further inlet point, the titanium tetrachloride introduced at the first inlet point being in admixture with aluminum chloride and being heated to a temperature of between 450° C. and 650° C., the aluminum chloride being formed by reaction of aluminum and chlorine and the heat generated by this reaction being used to heat the titanium tetrachloride introduced at the first inlet point and wherein all of the aluminum chloride is introduced into the oxidation reactor at the first inlet point.

5,599,520

SYNTHESIS OF CRYSTALLINE POROUS SOLIDS IN AMMONIA

Juan M. Garcés, 1106 W. Sugnet, Midland, Mich. 48640; Dean M. Millar, 1101 Adams Dr., Midland, Mich. 48642, and Kevin E. Howard, 1015 Whispering Oak Dr., Midland, Mich. 48642

Filed Nov. 3, 1994, Ser. No. 333,670

Int. Cl.[6] C01B *39/02;33/21*

U.S. Cl. 423—700 **20 Claims**

1. A process of preparing a crystalline porous solid selected from the group consisting of silicas and metallosilicates, the process comprising preparing a mixture containing:

(a) ammonia,

(b) water in an amount such that the molar ratio of ammonia to water is greater than about 4 and less than about 26,

(c) one or more nutrients comprising a (hydrocarbyl)ammonium polysilicate hydrate salt, and optionally, a source of a metal oxide which is reactive in the reaction mixture, and optionally, a source of an additional cation which is reactive in the reaction mixture, the relative amounts of the nutrients being sufficient to form the crystalline porous solid, and

(d) a mineralizer in an amount sufficient to mineralize the nutrient(s);

and maintaining the resulting mixture at a temperature and for a time sufficient to produce the crystalline porous silica or metallosilicate.

5,599,521

Patent Not Issued For This Number

5,599,522

TRIARYLMETHYL RADICALS AND THE USE OF INERT CARBON FREE RADICALS IN MRI

Mikkel Jørgensen, Glostrup, Denmark; Frode Rise, Oslo, Norway; Sven Andersson, Lomma; Torsten Almen, Malmö, both of Sweden, and Klaes Golman, Rungsted KYST, Denmark, assignors to Nycomed Imaging AS, Oslo, Norway

PCT No. PCT/EP91/00285, § 371 Date Sep. 2, 1992, § 102(e) Date Sep. 2, 1992, PCT Pub. No. WO91/12024, PCT Pub. Date Aug. 22, 1991

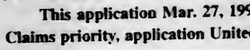
PCT Filed Feb. 12, 1991, Ser. No. 916,974

Claims priority, application United Kingdom, Feb. 12, 1899, 9003105; Jun. 1, 1990, 9012300

Int. Cl.[6] A61K *49/04;* **C07D** *317/70:339/06*

U.S. Cl. 424—9.33 **11 Claims**

1. A radical compound of formula Ia



(Ia)

wherein:

each Ar^{12}, which may be the same or different, represents a 6-membered carbocyclic, at least one group Ar^{12} being a group Ar^1;

each group Ar^1 represents a 6-membered ring optionally substituted at the or any ortho carbon by a group R^1, R^2, R^3 or R^4, at the or any meta carbon by a group R^2 or R^3, and at any para carbon by a group R^1, R^2, R^3 or R^4,

with the proviso that no more than two ring carbons are unsubstituted;

each of R^1, R^2, R^3 or R^4, which may be the same or different, independently represents a group of formula —M, —XM, —XAr^2 or —Ar^2;

M represents a water solubilizing group, each group X, which may be the same or different, represents an oxygen or sulphur atom or a NH or CH_2 group;

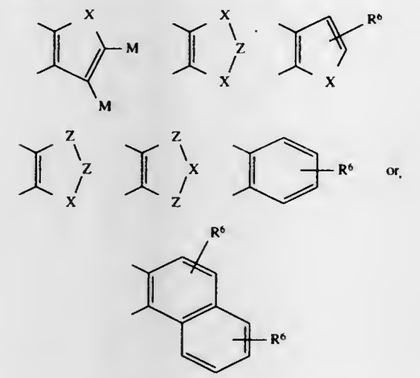
Ar^2 represents a 5 to 10 membered aromatic ring optionally substituted by a solubilizing group M; or

groups R^1 and/or R^4 on different Ar^1 groups may together represent bridging oxygen or sulphur atoms or NR^5 or CR^5_2 groups, where

R^5 represents a hydrogen atom or an optionally hydroxylated, optionally aminated, optionally alkoxylated, optionally carboxylated alkyl, oxo-alkyl, alkenyl or alkaryl group;

or, groups R^2 and R^3 may also represent hydrogen atoms or alkyl groups;

or, adjacent pairs of groups R^1, R^2, R^3 or R^4, together with the two intervening carbon atoms, may represent groups of formula



where

R^6 represents a hydrogen atom, a hydroxyl group, an optionally alkoxylated, optionally hydroxylated acyloxy or alkyl group or a solubilizing group M;

Z represents an oxygen or sulphur atom or a group NR^5, CR^7_2 or SiR^7_2;

each R^7, which may be the same or different, represents a hydrogen atom, an alkyl, hydroxyalkyl, carboxy, alkoxycarbonyl or carbamoyl group; or

two R^7 groups together with the atom to which they are bound represent a carbonyl group or a 5 to 8 membered cycloalkylidene, mono- or di-oxacycloalkylidene, mono- or di-azacycloalkylidene, or mono- or di-thiacycloalkylidene group optionally with the ring attachment carbon replaced by a silicon atom; or

R^7 where it is other than hydrogen, is optionally substituted by a group R^6;

or a salt thereof.

5,599,523

ECHO CONTRAST AGENT

Klaus-Dieter Beller, and Rudolf Linder, both of Konstanz, Germany, assignors to BYK Gulden Lomberg Chemische Fabrik GmbH, Konstanz, Germany

Continuation of Ser. No. 78,189, Jun. 21, 1993. This application Nov. 22, 1994, Ser. No. 347,206

Claims priority, application Germany, Jan. 9, 1991, 41 00 470.1

Int. Cl.[6] A61K *49/00*

U.S. Cl. 424—9.52 **24 Claims**

1. An aqueous preparation useful for receiving and stabilising micro gas bubbles for use as echo contrast media and containing polyoxyethylene/polyoxypropylene polymer and anionic phospholipid.

5,599,524

LOW VOC HAIR SPRAYS WITH IMPROVED SPRAY CHARACTERISTICS

Natalie A. Morawsky, Belle Mead, and Gary T. Martino, Plainsboro, both of N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Continuation-in-part of Ser. No. 95,150, Jul. 21, 1993, abandoned. This application Jun. 28, 1994, Ser. No. 267,268

Int. Cl.[6] A61K *7/11;9/12*

U.S. Cl. 424—47 **3 Claims**

1. A hair spray composition consisting essentially of a total of 100% by weight:

2 to 20% of a hair fixative polymer selected from the group consisting of a vinyl acetate/crotonates/vinyl neodecanoate copolymer, an octylacrylamide/acrylates/butylaminoethyl methacrylate copolymer, a vinyl acetate/crotonates copolymer, a polyvinylpyrrolidone homopolymer, a polyvinylpyrrolidone/vinyl acetate copolymer, a polyvinylpyrrolidone/acrylates copolymer, a vinyl acetate/crotonic acid/vinyl propionate copolymer, an acrylates/acrylamide copolymer, an acrylates/octylacrylamide copolymer, alkyl esters of polyvinylmethylether/maleic anhydride copolymers, a diglycol/cyclohexane-dimethanol/isophthalates/sulfoisophthalates copolymer, a vinyl acetate/butyl maleate/isobornyl acrylate copolymer, a vinylcaprolactam/polyvinylpyrrolidone/dimethylaminoethyl methacrylate copolymer, a vinyl acetate/alkylmaleate half ester/N-substituted acrylamide copolymer, a vinylcaprolactam/vinylpyrrolidone/methacryloamidopropyl trimethylammonium chloride copolymer, and a methacrylates/acrylates copolymer/amine salt,

0.6 to 5% of a hydrophobic additive that is hexamethyl disiloxane,

80% or less of a volatile organic compound selected from the group consisting of methanol, ethanol, propanol, isopropanol, butanol, acetone, dimethoxymethane, and dimethyl ether,

3 to 60% of a propellant selected from the group consisting of a hydrofluorocarbon, propane, butane, isobutane and a compressed gas selected from the group consisting of compressed nitrogen, air and carbon dioxide

0 to 10% of an ingredient selected from the group consisting of plasticizers, emollients, lubricants, penetrants, fragrances, perfumes, UV absorbers, dyes, colorants, thickeners, anticorrosion agents, detackifying agents, combing aids, antistatic agents and preservatives; and

at least 20% of water,

wherein the hair spray composition has improved spray characteristics compared to hair spray compositions which comprise at least 20% by weight water and which do not contain from 0.6 to 5% said hydrophobic additive.

5,599,525

STABILIZED DENTIFRICE COMPOSITIONS CONTAINING REACTIVE INGREDIENTS

Donald P. Hsu, Monmouth Junction; Rajnish Kohli, Belle Meade; Richard J. Crawford, Asbury; Nagaraj S. Dixit, Plainsboro; Michael A. Collins, Hazlet, and David B. Viscio, Monmouth Junction, all of N.J., assignors to Colgate Palmolive Company, New York, N.Y.

Filed Nov. 14, 1994, Ser. No. 339,370

Int. Cl.[6] A61K *7/16;7/18*

U.S. Cl. 424—49 **12 Claims**

1. An extrudable composite multilayer striped dentifrice composition for cleaning teeth containing a calcium peroxide ingredient which does not react with other ingredients of the striped composition during storage or when extruded from a container onto a toothbrush, the composition comprising two aqueous dentifrice components, one component containing a calcium peroxide ingredient and free of any colorants reactive with calcium dentifrice components, one component containing a sodium bicarbonate and a colorant reactive with the peroxide ingredient, the components

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having substantially equivalent viscosity which are maintained in stable discrete layered phases in interfacial contact with each other prior to extrusion without interaction of the peroxide and the colorant ingredients and which are extrudable together in interfacial contact without interaction of the ingredients.

5,599,526

VISUALLY CLEAR GEL DENTIFRICE

David B. Viscio, 37 Norton Rd., Monmouth Junction, N.J. 08852; Michael Collins, 6 Galway Dr., Hazlet, N.J. 07730, and Benjamin Y. Mandanas, 34 Polo Club Dr., Freehold, N.J. 07728

Filed Jun. 1, 1995, Ser. No. 456,351
Int. Cl.[6] A61K *7/16;7/18*
U.S. Cl. 424—49 **9 Claims**

1. A visually clear gel dentifrice comprising about 5– 50% by weight of dentally acceptable dentifrice polishing agent having a refractive index in the range of about 1.41 to about 1.47, about 0.1–10% by weight of a gelling agent to provide a gel consistency to said dentifrice, at least about 20% by weight of a liquid aqueous-humectant vehicle having a refractive index within about 0.02 refractive index units of said polishing agent, about 0.01–5% by weight of a substantially water-insoluble noncationic antibacterial agent, which is partially dissolved in about 0.1– 3% by weight of flavoring oil, and about 0.5–5% by weight of surfactant which facilitates dissolving of said antibacterial agent in said gel dentifrice, the improvement characterized in that said surfactant is

(a) a polyoxyethylene alcohol sulfate having the formula

$$R—(O\,CH_2CH_2)_n{}^-OSO3^-X^+,$$

wherein R is an alkyl group with a C10–18 hydrocarbon chain length, n is an integer of 1 to about 4 and X is alkali metal or

(b) a weight mixture of at least about 1:3 of said polyoxyethylene alcohol sulfate with alkali metal lauryl sulfate or

(c) a weight mixture of about 3:1 to about 1:3 of alkali metal lauryl sulfate with an N-acyl-N-alkyltaurate having the formula:

$$R'—\underset{\underset{O}{\|}}{C}—N(R^*)—CH_2CH_2SO_3^-X^+$$

wherein R' is an alkyl group with a C_{10-24} linear hydrocarbon chain length, R^* is a C_{1-4} n-alkyl group and X is alkali metal; wherein formations of crystals at cool temperature conditions below about 20° C. which substantially diminish clarity of said clear gel dentifrice is reduced while still permitting substantial retention of gel dentifrice clarity.

5,599,527

DENTIFRICE COMPOSITIONS HAVING IMPROVED ANTICALCULUS PROPERTIES

Donald P. Hsu, Monmouth Junction; Rajnish Kohli, Belle Meade, and Michael Prencipe, Princeton, all of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Nov. 14, 1994, Ser. No. 340,568
Int. Cl.[6] A61K *7/16;7/18;7/20;33/40*
U.S. Cl. 424—52 **21 Claims**

1. An aqueous fluoride gel or paste which is storage stable and is effective against calculus, the dentifrice comprising a vehicle containing about 5 to about 9% by weight water, having incorporated therein a water soluble fluoride compound providing about 10 to 2,000 ppm fluoride ion and a combination of about 0.5 to no more than about 3% by weight of a water soluble alkali metal polyphosphate and about 0.5 to no more than about 2.0% by weight of a water soluble alkali metal pyrophosphate which composition is stable and effective to reduce calculus formation on teeth in the oral cavity.

5,599,528

PREPARATION FOR EPIDERMIS

Takahisa Igaki, Chikushino, Japan, assignor to Sansho Seiyaku Co., Ltd., Onojo, Japan

Filed May 5, 1994, Ser. No. 238,627
Claims priority, application Japan, Sep. 30, 1993, 5-244830
Int. Cl.[6] A61K *9/107;7/42;7/48*
U.S. Cl. 424—59 **2 Claims**

1. A method of preventing the discoloration and decomposition of kojic acid in a topically administrable, oil-in-water or water-in-oil emulsion comprising a) 0.1–5% by weight of kojic acid, b) 5–50%, based on the weight of the oil in the emulsion, of at least one nonionic surfactant and c) water to 100% of the emulsion; which comprises adjusting the HLB value of the at least one surfactant to 12 or below.

5,599,529

DISPERSIONS

Alan G. Cowie, Stockton on Tees, England, assignor to Tioxide Group PLC, United Kingdom

Continuation of Ser. No. 566,318, Aug. 13, 1990, abandoned, which is a continuation of Ser. No. 197,280, May 23, 1988, abandoned. This application Sep. 20, 1995, Ser. No. 530,536
Claims priority, application United Kingdom, May 30, 1987, 8712752
Int. Cl.[6] A61K *7/42;* **C09C** *1/36*
U.S. Cl. 424—59 **28 Claims**

1. A oil dispersion comprising an oil, particles of titanium dioxide having an average size of from 0.01 to 0.15 micron and an organic dispersing agent for said particles, the amount of said particles being such that the dispersion has a solids content of greater than 40 percent by weight and said dispersion being substantially transparent to visible light and substantially absorbant to UV light so that the dispersion has a maximum extinction coefficient (E(max)) in the ultra violet range of wavelengths of at least 40 liters per gram per cm.

5,599,530

SURFACE TREATED PIGMENTS

Anjali A. Patil, Westfield; Joseph F. Calello, Union, and Robert W. Sandewicz, Spotswood, all of N.J., assignors to Revlon Consumer Products Corporation, New York, N.Y.

Filed Dec. 16, 1994, Ser. No. 357,946
Int. Cl.[6] A61K *7/043;7/027*
U.S. Cl. 424—63 **19 Claims**

1. A cosmetic composition comprising, by weight of the total composition:

a) 0.01–99% of an organic pigment particle composition consisting essentially of an organic pigment particle and an organometallic zirconium compound wherein said organometallic zirconium compound is chemically bonded to the surface of the organic pigment particle, and

b) 0.01–99% of a cosmetically acceptable carrier.

5,599,531

HAIR CARE, HYDRATING, COLORING, AND PERMING COMPOSITIONS AND METHODS

Robert R. Holcomb, Hackleburg, Ala., assignor to Novatech, Inc., Nashville, Tenn.

Continuation-in-part of Ser. No. 76,349, Jun. 11, 1993. This application Aug. 27, 1993, Ser. No. 113,795
Int. Cl.[6] A61K *9/14;33/00*
U.S. Cl. 424—70.1 **21 Claims**

1. A method of increasing the absorption of water into the hair comprising the step of applying to the hair an aqueous suspension of charged colloidal particles, wherein the aqueous suspension is generated by lowering the pH of an alkaline silica solution during

circulation of the solution through a magnetic field greater than the earth's magnetic field to form charged colloidal silica particles in the solution of from 10 to 100 Angstrom in size.

5,599,532

SPRAYABLE HAIR TREATMENT COMPOSITION

Joseph R. Faryniarz, Oxford; G. Jae Lee, Trumbull; Paul Vinski, Danbury, and Frank Jones, Gilford, all of Conn., assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.

Filed Aug. 12, 1994, Ser. No. 289,737
Int. Cl.[6] A61K *7/11*
U.S. Cl. 424—70.16 **8 Claims**

1. An aqueous hairspray composition comprising:

(i) a nonionic film-forming polymer constituted from at least one monomer having at least one unneutralized carboxylic acid group wherein said nonionic polymer is a copolymer of methacrylic acid/methyl methacrylate/ethyl acrylate;

(ii) an anionic film-forming polymer which is identical to the nonionic film-forming polymer except that all of carboxylic acid groups have been converted to a salt form; and

(iii) about 10 to about 45% dimethyl ether as a propellant;

the relative weight ratio of nonionic to anionic film-forming polymer ranging from about 10:1 to about 1:10.

5,599,533

STABLE WATER-IN-OIL EMULSION SYSTEM

George J. Stepniewski, Melville; Richard A. Konik, Sayville; John D. Dreher, Bay Shore; Gheorghe Cioca, Lake Grove, and Isaac D. Cohen, Brooklyn, all of N.Y., assignors to Estee Lauder, Inc., New York, N.Y.

Filed Dec. 15, 1994, Ser. No. 356,901
Int. Cl.[6] A61K *31/74*
U.S. Cl. 424—78.02 **40 Claims**

1. A stabilized water-in-oil emulsion, comprising

a. an organopolysiloxane elastomer present in an amount of about 0.1 to 12 wt.-%;

b. a vehicle in which the elastomer is dispersed, the vehicle present in an amount of about 1 to 90 wt.%;

c. at least one stabilizing agent which is an electrolyte, a polyol, an alcohol or a hydrocolloid and mixtures thereof present in an amount of about 0.01 to 20 wt.-%;

d. at least one surfactant present in an amount of about 0.01 to 20 wt.-%; and

e. an aqueous component.

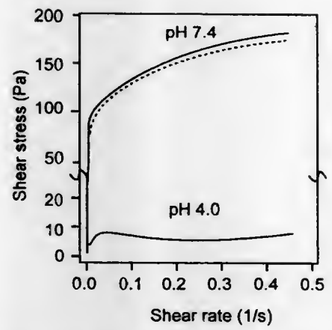
5,599,534

REVERSIBLE GEL-FORMING COMPOSITION FOR SUSTAINED DELIVERY OF BIO-AFFECTING SUBSTANCES, AND METHOD OF USE

Kenneth J. Himmelstein, Omaha, Nebr., and Cara L. Baustian, Pearl River, N.Y., assignors to University of Nebraska, Omaha, Nebr.

Filed Aug. 9, 1994, Ser. No. 287,694
Int. Cl.[6] A61K *31/74;31/19;47/38;* **A01N** *25/04*
U.S. Cl. 424—78.04 **22 Claims**

1. A reversibly gelling composition for sustained delivery of a therapeutic or diagnostic agent, said composition exhibiting a reversible increase in viscosity in response to variation in pH over a pre-determined range, said composition comprising an aqueous solution including about 0.01% to 10.0% (w/w) of at least one pharmaceutically acceptable pH-responsive gelling polymer and



about 0.01% to 20.0% (w/w) of at least one other pharmaceutically acceptable thermally nonresponsive polymer.

5,599,535

METHODS FOR THE CYTO-PROTECTION OF THE TRABECULAR MESHWORK

Jon R. Polansky, Mill Valley; Ernest Bloom, Alamo, and Donald J. Fauss, San Francisco, all of Calif., assignors to Regents of the University of California, Oakland, Calif.

Filed Jun. 7, 1995, Ser. No. 479,185
Int. Cl.[6] A61K *31/74;9/70;9/127;* **A61F** *2/02*
U.S. Cl. 424—78.04 **31 Claims**

1. A method for cyto-protection of the trabecular meshwork comprising administering to a human a composition including (a) an ophthalmologically effective amount of a non-steroidal cyciooxygenase inhibitor, and (b) a pharmaceutically acceptable carrier, to prevent the loss of trabecular cells.

5,599,536

METHOD FOR SUPPRESSING THE ACUTE PHASE RESPONSE IN A PATIENT RECEIVING IL-6 THERAPY

Laurie A. Myers, Morris Plains, N.J., assignor to Sandoz Ltd., Basel, Switzerland

Filed Dec. 13, 1993, Ser. No. 166,564
Int. Cl.[6] A61K *45/05*
U.S. Cl. 424—85.1 **17 Claims**

1. A method for treating the acute phase response in a patient receiving human IL-6 protein, which method comprises co-administering to the patient a platelet count increasing effective amount of human IL-6 protein and an acute phase response-suppressing effective amount of human G-CSF protein, the weight ratio of such G-CSF to such IL-6 being at least 1 to 1 expressed as non-glycosylated proteins, whereby the acute phase response is suppressed.

5,599,537

SALMONELLA VIRULENCE GENES

Samuel I. Miller, III, Brookline, and John J. Mekalanos, Cambridge, both of Mass., assignors to The General Hospital Corporation, Boston, and President and Fellows of Harvard College, Cambridge, both of Mass.

Continuation-in-part of Ser. No. 629,602, Dec. 18, 1990, abandoned. This application Jul. 9, 1993, Ser. No. 90,526
Int. Cl.[6] A61K *39/112;* **C12N** *1/20;1/21*
U.S. Cl. 424—93.2 **2 Claims**

1. A vaccine comprising a Salmonella cell, the virulence of which is attenuated by a phoP$^-$ mutation and a mutation in a prg locus.

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5,599,538

AUTOANTIBODIES WHICH ENHANCE THE RATE OF A CHEMICAL REACTION

Sudhir Paul; Lan Li, both of Omaha, Nebr., and Srini Kaveri, Villejuif, France, assignors to Igen, Inc., Gaithersburg, Md.

Continuation-in-part of Ser. No. 259,151, Jun. 13, 1994, which is a continuation of Ser. No. 775,956, Oct. 25, 1991, which is a continuation-in-part of Ser. No. 343,081, Apr. 25, 1989, Pat. No. 5,236,836. This application Jul. 12, 1994, Ser. No. 274,306

Int. Cl.[6] A61K *39/395;* **C12N** *9/00*

U.S. Cl. 424—130.1 **8 Claims**

1. A method for treating a disease condition in an animal caused by a substrate which comprises administering to said animal an autoantibody capable of enhancing the rate of cleavage of a peptide bond in said substrate in an amount effective to enhance the rate of said cleavage, said autoantibody having been prepared by a process comprising the steps of:

(a) identifying an animal with autoantibodies to a self-antigen of said animal;

(b) isolating said autoantibodies; and

(c) screening said autoantibodies to identify an autoantibody which enhances the rate of cleavage of said peptide bond.

5,599,539

THERAPY FOR CLOSTRIDIAL BOTULINUM TOXIN

Sean B. Carroll; Margaret B. van Boldrik, both of Cottage Grove, and Christopher M. Clemens, Madison, all of Wis., assignors to Ophidian Pharmaceuticals, Inc., Madison, Wis.

Continuation of Ser. No. 985,321, Dec. 4, 1992, which is a continuation-in-part of Ser. No. 842,709, Feb. 26, 1992, which is a continuation-in-part of Ser. No. 429,791, Oct. 31, 1989, Pat. No. 5,196,193. This application Jun. 7, 1994, Ser. No. 255,009

Int. Cl.[6] A61K *31/395;* **C07K** *16/02;16/12*

U.S. Cl. 424—167.1 **10 Claims**

1. A method of treatment of *Clostridium botulinum* neurotoxin disease comprising:

a) providing:

i) a therapeutically effective amount of an avian antitoxin composition in an aqueous solution suitable for oral administration wherein said avian antitoxin composition is directed against at least one *Clostridium botulinum* neurotoxin, and

ii) a subject intoxicated with at least one *Clostridium botulinum* neurotoxin against which said avian antitoxin composition is directed; and

b) orally administering said avian antitoxin composition to said subject.

5,599,540

Patent Not Issued For This Number

5,599,541

PEPTIDE SEQUENCE CAPABLE OF INDUCING A DELAYED-TYPE HYPERSENSITIVITY REACTION IN THE PRESENCE OF LIVING BACTERIA OF THE *MYCOBACTERIUM TUBERCULOSIS* COMPLEX AND ITS APPLICATIONS

Gilles Marchal, Ivry S/Seine, and Félix Romain, Fontenay Les Briis, both of France, assignors to Institut Pasteur, Paris Cedex, France

PCT No. PCT/FR93/00268, § 371 Date Oct. 17, 1994, § 102(e) Date Oct. 17, 1994, PCT Pub. No. WO93/19093, PCT Pub. Date Sep. 30, 1993

PCT Filed Mar. 17, 1993, Ser. No. 302,771

Claims priority, application France, Mar. 19, 1992, 92 03286

Int. Cl.[6] A61K *39/02;37/04;* **C07K** *1/00*

U.S. Cl. 424—190.1 **15 Claims**

1. A peptide or protein having an NH_2-terminal sequence of SEQ ID NO: 1 wherein the peptide or protein sequence is capable of initiating delayed hypersensitivity reactions of different intensity in the presence of living bacteria as opposed to dead bacteria of the *Mycobacterium tuberculosis* complex and is further characterized in that it contains no more than 0.5% by weight of amino acids tyrosine, phenylalanine, methionine, histidine, arginine and cysteine.

5,599,542

MOLECULES CONTAINING AT LEAST ONE PEPTIDE SEQUENCE CARRYING ONE OR SEVERAL EPITOPES CHARACTERISTIC OF A LIVER STAGE ANTIGEN PRODUCED BY *P. FALCIPARUM* IN HEPATOCYTES AND COMPOSITIONS CONTAINING THEM

Claudine Marchand, Paris; Pierre Druilhe, Saint Mande; Odile Puijalon-Mercereau, Issy Les Moulineaux, and Gordon Langsley, Paris, all of France, assignors to Institut Pasteur, Paris, France

PCT No. PCT/FR88/00074, § 371 Date Oct. 6, 1988, § 102(e) Date Oct. 6, 1988, PCT Pub. No. WO88/05785, PCT Pub. Date Aug. 11, 1988

PCT Filed Feb. 9, 1988, Ser. No. 275,139

Claims priority, application France, Feb. 9, 1987, 87 01543

Int. Cl.[6] A61K *39/015;* **C07K** *14/445*

U.S. Cl. 424—191.1 **8 Claims**

1. A purified polypeptide comprising an amino acid sequence selected from the group consisting of:

Leu—Ala—Lys—Glu—Lys—Leu—Gln—Glu—Gln—Gln—
Ser—Asp—Leu—Glu—Gln—Glu—Arg—Leu
Ala—Lys—Glu—Lys—Leu—Gln—Glu—Gln—Gln—Ser—Asp—
Leu—Glu—Gln—Glu—Arg—Leu
Lys—Glu—Lys—Leu—Gln—Glu—Gln—Gln—Ser—Asp—Leu—
Glu—Gln—Glu—Arg—Leu—Ala
Glu—Lys—Leu—Gln—Glu—Gln—Gln—Ser—Asp—Leu—Glu—
Gln—Glu—Arg—Leu—Ala—Lys
Lys—Leu—Gln—Glu—Gln—Gln—Ser—Asp—Leu—Glu—Gln—
Glu—Arg—Leu—Ala—Lys—Glu
Leu—Gln—Glu—Gln—Gln—Ser—Asp—Leu—Glu—Gln—Glu—
Arg—Leu—Ala—Lys—Glu—Lys
Gln—Glu—Gln—Gln—Ser—Asp—Leu—Glu—Gln—Glu—Arg—
Leu—Ala—Lys—Glu—Lys—Leu
Glu—Gln—Gln—Ser—Asp—Leu—Glu—Gln—Glu—Arg—Leu—
Ala—Lys—Glu—Lys—Leu—Gln
Gln—Gln—Ser—Asp—Leu—Glu—Gln—Glu—Arg—Leu—Ala—
Lys—Glu—Lys—Leu—Gln—Glu
Gln—Ser—Asp—Leu—Glu—Gln—Glu—Arg—Leu—Ala—Lys—
Glu—Lys—Leu—Gln—Glu—Gln
Ser—Asp—Leu—Glu—Gln—Glu—Arg—Leu—Ala—Lys—Glu—
Lys—Leu—Gln—Glu—Gln—Gln
Asp—Leu—Glu—Gln—Glu—Arg—Leu—Ala—Lys—Glu—Lys—
Leu—Gln—Glu—Gln—Gln—Ser
Leu—Glu—Gln—Glu—Arg—Leu—Ala—Lys—Glu—Lys—Leu—
Gln—Glu—Gln—Gln—Ser—Asp
Glu—Gln—Glu—Arg—Leu—Ala—Lys—Glu—Lys—Leu—Gln—
Glu—Gln—Gln—Ser—Asp—Leu

-continued

Gln—Glu—Arg—Leu—Ala—Lys—Glu—Lys—Leu—Gln—Glu—
Gln—Gln—Ser—Asp—Leu—Glu
Glu—Arg—Leu—Ala—Lys—Glu—Lys—Leu—Gln—Glu—Gln—
Gln—Ser—Asp—Leu—Glu—Gln
Arg—Leu—Ala—Lys—Glu—Lys—Leu—Gln—Glu—Gln—Gln—
Ser—Asp—Leu—Glu—Gln—Leu
Leu—Ala—Lys—Glu—Lys—Leu—Gln—Gly—Gln—Gln—Ser—
Asp—Leu—Glu—Gln—Glu—Arg
Ala—Lys—Glu—Lys—Leu—Gln—Gly—Gln—Gln—Ser—Asp—
Leu—Glu—Gln—Glu—Arg—Leu
Lys—Glu—Lys—Leu—Gln—Gly—Gln—Gln—Ser—Asp—Leu—
Glu—Gln—Glu—Arg—Leu—Ala
Glu—Lys—Leu—Gln—Gly—Gln—Gln—Ser—Asp—Leu—Glu—
Gln—Glu—Arg—Leu—Ala—Lys
Lys—Leu—Gln—Gly—Gln—Gln—Ser—Asp—Leu—Glu—Gln—
Glu—Arg—Leu—Ala—Lys—Glu
Leu—Gln—Gly—Gln—Gln—Ser—Asp—Leu—Glu—Gln—Glu—
Arg—Leu—Ala—Lys—Glu—Lys
Gln—Gly—Gln—Gln—Ser—Asp—Leu—Glu—Gln—Glu—Arg—
Leu—Ala—Lys—Glu—Lys—Leu
Gly—Gln—Gln—Ser—Asp—Leu—Glu—Gln—Glu—Arg—Leu—
Ala—Lys—Glu—Lys—Leu—Gln
Gln—Gln—Ser—Asp—Leu—Glu—Gln—Glu—Arg—Leu—Ala—
Lys—Glu—Lys—Leu—Gln—Gly
Gln—Ser—Asp—Leu—Glu—Gln—Glu—Arg—Leu—Ala—Lys—
Glu—Lys—Leu—Gln—Gly—Gln
Ser—Asp—Leu—Glu—Gln—Glu—Arg—Leu—Ala—Lys—Glu—
Lys—Leu—Gln—Gly—Gln—Gln
Asp—Leu—Glu—Gln—Glu—Arg—Leu—Ala—Lys—Glu—Lys—
Leu—Gln—Gly—Gln—Gln—Ser
Leu—Glu—Gln—Glu—Arg—Leu—Ala—Lys—Glu—Lys—Leu—
Gln—Gly—Gln—Gln—Ser—Asp
Glu—Gln—Glu—Arg—Leu—Ala—Lys—Glu—Lys—Leu—Gln—
Gly—Gln—Gln—Ser—Asp—Leu
Gln—Glu—Arg—Leu—Ala—Lys—Glu—Lys—Leu—Gln—Gly—
Gln—Gln—Ser—Asp—Leu—Glu
Gln—Gln—Ser—Asp—Leu—Glu—Lys—Leu—Gln—Gly—Gln—
Gln—Ser—Asp—Leu—Glu—Gln
Glu—Arg—Leu—Ala—Lys—Glu—Lys—Leu—Gln—Gly—Gln—
Gln—Ser—Asp—Leu—Glu—Gln
Arg—Leu—Ala—Lys—Glu—Lys—Leu—Gln—Gly—Gln—Gln—
Ser—Asp—Leu—Glu—Gln—Leu

wherein said polypeptide induces antibodies that react with the schizont stage of *Plasmodium falciparum*, and wherein said polypeptide does not substantially react with antibodies to the blood or sporozoite stages of *Plasmodium falciparum*.

5,599,543

IMMUNOGENIC FOUR AMINO ACID EPITOPE AGAINST *PLASMODIUM VIVAX*

Stephen L. Hoffman, Gaithersburg; Yupin Charoenvit, Silver Spring, both of Md., and Trevor R. Jones, Brooklyn, Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 609,551, Nov. 6, 1990, Pat. No. 5,095,093. This application Mar. 9, 1992, Ser. No. 848,636

Int. Cl.[6] A61K *39/015*

U.S. Cl. 424—191.1 **12 Claims**

1. An immunogenic composition comprising:

(a) a pharmaceutically acceptable carrier, excipient or adjuvant and

(b) a peptide having at least one repeat of the amino acid sequence -A-G-D-R- and which binds to the monoclonal antibody NVS3.

5,599,544

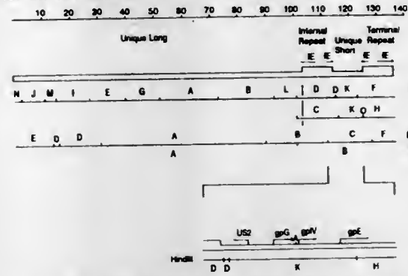
RECOMBINANT INFECTIOUS BOVINE RHINOTRACHEITIS VIRUS

Mark D. Cochran, Carlsbad, and Richard D. Macdonald, San Diego, both of Calif., assignors to PruTech Research and Development Partnership, San Jose, Calif., and Syntro Corporation, Lenexa, Kans.

Continuation of Ser. No. 247,475, May 23, 1994, which is a continuation of Ser. No. 732,584, Jul. 18, 1991, abandoned, which is a continuation-in-part of Ser. No. 696,262, Apr. 30, 1991, abandoned, which is a continuation of Ser. No. 933,107, Nov. 20, 1986, abandoned, and a continuation-in-part of Ser. No. 649,380, Jan. 31, 1991, abandoned, which is a continuation of Ser. No. 78,519, Jul. 27, 1987, abandoned, and a continuation-in-part of Ser. No. 225,032, Jul. 27, 1988, Pat. No. 5,223,424, Ser. No. 823,102, Jan. 27, 1986, Pat. No. 5,068,192, and Ser. No. 192,866, May 11, 1988, Pat. No. 5,047,237. This application Jun. 7, 1995, Ser. No. 479,650

Int. Cl.[6] A61K *39/265;* **C12N** *7/01*

U.S. Cl. 424—229.1 **27 Claims**



1. A vaccine for infectious bovine rhinotracheitis disease which comprises a) an effective immunizing amount of a live recombinant infectious bovine rhinotracheitis virus comprising an infectious bovine rhinotracheitis viral genome from which DNA encoding US2 gene has been deleted and b) a suitable carrier.

5,599,545

MYCOBACTERIUM AS ADJUVANT FOR ANTIGENS

John L. Stanford, Marden, and Graham Arthur W. Rook, Suffolk, both of United Kingdom, assignors to University College London, United Kingdom

Continuation of Ser. No. 050,282, May 7, 1990, abandoned. This application May 16, 1995, Ser. No. 441,785

Claims priority, application United Kingdom, Nov. 8, 1990, 9024282; Jul. 17, 1991, 9115410

Int. Cl.[6] A61K *39/04*

U.S. Cl. 424—282.1 **10 Claims**

1. An aqueous non-emulsified composition comprising killed cells of *Mycobacterium vaccae*, an antigen exogenous to mycobacteria and one or more diluents or carriers therefor.

5,599,546

MEDICINAL FACIAL MASK

Marvin E. Klein, 27629 Chatsworth, Farmington Hills, Mich. 48334

Continuation-in-part of Ser. No. 64,915, May 24, 1993, abandoned, which is a continuation-in-part of Ser. No. 899,418, Jun. 16, 1992, abandoned. This application Aug. 19, 1993, Ser. No. 109,720

Int. Cl.[6] A61K *7/02;47/02*

U.S. Cl. 424—401 **13 Claims**

1. A method of treating skin comprising the steps of:

1. forming an aqueous mixture consisting essentially of:

one or more carboxylic acids in an amount greater than zero and up to 20% by volume, each carboxylic acid having at

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least one substituent selected from the group consisting of: an alphahydroxyl group, a halogen atom and another carboxyl group;

0.1–2% by volume of a limonene-based oil; and

a skin oil absorbent carrier in an amount greater than zero and up to 40% by volume said skin oil absorbent carrier including a mineral based material selected from the group consisting of kaolin, magnesium aluminum silicate, bentonite and combinations thereof; and

the remainder, water;

II. applying a thin film of said aqueous mixture to the skin of a user;

III. allowing the film to dry on the skin; and

IV. removing the dried film with water.

5,599,547

MASCARA COMPOSITIONS

Edward M. Bartholomey, Baltimore, Md.; John M. Gilley, Shewsbury, Pa., and Magda El-Nokaly, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 22, 1994, Ser. No. 344,314

Int. Cl.[6] A61K *7/00*

U.S. Cl. 424—401 **15 Claims**

1. A mascara composition comprising:

a. from about 20% to about 65% solids;

b. from about 20% to about 80% liquid vehicle; and

c. from about 8% to about 50% a setting rate agent comprising a mixture of glycerol monostearate and lecithin wherein lecithin is at a level of at least 1% by weight of the composition, and the ratio of glycerol monostearate to lecithin is from about 2:1 to about 7:1;

wherein said setting rate agent enables said mascara composition to maintain its liquid state after initial application to the lashes for a period sufficient to provide uniform distribution of said mascara composition over said lashes.

5,599,548

SKIN CARE COMPOSITIONS CONTAINING FATTY ACID AMIDES AND RETINOL OR RETINYL ESTER

Stewart P. Granger, Paramus; Anthony V. Rawlings, Wyckoff, and Ian R. Scott, Allendale, all of N.J., assignors to Elizabeth Arden Co., Division of Conopco, Inc., New York, N.Y.

Filed May 8, 1995, Ser. No. 436,795

Int. Cl.[6] A61K *31/07;31/16*

U.S. Cl. 424—401 **12 Claims**

1. A skin conditioning composition comprising

(a) from about 0.001% to about 10% of a compound selected from the group consisting of retinol and a retinyl ester;

(b) from about 0.0001% to about 50% of a fatty acid amide wherein the fatty acid contains from 12 to 18 carbon atoms; and

(c) a cosmetically acceptable vehicle; wherein the ratio of retinol to the fatty acid amide is in the range of from about 200:1 to about 1:50 and wherein the ratio of the retinyl ester to the fatty acid amide is in the range of from 3,500:1 to 1:300.

5,599,549

COMBINED PERSONAL CLEANSING AND MOISTURIZING COMPOSITIONS

Susan C. Wivell, Madison, and George E. Deckner, Trumbull, both of Conn., assignors to Richardson-Vicks Inc., Shelton, Conn.

Division of Ser. No. 35,517, Mar. 22, 1993, Pat. No. 5,439,682, which is a continuation of Ser. No. 797,519, Nov. 22, 1991, abandoned. This application May 9, 1995, Ser. No. 437,479

Int. Cl.[6] A61K *6/00;7/00*

U.S. Cl. 424—401 **1 Claim**

1. A method for delivering to the skin a cleansing and moisturizing composition, wherein said composition is delivered from a non-aerosol mechanical pump as an aerated foam having a density from about 0.01 gms/cm^3 to about 0.25 gms/cm^3, said composition, comprising:

(a) from about 1% to about 10% of at least one anionic surfactant,

(b) from about 0.4% to about 15% of a long chain C16–22 suspending agent selected from the group consisting of ethylene glycol long chain esters, alkanolamides of long chain fatty acids, long chain esters of long chain fatty acids, glyceryl long chain esters, long chain esters of long chain alkanolamides, and mixtures thereof,

(c) from about 0.1% to about 10% of a dispersed, insoluble, oil phase,

(d) from about 1% to about 10% of at least one additional surfactant selected from the group consisting of nonionic surfactants, zwitterionic surfactants, amphoteric surfactants, and mixtures thereof, and

(e) the remainder water, and wherein said composition has a viscosity from about 0.1 cPs to about 40 cPs as measured at 25° C. using a Brookfield RVT equipped with a Spindle No. 1, at 100 rpm.

5,599,550

DISPOSABLE, BIODEGRADABLE, WAX-IMPREGNATED DUST-CLOTH

Gregor Kohlruss, Monch-Siegfried-Strasse 11, Borken, D-4280; Hubert Wiesner, Feld 25, Sudlohn 1, D-4286, and Ulrich Lersch, Am Briemengarten 5, Pulheim, D-5024, all of Germany

Continuation-in-part of Ser. No. 730,950, Sep. 11, 1991, abandoned. This application Jun. 28, 1994, Ser. No. 267,442

Claims priority, application Germany, Nov. 18, 1989, 8913652 U

Int. Cl.[6] A01N *25/34*

U.S. Cl. 424—404 **7 Claims**



1. A fully biodegradable dust-cloth for single use consisting of a natural wax impregnated, absorbent, cellulose, open-pored, fluffy, non-woven felt with a filler fraction of less than 10%, a water content of substantially zero at room temperature, a surface weight of 35–60 g/m^2 and a wax content of 25–50 g/m^2, said wax having a melting point in the range of 60–85 degrees C. and a hardness sufficient to prevent its removal from the fiber material during use in dusting, thereby to prevent leaving a film of wax or moisture when used to remove dust from a hard surface.

5,599,551

GENITAL LUBRICANTS CONTAINING ZINC AS AN ANTI-VIRAL AGENT

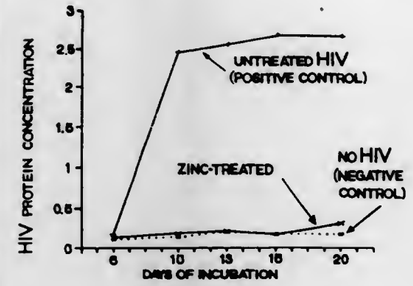
Patrick D. Kelly, 33 Berry Oaks, St. Louis, Mo. 63122

Continuation-in-part of Ser. No. 56,480, May 3, 1993, abandoned, which is a continuation-in-part of Ser. No. 737,169, Jul. 29, 1991, Pat. No. 5,208,031, which is a continuation-in-part of Ser. No. 528,495, May 25, 1990, abandoned, which is a continuation-in-part of Ser. No. 362,058, Jun. 6, 1989, abandoned. This application Dec. 22, 1994, Ser. No. 361,967

The portion of the term of this patent subsequent to May 4, 2010, has been disclaimed.

Int. Cl.[6] A61K *7/40;31/325;33/30;* **A01N** *55/02*

U.S. Cl. 424—405 **5 Claims**



1. An article of manufacture comprising an aqueous gel contained within a watertight tube having a sealed first end, an outlet orifice at an opposed second end, and at least one deformable plastic wall between said ends, wherein the aqueous gel is suitable for repeated daily use as a genital lubricant during sexual intercourse and contains (1) water, (2) a thickening agent, (3) a lubricating agent selected for use to reduce genital friction during sexual intercourse, and (4) a selected water-soluble organic zinc salt at a concentration which inhibits herpes simplex viruses, and wherein the gel with all its components is physiologically acceptable and does not irritate any genital surfaces when used as a topical lubricant during intercourse, and wherein the gel is characterized by the absence of any anti-coagulant compound or other component at a concentration that would generate a significant adverse effect upon genital surfaces if applied and used repeatedly as a genital lubricant over a period of months.

5,599,552

BIODEGRADABLE POLYMER COMPOSITION

Richard L. Dunn; Arthur J. Tipton; George L. Southard, and Jack A. Rogers, all of Fort Collins, Colo., assignors to Atrix Laboratories, Inc., Fort Collins, Colo.

Division of Ser. No. 783,512, Oct. 28, 1991, Pat. No. 5,324,519, which is a continuation-in-part of Ser. No. 384,416, Jul. 24, 1989, Pat. No. 5,077,049. This application May 26, 1994, Ser. No. 249,630

Int. Cl.[6] A61F *2/00*

U.S. Cl. 424—423 **26 Claims**

1. A composition suitable for forming an in situ solid implant in an animal, comprising: a formulation of a biodegradable, thermoplastic polymer that is insoluble in aqueous or body fluid, and an organic solvent that is miscible to dispersible in aqueous or body fluid, the composition being capable of coagulating or solidifying to form a solid microporous implant upon its contact with an aqueous or body fluid, the implant being a core surrounded by a skin, and the core and skin both being porous.

5,599,553

LOCAL DRUG DELIVERY FILM FOR PERIODONTAL TREATMENT

Chong P. Chung, Seoul, Rep. of Korea, assignor to Dong Kook Pharmaceutical Co., Ltd., Seoul, Rep. of Korea

PCT No. PCT/KR92/00071, § 371 Date Feb. 28, 1995, § 102(e) Date Feb. 28, 1995, PCT Pub. No. WO94/05266, PCT Pub. Date Mar. 17, 1994

PCT Filed Dec. 9, 1992, Ser. No. 392,925

Claims priority, application Rep. of Korea, Sep. 1, 1992, 1992-15831

Int. Cl.[6] A61K *6/00;9/70*

U.S. Cl. 424—435 **11 Claims**



1. A local drug delivery film for periodontal treatment containing a release component and an active component consisting of,

(a) as release component, 60% to 90% by total weight of drug delivery film of polymer mixture of polycaprolactone I having number average molecular weight in a range of from 30,000 to 60,000 and polycaprolactone II having number average molecular weight less than 1,000, the content ratio of the polycaprolactone I to polycaprolactone II being from 1:1 to 4:1, and

(b) as active component, 10% to 40% by total weight of drug delivery film of periodontal therapeutic agent.

5,599,554

TREATMENT OF NICOTINE CRAVING AND/OR SMOKING WITHDRAWAL SYMPTOMS

Satyanarayana Majeti, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuatioo of Ser. No. 264,654, Jun. 23, 1994, abandoned. This application Mar. 19, 1996, Ser. No. 619,860

Int. Cl.[6] A61F *13/02*

U.S. Cl. 424—448 **10 Claims**

1. A transdermally or transmucosally administrable composition for the treatment of nicotine craving or smoking withdrawal symptoms comprising nicotine, caffeine or xanthine compounds, and one or more pharmaceutically-acceptable carriers suitable for transdermal or transmucosal administration selected from the group consisting of a transdermal patch, buccal patch, bioadhesive film, or mucoadhesive film, or combinations thereof, wherein the composition delivers:

a) from about 5 mg to about 100 mg of nicotine wherein the blood level of nicotine is from about 1 nanogram per milliliter to about 100 nanograms per milliliter; and

b) from about 10 mg to about 250 mg of caffeine or xanthine compounds wherein the blood level of caffeine or xanthine compounds is from about 0.01 microgram per milliliter to about 20 micrograms per milliliter.

5,599,555

ENCAPSULATED COMETIC COMPOSITIONS

Magda El-Nokaly, Hamilton, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 673,879, Mar. 22, 1991, Pat. No. 5,215,757. This application Dec. 17, 1992, Ser. No. 999,435

Int. Cl.[6] A61K *9/14;47/00*

U.S. Cl. 424—488 18 Claims

1. A topically applied cosmetic composition comprising an:

(a) from about 0.001% to about 60% of an active ingredient; and

(b) from about 40% to about 99.999% of a stable polymeric liquid crystal consisting essentially of:

(1) from about 10% to about 90% of a solvent; and

(2) from about 10% to about 90% of a polysaccharide having a molecular weight of from about 500 to about 1,000,000.

5,599,556

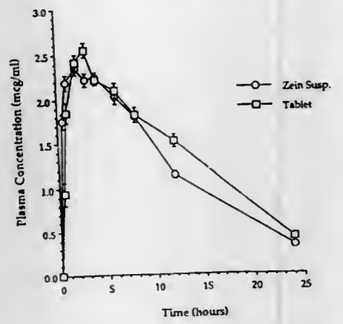
PROLAMINE COATINGS FOR TASTE MASKING

Glenn A. Meyer, Waukegan, Ill., and Terrence B. Mazer, Reynoldsburg, Ohio, assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation-in-part of Ser. No. 23,301, Feb. 26, 1993, abandoned, which is a continuation-in-part of Ser. No. 815,458, Dec. 31, 1991, abandoned. This application May 19, 1994, Ser. No. 245,927

Int. Cl.[6] A61K *9/14*

U.S. Cl. 424—491 10 Claims



1. An orally consumable liquid comprising an active substance in particle form contained in a liquid suspension having a pH greater than about 6.0, each particle comprising a core containing a physiologically active agent, said core being encapsulated by a single coating layer of from about 1 to about 35 micrometers thick wherein the weight ratio of said active substance to said coating layer is from 20:1 to 1:1, said coating consisting essentially of a prolamine and at least one material selected from the group consisting of plasticizers and hydrophobic substances, the taste of the active agent being masked by said coating layer substantially preventing the dispersion of the active substance into the suspension while being readily disintergrated by human gastric juices such that the active agent is immediately released therein.

5,599,557

STABLE HYDRATED CEPHALOSPORIN DRY POWDER FOR ORAL SUSPENSION FORMULATION

Donald A. Johnson, Miami Lakes, Fla.; Lorraine Wearley, Westfield; Rebecca Galeos, Bloomfield, both of N.J., and Joel A. Sequeira, New York, N.Y., assignors to Schering Corporation, Kenilworth, N.J.

PCT No. PCT/US93/03856, § 371 Date Oct. 27, 1994, § 102(e) Date Oct. 27, 1994, PCT Pub. No. WO93/21923, PCT Pub. Date Nov. 11, 1993

PCT Filed Apr. 30, 1993, Ser. No. 325,400

Int. Cl.[6] A61K *9/10;9/14;31/545;47/00*

U.S. Cl. 424—500 14 Claims

1. A method of preparing a dry hydrated cephalosporin powder formulation which is resistant to air oxidation and dehydration and is suitable for suspension in water to form a orally administerable product which comprises admixing at ambient temperature and humidity conditions, a hydrated cephalosporin or a pharmaceutically acceptable salt thereof in the form of a dry solid powder with substantially dry pharmaceutically acceptable excipients selected from the group consisting of surfactants, suspending agents thickening agents, opacificers, preservatives, and sweeteners to form a dry admixture transferring the so-formed dry admixture to a sealable storage container opaque to incident visible radiation under an atmosphere containing no more than about 5 volume percent oxygen.

5,599,558

SELECTING AMOUNTS OF PLATELET RELEASATE FOR EFFICACIOUS TREATMENT OF TISSUE

Richard H. Gordinier, Centereach; Ronald G. Duff, and Dawn D. Newmann, both of East Moriches, all of N.Y., assignors to Curative Technologies, Inc., East Setauket, N.Y.

Continuation of Ser. No. 822,286, Jan. 16, 1992, abandoned, which is a continuation-in-part of Ser. No. 408,058, Sep. 15, 1989, abandoned. This application Oct. 25, 1994, Ser. No. 328,651

Int. Cl.[6] A61K *35/14;43/00;35/12;* G01N *33/00*

U.S. Cl. 424—532 13 Claims

1. A method of making a product for efficacious topical cutaneous wound healing, said product comprising an amount of platelet releasate, said amount determined by: performing an assay on a platelet releasate sample to determine the amount in said sample of beta-thromboglobulin or at least one wound healing factor, wherein the factor has a concentration in the releasate that correlates with that of beta-thromboglobulin; based on said assay calculating the amount of platelet releasate containing the amount of the beta-thromboglobulin or said at least one wound healing factor necessary to achieve a predetermined degree of efficacious topical cutaneous wound healing; and incorporating said amount of platelet releasate into said product for efficacious topical cutaneous wound healing.

5,599,559

CALCIUM CHANNEL BLOCKING POLYPEPTIDE FROM AGELENOPSIS APERTA AND THERAPEUTIC METHODS EMPLOYING IT

Douglas Phillips, Gales Ferry; Mary E. Kelly, Groton; Nicholas A. Saccomano, Ledyard, and Robert A. Volkmann, Mystic, all of Conn., assignors to Pfizer Inc., New York, N.Y.

PCT No. PCT/US93/05392, § 371 Date Apr. 27, 1995, § 102(e) Date Apr. 27, 1995, PCT Pub. No. WO94/02511, PCT Pub. Date Feb. 3, 1994

Continuation of Ser. No. 919,538, Jul. 27, 1992, abandoned. This PCT application Jun. 10, 1993, Ser. No. 379,550

Int. Cl.[6] A61K *35/56;38/17;* C07K *14/435*

U.S. Cl. 424—538 3 Claims

1. A substantially pure polypeptide having the amino acid sequence, SEQ ID NO: 1, or a pharmaceutically acceptable salt thereof.

2. A method of blocking calcium channels in a cell comprising administering to said cell a calcium channel blocking amount of a polypeptide according to claim 1.

5,599,560

METHOD OF TREATING DEPRESSION USING NEUROTROPHINS

Judith Sluciak, Tarrytown, N.Y., assignor to Regeneron Pharmaceuticals, Inc., Tarrytown, N.Y.

Continuation of Ser. No. 47,819, Apr. 15, 1993, abandoned. This application Nov. 10, 1994, Ser. No. 337,321

Int. Cl.[6] A61K *38/18;35/30;* A01N *37/18*

U.S. Cl. 424—570 3 Claims

1. A method for treating a mammal with depression comprising administering to the midbrain of said mammal a pharmaceutically effective dose to treat depression of at least one neurotrophin or peptide or fragment thereof selected from the group consisting of brain-derived neurotrophic factor, neurotrophin-3, and neurotrophin-4.

5,599,561

METHOD OF MAKING POULTICE

Angel Gonzalez, Jr., P.O. Box 211, Peterborough, N.H. 03458

Filed Aug. 4, 1995, Ser. No. 511,460

Int. Cl.[6] A61K *31/05;31/055;33/06;33/18*

U.S. Cl. 424—670 14 Claims

1. A method of making poultice, which comprises:

adding water into a container;

adding vinegar into said container;

adding an herbal liniment solution comprising acetone, iodine, potassium iodide, menthol, thymol and chloroxylenol into said container;

adding hydrated magnesium sulfate into said container;

adding a fine mineral powder selected from the group consisting of clay, hydrous aluminum silicate, and a mixture of kaolinite and quartz, into said container; and

mixing said water, said vinegar, said herbal liniment solution, said hydrated magnesium sulfate, and said fine mineral powder to spreadable consistency.

5,599,562

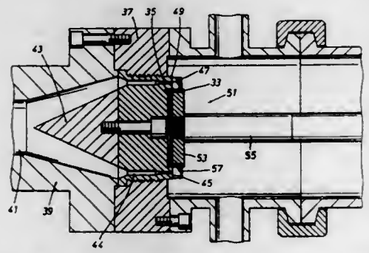
UNDERWATER PELLETIZER

Ronald D. Harris, Houston, and Robert B. Wood, Belleville, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Apr. 28, 1995, Ser. No. 431,242

Int. Cl.[6] B29B *9/00*

U.S. Cl. 425—67 17 Claims



1. A pelletizing assembly for pelletizing an extruded material, said pelletizing assembly comprising: an extrusion die plate comprising:

a die face at a downstream side of the die plate;

a die ring formed on the downstream side of the die face, said die ring has a wear surface projecting outwardly from the die surface to form a recess in center of die ring, said recess having a bottom surface facing the inner surface of said hub, and

a channel means extending from upstream side of the die plate to the die face adapted to deliver the extruded material from the upstream side of the die plate to the die face for extrusion, and said channel means forming an orifice in the die face for extruded material to exit the die plate;

a cutting assembly mounted for rotation adjacent the die face, said cutting assembly comprising:

a hub attachable to a driving shaft for rotation in spaced relation with the die face:

a cutting element mounted on the hub for rotation therewith, said cutting element having a cutting edge for movement adjacent the downstream surface of die plate: and

a first surface on the cutting assembly corresponding to a second surface on the extrusion die plate such that an interface is established between the cutting assembly and the extrusion die which permits free rotation of the cutting assembly and forms a barrier to prevent pellet from migrating (i) into said recess in center of die ring and (ii) between the die face and the hub.

5,599,563

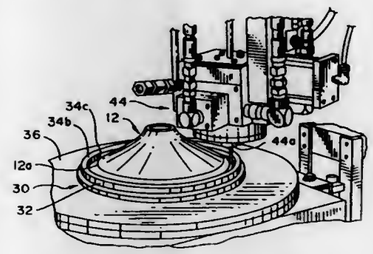
TOOL FOR MOLDING A SURROUND ONTO A LOUDSPEAKER CONE

Fred D. Yocum, 2550 NE. 31st Ct., Lighthouse Point, Fla. 33064

Continuation of Ser. No. 775,179, Oct. 11, 1991, Pat. No. 5,319,718. This application May 24, 1994, Ser. No. 248,145

Int. Cl.[6] B29C *39/10;39/24*

U.S. Cl. 425—117 15 Claims



1. A tool for open pour, low pressure casting of liquid plastic for fabrication of a loudspeaker cone with an integral surround on an outer peripheral edge of the cone, comprising:

an upwardly facing open female mold die having an annular cavity said female mold die being adapted to position the outer peripheral cone edge within said annular cavity;

a downwardly facing open male mold die which is alignable with said female mold die;

a dispensing head for dispensing liquid plastic into said mold annular cavity; and

said dispensing head and said female mold die being relatively movable with respect to each other during said dispensing of said liquid plastic.

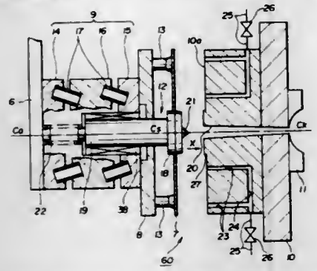
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5,599,564

AUTOMATIC STAMPER EXCHANGE DEVICE AND INJECTION MOLDING APPARATUS EMPLOYING THE EXCHANGE DEVICE

Koichi Ishihara; Kiyoshi Takii; Kozo Kawarazaki; Kazuhiro Oishi, and Nobuyuki Hirayama, all of Shizuoka, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 27, 1994, Ser. No. 364,137
Claims priority, application Japan, Dec. 27, 1993, 5-329320
Int. Cl.[6] B29C *45/40*
U.S. Cl. 425—190 **14 Claims**



1. An automatic stamper exchange mechanism comprising:
a first stamper housing unit for housing a used-up stamper,
a second stamper housing unit for housing a new stamper,
stamper mounting and dismounting means for dismounting the used-up stamper from a metal mold or mounting the new stamper in the metal mold, and
stamper supplying means for housing the used-up stamper dismounted by the stamper mounting and dismounting means in the first stamper housing unit or taking out the new stamper housed within the second stamper housing unit and supplying the new stamper thus taken out to said stamper mounting and dismounting means,
wherein, after the end of an injection molding operation by the metal mold, the used-up stamper is dismounted from the metal mold by said stamper mounting and dismounting means so as to be housed within said first stamper housing unit, and the new stamper is taken out by said stamper supplying means from said second stamper housing unit so as to be mounted on the metal mold by said stamper mounting and dismounting means.

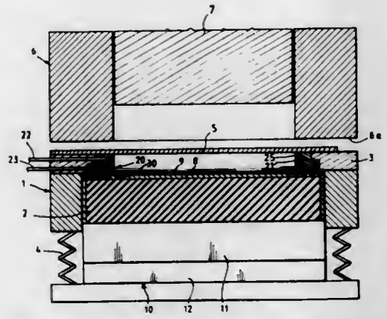
5,599,565

DEVICE FOR PRESS FORMING A SHEET BLANK

Michel Dittlo, Puteaux, France, assignor to Sollac, Puteaux, France

Filed Jan. 20, 1995, Ser. No. 376,220
Claims priority, application France, Jan. 21, 1994, 94 00666
Int. Cl.[6] B29C *43/52;33/02*
U.S. Cl. 425—384 **5 Claims**

1. Device for press forming a sheet blank comprising in combination:
a pad constituting a die and composed of an elastic material,
a retaining box containing said pad,
a lower blank holder which rests on an upper part of said box and has an upper face on which said sheet blank is placed,
means for preforming said sheet blank comprising an outer slide,
an upper blank holder carried by said outer slide,
means for forming said sheet blank comprising a plunger for actuation by a central slide, said press forming device further comprising, in zones of said elastic pad which are heated in operation of said device and adjacent to said elastic pad, means for regulating the temperature of said pad in the course of the press forming of said sheet blank placed on said lower blank holder,
wherein said lower blank holder comprises an inner part in contact with said elastic pad, a ring in said inner part of said lower blank holder, and said means for regulating the temperature of said pad is disposed in said ring.

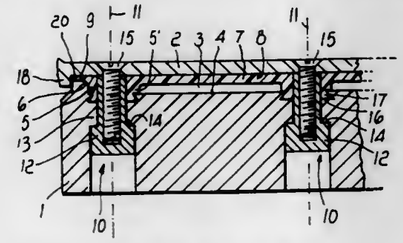


5,599,566

FLOATING PLANE FOR PRESS PUNCHES

Fabio Casolari, Via G. Fontana 12/A, 42014 Castellarano (Prov. of Reggio Emilia), Italy

Filed Jul. 24, 1995, Ser. No. 506,446
Claims priority, application Italy, Jul. 27, 1994, RE94A0063
Int. Cl.[6] B30B *15/06*
U.S. Cl. 425—405.1 **20 Claims**



1. A floating plane for press punches, comprising:
a bottom of the floating plane;
an isostatic base;
an intermediate partition for non-compressible operating fluid, said intermediate partition including a wall made of elastic material which couples to and fits the bottom of said floating plane;
linking and sliding orthogonal means for coupling said floating plane to said base such that the intermediate partition is arranged between said floating plane and said base; and
elastic peripheral elements of said intermediate partition to which said linking and sliding orthogonal means are coupled so as to provide a fluid-tight seal inside said intermediate partition for the operating fluid.

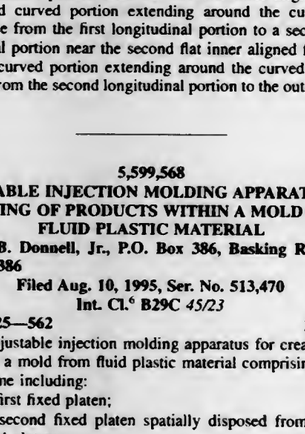
5,599,567

COOLED THREAD SPLIT INSERTS FOR INJECTION MOLDING PREFORMS

Jobst U. Gellert, 7A Prince Street, Georgetown, Ontario, Canada

Filed Nov. 13, 1995, Ser. No. 558,622
Claims priority, application Canada, Oct. 16, 1995, 2160644
Int. Cl.[6] B29C *45/73;49/06*
U.S. Cl. 425—526 **5 Claims**

1. In a pair of thread split inserts used in injection molding elongated hollow bottle preforms, each preform having a neck portion with an outer surface forming a ring collar and threads extending between an open end and the ring collar, each thread split insert having a rear end and first and second flat inner aligned faces extending on opposite sides of a curved inner surface, the thread split inserts to be mounted together in a mold with the respective flat inner faces of the thread split inserts abutting wherein the curved inner surfaces of the thread split inserts combine to form an opening therethrough shaped to mold the outer surface of the neck portion of the preform, each thread split insert having a semicircular groove to form the ring collar and a thread portion extending between the semicircular groove and the rear end to form the threads, the improvement wherein;
each thread split insert has an enclosed conduit with a configuration for circulating cooling fluid through the thread split insert, the cooling fluid conduit having an inlet portion and an outlet portion extending close together midway around the curved inner surface, a first curved portion extending around the curved inner surface from the inlet portion to a first longitudinal portion near the first flat inner aligned face, a second curved portion extending around the curved inner surface from the first longitudinal portion to a second longitudinal portion near the second flat inner aligned face, and a third curved portion extending around the curved inner surface from the second longitudinal portion to the outlet portion.



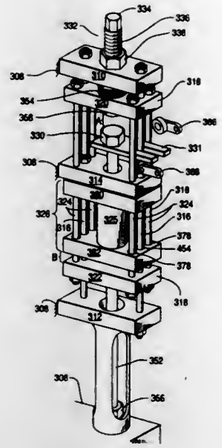
5,599,568

ADJUSTABLE INJECTION MOLDING APPARATUS FOR CREATING OF PRODUCTS WITHIN A MOLD FROM FLUID PLASTIC MATERIAL

Emerson B. Donnell, Jr., P.O. Box 386, Basking Ridge, N.J. 07920-0386

Filed Aug. 10, 1995, Ser. No. 513,470
Int. Cl.[6] B29C *45/23*
U.S. Cl. 425—562 **20 Claims**

1. An adjustable injection molding apparatus for creating products within a mold from fluid plastic material comprising:
A. a frame including:
(1) a first fixed platen;
(2) a second fixed platen spatially disposed from said first fixed platen;
(3) a fixed frame tie rod fixedly secured to said first fixed platen and to said second fixed platen and extending therebetween;
(4) a fixed intermediate member secured to said fixed frame tie rod at an intermediate position between said first fixed platen and said second fixed platen and spatially disposed from both;
B. a cage comprising:
(1) a first cage plate movably mounted on said fixed frame tie rod between said fixed intermediate member and said first fixed platen and movable therebetween;
(2) a second cage plate movably mounted on said fixed frame tie rod between said fixed intermediate member and said second fixed platen spatially disposed from said first cage plate and movable therebetween;
(3) a cage tie rod fixedly secured to said first cage plate and to said second cage plate and extending therebetween;
C. a hydraulic cylinder assembly movably mounted on said fixed frame tie rod between said fixed intermediate member and said second cage plate to be movable therebetween, said hydraulic cylinder assembly defining a cylinder bore extending therethrough, said hydraulic cylinder assembly defining a first end opening and a second end opening at positions in said cylinder bore spatially disposed from one another;
D. a hydraulic cylinder rod movable with respect to said hydraulic cylinder assembly and extending through said cylinder bore thereof and through said first end opening thereof and said second end opening, said hydraulic cylinder rod including a bumper secured there outside of said cylinder bore adjacent said first end opening thereof;
E. a nozzle rod means attached to said hydraulic cylinder rod and extending outwardly away therefrom and being movable therewith;
F. a nozzle body attached with respect to said frame, said nozzle body defining a nozzle channel means therethrough to facilitate dispensing thermoplastic material therethrough, said nozzle body further defining a tip opening means therein in fluid flow communication with respect to said nozzle channel means to facilitate dispensing thermoplastic material therethrough, said nozzle rod means being movably mounted within said nozzle channel means for selectively allowing and preventing dispensing therethrough, said nozzle rod means being selectively positionable with respect to said tip opening means to prevent dispensing therefrom when positioned therein;
G. a piston means fixedly secured to said hydraulic cylinder rod at a position within said cylinder bore, said piston means being reciprocally movable within said cylinder bore between a position adjacent said first end opening with said nozzle rod means in an open position with respect to said tip opening means to allow dispensing therethrough and a position adjacent said second end opening with said nozzle rod means in a closed position with respect to said tip opening means to prevent dispensing therethrough;
H. an adjustment means for varying the length of the stroke of said piston means relative to said frame, said adjustment means including:



(1) an adjustment screw means extending through said first fixed platen and through said first cage plate, said adjustment screw means being in threaded engagement with respect to said first fixed platen to be adjustably positionable extending therethrough and to vary the distance between said first fixed platen and said first cage plate;

(2) an adjustment screw head means positioned in abutment with said first cage plate at a position thereon opposite from said first fixed plate to limit movement of said first cage plate away from said first fixed platen, said adjustment screw head means being spatially disposed from said bumper by a distance equal to the stroke length of said piston means, said adjustment screw means being rotatable to adjust the relative positioning of said adjustment screw head means with respect to said bumper to adjust the stroke length of said piston means;

I. a first limit switch fixedly secured to said cage, said first limit switch being adapted to be actuated to indicate movement of said nozzle rod means to the adjustably open position with respect to said tip opening means;

J. a second limit switch fixedly secured to said frame at a position spatially disposed from said first limit switch, said second limit switch being adapted to be actuated to indicate movement of said nozzle rod means to the fully closed position with respect to said tip opening means;

K. a limit switch actuating plate secured to said hydraulic cylinder rod adjacent said bumper to be movable therewith, said limit switch actuating plate being movable with said hydraulic cylinder rod to a position adjacent to said first limit switch for actuating thereof responsive to movement of said nozzle rod means to the adjustably open position relative to said tip opening means, said limit switch actuating plate also being movable with said hydraulic cylinder rod to a position adjacent to said second limit switch for actuating thereof responsive to movement of said nozzle rod means to the fully closed position relative to said tip opening means; and

L. an hydraulic fluid conduit means in fluid flow communication with respect to said hydraulic cylinder assembly to supply a fixed amount of hydraulic fluid for one operational stroke into said cylinder bore during each operational stroke of the injection molding apparatus, the hydraulic fluid for each stroke being operative to drive said piston means and said hydraulic cylinder rod toward said adjustment screw head means until said bumper moves into abutment therewith and also being operative to drive said hydraulic cylinder assembly toward said second cage plate for abutment therewith.

5,599,569

USE OF AMYLASE-TREATED LOW-VISCOSITY STARCH IN FOODS

Chung-Wai Chiu, Westfield; David P. Huang, Bound Brook; James J. Kasica, Whitehouse Station, and Zu-Feng Xu, Somerville, all of N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Filed Mar. 28, 1995, Ser. No. 412,046

Int. Cl.[6] C13K *1/06*

U.S. Cl. 426—48 **9 Claims**

1. A method for adhering seasoning to a food product comprising the steps of:

a) coating the food product with a solution containing from 5 to 50% by weight of an amylase treated starch;

b) adhering thereon at least one seasoning, flavorant, or colorant; and

c) drying the resultant food product;

the amylase treated starch having been prepared by steam cooking starch, and enzymatically hydrolyzing said cooked starch with a single amylase in an amount and for a sufficient time to achieve a funnel viscosity, measured at 19% solids using a standard funnel, of 7 to 80 seconds, and a dextrose equivalent (DE) of 2 to 40.

5,599,570

COLLAGEN SAUSAGE CASING CONTAINING ENCAPSULATED SMOKE AND METHOD OF MAKING

Kenneth V. Stribling, St. Charles, Ill., assignor to Devro plc, Moodlesburn Chryston, Scotland

Filed Nov. 3, 1995, Ser. No. 552,835

Int. Cl.[6] A23J *3/04*; A23L *1/314*

U.S. Cl. 426—105 **23 Claims**

1. A collagen food wrapping comprising collagen extruded into a film, said collagen having dispersed therein a smoke component selected from the group consisting of a smoke colorant, a smoke flavorant or a mixture thereof which is encapsulated with an encapsulating material which will release the smoke component during curing or cooking of the collagen wrapping and prior to consumption thereof.

5,599,571

PROCESS FOR PRESERVING LEAFY PRODUCE

Joe J. Estrada, 11180 Sanchez St., Castroville, Calif. 95012

Continuation-in-part of Ser. No. 446,909, Dec. 6, 1989, abandoned. This application May 6, 1992, Ser. No. 880,147

Int. Cl.[6] A23B *7/00*

U.S. Cl. 426—321 **6 Claims**

1. A method for inhibiting wilting and discoloration of leafy produce, said method comprising:

exposing the leafy produce to an aqueous solution comprising sodium or calcium hypochlorite at 10 ppm to 100 ppm and potassium or sodium chloride salt at 100 ppm to 500 ppm; and

storing the leafy produce at a reduced temperature.

5,599,572

FIRMNESS IN PROCESSED VEGETABLES

Malcolm C. Bourne, Geneva, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.

Continuation of Ser. No. 135,575, Oct. 13, 1993, abandoned, which is a continuation of Ser. No. 22,433, Feb. 16, 1993, abandoned, which is a continuation of Ser. No. 540,399, Jun. 18, 1990, abandoned, which is a continuation of Ser. No. 279,907, Dec. 5, 1988, abandoned. This application Jun. 20, 1994, Ser. No. 262,353

Int. Cl.[6] A23B *7/06*

U.S. Cl. 426—321 **18 Claims**

1. A process for determining a temperature providing maximum rate of firmness increase in blanching of a vegetable for a canned vegetable product to be subjected to sterilization processing, said process comprising the steps of:

(a) before canning, blanching said vegetable at a series of blanching temperatures in the range of 125° to 160° F. followed by a series of hold times at ambient conditions in the range of 0 minutes to 90 minutes with each blanch temperature and a following hold time being associated with a separate run and determining thermal firmness of said vegetable for each run after canning and sterilizing,

(b) based on the determinations in step (a) determining rates of increase of thermal firmness for blanching temperatures in the range of 125° to 160° F., thereby to allow selection of the blanching temperature providing maximum rate of firmness increase.

5,599,573

PREPARATION OF ACIDIFIED PASTAS

Gale J. Barnes, Woodbury; David Collins-Thompson, New Milford, and Jau Y. Hsu, Brookfield, all of Conn., assignors to Nestec S.A., Vevey, Switzerland

Filed May 31, 1995, Ser. No. 456,161

Int. Cl.[6] A23L *1/16*

U.S. Cl. 426—451 **17 Claims**

1. A process for the production of an acidified pasta product comprising mixing a farinaceous material, an edible acid and water to obtain an acidified dough, forming the acidified dough into a shape to obtain a raw acidified pasta product, steaming the raw pasta product to surface-gelatinize the raw pasta product to obtain a surface-gelatinized acidified pasta product, contacting the surface-gelatinized product with water to obtain a wet acidified pasta product, steaming the wet product for cooking the wet product to obtain a steam-cooked acidified pasta product and packaging the steam-cooked product to obtain a packaged product.

5,599,574

PROCESS FOR REDUCING IN-MOULD TIMES FOR CHOCOLATE CONFECTIONS CONTAINING REDUCED CALORIE FATS

Gerald J. Guskey, Montgomery, and James A. Hellyer, Milford, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Sep. 26, 1994, Ser. No. 311,812

Int. Cl.[6] A23G *1/00*

U.S. Cl. 426—660 **20 Claims**

1. A process for reducing the in-mould time required for preparing chocolate confectionery products, which process comprises the steps of:

(I) forming an untempered chocolate confectionery composition which contains a reduced calorie fat;

(II) heating the untempered chocolate confectionery composition to a temperature ranging from about 37.8° C. to about 65.5° C. to form a melt and then adjusting the temperature of the melt to a temperature ranging from about 29.4° C. to about 48.9° C.;

(III) filling bar moulds with the untempered chocolate confectionery composition;

(IV) removing air bubbles from the chocolate confectionery composition;

(V) rapidly cooling the bar moulds containing the chocolate confectionery composition to a temperature sufficiently low so that the chocolate confectionery composition/mould interface temperature is less than about 22.2° C.; and

(VI) holding the bar mould containing the chocolate confectionery composition at a temperature of less than about 22.2° C. for from about 0 to about 15 minutes.

5,599,575

PROCESS FOR THE PRODUCTION OF CREAMED COCONUT AND CREAMED COCONUT PRODUCT

Jimbay P. Loh, Peekskill; Jerome F. Trumbetas, Tarrytown, both of N.Y., and Jocelyn Q. Mendoza, Cordova, Tenn., assignors to Kraft Foods, Inc., Northfield, Ill.

Filed Mar. 24, 1995, Ser. No. 410,267

Int. Cl.[6] A23L *1/221*

U.S. Cl. 426—617 **21 Claims**

1. A process for the production of a creamed coconut product, which process comprises the step of milling an initial coconut-containing product having an average particle size of 50–700 μm, a moisture content of less than 10% by weight, based on the total weight of the coconut-containing product, and a fat content of at least 50% by weight, based on the total weight of the coconut-containing product; at a temperature of from 48° C.–60° C. to obtain a creamed coconut product which contains substantially no coconut particles with a particle size greater than 30 μm without removing fibrous material from the creamed coconut product.

5,599,576

MEDICAL APPARATUS WITH SCRATCH-RESISTANT COATING AND METHOD OF MAKING SAME

Margaret P. Opolski, Carlisle, Mass., assignor to Surface Solutions Laboratories, Inc., Carlisle, Mass.

Filed Feb. 6, 1995, Ser. No. 384,422

Int. Cl.[6] B05D *1/36*; *7/02*

U.S. Cl. 427—2.3 **19 Claims**

1. A method for providing a protective coating on a surface of a medical apparatus adapted for use within a patient, comprising:

applying a coating solution to a surface of an implantable medical apparatus, such that a protective layer is formed upon the apparatus surface,

wherein the coating solution comprises a matrix polymer which contains a reinforcing agent, the reinforcing agent having a higher surface hardness than the surface hardness of the medical apparatus, wherein a total coating thickness on the medical apparatus is no greater than about 3 mil (0.003 inch).

5,599,577

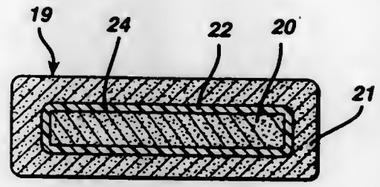
SIMETHICONE CONTAINING PHARMACEUTICAL COMPOSITIONS

Charles A. Stevens, Lansdale; Michael R. Hoy, North Wales, and Edward J. Roche, Paoli, all of Pa., assignors to McNeil-PPC, Inc., Skillman, N.J.

Division of Ser. No. 38,397, Mar. 29, 1993, abandoned, which is a continuation-in-part of Ser. No. 887,207, May 21, 1992, abandoned. This application May 31, 1995, Ser. No. 455,427

Int. Cl.[6] B05D *3/12*; A61K *9/24*; A61J *3/00*

U.S. Cl. 427—2.14 **5 Claims**



1. A method for manufacturing a multilayered solid dosage form having one layer containing simethicone and one layer containing a pharmaceutical for treating gastric disorders selected from the group consisting of cimetidine, ranitidine, famotidine, diphenoxylate, loperamide, loperamide-N-oxide, pharmaceutically acceptable salts thereof and combinations thereof with a barrier sandwiched between the two layers comprising pressing one of two granulations each containing pharmaceutically acceptable excipients with either a therapeutic amount of simethicone or a therapeutic amount of said pharmaceutical for the treatment of a gastric disorder therein, to form a first layer with one exposed surface; forming said barrier by coating the exposed surface with a pharmaceutically acceptable polymer which is substantially impermeable to simethicone to form a coated layer with coated surface; contacting the coated surface with the remaining granulation; and pressing the granulation and coated layer to form a multilayered solid oral dosage form wherein the simethicone and the pharmaceutical are separated by the polymer substantially impermeable to simethicone.

5,599,578

TECHNIQUE FOR LABELING AN OBJECT FOR ITS IDENTIFICATION AND/OR VERIFICATION

Charles L. Butland, 6204 Vista del Mar, #474, Playa del Rey, Calif. 90293

Continuation-in-part of Ser. No. 8,620, Jan. 22, 1993, Pat. No. 5,360,628, which is a continuation-in-part of Ser. No. 597,859, Oct. 15, 1990, Pat. No. 5,194,289, which is a continuation-in-part of Ser. No. 263,058, Oct. 27, 1988, abandoned, which is a continuation-in-part of Ser. No. 868,955, May 30, 1986, Pat. No. 4,882,195, which is a continuation-in-part of Ser. No. 857,929, Apr. 30, 1986, abandoned. This application Nov. 1, 1994, Ser. No. 333,077

Int. Cl.[6] B41M *3/14*

U.S. Cl. 427—7 16 Claims

1. Method for labeling an object for identification which comprises the step of:

applying a mark to said object with a visible ink which contains:

(a) a first component which is visible to the naked eye; and

(b) a second component which is invisible to the naked eye and which is one or more of ultraviolet radiation (UV) dye which is visible only in the presence of ultraviolet radiation, an infrared (IR) dye which is visible only in the presence of infrared radiation, an ink which displays a measurable electrical resistivity, or a biologic marker selected from one or more of a protein, amino acid, DNA, polypeptide, hormone, or antibody,

said mark having said first component which is visible to the naked eye and said second component which is invisible to the naked eye.

5,599,579

CATHODE-RAY TUBE WITH ANTI-REFLECTIVE COATING

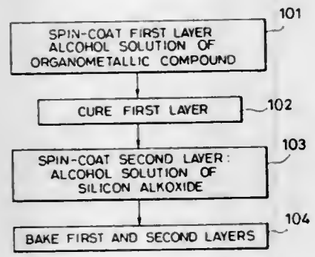
Yasuo Iwasaki, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 961,325, Oct. 15, 1992, Pat. No. 5,412,278. This application Jan. 5, 1995, Ser. No. 369,145

Claims priority, application Japan, Oct. 22, 1991, 3-273669

Int. Cl.[6] B05D *5/06*

U.S. Cl. 427—64 36 Claims



1. A method of manufacturing a cathode-ray tube having a faceplate with an anti-reflective coating, comprising:

(a) applying conductive filler particles to an alcohol solution of an organometallic compound;

(b) spin-coating said alcohol solution on said faceplate to form a first layer;

(c) curing said first layer;

(d) spin-coating an alcohol solution of silicon alkoxide on said first layer to form a second layer; and

(e) baking said first layer and said second layer.

5,599,580

METHOD OF FABRICATING A MAGNETIC RECORDING MEDIUM

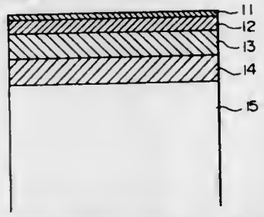
Masaaki Futamoto, Kanagawa-ken; Atsushi Nakamura, Hachioji; Nobuyuki Inaba, Hasuda; Yoshiyuki Hirayama, Kodaira; Yoshibumi Matsuda, Odawara; Mikio Suzuki, Kokubunji, and Yukio Honda, Fuchu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 207,609, Mar. 9, 1994, Pat. No. 5,536,585. This application Apr. 10, 1996, Ser. No. 632,355

Claims priority, application Japan, Mar. 10, 1993, 5-048847; Jun. 28, 1993, 5-157532; Jun. 28, 1993, 5-157533

Int. Cl.[6] B05D *5/12*

U.S. Cl. 427—130 19 Claims



1. A method for fabricating a magnetic recording medium comprising a step of forming microscopic unevenness having a height greater than 2 nm and smaller than 1 μm and a pitch greater than 1 nm and smaller than 500 nm on a surface of a substrate serving as a base; a step of forming a <100> oriented film made of a material having an NaCl crystallographic structure thereon by a physical vapor deposition method so that it has a thickness greater than 10 nm and smaller than 100 μm; a step of forming a film made of a material having a body centered cubic crystallographic structure further thereon by a physical vapor deposition method so that it has a thickness smaller than 1 μm; and a step of forming a magnetic film made of a Co based alloy having a hexagonal close packed structure still further thereon by a physical vapor deposition method so that it has a thickness greater than 2 nm and smaller than 100 nm.

5,599,581

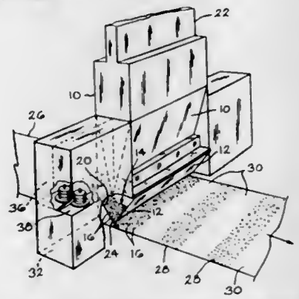
METHOD FOR PNEUMATICALLY CONTROLLING DISCHARGE OF PARTICULATE MATERIAL

Charles A. Burton, Columbus; Douglas E. Boyd, Dublin, and James S. Belt, Utica, all of Ohio, assignors to Owens Corning Fiberglas Technology, Inc., Summit, Ill.

Continuation of Ser. No. 144,371, Nov. 2, 1993, abandoned. This application Sep. 21, 1994, Ser. No. 315,259

Int. Cl.[6] B65D *1/12;1/16*

U.S. Cl. 427—188 37 Claims



1. The method of dispensing particulate material comprising establishing an accumulation of particulate material in a nozzle having an opening at the bottom for discharging the particulate material, establishing a buffer chamber in communication with the accumulation of particulate material such that an unobstructed interface exists between a surface of the particulate material and air in the buffer chamber, and changing the air pressure in the buffer chamber to control a flow of particulate material through the opening.

5,599,582

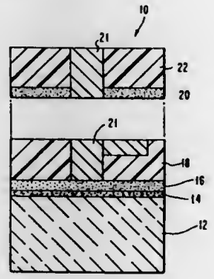
ADHESIVE LAYER IN MULTI-LEVEL PACKAGING AND ORGANIC MATERIAL AS A METAL DIFFUSION BARRIER

Eleftherios Adamopoulos, Bronx, N.Y.; Jungihl Kim, Seoul, Rep. of Korea; Kang-Wook Lee, Yorktown Heights, N.Y.; Tae S. Oh, Seoul, Rep. of Korea; Terrence R. O'Toole, Hopewell Junction, N.Y.; Sampath Purushothaman, Yorktown Heights, N.Y.; John J. Ritsko, Mount Kisco, N.Y.; Jane M. Shaw, Ridgefield, Conn.; Alfred Viehbeck, Stormville, and George F. Walker, New York, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 197,941, Feb. 17, 1994, which is a division of Ser. No. 771,929, Oct. 7, 1991, Pat. No. 5,326,643. This application Jun. 7, 1995, Ser. No. 475,412

Int. Cl.[6] B05D *5/10*

U.S. Cl. 427—207.1 10 Claims



1. A process for minimizing the formation of metal particles in a polyamic acid layer applied to a metal substrate comprising interposing an adhesive barrier between said polyamic acid and said metal substrate, said adhesive barrier comprising a polyimide having the structure:

$$R_1+I\frac{}{n}I-R_2$$

wherein I is selected from the group consisting of an imide, isoimide, amic acid, and an ester of said amic acid with an organo hydroxy compound having from one to about six carbon atoms, and wherein I is based on a condensation product of a cyclic tetracarboxylic acid anhydride and a cyclic diamine wherein the cyclic diamine is substituted completely or partially with an unsaturated heterocyclic diamine, a diamino organo phosphine or a mixture thereof;

n is from about one to about 100;

R_2 is selected from the group consisting of an imido of an amino organo phosphine, an imide of an unsaturated heterocyclic amine, and an imide of an unsaturated heterocyclic dicarboxylic acid; and

R_2 is R an imide of an acetylene amine or an imide of a vinyl amine.

5,599,583

ENCAPSULATION WITH WATER SOLUBLE POLYMER

Chel W. Lew, San Antonio, Tex.; Keith Branly, Brandon, Fla., and Jesse Gaytan, San Antonio, Tex., assignors to Micro Flo Company, Mulberry, Fla.

Filed May 27, 1994, Ser. No. 250,766

Int. Cl.[6] B01J *13/02;* B05D *7/00;* B32B *19/00*

U.S. Cl. 427—213.3 15 Claims

1. A process for encapsulating an agriculturally effective active ingredient by a process comprising the steps:

mixing until homogeneous (a) 50–90 wt % of an agriculturally effective active ingredient with (b) a water-free, molten, film-forming polymer binder that exhibits a viscosity of less than about 1000 cp, wherein said polymer binder is less than 100% water soluble, at least 20% soluble in alcohol, and forms a non-tacky solid at 20° C.; and

forming said homogeneous mixture into particles, wherein said agriculturally effective active ingredient is chemically compatible with said filmforming polymer binder.

5,599,584

MICROMINIATURE COMBUSTIBLE GAS SENSOR AND METHOD OF FABRICATING A MICROMINIATURE COMBUSTIBLE GAS SENSOR

Richard E. Champney, Jr., Beaver Falls, Pa., assignor to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed Dec. 16, 1994, Ser. No. 357,031

Int. Cl.[6] B01J *37/00*

U.S. Cl. 427—245 10 Claims

1. A method of producing a porous refractory support for a catalyst for a catalytically active detector to be used in a microminiature combustible gas sensor, the method comprising the steps of:

a. surrounding a target area with a thermally insulating material to define the shape of the detector;

b. bringing into contact with the target area a material capable of forming the porous refractory support upon the refractory forming material reaching a temperature of at least a known conversion temperature;

c. heating the refractory forming material in the target area to at least the conversion temperature, the refractory forming material being at a temperature below the conversion temperature before coming into contact with the target area, the thermally insulating area surrounding the target area remaining below the conversion temperature, thereby forming the porous refractory support in the shape of the target area; and

d. removing excess refractory material which has not been heated to the conversion temperature.

5,599,585

PROCESS TO MAKE AN ELASTOMERIC METALLIZED FABRIC

Bernard Cohen, Berkley Lake, Ga., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Division of Ser. No. 849,854, Mar. 12, 1992, abandoned. This application May 25, 1995, Ser. No. 450,599

Int. Cl.[6] C23C *16/00*

U.S. Cl. 427—250 10 Claims

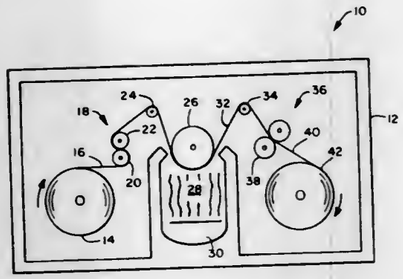
1. A process of making an elastomeric metallized nonwoven fabric comprising:

providing a nonwoven web of elastomeric meltblown fibers; and

metallizing at least one portion of at least one side of the nonwoven web of elastomeric meltblown fibers by metal vapor deposition or metal sputtering; and

cooling the nonwoven web of elastomeric meltblown fibers during metallization so that said portion of the nonwoven web is substantially covered with a metallic coating.

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5,599,586

CHEMICAL MAINTENANCE SYSTEMS FOR RESIDENTIAL ROOFING MATERIALS

Michael G. Israel, 14895 Feather Cove Rd., Clearwater, Fla. 34622

Filed Apr. 18, 1995, Ser. No. 424,717
Int. Cl.[6] B05D 3/00
U.S. Cl. 422—299 14 Claims

1. A process of forming a thin unpigmented film on the exterior surface of a substrate for protection against the growth of dark colored algae comprising applying to the surface an aqueous mixture comprising effective film-forming amounts of

(a) a water soluble polyvalent metallic salt,

(b) an organic anionic, nonionic or cationic surface active agent,

(c) an elastomeric and/or thermoplastic weatherable, weather-resistant film forming emulsion polymer, and

(d) water,

wherein the metallic salt, surface active agent and emulsion polymer are applied concurrently or sequentially in a range of from 0.01 lb. to 3.0 lb. per 100 square feet without prior interaction and coagulation of the metallic salt and emulsion polymer.

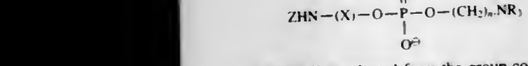
5,599,587

PHOSPHORIC ACID ESTERS AND THEIR USE IN THE PREPARATION OF BIOCOMPATIBLE SURFACES

Roderick W. J. Bowers; Peter W. Stratford; Stephen A. Jones; Jeremy C. Russell, and Michael J. Driver, all of Uxbridge, United Kingdom, assignors to Biocompatibles Limited, Middlesex, United Kingdom

PCT No. PCT/GB91/01934, § 371 Date Apr. 30, 1993, § 102(e) Date Apr. 30, 1993, PCT Pub. No. WO92/07858, PCT Pub. Date May 14, 1992
PCT Filed Nov. 5, 1991, Ser. No. 50,167
Claims priority, application United Kingdom, Nov. 5, 1990, 9024011; Nov. 5, 1990, 9024012
Int. Cl.[6] C07F 9/09
U.S. Cl. 427—322 39 Claims

10. A process for treating a surface which comprises contacting the surface with a compound of formula (I):



(I)

in which Z is selected from the group consisting of:

groups B—C(O)— where B is selected from the group consisting of halogen atoms, alkyl groups, unsubstituted or substituted by one or more electron withdrawing substituents, phenyl, and 5- and 6-membered heteroaromatic rings containing 1 to 3 nitrogen atoms, optionally fused with a further phenyl ring or 5- or 6-membered heteroaromatic ring containing 1 to 3 nitrogen atoms and unsubstituted or substituted by one or more electron withdrawing substituents;

groups B^1—OC(O)— where B^1 is selected from the group consisting of alkyl groups, unsubstituted or substituted by one or more electron withdrawing substituents, phenyl and 5- and 6-membered heteroaromatic rings containing 1 to 3 nitrogen atoms, optionally fused with a further phenyl ring or 5- or 6-membered heteroaromatic ring containing 1 to 3 nitrogen atoms and unsubstituted or substituted by one or more electron withdrawing substituents; and

phenyl and 5- or 6-membered heteroaromatic rings containing 1 to 3 nitrogen atoms optionally fused with a further phenyl ring or 5- or 6-membered heteroaromatic ring containing 1 to 3 nitrogen atoms and unsubstituted or substituted by one or more electron withdrawing substituents;

the groups R are the same or different and each is a straight or branched C_1–C_4 alkyl group;

n is from 2 to 6; and

X is selected from the group consisting of straight and branched C_{1-20} alkylene groups, groups of formula $—(CH_2CH_2O)_b—$ where b is from 1 to 20, and groups of formula $—(CH_2)_c—Ar—(CH_2)_d—$ where c and d are the same or different and each is from 0 to 5, Ar is a phenyl ring and the groups $(CH_2)_c$ and $(CH_2)_d$ are positioned on the phenyl ring Ar at the para- or meta- positions, and in which Ar is optionally substituted by one or more C_1–C_4 alkyl groups, or

an acid addition salt thereof or a hydrate thereof, thereby reacting the group —NHZ with the surface.

5,599,588

PROCESS FOR PREPARING METAL HALIDES BY THE SOL-GEL-METHOD

Oliver J. C. Poncelet, Chalon sur Soane, France, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 14, 1995, Ser. No. 557,509
Claims priority, application France, Nov. 23, 1994, 94 14309
Int. Cl.[6] C01F 17/00;5/26;11/20;3/00
U.S. Cl. 427—343 10 Claims

1. Process for preparing rare earth and/or alkaline earth metal halides which comprises:

(1) forming a homogeneous solution by mixing an alkoxide species in an anhydrous organic solvent, said alkoxide species consisting of rare earth and/or alkaline earth halogenoalkoxides corresponding to one of the following formulae:

$$M(ORx)_n(ORy)_m$$

or

$$M(ORx)_nX_m$$

wherein M is a rare earth or an alkaline earth, Rx and Ry are each separately alkyl groups substituted by at least a halogen atom, X is a halogen and n and m are such that the sum of n and m is equal to the valency of M, provided that n is higher than 0; and

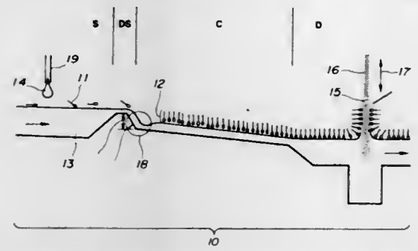
(2) adding to this solution a quantity of water which is at least stoichiometric for hydrolyzing the halogenoalkoxides to form a gel consisting essentially of rare earth and/or alkaline earth metal halides.

5,599,589

APPARATUS AND PROCESS FOR PRODUCING ORGANIC MONO MOLECULAR OR MULTILAYER FILMS

Otto Albrecht, Atsugi, and Hiroshi Matsuda, Isehara, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 18, 1995, Ser. No. 423,697
Claims priority, application Japan, Apr. 22, 1994, 6-084496; Mar. 24, 1995, 7-066014
Int. Cl.[6] B05D 1/20; B05C 3/02
U.S. Cl. 427—430.1 17 Claims



1. An apparatus for continuously producing a Langmuir Blodgett film comprising:

a tank having a spreading region for spreading over a surface of a liquid in the tank a material from which a monomolecular film can be formed, said monomolecular film having a surface pressure, a compression region for compressing the material on the liquid surface to form the monomolecular film, and a deposition region where the monomolecular film becomes deposited on a substrate, said deposition region containing liquid at a set level;

means for causing liquid to flow continuously from the spreading region to the deposition region through the compression region, said liquid having a measurable depth in each region;

first control means for controlling an amount of liquid inflow in response to the liquid level so as to maintain the level in the deposition region at the set value;

second control means for regulating supply of the film forming material in response to the surface pressure of the monomolecular film so as to maintain the surface pressure at a set value;

the liquid in flow being regulated so that the depth of the liquid flow in the compression region is less than the depth of the liquid flow in the spreading region and the depth of the liquid flow in the deposition region; and

a decoupling region is provided between the spreading region and the compression region and is arranged so that the liquid surface descends at an angle from the spreading region to the compression region and descends through the compression region to the deposition region, and the angle of descent of the liquid surface where the flow is about to enter the compression region is greater than the angle of descent of the liquid surface flowing through the compression region.

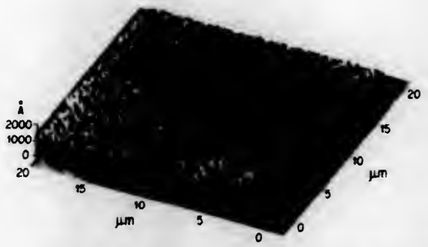
5,599,590

TEXTURE TREATMENT FOR CARBON SUBSTRATE AND FOR CARBON OVERCOAT LAYER OF MAGNETIC DISKS

Hidetaka Hayashi, Saratoga; Masago Kuwabara, Fremont, both of Calif.; Kazuo Muramatsu, Hyogo, Japan, and Dilip Kuchibhatla, San Jose, Calif., assignors to Kobe Steel USA Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 139,592, Oct. 20, 1993, abandoned, which is a continuation-in-part of Ser. No. 92,833, Jul. 16, 1993, abandoned. This application Jun. 6, 1994, Ser. No. 254,788
Int. Cl.[6] B05D 3/06
U.S. Cl. 427—448 20 Claims

1. A method for roughening a carbon surface, comprising the steps of:



(1) forming discrete areas of a solid non-magnetic transition metal oxidation catalyst on a carbon surface by sputtering, ion implantation, chemical vapor deposition, plasma Spraying, solution immersion or solution coprecipitation to form a catalyst-containing surface; and

(2) heating said catalyst-containing surface in an oxidizing atmosphere to oxidize the carbon surface and to form a roughened carbon surface having a roughness greater than the roughness of said carbon surface.

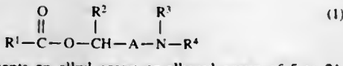
5,599,591

METHOD OF IMPROVING THE ELECTRICAL CONDUCTIVITY OF A SHAPED RESIN ARTICLE AND AN ELECTROSTATIC COATING PROCESS

Tetsuo Shiraiwa, Osaka, Japan, assignor to Dai-Ichi Kogyo Seiyaku Co., Ltd., Kyoto, Japan

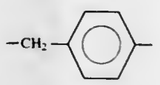
Filed Feb. 16, 1996, Ser. No. 602,649
Claims priority, application Japan, Mar. 15, 1995, 7-055701
Int. Cl.[6] B05D 1/04
U.S. Cl. 427—458 3 Claims

1. A method of improving the electrical conductivity of a shaped resin article which comprises kneading a nitrogen-containing compound of the following general formula (1) into a resin molding material, molding the kneaded mixture and subjecting the surface of the resulting article to corona discharge treatment:



(1)

where R^1 represents an alkyl group or alkenyl group of 5 to 21 carbon atoms, R^2 represents —H or $—CH_3$, R^3 and R^4 may be the same or different and each represents an alkyl group of 1 to 4 carbon atoms, A represents $—(CH_2)_n—$ or



and n is 1 to 5.

5,599,592

PROCESS FOR THE METALLIZATION OF PLASTIC MATERIALS AND PRODUCTS THERETO OBTAINED

Lucien D. Laude, res de Lilas 64, 59330 Hautmont, France

PCT No. PCT/EP95/00346, § 371 Date Sep. 29, 1995, § 102(e) Date Sep. 29, 1995, PCT Pub. No. WO95/20689, PCT Pub. Date Aug. 3, 1995
PCT Filed Jan. 31, 1995, Ser. No. 530,315
Claims priority, application Belgium, Jan. 31, 1994, 9400105
Int. Cl.[6] B05D 3/06
U.S. Cl. 427—543 16 Claims

1. A positive metallization process for metallizing a plastic composite piece containing a polymer plastic material and oxide grains, said oxide grains being made of one or more oxides, comprising three successive steps, the first step consisting of the

irradiation of a surface area of a plastic piece to be metallized with a light beam emitted by an excimer laser, said plastic piece being made from a polymer plastic material and oxide grains, said oxide grains being made from one or more oxides, the second step consisting of immersing said irradiated plastic piece in at least one autocatalytic bath containing metal ions and without palladium, said immersion inducing the deposit of said metal ions onto said irradiated surface area to form a metal film on said surface area resulting in the selective metallization of said surface area of said plastic piece, and the third step consisting of thermally processing said metallized plastic piece to induce diffusion of said deposited metal film into said polymer plastic material of said plastic piece.

5,599,593

LIQUID CRYSTAL DISPLAY DEVICE USING MAIN-CHAIN POLYESTER LIQUID CRYSTAL POLYMER

Seong-eun Chung, Seoul, Rep. of Korea, assignor to Samsung Display Devices, Co. Ltd., Kungki-Do, Rep. of Korea

Filed Dec. 30, 1994, Ser. No. 366,724

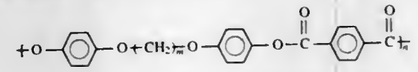
Claims priority, application Rep. of Korea, May 27, 1994, 94-11586

Int. Cl.[6] G02F *1/1337*

U.S. Cl. 428—1 2 Claims

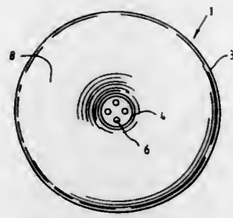


1. A ferroelectric liquid crystal display device comprising a pair of upper and lower substrates, transparent electrodes formed on each substrate, orientation layers formed on each transparent electrode and rubbed in a prescribed direction, and a ferroelectric liquid crystal injected between said orientation layers, wherein said orientation layer comprises a main-chain polyester liquid crystal polymer having the following formula I:



(I)

wherein m is an integer between 4 and 12 and n is an integer between 100 and 200.



5,599,595

PRINTED PLASTIC CIRCUITS AND CONTACTS AND METHOD FOR MAKING SAME

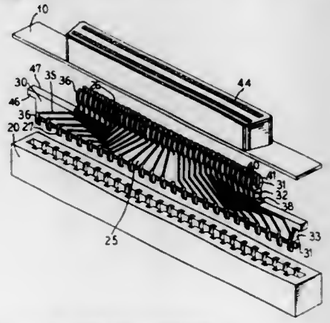
William J. McGinley, Barrington Hills; John R. Cannon, Wayne; William J. Green, Lisle, and Richard P. Zanardo, Matteson, all of Ill., assignors to Methode Electronics, Inc., Chicago, Ill.

Division of Ser. No. 294,347, Aug. 23, 1994, abandoned, which is a division of Ser. No. 164,150, Dec. 9, 1993, abandoned.

This application Jun. 6, 1995, Ser. No. 468,235

Int. Cl.[6] B52B *9/00*

U.S. Cl. 428—33 13 Claims



1. An electrical connector comprising:

a unitary, molded thermoplastic connector body, said connector body including a base portion and at least one projecting contact arm portion extending from a first end connected to the base portion to a second free end spaced from the base, the contact arm portion having at least one contact surface defined thereon adjacent the free end thereof, the contact surface having an electrically conductive region thereon defined by a firmly-adherent, electrically conductive coating.

5,599,594

SIMULATED OBJECTS

Gerald R. Pauley, Victoria, Australia, assignor to Australian Gem Exchange Pty. Ltd., Braeside, Australia

PCT No. PCT/AU92/00277, § 371 Date May 4, 1994, § 102(e) Date May 4, 1994, PCT Pub. No. WO92/21633, PCT Pub. Date Dec. 10, 1992

PCT Filed Jun. 12, 1992, Ser. No. 162,119

Claims priority, application Australia, Jun. 13, 1991, PK6648; Jul. 22, 1991, PK7338; Dec. 10, 1991, 88930/91

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—13 29 Claims

1. An article comprising a two dimensional reproduction of a surface of an object on a sheet of transparent material, a reflective backing, and a protective coating of a clear resin or clear plastics material for protecting the sheet of transparent material; the reflective backing, the protective coating and the sheet of transparent material being so arranged that the two dimensional reproduction has a three dimensional appearance.

5,599,596

REPULPABLE HOT MELT POLYMER/FATTY ACID COMPOSITIONS FOR FIBROUS PRODUCTS

Paul E. Sandvick, and Calvin J. Verbrugge, both of County of Racine, Wis., assignors to S. C. Johnson & Son, Inc., Racine, Wis.

Division of Ser. No. 96,523, Jul. 22, 1993, Pat. No. 5,491,190.

This application Dec. 14, 1995, Ser. No. 572,455

Int. Cl.[6] B27N *3/00;* B29D *22/00;23/00;* B32B *1/08;* B65D *1/00*

U.S. Cl. 428—34.2 28 Claims

1. A sheet of paper rendered water-resistant and repulpable in a heated nearly neutral to alkaline pH aqueous medium as a result of being coated with a hot melt polymer/fatty acid composition that is dispersible in a heated nearly neutral to alkaline aqueous pH medium consisting essentially of

A. from about 5% to 50% by weight based upon the total weight of the composition of at least one addition polymer selected from the group consisting of

(i) a polymer of from about 5 to 95 mole percent of at least one ethylenically unsaturated monocarboxylic acid monomer containing a free carboxyl group and from about 5 to 95 mole percent of at least one additional ethylenically unsaturated monomer,

(ii) a polymer of from about 50 to 95 mole percent of at least one ethylenically-unsaturated dicarboxylic acid monomer selected from the group consisting of an ethylene-1,2-dicarboxylic acid containing two free carboxyl groups and an ethylene-1,2-dicarboxylic acid anhydride having two carboxyl groups in the form of an anhydride group, and from about 5 to 50 mole percent of at least one additional ethylenically unsaturated monomer, and

(iii) a polymer of a total of from about 5 to 95 mole percent of (a) at least one of the ethylenically unsaturated monocarboxylic acid monomers and (b) at least one of the ethylenically-unsaturated dicarboxylic monomers and from about 5 to 95 mole percent of at least one additional ethylenically unsaturated monomer, wherein the additional ethylenically unsaturated monomer is selected from the group consisting of 1-alkenes having from about 4 to 60 carbon atoms; alkyl vinyl ethers having an ether alkyl group of from about 8 to 60 carbon atoms, and alkyl acrylates or alkyl methacrylates having an alkyl group of from about 8 to 60 carbon atoms, and

B. from about 50% to 95% by weight based upon the total weight of the composition of at least one fatty acid selected from the group consisting of natural and synthetic fatty acids containing from about 12 to 48 carbon atoms, wherein the fatty acid is compatible with the polymer and wherein the composition is a solid at 20° C., but starts to become fluid between about 50° C. and 95° C.

5,599,597

CONCRETE MOLDING WITH IMPROVED ACID RESISTANCE

Volkmar Berg, Graben, and Helmut Rinno, Hofheim, both of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Continuation of Ser. No. 045,559, Apr. 9, 1993, abandoned.

This application Dec. 16, 1994, Ser. No. 358,337

Claims priority, application Germany, Apr. 13, 1992, 42 12 325.9

Int. Cl.[6] B32B *27/00*

U.S. Cl. 428—344 8 Claims

1. A molded unreinforced or reinforced concrete molding, which may also be a concrete pipe, bound by hydraulic inorganic binders, with improved corrosion resistance to acids and acidic sewage, improved penetration resistance to inorganic and organic liquids and gases and improved mechanical stability, which has been produced by molding and hardening at normal temperature in air or below of plastic-viscous concrete mixtures of hydraulic inorganic binders, which may comprise cement or contain cement, aggregates and water, which additionally contains finely distributed plastics components from anionic dispersion copolymers which have been prepared from ethylenically unsaturated monomers by copolymerization, are hydrolysis resistant with respect to the hydraulic inorganic binder and with respect to acidic sewage and have been mixed with the plastic-viscous concrete mixtures as an aqueous plastics dispersion which is compatible with the hydraulic inorganic binder and whose minimum film forming temperature (MFT) is above the hardening temperature of the plastic-viscous concrete mixtures; the glass transition temperature (T_g) of the anionic dispersion copolymer is higher than 23° C., and the anionic dispersion copolymer contains, in each case based on the dispersion copolymer, 0.05 to 5% by weight of monomer units from selected the group consisting of ethylenically unsaturated carboxylic acids, ethylenically unsaturated sulfonic acids, ethylenically unsaturated phosphonic acids and, optionally, up to 2% by weight of monomer units from ethylenically unsaturated monomers with organosilicon radicals, which may be reactive, or contains epoxysilanes mixed with the aqueous plastics dispersion.

5,599,598

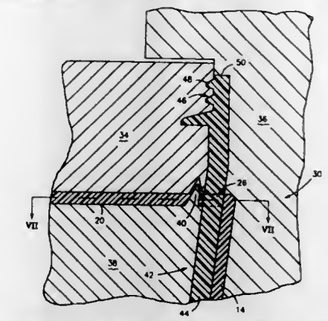
MULTILAYERED HOLLOW PLASTIC ARTICLE AND METHOD FOR OBTAINING SAME

Emery I. Valyi, Katonah, N.Y., assignor to Husky Injection Molding Systems Ltd., Canada

Filed Apr. 3, 1995, Ser. No. 415,350

Int. Cl.[6] B29D *9/00*

U.S. Cl. 428—35.7 24 Claims



1. A multilayered hollow plastic article which comprises: an inner first portion of a first thermoplastic layer; an outer second portion of a pressure molded second thermoplastic layer contacting the first portion, with the two layers being adhered to each other substantially over their entire contacting areas, with the inner first portion being thinner than the outer second portion; wherein said article has a first end defined by a neck region with an opening therein at the terminus thereof, a second end defined by a bottom region which is closed at the terminus thereof, and an intermediate body region between the neck and bottom regions with the body region connected to the neck region; and wherein the second portion covers the closed bottom and extends from the closed bottom to the open neck, and the first portion covers the closed bottom and extends from the closed bottom to terminate immediately below the neck portion, wherein the article has an inside and an outside face with the first portion defining the inside face of the body and bottom regions and the second portion defining the outside face of the body and bottom regions, and wherein the second portion defines inside and outside faces of the neck region, and including a plurality of discrete strips of the material of the first portion separated by material of the second portion, said discrete strips being located between the inside face of the article and the outside face of the article extending over the second portion and below the neck region.

5,599,599

FIBER REINFORCED PLASTIC ("FRP")-CONCRETE COMPOSITE STRUCTURAL MEMBERS

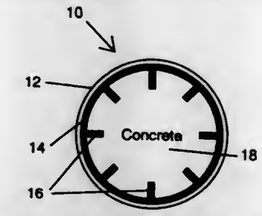
Amir Mirmiran, Orlando, and Mohsen Shahawy, Tallahassee, both of Fla., assignors to University of Central Florida, Orlando, Fla.

Filed Jul. 6, 1995, Ser. No. 499,050

Int. Cl.[6] B29D *22/00*

U.S. Cl. 428—36.3 19 Claims

1. A fiber reinforced plastic (FRP) composite member for



increasing the compressive, flexural and shear strengths of concrete columns and supports comprised of:

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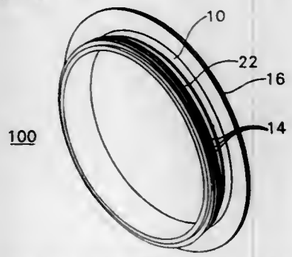
an exterior shell of a fiber and a resin combination, the combination including approximately 60 to approximately 63% glass and approximately 37 to approximately 40% polyester;
an interior pultruted member of the fiber and the resin combination located longitudinally within the exterior shell; and
a concrete core within the shell and about the interior pultruted member, wherein the interior pultruted member and the exterior shell provide axial and circumferential reinforcement for the cement core.

5,599,600

NOZZLE REPAIR SHIELD

Steven E. Rau, Newark, Del., assignor to Edlon, Inc., Avondale, Pa.

Continuation of Ser. No. 15,626, Feb. 9, 1993, abandoned. This application May 16, 1995, Ser. No. 442,132
Int. Cl.[6] B29D *23/00*
U.S. Cl. 428—36.9 **23 Claims**



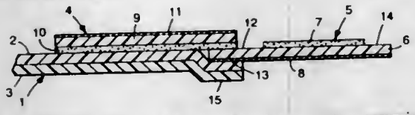
1. A repair shield for repairing a damaged surface in the nozzle area of a glass-lined vessel, comprising:
a polymeric, cylindrical body portion having first and second ends;
an annular flange disposed at the first end of said body portion for limiting the inward movement of said shield when inserted into said nozzle;
at least one sealing lip projecting substantially radially from the second end of said body portion for isolation the damaged nozzle surface from the contents of the vessel, said second end of said body portion comprising an annular cavity locate substantially coaxially with respect to said sealing lip, wherein the cavity has a diameter less than that of said lip; and
at least one annular, rigid support means disposed in said annular cavity for providing support to said sealing lip during insertion and use.

5,599,601

DIAPER FASTENING TAPE

Stephen P. Polski, Shoreview; Jayshree Seth, Woodbury, and Charles E. Boyer, III, Oakdale, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 277,620, Jul. 20, 1994, abandoned. This application Jan. 10, 1995, Ser. No. 370,967
Int. Cl.[6] B32B *3/06*
U.S. Cl. 428—40.1 **12 Claims**



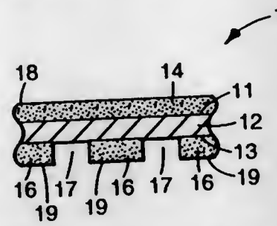
1. A pressure-sensitive adhesive tape closure system comprising a closure tape laminate comprised of a fastening tape tab portion having a first substrate with a first and second face and a release tape tab portion having a second substrate with a first face and a second face, the release tape tab portion second substrate first face having a first adhesive layer with no adhesive layer on said second face, said fastening tape tab portion first substrate first face having a fastening surface with no adhesive on said second face, with an end of said fastening tape tab portion first substrate connected to an end of said release tape tab portion second substrate by at least one adhesive layer-to-substrate bond, wherein at least a portion of the release tape tab portion first face, and the fastening tape tab portion first face or an intermediate substrate is not coated with an adhesive layer such that the fastening tape tab portion fastening surface and the release tape tab portion adhesive layer do not form an adhesive-to-adhesive bond and said fastening tape tab portion first face is in face-to-face contact with said release tape tab portion second face when the laminate is folded at said adhesive layer-to-substrate bond region.

5,599,602

DOUBLE-SIDED PRESSURE-SENSITIVE ADHESIVE TAPE AND METHOD OF MAKING

William K. Leonard, Troy Township, St. Croix County, Wis.; Kirit C. Mody, Shoreview, and Richard J. Rolando, Oakdale, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 166,549, Dec. 14, 1993, abandoned, which is a continuation-in-part of Ser. No. 769,548, Oct. 1, 1991, abandoned. This application Sep. 26, 1995, Ser. No. 534,183
Int. Cl.[6] C09J *7/02*
U.S. Cl. 428—56 **18 Claims**



1. A composite tape comprising a backing with first and second major surfaces, a first layer of normally tacky pressure-sensitive adhesive on said first major surface, and a second layer of normally tacky pressure-sensitive adhesive on said second major surface, wherein said adhesive layers and said backing were simultaneously coextruded and at least one of said first layer of adhesive and said second layer of adhesive is non-coextensive.

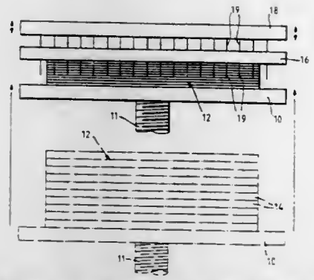
5,599,603

MANUFACTURE OF CARBON FIBRE PREFORM

Maurice J. Evans, Lichfield; Keith A. Williams, Birmingham, and Ronald Fisher, Warwickshire, all of Great Britain, assignors to Dunlop Limited, A British Company, London, England

Continuation of Ser. No. 809,514, Jan. 24, 1992, abandoned. This application Feb. 28, 1994, Ser. No. 202,890
Claims priority, application United Kingdom, Jul. 25, 1989, 8917003; Dec. 12, 1989, 8928031
Int. Cl.[6] B32B *3/02*
U.S. Cl. 428—66.2 **37 Claims**

34. A method of making a preform consisting essentially of carbon fibre comprising forming a compressible body containing at least 10 oriented layers of oxidised polyacrylonitrile fibre, compressing the body to a predetermined thickness while needling the compressed body using barbed needles, in a series of needle-punching operations which are carried out without transverse movement of the body relative to the needles so that the needles penetrate the same areas of the fabric in each needle-punching operation of the series and are caused to penetrate substantially the whole thickness of the body thereby to produce an array of fibre bundles, so as to enable the compressed preform subsequently to be removed from action by the above-mentioned compressing step in a free-standing and compressed state of the predetermined thickness.

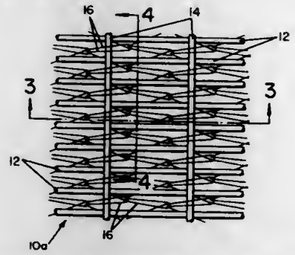


5,599,604

REINFORCEMENT FABRIC PLY AND COMPOSITE

Larry D. Goettsch, Lincoln, and Steve C. Otradovec, Bennet, both of Nebr., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 17, 1995, Ser. No. 405,658
Int. Cl.[6] B32B *5/12*
U.S. Cl. 428—105 **3 Claims**



1. A continuous belt comprising an elastomeric matrix containing domains of polymeric material having a melting point of 200° to 300° F. and reinforced by a plurality of parallel reinforcement cords or filaments whereby said reinforcement cords or filaments are not connected to each other and move independently of one another in said elastomeric matrix.

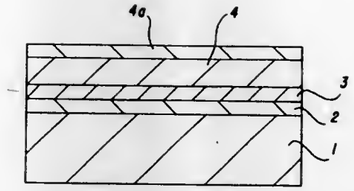
5,599,605

MAGNETO-OPTICAL RECORDING MEDIUM AND METHOD FOR PRODUCING THE SAME

Keiji Shono; Ken Tamanoi; Sumio Kuroda, and Koji Matsumoto, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 14, 1993, Ser. No. 45,737
Claims priority, application Japan, Apr. 17, 1992, 4-096893; Feb. 25, 1993, 5-036464
Int. Cl.[6] G11B *5/66;* **B32B** *3/10*
U.S. Cl. 428—141 **11 Claims**

1. A magneto-optical recording medium comprising:
an amorphous substrate which is transparent to laser light;
a first layer formed on a surface of the substrate, the first layer being amorphous and having a chemical composition corresponding to a first garnet;



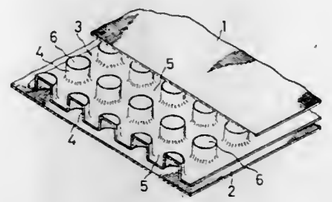
a second layer formed on the first layer, the second layer being composed of crystals of a second garnet having a crystallization temperature lower than the softening point of the substrate and an average surface roughness of less than 40 Å; and
a third layer formed on the second layer, the third layer being composed of a bismuth garnet having it axis of easy magnetization perpendicular to the surface of the substrate.

5,599,606

SHEET-LIKE SANDWICH MOLDING

Dieter Disselbeck, Bad Soden am Taunus, and Dieter Stahl, Kriftel, both of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Continuation of Ser. No. 225,003, Jul. 27, 1988, abandoned, which is a continuation of Ser. No. 62,217, Jun. 15, 1987, abandoned, which is a continuation of Ser. No. 910,145, Sep. 22, 1986, abandoned, which is a continuation of Ser. No. 719,349, Apr. 3, 1985, Pat. No. 4,631,221. This application Jun. 25, 1993, Ser. No. 83,023
Claims priority, application Germany, Apr. 5, 1984, 34 12 846.8
Int. Cl.[6] B32B *3/00*
U.S. Cl. 428—156 **8 Claims**



1. A core material comprising at least one textile woven or loop fabric of fiber material in the form of a sheet, the textile fabric having deformations therein formed by a deep-drawing process to thereby prestress the fiber material so deformed, the deformations having surrounding side walls, cured synthetic resin impregnating the fiber material, and openings between the resin impregnated fiber material extending over the stressed side walls of the deformations formed during the deep-drawing process.

5,599,607

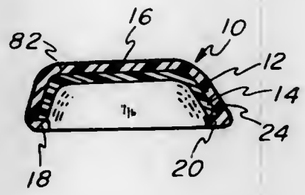
Patent Not Issued For This Number

5,599,608

METHOD OF INSERT MOLDING PLASTIC PARTS TO PROVIDE COVERED EDGE SURFACES AND PLASTIC PARTS MADE THEREBY

Hiroaki Yamamoto, and William Hardgrove, both of Brookville, Ohio, assignors to Green Tokai Co., Ltd., Brookville, Ohio

Filed Jul. 24, 1995, Ser. No. 506,362
Int. Cl.[6] B32B 9/00
U.S. Cl. 428—192 24 Claims



1. A method for insert molding plastic parts comprising the steps of:

preforming a film laminate having re-entrant edge portions;

positioning the film laminate in a mold cavity of a mold;

closing the mold; and

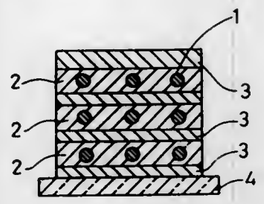
injecting prepolymer into the mold cavity to form a plastic substrate such that the re-entrant edge portions of the film laminate at least partially cover adjacent edges of the plastic substrate.

5,599,609

NONLINEAR OPTICAL MATERIAL AND METHOD OF PRODUCING THE SAME

Yoshio Manabe; Masaru Yoshida, both of Katano; Ichiro Tanahashi, and Tsuneo Mitsuyu, both of Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 27, 1994, Ser. No. 249,975
Claims priority, application Japan, Jun. 1, 1993, 5-130301
Int. Cl.[6] B32B 5/16; G02B 1/10
U.S. Cl. 428—212 8 Claims



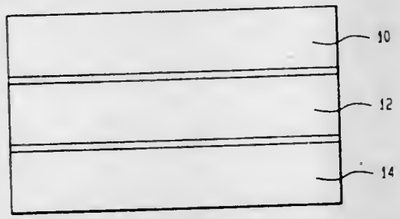
1. A nonlinear optical material comprising nitride layers and non-nitride layers which are alternately deposited on a substrate such that the non-nitride layers are located between two nitride layers, wherein (i) said nitride layers are at least substantially free of semiconductor particles and comprise at least one nitride material, and (ii) said non-nitride layers comprise at least one non-nitride material selected from the group consisting of oxides, carbides and semiconductors, and particles dispersed in said at least one non-nitride material, said particles having a substantially uniform particle diameter and comprising at least one semiconductor having an energy band gap smaller than an energy band gap of said nitride material and said non-nitride material.

5,599,610

TRILAMINATE FABRIC FOR SURGICAL GOWNS AND DRAPES

Harry Levy, Hollis Hills, N.Y., assignor to Fabrite Laminating Corp., Wood-Ridge, N.J.

Filed Feb. 4, 1994, Ser. No. 192,040
Int. Cl.[6] B32B 7/00
U.S. Cl. 442—261 8 Claims



1. A washable, sterilizable article for hospital and/or medical garments which exhibits a very high resistance to the penetration of fluid, blood and virus while exhibiting a high rate of moisture vapor transmission, comprising:

a first layer of one of woven or knit fabric;

a second layer of a microporous polyurethane membrane;

a third layer of one of woven or knit fabric;

a first polyether-polyurethane adhesive joining said first and second layers together;

and a second polyether-polyurethane adhesive joining said second and third layers together; and

wherein said second layer comprises a microporous polyurethane membrane composed of a the order of substantially 6 Billion individual pores per square inch.

5,599,611

PREPREG AND CURED LAMINATE FABRICATED FROM A TOUGHENED POLYCYANURATE

Ali Afzali-Ardakani, Yorktown Heights; Jeffrey T. Gotro, Endwell; Jeffrey C. Hedrick, Peekskill; Konstantinos Papathomas, Endicott; Niranjan M. Patel, Wappingers Falls, all of N.Y.; Jane M. Shaw, Ridgefield, Conn., and Alfred Viehbeck, Fishkill, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 923,723, Jul. 31, 1992. This application Nov. 23, 1994, Ser. No. 344,479
Int. Cl.[6] B32B 7/00
U.S. Cl. 442—180 24 Claims

1. A prepreg comprising a reinforcing material impregnated with a curable material said curable material comprising a blend of a fluorine-containing cyanate and a fluorine-containing arylene ether polymer wherein said cyanate is a monomer having the structure

$$N{\equiv}C{-}O{-}R{-}[R^1]_n{-}O{-}C{\equiv}N$$

said fluorine containing arylene ether polymer has the structure

$$X{-}R{-}[R^1]_m{-}X$$

wherein X is any group capable of reacting with a —C≡N group;

R is an aliphatic or aromatic group which may or may not be fluorosubstituted;

R^1 is an aliphatic or aromatic group which may or may not be fluoro substituted or R^1 is selected from the group consisting of ether, carbonyl, sulfone, phosphine oxide and sulfide, and at least one of R or R^1 must be fluoro substituted;

n is 0–10; and

m is 0–100;

said material in the cured state comprising a fluorine-containing polycyanurate network having a plurality of discrete phases of said fluorine-containing thermoplastic polymer dispersed therein wherein said thermoplastic polymer phases are of submicron size.

5,599,612

WOVEN CARBON FIBER FABRIC

Toshio Muraki, Matsuyama; Masazumi Tokunou; Ryuji Sawaoka, both of Ehime-ken; Masahiko Hayashi, Iyo; Toshiaki Higashi, Ehime-ken, and Tokuo Tazaki, Matsuyama, all of Japan, assignors to Toray Industries, Inc., Japan

Filed Mar. 22, 1995, Ser. No. 408,730
Claims priority, application Japan, Mar. 31, 1994, 6-063151
Int. Cl.[6] B32B 7/00
U.S. Cl. 442—60 9 Claims

1. A prepreg precursor comprising:

(a) carbon fiber threads woven into a carbon fiber woven fabric having a thickness, said threads of said woven fabric having points of intersection and being crimped in the direction of said fabric thickness; and

(b) a stabilizer material, applied to said fabric for stabilizing the structural form of the fabric by promoting adhesion between said threads at said points of intersection, in an amount after hardening between about 0.5 to about 10 wt % by weight of fibrous material of the fabric;

wherein said precursor has a bending resistance value between about 20 to about 150 mm and a cover factor between about 90 to about 99.8%, and wherein said precursor is capable of being impregnated with a matrix resin to form a prepreg such that said fabric is flattened in said thickness direction and remains in a flattened state.

5,599,613

COMPOSITIONS FOR IMPARTING STAIN-RESISTANCE TO POLYAMIDE TEXTILE PRODUCTS WHICH ARE LIGHTFAST AND DURABLE TO ALKALINE WASHING

Richard D. Smith, Opelika, Ala., assignor to WestPoint Stevens Inc., WestPoint, Ga.

Division of Ser. No. 989,485, Dec. 4, 1992, Pat. No. 5,328,766, which is a continuation of Ser. No. 847,412, Feb. 28, 1992, abandoned, which is a continuation of Ser. No. 543,997, Jun. 29, 1990, abandoned. This application Mar. 22, 1994, Ser. No. 216,109
Int. Cl.[6] B32B 7/00
U.S. Cl. 252—8.62 4 Claims

1. An aqueous solution for treating fibrous polyamide materials, the solution comprising a mixture of (a) a partially sulfonated novolak resin, (b) polymethacrylic acid, copolymers of methacrylic acid, or combinations of said polymethacrylic acid and said copolymers of methacrylic acid, and c) a water soluble aluminum compound.

5,599,614

INTEGRAL COMPOSITE MEMBRANE

Bamdad Bahar, Baltimore; Alex R. Hobson, Elkton, both of Md., and Jeffrey A. Kolde, Newark, Del., assignors to W. L. Gore & Associates, Inc., Newark, Del.

Continuation-in-part of Ser. No. 404,853, Mar. 15, 1995, Pat. No. 5,547,551. This application Nov. 21, 1995, Ser. No. 561,514
Int. Cl.[6] B32B 5/14;5/16;33/00; C25B 13/08
U.S. Cl. 442—171 9 Claims

1. A composite membrane comprising:

(a) an expanded polytetrafluoroethylene membrane having a porous microstructure of polymeric fibrils; and

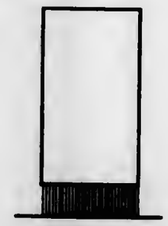
(b) an ion exchange material impregnated throughout the membrane, the impregnated expanded polytetrafluoroethylene membrane having a Gurley number of greater than 10,000 seconds, wherein the ion exchange material substantially impregnates the membrane so as to render an interior volume of the membrane substantially occlusive.

5,599,615

HIGH PERFORMANCE ELECTRIC CONTACTS

Joseph A. Swift, Ontario, and Stanley J. Wallace, Victor, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 9, 1995, Ser. No. 555,817
Int. Cl.[6] B32B 9/00
U.S. Cl. 428—293.1 17 Claims



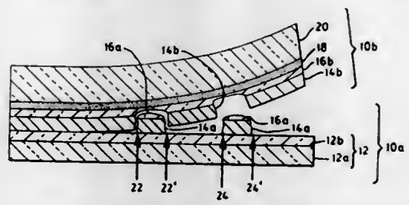
1. An electrical component for making electrical contact with another component comprising a composite member including a plurality of electrically conductive, nonmetallic fibers in an electrically conductive metallic matrix selected from the group consisting of metals and metal alloys, wherein said composite member has an axial direction and a DC volume resistivity of less than about 100 micro ohm cm, said plurality of conductive fibers being oriented in said matrix in a direction substantially parallel to each other and to the axial direction of said member and said fibers being continuous from one end of said member to the other end to provide a plurality of electrical contact points at each end of said member, at least one end of said member having a brush-like structure of said plurality of fibers wherein said brush-like structure is at least substantially free of the metallic matrix, thereby providing a distributed filament contact wherein the terminating ends of the fibers in the brush-like structure define an electrically contacting surface.

5,599,616

LAMINAR IMAGING MEDIUM UTILIZING CROSS-LINKED BORATED POLYMERIC BINDER

Jonathan M. Mack, Boylston, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 30, 1994, Ser. No. 347,598
Int. Cl.[6] B32B 3/26; G03F 7/004
U.S. Cl. 428—304.4 11 Claims



1. A laminar imaging medium for the imagewise recordation of information, the recorded latent image being developable by laminar separation, said laminar imaging medium comprising:

first and second support sheets;

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an imagewise activatable polymeric layer, the imagewise activatable layer being activatable in response to an imagewise recordation to thereby increase adhesion between said layer and a porous or particulate image-forming layer;

a plurality of fracturable layers, the plurality comprising the porous or particulate image-forming layer and a release layer, at least one of the fracturable layers having a cross-linked borated polymeric binder;

the porous or particulate image-forming layer disposed on the imagewise activatable layer and forming an interface therewith, the image-forming layer having cohesivity in excess of its adhesivity for the imagewise activatable layer;

the release layer disposed on the image-forming layer and forming an interface therewith such that upon laminar separation of the laminar imaging medium following activation of areas of the laminar imaging medium failure occurs in areas corresponding to the imagewise recordation within or on the surface of the release layer; and

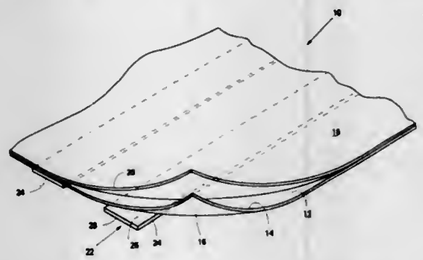
the first support sheet secured to the imagewise activatable layer and the second support sheet adhered to the face of the release layer remote from the imagewise activatable layer.

5,599,617

NONSLIP ARTICLE SUPPORT PAD

Michael A. Ewald, Highland Village, Tex., assignor to Struckmeyer Corporation, Dallas, Tex.

Filed Aug. 2, 1995, Ser. No. 510,520
Int. Cl.[6] B32B 7/12
U.S. Cl. 428—317.3 **5 Claims**



1. A conformable, nonslip article support pad, comprising:

it flexible substrate formed of a resiliently compressible foam material having defined upper and lower surfaces;

a flexible film having a kinetic coefficient of friction with steel that is greater than 1.0, said film being bonded to the upper surface of said flexible substrate forming an integral structure therewith and cooperating with the substrate to form a drapable structure having a readily deformable slip-resistant upper surface; and

a means for removably attaching the lower surface of the substrate of said pad to a selected recumbent surface, said means comprising a plastic film having first and second surfaces, said first surface being adhesively bonded to the lower surface of said flexible substrate and said second surface having an adhesive coating predisposed thereon and adapted to provide a temporary adhesive connection between said lower surface of the substrate and said selected recumbent surface when said article support pad is placed in contact with said selected recumbent surface.

5,599,618

METHOD OF MAGNETICALLY AND/OR ELECTROSTATICALLY POSITIONING PRESSURE-SENSITIVE ADHESIVE BEADS AND MAGNETICALLY POSITIONABLE PRESSURE-SENSITIVE

Joseph P. Callahan, Jr., St. Paul; Rudyard M. Enanoza, Woodbury; Michael S. Groess, Oakdale, and Mark D. Weigel, Vadnais Heights, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 28,424, Mar. 9, 1993, abandoned.
This application Nov. 15, 1994, Ser. No. 339,925
Int. Cl.[6] B32B 5/16
U.S. Cl. 428—323 **6 Claims**



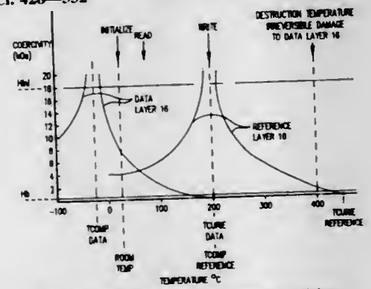
1. A coated substrate comprising a substrate having a layer of pressure-sensitive adhesive which displays pressure-sensitive tack coated thereon, wherein the pressure-sensitive adhesive is formed from free flowing adhesive beads wherein each adhesive bead consists essentially of a pressure-sensitive adhesive core and a tack-free shell therearound, wherein the pressure-sensitive adhesive core consists essentially of a pressure-sensitive adhesive and wherein the bead consists essentially of a magnetically responsive material and wherein the beads are capable of being applied to the substrate via magnetic forces, and wherein upon activation by heat and/or pressure the beads form a layer of pressure-sensitive adhesive that displays pressure-sensitive tack on the substrate.

5,599,619

WRITE ONCE MAGNETO-OPTIC MEDIA AND SYSTEM

John G. Eckhardt, Morgan Hill; Michael M. Farrow, Saratoga; Chien-Jung F. Lin, San Jose, and James C. Sults, Los Gatos, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 18, 1991, Ser. No. 779,220
Int. Cl.[6] G11B 5/66; B32B 5/16
U.S. Cl. 428—332 **20 Claims**



1. A write once optical storage medium comprising:

a substrate;

a data layer overlying the substrate, comprised of a first magnetic material having a first Curie temperature;

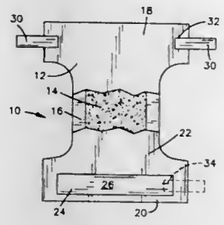
a reference layer overlying the data layer, comprised of a second magnetic material having a second Curie temperature greater than the first Curie temperature such that if the reference layer is heated to a temperature approximately equal to or greater than its Curie temperature the data layer can no longer be read.

5,599,620

SOFT DIAPER TAPE

Richard A. Huskey, Mentor, Ohio, assignor to Avery Dennison Corporation, Pasadena, Calif.

Continuation of Ser. No. 57,043, May 3, 1993, abandoned.
This application Jul. 6, 1994, Ser. No. 271,262
Int. Cl.[6] C09J 7/02
U.S. Cl. 428—343 **11 Claims**



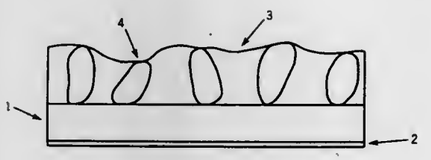
1. A fastener tab suitable for disposable diapers or other tab fastened articles comprising a backing film of polymeric resin and an adhesive layer for fastening and refastening, said film having an exposed outer side and said adhesive layer having an exposed adhesive side, said tab having a length extending between terminal segments thereof for forming a factory joint to secure said fastener tab to said tab fastened article at one terminal segment and a user joint to fasten and refasten said tab fastened article closed at the other terminal segment, and said outer side including a surface morphology having a roughness average value of from about 7,000 to about 14,700 angstroms, said surface morphology providing increased tactile softness as compared with a similar film having a rougher surface morphology.

5,599,621

COVER TAPE FOR SURFACE MOUNT DEVICE PACKAGING

Sohail Akhter, Brown Deer, Wis., assignor to Brady Precision Tape Co., Milwaukee, Wis.

Filed Sep. 29, 1995, Ser. No. 537,420
Int. Cl.[6] B65D 73/02;85/38; B32B 7/12
U.S. Cl. 428—349 **22 Claims**



1. A low haze, high light transmission, static dissipative, heat-sealable, tear resistant cover tape comprising an unmetallized backing film one side of which is coated with an adhesive composition and the other side of which is coated with a first organic antistatic agent, the adhesive composition comprising at least one:

A. Thermoplastic elastomer comprising a styrenic block copolymer,

B. Acrylic copolymer modifying agent,

C. Antiblock agent comprising thermoplastic polyolefin microspheres, and

D. Second organic antistatic agent.

5,599,622

STABILIZED CURABLE ADHESIVES

Kevin E. Kinzer, Woodbury; Wayne S. Mahoney, and Michael C. Palazzotto, both of St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 78,546, Jun. 16, 1993, Pat. No. 5,453,450.
This application May 22, 1995, Ser. No. 445,491
Int. Cl.[6] C09J 7/02;133/04;163/00
U.S. Cl. 428—355 EP **4 Claims**

1. A heat curable adhesive article comprising (a) at least one carrier web having at least a first and second surface; and (b) a free radically cured adhesive composition prepared from a formulation comprising:

(1) at least one free radically polymerizable monomer;

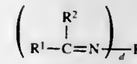
(2) at least one epoxy function monomer;

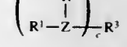
(3) at least one free radical polymerization photoinitiator;

(4) a thermally-initiated cationic catalyst system comprising:

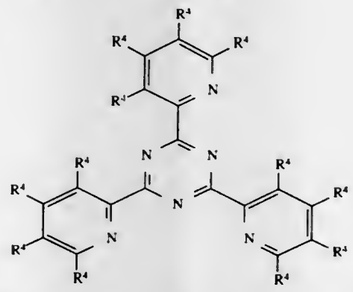
(a) at least one salt of an organometallic cation, wherein the salt of the organometallic cation is selected from the class of substituted and unsubstituted aromatic compounds based on a benzene or cyclopentadienyl nucleus, the metal atom is a transition metal atom, and the anion is tetrafluoroborate, hexafluorophosphate, hexafluoroarsenate, or hexafluoroantimonate;

(b) at least one stabilizing additive, wherein the stabilizing additive has a segment or central nucleus of a formula selected from the group consisting of


(1)


(2)

(3)


(4)

wherein

R^1 is a radical moiety that can be the same or different and is selected from substituted and unsubstituted C_1 to C_{10} alkyl groups, substituted and unsubstituted groups of one to four aromatic rings, wherein two to four rings can be fused or unfused rings;

R^2 is hydrogen or R^1 further when R^2 is R^1, R^1 and R^2 taken together can form a cyclic ring having 5 to 7 ring atoms;

R^3 is R^1 or divalent group (as when d=2) selected from alkylene, having 3 to 10 carbon atoms and phenylene groups:

R^4 is hydrogen, and each R^3 may be independently selected and is as defined above, and further two adjacent R^3 groups may be taken together to form a cyclic ring having 5 to 7 ring atoms;

Z is nitrogen, phosphorus, arsenic or antimony;

c is 1 or 2; and

d is 1 or 2;

(5) optionally, at least one alcohol-containing material; and

(6) optionally, adjuvants, coated on at least the first surface of the carrier web.

5,599,623

ARAMID COMPOSITION

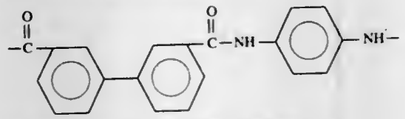
Beverly J. Selle, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 336,035, Nov. 8, 1994, abandoned. This application Jan. 16, 1996, Ser. No. 585,602

Int. Cl.[6] D02G *3/00*; **C08G** *69/26*

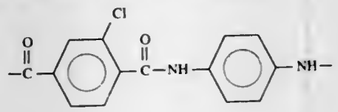
U.S. Cl. 428—364 **5 Claims**

1. An aramid fiber consisting essentially of about 5 to about 50 mole percent of the repeat unit



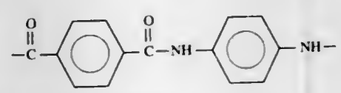
(I)

0 to about 25 mole percent of the repeat unit



(II)

and



(III)

is the remainder of the units.

5,599,624

AMORPHOUS SILICON OXYCARBIDE COATED SILICON CARBIDE OR CARBON FIBERS

Svante Prochazka, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 3, 1995, Ser. No. 498,272

Int. Cl.[6] D02G *3/00*

U.S. Cl. 428—375 **5 Claims**

1. A silicon carbide or carbon fiber having reduced surface roughness comprising the silicon carbide or carbon fiber having a continuous surface coating of a silicone resin on an outer surface of said fiber, where the silicone resin coated silicon carbide or carbon fiber undergoes pyrolysis in a protective atmosphere to form a hard, solid silicon oxycarbide glass coat on the outer surface of the silicon carbide or carbon fiber.

5,599,625

PRODUCTS HAVING MULTIPLE-SUBSTITUTED POLYSILOXANE MONOLAYER

Mary J. Wirth, Elkton, Md., and Hafeez O. Fatunmbi, Newark, Del., assignors to Research Corporation Technologies, Inc., Tucson, Ariz.

Continuation of Ser. No. 90,053, Jul. 15, 1993, abandoned, which is a continuation-in-part of Ser. No. 900,215, Jun. 17, 1992, abandoned. This application May 31, 1995, Ser. No. 455,875

Int. Cl.[6] B32B *17/10*

U.S. Cl. 428—391 **55 Claims**

1. A product comprising a silica gel or glass substrate to which is chemically bonded a monolayer of silicon atoms which are connected to other silicon atoms in said monolayer through oxygen atoms in said monolayer, wherein the monolayer is substituted with first and second hydrocarbyl substituents and each of the silicon atoms in said monolayer is substituted with said first hydrocarbyl substituent or said second hydrocarbyl substituent, wherein said first hydrocarbyl substituent is longer than said second hydrocarbyl substituent, and wherein the density of said hydrocarbyl substituents is at least 7 micromoles per square meter of substrate surface,

wherein said product is formed by hydrating the surface of said substrate to form on said surface a monolayer of water, and then reacting said surface of said substrate with silanes of the formulas R^1SiX_3 and R^2SiX_3, wherein R^1 and R^2 are hydrocarbyl substituents and X is a leaving group, provided that R^1 is longer than R^2, under conditions under which said silanes react at said surface and form said monolayer of silicon atoms.

5,599,626

MELAMINE-COATED AMMONIUM POLYPHOSPHATE

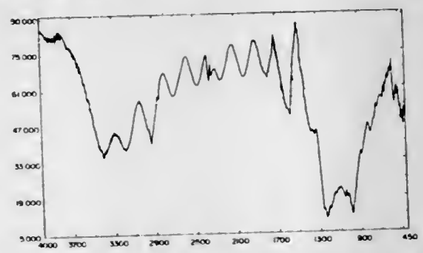
Chikashi Fukumura, Kitakyushushi; Masuo Iwata, Yokohamashi; Noriaki Narita, Yokohamashi; Kouji Inoue, Yokohamashi, and Ryoji Takahashi, Tokyoto, all of Japan, assignors to Chisso Corporation, Tokyo, Japan

Filed Mar. 8, 1994, Ser. No. 207,051

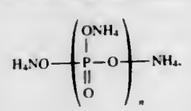
Claims priority, application Japan, Mar. 9, 1993, 5-075256

Int. Cl.[6] B32B *5/16*

U.S. Cl. 428—403 **12 Claims**



1. A powdery ammonium polyphosphate having a surface which is uniformly coated with melamine, comprising a powdery ammonium polyphosphate, having melamine added and/or adhered uniformly onto a particle surface thereof, expressed by the formula



wherein n represents an integer of 20 or more, said powdery ammonium polyphosphate being substantially free of secondary agglomeration and having a water solubility in 10 wt % aqueous suspension of no more than about 6.6 at room temperature.

5,599,627

MAGNETIC PARTICLES COMPRISING MAGNETITE CORE AND PROCESS FOR PRODUCING THE SAME

Koso Aoki, Hiroshima; Hiromitsu Misawa, Hatsukaichi; Yoji Okano, Hiroshima; Minoru Kozawa, Higashihiroshima; Naoki Uchida, Ohtake, and Kazuo Fujioka, Hiroshima, all of Japan, assignors to Toda Kogyo Corporation, Japan

Filed Oct. 4, 1994, Ser. No. 318,493

Claims priority, application Japan, Oct. 8, 1993, 5-277483; Feb. 25, 1994, 6-052995; Feb. 25, 1994, 6-052996

Int. Cl.[6] B32B *5/16*

U.S. Cl. 428—403 **9 Claims**

1. Magnetic particles having an area-average diameter of 0.05 to 1.0 μm, a compaction degree of not more than 60%, an oil absorption of more than 20 ml/100 g and a charging stability of not more than 1.0 μC/g, which magnetic particles comprise:

magnetite core particles containing a silicon compound in the inside thereof, and

a hydrous coprecipitate of silica and alumina deposited or adhered on the surfaces of the magnetite core particles,

wherein the elemental silicon content of the silicon compound in the magnetite core particles is 0.10 to 1.00 wt % based on the weight of the magnetic particles, the elemental silicon content in the hydrous coprecipitate composed of silica and alumina is 0.01 to 0.5 wt % based on the weight of the magnetic particles, and the elemental aluminum content in the hydrous coprecipitate composed of silica and alumina is 0.01 to 2.0 wt % based on the weight of the magnetic particles.

5,599,628

ACCELERATED CYCLOALIPHATIC EPOXIDE/ AROMATIC AMINE RESIN SYSTEMS

Hugh C. Gardner, Somerville, N.J., assignor to Amoco Corporation, Chicago, Ill.

Filed Mar. 1, 1984, Ser. No. 583,357

Int. Cl.[6] B32B *27/38*

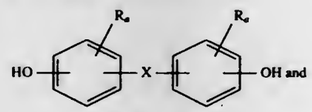
U.S. Cl. 428—413 **11 Claims**

1. A composition comprising:

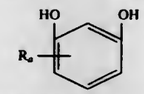
(a) a cycloaliphatic epoxy resin containing two or more 1,2-epoxide groups,

(b) an aromatic amine hardener, and

(c) a cure accelerator selected from

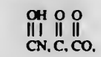


(i)

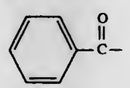


(ii)

wherein X is selected from SO_2, SO, $C(CF_3)_2$,



R is selected from halogen or alkyl of 1 to 4 carbon atoms, or



and a is 0 to 2.

5,599,629

HIGH MODULUS PREPREGABLE EPOXY RESIN SYSTEMS

Hugh C. Gardner, Somerville, and Shahid P. Qureshi, Edison, both of N.J., assignors to Amoco Corporation, Chicago, Ill.

Filed Mar. 1, 1984, Ser. No. 583,359

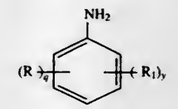
Int. Cl.[6] B32B *27/38*

U.S. Cl. 428—413 **22 Claims**

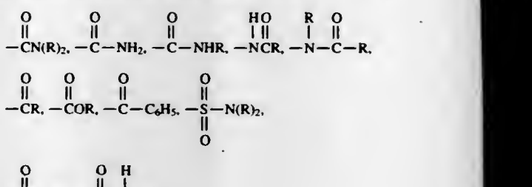
1. A composition comprising:

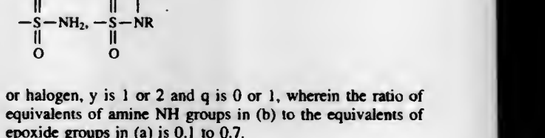
(a) an epoxy resin containing at least one glycidyl amine group wherein the resin contains three or more epoxide groups per molecule, and

(b) an aromatic amine hardener characterized by the following formula:



wherein R is alkyl of 1 to 4 carbon atoms, R_1 is independently an electron withdrawing group selected from $—CF_3$, —CN,





or halogen, y is 1 or 2 and q is 0 or 1, wherein the ratio of equivalents of amine NH groups in (b) to the equivalents of epoxide groups in (a) is 0.1 to 0.7.

5,599,630

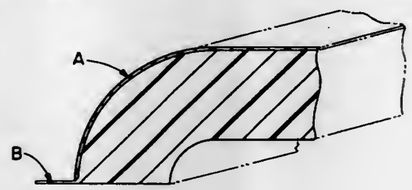
EDGE SEAL PROCESS AND PRODUCT

Robert W. Smith, 405 Water St., Box 54, Converse, Ind. 46919; David S. Cobbledick, 717 Beryl Dr., Kent, Ohio 44240; Charles M. Kausch, 1467 Westvale Dr., Akron, Ohio 44313; Donald F. Reichenbach, 9286 Portage St. NW., Massillon, Ohio 44646; Satish C. Sharma, 4441 Leewood Rd., Stow, Ohio 44224, and Richard Simmons, 627 Glendora Ave., Akron, Ohio 44320

Division of Ser. No. 81,744, Jun. 23, 1993. This application Jun. 5, 1995, Ser. No. 464,197

Int. Cl.[6] B32B *27/38*

U.S. Cl. 428—413 **12 Claims**



1. A laminate comprising:

a molded thermoset plastic part having at least one machined surface and at least a first coating and a second coating,

said first coating being a coating to improve the surface quality of the molded part,

said second coating being a reaction product comprising a liquid epoxy resin composition, said epoxy resin composition comprising an epoxy terminated oligomer having at least two reactive epoxy groups and a hardener component reactive with said epoxy groups, said liquid epoxy resin composition having a Brookfield viscosity at 25° C. of less than about 4000 poise,

said second coating being present on the at least one machined surface of the molded part.

5,599,631

FLUORINATED ELASTOMER/FLUORINATED RESIN COMPOSITIONS FOR TONER FUSING MEMBERS

Jiann-H Chen, Fairport; Beta Y. Ni, and Richard J. Kosakowski, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 8, 1995, Ser. No. 399,067

Int. Cl.[6] B32B *27/00*

U.S. Cl. 428—421 **5 Claims**

1. A fuser member having as its outermost layer, a substantially homogeneous cured composite comprising:

a) a continuous phase of a fluorocarbon elastomer selected from vinylidene fluoride based fluoroelastomers containing hexafluoropropylene and terpolymers of vinylidene fluoride, hexafluoropropylene and tetrafluoroethylene; and

b) a discontinuous phase of a flourinated resin having a molecular weight between about 4,000 and 25,000,

wherein the ratio of fluorocarbon elastomer to fluorinated resin is between about 8:1 and 1:8.

5,599,632

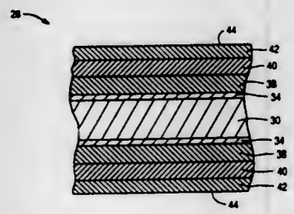
CARBON SEEDLAYER ON NON-METALLIC SUBSTRATES FOR MAGNETIC RECORDING MEDIA

Yuanda Cheng; Richard A. Gardner, both of San Jose, and Mojtaba Sedighi, Fremont, all of Calif., assignors to Akashic Memories Corporation, San Jose, Calif.

Filed May 10, 1995, Ser. No. 435,440

Int. Cl.[6] G11B *5/00*

U.S. Cl. 428—457 **12 Claims**



1. Magnetic recording media comprising:

a non-metallic substrate having a surface with surface irregularities;

a seedlayer selected from the group consisting of carbon and silicon formed over the surface of the substrate; and

a magnetic layer over the seedlayer;

wherein the seedlayer smoothes out the surface irregularities of the surface of the substrate so that a surface of the seedlayer adjacent the magnetic layer is smoother than the surface of the substrate.

5,599,633

WIRE ELECTRODE FOR ELECTRO-DISCHARGE MACHINING

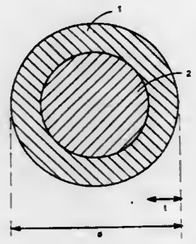
Kenji Miyazaki; Shigeo Ezaki, and Naoyuki Ohkubo, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 58,418, May 7, 1993, abandoned. This application Feb. 17, 1995, Ser. No. 390,417

Claims priority, application Japan, Jun. 11, 1992, 4-151988

Int. Cl.[6] B23H *1/06*

U.S. Cl. 428—675 **11 Claims**



1. A wire electrode for electro-discharge machining, comprising a core and a coating layer on the outer periphery of said core, wherein said core contains a core copper alloy containing at least about 0.16 percent by weight and not more than 7 percent by weight of Ag, and said coating layer contains a coating copper alloy containing Zn and Al in a range of at least 38 percent by weight of Zn and not more than 49 percent by weight of Zn+(6×Al) with the remainder of said coating copper alloy being Cu and unavoidable impurities.

5,599,634

THIN CEMENMTITIOUS SURFACE COATINGS

Derek Davies, Ashbourne, United Kingdom, assignor to British Technology Group Inter-Corporate Licensing Limited, London, England

PCT No. PCT/GB94/00054, § 371 Date Jul. 7, 1995, § 102(e) Date Jul. 7, 1995, PCT Pub. No. WO94/15889, PCT Pub. Date Jul. 21, 1994

PCT Filed Jan. 12, 1994, Ser. No. 481,368

Claims priority, application United Kingdom, Jan. 14, 1993, 9300654

Int. Cl.[6] B32B *9/00*

U.S. Cl. 427—688 **15 Claims**

1. A method of producing a thin cementitious surface coating, said method comprising the steps of:

making a dry cementitious material workable by adding excess water;

applying the workable material to a thickness of under 1 mm to a porous surface of a substrate having at least ten times the mass of said dry cementitious material, which material has the property of high suction of water thereon;

causing or permitting compaction of the applied material onto the surface; and

allowing the compacted material to mature as a coating bonded to said surface.

5,599,635

MAGNETIC RECORDING SYSTEM

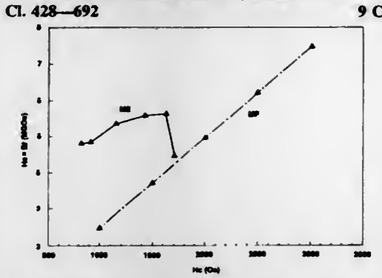
Kenji Katori; Mitsuharu Shouji, and Kazuhiko Hayashi, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 13, 1994, Ser. No. 305,079

Claims priority, application Japan, Sep. 13, 1993, 5-227620

Int. Cl.[6] G11B *5/66;5/74;* B32B *9/00*

U.S. Cl. 428—692 **9 Claims**



1. A high density magnetic recording system comprising:

a magnetic powder-coated magnetic tape having a coercive force Hc of from about 2000 to about 3300 Oe and a magnetic head including a pair of magnetic core halves bonded together in abutting relationship to define a magnetic gap, each core half including an alloy core having a saturation magnetic flux density of 15 kG and greater for recording signals;

wherein said alloy core has a composition of the formula: $(Fe_aM_bCu_cRu_d)_eN_fO_g$, wherein M is at least one member selected from the group consisting of: Si, Al, Ta, B, Mg, Ca, Sr, Cr, Mn, Zr, Nb, Ti, Mo, V, W, Hf, Ga, Ge and rare earth elements;

a, b, c, d, e, f and g are composition percentages; and

$0.1 \leqq b \leqq 5$,

$0 \leqq c \leqq 8$

$0 < d \leqq 5$

$0.2 \leqq c+d \leqq 8$

$a+b\ c+d=100$

$0.5 \leqq f \leqq 15$

$0.1 \leqq g \leqq 13$

$e+f+g=100$.

5,599,636

DEVICE FOR IMPROVING THE CURRENT OUTPUT OF A CHARGEABLE BATTERY AT LOW OUTSIDE TEMPERATURE

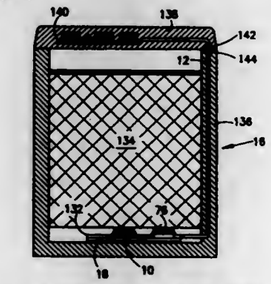
Dieter Braun, Gruewaldstrasse 10, 12165 Berlin, Germany

Division of Ser. No. 244,895, Jun. 21, 1994, Pat. No. 5,508,126. This application Jan. 29, 1996, Ser. No. 593,055

Claims priority, application Germany, Dec. 21, 1991, 41 42 628.2

Int. Cl.[6] H01M *10/50*

U.S. Cl. 429—7 **7 Claims**



1. A device for improving the current output to a load of a chargeable battery at low outside temperatures, comprising a container for a plurality of batteries having walls, said walls including at least one wall which contains first wall segments spaced apart from each other, said first wall segments being hollow and subjected to overpressure and extending over an entire thickness of said at least one wall, said first wall segments having spaces therebetween;

wherein one portion of said spaces, starting at a wall exterior between said first wall segments, is filled with second wall segments which are hollow and subjected to overpressure, said second wall segments being connected with said first wall segments; and

wherein a different part of said spaces between said first wall segments is closed off by a wall which bridges said first wall segments on ends thereon at an inside of said wall and is subjected to underpressure.

5,599,637

PERFORMANCE ZINC ANODE FOR BATTERIES

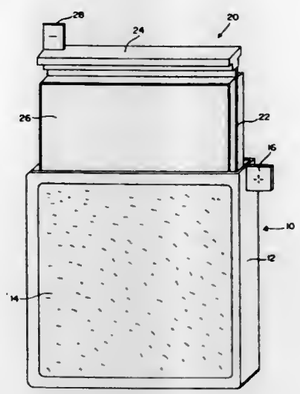
Eugeny Pecherer, Netanya; Joseph Biran, Raanana; Menachem Korall, and Jonathan Goldstein, both of Jerusalem, all of Israel, assignors to Electric Fuel Limited (E.F.L), Jerusalem, Israel

Continuation of Ser. No. 277,708, Jul. 20, 1994, abandoned, which is a continuation of Ser. No. 16,019, Feb. 10, 1993, abandoned. This application Oct. 11, 1995, Ser. No. 541,017

Claims priority, application Israel, Feb. 10, 1992, 100903

Int. Cl.[6] H01M *4/02*

U.S. Cl. 429—27 **26 Claims**



1. A zinc battery anode comprising a substantially planar skeletal frame including conductive metal and having a portion of a surface area thereof formed as open spaces, and further comprising an active zinc anode component compacted into a compact unitary member of active anode material encompassing the skeletal frame, said active anode component being formed of a slurry consisting of

a. zinc granules having an initial density of between 0.2 and 2.0 gr/cc;

b. an electrolyte consisting of an aqueous solution of a hydroxide of a group Ia metal; and optionally including

c. a corrosion inhibitor, said zinc granules being impregnated with and suspended in said electrolyte and said slurry being compacted under pressure to itself and to the skeletal frame to form a porous active zinc anode element having a density in the range of 0.5–3.0 gr/cc, said spaces in the skeletal frame fostering the adherence of said compact unitary member of active anode material, from which excess electrolyte has run off during said compaction, on both sides of said skeletal frame, thus forming a unitary plate of active anode material.

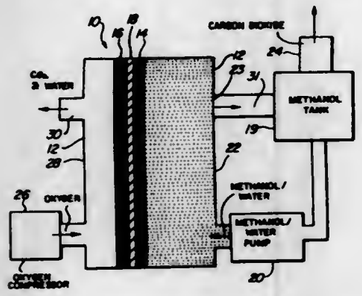
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5,599,638

AQUEOUS LIQUID FEED ORGANIC FUEL CELL USING SOLID POLYMER ELECTROLYTE MEMBRANE

Subbarao Surampudi, Glendora; Sekhariparam R. Narayanan, Altadena; Eugene Vamos, La Canada; Harvey A. Frank, Encino; Gerald Halpert, Pasadena; George A. Olah, Beverly Hills, and G. K. Surya Prakash, Hacienda Heights, all of Calif., assignors to California Institute of Technology, and University of Southern California, both of Pasadena, Calif.

Filed Oct. 12, 1993, Ser. No. 135,007
Int. Cl.[6] H01M 8/10;4/88
U.S. Cl. 429—33 49 Claims



1. In a liquid feed direct fuel cell having an anode, a cathode, an electrolyte, means for circulating an organic fuel past the anode and means for flowing oxygen past the cathode, wherein the improvement comprises:

said electrolyte comprising a solid polymer hydrogen ion conductor membrane;

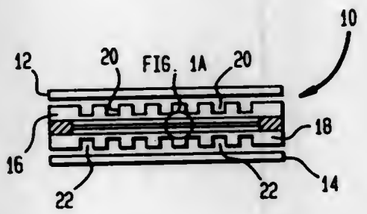
and wherein said organic fuel is free of an acid electrolyte.

5,599,639

ACID-MODIFIED POLYBENZIMIDAZOLE FUEL CELL ELEMENTS

Michael J. Sansone, Berkeley Heights; Frank J. Onorato, Phillipsburg, both of N.J., and Naoya Ogata, Tokyo, Japan, assignors to Hoechst Celanese Corporation, Somerville, N.J.

Continuation-in-part of Ser. No. 521,913, Aug. 31, 1995, abandoned. This application Oct. 27, 1995, Ser. No. 549,337
Int. Cl.[6] H01M 8/10
U.S. Cl. 429—33 17 Claims



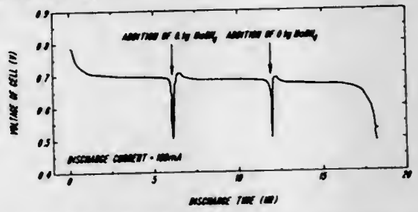
1. An electrolytic membrane for use in a fuel cell comprising an acidified polybenzimidazole resin membranous structure imbibed with phosphoric acid wherein said polybenzimidazole resin is covalently functionalized at its imidazole nitrogens with an alkyl or aryl acid moiety selected from the group consisting of organo sulfonate and organo phosphorylate substitutions and mixtures thereof.

5,599,640

ALKALINE FUEL CELL

Jai Y. Lee, Taejeon; Han H. Lee, Seoul; Jon H. Lee, and Dong M. Kim, both of Taejeon, all of Rep. of Korea, assignors to Korea Advanced Institute of Science and Technology, Rep. of Korea

Filed Aug. 17, 1995, Ser. No. 516,328
Claims priority, application Rep. of Korea, Aug. 17, 1994, 94-20260
Int. Cl.[6] H01M 8/06;8/08
U.S. Cl. 429—46 6 Claims



1. A fuel cell comprising:

a) an aqueous alkaline solution of an electrolyte containing a hydrogen-releasing agent selected from the group consisting of $NaBH_4$, KBH_4, $LiAlH_4$, KH and NaH,

b) a hydrogen storage alloy anode, and

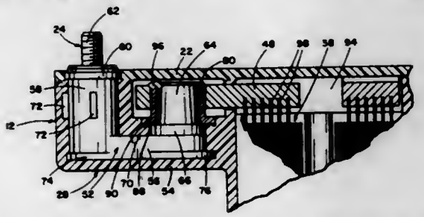
c) an oxygen cathode.

5,599,641

BATTERY TERMINAL AND CASE STRUCTURE

Larry K. W. Ching, Jr., Littleton, and Neil H. Puester, Aurora, both of Colo., assignors to Gyllling Optima Batteries AB, Stockholmsvagen, Switzerland

Filed Apr. 20, 1994, Ser. No. 230,969
Int. Cl.[6] H01M 2/30
U.S. Cl. 429—179 34 Claims



1. A terminal connector assembly for conducting electrical current from an electrolytic device through the wall of a case containing said device while preventing leakage of electrolyte from said case, said terminal connector comprising:

a terminal insert mounted within said case wall and including a first end portion projecting through said wall and forming an exterior connection member, a second end portion laterally spaced from said first end portion within said case to form an interior connection member remote from said exterior connection member, and means for substantially reducing the transmittal of mechanical loads from said first end portion to said second end portion;

means for electrically interconnecting said interior connection member with said electrolytic device within said case;

means located between said electrically interconnecting means and said interior connection member for sealing the connection between said electrically interconnecting means and said interior connection member to prevent leakage of electrolyte from said case,

wherein said load reducing means comprises an insert body portion disposed between said first and second end portions and spacing said interior connection member away from said exterior connection member to substantially transfer any mechanical loads imposed on said exterior connection member to said case wall; and

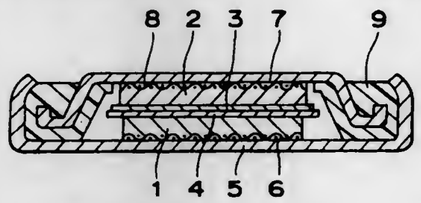
wherein said interior connection member comprises a pin projecting angularly outwardly from said insert body portion.

5,599,642

LITHIUM SECONDARY BATTERY CONTAINING ORGANIC ELECTROLYTE, ACTIVE MATERIAL FOR CATHODE THEREOF, AND METHOD FOR MANUFACTURING THE ACTIVE MATERIAL

Hiroyuki Toshiro, Ibaraki; Kazunobu Matsumoto, Osaka, and Akira Kawakami, Takatsuki, all of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

PCT No. PCT/JP94/00852, § 371 Date Jun. 9, 1995, § 102(e) Date Jun. 9, 1995, PCT Pub. No. WO94/28591, PCT Pub. Date Dec. 8, 1994
PCT Filed May 30, 1994, Ser. No. 379,495
Claims priority, application Japan, May 31, 1993, 5-154147; Oct. 20, 1993, 5-285669; Mar. 16, 1994, 6-072661
Int. Cl.[6] H01M 6/14
U.S. Cl. 429—194 10 Claims



1. A lithium secondary battery, which comprises:

a cathode comprising a lithium nickel oxide as an active material, an anode comprising lithium or a compound containing lithium and an organic electrolyte, wherein the cathode active material is a lithium nickel oxide having a primary differential absorption spectrum of electron spin resonance measured at a temperature of 77 K. by using X band that is a singlet, and an intensity ratio of a main peak other than lithium nickel oxide and a main peak of lithium nickel oxide in a powder X-ray diffraction image (CuKα ray) that is 0.03 or less.

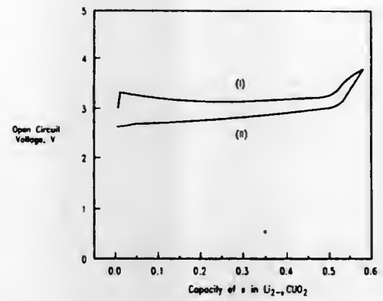
5,599,643

LITHIUM ELECTROCHEMICAL CELL INCLUDING LITHIUM COPPER OXIDE IN THE CATHODE

Edward J. Plichta, Howell, and Wishvender K. Behl, Ocean, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 8, 1995, Ser. No. 555,247
Int. Cl.[6] H01M 4/48
U.S. Cl. 429—220 4 Claims

1. An electrochemical cell including a lithium containing material as the anode, a lithium ion conducting electrolyte, and lithium copper oxide as the cathode wherein the lithium containing material used as the anode is taken from the group consisting of lithium metal, lithium metal alloy, and intercalation compounds of graphite, carbon and petroleum coke with lithium, wherein the lithium ion conducting electrolyte comprises a conducting lithium salt in an organic solvent, wherein the conducting lithium salt is selected from the group consisting of lithium perchlorate, lithium tetrachloroaluminate, lithium hexafluorophosphate, lithium tetrafluoroborate, lithium hexafluoroarsenate, and lithium tetrafluoromethane sulfanamide, wherein the organic solvent of the electrolyte is selected from the group consisting of at least one solvent taken from the group of propylene, carbonate, diethyl carbonate, dimethyl carbonate, methyl formate, methyl acetate, ethylene carbonate, butyrolactone, 1,3 dioxolane, and dimethoxyethane, and wherein the cathode contains Li_2CuO_2.



5,599,644

CATHODES FOR ELECTROCHEMICAL CELLS HAVING ADDITIVES

Wendi M. Swierbut, Westlake, and John C. Nardi, Brunswick, both of Ohio, assignors to Eveready Battery Company, Inc., St. Louis, Mo.

Filed Jun. 7, 1995, Ser. No. 485,424
Int. Cl.[6] H01M 4/50
U.S. Cl. 429—224 9 Claims

1. An electrochemical cell having an anode, a cathode, and an electrolyte, said cathode comprising a manganese dioxide active material and an additive comprising Fe_2O_3-TiO_2.

5,599,645

IMAGE TRANSFER METHOD FOR AN IMAGE FORMING APPARATUS

Takahiro Tamiya, Tokyo; Nobuo Iwata, Sagamihara; Tsuyoshi Deki, Koshigaya, and Takeshi Motohashi, Kawasaki, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed May 11, 1995, Ser. No. 439,139
Claims priority, application Japan, May 12, 1994, 6-098746; Apr. 10, 1995, 7-083824
Int. Cl.[6] G03G 13/16
U.S. Cl. 430—126 9 Claims

1. In an image forming apparatus comprising: an image carrier made of a semiconductor or an insulator;

an acceptor made of a semiconductor or an insulator, and adjoining or contacting one surface of said image carrier at a predetermined nip portion for image transfer, and movable in a same direction as said image carrier; and

two conductors for applying biases for image transfer, and contacting the other surface of said image carrier, and respectively spaced apart from a middle point of said nip portion by distances L1 and L2 at an upstream side and a downstream side with respect to said direction;

a method of transferring charged powder being conveyed by said image carrier to said acceptor a plurality of times in a stack, said method comprising the steps of:

applying to one of said two conductors located at the upstream side a potential V_1 of a same polarity as the charged powder carried on said image carrier;

applying to the other of said two conductors located at the downstream side a potential V_2 opposite in polarity to the charged powder carried on sad image carrier; and

sequentially increasing the absolute value of said potential V_1 having the polarity of the powder and the absolute value of said potential V_2 having the polarity opposite to the polarity of the powder every time an image transfer is repeated.

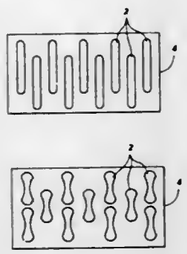
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HIGHER SUBSTRATE DENSITY DIP COATING METHOD

Geoffrey M. T. Foley, Fairport; William G. Herbert, Williamson; Eugene A. Swain, Webster; Youn K. Rasmussen, Fairport, and Gary J. Maier, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 29, 1996, Ser. No. 624,330
Int. Cl.[6] G03G *5/04;* B05D *5/12;1/18*
U.S. Cl. 430—133 12 Claims



1. A dip coating method comprising:
(a) shaping the widths of a plurality of hollow, flexible, endless substrates into an elongated shape and arranging the plurality of the elongated substrates into a configuration for dipping into a coating solution of a single coating vessel prior to (c);
(b) dipping the plurality of the substrates into a coating solution disposed in the coating vessel; and
(c) raising the plurality of the substrates having the elongated shape from the coating solution, thereby resulting in coated substrates.

11. The method of claim 1, wherein the coating solution comprises a charge generating material.

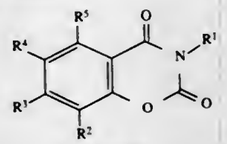
5,599,647

TONING AGENTS FOR THERMOGRAPHIC AND PHOTOTHERMOGRAPHIC MATERIALS AND PROCESS

Geert Defieuw, Kessel-Lo; Marcel Monbaliu, Mortsel, and Jean-Marie Dewanckele, Drongen, all of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Filed Jun. 20, 1996, Ser. No. 666,974
Claims priority, application European Pat. Off., Jul. 7, 1995, 95201863
Int. Cl.[6] G03C *1/35;1/498;1/73*
U.S. Cl. 430—200 20 Claims

1. A thermographic material comprising at least one element and wherein said element(s) contain(s) therein a substantially light-insensitive organic heavy metal salt and an organic reductor therefor the said material being capable of thermally producing an image from said organic heavy metal salt and reductor, wherein said material contains a 1,3-benzoxazine-2,4-dione toning agent having general formula (I):



(I)

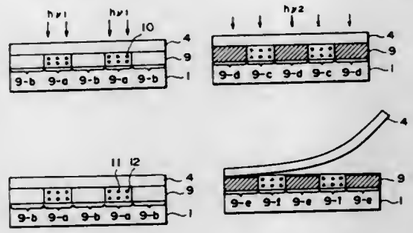
wherein R^1 represents hydrogen, $—CH_2OH$, —(C=O)—R, —CONHR, or M; R^2, R^3, R^4 and R^5 each independently represents hydrogen, —O—(C=O)—OR or —NH—(C=O)—OR and at least one of which is not hydrogen if R^1 is also hydrogen: R represents an alkyl or aryl group; and M represents a monovalent heavy metal ion.

5,599,648

SURFACE REFORMING METHOD, PROCESS FOR PRODUCTION OF PRINTING PLATE, PRINTING PLATE AND PRINTING PROCESS

Yuji Kondo; Masato Katayama, both of Yokohama, and Akihiro Mouri, Kokubunji, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 740,630, Aug. 5, 1991, abandoned.
This application Nov. 26, 1993, Ser. No. 157,431
Claims priority, application Japan, Aug. 3, 1990, 2-206616; Nov. 20, 1990, 2-316262; Nov. 20, 1990, 2-316263
Int. Cl.[6] G03C *1/805;* B41C *1/00*
U.S. Cl. 430—256 8 Claims



1. A surface reforming method, comprising sequentially:
(i) a step of separately providing a surface reforming medium, and a silver salt-containing polymeric article supported on a support and comprising at least a polymerizable compound and a photosensitive silver salt compound,
(ii) a step of subjecting the silver salt-containing polymeric article to imagewise exposure to light,
(iii) a step of causing the surface reforming medium to contact the silver salt-containing polymeric article after the imagewise exposure,
(iv) a step of polymerizing the silver salt-containing polymeric article, and
(v) a step of peeling the surface reforming medium from the silver salt-containing polymeric article, so that a fraction of the surface reforming medium is materially transferred to the polymerized polymeric article.

5,599,649

OPTICAL RECORDING MEDIUM

Masahiro Shinkai, Chiba, and Kenryo Namba, Tokyo, both of Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Mar. 30, 1995, Ser. No. 413,992
Claims priority, application Japan, Mar. 31, 1994, 6-087855; Mar. 31, 1994, 6-087863
Int. Cl.[6] G11B *7/24*
U.S. Cl. 430—270.11 24 Claims

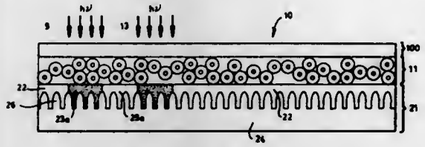
10. An optical recording medium comprising:
a substrate;
an optical recording layer and a surface layer formed on said substrate, said surface layer being printable with an ink containing a water-soluble dye, and said surface layer containing a smectite-organic composite.

5,599,650

PHOTOREACTION QUENCHERS IN ON-PRESS DEVELOPABLE LITHOGRAPHIC PRINTING PLATES

Daoshen Bi, Burlington; Maurice J. Fitzgerald, Canton; Frederick R. Kearney, Walpole; Rong-Chang Liang, Newton; William C. Schwarzel, Billerica, and Tung-Feng Yeh, Waltham, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 28, 1995, Ser. No. 430,359
Int. Cl.[6] G03C *1/73*
U.S. Cl. 430—273.1 9 Claims



1. A printing plate precursor element capable of being made imagewise responsive to fountain and ink solutions and thereby useful for printing images on a receiving medium, the printing plate precursor element comprising
a substrate having either an affinity or aversion to said ink solution;
a photoresist deposited over said substrate, the photoresist having an affinity or aversion to said ink solution substantially opposite the affinity or aversion of the substrate, the polymeric photoresist capable of imagewise photohardening upon imagewise exposure to actinic radiation, the photoresist comprising a photopolymerizable ethylenically unsaturated monomer having at least one terminal ethylenic group capable of forming a polymer by a free radical-initiated reaction, and a free-radical generating system activatable by actinic radiation; and
a continuous light-transmissive polymeric overcoat deposited over the photoresist, the light-transmissive polymeric overcoat incorporating therein a polymer with a pendant quencher component, the quencher component capable of deactivating free radicals generated by said free-radical generating system subsequent to activation of said system by said actinic radiation.

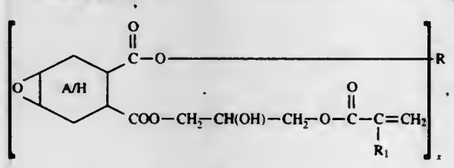
5,599,651

(CYCLO)ALIPHATIC EPOXY COMPOUNDS

Bettina Steinmann, Praroman; Jean-Pierre Wolf, Courtaman; Adrian Schulthess, Tentlingen, and Max Hunziker, Düdingen, all of Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Division of Ser. No. 169,938, Dec. 20, 1993, Pat. No. 5,468,886. This application Aug. 21, 1995, Ser. No. 517,888
Claims priority, application Switzerland, Dec. 23, 1992, 3943/92
Int. Cl.[6] G03L *5/00;* C07D *303/38*
U.S. Cl. 430—280.1 6 Claims

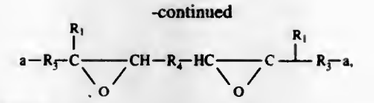
1. A formulation comprising
a) 5 to 60% by weight of a (cyclo)aliphatic epoxy compound of formula I or II



(I)

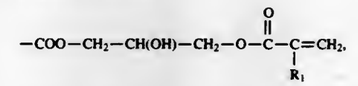
and

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(II)

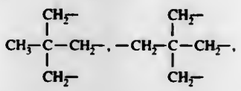
wherein
a is a radical of formula



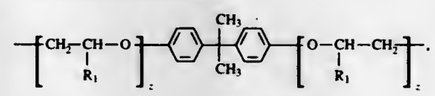
A is a cyclohexyl radical or a hydrogenated radical of formula



R is a radical of formula $(—CH_2)_3CH_3$, $(—CH_2—)_y$,



an unsubstituted or substituted monovalent to hexavalent aliphatic alcohol radical, an unsubstituted or substituted aromatic-aliphatic alcohol radical, an unsubstituted or substituted monovalent to tetravalent polyether rest or polyester radical, an unsubstituted or substituted monovalent to tetravalent polycaprolactone radical, an unsubstituted or substituted monovalent to tetravalent polyurethane radical or a radical of formula



and
R_1 is hydrogen or CH_3,
x is an integer from 1 to 6,
y is an integer from 2 to 20,
z is an integer from 1 to 10, and
R_3 and R_4 are each independently of the other an unsubstituted or substituted aliphatic, aromatic or cycioaliphatic hydrocarbon radical,
b) 0 to 10% by weight of a radical photoinitiator,
c) 0 to 10% by weight of customary additives,
d) 0 to 40% by weight of a mono-, di- or polyfunctional (meth)acrylate,
e) 30 to 70% by weight of a di- or polyfunctional epoxide,
f) 5 to 40% by weight of a OH-terminated polyether or polyester, and
g) 0.5 to 5% by weight of a cationic photoinitiator.

5,599,652

PEROXYCARBOXYLIC ESTER INITIATORS DERIVED FROM NITROGEN HETEROCYCLES

Jeanne E. Haubrich, Maplewood, Minn., assignor to Imation Corp., Woodbury, Minn.

Division of Ser. No. 407,617, Mar. 21, 1995, Pat. No. 5,527,921. This application Mar. 22, 1996, Ser. No. 621,745
Int. Cl.[6] G03F *7/031;* C08F *2/48;4/28*
U.S. Cl. 430—281.1 8 Claims

1. A photopolymerizable composition comprising;
(a) a radically polymerizable compound; and

(b) a peroxycarboxylic ester photoinitiator having the formula:

where,

R^1 is an alkyl group; and

R^2 is an aromatic heterocyclic ring containing a first sp^2 hybridized nitrogen atom having three valence bonds consisting of a single and double bond forming part of said aromatic heterocyclic ring, and at least one additional component selected from the group consisting of

i) an additional sp^2 hydridized nitrogen having three valence bonds consisting of a single and double bond in conjugation with said first sp^2 hybridized nitrogen,

ii) an alkyl peroxycarboxylic ester substituent, and

iii) an electron withdrawing substituent having a Hammett sigma value greater than 0.1.

7. A method of photopolymerization comprising the steps of;

(1) providing a polymerizable composition by combining

(a) a peroxycarboxylic ester photoinitiator having the formula:



where,

R^1 is an alkyl group; and

R^2 is an aromatic heterocyclic ring containing a first sp^2 hybridized nitrogen atom having three valence bonds consisting of a single and double bond forming part of said aromatic heterocyclic ring, and at least one additional component selected from the group consisting of

i) an additional sp^2 hydridized nitrogen having three valence bonds consisting of a single and double bond in conjugation with said first sp^2 hybridized nitrogen,

ii) an alkyl peroxycarboxylic ester substituent, and

iii) an electron withdrawing substituent having a Hammett sigma value greater than 0.1;

(b) a radically polymerizable compound; and

(c) a photosensitizer to form said polymerizable composition and

(2) irradiating said polymerizable composition with sufficient electromagnetic radiation to cause polymerization of said polymerizable composition.

8. A photopolymerizable composition comprising;

(a) a radically polymerizable compound; and

(b) a peroxycarboxylic ester photoinitiator having the formula:

where,

R^1 is an alkyl group; and

R^2 is an aromatic heterocyclic ring containing a first sp^2 hybridized nitrogen atom having three valence bonds consisting of a single and double bond forming part of said aromatic heterocyclic ring, and at least one aromatic structure fused to said aromatic heterocyclic ring containing said first sp^2 hybridized nitrogen atom, wherein said aromatic heterocyclic ring is selected from the group consisting of pyrazine, pyrimidine, pyridazine, triazine, imidazole, furazan, oxazole and thiazole.

5,599,653

PATTERN FORMING METHOD WITH SELECTIVE SILYLATION UTILIZING LITHOGRAPHIC DOUBLE-COATED PATTERNING PLATE WITH UNDERCOAT LEVELLING LAYER

Taku Nakao; Hiroyuki Yamazaki; Nobuo Tokutake, all of Kanagawa-ken; Masato Saito, Fukushima-ken; Hidekatsu Kohara, and Toshimasa Nakayama, both of Kanagawa-ken, all of Japan, assignors to Tokyo Ohka Kogyo Co., Ltd., Tokyo, Japan

Division of Ser. No. 287,895, Aug. 9, 1994, Pat. No. 5,498,514.
This application Dec. 15, 1995, Ser. No. 573,142
Int. Cl.[6] G03F 7/30;7/40
U.S. Cl. 430—314 **2 Claims**

1. In a method for forming a patterned resist layer on the surface of a substrate comprising the steps of:

(A) forming an undercoat leveling layer of a thermoplastic resin composition having a flat surface, on the surface of the substrate;

(B) forming an overcoat layer of a positive-working photosensitive resist composition on the flat surface of the undercoat layer;

(C) selectively irradiating the overcoat layer to form a pattern and developing the pattern by applying a developer to dissolve away solubilized resin composition on the irradiated areas of the overcoat layer so that the undercoat layer is exposed;

(D) silylating the overcoat layer patterned in step (C) whereby only the overcoat layer, but not the exposed undercoat layer, is silylated; and

(E) removing the undercoat layer from the areas not covered by the patterned overcoat layer by dry etching,

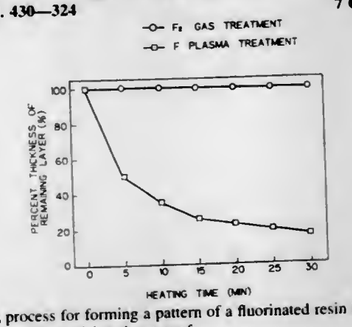
the improvement which comprises using, as the thermoplastic resin composition to form the undercoat layer, a resin composition comprising (1) a copolymer of glycidyl methacrylate and methyl methacrylate in a copolymerization ratio in the range from 2:8 to 8:2 by weight and having a weight-average molecular weight in the range from 10,000 to 200,000 and (2) 2,2',4,4'-tetrahydroxybenzophenone.

5,599,654

PROCESS FOR FORMING PATTERNED LAYER OF FLUORINATED RESIN AND DEVICES CONTAINING SAME

Hiroshi Kudo, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Aug. 17, 1993, Ser. No. 107,167
Claims priority, application Japan, Aug. 21, 1992, 4-222893
Int. Cl.[6] G03F 7/40;7/38
U.S. Cl. 430—324 **7 Claims**



1. A process for forming a pattern of a fluorinated resin layer on a substrate, comprising the step of:

forming a photosensitive resin layer on a substrate,

selectively exposing the photosensitive resin layer to a light energy ray,

developing the selectively exposed photosensitive resin layer to form a pattern of the resin layer, and

exposing the pattern of the resin layer to a fluorine gas atmosphere to convert the pattern of the resin layer to a fluorinated resin layer on the substrate.

5. A process for forming a pattern of a fluorinated resin layer on a substrate, comprising the steps of:

forming a photosensitive resin layer on a substrate,

selectively exposing the photosensitive resin layer to light,

exposing the resin layer to a fluorine gas atmosphere to convert the resin layer to a fluorinated resin layer, and

developing the fluorinated resin layer to form a pattern of the fluorinated resin layer on the substrate.

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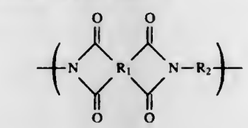
PHOTOIMAGEABLE POLYIMIDE COATING

David D. Ngo, Naperville, Ill., assignor to Amoco Corporation, Chicago, Ill.

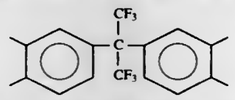
Division of Ser. No. 450,915, May 26, 1995, Pat. No. 5,532,110, which is a division of Ser. No. 269,698, Jul. 1, 1994, Pat. No. 5,501,941, which is a continuation of Ser. No. 865,069, Apr. 8, 1992, abandoned, which is a continuation of Ser. No. 522,363, May 8, 1990, abandoned. This application Apr. 4, 1996, Ser. No. 627,470
Int. Cl.[6] G03C 5/00
U.S. Cl. 430—325 **10 Claims**

1. A process for etching a photoimageable polyimide coating comprising:

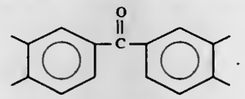
(a) coating a substrate with a layer of a photoimageable polyimide comprising recurring units of



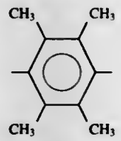
wherein R_1 comprises from about 70 to about 10 mole percent

I 

and from about 30 to about 90 mole percent

II 

and wherein R_2 consists essentially of



b) shielding selected areas of the photoimageable polyimide coating with a shield to provide a pattern of covered photoimageable polyimide coating and exposed photoimageable polyimide coating;

c) crosslinking the exposed photoimageable polyimide coating with actinic radiation;

d) removing the shield; and

e) removing the unexposed photoimageable polyimide coating with an etching composition.

5,599,656

PHOTOGRAPHIC MATERIALS HAVING RELEASABLE COMPOUNDS

Drake M. Michno, Webster; Richard P. Szajewski, Rochester, and Stephen P. Singer, Spencerport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 209,613, Jun. 21, 1988, abandoned. This application Aug. 6, 1990, Ser. No. 563,725
The portion of the term of this patent subsequent to Mar. 27, 2007, has been disclaimed.
Int. Cl.[6] G03C 7/305;7/32
U.S. Cl. 430—382 **23 Claims**

1. A photographic element comprising a support having thereon at least one photographic silver halide emulsion layer, in reactive association with the silver halide emulsion:

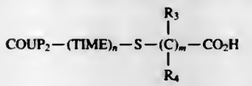
a) a first coupler represented by the formula:

$COUP_1$-T-INH

wherein $COUP_1$ is a coupler moiety, T is a timing group bonded to INH through a substituted or unsubstituted methylene group contained in T and bonded to $COUP_1$ through an O, S, or N atom contained in T, and INH is a development inhibitor moiety, and

wherein the T-INH group is able to undergo electron transfer along a conjugated system therein to cleave INH after T-INH is cleaved from $COUP_1$, and

b) a second coupler represented by the formula:



wherein $COUP_2$ is a coupler moiety, TIME is a timing group, n is 0 or 1, m is 1 to 8, R_3 and R_4 each independently represent hydrogen or alkyl of from 1 to 4 carbon atoms, and the sum of m and the number of carbon atoms represented by both R_3 and R_4 is 1 to 8.

12. A process of forming a photographic image comprising developing an exposed photographic silver halide layer with a color developing agent in the presence of:

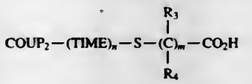
a first coupler that is a dye forming coupler,

a second coupler represented by the formula:

$COUP_1$-T-INH

wherein $COUP_1$ is a coupler moiety, T is a timing group bonded to INH through a substituted or unsubstituted methylene group contained in T and bonded to $COUP_1$ through an O, S, or N atom contained in T, and INH is a development inhibitor moiety, and wherein the T-INH group is able to undergo electron transfer along a conjugated system therein to cleave INH after T-INH is cleaved from $COUP_1$, and

a third coupler represented by the formula:



wherein $COUP_2$ is a coupler moiety, TIME is a timing group, n is 0 or 1, m is 1 to 8, R_3 and R_4 each independently represent hydrogen or alkyl of from 1 to 4 carbon atoms, and the sum of m and the number of carbon atoms represented by both R_3 and R_4 is 1 to 8.

5,599,657

COLOR PHOTOGRAPHIC SILVER HALIDE MATERIAL

Detlef Brennecke, Leichlingen; Johannes Willsau, Leverkusen; Ralf Bücher, Lohmar; Hans-Ulrich Borst, Elsdorf; Peter Bell, Köln, and Lothar Endres, Bergisch Gladbach, all of Germany, assignors to Agfa-Gevaert AG, Germany

Filed Oct. 24, 1995, Ser. No. 547,249

Claims priority, application Germany, Oct. 25, 1994, 44 38 085.4; Dec. 6, 1994, 44 43 329.8

Int. Cl.[6] G03C *1/46*

U.S. Cl. 430—503 11 Claims

1. A color negative film comprising a transparent support, at least one-red-sensitive silver halide emulsion layer containing at least one cyan coupler, at least one green-sensitive silver halide emulsion layer containing at least one magenta coupler, at least one blue-sensitive silver halide emulsion layer containing at least one yellow coupler, at least one interlayer Z-1 which is closer to the support than the red-sensitive silver halide emulsion layer and/or at least one interlayer Z-2 which is closer to the support than the green-sensitive silver halide emulsion layer, wherein said interlayer(s) Z-1 and/or Z-2 contains a silver halide emulsion which contains tabular grains with an aspect ratio of> about 2, an average diameter of a sphere of equal volume≧ about 0.3 μm and a diameter of a circle of equal projected surface area of the tubular grains of at least about 0.3 μm and wherein the silver halide emulsions in the interlayers Z-1 and/or Z-2 are not spectrally sensitized.

5,599,658

PHOTOGRAPHIC FILM-BASE AND PHOTOGRAPHIC ELEMENTS

Jehuda Greener, and Wen-Li A. Chen, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 19, 1995, Ser. No. 574,471

Int. Cl.[6] G03C *1/795*

U.S. Cl. 430—533 9 Claims

1. A silver halide photographic element comprising a film base bearing at least one photographic layer, the film base comprising a miscible blend of from 70 to 95 weight percent poly(ethylene naphthalate) and from 30 to 5 weight percent of a poly(ether imide).

5,599,659

PRESERVATION SOLUTION FOR EX VIVO, WARM PRESERVATION OF TISSUES, EXPLANTS,ORGANS AND VASCULAR ENDOTHELIAL CELLS COMPRISING RETINAL-DERIVED FIBROBLAST GROWTH FACTOR, CYCLODEXTRIN AND CHONDROITIN SULFATE

Lauren Brasile, Albany, and Jolene Clarke, Ballston Spa, both of N.Y., assignors to Breonics, Inc., Schenectady, N.Y.

Continuation-in-part of Ser. No. 29,459, Mar. 11, 1993, abandoned. This application Jan. 13, 1995, Ser. No. 372,782

Int. Cl.[6] A01N *1/02;* C12N *5/00*

U.S. Cl. 435—1.1 22 Claims

1. A solution with an osmolarity of 330 to 600 mOsm comprising:

(a) a cell culture medium;

(b) Mg++ in a concentration greater than 10mmol/L; and

(c) chondroitin sulfate, heparin, cyclodextrin, insulin, cholesterol, pyruvate, and retinal-derived fibroblast growth factor in concentrations sufficient to preserve tissues, explants, vascular endothelial cells, and organs at temperatures ranging from about 18° C. to about 35° C.

5,599,660

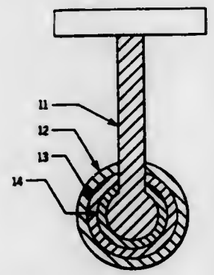
METHOD AND PREPARATION FOR SEQUENTIAL DELIVERY OF WAX-EMBEDDED, INACTIVATED BIOLOGICAL AND CHEMICAL REAGENTS

Rama P. Ramanujam; Brent A. Burdick, both of Brookfield, Wis.; Ulf D. Landegren, and Pierre Sevigny, both of Upsala, Sweden, assignors to Pharmacia Biotech Inc., Milwaukee, Wis.

Continuation-in-part of Ser. No. 227,835, Apr. 14, 1994, abandoned, which is a continuation-in-part of Ser. No. 4,883, Jan. 19, 1993, abandoned. This application Dec. 2, 1994, Ser. No. 349,115

Int. Cl.[6] C12Q *1/68;* C12P *19/34;* C10G *73/36*

U.S. Cl. 435—4 26 Claims



1. A reagent preparation comprising:

(a) a first reagent portion comprising:

(i) an amount of a wax carrier, the wax carrier having a first melting point, and

(ii) an amount of a first reagent wherein said first reagent is a preparation of at least one biological or chemical reagent, said first wax carrier and said first reagent being combined to form a solid first reagent portion when stored at a temperature less than the first melting point, and

(b) a second reagent portion comprising at least one chemical or biological reagent stored in an inactive form, wherein the first and second reagent portions are capable of sequential delivery into a chemical reaction and wherein the second reagent portion is at least partially coated, covered or layered upon the first reagent portion.

5,599,661

REAGENT FOR MEASURING DIRECT BILIRUBIN

Shoji Senba; Keisuke Kurosaka; Hitoshi Kondo, all of Kyoto; Masami Kojima, and Hiroshi Suzuki, both of Chiba-ken, all of Japan, assignors to Unitika, Ltd., Hyogo, and Iatron Laboratories, Inc., Tokyo, both of Japan

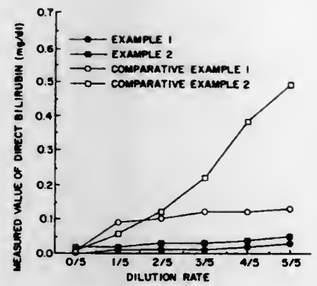
Filed Dec. 28, 1994, Ser. No. 365,158

Claims priority, application Japan, Dec. 28, 1993, 5-338661; Oct. 27, 1994, 6-264197

Int. Cl.[6] C12Q *1/00;1/26;* G01N *33/48;33/20*

U.S. Cl. 435—4 9 Claims

1. A reagent system for measuring direct bilirubin in a specimen, which reagent system comprises a buffer, a tetrapyrrole compound, and a bilirubin-oxidizing compound selected from the group consisting of a bilirubin oxidase, an oxidizing agent, and a diazonium salt.



5,599,662

OLICONUCLEOTIDE PRIMERS AND PROBES FOR THE DETECTION OF HIV-1

Richard A. Respess, Alameda, Calif., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Feb. 17, 1995, Ser. No. 390,192

Int. Cl.[6] C07H *21/04;* C12Q *1/70;* C12P *19/34*

U.S. Cl. 435—5 12 Claims

1. A pair of oligonucleotide primers consisting of RAR1032 (SEQ ID NO: 1) and RAR1033 (SEQ ID NO: 2).

9. A method for detecting human immunodeficiency virus type 1 (HIV-1) nucleic acid, wherein said method comprises:

(a) carrying out a polymerase chain reaction using a pair of oligonucleotide primers of claim 1; and

(b) detecting amplified HIV-1 nucleic acid.

5,599,663

ANGIOTENSIN IV AND ANALOGS AS REGULATORS OF FIBRINOLYSIS

Douglas E. Vaughan, Nashville, Tenn., assignor to Brigham & Women's Hospital, Boston, Mass.

Filed Aug. 27, 1993, Ser. No. 113,292

Int. Cl.[6] C12Q *1/68;* G01N *33/567;33/53*

U.S. Cl. 435—6 9 Claims

1. An in vitro method of evaluating whether a compound will promote fibrinolysis, comprising:

(a) providing cells having a receptor which specifically binds angiotensin IV and which are capable of expressing plasminogen activator inhibitor-1 (PAI-1) in the presence of angiotensin IV; and

(b) contacting the cells with a mixture comprising angiotensin IV or an agonist of angiotensin IV and the compound to specifically bind said receptor; and

(c) detecting the expression of PAI-1 to determine whether the compound induces substantial expression of PAI-1; and

(d) selecting the compound as promoting fibrinolysis if it does not induce substantial expression of PAI-1.

5,599,664

METHOD FOR CHARACTERIZING POLYMER MOLECULES OR THE LIKE

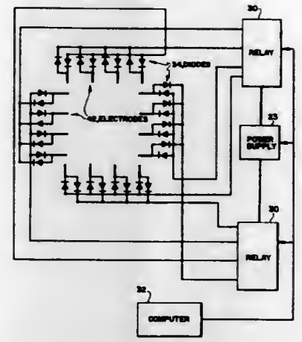
David C. Schwartz, Baltimore, Md., assignor to New York University, New York, N.Y.

Continuation of Ser. No. 333,531, Apr. 5, 1989, abandoned. This application Dec. 7, 1993, Ser. No. 162,379

Int. Cl.[6] C12Q *1/68;* C12P *19/34;* C25B *1/00;* C12N *15/00*

U.S. Cl. 435—6 28 Claims

1. A method for characterizing single, isolated nucleic acid, including any molecules specifically bound thereto, comprising the steps of:



placing said nucleic acid in a medium,

applying a temporary external force in a repeatable, controlled fashion to said nucleic acid, said force being of a type which causes a molecular size-dependent measurable change in said nucleic acid, wherein said change comprises a conformational change or a change in position,

observing said nucleic acid using a microscope:

measuring said change using the microscope; and

determining the molecular size of said nucleic acid based on said change measured using the microscope.

5,599,665

PSEUDOMONAS AERUGINOSA NUCLEIC ACIDS ENCODING EXOENZYME S ACTIVITY AND USE THEREOF IN DETECTING *PSEUDOMONAS AERUGINOSA* INFECTION

Joseph T. Barbieri, New Berlin; Dara W. Frank, and Scott M. Kulich, both of West Allis, all of Wis., assignors to MCW Research Foundation, Milwaukee, Wis.

Filed Dec. 21, 1993, Ser. No. 171,299

Int. Cl.[6] C12Q *1/68;* C12N *15/85*

U.S. Cl. 435—6 2 Claims

1. A method of detecting the presence of *Pseudomonas aeruginosa* infection, comprising the steps of

(a) obtaining a nucleic acid sample from a patient;

(b) exposing said sample to a probe under conditions whereby said probe hybridizes with any target sequence present in said sample, said probe comprised of a DNA sequence encoding exoenzyme S according to SEQ ID NO: 1; and

(c) detecting hybridization as an indication of *Pseudomonas aeruginosa* infection.

5,599,666

ALLELIC LADDERS FOR SHORT TANDEM REPEAT LOCI

James W. Schumm, and Christoph Puers, both of Madison, Wis., assignors to Promega Corporation, Madison, Wis.

Filed Mar. 28, 1994, Ser. No. 219,633

Int. Cl.[6] C12Q *1/68;* C07H *21/04*

U.S. Cl. 435—6 4 Claims

3. A kit for analyzing short tandem repeat sequences from a DNA sample at a specific locus selected from the group consisting of HUMCSF1PO, HUMF13A01, HUMFESFPS, HUMLPL (LIPOL), HUMVWFA31, and HUMHPRTB (HPRT-1) comprising:

a container containing an allelic ladder specific for the locus, wherein the allelic ladder for HUMCSF1PO contains at least 9 alleles, the allelic ladder for HUMF13A01 contains at least 12 alleles, the allelic ladder for HUMFESFPS contains at least 8 alleles, the allelic ladder for HUMLPL (LIPOL) contains at

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least 7 alleles, the allelic ladder for HUMVWFA31 contains at least 7 alleles, and the allelic ladder for HUMHPRTB contains at least 12 alleles.

5,599,667

POLYCATIONIC SUPPORTS AND NUCLEIC ACID PURIFICATION SEPARATION AND HYBRIDIZATION

Lyle J. Arnold, Jr.; Norman C. Nelson, both of San Diego; Mark A. Reynolds, La Jolla, and Alexander A. Waldrop, III, San Diego, all of Calif., assignors to Gen-Probe Incorporated, San Diego, Calif.

Continuation of Ser. No. 893,895, Jun. 4, 1992, abandoned, which is a continuation of Ser. No. 294,689, Mar. 2, 1988, abandoned, which is a continuation-in-part of Ser. No. 20,866, Mar. 2, 1987, abandoned. This application Sep. 23, 1994, Ser. No. 311,289

Int. Cl.[6] **C12Q** *1/68;* **C12N** *15/10*

U.S. Cl. 435—6 **73 Claims**

1. A method for purifying a polynucleotide greater than 100 nucleotides in length from an impure biological sample comprising an oligonucleotide 10 to 100 nucleotides in length comprising the steps of:

(a) contacting said biological sample with a solid support comprising a plurality of cations selected from the group consisting of ammonium, immonium and guanidinium ions, wherein said polynucleotide binds to said solid support and said oligonucleotide does not bind to said solid support, wherein said polynucleotide is at least three times greater in length than skid oligonucleotide; and

(b) separating said oligonucleotide from said solid support while said polynucleotide is held to said solid support.

5,599,668

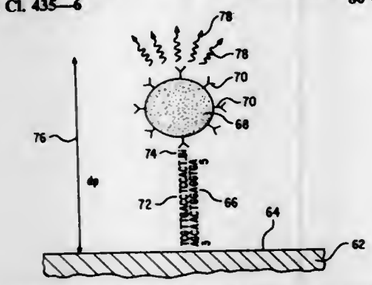
LIGHT SCATTERING OPTICAL WAVEGUIDE METHOD FOR DETECTING SPECIFIC BINDING EVENTS

Donald I. Stimpson, Gurnee; Julian Gordon, Lake Bluff, and Joanell V. Hoijer, Arlington Heights, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Sep. 22, 1994, Ser. No. 311,462

Int. Cl.[6] **C12Q** *1/68;1/70;* **C12P** *19/34;* **G01N** *33/53*

U.S. Cl. 435—6 **80 Claims**



1. A method for detecting the presence or amount of one or more specific binding analytes in a fluid sample, the method comprising:

(a) providing a waveguide device, the waveguide device comprising (i) a transparent element having a refractive index greater than that of the fluid sample; (ii) a light receiving edge; and (iii) a reactive surface comprising a first specific binding member of at least one cognate binding pair immobilized at a plurality of sites on the surface of the element, other non-situs portions of the reactive surface having no specific binding member immobilized thereon; wherein said first specific binding member, through intermediate cognate binding pairs if desired, specifically binds at least one analyte;

(b) contacting the reactive surface with a sample suspected to contain said one or more analytes and with a light scattering label attached to a specific binding member of a second cognate binding pair which, through intermediate cognate binding pairs if desired, specifically binds said one or more analytes, in the case of a sandwich assay, or the immobilized first specific binding member of said first cognate binding pair, in the case of a competitive assay; thereby forming light scattering label complexes attached to the plurality of sites in proportion to the amount of analyte in the sample;

(c) illuminating the light receiving edge of the waveguide with light effective to create total internal reflection within the waveguide, thereby simultaneously illuminating the entire reactive surface;

(d) collecting visually detectable light scattered by said light scattering label;

(e) comparing the degree of light scattering at each situs with either (i) the degree of light scattering at a non-situs portion, or (ii) the degree of light scattering at another situs, or both, whereby light scattering at each situs correlates to the presence or amount of the analyte for which the immobilized specific binding member at that situs is specific.

5,599,669

CYTOKINE-INDUCED MARKER FOR INFLAMMATORY RESPONSE

Vishva M. Dixit, Ann Arbor, Mich., assignor to The Regents of the University of Michigan, Ann Arbor, Mich.

Continuation of Ser. No. 164,611, Dec. 8, 1993, abandoned, which is a continuation of Ser. No. 607,741, Oct. 16, 1990, abandoned. This application Oct. 11, 1994, Ser. No. 321,162

Int. Cl.[6] **C12Q** *1/68;* **C07H** *21/04;* **C12P** *19/34*

U.S. Cl. 435—6 **12 Claims**



1. A nucleic acid consisting of the nucleotide sequence shown in SEQ ID NO:1 from nucleotide 74 to nucleotide 1497.

2. A nucleic acid consisting of the nucleotide sequence shown in SEQ. ID NO:1 from nucleotide 127 to nucleotide 1497.

3. An isolated and purified nucleic acid consisting of a DNA sequence coding for the amino acid sequence shown in SEQ. ID NO:2.

7. A nucleic acid probe or primer consisting of at least 30 nucleotides of the sequence of any of claims 1, 2, or 3.

9. A method of analyzing for the presence or B61 transcript in a patient comprising the steps of:

a. providing a probe of claim 7;

b. obtaining a sample of the patients blood or tissue;

c. contacting the sample to the probe and under stringent conditions favorable to hybridization of the probe to any complementary nucleic acid sequences in the sample;

d. detecting the presence of hybridized nucleic acid; and wherein

e. the detection of the hybridized probe being a positive indication of B61 in the patient.

5,599,670

β-GLUCURONIDASE AND GLUCURONIDE PERMEASE GENE SYSTEM

Richard A. Jefferson, Canberra, Australia, assignor to Cambia Biosystems, L.L.C., Canberra, Australia

Division of Ser. No. 138,546, Oct. 15, 1993, Pat. No. 5,432,081, which is a division of Ser. No. 447,976, Dec. 8, 1989, Pat. No. 5,268,463, which is a continuation-in-part of Ser. No. 264,586, Oct. 31, 1988, abandoned, which is a continuation-in-part of Ser. No. 119,102, Nov. 10, 1987, abandoned. This application Feb. 21, 1995, Ser. No. 329,701

Claims priority, application United Kingdom, Nov. 11, 1986, 8626862; Oct. 29, 1987, 8725402

Int. Cl.[6] **C12Q** *1/68;* **C12N** *9/00;9/24;* **A61K** *48/00*

U.S. Cl. 435—6 **87 Claims**

37. A method of monitoring activity of a controller element in a host cell, comprising:

(a) introducing into the host cell a DNA construct, the DNA construct comprising DNA encoding beta-glucuronidase and a DNA sequence of the controller element;

wherein the DNA encoding beta-glucuronidase (a) encodes a protein comprising the amino acid sequence as depicted in FIG. 2 or (b) hybridizes under stringent conditions to the complement of nucleotides 300 to 2105 as depicted in FIG. 2 and which encodes a functional beta-glucuronidase, and

wherein the DNA encoding beta-glucuronidase is under direction of the controller element; and

(b) detecting the presence of beta-glucuronidase activity, thereby monitoring activity of the controller element.

83. A method of releasing a compound from a glucuronide in a host cell expressing endogenous beta-glucuronidase, comprising:

(a) introducing into the host cell expressing endogenous beta-glucuronidase a DNA construct, the DNA construct comprising DNA encoding glucuronide permease,

wherein the DNA encoding the glucuronide permease comprises the amino acid sequence as depicted in FIG. 15, or hybridizes trader stringent conditions to the complement of the sequence comprising nucleotides 94–1464 as depicted in FIG. 15 and which encodes a functional glucuronide permease; and

(b) exposing the cell to a glucuronide, wherein the glucuronide is cleaved by the beta-glucuronidase, such that the compound is released.

5,599,671

HUMAN A2B ADENOSINE RECEPTOR ASSAY

Marlene A. Jacobson, Elkins Park; Christopher J. Luneau, Lansdale; Robert G. Johnson, Rosemont, and Christopher A. Salvatore, North Wales, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 5,945, Jan. 15, 1993, abandoned, which is a continuation-in-part of Ser. No. 850,702, Mar. 13, 1992, abandoned, and Ser. No. 850,701, Mar. 13, 1992, abandoned, and Ser. No. 850,707, Mar. 13, 1992, abandoned. This application Dec. 5, 1994, Ser. No. 349,696

Int. Cl.[6] **C12N** *5/10;15/12*

U.S. Cl. 435—6 **1 Claim**

1. A human adenosine receptor binding assay for a test sample using a mammalian cell line transfected with a plasmid, which plasmid comprises a mammalian expression vector and the nucleotide sequence encoding a human adenosine receptor protein, the assay comprising the steps of:

(1) expressing a human adenosine receptor protein, encoded by the nucleotide sequence, in a transfected cell line selected from COS7 cells transfected with the plasmid or CHO cells transfected with the plasmid;

(2) forming a membrane preparation from the cells;

(3) mixing a test sample with the membrane preparation and a radioactive ligand;

(4) incubating the mixture of Step (3);

(5) separating the radioactive ligand bound to the human adenosine protein from unbound radioactive ligand; and

(6) measuring the radioactivity of the radioactive ligand bound to the adenosine receptor protein;

wherein the adenosine receptor protein is the A2b human adenosine receptor protein.

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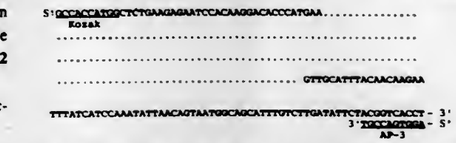
METHOD OF DIFFERENTIAL DISPLAY OF EXPOSED MRNA BY RT/PCR

Peng Liang, Watertown; Arthur B. Pardee, Brookline, and Cesario F. Bianchi, Boston, all of Mass., assignors to Dana-Farber Cancer Institute, Inc., Boston, and The President and Fellows of Harvard College, Cambridge, both of Mass.

Continuation of Ser. No. 33,084, Mar. 11, 1993, abandoned, which is a continuation-in-part of Ser. No. 850,343, Mar. 11, 1992, Pat. No. 5,262,311. This application Dec. 8, 1994, Ser. No. 351,748

Int. Cl.[6] **C07H** *21/04;* **C12P** *19/34;* **C12Q** *1/68*

U.S. Cl. 435—6 **23 Claims**



1. A method of comparing the presence or level of individual mRNA molecules in two or more nucleic acid samples, comprising the steps of:

providing a first nucleic acid sample including mRNA molecules;

providing a second nucleic acid sample including mRNA molecules;

contacting each of said first nucleic acid sample and said second nucleic acid sample with a first oligodeoxynucleotide primer that hybridizes to a first site in mRNAs in said first and second nucleic acid samples;

reverse transcribing said mRNAs to which said first primer hybridizes to produce a first population of DNA strands that are complementary to said mRNAs in said first nucleic acid sample to which said first primer hybridizes, and a second population of DNA strands that are complementary to said mRNAs in said second nucleic acid sample to which said first primer hybridizes;

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contacting said first and second populations of DNA strands with a second oligodeoxynucleotide primer that hybridizes to a second site in said first and second populations of DNA strands, which second site includes NNNRNNATGN (SEQ ID NO:27), said contacting being performed under conditions in which said second primer hybridizes with at least some of the DNA strands in said first and second populations;

extending said second primer to produce a third population of DNA strands that are complementary to the DNA strands in said first population to which said second primer hybridizes, and a fourth population of DNA strands that are complementary to the DNA strands in said second population to which said second primer hybridizes;

amplifying portions of the DNA strands in said first and third populations of DNA strands with said first and second primers to produce a first population of amplification products;

amplifying portions of the DNA strands in said second and fourth populations of DNA strands with said first and second primers to produce a second population of amplification products;

comparing the presence or level of individual amplification products in said first and second populations of amplification products.

5,599,673

LONG QT SYNDROME GENES

Mark T. Keating; Mark E. Curran, and Qing Wang, all of Salt Lake City, Utah, assignors to University of Utah Research Foundation, Salt Lake City, Utah

Filed Mar. 9, 1995, Ser. No. 401,512

Int. Cl.[6] C12Q *1/68;* C12P *19/34;* C07H *21/04;* C12N *15/00*

U.S. Cl. 435—6 **32 Claims**

1. A nucleic acid probe which will hybridize to a DNA coding for SCN5A polypeptide containing a mutation which causes long QT syndrome, said mutation being either an alteration of or deletion of any one or more of amino acid residues 1505, 1506 or 1507 of the SCN5A polypeptide but will not hybridize to DNA encoding wild type SCN5A under hybridization conditions which only permit hybridization products to form which are fully complementary in the region of the mutation.

5,599,674

FINGERPRINTING USING SINGLE SPECIFIC PRIMERS IN LOW STRINGENCY POLYMERASE CHAIN REACTION CONDITIONS

Sergio D. J. Pena, Gene Av. Afonso Pena 3111/9, 30130-909 Belo Horizonte, MG, and Andrew J. G. Simpson, Belo Horizonte, both of Brazil, assignors to Sergio D. J. Pena, Belo Horizonte, Brazil

Continuation of Ser. No. 100,738, Jul. 29, 1993, abandoned. This application Mar. 20, 1995, Ser. No. 406,635

Int. Cl.[6] C12Q *1/68;* C12P *19/34;* C07H *21/04*

U.S. Cl. 435—6 **11 Claims**

1. A method to obtain a signature characteristic of the nucleotide sequence of a purified cloned or amplified defined DNA segment which method consists essentially of:

subjecting said segment to multiply cycles of replication in the presence of a single primer fully complementary to a portion of at least about ten nucleotides of said segment, wherein said portion is not a repetitive sequence or part of a gene cluster within said DNA segment under conditions of low stringency at 25° C.–40° C. a primer concentration in the range of 2–10 μM, and a polymerase concentration in the range of 60–200 units/ml to obtain a mixture of replicated DNA molecules which result from said multiplicity of low stringency cycles of replication; and

determining the size of the replicated DNA molecules in the mixture thus obtaining a signature characteristic of said nucleotide sequence.

5,599,675

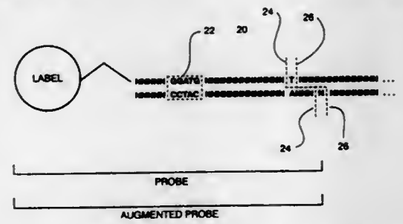
DNA SEQUENCING BY STEPWISE LIGATION AND CLEAVAGE

Sydney Brenner, Cambridge, England, assignor to Spectragen, Inc., Hayward, Calif.

Continuation-in-part of Ser. No. 222,300, Apr. 4, 1994, abandoned, which is a continuation-in-part of Ser. No. 280,441, Jul. 25, 1994, Pat. No. 5,552,278. This application Mar. 24, 1995, Ser. No. 410,116

Int. Cl.[6] C07H *21/04;* C12P *19/34;* C12Q *1/68*

U.S. Cl. 435—6 **68 Claims**



1. A method for determining a nucleotide sequence of a polynucleotide, the method comprising the steps of:

(a) ligating a probe to an end of a polynucleotide, the probe having a nuclease recognition site of a nuclease whose cleavage site is separate from its recognition site;

(b) identifying one or more nucleotides at the end of the polynucleotide by the identity of the probe ligated thereto or by extending a strand of the polynucleotide or probe;

(c) cleaving the polynucleotide with a nuclease recognizing the nuclease recognition site of the probe such that the polynucleotide is shortened by one or more nucleotides: and

(d) repeating said steps (a) through (c) until said nucleotide sequence of the polynucleotide is determined.

5,599,676

METHOD FOR ISOLATING A NOVEL RECEPTOR FOR α4 INTEGRINS

Robert H. Vonderheide, Brookline, and Timothy A. Springer, Chestnut Hill, both of Mass., assignors to Center for Blood Research, Inc., Boston, Mass.

Continuation of Ser. No. 886,992, May 21, 1992, abandoned. This application Oct. 14, 1994, Ser. No. 323,199

Int. Cl.[6] C12Q *1/02;* C12N *15/12;* C07K *16/00*

U.S. Cl. 435—7.2 **10 Claims**

5. A method for isolating a cDNA molecule encoding a receptor for an α4 integrin, comprising the following steps in the order stated:

(a) incubating recombinant cells cultured on a solid phase surface with a medium comprising (i) cells of a lymphoid cell line which expresses an α4 integrin, and (ii) a monoclonal antibody to VCAM-1 that blocks binding of the α4 integrin to VCAM-1, for a time period sufficient to allow binding of lymphoid cells to a recombinant cell, said recombinant cells containing and expressing plasmids comprising cDNA molecules present in a first group of less than 1,000 cDNA molecules from a library synthesized from stimulated endothelial cell mRNA;

(b) identifying said first group that results in increased binding of the lymphoid cells to a recombinant cell in step (a), relative to the binding of the lymphoid cells to a recombinant cell containing the plasmid without a cDNA molecule;

(c) dividing the identified first group into a second group of less than 40 cDNA molecules;

(d) introducing cDNA molecules from the second group into host cells which can express the cDNA molecules;

(e) incubating said host cells of step (d) cultured on a solid phase surface with a medium comprising (i) cells of a lymphoid cell line which expresses an α4 integrin; and (ii) a monoclonal antibody to VCAM-1 that blocks binding of the α4 integrin to VCAM-1, for a time period sufficient to allow binding of lymphoid cells to a host cell;

(f) identifying said second group that results in increased binding of the lymphoid cells to a host cell in step (e), relative to the binding of the lymphoid cells to a host cell containing the plasmid without a cDNA molecule;

(g) dividing the identified second group into a third group of single plasmid cDNA molecules;

(h) introducing cDNA molecules from the third group into host cells which can express the cDNA molecules;

(i) incubating said host cells of step (h) cultured on a solid phase surface with a medium comprising (i) cells of a lymphoid cell line which expresses an α4 integrin, and (ii) a monoclonal antibody to VCAM-1 that blocks binding of the α4 integrin to VCAM-1, for a time period sufficient to allow binding of lymphoid cells to a host cell; and

(j) isolating the cDNA molecule from the third group that results in increased binding of the lymphoid cells to a host cell in step (i), relative to the binding of the lymphoid cells to a host cell containing the plasmid without a cDNA molecule.

5,599,677

IMMUNOASSAYS FOR PROSTATE SPECIFIC ANTIGEN

Barry L. Dowell, Mundelein; Carol A. King, Highland Park; Debra B. Alexander, Gurnee; Allan H. Smith, Zion, and Susan B. O'Morchoe, Woodridge, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Dec. 29, 1993, Ser. No. 174,964

Int. Cl.[6] G01N *33/543;33/573;33/574;33/577*

U.S. Cl. 435—7.4 **33 Claims**

1. An immunoassay method for detecting or quantitating an Analyte ("A") in a sample, the Analyte being capable of existing in the sample in a free form ("free Analyte") or bound to a Binding Molecule to form a complex of the Analyte and the Binding Molecule ("{(A)(Binding Molecule)}"), the method comprising the steps of:

(a) contacting the Analyte to an antibody ("αHE") which can bind the free Analyte but not {(A)(Binding Molecule)}, a capture antibody ("αnHE") which can bind both the free Analyte and {(A)(Binding Molecule)}, and a probe antibody ("αA*") specific for the Analyte, providing that if the probe antibody is a polyclonal antibody then the Analyte is contacted to the capture antibody before the probe antibody;

(b) correlating the presence or amount of αA* which is bound to the Analyte, with the presence or amount of the Analyte in the sample, or correlating the amount of unbound αA* with the absence or amount of the Analyte in the sample.

5,599,678

ANTIBODIES WHICH REACT WITH FIBRINOGEN FRAGMENTS E1, E2 AND E3 AND METHODS OF THEIR USE

Michael Kraus, Marburg, and Werner Stüber, Lahntal, both of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg, Germany

Filed Dec. 15, 1993, Ser. No. 166,930

Claims priority, application Germany, Dec. 17, 1992, 42 42 736.3

Int. Cl.[6] G01N *33/53;* C07K *16/36*

U.S. Cl. 435—7.9 **13 Claims**

1. An antibody which binds to fibrinogen fragments E1, E2 and E3 which is obtained by immunizing a mammal with a peptide of amino acid SEQ ID NO: 14.

5,599,679

AMINO PROCOLLAGEN 1(I) PEPTIDES

David J. Baylink, 1428 Serpentine Dr., Redlands, Calif. 92373, and Susan Linkhart, 220 Gabrielle Way, Redlands, Calif. 92374

Continuation of Ser. No. 829,142, Jan. 31, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 479,233

Int. Cl.[6] G01N *33/53;* C07K *14/78*

U.S. Cl. 435—7.9 **22 Claims**

1. A synthetic or recombinantly produced polypeptide containing from six to fifty amino acids, wherein said polypeptide comprises from six to twelve contiguous amino acids contained in the sequence Gln-Glu-Glu-Gly-Gln-Val-Glu-Gly-Gln-Asp-Glu-Asp (PEP_{23-34} (Seq. ID No. 1)), wherein said six to twelve contiguous amino acids are the only amino acids in said polypeptide that immunologically compete by specific binding with amino-terminal propeptide of procollagen α1 Type I.

5,599,680

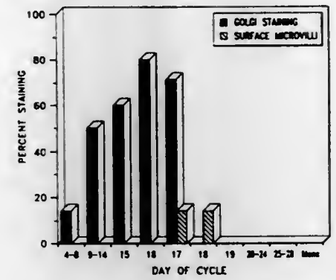
DIAGNOSTIC APPLICATIONS OF MOUSE ASCITES GOLGI (MAG) MANIPULATION

Ronald F. Feinberg, Cherry Hill, N.J., and Harvey J. Kliman, Philadelphia, Pa., assignors to The Trustees of the University of Pennsylvania, Philadelphia, Pa.

Continuation of Ser. No. 694,926, May 2, 1991, abandoned, which is a continuation-in-part of Ser. No. 587,395, Sep. 25, 1990, Pat. No. 5,276,017, which is a continuation-in-part of Ser. No. 583,034, Sep. 14, 1990, abandoned. This application Feb. 22, 1994, Ser. No. 199,551

Int. Cl.[6] G01N *33/53;* A61B *10/00*

U.S. Cl. 435—7.21 **1 Claim**



1. A method of diagnosing the relative receptivity of the endometrium of a human to implantation of a conceptus, comprising:

obtaining a sample from the endometrium of said human at about one to three days after ovulation would be expected to occur;

contacting said sample with detectably labeled endogenous antibody of mouse ascites whereby antibody which binds to said endometrium sample is evidenced by detectable signal;

detecting signal associated with the binding of said endogenous antibody to said sample wherein detecting signal equal to or greater than that of a fertile control indicates a greater probability that the endometrium of said human will be receptive to implantation of a conceptus.

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5,599,681

ACTIVATION-STATE-SPECIFIC PHOSPHOPROTEIN IMMUNODETECTION

Richard J. Epstein, Brookline, and Charles D. Stiles, Newton, both of Mass., assignors to Dana-Farber Cancer Institute, Inc., Boston, Mass.

Continuation of Ser. No. 918,370, Jul. 23, 1992, abandoned, which is a continuation-in-part of Ser. No. 866,728, Apr. 10, 1992, abandoned. This application Oct. 13, 1994, Ser. No. 324,421

Int. Cl.[6] G01N *33/53;33/574*

U.S. Cl. 435—7.23 **22 Claims**

1. A method for producing antibody that specifically binds to one of the two isoforms of a reversibly phosphorylated protein and does not bind to the other isoform of said protein nor to proteins other than said protein, said method comprising the steps of:

a) providing a peptide consisting essentially of a reversible phosphorylation site of said protein, a phosphorylatable amino acid in said reversible phosphorylation site being in the phosphorylation state of one of the two isoforms of said protein, said phosphorylation state having been achieved chemically and not enzymatically;

b) raising antibodies against said peptide;

c) isolating a population of antibodies reactive with said peptide;

d) screening said population for antibodies not reactive with said peptide wherein said peptide is in the phosphorylation state of the other isoform of said protein, said phosphorylation state having been achieved chemically and not enzymatically;

e) collecting antibodies identified in screening step (d); and

f) testing antibodies collected in step (e) to verify that the antibodies specifically bind said protein and not proteins other than said protein.

5,599,682

METHOD FOR THE PROTECTION OF LEUCOCYTES AND METHOD OF BLOOD ANALYSIS

André Van Agthoven, Marseille, France, assignor to Immunotech, Marseille, France

Filed May 19, 1994, Ser. No. 246,239

Claims priority, application France, May 19, 1993, 93 06332

Int. Cl.[6] G01N *33/554*

U.S. Cl. 435—7.24 **7 Claims**

1. A method for protecting leucocytes in a blood sample which has been pre-treated with an anticoagulant comprising:

adding to said blood sample a protective preparation which is substantially isotonic or hypertonic, said preparation comprising:

an aliphatic aldehyde,

a salt of an alkali metal or an alkaline earth metal, and

optionally, an agent to adjust isotonicity; and

hypotonic lysing erythrocytes in the blood sample.

5,599,683

METHOD FOR MEASURING PRODUCTION ACTIVITY OF TEST SUBSTANCE TOWARDS FXIIA

Katsumi Nishikawa, Katoh-gun, and Nobuyuki Ishibashi, Ono, both of Japan, assignors to Nippon Zoki Pharmaceutical Co., Ltd., Osaka, Japan

Filed Aug. 4, 1994, Ser. No. 283,200

Claims priority, application Japan, Aug. 6, 1993, 5-215177

Int. Cl.[6] C12Q *1/56;* **G01N** *33/86*

U.S. Cl. 435—13 **20 Claims**

1. A method for measuring activity of a test substance towards production of blood coagulation factor XII in an active form comprising initiating an activation reaction of blood coagulation factor XII by admixing a blood coagulation factor XII activator with an animal plasma in the presence of the test substance to produce an amount of blood coagulation factor XII in an active form, then stopping the reaction by adding both an inhibitor which inhibits activation of the blood coagulation factor XII and an inhibitor which specifically inhibits plasma kallikrein, said adding being within a time wherein the amount of blood coagulation factor XII in an active form which is produced increases with increasing reaction time, and quantitatively determining the amount of blood coagulation factor XII in an active form produced in said activation reaction as a measure of the activity of the test substance.

5,599,684

Patent Not Issued For This Number

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Patent Not Issued For This Number

5,599,686

PEPTIDES

Deborah DeFeo-Jones, Lansdale; Victor M. Garsky, Blue Bell; Raymond E. Jones, Lansdale, and Allen I. Oliff, Gwynedd Valley, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 28, 1994, Ser. No. 267,092

Int. Cl.[6] C12Q *1/37;1/34;* **A61K** *38/14*

U.S. Cl. 435—23 **15 Claims**

1. An oligopeptide that comprises a sequence of amino acids that is recognized and selectively proteolytically cleaved by free prostate specific antigen.

5,599,687

Patent Not Issued For This Number

5,599,688

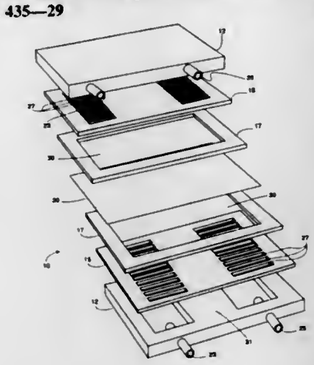
DEVICE AND METHOD FOR CIRCULATING FLUID OVER A MEMBRANE

George M. Grass, Tahoe City, Calif., assignor to Precision Instrument Design, Tahoe City, Calif.

Continuation of Ser. No. 138,653, Oct. 18, 1993, abandoned. This application Jul. 24, 1995, Ser. No. 506,049

Int. Cl.[6] C12Q *1/02;* **C12M** *3/06;1/12*

U.S. Cl. 435—29 **24 Claims**



1. A device for circulating fluid over a membrane, the device comprising:

a housing that in combination with the membrane defines an enclosed volume;

means for circulating fluid through the enclosed volume defined by the housing and the membrane, said circulating means comprising an inlet and an outlet in the housing, said inlet disposed to allow fluid to enter the enclosed volume in a direction generally parallel to the membrane;

a dispersing member disposed in the enclosed volume and laterally spaced-apart from said membrane, said dispersing member defining at least a first and a second opening spaced over an exposed surface of the membrane, wherein the inlet and the outlet are disposed between the housing and the dispersing member; and

a divider between the inlet and the outlet for directing the fluid entering through the inlet to flow through the first opening in the dispersing member in the direction of the membrane, across the membrane, through the second opening in the dispersing member and out the outlet.

18. A method for circulating a fluid over a membrane, the method comprising:

circulating the fluid through a housing that in combination with the membrane defines an enclosed volume, wherein the circulating step further comprises introducing the fluid into the enclosed volume through an inlet in a direction that is generally parallel with the membrane, directing the fluid with a first side of a divider to pass through at least one opening in a dispersing member that is laterally spaced-apart from the membrane so that the fluid is directed generally toward the membrane as it passes through the dispersing member, passing the fluid along the membrane, and directing the fluid back through another opening in the dispersing member so that the fluid may exit the housing through an outlet on a second side of the divider.

5,599,689

PROCESS FOR MAKING 1,3-PROPANEDIOL FROM CARBOHYDRATES USING MIXED MICROBIAL CULTURES

Sharon L. Haynie, Philadelphia, Pa., and Lorraine W. Wagner, Newark, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 12, 1995, Ser. No. 440,379

Int. Cl.[6] C12P *39/00*

U.S. Cl. 435—42 **1 Claim**

1. A biological process for preparing 1,3-propanediol comprising the steps of:

(a) mixing a glycerol-producing organism at a cell density of at least 1×10^6 cells/ml and a diol-producing organism at a cell ratio of glycerol-producing organism to diol-producing organism of at least 0.04 to 1.0 to yield a mixed culture medium, wherein said glycerol-producing organism is selected from the group consisting of members of the genera Aspergillus, Saccharomyces, Zygosaccharomyces, Pichia, Bacillus, Kluyveromyces, Candida sp., Hansenula sp., Dunaliella sp., Debaryomyces sp., Mucor, Torulopsis, Methylobacteria, Escherichia, and recombinant organisms transformed with the genes necessary for glycerol production, and wherein said diol-producing organism is selected from the group consisting of members of the genera Citrobacter, Enterobacter, Clostridium, Klebsiella, Lactobacillus, recombinant organisms transformed with a gene encoding a diol dehydratase enzyme or a glycerol dehydratase enzyme, and mutants having phenotypes which enhance production of 1,3-propanediol;

(b) contacting said mixed culture medium with a carbon substrate having at least a single carbon atom selected from the group consisting of monosaccharides, oligosaccharides, polysaccharides, carbon dioxide, methanol, formaldehyde, formate, and carbon-containing amines;

(c) incubating said mixed culture medium under suitable conditions to produce 1,3-propanediol; and

(d) recovering said 1,3-propanediol.

5,599,690

CONTROL OF NORLEUCINE INCORPORATION INTO RECOMBINANT PROTEINS

Dennis Fenton, Newbury Park; Por-Hsiung Lai, Westlake Village; Hsieng Lu, Thousand Oaks; Michael Mann, Thousand Oaks, and Larry Tsai, Thousand Oaks, all of Calif., assignors to Amgen Inc., Thousand Oaks, Calif.

Continuation of Ser. No. 880,462, May 5, 1992, abandoned, which is a continuation of Ser. No. 151,170, Feb. 1, 1988, abandoned. This application Dec. 22, 1994, Ser. No. 363,862

Int. Cl.[6] C12P *21/02;21/04*

U.S. Cl. 435—69.1 **19 Claims**

1. A method of inhibiting incorporation of norleucine into an expression product of recombinant DNA within a host cell, the method comprising the steps of:

a) culturing host cells in a culture medium to express a product of recombinanat DNA wherein the expression product has detectable norleucine;

b) modifying the culture medium in (a) such that norleucine incorporation into the expression product is inhibited; and

c) culturing cells in the modified medium to express a product of recombinant DNA wherein the expression product is free of detectable norleucine.

5,599,691

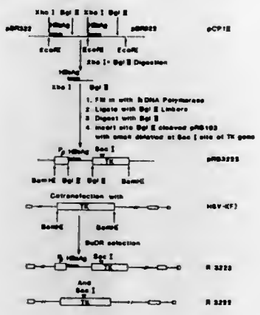
HERPES SIMPLEX VIRUS AS A VECTOR

Bernard Roizman, Chicago, Ill., assignor to Arch Development Corporation, Chicago, Ill.

Continuation of Ser. No. 195,356, Feb. 10, 1994, abandoned, which is a continuation of Ser. No. 923,015, Jul. 30, 1992, Pat. No. 5,288,641, which is a continuation of Ser. No. 455,771, Dec. 28, 1989, abandoned, which is a continuation of Ser. No. 616,930, Jun. 4, 1984, abandoned. This application Apr. 11, 1995, Ser. No. 419,831

Int. Cl.[6] C12P *21/00;* **C12N** *15/36;15/09*

U.S. Cl. 435—69.1 **23 Claims**



1. A recombinant viral genome of a herpes simplex virus containing an expressible non-viral gene permanently integrated at a non-lethal site of said genome.

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5,599,692

ANTIGENIC POLYPEPTIDES OF *TAENIA OVIS*

Gavin B. L. Harrison; Robert P. Dempster, both of Upper Hutt, New Zealand; Michael D. Rickard, Werribee, Australia; Marshall W. Lightowlers, Williamstown, Australia; Kim L. O'Hoy, Melbourne, Australia; Kevin S. Johnson, Godmanchester, United Kingdom; David D. Heath; Stephen B. Lawrence, both of Upper Hutt, New Zealand, and Jennifer G. Vinton, Lower Hutt, New Zealand, assignors to Coopers Animal Health NZ Limited, Upper Hutt, New Zealand; University of Melbourne, Victoria, Australia, and Ministry of Agriculture & Fisheries, Wellington, New Zealand

Division of Ser. No. 268,535, Jul. 6, 1994, which is a division of Ser. No. 851,112, Mar. 16, 1992, Pat. No. 5,348,740, which is a continuation of Ser. No. 349,723, May 9, 1989, abandoned. This application Feb. 23, 1995, Ser. No. 393,383

Claims priority, application New Zealand, May 12, 1988, 224597; Jun. 1, 1988, 224862

The portion of the term of this patent subsequent to Mar. 9, 2010, has been disclaimed.

Int. Cl.[6] C12N *15/12*; C07K *14/435*; A61K *39/00*

U.S. Cl. 435—69.3 19 Claims

1. A purified and isolated DNA molecule comprising a nucleotide sequence which encodes the amino acid sequence of FIG. 2, or comprising a fragment of said nucleotide sequence which encodes a polypeptide capable reducing the severity of *T.ovis* infection in a ruminant.

5,599,693

METHODS AND COMPOSITIONS RELATING TO USEFUL ANTIGENS OF MORAXELLA CATARRHALIS

Eric J. Hansen, Plano; Merja Helminen, and Isobel Maciver, both of Dallas, Tex., assignors to American Cyanamid Company, Wayne, N.J.

Division of Ser. No. 745,591, Aug. 15, 1991. This application May 25, 1995, Ser. No. 450,802

Int. Cl.[6] C12P *21/06*

U.S. Cl. 435—69.3 12 Claims

1. A process for preparing an antigen composition, comprising the steps of:

(a) selecting cells expressing a *Moraxella catarrhalis* outer membrane protein or peptide antigen having an epitope that binds to a monoclonal antibody selected from the group consisting of 8B6 (ATCC HB 11091), 10F3 (ATCC HB 11092) and 17C7 (ATCC HB 11093);

(b) culturing said selected cells under conditions effective for expression of the antigen; and

(c) collecting the antigen to prepare the composition.

5,599,694

PROCESS FOR PRODUCING AN OLIGOSACCHARIDE COMPOUND BY USING GLYCOSIDASES FROM A MOLLUSC

Kurt G. I. Nilsson, Lund, Sweden, assignor to Procur Aktiebolag, Lund, Sweden

Continuation of Ser. No. 834,575, Feb. 18, 1992, Pat. No. 5,372,937. This application Nov. 4, 1994, Ser. No. 336,105

Claims priority, application Sweden, Aug. 18, 1989, 8902767

Int. Cl.[6] C12P *19/44;19/12*; C12Q *1/34*; C07H *1/00*

U.S. Cl. 435—94 1 Claim

1. An oligosaccharide compound selected from the group consisting of GlcNAcβ1-3Galβ-OMe, GlcNAcβ1-6Galα-OMe, GalNAcβ1-3Galβ-OMe, GalNAcα1-3Galα-OMe, and Fucα1-6Galβ-OMe.

5,599,695

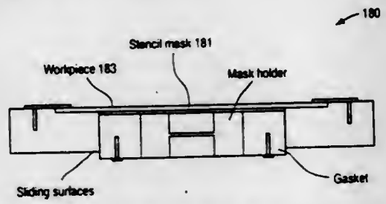
PRINTING MOLECULAR LIBRARY ARRAYS USING DEPROTECTION AGENTS SOLELY IN THE VAPOR PHASE

R. Fabian Pease, Stanford; Glenn McGall, Mountain View; Martin J. Goldberg, San Jose; Richard P. Rava; Stephen P. A. Fodor, both of Palo Alto; Virginia Goss, Santa Barbara; Lubert Stryer, Stanford, and James L. Winkler, Sunnyvale, all of Calif., assignors to Affymetrix, Inc., Santa Clara, Calif.

Filed Feb. 27, 1995, Ser. No. 395,604

Int. Cl.[6] C12P *19/34*; G01N *33/543*; C07H *21/02*; C07K *5/00*

U.S. Cl. 435—91.1 24 Claims



1. A method of forming polymers having different monomer sequences on a substrate, said method comprising:

providing a substrate comprising a linker molecule layer thereon, said linker molecule layer comprising a linker molecule and a protective group;

applying a barrier layer overlying said linker molecule layer, said applying step forming selected exposed regions of said linker molecule layer;

exposing said selected exposed regions of said linker molecule layer to a deprotecting agent solely in a vapor phase, to solely remove the protective group; and

coupling selected monomers to form selected polymers on the substrate.

5,599,696

METHOD OF PREPARING NUCLEIC ACIDS HAVING AN UNDEFINED NUCLEOTIDE SEQUENCE AMPLIFICATION

Paul R. Mueller; Paul A. Garrity, both of Pasadena, and Barbara J. Wold, San Marino, all of Calif., assignors to California Institute of Technology, Oakland, Calif.

Continuation of Ser. No. 118,571, Sep. 8, 1993, abandoned, which is a continuation of Ser. No. 803,679, Dec. 3, 1991, abandoned, which is a continuation of Ser. No. 422,652, Oct. 17, 1989, abandoned. This application Oct. 17, 1994, Ser. No. 323,571

Int. Cl.[6] C12P *19/34*; C12Q *1/68*

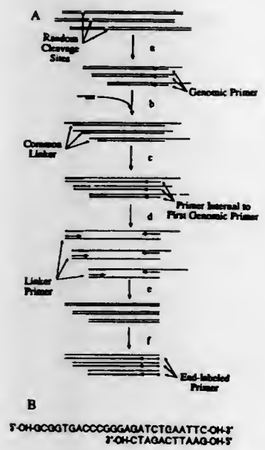
U.S. Cl. 435—91.2 7 Claims

1. A method for selectively amplifying single-stranded nucleic acid fragments having an undefined nucleotide sequence wherein said single-stranded nucleic acid fragments are present in a mixture of nucleic acids, said method comprising the steps of:

providing a mixture of nucleic acids, said mixture comprising a plurality of single-stranded nucleic acid fragments having 3' ends and 5' ends, wherein at least one of said single-stranded nucleic acid fragments has a nucleotide sequence which comprises a defined region and an undefined region and wherein said nucleotide sequence has a terminus located in said undefined region and wherein said terminus is located at the 5' end of said single-stranded nucleic acid fragment;

providing a first primer which comprises an oligonucleotide having a nucleotide sequence which is complementary to a first primer segment located in said defined region of said single-stranded nucleic acid fragment;

hybridizing said first primer to the first primer segment of said single-stranded nucleic acid fragment to provide a single-stranded nucleic acid segment having said terminus on said 5' end and said first primer on said 3' end;



synthesizing a complementary nucleic acid segment which is complementary to said single-stranded nucleic acid segment, said single-stranded nucleic acid segment and said complementary nucleic acid segment forming a double-stranded nucleic acid fragment having a blunt end located at said terminus;

providing a double-stranded linker which comprises first and second complementary linker oligonucleotides wherein at least one of said linker oligonucleotides comprises a known nucleotide sequence, said double-stranded linker having only one end which is capable of being attached to the blunt end of said double-stranded nucleic acid fragment;

attaching said linker to the blunt end of said double stranded nucleic acid fragment to form a double stranded nucleic acid segment having said linker on one end and said first primer on the other end;

separating said double stranded nucleic acid segment into two single-stranded sequences wherein each of said sequences has a first or second linker oligonucleotide at one end and a defined oligonucleotide segment at the other end, said defined oligonucleotide segment comprising said first primer or said defined region;

adding to at least one of said single-stranded sequences a linker primer and a gene-specific primer; and

amplifying said at least one of said single-stranded sequences by the polymerase chain reaction to provide amplification of said nucleic acid fragment present in said mixture of nucleic acids.

5,599,697

METHOD OF PRODUCING β-1,3-GLUCAN

Yukihiro Kanegae, Kobe; Kazutsugu Kimura, Harima-cho, and Isamu Nakatsui, Kobe, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 165,497, Dec. 13, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 465,184

Claims priority, application Japan, Dec. 14, 1992, 4-333257; Jul. 5, 1993, 5-165792; Jul. 9, 1993, 5-170619

Int. Cl.[6] C12P *19/04;19/08*

U.S. Cl. 435—101 10 Claims

1. A method for producing curdlan using no inorganic salt as a nitrogen source, which comprises:

culturing a microbe belonging to the genus Agrobacterium or Alcaligenes in a medium comprising a nitrogen source consisting essentially of an ammonium salt of an organic carboxylic acid which the microbe can assimilate, wherein the curdlan is produced and accumulated, and wherein the organic carboxylic acid is (a) an organic carboxylic acid selected from the group consisting of succinic acid, fumaric acid, α-ketoglutaric acid and lactic acid, or (b) an amino acid selected from the group consisting of glutamic acid, aspartic acid, alanine, proline, serine, threonine and histidine, and then harvesting the curdlan.

5,599,698

MODIFIED MATERIALS BASED ON POLYACRYLONITRILE AND PROCESS FOR THEIR PRODUCTION

Ezio Battistel; Franco Francalanci, both of Novara; Massimo Marinetti, Mestre, and Marco Morra, Cortiglione d'Asti, all of Italy, assignors to Montefibre S.p.A., Milan, Italy

Division of Ser. No. 363,875, Dec. 27, 1994. This application May 23, 1995, Ser. No. 448,029

Int. Cl.[6] C12P *13/02*; C12N *9/88*

U.S. Cl. 435—129 18 Claims

1. A process for preparing modified polyacrylonitrile, comprising treatment polyacrylonitrile with an effective amount of a nitrile hydratasis enzyme at an enzymatically active temperature and pH, wherein surface —CN groups of said polyacrylonitrile are hydrolyzed to —CO—NH_2 groups, wherein said treating is carried out with stirring in the presence of 2,000–12,000 U/ml of said enzyme on 0.2–2 grams of said polyacrylonitrile, in a medium containing 100 mM phosphate buffer at pH 7, at a temperature of 10°–30° C. for 12– 24 hours.

5,599,699

Patent Not Issued For This Number

5,599,700

PROCESS FOR THE PRODUCTION OF CARBOXYLIC ACIDS FROM ALCOHOLS USING SACCHAROMYCES

Ian M. Whitehead, Geneva, Switzerland, and Eric Ohleyer, Cruseilles, France, assignors to Firmenich SA, Geneva, Switzerland

Continuation-in-part of Ser. No. 64,061, May 18, 1993, abandoned. This application Jan. 13, 1994, Ser. No. 182,909

Claims priority, application Switzerland, Oct. 18, 1991, 3056/91

Int. Cl.[6] C12P *11/00;7/40;7/54;7/52*

U.S. Cl. 435—136 14 Claims

1. A biocatalytic process for the production of carboxylic acids by oxidation of the corresponding alcohols, which process comprises the steps of:

(a) suspending, under aerobic conditions, in an aqueous medium at a temperature of about 15° to 35° C. and a pH of about 4.5 to 6, a biomass of a yeast of genus Saccharomyces for an amount of time sufficient to consume all of the yeast's residual carbon nutrient supply, to form an aqueous bioconversion medium devoid of any carbon nutrient source;

(b) adding buffer to the formed aqueous bioconversion medium to adjust the pH of said medium to a value of between about 7 and 9 and subsequently continuing the addition of the buffer to maintain said pH value constantly at between about 7 and 9;

(c) adding a substrate to the thus obtained buffered aqueous bioconversion medium, said substrate selected from the group consisting of ethanol, propanol, 2-methyl-1-propanol, 2,2-dimethyl-1-propanol, n-butanol, isobutanol, 2-methyl-butanol, 3-methyl-butanol, n-pentanol, n-hexanol, n-heptanol, and 3-methylthio-propanol, and contacting said substrate with the biomass of the yeast in the buffered bioconversion medium for an amount of time sufficient to convert said substrate into the corresponding carboxylic acid and to form the latter acid in essentially quantitative yield in the bioconversion medium; and

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(d) extracting the formed carboxylic acid from the bioconversion medium via conventional methods.

5,599,701

INOSITOL-EXCRETING YEAST

Susan A. Henry, and Michael J. White, both of Pittsburgh, Pa., assignors to Carnegie Mellon University, Pittsburgh, Pa.

Continuation of Ser. No. 165,182, Dec. 2, 1993, abandoned, which is a continuation of Ser. No. 640,495, Jan. 14, 1991, abandoned. This application May 30, 1995, Ser. No. 453,461

Int. Cl.[6] C12P *7/02;7/64;* **C12N** *9/12;1/19*

U.S. Cl. 435—155 **13 Claims**

7. A method for the enhanced production of inositol, inositol-containing metabolites or phospholipids in a genetically engineered yeast cell of the genus Saccharomyces, comprising the steps of:

a. replacing all the copies of the OPI1 gene (SEQ ID..NO:1) such that all copies of the OPI1 gene (SEQ ID NO:1) are deleted in said yeast cell;

b. culturing said yeast cell so as to allow for inositol, inositol-containing metabolites or phospholipids to be produced; and

c. recovering said inositol, inositol-containing metabolites or phospholipids.

5,599,702

D-AMINO ACID OXIDASE FROM *TRIGONOPSIS VARIABILIS* IMMOBILIZED ON POROUS COPOLYMER BEADS

Klaus Sauber, Bad Soden am Taunus, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

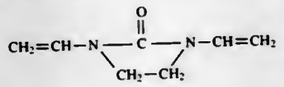
Continuation of Ser. No. 805,514, Dec. 12, 1991, abandoned. This application May 17, 1995, Ser. No. 443,017

Claims priority, application Germany, Dec. 24, 1990, 40 41 755.7

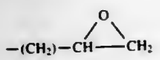
Int. Cl.[6] C12N *11/06;11/18;11/08;* **C12P** *35/00*

U.S. Cl. 435—181 **1 Claim**

1. An enzyme-coated support material comprising D-amino acid oxidase purified by ion exchange chromatography from *Trigonopsis variabilis* and a porous bead-shaped support material, wherein the support material is a crosslinked copolymer consisting essentially of vinyl acetate units and units of a crosslinking agent, having the formula:



the amount of crosslinking agent is 1% to 60% by weight, relative to the copolymer, the acyloxy groups of the vinyl acetate units are present as such, or some or all have been hydrolyzed to hydroxyl groups, the bead-shaped support material has a mean particle size of 20 to 800 μm and a mean pore diameter of 20 to 10,000 nm, and the bead-shaped support material is modified with a spacer group of the formula:



to which the D-amino acid oxidase is covalently bound.

5,599,703

IN VITRO AMPLIFICATION/EXPANSION OF CD34$^+$ STEM AND PROGENITOR CELLS

Thomas A. Davis, Chantilly, Va.; Steven Kessler, Cupertino, Calif., and Douglas H. Robinson, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 28, 1993, Ser. No. 142,569

Int. Cl.[6] C12N *5/00;* **A01N** *63/00;65/00*

U.S. Cl. 435—373 **9 Claims**

1. A method of expanding human bone marrow CD34$^+$ stem and progenitor cells, including primitive stem cells, in vitro comprising the steps of:

i) isolating the CD34$^+$ stem and progenitor cells from human bone marrow;

ii) contacting the isolated CD34$^+$ stem and progenitor cells with porcine microvascular brain endothelial cells; and

iii) co-culturing the contacted CD34$^+$ stem and progenitor cells and endothelial cells in the presence of at least one cytokine in an amount sufficient to support amplification/expansion of said CD34+ stem and progenitor cells.

5,599,704

ERBB2/NEU TARGETED RIBOZYMES

James D. Thompson, and Kenneth G. Draper, both of Boulder, Colo., assignors to Ribozyme Pharmaceuticals, Inc., Boulder, Colo.

Continuation of Ser. No. 936,531, Aug. 26, 1992. This application May 5, 1995, Ser. No. 435,350

Int. Cl.[6] C07H *21/04;* **C12N** *15/85;* **C12Q** *1/68*

U.S. Cl. 435—325 **14 Claims**

1. An enzymatic RNA molecule which specifically cleaves mRNA produced from the gene ErbB2/neu.

7. The enzymatic RNA molecule of claim 1, which specifically cleaves RNA sequence comprising any of SEQ. ID. NOS. 1–3, 6–16, 19, 20, 22–25, 27–37, 39–42, 45, 47–51, 53–56, 59–68, 70–75, 77, 78, 80, 83–87, 89–94, 96, 97, 99–107, 109, and 111–118, wherein said enzymatic RNA molecule is in a hammerhead configuration.

8. The enzymatic RNA molecule nucleic acid of any of claims 1–4 or 7, wherein said enzymatic RNA molecule comprises at least one sugar modification.

5,599,705

IN VITRO METHOD FOR PRODUCING DIFFERENTIATED UNIVERSALLY COMPATIBLE MATURE HUMAN BLOOD CELLS

Robert B. Cameron, 4130 Defender Dr., Agoura Hill, Calif. 91303-3510

Filed Nov. 16, 1993, Ser. No. 152,389

Int. Cl.[6] C12N *5/00;5/02*

U.S. Cl. 435—378 **14 Claims**

1. A method for the in vitro production of a single species of differentiated universally compatible mature human blood cells, comprising the steps of:

a) removing from a human donor pluripotent hematopoietic bone marrow stem cells, wherein said human donor is a blood type O, Rh factor negative, universal donor;

b) incubating said stem cells in a bioreactor in a growth medium containing a combination of recombinant human growth and maturation-promoting polypeptides, whereby said combination promotes the growth and maturation of said stem cells into a desired single species of differentiated human blood cells that are universally compatible with human recipients, said single species of blood cells being selected from the group consisting of erythroid cells, granulocytic cells, monocytic cells, thrombocytic cells, lymphocytic cells, and precursors thereof; and,

c) harvesting said species of differentiated blood cells.

5,599,706

RIBOZYMES TARGETED TO APO(A) MRNA

Dan T. Stinchcomb, 7203 Old Post Rd.; James McSwiggen, 4866 Franklin Dr., both of Boulder, Colo. 80301; Roger S. Newton, 1425 Bardstown Trail, and Randy Ramharack, 2465 Antietam Dr., both of Ann Arbor, Mich. 48105

Filed Sep. 23, 1994, Ser. No. 311,760

Int. Cl.[6] C12N *15/85;* **C12Q** *1/68;* **C07H** *21/04*

U.S. Cl. 435—366 **22 Claims**

1. An enzymatic RNA molecule which specifically cleaves apo(a) mRNA.

18. A mammalian cell including an enzymatic nucleic acid molecule of any of claims 1, 3, 5, 2, 4, 6–8 in vitro.

5,599,707

HUMAN PROHIBITIN DNA

Yusuke Nakamura, and Takaaki Sato, both of Tokyo, Japan, assignors to Cancer Institute, and Eisai Co., Ltd., both of Tokyo, Japan

Continuation of Ser. No. 114,461, Aug. 31, 1993, Pat. No. 5,401,635, which is a division of Ser. No. 9,255, Jan. 22, 1993, abandoned. This application Jan. 10, 1995, Ser. No. 370,789

Claims priority, application Japan, Jan. 24, 1992, 4-011156; Nov. 18, 1992, 4-308654

Int. Cl.[6] C07H *21/04;* **C12N** *15/85*

U.S. Cl. 435—325 **2 Claims**

1. A cDNA coding for a human prohibitin, which consists of the cDNA sequence of SEQ ID NO: 1.

5,599,708

OSTEOCLAST GROWTH REGULATING FACTORS AND ANTIBODIES

Gregory R. Mundy, San Antonio, Tex.; Wilson H. Burgess, Gaithersburg, Md., and Toshiyuka Yoneda, San Antionio, Tex., assignors to Osteosa Liquidation Trust, San Antonio, Tex.

Continuation of Ser. No. 59,722, May 10, 1993, abandoned, which is a continuation of Ser. No. 733,420, Jul. 23, 1991, abandoned. This application Jul. 25, 1994, Ser. No. 279,675

Int. Cl.[6] C12N *15/13;* **A61K** *39/395;* **C07K** *14/00;* **C12P** *21/02*

U.S. Cl. 435—240.27 **18 Claims**

1. An isolated and purified biologically active polypeptide capable of stimulating the growth or differentiation of osteoclast cells comprising the amino acid sequence -A-V-Q-R-Y-L-V-L-Q-G-V-S-P-A-Q-L (SEQ ID NO: 1).

5,599,709

RECOMBINANT DNA ENCODING NEURONAL α-BUNGAROTOXIN-BINDING PROTEINS

Jon M. Lindstrom, Del Mar, and Ralf D. Schoepfer, La Jolla, both of Calif., assignors to The Salk Institute for Biological Studies, San Diego, Calif.

Filed Sep. 28, 1989, Ser. No. 413,947

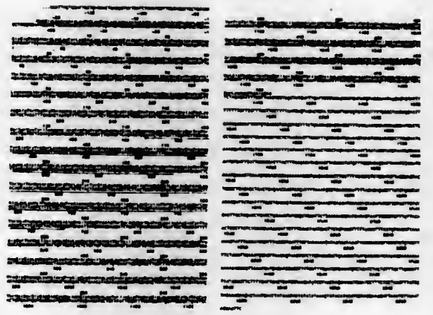
Int. Cl.[6] C12N *1/21;5/10;15/12*

U.S. Cl. 435—252.3 **22 Claims**

1. An isolated DNA molecule, comprising a sequence of nucleotides encoding an α subunit of a neuronal α-bungarotoxin-binding protein (αBgtBP) subtype or a fragment of said subunit, wherein said DNA fragment is sufficiently homologous to the DNA of FIGS. 2A or 2B or FIGS. 3A and 3B to hybridize thereto under conditions of low stringency.

5,599,710

Patent Not Issued For This Number



5,599,711

ASTAXANTHIN-PRODUCING YEAST CELLS, METHODS FOR THEIR PREPARATION AND THEIR USE

Bent Flens, Stenløse; Ib Christensen, Allerød; Robert Larsen, Virum; Steffen R. Johansen, Ega, all of Denmark, and Eric A. Johnson, Madison, Wis., assignors to Gist-brocades, N.V., Ma Delft, Netherlands

Continuation of Ser. No. 919,986, Jul. 27, 1992, Pat. No. 5,356,810, which is a continuation of Ser. No. 424,306, Dec. 11, 1989, abandoned. This application Oct. 13, 1994, Ser. No. 322,950

Claims priority, application Denmark, Apr. 15, 1987, 1998/87

Int. Cl.[6] C12N *1/16;* **C12P** *23/00*

U.S. Cl. 435—255.1 **3 Claims**

1. An isolated pure culture of a strain of *Phaffia rhodozyma* which when grown under conditions comprising an oxygen transfer rate of at least 30 mmoles/l/hour on YM medium at 20°–22° for 5 days in 500 ml shake flasks with two baffles containing 50 ml of the medium and subjected to orbital shaking at 150 rpm, produces astaxanthin in an amount of at least 600 μg per g *Phaffia rhodozyma* dry matter, as determined by HPLC analysis, wherein said strain is *Phaffia rhodozyma* deposited under accession No. 224-87 CBS, or a mutant thereof which retains the astaxanthin-producing capability.

5,599,712

PROTECTION FROM IONIZING IRRADIATION OR CHEMOTHERAPEUTIC DRUG DAMAGE BY IN VIVO GENE THERAPY

Joel S. Greenberger, Sewickley, Pa., assignor to University of Pittsburgh, Pittsburgh, Pa.

Filed Oct. 15, 1993, Ser. No. 136,079

Int. Cl.[6] A61K *48/00;* **C12N** *15/00*

U.S. Cl. 435—267 **25 Claims**

1. A method for protecting a cancer subject against an agent that elicits production of a toxic species when said subject is exposed to said agent, wherein

(i) said agent is selected from the group consisting of ionizing radiation, clinical radiation therapy, and a chemotherapeutic drug and,

(ii) said toxic species is selected from the group consisting of a free radical, a superoxide anion, and a heavy metal cation,

said method comprising the step of administering to said subject in vivo a pharmaceutical composition comprising

(A) a polynucleotide that encodes a protein such that, in said subject, said protein is transiently expressed in said subject, wherein said protein (i) interacts with said toxic species to provide a protection therefrom and (ii) is selected from a group consisting of gamma glutamyl transpeptidase, manganese superoxide dismutase, and metallothionein;

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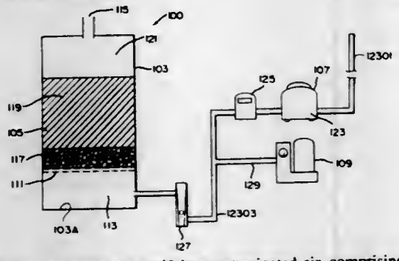
(B) a pharmaceutically acceptable vehicle for said polynucleotide wherein said vehicle is selected from a liposome and a replication-deficient adenovirus vector; and
(C) said administering is directed to the site of the tumor.

5,599,713

APPARATUS FOR PURIFYING CONTAMINATED AIR

Shinichiro Sato, Yokohama, Japan, assignor to Fujita Corporation, Tokyo, Japan

Filed Mar. 3, 1995, Ser. No. 399,356
Claims priority, application Japan, Mar. 8, 1994, 6-065730
Int. Cl.[6] A61L *9/00*; B01D *53/00*
U.S. Cl. 435—300.1 **3 Claims**



1. The apparatus for purifying contaminated air, comprising:
a container;
a soil layer disposed in said container for being populated with microorganisms, said soil layer allowing contaminated air to pass therethrough;
means for defining a space in said container for introducing contaminated air therein;
air supply means for supplying contaminated air to said space and passing the contaminated air through said soil layer to purify the contaminated air;
an outlet port mounted on said container for discharging the purified air from said soil layer;
an ozonizer for generating ozone; and
a communication passage interconnecting said ozonizer with said air supply means for supplying ozone to said air supply means to transform nitrogen monoxide contained in the contaminated air into nitrogen dioxide; and
wherein the contaminated air and the produced nitrogen dioxide are supplied by said air supply means to said space.

5,599,714

Patent Not Issued For This Number

5,599,715

LOWER ALCOHOL SULFATE WASH SOLUTION

Harold C. Warren, III, Rush; Norbert S. Norkus, Webster, and Margaret J. Smith-Lewis, Pittsford, all of N.Y., assignors to Johnson & Johnson Clinical Diagnostics, Inc., Rochester, N.Y.

Division of Ser. No. 155,441, Feb. 12, 1988, Pat. No. 4,965,191. This application Jul. 2, 1990, Ser. No. 546,980
Int. Cl.[6] G01N *33/53*
U.S. Cl. 436—17 **9 Claims**

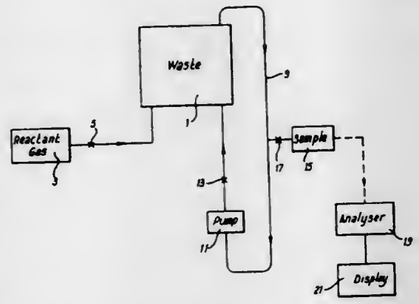
1. An aqueous wash solution consisting essentially of a buffer to maintain its pH at from about 5 to about 9 and at least about 1.5 weight percent of a first water-soluble salt comprising a lower alcohol sulfate anion having from 6 to 10 carbon atoms and an alkali metal or ammonium cation, said solution having an ionic strength of from about 0.1 to about 0.5, said ionic strength being provided by either said buffer or a second water-soluble salt present in a concentration sufficient to provide said ionic strength, said second water-soluble salt having an alkali metal, ammonium or alkaline earth metal cation.

5,599,716

MEASUREMENT OF RADIOACTIVE CONTENT OF WASTE AND PLANT ITEMS BY RADIOLYTIC TRANSFORMATION OF REACTANT GASES

Robert G. G. Holmes, Cumbria, United Kingdom, assignor to British Nuclear Fuels plc, United Kingdom

Continuation of Ser. No. 182,037, Mar. 7, 1994, abandoned. This application Nov. 27, 1995, Ser. No. 562,645
Claims priority, application United Kingdom, May 15, 1992, 9210455
Int. Cl.[6] G01M *23/00*
U.S. Cl. 436—57 **19 Claims**



1. A process of measuring the level of radioactivity of a solid sample comprising the steps of:
(a) contacting the solid with a reactant fluid selected from the group consisting of methane, ethane, ethylene, propane, propene, butane, methyl bromide, ethyl bromide, hexafluoroethane, trifluoromethane, bromotrifluoromethane, and mixtures thereof which is converted by nuclear radiation to a chemically stable product fluid to an extent dependent upon the radioactive content of the solid;
(b) detecting the amount of the reactant fluid converted into the product fluid; and
(c) determining whether the solid sample is intermediate level waste, low level waste or de-minimus waste from the amount of reactant fluid converted into product.

5,599,717

ADVANCED SYNCHRONOUS LUMINESCENCE SYSTEM

Tuan Vo-Dinh, Knoxville, Tenn., assignor to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Filed Sep. 2, 1994, Ser. No. 300,202
Int. Cl.[6] G01N *21/64*
U.S. Cl. 436—63 **10 Claims**

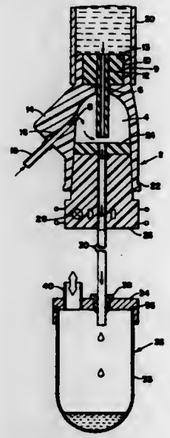
1. A method of testing a tissue sample to determine malignant or pre-malignant abnormality, comprising the steps of:
exposing the tissue sample to an excitation radiation and thereby generating an emission radiation;
synchronously scanning the wavelength of the excitation radiation and the wavelength of the emission radiation to produce a spectrum; and
correlating the spectrum to a malignancy condition of the tissue sample.

5,599,718

MEASUREMENT OF THE THROMBOLYTIC ACTIVITY OF BLOOD

Diana Gorog, 20 Grenville Court, London SE19 1LS, United Kingdom

PCT No. PCT/GB92/02328, § 371 Date Aug. 18, 1993, § 102(e) Date Aug. 18, 1993, PCT Pub. No. WO93/12423, PCT Pub. Date Jun. 24, 1993
PCT Filed Dec. 16, 1992, Ser. No. 107,672
Claims priority, application United Kingdom, Dec. 19, 1991, 9126987
Int. Cl.[6] G01N *33/86*
U.S. Cl. 436—69 **27 Claims**



1. A method of forming an occlusive thrombus comprising the steps of providing a first supply of blood that has not been clotted or combined with an anticoagulant, causing a portion of said supply of blood to flow under pressure completely through a capillary tube and into a first reservoir such that a thrombus forms in the capillary tube solely by shear-stress optically detecting formation of said thrombus, reducing the pressure after said detecting step detects formation of a complete thrombus and thereafter maintaining the reduced pressure for a predetermined period of time.

5,599,719

METHOD FOR ISOLATING BIOMOLECULES FROM A BIOLOGICAL SAMPLE WITH LINEAR POLYMERS

James E. Woiszwillo, Milford, Mass., and Fred Rothstein, Long Beach, Calif., assignors to Middlesex Sciences, Inc., Norwood, Mass.

PCT No. PCT/US93/00873, § 371 Date Aug. 26, 1993, § 102(e) Date Aug. 26, 1993, PCT Pub. No. WO93/03639, PCT Pub. Date Mar. 4, 1993
Continuation-in-part of Ser. No. 817,610, Jan. 7, 1992, Pat. No. 5,525,519. This PCT application Jan. 7, 1993, Ser. No. 107,822
Int. Cl.[6] G01N *33/487*
U.S. Cl. 436—88 **11 Claims**

1. A method of isolating at least one biomolecule from a biological sample comprising the steps of:
a) adding a sufficient amount of a solution of at least two soluble, linear polymers to a biological sample solution to form a precipitate, wherein a first polymer is polyvinylpyrrolidone and a second polymer is selected from the group consisting of polyethylene glycol, dextran, nonylphenolethoxylates, polyvinyl alcohol, and mixtures thereof, and adjusting the solution to a predetermined pH; and
b) separating the solution into two fractions, a supernatant and a precipitate, wherein the biomolecule is isolated from either the supernatant or precipitate.

5,599,720

MEASUREMENT OF ANALYTE CONCENTRATION

Roger P. Ekins, London, England, assignor to Multilyte Limited, London, United Kingdom

Continuation of Ser. No. 20,872, Feb. 19, 1993, which is a continuation of Ser. No. 533,689, Jun. 5, 1990, abandoned, which is a continuation of Ser. No. 804,385, Dec. 3, 1985, abandoned, which is a continuation-in-part of Ser. No. 606,822, Apr. 24, 1984, abandoned. This application Jun. 17, 1994, Ser. No. 261,757
Claims priority, application United Kingdom, Aug. 27, 1982, 8224600
Int. Cl.[6] G01N *33/566;21/76;33/543;33/53*
U.S. Cl. 436—501 **19 Claims**

1. A method of estimating the concentration in a fluid of an analyte whose concentration in that fluid is dependent on the dilution of the fluid, comprising contacting the fluid with a binding agent having binding sites specific for the analyte, the binding agent being used in a small amount such that the binding agent has at most only an insignificant effect on the ambient concentration of the analyte in the fluid, separating the binding agent and determining a value representative of the proportional occupancy of the binding sites of the binding agent by the analyte, and thereby determining from said value the analyte concentration in the fluid.

5,599,721

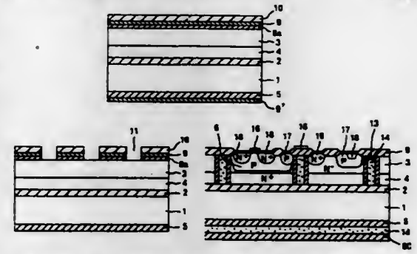
Patent Not Issued For This Number

5,599,722

SOI SEMICONDUCTOR DEVICE AND METHOD OF PRODUCING SAME WHEREIN WARPAGE IS REDUCED IN THE SEMICONDUCTOR DEVICE

Takayuki Sugiaka, Okazaki; Shoji Miura, Nukata-gun, and Toshio Sakakibara, Nishio, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Nov. 23, 1994, Ser. No. 346,255
Claims priority, application Japan, Nov. 26, 1993, 5-296894
Int. Cl.[6] H01L *21/265;21/02;21/302;21/76*
U.S. Cl. 437—21 **6 Claims**



1. A method of producing an SOI semiconductor device comprising the steps of:
joining a semiconductor substrate serving as a base and having a main surface and a junction surface opposite said main surface to a semiconductor layer, wherein an inner insulation film is sandwiched between said junction surface of said semiconductor substrate and said semiconductor layer and an outer insulation film is provided on said main surface of said semiconductor substrate;

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forming a first nitride film as a mask for trench formation over an exposed surface of said semiconductor layer;

removing a second nitride film which has accumulated on said outer insulation film and which accumulated on said outer insulation film during said first nitride film forming step;

using said first nitride film over said semiconductor layer as said mask in forming a trench in said semiconductor layer; and

filling in said trench with a filler material to form an island semiconductor region.

5,599,723

METHOD FOR MANUFACTURING BIPOLAR TRANSISTOR HAVING REDUCED BASE-COLLECTOR PARASITIC CAPACITANCE

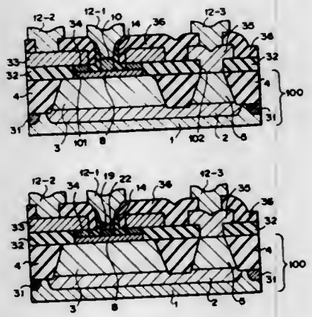
Fumihiko Sato, Tokyo, Japan, assignor to NEC Corporation, Japan

Continuation of Ser. No. 361,993, Dec. 21, 1994, abandoned. This application Apr. 2, 1996, Ser. No. 626,441

Claims priority, application Japan, Dec. 22, 1993, 5-323513

Int. Cl.[6] H01L *21/70*

U.S. Cl. 437—31 **9 Claims**



1. A method for manufacturing a semiconductor device, comprising:

a first step of forming a first insulation film on a surface of a first conduction type single crystal semiconductor layer;

a second step of forming on said first insulation film a first single crystal semiconductor film of a second conduction type through which a first opening is selectively formed;

a third step of forming a second insulation film on an upper surface of said first single crystal semiconductor film and on a side surface of said first single crystal semiconductor film which defines said first opening;

a fourth step of selectively removing said first insulation film using said second insulation film and said first single crystal semiconductor film as a mask to form through said first insulation film a second opening which is larger than said first opening;

a fifth step of growing a second single crystal semiconductor film of a second conduction type on an exposed surface of said first conductor type single crystal semiconductor layer within said second opening and growing a third single crystal semiconductor film of a second conduction type on an exposed lower surface of said first single crystal semiconductor film so that said second and third single crystal semiconductor films are connected to each other, said second and third single crystal semiconductor films being made of silicon-germanium; and

a sixth step of forming a third insulation film between said second insulation film and said second single crystal semiconductor film so as to cover an exposed side surface of said third single crystal semiconductor film.

5,599,724

FET HAVING PART OF ACTIVE REGION FORMED IN SEMICONDUCTOR LAYER IN THROUGH HOLE FORMED IN GATE ELECTRODE AND METHOD FOR MANUFACTURING THE SAME

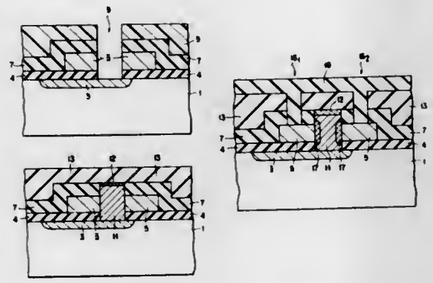
Takeshi Yoshida, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Tokyo, Japan

Division of Ser. No. 310,814, Sep. 22, 1994, abandoned, which is a continuation of Ser. No. 65,138, May 20, 1993, abandoned. This application Aug. 24, 1995, Ser. No. 518,855

Claims priority, application Japan, May 21, 1992, 4-128959

Int. Cl.[6] H01L *21/265;21/225;21/385*

U.S. Cl. 437—40 **20 Claims**



1. A method of manufacturing a semiconductor device, the method comprising:

forming a first semiconductor region of a first conductivity type in a main surface of a semiconductor substrate;

forming a first insulation film on said main surface of said semiconductor substrate;

forming a conductive layer on said first insulation film;

patterning said conductive layer to at least partially overlie said first semiconductor region;

forming a second insulation film on said conductive layer;

forming a first through hole to pass through said second insulation film, said conductive layer and said first insulation film to reach said first semiconductor region;

filling said first through hole with a semiconductor material of said first conductivity type to form a second semiconductor region of said first conductivity type on a part of said first semiconductor region inside said first through hole so that said second semiconductor region has an impurity concentration lower than that of said first semiconductor region;

forming a third semiconductor region of said first conductivity type on said second semiconductor region;

forming a second through hole to pass through said second insulation film to reach said conductive layer;

doping impurities of said second conductivity type into said conductive layer through said second through hole; and

heating to diffuse said impurities of said second conductivity type into said second semiconductor region to form a fourth semiconductor region of said second conductivity type in said second semiconductor region, wherein said fourth semiconductor region is adjacent to said conductive layer.

5,599,725

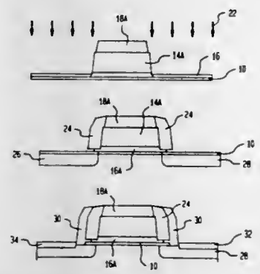
METHOD FOR FABRICATING A MOS TRANSISTOR WITH TWO-LAYER INVERSE-T TUNGSTEN GATE STRUCTURE

Fernand Dorleans, Wappingers Falls; Liang-Choo Hsia, Stormville; Louis L. C. Hsu, Fishkill; Gerald R. Larsen, Cornwall, and Geraldine C. Schwartz, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 125,357, Sep. 21, 1993, which is a continuation of Ser. No. 900,869, Jun. 18, 1992, abandoned. This application Nov. 22, 1994, Ser. No. 346,210

Int. Cl.[6] H01L *21/8234*

U.S. Cl. 437—40 **11 Claims**



1. A method for fabricating a refractory metal gate electrode for a MOS transistor, comprising the steps of:

depositing a first layer of refractory metal having a first density on a gate oxide layer formed on a silicon substrate;

depositing a second layer of refractory metal having a second density on said first layer of refractory metal; wherein said first density is lower than said second density;

etching said second layer to form an upper gate electrode portion; and,

partially etching a thickness of said first layer to form a lower portion of said gate electrode that extends laterally beyond said upper gate electrode portion.

5,599,726

METHOD OF MAKING A CONDUCTIVE SPACER LIGHTLY DOPED DRAIN (LDD) FOR HOT CARRIER EFFECT (HCE) CONTROL

Yang Pan, Singapore, Singapore, assignor to Chartered Semiconductor Manufacturing Pte Ltd, Singapore, Singapore

Filed Dec. 4, 1995, Ser. No. 567,017

Int. Cl.[6] H01L *21/336*

U.S. Cl. 437—41 **11 Claims**

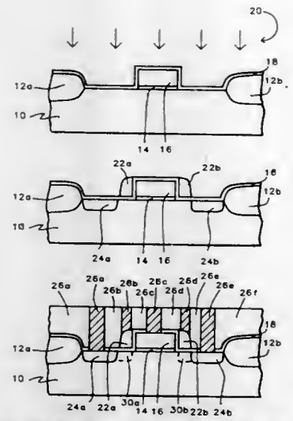
1. A method for forming a Metal Oxide Semiconductor Field Effect Transistor (MOSFET) comprising:

providing a semiconductor substrate, the semiconductor substrate having a first portion, a second portion adjoining a side of the first portion and a third portion adjoining an opposite side of the first portion;

forming upon the first portion of the semiconductor substrate a gate oxide layer, the gate oxide layer having a gate electrode formed and aligned thereupon, the gate electrode having a first sidewall adjoining the second portion of the semiconductor substrate and a second sidewall adjoining the third portion of the semiconductor substrate;

forming upon the first sidewall of the gate electrode and upon the surface of the second portion of the semiconductor substrate adjoining the first sidewall of the gate electrode a conformal oxide layer, the conformal oxide layer having a dose of fluorine atoms contained therein;

forming upon the conformal oxide layer at the juncture of the first sidewall of the gate electrode and the second portion of the semiconductor substrate a conductive spacer;



forming into the second portion of the semiconductor substrate at a location adjoining the conductive spacer and further removed from the gate electrode a source electrode; and,

forming into the third portion of the semiconductor substrate a drain electrode.

5,599,727

METHOD FOR PRODUCING A FLOATING GATE MEMORY DEVICE INCLUDING IMPLANTING IONS THROUGH AN OXIDIZED PORTION OF THE SILICON FILM FROM WHICH THE FLOATING GATE IS FORMED

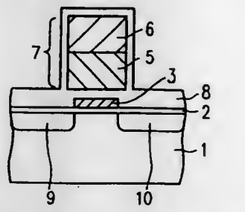
Kenji Hakozaki, Tenri, and Shin-ichi Sato, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 1, 1995, Ser. No. 456,867

Claims priority, application Japan, Dec. 15, 1994, 6-311576

Int. Cl.[6] H01L *21/8247*

U.S. Cl. 437—43 **9 Claims**



1. A method for producing a nonvolatile semiconductor memory device comprising the steps of:

forming a field insulating film on an isolation region on a semiconductor substrate and forming a tunneling oxide film on an active region;

depositing a silicon film on the semiconductor substrate;

forming stripe-shaped silicon portions including a plurality of first portions to be used as a plurality of floating gates and a plurality of second portions interposed between two adjacent portions of the plurality of first portions by patterning the silicon film;

forming an insulating film so as to cover at least the stripe-shaped silicon portions;

forming a conductive film so as to cover the insulating film;

forming a control gate so as to cover the plurality of first portions of the stripe-shaped silicon portions by patterning the conductive film;

converting the plurality of second portions of the stripe-shaped silicon portions into a silicon oxide film, and forming the

plurality of floating gates from the plurality of first portions by thermally oxidizing the plurality of second portions; and implanting impurity ions through the silicon oxide film into the active region on the semiconductor substrate by using the control gate as a mask, thereby forming a source region and a drain region in the active region.

5,599,728

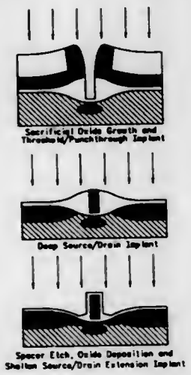
METHOD OF FABRICATING A SELF-ALIGNED HIGH SPEED MOSFET DEVICE

Chenming Hu, Alamo, and Hsing-Jen Wann, Albany, both of Calif., assignors to Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 224,363, Apr. 7, 1994, Pat. No. 5,489,792. This application Oct. 28, 1994, Ser. No. 330,505

Int. Cl.[6] H01L *21/265;21/302;21/76;21/306*

U.S. Cl. 437—44 **4 Claims**



1. A method of fabricating a field effect transistor in a surface region of a semiconductor substrate comprising the steps of

a) providing a semiconductor substrate having a pad silicon oxide layer on a surface of the substrate.

b) forming a silicon nitride layer over said pad silicon oxide layer,

c) removing a portion of said silicon nitride layer to expose a surface region of said substrate,

d) oxidizing said surface region, thereby forming an oxide layer,

e) removing a portion of said oxide layer to form an opening and expose a portion of said surface region,

f) implanting dopant ions through the opening in said oxide layer and forming a punchthrough stopper region spaced from said surface region,

g) forming a gate dielectric on said portion of said surface region,

h) depositing gate electrode material on said gate dielectric and overlying said silicon nitride layer,

i) removing both said gate electrode material overlying said silicon nitride layer and said silicon nitride layer thereby leaving a gate electrode on said gate dielectric, and

j) forming source and drain regions in said surface region using said gate electrode as an implantation mask for self-alignment.

5,599,729

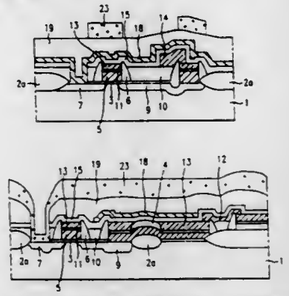
STATIC RANDOM ACCESS MEMORY CELL AND METHOD OF FABRICATING THE SAME

Joon-Young Park, Seoul, Rep. of Korea, assignor to LG Semicon Co., Ltd., Rep. of Korea

Filed Sep. 14, 1995, Ser. No. 528,320

Int. Cl.[6] H01L *21/70*

U.S. Cl. 437—52 **8 Claims**



1. A method of fabricating an SRAM cell, comprising the steps of:

forming a plurality of active regions and field regions on a substrate;

forming a first common gate electrode and two first impurity-doped regions on said active regions to thereby form two first bulk transistors;

forming a second common gate electrode and two second impurity-doped regions on said active regions separated from said first bulk transistors by a predetermined distance, to thereby form two second bulk transistors;

forming a gate oxide layer on the overall surface of the substrate;

depositing a conductive layer to form a thin film transistor body on said gate oxide layer; and

etching back said conductive layer so that said conductive layer remains only on said first and second common gate electrodes, Vss connectors overlapping said common gate electrodes by a predetermined width, and transistor connectors overlapping said second common gate electrode by a predetermined width, thereby forming two thin film transistors.

5,599,730

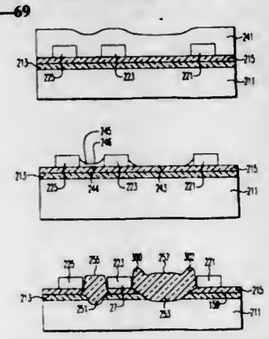
POLY-BUFFERED LOCOS

Kuo-Hua Lee, and Chen-Hua D. Yu, both of Orlando, Fla., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 8, 1994, Ser. No. 351,977

Int. Cl.[6] H01L *21/76*

U.S. Cl. 437—69 **6 Claims**



1. A method of integrated circuit fabrication comprising:

forming at least one patterned layer which overlies a substrate;

said patterned layer having at least one first pair of raised topographic features and one second pair of raised topographic features, the distance between said first pair of topographic features being less than the distance between said second pair of topographic features;

forming a blanket material layer over said patterned layer;

anisotropically etching back said blanket material layer, thereby creating fillets adjacent said second pair of topographic features and removing the rest of said blanket material layer between said second pair of topographic features; a continuous layer of said blanket material layer remaining between said first topographic features;

oxidizing said substrate and said fillets and said remaining continuous layer, thereby forming a field oxide.

5,599,731

METHOD OF FORMING A FIELD OXIDE FILM IN A SEMICONDUCTOR DEVICE

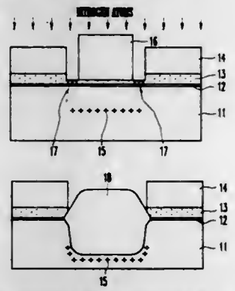
Sang H. Park, Kyungki-Do, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Jul. 6, 1995, Ser. No. 498,914

Claims priority, application Rep. of Korea, Jul. 6, 1994, 94-16087

Int. Cl.[6] H01L *21/76*

U.S. Cl. 437—70 **2 Claims**



1. A method of forming a semiconductor device, comprising:

sequentially forming a pad oxide film, a pad polysilicon film, and a nitride film on a silicon substrate;

implanting impurity ions to form a channel stop region after patterning said nitride film to define a field region;

exposing a selected portion of said exposed pad polysilicon by forming a photoresist pattern;

forming an oxidation prevention area by implanting nitrogen ions into said selected portion of said pad polysilicon film exposed at an edge of said photoresist pattern;

removing said photoresist pattern and subsequently performing a thermal oxidation process; and

forming a field oxide film by removing said nitride film, said pad polysilicon film, and said pad oxide film.

5,599,732

METHOD FOR GROWING III-V SEMICONDUCTOR FILMS USING A COATED REACTION CHAMBER

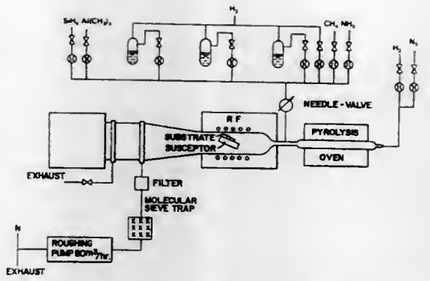
Manijeh Razeghi, Wilmette, Ill., assignor to Northwestern University

Filed Aug. 21, 1995, Ser. No. 517,172

Int. Cl.[6] H01L *21/203*

U.S. Cl. 437—105 **13 Claims**

1. A method for preparing chamber for use with metallo-organic chemical vapor deposition or metallo-organic molecular beam epitaxy procedures, comprising first forming at temperatures of from about 800° C. to about 1200° C. in situ a barrier coating over all surfaces of the reaction chamber, said barrier coating preventing impurities from said surfaces from interfering with said procedures.



5,599,733

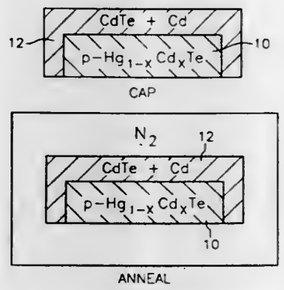
METHOD USING CADMIUM-RICH CDTE FOR LOWERING THE METAL VACANCY CONCENTRATIONS OF HGCDTE SURFACES

Chang-Feng Wan, Dallas, and John H. Tregilgas, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 137,874, Oct. 15, 1993, abandoned. This application Nov. 21, 1994, Ser. No. 342,530

Int. Cl.[6] H01L *21/225*

U.S. Cl. 437—160 **15 Claims**



1. A method for type-converting a substrate of mercury cadmium telluride from a first conductivity type to a second conductivity type comprising the steps of:

providing a substrate of mercury cadmium telluride of said first conductivity type;

capping said substrate with a layer of cadmium-rich cadmium telluride; and,

annealing said capped substrate at a temperature sufficient to support interdiffusion between said cadmium-rich cadmium telluride layer and said mercury cadmium telluride substrate, wherein said cadmium-rich cadmium telluride layer induces diffusion of mercury interstitials into said substrate and lowers the metal vacancy concentration of said substrate.

5,599,734

METHOD FOR FABRICATING MOS TRANSISTOR UTILIZING DOPED DISPOSABLE LAYER

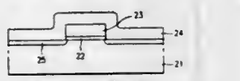
Jeong S. Byun, Chungcheongbuk-do, and Sang J. Choi, Chungcheongnam-do, both of Rep. of Korea, assignors to LG Semicon Co., Ltd., Chungcheongbuk-do, Rep. of Korea

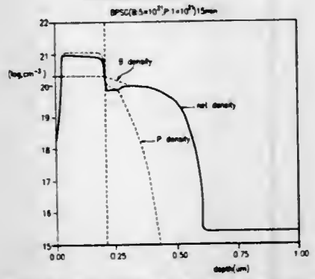
Division of Ser. No. 445,580, May 22, 1995, which is a continuation of Ser. No. 208,348, Mar. 9, 1994, abandoned. This application Jun. 6, 1995, Ser. No. 479,047

Claims priority, application Rep. of Korea, Feb. 4, 1994, 2105/1994

Int. Cl.[6] H01L *21/225*

U.S. Cl. 437—164 **4 Claims**





1. A method for fabricating an MOS transistor comprising the steps of:

forming a gate insulating layer on a substrate of a first conductivity-type;

forming a gate on the gate insulating layer;

forming a disposable layer over an entire surface of the substrate and the gate, the disposable layer having a first conductivity-type impurity and a second conductivity-type impurity of a higher concentration than that of the first conductivity-type impurity; and

forming a source and drain area of the second conductivity-type impurity on the substrate by diffusing the second conductivity type impurity of the disposable layer into the substrate by means of an annealing process;

wherein the disposable layer includes a BPSG layer;

wherein the BPSG layer is a B+PSG layer which is doped with a higher dopant concentration of boron than that of phosphorus to make a p-type MOS transistor.

5,599,735

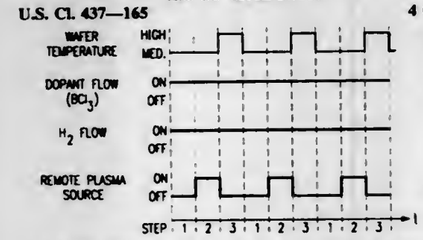
METHOD FOR DOPED SHALLOW JUNCTION FORMATION USING DIRECT GAS-PHASE DOPING

Mehrdad M. Moslehi, Los Altos, Calif., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 1, 1994, Ser. No. 283,979

Int. Cl.[6] H01L *21/223*

U.S. Cl. 437—165 **4 Claims**



1. A gas-phase doping method for semiconductor waters, comprising the steps of:

providing a semiconductor wafer having a surface, said wafer comprising silicon; and

exposing said surface of said wafer to a process medium in order to dope at least a portion of said surface of said wafer, said process medium comprising a dopant gas and an etch suppressing additive, wherein said dopant gas comprises a halide of a dopant species, wherein said etch suppressing additive is a material selected from the group consisting of silicon tetrachloride, silicon tetrafluoride, and dichlorosilane; and

exposing said wafer and said dopant gas to a plasma source, after said step of exposing said surface of said wafer to a process medium.

5,599,736

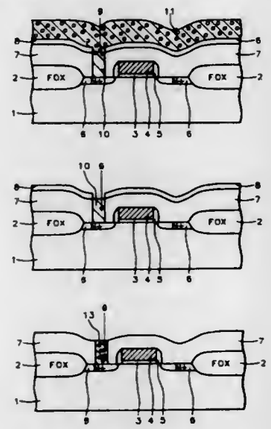
FABRICATION METHOD FOR POLYSILICON CONTACT PLUGS

Horng-Huei Tseng, Hsin chu, Taiwan, assignor to Vanguard International Semiconductor Corporation, Hsin-Chu, Taiwan

Filed Jun. 28, 1995, Ser. No. 496,013

Int. Cl.[6] H01L *21/28*

U.S. Cl. 437—186 **23 Claims**



1. A method for fabricating a MOSFET device on a semiconductor substrate, using a conductive plug to provide electrical contact between an active device region in said semiconductor substrate, and the interconnect metallization, comprising the steps of:

providing said MOSFET device, on said semiconductor substrate;

providing said active device region in said MOSFET device;

depositing a first dielectric layer on said semiconductor substrate, including said MOSFET device;

depositing a second dielectric layer on said first dielectric layer, to form composite dielectric layer;

photolithographic processing to open a region in photoresist, exposing said composite dielectric layer, directly overlying said active device region;

anisotropic removal of said composite dielectric layer, in said open region of said photoresist, to create a contact hole to said active device region;

cleaning surface of said active device region, in said contact hole opening;

depositing an intrinsic layer of polysilicon on said active device region, in said contact hole, and on said second dielectric layer;

a first doping of said intrinsic polysilicon layer;

a first anneal to completely convert said intrinsic polysilicon layer, on said second dielectric layer, to doped polysilicon, while converting a top portion of said intrinsic polysilicon layer, in said contact hole, to said doped polysilicon;

removal of said doped polysilicon, from surface of said second dielectric layer, and from surface of said intrinsic polysilicon layer, in said contact hole;

removal of said second dielectric layer from surface of said first dielectric layer;

a second doping of said intrinsic polysilicon layer, in said contact hole; and

a second anneal to activate dopants in said intrinsic polysilicon layer, in said contact hole.

5,599,737

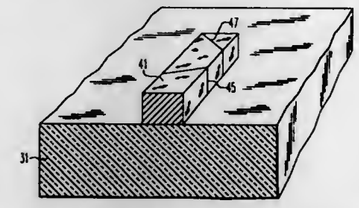
CONDUCTIVE RUNNER FABRICATION

Vivian W. Ryan, Washington, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 30, 1994, Ser. No. 367,380

Int. Cl.[6] H01L *21/283*

U.S. Cl. 437—187 **7 Claims**



1. A method of forming an integrated circuit comprising:

forming a blanket layer of conductive material overlying a dielectric substrate; and then

without performing a heat treatment to increase average grain size,

performing a blanket etchback procedure to reduce the thickness of said conductive material by approximately 50%, thereby producing a second blanket layer of conductive material;

patterning said second layer of conductive material to form conductive runners.

5,599,738

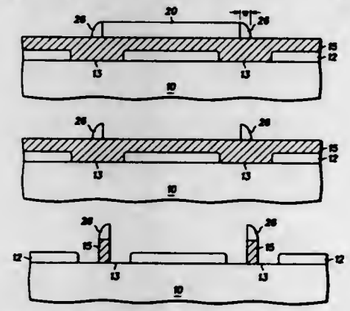
METHODS OF FABRICATION OF SUBMICRON FEATURES IN SEMICONDUCTOR DEVICES

Majid M. Hashemi; Saied N. Tehrani, and Sung P. Pack, all of Tempe, Ariz., assignors to Motorola, Schaumburg, Ill.

Filed Dec. 11, 1995, Ser. No. 566,385

Int. Cl.[6] H01L *21/44*

U.S. Cl. 437—187 **19 Claims**



1. A process of fabricating a semiconductor structure with submicron features comprising the steps of:

providing a semiconductor structure with a planar surface and a discontinuity in the surface;

depositing an electrically conductive layer of material on the surface and the discontinuity of the semiconductor structure;

forming a first etchable layer of material on the electrically conductive layer so as to define a first sidewall adjacent the discontinuity of the semiconductor structure;

forming a second etchable layer of material on the electrically conductive layer and on the first etchable layer, the second etchable layer covering the sidewall in the first etchable layer and forming a second sidewall in the second etchable layer that is thicker than remaining portions of the second etchable layer;

etching the second etchable layer from the electrically conductive layer and the first etchable layer so as to leave a portion of the second sidewall in the second etchable layer;

removing the first etchable layer to leave the second sidewall in the second etchable layer spaced from the discontinuity of the semiconductor structure;

etching the electrically conductive layer of material on the surface and the discontinuity of the semiconductor structure using the second sidewall as an etch mask to form a submicron feature; and

removing the second sidewall.

5,599,739

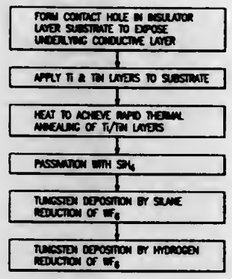
BARRIER LAYER TREATMENTS FOR TUNGSTEN PLUG

Sailesh M. Merchant, Orlando, Fla.; Arun K. Nanda, Austin, and Pradip K. Roy, Orlando, both of Tex., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 30, 1994, Ser. No. 366,867

Int. Cl.[6] H01L *21/443*

U.S. Cl. 437—190 **34 Claims**



1. A method of forming a tungsten plug comprising:

providing a substrate having a contact hole formed therein;

applying an adhesion layer of titanium nitride to at least a portion of the substrate;

contacting the substrate with SiH_4 to passivate the titanium nitride surface of the substrate;

reducing WF_6 with SiH_4 at a pressure of 1 Torr or less in the presence of the passivated substrate to form a nucleation layer on the passivated substrate; and

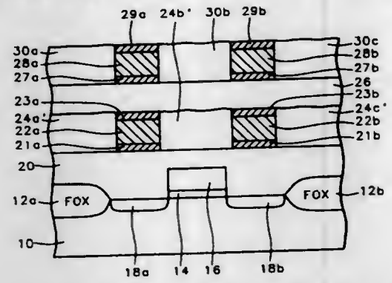
reducing WF_6 with H_2 at a pressure of at least 10 Torr to deposit tungsten to at least substantially fill the contact hole.

5,599,740

DEPOSIT-ETCH-DEPOSIT OZONE/TEOS INSULATOR LAYER METHOD

Syun-Ming Jang, Hsin-Chu, and Chen-Hua Yu, Keelung City, both of Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Ltd., Hsin-Chu, Taiwan

Filed Nov. 16, 1995, Ser. No. 558,491
Int. Cl.[6] H01L 21/283;21/302
U.S. Cl. 437—190 21 Claims



1. A method for forming a silicon oxide insulator spacer layer within a patterned integrated circuit layer upon a semiconductor substrate comprising:

(a) forming upon a semiconductor substrate a patterned integrated circuit layer, the patterned integrated circuit layer being structured with a titanium nitride upper-most layer, the titanium nitride upper-most layer having a first growth rate with respect to ozone assisted Chemical Vapor Deposited (CVD) silicon oxide layers, the patterned integrated circuit layer also having at least one lower-lying layer formed of a material having a second growth rate with respect to ozone assisted Chemical Vapor Deposited (CVD) silicon oxide layers, the second growth rate being greater than the first growth rate;

(b) forming within and upon the patterned integrated circuit layer a silicon oxide insulator spacer layer through an ozone assisted Chemical Vapor Deposition (CVD) process, the silicon oxide insulator spacer layer being formed until the surface of the titanium nitride upper-most layer is passivated with the silicon oxide insulator spacer layer;

(c) etching the silicon oxide insulator spacer layer from the surface of the titanium nitride upper-most layer; and

(d) sequentially repeating step (b) and step (c) until the surface of the silicon oxide insulation spacer layer over the lower-lying layer(s) of the patterned integrated circuit layer is planar with the upper surface of the titanium nitride upper-most layer.

5,599,741

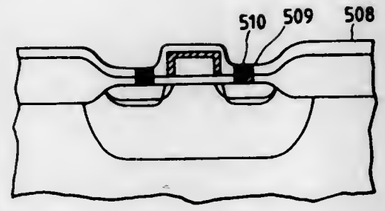
METHOD FOR MAKING SEMICONDUCTOR DEVICE WITH METAL DEPOSITED ON ELECTRON DONATING SURFACE OF GATE ELECTRODE

Shigeyuki Matsumoto, Atsugi; Hiroshi Yuzurihara, Isehara; Mamoru Miyawaki, Tokyo; Shunsuke Inoue, and Jun Nakayama, both of Atsugi, all of Japan, assignors to Cannon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 325,644, Oct. 19, 1994, abandoned, which is a continuation of Ser. No. 46,366, Apr. 13, 1993, abandoned, which is a continuation of Ser. No. 707,032, May 29, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 479,385
Claims priority, application Japan, May 31, 1990, 2-143734; Jun. 4, 1990, 2-144543
Int. Cl.[6] H01L 21/44;21/22
U.S. Cl. 437—192 8 Claims

1. In a method for fabricating a semiconductor device comprising:

(i) a semiconductor substrate;



(ii) source and drain regions formed within said semiconductor substrate;

(iii) a gate insulating film provided on said semiconductor substrate,

(iv) a first gate electrode provided on said gate insulating film; and

(v) a second gate electrode covering an upper surface and both side surfaces of said first gate electrode, the improvement which comprises:

(a) forming said first gate electrode;

(b) implanting an impurity using said first gate electrode as a mask to form first regions in said semiconductor substrate for forming said source and drain regions;

(c) forming said second gate electrode by selective chemical vapor deposition employing hydrogen gas and at least one gas selected from the group consisting of $TiCl_4$, $Cu(C_{11}H_{19}O_2)_2$, $Cu(C_5H_7O_2)_2$, $W(CH_3)_3$, $W(C_2H_5)_3$, $Mo(CO)_6$ and alkylaluminum hydride; and

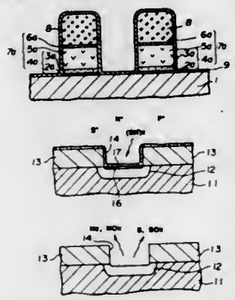
(d) implanting an impurity using said second gate electrode as a mask to form second regions in which impurity concentrations are higher than in said first regions in said semiconductor substrate, wherein there is a self-alignment between edge portions of said first and second regions with the first and second gate electrodes.

5,599,742

INTERCONNECTION FORMING METHOD

Shingo Kadomura, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 20, 1992, Ser. No. 933,027
Claims priority, application Japan, Aug. 29, 1991, 3-244523; Sep. 2, 1991, 3-246450; Jun. 2, 1992, 4-141527
Int. Cl.[6] H01L 21/467
U.S. Cl. 437—194 33 Claims



1. A method of forming interconnectors comprising the steps of:

forming an aluminum interconnector pattern by forming an interconnector layer containing aluminum on a substrate, resist masking and etching the interconnector layer;

maintaining the substrate under high vacuum and at a temperature below room temperature, and forming a sulphur nitride material layer on at least the exposed portions of the interconnector pattern; and

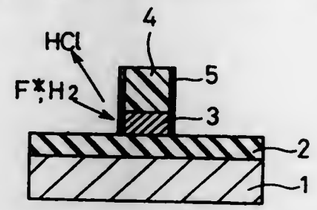
removing the sulphur nitride material layer before a next fabrication process.

5,599,743

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE

Satoshi Nakagawa, Muko, and Youji Bitou, Kyoto, both of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Filed Apr. 7, 1995, Ser. No. 418,474
Claims priority, application Japan, Apr. 7, 1994, 6-069465
Int. Cl.[6] H01L 21/44;21/48
U.S. Cl. 437—194 6 Claims



1. A method of manufacturing a semiconductor device, comprising the steps of:

forming an insulating film on a semiconductor substrate;

forming a film comprising aluminum or an alloy comprising aluminum on said substrate;

providing a mask with a pattern on the film comprising aluminum or the alloy comprising aluminum;

removing the film comprising aluminum or the alloy comprising aluminum by etching the film comprising aluminum or the alloy comprising aluminum by chlorination and/or bromination with plasma except the part of the film comprising aluminum or the alloy comprising aluminum on which the mask is formed;

exposing the film comprising aluminum or the alloy comprising aluminum to a gas mixture plasma comprising hydrogen and a gas that does not have a depositing or oxidizing effect but which substitutes fluoride for chloride and/or bromide;

washing the substrate and the film comprising aluminum or the alloy comprising aluminum with water; and

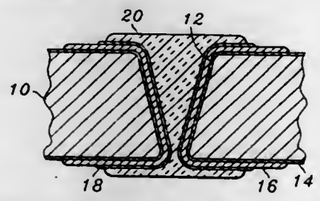
removing the mask.

5,599,744

METHOD OF FORMING A MICROCIRCUIT VIA INTERCONNECT

Wei H. Koh, Irvine, and Connie S. McCausland, San Juan Capistrano, both of Calif., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Feb. 6, 1995, Ser. No. 385,113
Int. Cl.[6] H01L 21/441
U.S. Cl. 437—195 22 Claims



1. A method for forming a conductive via in a non-conductive substrate having a through-hole formed intermediate two sides of the substrate, a thin conductive film being formed upon the substrate, the method comprising the steps of:

a) applying a conductive material within the through-hole;

b) firing the conductive material at a temperature below that temperature which results in degradation of the thin conductive film;

c) coating the through-hole within the conductive material;

d) applying a first non-conductive material to the conductive material; and

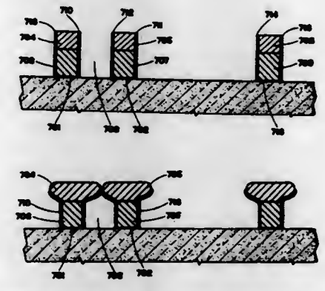
e) applying a second non-conductive material to the first-non-conductive material so as to fill the through-hole.

5,599,745

METHOD TO PROVIDE A VOID BETWEEN ADJACENT CONDUCTING LINES IN A SEMICONDUCTOR DEVICE

Alan R. Reinberg, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Jun. 7, 1995, Ser. No. 481,051
Int. Cl.[6] H01L 21/28
U.S. Cl. 437—195 13 Claims



1. A method of building a semiconductor device, comprising the steps of:

forming a layer of conductive material on a wafer;

forming a layer of dielectric material on top of said conductive layer;

etching said layer of dielectric material and said layer of conductive material to form a first line and a second line adjacent to said first line, each said line having

a conductive section, and

a dielectric section disposed upon said conductive section; and

heating said wafer until said dielectric sections move toward each other forming a cavity between the conductive section of said first line and the conductive section of said second line.

5,599,746

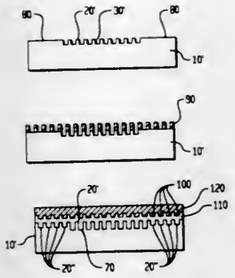
METHOD TO ELIMINATE POLYCIDE PEELING AT WAFER EDGE USING EXTENDED SCRIBE LINES

Water Lur, Taipei, and Der-Yuan Wu, Tour Fenn Jeau, both of Taiwan, assignors to United Microelectronics Corporation, Hsin-Chu, Taiwan

Filed May 6, 1994, Ser. No. 239,229
Int. Cl.[6] H01L 21/28
U.S. Cl. 437—200 5 Claims

1. A process for making semiconductor devices on a wafer to achieve adherence of a silicide layer to a polysilicon layer over the entire surface of the wafer comprising the steps of:

forming on a surface of said wafer a first group of die regions separated by a first group of scribe lines and a second group of die regions separated by said scribe lines, said first and second groups of die regions and said scribe lines occupying said entire surface of said wafer, said first group of die regions containing semiconductor devices and said second group of



die regions containing no semiconductor devices and being formed to enable said silicide layer to be subsequently deposited to adhere over the entire surface of said wafer,

depositing a layer of polysilicon over the entire surface of said wafer over said first and second groups of die regions and,

depositing said silicide layer on the entire surface of said wafer over said polysilicon layer, said silicide layer adhering to said polysilicon layer over the entire surface of said wafer.

5,599,747

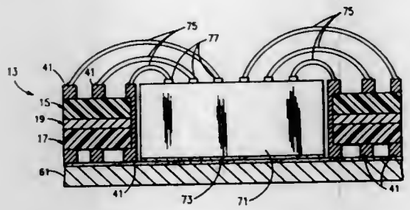
METHOD OF MAKING CIRCUITIZED SUBSTRATE

Ashwinkumar C. Bhatt; Thomas P. Duffy, both of Endicott; David E. Houser; Gerald W. Jones, both of Apalachin; Jeffrey McKeveny, Endicott, and Kenneth L. Potter, Kirkwood, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 390,344, Feb. 15, 1995. This application Jun. 27, 1995, Ser. No. 495,248

Int. Cl.[6] H01L *21/60*

U.S. Cl. 437—209 **15 Claims**



1. A method of making a circuitized substrate, said method comprising the steps of:

providing an electrically insulative base member having first and second opposing surfaces;

removing preselected portions of said base member to form at least one slot extending entirely through said base member and defining a temporary support portion within said insulative base member;

applying photoimaging material onto said first opposing surface of said base member, including over said temporary support portion and said slot extending through said base member;

exposing and developing selected portions of said photoimaging material to define a pattern within said photoimaging material;

circuitizing said first surface of said base member; and

removing additional portions of said base member to thereby remove said temporary support portion and define an opening extending entirely through said base member.

5,599,748

METHOD OF PASSIVATING GROUP III-V SURFACES

Paul H. Holloway, Gainesville, Fla., and Yun Wang, Houston, Tex., assignors to University of Florida, Gainesville, Fla.

Division of Ser. No. 787,906, Nov. 6, 1991, Pat. No. 5,407,869. This application Mar. 11, 1994, Ser. No. 208,863

Int. Cl.[6] H01L *21/302*

U.S. Cl. 437—225 **15 Claims**

1. A method of passivating a surface of a Group III–V compound substrate comprising exposing said surface to a solution comprising P_2S_5, S and $(NH_4)_2S$ in concentrations and for a time sufficient to prevent formation of segregated surface atoms and oxides on said substrate surface, thereby minimizing the density of surface states thereof.

5,599,749

MANUFACTURE OF MICRO ELECTRON EMITTER

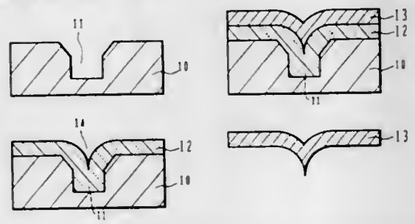
Atsuo Hattori, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan

Filed Oct. 18, 1995, Ser. No. 544,922

Claims priority, application Japan, Oct. 21, 1994, 6-282556; Oct. 27, 1994, 6-287391

Int. Cl.[6] H01J *1/16*

U.S. Cl. 437—228 **31 Claims**



1. A method of manufacturing an electric field emission type device comprising the steps of:

(a) forming a recess in the surface of a substrate, said recess having a generally vertical side wall at a lower portion of said recess and a tapered side wall at an upper portion thereof;

(b) depositing a sacrificial film on said substrate formed with said recess;

(c) depositing an electron emitting material layer on said sacrificial film; and

(d) removing said sacrificial film under said electron emitting material layer to expose said electron emitting material layer.

5,599,750

Patent Not Issued For This Number

5,599,751

ALKALINE EARTH MODIFIED GERMANIUM SULFIDE GLASS

Barry B. Harbison, Dunkirk, Md.; John M. Jewell, Taunton, Mass.; Celia I. Merzbacher, Alexandria, and Ishwar D. Aggarwal, Fairfax Station, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 28, 1995, Ser. No. 396,292

Int. Cl.[6] C03C *3/32;13/04;4/10*

U.S. Cl. 501—40 **20 Claims**

1. A sulfide glass substantially free of crystallites comprising, on mol basis, 30–65% germanium sulfide, 0–30% gallium sulfide and 30–60% of a modifier in sulfide form which imparts to the glass

improved Tg, improved thermal stability, or extended transmission in the infrared range when compared to a sulfide glass devoid of said modifier.

5,599,752

GLASS FOR A CONE OF A DISPLAY TUBE, DISPLAY TUBE ENVELOPE COMPRISING A CONE OF SUCH A GLASS AND METHOD OF MANUFACTURING A CONE FROM SUCH A GLASS

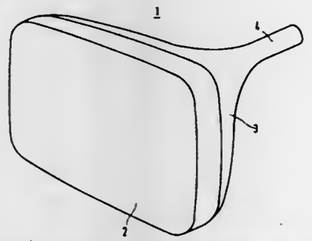
Andreas J. Piers, Bladel, and Jan G. J. Peelen, Eindhoven, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 8, 1994, Ser. No. 352,412

Claims priority, application Belgium, Dec. 8, 1993, 09301352

Int. Cl.[6] C03C *3/105*

U.S. Cl. 501—62 **3 Claims**



1. Glass for a cone of a display tube, which consists essentially of, in weight percent, the following constituents:

SiO_2	>45
Al_2O_3	2.0–6.5
Na_2O	4.5–9.0
K_2O	4.5–9.0
MgO	0.0–4.0
CaO	0.0–4.0
SrO	1.0–7.5
BaO	3.0–7.5
PbO	16–24.

5,599,753

BOROSILICATE GLASS WEAK IN BORIC ACID

Eckhart Watzke; Andrea Kämpfer; Thomas Kloss, and Gerhard Kemmler, all of Jena, Germany, assignors to Jenaer Glaswerck GmbH, Jena, Germany

Filed Aug. 30, 1995, Ser. No. 521,325

Claims priority, application Germany, Aug. 30, 1994, 44 30 710.1

Int. Cl.[6] C03C *3/091;3/093*

U.S. Cl. 501—66 **9 Claims**

1. A borosilicate glass composition weak in boric acid having a high chemical stability, an alkali resistance in accordance with DIN 52322 of LBK-Class 1, a radiation transmittance and a UV transmission $\tau_{250\ nm/1\ mm}$ of 0 to 70% or $\tau_{300\ nm/1\ mm}$ of 0 to 91% a thermal expansion $\alpha_{20/300}$ between 4.0–5.3× $10^{-6}K^{-1}$, a ratio α'/α of the thermal expansion coefficients above $T_g(\alpha')$ to below $T_g(\alpha)$ of 4 to 8, and, a glass transformation temperature between 500° C. and 600° C., said glass composition comprising in percent by weight on oxide basis:

SiO_2	>75
B_2O_3	1–<9
Al_2O_3	3–6
Li_2O	0–4
Na_2O	0–8
K_2O	0–6
MgO	0–3
CaO	0–3
BaO	0–2
SrO	0–2
ZnO	0–3
ZrO_2	0–3
SnO_2	0–3
SnO	0–3
TiO_2	0–2
CeO_2	0–2
Fe_2O_3	0–1
with	
$SiO_2 + B_2O_3$	>83
$SiO_2:B_2O_3$	>8
$SiO_2 + Al_2O_3, ZrO_2$	>83
$Li_2O + Na_2O + K_2O$	5–10
MgO + CaO + BaO + SrO + ZnO	≦3.

5,599,754

GLASS COMPOSITION FOR A SUBSTRATE, AND SUBSTRATE FOR PLASMA DISPLAY MADE THEREOF

Kei Maeda; Yasumasa Nakao; Hideki Kushitani, and Setsuro Ito, all of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Oct. 12, 1995, Ser. No. 542,320

Claims priority, application Japan, Oct. 14, 1994, 6-249781

Int. Cl.[6] C03C *3/087*

U.S. Cl. 501—70 **16 Claims**

1. A glass composition consisting essentially of from 52 to 62 wt % of SiO_2, from 5 to 12 wt % of Al_2O_3, from 0 to 4 wt % of MgO, from 3 to 5.5 wt % of CaO, from 6 to 9 wt % of SrO, from 0 to 13 wt % of BaO, from 17 to 27 wt % of MgO+CaO+SrO+BaO, from 7 to 14 wt % of $Li_2O+Na_2O+K_2O$, from 0.2 to 6 wt % of ZrO_2, and from 0 to 0.6 wt % of SO_3,

wherein the glass composition has a glass transition temperature of at least 600° C. and a devitrification temperature lower than the temperature at which the viscosity is 10^4 poise.

5,599,755

Patent Not Issued For This Number

5,599,756

SINTERED HIGH-TOUGHNESS ALUMINA-BASED COMPOSITE BODY

Youji Matsuo, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Division of Ser. No. 153,989, Nov. 18, 1993, Pat. No. 5,432,133. This application Apr. 7, 1995, Ser. No. 418,478

Claims priority, application Japan, Nov. 19, 1992, 4-310114

Int. Cl.[6] C04B *35/10*

U.S. Cl. 501—127 **2 Claims**

1. A sintered high-toughness alumina-based composite body of a structure consisting essentially of:

20 to 80 volume percent of a plate- or rod-shaped corundum structure or mixtures thereof;

a fine granular corundum structure; and

inevitable impurities.



5,599,757

NPO DIELECTRIC CERAMIC COMPOSITIONS AND CAPACITORS MADE THEREFROM

James M. Wilson, Victor, and Walter J. Symes, Jr., Dundee, both of N.Y., assignors to Ferro Corporation, Cleveland, Ohio

Filed Oct. 26, 1995, Ser. No. 548,710
Int. Cl.[6] C04B 35/468; H01G 4/10
U.S. Cl. 501—137 10 Claims

1. A low firing temperature NPO ceramic dielectric composition in particle form consisting essentially of about 91.0 to about 94.0 wt. % of a calcined base mixture, about 6.0 to 7.5 wt. % of a low melting point glass frit mixture, 0.0 to about 1.5 wt. % of SiO_2, and 0.0 to about 0.25 wt. % of $Mn(NO_3)_2$, said calcined base mixture consisting essentially of about 44.86 to about 48.31 wt. % of $BaTiO_3$, from about 38.95 to about 43.02 wt. % of TiO_2, from about 5.69 to about 11.61 wt. % ZrO_2, and from about 1.42 to about 4.04 wt. % of SiO_2.

5,599,758

REGENERATION OF CATALYST/ABSORBER

Eugene D. Guth, Torrance, Calif., and Larry E. Campbell, Knoxville, Tenn., assignors to Goal Line Environmental Technologies, Los Angeles, Calif.

Filed Dec. 23, 1994, Ser. No. 371,274
Int. Cl.[6] B01J 20/34; 38/10; 38/36
U.S. Cl. 502—34 20 Claims

1. A method of regenerating a devitalized absorber having nitrogen oxides absorbed therein or thereon, said method comprising the steps of:

providing a stream of regenerating gas comprising a reducing gas, said reducing gas having an effective amount for removing said nitrogen oxides from said devitalized absorber, and an inert carrier gas; and

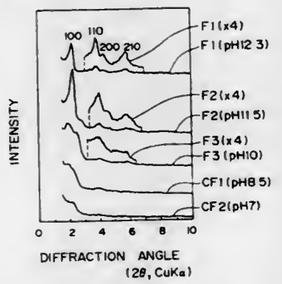
passing said stream of regenerating gas comprising an inert carrier gas and a component selected from the group consisting of hydrogen, carbon monoxide and mixtures thereof over said devitalized absorber comprising an alumina support with a platinum coating thereon and having nitrogen oxides absorbed therein or thereon for an effective time, at an effective temperature and at an effective space velocity to remove said nitrogen oxides from said devitalized absorber to form a regenerated absorber.

5,599,759

PROCESS FOR PRODUCING POROUS SILICON OXIDE MATERIAL

Shinji Inagaki; Yoshiaki Fukushima, and Yuri Yamada, all of Aichi-ken, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Japan

Filed Jun. 21, 1995, Ser. No. 493,042
Claims priority, application Japan, Jun. 22, 1994, 6-164484
Int. Cl.[6] B01J 21/16
U.S. Cl. 502—80 22 Claims



1. A process for producing a porous silicon oxide material, comprising:

a first step of dispersing a substance containing silicon in an aqueous solution of a surfactant, and adjusting the pH of the dispersion to a value of 10 or higher to increase the activity of the surfactant an effective amount to form an aggregate of micelle-like surfactant;

a second step of adjusting the pH of the dispersion to a value lower than 10, and forming a composite of a silicon oxide and the micelle-like surfactant; and

a third step of removing the surfactant from the composite while leaving the structure of the silicon oxide substantially intact.

5,599,760

MAGNESIUM CHLORIDE PARTICULATES HAVING UNIQUE MORPHOLOGY AND OLEFIN POLYMERIZATION CATALYSTS SUPPORTED THEREON

Claude Brun; Jean-Michel Brusson, both of Idron; Laurent Duranel, Arthez de Bearn, and Roger Spitz, Saint Symphorien D'Ozon, all of France, assignors to Elf Atochem S.A., Puteaux, France

Division of Ser. No. 61,245, May 17, 1993, Pat. No. 5,455,018. This application Apr. 20, 1995, Ser. No. 425,199
Int. Cl.[6] C08F 4/654
U.S. Cl. 502—115 5 Claims

1. An olefin polymerization catalyst comprising a support substrate of crystalline $MgCl_2$ particulates comprising substantially regular polyhedra having an even number of from 10 to 18 face surfaces, each pair of symmetrically opposite face surfaces of which being substantially parallel impregnated with a transition metal catalyst compound.

5,599,761

IONIC METALLOCENE CATALYST COMPOSITIONS

Howard W. Turner, Houston, Tex., assignor to Exxon Chemical Patents, Inc., Wilmington, Del.

Division of Ser. No. 318,304, Oct. 5, 1994, Pat. No. 5,470,927, which is a division of Ser. No. 19,726, Feb. 19, 1993, Pat. No. 5,384,299, which is a continuation-in-part of Ser. No. 737,611, Jul. 30, 1991, Pat. No. 5,198,401, which is a continuation-in-part of Ser. No. 555,977, Jul. 19, 1990, abandoned, which is a continuation-in-part of Ser. No. 133,480, Dec. 22, 1987, abandoned, which is a continuation-in-part of Ser. No. 8,800, Jan. 30, 1987, abandoned, and Ser. No. 133,052, Dec. 21, 1987, abandoned, which is a continuation-in-part of Ser. No. 11,471, Jan. 30, 1987, abandoned. This application May 25, 1995, Ser. No. 450,290
Int. Cl.[6] B01J 31/14
U.S. Cl. 502—152 12 Claims

8. A method of stabilizing an active ionic polymerization catalyst species comprising stabilizing said species with a water-stable anion containing a plurality of lipophilic radicals covalently coordinated to and shielding a central, formal charge bearing metal or metalloid atom, in which the lipophilic radicals of the anion include at least one substituted aromatic radical.

5,599,762

USE OF GLYCOL ETHER COMPOUNDS FOR THE PRODUCTION OF POLYOLEFIN CATALYSTS AND SUPPORTS

Dean A. Denton, Baltimore, Md., assignor to W. R. Grace & Co.-Conn., New York, N.Y.

Division of Ser. No. 252,860, Jun. 2, 1994. This application Jun. 7, 1995, Ser. No. 476,187
Int. Cl.[6] B01J 27/188
U.S. Cl. 502—210 14 Claims

1. A method of producing an oxide xerogel suitable for use as a polyolefin catalyst by removing water from an aluminum phosphate hydrogel, the method comprising:

(a) contacting a water-containing oxide hydrogel with an organic liquid selected from the group consisting of ethoxy ethyl acetate, methoxy propyl acetate, ethoxy ethyl propionate and mixtures thereof to form a mixture,

(b) removing water from the hydrogel resulting from step (a) by azeotropic distillation to form a xerogel containing said organic liquid,

(c) removing said organic liquid from said xerogel.

5,599,763

ABSORBENT MATERIAL, ABSORBENT BODY, AND METHOD FOR PRODUCTION THEREOF

Nobuyuki Harada, Suita; Kazumasa Kimura, Ikoma, and Tadao Shimomura, Toyonaka, all of Japan, assignors to Nippon Shokubai Co., Ltd., Osaka, Japan

Division of Ser. No. 752,054, Aug. 29, 1991, Pat. No. 5,368,918. This application Aug. 3, 1994, Ser. No. 283,181
Claims priority, application Japan, Aug. 30, 1990, 2-226679; Aug. 30, 1990, 2-226680; Aug. 30, 1990, 2-226681
Int. Cl.[6] B01J 20/22
U.S. Cl. 502—402 23 Claims

1. A method for the production of an absorbent material which comprises making 100 parts by weight of an absorbent polymer with 1 to 80 parts by weight of synthetic pulp, said synthetic pulp being a fine, branched discontinuous fibrous material made from thermoplastic resin, in the presence of 1 to 40 parts by weight of water.

5,599,764

SIZE SELECTIVE HYDROPHOBIC ADSORBENT FOR ORGANIC MOLECULES

Pramod K. Sharma, La Canada, and Gregory S. Hickey, Altadena, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Apr. 29, 1994, Ser. No. 235,351
Int. Cl.[6] B01J 20/10
U.S. Cl. 502—417 28 Claims

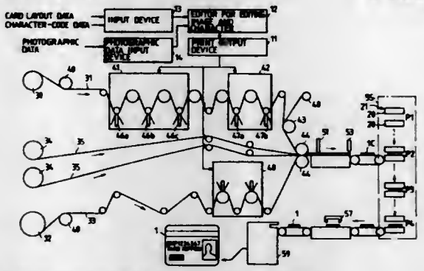
1. An adsorbent formed by the pyrolysis of hydrophobic silica and a molecular sieve polymer precursor wherein the silica preferentially adsorbs molecules having a molecular size of about 5–6 Å, the adsorbent preferentially adsorbing molecules having a molecular size of about 3–6 Å.

5,599,765

CARD AND PROCESS FOR PRODUCING THE SAME

Katsuyuki Ohshima; Mineo Yamauchi, and Masaki Kutsukake, all of Tokyo-to, Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Japan

Continuation of Ser. No. 655,117, Feb. 14, 1991, abandoned. This application Apr. 28, 1993, Ser. No. 54,756
Claims priority, application Japan, Feb. 16, 1990, 2-35948
Int. Cl.[6] B41M 5/035; 5/38
U.S. Cl. 503—227 4 Claims



1. A process for producing a card comprising:

recording variable data comprising photographic data on at least a surface of a card substrate to be used for the card by variable data recording means which comprises a sublimation thermal transfer device, while a thermal transfer sheet having an image-receiving layer is thermally transferred by the sublimation thermal transfer device onto said surface of said card substrate for the recording; said image-receiving layer of the thermal transfer sheet is disposed on said substrate by the medium of a releasing layer comprising a graft copolymer containing a releasing segment;

superposing the card substrate and an oversheet in a sheet form supplied from a roll thereof to form an integral laminate; and

cutting the integral laminate into a card form having a predetermined size.

5,599,766

METHOD OF MAKING A COLOR FILTER ARRAY ELEMENT

Michael L. Boroson, and Cathy A. Fleischer, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 18, 1996, Ser. No. 633,251
Int. Cl.[6] B41M 5/035; 5/38
U.S. Cl. 503—227 8 Claims

1. A method of preparing a color filter array element comprising the following steps:

a) imagewise-heating a dye-donor element comprising a support having thereon a dye layer comprising a dye dispersed in a binder, said dye layer being in superposed relationship with a dye image receiving layer of a dye-receiving element com-

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prising a support having thereon a dye image-receiving layer, said dye image receiving layer comprising a polymer which has a glass transition temperature above the sublimation temperature of said dye but which contains an organic plasticizer in an amount so that the glass transition temperature of said dye image-receiving layer is below said sublimation temperature of said dye;

b) transferring portions of said dye layer to said dye-receiving layer to form a repeating dye pattern thereon to form a color filter array; and

c) subjecting said dye-receiving element to a fusing heat treatment below said sublimation temperature of said dye but at a sufficient temperature and for a sufficient time so that said dye is not stratified on the surface.

5,599,767

SALT SENSITIVE BINDER SYSTEM

Chei W. Lew, San Antonio, Tex.; Keith Branly, Brandon, Fla., and Jesse H. Gaytan, San Antonio, Tex., assignors to Micro Flo Company, Mulberry, Fla.

Filed May 27, 1994, Ser. No. 250,790

Int. Cl.[6] A01N *25/26*

U.S. Cl. 504—116 **20 Claims**

1. A sprayable aqueous composition comprising:

discrete, free flowing solid particles comprising a salt sensitive, polymeric binder that is water soluble except when in chemical contact with a water soluble hardening salt and an agriculturally effective active ingredient encapsulated within said polymeric binder; and

an aqueous carrier medium containing said water soluble hardening salt in an amount sufficient to maintain said polymer in a solid, hydrophobic form.

5,599,768

STABILIZATION OF NON-AQUEOUS SUSPENSIONS

Clarence G. Hermansky, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 842,200, Mar. 19, 1992, abandoned, which is a continuation-in-part of Ser. No. 410,656, Sep. 21, 1989, abandoned. This application Nov. 9, 1994, Ser. No. 336,602

Int. Cl.[6] A01N *25/22*

U.S. Cl. 504—116 **26 Claims**

1. A process for stabilizing a suspension, said suspension consisting of in weight percent based on total formulation weight,

0.1–50% of at least one active ingredient;

20–99% organic medium; 0.01–5% of at least one suspending agent wherein the active ingredient is substantially insoluble in the organic medium, and

sufficient emulsifier for suspension of the final product in water, which process comprises:

adding to the suspension 0.1–15% of at least one of a water-swellable or water-soluble polymer selected from the class consisting of:

polyvinyl ethers, polyvinyl pyrrolidones, polypropylene oxide-polyethylene oxide condensates, polyvinyl acetates, maleic anhydrides, polypropylene glycols, modified polyacrylic acids, polyacrylonitrile block copolymers, polysaccharides, polysaccharide derivatives, proteins, carbohydrates, and mixtures of the foregoing; and

0.5–15% of at least one protic solvent.

5,599,769

SYNERGISTIC HERBICIDAL COMPOSITIONS COMPRISING GLYPHOSATE OR GLUFOSINATE IN COMBINATION WITH A SULFONYLUREA HERBICIDE

Erwin Hacker, Hochheim am Main; Manfred Röttele; Walter Dannigkeit, both of Kelkheim; Martin Hess, Mainz, and Hans Schumacher, Flörsheim am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Continuation of Ser. No. 231,999, Apr. 21, 1994, abandoned, which is a continuation of Ser. No. 50,291, May 11, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 462,119

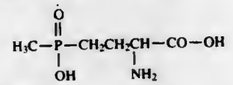
Claims priority, application Germany, Nov. 13, 1990, 40 36 069.5

Int. Cl.[6] A01N *43/54;43/66;57/04*

U.S. Cl. 504—128 **14 Claims**

1. A herbicidal composition with herbicidally effective content of a combination of

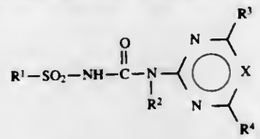
A) a compound of the formula (A1)



(A1)

or salts thereof and

B) one or more compounds of the formula (B)



(B)

where

R^1 is a radical selected from the group consisting of 3-(dimethylaminocarbonyl)pyrid-2-yl, 3-ethylsulfonylpyrid-2-yl and 3-[N-(C_1–C_4 -alkyl)-N-(C_1–C_4-alkylsulfonyl)amino] pyrid-2-yl,

R^2 is H or methyl,

R^3 and R^4 independently of one another are C_1–C_2-alkyl, C_1–C_2-alkoxy or C_1–C_2-haloalkoxy and

X is CH or N,

or salts thereof.

5,599,770

HERBICIDAL COMPOSITION CONTAINING 2-BENZYLOXYPYRIMIDINE DERIVATIVES, PROCESSES FOR PRODUCING THE DERIVATIVES AND 2-BENZYLOXYPYRIMIDINE DERIVATIVES

Yoshikazu Kubota; Hisashi Kanno; Tsutomu Sato, and Masato Arahira, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Japan

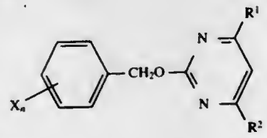
Filed Jun. 21, 1995, Ser. No. 493,048

Claims priority, application Japan, Jul. 15, 1994, 6-186707

Int. Cl.[6] C07D *239/34;239/52;239/60;* **A01N** *43/54*

U.S. Cl. 504—242 **4 Claims**

1. A herbicidal composition comprising a herbicidally effective amount of a 2-benzyloxypyrimidine derivative represented by the formula (I):



(I)

wherein

R^1 and R^2 are each independently H, a halogen, hydroxyl, C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_3–C_5 alkenyl, C_3–C_5 alkynyl,

C_1–C_4 alkoxy, C_1–C_4 haloalkoxy, C_3–C_5 alkenyloxy, C_3–C_5 alkynyloxy, C_1–C_4 alkylthio, or phenyl;

n is an integer of 0 to 5; and

each X which may be identical or different if n is greater than 1, is a halogen, C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxy, C_1–C_4 alkylthio, C_7–C_9 aralkyloxy, phenyl, hydroxymethyl, hydroxycarbonyl, C_1–C_4 alkoxycarbonyl, or nitro, and

an adjuvant.

5,599,771

3-ARYLURACIL DERIVATIVES AND THEIR USE AS HERBICIDES

Jean Wenger, Wallbach, Switzerland, assignor to Ciba-Geigy Corporation, Tarrytown, N.Y.

PCT No. PCT/EP94/01109, § 371 Date Dec. 16, 1994, § 102(e) Date Dec. 16, 1994, PCT Pub. No. WO94/24128, PCT Pub. Date Oct. 27, 1994

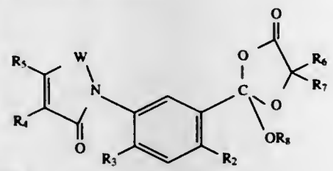
PCT Filed Apr. 11, 1994, Ser. No. 347,392

Claims priority, application Switzerland, Apr. 21, 1993, 1207/93

Int. Cl.[6] C07D *239/54;239/52;* **A01N** *43/54*

U.S. Cl. 504—243 **24 Claims**

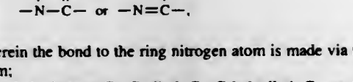
1. A compound of formula I



(I)

wherein

W is a group of the formula



wherein the bond to the ring nitrogen atom is made via the carbon atom;

R_1 is hydrogen, C_1–C_4alkyl, C_1–C_4haloalkyl, C_3- or C_4-alkenyl or C_3- or C_4-alkynyl;

R_2 is halogen or cyano;

R_3 is hydrogen or fluorine;

R_4 is hydrogen, halogen or C_1–C_4alkyl;

R_5 is C_1–C_4alkyl or C_1–C_4haloalkyl;

R_6 and R_7 are each independently of the other hydrogen, C_1–C_8alkyl, C_3–C_8alkenyl, C_3 –C_8alkynyl, C_3–C_8cycloalkyl, C_1–C_8haloalkyl, C_1–C_6alkoxy-C_1–C_6alkyl, C_1–C_6alkylthio-C_1–C_6alkyl, α- or β-naphthyl, phenyl, α- or β-naphthyl-C_1–C_4alkyl, phenyl-C_1–C_4alkyl, 2-, 3- or 4-pyridyl, pyrimidyl, pyrazinyl, furanyl, thienyl, oxazolyl, isoxazolyl or 2-, 3- or 4-pyridyl-C_1–C_4alkyl, pyrimidyl-C_1–C_4alkyl, pyrazinyl-C_1–C_4 alkyl, furanyl-C_1–C_4alkyl, thienyl-C_1–C_4alkyl, oxazolyl-C_1–C_4alkyl, isoxazolyl-C_1–C_4alkyl; or

R_6 and R_7 together with the carbon atom to which they are bonded form a 3-, 4-, 5- or 6-membered ring which is unsubstituted or mono- or poly-substituted by C_1–C_4alkyl and which in addition may have one —O—, —S— or —N(R_{10})— as hetero atom, at the 2-, 3- or 4-position, the 1-position being the carbon atom of the cyclic ortho-ester moiety to which the ring forming substituents R_6 and R_7 are bonded;

R_8 is C_1–C_6alkyl, cyano-C_1–C_6alkyl, nitro-C_1–C_6alkyl, C_3–C_6 alkenyl, C_3–C_6alkynyl, C_1–C_6-haloalkyl, C_3–C_6-haloalkenyl, C_3–C_6cycloalkyl, C_3–C_6cycloalkyl-C_1–C_6alkyl, α- or β-naphthyl, phenyl, α- or β-napbthyl-C_1–C_4alkyl, phenyl-C_1–C_4alkyl, 2-, 3- or 4-pyridyl, pyrimidyl, pyrazinyl, furanyl, thienyl, oxazolyl, isoxazolyl, 2-, 3- or 4-pyridyl-C_1–C_4alkyl, pyrimidyl-C_1–C_4alkyl, pyrazinyl-C_1–C_4alkyl, furanyl-C_1–C_4alkyl, thienyl-C_1–C_4alkyl, oxazolyl-C_1–C_4alkyl, isoxazolyl-C_1–C_4alkyl, C_1– C_6alkyl-carbonyl-C_1–C_6alkyl, C_1–C_6alkoxy-C_1–C_6alkyl, C_1–C_6alkoxy-carbonyl-C_1–C_6alkyl, C_3–C_6alkenyloxy-carbonyl-C_1–C_6alkyl, C_1–C_6alkylthio-C_1–C_6alkyl, C_1–C_6-dialkylamino-C_2–C_6alkyl, oxetanyl or C_1–C_6isoalkylideneaminooxy-C_1–C_4alkyl;

R_9 is C_1–C_4alkyl, C_3- or C_4-alkenyl or C_3- or C_4-alkynyl; and

R_{10} is hydrogen or C_1–C_4alkyl; or, when R_1 is hydrogen, an agrochemically acceptable salt of a compound of formula I.

5,599,772

(2-IMIDAZOLIN-2-YL) FUSED HETEROPYRIDINE COMPOUNDS, INTERMEDIATES FOR THE PREPARATION OF AND USE OF SAID COMPOUNDS AS HERBICIDAL AGENTS

Barrington Cross, Rocky Hill; Marinus Los, Pennington; Robert F. Doehner, Jr., East Windsor; David W. Ladner, Hamilton Square, and Jerry L. Johnson, Lawrenceville, all of N.J., assignors to American Cyanamid Company, Madison, N.J.

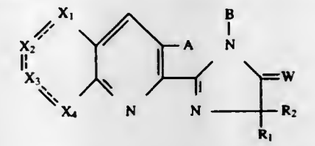
Division of Ser. No. 123,827, Sep. 20, 1993, Pat. No. 5,510,319, which is a division of Ser. No. 465,569, Jan. 16, 1990, Pat. No. 5,252,538, which is a continuation of Ser. No. 178,408, Apr. 6, 1988, abandoned, which is a continuation of Ser. No. 876,599, Jun. 20, 1986, abandoned, which is a continuation-in-part of Ser. No. 808,578, Dec. 13, 1985, abandoned, and a continuation-in-part of Ser. No. 612,531, May 21, 1984. This application Jun. 2, 1995, Ser. No. 458,153

Claims priority, application Brazil, May 20, 1985, 8502364

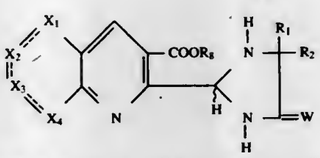
Int. Cl.[6] A01N *43/90;* **C07D** *491/056;495/04*

U.S. Cl. 504—246 **12 Claims**

1. (2-Imidazolin-2-yl) fused heteropyridine compounds having the structure

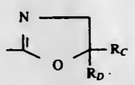


(I)



(XVII)

wherein A is $COOR_8$, CHO, CH_2OH, $COCH_2OH$, $CONH_2$, CH_2CH_2OH, CONHOH or



R_C and R_D are each hydrogen or C_1–C_4 alkyl;

R_8 is hydrogen, C_1–C_4 alkyl which may be interrupted by O or S, or is optionally substituted with C_1–C_4 alkoxy, halogen, hydroxy, C_3–C_6 cycloalkyl, benzyloxy, furyl, phenyl, furfuryl, halophenyl, C_1–C_4 alkylphenyl, C_1–C_4 alkoxyphenyl, nitrophenyl, carboxyl, C_1–C_4 alkoxy carbonyl, cyano or C_1–C_4 trialkylammonium; C_3–C_6 alkenyl, optionally substituted with one or two C_1–C_3 alkoxy, phenyl or halogen groups; C_3–C_6 cycloalkyl, optionally substituted with one or two C_1–C_3 alkyl groups; C_3–C_{10} alkynyl, optionally substituted with phenyl, halogen, C_1–C_4 alkoxy; or a cation selected from the group consisting of alkali metals, alkaline earth metals, manganese, copper, iron, ammonium and organic ammonium;

B is H, COR_9 or SO_2R_{10}, R_9 is C_1–C_{11} alkyl, chloromethyl, C_1–C_4 alkoxyl or phenyl optionally substituted with one chloro, one nitro, one methyl, or one methoxy group; R_{10} is

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C_1–C_5 alkyl, phenyl, or phenyl substituted with one methyl, halogen, nitro or C_1–C_4 alkoxy;

R_1 is C_1–C_4 alkyl;

R_2 is C_1–C_4 alkyl or C_3–C_6 cycloalkyl;

and when taken together with the carbon to which they are attached, R_1 and R_2 may represent C_3–C_6 cycloalkyl, optionally substituted with methyl;

--- represents a single or double bond;

W is O or S;

X_1, X_2, X_3 and X_4 are any combination of CR_4, CR_5R_6, O or S and are the same or different, with the proviso that two of X_1, X_2, X_3 and X_4 must be O or S and two of X_1, X_2, X_3 and X_4 must be CR_4 or CR_5R_6;

R_4 is hydrogen, halogen, C_1–C_6 alkyl; C_1–C_4 alkoxy; C_2–C_6 alkanoyloxy; C_1–C_4 alkylthio; phenoxy; C_1–C_4 haloalkyl, C_1–C_4 haloalkoxy; nitro, C_1–C_4 alkoxycarbonyl; C_1–C_4 dialkylamino; C_1–C_4 alkylsulfonyl or phenyl, optionally substituted with one or two C_1–C_4 alkyl, C_1–C_4 alkoxy, halogen or C_1–C_4 haloalkyl;

R_5 and R_6 are each hydrogen, C_1–C_4 alkyl; C_1–C_4 alkoxy, C_1–C_4 haloalkoxy; nitro, C_1–C_4 alkylsulfonyl or phenyl optionally substituted with one or two C_1–C_4 alkyl, C_1–C_4 alkoxy, halogen or C_1–C_4 haloalkyl; or any combination of these groups except when R_5 and R_6 are the same group, they are either both hydrogen or both C_1–C_4 alkyl; and when taken together, R_5 and R_6 may form a ring in which R_5R_6 are represented by the structure $-(CH_2)_n-$ where n is an integer of 4 or 5, or when taken together, R_5 and R_6 may form a group =O or $=NR_7$ wherein R_7 is phenyl, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkylamino;

R_3, R_4, R_5 and R_6, when present on adjacent positions may, along with the atoms to which they are attached, form a ring and such R_3–R_6 pairs can be represented by the structure $-(CH_2)_m-$ or $-(CH)_m-$ where m is an integer of 3 or 4;

with the provisos that --- represents a single bond between:

X_1 and X_2 when either X_1 or X_2 is O, S or CR_5R_6;

X_2 and X_3 when either X_2 or X_3 is O, S or CR_5R_6;

X_3 and X_4 when either X_3 or X_4 is O, S or CR_5R_6;

when one of X_{1-4} is oxygen, the X_{1-4} to which it is attached is CR_4 or CR_5R_6; and

when B is COR_9 or SO_2R_{10} and R_8 is hydrogen, --- then represents an aromatic bond, and R_4 may not be halogen.

5,599,773

(2-IMIDAZOLIN-2-YL) FUSED HETEROPYRIDINE COMPOUNDS AND USE OF SAID COMPOUNDS AS HERBICIDAL AGENTS

Barrington Cross, Rocky Hill; Marinus Los, Pennington; Robert F. Doehner, Jr., East Windsor; David W. Ladner, Hamilton Square, and Jerry L. Johnson, Lawrenceville, all of N.J., assignors to American Cyanamid Company, Madison, N.J.

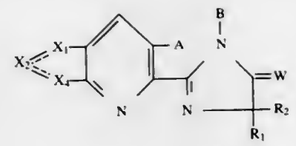
Division of Ser. No. 123,827, Sep. 20, 1993, Pat. No. 5,510,319, which is a division of Ser. No. 465,569, Jan. 16, 1990, Pat. No. 5,252,538, which is a continuation of Ser. No. 178,408, Apr. 6, 1988, abandoned, which is a continuation of Ser. No. 876,599, Jun. 20, 1986, abandoned, which is a continuation-in-part of Ser. No. 808,578, Dec. 13, 1985, abandoned, and Ser. No. 612,531, May 21, 1984. This application Jun. 2, 1995, Ser. No. 459,013

Claims priority, application Brazil, May 20, 1985, 8502364

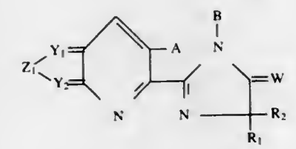
Int. Cl.[6] A01N *43/90*; **C07D** *471/04*

U.S. Cl. 504—246 **18 Claims**

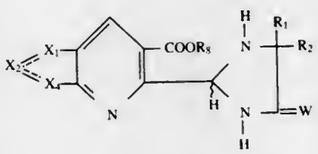
1. (2-Imidazolin-2-yl) fused heteropyridine compounds having the structure



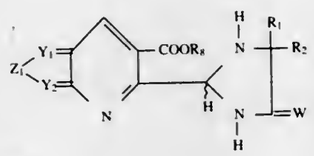
(II)



(IV)



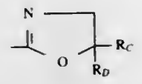
(XVIII)



(XX)

wherein

A is $COOR_8$, CHO, CH_2OH, $COCH_2OH$, $CONH_2$, CH_2CH_2OH, CONHOH or



R_C and R_D are each hydrogen or C_1–C_4 alkyl;

R_8 is hydrogen, C_1–C_4 alkyl which may be interrupted by O or S, or is optionally substituted with C_1–C_4 alkoxy, halogen, hydroxy, C_3–C_6 cycloalkyl, benzyloxy, furyl, phenyl, furfuryl, halophenyl, C_1–C_4 alkylphenyl, C_1–C_4 alkoxyphenyl, nitrophenyl, carboxyl, C_1–C_4 alkoxy carbonyl, cyano or C_1–C_4 trialkylammonium; C_3–C_6 alkenyl, optionally substituted with one or two C_1–C_3 alkoxy, phenyl or halogen groups; C_3–C_6 cycloalkyl, optionally substituted with one or two C_1–C_3 alkyl groups; C_3–C_{10} alkynyl, optionally substituted with phenyl, halogen, C_1–C_4 alkoxy; or a cation selected from the group consisting of alkali metals, alkaline earth metals, manganese, copper, iron, ammonium and organic ammonium;

B is H, COR_9 or SO_2R_{10}, R_9 is C_1–C_{11} alkyl, chloromethyl, C_1–C_4 alkoxyl or phenyl optionally substituted with one chloro, one nitro, one methyl, or one methoxy group;

R_{10} is C_1–C_5 alkyl, phenyl, or phenyl substituted R_{10} is C_1–C_5 alkyl, phenyl, or phenyl substituted with one methyl, halogen, nitro or C_1–C_4 alkoxy;

R_1 is C_1–C_4 alkyl;

R_2 is C_1–C_4 alkyl or C_3–C_6 cycloalkyl;

or when taken together with the carbon to which they are attached, R_1 and R_2 represent C_3–C_6 cycloalkyl, optionally substituted with methyl;

--- represents a single or double bond;

W is O or S;

X_1, X_2, and X_4 are any combination of CR_4, CR_5R_6, N or NR_3 and are the same or different, with the proviso that at least two of X_1, X_2, and X_4 must be N or NR_3;

Y_1 and Y_2 are N or CR_4;

Z_1 is NR_3 or CR_5R_6 with the proviso that at least two of Y_1, Y_2, and Z_1 must be N or NR_3;

R_3 is C_1–C_4 alkyl, which may be optionally substituted with phenyl or one or more halogens; C_3–C_6 alkenyl, optionally substituted with phenyl or one or more halogens; C_3–C_6 alkynyl, optionally substituted with phenyl or halogen; C_1–C_4 alkoxy, optionally substituted with phenyl or one or more halogens; C_3– C_6 alkenyloxy optionally substituted with phenyl or one or more halogens; C_3–C_6 alkynyloxy optionally substituted with halogen or phenyl; or C_2–C_6 alkanoyloxy, optionally substituted with halogen or phenyl;

R_4 is hydrogen, halogen, C_1–C_6 alkyl; C_1–C_4 alkoxy; C_2–C_6 alkanoyloxy; C_1–C_4 alkylthio; phenoxy; C_1–C_4 haloalkyl, C_1–C_4 haloalkoxy; nitro, C_1–C_4 alkoxycarbonyl; C_1– C_4 dialkylamino; C_1–C_4 alkyl-sulfonyl or phenyl, optionally substituted with one or two C_1–C_4 alkyl, C_1–C_4 alkoxy, halogen or C_1–C_4 haloalkyl;

R_5 and R_6 are each hydrogen, C_1–C_4 alkyl; C_1–C_4 alkoxy, C_1–C_4 haloalkoxy; nitro, C_1–C_4 alkylsulfonyl or phenyl optionally substituted with one or two C_1–C_4 alkyl, C_1–C_4 alkoxy, halogen or C_1–C_4 haloalkyl; or any combination of these groups except when R_5 and R_6 are the same group, they are either both hydrogen or both C_1–C_4 alkyl; or when taken together, R_5 and R_6 may form a ring in which R_5R_6 are represented by the structure $-(CH_2)_n-$ where n is an integer of 4 or 5, or when taken together, R_5 and R_6 may form a group =O or $=NR_7$ wherein R_7 is phenyl, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkylamino;

R_3, R_4, R_5 and R_6, when present on adjacent positions may, along with the atoms to which they are attached, form a ring and such R_3–R_6 pairs can be represented by the structure $-(CH_2)_m-$ or $-(CH)_m-$ where m is an integer of 3 or 4;

with the provisos that

--- represents a single bond between:

X_1 and X_2 when either X_1 or X_2 is NR_3 or CR_5R_6;

X_2 and X_4 when either X_2 or X_4 is NR_3 or CR_5R_6; and

when B is COR_9 or SO_2R_{10} and R_8 is hydrogen, then --- represents an aromatic bond, R_3 is C_1–C_4 alkyl, and R_4 may not be halogen.

5,599,774

N-ARYLINDOLES AND THEIR USE AS HERBICIDES

Ferenc M. Pallos, Walnut Creek, and Christopher J. Mathews, San Francisco, both of Calif., assignors to Imperial Chemical Industries PLC, London, England

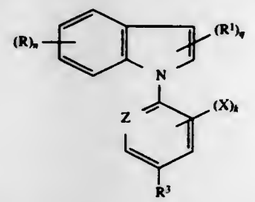
Continuation-in-part of Ser. No. 987,854, Dec. 9, 1992, Pat. No. 5,395,817, which is a continuation-in-part of Ser. No. 823,635, Jan. 22, 1992, abandoned. This application Dec. 31, 1992, Ser. No. 991,617

Int. Cl.[6] A01N *43/38*

U.S. Cl. 504—284 **3 Claims**

1. A herbicidal composition comprising

(a) 0.5 to about 95% by weight a substituted N-arylindole of the formula



in which:

R is halogen; nitro; cyano; $(C_1$–$C_6)$alkyl; $(C_1$–$C_6)$alkoxy; $(C_2$–$C_6)$alkenyloxy; $(C_2$–$C_6)$alkynloxy; $(C_1$–$C_6)$alkoxy$(C_1$–$C_6)$alkyl; carbonyl$(C_1$–$C_6)$alkoxy; $(C_1$–$C_6)$alkyloxy$(C_1$–$C_6)$alkoxy; cyano$(C_1$–$C_6)$alkoxy; benzyloxy; $(C_1$–$C_6)$alkoxycarbonyl$(C_1$–$C_6)$alkoxy; $(C_1$–$C_6)$alkylcarbonyl$(C_1$–$C_6)$alkoxy; halo$(C_1$–$C_6)$alkyl; hydroxy$(C_1$–$C_6)$alkyl; formyl; azido; carboxy or a salt thereof; amino; substituted amino having at least one substituent selected from the group consisting of $(C_1$–$C_6)$alkyl, $(C_1$–$C_6)$ alkoxy, hydroxy, formyl, $(C_1$–$C_6)$alkylcarbonyl, substituted $(C_1$–$C_6)$alkylcarbonyl substituted with carboxy or $(C_1$–$C_6)$alkoxycarboxy, $(C_1$–$C_6)$alkylsulfonyl, halo$(C_1$–$C_6)$alkylsulfonyl, aminocarbonyl, (di)$(C_1$–$C_6)$alkylaminocarbonyl, $(C_1$–$C_6)$alkoxycarbonyl, $(C_1$–$C_6)$alkoxy$(C_1$–$C_6)$alkyl, hydroxylcarbonyl$(C_1$–$C_6)$alkyl, $(C_1$–$C_6)$alkoxycarbonyl$(C_1$–$C_6)$alkyl, amino and (di) $(C_1$–$C_6)$alkyl amino; carboxyamido; substituted carboxyamido having at least one substituent selected from the group consisting of $(C_1$–$C_6)$alkyl, $(C_1$–$C_6)$alkylsulfonyl, and halo$(C_1$–$C_6)$alkylsulfonyl; sulfonamido wherein the N is unsubstituted or substituted with $(C_1$–$C_6)$alkyl; YR^4 wherein Y is O or $S(O)_m$ and R^4 is selected from the group consisting of hydrogen, $(C_1$–$C_6)$alkyl, halo$(C_1$–$C_6)$alkyl, cyano$(C_1$–$C_6)$alkyl, $(C_1$–$C_6)$alkoxycarbonyl$(C_1$–$C_6)$alkyl, hydroxycarbonyl$(C_1$–$C_6)$alkyl and aminocarbonyl$(C_1$–$C_6)$alkyl wherein the N is substituted with hydrogen and/or $(C_1$–$C_6)$alkyl;

n is 0 to 4 and

m is 0 to 2;

R^1 is $(C_1$–$C_6)$alkyl, halogen, cyano, halo $(C_1$–$C_6)$alkyl, $(C_1$–$C_6)$alkoxy, or carboxy or a salt or ester thereof;

q is 0 to 2;

X is halogen, cyano, nitro, $(C_1$–$C_6)$alkylthio, $(C_1$–$C_6)$alkylsulfinyl, $(C_1$–$C_6)$alkylsulfonyl, or $(C_1$–$C_6)$alkoxy;

k is 0 to 2;

Z is C-R^2 wherein R^2 is hydrogen halogen halo$(C_1$–$C_6)$alkyl, cyano, nitro, $(C_1$–$C_6)$alkylthio, $(C_1$–$C_6)$alkylsulfinyl, $(C_1$–$C_6)$alkylsulfonyl, or $(C_1$–$C_6)$alkoxy;

R^3 is hydrogen, halo$(C_1$–$C_6)$alkyl, halo$(C_1$–$C_6)$alkoxy, cyano, halogen, or SO_yR^5 wherein R^5 is $(C_1$–$C_6)$alkyl or halo$(C_1$–$C_6)$alkyl and y is 0, 1 or 2;

or an salt thereof; and

(b) one or more diluents.

5,599,775

(HG CU)$BG_2CA_2CU_3OY$ OXIDE SUPERCONDUCTOR AND METHOD OF PREPARING THE SAME

Makoto Itoh; Ayako Yamamoto; Kazuyuki Inawa; Seiji Adachi; Hisao Yamauchi, and Shoji Tanaka, all of Tokyo, Japan, assignors to Sumitomo Electric Industries, Ltd.; Tohoku Electric Power Co., Inc.; Matsushita Electric Industrial Co., Ltd., and International Superconductivity Technology Center, all of Japan

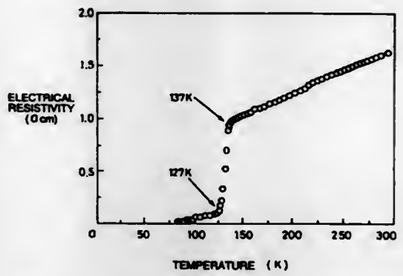
Division of Ser. No. 264,660, Jun. 23, 1994, Pat. No. 5,534,490. This application Jan. 26, 1996, Ser. No. 591,990

Claims priority, application Japan, Jun. 25, 1993, 5-155444

Int. Cl.[6] C04B *35/45*; **H01B** *12/00*

U.S. Cl. 505—125 **2 Claims**

1. An oxide superconductor consisting essentially of Hg, Ba, Ca,



Cu and O, being expressed in a chemical formula $(Hg_{1-x}Cu_x)Ba_2Ca_2Cu_3O_y$, wherein X=0.05 to 0.7 and Y=8 to 8.75.

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5,599,776

LOST CIRCULATION MATERIAL WITH RICE FRACTION

Boyce D. Burts, Jr., Maurice, La., assignor to M & D Industries of Louisiana, Inc., Lafayette, La.

Continuation of Ser. No. 831,045, May 26, 1992, abandoned, which is a division of Ser. No. 676,944, Mar. 28, 1991, Pat. No. 5,118,664. This application Aug. 12, 1994, Ser. No. 289,774

Int. Cl.[6] C09K *7/00*

U.S. Cl. 507—104 **5 Claims**

4. A method for decreasing fluid loss from a borehole into a subsurface formation comprising:

mixing a comminuted rice fraction and a comminuted plant material with a drilling fluid; and

circulating the mixture through a borehole during operations for the drilling of a well wherein the plant material is selected from the group consisting of wood fiber and almond hulls.

5,599,777

METHODS OF USING ACIDIZING FLUIDS IN WELLS, AND COMPOSITIONS USED THEREIN

Richard W. Jahnke, and John W. Forsberg, both of Mentor, Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Filed Oct. 6, 1993, Ser. No. 132,511

Int. Cl.[6] E21B *43/27*

U.S. Cl. 507—244 **29 Claims**

1. A method, comprising the step of: introducing into a well borehole a composition, comprising water, an acid, and (A) at least one reaction product of (A-1) at least one hydrocarbyl-substituted carboxylic acylating agent selected from the group consisting of a dicarboxylic acylating agent, a tricarboxylic acylating agent, a polycarboxylic acylating agent, or mixtures thereof, and (A-2) at least one amine-terminated polyoxyalkylene.

5,599,778

ORGANOSILOXANE LUBRICANT COMPOSITIONS

Hiroki Ishikawa; Tsutomu Naganawa, and Isao Ona, all of Chiba Perfecture, Japan, assignors to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

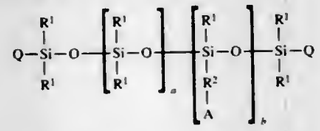
Continuation-in-part of Ser. No. 378,332, Jan. 26, 1995. This application Sep. 26, 1995, Ser. No. 533,894

Claims priority, application Japan, Jan. 28, 1994, 6-025990

Int. Cl.[6] C10M *105/76;107/50*

U.S. Cl. 508—208 **7 Claims**

1. A non-curing lubricant composition comprising at least one hydroxyphenyl group-containing polydiorganosiloxane that is free of amino groups and exhibits the general formula I



where each R^1 is individually selected from the group consisting of unsubstituted and substituted monovalent hydrocarbon radicals. R^2 represents an alkylene or alkylenearylene radical, A is selected from the group consisting of o-hydroxyphenyl and p-hydroxyphenyl, Q is R^1 or $—R^2—A$, and a is a positive integer and b is 0 or a positive integer with the proviso that when b is 0 at least one Q is $—R^2—A$; and wherein said composition exhibits an average phenol equivalent weight of from 10,000 to 5,000,000 and a viscosity at 25° C. of from 10 to 100,000 centistokes (mm^2/sec).

5,599,779

SYNERGISTIC RUST INHIBITORS AND LUBRICATING COMPOSITIONS

Thomas J. Karol, Norwalk; Steven G. Donnelly, New Fairfield, and Brian W. Stunkel, Stamford, all of Conn., assignors to R. T. Vanderbilt Company, Inc., Norwalk, Conn.

Filed Mar. 20, 1996, Ser. No. 619,054

Int. Cl.[6] C10M *141/02;141/06*

U.S. Cl. 508—283 **19 Claims**

10. A lubricating composition comprising an oil of lubricating viscosity and about 0.05 to 25.0 percent by weight of a synergistic rust inhibiting composition consisting of

(a) N-acylsarcosine represented by the structural formula



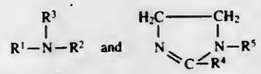
wherein R represents C_{8-18}-alkyl or alkenyl group,

(b) a dicarboxylic acid represented by the structural formula



wherein x is an integer from 4 to 46, and

(c) an amine selected from the group of compounds having the formula



wherein R^1, R^2 and R^3 are independently selected from hydrogen, alkyl having up to 14 carbon atoms, hydroxyalkyl or polyalkyleneoxy groups, R^4 is alkyl or cycloalkyl and R^5 is hydroxyalkyl or alkyl and the molar ratio of the N-acylsarcosine to the dicarboxylic acid to the amine ranges from about 2:1:2 to about 7:1:2.

5,599,780

METAL WORKING OIL COMPOSITION

Sabro Koyama; Tahei Okada, both of Ichihara, and Yoshiaki Aiki, Omiya, all of Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 260,795, Jun. 16, 1994, abandoned. This application Oct. 18, 1995, Ser. No. 544,920

Claims priority, application Japan, Jul. 2, 1992, 5-164334

Int. Cl.[6] C10M *125/22*

U.S. Cl. 508—391 **10 Claims**

1. A metal working oil composition for pressing aluminum or an alloy thereof, having a kinematic viscosity of 20 cSt or less at a temperature of 40° C. which comprises (A) 10% by weight or more of an n-α-olefin having 10 to 20 carbon atoms and (B) an over-based sulfonate having a total base number of 350 to 600 mg·KOH/g or more in such an amount that the total base number of the composition is 12.5 to 200 mg·KOH/g or more and a product of the content (wt %) of the n-α-olefin by the total base number (mg·KOH/g) of the composition is 1,200 or more; the upper amount of the overbased sulfonate being 20% by weight based on the total amount of the composition.

5,599,781

AUTOMATIC DISHWASHING DETERGENT HAVING BLEACH SYSTEM COMPRISING MONOPERSULFATE, CATIONIC BLEACH ACTIVATOR AND PERBORATE OR PERCARBONATE

Donna J. Haeggberg; Lucille F. Taylor; Mark R. Sivik, and James C. T. R. Burckett-St. Laurent, all of The Procter & Gamble Company, Miami Valley Laboratories P.O. Box 538707, Cincinnati, Ohio 45253-8707

Filed Jul. 27, 1995, Ser. No. 508,196

Int. Cl.[6] C11D *3/28;3/395;7/54;17/06;* **D06L** *3/02*

U.S. Cl. 510—220 **19 Claims**

1. A detergent composition comprising:

(a) from about 0.02% to about 2.5%, on an available oxygen basis, of one or more monopersulfate salts;

(b) from about 0.1% to about 4% on an available oxygen basis, of one or more hydrogen peroxide releasing salts; and

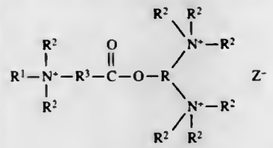
(c) from about 0.1% to about 10% by weight of one or more cationic bleach activators selected from the group consisting of:

(i) monocationic bleach activator having the formula:

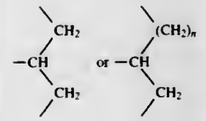
$$((CH_3)_3N^+(CH_2)_{3-8}C(O)L)\ (Z)^-$$

where L is caprolactam and

(ii) tricationic bleach activator having the formula:



wherein R^1 is C_1–C_{12} hydrocarbyl; any R^2 is independently selected from C_1–C_4 alkyl, C_1–C_4 hydroxyalkyl and benzyl; R^3 is selected from the group consisting of C_1–C_{10} hydrocarbyl, R^5NH, R^5NR^6 and R^5O wherein R^5 when present, is C_1–C_{10} hydrocarbyl; and R^6, when present, is C_1–C_4 hydrocarbyl; R^4 is



wherein n is from 1 to 4; and Z^- is a charge-balancing water soluble nonsoap anion.

iii) from about 0% to about 25% by weight of an nonionic surfactant; and

iv) from about 0.25% to about 5.0% of an oligomeric ester soil release agent which consisting essentially of the reaction product prepared by

(a) providing a mixture of oligomerizable monomers, having the functions $MO_3SC_6H_4C(O)—$, $M'O_3SC_6H_3\{C(O)O—\}_2$, $—(O)CC_6H_4C(O)—$ and $—OCH_2CH_2O—$ wherein M and M' are independently selected from lithium, potassium and sodium; said mixture having a mole ratio of $MO_3SC_6H_4C(O)—$ to $—(O)CC_6H_4C(O)—$ of from about 0.2:1 to about 1.4:1, a mole ratio of $MO_3SC_6H_4C(O)—$ to $M'O_3SC_6H_3\{C(O)O—\}_2$ of from about 0.67:1 to about 20:1; and a mole ratio of $MO_3SC_6H_4C(O)—$ to $—OCH_2CH_2O—$ of from about 0.007:1 to about 0.51:1; provided that said mixture does not contain monomers of formula HOROH wherein R is propylene or higher alkyl; and

(b) transesterifying and oligomerizing said mixture, in the presence of a catalyst, to a completion index of about 2.5 or higher.

5. A fully-formulated granular laundry detergent composition according to claim 1 having a density of from about 200 gram/l to about 1200 gram/l.

5,599,782

SOIL RELEASE AGENTS FOR GRANULAR LAUNDRY DETERGENTS

Robert Y. L. Pan, Blue Ash; Eugene P. Gosselink, Cincinnati; Eugene J. Pancheri, Montgomery, all of Ohio, and Stephen W. Morrall, Guilford, Ind., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 265,566, Jun. 24, 1994, abandoned, which is a continuation of Ser. No. 905,487, Jun. 25, 1992, abandoned, which is a continuation of Ser. No. 579,742, Sep. 7, 1990, abandoned. This application Dec. 21, 1995, Ser. No. 576,263

Int. Cl.[6] C11D *1/02;3/37*

U.S. Cl. 510—299 **9 Claims**

1. A laundry detergent composition comprising:

i) from about 5% to about 35% by weight of an anionic surfactant;

ii) from about 0% to about 95% by weight of a detergency builder;

5,599,783

CLEANING SOLVENT COMPOSITION AND A METHOD FOR CLEANING OR DRYING ARTICLES

Satoshi Ide; Takahiro Matsuda; Hirokazu Aoyama, and Akinori Yamamoto, all of Settsu, Japan, assignors to Daikin Industries, Ltd., Osaka, Japan

PCT No. PCT/JP94/01347, § 371 Date May 9, 1995, § 102(e) Date May 9, 1994, PCT Pub. No. WO95/05448, PCT Pub. Date Feb. 23, 1995

PCT Filed Aug. 12, 1994, Ser. No. 416,750

Claims priority, application Japan, Aug. 16, 1993, 4-222781

Int. Cl.[6] C11D *7/50;7/30;* **B08B** *3/08;* **C23G** *5/028*

U.S. Cl. 510—412 **4 Claims**

1. A cleaning solvent composition comprising 1H,2H/-hexafluorocyclobutane and at least one organic solvent selected from the group consisting of:

hydrocarbons consisting of hexane, heptane, isoheptane, octane, isooctane, methylcyclopentane, cyclohexane, methylcyclohexane and toluene; alcohols having 1–6 carbon atoms; esters composed of fatty acid having about 1–5 carbon atoms and lower alcohols having about 1–6 carbon atoms; and ketones represented by the formula $R—CO—R^1$ wherein R and R^1 represent straight or branched saturated hydrocarbons having 1–4 carbon atoms.

5,599,784

AQUEOUS LAMELLAR DETERGENT COMPOSITIONS WITH HYDROPHOBICALLY CAPPED HYDROPHILIC POLYMERS

Peter Bainbridge, Signal Mountain, Tenn., assignor to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

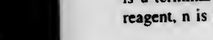
Continuation-in-part of Ser. No. 206,782, Mar. 4, 1994, Pat. No. 5,489,397. This application Mar. 14, 1994, Ser. No. 212,611

Int. Cl.[6] C11D *3/37;3/04;17/08;3/34*

U.S. Cl. 510—417 **20 Claims**

1. A liquid detergent composition consisting essentially of a lamellar dispersion of at least 25%, by weight, detergent active material(s) in an aqueous continuous phase, at least 1%, by weight, electrolyte(s) contained in the aqueous continuous phase, about 0.01 to 5%, by weight, deflocculating polymer, water, and optionally, one or more additional detergent component(s), all percents based on the total weight of the detergent composition, the deflocculating polymer being a hydrophobically-capped, hydrophilic

polymer having efficacy as a stabilizer, wherein the liquid detergent composition yields no more than 2%, by volume, visual phase separation following storage at 25° C. for one month and wherein the deflocculating polymer consists essentially of a repeating unit of the structure:



wherein A and B are a polymerized residue of ethylenically unsaturated carboxylic acid monomer(s) selected from the group consisting of monocarboxylic acid(s), dicarboxylic acid(s) and their salts, anhydrides and esters, I is a terminal hydrophobic moiety containing at least six carbon atoms and is derived from a hydrophobic initiator of free radical polymerization which functions to form a hydrophobically-capped polymer during polymerization, S is a terminal moiety which is the residue of a chain terminating reagent, n is an integer from about 10 to 100, and m is 0 or 1.

5,599,785

CLEANING COMPOSITION IN MICROEMULSION OR LIQUID CRYSTAL FORM COMPRISING MIXTURE OF PARTIALLY ESTERIFIED, FULLY ESTERIFIED AND NON-ESTERIFIED POLYHYDRIC ALCHOHOLS

Myriam Moodin, Seraing; Myriam Loth, Saint-Nicolas; Guy Broze, Grace-Hollogne, all of Belgium; Barbara Thomas, Princeton, N.J.; Steven Adamy, Hamilton, N.J.; Frank Bala, Jr., Middlesex, N.J., and Ammanuel Mehreteab, Piscataway, N.J., assignors to Colgate-Palmolive Co., Piscataway, N.J.

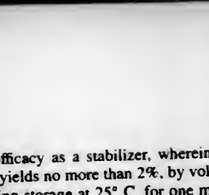
Continuation-in-part of Ser. No. 182,523, Jan. 18, 1994, abandoned, which is a continuation-in-part of Ser. No. 155,317, Nov. 22, 1993, abandoned, which is a continuation-in-part of Ser. No. 102,314, Aug. 4, 1993, abandoned. This application Nov. 15, 1994, Ser. No. 336,932

Int. Cl.[6] C11D *17/00;1/74;1/83*

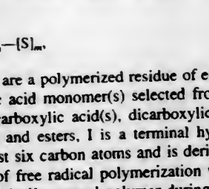
U.S. Cl. 510—417 **14 Claims**

1. A microemulsion cleaning composition comprising:

(a) 0.1wt. % to 20wt. % of a mixture of:



and



wherein w equals one to four, B is selected from the group consisting of hydrogen and a group represented by:

wherein R is selected from the group consisting of alkyl group having 6 to 22 carbon atoms, and alkenyl groups having 6 to 22 carbon atoms, wherein at least one of the B groups is represented by said



R is selected from the group consisting of hydrogen and methyl groups; x, y and z have a value between 0 and 60, provided that (x+y+z) equals 2 to 100, wherein in Formula (I) the weight ratio of monoester/diester/triester is 45 to 90/5 to 40/1 to 20, wherein the weight ratio of Formula (1) to Formula (II) is a value between 3 and about 0.02;

(b) 0.1 wt. % to 20 wt. % of an anionic surfactant wherein said anionic surfactant is selected from the group consisting of sulfate surfactants and sulfonate surfactants;

(c) 0 to 1.0 wt. % of a tri-alkyl citrate;

(d) 0.1 wt. % to 50 wt. % of a cosurfactant wherein said cosurfactant is selected from the group consisting of C_3–C_4 alkanols, $HO(CH_3CHCH_2O)_nH$, wherein n is a number from 2 to 18, mono C_1–C_6 alkyl ethers of ethylene glycol or propylene glycol, esters of ethylene glycol or propylene glycol, wherein said ethers and esters have the formulae $R_1(X)_mOH$ and $R_2(X)_pOH$, wherein R_1 is a C_1–C_6 alkyl group, R_2 is a C_2–C_4 acyl group, X is (OCH_2CH_2) or $(OCH_2(CH_3)CH)$ and m and p are each a number from 1 to 4, C_2–C_{10} aliphatic mono- or di-carboxylic acids, triethyl phosphate, and mixtures thereof;

(e) 0.1 wt. % to 10 wt. % of a water insoluble hydrocarbon or a perfume; and

f) the balance being water.

5,599,786

CELLULASE FABRIC-CONDITIONING COMPOSITIONS

Michael P. Siklosi; Frederick A. Hartman, both of Cincinnati, Ohio; Bruno A. Jean Hubesch, Tervuren; Johan G. L. Pluyter, Strombeek-Bever, both of Belgium, and Manuel G. Venegas, West Chester, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Aug. 12, 1993, Ser. No. 105,422

Int. Cl.[6] D06M *16/00*

U.S. Cl. 510—522 **17 Claims**

(I) 1. A fabric softening composition comprising from about 1% to about 80% of one or more cationic fabric softening agents, nonionic fabric softening agents, or mixtures thereof, and from about 3.5 CEVU/gram to about 125 CEVU/gram of composition of a cellulase.

5,599,787

AQUEOUS ANIONIC SURFACTANT SOLUTIONS STABLE AT LOW TEMPERATURE COMPRISING GLYCOSIDE AND ALKOXYLATED NONIONIC SURFACTANT MIXTURES AND PROCESSES OF MAKING SAME

Karl Schmid, Mettmann; Brigitte Giesen, and Andreas Syldath, both of Duesseldorf, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP93/02914, § 371 Date Jun. 19, 1995, § 102(e) Date Jun. 19, 1995, PCT Pub. No. WO94/10279, PCT Pub. Date May 11, 1994

PCT Filed Oct. 21, 1993, Ser. No. 428,109

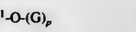
Claims priority, application Germany, Oct. 29, 1992, 42 36 506.6

Int. Cl.[6] C11D *3/22;1/825;1/83;11/00*

U.S. Cl. 510—535 **6 Claims**

(II) 1. An additive for addition to an aqueous solution of one or more anionic surfactants to improve the low-temperature stability thereof consisting of a mixture of the following nonionic surfactants:

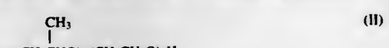
(a) at least one alkyl or alkenyl oligoglycoside of formula (I):



(I)

wherein R^1 is an alkyl or alkenyl radical having from about 6 to about 22 carbon atoms, G is a sugar unit having from 5 to 6 carbon atoms and p is a number from 1 to 10;

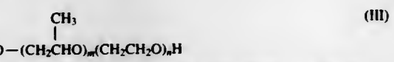
(b) at least one fatty alcohol polyglycol ether of the formula (II):



(II)

wherein R^2 is an alkyl radical having from about 8 to about 11 carbon atoms, n is a number from about 4 to about 9 and m=0 or is a number from 1 to 3; and, optionally,

(c) at least one fatty alcohol polyglycol ether of the formula (III):



(III)

wherein R^3 is an alkyl radical having from about 12 to about 15 carbon atoms, n is an integer from about 4 to about 9 and m=0 or is a number from 1 to 3.

5,599,788

METHOD FOR ACCELERATING SKIN WOUND HEALING WITH H3 PROTEIN

Anthony F. Purchio, Cardiff, and Richard LeBaron, Temecula, both of Calif., assignors to Advanced Tissue Sciences, La Jolla, Calif.

Filed Jul. 1, 1994, Ser. No. 268,797

Int. Cl.[6] A61K *9/10;* **C07K** *17/08*

U.S. Cl. 514—2 **8 Claims**

1. A method for accelerating skin wound healing comprising contacting said skin wound with an effective healing-promoting amount of H3 protein.

5,599,789

METHOD FOR THE TREATMENT OF TUMOURS AND SARCOMAS

George Kannourakis, Mt. Clear, Australia, assignor to Amrad Corporation Limited, Victoria, Australia

PCT No. PCT/AU92/00683, § 371 Date Aug. 24, 1993, § 102(e) Date Aug. 24, 1993, PCT Pub. No. WO93/12806, PCT Pub. Date Jul. 8, 1993

PCT Filed Dec. 24, 1992, Ser. No. 107,767

Claims priority, application Australia, Dec. 24, 1991, PL0164

Int. Cl.[6] A61K *38/16*

U.S. Cl. 514—8 **11 Claims**

1. A method of treatment of neurally derived undifferentiated tumors in a mammal comprising administering to said mammal an effective amount of leukemia inhibitory factor (LIF) for a time and under conditions sufficient to destroy, or reduce the size of, said neurally derived undifferentiated tumors.

5,599,790

FIBRINOGEN γ CHAIN POLYPEPTIDE AND COMPOSITIONS THEREOF

Dario C. Altieri; Lucia R. Languino, both of La Jolla, and George B. Thornton, Ramona, all of Calif., assignors to The Scripps Research Institute, La Jolla, Calif.

Continuation-in-part of Ser. No. 139,562, Oct. 19, 1993, abandoned, which is a continuation of Ser. No. 898,117, Jun. 11, 1992, abandoned. This application Apr. 25, 1994, Ser. No. 232,532

Int. Cl.[6] A61K *38/03;38/10*

U.S. Cl. 514—8 **4 Claims**

1. A composition comprising a therapeutically effective amount of a polypeptide consisting of a fibrinogen γ chain amino acid residue shown in SEQ ID NO 4 dispersed in a pharmaceutically acceptable excipient.

5,599,791

AMIDES OF ANTIBIOTIC GE 2270 FACTORS

Paolo Tavecchia, Rho; Sergio Lociuro, Milan; Romeo Ciabatti, Novate Milanese, and Enrico Selva, Gropello Cairoli, all of Italy, assignors to Gruppo Lepetit SPA, Varese, Italy

PCT No. PCT/EP92/00002, § 371 Date Jul. 1, 1993, § 102(e) Date Jul. 1, 1993, PCT Pub. No. WO92/12172, PCT Pub. Date Jul. 23, 1992

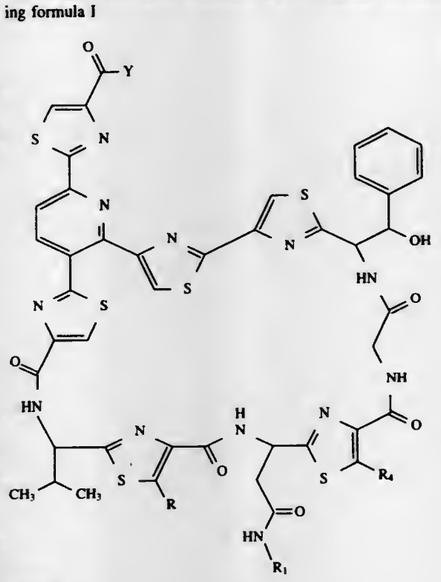
PCT Filed Jan. 2, 1992, Ser. No. 84,189

Claims priority, application European Pat. Off., Jan. 3, 1991, 91100123

Int. Cl.[6] C07K *7/56;* **A61K** *35/66*

U.S. Cl. 514—9 **13 Claims**

1. An amide derivative of antibiotic GE 2270 having the following formula I



I

wherein

R represents:

hydrogen, hydroxymethyl, or methoxymethyl;

R_1 represents:

hydrogen, or methyl;

Y represents:

a group of formula



wherein:

R_2 represents:

hydrogen, $(C_1–C_4)$alkyl, amino$(C_2–C_4)$alkyl, $(C_1–C_4)$alkylamino-$(C_1–C_4)$alkyl, or di-$(C_1–C_4)$alkylamino-$(C_1–C_4)$alkyl;

R_3 represents:

hydrogen; a linear or branched $(C_1–C_{14})$alkyl group bearing from 1 to 3 substituents selected from: carboxy, sulfo, phosphino, amino which may be optionally protected with a lower alkoxycarbonyl or a benzyloxycarbonyl group, $(C_1–C_4)$alkylamino wherein the alkyl moiety may be optionally substituted with a carboxy group, di-$(C_1–C_4)$alkylamino, hydroxy, halo, $(C_1–C_4)$alkoxy wherein the alkyl moiety may be optionally substituted with a carboxy group, $(C_1–C_4)$alkoxycarbonyl, mercapto, $(C_1–C_4)$alkylthio wherein the alkyl moiety may be optionally substituted with a carboxy group, phenyl which may be optionally substituted with 1 to 3 substituents selected from carboxy, sulfo, hydroxy, halo and mercapto, carbamyl, $(C_1–C_6)$alkylcarbamyl wherein the alkyl moiety may be optionally substituted with 1 or 2 substituents selected from carboxy, amino, $(C_1–C_4)$alkylamino and di-$(C_1–C_4)$alkylamino, di-$(C_1–C_4)$alkylcarbamyl wherein the alkyl moieties together with the adjacent nitrogen atom may also represent a saturated 5–7 membered heterocyclic ring which may optionally be substituted with a carboxy or a carbamyl group on one of the ring carbons and may optionally contain a further heterogroup selected from O, S and N, benzoylamino wherein the phenyl group may be substituted from 1 to 3 hydroxy group, a nitrogen containing 5–6 membered heterocyclic ring which may unsaturated, partially saturated or wholly saturated and may contain 1 to 3 further heteroatoms selected from N, S and O wherein one of the carbons of the ring may optionally bear a group carboxy, sulfo carboxy$(C_1–C_4)$alkyl or sulfo$(C_1–C_4)$alkyl and the ring nitrogen atom may optionally be substituted by $(C_1–C_4)$alkyl, carboxy$(C_1–C_4)$alkyl, sulfo$(C_1–C_4)$alkyl, or benzyl;

$(C_3–C_6)$alkenyl, optionally substituted by carboxy or sulfo;

1-deoxy-1-glucityl;

2-deoxy-2-glucosyl;

a fully saturated 5 to 7 membered nitrogen containing heterocyclic ring wherein the nitrogen atom may be optionally substituted by $(C_1–C_4)$alkyl or benzyl and one or two carbons of the ring skeleton may bear a substituent selected from $(C_1–C_4)$alkyl, carboxy and sulfo;

or

R_2 and R_3 taken together with the adjacent nitrogen atom represent a fully sanirated 5–7 membered heterocyclic ring which may optionally contain a further heteroatom selected from O, S and N, and may optionally bear one or two substituents on the ring carbons selected from $(C_1–C_4)$alkyl, benzyl, carboxy, sulfo, carboxy$(C_1–C_4)$alkyl, and sulfo$(C_1–C_4)$alkyl;

R_4 represents:

hydrogen, methyl, or hydroxymethyl;

with the proviso that when R_4 is hydrogen or hydroxymethyl, then simultaneously R is methoxymethyl and R_1 is methyl;

and the pharmaceutically acceptable addition salts thereof.

5,599,792

BONE-STIMULATING, NON-VASOACTIVE PARATHYROID HORMONE VARIANTS

K. Anne Kronis, Toronto, and Richard P. Bozzato, Etobicoke, both of Canada, assignors to Allelix Biopharmaceuticals Inc., Mississauga, Canada

Continuation of Ser. No. 900,680, Jun. 19, 1992, abandoned. This application Oct. 31, 1994, Ser. No. 332,453

Int. Cl.[6] A61K *38/29;* **C07K** *14/635*

U.S. Cl. 514—12 **8 Claims**

1. A bone-stimulating compound having reduced vasorelaxant activity as compared to natural human parathyroid hormone (hPTH) selected from the group consisting of [Cys^8]hPTH (1–84), [Ala^8]hPTH (1–84), and [Cys^8Leu^{18}]hPTH (1–84).

5,599,793

ANTITHROMOBOTIC AGENTS

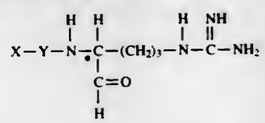
Nickolay Y. Chirgadze, Carmel; Aaron L. Schacht, Indianapolis; Gerald F. Smith, Indianapolis, and Michael R. Wiley, Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 207,491, Mar. 4, 1994, abandoned. This application Mar. 2, 1995, Ser. No. 397,449

Int. Cl.[6] A61K *38/00;* **C07K** *5/00;7/00;17/00*

U.S. Cl. 514—18 **24 Claims**

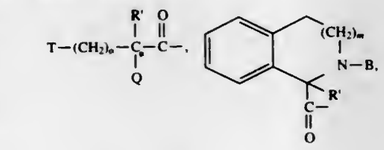
1. A compound having the Formula I

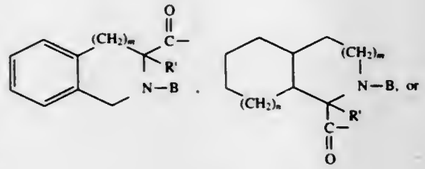


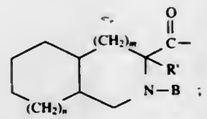
I

wherein

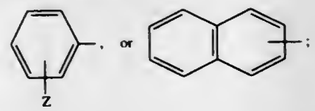
X is prolinyl, homoprolinyl,







T is $C_3–C_8$ cycloalkyl, $C_1–C_8$ alkyl,



a is 0 or 1;

Q is —OH, $C_1–C_4$ alkoxy, or —NH—A;

A is $C_1–C_4$ alkyl, R^*SO_2—, $R^*OC(O)$—, $R^*C(O)$—, $HOOCSO_2$—, HOOCC(O)—, or $—(CH_2)_g—COOH$;

g is 1, 2, or 3;

B is hydrogen or $C_1–C_4$ alkyl;

R' is hydrogen or $C_1–C_4$ alkyl;

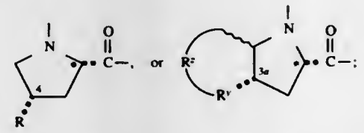
R* is $C_1–C_4$ alkyl, $C_1–C_4$ perfluoroalkyl, $—(CH_2)_d—COOH$, or unsubstituted or substituted aryl, where aryl is phenyl, naphthyl, a 5- or 6-membered unsubstituted or substituted aromatic heterocyclic ring, having one or two heteroatoms which are the same or different and which are selected from sulfur, oxygen and nitrogen, or a 9- or 10-membered unsubstituted or substituted fused bicyclic aromatic heterocyclic group having one or two heteroatoms which are the same or different and which are selected from sulfur, oxygen and nitrogen;

d is 1, 2, or 3;

m is 0, 1, or 2;

n is 0, 1, or 2;

Y is



R is $C_1–C_6$ alkyl, $C_3–C_8$ cycloalkyl, or $—(CH_2)_p—L—(CH_2)_q—T'$: where p is 0, 1, 2, 3, or 4, L is a bond, —O—, —S—, or —NH—, q is 0, 1, 2 or 3, and T' is hydrogen, $C_1–C_4$ alkyl, $C_3–C_8$ cycloalkyl, —COOH, $—CONH_2$, or Ar, where Ar is unsubstituted or substituted aryl as defined above for R*;

R^y is $—CH_2—$, —O—, —S—, or —NH—;

R^z is a bond or, when taken with R^y and the three adjoining carbon atoms, forms a saturated carbocyclic ring of 5–8 atoms, one atom of which may be —O—, —S—, or —NH—; and

Z is hydrogen, $C_1–C_4$ alkyl, $C_1–C_4$ alkoxy, hydroxy, halo, or R_nSO_2NH—, where R_n is $C_1–C_4$ alkyl;

provided that when p and q are each 0 and L is a bond, T' is not hydrogen;

or a pharmaceutically acceptable salt thereof; or a pharmaceutically acceptable solvate of said compound or salt thereof.

5,599,794

SYNERGISTIC COMBINATION OF A SUBSTANCE WITH GASTRIC ACID SECRETION INHIBITING EFFECT AND AN ACID DEGRADABLE ANTIBIOTIC

Arne T. Eek, Trosa, and Sven Erik Sjöstrand, Södertälje, both of Sweden, assignors to Aktiebolaget Astra, Sodertalje, Sweden

Filed Apr. 22, 1993, Ser. No. 51,722

Claims priority, application Sweden, Apr. 24, 1992, 9201297; Jan. 8, 1993, 9300029

Int. Cl.[6] A61K *31/70;31/445*

U.S. Cl. 514—29 **2 Claims**

1. A synergistic combination comprising from about 1–200 mg omeprazole or a pharmaceutically acceptable salt thereof and from about 250 mg to 10 mg clarithromycin for the treatment of gastritis and peptic ulcer.

5,599,795

METHOD FOR TREATMENT OF IDIOPATHIC INFLAMMATORY BOWEL DISEASE (IIBD)

Michael McCann, 7711 Edgewood Dr., Seven Hills, Ohio 44131, and Richard S. Abrams, 2016 Wilmette Ave., Wilmette, Ill. 60091

Filed Aug. 19, 1994, Ser. No. 264,052

Int. Cl.[6] A61K *31/70;31/43;31/395;31/415*

U.S. Cl. 514—31 **3 Claims**

1. A method of preventing or treating idiopathic inflammatory bowel disease, Crohn's Disease or ulcerative colitis in a human patient comprising administering to said patient a composition comprising at least one antibiotic agent and at least one anti-fungal agent to sterilize the intestine of said patient and then infusing orally and rectally to said patient a specific bacteria composition to establish colonization of the intestine whereby the pathological immune response is normalized and inflammation ceases.

5,599,796

TREATMENT OF UROGENITAL CANCER WITH BORON NEUTRON CAPTURE THERAPY

Raymond F. Schinazi, Decatur; Thomas E. Keane, Dunwoody, and Dennis C. Liotta, McDonough, all of Ga., assignors to Emory University, Atlanta, Ga.

Continuation-in-part of Ser. No. 161,674, Dec. 2, 1993. This application Nov. 4, 1994, Ser. No. 334,759

Int. Cl.[6] A61K *31/69;41/00;43/00*

U.S. Cl. 514—44 **21 Claims**

1. A method for treating a urogenital tumor in a human, comprising administering to the tumor being human an effective amount of a ^{10}B-containing compound, and irradiating the tumor with sufficient low energy neutrons to achieve cytotoxicity.

9. The method of claim 1 wherein the ^{10}B-containing compound is an oligonucleotide.

5,599,797

OLIGONUCLEOTIDES HAVING PHOSPHOROTHIOATE LINKAGES OF HIGH CHIRAL PURITY

Phillip D. Cook, San Marcos, Calif., and Glenn Hoke, Mt. Airy, Md., assignors to Isis Pharmaceuticals, Inc., Carlsbad, Calif.

Continuation-in-part of Ser. No. 297,703, Aug. 29, 1994, and Ser. No. 58,023, May 5, 1993, Pat. No. 5,521,302, which is a division of Ser. No. 777,670, Oct. 15, 1991, Pat. No. 5,212,295, which is a continuation-in-part of Ser. No. 777,007, Oct. 16, 1991, abandoned, said Ser. No. 297,703. This application Jun. 6, 1995, Ser. No. 471,967

Int. Cl.[6] A61K *31/70;* **C07H** *21/00*

U.S. Cl. 514—44 **6 Claims**

1. An oligonucleotide represented by SEQ ID NO:6 wherein at least 75% of the nucleoside units are joined together by Sp phosphorothioate 3' to 5' linkages.

5. A composition containing an oligonucleotide of claim 1 and an acceptable carrier.

5,599,798

CYCLIC AMP DERIVATIVE-CONTAINING OINTMENT

Norio Takasugi; Eiichi Mafune, and Masayuki Takahashi, all of Tokyo, Japan, assignors to Dalichi Pharmaceutical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 9,110, Jan. 26, 1993, abandoned. This application Nov. 1, 1994, Ser. No. 332,047

Claims priority, application Japan, Jan. 27, 1992, 4-011545

Int. Cl.[6] A61K *31/70*

U.S. Cl. 514—47 **12 Claims**

1. An ointment comprising an adenosine 3',5'-cyclic phosphate compound and a base having water-absorbing and drying properties; wherein, incorporated in said base, is one or more salts each

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having a pH in an aqueous solution of from 3 to 7; said one or more salts are present in a total amount of from 0.1 to 20% by weight of said base; said base having water-absorbing and dying properties is a polyethylene glycol, polyhydric alcohol, or mixtures thereof; and said one or more salts are added in the form of powder.

5,599,799

Patent Not Issued For This Number

5,599,800

ORGANOPOLYSILOXANE COMPOSITION OF GEL-LIKE APPEARANCE, CONTAINING NO GELLING AGENT, WHICH MAY BE USED IN COSMETICS AND DERMATOLOGY

Didier Candau, Bievres, and Pascal Simon, Vitry Sur Seine, both of France, assignors to L'Oreal, Paris, France

Filed Oct. 4, 1994, Ser. No. 317,486
Claims priority, application France, Oct. 4, 1993, 93 11802
Int. Cl.[6] A61K *31/70;31/715*
U.S. Cl. 514—53 **15 Claims**

I. A composition, comprising (a) an oily phase comprising at least 75% by weight of organopolysiloxane, dispersed in (b) an aqueous phase comprising at least 25% by weight of water, and (c) an emulsifying agent which is at least one sucrose ester, wherein said composition does not run under its own weight and has a viscosity greater than or equal to 1 Pa.s and wherein said composition contains no gelling agent.

5,599,801

PURIFIED HEPARIN FRACTIONS, METHOD FOR OBTAINING THEM AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Jean-François Branellec, Mont Saint Aignan; José Espejo, Bois Guillaume, and Philippe Picart, Rouen, all of France, assignors to Choay S.A., Paris, France

Filed May 6, 1994, Ser. No. 239,320
Claims priority, application France, May 7, 1993, 93 05534
Int. Cl.[6] A61K *31/725;* **C08B** *37/10*
U.S. Cl. 514—56 **16 Claims**

I. A heparin fraction resulting from nitrous depolymerization of heparin of natural origin having a content of total N-nitroso compounds not exceeding 500 ppb.

5,599,802

Patent Not Issued For This Number

5,599,803

SYNERGISTIC INSECTICIDAL COMPOSITIONS COMPRISING CAPSICUM AND INSECTICIDAL USE THEREOF

Gary C. Hainrihar, Lawton, Mich.; James G. Dubberly, and John T. Greenlee, both of Greenville, Miss., assignors to Kalamazoo Holdings, Inc., Kalamazoo, Mich.

Division of Ser. No. 166,695, Dec. 14, 1993. This application Sep. 29, 1995, Ser. No. 536,987
Int. Cl.[6] A01N *65/00;47/10;47/28;37/18*
U.S. Cl. 514—70 **48 Claims**

I. An insecticidal composition comprising as essential ingredients an effective insecticidal amount of (A) a non-organophosphorus insecticidal ingredient, plus (B) an activity-enhancing amount of a capsaicinoid, the weight ratio of (B) to (A) being between about 1:10 and 1:500.

5,599,804

FUNGICIDAL COMPOSITIONS FOR THE ENHANCEMENT OF TURF QUALITY

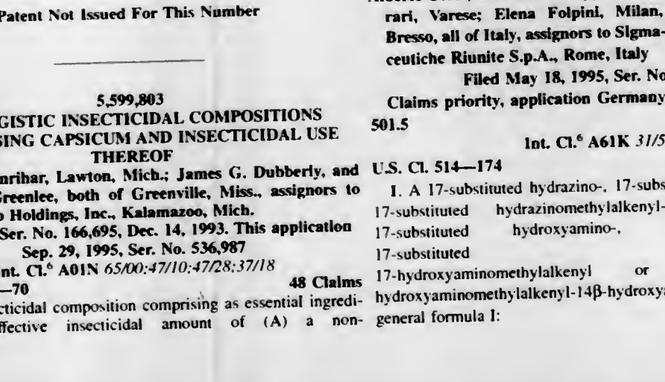
Laurence C. Mudge, Raleigh, N.C., assignor to Rhone-Poulenc, Inc., Research Triangle Park, N.C.

Filed Apr. 3, 1995, Ser. No. 415,934
Int. Cl.[6] A01N *43/38;57/18;59/26*
U.S. Cl. 514—141 **23 Claims**

1. A method of combatting fungi and enhancing turf quality in turfgrass which comprises applying to said turfgrass synergistic fungicidally effective amounts of:

(a) a first active agent selected from the group consisting of

(i) 1 part by weight of a monoester salt of a phosphorous acid of Formula (I):



(I)

wherein:

R is an alkyl radical having 2 to 4 carbon atoms,

Me is an alkali metal, alkaline earth, or aluminum atom, and

n is a whole number from 1 to 3 equal to the valence of Me; and

(ii) phosphorous acid or an alkali or alkali earth metal salt thereof; and

(b) from 0.01 to 0.1 parts by weight of a phthalocyanine compound.

5,599,805

Patent Not Issued For This Number

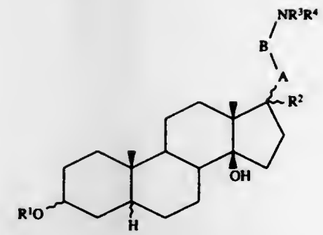
5,599,806

HYDRAZINO AND HYDROXYAMINO-14-β-HYDROXYANDROSTANE DERIVATIVES ACTIVE ON THE CARDIOVASCULAR SYSTEM PROCESSES FOR THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAME

Alberto Cerri, Gessate; Giuseppe Bianchi, Milan; Patrizia Ferrari, Varese; Elena Folpini, Milan, and Piero Melloni, Bresso, all of Italy, assignors to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A., Rome, Italy

Filed May 18, 1995, Ser. No. 444,366
Claims priority, application Germany, Jun. 13, 1994, 44 20 501.5
Int. Cl.[6] A61K *31/58*
U.S. Cl. 514—174 **18 Claims**

1. A 17-substituted hydrazino-, 17-substituted hydrazinoalkyl-, 17-substituted hydrazinomethylalkenyl-, 17-hydroxyamino-, 17-substituted hydroxyamino-, 17-hydroxyaminoalkyl-, 17-substituted hydroxyaminoalkyl-, 17-hydroxyaminomethylalkenyl or 17-substituted hydroxyaminomethylalkenyl-14β-hydroxyandrostane derivative of general formula I:



(I)

wherein:

the symbol ~~ means α or β configuration;

A represents $(CH_2)_m$, —(CH=CH)$_n$— or —(CH=CCH$_3$)$_n$—;

m represents an integer number from 0 to 4;

n represents an integer number from 0 to 2;

B represents a bond or CHR^5;

R^5 represents hydrogen or methyl;

R^1 represents hydrogen; C2–C4 alkyl unsubstituted or substituted by NR^{6}R^7; NHC(=NH)NH$_2$; or C2–C4 alkoxy alkyl unsubstituted or substituted by NR^{6}R^7;

R^6, R^7 which may be the same or different, represent hydrogen, C1–C4 alkyl or R^6 and R^7 may form, taken together with the nitrogen atom, a five- or six-membered heterocyclic ring optionally containing one or more further heteroatoms selected from oxygen and nitrogen;

R^2 represents hydrogen or hydroxy;

R^3 represents hydrogen or methyl;

R^4 represents NHC(=NR^8)NR^{9}R^{10} or OR^1;

R^8 represents hydrogen, methyl, C2–C4 alkyl, or phenyl, where the C2–C4 alkyl is unsubstituted or substituted by NR^{6}R^7, wherein R^6 and R^7 have the previously defined meanings;

R^9, R^{10} which may be the same or different, represent hydrogen, methyl, C2–C4 alkyl, unsubstituted or substituted by NR^{6}R^7 wherein R^6 and R^7 have the previously defined meanings; or

R^8, R^9, R^{10} taken two by two may form, together with the heteroatoms they are linked to, a five- or six- or seven-membered heteromonocyclic ring, with the provisos that (1) when B represents a bond, n=0 and, (2) when R^2 is hydroxy, m≠0.

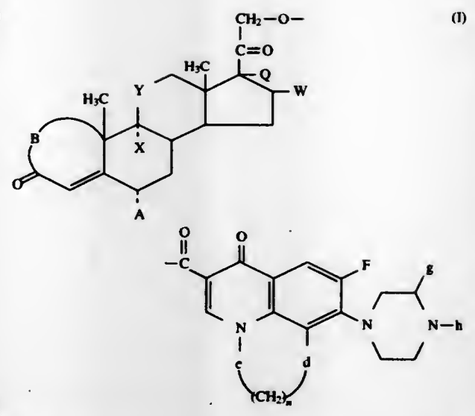
5,599,807

STEROID DERIVATIVES

Kazumi Ogata, Toyonaka; Takahiro Sakaue, Itami; Yuuichi Isowaki, Settsu; Hidetoshi Nakao, Itami, and Kazuhiko Ito, Amagasaki, all of Japan, assignors to Senju Pharmaceutical Co., Ltd., Osaka, Japan

Filed Dec. 16, 1994, Ser. No. 356,962
Claims priority, application Japan, Dec. 22, 1993, 5-324405
Int. Cl.[6] C07J *43/00;* **A61K** *31/58*
U.S. Cl. 514—176 **10 Claims**

1. A compound having the structure of an ester between the carboxyl group of a quinolonecarboxylic acid and the alcoholic hydroxyl group in 21-position of a steroid compound, which has the following formula (I) or a pharmacologically acceptable salt thereof



(I)

wherein the steroid moiety of the formula is a moiety selected from the group consisting of the following:

(1) A=X=W=H, B=—CH$_2$—CH$_2$—, Y=>C=O, Q=OH (cortisone);

(2) A=X=W=H, B=—CH$_2$—CH$_2$—, Y=>CH—OH, Q=OH (hydrocortisone);

(3) A=H, B=—CH=CH—, X=F, Y=>CH—OH, Q=W=acetal with acetone (triamcinolone acetonide);

(4) A=X=W=H, B=—CH=CH—, Y=>CH—OH, Q=OH (prednisolone);

(5) A=CH$_3$, B=—CH=CH—, X=W=H, Y=>CH—OH, Q=OH (methylprednisolone);

(6) A=H, B=—CH=CH—, X=F, Y=>CH—OH, Q=W=OH (triamcinolone);

(7) A=H, B=—CH=CH—, X=F, Y=>CH—OH, Q=OH, W=CH$_3$ (dexamethasone);

(8) A=F, B=—CH=CH—, X=H, Y=>CH—OH, Q=OH, W=CH$_3$ (paramethasone);

(9) A=F, B=—CH=CH—, X=Cl, Y=>CH—OH, W=CH$_3$, Q=H (clocortolone);

(10) A=X=F, B=—CH=CH—, Y=>CH—OH, Q=W=OH (fluocinolone);

(11) A=H, B=—CH=CH—, X=F, Y=>CH—OH, Q=OH, W=CH$_3$ (betamethasone);

and the quinolonecarboxylic acid moiety of the formula is a moiety selected from the group consisting of the following:

(12) n=0, d=g=h=H, e=C$_2$H$_5$ (norfloxacin);

(13) n=1, d=0, e=CHCH$_3$, g=H, h=CH$_3$ (ofloxacin);

(14) n=0, d=g=h=H, e=cyclopropyl (ciprofloxacin);

(15) n=0, d=F, e=C$_2$H$_5$, g=CH$_3$, h=H (lomefloxacin);

(16) n=0, d=F, e=CH$_2$CH$_2$F, g=H, h=CH$_3$ (fleroxacin);

(17) n=0, d=F, e=cyclopropyl, g=H, h=p-aminobenzensulfonyl.

5,599,808

AQUEOUS INDOLOCARBAZOLE SOLUTIONS

Joel D. Goldstein, King of Prussia, Pa., and Joseph L. Herman, Wilmington, Del., assignors to Cephalon, Inc., West Chester, Pa.

Continuation-in-part of Ser. No. 199,398, Feb. 18, 1994, abandoned. This application Feb. 3, 1995, Ser. No. 383,414
Int. Cl.[6] A61K *31/55;47/10;47/12;47/00*
U.S. Cl. 514—211 **24 Claims**

1. A solution comprising:

(a) an indolocarbazole;

(b) between about 1% and about 99% by weight inclusive of a selected organic solvent;

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(c) between about 0.25% and about 10% by weight inclusive of a dispersant;
(d) between about 1% and about 97% by weight inclusive of water; and
(e) between about 1% and about 60% by weight inclusive of polyethylene glycol.

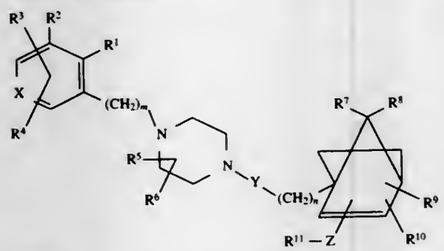
5,599,809

METHOD FOR IMPROVING REPRODUCTIVE EFFICIENCY IN FARM ANIMALS

Gerard J. Hickey, Westfield, N.J., and Douglas J. Pettibone, Chalfont, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Sep. 29, 1994, Ser. No. 314,840
Int. Cl.[6] A61K *31/495;* **A01N** *43/58*
U.S. Cl. 514—212 **36 Claims**

1. A method of increasing fertility and embryonic survival in a farm animal, comprising administering to a farm animal, in which fertilization has occurred, just prior to or during the period of maternal recognition of pregnancy a pharmacologically effective amount of a compound of formula I



I

wherein
X is
(1) C or
(2) N;
Y is
(1) carbonyl or
(2) sulfonyl;
Z is an optional substituent that, when present, is substituted or unsubstituted alkyl where said substituent is carboxyl;
R^1 is
(1) hydrogen,
(2) alkyl or
(3) NH_2;
R^2 is hydrogen, or
R^1 and R^2 together are bridged alkyl of three or four methylenes;
R^3 and R^4 are independently one or more of
(1) hydrogen,
(2) halogen,
(3) alkylsulfonyl,
(4) alkoxy or
(5) unsubstituted or substituted alkyl wherein said substituent is hydroxyl, alkoxyl, alkylsulfonyl, amino, alkylamino or dialkylamino;
R^5 and R^6 are independently selected from
(1) hydrogen,
(2) alkyl,
(3) substituted alkyl where said substituent is amino, hydroxyl, alkoxyl, alkylsulfonyl, arylsulfonyl, alkylamino or dialkylamino,
(4) phenylalkyl or
(5) oxo;
R^7 and R^8 are independently one or more of
(1) hydrogen,
(2) alkyl or
(3) joined together to form unsubstituted or substituted cycloalkyl where said substituent is hydroxy or hydroxyalkyl;
R^9 and R^{10} am independently selected from
(1) hydrogen,
(2) hydroxyl,
(3) halogen,
(4) oximino,
(5) methyl,
(6) carboxyl,
(7) oxo,
(8) alkoxycarbonyl,
(9) alkylcarbonyloxy,
(10) alkoxycarbonylalkoxy,
(11) trihaloalkylsulfonyloxo or
(12) unsubstituted or substituted amino where said substituent is one or more of alkyl, carboxyalkyl or alkoxycarbonylalkyl; or
R^9 and R^{10} are together joined to form a cyclic epoxide, whereby the R^9 and R^{10} substituents are on the same carbon or on adjacent carbon atoms;
R^{11} is
(1) hydrogen,
(2) $—N(R^{12})—CO—R^{13}$ or
(3) $—CO—N(R^{14})R^{15}$;
R^{12} is
(1) hydrogen,
(2) alkoxy,
(3) unsubstituted or substituted alkyl where said substituent is one or more of carboxyl, hydroxyl, alkoxyl, alkoxycarbonyl, alkylsulfonyl or arylsulfonyl,
(4) alkoxycarbonyl,
(5) alkoxycarbonylamino or
(6) alkylsulfonylalkyl;
R^{13} is
(1) hydrogen,
(2) alkoxyl,
(3) aralkoxyl,
(4) carboxyl,
(5) alkoxycarbonyl,
(6) alkoxycarbonylamino,
(7) unsubstituted or substituted cycloalkyl, wherein said substituent is carboxyl,
(8) unsubstituted or substituted phenyl wherein said substituent is one or more of carboxyl, carboxyalkyl or SO_3H,
(9) unsubstituted or substituted amino, wherein said substituent is unsubstituted or substituted alkyl where said substituent is one or more of carboxyl, alkylsulfonyl or unsubstituted 5-membered heterocyclic rings having 1 or 2 heteroatoms, where said heteroatom is N,
(10) unsubstituted or substituted heterocyclic rings selected from the group consisting of: pyrrolidinyl, imidazolyl, 1,2,4-triazolyl, tetrazolyl, tetrahydrofuranyl, furanyl, 1,3-dioxolanyl, thienyl, piperidinyl, piperazinyl, quinuclidinyl, morpholinyl, 1,3-tetrahydrothiazinyl, hexahydroazepinyl, tetrahydrothiopyranyl, 1-oxotetrahydrothiopyranyl and 1,1-dioxotetrahydrothiopyranyl wherein the linkage of the heterocyclic ring to the amidocarbonyl moiety can occur at a carbon atom or divalent nitrogen atom of the heterocyclic ring and wherein said substituent for any of said heterocyclic rings are one or more of alkyl, alkylcarbonyl, carboxyl, carboxyalkyl, carboxyaralkyl, aralkyl, aralkylcarbonyl, aralkoxycarbonyl, alkoxycarbonyl, alkoxycarbonylalkyl, aminoalkylcarbonyl, cyano, alkylsulfonyl, alkoxycarbonylaminoalkylcarbonyl, oxo or unsubstituted or substituted amino wherein said substituent is one or more of alkyl, carboxyalkyl, alkoxycarbonyl or alkoxycarbonylalkyl or
(11) unsubstituted or substituted alkyl, wherein said substituent is one or more of hydroxyl, alkoxy, carboxyl, phenyl, hydroxyphenyl, alkylphenyl, carboxyalkylphenyl, cyano, alkylsulfonyl, acetamidino, formamidino, aminocarbonyl, alkylaminocarbonyl, aralkyl, aralkoxycarbonyl, halogen, thio, alkylthio, alkoxycarbonyl, alkoxycarbonylalkyl, Het, or unsubstituted or substituted amino, wherein said substituent is one or more of alkyl, deuterated alkyl, piperidinyl, Cyc, pyridinyl, morpholinyl, tetrahydro-pyranyl, tetrahydrothiapyranyl, tetrahydrothiapyranyl S-oxide, alkoxycarbonylpiperidinyl, cyano, cyanoalkyl, hydroxyalkyl, haloalkyl, dialkyl, alkylcarbonyl, carboxyl, alkylsulfonyl, carboxyalkyl, alkoxycarbonyl, alkoxy-carbonylalkyl,

aralkoxycarbonyl, aminoalkyl, amino-carbonyl, aminocarbonylalkyl, alkylaminocarbonyl, phenalkyl or unsubstituted or substituted alkylcarbonyl, where said substituent is a 5-membered heterocyclic ring having 1 or 2 heteroatoms and where said heteroatom is N, Cyc is defined as unsubstituted or substituted cycloalkyl wherein said substituent is alkoxycarbonyl, carboxyl, hydroxyl, oxo or spirodioxolanyl and Het is defined as unsubstituted or substituted heterocyclic rings selected from the group consisting of: pyrrolidinyl, imidazolyl, 1,2,4-triazolyl, tetrazolyl, tetrahydrofuranyl, furanyl, 1,3-dioxolanyl, thienyl, piperidinyl, piperazinyl, pyridinyl, quinuclidinyl, morpholinyl, 1,3-tetrahydrothiazinyl, hexahydroazepinyl, tetrahydropyranyl, tetrahydrothio-pyranyl, 1-oxotetrahydrothiopyranyl and 1,1-dioxo-tetrahydrothiopyranyl wherein the linkage of the heterocyclic ring to the alkyl moiety can occur at a carbon atom or divalent nitrogen atom of the heterocyclic ring; and wherein said substituent for any of said heterocyclic rings are one or more of alkyl, amino, carboxyl, carboxyalkyl, aralkyl, carboxyaralkyl, alkoxycarbonyl, halogen substituted alkoxycarbonyl, alkoxycarbonylalkyl, alkoxyalkyl, alkoxyalkoxyalkyl, alkoxyalkoxyalkoxyalkyl, aralkylcarbonyl, aralkoxyalkyl, phenyl, aralkoxycarbonyl, oxo, SO_3H, or unsubstituted or substituted amino wherein said substituent is alkyl, carboxyl, carboxyalkyl, alkoxycarbonyl or alkoxycarbonylalkyl;
R^{14} and R^{15} are independently
(1) hydrogen,
(2) unsubstituted or substituted alkyl where said substituent is one or more of hydrogen, carboxyl, amino, aminoalkylamino, aminocarbonyl, hydroxyl, alkoxyl, alkylthio, thioalkyl, alkylsulfinyl, alkylsulfonyl, phenylalkoxy-carbonyl, alkoxycarbonyl, indolyl, phenalkyl, hydroxy-phenalkyl or unsubstituted 5-membered saturated heterocyclic rings having 1 or 2 hetero atoms wherein said hetero atom is N or
(3) heterocyclic rings selected from the group consisting of: unsubstituted or substituted saturated or unsaturated rings having 5, 6, 7 or 8 total members and 1, 2, 3 or 4 N heteroatoms; having 5 or 6 total members and 1 or 2 O heteroatoms; having 5 or 6 total members and 1 S heteroatom; or having 6 total members and 2 different heteroatoms from the group consisting of N, O or S and wherein said substituent is one or more of alkyl, oxo, carboxyl, phenylalkyl, carboxyphenylalkyl or alkoxycarbonyl; and
m and n are integers of from 0 to 1; and the pharmaceutically acceptable salts thereof.

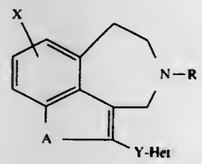
5,599,810

FURO- AND THIENO[4,3,2-EF][3]BENZAZEPINES USEFUL AS ALPHA ADRENERGIC RECEPTOR ANTAGONISTS

William E. Bondinell, Wayne; Robert M. Demarinis, Ardmore; Thomas W. Ku, Dresher, all of Pa.; Francis R. Pfeiffer, Cinnaminson, N.J.; Dinubhai H. Shah, Blue Bell, and Joseph W. Venslavsky, Wayne, both of Pa., assignors to SmithKline Beecham Corporation, Philadelphia, Pa.

Continuation of Ser. No. 17,713, Feb. 16, 1993, abandoned. This application Oct. 20, 1995, Ser. No. 505,297
Int. Cl.[6] A61K *31/55;* **C07D** *491/06;495/06*
U.S. Cl. 514—217 **24 Claims**

1. A compound of the formula:



in which:

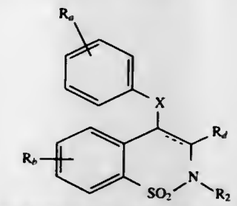
5,599,811

BENZOTHIAZINE DIOXIDES AS ENDOTHELIN ANTAGONISTS

Kent A. Berryman, Ann Arbor; Amy M. Bunker, Ypsilanti; Annette M. Doherty, Ann Arbor, and Jeremy J. Edmunds, Ypsilanti, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

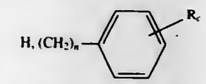
Filed Feb. 21, 1995, Ser. No. 393,143
Int. Cl.[6] A61K *31/54;* **C07D** *279/02*
U.S. Cl. 514—226.5 **15 Claims**

1. A compound of formula



I

or a pharmaceutically acceptable acid addition or base salt thereof wherein:
R_2 is

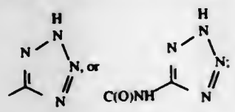


or $(CH_2)_n$-cycloalkyl of from 3 to 8 carbons;
R_a and R_c are each 1 to 5 substituents and R_b is 1 to 4 substituents independently selected from:
hydrogen,
alkyl of from 1 to 7 carbons,
alkenyl of from 2 to 7 carbons,
alkynyl of from 2 to 7 carbons,
cycloalkyl of from 3 to 8 carbons,
phenyl,
X is H, Cl, Br, F, I, CF_3, C_{1-6} alkyl, COR^1, CO_2R^2, $CONR^2R^2$, CN, NO_2, NR^2R^3, OR^3, SC_{1-4} alkyl, $S(CH_2)_{0-6}$ phenyl, SCF_3, or any accessible combination thereof of up to three substituents;
R is H, C_{1-6} alkyl, or C_{3-5} alkenyl;
each R^1 independently is C_{1-6} alkyl or $(CH_2)_{0-6}$ phenyl;
each R^2 independently is H, C_{1-6}alkyl, or $(CH_2)_{0-6}$phenyl;
each R^3 independently is H, C_{1-6} alkyl, $(CH_2)_{0-6}$ phenyl, COR^1, or SO_2R^1;
A is O or S;
Y is a single bond, $—(CH_2)_{1-4}—$, —CH=, —CH=CH—Q—, or $—(CH_2)_{0-2}—E—(CH_2)_{0-2}—$;
Q is a single bond, $—SO_2—$ or —C(O)—;
E is —CH(OH)—, —C(O)—, —O—, —S—, $—CO_2—$, $—NR^2—$, or $—C(O)NR^2—$; and
Het is a stable 5- to 7-membered monocyclic or 7- to 10-membered bicyclic heterocyclic ring, which is either saturated or unsaturated, and which consists of carbon atoms and from one to three heteroatoms selected from the group consisting of N, O, S, wherein the nitrogen and sulfur atoms may optionally be oxidized, and the nitrogen heteroatom may optionally be quarternized, and the carbon atoms may optionally be doubly bonded to oxygen, and including any bicyclic group in which any of the above-defined heterocyclic rings is fused to a benzene ring and wherein the Het is unsubstituted or substituted by any accessible combination thereof of up to three substituents selected from the group consisting of C_1–C_6alkyl, C_1–C_6alkoxy, Cl, Br, F, I, CF_3 NR^2R^2, CO_2R^2, $CONR^2R^2$, SO_3H, SO_2NHR^2, OH, NO_2, SO_2C_1–C_6alkyl, SC_1–C_6alkyl, or NR^2COC_1–C_6alkyl;
or a pharmaceutically acceptable salt thereof.

C(O)-phenyl,
methylenedioxy,
ethylenedioxy,
OR,
NRR_1,
SR_1,
NO_2,
N_3,
COR,
Cl,
Br,
F,
I,
CO_2R,
$CONRR_1$,
SO_2NRR_1,
SO_2R,
CN,
CF_3,
CF_2CF_3,
CHO,
OCOR,
$B(OH)_2$,
$NH(CH_2)_pCO_2R$,
$S(CH_2)_pCO_2R$,
$O(CH_2)_pCO_2R$,
$O(CH_2)_pOR$,
$NH(CH_2)_pOR$, and
$S(CH_2)_pOR$;

wherein R and R_1 are each independently selected from
hydrogen,
alkyl of from 1 to 6 carbon atoms,
alkenyl of from 2 to 7 carbon atoms,
alkynyl of from 2 to 7 carbon atoms,
cycloalkyl of from 3 to 8 carbon atoms,
phenyl or benzyl wherein the phenyl or benzyl ring is substituted by 1 or more H, methoxy, and methylenedioxy substituents;

R_4 is H, CO_2R, CO_3R, PO_4H, $B(OH)_2$, $CONRR_1$, SO_2NRR_1,



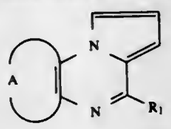
n is an integer of from 0 to 2;
p is an integer of from 1 to 4;
- - - indicates a single or double bond; and
X is $(CH_2)_n$, O, NR, or $S(O)_n$.

5,599,812
TRICYCLIC PYRROLOPYRAZINE 5-HT_3-ACTIVE COMPOUNDS

Sylvain Rault, Moult; Jean-Charles Lancelot, Le Bourg; Hervé Prunier, Caen; Max Robba, Paris; Philippe Delagrange, Issy Les Moulineaux; Pierre Renard, Versailles, and Gérard Adam, Le Mesnil Le Roi, all of France, assignors to Adir Et Compagnie, Courbevoie, France

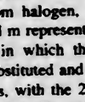
Filed Apr. 29, 1994, Ser. No. 235,426
Claims priority, application France, Apr. 30, 1993, 93 05109
Int. Cl.[6] C07D *417/14;413/14;* **A61K** *31/54;31/535*
U.S. Cl. 544—238.2 **15 Claims**

I. A compound which is selected from those of formula (I):



(I)

in which:
R^1 represents a group of formula:



in which R_2 and R_3 form, with the nitrogen atom which carries them, a group chosen from:
piperazine,
substituted piperazine,
piperidine,
substituted piperidine,
pyrrolidine,
substituted pyrrolidine,
morpholine,
morpholine substituted by one more alkyl groups,
tetrahydropyridine,
thiomorpholine,
a 5- to 12-membered azaspiro radical,
a 5- to 12-membered azaspiro radical substituted by one or more alkyl or oxo groups,
a 7- to 12-membered mono- or bicyclic azacycloalkyl radical optionally including, in its skeleton, to 1 or 2 additional heteroatoms chosen from oxygen, sulfur, and nitrogen,
a 7- to 12-membered mono- or bicyclic azacycloalkyl radical, substituted by one or more alkyl or oxo groups, optionally including, in its skeleton, to 1 or 2 additional heteroatoms chosen from oxygen, sulfur, and nitrogen,
a group —NH—$(CH_2)_k$—NH_2 in which k represents 2, 3 to 4,
and a substituted group —NH—$(CH_2)_k$—NH_2 in which k is as defined above,

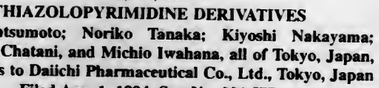
and A forms, with the 2 carbon atoms to which it is bonded, a ring chosen from benzo, pyrido, pyrazino and pyrimidino; A being unsubstituted or substituted by one or more radicals chosen from:
alkyl,
hydroxyl,
alkoxy,
acyl,
alkoxycarbonyl,
halogen,
trifluoromethyl,
$-(CH_2)_m$-phenyl and —O—$(CH_2)_m$-phenyl in which the phenyl ring is itself unsubstituted or substituted by one or more radicals chosen from halogen, alkyl, alkoxy, hydroxyl and trifluoromethyl; and m represents 0 or 1 to 4,
$-(CH_2)_m$-piperazine in which the piperazine group is itself substituted or unsubstituted and m is as defined above,

provided that if A forms, with the 2 carbon atoms to which it is bonded, a benzo ring, then R_2 and R_3 cannot form, with the nitrogen atom which carries them, piperazine which is unsubstituted or substituted by alkyl, phenyl or alkyl-substituted phenyl, morpholine or aminoalkylamines,

it being understood that the term "substituted", as it relates to the piperazine, piperidine, pyrrolidine and —NH—$(CH_2)_k$—NH_2 groups, means that these groups can be substituted by one or more halogen, hydroxyl, oxo, R_4 radicals or radicals



with R_4 being chosen from:
alkyl,
alkoxy,
alkenyl which is unsubstituted or substituted by a phenyl which is itself unsubstituted or substituted by one or more radicals chosen from halogen, alkyl, alkoxy, hydroxyl and trifluoromethyl,



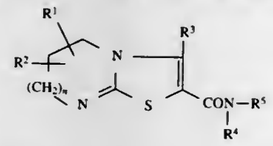
where n represents 0 or 1 to 5, n' represents 1 to 5, and where R_5 represents a radical chosen from phenyl, benzhydryl, thienyl, pyrrolyl, pyrrolidinyl, furyl, pyrimidinyl, pyridyl, methylenedioxyphenyl, ethylenedioxyphenyl, naphthyl, quinolyl, isoquinolyl, cycloalkyl and dicycloalkylmethyl; the term "cycloalkyl" meaning a 3- to 12-membered mono- or bicyclic group, it being possible for these R5 radicals themselves to be substituted by one or more of radicals chosen from halogen, trifluoromethyl, carboxyl, hydroxyl, alkyl and alkoxy,
and $(CH_2)_{n'}$—R_6 where n' is as defined above and R_6 represents a group chosen from carboxyl, alkoxycarbonyl, amino, alkylamino, dialkylamino, $—SO_2NR_7R_8$ and — $CONR_7R_8$ in which R_7 and R_8 represent, each independently of the other, a hydrogen atom or an alkyl group,
its optical isomers,
and its addition salts with a pharmaceutically acceptable acid or base,
it being understood that, except when otherwise specified,
the terms "alkyl", "alkoxy" and "acyl" represent linear or branched groups having from 1 to 6 carbon atoms, inclusive,
and the term "alkenyl" represents a linear or branched unsaturated group having from 2 to 6 carbon atoms, inclusive.

5,599,813
THIAZOLOPYRIMIDINE DERIVATIVES

Hiroo Matsumoto; Noriko Tanaka; Kiyoshi Nakayama; Haruko Chatani, and Michio Iwahana, all of Tokyo, Japan, assignors to Daiichi Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Apr. 1, 1994, Ser. No. 221,577
Claims priority, application Japan, Apr. 1, 1993, 5-110877
Int. Cl.[6] A61K *31/55;31/505;* **C07D** *513/04*
U.S. Cl. 514—232.5 **13 Claims**

1. Compounds represented by the following general formula



wherein n represents 1;
R^1 and R^2 each represents independently a hydrogen atom or an alkyl group having from 1 to 6 carbon atoms;
R^3 represents a hydroxyl group, an alkyl group having from 1 to 12 carbon atoms, a cycloalkyl group having from 3 to 6 carbon atoms, a halogenoalkyl group having from 1 to 6 carbon atoms, a cyanoalkyl group having from 2 to 7 carbon atoms, an alkoxyalkyl group having a total of from 2 to 12 carbon atoms, an alkoxycarbonylalkyl group having a total of from 3 to 10 carbon atoms, a carboxyalkyl group having a total of from 2 to 7 carbon atoms, an alkoxyl group having from 1 to 12 carbon atoms, a cycloalkoxyl group having from 3 to 6 carbon atoms, an alkoxyalkoxyl group having from 2 to 9 carbon atoms, an alkoxycarbonylalkoxyl group having from 3 to 10 carbon atoms, a carboxyalkoxyl group having from 2 to 4 carbon atoms, an alkenylalkoxyl group having from 3 to 6 carbon atoms or an aryl group having from 6 to 12 carbon atoms;
R^4 and R^5 each represents independently a hydrogen atom, an alkyl group having from 1 to 18 carbon atoms, an alkoxycarbonylalkyl group having a total of from 3 to 7 carbon atoms, a carboxyalkyl group having a total of from 2 to 4 carbon atoms, a cyanoalkyl group having from 2 to 4 carbon atoms, a hydroxyalkyl group having from 1 to 3 carbon atoms, an alkenyl group having from 2 to 18 carbon atoms, a cycloalkyl group having from 3 to 6 carbon atoms, a phenylsulfonyl group or a group of formula:

$—(CH_2)_a—Q$

wherein "a" represents 0 or an integer of 1 to 6;
Q represents an aryl group having from 6 to 12 carbon atoms, a heterocyclic group selected from the group consisting of pyridyl, pyrazinyl, oxazolyl, thiazolyl, thiadiazolyl, imidazolyl, pyrrolidinyl, piperidyl, and morpholinyl, or a condensed ring group selected from the group consisting of benzoxazolyl, benzothiazolyl and benzothiadiazolyl, the Q may contain simultaneously or independently 1 to 3 substitution groups selected from a halogen atom, a nitro group, a sulfo group, a group of formula:

$—X—(CH_2)_b—COOR^6$

or a group of formula:

$—X—(CH_2)_b—Y—(CH_2)_c—CH_3$

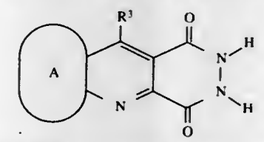
wherein X represents a single-bond, an oxygen atom, a sulfur atom, a sulfonyl group or an aryl group having from 6 to 10 carbon atoms; Y represents a single-bond, an oxygen atom, or an aryl group having from 6 to 10 carbon atoms; R^6 represents a hydrogen atom or an alkyl group having from 1 to 3 carbon atoms;
b and c each represents 0 or an integer of 1 to 6; if X is said aryl group, then $—(CH_2)_b—COOR^6$, $—(CH_2)_b—Y—(C_2)_c—CH_3$, $—COOR^6$ (when b is 0) or $—Y—(CH_2)_c—CH_3$ (when b is 0) may be substituted at any position of said aryl group, if Y is said aryl group, then $—(CH_2)_c—CH_3$ or $—CH_3$ (when c is 0) may be substituted at any position of said aryl group, or pharmaceutically acceptable salts thereof.

5,599,814
PYRIDAZINEDIONE COMPOUNDS USEFUL IN TREATING NEUROLOGICAL DISORDERS

Thomas M. Bare, West Chester, and Richard B. Sparks, Linwood, both of Pa., assignors to Imperial Chemical Industries, PLC, London, England

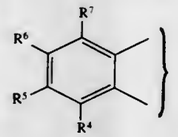
Continuation of Ser. No. 156,211, Nov. 22, 1993, abandoned, which is a continuation of Ser. No. 880,965, May 8, 1992, abandoned. This application Apr. 24, 1995, Ser. No. 427,469
Claims priority, application United Kingdom, May 9, 1991, 9109973; Feb. 13, 1992, 9202991
Int. Cl.[6] A61K *31/50;* **C07D** *471/04;471/14*
U.S. Cl. 514—248 **11 Claims**

1. A pharmaceutical composition suitable for the treatment of stroke, hypoglycemia, ischemic attack, anoxia and epilepsy, comprising an effective amount of a compound of formula I,



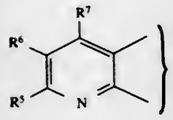
I

or a pharmaceutically acceptable salt thereof, wherein:
R^3 is hydroxy;
ring A is selected from the members shown as formulae Ia–Ib



Ia

-continued



wherein R^4, R^5, R^6, and R^7 are independently selected from the group consisting of hydrogen, halo, (1–4C)alkyl which may contain a double or triple bond, (1–3C)perfluoroalkyl, (1–3C)alkyl substituted with trifluoromethyl, nitro, OR^d, CO_2R^d, $CONR^d_2$, CN, NR^d_2, and cyclopropyl, wherein each R^d is independently selected from hydrogen and (1–4C)alkyl;

and a pharmaceutically acceptable diluent or carrier.

5,599,815

ANTIPSYCHOTIC BENZOISOTHIAZOLYL PIPERAZINE DERIVATIVES

Yoshimasa Fukuda; Toshiro Sasaki; Yuuko Nakatani; Yasuyuki Ichimaru, and Taiichiro Imanishi, all of Kanagawa, Japan, assignors to Meiji Seika Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP94/00159, § 371 Date Dec. 20, 1994, § 102(e) Date Dec. 20, 1994, PCT Pub. No. WO94/18197, PCT Pub. Date Aug. 18, 1994

PCT Filed Feb. 3, 1994, Ser. No. 318,857

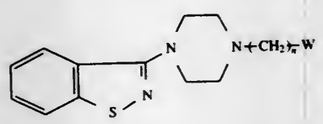
Claims priority, application Japan, Feb. 4, 1993, 5-017505; WIPO, Jan. 4, 1994, PCT/JP94/00001

Int. Cl.[6] **C07D** *417/14;* **A61K** *31/55;31/50;31/495*

U.S. Cl. 514—254 **5 Claims**

1. A compound represented by the formula

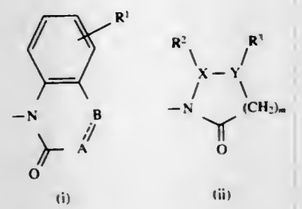
(I)



wherein

n represents an integer of 2–4,

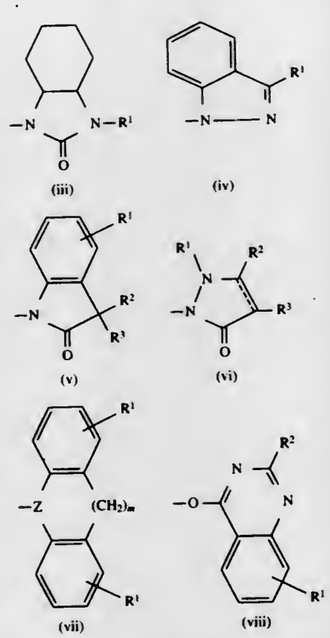
the group W represents any one of the groups represented by the formulae:



(i) (ii)

-continued

Ib



(iii) (iv) (v) (vi) (vii) (viii)

wherein m represents an integer of 0–2, the solid line with a dotted line represents a single bond or a double bond,

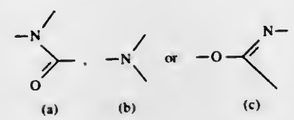
A represents CH_2, CH, N or NH,

B represents CH_2, CH or S,

X represents CH, N, S or a bond,

Y represents CH or N,

Z represents the following groups



(a) (b) or (c)

R^1 represents a hydrogen atom, a halogen atom, a lower alkyl group which may be substituted by halogen, an unsubstituted or substituted phenyl group, a hydroxyl group, a nitro group, a lower alkoxy group, an amino group or a cyano group,

R^2 and R^3, which may be the same or different, represent a hydrogen atom, a halogen atom, a lower alkyl which may be substituted with halogen, lower alkoxy or amino group, or a cyano group, provided that when X represents a bond, R^2 is not present, or

R^2 and R^3 may represent together a group $—(CH_2)_p—$, wherein p represents an integer of 3–5, to form an unsubstituted or substituted saturated ring or heterocyclic saturated ring, or

a pharmacologically acceptable salt thereof.

5,599,816

QUINOLIZINONE TYPE COMPOUNDS

Daniel T. Chu, Santa Clara, Calif.; Qun Li, Gurnee, Ill.; Curt S. Cooper, Gurnee, Ill.; Anthony K. L. Fung, Gurnee, Ill.; Cheuk M. Lee; Jacob J. Plattner, both of Libertyville, Ill.; Zhenkun Ma, Gurnee, Ill., and Wei-Bo Wang, Park City, Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

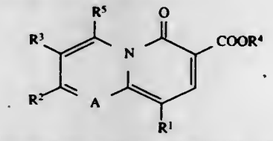
Division of Ser. No. 469,159, Jun. 6, 1995, which is a continuation-in-part of Ser. No. 316,319, Sep. 30, 1994, which is a continuation-in-part of Ser. No. 137,236, Oct. 14, 1992, abandoned, which is a continuation-in-part of Ser. No. 940,870, Oct. 27, 1992, abandoned, which is a continuation-in-part of Ser. No. 517,780, May 2, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 482,249

Int. Cl.[6] **A61K** *31/495;31/535;31/505;31/44;* **C07D** *498/02;487/00;455/02;471/02*

U.S. Cl. 514—254 **31 Claims**

1. A compound having the formula

(I)

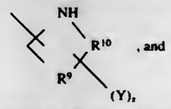


or a pharmaceutically acceptable salt, ester or amide thereof, wherein

R^1 in formula (I) is selected from (a) loweralkyl, (b) loweralkenyl, (c) halo(loweralkyl), (d) loweralkoxy, (e) cycloalkyl of from three to eight carbon atoms, (f) phenyl, (g) substituted phenyl, (h) halo, (i) cyano, (j) nitro, (k) bicycloalkyl, (l) loweralkynyl, (m) loweralkoxycarbonyl, (n) nitrogen-containing aromatic heterocycle, selected from the group consisting of pyridine, pyrazine, pyrimidine, pyrrazole, imidazole, thiazole, oxazole, isoxazole, thiadiazole and oxadiazole, (o) halo-substituted nitrogen-containing aromatic heterocycle, where the nitrogen-containing aromatic heterocycle is as defined above, (p) a 4-, 5- or 6-membered cyclic ether, and (q) $—NR^7R^8$ where R^7 and R^8 are independently selected from the group consisting of hydrogen, loweralkyl and alkanoyl of from one to eight carbon atoms or, taken together with the nitrogen atom to which they are attached, R^7 and R^8 form a 5-, 6- or 7-membered heterocycle;

R^2 in formula (I) is selected from (a) halogen, (b) loweralkyl, (c) loweralkenyl, (d) cycloalkyl of from three to eight carbons, (e) cycloalkenyl of from four to eight carbons, (f) loweralkoxy, (g) aryloxy, (h) aryl(loweralkyl)oxy, (i) aryl(loweralkyl), (j) cycloalkyl(loweralkyl), (k) amino, (l) (loweralkyl)amino, (m) aryl(loweralkyl)amino, (n) hydroxy-substituted (loweralkyl)amino, (o) phenyl, (p) substituted phenyl, (q) bicyclic nitrogen-containing heterocycle, (r) nitrogen-containing aromatic heterocycle as defined above, (s) nitrogen-containing heterocycle having the formula

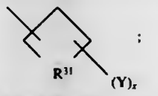
(Ia)



, and

(t) non-nitrogen-containing heterocycle having the formula

(Ib)



;

where x is zero, one, two or three;

R^9 is selected from the group consisting of (i) $—(CH_2)_m—$ where m is one, two or three, and (ii) $—(CH_2)_nR^{13}(CH_2)_p—$ where R^{13} is selected from —S—, —O— and —NH—, R^{10} is CH_2, or when R^9 is selected from option (i) may be O, S or N, n is one or two, and p is one or two; and R^{31} is $—(CH_2)_qR^{32}—$ where R^{32} is selected from —S— and —O—, and q is one, two or three; and Y is independently selected at each occurrence from the group consisting, of:

(i) loweralkyl,

(ii) hydroxy,

(iii) halogen,

(iv) halo(loweralkyl),

(v) hydroxy-substituted loweralkyl,

(vi) loweralkenylamino,

(vii) loweralkylamino,

(viii) loweralkoxy,

(ix) (loweralkoxy)loweralkylamino,

(x) loweralkoxy(loweralkyl),

(xi) loweralkoxy(loweralkoxy)(loweralkyl),

(xii) hydroxy-substituted loweralkyl,

(xiii) imino,

(xiv) alkoxycarbonyl,

(xv) carbamoyl,

(xvi) aryl(loweralkyl),

(xvii) aminoxy

(xviii) amino(loweralkyl),

(xix) halo(loweralkyl)amino,

(xx) halo(loweralkyl)amino(loweralkyl),

(xxi) thioloweralkoxy(loweralkyl),

(xxii) aminothioloweralkoxy,

(xxiii) cycloalkyl of from three to six carbon atoms,

(xxiv) cycloalkyl(loweralkyl),

(xxv) cycloalkylamino,

(xxvi) phenyl,

(xxvii) substituted phenyl,

(xxviii) substituted phenyl(loweralkyl)

(xxix) nitrogen-containing aromatic heterocycle as defined above,

(xxx) $—NR^{11}R^{12}$ where R^{11} and R^{12} are independently selected from hydrogen and loweralkyl or, when one of R^{11} and R^{12} is hydrogen, the other is alkanoyl of from one to eight carbon atoms, an alpha-amino acid, or a polypeptide residue of from two to five amino acids, and

(xxxi) $—C(R^{21})(R^{22})NH_2$ where R^{21} and R^{22} are independently selected from among hydrogen, loweralkyl, hydroxy-substituted loweralkyl, amino(loweralkyl), loweralkoxy-(loweralkyl), thioloweralkoxy(loweralkyl), cycloalkyl of from three to six carbon atoms, and loweralkyl substituted with nitrogen-containing aromatic heterocycle as defined above or, taken together with the carbon atom to which they are attached, R^{21} and R^{22} form a ring structure selected from cycloalkyl of from three to six carbon atoms and nitrogen-containing heterocycle;

R^3 is selected from the group consisting of hydrogen, halogen and loweralkoxy;

R^4 is selected from the group consisting of hydrogen, loweralkyl, a pharmaceutically acceptable cation, and a prodrug ester group;

R^5 is selected from the group consisting of (a) hydrogen, (b) halogen, (c) hydroxy, (d) loweralkyl, (e) halo(loweralkyl), (f) loweralkoxy, and (g) $—NR^{13}R^{14}$ where R^{13} and R^{14} are independently selected from the group consisting of hydrogen, loweralkyl, hydroxy-substituted loweralkyl, loweralkoxy(loweralkyl), and alkanoyl of from one to eight carbon atoms; and

A is $=CR^6-$, where R^6 is selected from the group consisting of (a) hydrogen, (b) halogen, (c) loweralkyl, (d) halo(loweralkyl), (e) hydroxy-substituted loweralkyl, (f) loweralkoxy-(loweralkyl), (h) loweralkoxy, and (i) amino(loweralkyl); provided that, when R^5 is hydrogen and A is $=CH—$, R^1 is not unsubstituted phenyl.

VOL 11 95 ISS 1 FE 4 1997 UMI

5,599,817

XANTHINE DERIVATIVES AS DIURETIC AGENTS

Stefan Adamus; Wolfram Gaida, both of Ingelheim; Christopher Meade, Bingen-Bödesheim, and Ulrike Küfner-Muhl, Ingelheim, all of Germany, assignors to Boehringer Ingelheim KG, Ingelheim am Rhein, Germany

PCT No. PCT/EP93/03158, § 371 Date Jul. 6, 1995, § 102(e) Date Jul. 6, 1995, PCT Pub. No. WO94/11000, PCT Pub. Date May 26, 1994

PCT Filed Nov. 11, 1993, Ser. No. 436,220

Claims priority, application Germany, Nov. 13, 1992, 42 38 367.6

Int. Cl.[6] A61K *31/19;31/34;31/52*

U.S. Cl. 514—263 3 Claims

1. A method for stimulating diuresis comprising the step of administering to a patient an effective amount of a pharmaceutical composition comprising 8-(3-oxocyclopentyl)-1,3-di-n-propyl-7H-purine- 2,6-dione or an enantiomer thereof and an inert pharmaceutical carrier.

5,599,818

FUNGICIDAL SPIROHETEROCYCLIC COMPOUNDS

Waldemar F. A. Pfrengle, Seibersbach, Germany, assignor to Shell Research Limited, Waterloo, United Kingdom

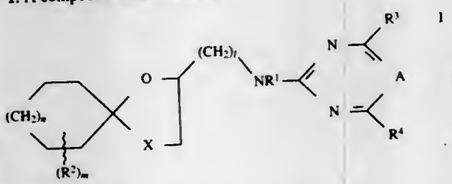
Continuation of Ser. No. 235,936, May 2, 1994, Pat. No. 5,462,944. This application May 12, 1995, Ser. No. 440,480

Claims priority, application European Pat. Off., May 3, 1993, 93107131

Int. Cl.[6] A61K *31/505;* C07D *405/12*

U.S. Cl. 514—275 16 Claims

1. A compound of the formula I



in which

X represents O or CH_2.

R^1 represents a hydrogen atom or an optionally substituted alkyl, cycloalkyl, haloalkyl, alkenyl, alkynyl, aryl or aralkyl group,

R^2 represents an optionally substituted C_{3-8} alkyl, cycloalkyl, cycloalkylalkyl, alkoxy, alkoxyalkyl, aryl or aryloxy group, or R^2, together with the ring to which it is attached, represents a polycyclic hydrocarbyl group,

A represents a group CR^5 and B represents a nitrogen atom,

R^3, R^4 and R^5 each independently represent a hydrogen or halogen atom, a hydroxy or cyano group or an optionally substituted alkyl, alkenyl, alkynyl, haloalkyl, alkoxyalkyl, aralkyl, aryl, alkylamino alkylthio or alkoxy group,

l represents an integer from 1 to 3,

m represents an integer from 1 to 6, and

n represents zero or an integer from 1 to 3.

5,599,819

ACETYLENES DISUBSTITUTED WITH A THIENYL OR FURYL GROUP AND A 2-SUBSTITUTED CHROMANYL, THIOCHROMANYL OR 1,2,3,4 - TETRAHYDROQUINOLINYL GROUP HAVING RETINOID-LIKE ACTIVITY

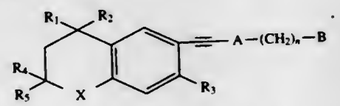
Roshantha A. S. Chandraratna, El Toro, Calif., assignor to Allergan

Division of Ser. No. 385,000, Feb. 7, 1995, which is a division of Ser. No. 144,178, Oct. 27, 1993, Pat. No. 5,407,937, which is a division of Ser. No. 967,630, Oct. 28, 1992, Pat. No. 5,272,156, which is a division of Ser. No. 732,270, Jul. 18, 1991, Pat. No. 5,183,827, which is a division of Ser. No. 409,476, Sep. 19, 1989, Pat. No. 5,045,551. This application Jun. 2, 1995, Ser. No. 458,389

Int. Cl.[6] A61K *31/50*

U.S. Cl. 514—314 17 Claims

1. Compounds of the formula



where X is NR', where R' is hydrogen or lower alkyl;

R_1, R_2 and R_3 are hydrogen or lower alkyl;

R_4 and R_5 are hydrogen or lower alkyl with the proviso that R_4 and R_5 both are not hydrogen;

n is an integer from 0 to 5;

A is thienyl or furyl, and

B is hydrogen, COOH or a pharmaceutically acceptable salt thereof, $COOR_8$, $COONR_9R_{10}$, $—CH_2OH$, CH_2OR_{11}, CH_2OCOR_{11}, CHO, $CH(OR_{12})_2$, $CHOR_{13}O$, —COR", $CR"(OR_{12})_2$, or $CR"OR_{13}O$, where R" is an alkyl group having 1 to 5 carbons, cycloalkyl having 3 to 5 carbons or alkenyl group having 2 to 5 carbons, R_8 is an alkyl group of 1 to 10 carbons, or a cycloalkyl group of 5 to 10 carbons, or R_8 is phenyl or lower alkylphenyl, R_9 and R_{10} independently are hydrogen, an alkyl group of 1 to 10 carbons, or a cycloalkyl group of 5 to 10 carbons, or phenyl or lower alkylphenyl, R_{11} is lower alkyl, phenyl or lower alkylphenyl, R_{12} is lower alkyl, R_{13} is divalent alkyl radical of 2–5 carbons.

5,599,820

ANTI-TUMOR COMPOUNDS, PHARMACEUTICAL COMPOSITIONS, METHODS FOR PREPARATION THEREOF AND FOR TREATMENT

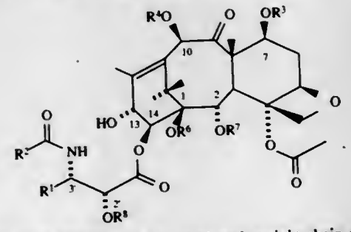
Iwao Ojima, Stony Brook, N.Y., and Ezio Bombardelli, Milan, Italy, assignors to The Research Foundation of State University of New York, Albany, N.Y., and Indena SpA Gruppo Inverni Della Beffa, Milan, Italy

Division of Ser. No. 40,189, Mar. 26, 1993, Pat. No. 5,475,011. This application Jun. 5, 1995, Ser. No. 461,730

Int. Cl.[6] A61K *31/445;31/21*

U.S. Cl. 514—320 9 Claims

1. A compound of the formula (II) wherein



(II)

R^1 is an unsubstituted or substituted straight chain or branched alkyl, alkenyl or alkynyl, an unsubstituted or substituted aryl or heteroaryl radical, an unsubstituted or substituted cycloalkyl, heterocycloalkyl, cycloalkenyl or heterocycloalkenyl radical;

R^2 is an unsubstituted or substituted straight chain or branched alkyl, alkenyl or alkynyl, cycloalkyl, heterocycloalkyl, cycloalkenyl, heterocycloalkenyl, aryl or heteroaryl;

or R^2 is an RO-, RS- or RR'N- wherein R is an unsubstituted or substituted straight chain or branched alkyl, alkenyl or alkynyl, cycloalkyl, heterocycloalkyl, cycloalkenyl, heterocycloalkenyl, aryl or heteroaryl; R' is a hydrogen or R as defined above; R and R' can be connected to form a cyclic structure;

R^3 is a hydrogen or an acyl or an alkyl or an alkenyl or an alkynyl or an unsubstituted or substituted cycloalkyl, heterocycloalkyl, cycloalkenyl or heterocycloalkenyl radical, or an unsubstituted or substituted aryl or heteroaryl radical or a hydroxyl protecting group;

R^4 is a hydrogen or an acyl radical or an alkyl, alkenyl or alkynyl radical, an unsubstituted or substituted cycloalkyl, heterocycloalkyl, cycloalkenyl or heterocycloalkenyl radical, an unsubstituted or substituted aryl or heteroaryl radical, or a hydroxyl protecting group;

R^6 is a hydrogen or an acyl radical or an alkyl, alkenyl or alkynyl radical, an unsubstituted or substituted cycloalkyl, heterocycloalkyl, cycloalkenyl or heterocycloalkenyl radical, an unsubstituted or substituted aryl or heteroaryl radical, or a hydroxyl protecting group;

R^7 is an acyl group;

R^8 is a hydrogen or a hydroxyl protecting group.

—CHR_{24}—CH=CH—CHR_{24}—,

—CHR_{24}—C≡C—CHR_{24}—,

—CHR_{24}—CH=CH—$CR_{23}R_{24}$—CHR_{24}—,

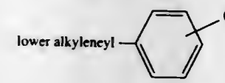
—CHR_{24}—$CR_{23}R_{24}$—CH=CH—CHR_{24}—,

—CHR_{24}—CH=C—$CR_{23}R_{24}$—CHR_{24}—, or

—CHR_{24}—$CR_{23}R_{24}$—C≡C—CHR_{24}—,

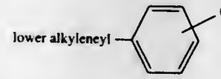
the —CH=CH—bond being cis or trans;

R_{23} is hydrogen, (C_1–C_{18})linear alkyl, phenyl, hydroxy, C_1–C_{18})alkoxy, aryloxy, aryl(C_1–C_{18})alkyloxy, (C_1–C_{18})alkanoyloxy, hydroxy(C_1–C_6)alkyl, (C_1–C_{18})alkoxy(C_1–C_6)alkyl, phenyl (C_1–C_6)alkoxy, aryl(C_1–C_{18})alkyloxy(C_1–C_6)alkyl, (C_1–C_{18})alkanoyloxy(C_1–C_6)alkyl, or



where Z_1 is lower alkyl, —OH, lower alkoxy, $—CF_3$, $—NO_2$, $—NH_2$, or halogen, and p is as previously defined; and

R_{24} is hydrogen, (C_1–C_{18})linear alkyl, phenyl, hydroxy(C_1–C_6)alkyl, (C_1–C_{18})alkoxy(C_1–C_6) alkyl, phenyl(C_1–C_6)alkyloxy, aryl(C_1–C_{18})alkyloxy(C_1–C_6)alkyl, (C_1–C_{18})alkanoyloxy(C_1–C_6)alkyl, or



where Z_1 is as previously defined, and p is as previously defined;

R_{27} is hydrogen or R_{24} and R_{27} taken together with the carbon to which they are attached form C=O or C=S; and

R_{18} and R_{19} are independently selected from the group consisting of:

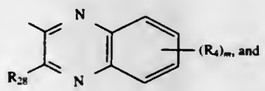
hydrogen,

(C_1–C_{18} straight or branched chain)alkyl,

—C(=O)—O—(C_1–C_{18})alkyl,

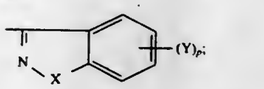
—C(=O)—(C_1–C_{18})alkyl,

—C(—O—)-pyridyl,



where $NR_{18}R_{19}$ taken together form a ring structure selected from the group consisting of piperidinyl, morpholinyl, and piperazinyl;

where the piperidinyl or piperazinyl ring is optionally substituted by



where X, Y, and P are as previously defined; where

R_4 is hydrogen, lower alkyl, lower alkoxy, hydroxy, tri(C_1–C_6)alkylsilyloxy, hydroxy lower alkyl, alkanoyloxy lower alkyl, amino, mono- or dialkylamino, (C_1–C_{18})acyl amino, (C_1–C_{18})alkanoyl, trifluoromethyl, chlorine, fluorine, bromine, —O—C(=O)—(C_1–C_{18})straight or branched chain-)alkyl or —C(=O)-aryl;

where R_{28} is hydrogen, (C_1–C_6)alkyl, aryl(C_1–C_6)alkyl, phenyl, or substituted phenyl;

5,599,821

4-HETEROARYL-1-PIPERIDINEALKYLAMINES AND DERIVATIVES THEREOF AND THEIR THERAPEUTIC UTILITY

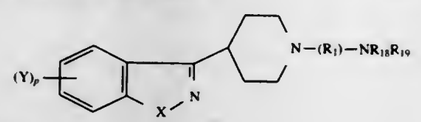
Edward J. Glamkowski, Warren; Yulin Chiang, Covent Station; Joseph T. Strupczewski, Flemington, all of N.J.; Kenneth J. Bordeau, Kintnersville, Pa.; Peter A. Nemoto, Raritan, and John J. Tegeler, Bridgewater, both of N.J., assignors to Hoechst-Roussel Pharmaceuticals, Inc., Somerville, N.J.

Division of Ser. No. 329,000, Oct. 25, 1994, which is a continuation-in-part of Ser. No. 144,265, Oct. 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 969,383, Oct. 30, 1992, Pat. No. 5,364,866, which is a continuation-in-part of Ser. No. 788,269, Nov. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 944,705, Sep. 5, 1991, abandoned, which is a continuation of Ser. No. 619,825, Nov. 29, 1990, abandoned, which is a continuation of Ser. No. 456,790, Dec. 29, 1989, abandoned, which is a continuation-in-part of Ser. No. 354,411, May 19, 1989, abandoned. This application Jun. 6, 1995, Ser. No. 469,357

Int. Cl.[6] A61K *31/495;31/55;31/505;31/44;* C07D *401/00;403/00;417/00;419/00, 221/04;275/04;239/02*

U.S. Cl. 514—321 27 Claims

1. A compound of the formula:



wherein

X is —O—, —S—, —NH—, or —N(R_2)—;

R_2 is selected from the group consisting of lower alkyl, aryl lower alkyl, aryl, cycloalkyl, aroyl, alkanoyl, alkoxycarbonyl, and phenysulfonyl groups;

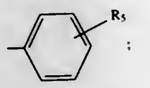
aryl is as defined hereinafter;

p is 1 or2;

Y is hydrogen, lower alkyl, hydroxy, chlorine, fluorine, bromine, iodine, lower alkoxy, trifluoromethyl, nitro, or amino;

R_1 is —$CR_{24}R_{27}$—($CR_{25}R_{24}$)$_n$—$CR_{24}R_{27}$— wherein n is 0, 1, 2, or

in which aryl is phenyl or



;

wherein R_5 is hydrogen, lower alkyl, lower alkoxy, hydroxy, chlorine, fluorine, bromine, iodine, lower monoalkylamino, lower dialkylamino, nitro, cyano, trifluoromethyl, or trifluoromethoxy;

and, any hydroxyl group attached to an aliphatic or aromatic carbon atom, or any primary or secondary nitrogen atom may be acylated with a (C_4–C_{18}) carboxylic group, in addition, any nitrogen atom may alternatively by acylated with a (C_4–C_{18})alkoxycarbonyl group;

m is 1, 2, or 3;

with the proviso that when X is —O— and Y is hydrogen, lower alkyl, lower alkoxy, chlorine, fluorine, bromine, iodine, or a hydroxyl group, R_{18} and R_{19} are not lower alkyl;

with the proviso that R_{18} and R_{19} are not hydrogen when R_1 is $(CH_2)_{2\text{-}5}$—, X is —O—, and Y is 6-F;

all geometric, optical, and stereoisomers thereof,

or a pharmaceutically acceptable acid addition salt thereof.

5,599,822

METHODS FOR MINIMIZING BONE LOSS

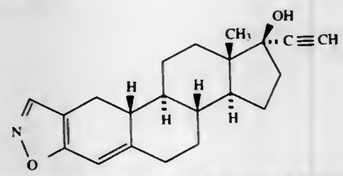
George J. Cullinan, Trafalgar, and Steven A. Fontana, Martinsville, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jun. 6, 1995, Ser. No. 467,475

Int. Cl.[6] A61K *31/41;31/44;31/445*

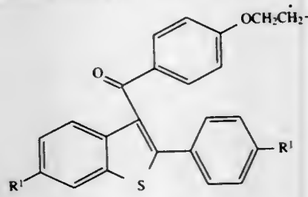
U.S. Cl. 514—324 **12 Claims**

1. A method for minimizing the bone loss effect of a compound of formula II



II

or a pharmaceutically acceptable salt thereof, wherein said formula II compound is administered to a mammal in need of treatment, comprising concurrently administering to said mammal an effective amount of a compound of formula I



I

wherein

each R^1 is independently —OH, —CH_3, —$OCOC_6H_5$, or —$OCO(C_1$–C_6 alkyl); and

R^2 is 1-piperidinyl, 1-pyrrolidinyl, or 1-hexamethyleneimino; or a pharmaceutically acceptable salt thereof.

5,599,823

SUBSTITUTED BIPHENYLPYRIDONES

Matthias Müller-Gliemann, Wuppertal; Martin Beuck, Erkrath; Stanislav Kazda; Johannes-Peter Stasch, both of Wuppertal; Andreas Knorr, Erkrath; Stefan Wohlfeil, Hilden; Walter Hübsch, Wuppertal; Jürgen Dressel, Wuppertal; Peter Fey, Wuppertal; Rudolf Hanko, Duesseldorf; Thomas Krämer, Wuppertal; Ulrich Müller, Wuppertal, and Siegfried Zaiss, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 970,364, Nov. 2, 1992, Pat. No. 5,356,911.

This application Jun. 29, 1994, Ser. No. 268,903

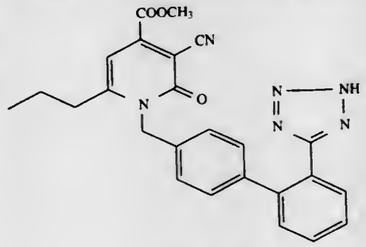
Claims priority, application Germany, Nov. 12, 1991, 41 37 151.8; Jul. 1, 1992, 42 21 583.8

Int. Cl.[6] A61K *31/44;* **C07D** *401/10*

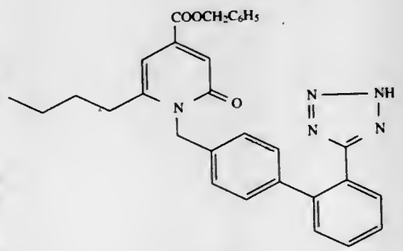
U.S. Cl. 514—340 **25 Claims**

1. A compound selected from the group consisting of

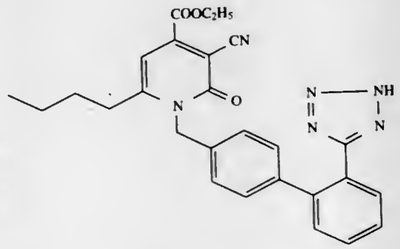
(XLVIII)



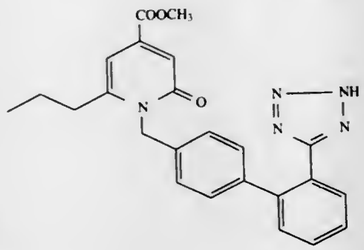
(XLIII)



(XLVII)

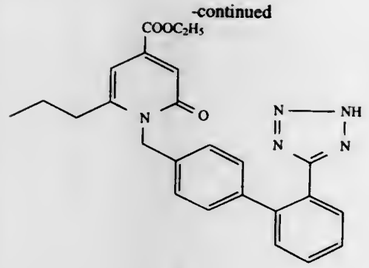


(XXXVII)

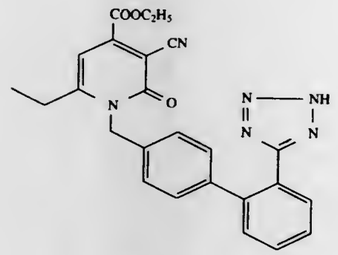


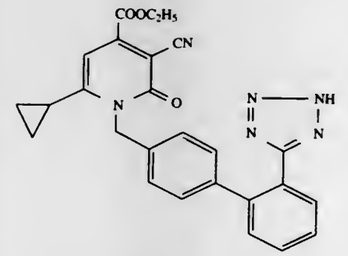
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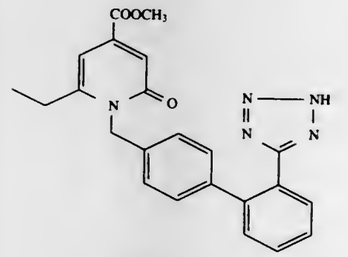
(XXXVIII)

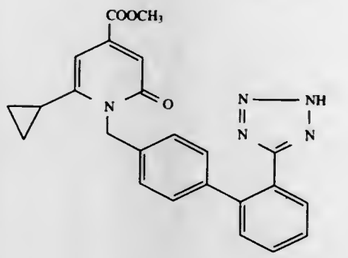


(XLIX)



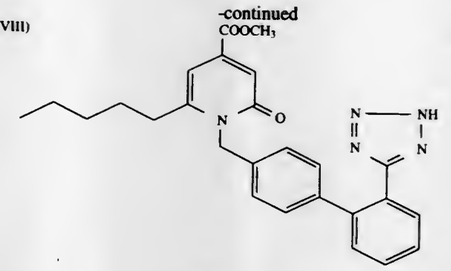






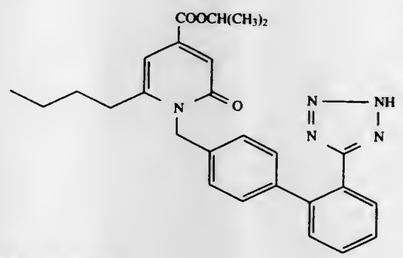
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(XLI)



and

(XXXVI)



(I)or a salt thereof.

5,599,824

PHARMACEUTICAL PREPARATION CONTAINING A SPECIFIC CRYSTAL MODIFICATION OF ISOPROPYL-(2-METHOXYETHYL) 1,4-DIHYDRO-2, 6-DIMETHYL-4-(3-NITROPHENYL)-3,5-PYRIDINEDICARBOXYLATE

Alfons Grunenberg, Dormagen; Ahmed Hegasy, Leverkusen; Wolfgang Mück; Gerhard Franckowiak, both of Wuppertal, and Rango-Rao Kanikanti, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 939,234, Sep. 2, 1992, abandoned.

(XXXIX) **This application Jan. 30, 1995, Ser. No. 380,229**

Claims priority, application Germany, Sep. 11, 1991, 41 30 173.0

Int. Cl.[6] A61K *31/44*

U.S. Cl. 514—356 **2 Claims**

1. A stable pharmaceutical preparation comprising a suspension of a pharmaceutically acceptable suspending liquid and a conglomeritic mixture of crystals of isopropyl-(2-methoxyethyl) 1,4-dihydro-2,6-dimethyl-4-(3-nitrophenyl)-3,5-pyridinedicarboxylate, said crystals having the crystalline structure of modification II, having a melting point of 116° C. and an average particle size of at most 5 μm.

(XL)

5,599,825

WATER-SOLUBLE METHINE COMPOUND AND PHARMACEUTICAL COMPOSITION FOR TREATMENT OF CANCER COMPRISING THE SAME

Noriaki Tatsuta; Akihiko Okegawa; Masayuki Kawakami, all of Minami-ashigara, Japan, and Keizo Koya, Lexington, Mass., assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

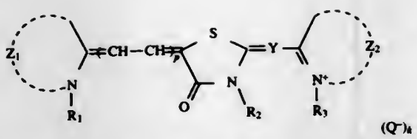
Filed Apr. 12, 1995, Ser. No. 420,481

Claims priority, application Japan, Jul. 21, 1994, 6-169582

Int. Cl.[6] A61K *31/425;* **C07D** *417/06*

U.S. Cl. 514—366 **18 Claims**

1. A methine compound represented by the following formula (I):



(I)

wherein Z_1 represents a non-metallic atomic group necessitated for forming a five-membered nitrogen-containing heterocyclic ring together with —N(R_1)—C—, Z_2 represents a non-metallic atomic group necessitated for forming a five-membered nitrogen-containing heterocyclic ring together with —N^+ (R_3)=C—, R_1, R_2 and R_3 each represent an alkyl group and at least one of R_1, R_2 and R_3 represents an alkyl group substituted with a polyethylene oxide group wherein one end of the polyalkylene oxide having a degree of polymerization of 2 to 6 is terminated with a hydrophobic group or substituted with a heterocyclic ring containing two or more oxygen atoms, Q represents an anion, k represents a numeral necessitated to control the charge in the molecule at zero, p represents 0 or 1, and Y represents a methine group or nitrogen atom.

5,599,826

THIAZOLIDINEDIONES AND DRUGS CONTAINING THEM

Alfred Mertens, Schriesheim; Hans-Peter Wolff, Mannheim, and Peter Freund, Ketsch, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

PCT No. PCT/EP94/01619, § 371 Date Nov. 21, 1995, § 102(e) Date Nov. 21, 1995, PCT Pub. No. WO94/27995, PCT Pub. Date Dec. 8, 1994

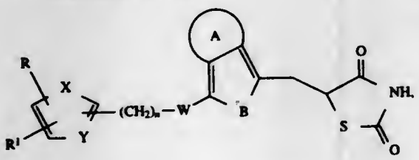
PCT Filed May 19, 1994, Ser. No. 578,561

Claims priority, application Germany, May 25, 1993, 43 17 320.9

Int. Cl.[6] C07D *417/12;* A61K *31/425*

U.S. Cl. 514—364 **13 Claims**

1. A compound of the formula



(I)

wherein

A is a carbocyclic ring of 5 or 6 carbon atoms or a 5 or 6-membered heterocyclic ring containing 1 or 2 heteroatoms, which heteroatoms are oxygen, nitrogen or sulfur, wherein each nitrogen atom independently carries no additional atoms or carries an oxygen atom;

B is —CH=CH—, —N=CH— or —CH=N—;

W is —CH_2—, —O—, —CH(OH)— or —CO—;

X is —S—, —O—, or —NH—;

Y is —N—;

R is naphthyl, pyridyl, furyl, thienyl or phenyl which are unsubstituted or substituted by one or two substituents, which are the same or different and are selected from the group consisting of C_1–C_3 alkyl, CF_3, C_1–C_3 alkoxy, F, Cl or Br;

R^1 is hydrogen or C_1–C_6 alkyl;

and n is 2;

and tautomers, enantiomers, diastereomers and pysiologically tolerated salts thereof.

5,599,827

STABLE MICROEMULSIONS OF CERTAIN 3-ISOTHIAZOLONE COMPOUNDS

Kevin F. Giroude, Alpha, N.J., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed May 16, 1995, Ser. No. 441,890

Int. Cl.[6] A01N *43/80*

U.S. Cl. 514—372 **8 Claims**

1. A microemulsion consisting essentially of:

A. 0.5 to 5 % by weight of at least one 3-isothiazolone selected from the group consisting of 5-chloro-2-methyl-4-isothazolin-3-one and 2-methyl-4-isothazolin-3-one;

B. water;

C. 2 to 20% by weight organic solvent(s) having less than 6 percent by weight solubility in water; and

D. 3–30% by weight surfactant(s) consisting of anionic surfactant(s) and,

optionally, non-ionic surfactant(s).

5,599,828

SYNERGISTIC COMBINATION OF MICROBICIDES TO COMBAT FUNGI ON PLANTS

Ronald Zeun, Neuenburg, and Gertrude Knauf-Beiter, Müllheim, both of Germany, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Filed May 18, 1995, Ser. No. 443,942

Claims priority, application Switzerland, May 20, 1994, 1576/94

Int. Cl.[6] A01N *43/54;43/64*

U.S. Cl. 514—383 **5 Claims**

1. A plant microbicidal composition comprising at least two active ingredient components in a synergistically effective amount, together with an inert carrier, wherein component I is epoxiconazol or a salt or metal complex thereof and component II is propiconazol or a salt or metal complex thereof, wherein the weight ratio of component I to component II is in the range of about 1:3 to about 10:1.

5,599,829

2-(SUBSTITUTED SULFANYL)-3,5-DIHYDRO-IMIDAZOL-4-ONE DERIVATIVES FOR INCREASING HDL CHOLESTEROL LEVELS

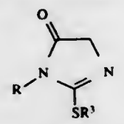
Hassan M. Elokdah, Fairless Hills; Theodore S. Sulkowski, Wayne, and Donald P. Strike, St. Davids, all of Pa., assignors to American Home Products Corporation, Madison, N.J.

Filed Nov. 28, 1995, Ser. No. 563,841

Int. Cl.[6] A61K *31/415*

U.S. Cl. 514—391 **12 Claims**

1. A method for increasing blood serum HDL cholesterol levels in a mammal in need of increased HDL cholesterol blood serum levels, which comprises administering to said mammal, an effective amound of a compound of formula I:



(I)

wherein

R is phenyl or phenyl optionally substituted with one or more groups selected from halogen, alkyl of 1 to 6 carbon atoms, perfluoroalkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, perfluoroalkoxy of 1 to 6 carbon atoms, hydroxy, alkanoyloxy of 2 to 6 carbon atoms, aroyloxy of 7 to 11 carbon atoms or arylalkanoyloxy of 8 to 16 carbon atoms;

R^3 is alkyl of 1 to 6 carbon atoms, aryl of 6 to 10 carbon atoms or arylalkyl of 7 to 12 carbon atoms;

or a pharmaceutically acceptable salt thereof.

5,599,830

SULPHOROUS DERIVATIVES OF IMIDAZOLE AND THEIR USE AS MEDICAMENTS

Jean C. Caille, Paris; Alain Corbier, Le Buisson; Michel Fortin, Paris; Gilles Hamon, Le Raincy; Simone Jouquey, Paris, and Jean P. Vevert, Pantin, all of France, assignors to Roussel Uclaf, France

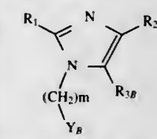
Division of Ser. No. 838,289, Jul. 24, 1992, Pat. No. 5,412,101. This application Jan. 9, 1995, Ser. No. 369,909

Claims priority, application France, Jul. 5, 1990, 90 08538; Apr. 19, 1991, 91 04882

Int. Cl.[6] C07D *403/10;233/42;* A61K *31/41;31/415*

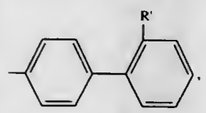
U.S. Cl. 514—398 **4 Claims**

1. A compound selected from the group consisting of a compound of the formula



I_B

wherein R_1 is alkyl of 1 to 13 carbon atoms, R_{2B} is selected from the group consisting of S-alkyl of 1 to 4 carbon atoms, S-alkenyl of 2 to 4 carbon atoms, hydrogen, acyl of an organic carboxylic acid of 1 to 6 carbon atoms, alkoxy and alkoxyalkyl of up to 6 carbon atoms and carboxy, R_{3B} is selected from the group consisting of hydrogen, acyl of an organic carboxylic acid of up 6 carbon atoms, —S(O)$_n$—Alk and —S(O)$_n$-phenyl, n is 0, 1 or 2, Alk is alkyl of 1 to 4 carbon atoms, m is 1, Y_B is



R' is selected from the group consisting of —COOH or tetrazolyl and their non-toxic, pharmaceutically acceptable salts with acids and bases.

5,599,831

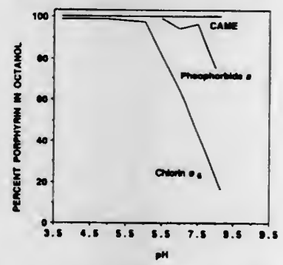
METHOD OF PREPARATION OF PHARMACEUTICAL COMPOSITIONS

Ronald D. Poretz, 8 York Rd., Mariboro, N.J. 07746, and Simon A. Chernomorsky, 23 Valley Forge La., Morris Plains, N.J. 07950

Filed May 27, 1994, Ser. No. 250,222

Int. Cl.[6] A01N *43/38;55/02;* C07K *1/00;* C07B *47/00*

U.S. Cl. 514—410 **31 Claims**



1. A method of preparation of a pharmaceutical composition comprising:

selecting a pH-sensitive amphipathic parent drug compound, said parent drug compound having an octanol:water partitioning ratio of at least about 80:20 at pH levels less than about pH 6.0 and an octanol:water partitioning ratio of less than about 70:30 at pH levels higher than about pH 8.0;

converting the parent drug compound to a lipophilic derivative of said parent drug compound, said lipophilic derivative having an octanol:water partitioning ratio of at least about 80:20 at a pH of about 3 to a pH of about 8.5; and then

combining the lipophilic derivative with a lipophilic carrier to form a pharmaceutical composition, the lipophilic derivative being capable of being converted back to the parent drug compound by lysosomal enzymes.

5,599,832

INDOLES AS INSECTICIDES AND ACARICIDES

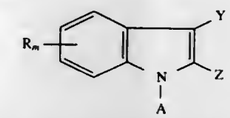
David M. Gange, Mercer, N.J., assignor to American Cyanamid Company, Madison, N.J.

Division of Ser. No. 293,152, Aug. 19, 1994, Pat. No. 5,502,071. This application Dec. 13, 1995, Ser. No. 572,280

Int. Cl.[6] A01N *43/38;55/00*

U.S. Cl. 514—415 **15 Claims**

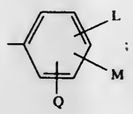
1. A method for the control of insect or acarid pests which comprises contacting said pests or their food supply, habitat or breeding grounds with a pesticidally effective amount of a compound formula I



(I)

wherein Y and Z are each independently hydrogen, halogen, CN, NO_2, S(O)$_n$$R_1$, C_1–C_6haloalkyl, C_1–C_6haloalkoxy, COR_2, CSR_3, or W, with the proviso that only one of Y or Z may be W, and with the further proviso that only one of Y or Z may be hydrogen;

W is



R is any combination of from one to four halogen, CN, NO_2, S(O)$_n$$R_7$, C_1–C_6haloalkyl or C_1–C_6haloalkoxy;

m is an integer of 1, 2, 3 or 4;

n is an integer of 0, 1, or 2;

L, M and Q are each independently hydrogen, halogen NO_2, CN, C_1–C_4haloalkyl, C_1–C_4haloalkoxy, COR_7 or S(O)$_n$$R_8$;

R_1, R_2, R_3, R_7 and R_8 are each independently C_1–C_6 haloalkyl;

C_1–C6alkyl optionally substituted with

one to three halogen atoms,

one tri(C_1–C_4 alkyl)silyl,

one hydroxy,

one cyano,

one or two C_1–C_4 alkoxy groups optionally substituted with one to three halogen atoms,

one C_1–C_4 alkylthio,

one phenyl optionally substituted with one to three halogen atoms, one to three C_1–C_4 alkyl groups or one to three C_1–C_4 alkoxy groups,

one phenoxy group optionally substituted with one to three halogen atoms, one to three C_1–C_4 alkyl groups or one to three C_1–C_4 alkoxy groups,

one benzyloxy group optionally substituted on the phenyl ring with one to three halogen atoms, one to three C_1–C_4 alkyl groups or one to three C_1–C_4 alkoxy groups,

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one C_1–C_6 alkylcarbonyloxy group optionally substituted with one to three halogen atoms,
one C_2–C_6 alkenylcarbonyloxy group optionally substituted with one to three halogen atoms,
one phenylcarbonyloxy group optionally substituted with one to three halogen atoms, one to three C_1–C_4 alkyl groups or one to three C_1–C_4 alkoxy groups
one C_1–C_6 alkoxycarbonyl group optionally substituted with one to three halogen atoms or one to three C_1–C_4 alkoxy groups, or
one benzylcarbonyloxy group optionally substituted on the phenyl ring with one to three halogen atoms, one to three C_1–C_4 alkyl groups or one to three C_1–C_4 alkoxy groups,
C_3–C_6 alkenyl optionally substituted with one to three halogen atoms or one phenyl group or
C_3–C_6 alkynyl optionally substituted with one to three halogen atoms or one phenyl group with the proviso that when R_{15} is hydrogen, then m must be an integer other than 2;
R_{16} is C_1–C_6 alkyl or C_3–C_6 cycloalkyl each optionally substituted with one to three halogen atoms,
one hydroxy,
one cyano,
one or two C_1–C_4 alkoxy groups optionally substituted with one to three halogen atoms,
one C_1–C_4 alkylthio,
one phenyl group optionally substituted with one to three halogen atoms, one to three C_1–C_4 alkyl groups or one to three C_1–C_4 alkoxy groups,
one phenoxy group optionally substituted with one to three atoms, one to three C_1–C_4 alkyl groups or one to three C_1–C_4 alkoxy groups,
one benzyloxy group optionally substituted on the phenyl ring with one to three C_1–C_4 alkyl groups or one to three halogen atoms, one to three C_1–C_4 alkoxy groups,
one C_1–C_6 alkylcarbonyloxy group optionally substituted with one to three halogen atoms,
one C_2–C_6 alkenylcarbonyloxy group optionally substituted with one to three halogen atoms,
one phenylcarbonyloxy group optionally substituted with one to three halogen atoms, one to three C_1–C_4 alkyl groups or one to three C_1–C_4 alkoxy groups
one C_1–C_6 alkoxycarbonyl group optionally substituted with one to three halogen atoms or one to three C_1–C_4 alkoxy groups, or
one benzylcarbonyl group optionally substituted on the phenyl ring with one to three halogen atoms, one to three C_1–C_4 alkyl groups or one to three C_1–C_4 alkoxy groups,
C_2–C_6 alkenyl optionally substituted with one to three halogen atoms or one phenyl group,
C_3–C_6 alkynyl optionally substituted with one to three halogen atoms or one phenyl group,
phenyl optionally substituted with one or more halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, phenoxy, C_1–C_4 alkylthio, tri(C_1–C_4 alkyl)silyl, C_1–C_4 alkylsulfinyl, C_1–C_4 alkylsulfonyl, CN, NO_2 or CF_3 groups,
phenoxy optionally substituted with one or more halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkylthio, tri (C_1–C_4 alkyl) silyl, C_1–C_4 alkylsulfinyl, C_1–C_4 alkylsulfonyl, CN, NO_2 or CF_3 groups,
1- or 2-naphthyl,
C_1–C_6 alkoxy optionally substituted with halogen, or C_2–C_6 alkenyloxy optionally substituted with halogen:
R_{17} is hydrogen or C_1–C_4 alkyl;
R_{18} is C_1–C_6 alkyl, C_1–C_6 haloalkyl, C_1–C_6 alkoxy, C_1–C_6 haloalkoxy,
phenyl optionally substituted with halogen, CN, NO_2, C_1–C_4 alkyl, C_1–C_4 alkoxy or CF_3.

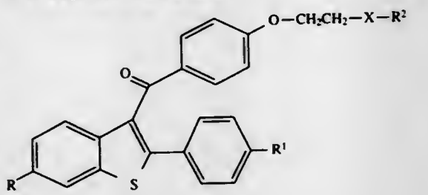
5,599,833

SULFONATE AND CARBAMATE DERIVATIVES OF 3-AROYLBENZO[B]THIOPHENES

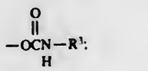
Larry J. Black; Henry U. Bryant, both of Indianapolis, and George J. Cullinan, Trafalgar, all of, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 392,445, Feb. 22, 1995, which is a continuation of Ser. No. 35,121, Mar. 19, 1993, Pat. No. 5,482,949. This application Jan. 17, 1996, Ser. No. 588,670
Int. Cl.[6] A61K *31/40*; C07D *405/10*
U.S. Cl. 514—422 **10 Claims**

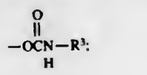
1. A compound of the formula



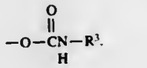
where
X is a bond or $—CH_2—$;
R^2 is a heterocyclic ring selected from pyrrolidino,
R is OH, $—OSO_2—(CH_2)_n—CH_3$ or



R^1 is hydrogen, OH, fluoro, chloro, $—OSO_2—(CH_2)_n—CH_3$ or



each R^3 is independently C_1–C_6 alkyl, C_3–C_6 cycloalkyl, unsubstituted or substituted phenyl where the substituent is fluoro, chloro, C_1–C_3 alkyl or C_1–C_3 alkoxy;
each n is independently 3, 4 or 5; and pharmaceutically acceptable salts and solvates thereof; provided that at least one of R and R^1 is



5,599,834

Patent Not Issued For This Number

5,599,835

USE OF DL-LIPOIC ACID AS A MEDICAL FOOD IN THE TREATMENT OF DIABETES MELLITUS

Frederick B. Fischer, 6685 Phillips Mill Rd., Box 6, Solebury, Pa. 18963

Filed Nov. 23, 1994, Ser. No. 344,131
Int. Cl.[6] A01N *43/26*
U.S. Cl. 514—440 **1 Claim**

1. A method of treating a patient suffering from a chronic syndrome of impaired carbohydrate, protein and fat metabolism characteristic of diabetes mellitus comprising administering to a patient a therapeutically effective amount of a medical food comprising lipoic acid and thiamine.

5,599,836

PHARMACEUTICAL PRODUCTS COMPRISING A PARASYMPATHOMIMETIC DRUG HAVING THERAPEUTIC PROPERTIES IN THE PATHOLOGY OF HUMAN SENSIBILITY AND THE MOTOR SYSTEM IN GENERAL AND METHOD OF USE

Maurizio Santini, Via Vanvitelli, 19, 20129, Milano, Italy

Division of Ser. No. 945,665, Sep. 16, 1992, Pat. No. 5,352,698. This application Sep. 16, 1994, Ser. No. 307,377
Claims priority, application Italy, Sep. 17, 1991, MI91A2444
Int. Cl.[6] A61K *31/27;31/22*
U.S. Cl. 514—478 **4 Claims**

1. A method of treatment of a human subject effected by voluntary motor inability, muscle spasticity in hemiplegia, multiple sclerosis, paraplegia, Strumpell-Lorraine disease, amyotrophic lateral sclerosis, miasthenia gravis, Eaton-Lambert syndrome, muscular dystrophy, Duchenne disease and Down syndrome, which consists of administering to said human subject supra cutem a composition containing 0.3–9 mgs. of carbachol per dose or i.m. a composition containing 0.25–0.75 mgs of carbachol per dose.

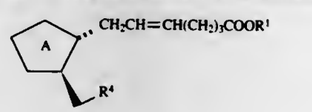
5,599,837

TREATMENT FOR HYPERTENSION OR GLAUCOMA IN EYES

Morio Kishi, Kyoto; Kimio Takahashi, Nishinomiya; Kenji Kawada, Toyonaka, and Yasumasa Goh, Sanda, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

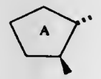
Continuation of Ser. No. 44,084, Apr. 6, 1993, abandoned, which is a continuation of Ser. No. 778,983, Nov. 6, 1991, abandoned. This application Feb. 28, 1995, Ser. No. 395,642
Claims priority, application Japan, Mar. 8, 1990, 57476/1990
Int. Cl.[6] C07C *405/00*; A61K *31/557*
U.S. Cl. 514—530 **10 Claims**

1. A 15-deoxyprostaglandin derivative of the formula (V):

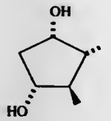


(V)

in which



is



R^1 is hydrogen or lower alkyl;
R^4 is C_5–C_{11} straight-chain alkenyl;
or pharmaceutically acceptable salts thereof.

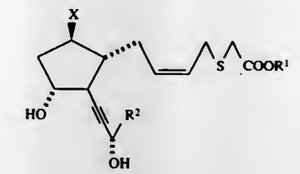
5,599,838

PROSTAGLANDIN DERIVATIVES

Fumie Sato, 3-1-219, Kugenuma Higashi, Fujisawa-shi, Japan; Takehiro Amano, Tokyo; Kazuya Kameo, Tokyo; Tohru Tanami, Tokyo; Masaru Mutoh, Tokyo; Naoya Ono, Tokyo, and Jun Goto, Tokyo, all of Japan, assignors to Taisho Pharmaceutical Co., Ltd., and Fumie Sato, both of Japan

Filed Feb. 23, 1996, Ser. No. 606,440
Int. Cl.[6] A61K *31/21*
U.S. Cl. 514—530 **5 Claims**

1. A prostaglandin derivative represented by the formula:



wherein X is halogen atom, R^1 is a hydrogen atom or an alkyl group having 1 to 6 carbon atoms, and R^2 is a cycloalkyl group having 3 to 10 carbon atoms, a cycloalkylmethyl group having 4 to 10 carbon atoms or a cycloalkylethyl group having 5 to 12 carbon atoms, or a salt thereof.

5. A method for lowering intraocular pressure in patients comprising administering an effective amount of the prostaglandin derivative of claim 1 or a salt thereof to eyes of patients.

5,599,839

ANTIVIRAL COMPOSITION

Michael R. Boyd, Ijamsville, Md.; Paul A. Cox, Provo, Utah; Gordon M. Cragg, Bethesda, Md.; Peter M. Blumberg, Frederick, Md.; Nancy A. Sharkey, Rockville, Md.; Junichi Ishitoya, Bethesda, Md.; James B. McMahon, Frederick, Md.; John A. Beutler, Braddock Heights, Md.; Owen S. Weislow, Reston, Va.; John H. Cardellina, II, Walkersville, Md., and Krik R. Gustafson, Wheaton, Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C., and Brigham Young University, Provo, Utah

Continuation of Ser. No. 530,562, May 30, 1990. This application Apr. 17, 1995, Ser. No. 424,558
Int. Cl.[6] A61K *31/22*
U.S. Cl. 514—546 **6 Claims**

1. A method of treating a viral infection sensitive to treatment with prostratin in a patient comprising administering to said patient prostratin in an amount sufficient to effect said treatment.

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5,599,840

PHYSIOLOGICALLY ACTIVE AND NUTRITIONAL COMPOSITION

Shlomo Yehuda, Tel Aviv, Israel, assignor to Bar Ilan University, Ramat Gan, Israel

Continuation of Ser. No. 197,241, Feb. 16, 1994, abandoned, which is a division of Ser. No. 820,562, Jan. 14, 1992, Pat. No. 5,288,755, which is a division of Ser. No. 376,289, Jul. 6, 1989, Pat. No. 5,120,763, which is a continuation-in-part of Ser. No. 120,830, Nov. 16, 1987, Pat. No. 4,851,431, and a continuation-in-part of Ser. No. 263,548, Nov. 27, 1988, abandoned, which is a continuation-in-part of Ser. No. 359,562, Jun. 1, 1989, abandoned. This application Nov. 13, 1995, Ser. No. 557,677

Claims priority, application Israel, Nov. 26, 1986, 80786; Oct. 25, 1987, 84273

Int. Cl.[6] A61K *31/20;31/22*

U.S. Cl. 514—549 8 Claims

1. A nutritional composition, adapted for consumption by mammals, which is characterized by he presence of (1) an orally ingestible diluent of carrier, except an oily carrier or diluent which comprises at least one member of the group consisting of C_{8-18} saturated fatty acids, oleic acid and derivatives of these acids, (2) a composition of matter which consists of (a) from about 13.0 to about 27.5% by weight of at least one compound selected from the group consisting of linolenic acid and salts, esters, and amides thereof, calculated as the free acid, said salts, esters, and amides of linoleic acid being both physiologically hydrolyzable and pharmacologically acceptable, and (b) about 87.0 to about 72.5% by weight of at least one compound selected from the group consisting of linoleic acid and salts, esters, and amides thereof, calculated as the free acid, said salts, esters, and amides of linolenic acid being both physiologically hydrolyzable and pharmacologically acceptable.

5,599,841

USE OF 3-GUANIDINOPROPIONIC ACID IN THE TREATMENT AND PREVENTION OF METABOLIC DISORDERS

Martin D. Meglasson, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 935,621, Aug. 26, 1992, abandoned, which is a continuation-in-part of Ser. No. 486,615, Feb. 28, 1990, abandoned. This application Aug. 2, 1993, Ser. No. 101,350

Int. Cl.[6] A61K *31/19;31/195;31/155*

U.S. Cl. 514—557 4 Claims

1. A method of treating or preventing impaired glucose tolerance in a patient susceptible to or experiencing impaired glucose tolerance comprising the systemic administration to said patient of an amount effective to treat or prevent impaired glucose tolerance of 3-guanidinopropionic acid or a pharmaceutically acceptable salt thereof.

5,599,842

Patent Not Issued For This Number

5,599,843

METHOD OF TREATING WRINKLES USING 2-PHENYLLACTIC ACID

Ruey J. Yu, Ambler, and Eugene J. Van Scott, Abington, both of Pa., assignors to Tristrata Technology, Inc., Wilmington, Del.

Continuation of Ser. No. 179,190, Jan. 10, 1994, Pat. No. 5,470,880, which is a continuation of Ser. No. 89,101, Jul. 12, 1993, Pat. No. 5,389,677, which is a division of Ser. No. 8,223, Jan. 22, 1993, abandoned, which is a continuation of Ser. No. 812,858, Dec. 23, 1991, abandoned, which is a continuation of Ser. No. 469,738, Jan. 19, 1990, abandoned, which is a continuation of Ser. No. 945,680, Dec. 23, 1986, abandoned. This application Jun. 6, 1995, Ser. No. 471,529

Int. Cl.[6] A61K *7/48;31/19*

U.S. Cl. 514—570 10 Claims

1. Method of visibly reducing a human skin wrinkle comprising topically applying to said wrinkle a composition comprising phenyl, 2-methyl 2-hydroxyacetic acid or a topically effective salt thereof, in an amount and for a period of time sufficient to visibly reduce said wrinkle, wherein said wrinkle is a facial wrinkle.

5,599,844

PREVENTION AND TREATMENT OF PATHOLOGIES ASSOCIATED WITH ABNORMALLY PROLIFERATIVE SMOOTH MUSCLE CELLS

David J. Grainger; James C. Metcalfe, and Peter L. Weissberg, all of Cambridge, United Kingdom, assignors to NeoRx Corporation, Seattle, Wash.

Continuation of Ser. No. 300,357, Sep. 2, 1994, Pat. No. 5,472,985, which is a continuation of Ser. No. 61,714, May 13, 1993, abandoned. This application Sep. 15, 1995, Ser. No. 528,810

Int. Cl.[6] A61K *31/135*

U.S. Cl. 514—651 18 Claims

1. A therapeutic method to treat procedural vascular trauma, comprising orally administering to a mammal subjected to the vascular trauma an amount of an agent effective upon oral administration to elevate the level of TGF-beta so as to inhibit the pathological proliferation of vascular smooth muscle cells.

5,599,845

Patent Not Issued For This Number

5,599,846

PHENYLEPHRINE TANNATE COMPOSITIONS

Vilas M. Chopdekar, Edison; James R. Schleck, Somerset; Vernon A. Brown, Maplewood, and Cheng Guo, Harrison, all of N.J., assignors to Jame Fine Chemicals, Inc., Bound Brook, N.J.

Filed Jun. 28, 1996, Ser. No. 671,160

Int. Cl.[6] A61K *31/135*

U.S. Cl. 514—653 6 Claims

1. A composition comprising:

(a) phenylephrine tannate having a minimum purity level of at least about 95 wt %, based on the weight of the composition; and

(b) water.

5,599,847

ANTIFUNGAL COMPOUNDS

David J. Robins, Glasgow, and Dale R. Walters, Prestwick, both of Scotland, assignors to British Technology Group Limited, London, England

PCT No. PCT/GB92/00964, § 371 Date Nov. 19, 1993, § 102(e) Date Nov. 19, 1993, PCT Pub. No. WO92/21236, PCT Pub. Date Dec. 10, 1992

PCT Filed May 28, 1992, Ser. No. 142,287

Claims priority, application United Kingdom, May 31, 1991, 9111794

Int. Cl.[6] A01N *33/04*

U.S. Cl. 514—671 7 Claims

1. A method of fungicidal treatment of plant material, which comprises applying to said material or to soil in which plants are growing or will be grown a fungicidal effective amount of a compound having the formula (I):

$$(R_1R_2N)CH_2—CH=CH—CH_2(NR_3R_4) \quad (I)$$

or a salt thereof wherein each of R_1, R_2, R_3 and R_4, which may be the same or different, represents an alkyl group having from 1 to 6 carbon atoms or R_1 and R_3 represent alkyl groups having from 1 to 3 carbon atoms or amidino groups and R_2 and R_4 represent hydrogen atoms.

5,599,848

PREPARATION, INTERMEDIATES FOR THE PREPARATION AND THE USE OF A MIXTURE OF DODECDIENOL ISOMERS

Ulrich Klein, Limburgerhof; Ulrich Neumann, Schifferstadt; Wolfgang Mackenroth, Bad Duerkheim; Guenter Renz, Mannheim; Wolfgang Krieg, Weingarten; Christiane Mackenroth, Bad Duerkheim; Ernst Buschmann, Ludwigshafen; Jacobus J. DeKramer, Limburgerhof, and Roland Milli, Ilvesheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Continuation of Ser. No. 211,451, Mar. 31, 1994, abandoned. This application Aug. 7, 1995, Ser. No. 512,259

Claims priority, application Germany, Oct. 24, 1991, 41 35 064.2

Int. Cl.[6] A01N *31/02*

U.S. Cl. 514—739 3 Claims

1. A method for controlling the codling moth *Cydia pomonella* by interfering with mating, which comprises applying a composition containing a mixture of proportions of isomers 8E,10E-dodecadienol (Ia), 8E,10Z-dodecadienol (Ib), 8Z,10E-dodecadienol (Ic), 8Z,10Z-dodecadienol (Id) in an amount sufficient to interfere with the finding of the females by the males of the species

wherein the proportion of isomers (Ib), (Ic) and (Id) in said mixture is at least 40%.

5,599,849

PROCESS FOR PRODUCING LIQUID AND, OPTIONALLY, GASEOUS PRODUCTS FROM GASEOUS REACTANTS

Berend Jager, Orange Free State; André P. Steynberg, Vanderbijlpark, both of South Africa; Juan R. Inga, Pittsburgh, Pa.; Renus C. Kelfkens, Secunda, South Africa; Michael A. Smith, and Francois E. J. Malherbe, both of Orange Free State, South Africa, assignors to Sasol Chemical Industries (Proprietary) Limited, Transvaal, South Africa

Filed Jan. 25, 1994, Ser. No. 187,189

Claims priority, application South Africa, Jan. 27, 1993, 93/0588

Int. Cl.[6] C07C *27/06*

U.S. Cl. 518—700 6 Claims

1. A process for producing liquid and, optionally, gaseous hydrocarbon products from gaseous reactants, which process comprises feeding synthesis gas comprising mainly carbon monoxide and hydrogen as reactants, into a slurry bed of Fischer-Tropsch catalyst particles suspended in a suspension liquid;

as the carbon monoxide and hydrogen pass upwardly through the slurry bed, allowing them to react at a temperature of at least 160° C. and at a pressure of between 18 and 50 bar, to form liquid and, optionally, gaseous hydrocarbon products;

separating liquid hydrocarbon products from the catalyst particles by passing, in a filtration zone within the slurry bed, liquid hydrocarbon products through a filtering medium in a first direction, so that a cake of solid catalyst particles forms on the filtering medium, while maintaining through the filtration zone a superficial gas velocity of between 5 and 70 cm/s, based on the filtration zone open cross-sectional area and while applying a pressure differential of up to 8 bar across the filtering medium and the cake;

interrupting the passage of liquid hydrocarbon product through the filtering medium;

backflushing the filtering medium by rapidly passing a flushing fluid through the filtering medium in a second direction, opposite to the first direction, for up to 30 seconds at a flushing fluid flow rate of at least 6000 l/h/m^2 of filtering medium while maintaining a pressure differential of up to 10 bar across the filtering medium and any filter cake build-up thereon, thereby to dislodge the cake from the filtering medium;

subjecting the filtering medium to a waiting period of between 15 and 60 minutes during which no filtering or backflushing therethrough takes place, to enhance removal of the filter cake as a result of turbulence within the slurry bed; and

again passing liquid hydrocarbon product through the filtering medium in the first direction so that a cake of solid catalyst particles again forms on the filtering medium.

5,599,850

PRE-EXPANDED ARTICLES OF A POLYOLEFIN RESIN HAVING MICROCELL AND PROCESS FOR PREPARING THEREOF

Young H. Park; Jeong D. Suh; Young D. Lee, all of Taejon, Rep. of Korea; Tae H. Kwack, Gread Neck, N.Y., and Won J. Choi, Taejon, Rep. of Korea, assignors to Hanwha Chemical Corporation, Seoul, Rep. of Korea

Filed Aug. 3, 1995, Ser. No. 510,844

Claims priority, application Rep. of Korea, Aug. 6, 1994, 1994-19437

Int. Cl.[6] C08J *9/18*

U.S. Cl. 521—60 12 Claims

1. A process for preparing pre-expanded articles of a polyolefin resin, wherein the pre-expanded articles have a microcell structure, which process comprises:

incorporating a blowing agent into the polyolefin resin in an amount of 45 to 90 parts by volume with respect to 100 parts by volume of the resin, and

carrying out a pre-expansion of the polyolefin resin at a temperature that is in the range of from Tm −35° C. to Tm −20° C., but below the softening point of said polyolefin resin;

wherein Tm is defined as the temperature at which melting of the polyolefin resin stops.

5,599,851
SUPERFINE MICROELEMENTAL BIOCHEMICAL MIXTURE AND FOAMED PLASTIC PRODUCTS THEREOF
Rui Jin; Jun Liu, and Qibiao Yang, all of Gongbei, China, assignors to Wonder & Bioenergy Hi-Tech International Inc., China
Filed Sep. 1, 1995, Ser. No. 522,620
Claims priority, application China, Dec. 26, 1994, 94 1 019015.3
Int. Cl.[6] C08G *18/24;18/22*
U.S. Cl. 521—107 **4 Claims**

1. A foamed polyurethane plastic product containing 5–30% (by weight) the superfine microelemental mixture whose proportions are (by weight): titanium oxide 70–80%, zirconia 10–20%, silica 5–10%, yttrium oxide 0.2–2%, cerium oxide 0.1–2%, tin dioxide 1–5%, zinc oxide 0.01–0.2%, silver phosphate 0.01–0.2%, and other elements in suitable amount, with the granularity of the mixture ≦0.5 μm, and anti-aging agent and dispersing agent in suitable amount.

5,599,852
INJECTABLE MICRODISPERSIONS FOR SOFT TISSUE REPAIR AND AUGMENTATION
Angelo G. Scopelianos, Whitehouse Station; Steven C. Arnold, Sparta; Rao S. Bezwada, Whitehouse Station; Mark B. Roller, North Brunswick, and Shawn T. Huxel, Lakehurst, all of N.J., assignors to Ethicon, Inc., Somerville, N.J.
Filed Oct. 18, 1994, Ser. No. 324,543
Int. Cl.[6] C08K *5/15;* **C08L** *3/00;* **A61F** *2/00;* **A61M** *5/00*
U.S. Cl. 523—105 **25 Claims**

1. A fluid, injectable, bioabsorbable microdispersion suitable for use as a soft tissue repair or augmentation material in animals comprising
a fluid carrier that is a liquid polymer selected from the group consisting of liquid polymers of a plurality of at least two different first lactone repeating units and liquid polymers of a plurality of first lactone and second lactone repeating units; wherein the first lactone repeating units are selected from the group consisting of ε-caprolactone repeating units, trimethylene carbonate repeating units, ether lactone repeating units and combinations thereof and the second lactone repeating units are selected from the group consisting of glycolide repeating units, lactide repeating units, p-dioxanone repeating units and combinations thereof; and
a particulate material that is selected from the group consisting of solid homopolymers of poly(ε-caprolactone), solid homopolymers of poly(p-dioxanone), solid homopolymers of poly(trimethylene carbonate), solid copolymers of a plurality of ε-caprolactone repeating units and third lactone repeating units, solid copolymers of a plurality of trimethylene carbonate repeating units and second lactone repeating units; wherein the third lactone repeating units are selected from the group consisting of glycolide repeating units, lactide repeating units, trimethylene carbonate repeating units, p-dioxanone repeating units, 1,4-dioxepan-2-one repeating units, 1-5-dioxepan-2-one repeating units and combinations thereof.

5,599,853
ERASABLE INKS
Rachel M. Loftin, Halifax, Mass., assignor to The Gillette Company, Boston, Mass.
Continuation of Ser. No. 12,967, Jan. 29, 1993, Pat. No. 5,362,167. This application Oct. 7, 1994, Ser. No. 319,927
Int. Cl.[6] C09D *11/16;* **C08L** *9/08*
U.S. Cl. 523—160 **21 Claims**

1. A writing instrument comprising an outer body; a writing tip at one end of said body; a reservoir included within said body and in fluid communication with said writing tip; and within said reservoir an aqueous-based, non-shear thinning ink that is erasable from and capable of forming a read-through tracing on 60 lb. offset printing paper, said ink comprising water, a colorant, and a styrene-butadiene copolymer having a styrene content of less than about 35%.

5,599,854
PREPARATION OF BUTADIENE-BASED IMPACT MODIFIERS
Edward J. Troy, and Anibal Rosado, both of Bristol, Pa., assignors to Rohm and Haas Company, Phila, Pa.
Division of Ser. No. 349,645, Dec. 5, 1994, Pat. No. 5,534,594. This application Nov. 16, 1995, Ser. No. 559,350
Int. Cl.[6] C08F *255/10;255/08;257/02*
U.S. Cl. 523—201 **7 Claims**

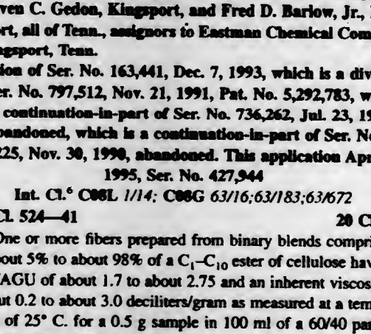
1. A polymer product which is a core/shell impact modifier produced by a process which comprises:
a. polymerizing in emulsion, in a pressure vessel, a first mixture of monomers, comprising at least 40% butadiene, and further comprising at least one polyunsaturated monomer for controlling the crosslinking of the polybutadiene, in the presence of an emulsifier and a free-radical initiator,
b. adding an agglomerating agent after 60%–90% conversion of the first mixture of monomers to polymer having a particle size of 70–110 nm,
c. continuing the polymerization until 60%–90% conversion of the monomers to polymer and a particle size of 120–240 nm. have been achieved;
d. continuing the polymerization of the first mixture of monomers while adding a second mixture of monomers which mixture comprises at least one of a C_1–C_4 alkyl methacrylate, and
e. continuing the polymerization of the second mixture of monomers to at least 80% conversion to polymer.

5,599,855
SELF-EMULSIFYING EPOXY CURING AGENT
Frederick H. Walker, Doylestown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.
Division of Ser. No. 345,164, Nov. 28, 1994, Pat. No. 5,489,630. This application Jun. 5, 1995, Ser. No. 463,477
Int. Cl.[6] C08K *3/20;* **C08L** *63/02;63/04*
U.S. Cl. 523—404 **22 Claims**

1. A coating composition comprising in an aqueous medium a polyepoxide resin and an epoxy hardener composition in an equivalents ratio of epoxy groups to amine hydrogens of about 0.5:1 to 2:1, the epoxy hardener composition comprising the reaction product of (A) a poly(alkylene oxide) mono- or diamine having a number average molecular weight (Mn) of 500 to 3000 and (B) a polyepoxide in a ratio of epoxide groups to active amine hydrogen atoms of about 1.1:1 to 6:1 to yield an intermediate (C) which is reacted with (D) a polyamine in a ratio of active amine hydrogen atoms to epoxide groups of >25:1, the amount of the poly(alkylene oxide) monoamine or diamine used to produce intermediate (C) being sufficient to provide a stable solution or emulsion of the epoxy hardener composition in an aqueous medium.

5,599,856
EPOXY RESIN SYSTEMS CONTAINING MODIFIERS
Hugh C. Gardner, Somerville, N.J., assignor to Amoco Corporation, Chicago, Ill.
Filed Mar. 1, 1984, Ser. No. 583,360
Int. Cl.[6] C08K *5/36*
U.S. Cl. 523—453 **16 Claims**

1. A composition comprising:
(a) a cycloaliphatic epoxide containing two or more epoxide groups, and
(b) a modifier selected from the group consisting of compounds of the formula



5,599,857
POLYMER CONCRETE COMPOSITION CONTAINING HIGH CEMENT CONTENT
William C. Allen, Pasadena, Calif., assignor to Union Oil Company of California, El Segundo, Calif.
Filed Jan. 3, 1994, Ser. No. 176,549
Int. Cl.[6] C08K *3/00*
U.S. Cl. 524—3 **49 Claims**

1. A composition comprising a waterless cement, styrene, and at least one poly-olefinically unsaturated co-monomer for reaction with said styrene, said composition comprises more of said co-monomer by weight than said styrene, based upon the total weight of all co-monomer and styrene present in said composition, and wherein said composition contains less than 1.0 weight percent of acrylamide and acrylonitrile.

5,599,858
ALIPHATIC-AROMATIC COPOLYESTERS AND CELLULOSE ESTER/POLYMER BLENDS
Charles M. Buchanan, Bluff City; Robert M. Gardner, Gray; Matthew D. Wood, Kingsport; Alan W. White, Kingsport; Steven C. Gedon, Kingsport, and Fred D. Barlow, Jr., Kingsport, all of Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.
Division of Ser. No. 163,441, Dec. 7, 1993, which is a division of Ser. No. 797,512, Nov. 21, 1991, Pat. No. 5,292,783, which is a continuation-in-part of Ser. No. 736,262, Jul. 23, 1991, abandoned, which is a continuation-in-part of Ser. No. 620,225, Nov. 30, 1990, abandoned. This application Apr. 26, 1995, Ser. No. 427,944
Int. Cl.[6] C08L *1/14;* **C08G** *63/16;63/183;63/672*
U.S. Cl. 524—41 **20 Claims**

1. One or more fibers prepared from binary blends comprising:
(A) about 5% to about 98% of a C_1–C_{10} ester of cellulose having a DS/AGU of about 1.7 to about 2.75 and an inherent viscosity of about 0.2 to about 3.0 deciliters/gram as measured at a temperature of 25° C. for a 0.5 g sample in 100 ml of a 60/40 parts by weight solution of phenol/tetrachloroethane, and
(B) about 2% to about 95% of an aliphatic polyester having an inherent viscosity of about 0.2 to about 2.0 deciliters/gram as measured at a temperature of 25° C. for a 0.5 g sample in 100 ml of a 60/40 parts by weight solution of phenol/tetrachloroethane, said percentages being based on the weight of component (A) plus component (B).

5,599,859
INK, INK-JET RECORDING PROCESS AND APPARATUS MAKING USE OF THE SAME
Masahiko Tonogaki; Yuko Suga, both of Tokyo; Akio Kashiwazaki, and Aya Takaide, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 212,792, Mar. 15, 1994, Pat. No. 5,492,952. This application Aug. 25, 1995, Ser. No. 519,358
Claims priority, application Japan, Mar. 22, 1993, 5-62111; Apr. 9, 1993, 5-83511
Int. Cl.[6] C09D *11/02*
U.S. Cl. 524—95 **21 Claims**

1. An ink suitable for an ink-jet system, which comprises a pigment, an aqueous medium, a water-soluble resin having an oxazolyl group or a fine particle having oxazolyl groups adsorbed on its outer surface, and a compound having at least one carbonyl group and has a viscosity of not more than 15 cP at 25° C.

5,599,860
IMPACT MODIFIED POLYACETAL COMPOSITIONS
Nazir A. Memon, 1001 Meridian Way, Yardley, Pa. 19067; Richard H. Weese, 123 Glenwood Dr., Washington Crossing, Pa. 18977, and Ursula E. Ziegler, Henry-Moisand-Strabe 40, D-6500 Mainz 43, Germany
Continuation-in-part of Ser. No. 196,743, Feb. 15, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 474,030
Int. Cl.[6] C08K *5/526;5/36;5/13*
U.S. Cl. 524—151 **16 Claims**

1. An improved polyacetal composition comprising more than 50 weight % of the total mixture as polyoxymethylene (component A) and 10–40 weight %, relative to the total mixture, of:
(a) a stabilized MBS core shell graft copolymer comprising a rubber-elastic core of polybutadiene or poly(butadiene/styrene), a hard graft shell, and a stabilizer formulation composed of one or more hindered phenols, an organic phosphite, an organic sulfide and a pH buffer system in the range of about 7 to about 11 (component B), or
(b) a combination of (i) an organic sulfide, (ii) a MBS core shell graft copolymer comprising a rubber-elastic core of polybutadiene or poly(butadiene/styrene) and a hard graft shell, and containing one or more hindered phenols and an organic phosphite, and, optionally, (iii) a pH buffer system in the range of about 7 to about 11, the organic sulfide, the MBS core-shell polymer of (b)(ii), and the pH buffer system being added singularly, or
(c) a combination of (i) an organic sulfide, (ii) a MBS core shell graft copolymer comprising a rubber-elastic core of polybutadiene or poly(butadiene/styrene), and a hard graft shell, and containing one or more hindered phenols, and (iii) at least one of an organic phosphite or a pH buffer system, the organic sulfide, the MBS core-shell polymer of (c)(ii), and the at least one of an organic phosphite or a pH buffer system being added singularly;
wherein the organic sulfide contains one or more of the group $—CH_2—S—R$, wherein R is an alkyl group of from 1 to 20 carbon atoms;
and wherein at least one hard graft shell is a polymer of methyl methacrylate or a copolymer of methyl methacrylate and styrene.

5,599,861
MOULDED, NON-CAKING MASTICATING AGENTS
Hartmuth Buding, Titz, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Jun. 9, 1995, Ser. No. 489,049
Claims priority, application Germany, Jun. 17, 1994, 44 21 265.8
Int. Cl.[6] C08K *5/375;5/101;* **C08L** *7/00;* **C09K** *3/00*
U.S. Cl. 524—225 **2 Claims**

1. Moulded, non-dusting, non-caking, free-flowing masticating agents consisting essentially of 90 to 10 weight % of 2,2'-

dibenzamidodiphenyl disulphide (DBD) and 10 to 90 weight % of a mixture of saturated fatty acids having an iodine number <25, a solidification point in the range from 50° to 68° C. and an acid number of 179 to 215, and optionally 0.01 to 5 weight % of activators to be deducted from the quantity of DBD, and/or optionally 10 to 70 weight % of inert fillers to be deducted from the quantity of the mixture of saturated fatty acids, with the proviso that the fatty acid content must not fall below 10 weight % in the mixture.

5,599,862

GRAFT POLYMERS WITH IMPROVED SURFACE GLOSS

Burkhard Köhler, Mündelheimer Str.94, 47829 Krefeld; Werner Tischer, Am Norfbach 9, 41542 Dormagen, and Karl-Erwin Piejko, Unterscheider Weg 7a, 51467 Bergisch Gladbach, all of Germany

Filed May 30, 1995, Ser. No. 449,480

Claims priority, application Germany, Jun. 10, 1994, 44 20 307.1

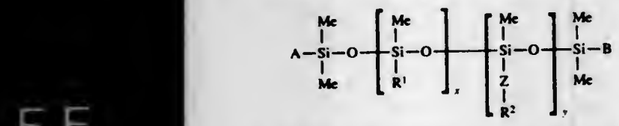
Int. Cl.[6] C08K *5/24;* **C08L** *51/00;* **C08G** *63/48;* **C08F** *283/00*

U.S. Cl. 524—262 **4 Claims**

1. A mixture consisting essentially of:

A) ABS graft polymer; and

B) 0.05 to 2% by weight, based on weight of mixture, of a polyether- or polyester-grafted silicone molecules of the formula



R^1 is an alkyl group containing 1 to 30 carbon atoms, up to 20% by weight of these alkyl groups being replaceable by phenyl and/or phenyl-alkenyl groups which may be substituted by one or more methyl groups, the alkenyl groups containing 1 to 3 carbon atoms,

A is $—CH_3$ or $R^2—Z—$,

B is $—CH_3$ or $R^2—Z—$,

R^2 is a polyether unit or a polyester unit with an average molecular weight of 200 to 3000,

Z is a difunctional group which joins the silicon atom to the group R^2,

X is a number of 3 to 250,

Y is a number of 0 to 50,

the average molecule containing at least one group $R^2—Z—$ and the ratio of the number of groups $R^2—Z—$ to the number x being 1:2 to 1.40.

5,599,863

GAMMA RADIATION STERILIZABLE ACRYLIC POLYMER

Daniel Zimmerman, Stratford, Conn., assignor to Cyro Industries, Mt. Arlington, N.J.

Filed Jun. 17, 1994, Ser. No. 261,617

Int. Cl.[6] C08K *5/10;5/06;5/05*

U.S. Cl. 524—308 **48 Claims**

1. An acrylic polymer composition comprising a melt blend of a methyl methacrylate polymer comprising units derived predominantly from methyl methacrylate and, in an amount sufficient to inhibit yellowing of the methyl methacrylate polymer upon exposure to gamma radiation, at least one polyalkylene glycol additive selected from the group consisting of

(i) a polyethylene glycol having a number average molecular weight of at least about 200,

(ii) a polypropylene glycol having a number average molecular weight of at least about 200, and

(iii) a derivative of (i) or (ii) selected from the group consisting of mono- and di-ether adducts with monoalcohols, and mono- and di-ester adducts with monoacids.

5,599,864

POLYARYLENE SULFIDE RESIN COMPOSITION AND OPTICAL PICK-UP PARTS FORMED FROM THE SAME

Shogo Ogawa; Hajime Hata, both of Kagawa; Ikuo Kasuga, Nagano; Hiromasa Marumo, Nagano, and Masamichi Hayakawa, Nagano, all of Japan, assignors to Kabushiki Kaisha Sankyo Seiki Seisakusho, Nagano, and Shikoku Chemicals Corporation, Kagawa, both of Japan

Filed Oct. 3, 1994, Ser. No. 316,470

Claims priority, application Japan, Oct. 1, 1993, 5-269555; Nov. 17, 1993, 5-312605

Int. Cl.[6] C08K *3/38;5/01*

U.S. Cl. 524—405 **14 Claims**

1. A polyarylene sulfide resin composition which comprises, as main components, from 20 to 40% by weight of a polyarylene sulfide resin, from 10 to 55% by weight of a fibrous filler and form 5 to 60% by weight of a solid particulate filler having a specific gravity lower than 3.5 wherein said resin composition has a specific gravity of 1.7 or more, and wherein said solid particulate filler is selected from the group consisting of aluminum borate and blast furnace slag.

5,599,865

MOLDED PRODUCT OF A POLYPROPYLENE RESIN

Junji Koizumi, and Junji Takeuchi, both of Nakashima-gun, Japan, assignors to Toyoda Goesi Co., Ltd., Nishikasugai-gun, Japan

Continuation-in-part of Ser. No. 204,569, Mar. 2, 1994, abandoned. This application May 8, 1995, Ser. No. 423,680

Claims priority, application Japan, Mar. 2, 1993, 5-066079

Int. Cl.[6] C08C *23/12*

U.S. Cl. 524—413 **11 Claims**

1. A molded product of a polypropylene resin having a coefficient of linear expansion up to 5.0×10^{-5} cm/cm/°C., which molded product is formed of 65 to 95% by weight of a polymer composition and 5 to 35% by weight of an inorganic filler,

wherein said polymer composition comprises 45 to 70 parts by weight of a polypropylene resin and 30 to 55 parts by weight of an amorphous ethylene-α-olefin copolymer,

wherein said polypropylene resin has a melt flow rate of 10 to 60 g/10 minutes and contains 0 to 8% by weight of ethylene,

wherein said amorphous ethylene-α-olefin copolymer comprises 30 to 60% by weight of a high molecular ethylene-α -olefin copolymer having a weight-average molecular weight of 380,000 to 1,000,000, and 40 to 70% by weight of a low-molecular ethylene-α-olefin copolymer having a weight-average molecular weight of 150,000 to 330,000, and

wherein the proportion of said filler and that of said amorphous ethylene-α-olefin copolymer has the relation expressed as $D>155-37\ \ln C$,

wherein D is the proportion of said filler, C is the proportion of said amorphous ethylene-α-olefin copolymer, and ln is a natural logarithm, wherein said melt flow rate (X) of the resin and the proportion (Y) of ethylene have the relation expressed as $Y\leq0.08X+3.4$.

5,599,866

METAL-CONTAINING LATEX PAINT

Bert Staadecker, 233 Streetsboro Rd., Hudson, Ohio 44236

Continuation-in-part of Ser. No. 117,438, Sep. 7, 1993, abandoned. This application Apr. 6, 1995, Ser. No. 418,179

Int. Cl.[6] C08K *9/10*

U.S. Cl. 524—440 **11 Claims**

1. A surface coating composition comprising a latex-base paint having dispersed therein sodium nitrite encapsulated metal particles of a Group VIII metal, wherein the ratio of sodium nitrite-:Group VIII metal is at least about 1:36 weight basis, said encapsulated metal rendering said surface coating composition capable of retaining a magnetized object.

5,599,867

COMPOSITION FOR USE IN MANUFACTURING MOLDED CERAMIC BODY, METHOD OF MANUFACTURING MOLDED CERAMIC BODY FROM SUCH COMPOSITION, AND METHOD OF PRODUCING CERAMIC BODY

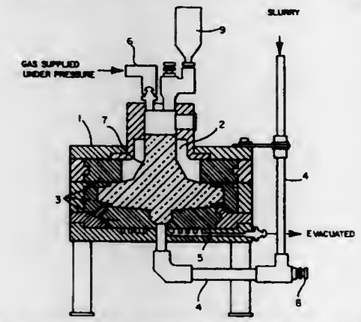
Naoki Ito; Yuji Miki; Atsushi Koizumi; Hiroshi Ichikawa; Kazumi Miyake; Kagehisa Hamazaki; Hitoshi Toyoda, and Yoshikatsu Higuchi, all of Saitama-ken, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 28, 1995, Ser. No. 411,872

Claims priority, application Japan, Mar. 28, 1994, 6-080943; Jun. 8, 1994, 6-126107

Int. Cl.[6] C08J *3/00;* **C08K** *3/34;* **C08L** *75/00;* **C03C** *3/04*

U.S. Cl. 524—443 **14 Claims**



1. A composition for manufacturing a fiber-reinforced molded ceramic body, comprising a ceramic powder composed primarily of silicon nitride, inorganic fibers and an organic binder, said binder comprising an emulsion of aqueous polyurethane, which are added to said ceramic powder.

5,599,868

PROCESS FOR COMPOUNDING FILLER MATERIALS AND POLYMERS AND PRODUCTS THEREFROM

Georg G. A. Bohm, Akron, and William M. Cole, Clinton, both of Ohio, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Apr. 19, 1994, Ser. No. 229,890

Int. Cl.[6] C08K *3/00*

U.S. Cl. 524—495 **21 Claims**

1. A process for compounding filler materials and solid rubber polymers for the preparation of vulcanizable rubber compositions comprising the steps of:

combining at least one solid rubber polymer, having a high molecular weight, and other compounding ingredients with at least one filler treated with a liquid in an amount of from about 10 to 60 percent by weight, based upon the combined weight of the liquid and the filler under conditions sufficient to uniformly distribute the filler to form a pre-blend; and

mixing said pre-blend until the filler is suitably dispersed throughout said rubber polymer, pre-blend with attendant release of said liquid from said preblend.

5,599,869

PIGMENTED PLASTICS MOLDING COMPOSITION AND ITS USE

Klaus Kurz, Hofheim, Germany, assignor to Hoechset AG, Germany

Filed Aug. 30, 1994, Ser. No. 298,390

Claims priority, application Germany, Sep. 1, 1993, 43 29 395.6; Dec. 27, 1993, 43 44 690.6

Int. Cl.[6] C08K *3/00*

U.S. Cl. 524—495 **8 Claims**

1. A process for the preparation of an article with colored laser-written symbols, which comprises the steps of:

providing a plastic molding composition consisting essentially of at least one organic thermoplastic polymer, at least one black pigment selected from the group consisting of bone charcoal, bone black or ivory black, and a coloring agent;

forming said molding composition into a shaped article, and

exposing the shaped article to a laser beam,

wherein said laser beam forms colored symbols on a dark background of the shaped article.

5,599,870

AQUEOUS EMULSION

Masato Nakamae; Naoki Fujiwara, both of Kurashiki; Kazutoshi Terada; Daisuke Miyake, both of Osaka; Ken Yuki, Kurashiki; Toshiaki Sato, and Hitoshi Maruyama, both of Kurashiki, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Mar. 21, 1995, Ser. No. 407,670

Claims priority, application Japan, Jul. 14, 1994, 6-161860

Int. Cl.[6] B01F *17/52;* **C08L** *29/04*

U.S. Cl. 524—503 **20 Claims**

1. An aqueous emulsion comprising a dispersant of a modified polyvinyl alcohol with an ethylene unit content of 2 to 9 mol % and a degree of hydrolysis of at least 95 mol %, a dispersoid of a polymer of an ethylenically unsaturated monomer, and a ratio (η2 rpm/η20 rpm) of Brookfield viscosity at 30° C., 2 rpm (η2 rpm) as against Brookfield viscosity at 30° C., 20 rpm (η20 rpm) being 1 to 1.8 when the latter viscosity (η20 rpm) is adjusted to 5,000 to 10,000 mPa·S.

2. An adhesive comprising an aqueous emulsion according to claim 1.

5,599,871

THERMOPLASTIC RESIN COMPOSITION HAVING GOOD PAINTING AND SURFACE-POLISHING PROPERTIES

Bong-Hyun Park, Kyungsangnam-do, Rep. of Korea, assignor to Hyundai Motor Company, Seoul, Rep. of Korea

Filed Dec. 29, 1994, Ser. No. 366,297

Claims priority, application Rep. of Korea, Dec. 30, 1993, 93-31614

Int. Cl.[6] C08L *77/00*

U.S. Cl. 524—504 **7 Claims**

1. A thermoplastic resin composition having good painting and surface polishing properties, comprising, in proportion to the total composition, 55–90 wt % of a polyamide homopolymer of hexamethylene diamine and equimolar adipic acid, 5–30 wt % of a polyanide copolymer of bis(4-aminocyclohexyl) propane. hexamethylene diamine, isophthalic acid, terephthalic acid and azelaic acid, 3–30 wt % of a thermoplastic elastomer comprising a graft of anhydrous maleic acid-ethylene on a propylene copolymer, 1–5 wt % of a fluoride polymer comprising a copolymer of ethylene and tetrafluoroethylene, and 0.2–2.5 wt % of an amide wax.

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5,599,872

PRESSURE-SENSITIVE ADHESIVE COMPOSITION CONTAINING STYRENE-MALEIC COPOLYMERS

John M. Sulewski, Westfield, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed May 13, 1996, Ser. No. 645,158
Int. Cl.[6] C09J *125/08;133/14;145/00;125/14*
U.S. Cl. 524—522 5 Claims

1. A pressure-sensitive coating composition comprising an organic solvent solution of:

i) an acrylic copolymer containing an acrylic ester and a comonomer having carboxyl or hydroxyl groups; and

ii) 0.1 to 15% by weight, based on the weight of i) of styrene-maleic copolymer selected from the group consisting of styrene-maleic anhydride copolymer, styrene-maleic ester copolymer and styrene-maleic partial ester copolymer.

5,599,873

FLUORINATED POWDER COATINGS FOR GALVANIZED STEEL

Edwin Verwey, Leiden; Ludwig K. Rijkse, Hoofddorp, both of Netherlands, and Michel Gillard, Corroy-le-Chateau, Belgium, assignors to Fina Research, S.A., Feluy, Belgium

Filed Dec. 14, 1994, Ser. No. 355,782
Claims priority, application Belgium, Dec. 23, 1993, 93870242
Int. Cl.[6] C08L *27/12;33/10*
U.S. Cl. 524—545 7 Claims

1. Fluorinated powder coating product for galvanized steel, consisting essentially of:

(a) a resin component consisting essentially of:

(i) from 60 to 90 wt % of at least one vinylidene fluoride copolymer having a melting temperature below about 150° C. and a melt viscosity greater than about 400 Pa-s at 100 sec^{-1} and 232° C., but less than about 1000 Pa-s at 100 sec^{-1} and 232° C.;

(ii) from 40 to 10 wt % of at least one compatible resin; and,

(b) from 1 to 35 parts by weight of at least one pigment per 100 parts by weight of the resin component.

5,599,874

THERMOPLASTIC POLYURETHANE ELASTOMER BASED ON A HYDROXYL TERMINATED POLYOL, AN AROMATIC CHAIN EXTENDER AND 1,5 NAPHTHALENE DIISOCYANATE

Stephen M. Singer, Peoria, and Mark T. Allott, Chillicothe, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Continuation of Ser. No. 111,683, Aug. 25, 1993, abandoned.
This application Jul. 13, 1995, Ser. No. 502,017
Int. Cl.[6] C08J *3/00;* C08K *3/20;* C08L *75/00*
U.S. Cl. 524—590 20 Claims

1. A thermoplastic polyurethane elastomeric composition, comprising:

a thermoplastic polyurethane elastomer derived from the reactants comprising;

a saturated hydroxyl terminated polyester diol, wherein said polyester diol is formed by polymerizing 1,4 butanediol with adipic acid, and wherein said polyester diol has a number average molecular weight in the range of 500 gms/mole to 3000 gms/mole;

a difunctional aromatic chain extender, and

1,5 naphthalene diisocyanate;

wherein said saturated hydroxyl terminated polyester diol and said difunctional aromatic chain extender are present in a molar ratio in the range of from about 40:60 to about 60:40 of said saturated hydroxyl terminated polyester diol to said difunctional aromatic chain extender and defining a polyester diol and chain extender mixture, and said 1,5 naphthalene diisocyanate and said polyester diol and chain extender mixture are present in a molar ratio in the range of from about 50:50 to about 54.5:45.5 of said 1,5 naphthalene diisocyanate to said polyester diol and chain extender mixture, and

wherein said thermoplastic polyurethane elastomer has an elongation in the range of about 500% to 853%.

5,599,875

2-COMPONENT PAINTS BASED ON UNSATURATED POLYESTERS FOR THE COATING OF WOOD AND WOOD MATERIALS

Karl-Dieter Depping, and Horst Hintze-Brüning, both of Münster, Germany, assignors to BASF Lacke + Farben, AG, Muenster-Hiltrup, Germany

Continuation of Ser. No. 81,352, Jul. 20, 1993, abandoned.
This application Aug. 28, 1995, Ser. No. 520,329
Claims priority, application Germany, Jan. 19, 1991, 41 01 529.0
Int. Cl.[6] C08J *3/00;* C08K *3/20;* C08L *67/00;* B05D *3/02*
U.S. Cl. 524—601 12 Claims

1. Coating compositions, comprising a paint component I and a paint component II, wherein component II comprises a curing catalyst, and further wherein component I comprises at least one reactive thinner and at least one unsaturated polyester (A) that is the reaction product of:

a) 33 to 67 mol % of a dicarboxylic acid component a consisting of:

a_1) 30 to 90 mol % of at least one ethylenically unsaturated aliphatic dicarboxylic acid selected from the group consisting of maleic acid, fumaric acid, itaconic acid, citraconic acid, and mixtures thereof, and

a_2) 10 to 70 mol % of at least one saturated aliphatic dicarboxylic acid having 6 to 10 carbon atoms per molecule;

b) 33 to 67 mol % of a diol component b consisting of:

b_1) 50 to 100 mol % of at least one member of the group consisting of 1,4-dimethylolcyclohexane and alkyl-substituted 1,4-dimethylolcyclohexanes and

b_2) 0 to 50 mol % of at least one monomeric or oligomeric glycol having 2 or 3 carbon atoms per glycol segment and a number average molecular weight $M_n \leqq 500$; and

c) 0 to 10 mol % of a polyol component c consisting of at least one polyol; with the proviso that the sum of the amounts of the components a to c is 100 mol %.

5,599,876

COMPOSITION AND PROCEDURE FOR THE PREPARATION OF ORGANIC GLASSES

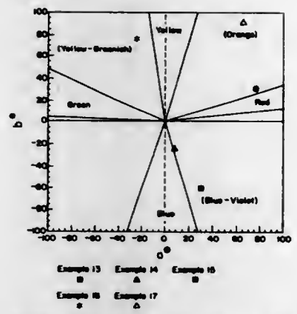
Fiorenzo Renzi, Gorgonzola; Claudio Gagliardi, San Donato Milanese; Franco Rivetti, Milan, and Pietro Allegrini, San Donato Milanese, all of Italy, assignors to Enichem Synthesis S.p.A., Palermo, Italy

Filed Oct. 27, 1993, Ser. No. 143,940
Claims priority, application Italy, Oct. 30, 1992, MI92A2492
Int. Cl.[6] C08K *5/357;* C08F *18/16;4/36*
U.S. Cl. 524—720 14 Claims

1. A liquid composition which can be polymerized, via radicals, into organic glasses, optionally coloured and/or photochromic, and which includes a polymerizable allyl carbonate, a polymerization initiator capable of generating free radicals under polymerization conditions, and optionally a dye and/or photochromic compound, characterized in that:

(A) said polymerizable allyl carbonate is at least a poly(allyl carbonate) of an aliphatic C_3–C_{10} polyol, linear or branched, or of a cyclo-aliphatic C_5–C_6 polyol, said polyols containing from 2 to 6 hydroxyl groups in the molecule, said poly(allyl carbonates) being in the form of monomers or mixtures of monomer and relative oligomers;

(B) said polymerization initiator is one compound selected from the group of perketals;



(C) said optional photochromic compound is at least an organic photochromic compound selected from the group consisting of spiropyranes, spiro-oxazines, chromenes and fulgides; and

(D) said optional dye is at least an organic dye.

5,599,877

LOW-HAZE IONOMERS OF COPOLYMERS OF ALPHA-OLEFINS, CARBOXYLIC ACID ESTERS, AND OPTIONAL COMONOMERS, AND PROCESSES FOR MAKING AND ACIDIFYING THESE IONOMERS

James H. Wang, Appleton, Wis.; David Rosendale, Mauriceville, Tex.; Victor P. Kurkov, San Rafael, Calif.; Leslie P. Theard, Houston, Tex.; Ta Y. Ching, Novato, Calif.; Lewis R. Compton; Tor H. G. Palmgren, both of Orange, Tex., and Mitchell P. Eichelberger, The Woodlands, Tex., assignors to Chevron Chemical Company, San Ramon, Calif.

Continuation of Ser. No. 379,411, Jan. 27, 1995, which is a continuation-in-part of Ser. No. 330,290, Oct. 27, 1994, which is a continuation-in-part of Ser. No. 144,173, Oct. 27, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 464,504
Int. Cl.[6] C08F *8/42*
U.S. Cl. 525—146 3 Claims

1. A composition comprising a blend comprising a polymer and a copolymer, wherein the polymer is selected from the group consisting of ethylene-alkyl acrylate copolymer, polypropylene, and high-density polyethylene, wherein the copolymer comprises alpha-olefins having from two to eight carbon atoms, esters of alpha, beta-ethylenically-unsaturated carboxylic acids having from four to twenty-two carbon atoms, and metal salts of acrylic or methacrylic acid, wherein the copolymer has a haze of no more than ten percent as measured by ASTM method D 1003.

5,599,878

Patent Not Issued For This Number

5,599,879

MODIFIED RADIAL POLYMERS

Richard Gelles; Carl L. Willis; John E. Gorman, all of Houston, Tex., and Andres M. Arismendi, Jr., Gaithersburg, Md., assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 34,046, Mar. 22, 1993, abandoned, which is a division of Ser. No. 585,373, Apr. 6, 1990, Pat. No. 5,218,044. This application May 25, 1994, Ser. No. 248,840
Int. Cl.[6] C08F *297/04;287/00;* C08L *53/02*
U.S. Cl. 525—285 5 Claims

1. A process for making a modified radial polymer comprising the steps of feeding to an extruder maleic anhydride and a radial polymer comprising at least 10 arms per molecule as determined by light scattering techniques, wherein the arms consist of hydrogenated conjugated diene units, and free radically grafting the maleic anhydride to the radial polymer in the extruder.

5,599,880

VINYL CYANIDE AND VINYL AROMATIC MONOMERS-GRAFTED NITRILE RUBBER

Seldon L. Dotson, Parkersburg, W. Va., assignor to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 312,376, Sep. 26, 1994, Pat. No. 5,532,318. This application Apr. 8, 1996, Ser. No. 629,258
Int. Cl.[6] C08F *279/04;* C08L *33/10;33/12*
U.S. Cl. 525—316 7 Claims

1. A high nitrile graft copolymer comprising

(a) a nitrile rubber substrate present at a level of from 25 to 75 percent by weight based on the total weight of the graft copolymer, said substrate comprising 60 to 85 percent by weight of a diene monomer based on the total weight of the substrate, 10 to 30 percent by weight of a vinyl cyanide monomer based on the total weight of the substrate, and from 4 to 6 percent by weight of an alkylmethacrylate monomer based on the total weight of the substrate, and

(b) a polymeric graft portion present at a level of from 25 to 75 percent by weight based on the total weight of the graft compolymer, and said polymeric graft portion comprising 53 to 70 percent by weight of a vinyl cyanide monomer based on the total weight of the portion, and from 30 to 47 percent by weight of a vinyl aromatic monomer based on the total weight of the portion.

5,599,881

NUCLEOPHILIC AMINE FUNCTIONALIZED POLYOLEFIN

Haiqi Xie, Kingston, Canada, assignor to DuPont Canada Inc., Mississauga, Canada

Filed Mar. 7, 1995, Ser. No. 400,160
Int. Cl.[6] C08F *8/32*
U.S. Cl. 525—381 13 Claims

1. A continuous method of producing nucleophilic amine functionalized polyolefin by reacting in an extruder a reactive polymer carrying an electrophilic functional group with a diamine or its salt, wherein the diamine or salt has amino end-groups having different reactivities, the reaction being carried out under conditions that assure that the diamine is present throughout the reaction in a mole amount at least equal to the mole amount of the electrophilic functional group of the reactive polymer, such conditions comprising: a) establishing a feed of a non-reactive resin through the extruder, then b) establishing the diamine feed, and then c) switching from the feed of non-reactive resin to a feed of reactive polymer.

5,599,882

RING-OPENING POLYMER AND A PROCESS FOR PRODUCTION THEREOF

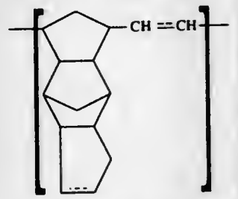
Yoshikatsu Nishi, Yokohama; Masayoshi Ohshima, Niiza; Teiji Kohara, Kawasaki; Toshiyasu Matsui, Yokohama, and Tadao Natsuume, Yokosuka, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

PCT No. PCT/JP88/00862, § 371 Date Feb. 13, 1990, § 102(e) Date Feb. 13, 1990, PCT Pub. No. WO89/01953, PCT Pub. Date Mar. 9, 1989
PCT Filed Aug. 31, 1988, Ser. No. 465,155
Claims priority, application Japan, Dec. 6, 1986, 61-290990; Sep. 1, 1987, 62-216461; Sep. 1, 1987, 62-216462; Dec. 5, 1987, 62-306850
Int. Cl.[6] C08F *4/642;232/06*
U.S. Cl. 525—332.1 11 Claims

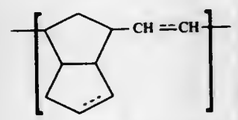
1. A polycyclic norbornene-based ring-opening polymer which comprises:

(A) 90–5% by mol of a repeating unit represented by the following formula (I) or an alkyl-substituted derivative thereof, and (B) 10–95% by mol of at least one repeating unit selected from the group consisting of a repeating unit represented by the following formula (II), an alkyl-substituted derivative thereof, and a repeating unit represented by the following formula (III), an alkyl-substituted derivative thereof or an alkylidene-substituted derivative thereof, and wherein said polymer has an intrinsic viscosity of 0.01–20 dl/g as determined in toluene at 25° C.

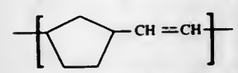
(I)



(II)



(III)



wherein ——— denotes a single bond or a double bond and wherein at least 50% of the (C——— C) linkages constituting the main chains of the respective repeating units are single bonds.

5,599,883

CURABLE RESIN COMPOSITION COMPRISING AN ACRYLIC COPOLYMER CONTAINING AN ORGANOHYDROGENPOLYSILOXANE MACROMONOMER UNIT AND AN ALKENYL GROUP-CONTAINING ACRYLIC MONOMER UNIT

Hiroharu Ohsugi, Hirakata; Shigeru Mikami, Nishinomiya; Hiroki Tanabe, Yawata; Mitsuhiro Takarada, Takasaki, and Yuji Yoshikawa, Annaka, all of Japan, assignors to Nippon Paint Co., Ltd., Japan

Division of Ser. No. 262,291, Jun. 20, 1994. This application Sep. 27, 1995, Ser. No. 534,588

Claims priority, application Japan, Jun. 21, 1993, 5-174917; Dec. 3, 1993, 5-339417

Int. Cl.[6] C08F *283/00*

U.S. Cl. 525—474 **11 Claims**

1. A curable resin composition comprising:

(a) an acrylic copolymer having (i) an organohydrogenpolysiloxane macromonomer unit having a silicon-hydrogen bond and a 3-(meth)acryloyloxypropyl group attached to the silicon atom, (ii) an alkenyl group-containing acrylic monomer unit, and optionally (iii) an ethylenically unsaturated monomer unit, and

(b) a catalytically effective amount of a hydrosilylation catalyst.

5,599,884

AMINO RESIN DISPERSION WITH REDUCED ALDEHYDE CONTENT, PROCESS THEREFOR, AND PAINT DETACKIFYING PROCESS THEREWITH

Scott J. Beleck, St. Clair Shores, Mich., assignor to Henkel Corporation, Plymouth Meeting, Pa.

Continuation-in-part of Ser. No. 215,098, Mar. 29, 1994, Pat. No. 5,454,516, which is a continuation-in-part of Ser. No. 970,727, Nov. 3, 1992, abandoned. This application May 8, 1995, Ser. No. 437,265

Int. Cl.[6] C08F *283/00;* **C08G** *8/28;* **C08L** *61/00;61/20;61/34*

U.S. Cl. 525—509 **13 Claims**

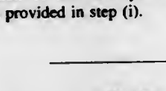
1. A process of reducing the free aldehyde content of an amino resin, said process comprising steps of:

(i) providing an initial amino resin dispersion containing from 0.10 to about 0.35% by weight based on the weight of the initial dispersion of free aldehyde;

(ii) mixing, either sequentially or simultaneously, with the initial amino resin dispersion provided in step (i):

(a) an amount of modifying reagent molecules that are soluble in the initial amino resin dispersion and include a structure according to formula I:

(I)



in which each of Q^1 and Q^3 independently is one of ═O, ═NH, or ═N; Q^2 is C or N, such that the ratio of the stoichiometric equivalent as acetoacetamide of the total amount of said modifying reagent added to the content of free aldehyde of the resin provided in step (i) is from 0.5:1.0 to 50:1.0; and

(b) an amount of a component selected from molecules that do not belong to component (a) but do contain at least one amino moiety that can react with an aldehyde molecule to form a single molecule product in which the nitrogen atom from the amino moiety has become covalently bonded to the carbon atom from the aldehydo moiety, such that the ratio by weight of the total stoichiometric equivalent as urea of component (b) to the total stoichiometric equivalent as acetoacetamide of component (a) is from about 1:100 to about 1.0:0.40; and

(iii) allowing the mixture formed in step (ii) to undergo spontaneous chemical reaction, at a temperature at which the mixture is liquid, to produce a modified amino resin dispersion in which the concentration of free aldehyde in the modified amino resin dispersion is not greater than about 0.20% by weight based on the weight of the modified amino resin dispersion and is not greater than about 80% by weight of the concentration of free aldehyde in the initial amino resin dispersion provided in step (i).

5,599,885

PROCESS FOR THE PREPARATION OF POLYOLEFIN

Masaaki Kawasaki; Yoshio Miyake; Tomoko Sueyoshi, and Atsuo Kobata, all of Yamaguchi, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 254,440, Jun. 6, 1994, abandoned, which is a continuation of Ser. No. 6,985, Jan. 21, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 461,950

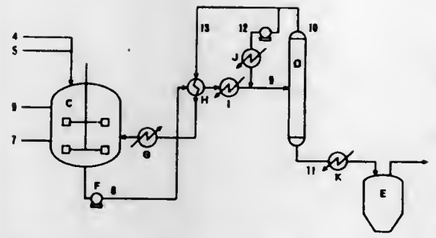
Claims priority, application Japan, Jan. 23, 1992, 4-010299; Jan. 24, 1992, 4-011414

Int. Cl.[6] C08F *2/06*

U.S. Cl. 526—68 **13 Claims**

1. A process for the preparation of polyolefin comprising polymerizing or copolymerizing olefin by a solution polymerization method in the presence of a catalyst for olefin polymerization comprising

(A) a metallocene compound of a transition metal selected from the group consisting of zirconium, hafnium and titanium, and



(B) an aluminoxane compound having a specific surface area of not less than 100 m^2/g;

wherein the aluminoxane compound (B) is added to the polymerization system in the form of a slurry of said aluminoxane compound (B) in a liquid C_5 to C_7 aliphatic hydrocarbon or alicyclic hydrocarbon or mixture thereof, having a boiling point of not higher than 100° C., which aluminoxane compound (B) is prepared by a process comprising bringing a toluene solution of the aluminoxane compound (B) into contact with the C_5 to C_7 aliphatic or alicyclic hydrocarbon or mixture thereof to precipitate the aluminoxane compound (B), separating the aluminoxane by filtration and then dispersing the aluminoxane in the C_5 to C_7 aliphatic or alicyclic hydrocarbon or mixture to form the slurry,

the metallocene compound (A) is added to the polymerization system in the form of a slurry or a solution of C_5 to C_7 aliphatic hydrocarbon or alicyclic hydrocarbon or mixture thereof, which is prepared separately from the slurry of said aluminoxane compound (B), and

the polymerization is carried out in the presence of a diluent consisting essentially of C_5 to C_7 aliphatic hydrocarbon or the alicyclic hydrocarbon or mixture thereof having a boiling point not higher than 100° C.

5,599,886

LIQUID TONERS WITH HYDROCARBON SOLVENTS

Terrance P. Smith, Woodbury; S. Prabhakara Rao, Maplewood, and David W. Macomber, St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 314,952, Sep. 29, 1994, Pat. No. 5,521,271. This application Feb. 22, 1996, Ser. No. 605,575

Int. Cl.[6] C08F *4/16;214/18;226/02;230/08;226/06;220/10*

U.S. Cl. 526—90 **9 Claims**

1. A process for preparing a composition comprising a hydrocarbon solvent and a polymeric dye comprising a polymeric moiety, a chromophore moiety, and at least one of a charge-directing chelating moiety or a surface release promoting moiety, said polymeric moiety comprising macromeric segment(s) that render said polymeric dye dispersible in a hydrocarbon solvent, said process comprising the steps of:

(1) combining in a hydrocarbon solvent (a) at least one monomer capable of free radical polymerization, which at least one monomer (a) contains a chromophore that is covalently linked to the polymerizable monomer (a), (b) at least one monomer capable of free radical polymerization, which at least one monomer (b) does not contain a chromophore, and (c) at least one macromer that is dispersible in said hydrocarbon solvent, to form a mixture,

(2) emulsifying the mixture of step (1) to form an emulsion in said hydrocarbon solvent, and

(3) free radically polymerizing the polymerizable components of the emulsion formed in step (2) in the presence of a metal cation.

5,599,887

CHROMIUM CATALYST COMPOSITIONS AND ETHYLENE POLYMERIZATION PROCESSES THEREWITH

Rickey D. Badley, Dewey, Okla.; Kent W. Rollmann, Searcy, Ark., and Max P. McDaniel, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 174,938, Dec. 28, 1993. This application May 25, 1995, Ser. No. 450,046

Int. Cl.[6] C08F *4/24*

U.S. Cl. 526—105 **24 Claims**

1. A process for homopolymerizing ethylene, or copolymerizing ethylene with a comonomer, to produce an ethylene polymer that has an increased amount of long chain branching and a decreased amount of die swell, said process comprising polymerizing ethylene with a chromium catalyst composition that comprises:

(a) a support that comprises silica, wherein said support has a surface area (SA) to pore volume relationship as follows

$$0.5 \leqq \text{Pore volume} \leqq f(SA)$$

wherein said f(SA) is

$$(1.14\times10^{-7})(SA)^3-(1.19\times10^{-4})(SA)^2+(3.19\times10^{-2})(SA)+0.20;$$

and

(b) a hexavalent chromium compound; wherein the surface concentration of said hexavalent chromium on said support is from 0.4 to 1 hexavalent chromium atoms per square nanometer.

5,599,888

PROCESS FOR PREPARING METHYL METHACRYLATE POLYMER

Yasushi Higuchi; Shojiro Kuwahara; Shinichi Hieda, and Masahiro Kurokawa, all of Hiratsuka, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Oct. 17, 1994, Ser. No. 324,270

Claims priority, application Japan, Nov. 9, 1993, 5-279861

Int. Cl.[6] C08F *2/38*

U.S. Cl. 526—212 **4 Claims**

1. A process for preparing a methyl methacrylate polymer which comprises polymerizing a monomer comprising methyl methacrylate alone or a mixture of 75% by weight or more of methyl methacrylate and 25% by weight or less of an alkyl acrylate having an alkyl group of 1 to 4 carbon atoms in the presence of a radical polymerization initiator, a chain transfer agent, and methanol as a solvent, the methanol being in an amount of 10 to 25% by weight based on a total weight of the monomer and methanol; the polymerization being carried out in a uniform solution, wherein a material feed composition comprising the monomer, the methanol as the solvent, the radical polymerization initiator and the chain transfer agent are prepared so that the radical polymerization initiator has a concentration in the material feed composition of 1.0×10^{-3} to 1.6 mol % and the chain transfer agent has a concentration in the material feed composition of 1.0×10^{-3} to 3.7 mol %; and in a first complete stirring tank, the monomer is continuously polymerized at a polymerization temperature of 130° to 170° C. for an average residence time which is 5 to 7,000 times as much as a half-value period of the polymerization initiator at the polymerization temperature, while a conversion of the monomer is maintained at 65 to 90%, wherein the polymerization is carried out under conditions which meet the following formulae (1) to (3):

formula (1):

$$(7.0\times10^7 \leqq C^2(\tau+\Theta)e^{4529/T}/(1-\Theta^2 \leqq 3.0\times10^9)$$

formula (2):

$$100 \leqq M/D+E+F \leqq 40{,}000$$

formula (3):

$$4.0\times10^{-7} \leqq I/M \cdot \Theta/\tau+\Theta \cdot (2.0\times10^{-3}\cdot R^2-8.5\times10^{-2}\cdot R+1) \leqq 1.0\times10^{-4},$$

wherein C is the monomer conversion (mol %) τ is the half-value period in minutes of the radical polymerization initiator, Θ is the average residence time in minutes, T is the polymerization temperature in absolute temperature, I is the concentration in mols/liter of the radical polymerization initiator in the feed, M is the concentration in mols/liter of the monomer in the feed, and R is a constant calculated from the monomer conversion and the concentration of the acrylate in the monomer in the feed, and is defined by the following formula:

$$R=m\cdot(3.7\times10^{-3}\cdot C+0.63),$$

wherein m is the concentration in mol % of the acrylate in the monomer in the feed; and

D, E and F are defined by the following formulae:

$$D=(7.75\times10^{3}e^{-3674/T}\cdot X)/(100+(7.75\times10^{3}e^{-3674/T}-1)\cdot C)$$

$$E=(423e^{-6021/T}\cdot S)/(100+(423e^{-6021/T}-1)\cdot C)$$

$$F=(1.13\times10^{-4}e^{4529/T}\cdot C)/(\Theta\cdot(100-C)^{2})$$

wherein X is the concentration in mols/liter of the chain transfer agent in the feed; and S is the concentration in mols/liter of the solvent.

5,599,889

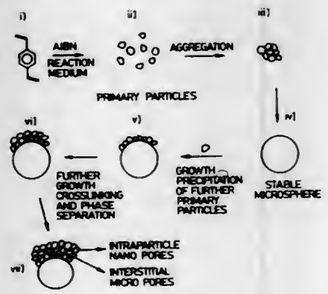
METHOD OF FORMING POLYMER MICROSPHERES

Harald D. H. Stöver, 50-405 Main Street, Dundas, Ont., Canada; Kai Li, 740 Proudfoot Lane, Unit 1116, London, Ont., Canada, and Wen H. Li, 64 North Oval, Hamilton, Ont., Canada

Filed Aug. 16, 1994, Ser. No. 291,163

Int. Cl.[6] C08F 2/06

U.S. Cl. 526—217 **6 Claims**



1. A method of forming cross-linked polymer microspheres, comprising the steps of:

forming a reaction mixture essentially free of stabilizer and comprising a polymerization medium, a styrene-type cross-linking agent, a radical initiator, and a porogen, with said cross-linking agent, said initiator and said porogen being soluble in said polymerization medium;

subjecting said reaction mixture to conditions selected to form porous monodisperse microspheres, wherein said porogen is toluene, wherein said toluene is provided to said medium at a level not exceeding 40 percent by volume of said reaction mixture.

5,599,890

POLYMERIC BINDER

Xun Tang, Dresher, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Mar. 21, 1994, Ser. No. 210,844

Int. Cl.[6] C08F 224/00;226/06;214/00;220/10;218/04;220/44

U.S. Cl. 526—260 **7 Claims**

1. A method for using a polymeric binder, comprising:

1) forming a ceramic slip comprising a ceramic powder, a liquid, and the polymeric binder;

2) forming a ceramic part from the ceramic slip; and

3) heating the ceramic part to effect removal of the polymeric binder; wherein the polymeric binder comprises a first polymer, and from 10 to 90 percent by weight of a second polymer, and wherein the first polymer comprises, as polymerized units, at least one monomer selected from the group consisting of: alkyl esters of methacrylic acids; alkyl esters of acrylic acids; vinylidene halides; vinyl halides; acrylonitrile; methacrylonitrile; styrene; and hydroxy functional vinyl monomers, and the second polymer comprises, as polymerized units, at least 5 percent by weight of 2-(3-oxazolidinyl)ethyl methacrylate, based on the total weight of the first polymer.

5,599,891

POLYMER COMPOSITION

Daniel M. Horowitz, Washington, D.C.; Brian K. Hunter, Kingston, Canada; Jeremy K. M. Sanders, Cambridge, United Kingdom; Joachim Clauss, Mühltal, Germany, and Neil George, Stocton on Tees, United Kingdom, assignors to Zeneca Limited, London, England

PCT No. PCT/GB93/02014, § 371 Date Aug. 8, 1995, § 102(e) Date Aug. 8, 1995, PCT Pub. No. WO94/07940, PCT Pub. Date Apr. 14, 1994

PCT Filed Sep. 28, 1993, Ser. No. 407,030

Claims priority, application United Kingdom, Sep. 28, 1992, 9220401; Sep. 28, 1992, 9229447; Mar. 8, 1993, 9304651

Int. Cl.[6] C09J 3/12

U.S. Cl. 527—202 **11 Claims**

1. A polymer composition in the form of an aqueous latex or a flowable powder of individual particles or loose agglomerates, substantially free of cellular protein and comprising a crystallisable biodegradable polyhydroxyalkanoate capable of forming over 30% crystallinity in the form of particles having a largest dimension in the range 0.1 to 5 μm and having on their surface a phospholipid or a surfactant, said polymer having a molecular weight m_w of over 50000 and having a crystallisation half life of more than 0.1 day at ambient temperature.

5,599,892

PREPARATION OF POLYSILANES

Akira Hayashida, Kawasaki, Japan, assignor to Shin-Etsu Chemical Co., Ltd., Japan

Filed Oct. 6, 1995, Ser. No. 539,757

Claims priority, application Japan, Oct. 7, 1994, 6-270580

Int. Cl.[6] C08G 77/00

U.S. Cl. 528—10 **26 Claims**

1. In a process for preparing a polysilane from a diorganodihalosilane and an alkali metal, the improvement wherein a low molecular weight polysilane resulting from the process as a byproduct is reacted with an alkali metal for conversion into a higher molecular weight polysilane.

5,599,893

WATER REPELLENT COMPOSITION

Mitsuo Asai; Hitoshi Uehara; Ichiro Ono, all of Usui-gun; Hiroaki Kobayashi, Osaka; Jun Kawaguchi, Osaka; Satoshi Shiiki, Osaka, and Kazuishi Mitani, Osaka, all of Japan, assignors to Shin-Etsu Co., Ltd., Japan

Filed Aug. 11, 1995, Ser. No. 514,516

Claims priority, application Japan, Aug. 12, 1994, 6-212121

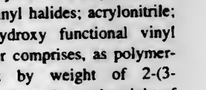
Int. Cl.[6] C08G 77/08

U.S. Cl. 528—12 **4 Claims**

1. A water repellent composition comprising in admixture,

(1) a hydrolyzate resulting from co-hydrolysis of a perfluoroalkyl group-containing organic silicon compound and a hydrolyzable group-containing methylpolysiloxane compound in a hydrophilic solvent,

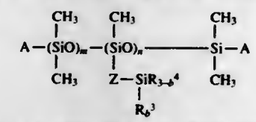
said perfluoroalkyl group-containing organic silicon compound having the following general formula (I):



$$C_pF_{2p+1}QSiR^1_aR^2_{3-a} \quad (I)$$

wherein R^1 is a monovalent hydrocarbon group having 1 to 4 carbon atoms, R^2 is an alkoxy or acyloxy group having 1 to 4 carbon atoms, Q is a divalent organic group having 2 to 10 carbon atoms, letter a is equal to 0 or 1, and p is an integer of 1 to 12, and

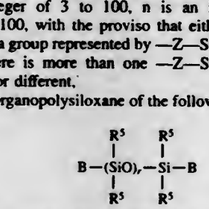
said hydrolyzable group-containing methylpolysiloxane compound having the following general formula (II):



(II)

wherein R^3 is a monovalent hydrocarbon group having 1 to 4 carbon atoms, R^4 is an alkoxy or acyloxy group having 1 to 4 carbon atoms, A is a methyl group or a group represented by $-Z-Si(R^3_b)R^4_{3-b}$, Z is an oxygen atom or a divalent organic group having 2 to 10 carbon atoms, letter b is equal to 0, 1 or 2, m is an integer of 3 to 100, n is an integer of 0 to 50, and $5\leqq m+n\leqq100$, with the proviso that either one of the terminal A groups is a group represented by $-Z-Si(R^3_b)R^4_{3-b}$ when n=0, and where there is more than one $-Z-Si(R^3_b)R^4_{3-b}$, they may be identical or different,

(2) an organopolysiloxane of the following general formula (III):



(III)

wherein R^5, which may be identical or different, is a monovalent hydrocarbon group having 1 to 20 carbon atoms, B, which may be identical or different, is a hydroxyl group, monovalent hydrocarbon group having 1 to 4 carbon atoms, alkoxy group or acyloxy group, and letter r is an integer of 1 to 100, and

(3) a strong acid.

5,599,894

SILICONE GEL COMPOSITIONS

Masayuki Ikeno, Gunma-ken, Japan, assignor to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

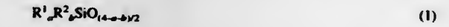
Filed Jun. 5, 1995, Ser. No. 465,457

Claims priority, application Japan, Jun. 7, 1994, 6-148661

Int. Cl.[6] C08G 77/08

U.S. Cl. 528—15 **16 Claims**

1. A silicone composition comprising (A) 100 parts by weight of an organopolysiloxane having an average of 0.5 to 2 alkenyl groups per molecule, and an average compositional formula (1):



$$R^1_aR^2_bSiO_{(4-a-b)/2} \quad (1)$$

wherein R^1 is an alkenyl group; R^2 is an optionally substituted, monovalent hydrocarbon group without an aliphatic unsaturated bond, and the subscripts a and b are positive numbers $0.005\leqq a\leqq1$, $1.5\leqq b\leqq2.4$ and $1.5<a+b<2.5$,

(B) 0.05 to 10 parts by weight of an organosiloxane oligomer having at least 3 alkenyl groups bound to silicon atoms at the terminal ends of the molecule in the form of $(H_2C{=}CH)(CH_3)_2SiO_{1/2}$ units,

(C) an organohydrogen polysiloxane having at least two hydrogen atoms bound to silicon atoms per molecule, and

(D) a catalytic amount of an addition reaction catalyst.

5,599,895

MOISTURE-CURING POLYURETHANE HOT-MELT ADHESIVE

Roland Helder, Hilden, Germany, assignor to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP93/03216, § 371 Date May 25, 1995, § 102(e) Date May 25, 1995, PCT Pub. No. WO94/12552, PCT Pub. Date Jun. 9, 1994

PCT Filed Nov. 16, 1993, Ser. No. 436,320

Int. Cl.[6] C08G 18/12

U.S. Cl. 528—59 **40 Claims**

1. A moisture-curing polyurethane hot-melt adhesive composition comprising at least one polyurethane prepolymer, said polyurethane prepolymer being the reaction product of reactants comprising:

a) at least one polyisocyanate,

b) at least one polyalkylene glycol at a concentration of more than 10% by weight based on total hot-melt adhesive, and

c) at least two polyester glycols having different glass transition temperatures, at least one of said polyester glycols having a glass transition temperature of from −40° C. to +50° C.

5,599,896

Patent Not Issued For This Number

5,599,897

AROMATIC POLYCARBONATE, A METHOD FOR PRODUCING THE SAME, AND A PLASTIC OPTICAL WAVEGUIDE USING THE SAME

Masaki Nishiguchi, Chiba, and Toshimasa Tokuda, Iyo, both of Japan, assignors to Furukawa Electric Co., Ltd., and Teijin Chemicals, Ltd., both of Tokyo, Japan

Division of Ser. No. 140,414, Oct. 25, 1993, Pat. No. 5,496,913. This application May 25, 1995, Ser. No. 449,996

Claims priority, application Japan, Nov. 2, 1992, 4-294420; Nov. 2, 1992, 4-315598; Nov. 2, 1992, 4-315600

Int. Cl.[6] C08G 63/68; G02B 6/00

U.S. Cl. 528—198 **7 Claims**

1. A plastic optical waveguide which comprises a plastic optical waveguide whose core layer is made of an aromatic polycarbonate obtained by reacting a carbonate precursor substance with a dihydric phenol, which phenol is mainly made up of bisphenol AF, having a relationship between the transmission loss at 660 nm and the transmission loss at 760 nm for the plastic optical waveguide of

$$L660\ nm<L760\ nm+600<1,500$$

wherein L660 nm represents the transmission loss (dB/km) at 660 nm, and L760 nm represents the transmission loss (dB/km) at 760 nm, and wherein a 5 wt % methylene chloride solution of the aromatic polycarbonate filtered through a filter having a pore diameter of at least 0.1 μm, has a transmittance of light of 400 nm of the filtrate, measured by using a liquid

cell having an optical path length of 250 mm, of 85% or more per cm of the resin, and when 0.7 g of the aromatic polycarbonate is dissolved in 100 ml of methylene chloride, the specific viscosity of the thus obtained solution measured at 20° C. is in the range of 0.160 to 0.418.

5,599,898

INSOLUBLE, ONLY SLIGHTLY SWELLABLE POLYMERS CONTAINING AMINO GROUPS, THEIR PREPARATION AND THEIR USE

Heinrich Hartmann, Limburgerhof; Walter Denzinger, Speyer; Michael Kroener, Mannheim, and Claudia Nilz, Roedersheim-Gronau, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP93/03019, § 371 Date Apr. 25, 1995, § 102(e) Date Apr. 25, 1995, PCT Pub. No. WO94/11408, PCT Pub. Date May 26, 1994

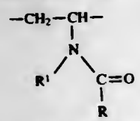
PCT Filed Oct. 29, 1993, Ser. No. 325,187

Claims priority, application Germany, Nov. 6, 1992, 42 37 439.1

Int. Cl.[6] C08G *69/08;73/10*

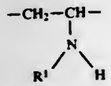
U.S. Cl. 528—310 **32 Claims**

1. An insoluble, only slightly swellable polymer containing amino groups, wherein said polymer comprises popcorn polymers containing units of the formula (I):



(I)

wherein R and R[1] are H or C_1–C_4-alkyl, and wherein at least 2% of the units of the formula (I) are replaced with units of the formula (II):



(II)

wherein R[1] is H or C_1–C_4-alkyl.

5,599,899

RIGID ROD AND LADDER POLYMERS AND PROCESS FOR MAKING SAME

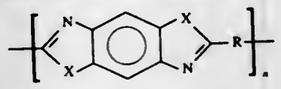
Samson A. Jenekhe, Fairport, and John A. Osaheni, Rochester, both of N.Y., assignors to Research Corporation Technologies, Inc., Tucson, Ariz.

Filed Nov. 1, 1993, Ser. No. 146,266

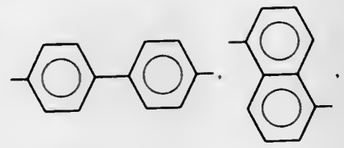
Int. Cl.[6] C08G *73/22*

U.S. Cl. 528—337 **38 Claims**

1. A rigid rod and ladder polymer comprising a polymer which includes the repeating structural unit

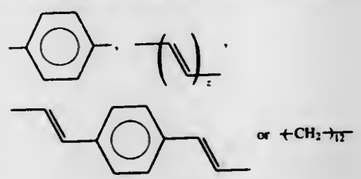


where X is sulfur, —NR[1] or oxygen; n is an integer of 2 to 2000; R is



or

when X is the same or different and is sulfur or oxygen; R is nil,



or

when

X is —NR[1]; R[1] is hydrogen or hydrocarbyl; x is 1 or 2; and y is an integer of 8 to 11; z is 1 or 2.

5,599,900

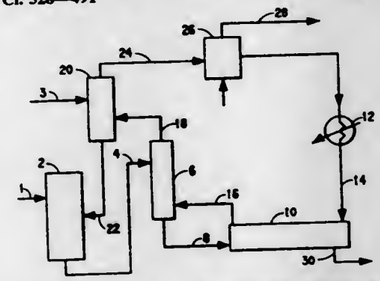
POLYESTERS PRODUCTION PROCESS

Kamlesh K. Bhatia, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 438,299, May 10, 1995, Pat. No. 5,552,513, which is a continuation-in-part of Ser. No. 138,312, Oct. 18, 1993, Pat. No. 5,434,239. This application Apr. 16, 1996, Ser. No. 632,994

Int. Cl.[6] C08F *6/00*

U.S. Cl. 528—491 **26 Claims**



1. A process for preparing poly(propylene terephthalate) of at least a degree of polymerization of 50, by polymerizing bis(3-hydroxy propyl) terephthalate (BHPT), or low molecular weight oligomers thereof, with the evolution of propylene glycol and other volatile reaction by-products, the process conducted at atmospheric pressure or above, comprising intimately contacting the bis(3-hydroxy propyl) terephthalate or low molecular weight oligomers thereof in melt form with an inert gas flowing at a velocity of 0.2 to 3 ft/sec, wherein the interfacial area between the melt and the gas phase is at least about 20 ft^2/ft^3 of the melt, and removing the volatile reaction by-products with the inert gas wherein the polymerization is completed in less than about 5 hours of contact time while the reactants are maintained in the melt form.

5,599,901

SORBENT FAMILIES

Lawrence M. Kauvar, San Francisco, Calif., assignor to Terrapin Technologies, Inc., South San Francisco, Calif.

Continuation of Ser. No. 920,335, Jul. 27, 1992, abandoned. This application May 24, 1994, Ser. No. 248,538

Int. Cl.[6] A61K *38/04;* **C07K** *7/00*

U.S. Cl. 530—328 **16 Claims**

1. A family of at least three peptides, which peptides, when bound to a solid support, display a range of affinities for an analyte as compared with the affinity of a diethylaminoethyl (DEAE) moiety for said analyte when said DEAE is bound to the same support, wherein all the peptides of said family have a net positive charge at neutral pH and wherein each peptide of the family differs from all other peptides of the family with respect to at least two parameters selected from the group consisting of net positive charge, spatial arrangement of the positive charge, cyclization, and helical conformation propensity

wherein each peptide has a formula selected from the group consisting of:

$$H^+\{(+)_{l1}(O)_{m1}(-)_{n1}\};$$

$$H^-\{(+)_{l1}(O)_{m1}(-)_{n1}\};$$

$$H^+X^1\{(+)_{l2}(O)_{m2}(-)_{n2}\}X^2;$$

and

$$H^-X^1\{(+)_{l2}(O)_{m2}(-)_{n2}\}X^2;$$

the foregoing peptides optionally extended at the C-terminus by 1–2 amino acids and the amides thereof,

wherein the sequence within {} is variable; H^+ represents a neutral amino acid which promotes helix formation; H^- represents a neutral amino acid which discourages helix formation, "+" represents a positively charged amino acid residue; "O" represents a neutral amino acid residue including a hydrophobic neutral residue; "–" represents a negatively charged amino acid residue; X^1 an X^2 represent residues which together form a covalent bridge; and l1, m1, n1, l2, m2, and n2 are integers subject to the following restrictions:

l1+m1+n1=4–7;

l1>n1;

l2+m2+n2=3–5; and

l2>n2.

5,599,902

CANCER INHIBITORY PEPTIDES

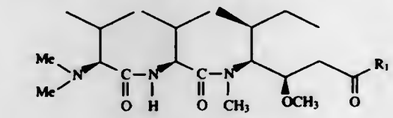
George R. Pettit, Paradise Valley, and Jayaram K. Srirangam, Tempe, both of Ariz., assignors to Arizona Board of Regents acting on behalf of Arizona State University, Tempe, Ariz.

Filed Nov. 10, 1994, Ser. No. 338,004

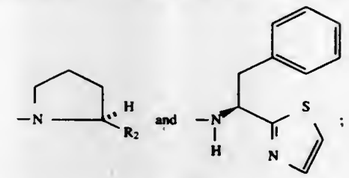
Int. Cl.[6] C07K *5/00;7/00;17/00;* **A61K** *38/00*

U.S. Cl. 530—330 **7 Claims**

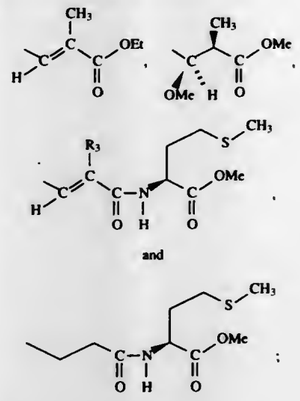
1. A composition of matter having the structural formula:



wherein: R_1 is selected from the group consisting of:



R_2 is selected from the group consisting of:



and R_3 is selected from the group consisting of hydrogen and methyl.

5,599,903

GLUTATHIONE ANALOGS AND PARALOG PANELS COMPRISING GLUTATHIONE MIMICS

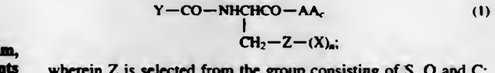
Lawrence M. Kauvar, San Francisco, and Matthew H. Lyttle, Point Reyes Station, both of Calif., assignors to Terrapin Technologies, Inc., San Francisco, Calif.

Continuation-in-part of Ser. No. 863,564, Apr. 3, 1992, abandoned. This application Sep. 24, 1993, Ser. No. 126,229

Int. Cl.[6] C07K *5/08;* **A61K** *38/06*

U.S. Cl. 530—331 **22 Claims**

1. The alkyl (1–10C), alkenyl (1–10C), or arylalkyl (7–12C) esters or amides of a compound of the formula:



(I)

wherein Z is selected from the group consisting of S, O and C;

wherein n is 1 or 2;

wherein when Z is O or C or when Z is S and n is 1, X is a mono- or disubstituted or unsubstituted hydrocarbon radical (1–20C) optionally containing 1 or 2 nonadjacent heteroatoms (O, S or N), and wherein said substitution is selected from the group consisting of halo, —NO, —NO_2, —NR_2, OR, and SR, wherein R is H or lower alkyl (1–4C); when Z is S and n is 2, one X is as above-defined and the other X is lower alkyl (1–4C);

Y—CO is γ-glu; and

AA_C is β-Ala or phenylGly coupled through a peptide bond to the reminder of the compound.

5,599,904

CHIMERIC STEROID HORMONE SUPERFAMILY RECEPTOR PROTEINS

Ronald M. Evans, La Jolla; Estelita S. Ong; Prudimar S. Segui, both of San Diego; Catherine C. Thompson, La Jolla; Kazuhiko Umesono, San Diego, all of Calif., and Vincent Giguere, Etobicoke, Canada, assignors to The Salk Institute for Biological Studies, La Jolla, Calif.

Division of Ser. No. 546,570, Aug. 6, 1990, abandoned, which is a division of Ser. No. 276,536, Nov. 30, 1988, Pat. No. 4,981,784, which is a continuation-in-part of Ser. No. 128,331, Dec. 2, 1987, abandoned. This application Mar. 3, 1992, Ser. No. 845,857

Int. Cl.[6] C07K *19/00;14/705*

U.S. Cl. 530—350 **13 Claims**

1. A chimeric receptor having at least an N-terminus domain, a DNA-binding domain, and a ligand-binding domain;

wherein each of said N-terminus, DNA-binding and ligand-binding domains is obtained from a member of the steroid hormone superfamily of receptors;

wherein said domains of said chimeric receptor originate from at least two different members of the steroid hormone superfamily of receptors; and

wherein at least one of the domains of said chimeric receptor originates from a human retinoic acid receptor alpha.

5,599,905

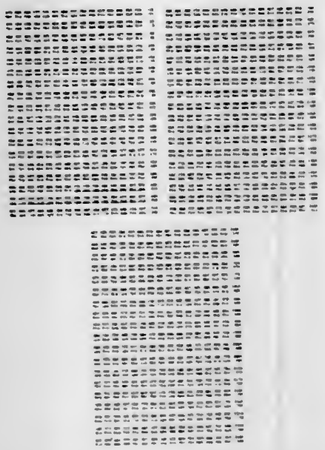
INTERLEUKIN-4 RECEPTORS

Bruce Mosley; David J. Cosman; Linda Park, all of Seattle; M. Patricia Beckmann, Pousibo; Carl J. March, and Rejean Idzerda, both of Seattle, all of Wash., assignors to Immunex Corporation, Seattle, Wash.

Division of Ser. No. 480,694, Feb. 14, 1990, which is a continuation-in-part of Ser. No. 370,924, Jun. 23, 1989, abandoned, which is a continuation-in-part of Ser. No. 326,156, Mar. 20, 1989, abandoned, which is a continuation-in-part of Ser. No. 319,438, Mar. 2, 1989, abandoned, which is a continuation-in-part of Ser. No. 265,047, Oct. 19, 1988, abandoned. This application Jul. 20, 1993, Ser. No. 94,669

Int. Cl.[6] C07K *14/705;* **C12N** *15/12*

U.S. Cl. 530—350 **21 Claims**



1. A substantially homogeneous IL-4R protein capable of binding IL-4, wherein said protein is a human IL-4R comprising the amino acid sequence of amino acids 1–800 of FIGS. 4A–4C.

5,599,906

PROTEASE ASSAYS

Bimalendu Dasmahapatra, Nutley, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Continuation of Ser. No. 923,988, Sep. 21, 1992, abandoned, which is a continuation-in-part of Ser. No. 509,007, Apr. 13, 1990, abandoned. This application Nov. 3, 1994, Ser. No. 333,901

Int. Cl.[6] C07K *19/00;14/395*

U.S. Cl. 530—350 **7 Claims**

1. A hybrid regulatory protein comprising a DNA-binding peptide and a DNA transcription-modifying peptide covalently joined in peptide linkage by a linker peptide which hybrid regulatory protein is (a) capable of binding to a specific region of DNA that controls the expression of one or more genes, thereby altering the rate of expression of the genes, and is (b) rendered substantially inactive by cleavage of the linker peptide by the protease, wherein substantially inactive means that the cleaved protein has 20% or less of the transcription-activating activity of the uncleaved, intact protein.

5,599,907

PRODUCTION AND USE OF MULTIMERIC HEMOGLOBINS

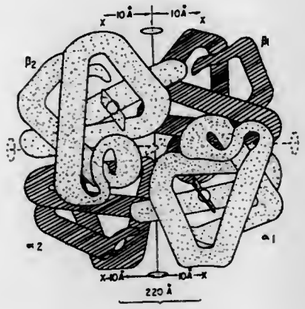
David C. Anderson, San Bruno, Calif.; Antony J. Mathews, Louisville, and Gary L. Stetler, Boulder, both of Colo., assignors to Somatogen, Inc., Boulder, Colo.

PCT No. PCT/US92/09752, § 371 Date May 9, 1994, § 102(e) Date May 9, 1994, PCT Pub. No. WO93/09143, PCT Pub. Date May 13, 1993

Continuation-in-part of Ser. No. 789,179, Nov. 8, 1991, which is a continuation-in-part of Ser. No. 671,707, Apr. 1, 1991, abandoned, which is a continuation-in-part of Ser. No. 374,161, Jun. 30, 1989, abandoned, Ser. No. 379,116, Jul. 13, 1989, abandoned, and Ser. No. 349,623, May 10, 1989, abandoned. This PCT application Nov. 6, 1992, Ser. No. 240,712

Int. Cl.[6] C07K *14/805;* **A61K** *35/14;* **C07H** *21/04;* **C12P** *21/00*

U.S. Cl. 530—385 **74 Claims**



1. A non-naturally occuring pseudotetrameric hemoglobin-like protein which is a pseudotetramer comprising four globin-like domains, said pseudotetramer comprising a pseudodimeric polypeptide having two substantially homologous globin-like domains, one of which is mutated to provide an asymmetric crosslinkable cysteine residue, the corresponding residue in the other globin-like domain of said pseudodimeric polypeptide being an amino acid other than cysteine, said pseudotetramer further comprising at least one other globin-like domain-bearing polypeptide.

5,599,908

METHOD FOR CONSTRUCTING A HYBRID REAGENT FOR DELIVERING A BIOACTIVE MOLECULE TO A CELLULAR TARGET

Victor A. Raso, Brookline, Mass., assignor to Boston Biomedical Research Institute, Boston, Mass.

Division of Ser. No. 998,754, Dec. 28, 1992, Pat. No. 5,501,854, which is a continuation of Ser. No. 482,001, Feb. 16, 1990, abandoned. This application Aug. 12, 1994, Ser. No. 290,481

Int. Cl.[6] C07K *16/42*

U.S. Cl. 530—387.3 **12 Claims**

1. A method for producing a hybrid reagent for delivering a bioactive molecule having an antibody binding site that is sensitive to pH to a cellular target within the cells of a host, comprising:

a) providing a first portion of a hybrid reagent which, upon administration to the host at physiologic pH, binds to the surface of said cells with the subsequent pinching off of the surface of said cells to form endosomes having a second and lower pH and containing said hybrid reagent whereby the hybrid reagent is transported to the interior of said cells by endocytosis, said first portion comprising an antibody or antigen binding fragment thereof;

b) screening antibodies or antigen binding fragments which bind the bioactive molecule to determine which of said antibodies or antigen binding fragments bind the bioactive molecule at physiologic pH and release it at a second and lower pH found within the endosomes;

c) selecting an antibody or antigen binding fragment to provide a second portion of said hybrid reagent which binds such bioactive molecule at biosiologic pH and releases it at such second and lower pH; and

d) constructing a hybrid reagent containing said first portion and said second portion;

whereby a hybrid reagent is produced which, upon administration to said bost with the antibody or antibody fragment bound to the bioactive molecule, will bind to the surface of said cells, will be endocytosed into said cells and will release the bioactive molecule to the cellular target within said cells.

5,599,909

PROCESS FOR REACTIVATING PURIFIED MEMBRANE PROTEINS

Karl Fickenscher, and Norbert F. Zander, both of Marburg, Germany, assignors to Behringwerke Aktiengesellschaft, Marburg, Germany

Filed Dec. 21, 1993, Ser. No. 170,880

Claims priority, application Germany, Dec. 23, 1992, 42 43 729.6

Int. Cl.[6] C07K *1/00;14/00*

U.S. Cl. 530—402 **10 Claims**

1. A process for reactivating purified membrane proteins, which comprises reacting said membrane proteins with phospholipids, said process being effected without adding detergents.

5,599,910

Patent Not Issued For This Number

5,599,911

FIBER-REACTIVE DYES HAVING A CENTRAL 1,3,5-TRIAZINE RING TO WHICH ARE BONDED TO A MONOAZO CHROMOPHORE HAVING ANOTHER 1,3,5-TRIAZINE MOIETY AND A SECOND CHROMOPHORE

Rolf Deitz, Basel, Switzerland; Bernhard Müller, Efringen-Kirchen, Germany, and Athanassios Tzikas, Pratteln, Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Filed Aug. 25, 1994, Ser. No. 296,206

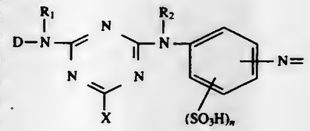
Claims priority, application Switzerland, Sep. 1, 1993, 2599/93

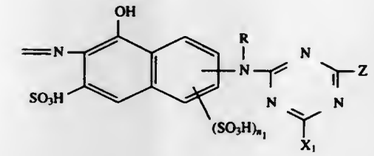
Int. Cl.[6] C09B *62/006;62/08;62/507;* **D06P** *1/38*

U.S. Cl. 534—618 **13 Claims**

1. A reactive dye of the formula

(1)





in which

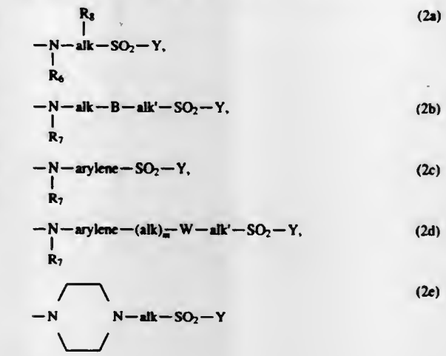
D is the radical of a monoazo, polyazo, metal complex azo, anthraquinone, phthalocyanine, formazan or dioxazine chromophore which is devoid of a triazine fiber-reactive group,

R, R_1 and R_2 are each, independently of one another, hydrogen or C_1–C_4alkyl which is unsubstituted or substituted by halogen, hydroxyl, cyano, C_1–C_4alkoxy, C_1–C_4alkoxycarbonyl, carboxyl, sulfamoyl, sulfo or sulfato,

X is chlorine, fluorine, bromine, 3-carboxy-1-pyridinyl or 3-carbamoyl-1-pyridinyl,

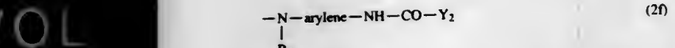
X_1 independently has one of the meanings specified for X,

Z is a reactive radical of the formula



or

-continued



(2f)

R_6 is hydrogen, C_1–C_4alkyl which is unsubstituted or substituted by hydroxyl, sulfo, sulfato, carboxyl or cyano, or a radical



R_7 is hydrogen or C_1–C_4alkyl.

R_8 is hydrogen, hydroxyl, sulfo, sulfato, carboxyl, cyano, halogen, C_1–C_4alkoxycarbonyl,

C–C_4alkanoyloxy, carbamoyl or the group $—SO_2—Y$,

alk and alk' are, independently of one another, C_1–C_6alkylene,

arylene is a phenylene or naphthylene radical which is unsubstituted or substituted by sulfo, carboxyl, C_1–C_4alkyl, C_1–C_4alkoxy or halogen,

Y is vinyl or a radical $—CH_2—CH_2—U$ and U is a leaving group,

Y_1 is a group $—CHX_2—CH_2X_2$ or $—CX_2=CH_2$ and X_2 is chlorine or bromine,

B is the radical —O— or $—NR_7—$,

W is a group $—SO_2—NR_6—$, $—CONR_6—$ or $—NR_6CO—$, and

m is the number 0 or 1, n is the number 1 or 2 and n_1 is the number 0 or 1.

5,599,912

COMPOUNDS AND METHODS FOR SUPPRESSING AN IMMUNE RESPONSE TO SULFOMETHOXOZALE CONTAINING SUBSTANCES

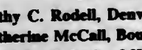
Timothy C. Rodell, Denver; Vidal De La Cruz, Westminster; Catherine McCall, Boulder; James K. Blodgett, and Donald A. McLeod, both of Westminster, all of Colo., assignors to Coretech, Inc., Denver, Colo.

Filed Sep. 10, 1993, Ser. No. 118,819

Int. Cl.[6] A61K *39/395;* **C13K** *5/00;7/00;* **C07H** *1/00*

U.S. Cl. 534—751 **7 Claims**

1. A compound of the formula



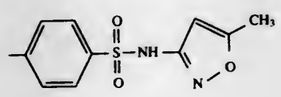
where

R is dextran of average molecular weight of about 10K to about 70K;

X is $—OCH_2C(O)NH(CH_2)_pNH—$ where p is 2–8;

Y is $—C(O)(CH_2)_3C(O)N(H)—$;

Z is



and n is a whole number from 2 to about 70.

5,599,913

CHROMOIONOPHORES, OPTICAL SENSORS CONTAINING THEM AND A METHOD FOR DETERMINING THE PRESENCE OF ALKALI METAL CATIONS OR OF A BASE

Stephen J. Harris, 10 Broadford Crescent, Ballinteer, Dublin 16; Dermot Diamond, Coolquoy, The Ward, County Dublin, both of Ireland, and Michael A. McKervey, 27a Osborne Park, Belfast BT9 6JN, Northern Ireland, United Kingdom

PCT No. PCT/IE93/00046, § 371 Date Mar. 28, 1995, § 102(e) Date Mar. 28, 1995, PCT Pub. No. WO94/04483, PCT Pub. Date Mar. 3, 1994

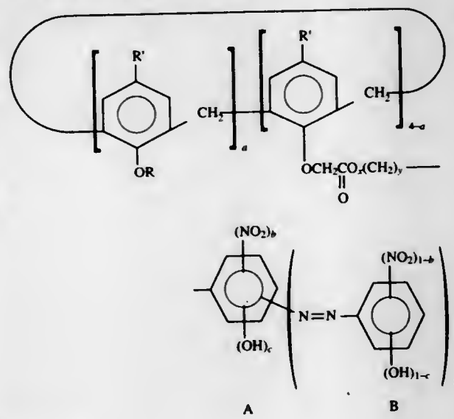
PCT Filed Aug. 6, 1993, Ser. No. 381,912

Claims priority, application Ireland, Aug. 12, 1992, S922577

Int. Cl.[6] C07C *205/42;205/43;205/45;245/08;* **G01N** *31/22*

U.S. Cl. 534—856 **16 Claims**

1. A chromoionophore of formula



IV

A B

wherein

a=0–3,

b=0 or 1,

c=0 or 1,

x=0 or 1,

y=0 or 1,

z=0 or 1,

provided that when Z=0, b=C=1,

R', which is the same or different on each aryl group, is selected from H, halogen, aliphatic hydrocarbyl, aryl, aliphatic hydrocarbylaryl, and derivatives thereof selected from aliphatic hydrocarbyl, aryl and aliphatic hydrocarbylaryl substituted with one or more halo groups, substituted with one or more radicals containing nitrogen substituted by one or more oxo groups, or interrupted by one or more oxygen atoms.

5,599,914

GLYCOSPHINGOLIPIDS WITH A GROUP CAPABLE OF COUPLING IN THE SPHINGOID PORTION, THE PREPARATION AND USE THEREOF

Herbert Wiegand, and Silke Bouslet, both of Marburg, Germany, assignors to Behringwerke Aktiengesellschaft, Marburg, Germany

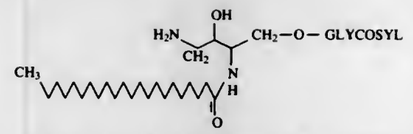
Filed Nov. 24, 1989, Ser. No. 440,798

Claims priority, application Germany, Nov. 27, 1988, 38 40 044.8

Int. Cl.[6] C07G *3/00;37/00;* **C07H** *5/04*

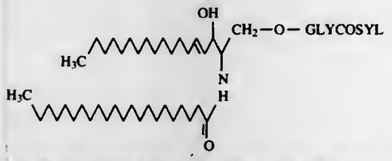
U.S. Cl. 536—4.1 **8 Claims**

1. A process for the preparation of a compound of the formula (III)



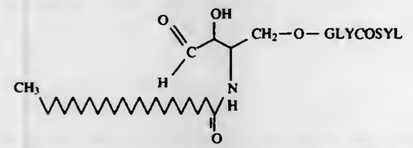
(III)

in which glycosyl is the carbohydrate portion of GM3, GD3, GM2 or GM1, which comprises oxidizing a glycosphingolipid of the formula (I)



(I)

with ozone, and subsequently reducing the reaction product of said oxidizing to a compound of the formula (II),



(II)

and further comprising the reductive amination of said compound of formula (II) wherein glycosyl is as defined above, with an alkali metal cyanoborohydride.

5,599,915

SIALYL LEWIS X MIMETICS

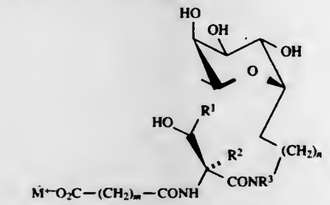
Chi-Huey Wong, Rancho Sante Fe, Calif., and Tetsuya Kajimoto, Wako, Japan, assignors to The Scripps Research Institute, La Jolla, Calif.

Filed Mar. 21, 1995, Ser. No. 407,912

Int. Cl.[6] A61K *31/70;* **C08B** *37/00*

U.S. Cl. 536—18.7 **17 Claims**

1. A compound of the formula



wherein

M^+ is any cation that maintains water-solubility of the compound;

m is 2 or 3;

n is 1 or 2;

R^1 is hydrogen, CH_2OH, CH_2CH_2OH or $CH_2CH_2CH_2OH$;

R^2 is hydrogen, CH_2OH or CH_2CH_2OH, with the provisos that

(a) one of R^1 and R^2 is hydrogen, and

(b) when R^1 is hydrogen, R^2 is CH_2OH or CH_2CH_2OH,

(c) when R^2 is hydrogen, R^1 i s CH_2OH, CH_2CH_2OH or $CH_2CH_2CH_2OH$; and

R^3 is hydrogen, a C_2–C_{10} alkyl or alkylene aldehyde, or an acetal formed by reaction of a C_2–C_{10} alkyl or alkylene group with either a C_1–C_4 alcohol or a C_2–C_4 diol.

5,599,916

CHITOSAN SALTS HAVING IMPROVED ABSORBENT PROPERTIES AND PROCESS FOR THE PREPARATION THEREOF

Jacek Dutkiewicz, Appleton, Wis.; Xin Ning, Alpharetta, Ga.; Jian Qin, Appleton, and Tong Sun, Neenah, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Dec. 22, 1994, Ser. No. 362,395

Int. Cl.[6] C08B *37/08*

U.S. Cl. 536—20 **105 Claims**

1. A process for preparing a water-swellable, water-insoluble chitosan salt, the process comprising:

forming a mixture comprising a water-insoluble chitosan, water, and an add selected from the group consisting of monobasic acids having a pKa_1 less than about 6 and multibasic acids having a pKa_1 less than about 6 and all pKa_n greater than about 5.5, wherein n is an integer greater than 1, wherein the mixture has an equilibrium pH between about 2 and about 6.5, and wherein the mixture is prepared under conditions effective to form a water-soluble chitosan salt, wherein the water-soluble chitosan salt dissolves into the water to form a homogeneous mixture; and

recovering the chitosan salt from the homogeneous mixture, wherein the recovered chitosan salt is water swellable and water insoluble and exhibits an initial Absorbency Under Load value of at least about 14 grams per gram.

5,599,917

INHIBITION OF INTERFERON-γ WITH OLIGONUCLEOTIDES

George R. Coppola, Hartsdale; Bruce A. Beutel, Suffern, both of N.Y., and Arthur H. Bertelsen, Ridgewood, N.J., assignors to PharmaGenics, Inc., Allendale, N.J.

Filed Mar. 17, 1994, Ser. No. 210,222

Int. Cl.[6] C12N *15/00;5/00;* **A61K** *48/00*

U.S. Cl. 536—22.1 **2 Claims**

1. An oligonucleotide selected from the group consisting of those having SEQ ID NOS: 1–39.

5,599,918

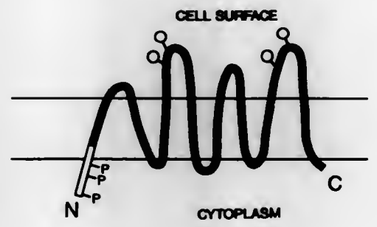
NUCLEIC ACIDS ENCODING TROPHININ AND TROPHININ-ASSISTING PROTEINS

Michiko N. Fukuda, San Diego, Calif., assignor to La Jolla Cancer Research Foundation, La Jolla, Calif.

Filed Oct. 4, 1994, Ser. No. 317,522

Int. Cl.[6] C07H *21/02;21/04;* **C12Q** *1/68*

U.S. Cl. 536—23.1 **26 Claims**



1. A purified nucleic acid molecule, comprising a contiguous nucleotide sequence which encodes the amino acid sequence consisting of SEQ ID NO: 2.

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5,599,919

NUCLEIC ACID ENCODING A TRANSIENTLY-EXPRESSED KINETOCHORE PROTEIN, AND METHODS OF USE

Timothy J. Yen, Havertown, Pa., and Jerome B. Rattner, Calgary, Canada, assignors to Fox Chase Cancer Center, Philadelphia, Pa., and UTI, Inc., Calgary, Canada

Filed Dec. 9, 1994, Ser. No. 353,700
Int. Cl.[6] C12N *15/12;15/00*
U.S. Cl. 536—23.5 6 Claims

1. An isolated, purified nucleic acid molecule that encodes a human kinetochore protein transiently expressed during G2 and M phases of a cell cycle, said protein having a molecular weight between about 340 kD and 420 kD, said protein having a general structure comprising two extended coil domains flanking a non-coil core domain, at least one nuclear localization consensus signal at the amino terminus, a conserved P-loop nucleotide binding site at the carboxyl terminus, and lacking the conserved helix-loop-helix domain characteristic of the SMC family of chromosome condensation proteins.

5,599,920

PERIPHERAL MYELIN PROTEIN CODING SEQUENCE AND METHOD

Pragna I. Patel, Houston, Tex.; Ueli Suter, Menlo Park, Calif.; G. Jackson Snipes, Palo Alto, Calif.; Andrew Welcher, Newbury Park, Calif.; Marino DeLeon, Silver Springs, Md.; James R. Lupski, Houston, Tex., and Eric M. Shooter, Portola Valley, Calif., assignors to Baylor College of Medicine, Houston, Tex.

Continuation of Ser. No. 308,488, Sep. 19, 1994, abandoned, which is a continuation of Ser. No. 879,623, May 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 711,615, Jun. 6, 1991. This application Aug. 21, 1995, Ser. No. 518,474
Int. Cl.[6] C12N *15/12*
U.S. Cl. 536—23.5 1 Claim

1. A purified nucleic acid sequence having the sequence SEQ ID NO: 1, said sequence encoding a peripheral myelin protein characterized by (i) expression predominantly by peripheral Schwann cells, (ii) a molecular weight of about 20,000, and (iii) substantial sequence homology to a peripheral myelin protein obtained from human peripheral nervous tissue.

5,599,921

OLIGONUCLEOTIDE FAMILIES USEFUL FOR PRODUCING PRIMERS

Joseph A. Sorge, Rancho Santa Fe; Dan Shoemaker, Del Mar, and Michael Weiner, San Diego, all of Calif., assignors to Stratagene, La Jolla, Calif.

Filed May 8, 1991, Ser. No. 697,936
Int. Cl.[6] C07H *21/00;21/04*
U.S. Cl. 536—24.33 15 Claims

1. A composition consisting essentially of a family of oligonucleotides all of the same length, said family defined by a nucleotide sequence formula containing six to eight nucleotide positions, one to three of said positions of the formula identifying positions of nucleotide variation among the family members, the remaining nucleotide positions each identifying a nucleotide that is the same in all members of the family, wherein said nucleotide is selected from the group consisting of A, T, G, C and U, wherein T and U are interchangeable.

5,599,922

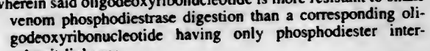
OLIGONUCLEOTIDE N3'-P5' PHOSPHORAMIDATES: HYBRIDIZATION AND NUCLEASE RESISTANCE PROPERTIES

Sergei M. Gryaznov, San Mateo; Ronald G. Schultz, Fremont, and Jer-kang Chen, Palo Alto, all of Calif., assignors to Lynx Therapeutics, Inc., Hayward, Calif.

Filed Mar. 18, 1994, Ser. No. 214,599
Int. Cl.[6] C07H *21/04;* C12Q *1/68*
U.S. Cl. 536—25.3 32 Claims

1. A method of enhancing resistance of an oligodeoxyribonucleotide to snake venom phosphodiesterase, comprising:

forming an oligodeoxyribonucleotide having at least 9 inter-subunit linkages, wherein at least 50% of said inter-subunit linkages are N3'→P5' phosphoramidate inter-subunit linkages of the formula:



where X is O^- or —OR, and R is a 1 to 5 carbon alkyl,

wherein said oligodeoxyribonucleotide is more resistant to snake venom phosphodiestrase digestion than a corresponding oligodeoxyribonucleotide having only phosphodiester inter-subunit linkages.

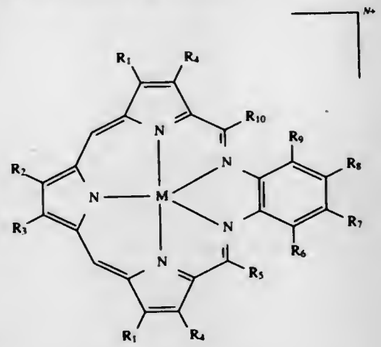
5,599,923

TEXAPHYRIN METAL COMPLEXES HAVING IMPROVED FUNCTIONALIZATION

Jonathan L. Sessler, Austin, Tex.; Tarak D. Mody, and Gregory W. Hemmi, both of Sunnyvale, Calif., assignors to Board of Regents, University of TX, Austin, Tex., and Pharmacyclics, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 98,514, Jul. 28, 1993, and Ser. No. 135,118, Oct. 12, 1993, Pat. No. 5,457,183, which is a continuation-in-part of Ser. No. 822,964, Jan. 21, 1992, Pat. No. 5,252,720, which is a continuation-in-part of Ser. No. 771,393, Sep. 30, 1991, abandoned, which is a continuation-in-part of Ser. No. 539,975, Jun. 18, 1990, Pat. No. 5,162,509, which is a division of Ser. No. 320,293, Mar. 6, 1989, Pat. No. 4,935,498, said Ser. No. 98,514is a division of Ser. No. 822,964. This application Feb. 15, 1994, Ser. No. 196,964
Int. Cl.[6] C07D *487/22*
U.S. Cl. 540—145 34 Claims

1. A texaphyrin having the structure:



wherein

M is H, a divalent metal cation selected from the group consisting of Ca^{+2}, Mn^{+2}, Co^{+2}, Ni^{+2}, Zn^{+2}, Cd^{+2}, Hg^{+2}, Fe^{+2}, Sm^{+2} and UO_2^{+2} or a trivalent metal cation selected from the group consisting of Mn^{+3}, Co^{+3}, Ni^{+3}, Fe^{+3}, Ho^{+3}, Ce^{+3}, Y^{+3}, In^{+3}, Pr^{+3}, Nd^{+3}, Sm^{+3}, Eu^{+3}, Gd^{+3}, Tb^{+3}, Dy^{+3}, Er^{+3}, Tm^{+3}, Yb^{+3}, Lu^{+3}, La^{+3}, and $U+^{3}$;

R_1–R_4 and R_6–R_9 are independently hydrogen, halide other than iodide, hydroxyl, alkyl, aryl, haloalkyl other than iodoalkyl, nitro, formyl, acyl, hydroxyalkyl, oxyalkyl, oxyhydroxyalkyl, carboxy, carboxyalkyl, carboxyamidealkyl, a sapphyrin molecule, or a linker to a sapphyrin molecule;

R_5 and R_{10} are independently hydrogen, alkyl, aryl, hydroxyalkyl, oxyalkyl, oxyhydroxyalkyl, carboxyalkyl, carboxyamidealkyl or a linker to a sapphyrin molecule;

at least one of R_5, R_6, R_9, and R_{10} is other than hydrogen; and

N is an integer less than or equal to 2.

5,599,924

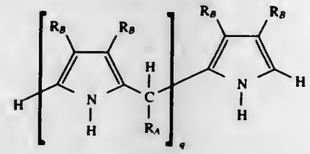
ELECTRON-DEFICIENT PORPHYRINS AND PROCESSES AND INTERMEDIATES FOR PREPARING SAME

Michael J. Therien, Philadelphia, Pa., and Stepben DiMagno, Lincoln, Nebr., assignors to Trustees of The University of Pennsylvania, Philadelphia, Pa.

Continuation-in-part of Ser. No. 64,468, May 20, 1993, Pat. No. 5,493,017, which is a continuation-in-part of Ser. No. 929,943, Aug. 14, 1992, Pat. No. 5,371,199. This application Apr. 28, 1994, Ser. No. 234,651
Int. Cl.[6] C07D *487/22*
U.S. Cl. 540—145 67 Claims

1. A synthetic process comprising the steps of:

(a) contacting an aldehyde having formula R_A—CHO with a pyrrole derivative having formula:



in organic solvent in the presence of acid for a time and under conditions effective to form a reaction mixture comprising water and an adduct of said aldehyde and said pyrrole derivative; and

(b) removing from said reaction mixture a portion of said water; wherein:

at least one R_A is a group that is electron-withdrawing relative to hydrogen;

at least one R_B is H or an acid-stable functional group; and

q is 0, 1, or 2.

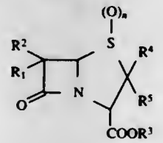
5,599,925

PENAM DERIVATIVES

Shigeru Torii, Okayama-ken; Hideo Tanaka, Okayama; Masatoshi Taniguchi, Toyonaka; Mitio Sasaoka; Takashi Shirol, both of Tokushima-ken, and Yutaka Kameyama, Okayama, all of Japan, assignors to Otsuka Kagaku Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 849,707, Mar. 11, 1992, abandoned. This application Sep. 30, 1994, Ser. No. 314,307
Claims priority, application Japan, Mar. 13, 1991, 3-047085; Mar. 13, 1991, 3-047166
Int. Cl.[6] C07D *499/897*
U.S. Cl. 540—310 3 Claims

1. A penam compound of the formula



wherein R^1 means hydrogen, halogen, amino or protected amino; R^2 means hydrogen, halogen, lower alkoxy, lower acyl, lower alkyl, hydroxy-substituted lower alkyl, protected hydroxy-substituted lower alkyl, hydroxy or protected hydroxy; or R^1 and R^2 may jointly represent oxo; R^3 means hydrogen or a carboxy-protecting group; R^4 means hydrogen; R^5 means a group of the formula $—CH_2Y$ where Y means allylthio or $—SR^6$; R^6 means a lower alkyl group, or which group is unsubstituted or substituted by a substituent selected from the group consisting of halogen, hydroxy, nitro, cyano, phenyl, naphthyl, lower alkyl, amino, mono-lower alkylamino, di-lower alkylamino, mercapto, alkylthio, phenylthio, naphthylthio, formyloxy, lower alkanoyloxy, benzoyloxy, naphthyloyloxy, formyl, lower alkanoyl, benzoyl, naphthyloyl, lower alkoxy, phenoxy, naphthyloxy, carboxy, lower alkoxy carbonyl, phenoxy carbonyl and naphthyloxy carbonyl; and n means 0, 1 or 2.

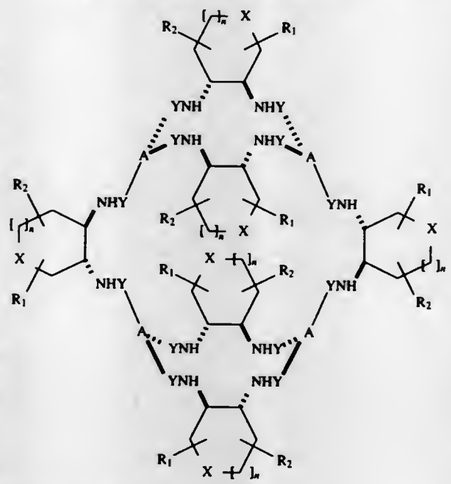
5,599,926

A_4B_6 MACROTRICYCLIC ENANTIOSELECTIVE RECEPTORS FOR AMINO ACID DERIVATIVES, AND OTHER COMPOUNDS

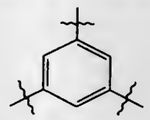
W. Clark Still, New York, N.Y.; Julian A. Simon, Cambridge, Mass.; Shawn D. Erickson, Strasbourg, France; Seung S. Yoon, New York, N.Y., and Jong-In Hong, Seoul, Rep. of Korea, assignors to The Trustees of Columbia University in the City of New York, New York, N.Y.

Continuation-in-part of Ser. No. 901,401, Jun. 19, 1992, Pat. No. 5,342,934. This application Jan. 27, 1994, Ser. No. 188,146
Int. Cl.[6] C07D *487/18;513/18;498/18*
U.S. Cl. 540—456 4 Claims

1. A composition of matter having the structure:



wherein A has the structure:



and R_1 and R_2 are independently the same or different and are H, F, a linear or branched chain alkyl, arylalkyl, alkoxyalkyl, aminoalkyl, alkylaminoalkyl, hydroxyalkyl, (cycloalkyl)alkyl, or acylalkyl group, or an aryl group, a linear or branched chain alkylaryl,

pyridyl, thiophene, pyrrolyl, indolyl or naphthyl group; X is CH_2 or NH; Y is C=O or SO_2; and n is 0 to about 3.

5,599,927

MACROCYCLIC IMMUNOMODULATORS WITH NOVEL CYCLOHEXYL RING REPLACEMENTS

Yat S. Or, and Jay R. Luly, both of Libertyville, Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation of Ser. No. 334,454, Nov. 8, 1994, abandoned, which is a continuation-in-part of Ser. No. 159,406, Nov. 30, 1993, abandoned. This application Dec. 15, 1995, Ser. No. 573,610

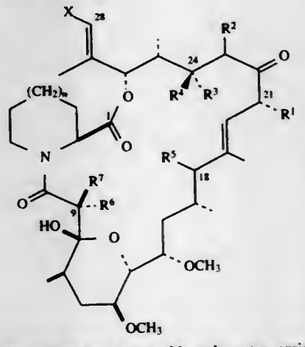
Int. Cl.[6] C07D *496/12*; A61K *31/33*

U.S. Cl. 540—456

6 Claims

1. A compound of the formula:

(II)



or a pharmaceutically acceptable salt, ester amide or prodrug thereof wherein the ester is selected from C1-to-C6 alkyl esters, C5-to-C7 cycloalkyl esters, arylalkyl esters and esters derived alcohol groups in the parent drug by reaction with C1-to-C6 carboxylic acids, C1-to-C6 dicarboxylic acids or aryl-carboxylic acids and wherein the amide result from reaction of a carboxylic acid moiety in the compound of formula II with NH_3, NH_2(C1–C6-alkyl), NH(C1–C6-alkyl)$_2$ or a 5- or 6-membered heterocycle containing one nitrogen atom and wherein the prodrug is selected from the group consisting of (a) acyloxymethyl esters of carboxylic acids, (b) (5-methyl-2-oxo-1,3-dioxolen-4-yl)methyl esters of carboxylic acids, (c) esters derived from alcohol groups in the parent drug by reaction with succinic acid, phosphoric acid, dialkylaminoacetic acid or an amino acid (d) N-Mannich bases of amides or amines, (e) N-hydroxymethyl derivatives of amides, (f) N-acyloxyalkyl derivatives of amides or heterocyclic amines, (g) oxazolidinones derived from ketone groups in the parent drug by reaction with 2-aminoethanol; N-methyl-2-aminoethanol, N-(2-hydroxyethyl)-2-aminoethanol, 2-aminopropanol, 2-amino-2-methylpropanol, 2-amino-2-hydroxymethylpropanol, 3-amino-2-hydroxypropane, 2-amino-1-phenylethanol, 3-aminopropanol or N-methyl- 2-amino-1-phenylpropanol and (h) enol esters derived from ketone groups in the parent drug,

wherein

n is zero or one;

R^1 is selected from the group consisting of methyl, ethyl, propyl, cyclopropylmethyl, 2-oxopropyl, 2-ethanal, 2-hydroxyethyl and allyl;

R^2 is hydrogen or R^2 taken together with R^3 forms a C-22/C-23 bond;

R^3 is selected from the group consisting of hydrogen, hydroxy and protected hydroxy; or R^2 taken together with R^3 forms a C-22/C-23 bond; or R^3 taken together with R^4 is oxo;

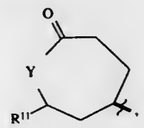
R^4 is hydrogen or R^4 taken together with R^3 is oxo;

R^5 is selected from hydrogen, hydroxy, protected hydroxy and fluoro;

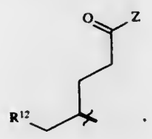
R^6 and R^7 are independently selected from hydrogen, hydroxy and protected hydroxy, with the proviso that at least one of R^6 and R^7 is hydrogen; or R^6 and R^7 taken together are oxo;

X is a substituent selected from the group of radicals having the subformulae:

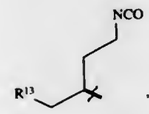
(IIa)



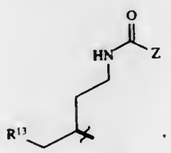
(IIb)



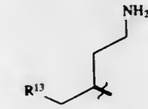
(IIc)



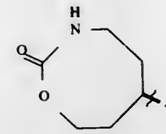
(IId)



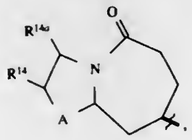
(IId')



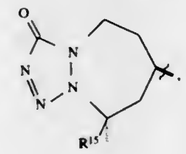
(IIe)



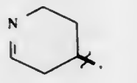
(IIf)



(IIg)

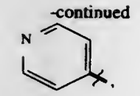


(IIh)

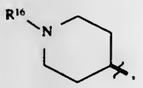


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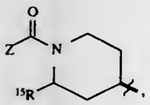
(IIi)



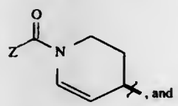
(IIj)



(IIk)

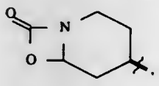


(IIm)



, and

(IIn)



wherein

A is —O— or —S—;

Y is —O— or —NR^{21}— wherein R^{21} is selected from the group consisting of:

(1) hydrogen,

(2) —(C1–C10-alkyl) optionally substituted with hydroxy, amino, aryl or heterocyclic,

(3) aryl and

(4) heterocyclic;

Z is selected from the group consisting of hydrogen, hydroxy, —(C1–C10-alkyl), aryl, heterocyclic, —(C1–C10-alkoxy) and —$NR^{23}R^{24}$, wherein R^{23} and R^{24} are independently selected from:

(1) hydrogen,

(2) aryl,

(3) heterocyclic and

(4) —(C1–C10-alkyl) optionally substituted with hydroxy, amino, aryl or heterocyclic,

or, alternatively, —$NR^{23}R^{24}$ represents a 3- to 7-membered heterocyclic ting, with the proviso that in subformulae (IId), (IIk) and (IIm) Z is other than hydroxy;

R^{11} is hydrogen, hydroxy or methoxy;

R^{12} is selected from the group consisting of:

(1) —CHO,

(2) —(C1–C10-alkyl) optionally substituted with one, two or three substituents independently selected from the group consisting of hydroxy, amino, aryl and heterocyclic,

(3) —(C2–C10-alkenyl) optionally substituted with aryl or heterocyclic,

(4) —CH_2-$NR^{21}R^{22}$ where R^{21} is independently defined as above and R^{22} is hydrogen or acyl;

R^{13} is selected from the group consisting of —CHO, hydroxy, protected hydroxy, —(C2–C10-alkenyl) optionally substituted with aryl and —(C1–C10-alkyl) optionally substituted with aryl, with the proviso that in subformula (IId') R^{13} is other than —CHO;

R^{14} and R^{14a} are independently selected from hydrogen, aryl, heterocyclic and —(C1–C10-alkyl) or, taken together with the carbon atoms to which they are attached, R^{14} and R^{14a} form an aryl group or a heterocyclic group;

R^{15} is hydrogen or hydroxy; and

R^{16} is selected from the group consisting of

(1) hydrogen,

(2) —(C1–C10-alkyl) optionally substituted with hydroxy, amino, aryl or heterocyclic,

(3) aryl,

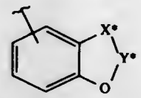
(4) heterocyclic and

(5) —C(=NH)—NH_2;

wherein at each occurrence the hydroxy protecting group is independently selected from methoxymethyl, methylthiomethyl, 2-methoxyethoxymethyl, benzyloxymethyl, 2-(trimethylsilyl)ethoxymethyl, t-butyl, benzyl, triphenylmethyl, tetrahydropyranyl 2,2,2-trichloroethyl, tris(C1-to-C10-alkyl)silyl, (C1-to-C10)loweralkyldiarylsilyl, triphenyimethyldimethylsilyl, triarylsilyl, triarylalkylsilyl, —C(O)H, —C(O) (C1-to-C10-alkyl), —C(O)-aryl, alkoxycarbonyl, —$S(O)_2$-(C1-to-C10 alkyl), and —$S(O)_2$-(aryl);

wherein at each occurrence the aryl group is independently selected from phenyl, 1-naphthyl, 2-naphthyl, fluorenyl, (1,2)-dihydronaphthyl, (1,2,3,4,)-tetrahydronaphthyl and indenyl and wherein each aryl group is unsubstituted or substituted with one, two or three substituents independently selected from the group consisting of —(C1–C10-alkyl), —(C2–C10-alkenyl), halogen, —$(CH_2)_m$N(C1–C6-alkyl)$_2$, wherein m is zero to six, —CN, —CHO, mono-, di-, tri-, or perhalogenated —(C1–C6-alkyl), —$S(O)_p$(C1–C6-alkyl), wherein p is 0, 1 or 2, —C(O)N(C1–C6-alkyl), —$(CH_2)_m$O(C1–C6-alkyl), where m is as defined above, $(CH_2)_q$OC(O)(C1–C6-alkyl), wherein q is zero to six, $(CH_2)_r$C(O)O(C1–C6-alkyl), wherein r is zero to six, —NO_2, —N_3, —$S(O)_2$N(C1–C6-alkyl)$_2$, —(C2-to-C10-alkynyl), —C≡C—$Si(CH_3)_3$, guanidino, hydroxy, —COOH, —(C1–C6-alkoxy), —OC(O)(C1–C6-alkyl), unsubstituted aryl and unsubstituted Het;

wherein at each occurrence the Het group or heterocyclic group is independently selected from the group consisting of indolyl, quinolyl, isoquinolyl, tetrahydroquinolyl, benzofuryl, dihydrobenxofuryl, benzothienyl, azetidinyl, oxetanyl, pyrrolyl, pyrrolinyl, pyrrolidinyl, pyrazolyl, pyrazolinyl, pyrazolidinyl, imidazolyl, imidazolinyl, imidazolidinyl, pyridyl, piperidinyl, homopiperidinyl, pyrazinyl, piperazinyl, pyrimidinyl, pyridazinyl, oxazolyl, oxazolidinyl, isoxazolidinyl. morpholinyl, thiomorpholinyl, thiazolyl, isothiazolidinyl, benzimidazolyl, benzothiazolyl, benzoxazolyl, furyl, thienyl, thiazolidinyl, isothiazolyl, triazolyl, tetrazolyl, isoxazolyl, oxadiazolyl, thiadiazolyl, pyrimidyl, cytosinyl, thiosytosinyl, xanthenyl, xanthonyl, uricyl, thyminyl, and compounds of the formula



where X^* is —CH_2— or —O— and Y^* is —C(O)— or —$[C(R^*)_2]_y$— where R^* is hydrogen or C1–C4-alkyl and y is 1, 2 or 3 and wherein each heterocyclic group is unsubstituted, monosubstituted or disubstituted with substituents independently selected from —(C1-to-C10 alkyl), —(C2-to-C10-alkenyl), halogen, amino, —$(CH_2)_f$N(C1–C6-alkyl)$_2$, wherein f is 0 to 6, —CN, —CHO, mono-, di-, tri-, or perhalogenated —(C1–C6-alkyl), —$S(O)_g$ (C1–C6-alkyl) wherein g is 0, 1 or 2, —C(O)N(C1–C6-alkyl), —$(CH_2)_h$ N(C1–C6-alkyl), wherein h is 0 to 6, —$(CH_2)_i$OC(O)(C1–C6-alkyl) wherein i is 0 to 6, —$(CH_2)_j$ C(O)O(C1–C6-alkyl), wherein j is 0 to 6, —NO_2, —N_3, —$S(O)_2$N(C1–C6-alkyl)$_2$, —(C2–C10-alkynyl), —C≡C—$Si(CH_3)_3$, guanidino, hydroxy, —COOH, —(C1–C6-alkoxy), —OC(O)(C1–C6-alkyl), oxo (=O), unsubstituted aryl and unsubstituted Het; and

wherein at each occurrence the acyl group is independently selected from —C(O)R^{30} wherein R^{30} is aryl, (C1–C10-alkyl), (C2–C10-alkenyl) or heterocyclic.

5,599,928

TEXAPHYRIN COMPOUNDS HAVING IMPROVED FUNCTIONALIZATION

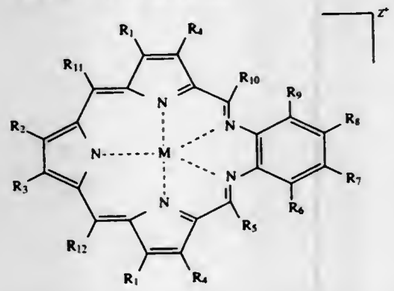
Gregory W. Hemmi, Sunnyvale, Calif.; Jonathan L. Sessler, Austin, Tex., and Tarak D. Mody, Sunnyvale, Calif., assignors to Pharmacyclics, Inc., Sunnyvale, Calif., and Board of Regents, The University of Texas System, Austin, Tex.

Continuation-in-part of Ser. No. 196,964, Feb. 2, 1994. This application Jun. 2, 1995, Ser. No. 459,333

Int. Cl.[6] C07D *487/22*

U.S. Cl. 540—474 20 Claims

1. A texaphyrin having the structure:



wherein

M is H, a divalent metal cation, or a trivalent metal cation;

R_1–R_4, R_7 and R_8 are independently hydrogen, halide, hydroxyl, alkyl, aryl, haloalkyl, nitro, formyl, acyl, hydroxyalkyl, oxyalkyl, oxyhydroxyalkyl, saccharide, carboxy, carboxyalkyl, carboxyamidealkyl, a site-directing molecule, a catalytic group, or a couple to a site-directing molecule or to a catalytic group;

R_6 and R_9 are independently selected from the groups of R_1–R_4, R_7 and R_8, with the proviso that the halide is other than iodide and the haloalkyl is other than iodoalkyl;

R_5 and R_{10}–R_{12} are independently hydrogen, alkyl, aryl, hydroxyalkyl, oxyalkyl, oxyhydroxyalkyl, carboxyalkyl, carboxyamidealkyl or a couple to a saccharide, to a site-directing molecule or to a catalytic group;

at least one of R_5, R_6, R_9, R_{10}, R_{11} and R_{12} is other than hydrogen; and

Z is an integer less than or equal to 5.

5,599,929

METHOD FOR PREPARING OPIPRAMOL

Daniella Gutman, Rishon Lezion, and Mishel Ashkar, De'er Hanna, both of Israel, assignors to Taro Pharmaceutical Industries Ltd, Haifa Bay, Israel

Filed Nov. 9, 1994, Ser. No. 336,837

Int. Cl.[6] C07D *223/24;403/06*

U.S. Cl. 540—592 10 Claims

1. A process for the preparation of opipramol comprising

reacting iminostilbene with 1-bromo-3-chloropropane in the presence of a weak base selected from a hydrogen phosphate salt of the formula M_xHPO_4 and an acetate salt of the formula CH_3COOM, wherein M is an alkali metal, alkaline earth metal or ammonium and x is 1 or 2 depending on the valence of M, in the presence of a catalytically effective amount of a compatible phase transfer agent and in a solvent inert to the reagents in the reaction, to form a N-(3-halopropyl)iminostilbene, which is a a mixture of N-(3-bromopropyl)iminostilbene and N-(3-chloropropyl)iminostilbene;

separating any unreacted 1-bromo-3-chloropropane and any salt present from the reaction mixture;

reacting the thus formed N-(3-halopropyl)iminostilbene in situ, without isolation from the reaction mixture, with N-(2-hydroxyethyl)piperazine in the presence of a base to form opipramol and

separating opipramol from the reaction mixture.

5,599,930

SUBSTITUTED INDOLES AS ANTI-AIDS PHARMACEUTICALS

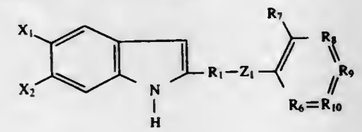
Donna L. Romero, and Richard C. Thomas, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 176,030, Dec. 30, 1993, abandoned, which is a continuation-in-part of Ser. No. 725,053, Jul. 3, 1991, abandoned. This application Feb. 17, 1994, Ser. No. 197,589

Int. Cl.[6] C07D *401/14;413/14*

U.S. Cl. 544—121 2 Claims

1. A piperazine of the formula



where:

(I) R_1 is —CO—;

(II) Z_1 is piperazine;

(III) R_6 is —N—;

(IV) R_7 is $—N(R_{7-5})(R_{7-6})$ where

(A) R_{7-5} is C_1–C_6 alkyl,

(B) R_{7-6} is —H;

(V) R_8 is $—CR_{8-1}$=where R_{8-1} is —H;

(VI) R_9 is $—CR_{9-1}$=where R_{9-1} is —H;

(VII) R_{10} is $—CR_{10-1}$=where R_{10-1} is —H;

(VIII) X_2 is —H;

(IX) X_1 is;

(A) —II—CO—CF_9.

(B) $—N(X_{1-7})—CO—O—X_{1-6}$ where X_{1-6} is C_1–C_4 alkyl and X_{1-7} is —H or C_1–C_3 alkyl,

(C) $—N(X_{1-7})—CO—N(X_{1-2})(X_{1-2})$ where

(1) X_{1-2} and X_{1-8} are the same or different and are —H, C_1–C_6 alkyl, —ϕ, 2-pyridinyl, 3-pyridinyl, 4-pyridinyl and where X_{1-2} and X_{1-3} can be taken together with the attached nitrogen atom, and other heteroatom if necessary, to form a ring selected from the group consisting of 1-pyrrolidinyl, 1-piperidinyl, 1 -piperazinyl, 1-morpholinyl and 1 piperazinyl optionally substituted in the 4-position with C_1–C_6 alkyl,

in the 3- and/or 5-position with C_1–C_3 alkyl, and N-oxides thereof

(2) X_{1-7} is as defined above,

(D) $—NH—CO—(CH_2)_{n4}NX_{1-2}X_{1-2}$ where n_4 is 1 thru 8 and X_{1-2} and X_{1-3} are as defined above,

(E) $—N(X_{1-7})—CO—N(X_{1-7})—(CH_2)_{n4}—N(X_{1-8})$ where n_4, X_{1-2}, X_{1-3} and X_{1-7} are as defined above,

(F) $—N(X_{1-7})—CO—N(X_{1-7})—(CH_2)_{n6}—X_{1-8}$ where

(1) n_5 is 0 thru 3,

(2) X_8 is 2-pyridinyl, 3-pyridinyl and 4-pyridinyl,

(2) X_{1-7} is as defined above,

(G) $—NH—SO_2—CF_3$.

(H) $—NX(_{1-7})—SO_2—(CH_2)_{n4}—N(X_{1-2})$ (X_{1-3}) where n_4, X_{1-2}, X_{1-8} and X_{1-7} are as defined above.

(I) $—N(X_{1-7})—SO_2—N(X_{1-2})(X_{1-3})$ where X_{1-2}, X_{1-3} and X_{1-7} are as defined above,

(J) $—N(X_{1-4})—SO_2—X_{1-5}$ where X_{1-5} is C_1–C_4 alkyl and where X_{1-4} and X_{1-5} are taken together to form a heterocyclic ring of 5 or 6 atoms,

(K) $—N(X_{1-7})—SO_2—(CH_2)_{n4}—X_{1-5}$ where n_5, X_{1-7} and X_{1-5} are as defined above,

(L) —NH—CO-[4—(1—X_{1-2})piperidinyl] where X_{1-2} is —H, and pharmaceutically acceptable salts thereof.

5,599,931

PROCESS FOR SEPARATING STEREOISOMERS OF FOLINIC ACID

Giorgio Ripa; Rodolfo Piva, both of Milan, Italy, and Ernst Fekder, Riva S. Vitale, Switzerland, assignors to Bracco S.p.A., Milan, Italy

Continuation of Ser. No. 290,812, Aug. 17, 1994, abandoned. This application Jun. 1, 1995, Ser. No. 456,767

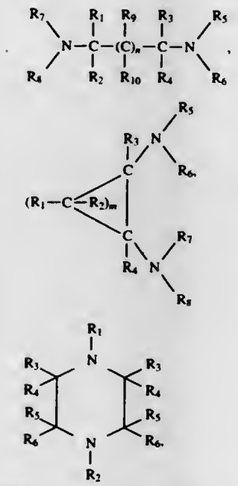
Claims priority, application Italy, Feb. 20, 1992, MI92A0367

Int. Cl.[6] C07D *475/04*

U.S. Cl. 544—258 11 Claims

1. A process for the separation of the (6R) and (6S) diastereoisomers of folinic acid or the calcium salt thereof of the desired high optical purity, which comprises the steps of:

a) reacting racemic folinic acid in a liquid medium consisting of 1) water; 2) a mixture of water and a protic organic solvent which is a member selected from the group consisting of methanol, ethanol, n-propanol, isopropanol, ethylene glycol, 1,2-propylene glycol, 1,3-propylene glycol, formamide and N-methyl-formamide; 3) water, said protic organic solvent as in 2) and a dipolar aprotic organic solvent which is dimethylformamide, dimethylacetamide, dimethylsulphoxide, N-methyl-pyrrolidone or hexamethylphosphoramide; 4) dimethyl acetamide or 5) a mixture of water and dimethyl acetamide with a basic diamine, said diamine having formula I, II or III



wherein:

R_1 to R_8 are the same or different, and are H or straight or branched C_{1-6} alkyl groups, unsubstituted or substituted by 1–4 OH groups, 1–4 alkoxy groups or hydroxyalkoxy groups,

R_9 and R_{10} are the same or different, and are the same as R_1 or OH,

n is 0–6, and

m is 2–8;

at a temperature of 5°–35° C. followed by cooling at 25°–5° C. whereby the racemic salt of folinic acid and said diamine is obtained;

b) dissolving said racemic salt from step a) in a solvent as the solvent defined in step a) hereinabove at a temperature of 25°–70° C., followed by cooling to about 0° C. whereby the first solid which separates upon cooling contains a major portion of a first one of the said (6R) or (6S) diastereoisomers, the major portion of the other second isomer remaining in the crystallization mother-liquors;

c) purifying by recrystallization at least once the isomer-enriched solid from step b), from the same solvent used in said step b) until the first diastereoisomeric salt with said diamine is obtained in a desired optical purity, and then converting said salt with said diamine into the calcium salt and when free folinic acid as the first diastereoisomer is desired reacting said calcium salt with hydrochloric acid in water and cooling to precipitate said free folinic acid from said first diastereoisomer;

d) isolating the second diastereoisomeric salt from the mother-liquors from step b).

5,599,932

INTERCALATORS HAVING AFFINITY FOR DNA AND METHODS OF USE

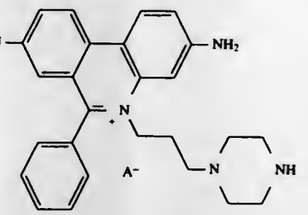
Christopher Bieniarz, Highland Park; Jeffrey B. Huff, Park Ridge, and Denis R. Henrard, Lake Forest, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 265,342, Jun. 23, 1994, which is a continuation-in-part of Ser. No. 86,285, Jun. 30, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 464,185

Int. Cl.[6] C07D *401/06*

U.S. Cl. 544—361 2 Claims

1. A compound having the formula



wherein A^- is an acceptable monvalent counter anion.

5,599,933

SURFACTANT COMPOSITION AND METHOD OF MAKING THE SAME

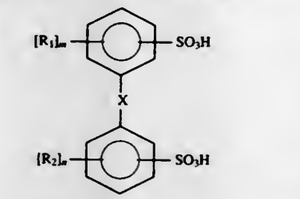
Richard J. Kaiser, Bethlehem, Pa., assignor to Binney & Smith Inc., Easton, Pa.

Continuation of Ser. No. 110,877, Aug. 24, 1993, abandoned, which is a division of Ser. No. 839,330, Feb. 20, 1992, Pat. No. 5,262,535. This application Mar. 15, 1995, Ser. No. 404,362

Int. Cl.[6] C07D *295/00;265/30;* C07F *9/28*

U.S. Cl. 544—402 15 Claims

1. A method of formulating a surfactant composition comprising reacting a sulfonic acid compound of the formula



wherein X is a member selected from the group consisting of N, O and S; R_1 and R_2 are independently a straight or branched, saturated or unsaturated, nonaromatic hydrocarbon of four to eighteen

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carbon atoms, m is 1 or 2, and n is 0, 1, or 2; with an amine which is liquid at room temperature by:

(a) adding said amine and said sulfonic acid compound until a pH of from about 7.0 to about 10.0 is achieved.

5,599,934

Patent Not Issued For This Number

5,599,935

BISQUINOLINOL AND BISBENZOQUINOLINOL COMPOUNDS, AND PROCESS FOR PRODUCING SAME

Kazuhisa Hiratani; Toshikazu Takahashi, both of Tsukuba; Kazuyuki Kasuga, Tsuchiura, and Hideki Sugihara, Tsukuba, all of Japan, assignors to Director-General of Industrial Science and Technology, Japan

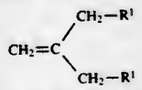
Filed Nov. 3, 1995, Ser. No. 552,860

Claims priority, application Japan, Nov. 17, 1994, 6-283083

Int. Cl.[6] C07D *401/06*

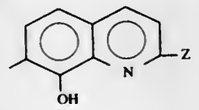
U.S. Cl. 546—101 **4 Claims**

1. A compound having the following general formula (I):



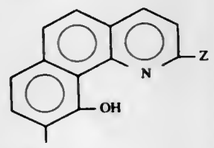
(I)

wherein said R^1 groups are the same and R^1 is selected from the group consisting of



where Z is H or alkyl

and



where Z is H or alkyl.

5,599,936

ISOINDOLINONE DERIVATIVE, PREPARATION THEREOF AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAME

Michel Barreau, Montgeron; Michel Cheve, Soisy Sur Seine; Marie-Christine Dubroeucq, Enghein les Bains; Gilles Dutruc-Rosset, Paris, and Franco Manfre, Limeil-Brevannes, all of France, assignors to Rhone-Poulenc Rorer S.A., Antony Cedex, France

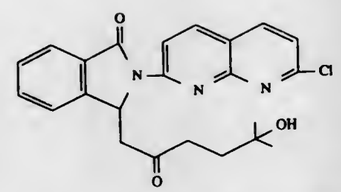
Division of Ser. No. 286,294, Aug. 5, 1994, Pat. No. 5,494,915. This application Jun. 7, 1995, Ser. No. 476,749

Claims priority, application France, Feb. 7, 1992, 92 01382

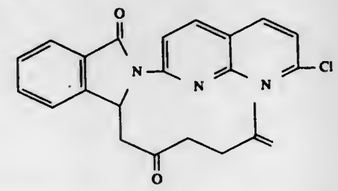
Int. Cl.[6] C07D *471/04*

U.S. Cl. 546—122 **6 Claims**

1. Process for the preparation of racemic isoindolinone derivative of formula



characterized by hydrating a racemic hexenyl containing compound of formula:



in the presence of an acid in an aqueous-organic medium.

5,599,937

HETEROAROMATIC QUINUCLIDINENES, THEIR USE AND PREPARATION

Gunilla Glas, Kista; Ulf Hacksell, Uppsala; Gary Johansson, Uppsala; Björn Nilsson, Uppsala; Lisbeth Nilvebrant, Bromma, and Gunnar Nordvall, Södertälje, all of Sweden, assignors to Pharmacia AB, Stockholm, Sweden

PCT No. PCT/SE93/00415, § 371 Date Nov. 8, 1994, § 102(e) Date Nov. 8, 1994, PCT Pub. No. WO93/23395, PCT Pub. Date Nov. 25, 1993

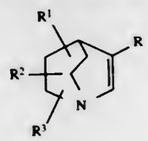
PCT Filed May 11, 1993, Ser. No. 325,407

Claims priority, application Sweden, May 11, 1992, 9201478

Int. Cl.[6] C07D *453/02*; A61K *31/44*

U.S. Cl. 546—133 **11 Claims**

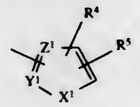
1. A compound of the general Formula I:



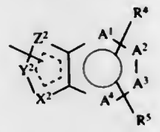
I

wherein

R is a group of the general Formula II or III:



II



III

where

X^1 represents oxygen or sulphur and Y^1 and Z^1 both represent carbon;

one of X^2, Y^2 and Z^2 represents oxygen or sulphur and the other two both represent carbon or one represents nitrogen and the other represents carbon, and the dotted line in Formula III represents an optional additional carbon-carbon or carbon-nitrogen bond;

A^1, A^2, A^3 and A^4 each represent carbon or, when one of X^2, Y^2 and Z^2 represents oxygen or sulphur and the other two both represent carbon, one of A^1, A^2, A^3 and A^4 may represent nitrogen and the others carbon;

R^1, R^2 and R^3 independently represent hydrogen, $C_{1\text{-}10}$alkyl, $C_{2\text{-}10}$alkenyl, $C_{2\text{-}10}$alkynyl, $C_{3\text{-}10}$cycloalkyl, $C_{5\text{-}10}$cycloalkenyl, $C_{4\text{-}10}$cycloalkylalkyl, $C_{6\text{-}10}$cycloalkylalkenyl, $C_{1\text{-}10}$alkoxy, $C_{2\text{-}10}$alkenyloxy, $C_{2\text{-}10}$alkynyloxy, $C_{3\text{-}10}$cycloalkyloxy, $C_{5\text{-}10}$ cycloalkenyloxy, $C_{4\text{-}10}$cycloalkylalkoxy, $C_{6\text{-}10}$cycloalkylalkenyloxy, hydroxy, hydroxy-$C_{1\text{-}10}$alkyl, or $(CH_2)_nAr$, where Ar is an optionally substituted aryl selected from the group consisting of phenyl and naphthyl or heteroaryl, the latter containing 1 to 3 heteroatoms selected from oxygen, sulphur and nitrogen and being selected from the group consisting of thiophene, furan, pyrrole, imidazole, pyrazole, thiazole, isothiazole, oxazole, isoxazole, triazole, pyridine, benzofuran, isobenzofuran, benzothiazole, benzothiophene, indole, isoindole, oxadiazole and benzooxazole and n is an integer 0 to 10; and

R^4 and R^5 independently represent hydrogen, $C_{1\text{-}10}$alkyl, $C_{2\text{-}10}$alkenyl, $C_{2\text{-}10}$alkynyl, $C_{3\text{-}10}$cycloalkyl, $C_{3\text{-}10}$cycloalkenyl, $C_{4\text{-}10}$cycloalkylalkyl, $C_{6\text{-}10}$cycloalkylalkenyl, halogen or $(CH_m)_nB$, wherein $(CH_m)_n$, in which n is as defined above and m independently is an integer 0 to 2, represents a bond or a straight or branched, saturated or unsaturated hydrocarbon chain and B represents Ar (as defined above), COR^6, $COOR^6$, $CON(R^6)_2$, $N(R^6)_2$, OR^6, CN, NO_2, $C{=}NOR^6$, $OCOR^6$, $N(R^6)COR^6$, $C(R^6)_2OR^6$, $OCOC(OH)(R^6)_2$ or trifluoromethyl where R^6 independently represents hydrogen, $C_{1\text{-}10}$alkyl, $C_{2\text{-}10}$alkenyl, $C_{2\text{-}10}$alkynyl, $C_{3\text{-}10}$cycloalkyl, $C_{5\text{-}10}$cycloalkenyl, $C_{4\text{-}10}$cycloalkylalkyl, $C_{6\text{-}10}$cycloalkylalkenyl, $(CH_2)_nAr$ or a bi- or tricyclic ring system, wherein Ar and n are as defined above; or

R^4 and R^5 are interconnected to complete a saturated or unsaturated ring which may contain 1 or 2 hetero atoms;

with the proviso that when R represents a group of Formula II and R^1, R^2 and R^3 each are hydrogen, R is other than 2-furyl, 4-methyl-2-furyl and 5-methyl-2-furyl; and physiologically acceptable salts thereof.

5,599,938

PROCESS FOR PREPARING A PIPERIDINE DERIVATIVE

David W. S. Latham; Michael D. Goodyear, and Andrew J. Whitehead, all of Ware, Great Britain, assignors to Glaxo Group Limited, London, England

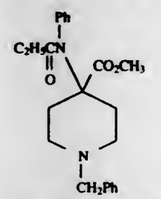
Filed Aug. 9, 1994, Ser. No. 287,910

Claims priority, application Great Britain, Aug. 13, 1993, 9316863

Int. Cl.[6] C07D *211/56*

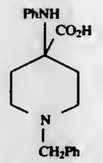
U.S. Cl. 546—224 **10 Claims**

1. A process for the preparation of the compound of formula (I)



(I)

which comprises reading a compound of formula (II) or an acid addition salt thereof



(II)

with propionic anhydride and then treating the resultant product with methanol.

5,599,939

PROCESS FOR THE PREPARATION OF 2,3,5,6-TETRACHLOROPYRIDINE

Niels Friis, Bækmarksbro, and Per Frylich, Harboør, both of Denmark, assignors to Cheminova Agro A/S, Harboor, Denmark

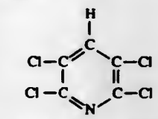
Division of Ser. No. 290,946, Aug. 22, 1994. This application May 31, 1995, Ser. No. 455,161

Claims priority, application Denmark, Dec. 22, 1993, 1535/92

Int. Cl.[6] C07D *213/133;213/61*

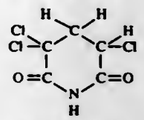
U.S. Cl. 546—250 **9 Claims**

1. A process for the preparation of 2,3,5,6-tetrachloropyridine of formula I



I

from 3,3,5-trichloroglutarimide of formula II .



II

wherein the 3,3,5-trichloroglutarimide is reacted

a. with phosphorous trichloride or phosphorous oxytrichloride or mixtures thereof in the presence from the start of catalytic amounts of hydrogen chloride, followed by a conversion of polyphosphorous compounds formed into phosphorous oxytrichloride by supplying gaseous chlorine,

b. optionally supplying further phosphorous trichloride before supplying the chlorine.

5,599,940

N-ACYLOXYALKYL-CARBOXAMIDES AND PROCESS FOR THEIR PREPARATION

Reinhard Lantzsch, Wuppertal, and Werner Lindner, Köln, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

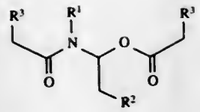
Filed Feb. 24, 1995, Ser. No. 393,960

Claims priority, application Germany, Mar. 4, 1994, 44 07 182.5

Int. Cl.[6] C07C *69/63;67/02*

U.S. Cl. 546—329 **1 Claim**

1. Isolated pure N-acyloxyalkyl-carboxamides of the general formula (I):



(I)

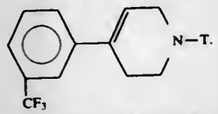
in which
R^1 is alkyl, alkenyl, alkinyl, cycloalkyl, cycloalkylalkyl, arylalkyl or heteroarylalkyl, each of which is optionally substituted,
R^2 is optionally substituted alkyl and
R^3 is hydrogen, halogen or optionally substituted alkyl.

5,599,941
N-SUBSTITUTED TRIFLUOROMETHYLPHENYLTETRAHYDROPYRIDINES PROCESS FOR THE PREPARATION THEREOF INTERMEDIATES IN SAID PROCESS AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Umberto Guzzi; Constantino Palmieri, and Tiziano Croci, all of Milan, Italy, assignors to Sanofi, France

Division of Ser. No. 141,066, Oct. 26, 1993, Pat. No. 5,462,945, which is a continuation of Ser. No. 705,704, May 23, 1991, Pat. No. 5,281,606. This application May 31, 1995, Ser. No. 455,287
Claims priority, application France, May 23, 1990, 90 06474
Int. Cl.[6] C07D *401/06;211/70*
U.S. Cl. 546—346 **1 Claim**

1. A compound of formula (IV)



(IV)

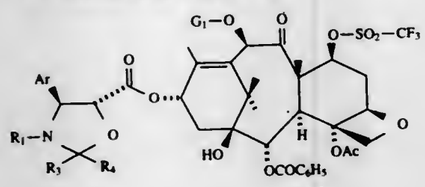
wherein -T represents -R-CO-G or -Q-CO-M wherein -R- and -Q-, represent a straight or branched alkylene radical of from 1 to 3 carbon atoms, -G may represent naphthyl monosubstituted with hydroxy or (C_1–C_4) alkoxy; naphthyl di-substituted with hydroxy, (C_1–C_4) alkoxy or (C_1–C_4) alkyl; or naphthyl substituted with methylenedioxy, and -M may represent naphthyl; naphthyl monosubstituted with (C_1–C_4) alkyl pyridyl; or (C_1–C_4) aklyl-pyridyl; and the addition salts thereof with mineral or organic acids.

5,599,942
TAXOID INTERMEDIATES

Hervé Bouchard, Ivry Sur Seine; Jean-Dominique Bourzat, Vincennes, and Alain Commercon, Vitry-Sur-Seine, all of France, assignors to Rhone-Poulenc Rorer S.A., Antony, France

Division of Ser. No. 162,984, Dec. 8, 1993. This application Jun. 7, 1995, Ser. No. 483,697
Claims priority, application France, Dec. 9, 1992, 92 14813
Int. Cl.[6] C07D *263/04;263/06*
U.S. Cl. 548—215 **10 Claims**

1. A compound of the formula XXIII:



(XXIII)

in which
Ar is an aryl radical;
R_1 is a benzoyl radical or a radical R_2—O—CO— in which R_2 is:
a straight or branched alkyl radical containing 1 to 8 carbon atoms, an alkenyl radical containing 2 to 8 carbon atoms, an alkynyl radical containing 3 to 8 carbon atoms, a cycloalkyl radical containing 3 to 6 carbon atoms, a cycloalkenyl radical containing 4 to 6 carbon atoms or a bicycloalkyl radical containing 7 to 11 carbon atoms, these radicals being unsubstituted or substituted by one or more halogen atoms, hydroxy radicals, alkyloxy radicals containing 1 to 4 carbon atoms, dialkylamino radicals in which each alkyl portion contains 1 to 4 carbon atoms, piperidino radicals, morpholino radicals, 1-piperazinyl radicals, cycloalkyl radicals containing 3 to 6 carbon atoms, cycloalkenyl radicals containing 4 to 6 carbon atoms, phenyl radicals, cyano radicals, carboxy radicals, or alkyloxycarbonyl radicals whose alkyl portion contains 1 to 4 carbon atoms,
or a phenyl radical being unsubstituted or substituted by one or more halogen atoms, alkyl radicals containing 1 to 4 carbon atoms, or alkyloxy radicals containing 1 to 4 carbon atoms,
or a saturated or unsaturated 4- to 6-membered nitrogen-containing heterocyclyl radical being unsubstituted or substituted by one or more alkyl radicals containing 1 to 4 carbon atoms;
R_3 and R_4, which are identical or different, are hydrogen, or an alkyl radical containing 1 to 4 carbon atoms, or an aralkyl radical whose alkyl portion contains 1 to 4 carbon atoms or an aryl radical, or alternatively R_3 is an alkoxy radical containing 1 to 4 carbon atoms or a trihalomethyl radical or a phenyl radical substituted by a trihalomethyl radical and R_4 is a hydrogen atom, or R_3 and R_4 form, together with the carbon atom to which they are attached, a 4- to 7-membered ring, and
G_1 is a hydrogen atom or an acetyl, alkoxyacetyl or alkyl radical or a hydroxy-protecting group.

5,599,943
METHOD FOR PRODUCING TETRAZOLYLBENZENE COMPOUND

Takeshi Kato, Higashiosaka, and Yasushi Shida, Sakai, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 83,697, Jun. 29, 1993, Pat. No. 5,484,955. This application Aug. 28, 1995, Ser. No. 519,717
Claims priority, application Japan, Jul. 6, 1992, 4-178484
Int. Cl.[6] C07D *257/00*
U.S. Cl. 548—252 **14 Claims**

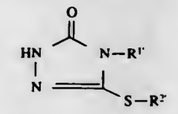
1. A process for producing a tetrazolylbenzene compound which comprises reacting a cyanobenzene compound with a compound of the formula $(R)_3SnN_3$, wherein R is a C_{2-18} alkyl and acidifying the reaction mixture wherein the acidifying is carried out in the presence of nitrous acid or a salt thereof.

5,599,944
INTERMEDIATES FOR HERBICIDAL SULPHONYLAMINOCARBONYLTRIAZOLINONES HAVING SUBSTITUENTS WHICH ARE BONDED VIA SULPHUR

Klaus-Helmut Müller, Düsseldorf; Peter Babczinski, Wuppertal; Hans-Joachim Santel, Leverkusen; Robert R. Schmidt, Bergisch-Gladbach; Kurt Findeisen, Leverkusen; Markus Lindig, Langenfeld; Klaus Lürssen, Bergisch-Gladbach, and Harry Strang, Düsseldorf, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of Ser. No. 125,975, Sep. 23, 1993, Pat. No. 5,523,409, and Ser. No. 136,429, Oct. 13, 1993, Pat. No. 5,380,863, which is a division of Ser. No. 870,867, Apr. 20, 1992, Pat. No. 5,276,162, which is a division of Ser. No. 777,824, Oct. 15, 1991, Pat. No. 5,149,356, which is a division of Ser. No. 596,845, Oct. 12, 1990, Pat. No. 5,085,684, said Ser. No. 125,975is a division of Ser. No. 868,065, Apr. 13, 1992, Pat. No. 5,262,389, which is a division of Ser. No. 741,702, Aug. 6, 1991, Pat. No. 5,166,356, which is a division of Ser. No. 168,823, Mar. 16, 1988, Pat. No. 5,061,311. This application Aug. 24, 1994, Ser. No. 295,446
Claims priority, application Germany, Mar. 24, 1987, 37 09 574.9; Oct. 12, 1989, 39 34 081.3; Nov. 3, 1989, 39 36 622.7; Nov. 3, 1989, 39 36 623.5
Int. Cl.[6] C07D *249/12*
U.S. Cl. 548—263.6 **18 Claims**

1. A substituted triazolinone of the formula



in which

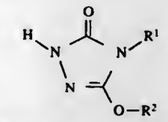
	$R^{1'}$ is	and	$R^{2'}$ is
(a)			CH_3
(b)			C_2H_5
(c)			C_3H_7
(d)			$CH(CH_2)_2$
(e)			$CH_2-CH=CH_2$
(f)	$CH_2-CH=CH_2$		C_2H_5
(g)	$CH_2-CH=CH_2$		$CH_2-CH=CH_2$
(h)	$CH_2-CH=CH_2$		$CH(CH_3)_2$
(i)	$CH_2-CH=CH_2$		C_3H_7
(j)			$CH_2-C\equiv CH$
(k)	$CH_2-CH=CH_2$		$CH_2-C\equiv CH$
(l)	OCH_3		CH_3
(m)	OCH_3		C_2H_5
(n)	OC_2H_5		CH_3
(o)	OC_2H_5		C_2H_5
(p)	OC_3H_7-n		$CH_2-CH=CH_2$
(q)	$OCH_2-CH=CH_2$		C_2H_5.

5,599,945
PROCESS FOR THE PREPARATION OF ALKOXYTRIAZOLINONES

Heinz-Jürgen Wroblowsky, Langenfeld, and Klaus König, Odenthal, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

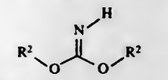
Filed Sep. 15, 1995, Ser. No. 528,583
Claims priority, application Germany, Sep. 23, 1994, 44 33 967.4
Int. Cl.[6] C07D *249/12*
U.S. Cl. 548—263.6 **9 Claims**

1. A process for the preparation of an alkoxy-triazolinone of the formula



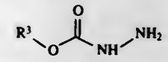
(I)

in which
R^1 is optionally cyano, halogen or C_1–C_4-alkoxy substituted alkyl, alkenyl or alkinyl, each of which has up to 6 carbon atoms; optionally halogen or C_1–C_4-alkyl substituted C_3–C_6-cycloalkyl; optionally halogen or C_1–C_4-alkyl substituted C_3–C_6-cycloalkyl-C_1–C_4-alkyl; optionally substituted C_6–C_{10}-aryl or optionally substituted C_6–C_{10}-aryl-C_1–C_4-alkyl wherein the substituents on said aryl moieties are selected from the group consisting of carboxyl, cyano, nitro, halogen, C_1–C_4-alkyl, C_1–C_4-halogenoalkyl, C_1–C_4-alkoxy, C_1– C_4-halogenalkoxy or C_1–C_4-alkoxy-carbonyl, and
R^2 is optionally halogen, or C_1–C_4-alkoxy substituted alkyl, alkenyl or alkinyl, each of which has up to 6 carbon atoms; optionally halogen or C_1–C_4-alkyl substituted C_3–C_6-cycloalkyl; optionally halogen or C_1–C_4-alkyl substituted C_3–C_6-cycloalkyl-C_1–C_4-alkyl; optionally substituted C_6–C_{10}-aryl; or optionally substituted C_6–C_{10}-aryl-C_1–C_4-alkyl wherein the substituents on said aryl moieties are selected from the group consisting of carboxyl, cyano, nitro, halogen, C_1–C_4-alkyl, C_1–C_4-halogenoalkyl, C_1–C_4-alkoxy, C_1– C_4-halogenalkoxy or C_1–C_4-alkoxy-carbonyl,
which comprises
1) reacting an iminocarbonic diester of the formula



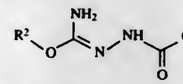
(II)

in which
R^2 has the abovementioned meaning,
with a carbazinic ester of the formula



(III)

in which
R^3 is C_1–C_4-alkyl which is optionally substituted by C_1–C_4-alkoxy; or is phenyl; or benzyl,
optionally in the presence of a reaction auxiliary and a diluent at a temperature between −20° C. and +120° C. wherein the reaction auxiliary is a protonic acid, a polymeric acid or an acidic ion exchanger; and
2) taking the semicarbazide derivative formed above which has the formula

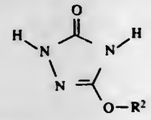


(IV)

in which
R^2 and R^3 have the abovementioned meaning and/or the corresponding tautomeric compound which is formed in step 1,

optionally isolating it, and subjecting it to a cyclizing condensation reaction optionally in the presence of a base and a diluent; and

3) reacting the resulting alkoxytriazolinone formed in step 2 which has the formula



(V)

in which

R^2 has the abovementioned meaning

and/or the corresponding tautomeric compound

with an alkylating agent of the formula

(VI)

in which

X represents halogen or the groups —O—SO_2—O—R^1 or —O—CO—O—R^1 and

R^1 has the abovementioned meaning at temperatures between 0° C. and 150° C., optionally in the presence of a base and optionally in the presence of a diluent.

5,599,946

3-(2-TRIALKYLSILYLOXY)ETHYL-7-ETHYL-1H-INDOLES AND METHOD FOR THEIR PREPARATION

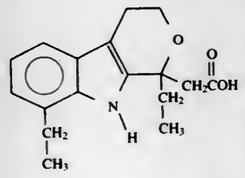
Giobbio Vincenzo, Turin, and Polastri Franco, Milanino-MI, both, Italy, assignors to Teva Pharmaceutical Industries Ltd., Petah Tiqva, Israel

Filed May 30, 1995, Ser. No. 453,740

Int. Cl.[6] C07D *491/052*

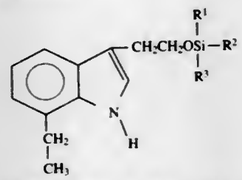
U.S. Cl. 548—432 **4 Claims**

1. A method for preparing etodolac having the following formula:



etodolac

comprising reacting 7-ethyltryptophol with a trialkylsilyl derivative having the formula I:



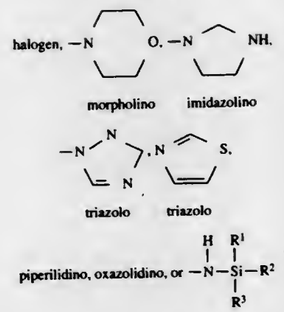
(I)

wherein R^1, R^2 and R^3 are the same or different and each is an alkyl group having from 1 to 6 carbon atoms, to yield a 3-(2-trialkylsilyloxy)ethyl-7-ethyl-1H-indole having the following formula (II):



II

wherein R is:



morpholino imidazolino

triazolo triazolo

piperilidino, oxazolidino, or

and reacting said 3-(2-trimethylsilyloxy)ethyl-7-ethyl-1H-indole with a lower alkyl ketoester to produce etodolac ester, and hydrolyzing said etodolac ester to produce etodolac.

5,599,947

FATTY ACID ANALOGS AND PRODRUGS

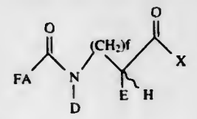
Sean T. Nugent, Grayslake, and Richard A. Mueller, Glencoe, both of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Continuation-in-part of Ser. No. 4,370, Jan. 14, 1993, abandoned. This application Mar. 24, 1995, Ser. No. 410,450

Int. Cl.[6] C07D *209/20;233/64;* **C07C** *229/06;233/01*

U.S. Cl. 548—496 **15 Claims**

1. A compound of the formula



wherein:

FA is a fatty acid moiety of the formula C_1–C_3 alkyl $O(CH_2)_{8-12}$;

f is zero or one;

X is selected from the group consisting of OH, O-alkyl having from one to six carbon atoms, and $N(R_1)R$ in which R and R_1 are independently H or alkyl having from one to six carbon atoms or arylalkyl having from one to eight carbon atoms;

D is selected from the group consisting of H, C_1–C_3 alkyl, C_6–C_9 aryl, C_1–C_3 alk C_6–C_9 aryl;

E is selected from the group consisting of H, C_1–C_3 alkyl, C_6–C_9 aryl, C_1–C_3 alk C_6–C_9 aryl, OH or halo mono substituted C_1–C_3 alk C_6–C_9 aryl, hydroxy C_1–C_3 alkyl, C_1–C_3 alkoxy C_1–C_3 alkyl, C_6–C_9 aryl C_1–C_3 alkoxy C_1–C_3 alkyl, thio C_1–C_3 alkyl, C_1–C_3 alkylthio C_1–C_3 alkyl, C_6–C_9 aryl C_1–C_3 alkylthio C_1–C_3 alkyl, imidazolyl and indolyl.

5,599,948

SUBSTITUTED DIPYRROMETHANES AND THEIR PREPARATION

Tilak Wijesekera, Glen Mills, Pa., assignor to Sun Company, Inc., Philadelphia, Pa.

Division of Ser. No. 562,776, Nov. 27, 1995, Pat. No. 5,536,844. This application May 2, 1996, Ser. No. 641,796

Int. Cl.[6] C07D *403/06*

U.S. Cl. 548—518 **4 Claims**

1. Method for making a 5,5'-unsubstituted meso-halocarbyl dipyrromethane which comprises reacting a [2-(1-hydroxy-1-hydro-1-halocarbyl)pyrrole] with a pyrrole unsubstituted in the 2 and 5 positions to produce said 5,5'-unsubstituted-meso-halocarbyl dipyrromethane.

5,599,949

BISPHENOL DERIVATIVE AND ITS MANUFACTURING METHOD

Fujio Yagihasi, Yokohama, and Minoru Takamizawa, Setagaya-ku, both of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Japan

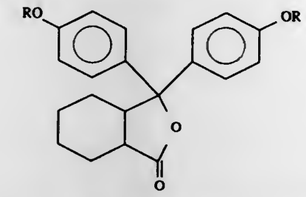
Division of Ser. No. 294,214, Aug. 22, 1994. This application Jun. 5, 1995, Ser. No. 462,527

Claims priority, application Japan, Aug. 23, 1993, 5-229505

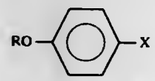
Int. Cl.[6] C07D *307/83*

U.S. Cl. 549—214 **6 Claims**

1. A method of manufacturing a bisphenol derivative of the following formula



where R is a lower alkyl group, tetrahydropyranyl, methoxymethyl or trialkylsilyl group, and the benzene rings in the formula are optionally substituted by a lower alkyl group, which comprises reacting a Grignard reagent derived from the following substituted phenol



with cyclohexane-1,2-dicarboxylic acid anhydride; where R is as defined above, and X is halogen.

5,599,950

PREPARATION PROCESS OF GINKGOLIDE B FROM GINKGOLIDE C

Beng-Poon Teng, Villeneuve Les Avignons, France, assignor to Societe de Conseils de Recherches et d'Applications Scientifiques (S.C.R.A.S), France

Filed Aug. 4, 1994, Ser. No. 287,632

Claims priority, application United Kingdom, Apr. 22, 1994, 9408044

Int. Cl.[6] C07D *307/93*

U.S. Cl. 549—297 **12 Claims**

1. Process for the preparation of ginkgolide B from ginkgolide C, said process comprising the following two steps:

(a) reacting ginkgolide C with a sulfonic anhydride to obtain a C-7 sulfonate of ginkgolide C; and

(b) reacting the C-7 sulfonate of ginkgolide C with a borohydride in an aprotic solvent, the reaction eliminating the C-7 radical of the C-7 sulfonate of ginkgolide C, thus producing ginkgolide B.

5,599,951

AMINO ACID DERIVATIVES, THE PROCESS FOR THEIR PREPARATION AND THEIR APPLICATIONS TO THERAPY

Jean-Christophe Plaquevent, Notre Dame de Bondeville; Denis Danvy, Mont Saint Aignan; Thierry Monteil, Rouen; Claude Gros, Paris; Jean-Charles Schwartz, Paris; Jeanne-Marie LeComte, Paris; Hélène Greciet, Val de Reuil; Lucette Duhamel, and Pierre Duhamel, both of Mont Saint Aignan, all of France, assignors to Societe Civile Bioprojet, Paris, France

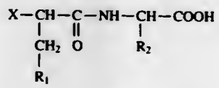
Continuation of Ser. No. 103,156, Aug. 9, 1993, abandoned, which is a continuation of Ser. No. 689,238, Jun. 13, 1991, abandoned. This application Apr. 14, 1995, Ser. No. 422,652

Claims priority, application France, Sep. 15, 1989, 89 12142

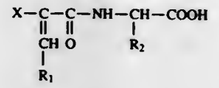
Int. Cl.[6] C07D *317/54;317/56;319/18*

U.S. Cl. 549—362 **3 Claims**

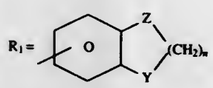
1. An amino acid derivative corresponding to the general formula:



or

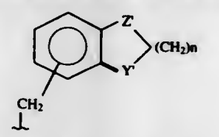


wherein



wherein Z and Y are O and n=1 or 2

R_2 represents a hydrogen atom, a lower alkyl group, a lower hydroxyalkylene group, a phenyl group, a lower phenylalkylene group, a lower hydroxyphenylalkylene group, a lower aminoalkylene group, a lower guanidinoalkylene group, a lower mercaptoalkylene group, a lower indolylalkylene group, a lower carbamylalkylene group, a lower alkylthio lower alkylene group, a lower imidazolylalkylene group, a lower carboxylalkylene group or one of the following groups:



wherein Z', Y' and n have the meanings defined below:

Z'	Y'	n
O	O	1
O	O	2
O	CH_2	1

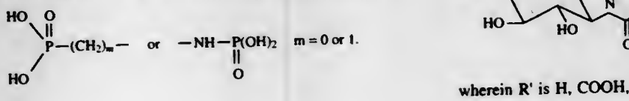
-continued

Z'	Y'	n
CH_2	CH_2	1
CH_2	CH_2	2

X designates the group responsible for chelating the zinc atom of the enzymes (enkephalinase and ACE) selected from the group consisting of a mercaptomethyl, hydroxamic acid, and an N-carboxylalkyl of the formula



wherein R_3 represents a benzyl lower alkyl radical or a benzyl lower alkoxy radical, or phosphorated derivatives of formula



5,599,952

METHODS OF PRODUCING CARBOXYLIC ACID ESTER DERIVATIVES AND INTERMEDIATES FOR USE IN THE METHODS

Masakatsu Matsumoto, Sagamihara; Nobuko Watanabe, Tokyo; Eiko Mori, Tokyo; Hisako Kobayashi, Tokyo, and Hiroshi Ikawa, Tokyo, all of Japan, assignors to Fujirebio Inc., Tokyo, Japan

Division of Ser. No. 288,197, Aug. 9, 1994, Pat. No. 5,481,009. This application May 18, 1995, Ser. No. 444,372

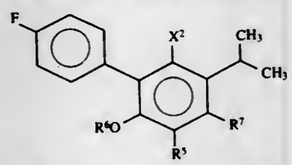
Claims priority, application Japan, Aug. 9, 1993, 5-214812; Aug. 25, 1993, 5-230769

Int. Cl.[6] C07D *319/18;317/48;311/04*

U.S. Cl. 549—362 **12 Claims**

1. A 4-fluorobiphenyl derivative of formula (VI),

(VI)



wherein R^5 is a halogen atom, or a group represented by R^8O—, in which R^8 is a hydrogen atom, or an alkyl group having 1 to 6 carbon atoms; R^6 and R^7 each is a hydrogen atom, or an alkyl group having 1 to 6 carbon atoms; R^8 and R^6 may form a five- or six-membered ring in combination with the oxygen atom to which each of R^8 and R^6 is bonded; R^8 and R^7 may form a five- or six-membered ring in combination with the oxygen atom to which R^8 is bonded; and X^2 is a hydrogen atom, a halogen atom, a formyl group, or a group represented by X^3CH_2—, in which X^3 is a halogen atom or a hydroxyl group.

5,599,953

C-GLYCOSIDE ANALOGUES OF N-(4-HYDROXYPHENYL)RETINAMIDE-O-GLUCURONIDE

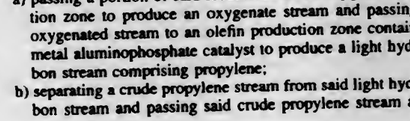
Robert W. Curley, Jr., and Michael J. Robarge, both of Columbus, Ohio, assignors to The Ohio State Research Foundation, Columbus, Ohio

Division of Ser. No. 316,140, Sep. 30, 1994, Pat. No. 5,516,792, which is a continuation-in-part of Ser. No. 974,730, Nov. 13, 1992, abandoned. This application May 26, 1995, Ser. No. 452,325

Int. Cl.[6] C07D *309/14*

U.S. Cl. 549—417 **4 Claims**

1. A method for preparing a compound comprising the steps of:
A. providing a glycoside wherein all the hydroxy groups are protected;
B. brominating the glycoside of step A;
C. placing an azide group on the protected glycoside;
D. reducing the product of step C to its corresponding amine;
E. retinoylating the product of step D; and
F. deprotecting the product of step E to provide the compound of the following structure:



wherein R' is H, COOH, or CH_2OH, or isomers thereof.

5,599,954

N-SUBSTITUTED-7-AMINO-5-HYDROXY-3-OXOHEPTANOIC ACID DERIVATIVES AND METHOD FOR PRODUCING THE SAME

Sigeru Mitsuhashi; Tsukasa Sotoguchi; Yoshifumi Yuasa, and Hidenori Kumobeyashi, all of Kanagawa, Japan, assignors to Takasago International Corporation, Tokyo, Japan

Filed Jan. 26, 1996, Ser. No. 592,494

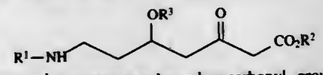
Claims priority, application Japan, Jan. 27, 1995, 7011414

Int. Cl.[6] C07D *315/00*

U.S. Cl. 549—419 **10 Claims**

1. An N-substituted-7-amino-5-hydroxy-3-oxoheptanoic acid derivative having the general structural formula (1):

(1)



wherein R^1 represents a benzyloxycarbonyl group, a lower alkoxycarbonyl group or a benzoyl group;
R^2 represents a lower alkyl group; and R^3 represents a hydrogen atom or a protecting group of a hydroxyl group.

5,599,955

PROCESS FOR PRODUCING PROPYLENE OXIDE

Bipin V. Vora, Darien, and Peter R. Pujado, Palatine, both of Ill., assignors to UOP, Des Plaines, Ill.

Filed Feb. 22, 1996, Ser. No. 605,602

Int. Cl.[6] C07D *301/14;301/16*

U.S. Cl. 549—525 **21 Claims**

1. A process for the production of propylene oxide from a feedstream comprising hydrogen and a carbon oxide, said process comprising:
a) passing a portion of said feedstream to an oxygenate production zone to produce an oxygenate stream and passing said oxygenated stream to an olefin production zone containing a metal aluminophosphate catalyst to produce a light hydrocarbon stream comprising propylene;
b) separating a crude propylene stream from said light hydrocarbon stream and passing said crude propylene stream and an aqueous hydrogen peroxide stream to an epoxidation reaction zone containing an epoxidation catalyst to produce a propylene oxide product, a light ends stream comprising unreacted propylene and a spent water stream comprising heavy components;
c) separating at least a portion of said feedstream in a hydrogen separation zone to provide a hydrogen stream comprising hydrogen and reacting in a peroxide production zone said hydrogen stream and an oxygen-containing stream to produce hydrogen peroxide and removing the hydrogen peroxide with a water stream to produce said aqueous hydrogen peroxide stream; and
d) treating said spent water stream to remove the heavy components and produce a treated water stream and recycling at least a portion of the treated water stream to provide the water stream.

5,599,956

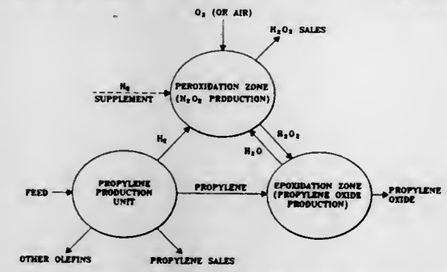
INTEGRATED PROCESS FOR THE PRODUCTION OF PROPYLENE OXIDE

Peter R. Pujado, Palatine, and John I. Hammerman, Arlington Heights, both of Ill., assignors to UOP, Des Plaines, Ill.

Filed Feb. 22, 1996, Ser. No. 606,108

Int. Cl.[6] C07D *301/12;303/04*

U.S. Cl. 549—531 **10 Claims**



1. An integrated process for the production of propylene oxide from saturated hydrocarbons comprising:
a. producing from a saturated hydrocarbon-containing feedstock a product stream containing propylene and hydrogen;
b. separating said product stream into a propylene-rich stream and a hydrogen-rich stream;
c. processing hydrogen in the hydrogen-rich stream in a peroxidation zone at peroxidation conditions to obtain hydrogen peroxide;
d. epoxidizing in an epoxidation zone the propylene in the propylene-rich stream with hydrogen peroxide in the presence of an epoxidation catalyst at epoxidation conditions to form propylene oxide; and
e. recovering the propylene oxide formed.

5,599,957

ASYMMETRIC EPOXIDATION REACTION

Tsutomu Katsuki; Ryo Irie, and Hidehiko Sasaki, all of Fukuoka, Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 209,723, Mar. 14, 1994, Pat. No. 5,420,314. This application May 30, 1995, Ser. No. 452,855

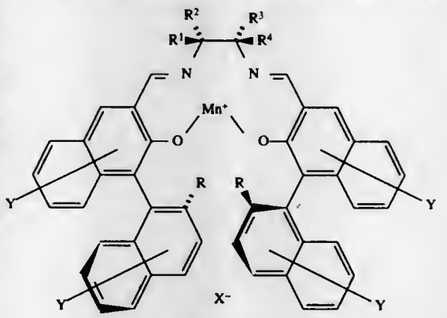
Claims priority, application Japan, Feb. 23, 1994, 6-25337

Int. Cl.[6] C07F *13/00;9/547;* **C07D** *323/00;487/00*

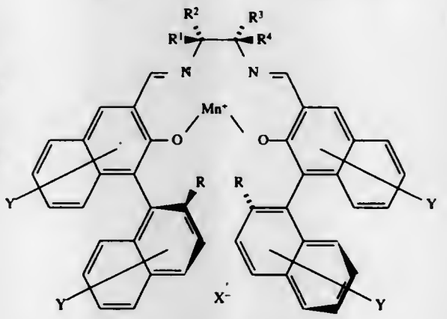
U.S. Cl. 549—533 **27 Claims**

1. An optically active material selected from the group consisting of manganese complexes of formula I_c, manganese complexes of formula I_d, a mixture of manganese complexes of formulae I_c and I_d, and mixtures of manganese complexes of formulae I_c and/or I_d with manganese complexes of formulae I_a and/or I_b:

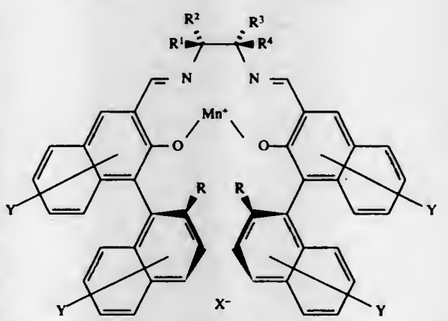
I_a



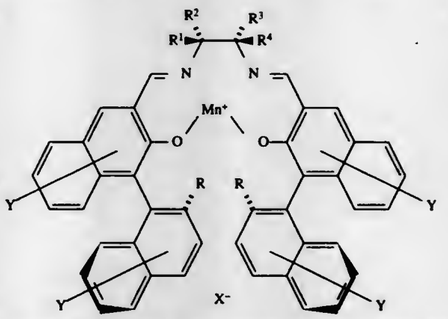
I_b



I_c



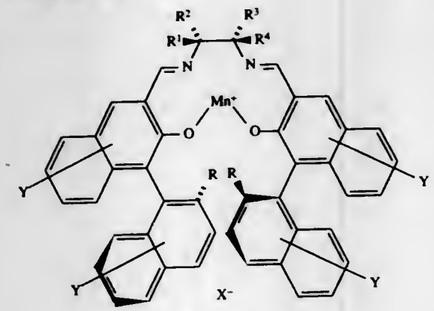
I_d



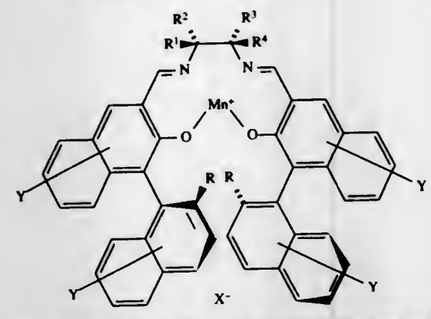
wherein R^1, R^2, R^3 and R^4 independently represent hydrogen atom, C_1–C_4 alkyl group, phenyl group which may be substituted by a halogen atom, C_1–C_4 alkyl group, C_1–C_4 alkoxyl group, cyano group or nitro group; and any two of R^1, R^2, R^3 and R^4 together

form a C_4–C_8 ring, X^- represents a counter anion which may form a salt, represents hydrogen atom, halogen atom, C_1–C_4 alkyl group, C_1–C_4 alkoxyl group, nitro group or cyano group, R represents hydrogen atom, C_1–C_4 alkyl group, phenyl group which may be substituted by halogen atom, C_1–C_4 alkyl group or C_1–C_4 alkoxyl group, or substituted silyl group.

23. A mixture of optically active manganese complexes of formula I_a and I_b:



I_a



I_b

wherein R^1, R^2, R^3 and R^4 independently represent hydrogen atom, C_1–C_4 alkyl group, phenyl group which may be substituted by a halogen atom, C_1–C_4 alkyl group, C_1–C_4 alkoxyl group, cyano group or nitro group; and any two of R^1, R^2, R^3 and R^4 together form a C_4–C_8 ring, X^- represents a counter anion which may form a salt, Y represents hydrogen atom, halogen atom, C_1–C_4 alkyl group, C_1–C_4 alkoxyl group, nitro group or cyano group, R represents hydrogen atom, C_1–C_4 alkyl group, phenyl group which may be substituted by halogen atom, C_1–C_4 alkyl group or C_1–C_4 alkoxyl group, or substituted silyl group.

5,599,958

PREPARATION OF 19-NOR VITAMIN D COMPOUNDS

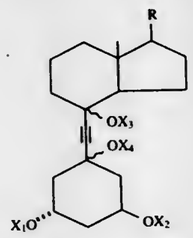
Hector F. Deluca, Deerfield; Heinrich K. Schnoes, and Fariba Aria, both of Madison, all of Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Division of Ser. No. 410,858, Mar. 27, 1995, Pat. No. 5,525,745, which is a division of Ser. No. 382,399, Sep. 8, 1994, Pat. No. 5,430,196, which is a continuation of Ser. No. 926,829, Aug. 7, 1992, abandoned. This application May 23, 1995, Ser. No. 448,115

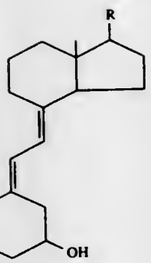
Int. Cl.[6] C07C *401/00*

U.S. Cl. 552—653 **10 Claims**

1. A process for the preparation of 1α-hydroxy-19-nor-vitamin D compounds having the structure

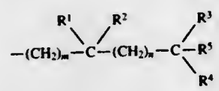


where R is represented by the structure



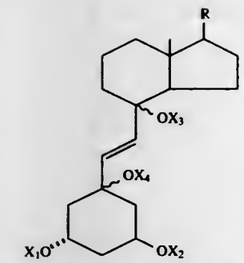


where the stereochemical center at carbon 20 in the side chain may have the R or S configuration, and where Z is selected from the group consisting of Y, —OY, —CH_2OY, —C≡CY and —CH=CHY, where the double bond may have the cis or trans stereochemical configuration, and where Y is selected from the group consisting of hydrogen, methyl —CR^5O and a radical of the structure,

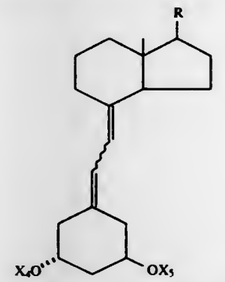


where m and n, independently, represent the integers from 0 to 5, where R^1 is selected from the group consisting of hydrogen, hydroxy, protected hydroxy, fluoro, trifluoromethyl, and C_{1-5}—alkyl, which may be straight chain or branched and, optionally, bear a hydroxy or protected-hydroxy substituent, and where each of R^2, R^3, and R^4, independently, is selected from the group consisting of hydrogen, fluoro, trifluoromethyl and C_{1-5} alkyl, which may be straight-chain or branched, and optionally, bear a hydroxy or protected-hydroxy substituent, and where R^1 and R^2, taken together, represent an oxo group, or an alkylidene group, $=CR^2R^3$, or the group —$(CH_2)_p$—, where p is an integer from 2 to 5, and where R^3 and R^4, taken together, represent an oxo group, or the group —$(CH_2)_q$—, where q is an integer from 2 to 5, and where R^5 represents hydrogen, hydroxy, protected hydroxy, or C_{1-5} alkyl, which comprises the steps of partially reducing the triple bond of a 6,7-acetylenic compound having the formula

either with hydrogen in the presence of a catalyst or with a hydride reducing agent in an organic solvent, to obtain a 6-ene-compound of the formula



where the 6,7 double bond may have the cis- or trans-stereochemical configuration, and where R is as defined above and where each of X_1, X_2, X_3 and X_4 independently represents hydrogen or a hydroxy-protecting group, thereafter reductively removing the 5,8 oxygen constituents using a low-valent titanium reductant comprising a titanium halide/metal hydride reducing agent in an organic solvent to generate a mixture of 5,7 diene products having the structure



where each of X_1 and X_2, independently, represents hydrogen or a hydroxy-protecting group, and where the 7,8-double bond has the cis- or trans-stereochemical configuration, and obtaining the 7,8-trans-isomer from said mixture to acquire the desired 1α-hydroxy-19-nor-vitamin D derivative.

5,599,959

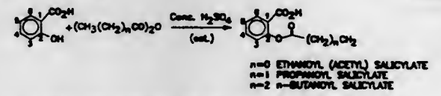
ANALOGUES OF ACETYLSALICYLIC ACID AND NOVEL USES THEREOF

Ramachandra S. Hosmane, Columbia, and Paddada R. Rao, Hampstead, both of Md., assignors to University of Maryland, Baltimore, Md.

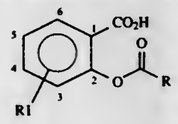
Filed Jan. 31, 1995, Ser. No. 382,300

Int. Cl.[6] C07C *233/00*

U.S. Cl. 554—63 **9 Claims**



1. A salicylate analogue having the structure



wherein R is selected from the group consisting of hexyl, octyl, nonyl, decyl, undecyl, naphthyl and cyclohexyl;

wherein R1 is selected from the group consisting of a C2–C12 alkyl group, F, Br, CO_2H, CONHR, $CONR_2$, CO_2R, C≡N, CHO, SO_3R, SO_2NHR, SO_2NR_2, OH, OR, SH, SR, OCONHR, $OCONR_2$, SCOR, SCONHR, $SCONR_2$, NH2, NHR, NHCOR and NR2;

and wherein R1 is in the 3-, 4-, 5- or 6-position, or a combination thereof.

5,599,960

3,5-DIMETHYL-PENTENYL-DIHYDRO-2(3H)-FURANONE ISOMER MIXTURES, ORGANOLEPTIC USES THEREOF, PROCESS FOR PREPARING SAME AND PROCESS INTERMEDIATES THEREFOR

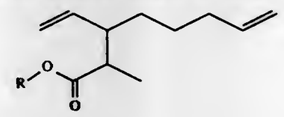
Richard M. Boden, Ocean; William J. Fylak, Loch Arbour; Marie R. Hanna, Keyport, and Futoshi Fujioka, Oakhurst, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 330,847, Oct. 27, 1994, Pat. No. 5,478,803. This application May 25, 1995, Ser. No. 449,743

Int. Cl.[6] C07C *69/587*

U.S. Cl. 554—224 **3 Claims**

1. A compound defined according to the structure:



wherein R is C_1–C_4 alkyl.

5,599,961

Patent Not Issued For This Number

5,599,962

PROCESS FOR THE PREPARATION OF RUTHENIUM HYDROGENATION CATALYSTS AND PRODUCTS THEREOF

Richard P. Beatty, Newark, Del., and Rocco A. Paciello, Bad. Durkheim, Germany, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 31, 1995, Ser. No. 381,696

Int. Cl.[6] C07F *9/02;15/00*

U.S. Cl. 556—21 **3 Claims**

1. A ruthenium complex of the formula $RuH_2L^1L^2(PR_3)_2$, wherein:

L^1 is a ligand selected from the group consisting of H_2, N_2, and R^2CN;

L^2 is a ligand selected from the group consisting of N_2 and R^2CN;

$(PR_3)_2$ represents two separate phosphine ligands or a diphosphine ligand, wherein

each R is a substituent independently selected from the group consisting of: H, a hydrocarbyl group, and an assembly of at least two hydrocarbyl groups connected by ether or amine linkages; and

R^2 is a hydrocarbyl group.

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5,599,963

CATALYSTS FOR PRODUCTION OF β-HYDROXY CARBONYL COMPOUNDS

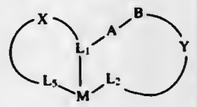
Erick M. Carreira, Pasadena, and Robert A. Singer, Los Angeles, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Continuation-in-part of Ser. No. 310,241, Sep. 21, 1994, abandoned. This application Mar. 29, 1995, Ser. No. 415,237

Int. Cl.[6] C07F 7/28; 1/08

U.S. Cl. 556—33 **27 Claims**

1. A compound having the formula:



wherein

M is selected from the group consisting of Fe, Ni, Cu, Sc, Y, La, Ti, Zr, and Hf;

L_1, L_2, and L_3=are each selected from the group consisting of O, N, S and P;

A is either a single or a double bond;

B is selected from the group consisting of C, N, S and P;

X is substituted biphenyl or substituted or unsubstituted: binaphthyl or bisphenanthrol; and

Y is substituted phenyl, substituted naphthyl, or substituted biphenyl.

5,599,964

CONTINUOUS PROCESS FOR PREPARING HYDROCARBYLALUMINOXANES

John K. Roberg; Robert E. Farritor, and Edward A. Burt, all of Baton Rouge, La., assignors to Albemarle Corporation, Richmond, Va.

Filed Apr. 19, 1996, Ser. No. 635,310

Int. Cl.[6] C07F 5/06

U.S. Cl. 556—179 **20 Claims**

1. A continuous process for making aluminoxane, said process comprising feeding water, hydrocarbylaluminum and organic solvent to a loop recycle reactor under conditions so as to react said water and said hydrocarbylaluminum to form a hydrocarbylaluminoxane, removing a portion of said solvent and hydrocarbylaluminoxane from said reactor and recirculating the remaining portion of the reactor contents through a reaction zone where said water initially contacts said hydrocarbylaluminum.

5,599,965

PROCESS FOR THE PREPARATION OF DIALKY CARBONATES

Zoltan Kricsfalussy; Helmut Waldmann, and Hans-Joachim Traenckner, all of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jul. 22, 1994, Ser. No. 279,328

Claims priority, application Germany, Jul. 30, 1993, 43 25 651.1

Int. Cl.[6] C07C 69/96

U.S. Cl. 558—277 **11 Claims**

1. A process for the preparation of a dialkyl carbonate of the formula

$$(RO)_2CO,$$

wherein R is linear or branched C_1–C_4-alkyl, by reacting the corresponding alkanol of the formula

ROH, wherein R is as defined above, with carbon monoxide and oxygen in the presence of a salt melt containing a Cu salt wherein a molar ratio of alkanol: $CO:O_2$=1:1-0.01:1-0.01 is established and the reaction is carried out at 120°to 300° C. and at 25 to 50 bar, and the pressure is relieved in stages to 10 to 0.8 bar in order to distill water and organic components out of the reaction medium, the salt melt remaining in the reaction medium, and the pressure is then allowed to increase to 25 to 50 bar again whereby the water content is kept at a value of less than 10 wt % of the total reaction mixture and the resulting distillate is fed into a fractionation column, water is obtained as the bottom product and withdrawn, and dialkyl carbonate and alkanol as the top product are recycled into the reaction.

5,599,966

SUBSTITUTED ETHANOLAMINE ESTERS

Jan Brou, Giessenburg; Geert J. Sterk, Utrecht; Hendrik Timmerman, Voorschoten; Meta E. J. Veerman, and Jan F. Van Der Werf, both of Amsterdam, all of Netherlands, assignors to BYK Nederland BV, Zwanenburg, Netherlands

PCT No. PCT/EP93/02862, § 371 Date Apr. 17, 1995, § 102(e) Date Apr. 17, 1995, PCT Pub. No. WO94/08945, PCT Pub. Date Apr. 28, 1994

PCT Filed Oct. 18, 1993, Ser. No. 416,860

Claims priority, application Switzerland, Oct. 16, 1992, 03230/92

Int. Cl.[6] C07C 255/49;229/08; C07D 213/55;209/16

U.S. Cl. 558—414 **11 Claims**

1. A compound of formula I

$$Ar_1—CH(OH)—CH_2—NH—CH_2—X—CH_2—E—(CH_2)_n—Y—Ar_2 \quad (I)$$

in which

X is 1–12C-alkylene, 1–6C-alkyleneoxy-1–6C-alkylene or cyclohexylene,

E is carbonyloxy (—CO—O—) or oxycarbonyl (—O—CO—),

n is an integer from 0 to 10,

Y is a bond, oxygen (O), sulfur (S), the group —CHR—, in which R is 1–4C-alkyl, phenyl or hydroxyl, or the group —CR'$_2$— or —CHR'—CH_2O—, in which R' is 1–4C-alkyl, and in which Y is not oxygen if n is the number 0,

Ar_1 is a phenyl radical substituted by R1, R2 and R3, in which

R1 is hydrogen, halogen, hydroxyl (—OH), amino (—NH_2), ureido (—NH—CO—NH_2), formylamino (—NH—COH), 1–4C-alkylcarbonylamino (—NH—CO-1–4C-alkyl), di-1–4C-alkyl-carbamoyloxy [—O—CO—N(1–4C-alkyl)$_2$], toluyloxy (—O—CO—C_6H_4—CH_3), hydroxymethyl (—CH_2OH), 1–4C-alkylcarbonyloxy (—O—CO-1–4C-alkyl), 1–4C-alkyl, 1–4C-alkoxy, 1–4C-alkylsulfonylamino (—NH—SO_2-1–4C-alkyl), 1–4C-alkylsulfonylmethyl (—CH_2—SO_2-1–4C-alkyl) or 1–4C-alkoxy-1–4 C-alkyl,

R2 is hydrogen, halogen, hydroxyl (—OH), cyano (—CN), trifluoromethyl (—CF_3), toluyloxy (—O—CO—C_6H_4—CH_3), hydroxymethyl (—CH_2OH) or 1–4C-alkylcarbonyloxy (—O—CO-1–4C-alkyl) and

R3 is hydrogen or halogen, and

Ar_2 is a phenyl radical which is substituted by R4 and R5, a thienyl radical, a pyridyl radical, a naphthyl radical, an indolyl radical, an indanyl radical or a benzo-1,4-dioxanyl radical, in which

R4 is hydrogen, halogen, hydroxyl (—OH), cyano (—CN), 1–4C-alkyl, 1–4C-alkoxy, benzyloxy, nitro (—NO_2), trifluoromethyl (—CF_3), 1–4C-alkoxycarbonyl (—CO—O-1–4C-alkyl), carbamoyl (—CO—NH_2), di-1–4C-alkylcarbamoyl [—CON—(1–4C-alkyl)$_2$], amino (—NH_2), 1–4C-alkylsulfonyl, phenyl or phenylcarbonylamino and

R5 is hydrogen, halogen, hydroxyl (—OH), 1–4C-alkyl or 1–4C-alkoxy,

and in which R4 is not hydroxyl or 1–4C-alkoxy if E is oxycarbonyl (—O—CO—), n is the number 0 and Y is a bond, and in which R1 and R2 are not simultaneously hydroxyl if X is 1–4C-alkylene and E is carbonyloxy (—CO—O—), or a salt of this compound.

5,599,967

ACETYLENES DISUBSTITUTED WITH A 5 SUBSTITUTED TETRAHYDRONAPHTHYL GROUP AND WITH AN ARYL OF HETEROARYL GROUP HAVING RETINOID-LIKE BIOLOGICAL ACTIVITY

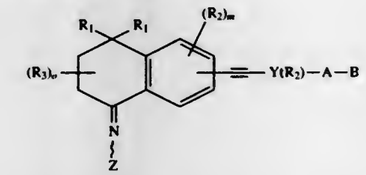
Vidyasagar Vuligonda, Irvine; Richard L. Beard, Newport Beach; Alan T. Johnson, Rancho Santa Margarita; Min Teng, Aliso Viejo; The K. Song, Long Beach, and Roshantha A. Chandraratna, Mission Viejo, all of Calif., assignors to Allergan

Filed Dec. 29, 1994, Ser. No. 366,169

Int. Cl.[6] C07C 69/76

U.S. Cl. 560—48 **16 Claims**

1. A compound of the formula



wherein R_1 is hydrogen or alkyl of 1 to 10 carbons;

R_2 and R_3 are hydrogen, or alkyl of 1 to 6 carbons and the substituted ethynyl group occupies either the 2 or the 3 position of the tetrahydronaphthalene ring;

m is an integer having the value of 0–3;

o is an integer having the value 0–4;

Y is phenyl optionally substituted with one or two R_2 groups;

A is $(CH_2)_n$ where n is 0–5, lower branched chain alkyl having 3–6 carbons, cycloalkyl having 3–6 carbons, alkenyl having 2–6 carbons and 1 or 2 double bonds, alkynyl having 2–6 carbons and 1 or 2 triple bonds;

B is hydrogen, COOH or a pharmaceutically acceptable salt thereof, $COOR_8$, $CONR_9R_{10}$, —CH_2OH, CH_2OR_{11}, CH_2OCOR_{11}, CHO, $CH(OR_{12})_2$, $CHOR_{13}O$, —COR_7, $CR_7(OR_{12})_2$, CR_7OR_{13}, or tri-lower alkylsilyl, where R_7 is an alkyl, cycloalkyl or alkenyl group containing 1 to 5 carbons, R_8 is an alkyl group of 1 to 10 carbons or (trimethylsilyl)alkyl where the alkyl group has 1 to 10 carbons, or a cycloalkyl group of 5 to 10 carbons, or R_8 is phenyl or lower alkylphenyl, R_9 and R_{10} independently are hydrogen, an alkyl group of 1 to 10 carbons, or a cycloalkyl group of 5–10 carbons, or phenyl or lower alkylphenyl, R_{11} is lower alkyl, phenyl or lower alkylphenyl, R_{12} is lower alkyl, and R_{13} is divalent alkyl radical of 2–5 carbons; the wavy line represents a single valence bond around which the configuration can be syn or anti, and

Z is OR_1, R_1 phenyl, benzyl, lower alkyl or lower alkoxy substituted phenyl, $OSi(R_2)_3$, $OCOR_{14}$, $OC(R_{15})(R_{16})XR_{17}$, $N(R_{14})_2$, $NHCON(R_{14})_2$, $NHCSN(R_{14})_2$, where X is O or S; R_{14} is hydrogen, alkyl of 1 to 10 carbons, alkenyl of 2 to 10 carbons and having 1 to 3 double bonds, alkynyl having 2 to 10 carbons and 1 to 3 triple bonds, carbocyclic aryl selected from the group consisting of phenyl, C_1– C_{10}-alkylphenyl, naphthyl, C_1–C_{10}-alkylnaphthyl, phenyl-C_1–C_{10}alkyl, naphthyl-C_1– C_{10}alkyl; R_{15} and R_{16} are hydrogen or lower alkyl of 1 to 6 carbons, and R_{17} is lower alkyl of 1 to 6 carbons.

5,599,968

CONTINUOUS PROCESS FOR THE PREPARATION OF ORGANIC ISOCYANATES

Robert Bankwitz, Kempen; Herbert Gebauer, Krefeld; Christian König, Kaarst, and Eckart Waldau, Düsseldorf, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 4, 1995, Ser. No. 566,531

Claims priority, application Germany, Dec. 8, 1994, 44 43 642.4

Int. Cl.[6] C07C 263/10

U.S. Cl. 560—347 **5 Claims**

1. In a process for the continuous preparation of organic isocyanates comprising reacting at least one primary organic amine with phosgene in the presence of an inert, organic solvent, the improvement wherein the reaction mixture is circulated by means of a bubble column at a temperature of about 60° to 100° C., and the ratio of the quantity of circulated amine reaction products to the quantity of supplied amine is from 100:1 to 5:1.

5,599,969

PROCESS OF RESOLVING PHENYLPROPIONIC ACIDS USING α-METHYLBENZYLAMINE

Robert Hardy; Paul F. Coe; Adrian Hirst, and Hugh O. O'Donnell, all of Nottingham, England, assignors to The Boots Company PLC, Nottingham, England

PCT No. PCT/EP93/03376, § 371 Date Jun. 21, 1995, § 102(e) Date Jun. 21, 1995, PCT Pub. No. WO94/12460, PCT Pub. Date Jun. 9, 1994

PCT Filed Nov. 30, 1993, Ser. No. 424,517

Claims priority, application United Kingdom, Dec. 2, 1992, 9225202; Dec. 2, 1992, 9225203

Int. Cl.[6] C07B 57/00

U.S. Cl. 562—401 **29 Claims**

1. A process for the production of a product which is enriched in a desired enantiomer of a phenylpropionic acid selected from ibuprofen or flurbiprofen which comprises the following stages:

(a) a resolution, in which an α-methylbenzylamine salt of the phenylpropionic acid is prepared which is enriched in the desired enantiomer by contacting, in a mixture of toluene and methanol as solvent, a substantially racemic mixture of the phenylpropionic acid with an enantiomer of α-methylbenzylamine, the respective molar ratio of the substantially racemic phenylpropionic acid to the α-methylbenzylamine being in the range of about 1:0.25 to about 1:1;

(b) a recrystallisation stage, in which the resulting enriched salt is recrystallised from a mixture of methanol and toluene to give an α-methylbenzylamine salt of the phenylpropionic acid which is further enriched in the desired enantiomer;

(c) an optional liberation stage, in which the phenylpropionic acid which is further enriched in the desired enantiomer is liberated from the recrystallised salt;

(d) an optional salt-preparation stage in which a solid salt of the phenylpropionic acid further enriched in the desired enantiomer is isolated, the solid salt optionally being even further enantiomerically enriched in the desired enantiomer;

(e) a racemisation stage, in which the phenylpropionic acid enriched in the undesired enantiomer is recovered from the first mother liquor of resolution stage (a), racemised, and the racemic phenylpropionic acid is reused in a subsequent resolution stage (a); and

(f) a recovery stage for the α-methylbenzylamine resolving agent, in which α-methylbenzylamine is recovered from the first mother liquor of resolution stage (a) and optionally from the liberation stage (c) and is then reused in a subsequent resolution stage (a).

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5,599,970

Patent Not Issued For This Number

5,599,971

METHOD FOR PRODUCING 1,4-DIHYDROXY-2-NAPHTHOIC ACID

Toshio Nakamatsu; Yasuhiro Nishida, both of Hyogo; Shinichi Watanabe, Kyoto, and Norio Kometani, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, and Sumika Fine Chemicals Co., Ltd., both of Osaka, Japan

Continuation of Ser. No. 5,080, Jan. 15, 1993, abandoned. This application Feb. 1, 1995, Ser. No. 383,688

Claims priority, application Japan, Jan. 17, 1992, 4-006340

Int. Cl.[6] C07C *51/15*

U.S. Cl. 562—425 **9 Claims**

1. A method for producing 1,4-dihydroxy-2-naphthoic acid, which comprises the steps of:

subjecting 1,4-dihydroxynaphthalene to an alkali metal salt formation reaction in an organic medium using an alkali metal alcobolate, wherein said organic medium is selected from the group consisting of polyhydric alcohols and polyhydric alcohol alkyl ethers, wherein said polyhydric alcohols and polyhydric alcohol alkyl ethers have a boiling point of 130° C. or more and a solubility parameter δ of 13 or less; and

subjecting the salt formation reaction mixture to carboxylation using carbon dioxide gas.

5,599,972

AMINOBENZOIC ACID DERIVATIVES

Shuhei Miyazawa; Shigeki Hibi; Hiroyuki Yoshimura; Takashi Mori; Yorihisa Hoshino; Mitsuo Nagai; Kouichi Kikuchi; Hisashi Shibata; Kazuo Hirota; Takashi Yamanaka; Isao Yamatsu, and Masanori Mizuno, all of Ibaraki, Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Division of Ser. No. 337,480, Nov. 8, 1994, Pat. No. 5,578,603, which is a division of Ser. No. 13,080, Feb. 3, 1993, Pat. No. 5,389,643. This application Jun. 7, 1995, Ser. No. 475,602

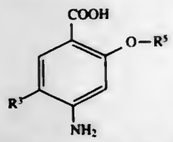
Claims priority, application Japan, Feb. 4, 1992, 4-18959; Sep. 3, 1992, 4-235533

Int. Cl.[6] C07C *229/34*

U.S. Cl. 562—433 **1 Claim**

1. An aminobenzoic acid derivative represented by the following formula (a) or a pharmacologically acceptable salt thereof:

(a)



wherein R^3 represents a halogen atom and R^5 represents an optionally substituted lower alkynyl group having 3 to 10 carbon atoms.

5,599,973

GABA AND L-GLUTAMIC ACID ANALOGS FOR ANTISEIZURE TREATMENT

Richard B. Silverman, Morton Grove, Ill.; Ryszard Andruszkiewicz, Sopot, Poland; Po-Wai Yuen, Ann Arbor, Mich.; Denis M. Sobieray, Holland, Mich.; Lloyd C. Franklin, Hamilton, Mich., and Mark A. Schwindt, Holland, Mich., assignors to Northwestern University, Evanston, Ill., and Warner-Lambert Company, Ann Arbor, Mich.

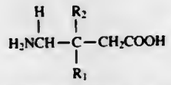
Division of Ser. No. 64,285, May 18, 1993, abandoned, which is a continuation-in-part of Ser. No. 886,080, May 20, 1992, abandoned, which is a continuation-in-part of Ser. No. 618,692, Nov. 27, 1990, abandoned. This application Apr. 12, 1995, Ser. No. 420,580

Int. Cl.[6] C07C *229/00*

U.S. Cl. 562—443 **1 Claim**

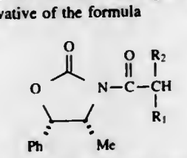
1. A process for preparing an S-isomer of a compound of the formula

I



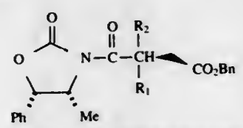
wherein R_1 is a straight or branched alkyl of from 1 to 6 carbon atoms, phenyl, or cycloalkyl having from 3 to 6 carbon atoms; R_2 is hydrogen, methyl, or carboxyl; individual enantiomers thereof; and pharmaceutically acceptable salts thereof; with the proviso that when R_2 is hydrogen, R_1 is other than methyl; said process comprising the steps of forming an acid chloride of an acid of the formula $HOC(=O)CH(R_1)(R_2)$, the corresponding acid chloride having the formula $ClC(=O)CH(R_1)(R_2)$, adding the acid chloride to a solution of (4R,5S)-(+)-4-methyl- 5-phenyl-2-oxazolidinone and n-butyllithium at −78° C. under argon to produce an oxazolidinone derivative of the formula

II



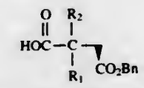
treating the oxazolidinone (II) with benzyl α-bromoacetate to produce an ester

III



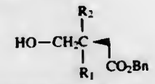
treating the ester (III) with hydrogen peroxide and lithium oxide followed by treatment with sodium metabisulfite to produce a compound of the formula

IV



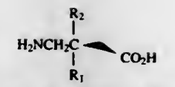
treating the compound (IV) with borane dimethyl sulfide complex to produce the compound

V



forming the corresponding tosylate from the compound (V), forming an azide from the corresponding tosoylate and reducing the azide to the amine of the formula

VI



wherein R_1 and R_2 have the meanings defined for formula (I), Ph is phenyl, Me is methyl, and Bn is benzyl.

5,599,974

ALDEHYDIC AGENTS FOR ALLOSTERIC MODIFICATION OF HEMOGLOBIN

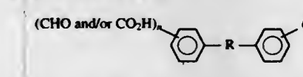
Donald J. Abraham, Midlothian; Telih Boyiri, Richmond; Martin Safo, Richmond, and Richmond Danso-Danquah, Richmond, all of Va., assignors to Center for Innovative Technology, Herndon, Va.

Filed Sep. 19, 1994, Ser. No. 308,805

Int. Cl.[6] C07C *51/42*

U.S. Cl. 562—463 **28 Claims**

1. A compound sized to interact inside a central water cavity of a hemoglobin molecule and bridge two α subunits of said hemoglobin molecule, said compound having at least three functional groups wherein each functional group is selected from the group consisting of aldehydes and carboxylic acids, a first functional group being positioned on said compound to bond with an n-terminal Valine 1 on a first α subunit, and a second functional group being positioned on said compound to bond with Arginine 141 on a second α subunit, a third functional group being positioned on said compound to bond with Lysine 99 on said second α subunit, said compound having a chemical structure selected from the group consisting of:



where n is at least 1, and R is a sequence which contains moieties selected from the group consisting of saturated and unsaturated carbon atoms, oxygen atoms, and aromatic moieties.

5,599,975

CYCLISED ANALOGUES OF FATTY ACID METABOLITES

René Gree, Cesson-Sevigne; Ali M. Hachem, Rennes; Danielle Gree, Cesson-Sevigne; Yves Le Floc'h, Betton; Yves Rolland, Vanves; Serge Simonet, Conflans St-Honorine, and Tony Verbeuren, Vernouillet, all of France, assignors to Adir Et Compagnie, Courbevoie, France

Filed Oct. 27, 1994, Ser. No. 330,027

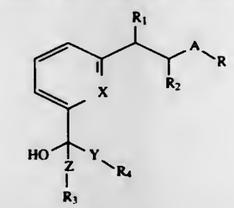
Claims priority, application France, Oct. 28, 1993, 93 12858

Int. Cl.[6] C07C *59/00*

U.S. Cl. 562—465 **9 Claims**

1. A compound selected from those of formula (I):

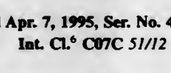
(I)



wherein:

A represents a divalent hydrocarbon radical having 2 to 10 carbon atoms inclusive in straight or branched chain and optionally containing one or more unsaturations in the form of double and/or triple bonds,

R is selected from fluorine, chlorine, bromine and iodine, —OR', —COOR', —COR', $P(O)(OR')_2$, —CH=N—OR', —CONHR', —CH=NR", —CH=NAr, $NHSO_2Ar$, —CON(OH)R', —NHR', —NHCOR', —CH=N—NHAr,



and optionally substituted imidazolyl, pyrazolyl or tetrazolyl,

R' is selected from hydrogen and straight-chain or branched alkyl having 1 to 6 carbon atoms inclusive,

R" represents straight-chain or branched alkyl having 1 to 6 carbon atoms inclusive,

Ar represents optionally substituted aryl selected from phenyl and naphthyl,

R_1 and R_2 each represents hydrogen or together form a bond,

R_3 is selected from hydrogen and alkyl having 2 to 10 carbon atoms inclusive in straight or branched chain,

R_4 represents a hydrocarbon radical having 2 to 10 carbon atoms inclusive in straight or branched chain and optionally containing one or more unsaturations in the form of double and/or triple bonds,

X is selected from CH and nitrogen,

Y and Z each represents, independently of the other, a valency bond or para-phenylene,

it being understood that the expression "optionally substituted" indicates that the radical concerned may optionally be substituted by one or more groups selected from chlorine, fluorine, bromine, iodine, amino, alkylamino, dialkylamino, nitro, cyano, alkyl, alkoxy, acyl, acyloxy, carboxy, alkoxycarbonyl, amido and carboxamido,

its stereoisomers, its possible N-oxides, or its pharmaceutically-acceptable addition salts with an acid or a base.

5,599,976

RECOVERY OF ACETIC ACID FROM DILUTE AQUEOUS STREAMS FORMED DURING A CARBONYLATION PROCESS

Mark O. Scates, Friendswood; Steven E. Parker, Seabrook; Jennifer B. Lacy, Houston, and Russell K. Gibbs, Houston, all of Tex., assignors to Hoechst Celanese Corporation, Sommerville, N.J.

Filed Apr. 7, 1995, Ser. No. 418,333

Int. Cl.[6] C07C *51/12*

U.S. Cl. 562—519 **8 Claims**

1. A process for the carbonylation of one or more compounds selected from the group consisting of methanol, dimethyl ether, or methyl acetate to acetic acid comprising;

carbonylating said methanol, dimethyl ether or methyl acetate in a reaction medium further containing a Group VIII metal carbonylation catalyst, methyl iodide and water to form a reaction product comprising acetic acid and water, separating and purifying said reaction product to substantially dry acetic acid and one or more aqueous streams containing from about 5 to about 30 wt. % acetic acid, the improvement which comprises reacting at least a portion of at least one of the said aqueous streams from the drying column, or the splitter column with methanol in the presence of a second catalyst to form methyl acetate and water, separating the methyl acetate from the water and recycling the methyl acetate to the reactor.

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5,599,977

OXIDATION PROCESS

Donald E. Kiely, 2521 Chatwood Rd., Birmingham, Ala. 35226; Andy Carter, 685-C Idlewild Cir., Birmingham, Ala. 35205, and David P. Shrout, 27 Shades Crest Rd., Birmingham, Ala. 35226

Filed Jun. 2, 1995, Ser. No. 460,621
Int. Cl.[6] C07C 51/16;51/42
U.S. Cl. 562—523 17 Claims

1. In the process of oxidizing a carbohydrate with nitric acid to form a carbohydrate-derived acid the improvement which comprises

a) blowing a gas, selected from air, oxygen or nitrogen, into the reacting mixture of nitric acid and precursor carbohydrate at a rate sufficient to maintain the reaction mixture at a desired temperature,

b) after the oxidation has been completed, neutralizing the acid mixture with a base selected from the group consisting of alkali metal hydroxides, alkali metal carbonates, ammonia and amines to a pH sufficient to convert the contained acids to their salts,

c) passing the resulting solution of salts through a column containing an ion retardation resin,

d) eluting the column with water, and

e) collecting the portion of effluent which contains the salt of the desired carbohydrate-derived acid.

5,599,978

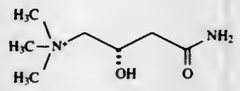
PROCESS FOR MANUFACTURING L-(-)-CARNITINE FROM A WASTE PRODUCT HAVING OPPOSITE CONFIGURATION

Fabio Giannessi, Rome; Maria L. Bolognesi, Bologna; Maria O. Tinti, and Francesco De Angelis, both of Rome, all of Italy, assignors to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A., Rome, Italy

Division of Ser. No. 170,764, Dec. 21, 1993, Pat. No. 5,412,113. This application Jan. 3, 1995, Ser. No. 367,863
Claims priority, application Italy, Dec. 21, 1992, RM92A0915
Int. Cl.[6] C07C 229/10;229/22
U.S. Cl. 562—567 6 Claims

1. A process for producing L-(−)-carnitine inner salt from D-(+)-carnitinamide which comprises:

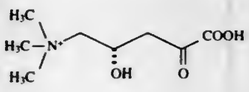
(a) hydrolyzing a salt of D-(+)-carnitinamide 1 of the general formula



(1)

X⁻

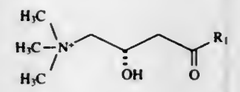
wherein X⁻ is any monovalent counterion to obtain D-(+)-carnitine 2



(2)

X⁻

(b) esterifying said D-(+)-carnitine 2 to an ester 3 of the general formula

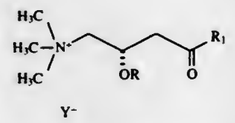


(3)

X⁻

wherein R_1 is (i) a straight or branched alkoxy group having 1–11 carbon atoms or (ii) an arylalkoxy or diarylalkoxy group wherein the aryl group is a monocyclic or bicyclic aryl group containing 5 to 12 carbon atoms and the alkyl group has 1–4 carbon atoms, and wherein said arylalkoxy or diarylalkoxy groups can be optionally substituted with a lower alkyl group having 1–4 carbon atoms, an alkoxy group having 1–4 carbon atoms, halogen, a nitro group or an amino group;

(c) acylating said ester 3 to an acyl derivative 4 of the general formula



(4)

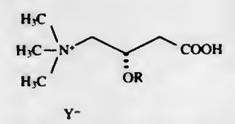
Y⁻

wherein

Y⁻, which is the same as or different than X⁻, is a counterion imparting solubility to 4 and OR is a leaving group wherein R is selected from an alkylsulfonyl having 1–12 carbon atoms, formyl and trifluoroacetyl,

by reacting 3 with an acylating agent (1) of the formula RY wherein Y is a halogen or (2) an anhydride precursor for R, and R has the above defined meaning, with an organic base, in a basic solvent or in at least one inert organic solvent, at 0° C.–50° C., for 1–24 hours;

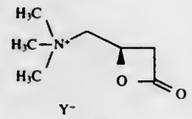
(d) converting the COR_1 group of said acylderivative 4 to a carboxylic group, to obtain an acyl D-(+)-carnitine 5 of the formula



(5)

Y⁻

(e) lactonizing said acyl D-(+)-carnitine 5 to a lactone 6 of L-(−)-carnitine of the formula



(6)

Y⁻

by treating 5 in a basic environment, and

(f) converting said lactone 6 to L-(−)-carnitine inner salt by treating 6 in a basic solution and isolating said L-(−)-carnitine inner salt.

5,599,979

SEPARATION OF FORMIC ACID FROM ACETIC ACID BY EXTRACTIVE DISTILLATION

Lloyd Berg, 1314 S. Third Ave., Bozeman, Mont. 59715, assignor to Lloyd Berg, Bozeman, Mont.

Filed Sep. 8, 1995, Ser. No. 524,670
Int. Cl.[6] C07C 51/42
U.S. Cl. 562—608 2 Claims

1. A method for recovering formic acid from a mixture of formic acid and acetic acid which comprises distilling a mixture of formic acid and acetic acid in a rectification column in the presence of about one part by weight of an extractive agent per part of formic acid-acetic acid mixture, recovering the formic acid as overhead product and obtaining the acetic acid and the extractive agent from the stillpot, wherein said extractive agent consists of one material selected from the group consisting of propionic acid, butyric acid, valeric acid and 2-ethyl hexanoic acid.

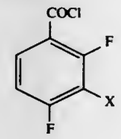
5,599,980

PROCESS FOR THE PREPARATION OF POLYHALOGENATED BENZOTRIFLUORIDES, BENZOTRICHLORIDES AND BENZOYL CHLORIDES AND NEW TRIHALOGENOBENZOTRICHLORIDES AND -BENZOYL CHLORIDES

Albrecht Marhold, Leverkusen, and Peter Andres, Leichlingen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 12, 1994, Ser. No. 180,949
Claims priority, application Germany, Jan. 19, 1993, 43 01 247.7
Int. Cl.[6] C07C 51/58
U.S. Cl. 562—840 1 Claim

1. A compound of the formula



wherein
X is Cl or F.

5,599,981

PROCESS FOR PRODUCING ALKYLBENZOYL CHLORIDE

Norio Fushimi; Kenichi Nakamura, and Makoto Takagawa, all of Tsukuba, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Jan. 24, 1996, Ser. No. 590,598
Claims priority, application Japan, Jan. 26, 1995, 7-010645; Jan. 26, 1995, 7-010646
Int. Cl.[6] C07C 51/58
U.S. Cl. 562—863 7 Claims

1. A process for producing alkylbenzoyl chloride which comprises reacting alkylbenzaldehyde with chlorine at a temperature of −10° to 80° C. under a pressure of 5 kg/cm² or below in a liquid phase.

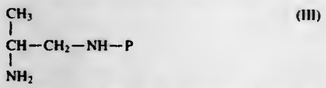
5,599,982

PROCESS FOR PREPARING ENANTIOMERICALLY PURE IMIDAZO[4,5,1-JK][1,4]-BENZODIAZEPIN-2(1H)-THIONES

Alfons G. M. De Knaep, Turnhout; Luc J. R. Moens, Lille, and Eduard J. C. Vreysen, Mol, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Division of Ser. No. 196,168, Feb. 15, 1994, Pat. No. 5,463,049. This application Mar. 30, 1995, Ser. No. 413,756
Claims priority, application European Pat. Off., Sep. 24, 1991, 91.202.474
Int. Cl.[6] C07C 311/05;311/18
U.S. Cl. 564—94 3 Claims

1. An enantiomerically pure intermediate of the formula:



(III)

or an acid addition salt thereof, wherein P represents a member selected from the group consisting of methanesulfonyl, trifluoromethanesulfonyl, benzenesulfonyl, 4-methylbenzenesulfonyl, formyl, methylcarbonyl, and tert.butylcarbonyl.

5,599,983

PREPARATION OF ALKANESULFONAMIDES WITH LOW RESIDUAL AMMONIUM IMPURITIES

Gary S. Smith, 7 Cardinal La., Collegeville, Pa. 19426; Robert Cordova, 1053 Blake St., Bethlehem, Pa. 18017; Thomas H. Overgaard, 18263 Denby, Redford Township, Mich. 48246, and Marc T. Budrick, 15298 Regina, Allen Park, Mich. 48101

Filed Aug. 21, 1995, Ser. No. 517,320
Int. Cl.[6] C07E 303/44
U.S. Cl. 564—98 26 Claims

1. A method for the preparation of an alkanesulfonamide containing a reduced amount of ammonium salt impurities comprising the treatment of an alkanesulfonamide containing ammonium or alkylammonium-salt impurities with a base under substantially anhydrous conditions and in an amount sufficient to convert substantially all of the ammonium or alkylammonium salts to the corresponding base salts, and liberating neutral amine or ammonia from the reaction, said base selected from the group consisting of alkali-metal and alkaline-earth metal bases, quaternary ammonium and phosphonium bases, and synthetic polymeric resins containing basic functionalities.

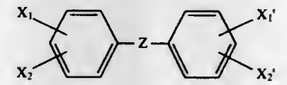
5,599,984

GUANYLHYDRAZONES AND THEIR USE TO TREAT INFLAMMATORY CONDITIONS

Marina Bianchi, Milan, Italy; Anthony Cerami, Shelter Island, N.Y.; Kevin J. Tracey, Old Greenwich, Conn., and Peter Ulrich, Old Tappan, N.J., assignors to The Picower Institute For Medical Research, Manhasset, N.Y.

Continuation-in-part of Ser. No. 184,540, Jan. 21, 1994, abandoned. This application Sep. 29, 1994, Ser. No. 315,170
Int. Cl.[6] C07C 233/05
U.S. Cl. 564—157 6 Claims

1. A compound having the formula:



wherein:
X_2=GhyCH—, $GhyCCH_3$— or H—;
X_1, X'_1 and X'_2, independently =GhyCH— or $GhyCCH_3$—;
—Z=—A—$(CH_2)_n$—A—, n=2-10, and A=—NH(CO)—, and salts thereof.

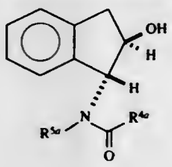
5,599,985

OPTICALLY PURE 1-AMIDO-2-INDANOLS

Yun Gao, Framingham; Yaping Hong, Worcester; Xiaoyi Nie, Boxborough; Roger P. Bakale, Shrewsbury; Richard R. Feinberg, Norton, and Charles M. Zepp, Berlin, all of Mass., assignors to Sepracor, Inc., Marlborough, Mass.

Continuation-in-part of Ser. No. 121,340, Sep. 14, 1993, Pat. No. 5,516,943. This application Jul. 21, 1994, Ser. No. 278,459
Int. Cl.[6] C07C 233/06
U.S. Cl. 564—184 5 Claims

1. An amide of a trans-1-amino-2-indanol of formula



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wherein R^{4a} is methyl or phenyl and R^{5a} is hydrogen or alkyl of 1 to 6 carbons and wherein one enantiomer is present in greater than 80% ee.

5,599,986

PROCESS FOR THE PREPARATION OF ALKALI METAL SALTS OF DIFORMYLAMIDE

Jonathan C. Evans; Christian T. Goralski, both of Midland; Cynthia L. Rand, Sanford, and Paul C. Vosejpka, Midland, all of Mich., assignors to Hoechst Marion Roussel Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 459,150, Jun. 2, 1995, abandoned, which is a division of Ser. No. 315,041, Sep. 29, 1994, Pat. No. 5,488,188. This application Aug. 31, 1995, Ser. No. 513,501

Int. Cl.[6] C07C *231/24;233/00*

U.S. Cl. 564—216 **5 Claims**

1. A substantially pure crystalline form of sodium diformylamide comprising a crystalline form of sodium diformylamide characterized by peaks in the x-ray powder diffraction pattern at values of two theta of 15.60°±0.2°, 24.90°±0.2°, 27.69°±0.2°, 31.23°±0.2°, 35.80°±0.2°, 37.76°±0.2°, 43.10°±0.2°, 46.28°±0.2°, 51.05°±0.2°, and 57.15°±0.2°.

5,599,987

INTEGRATED PROCESS FOR CYCLOHEXANONE OXIME PRODUCTION

Guy L. Crocco, Wilmington, Del.; John C. Jubin, Jr., West Chester, and John G. Zajacek, Devon, both of Pa., assignors to Arco Chemical Technology, L.P., Greenville, Del.

Filed Mar. 31, 1995, Ser. No. 414,677

Int. Cl.[6] C07C *249/04;* **C07D** *201/02;201/04;201/06*

U.S. Cl. 564—267 **15 Claims**

1. An integrated process for producing cyclohexanone oxime comprising the steps of:

(a) reacting isopropanol with molecular oxygen in a liquid phase at a temperature of from 50° C. to 200° C. to form an oxidant mixture comprised of isopropanol, acetone, and hydrogen peroxide;

(b) subjecting the oxidant mixture to distillation so as to remove substantially all of the isopropanol and acetone and to provide an aqueous hydrogen peroxide stream comprised of water and hydrogen peroxide, wherein an amount of water is introduced sufficient to maintain a hydrogen peroxide concentration in the aqueous hydrogen peroxide stream less than 50% by weight;

(c) reacting the acetone removed in step (b) with hydrogen in the presence of a heterogeneous hydrogenation catalyst wherein said hydrogenation catalyst is comprised of a transition metal selected from nickel, chromium, platinum, ruthenium, rhodium and palladium at a temperature of from 20° C. to 175° C. and a hydrogen pressure of from 0.5 to 100 atmospheres to convert the acetone to isopropanol;

(d) reacting cyclohexanone with ammonia and the aqueous hydrogen peroxide stream at a temperature of from 25° C. to 150° C. in the presence of a catalytically effective amount of titanium silicalite and an amount of an alcohol selected from the group consisting of methanol, t-butyl alcohol and mixtures thereof sufficient to maintain a single liquid phase reaction mixture to form an ammoximation reaction product comprised of cyclohexanone oxime, water, and alcohol; and

(e) recycling at least a portion of the isopropanol produced in step (c) for use in step (a).

5,599,988

LARGE SCALE PREPARATION OF 2,4-DIHYDROXYBENALDEHYDE USING A VARIATION OF THE VILSMEIERHAACK REACTION AND ISOLATED INTERMEDIATES

Wilford Mendelson, King of Prussia, Pa., assignor to Smith-Kline Beecham Corporation, Philadelphia, Pa.

Filed Dec. 22, 1994, Ser. No. 362,730

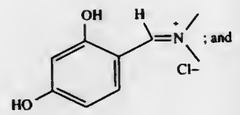
Int. Cl.[6] C07C *249/00;45/00;45/90*

U.S. Cl. 564—272 **4 Claims**

1. A process for proudcing 2,4-dihydroxybenzaldhyde which process comprises

a) adding oxalyl chloride acetonitrile and DMF to form a reaction mixture;

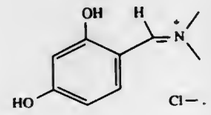
b) reacting resorcinol with the reaction mixture to yield the compound



; and

b adding water to form 2,4-dihydroxy-benzylaldehyde.

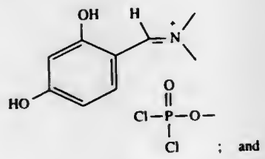
2. A compound of the formula



3. A process for producing 2,4-dihydroxybenzaldhyde which process comprises

a) adding $POCl_3$, acetonitrile, and DMF to form a reaction mixture;

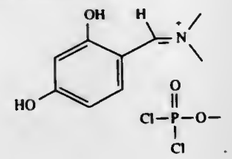
b) reacting resorcinol with the reaction mixture to yield the compound



; and

b) adding water to form 2,4-dihydroxy-benzylaldehyde.

4. A compound of the formula:



5,599,989

BISQUATERNARY AMMONIUM COMPOUNDS OF 2,2'-DIMETHYL-1,1'-BINAPHYTHYL AND PROCESS FOR THEIR PREPARATION

Hans Millauer, Eschborn, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt, Germany

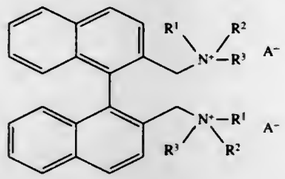
Filed May 24, 1995, Ser. No. 449,677

Claims priority, application Germany, May 26, 1994, 44 18 349.6

Int. Cl.[6] C07C *211/63;209/12;209/22*

U.S. Cl. 564—290 **23 Claims**

1. A bisquaternary ammonium compound of the formula (I)



(I)

where:

R^1, R^2, R^3 are identical or different and are $(C_1–C_{12})$alkyl which alkyl optionally contain oxygen atoms or N—R^4 moieties, where R^4 is $(C_1–C_4)$alkyl, in the chain or

R^1 is $(C_4–C_8)$cycloalkyl and R^2, R^3 are identical or different and are $(C_1–C_{12})$alkyl or

the two radicals R^1 together form an alkylene chain having from 2 to 6 carbon atoms and R^2, R^3 are identical or different and are $(C_1–C_{12})$alkyl or

the radicals R^1 and R^2 located on the same nitrogen atom together form a 5-membered or 6-membered ring, which ring optionally contains oxygen atoms or N—R^4 moieties, where R^4 is $(C_1–C_4)$alkyl, in the chain and the radical R^3 is an alkyl radical having from 1 to 12 carbon atoms or

the radicals R^1, R^2, R^3 located on the same nitrogen atom together form a bicyclic ring system having a nitrogen atom as bridge head atom and, optionally, further oxygen atoms or N—R^4 moieties, where R^4 is $(C_1–C_4)$alkyl, in the ring system and

A is a chlorine, bromine, iodine atom or a OSO_3R^5 radical, where R^5 is $(C_1–C_4)$alkyl or aryl.

5,599,990

PROCESS FOR PREPARING QUATERNARY AMMONIUM COMPOUNDS

Joseph H. Miller; Joe D. Sauer, and Dru L. DeLaet, all of Baton Rouge, La., assignors to Albemarle Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 407,828, Mar. 21, 1995, abandoned. This application Oct. 27, 1995, Ser. No. 548,991

Int. Cl.[6] C07C *209/12;211/62;211/63;211/64*

U.S. Cl. 564—296 **11 Claims**

1. In a process for preparing a quaternary ammonium halide by reacting a substituted or unsubstituted haloalkane with a tert-amine, the improvement which comprises reacting the haloalkane compound and tert-amine in a tool ratio not higher than 1.1/1 in the absence of a solvent and at a temperature such as to maintain the reaction mixture liquid.

5. The process of claim 1 wherein the haloalkane compound is a bromoalkane compound.

5,599,991

ESYLATE AND SULFATE SALTS OF R(+)-N-PROPARGYL-1-AMINOINDAN

Moussa B. H. Youdim, Haifa; John P. M. Finberg, Tivon; Ruth Levy, Tel-Aviv; Jeffrey Sterling; David Lerner, both of Jerusalem; Haim Yellin, Ramat-Gan, and Alex Veinberg, Rehovot, all of Israel, assignors to Teva Pharmaceutical Industries Ltd., and Technion Research and Development Foundation, Ltd.

Continuation of Ser. No. 411,398, Mar. 28, 1995, Pat. No. 5,532,415, which is a continuation of Ser. No. 139,517, Oct. 18, 1993, abandoned, which is a continuation-in-part of Ser. No. 63,455, May 18, 1993, Pat. No. 5,387,612, which is a continuation of Ser. No. 632,184, Dec. 21, 1990, abandoned. This application Jun. 6, 1995, Ser. No. 465,787

Claims priority, application Israel, Jan. 3, 1990, 92952

Int. Cl.[6] C07C *211/38*

U.S. Cl. 564—308 **2 Claims**

1. Esylate salt of R(+)-N-propargyl-1-aminoindan.

5,599,992

PROCESS FOR THE PREPARATION OF 2-FLUOROPHENYLHYDRAZINE

Otto Arndt, Hofheim, Germany, assignor to Hoechst Aktiengesellschaft, Germany

Filed Jan. 22, 1996, Ser. No. 589,859

Claims priority, application Germany, Jan. 24, 1995, 195 01 948.2

Int. Cl.[6] C07C *241/02*

U.S. Cl. 564—314 **19 Claims**

1. A process for the preparation of 2-fluorophenylhydrazine or 2-fluorophenylhydrazine hydrochloride, which comprises diazotizing 2-fluoroaniline, reducing the resulting diazonium salt with alkaline bisulfite solution to give 2-fluorophenyhydrazine α,β-disulfonate, hydrolyzing the latter with hydrochloric acid to give 2-fluorophenylhydrazine hydrochloride, adding alkali metal solution to neutralize the mixture, subsequently cooling the mixture, removing the 2-fluorophenylhydrazine precipitate by filtration and, optionally reacting the latter with hydrochloric acid to give 2-fluorophenylhydrazine hydrochloride.

5,599,993

PHENYLETHYNYL AMINE

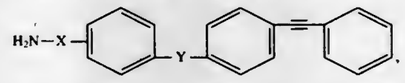
Paul M. Hergenrother, Yorktown; Robert G. Bryant, Poquoson; Brian J. Jensen, Williamsburg, and Stephen J. Havens, Newport News, all of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 209,512, Mar. 3, 1994, Pat. No. 5,412,066. This application Jan. 20, 1995, Ser. No. 376,167

Int. Cl.[6] C07C *225/22;217/90;317/36*

U.S. Cl. 564—328 **2 Claims**

1. A phenylethynyl amine having the general structure:



wherein X is a bond or X is a meta or para substituted phenoxy group, and Y is an activating selected from the group selected consisting of $C(CF_3)_2$, CO, and SO_2.

5,599,994

AMINO ACID-DERIVED DIAMINOPROPANOLS

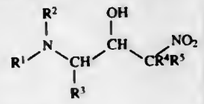
Biman Pal, Waltham; Siya Ram, Winchester; Yesh P. Sachdeva, Concord; Jaechul Shim, Cambridge; Salah A. Zahr, Acton; Emile Al-Farhan, Dedham, and Richard L. Gabriel, Swampscott, all of Mass., assignors to Pharm-Eco Laboratories, Inc., Lexington, Mass.

Continuation-in-part of Ser. No. 271,619, Jul. 7, 1994, Pat. No. 5,475,138. This application Jun. 7, 1995, Ser. No. 487,294

Int. Cl.[6] C07C *215/28;213/00;229/34;227/02*

U.S. Cl. 564—355 **3 Claims**

1. A composition predominently comprising a 2S diastereomer of a compound represented by the formula



and salts thereof wherein:

R^1 is a protecting group;

R^2 is selected from the group consisting of —H, C1–C18 alkyl, aryl, heteroaryl, acetyl and tosyl;

R^3 is a side-chain of an amino acid; and

R^4 and R^5 are each independently selected from the group consisting of —H, alkyl, aryl, nitrile and alkoxycarbonyl.

5,599,995

ELECTROPHOTOGRAPHIC PHOTOCONDUCTOR COMPRISING PYRENYLAMINE DERIVATIVE, THE PYRENYLAMINE DERIVATIVE, INTERMEDIATE FOR PREPARATION THEREOF, AND METHOD FOR PREPARING THE PYRENYLAMINE DERIVATIVE AND THE INTERMEDIATE

Chiaki Tanaka, Shizuoka-ken; Masaomi Sasaki, Susono; Tamotsu Aruga, Mishima; Tomoyuki Shimada, Shizuoka-ken, and Hiroshi Adachi, Numazu, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

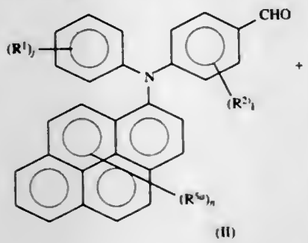
Division of Ser. No. 427,124, Apr. 24, 1995, which is a division of Ser. No. 260,920, Jun. 15, 1994, Pat. No. 5,459,275, which is a continuation-in-part of Ser. No. 77,444, Jun. 17, 1993, abandoned, and Ser. No. 996,080, Dec. 23, 1992, Pat. No. 5,344,985. This application Jun. 5, 1995, Ser. No. 462,852

Claims priority, application Japan, Dec. 28, 1991, 3-360363; Apr. 15, 1992, 4-121326; Jun. 8, 1992, 4-173818; Jun. 17, 1992, 4-183142; Jul. 17, 1992, 4-213528; Jul. 17, 1992, 4-213529; Aug. 10, 1992, 4-234323; Dec. 3, 1992, 4-350440; Jun. 15, 1993, 5-168513

Int. Cl.[6] C07C *209/78*

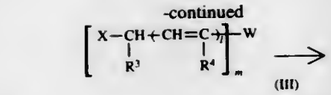
U.S. Cl. 564—426 **1 Claim**

1. A method of preparing a pyrenylamine derivative of formula (Ia) comprising the step of allowing an aldehyde compound of formula (II) to react with a phosphorus compound of formula (III) in accordance with the following reaction scheme:

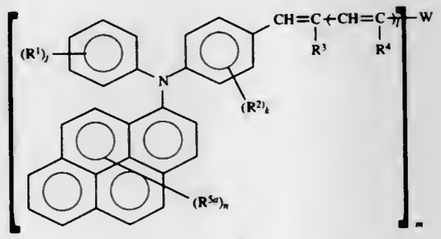


(II)

-continued



(III)



(Ia)

wherein R^1 and R^2 each represent hydrogen, a halogen atom, nitro group, cyano group, a dialkylamino group, an alkyl group having 1 to 10 carbon atoms, an alkoxyl group having 1 to 10 carbon atoms, or a phenyl group; R^3 and R^4 each represent hydrogen, cyano group, formyl group, an alkoxycarbonyl group, an alkyl group having 1 to 10 carbon atoms, an alkenyl group, or a phenyl group; R^{5a} represents hydrogen, or an alkyl group having 1 to 10 carbon atoms; W represents hydrogen, an alkyl group having 1 to 10 carbon atoms, a phenylthio group, a bivalent chain unsaturated hydrocarbon group, a monovalent or bivalent carbocyclic aromatic group, or a monovalent or bivalent heterocyclic hydrocarbon group; and j is an integer of 1 to 5, k is an integer of 1 to 4, l is an integer of 0 to 2, m is an integer of 1 or 2, n is an integer of 1 to 3, provided that when j, k or n is 2 or more, R^1, R^2, R^{5a} may be the same or different; X in formula (III) represents a phosphonium salt represented by $-P^+(R^6)_3Y^-$, or a dialkylphosphite group represented by $-PO(OR^7)_2$, in which R^6 represents a phenyl group or an alkyl group having 1 to 10 carbon atoms, Y represents a halogen atom, and R^7 represents an alkyl group having 1 to 10 carbon atoms.

5,599,996

2-AMINO-5-FLUOROPHENYL CYCLOPROPYL KETONE

Michael E. Condon, Lawrenceville, and Philip M. Harrington, Mercer, both of N.J., assignors to American Cyanamid Company, Madison, N.J.

Division of Ser. No. 236,718, Apr. 29, 1994, Pat. No. 5,492,884. This application May 4, 1995, Ser. No. 435,012

Int. Cl.[6] C07C *225/22*

U.S. Cl. 564—442 **1 Claim**

1. 2-Amino-5-fluorophenyl-cyclopropyl ketone.

5,599,997

PROCESS FOR THE PRODUCTION OF CYCLOHEXYL AMINE

Dennis Hearn, and Speros P. Nemphos, both of Pasadena, Tex., assignors to Chemical Research & Licensing Company, Pasadena, Tex.

Filed Mar. 14, 1995, Ser. No. 404,095

Int. Cl.[6] C07C *209/72*

U.S. Cl. 564—450 **14 Claims**

1. A process for the production of cyclohexyl amine from the hydrogenation of aniline comprising the steps of:

(a) feeding a first stream containing aniline and a second stream containing hydrogen to a distillation column reactor above a reaction distillation zone;

(b) contacting the aniline and hydrogen in a reaction distillation zone containing a hydrogenation catalyst prepared in the form of a catalytic distillation structure and having both a liquid and vapor phase at a hydrogen partial pressure in the range of about 0.1 psia to less than 100 psia, in thereby reacting a portion of the aniline with a portion of the hydrogen to form a reaction mixture containing cyclohexyl amine, unreacted hydrogen and unreacted aniline;

(c) maintaining the pressure in the distillation column reactor such that the reaction mixture is at its boiling point;

(d) removing gaseous aniline, gaseous cyclohexyl amine and hydrogen as overheads from the distillation column reactor;

(e) condensing substantially all of the aniline and cyclohexyl amine removed as overheads from the distillation column reactor;

(f) returning a portion of the condensed aniline and cyclohexyl amine to the distillation column reactor as reflux; and

(g) withdrawing an overheads liquid product containing cyclohexyl amine from the distillation column.

5,599,998

METHOD FOR THE SYNTHESIS OF ADAMANTANE AMINES

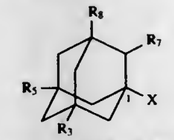
George A. Kraus, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Oct. 24, 1994, Ser. No. 327,615

Int. Cl.[6] C07C *209/66*

U.S. Cl. 564—455 **11 Claims**

1. A method for derivatizing 1-halo-adamantanes comprising reacting a compound of formula (I):



(I)

wherein each of wherein each of R_3, R_5, R_7 and R_8 is H, F or CH_3 and X is Br, Cl or I, with lithium metal in an organic solvent, under sonication, to yield a compound of formula (I), wherein X is Li.

5,599,999

PROCESS FOR PREPARATION FOR ALKANOLAMINE, CATALYST USED IN THE PROCESS AND PROCESS FOR PREPARATION OF THE CATALYST

Atusi Moriya, Yokohama, and Hideaki Tsuneki, Tokyo, both of Japan, assignors to Nippon Shokubai Co., Ltd., Osaka, Japan

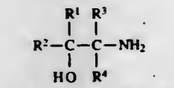
Filed Nov. 2, 1994, Ser. No. 333,329

Claims priority, application Japan, Nov. 2, 1993, 5-295992; Nov. 2, 1993, 5-295993

Int. Cl.[6] C07C *209/16*

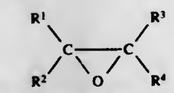
U.S. Cl. 564—477 **13 Claims**

1. A process for preparation of an alkanolamine represented by the general formula (II)



(II)

wherein R^1, R^2, R^3 and R^4 each independently represent a hydrogen atom, a methyl group or an ethyl group, which comprises reacting an alkylene oxide represented by the general formula (I)



(I)

wherein R^1, R^2, R^3 and R^4 are the same as in the general formula (II),

with ammonia in a liquid phase at a mole ratio of ammonia to alkylene oxide of from 1:1 to 40:1, in the presence of a catalyst comprising a rare earth element supported on an inorganic heat-resisting carrier.

5,600,000

REDUCTIVE AMINATION PROCESSES FOR THE SELECTIVE PRODUCTION OF AMINOETHYLETHANOLAMINE

Stephen W. King, Scott Depot, W. Va., assignor to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Continuation of Ser. No. 171,539, Dec. 22, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 461,549

Int. Cl.[6] C07C *209/02*

U.S. Cl. 564—480 **5 Claims**

1. A reductive amination process comprising reacting MEA in the presence of ammonia, hydrogen and a reductive amination catalyst comprising at least one catalytically effective reductive amination metal incorporated with a transitional alumina carrier, thereby yielding a product mix having increased aminoethylethanolamine levels relative to piperazine.

5,600,001

ACETALDEHYDE DERIVATIVES, THEIR PREPARATION PROCESS AND THEIR USE

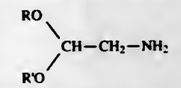
Alain Schouteeten, Ezanville, and Yani Christidis, Paris, both of France, assignors to Societe Francaise Hoechst, Puteaux, France

Division of Ser. No. 431,033, Apr. 28, 1995, Pat. No. 5,527,964. This application Feb. 22, 1996, Ser. No. 605,792

Int. Cl.[6] C07C *209/42;209/00*

U.S. Cl. 564—504 **6 Claims**

1. A method for preparing substituted ethylamines of formula IV



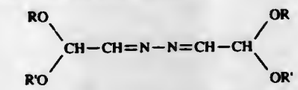
(IV)

wherein R and R' either are identical and represent an alkyl radical of 1–4 carbons or an alkenyl radical of 3–5 carbons, or together form a radical of formula II

$$—CHR_1—(CR_2R_3)_n—CHR_4— \quad \text{(II)}$$

in which R_1, R_2, R_3 and R_4, identical or different, represent a hydrogen atom or an alkyl radical containing 1 to 4 carbon atoms and n represents 0 or 1, in all their different stereoisomer forms comprising

converting an azine of formula I



(I)

to said ethylamine of formula IV.

5,600,002

Patent Not Issued For This Number

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5,600,003

PROCESS FOR ISOLATING TETRAPHENYLBORATES

Rüdiger Baur, Eppstein; Hermann Fuchs, Königstein; Hans-Tobias Macholdt, Darmstadt, all of Germany; Jörg Glitzel, Tokyo, Japan, and Wilfried Theisse, Flörsheim, Germany, assignors to Hoechst Aktiengesellschaft, Germany

Filed Jan. 10, 1995, Ser. No. 370,804

Claims priority, application Germany, Jan. 11, 1994, 44 00 543.1

Int. Cl.[6] C07C 5/02

U.S. Cl. 568—1 **19 Claims**

1. A process for the isolation of a tetraphenylborate, in solid form, from a solution or suspension containing 1 to 40% by weight of a tetraphenylborate and water, an organic solvent, or a mixture thereof as the solution or suspension medium, which process comprises:

spray drying a said solution or suspension by atomizing the solution or suspension and heating the resulting atomized solution or suspension in a spray drying zone with a heated gas which enters the spray drying zone at a temperature in the range of 100° to 400° C. and exits the spray drying zone at a temperature in the range of 50° to 180° C., and

recovering as the product a solid, particulate tetraphenylborate having a residual moisture content between 0.001 and 8% by weight.

5,600,004

PROCESS FOR PREPARING PENTAFLUOROPHENYL COMPOUNDS

Steven P. Diefenbach, Baton Rouge, La., assignor to Albemarle Corporation, Richmond, Va.

Filed Feb. 21, 1995, Ser. No. 391,806

Int. Cl.[6] C07F 5/02

U.S. Cl. 568—1 **10 Claims**

1. A process for preparing a pentafluorophenyl compound having the formula $(C_6F_5)_nY$, where Y is a transition or main group element of Groups 4 to 14 of the Periodic Table other than carbon and n equals the valence of Y, said process comprising (a) reacting pentafluorophenylmagnesium halide with a halide of Y, in mole ratios of pentafluorophenylmagnesium halide to said halide of Y of from (0.8 to 1.2) n to 1, in an ether solvent under conditions to form a reaction mixture which contains said pentafluorophenyl compound and a magnesium halide salt, (b) including a precipitating agent in said reaction mixture which is effective to precipitate said salt from said reaction mixture, and (c) separating the precipitated salt from said reaction mixture.

5,600,005

PROCESS FOR PRODUCING TETRAKISFLOROPHENYLBORATE

Shoji Naganuma; Masami Watanabe, both of Sodegaura, and Norio Tomotsu, Ichihara, all of Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 193,008, Feb. 17, 1994. This application Jun. 6, 1995, Ser. No. 465,892

Claims priority, application Japan, Jun. 23, 1992, 4-188834; Oct. 9, 1992, 4-271356

Int. Cl.[6] C07F 5/02

U.S. Cl. 568—6 **8 Claims**

1. A process for preparing a tetrakisfluorophenylborate which comprises a first step in which the following reactions (1) and (2) are carried out in sequence and a second step in which the following reactions (3) and (4) are carried out in sequence.

First Step:

$$3X^1C_6Y^1{}_5+3R^1M^1\rightarrow 3M^1C_6Y^1{}_5+3R^1X^1 \quad (1)$$

$$3M^1C_6Y^1{}_5+BX^2{}_3\rightarrow B(C_6Y^1{}_5)_3+3M^1X^2 \quad (2)$$

Second Step:

$$X^1C_6Y^1{}_5+R^2M^2\rightarrow M^2C_6Y^1{}_5+R^2X^1 \quad (3)$$

$$M^2C_6Y^1{}_5+B(C_6Y^1{}_5)_3\rightarrow M^2B(C_6Y^1{}_5)_4 \quad (4)$$

wherein X^1 and X^2 individually represent a halogen atom; Y represents a hydrogen atom or a fluorine atom, provided that 2 to 5 Ys among five Ys are fluorine atoms; R^1 and R^2 individually indicate an alkyl group or an aryl group; and M^1 and M^2 individually are an alkali or alkaline earth metal, or represent $R^3{}_2Al$, provided that R^3 is an alkyl group; and wherein the molar ratio of $M^1C_6Y^1{}_5$ and $BX^2{}_3$ in said reaction (2) is $3/2.5 \leqq M^1C_6Y^1{}_5/BX^2{}_3 \leqq 3/1.05$.

5,600,006

BIS(DIARYLALKYL)PHOSPHINES

Dieter Regnat, Frankfurt, and Hans-Jerg Kleiner, Kronberg, both of Germany, assignors to Hoechst A.G., Germany

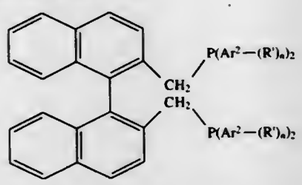
Filed Nov. 10, 1994, Ser. No. 337,959

Claims priority, application Germany, Nov. 13, 1993, 43 38 827.2; Sep. 19, 1994, 44 33 294.7

Int. Cl.[6] C07F 9/02

U.S. Cl. 568—16 **3 Claims**

1. A compound of the formula



in which Ar^2 is a phenyl radical, R' is an alkyl radical having 1 to 4 carbon atoms, CF_3, fluorine, chlorine or bromine, and n is 1 or 2.

5,600,007

USE OF α-HYDROXYKETOALKYL DERIVATIVES AS LIGHT PROTECTION FILTERS

Roland Martin, Weinheim; Ingeborg Stein, Erzhausen; Ulrich Heywang, Darmstadt; Michael Schwarz, Gross-Gerau, and Thekla Kurz, Gross-Zimmern, all of Germany, assignors to Merck Gmbh, Germany

PCT No. PCT/EP93/00245, § 371 Date Oct. 15, 1993, § 102(e) Date Oct. 15, 1993, PCT Pub. No. WO93/16026, PCT Pub. Date Aug. 19, 1993

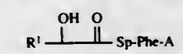
PCT Filed Feb. 3, 1993, Ser. No. 137,014

Claims priority, application Germany, Feb. 15, 1992, 42 04 651.3

Int. Cl.[6] C07C 49/437;207/00

U.S. Cl. 568—306 **8 Claims**

1. α-Hydroxyketoalkyl derivatives of the formula I



(I)

wherein

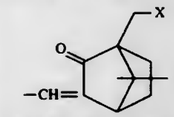
R^1 is H or alkyl having 1 to 10 C atoms,

Sp is $(CH_2)_n$ or —CH=CH—,

n is 0 or an integer between 1 and 10,

Phe is phenylene which is unsubstituted or substituted by 1 to 4 hydroxyl, alkyl or alkyloxy groups, the alkyl groups in each case having 1–10 C atoms, and

A is a radical of the formula (b)



(b)

X is H, R^2 or SO_3H; and

R^2 has one of the meanings given for R^1.

5,600,008

BENZOYL DERIVATIVES AND SYNTHESIS THEREOF

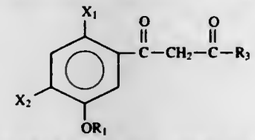
Bruce C. Hamper, Kirkwood, and Kindrick L. Leschinsky, Ellisville, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 277,724, Jul. 20, 1994, abandoned, which is a continuation-in-part of Ser. No. 169,285, Dec. 20, 1993, abandoned, which is a continuation of Ser. No. 763,762, Sep. 25, 1991, Pat. No. 5,281,571, which is a continuation-in-part of Ser. No. 600,031, Oct. 18, 1990, abandoned. This application Mar. 13, 1995, Ser. No. 403,037

Int. Cl.[6] C07C 45/45

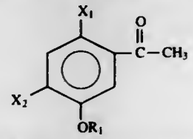
U.S. Cl. 568—314 **5 Claims**

1. Process for preparing compounds according to Formula IC



IC

comprising acylating a compound according to Formula IB



IB

by reaction with $(R_3CO)_2O$ or R_3COZ wherein

X_1 and X_2 are H or halogen;

R_1 is C_{1-6} alkyl and

R_3 is C_{1-6} haloalkyl, and

Z is halogen, C_{1-6} alkoxy or C_{6-8} aryloxy

in an inert solvent in the presence of a strong base at a temperature between −78° C. and 200° C. and after workup recovering said compound according to Formula IC.

5,600,009

USE OF 4-SUBSTITUTED 2-BUTANONES TO PREPARE NABUMETONE

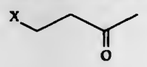
John F. Fritch; Mohammad Aslam; Dora E. Rios, and Joel C. Smith, all of Corpus Christi, Tex., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed Apr. 9, 1996, Ser. No. 629,656

Int. Cl.[6] C07C 45/62

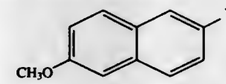
U.S. Cl. 568—318 **28 Claims**

1. A process for the preparation of 4-(6'-methoxy-2'-naphthyl)-but-3-en- 2-one comprising contacting a substituted butanone



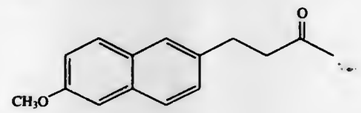
wherein X=CH_3SO_3, OR, NR_2, or halogen and each R is independently hydrogen, alkyl, aryl, acyl, alkanesulfonyl, arenesulfonyl, carbamoyl, alkoxycarbonyl, or aryloxycarbonyl;

with, substituted methoxynaphthalene



wherein Y=halogen, $N_2{}^+Z$—; N=nitrogen; Z=BF_4—, HSO_4—, halide;

wherein the reaction temperature is in the range of about 100°–200° C. the reaction pressure is in the range of about 0–1500 psi, and the reaction time is in the range of about 10 min. to 24 hours. in the presence of a homogeneous palladium catalyst, and subsequently hydrogenating the reaction product to yield



5,600,010

Patent Not Issued For This Number

5,600,011

HAFNIUM COMPOUND AND A PROCESS

Shu Kobayashi, Tokyo-to, Japan, assignor to Daicel Chemical Industries, Ltd., Osaka, Japan

Filed Jun. 7, 1995, Ser. No. 474,651

Claims priority, application Japan, Jul. 8, 1994, 6-180849

Int. Cl.[6] B01J 27/02;27/135

U.S. Cl. 568—335 **3 Claims**

1. A novel hafnium compound represented by the formula $Hf(OSO_2CF_3)_4$.

5,600,012

PROCESS FOR PRODUCING TETRAHYDROISOALPHA ACIDS

William R. Poyner, Crossway Green; Geoffrey Smith, Brierly Hill; Keith T. Westwood, Bodenham, all of United Kingdom, and David W. Hysert, Yakima, Wash., assignors to John I. Haas, Inc., Yakima, Wash.

Filed Apr. 6, 1995, Ser. No. 417,984

Int. Cl.[6] C07C 45/67

U.S. Cl. 568—347 **9 Claims**

1. A process for making THIAA, comprising:

producing a non-buffered, natural pH, alcoholic solution of IAA;

hydrogenating substantially all of the IAA in the presence of a noble metal catalyst, to thereby convert the IAA into high purity THIAA in a single step, wherein

the reaction between the catalyst and the IAA selectively controls the hydrogenation of the IAA and minimizes perhydrogenation of the IAA without necessarily cutting off the supply of hydrogen.

5,600,013

PREPARATION OF CYCLIC KETONES

Michel Alas, Melle, and Michel Crochemore, Chaponost, both of France, assignors to Rhone-Poulenc Chimie, Courbevoie Cedex, France

Continuation of Ser. No. 251,271, May 31, 1994, abandoned. This application Oct. 4, 1995, Ser. No. 539,041

Claims priority, application France, May 28, 1993, 93 06477

Int. Cl.[6] C07C *45/45*

U.S. Cl. 568—355 **40 Claims**

1. A process for the preparation of a cyclic ketone, comprising decarboxylating/cyclizing a dicarboxylic acid in the presence of a catalytically effective amount of a condensed or uncondensed neutral phosphate.

5,600,014

SYNTHESES OF D-CHIRO-3-INOSOSE AND (+)-D-CHIRO INOSITOL

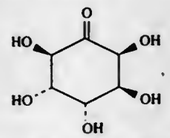
Tomas Hudlicky, and Martin Mandel, both of Blacksburg, Va., assignors to Virginia Tech Intellectual Properties, Inc., Blacksburg, Va.

Division of Ser. No. 974,057, Nov. 10, 1992, abandoned, which is a continuation-in-part of Ser. No. 956,522, Oct. 5, 1992, abandoned. This application Mar. 24, 1995, Ser. No. 410,477

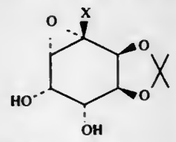
Int. Cl.[6] C07C *45/42*

U.S. Cl. 568—361 **5 Claims**

1. A process for the preparation of D-chiro-3-inosose 10,

10 

the process comprising reacting an epoxydiol having the formula:

12 

wherein X is Cl or Br;

with an appropriate hydrolyzing agent at a temperature between about −10° C. to about 110° C. in an appropriate solvent.

5,600,015

ASSYMETRIC HYDROGENATION OF ISOPRENE DERIVATIVES

Emil A. Broger, Magden, and Robert K. Müller, Basle, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

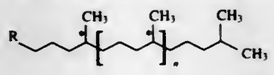
Continuation of Ser. No. 203,859, Mar. 1, 1994, abandoned, which is a continuation of Ser. No. 44,519, Apr. 8, 1993, abandoned. This application May 19, 1995, Ser. No. 445,068

Claims priority, application Switzerland, Apr. 16, 1992, 1270/92

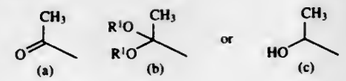
Int. Cl.[6] C07C *45/62*

U.S. Cl. 568—396 **32 Claims**

1. A process for producing a isoprene derivative of the formula:

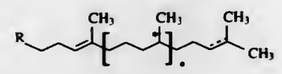


wherein R is:



R^1 is lower alkyl or both R^1's together are ethylene or propylene, n is 0, 1 or 2, and the asymmetric centres each individually can have the (R)- or (S)-configuration,

comprising asymmetrically hydrogenating a compound in the (E)- or (Z)-form of the formula:

II 

wherein R and n are as above, and the dotted line is an optional double bond,

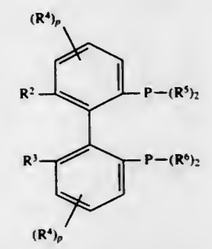
in the presence of a ruthenium complex of an optically active atropisomeric diphosphine ligand having the formula:

$$[RuL]^{2+}(Z)_2, \quad \text{III}$$

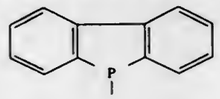
$$Ru(Z^1)_2L \quad \text{IV}$$

$$[Ru(Z^2)_{2-m}(L)(X)(Z^3)m \quad \text{V}$$

wherein Z is $BF_4^{\ominus}$, $Cl_4^{\ominus}B(phenyl)_4^{\ominus}$ or $PF_6^{\ominus}$, Z^1 is halogen or the group $Y—COO^{\ominus}$or $Y—SO_3^{\ominus}$, Y is lower alkyl, phenyl, halogenated lower alkyl or halogenated phenyl, Z^2 is halogen, X is benzene, hexamethylbenzene or p-cymene and m is 1 or 2, Z^3 is halogen, $BF_4^{\ominus}$, $Cl_4^{\ominus}$ or $B(phenyl)_4^{\ominus}$, and L is the optically active atropisomeric diphosphine ligand which is present in the (R)- or (S)-form and is of the formula:

VI 

wherein R^2 and R^3 each independently are lower alkyl, lower alkoxy, hydroxy, or protected hydroxy or and together is $—O—CH_2—O—CH_2—O—$, R^4 is lower alkyl or lower alkoxy, p is 0, 1 or 2, and R^5 and R^6 each independently are aryl, a five-membered heteroaromatic group or, together with the phosphorous atom, a group of the formula:



to obtain said isoprene derivative.

5,600,016

BENZOYL DERIVATIVES AND SYNTHESIS THEREOF

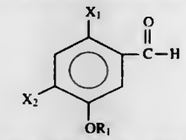
Bruce C. Hamper, Kirkwood, and Kindrick L. Leschinsky, Ellisville, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 277,724, Jul. 20, 1994, abandoned, which is a continuation-in-part of Ser. No. 169,285, Dec. 20, 1993, abandoned, which is a continuation of Ser. No. 763,762, Sep. 25, 1991, Pat. No. 5,281,571, which is a continuation-in-part of Ser. No. 600,031, Oct. 18, 1990, abandoned. This application Mar. 13, 1995, Ser. No. 403,038

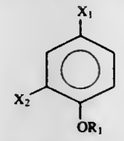
Int. Cl.[6] C07C *45/45*

U.S. Cl. 568—437 **3 Claims**

1. Process for preparing compounds according to Formula IA

IA 

comprising reacting a compound according to Formula II

II 

wherein

X_1 and X_2 are H or halogen and

R_1 is C_{1-6} alkyl.

with a 1,1-dihaloalkylalkylether in the presence of an acid alkylating catalyst.

5,600,017

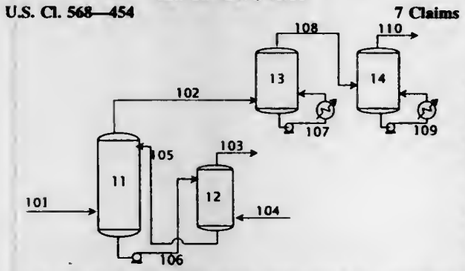
DIRECT HYDROFORMYLATION OF A MULTI-COMPONENT SYNTHESIS GAS CONTAINING CARBON MONOXIDE HYDROGEN ETHYLENE AND ACETYLENE-(LAW072)

Gabor Kiss, Glenn Gardner; Michael G. Matturro, Lambertville; Harry W. Deckman, Clinton, all of N.J.; Istvan T. Horvath, New Hope, Pa.; Anthony M. Dean, Hampton, N.J.; Frank Hershkowitz, Liberty Corner, N.J., and Raymond A. Cook, Hampton, N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation of Ser. No. 375,324, Jan. 18, 1995, abandoned. This application Nov. 28, 1995, Ser. No. 563,838

Int. Cl.[6] C07C *45/50*

U.S. Cl. 568—454 **7 Claims**



1. A process for hydroformylating multicomponent syngas feed streams containing CO, H_2, C_2 to C_5 olefins and mixtures thereof and C_2 to C_5 alkynes and mixtures thereof, comprising: contacting the multicomponent syngas feed stream containing CO, H_2, monounsaturated olefins selected from the group consisting of C_2 to C_5 olefins and mixtures thereof and monounsaturated alkynes selected from the group consisting of C_2 to C_5 alkynes and mixtures thereof with a solution of an oil soluble rhodium complex catalyst produced by complexing in solution a low valence Rh and an oil soluble triorganophoshorous compound wherein the catalyst has a P/Rh ratio of at least 30, a concentration of Rh in solution from about 1 to about 1000 ppm by weight, a total concentration of coordinatively active P of at least about 0.01 mol/l, and a ratio of $[P]/p_{co}$ of at least 0.1 mmol/l/kPa, wherein [P] is the total concentration of coordinatively active phosphorous in the solution, and p_{co} is the partial pressure of CO, to produce the corresponding C_3 to C_6 aldehydes.

5,600,018

PREPARATION OF GLUTARALDEHYDE

Rainer Becker, Bad Dürkheim; Wolfgang Friedrich, Speyer; Walter Klink, Birkenheide; Juergen Schossig, Fussgönheim, and Andreas Henne, Neustadt, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

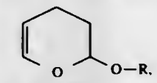
Filed Aug. 7, 1995, Ser. No. 512,151

Claims priority, application Germany, Aug. 18, 1994, 44 29 262.7

Int. Cl.[6] C07C *47/12;45/60*

U.S. Cl. 568—483 **9 Claims**

1. A process for preparing glutaraldehye which comprises: reacting an alkoxydihydropyran of the formula I

(I) 

wherein R is C_1- to C_{20}-alkyl,

with water at from 0° to 150° C. and from 0.01 to 50 bar in the presence of a catalyst consisting essentially of a bleaching earth.

5,600,019

POLYISOCYANATE BASED POLYMERS PERPARED FROM FORMULATIONS INCLUDING NON-SILICONE SURFACTANTS AND METHOD FOR THE PREPARATION THEREOF

Debkumar Bhattacharjee, Lake Jackson; Jerram B. Nichols, Alvin, both of Tex.; Warren A. Kaplan, Grayslake, Ill., and Vaughn M. Nace, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 169,477, Dec. 17, 1993, abandoned. This application Nov. 23, 1994, Ser. No. 342,299

Int. Cl.[6] C09K *3/00*; C07C *43/11*

U.S. Cl. 568—613 **13 Claims**

1. An active hydrogen containing composition comprising:

(A) a polyfunctional active hydrogen containing compound,

(B) an optional blowing agent,

(C) an optional catalyst, and

(D) a non-silicone surfactant,

wherein no silicone based surfactant is required in the composition; wherein the non-silicone based surfactant is present at a reaction mixture concentration of 0.25 to 20 parts per 100 parts of active hydrogen compounds, and wherein the non-silicone surfactant is an amine or hydroxy initiated polyether having from about 10 to about 90 weight percent oxyethylene units based on the combined weight of oxyethylene and oxyalkylene units and from about 10 to about 90 weight percent oxyalkylene units based on the combined weight of oxyethylene and oxyalkylene units, the oxyalkylene units having at least 4 carbons and the polyether being substantially free of oxypropylene units, and the non-silicone surfactant is represented by the formula:

$$I\text{-}(A\text{-}((E_z,B_y,P_z)\text{-}A'H_Q)_{q'})_R$$

wherein I is the non-reactive portion of an initiator; A and A' are independently O, N, or NH; E is an oxyethylene group; B is an

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oxyalkylene group of 4 or more carbon atoms; P is an oxypropylene group; x, y are values such that the ratio of x:y is from 1:4 to 4:1; z is a value such that the total weight of oxypropylene units is less than 10 percent of the combined weight of oxyethylene units and oxyalkylene units; R is from 1 to 8 depending upon the functionality of the initiator; Q and Q' are independently 1 if A or A' is O or NH, and Q and Q' are independently 2 if A or A' is N; the total molecular weight of the compound is from 750 to 11,000; and E and B are in blocks.

5,600,020

PROCESS FOR THE PREPARATION OF ALKOXYLATES USING ESTER COMPOUNDS AS CATALYST

Detlef Wehle, Niedernhausen; Gernot Kremer, Kelkheim, and Ignaz Wimmer, Wiesbaden, all of Germany, assignors to Hoechst Aktiengesellschaft, Germany

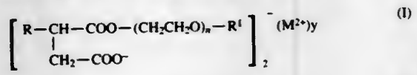
Filed Dec. 6, 1994, Ser. No. 350,413

Claims priority, application Germany, Dec. 7, 1993, 43 41 576.8

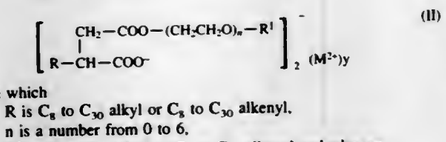
Int. Cl.[6] C07C *43/11;41/01*

U.S. Cl. 568—618 **13 Claims**

1. A process for the preparation of alkoxylates comprising alkoxylating a compound containing at least one active hydrogen atom in the presence of a catalyst wherein said catalyst contains at least one alkaline earth metal salt of an alkyl- or alkenylsuccinic monoester of the formulae (I) and (II) below



(I)



(II)

in which

R is C_8 to C_{30} alkyl or C_8 to C_{30} alkenyl,

n is a number from 0 to 6,

R^1 is C_1 to C_{18} alkyl or C_3 to C_{18} alkenyl or hydrogen,

if n is 1 or >1,

M is Ba, Ca or St, and

Y is a number from 0.9 to 1.8.

and wherein from 10 to 70% of the titratable alkalinity of said alkaline earth metal salt of an alkyl- or alkenylsuccinic monoester of the formula (I) or (II) has been neutralized by an inorganic acid which forms salts of low solubility in water with the cations Ba, Ca or Sr.

5,600,021

FUNCTIONALIZED INITIATORS FOR ANIONIC POLYMERIZATION

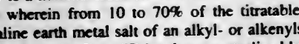
James A. Schwindeman, Lincolnton; Eric J. Granger, Charlotte; John F. Engel, Belmont, and Conrad W. Kamienski, Gastonia, all of N.C., assignors to FMC Corporation, Philadelphia, Pa.

Division of Ser. No. 436,784, May 8, 1995, which is a continuation-in-part of Ser. No. 332,217, Oct. 31, 1994, which is a continuation-in-part of Ser. No. 129,818, Feb. 18, 1994, abandoned. This application Jun. 2, 1995, Ser. No. 458,602

Int. Cl.[6] C07C *43/04;* **C08F** *4/48*

U.S. Cl. 568—671 **6 Claims**

1. Hydrocarbon solutions of monofunctional ether initiators of the following structure;



characterized in that M is an alkali metal selected from the group consisting of lithium, sodium and potassium; Z is a branched or straight chain hydrocarbon group which contains 3–25 carbon atoms, optionally containing aryl groups; and R^1, R^2, and R^3 are independently selected from hydrogen, alkyl groups, and aryl, groups.

5,600,022

METHOD FOR RECOVERING CHLOROMETHYL METHYL ETHER

Kiyoto Ando; Akihiko Tsukada; Hiroshi Arataki, and Youichi Tamura, all of Kitakyushu, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

Filed Dec. 27, 1994, Ser. No. 364,727

Claims priority, application Japan, Dec. 27, 1993, 5-347071

Int. Cl.[6] C07C *41/00*

U.S. Cl. 568—682 **10 Claims**

1. In a reaction for introducing chloromethyl groups into an aromatic crosslinked copolymer by reacting chloromethyl methyl ether to the aromatic crosslinked copolymer in the presence of a chloromethylation reaction catalyst, a method for recovering chloromethyl methyl ether from the reaction mixture, which comprises the following steps:

1) a step of adding to the reaction mixture an aqueous acid solution which is capable of dissolving the chloromethylation reaction catalyst without decomposing chloromethyl methyl ether, and an extraction solvent which is inert to and miscible with chloromethyl methyl ether and which is capable of swelling the chloromethylated aromatic crosslinked copolymer,

2) a step of contacting hydrogen chloride gas to the reaction mixture and the extract solution from the step 1 to convert decomposition products of chloromethyl methyl ether, to chloromethyl methyl ether,

3) a step of separating the resulting mixture from the step 2 into an extraction solvent layer containing chloromethyl methyl ether and an acid-containing aqueous layer, and

4) a step of separating the chloromethyl methyl ether from the extraction solvent layer separated in the step 3.

5,600,023

SINGLE STAGE DIISOPROPYL ETHER PROCESS USING ORGANIC SOLVENT AQUEOUS EXTRACTION AND ION EXCHANGE TREATING FOR SO_3 REMOVAL

Terry L. Marker, Warrenville, and Laura E. Kempf, Deerfield, both of Ill., assignors to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 79,768, Jun. 21, 1993, Pat. No. 5,371,301. This application Nov. 18, 1994, Ser. No. 342,416

Int. Cl.[6] C07C *41/05*

U.S. Cl. 568—694 **2 Claims**

1. A process for the production of diisopropyl ether which process comprises the steps of:

(a) contacting propylene, water, and recycled isopropyl alcohol in the presence of sulfolane present in an amount between about 50 and about 85 weight percent relative to a sulfolane-water mixture in a diisopropyl ether reaction zone in the presence of a styrene/divinylbenzene co-polymer having an SO_3H functional group attached thereto under conditions sufficient to produce a diisopropyl ether reaction zone effluent stream comprising diisopropyl ether, isopropyl alcohol, propylene and SO_3;

(b) passing at least a portion of said diisopropyl ether reaction zone effluent to an extraction zone wherein said diisopropyl ether reaction zone effluent stream is admixed with water and recycled extract to form a raffinate stream comprising diisopropyl ether, isopropyl alcohol, propylene and an extract stream comprising water, isopropyl alcohol and SO_3, said raffinate having a pH of greater than about 3.5;

(c) recycling at least a portion of said raffinate stream to said diisopropyl ether reaction zone;

(d) passing at least a portion of said diisopropyl ether reaction zone effluent stream to an SO_3 removal zone containing a basic ion exchange resin to form an SO_3 removal zone effluent stream; and

(e) recovering said diisopropyl ether from at least a portion of that portion of the raffinate that is not recycled to said diisopropyl ether.

5,600,024

ENHANCED RECOVERY OF ALCOHOL FROM AN ETHER CONTAINING STREAM

Robert B. Eldridge, and Gary R. Patton, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 26, 1995, Ser. No. 507,578

Int. Cl.[6] C07C *41/06;41/09*

U.S. Cl. 568—697 **16 Claims**

1. A method for producing ethyl tertiary butyl ether (ETBE), said method comprises the steps of:

reacting a stream containing isobutylene, ethanol and non-reactive reactive hydrocarbons within an etherification reaction zone to form a reaction product containing ETBE, ethanol, and non-reactive hydrocarbons;

adding a methanol stream containing methanol to said reaction product to give a fractionator feed such that the molar ratio of methanol to ethanol in said feed is in the range of from about 0.1:1 to about 10:1; and

separating by fractionation said feed into an overhead stream and a bottoms stream, said overhead stream containing methanol and non-reactive hydrocarbons and said bottoms stream containing ETBE and ethanol.

5,600,025

SUBSTANTIALLY STRAIGHT CHAIN ALKYLPHENOLS

Thomas F. Buckley, III, Hercules, Calif., assignor to Chevron Chemical Company, San Ramon, Calif.

Division of Ser. No. 581,345, Sep. 12, 1990, Pat. No. 5,322,529. This application May 19, 1994, Ser. No. 246,013

Int. Cl.[6] C07C *39/00*

U.S. Cl. 568—716 **5 Claims**

1. A wax-free liquid alkylphenol wherein the alkyl group is a substantially straight-chain alkyl group of from about 25 to 50 carbon atoms and is attached to the phenol ring at least 6 carbon atoms from the terminus of the longest chain of the alkyl group, and wherein the alkyl group comprises at least two hydrocarbon tails of at least 6 carbon atoms in length, and further wherein the alkyl group is derived from a substantially straight-chain alpha olefin oligomer of C_8 to C_{20} alpha olefins.

5,600,026

PROCESS FOR PRODUCTION OF CRESOLS

Kiyoshi Ikimi; Yoichi Ikeda; Akira Murakami; Kazushige Okamoto; Tooru Tokumaru, and Motoo Hazama, all of Oita, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka-fu, Japan

Continuation of Ser. No. 144,448, Nov. 2, 1993, abandoned, which is a continuation-in-part of Ser. No. 49,440, Apr. 20, 1993, abandoned. This application Feb. 23, 1995, Ser. No. 393,031

Claims priority, application Japan, May 27, 1992, 4-134861; Jul. 1, 1992, 4-174222

Int. Cl.[6] C07C *37/08;37/06;37/68*

U.S. Cl. 568—798 **22 Claims**

1. A process for the production of cresols, comprising the steps of:

(a) oxygenating cymene with oxygen gas or an oxygen-containing gas in the absence of an alkali, to thereby obtain a solution of oxygenation products containing tertiary and primary hydroperoxides of cymene;

(b) carrying out a selective decomposition reaction on the oxygenation products obtained in the step (a) under an atmosphere of nitrogen with either:

(i) an organic quaternary ammonium salt and an alkali, or

(ii) an organic quaternary ammonium hydroxide, in the presence or absence of alkali

to thereby selectively decrease said primary hydroperoxides in the solution;

(c) subjecting the resultant solution from step (b) to decomposition in the presence of an acidic catalyst, or sulfur or a Burmah catalyst; and

(d) subjecting the resultant solution from step (c) to hydrogenation, subsequently separating and recovering the desired cresols.

5,600,027

PROCESS FOR PRODUCING OPTICALLY ACTIVE ALCOHOL CONTAINING PHENYL GROUP

Junko Suzuki, Kanagawa; Satoshi Negishi, Tokyo; Seiichi Shirasawa, Kanagawa, and Yukie Masuda, Tokyo, all of Japan, assignors to The Nisshin Oil Mills, Ltd., Tokyo, Japan

Filed Sep. 15, 1995, Ser. No. 529,071

Claims priority, application Japan, Nov. 29, 1994, 6-317695; Nov. 29, 1994, 6-317696; Nov. 29, 1994, 6-317697; Nov. 29, 1994, 6-317698

Int. Cl.[6] C07C *29/74*

U.S. Cl. 568—810 **8 Claims**

1. A process for producing an optically active alcohol having a phenyl group comprising the steps of:

carrying out interesterification between (a) a monoester between a racemic alcohol having a phenyl group and a fatty acid or a diester between a racemic alcohol having a phenyl group and a dibasic acid and (b) an optically inactive non-racemic alcohol having 16 or more carbon atoms in the presence of heat-resistant lipase and in the absence of a solvent under a substantially water-free condition at a temperature of not lower than 81° C. under atmospheric pressure or reduced pressure, and

separating an optically active alcohol having a phenyl group rich in either one of R- and S-forms from the reaction mixture.

5,600,028

METHOD FOR PRODUCING LOWER POLYHYDRIC ALCOHOLS AND A NEW RUTHENIUM-BASED CATALYST USED IN THIS METHOD

Giuseppe Gubitosa, Novara, and Bruno Cassale, Cameri, both of Italy, assignors to Montecatini Technologie S.r.l., and Novamont S.p.A., both of Milan, Italy

Division of Ser. No. 10,564, Jan. 28, 1993, Pat. No. 5,403,805. This application Jan. 23, 1995, Ser. No. 376,802

Claims priority, application Italy, Jan. 31, 1992, TO92A0079

Int. Cl.[6] C07C *31/18;* **B01J** *21/18;23/46*

U.S. Cl. 568—861 **15 Claims**

1. A method for continuous production in a fixed bed reactor of lower polyhydric alcohols and their mixtures, comprising hydrogenolysis of higher polyhydric alcohols under pressure in the presence of a catalyst comprising from 0.5 to 5% by weight of ruthenium supported on granulated activated carbon, said catalyst having:

a specific surface area of from 600 to 1000 m^2/g;

a total pore volume of from 0.5 to 1.2 cm^3/g;

an apparent specific weight (bulk density) of from 0.45 to 0.55 g/cm^3;

an actual specific weight of from 1.9 to 2.3 g/cm^3;

a total volume of micropores having a radius smaller than 75 A of from 0.4 to 0.55 cm^3/g; and

an ash content of from 2 to 5% by weight.

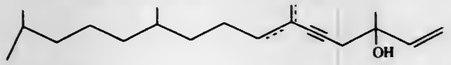
5,600,029

PROCESS FOR PRODUCING DL-TOCOPHEROLS AND INTERMEDIATES THEREFOR

Tatsuhiko Kaneko, Mishima-gun, and Kenichi Kashiwa, Kobe, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Mar. 2, 1995, Ser. No. 398,176
Claims priority, application Japan, Mar. 9, 1994, 6-038380
Int. Cl.[6] C07C *33/048*
U.S. Cl. 568—873 **1 Claim**

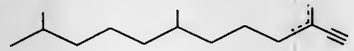
1. A process for producing a compound of the formula (II):



wherein



means that either of the two bonds is a double bond and the other is a single bond, which comprises reacting a compound of the formula (I):



wherein



is as defined above, with 2-methyl-2vinyloxirane.

5,600,030

HYDROGENATION CATALYST, A PROCESS FOR ITS PREPARATION AND USE THEREOF

Gregor Deckers, Xanten; Gerhard Diekhaus, Oberhausen; Bernd Dorsch, Bottrop; Carl D. Frohning, Wesel; Gerhardt Horn, and Horst B. Horrig, both of Oberhausen, all of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Division of Ser. No. 217,151, Mar. 24, 1994, Pat. No. 5,498,587. This application May 9, 1995, Ser. No. 437,354
Claims priority, application Germany, Mar. 27, 1993, 43 10 053.8
Int. Cl.[6] C07C *27/06;29/141;31/10;31/12*
U.S. Cl. 568—881 **2 Claims**

1. A process for hydrogenation of an aldehyde selected from the group consisting of propanal, n-butanal, and i-butanal comprising contacting said aldehyde with hydrogen in the presence of a hydrogenation catalyst consisting essentially of in the reduced state

25% to 50% by weight of metallic nickel

10% to 35% by weight of nickel oxide

4% to 12% by weight of magnesium oxide

1% to 5% by weight of sodium oxide

the remainder being a water insoluble support material, wherein the total of said nickel and said nickel oxide is 40% to 70% by weight based on said catalyst, said catalyst having a total BET surface area of 80 to 200 m_2/g and a total pore volume, determined by mercury porosimetry, of 0.35 to 0.6 ml/g,

said total volume consisting of 30% to 60% of said volume from pores having pore radii equal to or less than 40 Å, 4% to 10% of said volume from pores having pore radii from more than 40 Å to 300 Å, and 30% to 60% of said volume from pores having pore radii from more than 300 Å to 5000 Å.

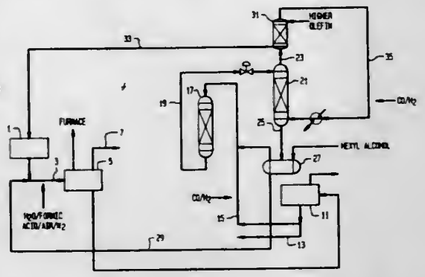
5,600,031

PROCESS FOR PREFORMING COBALTOUS SALTS USING SHELL-TYPE PREFORMER CATALYSTS

Patricia B. Roussel, Baton Rouge, La., assignor to Exxon Chemical Patents, Inc., Wilmington, Del.

Filed Aug. 18, 1995, Ser. No. 516,537
Int. Cl.[6] C07C *27/20;31/125*
U.S. Cl. 568—882 **12 Claims**

(II)



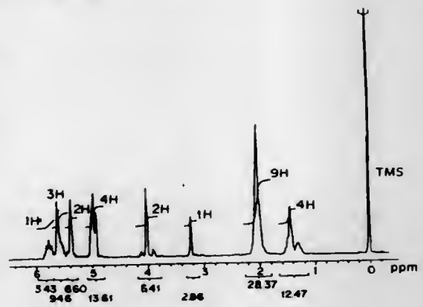
1. A process for preparing oxo alcohols and aldehydes by the (I) cobalt catalyzed hydroformylation of C_2 to C_{17} linear or branched monoolefins with subsequent hydrogenation of the hydroformylation product, in which oxo process aqueous solutions of cobalt salts are convened to active hydrido cobalt carbonyl species in a preformer reactor under preforming reaction conditions, the improvement characterized by said preformer reactor containing a shell-type, metal on substrate, preformer catalyst.

5,600,032

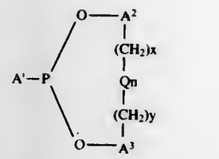
METHOD FOR PRODUCING AN UNSATURATED ALCOHOL

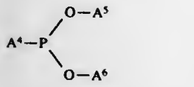
Keiichi Sato; Yoko Seto, and Iwao Nakajima, all of Yokohama, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

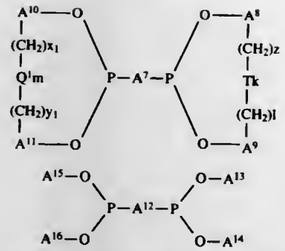
Filed Jun. 7, 1995, Ser. No. 475,619
Claims priority, application Japan, Jun. 29, 1994, 6-147732
Int. Cl.[6] C07C *29/36;29/17;31/125;33/02*
U.S. Cl. 568—903 **10 Claims**



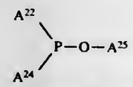
1. A method for producing an unsaturated alcohol having a chain structure formed by oligomerization of a conjugated alkadiene, which comprises reacting a conjugated alkadiene and water in the presence of carbon dioxide by means of a palladium compound and a phosphorus compound having at least one trivalent phosphorus-oxygen single bond, as catalyst, wherein a phosphonite compound of the formula (1), (2), (3) or (4) or a phosphinite of the formula (5) is used as the phosphorus compound having at least one trivalent phosphorus-oxygen single bond:







wherein A^1 is an aryl group or an alkyl group, which may be substituted, A^4 is an aryl group which may be substituted, each of A^5, A^6, A^{13}, A^{14}, A^{15} and A^{16} which are independent of one another, is an aryl group which may be substituted, each of A^2, A^3, A^8, A^9, A^{10} and A^{11} which are independent of one another, is an arylene group which may be substituted, each of A^7 and A^{12} which are independent of each other, is a bivalent hydrocarbon group which may be substituted, each of x, x^1, y, y^1, z and 1 which are independent of one another, is an integer of 0 or 1, each of Q, Q^1 and T which are independent of one another is a bivalent linking group of the formula $—C^1R^2—$, —O—, —S—, $—SO_2—$, $—NR^3—$, $—SiR^4R^5—$ or —CO—, each of R^1 and R^2 which are independent of each other, is hydrogen, a C_{1-12} alkyl group, a phenyl group, a tolyl group or an anisyl group, each of R^3, R^4 and R^5 which are independent of one another, is hydrogen or a methyl group, and each of n, m and k which are independent of one another, is an integer of 0 or 1,


(5)

wherein each of A^{23}, A^{24} and A^{25} which are independent of one another, is an aryl group which may be substituted.

5. The method according to claim 1, further comprising hydrogenating the resulting unsaturated alcohol to obtain the corresponding saturated alcobol.

5,600,033

EPOXIDE ISOMERIZATION CATALYSTS

Mahmoud K. Faraj, Newtown Square, Pa., assignor to ARCO Chemical Technology, L.P., Greenville, Del.

Division of Ser. No. 324,033, Oct. 17, 1994, Pat. No. 5,455,215. This application Jun. 5, 1995, Ser. No. 461,086
Int. Cl.[6] C07C *29/56;33/03*
U.S. Cl. 568—908 **5 Claims**

1. A process for isomerizing an epoxide to an allylic alcohol, said process comprising heating an epoxide in the vapor phase in the presence of a supported catalyst which comprises:

(a) from about 5 to about 95 wt. % of lithium phosphate; and

(b) from about 5 to about 95 wt. % of a silica support;

wherein the silica support contains at least about 98 wt. % of silicon dioxide.

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(1) 5,600,034

METHOD FOR PRODUCING ALLYL ALCOHOLS

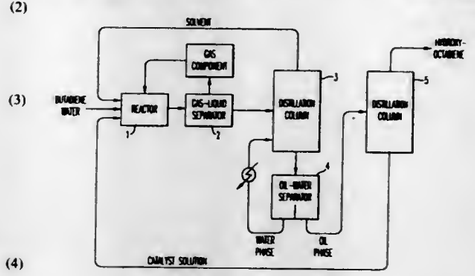
Tomoyuki Mori; Hiroshi Kameo; Shinji Isogai, and Soichiro Saita, all of Kurashiki, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

Filed Nov. 20, 1995, Ser. No. 560,637
Claims priority, application Japan, Nov. 28, 1994, 6-317517
Int. Cl.[6] C07C *29/00;33/02*
U.S. Cl. 568—908 **19 Claims**

(2)

(3)

(4)



1. A method for producing allyl alcohols, which comprises heat-treating diallyl ethers in the presence of a catalyst containing a palladium compound and a phosphorus compound to convert them to allyl alcobols, wherein the heat treatment is conducted under such conversion reaction conditions that the value of function F represented by the following formula is within a range of $0 \leqq F < 100$, the concentration of allyl alcobols in the conversion reaction solution is not higher than 20 wt %, and the Pd concentration in the conversion reaction solution is within a range of from 0.005 to 1.0 wt %:

$$F = \theta r \cdot [Pd] \cdot (T - 100)$$

wherein θt is the conversion reaction time (hours), [Pd] is the Pd concentration (wt %) in the conversion reaction solution, and T is the conversion reaction temperature (°C.).

8. A method for producing allyl alcohols, which comprises subjecting a conjugated alkadiene and water to a hydration dimerization reaction in the presence of a catalyst containing a palladium compound and a phosphorus compound and, if necessary, carbon dioxide to obtain a hydration dimerization reaction solution containing allyl alcohols and diallyl ethers as by-products, and then heat-treating the diallyl ethers in the reaction solution for conversion to allyl alcobols, wherein the heat treatment is conducted under such conversion reaction conditions that the value of function F represented by the following formula is within a range of $0 \leqq F < 100$, the concentration of the allyl alcohols in the conversion reaction solution is not higher than 20 wt %, and the Pd concentration in the conversion reaction solution is within a range of from 0.005 to 1.0 wt %:

$$F = \theta r \cdot [Pd] \cdot (T - 100)$$

wherein θt is the conversion reaction time (hours), [Pd] is the Pd concentration (wt %) in the conversion reaction solution, and T is the conversion reaction temperature (°C.).

16. A method for producing allyl alcohols, which comprises subjecting a conjugated alkadiene and water to hydration dimerization reaction in a solvent in the presence of a catalyst containing a palladium compound and a phosphorus compound and, if necessary, carbon dioxide to obtain a hydration dimerization reaction solution containing allyl alcobols and diallyl ethers as by-products, and then heat-treating the diallyl ethers in the reaction solution for conversion to allyl alcohols, wherein the heat treatment is conducted when the allyl alcohols are separated by distillation from the reaction solution under such conversion reaction conditions

that the value of function F represented by the following formula is within a range of $0 \leq F < 100$, the concentration of allyl alcohols in the conversion reaction solution is not higher than 20 wt %, and the Pd concentration in the conversion reaction solution is within a range of from 0.005 to 1.0 wt %:

$$F = \theta r \cdot [Pd] \cdot (T - 100)$$

wherein θt is the conversion reaction time (hours), [Pd] is the Pd concentration (wt %) in the conversion reaction solution, and T is the conversion reaction temperature (°C.).

5,600,035

POSITIVE PHOTOACTIVE COMPOUNDS BASED ON 2,6-DINITRO BENZYL GROUPS AND 2,5-DINITRO BENZYL GROUPS

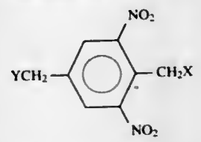
Charles F. Kahle, II, McCandless Twp., Allegheny County; Neil D. McMurdie, Ross Twp., Allegheny County; Raphael O. Kollah, Shaler Twp., Allegheny County; Daniel E. Rardon, Pittsburgh, and Gregory J. McCollum, Hampton Twp., Allegheny County, all of Pa., assignors to PPG Industries, Inc., Pittsburg, Pa.

Filed Jul. 13, 1994, Ser. No. 274,614

Int. Cl.[6] C07C *205/00*

U.S. Cl. 568—932 **18 Claims**

1. A photoactive compound including the structure:



where X and Y may be the same or different member selected from the group consisting of: halogen, —OR, —O—SO_2R, —SR, —NRR', —OC=ONHR, —OC=OOR and —OC=OR; and

where R and R' may be the same or different member selected from the group consisting of: hydrogen and substituted or unsubstituted alkyl, aryl, or aralkyl substitutents.

5,600,036

2-TRIFLUOROMETHYL-4-CHLOROBENZALCHLORIDE AND 2-METHYL-3-NITRO-5-CHLOROBENZOTRIFLUORIDE USEFUL AS INTERMEDIATES FOR PREPARING 2-METHYL-3-AMINOBENZOTRIFLUORIDE

Takayuki Nishimiya; Masatomi Kanai, and Toshikazu Kawai, all of Kawagoe, Japan, assignors to Central Glass Company, Limited, Yamaguchi, Japan

Division of Ser. No. 177,490, Jan. 5, 1994, Pat. No. 5,449,831. This application Jun. 6, 1995, Ser. No. 467,678

Claims priority, application Japan, Jan. 18, 1993, 5-6184

Int. Cl.[6] C07C *205/06*

U.S. Cl. 568—937 **2 Claims**

1. 2-Trifluoromethyl-4-chlorobenzalchloride prepared by chlorinating o-trifluoromethylbenzalhalide.

5,600,037

PROCESS FOR ISOMERIZING 1,1,2-TRIFLUORO-1,2-DICHLOROETHANE TO 1,1,1-TRIFLUORO-2,2-DICHLOROETHANE

Paolo Cuzzato, Treviso; Letanzio Bragante, and Antonio Masiero, both of Padua, all of Italy, assignors to Ausimont S.p.A., Milan, Italy

Continuation of Ser. No. 185,773, Jan. 24, 1994, abandoned, which is a continuation of Ser. No. 961,376, Oct. 15, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 482,740

Claims priority, application Italy, Oct. 18, 1991, MI91A2765

Int. Cl.[6] C07C *17/00;19/08;17/38*

U.S. Cl. 570—151 **11 Claims**

1. A process for removing 1,1,2 -trifluoro-1,2-dichloroethane (Al23a) from a mixture comprising 1,1,1-trifluoro-2,2-dichloroethane (Al23) and Al23a, which comprises isomerizing Al23a to Al23 by contacting said mixture in the vapor phase with a catalyst consisting essentially of AlF_3 and transition metals selected from the group consisting of Fe, Mn, Co, and Ni, in an amount of from 0 to 1% by weight, at a temperature of from 200° C. to 400° C.

5,600,038

ADIABATIC HYDROFLUORINATION OF HYDROCHLOROFLUOROCARBONS

John A. Wismer, Washington Crossing; Maher Y. Elsheikh, Wayne; Michael S. Bolmer, Collegeville, all of Pa., and Jean P. Schirmann, Paris, France, assignors to Elf Atochem North America, Inc., Philadelphia, Pa.

Continuation-in-part of Ser. No. 346,489, Nov. 29, 1994. This application Mar. 24, 1995, Ser. No. 410,483

Int. Cl.[6] C07C *17/08*

U.S. Cl. 570—166 **22 Claims**

1. A substantially adiabatic process for hydrofluorinating hydrochlorocarbons and hydrochlorofluorocarbons, which comprises contacting, in an adiabatic reactor, a starting compound having the general formula RCl, with R having the general formula $C_wH_xCl_yF_z$, wherein w is an integer from 1 to 4, inclusive, and the sum (x+y+z) is either 2w+1 or 2w−1, with gaseous HF, at a molar ratio of HF to starting compound of at least about 2.5:1, at an initial reaction pressure of from about 1 atmosphere to about 500 psig, at a reactor temperature below 400° C. and an initial HF enthalpy of from about 35% to about 90% of the difference between the enthalpy of the feed HF at its calculated ideal gas partial pressure and the enthalpy of saturated HF at the same pressure, in the presence of a catalyst that is sufficiently active to initiate the reaction in the presence of partially dissociated HF and capable of maintaining activity and selectivity at elevated temperatures.

5,600,039

PROCESS FOR THE PREPARATION OF 1,1,1,2-TETRAFLUOROETHANE

Jean-Michel Galland, Vernaison; Emmanuel Guiraud, Saint-Genis Laval, and Jean-Pierre Schirmann, Paris, all of France, assignors to d'Elf Atochem S.A., France

Continuation of Ser. No. 279,622, Jul. 25, 1994, abandoned, which is a continuation of Ser. No. 10,043, Jan. 28, 1993, abandoned. This application Dec. 23, 1994, Ser. No. 363,553

Claims priority, application France, Jan. 30, 1992, 92 01035

Int. Cl.[6] C07C *17/08*

U.S. Cl. 570—169 **20 Claims**

1. Continuous process for the preparation of 1,1,1 2-tetrafluoroethane (134a) from 2-chloro-1,1,1-trifluoroethane (133a) and hydrofluoric acid in the gaseous phase in the presence of a chromium-based catalyst, comprising subjecting the flow of gas leaving the reactor to a distillation in order to separate at the top a flow containing almost all the hydrochloric acid and at least 90% of the 134a produced by the reaction and at the bottom a flow containing at least 90% of the unconverted reactants (133a and HF) present in the flow of gas leaving the reactor, and the flow recovered at the bottom of the distillation, including water and organic by-products, is recycled directly to the reactor, without any purifying operation.

5,600,040

SEPARATION OF TETRAFLUOROETHANE ISOMERS

David R. Corbin, West Chester, and Barry A. Mahler, Glen Mills, both of Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

PCT No. PCT/US92/05851, § 371 Date Feb. 17, 1995, § 102(e) Date Feb. 17, 1995, PCT Pub. No. WO94/02440, PCT Pub. Date Feb. 3, 1994

PCT Filed Jul. 17, 1992, Ser. No. 374,617

Int. Cl.[6] C07C *17/389;19/08*

U.S. Cl. 570—179 **10 Claims**

1. A process for separating a mixture of CHF_2CHF_2 and CF_3CH_2F to provide a product wherein the mole ratio of CF_3CH_2F relative to CHF_2CHF_2 is increased, comprising the step of: contacting said mixture with a sorbent for CHF_2CHF_2 selected from the group consisting of (i) inorganic molecular sieves having intermediate electronegativities greater than the intermediate electronegativity of Zeolite Na-X and (ii) activated carbons, at a temperature within the range of −20° C. to 300° C. and a pressure within the range of 10 kPa to 3000 kPa and for a period of time sufficient to remove a substantial amount of the CHF_2CHF_2 and increase the mole ratio of CF_3CH_2F to CHF_2CHF_2 by at least about 25% relative to the mole ratio thereof in the initial mixture.

5,600,041

PROCESS FOR THE SELECTIVE REMOVAL OF ORGANIC NITRATES FROM A HALOGENATED ORGANIC STREAM CONTAINING TRACE QUANTITIES OF ORGANIC NITRATES

Chwu-Ching Jan, Elk Grove Village; Tom N. Kalnes, La Grange, and George R. Hibel, Schaumburg, all of Ill., assignors to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 192,532, Feb. 7, 1994, abandoned, which is a continuation-in-part of Ser. No. 981,962, Nov. 25, 1992, abandoned. This application Feb. 13, 1995, Ser. No. 388,112

Int. Cl.[6] C07C *17/38*

U.S. Cl. 570—180 **6 Claims**

1. A process for the selective conversion of organic nitrates contained in a stream comprising halogenated organic compounds and said organic nitrates which process comprises:

(a) contacting said stream comprising said halogenated organic compounds and said organic nitrates, and hydrogen with a selective hydrogenation catalyst comprising a refractory inorganic oxide and at least one metallic compound having hydrogenation activity and selected from the group consisting of Groups VIB and VIII of the Periodic Table in a hydrogenation zone at hydrogenation conditions including a pressure from about atmospheric to about 2000 psig, a temperature from about 60° F. to about 212° F., a liquid hourly space velocity from about 0.05 hr^{-1} to about 20 hr^{-1} and a hydrogen circulation rate from about one to about 1000 SCFB selected to produce at least one water-soluble nitrogen compound while minimizing the production of hydrogen halide compounds;

(b) separating the resulting effluent from said hydrogenation zone to produce a hydrogen-rich gaseous stream and a liquid stream comprising halogenated organic compounds and water-soluble nitrogen compounds;

(c) contacting said liquid stream comprising halogenated organic compounds and water-soluble nitrogen compounds with an aqueous scrubbing solution to absorb at least a portion of said water-soluble nitrogen compounds;

(d) recovering an aqueous stream comprising water-soluble nitrogen compounds; and

(e) recovering a stream comprising halogenated organic compounds having less than about 20 ppm nitrogen.

5,600,042

PROCESS FOR THE PRODUCTION OF VINYL CHLORIDE

Wu-Chi Chen, and Harvey R. Chen, both of 859 Brittmoore Rd., Houston, Tex. 77079-3601

Filed Apr. 27, 1995, Ser. No. 429,786

Int. Cl.[6] C07C *21/00;17/04*

U.S. Cl. 570—230 **20 Claims**

1. A process for the manufacture of C_2H_3Cl consisting essentially of

(a) the reaction of C_2H_4 with a chlorinating stream containing a highly chlorinated ethene, such as C_2Cl_4, C_2HCl_3, or C_2HCl_2, to produce C_2H_3Cl and a corresponding less chlorinated ethene, such as C_2HCl_3 or $C_2H_2Cl_2$, and

(b) the separation of the effluent from the reaction to recover C_2H_3Cl as a product, recover unreacted C_2H_4 and said highly chlorinated ethene for recycling, and recover said less chlorinated ethene as another product.

5,600,043

OXYCHLORINATION PROCESS

Victor J. Johnston, Silver Lake, and Joseph A. Cowfer, Avon Lake, both of Ohio, assignors to The Geon Company, Avon Lake, Ohio

Filed Mar. 27, 1995, Ser. No. 411,023

Int. Cl.[6] C07C *17/15;17/154*

U.S. Cl. 570—243 **7 Claims**

1. A process for the oxychlorination of ethylene to produce 1,2-dichloroethane by contacting a mixture of ethylene, oxygen containing gas and hydrogen chloride with a catalyst composition in a reaction zone and recovering 1,2-dichloroethane from the effluents of the reaction zone the process comprising introducing ethylene, HCl and oxygen containing gas into said reaction zone in a ratio of 1.8 and 2.2 moles of HCl per mole of ethylene and from 0.5 to 1 mole of oxygen per mole of ethylene, the oxychlorination process taking place at a temperature of from 210° C. to 250° C., ethylene conversion on a weight basis is at 99% or higher and the mixture is contacted with a catalyst including a support which has deposited thereon a combination of metals, the combination consisting essentially of from 3% to about 6% copper metal, from 0.2% to about 1% potassium metal and from 0.05% to 0.15% magnesium metal, all percentages expressed on a weight percent basis.

5,600,044

METHOD FOR INHIBITING HYDRATE FORMATION

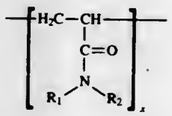
Karla S. Colle, Houston, Tex.; Christine A. Costello, Easton, Pa.; Russell H. Oelfke, Houston, Tex.; Larry D. Talley, Friendswood, Tex.; John M. Longo, Houston, Tex., and Enoch Berluche, Phillipsburg, N.J., assignors to Exxon Production Research Company, Houston, Tex.

Continuation-in-part of Ser. No. 306,336, Sep. 15, 1994, abandoned. This application May 24, 1995, Ser. No. 449,151

Int. Cl.[6] C07C *7/20;* F17D *1/05;* F15D *1/00*

U.S. Cl. 585—15 **14 Claims**

1. A method for inhibiting the formation of clathrate hydrates in a fluid having hydrate forming constituents, said method comprising treating said fluid with an inhibitor comprising a substantially water soluble polymer having the following N-substituted acrylamide:



where,

R_1 is a hydrocarbon group having one to ten carbon atoms and zero to four heteroatoms selected from the group consisting of nitrogen, oxygen, sulfur, and, combinations thereof,

R_2 is hydrogen atom or a hydrocarbon group having one to ten carbon atoms and zero to four heteroatoms selected from the group consisting of nitrogen, oxygen, and sulfur, and combinations thereof, and,

x is an average number of repeating monomeric units for producing an average molecular weight for said polymer between about 1,000 and about 6,000,000 for said polymer.

5,600,045

PROCESS FOR CONVERSION OF CRUDE HYDROCARBON MIXTURES

Matheus J. Van Der Aalst, EC Terneuzen, Netherlands; Levien J. Everaert, Stekene, Belgium, and Juan M. Garces, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 2, 1993, Ser. No. 160,634

Int. Cl.[6] C07C *41/08;43/00;5/08;7/167*

U.S. Cl. 585—261 **22 Claims**

1. A process for conversion of crude hydrocarbon mixtures comprising tertiary olefins and gum-forming constituents, which process comprises contacting the crude hydrocarbon mixture with an alcohol and hydrogen in the presence of a catalyst comprising an acidic mordenite zeolite containing an active hydrogenation metal component.

5,600,046

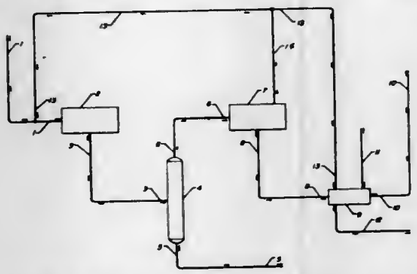
COMBINATION DEHYDROCYCLODIMERIZATION AND DEHYDROGENATION PROCESS FOR PRODUCING AROMATIC AND OLEFIN PRODUCTS

Christopher D. Gosling, Roselle; Joseph H. Gregor, Itasca, and Charles P. Luebke, Mt. Prospect, all of Ill., assignors to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 167,299, Dec. 16, 1993, Pat. No. 5,401,893. This application Dec. 2, 1994, Ser. No. 348,418

Int. Cl.[6] C07C *5/00;2/00;6/00;* **C10G** *39/06*

U.S. Cl. 585—322 **12 Claims**



1. A process for producing aromatic and olefinic hydrocarbons comprising:

a) flowing a hydrocarbon feedstream containing C_3–C_6 aliphatic hydrocarbons into a dehydrocyclodimerization zone where said feedstream is contacted with a bed of a solid dehydrocyclodimerization catalyst at dehydrocyclodimerization conditions, thereby producing an effluent stream containing C_6^+ aromatics, hydrogen and C_1–C_4 aliphatic hydrocarbons;

b) flowing the effluent stream to a first separation zone and separating the stream to obtain a first bottoms stream containing C_6^+ aromatics and a first overhead stream containing hydrogen and C_1–C_4 aliphatic hydrocarbons;

c) flowing the first overhead stream to a dehydrogenation zone and contacting said stream with a dehydrogenation catalyst in the presence of hydrogen at dehydrogenation conditions, thereby producing a second effluent stream containing $C_3^=$/$C_4^=$ olefins, hydrogen and unreacted C_1–C_4 aliphatic hydrocarbons;

d) flowing the second effluent stream to a gas recovery zone and separating the second effluent stream into a hydrogen stream, a fuel gas (C_1/C_2) stream, a $C_3^=$/$C_4^=$ stream and a C_3–C_4 recycle aliphatic stream;

e) recycling at least a portion of the C_3–C_4 aliphatic stream to the dehydrogenation zone of step (c).

5,600,047

PROCESS FOR PRODUCING OPTICALLY ACTIVE OLEFIN

Tadakatsu Mandai, Okayama; Jiro Tsuji, Sanyo-cho, and Manzo Shiono, Okayama, all of Japan, assignors to Kuraray Co., Ltd., Okayama-ken, Japan

Continuation of Ser. No. 45,950, Apr. 14, 1993, abandoned. This application Jun. 2, 1995, Ser. No. 459,637

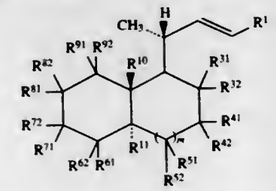
Claims priority, application Japan, Apr. 14, 1992, 4-121182; Jul. 8, 1992, 4-205938

Int. Cl.[6] C07C *1/20;1/32*

U.S. Cl. 585—357 **11 Claims**

1. A process for producing an optically active olefin represented by general formula (Ib)

(Ib)



wherein

R^1 represents an alkyl or alkenyl group which may be substituted by an optionally protected hydroxyl group, an optionally protected oxo group, an optionally protected carboxyl group or a halogen atom;

R^{10} represents a lower alkyl group;

R^{11} represents a hydrogen atom or a lower alkyl group;

each of R^{31}, R^{32}, R^{41}, R^{42}, R^{51}, R^{52}, R^{61}, R^{62}, R^{71}, R^{72}, R^{81}, R^{82}, R^{91} and R^{92} represents a hydrogen atom, an optionally protected hydroxyl group, or an organic group selected from an alkyl, alkenyl, cycloalkyl, cycloalkylidenealkyl, cycloalkenylalkenyl, cycloalkenyl, aryl or aralkyl group which may be substituted by an optionally protected hydroxyl group, an optionally protected oxo group, an optionally protected carboxyl group, cyano group, an optionally substituted amino group or a halogen atom, or

each one pair of the substituents on two adjacent carbon atoms, that is, (R^{31} or R^{32}) and (R^{41} or R^{42}); (R^{41} or R^{42}) and (R^{51} or R^{52}); (R^{51} or R^{52}) and R^{11}; R^{11} and (R^{61} or R^{62}); (R^{61} or R^{62}) and (R^{71} or R^{72}); (R^{71} or R^{72}) and (R^{81} or R^{82}); and (R^{81} or R^{82}) and (R^{91} or R^{92}), may be bonded to each other to form an additional carbon-to-carbon bond, or

each one pair of the substituents on the same carbon atom, that is, R^{31} and R^{32}; R^{41} and R^{42}; R^{51} and R^{52}; R^{61} and R^{62}; R^{71} and R^{72}; R^{81} and R^{82}; R^{91} and R^{92}, may be bonded to each other to form an optionally protected oxo group or a group of the formula

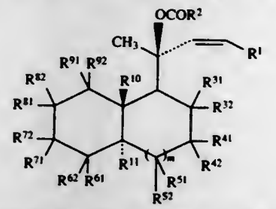


wherein each of Z^1 and Z^2 represents a hydrogen atom or an organic group as described for R^{31} to R^{91}, or

R^{61}, R^{62}, R^{71} and R^{72} may form an additional ring together with the carbon atoms to which they are bonded; and

m is 0 or 1, which process comprises reacting an optically active ester derivative represented by the general formula (IIb)

(IIb)



wherein R^1, R^{10}, R^{11}, R^{31}, R^{32}, R^{41}, R^{42}, R^{51}, R^{52}, R^{61}, R^{62}, R^{71}, R^{72}, R^{81}, R^{82}, R^{91}, R^{92} and m are as defined above and R^2 represents a hydrogen atom, an alkoxy group, an alkenyloxy group or an aralkyloxy group of which the aryl moiety may be substituted by a halogen atom, a nitro group, a lower alkyl group or a lower alkoxy group with formic acid or a salt thereof in the presence of a catalyst comprising a palladium salt and a tertiary phosphine and wherein, in the aforementioned definitions,

the optionally protected hydroxyl group is a hydroxyl group which may optionally be protected by an acyl group, an alkoxycarbonyl group, a tri-substituted silyl group, a 1-alkoxyalkyl group or a 2-oxacycloalkyl group;

the optionally substituted amino group is selected from the group consisting of amino, methylamino, dimethylamino, acetylamino, benzyloxy-carbonylamino, t-butoxycarbonylamino, benzyloxyamino and p-toluenesulfonylamino;

the optionally protected oxo group is an oxo group which may optionally be protected by an acyclic ketal, a cyclic ketal, an acyclic thioketal or a cyclic thioketal; and,

the optionally protected carboxyl group is selected from the group consisting of a carboxyl group, lower alkoxy-carbonyl groups and aralkyloxycarbonyl groups.

5,600,048

CONTINUOUS PROCESS FOR PREPARING ETHYLBENZENE USING LIQUID PHASE ALKYLATION AND VAPOR PHASE TRANSALKYLATION

Jane C. Cheng, Clarksburg; C. Morris Smith; Chaya R. Venkat, both of Princeton, all of N.J., and Dennis E. Walsh, Richboro, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Dec. 27, 1994, Ser. No. 364,145

Int. Cl.[6] C07C *2/66*

U.S. Cl. 585—449 **24 Claims**

1. A process for preparing ethylbenzene, said process comprising the steps of:

(a) contacting benzene and ethylene with an acidic solid oxide catalyst in a liquid phase alkylation reaction zone under sufficient liquid phase conditions to generate ethylbenzene product and byproducts comprising diethylbenzene; and

(b) contacting said diethylbenzene byproduct from step (a) and benzene with an acidic solid oxide catalyst in a vapor phase transalkylation reaction zone under sufficient vapor phase conditions to generate an effluent comprising another ethylbenzene product,

wherein benzene feed which is introduced into said vapor phase transalkylation zone of step (b) comprises nonbenzene hydrocarbons having from 5 to 7 carbon atoms, and wherein nonbenzene hydrocarbons having from 5 to 7 carbon atoms are converted to hydrocarbons having a different boiling point in said transalkylation zone, and wherein unreacted benzene is recycled in said alkylation zone and in said transalkylation zone.

5,600,049

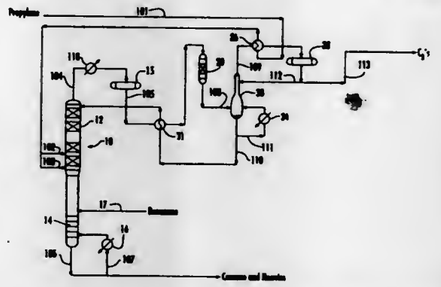
PROCESS FOR DEPROPANIZING BENZENE

Angel Sy, Katy, Tex., assignor to Chemical Research & Licensing Company, Pasadena, Tex.

Filed Jun. 1, 1995, Ser. No. 456,693

Int. Cl.[6] C07C *2/64;15/067*

U.S. Cl. 585—450 **9 Claims**



1. A process which utilizes the heat of vaporization of liquid propylene to cool the overheads from a benzene recovery column, comprising fractionally distilling benzene containing dissolved C_3's in a distillation column to vaporize and remove the C_3's as overheads, contacting said vaporized C_3's by indirect heat exchange with liquid propylene in a condenser where said liquid propylene is vaporized and the overheads are cooled and condensed, whereby the distillation column pressure is reduced by the refrigeration provided by the vaporized liquid propylene.

2. In a process for the production of cumene by the reaction of benzene with propylene and concurrent separation of the product in a distillation column reactor having a propylene feed to said distillation column reactor and the subsequent separation of unreacted C_3's from unreacted benzene in a depropanizer column, wherein the improvement comprising vaporizing the propylene feed by indirect heat exchange with the depropanizer column overheads.

3. A process for the production of cumene comprising the steps of:

(a) feeding (1) a first stream containing benzene and (2) a second stream containing propylene to a distillation column reactor;

concurrently in said distillation column reactor

(i) contacting said benzene and propylene in a reaction distillation zone in the presence of an acidic alkylation catalyst prepared in the form of a catalytic distillation structure to react a portion of said benzene with a portion of said propylene to form a reaction mixture containing product cumene, unreacted benzene and unreacted propylene and C_3's, and

(ii) separating the product cumene from the unreacted benzene, unreacted propylene and C_3's by fractional distillation;

(b) removing the cumene product from said distillation column reactor as bottoms;

(c) removing the unreacted benzene, unreacted propylene and C_3's from said distillation column reactor as overheads;

(d) separating the unreacted benzene from the unreacted propylene and C_3's by fractional distillation in a depropanizer whereby the unreacted propylene and C_3's are taken as overheads and the unreacted benzene is taken as bottoms; and

(e) condensing the overheads containing the unreacted propylene and C_3's by indirect heat exchange with said second stream thereby vaporizing said second stream prior to feeding said second stream to said distillation column reactor.

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5,600,050

ZEOLITE CATALYST FOR THE LIQUID PHASE ALKYLATION AND TRANSALKYLATION OF BENZENE

Zhiyuan Huang; Suxian Tian; Yali Xu; Bin Zhu; Weidong Wang; Fengmei Zhang, and Xie Wang, all of Beijing, China, assignors to ChinaPetro-Chemical Corp., and Research Institute of Petroleum Processing, both of Beijing, China

Filed Dec. 14, 1994, Ser. No. 355,877
Int. Cl.[6] C07C 2/70
U.S. Cl. 585—462 4 Claims

1. The process of producing ethylbenzene comprising alkylating benzene with ethylene in the presence of a catalyst under conditions effective for the production of ethylebenzene and recovering the product, wherein the catalyst is a zeolite catalyst for the liquid phase alkylation and transalkylation of benzene comprising 30 to 70% by weight of H-beta zeolite with a silicon to aluminum ration of 20 to 40; 0.5 to 10% by weight of halogen; and the balance gamma alumina, based in each case on the total weight of the catalyst, and the catalyst is prepared by the process comprising contacting a halogen-containing compound with a mixture of H-beta zeolite and a precursor of gamma alumina.

5,600,051

ENHANCING OLEFIN YIELD FROM CRACKING

R. Terence K. Baker, and Nelly M. Rodriguez, both of State College, Pa., assignors to Corning Incorporated, Corning, N.Y.

Filed May 19, 1995, Ser. No. 445,319
Int. Cl.[6] C07C 4/04
U.S. Cl. 585—648 9 Claims

1. In a method of thermally cracking hydrocarbons to produce olefins wherein a gaseous stream containing hydrocarbons is passed through a heated metal tube in a pyrolysis/furnace, the improvement comprising enhancing the olefin yield by exposing the gaseous stream containing hydrocarbons to the surface of a barium silicate glass-ceramic as the gaseous stream passes through the tube.

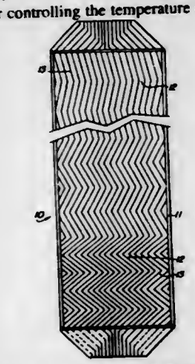
5,600,052

PROCESS AND APPARATUS FOR CONTROLLING REACTION TEMPERATURES

Christine J. B. Girod, Le Pecq; William W. Levy, Paris, both of France; Peter R. Pujado, Palatine; Jacques J. L. Romatier, Riverwoods, both of Ill.; Dominique J. J. M. Sabin, Herbeville, France, and Paul A. Sechrist, Des Plaines, Ill., assignors to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 236,072, May 2, 1994, Pat. No. 5,525,311. This application Dec. 28, 1994, Ser. No. 365,622
Int. Cl.[6] C07C 5/32
U.S. Cl. 585—654 13 Claims

1. A process for controlling the temperature of a reactant stream



in a chemical reaction by indirect heat exchange with a heat exchange fluid across a multiplicity of plate elements, said process comprising:

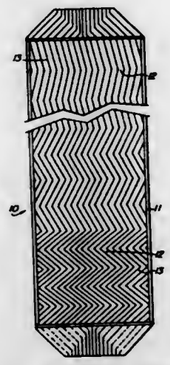
a) passing a heat exchange fluid from a heat exchange inlet to a heat exchange outlet through a first set of elongated channels formed by a first side of said plates;
b) passing a reaction stream from a reactant inlet to a reactant outlet through a second set of channels formed by a second side of said plates; and,
c) exchanging heat between said heat exchange fluid and said reactant stream by contacting at least one of said reactant and said heat exchange fluid with a first portion of said plates having a first heat transfer factor and a second portion of the plates having a second heat transfer factor wherein said first portion is spaced apart from said second portion and said first heat transfer factor is different from said second heat transfer factor.

5,600,053

PROCESS AND APPARATUS FOR CONTROLLING REACTION TEMPERATURES

Christine J. B. Girod, Le Peco; William W. Levy, Paris, both of France; Peter R. Pujado, Palatine; Jacques J. L. Romatier, Riverwoods, both of Ill.; Dominique J. J. M. Sabin, Herbeville, France, and Paul A. Sechrist, Des Plaines, Ill., assignors to UOP, Des Plaines, Ill.

Division of Ser. No. 236,072, May 2, 1994, Pat. No. 5,525,311. This application Jun. 8, 1995, Ser. No. 488,991
Claims priority, application France, Jul. 5, 1993, 93 08210; Aug. 13, 1993, 93 09966; Aug. 13, 1993, 93 09967
Int. Cl.[6] C07G 5/333
U.S. Cl. 585—654 15 Claims



1. A process for controlling the temperature of a reactant stream in a chemical reaction by indirect heat exchange with a heat exchange fluid across a multiplicity of plate elements, said process comprising:

a) passing a heat exchange fluid from a heat exchange inlet to a heat exchange outlet through a first set of elongated channels formed by a first side of said plates;
b) passing a reactant stream from a reactant inlet to a reactant outlet through a second set of channels formed by a second side of said plates; and,
c) exchanging heat between said heat exchange fluid and said reactant stream and said heat exchange fluid with corrugations formed by said plates having a pitch angle or depth adjacent at least one of the reactant inlet and heat exchange inlet that differs from the pitch angle or depth of the corrugations adjacent the heat exchange outlet or reactant outlet.

11. A process for the catalytic dehydrogenation of hydrocarbons, said process comprising:

a) passing a heating fluid from a first heat exchange inlet to a first heat exchange outlet through a first set of elongated channels formed at least in part by a first side of a first set of plates;

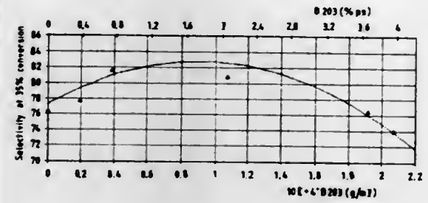
b) passing a feedstream comprising paraffins into a feed inlet at dehydrogenation conditions and contacting said feedstream with a dehydrogenation catalyst in a second set of channels formed by a second side of said first set of plates;
c) collecting a first dehydrogenation effluent stream comprising dehydrogenated hydrocarbons from said second set of channels through a first effluent outlet;
d) heating said feedstream with said heating fluid by contacting said feedstream and said heating fluid with corrugations formed by said plates and arranged such that the pitch angle with to the flow of heating fluid is greater at said first heat exchange outlet than at said first heat exchange inlet; and,
e) recovering a product stream comprising at least a portion of said dehydrogenated hydrocarbons.

5,600,054

PROCESS FOR THE SKELETON ISOMERIZATION OF LINEAR OLEFINS

Roberta Miglio, Trecate, and Ugo Cornaro, Seriate, both of Italy, assignors to Snamprogetti S.p.A., Milan, Italy

Filed Jan. 31, 1995, Ser. No. 381,062
Claims priority, application Italy, Feb. 11, 1994, MI94A0243
Int. Cl.[6] C07C 5/27
U.S. Cl. 585—671 9 Claims



1. A process for the skeleton isomerization of a linear olefin which comprises contacting said olefin under isomerization conditions with a catalyst comprising a gamma-alumina on the surface of which boron oxide is deposited in a quantity lower than 2.1×10^{-4} g/m^2 of the surface of the alumina.

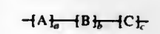
5,600,055

IMMOBILIZED LEWIS ACID CATALYSTS

Tze-Chiang Chung, State College, Pa.; Frank J.-Y. Chen, Edison; Jon E. Stanat, Westfield, both of N.J., and Alok Kumar, State College, Pa., assignors to Exxon Chemical Patents Inc, Linden, N.J.

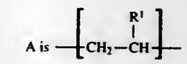
Division of Ser. No. 154,228, Nov. 18, 1993, Pat. No. 5,414,177, which is a division of Ser. No. 723,130, Jun. 28, 1991, Pat. No. 5,288,677. This application May 8, 1995, Ser. No. 436,508
Int. Cl.[6] C07C 2/62
U.S. Cl. 585—727 13 Claims

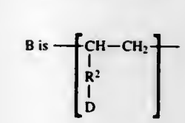
1. A process for alkylating a substrate selected from the group consisting of olefin, alkane, alkyl halide, aromatic compound, and hydroxy aromatic compound with an alkylating agent selected from at least one member of the group consisting of olefin, alkane, and alkyl halide which comprises contacting a mixture of substrate and alkylating agent in the presence of immobilized Lewis Acid catalyst in a manner and under conditions sufficient to alkylate the substrate with the alkylating agent subject to the proviso that the alkylating agent is selected to be different from the substrate employed; and wherein the immobilized catalyst comprises polymer baving at least one Lewis Acid immobilized within the structure therein, said polymer having monomer units represented by the structural formula:



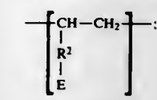
wherein

a represents about 1 to about 99 mole %
b represents about 0 to about 50 mole %
c represents about 1 to about 99 mole %
a+b+c is preferably about 100%;

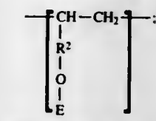




C is selected from the group consisting of:



(I)



(II)

(III) combinations thereof.

D is OH, halide, OR[4], NH_2, NHR^3, OM' or OM";
E is the residue of the reaction of at least one Lewis Acid with the D substituent of monomer unit B;
R^1 represents proton, C_1–C_{24} alkyl group, or C_3–C_{24} cycloalkyl;
R^2 represents C_1–C_{24} alkyl group, C_3–C_{24} cycloalkyl, C_6–C_{18} aryl, or C_7–C_{30} alkylaryl;
R^3 represents C_1–C_{24} alkyl, C_3–C_{24} cycloalkyl, C_1–C_{24} aryl, or C_7–C_{30} alkylaryl;
R^4 represents C_1–C_{24} alkyl, C_3–C_{24} cycloalkyl, C_1–C_{24} aryl, or c7–C_{30} alkylaryl;
M' represents alkali metal;
M" represents alkaline-earth metal.

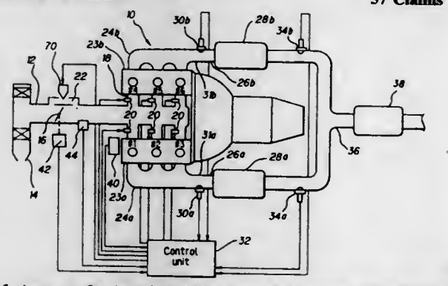
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5,600,056

AIR/FUEL RATIO DETECTION SYSTEM FOR MULTICYLINDER INTERNAL COMBUSTION ENGINE

Yusuke Hasegawa; Isao Komoriya, and Yoichi Nishimura, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 6, 1995, Ser. No. 463,639
Claims priority, application Japan, Jun. 20, 1994, 6-160533
Int. Cl.[6] F01N *3/20*
U.S. Cl. 73—23.32 **57 Claims**



1. A system for detecting air/fuel ratio of an internal combustion engine having a plurality of cylinders by sampling outputs of an air/fuel ratio sensor installed at a confluence point of an exhaust system or downstream of the confluence point of said engine, comprising:

engine operating condition detecting means for detecting operating conditions of said engine;

sampling means for sampling said outputs of said air/fuel ratio sensor as a plurality of sampled data;

characteristics determining means for determining characteristics for datum selection with respect to said operating conditions of said engine;

selecting means for selecting one of said plurality of sampled data by retrieving said determined characteristics by said detected operating conditions of said engine; and

air/fuel ratio determining means for determining said air/fuel ratio of said engine based on said selected sampled datum; wherein:

said engine is provided with an exhaust manifold which is connected to exhaust ports of said plurality of cylinders and merges to said confluence point of the exhaust system at which or downstream thereof said air/fuel ratio sensor is installed in such a manner that distance from the air/fuel ratio sensor to the exhaust port of at least one cylinder is different from that of another cylinder;

said characteristics determining means determines said characteristics for datum selection with respect to said operating conditions of said engine and said distance to said air/fuel ratio sensor; and

said selecting means selects one of said plurality of sampled data by retrieving said determined characteristics by said detected operating conditions of said engine and said distance to said air/fuel ratio sensor.

5,600,057

METHOD OF LEAK DETECTION IN A HEAT EXCHANGER COMBUSTION CHAMBER

Thomas P. Hansche, deceased, late of Wynnewood, Okla., and Betty R. Hansche, administrator, 505 S. Sebers, Wynnewood, Okla. 73098

Filed Mar. 11, 1996, Ser. No. 615,548
Int. Cl.[6] G01M *3/04*
U.S. Cl. 73—40.7 **2 Claims**

1. A method of detecting a gas leak in the wall of a heat exchanger combustion chamber disposed in the return air path downstream from a blower means moving air to be heated across the combustion chamber in a gas fired forced air furnace normally generating a blue color gas flame, the detection method comprising the following steps:

a) providing a liquid compound containing four parts by measure of sodium bicarbonate dissolved in one part by measure of a liquid;

b) introducing a mist spray of said compound into the air stream adjacent and upstream from said blower means while simultaneously visually inspecting the combustion chamber gas flame;

c) in the event that during step (b) any change toward an orange color flame is discernable in the combustion chamber thereby indicating a leak in the wall of the combustion chamber: rejecting the combustion chamber; and,

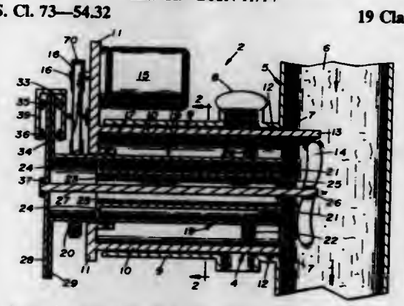
d) in the event that during step (b) no change in the blue color of the combustion chamber flame is discernable; thereby indicating an imperforate combustion chamber wall: accepting the combustion chamber for continued use.

5,600,058

ROTATING CONSISTENCY TRANSMITTER AND METHOD

Ekhard Preikschat, Bellevue, and Robert J. Hilker, Bothell, both of Wash., assignors to APPA Systems, Inc., Bellevue, Wash.

Filed Sep. 8, 1995, Ser. No. 525,945
Int. Cl.[6] G01N *11/14*
U.S. Cl. 73—54.32 **19 Claims**



1. A consistency transmitter, comprising:

a. a composite, rotating shaft including concentrically aligned outer drive shaft, a middle sensor shaft, and an inner reference shaft, said shafts being connected together so that when said outer drive shaft is rotated, said sensor shaft is rotated and causes said reference shaft to rotate, said reference shaft having an extended end;

b. a force detecting means attached to said extended end of said reference shaft;

c. a torque detecting means connected between said outer drive shaft and said inner reference shaft, said torque detecting means capable of detecting the amount of torque applied across to said sensor shaft; and,

d. a rotating means attached to said outer drive shaft for rotating said force detecting means.

5,600,059

ENGINE DELIVERY SYSTEM

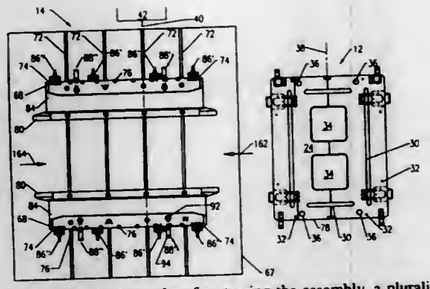
Thomas F. Sondey, 9068 Lone Pine, Shelby Township, Mich. 48317

Filed Apr. 21, 1995, Ser. No. 426,240
Int. Cl.[6] G01M *15/00*
U.S. Cl. 73—116 **20 Claims**

1. An engine delivery system for delivering an internal combustion engine to an engine test room that has a dynamometer and a bed plate, the engine delivery system comprising:

a portable engine pallet assembly for supporting an engine, said assembly including a base plate, a detachable handle con-

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nected to the base plate for steering the assembly, a plurality of pivotable wheel assemblies connected to the base plate that are capable of being locked, and an accessory mounting device connected to the base plate that is operable to support electrical components; and

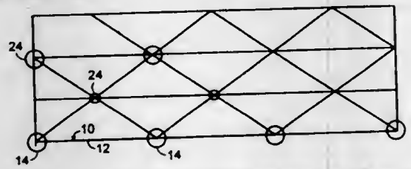
a pallet locating system for locating said engine pallet assembly relative to a centerline of the dynamometer, said locating system including a pair of elongated rails that are secured to the bed plate, a pair of wheel guides secured to the bed plate for guiding the wheels of the pallet assembly, a self-centering locating pin assembly located relative to said rails, and a plurality of clamping devices connected to one of said rails for securing the engine pallet assembly to said rails.

5,600,060

APPARATUS AND METHOD FOR COMPUTING UNSTEADY FLOWS BY DIRECT SOLUTION OF THE VORTICITY EQUATION

John R. Grant, Jamestown, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 22, 1996, Ser. No. 613,747
Int. Cl.[6] G01M 9/00
U.S. Cl. 73—147 **9 Claims**



1. A method for directly computing unsteady fluid flows comprising the steps of:

defining a model of a surface;

defining a plurality of surface nodes on said surface model;

defining boundary conditions at said surface nodes;

defining consecutive layers a preset distance outward from said surface model, said consecutive layers having nodes therein;

developing a panel for said surface, said panel being an arc intersecting at least three nodes of the previous layer of interest, said surface panel having a centroid and an arc length;

defining a surface shape function in accordance with said boundary conditions at each said surface node;

calculating surface vorticity values and surface source strengths at said surface in order to satisfy said boundary conditions;

connecting a node at a level of interest with two nodes from a previous level of interest to form an element, said previous level of interest nodes being said surface nodes if said level of interest is the initial level of interest;

calculating a vorticity gradient for the level of interest node and a second vorticity gradient from said parameters associated with said two previous layer of interest nodes at said time increment;

calculating a diffusion velocity from said vorticity gradient for the level of interest node at said time increment;

developing a surface fluid flow velocity at said time increment by calculation from said source velocities at said at least three nodes of said surface and said defined shape function;

developing a fluid flow velocity field at said time increment at each said node at said level of interest by calculation from calculated vorticity gradients and diffusion velocities at said connected two nodes at said previous level of interest;

calculating the rate of change in vorticity with respect to time for said each level of interest node at said time increment using said developed velocity, said diffusion velocity and said first and second vorticity gradients;

repeating the steps beginning at the step of connecting a node for the next level of interest until an entire fluid flow velocity field of interest is developed at the time increment;

calculating the new vorticity at each node at the time increment;

calculating new positions for each node at the time increment; and

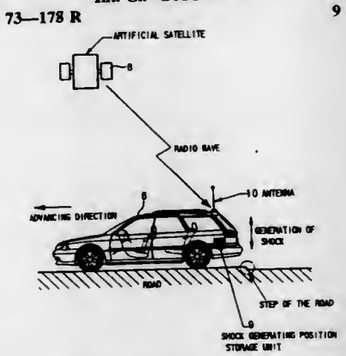
repeating the steps beginning at the step of connecting a node for the next time increment.

5,600,061

APPARATUS FOR DETECTING AND STORING DATA REPRESENTATIVE OF SHOCK IMPARTED TO VEHICLE DURING TRAVEL

Shuichi Yabushita, Yokohama, and Shinsuke Miura, Mishima, both of Japan, assignors to Yamaichi Electronics Co., Ltd., Tokyo, Japan

Filed Aug. 9, 1995, Ser. No. 513,111
Claims priority, application Japan, Aug. 11, 1994, 6-210653
Int. Cl.[6] G01C 21/00
U.S. Cl. 73—178 R **9 Claims**



1. An apparatus for detecting shocks imparted to a motor vehicle during travel thereof over a transfer path and for storing data representative of the shocks, said apparatus comprising:

a storage unit including a memory;

a global positioning system operable to determine a position of the vehicle along said path;

a shock sensor for detecting shocks imparted to the vehicle during travel thereof over the path and for generating shock data representative of magnitude of the shocks;

means for, when said shock data exceeds a predetermined minimum value indicative of a detected shock of not less than a predetermined magnitude, operating said global positioning system to determine the position of the vehicle along the path when said detected shock occurred and generating position data representative thereof;

a timer in said storage unit to generate time data representative of the time when said detected shock occurred; and

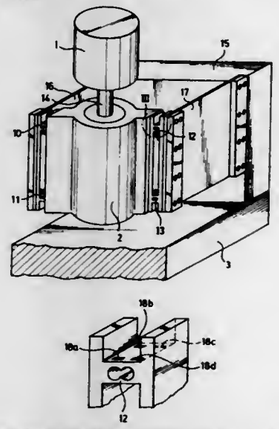
means for sending said shock data exceeding said predetermined minimum value, said position data and said time data to said memory.

5,600,062

APPARATUS FOR MEASURING UNBALANCE ON A ROTARY MEMBER

Uwe Moench, Bensheim, Germany, assignor to Hofmann Maschinenbau GmbH, Pfungstadt, Germany

Filed Dec. 8, 1994, Ser. No. 354,832
Claims priority, application Germany, Dec. 14, 1993, 43 42 667.0
Int. Cl.[6] G01M 1/02
U.S. Cl. 73—462 **4 Claims**



1. Apparatus for unbalance measurement on a rotary member, comprising a foundation, a rotary mounting means for the rotary member, an oscillatable support means for supporting the rotary mounting means on said foundation, a measuring means operatively disposed between said foundation and the rotary mounting means for measurement of a phenomenon which results from unbalance of the rotary member, and a means for measuring the force due to the weight of the rotary member carried by the rotary mounting means, disposed in the path of transmission of force between the rotary mounting means and said foundation, for determining the mass of the rotary member arranged in the rotary mounting means, said rotary member weight force measuring means including an electrical force sensor that comprises at least one deformation body, arranged between said rotary mounting means and said oscillatable support means, which is deformable by the force due to the weight of the rotary member arranged in said rotary mounting means.

5,600,063

OSCILLATION GYRO AND AN INSPECTION APPARATUS THEREFOR

Kenji Ogawa, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 30, 1994, Ser. No. 352,032
Claims priority, application Japan, Aug. 24, 1994, 6-199607
Int. Cl.[6] G01C 19/00
U.S. Cl. 73—504.03 **8 Claims**

1. A vibration gyro comprising:

an oscillator;

a plurality of piezoelectric units for oscillating said oscillator in a predetermined driving-axis direction, each of the piezoelectric units having a common electrode in common with each of the other piezoelectric units, a noncommon electrode, and a resistive component;

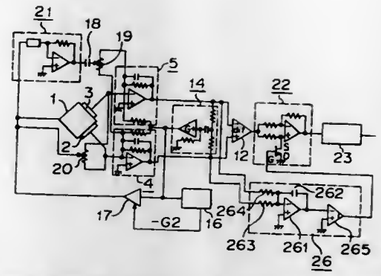
piezoelectric unit driving means for driving said plurality of piezoelectric units by supplying an electric power signal to said common electrode of said plurality of piezoelectric units;

a plurality of current-voltage converting means each for converting a current output from the noncommon electrode of one of said plurality of piezoelectric units to a voltage and outputting said voltage as a converted signal;

eliminating means for eliminating damping components of the currents output from said plurality of piezoelectric units by amplifying by a predetermined amplification factor said electric power signal supplied from said piezoelectric unit driving means, altering by a predetermined angle a phase of the amplified electric power signal, dividing the amplified electric power signal having the altered phase, and supplying the divided signals to said plurality of current-voltage converting means;

adding means for adding the converted signals output from said plurality of current-voltage converting means and feeding back an added value to each of said plurality of current-voltage converting means, thereby decreasing the amplitude of said converted signals; and

error calculating means for calculating a difference between the outputs of said plurality of current-voltage converting means and outputting a signal representing said difference, wherein the difference signal indicates an angular velocity of said oscillator.

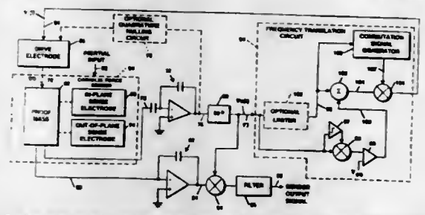


5,600,064

ELECTRONICS FOR CORIOLIS FORCE AND OTHER SENSORS

Paul Ward, Waltham, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Division of Ser. No. 219,023, Mar. 28, 1994, Pat. No. 5,481,914. This application May 24, 1995, Ser. No. 448,789
Int. Cl.[6] G01P 9/00
U.S. Cl. 73—504.04 **16 Claims**



1. An automatic quadrature nulling system for a micromechanical, in-plane gyroscope, said gyroscope having a center stator, a first and a second end stator on opposite sides of said center stator, two proof masses, each suspended between said center stator and a respective end stator, and a plurality of electrodes underlying said proof masses, said quadrature nulling system comprising:

means for receiving and applying a first supply signal to said center stator of said gyroscope;

means for receiving and applying a second supply signal to each of said first and second end stators;

means for receiving and applying a third supply signal to two electrodes, each underlying a respective one of said proof masses;

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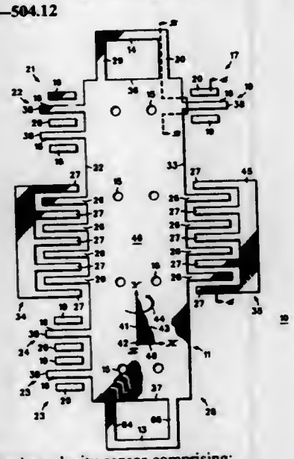
an out-of-plane charge amplifier responsive to an out-of-plane signal induced by out-of-plane movement of said proof masses and providing an out-of-plane charge amplifier output;
an in-plane charge amplifier responsive to said first supply signal and providing an in-plane charge amplifier output;
excitation feedback means for receiving said in-plane charge amplifier output and for providing an excitation feedback output to said means for receiving and applying said second supply signal;
an in-plane gain stage for amplifying said in-plane charge amplifier output and for producing an amplified in-plane output;
an out-of-plane gain stage for amplifying said out-of-plane charge amplifier output and for producing an amplified out-of-plane output;
first mixer means for mixing said amplified out-of-plane output with said amplified in-plane output and for providing a first mixer output;
integrator means for integrating said first mixer output and for providing an integrator output to said means for receiving and applying said second supply signal;
phase shifting means for phase shifting said amplified in-plane output; and
second mixer means for mixing said phase shifted, amplified in-plane output and said amplified out-of-plane output, and for providing a gyroscope output.

5,600,065

ANGULAR VELOCITY SENSOR

Barun K. Kar, Tempe; Guang X. Li; Zuoying L. Zhang, both of Gilbert; Eric D. Joseph, Chandler, and Frank A. Shemansky, Jr., Phoenix, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 25, 1995, Ser. No. 548,017
Int. Cl.[6] G01P *9/04*
U.S. Cl. 73—504.12 **19 Claims**



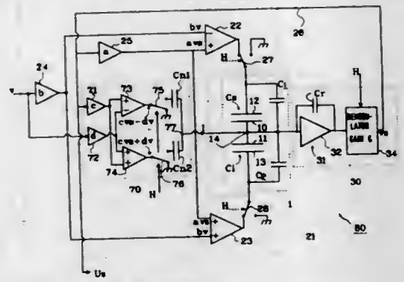
1. An angular velocity sensor comprising:
a substrate having a current conducting region;
a seismic mass having a first portion and a second portion overlying the substrate, the first portion overlying the current conducting region to create an air gap between the first portion and the current conducting region;
at least one electrode over the substrate and adjacent to the second portion of the seismic mass wherein the at least one electrode and the second portion of the seismic mass generate electrostatic forces to oscillate the seismic mass along a first axis substantially parallel to the current conducting region.

5,600,066

CAPACITIVE ACCELEROMETER WITH A CIRCUIT FOR CORRECTING STRAY CAPACITANCE PERTURBATIONS

Michel Torregrosa, Beaumont les Valence, France, assignor to Sextant Avionique, Cedex, France

Continuation of Ser. No. 185,074, Jan. 18, 1994, abandoned. This application Sep. 1, 1995, Ser. No. 522,224
Claims priority, application France, Jan. 19, 1993, 93 00752
Int. Cl.[6] G01P *15/13;21/00;* **G01L** *1/00*
U.S. Cl. 73—514.18 **8 Claims**



1. An accelerometer including:
a silicon capacitive acceleration detector comprising a pair of complementary acceleration sensitive capacitors connected to a common node between first and second terminals, said pair of capacitors having respective parallel connected stray capacitances;
a compensation unit for reducing an impairing influence of said stray capacitances, said unit providing an acceleration representative signal equal to a sum of a reference signal and of a measuring signal corresponding to a signal at said common node, wherein the reference signal and the measuring signal are weighted respectively by first and second coefficients;
first circuitry for applying to said first terminal a signal equal to the difference between the acceleration representative signal and the reference signal, wherein the acceleration representative signal and the reference signal are weighted respectively by third and fourth coefficients; and
second circuitry for applying to said second terminal a signal equal to the sum of the acceleration representative signal and of the reference signal, wherein the acceleration representative signal and the reference signal are weighted respectively by said third and fourth coefficients.

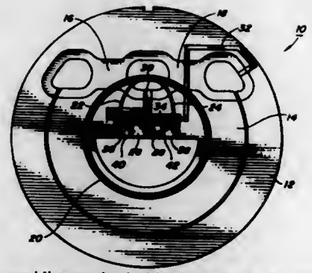
5,600,067

TORQUE WIRE THERMAL STRAIN RELIEF

Charles J. Rupnick, Olympia, and Thomas E. Terry, Vashon, both of Wash., assignors to AlliedSignal, Inc., Morristown, N.J.

Continuation of Ser. No. 108,332, Aug. 18, 1993, abandoned. This application May 23, 1995, Ser. No. 447,971
Int. Cl.[6] G01P *15/08;15/13*
U.S. Cl. 73—514.23 **6 Claims**

1. An accelerometer comprising:
a fixed support structure;
a movable pendulum formed with a pendulum portion and one or more bonding portions, said pendulum portion movably attached to said fixed support structure,
one or more flexure for movably coupling said fixed support structure to said movable pendulum to rotate about said fixed support structure, where in said bonding portions are formed as islands on said pendulum portion by way of one or more flexible arms, said flexible arms and said bonding portions spaced away from said flexures, said islands adapted to enable rigid attachment of one or more electrical conductors thereto



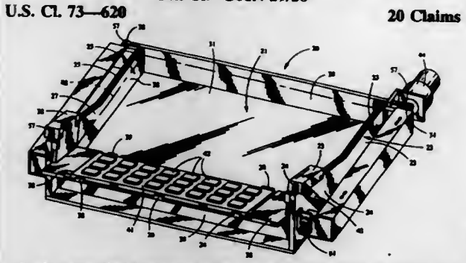
while providing mechanical isolation relative to said movable pendulum and said fixed support structure;
a coil of wire formed from an electrical conductor having two free ends, said two free ends adapted to be rigidly attached to said one or more bonding portions;
electrical connection means making an electrical connection between at least one of said two free ends of said coil of wire and said one or more bonding portions, said electrical connection means including a bonding pad disposed on said one or more bonding portions, said bonding portions disposed on said pendulum, at least one of said two free ends of said coil of wire being rigidly attached to said bonding pad; and
means, coupled to said coil of wire, for providing a signal representative of acceleration.

5,600,068

CONTROLLED-IMMERSION INSPECTION

Lawrence W. Kessler, Buffalo Grove; Daniel M. Erickson, Schiller Park; Daniel W. Micek, Norridge, and John Billone, DesPlaines, all of Ill., assignors to Sonoscan, Inc., Bensenville, Ill.

Filed Aug. 16, 1995, Ser. No. 515,601
Int. Cl.[6] G01N *29/26*
U.S. Cl. 73—620 **20 Claims**



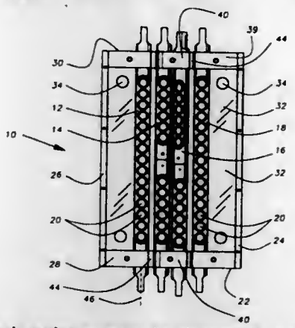
1. A controlled-immersion inspection mechanism to immerse plural articles arranged in an orderly pattern into a tank filled to a given level with a liquid medium, the controlled-immersion inspection mechanism comprising:
a tank;
first and second guide tracks extending across the tank in parallel spaced relation to each other, each guide track including an inspection segment parallel to the given level and an entry segment extending upwardly at an acute angle from one end of the inspection segment;
first and second carriages movable along the first and second guide tracks, respectively;
a platform, extending between the first and second carriages, for supporting plural articles arranged in an orderly pattern for inspection;
and a platform drive, connected to the platform, for driving the platform between an entry position, in which the articles are elevated above the given level, and an inspection position, in which the articles are immersed in the liquid medium at a predetermined level below the given level.

5,600,069

ULTRASONIC TESTING APPARATUS AND METHOD FOR MULTIPLE DIAMETER OILFIELD TUBULARS

Richard J. Girndt, Spring, and David E. Siverling, Houston, both of Tex., assignors to ICO, Inc., Houston, Tex.

Filed Apr. 26, 1995, Ser. No. 429,517
Int. Cl.[6] G01N *29/04*
U.S. Cl. 73—622 **12 Claims**



1. Ultrasonic testing apparatus for ultrasonically testing oilfield tubulars, said test apparatus including a tubular support frame having a central axis, said ultrasonic testing apparatus further comprising:
first and second linear arrays of transducers for unltrasonically testing said oilfield tubulars, each of said first and second linear array including a plurality of ultrasonic transducers arranged along respective first and second array axes each substantially parallel to said central axis and laterally offset with respect to each other;
a drive assembly operable for axially moving an oilfield tubular with respect to said first and second linear arrays in a direction substantially parallel to said central axis, and for rotating said oilfield tubular with respect to said first and second linear arrays at a rate of rotation related to said axial movement, the drive assembly including a plurality of canted rotator stations mounted along said tubular support frame, with each canted rotator station including two wheels adjacent each other for supporting said oilfield tubular therebetween and being canted with respect to said central axis of said tubular frame support; and
an axial adjustment assembly for adjusting an axial position of said first linear array with respect to said second linear array in a direction substantially parallel to said central axis.

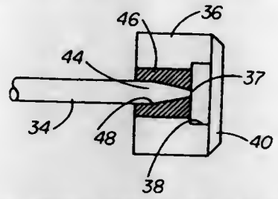
5,600,070

FIBER OPTIC COMBUSTION PRESSURE SENSOR WITH IMPROVED LONG-TERM RELIABILITY

Marek Wlodarczyk, 6865 Vachon Dr., Birmingham, Mich. 48301

Continuation-in-part of Ser. No. 86,245, Jul. 7, 1993, Pat. No. 5,390,546. This application Feb. 21, 1995, Ser. No. 390,970
Int. Cl.[6] G01L *7/08*
U.S. Cl. 73—715 **15 Claims**

1. In a fiber optic diaphragm sensor comprising a ferrule and



having a cavity therein, a diaphragm attached to the ferrule and

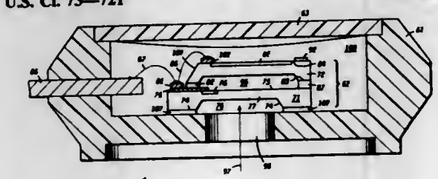
partially enclosing the cavity, the diaphragm being moveable in response to changes in fluid pressure exerted upon the diaphragm,
the diaphragm comprising a top, an underside, a periphery, and
a skirt depending from the top and terminating at the periphery, the skirt being thicker nearer the top than at the periphery,
an optical fiber inserted in the ferrule with the tip end of the optical fiber in communication with the cavity, the tip end being disposed to inject a light beam toward the diaphragm and to receive a light beam reflected from the diaphragm underside,
the center of the diaphragm being thicker than an annular portion about the center.

5,600,071

VERTICALLY INTEGRATED SENSOR STRUCTURE AND METHOD

K. Soorlakumar, Scottsdale; David J. Monk, Mesa; Wendy K. Chan, Scottsdale, and Kenneth G. Goldman, Chandler, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 523,422, Sep. 5, 1995, abandoned.
This application Jul. 22, 1996, Ser. No. 684,723
Int. Cl.[6] G01L *9/06*
U.S. Cl. 73—721 **23 Claims**



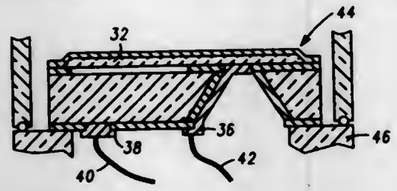
1. A vertically integrated sensor device comprising:
a base substrate having a first major surface, a second major surface opposite the first major surface, and a cavity extending from the second major surface to form a diaphragm, and wherein the base substrate comprises a semiconductor material;
a transducer formed on the diaphragm;
a cap substrate having a third major surface and a fourth major surface opposite the third major surface, wherein the third major surface is connected to the first major surface to provide a hermetically sealed chamber, and wherein the cap substrate comprises a semiconductor material; and
an electronic device formed on the fourth major surface, wherein the electronic device is electrically coupled to the transducer.

5,600,072

CAPACITIVE PRESSURE SENSOR AND METHOD FOR MAKING THE SAME

Shiuh-Hui S. Chen, Lake Zurich, and Carl Ross, Mundelein, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 23, 1995, Ser. No. 494,127
Int. Cl.[6] G01L *9/12*
U.S. Cl. 73—724 **10 Claims**



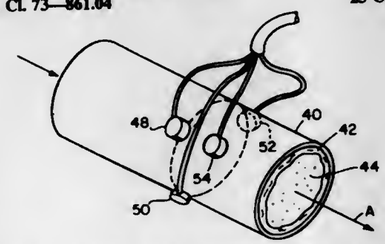
1. A pressure sensor comprising:
a first substrate presenting a top and a bottom surface;
a second substrate presenting a top and a bottom surface and having structure defining a feedthrough hole therein;
a first dielectric layer disposed on at least a portion of one of the first substrate's bottom surface and the second substrate's top surface and wherein the second substrate's top surface is attached to the first substrate's bottom surface such that a hermetically sealed cavity is defined between the first and second substrates by the first dielectric layer such that the first substrate functions as a diaphragm;
a first electrical connection disposed on the first substrate's bottom surface through the feedthrough hole;
a second electrical connection disposed on the second substrate's bottom surface;
an electrical insulator disposed on a side wall of the feedthrough hole for electrically isolating the first electrical connection from the second substrate; and
wherein the sensor defined herein allows the first and second electrical connections to be formed approximate the second substrate's bottom surface.

5,600,073

METHOD AND SYSTEM FOR ANALYZING A TWO PHASE FLOW

Wayne S. Hill, Westborough, Mass., assignor to Foster-Miller, Inc., Waltham, Mass.

Filed Nov. 2, 1994, Ser. No. 333,213
Int. Cl.[6] G01F *1/74*
U.S. Cl. 73—861.04 **23 Claims**



1. A method of analyzing a two-phase flow in a conduit comprising:
transmitting acoustic energy through the conduit and into the flow therein;
detecting return echoes;
computing from the return echoes, one or more flow indicator quantities derived from the return echoes; and
determining, from said computed flow indicator quantities, at least one of mass flow rate and flow quality.

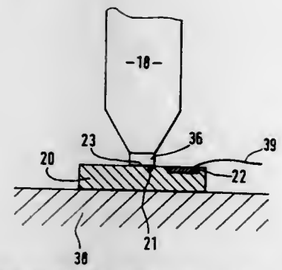
5,600,074

SILICON CHIP FOR USE IN A FORCE-DETECTION SENSOR

Jiri Marek, Reutlingen; Frank Bantien, Ditzingen; Steffen Schmidt, Reutlingen; Kurt Weiblen, Metzingen; Matthias Kuesell, Kornwestheim, and Werner Herden, Gerlingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE92/00870, § 371 Date May 10, 1994, § 102(e) Date May 10, 1994, PCT Pub. No. WO93/10430, PCT Pub. Date May 27, 1993
PCT Filed Oct. 16, 1992, Ser. No. 240,740
Claims priority, application Germany, Nov. 15, 1991, 41 37 624.2
Int. Cl.[6] G01L *1/10*
U.S. Cl. 73—862.625 **8 Claims**

1. A silicon chip having a force application area on which a stamp presses, for use in a force sensor, comprising:
a) a piezoresistive element, said piezoresistive element



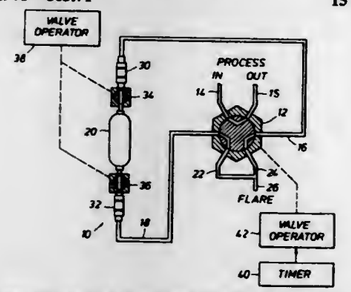
i) arranged in an area of high mechanical tension, and
ii) used to produce signals; and
b) circuits, said circuits
i) arranged in an area of low mechanical tension, and
ii) used to evaluate the signals produced by said piezoresistive element,
wherein the force application area is located on a top surface of the silicon chip, the top surface including a groove located between said force application area and said circuits, and
wherein the groove extends to a depth below the top surface which depth is less than a thickness of the silicon chip.

5,600,075

HIGH PRESSURE GAS SAMPLE COLLECTION SYSTEM

Roger Peterson, County Rd., 375, Drawer 567, Old Ocean, Tex. 77463

Filed Mar. 5, 1996, Ser. No. 611,002
Int. Cl.[6] G01N *1/00*
U.S. Cl. 73—863.71 **15 Claims**



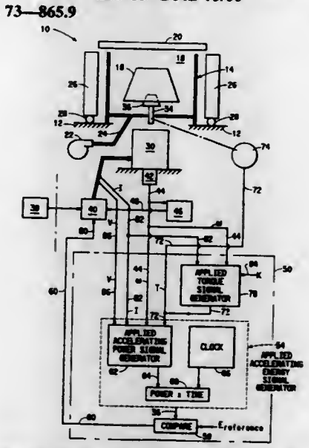
1. A sample collection system for obtaining a pressurized fluid sample from a process, a sample collection system comprising:
(a) valve means for controlling delivery of the sample from the process, comprising a six port and two position valve which is operated by an operating means;
(b) flow lines connected to deliver to and from said valve means a sample from the process;
(c) a sample loop comprising an entry end and an exit end connected to said valve means;
(d) a demountable sample receiving container for receiving sample at essentially the same pressure as said process;
(e) entry and exit valves associated with said container which connect into and release from said sample loop to enable said container to be connected in said sample loop, and wherein said sample container along with said valves are removed as a unit to capture process sample at an elevated pressure, and wherein the operation of said valve means by said operating means between a flow position and a no flow position simultaneously terminates sample flow at said entry end and said exit end of said sample loop.

5,600,076

ENERGY MONITOR FOR A CENTRIFUGE INSTRUMENT

John A. Fleming, Newtown, and William A. Romanauskas, Southbury, both of Conn., assignors to Sorvall Products, L.P., Newtown, Conn.

Filed Jul. 29, 1994, Ser. No. 283,020
Int. Cl.[6] B04B *13/00*
U.S. Cl. 73—865.9 **8 Claims**



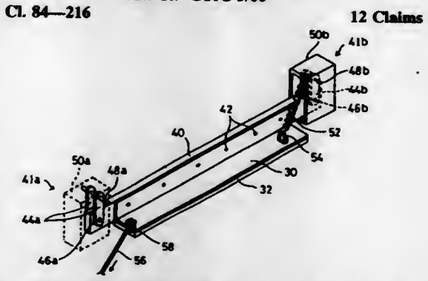
1. An applied energy monitoring arrangement for a centrifuge instrument, the instrument being operable to rotate a rotor, the instrument having an energy containment system therein, the energy containment system having a predetermined containment energy threshold E_c associated therewith, the containment energy threshold being representative of the energy able to be withstood by the containment system of the instrument in the event that a failure of a rotor produces a fragment the applied energy monitoring arrangement comprising;
means for generating a signal representative of the energy applied to accelerate a rotor; and
means for comparing the signal representative of the applied accelerating energy to a predetermined reference energy value E_{ref} the reference energy value E_{ref} being below the containment energy threshold E_c of the instrument.

5,600,077

DAMPER MECHANISM PROVIDED IN A GRAND PIANO

Hisamitsu Honda, Hamamatsu, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Hamamatsu, Japan

Filed Feb. 17, 1995, Ser. No. 389,938
Claims priority, application Japan, Feb. 18, 1994, 6-021576
Int. Cl.[6] G10C *3/00*
U.S. Cl. 84—216 **12 Claims**



1. A damper unit for mounting in a grand piano having a plurality of strings, a key bed with a plurality of keys and a

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plurality of hammers on a plurality of hammer shanks that are operatively coupled to the keys for, upon depression of the keys, striking the strings via the hammers and creating string striking sound, said damper unit comprising:

two support hangers pivotally mounted inside the piano adjacent the strings and the hammers;

a support rail having a stop mechanism and two opposed ends, each of said two support hangers pivotally supporting one of the two opposed ends of said support rail such that said support rail is mounted longitudinally between the strings and the hammers for swinging motion of said support rail between i) a retracted position in which said stop mechanism is located out of a range of motion of the hammer shanks, in response to depression of the keys, for permitting the hammers to strike the strings and create string striking sound, and ii) a stop position in which the stop mechanism is located within the range of motion of the hammer shanks for contacting the hammer shanks and halting the motion of the hammer shanks, in response to depression of the keys, prior to the hammers striking the strings, thereby preventing the hammers from striking the strings and causing sound;

a positioning mechanism supported by the piano and operatively coupled to said support rail for selectively positioning said stop mechanism in said stop position and in said retracted position; and

at least one of a height and an inclination of said contact surface, relative to a longitudinal axis of said support rail, being varied along the length of said support rail whereby, when said support rail is located in said stop position, at least one of the height and the inclination of said contact surface, relative to the key bed of the piano, is varied between tone ranges of the strings of the piano;

wherein said stop mechanism comprises:

a plurality of stop rail members, one for each said tone range, mounted sequentially along a length of said support rail;

each of said plurality of stop rail members has a contact surface and is adjustably mounted to said support rail for adjusting at least one of the height and the inclination of said contact surface relative to a longitudinal axis of said support rail, and thereby adjusting at least one of the height and the inclination of the contact surface relative to the key bed.

5,600,078

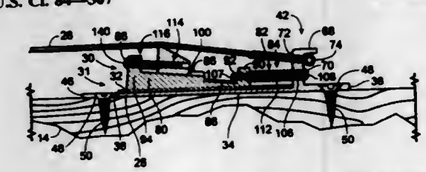
ADJUSTABLE BRIDGE FOR A STRING INSTRUMENT

Nole F. Edwards, 11264 U.S. Highway 12, Randle, Wash. 98377

Filed Jan. 17, 1995, Ser. No. 373,899

Int. Cl.[6] G10D *3/04*

U.S. Cl. 84—307 **24 Claims**



1. A bridge for a string instrument having a body and at least one string, comprising:

a base for mounting said bridge on the body of the instrument; and

an intonation adjustment member, slidably mounted on said base, for adjusting the horizontal position at which a string is supported by said bridge, wherein said intonation adjustment member includes a height adjustment member, movably mounted on said intonation member, for adjusting the vertical position of said the string relative to said intonation adjustment member and thereby adjusting the vertical position of the string above the body.

5,600,079

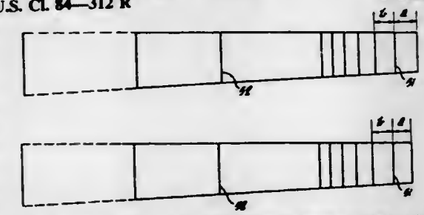
METHOD AND APPARATUS FOR FULLY ADJUSTING AND INTONATING AN ACOUSTIC GUITAR

Howard B. Felten, 12501 Mitchell Ave., Los Angeles, Calif. 90066, and Gregory T. Back, 16000 Sunset Blvd. #1, Pacific Palisades, Calif. 90272

Continuation of Ser. No. 896,685, Jun. 10, 1992, Pat. No. 5,404,783. This application Jan. 23, 1995, Ser. No. 376,601

Int. Cl.[6] G10D *3/14*

U.S. Cl. 84—312 R **3 Claims**



2. A method of intonating an acoustic guitar having a body, strings, frets, with the distance between the nut and the first fret being in the range of 1 to 10% shorter than standard, and a bridge having continuously adjustable acoustically resonant saddle elements including the following steps:

a) striking an open (non-fretted) string;

b) tuning said open (non-fretted) string to a note, thereby setting the open string to the true pitch;

c) striking the same string while fretted at the 12th fret (fretted string) producing a note which is one octave higher than the open string note on the same string;

d) comparing said 12th fret note to the open string note;

e) longitudinally adjusting the saddle element of said fretted string by turning a screw threaded to said saddle and connected to said body thus physically adjusting the longitudinal position of said saddle element until the intonation of the fretted string matches the open string;

f) similarly intonating all other strings to their respective pitches.

5,600,080

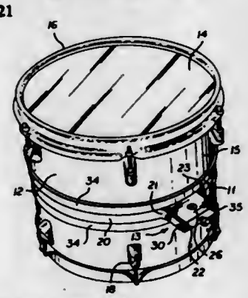
DRUM SUSPENSION AND MOUNTING APPARATUS

Remo D. Belli, North Hollywood, Calif., assignor to Remo, Inc., Valencia, Calif.

Filed Jul. 10, 1995, Ser. No. 499,817

Int. Cl.[6] G10D *13/02*

U.S. Cl. 84—421 **5 Claims**



1. A musical drum comprising:

a substantially cylindrical drum shell having a cylindrical shell wall with an outer portion and at least one end over which a drumhead is to be attached, and

a means for suspending said drum from a support device comprising an apparatus disposed substantially and continuously around the outer portion of the shell wall in contact relation therewith within a circumscribed slot formed within said shell wall and having a first end member and a second end member and a bracket assembly, said bracket assembly including a first side and a second side for attachment to said first end member and said second end member, respectively, whereby vibrations produced upon the striking of the drumhead are spread evenly throughout the shell to sustain musical tones and achieve fundamental sounds.

5,600,081

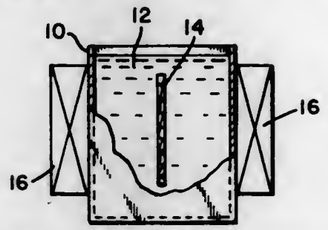
METHOD OF IMPROVING THE SONORITY OF A MUSICAL INSTRUMENT

Luther G. Simjian, 1750 S. Ocean La., Ft. Lauderdale, Fla. 33316

Filed Oct. 4, 1995, Ser. No. 539,327

Int. Cl.[6] G01D *3/02*

U.S. Cl. 84—453 **12 Claims**



1. The method of improving the sonority of a musical instrument made at least partially of wood comprising the steps of:

providing a source of sonic energy and exposing at least one surface of the wood prior to its incorporation in the instrument to sonic energy propagated from said source operating at a frequency in the range from 5 kHz to 100 kHz.

5,600,082

ELECTRONIC MUSICAL INSTRUMENT WITH MINUS-ONE PERFORMANCE RESPONSIVE TO KEYBOARD PLAY

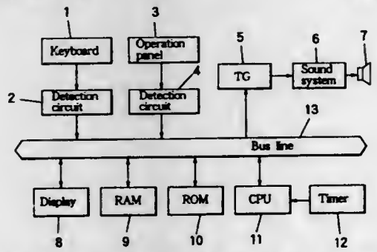
Hiroyuki Torimura, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan

Filed Jun. 21, 1995, Ser. No. 492,751

Claims priority, application Japan, Jun. 24, 1994, 6-164942

Int. Cl.[6] G10H *1/36*

U.S. Cl. 84—610 **8 Claims**



1. An electronic musical apparatus for playing an automatic performance and a manual performance during progression of a musical composition, comprising:

memory means for storing a sequence of automatic performance data representative of the musical composition which is composed of a plurality of parts and which is divided into a series of passages by musically rational manner, and for storing a sequence of check point data indicative of break points of the passages;

implement means manually operable for inputting a sequence of manual performance data assigned to a particular part of the musical composition;

sound means receptive of the inputted manual performance data for sounding the manual performance;

automatic means for sequentially retrieving the automatic performance data and the check point data from the memory means and for feeding the retrieved automatic performance data to the sound means so as to enable the same to sound the automatic performance;

mute means operative when the manual performance data is continuously inputted for controlling the sound means to mute the particular part of the automatic performance while allowing the sounding of the same particular part of the manual performance; and

release means receptive of the retrieved check point data for checking when the musical composition during the progression thereof reaches each break point and for controlling the sound means to release the muting of the particular part of the automatic performance timely at a desired break point so that a complete passage of the automatic performance can be restored for the particular part.

5,600,083

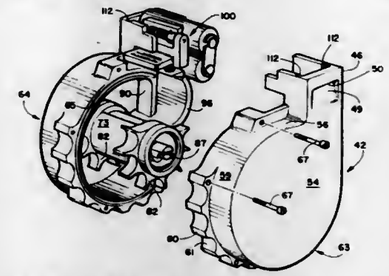
MAGAZINE FOR PUMP ACTION SHOTGUN

James K. Bentley, 2489 Starling Dr., Paso Robles, Calif. 93446, and Willard H. Crawford, 1836 Orange St., Bakersfield, Calif. 93004

Continuation-in-part of Ser. No. 343,332, Nov. 21, 1994, Pat. No. 5,456,153. This application May 30, 1995, Ser. No. 453,867

Int. Cl.[6] F41A *9/74*

U.S. Cl. 89—33.02 **3 Claims**



1. A magazine for a firearm comprising:

a housing having a front wall, a rear wall, a top wall, a bottom wall, a left side wall and a right side wall;

said front wall having an inner surface and said rear wall having an inner surface; a tubular drum having an outer surface also has opposite ends that are journaled in said respective inner surfaces; an annular chamber is formed in said housing with the inner surface being defined by the outer surface of said tubular drum and the outer surface of said annular chamber being defined by said top wall, said bottom wall, said left side wall and said right side wall;

said housing having a substantially vertical tubular chimney section having a top end, a bottom end, a left side wall, a right side wall, a front wall and a rear wall; an outlet port is formed in the top end of said chimney section and an inlet port is formed in the bottom end of said chimney section; said tubular chimney section having a linearly extending chamber and its bottom end is in communication with said annular chamber;

means for spring loading said drum so that the drum will rotate with respect to the front and rear walls of said housing;

means on the outer surface of said tubular drum for capturing (ammunition) shotgun shells so that they can be carried along said annular chamber toward the inlet port of said chimney section as said drum rotates;

a shell ammunition follower assembly having a front end and a rear end, said shell ammunition follower assembly travels

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immediately behind a last round of ammunition and pushes it forwardly toward the outlet port of said chimney section of said magazine;

means for connecting the rear end of said shell ammunition follower assembly to said rotating drum; and

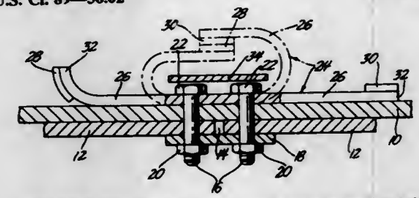
first means for capturing the flange on the brass sleeve located on the end of a shotgun shell and said first means is formed on the inner surfaces of the left and right side walls of said chimney section adjacent (its) the rear wall of said chimney section.

5,600,084

ARMOR PANEL FASTENER DEVICE

René G. Gonzalez, Southfied, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 16, 1996, Ser. No. 605,289
Int. Cl.[6] F41H *5/013;5/04*
U.S. Cl. 89—36.02 **2 Claims**



1. An armor structure attached to a vehicle for protecting at least a portion of the vehicle comprising: a plurality of threaded fasteners attached to the vehicle to be armored, with the threaded potion of the fasteners extending outward from the vehicle surface, a plurality of individual armor panels to be attached to the vehicle, the individual armor panels being disposed in abutting fashion to form a protective layer, each individual armor panel having a plurality of apertures adapted to engage at least two of the threaded fasteners to secure the individual armor panel to the vehicle, the individual armor panels, being disposed so the threaded portion of the fasteners project through the apertures formed in the panel; a shield panel of ballistic material overlying and covering a seam formed at the abutment of adjoining individual armor panels, the shield panel located on the outer side of the individual panels, the shield panel having apertures which individually to receive at least two of the threaded fasteners; a plurality of projectile containment devices located on the side of the individual panels closest to the interior of the vehicle, each individual containment device having a web of ballistic material containing a plurality of apertures each aperture surrounding one fastener, and the web surrounding two or more adjacent fasteners, the web being disposed between the vehicle body and the portion of the fasteners inside the vehicle body, the web having portions extending outward from the fasteners, the web terminating in free ends, the free ends having closure means which cooperate to hold the free ends together to envelope the portion of the fasteners inside the vehicle.

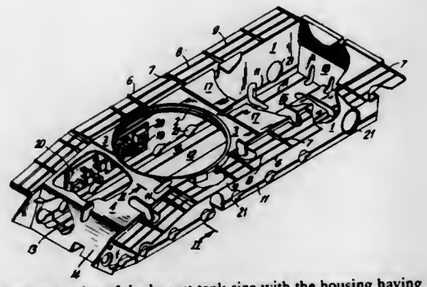
5,600,085

METHOD OF MANUFACTURING ARMORED TANK HOUSING

Jürgen Schalke, Trittau, and Erich Pothe, Horneburg, both of Germany, assignors to Blohm & Voss International, Hamburg, Germany

Filed Mar. 17, 1983, Ser. No. 477,423
Int. Cl.[6] F41H *7/04*
U.S. Cl. 89—36.08 **6 Claims**

1. Method of manufacturing armored tank housings for use in all combat, scouting, infantry and supply tank types of different sizes and operating as track vehicles, comprising the steps of selecting the size of the tank housing for the range of tank types to correspond to the size of the largest tank size with the housing having a long direction extending in the direction of travel on the tracks and a short direction extending transversely of the long direction and the housing having a front end, a rear end spaced in the long direction from the front end, forming the roof of the tank housing of a front roof plate extending from the front end toward the rear end of the housing followed by a center roof plate and welding the front roof plate and the center roof plate together along a weld seam extending in the short direction of the housing, forming the bottom of the housing of a front floor plate extending from the front end toward the rear end of the housing followed by a center floor plate and a rear floor plate extending to the rear end of the housing and welding the front floor plate to the center floor plate and the center floor plate to the rear floor plate along weld seams extending in the short direction of the housing with each of said front, center and rear floor plates forming a part of spaced bottom edges extending in the long direction of the housing, providing an elongated side wall along each side of the housing extending in the long direction with the side walls extending upwardly between the bottom of the housing and the roof of the housing, providing an angular extruded section extending along and between the bottom edges of said floor plates extending in the long direction and the lower edges of said side walls extending in the long direction, welding said floor plates and said side walls to the extruded section along longitudinally extending seams extending in the long direction of the housing so that the transverse seams in said floor plates do not traverse such longitudinally extending weld seams, welding the upper edges of the side walls to the roof with the weld seams extending in the long direction and providing openings located along the junction of the lower ends of said side walls and said extruded section for positioning therethrough components for movement, for orientation and for military tasks in the same locations in said housing for each tank type.



5,600,086

TARGET DETECTION DEVICE USING A TRIGGER WIRE

Georges Lemonnier, Arcay, France, assignor to Giat Industries, Versailles, France

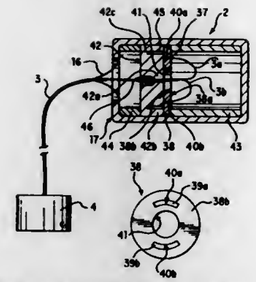
PCT No. PCT/FR94/00883, § 371 Date Jan. 10, 1995, § 102(e) Date Jan. 10, 1995, PCT Pub. No. WO95/03522, PCT Pub. Date Feb. 2, 1995
PCT Filed Jul. 13, 1994, Ser. No. 367,156
Claims priority, application France, Jul. 22, 1993, 93 09002
Int. Cl.[6] F42B *23/10*
U.S. Cl. 102—424 **12 Claims**

1. A device for detecting a target and for triggering the detonation of a mine, comprising:

a detonator that detonates the mine in response to a detection signal;

a trigger wire that is displaceable by the target;

a signal member attached to the trigger wire and comprising a deformable plate, said signal member being located on a support, the support being attached to the mine or locatable apart from the mine; and



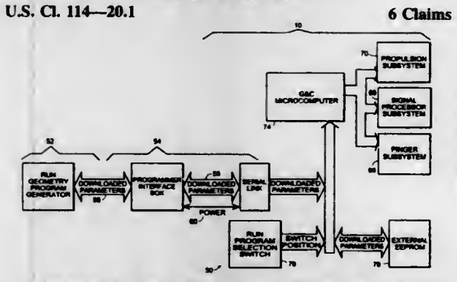
a detector that generates the detection signal due to deformation of the deformable plate.

5,600,087

FIELD PROGRAMMABLE EXPENDABLE UNDERWATER VEHICLE

Raymond A. Chace, Jr., East Freetown, Mass., assignor to Sippican, Inc., Marion, Mass.

Filed Mar. 21, 1995, Ser. No. 408,559
Int. Cl.[6] F42B *19/36*
U.S. Cl. 114—20.1 **6 Claims**



1. Apparatus for field programming a device used in training naval forces in anti-submarine warfare in ocean water, comprising:

(A) an expendable underwater vehicle having a length of about three to five feet and a diameter of about five inches, the vehicle including:

a nose at a front end of the vehicle,

a shroud at a rear end of the vehicle which includes a propeller, elevators, and rudders,

an internal motor for driving the propeller,

actuators for controlling the elevators and the rudders,

an internal guidance and control subsystem for storing and using a first set of operational parameters which dictate the operation of the vehicle in the ocean water, the internal guidance and control subsystem controlling the in-water operation of the vehicle by controlling the motor and the actuators based on the first set of operational parameters,

a communications port coupled to the internal guidance and control subsystem,

an internal signal processing subsystem for simulating a submarine by generating signals representative of the submarine and causing corresponding acoustic signals to be transmitted into the ocean water, and

an internal power source for powering the signal processing subsystem, the guidance and control subsystem, the motor, and the actuators after launch of the vehicle into the ocean water; and

(B) a portable interface module for coupling to the internal guidance and control subsystem via the communications port in the field prior to launch of the vehicle into the ocean water, the portable interface module being carryable by a single person and comprising

a computer for storing and downloading to the internal guidance and control subsystem a second set of operational parameters to replace the first set of operational parameters, and

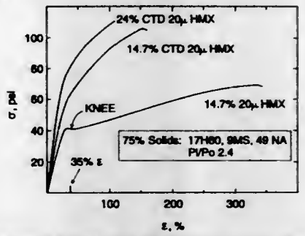
a power source for providing power to at least the internal guidance and control subsystem of the vehicle to allow the internal guidance and control subsystem to receive and store the second set of operational parameters.

5,600,088

COATINGS FOR SOLID PROPELLANTS

Adolph E. Oberth, Fair Oaks, Calif., assignor to Aerojet General Corporation, Rancho Cordova, Calif.

Filed Oct. 27, 1988, Ser. No. 263,586
Int. Cl.[6] C06B *45/22*
U.S. Cl. 149—11 **33 Claims**



25. A method for enhancing the bond between powdered solids and binder material in a solid propellant system, which method comprises mixing together filler particles, an explosive component and a binder or binder composition, and curing the propellant system in the presence of a catalyst, wherein at least a portion of the filler particles are coated with a copolymer comprising a primary or secondary amine and 3-nitrazapentane diisocyanate.

5,600,089

HIGHLY PLASTICIZED ELASTOMERS

Russell Reed, Jr., and Vicki L. Brady, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 7, 1994, Ser. No. 351,855
Int. Cl.[6] C06B *45/36;45/10;* **C08J** *3/00;* **C08L** *75/00*
U.S. Cl. 149—19.4 **19 Claims**

1. An elastomer comprising:

a polyurethane binder formed from a binder mixture including an at least tetrafunctional polyol and an isocyanate curative, said polyol having substantially a star structure and a molecular weight of at least about 16000 daltons; and

a plasticizer present in said binder mixture in a ratio of at least about five parts by weight of said plasticizer to about one part by weight of said polyol.

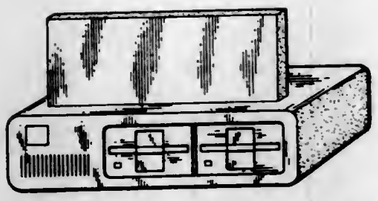
5,600,090

FILTER FOR ELECTRICAL APPARATUS

Jonathan Morris, 1692 Wallace St., Vineland, N.J. 08360

Continuation of Ser. No. 39,637, Mar. 30, 1993, abandoned. This application May 22, 1995, Ser. No. 446,443
Int. Cl.[6] H05K *5/03*
U.S. Cl. 174—17 VA **1 Claim**

1. A filter cover for a part of a computer, said computer having a housing having an opening for a flow of air through said housing and at least one printed circuit board within said housing to be protected from dust particles in said flow of air, said cover comprising



a sheet of flexible open cell foamed elastic synthetic material whose cells are dimensioned and arranged to trap and remove dust in air flowing through said material, and

means to secure said material to said printed circuit board.

5,600,091

HF SHIELDED ELECTRICAL ENCLOSURES

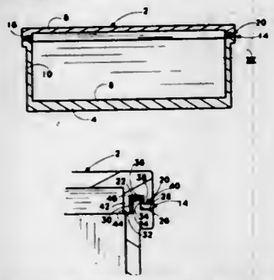
Friedhelm Rose, Mindener Weg 24 b, 32457 Porta Westfalica, Germany

Filed Jun. 10, 1994, Ser. No. 258,452

Claims priority, application Germany, Feb. 21, 1994, 44 05 408.4

Int. Cl.[6] H05K *9/00*

U.S. Cl. 174—35 R **12 Claims**



1. In an electrical enclosure having a box-like base including a bottom and a plurality of base sides normal to said bottom and integrally joined by corners, said base sides and corners defining a base periphery, a sealing cover with cover sides and corners that mimic said base sides and corners defining a cover periphery and fasteners to attach said cover to said base, an improved HF shielding feature which comprises:

a tongue projecting integrally from said base periphery normal to said bottom defined by

a first compression surface spaced apart from said base periphery,

a first outside wall depending from said first compression surface to an outside portion of said base periphery and

a first inside wall depending from said first compression surface to an inside portion of said base periphery, a groove formed integrally in said cover periphery defined by

a second compression surface opposing from a predetermined distance said first compression surface,

a second outside wall depending from said second compression surface to an outside section of said cover periphery and

a second inside wall depending from said second compression surface to an inside section of said cover periphery, and

a gasket compressed between said first compression surface and said second compression surface,

said at least a part of second inside wall is in contact with at least some of said inside portion of said base periphery and all of said second outside wall is out of contact with said outside portion of said base periphery.

5,600,092

SINGLE CONTACT SPRING

Max Patscheck, München; Dieter Schmalzl, Augsburg, and Helmut Mensching, Neusäss, all of Germany, assignors to Siemens Nixdorf Informationssysteme Aktiengesellschaft, Paderborn, and J. N. Eberle Federnfabrik GmbH, Schabmunchen, both of Germany

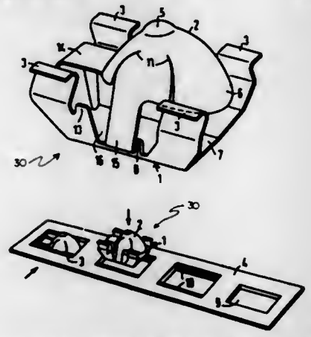
PCT No. PCT/DE93/00440, § 371 Date Nov. 23, 1994, § 102(e) Date Nov. 23, 1994, PCT Pub. No. WO93/25062, PCT Pub. Date Dec. 9, 1993

PCT Filed May 19, 1993, Ser. No. 343,569

Claims priority, application Germany, May 26, 1992, 42 17 436.8; Aug. 7, 1992, 42 26 209.7

Int. Cl.[6] H05K *9/00*

U.S. Cl. 174—35 GC **20 Claims**



1. A single contact spring for latch-locking into a sheet-metal aperture of an RF-shielding device, the spring comprising:

a latch cage configured generally in a trough shape and with a lower part having a trapezoidally-shaped cross-section, the latch cage having two open ends and two longitudinal sides, each side having a cutout, the two cutouts opposing each other, top edges of the longitudinal sides being angled-off outward, an angled-off carrier part fastened to one of the ends, and an outwardly bent-off elbow extending from one of the longitudinal sides at one of the cutouts; and

a resilient contact part generally configured as a contact cup, the contact part being resiliently held by said angled-off carrier part of the latch cage, the contact part having a hook-shaped part extending therefrom in an opposite-bent manner relative to said bent-off elbow to engage said bent-off elbow when said contact spring is in a normal position, the contact part being positioned generally between the longitudinal sides of the latch cage so that the contact part is disposed partially below a plane defined by said top edges, in the normal position.

5,600,093

DUAL PURPOSE ELECTRICAL BOX

Greg B. Herth, 10 Tower Mews, and Jeffrey E. Davis, 103 Guillford Ave., both of Oakdale, N.Y. 11769

Filed Apr. 8, 1994, Ser. No. 225,054

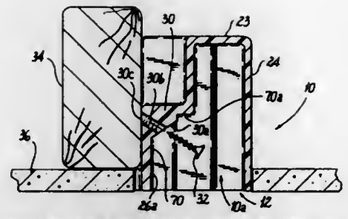
Int. Cl.[6] H02G *3/08*

U.S. Cl. 174—53 **5 Claims**

1. A modular electrical work box for use as a new work box or an old work box, in a building to distribute electrical power from the power supply to electrical outlets, said electrical work box comprising:

a housing including a top wall, a bottom wall, a rear wall, a first side wall and a stud bearing side wall opposite said first side wall;

said housing of said work box containing a recess therein for insertion of electrical components, including wires and outlets therein;



said electrical work box further having at least one internal angled fastener mounting bracket therein for inserting a mounting fastener within a wall stud to provide a rigid fit of said work box to said wall stud;

said at least one fastener mounting bracket accommodating at least one mounting fastener therein;

said work box including a face support member, said face support member having at least one hole accommodating at least one electrical outlet, wherein an interior of said outlet faces into said recess within said housing of said electrical work box;

said at least one fastener mounting bracket being located internally within said work box, said work box being attachable to said stud bearing side wall, said at least one fastener mounting bracket including an angled sheath for said at least one mounting fastener for mounting said electrical work box within a wall of the building;

said at least one fastener mounting bracket including a flat horizontal wall substantially perpendicular to said stud bearing side wall and a vertical wall substantially perpendicular to said flat horizontal wall, said angled sheath extending at an angle relative to said vertical wall;

said at least one fastener mounting bracket having an exterior hole within said stud beating side wall, said exterior hole being flush with said stud bearing side wall.

5,600,094

FIXING DEVICE TO ANCHOR AND SEAL AN ELONGATE MEMBER

Neil E. McCabe, 41 Kebbell Grove, Lower Hutt, New Zealand

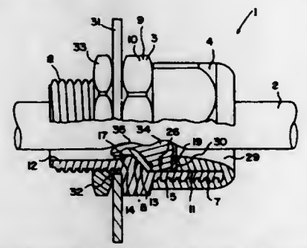
PCT No. PCT/NZ93/00118, § 371 Date May 26, 1995, § 102(e) Date May 26, 1995, PCT Pub. No. WO94/12821, PCT Pub. Date Jun. 9, 1994

PCT Filed Nov. 25, 1993, Ser. No. 446,606

Claims priority, application New Zealand, Nov. 30, 1992, 245311

Int. Cl.[6] H02G *3/18*

U.S. Cl. 174—65 SS **15 Claims**



1. A fixing device for anchoring and sealing around a filamentary product, the device comprising a body, an annular cap, a clamping ring and an elastomeric sealing sleeve, wherein:

the body has a central bore extending through its entire length in a longitudinal direction, and a screw threaded end portion;

the annular cap includes an urging means and is threadably mountable on the screw threaded end portion of the body;

the clamping ring includes an annular base member upstanding from which extend a plurality of spaced apart gripping fingers; and,

the sealing sleeve is adapted to be slidably received within the annulus of the gripping fingers of the clamping ring but extending in the longitudinal direction beyond the tips thereof;

characterised in that the clamping ring is adapted to be received within the bore of the body such that the free ends of the gripping fingers are slidably engageable with an inwardly tapered portion of the bore, and the urging means of the annular cap can act directly or indirectly on the annular base member of the clamping ring to urge the free ends of the gripping fingers into the tapered portion of the bore, the free ends of the gripping fingers being configured and arranged on such urging to press the sealing sleeve inwardly to define a first annular gripping surface bearing against the filamentary product, thereby anchoring it in position and sealing around it, the sealing sleeve being substantially prevented from extruding past the gripping fingers or past the urging means and being arranged such that on partial collapsing under pressure exerted by said urging means a second annular gripping surface is formed in a longitudinally spaced relationship to said first annular gripping surface for additional sealing and anchoring engagement with the filamentary product.

5,600,095

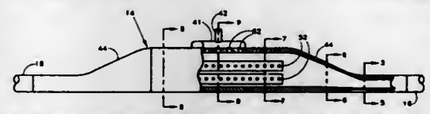
SPLICE FOR A SUPERCONDUCTING CABLE-IN-CONDUIT CONDUCTOR

Michael W. Dew, San Diego; Dennis W. Lieurance, San Marcos, and Donald C. Rix, San Diego, all of Calif., assignors to Lockhead Martin Corporation, Bethesda, Md.

Filed Jul. 18, 1994, Ser. No. 276,808

Int. Cl.[6] H01R *4/00;43/00;* **H01F** *41/04;* **H01L** *39/24*

U.S. Cl. 174—84 R **23 Claims**



1. A conductor splice and splice support structure for use with cable-in-conduit superconductor cable arranged in an annular tube having a plurality of spaced sub-cables each comprising stabilizer and superconductor strands, which comprises:

two transition ramp members, each varying in cross section from a circular first end conforming to the cable configuration to an enlarged, oval, second end;

each of said transition ramp members having a plurality of surface grooves, each of said grooves sized to hold one sub-cable;

a main support member having a plurality of grooves aligned with, and approximately twice as deep as, said transition ramp member grooves, each sized to hold two sub-cable ends in an overlapping arrangement;

strands formed from superconducting material for wrapping the overlapped sub-cable ends; and

said transition ramp members and main support member having a thickness substantially equal to the thickness of said superconducting cable;

whereby said superconductor cable and said splice may be wound to form a coil having uniform thickness throughout each turn.

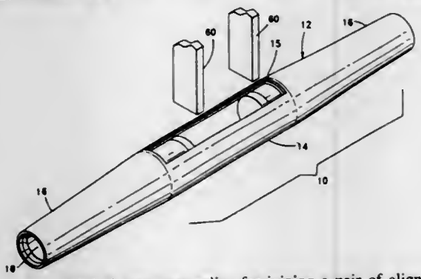
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5,600,096

MECHANICAL CONNECTOR SPLICE FOR CABLE

Hitesh Cherry; Michael A. Kandros, and Daniel V. Nardone, all of Harrisburg, Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Sep. 27, 1994, Ser. No. 312,579
Int. Cl.[6] H02G 15/08
U.S. Cl. 174—84 R 9 Claims



1. A mechanical connector splice for joining a pair of aligned cables, said splice comprising

(a) an outer, generally circular metal shell consisting of a midportion and a pair of tapered, conical end portions, where each said end portion terminates in an opening into which one of said cables is received,

(b) a generally conical configured insert within each said end portion, said insert being arranged to move axially of said metal shell to securely engage said one of said cables,

(c) a spacer member within said midportion to initially position said inserts; where said spacer member includes a pair of pusher members positioned to exert an axial movement on a respective said insert, said pusher members being circular disks, and

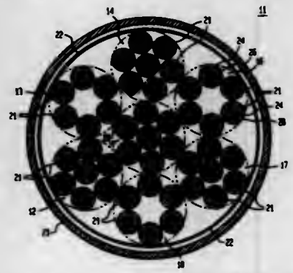
(d) access means in said metal shell and spacer member for an externally applied tool to effect said axial movement on said inserts in a manner to securely grip the respective said aligned cables.

5,600,097

FIRE RESISTANT CABLE FOR USE IN LOCAL AREA NETWORK

Larry L. Bleich; Warren F. Moore, both of Omaha, and Stephen T. Zerbe, Gretna, all of Nebr., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Nov. 4, 1994, Ser. No. 334,657
Int. Cl.[6] H01B 7/00;7/28
U.S. Cl. 174—110 R 12 Claims



1. A fire retardant telecommunications cable for use within a building, which has a low structural return loss, comprising:

a core consisting of a plurality of insulated conductors in groups of twisted pairs wherein the number of twisted pairs in said core is at least five;

each of said conductors having a single, relatively uniform, insulation layer of a non-fire retardant polyolefin composition;

each of said groups of conductors being twisted to have a different lay with respect to each other as a group and the twisted pairs of the groups having two or more different lay lengths; and

an outer jacket of flame retardant material surrounding said core;

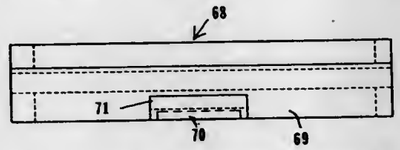
said cable having a structural return loss (SRL) in a frequency range of 20–100 MHz determined by a formula $SRL_f \geq SRL_{200} - 10 \log_{10} (f/20)$ where f is the frequency and SRL_{200} is the SRL at 20 MHz and SRL_{200} is at least 23 dB.

5,600,098

ELECTRONIC CABLE ORGANIZER

Alexander Kazaks, 409 N. 24th St., LaCrosse, Wis. 54601

Filed Jul. 25, 1994, Ser. No. 279,528
Int. Cl.[6] H02G 3/04
U.S. Cl. 174—135 3 Claims



2. An apparatus for securing a plurality of elongated flexible structures, comprising:

(a) a body constructed of a single piece of thin, flat, flexible material having a quadrilateral configuration with first and second end edges and first and second side edges, said body having at least one aperture for extension therethrough of an elongated flexible structure, said body further having a releasable flap coveting said aperture; and

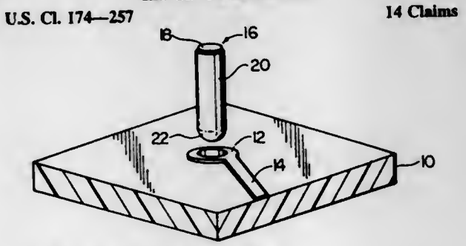
(b) means, disposed along said first and second side edges, to releasibly join said side edges together.

5,600,099

CHEMICALLY GRAFTED ELECTRICAL DEVICES

David R. Crotzer, Windham, N.H.; Mark G. Hanrahan, and Charles S. Pickles, both of N. Attleboro, Mass., assignors to Augat Inc., Mansfield, Mass.

Filed Dec. 2, 1994, Ser. No. 348,574
Int. Cl.[6] H05K 1/09;1/02
U.S. Cl. 174—257 14 Claims



1. An electrical device comprising:

a substrate having a surface;

a conductive layer composed of a plurality of conductive particles each having a conductive coating;

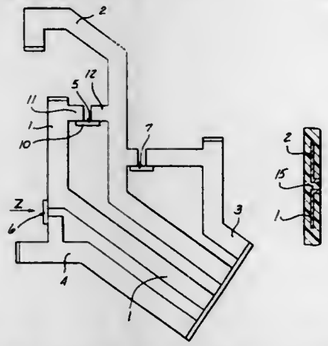
the conductive coatings of the particles being chemically bonded together and to the substrate surface.

5,600,100

ELECTRICAL DEVICE, IN PARTICULAR STEERING COLUMN SWITCH FOR AUTOMOTIVE VEHICLES

Marcel Andrei-Alexandru, Bietigheim-Bissingen; Peter Fein, Wildberg, and John M. Longney, Sachsenheim, all of Germany, assignors to ITT Automotive Europe GmbH, Germany

PCT No. PCT/EP92/02575, § 371 Date Aug. 15, 1994, § 102(e) Date Aug. 15, 1994, PCT Pub. No. WO93/10544, PCT Pub. Date May 27, 1993
PCT Filed Nov. 10, 1992, Ser. No. 244,393
Claims priority, application Germany, Nov. 15, 1991, 41 37 654.4
Int. Cl.[6] H05K 1/00
U.S. Cl. 174—261 21 Claims



1. A method of forming an electrical device, comprising the steps of:

punching out a plate with at least two conductive contact elements, the conductive contact elements of the punched-out plate being interconnected by a U-shaped tab open towards the conductive contact elements and disposed approximately perpendicular on the conductive contact elements, and the U-shaped tab having two legs and a transverse web;

embedding the punched-out plate into plastics material of a plastic plate; and

cutting at least the transverse web of the U-shaped tab after the punched-out plate is embedded into the plastic plate.

5,600,101

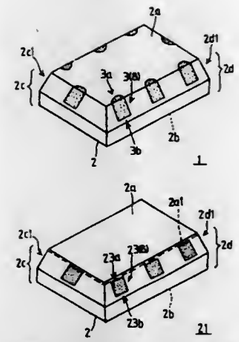
MULTILAYER ELECTRONIC COMPONENT AND METHOD OF MANUFACTURING THE SAME

Norio Sakai, Moriyama, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Jul. 20, 1995, Ser. No. 504,696
Claims priority, application Japan, Jul. 21, 1994, 6-169646
Int. Cl.[6] H05K 1/14
U.S. Cl. 174—261 12 Claims

1. A multilayer electronic component comprising:

a substrate having major and side surfaces and comprising a plurality of stacked insulating sheets including an insulating sheet provided with an internal circuit; and



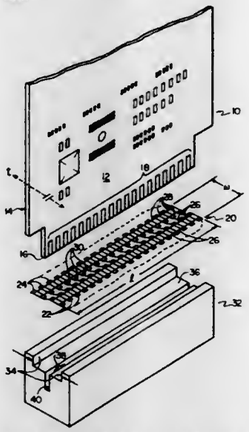
an external electrode comprising a conductor applied to an inclined portion formed in said side surface of said substrate and connected to said internal circuit.

5,600,102

SOLDER PREFORM WRAPPABLE AROUND A PRINTED CIRCUIT CARD EDGE

Paul A. Socha, Whitesboro, N.Y., assignor to Indium Corporation of America, Utica, N.Y.

Filed Feb. 27, 1996, Ser. No. 607,795
Int. Cl.[6] H05K 1/02
U.S. Cl. 174—261 10 Claims



1. A solder preform for use with a printed circuit card having first and second sides, a first edge, a first pattern of conductive pads disposed on said first side of said printed circuit card and a second pattern of conductive pads disposed on said second side of said circuit card, said solder preform comprising:

a first array of solder pads arranged in a first solder pad pattern corresponding to said first pattern of conductive pads on said first side of said printed circuit card;

a first plurality of bridging solder bands connecting selected ones of said first array of solder pads to maintain said first array of solder pads in said first solder pad pattern;

a second array of solder pads arranged in a second solder pad pattern corresponding to said second pattern of conductive pads on said second side of said circuit card;

a second plurality of bridging solder bands connecting selected ones of said second array of solder pads to maintain said second array of solder pads in said second solder pad pattern; and

a plurality of spacing solder bands interconnecting selected ones of said first array of solder pads with selected ones of said second array of solder pads to form an integral solder preform,

said first array of solder pads being arranged to overlay said plurality of conductive pads on said first side of said printed circuit and said second array of solder pads being arranged to overlay said plurality of conductive pads on said second side of said printed circuit card when said solder preform is wrapped around said first edge of said printed circuit card.

5,600,103

CIRCUIT DEVICES AND FABRICATION METHOD OF THE SAME

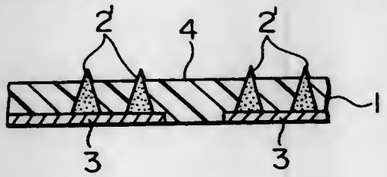
Hiroshi Odaira, Chigasaki; Eiji Imamura, Yokosuka; Yusuke Wada, Tokyo; Yasushi Arai, Fujisawa; Kenji Sasaoka, Zama; Takahiro Mori, Yokohama; Fumitoshi Ikegaya, Zama, and Sadao Kowatari, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Filed Mar. 2, 1994, Ser. No. 204,994

Claims priority, application Japan, Apr. 16, 1993, 5-090177; Jun. 2, 1993, 5-131726; Jun. 23, 1993, 5-152006; Sep. 8, 1993, 5-223329

Int. Cl.° H05K *1/00*

U.S. Cl. 174—265 **8 Claims**



1. An inter-connector, comprising:

a synthetic resin supporting member; and

nearly circular cone shaped conductive lead portions pierced vertically into said synthetic resin supporting member and spaced apart from each other,

wherein a bottom surface of each of said circular cone shaped conductive lead portions is flatly exposed on one main surface of said synthetic resin supporting member and top portions of said circular cone shaped conductive lead portions protrude from other surface of said synthetic resin supporting member.

5,600,104

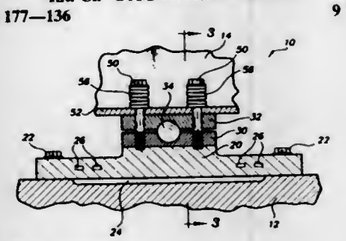
LOAD CELL HAVING REDUCED SENSITIVITY TO NON-SYMMETRICAL BEAM LOADING

Jerry L. McCauley, Kent, and William J. Moon, Seattle, both of Wash., assignors to Structural Instrumentation, Inc., Tukwila, Wash.

Filed Oct. 20, 1993, Ser. No. 139,995

Int. Cl.° G01G *19/08;21/10;23/06*

U.S. Cl. 177—136 **9 Claims**



2. A load cell comprising:

a frame;

a beam mounted on said frame at two spaced apart points;

a load carrying member supporting said load;

a pivot point support positioned between said beam and said load carrying member so said pivot point support prevents said load carrying member from applying rotational moments to said beam:

transducer means for measuring load induced strains in said beam indicative of the weight of said load; and

fastening means interconnecting said beam and said load carrying member, said fastening means restraining relative movement between said beam and said load carrying member toward and away from each other while allowing relative angular movement between said beam and said load carrying member.

5,600,105

POSITION DETECTING DEVICE AND POSITION POINTING DEVICE THEREFOR

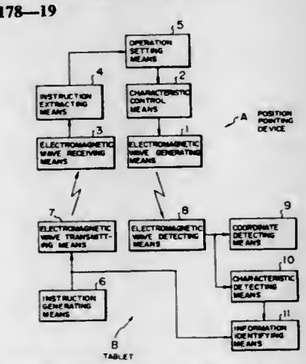
Yasuhiro Fukuzaki, and Yuji Katsurahira, both of Saitama-ken, Japan, assignors to Wacom Co., Ltd., Saitama, Japan

Filed Dec. 23, 1994, Ser. No. 362,643

Claims priority, application Japan, Dec. 28, 1993, 5-335802

Int. Cl.° G08C *21/00*

U.S. Cl. 178—19 **17 Claims**



11. A position pointing device for use with a coordinate detecting tablet for emitting a first AC field, the first AC field being susceptible of including an instruction requesting pointing device information to be transmitted from the tablet, the position pointing device comprising:

(a) a second AC field generating means for generating a second AC field having a spatial distribution corresponding to a coordinate value of a pointed position of the device relative to the tablet,

(b) characteristic control means for controlling an intensity characteristic or a frequency characteristic or a time-dependent change of the intensity or frequency characteristic of the second AC field generated by said electromagnetic wave generating means in accordance with predetermined control information,

(c) information generating means for generating at least one piece of pointing device information,

(d) AC field receiving means for receiving the first AC field including the instruction requesting pointing device information,

instruction extracting means for extracting the instruction requesting the pointing device information from said received first AC field, and

information setting means for setting said pointing device information as said predetermined control information in accordance with said instruction requesting pointing device information.

5,600,106

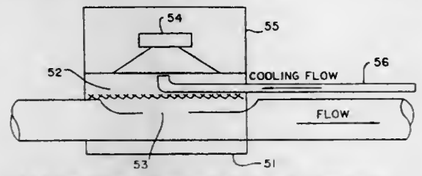
ACTIVELY SOUND REDUCED MUFFLER HAVING A VENTURI EFFECT CONFIGURATION

Andrew J. Langley, Welwyn, Great Britain, assignor to Noise Cancellation Technologies, Inc., Linthicum, Md.

Division of Ser. No. 211,838, May 24, 1994, Pat. No. 5,550,334. This application May 15, 1996, Ser. No. 647,538

Int. Cl.° F01N *1/06*

U.S. Cl. 181—206 **5 Claims**



1. An active noise canceled muffler system comprising:

an exhaust pipe, having a front end and a rear end, for expelling exhaust gases;

an aperture in said exhaust pipe disposed between said front end and said rear end of said exhaust pipe;

an enclosure mounted adjacent said exhaust pipe and over said aperture containing at least one loudspeaker means adapted to produce opposite sound from that emanating from said exhaust pipe through said aperture, said enclosure surrounding part of said exhaust pipe;

a venturi effect means in said exhaust pipe adjacent said aperture for generating a low pressure region in said exhaust pipe, said low pressure region being below atmospheric pressure;

a conduit means having a first end and a second end, said first end being disposed in said enclosure adjacent said low pressure region and said second end being spaced from said rear end of said exhaust pipe, for allowing ambient air to flow to said low pressure region to thereby prevent or inhibit any exhaust gases from coming into contact with said loudspeaker means.

5,600,107

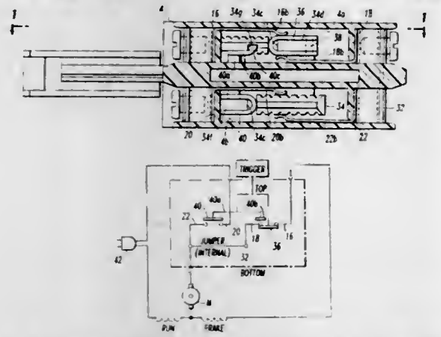
ELECTRIC SWITCH WITH DYNAMIC BRAKE CONTACT SHARED FOR MAKING AND BREAKING A POWER CIRCUIT

David Y. Tsai, Arab, Ala., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jul. 27, 1995, Ser. No. 508,009

Int. Cl.° H01H *9/00;5/00*

U.S. Cl. 200—1 R **12 Claims**



1. In a double pole single throw electric switch comprising normally open contact means comprising a first pole and normally closed contact means comprising a second pole, each said contact means comprising a pair of spaced stationary contacts and a movable bridging contact, the improvement comprising:

another movable contact disposed in normally open relation to one stationary contact of said pair of stationary contacts of said second pole; and

means conductively connecting said another movable contact to said bridging contact of said first pole.

5,600,108

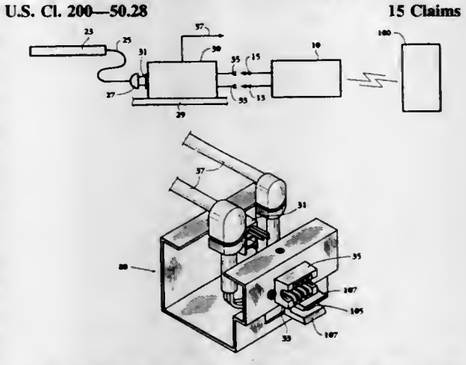
DOCKING MODULE ENCLOSURE INCLUDING CONNECTORS AND POWER SWITCHING

Paul F. Newham, San Antonio, Tex., assignor to Bed-Check Corporation, Tulsa, Okla.

Filed Aug. 29, 1994, Ser. No. 297,402

Int. Cl.° H01H *9/00;* **A61G** *7/00;* **H01R** *13/70*

U.S. Cl. 200—50.28 **15 Claims**



1. For mounting a docking module on a bed having a mat disposed thereon which senses the presence and absence of a patient in and from the bed for indication thereof at a remote monitoring station, said module having a case with externally accessible power and control connectors and said mat having a sensor connector, an enclosure comprising:

an elongated sleeve-like housing having an interior cross-section substantially complimentary to an outer cross-section of the docking module and an open forward end for slidably inserting and removing the docking module into and out of a supported position within said sleeve-like housing; and

a connector housing mounted within a back end of said sleeve-like housing for containing enclosure power, control and sensor connectors matable with their respective module and mat connectors, said connector housing having an aperture through a wall thereof for mounting of said enclosure sensor connector therein for interfacing with said mat sensor connector and a pair of apertures through a forward wall thereof for mounting of said enclosure power and control connectors therein in alignment for interfacing with the docking module power and control connectors as the module is inserted into said sleeve-like housing, said wall being contoured to position said enclosure power connector and control connector such that, during said insertion and removal, said control connector is connected before said power connector and said power connector is disconnected before said control connector, respectively.

10. An enclosure according to claim 1, said enclosure power connector having means thereon for switching power through said connector on and off in response to insertion and removal of said docking module into and out of said sleeve-like housing, respectively.

11. An enclosure according to claim 10, said switching means comprising a resiliently biased plunger extending forwardly from said enclosure power connector for compression and expansion during insertion and removal of said docking module into and out of said sleeve-like housing, respectively.

5,600,109

ACCELERATION RESPONSIVE SWITCH AND METHOD OF MAKING THE SAME

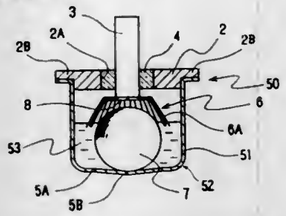
Yasukazu Mizutani; Shigekazu Shibata, both of Nagoya; Mitsuhiro Urano, Toyota; Masayuki Watanabe, Nagoya, and Hideki Koseki, Aichi-ken, all of Japan, assignors to Ubukata Industries Co., Ltd., Nagoya, Japan

Filed Sep. 22, 1994, Ser. No. 310,390

Claims priority, application Japan, Oct. 1, 1993, 5-269981; Oct. 6, 1993, 5-276230; Dec. 15, 1993, 5-342860

Int. Cl.[6] H01H *35/14*

U.S. Cl. 200—61.45 R **8 Claims**



1. An acceleration responsive switch comprising:

a) a hermetic receptacle including a bottomed cylindrical, electrically conductive housing having an inclined face formed on an inner bottom face so as to gently rise concentrically outwardly substantially from a center of the inner bottom face and a header fixed to the housing to hermetically close an open end of the housing and having a through-aperture;

b) a lead terminal hermetically fixed in the through-aperture of the header so as to extend through the header and be electrically insulated from the housing;

c) a contact member secured to an end of the lead terminal located in the housing and including a plurality of feather portions arranged radially to be approximately concentric with the housing, each of the feature portions having a predetermined elasticity;

d) an electrically conductive inertia ball enclosed in the hermetic receptacle so as to be capable of rolling on the inner bottom face of the housing, the inertia ball being located substantially at the center of the inner bottom face of the housing in a normal attitude thereof in a stationary state due to the inclined face of the inner bottom face of the housing, the inertia ball moving to a position spaced from the center of the inner bottom face of the housing when subjected to an oscillation, so that the inertia ball contacts one or more of the feather portions of the contact member, thereby electrically conducting between the feather portions and the housing; and

e) an oscillation damping liquid contained in the hermetic receptacle with the inertia ball, tbe oscillation damping liquid having a viscosity suitable to apply resistance to the inertia ball so that the inertia ball ceases rotating when an external oscillation previously applied to the inertia ball stops, the oscillation damping liquid being previously degassed so that impurities dissolved therein are eliminated.

5,600,110

WEAR-RESISTANT STEERING COLUMN SWITCH WITH LEVER PIVOTABLE ABOUT TWO MUTUALLY PARALLEL AXES

Walter Neubauer, Lauffen, Germany, assignor to ITT Automotive Europe GmbH, Germany

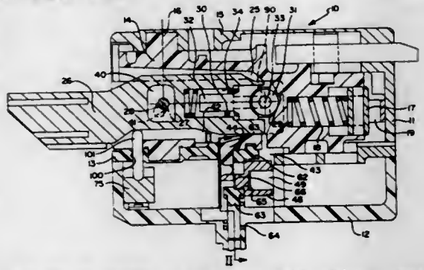
PCT No. PCT/EP93/01470, § 371 Date Dec. 1, 1994, § 102(e) Date Dec. 1, 1994, PCT Pub. No. WO93/25407, PCT Pub. Date Dec. 23, 1993

PCT Filed Jun. 9, 1993, Ser. No. 347,357

Claims priority, application Germany, Jun. 11, 1992, 42 19 056.8; Jun. 9, 1993, 43 19 065.0

Int. Cl.[6] H01H *21/36;3/16;9/02*

U.S. Cl. 200—61.54 **22 Claims**



1. A steering column switch for automotive vehicles, comprising:

a switch housing having a manually pivotable switch lever connected to a first moving electric contact and a second moving electric contact,

wherein said switch lever is pivotable in a first position about a first axis effective for actuating said second electric contact, and is further guided in a longitudinal aperture to a second position to be pivotable about a second axis essentially parallel to the first axis and effective for actuating said first electric contact, and wherein said switch lever is supported in a carrier rotatable around a third axis which is essentially perpendicular to the second axis,

wherein said longitudinal aperture is partially defined by a guiding surface, wherein said guiding surface is defined by a limiting component inserted into the switch lever, said carrier further including

a first cylindrical pin anchored in the carrier and slides along the limiting component while the lever is guided in said longitudinal aperture towards said second position.

5,600,111

CIRCUIT-BREAKER HAVING LOW SELF-COMPRESSION

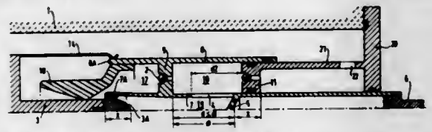
Denis Dufournet, Bron, France, assignor to Gec Alsthom T & D SA, Paris, France

Filed May 15, 1995, Ser. No. 441,459

Claims priority, application France, May 19, 1994, 94 06128

Int. Cl.[6] H01H *33/915*

U.S. Cl. 218—61 **10 Claims**



1. A puffer-type circuit-breaker comprising:

an insulating casing filled with a dielectric gas under pressure; a fixed piston mounted on the casing and extending within the casing; a fixed arcing contact and a moving arcing contact that co-operate with each other; a moving contact assembly, including the moving arcing contact, that is secured to a drive member and that is operative for displacement axially inside the casing between a closed position and an open position, the moving contact assembly including a first tube having one end which carries the moving arcing contact thereon, a second tube that is coaxial with the first tube, the second tube having an end with a blast nozzle mounted thereon, and an annular wall interconnecting the first tube and the second tube, so as to define an expansion chamber of constant volume between the first and second tubes, the blast nozzle and one side of the annular wall, and a compression chamber located on the other side of the annular wall, the compression chamber being defined between the first and second tubes, the fixed piston and the other side of the annular wall, and communicating with the expansion chamber; compression means for compressing the gas in the compression chamber during a first portion of the displacement of the moving contact assembly between the closed position and the open position; and pressure-reducing means for reducing the pressure of the gas in the compression chamber during a second portion of the displacement of the moving contact assembly, wherein the compression means comprises the fixed piston that co-operates with the first tube over a certain travel distance x, and the pressure-reducing means comprises means for non-recoverably exhausting the gas contained in the compression chamber from said compression chamber and which operates once the distance x has been travelled.

5,600,112

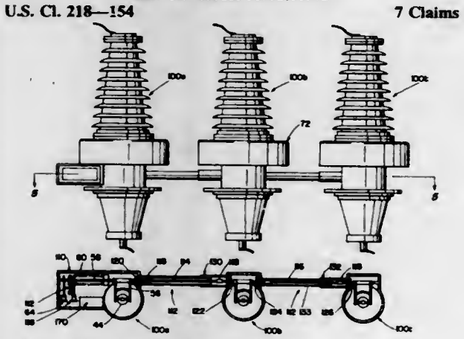
BUSHING ASSEMBLY WITH CIRCUIT INTERRUPTERS INCLUDING POLYPHASE OPERATING MECHANISM

John C. Opfer, Chicago, Ill., assignor to S & C Electric Company, Chicago, Ill.

Filed Jul. 7, 1995, Ser. No. 499,623

Int. Cl.[6] H01H *33/02;33/42*

U.S. Cl. 218—154 **7 Claims**



1. A circuit-interrupting device comprising:

a first insulating bushing;

a second insulating bushing;

a pair of separable contacts within said first insulating bushing;

housing means for supporting said first insulating bushing and said second insulating bushing, said first insulating bushing extending from a first side of said housing means and said second insulating bushing extending from a second side of said housing means; and

means for operating said pair of separable contacts between closed and opened positions in response to a drive input, said operating means being supported by said housing means and carrying at least one of said pair of separable contacts, said first insulating bushing including means for providing a first electrical connection to a first of said separable contacts, said second insulating bushing including means for providing a second electrical connection to the second of said separable contacts, said housing means including means for mounting said circuit-interrupting device with respect to and through a predetermined surface that includes a predetermined opening such that said first insulating bushing extends from a first side of the predetermined surface and said second insulating bushing extends from a second side of the predetermined surface, said first insulating bushing including external dielectric characteristics suitable for an outdoor environment, said drive input being located at said housing means and on said first side of the predetermined surface.

5,600,113

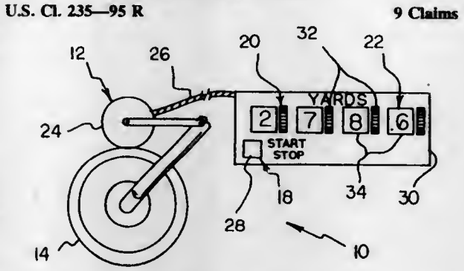
GOLF COURSE DISTANCE MEASURING DEVICE

William E. Ewers, 12375 Military Trail, Boynton Beach, Fla. 33436

Filed Jan. 26, 1995, Ser. No. 378,582

Int. Cl.[6] G01C *22/00*

U.S. Cl. 235—95 R **9 Claims**



1. A golf course distance measuring device comprising:

a mechanical sensor means for monitoring a specific wheel of a golf cart having a plurality of wheels to count a number of revolutions of the specific wheel;

a mechanical accumulator means in mechanical communication with the mechanical sensor means to determine a distance traveled by the golf cart relative to the number of revolutions of the specific wheel;

a mechanical actuating means interposed between the sensor means and the mechanical accumulator means for selectively permitting and precluding communication between the sensor means and the accumulator means to allow for unmeasured traveling of the golf cart when looking for a golf ball;

a distance input means in mechanical communication with the mechanical accumulator means for permitting a user to input a distance to a hole on a golf course into the accumulator means such that as the golf cart is driven towards the hole of the golf course the distance traveled by the cart is subtracted from the distance to the hole; and,

a display means in mechanical communication with the accumulator means for informing the user of a distance left to the hole,

wherein the mechanical sensor means comprises a pick-up wheel rotatably mountable to a portion of the golf cart so as to engage the specific wheel,

wherein a cable extends from the pick-up wheel and is in mechanical communication with the mechanical accumulator means, and

wherein the mechanical actuating means comprises a start-stop button which can be selectively operated through repeated sequential depressions to selectively permit and preclude communication between the mechanical sensor means and the mechanical accumulator means.

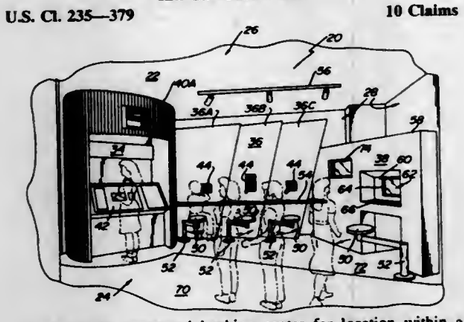
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5,600,114

REMOTE UNMANNED BANKING CENTER

Scott R. Dunlap, Feasterville, and Annette B. Montante, Abington, both of Pa., assignors to Facilities Engineering and Design Consultants, Inc., Southampton, Pa.

Filed Sep. 21, 1995, Ser. No. 531,746
Int. Cl.[6] G06F 17/60
U.S. Cl. 235—379 10 Claims



1. A remote unmanned banking center for location within a building having a floor, said banking center comprising a master computer, floor covering means, plural seats, a first transaction station, a second transaction station, and a third transaction station, said first station comprising a kiosk containing a automated teller machine, said second station comprising a wall with plural telephones mounted thereon, said third station comprising a housing in which a video monitor is located, said wall comprising plural, angularly oriented wall sections disposed sequentially immediately between said kiosk and said third station, with each of said wall sections having an associated telephone mounted thereon, said telephones being connected to said main computer for providing financial information, respective ones of said plural seats being permanently mounted immediately adjacent respective ones of said wall sections, said video monitor being arranged to continuously display an informational video, said floor covering means being fixedly mounted on the floor of the building for establishing a directional line toward said first transaction station and along said wall so that plural patrons of the remote banking center may queue up along that line to said first station, and wherein the patrons in the queue can readily view said video monitor while waiting for access to said automated teller machine and/or said telephones, each of said seats being arranged to have a person seated thereon so that said person can use the telephone to access said master computer to receive information therefrom.

5,600,115

FLEXIBLE CABLE WITH SECURITY SYSTEM FOR CODE MARKINGS

Alfiero Balzano, 11762 Western Ave., Unit "O", Stanton, Calif. 90680

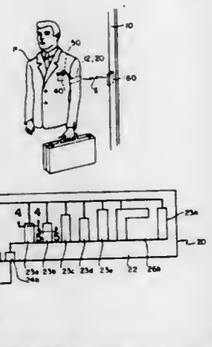
Filed Jan. 16, 1996, Ser. No. 586,987
Int. Cl.[6] G06K 5/00
U.S. Cl. 235—382 15 Claims

1. An identification system for use in determining whether to permit objects access to a preselected location, comprising:

an information transmitting element adapted to be carried by an object, said information transmitting element including a flexible substrate and an array of heat energy emitting members disposed on said substrate, said heat energy emitting members collectively being of such sizes, shapes and spacings as to present a bar code marking,

a carrier for said transmitting element adapted to be mounted on said object, and

a receiving element for detecting the heat energy emitted by said heat energy emitting members and decoding the encoded information being transmitted,



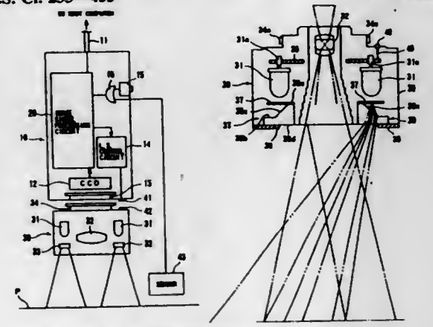
whereby if the information represented by said bar code marking satisfies preexisting conditions required for access to said location, said object is permitted to enter said location.

5,600,116

OPTICAL DATA READING DEVICE

Shuzo Seo, and Harumi Aoki, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 29, 1994, Ser. No. 349,996
Claims priority, application Japan, Nov. 29, 1993, 5-323138
Int. Cl.[6] G06K 7/10
U.S. Cl. 235—455 23 Claims



12. An optical data reading device, comprising:

a main housing;

an optical system housing connected to said main housing having an image optical system, said image optical system having a primary focus lens for focusing light into said main housing;

a light source housed in said optical system housing, said light source illuminating an object;

an illuminating optical system comprising an annular prism for uniformly illuminating said object;

an image sensor housed in said main housing, said image sensor outputting a signal in accordance with light reflected from said object and focused on said image sensor by said primary focus lens of said image optical system; and

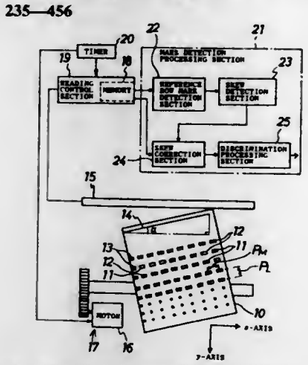
a light source control unit controlling said light source in accordance with said signal output by said image sensor, whereby said output signal has a value within a predetermined range.

5,600,117

MARK SHEET READING APPARATUS

Hisaharu Sakamoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 27, 1994, Ser. No. 364,267
Claims priority, application Japan, Dec. 28, 1993, 5-334551
Int. Cl.[6] G06K 7/10
U.S. Cl. 235—456 2 Claims



1. A mark sheet reading apparatus for reading a mark sheet, comprising:

a transporting apparatus for transporting a mark sheet, which has a plurality of marking areas arranged in a matrix of rows and columns thereon, in a direction along a column of the matrix;

the marking areas of the mark sheet being selectively marked or left unmarked so as to represent binary data, the marks in the marking areas including timing marks arranged in a column corresponding to the individual rows of the matrix;

an image sensor for reading the mark sheet;

the mark sheet further having a reference row mark in the form of a continuous straight line provided in parallel to the rows of the matrix and extending over a length covering the overall length of the rows; and

a mark detection processing section for detecting and discriminating a binary mark from within data read by said image sensor;

said mark detection processing section including reference row mark detection means for discriminating a continuous straight line from among the data read by said image sensor to detect the reference row mark of the mark sheet, skew detection means for detecting an inclination rate of the reference row mark detected by said reference row mark detection means, and skew correction means for correcting coordinates of binary data read by said image sensor in accordance with the inclination rate of the reference row mark detected by said skew detection means;

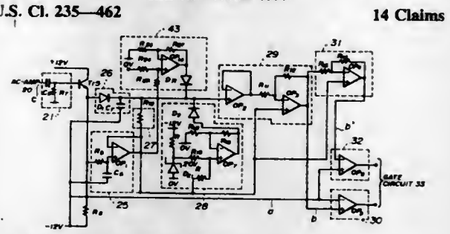
wherein said skew detection means includes, where a direction in which said image sensor scans the mark sheet is represented as x-axis direction and another direction in which the mark sheet is transported by said transporting apparatus is represented as y-axis direction, means for calculating a length L of an x-axis component of the reference row mark detected by said reference row mark detection means, means for detecting a difference T in detection time between the opposite ends of the reference row mark in the y-axis direction, and means for calculating a substantial length D of the reference row mark from the difference T in detection time, a transporting speed V of said transporting apparatus and the length L of the x-axis component of the reference row mark, and said skew correction means corrects the coordinate values of the binary data in accordance with a ratio between the substantial length D and the length L of the x-axis component of the reference row mark.

5,600,118

BINARIZING CIRCUIT AND BAR-CODE READER USING SUCH

Shinichi Sato; Isao Iwaguchi; Ichiro Shinoda, and Hiroaki Kawai, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed May 30, 1995, Ser. No. 452,696
Claims priority, application Japan, Jul. 13, 1994, 6-161513
Int. Cl.[6] G06K 7/10
U.S. Cl. 235—462 14 Claims



1. A binarizing circuit comprising:

binary signal generating means for generating a binary signal from an input signal, supplied from an external unit, in accordance with a processing characteristic;

detecting means for detecting a state of the input signal; and

control means for controlling, based on the state of the input signal detected by said detecting means, the processing characteristic in accordance with which said binary signal generating means generates the binary signal from the input signal,

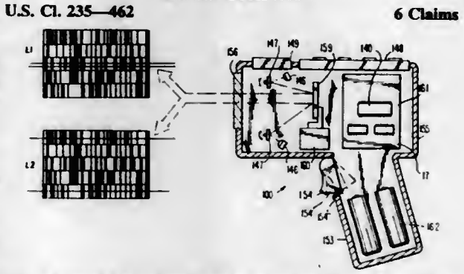
wherein said binary signal generating means generates the binary signal from the input signal in accordance with the processing characteristic by which noises are removed using a slicing level, the slicing level varying in accordance with the state of the input signal, a lowest level of the slicing level being limited to a lower limit level, and wherein said control means includes limit control means for controlling the lower limit level of the slicing level.

5,600,119

DUAL LINE LASER SCANNING SYSTEM AND SCANNING METHOD FOR READING MULTIDIMENSIONAL BAR CODES

Paul Dvorkis, Stony Brook; David P. Goren, Bonkonkoma; Glenn S. Spitz, Far Rockaway, and Daniel R. McGlynn, Brooklyn, all of N.Y., assignors to Symbol Technologies, Inc., Holtsville, N.Y.

Continuation of Ser. No. 294,438, Aug. 23, 1994, abandoned, which is a continuation of Ser. No. 37,143, Mar. 25, 1993, abandoned, which is a division of Ser. No. 715,267, Jun. 14, 1991, Pat. No. 5,235,167, which is a continuation-in-part of Ser. No. 506,674, Apr. 9, 1990, abandoned, which is a continuation of Ser. No. 260,692, Oct. 21, 1988, Pat. No. 4,933,538.
This application Oct. 13, 1995, Ser. No. 542,517
Int. Cl.[6] G06K 7/10
U.S. Cl. 235—462 6 Claims



1. A system for reading indicia having parts of different light reflectivity, comprising:

pattern generator means operative, in a first operational state, for generating a first scanning light pattern having a pair of scan lines each extending along a predetermined direction lengthwise of an indicium, said scan lines being spaced apart by a first distance along a transverse direction generally perpendicular to the predetermined direction, and for directing the first scanning pattern toward the indicium for reflection therefrom,

said pattern generator means being further operative, in a second operational state, for generating a second scanning light pattern in which the scan lines are spaced apart by a second distance greater than said first distance along the transverse direction, and for directing the second scanning pattern toward the indicium for reflection therefrom;

means for detecting at least a portion of light reflected off the indicium from at least one of the scanning patterns, and for generating an electrical signal corresponding to data indicative of the indicium being read; and

control means for processing the electrical signal to determine wbether the data indicates that the indicium is a two-dimensional bar code symbol, and for automatically controlling the pattern generator means to change from the first operational state to the second operational state upon the determination that the indicium is a two-dimensional bar code symbol.

5,600,120

HELICAL SCANNING PATTERN GENERATOR

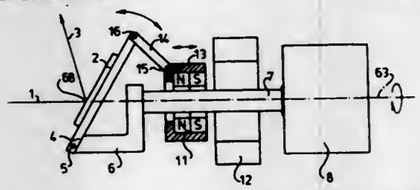
Ke-Ou Peng, Delft, Netherlands, assignor to Opticon Sensors Europe B.V., Hoofddorp, Netherlands

Continuation of Ser. No. 309,883, Sep. 20, 1994, abandoned. This application May 28, 1996, Ser. No. 653,993

Claims priority, application European Pat. Off., Sep. 21, 1993, 93202734

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—467 **13 Claims**



1. A scanning apparatus to scan an object by means of a light beam, the apparatus comprising at least one mirror, which, during operation, is driven by driving means to make a combined movement of a continuous unidirectional rotation about a fixed axis of rotation and an oscillating movement relative to said axis of rotation, said driving means comprising rotation driving means and oscillating driving means, both said rotation and said oscillating driving means being controlled by control means in such a way that the continuous rotation and oscillating movements of said at least one mirror are controlled independently, the rotation driving means being located in a fixed position for rotating said at least one mirror unidirectional about said fixed axis of rotation and said oscillating driving means oscillating only said at least one mirror.

5,600,121

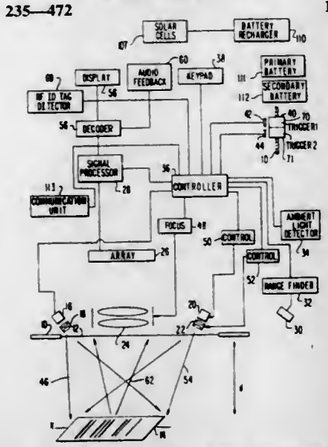
OPTICAL READER WITH INDEPENDENT TRIGGERING AND GRAPHICAL USER INTERFACE

Joel Kahn, Rockville Centre; Richard Isaac, East Northport; Joseph Devita, Patchogue; Daniel R. McGlynn, Brooklyn; Reuven Shapira, Plainview; Simon Bard, Setauket; Joseph Katz, Stony Brook, and Robert Durst, East Setauket, all of N.Y., assignors to Symbol Technologies, Inc., Holtsville, N.Y.

Filed Aug. 20, 1995, Ser. No. 407,577

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—472 **13 Claims**



1. A reader for electro-optically reading indicia such as coded symbols, comprising:

a scanner for generating a scanning beam directed toward a symbol to be read;

a first actuator operatively connected to the scanner and manually displaceable from a first position to a second position for producing a first light beam for aiming the reader at the symbol, and a second actuator operatively connected to the scanner, independently operative from the first actuator, and manually displaceable from a first position to a second position for initiating a scanning beam pattern for reading the symbol, said first and second actuators being spaced apart from each other; and

a detector for receiving reflected light from the symbol to produce electrical signals corresponding to data represented by the symbol.

5,600,122

STRUCTURE OF CARD INSERTION PORT AND METHOD OF MOUNTING CARD INSERTION PORT MEMBER

Fumihisa Isono; Hiroshi Uemura, and Takashi Ayabe, all of Tokyo, Japan, assignors to Tamura Electric Works Ltd., Tokyo, Japan

Filed Jan. 12, 1995, Ser. No. 372,028

Claims priority, application Japan, Jan. 14, 1994, 6-014984

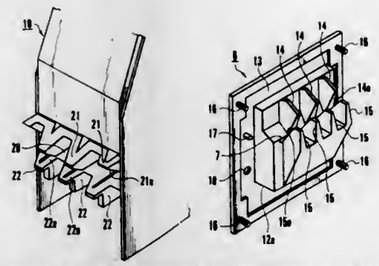
Int. Cl.[6] G06K *13/06*

U.S. Cl. 235—483 **6 Claims**

1. A structure of a card insertion port, comprising:

a card reader, incorporated in an apparatus main body, for reading/writing information from/on a card, said card reader having a slit-like card intake port arranged to oppose a front case of said apparatus main body;

a card insertion port formed to be physically separate from the card intake port and mounted to an opening portion of said front case, said insertion port having a slit-like card insertion port extending from a front surface to a rear surface of said front case and being closely opposite to the card intake port;



a coupling portion for coupling the card insertion port and the card intake port, wherein said coupling portion includes a pair of opposing first comb-shaped guide pieces coupled to the card intake port and the card insertion port, and formed to sandwich the card insertion port opposite to the card intake port, and a pair of opposing second comb-shaped guide pieces formed to sandwich the card intake port opposite to the card insertion port, said first and second comb-shaped guide pieces meshing and engaging with each other to constitute a card intake path which extends from the card insertion port to the card intake port.

5,600,123

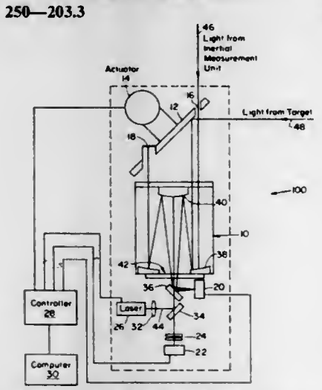
HIGH-RESOLUTION EXTENDED FIELD-OF-VIEW TRACKING APPARATUS AND METHOD

Joseph Purrazzella, South Hampton, N.Y., assignor to Litton Systems, Inc., Lexington, Mass.

Filed Feb. 17, 1993, Ser. No. 18,884

Int. Cl.[6] G01B *11/00*

U.S. Cl. 250—203.3 **14 Claims**



1. An optical tracking system comprising:

a scanning mirror positioned to receive an image from within a field of view scannable by the mirror;

an actuator on which the scanning mirror is mounted to control movement of the mirror;

a light dispersive element that is coupled to the scanning mirror such that movement of the mirror is correlated with movement of the dispersive element;

a sensor onto which the image from the scanning mirror is directed;

an optical system to optically couple the image from the scanning mirror to the sensor;

a first light source that is optically coupled to the dispersive element such that light dispersed from the dispersive element provides a pattern of light, some portion of the light pattern being directed onto the sensor throughout the field of view of the scanning mirror; and

a second light source providing a reference optical signal optically coupled and directed onto the sensor.

5,600,124

SUN TRACKER SYSTEM FOR A SOLAR ASSEMBLY

Alexander Berger, Konigsbergerstrasse 196, D-7500 Karlsruhe 1, Germany

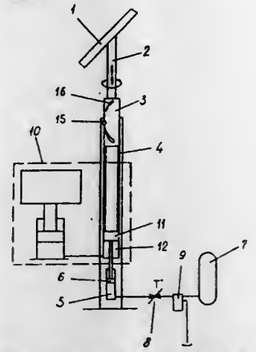
PCT No. PCT/DE92/01003, § 371 Date May 19, 1994, § 102(e) Date May 19, 1994, PCT Pub. No. WO93/11392, PCT Pub. Date Jun. 10, 1993

PCT Filed Dec. 3, 1992, Ser. No. 244,125

Claims priority, application Germany, Dec. 3, 1991, 41 39 799.1; Jul. 17, 1992, 42 23 573.1

Int. Cl.[6] G01J *1/20*

U.S. Cl. 250—203.4 **16 Claims**



1. Azimuthal sun tracker system working according to the gravitational force principle for a solar assembly with a rotary pole carrying the solar assembly being supported by a first chamber of variable volume including a single-acting regulating cylinder, and the fluid contained in the chamber being displaced from the chamber by the effect of the dead load force of the solar assembly and of the rotary pole, causing the rotary pole to sink and being tracked according to the course of the sun by interaction of a guide element, with a complementary guide groove, and a sun tracker system, working according to the gravitational force principle with a suspension pole carrying the solar assembly being supported by a second chamber of variable volume including a single-acting regulating cylinder, the solar assembly being rotated about the horizontal axis during lifting or lowering of the suspension pole, by the effect of a hinged cross-bar connected with a supporting construction, with the sinking being caused by the dead load force of the solar assembly and of the suspension pole, the lifting being caused by connecting the second chamber with a pressure source, at least one of the rotary pole and the suspension pole being supported on an additional power block, carrying the main part of the weight of the solar assembly and of said one of the rotary pole and suspension pole, and said power block stores energy during the sinking of the solar assembly for reuse during lifting.

5,600,125

COMPENSATION AND STATUS MONITORING DEVICES FOR FIBER OPTIC INTENSITY-MODULATED SENSORS

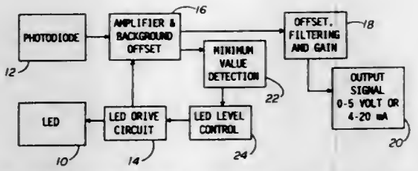
Thomas J. Poorman, 2705 Windwood Dr., Ann Arbor, Mich. 48105, and Marek T. Wlodarczyk, 6865 Vachon Dr., Bloomfield Hills, Mich. 48301

Filed May 16, 1995, Ser. No. 442,218

Int. Cl.[6] G01J *1/20*; **H01J** *5/16*

U.S. Cl. 250—205 **5 Claims**

1. A fiber optic sensor compensation and monitoring device comprising



an optical light source and electronic drive circuit for the optical light source,

an optical light detector and electronic amplifier for the optical light detector,

a background offset circuit in communication with the optical light detector and the electronic drive circuit,

a minimum value detector in communication with the electronic amplifier and background offset circuit, and

an optical light source level control in communication with the electronic drive circuit and the minimum value detector,

whereby the minimum value of the dynamic waveform from the electronic amplifier, corrected for background offset, is forced to a known reference value by adjusting the current to the optical light source and,

whereby the dynamic waveform from the electronic amplifier, corrected for background offset, is separately conditioned for dynamic output within a specified voltage range.

5,600,126

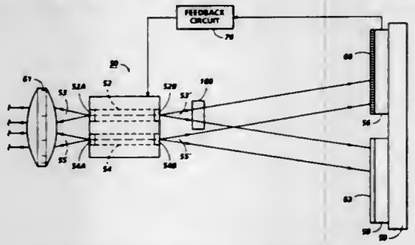
METHOD AND APPARATUS FOR CONTROLLING THE POWER OUTPUT OF MULTIPLE LASER DIODES

James J. Appel, Rochester, and Aron Nacman, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 20, 1995, Ser. No. 493,182

Int. Cl.[6] G01J *1/32*

U.S. Cl. 250—205 **9 Claims**



1. A laser power control apparatus, comprising

a first laser diode having a front facet, a back facet, and a current input for receiving a drive current, said first laser diode for emitting laser fight having a first polarization at a power that depends upon the drive current;

a second laser diode having a front facet and a back facet, said second laser diode for emitting laser fight at a second polarization that is different from said first polarization;

a first photodetector positioned to receive laser fight emitted from the back facet of said first laser diode and laser light emitted from the back facet of said second laser diode, said first photodetector further for producing a first electrical signal that depends upon the laser light received by said first photodetector;

a second photodetector positioned to receive laser light emitted from the back facet of said first laser diode and laser light emitted from the back facet of said second laser diode, said second photodetector further for producing a second electrical signal that depends upon the laser light received by said second photodetector;

a first polarization falter disposed between said first photodetector and said back facets, said first polarization filter for passing laser light emitted from said first laser diode to said first photodetector and for attenuating laser fight emitted from said second laser diode;

a second polarization filter disposed between said second photodetector and said back facets, said second polarization falter for passing laser light emitted from said second laser diode and for attenuating laser light emitted from said first laser diode; and

a control circuit for monitoring the first electrical signal and the second electrical signal, said control circuit further for adjusting the control current applied to said first laser diode based upon said first and second electrical signals.

5,600,127

SOLID STATE IMAGE SENSOR TRANSFERRING CHARGES WITH HIGH EFFICIENCY AND DECREASED POWER CONSUMPTION, AND METHOD OF DRIVING THE SAME

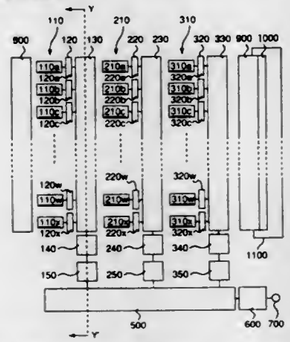
Masafumi Kimata, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 31, 1995, Ser. No. 508,430

Claims priority, application Japan, Feb. 23, 1995, 7-035126

Int. Cl.[6] H01J *40/14*

U.S. Cl. 250—208.1 **20 Claims**



1. A solid state image sensor comprising:

a photodetector array wherein photodetectors are arranged in two-dimension vertically and horizontally;

vertical charge transfer elements each connected to a line of photodetectors aligned vertically in said photodetector array;

a pixel line selection circuit which selects a horizontal line or a group of horizontal lines of photodetectors among said photodetectors in a horizontal blanking period and transfers signal charges stored in the photodetectors in the selected line or lines to the vertical charge transfer elements;

a driver means for supplying signals to said vertical charge transfer elements for driving the signal charges in said vertical charge transfer elements; and

a horizontal charge transfer element connected to said vertical charge transfer elements, the horizontal charge transfer element transferring signal charges transferred from said vertical charge transfer elements to the external in a next horizontal period subsequent to the horizontal blanking period;

wherein said driver means comprises shift registers of a plurality of stages each corresponding to a horizontal line of said photodetector array; and

each stage of said shift registers comprises:

transfer gates operated by clock signals and inverters connected to the transfer gates; connection lines connecting an output of the shift register in a stage to an input of the shift register in a next stage; and a circulation loop line connecting an output of the shift registers of the last stage in said shift registers to an input of the shift register of a first stage in said shift registers.

5,600,128

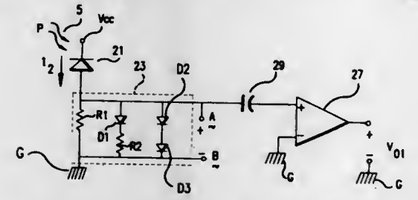
INFRARED RECEIVER WITH VARIABLE INPUT RESISTANCE FOR OPTICAL COMMUNICATION SYSTEMS

Kirk W. Lindstrom, Los Altos, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 20, 1995, Ser. No. 426,745

Int. Cl.[6] H01J *40/14;* **G01N** *21/00*

U.S. Cl. 250—214 AG **7 Claims**



1. A receiver for converting a light signal into an electrical signal, comprising:

a detector for receiving the light signal and producing a current, the current strength varying directly with the light signal strength;

a variable resistance with two terminals, one of the terminals coupled to the detector for receiving the current, the other of the terminals connected to a reference voltage, the variable resistance producing a variable voltage across the terminals in response to the varying current wherein the resistance of the variable resistance varies with the variable voltage; and

an amplifier having a pair of inputs, each input coupled to a terminal of the variable resistance, the amplifier amplifying the variable voltage.

5,600,129

Patent Not Issued For This Number

5,600,130

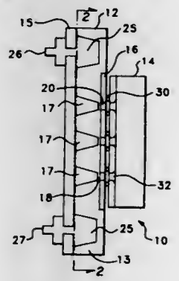
TWO-DIMENSIONAL OPTOELECTRONIC ARRAY MODULE

Bart J. VanZeghbroeck, Boulder, Colo., assignor to The Regents of the University of Colorado, Boulder, Colo.

Continuation of Ser. No. 261,605, Jun. 17, 1994, abandoned. This application Aug. 15, 1995, Ser. No. 515,284

Int. Cl.[6] H01J *40/14*

U.S. Cl. 250—214.1 **10 Claims**



1. Apparatus for detecting input light and for generating an output as a function of the detection of said input light, comprising:

a semiconductor wafer having a membrane formed therein in such a manner that said wafer surrounds and physically supports said membrane;

said membrane having a first roughened surface for receiving said input light, and having a second surface that is opposite said first surface;

said membrane having a thickness extending between said first and second surfaces that is on the order of an absorption length of said input light or less;

said roughened surface operating to cause said input light to reflect internally within said thickness of said membrane; and

said membrane operating to internally release free carriers within said thickness of said membrane in response to the presence of said input light;

a source of membrane biasing voltage;

at least a first and a second electrical contact pair attached to physically spaced portions of said second side of said membrane;

first circuit means including an impedance connecting said at least first and second electrical contact pair to said source of biasing voltage, said first circuit means for voltage biasing said membrane and for generate a current flow through said impedance that is proportional to said released free carriers;

integrated circuit means fabricated on said wafer; and

second circuit means connecting said integrated circuit means to be controlled by said current flow through said impedance, said integrated circuit means operating to provide said output as a function current flow through said impedance.

5,600,131

PHOTODETECTING DEVICE WITH SIMPLE INTERCONNECTION BETWEEN A PHOTODETECTOR AND A FLEXIBLE PRINTED WIRING BOARD

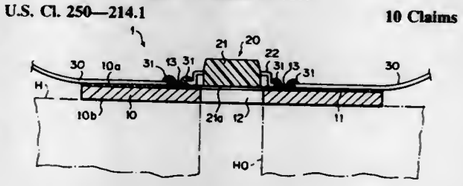
Masafumi Miura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 24, 1996, Ser. No. 637,487

Claims priority, application Japan, Apr. 28, 1995, 7-128897

Int. Cl.[6] H01L *31/0203*

U.S. Cl. 250—214.1 **10 Claims**



1. A photodetecting device comprising:

a photodetector having a body portion at one surface of which a light receiving surface is provided and a plurality of lead portions each extending outwardly from a side surface of said body portion; and

a substrate having a through hole and a first surface on which a plurality of electrically conductive land portions are formed,

wherein said lead portions of the photodetector are bent toward said substrate, an end portion of said lead portions is connected to said land portions, and said photodetector is disposed so that said light receiving surface faces to said through

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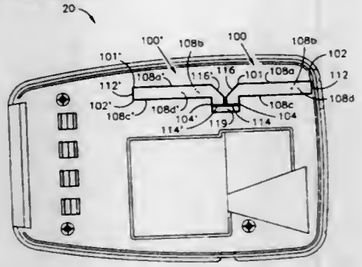
hole and a light from an optical head on which a second surface of said substrate is joined arrives at said light receiving surface through said through hole.

5,600,132

BI-DIRECTIONAL LASER LIGHT DETECTION DEVICE HAVING A LASER LIGHT PIPE

Glen D. Martinson, Oakville, and Marcus Beaumont, Burlington, both of Canada, assignors to B.E.L-Tronics Limited, Mississauga, Canada

Filed Oct. 19, 1994, Ser. No. 325,500
Int. Cl.[6] H01J *5/16*
U.S. Cl. 250—227.11 **16 Claims**



1. A bi-directional portable laser light detection device for receiving and detecting laser light from one or more of a plurality of sources, where each source is generally aligned along one of a first and a second opposed paths, said laser light detection device having at least one laser light sensor and associated circuitry to give warning when laser light emitted from any one of said plurality of sources within a predetermined range of wavelengths and pulse repetition rates and travelling generally along either of said first and second opposed paths is detected, wherein said laser detection device includes a laser light pipe, said laser light pipe comprising:

a solid body having an input end, an output end, and at least one wall member connecting said input end and said output end;

a generally planar laser light admitting zone on the exterior of said solid body at said input end thereof oriented so as to generally face the expected direction of the path of said laser light within said predetermined range of wavelengths and pulse repetition rates emitted from a source along said first opposed path so that, in use, said laser light emitted from said source enters said solid body by way of said admitting zone so as to become admitted laser light; and

a generally planar laser light emitting zone on the exterior of said solid body at said output end thereof, said generally planar laser light emitting zone being oriented so as to generally face outwardly toward said at least one laser light sensor such that said admitted laser light will be emitted from said laser light emitting zone and received by said at least one laser light sensor;

wherein the external periphery of said solid body is shaped and dimensioned so as to transmit and internally reflect said admitted laser light to said laser light emitting zone; and

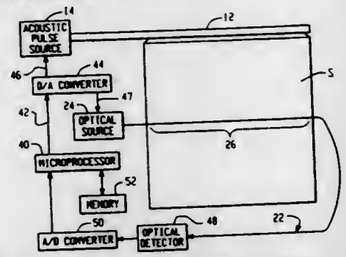
wherein said at least one laser light sensor is oriented so as to receive laser light within said predetermined range of wavelengths and pulse repetition rates emitted from said laser light emitting zone of said laser light pipe, and also so as to receive laser light within said predetermined range of wavelengths and pulse repetition rates travelling along said second opposed path.

5,600,133

STRUCTURAL ANALYZER USING ACOUSTO-OPTIC SENSOR

William B. Spillman, Jr., Charlotte, Vt., assignor to Simmonds Precision Products, Inc., Akron, Ohio

Continuation of Ser. No. 34,994, Mar. 22, 1993, abandoned. This application May 1, 1995, Ser. No. 431,484
Int. Cl.[6] G01N *29/04*
U.S. Cl. 250—227.14 **17 Claims**



1. An acousto-optic structure analyzer comprising,

means for transmitting acoustic energy through an elongated acoustic wave guide that is acoustically coupled along its length to the structure so that acoustic energy is transmitted through at least a corresponding portion of the structure along the length of said wave guide to produce a transmissive acoustic signature distributed over said length, and

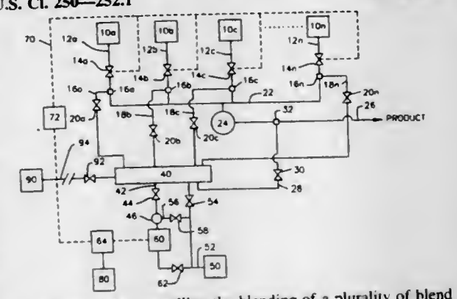
means for modulating light in response to said acoustic energy to produce a light pattern representative of said distributed acoustic signature.

5,600,134

METHOD FOR PREPARING BLEND PRODUCTS

Terrence R. Ashe, Point Edward; Robert J. Falkiner, Mississauga, and Tian C. Lau, Scarborough, all of Canada, assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Jun. 23, 1995, Ser. No. 494,202
Int. Cl.[6] H01J *49/00*
U.S. Cl. 250—252.1 **11 Claims**



1. A method for controlling the blending of a plurality of blend stocks each having boiling points less than about 350° C. into at least one blend product which comprises the steps of:

(a) selecting at least one of physical, perceptual, performance and chemical properties of at least one of blend stock and blend product;

(b) selecting reference samples, said reference samples containing characteristic compounds present in at least one blend stock and blend product and which have known values of the properties selected in the step (a);

(c) producing a training set by the steps of:

(1) injecting each reference sample into a gas chromatograph which is interfaced to a mass spectrometer thereby causing at least a partial separation of the hydrocarbon mixture into constituent chemical components;

(2) introducing the constituent chemical components of each said reference sample into the mass spectrometer, under dynamic flow conditions;

(3) obtaining for each said reference sample a series of time resolved mass chromatograms;

(4) calibrating the mass chromatograms to correct retention times;

(5) selecting a series of corrected retention time windows;

(6) selecting within each retention time window a series of molecular or fragment ions, said ions being representative of said characteristic compounds or compound classes expected within the retention time window;

(7) recording the total amount of each characteristic compound or compound group selected in the step c(6);

(8) forming the data from the steps c(6) and c(7) into a X-block matrix;

(9) forming the property data selected in the step (a) for said reference samples selected in the step (b) into a Y-block matrix;

(10) analyzing the data from the steps c(9) by multivariate correlation techniques including Partial Least Squares, Principal Component Regression, or Ridge Regression to produce a series of coefficients;

(d) subjecting at least one of said blend stock and said blend product samples to the steps c(1) and c(3) in the same manner as the reference sample to produce a series of time resolved mass chromatograms;

(e) repeating the steps c(4) to c(8) chromatograms from the step (d);

(f) multiplying the matrix from the step (e) by the coefficients from the step c(10) to produce a predicted value of the properties for the at least one of said blend stock and said blend product samples; and

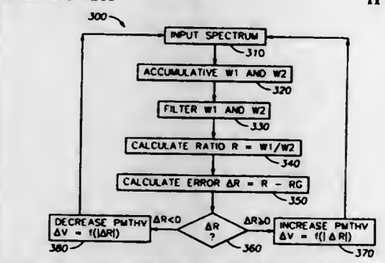
(g) using the predicted values of said selected properties of the at least one of said blend stock and said blend product samples to control the amount of said blend stock in the blend product.

5,600,135

SPECTRAL GAIN STABILIZATION USING GROSS SHAPE FEATURES OF LARGELY INVARIANT SPECTRA

Larry A. Jacobson, Richmond, Tex., assignor to Halliburton Company, Houston, Tex.

Filed Jun. 6, 1995, Ser. No. 467,221
Int. Cl.[6] G01V *5/04*
U.S. Cl. 250—261 **11 Claims**



1. A method for regulating the signal gain of a nuclear well logging apparatus positioned within a wellbore traversing an earth formation, by using a measured spectrum that is relatively invariant, comprising the steps of:

(a) measuring a particle or gamma ray energy spectrum of said earth formation and said wellbore;

(b) calculating a ratio of a number of said particles or gamma rays measured in a first energy window to a number of said particles or gamma rays measured in a second energy window;

(c) adjusting said gain of said nuclear well logging apparatus as a function of said calculated ratio; and

(d) repeating steps (a) through (c) as said nuclear well logging apparatus traverses said wellbore;

wherein said first energy window is selected to span substantially an entire range of measured energies for said spectrum; and

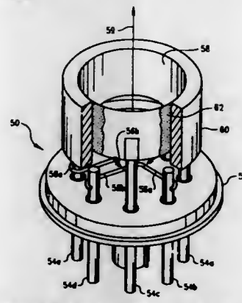
wherein said second energy window is selected to span an upper range of said measured energies for said spectrum.

5,600,136

SINGLE POTENTIAL ION SOURCE

Marsbed Hablanian, Wellesley, Mass., and Asoka Ratnam, Rockville, Md., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Jun. 7, 1995, Ser. No. 474,593
Int. Cl.[6] B01D *59/44;* **H01J** *49/00;27/00*
U.S. Cl. 250—288 **20 Claims**



7. A single potential ion source for use in a leak detection system having an ion collector coupled to said ion source, the ion source comprising:

a base member;

a plurality of pins extending through said base member;

a conical electrode electrically coupled to at least one of said pins to be placed at said single potential, said electrode spaced apart from said base member;

a cylindrical magnet encircling an exterior of said conical electrode; and

at least a first heating element coupled to at least two of said pins and positioned between said base member and said conical electrode; and

said single potential chosen to direct ions away from said first heating element through a center portion of said conical electrode towards said ion collector.

5,600,137

PROBE APPARATUS HAVING REDUCED MISALIGNMENT OF CONDUCTIVE NEEDLES

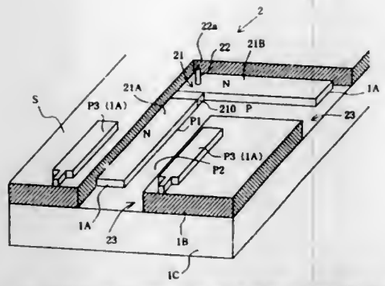
Mitsuchika Saito, Kawasaki, and You-Wen Yi, Yokohama, both of Japan, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 20, 1995, Ser. No. 546,046
Claims priority, application Japan, Oct. 28, 1994, 6-289259
Int. Cl.[6] H01J *31/26;* **G11B** *9/00*
U.S. Cl. 250—306 **11 Claims**

1. A probe apparatus, comprising:

a probe group supporting member having a substrate surface on which probes having conductive needles are formed;

wherein main bodies of said probes are constructed from composite beams formed of silicon, said composite beams being formed by joining a plurality of arms which extend from the substrate of the probe group supporting member, and which overhang said substrate in a direction parallel to the surface of



said substrate, said composite beams further comprising a first arm which functions as a first wiring arrangement and a second arm which functions as a second wiring arrangement;

wherein said first arm further comprises an electrode that generates an electrostatic force between said arm and said substrate, said electrode being connected either to said first wiring arrangement or between said arm and a member other than said substrate;

wherein said first arm and said second arm are insulated from each other by either a PNP junction or an NPN junction; and

wherein said conductive needles are attached perpendicular to the substrate surface at a point on each of said composite beams.

5,600,138

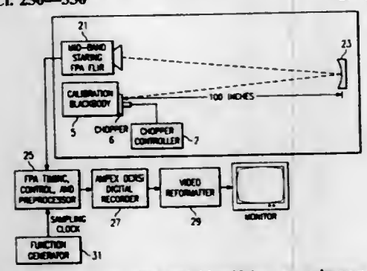
REMOTE SENSING OF MODULATED SOURCES BY UNDERSAMPLED METHODS

Kenneth K. Colson, Dallas, and Bryan S. Reese, Mesquite, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 249,110, May 25, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 483,400

Int. Cl.[6] H04N *5/33*

U.S. Cl. 250—330 **19 Claims**



1. A method of detecting and identifying an unknown source providing modulation frequencies comprising the steps of:

(a) sampling the unknown source at a first known frequency to obtain first sampled data indicative of said unknown source;

(b) sampling the unknown source at a second known frequency different from said first known frequency to obtain second sampled data indicative of said unknown source;

(c) identifying the modulation frequencies of said unknown source from said first sampled data and said second sampled data;

(d) wherein said first known frequency and said second known frequency are lower than at least some of the modulation frequencies of said unknown source; and

(e) providing a FLIR capable of sampling at at least two different frequencies for sampling said unknown source at said first and second known frequencies.

5,600,139

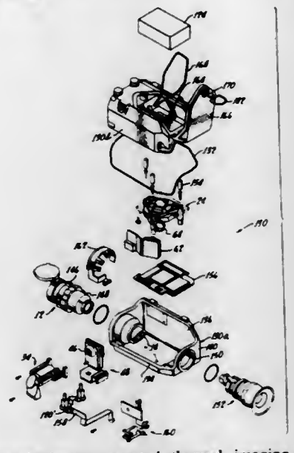
BATTERY-OPERATED THERMAL IMAGING DEVICE WITH SAFETY BATTERY COMPARTMENT

Gary Mladjan, Torrance; Anthony Cacioppo, La Palma, and Victor Amelino, Redondo Beach, all of Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Filed Oct. 10, 1995, Ser. No. 540,737

Int. Cl.[6] G01J *5/04*

U.S. Cl. 250—330 **9 Claims**



1. A portable battery-operated thermal imaging device for receiving thermal infrared radiation from a scene and providing a visible image replicating the scene, said thermal imaging device comprising:

a housing defining a recess for receiving a battery;

a door hingably attached to said housing and closing sealingly across said recess to bound a battery compartment in said recess; and

a latching device engaging said housing and said door for securing said door sealingly closed across said recess, said latching device including a resilient portion yielding elastically in response to a selected force level created by gas pressure within said battery compartment acting on said door, thereby to allow limited unsealing movement of said door away from said housing and the escape of gas pressure from within said battery compartment.

5,600,140

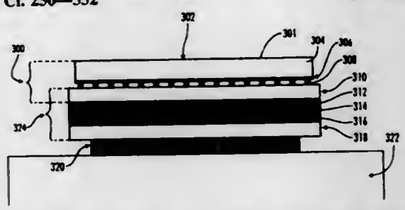
IMBALANCED COMPOSITE FOCAL PLANE ARRAY

Rolin K. Asatourian, Fullerton, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Jun. 7, 1995, Ser. No. 481,000

Int. Cl.[6] G01J *5/06*

U.S. Cl. 250—332 **25 Claims**



1. A hybrid Focal Plane Array (FPA) structure for detecting incoming radiation, wherein the hybrid FPA is subject to thermal excursions, comprising:

a detector including a radiation-sensitive optical substrate for receiving the incoming radiation and converting the incoming radiation to electrical charge;

a composite structure (CS) coupled to the detector, the CS including

electronic means for receiving the electrical charge from the optical substrate, the electronic means being subject to distortion and deflection from the thermal excursions,

a core layer coupled to the electronic means, and

a balancing substrate coupled to the core layer for balancing the distortion and deflection experienced by the electronic means, the core layer being sandwiched between the electronic means and the balancing substrate; and

interconnection means for mechanical, electrical, and thermal coupling of the detector to the CS, such that the radiation detected by the detector is transmitted as electrical charge through the interconnection means to the electronic means,

wherein the distortion and deflection of the electronic means caused by thermal excursions tend to damage the interconnection means,

further wherein the electronic means, the core layer, and the balancing substrate have differing moduli of elasticity, thicknesses, and thermal expansion coefficients (TECs) such that distortion and deflection of the composite structure are minimized, thereby reducing damage to the interconnection means.

5,600,141

Patent Not Issued For This Number

5,600,142

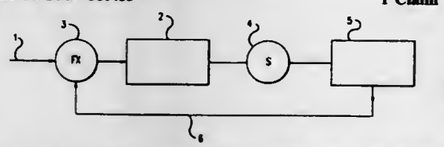
MEASUREMENT OF VAPORIZED HYDROGEN PEROXIDE

Rian Van Den Berg, Sliedrecht, Netherlands; Mark S. Zetter, El Dorado Hills, Calif.; Keith L. Miller, El Dorado Hills, Calif., and Terry R. Todd, Placerville, Calif., assignors to UOP, Des Plaines, Ill.

Filed May 26, 1995, Ser. No. 451,842

Int. Cl.[6] G01N *21/35*

U.S. Cl. 250—339.13 **1 Claim**



1. A method of determining the concentration of hydrogen peroxide vapor in the presence of water vapor in a sample containing both hydrogen peroxide and water vapors comprising:

a) measuring a first absorbance of the sample at a wavelength in a first region of approximately 1420 nanometers and at least one second absorbance at at least one wavelength selected from at least one second region of 915–950, 1350–1400 and 1830–2000 nanometers;

b) subtracting from the first absorbance the absorbance owing to water vapor as calculated from at least one second absorbance measured in the second region to afford a third absorbance at approximately 1420 nanometers corrected for water vapor; and

c) determining the concentration of hydrogen peroxide vapor from said third absorbance using Beers Law.

5,600,143

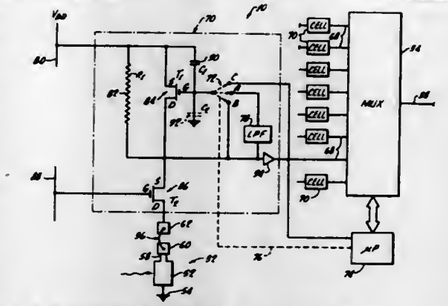
SENSOR INCLUDING AN ARRAY OF SENSOR ELEMENTS AND CIRCUITRY FOR INDIVIDUALLY ADAPTING THE SENSOR ELEMENTS

Peter C. T. Roberts, Gilbert, Ariz., and Charles F. Walmsley, Edinburgh, Scotland, assignors to Litton Systems, Inc., Woodland Hills, Calif.

Filed Dec. 2, 1994, Ser. No. 348,590

Int. Cl.[6] H04N *5/33*; **G01J** *5/30*

U.S. Cl. 250—349 **19 Claims**



1. A photo-conductive infrared sensor comprising:

an array of sensor elements each varying in conductivity in response both to temperature (thermic variation), and to incident photons of infrared light (photonic variation) which is to be measured;

plural adaptation circuits each individually conducting a variable bias current from a source thereof through the respective one of said plural sensor elements, said adaptation circuits each including a resistive element in parallel with a variable-conductance element, said variable-conductance element varying in conductivity in response to a feed back signal to provide a first portion of said bias current resulting from variation of conductivity of said sensor element in response to thermic variation, said resistive element providing a second portion of said bias current resulting from variation of conductivity of said sensor element in response to said photonic variation, and said resistive element also providing a first signal in response to voltage drop there across, each adaptation circuit including a multi-position switch in one position thereof supplying said first signal to said variable-conductance element as said feed back signal.

5,600,144

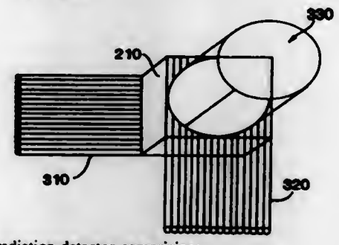
THREE DIMENSIONAL IMAGING DETECTOR EMPLOYING WAVELENGTH-SHIFTING OPTICAL FIBERS

William A. Worstell, Framingham, Mass., assignor to Trustees of Boston University, Boston, Mass.

Filed May 10, 1994, Ser. No. 240,591

Int. Cl.[6] G01T *1/20*

U.S. Cl. 250—363.03 **27 Claims**



1. A radiation detector comprising:

a plurality of wavelength shifting fibers;

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one or more inorganic scintillators, each of said scintillators directly coupled to at least one of said wavelength shifting fibers;

photosensor means coupled to said wavelength shifting fibers for determining the time and position of energy deposition within one or more of said scintillators.

5,600,145

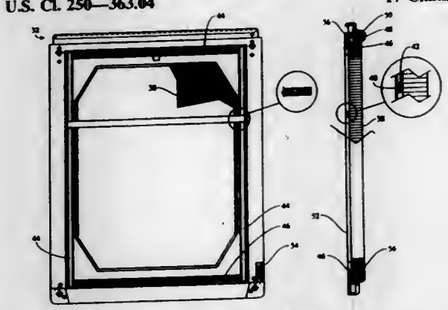
EMISSION/TRANSMISSION DEVICE FOR USE WITH A DUAL HEAD NUCLEAR MEDICINE GAMMA CAMERA WITH THE TRANSMISSION SOURCE LOCATED BEHIND THE EMISSION COLLIMATOR

Steven J. Plummer, Hudson, Ohio, assignor to Picker International, Inc., Highland Heights, Ohio

Filed Jan. 19, 1995, Ser. No. 374,977

Int. Cl.[6] G01T *1/166*

U.S. Cl. 250—363.04 **17 Claims**



1. A diagnostic imaging system comprising:

a gantry for movably supporting first and second detector heads oppositely disposed on the gantry, each detector head receiving emission radiation from an examination region and generating emission data indicative thereof;

first and second collimators mounted on radiation receiving faces of the first and second detector head, respectively, for collimating the radiation received by the first and second detector heads;

a transmission radiation source mounted to traverse along the first collimator between the radiation receiving face of the first detector head and the examination region such that the second detector head receives both emission radiation from the examination region and transmission radiation from the transmission radiation source, the second detector head further generating transmission data indicative of the transmission radiation received;

a radiation blocking shield mounted to traverse along the first collimator with the transmission radiation source, the radiation blocking shield being disposed between the transmission radiation source and the first detector head radiation receiving face such that the transmission radiation is blocked from being received by the first detector head; and

a reconstruction processor for reconstructing a volumetric image representation from the emission and transmission data.

5,600,146

CHARGED PARTICLE BEAM MULTIPLE-POLE DEFLECTION CONTROL CIRCUITRY

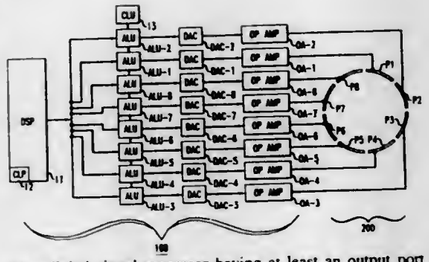
Joseph A. Felker, Belle Mead, and Thomas C. Russell, Murray Hill, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Nov. 22, 1995, Ser. No. 561,906

Int. Cl.[6] H01J *37/147*

U.S. Cl. 250—396 R **9 Claims**

1. Charged particle beam multiple-pole deflection control circuitry comprising



(a) a digital signal processor having at least an output port to which the digital signal processor can deliver processor signals;

(b) a multiplicity of accumulating arithmetic logic units, each of the accumulating arithmetic logic units having a separate output port and having a separate input port connected to the output port of the digital signal processor, whereby the input port of each of the accumulating arithmetic logic units can receive the processor signals; and

(c) a multiplicity of plates, located in an array suitable for deflecting the charged particle beam, each of the plates connected to receive a voltage corresponding to a scan output developed at the output port of a separate one of the accumulating arithmetic logic units.

5,600,147

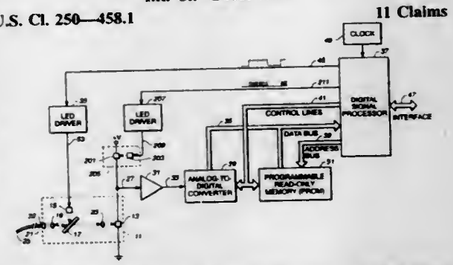
TEMPERATURE MEASURING SYSTEM HAVING IMPROVED SIGNAL PROCESSING AND MULTIPLE OPTICAL SENSORS

Earl M. Jensen, Sunnyvale, Calif., assignor to Luxtron Corporation, Santa Clara, Calif.

Division of Ser. No. 75,743, Jun. 11, 1993, Pat. No. 5,470,155. This application Jun. 6, 1995, Ser. No. 465,827

Int. Cl.[6] G01K *11/32*

U.S. Cl. 250—458.1 **11 Claims**



1. A method of repetitively monitoring luminescence that occurs after termination of excitation pulses directed against luminescent material, comprising the steps of:

measuring a level of the luminescence at a set time after termination of an excitation pulse.

comparing the measured level with a predetermined level in order to identify any difference therebetween, and

adjusting a duration of a subsequent excitation pulse to cause the level of the luminescence at the set time after termination of the subsequent excitation pulse to reduce any such difference, said adjusting step being accomplished without substantially modifying the intensity of said excitation pulses.

5,600,148

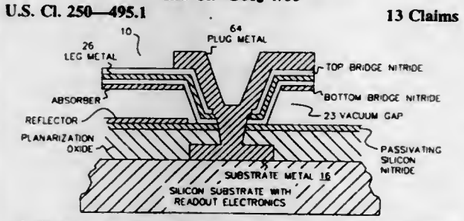
LOW POWER INFRARED SCENE PROJECTOR ARRAY AND METHOD OF MANUFACTURE

Barrett E. Cole, and Chien J. Han, both of Bloomington, Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 30, 1994, Ser. No. 367,492

Int. Cl.[6] G01J *1/00*

U.S. Cl. 250—495.1 **13 Claims**



1. An apparatus for emitting a wide-band infrared image, comprising:

a semiconductor substrate having a plurality of cavities therein;

address means disposed on the substrate proximate the plurality of cavities for routing electrical signals to various portions of the substrate, wherein the electrical signals include a pixel addressing signal, a voltage signal, and drive voltage;

at least two emitter pixel members coupled to the address means and each disposed above one of the plurality of cavities in the substrate wherein each emitter pixel member comprises a two-level microstructure: a first level bearing a transistor means, and a second level, set apart and disposed above the first level, and comprising the emitter pixel member, wherein the first level is made of silicon nitride and wherein the second level has an absorber layer and the first level has a reflector layer opposite of and facing the absorber layer;

means for connecting, supporting, and thermally isolating each pixel member from the substrate;

a trace of electrically resistive material coupled to each pixel member and at least one leg physically and electrically coupled to the substrate;

electronic control means for electrically coupling the pixel addressing signal, the voltage signal, and the drive voltage to each emitter pixel member; and,

transistor means for driving a controlled amount of electrical current through the trace of electrically resistive material and for maintaining the temperature of the trace.

5,600,149

POWER SUPPLY REGULATOR

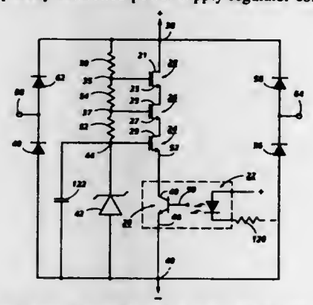
Abdul M. ElHatem, Redondo Beach, Calif.; Mohammad M. Mojarradi, Pullman, Wash., and Masaji Sato, Torrance, Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 30, 1995, Ser. No. 550,478

Int. Cl.[6] H03K *3/42;* **G02B** *27/00*

U.S. Cl. 250—551 **4 Claims**

1. An optically controlled power supply regulator comprising:



a transistor means having a gate, a drain, and a source;

a resistive means;

biasing means having a positive terminal and a negative terminal;

an optoelectronic transistor means having a collector, an emitter which outputs emitter current, and a base;

a positive node at a given voltage;

a negative node at a given voltage that is less than the positive node voltage;

said drain of said transistor means being electrically connected to said positive node;

said source of said transistor means being electrically connected to said collector of said optoelectronic transistor means;

said gate of said transistor means being electrically connected to said positive node through said resistive means;

said gate of said also being electrically connected to said positive terminal of said biasing means;

said emitter of said optoelectronic transistor being electrically connected to said negative terminal of said biasing means and to said negative node;

said base is floating;

a light emitting means having a negative terminal and a positive terminal;

said emitter being responsive to light from said light emitting means for changing the amount of emitter current; and

the improvement comprising:

a capacitive means being electrically connected between said gate of said transistor means and said negative node and a resistive means being electrically connected to said light emitting means at said negative terminal and being in series with said light emitting means.

5,600,150

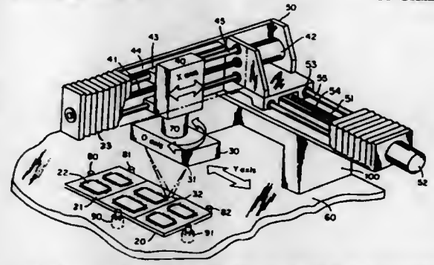
METHOD FOR OBTAINING THREE-DIMENSIONAL DATA FROM SEMICONDUCTOR DEVICES IN A ROW/COLUMN ARRAY AND CONTROL OF MANUFACTURING OF SAME WITH DATA TO ELIMINATE MANUFACTURING ERRORS

Howard Stern, Greenlawn; William E. Yonescu, Smithtown, and Alex Mauro, Holbrook, all of N.Y., assignors to Robotic Vision Systems, Inc., Hauppauge, N.Y.

Continuation-in-part of Ser. No. 903,524, Jun. 24, 1992, Pat. No. 5,463,227. This application Jun. 7, 1995, Ser. No. 476,212

Int. Cl.[6] G01N *21/86*

U.S. Cl. 250—559.29 **11 Claims**



1. In the manufacture of semiconductor devices in a processor operated semiconductor fabrication unit, the semiconductor devices having an intended predetermined geometry, method of controlling the manufacture to insure producing the intended device geometry, the controlling method comprising:

arranging at least two of said manufactured semiconductor devices in at least one of a row and a column,

scanning sequentially with at least one sensor corresponding structure features of at least first and second devices in said at least one of a row and a column to acquire three-dimensional device geometry data from said at least first and second devices,

further scanning other rows and columns of devices therein with said sensor to acquire additional three-dimensional device geometry data,

comparing the acquired three-dimensional device geometry data with said intended predetermined geometry to produce a signal indicative of any departure of an actual device geometry from intended geometry, and

controlling said fabrication unit to compensate for said device geometry departure.

5,600,151

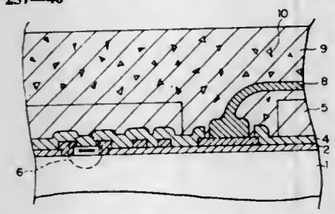
SEMICONDUCTOR DEVICE COMPRISING A SEMICONDUCTOR SUBSTRATE, AN ELEMENT FORMED THEREON, AND A STRESS-BUFFERING FILM MADE OF A SILICONE LADDER RESIN

Etsushi Adachi; Hisoshi Adachi; Shigeyuki Yamamoto; Hiroyuki Nishimura; Shintaro Minami; Tooru Tazima, and Hiroshi Tobimatsu, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

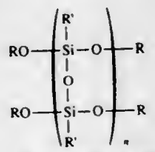
Filed Feb. 13, 1995, Ser. No. 387,168

Int. Cl.[6] H01L *23/28;21/02*

U.S. Cl. 257—40 **5 Claims**



1. A semiconductor device comprising a semiconductor substrate, an element formed thereon, and a stress-buffering film disposed over the semiconductor substrate, said stress-buffering film being made of a silicone ladder resin represented by formula (I)



(I)

wherein an end group R represents at least one member selected from the group consisting of a hydrogen atom and an alkyl group, a side chain R' represents at least one member selected from the group consisting of a cyclohexyl group, a lower alkyl group, and a photopolymerizable unsaturated group, and n is an integer of at least 10, wherein said silicone ladder resin has said photopolymerizable unsaturated group as R' in the side chains in an amount of at least 3 mol % based on the total amount of whole side chain groups in the molecule, with the proviso that when 100 mol % of said whole side chain groups R' in the molecule are said photopolymerizable unsaturated group, R' cannot be said cyclohexyl group or said lower alkyl group.

5,600,152

PHOTOELECTRIC CONVERSION DEVICE AND ITS MANUFACTURING METHOD

Hiraku Kozuka, Hiratsuka, and Shigetoshi Sugawa, Atsugi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

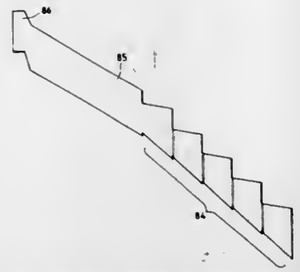
Filed Jun. 6, 1995, Ser. No. 466,744

Claims priority, application Japan, Jun. 7, 1994, 6-125027

Int. Cl.[6] H01L *31/0376*

U.S. Cl. 257—55 **10 Claims**

7. A photoelectric conversion device having a light absorbing layer and a carrier multiplying layer having a non-single crystalline



semiconductor, said carrier multiplying layer being composed of a plurality of graded layers of which the forbidden band width continuously changes from the minimum forbidden band width Eg1 to the maximum forbidden band width Eg2, wherein there is an energy step sufficient to avalanche multiply the carriers between a region of the maximum forbidden band width Eg2 and a region of the minimum forbidden band width Eg1 adjacent thereto, when an electric field is applied, characterized in that an oxide or nitride region is formed between said graded layers.

5,600,153

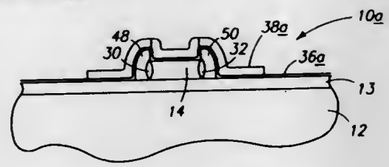
CONDUCTIVE POLYSILICON LINES AND THIN FILM TRANSISTORS

Monte Manning, Kuna, Id., assignor to Micron Technology, Inc., Boise, Id.

Division of Ser. No. 320,044, Oct. 7, 1994, abandoned. This application May 26, 1995, Ser. No. 452,134

Int. Cl.[6] H01L *29/786*

U.S. Cl. 257—66 **13 Claims**



1. A bottom gated thin film transistor comprising:

a substrate;

a conductively doped polysilicon bottom gate line lying atop the substrate, the bottom gate line having an outer top gating surface and opposing outer sidewalls;

a gate dielectric layer lying atop the bottom gate outer top gating surface;

a thin film transistor layer lying atop the gate dielectric layer, the thin film transistor layer comprising a source region, a drain region, and a channel region lying intermediate the source region and the drain region; and

the bottom gate line sidewalls comprising a conductivity enhancing metal silicide covering a predominant portion of the sidewalls and running along the line.

5,600,154

THIN FILM TRANSISTOR WITH PARTICULAR NITROGEN CONCENTRATION

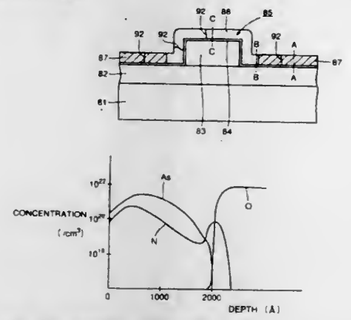
Satoshi Shimizu; Shuichi Ueno; Shigenobu Maeda, and Takashi Ipposhi, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 257,414, Jun. 7, 1994, abandoned. This application Oct. 20, 1995, Ser. No. 546,514

Claims priority, application Japan, Jun. 10, 1993, 5-138432; Jun. 1, 1994, 6-120224

Int. Cl.[6] H01L *29/76;29/12;27/108*

U.S. Cl. 257—66 **1 Claim**



1. A thin film transistor comprising:

a gate electrode formed on an insulating film,

a gate insulating film formed to cover said gate electrode,

a polysilicon film formed on said gate insulating film, having a pair of source/drain regions on a main surface thereof with a predetermined distance therebetween to sandwich a channel region,

wherein all crystals located in at least said channel region and said source/drain region of said polysilicon film has a grain size of at least 1000 Å,

wherein nitrogen is included in at least said channel region and said source/drain regions of said polysilicon film, and

said nitrogen is accumulated at the interface of the polysilicon film and the gate insulating film.

5,600,155

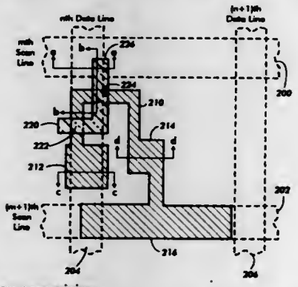
ARRAY WITH METAL SCAN LINES CONTROLLING SEMICONDUCTOR GATE LINES

I-Wei Wu, Los Altos, Calif., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 368,123, Jan. 3, 1995, abandoned. This application Dec. 14, 1995, Ser. No. 572,357

Int. Cl.[6] H01L *29/04;* **G02F** *1/1343*

U.S. Cl. 257—72 **23 Claims**



1. An array comprising:

a substrate with a surface at which circuitry can be formed; and

array circuitry formed at the surface of the substrate, the array circuitry comprising:

a set of M scan lines, where M is greater than 1; each of the scan lines extending approximately in a first direction across the surface of the substrate; the M scan lines being positioned in order from first through Mth;

a set of N data lines, where N is greater than 1; each of the data lines extending approximately in a second direction across the surface of the substrate; the second direction being different than the first direction; the N data lines being positioned in order from first through Nth;

for each value of m from 1 through M and for each value of n from 1 through N, a crossing region in which the mth scan line and the nth data line cross;

for each of a set of one or more of the crossing regions, cell circuitry connected to the mth scan line and the nth data line; the cell circuitry of each crossing region in the set comprising:

a component having a data lead for receiving signals from or providing signals to the nth data line; and

connecting circuitry for electrically connecting the data lead to the nth data line under control of the mth scan line; the mth scan line comprising metal; the connecting circuitry comprising:

a first semiconductor line connected between the nth data line and the data lead; the first semiconductor line including a first channel; and

a second semiconductor line connected to the mth scan line and crossing the first semiconductor line at the first channel;

the second semiconductor line being conductive so that signals on the mth scan line control conductivity of the first channel.

5,600,156

DIAMOND SEMICONDUCTOR DEVICE WITH P-I-N TYPE MULTILAYER STRUCTURE

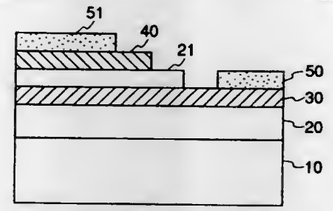
Yoshiki Nishibayashi; Tadashi Tomikawa, and Shin-ichi Shikata, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan

Filed Sep. 8, 1994, Ser. No. 303,112

Claims priority, application Japan, Sep. 10, 1993, 5-226235

Int. Cl.[6] H01L *31/0312;29/861;29/167;31/075*

U.S. Cl. 257—77 **22 Claims**



1. A diamond semiconductor device comprising:

a first n-type diamond layer to which an n-type dopant is doped at high concentration so that metal conduction dominates;

a first p-type diamond layer to which a p-type dopant is doped at high concentration so that metal conduction dominates; and

a first high resistance diamond layer formed between said first n-type diamond layer and said first p-type diamond layer and having values of a thickness and a doping concentration at which semiconductor conduction dominates between said first n-type diamond layer and said first p-type diamond layer,

wherein n-type dopant of said first n-type diamond layer is nitrogen; and the thickness of said first high resistance diamond layer is within a range of 30–3000 nm.

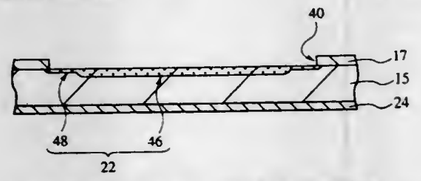
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5,600,157

LIGHT-EMITTING AND LIGHT-SENSING DIODE ARRAY DEVICE, AND LIGHT-EMITTING AND LIGHT-SENSING DIODE WITH IMPROVED SENSITIVITY

Ichimatsu Abiko; Yukio Nakamura; Katsuzo Kaminishi; Takatoku Shimizu; Kazuo Tokura; Yasuo Iguti; Hiroshi Furuya; Mitsuhiko Ogihara; Masumi Taninaka, and Mio Chiba, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 234,022, Apr. 28, 1994, abandoned. This application May 29, 1996, Ser. No. 654,756
Claims priority, application Japan, Apr. 28, 1993, 5-103338; Aug. 25, 1993, 5-210074; Oct. 6, 1993, 5-250571
Int. Cl.[6] H01L 27/15;31/153;31/12
U.S. Cl. 257—84 10 Claims



1. A diode for emitting and sensing light, comprising:

an n-type gallium-arsenide-phosphide semiconductor substrate; and

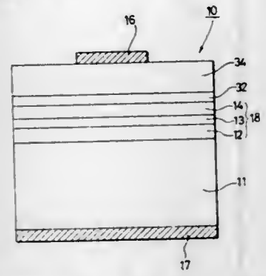
a p-type doped region disposed in said substrate, having a depth of at least 0.3 micrometers but not more than two micrometer in said substrate, containing p-type impurity atoms at a concentration of at least 5×10^{20} impurity atoms per cubic centimeter but not more than 10^{23} impurity atoms per cubic centimeter.

5,600,158

SEMICONDUCTOR LIGHT EMITTING DEVICE WITH CURRENT SPREADING LAYER

Nobuhiko Noto; Keizo Adomi, and Takao Takenaka, all of Annaka, Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Filed Aug. 14, 1995, Ser. No. 514,628
Claims priority, application Japan, Sep. 22, 1994, 6-228286
Int. Cl.[6] H01L 33/00
U.S. Cl. 257—94 8 Claims



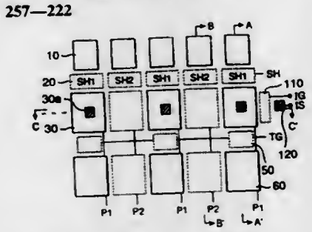
1. A semiconductor light emitting device comprising an n-type GaAs substrate, a light emitting layer portion consisting of an AlGaInP double heterojunction structure formed on said substrate, and p-type current spreading layers formed on said light emitting layer portion, characterized in that said p-type current spreading layers comprise an undoped current spreading layer and a heavily-doped current spreading layer formed on said undoped current spreading layer.

5,600,159

SOLID STATE IMAGE SENSING DEVICE HAVING FACILITATED OUTPUT SIGNAL CORRECTION

Makoto Monoi, Tokyo-To; Kenji Suzuki, Chigasaki, and Kiyoshi Fujii, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-Ken, Japan

Filed Dec. 14, 1994, Ser. No. 358,628
Claims priority, application Japan, Dec. 15, 1993, 5-342217
Int. Cl.[6] H01L 27/148
U.S. Cl. 257—222 19 Claims



1. A solid state sensing device, comprising:

photoelectric transferring means composed of a plurality of photoelectric transfer elements arranged in a straight line for transducing incident light into signal charges;

at least first and second charge transfer paths arranged in parallel to the photoelectric transfer elements and each having a plurality of charge coupled devices, the first charge transfer path being electrically connected to the photoelectric transfer elements for transferring the signal charges;

charge transferring means for transferring the signal charges from said photoelectric transferring means to said first charge transfer path at a first timing and for transferring the signal charges transferred to said first charge transfer path to said second charge transfer path at a second timing;

said charge transferring means including a shift register through which the first charge transfer path is electrically connected to the photoelectric transfer elements;

a drive pulse line connected to the shift register, drive pulses being supplied to the shift register through the drive pulse line to transfer the signal charges from the photoelectric transferring means to the first charge transfer path at the first timing; and

charge supplying means, electrically connected to the first charge transfer path, for applying a bias charge to the signal charges to be transferred from said first charge transfer path to said second charge transfer path.

5,600,160

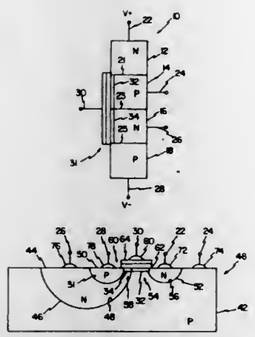
MULTICHANNEL FIELD EFFECT DEVICE

Douglas D. Hvistendahl, P.O. Box 216, Eliendale, N. Dak. 58436

Continuation of Ser. No. 47,693, Apr. 14, 1993, abandoned. This application Jan. 20, 1995, Ser. No. 376,064
Int. Cl.[6] H01L 29/76
U.S. Cl. 257—288 20 Claims

1. A semiconductor switching device comprising:

a semiconductor body having a first region of semiconductive material doped to a first polarity type adjacent a second region of semiconductive material doped to a second polarity type to form a first PN junction therebetween and a surface having a first portion of the first region adjacent a second portion of the second region, the semiconductor body having a third region of semiconductive material doped to the first polarity adjacent the second region to form a second PN junction and a fourth region of semiconductive material doped to the second polarity adjacent the first region to form a third PN junction;



a single gate plate spaced apart from the first portion and the second portion and extending over the first PN junction and from the second PN junction to the third PN junction, the gate plate responsive to a first control signal having a first voltage level to control formation of a first conductivity channel in the first region through the first portion of the surface to electrically connect the second and fourth regions, and responsive to a second control signal having a second voltage level to control formation of a second conductivity channel in the second region through the second portion of the surface to electrically connect the first and third regions; and

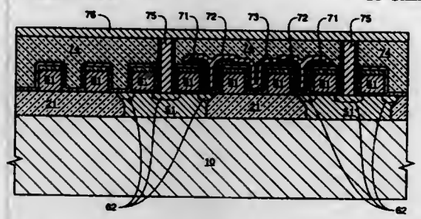
wherein each of the first, second, third, and fourth regions includes an electrical contact.

5,600,161

SUB-MICRON DIFFUSION AREA ISOLATION WITH SI-SEG FOR A DRAM ARRAY

Fernando Gonzalez, and Angus C. Fox, III, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 250,897, May 31, 1994. This application Mar. 24, 1995, Ser. No. 410,176
Int. Cl.[6] H01L 29/76
U.S. Cl. 257—306 18 Claims



1. An active transistor in a semiconductor device, comprising:

diffusion regions formed in a semiconductive region, said semiconductor region residing on a silicon substrate surface and having a substantially vertical lower sidewall portion and an upper sidewall portion that is less vertical relative to said substantially vertical lower sidewall portion;

a channel region spanning between said diffusion regions; and

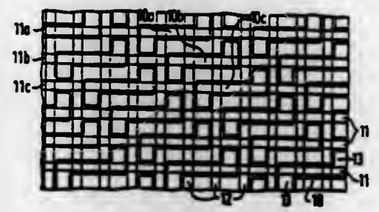
a transistor gate overlying said channel region and having a gate dielectric therebetween.

5,600,162

DRAM-TYPE MEMORY CELL ARRANGEMENT ON A SUBSTRATE

Wolfgang Rösner, München, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

PCT No. PCT/DE93/00542, § 371 Date Feb. 10, 1995, § 102(e) Date Feb. 10, 1995, PCT Pub. No. WO94/03898, PCT Pub. Date Feb. 17, 1994
PCT Filed Jun. 23, 1993, Ser. No. 382,048
Claims priority, application Germany, Aug. 10, 1992, 42 26 454.5
Int. Cl.[6] H01L 27/108;29/76;29/94;31/119
U.S. Cl. 257—311 8 Claims



1. A DRAM cell arrangement, comprising:

a substrate,

bitlines arranged in a bitline plane and word lines arranged in a wordline plane on said substrate,

memory cells in said substrate, said memory cells each comprising a cell transistor and a memory element, said cell transistors being MOS transistors that are constructed as transistor pairs in two respective memory cells in said substrate, said transistor pairs including source areas connected to one another,

common bitline contacts connecting respective ones of said bitlines to said source areas,

said MOS transistors having their drain areas, channel areas and source areas in a linear arrangement which is aligned in a direction of said bitlines and that is below an associated one of said bitlines,

terminal areas, each of said terminal areas adjoining a corresponding one said drain areas, said terminal areas being cell contacts between said cell transistors and said memory elements,

wherein each one of said drain areas and an adjoining one of said terminal areas are a continuous doped area in said substrate, and

said terminal areas each being to a side of an associated one of said bitlines, and wherein said terminal areas adjoining said drain areas of said transistor pair are on opposite sides of the associated one of said bitlines.

5,600,163

SEMICONDUCTOR ELEMENT AND SEMICONDUCTOR MEMORY DEVICE USING THE SAME

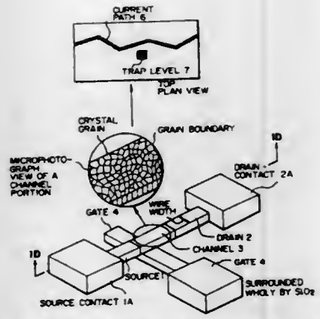
Kazuo Yano, Hino; Tomoyuki Ishii, Kodaira; Takashi Hashimoto, Iruma; Koichi Seki, Hino; Masakazu Aoki, Tokorozawa; Takeshi Sakata, Kunitachi; Yoshinobu Nakagome, Hamura, and Kan Takeuchi, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 16, 1994, Ser. No. 291,752
Claims priority, application Japan, Aug. 19, 1993, 5-204922; Nov. 22, 1993, 5-291638
Int. Cl.[6] H01L 29/76;31/036
U.S. Cl. 257—314 49 Claims

1. A semiconductor element, comprising:

a source region constituting a source of said semiconductor element;

a drain region constituting a drain of said semiconductor element;



an effective channel region provided between said source region and said drain region for interconnection thereof;

a gate electrode connected to said effective channel region through a gate insulation film interposed between said gate electrode and said effective channel region; and

a level node formed between said source region and said drain region in the vicinity of a current path in said effective channel region for capturing at least one carrier,

wherein effective capacitance between said gate electrode and said effective channel region is set so small as to satisfy a condition given by the following inequality expression:

$$1/C_e > kT/q^2$$

where

C_e represents said effective capacitance,

k represents Boltzmann's constant,

T represents an operating temperature in degree Kelvin, and

q represents charge of an electron.

5,600,164

NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE

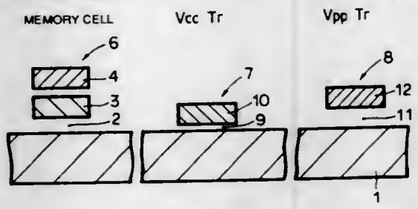
Natsuo Ajika, and Masahiro Hatanaka, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 29, 1995, Ser. No. 536,300

Claims priority, application Japan, Mar. 13, 1995, 7-052276

Int. Cl.[6] H01L *27/02;29/78*

U.S. Cl. 257—321 **14 Claims**



1. A non-volatile semiconductor memory device, comprising:

a memory cell including a tunnel oxide film, a floating gate and a control gate;

a first transistor including a first gate insulating film and a first gate and driving a first voltage; and

a second transistor including a second gate insulating film and a second gate and driving a second voltage which has an absolute value greater than that of said first voltage;

wherein an inequality of T1<t (TN) is satisfied where t (TN) is a thickness of said tunnel oxide film and T1 is a thickness of said first gate insulating film.

5,600,165

SEMICONDUCTOR DEVICE WITH ANTIREFLECTION FILM

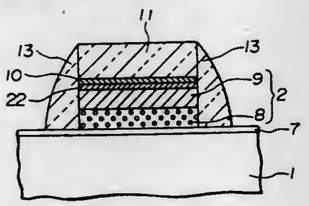
Masanori Tsukamoto, and Tetsuo Gocho, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 26, 1995, Ser. No. 507,526

Claims priority, application Japan, Jul. 27, 1994, 6-175526; Jul. 28, 1994, 6-177055

Int. Cl.[6] H01L *31/232*

U.S. Cl. 257—323 **11 Claims**



1. A semiconductor device comprising:

a substrate;

a gate insulating film formed on the surface of said substrate;

a gate electrode formed on said gate insulating film;

a first antireflection film having a pattern in common with said gate electrode, said first antireflection film containing hydrogen and being formed on said gate electrode; and

a hydrogen permeation prohibiting film formed between said gate insulating film and said first antireflection film.

5,600,166

EPROM CELL WITH A READILY SCALABLE INTERPOLY DIELECTRIC

Cesare Clementi, Busto Arsizio; Gabriella Ghidini, Milan, and Marina Tosi, Trezzo sull'Adda, all of Italy, assignors to SGS-Thomson Microelectronics, S.r.l., Agrate Brianza, Italy

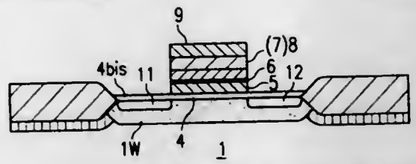
Division of Ser. No. 67,386, May 26, 1993, Pat. No. 5,422,291.

This application Jun. 1, 1995, Ser. No. 457,514

Claims priority, application European Pat. Off., May 27, 1992, 92830266

Int. Cl.[6] H01L *29/792*

U.S. Cl. 257—324 **12 Claims**



1. A programmable nonvolatile read only memory cell having a floating gate of polysilicon to which a control gate is capacitively coupled and electrically isolated therefrom by means of a dielectric multilayer, characterized by the fact that said multilayer consists essentially of:

a first nitridized superficial layer of the polysilicon of said floating gate, formed by treatment in a nitrogen atmosphere at a temperature between 900° C. and 1100° C. for between 15 and 150 seconds;

a second layer of deposited silicon nitride, over said first nitridized layer of polysilicon; and

a third dielectric layer constituted by an oxidized top layer of said deposited second layer of silicon nitride, formed by oxidation in the presence of water vapor at a temperature between 900° C. and 1000° C.

5,600,167

SEMICONDUCTOR DEVICE HAVING LOW CONTACT RESISTANCE

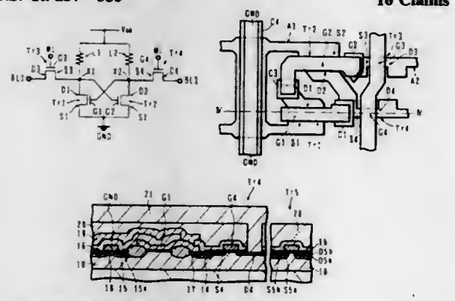
Takehiro Urayama, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Jun. 6, 1995, Ser. No. 466,078

Claims priority, application Japan, Jul. 20, 1994, 6-168026

Int. Cl.[6] H01L *27/11*

U.S. Cl. 257—335 **16 Claims**



1. A semiconductor device comprising:

a semiconductor substrate having a surface region of a first conductivity type;

a conductive film directly formed on part of a surface of said surface region, said conductive film containing impurities of a second conductivity type opposite to the first conductivity type;

an oozed diffusion region of the second conductivity type formed by diffusion of the impurities in said conductive film, said oozed diffusion region being formed in said surface region at a first area containing said part and being contiguous to said conductive film;

a low resistivity region of the second conductivity type formed in said surface region, extending from a second area outside of the conductive film to a third area under said conductive film, and merged with said oozed diffusion region; and

a double-diffused drain (DDD) structure transistor comprising a first gate electrode formed on a gate insulating film over a channel region defined by a fourth area in said surface region, first source and drain regions of the second conductivity type formed on both sides of said first gate electrode, and second source and drain regions of the second conductivity type formed on both sides of said first gate electrode, said second source and drain regions having a larger depth from said surface than said first source and drain regions, enclosing said first source and drain regions in said surface region, and extending to fifth areas under said first gate electrode,

wherein said conductive film has substantially the same layer structure as said first gate electrode, said low resistivity region has substantially the same depthwise impurity concentration profile as said second source and drain regions, and a length of a portion of said low resistivity region under said conductive film is substantially the same as a length of a portion of said second source and drain regions under said first gate electrode.

5,600,168

SEMICONDUCTOR ELEMENT AND METHOD FOR FABRICATING THE SAME

Bong J. Lee, Chungcheongbuk-do, Rep. of Korea, assignor to LG Semicon Co., Ltd., Seoul, Rep. of Korea

Continuation of Ser. No. 230,337, Apr. 20, 1994, abandoned.

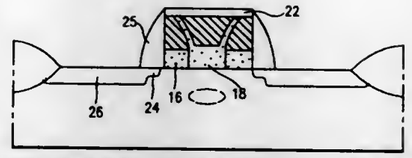
This application Aug. 3, 1995, Ser. No. 510,874

Int. Cl.[6] H01L *29/76;21/265*

U.S. Cl. 257—336 **16 Claims**

1. A semiconductor element comprising:

a first conductivity-type semiconductor substrate;



second conductivity-type high-density source and drain regions formed spaced from each other in the semiconductor substrate;

a second conductivity-type low-density impurity region formed adjacent to the second conductivity-type high-density source and drain regions;

pair of first gate insulation films formed on both ends of the semiconductor substrate between the second conductivity-type low-density impurity region;

a second gate insulation film formed on the semiconductor substrate between the pair of first gate insulation films;

a pair of first conduction layers in the form of a sidewall spacer formed directly above the first gate insulation films;

a second conduction layer formed on the second gate insulation film;

a third conduction layer connecting the pair of first conduction layers and the second conduction layer so as to form a single gate;

an insulation film sidewall spacer in contact with one of the pair of first gate insulation films and the first and one of the pair third conduction layers; and

a punch through prevention impurity region formed in the semiconductor substrate beneath the second conduction layer.

5,600,169

MINIMUM CHARGE FET FABRICATED ON AN ULTRATHIN SILICON ON SAPPHIRE WAFER

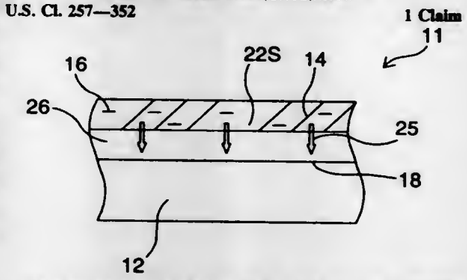
Mark L. Burgener, and Ronald E. Reedy, both of San Diego, Calif., assignors to Peregrine Semiconductor Corporation, San Diego, Calif.

Division of Ser. No. 90,400, Jul. 12, 1993, Pat. No. 5,416,043.

This application Mar. 21, 1995, Ser. No. 408,034

Int. Cl.[6] H01L *27/01;27/12;29/76*

U.S. Cl. 257—352 **1 Claim**



1. A transistor formed in an intrinsic silicon layer on a sapphire substrate wherein said silicon layer is less than approximately 270 nm thick and has an areal density of electrically active states in regions not intentionally doped which is less than approximately 5×10^{11} cm^{-2}, said transistor made by the process comprising the steps of:

epitaxially depositing a layer of silicon on a surface of a sapphire substrate;

implanting a given ion species into said layer of silicon under such conditions that said implanted ions form a buried amorphous region in said silicon layer which extends substantially from said surface of said sapphire substrate into said layer of silicon, thus leaving a surface layer of monocrystalline silicon covering said buried amorphous region;

selecting an areal portion of said silicon on sapphire and maintaining said areal portion at or below a temperature of approximately zero degrees centigrade (0° C.) such that the temperature throughout said areal portion is substantially uniform during said ion implanting step;

annealing the wafer to induce solid phase epitaxial regrowth of said buried amorphous region using said surface layer of monocrystalline silicon as a crystallization seed; and

performing all annealing and processing procedures at or below a temperature of approximately 950° C. thereby maintaining an areal density of electrically active states in regions of said silicon layer not intentionally doped which is less than approximately 5×10^{11} cm^{-2}.

5,600,170

INTERCONNECTION STRUCTURE OF SEMICONDUCTOR DEVICE

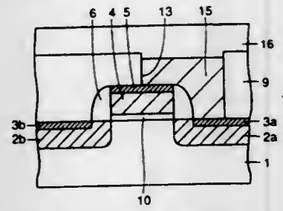
Masao Sugiyama; Hiroyuki Amishiro, and Keiichi Higashitani, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 7, 1995, Ser. No. 479,735

Claims priority, application Japan, Dec. 26, 1994, 6-322292

Int. Cl.[6] H01L *29/76;29/94;31/062;31/113*

U.S. Cl. 257—382 **3 Claims**



1. An interconnection structure of a semiconductor device, comprising:

a first conductive layer;

a second conductive layer provided in the vicinity of said first conductive layer;

an interlayer insulating film covering said first conductive layer and said second conductive layer, and having a contact hole exposing a prescribed region of said first conductive layer and a prescribed region of said second conductive layer; and

a refractory metal buried layer filling said contact hole and electrically connecting said first conductive layer and said second conductive layer.

5,600,171

MASK ROM DEVICE

Hiroyasu Makihara; Akira Okugaki; Kenji Kohda, and Masahide Kaneko, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 13, 1994, Ser. No. 274,603

Claims priority, application Japan, Jul. 15, 1993, 5-175360

Int. Cl.[6] H01L *29/76;21/265*

U.S. Cl. 257—390 **5 Claims**

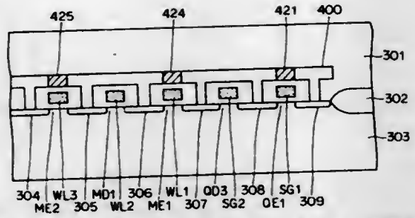
1. A mask ROM device, comprising:

a plurality of memory cells, each said memory cell including an enhancement type FET having a gate electrode and first and second source/drain regions;

a plurality of word lines connected to said gate electrodes;

a plurality of bit lines connected to said first source/drain regions; and

a conductive semiconductor line formed above said gate electrode so as to connect said first and second source/drain regions through contact holes in each of said memory cells, wherein



said conductive semiconductor line is formed of one conductivity type in each of memory cells selected according to information to be stored, and

said conductive semiconductor line includes a segment of the opposite conductivity type sandwiched by segments of said one conductivity type so as to avoid formation of a short-circuit between said first and second source/drain regions in each of non-selected memory cells.

5,600,172

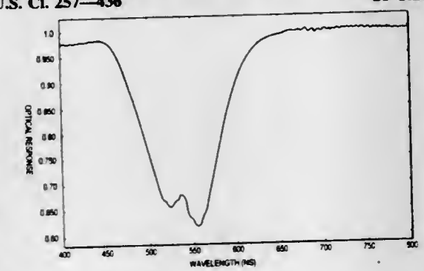
HYBRID, DYE ANTENNA/THIN FILM SUPERCONDUCTOR DEVICES AND METHODS OF TUNED PHOTO-RESPONSIVE CONTROL THEREOF

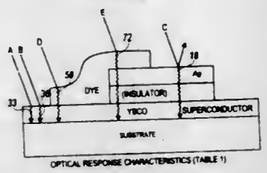
John T. McDevitt, and David C. Jurbergs, both of Austin, Tex., assignors to Electric Power Research Institute, Palo Alto, Calif.

Continuation-in-part of Ser. No. 40,799, Mar. 31, 1993, abandoned. This application Nov. 3, 1994, Ser. No. 334,786

Int. Cl.[6] H01L *31/0232;* **G02F** *1/01;* **G02B** *5/22;* **H01B** *12/00*

U.S. Cl. 257—436 **20 Claims**





1. A tuneable photo-responsive device comprising in operative combination:

a) a supported thin film superconductor element having a resistance-changeable region defined therein which exhibits a substantially featureless response to a broad band of wavelengths and which has at least one accessible surface area;

b) a coating layer which includes a wavelength selective absorptive dye, or a wavelength selective absorptive dye overlying a photoreflective coating layer, and said coating layer is applied on at least a portion of said surface area of said region;

c) said thin film superconductor element is responsive to energies developed in said absorptive dye-containing coating layer upon exposure to one or more incident wavelengths;

d) said dye has the property of absorbing energy at specified wavelengths corresponding to the discrete energy levels associated with the molecular lattice of said absorptive dye;

e) said specific wavelengths of energy are converted to said discrete molecular lattice energies in said absorptive dye and are conducted to said thin film superconductor to change the resistance value of said superconductor film region to passage of a current therethrough when said superconductor film is maintained near its critical temperature, T_c;

f) said reflective layer reflects at least a portion of wavelengths transmitted through said absorptive dye-containing coating layer to shield said thin film superconductor element from said transmitted wavelengths; and

g) said dye-containing coating layer acts as an energy harvesting element, which in combination with said superconductor element, forms a hybrid dye/superconductor transducer having wavelength selective enhanced sensitivity as compared to an uncoated superconductive element.

5,600,173

SEMICONDUCTOR DEVICE CAPABLE OF DETECTING A LIGHT POSITION

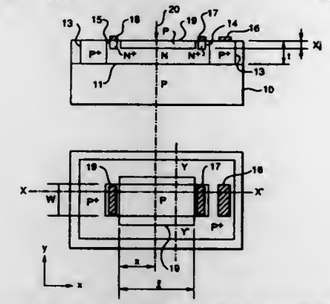
Hiroshi Suzunaga, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Continuation of Ser. No. 66,280, May 26, 1993, abandoned. This application Feb. 8, 1995, Ser. No. 385,203

Claims priority, application Japan, May 28, 1992, 4-137064

Int. Cl.[6] H01L *31/00*

U.S. Cl. 257—446 **20 Claims**



1. A semiconductor device for detecting a light position radiated thereon comprising:

a semiconductor substrate of a first conductivity type;

a semiconductor epitaxial layer of a second conductivity type, the epitaxial layer being formed on said substrate;

a diffusion layer of said first conductivity type, the diffusion layer being formed into said epitaxial layer so as to surround a portion of said epitaxial layer, said diffusion layer having a depth extending to said substrate;

a light receptive single layer formed by diffusion into said portion of said epitaxial layer and having said first conductivity type, said light receptive single layer extending across said epitaxial layer so as to contact said diffusion layer;

a pair of electrodes formed on the surface of said epitaxial layer, said electrodes being parallel to each other; and

a second electrode formed on the surface of said diffusion layer.

5,600,174

SUSPENDED SINGLE CRYSTAL SILICON STRUCTURES AND METHOD OF MAKING SAME

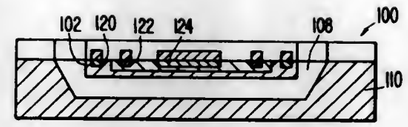
Richard J. Reay, Palo Alto, and Erno H. Klaassen, San Jose, both of Calif., assignors to The Board of Trustees of the Leeland Stanford Junior University, Palo Alto, Calif.

Filed Oct. 11, 1994, Ser. No. 321,299

Int. Cl.[6] H01L *31/058;29/06*

U.S. Cl. 257—467 **9 Claims**

1. An integrated circuit incorporating a suspended single crystal silicon structure, comprising:



a p-substrate;

a pit etched in said p-substrate;

at least one dielectric beam extending over said pit;

an n-well suspended over said pit by said at least one dielectric beam, said at least one dielectric beam providing mechanical support and thermal insulation of said n-well;

circuitry having electrical characteristics effected by temperature, at least a portion of said circuitry being located in said n-well and being thermally isolated in said n-well; and

electrically conductive traces in said at least one dielectric beam connecting said thermally isolated circuitry to external circuits.

5,600,175

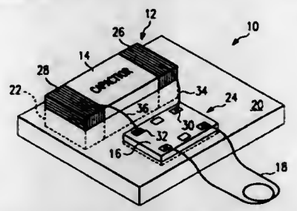
APPARATUS AND METHOD FOR FLAT CIRCUIT ASSEMBLY

Kurt Orthmann, Munich, Germany, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 27, 1994, Ser. No. 281,867

Int. Cl.[6] H01L *27/02*

U.S. Cl. 257—532 **9 Claims**



1. A transponder circuit assembly having a thickness less than 760 μm, comprising:

a circuit component;

an integrated circuit;

an antenna;

a carrier having a thickness less than that of the integrated circuit and circuit component, said carrier defining a shallow cavity properly sized for accommodating said integrated circuit and capacitor; and

electrical connectors connecting said integrated circuit and circuit component.

5,600,176

INTEGRATED VOLTAGE DIVIDER

Walter Bucksch, Freising, Germany, assignor to Texas Instruments Deutschland GmbH, Germany

Continuation of Ser. No. 67,760, May 26, 1993, abandoned. This application Jun. 2, 1995, Ser. No. 458,547

Claims priority, application Germany, May 26, 1992, 42 17 408.2

Int. Cl.[6] H01L *29/00;23/62*

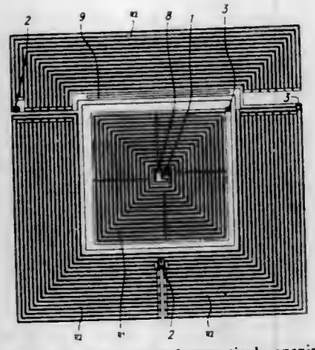
U.S. Cl. 257—536 **11 Claims**

1. An integrated voltage divider comprising:

a semiconductor substrate of one conductivity type and having a top surface;

first and second wells of the other conductivity type opposite to the one conductivity type of said semiconductor substrate disposed in said semiconductor substrate in spaced relation

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with respect to each other and respectively opening onto the top surface of said semiconductor substrate;

a dielectric layer disposed on the top surface of said semiconductor substrate and overlying said first and second wells;

first and second partial resistors having their distally-related ends defining opposite ends of a series circuit including said first and second partial resistors and providing respective inputs for receiving a voltage to be divided and their proximally-related ends being connected at a point providing an output at which the divided voltage appears;

said first and second partial resistors being formed of paths of polycrystalline semiconductor material and having respective resistor values, said first and second partial resistors being disposed on said dielectric layer and overlying the corresponding one of said first and second wells;

said first well being connected to the first partial resistor at one end of the series circuit;

said second well being connected to the second partial resistor at the other end of the series circuit; and

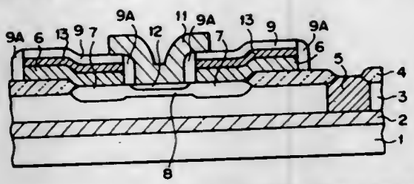
the paths of polycrystalline semiconductor material forming the first and second partial resistors having respective total surface areas dimensioned so that the ratio of the total surface area of the path of polycrystalline semiconductor material forming the first partial resistor to the total surface area of the path of polycrystalline semiconductor material forming the second partial resistor is equal to the inverse ratio of the resistor value of said first partial resistor to the resistor value of said second partial resistor.

5,600,177

SEMICONDUCTOR DEVICE HAVING AN ELECTRICALLY CONDUCTIVE LAYER INCLUDING A POLYCRYSTALLINE LAYER CONTAINING AN IMPURITY AND A METALLIC SILICIDE LAYER

Toru Yamazaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 19, 1994, Ser. No. 358,456
Claims priority, application Japan, Dec. 28, 1993, 5-337686
Int. Cl.[6] H01L *27/082;29/76;23/48;27/088*
U.S. Cl. 257—588 **15 Claims**



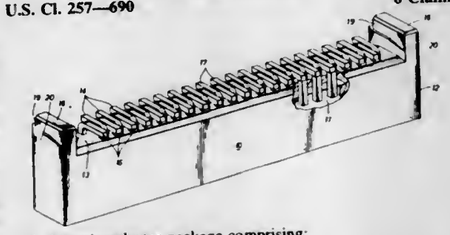
1. Semiconductor device having an electrically conductive layer comprising a polycrystalline silicon layer containing an impurity and a metallic silicide layer which are sequentially formed on a semiconductor substrate, and a silicon nitride film covering upper and lateral surfaces of said electrically conductive layer, said metallic silicide layer having an upper surface, a lower surface and a lateral surface, said polycrystalline silicon layer having a lateral surface and an upper surface in contact with said lower surface of said metallic silicide layer, wherein said upper surface of said metallic silicide layer, said lateral surface of said metallic silicide layer and said lateral surface of said polycrystalline silicon layer are in contact with said silicon nitride film.

5,600,178

SEMICONDUCTOR PACKAGE HAVING INTERDIGITATED LEADS

Ernest J. Russell, Richmond, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 134,149, Oct. 8, 1993, Pat. No. 5,413,970.
This application Jun. 7, 1995, Ser. No. 483,675
Int. Cl.[6] H01L *23/48;23/52*
U.S. Cl. 257—690 **6 Claims**



1. A semiconductor package comprising:

at least one semiconductor chip;

first and second electrically conductive lead rows;

a non-conductive material encapsulating the at least one semiconductor chip and portions of the leads, each of the conductive lead rows having an encapsulated portion and an exposed portion, the exposed portion having a first portion and a second portion;

wherein the encapsulated portions of the leads are electrically connected to at least one semiconductor chip;

wherein exposed portions of the leads are disposed on a first side of the package with the first portions of the first and of the second rows positioned apart at least a thickness of the one semiconductor chip and extending perpendicular from the first side;

wherein the first portions of the first row are generally parallel and opposed to the first portions of the second row; and

wherein a spacing between adjacent pairs and a structure of the second portions result in the first and second lead rows being interdigitated with each other in a non-contacting manner.

5,600,179

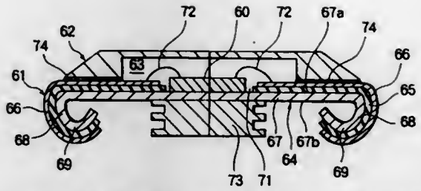
PACKAGE FOR PACKAGING A SEMICONDUCTOR DEVICE SUITABLE FOR BEING CONNECTED TO A CONNECTION OBJECT BY SOLDERING

Katsunobu Suzuki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 27, 1995, Ser. No. 534,316
Claims priority, application Japan, Sep. 27, 1994, 6-231840
Int. Cl.[6] H01L *23/48*
U.S. Cl. 257—690 **17 Claims**

1. A package for packaging a semiconductor device, comprising:

a metal plate including a central plate portion and a peripheral plate portion extending outwardly from said central plate portion, said central plate portion having a first surface for mounting said semiconductor device and a second surface opposite to said first surface in a predetermined direction, said peripheral plate portion being bent to face said second surface of the central plate portion and extending substantially along a



reference plane which is perpendicular to said predetermined direction, said peripheral plate portion having a particular portion projecting from said reference plane opposite said central plate portion;

an insulator layer extending along said metal plate from said first surface of the central plate portion to said peripheral plate portion to cover said particular portion; and

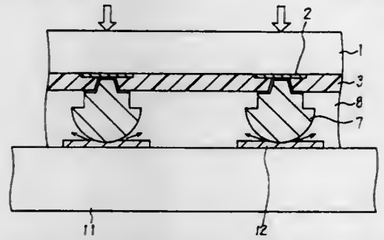
a conductive pattern extending along said insulator layer from said central plate portion to said particular portion.

5,600,180

SEALING STRUCTURE FOR BUMPS ON A SEMICONDUCTOR INTEGRATED CIRCUIT CHIP

Teruo Kusaka; Naoji Senba; Atsushi Nishizawa, and Nobuaki Takahashi, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jul. 21, 1995, Ser. No. 505,152
Claims priority, application Japan, Jul. 22, 1994, 6-170612
Int. Cl.[6] H01L *23/48*
U.S. Cl. 257—692 **30 Claims**



1. A semiconductor integrated circuit chip to be bonded through bumps onto a circuit board, said chip having:

a plurality of pads formed on said semiconductor integrated circuit chip, each of said pads being formed with a bump thereon; and

a coating material being provided to coat at least surfaces of said a plurality of bumps, said material being made of an insulation material having a hardness sufficiently small for showing, when bonding said chip onto said circuit board, a deformation thereby at least a top portion of each of said bumps contacts pads provided on said circuit board.

5,600,181

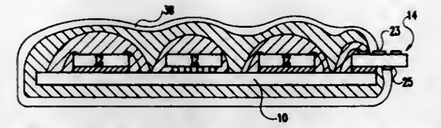
HERMETICALLY SEALED HIGH DENSITY MULTI-CHIP PACKAGE

Patrick M. Scott, Newark Valley, N.Y.; Andrew Z. Glovatsky, Ypsilanti, Mich., and Michael A. Mele, Endicott, N.Y., assignors to Lockheed Martin Corporation, Bethesda, Md.

Filed May 24, 1995, Ser. No. 449,591
Int. Cl.[6] H01L *23/34*
U.S. Cl. 257—723 **8 Claims**

1. A hermetically sealed printed wiring board assembly, comprising in combination:

a printed wiring board;



a plurality of circuit dies mechanically bonded to said printed wiring board;

a hermetically sealed input/output connector connected to said printed wiring board;

an encapsulating layer completely encapsulating said printed circuit board, said plurality of circuit dies, and an inboard portion of said connector;

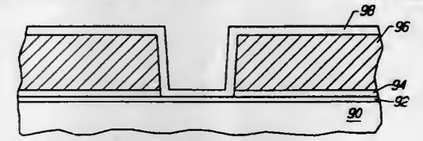
a metal layer covering said non-metallic encapsulating layer to provide a hermetic seal that completely encloses said printed wiring board, said plurality of circuit dies, and said inboard portion of said connector.

5,600,182

BARRIER METAL TECHNOLOGY FOR TUNGSTEN PLUG INTERCONNECTION

Richard D. Schinella, Saratoga; Gobi R. Padmanabhan, Sunnyvale, and Joseph M. Zelayeta, Saratoga, all of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Jan. 24, 1995, Ser. No. 378,027
Int. Cl.[6] H01L *29/54*
U.S. Cl. 257—763 **26 Claims**



1. An integrated circuit device, comprising:

a first conducting layer having a top surface;

a titanium layer on said first conducting layer, said titanium layer having a top surface;

a titanium nitride layer in a range of 20 to 50 Angstroms thick on said titanium layer; and

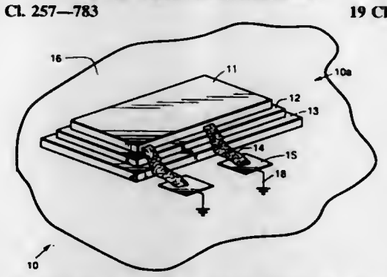
a second conducting layer on said titanium nitride layer.

5,600,183

MULTI-LAYER FILM ADHESIVE FOR ELECTRICALLY ISOLATING AND GROUNDING AN INTEGRATED CIRCUIT CHIP TO A PRINTED CIRCUIT SUBSTRATE

Louis E. Gates, Jr., Westlake Village, Calif., assignor to Hughes Electronics, Los Angeles, Calif.

Filed Nov. 15, 1994, Ser. No. 340,137
Int. Cl.[6] H01L *23/02;23/52;23/48*
U.S. Cl. 257—783 **19 Claims**



1. An integrated circuit chip bonding system for electrically isolating and grounding a base of an integrated circuit chip to a

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printed circuit substrate having electrical interconnection circuit routing vias disposed beneath the integrated circuit chip, said bonding system comprising:

a multi-layer film adhesive comprising:

an electrically conductive upper film layer having dimension that are larger than the integrated circuit chip and that electrically contacts the base of the integrated circuit chip; and a dielectric insulating lower film layer having dimensions that are larger that the upper film layer that overlies electrical interconnection circuit routing vias disposed beneath the integrated circuit chip; conductive adhesive disposed on a portion of exterior surfaces and edges of the electrically conductive upper film layer and the dielectric insulating lower film layer that interconnects the electrically conductive upper film layer and a ground pad disposed on the substrate.

5,600,184

STARTER HAVING LINK BETWEEN PINION REGULATOR AND MAGNET SWITCH

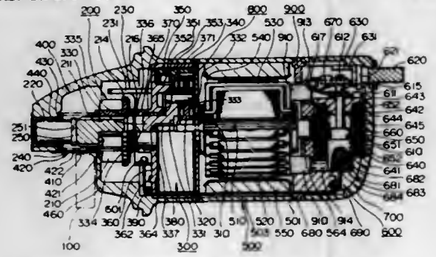
Tsutomu Shiga, Nukata-gun; Nobuyuki Hayashi, Nagoya; Masanori Ohmi, Anjo, and Masami Niimi, Handa, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 20, 1995, Ser. No. 407,077

Claims priority, application Japan, Sep. 19, 1994, 6-222323

Int. Cl.[6] F02N *11/00*

U.S. Cl. 290—38 R **14 Claims**



1. A starter for an engine with a ring gear comprising:

a starter motor;

an output shaft driven by the starter motor;

a pinion transmittal member including a pinion, engaged with the output shaft by means of a helical spline, which meshes with the ring gear of the engine;

pinion regulating means which by abutting the pinion transmittal member and regulating rotation of the pinion transmittal member moves the pinion to a ring gear side by means of rotation of the output shaft;

a magnet switch disposed at the axially opposite side of the starter motor from the pinion transmittal member and having a fixed contact and a plunger which has a movable contact for abutment with the fixed contact, the magnet switch passing electrical current to the starter motor when the movable contact abuts the fixed contact by the movement of the plunger; and

link means provided between the plunger of the magnet switch and the pinion regulating means,

wherein the pinion transmittal member is moved to the ring gear side by abutting the pinion regulating means with the pinion transmittal member via the link means by movement of the plunger.

5,600,185

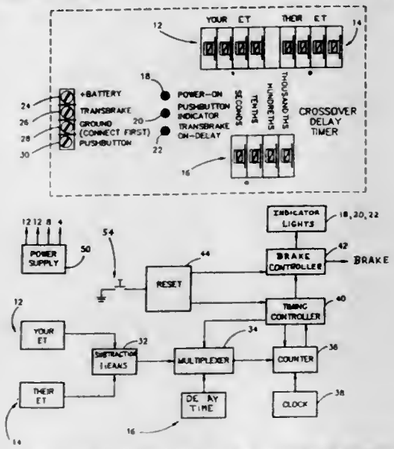
CROSS OVER DELAY APPARATUS

Nolen L. Hamma, 2036 Fillmore St., Davenport, Iowa 52802, and Dwain C. May, 2508 Jersey Ridge Rd., Davenport, Iowa 52803

Continuation of Ser. No. 738,387, Jul. 31, 1991, abandoned. This application Feb. 14, 1994, Ser. No. 195,241

Int. Cl.[6] H01H *43/04*

U.S. Cl. 307—10.1 **47 Claims**



1. An electrical device for use in a race vehicle for inputting a selectable delay period from the actuation of a control switch to the disengagement of vehicle braking means, comprising:

(a) brake control means for selectively engaging and disengaging the vehicle braking means;

(b) clock means for producing electrical clock pulses;

(c) means for counting a preselected first and second number of said clock pulses corresponding to said selectable delay period and outputting a signal to said brake control means in response thereto thereby disengaging said vehicle braking means;

(d) first means for selecting said first number of clock pulses to be counted by said counting means;

(e) a second input means for selecting a first value;

(f) a third input means for selecting a second value;

(g) means for subtracting said first value from said second value to obtain said second number of clock pulses to be counted by said counting means; and

(h) means for actuating said counting means in response to the actuation of said control switch.

5,600,186

CAPACITOR VOLTAGE DIVIDER CIRCUIT

Won-Chul Song; Chang-Jun Oh; Jong-Ryul Lee; Hae-Wook Choi, all of Yusong-ku, Rep. of Korea, and Bang-Sup Song, Champaign, Ill., assignors to Electronics and Telecommunications Research Institute, Daejeon-shi, Rep. of Korea

Filed Nov. 29, 1994, Ser. No. 350,020

Claims priority, application Rep. of Korea, Dec. 3, 1993, 93-26315

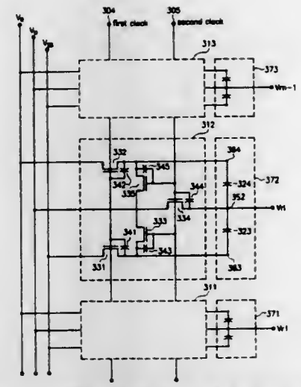
Int. Cl.[6] H01H *47/00*

U.S. Cl. 307—125 **5 Claims**

1. A capacitor type voltage divider circuit comprising:

a source of a plurality of reference voltage signals;

a plurality of switching means, coupled to the source, for switching the reference voltage signals applied thereto in response to first and second clock signals; and



a plurality of voltage dividing means each having two capacitors for dividing the reference voltage signals provided from the switching means into a predetermined value; and wherein

said switching means each comprise first and second transistors switched in response to the second clock signal, third, fourth and fifth transistors switched in response to the first clock signal, and a plurality of parasitic capacitors connected between a gate and a drain of each of the transistors with one reference voltage signal of the reference voltage signals being connected to a source of the first transistor, another reference voltage signal being connected to a source of the second transistor, and an additional reference voltage signal of the reference voltage signals being commonly connected to a source of the third, fourth and fifth transistors.

5,600,187

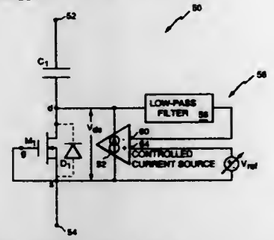
ELECTRONICALLY CONTROLLABLE CAPACITORS USING POWER MOSFET'S

Sayed-Amr El-Hamamsy, Schenectady, N.Y.; Robert S. Scott, Northville, Mich., and Joseph C. Borowiec, Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 27, 1994, Ser. No. 265,889

Int. Cl.[6] H01G *7/00*

U.S. Cl. 307—157 **16 Claims**



1. A variable capacitor, comprising:

the output capacitance of at least one power MOSFET, said power MOSFET having drain, gate and source terminals, said gate and source terminals being connected together, said power MOSFET further having a body diode integral therewith;

a series capacitance connected in series with said MOSFET and having one terminal connected to the drain or source thereof; and

bias control circuitry for controlling a bias voltage applied to said MOSFET in a predetermined range of voltages depending on the voltage rating of said MOSFET, the peak amplitude of an ac signal applied to said MOSFET, and the value of said series capacitance, said bias control circuitry having a high impedance at operating frequencies therefor, the capacitance of said variable capacitor varying with said bias voltage.

5,600,188

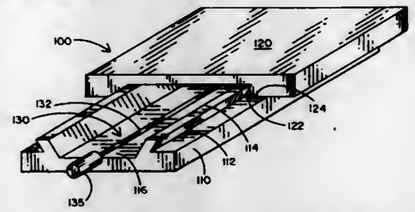
LOW STICTION, DUAL DRIVE, MOTIVE SYSTEM

Inge Mandal, 604 Lassen La., Costa Mesa, Calif. 92626-3122

Continuation-in-part of Ser. No. 967,676, Oct. 26, 1992, abandoned, which is a continuation-in-part of Ser. No. 485,053, Feb. 26, 1990, Pat. No. 5,311,091. This application Apr. 21, 1994, Ser. No. 230,967

Int. Cl.[6] H02K *41/00*

U.S. Cl. 310—12 **9 Claims**



1. A method of eliminating effects of coulomb friction and start-up stiction in a controlled motive system having a base, a linearly motive member, and a first actuating member therebetween, comprising the steps of:

adding at least one second actuating member in series with the first actuating member; and

maintaining the first actuating member and the at least one second actuator member in relative motion.

5,600,189

ELECTROMAGNETIC ACTUATOR HAVING A CYLINDRICAL TRANSLATION COIL AND A TOROIDAL ROTATION COIL, ACTUATOR UNIT COMPRISING THE ACTUATOR AND A MEASUREMENT SYSTEM, AND MACHINE COMPRISING THE ACTUATOR OR THE ACTUATOR UNIT

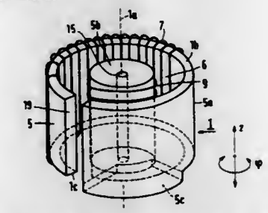
Johannes M. A. M. Van Geel; Johan C. Compter, both of Eindhoven, Netherlands, and Volker Kessler, Freiberg, Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 6, 1995, Ser. No. 499,850

Claims priority, application European Pat. Off., Jul. 14, 1994, 94202036

Int. Cl.[6] H02K *1/12;1/22*

U.S. Cl. 310—40 R **12 Claims**



1. An electromagnetic actuator comprising two actuator sections which are translatable relative to one another along an actuator axis and which are rotatable about the actuator axis, a first actuator section comprising a coil system and a second actuator section comprising a permanent magnet system for cooperation with the coil system via an air gap, characterised in that the coil system is arranged on a magnetically conductive yoke and comprises a cylindrical translation coil and a toroidal rotation coil, which are coaxial with the actuator axis, and the permanent magnet system comprises an annular magnet, which is coaxial with the actuator

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axis, for cooperation with both the translation coil and the rotation coil, which magnet has a radial magnetisation which is interrupted by an annular segment, the magnetically conductive yoke having a central core around which the translation coil is arranged and a shell on which the rotation coil is disposed, which core and shell bound a space within which the annular magnet is disposed, the magnetically conductive yoke comprising a bridge connecting the central core and the shell.

5,600,190

MICROMECHANICAL COMPONENT PART AND METHOD FOR THE MANUFACTURE THEREOF

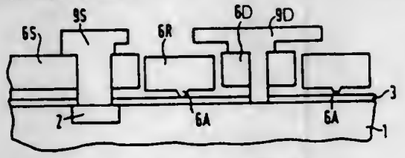
Thomas Zettler, Munich, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed May 13, 1994, Ser. No. 242,336

Claims priority, application Germany, May 19, 1993, 43 16 856.6

Int. Cl.[6] **H02N** *1/00;* **H01L** *21/306*

U.S. Cl. 310—40 MM **7 Claims**



1. A micromechanical arrangement, comprising:

a substrate;

a static micromechanical structure;

a movable micromechanical structure, said static and movable micromechanical structures formed from a layer applied on a top side of the substrate;

means for connecting the static structure to the substrate, said means for connecting formed of a fixing layer deposited into a hole of said static structure and connecting said static structure to said substrate and extending up vertically into said hole of the static structure.

5,600,191

DRIVING ASSEMBLY FOR MOTOR WHEELS

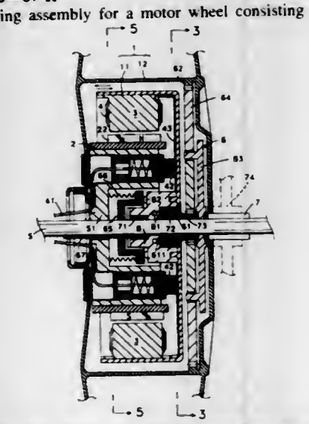
Chen-Chi Yang, P.O. Box 10780, Taipei, Taiwan

Filed Dec. 19, 1994, Ser. No. 359,027

Int. Cl.[6] **H02K** *7/00;* **B60K** *1/00*

U.S. Cl. 310—67 R **5 Claims**

1. A driving assembly for a motor wheel consisting of a hub



rotating around an immobile axle for driving the wheel which is supported by said hub, said driving assembly comprises:

a stator provided on a securing element on said axle, said stator consisting of a plurality of permanent magnets of different polarities radially spaced apart in a direction parallel to said axle;

conductive elements axially fastened to said securing element on said axle, said conductive elements being parallel to said axle;

an annular printed-circuit board having an insulated body, said circuit board having two groups of conductive sheets respectively disposed in an inner area and outer area of one side of said printed-circuit board, each of said conductive sheets in said inner area being connected to any one of said group of conductive sheets in said outer area, and said group of conductive sheets in said inner area may be contacted by said conductive elements;

a wheel frame pivotally provided on said axle for use as said hub, said wheel frame having disposed therein a plurality of radially distributed winding coils corresponding to said permanent magnets to constitute a rotor in relation to said stator, each of said winding coils being connected to any one of said group of conductive sheets in said outer area of said printed-circuit board, said wheel frame being secured with said printed-circuit board so that they may rotate on said axle, and air currents generated during rotation rapidly dissipating heat of said winding coils within said inner wheel frame; and

a power supply element disposed on said securing element on said axle for transmitting electric power from said conductive elements via said printed-circuit board to said winding coils in said inner wheel frame so that when said winding coils receive electric power, they may generate an electromagnetic field with said stator to drive said wheel frame to rotate around said axle;

Said wheel frame comprising an outer wheel frame and an inner wheel frame respectively pivotally connected to said axle, said inner wheel frame having disposed therein said plurality of winding coils, and said inner wheel frame being fixed with said printed-circuit board to rotate therewith, said outer wheel frame being used as a hub for supporting a wheel, and a reduction mechanism having a driving gear and an idle gear is disposed between one lateral side of said inner wheel frame and said outer wheel frame, said inner wheel frame transmitting power to said driving gear of said reduction mechanism, and said outer wheel frame being connected to said driven gear so that power generated during rotation of said inner wheel frame may be passed via said reduction mechanism to said outer wheel frame;

a clutch ring secured on said inner wheel frame, said clutch ring being pivotally connected to said axle around which said clutch ring may rotate;

a clutch element having one portion thereof connected to said clutch ring and the other portion thereof provided on said driving gear of said reduction mechanism so that said clutch ring may, by means of said clutch element, unite with said driving gear for transmitting power or disengage from said driving gear to stop power transmission; and

a driving element for controlling said clutch element.

5,600,192

DC ELECTRIC MOTOR HAVING A FLUX CONCENTRATING MEMBER THEREON

David M. Carson; John A. Fleming, both of Newtown, and Victor W. Miranda, Jr., West Haven, all of Conn., assignors to Sorvall Products, L.P., Newtown, Conn.

Filed Jul. 29, 1994, Ser. No. 283,113

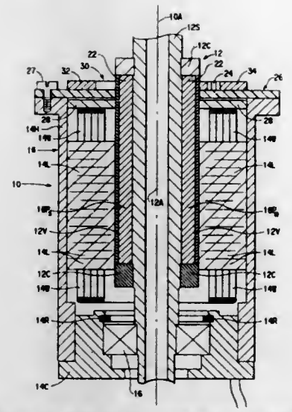
Int. Cl.[6] **H02K** *29/08; 11/00*

U.S. Cl. 310—68 B **12 Claims**

1. A brushless DC electric motor comprising:

a motor housing, the housing having a stator therein, the stator having first and second axial ends thereon, the stator carrying conductive windings having end turn portions that project past each axial end of the stator;

a rotatable shaft extending centrally and axially through the stator, the shaft having an axis extending therethrough, the



shaft having an array of commutating magnets thereon, each magnet having a pole of a first polarity and a pole of a second polarity;

a support substrate spaced axially from the first axial end of the stator and mounted in a fixed relationship with respect to the axis of the shaft and in a plane perpendicular thereto, the support substrate having opposed first and second surfaces thereon, the first surface of the support substrate facing toward the end turns projecting past the first axial end of the stator,

the support substrate having a plurality of sensors disposed on the second surface thereof, the sensors being susceptible to influence by the magnets, the sensors being arranged in a predetermined pattern about the shaft;

a ferromagnetic flux concentrating member mounted to the second surface of the support substrate in a predetermined relationship with each of the sensors, the flux concentrating member conducting magnetic flux emanating from a pole of the first polarity to and through each of the sensors and returning the flux to a pole of the second polarity, such that, as the shaft is rotated, each of the sensors is at substantially all times susceptible to the influence of magnetic flux emanating from one of the commutating magnets,

wherein the flux concentrating member is a generally planar disc having an annular rim with a plurality of radially inwardly directed spokes, the number of spokes corresponding to the number of magnetically responsive sensors,

each spoke having a radial gap therein, each one of the sensors being received within the radial gap in one of the spokes.

5,600,193

MOTOR

Kenji Matsushima, and Yukihiro Nagahori, both of Gyoda, Japan, assignors to Jeco Company Limited, Japan

Filed Jun. 23, 1994, Ser. No. 264,509

Claims priority, application Japan, Jun. 30, 1993, 5-162923; May 27, 1994, 6-114984

Int. Cl.[6] **H02K** *11/00*

U.S. Cl. 310—68 C **13 Claims**

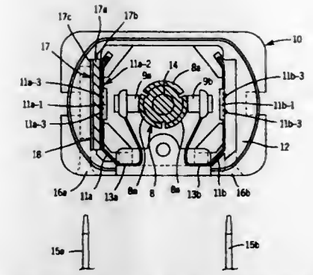
1. A motor comprising:

a stator for producing a predetermined magnetic field in the interior of a motor case having one open end;

a rotor rotatably provided inside said motor case so as to rotate by interacting with the magnetic field produced by said stator;

a pair of brush arms which are held by a motor cover closing the open end of said motor case, and which supply a current to said rotor;

connection holes extending into said motor cover for receiving elongated external circuit terminal members, one of said brush arms having a connecting surface portion exposed in



one of said connection holes along a portion of the length of said connection hole for engaging a side of one of said external circuit terminal members inserted in one of said connection holes to establish an electrical connection with said one of said external circuit terminal members;

an electric element having a pair of connection surfaces;

an electrical element holder provided in said motor cover for holding said electrical element such that a first connection surface of said electrical element is electrically connected with the other of said brush arms, and a second connection surface of said electrical element is positioned to engage a side of another external circuit terminal member inserted in the other of said connection holes to establish an electrical connection with said another of said external circuit terminal members.

5,600,194

MAGNETIC HYSTERESIS CLUTCH

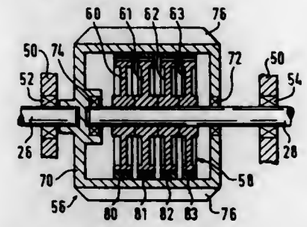
Risto Toukola, Nova Milanese, Italy, assignor to Ipalco B.V., Netherlands

Filed Aug. 25, 1994, Ser. No. 296,251

Claims priority, application Luxembourg, Aug. 25, 1993, LU88394

Int. Cl.[6] **H02K** *49/04; 7/10;* **H02P** *15/00*

U.S. Cl. 310—105 **13 Claims**



1. A magnetic hysteresis clutch comprising:

a rotor supporting a ferromagnetic hysteresis material said rotor having a radius and being rotatable about an axis, and

a rotary magnetic inductor capable of inducing a magnetic field in the ferromagnetic hysteresis material of the rotor said magnetic inductor having a radius and being rotatable about said axis;

said magnetic inductor and said ferromagnetic hysteresis material being arranged with a radial or axial air gap there between, so as to allow relative rotation of one with respect to the other with a variable slip wherein;

an increase in the losses in the ferromagnetic material, which accompanies a given increase in the slip, leads to a reversible decrease in the magnetization of the ferromagnetic hysteresis material in the magnetic field of the rotary magnetic inductor sufficient to produce a reversible decrease in the transmitted torque.

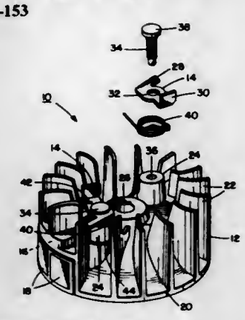
VOL 11 95 ISS 1 FE 4 1997 UMI

5,600,195

FLYWHEEL ROTOR ASSEMBLY WITH STARTER PAWLS

Lynn C. Welborn, King Mountain; Parks W. Stiles, and José I. Venegas, both of Gastonia, all of N.C., assignors to Homelite, Inc., Charlotte, N.C.

Filed Nov. 9, 1993, Ser. No. 149,542
Int. Cl.[6] H02K 21/22
U.S. Cl. 310—153 14 Claims



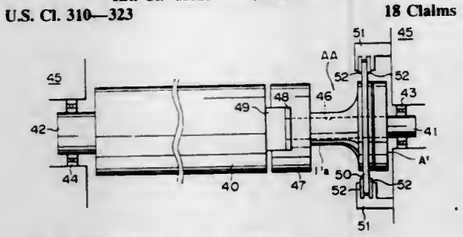
1. A rotor assembly comprising:
a rotor having a permanent magnet and starter pawl mounting posts;
starter pawls movably mounted on the posts; and
springs mounted on the posts biasing the starter pawls in first positions, the springs each having a first end mounted on one of the starter pawls, an opposite second end positioned against a portion of the rotor, and a middle section having a retaining section engaging an exterior of one of the posts and holding the spring on the post during assembly of the starter pawls and springs to the rotor wherein the middle sections includes a coiled section and the retaining section includes a transverse section that extends, at least partially, across a center channel formed by the coiled section.

5,600,196

VIBRATION DRIVEN MOTOR

Jun Tamai, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 126,028, Sep. 24, 1993, abandoned, which is a continuation of Ser. No. 858,437, Mar. 24, 1992, abandoned, which is a continuation of Ser. No. 533,534, Jun. 5, 1990, abandoned. This application Apr. 3, 1995, Ser. No. 415,673
Claims priority, application Japan, Jun. 5, 1989, 1-142339
Int. Cl.[6] H02N 2/00; H01L 41/08
U.S. Cl. 310—323 18 Claims



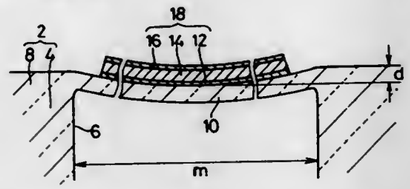
1. A vibration driven motor, comprising:
a bar-shaped vibration member having an axial bore extending therethrough, said vibration member including a contact portion, an attachment portion, and an intermediate portion located between said contact portion and said attachment portion, said intermediate portion having an outer diameter that is smaller than an outer diameter of said contact portion; and
an electro-mechanical energy conversion member, attachable to the attachment portion of said vibration member, for generating a vibration in said vibration member in response to an applied electrical signal.

5,600,197

PIEZOELECTRIC/ELECTROSTRICTIVE FILM ELEMENT AND METHOD OF PRODUCING THE SAME

Yukihisa Takeuchi, Aichi-ken, and Tsutomu Nanataki, Nagoya, both of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Dec. 28, 1994, Ser. No. 365,129
Claims priority, application Japan, Feb. 14, 1994, 6-017697; Feb. 22, 1994, 6-024174; Aug. 11, 1994, 6-189203; Oct. 5, 1994, 6-241172
Int. Cl.[6] H01L 41/08
U.S. Cl. 310—328 7 Claims



1. A piezoelectric/electrostrictive film element comprising:
a ceramic substrate having at least one window, and a diaphragm portion closing each of said at least one window, said diaphragm portion being formed as an integral part of said ceramic substrate; and
a piezoelectric/electrostrictive unit including a lower electrode, a piezoelectric/electrostrictive layer and an upper electrode, which are formed in the order of description on an outer surface of said diaphragm portion by a film-forming method, to provide a laminar structure, said piezoelectric/electrostrictive layer consisting of a dense body having a crystal grain size of not smaller than 0.7 μm, and a porosity (x) of not greater than 15%, said diaphragm portion having a deflection percentage (y) of 0–8%, which is a percentage of an amount of deflection of a central part of said diaphragm portion into the window in an unbiased state, with respect to a length of a shortest line which extends across a corresponding one of said at least one window and passes through a center of the window, said porosity (x) and said deflection percentage (y) satisfying the following formula:

$$y \leq 0.1167x^2 - 3.317x + 25.5.$$

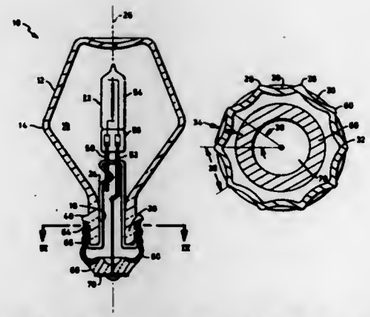
5,600,198

ELECTRIC LAMP ASSEMBLY WITH THREADED BASE PORTION

Steven L. Meade, and Joseph P. Gallant, both of Lexington, Ky., assignors to Osram Sylvania Inc., Danvers, Mass.

Continuation-in-part of Ser. No. 950,532, Sep. 23, 1992, abandoned. This application Oct. 3, 1994, Ser. No. 317,088
Int. Cl.[6] H01J 5/50
U.S. Cl. 313—318.01 11 Claims

1. An electric lamp assembly comprising:
a) a lamp envelope having a wall defining a substantially enclosed chamber, a tubular end extending from said wall and defining an opening to said chamber, a collar portion extending from an outer surface of said tubular end, and a series of prominences extending outwardly from said collar portion, said prominences defining therebetween a series of corresponding concavities, each of said concavities being disposed between a pair of said prominences,



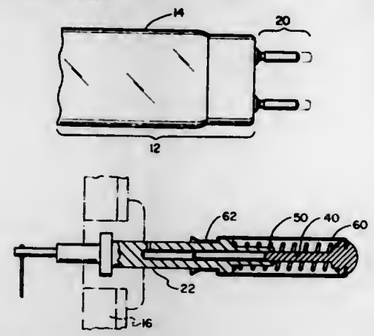
b) a threaded base fixed to said tubular end of said lamp envelope, said threaded base having an end ring in close contact with the prominences and extending at least partially into said concavities to bind said base to said envelope, and having external threading for attachment of said assembly to a socket, and
c) a light source disposed in said chamber and having electrical leads in contact with said threaded base and with a contact fixed on a free end of said base.

5,600,199

FLUORESCENT LAMP WITH SPRING-LOADED TERMINAL PINS

Steve E. Martin, Sr., 22 First Rd., Marlborough, Mass. 01752, and Kevin M. Kelly, 59A Second St., Framingham, Mass. 01701

Filed Sep. 15, 1994, Ser. No. 306,398
Int. Cl.[6] H01J 5/50; H01R 13/24
U.S. Cl. 313—318.02 1 Claim



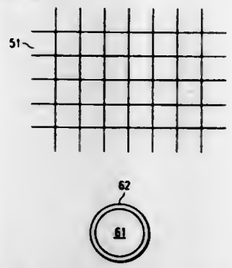
1. A fluorescent lamp comprising:
(a) a tube having an inner surface and an outer surface and first and second ends;
(b) a first base cap mounted to said first end;
(c) a second base cap mounted to said second end;
(d) a first terminal pin moveably mounted to said first base cap, said first terminal pin comprising an inner stem member secured to said first base cap, an outer stem member slidably engaged with said inner stem, a spring member engaged with said inner stem member and said outer stem member, and a sleeve member surrounding said inner stem member, said outer stem, and said spring member; and
(e) a second terminal pin moveably mounted to said second base cap.

5,600,200

WIRE-MESH CATHODE

Nalin Kumar, Austin, and Chenggang Xie, Cedar Park, both of Tex., assignors to Microelectronics and Computer Technology Corporation, Austin, Tex.

Division of Ser. No. 71,157, Jun. 2, 1993, which is a continuation-in-part of Ser. No. 851,701, Mar. 16, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 479,268
Int. Cl.[6] H01J 1/30
U.S. Cl. 313—346 R 9 Claims



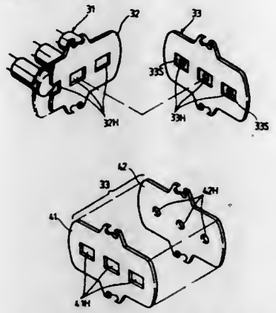
1. A wire-mesh cathode, comprising:
a plurality of intersecting rows and columns of wires, the wires being electrically joined at intersection points thereof; and
a layer of amorphic diamond film deposited on said wires, said amorphic diamond film comprising a plurality of microcrystallite electron emission sites wherein adjacent sites have different electron affinities.

5,600,201

ELECTRON GUN FOR A COLOR CATHODE RAY TUBE

Neung-Yong Yun, Seoul; Heon-Chang Kim; Han-Shin Do, both of Kyungki-do, and Il-Tae Kim, Seoul, all of Rep. of Korea, assignors to Samsung Display Devices Co., Ltd., Kyungki-do, Rep. of Korea

Continuation-in-part of Ser. No. 242,089, May 12, 1994, abandoned. This application May 17, 1995, Ser. No. 443,824
Claims priority, application Rep. of Korea, Oct. 22, 1993, 93-22019; Dec. 31, 1993, 93-32276
Int. Cl.[6] H01J 29/54
U.S. Cl. 313—414 8 Claims



1. An electron gun for a color cathode ray tube comprising:
a triode including three cathodes, a control electrode, a screen electrode including an incident surface opposed to said control electrode, and a main lens for focusing and accelerating an electron beam formed by said triode, wherein said control

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electrode includes a plurality of horizontally elongated electron beam passing holes, each electron beam passing hole having a long axis disposed in an arrangement direction of the plurality of electron beam passing holes, and said screen electrode includes a plurality of horizontally elongated slots, each slot encompassing a corresponding one of the electron beam passing holes and having a long axis disposed in the arrangement direction of the plurality of electron beam passing holes, the horizontally elongated slots being recessed from the incident surface of said screen electrode.

5,600,202

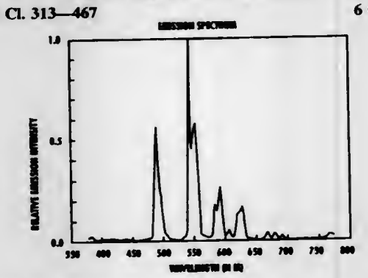
GREEN-EMITTING PHOSPHOR AND CATHODE-RAY TUBE EMPLOYING IT

Tsutomu Yamada; Yasuo Oguri; Takashi Hase, all of Odawara; Yasuhiko Uehara, Mobara, and Hisashi Toyama, Kokubunji, all of Japan, assignors to Kasei Optonix, Ltd., and Hitachi Ltd., both of Tokyo, Japan

Filed Aug. 30, 1995, Ser. No. 521,492

Int. Cl.[6] H01J *29/10;* **C09K** *11/06*

U.S. Cl. 313—467 **6 Claims**



1. A green-emitting phosphor of Tb-activated oxide, which is represented by the compositional formula:

$$(Y_{1-x-y-z}Tb_xYb_yD_z)_3(Al_{1-w}Ga_w)_5O_{12}$$

wherein D is at least one element selected from the group consisting of Sc and La, and x, y, z and w are numbers satisfying the following conditions:

$$1\times10^{-2}\leqq x\leqq 2\times10^{-1}$$

$$1\times10^{-6}\leqq y\leqq 2\times10^{-2}$$

$$1\times10^{-4}\leqq z\leqq 5\times10^{-1}$$

$$0\leqq w\leqq 1,$$

and which contains from 1×10^{-5} to 1×10^{-2} gram atom of barium element per mol of the phosphor and is capable of emitting a color within the following range by CIE chromaticity coordinates:

$$0.325\leqq X\leqq 0.360$$

$$0.540\leqq Y\leqq 0.625.$$

5,600,203

AIRTIGHT ENVELOPE FOR IMAGE DISPLAY PANEL, IMAGE DISPLAY PANEL AND METHOD FOR PRODUCING SAME

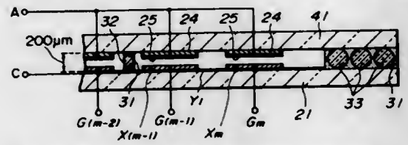
Mamoru Namikawa; Tatsuo Yamaura; Yukio Ogawa; Yoshio Makita; Satoshi Yoshimura, and Yuichi Kogure, all of Mobara, Japan, assignors to Futaba Denshi Kogyo Kabushiki Kaisha, Mobara, Japan

Filed Apr. 26, 1994, Ser. No. 233,303

Claims priority, application Japan, Apr. 26, 1993, 5-099766; Nov. 22, 1993, 5-313971

Int. Cl.[6] H01J *29/50*

U.S. Cl. 313—495 **6 Claims**



1. An airtight envelope for a display panel comprising:

an anode substrate;

a cathode substrate;

said anode substrate and cathode substrate being sealedly joined to each other by means of a sealing material comprising frit glass and elements selected from the group consisting of particulate elements and bar-like elements, to provide an airtight structure, wherein said elements have a melting temperature greater than a melting temperature of said frit glass; and

spacers provided at predetermined positions in a display area defined in a gap between said anode substrate and said cathode substrate, wherein said spacers are softened at said melting temperature of the frit glass, resulting in being fixed on said anode substrate and cathode substrate.

5,600,204

HIGH-PRESSURE SODIUM DISCHARGE LAMP

Cornelis A. J. Jacobs, Turnhout, Belgium; Aldegondus W. Jansen, Eindhoven, Netherlands, and Jan A. J. Stoffels, Turnhout, Belgium, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 288,653, Aug. 10, 1994, abandoned, which is a continuation of Ser. No. 142,644, Oct. 25, 1993, abandoned, which is a continuation of Ser. No. 875,492, Apr. 29, 1992, abandoned, which is a continuation of Ser. No. 683,584, Apr. 10, 1991, abandoned, which is a continuation of Ser. No. 405,509, Sep. 11, 1989, abandoned. This application May 1, 1995, Ser. No. 434,896

Claims priority, application Netherlands, Sep. 12, 1988, 8802228

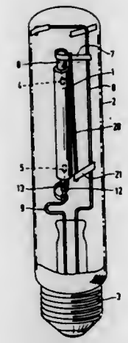
Int. Cl.[6] H01J *17/20*

U.S. Cl. 313—572 **5 Claims**

1. A saturated high-pressure sodium discharge lamp comprising a discharge device having a filling of sodium and mercury, and xenon at a pressure of at least 26.7 kPA (200 torr) at a temperature of 300K, and means for maintaining a gas discharge within said discharge device during lamp operation, said discharge device generating during lamp operation a light spectrum having a self-absorption band at 589.3 nm and a spectral flank on both sides of said self-absorption band each having a respective maximum, said maxima being separated by a wavelength difference $\Delta\lambda$, the improvement comprising:

said sodium and mercury having a weight ratio (Na/Hg) of at least 0.075 and at most 0.125; and

said wavelength difference $\Delta\lambda$ is at least 3.5 nm and at most 6 nm.



5,600,205

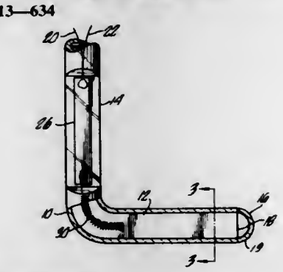
BENT TUBE LAMP

Robert A. Foss, Hesperia; Patrick M. Lewis, Diamond Bar, and Michael P. Duffey, Hesperia, all of Calif., assignors to UVP, Inc., Upland, Calif.

Filed Jan. 26, 1995, Ser. No. 378,683

Int. Cl.[6] H01J *61/30*

U.S. Cl. 313—634 **2 Claims**



1. A lamp comprising

a sealed tube having an elongate cavity, the sealed tube having a first end portion, a second end and a septum extending from the first end portion to near the second end, the elongate cavity on both sides of the septum being sealed at the first end portion and joined at the second end, the sealed tube having a bend between the first end portion and second end of the sealed tube;

leads extending into the sealed tube at the first end portion;

electrodes coupled with the leads, respectively, and extending into the elongate cavity with the septum therebetween, the electrodes extending to between the bend and the second end in the sealed tube.

5,600,206

SOLID STATE SOUND LAMP

James A. Cashin, 18730 Oxnard St., #208, Tarzana, Calif. 91356

Filed Jun. 23, 1995, Ser. No. 493,911

Int. Cl.[6] G11B *7/00*

U.S. Cl. 315—32 **9 Claims**

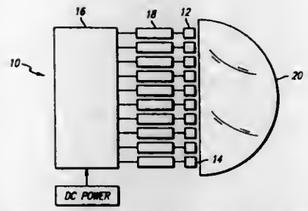
1. A sound lamp assembly used in a sound decoding system having a decoding receptor for decoding information on film having a plurality of color dye layers of different peak densities on which at least one color dye layer contains encoded information, comprising:

power supply means;

unmodulated illuminating means comprised of a plurality of LED die attached to said power supply means, said unmodulated illuminating means creating illumination with minimal variation in intensity, said unmodulated illuminating means providing a signal whose wavelength coincides only with the peak density of the color dye layer containing the encoded information;

limiting means for regulating the power supply means so that it is constant; whereby said limiting means corrects any minor variances in intensity between said multiplicity of LED die, and

optics means for collecting diffuse illumination of the illuminating means and directing it toward the receptor.



5,600,207

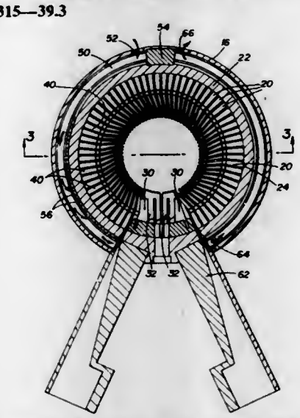
PREFERENTIALLY COOLED FORWARD WAVE CROSSED-FIELD AMPLIFIER ANODE

Michael S. Worthington, Hughesville; Kenneth F. Ramacher, Montoursville; Chris L. Wheeland, Winfield; Scott A. Kleinle, South Williamsport; Edward M. Doyle, Montoursville, and Joseph C. Musheno, Williamsport, all of Pa., assignors to Litton Systems, Inc., Woodland Hills, Calif.

Continuation-in-part of Ser. No. 890,663, May 28, 1992, Pat. No. 5,418,427. This application Jul. 27, 1994, Ser. No. 281,468

Int. Cl.[6] H01J *23/24;25/36*

U.S. Cl. 315—39.3 **13 Claims**



1. A crossed-field amplifier having an RF input and an RF output, comprising:

an anode and a cathode, said anode being disposed radially along a backwall inside the amplifier and coaxially around said cathode, said anode comprising a plurality of radially disposed vanes, a subset of said plurality of radially disposed vanes comprising output vanes located proximate the RF output of the crossed-field amplifier;

means for providing backwall cooling to said plurality of radially disposed vanes proximate said backwall; and

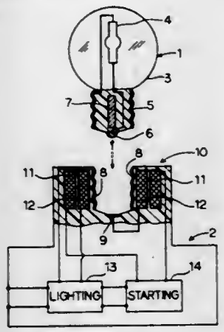
means for providing vane cooling to only said output vanes, said vane cooling means being disposed only within said output vanes and absent from the remaining vanes, thereby providing additional cooling to only said output vanes.

5,600,208

DISCHARGE LAMP UNIT HAVING SEPARABLE HIGH-VOLTAGE TRANSFORMER SAFEGUARD

Kouichi Katou, Anjou; Koichi Toyama, and Kenji Aida, both of Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Oct. 18, 1995, Ser. No. 544,706
Claims priority, application Japan, Nov. 10, 1994, 6-276763
Int. Cl.[6] H01J *7/44*
U.S. Cl. 315—70 **15 Claims**



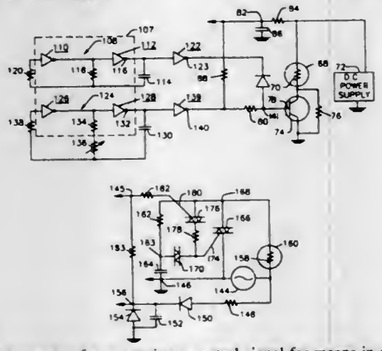
1. A discharge lamp unit comprising:
a lamp section including a lamp; and
a base section to which said lamp section is mounted;
wherein a part of a high-voltage transformer for applying a high voltage to said lamp section when starting said lamp is provided in said lamp section; and
wherein a remaining part of said high-voltage transformer is provided in said base section.

5,600,209

ELECTRONIC CANDLE SIMULATOR

Raymond F. St. Louis, 12 Cove Rd., Branchville, N.J. 07826

Continuation of Ser. No. 271,171, Jul. 7, 1994, abandoned. This application Dec. 21, 1995, Ser. No. 576,820
Int. Cl.[6] H05B *41/44;41/36*
U.S. Cl. 315—200 A **15 Claims**



8. Apparatus for generating a control signal for means in circuit with a light emitting means and a power supply so as to control the amount of light emitted by said light emitting means in such manner as to simulate a candle comprising:
a first oscillator for producing an output having a first frequency;
a second oscillator for producing an output having a second frequency that has a predetermined nominal difference with respect to said first frequency and that is other than an harmonic or subharmonic relationship to said first frequency; and
means for producing said control signal only during times when the outputs of both of said first and second oscillators have the same polarity.

5,600,210

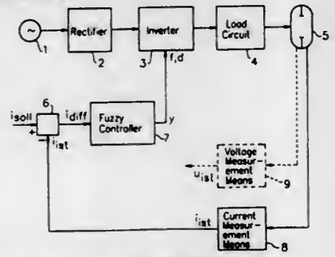
Patent Not Issued For This Number

5,600,211

ELECTRONIC BALLAST FOR GAS DISCHARGE LAMPS

Siegfried Luger, Dornbirn, Austria, assignor to Tridonic Bauelemente GmbH, Dornbirn, Austria

Filed Sep. 8, 1995, Ser. No. 525,197
Claims priority, application Germany, Sep. 16, 1994, 44 33 085.5; Dec. 8, 1994, 44 43 784.6
Int. Cl.[6] G05F *1/00*
U.S. Cl. 315—307 **25 Claims**



1. Electronic ballast for gas discharge lamps,
having a rectifier for rectifying a supply voltage,
having an inverter fed from the rectifier,
having a load circuit, to which at least one gas discharge lamp can be connected, connected to the inverter, and
having a control device with a comparator for controlling the brightness of the at least one gas discharge lamp,
characterized in that,
the control device includes a fuzzy controller which in dependence upon at least one input signal (i_{diff}, u_{ist}, R_{ist}, T_{ist}) determines as output signal a setting value for a physical parameter of the inverter or of the load circuit.

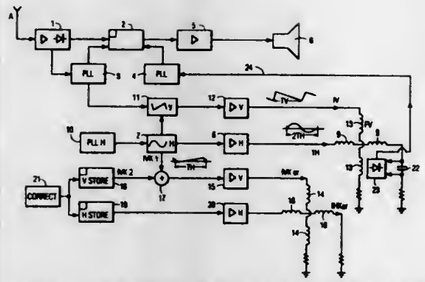
5,600,212

DEFLECTION CIRCUIT FOR A TELEVISION RECEIVER USING SYMMETRICAL DEFLECTION

Gangolf Hirtz, Villingen; Bernd Bader, Gschwend; Yves Francois, Villingen; Bernd Tenconi, Brigachtal, and Fritz Ohnemus, VS-Villingen, all of Germany, assignors to Deutsche Thomson-Brandt GmbH, Villengen-Schweoningen, Germany

Filed Feb. 22, 1993, Ser. No. 19,979
Claims priority, application Germany, Feb. 20, 1992, 42 05 146.0; Mar. 2, 1992, 42 06 479.1; Mar. 7, 1992, 42 07 350.2
Int. Cl.[6] G09G *1/04;* **H01J** *29/70*
U.S. Cl. 315—391 **8 Claims**

1. A method for symmetrical horizontal scanning in a television tube, comprising the steps of:
energizing a vertical deflection coil of said tube with a sawtooth vertical scanning current having a first slope during vertical trace to generate a first vertical deflection field; and,
energizing an auxiliary vertical deflection coil of said tube with a sawtooth vertical auxiliary current having a line frequency



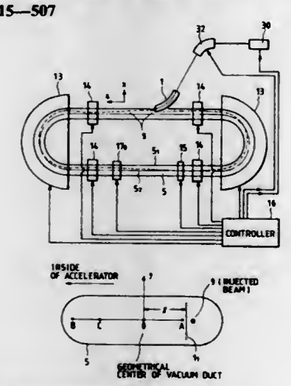
and a second slope during horizontal trace equal but opposite to said first slope of said vertical scanning current to generate a second vertical deflection field, said first and second vertical deflection fields being superimposed in said tube to produce a stepped vertical deflection field.

5,600,213

CIRCULAR ACCELERATOR, METHOD OF INJECTION OF CHARGED PARTICLES THEREOF, AND APPARATUS FOR INJECTION OF CHARGED PARTICLES THEREOF

Kazuo Hiramoto, Hitachioota; Junichi Hirota, Hitachi; Kenji Miyata, and Masatsugu Nishi, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 133,217, Oct. 7, 1993, abandoned, which is a continuation of Ser. No. 733,645, Jul. 22, 1991, abandoned. This application Jun. 6, 1995, Ser. No. 470,478
Claims priority, application Japan, Jul. 20, 1990, 2-190543
Int. Cl.[6] H05H *7/00*
U.S. Cl. 315—507 **16 Claims**



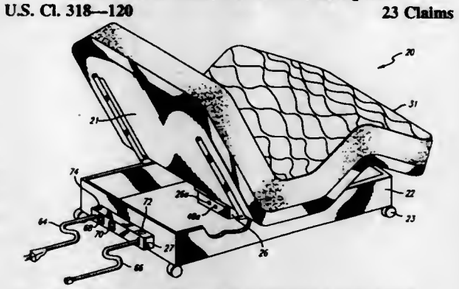
1. A circular accelerator comprising:
means for constituting a center closed orbit;
means for injecting a beam of charged particles into the center closed orbit;
means for accelerating said beam; and
additional means, operative only during injection of said beam, for shifting an orbital path of said beam injected into the center closed orbit in a horizontal direction toward a side opposite to the injection side.

5,600,214

USER-CONTROLLABLE ADJUSTABLE MASSAGE BED

Leonard E. Fromson, Cerritos, Calif., assignor to Maxwell Products, Inc., Cerritos, Calif.

Division of Ser. No. 189,963, Jan. 31, 1994, Pat. No. 5,544,376. This application Nov. 21, 1995, Ser. No. 560,218
Int. Cl.[6] A47C *31/00;* **G05B** *11/01;* **H04Q** *7/00*
U.S. Cl. 318—120 **23 Claims**



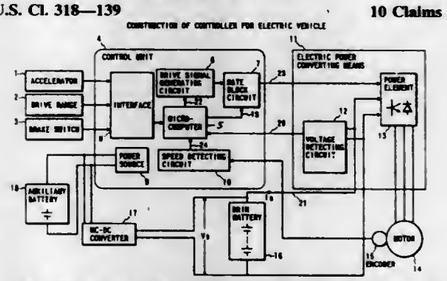
1. A user-controllable adjustable massage bed, comprising:
(a) a vibratory articulated bed including:
a bed base;
back, seat, thigh and foot support plates articulated relative to one another and supported by said base, said support plates being adapted for supporting a mattress;
a head motor for controllably lifting said back support plate and thereby a head section of the mattress when supported;
a foot motor for controllably lifting said thigh support plate and thereby a thigh section of the mattress; and
a vibratory massage motor for vibrating at least one of said support plates and thereby a corresponding section of the mattress; and
(b) a remote-control handheld unit including:
a first user-activated mechanism for controlling the operation of at least one of said foot and head motors; and
a second user-activated mechanism for shifting an on-off cycling rhythm of said massage motor between first and second different rhythms with said massage motor running.

5,600,215

CONTROLLER FOR ELECTRIC VEHICLE

Hiroyuki Yamada; Shotaro Naito, both of Hitachinaka, and Sanshiro Obara, Ibaraki, all of Japan, assignors to Hitachi, Ltd., and Hitachi Automotive Engineering Co., Ltd., both of Japan

Filed Jul. 7, 1995, Ser. No. 499,135
Claims priority, application Japan, Jul. 7, 1994, 6-156162
Int. Cl.[6] H02P *7/29*
U.S. Cl. 318—139 **10 Claims**



1. A controller for a battery powered electric vehicle of the type in which a torque command signal corresponding to an extent of actuation of an accelerator input device controls a motor for driving the vehicle in response to the torque command signal, which controller comprises:

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a comparator coupled to receive and compare a terminal voltage of said battery and a preset first comparison voltage;

first clock means for measuring a first elapsed time during a period when said terminal voltage is smaller than the first comparison voltage, and for detecting when the first elapsed time exceeds a first preset time period;

calculation means for producing a torque limiting command signal having a value which decreases to a set lower limit value according to a predetermined pattern, starting at the time when said first clock means detects that said first elapsed time exceeds said first preset time period;

means for comparing said torque command signal with said torque limiting command signal and for selecting the smaller thereof; and

means for controlling operation of the vehicle motor in response to the selected signal.

5,600,216

BRIDGE CIRCUIT FOR DRIVING A BRUSHLESS DC MOTOR

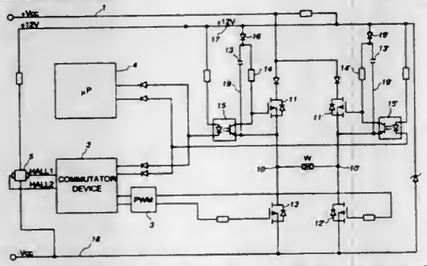
Arno Karwath, Rottweil, and Mojtaba Moini, Konigsfeld, both of Germany, assignors to Papst-Motoren GmbH & Co. KG, Germany

Filed Jul. 13, 1993, Ser. No. 91,665

Claims priority, application Germany, Jul. 15, 1992, 42 23 208.2

Int. Cl.[6] H02P *1/04*

U.S. Cl. 318—291 **17 Claims**



1. A bridge circuit including n-channel field effect transistors for driving a brushless DC motor, said bridge circuit comprising:

a DC power source having a positive output and a negative output;

at least one first n-channel field effect transistor for selectively connecting the positive output to the DC motor and at least one second n-channel field effect transistor for selectively connecting the negative output to the DC motor;

control means for controlling the first and second n-channel field effect transistors to alternatingly connect the positive output and the negative output to the DC motor;

a source of auxiliary potential comprising a potential sliding capacitor connected between the positive output and the second n-channel field effect transistor for charging to a predetermined potential when the second n-channel field effect transistor is connecting the negative output to the DC motor; and

the control means comprises a switch device operative when the second n-channel field effect transistor is not connecting the negative output to the DC motor for connecting the auxiliary potential of the potential sliding capacitor to drive the first n-channel field effect transistor to connect the positive output to the DC motor.

5,600,217

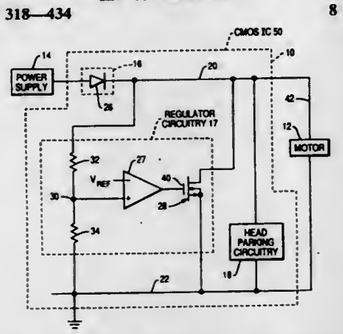
CMOS DISK DRIVE MOTOR CONTROL CIRCUIT HAVING BACK-EMF REGULATOR CIRCUITRY

Donald M. Bartlett, Fort Collins, Colo., assignor to AT&T Global Information Solutions Company, Dayton, Ohio; Hyundai Electronics America, San Jose, Calif., and Symbios Logic Inc., Fort Collins, Colo.

Continuation of Ser. No. 131,827, Oct. 5, 1993, abandoned. This application Nov. 22, 1994, Ser. No. 343,275

Int. Cl.[6] H02P *3/00*

U.S. Cl. 318—434 **8 Claims**



1. In a disk drive having a disk drive head, a control circuit between a power supply and a disk drive motor comprising:

a CMOS integrated circuit chip including (i) a regulator circuit which prevents a back-EMF, which is generated by the motor when power is removed from the motor, from exceeding a predetermined voltage whereby the back-EMF is shunted when the back-EMF exceeds the predetermined voltage; and

(ii) a disk drive head parking circuit for retracting and parking the disk drive head, coupled to the motor and the regulator, and coupled to receive the back-EMF, whereby the back-EMF does not exceed a safe operating range of the disk drive head parking circuit.

5,600,218

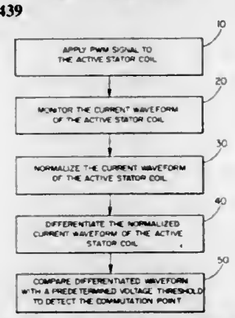
SENSORLESS COMMUTATION POSITION DETECTION FOR BRUSHLESS MOTORS

George H. Holling, Princeton; Mark M. Yeck, and Anthony J. Brewer, both of Madison, all of Wis., assignors to George H. Holling, Princeton, Wis.

Filed Sep. 11, 1995, Ser. No. 526,525

Int. Cl.[6] H02P *6/02*

U.S. Cl. 318—439 **15 Claims**



1. A method for determining a commutation position of a polyphase brushless motor having a plurality of field coils disposed about a rotor, said plurality of field coils having at least one active field coil for receiving a driving signal to generate a magnetic field that exerts the maximum amount of torque on said rotor, comprising the steps of:

(a) selectively energizing said at least one active field coil with said driving signal, said driving signal comprising a voltage pulse train of successive on and off pulses;

(b) continuously monitoring the current waveform of said at least one active field coil during said step of selectively energizing;

(c) continuously normalizing said current waveform to define a normalized current waveform;

(d) continuously differentiating said normalized current waveform to define a current rate of change waveform; and

(e) continuously comparing said current rate of change waveform to a predetermined voltage threshold value to determine the commutation point, said commutation point being the point in time at which said current rate of change waveform fails to intersect said predetermined voltage threshold.

5,600,219

SENSORLESS CLOSED-LOOP ACTUATOR UNLATCH

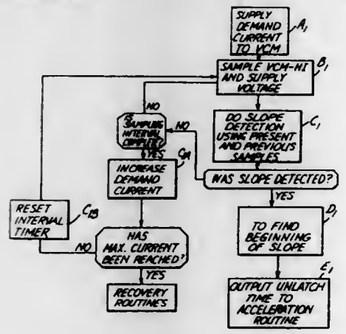
Kevin A. Gomez, Singapore, Singapore, assignor to Seagate Technology, Inc., Scotts Valley, Calif.

PCT No. PCT/US94/02745, § 371 Date Jun. 29, 1994, § 102(e) Date Jun. 29, 1994, PCT Pub. No. WO95/25327, PCT Pub. Date Sep. 21, 1995

PCT Filed Mar. 14, 1994, Ser. No. 256,172

Int. Cl.[6] G11B *21/02*

U.S. Cl. 318—456 **9 Claims**



1. A method for detecting movement of an actuator comprises:

supplying current to a voice coil motor of the actuator;

sampling a voice coil motor voltage while supplying current to the voice coil motor;

performing a slope detection on a voice coil motor voltage function using the samples; and

identifying a change in slope of the voice coil motor voltage function.

6. A method for detecting movement of an actuator comprises:

supplying a continuously increasing current to a voice coil motor of an actuator;

measuring a back e.m.f. voltage of the voice coil motor;

performing a change of slope detection of a back e.m.f. voltage function of voice coil motor; and

integrating the back e.m.f. voltage function to determine movement of the actuator.

5,600,220

SYSTEM FOR SERVO-CONTROLLING AN AIRCRAFT FLIGHT CONTROL MEMBER

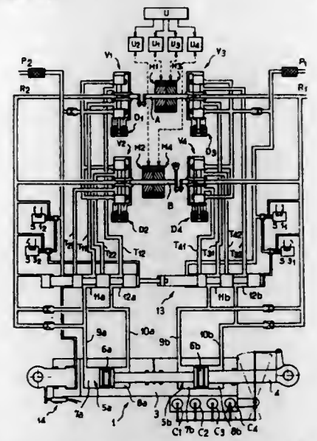
Bruno Thoraval, Frepillon, and Jean-Luc Bertrand, Tours, both of France, assignors to Lucas France, Paris, France

Filed Aug. 18, 1994, Ser. No. 292,483

Claims priority, application France, Aug. 20, 1993, 93 10166

Int. Cl.[6] B64C *13/42*

U.S. Cl. 318—562 **9 Claims**



1. A servo control system for actuating an aircraft flight control member, the system comprising:

(A) an hydraulic actuator unit for actuating the flight control member, said actuator unit comprising two hydraulic actuators;

(B) an actuation means for actuating said hydraulic actuator unit, said actuation means comprising first and second actuation assemblies, each assembly comprising

(1) two hydraulic circuits,

(2) two mechanically controlled distributor valves, each distributor valve operates a hydraulic circuit, and

(3) two drive units including motor means for actuating said distributor valves, wherein each drive unit has an active and a passive state, and one unit is in the active state and the other is in the passive state;

(C) means for detecting a failure of at least one element of the first or second actuation assemblies;

(D) a selector valve, having two states, for connecting the hydraulic circuits of the first and second actuation assemblies with the hydraulic circuits of each actuator wherein in a first state of the selector valve the first actuation assembly is in an active state and the second actuation assembly is in a reserve state, and in a second state of the selector valve, the first actuation assembly is in a reserve state and the second actuation assembly is in an active state; and

(E) control means for

(1) controlling the motor means to operate the drive units as a function of a detected position of the flight control member and of piloting orders, wherein the distributor valves of the first and second actuation assembly are actuated simultaneously,

(2) controlling switching of said selector valve from one state to the other upon detection of failure by the means for detecting a failure, and

(3) controlling, upon detection of a failure, the active drive unit in one of the actuation assemblies to change from the active to passive and controlling the passive drive unit in the same assembly to change from the passive to active state, wherein the change of drive units occurs simultaneously with the selector valve switching.

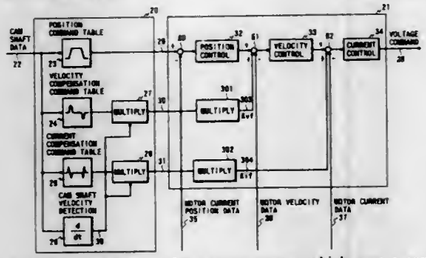
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5,600,221

CONTROL APPARATUS FOR SERVO SYSTEM

Kazuhiko Tomatsuri; Misako Okada; Yusuke Ushio; Yuko Tomita, and Satoshi Mizogami, all of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 5, 1995, Ser. No. 436,011
Claims priority, application Japan, May 9, 1994, 6-095285; Mar. 17, 1995, 7-059254
Int. Cl.[6] G05D 3/00
U.S. Cl. 318—632 11 Claims



1. A control apparatus for a servo system which uses a servo motor to perform operations equivalent to those of a cam mechanism, comprising:

a motion command section having a first data table, a second data table and a third data table for a position command, a velocity compensation command and a current compensation command, respectively, for calculating and outputting a position command equivalent to a cam stroke of the cam mechanism, a velocity compensation command and a current compensation command in accordance with the data tables and cam shaft data equivalent to a cam shaft position of the cam mechanism; and

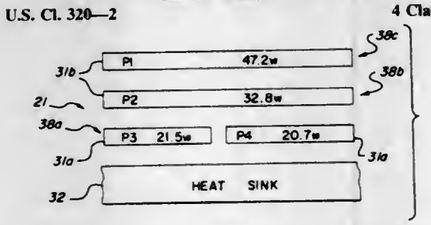
a servo control section for controlling the servo motor on the basis of the position command from said motion command section, said servo control section effecting at least one of velocity compensation based on the velocity compensation command and current compensation based on the current compensation command.

5,600,222

THERMAL MANAGEMENT USING A HYBRID SPIRAL/HELICAL WINDING GEOMETRY

John T. Hall, Woodland Hills; Ray G. Radys, Santa Monica, and George R. Woody, Redondo Beach, all of Calif., assignors to Delco Electronics Corporation, Kokomo, Ind.

Continuation-in-part of Ser. No. 140,954, Oct. 25, 1993, Pat. No. 5,434,493. This application Dec. 2, 1994, Ser. No. 348,665
Int. Cl.[6] H02J 7/00
U.S. Cl. 320—2 4 Claims



1. An inductive charging system for use in charging batteries of an electric vehicle, wherein said inductive charging system comprises a power source, a charge station coupled to the power source, a charge probe that comprises a primary core and a primary winding of a transformer coupled to the charge station by means of an extendable charging cable, a charge port disposed in the electric vehicle that comprises a secondary core and secondary windings of the transformer, and a charge controller coupled between the charge port and the batteries of the electric vehicle, wherein the improvement comprises:

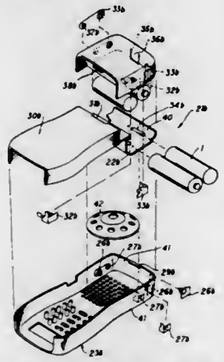
a primary winding comprising a predetermined number of turns stacked in a predetermined number of layers and wherein at least one of the turns comprises a spiral multi-turn winding such that the number of layers is less than the number of turns.

5,600,223

BATTERY CASE FOR PORTABLE TERMINAL UNIT

Toshiaki Shirai, Narashino, Japan, assignor to Uniden Corporation, Chiba, Japan

Filed Dec. 9, 1994, Ser. No. 352,488
Claims priority, application Japan, Jan. 10, 1994, 6-726
Int. Cl.[6] H01M 2/10
U.S. Cl. 320—2 18 Claims



10. A battery case for a portable terminal unit comprising:

a first battery storage case monolithically integrated with a basic body of a portable terminal unit for accommodating therein a first plurality of batteries from a first opening in said basic body said, first plurality of batteries arrayed therein in parallel with each other; and

a second battery storage case for accommodating therein a second plurality of batteries, different from the first plurality of batteries, from a second opening in said second battery storage case, said second plurality of batteries arrayed in parallel with each other, which can be mounted on the basic body of said portable terminal unit so that said first opening will be opposite to said second opening;

wherein the basic body of said portable terminal unit comprises a front case and a rear case, said first battery storage case comprises a battery holding section provided on an extension of said rear case and an accommodating section provided on an extension of said front case for accommodating said battery holding section, and said first opening is in said front case.

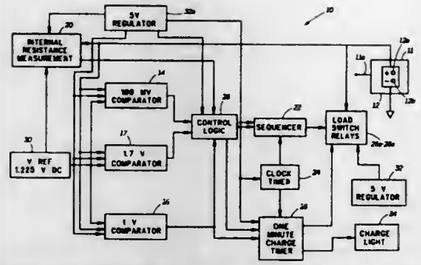
5,600,224

APPARATUS AND METHOD FOR CHARGING ONLY RECHARGEABLE BATTERIES

Deepak R. Mody, Parkland, Fla.; Arun K. Krishnamurthy; Kin S. Liew, both of Singapore, Singapore, and Anh X. Nguyen, Boynton Beach, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 31, 1995, Ser. No. 454,933
Int. Cl.[6] H02J 7/00
U.S. Cl. 320—2 11 Claims

1. A battery charger that can discriminate between a rechargeable battery and a non-rechargeable battery, said battery charger



coupled to an external electric power source for providing electric power for recharging a battery, said battery charger comprising:

a battery holder for receiving the battery;

an anode contact and a cathode contact connected to said battery holder in predetermined positions for electrical contact with the battery when inserted into said battery holder;

charging current control means coupled to said cathode contact and said anode contact for controlling charging current supplied to said anode contact and said cathode contact;

means coupled to said charging current control means for supplying a predetermined-amount of charging current to said anode contact and said cathode contact for a predetermined period of time;

means coupled to said anode contact and said cathode contact for measuring internal impedance of the battery within said battery holder to be charged, the battery being in contact with said anode contact and said cathode contact, wherein said means for measuring internal impedance comprises:

means for measuring an open cell voltage;

means for measuring a closed cell voltage with fixed load;

means for determining a voltage difference between said open cell voltage and paid closed cell voltage;

means for generating a preselected reference voltage coupled to said means for determining, said voltage difference being compared to said preselected reference voltage, whereby the battery is deemed non-rechargeable when said voltage difference exceeds said preselected reference voltage and rechargeable when said voltage difference is less than said preselected reference voltage; and

means for terminating the charging current coupled to said charging current control means and said means for measuring internal impedance to terminate charging the battery when the internal impedance exceeds a predetermined threshold value, whereby said battery charger can discriminate between the rechargeable battery or the non-rechargeable battery based on internal impedance.

5,600,225

NONCONTACTING CHARGING DEVICE

Masataka Goto, c/o NEC Corporation, 7-1, Shiba 5-chome, Minato-ku, Tokyo, Japan

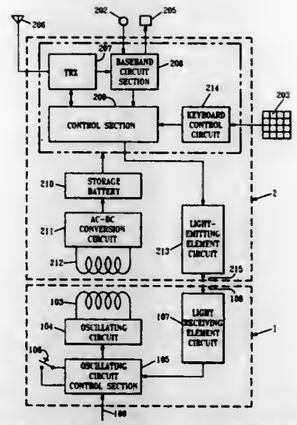
Filed Jun. 20, 1995, Ser. No. 492,628
Claims priority, application Japan, Jun. 30, 1994, 6-171722
Int. Cl.[6] H01M 10/44; H02J 7/00
U.S. Cl. 320—2 7 Claims

1. A noncontacting charging device for supplying, in a noncontacting state, electrical power to a storage battery of a battery-equipped radio communication device, comprising:

a charger having a primary coil and alternating current supply means for supplying alternating current power to said primary coil;

a secondary coil that couples electromagnetically with said primary coil, and charging-power supply means for supplying, as charging power, electrical power of an induced current produced in said secondary coil to said storage battery;

halt signal generating means for generating a halt signal in response to one of an incoming call and a manual input that



commands a halt of the supply of alternating current power to said primary coil; and

halting means for halting the supply of alternating current power to said primary coil in response to said halt signal;

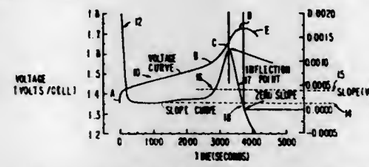
said secondary coil, said charging power supply means, and said halt signal generating means being provided in said radio communication device.

5,600,226

METHODS OF CONTROLLING THE APPLICATION AND TERMINATION OF CHARGE TO A RECHARGEABLE BATTERY

Carl B. Falcon, Royersford, Pa., assignor to Galaxy Power, Inc. A Pennsylvania Corporation, Valley Forge, Pa.

Filed Oct. 13, 1993, Ser. No. 135,923
Int. Cl.[6] H01N 10/44
U.S. Cl. 320—20 52 Claims



1. A method of charging a rechargeable battery having a voltage characteristic that varies in a predetermined manner with a charge state of the battery and for terminating said charging of the battery in response to the charge state of the battery when the battery has attained a full charge, comprising the steps of:

supplying electrical energy to the battery for charging of the battery;

monitoring said voltage characteristic of the battery as said electrical energy is supplied to the battery;

differentiating a variation of the monitored voltage characteristic with time as said electrical energy is supplied to the battery to provide a slope characteristic that decreases as a function of time to a bottom peak followed by a top peak followed by a decreasing slope;

identifying in said slope characteristic a minimum slope of said bottom peak as said electrical energy is supplied to the battery; and

terminating said supplying of electrical energy to the battery when said slope characteristic equals said minimum slope as said slope characteristic decreases following said top peak.

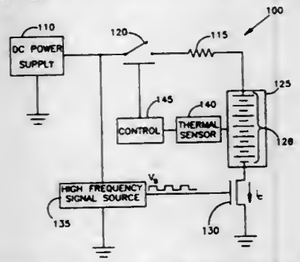
VOL 11 95 ISS 1 FE 4 1997 UMI

5,600,227

ELECTRICAL STORAGE BATTERY CHARGER AND CONDITIONER

Gustav C. Smalley, 900 Knopf St., Manville, N.J. 08835

Filed Jul. 29, 1994, Ser. No. 282,966
Int. Cl.[6] H01M *10/44;10/46*
U.S. Cl. 320—21 **18 Claims**



1. A method of conditioning an electrical storage battery comprising:

applying an alternating charging current to the battery, said alternating charging current comprising a substantial plurality of cycles, said alternating current having a frequency of at least approximately 20 kHz, and wherein each of said cycles alternates between a first charging current and a second charging current, the second charging current being substantially less than the first charging current;

removing the alternating charging current from the battery when the battery is substantially charged; and

rapidly discharging said battery.

9. An apparatus for charging an electrical storage battery comprising:

a) a DC power supply;

b) a current regulator connected to said power supply;

c) a socket into which the electrical storage battery may be positioned, the socket connected to said current regulator;

d) a high frequency power switch connected to said power supply and to said socket, the high frequency power switch having an on and off condition; and

e) a source of high frequency signals having a frequency of at least approximately 20 kHz coupled to the high frequency power switch, the signal source operable to drive said high frequency power switch to turn said switch on and off at a frequency of at least approximately 20 kHz such that when the switch is turned on, a first charging current flows through the socket and when the switch is turned off, a second charging current flows through the socket, the second charging current being substantially less than the first charging current.

5,600,228

POWER MANAGING APPARATUS AND METHOD

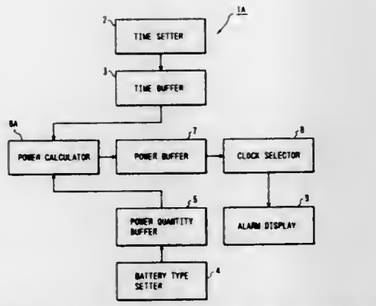
Kazuhiro Matsubayashi, Yokohama; Kazutoshi Shimada, Yokosuka; Eisaku Tatsumi, Yokohama; Shigeki Mori, Koshigaya; Shinichi Sunakawa, Kawasaki; Takashi Harada, Yokohama, and Katsuhiko Nagasaki, Ichikawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 27, 1994, Ser. No. 280,990
Claims priority, application Japan, Jul. 29, 1993, 5-207237
Int. Cl.[6] H02J *7/04;7/16*
U.S. Cl. 320—43 **27 Claims**

1. A power managing apparatus in an electronic apparatus using a battery comprising:

residual quantity detecting means for detecting a residual quantity of the battery;

setting means for setting a time; and



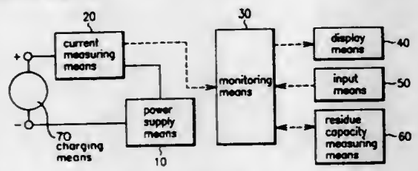
judging means for judging whether the electronic apparatus can be driven until the set time on the basis of the residual quantity of the battery detected by said residual quantity detecting means.

5,600,229

SYSTEM FOR MONITORING ENERGY PERFORMANCE OF SECONDARY BATTERY, AND METHOD THEREFOR

Se-Chun Oh, Seungnam, Rep. of Korea, assignor to Samsung Heavy Industries Co., Ltd., Seoul, Rep. of Korea

Filed Nov. 17, 1994, Ser. No. 343,874
Claims priority, application Rep. of Korea, Mar. 31, 1994, 94-6828
Int. Cl.[6] H01N *10/48*
U.S. Cl. 320—48 **3 Claims**



1. A system for monitoring energy performance of a battery, comprising:

a power supply means for supplying a power source to the battery;

a current measuring means for measuring the magnitude of the current generated from said power supply means;

a monitoring means having a micro-processor for determining a value of the energy performance of the battery by comparing a total unused energy amount of the battery with a total used energy amount obtained by measuring a magnitude of current in said current measuring means;

a display means for displaying a value of the energy performance of the battery of said monitoring means;

an input means for inputting information related to the battery by a user;

a residue capacity measuring means for receiving the value of the energy performance of the battery from said monitoring means; and

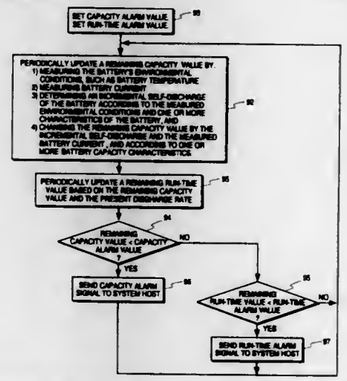
a charging means for charging the battery in accordance with the value of the energy performance of the battery received from said residue capacity measuring means.

5,600,230

SMART BATTERY PROVIDING PROGRAMMABLE REMAINING CAPACITY AND RUN-TIME ALARMS BASED ON BATTERY-SPECIFIC CHARACTERISTICS

Robert A. Dunstan, Beaverton, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Dec. 15, 1994, Ser. No. 357,412
Int. Cl.[6] H02J *7/04*
U.S. Cl. 320—48 **27 Claims**



1. An apparatus for indicating a remaining capacity of a battery, the apparatus comprising:

a logic unit;

a memory coupled to the logic unit, storing one or more characteristics of the battery including self-discharge, as a function of battery temperatures one or more environmental conditions of the battery including the temperature of the battery and information indicative of battery current;

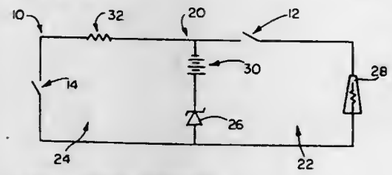
wherein the logic unit periodically updates the remaining capacity value based on the information indicative of battery current, the temperature of the battery and the self-discharge characteristics.

5,600,231

DEVICE FOR TESTING AND REFRESHING BATTERIES

Robert Parker, Alamo, Calif., assignor to Avery Dennison Corporation, Pasadena, Calif.

Filed Apr. 5, 1995, Ser. No. 416,647
Int. Cl.[6] H01M *10/44;10/48;* **G01N** *27/416*
U.S. Cl. 320—48 **22 Claims**



1. A battery system, comprising:

a rechargeable battery;

a refresh circuit including a refresh resistor electrically coupled to the battery through a first switch and a diode;

a test circuit including a heat generating element electrically coupled to the battery through a second switch and said diode; and

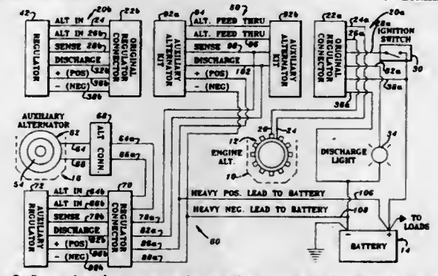
a first temperature responsive display thermally coupled to said heat generating element for visual display of the relative charge of the battery.

5,600,232

ALTERNATOR SYSTEM FOR A VEHICLE

Jimmy N. Eavenson, Sr., Juneau, and Barry M. Hough, Beaver Dam, both of Wis., assignors to Deere & Company, Moline, Ill.

Filed Jun. 17, 1994, Ser. No. 261,521
Int. Cl.[6] H02P *9/00*
U.S. Cl. 322—12 **9 Claims**



9. In a charging system for a utility vehicle presenting a peak current load of at least a preselected demand level, the vehicle including a battery, an engine having an internal alternator system having an output capacity less than the preselected demand level, the internal alternator system including an internal alternator, a regulator, and a first wiring harness connecting the internal alternator with the battery and internal alternator regulator to provide regulated power to the battery, the first wiring harness including a power lead extending from the regulator to the battery, an auxiliary alternator system including:

an auxiliary alternator connected to the engine and driven by the engine, the auxiliary alternator having an output;

an auxiliary wiring harness extending between the auxiliary alternator output and the battery and connecting the auxiliary alternator substantially in parallel with the internal alternator to thereby supplement the output capacity of the internal alternator system, the cumulative outputs of the alternators generally being equal to or greater than the preselected demand level;

wherein the first wiring harness includes a separable connector having first and second mating connecting portions, and wherein the auxiliary wiring harness includes harness connecting structure for mating with the first and second mating connecting portions, when the first and second mating connecting portions are separated, to connect the internal and auxiliary alternators in parallel; and

wherein the auxiliary wiring harness includes positive and negative leads connecting the outputs of the alternators to the battery, and wherein the harness connecting structure includes means for for limiting current flow through the power lead to the battery when the connecting structure is mated with the first and second mating connecting portions so that the cumulative output of the alternators is not carried by any one of the connecting portions.

5,600,233

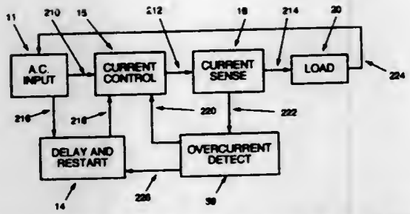
ELECTRONIC POWER CONTROL CIRCUIT

Rufus W. Warren, Oak Lawn, and John E. Gorman, Cicero, both of Ill., assignors to Chicago Stage Equipment Co., Oak Lawn, Ill.

Filed Aug. 22, 1995, Ser. No. 518,107
Int. Cl.[6] G05F *1/10;* **H02J** *3/12*
U.S. Cl. 323—237 **20 Claims**

1. An electronic power control circuit for controlling electrical power delivered from an alternating current source to a load, said electronic power control circuit comprising: power controlling means operatively coupled to control electrical power delivered to a load, said power controlling means being operative in an on condition, for delivering electrical power to a load and operative in an off condition for withholding electrical power from a load;

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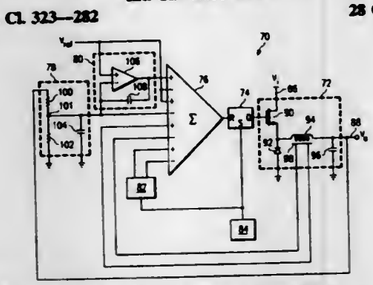
overcurrent detector circuit means for producing an overcurrent signal in response to an overcurrent condition at a load; and restart circuit means coupled to said power controlling means and to said overcurrent detector circuit means, and responsive to said overcurrent signal for causing said power controlling means to operate in said off condition, said restart circuit means being further operative for causing said power controlling means to return to said on condition before the end of the same alternating current half-cycle in which said overcurrent signal is produced.

5,600,234

SWITCH MODE POWER CONVERTER AND METHOD

Roy A. Hastings, Allen; Marco Corsi, Dallas, and William C. Johnston, Garland, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 1, 1995, Ser. No. 396,856
Int. Cl.[6] G05F 1/56
U.S. Cl. 323—282 **28 Claims**



20. A voltage regulated power supply, comprising:

a buck-derived switching cell having a switch with a control port and an input port, an inductor coupled to said switch and providing an output port of said switching cell, and a capacitor coupled between said output port and a ground potential to maintain a predetermined output voltage at said output port;

a summing comparator having first, second and third differential input pairs and an output terminal, said output terminal coupled to provide a control signal to said control port of said switching cell;

a reference voltage port for providing a reference voltage to a terminal of each of said first and second differential input pairs;

a first feedback circuit having a dc voltage gain, and coupled between said output port and a terminal of said second differential input pair for providing a first control loop with said summing comparator and said switching cell to control the transient response of the power supply;

a second feedback circuit having a large dc voltage gain compared to the dc voltage gain of the first feedback circuit, said second feedback circuit coupled between said reference voltage port, said first feedback circuit and said first differential input pair for providing a second control loop with said summing comparator and said switching cell to control the operating point of the output port; and

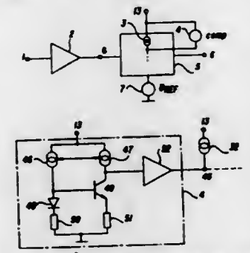
a driving circuit coupled to said third differential input pair of said summing comparator for establishing a base-line period for said control signal.

5,600,235

BIPOLAR CASCADABLE CIRCUIT CONFIGURATION FOR SIGNAL LIMITATION AND FIELD INTENSITY DETECTION

Volker Thomas, München, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 8, 1995, Ser. No. 512,467
Claims priority, application Germany, Aug. 8, 1994, 44 27 974.4
Int. Cl.[6] G05F 3/16
U.S. Cl. 323—315 **5 Claims**



1. A bipolar cascadable circuit configuration, comprising:

a limiter stage generating an output signal;

a detection stage receiving the output signal from said limiter stage and supplying an output signal;

a power supply receiving a supply voltage and feeding an output current to said detection stage;

said power supply and the output signal of said detection stage being dependent on the supply voltage; and

a configuration for compensating for fluctuations in said power supply and forming a difference between a first, early-dependent current and a second, less early-dependent current, multiplying the difference by a factor and adding the multiplied difference to the output current of said power supply.

5,600,236

CONVERTER AND DIGITAL CHANNEL SELECTOR

Mark W. Haley, and Eric A. Sparks, both of San Antonio, Tex., assignors to VLAI Technology, Inc., San Jose, Calif.

Filed Nov. 1, 1994, Ser. No. 333,009
Int. Cl.[6] G01R 1/04
U.S. Cl. 324—158.1 **6 Claims**

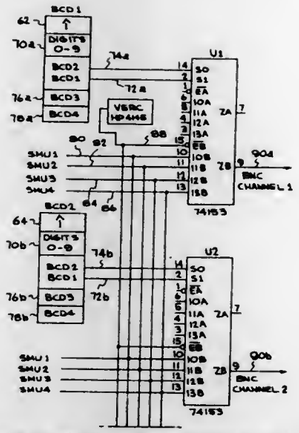
1. A manually-controlled converter and digital channel selector device for use with a source measurement unit and a probe station having a plurality of separate probes, said channel selector device comprising in combination:

said source measurement unit having a plurality of output terminal connectors connected to receive corresponding ones of a plurality of signals;

said probe station having a plurality of separate probes, each of which can be secured to different test points on a wafer of a semiconductor integrated circuit device;

said channel selector device including a plurality of input channel connectors being connected to corresponding ones of said plurality of output terminal connectors of said source measurement unit and a plurality of output channel connectors being connected to corresponding ones of said plurality of separate probes;

said channel selector device further including manually-controlled converter means for generating a plurality of digital control signals and digital channel selector logic circuit means



responsive to said digital control signals for selectively connecting respective ones of said plurality of input channel connectors to any one of said plurality of output channel connectors,

whereby said digital channel selector logic circuit means selectively applies each one of the plurality of signals from the source measurement unit to any one of the corresponding plurality of discrete separate probes;

wherein said manually controlled converter means is comprised of a plurality of code switch means for manually encoding selected digits into BCD code signals defining said plurality of digital control signals;

wherein said code switch means is comprised of a plurality of thumbwheel switches in which the selected digits can be manually controlled by a user;

wherein said digital channel selector logic circuit means is comprised of a plurality of multiplexer circuits, wherein each of said multiplexer circuits has a plurality of input terminals, wherein each of the plurality of output terminal connectors of said source measurement unit are connected to an input terminal of each of said multiplexer circuits, where in an output terminal of each of said multiplex circuits is connected to a respective one of the plurality of discrete probes; and

wherein each respective one of said multiplexer circuits is manually controlled by a respective one of said manually-controlled thumbwheel switches to selectively connect an input terminal of said multiplexer circuits to its output terminal.

5,600,237

METHOD AND APPARATUS FOR DETERMINING THE POSITION OF AN ARMATURE IN AN ELECTROMAGNETIC ACTUATOR BY MEASURING THE DRIVING VOLTAGE FREQUENCY

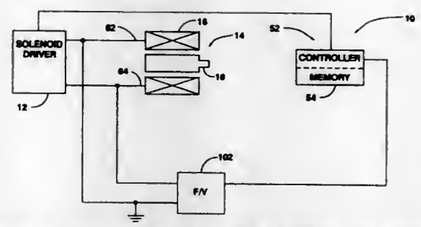
Andrew H. Nippert, Washington, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Division of Ser. No. 800,815, Nov. 29, 1991, Pat. No. 5,481,187. This application Jun. 7, 1995, Ser. No. 474,423
Int. Cl.[6] G01B 7/14; G01N 27/72; G01R 33/12
U.S. Cl. 324—207.16 **6 Claims**

1. An apparatus for determining the position of an armature of an electromagnetic actuator having a coil, the armature being movable to and between first and second positions in response to current flowing through the coil, comprising:

means for applying a voltage to said coil to cause current to flow through said coil at a desired current magnitude;

means for measuring the frequency of said applied voltage; and



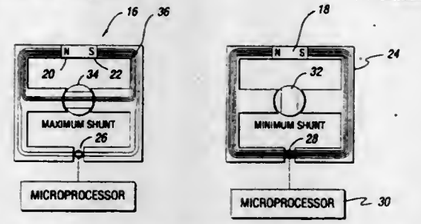
means for determining the position of the armature with respect to the coil in response to the applied voltage frequency and desired current magnitude.

5,600,238

METHOD AND APPARATUS FOR DETECTING THE LINEAR OR ROTARY POSITION OF AN OBJECT THROUGH THE USE OF A VARIABLE MAGNETIC SHUNT DISPOSED IN PARALLEL WITH A YOKE AIR GAP

Henry Holloway, Dearborn, and David J. Kubinski, Canton, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 5, 1994, Ser. No. 270,562
Int. Cl.[6] G01B 7/14;7/30
U.S. Cl. 324—207.21 **12 Claims**



5. A method for detecting the linear and rotary position of an object, comprising:

providing a permanent magnet operative to generate a magnetic field;

providing a yoke having a first gap in electromagnetic communication with said permanent magnet for guiding at least a portion of said magnetic field therethrough, said yoke including a high-permeability magnetic material and having an air gap of predetermined lateral dimension;

perturbing said magnetic field generated in said yoke air gap through the use of a variable magnetic shunt which is disposed in the first gap which is parallel to the air gap and is affixed to the object whose position is sought to be detected, said shunt comprised of a high-permeability magnetic material;

determining the intensity of said magnetic field in said yoke air gap through the use of a magneto-resistive sensor disposed in said yoke air gap; and

generating an electrical signal corresponding to said determined magnetic field intensity and the angular/linear position of said variable magnetic shunt.

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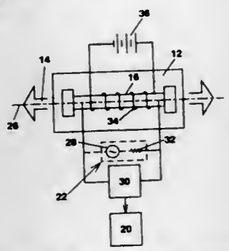
STRAIN SENSING SYSTEM INCLUDING A MAGNETOSTRICTIVE MATERIAL HAVING A PIEZOMAGNETIC PROPERTY SELECTED FOR MAXIMIZING ELECTRICAL IMPEDANCE TO CURRENT APPLIED TO A PREDETERMINED SKIN DEPTH

Kristl B. Hathaway, Deale; James B. Restorff, College Park; Marilyn Wun-Fogle, Gaithersburg, and Arthur E. Clark, Adelphia, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 16, 1995, Ser. No. 611,469

Int. Cl.[6] G01R *33/18;* **G01L** *3/02*

U.S. Cl. 324—209 **8 Claims**



1. A method of enhancing determination of strain of a magnetostrictive element produced by stress exerted thereon during supply of current thereto, including the steps of: applying said current to the magnetostrictive element for penetration thereof to predetermined skin depth ratio; selecting a piezomagnetic material for the magnetostrictive element having a large magnetomechanical coupling factor maximizing change in impedance in response to said strain of the magnetostrictive material during said penetration by the current to said predetermined skin depth ratio; and measuring said maximized change in impedance.

5,600,240

STRUCTURE FOR A CYLINDRICAL EDDY-CURRENT PROBE HAVING A HOLLOW BODY CONTAINING AN ELASTIC SUBSTRATE WITH AXIALLY ALIGNED SENSOR COILS

Ulitin Y. Mikhailovich, and Gorskaya L. Evgenevna, both of Moscow, Russian Federation, assignors to Intron Plus, Ltd., Moscow, Russian Federation

PCT No. PCT/RU94/00095, § 371 Date Dec. 28, 1994, § 102(e) Date Dec. 28, 1994, PCT Pub. No. WO94/25866, PCT Pub. Date Nov. 10, 1994

PCT Filed Apr. 28, 1994, Ser. No. 356,317

Claims priority, application Russian Federation, Apr. 29, 1993, 93025817

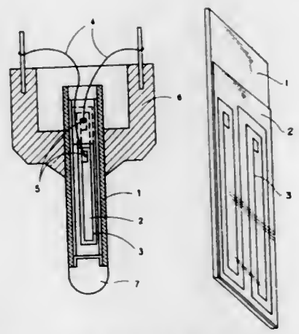
Int. Cl.[6] G01N *27/90*

U.S. Cl. 324—219 **7 Claims**

1. An eddy-current probe for non-destructive testing within holes in work pieces or within pipes, comprising:

a hollow cylindrical metallic body having an inner surface with an inner diameter d, an outer surface with an outer diameter D and a central axis;

an elastic dielectric substrate, within said hollow cylindrical metallic body, having an inner surface and an outer surface; said substrate outer surface juxtaposed with said metallic body inner surface;



a first conductor coil, fabricated onto said substrate inner surface, having a conductor arranged parallel to the body central axis; and

the ratio D/d is in the range of 1.4 to 1.6.

5,600,241

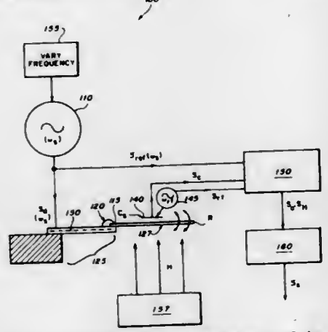
VIBRATING-REED SUSCEPTOMETER FOR MEASURING ANISOTROPIC ASPECTS OF SUSCEPTIBILITY

Ronald L. Jacobsen, Jr., London, Ohio, and Alexander C. Ehrlich, Alexandria, Va., assignors to The United States of America as Represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 7, 1995, Ser. No. 499,527

Int. Cl.[6] G01N *27/72;* **G01R** *33/02*

U.S. Cl. 324—228 **10 Claims**



1. A method for determining the anisotropy of the magnetic susceptibility of a sample comprising the steps:

(a) determining the resonant frequency of the sample in substantially zero magnetic field, the resonant frequency being for flexure vibration in a selected plane of vibration;

(b) applying a uniform dc magnetic field to the sample, the magnetic field having a component in the selected plane of vibration;

(c) determining the resonant frequency of the sample in the presence of the magnetic field applied in step (b), the resonant frequency being for flexure vibration in the selected plane; and

(d) determining the anisotropy of the magnetic susceptibility of the sample, said determining step being dependent on the amplitude of the magnetic field component applied in step (b) and on the resonant frequencies determined in steps (a) and (c).

5,600,242

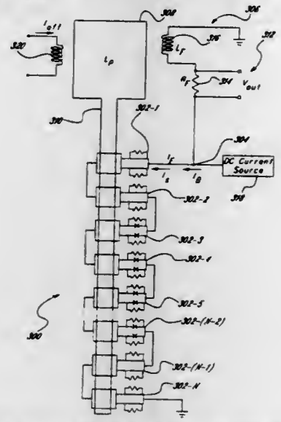
ELECTRICALLY SMALL BROADBAND HIGH LINEAR DYNAMIC RANGE DECEIVER INCLUDING A PLURALITY OF ACTIVE ANTENNA ELEMENTS

Stephen P. Hubbell, Gig Harbor, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 26, 1994, Ser. No. 313,506

Int. Cl.[6] G01R *33/02;33/035*

U.S. Cl. 324—248 **31 Claims**



1. An active antenna apparatus for detecting the magnetic field component of applied electromagnetic radiation comprising:

magnetic field transducing means comprising a plurality of active elements, each active element producing an electrical signal indicative of the magnitude of the magnetic component of the applied electromagnetic field, the active elements being serially coupled together to form an array, the array being constructed to combine the electrical signal from each active element to produce a combined output signal;

bias means, coupled to said array, for providing a constant bias current to each active element of the magnetic field transducing means; and

dummy element means, coupled to the array, for ensuring that the applied electromagnetic radiation is substantially the same for each active element of the array so that the combined output signal is indicative of the applied electromagnetic radiation, the dummy element means being responsive to the bias current to create a compensating magnetic field but not being responsive to the applied electromagnetic radiation.

12. An active antenna apparatus for detecting the magnetic field component of applied electromagnetic radiation wherein the magnetic field component provides an applied magnetic flux, comprising:

a plurality of magnetic field transducing means for producing an electrical signal indicative of and proportional to the magnetic component of the electromagnetic radiation;

magnetic flux pickup means for collecting the applied magnetic flux and for distributing the collected magnetic flux to said plurality of magnetic field transducing means; and

analog feedback means responsive to said plurality of magnetic field transducing means for providing analog feedback to said magnetic flux pickup means for maintaining the total magnetic flux provided to said plurality of magnetic field transducing means substantially constant.

5,600,243

MAGNETICALLY SHIELDED MAGNETIC SENSOR WITH SQUID AND GROUND PLANE

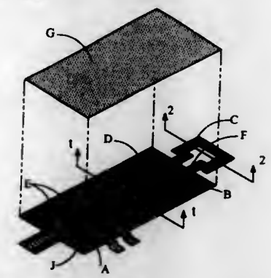
Mark S. Colclough, West Midlands, England, assignor to Conductus, Inc., Sunnyvale, Calif.

PCT No. PCT/US93/08496, § 371 Date Mar. 17, 1995, § 102(e) Date Mar. 17, 1995, PCT Pub. No. WO95/07470, PCT Pub. Date Mar. 16, 1995

PCT Filed Sep. 7, 1993, Ser. No. 403,728

Int. Cl.[6] G01R *33/035*

U.S. Cl. 324—248 **9 Claims**



1. A magnetic sensor comprising:

a superconducting ground plane;

a SQUID comprising a pickup loop, a SQUID loop and at least one weak-link junction, said SQUID loop and said pickup loop lying in a single plane, said SQUID loop being displaced from said superconducting ground plane in a direction normal to the plane and substantially overlying said superconducting ground plane and said pick-up loop lying exterior to the area overlying said superconducting groundplane; and

a feedback loop, said feedback loop being displaced from said superconducting ground plane and from said SQUID in a direction normal to the plane, said feedback loop substantially overlying said SQUID loop, and said feedback loop having a bifilar geometry and a mutual inductance with said SQUID loop wherein said feedback loop conducts a current in a direction around the feedback loop, said current producing a magnetic field at each point along said feedback loop, and the sum of said magnetic fields being approximately equal at a distance from said feedback loop.

5,600,244

METHOD FOR REDUCING INHOMOGENEITY OF SURFACE COILS THROUGH ADDITIONAL DATA FROM HOMOGENEOUS BODY COIL VIA TEMPORALLY SEPARATE ALTIVATION OF THE SURFACE AND BODY COILS

Jens D. Jensen, Hamburg, and Ingwer C. Carlsen, Kiel, both of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

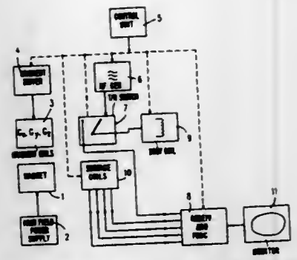
Filed Aug. 2, 1995, Ser. No. 510,156

Claims priority, application Germany, Aug. 3, 1994, 44 27 429.7

Int. Cl.[6] G01R *33/20*

U.S. Cl. 324—309 **7 Claims**

1. An MR method for determining the nuclear magnetization distribution in an examination zone, comprising; acquiring image data during an MR examination by means of a surface coil arrangement including one or more individual coils having a locally inhomogeneous sensitivity; carrying out two respective MR auxiliary measurements, one by means of the surface coil arrangement and the other by means of a body coil arrangement having a locally at least approximately homogeneous sensitivity, the two MR auxiliary measurements being carried out temporally separate from one another and from the MR examination, and during the two MR auxiliary measurements the magnetic fields acting on the examination zone exhibiting the same temporal variation; deriving



auxiliary values from data acquired during the two MR auxiliary measurements; and correcting the image data acquired during the MR examination by means of the surface coil arrangement on the basis of the auxiliary values.

5,600,245

INSPECTION APPARATUS USING MAGNETIC RESONANCE

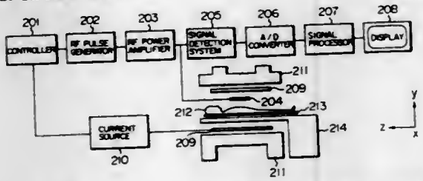
Etsuji Yamamoto, Akishima; Hisaaki Ochi, Kodaira; Hiroyuki Itagaki, Kokubunji; Yukari Onodera, Asaka, and Hiroyuki Takeuchi, Kashiwa, all of Japan, assignors to Hitachi, Ltd., and Hitachi Medical Corporation, both of Tokyo, Japan

Filed Oct. 7, 1994, Ser. No. 319,724

Claims priority, application Japan, Oct. 8, 1993, 5-252820; Dec. 27, 1993, 5-330515

Int. Cl.[6] G01V *3/00*

U.S. Cl. 324—318 **33 Claims**



1. An inspection apparatus using magnetic resonance, comprising:

magnetic field generation means for generating a static magnetic field, a gradient magnetic field and a radio frequency (RF) magnetic field, respectively;

signal detection means for detecting magnetic resonance signals from an inspected object;

a computer for executing arithmetic operations for detection signals from said signal detection means; and

output means for outputting the result of the operations by said computer;

wherein said gradient magnetic field generation means comprises a first set of gradient coils and a second set of gradient coils;

said first set of gradient coils is fixed to a magnet directly or indirectly for generating said static magnetic field;

said second set of gradient coils is movable; and

the magnetic field generated by said second set of gradient coils at a conducting portion of said magnet is offset by the magnetic field generated by said first set of gradient coils.

5,600,246

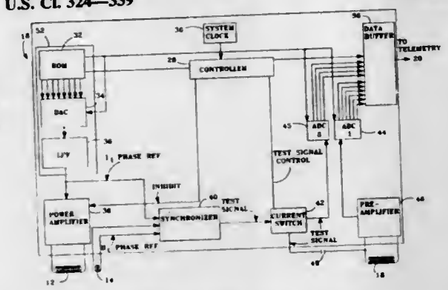
METHOD AND APPARATUS FOR REDUCING SIGNAL-PHASE ERROR IN INDUCTION WELL LOGGING INSTRUMENTS

Stanislav Forgang, Houston, and Otto N. Fanini, Stafford, both of Tex., assignors to Western Atlas International, Inc., Houston, Tex.

Filed Nov. 28, 1995, Ser. No. 563,541

Int. Cl.[6] G01V *3/28;3/18;* **G01R** *33/12;* **G01N** *27/72*

U.S. Cl. 324—339 **11 Claims**



1. An apparatus for determining a phase response of a receiver in an electromagnetic induction well logging instrument, comprising:

a source of alternating current selectively coupled to a transmitter;

a low-gain antenna proximal to said transmitter, said low-gain antenna generating a voltage in response to a magnetic field induced by passing said alternating current through said transmitter;

a receiver spaced apart from said transmitter, said receiver generating a voltage in response to eddy currents induced by said magnetic field in an earth formation surrounding said instrument;

a phase comparator coupled at one input to said low-gain antenna, said phase comparator coupled at another input to said source of alternating current, said phase comparator for generating a signal corresponding to a difference in phase between said voltage generated in said low-gain antenna and said source of alternating current;

a sample and hold circuit coupled to an output of said phase comparator, said sample and hold circuit for retaining a most recent one of said signals output from said phase comparator;

a time-delay circuit coupled to said source of alternating current and to said sample and hold circuit, said time-delay circuit for providing an output comprising said alternating current time-delayed correspondingly to said difference in phase measured by said phase comparator;

a current switch interconnected between said output of said time-delay circuit and said receiver, said current switch selectively operable to inject said time-delayed alternating current into said receiver;

a controller for selectively disconnecting said source from said transmitter, said controller for selectively operating said current switch to inject said time-delayed alternating current when said transmitter is disconnected; and

means for determining a difference in phase between said output of said time-delay circuit and an output of said receiver when said controller operates said current switch to inject said time-delayed alternating current into said receiver.

5,600,247

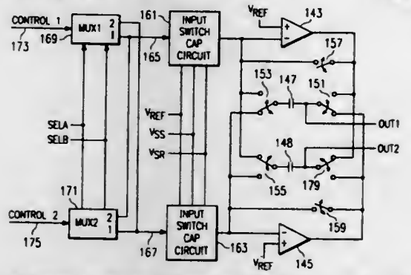
DYNAMICALLY BALANCED FULLY DIFFERENTIAL CIRCUIT FOR USE WITH A BATTERY MONITORING CIRCUIT

Wallace E. Matthews, Richardson, Tex., assignor to Benchmarq Microelectronics, Dallas, Tex.

Continuation-in-part of Ser. No. 910,675, Jul. 8, 1992, abandoned. This application Aug. 17, 1994, Ser. No. 291,688

Int. Cl.[6] G01N *27/416*

U.S. Cl. 324—426 **2 Claims**



1. A battery monitoring circuit for monitoring current with a current monitor through a sense resistor disposed in series with one terminal of the battery by detecting the voltage across the sense resistor in order to determine the current through the battery terminal, the current monitor comprising:

a voltage-to-frequency converter for converting the voltage across the sense resistor to a primary pulse stream, the rate of said primary pulse stream corresponding to the voltage across the sense resistor;

a circuit for determining the current through the battery terminal, the current being a function of the rate of said primary pulse stream; and

said voltage-to-frequency converter having a differential structure associated therewith, said differential structure comprising:

a first differential leg having first passive switching elements and first active elements associated therewith for receiving as an input voltage the voltage that is across the sense resistor and processing the input voltage therethrough with said first passive switching elements and said first active elements in a first predetermined manner and outputting a first differential signal,

a second differential leg substantially identical to said first differential leg and having second passive switching elements and second active elements associated therewith for receiving as an input voltage the voltage across the sense resistor and processing the input voltage therethrough with said second passive switching elements and said second active elements in a second predetermined manner and outputting a second differential signal, said second differential signal being substantially similar to said first differential signal and of an opposite polarity with differences between said first and second differential signals resulting from differences between said first and second passive switching elements and said first and second active elements in said first and second differential legs, respectively, wherein positive transitions in said first differential signal will correspond to negative transitions in said second differential signal, such that said first and second differential signals comprise a differential output,

a multiplex circuit for periodically switching select portions of said first and second passive switching elements and said first and second active elements between said first and second differential legs to compensate for said differences between said first and second passive switching elements and said first and second active elements in said first and second differential legs, and

a pulse generation system for generating a first differential pulse stream having a pulse rate that is a function of said first differential signal and a second differential pulse stream having a pulse rate that is a function of said second differential signal and a summing circuit for summing said first and second differential pulse streams to provide said primary pulse stream.

5,600,248

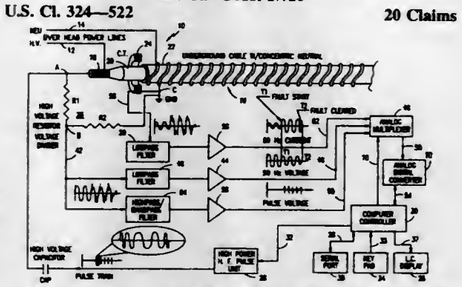
FAULT DISTANCE LOCATOR FOR UNDERGROUND CABLE CIRCUITS

Arthur C. Westrom, Stone Mountain, and James W. Larsen, Suwanee, both of Ga., assignors to Dipl.-Ing H. Horstmann GmbH, Germany

Filed Jun. 21, 1995, Ser. No. 493,340

Int. Cl.[6] G01R *27/26*

U.S. Cl. 324—522 **20 Claims**



1. A distance fault locator for an underground cable for calculating accurately the location of a cable fault, said fault distance locator comprising:

means for monitoring the cable current to produce a fault-current occurrence signal upon the occurrence of a cable arcing fault;

means for monitoring the cable voltage to produce a fault-voltage occurrence signal upon the occurrence of the cable arcing fault;

means for injecting periodically a pulse stream into the cable prior to an initial occurrence of the cable arcing fault in order to obtain a reference pulse signal;

controller means responsive to said fault-current signal and said fault-voltage signal for triggering said injection means to send a series of pulse streams into the faulted cable at a high sampling rate for a predetermined time interval occurring subsequent to the initial occurrence of the cable arcing fault at a first time and prior to a cable interruption at a second time in order to obtain reflected pulse signals during the cable arcing fault; and

said controller means including correlation means for correlating said reflected pulse signals to said reference pulse signal to determine delay times between the pulse signals sent on the faulted cable during the predetermined time interval of the cable arcing fault and the reflected pulse signals therefrom so as to calculate the distance to the location of the cable fault.

5,600,249

DETERMINING CONTACT QUALITY OF AN IMPEDANCE METER

Kazuyuki Yagi; Yasuaki Komatsu, and Masahiro Ikeda, all of Kobe, Japan, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 14, 1995, Ser. No. 490,355

Claims priority, application Japan, Jun. 29, 1994, 6-170061

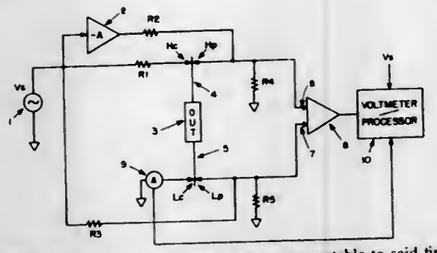
Int. Cl.[6] G01R *31/02*

U.S. Cl. 324—537 **8 Claims**

1. An impedance meter comprising:

first and second measurement contacts connectable to first and second terminals of a device under test (DUT);

signal generator means for applying a first test signal to said first and second measurement contacts;



third and fourth measurement contacts connectable to said first and second terminals of said DUT;

amplifier means for amplifying the voltage between said third and fourth measurement contacts;

circuit means for applying a second test signal, opposed in phase to said first test signal, to an input of said amplifier, said first test signal being substantially attenuated if a high resistance junction exists between said third measurement contact and said first terminal of said DUT, and enabling said amplifier means to manifest an output signal indicative of the phase of said second test signal; and

meter means for comparing a phase of said first test signal and said output signal from said amplifier means to determine a quality of contact between said DUT and at least one said measurement contact.

5,600,250

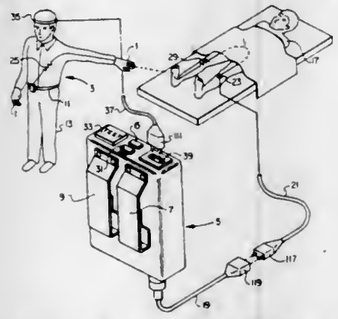
APPARATUS FOR MONITORING THE INTEGRITY OF A PERSONAL PROTECTIVE BARRIER

Robert L. Thompson, 9506 Heathdale Dr., Dallas, Tex. 75243

Continuation of Ser. No. 101,484, Aug. 2, 1993, Pat. No. 5,448,177. This application Sep. 5, 1995, Ser. No. 523,270

Int. Cl.[6] G01R *31/12*

U.S. Cl. 324—557 **8 Claims**



1. An apparatus for monitoring the integrity of a personal protective barrier worn by a worker comprising:

a detection circuit electrically connected to first and second contacts and operable to sense the electrical resistance between said first and second contacts;

said first contact being electrically connected to said worker and said second contact being electrically connected to an external object, said worker, said protective barrier, and said external object being included in an electrical circuit between said first and second contacts;

said detection circuit being electrically connected to an alarm and operable to activate said alarm when the electrical resistance between said first and second contacts is at or below a predetermined level and to vary the output of said alarm in response to the decrease of said electrical resistance below said predetermined level;

whereby the variation of said alarm allows said worker to distinguish between imminent failure of said personal protective barrier and failure of said barrier.

5,600,251

SURFACE ELECTRIC POTENTIAL SENSOR DRIVE AND INDUCTION NOISE CANCELLATION CIRCUIT

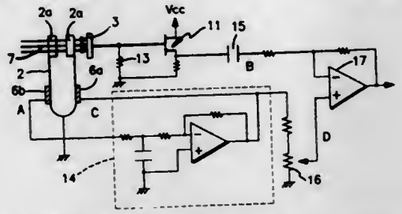
Osamu Akiyama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 6, 1995, Ser. No. 398,997

Claims priority, application Japan, Mar. 7, 1994, 6-036167

Int. Cl.[6] G01R *29/12;5/28*

U.S. Cl. 324—613 **16 Claims**



1. A surface potential sensor, comprising:

a chopper portion for cutting electric lines of force radiated from a component to be measured, said chopper portion cutting the electric lines of force at a know frequency;

a detection electrode for detecting said cut electric lines of force and for outputting an A.C. voltage signal;

a pre-amplifier circuit connected to said detection electrode for amplifying the A.C. voltage signal and outputting an amplified A.C. voltage signal;

a drive circuit for applying a drive signal to a drive electrode of said chopper portion to oscillate said chopper portion; and

induction noise removing means for removing induction noise imparted by the drive signal from the amplified A.C. signal, said induction noise removing means comprising a differential amplifier circuit for amplifying a difference between the amplified A.C. voltage signal and the drive signal, and outputting an amplified difference signal.

5,600,252

DEVICE FOR INJECTING CURRENT AT RADIO FREQUENCY INTO ELECTRIC WIRING

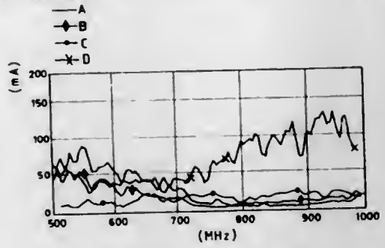
Giuseppe Rossi, Torino, Italy, assignor to Centro Ricerche Fiat Societa Consortile per Azioni, Strada Torino, Italy

Filed Dec. 12, 1994, Ser. No. 353,711

Claims priority, application Italy, Dec. 23, 1993, TO93A0994

Int. Cl.[6] G01R *27/28*

U.S. Cl. 324—635 **8 Claims**



1. A device for injecting current at radio frequency into electric wiring, characterised in that it comprises a guiding structure (**10**) of an electrically conductive material consisting of a tapered shell (**12**) wherein a central vertical wall (**20**) is suspended determining

two half-spaces (S, D) within the shell (**12**); at the tapered end, the shell (**12**) and the central vertical wall (**20**) being respectively connected to the braiding and the central wire of a coaxial cable (**17**) supplying radio frequency electric current; at the end opposite to said tapered end, a wiring (**19**) being disposed through the structure (**10**) perpendicular to said vertical central wall (**20**) and resting on a base (**11**) of dissipating material; in one (D) of the two half-spaces, said wiring (**19**) being protected by a shield (**23**) integral with the shell (**12**).

5,600,253

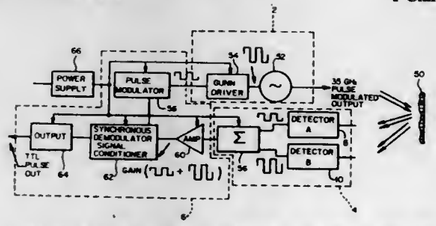
ELECTROMAGNETIC WAVE REFLECTIVE TYPE, LOW COST, ACTIVE PROXIMITY SENSOR FOR HARSH ENVIRONMENTS

Leonard D. Cohen, Brooklyn; Scott M. Weiner, Great Neck; Henry C. Paczkowski, Woodside, all of N.Y., and Joseph C. Zuercher, Brookfield, Wis., assignors to Eaton Corporation at Eaton Center, Cleveland, Ohio, and AIL Systems, Inc., Deer Park, N.Y.

Filed May 8, 1995, Ser. No. 436,705

Int. Cl.[6] G01R *27/00*

U.S. Cl. 324—644 **1 Claim**



1. An electromagnetic wave, reflective type, active proximity sensor, which comprises:

a transmitter for transmitting radiated energy to a target, the transmitter including a Gunn oscillator circuit, the Gunn oscillator circuit including a Gunn oscillator and a Gunn driver coupled to the Gunn oscillator, the Gunn oscillator, driven by the Gunn driver, generating a pulse modulated signal which is radiated by the transmitter to the target;

a receiver, the receiver including first and second waveguides and first and second detectors respectively coupled to the first and second waveguides, the first and second waveguides receiving radiated energy reflected from the target and providing the radiated energy to the first and second detectors, respectively, each of the first and second detectors generating an output signal which corresponds to the radiated energy received by the first and second waveguides, the receiver further including a summer, the summer being coupled to the first and second detectors and being responsive to the output signals of the first and second detectors, the summer generating an output signal corresponding to the sum of the output signals of the first and second detectors; and

an analog processor/driver circuit, the analog processor/driver circuit being responsive to the output signal of the summer, the processor/driver circuit including a pulse modulator generating a pulsed signal and providing the pulsed signal to the Gunn driver, an amplifier receiving the output signal of the summer and generating an amplified signal in response thereto, a synchronized demodulator signal conditioner being responsive to the amplified signal and generating an output signal in response thereto, and an output stage responsive to the output signal from the synchronized modulator signal conditioner and generating an output signal in response thereto.

5,600,254

PROCESS AND CIRCUIT ARRANGEMENT FOR MEASURING THE RESISTANCE OF A RESISTANCE SENSOR

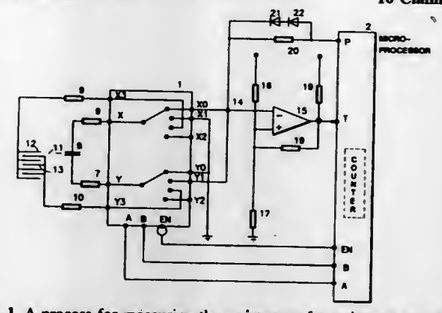
Reinhold Berberich, Frankfurt, Germany, assignor to VDO Adolf Schindling AG, Frankfurt, Germany

Filed Feb. 24, 1995, Ser. No. 394,373

Claims priority, application Germany, Jun. 24, 1994, 44 21 906.7

Int. Cl.[6] G01R *27/14*

U.S. Cl. 324—711 **10 Claims**



1. A process for measuring the resistance of a resistance sensor in a succession of measurement cycles via a rate of change of the charge of a capacitor to be employed with a measurement circuit for energizing the resistance sensor; the process comprising the steps of:

charging the capacitor during a first time interval in a first measurement cycle;

discharging the capacitor partially through the resistance sensor during a second predetermined interval of time to obtain a remaining charge in the capacitor;

disconnecting the capacitor from the resistance sensor;

discharging the capacitor partially through a known resister during a third interval of time to obtain a predetermined value of capacitor voltage;

measuring the length of the third time interval, the length of the third time interval being a measure of the resistance of the resistance sensor; and

varying the direction of a discharge current of the capacitor through the resistance of the sensor from measurement cycle to measurement cycle.

5,600,255

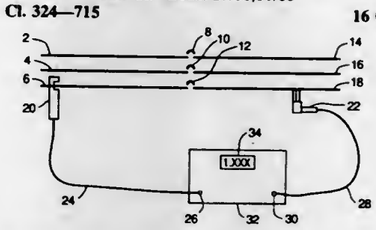
LIVE CIRCUIT RESISTANCE MEASUREMENT SYSTEM AND METHOD

John H. Moore, Alameda, and Christopher J. Revak, Pleasanton, both of Calif., assignors to Electro-Test, Inc., Danville, Calif.

Filed Nov. 20, 1995, Ser. No. 560,846

Int. Cl.[6] G01R *27/08;31/00*

U.S. Cl. 324—715 **16 Claims**



1. A method for measuring resistance of a portion of a circuit energized with alternating current, said method comprising the steps of:

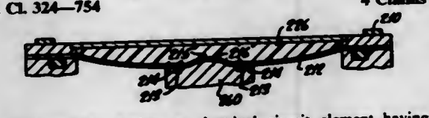
connecting two current contacts to the portion of the circuit under test;
connecting two potential contacts to the portion;
sensing an alternating current voltage level present between the current contacts;
comparing the voltage level to a preset voltage threshold;
electrically isolating the potential contacts and the current contacts from the portion if the voltage level exceeds the threshold;
imposing a direct current of constant magnitude between the current contacts and into the portion;
using an instrumentation amplifier to sense a direct current potential difference between the potential contacts and generate an output signal indicative of the difference.

5,600,256

CAST ELASTOMER/MEMBRANE TEST PROBE ASSEMBLY

Blake F. Woith, Orange; John Pasiecznik, Jr., Malibu; William R. Crumly, Anaheim, and Robert K. Betz, Long Beach, all of Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Division of Ser. No. 88,962, Jul. 1, 1993, Pat. No. 5,412,866. This application Feb. 13, 1995, Ser. No. 387,674
Int. Cl.[6] G01R *31/02*
U.S. Cl. 324—754 **4 Claims**



1. A device for testing an electrical circuit element having contacts thereon in a predetermined pattern comprising:
a membrane support defining a membrane opening,
a flexible membrane mounted to said membrane support and spanning said opening, said membrane having a plurality of contacts on one side thereof, said contacts being in a pattern corresponding in position to said predetermined pattern,
circuit means on said membrane extending away from said contacts for connection to a test circuit,
said membrane having a predetermined non-planar configuration, and
a resilient form retaining body cast directly on the membrane and extending over and secured to the entire surface of the other side of said membrane and in contact therewith for holding said membrane in said predetermined non-planar configuration, said membrane configuration including an anti-drape recess between at least some of said membrane contacts, said anti-drape recess extending inwardly of the membrane away from said one side.

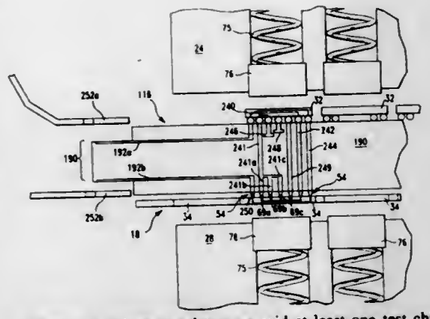
5,600,257

SEMICONDUCTOR WAFER TEST AND BURN-IN

James M. Leas, South Burlington; Robert W. Koss, Burlington, both of Vt.; George F. Walker, New York; Charles H. Perry, Poughkeepsie, both of N.Y., and Jody J. Van Horn, Underhill, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 9, 1995, Ser. No. 513,057
Int. Cl.[6] G01R *1/02*
U.S. Cl. 324—754 **4 Claims**

1. An apparatus for simultaneously contacting a plurality of integrated circuit product chips having signal I/O, ground, and power pads, the product chips on a product wafer having a front surface and a back surface, the apparatus connectable to a power supply, the apparatus comprising:
a test head connectable to a plurality of the product chips on the product wafer, said test head comprising at least one test chip electrically connectable to the product chips, said at least one test chip having a front and a back surface; and



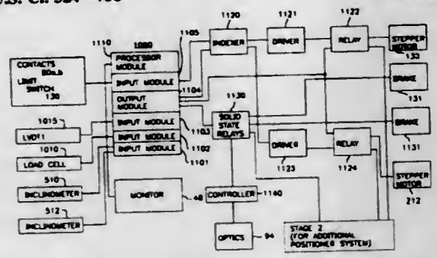
a plurality of voltage regulators on said at least one test chip, said regulators connectable between the power supply and the power pads on the product chips, wherein said voltage regulators are variable.

5,600,258

METHOD AND APPARATUS FOR AUTOMATED DOCKING OF A TEST HEAD TO A DEVICE HANDLER

Daniel J. Graham, West Berlin; Alyn R. Holt; Robert E. Matthiessen, both of Cherry Hill, all of N.J.; L. Marvin Wellerstein, Jenkintown, Pa., and Christopher L. West, Vincentown, N.J., assignors to inTEST Corporation, Cherry Hill, N.J.

Continuation-in-part of Ser. No. 122,855, Sep. 15, 1993, Pat. No. 5,440,943. This application Dec. 12, 1994, Ser. No. 355,501
Int. Cl.[6] G01R *31/02*
U.S. Cl. 324—758 **15 Claims**



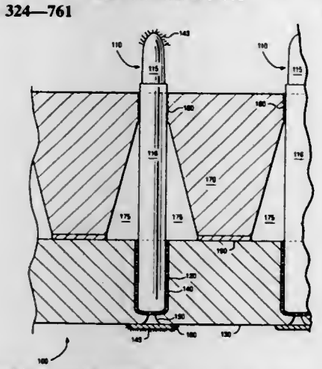
1. A positioner for docking an electronic test head with a device handler, comprising:
head rotation means for rotating said electronic test head about a first axis;
motion means for moving said electronic test head along a second axis orthogonal to said first axis;
sensor means for determining respective distances between a plurality of locations on a surface of said electronic test head and a respective plurality of locations on a surface of said device handler; and
means for
a) selectively signalling said head rotation memos to rotate said electronic test head about said first axis; and
b) selectively signalling said motion means to move said electronic test head along said second axis;
responsive to said respective distances determined by said sensor means in order to dock said electronic test head with said device handler.

5,600,259

METHOD AND APPARATUS FOR REDUCING INTERFERENCE IN A PIN ARRAY

Bernd Bartyzel; Steven A. Duncan; Daniel A. Fields, and Keith A. Vanderlee, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 506,617, Jul. 21, 1995, abandoned, which is a continuation of Ser. No. 168,614, Dec. 17, 1993, abandoned. This application Feb. 9, 1996, Ser. No. 599,033
Int. Cl.[6] G01R *31/02*
U.S. Cl. 324—761 **12 Claims**



1. A multi-pin probe comprising:
a printed circuit board with a plurality of electrically conductive vias for making connection to a test system;
a plurality of elongated probes, a first end of each probe partially inserted into one of said electrically conductive vias; a second end of each probe extending to make connection to a conductive area of an object under test; and
a housing having a plurality of cavities inserted over said second end of said plurality of probes such that said second end of each probe extends completely through the housing whereby said connection to a conductive area may be made, each cavity having a first and a second aperture around one of said probes with the first aperture in constant contact with said probe to position said probe to make said connection to a conductive area and the second aperture not in contact with said probe, the first aperture being smaller than the second aperture with the second aperture being located on a side of the housing closest to the printed circuit board and spaced from said second end.

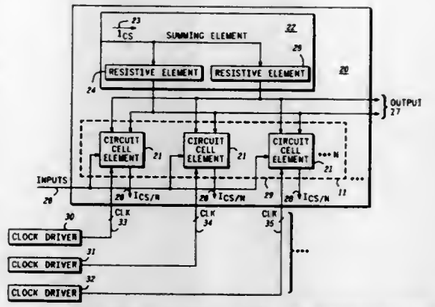
5,600,260

METHOD AND APPARATUS FOR HARDENING CURRENT STEERING LOGIC TO SOFT ERRORS

Michael P. LaMacchia, Gilbert, and William O. Mathes, Tempe, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 29, 1995, Ser. No. 496,651
Int. Cl.[6] H03K *19/003;19/00*
U.S. Cl. 326—11 **12 Claims**

12. A method for hardening a current steering logic (CSL) circuit to soft errors, the method comprising the steps of:
partitioning a single cell into a plurality of circuit cell elements, wherein each of the plurality of circuit cell elements redundantly performs a logic function of the single
supplying current through the plurality of circuit cell elements whereby substantially equal currents flow through each of the plurality of circuit cell elements when no soft errors occur, and
summing output currents from the plurality of circuit cell elements to provide a predetermined logic signal whereby the predetermined logic signal is maintained in the presence of soft errors occurring in a minority of the plurality of circuit cell elements because the current flowing through a majority of the plurality of circuit cell elements is maintained.

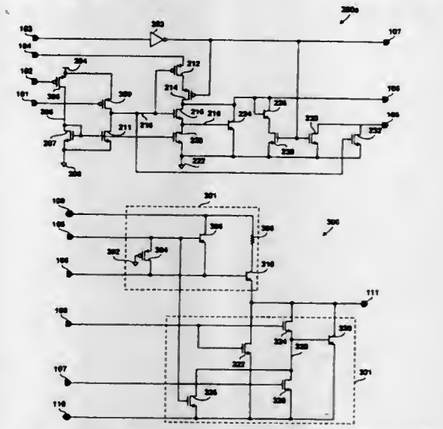


5,600,261

OUTPUT ENABLE ACCESS FOR AN OUTPUT BUFFER

Allen R. White, Starkville, Miss., and Shiva P. Gowni, New Delhi, Ind., assignors to Cypress Semiconductor Corporation, San Jose, Calif.

Filed Oct. 5, 1994, Ser. No. 318,146
Int. Cl.[6] H03K *17/16*
U.S. Cl. 326—27 **13 Claims**



1. A method for generating an output signal for output buffer circuitry, comprising the steps of:
(a) generating a first voltage level at a node for a period of time;
(b) outputting the first voltage level at the node as a buffer control signal for the output buffer circuitry to generate an output signal corresponding to a logical state:
(c) generating a second voltage level at the node in response to a delayed control signal, wherein the second voltage level is different from the first voltage level;
(d) outputting the second voltage level at the node as the buffer control signal for the output buffer circuitry to generate the output signal corresponding to the logical state; and
(e) generating the output signal corresponding to the logical state in response to the buffer control signal:

(f) receiving an input control signal; and

(g) delaying the input control signal for the period of time to produce the delayed control signal.

5,600,262

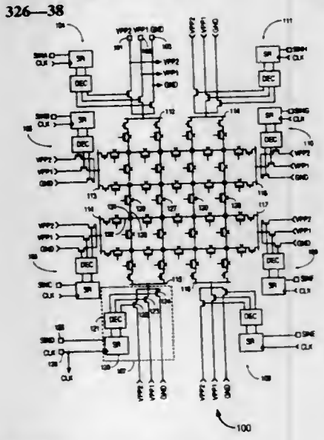
INTEGRATED CIRCUIT FACILITATING SIMULTANEOUS PROGRAMMING OF MULTIPLE ANTIFUSES

Paige A. Kolze, San Jose, Calif., assignor to QuickLogic Corporation, Calif.

Continuation of Ser. No. 349,093, Dec. 1, 1994, Pat. No. 5,495,181. This application Oct. 11, 1995, Ser. No. 540,726

Int. Cl.[6] H03K *19/177*

U.S. Cl. 326—38 **5 Claims**



1. An integrated circuit, comprising:

a first string;

a second string;

a third string;

a fourth string, each of said strings comprising:

a first conductor, a second conductor, an antifuse, and a pass transistor, said pass transistor being controllable to couple said first and second conductors together, said antifuse being disposed to couple said first and second conductors together if said antifuse is programmed, said first and second conductors extending in the same direction and being roughly collinear with one another, wherein said first conductors of said first, second, third and fourth strings are disposed to be parallel with one another;

a first control conductor extending in a direction substantially perpendicular to the direction said first and second conductors of each of said strings extend, said first control conductor being coupled to the gates of the pass transistors of said first and second strings;

a second control conductor roughly collinear with said first control conductor, said second control conductor being coupled to the gates of the pass transistors of said third and fourth strings;

a first programming bus extending in said direction said first control conductor extends, said first programming bus coupling said first and second strings together; and

a second programming bus roughly collinear with said first programming bus, said second programming bus coupling said third and fourth strings together.

5,600,263

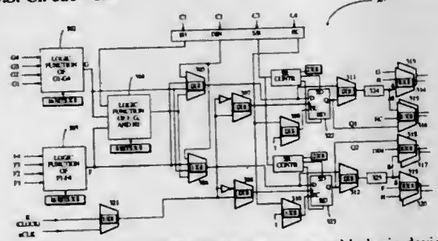
CONFIGURATION MODES FOR A TIME MULTIPLEXED PROGRAMMABLE LOGIC DEVICE

Stephen M. Trimberger, San Jose; Richard A. Carberry, Los Gatos; Robert A. Johnson, San Jose, and Jennifer Wong, Fremont, all of Calif., assignors to Xilinx, Inc., San Jose, Calif.

Filed Aug. 18, 1995, Ser. No. 517,018

Int. Cl.[6] H03K *19/177*

U.S. Cl. 326—39 **13 Claims**



1. A method of time multiplexing a programmable logic device comprising the steps of:

providing at least one configurable element;

providing a plurality of configuration memory points for configuring said at least one configurable element, wherein each of said configuration memory points includes a plurality of memory cells and a latch.

5,600,264

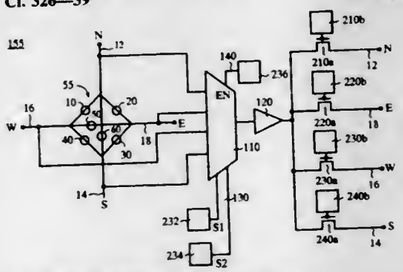
PROGRAMMABLE SINGLE BUFFERED SIX PASS TRANSISTOR CONFIGURATION

Khue Duong; Stephen M. Trimberger, both of San Jose, and Alok Mehrotra, Los Gatos, all of Calif., assignors to Xilinx, Inc., San Jose, Calif.

Filed Oct. 16, 1995, Ser. No. 543,454

Int. Cl.[6] H03K *19/01*

U.S. Cl. 326—39 **23 Claims**



1. An electrical connection apparatus comprising:

a switch circuit for providing programmable connection between a first line, a second line, a third line, and a fourth line, wherein any line can be coupled to any other line by programming a first set of programmable memory cells;

a multiplexing circuit coupled to said first line, said second line, said third line, and said fourth line; and

a single buffer device coupled to receive an output of said multiplexing circuit and coupled to drive a demultiplexing circuit, said demultiplexing circuit coupled to an output terminal of said single buffer device and for coupling said output terminal of said single buffer device to a line of a set of lines comprising said first line, said second line, said third line, and said fourth line.

5,600,265

PROGRAMMABLE INTERCONNECT ARCHITECTURE

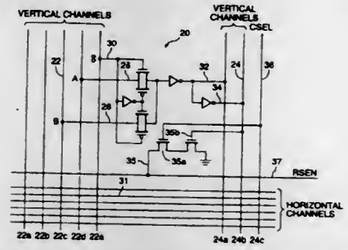
Abbas El Gamal, Palo Alto; Khaled A. El-Ayat, Cupertino, and Amr Mohsen, Saratoga, all of Calif., assignors to Actel Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 342,735, Nov. 21, 1994, Pat. No. 5,479,113, which is a continuation of Ser. No. 2,873, Jan. 13, 1993, Pat. No. 5,367,208, which is a continuation of Ser. No. 869,488, Apr. 15, 1992, Pat. No. 5,187,393, which is a continuation of Ser. No. 621,452, Jan. 15, 1991, Pat. No. 5,172,014, which is a division of Ser. No. 309,306, Feb. 10, 1989, Pat. No. 5,015,885, which is a continuation-in-part of Ser. No. 195,728, May 18, 1988, Pat. No. 4,873,459, which is a continuation-in-part of Ser. No. 909,261, Sep. 19, 1986, Pat. No. 4,758,745.

This application Dec. 20, 1995, Ser. No. 575,519

Int. Cl.[6] H03K *19/177*

U.S. Cl. 326—41 **6 Claims**



1. An electrically programmable interconnect architecture comprising:

a plurality of logic elements arranged in an array, each of said logic elements having at least one connection node emanating therefrom, each of said logic elements including a multiplexer;

a plurality of sets of wiring channels, said plurality of sets of wiring channels disposed adjacent said logic elements wherein at least one of said plurality of sets of wiring channels crosses said connection node, thereby forming node-channel intersections, at least one of said wiring channels comprising at least two wiring segments, said wiring segments spanning at least two of said logic elements;

a plurality of two-terminal electrically programmable, configurable elements, said configurable elements having a normally open circuit state, at least one of said electrically programmable, configurable elements connected between selected ones of said wiring segments comprising one of said plurality of sets of wiring channels and at least one of said plurality of two-terminal electrically programmable, configurable elements connected between said connection nodes and said wiring channels at said node-channel intersections; and

a selector means for selectively rendering said plurality of electrically programmable, configurable elements conductive or non-conductive in order to form a connection between said wiring segments and between said wiring channel and said connection nodes.

5,600,266

DIGITAL LOGIC OUTPUT BUFFER INTERFACE FOR DIFFERENT SEMICONDUCTOR TECHNOLOGIES

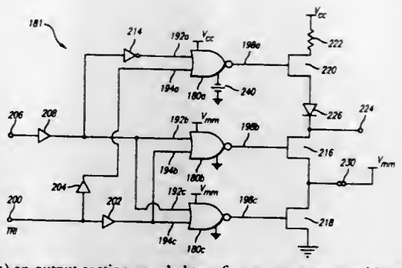
William C. Terrell; Robert N. Deming, both of Thousand Oaks, and Russell S. Hinds, Oxnard, all of Calif., assignors to Vitesse Semiconductor Corporation, Camarillo, Calif.

Continuation of Ser. No. 496,254, Jun. 28, 1995, abandoned, which is a continuation of Ser. No. 369,316, Jan. 25, 1995, abandoned, which is a continuation of Ser. No. 187,183, Jan. 24, 1994, abandoned, which is a continuation of Ser. No. 825,109, Jan. 23, 1992, Pat. No. 5,298,808. This application Dec. 19, 1995, Ser. No. 575,115

Int. Cl.[6] H03K *19/094;17/16*

U.S. Cl. 326—57 **20 Claims**

1. An output buffer apparatus comprising:



(a) an output section coupled to a first-power source, said output section further comprising:

(i) a buffer output;

(ii) a pull-up portion comprising a first current handling terminal coupled to said first power source, a second current handling terminal coupled to said buffer output, and at least one current controlling input; and

(iii) a pull-down portion comprising:

A. a first transistor comprising a current controlling input and a first current handling terminal coupled to said buffer output;

B. a second transistor comprising a current controlling input, a first current handling terminal coupled to ground, and a second current handling terminal coupled to a second current handling terminal of said first transistor; and

C. a current source comprising a current sourcing terminal coupled to said second current handling terminals of said first and said second transistors; and

(b) a logic means comprising a tri-state input, a first control output coupled to said at least one current controlling input of said pull-up portion, a second at least one control output coupled to said current controlling input of said first transistor and coupled to said current controlling input of said second transistor, said logic means for turning off said first and said second transistors and said pull-up section when said tri-state input is receiving a first designated logic level.

5,600,267

APPARATUS FOR A PROGRAMMABLE CML TO CMOS TRANSLATOR FOR POWER/SPEED ADJUSTMENT

Sing Y. Wong, Saratoga; Donald Yu, Fremont, and Roger Bettman, Los Altos, all of Calif., assignors to Cypress Semiconductor Corporation, San Jose, Calif.

Continuation of Ser. No. 265,456, Jun. 24, 1994, abandoned. This application Nov. 28, 1995, Ser. No. 563,350

Int. Cl.[6] H03K *19/0948*

U.S. Cl. 326—73 **26 Claims**

1. A translating circuit with a programmable power down option for translating a signal from a CML voltage level to a TTL voltage level, said translating circuit comprising:

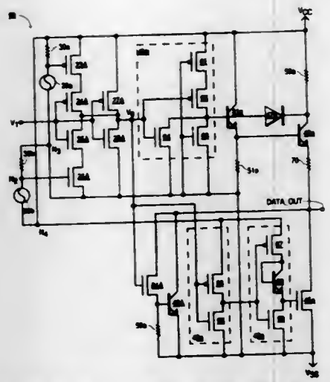
a first amplifier circuit for amplifying said signal;

a second amplifier circuit for amplifying said signal,

said second amplifier circuit being coupled in parallel to said first amplifier circuit such that an input of said first amplifier circuit and an input of said second amplifier circuit are coupled to an input of said translating circuit;

a programmable circuit liar controlling said first amplifier circuit and coupled to said first amplifier, said programmable circuit shutting down said first amplifier circuit in a power-down mode without shutting down said second amplifier circuit, wherein in said power-down mode, said second amplifier circuit responds to said signal independently of said first amplifier circuit; and

a third amplifier circuit for translating said signal to a TTL voltage level, said third amplifier circuit having an input coupled to an output of said first amplifier circuit and an output of said second amplifier circuit, such that said third



amplifier circuit being coupled in series with said first amplifier circuit and said second amplifier circuit, said third amplifier circuit having an output coupled to an output of said translating circuit.

5,600,268

GATE CIRCUIT OF COMBINED FIELD-EFFECT AND BIPOLAR TRANSISTORS

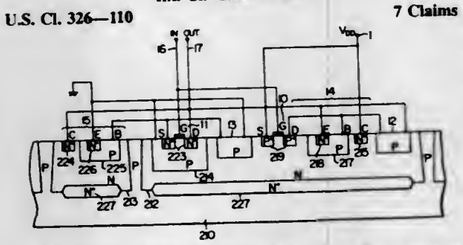
Ikuro Masuda, Hitachi; Kazuo Kato, Ibaraki-ken; Takao Sasayama; Yoji Nishio, both of Hitachi; Shigeo Kuboki, Nakaminato, and Masahiro Iwamura, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 111,506, Aug. 24, 1993, abandoned, which is a continuation of Ser. No. 986,891, Dec. 8, 1992, Pat. No. 5,239,212, which is a continuation of Ser. No. 783,921, Oct. 29, 1991, abandoned, which is a continuation of Ser. No. 639,112, Jan. 9, 1991, abandoned, which is a continuation of Ser. No. 127,206, Dec. 1, 1987, Pat. No. 5,001,366, which is a continuation of Ser. No. 45,216, Apr. 30, 1987, Pat. No. 4,719,373, which is a continuation of Ser. No. 513,056, Jul. 12, 1983, abandoned. This application Sep. 30, 1994, Ser. No. 315,594

Claims priority, application Japan, Jul. 12, 1982, 57-119815

Int. Cl.[6] H03K *19/01*

U.S. Cl. 326—110 **7 Claims**



1. A bipolar transistor-complementary field-effect transistor composite semiconductor integrated circuit device comprising:

a bipolar output circuit including first and second bipolar transistors having the same conductivity type, wherein collector-emitter current paths of the first and second bipolar transistors are connected in series to each other;

a driver circuit for receiving an input signal and including at least one field-effect transistor for coupling a first signal to a base of said first bipolar transistor to control the on-off state thereof and means for coupling a second signal to a base of said second bipolar transistor for controlling the on-off state thereof in opposite relationship to the on-off state of the first bipolar transistor; and

discharge means for discharging at least one of said first and second bipolar transistors,

wherein said first and second bipolar transistors are each of a vertical type formed respectively in semiconductor regions of a second conductivity type isolated from one another and from the semiconductor substrate of a first conductivity type, wherein the base regions of the first and second bipolar transistors are isolated from source, drain and channel regions of said field-effect transistor, and wherein a connection node between said first and second bipolar transistors provides an output signal.

5,600,269

LOW POWER CONSUMPTION COMPARATOR CIRCUIT

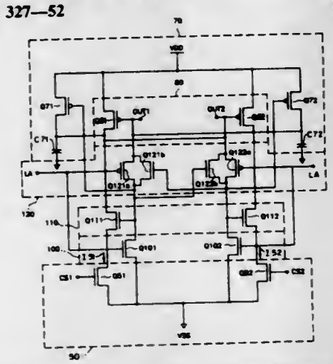
Won-Chul Song; Chang-Jun Oh; Jong-Ryul Lee; Hae-Wook Choi, all of Daejeon, Rep. of Korea, and Bang-Sup Song, Champaign, Ill., assignors to Electronics and Telecommunications Research Institute, Daejeon, Rep. of Korea

Filed Dec. 2, 1994, Ser. No. 352,830

Claims priority, application Rep. of Korea, Dec. 3, 1993, 93-26314

Int. Cl.[6] H03F *3/45*; **G11C** *7/00*

U.S. Cl. 327—52 **8 Claims**



1. A low power-consumption type comparator circuit capable of operating in a latch state and a normal state, said circuit having two input terminals for receiving two input voltage signals, one of which is an input reference signal and the other of which is an input comparison signal, and two output terminals having respective voltage levels, the circuit comprising:

signal converting means for converting said voltage input signals into current signals;

switching/feedback means for controlling transmission of the current signals to the output terminals during performing a latch operation of the circuit and feeding back output signals of the output terminals thereto;

high level holding means for maintaining each voltage level of the output terminals to a logical high-state only when the latch operation is not performed;

amplifying/determining means for amplifying the current signals and determining logical level of the input comparison signal as one of the input signals;

output switching means for the controlling transmission of output signals to control terminals of the switching/feedback means; and

low level holding means for maintaining each voltage level of the control terminals of the switching/feedback means to a logical low-state so as to enable the switching/feedback circuit portion not to be made conductive only when the latch operation is not performed.

5,600,270

COMPUTATIONAL CIRCUIT

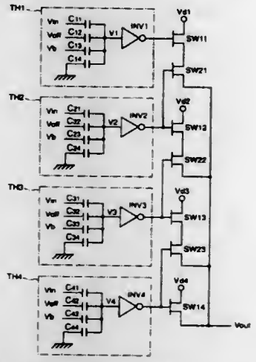
Guoliang Shou; Sunao Takatori, and Makoto Yamamoto, all of Tokyo, Japan, assignors to Yozan Inc., Tokyo, and Sharp Corporation, Osaka, both of Japan

Division of Ser. No. 262,059, Jun. 17, 1994. This application Jun. 7, 1995, Ser. No. 472,461

Claims priority, application Japan, Jun. 18, 1993, 5-172551; Jun. 18, 1993, 5-172552; Jun. 24, 1993, 5-177362; Jun. 30, 1993, 5-187215

Int. Cl.[6] G06F *7/42;7/44*

U.S. Cl. 327—75 **3 Claims**



1. A computational circuit comprising:

a plurality of inverters having equal thresholds, each inverter in said plurality of inverters having an input terminal;

a plurality of capacitive couplings, each capacitive coupling having two input terminals, a different capacitor associated with each input terminal and a common output terminal, said common output terminal of each capacitive coupling being operatively connected to said input terminal of one of said inverter so that a combination of one capacitive coupling and an associated inverter defines a thresholding circuit, said input terminals of said capacitive couplings being operatively connected at all times during operation of the computational circuit to an analog input voltage and a reference voltage, said capacitors of said plurality of capacitive couplings having different capacitances so that each thresholding circuit has a different threshold; and

a second common output terminal receiving outputs of said plurality of inverters so that a quantization of said analog input voltage is provided at said second common output terminal.

5,600,271

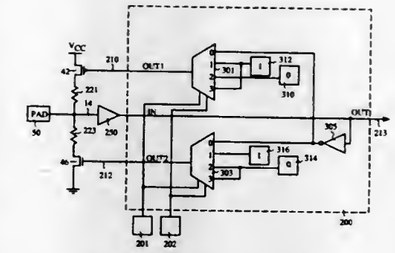
INPUT SIGNAL INTERFACE WITH INDEPENDENTLY CONTROLLABLE PULL-UP AND PULL-DOWN CIRCUITRY

Charles R. Erickson, Fremont, and Peter H. Alfke, Los Altos Hills, both of Calif., assignors to Xilinx, Inc., San Jose, Calif.

Filed Sep. 15, 1995, Ser. No. 528,580

Int. Cl.[6] H03K *19/084*

U.S. Cl. 327—108 **20 Claims**



1. A configurable input interface circuit comprising:

an input receiving node for receiving an input signal;

a pull-up device coupled to said receiving node for pulling said receiving node to a first logic state under control from a first control signal;

a pull-down device coupled to said receiving node for pulling said receiving node to a second logic state under control from a second control signal;

a memory device for containing configuration information; and

an internal interface circuit coupled to receive said input signal and coupled to receive said configuration information, said internal interface circuit for generating said first control signal and said second control signal wherein said pull-up device and said pull-down device are independently controllable to be permanently on, permanently off, or independently controllable to be on or off as a function of said input signal.

5,600,272

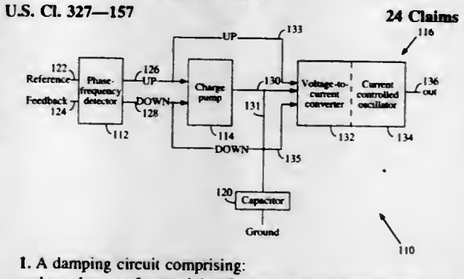
DIGITAL DAMPING METHOD AND APPARATUS FOR PHASE-LOCKED LOOPS

Alan C. Rogers, Palo Alto, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Continuation of Ser. No. 254,270, Jun. 6, 1994, abandoned, which is a continuation-in-part of Ser. No. 119,874, Sep. 10, 1993, Pat. No. 5,371,425. This application Jan. 2, 1996, Ser. No. 582,048

Int. Cl.[6] H03L *7/00*

U.S. Cl. 327—157 **24 Claims**



1. A damping circuit comprising:

a phase detector for receiving first and second input signals and for generating a first comparison signal representative of an amount by which a phase of the first input signal exceeds a phase of the second input signal and a second comparison signal representative of an amount by which the phase of the second input signal exceeds the phase of the first input signals, said first input signal being a reference signal and said second input signal being a feedback signal;

an integrator coupled to said phase detector for combining said first and second comparison signals and for generating a third comparison signal representative of a cumulative sum of said first and second comparison signals;

an oscillator coupled to said phase detector and said integrator for generating an output signal having a frequency responsive to the combination of said first, second and third comparison signals, said output signal being coupled to provide said feedback signal.

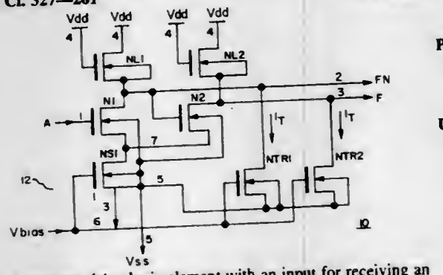
VOL 11 95 ISS 1 FE 4 1997 UMI

5,600,273

CONSTANT DELAY LOGIC CIRCUITS AND METHODS

David W. Hall, Satellite Beach; J. G. Dooley, and Arecio A. Hernandez, both of Melbourne, all of Fla., assignors to Harris Corporation, Melbourne, Fla.

Continuation-in-part of Ser. No. 292,482, Aug. 18, 1994, Pat. No. 5,514,982. This application Sep. 13, 1994, Ser. No. 305,366
Int. Cl.[6] H03H 11/26; G06F 1/04
U.S. Cl. 327—261 12 Claims



1. A constant delay logic element with an input for receiving an input signal and an output for outputting an output signal comprising:

a single constant current source,

switching transistors coupled to the current source,

inputs coupled to the switching transistors for applying input signals to the switching transistors,

current load devices coupled to the switching transistors,

outputs coupled to the load devices for outputting signals from the load devices,

said switching transistors steering current among said load devices in accordance with the input signals applied to said switching transistors,

means, coupled to the constant current source, for controlling the magnitude of the constant current,

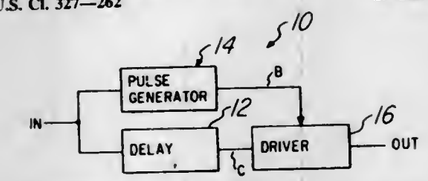
means responsive to the magnitude of the constant current for delaying the propagation of a signal from the input to the output inversely proportional to the magnitude of the constant current, whereby said propagation delay is determined by the current source.

5,600,274

CIRCUIT AND METHOD FOR COMPENSATING VARIATIONS IN DELAY

Theodore W. Houston, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 807,006, Dec. 13, 1991, abandoned. This application Dec. 17, 1992, Ser. No. 993,502
Int. Cl.[6] H03H 11/26; H03K 17/14:5/02:3/00
U.S. Cl. 327—262 29 Claims



1. A compensation circuit comprising:

a control circuit for receiving a control signal, said control circuit including a pulse generator circuit which generates a pulse upon a transition within said control signal, wherein the width of said pulse output by said control circuit is sensitive to variations caused by at least one parameter which causes variations in delay;

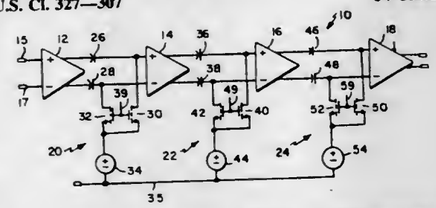
a compensated driver circuit with a control input coupled to said control circuit and with a signal input coupled to an input circuit, wherein the delay of an output signal of said compensated driver circuit is affected by the width of said pulse output by said control circuit thereby modifying the delay of said output signal in response to variations of said at least one parameter.

5,600,275

LOW-VOLTAGE CMOS COMPARATOR WITH OFFSET CANCELLATION

Patrick J. Garavan, Limerick, Ireland, assignor to Analog Devices, Inc., Norwood, Mass.

Filed Apr. 29, 1994, Ser. No. 235,557
Int. Cl.[6] H03L 5/00
U.S. Cl. 327—307 54 Claims



25. A method of comparing two voltages with amplification circuitry prone to offsets, comprising the steps of:

supplying a power supply voltage to the amplification circuitry,

supplying a first common-mode DC voltage by a first DC voltage source, wherein the common-mode DC voltage is different from the power supply voltage,

memorizing a first amplification offset, the step of memorizing employing the first DC voltage as a reference,

amplifying with the amplification circuitry a difference between the two voltages by a first gain to generate an amplified difference with a first output swing, wherein the step of amplifying is performed in the same integrated circuit as the step of supplying,

canceling from the amplified difference the first offset memorized in the step of memorizing, and

increasing the magnitude of the first DC voltage in a certain direction in response to a stimulus which increases the magnitude of the first output swing in the amplified difference of the amplifying step about the first common-mode DC voltage in the same direction, the step of increasing the magnitude of the first DC voltage preventing the first output swing from reaching the power supply voltage as a result of matching characteristics of the first DC voltage source and the amplification circuitry.

5,600,276

INTEGRATED CIRCUIT COMPRISING A RESISTOR OF STABLE RESISTIVE VALUE

Makoto Imamura, and Masahito Takagi, both of Tokyo, Japan, assignors to Yokogawa Electric Corporation, Tokyo, Japan

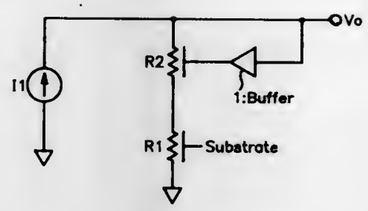
Continuation of Ser. No. 423,331, Apr. 14, 1995, abandoned. This application Jun. 10, 1996, Ser. No. 661,133
Claims priority, application Japan, Jun. 6, 1994, 94123529
Int. Cl.[6] G06G 7/12
U.S. Cl. 327—362 17 Claims

1. An integrated circuit comprising:

a semiconductor substrate having a substantially flat surface;

at least one first polysilicon resistor formed on said substantially flat surface of said substrate and having between two points thereof a first resistance value with a first component; and

means for applying an electrical signal to said substrate of a suitable value and so as to cause cancellation of said first component of said first resistance value.

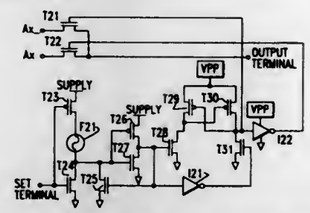


5,600,277

APPARATUS AND METHOD FOR A NMOS REDUNDANCY FUSE PASSGATE CIRCUIT USING A VPP SUPPLY

Jeffrey E. Koelling, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 9, 1995, Ser. No. 437,760
Int. Cl.[6] G11C 7/00
U.S. Cl. 327—526 13 Claims



1. A redundancy passgate fuse circuit energized by a first power source and a pump power source for providing a voltage greater than said first power source, said circuit comprising:

a first and a second NMOS passgate transistor, said first and said second transistors having a common output terminal, said first transistor having a data signal applied to an input terminal thereof, said second transistor having a complement signal of said data signal applied to an input terminal thereof;

a first circuit for applying a first control signal to said first transistor and for applying a complementary signal to said second transistor, said first circuit being energized by said pump power source; and

a fuse component including a fuse, said fuse component responsive to a set signal for applying an input signal to said first circuit, wherein said input signal is determined by a status of said fuse, said input signal controlling which of said first and second transistors transmits a signal, said fuse component being energized by said first power source, said pump power source providing that said data signal and said complement signal are transmitted by said first and said second transistor without attenuation.

5,600,278

PROGRAMMABLE INSTRUMENTATION AMPLIFIER

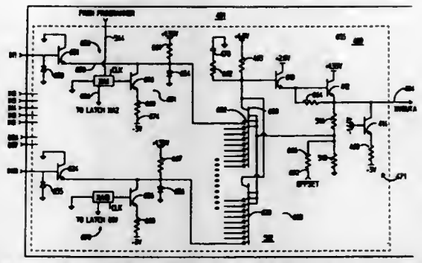
Thomas F. Uhling, Monument, and Keith C. Griggs, Colorado Springs, both of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 3, 1995, Ser. No. 384,295
Int. Cl.[6] H03F 3/68; H03G 3/30
U.S. Cl. 330—51 14 Claims

1. An amplifier comprising:

an amplifier input and an amplifier output;

a first amplifier channel including a first input transistor emitter and a first output transistor emitter, said first input transistor emitter and said first output transistor emitter connected together to form a first emitter pair;



a second amplifier channel including a second input transistor emitter and a second output transistor emitter, said second input transistor emitter and said second output transistor emitter connected together to form a second emitter pair;

selection means for selecting one of said first and second amplifier channels;

activation means responsive to said selection means for activating said selected amplifier channel so that a signal applied to said input passes from said amplifier input, through said selected amplifier channel, to said amplifier output; and

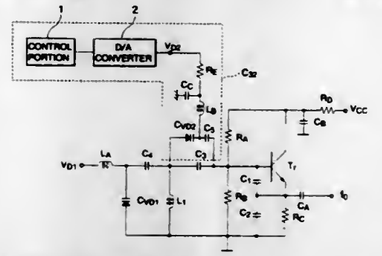
emitter voltage control means for forcing said first emitter pair to a controlled shut off voltage when said first amplifier channel is not activated and for forcing said second emitter pair to a controlled shut off voltage when said second amplifier channel is not selected.

5,600,279

VCO HAVING ADJUSTMENT FOR FLUCTUATIONS IN RELATION BETWEEN CONTROL VOLTAGE AND OUTPUT FREQUENCY

Kazuhiro Mori, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 7, 1995, Ser. No. 481,083
Claims priority, application Japan, Sep. 8, 1994, 6-214742
Int. Cl.[6] H03C 3/22; H03L 7/099
U.S. Cl. 331—36 C 16 Claims



3. A VCO circuit, comprising:

a) a first voltage variable capacitance device for varying a resonance frequency of a resonance circuit comprising a fixed capacitance device connected in series with an inductance device,

b) a second voltage variable capacitance device connected to said fixed capacitance device, and

c) means for applying an adjustment voltage to said second voltage variable capacitance device to adjust for fluctuations in the relation between a control voltage applied to the first voltage variable capacitance device and a resonance frequency of said resonance circuit;

wherein said fixed capacitance device comprises a series circuit of first, second, and third capacitors, and said second voltage variable capacitance device is connected in parallel to one of the first, second, and third capacitors.

5,600,280

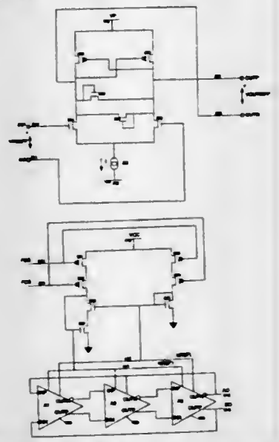
DIFFERENTIAL AMPLIFIER AND VARIABLE DELAY STAGE FOR USE IN A VOLTAGE CONTROLLED OSCILLATOR

Zhong-Xuan Zhang, Fremont, Calif., assignor to Cirrus Logic, Inc., Fremont, Calif.

Continuation of Ser. No. 169,158, Dec. 17, 1993, abandoned. This application Mar. 13, 1995, Ser. No. 404,133

Int. Cl.[6] H03B *5/24*

U.S. Cl. 331—57 **11 Claims**



4. A differential amplifier and control circuit coupled between a first power supply voltage and a second power supply voltage and further coupled to receive a differential input signal, comprising:

a. a differential amplifier having:

i. a first transistor having a first gate, a first source and a first drain, wherein the first gate is coupled to the differential input signal;

ii. a second transistor having a second gate, a second source and a second drain, wherein the second gate is coupled to the differential input signal and the second source is coupled to the first source;

iii. a third transistor having a third gate, a third source and a third drain, wherein the third gate is coupled to the third drain and to the first drain and the third source is coupled to the second drain;

iv. a fourth transistor having a fourth gate, a fourth source and a fourth drain, wherein the fourth gate is coupled to the fourth drain, to the second drain and to the third source and the fourth source is coupled to the first drain, the third drain and the third gate wherein a differential output signal is measured between a first output node formed at the fourth drain and a second output node formed at the fourth source, thereby automatically limiting a substantially symmetrical swing of the differential output signal;

v. a fifth transistor having a fifth gate, a fifth source and a fifth drain, wherein the fifth gate is coupled to the second drain, the third source, the fourth gate and the fourth drain, the fifth drain is coupled to the first drain, the third gate, the third drain and the fourth source and the fifth source is coupled to the first power supply voltage; and

vi. a sixth transistor having a sixth gate, a sixth source and a sixth drain, wherein the sixth gate is coupled to the first drain, the third gate, the third drain, the fourth source and the fifth drain, the sixth drain is coupled to the second drain, the third source, the fourth gate, and the fourth drain and the sixth source is coupled to the fifth source and the first power supply voltage; and

b. means for generating a control current coupled to a control signal, the first source, the second source and the second power supply voltage for controlling a time of formation of the differential output signal.

5,600,281

OSCILLATOR CIRCUIT GENERATING A CLOCK SIGNAL HAVING A TEMPERATURE DEPENDENT CYCLE AND A SEMICONDUCTOR MEMORY DEVICE INCLUDING THE SAME

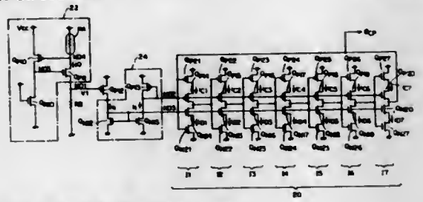
Shigeru Mori; Takeshi Kajimoto, and Masanori Hayashikoshi, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 257,845, Jun. 10, 1994, Pat. No. 5,499,214. This application Dec. 22, 1995, Ser. No. 577,354

Claims priority, application Japan, Jun. 28, 1993, 5-157237; Feb. 16, 1994, 6-19210

Int. Cl.[6] G01K *7/00;* **H03B** *5/02*

U.S. Cl. 331—57 **9 Claims**



1. An oscillator circuit comprising:

reference current generation means including,

potential generation means for generating an output potential varying in response to an operating temperature, and

voltage-current conversion means for generating a reference current varying in response to said output potential,

said reference current generation means further including reference transistor in which said reference current flows; and

oscillator means including an odd number of a plurality of inverter means connected in a ring manner, wherein each of said plurality of inverter means includes an input node, an output node, a first transistor connected between a first power supply potential node and said output node, and having a control electrode connected to said input node, and a second transistor connected between said output node and a second power supply potential node, and having a control electrode connected to said input node, and wherein at least one of said plurality of inverter means further includes a control transistor forming a current mirror circuit with said reference transistor, and connected between said output node and said second power supply potential node, in series with said second transistor, said oscillator means providing a clock signal from an output node of the inverter means of the last stage.

5,600,282

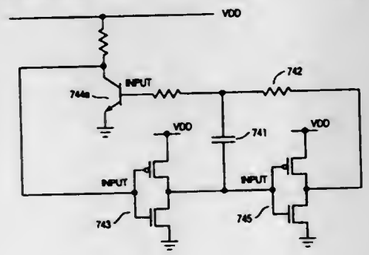
LOW POWER CONSUMPTION OSCILLATOR CIRCUIT

Steven E. Austin, Fremont; James J. Blanc, San Mateo, and Stephen J. Kim, San Jose, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Division of Ser. No. 242,319, May 13, 1994. This application Jun. 7, 1995, Ser. No. 483,287

Int. Cl.[6] H03B *5/24*

U.S. Cl. 331—111 **16 Claims**



1. An oscillator comprising:

a capacitor;

a first resistor coupled to said capacitor, wherein said first resistor is capable of delaying discharge of said capacitor;

a first inverter coupled to said capacitor and having a first input, wherein said first inverter is capable of applying charge to said capacitor when a first voltage potential on said first input is above a first threshold voltage of said first inverter and wherein said first inverter is capable of removing charge from said capacitor when a second voltage potential on said first input is below a second threshold voltage of said first inverter; and

threshold detection circuitry having a second input and a second output, said second output coupled to said first input of said first inverter and said second input coupled to said capacitor, wherein said threshold detection circuitry is capable of applying said first voltage potential on said first input when a third voltage potential on said second input is below a third threshold voltage of said threshold detection circuitry, and wherein said threshold detection circuitry is capable of applying said second voltage potential on said first input when a fourth voltage potential on said second input is above said third threshold voltage of said threshold detection circuitry, wherein said third threshold voltage of said threshold detection circuitry is different than said first and second threshold voltages.

5,600,283

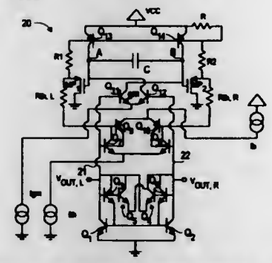
DC ISOLATED DIFFERENTIAL OSCILLATOR HAVING FLOATING CAPACITOR

Don R. Sauer, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Sep. 13, 1995, Ser. No. 527,400

Int. Cl.[6] H03K *3/0231;* **H03F** *3/45*

U.S. Cl. 331—111 **13 Claims**



13. A method for oscillating an output signal at a predetermined frequency, said method comprising the steps of:

generating said output signal;

providing a differential negative feedback for creating a differential voltage across a capacitive element in response to said output signal;

providing a differential positive feedback for creating a toggle voltage;

comparing said differential voltage to said toggle voltage; and

inverting said output signal in response to said step of comparing.

5,600,284

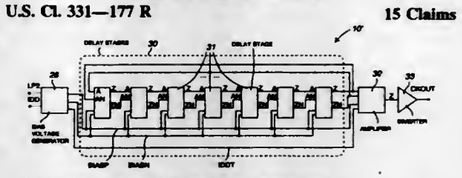
HIGH PERFORMANCE VOLTAGE CONTROLLED OSCILLATOR

Trung T. Nguyen, San Jose, and Jin Zhao, Milpitas, both of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Continuation of Ser. No. 351,636, Dec. 7, 1994, Pat. No. 5,469,120. This application Oct. 16, 1995, Ser. No. 543,740

Int. Cl.[6] H03B *5/04;5/24*

U.S. Cl. 331—177 R **15 Claims**



1. A voltage controlled oscillator, comprising:

(a) bias voltage generating means having an input and a pair of outputs comprising a first voltage control signal and a second voltage control signal which vary in response to variances in a voltage level at said input, wherein said bias voltage generating means maintains a voltage floor at said outputs when said voltage level at said input indicates a lack of error correction;

(b) delay means including a series connection of a plurality of delay stages wherein each of said delay stages includes a process variation compensation circuit, said delay means having an input coupled to said first voltage control signal and an input coupled to said second voltage control signal and an output; and

(c) amplifier means having an input coupled to said output of said delay means.

5,600,285

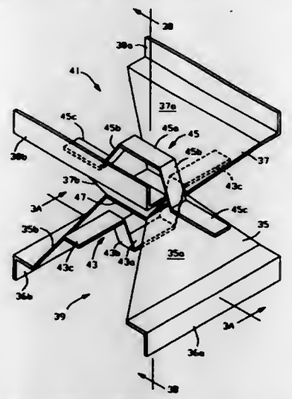
MONOLITHIC STRIPLINE CROSSOVER COUPLER HAVING A PYRAMIDAL GROUNDING STRUCTURE

Richard A. Sachs, West Hempstead, and Robert G. Danehy, White Plains, both of N.Y., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Nov. 18, 1994, Ser. No. 342,325

Int. Cl.[6] H01P *3/08*

U.S. Cl. 333—1 **4 Claims**



1. A cross-over coupler comprising:

a housing comprising first and second pyramids truncated by an electrically conducting common ground plane, said first and second pyramids each having one pair of electrically conducting opposite facing sides extending from said common ground plane and one pair of opposite facing sides open to respectively provide first and second channels through said housing;

a first transmission line comprised of a first electrical conductor traversing said first channel at a first predetermined level below said common ground plane;

a second transmission line comprised of a second electrical conductor traversing said second channel at a second predetermined level above said common electrical ground plane;

said first and second electrical conductors respectively comprising five sections, corresponding first sections of said first and second conductors being parallel to said common ground plane, corresponding second and third sections, of said first and second electrical conductors, extending from opposite ends of said first section parallel to said opposite electrical conductor sides of said first and second pyramids, respectively, at a preselected distance therefrom and corresponding fourth and fifth sections respectively extending from said second and third sections parallel to said common ground plane;

first and second electrical conducting sheets respectively extending, with a perpendicular orientation to said common ground plane, from said oppositely facing sides of said first pyramid; and

third and fourth electrical conducting sheets respectively extending, with a perpendicular orientation to said common ground plane, from said oppositely facing sides of said second pyramid.

5,600,286

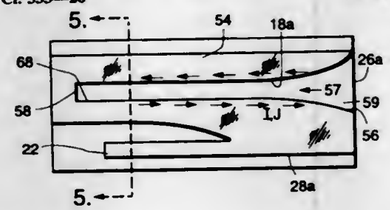
END-ON TRANSMISSION LINE-TO-WAVEGUIDE TRANSITION

Stan W. Livingston, Fullerton, and Jar J. Lee, Irvine, both of Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Filed Sep. 29, 1994, Ser. No. 315,008

Int. Cl.[6] H01P *5/107*

U.S. Cl. 333—26 **22 Claims**



9. An end-on transmission line-to-waveguide transition, comprising:

a substrate that has a slotline side, a traversing side and opposing edges;

a slotline conductor disposed on the slotline side of said substrate that defines a flared slotline having a flared gap, said conductor being spaced inward from the opposing edges of the substrate; and

a traversing conductor disposed on the traversing side of said substrate that is aligned with said slotline conductor and traverses the flared gap in said slotline.

5,600,287

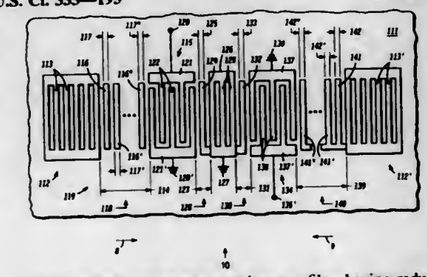
ACOUSTIC WAVE FILTER WITH REDUCED BULK-WAVE SCATTERING LOSS, LADDER FILTER INCORPORATING SAME AND METHOD

Philip P. Kwan, Tempe; Thomas S. Hickernell, Mesa, and David Penunuri, Fountain Hills, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 251,159, May 31, 1994, Pat. No. 5,434,466, and Ser. No. 191,232, Feb. 3, 1994, Pat. No. 5,471,178. This application May 26, 1995, Ser. No. 451,827

Int. Cl.[6] H03H *9/64*

U.S. Cl. 333—195 **19 Claims**



1. A method of making an acoustic wave filter having reduced bulk-wave scattering loss, said method comprising steps of:

(a) providing an acoustic wave propagating substrate;

(b) disposing a first reflector on a first surface of said acoustic wave propagating substrate, said first reflector comprising a first group of periodically disposed reflective elements;

(c) disposing a first transducer to a first side of said first reflector, said first transducer comprising a first group of electrodes periodically disposed along a preferred axis on said first surface, said first transducer for providing acoustic waves traveling in either direction along said preferred axis in response to electrical stimulation and for providing electrical signals in response to acoustic waves incident on said first transducer, said first transducer having a first center frequency and an acoustic wavelength associated with said first center frequency, said first transducer separated from said first reflector by a first gap having a first width exceeding one-fourth of said acoustic wavelength;

(d) disposing a second reflector to a side of said first transducer opposite said first reflector, said second reflector comprising a second group of periodically disposed reflective elements, said second reflector separated from said first transducer by a second gap having a second width; and

(e) disposing a first waveguiding element having a first breadth within said first gap, said first width exceeding said first breadth, said first waveguiding element being aperiodic with said first group of electrodes and said first group of periodically disposed reflective elements.

5,600,288

SYNTHETIC INDUCTOR IN INTEGRATED CIRCUITS FOR SMALL SIGNAL PROCESSING

Jing-Meng Liu, Hsinchu, Taiwan, assignor to Taiwan Semiconductor Manufacturing Company, Ltd., Hsinchu, Taiwan

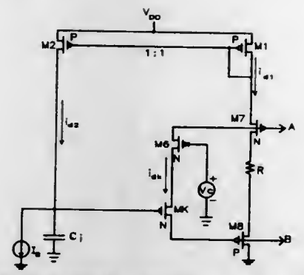
Filed Mar. 11, 1996, Ser. No. 613,575

Int. Cl.[6] H03H *11/48*

U.S. Cl. 333—214 **15 Claims**

1. An equivalent circuit for an inductor fabricated using integrated circuit devices, between a first circuit terminal and a second circuit terminal to perform a shifting of a phase delay of a signal voltage applied between the first and second circuit terminals, comprising:

a) a first buffer amplifier comprising a first input terminal coupled to the first circuit terminal and a first output terminal, wherein a voltage at the first output terminal is equal in magnitude of the voltage at the first input terminal;



b) a second buffer amplifier comprising a second input terminal coupled to the second circuit terminal and a second output terminal, wherein a voltage at the second output terminal is equal in magnitude of the voltage at the second input terminal;

c) a resistor means coupled between the first output terminal and the second output terminal wherein a current through the resistor means is equal to the voltage applied between the first and second circuit terminals divided by the resistance of the resistor means;

d) a current controlled current source wherein a control current is the current through the resistor means and the current source current is the control current multiplied by a multiplier factor;

e) a capacitance means coupled to the current controlled current source wherein a voltage developed across, the capacitance means is the current source current divided by the capacitance of the capacitance means multiplied by $\sqrt{-1}$ multiplied by the angular frequency of the signal voltage at the first and second circuit terminals;

f) a voltage controlled resistor comprising a top terminal, a bottom terminal, coupled to the second circuit terminal, and a control terminal coupled to the capacitance means and the current controlled current source, wherein a value of resistance between the top terminal and the bottom terminal is 1 divided by a constant gain factor times the voltage developed across the capacitance means; and

g) a biasing means coupled between the first circuit terminal and the top terminal of the voltage controlled resistor to provide a constant voltage to the top terminal so that a current through the voltage controlled resistor is the constant voltage divided by the value of the resistance of the voltage controlled resistor and an impedance between the first and second circuit terminals is the signal voltage applied between the first and second circuit terminals divided by the current through the voltage controlled resistor.

5,600,289

MEASURING JIG USED FOR EVALUATION OF A DEVICE WITH A NONRADIATIVE DIELECTRIC WAVEGUIDE

Youhei Ishikawa; Toru Tanizaki, both of Kyoto; Hiroshi Nishida, Kawanishi; Norimitsu Tsukai, Sagamihara, and Atsushi Saito, Nagaokakyo, all of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Aug. 28, 1995, Ser. No. 520,307

Claims priority, application Japan, Aug. 30, 1994, 6-205426

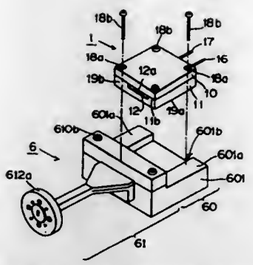
Int. Cl.[6] H01P *5/00*

U.S. Cl. 333—248 **4 Claims**

1. A measuring jig used for evaluation of a device with a nonradiative dielectric waveguide, the device with a nonradiative dielectric waveguide operating in a microwave band or in a millimeter wave band,

the device with the nonradiative dielectric waveguide comprising:

a couple of first conductors which are parallel to each other at a specified space;



a first dielectric strip which is disposed between the first conductors, the first dielectric strip propagating a high-frequency electromagnetic wave at a specified mode;

a plane mounting surface which is formed on at least either of the first conductors; and

a first end surface which is formed on an end of the first conductors so as to be vertical to a direction in which the high frequency electromagnetic wave is propagated in the first dielectric strip, an end of the first dielectric strip being exposed on the first end surface,

the measuring jig comprising:

a mount section on which the device with the nonradiative dielectric waveguide is to be mounted, the mount section having a surface which is to entirely come into contact with the plane mounting surface of the device;

a converting section which is integral with the mount section and connects the device with the nonradiative dielectric waveguide mounted on the mount section to an external circuit, the converting section comprising:

a couple of second conductors which are parallel to each other at a specified space;

a second dielectric strip which is disposed between the second conductors; and

a second end surface which is formed on an end of the second conductors so as to be vertical to a direction in which a high-frequency electromagnetic wave is propagated in the second dielectric strip, the second end surface facing the first end surface, and an end of the second dielectric strip being exposed on the second end surface so as to face the end of the first dielectric strip.

5,600,290

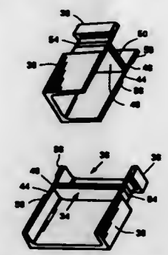
HERMETICALLY SEALED ELECTROMAGNETIC WINDOW AND METHOD OF FORMING THE SAME

Theodore G. Anderson, II, Hermosa Beach, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Sep. 5, 1995, Ser. No. 523,706

Int. Cl.[6] H01P *1/08*

U.S. Cl. 333—252 **20 Claims**



1. A hermetically sealed electromagnetic (EM) window, comprising:

first and second waveguide segments each having segment walls that are thinned at one end into respective knife edges, said

first and second waveguide segments being positioned with their knife edges facing each other;

a dielectric insert positioned between the knife edges of said waveguide segments; and

a brazing material adhered between said insert and said knife edges and providing a hermetic seal between said insert and said waveguide segments.

5,600,291

CONTACTOR DEVICE

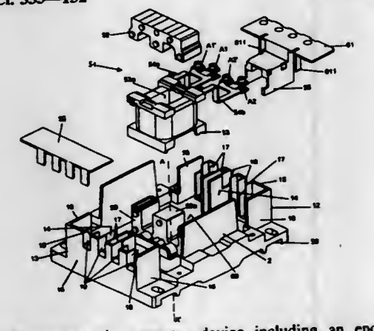
Jean-Pierre Duchemin, Jouy-le-Moutier; Bruno Jacquet, Saint-Germain-en-Laye, and Régis Perrocheau, Jouy-le-Moutier, all of France, assignors to Schneider Electric SA, Boulogne Billancourt, France

Filed Oct. 12, 1995, Ser. No. 542,321

Claims priority, application France, Oct. 17, 1994, 94 12450

Int. Cl.[6] H01H *67/02*

U.S. Cl. 335—132 **11 Claims**



1. Electromagnetic contactor device including an enclosure formed by a base unit and a housing unit assembled together and accommodating power poles and a solenoid having a coil the body of which has power supply terminals on one side, said enclosure providing between the base unit and the housing unit a first housing adapted to receive the power supply terminals, characterised in that the enclosure has symmetrically disposed relative to the first housing a second housing also formed between the base unit and the housing unit and having substantially the same cross-section as the first housing so that it can receive the side of the coil provided with terminals after a rotation of the coil by 180°, the housing opposite that receiving the terminals being closed off.

5,600,292

Patent Not Issued For This Number

5,600,293

INTEGRATED MAGNETIC EXPLODING FOIL INITIATOR FIRE SET

Donald Hunter, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 14, 1994, Ser. No. 260,287

Int. Cl.[6] H05B *6/68*

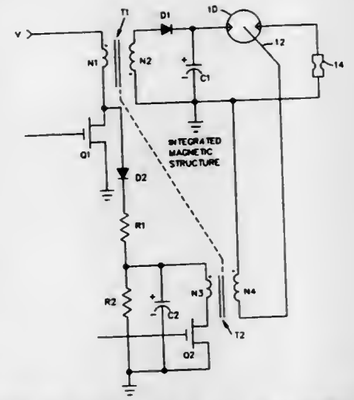
U.S. Cl. 336—182 **27 Claims**

1. An integrated magnetic structure comprising:

a first transformer including a first winding and a second winding,

a second transformer including a third winding and a fourth winding, and

a core element including a center pole, a first outer pole, and a second outer pole,



wherein said first winding and said second windings are positioned on said center pole, and

said third winding and said fourth winding are positioned on said first outer pole and said second outer pole, so that inductive interference between said first transformer and said second transformer is minimized.

5,600,294

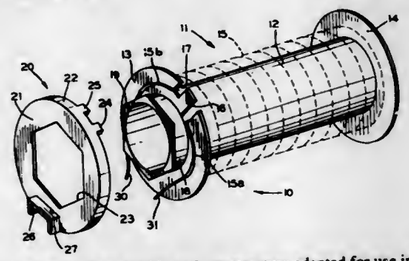
INTERLOCKING BOBBIN AND CAP FOR ELECTROMAGNETIC COIL ASSEMBLY

Gary Buenconsejo; Keith A. Doehrman, both of Ft. Wayne; Lee M. Stanley, Columbia City, and Henry J. Waring, Garrett, all of Ind., assignors to Dana Corporation, Toledo, Ohio

Filed Dec. 27, 1994, Ser. No. 364,215

Int. Cl.[6] H01F *27/04;27/28*

U.S. Cl. 336—192 **12 Claims**



1. An interlocking bobbin and cap structure adapted for use in an electromagnetic coil assembly comprising:

a bobbin including a body having an outer surface, first and second flanges formed on said body and extending outwardly from said outer surface, an extension extending from said first flange, and a lip formed on said extension defining an outer periphery which is non-circular in shape; and

a cap including an end wall having an opening formed therethrough defining an inner periphery which is non-circular in shape, said extension of said bobbin extending through said opening of said cap, said cap being movable relative to said bobbin between a first position, wherein said outer periphery of said lip is aligned with said inner periphery of said opening of said cap, and a second position, wherein said outer periphery of said lip is not aligned with said inner periphery of said opening of said cap such that portions of said lip extend over portions of said end wall of said cap to retain said cap on said bobbin.

5,600,295

THERMAL FUSE AND METHOD FOR THE ACTIVATION THEREOF

August Kaufmann, München, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

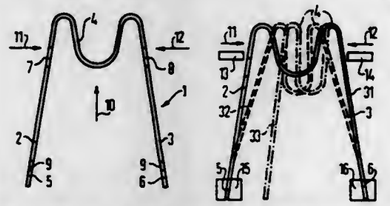
PCT No. PCT/DE93/00496, § 371 Date Dec. 15, 1994, § 102(e) Date Dec. 15, 1994, PCT Pub. No. WO93/26028, PCT Pub. Date Dec. 23, 1993

PCT Filed Jun. 8, 1993, Ser. No. 351,433

Claims priority, application Germany, Jun. 15, 1992, 42 19 554.3

Int. Cl.[6] H01H *37/76*

U.S. Cl. 337—405 **7 Claims**



1. A thermal fuse for fixing on a circuit substrate said fuse being formed by a spring clip comprising;

two contact locations whereof at least one is a solder location for connection to corresponding two circuit contacts of the substrate;

at least one elastic spring arm as a connecting section between the two contact locations; and

a plastically deformable bending section of the spring arm between the two contact locations such that a spacing between the two contact locations when said spring arm is tension-free corresponds to a regular spacing between the circuit contacts of the substrate, wherein a tension can be produced in the spring clip by deforming the bending section, said tension causing a bias between the two contact locations.

5,600,296

THERMISTOR HAVING TEMPERATURE DETECTING SECTIONS OF SUBSTANTIALLY THE SAME COMPOSITION AND DIMENSIONS FOR DETECTING SUBTANTIALLY IDENTICAL TEMPERATURE RANGES

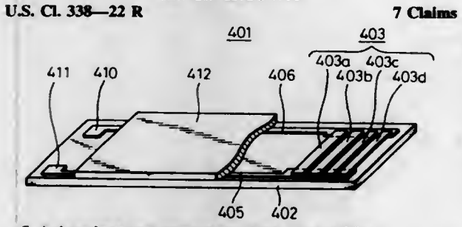
Kaoru Kuzuoka, Toyota; Sotoo Takahashi, Okazaki; Masamichi Shibata, Toyota, and Susumu Shibayama, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Oct. 14, 1994, Ser. No. 323,227

Claims priority, application Japan, Oct. 14, 1993, 5-256888; Dec. 21, 1993, 5-322351; Jan. 31, 1994, 6-009251; Feb. 15, 1994, 6-018091

Int. Cl.[6] H01C *7/10*

U.S. Cl. 338—22 R **7 Claims**



5. A thermistor type temperature sensor, comprising:

a substratum plate made of electric insulative ceramic material;

a thin or thick layer of a thermistor material constructing a detecting resistor, the resistance of which varies in accordance with the temperature to be detected;

electrodes connected to the detecting resistor to carry an electric signal corresponding to the detected temperature; and

the resistor and electrodes being formed on the substratum;

the detecting resistor being constructed from a plurality of temperature detecting sections for sensing substantially identical temperature ranges and having substantially the same compositions and dimensions and being connected in series or in parallel with the electrodes.

5,600,297

MAGNETIC FIELD SENSOR

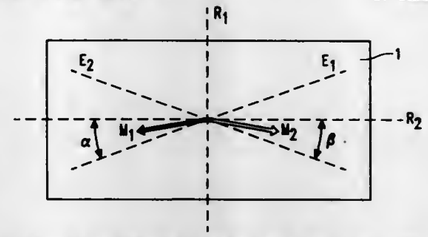
Jacobus J. M. Ruigrok; Martinus A. M. Gijs; Jacques C. S. Kools; Reinder Coehoorn, and Wiepke Folkerts, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 21, 1995, Ser. No. 517,156

Claims priority, application European Pat. Off., Aug. 28, 1994, 94202458

Int. Cl.[6] H01L *43/00*

U.S. Cl. 338—32 R **17 Claims**



1. A device for detecting a magnetic field, said device comprising a magneto-resistive multilayer structure comprising a first magnetic layer separated from a second magnetic layer only by an interposed non-magnetic layer, said multilayer structure having a first in-plane reference axis coinciding with the direction in which magnetic flux produced by said magnetic field is effected by said multilayer structure during operation, and a second in-plane reference axis which is perpendicular to said first reference axis, characterized in that said first magnetic layer has a magnetic easy axis E_1 with in-plane components along said first reference axis and said second reference axis where E_1 is canted through an acute in-plane angle α of greater than 0° and less than 45° with respect to said second reference axis and that said second magnetic layer has a magnetic easy axis E_2 with in-plane components along said first reference axis and said second reference axis where E_2 is canted through an acute in-plane angle β of greater than 0° and less than 45° with respect to said second in-plane reference axis the components of E_1 and E_2 along said second reference axis being anti-parallel.

5,600,298

VARIABLE RESISTOR

Fumitoshi Masuda, Kyoto, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Aug. 11, 1994, Ser. No. 288,686

Claims priority, application Japan, Aug. 19, 1993, 5-228068

Int. Cl.[6] H01C *10/32*

U.S. Cl. 338—162 **19 Claims**

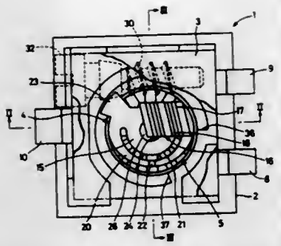
1. A variable resistor comprising:

an electrically insulating substrate having at least one major surface on one side;

a conductive collector and a resistive element, which is arcuately extending around said collector, said collector and resistive element being formed on a major surface of said substrate;

an electrically conductive wiper having elasticity and arranged opposite to said at least one major surface of the substrate and rotatable with respect to said substrate;

said wiper including a curved wiper body and a contact member formed by a bent portion of the wiper integrally extending from said wiper body;



wherein the contact member bridges the collector and the resistive element and is able to slide along the resistive element due to the rotation of the wiper thereby creating an electrical contact between the collector and a selected position on the resistive element;

a rotor arranged opposite to said major surface of the substrate and being rotatable with respect to the substrate; and

a clutch mechanism for transmitting rotation of the rotor to the wiper for rotating the wiper until the wiper is inhibited from further rotation,

said clutch mechanism comprising a detent member integrally extending from said wiper body along its peripheral edge portion while bridging two points of said peripheral edge portion, said detent member and said rotor having respective first and second engaging portions which are elastically engageable with each other.

5,600,299

BEEPER CONTROLLED AUTO SECURITY SYSTEM

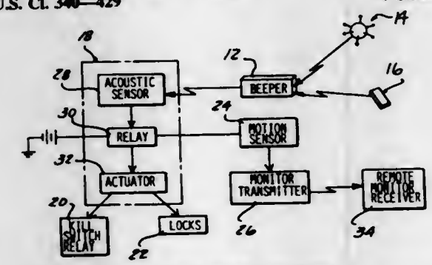
Eugene Tompkins, 16016 E. Warren, Detroit, Mich. 48224

Division of Ser. No. 10,465, Jan. 27, 1993, Pat. No. 5,432,495, which is a continuation of Ser. No. 471,965, Jan. 29, 1990, abandoned. This application Jul. 10, 1995, Ser. No. 500,163

The portion of the term of this patent subsequent to Jul. 11, 2012, has been disclaimed.

Int. Cl.[6] B60R *25/10*

U.S. Cl. 340—429 **4 Claims**



1. An auto vehicle security system comprising:

selectively activated vehicle disabling means operable when activated to prevent operation of the vehicle;

receiver-disable signal generator means for selectively activating said vehicle disabling means responsive to alternative activating means, said alternative activating means including a portable hand held transmitter selectively activatable to emit an rf signal to said receiver disable signal generator means to activate said receiver-disable signal generator means, and a telephone activated remote transmitter emitting another rf signal transmitted to said receiver-disable signal generator means, whereby said vehicle may selectively be disabled either by operation of said hand held transmitter or by a telephone activated transmission;

said receiver-disable signal generator means comprising a beeper-receiver unit mounted within said vehicle adapted to emit an signal upon receipt of a signal originating from either of said hand held transmitter or said remote transmitter, and said selectively activated vehicle disabling means further including detector means mounted in said vehicle adjacent said beeper-receiver unit and tuned so as to be activated by emission of said signal by said beeper-receiver unit, said vehicle disabling means directly responsive to said signal emitted from said beeper-receiver unit.

5,600,300

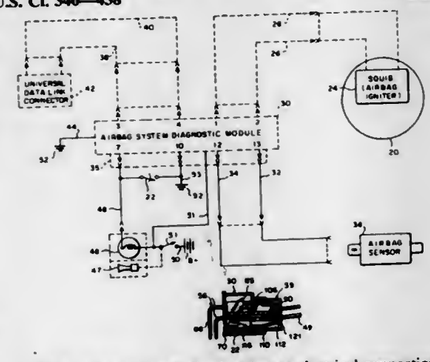
ARRANGEMENT FOR INDICATING AN INDICATING AN INTERRUPTED ELECTRICAL CONNECTION

Frank Povilaitis, Troy, Mich., assignor to Chrysler Corporation, Auburn Hills, Mich.

Filed Jul. 15, 1994, Ser. No. 275,686

Int. Cl.[6] B60Q *1/00*

U.S. Cl. 340—438 **7 Claims**



1. An arrangement for indicating that an electrical connection is not established between first and second electrical circuit components; the arrangement comprising:

a first connector associated with the first circuit component and having a plurality of first contacts;

a second connector associated with the second circuit component and having a plurality of second contacts for establishing an electrical connection with the first connector when engaged therewith;

a normally closed shorting contact normally in engagement with two of the second contacts;

a member on the first connector for engaging the shorting contact to disconnect the shorting contact from at least one of the two second contacts upon joining the first connector to the second connector, said member comprising a cam; and

an indicator connected across the two second contacts and to a source of electric current for emitting a signal when the first and second connectors are disconnected, allowing the shorting contact to be engaged with the two second contacts, the indicator not emitting the signal when the first and second connectors are joined and the member on the first connector engages and disconnects the shorting contact from the two second contacts;

wherein the normally closed shorting contact is a unitary leaf spring that is spring biased into engagement with the two second contacts and has a ramp thereon for engagement by the cam;

wherein the unitary leaf spring includes two contact projections for engaging the two second contacts;

wherein the unitary leaf spring is a biased plate with the two contact projections extending in spaced relation therefrom to define a space therebetween, in which space the ramp is disposed.

5,600,301

REMOTE TIRE PRESSURE MONITORING SYSTEM EMPLOYING CODED TIRE IDENTIFICATION AND RADIO FREQUENCY TRANSMISSION, AND ENABLING RECALIBRATION UPON TIRE ROTATION OR REPLACEMENT

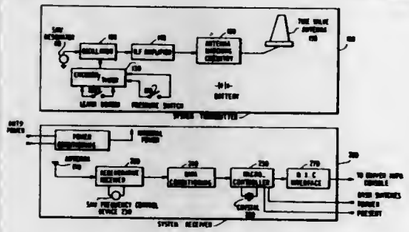
Jerry H. Robinson, III, Matthews, N.C., assignor to Schrader Automotive Inc., Monroe, N.C.

PCT No. PCT/US93/01995, § 371 Date Jul. 18, 1995, § 102(e) Date Jul. 18, 1995, PCT Pub. No. WO94/20317, PCT Pub. Date Sep. 15, 1994

PCT Filed Mar. 11, 1993, Ser. No. 491,890

Int. Cl.[6] B60C *23/00*

U.S. Cl. 340—442 **17 Claims**



1. In a vehicle having a plurality of wheels, each of said wheels having at least one tire mounted thereon, a tire pressure monitoring system including a display interface inside said vehicle for providing an indication of abnormal tire pressure, said system further comprising, for each of said tires, sensing/transmitting means which comprise:

means for sensing pressure;

means for producing signals indicative of temperature-compensated pressure of a respective one of said tires;

means for encoding said signals so as to provide encoded signals, identifying said each of said tires, and location thereof on said vehicle uniquely; and

means for transmitting said encoded signals;

said system further comprising:

means for receiving said encoded signals;

means for decoding said encoded signals, and providing display signals accordingly; and

means for providing a display indicative of low pressure and location of said each of said tires in accordance with said display signals;

characterized in that the sensing/transmitting means are mounted internally of the tire, and in that the system comprises means for recalibrating said system such that, in the event of rotation of tires on said vehicle, said system reacquires information on said location of each of said tires, said means for recalibrating said system comprising a microcontroller and pushbuttons associated with said means for providing a display, wherein depression of said pushbuttons in a predetermined manner programs said microcontroller to store location of said tires on said vehicle; and a magnetically-activated switch, activated in response to presence of a magnetic field in a vicinity thereof, and wherein activation of said switch in conjunction with said depression of said push buttons in said predetermined manner programs said microcontroller to store location of said tires on said vehicle.

5,600,302

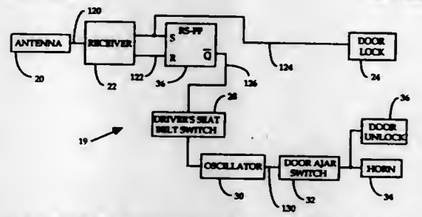
VEHICLE-BASED ANTI-LOCKOUT SYSTEM

James Lewis, 615 W. Chilton St., Chandler, Ariz. 85224

Continuation-in-part of Ser. No. 229,750, Apr. 19, 1994, Pat. No. 5,438,312. This application Jun. 29, 1995, Ser. No. 496,426

Int. Cl.[6] B60Q *1/00*

U.S. Cl. 340—457 **16 Claims**



1. A method for preventing keys from being locked in a vehicle comprising:

transmitting a first lock signal;

receiving the first lock signal and outputting a second lock signal;

locking at least one door of a vehicle when the second lock signal is received;

transmitting a first unlock signal;

receiving the first unlock signal and outputting an oscillating unlock signal;

inhibiting the oscillating unlock signal when a driver's seat belt is buckled;

inhibiting the oscillating unlock signal when at least one door of the vehicle is open;

sounding an audible warning when the oscillating unlock signal is output;

unlocking at least one door of the vehicle when the oscillating unlock signal is output;

whereby at least one door of a vehicle is unlocked and the audible warning is sounded when the seat belt is unbuckled and the doors of the vehicle are closed.

5,600,303

DETECTION OF CONCEALED EXPLOSIVES AND CONTRABAND

Abdo A. Husseiny, LaPlace; Edwin D. Stevens, New Orleans, and Zeinab A. Sabri, LaPlace, all of La., assignors to Technology International Incorporated, LaPlace, La.

Division of Ser. No. 341,139, Nov. 16, 1994, which is a continuation of Ser. No. 4,858, Jan. 15, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 471,680

Int. Cl.[6] G08B *13/14*

U.S. Cl. 340—568 **4 Claims**

1. A method of screening individuals for contraband at security check points, comprising:

providing each individual with an identification code;

directing the individual through at least a first detection station;

detecting the presence of metallic objects with at least one detector at said first detection station;

providing comparison images of known contraband in a database;

converting signals received from said detector to images indicative of a detected object;

processing said detected images and said identification for each individual;

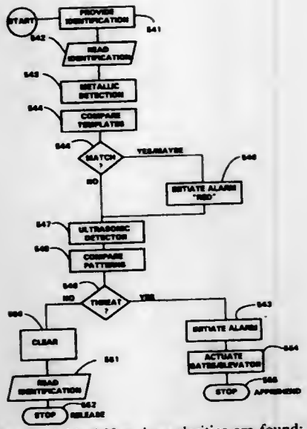
comparing said detected images with said comparison images;

annunciating the presence of contraband if a match is found;

directing the individual to a second detection station;

subjecting the individual to ultrasonic interrogation at said second detection station for detecting non-metallic contraband;

determining whether irregularities in a body surface of the individual are present;



clearing the individual if no irregularities are found; and

annunciating the presence of contraband and segregating the individual if irregularities are found.

5,600,304

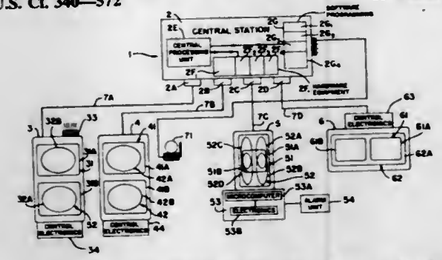
EAS SYSTEM WITH COMMON CONTROL STATION FOR DIFFERENT PERSONALITY LOCAL STATIONS

William R. Accolla, Loxahatchee; Fadi E. Ayoub, Deerfield Beach, and Brent Balch, Ft. Lauderdale, all of Fla., assignors to Sensormatic Electronics Corporation, Boca Raton, Fla.

Filed Nov. 2, 1995, Ser. No. 556,765

Int. Cl.[6] G08B *13/187*

U.S. Cl. 340—572 **15 Claims**



1. A central control station for use with different personality local stations in an electronic article surveillance system comprising:

one or more ports each adapted to interface with a local station;

hardware equipment and software programming having different parts associated with controlling different personality local stations; and

a central processing unit for coordinating operation of said hardware equipment and software programming such that a given local station interfaced with a given one of said one or more ports is controlled based on the parts of the hardware equipment and software programming associated with that given local station.

5,600,305

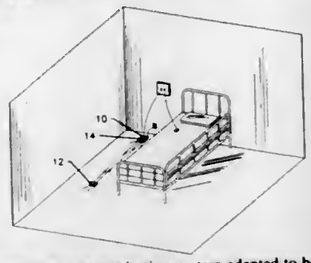
PORTABLE PATIENT MONITORING SYSTEM

Jerome Stafford, and Charles Bock, both of 3608 8th Ave. South, Great Falls, Mont. 59405

Filed Sep. 25, 1995, Ser. No. 533,259

Int. Cl.[6] G08B *23/00*

U.S. Cl. 340—573 **4 Claims**



1. A portable patient monitoring system adapted to be used with a conventional nurses station call system, a standard electrical wall outlet and a typical hospital type bed, said portable patient monitoring system comprising:

a portable master unit, said portable master unit being adapted to be placed adjacent to a typical hospital type bed;

said portable patient monitoring system having a transformer external to said portable master unit, said transformer being adapted to couple to a standard electrical wall outlet;

said transformer being adapted to convert standard electrical wall outlet electrical power to a low voltage (+12 volts DC), said low voltage (+12 volts DC) providing electrical power to said portable master unit;

said portable master unit having a line, said line providing said low voltage (+12 volts DC) to said portable master unit from said transformer;

said portable master unit having an inline diode, said inline diode being in said line and providing polarity protection to said portable master unit from said low voltage (+12 volts DC);

said portable master unit having a switch, said switch being in said line and providing on/off activation of said portable master unit;

said portable master unit having a metal oxide varistor, said metal oxide varistor being in said line and providing overvoltage protection to said portable master unit from said low voltage (+12 volts DC);

said portable master unit having an input filter capacitor, said input filter capacitor being in said line and being coupled to a first three terminal regulator, said three terminal regulator being a fixed output (+5 volts DC) three terminal regulator;

said portable master unit having a plurality of three output capacitors, said plurality of three output capacitors being coupled in parallel with each other as well as said low voltage (+12 volt DC) and said first three terminal regulator;

said plurality of three output capacitors and said first three terminal regulator providing a feeder +5 volts DC for said portable patient monitoring system;

said portable master unit having an a second three terminal regulator, said second three terminal regulator being adjustable and being coupled to said low voltage (+12 volt DC);

said second three terminal regulator being coupled and providing voltage to a battery;

said battery being coupled to a first voltage comparator, said first voltage comparator dividing and comparing said voltage to said battery to a reference voltage;

said battery being coupled to a diode;

said battery providing power to said portable master unit through said diode when said low voltage (+12 volt DC) is not available;

said portable master unit having an infrared emitter, said infrared emitter emitting an infrared beam;

said portable master unit having an infrared detector, said infrared detector detecting said infrared beam;

said portable patient monitoring system having a portable infrared reflector, said portable infrared reflector reflecting said infrared beam emitted from said infrared emitter back to said infrared detector; and,

said portable infrared reflector being adapted to be placed adjacent to said typical hospital type bed such that said infrared beam from said portable infrared emitter to said portable infrared reflector and back to said infrared detector runs parallel to said typical hospital type bed a predetermined distance away from said typical hospital type bed.

5,600,306

RECEPTACLE UNIT AND EXTENSION CORD

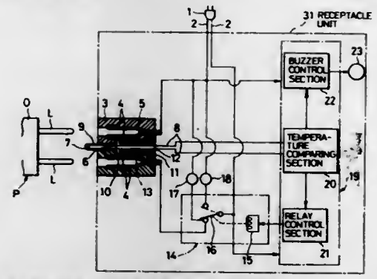
Minoru Ichikawa, Tokyo, and Teruhiko Ishinaka, Okegawa, both of Japan, assignors to Nisso Industry Co., Ltd., Tokyo, Japan

Filed Oct. 12, 1995, Ser. No. 542,319

Claims priority, application Japan, Oct. 17, 1994, 6-275511; Feb. 1, 1995, 7-034724

Int. Cl.[6] G08B *21/00*

U.S. Cl. 340—584 **33 Claims**



9. An electrical receptacle unit comprising:

a source-side electrical plug having a plug case and a pair of blades projecting from the plug case for insertion into a pair of slotted terminals of an electric power source receptacle,

a first temperature sensor provided in the plug case for detecting temperature between the blades,

at least one receptacle body internally provided with a pair of slotted terminals for insertion of a pair of blades of a load-side electrical plug, the receptacle body being connected to the source-side electrical plug through a cord,

a second temperature sensor outwardly projectable from between the slotted terminals of the receptacle body, and

a biasing member for projecting the second temperature sensor out from the receptacle body.

5,600,307

SURFACE CHARGE PERSONAL ELECTROMAGNETIC RADIATION MONITOR AND METHOD

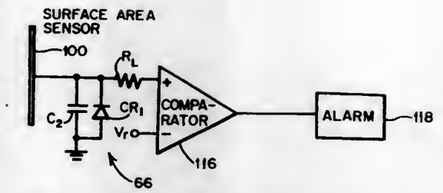
Edward E. Aslan, Plainview, N.Y., assignor to The Narda Microwave Corp., Hauppauge, N.Y.

Filed Nov. 14, 1995, Ser. No. 557,937

Int. Cl.[6] G08B *21/00*

U.S. Cl. 340—600 **11 Claims**

1. A personal electromagnetic radiation monitor wearable by a person to a warn the person of a radiation hazard condition caused by electromagnetic radiation emanating from a source of electromagnetic radiation, the electromagnetic radiation radiated by the source having at least a primary radial electric field component and a vertical or horizontal electric field component disposed perpendicularly to the radial electric field component, the vertical or horizontal field component inducing a flow of a displacement current in the person's body, the displacement current generating a



secondary radial electric field component emanating from the person's body, the personal electromagnetic radiation monitor comprising:

an electromagnetic radiation sensor, the electromagnetic radiation sensor being capable of sensing the primary radial electric field component directly emanating from the source of electromagnetic radiation and the secondary radial electric field component emanating from the person's body, the electromagnetic radiation sensor generating an output signal in response to the primary and secondary radial electric field components sensed by the electromagnetic radiation sensor;

a detector, the detector being responsive to the output signal from the electromagnetic radiation sensor and generating a detected signal in response thereto;

means responsive to the detected signal for comparing a threshold signal with one of the detected signal and a signal corresponding thereto, the comparing means generating an output signal in response to the comparison thereof; and

an alarm circuit, the alarm circuit being responsive to the output signal of the comparing means and generating an alarm signal in response thereto.

5,600,308

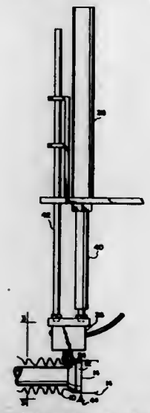
METHOD FOR DETECTING A POSITION ON A PRODUCT

Peter A. Corpeny, and Mark D. Kelley, both of Kansas City, Mo., assignors to Devro-Teepak, Inc., Westchester, Ill.

Filed Jun. 23, 1995, Ser. No. 493,975

Int. Cl.[6] G08B *21/00*

U.S. Cl. 340—675 **5 Claims**



1. A method for removing a splice at a location on a tubular food casing product which comprises:

a) applying a tape to the food casing proximate the position of the splice, which tape has metallic properties;

b) detecting at least one of said properties of the tape when the tape reaches a particular location during movement of the casing; and

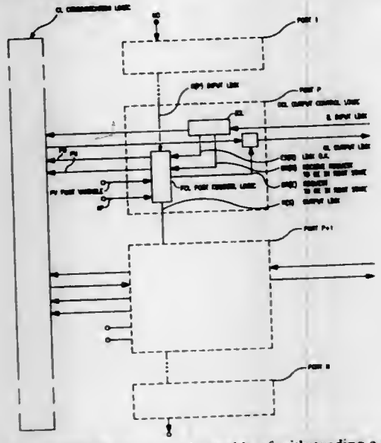
c) removing the splice in response to the detection of the tape.

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5,600,309
OPERATIONALLY SECURE COMMUNICATION ASSEMBLY

Remi Despres, Montesson, France, assignor to Reseaux de Communications d'Entreprise, Paris, France

Continuation-in-part of Ser. No. 984,491, Dec. 2, 1992, abandoned. This application Jun. 30, 1994, Ser. No. 269,114
Claims priority, application France, Dec. 6, 1991, 91 15171
Int. Cl.[6] H04Q *9/00*
U.S. Cl. 340—825.02 **11 Claims**



1. A Communications network capable of withstanding a link or node failure comprising:

a root node having at least one fixed port;

at least two additional nodes with at least two variable ports,one of which ports is in a root state, said additional nodes being serially connected to each other by links which connect a variable port of one additional node to a variable port of an adjacent additional node, one of said connected variable ports having dominance over the other of said connected variable ports, said additional nodes having an additional port connected to one of said root node fixed ports;

said additional nodes including a port control circuit comprising:

means for sending to an adjacent node a configuration request to establish a root state on a variable port not in a root state in response to a failure of a link connected to another port which is in the root state;

means for determining whether said adjacent node has issued an authorization message to said requesting node; and

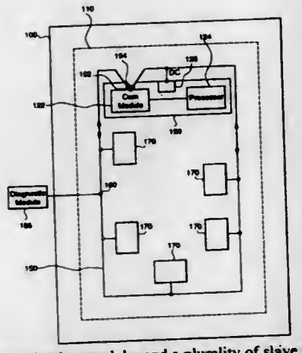
means for configuring said variable port into a root state when said authorization message is received, whereby said variable port is configured into said root state when a failure exists along a link connected to said another port of said node which was previously in the root state, permitting communications through said newly configured port to said root node.

5,600,310
SERIAL BUS CONTROL FOR APPLIANCES

Walter Whipple, III, Amsterdam, and Hunt A. Sutherland, Saratoga Springs, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 2, 1994, Ser. No. 348,406
Int. Cl.[6] H04L *12/40*
U.S. Cl. 340—825.06 **14 Claims**

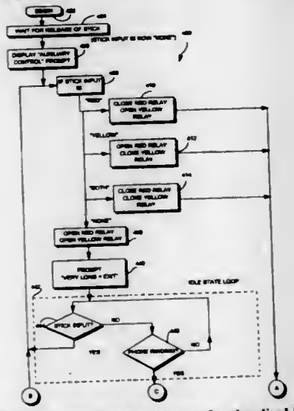
1. A household appliance comprising a direct current (DC) serial bus control system disposed within said appliance, said serial bus control system comprising a single DC master communications module, a low-voltage DC serial bus connector coupled to said master communication module, and a plurality of slave nodes, each of said slave nodes being coupled to said serial bus connector and being responsive to at least one of a plurality of DC current slave node address codes so as to generate a respective DC current slave node response signal to said master communications module.



5,600,311
ENVIRONMENTAL CONTROL SYSTEM WITH AUXILIARY CONTROL INTERFACE

Richard F. Rice, Huntsville; David M. Kelly, Madison, and Daryl L. Smith, Moulton, all of Ala., assignors to Rice-Kelly Research & Engineering, Inc., Huntsville, Ala.

Filed Apr. 17, 1995, Ser. No. 422,881
Int. Cl.[6] H02B *15/00*
U.S. Cl. 340—825.19 **31 Claims**



1. A method of controlling equipment for the disabled comprising:

(a) electrically detecting user-actuated switch closures;

(b) selecting, with an electronic processor in response, at least in part, to the detected user-actuated switch closures, between first and second operating modes;

(c) in the first operating mode, selecting menu options in response to said detected switch closures and automatically controlling at least first equipment based on the selected menu options;

(d) in the second, "pass through" mode, automatically generating, at least in part in response to said detected user-actuated switch closures, further output switch closures that emulate said user-actuated switch closures;

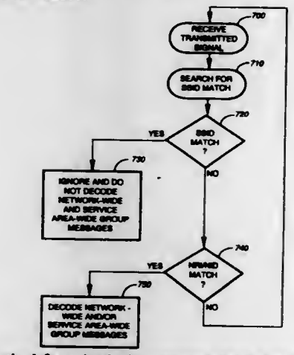
(e) controlling at least other equipment with the further output switch closures; and

(f) remaining in the second mode until a predetermined event occurs.

5,600,312
MESSAGING SYSTEM AND METHOD HAVING ROAMING CAPABILITY AND CONTROLLED GROUP MESSAGING

David F. Willard, Plantation; Robert J. Schwendeman, Pompano Beach; Eric T. Eaton, Lake Worth, and Barbara D. Laflin, Ocean Ridge, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 378,136, Jan. 24, 1995. This application Mar. 9, 1995, Ser. No. 401,317
Int. Cl.[6] H04Q *7/18*
U.S. Cl. 340—825.47 **12 Claims**



1. A method for selectively communicating group messages to pagers in a network, the method comprising the steps of:

dividing a network into a plurality of service areas, each service area comprising at least one zone;

assigning to each network a network roaming identifier which comprises at least a network identifier and a service area identifier such that the network identifier is common throughout a network, the service area identifier for identifying a service area within a network;

assigning to each service area at least one system identifier which comprises at least a local service provider identifier and a zone identifier for identifying a zone within a service area;

storing in at least one receiver subscribed for receiving messages in a particular network and in at least one home service area in the particular network, a network roaming identifier associated with the particular network and at least one particular system identifier associated with the at least one home service area;

generating a group message to be decoded by a select group of receivers subscribed to receive messages in the particular network;

generating a signal associated with each zone for communicating addressed messages to receivers in each zone, including a step of associating within the signal the group message with the network roaming identifier corresponding to a network, the signal further including a system identifier corresponding to each zone;

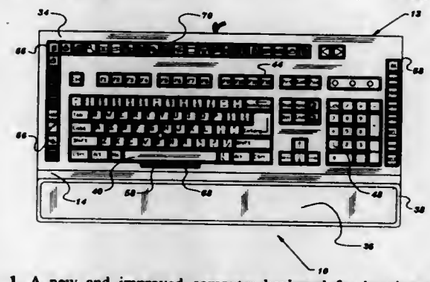
transmitting in each zone the signal associated with each zone;

in the at least one receiver, receiving the signal transmitted in a zone and decoding the system identifier corresponding to the at least one home service area and ignoring the network roaming identifier so as not to receive the group message associated with the network roaming information, and when the at least one receiver determines that the decoded system identifier does not correspond to the stored particular system identifier, decoding the network roaming identifier and the group message associated therewith.

5,600,313
COMPUTER KEYBOARD

Lorri Freedman, 2667 Loretta St., Yorktown Heights, N.Y. 10598

Filed Dec. 22, 1995, Ser. No. 577,112
Int. Cl.[6] H03K *17/94*
U.S. Cl. 341—22 **1 Claim**



1. A new and improved computer keyboard for keeping the hands of a user on the keyboard during computer operation comprising in combination:

a generally rectangular keyboard body having a top side, bottom side and a pair of short peripheral walls with a pair of long peripheral walls therebetween, the bottom side of the keyboard having a pair of wires that extend therefrom for coupling to a computer, the bottom side having a switch that allows key board function with the computer;

a keyboard mechanism located on the top side of the keyboard body, the keyboard mechanism having a inner key area with a peripheral key area therearound;

a generally rectangular wrist pad positionable on the top side of the keyboard below the inner key area and the peripheral key area, the wrist pad being perpendicular one of the long peripherals wall in a lower quadrant of the top side, the wrist pad being formed of a flexible material, the wrist pad having a length equal to a length of the peripheral walls;

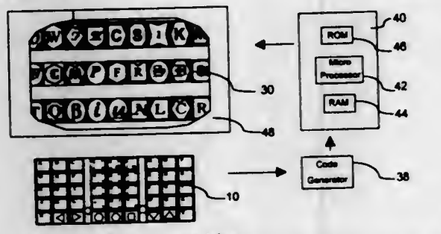
a plurality of keys for depressing by movement of fingers of a user in a first direction when positionable within the inner key area of the keyboard mechanism, the plurality of keys forming a space bar, function keys and alphabet keys, the plurality of keys capable of being depressed while a wrist of the user rest on the wrist pad;

a pointing stick positionable from the space bar and between the alphabet keys G, H, and B within the inner key area of the keyboard mechanism, the pointing stick being cylindrical and rotatable 360 degrees about a universal joint, the pointing stick being capable of controlling all movement of a cursor on a display screen of a computer by movement thereof with any two fingers of the user;

a pair of mouse buttons being positionable along the inner key area of the keyboard mechanism and spaced from the space bar, the pair of mouse buttons forming a right button and a left button, the right and Left buttons being capable of functioning accordance with the pointing stick when the user positions the cursor on an icon in a Windows application on the display screen of the commuter; and

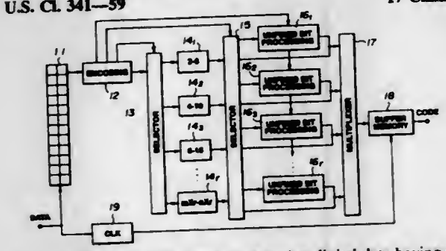
three sets of icon keys with each set being positionable within the peripheral key area of the keyboard mechanism, the three sets of icon keys forming a set of static icon keys, a set of command icon keys and a set of toolbar icon keys, the set of static icon keys being positionable vertically on a left side of keyboard mechanism, the set of command icon keys being positionable vertically on a right side of the keyboard mechanism, the toolbar icon keys being positionable horizontally above the function keys of the keyboard mechanism, the three sets of icon keys being capable of functioning within an application appearing on the display screen, the three sets of icon keys being capable free up display screen space for allowing more screen space for the application when the user inputting useful data into the computer.

5,600,314
DATA INPUT DEVICE AND CORRELATIVE ENCODING TECHNIQUE
Ernesto V. Oliveros, 1329 Third Ave., Suite 392, Chula Vista, Calif. 91911
Filed Jul. 27, 1995, Ser. No. 508,188
Int. Cl.[6] H03K 17/94
U.S. Cl. 341—26 14 Claims



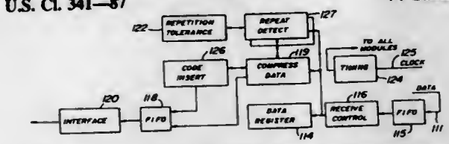
1. A data input device comprising:
A key board containing a plurality of keys including a first group of 26 keys assigned to each letter of the alphabet and a second group of keys assigned to each Arabic numeral; and
a code generator for generating a plurality of four bit code words in response to actuation of said keys, one four bit code word for each of second group of keys, and two four bit code words for each of said first group of keys.

5,600,315
MODULATING METHOD AND DEMODULATING APPARATUS
Yoshihide Shimpuku, and Toshiyuki Nakagawa, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed May 18, 1994, Ser. No. 245,360
Claims priority, application Japan, May 21, 1993, 5-119989
Int. Cl.[6] H03M 7/00
U.S. Cl. 341—59 17 Claims



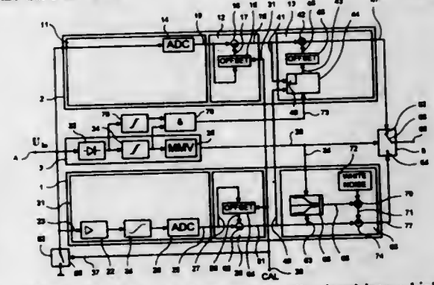
4. A modulation apparatus for converting digital data having the basic data length equal to m bits into a variable length code (d, k; m, n; r) having the basic codeword length of n bits, comprising
means for determining the constraint length i of said digital data,
storage means in which conversion tables for converting said digital data into codewords of said variable length code having a minimum length between transitions T_{min} of 2.0 T or longer and a minimum length d of the same consecutive symbols of 4 or more, T being the bit length of said digital data, are stored, and in which a bit at a preset position of a codeword among said codewords likely to give a maximum run k is previously set as being an unfixed bit,
modulation means for converting said digital data into said variable length codewords, based upon the results of determination by said determining means, with the aid of said conversion tables, and
unfixed bit processing means for determining said unfixed bit depending upon the next consecutive codewords if said unfixed bit is contained in the codeword produced by said modulation means.

5,600,316
DATA COMPRESSION BY REMOVING REPETITION AND UNNECESSARY INFORMATION
Edward W. Moll, 7 W. Bluebell La., Mount Laurel, N.J. 08054
Continuation of Ser. No. 127,013, Sep. 24, 1993, Pat. No. 5,434,568, which is a continuation of Ser. No. 531,631, Jun. 1, 1990, abandoned, which is a continuation of Ser. No. 690,478, Jan. 10, 1985, abandoned. This application Mar. 15, 1995, Ser. No. 404,703
Int. Cl.[6] H03M 7/30
U.S. Cl. 341—87 74 Claims



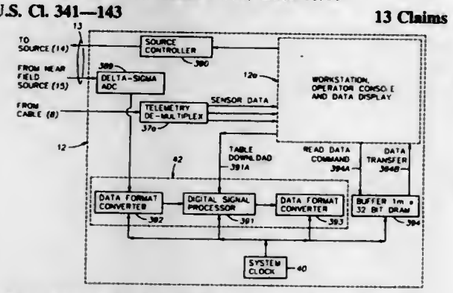
1. An apparatus for suppressing storage or transmission of repetitive bits of a digital input signal received from a signal source, said apparatus comprising:
(a) monitoring means for monitoring said digital input signal for a plurality of groupings of bits of said digital input signal, each grouping comprising plural groups of N bits per group;
(b) comparing means for comparing at least one bit of one of said groups with a respective bit of the others of said plural groups of said grouping to count the number of times said bits compared repeat in order to establish a particular grouping; and
(c) signalling means for generating an identification signal for identifying those bits in said plural groups in said particular grouping that have repeated said number of times and those bits in said plural groups in said particular grouping that have not repeated said number of times.

5,600,317
APPARATUS FOR THE CONVERSION OF ANALOG AUDIO SIGNALS TO A DIGITAL DATA STREAM
Mattias Knoth, Gründau; Thomas Reussner, Darmstadt; Helmut Jahne, Berlin; Olaf Altenburg, Berlin; Klaus Cain, Berlin, and Detlef Kutschabsky, Berlin, all of Germany, assignors to Stage Tec Entwicklungsgesellschaft für professionelle Audiotechnik mbH, Germany
Filed Jun. 14, 1995, Ser. No. 490,136
Claims priority, application Germany, Jun. 14, 1994, 44 20 713.1; Jan. 12, 1995, 195 02 047.2
Int. Cl.[6] H03M 1/10;1/06
U.S. Cl. 341—139 13 Claims



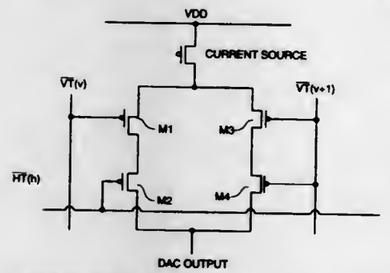
1. A circuit for converting an analog audio signal into a highly resolving bit stream, for which the audio signal (U_{in}) is converted on several parallel paths (1,2) with different amplitude sensitivities into a data stream, wherein the offset of the individual paths (1,2) is compensated for individually and subsequently the amplification difference, produced by the different amplitude sensitivities, is determined and compensated for, so that one of the two data streams is made available as a bit stream for further processing, the selection of the data stream which is made available as a bit stream for further processing, is determined based on the amplitude of the audio signal (U_{in}).

5,600,318
SEISMIC DATA ACQUISITION SYSTEM
Xuguang Li, Sugar Land, Tex., assignor to Western Atlas International, Inc., Houston, Tex.
Filed Feb. 28, 1995, Ser. No. 396,128
Int. Cl.[6] H04B 14/04; G06F 15/00
U.S. Cl. 341—143 13 Claims



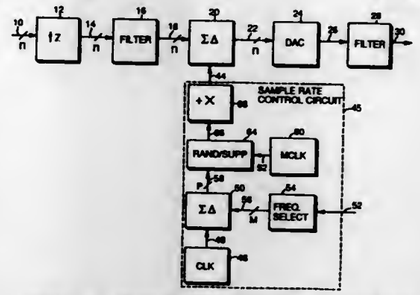
9. An apparatus for digitizing seismic surveys comprising:
a delta-sigma converter operatively connected to a seismic sensor;
means for calculating an average of a plurality of outputs of said delta-sigma converter;
means for subtracting said average from a single output of said converter; and
a single-stage digital filter connected to said means for subtracting, said single-stage digital filter providing the functions of filtering, synchronization and data rate resampling.

5,600,319
THERMOMETRIC-TO-DIGITAL-TO-ANALOG CONVERTER OCCUPYING REDUCED CHIP AREA
Bernard Ginetti, Antibes, France, assignor to YLSI Technology, Inc., San Jose, Calif.
Filed Nov. 1, 1994, Ser. No. 333,008
Int. Cl.[6] H03M 1/66
U.S. Cl. 341—144 7 Claims



1. A digital-to-analog converter, comprising:
an array of current source cells, each cell having an output connected to a load as a function of an input code converted into a thermometric code including signals HT and VT, wherein logic inverses of the thermometric code are supplied to each cell in the array to selectively connect the cell to the load, and wherein each cell includes a first and a second P type metal oxide semiconductor field effect transistor connected in series, the series connected in parallel with one or more third P type metal oxide semiconductor field effect transistors,
wherein the gate of the second transistor receives a signal fheightHT(h), the gate of the third transistor receives a signal fheightVT(v+1), wherein one current source is connected between the drains of the first and third P type metal oxide semiconductor field effect transistors and a polarization voltage VDD and wherein the cell output is obtained on the source of the second P type metal oxide semiconductor field effect transistor.

5,600,320
VARIABLE SAMPLE RATE DAC
James Wilson, Sharon; Ronald A. Cellini, Newton, and James M. Sobol, Norfolk, all of Mass., assignors to Analog Devices, Inc., Norwood, Mass.
Division of Ser. No. 404,235, Mar. 15, 1995, Pat. No. 5,512,897. This application Jun. 6, 1995, Ser. No. 467,703
Int. Cl.[6] H03M 1/66
U.S. Cl. 341—144 4 Claims

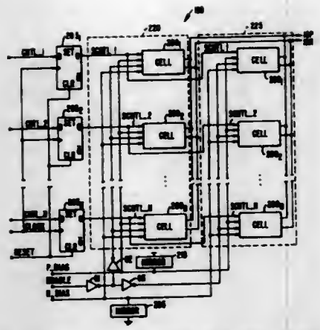


1. A method for converting digital samples to an analog signal at an oversampling rate equal to an oversampling ratio times a preselected input sample rate, comprising the steps of:
computing a frequency select signal from the preselected input sample rate;
producing, from the frequency select signal, a noise-shaped clock signal; and
converting digital input samples to an analog signal at the oversampling rate equal to the frequency of the noise-shaped clock signal.

5,600,321
HIGH SPEED, LOW POWER CMOS D/A CONVERTER FOR WAVE SYNTHESIS IN NETWORK
John M. Winca, Cupertino, Calif., assignor to Advanced Micro Devices Inc., Sunnyvale, Calif.
Filed Jun. 7, 1995, Ser. No. 482,113
Int. Cl.[6] H03M 1/66
U.S. Cl. 341—144 12 Claims

1. A least significant cell for an integrated digital to analog converter for driving an incremental current at each of a first and a second output node, comprising:
a first pair of matching MOS transistors including a first and second MOS transistor, each transistor having a first terminal node, a second terminal node and a gate terminal node, said gate terminal nodes receiving a first bias current for controlling an operating current between said first terminal node and second terminal node and wherein said first terminal node of said first MOS transistor is coupled to the first output node and said first terminal node of said second MOS transistor is coupled to the second output node;
a first current source having a first current terminal coupled to said second terminal node of said first MOS transistor and a

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second current terminal coupled to a first voltage reference level, said first current source responsive to a first control signal for switching a first operating current through said first MOS transistor on when said first control signal has a first value and switching said first operating current through said first MOS transistor off when said first control signal has a second value;

a second current source having a first current terminal coupled to said second terminal node of said second MOS transistor and a second current terminal coupled to said first voltage reference level, said second current source responsive to a second control signal for switching a second operating current through said second MOS transistor on when said second control signal has a first value and switching said second operating current through said second MOS transistor off when said second control signal has a second value;

a second pair of matching MOS transistors including a third and fourth MOS transistor, each of said third and fourth transistors having a first terminal node, a second terminal node and a gate terminal node, said gate terminal nodes of said second pair of transistors receiving a second bias current for controlling an operating current between said first terminal node and second terminal node and wherein said first terminal node of said third MOS transistor is coupled to the first output node and said first terminal node of said fourth MOS transistor is coupled to the second output node;

a third current source having a first current terminal coupled to said second terminal node of said third MOS transistor and a second current terminal coupled to a second voltage reference level, said third current source responsive to a third control signal for switching a third operating current through said third MOS transistor on when said third control signal has a first value and switching said third operating current through said third MOS transistor off when said third control signal has a second value; and

a fourth current source having a first current terminal coupled to said second terminal node of said fourth MOS transistor and a second current terminal coupled to said second voltage reference level, said fourth current source responsive to a fourth control signal for switching a fourth operating current through said fourth MOS transistor on when said fourth control signal has a first value and switching said fourth operating current through said fourth MOS transistor off when said fourth control signal has a second value.

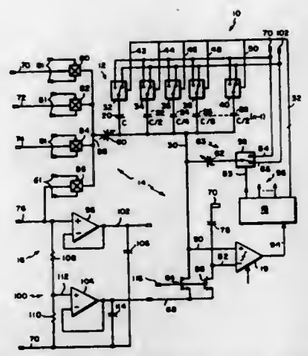
5,600,322

LOW-VOLTAGE CMOS ANALOG-TO-DIGITAL CONVERTER

Patrick J. Garavan, Limerick, Ireland, assignor to Analog Devices, Inc., Norwood, Mass.

Filed Apr. 29, 1994, Ser. No. 236,509
Int. Cl.[6] H03M *1/34*
U.S. Cl. 341—172 **49 Claims**

1. A CMOS analog-to-digital converter, comprising:



a common-mode voltage generating circuit having an output terminal operative to provide an output voltage, which output voltage is between a voltage at a supply voltage node and a voltage at a reference voltage node, and which output voltage is closer to the voltage at the supply voltage node than to the voltage at the reference voltage node,

a switched capacitive ladder network operably interconnecting the output of the common-mode voltage generating circuit, the reference voltage node, the supply voltage node, and an input node, and

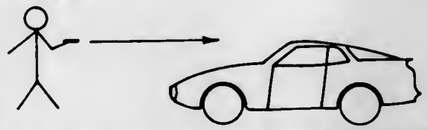
a comparator having a first input responsive to charge stored in the switched capacitor ladder network and a second input responsive to the voltage at the common-mode voltage generating circuit output terminal at the same time that the first input is responsive to charge stored in the switched capacitor ladder network.

5,600,323

TELECONTROL SYSTEM WITH A PLURALITY OF FUNCTIONAL RANGES SELECTED BY DETECTION THRESHOLD

Alain Boschini, Nanterre, France, assignor to Valeo Electronique, Cretell, Cedex, France

Filed Jun. 16, 1994, Ser. No. 260,955
Claims priority, application France, Jun. 21, 1993, 93 07481
Int. Cl.[6] G08C *19/12*
U.S. Cl. 341—173 **4 Claims**



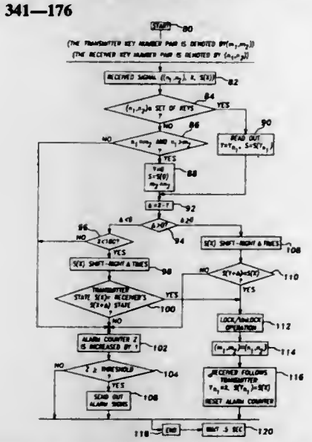
1. A telecontrol system for remote execution of functions for actuating devices in a motor vehicle, comprising a portable emitter for generating a message that is at least partially encoded and a receiver module located in the vehicle, the emitter having a first processor, an emitter connected to the processor for receiving signals therefrom, a group of touch keys for activating the first processor to provide input signals thereto, and a power supply source for the processor and emitter, the receiver module having a receiving circuit for receiving the message generated by the emitter and for decoding the at least partially coded message to give demodulated output signals, a data signal configuring circuit connected to the output of the receiving circuit, a detection threshold switching circuit in said data signal configuring circuit for selecting the detection threshold, said detection threshold corresponding to one of a plurality of predetermined zones of distance from the vehicle, a second processor connected to the output of the data signal configuring circuit for processing the data signal received therefrom, and an actuating circuit for actuating electromagnetic devices of the vehicle to execute functions that each correspond to a respective individual zone, the actuating circuit being connected to the second processor to receive command signals from the second processor, wherein the second processor includes control means for controlling within the receiver module a detection threshold of the data signal configuring circuit to define within the receiver module one of the plurality of zones of functional range around the vehicle.

5,600,324

KEYLESS ENTRY SYSTEM USING A ROLLING CODE

Irving S. Reed, Santa Monica; Xiaowei Yin, Alhambra, and Xuemin Chen, Los Angeles, all of Calif., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 881,417, May 11, 1992, abandoned.
This application Feb. 29, 1996, Ser. No. 609,093
Int. Cl.[6] G08C *19/12*
U.S. Cl. 341—176 **4 Claims**



1. A method for programming transmitters for use in conjunction with a receiver for authenticating said transmitters, wherein each of said transmitters transmits a message signal to said receiver when activated, said message signal including a transmitter identification number field, a transmitter rolling code state number field, and a transmitter clock counter field, said method comprising the steps of:

assigning unique transmitter identification codes to each of at least one transmitters;

placing said receiver in learning mode;

sequentially activating each transmitter and thereby sending said message signal to said receiver;

receiving said message signal at said receiver;

storing, in corresponding registers within said receiver, said identification number, rolling code state and clock counter for each of said transmitters; and

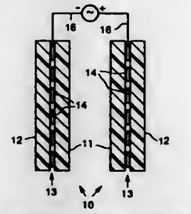
removing said receiver from said learning mode and placing said receiver in normal operation mode.

5,600,325

FERRO-ELECTRIC FREQUENCY SELECTIVE SURFACE RADOME

David A. Whelan, McLean, Va.; John Fraschilla, Redondo Beach, and Brian M. Pierce, Moreno Valley, both of Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Filed Jun. 7, 1995, Ser. No. 473,821
Int. Cl.[6] H01Q *1/42*; G01S *7/28*
U.S. Cl. 342—13 **5 Claims**



1. A ferro-electric frequency selective surface radome comprising:

a grating screen having first and second surfaces and comprising a plurality of printed radiating elements;

inner and outer voltage controlled dielectric layers disposed on the first and second surfaces of the grating screen;

relatively high ohms per square resistive films disposed on exposed surfaces of the inner and outer voltage controlled dielectric layers; and

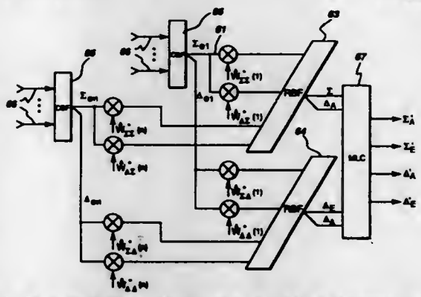
voltage control means coupled to the respective resistive films for controlling the voltages applied to the respective inner and outer voltage controlled dielectric layers by actively varying the dielectric permittivity of the resistive films around a small percentage of its nominal value to provide a ground on outer surfaces of the dielectric layers.

5,600,326

ADAPTIVE DIGITAL BEAMFORMING ARCHITECTURE AND ALGORITHM FOR NULLING MAINLOBE AND MULTIPLE SIDELOBE RADAR JAMMERS WHILE PRESERVING MONOPULSE RATIO ANGLE ESTIMATION ACCURACY

Kai-Bor Yu, Schenectady, and David J. Murrow, Clifton Park, both of N.Y., assignors to Martin Marietta Corp., Moorestown, N.J.

Filed Dec. 16, 1991, Ser. No. 807,546
Int. Cl.[6] G01S *7/36*
U.S. Cl. 342—17 **4 Claims**



1. In a monopulse radar system having an adaptive array antenna, a mainlobe canceller, and a monopulse processor for determining angle of arrival, said adaptive array antenna comprising multiple elemental sensors, said monopulse processor being operable to form target angle of arrival estimation using received sum and difference beam output signals, and said mainlobe canceller being operable to generate said signals representing said sum and difference beams expressed as a product of elevation and

azimuth factors for use by said monopulse processor while simultaneously yielding an undistorted elevation angular measurement by cancelling a mainlobe jammer with nulls in azimuth and an undistorted azimuth angular measurement by cancelling said mainlobe jammer with nulls in elevation, the improvement comprising:

preprocessing means coupled to said adaptive array antenna for forming an identical set of nulls responsive to jammers before said sum and difference beams are formed for monopulse processing;

means for maintaining the mainlobe during preprocessing; and

means coupling said adaptive array in cascade with said mainlobe canceller.

5,600,327

DIELECTRIC WAVEGUIDE MIXER AND DIELECTRIC WAVEGUIDE RADAR MODULE

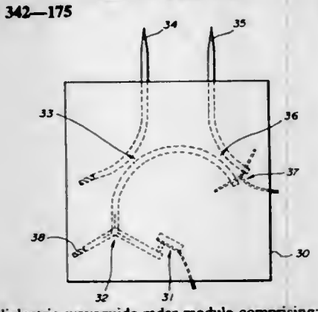
Masahito Shingyoji, Sakado; Hiroyuki Ando, Niiza; Shigiki Kato, Shiki, and Hiroshi Uematsu, Asaka, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 180,955, Jan. 13, 1994. This application Jul. 6, 1995, Ser. No. 499,859

Claims priority, application Japan, Jan. 13, 1993, 5-20616

Int. Cl.[6] G01S *7/28*

U.S. Cl. 342—175 **11 Claims**



1. A dielectric waveguide radar module comprising:

at lease one conductive plate; high-frequency signal generating means held on said conductive plate, for generating a high-frequency signal;

antenna means for radiating out said high-frequency signal;

propagating means for propagating signals, said propagating means having at least a dielectric waveguide held on said conductive plate and connected between said high-frequency signal generating means and said antenna means, for propagating, in a first direction, a high-frequency signal generated by said high-frequency signal generating means to said antenna means for radiation therefrom and propagating, in a second direction opposite to said first direction, a signal reflected by an external object to which the high-frequency signal is radiated and received by said antenna means; and

mixer means disposed across said dielectric waveguide for mixing the signals propagated in said first and second directions into a beat signal.

5,600,328

DEMODULATOR CIRCUIT IN GLOBAL POSITIONING SYSTEM RECEIVER

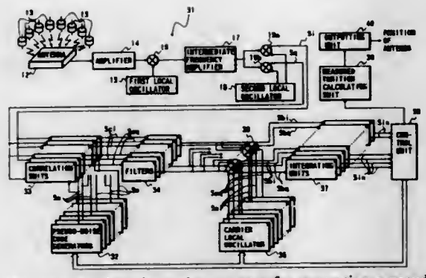
Ryobun Tachita, Kawasaki; Akihisa Kawasaki, Sagamihara, and Izumi Satoh, Matsumoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 21, 1995, Ser. No. 492,968

Int. Cl.[6] G01S *5/02*

U.S. Cl. 342—357 **12 Claims**

1. A demodulator circuit in a global positioning system, comprising:



only one pseudo-noise code generator for generating a pseudo-noise code having a code phase agreeing with a code phase of a noise code peculiar to a respectively corresponding satellite every sampling period;

correlation means for generating a correlation signal indicating a correlation between a radio wave transferred from the satellite and the pseudo-noise code generated by the pseudo-noise code generator respectively corresponding thereto every sampling period to remove the noise code from the radio wave, the radio wave being formed of the noise code, a satellite signal and a carrier wave modulated with the noise code and the satellite signal, and the correlation signal being formed of the satellite signal and the carrier wave modulated with the satellite signal;

a plurality of local oscillators for generating respective carrier oscillating signals every sampling period, a plurality of said carrier oscillating signals having oscillating frequencies which are close to a carrier frequency of the carrier wave of the correlation signal generated by the correlation means;

a plurality of frequency converters for respectively frequency-converting the correlation signal generated by said correlation means with one of the carrier oscillating signals generated by said local oscillators every sampling period to generate a plurality of base signals, each of the base signals being formed by removing the carrier wave from the correlation signal;

integrating means for time-integrating each of the base signals generated by the frequency converters and obtaining a plurality of integrating signals; and

control means for controlling the pseudo-noise code generator according to the integrating Signals obtained by the integrating means to make the code phase of the pseudo-noise code agree with that of the noise code peculiar to the satellite, controlling the local oscillators according to the integrating signals to make a particular oscillating frequency of a particular carrier oscillating signal generated by one of the local oscillators agree with the carrier frequency of the carrier wave of the correlation signal, and detecting the satellite signal of the satellite from a particular integrating signal obtained by the integrating means which relates to a particular base signal generated with the particular carrier oscillating signal by one of the frequency converters.

5,600,329

DIFFERENTIAL SATELLITE POSITIONING SYSTEM GROUND STATION WITH INTEGRITY MONITORING

Mats A. Brenner, Plymouth, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

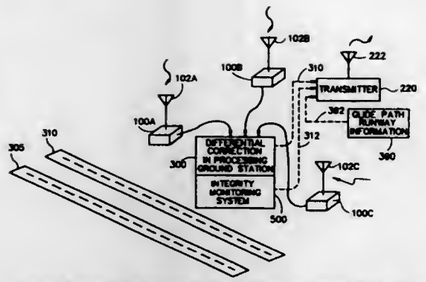
Filed Jun. 30, 1995, Ser. No. 497,995

Int. Cl.[6] A01S *5/02*; **H04B** *7/185*; **G01C** *21/00*; **G06F** *7/70*

U.S. Cl. 342—357 **12 Claims**

1. A differential satellite positioning system ground station for determining GPS differential correction information with integrity monitoring, said differential satellite positioning system ground station comprising:

a plurality of GPS signal receivers, each at a known geocentric position, each operative for receiving a satellite-specific information signal transmitted from each of selected ones of a plurality of satellite vehicles, and each operative for deriving, from each of said received satellite-specific information signals from said satellite vehicles, receiver-satellite-specific GPS signal information;



first differential correction processing means for deriving receiver-satellite-specific GPS differential correction information associated with each of said satellite-specific information signals, where said receiver-satellite specific differential correction information is a function of said receiver-satellite-specific GPS signal information determined by a specific one of said GPS signal receivers and said known position of said GPS signal receivers for the same one of said GPS signal receivers;

second differential correction processing means operative for determining satellite-specific GPS differential correction information, associated with each of said satellite-specific information signals, as a function of said receiver-satellite-specific GPS differential correction information determined by more than one of said plurality of GPS signal receivers and associated with the same one of said satellite-specific information signals;

ground station integrity monitoring means for determining satellite-specific integrity information associated with each of said satellite-specific information signals, as a function of said receiver-satellite-specific GPS differential correction information and said satellite-specific GPS differential correction information, where said satellite-specific integrity information is descriptive of the integrity of said satellite-specific GPS differential correction information.

5,600,330

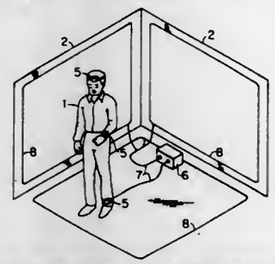
DEVICE FOR MEASURING POSITION AND ORIENTATION USING NON-DIPOLE MAGNET IC FIELDS

Ernest B. Blood, Burlington, Vt., assignor to Ascension Technology Corporation, Burlington, Vt.

Filed Jul. 12, 1994, Ser. No. 273,965

Int. Cl.[6] G01B *3/02;5/04;7/14*

U.S. Cl. 342—463 **15 Claims**



1. A device for determining position and orientation of a receiving antenna with respect to a transmitting antenna using a plurality of electromagnetic fields, said device comprising:

transmitting means for transmitting a plurality of non-rotating electromagnetic fields, each from a different location where said transmitting means comprises more than one non-dipole antennae;

means for supplying a current to said transmitting means for creating said transmitted electromagnetic fields;

receiving means disposed to receive said electromagnetic fields, wherein said receiving means is disposed inside a volume of space where non-dipole field conditions exist; and

processing means for measuring and converting output signals from said receiving means into position and orientation measurements.

5,600,331

CONICAL MICROSTRIP ANTENNA PREPARED ON FLAT SUBSTRATE AND METHOD FOR ITS PREPARATION

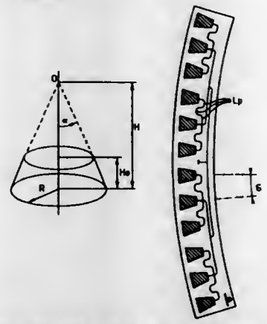
Bernard Buralli, Cannes La Bocca, France, assignor to Aerospatiale Societe Nationale Industrielle, France

Filed Dec. 23, 1994, Ser. No. 364,482

Claims priority, application France, Dec. 31, 1993, 93 15971

Int. Cl.[6] H01Q *1/38*

U.S. Cl. 343—700 MS **14 Claims**



1. A microstrip antenna which can be carried by a frustum of a cone, said cone having a height H, a half-angle α at the apex, and a base with a corresponding circular reference line of radius R, said frustum of said cone having a height H_o and sharing said base and said circular reference line with said cone, said microstrip antenna comprising:

a layer of dielectric material disposed on said frustum and having a first surface and a second surface;

a conductive layer, complementary with said second surface of said layer of dielectric material for forming a ground plane;

an annular succession of N radiating patches made of a conductive metal disposed on said first surface and divided into S identical sub-arrays of radiating patches, each sub-array of radiating patches, of said S identical sub-arrays of radiating patches, having radiating patches which are shaped so that said radiating patches resonate in a predetermined frequency band having a center frequency F_o; and

at least one feed array for each said S identical subarrays of radiating patches, each feed array, of said at least one feed array, comprising:

a common point, each said at least one feed array connecting said radiating patches of said at least one sub-array of radiating patches to said common point; and

conductive lines, said conductive lines having lengths for forming a tree-structure array of dividers such that said lengths of said conductive lines between said common point and said radiating patches are substantially identical in length to within $c/(F_o\sqrt{\epsilon e})$ where c is the speed of light and ϵe is the effective dielectric constant of a propagation medium constituted by a dielectric substrate and said conductive lines, said tree-structure array of dividers being formed on the same said surface of said layer of dielectric

material that said conductive metal of said radiating patches is formed, said tree-structure array of dividers having n stages, each stage i of said n stages having at least one divider of said dividers, all said dividers which are within a same stage of said n stages being of the same order, each divider of said at least one divider within said stage i of said n stages comprising an integer number of substantially identical straight line segments with equal angles $\gamma 2$ between said straight line segments when developed onto a flat surface, all said dividers within said stage i approximating arcs of a common circle which is concentric with a circular arc formed by said circular reference line when developed onto a flat surface, said straight line segments of said stage i of said n stages each having a length ΔLa_i and each of two said straight line segments which are adjacent to each other having an angle γi between them such that

$$Na_i = La_i/\Delta La_i,$$

said Na_i being an integer number of said straight line segments for said stage i, said integer number being equal to or greater than 1, where

$$La_i = 2\pi \sin(\alpha)\, Ra_i 2^{\delta 3}/[S(2^{i-m}3^m)],$$

said $\delta 3$ being Chrönecker's symbol, said Chrönecker's symbol having a value equal to 1 if said stage i has at least one said divider which is of third order and said Chröneckker's symbol having a value equal to 0 if said stage i has at least one said divider which is of second order, said m being the number of stages having at least one divider which is of third order between stage 1 of n number of total stages and said stage i of said n stages, said stages having at least one divider which is of third order being counted within each identical sub-array of said S identical sub-arrays from said common point, and where

$$Ra_i = H/\cos(\alpha) - h + (n - i + 1)\, p \sum_{k=1}^{k=i} h_k,$$

said p having a value equal to 1 if said feed array is under said radiating patches and said p having a value equal to −1 if said feed array is over said radiating patches, each radiating patch of said radiating patches having an edge, said h being the distance between said circular reference line of said frustum and said edge of a radiating patch of said radiating patches connected to said feed array, said h_k being the height of a stage k of said n stages, said angle γi being equal to $\Delta La_i/Ra_i$.

5,600,332

WIDEBAND, LOW FREQUENCY, AIRBORNE VIVALDI ANTENNA AND DEPLOYMENT METHOD

Kenneth W. Brown, Yucaipa; Keith G. Kato, Rancho Cucamonga; David R. Sar, Placentia, and Byron M. Niemeier, Claremont, all of Calif., assignors to Hughes Missile Systems Company, Los Angeles, Calif.

Filed Jul. 24, 1995, Ser. No. 506,055
Int. Cl.[6] H01Q 1/30
U.S. Cl. 343—707 **14 Claims**

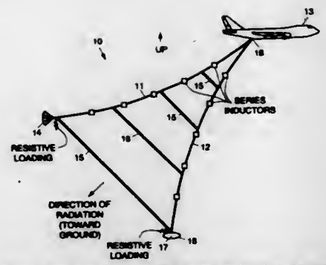
1. A wideband, low frequency, airborne Vivaldi antenna for use with an airborne vehicle, said antenna comprising:

upper and lower conducting wires that extend from a moving airborne vehicle, which when extended, form a radiator having a Vivaldi taper;

a weight connected to an end of the lower wire distal from the airborne vehicle; and

nonconducting guy-wires connected between the upper and lower conducting wires at predetermined locations that form and maintain an optimal Vivaldi taper between the conducting wires;

and wherein the Vivaldi taper of the conducting wires is maintained by a combination of aerodynamic drag on the conducting wires, the weight, and the nonconducting guy-wires, and wherein the antenna radiates energy towards the ground relative to the airborne vehicle.

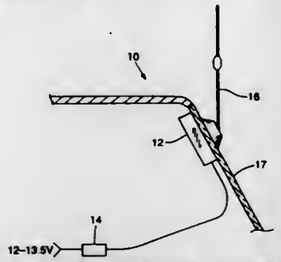


5,600,333

ACTIVE REPEATER ANTENNA ASSEMBLY

Douglas W. Justice, Wilsonville, Oreg., and Damon L. Patton, Vancouver, Wash., assignors to Larsen Electronics, Inc., Vancouver, Wash.

Filed Jan. 26, 1995, Ser. No. 379,690
Int. Cl.[6] H01Q 1/32
U.S. Cl. 343—713 **22 Claims**



1. In an antenna assembly for use with a personal communications device in a motor vehicle, the assembly including a first antenna positioned outside the vehicle, and a second antenna coupled with the first antenna, the first and second antennas being positioned on opposing surfaces of a window or windshield of said vehicle, the assembly characterized by absence of a feedline extending completely between said antenna assembly and the personal communications device with which it is to be used, wherein a user of the personal communications device can gain benefit from the first antenna without the hindrance of a physical, wired connection extending completely between the device and the antenna assembly, an improvement comprising: an amplifier through which the second antenna is coupled to the first antenna, and a conductive body positioned between the two antennas to increase RF isolation therebetween, wherein a compact active repeater assembly is provided.

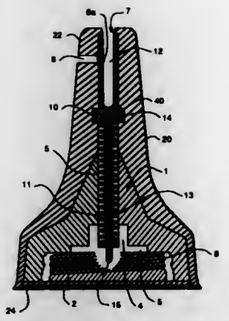
5,600,334

MOBILE ANTENNA MOUNT

Glendon R. Whitehouse, Amherst, N.H., assignor to Cushcraft Corporation, Manchester, N.H.

Filed Aug. 18, 1995, Ser. No. 516,788
Int. Cl.[6] H01Q 1/32;1/12
U.S. Cl. 343—715 **8 Claims**

1. A mobile antenna mount structure for mounting a whip-type antenna on a vehicle, comprising a two-piece, electrically continuous assembly defining a first and a second chamber, said first chamber adapted to accommodate a contact assembly, said second chamber adapted to accommodate a whip-type antenna, said first and second chamber being separated from one another by a wall, and a resiliently deformable housing surrounding and weatherproofing said two-piece electrically continuous assembly, said resiliently deformable housing including a lower lip which provides a seal when said two-piece continuous assembly is mounted on a vehicle, said two-piece assembly being mounted in a rigid housing with said rigid housing mounted in said resiliently deformable housing, and wherein said two-piece assembly includes an outwardly directed flange for engaging with a corresponding recess in said resiliently deformable housing.

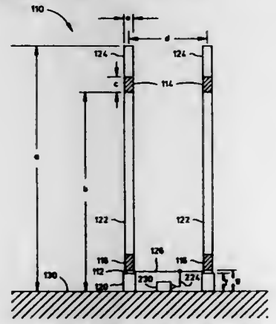


5,600,335

HIGH-POWER BROADBAND ANTENNA

Robert S. Abramo, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 21, 1994, Ser. No. 369,594
Int. Cl.[6] H01Q 9/00
U.S. Cl. 343—749 **7 Claims**



1. A high-power broadband antenna comprising:

at least two vertical antenna sections each comprising a plurality of substantially collinear electrically conductive radiating elements operably coupled to a broadband input signal for enhancing antenna efficiency of said high-power broadband antenna for said broadband input signal, wherein each said antenna section is fixed to an electrical insulator mounted on a horizontal ground plane; and

at least two loading elements electrically coupled to said radiating elements; wherein each of said loading elements comprises a parallel combination of a resistor, an inductor, and a capacitor formed into each of said antenna sections and operably coupled to said radiating elements for effecting said antenna efficiency of said high-power broadband antenna, wherein:

said antenna sections are spaced apart by approximately 2 percent or less of a base wavelength;

each of said antenna sections comprises a lower section, a center section, and an upper section;

said lower section has a length sufficient for making an electrical connection to an impedance matching transformer;

said center section has a length of approximately 6 percent of said base wavelength; and

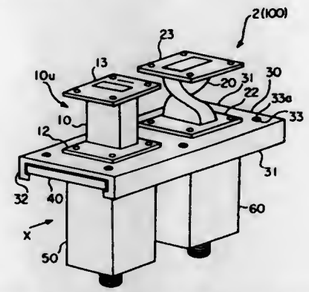
said upper section has a length of approximately 1 percent of said base wavelength.

5,600,336

ANTENNA DEVICE AND SATELLITE COMMUNICATION RECEPTION SYSTEM

Kazuhara Kubo; Takayoshi Tsurumaki, and Masahiro Tamura, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 15, 1994, Ser. No. 289,587
Claims priority, application Japan, Jan. 31, 1994, 6-009292
Int. Cl.[6] H01Q 13/00
U.S. Cl. 343—756 **12 Claims**



1. An antenna device for receiving radio wave transmitted from a communication satellite, converting the received radio wave into an electric signal, amplifying the signal, and outputting the amplified signal to a receiver, comprising:

a pair of low-noise block converters for converting radio waves supplied from respective radio wave receiving ports thereof into electric signals and amplifying the electric signals;

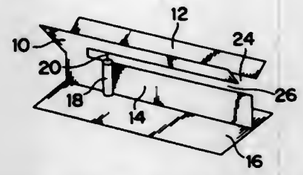
a fixing adapter, said low-noise block converters being arranged in an array and fixed at the radio wave receiving ports thereof to said fixing adapter, said fixing adapter having a pair of respective radio wave passage openings in registry with said radio wave receiving ports, respectively, of the low-noise block converters;

a holder unit, said fixing adapter being held on said holder unit for a sliding movement in a direction along said array, said holder unit having a pair of respective radio wave passage openings in registry with said radio wave passage openings, respectively, of said fixing adapter, and

a waveguide unit mounted on a surface of said holder unit remotely from said fixing adapter and adapted to be connected to an orthogonal mode transducer for receiving a radio wave from the satellite, said waveguide unit comprising a straight waveguide for guiding a radio wave from the orthogonal mode transducer straight to one of said low-noise block converters and a twisted waveguide for turning a radio wave from the orthogonal mode transducer through 90° and guiding the radio wave to one of said low-noise block converters.

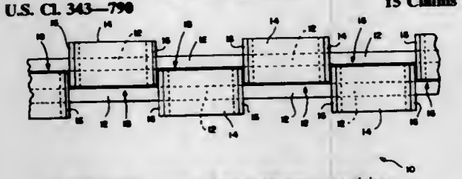
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Y-ANTENNA
Jan Cassel, Djursholm, Sweden, assignor to Moteco AB, Ruda, Sweden
PCT No. PCT/SE93/00969, § 371 Date May 23, 1995, § 102(e) Date May 23, 1995, PCT Pub. No. WO94/13030, PCT Pub. Date Jun. 9, 1994
PCT Filed Nov. 15, 1993, Ser. No. 428,070
Claims priority, application Sweden, Nov. 20, 1992, 9203529
Int. Cl.[6] H01Q *13/10*
U.S. Cl. 343—770 **13 Claims**



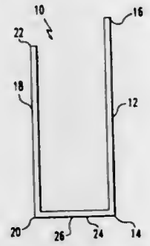
1. A Y-antenna, comprising: an elongate metal structure having a Y-shaped cross-sectional shape, said Y-shaped structure having a first upper member and a second upper member forming an angle with one another, and said upper members each having an upper edge and a lower edge, said Y-shaped structure further including a lower, substantially vertical member having an upper edge and a lower edge, and the lower edges of said two upper members being connected to the upper edge of the lower member;
a bottom metal plate galvanically connected at substantially right angles to the lower member at the lower edge thereof;
and said Y-shaped structure including two notches extending substantially parallel and provided one in each of said upper members, the notches being quarter wave resonant at different frequencies, a first one of the notches corresponding to a first frequency and a second of said notches corresponding to a higher frequency than said first frequency, said notches being open at a first end and closed at an opposite end, and said notches having one side in common which common side is defined by the upper edge of the lower member.

5,600,338
COAXIAL-COLLINEAR ANTENNA
Warner L. Ecklund, Boudler, and John W. Neuschaefer, Lafayette, both of Colo., assignors to R.dian Corporation, Austin, Tex.
Filed Feb. 27, 1995, Ser. No. 394,847
Int. Cl.[6] H01Q *1/16*
U.S. Cl. 343—790 **15 Claims**



1. An improved coaxial-collinear antenna comprising:
a first continuous inner conductor having a first plurality of individual outer conductors aligned coaxially therewith, each said outer conductor in said first plurality of outer conductors being equidistantly spaced along said first continuous inner conductor by an amount substantially equal to the length of one of said outer conductors; and
a second continuous inner conductor having a second plurality of individual outer conductors aligned coaxially therewith, each said outer conductor in said second plurality of outer conductors being equidistantly spaced along said second continuous inner conductor by an amount substantially equal to the length of one of said outer conductors;
said first and second continuous inner conductors being parallel, each said outer conductor in said first plurality of outer conductors being electrically connected to said second continuous inner conductor between consecutively spaced outer conductors in said second plurality of outer conductors, each said outer conductor in said second plurality of outer conductors being electrically connected to said first continuous inner conductor between consecutively spaced outer conductors in said first plurality of outer conductors.

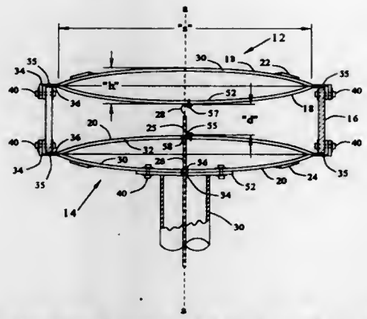
5,600,339
ANTENNA
Edward A. Oros, 2629 Sapling Dr., Allison Park, Pa. 15101
Filed Dec. 6, 1994, Ser. No. 349,807
Int. Cl.[6] H01Q *9/04*
U.S. Cl. 343—825 **8 Claims**



1. An antenna comprising:
a first conductive element, having a first end and a second end, having an electrical length of essentially ½ wavelength at an operation frequency;
a second conductive element, having a first end and a second end, having an electrical length essentially ½ wavelength at said operation frequency, said second conductive element adjacent and essentially in parallel to the first conductive element;
a third conductive element in communication with the first and second conductive elements at their first ends so signals may pass through the first, second and third conductive elements, said third conductive element having an electrical length of essentially 0.06 wavelengths;
a feed point attached to one of said first conductive element, said second conductive element, and said third conductive element.

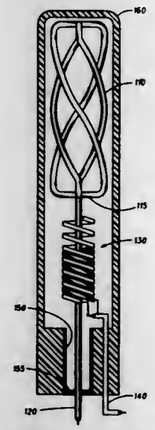
5,600,340
WIDEBAND OMNI-DIRECTIONAL ANTENNA
Thinh Q. Ho, Anaheim, and John W. Rockway, San Diego, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Apr. 13, 1995, Ser. No. 422,366
Int. Cl.[6] H01Q *1/48*
U.S. Cl. 343—846 **12 Claims**

1. An omni-directional antenna, comprising:
a first spheroid having an electrically conductive first outer surface and a first center axis;
a second spheroid having an electrically conductive second outer surface and a second center axis;
a structural member for supporting said first spheroid a fixed distance from said second spheroid so that said first and second center axes are generally coincident;
first resistive ring mounted to said first outer surface;
a second resistive ring mounted to said second outer surface;
a first electrical conductor directly connected to said second spheroid; and



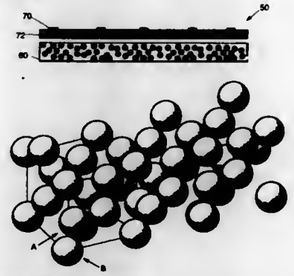
a second electrical conductor directly connected to said first spheroid and electrically insulated from said first electrical conductor.

5,600,341
DUAL FUNCTION ANTENNA STRUCTURE AND A PORTABLE RADIO HAVING SAME
Kevin M. Thill, Kenosha, Wis., and Christopher N. Kurby, Elmhurst, Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Aug. 21, 1995, Ser. No. 517,490
Int. Cl.[6] H01Q *1/24;1/36*
U.S. Cl. 343—895 **22 Claims**



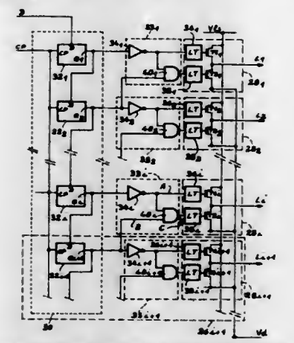
1. A dual function antenna structure for transceiving first and second signals of different frequencies, comprising:
a primary antenna structure including
a primary antenna element capable of transceiving the first signal in a first mode; and
a first feed operatively coupled to the primary antenna element to feed therein the first signal to be transceived by the primary antenna element in the first mode;
a second feed to feed therein the second signal to be transceived in a second mode; and
a coupling element operatively connected between the primary antenna structure and the second feed disposed to electromagnetically couple directly between the primary antenna structure and the second feed and having characteristics sufficient to cause the primary antenna structure to form a secondary antenna element for transceiving the second signal by the primary antenna structure in the second mode at a different frequency than the first signal in the first mode.

5,600,342
DIAMOND LATTICE VOID STRUCTURE FOR WIDEBAND ANTENNA SYSTEMS
Joseph L. Pikulski, Westlake, and Juan F. Lam, Agoura Hills, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Filed Apr. 4, 1995, Ser. No. 416,626
Int. Cl.[6] H01A *15/00*
U.S. Cl. 343—909 **17 Claims**



1. An antenna array comprising:
an array of radiators; and
a substrate disposed below said array of radiators for reflecting incident energy radiated by said array, said substrate comprising a layer of dielectric photonic band gap material, said layer comprising a periodic structure of nonintersecting voids formed in said dielectric material to form a diamond lattice void structure emulating an atomic diamond lattice structure, said substrate fabricated without resonant defects in said periodic structure of voids.

5,600,343
MULTIPLEXED MATRIX DISPLAY SCREEN AND ITS CONTROL PROCESS
Denis Sarrasin, Sassenage, France, assignor to Commissariat a l'Energie Atomique, France
Continuation of Ser. No. 150,467, Nov. 10, 1993, abandoned. This application Apr. 27, 1995, Ser. No. 430,187
Claims priority, application France, Nov. 13, 1992, 92 13661
Int. Cl.[6] G09G *3/22*
U.S. Cl. 345—74 **6 Claims**



1. A multiplexed matrix display screen comprising n row electrodes (**10**) and m column electrodes (**8**) in crossed manner for carrying control signals, n row control circuits (**26***i*) for successively controlling the n row electrodes, with n and m being integers ≧2, the control circuit of the row electrode Li, with i being an integer such that 1≦i≦n, having means for applying to the row electrode Li a selection potential (Vls) during a first selection time T1 and then a discharge potential (Vd) during at least part of a second selection time of at least one other row electrode (Li+1)

and for placing under high impedance the row electrode Li outside the first selection time and said part of the second selection time, the discharge potential (Vd) applied to the row electrode (Li) and a selection potential (Vls) applied to the said other row electrode (Li+1) being initiated simultaneously so as to permit said screen to have a total image time T equal to n times T1, and column control circuits (24) for simultaneously applying to the m column electrodes during the first selection time potentials (−Vc, +Vc) for display of data of the row Li, the discharge potential (Vd) being below the smallest potential (−Vc) applied to the column electrodes, and wherein said multiplexed matrix display screen further comprises at least one cathodoluminescent anode (20), electrode emitting microtips (16) supported by column electrodes, the row electrodes resting on the column electrodes and being insulated therefrom and having holes from which the microtips emerge, and also wherein said means for applying said selection potential and said discharge potential, and for placing under high impedance said low electrodes includes an input circuit comprising a shift register with n+1 flip-flops for controlling the n output circuits, a push-pull circuit with at least two logic inputs and one output, said push-pull circuit being connected to said selection and discharge potentials, and said tow logic inputs being connected to combinatorial logic.

5,600,344

LIQUID CRYSTAL DISPLAY

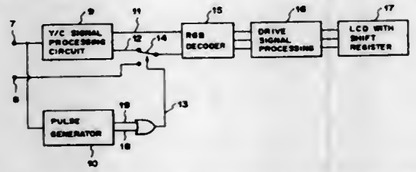
Koichi Sono, Hiratsuka; Mamoru Miyawaki, Isehara; Akira Ishizaki, Atsugi; Katsuhisa Ogawa, Machida, and Katsuhito Sakurai, Hadano, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 391,062, Feb. 21, 1995, abandoned, which is a continuation of Ser. No. 283,144, Aug. 1, 1994, abandoned, which is a continuation of Ser. No. 22,510, Feb. 25, 1993, abandoned. This application Nov. 21, 1995, Ser. No. 561,153

Claims priority, application Japan, Feb. 28, 1992, 4-075980

Int. Cl.[6] G09G *3/36*

U.S. Cl. 345—87 **10 Claims**



1. A liquid crystal display which is driven in multiplex comprising:

a main display having a plurality of pixels arranged in a matrix, and a sub-display provided at least partly around a periphery of said main display;

switch means for selecting between an information signal displayed in said main display and a black level signal displayed in said sub-display; and

a drive signal processing circuit for enabling the selected signal to appear on said liquid crystal display,

wherein switch means is switched according to a logical sum of horizontal blanking signals and a vertical blanking signal, and said sub-display always presents a black representation.

5,600,345

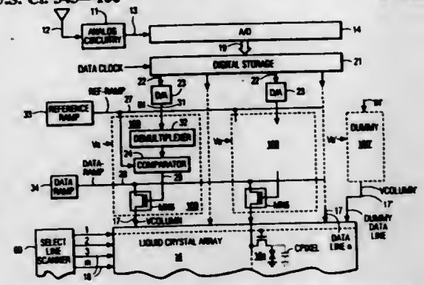
AMPLIFIER WITH PIXEL VOLTAGE COMPENSATION FOR A DISPLAY

Andrew G. F. Dingwall, Princeton, and Sherman Weisbrod, Skillman, both of N.J., assignors to Thomson Consumer Electronics, S.A., Courbevoie, France

Filed Mar. 6, 1995, Ser. No. 398,822

Int. Cl.[6] G02F *1/133*; G09G *3/36*

U.S. Cl. 345—100 **6 Claims**



1. A video apparatus for developing a signal containing picture information in pixels of a display device arranged in columns, comprising:

a source of a video signal;

a plurality of data line drivers responsive to said video signal for applying said video signal to said pixels, a given data line driver of said plurality of line drivers being coupled to a corresponding data line associated with a corresponding column of said pixels for developing an output signal in said associated data line at a magnitude that is determined by a corresponding portion of said video signal; and

an amplifier stage including a dummy data line driver for generating a control signal that is coupled to each of said plurality of said data line drivers for controlling said output signal of each of said plurality of data line drivers such that for a given magnitude of said video signal portion a tendency of said output signal of said given data line driver to change over the operation lifetime is compensated by said control signal in a manner to reduce said change in said output signal of each of said plurality of data line drivers.

5,600,346

MULTIWINDOW DISPLAY CONTROL METHOD AND APPARATUS

Hajime Kamata; Tsuneo Katsuyama; Toshimitsu Suzuki, all of Kawasaki; Yu Minakuchi, and Katsutoshi Yano, both of Tokyo, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 19, 1991, Ser. No. 717,904

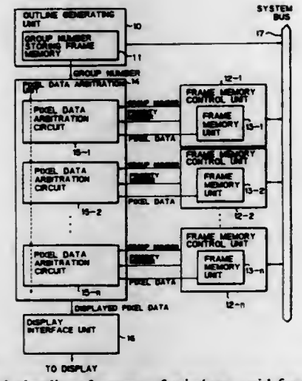
Claims priority, application Japan, Jun. 19, 1990, 2-161087; Sep. 14, 1990, 2-245372

Int. Cl.[6] G09G *5/14*

U.S. Cl. 345—120 **17 Claims**

1. A multiwindow display control apparatus for controlling a display of multiwindows having a plurality of groups of windows each of said plurality of groups of windows having a plurality of windows, comprising:

a plurality of frame memory control means for storing pixel data corresponding to each of said plurality of windows to be displayed, a first group number identifying said plurality of windows located in the each of said plurality of groups of windows, and a priority number identifying a display priority for the each of said plurality of windows located in the each



of said plurality of groups of windows, said frame memory control means comprises corresponding frame memory control means;

outline generating means for generating a second group number identifying a desired group of windows to be displayed;

pixel data arbitration means including a plurality of pixel data arbitration circuits connected to each other in a daisy chain structure, operatively connected to said corresponding frame memory control means and to said outline generating means, for determining a determined group of windows having a coincidence when said first group number coincides with said second group number, and for determining a determined window to be displayed having said priority number assigned the highest priority in the determined group of windows; each of said plurality of pixel data arbitration circuits includes:

a previous stage pixel data arbitration circuit connected to said outline generating means storing a previous priority number and previous pixel data;

a next stage pixel data arbitration circuit connected to said outline generating means;

first comparing means for detecting the coincidence between said second group number generated from said outline generating means and said first group number stored in the corresponding frame memory control means;

second comparing means for detecting whether the priority number stored in the corresponding frame memory control means is larger than the previous priority number sent from the previous stage pixel data arbitration circuit; and

selecting means for outputting, when said first comparing means detects the coincidence and said second comparing means detects that the priority number stored in the corresponding frame memory control means is larger than the previous priority number sent from the previous stage pixel data arbitration circuit, the priority number and the pixel data stored in the corresponding frame memory control means, and said selecting means for outputting, when one of said first comparing means does not detect the coincidence and said second comparing means detects that the priority number stored in the corresponding frame memory control means is smaller than the previous priority number sent from the previous stage pixel data arbitration circuit, the previous priority number and the previous pixel data sent from the previous stage pixel data arbitration circuit, and said second group number generating from said outline generating means being sent to the next stage pixel data arbitration circuit; and

display means, operatively connected to said pixel data arbitration means, for displaying determined pixel data corresponding to the determined window.

5,600,347

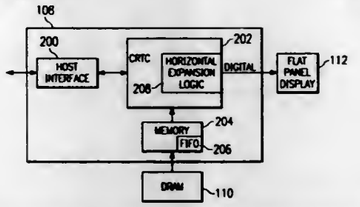
HORIZONTAL IMAGE EXPANSION SYSTEM FOR FLAT PANEL DISPLAYS

Stephen P. Thompson, Delray Beach, Fla.; Masaki Oie; Akihiro Ogura, both of Sagamihara, Japan; Kiyoshi Takemura, Tokyo, Japan, and Joseph D. Harwood, Boca Raton, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1993, Ser. No. 177,628

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—127 **21 Claims**



1. Apparatus for horizontal expansion of a first sequence of data elements representing pixels of graphics display lines to a second longer sequence of data elements for display on a graphics display panel of higher horizontal resolution than that of said first data sequence, the apparatus comprising:

an input register for receiving said first data sequence at a first clock frequency;

means for generating a second clock signal at a frequency that is a multiple of said first clock frequency;

means for generating from said first data sequence an intermediate oversampled data sequence at the frequency of said second clock signal; and

means for decimation of said intermediate oversampled data sequence to produce said second longer sequence of data elements for display on said graphics display panel, said decimation means comprising means for selectively passing or discarding data elements from said intermediate oversampled data sequence according to Bresenham's line algorithm, thereby generating said second longer sequence.

5,600,348

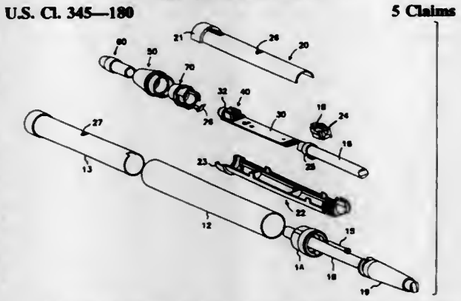
ADJUSTABLE TIP LIGHT PEN

Paul A. Bartholow, St. Louis Park, and Douglas E. Loebertmann, Shakopee, both of Minn., assignors to FTG Data Systems, Stanton, Calif.

Filed Aug. 19, 1994, Ser. No. 292,867

Int. Cl.[6] G09G *1/00*

U.S. Cl. 345—180 **5 Claims**



1. A light pen for use in data input to data processing equipment, comprising:

a pen-like housing for holding by a user;

a pen tip structure disposed to be carried at the forward end of the light pen for contacting with the surface of a screen of the data processing equipment;

means for mounting the tip structure for relative movement with the housing as the light pen is pushed in contact with a surface;

electrical switching means mounted within said housing and operative to provide a switch function in response to said tip movement;

a stop member within said housing for contact by said tip structure as the light pen is pushed into contact with a surface, to limit the travel of the tip structure; and

adjustment means for selectively adjusting the effective distance between the stop member and tip structure so as to control the length of tip travel during user-activated contact with a surface to initiate the switch function of the light pen.

5,600,349

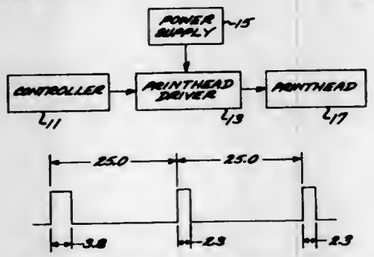
METHOD OF REDUCING DRIVE ENERGY IN A HIGH SPEED THERMAL INK JET PRINTER

Brian J. Keefe, Stanford, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 14,301, Feb. 5, 1993, abandoned. This application Feb. 24, 1995, Ser. No. 394,927

Int. Cl.[6] B41J *2/05*

U.S. Cl. 347—11 **10 Claims**



1. A thermal ink jet printer system comprising:

a thermal ink jet printhead having a plurality of ink drop firing resistors responsive to ink droplet firing pulses; and

control means for applying to a selected one of said ink firing resistors at least a first in sequence pulse of a pulse group pattern having a sequence of pulses that cause firing of respective ink droplets when applied to the selected ink firing resistor, said pulses being sufficiently closely spaced in time by time intervals so that the droplets fired pursuant thereto combine in flight to form a single drop having a volume that depends on the number of pulses of the pulse group that are applied, said control means controlling the pulses of the pulse group such that the drive energy for the second and subsequent pulses in the pulse group is reduced relative to the drive energy of the first pulse of the pulse group and such that each of the pulses of the pulse group has a pulse width that is less than any of the time intervals between the pulses of the pulse group, whereby heat build up in the thermal ink jet printhead is reduced as a result of the reduced drive energy of the second and subsequent pulses of the pulse group.

5,600,350

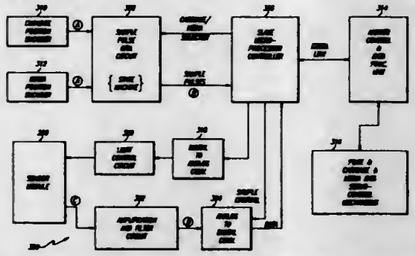
MULTIPLE INKJET PRINT CARTRIDGE ALIGNMENT BY SCANNING A REFERENCE PATTERN AND SAMPLING SAME WITH REFERENCE TO A POSITION ENCODER

Keith E. Cobbs, San Diego; Robert W. Beauchamp, Carlsbad, and Paul R. Sorenson, San Diego, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 55,624, Apr. 30, 1993, abandoned. This application Oct. 11, 1995, Ser. No. 540,908

Int. Cl.[6] B41J *29/393*

U.S. Cl. 347—19 **16 Claims**



1. An improved image registration system for a multi-color inkjet printer/plotter comprising:

carriage assembly means for retaining multiple inkjet cartridges, each of said cartridges having a plurality of nozzles adapted to eject ink in response to the application of an electrical signal thereto;

first motive means for moving said carriage assembly means in a first axis;

second motive means for moving print media in a second axis transverse to said first axis, said first axis being a scan axis and said second axis being a media axis;

first position encoder means for sensing the position of the carriage assembly in said first axis and providing position encoder signals in response thereto;

control means for providing electrical signals for causing said nozzles in said inkjet cartridges to eject ink onto said media and create an image thereon in response to timing signals;

sensor means for optically sensing said image and providing a set of sensed signals in response thereto; and

processor means for sampling said sensed signals with said position encoder signals to generate position-sampled signals, determining a phase difference therebetween, and using the phase difference to provide corrected timing signals in response thereto.

5,600,351

INKJET PRINTER WITH INCREASED PRINT RESOLUTION IN THE CARRIAGE SCAN AXIS

Clayton L. Holstun, Escondido; Ronald A. Askeland, San Diego; Frank Drogo, San Marcos, all of Calif., and Brian P. Canfield, Barcelona, Spain, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 58,731, May 3, 1993, abandoned. This application Jun. 23, 1994, Ser. No. 264,678

Int. Cl.[6] B41J *2/145;2/205*

U.S. Cl. 347—40 **20 Claims**

1. A printer having ink cartridges mounted on a carriage for applying ink to media driven in a media advance direction comprising:

a carriage movable along a carriage scan axis;

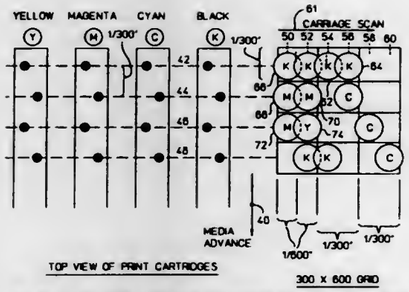
ink means for firing ink droplets from the cartridges at a predetermined firing frequency from ink nozzles having a certain spacing in the media advance direction;

wherein said carriage scans across the media to apply the droplets on an addressable grid which has a first resolution in the carriage scan axis and a second resolution in the media advance direction, said first resolution being higher than said second resolution, and said first resolution and said second resolution define standard pixels each having:

a width along the carriage scan axis equal to twice the reciprocal of the first resolution, and

a height along the media advance direction equal to the reciprocal of the second resolution; and

wherein said ink means fire droplets sized so that in each pass of the carriage two droplets are addressed to substantially each standard pixel.



5,600,352

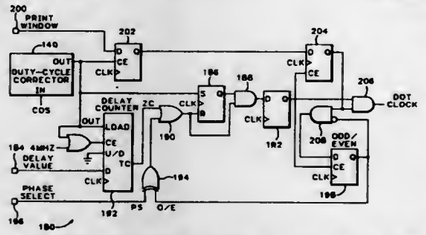
APPARATUS AND METHOD FOR CONTROLLING COALESCENCE OF INK DROPS ON A PRINT MEDIUM

David L. Knierim, Wilsonville, and Mark R. Parker, Portland, both of Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Filed Jun. 27, 1994, Ser. No. 267,061

Int. Cl.[6] B41J *2/145;2/15;23/00*

U.S. Cl. 347—40 **22 Claims**



1. A method for improving quality of a print by controlling positioning of phase change ink drops on it print medium in an ink-jet printer having a print head and a print medium that undergo relative movement when producing the print, comprising the steps of:

moving at least one of the print head and the print medium such that the relative movement follows an initial scan line in a single direction along the print medium;

receiving an encoder signal having odd- and even-numbered transitions indicative of incremental positions of the relative movement;

generating in response to the encoder signal a dot clock having odd- and even-numbered transitions characterized by an asymmetrical timing relationship; and

ejecting a set of the phase change ink drops from the ink-jet print head in response to the asymmetrical timing relationship of the dot clock, the set of the phase change ink drops being deposited in an asymmetrically spaced apart pattern along the scan line on the print medium such that more closely spaced apart pairs of adjacent ones of the set of the phase change ink drops form initial coalesced pairs of the phase change ink drops.

5,600,353

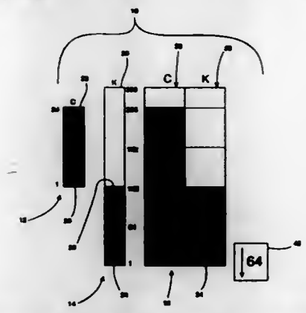
METHOD OF TRANSITIONING BETWEEN INK JET PRINTING MODES

Mark S. Hickman, and Bruce A. Axten, both of Vancouver, Wash., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 1, 1995, Ser. No. 397,295

Int. Cl.[6] B41J *2/15;2/21;2/145*

U.S. Cl. 347—43 **16 Claims**



1. A method of generating an image on a printable surface located entirely on a single sheet of print media, from a stream of incoming print data containing data of a first data type for generating an image of a first image type and containing data of a second data type for generating an image of a second image type, the method comprising the steps of:

printing in a first mode;

while printing in the first mode, depositing a first partial density image swath having a first swath width on the printable surface, and printing a second partial density image swath having a second swath width to overlap at least a portion of the first partial density image swath, generating a first shingle tab extending from the first swath having a first length;

after depositing the first swath and the second swath, advancing the surface by a first amount;

while printing in the first mode, scanning incoming print data to determine whether the incoming print data includes the second data type;

if incoming print data includes the second data type, transitioning to a second print mode;

while printing in the second mode, depositing a third partial density image swath having a third swath width different from the second swath width on the printable surface to overlap at least a portion of the first shingle tab, generating a second shingle tab having a second length different from the first length; and

after depositing the third swath, advancing the surface by a second amount different from the first advance amount.

5,600,354

WRAP-AROUND FLEX WITH ADDRESS AND DATA BUS

David E. Hackleman, Monmouth; William A. Bustkirk, Albany, both of Oreg., and Ross R. Allen, Belmont, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 864,890, Apr. 2, 1992, Pat. No. 5,469,199. This application Apr. 14, 1994, Ser. No. 228,471

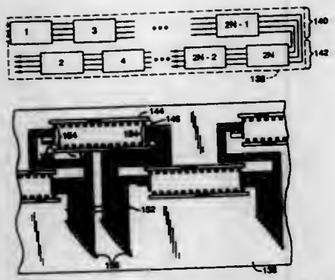
Int. Cl.[6] B41J *2/01*

U.S. Cl. 347—50 **33 Claims**

1. A page wide ink jet printhead containing a reservoir of ink comprising:

a page-wide printhead substrate having a first dimension defining a printhead width, the printhead having a plurality of groups of orifices formed therein to incrementally encompass the width of the printhead;

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a plurality of groups of heater elements mounted on the substrate, each heater element for vaporizing ink disposed proximate a corresponding orifice to eject the ink therefrom;

a plurality of printhead circuit elements mounted on the substrate, each circuit element associated with a group of heater elements for selectively energizing a heater element from the group; and

means for serially interconnecting the printhead circuit elements, said interconnecting means providing an address and an associated command to a printhead circuit element, the address specifying a printhead circuit element that the command is addressed to, and the command specifying which of the beater elements in the addressed printhead circuit element are to be actuated.

5,600,355

COLOR IMAGE FORMING APPARATUS BY DIRECT PRINTING METHOD WITH FLYING TONER

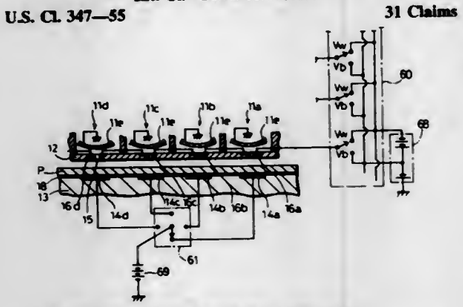
Takasumi Wada, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 31, 1995, Ser. No. 550,827

Claims priority, application Japan, Nov. 4, 1994, 6-271552

Int. Cl.[6] G03G *15/00;15/01*

U.S. Cl. 347—55 **31 Claims**



1. A color image forming apparatus comprising:

toner carriers, aligned in a transport direction of recording paper in a recording paper passing section, for carrying toner charged in a predetermined polarity, one toner carrier being provided for each toner color;

an insulating substrate including a plurality of toner passing holes having a diameter which allows passage of the toner, said insulating substrate being disposed opposite to said toner carriers, said toner passing holes being formed in locations facing said toner carriers;

control electrodes mounted on positions corresponding to said toner passing holes, respectively, on said insulating substrate;

back electrodes disposed opposite to said insulating substrate with a clearance therebetween, said clearance functioning as said recording paper passing section;

recording paper transporting means for transporting said recording paper through said recording paper passing section;

back-electrode voltage applying means for applying to said back electrodes a voltage of an opposite polarity to the toner to produce an electric field which causes the toner carried by said toner carriers to pass through said toner passing holes and move toward said back electrodes; and

control-electrode voltage applying means for producing an electric field which controls a movement of the toner from said toner carriers toward said back electrodes through said toner passing holes by selectively applying to said control electrodes a control voltage which varies according to an image signal, said control voltage having a substantially same polarity as toner charged to a predetermined polarity both when the toner is allowed to pass through said toner passing holes and when the toner is not allowed to pass through said toner passing holes to always prevent the toner from adhering to said control electrodes.

5,600,356

LIQUID JET RECORDING HEAD HAVING IMPROVED RADIATOR MEMBER

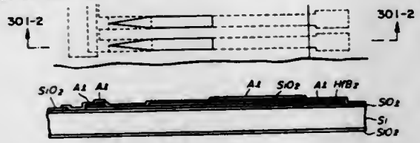
Takuro Sekiya; Takashi Kimura; Masanori Horike; Shuji Motomura, and Masami Kadonaga, all of Yokohama, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 182,374, Jan. 14, 1994, abandoned, which is a continuation of Ser. No. 888,452, May 20, 1992, abandoned, which is a continuation of Ser. No. 557,565, Jul. 24, 1990, abandoned. This application Dec. 28, 1994, Ser. No. 365,069

Claims priority, application Japan, Jul. 25, 1989, 1-192357; Dec. 1, 1989, 1-312633; Jan. 30, 1990, 2-20109; Mar. 7, 1990, 2-57287

Int. Cl.[6] B41J *2/05*

U.S. Cl. 347—62 **3 Claims**



1. A liquid jet recording head comprising:

a liquid path member having a plurality of liquid flow paths which are filled with recording liquid, an orifice being formed at an end of each of said liquid flow paths;

a base member connected to said liquid path member;

a plurality of heater members formed on said base member, each of said plurality of beater members corresponding to one of said plurality of liquid flow paths of said liquid path member; and

a radiator layer which is in contact with said plurality of heater members, said radiator layer having a plurality of openings each of which is located on one of said plurality of heater members, an area of each of said plurality of openings being gradually decreased in a direction toward said orifice of a corresponding liquid flow path, wherein bubbles are generated in the recording liquid in each of said liquid flow path by heat from a corresponding one of said plurality of heater members, and liquid droplets are jetted from the orifice by the bubbles.

5,600,357

DROP-ON-DEMAND INK-JET PRINTING HEAD

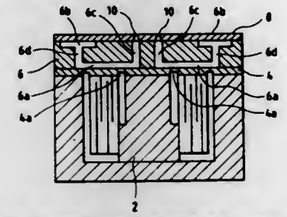
Minoru Usui; Haruhiko Koto; Haruo Nakamura; Yozo Shimada, and Tomoaki Abe, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 922,378, Jul. 31, 1992, Pat. No. 5,446,485, which is a continuation of Ser. No. 657,910, Feb. 20, 1991, abandoned. This application May 4, 1995, Ser. No. 433,756

Claims priority, application Japan, Feb. 23, 1990, 2-43787; Nov. 30, 1990, 2-337278

Int. Cl.[6] B41J *2/045*

U.S. Cl. 347—72 **6 Claims**



6. A drop-on-demand ink-jet printing head, comprising:

a base;

a nozzle plate defining a plurality of nozzle apertures;

an array of piezoelectric elements, each of said piezoelectric elements arranged at predetermined intervals and each having one end which is fixed onto said base and another end which is free and which is confronted with respective ones of said nozzle apertures of said nozzle plate; and

an ink reservoir;

wherein each of said piezoelectric elements comprises a lamination of multiple piezoelectric material layers and multiple conductive material layers stacked, such that said material layers alternate between a piezoelectric layer and a conductive layer and a lamination direction of said lamination coincides with a main vibrating direction of each said piezoelectric element;

wherein the main vibrating direction is an axial direction extending through each of said piezoelectric elements;

wherein a gap is formed between said nozzle apertures of said nozzle plate and said free end of said piezoelectric elements for accumulating ink therein, said gap defining at least a portion of said ink reservoir; and

wherein the fixed end of each of said piezoelectric elements is an inactive portion and the free end is an active portion.

5,600,358

INK PEN HAVING A HYDROPHOBIC BARRIER FOR CONTROLLING INK LEAKAGE

Marc A. Baldwin, Corvallis; Ella M. Duyck, Philomath, and Lawrence R. Plotkin, Corvallis, all of Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 30, 1993, Ser. No. 85,865

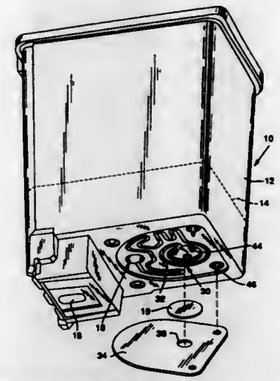
Int. Cl.[6] B41J *2/175;2/17*

U.S. Cl. 347—87 **13 Claims**

1. A pen for an ink-jet printer comprising:

a reservoir for holding a supply of ink;

a vent in the reservoir for selectively admitting ambient air into the reservoir to maintain a backpressure within the reservoir within an operating range for the ink pen which allows the ink pen to eject said ink while preventing free flow of said ink from the ink pen, the vent comprising a bubble generator that traps a quantity of said ink within the vent by capillary forces, said trapped quantity of ink sealing the vent when the backpressure is within said operating range and allowing said ambient air to bubble through said trapped quantity of ink and into the reservoir when said backpressure exceeds said operating range to thereby lower the backpressure;



a hydrophobic membrane; and

a path connecting said bubble generator and said hydropbobic membrane.

5,600,359

THERMAL TRANSFER PRINTING METHOD AND APPARATUS

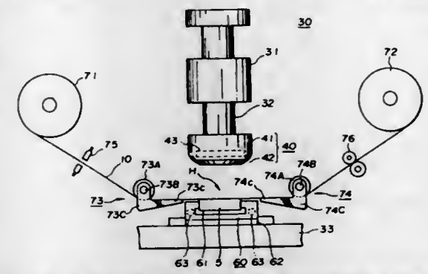
Shuichi Kikuchi, Miyagi, Japan, assignor to Sony Corporation, Japan

Continuation-in-part of Ser. No. 272,004, Jul. 8, 1994, abandoned. This application May 12, 1995, Ser. No. 440,140

Claims priority, application Japan, Jul. 14, 1993, 5-195565; May 12, 1994, 6-098497

Int. Cl.[6] B41J *2/325;* **B41F** *16/00*

U.S. Cl. 347—171 **8 Claims**



1. A thermal transfer printing method for transferring a printing layer from a thermal transfer film onto a metal or ceramic material by a thermal transfer head, the thermal transfer film having a base film, a printing layer and a heat sensitive adhesive layer, both of which layers are formed on the base film, the method comprising the steps of:

(a) heating the material;

(b) shifting the material to a thermal transfer printing position;

(c) pressing the thermal transfer film onto the material with the thermal transfer head;

(d) separating the thermal transfer head away from the thermal transfer film;

(e) cooling the thermal transfer film; and

(f) peeling the base film of the thermal transfer film away from the material while leaving the printing layer and adhesive layer on the material.

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5,600,360

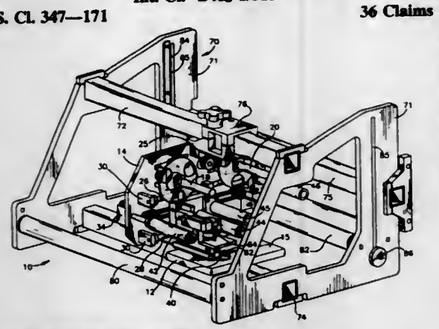
THERMAL IMPRINTER AND METHOD

Bernard Lerner, Aurora, and William M. Cronauer, Tallmage, both of Ohio, assignors to Automated Packaging Systems, Inc., Streetsboro, Ohio

Filed Apr. 30, 1996, Ser. No. 641,281

Int. Cl.[6] B41J *2/325*

U.S. Cl. 347—171 **36 Claims**



1. An imprinting mechanism comprising:

a) frame structure delineating a printing station;

b) a printer positionable adjacent the station, the printer being carried by the structure;

c) a drive mechanism interposed between and operably connected to the printer and the station for causing selective relative movement between the printer and the station;

d) spaced printing web supply and take-up mechanisms delineating the ends of a printing web path of travel extending from the supply mechanism, past the station and the printer to the take-up mechanism;

e) a web brake operably connectable to a web and positioned along the path; and,

f) the brake having an on position preventing relative web and printer movement when the printer and station are relatively moved and the printer is not operating, the brake having an off position permitting relative web and printer movement when the printer is printing.

5,600,361

STORAGE BOX FOR A CASSETTE FOR A THERMAL PRINTER

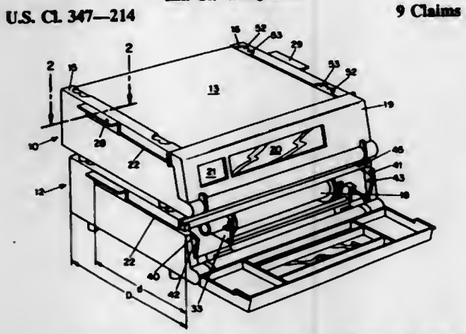
Lieven Dirx, Oud-Turnhout, Belgium, assignor to Agfa-Gevaert N.V., Mortsel, Belgium

Filed Mar. 27, 1995, Ser. No. 410,988

Claims priority, application European Pat. Off., Apr. 29, 1994, 94201180

Int. Cl.[6] B41J *2/01*

U.S. Cl. 347—214 **9 Claims**



1. A storage box (**10**, **12**) for a cassette (**33**) for use with a thermal printer, which cassette is arranged for receiving a supply spool with a roll of dye ribbon wound thereon and a take-up spool having the leading end of the dye ribbon attached thereto for receiving the ribbon as it is paid off from the supply spool, said cassette being provided with a laterally outwardly extending handle (**28**, **29**) at both lateral sides allowing easy gripping of the cassette, characterised in that said storage box is a generally rectangular enclosure having a top (**13**), bottom (**14**), two side walls (**15**, **11**) and a rear wall (**17**), a front opening (**18**) giving access to the box and a door (**19**) for closing such opening, and a slot (**22**) in both side walls extending up from the front opening of the box in the direction of the rear wall, the height and the configuration of said slots being such as to allow insertion of a cassette in the storage box through its front opening while the handles fit in said slots, the outside portion (**31**) of the handles (**28**, **29**) remaining outside of the box thus allowing manipulation of the cassette.

5,600,362

AUTOMATIC SYSTEM FOR FRONT-AND-BACK PRINTING OF CARDS IN BLACK AND WHITE AND IN COLOR, BY REVERSING THE CARD

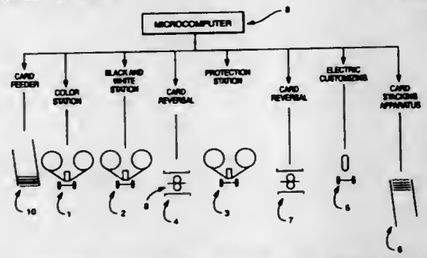
Paul Morgavi, la Ciotat; Jean-Paul Marietti, Mimet, and Jean-Jacques Oubrayrie, Allauch, all of France, assignors to Gemplus Card International, Gemenos, France

Filed Apr. 13, 1995, Ser. No. 426,764

Claims priority, application France, Apr. 15, 1994, 94 04827; Apr. 15, 1994, 94 04828

Int. Cl.[6] B41J *2/325*

U.S. Cl. 347—218 **8 Claims**



1. Automatic system for the front-and-back printing of cards, comprising:

at least one printing machine incorporating a thermal printing head, in front of which pass simultaneously a ribbon serving as a support for colorants to be deposited and the card to be printed;

at least one card-reversing device positioned before or after said printing machine; and

an electronic device controlling the printing machine and the reversing device, which moves the card in front of the thermal head so as to bring the front side in contact with said ribbon for printing of the front side, reversing the card in the reversing device, and bringing the back side of the card in contact with said ribbon for printing of the back side, the card-reversing device being a rotating device incorporating -

(a) a horizontal drum which can pivot +/−180° around its horizontal axis, in which the card is inserted flat on one side along an axis of the card by means of rollers turning in opposite directions, said drum comprising rollers which move the card in the flat position inside the drum;

(b) a motorized device which produces a rotation of +/−180° of the horizontal drum around an axis;

(c) a device controlling the position of the card in the drum before rotation is initiated; and

(d) a device for continuous tracking of the attitude of the card in the drum regardless of which side is being printed.

5,600,363

IMAGE FORMING APPARATUS HAVING DRIVING MEANS AT EACH END OF ARRAY AND POWER FEEDING SUBSTRATE OUTSIDE HEAD HOUSING

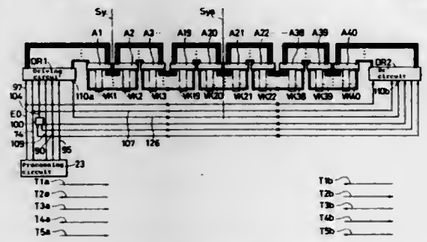
Toshihiro Anzaki, Kokubu; Yasuo Nishiguchi, Kyoto; Moriyuki Arai, Tokyo; Shunji Murano; Sadayuki Orito, both of Airagun, and Yuuji Kurazono, Kokubu, all of Japan, assignors to Kyocera Corporation, Kyoto, Japan

Continuation of Ser. No. 422,543, Oct. 18, 1989, abandoned. This application Nov. 3, 1993, Ser. No. 148,522

Claims priority, application Japan, Dec. 28, 1988, 1-145738; Dec. 28, 1988, 63-335133; May 31, 1989, 1-140116; Jul. 8, 1989, 1-176660; Sep. 21, 1989, 1-246851

Int. Cl.[6] B41T *2/447;2/435*

U.S. Cl. 347—237 **2 Claims**



1. An image forming apparatus comprising:

printing means for forming an image on a recording medium, said printing means having an array of printing blocks, said array having two opposed ends, and a plurality of individual signal lines, each of said individual signal lines having a first end and a second end, wherein

each of said blocks contains a plurality of printing elements arranged in an order in a row, and a common signal line, each of said printing elements having a first terminal and a second terminal,

each of said individual signal lines is connected to the first terminal of one of said printing elements of each of said blocks such that the printing elements connected to one of said individual signal lines are disposed at symmetric positions on adjacent printing blocks, and

the second terminal of said plurality of printing elements in each of said blocks is connected to said common signal line of the respective one of said blocks;

data generating source means for sequentially generating printing data for said printing means in a sequence corresponding to the order of printing elements of each of said blocks;

block selecting means connected between said data generating source means and said common signal lines for selecting each of said blocks in sequence; and

first driving means and second driving means each disposed at a respective end of said array of printing blocks and connected to said data generating source means, each said driving means for providing drive signals simultaneously to all printing elements of each of said blocks, wherein

said first driving means has outputs connected to said first end of each of said individual signal lines and said second driving means has outputs connected to said second end of each of said individual signal lines so that both of said driving means simultaneously supply power to selected printing elements of one of said blocks corresponding to said drive signals and in response to printing data generated by said data generating means when said one of said blocks is selected by said block selecting means.

5,600,364

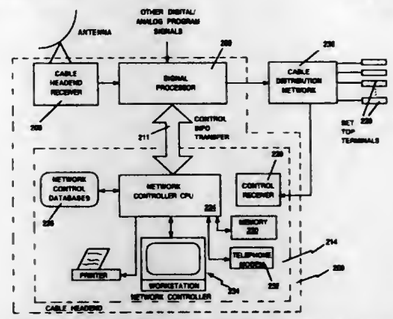
NETWORK CONTROLLER FOR CABLE TELEVISION DELIVERY SYSTEMS

John S. Hendricks, Potomac, and Alfred E. Bonner, Bethesda, both of Md., assignors to Discovery Communications, Inc., Bethesda, Md.

Continuation-in-part of Ser. No. 991,074, Dec. 9, 1992. This application Dec. 2, 1993, Ser. No. 160,280

Int. Cl.[6] H04N *7/173*

U.S. Cl. 348—1 **36 Claims**



1. A network controller for use with digital signal processing equipment in a cable headend capable of remotely monitoring and controlling a plurality of set top terminals in a cable television program delivery system using network control data, each set top terminal receiving a plurality of information fields in a control information stream, the control information stream being produced using a program control information signal received from a remotely located source, the network controller comprising:

an interface means, connected to the digital signal processing equipment, for receiving and transferring control information, wherein the program control information signal is received from the digital signal processing equipment on a scheduled basis and the control information stream produced using the program control information signal is transferred to the digital signal processing equipment for distribution over the cable television system;

a means for storing the network control data, wherein the stored network control data includes data on television programs;

a means for accessing the stored network control data; and

a means for generating the control information stream using the received program control information signal and the accessed network control data, wherein the received program information signal carries data on packaged programs or menu content, whereby the information fields of the control information stream are formed by modifying the data on packaged programs or menu content and whereby the control information stream can subsequently be distributed to multiple set top terminals.

5,600,365

MULTIPLE AUDIO AND VIDEO SIGNAL PROVIDING APPARATUS

Yoshiyuki Kondo, Saitama; Koichi Tagawa, and Tetsu Shigetomi, both of Kanagawa, all of Japan, assignors to Sony Corporation, Japan

Filed Jan. 25, 1995, Ser. No. 378,002

Claims priority, application Japan, Jan. 28, 1994, 6-008862

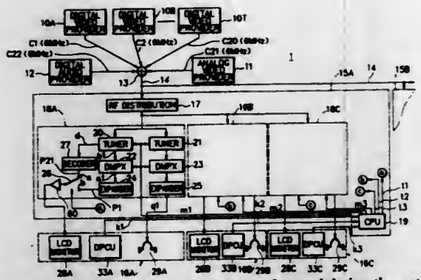
Int. Cl.[6] H04N *7/10*

U.S. Cl. 348—8 **6 Claims**

1. A signal providing apparatus comprising:

digital video signal outputting means for outputting a plurality of compressed digital video signals;

time-division multiplexing means for multiplexing a plurality of said compressed digital video signals by time-division;



digital video signal modulating means for modulating the output signal from said time-division multiplexing means;

frequency-division multiplexing means receiving the output signal from said digital video signal modulating means as a first input signal and a second input signal, for multiplexing said output signal from said digital video signal modulating means and said second input signal by frequency-division;

tuner means receiving the output signal from said frequency-division multiplexing means, for demodulating said output signal from said frequency-division multiplexing means and for selecting a signal having a specific frequency;

video signal selecting means for selecting one of said compressed digital video signals multiplexed by time-division in the output signal from said tuner means;

expanding means for expanding the output signal from said video signal selecting means; and

display means receiving the output signal from said expanding means, for displaying a video image;

analog video signal outputting means for outputting an analog video signal;

analog video signal modulating means for modulating said analog video signal and for providing a modulated analog video signal as said second input signal to said frequency-division multiplexing means; and

decoding means for decoding said analog video signal, included in said output signal from said tuner means, into the output signal supplied to said display means;

wherein said digital video modulating means and said analog video signal modulating means are RF-modulators modulating signals by carrier frequencies, each bandwidth of which is 6 MHz.

5,600,366

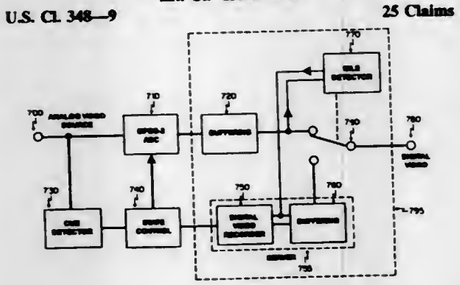
METHODS AND APPARATUS FOR DIGITAL ADVERTISEMENT INSERTION IN VIDEO PROGRAMMING

Martin A. Schulman, Herndon, Va., assignor to NPB Partners, Ltd., Reston, Va.

Filed Mar. 22, 1995, Ser. No. 408,253

Int. Cl.[6] H04N *7/10*

U.S. Cl. 348—9 **25 Claims**



1. Apparatus for inserting local video programming in place of externally supplied programming comprising:

a. means for receiving externally supplied programming comprising analog video information and embedded tone cues including a pre-roll cue and a roll cue, detecting said tone cues and converting the analog video information to digital video information;

b. means for activating digital video storage in response to one of said tone cues preparatory to initiating playback; and

c. means for initiating playback from said storage in response to detecting an idle condition from said digital video information.

5,600,367

Patent Not Issued For This Number

5,600,368

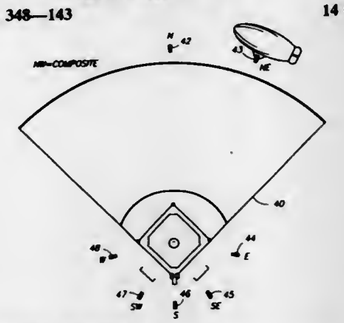
INTERACTIVE TELEVISION SYSTEM AND METHOD FOR VIEWER CONTROL OF MULTIPLE CAMERA VIEWPOINTS IN BROADCAST PROGRAMMING

Joseph H. Matthews, III, Redmond, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Filed Nov. 9, 1994, Ser. No. 336,804

Int. Cl.[6] H04N *7/18;5/232*

U.S. Cl. 348—143 **14 Claims**



1. A system comprising:

a display unit to receive a broadcast program which is filmed using multiple cameras situated at various camera viewpoints, the broadcast program having a primary channel and multiple virtual channels associated with the primary channel, the virtual channels carrying video signals from corresponding cameras;

a remote control handset remotely coupled to the display unit, the remote control handset having dedicated camera control buttons for selecting corresponding virtual channels to thereby choose a desired camera viewpoint; and

the dedicated camera control buttons being arranged in a correlating pattern to the camera viewpoints to directly map the camera control buttons on the remote control handset to the camera viewpoints so that a viewer can choose a desired camera viewpoint using intuitive control of the camera control buttons without diverting the viewer's eyes from the display unit.

5,600,369

LARGE-SIZED PIXEL IMAGE DETECTOR

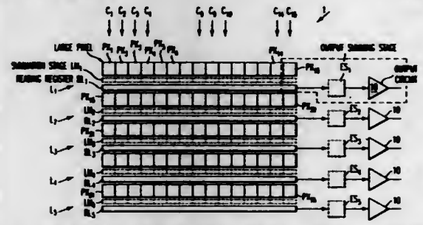
Yvon Cazaux, Grenoble; Jean-Louis Coutures, St. Egreve; Pierre Dautriche, Claix, and Gilles Boucharlat, Grenoble, all of France, assignors to Thomson Composants Militaires Et Spatiaux, Courbevoie, France

Continuation of Ser. No. 71,926, Jun. 4, 1993, Pat. No. 5,481,301, which is a continuation of Ser. No. 756,882, Sep. 9, 1991, abandoned. This application May 2, 1995, Ser. No. 432,772

Claims priority, application France, Sep. 7, 1990, 90 11120

Int. Cl.[6] H04N *5/335*

U.S. Cl. 348—218 **3 Claims**



1. A method for detecting electromagnetic radiation imparted onto a network of photosensitive surfaces, each photosensitive surface comprising a photomos network of at least one column of at least two lines of elementary pixels, said at least one column forming a vertical shift register having P photosensitive pixels, including one end pixel, and said sensor comprising a horizontal reading register having one reading stage at one end of each column, said method comprising the steps of:

simultaneously exposing all of the photomos networks of at least one photosensitive surface to electromagnetic radiation during a predetermined period of time, thereby charging elementary pixels of each photomos network;

applying, after the predetermined period of time has ended, transfer signals to each vertical shift register so as to shift in P steps, the charges of all the elementary pixels of the corresponding column towards said one end of the column and shift correspondingly P times, the charges of the end pixel of the column into the reading stage of the corresponding column;

summing in the reading stage of the corresponding column the charges received from the end pixel of the column during the P shift steps, said charges resulting from exposure of all the pixels of the column to electromagnetic radiation during the said predetermined period of time; and

applying transfer signals to said horizontal reading register so as to transfer towards an output of the horizontal reading register the charges contained in the reading stages.

5,600,370

IMAGE SENSING APPARATUS WITH FADING ACTION AND CONTROL THEREOF

Hiroaki Furuyama, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 876,853, Apr. 30, 1992, abandoned. This application Oct. 21, 1994, Ser. No. 327,222

Claims priority, application Japan, May 10, 1991, 3-104555

Int. Cl.[6] H04N *5/262*

U.S. Cl. 348—239 **47 Claims**

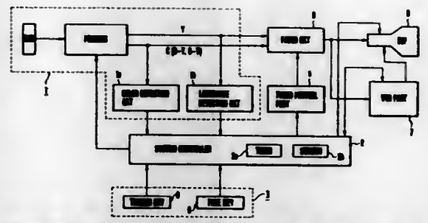
4. An image sensing apparatus comprising:

(a) image sensing means for photoelectrically converting sensed image light obtained from an object;

(b) color detecting means for detecting a dominant color of the object;

(c) fade means for performing a fade action on an output of said image sensing means; and

(d) control means for selecting a fade color to be used by said fading means in accordance with the dominant color detected by said color detecting means.



5,600,371

IMAGE PICKUP APPARATUS WITH LENS UNIT DETECTION AND RECORDING CONTROL

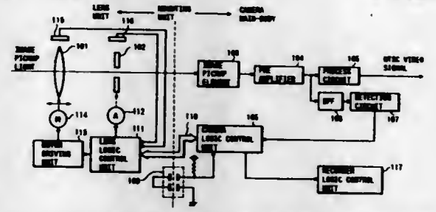
Hideyuki Arai, Kawasaki; Kenji Kyuma, Yokohama; Koji Tajima, Musashino, and Ryunosuke Iijima, Ebina, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 773,709, Oct. 9, 1991, abandoned. This application Dec. 23, 1993, Ser. No. 174,623

Claims priority, application Japan, Oct. 15, 1990, 2-273358; Oct. 15, 1990, 2-273359; Oct. 15, 1990, 2-273360; Oct. 15, 1990, 2-273361; Oct. 15, 1990, 2-273362; Nov. 6, 1990, 2-299829; Nov. 6, 1990, 2-299830; Nov. 30, 1990, 2-333842

Int. Cl.[6] H04N *5/225*

U.S. Cl. 348—335 **16 Claims**



1. A video camera having a photographic lens detachably mounted on a camera main-body unit, comprising:

communication means for communicating control information with said lens mounted on said camera main body and controlling said lens;

discriminating means for discriminating whether the lens has been in an uncontrollable condition for a predetermined time during a photographing operation; and

control means for controlling picture recording so as to inhibit a picture recording operation in the case that the discriminating means discriminates that said lens has been in an uncontrollable condition for the predetermined time.

5,600,372

FLANGE-BACK ADJUSTMENT METHOD FOR A VIDEO CAMERA

Doh H. Cha, Kyungki-do, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 21, 1994, Ser. No. 360,416

Claims priority, application Rep. of Korea, Dec. 21, 1993, 28833/1993

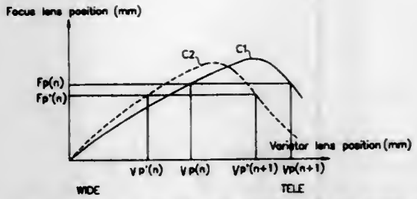
Int. Cl.[6] H04N *5/232*

U.S. Cl. 348—345 **16 Claims**

1. A flange-back adjustment method for a video camera, comprising the steps of:

determining a value of a first position on an actual trace curve;

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determining a value of a second position on the actual trace curve;

calculating a difference between the first position value and the second position value;

determining corresponding first and second positions on a predefined trace curve stored in memory using the calculated difference; and

determining a flange-back value using the first and second positions on the actual trace curve and the first and second positions on the predefined trace curve.

5,600,373

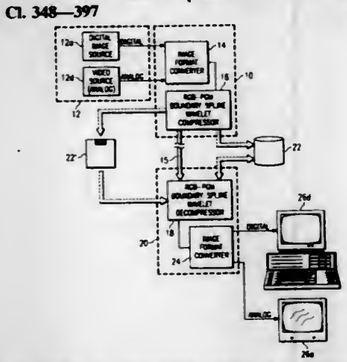
METHOD AND APPARATUS FOR VIDEO IMAGE COMPRESSION AND DECOMPRESSION USING BOUNDARY-SPLINE-WAVELETS

Charles K. Chui, and Pak-Kay Yuen, both of College Station, Tex., assignors to Houston Advanced Research Center, The Woodlands, Tex.

Continuation of Ser. No. 181,663, Jan. 14, 1994, abandoned. This application Jun. 27, 1996, Ser. No. 671,085

Int. Cl.[6] H04N 7/18

U.S. Cl. 348—397 **39 Claims**



1. A method of compressing digital data representative of a video image for communication thereof, comprising the steps of:

formatting the digital data corresponding to a frame of the video image into an array of locations in rows and columns, with each array location having a display intensity value;

compressing the digital data by performing the steps of:

decomposing said array, in a first direction, into a low-frequency portion by applying a first finite matrix filter derived from a boundary-spline-wavelet scaling function, and into a high-frequency portion by applying a second finite matrix filter derived from a boundary-spline-wavelet wavelet function corresponding to the boundary-spline-wavelet scaling function, wherein each of said first and second finite matrix filters have an interior portion and have a boundary portion with different coefficient entries than its corresponding interior portion, and wherein the boundary portion of the second finite matrix filter is larger than the boundary portion of the first finite matrix filter;

arranging results of the decomposing into the array as corresponding vectors in the first direction; and

then decomposing the arranged results of the first decomposing step in a second direction, by applying the first and second finite matrix filters to said results; and

communicating the results of the compressing step to a receiving unit.

5,600,374

IMAGE ENCODING/DECODING APPARATUS

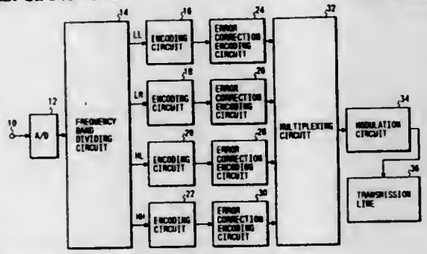
Akihiro Shikakura, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 2, 1994, Ser. No. 300,460

Claims priority, application Japan, Sep. 17, 1993, 5-231136

Int. Cl.[6] H04N 7/50

U.S. Cl. 348—398 **14 Claims**



1. An image encoding apparatus comprising:

a) input means for inputting an image signal;

b) dividing means for dividing the image signal input by said input means into signal groups of a plurality of frequency bands;

c) encoding means for encoding the plurality of signal groups divided by said dividing means; and

d) adding means for adding error correction check codes weighted in accordance with the frequency band to the image signal encoded by said encoding means.

5,600,375

RENDERING AN INTER VERSES INTRA VIDEO ENCODING DECISION BASED UPON A VERTICAL GRADIENT MEASURE OF TARGET VIDEO FRAMES

Larry Wickstrom, Beaverton, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Sep. 8, 1994, Ser. No. 302,595

Int. Cl.[6] H04N 7/30;7/32

U.S. Cl. 348—400 **16 Claims**

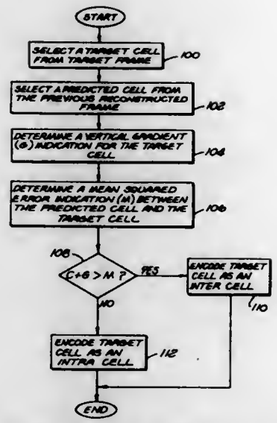
9. A video encoding system, comprising:

means for selecting a target cell of a target video frame, said target cell including a first plurality of rows and a second plurality of columns of target pixel data values, at lest one of said target pixel data values corresponding to an image scene;

means for determining a vertical gradient measure for the target cell, said vertical gradient measure for the target cell being a square root of a ratio having (i) a numerator being a sum of sums of pixel-by-pixel differences between two adjacent rows calculated over the target cell, and (ii) a denominator being a product of a row number representing said first plurality of rows and a column value representing said second plurality of columns;

means for determining a vertical gradient measure for the target video frame based on said vertical gradient measure for the target cell;

means for determining an error measure between the target video frame and a predicted video frame;



means for encoding the target video frame relative to the predicted video frame if the vertical gradient measure is greater than the error measure;

means for encoding the target video frame independent of the predicted video frame if the vertical gradient measure is less than the error measure.

5,600,376

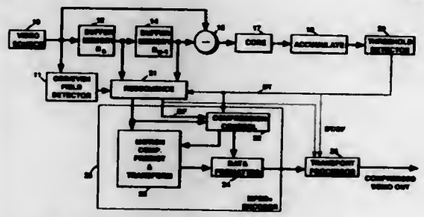
FIELD ELIMINATION APPARATUS FOR A VIDEO COMPRESSION/DECOMPRESSION SYSTEM

Scott D. Casavant, Germantown, Md., and Tristan Savatier, San Francisco, Calif., assignors to RCA Thomson Licensing Corporation, Princeton, N.J.

Division of Ser. No. 324,558, Oct. 18, 1994, Pat. No. 5,426,464, which is a division of Ser. No. 4,753, Jan. 14, 1993, Pat. No. 5,491,516. This application Mar. 20, 1995, Ser. No. 407,735

Int. Cl.[6] H06N 7/26

U.S. Cl. 348—423 **1 Claim**



1. Video signal compression apparatus comprising:

a source of video signal including even and odd fields;

means for combining said even and odd fields into output frames of video signal;

a source of codewords DT/DF indicative of fields to be repeated and indicative of the temporal order that fields of respective frames are to be displayed when reproduced;

means for compressing said output frames; and

means for combining compressed frames of video signal and said codewords DT/DF corresponding to respective compressed frames, for transmission.

5,600,377

APPARATUS AND METHOD FOR MOTION COMPENSATING VIDEO SIGNALS TO PRODUCE INTERPOLATED VIDEO SIGNALS

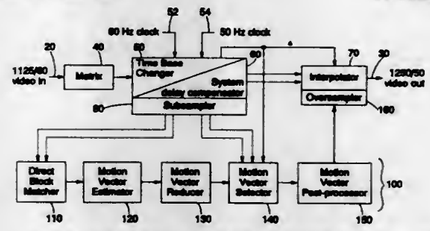
Morgan W. A. David, Farnham; Stephen M. Keating, Reading; Martin R. Dorricott, Basingstoke, and James E. Burns, Basingstoke, all of United Kingdom, assignors to Sony Corporation, Tokyo, Japan, and Sony United Kingdom Limited, Weybridge, England

Filed Sep. 9, 1993, Ser. No. 118,239

Claims priority, application United Kingdom, Nov. 10, 1992, 9223510

Int. Cl.[6] H04N 7/01

U.S. Cl. 348—452 **16 Claims**



1. Motion compensated video signal processing apparatus, comprising:

means for selecting corresponding pairs of temporally adjacent fields of an input digital video signal for use in interpolation of respective fields of an output digital video signal;

a subsampler for horizontally and temporally subsampling the selected pairs of fields of said input digital video signal to generate a subsampled video signal;

a motion vector processor for generating motion vectors from said subsampled video signal, said motion vectors representing image motion between at least a subset of the selected pairs of video fields of said input digital video signal; and

a motion compensated video processor for processing said input digital video signal according to said motion vectors to generate said output digital video signal, said motion compensated video processor including a motion compensated interpolator for interpolating video fields of said output digital video signal from the selected pairs of video fields of said input digital video signal.

5,600,378

LOGICAL AND COMPOSITE CHANNEL MAPPING IN AN MPEG NETWORK

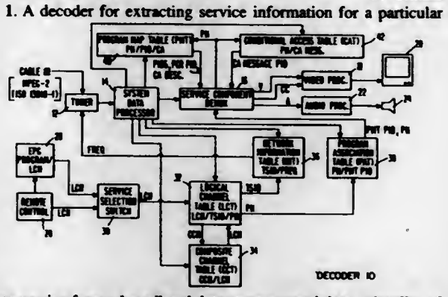
Anthony J. Wasilewski, Alpharetta, Ga., assignor to Scientific-Atlanta, Inc., Atlanta, Ga.

Filed May 22, 1995, Ser. No. 446,322

Int. Cl.[6] H04N 7/00;7/10

U.S. Cl. 348—468 **10 Claims**

1. A decoder for extracting service information for a particular



data service from a broadband data stream containing a plurality of service transport streams carrying a plurality of data services, comprising:

means for selecting said particular data service from said plurality of data services by specifying a logical channel number;

a tuner which selects a frequency containing service components of said particular data service;

processing means for extracting a logical channel table from said service components, said logical channel table mapping said logical channel number to a particular service transport stream and a program number of said particular service transport stream on which said particular data service can be found; and

means for extracting said particular data service from said broadband data stream by specifying said particular service transport stream and said program number corresponding to said logical channel number selected by said selecting means.

5,600,379

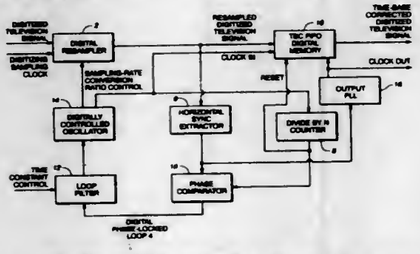
TELEVISION DIGITAL SIGNAL PROCESSING APPARATUS EMPLOYING TIME-BASE CORRECTION

Steven D. Wagner, Belmont, Calif., assignor to Yves C. Faroudia, Los Altos Hills, Calif.

Filed Oct. 13, 1994, Ser. No. 322,753

Int. Cl.[6] H04N *7/00;5/12*

U.S. Cl. 348—497 **19 Claims**



1. A time-base corrector receiving a digitized color television signal made up of digital samples representing an analog television signal digitized by a sampling clock asynchronous with respect to the analog television signal's horizontal synchronizing pulses, whereby the number of digital samples in response to each horizontal line of the analog television signal may vary and the relative time alignment of the first digital sample of each horizontal line may vary with respect to the horizontal synchronizing pulse of the corresponding analog television signal's horizontal line, comprising

means for resampling said digitized color television signal to produce resampled digital samples, said means for resampling having a controllable sampling-rate-conversion ratio;

means for controlling the sampling-rate-conversion ratio of said means for resampling, said means for controlling including a feedback loop having an input and an output, said feedback loop receiving said resampled digital samples at its input and providing a sampling-rate-conversion ratio control at its output;

means for storing said resampled digital samples;

means for reading out stored resampled digital samples; and

wherein each of said first three recited means operates exclusively in the digital domain.

5,600,380

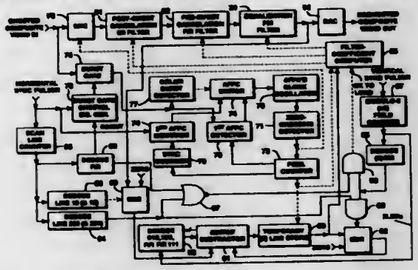
GHOST-CANCELATION REFERENCE SIGNAL ACQUISITION CIRCUITRY, AS FOR TV RECEIVER OR VIDEO RECORDER

Chandrakant B. Patel, Hopewell, N.J., and Jian Yang, Norwood, Mass., assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Continuation-in-part of Ser. No. 984,488, Dec. 2, 1992, abandoned. This application Apr. 15, 1994, Ser. No. 228,356

Int. Cl.[6] H04N *5/21;5/213*

U.S. Cl. 348—614 **30 Claims**



1. A combination including:

means for supplying a first composite video signal which is subject to having attendant ghosts and includes at least at times in a prescribed L^{th} line of each field during the vertical blanking interval one of a repeating cycle of M ghost-canceling reference signals of prescribed magnitude and respective phasing, M being an integer larger than one;

filter circuitry for generating a second composite video signal in response to said first composite video output signal, which response is adjusted in response to filter programming signals;

a computer including a computer memory for storing a ghost-free ghost-canceling reference signal, said computer connected for receiving a ghost-canceling reference signal with attendant ghosts for comparison with said ghost-free ghost-canceling reference signal as a basis for calculating said filter programming signals to be such that said second composite video signal is a response to said first composite video signal in which said attendant ghosts are substantially reduced; and

means for supplying said ghost-canceling reference signal with attendant ghosts comprising:

a horizontal sync separator for separating horizontal synchronizing pulses from one of said first and second composite video signals;

a vertical sync separator for separating vertical synchronizing pulses from one of said first and second composite video signals;

a scan line counter responding to said separated horizontal synchronizing pulses for generating a line count and responding to said separated vertical synchronizing pulses for being reset to an initial line count;

an Lth-line separator for separating scan lines of said second composite video signal immediately following a prescribed value of said line count being attained which is descriptive of said prescribed line of each field during the vertical blanking interval that includes at least at times one of said M ghost-canceling reference signals;

a field counter responding to said separated vertical synchronizing pulses for generating a field count modulo MN;

means for synchronizing said field count modulo MN to said repeating cycle of said M ghost-canceling reference signals;

a temporal filter combining corresponding pixels from a number MN of successive scan lines as separated by said L^{th}-line separator to generate a temporal filter response that is supplied to said computer as said ghost-canceling reference signal with attendant ghosts, N being a positive integer.

5,600,381

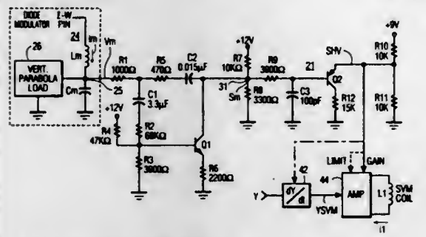
SCAN VELOCITY MODULATION CIRCUIT

Dal F. Griepentrog, Indianapolis, Ind., assignor to Thomsom Consumer Electronics, Inc., Indianapolis, Ind.

Filed Jun. 20, 1994, Ser. No. 262,431

Int. Cl.[6] H04N *3/32*

U.S. Cl. 348—626 **8 Claims**



1. A scan velocity modulation circuit, comprising:

a source of a video signal;

means for deflecting an electron beam of a picture tube;

means responsive to said video signal and coupled to said deflecting means for generating a drive signal which produces scan velocity modulated deflection of said electron beam;

a source of an input signal having vertical and horizontal rate components; and

means coupled to said input signal source and to said drive signal generating means for producing a correction signal having vertical and horizontal rate components differing in relative amplitudes from that of said input signal, said drive signal being modified in accordance with the vertical and horizontal rate components of said correction signal.

5,600,382

INPUT/OUTPUT DEVICE FOR AUDIO/VIDEO SIGNALS ASSOCIATED WITH A TELEVISION

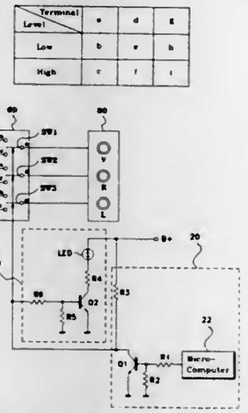
Tae Y. Won, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Nov. 28, 1994, Ser. No. 348,886

Claims priority, application Rep. of Korea, Nov. 27, 1993, 93-25489

Int. Cl.[6] H04N *5/268*

U.S. Cl. 348—705 **10 Claims**



1. A device for selective input and output of audio and video signals between a television and a general audio and video signal processing appliance, comprising:

a plurality of jacks formed on a predetermined portion of the television providing input and output of respective audio and video signals;

first switching means operatively coupled to said jacks for switching between a first operating state wherein input audio and input video signals are applied from respective said jacks to the television and a second operating state wherein output audio and output video signals are provided by the television to respective said jacks; and

control means generating a first control signal applied to said first switching means for selectively switching said first switching means between said first and said second operating states.

5,600,383

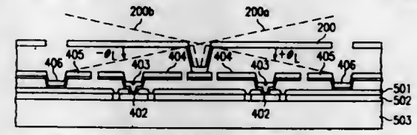
MULTI-LEVEL DEFORMABLE MIRROR DEVICE WITH TORSION HINGES PLACED IN A LAYER DIFFERENT FROM THE TORSION BEAM LAYER

Larry J. Hornbeck, Van Alstyne, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 792,518, Nov. 13, 1991, abandoned, which is a division of Ser. No. 546,465, Jun. 29, 1990, Pat. No. 5,083,857. This application Jun. 7, 1995, Ser. No. 474,203

Int. Cl.[6] H04N *5/74;* **G02B** *26/00*

U.S. Cl. 348—771 **19 Claims**



1. A spatial light modulation device said device comprising:

a base layer;

a beam layer;

a beam support post;

a hinge supported by said base layer and connected to said rotatable layer by said beam support post wherein said hinge allows said rotatable area to move within a defined motion with respect to said base layer, said hinge lying in a plane separate from the plane of said rotatable layer;

a hinge gap between said base layer and said hinge allowing for movement of said hinge; and

a beam gap between said hinge and said beam layer allowing for movement of said beam layer.

5,600,384

SELF ALIGNING MAGNETIC MEDIA FOLLOWER DEVICE

Thomas C. Merle; David L. Rowden, and Dale W. Ryan, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 28, 1995, Ser. No. 430,671

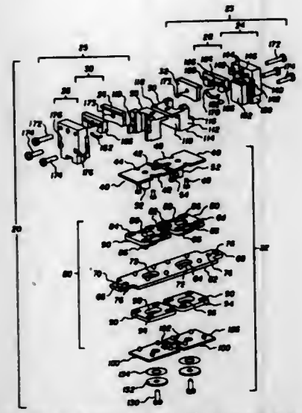
Int. Cl.[6] G03B *31/02;17/24*

U.S. Cl. 352—27 **26 Claims**

1. A ball carrier mounting assembly for limiting the angular movement of a film edge follower device comprising:

a pair of upper ball cages having upper and lower surfaces, each upper ball cage further comprising; a lug protruding from the upper surface for engaging a notch, a tube extending through the thickness of each upper cage and protruding below the lower surface, and a plurality of ball pockets extending through the thickness of each upper cage;

an asymmetrically shaped mounting plate located underneath the pair of upper ball cages for attaching the assembly to a fixed support, the mounting plate having a body and first and second end tabs, wherein each end tab of the mounting plate has a different configuration for orienting the assembly, the



body having in addition a pair of apertures spaced from the tab ends for accommodating the tubes; and

a pair of lower ball cages having upper and lower surfaces located below the mounting plate, each lower ball cage further comprising; a lug protruding downwards from the lower surface for engaging a notch, an aperture extending through a thickness of each lower cage for receiving the tube therein, and a plurality of ball pockets extending through the thickness of each lower cage.

5,600,385

CAMERA WITH MAGNETIC RECORDING/READING DEVICE

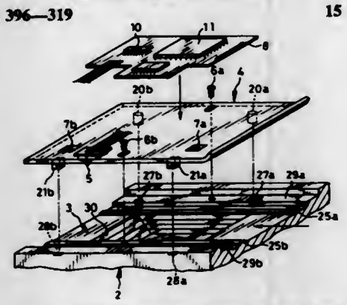
Yukitaka Takeshita, Saitama, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 11, 1994, Ser. No. 240,578

Claims priority, application Japan, May 11, 1993, 5-109562

Int. Cl.[6] G03B *17/24;17/28*

U.S. Cl. 396—319 **15 Claims**



1. A camera having an exposure frame in which an exposure aperture is defined, a film support plate disposed behind said exposure frame for supporting a rear surface of photo film, and a magnetic head mounted on said film support plate, said film moving through a passageway defined between said exposure frame and said film support plate, a magnetic recording layer formed on said film to allow data to be recorded on, or read from, said recording layer, during movement of said film, by said magnetic head, said camera comprising position regulating means for regulating the position of longitudinal edges of said film, said regulating means being disposed on said film support plate, wherein said film support plate is fixed to said exposure frame.

5,600,386

PHOTOGRAPHIC CAMERA SYSTEM

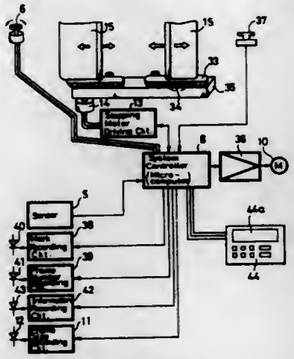
Takahiko Saito, Kanagawa; Akira Nakanishi; Shunzi Obayashi, both of Tokyo, and Hideki Toshikage, Saitama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 329,546, Oct. 26, 1994, which is a continuation-in-part of Ser. No. 26,415, Mar. 4, 1993, abandoned. This application May 19, 1995, Ser. No. 444,681

Claims priority, application Japan, Mar. 17, 1992, 4-060684; Mar. 23, 1992, 4-065304

Int. Cl.[6] G03B *17/24*

U.S. Cl. 396—315 **26 Claims**



1. A photographic system comprising:

a photographic camera including

a first housing for housing a photographic film cartridge containing a photographic film,

a second housing for housing said photographic film drawn from said cartridge, said photographic film having two longitudinal marginal areas, a first of said two marginal areas having holes and being used as a recording area where film information about said photographic film can be recorded,

film drive means for feeding said photographic film and positioning a frame of said photographic film for exposure by detecting at least one of said holes,

exposure means disposed between said first housing and said second housing for exposing an image of a subject to be recorded on said frame of said photographic film,

film recording means for recording aspect information on said photographic film and for recording photographic information or camera information on a second of said two marginal areas, said aspect information indicating an aspect of an effective area on said photographic film where an exposed area is to be printed on photosensitive photographic paper, and

control means for controlling said film drive means and said film recording means to record said aspect information at a predetermined position in one of said two marginal areas; and

a photographic film printer for printing on said photosensitive photographic paper a processed photographic film recorded using said photographic camera, including

a printer body,

light source and variable mask means disposed on said printer body for exposing said photographic paper,

detecting means for detecting said at least one of said holes and said aspect information recorded at said predetermined position by said photographic camera and for generating a hole detecting signal and an aspect information signal,

determining means for determining whether said detecting means has correctly detected said aspect information and for generating a size information signal based on said aspect information signal,

processed photographic film drive control means disposed on said printer body for controlling driving of said photographic film in response to said hole detecting signal and for positioning said frame of said photographic film, and printing means disposed on said printer body for varying said variable mask in response to said size information signal.

5,600,387

DATA PRINT UNIT FOR NON-REMOVABLE-FILM CAMERA

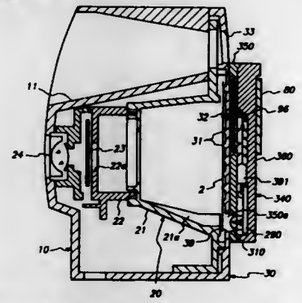
Haruyoshi Yamada; Hiroshi Kobayashi; Masaki Ozawa, and Seiji Tanaka, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Division of Ser. No. 982,811, Jan. 12, 1993. This application Jun. 5, 1995, Ser. No. 461,828

Claims priority, application Japan, Apr. 2, 1991, 69980/91; Apr. 25, 1991, 95685/91; Apr. 25, 1991, 95686/91; Apr. 25, 1991, 95705/91; Apr. 25, 1991, 95706/91; Dec. 10, 1991, 326000/91; WIPO, Apr. 1, 1992, PCT/JP92/00419

Int. Cl.[6] G03B *17/24*

U.S. Cl. 396—315 **30 Claims**



16. A camera, comprising:

a camera body having a front surface with a lens and shutter for exposing passing frames of photographic film; and

a data print unit attached to a back surface of said camera body, comprising:

an assembled housing including opposing upper and lower frame members defining a lamp chamber therebetween, said lower frame member communicating with the back surface of said camera body and defining a light transmission hole to project light emitted within said assembled housing onto the photographic film;

a lamp disposed within the lamp chamber of said assembled housing;

a printed circuit board disposed partially within the lamp chamber of said assembled housing and receiving said lamp on a first surface thereof, said first surface of said printed circuit board including a connection member mounted thereon and in electrical communication with said lamp, said connection member extending at least partially outside said assembled housing to transmit external electrical signals to said lamp; and

a mirror disposed within the lamp chamber of said assembled housing opposite said lamp for directing light emitted from said lamp through the light transmission hole of said lower frame member, wherein said upper frame member includes a plurality of slit limiting projections extending downwardly into the lamp chamber between said lamp and said mirror to attenuate reflected light therein.

5,600,388

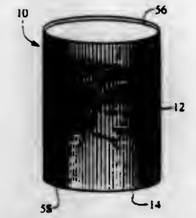
METHOD AND APPARATUS FOR CREATING CYLINDRICAL THREE DIMENSIONAL PICTURE

Victor G. Anderson, Arlington, Tex., assignor to Pinnacle Brands, Inc., Grand Prairie, Tex.

Continuation-in-part of Ser. No. 2,969, Jan. 11, 1993, Pat. No. 5,365,294. This application Feb. 14, 1994, Ser. No. 195,194

Int. Cl.[6] G03B *35/00*

U.S. Cl. 396—324 **19 Claims**



1. A three dimensional picture viewable by an observer through an angle of 360° comprising:

a photograph containing a series of images resulting from a photo emulsion exposed from various angles to a series of sequential images of a subject photographed through an angle of 360°; and

a parallax barrier strip disposed between the photograph and the observer to permit the photograph to be viewed as a three dimensional image of the subject through an angle of 360°.

5,600,389

CAMERA WHICH SETS SHUTTER SPEED AND LIGHTS DISPLAY IN ACCORDANCE WITH FLASH DEVICE

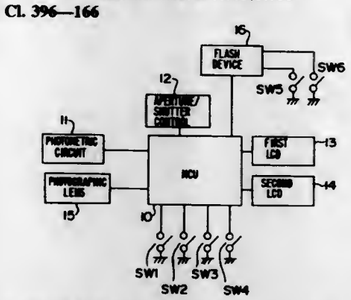
Takashi Saegusa, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Jun. 30, 1995, Ser. No. 497,234

Claims priority, application Japan, Sep. 7, 1994, 6-213616; Sep. 7, 1994, 6-213621

Int. Cl.[6] G03B *15/05;17/00*

U.S. Cl. 396—166 **15 Claims**



1. A camera shutter device selectively cooperating with a flash device which is attachable to a camera and a self contained flash disposed within the camera which produces a flash for a predetermined time, wherein the camera has an external body, said camera shutter device comprising:

a manual switch which inputs a manual shutter speed;

a memory which stores a flash shutter speed corresponding to the predetermined time of the flash;

a shutter control unit, coupled to said manual switch and said memory, which sets a camera shutter speed to the flash shutter speed stored in said memory when the flash device is attached to the camera and to the manual shutter speed input by said manual switch when the flash device is not attached to the camera;

an external monitor display unit mounted on the external body of the camera;

a determination unit, coupled to said manual switch, which determines when the manual shutter speed input by said manual switch presents a risk of image blur; and

a viewfinder display unit coupled to said determination unit and responsive to said determination unit to display a warning when said determination unit determines a risk of image blur.

5,600,390

ELECTRIC CAMERA

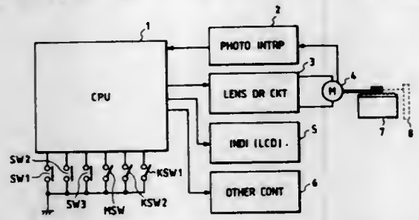
Hiroyuki Tsuru, Tokyo; Tadashi Otani, Ohtawara, and Keishi Urata, Tokyo, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Jun. 23, 1995, Ser. No. 494,246

Claims priority, application Japan, Aug. 4, 1994, 6-202691

Int. Cl.[6] G03B *1/18;5/02*

U.S. Cl. 396—133 **19 Claims**



2. An electric camera comprising:

a switch for performing a switching operation of the camera between a use position at which the camera is usable and a not-use position at which the camera becomes in a pause state;

a driving member for shifting a member to be driven between a use position at which the member is usable and a pause position at which the member is not used at a first driving speed in response to a switched state of said switch;

detection means for detecting whether the shift of said member to be driven is abnormal or not;

counter means for starting counting when said driving member starts a driving operating in response to the switching operation by said switch;

a change-over member for changing over a driving speed of said driving member from a first speed to a second speed which is lower than the first speed in response to a detection by said detection means that the shift of said member to be driven is abnormal; and

control means for stopping the drive of the driving member when the counter means counts the predetermined time.

5,600,391

ONE PIECE VIEWFINDER AND FABRICATION PROCESS

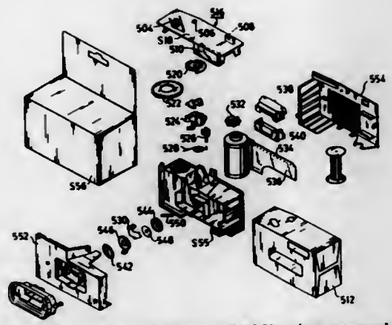
Alan V. VanDeMoere; Ralph M. Lyon, and Edward N. Balliug, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 292,029, Aug. 14, 1994, abandoned, which is a continuation of Ser. No. 945,186, Sep. 15, 1992, Pat. No. 5,353,165. This application Oct. 28, 1994, Ser. No. 330,572

Int. Cl.[6] G03B *13/02;17/02*

U.S. Cl. 396—6 **11 Claims**

1. A method of recycling a single use camera having a camera body including a film cassette chamber, a viewfinder formed from a support and a plurality of optically aligned lenses molded integrally with the support, a shutter mechanism, a film advance and metering mechanism, and a taking lens, all of which have been



used to take pictures on an exposed roll of film since removed from the film cassette chamber and therefore are previously used single use camera parts, said method comprising the steps of:

determining that the previously used camera body having an empty film cassette chamber is suitable for recycling;

determining that the previously used viewfinder formed from a support and a plurality of optically aligned lenses integrally molded with said support is suitable for recycling with the previously used camera body; and

loading an unexposed roll of film into the empty film cassette chamber of the previously used camera body.

5,600,392

POSITION SENSOR

Tetsuo Sakamoto; Junichi Matsumoto, and Tomio Kurosu, all of Tokyo, Japan, assignors to Copal Company Limited, Japan

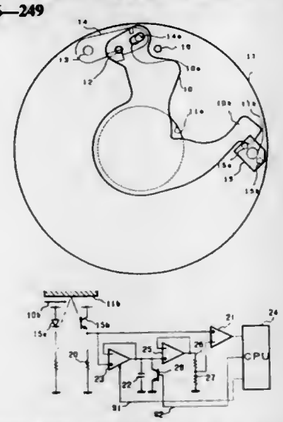
PCT No. PCT/JP93/01716, § 371 Date Oct. 6, 1994, § 102(e) Date Oct. 6, 1994

PCT Filed Nov. 24, 1993, Ser. No. 256,167

Claims priority, application Japan, Nov. 25, 1992, 4-338020

Int. Cl.[6] G03B *9/08;9/02;7/08*

U.S. Cl. 396—249 **10 Claims**



1. A position sensor comprising:

sensor means for detecting a position of an object, said sensor means having a detecting portion disposed along an operation line of said object, said sensor means producing an output signal;

threshold level determining means for reading a first output level of said output signal from said sensor means to determine a threshold level from said first output level; and

comparator means for comparing a second output level of said output signal from said sensor means with said threshold level and for producing a position signal indicative of said position, said threshold level determining means reading said first level of said output signal prior to said comparator means producing said position signal to establish said threshold level of said comparator means according to said first level of said output signal.

5,600,393

MECHANISM FOR OPENING AND CLOSING CARTRIDGE COMPARTMENT COVER OF CAMERA

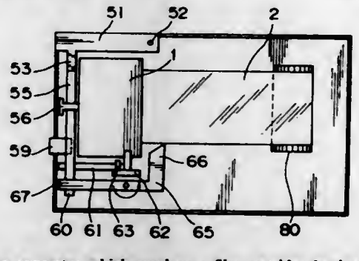
Akira Funahashi, Sakai, Japan, assignor to Minolta Co., Ltd., Osaka, Japan

Filed Dec. 23, 1994, Ser. No. 363,825

Claims priority, application Japan, Dec. 28, 1993, 5-335211

Int. Cl.[6] G03B *17/26;17/02*

U.S. Cl. 396—513 **12 Claims**



1. An apparatus which employs a film cartridge having a film case with a film passageway and a light-intercepting door that opens and closes the film passageway comprising:

a driving mechanism which drives the light-intercepting door to open and close the film passageway;

a detector which detects whether the film is fed through the film passageway outside the film case of the film cartridge; and

a prohibiting structure which prohibits the light-intercepting door from being closed by the driving mechanism so as not to catch the film when the detector detects that the film is fed outside the film case of the film cartridge.

5,600,394

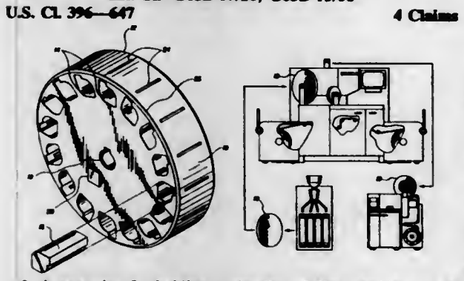
SMART FILM CARTRIDGE MAGAZINE

Bradley C. DeCook, Rochester; Brian K. Gallipeau, Fairport, and David P. D'Aurelio, Hilton, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 241,884, May 12, 1994, Pat. No. 5,475,461. This application Mar. 28, 1995, Ser. No. 412,246

Int. Cl.[6] G03B *17/26;* **G03D** *13/08*

U.S. Cl. 396—647 **4 Claims**



1. A magazine for holding a plurality of film cartridges, each having a photosensitive material disposed therein, comprising:

a support structure having a plurality of cavities for holding and retaining the plurality of film cartridges therein, and a memory secured to the magazine for retaining information regarding the film exposed for controlling operation of a photofinishing device with respect to the film contained within the plurality of film cartridges and for identifying the location of each of said film cartridges.

5,600,395

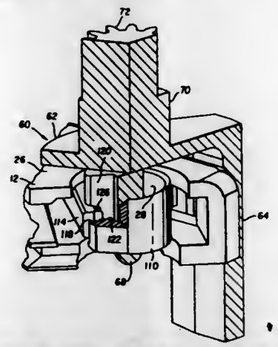
ONE-TIME-USE CAMERA HAS DRIVER FOR CLOSING FILM CASSETTE WHICH CANNOT RE-OPEN CLOSED CASSETTE

Edward N. Balling, Rochester, N.Y.; Masami Fujita, Machida, Japan; Kiyoaki Hazama, Hachiohji, Japan, and Katsuyuki Koizumi, Hino, Japan, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 9, 1996, Ser. No. 685,238

Int. Cl.[6] G03B *17/26;17/02*

U.S. Cl. 396—6 **1 Claim**



1. A one-time-use camera comprising a film cassette having a light lock pivoted open to permit film movement into the cassette interior and pivoted closed to prevent ambient light from entering the cassette interior and a locking pawl movable into engagement with said light lock when the light lock is closed to secure the light lock closed and movable out of engagement with the light lock when the light lock is closed to permit the light lock to be pivoted open, is characterized in that:

a driver is moveable in engagement with said light lock to pivot the light lock closed to allow said locking pawl to move into engagement with the light lock and has a void which prevents the driver from moving the locking pawl out of engagement with the light lock, whereby said driver can be pushed against said film cassette to push the film cassette out of said camera without any possibility of the driver being moved in engagement with said light lock to pivot the light lock open.

5,600,396

PHOTOTHERMOGRAPHIC THERMAL PROCESSOR FILTRATION SYSTEM

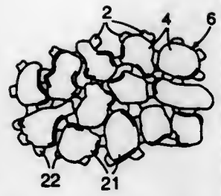
Robert M. Biegler, Woodbury; Rosanne E. Gronseth, Minneapolis; Robert J. Ryther, St. Paul; Michael P. Jusire, Maple Grove, and John A. Svendsen, Marine on St. Croix, all of Minn., assignors to Imation Corp., St. Paul, Minn.

Continuation-in-part of Ser. No. 239,888, May 9, 1994, Pat. No. 5,510,871. This application Dec. 4, 1995, Ser. No. 566,931

Int. Cl.[6] G03D *7/00*

U.S. Cl. 396—565 **13 Claims**

1. A thermal developing unit for the thermal development of photothermographic media which comprises a means for thermally developing photothermographic media by placing said media in contact with a heated element within a case, a first and second opening for venting gas from said case, said first opening being connected to an area surrounding said heated element said second opening being connected to an area within said unit where said



media passes after it has been thermally developed, and in a path by which said gas can be vented through at least one of said first or second openings from said case there is a filter cartridge comprising a filter housing containing a chemical filtration media having no bonded absorbent partculates therein.

5,600,397

AUTOMATIC FOCUSING DEVICE

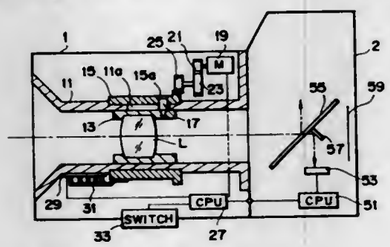
Yoshiharu Shiokama, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 345,324, Nov. 21, 1994, abandoned, which is a continuation of Ser. No. 174,624, Dec. 28, 1993, abandoned, which is a continuation of Ser. No. 47,059, Apr. 6, 1993, abandoned, which is a continuation of Ser. No. 789,966, Nov. 12, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 481,217

Claims priority, application Japan, Nov. 14, 1990, 2-305993

Int. Cl.[6] G03B *13/36*

U.S. Cl. 396—133 **9 Claims**



1. An automatic focusing device, comprising:

a defocus detecting portion which detects a defocus amount and a defocus direction with respect to an anticipated image formation plane of an image of an object formed by a lens;

a lens position detector which detects positions of said lens;

a range setting device to set a shifting range of said lens to a selected limited range within a larger total range in which said lens can travel to perform automatic focusing;

a lens drive to shift said lens based on said defocus amount and said defocus direction to perform automatic focusing,

a lens shifting amount determining portion which determines a lens shifting amount required to shift said lens in a lens shifting direction, corresponding to said defocus direction, from a detected position of said lens within said limited range to a limit position of said limited range, said lens shifting amount determining portion determining said required lens shifting amount and said lens shifting direction based on said detected lens position within said limited range and said defocus direction;

an image plane shifting amount determining portion which converts said required lens shifting amount to an image plane shifting amount and compares said image plane shifting amount with said defocus amount; and

a regulating portion which regulates said lens drive such that when said defocus amount is less than the determined image plane shifting amount, said lens drive is enabled to shift said lens, and when said defocus amount is greater than the determined image plane shifting amount, said lens drive is disabled from shifting said lens.

5,600,398

AUTOMATIC FOCUS ADJUSTMENT DEVICE AND METHOD

Akira Ogasawara, Kanagawa-ken, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Jan. 25, 1995, Ser. No. 378,353

Claims priority, application Japan, May 19, 1994, 6-105370

Int. Cl.[6] G03B *13/36*

U.S. Cl. 396—125 **21 Claims**



1. An automatic focus adjustment device comprising:

focus detection means for repeatedly outputting focus detection signals relating to a photographic subject viewed through a shooting lens, so as to output a sequence of the focus detection signals representing focus conditions over time;

defocus amount computation means for calculating defocus amounts of the shooting lens based on the focus detection signals output from the focus detection means, so as to output the calculated defocus amounts in sequence over time;

drive control means for determining whether the shooting lens is in a predetermined focus state based on the defocus amounts and for conducting focus adjustment by driving the shooting lens until the shooting lens is in the predetermined focus state, the focus adjustment being conducted based on the defocus amounts calculated by the defocus amount computation means; and

statistical processing means for statistically processing a plurality of the calculated defocus amounts that have been output in sequence by the defocus amount computation means after the shooting lens has been determined to be in the predetermined focus state, the drive control means stopping the focus adjustment when it is determined that the shooting lens is in the predetermined focus state and subsequently resuming focus adjustment of the shooting lens when a result from the statistical processing means satisfies a predetermined condition, otherwise the drive control means continuing to stop the focus adjustment.

5,600,399

OPTICAL APPARATUS AND CAMERA FOR CONTROLLING A PLURALITY OF FUNCTIONS BY USING A VISUAL AXIS

Akira Yamada; Yoshiaki Irie, both of Yokohama, and Akihiko Nagano, Ichihara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 348,134, Nov. 23, 1994, abandoned. This application Feb. 16, 1996, Ser. No. 602,597

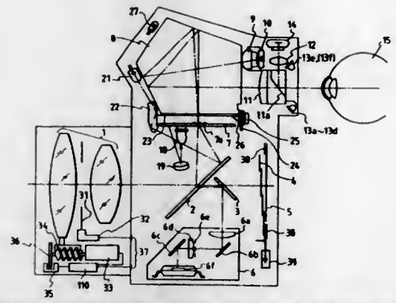
Claims priority, application Japan, Nov. 25, 1993, 5-317537

Int. Cl.[6] G03B *13/16;17/20*

U.S. Cl. 396—51 **20 Claims**

1. An optical apparatus with a visual axis detection function, which comprises finder means for observing an object, and visual axis detection means for detecting a visual axis direction of an observer who looks into the finder means, said apparatus comprising:

a visual axis input index which is arranged in the finder means;



visual axis input means for executing a selected function when said visual axis detection means detects that the visual axis of the observer is located on or near said visual axis input index; and

selection means for causing the observer to select the function to be executed by said visual axis input means from a plurality of functions without using said visual axis detection means.

5,600,400

CAMERA HAVING VISUAL LINE DETECTING DEVICE AND METHOD OF PHOTOGRAPHY PERFORMED THEREBY

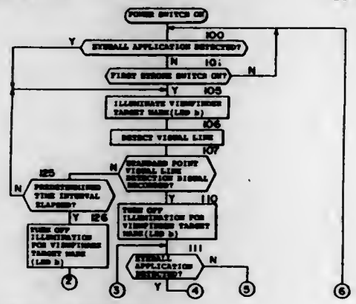
Hiroshi Wakabayashi, Yokohama; Yuji Katano, and Minoru Kato, both of Kawasaki, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 371,485, Jan. 11, 1995, which is a continuation of Ser. No. 220,452, Mar. 30, 1994, which is a continuation of Ser. No. 5,829, Jan. 19, 1993. This application Apr. 28, 1995, Ser. No. 430,817

Claims priority, application Japan, Jan. 20, 1992, 4-027510

Int. Cl.[6] G03B *7/00*

U.S. Cl. 396—51 **10 Claims**



1. A camera, comprising:

a viewfinder;

a means for detecting a visual line of a photographer looking through said viewfinder;

an operation member that when operated causes the camera to perform photography;

a mark displaying means for automatically displaying a target mark within said viewfinder when said operation member is operated, not requiring operation of any devices other than said operation member;

a means for automatically inputting and storing calibration data based upon the visual line detected by said visual line detection means when said photographer fixates on said target mark visible within said viewfinder;

a means for performing photography which, based upon the visual line detected by said visual line detection means and said stored calibration data, detects an object fixated on by said photographer to be photographed and performs photography thereof; and

a means for detecting eyeball application which detects whether the photographer is applying an eyeball to said viewfinder, wherein said mark displaying means displays said target mark when an eyeball application is detected by said eyeball application detection means.

5,600,401

CAMERA HAVING EFFICIENT UTILIZATION OF SPACE FOR MOUNTED COMPONENTS

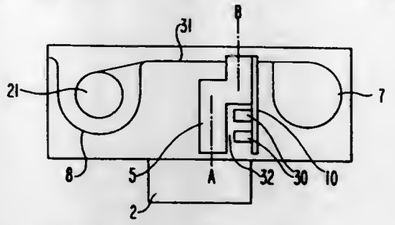
Minoru Kato, Kawasaki; Hidenori Miyamoto, Urayasu, and Isao Soshi, Tokyo, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 183,854, Jan. 21, 1994, abandoned. This application Jun. 19, 1996, Ser. No. 666,831

Claims priority, application Japan, Jan. 21, 1993, 5-008638

Int. Cl.[6] G03B *7/00*

U.S. Cl. 396—542 **9 Claims**



1. A camera, comprising:

(a) a viewfinder including,

(i) an objective lens having a first optical axis,

(ii) an eyepiece lens having a second optical axis which is offset from the first optical axis to form an offset portion in a wall of the viewfinder; and

(b) a printed board having a portion attached to the viewfinder and a portion extending from the viewfinder, and having at least one electrical component mounted thereon, the at least one electrical component being located between the offset portion of the wall of the viewfinder and the portion of the printed board extending from the viewfinder.

5,600,402

METHOD AND APPARATUS FOR PRODUCING THREE-DIMENSIONAL GRAPHIC IMAGES USING A LENTICULAR SHEET

Daniel B. Kainen, 137 Varick St., New York, N.Y. 10013

Filed May 4, 1995, Ser. No. 433,976

Int. Cl.[6] G03B *27/32;35/14*

U.S. Cl. 355—22 **15 Claims**

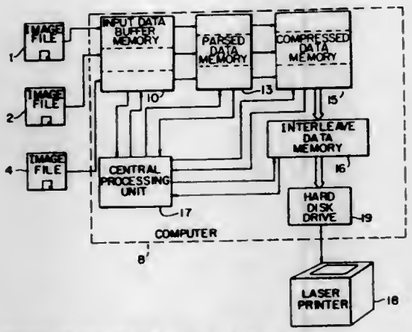
1. A method of producing three-dimensional images using a lenticular sheet, comprising the steps of:

capturing a plurality of views of a subject at different parallax angles;

parsing each of the views of the subject into a plurality of narrow rectangular segments equal to the number of lenticules of the lenticular sheet;

compressing the width of each narrow rectangular segment by a ratio equal to the reciprocal of the plurality of parallax views of the subject obtained in the step of capturing;

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interleaving the multiplicity of segments;

printing the interleaved segments; and

then aligning the printed image with the lenticular sheet following the step of printing the interleaved segments, whereby the position of each segment below each lenticule corresponds to the parallax angle view represented by that segment obtained in the step of capturing.

5,600,403

MONITOR SYSTEM FOR MONITORING STATE OF IMAGE FORMING DEVICE

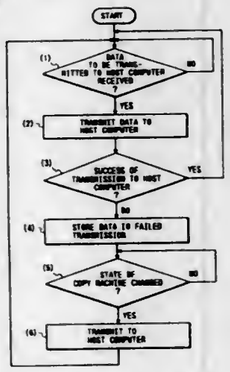
Masaaki Inoo, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 20, 1994, Ser. No. 359,813

Claims priority, application Japan, Dec. 24, 1993, 5-327261

Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—8 **24 Claims**



1. A monitor system for monitoring a state of an image forming device, comprising:

detector means for detecting the state of the image forming device; and

transmitter means for transmitting status data representing the state to a monitor device upon a state change being detected by said detector means, said transmitter means including holding means for holding the status data in accordance with a failure of transmission of the status data, wherein said transmitter means transmits the status data held by said holding means in accordance with a new state change detected by said detector means.

5,600,404

CORRECTION OF MISREGISTRATION IN AN IMAGE FORMING APPARATUS DEPENDING ON MULTIPLE REGIONS OF A TRANSFER BELT

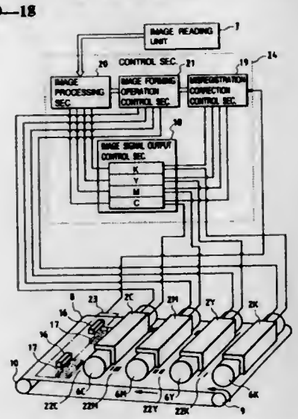
Ryo Ando, and Hirotaka Mori, both of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 10, 1995, Ser. No. 541,930

Claims priority, application Japan, Oct. 20, 1994, 6-279801

Int. Cl.[6] G03G *15/01*

U.S. Cl. 399—18 **2 Claims**



1. A misregistration correcting method in an image forming apparatus which has a plurality of image forming sections, and a medium carrying and transporting unit for sequentially forwarding recording media to locations opposed to the respective image forming sections while carrying the recording media, and which transfers a plurality of images formed by the respective image forming sections onto each of the recording media placed on the medium carrying and transporting unit while superimposing the images one upon another, comprising the steps of:

transferring image position detecting pattern images from the respective image forming sections onto the medium carrying and transporting unit over an entire circumferential surface thereof;

detecting the pattern images transferred on the circumferential surface of the medium carrying and transporting unit;

calculating misregistration amounts on the circumferential surface of the medium carrying and transporting unit;

calculating an average of the misregistration amounts for each of the pattern images and calculating an average of the misregistration amounts for each of the pattern images within a region for each of a plurality of regions of the circumferential surface of the medium carrying and transporting unit, the respective regions being determined in accordance with a size of the recording media; and

correcting, based on the calculated averages, a transfer position of each of the images on each of the recording media placed in the respective regions of the medium carrying and transporting unit.

5,600,405

BIAS CLEANING SYSTEM AND ELECTROSTATIC PRINTING APPARATUS THEREWITH AND OPERATING METHOD THEREOF

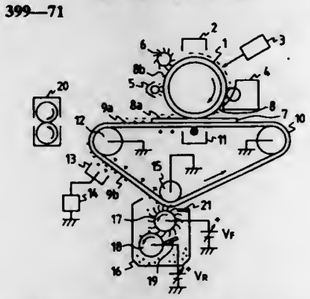
Takao Umeda, Mito; Katsuya Kawai, Katsuta; Yosuke Saito, Katsuta; Hiroyuki Mabuchi, Katsuta; Masayasu Anzai, Hitachi; Masato Miwa; Takashi Suzuki, both of Katsuta, all of Japan; Teruaki Mitsuya, Pasadena, Calif.; Yasuo Takuma, Hitachi, Japan; Masato Miwa; Takashi Suzuki, both of Katsuta, Japan; Teruaki Mitsuya, Pasadena, Calif., and Yasuo Takuma, Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 9, 1994, Ser. No. 257,296

Claims priority, application Japan, Jun. 14, 1993, 5-142172

Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—71 **25 Claims**



1. A bias cleaning system comprising:

an electrically conductive brush roller for collecting a charge-carrying toner which has adhered on a rotatable toner carrying nonphotosensitive member by scrubbing the toner from the toner carrying member under a condition in which said toner carrying member is rotating in contact with said brush roller and a direct current voltage of opposite polarity to the charge on the toner is applied to said brush roller;

a collecting roller for collecting the toner scrubbed off said toner carrying member by said brush roller by effecting contact between the collecting roller and the electrically conductive brush roller under a condition in which a direct current voltage having the same polarity as and a higher level than the voltage applied to the electrically conductive brush roller is applied to the collecting roller; and

toner charge decreasing means for decreasing the amount of charge on the toner carried on the toner carrying member in a region up-stream of the electrically conductive brush roller in the moving direction of the toner carrying member.

5,600,406

FIXING TEMPERATURE CONTROL DEVICE

Yukihiro Aikawa; Satoshi Ishii; Hiroyuki Sadamori; Tsutomu Sugaya, and Junichi Hirobe, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Sep. 15, 1994, Ser. No. 305,316

Claims priority, application Japan, Oct. 19, 1993, 5-261419; Oct. 19, 1993, 5-261420; Oct. 19, 1993, 5-261421; Oct. 19, 1993, 5-261422; Nov. 30, 1993, 5-300447

Int. Cl.[6] G03G *15/20*

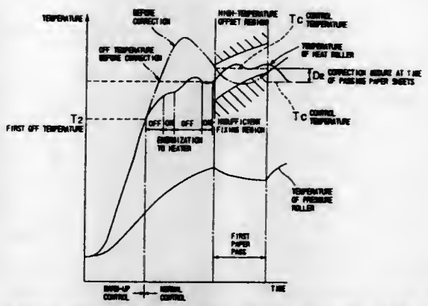
U.S. Cl. 399—70 **20 Claims**

1. A fixing temperature control device comprising:

a fixing device of an image forming apparatus which includes a heater, a pressure roller and a heat roller heated by said heater, said fixing device heating and fixing toner particles on paper sheets passing between both the rollers;

heat roller temperature detecting means for detecting the temperature of said heat roller; and

energization control means for turning said heater on and off,



wherein, said energization control means performs a warm-up mode and then a normal mode in response to each occurrence of an image formation start signal,

wherein, in said warm-up control mode, warm-up mode processing is started by turning said heater on in response to said image formation start signal and is terminated by turning said heater off at a time when a temperature detected by said heat roller temperature detecting means reaches a predetermined first off temperature, and

wherein, in said normal control mode, normal mode processing, having a predetermined control temperature as a target, is started on the basis of the temperature detected by said heat roller temperature detecting means upon termination of said warm-up mode processing of said warm-up control mode, and is terminated when said heater is turned off in response to an image formation termination signal, said heater remaining off until a next warm-up control mode is performed in response to a next image formation start signal.

5,600,407

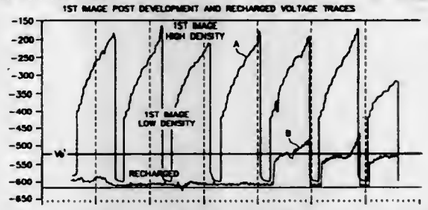
IMAGE FORMING METHOD AND APPARATUS FORMING COMBINED TONER IMAGES

W. Charles Kaiske, Penfield, and Anne F. Lairmore, Hilton, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 31, 1995, Ser. No. 381,455

Int. Cl.[6] G03G *15/01*

U.S. Cl. 399—56 **15 Claims**



1. A method of forming at least two toner images on a portion of an image member, said method comprising:

applying a charge of a first polarity to an electrophotographic image member,

imagewise exposing a portion of the electrophotographic image member to a first pattern of radiation having a plurality of intensities greater than zero to form a first electrostatic image having a plurality of potential levels, all of the first polarity,

applying a first toner having a charge of the first polarity to the first electrostatic image to form a first toner image on said portion, said toner image having a plurality of density levels including an intermediate density level less than the highest density level, in addition to any zero density level,

recharging the portion of the image member by applying a charge of the first polarity to said portion of the image member, including applying such a charge to the first toner image,

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imagewise exposing the recharged portion to create a second electrostatic image in registration with the first toner image,

applying a second toner having a charge of the first polarity to the second electrostatic image to form a second toner image in registration with said first toner image, and

monitoring a potential associated with the intermediate density level toner of the first toner image after the recharging step and adjusting the process in response to said monitored potential.

5,600,408

ELECTROPHOTOGRAPHIC COLOR IMAGE FORMING APPARATUS PROVIDED WITH A PLURALITY OF IMAGE EXPOSING DEVICES

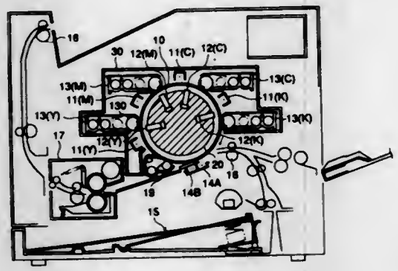
Tatsumi Horiuchi, and Satoshi Haneda, both of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Sep. 1, 1995, Ser. No. 522,680

Claims priority, application Japan, Sep. 9, 1994, 6-216081; Sep. 9, 1994, 6-216082; Sep. 14, 1994, 6-220297

Int. Cl.[6] G03G *15/00;15/01*

U.S. Cl. 399—39 **29 Claims**



1. A color image forming apparatus, comprising:

an image carrier;

charging means for electrically charging the image carrier;

a plurality of image exposing devices for exposing the image carrier so as to form latent images on the image carrier;

a plurality of developing devices for developing the latent images with color toners so as to form a plurality of color toner images, each of the plurality of developing devices developing one of the latent images with a different color toner;

a controller for controlling the image carrier, the charging means, the image exposing devices, and the developing devices so that the plurality of color toner images are formed one after another and superimposed on the image carrier; said controller comprising a regulator for adjusting a positional relation among the plurality of color toner images; and

a transfer device for transferring the plurality of color toner images superimposed on the image carrier onto a transfer sheet;

wherein each of the plural image exposing devices has an exposing position on the image carrier and the plural image exposing devices are arranged in such a manner that the plural exposing positions of the plural image exposing devices are spaced with each other substantially with an equal distance therebetween, and wherein the regulator regulates a circumferential speed of the image carrier so as to compensate positional deviation among the plural exposing devices.

5,600,409

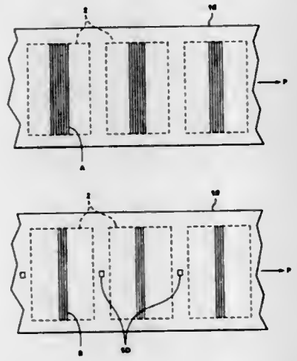
OPTIMAL TONER CONCENTRATION SENSING SYSTEM FOR AN ELECTROPHOTOGRAPHIC PRINTER

Matthew M. Dennie, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 20, 1996, Ser. No. 603,298

Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—58 **18 Claims**



1. In an electrostatographic printing apparatus in which toner particles in a primary toner supply are applied to an electrostatic latent image on a charge receptor, said apparatus further including a secondary toner supply and means for selectably adding toner particles from the secondary toner supply to the primary toner supply, a method of determining an optimal condition of toner particles in the primary toner supply, comprising the steps of:

applying toner from the primary toner supply to a series of electrostatic latent images without adding toner to the primary toner supply; and

applying toner from the primary toner supply to a series of electrostatic latent images while adding toner to the primary toner supply at a first rate, while periodically creating a series of test patches of a predetermined development potential on the charge receptor and measuring an actual density of each test patch after toner is applied thereto, until an actual measured density on a test patch is within a first range of a predetermined toner density.

5,600,410

Patent Not Issued For This Number

5,600,411

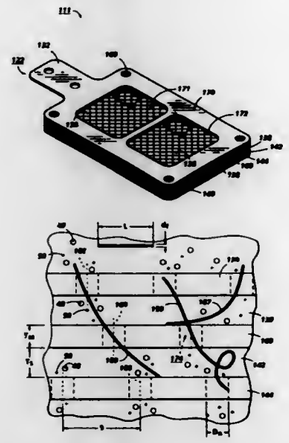
MULTI LAYER TONER FILTRATION TRAP

Steven C. Hart, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 7, 1995, Ser. No. 474,861

Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—98 **16 Claims**



1. An apparatus for trapping a contaminant, comprising:

a first member defining a plurality of apertures therein; and

a second member defining a plurality of apertures therein, said second member in juxtaposition with said first member and defining a space therebetween smaller than a maximum length of the contaminant.

5,600,412

APPARATUS AND METHOD FOR BORDERIZING AN IMAGE IN A PRINTING SYSTEM

Thomas W. Conners, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 22, 1995, Ser. No. 493,832

Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—81 **13 Claims**

1. In a printing system for producing a print having a representation of an image, the printing system including a memory for storing image data corresponding with the image, the image data including a plurality of pixels defining the image, the image including a first image portion and a second image portion, the first image portion and the second image portion including a first set of dimensions and a second set of dimensions, respectively, a border generating system for generating a border to be positioned about a peripheral portion of one of the first and second image portions, the border including an inner border edge, disposed immediately adjacent the peripheral portion, and an outer border edge spaced from the inner border edge, said border generating system comprising:

(a) a user interface at which a user designates which one of the first and second image portions is to receive the border;

(b) memory for storing a set of information, the set of information controlling a manner in which the border is to be generated;

(c) a processor for indicating, by reference to the set of information as well as the first and second sets of dimensions, which pixels are to define the inner border edge and which pixels are to define the outer border edge so that an optimum relationship is obtained between the border and at least one of the first and second image portions; and

(d) said processor generating the border, for printing the image, with the inner border edge and the outer border edge.

5,600,413

METHOD AND APPARATUS FOR CONTROLLING THE POTENTIAL APPLIED TO A CONTACT CHARGER IN AN IMAGE FORMING APPARATUS

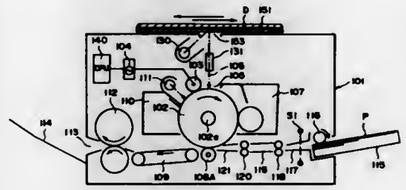
Shigeo Kimura, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

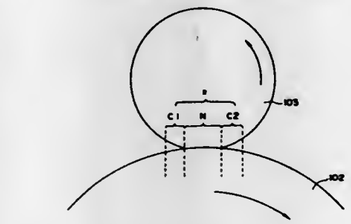
Filed Jul. 27, 1994, Ser. No. 280,986

Claims priority, application Japan, Jul. 27, 1993, 5-205797

Int. Cl.[6] G03G *15/02;21/00*

U.S. Cl. 399—174 **17 Claims**





11. An image forming apparatus comprising:

an image bearing member for bearing an image;

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a charging member for electrically charging an image bearing member;

toner image forming means for forming a toner image by applying toner onto the electrically-charged image bearing member;

transfer means for transferring the toner image from said image bearing member to a transfer material;

said transfer means includes a transfer member contactable to a side of the transfer material remote from said image bearing member, wherein said transfer member is supplied with a voltage of a polarity opposite from a charging polarity of said charging member without the transfer material at a transfer position when a first area of image bearing member passes through the transfer position;

control means for switching a potential applied to said charging member to form a blank area including an end portion of a transfer material with respect to a movement direction of said image bearing member;

wherein said first area and a second area of said image bearing member which corresponds to the blank area, are charged to a predetermined potential by said charging member.

5,600,414

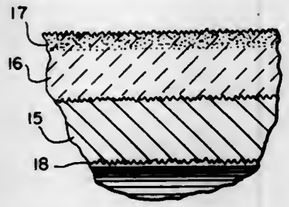
CHARGING ROLLER WITH BLENDED CERAMIC LAYER

Bruce E. Hyllberg, Gurnee, Ill., assignor to American Roller Company, Union Grove, Wis.

Continuation of Ser. No. 973,447, Nov. 9, 1992, abandoned. This application Mar. 13, 1995, Ser. No. 402,805

Int. Cl.[6] G03G *15/02*

U.S. Cl. 399—176 **9 Claims**



1. A roller for assisting in charging toner in a machine in response to an applied voltage differential, the charging roller comprising:

a cylindrical roller core;

a ceramic layer disposed around the cylindrical roller core;

wherein the ceramic layer is formed by plasma spraying a blend of a first ceramic material mixing alumina and titania in a first ratio and a second ceramic material mixing alumina and titania in a second ratio;

wherein the first ceramic material and the second ceramic material are blended in a ratio to control an RC circuit time constant relating to electrical response of the ceramic layer to the applied voltage differential; and

a sealant penetrating and protecting the ceramic layer from moisture contamination, said sealant also being selected to control an RC circuit time constant relating to electrical response of the sealed ceramic layer to the applied voltage differential.

5,600,415

IMAGE FORMING APPARATUS WITH DEVELOPING BIAS CONTROL

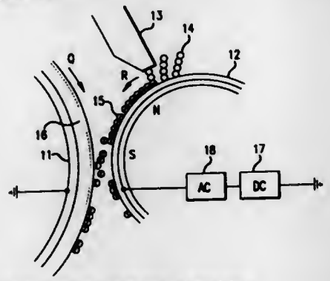
Kazuhiko Takahashi, Iwatsuki, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Aug. 25, 1994, Ser. No. 295,033

Claims priority, application Japan, Aug. 27, 1993, 5-212615

Int. Cl.[6] G03G *15/00*

U.S. Cl. 399—55 **13 Claims**



1. An image forming apparatus comprising:

a photo sensitive member;

a light source for exposing said photosensitive member according to input image information;

a developing unit located in the vicinity of said photosensitive member with a gap defined therebetween, for making a charged toner jump across the gap to said photosensitive member and developing an electrostatic latent image formed on said photosensitive member;

developing bias applying means for applying to said gap defined between said developing unit and said photosensitive member a developing bias comprising an AC voltage component for reciprocating said charged toner across the gap between said developing unit and said photosensitive member and a DC voltage component for developing said electrostatic latent image;

developing bias application control means for controlling on/off switching of said developing bias to be applied by said developing bias applying means;

phase detecting means for detecting whether a phase of said developing bias is a toner return phase in which said charged toner has returned from said photosensitive member to said developing unit;

off-time phase control means for turning off said developing bias in said toner return phase according to a detection result output from said phase detecting means; and

wherein the charged toner has a diameter d, the photosensitive member has a first center axis and a first radius R_1 and the developing unit has a second center axis and a second radius R_2, wherein a distance between the first center axis and the second center axis is greater than R_1+R_2+d.

5,600,416

ELECTRODE WIRE TENSIONING FOR SCAVENGELESS DEVELOPMENT

Steven C. Hart, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 6, 1995, Ser. No. 568,106

Int. Cl.[6] G03G *15/08*

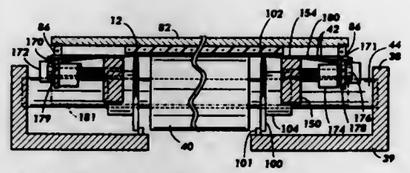
U.S. Cl. 399—291 **20 Claims**

1. An apparatus for developing a latent image recorded on a surface, including:

a housing defining a chamber storing a supply of developer material therein;

a donor roll spaced apart from the surface and adapted to transport the developer material to a development zone adjacent the surface;

a donor roll shaft on which said donor roll is mounted;



a donor roll support, said donor roll shaft being rotatably mounted on said donor roll support;

an electrode wire having a first end and a second end, said electrode wire being positioned in the space between the surface and said donor roll, said electrode wire being electrically biasable to detach the developing material from said donor roll to form a cloud of developer material in the space between said electrode wire and the surface with the developer material developing the latent image;

a wire module comprising a frame including two side beams connected by a first cross member at a first end and a second cross member at a second end; a first anchor rigidly mounted to a first anchor block and a second anchor rigidly mounted to a second anchor block, the first end of the wire being attached to the first anchor and the second end of the wire being attached to the second anchor; the first anchor block being located between the first cross member and a first end of said donor roll; and

an adjusting member which moves the first anchor block with respect to the first cross member in order to adjust the tension of the wire to a preselected tension.

5,600,417

DEVELOPING DEVICE FOR ELECTROPHOTOGRAPHIC APPARATUS

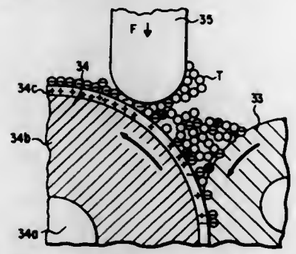
Michihisa Iguchi; Hiroshi Hashizume; Seiji Arai; Yoshiaki Okano; Chinobu Sakai; Hirotaka Fukuyama; Takahito Kabai; Kouichirou Satou; Tetsuya Nakamura, and Satoshi Katagata, all of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, and Kabushiki Kaisha TEC, Shizuoka, both of Japan

Filed Aug. 31, 1993, Ser. No. 113,696

Claims priority, application Japan, Aug. 31, 1992, 4-232409

Int. Cl.[6] G03G *15/08*

U.S. Cl. 399—279 **16 Claims**



1. A developing device for developing an electrostatic latent image formed on a photosensitive member in an electrophotographic apparatus utilizing toner, the developing device comprising:

means for containing the toner;

a developing roller for carrying on its surface the toner contained in said containing means and bringing the toner into contact with the photosensitive member; and

a developing blade, adapted to be in contact with the developing roller, for charging by friction the toner carried on the developing roller, wherein the hardness of the developing blade is higher than the hardness of the developing roller and positioned to sufficiently deform the developing roller so that stable contact is maintained between the developing roller and the developing blade;

and further wherein the hardness of the developing blade is 79 ±4 degrees in JIS-A hardware and the hardness of the developing roller is 30 ±5 degrees in JIS-A hardness.

5,600,418

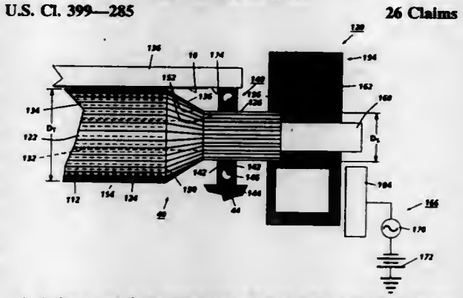
DONOR ROLLS WITH EXTERIOR COMMUTATION

Steven C. Hart, Webster; Mark S. Amico, and Glenn M. Keenan, both of Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 25, 1995, Ser. No. 533,108

Int. Cl.[6] G03G *15/06*

U.S. Cl. 399—285 **26 Claims**



1. A donor roll for transporting marking particles to an electrostatic latent image recorded on a surface, said donor roll adaptable for use with a power source to assist in transporting the marking particles, said donor roll comprising:

a rotatably mounted body including a particle transportation portion, a support portion adjacent the particle transportation portion, and an external portion adjacent the support portion and spaced from the particle transportation portion, said body defining an axis of rotation thereof;

an electrode member mounted on the particle transportation portion of said body; and

an electrical conductor associated with the external portion of said body and extending in a direction at least partially parallel to the axis of rotation of said body, said electrical conductor electrically connected to said electrode member and adapted to be electrically connectable to the power source.

5,600,419

DEVELOPING DEVICE HAVING BIASING CIRCUIT FOR CHARGE ERASING MEMBER

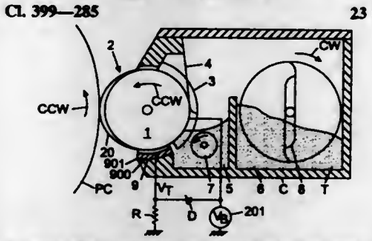
Tamotsu Sakuraba, and Shinichi Takemoto, both of Toyokawa, Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Aug. 1, 1995, Ser. No. 509,886

Claims priority, application Japan, Aug. 1, 1994, 6-180188

Int. Cl.[6] G03G *15/06*

U.S. Cl. 399—285 **23 Claims**



1. A developing device for developing an electrostatic latent image on an electrostatic latent image carrier comprising:

a toner carrying member opposed to said electrostatic latent image carrier and having a movable surface on which a toner is held;

a charge erasing member being in contact with said surface of said toner carrying member;

a developing bias power unit; and

a connection circuit for connecting said developing bias power unit with said charge erasing member and said toner carrying member so as to maintain a predetermined electric potential difference between said developing bias power unit and said charge erasing member.

5,600,420

IMAGE TRANSFER ELEMENT IN A COLOR IMAGE FORMING APPARATUS

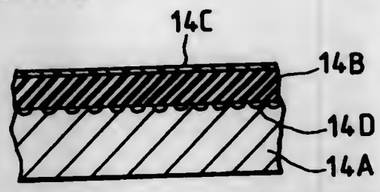
Masahiko Saito, Kitaibaraki; Masashi Yamamoto, Hitachi; Tetsuro Akasaki, Hitachinaka; Koichi Niwa, Hitachi; Jin Sawabata, Hitachioota; Masahiro Nakano, Hitachi; Motoyuki Suzuki, Kitaibaraki, and Toshiya Sato, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 2, 1994, Ser. No. 348,692

Claims priority, application Japan, Dec. 17, 1993, 5-317707; Feb. 22, 1994, 6-023975

Int. Cl.[6] G03G *15/14*

U.S. Cl. 399—302 **12 Claims**



1. A color image forming apparatus for forming a color image having a belt-shaped latent image holder an exposure element forming a latent image by exposing said latent image holder to light, a plurality of developers having different toners and developing said latent image, an intermediate transfer element forming a color image by receiving and superposing plural toner images, a print transferer by which the color image formed on said intermediate transfer element is transferred onto a printed member, an image fixer fixing the color image transferred to said printed member, wherein:

said intermediate transfer element comprises a conductive cylindrical base member of drum-shape and an elastic member of belt-shape having a thickness of t (mm) coating the surface of said base member, wherein grooves or pits having a depth and width of 10 μm to t/5 (mm) are provided on the surface of said base member.

5,600,421

IMAGE FORMING APPARATUS

Nobuhiko Takekoshi, Kawasaki; Takashi Hasegawa, Ageo; Masahiro Inoue, Yokohama, and Yoichi Kimura, Kawaguchi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 14, 1994, Ser. No. 305,604

Claims priority, application Japan, Sep. 17, 1993, 5-254944; Sep. 9, 1994, 6-215992

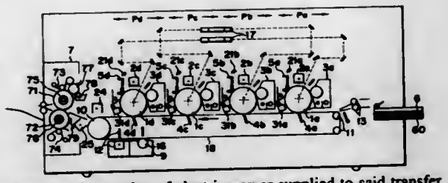
Int. Cl.[6] G03G *15/16*

U.S. Cl. 399—66 **26 Claims**

1. An image forming apparatus comprising:

an image bearing member for bearing an image thereon; and

transfer means for transferring the image from said image bearing member to a recording material at a transfer startoni said transfer means performing a plurality of image traneferring operations for a common recording material;



wherein a limit value of electric power supplied to said transfer means is changed between a case where an imaged portion of said image bearing member is positioned at said transfer station and a case where a non-imaged portion of said image bearing member is positioned at said transfer station, and

wherein the limit value for said imaged portion and said non-imaged portion is set so that the limit value in a last image transferring operation is greater than the limit value in a first image transferring operation, and the limit value in a certain transferring opweration does not become smaller than the limit value in a next transferring operation.

5,600,422

IMAGE-FORMING APPARATUS EMPLOYING A REVERSAL DEVELOPING SYSTEM

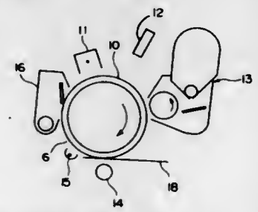
Toshiyuki Fukami; Masashi Tanaka; Masato Katsukawa, and Hideo Nakamori, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Feb. 7, 1995, Ser. No. 384,867

Claims priority, application Japan, Feb. 8, 1994, 6-014545

Int. Cl.[6] G03G *15/16*

U.S. Cl. 399—313 **9 Claims**



1. An image-forming apparatus employing a reversal developing system and comprising a photosensitive material, a main charger, an image-exposing device, a reversal developing device, a transfer device and a discharger, wherein the transfer device comprises a transfer roller disposed near the surface of the photosensitive material and a power source for applying a DC voltage to said transfer roller, and wherein said photosensitive material is capable of being electrically charged into both positive and negative polarities, said transfer roller is an electrically conducting sponge roller that is brought into contact with the surface of the photosensitive material or is brought into pressed contact with the surface of the photosensitive material with a force which is not larger than 500 g/cm^2 a DC voltage applied to the transfer roller is of a polarity opposite to the polarity of the surface of the photosensitive material that is electrically charged by the main charger and has a value larger than a charge start voltage of the photosensitive material, and the potential on the surface of the photosensitive material after it is discharged is set to be not larger than 50 V in an absolute value.

5,600,423

IMAGE FORMING APPARATUS INCLUDING A TRANSFER MEDIUM BEARING MEMBER HAVING A SHEET MEMBER FOR BEARING A TRANSFER MEDIUM THEREON

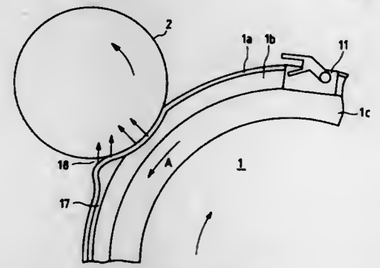
Toshiaki Miyashiro, Ichikawa; Akihiko Takeuchi, Yokohama; Toshihiko Ochiai, Tokyo; Motoi Kato, Yokohama; Akira Ito, Tokyo; Nobuaki Kabeya, Toride; Takehiko Suzuki, and Takao Kume, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 24, 1995, Ser. No. 426,836

Claims priority, application Japan, Apr. 28, 1994, 6-113672

Int. Cl.[6] G03G *15/16*

U.S. Cl. 399—313 **76 Claims**



1. An image forming apparatus comprising:

an image bearing member bearing images thereon and movable; and

a transfer medium bearing member provided in pressure contact with said image bearing member and bearing a transfer medium thereon and rotatable, said transfer medium bearing member having a sheet member for bearing the transfer medium thereon, and an elastic layer supporting that area of said sheet member bearing the transfer medium thereon from the inside of said sheet member, a voltage being applied to said transfer medium bearing member to transfer the images on said image bearing member to the transfer medium born on said sheet member;

wherein said sheet member having an area not fixed to said elastic layer, said transfer medium bearing member being rotated with a potential difference created between said image bearing member and said sheet member before the operation of transferring the images on said image bearing member to the transfer medium born on said sheet member is started.

5,600,424

SYSTEM FOR CONTROLLING THE MOTION OF FUSED OR UNFUSED COPY SHEETS ENTERING A FUSER NIP

Michael A. Malachowski, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 17, 1993, Ser. No. 168,296

Int. Cl.[6] G03G *15/20*

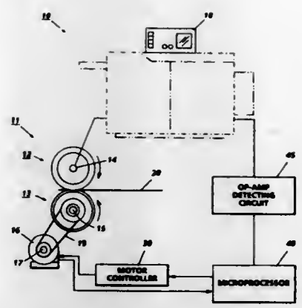
U.S. Cl. 399—68 **12 Claims**

9. A two speed fuser for use in a copier/printer apparatus that makes single sided and duplexed copies, comprising:

a first roller;

a second roller cooperating with said first roller to form a nip through which a substrate supporting toner material is moved; and

a motor connected to one of said rollers for driving said one of said rollers at either one of predetermined two speeds upon demand, and wherein said motor operates at said first predetermined speed for single sided copying and at said second predetermined speed for simultaneous duplexing.



5,600,425

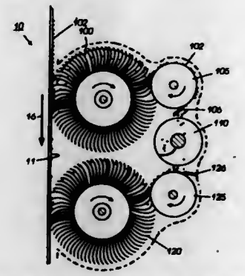
CLEANER SYSTEM WITH CENTRAL AUGERING

Bruce E. Thayer; Dennis G. Gerbasi, both of Webster, and Norman E. LaTour, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 18, 1995, Ser. No. 574,067

Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—353 **12 Claims**



1. An apparatus for removing particles from a surface, comprising:

means for cleaning the surface;

at least two detoning members for detoning the particles from the cleaning means, said detoning members comprising a first detoning roll and a second detoning roll, said first detoning roll having a first scraper blade in frictional contact with said first detoning roll, the first scraper blade removing particles from said first detoning roll, said second detoning roll having a second scraper blade in frictional contact with said second detoning roll, the second scraper blade removing particles from said second detoning roll; and

means for transporting the particles removed from the surface, said transporting means being centrally located along a centerline between said detoning members, said first scraper blade and said second scraper blade defining portions of a channel to the same transporting means.

5,600,426

SELF-ALIGNING, LOW JAM RATE IDLER ASSEMBLY

John D. Gramlich, Webster; Margaret C. Plain, Rochester; Robert F. Rubecha, Fairport; Cesldo J. Dicesare, and Theodore J. Kellogg, both of Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

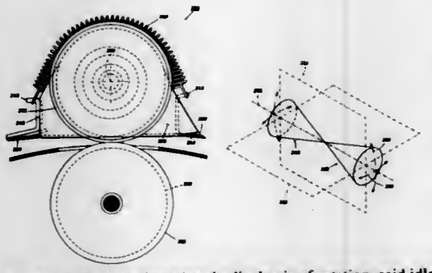
Filed Mar. 30, 1994, Ser. No. 220,383

Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—381 **12 Claims**

1. An apparatus for applying a normal force to a sheet being advanced by a drive member, comprising:

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an idler member having a longitudinal axis of rotation, said idler member being in contact with the drive member to form a nip therebetween through which the sheet advances; and

a retaining member to secure said idler member in contact with the drive member, said retaining member fastening said idler member so that said idler member may simultaneously pivot in a plurality of planes about a preselected point of the longitudinal axis of rotation to maintain alignment with the drive member.

5,600,427

PAPER DEHUMIDIFYING UNIT FOR IMAGE FORMING APPARATUS

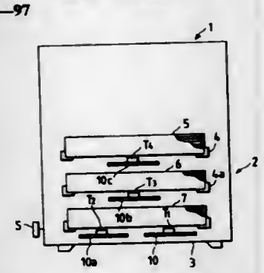
Yoshiaki Watanabe, and Takuji Miyazawa, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 19, 1994, Ser. No. 325,932

Claims priority, application Japan, Oct. 21, 1993, 5-285627

Int. Cl.[6] G03G *15/00*

U.S. Cl. 399—97 **17 Claims**



1. A paper dehumidifying unit for an image forming apparatus having a paper feeding device containing multi-stage paper feeding trays and allowing copying paper to be fed from any one of the trays, said paper dehumidifying unit comprising:

heating means placed under at least one of the paper feeding trays and between the other paper feeding trays in said paper feeding device, for heating the inside of the said paper feeding device to a specified temperature;

control means for controlling the temperature of said heating means; and

means for preventing the transmission of the heat emanated from said heating means directly to copying paper.

5,600,428

SHEET SEPARATOR FOR AN IMAGE FORMING APPARATUS

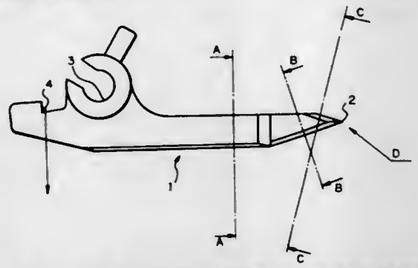
Masato Yanagida, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 22, 1994, Ser. No. 346,186

Claims priority, application Japan, Nov. 30, 1993, 5-299688; Oct. 11, 1994, 6-245646

Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—399 **1 Claim**



1. In an image forming apparatus for forming an electrostatic latent image on an image carrier, developing said latent image with toner having a softening point of 80° C. or below to produce a corresponding toner image, and then transferring said toner image to a sheet, a sheet separator for separating, after image transfer, said sheet from the surface of said image carrier while making sliding contact with said surface at an edge portion thereof has a radius of curvature of 0.04 mm or below at a tip of said edge portion which contacts said surface of said image carrier, said edge portion has a width of 0.2 mm or less, and said sheet separator is made of resin having a Rockwell hardness (scale M) ranging from 100 to 119.

5,600,429

IMAGE COPYING APPARATUS

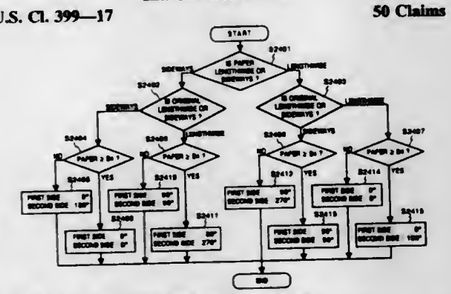
Satoru Kutsuwada, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 20,384, Feb. 22, 1993, abandoned. This application Oct. 14, 1994, Ser. No. 323,058

Claims priority, application Japan, Feb. 24, 1992, 4-036166

Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—17 **50 Claims**



1. An image copying apparatus comprising:

discriminating means for discriminating a direction at which one or more original(s) have been placed on a scanner, the scanner providing first and second original images with a relative orientation therebetween from the original(s);

deciding means for deciding a first angle of rotation of the first original image, and for deciding a second angle of rotation of the second original image; and

image forming means for forming the first original image onto a first face of a recording paper at the first angle of rotation, and for forming the second original image onto a second face of the recording paper at the second angle of rotation,

wherein said deciding means decides the first and second angles of rotation based upon the discriminated direction of the original(s) and based upon whether the first original image or the second original image is to be formed, so that a relative orientation between the first and second original images formed onto the first and second faces of the recording paper, respectively, is the same as the relative orientation between the first and second original images irrespective of the direction of the original(s) and regardless of how the recording paper is handled by said image forming means.

5,600,430

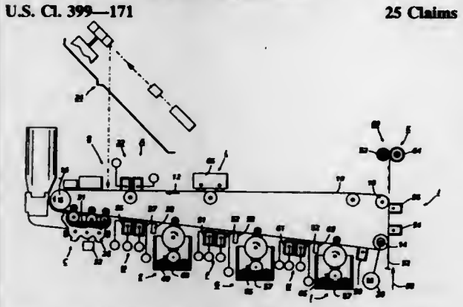
SPLIT RECHARGE METHOD AND APPARATUS FOR COLOR IMAGE FORMATION

Jeffrey J. Folkins, Rochester; Roger L. Bullock; Thomas J. Fleck, both of Webster; Kenneth W. Pietrowski; Charles H. Tabb, both of Penfield; Zhao-Zhi Yu, Webster, and Mark A. Gwaltney, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 30, 1994, Ser. No. 347,617

Int. Cl.[6] G03G *15/01*

U.S. Cl. 399—171 **25 Claims**



1. A corona generating apparatus for recharging a charge retentive surface to a predetermined potential, wherein the charge retentive surface has an image developed thereon having an electrical charge associated therewith, comprising:

a first corona generating device, positioned adjacent the charge retentive surface, for recharging the charge retentive surface to a higher absolute potential than the predetermined potential; and

a second corona generating device, spaced from said first corona generating device and positioned adjacent the charge retentive surface, for recharging the charge retentive surface to the predetermined potential, the difference in charge retentive surface potential after being recharged hy said first corona generating device and the predetermined potential being preselected so as to substantially neutralize the electrical charge associated with the developed image.

5,600,431

IMAGE FORMING APPARATUS FOR FORMING COLOR IMAGE WITH DRY DEVELOPER

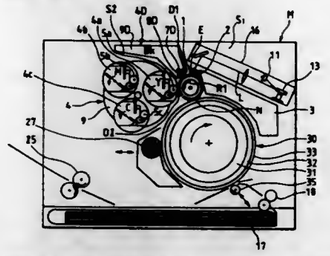
Masami Takeda; Kimio Nakahata, both of Kawasaki; Masuo Yamazaki, Yokohama; Katsuhiko Nishimura, Yokohama; Hiromichi Yamada, Yokohama; Tatsuya Nakamura, Tokyo; Toharu Saitou, Yokohama; Tohru Kosaka, Machida; Takashi Shibuya; Yasuo Yoda, both of Kawasaki, and Masahide Hirai, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 23, 1994, Ser. No. 348,072

Claims priority, application Japan, Nov. 26, 1993, 5-321180

Int. Cl.[6] G03G *15/01*

U.S. Cl. 399—226 **13 Claims**



1. An image forming apparatus for forming a color image with dry developer, comprising:

an image bearing member effecting endless movement;

charging means for charging said image bearing member to a predetermined potential;

optical means for exposing said image bearing member to image information;

first developing means utilizing developer containing a magnetic component, and comprising a single developing device which is opposed to said image bearing member in a fixed position, said charging means, optical means and first developing means being arranged in this order along the moving direction of said image bearing member;

second developing means positioned at the downstream side of said first developing means and utilizing non-magnetic developer of a color different from that of the developer of said first developing means, said second developing means comprising a plurality of developing devices operating independently of said first developing means, and one of the developing devices of said second developing means, when rotated, being opposed to said image bearing member; and

transfer means maintained in contact with or close to said image bearing member for transferring an image of the developer formed on said image bearing member by said first and second developing means,

wherein a space containing said second developing means is enclosed by the shape of said first developing means, transfer means and image bearing member.

5,600,432

METHOD AND APPARATUS FOR MEASUREMENT OF RESOLUTION OF IMAGING SYSTEMS

J. Michael Lengyel, Ramona, Calif.; Randy M. Maner, Albuquerque, N.M., and Larry A. Nelson, Bellevue, Wash., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 21, 1994, Ser. No. 263,897

Int. Cl.[6] G01N *21/00*

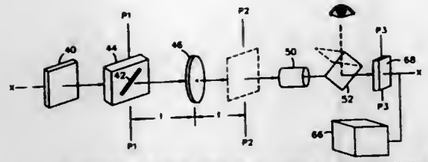
U.S. Cl. 356—124.5 **5 Claims**

1. Apparatus for measurement of resolution of an imaging system comprising:

means responsive to said imaging system for providing a display of a line image at a predetermined angular orientation;

means for providing a photographic facsimile of said line image;

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means for providing a light beam in the form of coherent light of a given wavelength, said beam defining an optical axis, and for applying said light beam to said photographic facsimile along said optical axis, thereby to produce a diffraction pattern;

liquid optical gate means positioned along said optical axis for receiving said light beam and said photographic facsimile and for forming said diffraction pattern of said line image

first optical means positioned along said optical axis for focusing a Fourier transformation of said diffraction pattern on a spatial frequency plane;

whereat spatial frequency components or said diffraction pattern are dispersed in a spatial light pattern and wherein the amplitude and spectral distribution of the spatial frequency components varies in accordance with a the geometry of said line image;

second optical means focused upon said spatial frequency plane for receiving said spatial light pattern, and for reproducing an image input upon said spatial frequency plane as an output image having magnified features corresponding to the spatial frequency components thereof; and

detector means positioned to receive said enlarged image and to store said enlarged image in digital form, where said detector means is responsive to said magnified features for providing a measure of the signal intensities corresponding to said portion of said spatial frequency distribution.

5,600,433

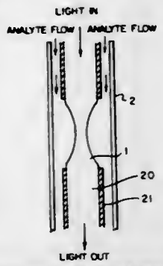
OPTICAL FIBER WAIST REFRACTOMETER

Daniel A. Buttry; Thomas C. Vogelmann; Guoying Chen, all of Laramie, Wyo., and Richard Goodwin, Bethesda, Md., assignors to The University of Wyoming, Laramie, Wyo.

Filed Nov. 2, 1994, Ser. No. 334,037

Int. Cl.[6] G01N *21/41*; **G02B** *6/00*; **G01J** *1/04*

U.S. Cl. 356—128 **74 Claims**



1. A refractive index detector for measuring the refractive index of a dynamic, spatially heterogeneous liquid sample, comprising:

a sensor comprising an unclad first portion of a fiber optic filament having a predetermined diameter and a longitudinally tapered unclad second portion, wherein the fiber diameter of said sensor continuously decreases curvilinearly from said predetermined diameter to a minimum diameter, said sensor lacking a cylindrical zone having said minimum diameter;

a monochromatic light source which irradiates a first end of said fiber optic filament along a fiber axis; and

means for monitoring variations in light intensity emitting from said sensor.

5,600,434

APPARATUS FOR DEFENDING AGAINST AN ATTACKING MISSILE

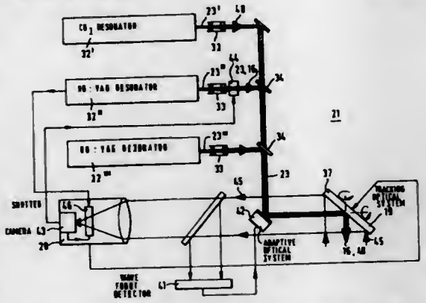
Berndt Warm, Nürnberg; Detlev Wittmer, Lauf, and Matthias Noll, Eckental, all of Germany, assignors to Diehl GmbH & Co., Nurnberg, Germany

Filed Jan. 30, 1995, Ser. No. 380,058

Claims priority, application Germany, Jan. 31, 1994, 44 02 855.5; Aug. 31, 1994, 44 30 830.2

Int. Cl.[6] B64D *1/04*; **G01J** *1/20*; **G01C** *21/02*

U.S. Cl. 356—139.08 **10 Claims**



1. An apparatus (14) for defending against a missile (12) attacking an aircraft (11), said missile (12) having a thermal optronic homing head (13) for tracking said aircraft (11), said apparatus comprising:

a laser source (21) which provides a laser beam (23) that contains frequency components of operating bands of infrared detectors;

a target tracking system (20) which tracks said missile (12);

an optical tracking system (19) connected to said target tracking system (20) for initially orienting said laser beam (23) into a direction (22) approximately towards said approaching missile (12) as a pulsed defensive beam (16);

a camera (43) connected with said laser source (21), said camera having a shutter (46) synchronized to activate in response to said pulsed defensive beam (16) to receive pulses (45) reflected from said missile (12) and provide stroboscopic illumination of the pulses (45) reflected from the missile (12) to said camera (43) for precise tracking of said missile (12) until the homing head (13) of the missile (12) malfunctions due to energy received from the pulsed defensive beam (16).

5,600,435

INTELLIGENT SENSOR METHOD AND APPARATUS FOR AN OPTICAL WHEEL ALIGNMENT MACHINE

Robert J. Bartko, Shelby Township, and Jack H. Rosen, Farmington Hills, both of Mich., assignors to Fori Automation, Inc., Shelby Township, Macomb County, Mich.

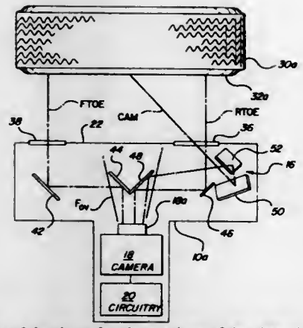
Filed May 24, 1995, Ser. No. 449,520

Int. Cl.[6] H04N *7/18*; **G01B** *5/24*;*11/26*

U.S. Cl. 356—139.09 **16 Claims**

1. In a sensor for use in a wheel alignment machine to measure the orientation of a tire on a vehicle to thereby determine one or more alignment characteristics of the vehicle, said sensor being of the type having at least one light source oriented to project shaped light onto a sidewall of the tire at a plurality of spaced locations and a light responsive receiver oriented at a perspective angle with respect to said light source to receive an image that includes a portion of the shaped light that is reflected off the tire, with said light responsive receiver being operable to generate electrical signals indicative of the image, wherein the improvement comprises:

a system of optical elements oriented relative to said light responsive receiver to provide said light responsive receiver with an optical view that includes the plurality of spaced



locations of the tire, whereby portions of the shaped light that are reflected off the tire at each of the plurality of spaced locations are received by said light responsive receiver as a single image; and

an electronic circuit responsive to said electrical signals to determine the location within the image of a predetermined feature of each of the reflected portions of shaped light, said circuit further being operable to generate output data representative of the locations of said predetermined features.

5,600,436

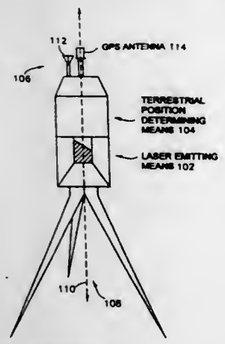
APPARATUS AND SYSTEM FOR DETERMINING TERRESTRIAL POSITION

Adam J. Gudat, Edelstein, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Jan. 5, 1994, Ser. No. 177,364

Int. Cl.[6] G01B *11/26;11/14;11/24*; **E02F** *3/76*

U.S. Cl. 356—141.3 **28 Claims**



1. A reference station, comprising:

a station frame;

means connected to said frame for emitting a primary laser reference beam;

means for determining a terrestrial position of a reference point located on the reference station relative to a fixed terrestrial reference system, R_T, and responsively producing a terrestrial position signal; and

communication means for receiving said terrestrial position signal and responsively transmitting a communication signal indicative of said terrestrial position signal.

5,600,437

APPARATUS FOR AND A METHOD OF INSPECTING OBJECTS

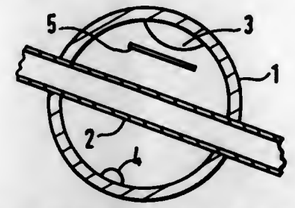
Mehmet A. Erdentug, Worcester, England, assignor to Parascan Technologies Limited, Coleshill, England

Filed Mar. 22, 1995, Ser. No. 408,494

Claims priority, application United Kingdom, Mar. 25, 1994, 9405939

Int. Cl.[6] G01N *21/88*

U.S. Cl. 356—237 **6 Claims**



1. Apparatus for detecting the presence of incorrectly shaped and discolored objects in a stream of such objects moving along a path, the apparatus comprising

a single spherically-shaped closed structure whose internal wall surfaces are adapted to diffuse light emitted from a shielded light source to produce a state of light equilibrium within the structure,

an open-ended inclined translucent conduit positioned within and extending through the interior of the structure with its inclined longitudinal axis passing along a center line of the sphere,

a sensor calibrated to detect changes in light intensity above or below desired upper and lower values caused by misshapen or discolored objects passing through the conduit, and

a reject mechanism positioned below a lowermost opening of the conduit and operable upon signals received from the sensor to remove misshapen and discolored objects from the path taken by the moving objects.

5,600,438

PARTICLE SENSOR WITH VARIABLE-SPEED BLOWER

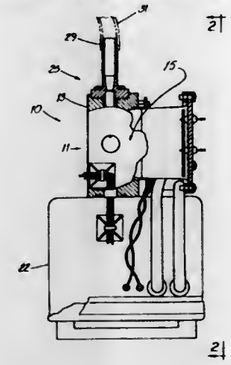
Gerhard Kreikebaum, San Bernandino, and David L. Chandler, Highland, both of Calif., assignors to Venturedyne, Ltd., Milwaukee, Wis.

Continuation of Ser. No. 364,389, Dec. 23, 1994, Pat. No. 5,515,164, which is a continuation of Ser. No. 109,807, Aug. 19, 1993, abandoned. This application Mar. 15, 1996, Ser. No. 616,456

Int. Cl.[6] G01N *21/05;21/53*

U.S. Cl. 356—339 **4 Claims**

1. A particle sensor using scattered light for analyzing airborne



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particles entrained in air drawn from an environment into the particle sensor, such sensor including:

a variable-speed centrifugal blower having a housing, a motor and an exhaust port;

an opening in the blower housing;

a particle detection system including a sensing portion having a light-scatter sensing cavity;

an air flow tube and a low-pressure-drop nozzle in air flow communication with the sensing cavity and with the opening in the blower housing;

a circuit connected to the motor for providing a speed-controlling variable voltage to the motor;

a flow sensor for providing a speed-affecting signal to the circuit;

an exhaust filter interposed between the exhaust port and the environment;

and wherein:

the particle detection system further includes (a) a light source, (b) a device directing light scattered by a particle entering the cavity through the air flow tube and the nozzle, and (c) a detector for receiving light directed by the device; and

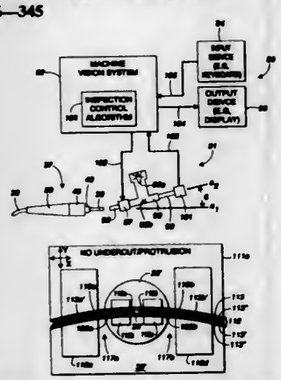
the air flowing in the sensing cavity through the air flow tube is drawn through such sensing cavity by the centrifugal blower, flows at a flow rate dependent upon the speed of the blower motor and is discharged from the particle sensor through the exhaust filter.

5,600,439

SELF-CALIBRATION SYSTEM AND METHOD FOR DETERMINING THE ADEQUACY OF AN INTERFEROMETER ANGLE AND SURFACE CURVATURES IN AN INSPECTION SYSTEM FOR DETERMINING DISPARITY BETWEEN TWO SURFACES

Andrei Cuipkes, Lawrenceville, and John M. Palmquist, Lilburn, both of Ga., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Apr. 27, 1995, Ser. No. 429,967
Int. Cl.[6] G01B 9/02
U.S. Cl. 356—345 **18 Claims**



1. A method for an automatic inspection system for contactlessly measuring a disparity between first and second surfaces by analyzing an image with interferometric fringes disposed over the surfaces and for determining the adequacy of an angle of the interferometer and curvature radii of the surfaces, comprising the steps of:

(a) producing automatically with said inspection system an image of said surfaces with interferometric fringes superimposed over said images by exposing said surfaces to an interferometer having an objective disposed at an angle relative to an axis that is substantially perpendicular to said surfaces;

(b) measuring automatically with said inspection system a spacing between two fringes in said image, said spacing being a function of said angle and said curvature radii;

(c) comparing automatically with said inspection system said measured spacing with a previous measured spacing;

(d) when said measured spacing matches said previous measured spacing, then determining automatically with said inspection system said disparity between said surfaces based upon said measured spacing and an offset between a fringe in a first image region representing said first surface and said fringe in a second image region representing said second surface;

(e) when said measured spacing fails to match said previous measured spacing, comparing automatically with said inspection system said measured spacing with a predefined spacing range;

(f) when said measured spacing falls within said predefined spacing range, then determining automatically with said inspection system said disparity between said surfaces based upon said measured spacing and said offset; and

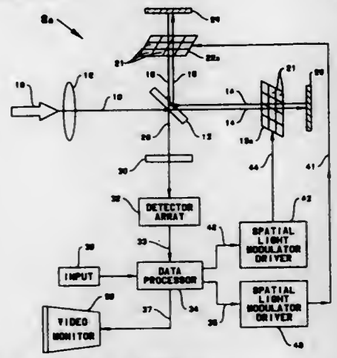
(g) when said measured spacing falls outside said predefined spacing range, then generating automatically with said inspection system a calibration error signal.

5,600,440

LIQUID CRYSTAL INTERFEROMETER

Charles S. Bendall, La Mesa, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 5, 1995, Ser. No. 498,070
Int. Cl.[6] G01B 9/02
U.S. Cl. 356—345 **34 Claims**



1. An interferometer, comprising:

a beam splitter for dividing a first optical signal into second and third optical signals;

a first array of liquid crystals through which said second optical signal passes, each said liquid crystal having an index of refraction which may be modulated;

a first mirror for directing said second optical signal array to said beam splitter;

a second array of liquid crystals through which said third optical signal passes, each said liquid crystal having an index of refraction which may be modulated;

a second mirror for directing said third optical signal to said beam splitter where said second and third optical signals are combined to form a fourth optical signal having an interference pattern;

a detector array for transforming said fourth optical signal into an electrical signal; and

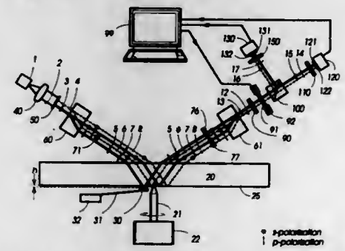
first means for transforming said electrical signal into digital data representing said interference pattern and for independently modulating said indices of refraction of said liquid crystals comprising said first and second arrays of liquid crystals.

5,600,441

INTERFEROMETER AND METHOD FOR MEASURING THE DISTANCE OF AN OBJECT SURFACE WITH RESPECT TO THE SURFACE OF A ROTATING DISK

Peter de Groot, and Leslie L. Deck, both of Middletown, Conn., assignors to Zygo Corporation, Middlefield, Conn.

Filed Jan. 31, 1995, Ser. No. 381,232
Int. Cl.[6] G01B 9/02
U.S. Cl. 356—357 **22 Claims**



1. A method for measuring the distance of an object surface with respect to a surface of a rotating disk, said disk comprising a substantially transparent plane-parallel disk in rotation about an axis normal to its largest surface, said object surface comprising a substantially flat surface that is in close proximity to said disk surface, said method comprising the steps of:

providing a pair of parallel, spatially separated and orthogonally polarized beams incident upon said disk surface at Brewster's angle, one of said beams passing through said disk without reflection, the other of said beams suffering partial reflection at each of said surfaces of said disk, said one beam impinging upon said object surface and being reflected therefrom;

combining said beam reflected from said disk surface with said beam reflected from said object surface for forming a recombined beam comprising two mutually orthogonally polarized beams, one corresponding to the disk surface and the other corresponding to the object surface;

causing said recombined beam orthogonally polarized components to interfere with each other at a detector for providing information about the relative phase of said two polarization components, said information being related to the difference in optical paths of said beam reflected from said disk surface and said beam reflected from said object surface; and

removing any unwanted details concerning variations in volume and surface profile of said disk from said information for providing said measured distance; whereby information about the size of the gap between said object surface and said disk surface may be provided from said measured distance, said removing step comprising the step of making a compensation measurement to compensate for said unwanted details with a different pair of beams traveling parallel to the principal measurement beams.

5,600,442

POSITION DETECTING APPARATUS BASED ON BEFORE AND AFTER MODE-HOP SIGNALS

Isao Minegishi; Hiroyuki Kawashima, and Susumu Saito, all of Tokyo, Japan, assignors to Kabushiki Kaisha TOPCON, Japan

Filed Dec. 28, 1994, Ser. No. 365,240
Claims priority, application Japan, Dec. 29, 1993, 5-355224
Int. Cl.[6] G01B 9/02
U.S. Cl. 356—358 **7 Claims**

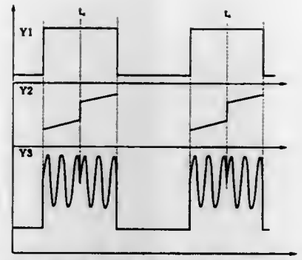
1. A position detecting apparatus comprising:

a light emitter which activates a laser source to emit a light beam so that mode hopping occurs;

an interference optical system which directs the light beam from said laser source to a measuring light path on which an object to be measured is located and a reference light path on which a reflection mirror is placed, and merges reflected light beams coming back on said light paths so that the reflected light beams interfere with each other;

a light sensor which receives the interference light beam provided by said interferometer optical system; and

a position detector which determines the position of said object of measurement based on the interference signals produced by said light sensor before and after mode hopping caused by said light emitter.

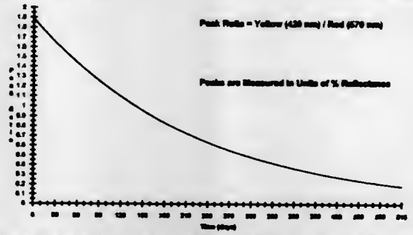


5,600,443

METHOD OF DETERMINING THE AGE OF INK HAVING TIME DEPENDENT CHARACTERISTICS

Thomas H. Frey, Agoura Hills, and Isaiah Lieberman, Los Angeles, both of Calif., assignors to Signa Scan, Inc., Anaheim, Calif.

Filed Jul. 20, 1995, Ser. No. 504,892
Int. Cl.[6] G01J 3/427;3/50
U.S. Cl. 356—402 **4 Claims**



1. A method for determining the age of ink deposited on a writing surface, said method comprising the steps of:

measuring the amount of light at a first wavelength that is reflected from the ink at a first time after the ink has been deposited on the writing surface;

measuring the amount of light at a second wavelength that is reflected from the ink at said first time;

computing a first ratio of the amount of light reflected from the ink at said first time at each of the first and second wavelengths;

measuring the amount of light at the first wavelength that is reflected from the ink at a second time after the ink has been deposited on the writing surface;

measuring the amount of light at the second wavelength that is reflected from the ink at said second time;

computing a second ratio of the amount of light reflected from the ink at said second time at each of said first and second wavelengths; and

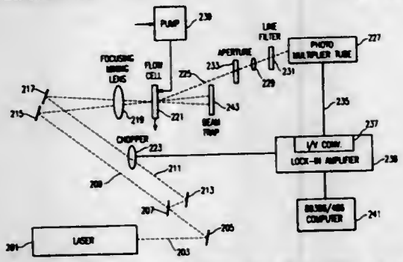
comparing said first and second ratios to one another, such that the respective magnitudes of said first and second ratios indicates the age of the ink between said first and second times.

5,600,444

DETECTING ANALYTE LIGHT ABSORPTION UTILIZING DEGENERATE FOUR WAVE MIXING

William G. Tong, San Diego, Calif., assignor to San Diego State University Foundation, San Diego, Calif.

Continuation of Ser. No. 181,676, Jan. 13, 1994, abandoned.
This application Sep. 12, 1995, Ser. No. 527,289
Int. Cl.[6] G01N *21/00*
U.S. Cl. 356—432 38 Claims



1. An apparatus for performing two-input-beam forward-scattering degenerate four-wave mixing for use in detecting absorption of light by an analyte, including:

(a) a sample cell for containing an analyte; and

(b) a coherent light source having a coherence length, the coherent light source for generating a first and a second input coherent beam, each having respective incident paths and a path length from the coherent light source to the sample cell, the first input coherent beam path length minus the second input coherent beam path length being less than or equal to the coherence length of the coherent light source, the coherent light source being configured such that the first and second input coherent beams intersect within the analyte at an angle θ of less than approximately 5 degrees so as to generate a first and a second signal beam each having a collimated coherent beam generated by interaction of at least one of the first and second input coherent beams with a thermally induced refractive index grating formed by constructive interference of the first and second input coherent beams, the first and second signal beams having respective signal paths, the signal path of the first signal beam being at an angle from the incident path of the second input coherent beam approximately equal to θ, and the signal path of the second signal beam being at an angle from the incident path of the first input coherent beam approximately equal to σ; and

(c) a detector disposed within the signal path of at least one signal beam, for receiving the coherent beam of such signal beam and determining from such signal beam absorption of light by the analyte in the sample cell.

5,600,445

MODULAR COPYING SYSTEM USING LIGHT WAVE, ELECTRIC WAVE, OR SONIC WAVE INTERCONNECTIONS

Kyoji Omi, Kawasaki, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

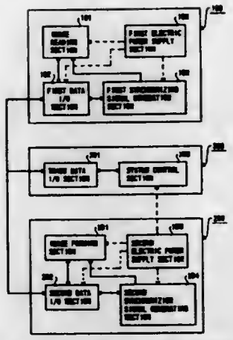
Filed Mar. 22, 1994, Ser. No. 215,608
Claims priority, application Japan, Mar. 23, 1993, 5-089351
Int. Cl.[6] H04N *1/00;1/40;* G03G *21/00;* G01D *15/00*
U.S. Cl. 358—296 11 Claims

1. A copying system comprising:

a scanner module formed as an independent frame, comprising,

an image reading means for reading a manuscript picture by resolving a picture image into pixels and generating image data,

a first data I/O means which is a first I/O interface for said image data and control data, and



a first synchronizing signal generating means, for generating a first synchronization signal, comprising a first crystal oscillator,

wherein said first I/O interface receives said image data and said first synchronization signal and transfers said control data to said image reading means and said first synchronization signal generating means, and said image reading means receives said first synchronization signal;

a printer module formed as an independent frame, comprising,

an image forming means for forming and outputting said image data as a permanent visual image on a recording medium,

a second data I/O means which is a second I/O interface for said image data and said control data, and

a second synchronizing signal generating means, for generating a second synchronization signal, comprising a second crystal oscillator,

wherein said second I/O interface receives said image data and said second synchronization signal and transfers said control data to said image forming means and said second synchronization signal generating means, and said image forming means receives said second synchronization signal; and

a system control module formed as an independent frame, comprising,

a third data I/O means which is a third I/O interface for said image data and said control data, and

a system control means for controlling said scanner module and said printer module synchronously and generating said control data;

said third I/O interface transferring said control data to said first and second I/O interfaces; and

said first and second crystal oscillator having substantially a same frequency, so that said first and second synchronization signals and said image reading and image forming means are synchronized with each other for maintaining coincidence between cycles and header phases of said image data that is read and formed.

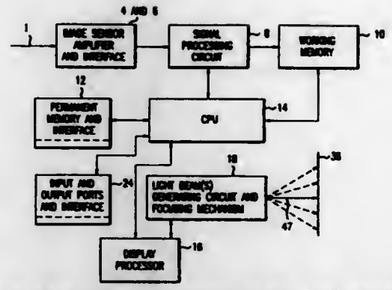
5,600,446

ELECTRONIC CAMERA APPARATUS FOR INSTANT AND CONVENTIONAL PHOTOGRAPHY, AND VIDEO CAMERAS

Adam S. Iga, 1324 S. Dinwiddie St., Arlington, Va. 22206

Continuation of Ser. No. 31,839, Mar. 16, 1993, abandoned.
This application Mar. 17, 1995, Ser. No. 407,394
Int. Cl.[6] H04N *9/79;5/84*
U.S. Cl. 386—117 2 Claims

1. An improved camera method for recreating a composite image frame in both a soft-copy form on a visual display screen of a camera and a hard-copy form on a photosensitive material means of said camera, using more than one pure, non-distorted and noise free image frame signal comprising the steps of:



(a) providing to a temporary memory means of said camera and to said visual display screen means of said camera, a first pure, non-distorted and noise free image frame;

(b) using a keyboard input means of said camera and said visual display screen means of said camera to divide said first pure, non-distorted and noise free image frame provided to said temporary memory means of said camera and to said visual display screen means of said camera, using a predetermined space coordinate system displayed on said visual display screen means of said camera, into a distinct number of equal parts in area so that each part so divided is of a predetermined size in area, said predetermined size in area being larger than a normal pixel size of an image sensor circuit means of said camera;

(c) using said keyboard input means of said camera and said visual display screen means of said camera to number or label each of said distinct number of parts of said first pure, non-distorted and noise free image frame parts, so that each of said distinct number of parts of said first pure, non-distorted and noise free image frame is identified by a unique number or a unique label;

(d) looking at said visual display screen means of said camera and making a user or an operator choice-based visual determination which of said distinct number of parts of said first pure, non-distorted and noise free image frame parts are to be erased;

(e) using said keyboard input means of said camera to identify to said camera said distinct number of parts of said first pure, non-distorted and noise free image frame parts visually predetermined for erasure, by inputting into said camera said unique number or said unique label allocated to each of said distinct number of parts of said first pure, non-distorted and noise-free image frame parts visually predetermined for erasure.

(f) providing to said temporary memory means of said camera and to send visual display screen means of said camera a corresponding second pure, non-distorted and noise-free image frame part for every part of said first pure, non-distorted and noise-free image frame visually predetermined for erasure and pre-identified to said camera;

(g) using a signal processing circuit means of said camera, a central processor unit means of said camera, said keyboard input means of said camera and said visual display screen means of said camera to erase every said part of said first pure, non-distorted and noise-free image frame visually predetermined for erasure and pre-identified to said camera and filling every resulting blank part of said first pure, non-distorted and noise-free image frame with said corresponding second pure, non-distorted and noise-free image frame part so as to produce a third pure, non-distorted and noise-free recreated composite image frame;

(h) using said keyboard input means of said camera to instruct a display processor means of said camera and said central processor unit means of said camera to use the image information contained in said third pure, non-distorted and noise-free recreated composite image frame to direct and control a light beam generating and focusing circuit means of said camera to expose said photosensitive material means with said third pure, non-distorted and noise-free recreated composite image frame.

5,600,447

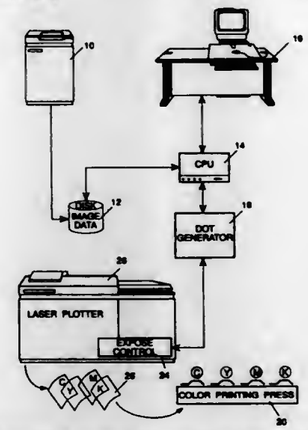
Patent Not Issued For This Number

5,600,448

APPARATUS AND METHOD FOR GENERATING A SCREENED REPRODUCTION OF AN IMAGE

Gil Fisher, Petach Tikva, Israel, assignor to Scitex Corporation Ltd., Herzliya, Israel

Filed Apr. 25, 1994, Ser. No. 233,301
Claims priority, application Israel, Apr. 27, 1993, 105530
Int. Cl.[6] H04N *1/40*
U.S. Cl. 358—456 12 Claims



1. Apparatus for generating a screened reproduction of an image comprising:

apparatus receiving input density values of an original and coordinate information and storing screening Information for providing an operating input to a plotter enabling the plotter to provide an array of dots forming a screened image of the original, each dot being formed by a number of plotter lines, said apparatus being characterized In that it Includes apparatus for modifying at least one of the input density values, the coordinate information and the screening information, thereby to provide an operating input generally free of repeated artifacts arising from the lack of coordination between the coordinate systems of the plotter and those of the screening information,

wherein said apparatus for modifying is operative to maintain a uniform number of said plotter lines in each said dot for a when input density.

5,600,449

Patent Not Issued For This Number

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5,600,450

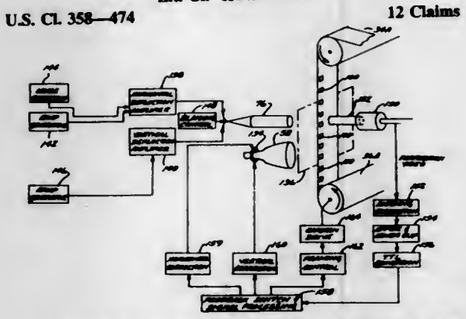
FILM WEAVE CORRECTION SYSTEM

Michael C. Kaye, Agoura Hills, and Majid Bemanian, Glendale, both of Calif., assignors to MSCL, Inc., Santa Monica, Calif.

Continuation of Ser. No. 259,125, Oct. 18, 1988, which is a continuation of Ser. No. 142,854, Dec. 15, 1987, abandoned, which is a continuation-in-part of Ser. No. 904,035, Sep. 4, 1986, abandoned. This application Aug. 25, 1995, Ser. No. 519,648

Int. Cl.[6] H04N *5/253*

U.S. Cl. 358—474 **12 Claims**



1. A method of detecting the position of a sprocket hole in a film recording or reproducing apparatus which employs a continuous motion film drive, comprising:

causing a beam of radiation and the film to move relative to one another in a vertical direction to determine the position of a horizontal edge of the sprocket hole; and

causing the beam of radiation to illuminate a substantially vertical edge of a sprocket hole to determine the position of the vertical edge at a specified location relative to the film in response to the determination of the position of the horizontal edge.

5,600,451

CHARGE TRANSFER DEVICE AND OUTPUT CIRCUIT THEREOF

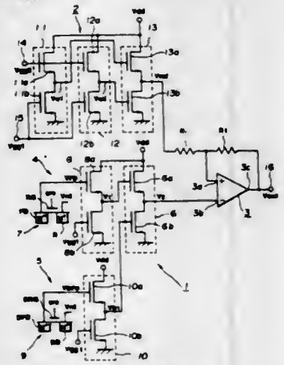
Yasuhito Maki, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 10, 1994, Ser. No. 288,038

Claims priority, application Japan, Aug. 12, 1993, 5-200675

Int. Cl.[6] H04N *1/04*

U.S. Cl. 358—483 **12 Claims**



1. A charge transfer device comprising:

a charge transfer section for outputting a signal charge;

a correction voltage signal output circuit for voltage-converting the signal charge into a voltage and outputting a correction voltage signal;

a reference signal output circuit for outputting a reference signal of a predetermined voltage, the reference signal output circuit having a circuit constant substantially equal to a circuit constant of the correction voltage signal output circuit; and

a differential operational amplifying circuit for amplifying a difference between the correction voltage signal from the correction voltage signal output circuit and the reference signal from the reference signal output circuit and outputting the amplified difference, wherein the reference signal output circuit includes first and second source follower circuits coupled respectively to a differential amplifying circuit.

5,600,452

CIRCUIT FOR THE REPRODUCTION OF COLOR PRESENTATIONS OF CHRONOLOGICAL PROGRESSION

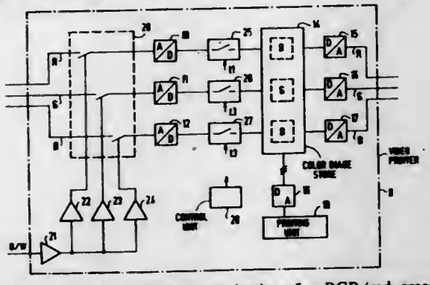
Guenther Simanon, Neunkirchen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Continuation of Ser. No. 76,399, Jun. 14, 1993, abandoned. This application Nov. 15, 1994, Ser. No. 340,879

Claims priority, application Germany, Feb. 22, 1993, 9302548 U

Int. Cl.[6] H04N *1/46*

U.S. Cl. 358—501 **9 Claims**



1. A circuit arrangement for reproduction of an RGB (red, green, blue) color image of a color video signal or of single color R, G, or B chronologically presented color images from a B/W (black and white) video signal, comprising:

first inputs for color channels R, G, B (red, green, blue) for the color video signal;

a second input for receiving the B/W (black and white) video signal;

a reproduction unit having individual color channels R, G, B;

a first switch unit for alternatively connecting either said first inputs for the color video signal through to said R, G, B color channels of the reproduction unit or for switching through said second input for the B/W video signal to the R, G, B color channels of the reproduction unit; and

a second switch unit connected between the reproduction unit and the first switch unit for producing three chronologically presented images when the first switch unit is switching through the second input so that the B/W video signals are applied to the individual color channels R, G, B of the reproduction unit at different times thus producing the different single color R, G, or B images, or when said first switch unit is switching through the first inputs for the color channels R, G, B, then said second switch unit providing a connection for all of the R, G, B color channels to the R, G, B color channels of the reproduction unit for reproduction of said RGB color image.

5,600,453

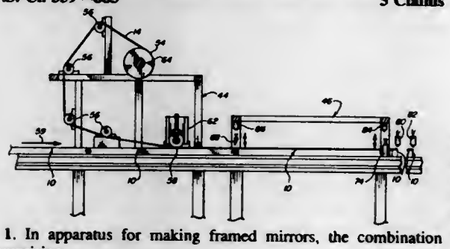
COMPOSITE FRAMED MIRROR AND APPARATUS AND METHOD FOR MAKING SAME

Kenneth R. Carson, Shannon, Miss., assignor to The Stanley Works, New Britain, Conn.

Division of Ser. No. 243,278, May 16, 1994, Pat. No. 5,483,386. This application Sep. 21, 1995, Ser. No. 531,451

Int. Cl.[6] G02B *5/08;* **B32B** *31/00;* **B30B** *5/06;* **B26D** *5/28*

U.S. Cl. 359—883 **5 Claims**



1. In apparatus for making framed mirrors, the combination comprising:

(a) an elongated frame;

(b) a conveyor extending longitudinally of said frame and defining a path therethrough with upstream and downstream ends for moving a frame with a mirror therein therealong;

(c) a laminating roller rotatably supported on said frame above said conveyor along its path to bear upon the upper surface of a frame and mirror;

(d) a roll supporting shaft for a roll of film rotatably supported on said frame above said conveyor;

(e) a multiplicity of guide rollers rotatably supported on said frame providing a path for film from said roll supporting shaft to said laminating roller for bonding to a frame and mirror;

(f) a stop member movably supported on said frame in said path at a predetermined distance downstream from said laminating roller;

(g) a cutting member movably supported on said frame between said laminating roller and stop member at a predetermined distance from said stop member;

(h) means for moving said cutting member into said path to cut film thereon;

(i) means for moving said stop member into said path to stop movement of a frame and mirror on said belt;

(j) means for stopping said feed roll shaft to prevent unrolling of film therefrom;

(k) control means for said stopping and moving means to move said stop member into said path to stop movement of a frame and mirror on said conveyor, to stop rotation of said feed roll shaft, and to move said cutting member into said path to sever the associated film at the trailing end of the frame and mirror on said belt stopped by said stop member, and thereafter to move said cutting member from said path and said stop member from said path to release the stopped frame and mirror for movement along the path and to release said feed roll to allow unrolling of film therefrom.

5,600,454

VIEWING APPARATUS

David J. Trayner, and Edwina M. Orr, both of Richmond, England, assignors to Richmond Holographic Research and Development Ltd, Richmond Upon Thames, England

PCT No. PCT/GB92/01295, § 371 Date Jan. 14, 1994, § 102(e) Date Jan. 14, 1994, PCT Pub. No. WO93/02372, PCT Pub. Date Feb. 4, 1993

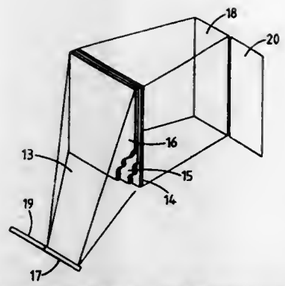
PCT Filed Jul. 15, 1992, Ser. No. 182,136

Claims priority, application United Kingdom, Jul. 16, 1991, 9115394

Int. Cl.[6] G02B *5/32;27/22;* **G03B** *35/16*

U.S. Cl. 359—15 **4 Claims**

1. Viewing apparatus comprising a holographic recording of a diffusely illuminated zone and means for illuminating the holographic recording from a plurality of different positions such that images of the zone are reconstructed forming viewing zones characterised in that there is provided adjacent the holographic recording a modulating screen for effecting spatial modulation of light from the respective positions, the arrangement being such as to provide a plurality of viewing zones whereby the said spatial modulation can be seen from a corresponding one of the zones.



5,600,455

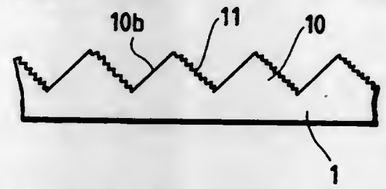
PRISMATIC MEMBER WITH COARSENED PORTIONS OR TRIANGULAR PRISMATIC AND SEMI-CIRCULAR PRISMATIC MEMBERS ARRANGED ON A FLAT LIGHT EMITTING SURFACE

Tsuyoshi Ishikawa, Tokyo; Kayoko Watai, Hasuda, and Kazuaki Yokoyama, Ageo, all of Japan, assignors to Enplas Corporation, Saitama-ken, Japan

Filed Aug. 31, 1994, Ser. No. 297,956

Int. Cl.[6] G02F *1/1335;* **G01D** *11/28;* **F21V** *7/04;5/00*

U.S. Cl. 349—57 **7 Claims**



1. A surface light source device, comprising:

a light source, a flat light emitting surface for emitting a light generated from said light source, and a prismatic member;

said prismatic member having a multiplicity of convex portions which have triangular cross sections, and extend parallel to each other on at least one of the surfaces thereof, at least one surface portion of each of said convex portions being coarsened; and

said prismatic member being arranged on said light emitting surface.

5,600,456

TRANSMISSION LIQUID CRYSTAL DISPLAY WITH A REDUCED DEPENDENCY OF A DISPLAY QUALITY UPON A VISUAL ANGLE

Muneo Maruyama, and Koji Kashimoto, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

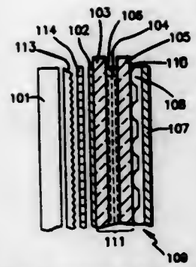
Filed Sep. 1, 1995, Ser. No. 522,930

Claims priority, application Japan, Sep. 1, 1994, 6-232288

Int. Cl.[6] G02F *1/1335*

U.S. Cl. 349—64 **24 Claims**

1. An optical diffusion lens having a plate-like shape to be employed in a transmission liquid crystal display, said lens having first and second surfaces, said first surface facing to a display



screen and said second surface facing to a liquid crystal panel, entire parts of said first surface are flat, and said second surface comprises alternating flat portions and semi-cylindrically shaped convex portions having a predetermined curvature, said convex portions having a difference in level of a top portion thereof from said flat portions, said convex portions being arranged at a predetermined pitch, wherein a ratio of said difference in level to said pitch is in the range from 2.9:10 to 0.8:10.

5,600,457

METHOD FOR FORMING A LIQUID CRYSTAL DEVICE AT ROOM TEMPERATURE

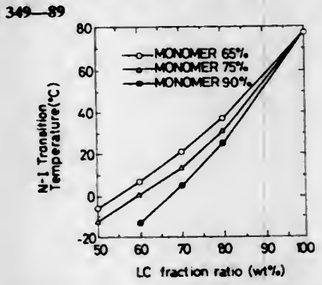
Michio Shimizu; Kouji Moriya; Takeshi Nishi, and Toshimitsu Konuma, all of Kanagawa, Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan

Filed Jun. 7, 1993, Ser. No. 72,126

Claims priority, application Japan, Jun. 9, 1992, 4-173712

Int. Cl.[6] G02F *1/1333*

U.S. Cl. 349—89 **17 Claims**



1. A method for forming an electro-optical device comprising the steps of:

controlling a weight ratio of oligomer and monomer which are included in an organic substance in order to precipitate a droplet of a liquid crystal from a mixture of said liquid crystal and the organic substance at room temperature; and

supplying said mixture with an energy selected from the group consisting of a light energy, a thermal energy and both thereof about said room temperature to separate said liquid crystal from said organic substance and to harden said organic substance,

wherein a mixing ratio of the liquid crystal and the organic substance is set so that the liquid crystal is compatible with the organic substance, and

wherein droplets of the liquid crystal are uniformly distributed through said mixture after the organic substance is hardened.

5,600,458

ACTIVE MATRIX DISPLAY HAVING AT LEAST ONE NONLINEAR ELEMENT COMPOSED OF A SULFIDE FILM

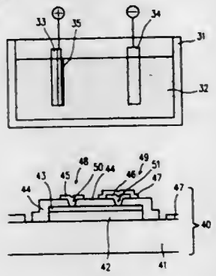
Kiyoshi Okano, and Satoshi Yamaue, both of Tenri, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 11, 1995, Ser. No. 439,377

Claims priority, application Japan, Jun. 1, 1994, 6-120290; Aug. 15, 1994, 6-191592

Int. Cl.[6] G02F *1/136; 1/135*

U.S. Cl. 349—44 **2 Claims**



1. A display apparatus comprising:

a display medium having an electro-optic characteristic;

a pair of substrates arranged to face each other sandwiching the display medium;

a pair of electrodes disposed in inner surfaces of the pair of substrates for applying a voltage to the display medium; and

at least one nonlinear element including a nonlinear resistance layer composed of a sulfide film obtained by immersing a conductive or semiconductive film in a solution containing sulfur ions or ions having sulfur atoms and applying a voltage between the conductive or semiconductive film as an anode and a cathode, the nonlinear element being disposed on the inner surface of one of the pair of substrates and electrically connected to one of the pair of electrodes;

wherein the film is a first substance selected from a group consisting of zinc, tantalum, and cadmium and the nonlinear resistance layer is a sulfide of the first substance; and

wherein the film includes at least one second substance selected from a group consisting of aluminum, iron, nickel, chromium, copper, silver, manganese, and indium, and the nonlinear resistance layer includes the second substance as impurities.

5,600,459

MULTIPLE-SHUTTER FLAT-PANEL DISPLAY HAVING INDIVIDUALLY CONTROLLED PIXELS AND METHOD FOR MAKING SAME

Howard S. Roy, 2573 Stowe Ct., Northbrook, Ill. 60062-8103, and Narinder P. Singh, 5 Newell Rd., #4, Palo Alto, Calif. 94303

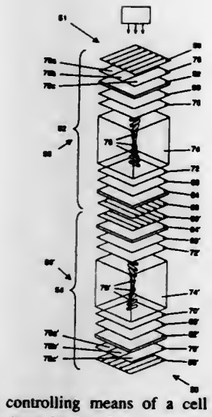
Filed Dec. 20, 1993, Ser. No. 169,229

Int. Cl.[6] G02F *1/133; 1/1343*

U.S. Cl. 349—42 **29 Claims**

1. A display having a plurality of pixel locations, comprising:

first and second display layers, each including a cell at each pixel location, wherein each cell includes means for modulating light passing through the display and means for controlling the modulating means of the cell;



wherein the controlling means of a cell at a pixel location operates independently of the controlling means of another cell at the pixel location.

5,600,460

METHOD OF REPAIRING A SIGNAL LINE OPEN CIRCUIT BY CONNECTING EACH SIDE OF THE SIGNAL LINE TO AN ADJACENT PIXEL ELECTRODE

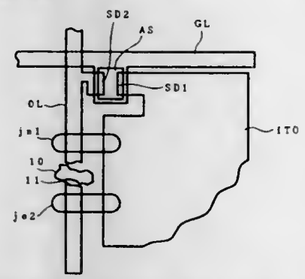
Hideaki Yamamoto, Tokorozawa; Mitsuo Nakatani, Mobara; Haruo Matsumaru, Hinode-machi, and Susumu Niwa, Chonan-machi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 8, 1994, Ser. No. 337,394

Claims priority, application Japan, Nov. 8, 1993, 5-277983; May 30, 1994, 6-116181

Int. Cl.[6] G02F *1/1343; 1/1333*

U.S. Cl. 349—54 **7 Claims**



1. A method of manufacture of a transparent substrate for use in a liquid crystal display device,

said transparent substrate including a plurality of pixel electrodes and a plurality of wiring strips disposed between said plurality of pixel electrodes on a surface thereof,

said method of manufacture including a step of electrically connecting respective sides of an undesired open circuit in said plurality of wiring strips caused during substrate fabrication, said step of electrically connecting including forming an electro-conductive path between said respective sides of the undesired open circuit and one of said plurality of pixel electrodes adjacent thereto.

5,600,461

ACTIVE MATRIX LIQUID CRYSTAL DISPLAY DEVICE

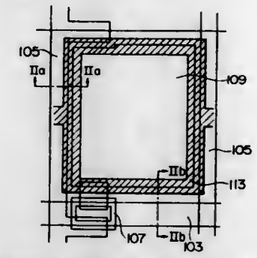
Tomomasa Ueda, Yokohama; Masahiko Akiyama; Atsushi Sugahara, both of Tokyo; Makoto Shibusawa, Odawara; Mitsushi Ikeda, Yokohama; Yoshiko Tsuji, Kawasaki, and Hisao Toeda, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Continuation of Ser. No. 38,989, Mar. 29, 1993, Pat. No. 5,459,596. This application Jun. 14, 1995, Ser. No. 490,538

Claims priority, application Japan, Sep. 14, 1992, 4-245121

Int. Cl.[6] G02F *1/1343*

U.S. Cl. 349—38 **8 Claims**



1. An active matrix type liquid crystal display device, comprising:

an array substrate, said array substrate including;

a first substrate,

a plurality of scan lines and a plurality of signal lines formed on said first substrate,

said plurality of signal lines intersecting said plurality of scan lines and insulated from said plurality of scan lines,

a thin film transistor element having a gate portion, drain portion and source portion, and disposed at each intersection of said plurality of scan lines and signal lines, at said intersection said gate portion being connected to said scan line, and said drain portion being electrically connected to said signal line,

a separate pixel electrode electrically connected to said source portion of each said thin film transistor element,

a shield electrode layer extending in lapped relation with at least one side of each said pixel electrode and in lapped relation with a portion of a scan line or a portion of a scan line and a signal line, the intersecting ones of said scan and signal lines being next to adjacent sides of said pixel electrode, said shield electrode layer extending in lapped relation with at least one side of a plurality of pixel electrodes, and

an insulation layer disposed between said shield electrode layer and each said pixel electrode and said portion of said scan line or said portion of said scan and signal lines;

a second substrate having an opposite electrode and disposed in opposed relation with said array substrate; and

a liquid crystal layer disposed between said array and second substrates,

wherein said pixel electrode is disposed between gate insulation layers of said thin film transistor element, and said shield electrode layer is disposed just below said gate insulation layers.

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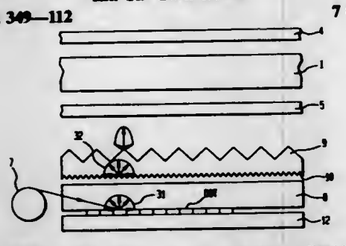
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5,600,462

OPTICAL FILM AND LIQUID CRYSTAL DISPLAY DEVICE USING THE FILM

Masaru Suzuki, Yamato; Fumihiro Hasezawa, Sagamihara, and Masahu Mogi, Yamato, all of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 14, 1993, Ser. No. 121,657
Claims priority, application Japan, Sep. 16, 1992, 4-246225
Int. Cl.[6] G02F 1/1343
U.S. Cl. 349—112 7 Claims



1. A liquid crystal display device including a liquid crystal display panel and a back light device, said back light device comprising:

a light source for emitting light;

a light guide means having a top surface facing a back surface of said liquid crystal display panel and a side surface receiving said light from said light source;

a reflector means provided on a back surface of said light guide means; and

an optical film of transparent material positioned between said back surface of said liquid crystal display panel and said top surface of said light guide means, including a first surface having a wave structure including a plurality of regularly spaced isosceles triangles prisms arranged side-by-side, the prisms having smooth surfaces, and a second surface having an optically rough structure for performing diffuse transmission, wherein a top angle of said isosceles triangle prisms is in a range of 95 degrees to 120 degrees for flat, angles prism surfaces to gather light from the diffuse transmission into a desired viewing angle for the liquid crystal display panel.

5,600,463

Patent Not Issued For This Number

5,600,464

LIQUID CRYSTAL DISPLAY DEVICE HAVING THE ELECTRIC FIELD PARALLEL TO THE SUBSTRATES

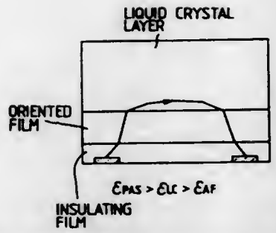
Masahito Ohe, Hitachi, and Katsumi Kondo, Katsuta, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 20, 1994, Ser. No. 309,157
Claims priority, application Japan, Sep. 20, 1993, 5-233262; Oct. 12, 1993, 5-254028
Int. Cl.[6] G02F 1/1337; 1/1333
U.S. Cl. 349—123 19 Claims

1. A liquid crystal display device comprising:

a plurality of display picture elements, each being composed of electrodes on a substrate;

an orienting film for a liquid crystal layer formed on the substrate directly or via an insulating layer, said substrate being arranged so as to face another substrate on which another orienting film is formed, the liquid crystal layer being held between said two substrates, and said electrodes being composed so as to generate an electric field substantially parallel to said substrates and to the liquid crystal layer; and



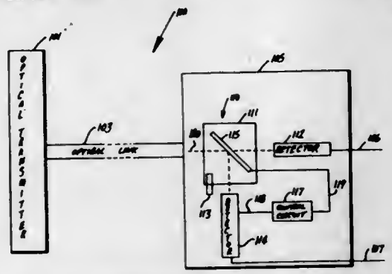
substantially similar products ($(\epsilon,\rho)_{LC}$, $(\epsilon,\rho)_{AF}$, and $(\epsilon,\rho)_{PAS}$) of a specific dielectric constant ϵ, and a specific resistivity ρ are provided for respective ones of the liquid crystal layer, the orienting film, and the insulating film.

5,600,465

OPTICAL DEMULTIPLEXER OPERATING IN SYNCHRONISM WITH A DATA STREAM HAVING ASCERTAINABLE PULSE RATE

Kenneth A. Pusey, Essex Junction, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 288,468, Mar. 9, 1994, Pat. No. 5,566,015.
This application Jun. 1, 1995, Ser. No. 456,585
Int. Cl.[6] H04J 14/00
U.S. Cl. 359—115 4 Claims



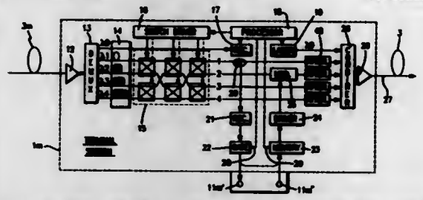
1. An optical demultiplexer comprising an optical switch, the optical switch comprising a reflective mirror having a variable reflectivity which varies between a reflective and a non-reflective state and responsive to electrical control pulses to alternately direct successive pulses of a serial stream of optical data pulses having a predefined data rate to first and second optical detectors in synchronism with the predefined data rate, and wherein successive pulses of the stream are alternately reflected by the reflective mirror to the first optical detector in a first time period when the reflective mirror is in the reflective state and are passed through the reflective mirror to the second optical detector in a second time period when the reflective mirror is in the non-reflective state; and the reflective mirror comprises a wafer of superconductive material at a temperature at which the wafer is in a superconducting and reflective state and has the properties of an optical reflector, and the wafer is responsive to the electrical control pulses to temporarily change to a non-superconducting state in which the wafer is optically transparent and in the non-reflective state.

5,600,466

WAVELENGTH DIVISION OPTICAL SIGNALLING NETWORK APPARATUS AND METHOD

Hideaki Tsushima, Tokyo, Japan; Peter E. Barnsley, and Alan McGuire, both of Suffolk, England, assignors to British Telecommunications public limited company, London, England

Filed Mar. 24, 1994, Ser. No. 216,876
Claims priority, application United Kingdom, Jan. 26, 1994, 9401488
Int. Cl.[6] H04J 14/02
U.S. Cl. 359—124 30 Claims



1. A terminal station for an optical communications system utilising a plurality of data transmission wavelengths, the station comprising:

sending means for sending a data signal on a free data transmission wavelength,

receiving means for receiving a control signal indicating said free data transmission wavelength, and

an input port for receiving said plurality of data transmission wavelengths,

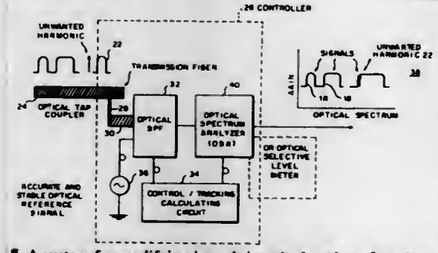
said sending means comprising at least one light modulator device connected to said input port to receive said free data transmission wavelength, and to modulate said free data transmission wavelength with data.

5,600,467

METHOD AND APPARATUS FOR REDUCING HARMONIC INTERFERENCE ON MULTIPLEXED OPTICAL COMMUNICATION LINES

John A. Fee, Plano, Tex., assignor to MCI Communications Corp., Washington, D.C.

Filed Jun. 14, 1995, Ser. No. 490,416
Int. Cl.[6] H04J 14/02
U.S. Cl. 359—124 12 Claims



8. A system for modifying in real time the location of carriers in an optical carrier to avoid harmonic interference comprising:

a) means for supplying a spectrum of carrier wavelengths;

b) means for sweeping the entire spectrum of the carrier wavelengths for wanted and unwanted carrier wavelengths;

c) means for plotting wanted carrier signals versus unwanted signals in the spectrum;

d) means for tracking the unwanted carrier signals;

e) means for calculating the amount of spectrum that any or all of the carrier signals must move to avoid unwanted harmonics; and

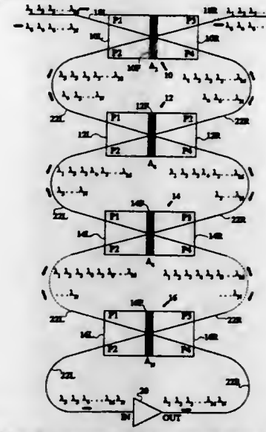
f) means for generating a control signal to change carrier frequencies of wanted carriers to avoid harmonics of unwanted carrier signals.

5,600,468

APPARATUS FOR CONVERTING WAVELENGTH-DIVISION MULTIPLEXED OPTICAL SIGNALS

John L. Barber, Parker, Tex., assignor to JDS Fitel Inc., Nepean, Canada

Filed Feb. 13, 1995, Ser. No. 387,596
Int. Cl.[6] H04J 14/02; H01S 3/00
U.S. Cl. 359—127 16 Claims



1. Apparatus for processing wavelength-division multiplexed optical signals comprising first and second apparatus ports for connecting in an optical transmission path to receive, respectively, a first plurality of wavelength-division multiplexed optical signals propagating in a first direction in the transmission path and a second plurality of wavelength-division multiplexed optical signals propagating in an opposite direction in the transmission path, all of the signals of the first plurality having wavelengths different from all of the wavelengths of the signals of the second plurality, means coupled between the first and second apparatus ports for arranging the first plurality and second plurality of wavelength-division multiplexed optical signals to propagate unidirectionally, said coupled means comprising an output port for outputting the unidirectionally-propagating plurality of wavelength-division multiplexed optical signals, and an input port for receiving a corresponding unidirectionally-propagating plurality of wavelength-division multiplexed optical signals, the coupled means splitting said corresponding unidirectionally-propagating wavelength-division multiplexed optical signals into a first group of wavelength-division multiplexed optical signals and a second group of wavelength-division multiplexed optical signals having wavelengths corresponding to at least some of those of the first plurality of wavelength-division multiplexed optical signals and second plurality of wavelength-division multiplexed optical signals, respectively, the coupled means outputting the first and second groups of wavelength-division multiplexed optical signals to the transmission path via the second apparatus port and first apparatus port, respectively.

5,600,469

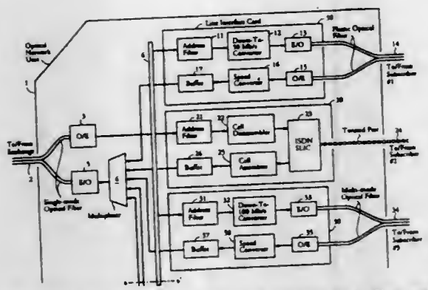
OPTICAL NETWORK UNIT IMPLEMENTED WITH LOW-COST LINE INTERFACE CARDS

Shuntaro Yamazaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 13, 1995, Ser. No. 542,875
Claims priority, application Japan, Oct. 13, 1994, 6-247927
Int. Cl.[6] H04J 14/08
U.S. Cl. 359—135 7 Claims

1. An optical network unit for an optical access network, comprising:

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an optical receiver connected through a single-mode fiber optic link to a central office for receiving therefrom an ATM (asynchronous transfer mode) cells having a rate conforming to the transmission capacity of the single-mode fiber optic link;

a plurality of line interface cards associated respectively with drop lines connected to subscribers, each of the line interface cards comprising:

an address filter having a uniquely assigned address for extracting, from the output of said optical receiver, ATM cells having a virtual channel identifier corresponding to the assigned address;

first converting means for converting the extracted ATM cells to a signal having a rate conforming to the transmission capacity of the associated drop line;

second converting means for converting a signal from said drop line to ATM cells having a rate conforming to the transmission capacity of said single-mode fiber optic link;

interface means for interfacing the first and second converting means with said associated drop line; and

a buffer for storing the ATM cells from the second converting means;

a multiplexer for multiplexing ATM cells stored in the buffers of said line interface cards and producing an ATM cell stream; and

an optical transmitter for transmitting the ATM cell stream through said single-mode fiber optic link to said central office.

5,600,470

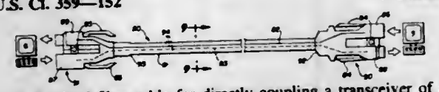
MIXED FIBER ADAPTER CABLE

Peter J. Walsh, Colorado Springs, Colo., assignor to Hewlett-Packard Co, Palo Alto, Calif.

Filed Jun. 21, 1993, Ser. No. 80,378

Int. Cl.[6] H04B *10/00*

U.S. Cl. 359—152 **7 Claims**



2. A mixed fiber cable for directly coupling a transceiver of a first node to a transceiver of a second node, wherein the transceiver of the first node transmits a signal of a first type and the transceiver of the second node transmits a signal of a second type, said cable comprising:

a first fiber that propagates a signal of a first type, said first fiber having a first end and a second end;

a second fiber that propagates a signal of a second type, said second fiber having a first end and a second end;

a first transceiver connector keyed to couple with said transceiver of said first node, said first connector having a transmitting fiber termination and a receiving fiber termination, wherein said first end of said first fiber is coupled to said transmitting fiber termination of said first connector and said first end of said second fiber is coupled to said receiving fiber termination of said first connector; and

a second transceiver connector keyed to couple with said transceiver of said second node, said second connector having a transmitting fiber termination and a receiving fiber termination, wherein said second end of said second fiber is coupled to said transmitting fiber termination of said second connector and said second end of said first fiber is coupled to said receiving fiber termination of said second connector.

5,600,471

OPTICAL WIRELESS DATA TRANSMISSION SYSTEM AND OPTICAL WIRELESS DATA TRANSMITTING/RECEIVING APPARATUS

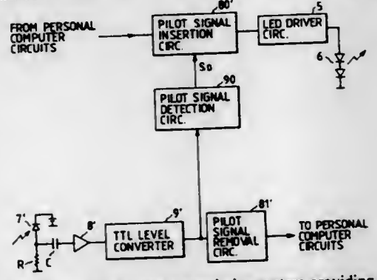
Kazutoshi Hirohashi, Yokohama, and Yoshiaki Yunoki, Tokyo, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Apr. 27, 1995, Ser. No. 430,041

Claims priority, application Japan, Apr. 28, 1994, 6-113897; Aug. 10, 1994, 6-209080

Int. Cl.[6] H04B *10/00*

U.S. Cl. 359—152 **24 Claims**



1. An optical wireless data transmission system providing simultaneous bidirectional transmission of data by optical signals between at least a first optical signal transmitting and receiving apparatus and a second optical signal transmitting and receiving apparatus, each of said first and second optical signal transmitting and receiving apparatuses including photoemissive means for producing a transmitted optical signal and photoreceptive means for converting a received optical signal to a reception signal, wherein each of said first and second optical signal transmitting and receiving apparatuses comprises:

isolating means for optically isolating said photoreceptive means thereof from an optical signal emitted by said photoemissive means thereof; and

means for generating said optical signal from a biphase code electrical signal by baseband modulation of an intensity of light which is emitted by said photoemissive means thereof,

wherein said data are conveyed as data packets, and wherein each of said first and second optical signal transmitting and receiving apparatuses comprises means for inserting into said optical signal generated by said photoemissive means thereof, within each of respective vacant intervals between said data packets, a pilot signal having an amplitude which is similar to an amplitude of said optical signal within said data packets.

5,600,472

DISTORTION GENERATING CIRCUIT

Katsumi Uesaka, Yokohama, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Apr. 13, 1994, Ser. No. 226,852

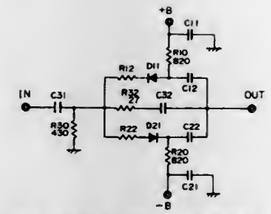
Claims priority, application Japan, Apr. 14, 1993, 5-087352; Nov. 18, 1993, 5-289268

Int. Cl.[6] H04B *10/00*

U.S. Cl. 359—161 **24 Claims**

1. A distortion generating circuit comprising:

a linear attenuator which has an input impedance substantially coincident with an impedance of a transmission path for an input signal and an output impedance substantially coincident with an impedance of a transmission path for an output signal;



at least one diode which is connected in parallel with the linear attenuator and which generates a nonlinear distortion component for said input signal; and

an adder adding output from said linear attenuator and output from said diode.

5,600,473

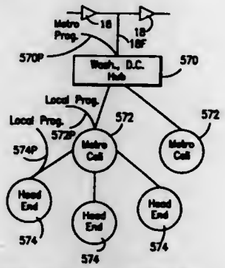
OPTICAL AMPLIFIER SYSTEMS WITH ADD/DROP MULTIPLEXING

David R. Huber, Annapolis, Md., assignor to Ciena Corporation, Savage, Md.

Continuation-in-part of Ser. No. 367,432, Dec. 30, 1994, Pat. No. 5,557,442, which is a division of Ser. No. 071,263, Jun. 4, 1993, Pat. No. 5,579,143. This application Feb. 24, 1995, Ser. No. 394,340

Int. Cl.[6] H04B *10/16;14/02;* **H01S** *3/00*

U.S. Cl. 359—179 **9 Claims**



1. An optical amplifier system comprising:

a first optical circulator having at least first, second and third circulator ports;

an optical transmission fiber optically communicating with the first circulator port for transporting a wavelength division multiplexed optical transmission signal, the wavelength division multiplexed optical transmission signal comprising plural optical signals of different wavelengths;

a section of optically amplifying rare-earth doped fiber optically communicating with the optical input fiber and with the first circulator port for amplifying the wavelength division multiplexed optical transmission signal input to the first circulator port;

a wavelength-selecting optical fiber having first and second fiber ends, the first fiber end optically communicating with the second circulator port of the first optical circulator, the wavelength-selecting optical fiber including at least one in-fiber Bragg grating for selectively reflecting an optical signal of a particular wavelength from the wavelength division multiplexed optical signal;

a second optical circulator having at least first, second, and third optical circulator ports, the first circulator port of the second circulator optically communicating with the second end of the wavelength-selecting optical fiber; and

an optical fiber transmitting optical signals to be added to the wavelength division multiplexed optical transmission signal optically communicating with the third optical circulator port of the second optical circulator.

5,600,474

TRANSMISSION SYSTEM WITH POLARIZATION CONTROL

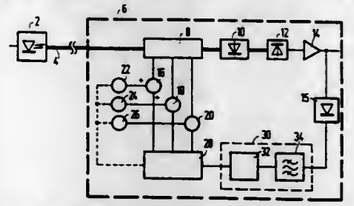
Markus T. Tomesen, Venlo; Engelbertus C. M. Pennings, and Dolf Schouten, both of Eindhoven, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 7, 1995, Ser. No. 488,308

Claims priority, application European Pat. Off., Jun. 9, 1994, 94201650

Int. Cl.[6] H04B *10/06;10/00*

U.S. Cl. 359—192 **8 Claims**



1. A transmission system comprising a transmitter for converting an input signal into a transmit signal, a channel for transporting the transmit signal, and a polarization-sensitive receiver for receiving a receive signal from the channel; the receiver comprising polarization adapting means for deriving from said receive signal a further signal having a state of polarization which is adjustable in accordance with a control signal supplied to said polarization adapting means, the transmission system further comprising means for producing polarization variations in said further signal; said receiver further comprising;

measuring means for detecting an error signal corresponding to a difference between an actual state of polarization of said further signal and a desired state of polarization thereof;

control means for deriving said control signal for the polarization adapting means from said error signal; and

filter means comprised in said measuring means for suppressing frequency components in said error signal which are below a certain limit frequency, a significant number of frequency components of said polarization variations being above said limit frequency.

5,600,475

LASER SCANNER

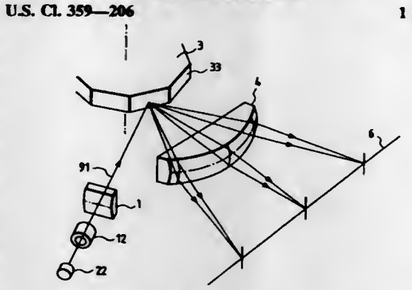
Takeshi Mochizuki; Susumu Saito, and Akira Arimoto, all of Ibaraki, Japan, assignors to Hitachi Koki Co., Ltd., and Hitachi Ltd., both of Tokyo, Japan

Filed Jul. 20, 1994, Ser. No. 277,747

Claims priority, application Japan, Jul. 23, 1993, 5-182422

Int. Cl.[6] G02B *26/08*

U.S. Cl. 359—206 **1 Claim**



1. A laser scanner comprising:

a laser light source for generating a laser beam;

an optical deflector for deflecting the laser beam from said laser light source;

a scanning lens for allowing a reflected light from said optical deflector to scan over a surface of interest, said optical deflector and said surface of interest being disposed in such a way that they satisfy a generally conjugate imaging relationship through said scanning lens in a direction normal to a scanning direction;

wherein said scanning lens comprises a single lens element and at least one surface of said scanning lens is of such a geometry that a curvature in a direction normal to the scanning direction varies gradually in the scanning direction in accordance with a specific deflecting position of said optical deflector, wherein the geometry of at least one lens surface of said scanning lens in the scanning direction is expressed by equation (1) and satisfies the relation (2):

$$Z = X^2/R\,(1+\sqrt{1-(K+1)(X/R)^2} \quad (1)$$

$$-0.54 \leq (U'/U)|KT^{1/8}\cdot SIG(K)| \leq 0.48 \quad (2)$$

where

R: the radius of curvature on an optical axis;

K: the conic constant;

U: the angle a ray of light giving a maximum scan width forms with the optical axis on an entrance side of said scanning lens;

U': the angle a ray of light giving a maximum scan width forms with the optical axis on an exit side of said scanning lens; and

Z and X: surface coordinates in the direction of the optical axis and in the scanning direction, respectively.

5,600,476

OPTICAL SCANNER

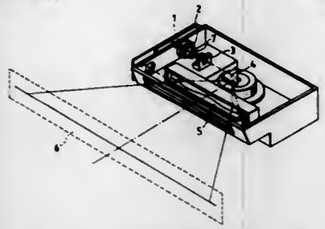
Kyu Takada; Nozomu Inoue; Takashi Hama, and Yujiro Nomura, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed May 26, 1995, Ser. No. 451,396

Claims priority, application Japan, Jan. 30, 1995, 7–033038

Int. Cl.[6] G02B *26/08*

U.S. Cl. 359—206 **10 Claims**



1. In an optical scanner comprising a light source for emitting a light beam, deflection means for deflecting the light beam as it rotates at a uniform angular velocity, and an imaging lens for forming a beam spot on a scan surface by focusing the light beam that has been deflected by the deflection means, the imaging lens having aspheric surfaces in a main-scanning cross section, the improvement wherein parameters e, n, w, and ρ relating to the aspheric surfaces satisfy the following conditions:

$$\frac{1}{2g}\left|\sum_i \rho_i(y_i)e_i\mu_i w_i^2(n_i-1)\right| < 2.5$$

where

$$\rho_i(y_i) = \frac{dc_i(v_i(y))}{dy}\Big|_{y=y_i}$$

$c_i(v_i)$: curvature of lens surface S_i at height v_i from an optical axis;

e_i: distance between the lens surface S_i and the scan surface;

g: main-scanning radius of the beam spot at zero image height;

n_i: refractive index of the imaging lens forming the lens surface S_i;

S_i: ith lens surface;

u_i: coefficient for determining whether the lens surface S_i is an entrance or an exit face;

u_i=1 (entrance face)

u_i=−1 (exit face)

$v_i(Y_s)$: height from the optical axis of a point at which a principal ray at image height Y_s passes through the lens surface S_i;

w_i: main-scanning cross-sectional radius of the light beam on the lens surface S_i that passes along the optical axis of the lens surface S_i;

y: coordinate representing the height from the optical axis in a main-scanning direction;

y_s: image height on the scan surface; and

$\rho_i(Y_s)$: rate of change in curvature at the point where the principal ray at the image height Y_s passes through lens surface S_i, as calculated by differentiating curvature c, with respect to y.

5,600,477

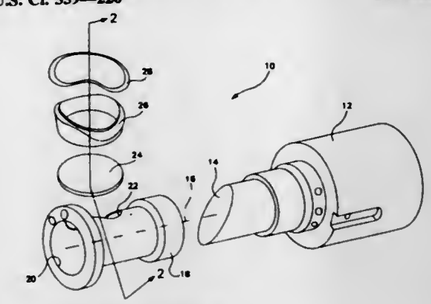
BEAM SCANNER

Robert D. Pepe, Dracut, Mass., assignor to Bayer Corporation, Wilmington, Mass.

Filed May 4, 1995, Ser. No. 434,963

Int. Cl.[6] G02B *26/08*

U.S. Cl. 359—220 **21 Claims**



1. A beam scanner comprising:

a) a beam deflecting means;

b) a hollow shield surrounding the beam deflecting means, said hollow shield having an entrance aperture means for allowing a beam to enter the hollow shield and project onto and be deflected by said beam deflecting means and an exit aperture means for allowing the deflected beam to exit the hollow shield;

c) a window means for environmentally sealing said exit aperture means with said window means having a periphery;

d) rotation means for rotating said beam deflecting means, said hollow shield and said window means together about a spin axis; and,

e) hydraulic means for maintaining the periphery of the window means in an undistorted condition.

5,600,478

LASER MARKING ARRANGEMENTS

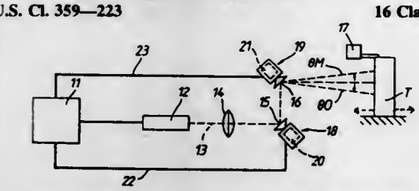
William H. Stevens, Hull, Great Britain, assignor to Imaje SA, France

PCT No. PCT/GB91/01264, § 371 Date Jul. 1, 1994, § 102(e) Date Jul. 1, 1994, PCT Pub. No. WO93/03456, PCT Pub. Date Feb. 18, 1993

PCT Filed Jul. 26, 1991, Ser. No. 185,854

Int. Cl.[6] G02B *26/08*

U.S. Cl. 359—223 **16 Claims**



1. A laser marking arrangement wherein a laser beam deflecting means causes the path of a laser beam to scan in one plane, a target is displaced in a direction at right angles to said plane of scan and a computer controls the firing of the laser at pre-programmed positions along the scan path, over each scan or selected scans, whereupon a desired dot-matrix marking over an area of the target is obtained, the laser beam path deflecting means includes a mirror arranged in the path of the laser beam, a mirror displacing device is arranged to displace the mirror between two extreme positions defining a predetermined angle and said predetermined angle defining the angle of scan for the path of the laser beam

characterized in that the mirror displacing device is arranged to displace the mirror through said predetermined angle in one direction at a rate of displacement faster than the rate of displacement in the other direction and the laser is controlled to fire only while the mirror is being traversed in the direction affording the lower rate of displacement.

5,600,479

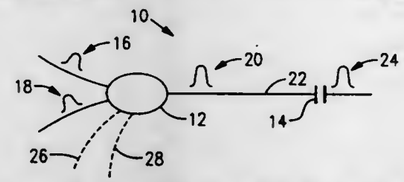
METHOD AND APPARATUS FOR OPTICAL LOGIC AND SWITCHING FUNCTIONS

Alan F. Evans, Beaver Dams, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Filed Dec. 22, 1995, Ser. No. 577,136

Int. Cl.[6] G02B *26/00;6/26;* G02F *3/00*

U.S. Cl. 359—237 **21 Claims**



1. A method for generating a logical output that varies depending on the input pattern of a plurality of input pulses, each input pulse having a predetermined high state power level, said method comprising the steps of:

coupling said plurality of input pulses onto an output fiber to generate a coupler output pulse having a power level approximately equal to the sum power level of said input pulses, said plurality of input pulses having an original input pulse width, said output fiber having a Raman threshold;

stimulating Raman scattering of said coupler output pulse when the power level of said output pulse exceeds said Raman threshold, said stimulating step selectively shifting the wavelength of said output pulse; and

blocking said output pulse using a wavelength-selective filter where said pulse has a wavelength corresponding to an input pattern desired to result in a "0" logical output.

5,600,480

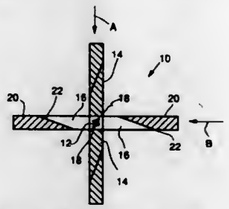
ULTRA-LOW ACOUSTIC RESONANCE ELECTRO-OPTIC MODULATOR

Kuei-Ru Chien, Cerritos, and Robin A. Reeder, Hawthorne, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Sep. 17, 1993, Ser. No. 122,625

Int. Cl.[6] G02F *1/03;1/07*

U.S. Cl. 359—245 **22 Claims**



1. An electro-optic modulator consisting of:

(a) an electro-optic crystal;

(b) first and second metal electrodes for creating a change in voltage across said electro-optic crystal; and

(c) an interface between said electro-optic crystal and said metal electrodes providing contact between said electro-optic crystal and said metal electrodes, wherein said first and second metal electrodes comprise a metal having an acoustic impedance that is within 15% of the acoustic impedance of said electro-optic crystal whereby said first and second metal electrodes reduce the amplitude of acoustic resonance in said electro-optic crystal.

5,600,481

OPTICAL FIBER AMPLIFIER AND OPTICAL TRANSMISSION SYSTEM USING THE SAME

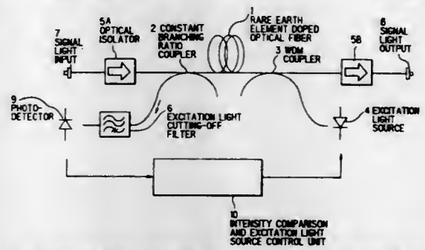
Yukinobu Nakabayashi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 27, 1994, Ser. No. 364,456

Claims priority, application Japan, Dec. 27, 1993, 5-330275

Int. Cl.[6] H04B *10/16;* H01S *3/131;* G02F *1/39*

U.S. Cl. 359—341 **5 Claims**



1. An optical fiber amplifier for amplifying a wavelength division multiplexed (WDM) light signal, said optical fiber amplifier having a mean gain and comprising:

an amplifying optical fiber having an optical fiber gain;

means for detecting said optical fiber gain;

means for comparing said optical fiber gain with a predetermined gain value to generate a difference signal;

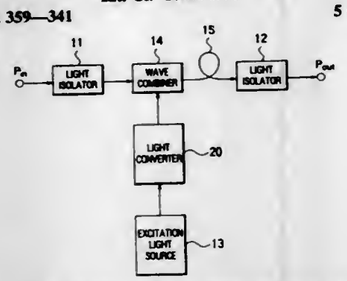
control means for controlling an excitation light source to supply to said amplifying optical fiber an excitation light in an amount based on said difference signal, so that said mean gain of said optical fiber amplifier is thereby controlled to be identical to said predetermined gain value;

wherein said predetermined gain value is a constant value which minimizes a dependency of said mean gain on wavelengths of said WDM light signal.

5,600,482
OPTICAL AMPLIFIER CIRCUIT CAPABLE OF CARRYING OUT STABLE AMPLIFICATION

Seiji Watanabe, Tokyo, Japan, assignor to Nec Corporation, Tokyo, Japan

Filed Mar. 9, 1995, Ser. No. 401,226
Claims priority, application Japan, Mar. 10, 1994, 6-039775
Int. Cl.[6] H01S *3/16*
U.S. Cl. 359—341 **5 Claims**

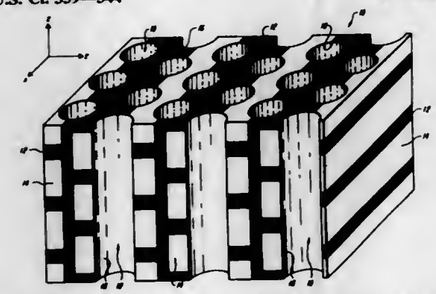


1. An optical amplifier circuit for amplifying input signal light into amplified output light, comprising:
an excitation light source for generating excitation light having a polarized light component;
an optical fiber doped with a rare-earth element to be excited by said excitation light, said optical fiber amplifying said input signal light into said amplified output light;
light supplying means coupled to said optical fiber for supplying said excitation light to said optical fiber; and
light converting means coupled between said excitation light source and said light supplying means for converting said excitation light into converted excitation light having a depolarized light component.

5,600,483
THREE-DIMENSIONAL PERIODIC DIELECTRIC STRUCTURES HAVING PHOTONIC BANDGAPS

Shanhui Fan, Cambridge; Pierre R. Villeneuve, Arlington; John D. Joannopoulos, Belmont, all of Mass., and Robert D. Meade, Morris Twp., N.J., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 240,916, May 10, 1994, Pat. No. 5,440,421. This application Apr. 20, 1995, Ser. No. 425,510
Int. Cl.[6] H01L *33/00*
U.S. Cl. 359—344 **30 Claims**

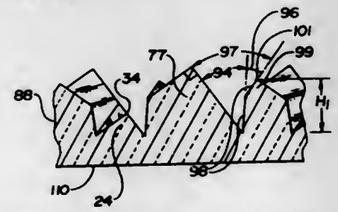


1. A method of fabricating a periodic dielectric structure having a three-dimensional photonic bandgap, said method comprising:
(a) providing a substrate;
(b) applying a layer of a first material having a first dielectric constant on said substrate;
(c) forming a plurality of parallel regions along a first axis lying in the plane of said layer;
(d) filling said plurality of regions with a second material having a second dielectric constant;
(e) applying a further layer to overlie the previous layer of first material and filled regions;
(f) repeating steps (c)–(e) a predetermined number of times to form a multi-layered structure; and
(g) forming a plurality of parallel channels through said multi-layered structure in a second axis orthogonal to the plane of the layers, said channels being adapted to comprise a third material having a third dielectric constant, thereby resulting in said structure having three-dimensional periodicity.

5,600,484
MACHINING TECHNIQUES FOR RETROREFLECTIVE CUBE CORNER ARTICLE AND METHOD OF MANUFACTURE

Gerald M. Benson, Woodbury, and Kenneth L. Smith, White Bear Lake, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 20, 1993, Ser. No. 139,920
Int. Cl.[6] G02B *5/122;5/124;5/128*
U.S. Cl. 359—529 **7 Claims**



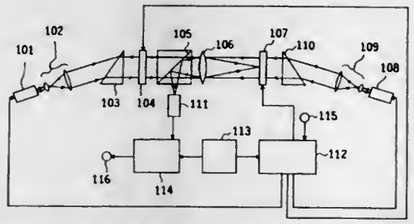
1. A method of manufacturing a cube corner article comprising the steps of:
a) providing a machinable substrate of material suitable for forming reflective surfaces; and
b) creating a plurality of geometric structures including cube corner elements by directly machining at least two sets of parallel final grooves in the substrate so that groove machining forms at least one geometric structure side having both an optical portion and a non-optical portion constructed so that the optical portion and the non-optical portion intersect along an axis that is parallel to the axis of the groove which forms the geometric structure side.

5,600,485
OPTICAL PATTERN RECOGNITION SYSTEM METHOD OF FERROELECTRIC LIQUID CRYSTAL SPATIAL LIGHT MODULATOR

Tadao Iwaki, and Yasuyuki Mitsuoka, both of Tokyo, Japan, assignors to Seiko Instruments Inc., and Sumitomo Cement Co. Ltd., Japan

Division of Ser. No. 870,133, Apr. 15, 1992, abandoned. This application Jul. 28, 1994, Ser. No. 282,076
Claims priority, application Japan, Apr. 23, 1991, 3-092461; Jul. 22, 1991, 3-181316
Int. Cl.[6] G02B *27/46;* **G06F** *17/15;* **G06K** *9/64*
U.S. Cl. 359—561 **12 Claims**

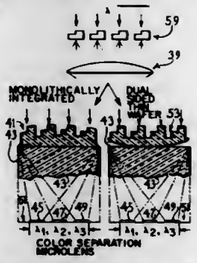
1. An optical pattern recognition system which automatically recognizes or measures a specified pattern from two-dimensional images, the optical pattern recognition system comprising: image display means for displaying at least one reference image including at least one target and at least one input image to be entered; first means, including a laser diode having an oscillation wavelength less than 900 nm, for converting the at least one reference image and the at least one input image into a coherent image; second means having a Fourier transform lens for performing an optical Fourier transform on the coherent image to produce a joint Fourier-transformed image of the reference image and the input image; an optically addressed type ferroelectric liquid crystal spatial light modulator having no light reflection layer; third means for converting the joint Fourier-transformed image into an intensity distribution image and displaying the intensity distribution image on the optically addressed type ferroelectric liquid crystal spatial light modulator; fourth means, including a laser diode having an oscillation wavelength longer than 660 nm, for reading the intensity distribution image displayed on the optically addressed type ferroelectric liquid crystal spatial light modulator by using the coherent light; fifth means having a Fourier transform lens for Fourier-transforming the intensity distribution image read out to produce a two-dimensional correlation image distribution of the reference image and the input image, the second and the fifth means sharing the same Fourier transform lens; and a light-electricity conversion element for detecting the correlation peak intensity of the reference image and the input image contained in the correlation image distribution.



5,600,486
COLOR SEPARATION MICROLENS

George Gal, Palo Alto, and Bruce J. Herman, Mountain View, both of Calif., assignors to Lockheed Missiles and Space Company, Inc., Sunnyvale, Calif.

Filed Jan. 30, 1995, Ser. No. 380,109
Int. Cl.[6] G02B *5/18;27/42;27/10*
U.S. Cl. 359—569 **18 Claims**

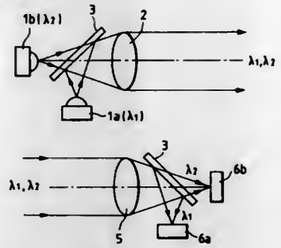


1. A one-piece, unitary, color separation and focusing microlens which produces selected color dispersion of an incoming spectral band by diffraction orders and which also focuses the selected, dispersed diffraction orders into a plurality of separate, distinct spots in a common focal plane of the microlens, said color separation microlens comprising,
dispersive means for separating colors of an incoming spectral band by a plurality of diffraction orders,
focusing means located with respect to the dispersive means for focusing the separated colors of the plurality of diffraction orders into a plurality of separate, distinct spots in a common focal plane,
said focal plane being spaced from the microlens by the focal distance of the microlens for said spectral band, and
said dispersive means and focusing means being fabricated in a one-piece, unitary, micro-optical element.

5,600,487
DICHROIC MIRROR FOR SEPARATING/SYNTHESIZING LIGHT WITH A PLURALITY OF WAVELENGTHS AND OPTICAL APPARATUS AND DETECTING METHOD USING THE SAME

Hironobu Kiyomoto, Kyoto; Kouichi Ekawa, Osaka, and Hayami Hosokawa, Kyoto, all of Japan, assignors to Omron Corporation, Japan

Filed Apr. 12, 1995, Ser. No. 420,594
Claims priority, application Japan, Apr. 14, 1994, 6-102124; Apr. 14, 1994, 6-102126
Int. Cl.[6] G02B *27/14;1/10*
U.S. Cl. 359—634 **30 Claims**



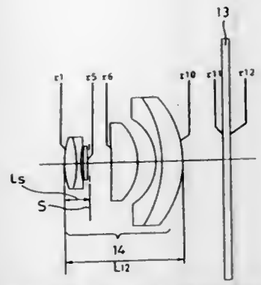
1. An optical apparatus comprising:
first light-emitting means and second light-emitting means for respectively emitting a first light beam and a second light beam having mutually different wavelengths, at least one of said first and second light beams being at least one of a divergent light beam and a convergent light beam; and
a dichroic mirror comprising an optical multi-layered film for transmitting one of said first and second light beam therethrough and reflecting the other of said first and second light beams to synthesize said first and second light beams;
wherein a characteristic of said dichroic mirror satisfies at least one of the relations:
$\lambda D > (\lambda 1 + \lambda 2)/2$,
$\lambda D > \sqrt{(\lambda 1 + \lambda 2)}$, and
$X = \cos^{-1}[(2\cos a - 1)\cos\theta]$,
where wavelengths of said first and second light beams are $\lambda 1$ and $\lambda 2$, respectively:
a wavelength in which a transmittance at a central angle of said dichroic mirror disposed in at least one of divergent and convergent optical paths becomes ½ of a maximum transmittance thereof is λD;
an incident angle of at least one of said divergent and convergent light beams on said dichroic mirror is centered at θ and spans a range of a on either side of center angle θ; and
an angle in which a transmittance with respect to a wavelength of at least one of $(\lambda 1 + \lambda 2)/2$ and $\sqrt{(\lambda 1 \times \lambda 2)}$ becomes ½ of the maximum transmittance is x.

5,600,488
PROJECTION LENS ASSEMBLY AND PROJECTOR

Nobutaka Minefuji; Yasuyuki Tejima, and Masakazu Yamagata, all of Tokyo, Japan, assignors to Casio Computer Co., Ltd., and Asahi Kogaku Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Filed Aug. 8, 1995, Ser. No. 512,398
Claims priority, application Japan, Aug. 12, 1994, 6-190845; Apr. 27, 1995, 7-104368
Int. Cl.[6] G02B *3/00;3/08*
U.S. Cl. 359—651 **16 Claims**

4. A projection lens assembly comprising:
an imaging lens group having a positive refractive power; and,
a Fresnel lens group having a positive refractive power and at least one Fresnel lens surface, said imaging lens group and said Fresnel lens group being arranged in this order from an enlargement side;



wherein a surface of the Fresnel lens group having a strongest refractive power is the Fresnel lens surface, which is provided on the lens surface on a reduction side, and satisfies the following relationships:

$50° < \theta < 70°$, and

$0.2 < f_b/f < 0.6$

wherein θ represents the angle defined between the optical axis and the line normal to the Fresnel lens surface at the portion of the Fresnel lens surface furthest from the optical axis, f represents the focal length of the whole lens assembly and

f_b represents the distance between the surface of the Fresnel lens group having the strongest refractive power and the conjugate plane on the reduction side.

5,600,489

COPYING ZOOM LENS SYSTEM

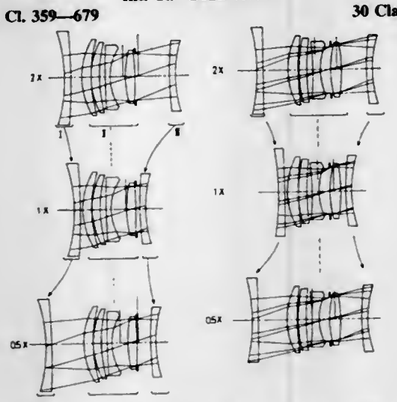
Toshihiko Ueda, and Hiroki Kinoshita, both of Toyokawa, Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Dec. 16, 1994, Ser. No. 357,450

Claims priority, application Japan, Dec. 21, 1993, 5-322555

Int. Cl.[6] G02B *15/14*

U.S. Cl. 359—679 **30 Claims**



1. A zoom lens system comprising from an original side:
a first lens unit of negative refractive power including at least one negative lens element;
a second lens unit of positive refractive power including at least four lens elements; and
a third lens unit of negative refractive power including at least one negative lens element,
wherein said second lens unit is asymmetric with respect to a center thereof, and wherein during zooming, a projection magnification is varied with a conjugate distance being maintained constant by varying a distance between the first and second lens units and a distance between the second and third lens units and by moving the entire lens system, and wherein the following conditions are fulfilled:

$$0.3 < \frac{d12E}{d12R} < 1.5$$

$$0.5 < \frac{d23E}{d23R} < 3.0$$

where d12E is a distance between the first and second lens units at an enlargement end, d12R is a distance between the first and second lens units at a reduction end, d23E is a distance between the second and third lens units at the enlargement end, and d23R is a distance between the second and third lens units at the reduction end.

5,600,490

ZOOM LENS FOR PROJECTING VIDEO IMAGE

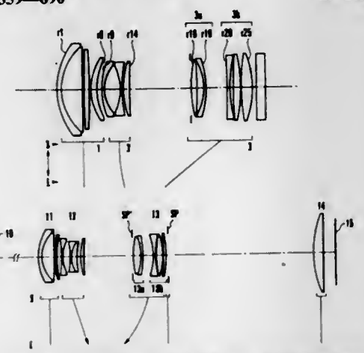
Saburo Sugawara, and Hiroyuki Hamano, both of Kanagawa-ken, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 4, 1994, Ser. No. 317,523

Claims priority, application Japan, Oct. 6, 1993, 5-250637; Oct. 25, 1993, 5-266352

Int. Cl.[6] G02B *15/14*

U.S. Cl. 359—690 **29 Claims**



1. A zoom lens comprising, in order from a large conjugate side to a small conjugate side, a first lens unit having a positive refractive power, a second lens unit having a negative refractive power and a third lens unit having a positive refractive power, wherein when zooming from a shortest focal length end to a longest focal length end, an air separation between said first and second lens units increases and an air separation between said second and third lens units decreases, wherein said first to third lens units each has at least one aspheric surface, and wherein the following condition is satisfied:

$$|D_{12d}/D_{23d}| < 0.25$$

where D_{12d}: the amount of variation of the air separation between said first and second lens units with zooming from the shortest focal length end to the longest focal length end; and

D_{23d}: the amount of variation of the air separation between said second and third lens units with zooming from the shortest focal length end to the longest focal length end.

5,600,491

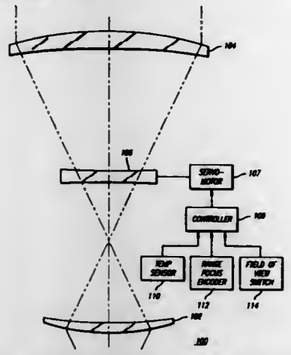
THERMAL IMAGING SYSTEM FOR A MILITARY VEHICLE

David A. Hull, Manhattan Beach; Richard R. Smith, Los Angeles; Mark R. Ehlers, Gardena; Michael J. Brothers, Torrance; Kenneth W. Lee, Whittier, and Dietmar Hanke, Mission Viejo, all of Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Filed Apr. 28, 1995, Ser. No. 430,791

Int. Cl.[6] G02B *15/14*

U.S. Cl. 359—698 **11 Claims**



1. A thermal imaging system for a vehicle comprising:
a first lens for receiving an image of an object;
a second lens in optical alignment with the first lens for viewing the image of the object; and
means in optical communication with said first and second lens for compensating for changes in the optical performance thereof, wherein said means for compensating includes:
a third lens;
means for moving said third lens, said means for moving including a position actuator and a controller for same; and
a sensor for receiving temperature information and providing a voltage representative of temperature information to the controller.

5,600,492

SURFACE-CURVED OPTICAL ELEMENT ADAPTED FOR EMERGENCE AND INCIDENCE OF PARALLEL LIGHT RAYS

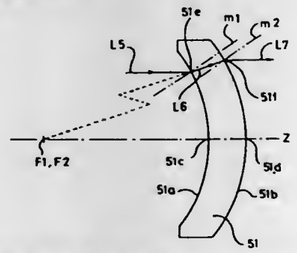
Hirokazu Tanaka, Tokyo-to, and Fumio Ogawa, Kanagawa-ken, both of Japan, assignors to Stanley Electric Corporation, Tokyo-to, Japan

Filed Apr. 7, 1995, Ser. No. 418,974

Claims priority, application Japan, May 2, 1994, 6-113421

Int. Cl.[6] G02B *3/02; 13/18*

U.S. Cl. 359—712 **4 Claims**



1. An optical element comprising:
a transparent body having a refractive index n and having first and second boundary surfaces defining, in cross-section, first and second ellipsoidal curves having an eccentricity of 1/n and adapted for entrance and emergence of parallel light rays,
the first ellipsoidal curve defining a first focal point and a first apsis, the first ellipsoidal surface having a first vertex corresponding to the first apsis,
the second ellipsoidal curve defining a second focal point and a second apsis, the second ellipsoidal surface having a second vertex corresponding to the second apsis,
the first and second focal points being coincident, aligned on a straight line, and remote from the first and second vertices.

5,600,493

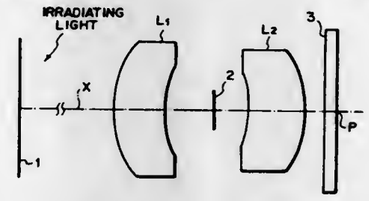
FINITE CONJUGATE LENS SYSTEM

Toshiaki Katsuma, Saitama-ken, Japan, assignor to Fuji Photo Optical Co., Ltd., Saitama-ken, Japan

Filed Dec. 28, 1994, Ser. No. 365,117

Int. Cl.[6] G02B *3/02*

U.S. Cl. 359—717 **6 Claims**



1. A reading lens system arranged between an object side and an image plane side, comprising a first lens element which is a meniscus lens having a positive refractive power and convex toward the object side, a stop and a second lens element which is a meniscus lens convex toward the image plane side, the first lens element, the stop and the second lens element being arranged in this order from the object side, and each of the faces of the second lens element being an aspheric surface represented by the formula

$$Z = c_i y_i^2 / \{1 + (1 - k_i c_i^2 y_i^2)^{1/2}\} + \sum_{j=2}^{5} A_j y_i^{2j};$$

and wherein

$$0.8 \leq B_3/B_4 \leq 1.2,$$

where

Z is the length of a perpendicular line between a point on an aspheric plane at a height of y_i above the optical axis and a plane tangent to the aspheric plane at a vertex of the aspheric plane,

$B_3 = 1 - k_3 c_3^2 y'^2_3$,

$B_4 = 1 - k_4 c_4^2 y'^2_4$

k_i=a value which gives the conic constant of an i-th face as numbered from the object side as $k_i - 1$,

c_i=the curvature at the vertex of the aspheric plane of an i-th face as numbered from the object side,

y_i=the height above the optical axis of an i-th face as numbered from the object side,

y'_3=the effective radius of the third face as numbered from the object side,

y'_4=the effective radius of the fourth face as numbered from the object side, and

A_j=2j order aspheric coefficient (j=2–5).

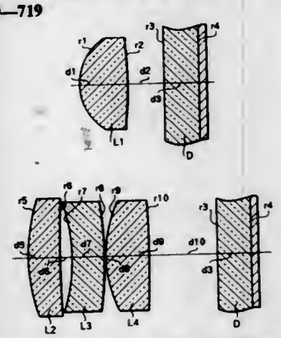
VOL 11 95 ISS 1 FE 4 1997 UMI

5,600,494

OBJECTIVE LENS SYSTEM OF AN OPTICAL DISK DEVICE

Wataru Kubo; Koichi Maruyama, and Suguru Takishima, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 13, 1995, Ser. No. 571,514
Claims priority, application Japan, Dec. 14, 1994, 6-333159
Int. Cl.[6] G02B *13/18*
U.S. Cl. 359—719 **11 Claims**



1. An objective lens system used in an optical system of an optical disk device, said objective lens system converging light emitted from a light source onto a reflecting layer of an optical disk, said objective lens system comprising at least one lens element;

said lens element having an offense against the sine condition OSC, said optical disk having a substrate thickness T and a refractive index n, wherein a ray of said light exits said lens element and intersects an optical axis of said lens element with an angle α;

wherein for light rays that are incident on the objective lens system at distances from an optical axis of the objective lens system which are at least equal to a predetermined percentage of a height of an effective aperture of the objective lens system α, OSC, n and T satisfy the following relationship:

$$0.5 < OSC / \left[-\left(\frac{1}{n} - \sqrt{\frac{1 - \mathrm{Sin}^2\alpha}{n^2 - \mathrm{Sin}^2\alpha}} \right) \cdot T \right] < 1.5$$

wherein a spherical aberration of the optical lens system is corrected; and

wherein an offense against the sine condition of only said lens element is substantially coincident with a spherical aberration of said lens element such that a coma of only said lens element is corrected.

5,600,495

STRUCTURE FOR ATTACHING SCANNING OPTICAL SYSTEM

Yoshihito Sekikawa, Saitama, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

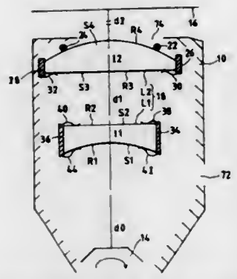
Filed Oct. 19, 1994, Ser. No. 325,477
Claims priority, application Japan, Dec. 16, 1993, 5-316986
Int. Cl.[6] G02B *07/02;26/08*
U.S. Cl. 359—819 **13 Claims**

1. A structure for precisely orienting a scanning optical system having a lens, the structure comprising:

an optical housing;

at least two abutment members disposed on said optical housing, the abutment members being configured to precisely engage on a curved lens surface on a side of the lens having a greatest absolute value of a reciprocal of a radius of curvature;

means on the optical housing for orienting the lens in a path of light reflected by a rotatable mirror; and



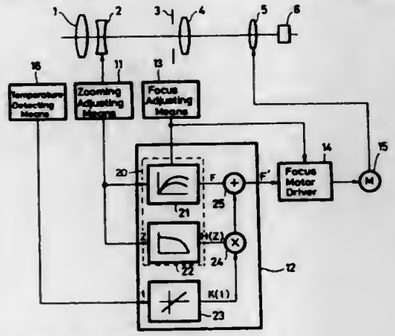
spring means associated with the lens for biasing the curved lens surface against abutment members.

5,600,496

DEVICE FOR CONTROLLING A ZOOM LENS

Shigeru Mori, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 2, 1995, Ser. No. 397,647
Claims priority, application Japan, Mar. 14, 1994, 6-042719
Int. Cl.[6] G02B *7/02*
U.S. Cl. 359—820 **2 Claims**



1. A zoom lens device comprising:

an imaging device for converting light from an object to an electrical signal:

lens means including a zoom lens and a focusing lens disposed between said object and said imaging device;

a zooming adjusting circuit for adjusting a movement of said zoom lens;

correcting circuit means including a first correction circuit, a second correction circuit for outputting adjustment values in response to adjustment of said zoom lens, and a memory in which a correction value prepared for said lens means is stored as respective correction maps, wherein said correction maps include first correction data comprising correction data used when said zoom lens is moved from the position closest to said imaging device and second correction data comprising correction data used when said zoom lens is placed at the end of a wide-angle lens to display said object largest;

a temperature detecting circuit for detecting a temperature around said focusing lens;

a coefficient circuit for correcting at least one adjustment value of said correction circuit based on an output signal of said temperature detecting circuit;

focusing means receiving an output value of said memory added to an output signal of said coefficient circuit to thereby adjust said focusing lens; and

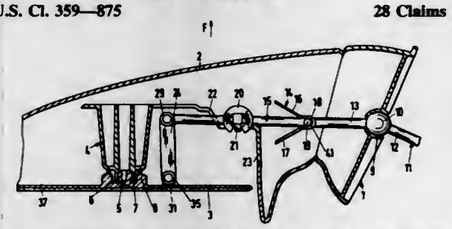
arithmetic means wherein a first adjustment value of said coefficient circuit and said output signal of said second correction circuit are multiplied to obtain a multiplied value, the multiplied value is added to a second adjustment value of the coefficient circuit to obtain an added output signal and said focusing lens is controlled in accordance with the added output signal by said focusing means.

5,600,497

EXTERNAL REAR VIEW MIRROR FOR VEHICLES, ESPECIALLY MOTOR VEHICLES

Karl-Heinz Leonberger, Hochdorf, Germany, assignor to Reitter & Schefenacker GmbH & Co. KG, Esslingen, Germany

Filed Mar. 11, 1994, Ser. No. 212,497
Claims priority, application Germany, Mar. 12, 1993, 43 07 821.4
Int. Cl.[6] B60R *1/06*
U.S. Cl. 359—875 **28 Claims**



1. An external rear view mirror for a motor vehicle, said mirror comprising:

a housing;

a mirror support plate;

a pivot joint for connecting said mirror support plate to said housing such that said mirror support plate is pivotable about two axes perpendicular to one another;

an actuating lever for pivoting said mirror support plate;

two push rods pivotably connected with a first end to said mirror support plate at a distance from said pivot joint;

an intermediate lever pivotably connected to said actuating lever and to said push rods;

said intermediate lever having a transverse rod with two ends in the form of a bearing ball;

said push rods having at a second end thereof a bearing cup, with each of said bearing balls resting in one of said bearing cups; and

wherein said intermediate lever has two arms and a ball joint for connecting said two arms to one another.

5,600,498

PHOTOGRAPHIC PRINTING APPARATUS WITH IMPROVED COMPONENT SPACING

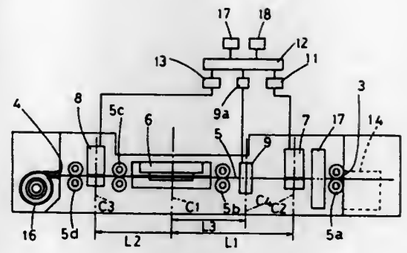
Eiji Motooka, and Hiroshi Oku, both of Wakayama, Japan, assignors to Noritsu Koki Co., Ltd., Wakayama, Japan

Filed Apr. 7, 1995, Ser. No. 418,776
Claims priority, application Japan, Apr. 7, 1994, 6-069572; Apr. 7, 1994, 6-069573; Apr. 7, 1994, 6-069574
Int. Cl.[6] G11B *5/633*
U.S. Cl. 360—3 **17 Claims**

1. A photographic printing apparatus comprising:

an exposure station disposed in a midway region of a transfer path between a transfer inlet and a transfer outlet along which a negative film having magnetic recording tracks provided thereon is transferred forwardly and backwardly; and

a magnetic read head disposed between said transfer inlet and said exposure station, said magnetic read head being spaced from a center line of said exposure station by a distance which is equal to a sum of an integer multiple of the pitch length of one frame on the negative film and a half of the same.

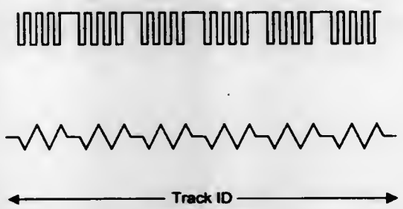


5,600,499

TRI-BIT ENCODING FOR DISK DRIVE SERVO TRACK ID INFORMATION

Marc E. Acosta, San Clemente; Richard W. Hull, Laguna Hills, and Michael Spaur, Laguna Niguel, all of Calif., assignors to Western Digital Corporation, Irvine, Calif.

Filed Apr. 9, 1993, Ser. No. 45,583
Int. Cl.[6] G11B *5/09;5/596*
U.S. Cl. 360—40 **9 Claims**



12 tribits, 3T's each
(example: 101010101010)

1. In a hard disk drive, a method for encoding and writing track-identification data into a track-identification field in an embedded servo wedge comprising the steps of:

converting the binary track-identification data into a Gray code consisting of an array of binary "1" and "0" bits;

encoding the Gray code serially, one bit at a time, into a tri-bit code symbol;

writing the encoded tri-bit code symbols into the track-identification field as a series of flux reversals wherein each successive tri-bit symbol begins with a flux reversal which is of opposite polarity from the flux reversal beginning an immediately prior tri-bit symbol.

5,600,500

PERFORMANCE BASED WRITE CURRENT OPTIMIZATION PROCESS

Timothy A. Madsen, Bloomington, and Michael J. Roe, Ramsey, both of Minn., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

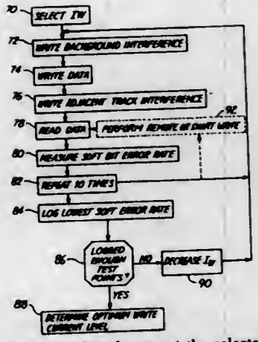
Filed Nov. 14, 1994, Ser. No. 337,386
Int. Cl.[6] G11B *5/09*
U.S. Cl. 360—46 **18 Claims**

1. A method of optimizing write current in a data storage system, comprising:

selecting a write current level that is greater than an optimum write current level;

writing background interference at the selected write current level on a first data track in the data storage system;

writing data at the selected write current level on the first data track;



writing adjacent track interference at the selected write current level on a data track that is adjacent to the first data track;

reading the data from the first data track at an off-track position;

measuring an error rate in the data read from the first data track;

logging the measured error rate;

decreasing the selected write current level;

repeating the steps of writing background interference, writing data, writing adjacent track interference, reading the data, measuring an error rate and logging the measured error rate; and

determining the optimum write current level as a function of the logged error rates.

5,600,501

DISK RECORDING AND/OR REPRODUCING APPARATUS THAT COMPENSATES FOR BIT NONLINEARITY AND A PHASE SHIFT INTRODUCED BY SEPARATE READ AND WRITE HEADS

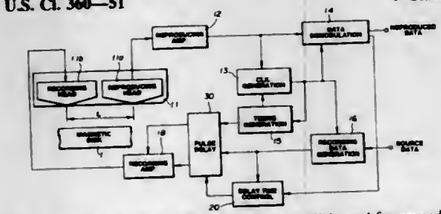
Takamichi Yamakoshi; Nobuhiro Hayashi, and Hiroaki Yada, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 156,304, Nov. 23, 1993, abandoned. This application Sep. 20, 1995, Ser. No. 531,014

Claims priority, application Japan, Nov. 30, 1992, 4-343186

Int. Cl.[6] G11B *5/09*

U.S. Cl. 360—51 **9 Claims**



1. An apparatus for recording data onto a disk, and for reproducing data from the disk, the disk having a permanent pattern formed thereon, the apparatus comprising:

a reproducing head for reproducing data from the disk, for detecting the permanent pattern, and for outputting a pattern signal in response to the permanent pattern;

clock signal generating means for generating a clock signal so that a portion of the clock signal is synchronized to a portion of the pattern signal;

delay means for receiving data to be recorded on the disk wherein the data to be recorded on the disk is clocked in response to the clock signal generated by the clock signal generating means, and for delaying the data to be recorded on the disk a delay time relative to the clock signal generated by the clock signal generating means, the delay time including a first delay component and a second delay component;

a recording head for recording the data delayed by the delay means onto the disk;

position detecting means for determining a radial position of the reproducing head over the disk in response to the data reproduced by the reproducing head; and

control means for detecting a predetermined magnetization reversal pattern in the data to be recorded, for determining the first delay component in response thereto, and for determining the second delay component in response to the radial position of the reproducing head.

5,600,502

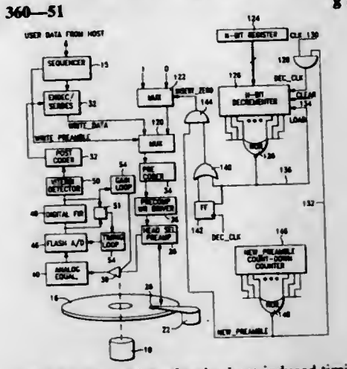
ELIMINATION OF INTER SYMBOL INTERFERENCE-INDUCED TIMING PHASE STEPS AT SECTOR START IN PRML DIGITAL MAGNETIC DATA STORAGE CHANNEL

Kevin D. Fisher, Palo Alto, Calif., assignor to Quantum Corporation, Milpitas, Calif.

Continuation of Ser. No. 222,908, Apr. 5, 1994, abandoned. This application Sep. 15, 1995, Ser. No. 600,015

Int. Cl.[6] G11B *5/09*

U.S. Cl. 360—51 **8 Claims**



1. A method for elimination of undershoot-induced timing phase steps at a transition between a recorded periodic preamble pattern and a user data field in a data storage device having a writing mode and a playback mode including a PRML sampling data detection channel and including a head transducer structure and a magnetic storage medium moving relatively to the head transducer structure and

wherein a periodicity of undershoot events in relation to main magnetic flux transition responses induced in the head transducer structure during playback mode of the recorded periodic preamble pattern is known, the method comprising the steps of:

during writing of the preamble pattern to the magnetic storage medium preceding the user data field during writing mode, altering the phase of the preamble pattern at a periodicity related to the periodicity of undershoot events, and

during playback mode reading the preamble pattern from the magnetic storage medium and passing a readback signal through the PRML sampling data detection channel to generate a timing adjustment control signal and

phase locking a digital data sampling timing loop within the PRML sampling data detection channel to the readback signal in accordance with the timing adjustment control signal,

whereby undershoot-induced timing phase steps otherwise occuring during the transition between the recorded preamble pattern and the user data field are eliminated.

5,600,503

MAGNETIC RECORDING AND REPRODUCING APPARATUS HAVING PRINTED WIRING BOARDS CONNECTED TO EACH OTHER BY A CABLE

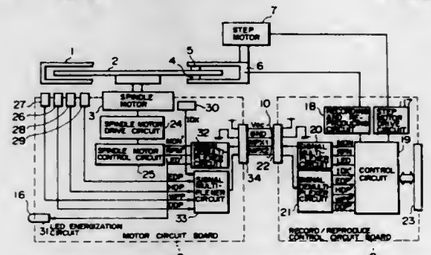
Hisashi Sakogawa, Morioka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 22, 1994, Ser. No. 263,676

Claims priority, application Japan, Jun. 25, 1993, 5-154772

Int. Cl.[6] G11B *33/00*

U.S. Cl. 360—69 **4 Claims**



1. A magnetic recording and reproducing apparatus comprising:

recording and reproducing means for magnetically recording information on a recording medium and reproducing the recorded information from the recording medium;

at least two circuit boards, electrically connected to each other by a cable, for controlling recording and reproducing operations of said recording and reproducing means;

a signal multiplexer circuit, disposed on each of said at least two circuit boards, for time-dividing a plurality of control signals to be transmitted between said at least two circuit boards and then multiplexing the time-divided control signals to supply a multiplexed control signal to a single signal line of said cable; and

a signal demultiplexer circuit, disposed on each of said at least two circuit boards, for demultiplexing the multiplexed control signal into individual control signals, wherein:

each of said plurality of control signals has a binary value;

said signal multiplexer circuit detects a level inversion of any one of said plurality of control signals to sequentially time-divide said plurality of control signals by using, as a reference start point, a time point when said level inversion of said control signal is detected and thereby produces the multiplexed control signal; and

said signal demultiplexer circuit detects a level inversion of said multiplexed control signal to demultiplex said multiplexed control signal by using, as a reference start point, a time point when said level inversion of said multiplexed control signal is detected and thereby obtains said individual control signals.

5,600,504

METHOD AND APPARATUS FOR DETECTING TAPE TERMINI IN A TAPE RECORDER

Byung-ryul Seo, Kyungki-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Nov. 30, 1994, Ser. No. 350,161

Claims priority, application Rep. of Korea, Dec. 28, 1993, 93-30235

Int. Cl.[6] G11B *15/18*

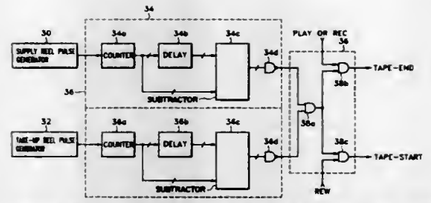
U.S. Cl. 360—74.2 **38 Claims**

1. A method for detecting a starting or ending terminus of a tape in a tape recording and playback device having a supply reel and a take-up reel, comprising the steps of:

generating first pulses in response to rotation of the supply reel;

generating second pulses in response to rotation of the take-up reel;

counting the first pulses, and generating a first count value indicative of the number of counted first pulses;



counting the second pulses, and generating a second count value indicative of the number of counted second pulses;

delaying said first pulses by a prescribed time delay period, and generating a delayed first count value;

delaying said second pulses by said prescribed time delay period, and generating a delayed second count value;

determining whether the supply reel is in a stop state by comparing said first value with said delayed first count value;

determining whether the take-up reel is in a stop state by comparing said second count value with said delayed second count value; and

determining that the starting or ending terminus of the tape has been reached when the supply reel and the take-up reel are both determined to be in said stop states.

5,600,505

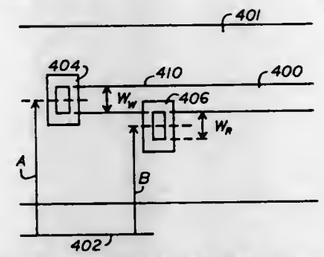
SKEW CORRECTION IN A MULTI-TRACK TAPE RECORDER/PLAYER

Mark R. Ayres, Whitmore Lake, Mich., assignor to Exabyte Corporation, Boulder, Colo.

Filed Jun. 10, 1994, Ser. No. 258,425

Int. Cl.[6] G11B *5/584;15/48*

U.S. Cl. 360—77.12 **20 Claims**



1. In a multi-track tape drive having at least one read head and one write/erase head, the heads being displaceable laterally with respect to the movement of tape travel, and a memory operative to store signals representative of the displacements of the heads, a method of calculating alignment error, comprising the steps of:

(a) recording with said write/erase a longitudinal stripe having first and second edges at a displacement along at least a portion of said tape;

(b) storing the displacement associated with step (a) as value "A";

(c) locating, with said read head, one of said first and said second edges of said longitudinal stripe;

(d) storing the resulting displacement associated with step (c) as displacement value "B";

(e) determining and storing an expected offset "D" between the value of "A" and the value of "B" as a function of the width of said read and said write/erase heads; and

(f) calculating an alignment error "E" in accordance with the following formula:

$$E=(A\pm D-B)$$

wherein the choice of whether to use + or − depends upon which of said first and said second edges are located in step (c).

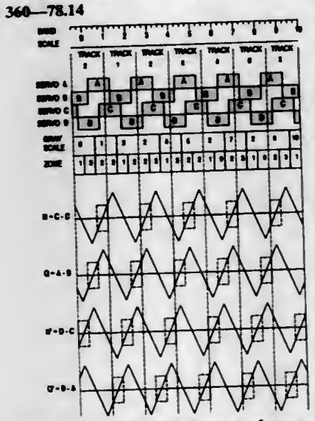
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5,600,506

APPARATUS AND METHOD FOR DETERMINING THE POSITION OF A TRANSDUCER RELATIVE TO A DISK SURFACE IN A DISK DRIVE SYSTEM

Michael Baum, Longmont, and James Touchton, Boulder, both of Colo., assignors to Conner Peripherals, Inc., San Jose, Calif.

Filed May 10, 1995, Ser. No. 435,435
Int. Cl.[6] G11B 5/596
U.S. Cl. 360—78.14 **48 Claims**



1. A system for measuring the distance of a transducer from a reference point on a disk in a sector servo disk drive system comprising:

a disk surface divided into sectors where each sector comprises Z data tracks, a servo band and a gray scale band recorded across all said Z data tracks, said servo band comprising a quadrature servo pattern repeated 0.75*Z times, said gray scale band comprises 1.5*Z consecutively addressed gray scale areas; and

a position generator for generating from said quadrature servo pattern and an address of a gray scale area read by a transducer in said disk drive system a signal indicating a position of said transducer relative to a fixed reference point in said gray scale band on said disk.

5,600,507

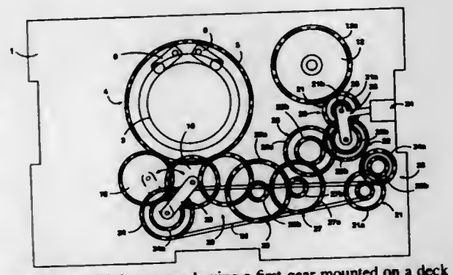
POWER TRANSMISSION DEVICE FOR TAPE RECORDER

Gun C. Park; Do Y. Choi; Ohashi Masaharu, and Jae K. Seo, all of Suwon, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Continuation of Ser. No. 165,299, Dec. 13, 1993, abandoned.
This application Sep. 12, 1995, Ser. No. 526,864
Claims priority, application Rep. of Korea, Dec. 11, 1992, 92-23944; Dec. 11, 1992, 92-23945; Feb. 26, 1993, 93-2765
Int. Cl.[6] G11B 5/027
U.S. Cl. 360—85 **18 Claims**

1. In a power transmission device of a tape recorder for receiving a power from a capstan motor both to drive a tape loading system for loading a tape with respect to a drum and to drive a reel table system, said tape loading system being placed around an outer circumference of the drum and operative to move the tape toward the drum, the power transmission device of said tape recorder comprising:

power transmitting means formed of a transmission gear for performing forward and backward rotation in response to said capstan motor, and a rotating gear for swinging at a predetermined angle around a shaft, said rotating gear being in meshing engagement with said transmission gear;



first power driving means having a first gear mounted on a deck for transmitting a rotational force from said capstan motor to said tape loading system by being selectively brought into meshing engagement with said rotating gear;

second power driving means having a relay gear mounted on said deck for transmitting the rotational force from said capstan motor to said reel table system by being selectively brought into meshing engagement with said rotating gear; and

position-control means for preventing said rotating gear from being deviated when driving a selected one of said first and second power driving means using said power transmitting means,

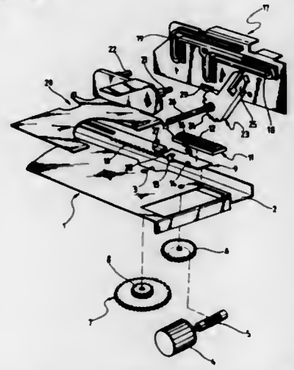
wherein said tape loading system includes a ring gear and pole bases operative to move along a preset path in accordance with rotation of said ring gear to load the tape into proximity with the drum.

5,600,508

CASSETTE LOADING APPARATUS WHICH UTILIZES THE DRIVING FORCE OF MOTOR INSTALLED IN TAPE DRIVING MECHANISM

Myoung-Soo Choi, Anyang City, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Nov. 18, 1994, Ser. No. 343,982
Claims priority, application Rep. of Korea, Nov. 23, 1993, 93-25008
Int. Cl.[6] G11B 5/008
U.S. Cl. 360—96.5 **4 Claims**



1. A cassette loading apparatus, including a cassette holder for receiving a cassette, and a motor for generating a driving force, and which moves said cassette holder by the driving force of said motor, so as to load the cassette onto a deck for travelling a tape from reel to reel in the cassette, said cassette loading apparatus comprising:

a master gear coupled to and rotated by said motor;

a first slide member having a first rack gear coupled to said master gear, and being moved by the rotation of said master gear;

a second slide member having a second rack gear, and being supported by and movable on said first slide member;

an arm gear which is meshed with the second rack gear of said second slide member and coupled to said cassette holder, and which rotates in accordance with the movement of said second slide member and thereby moves said cassette holder; and

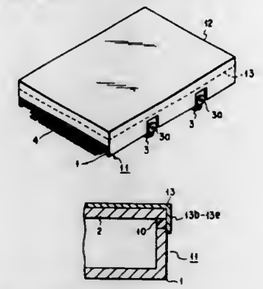
means for locking said first and second slide members so as to move together in a locked state during cassette loading and ejecting, and for releasing the locked state after cassette loading, thereby to permit said first slide member to move while the second slide member remains stationary, such that the driving force of said motor is transmitted to at least one other driven portion on the deck via one of said master gear and said first slide member.

5,600,509

STORAGE APPARATUS HAVING SHIELD MEMBER FOR COVERING MAIN BODY

Yoshiyuki Kawakami, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 26, 1993, Ser. No. 51,783
Claims priority, application Japan, Apr. 27, 1992, 4-27522 U
Int. Cl.[6] G11B 33/14
U.S. Cl. 360—97.02 **4 Claims**



1. A disk drive comprising:

a casing having a bottom portion and four side portions made of a metallic material, the side portions extending upward to top surfaces from a top surface of the bottom portion;

a seal member on the top surfaces of the four side portions;

a top cover having top and bottom surfaces on the seal member at a perimeter of the top cover; the top cover, the casing, and the seal member forming a chamber for accommodating a driving mechanism for recording/reproducing data on a recording medium;

a metallic shield member of an electromagnetically shielding material for electromagnetically shielding part of the side portions of the casing including the seal member, the metallic shield member including a base portion for covering the top surface of the top cover, and the four side portions extending downward from the base portion of the metallic shield member for covering the seal member, side surfaces of the top cover member, and part of the side portions of the casing; and

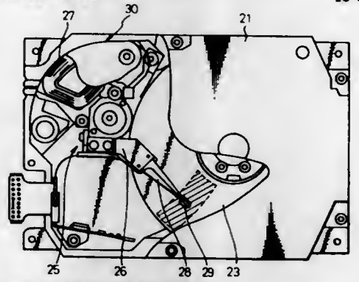
a shield cover member of an electrically insulating sheet material attached to the metallic shield member, the shield cover member having a base portion for covering the entire base portion of the metallic shield cover, and the four side portions extending downward from the base portion of the shield cover member for covering the corresponding side portions of the metallic shield member.

5,600,510

DISK APPARATUS WITH SHIELDING MEMBER IN A HEAD MOVING RANGE

Kazunori Shikano, Higashine, Japan, assignor to Fujitsu Limited, Japan

Continuation of Ser. No. 60,348, May 11, 1993, abandoned.
This application Oct. 11, 1994, Ser. No. 321,457
Claims priority, application Japan, May 13, 1992, 4-119370
Int. Cl.[6] G11B 5/10;33/14
U.S. Cl. 360—97.02 **10 Claims**



1. A disk apparatus comprising:

at least one rotatable disk having at least one recording surface;

at least one head for reading or writing information from or to said rotatable disk;

head drive means for moving said head along said recording surface of the rotatable disk within a head moving range;

an enclosure having a generally uniform thickness for housing therein at least said rotatable disk, said head and said drive means, said enclosure having an outer surface thereof provided with a region of reduced thickness forming a recess over said head moving range, wherein the recess lies within the generally uniform thickness of adjacent portions of the enclosure;

a printed circuit board mounted on said enclosure; and

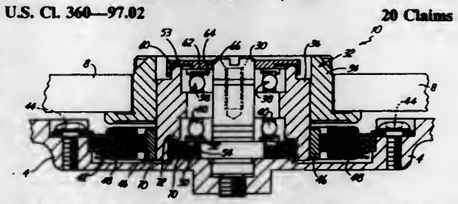
a shielding member for shielding the head from external electrical noise within head moving range, said shielding member attached to said outer surface of the enclosure positioned within said recess, having a shape corresponding to said recess to facilitate positioning of the shielding member therewithin, and located in a space defined between said enclosure and said printed circuit board, said shielding member having a size substantially corresponding to said head moving range.

5,600,511

PARTICLE CONTAINMENT AND FLUID RETENTION WITH BARRIER SEAL IN MAGNETIC DISC DRIVE

John C. Dunfield, Santa Cruz, and Gunter K. Heine, Aptos, both of Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Feb. 10, 1995, Ser. No. 386,882
Int. Cl.[6] G11B 33/14;17/02
U.S. Cl. 360—97.02 **20 Claims**



1. A disc drive motor for use in a disc drive for storing information having a sealed disc drive chassis providing a substantially contaminant-free cavity, the disc drive motor comprising:

a fixed member coupled to the disc drive chassis;

a rotor rotatable about the fixed member for rotatably carrying a magnetic storage disc in the contaminant-free cavity, wherein one of the fixed member and the rotor comprises a shaft;

a bearing assembly between the rotor and the fixed member allowing rotation of the rotor relative to the fixed member;

a gap defined between the rotor and the fixed member which separates the bearing assembly from the magnetic storage disc and the contaminant-free cavity; and

a barrier material carried on a surface in the gap having a characteristic which reduces contaminant flow from the region of the bearing assembly to the contaminant-free cavity.

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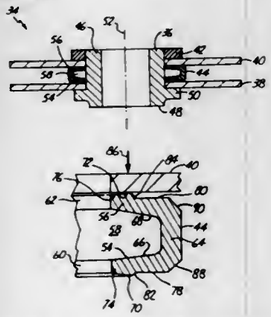
DISC SPACER WITH INTERIOR GROOVE

Hatem R. Radwam, San Jose; Clifford T. Jue, Santa Cruz; Brian H. Nelson, Fremont, and Bradley D. Kelemen, Santa Cruz, all of Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Continuation of Ser. No. 240,037, May 9, 1994. This application Jun. 7, 1995, Ser. No. 477,295

Int. Cl.[6] G11B *17/08*

U.S. Cl. 360—98.08 **12 Claims**



9. A hub assembly in a disc drive, the hub assembly comprising:

a hub having a first axial end and a second axial end;

a flange disposed generally at the second axial end of the hub;

a disc generally concentrically disposed about the hub and supported by the flange;

a clamping means, coupled to the hub, for clamping the disc to the hub for rotation with the hub;

a disc support, generally concentrically disposed about the hub, and having a disc engaging surface for supporting the disc, the disc engaging surface having a disc supporting region engaging the disc, an inner offset portion axially offset from the disc supporting region, and a step to an outer offset portion axially offset from the disc supporting region, the disc supporting region being located radially between the inner offset portion and the step and along the disc engaging surface, the step being located between the disc supporting region and the outer offset portion; and

wherein the disc support includes a member having first and second groove-defining flanges defining a hub receiving aperture and a groove, the groove communicating with the hub receiving aperture and extending radially away from the hub receiving aperture to a groove terminal portion, the first and second groove defining flanges having as an exterior surface the disc engaging surface.

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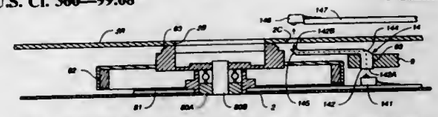
POSITION DETECTING MECHANISMS FOR RECORDING MEDIA

Toshio Nakata, and Naoyuki Okumura, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Division of Ser. No. 206,987, Mar. 4, 1994, Pat. No. 5,583,717. This application Jun. 5, 1995, Ser. No. 462,340

Int. Cl.[6] G11B *17/028;23/30*

U.S. Cl. 360—99.08 **4 Claims**



1. An information recording/reproducing device comprising:

a medium driving means having a centrally located shaft, a hub vertical to said shaft for rotatably driving a recording medium via a large central opening therein, and a motor rotor vertical to said shaft and apart from one surface of said recording medium facing said motor rotor,

said recording medium having a smaller opening therethrough generally positioned at a radial distance from said large central opening, said smaller opening radial distance less than the radial distance from the center of said large central opening to an outer radial extent of said motor rotor,

position detection means for detecting the instantaneous rotational position of said rotated recording medium comprising a light emitting element and a light detecting element,

one of said elements positioned outwardly beyond the outer radial extent of said motor rotor to define a first optical path portion extending toward said one surface of said recording medium,

the other of said elements positioned facing another surface of said recording medium opposite said one surface and in axial alignment with the rotational passage of said smaller opening, said axial alignment extending through said smaller opening thereby constituting a second optical path portion, and

a light guide member having one end aligned in said first optical path portion and a second end aligned in said second optical path portion providing completion of an optical path for coupling of light between said first and second optical path portions.

5,600,514

MAGNETIC DISK DRIVE INCLUDING LABYRINTH SEAL AND MAGNETIC SEAL

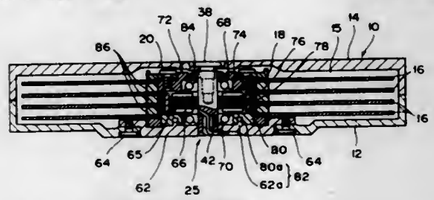
Shinichi Fukuzawa, Kawasaki, Japan, assignor to Fujitsu Limited, Japan

Continuation of Ser. No. 274,480, Jul. 13, 1994, abandoned. This application Jan. 16, 1996, Ser. No. 586,140

Claims priority, application Japan, Sep. 24, 1993, 5-237025

Int. Cl.[6] G11B *17/02*

U.S. Cl. 360—99.08 **10 Claims**



1. A magnetic disk drive comprising:

a housing having a base and a cover and defining a sealed chamber therein;

a flange fixed to said base;

a spindle shaft fixed to said housing and said flange;

a spindle hub rotatably mounted on said spindle shaft within said sealed chamber;

at least one magnetic disk mounted on said spindle hub in a portion of said sealed chamber;

means for rotating said spindle hub around said spindle shaft, said means for rotating including a stator having a wiring at a predetermined height dimension;

first and second bearing means within said sealed chamber for rotatably supporting said spindle hub about said spindle shaft;

a labyrinth seal located outside of said first bearing means and adapted to prevent entry of contaminated particles from said first bearing means into said portion of said sealed chamber, said labyrinth seal being defined between said flange and an element coupled to said spindle hub; and

magnetic seal means capable of hydraulically contacting said spindle shaft for preventing the entry of contaminated particles from said second bearing means into said portion of said sealed chamber, said seal means being disposed between said spindle hub and said spindle shaft,

said magnetic seal means including an annular magnet fixed to said spindle hub, a pair of magnetic plates, one end of said magnetic plates being fixed to said spindle hub in such a manner as to sandwich said annular magnet, the other ends of said magnetic plate being allowed to project from said annular magnet toward said spindle shaft, wherein said other ends of said magnetic plates are spaced apart from said spindle shaft to form a cavity, and a magnetic fluid having magnetic particles dispersed within said cavity.

5,600,515

SLIDING TYPE MAGNETIC HEAD ASSEMBLY HAVING A SPHERICAL CONTACT SURFACE OFFSET FROM A MAGNETIC POLE

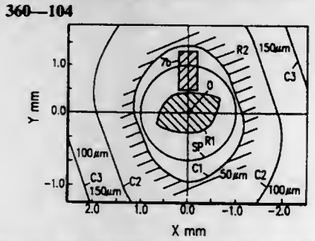
Osamu Mizuno, Osaka; Tohru Nakamura, Katano, and Hideki Aikoh, Higashiosaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jun. 28, 1994, Ser. No. 267,876

Claims priority, application Japan, Jun. 30, 1993, 5-160533

Int. Cl.[6] G11B *5/48;5/54;21/16;5/187*

U.S. Cl. 360—104 **21 Claims**



1. A magnetic head assembly for use with an information storage medium having a sliding surface, the magnetic head assembly comprising:

a magnetic-field generation means having a magnetic pole for providing a magnetic field to the information storage medium;

a slider means coupled with the magnetic-field generation means, the slider means having a protruding portion which protrudes toward the information storage medium; and

a load means coupled with the slider means, the load means providing a pressing force to the slider means in a direction perpendicular to the sliding surface, and pressing the protruding portion onto the sliding surface so as to maintain continuous sliding contact with the sliding surface during operation,

wherein a surface of the protruding portion of the slider means includes part of a spherical surface, and

a location of a projection of the bottom surface of the magnetic pole onto the sliding surface, relative to a virtual plane including the bottom surface of the magnetic pole, is outside a contact region on the sliding surface where the protruding portion of the slider means and the sliding surface of the information storage medium can be in contact with each other during operation, and inside a crossing region on the sliding surface where the virtual plane and the sliding surface can cross with each other.

5,600,516

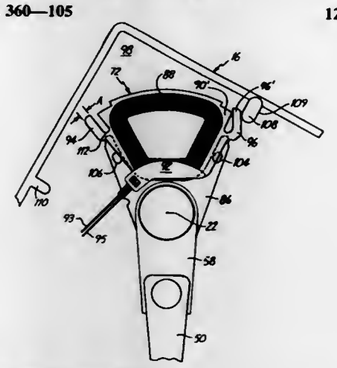
DEFLECTABLE CRASH STOP IN ACTUATOR ARM ASSEMBLY OVERMOLD

Brian L. Phillips, San Jose, and Lawrence W. Gollbach, Felton, both of Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Continuation of Ser. No. 214,777, Mar. 17, 1994, abandoned. This application Dec. 5, 1995, Ser. No. 567,398

Int. Cl.[6] G11B *5/54*

U.S. Cl. 360—105 **12 Claims**



4. A disc drive, comprising:

a baseplate having a first stop pin and a second stop pin;

an actuator arm assembly including an actuator arm, a voice coil and an overmold flowed over the voice coil and the actuator arm, wherein the overmold couples the voice coil to the actuator arm and has a perimeter, and wherein the overmold forms first and second deflectable crash stops along the perimeter, with each crash stop having a cantilevered beam with a distal end which is deflectable between a first position in which the distal end is spaced from the perimeter and a second position in which the distal end abuts the perimeter;

bearing means, coupled to the baseplate and the actuator arm assembly, for bearing the actuator arm assembly in movable relation to the baseplate;

magnet means, coupled to the baseplate, for interacting with the voice coil to cause movement of the actuator arm assembly relative to the baseplate;

a head gimbal assembly coupled to the actuator arm assembly;

a disc rotatably mounted to the baseplate and located proximate the actuator arm assembly so that movement of the actuator arm assembly causes movement of the head gimbal assembly over a surface of the disc, the head gimbal assembly reading data from the disc and providing a data signal indicative of the data read from the disc;

control means, coupled to the head gimbal assembly and the voice coil, for controlling movement of the actuator arm and for receiving the data signal; and

wherein the first and second deflectable crash stops are positioned to engage the first and second stop pins and deflect to stop movement of the actuator arm assembly in generally opposing directions relative to the baseplate.

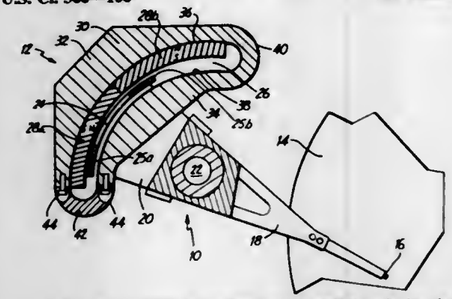
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5,600,517

MAGNET/BLOCK ASSEMBLY FOR DISC DRIVE SYSTEMS

Robert W. Whitmore, Longmount, Colo., assignor to Seagate Technology, Inc., Scotts Valley, Calif.

Continuation of Ser. No. 99,808, Jul. 29, 1993, abandoned, which is a continuation of Ser. No. 728,155, Jul. 10, 1991.
This application Sep. 26, 1994, Ser. No. 312,433
Int. Cl.[6] G11B *5/55;5/012*
U.S. Cl. 360—106 **15 Claims**



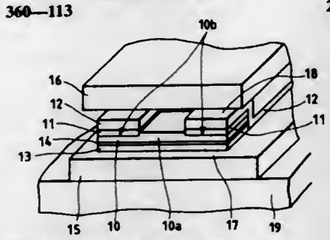
1. A disc drive system for writing data to and/or retrieving data from tracks of a media disc, the disc drive system comprising:
- a transducer for recording and/or retrieving data;
- a track accessing arm having a first end and a second end, with the second end coupled to the transducer;
- an actuator spindle forming an axis of rotation intermediate the first end and the second end, the track accessing arm being pivotally mounted to the actuator spindle;
- a back iron having a first gap surface;
- a front iron having a second gap surface, the second gap surface being spaced from and facing the first gap surface to form a single arcuate magnetic gap space, the single magnetic gap space having a first end at a first arcuate location of the single magnetic gap space and a second end at a second arcuate location of the single magnetic gap space;
- an actuator coil having a generally uniform thickness and a first segment and a second segment at different locations on the actuator coil, the actuator coil being coupled to the first end of the track accessing arm to position the first and second segments in the single magnetic gap space for arcuate travel therein to rotate the track accessing arm about the axis of rotation;
- a first magnet for providing a first magnetic field passing through the first segment of the actuator coil;
- a second magnet for providing a second magnetic field passing through the second segment of the actuator coil, the first and second magnetic fields being generally in opposite directions across the single magnetic gap space to form a first flux loop across the single magnetic gap space between the first and second ends;
- first flux conduction means connected between the back iron and the front iron at the first end of the single magnetic gap space, for conducting flux between the back and front irons to form a second flux loop at the first end of the single magnetic gap space; and
- second flux conduction means connected between the back iron and the front iron at the second end of the single magnetic gap space, for conducting flux between the back and front irons to form a third flux loop at the second end of the single magnetic gap space, wherein the back iron, the front iron, and the first flux conduction means are formed from a single piece of material having ferromagnetic properties and the second flux conduction means is formed from a material having ferromagnetic properties.

5,600,518

MAGNETORESISTIVE HEAD HAVING A STEPPED MAGNETORESISTIVE FILM ELEMENT

Naoki Koga, Tamana, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 23, 1994, Ser. No. 216,387
Claims priority, application Japan, Mar. 24, 1993, 5-064937
Int. Cl.[6] G11B *5/39*
U.S. Cl. 360—113 **26 Claims**



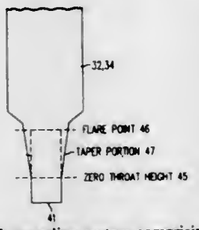
7. A magnetoresistive head comprising:
- a substrate;
- a first magnetic shielding member arranged on said substrate;
- a magnetoresistive element film provided on said first magnetic shielding member, said magnetoresistive element film including first and second opposed surfaces, said second surface being flat, said magnetoresistive element having first and second stepped portions formed on said first surface, each of said first and second stepped portions having a thickness smaller than that of a third portion defined on said first surface of said magnetoresistive element film, said third portion being other than the first and second stepped portions;
- first and second antiferromagnetic films provided on the first and second stepped portions of said magnetoresistive element film;
- first and second lead layers mounted on said first and second antiferromagnetic films for supplying a sense current to said magnetoresistive element film; and
- a second shielding member arranged on said first and second lead layers.

5,600,519

CONTROLLED SATURATION THIN FILM MAGNETIC WRITE HEAD

David E. Heim, Redwood City, and Mason L. Williams, III, San Jose, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 6, 1995, Ser. No. 399,781
Int. Cl.[6] G11B *5/147;5/187*
U.S. Cl. 360—126 **6 Claims**



1. A magnetic disk recording system comprising:
- a magnetic recording medium having a recording surface;
- a thin film magnetic head and an air bearing slider supporting said head;
- head arm means for supporting said air bearing slider with said magnetic head closely adjacent to the recording surface of said magnetic recording medium;
- accessing means for supporting said head arm means and for moving said head arm means relative to the recording surface of said magnetic recording medium;

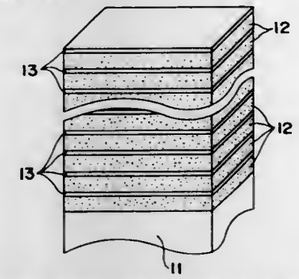
said thin film magnetic head comprising;
- a first magnetic yoke layer extending from a pole tip region to a back gap region;
- a second magnetic yoke layer which is separated by a predetermined small distance from said first magnetic yoke layer at said pole tip region to produce a transducing gap, said second magnetic yoke layer begins to diverge from said first magnetic yoke layer at a zero throat point to form a space between said magnetic yoke layers at a central region and is in contact with said first magnetic yoke layer at said back gap region;
- said first and said second magnetic yoke layers extending from said zero throat point toward said back gap region to a flare point at which said magnetic yoke layers increase progressively in width;
- a yoke structure being activated by a conductor coil deposited in the space between said first and said second magnetic yoke layers;
- the width of said first and said second magnetic yoke layers, between said zero throat point and said flare point, increases gradually by a chosen amount to equalize the flux density from said zero throat point to said flare point such that, at a write current applied to said coil, the length of the magnetic yoke layers from said zero throat point to said flare point is saturated simultaneously.

5,600,520

LAMINATED MAGNETIC HEAD CORE

Isamu Aokura, Osaka; Kumio Nago, Nara-ken; Hitoshi Yamanishi, Higashiosaka; Hiroshi Sakakima, Tsuzuki-gun, and Youichi Ohnishi, Higashiosaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 181,312, Jan. 13, 1994, abandoned.
This application May 16, 1995, Ser. No. 441,947
Claims priority, application Japan, Jan. 14, 1993, 5-004641
Int. Cl.[6] G11B *5/147*
U.S. Cl. 360—126 **2 Claims**



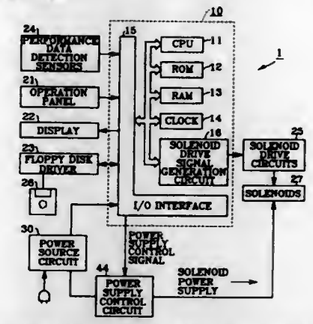
1. A laminated magnetic head core wherein Fe—M—N system soft magnetic thin films wherein M is being at least one element selected from the group consisting of Ta, Nb, Zr, and Hf and non-magnetic insulating films are alternately laminated, wherein,
- each of the soft magnetic thin films being 0.2–10 μm thick, and each of the non-magnetic insulating films being 10 through 1000 nm thick, each of the soft magnetic thin films having an axis of easy magnetization within its film surface which is oriented in a direction different from the axes of easy magnetization within the film surface of the adjacent soft magnetic thin films, thus providing enhanced isotropic magnetic permeability and reduced eddy current loss over cores wherein said axes of easy magnetization are oriented in the same direction within each film surface.

5,600,521

AUTOMATIC PERFORMING APPARATUS WITH POWER SUPPLY CONTROLLER

Tetsusai Kondo, Hamamatsu, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Shizuoka-ken, Japan

Continuation of Ser. No. 370,556, Jan. 9, 1995, abandoned, which is a continuation of Ser. No. 950,829, Sep. 24, 1992, abandoned. This application Apr. 26, 1996, Ser. No. 639,380
Claims priority, application Japan, Dec. 13, 1991, 3-330686
Int. Cl.[6] H02H *7/00*
U.S. Cl. 361—18 **11 Claims**



1. An automatic performing apparatus for executing at least one of performance recording and performance reproduction, said automatic performing apparatus comprising:
- drive means, coupled to at least one of a recording unit and a reproduction unit, for providing a control signal to at least one of said recording unit and said reproduction unit;
- a power source coupled to said drive means for supplying power to said drive means;
- controller means being coupled to said drive means for controlling operation of said drive means, and said controller means providing a diagnostic signal which fluctuates between a high level and a low level, during normal operation of said controller means, and lacking said fluctuation, during abnormal operation of said controller means; and
- power supply control means being coupled to said controller means for receiving said diagnostic signal from said controller means, and said power supply control means being coupled between said power source and said drive means for controlling, depending upon said diagnostic signal, power supply to said drive means such that,
  - i) when said diagnostic signal fluctuates, said power supply control means facilitates the supply of power from said power source to said drive means, and
  - ii) when said diagnostic signal lacks said fluctuation, said power supply control means interrupts the supply of power from said power source to said drive means.

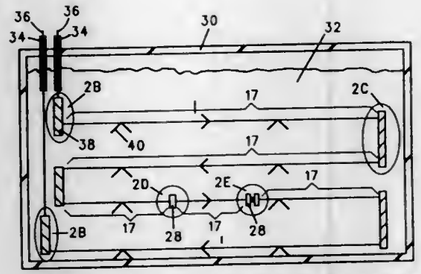
5,600,522

HIGH TEMPERATURE SUPERCONDUCTING FAULT CURRENT LIMITER

John R. Hull, Hinsdale, Ill., assignor to ARCH Development Corporation, Chicago, Ill.

Continuation of Ser. No. 923,712, Jul. 31, 1992, abandoned.
This application Aug. 18, 1994, Ser. No. 292,410
Int. Cl.[6] H02H *9/00*
U.S. Cl. 361—19 **21 Claims**

1. A fault current limiter for a circuit having an electrical current carrying path, comprising:
- a high temperature superconductor disposed in said current carrying path, said superconductor cooled below its critical temperature to maintain the superconducting electrical properties during operation as said fault current limiter;
- said superconductor comprising a plurality of segments, at least one of said segments consisting of multiple parallel conduct-



ing path elements having open space between each of said elements in the at least one segment and said superconductor segments being unsupported along most of each of the segments, thereby allowing unobstructed access for a coolant along most of said segment; and

said segments being supported at the ends of each of said segments by means for supporting which comprises metallic conductive means for conducting the electrical current through an unbroken one of said parallel conducting path elements in said segments in the event one of said parallel conducting path elements within one of said segments breaks.

5,600,523

EARTH LEAKAGE BREAKER

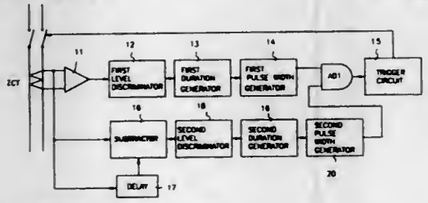
Kyung A. Park, Kyungsangbook-Do, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Cheongju, Rep. of Korea

Filed Dec. 29, 1994, Ser. No. 365,870

Claims priority, application Rep. of Korea, Dec. 29, 1993, 30626/1993

Int. Cl.[6] H02H *9/08*

U.S. Cl. 361—42 **11 Claims**



4. A breaker circuit comprising:

means for detecting a current difference among or between a plurality of current lines, and outputting a first signal;

means for generating a second signal of a first predetermined period in response to said first signal from said detecting means;

means for delaying said first signal by a predetermined cycle;

means for generating a third signal of a second predetermined period in response to said delayed first signal from said delaying means, said means for generating said third signal having one of

i) a subtractor which performs a substraction between levels of said first signal and said delay first signal, and

ii) means for converting a phase of said first signal by about 180 degrees, and an adder which performs an addition between levels of said first signal and said delayed first signal;

means for performing a logical operation between said second and third signals, and outputting a fourth signal; and

means, responsive to a reception said fourth signal, for disconnecting said plurality of current lines when said current difference indicates an electric leakage.

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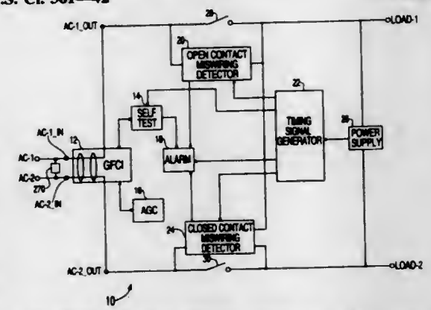
INTELLIGENT GROUND FAULT CIRCUIT INTERRUPTER

Benjamin Neiger, New York; Bernard Gershen, Centerport, and Saul Rosenbaum, East Meadow, all of N.Y., assignors to Leviton Manufacturing Co., Inc., Little Neck, N.Y.

Filed May 4, 1995, Ser. No. 435,021

Int. Cl.[6] H02H *3/28*

U.S. Cl. 361—42 **17 Claims**



1. An intelligent circuit interrupt system electrically connected load upon detection of an interrupt condition, comprising:

circuit interrupt means including line and load side phase and neutral ports, wherein said line side phase and neutral ports are electrically connected, respectively, to phase and neutral terminals of said AC source and said circuit interrupt mean generate an interrupt signal for interrupting said AC flow at detection of said interrupt condition;

a relay switch including a relay coil and phase and neutral contacts, wherein line and load ends of said phase contact are electrically connected, respectively, between said interrupt means load side phase port and a phase terminal of said load, line and load ends of said neutral contact are electrically connected, respectively, between said interrupt means load side neutral port and a neutral terminal of said load and said relay coil is electrically coupled between said load ends of said phase and neutral contacts for controlling said contacts in response to said interrupt signal;

an open-contact miswiring detector (OCMD) electrically connected to said line and load ends of one of said phase and neutral contacts for detecting a miswiring condition when said contacts are in an open state;

a closed-contact miswiring detector (CCMD) electrically connected to said load end of said phase contact and to said line and load ends of one of said neutral and phase contacts for detecting a miswiring condition when said contacts are in a closed state;

a timing signal generator electrically connected to said open and closed contact miswiring detectors for generating system timing signals;

a test circuit electrically coupled to said interrupt means and responsive to said timing signal generator for regularly testing said interrupt means' operability;

an alarm circuit electrically responsive to each of: said test circuit, said timing signal generator, said open contact miswiring detector and said closed contact miswiring detector for communicating at least one of: an open-contact miswiring condition, a closed-contact miswiring condition, an operational failure condition, and a need for external testing condition; and

a power supply electrically connected between said load ends of said phase and neutral contacts, and to said timing signal generator.

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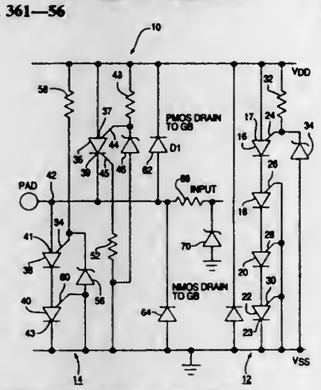
ESD PROTECTION CIRCUIT FOR INTEGRATED CIRCUIT

Leslie R. Avery, Flemington, N.J., assignor to David Sarnoff Research Center Inc, Princeton, N.J.

Filed Aug. 17, 1994, Ser. No. 291,809

Int. Cl.[6] H02H *9/04*

U.S. Cl. 361—56 **20 Claims**



1. An ESD protection circuit comprising:

a pair of power lines

a plurality of SCRs electrically connected in series between said power lines, each of said SCRs having a gate;

a zener diode electrically connected between the gate of the SCR at one end of the plurality of SCRs connected in series and one of the power lines; and

means electrically connecting the gates of each of the other SCRs in the series other than the one SCR at the one end of the series to said one power line.

5,600,526

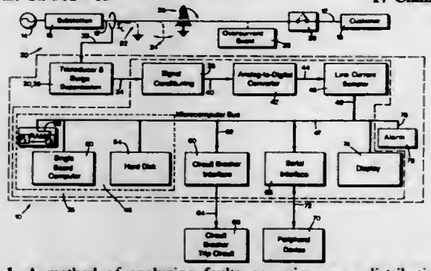
LOAD ANALYSIS SYSTEM FOR FAULT DETECTION

B. Don Russell; B. Michael Aucoin, both of College Station, and Carl L. Benner, Bryan, all of Tex., assignors to The Texas A & M University System, College Station, Tex.

Filed Oct. 15, 1993, Ser. No. 138,144

Int. Cl.[6] H02H *3/00*

U.S. Cl. 361—65 **17 Claims**



1. A method of analyzing faults occurring on a distribution circuit coupled to an AC power source, comprising the steps of:

monitoring a load current flowing over the distribution circuit;

analyzing the load current over time, said analyzing step including

a first stage of analyzing the load current for arcing, load loss, and overcurrent level to produce a first stage analysis result; and

a second stage of analyzing the load current for arcing and one of load loss and overcurrent level to produce a second stage analysis result;

distinguishing, based on the analysis of the load current, the difference between a first type of fault requiring de-energization of the distribution circuit, and a second type of fault for which the distribution circuit remains energized;

in response to the first stage analysis result, issuing a pre-action command comprising an alarm for the second type of fault, and a trip-ready pre-action command for the first type of fault; and

in response to the second stage analysis result, issuing an action command comprising an alarm for the second type of fault, a trip command for the first type of fault, and a wait command to allow time for operation of any overcurrent protection devices installed on the distribution circuit.

5,600,527

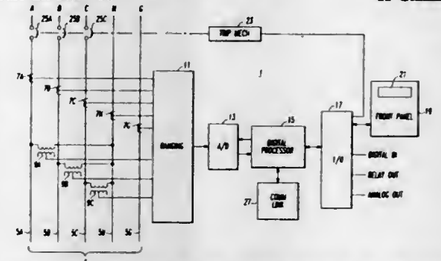
CIRCUIT INTERRUPTER PROVIDING PROTECTION AND WAVEFORM CAPTURE FOR HARMONIC ANALYSIS

Joseph C. Engel, Monroeville; Gary F. Saletta, Irwin, and Richard A. Johnson, Hopewell Township, all of Pa., assignors to Eaton Corporation, Cleveland, Ohio

Filed Dec. 22, 1994, Ser. No. 363,193

Int. Cl.[6] H02H *3/00*

U.S. Cl. 361—93 **11 Claims**



1. A circuit interrupter for interrupting current in an electrical system, said circuit interrupter comprising:

separable contacts interrupting said current when opened;

sensing means sensing waveforms in said electrical system including at least one current waveform;

sampling means sampling said waveforms sensed by said sensing means at sampling instants to generate digital samples of said waveforms including current samples of said at least one current waveform; and

processing means having protection means operating in a protection mode to trip said separable contacts open in response to a selected current/time characteristic of said current waveform repetitively determined from said digital samples, and waveform capture means operating in a capture mode to store said digital samples of said waveform, wherein said processing means comprises sampling instant generating means generating sampling instants at a first sampling rate for said protection mode, and at a second sampling rate for said waveform capture means operating in said capture mode.

5,600,528

HEATER CUT OFF CIRCUIT AND METHOD

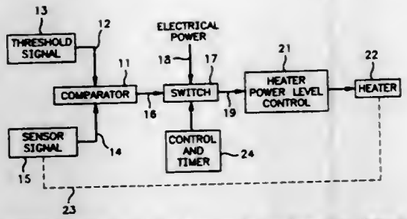
Malcolm M. McQueen, Fallbrook, Calif., assignor to Fluid Components Intl, San Marcos, Calif.

Filed Mar. 31, 1995, Ser. No. 414,117

Int. Cl.[6] H02H *5/04*

U.S. Cl. 361—103 **16 Claims**

1. In combination with a thermal sensor of the heated type having an output signal and having means for heating said sensor, the magnitude of the output signal of said thermal sensor being related to the temperature of said thermal sensor, apparatus for



preventing damage to said sensor or its environment from overheating, said apparatus comprising:

an electrical signal comparator having at least two input terminals and at least one output terminal;

means for establishing a first electrical signal corresponding to a predetermined temperature threshold level and connecting said first signal to a first said comparator input terminal;

means for coupling said thermal sensor output signal to a second said comparator input terminal;

means for applying electrical power to said heating means: and

switch means coupled to said output terminal of said comparator, said switch means being connected between said electrical power applying means and said heating means, said switch means selectively coupling said means for applying electrical power to said heating means pursuant to the output signal from said comparator, said comparator being configured to provide an output signal on said output terminal when said thermal sensor output signal exceeds said first signal by a predetermined amount to disconnect said electrical power applying means from said heating means.

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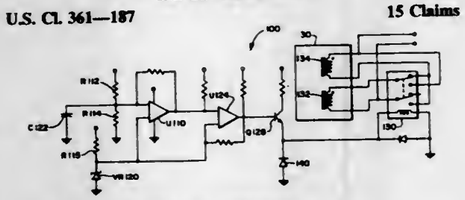
ELECTROMAGNETIC LOCK

Peter S. Conklin, Simsbury, Conn., assignor to Harrow Products, Inc., Grand Rapids, Mich.

Continuation of Ser. No. 980,774, Nov. 24, 1992. This application May 16, 1995, Ser. No. 442,396

Int. Cl.[6] H01H *47/28*

U.S. Cl. 361—187 **15 Claims**



1. An electromagnetic lock comprising:

electromagnet means comprising first and second coils energizable by a supply voltage to produce a magnetic field;

series means for connecting said first and second coils in series;

parallel means for connecting said first and second coils in parallel;

relay means for selectively activating said series means or said parallel means in response to an input;

reference voltage means for establishing a reference voltage;

comparator means for comparing said supply voltage to said reference voltage and producing an output signal;

output means for applying said output signal to said input, so that if said supply voltage is in a first range, said coils are connected in series, and if said supply voltage is in a second range, said coils are connected in parallel.

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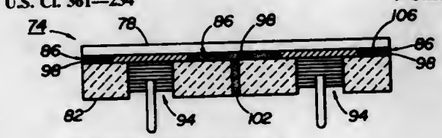
ELECTROSTATIC CHUCK

Peter C. Smith, Burlingame, Calif., assignor to The Morgan Crucible Company plc, Windsor, England

Continuation-in-part of Ser. No. 925,086, Aug. 4, 1992, Pat. No. 5,368,220. This application Jun. 10, 1994, Ser. No. 258,232

Int. Cl.[6] H02N *13/00*

U.S. Cl. 361—234 **9 Claims**



1. An electrostatic chuck comprising:

a. first and second members;

b. an electrode comprising a metal interposed between and bonding portions of the first and second members by chemically reacting with them; and

c. a non-conductive material, selected from the group consisting of inorganic dielectric filler and organic dielectric filler, interposed between portions of the first and second members not bonded by the metal.

5,600,531

CAPACITOR FOR MAGNETRON OF MICROWAVE OVEN

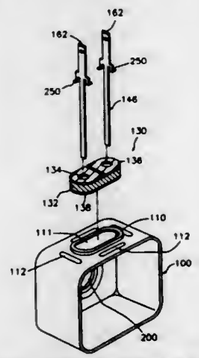
Wookeum Jun, Kyeongki-do, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Sep. 16, 1994, Ser. No. 307,205

Claims priority, application Rep. of Korea, Sep. 18, 1993, 93-18958; Sep. 18, 1993, 93-18959; Sep. 18, 1993, 93-18962

Int. Cl.[6] H01G *4/35;* **H05B** *6/72*

U.S. Cl. 361—302 **12 Claims**



1. A capacitor for a magnetron, said capacitor comprising:

a shielding case having an elliptic opening on a side wall thereof and a projected portion formed along said elliptic opening by bending out a circumference portion of said elliptic opening, and a recess formed on an inner surface thereof corresponding to said projected portion;

an elliptic cylindrical ceramic dielectric having a size corresponding to said elliptic opening of said shielding case, and having a pair of through holes;

a pair of separated electrodes separately formed on an upper surface of said ceramic dielectric;

a common electrode formed on a lower surface of said ceramic dielectric and oppositely from said separated electrodes;

a pair of through conductors passing through said through holes and connected to a choke coil of the magnetron;

an insulation resin case with a lower portion secured on said projected portion of said shielding case for surrounding an outside and inside of said ceramic dielectric; and

an insulation cylinder with its upper portion secured in said recess of said shield case for surrounding said through conductors.

5,600,532

THIN-FILM CONDENSER

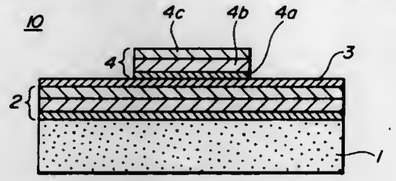
Arakawa Michiya, and Takada Toshikatsu, both of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Apr. 10, 1995, Ser. No. 419,408

Claims priority, application Japan, Apr. 11, 1994, 6-098179

Int. Cl.[6] H01G *9/008*

U.S. Cl. 361—305 **21 Claims**



1. A thin-film condenser comprising:

a lower electrode layer formed on an insulation substrate;

a thin-film dielectric layer formed on said lower electrode layer; and

an upper electrode layer formed on said thin-film dielectric layer;

wherein said lower electrode layer includes a lower electrode surface layer section forming a surface in contact with said thin-film dielectric layer, and said lower electrode surface layer comprises a metal having a recrystallization temperature within the range of 623 K. to 933 K.

5,600,533

MULTILAYER CERAMIC CAPACITOR HAVING AN ANTI-REDUCING AGENT

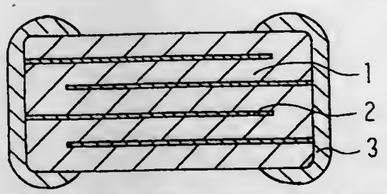
Harunobu Sano, Kyoto, and Yukio Hamaji, Shiga, both of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Jun. 7, 1995, Ser. No. 478,026

Claims priority, application Japan, Jun. 23, 1994, 6-141799

Int. Cl.[6] H01G *4/008;4/018*

U.S. Cl. 361—321.4 **4 Claims**



1. A multilayer ceramic capacitor comprising dielectric ceramic layers, internal electrodes disposed between said dielectric ceramic layers, and an external electrode connected to said internal electrodes,

said dielectric ceramic layers comprising barium titanate, a bismuth compound, and an anti-reducing agent,

said internal electrodes comprising nickel or a nickel alloy;

wherein said anti-reducing agent is represented by the general formula:

$$\alpha MO_x+\beta RO+\gamma B_2O_3+(100-\alpha-\beta-\gamma)SiO_2$$

wherein MOx represents one member selected from the group consisting of MnO_2, Li_2O, and ZnO; R represents at least one member selected from the group consisting of Mg, Sr, Ca, and Ba; and α, β, and γ, each indicating a respective percentage by mole, represent numbers in the ranges of $5 \leqq \alpha \leqq 20$, $10 \leqq \beta \leqq 60$, and $20 \leqq \gamma \leqq 35$, respectively.

5,600,534

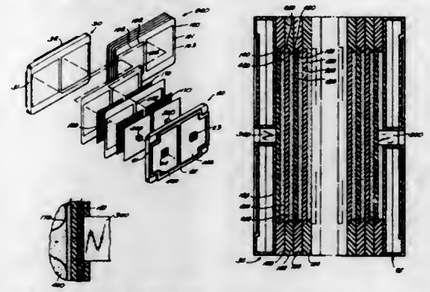
CAPACITOR HAVING NON-CONDUCTIVE PLASTIC FRAMES

Wayne W. Blazek; James J. Bolstad, both of Milwaukee; Phillip A. Eidler, Muskego; Carl D. Jahns, Franklin; Ronald C. Miles, Milwaukee, all of Wis.; Robin A. Vidas, Fenton, Mich., and Peter J. Lex, Wauwatosa, Wis., assignors to ZBB Technologies, Inc., Wauwatosa, Wis.

Filed Oct. 12, 1995, Ser. No. 542,287

Int. Cl.[6] H01G *9/00*

U.S. Cl. 361—502 **25 Claims**



1. A capacitor comprising:

a first plurality of non-conductive plastic frames having at least one conductive electrode insert mounted therein, and wherein the at least one conductive electrode insert has a first surface and an opposite second surface;

a second plurality of non-conductive plastic frames each having at least one separator insert borne therein, and wherein each of the second plurality of non-conductive plastic frames is positioned in sandwiched relation between two adjacent non-conductive frames of the first plurality of non-conductive frames;

a carbon paste positioned between each of the frame-mounted conductive electrode inserts and each of the frame-mounted separator inserts, the frame-mounted conductive electrodes and separators and the carbon paste forming at least one capacitor cell; and

first and second terminal electrodes, each terminal electrode electrically coupled to the at least one capacitor cell and including at least one conductive electrode insert having a current collector, and a terminal for electrically coupling the capacitor to external circuits;

wherein the capacitor is operable to store electrostatic energy.

5,600,535

AMORPHOUS THIN FILM ELECTRODE MATERIALS FROM HYDROUS METAL OXIDES

T. Richard Jow, Chatham, and Jian-Ping Zheng, Estontown, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 9, 1994, Ser. No. 353,418

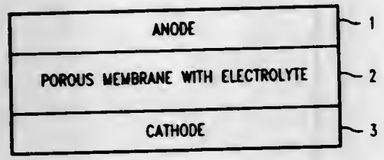
Int. Cl.[6] H01G *9/00;9/04;9/042*

U.S. Cl. 361—503 **3 Claims**

1. A capacitor comprising:

an anode comprising a first thin film of an amorphous mixed metal oxide on a first substrate, wherein the first thin film of amorphous mixed metal oxide is noncrystalline,

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an electrolyte; and

a cathode comprising a second thin film of an amorphous mixed metal oxide on a second substrate, wherein the second thin film of amorphous mixed metal oxide is noncrystalline.

5,600,536

CONNECTOR BAR FOR LOAD CENTER INTERIOR ASSEMBLY

Norman M. Newsome; Jeffrey O. Sharp, both of Lexington; Michael R. Harris, Winchester, and Robert B. Lamar, Jr., Midway, all of Ky., assignors to Square D Company, Palatine, Ill.

Filed Sep. 18, 1995, Ser. No. 529,705
Int. Cl.[6] H02B *1/20*
U.S. Cl. 361—648 **18 Claims**

1. A connector bar assembly for making electrical connections to terminals having a lug body with an externally accessible interior cavity and a binding screw, the connector bar assembly comprising:

a lug body having an externally accessible interior cavity;

a binding screw for engaging tough the lug body to decrease the size of the interior cavity;

a connector bar having an elongated body having two ends and made of electrically conductive material;

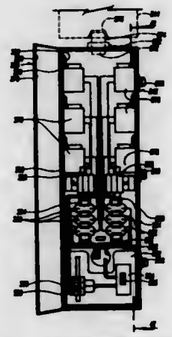
at least one of the ends having a solid cross-section with a configuration which creates less distortion in the sides of the lug body compared to a round cross-section configuration when the binding screw contacts the one end with torque applied for making the pre-determined mechanical and electrical connection.

5,600,537

BALLAST BOX FOR INTEGRATED LOCATION OF BALLASTS AND ELECTRICAL CONNECTIONS

Myron K. Gordin, and James L. Drost, both of Oskaloosa, Iowa, assignors to Musco Corporation, Oskaloosa, Iowa

Division of Ser. No. 278,999, Jul. 22, 1994, which is a continuation of Ser. No. 652,557, Feb. 6, 1991, which is a continuation-in-part of Ser. No. 472,822, Jan. 31, 1992. This application Jan. 3, 1995, Ser. No. 367,959
Int. Cl.[6] H05K *5/04*; F21V *21/14*
U.S. Cl. 361—674 **13 Claims**



1. A ballast box for use with a light pole elevating a plurality of light fixtures comprising:

a housing having front, back, top, bottom, and side walls defining an interior chamber;

a hingeable door allowing access to the interior chamber;

a top section in the interior chamber including ballasts mounted on ballast mounts and capacitors mounted on capacitor mounts;

a bottom section in the interior chamber including circuit breakers mounted on a circuit breaker mount, and disconnect members mounted on disconnect mounts;

a heat insulating wall substantially separating the top and bottom sections;

wiring passing between the top and bottom sections and interconnecting the ballasts, capacitors, circuit breakers, and disconnects; and

an opening in the ballast box housing to allow communication of wires into and out of the top and bottom sections of the interior chamber of the ballast box.

5,600,538

PERSONAL COMPUTER AND HOUSING STRUCTURE HAVING CIRCUIT BOARD REMOVABLE HORIZONTALLY AND SUB-CHASSIS REMOVABLE FROM THE TOP THEREOF

Eric Xanthopoulos, Santa Clara, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

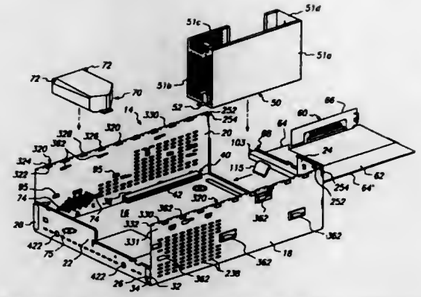
Filed Jul. 8, 1994, Ser. No. 272,322
Int. Cl.[6] G06F *1/16*; H05K *7/14*
U.S. Cl. 361—683 **9 Claims**

1. A computer comprising:

a housing including a plurality of metallic walls defining an enclosed chamber, two of said walls being removable to expose a top and a rear, respectively, of said chamber;

a circuit board disposed in said chamber and removable horizontally through said rear of said chamber when said rear is exposed;

a sub-chassis disposed in said chamber and being removable through said top of said chamber when said top is exposed, said sub-chassis including a pair of horizontally spaced connecting elements;



first and second horizontally spaced functional components removably secured to respective ones of said connecting elements; and

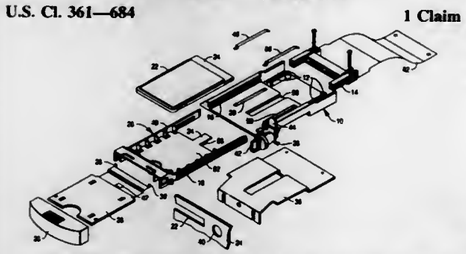
a third functional component disposed beneath said sub-chassis and being removable through said top of said chamber when said top is exposed and said sub-chassis is removed.

5,600,539

SECURE INTERFACE CARD EXTRACTOR/EJECTOR MECHANISM

George Heys, Jr., Dacula; Horng J. Lin, Lawrenceville; Brian A. Wong Shui, Atlanta, and Andrew C. Zeik, Duluth, all of Ga., assignors to AT&T Global Information Solutions Company, Dayton, Ohio

Filed Oct. 11, 1994, Ser. No. 321,198
Int. Cl.[6] H05K *7/14*; G06F *1/16*
U.S. Cl. 361—684 **1 Claim**



1. Apparatus for retaining and securing removable interface cards in a data processing device, comprising:

a drawer guide mounted within the data processing device and having a support surface, a connector mount and a pair of tracks;

an electrical connector mounted on said connector mount;

a drawer slide having rails which ride in the tracks of said drawer guide;

wherein said drawer guide and said drawer slide are provided with interlocking elements to prevent the drawer slide from being accidentally removed from the drawer guide, including a stop in the drawer guide and a hook on the drawer slide;

an interface card containing electronic circuitry positioned in said drawer slide and having an electrical connector at one end engageable with said electrical connector on the connector mount; and

a ground plate positioned on said drawer slide adjacent to said interface card for providing electrostatic discharge protection for the electronic circuitry contained in the interface card;

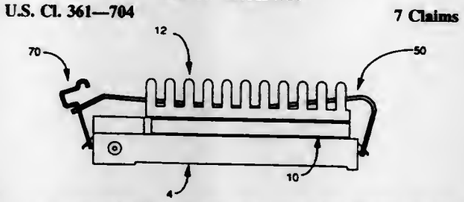
wherein the hook on the drawer slide extends through an aperture in the ground plate.

5,600,540

HEAT SINK AND RETAINER FOR ELECTRONIC INTEGRATED CIRCUITS

Michael L. Blomquist, 3474 Cart Ct., Newbury Park, Calif. 91320

Filed May 15, 1995, Ser. No. 441,274
Int. Cl.[6] H05K *7/20*
U.S. Cl. 361—704 **7 Claims**



1. In combination, a heat sink and a heat sink retainer clip for use in conjunction with an electronic device, such as a semiconductor, to provide cooling of the device, the device being mounted on a rectangular socket with opposing sidewalls, at least two opposed side walls having lugs protecting laterally outward from the walls, the heat sink comprising a flat plate with a plurality of fins protecting upwardly from the top surface of the plate, a central section of the plate being free of the fins to receive the clip, the retainer clip comprising: a first member including a retaining portion and a biasing portion:

(i) said biasing portion received in said central section of the plate and extending substantially across the plate for biasing the heat sink against the device;

(ii) said retaining portion having an opening for receiving the lug on the socket side wall and connected to said biasing portion adjacent one end thereof;

(iii) said biasing portion, at the end opposite to the retaining portion, being bifurcated to form two arms adjacent the free end; and

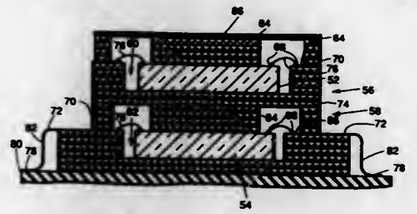
a second member, rotatably and loosely supported by the free end of said biasing portion, including at least two openings, a lower of said openings for receiving the lug on the opposite side wall of the socket, the upper opening receiving the free ends of the arms on the biasing member.

5,600,541

VERTICAL IC CHIP STACK WITH DISCRETE CHIP CARRIERS FORMED FROM DIELECTRIC TAPE

Robert Bone, Laguna Niguel, and Kirti Vora, Irvine, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 163,463, Dec. 8, 1993, abandoned. This application Aug. 3, 1995, Ser. No. 510,735
Int. Cl.[6] H05K *7/20*
U.S. Cl. 361—707 **33 Claims**



1. A vertical integrated circuit (IC) chip stack, comprising:

a plurality of vertically stacked chip carriers, each carrier comprising:

a dielectric body having a floor and side walls bounding a cavity,

an IC chip lodged in said cavity wherein the upper surface of said chip, except for the uppermost chip in the stack, is in

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direct and thermal contact with the floor of the carrier immediately above it in the stack,

electrical routing extending through the carrier body, and

electrical connectors connecting said IC chip to its carrier's routing,

electrical intercarrier interconnects between the routings for adjacent carriers, and

stack contacts connected to respective intercarrier interconnects for making external connections to the stack.

5,600,542

MODULAR AUTOMATION DEVICE WITH A LOCKING MEMBER

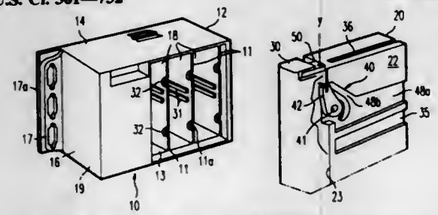
Pascal Malgouires, Cannes la Boca, France, assignor to AEG Schneider Automation, Sophia Antipolis, France

Filed May 4, 1995, Ser. No. 433,964

Claims priority, application France, May 6, 1994, 94 05713

Int. Cl.[6] H05K *5/00*; **H01R** *13/629;13/62*

U.S. Cl. 361—732 **12 Claims**



1. Modular automation device, comprising:

a chassis which has horizontal and vertical walls and which delimits an internal volume fitted with rectilinear guide members,

a plurality of modules provided at a rear portion thereof with a connector and at a front portion thereof with one of a connector and a terminal block, each having a locking member and said modules being insertable into the internal volume of the chassis by the guide members, each said modules being immobilized in a connection position by said locking member, wherein:

the internal volume of the chassis is divided into compartments separated by vertical partitions and accommodating at least one of said modules,

the locking member comprises a flat lever pivoted on a journal attached to one of a side wall of the module and one of said vertical partitions, said flat lever being pivoted between an unlocked position and a locked position, and

said one of said vertical partitions and said side wall comprises a fixed locking member projecting towards an interior portion of the compartment, the flat lever cooperating with the fixed locking member as a cam up to the locked position wherein a recess is located in one of a side portion of the module and the side wall and within which the flat lever is both located and pivoted so as to cooperate with the fixed locking member.

5,600,543

IC CARD

Yoshikado Sanemitsu, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 14, 1995, Ser. No. 572,647

Claims priority, application Japan, Aug. 24, 1995, 7-215762

Int. Cl.[6] H05K *1/14*

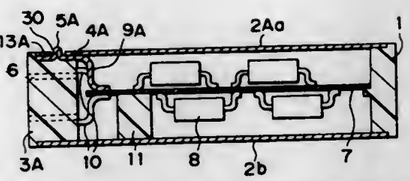
U.S. Cl. 361—737 **14 Claims**

1. An IC card comprising:

an approximately U-shaped frame,

a connector housing fastened to an open end of said frame,

a metal member fastened to a face of said connector housing adjacent to the face into which connector pins are inserted,



said metal member being made of a conductive metal plate, having at least one protrusion, and being used for reducing the impedance of earth terminals, and

a pair of metal panels holding between themselves said frame to which said connector housing is fastened,

wherein one of said metal panels has through-holes in its end at said connector housing for inserting said protrusions thereto to make them project therethrough, and said one of metal panels, in which said protrusions project through said through-holes, is fastened to said frame, while said one of metal panels holds said metal member between itself and said connector housing.

5,600,544

SHIELDING DEVICE FOR A BACKPLANE PLUG CONNECTOR

Erich Thalhammer, München, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

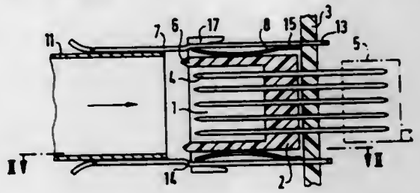
PCT No. PCT/EP93/02761, § 371 Date Apr. 27, 1995, § 102(e) Date Apr. 27, 1995, PCT Pub. No. WO94/10726, PCT Pub. Date May 11, 1994

PCT Filed Oct. 8, 1993, Ser. No. 428,157

Claims priority, application Germany, Oct. 29, 1992, 92118540.1

Int. Cl.[6] H05K *9/00*

U.S. Cl. 361—816 **11 Claims**



1. In a shielding device for a plug connector of a backplane printed circuit board of a mounting rack, the shielding device along the side walls of a plug housing of a plug connector having shielding metal sheets which extend perpendicular to the backplane printed circuit board which has a ground layer and said sheets having a multiplicity of spring tongues, which extend in the insertion direction and can make contact with a shielding housing of a plug-on mating plug, the improvement comprising the shielding metal sheets having continuously closed areas in the region for making contact with the shielding housing of the mating plug, and the spring tongues being in each case a component of at least one contact spring strip which bears in a contact-making manner on the inner surface of a side of the shielding metal sheet.

5,600,545

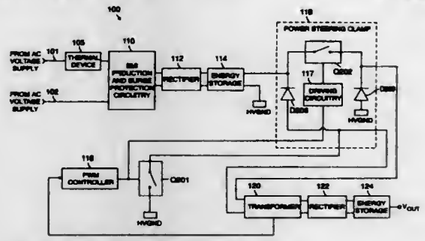
APPARATUS AND METHOD FOR A SWITCHING POWER SUPPLY WITH A POWER STEERING CLAMP

Joseph A. Simpkins, West Chester, Pa., assignor to Mars, Incorporated, McLean, Va.

Filed Jan. 23, 1995, Ser. No. 376,932

Int. Cl.[6] H02M *3/335*

U.S. Cl. 363—21 **21 Claims**



1. A switching power supply comprising:

energy storage means;

a pulse width modulator controller;

a first switch capable of being in open and closed positions and controlled by the pulse width modulator controller; a transformer, wherein energy flows from the energy storage means to the transformer depending on the position of the first switch, and wherein leakage energy flows out of the transformer; and

a power steering clamp Comprising a second switch, wherein the power steering clamp routes the leakage energy from the transformer to the energy storage means.

5,600,546

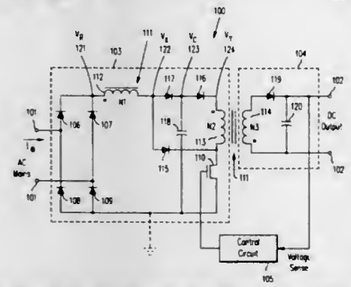
INPUT HARMONIC CURRENT CORRECTED AC-TO-DC CONVERTER WITH MULTIPLE COUPLED PRIMARY WINDINGS

Francis M. S. Ho, Sheung Shui, and Robert C. F. Lee, Causeway Bay, both of Hong Kong, assignors to Computer Products, Inc., Boca Raton, Fla.

Filed Oct. 16, 1995, Ser. No. 543,561

Int. Cl.[6] H02M *3/335*

U.S. Cl. 363—21 **19 Claims**



1. An AC-to-DC power converter having AC input current terminals, comprising:

a transformer having a first primary winding, a second primary winding and a secondary winding;

a power switch;

a storage capacitor; and

means for controlling said power switch such that said second primary winding is energized in a first time interval with energy previously stored in said storage capacitor and such that said first primary winding is energized in a second time interval with energy of a current flowing through said AC input current terminals.

5,600,547

INVERTER CIRCUIT UTILIZING A FREQUENCY SYNCHRONIZATION DEVICE

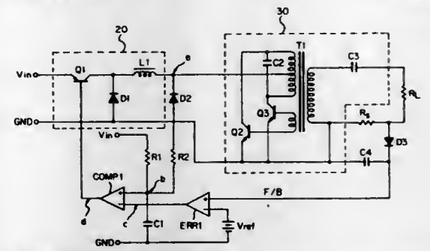
Joon H. Kim, Kyungki-do, Rep. of Korea, assignor to Samsung Electro-Mechanics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Dec. 20, 1995, Ser. No. 575,192

Claims priority, application Rep. of Korea, Dec. 21, 1994, U94 34795

Int. Cl.[6] H02M *3/335;7/00*

U.S. Cl. 363—22 **2 Claims**



1. An inverter circuit comprising:

a DC-to-DC converter for converting an input DC power supply into another DC power supply of a predetermined voltage level;

a DC-to-AC converter for converting said DC power supply from said DC-to-DC converter into an AC power supply;

feedback means for detecting said AC power supply current from said DC-to-AC converter as a voltage and feeding the detected voltage back to said DC-to-DC converter as a feedback control signal;

voltage difference detection means for detecting the voltage difference between the detected voltage and a reference voltage, and amplifying the detected voltage difference with a predetermined amplification factor;

frequency synchronizing means, coupled between said DC-to-DC converter and said DC-to-AC converter, for providing a sawtooth voltage synchronized with a frequency of a ripple voltage which is generated at an output terminal of said DC-to-DC converter due to a switching operation of said DC-to-AC converter; and

voltage comparing means for comparing said sawtooth voltage provided from said frequency synchronizing means with an output voltage of said voltage difference detection means, and providing a switching control signal to said DC-to-DC converter as a result of comparison.

5,600,548

DC CONTENT CONTROL FOR AN INVERTER

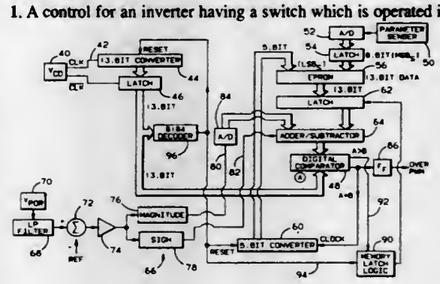
Vietson Nguyen, and P. John Dhyanchand, both of Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Aug. 11, 1994, Ser. No. 289,485

Int. Cl.[6] H02M *1/12*

U.S. Cl. 363—41 **15 Claims**

1. A control for an inverter having a switch which is operated in



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accordance with a waveform having spaced rising and falling edges wherein the inverter produces AC output power, comprising:

means for detecting the magnitude and polarity of a DC component in the AC output power; and

an adder/subtractor responsive to the detecting means for adjusting at least one of a rising and falling edge of the waveform to reduce the magnitude of the DC component.

5,600,549

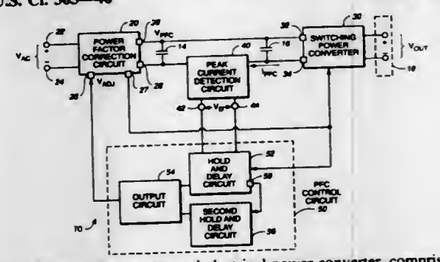
POWER FACTOR CORRECTED ELECTRICAL POWER CONVERTER

David A. Cross, Sandy Beds, United Kingdom, assignor to Astec International, Ltd., Hong Kong, Hong Kong

Filed Sep. 20, 1994, Ser. No. 309,112

Int. Cl.[6] H02M *1/12*

U.S. Cl. 363—46 **5 Claims**



1. A power factor corrected electrical power converter, comprising:

an input port for receiving an AC line voltage and one or more output ports;

a power factor correction circuit for converting said AC line voltage into an intermediate DC voltage;

a DC-to-DC converter for converting said intermediate DC voltage into one or more DC output voltages at said one or more output ports; and

a control circuit for causing said power factor correction circuit to adjust the level of said intermediate DC voltage, said control circuit responsive to a measurement signal comprising a power factor current within said power factor corrected electrical power converter, said power factor current having current peaks, the level of said current peaks being indicative of the value of said power factor of said power factor corrected electrical power converter, said control circuit causing said power factor correction circuit to raise the level of said intermediate DC voltage when a current peak of said power factor current is higher than a predetermined level.

5,600,550

POWER CONVERTER FOR RECREATIONAL VEHICLES AND THE LIKE

James C. Cook, II, Marshall, Mich., assignor to Progressive Dynamics, Inc., Marshall, Mich.

Filed Jun. 8, 1994, Ser. No. 255,470

Int. Cl.[6] H02H *7/10*

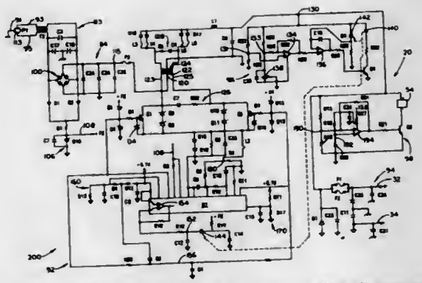
U.S. Cl. 363—50 **40 Claims**

1. A switched power converter for a recreational vehicle, said switched power converter producing a stable DC output voltage for the electrical system of the recreational vehicle from an AC power supply, the power converter comprising:

a housing;

a switched power supply positioned in said housing, said switched power supply including a switch and at least one energy storage component for converting the AC supply voltage to a regulated DC voltage at an output thereof;

a sensor positioned in said housing for generating a temperature dependent signal;



a fan positioned on said housing to move cooling air over said switched power supply;

a control circuit coupled to said sensor and to said fan, said control circuit including a first temperature detector and a controlled power supply selectively supplying power to said fan, whereby said fan is enabled by said selective power supply when said first temperature detector detects that a temperature is above a first threshold level and said fan is disabled by said selective power supply when said first temperature detector detects that the temperature is below a second threshold level; and

a second temperature detector coupled to said switched power supply, said second temperature detector inputting a temperature dependent signal to said switched power supply.

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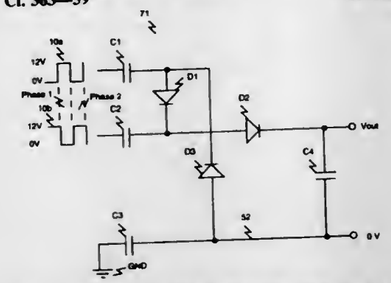
ISOLATED POWER/VOLTAGE MULTIPLIER APPARATUS AND METHOD

James J. Luscher, Jr., Madison, Wis., assignor to Schenck-Accurate, Inc., Whitewater, Wis.

Filed Aug. 2, 1995, Ser. No. 510,414

Int. Cl.[6] H02M *3/18*

U.S. Cl. 363—59 **10 Claims**



1. A voltage multiplier circuit for providing charge to a load and configured to receive a first and a second clock signal, said first and second clock signals being out of phase with respect to each other, and each having one of a first and a second voltage value, comprising:

a first stage coupled to receive the first clock signal and to store a first charge corresponding to a voltage difference between the first and second voltage values when the first clock signal is at the first voltage value, and to output the first charge when the first clock signal is at the second voltage value;

a second stage coupled to receive the second clock signal and coupled to the first stage for receiving the first charge, said second stage being configured to store a second charge corresponding to two times a voltage difference between the first and second voltage values when the first clock signal is at the first voltage value, and to output the second charge when the second clock signal is at the second voltage value;

an output capacitor coupled to receive the second charge from the second stage; and

a feedback diode coupled to the output capacitor, a reference potential and the first stage, wherein when the first clock signal is at the second voltage value, a feedback charge proportional to an amount of charge drawn off the output capacitor by the load is sent to recharge the first stage via the feedback diode.

5,600,552

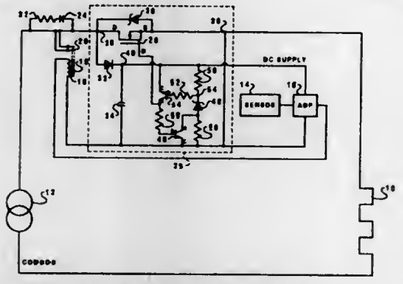
DIRECT CURRENT POWER SUPPLY FOR USE IN SERIES WITH A LOAD IN AN ALTERNATING CURRENT CIRCUIT

Kim I. McCavit, St. Joseph, and Bradford B. Jensen, Berrien Springs, both of Mich., assignors to Heath Company, Benton Harbor, Mich.

Filed Mar. 2, 1995, Ser. No. 397,838

Int. Cl.[6] H02M *7/06*

U.S. Cl. 363—89 **13 Claims**



1. A direct current power supply comprising:

a switching element;

first and second nodes for connection into an alternating current line that are selectively connectable by the switching element;

a unidirectional current path connecting the first and second nodes parallel to the switching element;

an intermediate direct current output node in the unidirectional current path; and

a voltage regulating element connected to the intermediate direct current output node and responsive to a first voltage level on the intermediate direct current output node for turning the switching element on and to a second voltage level on the intermediate direct current output node for turning the switching element off in an active alternating current line.

5,600,553

FUZZY CONTROL APPARATUS

Somei Kawasaki, Tokyo, and Toshihiko Kubo, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 13, 1992, Ser. No. 882,620

Claims priority, application Japan, May 13, 1991, 3-107308; May 14, 1991, 3-109221; May 15, 1991, 3-110346

Int. Cl.[6] G06F *19/00*

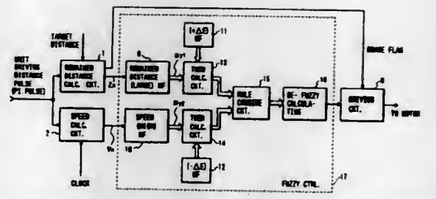
U.S. Cl. 364—148 **13 Claims**

1. A driving apparatus for controlling by a fuzzy inference, comprising:

(a) a driving object;

(b) driving means for driving said driving object;

(c) first detecting means for detecting position information of the driving object, said detecting means detecting a remained distance from a movement target position of said driving object;



(d) second detecting means for detecting a speed corresponding to said remained distance detected by said first detecting means; and

(c) control means for controlling said driving means by the following fuzzy inference rules by using said remained distance and said speed;

Rule 1: IF remained distance=(large) THEN (+ΔE)

Rule 2: IF speed=(high) THEN (−ΔE)

wherein (+ΔE) or (−ΔE) denotes a fuzzy set to express a deviation amount of a driving information, (large) denotes a fuzzy set to express that the remained distance is large and (high) denotes a fuzzy set to express that the speed is high.

5,600,554

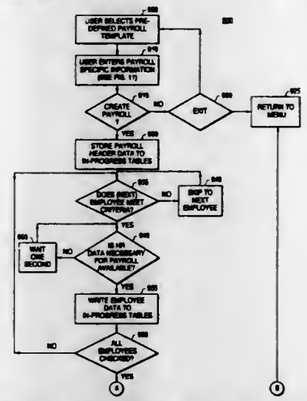
METHODS AND APPARATUS FOR SECURING, INTEGRATING, AND MANIPULATING EMPLOYEE PAYROLL AND HUMAN RESOURCE INFORMATION

Dale H. Williams, Marietta, N.Y., assignor to Crucible Materials Corporation, Syracuse, N.Y.

Filed Sep. 29, 1994, Ser. No. 314,720

Int. Cl.[6] G06F *19/00*

U.S. Cl. 395—201 **20 Claims**



1. A system for managing payroll data and human resource data for a plurality of employees, wherein the payroll data includes an employee-type and a plurality of payroll codes, and wherein the human resource data includes an employee-identifier for each of the employees, a salary for each employee, and a plurality of HR codes, the system comprising:

means for storing the payroll data and the human resource data;

means for receiving user input including a pay period;

means for integrating the payroll data and the human resource data by matching the employee-type for each employee with the employee-identifier, and for generating a payroll from the payroll data and the human resource data using the pay period and the salary for each employee; and

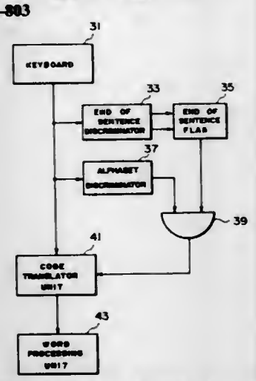
means for accessing the human resource data while generating the payroll.

5,600,555
PART ARRANGEMENT OPTIMIZING METHOD
Masanobu Takahashi, and Kazuo Kyuma, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed May 16, 1994, Ser. No. 242,888
Claims priority, application Japan, May 20, 1993, 5-139842
Int. Cl.[6] G06F *17/60*
U.S. Cl. 395—201 **9 Claims**



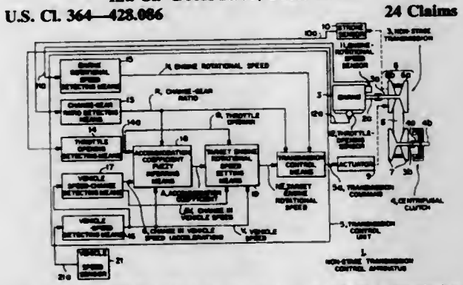
1. A part arrangement optimizing method comprising the steps of:
(a) representing, in a computer memory, each of a plurality of parts to be arranged as a block or as a block set, such that the blocks are uniform in size;
(b) determining arrangements of said blocks and block sets so that evaluation function values corresponding to the plurality of parts are minimized;
(c) determining the arrangement of said parts on the basis of block arrangements determined in step (b); and
(d) arranging said parts on the basis of the arrangement determined in step (c).

5,600,556
WORD PROCESSOR THAT AUTOMATICALLY CAPITALIZES THE FIRST LETTER OF SENTENCE
Shunpei Takenaka, Yamato, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 608,013, Nov. 1, 1990, abandoned, which is a continuation of Ser. No. 270,379, Nov. 10, 1988, abandoned, which is a continuation of Ser. No. 903,827, Sep. 3, 1986, abandoned, which is a continuation of Ser. No. 460,825, Jan. 25, 1983, abandoned. This application Dec. 9, 1993, Ser. No. 164,836
Claims priority, application Japan, Jan. 29, 1982, 57-11784; Jan. 29, 1982, 57-11788; Jan. 30, 1982, 57-12535
Int. Cl.[6] G06F *17/21*
U.S. Cl. 395—803 **2 Claims**



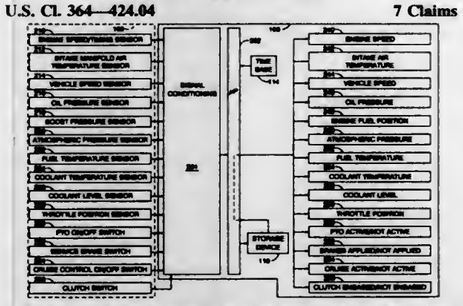
1. An electronic apparatus for forming a text, comprising:
input means for inputting a period code, lower case letter codes, upper case letter codes, a carriage return code, a space code, an end of page code, a start of text formation code, and a non-letter code;
an end of sentence discriminator, connected to said input means, comprising:
an end of sentence code discriminator, connected to said input means, producing a high level end of sentence flag setting signal on an output line thereof when discriminating one of a period code, a carriage return code, an end of page code, and a start of text formation code input by said input means, and producing a low level signal when discriminating the absence of one of the period code, the carriage return code, the end of page code, and the start of text formation code input by said input means;
a non-letter code discriminator, connected to said input means, producing a signal when receiving a non-letter code from said input means;
an inverter, connected to the output line of said end of sentence code discriminator to receive and invert the signal output from said end of sentence code discriminator;
a first AND gate connected to receive the output of said inverter and to receive the signal from said non-letter code discriminator;
a strobe signal line connected to said input means to receive the output therefrom; and
a J-K flip flop having J, K, and clear input terminals, wherein the output line of said end of sentence code discriminator is connected to said J input terminal, said strobe signal line is directly connected to said clear input terminal so that said J-K flip flop is set or reset when receiving a trailing edge of a signal on said strobe signal line, and an output line of said first AND gate is connected to said K input terminal, wherein said J-K flip flop outputs an end of sentence flag signal in response to receiving an end of sentence flag setting signal at said J terminal from said end of sentence code discriminator;
an alphabet discriminator, connected to said input means, discriminating the input by said input means of an alphabetic character and producing a signal when the input of an alphabetic character is discriminated;
a second AND gate connected to receive the output from said J-K flip flop and said alphabet discriminator; and
a code translator unit connected to receive the output from said input means and said second AND gate, said code translator unit translating a lower case character code received from said input means into an upper case character code when receiving an output from said second AND gate.

5,600,557
TRANSMISSION CONTROL APPARATUS FOR NONSTAGE TRANSMISSION OF VEHICLES
Sumitaka Ogawa, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 29, 1994, Ser. No. 282,560
Claims priority, application Japan, Aug. 9, 1993, 5-197521
Int. Cl.[6] B60K *26/00*; **F16H** *61/02*
U.S. Cl. 364—428.086 **24 Claims**



1. A transmission control apparatus for a nonstage transmission of a vehicle comprising:
a target engine rotational speed setting means for setting a target rotational speed of an engine in accordance with at least the speed of said vehicle and an accommodation coefficient indicating a running state of said vehicle;
an accommodation coefficient fuzzy-inferring means for inferring said accommodation coefficient from inputs including demanded engine output quantities, the speed of said vehicle, a change-gear ratio and a rate of change in vehicle speed on the basis of fuzzy rules; and
a change-gear ratio controlling means for controlling a change-gear ratio of said nonstage transmission on the basis of said accommodation coefficient derived by said accommodation coefficient fuzzy-inferring means to cause said engine to rotate at said target rotational speed.

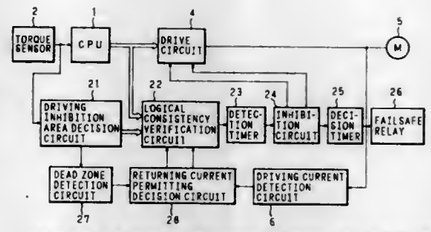
5,600,558
DATA EXCEPTION REPORTING SYSTEM
Ronald J. Mearek, Peoria; David L. Dickrell, Chillicothe; Gregory S. Gauger, Pekin; Robert W. Keene, Peoria; Richard D. Rathe, Peoria; Brian T. Rolli, Peoria; Greg A. Schumacher, Washington; Scott G. Sinn, Morton, and Michael R. Verheyen, Dunlap, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.
Filed Aug. 12, 1994, Ser. No. 289,470
Int. Cl.[6] G06F *17/00;15/04*
U.S. Cl. 364—424.04 **7 Claims**



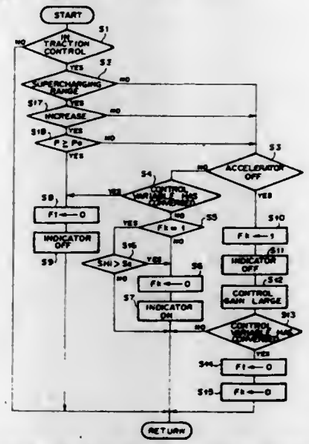
5. A method for controllably sensing, recording, and selectively displaying data associated with operational characteristics of a vehicle and associated engine having a plurality of transducers respectively connectable to a programmable logic device and adapted to produce parameter signals in response to respective preselected engine and vehicle parameters, and having a storage device connected to said programmable logic device and data entry and display devices connectable to said programmable logic device, comprising the steps of:
controllably manipulating said parameter signals to produce responsive information signals;
accumulating the amount of time a preselected one of said information signals occurs during a period defined by at least a preselected one of said remaining information signals having a predetermined value;
delivering said accumulated time value to said storage device; and,
controllably delivering said accumulated time value to said display device.

5,600,559
ELECTRIC POWER STEERING APPARATUS
Mitsuhiko Nishimoto, Kashihara, and Hirofumi Matsuoka, Kyoto, both of Japan, assignors to Koyo Seiko Co., Ltd., Osaka, Japan
Continuation of Ser. No. 339,477, Nov. 14, 1994, abandoned. This application Apr. 26, 1996, Ser. No. 638,691
Claims priority, application Japan, Nov. 19, 1993, 5-291000
Int. Cl.[6] B62D *5/04*
U.S. Cl. 364—424.051 **2 Claims**

1. An electric power steering apparatus, comprising:
a torque sensor for detecting steering torque;
a data processor for generating a control signal for driving a motor corresponding to a value obtained by adding a target value in accordance with the steering torque detected by said torque sensor and a differentiated value of the steering torque detected by said torque sensor;
inhibition zone decision means for deciding whether or not the steering torque detected by said torque sensor is in a predetermined driving direction inhibition zone;
consistency verification means for verifying logical consistency or determining inconsistency between a result of a decision by said inhibition zone decision means and the motor control signal generated by said data processor;
a timer to time the period during which a result of verification by said consistency verification means is determined as being inconsistent;
drive inhibition means for inhibiting drive of said motor at a predetermined time set to occur after the time that the signal of said differentiated value of the steering torque disappears as timed by said timer; and
means for inhibiting re-drive of said motor until the control signal for driving said motor disappears upon a predetermined period of time passing after the drive of said motor is inhibited by said drive inhibition means.



5,600,560
TRACTION CONTROL TERMINATION DETERMINING SYSTEM
Tetsuhiro Yamashita; Koji Hirai; Kazuaki Nada, and Hideharu Satou, all of Hiroshima-ken, Japan, assignors to Mazda Motor Corporation, Hiroshima-ken, Japan
Filed Jul. 8, 1994, Ser. No. 272,083
Claims priority, application Japan, Jul. 9, 1993, 5-194123; Mar. 31, 1994, 6-087878
Int. Cl.[6] B60K *31/00*
U.S. Cl. 364—426.03 **7 Claims**



2. A traction control system for a vehicle provided with an engine comprising a wheel speed detecting means for detecting the wheel speeds of the vehicle, a slip rate calculating means for

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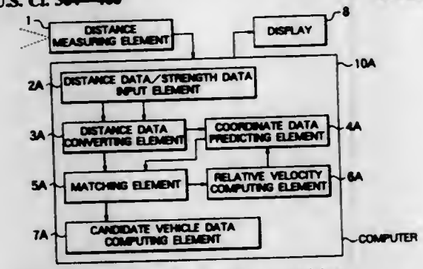
calculating the rate of slip of the driving wheels on the basis of the wheel speeds detected by the wheel speed detecting means and an engine output controller which when the rate of slip of the driving wheels is larger than a predetermined value, feedback-controls the engine output so that the rate of slip of the driving wheels converge on a predetermined target value, wherein the improvement comprises a traction control termination determining means which determines that the traction control is to be terminated when an actual engine output has converged on a target engine output set according to the operating condition of the engine while the traction control is being effected and termination means for terminating the traction control in response to the determination of the traction control termination determining means.

5,600,561

VEHICLE DISTANCE DATA PROCESSOR

Shigekazu Okamura, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 9, 1995, Ser. No. 385,882
Claims priority, application Japan, Feb. 10, 1994, 6-016734
Int. Cl.[6] G01S *13/42;13/60;17/66*
U.S. Cl. 364—460 **6 Claims**



1. A vehicle distance data processor comprising:

distance measuring means which generates electromagnetic waves in a plurality of directions and receives electromagnetic waves reflected from objects to provide reflection strength data regarding the strengths of the reflected electromagnetic waves and distances to the objects;

distance data converting means for converting distance data obtained by said distance measuring means into coordinate data of the positions of the points of detection;

predicting means for predicting coordinate data of each currently obtained detection point based on the coordinate data of each previously obtained detection point and relative velocity vector data related to each detection point;

matching means for matching each previously obtained detection point and each currently obtained detection point in a time serial manner, based on the predicted coordinate data obtained by said predicting means, the strength of the reflected electromagnetic waves of each previously obtained detection point, and the coordinate data of each currently obtained detection point and the strength of reflected electromagnetic waves thereat;

relative velocity computing means which computes the relative velocity vector data based on the detection points which have been matched with their respective points by said matching means, with the computed relative velocity vector data being used in said predicting means; and

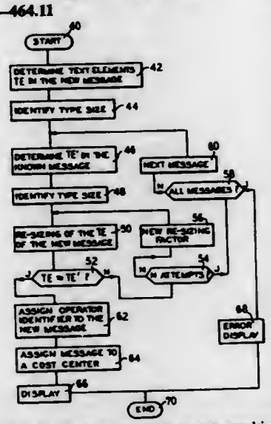
candidate vehicle data computing means for obtaining candidate vehicle data by computation of a currently obtained detection point based on the coordinate data of each currently obtained detection point and relative velocity vector data, to obtain coordinate data and velocity vector data of said currently obtained detection point.

5,600,562

METHOD FOR THE OPERATION OF A POSTAGE METER MACHINE

Stephan Guenther, Berlin, Germany, assignor to Francotyp-Postalia AG & Co., Birkenwerder, Germany

Filed Nov. 14, 1994, Ser. No. 339,888
Claims priority, application European Pat. Off., Dec. 16, 1993, 93 120 344.2
Int. Cl.[6] G07B *17/00*
U.S. Cl. 364—464.11 **21 Claims**



1. A method for operating a postage meter machine jointly used by a plurality of users, said method comprising the steps of:

each user selecting at least one message to be printed on postal matter franked by that user;

incorporating an identifier which identifies the respective user into the message selected by said user;

providing a control unit in said postage meter machine with information pertaining to said identifier;

storing said message in said control unit in data form; and

comparing said information pertaining to said identifier to the identifier in the message stored in said control unit and allocating said message to the respective user given agreement of said comparison, and printing said message with the identifier therein.

5,600,563

SYSTEM FOR PRINTING SOCIAL EXPRESSION CARDS

Thomas G. Cannon, Loveland; Daniel L. DeHart, Greeley, and Eric M. Krug, Loveland, all of Colo., assignors to Onkor Ltd., Masonville, Colo.

Filed Sep. 23, 1992, Ser. No. 949,715
Int. Cl.[6] G06F *19/00*
U.S. Cl. 364—468.24 **7 Claims**

1. A system for printing social expression cards comprising:

a database preparation computer system having:

(a) means for inputing graphic images for each of said cards;

(b) means for creating a high-resolution print image for each of said images;

(c) means for creating a lower-resolution display image for each of said images;

(d) means for creating a card description database defining the layout of each card in terms of its component images and their locations on the card;

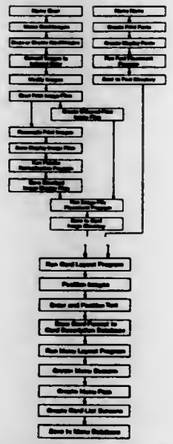
(e) data storage means for creating multiple copies of said card description database, print images, and display image files on removable data storage media; and

at least one card printing system having:

(a) a display;

(b) a printer;

(c) input means;



(d) data storage means for reading said removable data storage media; and

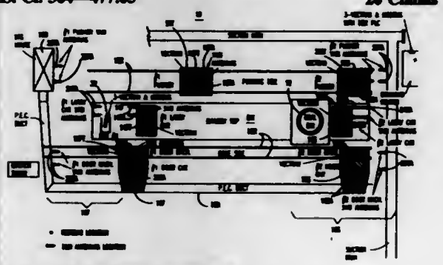
(e) processor means for using said card description database to selectively retrieve display images of cards from said data storage means and display said display images on said display; allowing a user to select a desired card via said input means; retrieving print images for said selected card from said data storage means; and printing said print images on said printer.

5,600,564

COKE OVEN BATTERY WITH COMMUNICATION SYSTEM

James J. Taraskewicz, Riverview, Mich., and Edward C. Nichols, Pittsburgh, Pa., assignors to National Steel Corporation, Mishawaka, Ind.

Filed Dec. 1, 1994, Ser. No. 352,785
Int. Cl.[6] G06F *19/00*; B61L *19/02*
U.S. Cl. 364—477.05 **20 Claims**



1. A coke oven battery comprising:

a plurality of coke ovens;

a first set of machines associated with the plurality of coke ovens and having at least two machines selected from the group consisting of charging cars, pusher machines, and door machines;

a battery controller for controlling the first set of machines and the plurality of coke ovens;

a first set of radio land transceiver units operably connected to the battery controller, each land transceiver unit associated on a one-to-one basis with a corresponding one of the first set of machines; and

a first set of radio machine transceiver units, each machine transceiver unit mounted for movement with a corresponding one of the first set of machines and operable to communicate with a corresponding land transceiver unit; and

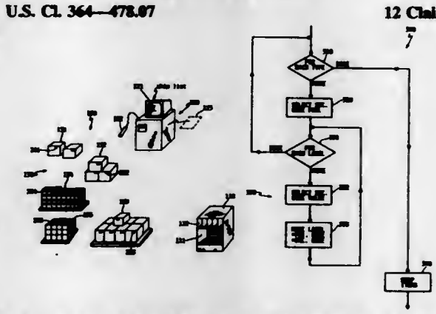
wherein each of the land transceiver units and each of the machine transceiver units are spread spectrum transceivers; and further comprising a first set of pairs of machine antennas, each pair operably connected to a corresponding one of the first set of machine transceiver units; a plurality of machine signal threshold detectors, one for each pair of the first set of pairs of machine antennas and operable to output a change signal when signal strength is inadequate; a plurality of machine switches, one for each pair of the first set of pairs of machine antennas and operable to switch one of the machine transceiver units from using one antenna to using another antenna upon receipt of a change signal; and wherein each machine transceiver unit has a pair of antennas selectively switchable thereto for use of one at a time.

5,600,565

METHOD AND APPARATUS FOR ERROR REDUCTION IN ITEM PACKAGING

Steven L. Wagner, and Stephen E. Wheeler, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 22, 1994, Ser. No. 363,197
Int. Cl.[6] G06F *17/00*
U.S. Cl. 364—478.07 **12 Claims**


7
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INPUT
INPUT
FILL
FILL
FILL

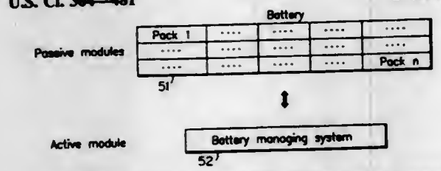
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5,600,566

APPARATUS AND METHOD FOR MONITORING STATE OF BATTERY

Yong-Sik Park, Seongnam, Rep. of Korea, assignor to Samsung Heavy Industries Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 28, 1994, Ser. No. 364,933
Claims priority, application Rep. of Korea, Feb. 28, 1994, 94-3791
Int. Cl.[6] H02J *7/04*
U.S. Cl. 364—481 **2 Claims**



1. An apparatus for monitoring a battery charge state comprising:

a plurality of passive modules comprising an A/D converter for converting analog signals of voltages, currents and temperatures of a plurality of batteries into digital signals within time intervals, a micro-processor including an internal RAM, a ROM, a clock and a serial port for computing a battery charge state of the batteries based on an output of said A/D converter, and a plurality of displays for displaying the battery charge state of the batteries computed by said micro-processor;

an active module comprising a micro-processor for computing a residual capacity of the batteries by obtaining information from individual passive modules of said plurality of passive modules, a storing means for storing the information from said passive modules, an auxiliary memory means for storing the information from said passive modules when the apparatus is off, and a display for displaying the residual capacity of the plurality of the batteries; and

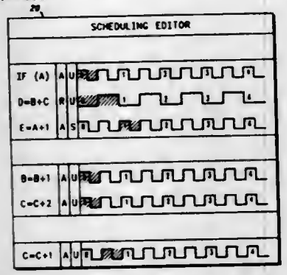
two serial lines for connecting said plurality of passive modules and said active module.

5,600,567

METHOD OF GRAPHICALLY DISPLAYING AND MANIPULATING CLOCK-BASED SCHEDULING OF HDL STATEMENTS

Kayhan Kucukcakar, Scottsdale; Rajesh Gupta, Chandler, and Thomas Tkacik, Phoenix, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 3, 1994, Ser. No. 333,656
Int. Cl.[6] G06F *15/00*
U.S. Cl. 364—488 **23 Claims**



1. A computer implemented method of editing a design database, comprising the steps of:

displaying an algorithmic description of a circuit functionality from the design database on a display screen in graphic fields;

displaying scheduling data from the design database associated with said algorithmic description in said graphic fields;

selecting one of said graphic fields; and

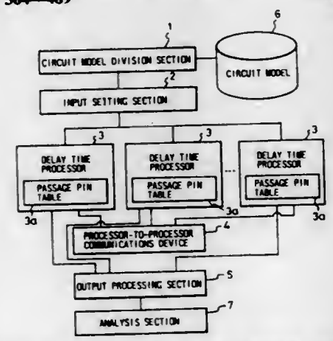
altering said scheduling data associated with said algorithmic description in said one of said graphic fields.

5,600,568

ANALYSIS SYSTEM FOR THE DELAY TIME IN LOGIC EQUIPMENT

Yoshiyuki Iwakura, Yokohama, and Atsushi Kimura, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 20, 1994, Ser. No. 277,742
Claims priority, application Japan, Oct. 18, 1993, 5-259805
Int. Cl.[6] G06F *17/50*
U.S. Cl. 364—489 **16 Claims**



1. A logic equipment delay time analysis system, comprising:

a circuit model division section which divides a circuit model of a logic device into plural, divided circuit models,

a plurality of delay time processors, respectively corresponding to the plurality of divided circuit models, which perform corresponding calculations, in parallel, of the respective delay time of the plural, divided circuit models; and

a processor-to-processor communications device which is connected to, and performs communications between, said plurality of delay time processors, wherein:

data with regard to each divided circuit model, of the plurality of divided circuit models, divided by said circuit model division section is assigned to the corresponding delay time processor of said plurality of delay time processors, by said circuit model division section, and

said processor-to-processor communications device receives the delay time, calculated by each delay time processor of the plurality of delay time processors, and transmits the received delay time to the other delay time processors of the plurality of delay time processors, thereby to calculate accumulated delay times from the input pins of the logic device to the output pins of the logic device.

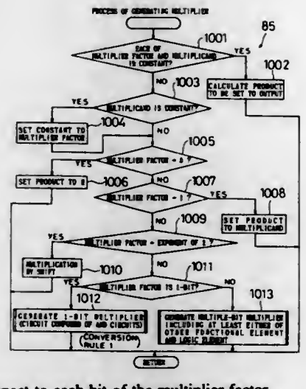
5,600,569

METHOD, SYSTEM, AND APPARATUS FOR AUTOMATICALLY DESIGNING LOGIC CIRCUIT, AND MULTIPLIER

Tamotsu Nishiyama, and Shintaro Tsubata, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Sep. 2, 1994, Ser. No. 300,802
Claims priority, application Japan, Sep. 2, 1993, 5-218780
Int. Cl.[6] G06F *17/50*
U.S. Cl. 364—489 **44 Claims**

1. A method of automatically designing a logic circuit for generating information on the logic circuit for calculating the product of a multiplier factor and a multiplicand, comprising the steps of:



with respect to each bit of the multiplier factor,

(a) judging whether the multiplier factor is a variable or a constant;

(b) if the multiplier factor is a variable, generating information on a circuit for selecting, based on the value of a bit of concern in the multiplier factor, either of a signal indicating the multiplicand and a signal indicating 0 and outputting the selected signal as a partial product;

(c) if the multiplier factor is a constant, judging whether or not the value of said bit in the multiplier factor is 1;

(d) if the value of said bit in the multiplier factor is 1, generating information on a circuit for outputting the signal indicating the multiplicand as a partial product; and

(e) after executing the steps (a) to (d), generating information on a shift circuit for shifting the signal indicating the multiplicand by one bit and newly setting the output signal from said shift circuit as a signal indicating the multiplicand to be used in the steps (a) to (d),

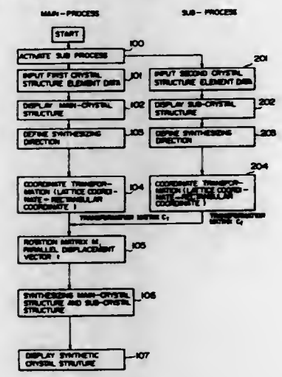
the steps (a) to (e) being repeatedly executed for all the bits of the multiplier factor.

5,600,570

METHOD AND APPARATUS FOR MODELING SYNTHETIC CRYSTAL STRUCTURE

Yutaka Imasato, Chiba, and Masahito Kawai, Kawasaki, both of Japan, assignors to Fujitsu Ltd., Kawasaki, Japan

Filed Mar. 6, 1992, Ser. No. 846,335
Claims priority, application Japan, Mar. 8, 1991, 3-043843
Int. Cl.[6] G06F *17/00*
U.S. Cl. 364—496 **10 Claims**



5,600,571

METHOD FOR DETERMINING PROTEIN TERTIARY STRUCTURE

Richard A. Friesner; Alessandro Monge, and John Gunn, all of New York, N.Y., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y.

Filed Jan. 18, 1994, Ser. No. 183,298
Int. Cl.[6] G06F *17/50*
U.S. Cl. 364—496 **8 Claims**

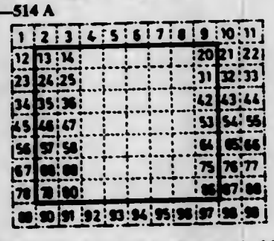
1. A method for determining the most stable tertiary structure of a protein having a known primary structure which comprises the steps of (a) producing a reduced representation of the protein by assigning to the protein (i) secondary structural motifs comprising loops and helices present therein and (ii) all ϕ and Φ dihedral angles for the amino acid residues present therein; (b) determining which conformations of the reduced representation are physically permissible (c) determining which of the physically permissible conformations of the protein possesses the lowest free energy which comprises the steps of (i) randomly varying the dihedral angles of each conformation and evaluating energy for each conformation using a dipole approximation, (ii) accepting or rejecting a conformation in accordance with Metropolis test criteria, (iii) iterating steps (c)(i) and (ii) on accepted conformations and generating C_α and if present C_β atomic coordinates for all residues, and (iv) evaluating energy using the atomic coordinates and a full potential function for all conformations to provide an ensemble of low energy conformations; and (d) comparing conformations to determine that of lowest energy, so as to thereby determine the most stable tertiary structure of the protein.

5,600,572

METHOD FOR TRANSMISSION OF VARIABLE-FORMAT IMAGES VIA LOW DATA RATE TRANSMISSION SYSTEMS

Michel Kerdranvat, Bischoffsheim, and Jean Y. Moraillon, Molsheim, both of France, assignors to Thomson Consumer Electronics S.A., Courbevoie, France

Filed Mar. 7, 1995, Ser. No. 400,087
Claims priority, application France, Mar. 25, 1994, 94 03547
Int. Cl.[6] H04N 1/415
U.S. Cl. 364—514 A 11 Claims



1. A method for coding a video image on a pixel block basis in a transmission system, said video image exhibiting one of a plurality of image display formats, comprising the steps of:

(a) defining a first image display format that encompasses each of said plurality of image display formats;

(b) dividing said first image format into pixel blocks;

(c) assigning labels to said first image format blocks so that said first image blocks can be individually addressed;

(d) selecting a second image display format for said video image, said second image display format being encompassed by said first image display format; and

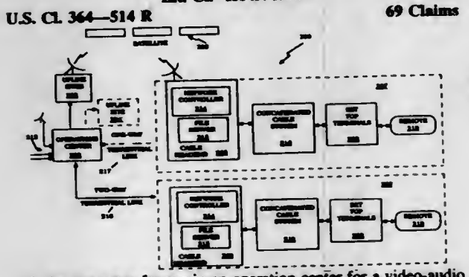
(e) coding said video image in said second image display format with reference to said individual addresses of said first image format blocks.

5,600,573

OPERATIONS CENTER WITH VIDEO STORAGE FOR A TELEVISION PROGRAM PACKAGING AND DELIVERY SYSTEM

John S. Headricks, Potomac, Md., and Richard E. Wunderlich, Alpharetta, Ga., assignors to Discovery Communications, Inc., Bethesda, Md.

Continuation-in-part of Ser. No. 160,282, Dec. 2, 1993, which is a continuation-in-part of Ser. No. 991,874, Dec. 9, 1992.
This application Dec. 2, 1994, Ser. No. 352,204
Int. Cl.[6] H04N 5/00
U.S. Cl. 364—514 R 69 Claims



1. An apparatus for use in an operation center for a video-audio program delivery system, wherein the operations center receives a plurality of programs from external sources, stores one or more of the received programs, generates a program schedule, and causes program identities and at least one of the stored programs to be sent to one or more remote sites, comprising:

means for receiving a plurality of programs provided from a plurality of external sources wherein one or more of the provided programs is individually identified;

means, connected to the receiving means, for storing at least one of the received and identified programs for subsequent retrieval;

control means, connected to the receiving means and storing means, for providing communication and control;

computer assisted means, connected to the control means, for generating a program schedule comprising program identities and an associated time for sending one or more of the stored programs to a remote site;

output means, connected to the control means and storing means, for sending program identities and programs to one or more remote site, wherein the program identities are included in the program schedule and wherein the output means obtains one or more of the stored programs identified in the program schedule from the storing means to send to the remote sites; and

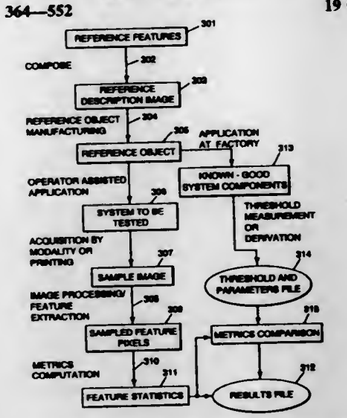
wherein at least one stored program obtained by the output means from the storing means is individually retrieved from the storing means.

5,600,574

AUTOMATED IMAGE QUALITY CONTROL

Ronald C. Reitan, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 13, 1994, Ser. No. 242,275
Int. Cl.[6] G06F 11/00
U.S. Cl. 364—552 19 Claims



1. A method of automatically measuring the performance of a plurality of functional components of an electronic digital imaging system, comprising the steps of:

storing metric thresholds for known good functional components including an image input device and image output device and an image storage memory;

acquiring a sample image from a plurality of reference objects to produce a set of pixel data representative of the plurality of reference objects;

measuring selected attributes from the set of pixel data for image acquisition, image storage and image output functional components and producing therefrom a set of feature statistics;

comparing the set of feature statistics against the metric thresholds; and

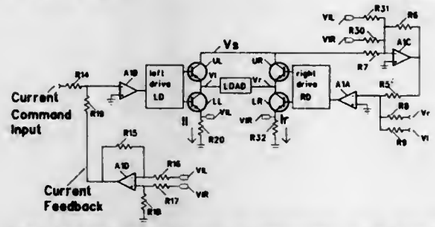
indicating it any one of the set of feature statistics fall below any one of the metric thresholds and indicating the failure of the functional component which resulted in the any one of the set of feature statistics to fall below any one of the metric thresholds.

5,600,575

DRIVE PROTECTION MONITOR FOR MOTOR AND AMPLIFIER

Robert B. Anticole, 19 Commons Dr., Bradfordwoods, Pa. 15015

Filed Oct. 5, 1994, Ser. No. 317,677
Int. Cl.[6] H03F 3/21; H02H 7/00
U.S. Cl. 364—557 19 Claims



1. An apparatus for monitoring the temperature of an inaccessible portion of an electrical current carrying device that cannot be directly measured easily comprising:

means for establishing a reference temperature value comprising means for continuously measuring an accessible temperature in the vicinity of the current carrying device;

means for measuring the power dissipated in the current carrying device;

a digital computer;

means for inputting to the digital computer, the reference temperature value, the power dissipated in the current carrying device, the thermal resistances and thermal time constants of the thermal model simulating the current carrying device to the reference temperature; and

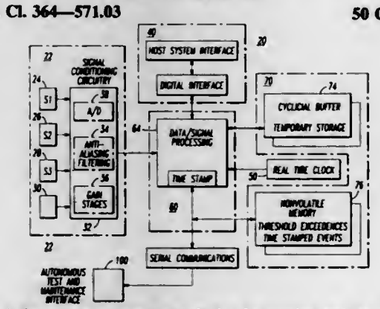
means comprising the digital computer for continuously calculating a differential temperature based upon the power dissipation and thermal model and adding the reference temperature thereto.

5,600,576

TIME STRESS MEASUREMENT DEVICE

Stuart P. Broadwater, White Hall; White E. Gibson; Paul W. Skeberdis, both of Baltimore, and Edward A. Cockey, Jarrettsville, all of Md., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Mar. 11, 1994, Ser. No. 209,056
Int. Cl.[6] G01L 3/10
U.S. Cl. 364—571.03 50 Claims



1. A time stress measurement device for sensing and processing data regarding an electronic or mechanical system comprising:

environmental data collecting means for collecting event fault data corresponding to an event experienced by the system being measured;

event data collecting means for collecting event fault data corresponding to an event experienced by the system being measured;

processing means for time-stamping the collected environmental data with a time when the environmental data is collected, for time-stamping the collected fault data with a time when the fault data is collected, and for comparing the collected environmental data to preset environmental data thresholds and time-stamping environmental data exceeding the preset thresholds; and

storage means for storing the time-stamped environmental data and time-stamped event data.

5,600,577

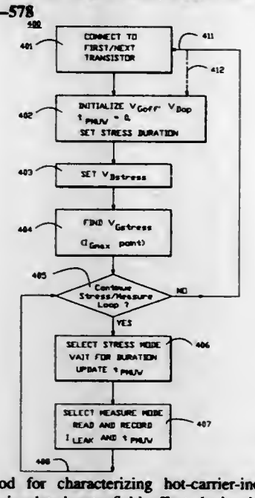
Patent Not Issued For This Number

5,600,578

TEST METHOD FOR PREDICTING HOT-CARRIER INDUCED LEAKAGE OVER TIME IN SHORT-CHANNEL IGFETS AND PRODUCTS DESIGNED IN ACCORDANCE WITH TEST RESULTS

Hao Fang, Cupertino; Peng Fang, Milpitas, and John T. Yue, Los Altos, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Aug. 2, 1993, Ser. No. 101,251
Int. Cl.[6] G01R 31/26; G06F 17/50
U.S. Cl. 364—578 38 Claims



1. A method for characterizing hot-carrier-induced leakage (HCIL) in an insulated gate field effect device having a given channel length and/or other fabrication-defined attributes, the method comprising the steps of:

(a) repeatedly switching the insulated gate field effect device between a conductive stress state in which charge trapping is induced within the device, and a leakage measurement state in which a turn-off voltage is applied to an insulated gate of the device for the purpose of measuring current leakage through the device;

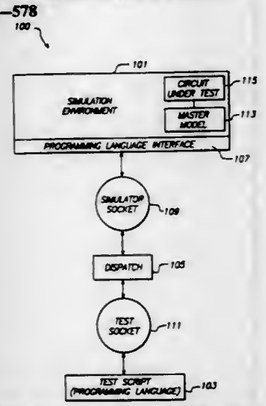
(b) during said step of repeatedly switching, repeatedly measuring the accumulated amount of time for which the device has been in the conductive stress state;

(c) measuring at least one of a forward and reverse current leakage through the device in the repeated leakage measurement states; and

(d) recording data indicating the correlation between accumulated stress time and the at least one measured forward and reverse current leakage.

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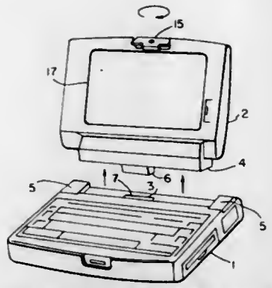
5,600,579
HARDWARE SIMULATION AND DESIGN VERIFICATION SYSTEM AND METHOD
William C. Steinmetz, Jr., San Jose, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.
Filed Jul. 8, 1994, Ser. No. 271,987
Int. Cl.[6] G06F *9/455;13/14*
U.S. Cl. 364—578 **22 Claims**



1. A hardware design verification system comprising:
simulator means for simulating a hardware environment having a circuit under test coupled to a master model;
test script means for executing a test script;
dispatch means;
first inter-task communication means for transmitting a packet from the test script means to the dispatch means: and
second inter-task communication means for transmitting a packet from the dispatch means to the simulator means,
wherein:
the test script means uses the first inter-task communication means to transmit a first packet to the dispatch means, the first packet being encoded in accordance with a predetermined encryption technique and designating a desired manipulation of the simulated hardware environment;
the dispatch means, in response to receipt of the first packet, uses the second inter-task communication means to transmit the first packet to the master model; and
the master model, in response to receipt of the first packet, decodes the first packet in accordance with the predetermined encryption technique and manipulates the hardware environment in accordance with the desired manipulation.

5,600,580
NOTEBOOK TYPE INFORMATION PROCESSING APPARATUS HAVING INPUT FUNCTION WITH PEN
Kaori Honjo; Masami Kashiwakura, both of Tokyo; Takaya Suzuki, Yamagata; Toru Akasaka, Yamagata, and Hiroshi Onishi, Yamagata, all of Japan, assignors to NEC Corporation, Tokyo, Japan
Continuation of Ser. No. 159,228, Nov. 30, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 468,334
Claims priority, application Japan, Nov. 30, 1992, 4-320977; Dec. 3, 1992, 4-324108
Int. Cl.[6] G06F *1/16;15/16*
U.S. Cl. 364—708.1 **4 Claims**

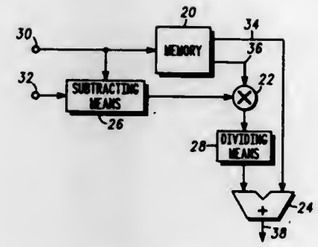
1. A notebook type information processing apparatus having an input function with a pen, comprising:
an apparatus body; and
a display,
wherein said display includes a first connector through which control signals are transmitted,
wherein said apparatus body includes:



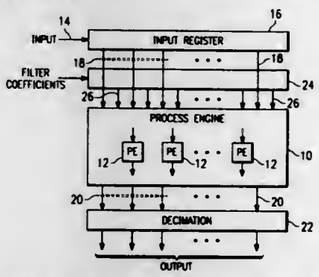
a groove formed on said apparatus body for selectively locking and unlocking said display to and from said apparatus body; and
connector means, connectable to said first connector and through which said control signals are transmitted from and to said apparatus body in a configurationally and electrically symmetrical condition, for connecting said display to said apparatus body, and
wherein said connector means comprises:
determining means for determining which of two orientation states said display is connected to said apparatus body, wherein said display is selectively connected to said apparatus body in a first and a second orientation state, and said display is changed back and forth between said first and said second orientation states by disconnecting said display from said apparatus body, turning said display by 180° around a center line of said display, said center line being substantially perpendicular to a connecting line between said display and said apparatus body, and reconnecting said display to said apparatus body;
a second connector connectable to said first connector through which said control signals are transmitted from and to said first connector; and
an arranging circuit for arranging spatial orders of said control signals on the basis of said orientation states, said arranging circuit maintaining said spatial orders of said control signals from and to said second connector when said determining means determines said display is at one of said two orientation states, and said arranging circuit arranging said spatial orders of said control signals in the reverse order and supplying said arranged control signals from and to said second connector when said determining means determines said display is at the other of said two orientation states.

5,600,581
LOGARITHM/INVERSE-LOGARITHM CONVERTER UTILIZING LINEAR INTERPOLATION AND METHOD OF USING SAME
James D. Dworkin, Chandler, Ariz.; Philip B. Giangarra, Mansfield, Mass., and Stephen L. Smith, Chandler, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Feb. 22, 1995, Ser. No. 391,880
Int. Cl.[6] G06F *1/02;7/00;15/00*
U.S. Cl. 364—722 **26 Claims**

4. A logarithm converter, which comprises:
a memory for storing a plurality of neighboring log values and a plurality of delta values, the memory providing as output a neighboring log value and a delta value which correspond to a first bit slice of a digital input signal;
a multiplier for multiplying a second bit slice of the digital input signal by the delta value to produce a first term;
means for generating a correction factor that represents the first term divided by an interval value; and
an adder for summing the correction factor and the neighboring log value to produce the log signal.

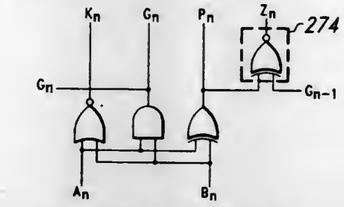


5,600,582
PROGRAMMABLE HORIZONTAL LINE FILTER IMPLEMENTED WITH SYNCHRONOUS VECTOR PROCESSOR
Hiroshi Miyaguchi, Tokyo, Japan, assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Apr. 5, 1994, Ser. No. 222,775
Int. Cl.[6] G06F *15/31*
U.S. Cl. 364—724.01 **8 Claims**



1. A method for converting a sequence of input digital data samples into a sequence of output filtered digital data samples according to a predetermined multi-tap finite impulse response filter algorithm with a digital processing system consisting of a plurality of serially disposed single bit processing elements, comprising the steps of:
receiving said sequence of input digital data samples;
inserting zero digital data samples between each pair of sequential input digital data samples in said sequence of input digital data samples thereby forming a zero interspersed sequence of digital data samples;
supplying said zero interspersed sequence of digital data samples into a serial-in-parallel-out data buffer, each data sample of said zero interspersed sequence of digital data samples stored in a corresponding sequential storage location;
receiving a predetermined plurality of filter coefficients that are associated with the finite impulse response filter algorithm to a filter coefficient input;
supplying each input filter coefficient of said predetermined plurality of filter coefficients to each of said plurality of serially disposed single bit processing elements;
outputting said zero interspersed sequence of digital data samples from the serial-in-parallel-out data buffer;
supplying each of said zero interspersed sequence of data sampled outputs from said serial-in-parallel-out data buffer to a corresponding one of the plurality of single bit processing elements;
supplying to each of said plurality of single bit processing elements digital data samples of said zero interspersed sequence of digital data samples stored within a selected subset of a second left neighboring single bit processing element, a left neighboring single bit processing element, a right neighboring single bit processing and a second right neighboring processing element;
simultaneously processing said zero interspersed sequence of digital data samples and a corresponding one of each of said input filter coefficients with said plurality of serially disposed single bit parallel processing elements, each of said plurality of serially disposed single bit processing elements having an arithmetic logic unit associated therewith for performing computations in parallel in accordance with the predetermined finite impulse response filter algorithm to provide at the output of each of said plurality of serially disposed single bit processing elements output filtered digital data samples;
supplying from each of said plurality of single bit processing elements said output filtered data samples corresponding to each digital data sample of said zero interspersed sequence of digital data samples into a parallel-in-serial-out data buffer, each output filter value stored in a corresponding sequential storage location and;
sequentially outputting said output filtered digital data samples from the parallel-in-serial-out data buffer.

5,600,583
CIRCUIT AND METHOD FOR DETECTING IF A SUM OF TWO MULTIDIGIT NUMBERS EQUALS A THIRD MULTIDIGIT NUMBER PRIOR TO AVAILABILITY OF THE SUM
Patrick W. Bosshart, Plano, and Sanjive Agarwala, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 166,370, Dec. 13, 1993, Pat. No. 5,508,950, which is a division of Ser. No. 922,926, Jul. 31, 1992, Pat. No. 5,270,955. This application Jun. 7, 1995, Ser. No. 478,145
Int. Cl.[6] G06F *7/00*
U.S. Cl. 364—736.5 **9 Claims**



1. A circuit for detecting if an arithmetic/logic combination of a first multibit number A of N bits and a second multibit B of N bits equals a third multibit number C of N bits prior to availability of the arithmetic/logic combination of A and B, said circuit comprising:
a plurality of N PGK generating circuits, each PGK generating circuit receiving a corresponding nth bit of said first multibit number A_n, a corresponding nth bit of said second multibit number B_n, each PGK generating circuit generating a corresponding propagate signal P_n at a propagate output, generating a corresponding generate signal G_n at a generate output and generating a corresponding kill signal K_n at a kill output;
a plurality of N zero circuits, one zero circuit corresponding to one of said PGK generating circuits, each of said zero circuits including
an exclusive OR circuit having a first input receiving said corresponding propagate signal P_n and a second input receiving said kill signal K_{n-1} of a prior PGK generating circuit if a corresponding nth bit of said third multibit number C_n is "0" and a corresponding prior bit of said third multibit number C_{n-1} is "0", said zero circuit generating a corresponding zero signal Z_n at an output,
an exclusive NOR circuit having a first input receiving said corresponding propagate signal P_n and a second input receiving said generate signal G_{n-1} of a prior PGK generating circuit if a corresponding nth bit of said third multibit number C_n is "0" and a corresponding prior bit of said third

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multibit number C_{n-1} is "1", said zero circuit generating a corresponding zero signal Z_n at an output,

an exclusive NOR circuit having a first input receiving said corresponding propagate signal P_n and a second input receiving said kill signal K_{n-1} of a prior PGK generating circuit if a corresponding nth bit of said third multibit number C_n is "1" and a corresponding prior bit of said third multibit number C_{n-1} is "0", said zero circuit generating a corresponding zero signal Z_n at an output,

an exclusive OR circuit having a first input receiving said corresponding propagate signal P_n and a second input receiving said generate signal G_{n-1} of a prior PGK generating circuit if a corresponding nth bit of said third multibit number C_n is "1" and a corresponding prior bit of said third multibit number C_{n-1} is "1", said zero circuit generating a corresponding zero signal Z_n at an output; and

an N input AND circuit receiving said corresponding zero signals Z_n from each of said zero circuits for generating an equality signal indicating the arithmetic/logic combination of said first multibit number A and said second multibit number B equals said third multibit number C if all of said zero signals Z_n are "1".

5,600,584

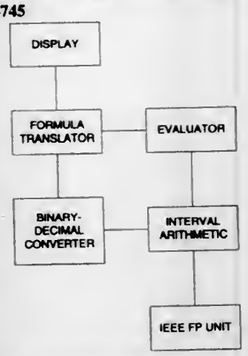
INTERACTIVE FORMULA COMPILER AND RANGE ESTIMATOR

Roger Schlafly, P.O. Box 1680, Soquel, Calif. 95073

Filed Sep. 15, 1992, Ser. No. 945,262

Int. Cl.[6] G06F *7/38;3/14;11/30*

U.S. Cl. 364—745 **20 Claims**



1. A computer-implemented method for estimating the range of a numeric formula in an interactive computer program, comprising

representing real numbers as intervals;

breaking the formula into a sequence of primitive operations;

estimating bounds for each primitive operation;

converting decimal numbers precisely;

displaying each interval in a cell; and

evaluating said formula as a sequence of interval operations.

5,600,585

Patent Not Issued For This Number

5,600,586

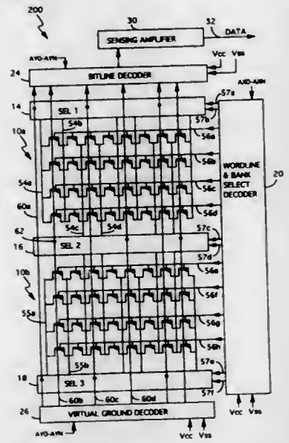
FLAT-CELL ROM AND DECODER

Peter W. Lee, Saratoga, Calif., assignor to Aplus Integrated Circuits, Inc., Saratoga, Calif.

Continuatioo-in-part of Ser. No. 249,801, May 26, 1994, abandoned. This application Jul. 25, 1994, Ser. No. 279,682

Int. Cl.[6] G11C *17/00*

U.S. Cl. 365—104 **15 Claims**



8. A flat-cell ROM comprising:

(a) a bank of field effect transistors, each having a source, drain and gate, formed by ion implantation between columns of buried conductive structure and under rows of polysilicon, wherein adjacent columns of buried conductive structure are the source and drain of at least one of said transistors and a corresponding row of polysilicon is the gate of said at least one of said transistors, wherein said bank is grouped into pair columns and said bank includes two rows of transistors for selecting one of said pair;

(b) a selector network associated with said bank including a first selector network connected to a first class of alternating sets of said columns of buried conductive structure and configured to be controlled by a first selector signal, and a second selector network connected to a second class of alternating sets of said columns of buried conductive structure and configured to be controlled by a second selector signal;

(c) a plurality of metal bitlines with a pitch quadruple that of said columns, with a first class of alternating ones of said plurality of metal bitlines connected to said first selector network with a pitch octuple that of said columns and a second class of alternating ones of said plurality of metal bitlines connected to said second selector network with a pitch octuple that of said columns; and

(d) a decoder network, coupled to said columns and said rows, for decoding an input address to select a corresponding field effect transistor.

5,600,587

FERROELECTRIC RANDOM-ACCESS MEMORY

Hiroki Koike, Tokyo, Japan, assignor to Nec Corporation, Tokyo, Japan

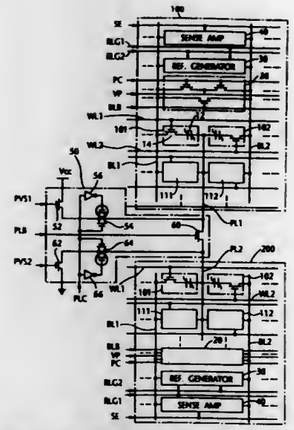
Filed Jan. 29, 1996, Ser. No. 593,686

Claims priority, application Japan, Jan. 27, 1995, 7-011357

Int. Cl.[6] G11C *11/22*

U.S. Cl. 365—145 **7 Claims**

1. A ferroelectric random-access memory comprising first and second memory blocks each of which comprises a plurality of memory cells arranged in rows and columns,



each memory cell comprising a ferroelectric capacitor, which comprises first and second electrode plates and a ferroelectric material interposed between the two electrode plates, and a field effect transistor which is coupled at the source or drain to the first electrode plate of the capacitor,

each memory block further comprising a plurality of word lines each of which is arranged along a row of memory cells and is coupled to the gate of said transistor in a plurality of memory cells in the row, a plurality of bit lines each of which is arranged along a column of memory cells and is coupled to the drain or source of said transistor in a plurality of memory cells in the column and a plate line which is coupled to the second electrode plate of said capacitor in every memory cell of the memory block,

each memory block further comprising a precharging means for precharging the bit lines to one of first and second voltages which respectively correspond to the two levels of binary data, a plurality of sense amplifiers each of which senses a difference between a reference voltage and a signal voltage developed on a bit line by an accessed memory cell and amplifies the difference voltage to one of said first and second voltages and a balancing means for temporarily keeping the bit lines at an intermediate voltage between said first and second voltages after the amplification of said difference voltage,

the memory further comprising a plate line voltage control means for keeping the plate line of each memory block at one of said first and second voltages during standby periods, changing the voltage on the plate line of one of the two memory blocks to the other of said first and second voltages and connecting the plate lines of the two memory blocks during a transition period preceding to an operation period to thereby keep the connected plate lines at said intermediate voltage and disconnecting the plate lines in a standby period following the operation period.

5,600,588

DATA RETENTION CIRCUIT AND SEMICONDUCTOR MEMORY DEVICE USING THE SAME

Shoichiro Kawashima, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Jan. 24, 1995, Ser. No. 377,216

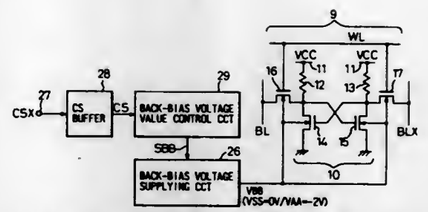
Claims priority, application Japan, Jan. 24, 1994, 6-006025

Int. Cl.[6] G11C *11/00*

U.S. Cl. 365—154 **8 Claims**

1. A semiconductor memory device comprising:

a memory means having a plurality of memory cells, each memory cell including a flip-flop circuit having driver transistors; and



a threshold voltage control means for controlling respective threshold voltages of said driver transistors,

said threshold voltage control means controlling at least each threshold voltage of driver transistors constituting a selected memory cell to be a first threshold voltage when said memory device is in an accessed state of the memory device, and said threshold voltage control means controlling threshold voltages of all of respective driver transistors constituting each memory cell to be a second threshold voltage different from said first threshold voltage when said memory device is in a stand-by state of the memory device.

5,600,589

STATIC RANDOM ACCESS MEMORY

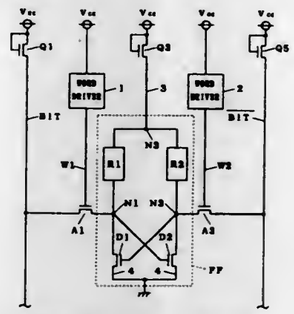
Yoshiyuki Ishigaki, and Motomu Ukita, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 5, 1995, Ser. No. 498,056

Claims priority, application Japan, Dec. 12, 1994, 6-307701

Int. Cl.[6] G11C *11/34*

U.S. Cl. 365—154 **10 Claims**



1. A static random access memory comprising:

an internal power source line;

a word line;

a bit line;

a memory cell, said memory cell comprising, a flip-flop circuit for holding data, and an access transistor, said access transistor comprising,

one electrode connected to the bit line,

a second electrode connected to said flip-flop circuit, and

a gate electrode connected to the word line,

wherein a voltage stepped down from an external supply voltage is supplied to said bit line and the internal power source line of said memory cell, and said external supply voltage is directly supplied to said word line.

5,600,590

PROCESS FOR THE MANUFACTURE OF AN INTEGRATED VOLTAGE LIMITER AND STABILIZER IN FLASH EEPROM MEMORY DEVICES

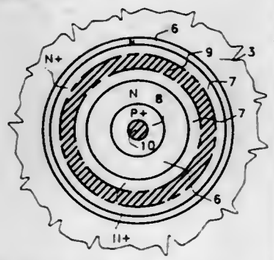
Paolo Ghezzi, Rivolta D'Adda, and Alfonso Maurelli, Sulbiate, both of Italy, assignors to SGS-Thomson Microelectronics, S.r.l., Agrate Brianza, Italy

Division of Ser. No. 301,792, Sep. 7, 1994. This application Jun. 7, 1995, Ser. No. 477,302

Claims priority, application European Pat. Off., Sep. 10, 1993, 93830365

Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—175 **8 Claims**



1. A flash EEPROM memory device with integrated voltage limiter and stabilizer components, the memory device comprising:

a plurality of flash EEPROM memory cells;

a plurality of N-channel transistors;

a plurality of P-channel transistors; and

a plurality of voltage limiter and stabilizer components with each limiter and stabilizer component having a cathode region and an anode region, the cathode regions of said voltage limiter and stabilizer components being formed simultaneously with source regions of said flash EEPROM memory cells, the anode regions of said voltage limiter and stabilizer components being formed simultaneously with active areas of said P-channel transistors.

5,600,591

DYNAMIC RANDOM ACCESS MEMORY AND MANUFACTURING METHOD THEREOF

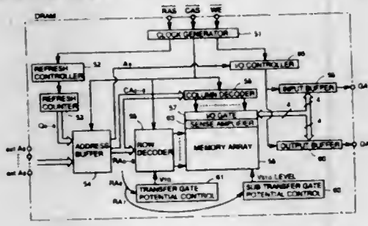
Hiroshi Takagi, Hyogo-ken, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 49,728, Apr. 21, 1993. This application Aug. 7, 1995, Ser. No. 512,074

Claims priority, application Japan, Apr. 24, 1992, 4-106831

Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—184 **11 Claims**



5. A DRAM in which a plurality of memory cells are provided on the main surface of a semiconductor substrate, wherein

each of said memory cells comprises a field effect transistor and a capacitor connected thereto, said field effect transistor including a first gate electrode having a first threshold voltage, and a second gate electrode having a second threshold voltage different from said first threshold voltage, wherein

said field effect transistor comprises

said first gate electrode and said second gate electrode formed on the main surface of said semiconductor substrate with a gate insulating film interposed therebetween, and insulated adjacent to each other, and

first and second impurity regions formed in the main surface of said semiconductor substrate, spaced from each other by said first and second gate electrodes, and

wherein said capacitor comprises

a first capacitor electrode connected to said second impurity region,

a dielectric film formed on said first capacitor electrode, and

a second capacitor electrode formed on said dielectric film.

5,600,592

NONVOLATILE SEMICONDUCTOR MEMORY DEVICE HAVING A WORD LINE TO WHICH A NEGATIVE VOLTAGE IS APPLIED

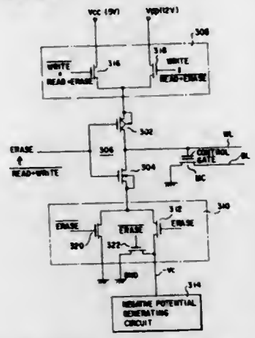
Shigeru Atsumi, and Sumio Tanaka, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 332,493, Oct. 31, 1994, Pat. No. 5,438,542, which is a continuation of Ser. No. 210,279, Mar. 18, 1994, abandoned. This application May 8, 1995, Ser. No. 436,563

Claims priority, application Japan, May 28, 1993, 5-126588

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—185.18 **19 Claims**



1. A nonvolatile semiconductor memory device comprising:

a semiconductor substrate having a P-conductivity type region;

stacked gate memory cells each having a control gate, a floating gate, a source, and a drain, said stacked gate memory cells being formed on said P-conductivity type region;

a word line connected to the control gates of said memory cells;

first means for providing a negative potential to said word line in response to a signal;

a first N-channel transistor formed on said substrate, said first N-channel transistor being electrically separated from said P-conductivity type region by a double well structure; and

second means for providing a positive potential to said P-conductivity type region in response to said signal.

5,600,593

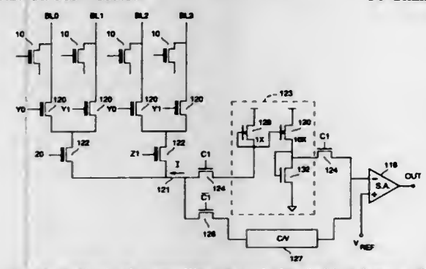
APPARATUS AND METHOD FOR REDUCING ERASED THRESHOLD VOLTAGE DISTRIBUTION IN FLASH MEMORY ARRAYS

Vincent L. Fong, Cuppertino, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Dec. 6, 1994, Ser. No. 349,812

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—185.19 **30 Claims**



14. A method of controlling erased threshold voltages of a plurality of flash memory cells arranged in an array, each of the flash memory cells of said array including a control gate, a floating gate, a drain and a source, at least a majority of the flash memory cells having a threshold voltage adjusted to be greater than a target maximum erased threshold voltage, the method comprising the steps of:

(a) erasing the cells of the array thereby reducing the threshold voltages of the cells;

(b) testing to determine whether any cells of the array have a threshold voltage greater than a target maximum erased threshold voltage;

(c) repeating the steps of erasing and testing until all of the cells have threshold voltages less than the target maximum erased threshold voltage, at least one cell having a threshold voltage that is both less than the target maximum erased threshold voltage and greater than a target minimum erased threshold voltage;

(d) testing, subsequent to said step (c) of repeating and before any programming step, to determine whether any of the cells of the array have a threshold voltage less than a target minimum erased threshold voltage;

(e) programming the cells of the array thereby increasing the threshold voltages of the cells in the event the step (d) of testing ascertains that one of the cells has a threshold voltage which is less than the target minimum erased threshold voltage;

(f) measuring the cells, subsequent to the step of increasing, to ascertain whether any of the cells have a threshold voltage less than the target minimum erased threshold voltage; and

(g) repeating the steps (e) and (f) until none of the cells has a threshold voltage less than the target minimum erased threshold voltage.

5,600,594

THRESHOLD VOLTAGE MEASURING DEVICE FOR MEMORY CELLS

Silvia Padoan, Rimini; Marco Maccarrone, Palestro, and Marco Olivo, Bergamo, all of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

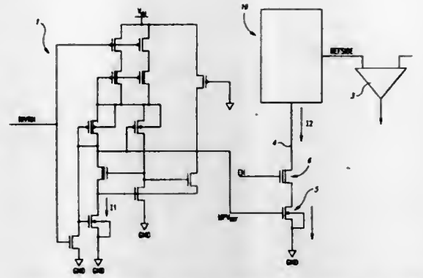
Filed Mar. 31, 1995, Ser. No. 412,326

Claims priority, application European Pat. Off., Mar. 31, 1994, 94830156

Int. Cl.[6] G11C *16/02*

U.S. Cl. 365—185.24 **24 Claims**

1. A circuit device for measuring the threshold voltage distribution among electrically programmable, non-volatile memory cells, the circuit device comprising:



a differential amplifier having a first input connected to a first circuit leg that is connectable to at least one memory cell and a second input connected to a reference circuit leg, and

a variable current generator that generates at its output a varying current value, the output of the variable current generator being connected to the reference circuit leg to provide the varying current value thereto to measure the threshold voltage of the memory cell connected to the first input of the differential amplifier.

5,600,595

NON-VOLATILE SEMICONDUCTOR DEVICE WITH AN ELECTRICALLY ERASABLE AND PROGRAMMABLE READ ONLY MEMORY SHOWING AN EXTREMELY HIGH SPEED BATCH ERASURE OPERATION

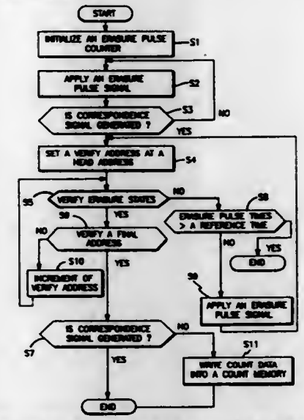
Naoyuki Ogura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 12, 1995, Ser. No. 526,907

Claims priority, application Japan, Sep. 12, 1994, 6-242390

Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—185.33 **6 Claims**



1. A non-volatile semiconductor memory device showing a high speed batch erasure operation, said device comprising:

an electrically erasable and programmable read only memory including memory cells;

means coupled to said electrically erasable and programmable read only memory for generating erasure pulse signals to be applied onto said memory cells;

means coupled to said erasure pulse signal generation means for controlling operations of erasure pulse signal generations by supplying erasure control signals to said erasure pulse signal generation means;

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means for storing a predetermined reference number of times of erasure pulse signal applications, said predetermined reference number being set to correspond to an estimated number of times of the erasure pulse signal applications necessary for completing the batch erasure operation;

means coupled to said control means for counting the number of times of erasure pulse signal applications currently made onto said memory cells by fetching said erasure control signals from said control means; and

means coupled to both said storing means and said counting means for comparing said counted number of times of erasure pulse signal applications currently made and fetched from said counting means with said predetermined reference number fetched from said storing means and then outputting a correspondence signal to be supplied to said control means only when said counted number of times of erasure pulse signal applications corresponds to said predetermined reference number, whereby:

said control means implements processes comprising the steps of:

continuing applications of said erasure pulse signals onto said memory cells until said control means receives said correspondence signal from said comparator; and

repeating a set of an additional erasure pulse signal application onto said memory cells and a verifying process for verifying erasure states of all said memory cells until said control means can verify the fact that all said memory cells have been in erasure states.

5,600,596

DATA ACCESS SCHEME WITH SIMPLIFIED FAST DATA WRITING

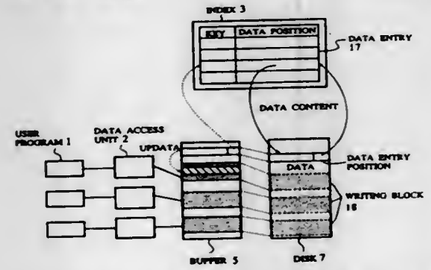
Toshio Shirakihara, Kanagawa-ken, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 28, 1994, Ser. No. 365,143

Claims priority, application Japan, Dec. 28, 1993, 5-349336

Int. Cl.[6] G06F 13/00

U.S. Cl. 365—189.01 **22 Claims**



1. A method of making accesses to a plurality of data present in a plurality of blocks provided in a secondary memory device by using a primary memory device, comprising the steps of:

selecting one of said plurality of blocks as a writing block;

writing each updated data into a region in the primary memory device corresponding to an invalid data portion in the writing block selected at the selecting step; and

storing the writing block with each updating data written at the writing step from the primary memory device into the secondary memory device.

5,600,597

REGISTER PROTECTION STRUCTURE FOR FPGA

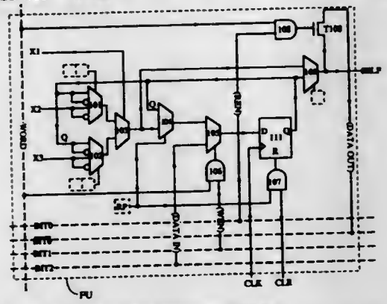
Thomas A. Kean, and William A. Wilkie, both of Edinburgh, Scotland, assignors to Xilinx, Inc., San Jose, Calif.

Filed Jun. 6, 1995, Ser. No. 486,176

Claims priority, application United Kingdom, May 2, 1995, 9508931; May 2, 1995, 9508934

Int. Cl.[6] G11C 7/00

U.S. Cl. 365—189.08 **4 Claims**



1. A register protect structure comprising:

a register having a data input terminal for receiving an input signal D, a register output terminal for providing a register output signal Q, and a clock input terminal;

means for generating a user logic signal;

means for accessing said register input terminal and register output terminal through configuration memory accessing lines;

means for selecting said input signal D from any one of said user logic signal, said configuration memory accessing lines, and said register output signal Q; and

register protect means for preventing said user logic signal from being selected by said means for selecting.

5,600,598

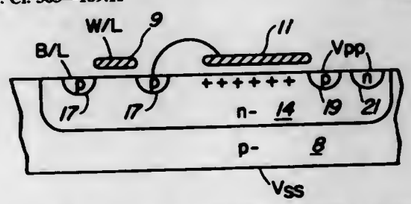
MEMORY CELL AND WORDLINE DRIVER FOR EMBEDDED DRAM IN ASIC PROCESS

Karl Skjaveland, Ramsay Township, and Peter B. Gillingham, Kanata, both of Canada, assignors to Mosaid Technologies Incorporated, Kanata, Canada

Filed Dec. 14, 1994, Ser. No. 355,956

Int. Cl.[6] G11C 7/00

U.S. Cl. 365—189.11 **5 Claims**



1. A DRAM charge storage structure comprising a p-channel access FET in an n^- doped well of a p^- doped substrate, a p^- channel charge storage capacitor, conductive means connecting a gate of the charge storage capacitor to a drain of the FET, and means for applying a boosted word line voltage to a gate of the FET, the charge capacitor having p^+ doped source/drain region diffused into the n^- well, means for connecting the p^+ doped region to a voltage source V_{pp} which is high enough to maintain the channel of the charge storage capacitor upon the capacitor receiving charge defining any of 0 or 1 logic levels, an n doped region diffused into the n^- well, and means for connecting the n doped region to a voltage source which is sufficiently high so as to reduce sub-threshold leakage through the p-channel access FET.

5,600,599

DATA SIGNAL OUTPUT CIRCUIT AND SEMICONDUCTOR MEMORY DEVICE INCLUDING THE SAME

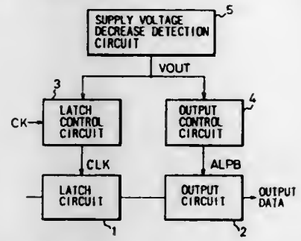
Tomohiro Nakayama; Yntaka Fukutani; Takanori Shiga, and Masakazu Kimura, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 20, 1994, Ser. No. 359,462

Claims priority, application Japan, Jan. 26, 1994, 6-007005

Int. Cl.[6] G11C 7/00

U.S. Cl. 365—189.05 **6 Claims**



1. A data signal output circuit comprising:

a latch circuit which latches and holds a data signal according to a latch signal, said latch circuit changing to a through state directly outputting an input data signal when said latch signal is set to one of two logical states;

an output circuit which changes between a state for outputting a data signal from said latch circuit and a high-impedance state according to an output control signal;

a latch control circuit for generating said latch signal;

a output control circuit for generating said output control signal; and

a supply voltage decrease detection circuit for detecting a decrease in a supply voltage, and

when said supply voltage decrease detection circuit detects a decrease in said supply voltage, said latch control circuit outputs a latch signal to set said latch circuit to said through state and said output control circuit outputs an output control signal to set said output circuit to output the data signal from said latch circuit.

5,600,600

METHOD FOR PROGRAMMING AND TESTING A NONVOLATILE MEMORY

Marco Olivo, Bergamo, and Marco Maccarrone, Palestro, both of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Filed Jan. 31, 1995, Ser. No. 381,530

Claims priority, application European Pat. Off., Jan. 31, 1994, 94830032

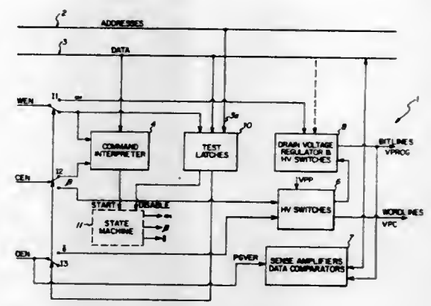
Int. Cl.[6] G11C 7/00

U.S. Cl. 365—201 **33 Claims**

1. A method for testing an electrically programmable non-volatile memory that includes a cell matrix coupled to control circuitry, which circuitry governs succession and timing of memory programming phases in response to control signals, the method comprising the steps of:

disabling an internal state machine of the control circuitry from controlling the cell matrix; and

modifying a function of at least one of the control signals so as to directly program the cell matrix, and subsequently verify programming correctness.



5,600,601

SEMICONDUCTOR MEMORY DEVICE WITH REDUCED CONSUMPTION POWER FOR BIT LINE PRECHARGE

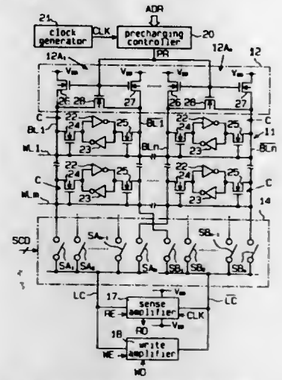
Hiroko Murakami; Takaki Ido, and Kenzi Yamada, all of Kasugai, Japan, assignors to Fujitsu Limited, Kawasaki, and Fujitsu VLSI Limited, Kasugai, both of Japan

Filed Dec. 28, 1994, Ser. No. 364,985

Claims priority, application Japan, Feb. 16, 1994, 6-019569

Int. Cl.[6] G11C 7/02

U.S. Cl. 365—203 **2 Claims**



1. A semiconductor memory device comprising:

a memory cell array including a plurality of word lines, a plurality of bit lines, and a plurality of memory cells connected to each of the word lines and bit lines, respectively;

a word line selector connected to said word lines for selecting one of said word lines in accordance with a row address signal;

a bit line selector connected to said bit lines for selecting one of said bit lines in accordance with a column address signal;

a precharger for setting the potential of each of said bit lines to a potential before data is read out onto the bit lines from said memory cells; and

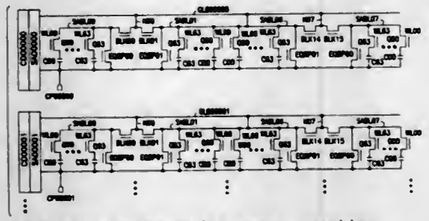
a controller responsive to said row address signal to activate said precharger to precharge said bit lines, when different word lines are selected in succession by said word line selector in response to a change in said row address signal;

an address buffer for maintaining address signals including the row address signal and the column address signal, such that said row address signal is supplied to said word line selector and said controller and said column address signal is supplied to said bit line selector;

a memory cell array including a plurality of word lines, a plurality of bit lines, and a plurality of memory cells connected to each of the word lines and bit lines, respectively;

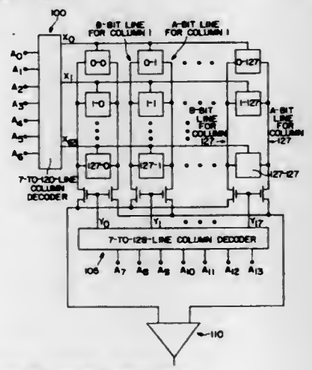
a word line selector connected to said word lines for selecting one of said word lines in accordance with an address signal;
a bit line selector connected to said bit lines for selecting one of said bit lines in accordance with an address signal;
a precharger for setting the potential of each of said bit lines to a potential before data is read out onto the bit lines from said memory cells;
a controller responsive to said address signal to activate said precharger when different word lines are selected in succession by said word line selector, further comprising an address buffer for maintaining said address signal, wherein said address signal includes a row address signal and a column address signal maintained by said address buffer, said row address signal being supplied by the address buffer to said word line selector and said column address signal being supplied by the address buffer to said bit line selector;
an address latch for latching a plurality of primary row address bit signals and outputting them as secondary row address signals;
a discriminator for determining whether or not said secondary row address signal and said primary row address signal match, and for outputting a discrimination signal in response thereto; and
an output circuit for receiving the output signal from the discriminator, and for outputting a signal to activate said precharger when the primary and secondary signals do not match;
wherein said address latch comprises a plurality of flip-flops supplied with said primary row address bit signals, wherein said discriminator comprises a plurality of exclusive OR circuits supplied with the output from said flip-flops; and wherein said output circuit comprises an OR circuit to which the output signal from each of said exclusive OR circuits is input, said semiconductor memory device further comprising a clock generator for supplying the clock signal to said flip-flops and address buffer, to control the latching of said primary row address signals by said flip-flops.

5,600,602
HIERARCHICAL MEMORY ARRAY STRUCTURE HAVING ELECTRICALLY ISOLATED BIT LINES FOR TEMPORARY DATA STORAGE
Mir M. Seyyedy, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.
Filed Apr. 5, 1995, Ser. No. 417,213
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—205 **3 Claims**



1. A method of storing data in a memory comprising:
a plurality of subarray bit lines, each of the plurality of subarray bit lines having a capacitance selectively chosen for data storage;
a plurality of memory storage capacitors;
a plurality of addressable memory capacitor access devices connected to the plurality of memory storage capacitors for selectively coupling one of the plurality of memory storage capacitors to one of the plurality of subarray bit lines to charge share a memory capacitor charge with a subarray bit line charge;
a global bit line having a capacitance;
a plurality of addressable subarray bit line access devices connected to the global bit line and the plurality of subarray bit lines, the plurality of addressable subarray bit line access devices for either electrically isolating the plurality of subarray bit lines from the global bit line, or selectively coupling one of the plurality of subarray bit lines to the global bit line for charge sharing an un-amplified subarray bit line charge with the global bit line capacitance; and
a sense amplifier circuit connected to the global bit line for sensing and amplifying a voltage on the global bit line, the method comprising the steps of:
providing a charge on a first one of the plurality of subarray bit lines;
electrically isolating the first one of the plurality of subarray bit lines from the global bit line and the plurality of memory storage capacitors to temporarily store the charge on the first one of the plurality of subarray bit lines.

5,600,603
COMMON CENTROID DIFFERENTIAL SENSING SCHEME
Bart McDaniel, Phoenix, Ariz., assignor to Intel Corporation, Santa Clara, Calif.
Filed Aug. 22, 1995, Ser. No. 517,910
Int. Cl.[6] G11C *13/00*
U.S. Cl. 365—207 **4 Claims**



3. A computer system comprising:
(a) a processor;
(b) a bus coupled to said processor;
(c) a memory coupled to said processor through said bus, said memory using a differential sensing apparatus for sensing contents of registers in a register array, said differential sensing apparatus including:
(1) a first pair of differential bit lines traversing the register array in a predetermined direction along a first traversing path and a second traversing path,
(2) a second pair of differential bit lines traversing said register array in the predetermined direction along a third traversing path and a fourth traversing path;
(3) wherein (i) the bit lines of one of said pairs of differential bit lines swap traversing paths at

$$\frac{1}{4*N}$$

from top and bottom of said register array and swap every

$$\frac{1}{2*N}$$

afterwards, (ii) while the bit line pairs of the other of said pairs of differential bit lines swap traversing paths at

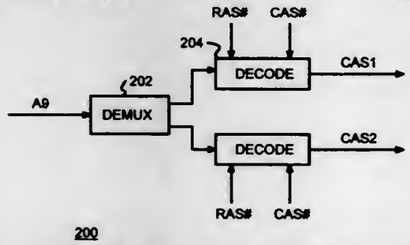
$$\frac{1}{4*(N+1)}$$

from the top and bottom of said register array and every

$$\frac{1}{2*(N+1)}$$

afterwards, where N is an integer greater than 0.

5,600,604
SYSTEM FOR ALLOWING A SIMM MODULE WITH ASYMMETRIC ADDRESSING TO BE UTILIZED IN A COMPUTER SYSTEM
Roger Chen, San Jose, Calif., assignor to Advanced Peripherals Labs, Inc., San Jose, Calif.
Filed May 1, 1995, Ser. No. 431,439
Int. Cl.[6] G11C *8/00*
U.S. Cl. 365—230.06 **3 Claims**

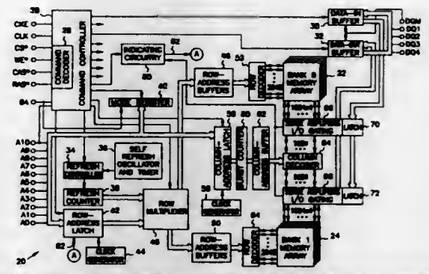


200

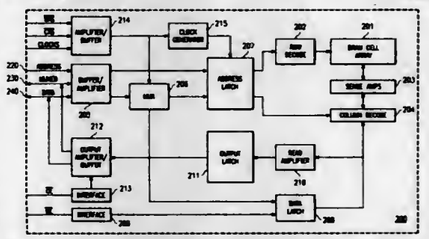
1. A circuit for allowing a memory module with an asymmetric addressing scheme to effectively operate with a memory controller which has a symmetric address scheme, the circuit comprising:
a demultiplexer means for receiving at least the last address bit of address signals from the memory controller and generating a plurality of control signals; and
a decoder means, the decoder means including a plurality of decoder units, each of the decoder units comprising logic means for receiving one of the plurality of control signals, two address strobe signals from the memory controller, each of the decoder units selectably providing a decoded one of the two address strobe signals responsive to the demultiplexer means.

5,600,605
AUTO-ACTIVATE ON SYNCHRONOUS DYNAMIC RANDOM ACCESS MEMORY
Scott Schaefer, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.
Filed Jun. 7, 1995, Ser. No. 481,920
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—233 **24 Claims**

1. A memory device including a memory array of storage cells organized in rows and column for storing data and responsive to command signals, the memory device operating in synchronization with active edges of a system clock, the memory device comprising:
a command decoder/controller responsive to selected command signals to initiate, at a first active edge of the system clock, a first command controlling a first operation on the memory array, and to initiate, at a second active edge of the system clock, a second command controlling a second operation on the memory array, wherein the second active edge of the system clock occurs during the first operation;
indicating circuitry responsive to the first command to provide a first command complete signal indicating the completion of the first operation; and
second circuitry responsive to the second command to perform a first portion of the second operation, and responsive to the first command complete signal to perform a second portion of the second operation.



5,600,606
LOW PIN COUNT - WIDE MEMORY DEVICES USING NON-MULTIPLEXED ADDRESSING AND SYSTEMS AND METHODS USING THE SAME
G. R. Mohan Rao, Dallas, Tex., assignor to Cirrus Logic, Inc., Fremont, Calif.
Continuation-in-part of Ser. No. 521,867, Aug. 31, 1995, Pat. No. 5,537,353. This application Mar. 7, 1996, Ser. No. 612,113
Int. Cl.[6] G11C *7/00;8/00*
U.S. Cl. 365—233 **23 Claims**



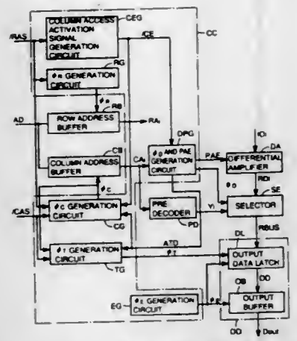
1. A method of operating a memory device including a plurality of multiplexed data/address input/output terminals, an array of memory cells, and circuitry for accessing selected ones of the memory cells in response to received row and column address bits, the method comprising the steps of:
substantially simultaneously inputting said row address bit and column address bit during an address cycle, at least one of said row and column address bits input through a selected one of the multiplexed terminals; and
accessing ones of the memory cells addressed by the row and column bits through selected ones of the multiplexed terminals during a data access cycle.

5,600,607
SEMICONDUCTOR MEMORY DEVICE THAT CAN READ OUT DATA AT HIGH SPEED
Kiyohiro Furutani, and Hiroshi Miyamoto, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed May 5, 1995, Ser. No. 435,691
Claims priority, application Japan, May 31, 1994, 6-118653
Int. Cl.[6] G11C *8/00*
U.S. Cl. 365—233.5 **20 Claims**

1. A semiconductor memory device providing data of a predetermined memory cell from a plurality of memory cells, said semiconductor memory device comprising:

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column address signal latch means responsive to a column address control signal to latch a column address signal,

amplify means for amplifying data of a predetermined memory cell out of said plurality of memory cells according to a column address signal latched by said column address signal latch means, and

column address control signal output means for providing said column address control signal in a latch instructed state where said column address signal latch means is instructed to maintain a latch operation during an operation period of said amplify means,

said column address control signal output means including:

first control signal output means responsive to a column address strobe signal for providing said column address control signal at said latch instructed state, and

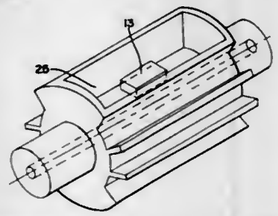
second control signal output means responsive to a column address change detection signal indicating that a column address signal has changed for providing said column address control signal at said latch instructed state for a predetermined time period.

5,600,608

HYDROPHONE CARRIER

Franz Weiss, Chatswood, and Robert D. Dowle, New South Wales, both of Australia, assignors to GEC Marconi Systems Pty, Ltd., Australia

Continuation of Ser. No. 192,418, Feb. 4, 1994, abandoned.
This application Aug. 30, 1995, Ser. No. 521,237
Claims priority, application Australia, Apr. 6, 1993, PL8180
Int. Cl.[6] G01V *1/00*
U.S. Cl. 367—20 **11 Claims**



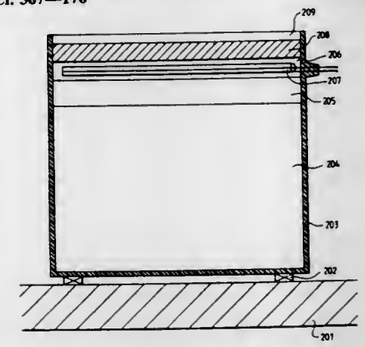
1. A hydrophone carrier adapted to mount a hydrophone in a streamer, said carrier comprising an integral closed structure of an outer skin and a pair of rigid end plates spaced apart axially by at least one central member, said skin and end plates defining an enclosed zone between said end plates, said carrier isolating said zone from structural stress and strain, such as induced by cable borne vibration, and admitting externally induced pressure fluctuations.

5,600,609

ABSORBENT PASSIVE ACOUSTIC ANTENNA

Patrick Vacher, Vence, France, assignor to Thomson-CSF, Paris, France

Filed May 25, 1995, Ser. No. 450,634
Claims priority, application France, May 31, 1994, 94 06601
Int. Cl.[6] H04R *17/00*
U.S. Cl. 367—176 **15 Claims**



1. An absorbent acoustic antenna, which comprises

a set of sensors detecting acoustic waves, said antenna comprising a first layer of an elastomer forming an absorbent material, a second layer with a high acoustic impedance forming a hard reflector and lying on the first layer, a third layer formed of an elastomer having acoustic characteristics which are substantially similar to that of water in order to be transparent to the acoustic waves, said third layer coating said sensors and lying on the second layer, and a fourth layer formed of an elastomer so as to be anechoic by absorption at the high acoustic frequencies and transparent at acoustic frequencies lower than the high acoustic frequencies, said fourth layer lying on the third layer.

5,600,610

ELECTROSTATIC TRANSDUCER AND METHOD FOR MANUFACTURING SAME

James A. Hill, and Anthony R. H. Goodwin, both of Moscow, Id., assignors to Gas Research Institute, Chicago, Ill.

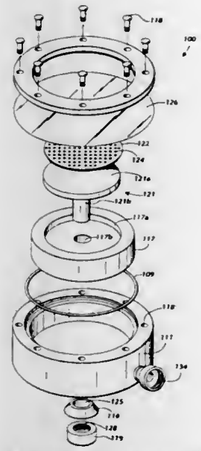
Filed Jan. 31, 1995, Ser. No. 381,540
Int. Cl.[6] H04R *19/00*
U.S. Cl. 367—181 **25 Claims**

1. An apparatus for an electrostatic transducer for percussion waves, comprising:

an inner electrode having a biasing surface;

a dielectric layer substantially covering said inner electrode and having inner and outer surfaces, said inner surface being substantially continuous and contiguous with said biasing surface, said biasing surface, said outer surface having protruding support fingers; and

an outer electrode layer being supported by said support fingers in a position adjacent to and separated from said biasing surface, said outer electrode layer for interacting percussion waves in an adjacent medium by movement of said moveable outer electrode relative to said inner electrode;



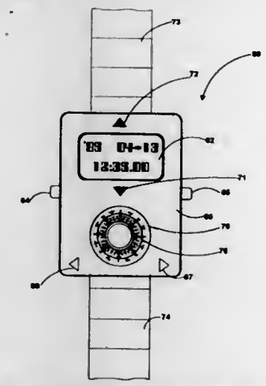
whereby an electrical bias can be generated and sensed between said biasing surface and said outer electrode layer based upon said movement of said outer electrode layer relative to said inner electrode.

5,600,611

WRIST MOUNTABLE COMPASS

Bruce H. Kamens, Thomaston, Conn., assignor to Timex Corporation, Middlebury, Conn.

Filed Oct. 4, 1995, Ser. No. 539,141
Int. Cl.[6] G04B *47/00*
U.S. Cl. 368—10 **6 Claims**



1. A wrist mountable compass having means for fastening to a wrist of a user, which comprises:

a magnetoresistive sensor coupled to a circuit means for sensing the polarity of the horizontal flux lines of the earth's magnetic field;

means for selecting a compass direction comprising a rotatable compass dial coupled to the magnetoresistive sensor such that the sensor rotates in conjunction with the dial;

a marking on the wrist mountable compass for orienting the compass relative to the horizontal flux lines of the earth's magnetic field;

an operating switch for activating the magnetoresistive sensor and the circuit means; and

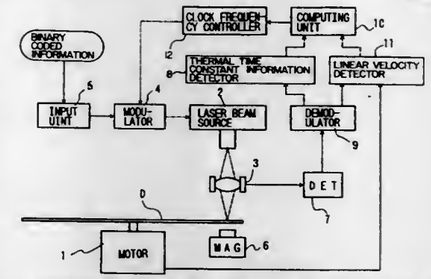
direction indicating means coupled to the circuit means for indicating the direction in which the wrist mountable compass should be turned so that the marking on the compass is directed towards the selected compass direction.

5,600,612

MAGNETOOPTIC RECORDING METHOD AND APPARATUS

Jun Saito, Tokyo; Shinichi Kurita, Kanagawa; Yoshihiro Yamanaka, Kanagawa, and Kazutomo Miyata, Kanagawa, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

PCT No. PCT/JP94/00411, § 371 Date Nov. 1, 1994, § 102(e) Date Nov. 1, 1994, PCT Pub. No. WO94/22139, PCT Pub. Date Sep. 29, 1994
PCT Filed Mar. 15, 1994, Ser. No. 331,578
Claims priority, application Japan, Mar. 15, 1993, 5-078515; Nov. 8, 1993, 5-277946
Int. Cl.[6] G11B *11/10;7/00*
U.S. Cl. 369—13 **7 Claims**



1. A magnetooptic recording apparatus comprising an input unit for introducing binary signals representing information to be recorded, a laser beam source, modulating means for modulating an output beam intensity of said laser beam source in accordance with said binary signals, a projection optical system for directing the beam from said laser beam source to a magnetooptic recording medium, and moving means for moving said magnetooptic recording medium relative to said beam, characterized by comprising:

means for detecting a linear velocity of said magnetooptic recording medium with respect to said beam,

means for detecting thermal time constant information preliminarily recorded on said magnetooptic recording medium, and

means responsive to said detected linear velocity and thermal time constant information to compute a thermal time constant at said linear velocity by calculation.

5,600,613

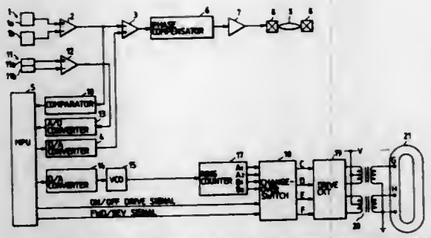
OPTICAL INFORMATION RECORDING/ REPRODUCTION APPARATUS AND METHOD USING AN ULTRASONIC WAVE MOTOR TO DRIVE ONE OF AN OPTICAL HEAD AND A RECORDING MEDIUM

Kazuaki Matsumoto, Kawasaki, and Hiroto Kitai, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 26, 1994, Ser. No. 329,307
Claims priority, application Japan, Oct. 27, 1993, 5-289804; Mar. 24, 1994, 6-053729
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—32 **7 Claims**

1. An optical information recording/reproducing apparatus in which relative movement between an optical information recording medium having a linear information track and an optical head is performed to cause a light beam radiating from the optical head to follow the information track by tracking control so as to perform at least one of recording and reproduction of information, comprising:

an ultrasonic wave motor for driving one of the medium and the optical head relative to the other; and



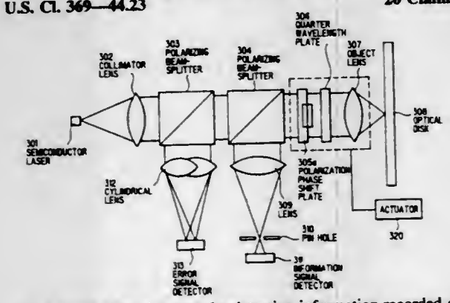
control means for controlling said ultrasonic wave motor to gradually decrease the drive velocity thereof by changing the drive frequency of said ultrasonic wave motor so as to depart from the resonance frequency of said ultrasonic wave motor when the driving of said ultrasonic wave motor is to be stopped.

5,600,614

OPTICAL HEAD SYSTEM HAVING SUPER RESOLUTION ELEMENT

Ryuichi Katayama, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed May 16, 1995, Ser. No. 442,800
Claims priority, application Japan, May 17, 1994, 6-102409
Int. Cl.[6] G11B 7/095
U.S. Cl. 369—44.23 **20 Claims**



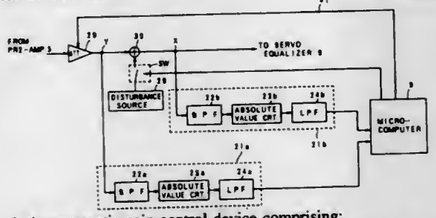
1. An optical head system for detecting information recorded on an optical recording medium, comprising:
- a light source which supplies an input light toward a surface of the optical recording medium;
- an object lens, positioned between the light source and the optical recording medium, which condenses the input light to the optical recording medium;
- a first polarization beam splitter, positioned between the light source and the object lens, which separates a reflection light reflected from the optical disk to form an information signal, from the input light passing through the first polarization beam splitter;
- an information signal detector which receives the information signal and detects information recorded on the optical recording medium in accordance with the received information signal; and
- a super resolution element arranged between the polarization beam splitter and the object lens for decreasing the diameter of a condensed light spot on the optical recording medium, the super resolution element being designed so that a light reflected from the optical recording medium passes through the element substantially unchanged;
- wherein said super resolution element includes a polarization phase shift plate including a phase shift region for shifting by π the phase of a light polarized in a first linear direction and for permitting a light polarized in a second linear direction which is orthogonal to the first linear direction to pass through the phase shift region.

5,600,615

DEVICE AND METHOD FOR AUTOMATICALLY CONTROLLING A SERVO LOOP GAIN

Kazuhiro Kiyoura; Yoshifumi Fujino; Alex Bradshaw; Takashi Sasaki; Koichiro Haraguchi, and Takeshi Matsumoto, all of Kawagoe, Japan, assignors to Pioneer Electronic Corporation, Tokyo-to, Japan

Filed Nov. 2, 1994, Ser. No. 333,326
Claims priority, application Japan, Nov. 4, 1993, 5-275181
Int. Cl.[6] G11B 7/095
U.S. Cl. 369—44.35 **19 Claims**



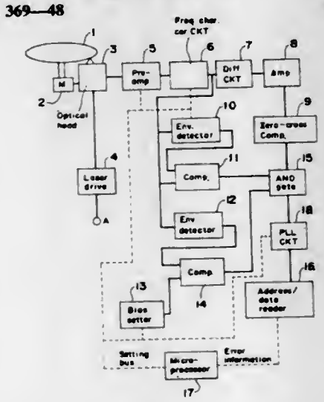
1. An automatic gain control device comprising:
- servo loop for performing servo control based on an error signal;
- gain control means for controlling a gain of the servo loop in accordance with a gain control value; and
- storage means for storing gain control values, wherein said gain control means starts gain control using the gain control value stored in the storage means as a default value with which the gain control is started, and stores a gain control value newly obtained by the gain control to the storage means after the gain control is completed,
- wherein the automatic gain control device further comprises means for calculating an average of the gain control values stored in the storage means, and wherein said gain control means uses the average as the default value.

5,600,616

OPTICAL INFORMATION RECORDING AND REPRODUCING APPARATUS WITH VARIABLE REPRODUCTION SIGNAL PROCESSING FOR INFORMATION RECONSTRUCTION AND RECORDING MEDIUM WITH ITS REPRODUCTION CONDITION

Chikashi Inokuchi, Katano; Kenzou Ishibashi, Moriguchi, and Mayumi Hironaka, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 913,869, Jul. 15, 1992, abandoned.
This application Apr. 6, 1994, Ser. No. 224,099
Claims priority, application Japan, Jul. 15, 1991, 3-173699
Int. Cl.[6] G11B 7/00
U.S. Cl. 369—48 **10 Claims**



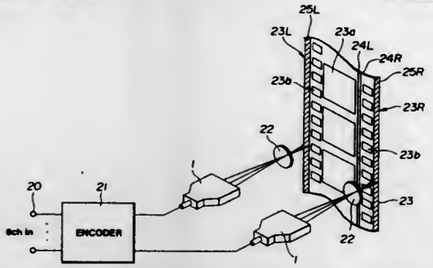
1. An optical information recording and reproducing apparatus for use with a recording medium comprising:
- the recording medium having a reproduction signal representing data;
- a preamplifier for amplifying said reproduction signal from said recording medium;
- a filter for compensating for said signal from said pre-amplifier;
- a comparator for converting said signal from said filter from analog signal into binary signal;
- an envelope detecting comparator having a bias circuit for detecting presence of said signal from said filter;
- a phase locked loop circuit for reading out information including synchronous signals from said comparator;
- a detection means for detecting errors during or after read-out of said data;
- a parameter control means for controlling parameters including amplification degree of said pre-amplifier, frequency characteristics of said filter, comparison level of said comparator, bias level of said bias circuit, and data fetching timing of said phase locked loop circuit, all of the amplification degree of said pre-amplifier, the frequency characteristics of said filter, the comparison level of said comparator, the bias level of said bias circuit and the data fetching timing of said phase locked loop circuit can be changed by setting a combination of parameters; and
- wherein said detection means reads the data by setting a combination of initial parameters; wherein when said detection means has detected the errors, said detection means sequentially selects and sets a plurality of combinations of the parameters different from the combination of initial parameters according to said parameter control means to reread the data until the errors are not detected.

5,600,617

DATA RECORDING DEVICE FOR MOTION PICTURE FILM

Etsuro Saito, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan, and Sony Cinema Products Corporation, Culver City, Calif.

Filed Mar. 23, 1995, Ser. No. 408,841
Claims priority, application Japan, Mar. 31, 1994, 6-063664
Int. Cl.[6] G11B 7/00
U.S. Cl. 369—97 **4 Claims**



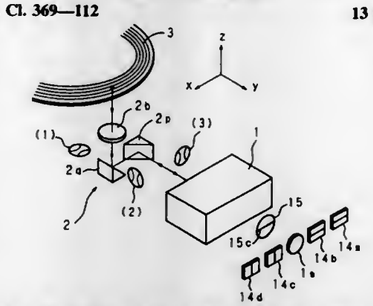
1. A data recording device for a motion picture film comprising:
- a plurality of light emitting devices adapted for being turned on responsive to audio data to be recorded and for transforming electrical audio data into audio data carrying light which is radiated;
- a plurality of optical fibers connected at first ends to light exit ends of the light emitting devices and adapted for conducting the audio data carrying light radiated from the light emitting devices to second ends thereof for radiating the audio data carrying light; and
- a head unit for arraying the second ends of the optical fibers according to a pre-set pattern, for providing heat dissipation by placing a gap of predetermined size between adjoining second ends of the optical fibers thereby eliminating the need for a heat sink and for illuminating the outgoing audio data carrying light at the second ends of the optical fibers via a radiating port thereof on the motion picture film.

5,600,618

OPTICAL DATA RECORDING/REPRODUCING DEVICE AND INTEGRATED HEAD

Koichi Tezuka, and Kyoko Miyabe, both of Kawasaki, Japan, assignors to Fujitsu Limited, Japan

Filed Apr. 4, 1995, Ser. No. 416,044
Claims priority, application Japan, Jul. 15, 1994, 6-164383
Int. Cl.[6] G11B 7/00
U.S. Cl. 369—112 **13 Claims**



1. An optical data recording/reproducing device which control focusing of coherent light projected on an optical disk, comprising:
- a coherent light source for emitting the coherent light; optical means for allowing reflected light of the coherent light from the optical disk to form a first optical path that is substantially vertical to a face of the optical disk and a second optical path that includes an even number of reflection,, said first optical path and said second optical path being substantially identical to a projecting optical path from the coherent light source to the optical disk;
- a holographic optical element that transmits said reflected light having passed through said optical means; and
- photodetectors for receiving said reflected light via said holographic optical element, thereby obtaining a pattern of said reflected light to be used for controlling focusing of the coherent light projected on the optical disk.

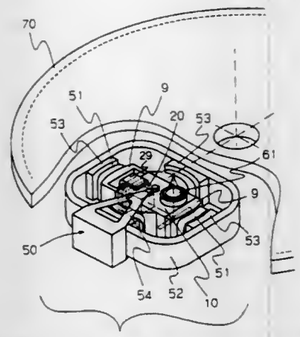
5,600,619

OPTICAL HEAD

Taro Takekoshi; Tomohiro Makigaki; Hirokazu Ito, and Toshio Arimura, all of Nagano-ken, Japan, assignors to Seiko Epson Corporation, Nagano-ken, Japan

PCT No. PCT/JP94/01579, § 371 Date Apr. 28, 1995, § 102(e) Date Apr. 28, 1995, PCT Pub. No. WO95/09418, PCT Pub. Date Apr. 6, 1995
PCT Filed Sep. 26, 1994, Ser. No. 428,132
Claims priority, application Japan, Sep. 27, 1993, 5-240091
Int. Cl.[6] G11B 7/00
U.S. Cl. 369—112 **15 Claims**

1. An integrally-driven type optical head in which a laser optical system provided with a semiconductor laser and a light receiving device is mounted in a moving part of an actuator, wherein
- the moving part is constituted by uniting a heat radiator made of a high heat conductivity material with a heat insulator made of a low heat conductivity material, wherein



the heat conduction bonding of the heat radiator to the semiconductor laser is performed and a coil of the actuator is securely fixed to this heat radiator through the heat insulator.

5,600,620

OPTICAL HEAD APPARATUS HAVING MEANS TO ELIMINATE NOISE CAUSED BY SIDE-LOBES

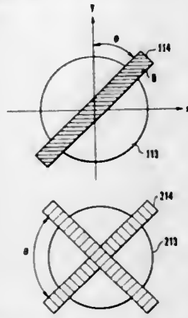
Osamu Ohguri, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 8, 1995, Ser. No. 555,136

Claims priority, application Japan, Nov. 8, 1994, 6-273297; Nov. 11, 1994, 6-277804

Int. Cl.[6] G11B *7/135*

U.S. Cl. 369—112 **12 Claims**



1. An optical head apparatus comprising:

a light source for emitting a light beam;

optical modulation means for modulating one of a light intensity and a phase in a section of the light beam from said light source and controlling the position of a generated side lobe light beam, said optical modulation means having at least a first strip-like light-shielding area rotated about the light beam propagation direction by a first predetermined angle with respect to a vertical axis in the section of the light beam;

an objective lens for focusing the light beam from said optical modulation means to form a super-resolution light spot on a recording medium;

reflected beam condensing means for condensing a reflected beam from the small spot on said recording medium; and

photodetection means for detecting the reflected beam from said reflected beam condensing means to reproduce information.

5,600,621

LASER OUTPUT CONTROL DEVICE FOR AN OPTICAL INFORMATION RECORDING AND REPRODUCING APPARATUS

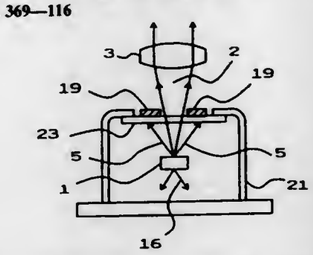
Kazuo Noda, Yokohama; Eiichi Nakamura, Sagamihara, and Koichi Yamazaki, Sakado, all of Japan, assignors to Nippon Conlux Co., Ltd., Tokyo, Japan

Filed Apr. 21, 1994, Ser. No. 230,593

Claims priority, application Japan, Apr. 26, 1993, 5-122028

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—116 **9 Claims**



4. An optical information recording and reproducing apparatus comprising:

a semiconductor laser device arranged for use as a light source for information recording and reproduction;

a housing for accommodating the semiconductor laser device and having a laser light emitting window section for allowing passage therethrough of laser light generated by the semiconductor laser device;

a light detection element including a light receiving element disposed adjacent the periphery of the laser light emitting window section, the light detection element receiving, by means of the light receiving element, peripheral light of forward radiated laser light which is generated by the semiconductor laser device and which passes through the window section, the light detection element being arranged to output an electrical signal representing an intensity of the received peripheral light;

a control circuit that, in accordance with the electrical signal output by the light detection element, automatically controls output power of the laser light generated by the semiconductor laser device to maintain the output power at a predetermined value; and

an optical system including an optical path for allowing the forward radiated laser light generated by the semiconductor laser device and passing through the window section, to be irradiated onto an optical information recording medium, the optical system being arranged such that laser light reflected from the optical information recording medium is fed back along the optical path and branched towards a reading light receiving element via splitter means provided midway in the optical path wherein,

the laser light emitting window section includes a window formed of a transparent plate and the light receiving element includes a light receiving element disposed on the outside of the housing at the periphery of the window formed by the transparent plate.

5,600,622

Patent Not Issued For This Number

5,600,623

DISC DEVICE HAVING A PLURALITY OF HEADS EACH MOVABLE WITHIN A LIMITED DISTANCE

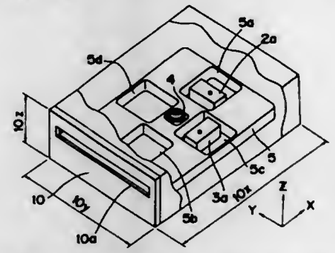
Benichi Miyazaki, Katano, and Yukio Nishino, Nara-ken, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Continuation of Ser. No. 137,300, Oct. 15, 1993, abandoned. This application Jun. 27, 1995, Ser. No. 495,037

Claims priority, application Japan, Oct. 20, 1992, 4-281396

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—219 **3 Claims**



1. A disc device comprising:

a housing having an outer moving region and an inner moving region lying radially inwardly of the outer moving region;

a disc adapted to be accommodated in said housing and having a first surface and a second surface opposite to each other, said disc also having an information area defined on the first surface and divided into an outer information region and an inner information region lying radially inwardly of the outer information region;

first movable mounting means mounted in said housing and having a first head, said first movable mounting means movable in a first direction radially of said disc within a limited distance across the outer moving region so that the first head records or reproduces information on or from the outer information region; and

second movable mounting means mounted in said housing and having a second head, said second movable mounting means movable in a second direction radially of said disc within a limited distance across the inner moving region so that the second head records or reproduces information on or from the inner information region, respectively, said second direction being perpendicular to the first direction;

wherein the first movable mounting means and the second movable mounting means do not interfere with each other.

5,600,624

APPARATUS FOR ROTATING AN OPTICAL DISK INCLUDING AN AIR BEARING TURNTABLE

Peter Forsell, Goetalandsvaegen 188, 35 Aelvsjoe, S-125, Sweden

PCT No. PCT/SE93/00279, § 371 Date Nov. 30, 1993, § 102(e) Date Jan. 4, 1994, PCT Pub. No. WO93/20556, PCT Pub. Date Oct. 14, 1993

PCT Filed Apr. 1, 1993, Ser. No. 158,161

Claims priority, application Sweden, Apr. 1, 1992, 9201022

Int. Cl.[6] G11B *3/60*

U.S. Cl. 369—266 **6 Claims**

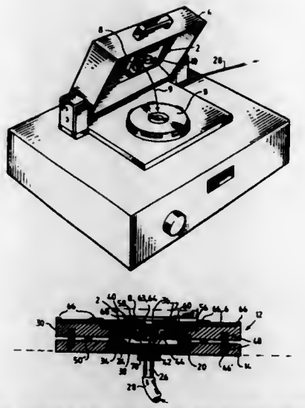
1. An optical disk system for reading a CD-disk comprising:

an optical unit for projecting a laser beam onto a surface of the CD-disk, the optical unit being adapted to detect laser light reflected back onto the optical unit after having been modulated with information stored on the CD-disk;

an air journal unit having a support member, a turntable adapted for contact with the CD-disk, and a planar element disposed between the support member and the turntable, the planar element having first and second opposing sides and defining an air chamber between the second side and the support member, the turntable having first and second opposing sides, the second side being rotatably supported on a surface of the first side of the planar element, said surface having a recess forming a space between the first side of the planar element and the second side of the turntable, the air chamber having an inlet opening for receiving pressurized air and a plurality of outlet openings fluidly coupling the air chamber with said space between the first side of the planar element and the first side of the turntable, the air journal unit being separable from the optical unit to allow introduction of the CD-disk onto the turntable;

an air chamber disc disposed within the air chamber for supporting, the planar element above the support member; and

a motor-driven shaft for rotating the turntable and the CD-disk therewith, the turntable having a centrally located journal pin extending from the first side of the turntable, one of the plurality of outlet openings in the air chamber receiving the journal pin to form an air journal means for the journal pin and the motor-driven shaft, the turntable being separable from said planar element by air introduced into said space through said outlet openings to create an air bearing between the turntable and the planar element, thereby minimizing friction as the turntable rotates.



5,600,625

TURNTABLE FOR DISC-SHAPED INFORMATION CARRIERS

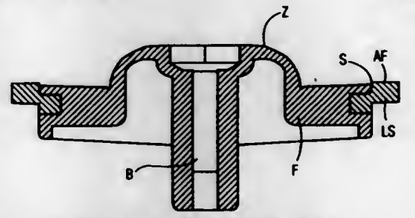
Manfred Kammerer, St. Georgen, Germany, assignor to Deutsche Thomson-Brandt GmbH, Germany

Continuation of Ser. No. 150,909, Nov. 12, 1993, abandoned. This application Apr. 11, 1995, Ser. No. 420,898

Claims priority, application Germany, Nov. 19, 1992, 42 38 941.0

Int. Cl.[6] G11B *3/60*

U.S. Cl. 369—270 **8 Claims**



1. In a turntable for disc shaped records, having;

an annular centrally apertured outer member having a peripheral record bearing surface with a radial inward facing inner edge;

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a circular inner member with a central portion for receiving turntable drive means and including means for centering a record;

said outer member having a shoulder at the inner edge of said record bearing surface leading to a protruding offset projection recessed below said record bearing surface, said offset projection extending radially inward of said radial inward facing inner edge toward the drive means receiving portion of said inner member;

the improvement comprising:

said inner member being a non-metallic mouldable material which at its outer periphery completely surrounds and engages the protruding offset projection of said outer member up to and against said shoulder at said record bearing surface; and, the record bearing surface of the outer member is a location reference surface, in a direction normal thereto, for the inner member so as to minimize vertical run out of said turntable.

5,600,626

OPTICAL DISK OF SAMPLED SERVO TYPE HAVING SYNCHRONIZATION A MARKS FOR SIMPLE SYNCHRONIZATION DETECTION

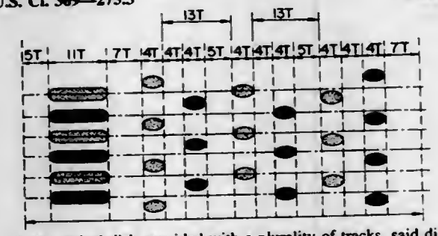
Fumihiko Yokogawa; Yoshimi Tomita, and Hideki Hayashi, all of Tsurugashima, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Nov. 17, 1994, Ser. No. 343,946

Claims priority, application Japan, Nov. 19, 1993, 5-290750

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—275.3 **1 Claim**



1. An optical disk provided with a plurality of tracks, said disk having a recording format for a sampled servo system, and comprising a preformatted servo field including a synchronous mark for synchronization detection and a data field for recording data on each track;

wherein each synchronous mark is aligned in the same radial direction of the disk per track, and each said synchronous mark has an edge interval longer than a maximum inversion interval between other marks in the direction of the track; and

an interval of said aligned synchronous marks between adjacent tracks is smaller than a spot diameter of a reading beam.

5,600,627

OPTICAL DISK AND A METHOD FOR RECORDING, REPRODUCING, AND DELETING INFORMATION ON AND FROM THE OPTICAL DISK

Junji Hirokane, Nara; Hiroyuki Katayama, Sakura; Akira Takahashi, Nara, and Kenji Obta, Nara-ken, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

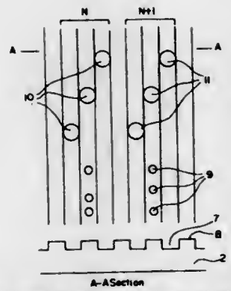
Filed Nov. 14, 1994, Ser. No. 340,333

Claims priority, application Japan, Nov. 16, 1993, 5-286478; Nov. 16, 1993, 5-286479

Int. Cl.[6] G11B *13/04*

U.S. Cl. 369—275.4 **17 Claims**

1. A method for recording, reproducing, and deleting information on and from an optical disk including a plurality of tracks each having M guide grooves (M is an integer equal to or larger than 2) and M-1 land(s) interposed between the adjacent guide grooves, at least one of the land(s) having a group of pits for producing address information, at least one of the land(s) having no pits, the method comprising the step of:



focusing light beams on the respective guide grooves and land(s) for effecting the recording, reproduction, and deletion of information.

5,600,628

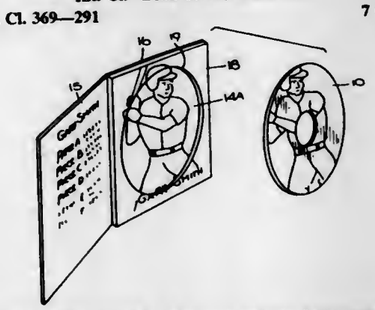
COMPACT DISC ALBUM

Donald Spector, 380 Mountain Rd., Union City, N.J. 07080

Continuation-in-part of Ser. No. 821,062, Jan. 16, 1992, abandoned, which is a continuation-in-part of Ser. No. 701,078, May 16, 1991, Pat. No. 5,090,561. This application Sep. 16, 1992, Ser. No. 945,408

Int. Cl.[6] G11B *23/03*; **B65D** *85/57*

U.S. Cl. 369—291 **7 Claims**



1. An album forming a protective package for a compact disc having a recording on one side, the other side of the disc being unrecorded, said disc being removable from the album so that it may be inserted in a compact disc player, said album comprising:

(a) a rectangular front cover panel hinged to a rectangular rear cover panel; and

(b) a face panel overlying the inner surface of the rear cover panel and secured thereto, said face panel and said rear cover panel being formed of flexible material, said face panel having a circular opening therein which is backed by said rear cover panel to define a well, said opening having a diameter matching that of the disc whereby said disc is snugly nested in said well, whereby when the album is closed, said disc is surrounded by said face panel and is sandwiched between said front and rear cover panels, and when the album is open, the disc may be popped out by flexing the rear cover panel, the recording on one side of the disc being related to a character, such as a sports figure, the other side being printable, said face panel having a picture of the character printed thereon, a portion of which is printed on the printable surface of the disc, the same portion being printed on the inner surface of the rear cover panel surrounded by the opening.

5,600,629

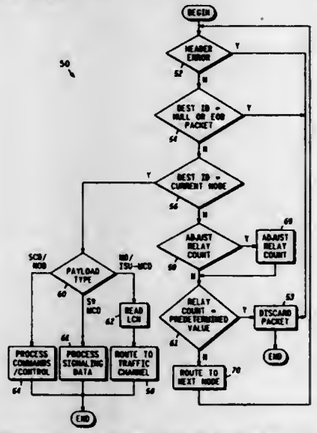
INTER-SATELLITE METHOD FOR ROUTING PACKETS

Gerry Van Dacle, Phoenix; Kenneth W. Hines, Tempe; Bradley T. Sanders, Chandler, and Donald J. Sabourin, Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 279,729, Jul. 25, 1994, abandoned. This application Sep. 8, 1995, Ser. No. 524,955

Int. Cl.[6] H04J *3/26*

U.S. Cl. 370—349 **12 Claims**



10. A method executed by each of a plurality of nodes for routing packets from an origination node to a destination node through the nodes, the nodes being connected together, each of the packets including a header and a payload, each of the headers including a relay count, payload type, header error check and destination ID, each of the nodes storing a routing cue table, the method comprising the steps of:

(a) discarding the packet if the header error check is not equal to a calculated error check of the header;

(b) discarding the packet if the destination ID indicates a null packet or an end-of-burst packet;

(c) determining whether a current node matches the destination ID if the packet is neither the null packet nor the end-of-burst packet;

(d) reading the payload type to determine where the packet is to be routed if the current node matches the destination ID;

(e) identifying from the routing cue table which node to send the packet to based on the destination ID if the current node does not match the destination ID;

(f) adjusting the relay count;

(g) discarding the packet if the relay count is equal to a predetermined value;

(h) forwarding the packet if the packet is not discarded in (g) to the node identified in step (e); and

(i) repeating steps (a)–(h) until the packet arrives at the destination node.

5,600,630

PATH CHANGING SYSTEM AND METHOD FOR USE IN ATM COMMUNICATION APPARATUS

Masataka Takano; Yoji Oka, both of Yokohama; Akihiko Takase, Tokyo, and Setsuo Takahashi, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Communication Systems, Inc., Yokohama, both of Japan

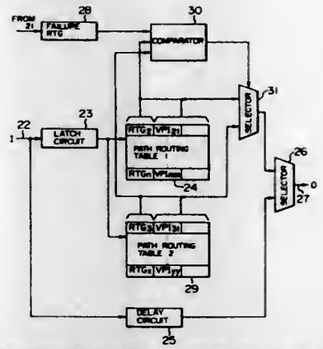
Filed Aug. 25, 1994, Ser. No. 296,334

Claims priority, application Japan, Aug. 31, 1993, 5-215485

Int. Cl.[6] H04J *3/14*; **H04L** *12/56*

U.S. Cl. 370—218 **40 Claims**

1. A communication apparatus wherein connecting information included in cells inputted from a plurality of digital lines are rewritten and internal routing information are added to the cells according to the connecting information to allow said cells to be output into the system, whereby the cells are multiplexed and switched to a plurality of predetermined output digital lines by converting at least one of an output connection and an output line, comprising:



a plurality of routing information storing apparatuses each for storing information of an output connection, an output line or both corresponding to one piece of input connecting information;

an equipment information registering apparatus for storing information indicative of states such as a failure, of said output line, an output communication apparatus, a communication apparatus of interest or communication equipment comprised of a combination thereof; and

a selecting apparatus for selecting any one of said plurality of routing information storing apparatus based on correspondence between the contents of said equipment information registering apparatus and said plurality of routing information storing apparatus,

whereby in the event of a failure occurring in said output line, the output communication apparatus, the communication apparatus of interest or a combination thereof, an output line, an output connection or an output apparatus is selected in self-control fashion from said plurality of routing information storing apparatuses in accordance with the failure.

5,600,631

SELF-HEALING RING SWITCH AND METHOD OF CONTROLLING THE SAME

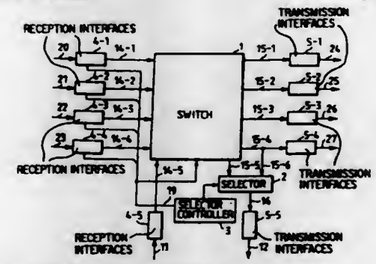
Masahiro Takatori, Hachioji; Yoshihiro Ashi, and Hiroyuki Fujita, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 15, 1994, Ser. No. 356,617

Claims priority, application Japan, Jan. 11, 1994, 6-001112

Int. Cl.[6] H04J *3/08*; *3/14*

U.S. Cl. 370—217 **8 Claims**



1. A self-healing ring switch comprising:

a switch having a plurality of input/output highways; and

a selector having a plurality of input terminals and an output terminal, wherein one of the output highways of said switch is connected with one of the input terminals of said selector, wherein one of the remaining output highways of said switch is branched, wherein one of the branched highways is connected with another input terminal of said selector, and wherein the output terminal of said selector is connected with a drop line;

wherein said switch includes a first space division switch, add drop switch, a second space division switch on a delay adder;

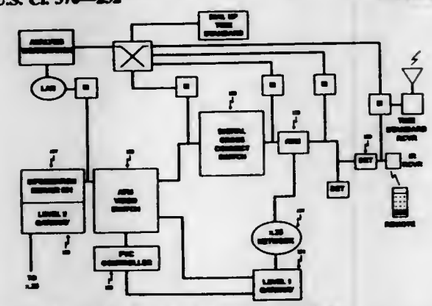
wherein said first space division switch has at least four input and four output terminals, wherein said add drop switch has at least four input and four output terminals, wherein said second space division switch has at least four input and four output terminals, wherein at least three of the output terminals of said first space division switch are connected with the input terminals of said add drop switch, wherein at least three of the output terminals of said add drop switch are connected with the input terminals of said second space division switch, wherein an output terminal of said first space division switch which is not connected with said add drop switch, is connected with an input terminal of said second space division switch through said delay adder, wherein the signals from add lines are fed to the input terminals of said add drop switch, and wherein that output terminal of said add drop switch which is not connected with said second space division switch is used as said one output highway, whereas one of the output highways of said second space division switch is used as said one of the remaining output highways.

5,600,632

METHODS AND APPARATUS FOR PERFORMANCE MONITORING USING SYNCHRONIZED NETWORK ANALYZERS

Martin A. Schulman, Herndon, Va., assignor to Bell Atlantic Network Services, Inc., Arlington, Va.

Filed Mar. 22, 1995, Ser. No. 408,254
Int. Cl.[6] H04J *1/16;3/14*
U.S. Cl. 370—252 **9 Claims**



1. A network performance analyzer comprising:

a plurality of network analyzers, each having a clock and each connected to a point in a network;

means for synchronizing the clocks of said network analyzers;

means for aggregating data captured by said network analyzers, comprising means for placing all said data in a common file and for sorting said data chronologically; and

means for analyzing said data to produce network performance information, comprising means for processing chronologically sorted data to extract desired information; wherein the desired information comprises one or more of:

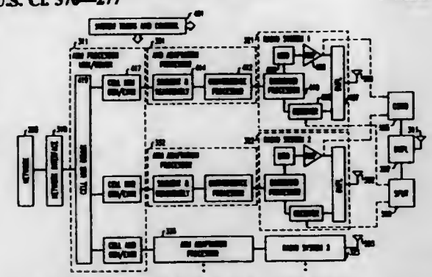
a. average packet latency between two points,
b. packet latency distribution,
c. packet size distribution,
d. packet size minimum and/or maximum,
e. minimum and/or maximum latency
f. packet fragmentation,
g. packet loss,
h. packet retransmissions,
i. sliding window algorithm efficiency, and
j. throughput.

5,600,633

WIRELESS TELECOMMUNICATION BASE STATION FOR INTEGRATED WIRELESS SERVICES WITH ATM PROCESSING

Gopal K. Jaisingh, Montville, and Jesse E. Russell, Piscataway, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Feb. 24, 1995, Ser. No. 393,784
Int. Cl.[6] H04B *1/66*
U.S. Cl. 370—277 **9 Claims**



1. A flexible intelligent base station, comprising:

a network interface for connecting to an ATM communication network;

an ATM adaptation processor for mapping signaling and bearer information streams into ATM cell streams and converting ATM cell streams into signaling and bearer information streams;

an ATM processor multiplexer/demultiplexer coupling the air-to-network interface with air as the data transmission medium and ATM adaptation processor to each other; and

first radio processing circuitry connected to the ATM adaptation processor and including circuitry for processing the signaling and bearer information streams and antenna apparatus for radiating such information streams and for receiving such streams over the air interface.

5,600,634

MULTIPLEX SERIAL DATA COMMUNICATION CIRCUIT NETWORK WITH SUPERPOSED CLOCK AND DATA SIGNALS

Yoshinori Satoh, Yokosuka, and Takashi Matsumoto, Yokohama, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 15, 1995, Ser. No. 405,053
Claims priority, application Japan, Mar. 17, 1994, 6-046686; Sep. 30, 1994, 6-237953; Dec. 27, 1994, 6-338244
Int. Cl.[6] H04B *1/56*
U.S. Cl. 370—294 **29 Claims**

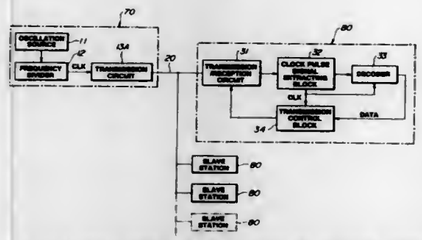
1. A multiplex serial data communication circuit network comprising:

a) a clock pulse oscillation circuit for generating a clock pulse signal;

b) a single signal transmission line on which a signal is transmitted bidirectionally in a multiplex time division mode;

c) a clock pulse signal output circuit for transmitting the clock pulse signal generated by the clock pulse oscillation circuit on said single signal transmission line;

d) a transmission data generation/output circuit for superposing a transmission data on the clock pulse signal output from said clock pulse signal output circuit;



e) a clock pulse signal extraction circuit for receiving signals present on the transmission line and for extracting the clock pules signal from the received signals; and

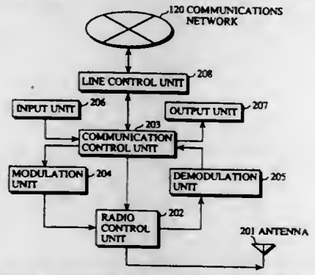
f) means for separating and extracting a signal required to operate therein from among the received signals and for executing a signal processing in synchronization with the extracted clock pules signal.

5,600,635

CALLER PERSONAL STATION EQUIPPED WITH SIMULTANEOUS CALL FUNCTION AND MULTICAST COMMUNICATION FUNCTION AND CORRESPONDING RECEIVER PERSONAL STATION, AND CELL STATION AND CORRESPONDING RECEIVER PERSONAL STATION

Takayuki Hamaki, Hirakata; Mitsuhiro Suzuki, Moriguchi; Akinori Tatsumi, Yokohama; Mikio Shimazu, Iizuka; Jun Yamaguchi, Takatsuki; Hiroaki Iwamoto, Hirakata; Masahide Morozumi, Yokohama; Takuya Kobayashi, Osaka; Seiji Horii, Kashihara, and Takako Hirose, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 6, 1995, Ser. No. 418,422
Claims priority, application Japan, Apr. 7, 1994, 6-069589; May 23, 1994, 6-108705
Int. Cl.[6] H04L *5/14; H04J 3/00*
U.S. Cl. 370—280 **101 Claims**



1. In a mobile communication system comprising a cell station and a plurality of personal stations, the cell station controlling the plurality of personal stations using a control channel and a plurality of communication channels, the plurality of personal stations performing digital radio communications via the cell station while monitoring the control channel and the plurality of communication channels, each of the plurality of personal stations being a caller personal station, which performs direct multicast communications with other personal stations, the caller personal station comprising:

a channel search means for scanning the plurality of communication channels to search for an unoccupied channel and regarding the unoccupied channel as a multicast channel;

a simultaneous call means for repeatedly transmitting a simultaneous call frame on the multicast channel for a first predetermined time period, the simultaneous call frame indicating a simultaneous call to the other personal stations;

a multicast means for transmitting multicast frames on the multicast channel when a second predetermined time period has passed, said multicast frames containing data to be multicast; and

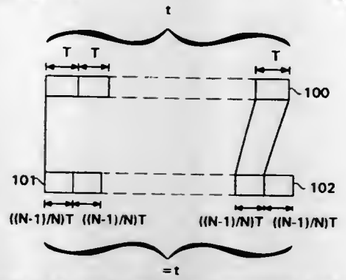
on receiving the simultaneous call frame by sequentially sensing the plurality of communication channels, the other personal stations enter a receiving state of multicast frame on the multicast channel.

5,600,636

METHOD FOR DIGITAL SEMI-DUPLEX TRANSMISSION

Kimmo Mäkeläinen, Helsinki; Mika Lehmusto, Kerava, and Mika Heiskari, Espoo, all of Finland, assignors to Nokia Telecommunications OY, Espoo, Finland

PCT No. PCT/FI94/00431, § 371 Date Sep. 12, 1995, § 102(e) Date Sep. 12, 1995, PCT Pub. No. WO95/09497, PCT Pub. Date Apr. 6, 1995
PCT Filed Sep. 26, 1994, Ser. No. 448,366
Claims priority, application Finland, Sep. 27, 1993, 934229
Int. Cl.[6] H04L *5/16*
U.S. Cl. 370—296 **4 Claims**



1. Method for digital semi-duplex transmission between subscriber stations and a base station in a radio system, characterized in that it comprises the following steps:

a selected number (N–1) of speech or data blocks are transmitted during a time period shorter than the original total duration (t) of the speech or data blocks from a subscriber station (MS A) having the permission to transmit to a base station (BS) having the permission to receive;

the base station (BS) having the receiving permission utilizes the original total duration (t) of the blocks reduced by the actual transmission period of the blocks and by a first and a second guard period (**301**, **302**, respectively) for transmitting reverse information (**203**) and time synchronization information (**202**) to the subscriber station having the transmitting permission; and

the base station (BS) having the receiving permission transmits information during at least one of said guard periods (**301**, **302**) to at least one subscriber station (MS B) which does not have the transmitting permission.

5,600,637

SYSTEM AND METHOD FOR TRAFFIC DISTRIBUTION, INTERMEDIATE DEVICE AND END DEVICE

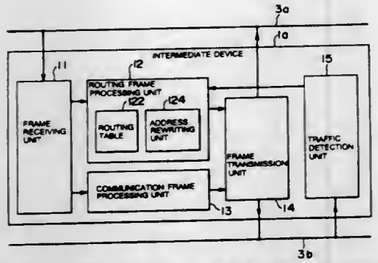
Rumiko Kikuta, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Dec. 8, 1994, Ser. No. 351,714
Claims priority, application Japan, Feb. 22, 1994, 6-024454
Int. Cl.[6] H04Q *11/00*
U.S. Cl. 370—389 **18 Claims**

1. A system for traffic distribution comprising:

a plurality of networks;

a plurality of end devices which are connected to each of the networks, and transmit and receive a communication frame and a routing frame; and



a plurality of intermediate devices which connect the plurality of networks to one another and receive the communication frame and the routing frame from one of said networks and transmit the communication frame and the routing frame to another network of a destination of said networks; wherein each of the plurality of intermediate devices comprises:

receiving means which receives the communication frame and the routing frame transmitted from an end device of a transmission source;

detection means which detects a traffic volume of the communication frame transmitted to said another network of the destination;

routing frame processing means which creates a frame including a media access control address that indicates an access point at which said intermediate device is connected to said one of said networks, and a network entity title which indicates an address allocated to the intermediate device so as to inform the frame as the routing frame to said end devices connected to each of said networks, and creates a routing frame that indicates an intermediate device other than said intermediate device when the traffic volume exceeds a prescribed value; and

transmission means which receives the communication frame directly from said receiving means and transmits the communication frame to an end device of destination and transmits the routing frame that indicates said other intermediate device from said routing frame processing means to said end device of the transmission source.

5,600,638

METHOD AND SYSTEM FOR IMPROVING THE PROCESSING TIME OF THE PATH SELECTION IN A HIGH SPEED PACKET SWITCHING NETWORK

Olivier Bertin, Nice, and Olivier Maurel, Le Cannet, both of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 12, 1994, Ser. No. 354,407

Claims priority, application European Pat. Off., Aug. 3, 1994, 93480231

Int. Cl.[6] H04L *12/56*; **H04Q** *11/04*

U.S. Cl. 370—351 **4 Claims**

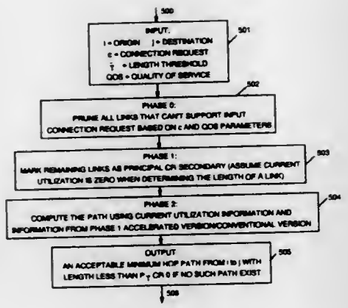
4. For use in a packet communications system comprising a plurality of packet switching nodes interconnected by a plurality of transmission links, a method of determining an optimal path between an originating node and a destination node, said method comprising the steps of:

identifying principal paths between the originating node and the destination node in said system, each said principal path including a minimal hop count where a hop is a single one of said transmission links in said principal path;

identifying a set of principal links, a principal link being a link on an identified principal path,

determining an optimal path between said originating node and said destination node utilizing only the links in said set of principal links, and

accepting said optimal path only if said optimal path also has a transmission delay below a preselected threshold.



5,600,639

BROADCAST METHOD FOR SIMULTANEOUS SWITCHING OF AN ANNOUNCEMENT TO A PLURALITY OF SUBSCRIBERS OF A COMMUNICATION SYSTEM

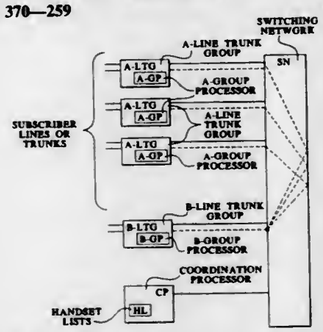
Axel Kreten, Pchheim, and Klaus Leutner, Unterhaching, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Sep. 26, 1994, Ser. No. 311,928

Claims priority, application Germany, Sep. 24, 1993, 43 32 637.4

Int. Cl.[6] H04J *3/02*; **H04Q** *3/42*

U.S. Cl. 370—259 **4 Claims**



1. Broadcast method for simultaneously switching an identical announcement to each of a plurality of subscribers of a communication system having a central switching network that is centrally-controlled by a coordination processor and having a plurality of line trunk groups that form interfaces of subscriber ports, trunk ports and service ports to channels of said switching network and that are each respectively controlled by an A-side group processor, said method comprising the steps of:

allocating a collecting time span for said identical announcement to a single announcement port via which said identical announcement is sent;

collecting call requests from a plurality of subscribers for said one announcement, said call requests arriving within said collecting time span of said announcement port;

independently through-connecting a call request via said A-side group processor to that channel of said central switching network via which the announcement is through-connected;

informing said group processor of the through-connect point in time to a common announcement port identified for an announcement request via said coordination processor; and

after the expiration of said collecting time span, through-connecting said one announcement port to each subscriber in said plurality of subscribers from which said collected call requests were received within said collecting time span.

5,600,640

CALL PROCESSING SYSTEM FOR CONTROLLING CONNECTIONS IN A COMMUNICATIONS SYSTEM

Hamish M. Blair; Graham R. Dent, both of Kenilworth; John W. Cutler, Coventry, all of Great Britain; Cornelis Hoogendoorn, Graefelfing; Heinrich Schiessl, Munich, both of Germany, and Larry E. Schessel, Boca Raton, Fla., assignors to Siemens Aktiengesellschaft, Munich, Germany, and GPT Ltd., Coventry, Great Britain

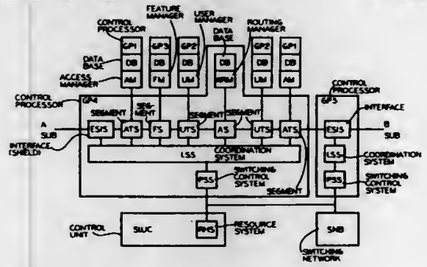
PCT No. PCT/EP93/02287, § 371 Date Jun. 7, 1995, § 102(e) Date Jun. 7, 1995, PCT Pub. No. WO94/05121, PCT Pub. Date Mar. 3, 1994

PCT Filed Aug. 25, 1993, Ser. No. 392,727

Claims priority, application European Pat. Off., Aug. 25, 1992, 92114476

Int. Cl.[6] H04Q *11/04*

U.S. Cl. 370—360 **9 Claims**



6. A switching system, comprising:

a call processing system having;

a signaling interface system which forms an interface of the call processing system to a signaling type on which respective connection ends are based, and which carries out a part of logic connection control which is dependent on the signaling type,

a call control system which carries out a part of the logic connection control which is independent of the signaling type,

a resource control system which initializes connection control processes at a physical level by corresponding to connection requests, which connection requests are produced by the signaling interface system and the call control system in a mutually independent manner, and

a coordination system which coordinates the mutually independent connection requests submitted to the resource control system by the signaling interface system and the call control system;

the resource control system having a switching control system and resource systems,

the switching control system controlling the connections at the physical level in a central manner and for this purpose receiving connection requests from the call processing system, while

the resource systems of the switching system control respective resources locally and for this purpose receive commands from the switching control system.

5,600,641

VOICE CIRCUIT EMULATION SYSTEM IN A PACKET SWITCHING NETWORK

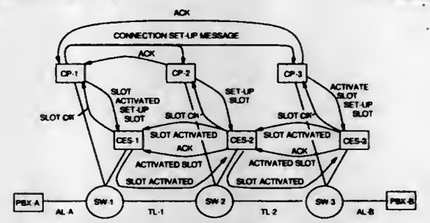
Maurice Duault, Saint Laurent du Var; Gerard Lebizay, Vence, and Claude Galand, Cagnes sur Mer, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 26, 1995, Ser. No. 451,580

Claims priority, application European Pat. Off., Jul. 7, 1994, 94480062

Int. Cl.[6] H04L *12/56*

U.S. Cl. 370—400 **22 Claims**



21. A circuit emulation CE server for using in a packet switching communications network having switching nodes interconnected by connection lines; said CE server comprising:

a buffer memory for storing IN CE packets and OUT CE packets;

a local store for storing routing tables containing, for each incoming connection line, the identification of each outgoing connection line, the identification of each outgoing connection line associated to each slot of the circuit emulation packet received from said incoming connection line and the identification of each slot of the CE packet to be transmitted on said outgoing transmission line; and

a switch module for monitoring the routing tables and switching slots, containing voice signals, contained in the IN CE packets received from an incoming connection line to slots contained in the OUT CE packets for subsequent transmission on different outgoing connection lines.

5,600,642

METHOD FOR MODIFYING A MULTICAST TREE IN A SWITCHING NETWORK

Ludwig Pauwels, Hoboken; Filip Callens, Hoegaarden, and Pascal Lefebvre, Woluwe-St-Pierre, all of Belgium, assignors to Alcatel N.V., BH Rijswijk, Netherlands

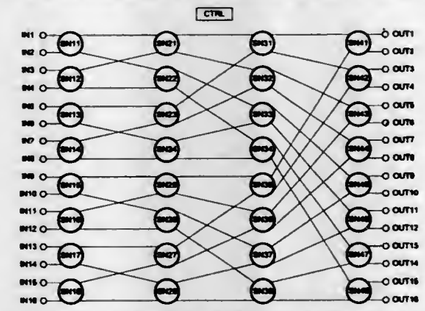
Filed Sep. 13, 1995, Ser. No. 527,488

Claims priority, application European Pat. Off., Sep. 13, 1994, 94202633

Int. Cl.[6] H04L *12/56*

U.S. Cl. 370—396 **7 Claims**

1. In a switching network with a plurality of network inlets and



network outlets and a plurality of interconnected switching nodes

having node inputs and node outputs with respective addresses, a method of modifying a first set of said network outlets to which a cell stream is routed from one of said network inlets to a second set of said network outlets to which said cell stream is to be routed, the addresses of the node outputs of each of said switching nodes from which said cell stream is output, being stored in a routing table of said each node, characterized in that said method includes the steps of:

transmitting a modification request message to said network inlets from each network outlet belonging to one but not to both of said sets;

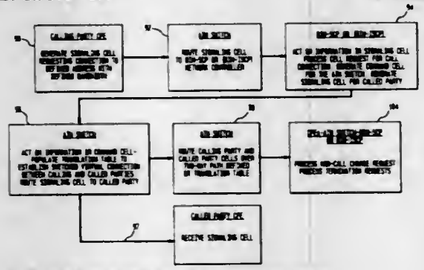
in each switching node receiving said modification request message on one of the node outputs of said each switching node, selectively transmitting said request message to said network inlets or transmitting a confirmation message to said each network outlet depending on the absence or presence in said node routing table of addresses of node outputs other than said one node output, respectively.

5,600,643

BROADBAND INTELLIGENT TELECOMMUNICATIONS NETWORK AND METHOD PROVIDING ENHANCED CAPABILITIES FOR CUSTOMER PREMISES EQUIPMENT

Richard B. Robrock, II, Somerset, N.J., assignor to Bell Communications Research, Inc., Morristown, N.J.

Filed Sep. 23, 1993, Ser. No. 125,978
Int. Cl.[6] H04L *12/56*
U.S. Cl. 370—399 **78 Claims**



1. A broadband intelligent network comprising:

a fast-packet switch having a plurality of ports;

a switch processor to establish switched virtual connections or permanent virtual connections between ports;

respective customer links having a broad digital bandwidth connected to predetermined customer switch ports for transporting signaling and data cells to and from respective customer premises equipment (CPE) units;

a network control processing system interfaced to at least one switch port to receive signaling cells generated by CPE units and carrying customer service request data, and to control network responses thereto;

a resource system for the network having at least one resource unit interfaced to a resource unit port of the fast-packet switch to receive query cells and to transmit response cells carrying resource data;

the switch processor detecting each customer generated signaling cell generated by a CPE unit and received by the switch and routing each generated signaling cell through a first virtual circuit and the one switch port to the network control processing system;

the network control processing system detecting service request data in each signaling cell requesting download of a program module or data from the network to a CPE unit from which the service request data is received or from the requesting CPE unit to the network;

the network control processing system responding to download requests by effecting the requested download between the requesting CPE unit and the network through the fast-packet switch; and

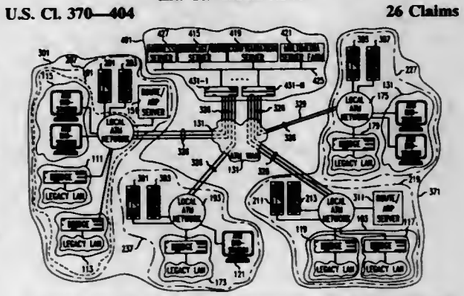
the network control processing system directing the switch processor to establish a second virtual circuit in the fast-packet switch between the requesting CPE unit and the resource unit if a host or other resource unit connection is required by the service request.

5,600,644

METHOD AND APPARATUS FOR INTERCONNECTING LANS

Tian-Pong P. Chang, Holmdel; Seyhan Civanlar, Middletown Township, Monmouth County, and Vikram R. Saksena, Freehold, all of N.J., assignors to AT&T, Holmdel, N.J.

Filed Mar. 10, 1995, Ser. No. 402,235
Int. Cl.[6] H04L *12/46*
U.S. Cl. 370—404 **26 Claims**



1. Apparatus for directly interconnecting a plurality of sub-emulated local area networks (sub-ELANs) across a common asynchronous transfer mode (ATM) network to form a single ELAN, each of said sub-ELANs including a LAN Emulation Server (LES) and a Broadcast and Unknown Server (BUS), said apparatus comprising:

an ELAN contronect network directly connected to said common ATM network for interconnecting the LES and BUS of each of said sub-ELANs, the ELAN contronect network being configured to present itself to the LES and BUS of each of said sub-ELANs as a LAN Emulation Client (LEC).

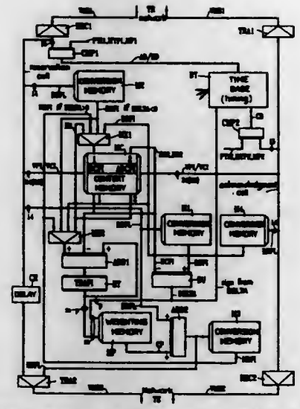
5,600,645

BIT RATE RESERVATION AT SWITCHING NODES OF AN ASYNCHRONOUS NETWORK

Pierre Boyer, Lannion; Christophe Mangin, Louannec, and Michel Servel, Lannion, all of France, assignors to France Telecom, Paris, France

Filed Jul. 21, 1995, Ser. No. 505,593
Claims priority, application France, Jul. 21, 1994, 94 09146
Int. Cl.[6] H04L *12/56*
U.S. Cl. 370—395 **19 Claims**

1. A method of bit rate reservation at switching nodes of an asynchronous transfer mode network through which passes a routing channel having a current bit rate stored at said nodes and extending between first and second terminals, a reservation cell being received in each switching node, said reservation cell containing a requested bit rate, having been transmitted from said first terminal through said network and being retransmitted on an outgoing multiplex channel from each said switching node having a maximum bit rate through said network to said second terminal, and an acknowledgement cell being received by each said switching node, said acknowledgment cell being transmitted from said second terminal to said first terminal through said network in response to said reservation cell retransmitted on said outgoing multiplex channel,



said method comprising the following steps effected at each said switching node if said requested bit rate contained in said reservation cell received by each said switching node is greater than said current bit rate:

decreasing said requested bit rate as function of a difference between said requested bit rate and said current bit rate and a stored total of bit rates accepted and in process of acceptance relating to other routing channels using said outgoing multiplex channel to provide a new bit rate lower than said requested bit rate, even when the difference between said requested bit rate and said current bit rate is higher than the difference between said maximum bit rate of said outgoing multiplex channel and said stored total;

subtracting said current bit rate from said stored total to provide a first temporary total;

replacing said requested bit rate by said new bit rate in said received reservation cell;

transmitting said reservation cell containing said new bit rate on said outgoing multiplex channel through said network to said second terminal;

adding to said first temporary total an adopted lower new bit rate at said switching nodes through which said routing channel passes in response to an acknowledgement cell that contains said adopted lower new bit rate and that is transmitted by said second terminal on receipt of said reservation cell containing said adopted lower new bit rate; and

storing said adopted lower new bit rate in place of said current bit rate.

5,600,646

VIDEO TELECONFERENCING SYSTEM WITH DIGITAL TRANSCODING

Mark D. Polomski, Hollis, N.H., assignor to VideoServer, Inc., Lexington, Mass.

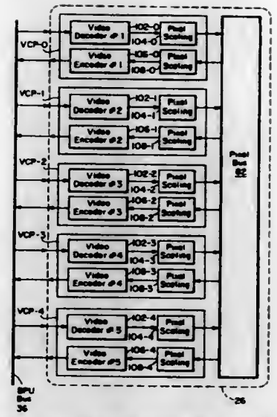
Filed Jan. 27, 1995, Ser. No. 379,274
Int. Cl.[6] H04J *3/22*; **H04N** *7/15*
U.S. Cl. 370—263 **31 Claims**

1. A multipoint control unit for receiving compressed video signals from terminals in a conference and for transmitting selected compressed video signals to the terminals, the multipoint control unit comprising:

decoding means for decoding the compressed video signals from respective terminals to uncompressed video signals in a pixel domain;

a time division multiplex bus receiving the uncompressed video signals at timeslots associated with respective terminals, the bus being a parallel pixel bus;

selector means for selecting the uncompressed video signals from one or more timeslots of the time division multiplex bus; and



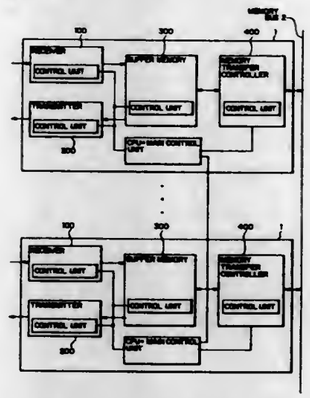
encoding means for encoding the selected uncompressed video signals for transmission to respective terminals.

5,600,647

COMMUNICATION DATA SWITCHING APPARATUS AND COMMUNICATION SYSTEM WITH SUCH SWITCHING APPARATUS

Masao Murai, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 17, 1995, Ser. No. 405,956
Claims priority, application Japan, Apr. 18, 1994, 6-078563
Int. Cl.[6] H04L *12/407*
U.S. Cl. 370—363 **4 Claims**



1. A communication data switching apparatus having a communication data switching unit for use between an input line, an output line, and a memory bus, said unit comprising:

an adapted receiver connected to the input line;

an adapted transmitter connected to the output line;

a buffer memory for storing data received by said receiver and data to be transmitted by said transmitter;

a memory transfer controller for controlling transfer of data between said buffer memory and the memory bus; and

main control means for controlling said receiver, said transmitter, said buffer memory, and said memory transfer controller to enable storing of data which has been received from the input line by said receiver, in said buffer memory, transferring of the data to the memory bus, confirming whether the data on

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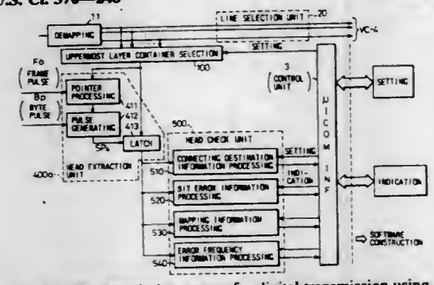
the memory bus are addressed to a station to which the main control means belongs, based on the content of the data, and delivering the data through said transmitter to the output line if the data are addressed to the station.

5,600,648

SDH TRANSMISSION SYSTEM

Tomohisa Furuta, Osaka; Kouji Tanonaka, Kawasaki, and Yasuo Takami, Osaka, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Jan. 19, 1995, Ser. No. 375,283
Claims priority, application Japan, Mar. 18, 1994, 6-049349
Int. Cl.[6] H04J *3/12*
U.S. Cl. 370—248 **17 Claims**



1. An SDH transmission system for digital transmission using as a unit of transmission a synchronous transport module (STM-n) in which virtual containers (VC-m) are hierarchically mapped, said virtual containers being supplied through a demapping means in said system, said transmission system comprising a through path monitoring circuit including:

a container selection means for selectively extracting a specific virtual container (VC-m) of a particular hierarchy including uppermost layer virtual containers (VC-4), and

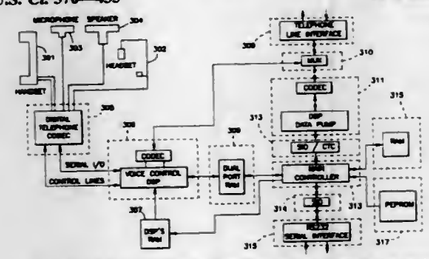
a path overhead processing means for processing the path overhead of said specific virtual container (VC-m) obtained from the above container selection means.

5,600,649

DIGITAL SIMULTANEOUS VOICE AND DATA MODEM

Raghu Sharma, North Oaks; Jeffrey P. Davis, Ham Lake; Timothy D. Gunn, Mounds View; Ping Li, New Brighton, all of Minn.; Sidhartha Maitra, Saratoga, Calif.; Ashish Thanawala, Saratoga, Calif., and Steve Young, Saratoga, Calif., assignors to Multi-Tech Systems, Inc., Mounds View, Minn.

Division of Ser. No. 2,467, Jan. 8, 1993, Pat. No. 5,452,289.
This application Sep. 14, 1995, Ser. No. 527,849
Int. Cl.[6] H04J *3/17*
U.S. Cl. 370—435 **10 Claims**



1. A method for communication of voice and data information, comprising the steps of:

receiving local voice signals from a local user;

conveying remote voice signals from a remote user to the local user;

converting the local voice signals into outgoing digital voice data;

converting incoming digital voice data into the remote voice signals;

compressing the outgoing digital voice data into compressed outgoing digital voice data;

decompressing compressed incoming digital voice data into the incoming digital voice data;

packetizing the compressed outgoing digital voice data into compressed outgoing digital voice data packets;

placing headers on each of the compressed outgoing digital voice packets;

depacketizing the compressed incoming digital voice data packets into the compressed incoming digital voice data;

packetizing computer digital data into computer digital data packets;

placing headers on each of the computer digital data packets;

multiplexing the compressed outgoing digital voice data packets with outgoing computer digital data packets to produce an outgoing packet stream;

transmitting the outgoing packet stream;

receiving multiplexed incoming data which contains incoming computer digital data packets multiplexed with the compressed incoming digital voice data packets; and

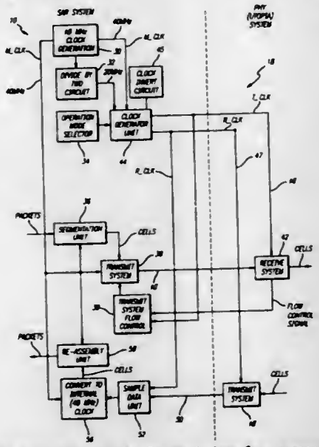
demultiplexing the incoming computer digital data packets and the compressed incoming digital voice data packets.

5,600,650

METHOD AND APPARATUS FOR SYNTHESIZING CLOCK SIGNALS FOR USE WITH AN ASYNCHRONOUS TRANSFER MODE SYSTEM HAVING SELECTABLE DATA TRANSMISSION RATES

Rasoul M. Oskouy, Fremont, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Jul. 7, 1995, Ser. No. 499,728
Int. Cl.[6] H01J *13/00*; **H04J** *3/06*
U.S. Cl. 370—468 **20 Claims**



1. In an asynchronous transfer mode interface system for interfacing with an external system, wherein the external system operates to transmit and receive data in synchronization with receive and transmit clock signals, respectively, provided by the interface system, the interface system comprising:

a clock generator for generating first and second clock signals for operating in first and second modes, respectively, with the first clock signal having a clock rate twice that of the second signal;

a transmission unit for transmitting data to the external system in the first and second modes by driving the external system with a transmit clock which is, respectively, either the first clock signal inverted or the second clock signal;

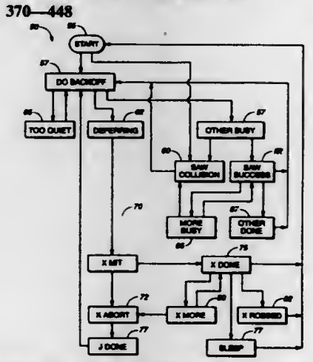
a receiving unit for receiving data from the external system in the first and second modes by driving the external system with a receive clock which is, respectively, either the first clock signal or the second clock signal and for receiving the data from the external system in synchronization with the receive clock.

5,600,651

BINARY LOGARITHMIC ARBITRATION METHOD FOR CARRIER SENSE MULTIPLE ACCESS WITH COLLISION DETECTION NETWORK MEDIUM ACCESS CONTROL PROTOCOLS

Mart L. Molle, 7509 Whitegate Ave., Riverside, Calif. 92506

Filed Apr. 7, 1995, Ser. No. 418,481
Int. Cl.[6] H04L *12/413*
U.S. Cl. 370—448 **20 Claims**



1. A method of operating a subject host in a network having a plurality of hosts connected to a shared channel, said subject host having data to transmit, said method comprising the steps of:

(a) incrementing a counter for said subject host when two or more of the plurality of hosts transmit simultaneously to cause a collision;

(b) resetting said counter when a host other than said subject host successfully transmits a packet;

(c) commencing a backoff delay if

i) a host other than said subject host successfully transmits a burst of packets equal to or greater than a predetermined length, or

ii) a host other than said subject host successfully transmits a packet and thereafter no host transmits data for a first predetermined amount of time, or

iii) a collision occurs,

said backoff delay for said subject host generated from a random number whose distribution depends on said counter;

(d) transmitting data from said subject host at the expiration of said backoff delay, unless another host begins transmitting; and

(e) if another host begins transmitting, then waiting

i) for said other host to successfully transmit a burst of packets equal to or greater than the predetermined length, before executing step (c)(i), or

ii) for said other host to cease transmitting for the first predetermined amount of time, before executing step (c)(ii), or

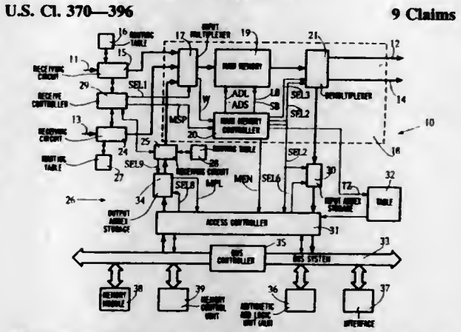
iii) for a collision, before executing step (c)(iii).

5,600,652

LOCAL AREA NETWORK OPERATING IN THE ASYNCHRONOUS TRANSFER MODE (ATM)

Rolf Kreamer, Herzogenrath-Pannesheide; Yonggang Du; Hans-Jürgen Reuerman, both of Aachen, all of Germany; Marinus Bakker, Wijlre, Netherlands; Klaus-Peter May; Joachim Kahlert, both of Aachen, Germany, and Andries Van Wageningen, Wijlre, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 2, 1995, Ser. No. 458,205
Claims priority, application Germany, Jun. 3, 1994, 44 19 343.2
Int. Cl.[6] H04L *12/42*
U.S. Cl. 370—396 **9 Claims**



8. Network interface for a local area network operating in an asynchronous transfer mode (ATM), to which interface at least one station is coupled, said network interface comprising: a coupling device and a control arrangement and wherein said network interface transmits cells via the coupling device between send and receive ring lines, at least one station and at least one control arrangement, wherein a control arrangement comprises an access controller which is provided for conveying, in dependence on the contents of a header field of a cell received from the coupling device, one of the following selected from the group consisting of (i) the cell, (ii) first parts of the cell, and (iii) additional information to a bus system and units coupled to the bus system.

5,600,653

TECHNIQUE FOR IMPROVING ASYNCHRONOUS TRANSFER MODE OPERATION OVER A COMMUNICATIONS LINK WITH BURSTY BIT ERRORS

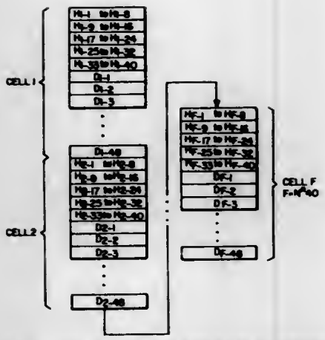
Dattakumar M. Chitre, Silver Spring; Dilip S. Gokhale, Gaithersburg; Thomas Henderson, Bethesda; John A. Lunsford, Gaithersburg, and Neville Mathews, Derwood, all of Md., assignors to Comsat Corporation, Bethesda, Md.

Filed Sep. 30, 1994, Ser. No. 315,485
Int. Cl.[6] H04L *1/00*
U.S. Cl. 370—474 **21 Claims**

11. A method of bit interleaving signals to avoid undetected errors in an Asynchronous Transmission Mode (ATM) communications system transmitting frames, each of said frames having F cells, each of said cells having a header of D bytes and a payload of P bytes, F, D and P being integers, said method comprising the steps of:

selecting at least one bit from a first payload byte of each of L different cells of one of said frames, L being an integer;

combining said selected bits to form L interleaved payload bytes; and



transmitting said F cells, wherein said payload comprises one of said interleaved payload bytes and P−1 remaining payload bytes, wherein said P−1 remaining payload bytes are non-interleaved.

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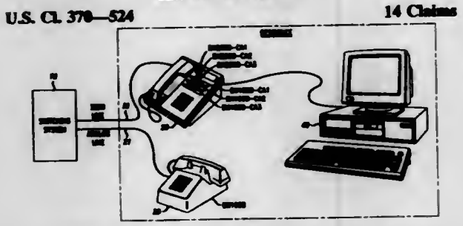
MULTIPLE CALL OFFERING METHOD FOR USE WITH AN ANALOG STATION AND AN ISDN STATION THAT SHARE A DIRECTORY NUMBER

Louis D. Brown, Clarendon Hills, and Linda M. Smedinghoff, Wheaton, both of Ill., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 99,295, Jul. 29, 1993, abandoned. This application May 25, 1995, Ser. No. 450,294

Int. Cl.[6] H04M *3/42*

U.S. Cl. 370—524 **14 Claims**



1. A method for use by a switching system in serving at least one analog station via an analog line and at least one ISDN station via an ISDN line, where a given directory number for analog services is assigned to both said analog station and said ISDN station, said method comprising:

in response to a first call to or from said given directory number, establishing a call connection with said analog station for said first call and effecting indication of an active status at a first call appearance of a given directory number at said ISDN station,

in response to a second call to said given directory number, providing a call offering signal to said analog station and effecting alerting at a second call appearance of said given directory number at said ISDN station, and

in response to signaling from said analog station, placing said first call on hold, connecting said second call to said analog station, and effecting indication of an active status at said second call appearance.

5,600,655

CALLING METHOD FOR COMMUNICATION TERMINAL DEVICE

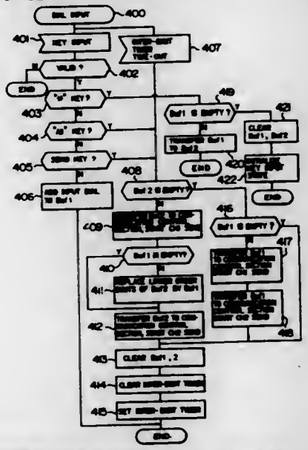
Iwao Ishinabe, Yokohama, and Nobuyuki Matsuyama, Fujisawa, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 26,759, Mar. 5, 1993, Pat. No. 5,457,692. This application Jun. 5, 1995, Ser. No. 460,936

Claims priority, application Japan, May 19, 1992, 4-126447

Int. Cl.[6] H04J *3/12*

U.S. Cl. 370—524 **3 Claims**



1. A communication terminal device, comprising:

a line interface (I/F) connected with a communication network, for accommodating L channels, L being an integer equal to or greater than 2;

key input means provided with a plurality of keys for inputting a plurality of called party numbers;

communication control means, connected to said line I/F, for controlling communication connection between the communication terminal device and a called communication terminal through said communication network;

key input control means for extracting a called party number from a key input series including the plurality of called numbers input from said key input means, and using the extracted called party number, directing said communication control means to connect said L channels with said called communication terminal device;

a number accumulation section for receiving and accumulating, through said key input control means, the key input series input from said key input means; and

display means for displaying the key input series input from said key input means and response of said key input control means,

wherein said key input means includes a pausing key for inputting a pause between individual ones of the plurality of called party numbers, and

wherein when n (L≥b>1) inputs of said pausing key are included in the key input series input from said key input means, said key input control means directs said communication control means to connect a first channel of said L channels with the called communication terminal using the key input series input as a first called party number before a first input of said pausing key, directs said communication control means to connect subsequent channels of said L channels with the called communication terminal using subsequent key input series input between inputs of said pausing key, and directs said communication control means to connect the (n+1)-th channel of said L channels with the called communication terminal using the key input series input after an n-th input of said pausing key as a (n+1)-th called party number,

wherein when no input of said pausing key is included in the key input series, said key input control means directs said communication control means to connect the first through m-th (L≥m≥2) channels of said L channels with the called communication terminal using the key input series as a called party number.

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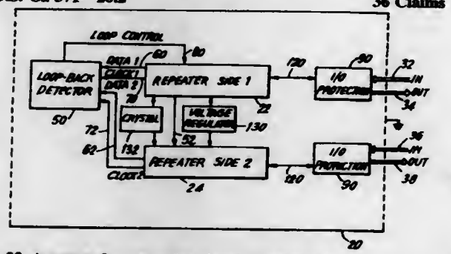
REMOTE LOOPBACK APPARATUS AND METHOD FOR TELEPHONE LINE REPEATERS

Karl A. Kelsey, and Romuald Bailey, both of Albuquerque, N.M., assignors to Siemens Stromberg-Carlson, Boca Raton, Fla.

Continuation of Ser. No. 75,201, Jun. 10, 1993. This application Oct. 25, 1995, Ser. No. 548,160

Int. Cl.[6] G01R *31/28*

U.S. Cl. 371—20.2 **36 Claims**



33. A system for conveying signals, comprising:

a transmission line comprising first and second data lines; and

a plurality of remotely addressable repeaters connected to the transmission line, each repeater having a unique address designation and comprising:

a pair of repeater modules;

a detector, connected to the repeater modules, for detecting at least one inchannel code sequence, where at least one inchannel code sequence is representative of the unique address designation of the repeater; and

a loop-back switch, responsive to the detector, for interconnecting the repeater modules of the repeater independently of the transmission line.

5,600,657

TRANSMISSION PATH FAULT DETECTING METHOD AND SYSTEM

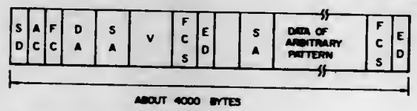
Kenichiro Orita, Hadano, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 891,784, Jun. 1, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 462,994

Claims priority, application Japan, Jun. 7, 1991, 3-162536

Int. Cl.[6] H04B *3/46;17/00*

U.S. Cl. 371—20.6 **19 Claims**



1. A transmission system comprising:

a transmission line;

a plurality of fault detectors installed along said transmission line and mutually connected to one another in a ring-like configuration; and

a plurality of stations, each of which is connected to one of said plurality of fault detectors and communicates with another one of said plurality of stations along said transmission line;

wherein each of said fault detectors includes:

a token detector detecting a fault as indicated by a disappearance of a token passed by one of said plurality of fault detectors or said plurality of stations;

a transmitter responsive to said token detector and sending a fault locating frame including a first portion and a second portion, said first portion bounded by a starting delimiter and a first ending delimiter and including information identifying said fault locating frame, and said second portion appended to said first portion and comprising a data string of arbitrary length followed by a second ending delimiter indicating the end of said second portion;

a receiver receiving a fault locating frame sent by a transmitter of another of said plurality of fault detectors, said receiver including means for determining whether said fault locating frame is successfully received; and

a fault locator determining that the fault detected by said token detector exists between said fault detector and an upstream fault detector when said fault detector fails to successfully receive a fault locating frame from said upstream fault detector.

5,600,658

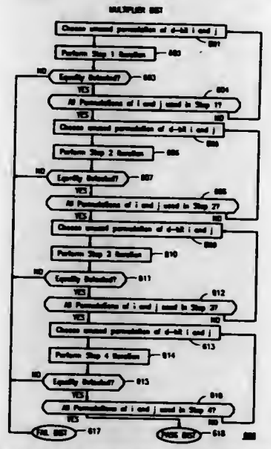
BUILT-IN SELF TESTS FOR LARGE MULTIPLIER, ADDER, OR SUBTRACTOR

Fazal U. R. Qureshi, Cupertino, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Oct. 19, 1995, Ser. No. 545,509

Int. Cl.[6] G06F *11/22;11/263*

U.S. Cl. 371—22.1 **61 Claims**



1. A method of testing a multiplier taking first and second N-bit input mantissa operands and producing a 2N-bit mantissa output, the method comprising the steps of:

selecting a digit size d, such that d evenly divides into N;

allocating each of the first and second N-bit input mantissa operands into N/d input digit fields, the input digit fields of the first operand being A(0) through A(N/d−1), the input digit fields of the second operand being B(0) through B(N/d−1);

allocating the 2N-bit mantissa output into 2N/d output subchunks each having d bits, the output subchunks being S(0) through S(2N/d−1);

for each of 2^{2d} permutations of integer i and integer j, wherein i and j are from the range from 0 to $2^{d}-1$, inclusive,

loading all even digit fields A(0) through A(N/d−2) of the first operand with i;

loading all odd digit fields A(1) through A(N/d−1) of the first operand with 0;

loading the least significant digit field B(0) of the second operand with j;
loading the more significant digit fields B(1) through B(N/d−1) of the second operand with 0;
performing a multiplication;
comparing N/2d even output subchunks S(0) through S(N/d−2) for equality;
comparing N/2d odd output subchunks S(1) through S(N/d−1) for equality;
continuing if the comparing steps detected equality;
reporting test failure if either of the comparing steps detected inequality;
for each of 2^{2d} permutations of integer i and integer j, wherein i and j are from the range from 0 to $2^{d}-1$, inclusive,
loading all even digit fields A(0) through A(N/d−2) of the first operand with 0;
loading all odd digit fields A(1) through A(N/d−1) of the first operand with i;
loading the most significant digit field B(N/d−1) of the second operand with j;
loading the less significant digit fields B(0) through B(N/d−2) of the second operand with 0;
performing a multiplication;
comparing N/2d even output subchunks S(N/d) through S(2N/d−2) for equality; comparing N/2d odd output subchunks S(N/d+i) through S(2N/d−1) for equality;
continuing if the comparing steps detected equality;
reporting test failure if either of the comparing steps detected inequality;
for each of 2^{2d} permutations of integer i and integer j, wherein i and j are from the range from 0 to $2^{d}-1$, inclusive,
loading digit field A(1) of the first operand with j;
loading digit fields A(0) and A(2) through A(N/d−1) of the first operand with 0;
loading all even digit fields B(0) through B(N/d−2) of the second operand with 0;
loading all odd digit fields B(1) through B(N/d− 1) of the second operand with i;
performing a multiplication;
comparing N/2d even output subchunks S(2) through S(N/d) for equality;
comparing N/2d odd output subchunks S(1) through S(N/d−1) for equality;
continuing if the comparing steps detected equality;
reporting test failure if either of the comparing steps detected inequality;
for each of 2^{2d} permutations of integer i and integer j, wherein i and j each are from the range from 0 to $2^{d}-1$, inclusive,
loading digit field A(N/d−2) of the first operand with j;
loading digit fields A(0) through A(N/d−3) and A(N/d−1) of the first operand with 0;
loading all even digit fields B(0) through B(N/d−2) of the second operand with 0;
loading all odd digit fields B(1) through B(N/d− 1) of the second operand with i;
performing a multiplication;
comparing N/2d even output subchunks S(N/d) through S(2N/d−2) for equality;
comparing N/2d odd output subchunks S(N/d−1) through S(2N/d−3) for equality;
continuing if the comparing steps detected equality;
reporting test failure if either of the comparing steps detected inequality; and
reporting test passing if none of the above comparing steps detect inequality.

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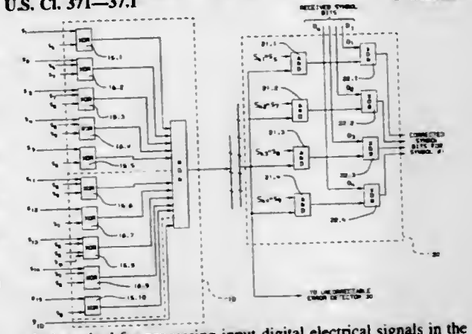
LOW COST SYMBOL ERROR CORRECTION CODING AND DECODING

Chin-Long Chen, Fishkill, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 318,983, Mar. 6, 1989, abandoned. This application Mar. 23, 1992, Ser. No. 856,421

Int. Cl.[6] H03M *13/00*

U.S. Cl. 371—37.1 **3 Claims**



1. A method for processing input digital electrical signals in the form of binary data occurring in a block of 128 bits and subblocks of at most b symbol bits, said method comprising the step of transforming by electrical circuit means said 128 bits of data to produce output digital electrical signals satisfying parity check conditions determined by a parity check matrix of the form $H=[M_1\ M_2\ I_{24}]$ where I_{24} is a 24 by 24 identity matrix and M_1 is a matrix of the form $M_1=[V_1\ V_2\ V_3]^T$ and $M_2=[V_1\ V_2\ V_3]$ where V_1 is a submatrix of the form $V_1=[I_8\ I_8\ I_8\ I_8\ I_8\ I_8\ I_8\ T^{50}]$, $V_2=[I_8\ T^1\ T^2\ T^3\ T^{252}\ T^{253}\ T^{254}\ T^1]$ and submatrix $V_3=[T^{156}\ T^{155}\ T^{154}\ T^{153}\ T^{159}\ T^{158}\ T^{157}\ I_8]$ and where I_8 is an 8 row by 8 column identity matrix and the matrix T is a companion matrix to a primitive polynomial of order 8 and where said electrical circuit means is defined by said parity check matrix.

5,600,660

METHOD FOR DETERMINING THE NUMBER OF DEFECTIVE DIGITAL BITS (DEFECTIVE BIT NUMBER) TRANSMITTED OVER A DATA-TRANSMISSION PATH TO BE TESTED, AND DEVICE FOR THE CARRYING OUT OF THE METHOD

Andreas Wolf, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

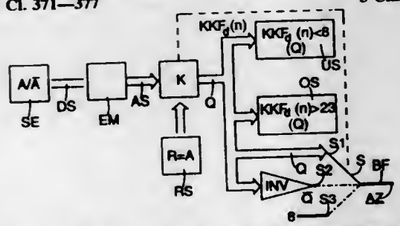
PCT No. PCT/DE93/00108, § 371 Date Oct. 18, 1994, § 102(e) Date Oct. 18, 1994, PCT Pub. No. WO93/17511, PCT Pub. Date Sep. 2, 1993

PCT Filed Feb. 3, 1993, Ser. No. 290,916

Claims priority, application Germany, Feb. 21, 1992, 42 05 776.0

Int. Cl.[6] H03M *13/00*; **G06F** *11/00*

U.S. Cl. 371—377 **5 Claims**



5. A device for determining a number of defective digital data bits transmitted over a data-transmission path to be tested, the device comprising:

a) a transmitter for sending one of a test sequence of digital data and an inverse test sequence over the data-transmission path to be tested;
b) a receiver for receiving an output sequence on an output end of the data-transmission path to be tested;
c) a cross-correlator for forming a cross-correlation of the output sequence received by the receiver and a reference sequence, said correlator including at least one of an exclusive-OR and an exclusive-NOR logical operation circuit;
d) a summator, arranged behind, and coupled with, the logical operation circuit, for forming a check-sum;
e) a comparator, arranged behind, and coupled with, the summator, for comparing the check-sum formed by the summator with an upper threshold value and with a lower threshold value, each of the upper and lower threshold values being set at a predetermined distance from value range limits based on the test sequence; and
f) a selection circuit, arranged behind, and coupled with, the comparator and the summator, for feeding an indication of the number of defective digital data bits transmitted over the data-transmission path as at least low-order positions of the checksum from the summator.

5,600,661

DEVICE FOR PROCESSING TRANSMITTED DIGITAL VIDEO SIGNAL

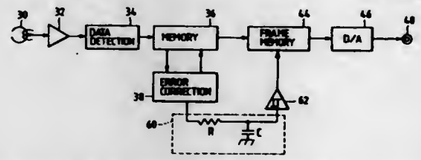
Makoto Shimokoriyama, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 8,828, Jan. 25, 1993, which is a continuation of Ser. No. 523,547, May 15, 1990, abandoned. This application Jan. 17, 1995, Ser. No. 373,503

Claims priority, application Japan, May 16, 1989, 1-120551; Oct. 23, 1989, 1-275490

Int. Cl.[6] H03M *13/00*

U.S. Cl. 371—40.1 **18 Claims**



1. A device for processing a digital code train on a transmission line, said digital code train including error detection/correction codes and video codes, comprising:
(a) error detecting means for detecting a code error of said digital code train by using said error detection/correction codes, and for generating a detection signal indicating whether or not a frequency of code error occurrences is higher than a predetermined rate;
(b) a memory, coupled to said error detecting means, for storing said video codes;
(c) control means for controlling a writing operation of the video codes into said memory; and
(d) mode changing means, coupled to said control means, for changing said device between a first mode in which said control means controls whether or not the video codes are written into said memory in accordance with the detection signal generated by said error detecting means, and a second mode in which said control means controls whether or not the video codes are written into said memory irrespective of the detection signal generated by said error detecting means.

5,600,662

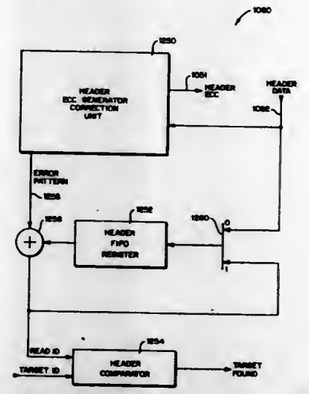
ERROR CORRECTION METHOD AND APPARATUS FOR HEADERS

Christopher P. Zook, Longmont, Colo., assignor to Cirrus Logic, Inc., Fremont, Calif.

Continuation of Ser. No. 326,126, Oct. 18, 1994, which is a continuation-in-part of Ser. No. 147,865, Nov. 4, 1993, Pat. No. 5,465,260, and Ser. No. 147,650, Nov. 4, 1993, abandoned, and Ser. No. 147,758, Nov. 4, 1993, abandoned, and Ser. No. 148,068, Nov. 4, 1993, abandoned, and Ser. No. 310,973, Sep. 23, 1994, and Ser. No. 124,936, Sep. 21, 1993, Pat. No. 5,449,424. This application Mar. 28, 1995, Ser. No. 412,277

Int. Cl.[6] G11B *20/18*

U.S. Cl. 371—40.1 **23 Claims**



1. An error correction apparatus which obtains a sector from a rotating disk magnetic storage medium, the sector including header information followed by user data information associated with the header information of the sector, wherein the error correction apparatus obtains the header information for the sector and corrects an error burst occurring in the header information stored on the storage medium.

5,600,663

ADAPTIVE FORWARD ERROR CORRECTION SYSTEM

Ender Ayanoglu, Red Bank; Richard D. Gitlin, Little Silver, both of N.J.; Thomas F. La Porta, Thornwood, N.Y.; Sanjoy Paul, Atlantic Highlands, and Krishan K. Sabnani, Westfield, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

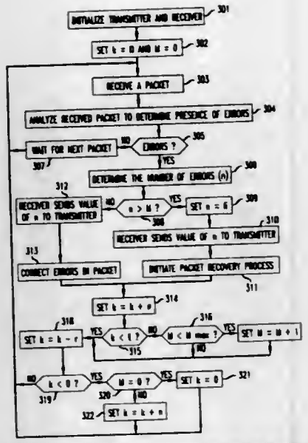
Filed Nov. 16, 1994, Ser. No. 340,551

Int. Cl.[6] H03M *13/00*; **H04L** *1/18*

U.S. Cl. 371—41 **18 Claims**

1. A forward error correction system comprising
a first device which a) processes a number (N) bytes within each of a plurality of original packets to form a respective forward error correction code of M bytes, b) processes a number (P) of the original packets to form Q additional error correction packets each associated with respective forward error corrections code, and c) transmits said P original packets and said Q additional forward error correction packets as a stream of data as well as their respective forward error correction codes; and
a second device which receives the data stream and which a) processes the data stream to correct errors in a received corrupted packet as a function of the respective forward error correction code; b) responsive to errors which cannot be so corrected, processes such errors as a function of the Q additional forward error correction packets to correct said error; and c) responsive to failing to correct such errors, returns a

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message indicative of said failure and includes in the message a request to expand said forward error correction processing at said first device.

5,600,664

INFORMATION REPRODUCING APPARATUS

Nobuhiro Hayashi, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

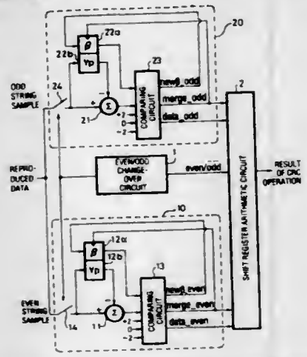
PCT No. PCT/JP94/00330, § 371 Date Nov. 1, 1994, § 102(e) Date Nov. 1, 1994, PCT Pub. No. WO94/20961, PCT Pub. Date Sep. 15, 1994

PCT Filed Mar. 1, 1994, Ser. No. 331,545

Claims priority, application Japan, Mar. 2, 1993, 5-066247

Int. Cl.[6] G06F *11/10;* **H03M** *13/12;* **G11B** *27/36;* **H04N** *5/76*

U.S. Cl. 371—43 **9 Claims**



1. A circuit for concurrently performing a partial response maximum likelihood decoding, and an error correction calculation of a data stream in accordance with an algorithm characterized by a parameter j, the circuit comprising:

a plurality of serial shift registers, connected in parallel, each shift register including

j+2 latch means, D_1 to D_j, connected in series for latching and shifting the data stream;

j+1 selector means, S_0 to S_j, wherein each selector means S_i, for i equal 0 to j, is connected between adjacent latch means D_{i-1} and D_i for switching a Sample of said data stream from an odd string sample to an even string sa.mple and vice versa, in response to a change-over signal, such that said shift register simultaneously processes the even string sample and the odd string sample of a processing result of a processing means on the basis of the changeover signal;

arithmetic means disposed between selected adjacent ones of the latch means to carry out the error correction calculation in accordance with a generating polynomial of an error detection code and calculates exclusive-ORs of outputs of said latch means.

5,600,665

MULTIPLE OUTPUT FIBER LASER WITH PASSIVE FREQUENCY CONTROL AND METHOD

Monica L. Minden, Calabasas, and Celestino J. Gaeta, Simi Valley, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jul. 28, 1995, Ser. No. 508,727

Int. Cl.[6] H01S *3/30*

U.S. Cl. 372—6 **17 Claims**

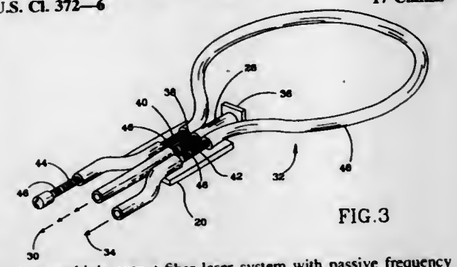


FIG.3

1. A multiple output fiber laser system with passive frequency control, comprising:

a first optical fiber resonant cavity for generating a first optical beam,

at least one other optical fiber resonant cavity for generating at least one other-optical beam,

each of said resonant cavities comprising at least one Bragg reflection grating that determines-the cavity's lasing frequency, said resonant cavities positioned so that their respective Bragg gratings are in close proximity to each other, so that said gratings experience substantially the same environmental conditions,

wherein said Bragg gratings respond substantially equally to changes in said environmental conditions, so that the frequency relationships between said optical beams remain substantially constant over time.

5,600,666

LASER BEAM SCANNING RADIATING APPARATUS

Hiroyuki Hiiro, Kanagawa-ken, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa-ken, Japan

Filed Jan. 13, 1995, Ser. No. 372,125

Claims priority, application Japan, Jan. 13, 1994, 6-001950; Jul. 6, 1994, 6-154738; Nov. 4, 1994, 6-270789

Int. Cl.[6] H01S *3/10*

U.S. Cl. 372—24 **24 Claims**

1. A laser beam scanning radiating apparatus comprising:

i) a laser beam source which emits a plurality of laser beams at a wavelength such that the laser beams intersect one another with predetermined angular spectra on a predetermined virtual plane through which the laser beams pass;

ii) a transform optical system including a beam expander array dividing the laser beams having impinged upon the virtual plane into small regions and a Fourier transform lens array which carries out Fourier transforms of the small regions, said transform optical system being located in the vicinity of the virtual plane such that a front Fourier transform plane of said transform optical system substantially coincides with the virtual plane;

iii) phase modulating means for modulating each of the phases of the laser beams having been divided into the small regions by said beam expander array, said phase modulating means being positioned between said beam expander array and said Fourier transform lens array such that wave fronts of the plurality of the laser beams subjected to the Fourier transform by said Fourier transform lens array in said transform optical system are continuously smoothly connected with one another;

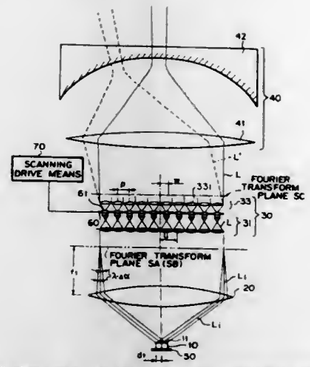
iv) scanning drive means for driving said phase modulating means in order to change directions of travel of the laser beams emitted from said transform optical system; and

v) a laser resonator mirror optical system including,

a) a first laser resonator mirror, which receives the laser beams having been scanned by said scanning drive means, and which reflects said laser beams having been scanned back towards said transform optical system, and

b) a second laser resonator mirror, which is located at a position rearward from said laser beam source,

wherein a plurality of Fourier transformed patterns of the laser beams are reproduced on the Fourier transform plane of said transform optical system at equal intervals and with a same phase with respect to a predetermined direction.



5,600,667

SEMICONDUCTOR LASER DEVICE

Isao Kidoguchi, Mino; Kiyoshi Ohnaka, Moriguchi; Hideto Adachi, Mino; Satoshi Kamiyama, Sanda; Masaya Mannou, Hirakata, and Takeshi Uenoyama, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

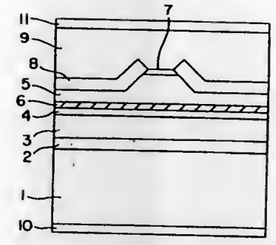
Filed Apr. 5, 1994, Ser. No. 223,215

Claims priority, application Japan, Apr. 5, 1993, 5-077845; Apr. 5, 1993, 5-077854; Jul. 28, 1993, 5-186022; Aug. 6, 1993, 5-195859

Int. Cl.[6] H01S *3/19*

U.S. Cl. 372—45 **3 Claims**

1. A semiconductor laser device having an active layer, a pair of cladding layers interposing the active layer and a multi-quantum barrier provided between one of the pair of cladding layers and the active layer; wherein the multi-quantum barrier includes a structure comprising barrier layers and well layers wherein said well layers have an energy band gap narrower than that of the alternating barrier layers, thereby providing a function of reflecting carriers overflowing from the active layer back to the active layer, and an energy band gap of at least one of the barrier layers and well layers in the multi-quantum barrier changes with the distance from the active layer.



5,600,668

SLAB LASER

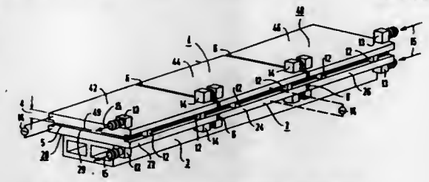
Kai Erichsen, Malente; Hermann Hage, Hamburg; Wolfgang Knapp, Hamburg; Berthold Leifermann, Hamburg; Volker Scholz, Lübeck, and Norbert Taufenbach, Basthorst, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Jun. 23, 1995, Ser. No. 494,056

Claims priority, application Germany, Dec. 23, 1992, 92 17 640.24

Int. Cl.[6] H01S *3/097*

U.S. Cl. 372—87 **19 Claims**



1. In a slab laser, an electrode assembly, comprising:

a carrier;

mutually parallel electrodes supported on said carrier, said electrodes having a given thickness, said electrodes having flat surfaces facing each other and defining and bordering a discharge chamber therebetween for receiving a gas, and said electrodes having flat surfaces facing away from said discharge chamber;

each of said electrodes having a plurality of sections spatially separated from one another over at least a portion of said given thickness of said respective electrode; and

said electrodes being supported on said carrier such that said flat surfaces facing away from said discharge chamber are freely movable.

5,600,669

ELECTRODE ASSEMBLY FOR GLASS TANK FURNACES

Helmut Pieper, Lohr am Main, Germany, assignor to Betelligungen Sorg GmbH & Co. KG, Lohr am Main, Germany

Filed Dec. 11, 1995, Ser. No. 570,136

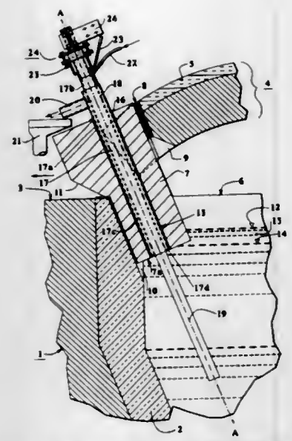
Claims priority, application Germany, Dec. 17, 1994, 44 45 167.9

Int. Cl.[6] C03B *5/027*

U.S. Cl. 373—38 **13 Claims**

1. An electrode assembly for a glass melting furnace having a filling level and an electrode block, the electrode assembly comprising: a cylindrical electrode holder with a rod electrode extending through said electrode holder, the rod electrode able to be selectively advanced through the cylindrical electrode holder while said electrode is operating, said electrode holder having a bottom face and a device for forced cooling fitted along at least part of its length, said electrode holder being disposed in the electrode block in the furnace, said bottom face being disposed below the filling level of the furnace, an axis of said electrode holder and said

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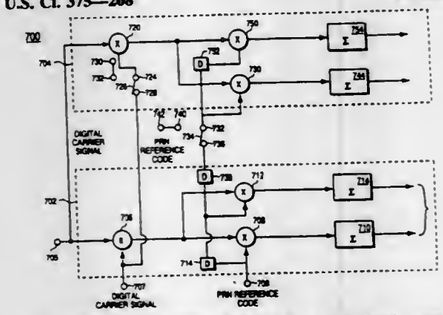


electrode being at an angle of between 0° and 60° from vertical, said device for forced cooling extending above said filling level and said electrode holder being fitted with a sealing device above said filling level which seals against said electrode and which prevents oxygen penetrating into a gap between said electrode and said electrode holder.

5,600,670
DYNAMIC CHANNEL ALLOCATION FOR GPS RECEIVERS

Paul F. Turney, Santa Clara, Calif., assignor to Trimble Navigation, Ltd., Sunnyvale, Calif.

Filed Dec. 21, 1994, Ser. No. 363,385
Int. Cl.[6] H04B *15/00;* **H04K** *1/00;* **H04L** *27/30*
U.S. Cl. 375—208 **5 Claims**



1. A GPS channel system for acquiring a GPS signal, comprising:

a first channel module including a first correlator which receives a first digitized received GPS signal and a local PRN reference code signal to provide an output signal to a first accumulator;

said first channel module also including a second correlator which receives the first digitized received GPS signal and a first delayed local PRN reference code signal to provide an output signal to a second accumulator;

means for additionally delaying the first delayed local PRN reference code signal to provide a second delayed PRN reference code signal;

a second channel module including a third correlator which receives the first digitized received GPS signal and the second delayed local PRN reference code signal to provide an output signal to a third accumulator;

means for additionally delaying the second delayed local PRN reference code signal to provide a third delayed PRN reference code signal;

said second channel module also including a fourth correlator which receives the first digitized received GPS signal and the third delayed local PRN reference code signal to provide an output signal to a fourth accumulator;

said first channel module also including the second correlator which receives the first digitized received GPS signal and a first delayed local PRN reference code signal to provide an output signal to the second accumulator;

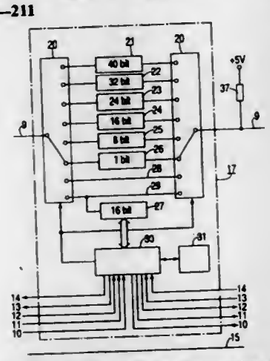
switch means for applying the second delayed PRN reference code signal to the third correlator of the second channel module and for applying the third delayed PRN reference code signal to the fourth correlator of the second channel module when the GPS channel system is in an acquisition mode of operation to allow the third and fourth correlators of the second channel to be switchably connected in a cascaded, serial configuration for the acquisition mode of operation, and

wherein the switch means includes means for applying a sequence of other PRN reference code signals to the third and fourth correlator of the second channel module when the GPS channel system is in a tracking mode of operation to allow the third and fourth correlators to be applied to a separate GPS signal.

5,600,671
INFORMATION TRANSMISSION METHOD FOR TRANSMITTING DIGITAL INFORMATION

Jürgen Maul, Sulzbach-Rosenberg; Manfred Sand; Georg Trummer, both of Amberg, and Werner Schlieker, Nürnberg, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Continuation of Ser. No. 100,938, Aug. 3, 1993, abandoned. This application May 11, 1995, Ser. No. 439,556
Claims priority, application European Pat. Off., Aug. 5, 1992, 92113370
Int. Cl.[6] H04B *1/38*
U.S. Cl. 375—211 **32 Claims**



1. A method for transmitting digital information, which includes both commands and data, between a main unit and a plurality of subunits of an electrical device, in which the subunits are subordinate to the main unit and in which each subunit has a plurality of shift registers with different bit lengths, said method comprising the steps of:

a) transmitting the commands and the data via a serial bus system;

b) providing at least one data line in the serial bus system over which the commands and data are alternately transmitted;

c) providing one timing line in the serial bus system for specifying a shared system clock;

d) providing at least one control line in the serial bus system for transmitting a control signal;

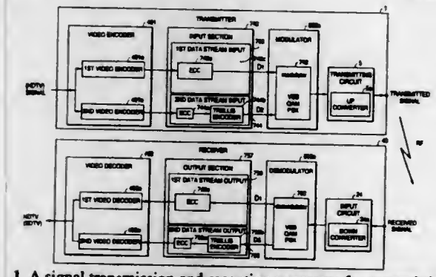
e) conducting the data line through each subunit and simultaneously coupling in each subunit a stub shift register to the data line when a command is being transmitted over the data line; and

f) coupling one of the plurality of shift registers in each subunit in series in the data line when data is being transmitted.

5,600,672
COMMUNICATION SYSTEM

Mitsuaki Oshima, Kyoto, and Seiji Sakashita, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 857,627, Mar. 25, 1992. This application May 10, 1994, Ser. No. 240,521
Claims priority, application Japan, Mar. 27, 1991, 3-62798; Apr. 25, 1991, 3-95813; May 29, 1991, 3-155650; Jul. 23, 1991, 3-182236; Mar. 17, 1992, 4-60739; May 10, 1993, 5-132984; Sep. 24, 1993, 5-261612; Dec. 27, 1993, 5-349972; Mar. 24, 1994, 6-79668
Int. Cl.[6] H04L *5/16;* **H04B** *1/38*
U.S. Cl. 375—219 **12 Claims**



1. A signal transmission and reception apparatus for transmitting and receiving an n-level VSB signal, the apparatus comprising a transmitter and a receiver;

said transmitter comprising:

a compression means for compressing an input video signal to a digital video compression signal;

an error correction encoding means for adding an error correction code to the digital video compression signal to produce an error correction coded signal;

a modulation means for modulating the error correction coded signal to an n-level VSB modulation signal, said modulation means comprising a means for allocating code points along a uniaxial modulation coordinate system, and a filter means having a plurality of coefficients which are a series of impulse responses defined by plotting timebase responses to the VSB modulation signal along the in-phase axis and its orthogonal axis for filtering a series of said code points allocated along the uniaxial modulation coordinate system; and

a transmission means for transmitting the modulation signal, and

said receiver comprising:

a means for receiving a transmitted n-level VSB modulation signal;

a demodulation means for demodulating the received n-level VSB modulation signal into a digital reception signal;

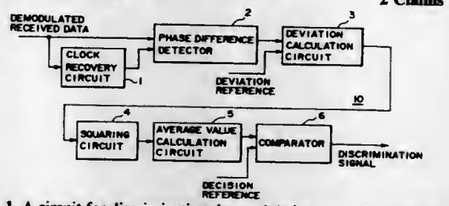
an error correction means for error correcting the digital reception signal to obtain an error-corrected digital signal; and

an expanding means for expanding the error-corrected digital signal to obtain a video output signal.

5,600,673
CIRCUIT FOR DISCRIMINATING RECEIVED SIGNAL MODULATION TYPE

Kimiyoshi Kimura, Tokyo; Kenichi Shiraishi, Yokohama, and Souichi Shinjo, Machida, all of Japan, assignors to Kabushiki Kaisha Kenwood, Tokyo, Japan

Filed Dec. 1, 1995, Ser. No. 566,082
Claims priority, application Japan, Dec. 5, 1994, 6-329268
Int. Cl.[6] H04B *3/46*
U.S. Cl. 375—224 **2 Claims**



1. A circuit for discriminating the modulation type of a received signal, comprising:

a clock recovery circuit for recovering a data clock from received data;

a phase difference detector for detecting a phase difference between the data clock recovered by said clock recovery circuit and the received data;

a deviation calculation circuit for calculating a deviation between the phase difference detected by said phase difference detector and a deviation reference value preset in accordance with a modulation type;

a squaring circuit for squaring the deviation calculated by said deviation calculation circuit;

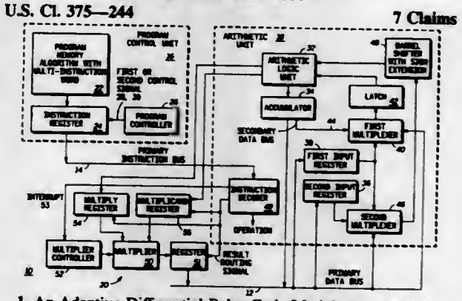
an average value calculation circuit for calculating an average value of a predetermined plurality number of consecutive ones of the square output calculated by said squaring circuit; and

a comparator for comparing the average value calculated by said average value calculation circuit with a predetermined decision reference value and outputting a discrimination signal in accordance with the comparison results.

5,600,674
METHOD AND APPARATUS OF AN ENHANCED DIGITAL SIGNAL PROCESSOR

Luis A. Bonet; David Yatim, and James W. Girardeau, Jr., all of Austin, Tex., assignors to Motorola Inc., Schaumburg, Ill.

Filed Mar. 2, 1995, Ser. No. 397,447
Int. Cl.[6] H04B *14/06*
U.S. Cl. 375—244 **7 Claims**



1. An Adaptive Differential Pulse Code Modulator comprising:

(a) a primary data bus;

(b) a primary instruction bus;

(c) program control unit operably coupled to the primary instruction bus, wherein the program control unit includes:

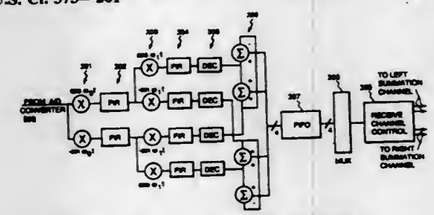
(i) program memory that stores an algorithm, wherein the algorithm includes a plurality of operations, and wherein at least some of the plurality of operations include multi-instruction words;
(ii) instruction register that temporarily receives and stores at least one of the plurality of operations when a first control signal is received and provides at least one of the plurality of operations to the primary instruction bus when a second control signal is received; and
(iii) program controller operably coupled to the program memory, wherein the program controller generates the first and second control signals;
(d) arithmetic unit operably coupled to the program control unit and the primary data bus, wherein the arithmetic unit includes:
(i) an arithmetic logic unit;
(ii) an accumulator operably coupled to the arithmetic logic unit and the primary data bus;
(iii) a first input register operably coupled to the primary data bus;
(iv) a second input register operably coupled to the primary data bus;
(v) a first multiplexer operably coupled to the first input register, the primary data bus, the arithmetic logic unit, and the accumulator, wherein the first multiplexer is coupled to the accumulator via a secondary data bus, wherein the secondary data bus has less parasitic capacitance than the primary data bus;
(vi) a second multiplexer operably coupled to the second input register, the primary data bus, and the first multiplexer; and
(vii) a barrel shifter having sign extension, wherein the barrel shifter is operably coupled to the second multiplexer and the arithmetic logic unit; and
(e) an analog-to-digital digital-to-analog digital filter that includes:
(i) sigma-delta converter that receives an analog signal and produces a digital representation of the analog signal;
(ii) digital filter operably coupled to the sigma-delta converter, wherein the digital filter filters the digital representation of the analog signal to produce filtered signals, wherein the filtered signals are provided to the primary data bus;
(iii) receive digital filter that produces filtered digital information based on digital information received from the primary data bus; and
(iv) analog filter operably coupled to the receive digital filter, wherein the analog filter converts the filtered digital information into an analog signal.

5,600,675

ULTRASONIC IMAGER HAVING IMPROVED BANDWIDTH

William E. Engeler, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 7, 1994, Ser. No. 301,746
Int. Cl.[6] H04L *5/12;23/02;* **H04B** *1/66*
U.S. Cl. 375—261 **23 Claims**



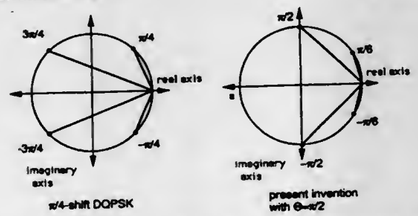
1. A digital baseband imaging system comprising:
a plurality of transducers arranged in a sequence to form an array;
means for selectively operating said transducers in a transmission mode to produce propagating energy pulses from electrical driving signals; and
means for forming a beam from analog electrical detection signals produced in response to detection of reflected energy pulses by said transducers operating in a reception mode, said beamforming means comprising a plurality of receive channels, each of said receive channels being coupled to a corresponding one of said plurality of transducers, respectively, wherein each of said receive channels comprises:
analog-to-digital conversion means for converting said analog electrical detection signals into digital signal samples;
a first demodulation stage for basebanding said digital signal samples to form a first complex sample; and
means for forming first and second sets of complex samples from said first complex sample, said first set of complex samples being centered in a first frequency band and said second set of complex signals being centered in a second frequency band.

5,600,676

MODULATION SCHEME WITH LOW ENVELOPE VARIATION FOR MOBILE RADIO BY CONSTRAINING A MAXIMUM MODULUS OF A DIFFERENTIAL PHASE ANGLE

Rajaram Ramesh, Schenectady, N.Y., assignor to Ericsson GE Mobile Communications Inc., Research Triangle Park, N.C.

Filed Jul. 6, 1993, Ser. No. 86,797
Int. Cl.[6] H04L *27/10*
U.S. Cl. 375—283 **8 Claims**



1. A method of communicating digital information over a radio channel comprising steps of:
a) mapping l bits of digital information directly to a differential phase angle of a signal constellation with equally spaced phase angles where a maximum modulus of a differential phase angle Θ is given by:

$$\theta = \frac{(2^l - 1)\pi}{k}$$

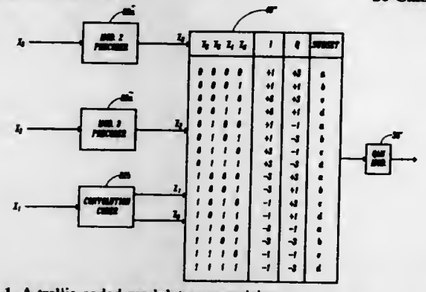
where k is an integer greater than or equal to 2^l and where k and l may assume values in addition to and different from an instance where k=4 and l=2;
b) accumulating differential phase angles generated in step (a);
c) forming an analog signal from the differential phase angles accumulated in step (b);
d) transmitting the analog signal;
e) receiving the signal transmitted in step (d) at an antenna of a receiver; and
f) demodulating the signal received in step (e) into digital information according to phase angles in the signal constellation.

5,600,677

TRELLIS CODED MODULATION SYSTEM FOR DIGITAL TELEVISION SIGNAL

Richard W. Citta, Oak Park, and David A. Willming, Palatine, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Division of Ser. No. 272,181, Jul. 8, 1994. This application Jan. 16, 1996, Ser. No. 586,441
Int. Cl.[6] H04L *27/04;27/20*
U.S. Cl. 375—296 **26 Claims**



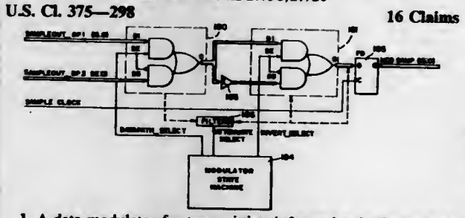
1. A trellis coded modulator comprising:
means for convolutionally coding a first input data bit X_1, for deriving first and second output bits Z_0 and Z_1;
means for precoding one or more second input data bits X_2–X_N for deriving respective output bits Z_2–Z_N; and
means for mapping the output bits Z_0, Z_1, Z_2–Z_N into corresponding one-dimensional multi-value symbols, wherein said symbols form a phase variant symbol constellation and wherein the output bits Z_0, Z_1 identify respective subsets of said symbols, each of said subsets comprising two or more equally spaced symbol values, and the output bits Z_1, Z_2–Z_N identify respective pairs of said symbols, each of said pairs comprising two adjacent symbol values.

5,600,678

PROGRAMMABLE DIGITAL MODULATOR AND METHODS OF MODULATING DIGITAL DATA

James E. Petranovich, and F. Matthew Rhodes, both of Encinitas, Calif., assignors to Pacific Communication Sciences, Inc., San Diego, Calif.

Continuation of Ser. No. 858,397, Mar. 26, 1992, Pat. No. 5,420,887. This application Oct. 27, 1994, Ser. No. 330,577
Int. Cl.[6] H04L *27/36;27/20*
U.S. Cl. 375—298 **16 Claims**



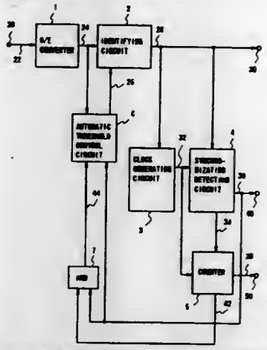
1. A data modulator for transmitting information in the form of symbols using M-ary phase shift keying wherein M is the number of known symbols used to transmit the information at a known carrier frequency, comprising:
an interface for accepting a number of samples of a sampled output waveform wherein a value associated with the samples is based on sampling an output waveform at a sampling rate that is a predetermined number times the carrier frequency, said sampled output waveform being indicative of said information to be transmitted;
an inverter coupled to said interface for inverting at least some of said samples, said samples so inverted defining inverted samples; and
a programmable selector coupled to said interface and said inverter for selecting samples to be inverted based on the sampling rate and the known symbols, said samples and said inverted samples forming a sequence of modulated samples for transmission.

5,600,679

BURST SIGNAL RECEIVING APPARATUS WITH DIFFERENT HOLDING TIMES OF THRESHOLD SIGNAL

Makoto Kadowaki, Tokyo, and Kunimitsu Kurita, Shizuoka, both of Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Mar. 18, 1996, Ser. No. 617,408
Claims priority, application Japan, Mar. 28, 1995, 7-069220
Int. Cl.[6] H04L *25/06*
U.S. Cl. 375—317 **19 Claims**



1. A digital burst signal receiving apparatus, comprising:
an identifying circuit for identifying based on a supplied threshold signal whether each of bits of a received digital burst signal is in a high level or a low level;
synchronization detecting means for detecting a sync pattern from said digital burst signal identified by said identifying circuit to produce a hunting signal; and
automatic threshold control means for supplying to said identifying circuit said threshold signal indicative of a threshold level which is determined by said automatic threshold control means from the received digital burst signal and having one of first and second duration times which is selected by said automatic threshold control means based on whether said hunting signal is significant or insignificant, the first duration time being longer than the second duration time.

5,600,680

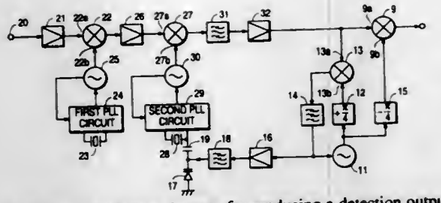
HIGH FREQUENCY RECEIVING APPARATUS

Akira Mishima, Motosu-gun; Hiroshi Nagai, Ichinomiya, and Akio Iwase, Nishikasugai-gun, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 252,103, Jun. 1, 1994, abandoned. This application Sep. 8, 1995, Ser. No. 525,247
Claims priority, application Japan, Jun. 1, 1993, 5-130325
Int. Cl.[6] H03D *5/00;9/00*
U.S. Cl. 375—327 **7 Claims**

1. A high frequency receiving apparatus comprising:
a mixer for mixing a local oscillation signal with a high frequency input signal to obtain an intermediate frequency signal;
a local oscillation device for controlling a frequency of an oscillator with a PLL system on the basis of an oscillation frequency of a reference solid-state oscillation element and for sending said local oscillation signal to said mixer;
a detection oscillator for generating an oscillation signal for picture synchronous detection;

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a picture synchronous detector for producing a detection output having a specific phase difference from said oscillation signal of said detection oscillator based upon said intermediate frequency signal;

a phase comparator for comparing a phase difference between said intermediate frequency signal and said oscillation signal of said detection oscillator;

a variable capacitive element equivalently connected in parallel to said reference solid-state oscillation element of said local oscillation device for converting a voltage change into a capacitance change; and

a voltage feedback device for applying an output voltage of said phase comparator to said variable capacitive element.

5,600,681

METHOD AND EQUIPMENT FOR THE RECEPTION OF DIGITAL SIGNALS

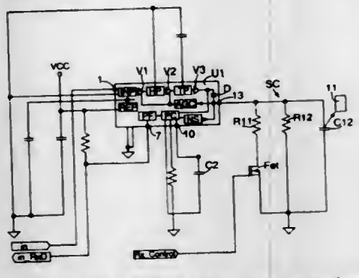
Max B. Gut, Ahornweg 15, CH-6353 Weggis, Switzerland, assignor to Max B. Gut, Weggis, Switzerland

Filed Mar. 2, 1994, Ser. No. 204,490

Claims priority, application Switzerland, Mar. 5, 1993, 00654/93

Int. Cl.[6] H04L *27/08*

U.S. Cl. 375—345 **15 Claims**



1. A method for gain control of a noise signal in received digital input signals, including noise and data signals in the form of pulses consisting of bursts of oscillations, said method comprising the steps of:

filtering the received digital input signals;

amplifying the filtered input signals.

presenting said filtered and amplified signals to a signal detector (PC);

generating from said signal detector (PC) an output signal after reception of said input signals, corresponding to said filtered and amplified signals;

presenting said output signal to a noise suppression circuit (NS);

charging a capacitor (C12), for the purposes of automatic signal gain control during the occurrence of noise and data signals, in such a way that, when few of said input signals exceed a threshold level, a correspondingly small charge is generated in said capacitor, and the gain sensitivity is raised, and when many digital input signals exceed a threshold level, a correspondingly large charge is generated in said capacitor, and the gain sensitivity is reduced,

generating a discharge pulse (EP), and thereafter

causing the charge transferred to the capacitor (C12) by the data signal to be removed again.

5,600,682

ASYNCHRONOUS DATA TRANSMITTING AND RECEIVING SYSTEM

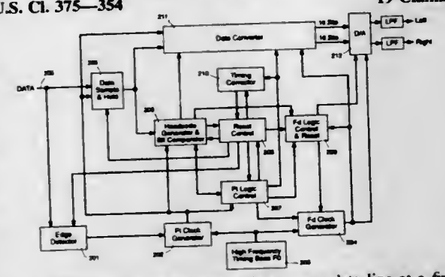
Xiaoyang Lee, New York, N.Y., assignor to Panasonic Technologies, Inc., Princeton, N.J.

Division of Ser. No. 40,481, Mar. 31, 1993, Pat. No. 5,450,450.

This application May 24, 1995, Ser. No. 449,688

Int. Cl.[6] H04L *7/00*

U.S. Cl. 375—354 **19 Claims**



1. A transmitter for transmitting data over a data line at a first transmitting rate, which data has been generated as a continuous data stream at a first data generating rate which is lower than said first transmitting rate, comprising:

means for dividing said continuous data stream into a plurality of sequential packets of data bits;

means for assembling said plurality of packets into a plurality of transmission packets, each transmission packet comprising a headcode including a first transition bit, data bits, and an endcode, said means for assembling including:

headcode generator means for generating a headcode for each of said transmission packets, said headcode comprising a first transition bit set opposite to the standby level of said data line and at least one headcode packet recognition bit; and

endcode generator means for generating an endcode for each of said transmission packets, said endcode comprising at least one last transition bit set to the standby level of said data line; and

means for transmitting said plurality of transmission packets at said first transmitting rate.

5,600,683

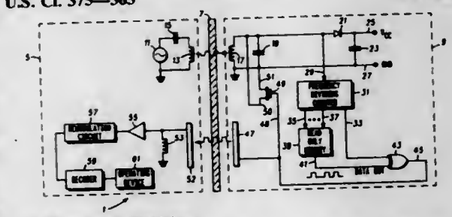
COMMUNICATION DATA FORMAT

Kirk B. Bierach, Saratoga, and Ximing Shi, Fremont, both of Calif., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 1, 1995, Ser. No. 432,257

Int. Cl.[6] H04L *7/00*

U.S. Cl. 375—363 **12 Claims**



1. A system comprising:

a device containing digital data arranged to include a plurality of variable data bits and synchronization bits, the number of said variable data bits being more than the number of said synchronization bits; and

a modulation circuit coupled to said device for generating modulated signals by modulating said digital data in accordance with a binary phase shift keying technique;

a demodulation circuit for generating demodulated signals from said modulated signals;

a decoder for correctly recovering said variable data bits from said demodulated signals, said decoder includes;

means for verifying that said demodulated signals contain said synchronization bits;

means for forming a complement of said demodulated signals; and

means for extracting said variable data bits.

5,600,684

AUTOMATIC IDENTIFICATION FOR DIGITAL CONFERENCING

Andrew Kuzma, 12558 NW. Woodland Ct., Portland, Oreg. 97229

Filed Sep. 13, 1994, Ser. No. 305,206

Int. Cl.[6] H04L *23/00*

U.S. Cl. 375—377 **2 Claims**

ITone Bit Sequence	HDLC Interpretation
Illegal even frame FAS/BAS	noise (no flag)
ITone sequence	UI message containing ITone
even frame padding (if any) and odd frame FAS/BAS parity	bad message (CRC failure)
ITone sequence	UI message containing ITone
odd frame padding (if any) and second even frame FAS/BAS parity	bad message (CRC failure)
ITone sequence	UI message containing ITone
even frame padding (if any) and odd frame FAS/BAS parity	bad message (CRC failure)
ITone sequence	UI message containing ITone
odd frame padding (if any)	bad messages waiting for flag framing

1. For use in a digital communication system, including a digital network with a plurality of communication terminals, a method for characterizing a specific terminal's message format capabilities comprising the steps of:

(A) sending from said specific terminal a framed format identification message; and

(B) including within said framed format identification message a corresponding flagged format identification message, wherein said framed format comprises the ITU H.320 standard, and said flagged format comprises a PCS format including the use of HDLC flags.

5,600,685

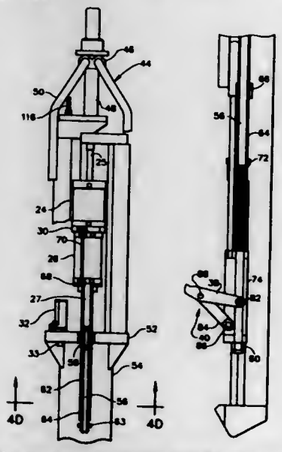
TOOL FOR UNLATCHING EXTENDED HANDLE AND STANDARD HANDLE CONTROL RODS

Kenneth R. Izzo, Los Gatos; Robert K. Lovell, and Terry K. Dallas, both of San Jose, all of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Apr. 24, 1995, Ser. No. 427,543

Int. Cl.[6] G21C *19/00*

U.S. Cl. 376—260 **20 Claims**



1. A tool for unlatching extended handle and standard handle control rods from their associated control rod drives, comprising:

a first frame assembly having an axis;

a second frame assembly slidably coupled to said first frame assembly;

a grapple hook pivotably coupled to said first frame assembly;

means for rotating said grapple hook between first and second angular positions, said grapple hook rotating means being mounted on said first frame assembly;

a connecting element;

first displacing means for axially displacing said connecting element relative to said second frame assembly;

an actuator rod;

an actuator finger pivotably coupled to said actuator rod;

actuator linkage means for rotating said actuator finger relative to said actuator rod during axial displacement of said actuator rod relative to said actuator linkage means; and

second displacing means for axially displacing said actuator rod relative to said connecting element.

5,600,686

METHOD FOR REPLACING A COMPONENT LOCATED IN THE INTERIOR OF A CONTAINMENT OF A NUCLEAR REACTOR

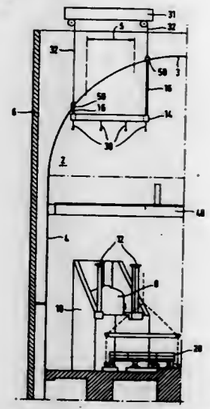
Johannes Stoss, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 16, 1995, Ser. No. 515,828

Claims priority, application Germany, Aug. 16, 1994, 44 29 012.8

Int. Cl.[6] G21C *19/20*

U.S. Cl. 376—260 **5 Claims**



2. A method for replacing a component located in the interior of a containment of a nuclear reactor, which comprises:

forming an opening in a dome of a containment of a nuclear reactor above a component to be replaced in the interior of the containment, for transporting the component through the opening; and

suspending a work scaffold from support cables of a hoisting tackle disposed outside the containment and guiding the support cables through passageway openings in the dome, for handling at the dome.

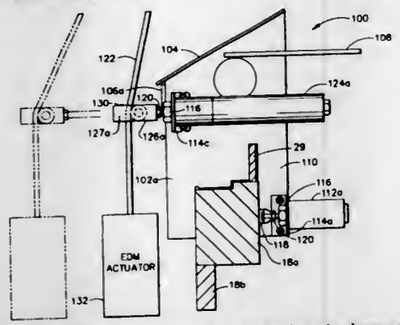
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5,600,687

STEAM DAM SLIDE WITH CABLE MANIPULATOR FOR RADIALLY POSITIONING HOISTED LOAD IN ANNULUS

Christopher M. Welsh, San Jose, Calif., assignor to General Electric Company, San Jose, Calif.

Filed Sep. 22, 1995, Ser. No. 532,185
Int. Cl.[6] G21C *19/00*
U.S. Cl. 376—260 13 Claims



1. A tool for radially positioning a cable having a load suspended therefrom in an annulus between a shroud and a reactor pressure vessel of a nuclear reactor, comprising:

a rigid support frame having first and second side plates, each side plate having a recess with a profile which matches the cross-sectional profile of an uppermost portion of the shroud;

first and second positioning cylinders mounted on said rigid support frame and having first and second pistons respectively which extend in parallel in a predetermined direction; and

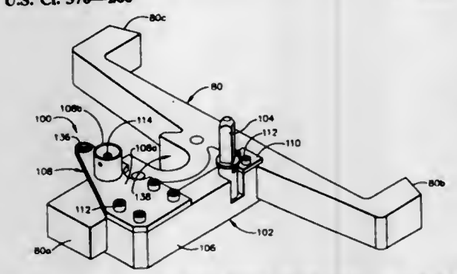
a roller rotatably mounted for rotation about an axis and coupled to said first and second pistons so that said roller translates in said predetermined direction during concurrent extension of said first and second pistons.

5,600,688

TOOL FOR INSTALLING HARDWARE FOR RADIALLY SUPPORTING VERTICAL RESTRAINT TIE ROD

Wing G. Jung, Cupertino, Calif., assignor to General Electric Company, San Jose, Calif.

Filed Sep. 22, 1995, Ser. No. 532,910
Int. Cl.[6] G21C *19/00*
U.S. Cl. 376—260 5 Claims



1. A tool for remotely positioning a shroud repair component to be installed in an annulus between a shroud and a reactor pressure vessel of a nuclear reactor, comprising:

a frame having first and second linear channels, said first channel being formed in part by a first planar surface which is substantially perpendicular to a reference plane and said second channel being formed in part by a second planar surface which is substantially perpendicular to said reference plane but is not parallel to said first planar surface;

an arm connected to said frame and extending parallel to said reference plane, said arm having a throughhole extending perpendicular to said reference plane;

a bar having a threaded throughhole, said bar being connected to said arm at a location such that said threaded throughhole is aligned and communicates with said throughhole in said arm;

a set screw threadably engaged in said threaded throughhole; and

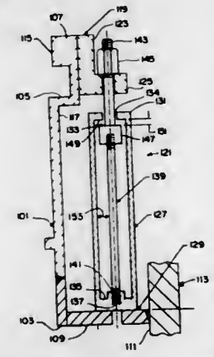
a pivot pivotably coupled to said frame.

5,600,689

METHOD AND APPARATUS FOR REPAIRING BOILING WATER REACTOR SHROUDS UTILIZING TIE-RODS WITH MULTIPLE LONGITUDINAL MEMBERS

Sterling J. Weems, Chevy Chase, Md.; Noman Cole, Mason Neck, and H. William McCurdy, Vienna, both of Va., assignors to MPR Associates, Inc., Alexandria, Va.

Continuation-in-part of Ser. No. 190,796, Feb. 2, 1994, Pat. No. 5,402,570, which is a continuation-in-part of Ser. No. 329,409, Oct. 27, 1994, abandoned. This application Dec. 15, 1994, Ser. No. 358,085
Int. Cl.[6] G21C *11/00;5/10*
U.S. Cl. 376—302 34 Claims



28. In combination, a boiling water reactor shroud and a tie-rod assembly for applying a compressive force to the boiling water reactor shroud, said tie-rod assembly comprising:

a plurality of coaxial longitudinal members separated by a radial gap, wherein each of said coaxial longitudinal members has axially opposed ends;

means for attaching one end of a first of said coaxial longitudinal members to a top portion of the shroud;

means for attaching the other end of said first coaxial longitudinal member to a bottom portion of the shroud;

means for tensioning said first coaxial longitudinal member;

means for coupling said first coaxial longitudinal member with a second of said coaxial longitudinal members in a manner to axially load said second coaxial longitudinal member after said first coaxial longitudinal member has axially extended a predetermined amount; and

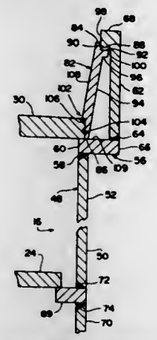
damping fluid disposed in said radial gap.

5,600,690

METHOD AND APPARATUS FOR REPAIRING BOILING WATER REACTOR SHROUDS UTILIZING TIE-RODS AND BRACES

Sterling J. Weems, Chevy Chase, Md., and Noman Cole, Mason Neck, Va., assignors to MPR Associates, Inc., Alexandria, Va.

Continuation-in-part of Ser. No. 190,796, Feb. 2, 1994, Pat. No. 5,402,570, and Ser. No. 332,815, Oct. 31, 1994, abandoned. This application Dec. 20, 1994, Ser. No. 359,376
Int. Cl.[6] G21C *11/00;5/10*
U.S. Cl. 376—302 16 Claims



8. A boiling water reactor shroud assembly comprising:

a boiling water reactor shroud having a borizontal shroud plate extending inwardly from a lower edge of an upper vertical shroud plate section to an upper edge of a lower vertical shroud plate section to form a horizontal rim; and

a plurality of braces held in compression between sites on the interior of said upper vertical shroud plate section and the upper edge of said lower vertical shroud plate section at a respective plurality of angularly spaced locations about the interior of said shroud.

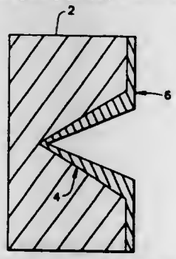
5,600,691

NOBLE METAL DOPING OR COATING OF CRACK INTERIOR FOR STRESS CORROSION CRACKING PROTECTION OF METALS

Samson Hettiarachchi, Menlo Park; Robert L. Cowan, II, Livermore; Thomas P. Diaz, San Martin, and Gary P. Wozadlo, Los Gatos, all of Calif., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 143,513, Oct. 29, 1993, and a continuation-in-part of Ser. No. 143,514, Oct. 29, 1993, Pat. No. 5,448,605. This application Mar. 10, 1994, Ser. No. 209,572
Int. Cl.[6] G21C *9/00*
U.S. Cl. 376—305 16 Claims

1. A method for mitigating propagation of a crack in an oxided



surface of a metal component submerged in water in a water-cooled nuclear reactor or associated equipment, comprising the steps of;

injecting a solution of a compound containing a noble metal into the water in which metal component is submerged while said reactor is operating; and

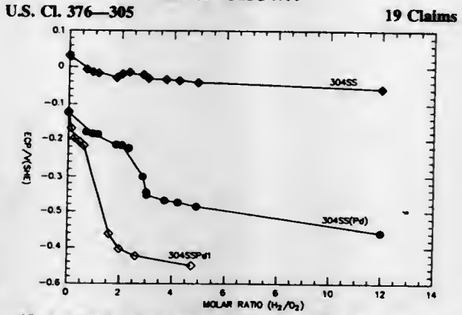
causing said noble metal compound to decompose under reactor thermal conditions to release atoms of said noble metal which incorporate in said oxided surface of said metal component.

5,600,692

METHOD FOR IMPROVING TENACITY AND LOADING OF PALLADIUM ON PALLADIUM-DOPED METAL SURFACES

Samson Hettiarachchi, Menlo Park, Calif., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 209,572, Mar. 10, 1994, which is a continuation-in-part of Ser. No. 143,513, Oct. 29, 1993, and a continuation-in-part of Ser. No. 143,514, Oct. 29, 1993, Pat. No. 5,448,605. This application Mar. 7, 1995, Ser. No. 400,075
Int. Cl.[6] G21C *9/00*
U.S. Cl. 376—305 19 Claims



10. A method of operating a boiling water reactor containing oxided metal components, comprising the steps of:

injecting a solution of a thermally decomposable compound containing a noble metal into the high-temperature water of an operating reactor to cause decomposition of said compound to produce species of said noble metal; and

injecting a reducing agent into the high-temperature water to reduce the noble metal species freed by decomposition of the noble metal compound and to cause said noble metal species to incorporate in said oxided metal components,

said injected reducing agent being present in the water during injection of the noble metal compound.

5,600,693

Patent Not Issued For This Number

5,600,694

NUCLEAR FUEL UPPER END FITTING QUICK DISCONNECT JOINT

Richard P. Broders, Granby, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Feb. 22, 1995, Ser. No. 393,102
Int. Cl.[6] G21C *3/32*
U.S. Cl. 376—446 6 Claims

1. A fuel assembly for use in a pressurized water nuclear reactor, said assembly having a plurality of guide tube members each joined at its upper end to one of a plurality of post members with each of said post member having a head portion against which is spring biased a first horizontally oriented plate spaced from a second horizontally oriented plate, said first plate being slidably

mounted by holes therein on said post members, and said second plate being fixed to said post members, springs surrounding said post members and abutting said first and second plates, said fuel assembly being characterized by:

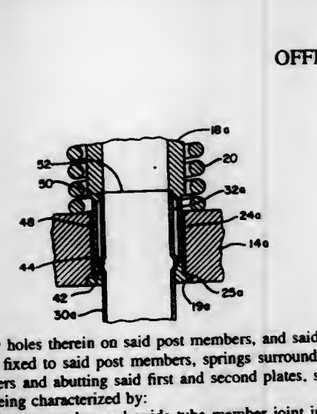
each said post member and guide tube member joint including one of said post or tube members with slots parallel to its axis to form flexible spring fingers with a projecting step on the ends thereof for abutting engagement with said second plate and further one of said members including a projection for being retained in a recess in the other of said members in the surface portion adjacent to said one of said members to permit locking said members together or unlocking said members when said spring fingers steps are free of said abutting engagement with said second plate and said spring fingers are thus free to flex, said spring fingers steps being disengageable from said abutting engagement with said second plate by compressing said springs to move said first and second horizontal plates towards each other.

5,600,695

COUNTER CIRCUIT HAVING LOAD FUNCTION

Keiji Negi, Tokyo, Japan, assignor to Ando Electric Co., Ltd., Tokyo, Japan

Filed Sep. 19, 1995, Ser. No. 530,444
Claims priority, application Japan, Sep. 30, 1994, 6-261738
Int. Cl.[6] H03K *21/40*
U.S. Cl. 377—51 **2 Claims**



1. A counter circuit having a load function which performs counting operations in synchronization with an input clock signal and is able to count from an arbitrary value upon receiving a count initiation value in synchronization with a load signal, comprising:

at least three counter circuits, each of which corresponds to a numerical digit;

at least one load value monitor circuit, each of which detects whether or not load values of the counter circuits corresponding to lower digits are full count values upon input of said count initiation value in synchronization with a load signal, and delays the output of said load signal by one clock period if a full count value has been detected; and

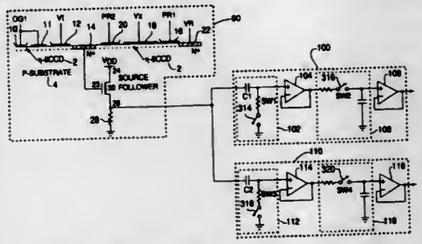
at least one OR circuit, each of which receives an output from one of said load value monitor circuits and a carry output from one of said counter circuits, then outputs their logical sum to an ET terminal of another of said counter circuits.

5,600,696

DUAL-GAIN FLOATING DIFFUSION OUTPUT AMPLIFIER

Donald J. Sauer, Allentown, N.J., assignor to David Sarnoff Research Center, Inc., Princeton, N.J.

Filed Oct. 11, 1995, Ser. No. 541,164
Int. Cl.[6] G11C *19/28*; **H01L** *29/768*
U.S. Cl. 377—60 **9 Claims**



1. A diffusion amplifier comprising:

a channel of a first conductivity type semiconductor material formed in a substrate of a second conductivity type semiconductor material;

a reset diffusion, disposed in an extension of said channel, connected to receive a reset potential;

a terminal for applying a signal charge, said terminal disposed adjacent to a surface of said substrate;

a floating diffusion disposed in said channel extension, said floating diffusion and said reset diffusion being of said first conductivity type of semiconductor material of relatively high doping compared to said channel and its extension;

a high input impedance amplifier circuit, including a field effect transistor, being disposed on said substrate, having a gate electrode ohmically coupled to said floating diffusion;

a first reset gate electrode disposed adjacent to said substrate surface, over said channel extension, and between said floating diffusion and said reset drain diffusion, to which first reset gate electrode reset pulses are recurrently applied;

a second reset gate electrode disposed adjacent to said substrate surface, over said channel extension, and between said floating diffusion and said first reset gate electrode, to which second reset gate electrode reset pulses are recurrently applied; and

a d-c gate electrode disposed adjacent to said substrate surface, over said channel extension, and between said first reset gate electrode and said second reset gate electrode.

5,600,697

TRANSMISSION LINE USING A POWER COMBINER FOR HIGH DATA RATE COMMUNICATION IN A COMPUTERIZED TOMOGRAPHY SYSTEM

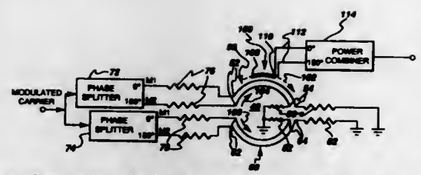
Daniel D. Harrison, Delanson, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 20, 1995, Ser. No. 407,149
Int. Cl.[6] H05G *1/60*
U.S. Cl. 378—15 **32 Claims**

1. A computerized tomography system comprising:

a stationary frame;

a generally annular rotating frame;



a phase splitter having an input port coupled to receive a modulated carrier having a predetermined bandwidth, said phase splitter having first and second output ports for supplying, respectively, first and second modulated carrier constituents having a substantially 180° out-of-phase angle between one another while maintaining a substantially uniform amplitude over said bandwidth;

a transmission line attached to said rotating frame and positioned substantially around said annular rotating frame, said transmission line comprising at least one individual segment having first and second conductors respectively coupled to the first and second output ports of said phase splitter to receive the first and second modulated carrier constituents from said phase splitter;

a coupler attached to said stationary frame and being positioned sufficiently near said transmission line for establishing radio coupling therebetween to receive the first and second modulated carrier constituents being applied to said at least one individual segment; and

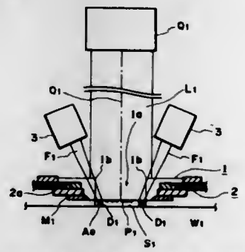
a power combiner having first and second input ports for receiving, respectively, the first and second modulated carrier constituents supplied by said coupler, said power combiner being adapted for combining the substantially 180° out-of-phase first and second modulated carrier constituents to form a combined modulated carrier supplied through an output port of said power combiner.

5,600,698

X-RAY EXPOSURE APPARATUS

Shigeru Terashima, Utsunomiya, and Takeshi Miyachi, Zama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 4, 1995, Ser. No. 416,097
Claims priority, application Japan, Apr. 4, 1994, 6-089168; Mar. 28, 1995, 7-094510
Int. Cl.[6] G03F *7/20*
U.S. Cl. 378—34 **6 Claims**



1. An X-ray apparatus for transferring a circuit pattern and an alignment mark of a mask onto a substrate, said apparatus comprising:

a regulating member for regulating an X-ray exposure beam from an X-ray source; and

an alignment optical system for projecting an alignment beam to an alignment mark of the mask, to perform alignment between the mask and the substrate;

wherein said regulating member is able to be arranged between said alignment optical system and the mask, to pass the alignment beam therethrough; and

wherein a distance E from said regulating member to the mask satisfies the relation

$$E \geq (f+m)/2(\tan\theta+\tan\gamma),$$

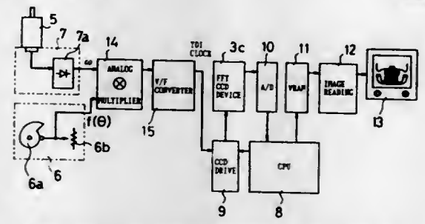
where, as viewed from a direction of formation of an edge of said regulating member, θ is the angle defined between an optical axis of the alignment beam and an optical axis of the X-ray exposure beam, f is the beam width of a portion of the alignment beam passing through said regulating member, γ is the maximum of a divergence angle, in an exposure region, of the X-ray exposure beam, and m is the width of the alignment mark.

5,600,699

PANORAMIC X-RAY IMAGING APPARATUS

Masakazu Suzuki; Keisuke Mori; Akifumi Tachibana; Kazunari Matoba, all of Kyoto; Hitoshi Asai, and Kazuhisa Miyaguchi, both of Hamamatsu, all of Japan, assignors to J. Morita Manufacturing Corporation, Kyoto, and Hamamatsu Photonics Kabushiki Kaisha, Shizuoka, both of Japan

Filed Feb. 8, 1996, Ser. No. 598,442
Claims priority, application Japan, Feb. 9, 1995, 7-022148
Int. Cl.[6] A61B *6/14*
U.S. Cl. 378—38 **7 Claims**



1. A panoramic X-ray imaging apparatus provided with an X-ray generating means and an X-ray CCD detecting means disposed opposite to each other at both ends of a swivel member so as to perform tomographic imaging of the entire jaws of a human head positioned between the X-ray generating means and the X-ray CCD detecting means by driving the X-ray CCD detecting means in accordance with the TDI method, said apparatus comprising:

an angle detecting means for detecting the rotation angle θ of the swivel member;

an angular speed detecting means for detecting the rotational angular speed ω of the swivel member; and

a function generating means for deriving a signal responding to the rotation angle θ detected by the angle detecting means and representing a function value $f(\theta)$ used determine a tomographic orbit,

wherein a TDI clock driving the X-ray CCD detecting means is derived by using a frequency determined on the basis of the angular speed ω detected by the angular speed detecting means and the function value $f(\theta)$ generated by the function generating means.

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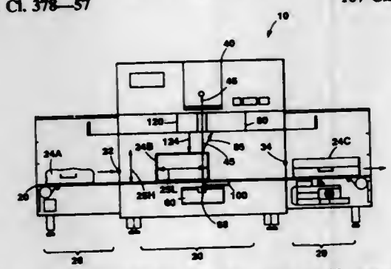
DETECTING EXPLOSIVES OR OTHER CONTRABAND BY EMPLOYING TRANSMITTED AND SCATTERED X-RAYS

Kristoph D. Krug, Framingham; William F. Aitkenhead, Sharon; Richard F. Eilbert, Lincoln, all of Mass.; Jeffrey H. Stillson, Nashua, N.H., and Jay A. Stein, Framingham, Mass., assignors to Vivid Technologies, Inc., Woburn, Mass.

Filed Sep. 25, 1995, Ser. No. 533,646

Int. Cl.[6] G01N *23/10*

U.S. Cl. 378—57 **107 Claims**



1. An X-ray inspection device for detecting a specific material of interest in items of baggage or packages, comprising:

a conveyor constructed and arranged to move items of baggage or packages to an inspection region;

an X-ray source system located at said inspection region and constructed to expose an examined item of baggage or package by a beam of X-ray radiation;

an x-ray detection system located at said inspection region and constructed to detect x-ray radiation modified by said examined item;

a dimension detector constructed to measure a selected dimension of said examined item;

an interface system connected to and receiving from said X-ray detection system X-ray data and from said dimension detector dimension data, said interface system constructed to order said X-ray data and said dimension data;

a computer operatively connected to and receiving from said interface system said ordered X-ray and dimension data, said computer programmed to utilize said data for recognition of said specific material of interest in said examined item; and

said computer further programmed to indicate presence of said specific material of interest.

5,600,701

X-RAY IMAGING SYSTEM AND METHOD THEREFOR

Rika Baba, Kokubunji; Ken Ueda, Ome; Yoichi Onodera, Asaka; Keiji Umetani, Hino; Hisatake Yokouchi, Tokyo; Shigekazu Hara, Noda; Tomoharu Kajiyama, Koganei, and Fumitaka Takahashi, Toride, all of Japan, assignors to Hitachi Medical Corporation, Tokyo, Japan

Filed May 10, 1994, Ser. No. 240,313

Claims priority, application Japan, May 11, 1993, 5-109141; Aug. 19, 1993, 5-205164

Int. Cl.[6] H05G *1/64*

U.S. Cl. 378—98.2 **10 Claims**

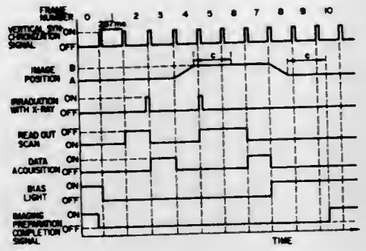
1. A picture imaging system comprising:

a television camera having an image pick-up tube;

means for moving and stopping said television camera;

means for exposing an object to be imaged after said television camera has been turned-over from a moving state to a stopped state; and

means for making said television camera read out image signals of said object to be imaged, after a period of time of at least 300 ms for attenuation of microphonic noise has lapsed, measured from a point of time where said television camera has been turned-over from the moving state to the stopped state.



5,600,702

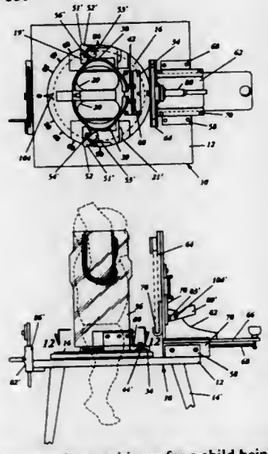
POSITIONER FOR A CHILD BEING X-RAYED

Jimmy C. Pigg, P.O. Box 772, Waynesboro, Tenn. 38485

Filed Oct. 25, 1995, Ser. No. 547,978

Int. Cl.[6] G03B *42/02*

U.S. Cl. 378—180 **9 Claims**



1. An improvement in a positioner for a child being X-rayed, the positioner comprising a platform having an opening therethrough, a turn table mounted in the opening in said platform for rotary movement in clockwise and counterclockwise directions, there being a pair of side-by-side spaced openings in said turn table between the perimeter thereof for the projection of the legs of a child therethrough, a horse member arranged between and spaced from each of said openings for supporting a child in a straddled position and connected to said turn table for upward and downward movement, a pair of arcuate shaped upstanding side members each transparent to light waves and X-rays arranged in face-to-face spaced relation positioned on said turn table between the perimeter and said turn table openings and connected to said turn table for limited movement toward and away from each other, and an upstanding film holder positioned on said platform adjacent to and facing said side members and supported on said platform, the film holder including latching means for latching an X-ray film cassette in place after movement of the X-ray film cassette vertically to place the X-ray film cassette between an X-ray machine and the child being X-rayed, the latching means having an end that contacts the X-ray film cassette and an end opposite the end that contacts the X-ray film cassette,

the improvement comprising means for increasing fiction mounted at the end of the latching means that contacts the X-ray film cassette and the end of the latching means opposite the end that contacts the X-ray film cassette having a greater weight than the end that contacts the X-ray film cassette.

5,600,703

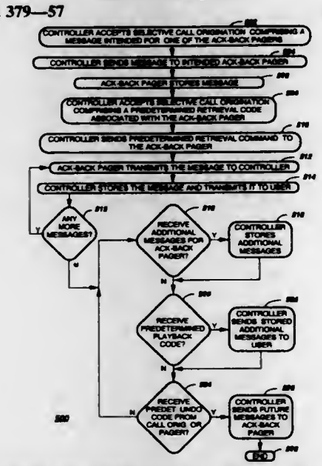
METHOD AND APPARATUS FOR REMOTELY RETRIEVING MESSAGES INTENDED FOR AN ACKNOWLEDGE-BACK PAGER IN A SELECTIVE CALL COMMUNICATION SYSTEM

Tri T. Dang, Coconut Creek; Kwok K. Choi, Coral Springs, and Lowell C. Hufferd III, Delray Beach, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 24, 1995, Ser. No. 393,797

Int. Cl.[6] H04Q *7/12*

U.S. Cl. 379—57 **22 Claims**



1. A method for remotely retrieving messages intended for an acknowledge-back pager in a selective call communication system including a fixed portion and a portable portion comprising the acknowledge-back pager, the selective call communication system having provisions for interconnection with a user through a telephone system, the method comprising the steps of:

accepting by the fixed portion a selective call origination from a caller, comprising a message intended for the acknowledge-back pager;

sending the message from the fixed portion to the acknowledge-back pager in response;

storing the message sent in the sending step within a pager memory of the acknowledge-back pager;

thereafter accepting by the fixed portion a selective call origination from the user, the selective call origination comprising a predetermined retrieval code associated with the acknowledge-back pager;

sending a predetermined retrieval command to the acknowledge-back pager in response;

retrieving the message from the pager memory in response to the predetermined retrieval command;

transmitting the message retrieved, from the acknowledge-back pager to the fixed portion;

storing the message transmitted in the transmitting step within a controller memory of the fixed portion; and

thereafter sending the message from the controller memory through the telephone system to the user.

5,600,704

SYSTEMS AND METHODS FOR PRIORITIZED ROUTING OF TELEPHONE CALLS TO A SUBSCRIBER

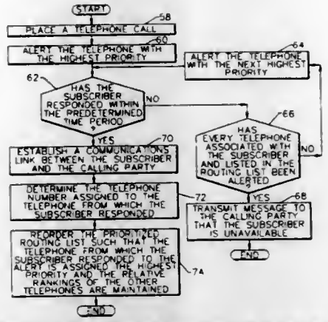
Björn G. D. Ahlberg, Falsterbo; Johan Falk, Järfälla, both of Sweden, and Anders Möine, Cary, N.C., assignors to Ericsson Inc., Research Triangle Park, N.C.

Filed Aug. 30, 1994, Ser. No. 298,406

Int. Cl.[6] H04M *3/42;11/00*

U.S. Cl. 379—58 **31 Claims**

1. A cellular radio communications system comprising:



a prioritized routing list of a plurality of telephone numbers wherein each telephone number is assigned to a telephone associated with a predetermined subscriber of the cellular radio communications system;

communications link establishing means, responsive to said prioritized routing list, for establishing a communications link between a source telephone placing a telephone call and a predetermined telephone number associated with the predetermined subscriber wherein said communications link establishing means sequentially alerts the telephones associated with the predetermined subscriber according to said prioritized routing list of telephone numbers associated with the predetermined subscriber; and

reprioritizing means, responsive to said communications link establishing means, for sorting said prioritized routing list of telephone numbers associated with the predetermined subscriber such that the telephone from which the subscriber responded to the alert is assigned the highest priority and is initially alerted by said communications link establishing means in response to a next telephone call placed to the predetermined telephone number associated with the subscriber;

wherein said reprioritizing means comprises means for sorting said prioritized routing list of telephone numbers associated with the predetermined subscriber after the subscriber places a telephone call from an associated telephone such that the telephone from which the subscriber placed the telephone call is assigned the highest priority and is initially alerted by said communications link establishing means in response to a next telephone call placed to the predetermined telephone number associated with the subscriber.

5,600,705

METHOD FOR CALL ESTABLISHMENT

Sanna Maenpaa, Espoo, Finland, assignor to Nokia Telecommunications Oy, Espoo, Finland

PCT No. PCT/FI93/00376, § 371 Date Feb. 23, 1995, § 102(e) Date Feb. 23, 1995, PCT Pub. No. WO95/01073, PCT Pub. Date Jan. 5, 1995

PCT Filed Sep. 20, 1993, Ser. No. 387,926

Claims priority, application Finland, Jun. 23, 1993, 932920

Int. Cl.[6] H04Q *7/22*

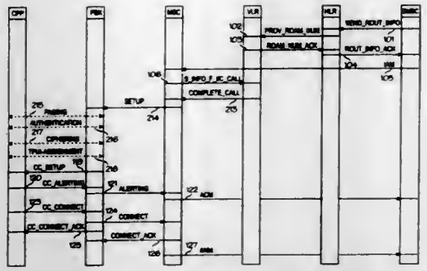
U.S. Cl. 379—58 **10 Claims**

7. A method for call establishment in a cellular radio system comprising a mobile services switching centre, a private branch exchange connected thereto, and a visitor location register and a home location register for storing subscriber and location data on subscribers, in which method

the mobile services switching centre requests, to establish a call to the subscriber, the home location register of the subscriber to provide subscriber and location data of the subscriber on the basis of the subscriber number,

the home location register of the subscriber maintains a PBX parameter,

if the subscriber and location data of the subscriber are not found in the home location register on the basis of the subscriber number of the subscriber, the home location regis-



ter compares the subscriber number of the subscriber with said PBX parameter, and if the desired correspondence between the subscriber number of the subscriber and the PBX parameter exists,

the home location register forms a roaming number for the subscriber on the basis of the roaming parameter of the home PBX, said roaming number carrying information on the fact that the subscriber is located within the area of its home PBX, and sends it to the mobile services switching centre,

one mobile services switching centre requests the visitor location register of the location area of the subscriber to provide routing information for the subscriber by sending a subscriber and location data request message pertaining to the subscriber and containing said roaming number,

if the subscriber data of the subscriber are not found in the visitor location register on the basis of the roaming number, the visitor location register compares the roaming number with the subscriber home PBX roaming parameter that is stored by the visitor location register, and if the desired correspondence between these exists,

the visitor location register does not initiate the mobility management functions pertaining to normal connection establishment in the system but sends to the mobile services switching centre an indication of the fact that the call can be switched,

the mobile services switching centre sends a connection establishment request to the private branch exchange of the home location area of the subscriber,

the home private branch exchange of the subscriber performs operations for establishing a connection and establishes a connection between the subscriber and the mobile services switching centre.

5,600,706

METHOD AND SYSTEM FOR DETERMINING THE POSITION OF A MOBILE RECEIVER

Michael J. Dunn, Issaquah, Wash.; Don H. Atherly, Eugene, Oreg.; Douglas O. J. Reudink, Bellevue, Wash.; Martin J. Feuerstein, Kirkland, Wash.; Ronald E. Foerster, Seattle, Wash.; Ching Chuang, Issaquah, Wash., and Dino J. Vendetti, Bellevue, Wash., assignors to U S West, Inc., Englewood, Colo.

Continuation-in-part of Ser. No. 178,954, Jan. 7, 1994, which is a continuation-in-part of Ser. No. 865,090, Apr. 8, 1992, Pat. No. 5,295,180. This application May 9, 1994, Ser. No. 240,070

The portion of the term of this patent subsequent to Jan. 7, 2014, has been disclaimed.

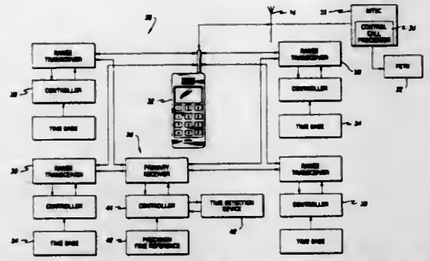
Int. Cl.[6] H04M *11/00;* **H04B** *7/185;* **G01S** *3/02*

U.S. Cl. 379—59 **60 Claims**

1. A positioning system, comprising:

a plurality of range transceivers at known fixed locations each having a time reference base for transmitting approximately synchronized digital range signals having a signal energy;

at least one primary receiver each disposed at a known location relative to the locations of said plurality of range transceivers which (a) receives the digital range signals, (b) determines a deviation representing the amount that each digital range signal deviates from system synchronization, and (c) sends



corresponding error signals to said plurality of range transceivers so as to more closely bring said digital range signals into synchronization;

a supplemental receiver at an unknown location which receives said synchronized digital range signals; and

computation means, in communication with the supplemental receiver, for computing, based on the time difference of arrival of the received synchronized digital range signals, coordinate values defining the position of said supplemental receiver.

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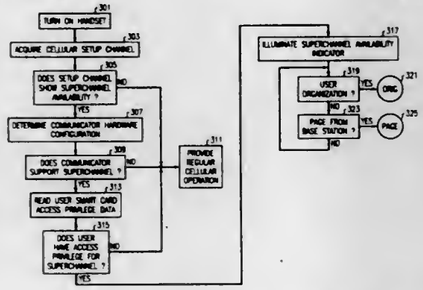
WIRELESS CHANNEL SETUP USING LOW BANDWIDTH NETWORK FOR SELECTING HIGH BANDWIDTH DATA BEARER CHANNEL OF ANOTHER NETWORK SYSTEM FOR DATA TRANSMISSION

Robert R. Miller, II, Morris Township, Morris County, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Aug. 31, 1994, Ser. No. 299,673

Int. Cl.[6] H04Q *7/22*

U.S. Cl. 379—59 **7 Claims**



2. A method of transmitting data over a wide bandwidth data channel with a mobile terminal having co-resident cellular radiotelephone and wireless data transmission modems, comprising the steps of:

setting up a cellular radiotelephone call between an origination and destination terminal over a narrow band overhead set up channel;

communicating with the cellular radiotelephone over the narrow bandwidth channel for arranging access and setup of the wide bandwidth data channel between the origination and destination terminal;

transmitting data over the wide bandwidth data channel.

5,600,708

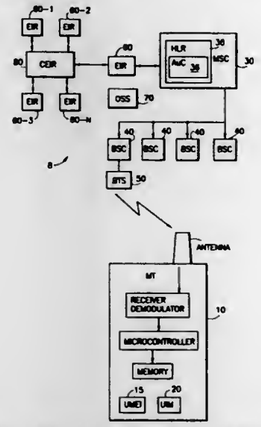
OVER THE AIR LOCKING OF USER IDENTITY MODULES FOR MOBILE TELEPHONES

Paul S. Meche, Richardson, Tex., and Ahti Vaisanen, Del Mar, Calif., assignors to Nokia Mobile Phones Limited, Salo, Finland

Filed Aug. 4, 1995, Ser. No. 511,519

Int. Cl.[6] H04Q *7/30;7/32*

U.S. Cl. 379—59 **18 Claims**



1. A mobile communications network comprising at least one central base switching network and a plurality of remote mobile terminals containing circuits for transmitting and receiving electronic signals, each of said remote mobile terminals including a user identity module (UIM) containing personalized user data for controlling the transmission of signals therefrom,

wherein said central base switching network includes means for transmitting data signals to a selected remote mobile terminal for selectively locking said selected remote mobile terminal to said included UIM and said included UIM to said selected remote mobile terminal, thereby selectively preventing operation of said selected remote mobile terminal with any other of said UIMs and operation of said included UIM with any other of said remote mobile terminals.

5,600,709

TELEPHONE SET FOR AN INTEGRATED SERVICES DIGITAL NETWORK (ISDN)

Jürgen Hödlinger, Röthenbach, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 133,825, Oct. 7, 1993, abandoned, which is a continuation of Ser. No. 760,547, Sep. 16, 1991, abandoned. This application Mar. 21, 1995, Ser. No. 408,086

Claims priority, application Germany, Sep. 18, 1990, 40 29 528.1

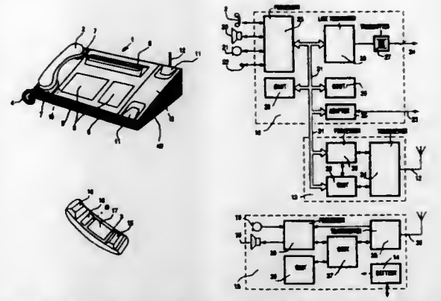
Int. Cl.[6] H04M *11/00*

U.S. Cl. 379—61 **8 Claims**

1. A telephone set for an integrated services digital network (ISDN) having a plurality of message channels, each message channel having a capacity of 64 kbit/s, said telephone set comprising one main module only and a handset with a connection cord, said main module comprising a main circuit which includes means for generating control signals for communication from the handset with a connection cord, and one line terminating unit only for coupling to an interface for said network, said main circuit being arranged for transmitting signals between the handset with a connection cord and the line terminating unit,

wherein the telephone set further comprises:

at least one mobile handset, and



an auxiliary circuit, coupled to said main module, comprising a radio transceiver for communication with said at least one mobile handset, and means for processing and transmitting signals between said main module and said transceiver; and

wherein said main module comprises a controller for transmitting respective signals from said handset with a connection cord and from said at least one mobile handset at the same time over different respective ones of the message channels of the integrated services digital network.

5,600,710

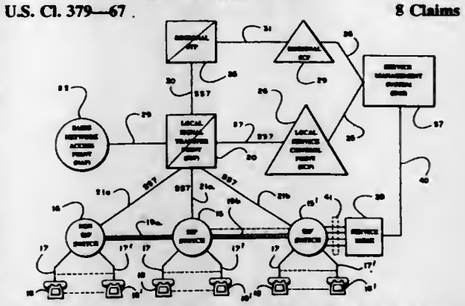
METHOD FOR PROVIDING A RECORDED MESSAGE TO A TELEPHONE CALLER WHEN CALLED NUMBER IS BUSY

Frank J. Weisser, Jr., Atlanta, Ga., and Jimmy W. Langley, Birmingham, Ala., assignors to BellSouth Corporation, Atlanta, Ga.

Continuation of Ser. No. 272,130, Jul. 8, 1994, abandoned. This application Oct. 16, 1995, Ser. No. 543,513

Int. Cl.[6] H04M *1/64;7/00*

U.S. Cl. 379—67 **8 Claims**



6. In an advanced intelligent network including a first service switching point a second service switching point and a service node, a method or processing a telephone call directed to a telephone number associated with a subscriber's line when the telephone number is busy, comprising me steps of:

(a) receiving a telephone call directed to the subscriber's line on a caller's line at the first service switching point, the first service switching point serving the subscriber's line and operative to make a direct voice-circuit connection before the first service switching point and the subscriber's line;

(b) determining whether the subscriber's line is busy;

(c) in response to determining that the subscriber's line is busy, temporarily connecting the telephone call to the service node by connecting a first; voice-circuit between the first service switching point and the second service switching point, and connecting a second voice-circuit between the second service switching point and the service node;

(d) while the telephone call is temporarily connected to the service node,

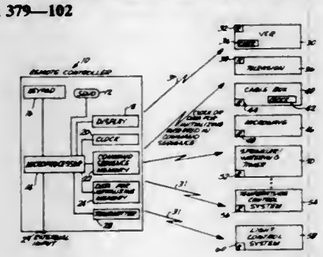
(i) placing the telephone call in a queue,
(ii) playing a message on the caller's line, and
(iii) monitoring the status of the subscriber's line to determine whether the subscriber's line becomes idle;
(e) repeating steps (a) through (d) above for each new telephone call directed to the subscriber's line that encounters the busy condition so as to provide a plurality of queued telephone calls in the queue; and
(f) in response to determining that the subscriber's line has become idle,
(i) selecting a telephone call from the plurality of queued telephone calls to be a selected call for connection with the subscriber's line,
(ii) disconnecting the first voice-circuit between the first service switching point and the second service switching point, and disconnecting the second voice-circuit between the second service switching point and the service node for the selected call, and
(iii) connecting the selected telephone call to the subscriber's line by establishing a voice-circuit between the first service switching point and the subscriber's line.

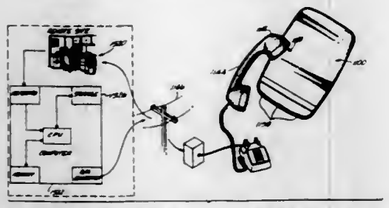
5,600,711

APPARATUS AND METHODS FOR PROVIDING INITIALIZING SETTINGS TO AN APPLIANCE

Henry C. Yuen, P.O. Box 1159, Redondo Beach, Calif. 90278

Filed May 3, 1994, Ser. No. 237,506
Int. Cl.[6] H04M *11/00;* **H04N** *5/44*
U.S. Cl. 379—102 **8 Claims**





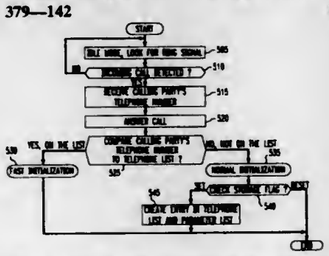
1. A method for setting a first clock in an appliance at a remote site comprising the steps of:
initiating a telephone connection with a remote site;
communicating background information on the appliance to the remote site;
converting the background information describing the appliance into a first sequence of commands for setting the first clock in the appliance;
downloading over the telephone connection the first sequence of commands for setting the first clock in the appliance;
storing the first sequence of commands in a memory in a remote controller;
activating a single command on the remote controller;
processing the single command in the remote controller to insert a time read from a second clock in the remote controller into the first sequence of commands for setting the first clock in the appliance to form a sequence of time commands; and
transmitting the sequence of time commands from the remote controller to the appliance to set the first clock in the appliance.

5,600,712

ENABLING TECHNIQUE FOR QUICKLY ESTABLISHING HIGH SPEED PSTN CONNECTIONS IN TELECOMMUTING APPLICATIONS

Bruce L. Hanson, Little Silver, N.J.; Kurt E. Holmquist, Largo, Fla., and Lee B. Strahs, Colts Neck, N.J., assignors to Paradyne Corporation, Largo, Fla.

Continuation of Ser. No. 333,686, Nov. 3, 1994, abandoned. This application Apr. 5, 1996, Ser. No. 628,410
Int. Cl.[6] H04M *1/57;11/06;* **H03H** *7/30*
U.S. Cl. 379—142 **8 Claims**



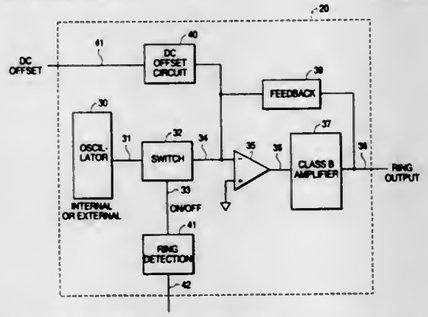
1. A method for use in data communications equipment apparatus for communicating with a far-end data endpoint through a switched telephone network that provides a communications channel comprising a predominately switched digital portion and a fixed analog portion, the method comprising the steps of:
retrieving a set of stored tap values associated with a telephone number representative of the far-end data endpoint; and
initializing an equalizer of the data communications equipment apparatus with the retrieved set of stored tap values to compensate for the fixed analog portion of the communications channel.

5,600,713

ON-BOARD RING SIGNAL GENERATOR

Herbert M. K. Chen, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Nov. 15, 1994, Ser. No. 340,386
Int. Cl.[6] H04M *19/02*
U.S. Cl. 379—375 **22 Claims**



1. A ring generator circuit, comprising:
a switch having an output providing an oscillating signal in response to an on condition of an on/off signal at a control input of said switch;

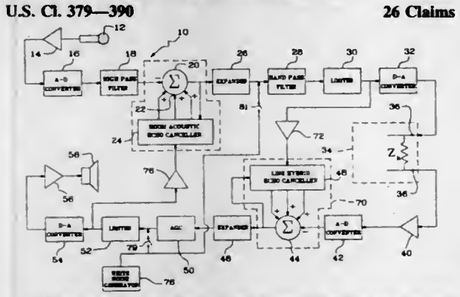
a DC offset circuit receiving a DC input potential at an input port of said DC offset circuit and outputting a DC offset potential at an output port of said DC offset circuit;
an amplifier stage, connected to said output of said switch and said output port of said DC offset circuit, wherein said amplifier stage provides a ring output; and
a feedback circuit connected between said ring output of said amplifier stage and said output of said switch,
said feedback circuit feeding back said ring output to an input port of said amplifier stage to reduce an output signal distortion and an output noise level of said ring output.

5,600,714

CONFERENCE TELEPHONE USING DYNAMIC MODELED LINE HYBRID

William G. Eppler, Jr., and David Neaderland, both of Norwalk, Conn., assignors to Sound Control Technologies, Inc., Norwalk, Conn.

Filed Jan. 14, 1994, Ser. No. 182,761
Int. Cl.[6] H04M *9/08;* **H04B** *3/20*
U.S. Cl. 379—390 **26 Claims**



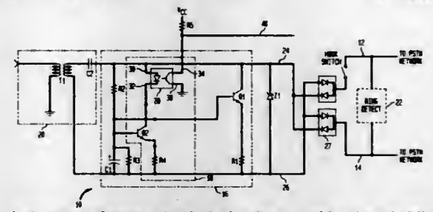
1. A speaker telephone for use with a two wire telephone system, comprising:
(a) an audio input circuit for receiving an audio signal to be transmitted over a conventional two-wire telephone system;
(b) a transmitted signal processing circuit for receiving an audio signal and altering the audio characteristics thereof, and providing the altered audio characteristics at the output of said signal processing circuit, said transmitted signal processing circuit further comprising an expander;
(c) an output coupling circuit coupled to the output of said transmitted signal processing circuit and connected to couple the altered audio signal output of said transmitted signal processing circuit to the input of said two wire telephone system;
(d) an input coupling circuit for coupling the output wire of said two wire telephone system to said speaker telephone;
(e) a first line hybrid echo canceler coupled to receive the output of said transmitted signal processing circuit, and produce a plurality of first echo outputs in response to said transmitted signal processing circuit output and having a first error signal input;
(f) a first difference circuit having an input of first polarity coupled to the output of said input coupling circuit, and inputs of opposite polarity coupled to said echo outputs of said first line hybrid echo canceler, said difference circuit having a difference output producing the difference between signals present at said first polarity input and a pair of inputs of opposite polarity, the output of said first difference circuit being coupled to said first error signal input;
(g) an audio output circuit coupled to the output of said difference circuit and having an electrical output; and
(h) a loudspeaker coupled to the output of said audio output circuit to convert said electrical output into a desired audio signal.

5,600,715

INTEGRATED LOOP CURRENT DETECTOR APPARATUS FOR A PSTN MODEM

Thomas J. Bingel, Indian Rock Beach, Fla., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Feb. 28, 1996, Ser. No. 608,418
Int. Cl.[6] H04M *3/22*
U.S. Cl. 379—393 **24 Claims**



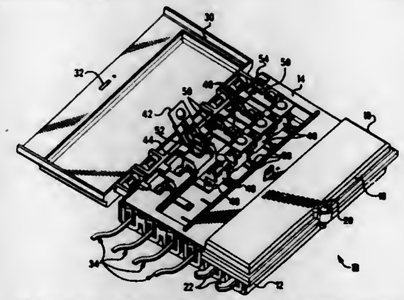
1. A current detector circuit device for use with a loop holding circuit, said device comprising:
a current mirror circuit coupled in parallel with said loop holding circuit, said current mirror circuit including,
transistor means coupled to said loop holding circuit for detecting interruptions in loop current flowing through lines to which the current detector circuit is adapted to be coupled; and
an isolating coupling device coupled to said transistor means and operative to trigger an output thereof in response to a predetermined input signal level, said output of said coupling device being coupled to a current detect input, thereby providing an isolated output indicative of current interruption in said loop holding circuit.

5,600,716

CUSTOMER-ACCESSIBLE TEST PORT FOR NETWORK INTERFACE DEVICE

E. Clark Broome, Clemmons, N.C.; Harry M. Capper; Sam Denovich, both of Harrisburg, Pa.; Carl E. Fritz; Kenneth C. Hawk, both of Clemmons, N.C.; James S. Hower, Harrisburg, and James W. Robertson, Oberlin, both of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Continuation-in-part of Ser. No. 213,137, Mar. 15, 1994, Pat. No. 5,420,920. This application May 16, 1995, Ser. No. 442,032
Int. Cl.[6] H04M *1/00*
U.S. Cl. 379—399 **1 Claim**



1. A test port of a subscriber module of a network interface device wherein conductors of distribution cable are connected to conductors of premise wiring of a subscriber of telephone service, comprising:
a jack including a plug-receiving cavity and an array of contact members exposed for engagement at a mating interface within said plug-receiving cavity;
a plug member insertable into and removable from said plug-receiving cavity and including an array of interconnecting

contact members exposed to be engageable with said jack contact members, with said plug member removable from said jack to permit insertion of another plug member for testing;

said contact members of said jack are arranged in associated pairs of first and second contact members adjacent said mating interface and having respective contact sections exposed along said mating interface in said plug-receiving cavity, wherein said first and second contact members of each said associated pair are positioned side-by-side and spaced apart, and said first and second contact members being electrically unconnected to each other when said plug member is unmated from said jack, one of said first and contact members of each said pair being connected to a circuit extending to a distribution cable and the other thereof being connected to a circuit extending to premise wiring of a subscriber of telephone service;

said contact members of said plug member being unconnected to any circuit when said plug member is unmated from said jack, each said contact member including a contact section associated with a respective said pair of said contact members of said jack, defining interconnecting contacts adapted to interconnect said ones and others of said pairs of contact members of said jack when said plug member is fully inserted into said jack, thus interconnecting otherwise unconnected ones of said conductors of said distribution cable and associated conductors of said premise wiring; and

each said interconnecting contact includes a body section insertable into a cavity of said plug near said mating end and includes a said contact section extending along a plug portion surface adjacent said mating end thereof and being sufficiently wide to engage said outwardly deflectable contact sections of said first and second contact members of said associated pair upon full insertion of said plug into said jack.

5,600,717

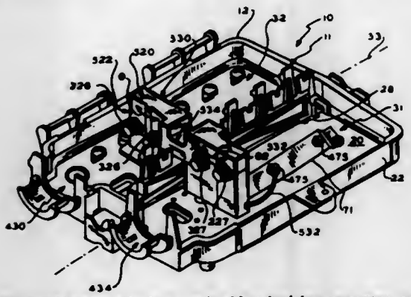
COMBINATION TELEPHONE NETWORK INTERFACE AND CABLE TELEVISION APPARATUS AND CABLE TELEVISION MODULE

Pina R. Schneider, Matawan; Eric J. Hermsen, Howell, and Frank S. Siano, Spotswood, all of N.J., assignors to ANTEC Corp., Rolling Meadows, Ill.

Continuation of Ser. No. 266,188, Jun. 27, 1994, abandoned, which is a continuation-in-part of Ser. No. 18,327, Feb. 16, 1993, Pat. No. 5,394,466. This application Jun. 14, 1996, Ser. No. 658,428

Int. Cl.[6] H04M *11/00*

U.S. Cl. 379—399 **45 Claims**



36. Combination telephone and cable television apparatus, comprising:

telephone network interface apparatus including a housing providing a telephone company compartment and a telephone subscriber compartment, and providing first coaxial cable access means to said telephone company compartment and providing second coaxial cable access means to said telephone subscriber compartment, said telephone network interface apparatus including electrical protection means mounted in said telephone company compartment and telephone connecting means mounted in said telephone subscriber compartment for connecting at least one incoming telephone line to at least one telephone subscriber's line, first ground connecting means residing in said telephone company compartment and connected to said electrical protection means and for connecting said electrical protection means to earth ground;

cable television signal connecting means for interconnecting incoming cable television signals to one or more television sets, said cable television signal connecting means including support means mounted in said telephone subscriber compartment and first and second and third and fourth coaxial cable connectors, said first and second coaxial cable connectors interconnected to carry said incoming cable television signals from said first coaxial cable connector to said second coaxial cable connector and said third and fourth coaxial cable connectors interconnected to carry said incoming cable television signals from said third coaxial cable connector to said fourth coaxial cable connector;

said first and third coaxial cable connectors mounted to said support means in a predetermined manner to reside in said telephone company compartment and to dispose at least one of said first and third coaxial cable connectors angularly with respect to said first coaxial cable access means to facilitate connection of said first and third coaxial cable connectors to first and second coaxial cables extending through said first coaxial cable access means and into said telephone company compartment and carrying said incoming cable television signals; and

said second and fourth coaxial cable connectors mounted to said support means in a predetermined manner to reside in said telephone subscriber compartment and to dispose at least one of said second and fourth coaxial cable connectors angularly with respect to said second coaxial cable access means to facilitate connection of said second and fourth coaxial cable connectors to third and fourth coaxial cables extending through said second coaxial cable access means and into said telephone subscriber compartment and carrying said incoming cable television signals to said one or more television sets.

5,600,718

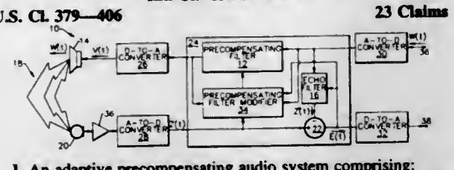
APPARATUS AND METHOD FOR ADAPTIVELY PRECOMPENSATING FOR LOUDSPEAKER DISTORTIONS

Paul W. Dent, Stehag; Jim A. J. Rasmusson, Brosrap, both of Sweden, and Ronald J. Johnsen, Cary, N.C., assignors to Ericsson Inc., Research Triangle Park, N.C.

Filed Feb. 24, 1995, Ser. No. 393,726

Int. Cl.[6] H04M *9/08*

U.S. Cl. 379—406 **23 Claims**



1. An adaptive precompensating audio system comprising:

a loudspeaker for producing a sound pressure wave in response to an audio input signal which is applied to an audio input thereof, said sound pressure wave including a desired linear component which is a linear function of said audio input signal, and an undesired non-linear component which is a non-linear function of said audio input signal;

a precompensating filter for precompensating an input signal representative of said desired linear component to produce a precompensated output signal, and for applying said precompensated output signal to said audio input such that said undesired non-linear component is reduced;

a microphone for converting said sound pressure wave into a sound signal; and

a precompensating filter modifier responsive to said sound signal and said input signal for modifying said precompensating filter, to further reduce said undesired non-linear component;

wherein said precompensating filter comprises means for performing a transformation of said input signal to produce said precompensated output signal, said transformation being an estimate of an inverse non-linear transfer function of said loudspeaker.

5,600,719

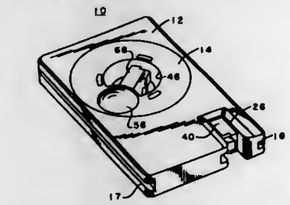
PORTABLE STORAGE DEVICE FOR A TELEPHONE LINE

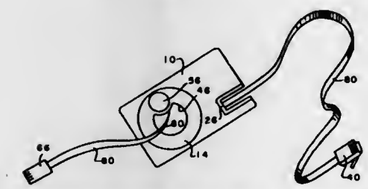
Craig S. Lovecky, Old Orchard Beach; Richard Rolfe, Biddeford, both of Me., and Alan B. Lowry, Canton, Mass., assignors to Shape Inc., Biddeford, Me.

Continuation of Ser. No. 266,506, Jun. 27, 1994, abandoned. This application Feb. 14, 1996, Ser. No. 601,647

Int. Cl.[6] H04M *1/00*

U.S. Cl. 379—438 **18 Claims**





1. Telecommunications line storage device, comprising:

a portable housing;

a rotatable reel connected to the housing;

a telecommunications line having a first end with a first connector, and a second end with a second connector,

wherein said line is movable between a first retracted position inside the housing, and a second extended position where a majority of the line is outside the housing, and

wherein the first connector is positioned inside the reel and the second connector is positioned inside the housing in the first position, and the first and second connectors are positioned outside the reel and the housing, respectively, in the second position.

5,600,720

ENCRYPTION APPARATUS, COMMUNICATION SYSTEM USING THE SAME AND METHOD THEREFOR

Keiichi Iwamura, and Takahisa Yamamoto, both of Kawasaki, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 19, 1994, Ser. No. 277,512

Claims priority, application Japan, Jul. 20, 1993, 5-179232; Jul. 20, 1993, 5-179241

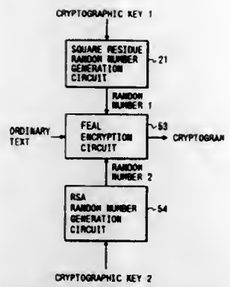
Int. Cl.[6] H04L *9/26*

U.S. Cl. 380—1 **16 Claims**

16. A communication method comprising the steps of:

in a transmitting station,

inputting data held by a first data hold unit to a first conversion unit;



sequentially calculating parameter sequences and outputting a parameter with first calculation means;

converting the input data based on the parameter output from said first calculation means;

updating the data held in said first hold unit based on the conversion result;

sequentially outputting a portion of data held in said first hold unit as random number sequences; and

sequentially transmitting to a receiving station cryptograms encrypted based on the output random number sequences, wherein the conversion of the data held by said first hold unit is faster than the calculation of one parameter by said first calculation means and the number of parameters necessary for cryptoanalyzing the parameter sequence is greater than that of the random number sequence and the parameter is updated whenever the held data is updated a predetermined number of times; and

in the receiving station,

inputting data held by a second data hold unit to a second conversion unit;

sequentially calculating parameter sequences and outputting a parameter with second calculation means;

converting the input data based on the parameter output from said second calculation means;

updating the data held in said second hold unit based on the conversion result;

[sequentially calculating parameter sequences which are difficult to be inferred from output sequences as the parameters; to change the parameters;

sequentially outputting a portion of data held in said second hold unit as random number sequences; and

cryptoanalyzing the cryptograms based on the output random number sequences, wherein the conversion of the data held by said second hold unit is faster than the calculation of one parameter by said second calculation means and the number of parameters necessary for cryptoanalyzing the parameter sequence is greater than that of the random number sequence and the parameter is updated whenever the held data is updated a predetermined number of times.

5,600,721

APPARATUS FOR SCRAMBLING A DIGITAL VIDEO SIGNAL

Naohisa Kitazato, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jul. 27, 1994, Ser. No. 281,277

Claims priority, application Japan, Jul. 30, 1993, 5-189510

Int. Cl.[6] H04N *7/167*

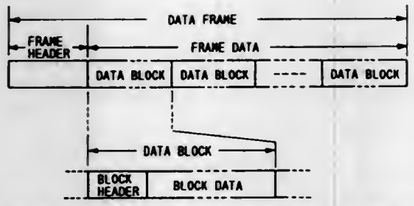
U.S. Cl. 380—20 **28 Claims**

19. Apparatus for descrambling a partially scrambled digital video signal, comprising:

means for receiving frames of video data, each frame being comprised of respective blocks of video data with each block having either block scramble-off data or block scramble-on data;

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means for descrambling each of said blocks of video data having said scramble-on data to produce respective descrambled blocks of video data; and

means for decoding said descrambled blocks of video data and said blocks of video data having said block scramble-off data to produce a decoded digital video signal.

5,600,722

SYSTEM AND SCHEME OF CIPHER COMMUNICATION

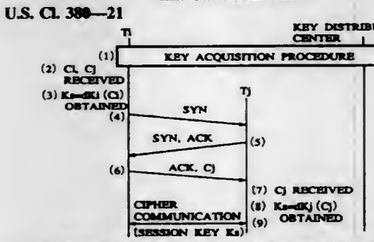
Toshikazu Yamaguchi, and Kiyoto Tanaka, both of Kanagawaken, Japan, assignors to Nippon Telegraph & Telephone Corp., Tokyo, Japan

Filed Oct. 6, 1994, Ser. No. 319,449

Claims priority, application Japan, Oct. 6, 1993, 5-250851

Int. Cl.[6] H04L *9/12*

U.S. Cl. 380—21 **16 Claims**



1. A method of cipher communication, comprising the steps of:

connecting a plurality of terminals with a key distribution center through a network; generating a session key to be used in a cipher communication between first and second terminals among said plurality of terminals at the key distribution center;

obtaining and sharing the session key generated by the key distribution center at the first and second terminals at a timing of a request for establishing a cipher communication session between the first and second terminals during a connection establishing procedure; and

carrying out the cipher communication between the first and second terminals by establishing the cipher communication session between the first and second terminals by completing the connection establishing procedure and using the session key obtained at the obtaining step.

5,600,723

CRYPTOGRAPHICALLY SECURE ELECTRIC FUEL PUMP SYSTEM

Phillip J. Woodall, Towson, Md.; Daniel R. Danowski, Bowling Green, Ohio; Anthony Bernot, Maricopa, Ariz.; Karl H. Bloomgren, Towson, Md., and Richard M. Sturgeon, Lucas, Ohio, assignors to AlliedSignal Inc., Morristown, N.J.

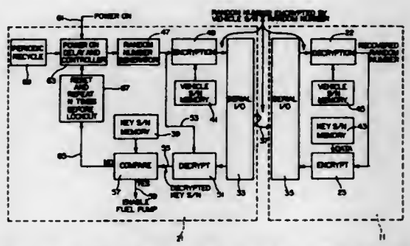
Filed Dec. 23, 1994, Ser. No. 362,722

Int. Cl.[6] H04L *9/32;9/00;* **B60R** *25/04*

U.S. Cl. 380—23 **20 Claims**

9. A vehicle security system for preventing operation of the vehicle without an appropriate key comprising:

a vehicle ignition switch;



a key insertable into the ignition switch for enabling the vehicle ignition system;

a fuel pump module and an electromechanical fuel pump;

means in the fuel pump module for storing a key identification and a vehicle identification;

means in the key for storing a key identification and a vehicle identification;

means in the fuel pump module for generating a pseudorandom signal;

means for combining the pseudorandom signal and the stored vehicle identification;

means transmitting the combined pseudorandom signal and stored vehicle identification to the key;

means in the key for recovering the pseudorandom signal from the transmitted combined signal;

means in the key for combining the recovered pseudorandom signal and the stored key identification signal;

means transmitting the combined pseudorandom signal and stored key identification to the fuel pump module;

means utilizing the generated pseudorandom signal to recover the key identification signal;

means for comparing the recovered key identification signal and the stored key identification signal, and for enabling the fuel pump only if the compared key identification signals are the same.

5,600,724

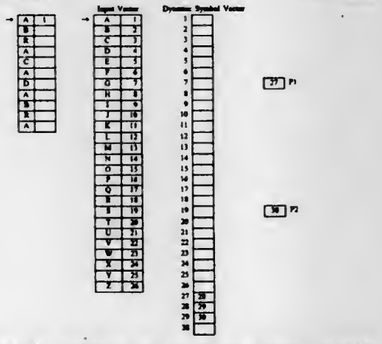
METHOD FOR THE PROTECTION OF MESSAGES TRANSMITTED USING PUBLIC COMMUNICATION LINES

V. P. Masnikosa, BUL. Avnoj-a 116/17, 11070 New Belgrade, Serbia, Yugoslavia

Filed May 23, 1995, Ser. No. 448,293

Int. Cl.[6] H04L *9/28;9/00*

U.S. Cl. 380—28 **9 Claims**



9. A method for encrypting into a protected sequence a message defied by a sequence of one or more symbols, said method comprising:

generating an input vector comprising a plurality of entries, each entry including a symbol and a corresponding index,

generating a dynamic symbol vector comprising a plurality of entries, zero, one or more of which entries represent a protection index for the respective symbol,

generating a pointer P1 corresponding to a first free index in said dynamic symbol vector,

generating a pointer P2 corresponding to a last free index in said dynamic symbol vector,

generating said protected sequence by executing the following steps for each successive symbol in said message

appending to a prior protected sequence, if any, an index from said input vector corresponding to said symbol,

storing in said dynamic symbol vector at a location corresponding to a value of P2 the index from said input vector corresponding to said symbol,

storing as P2 a value of the index from said input vector corresponding to said symbol,

storing a value of P1 as the index of said input vector corresponding to said symbol,

storing as P1 a value of a next first free index in said dynamic symbol vector,

transmitting said protected sequence to a recipient,

receiving said protected sequence by said recipient,

generating a dynamic index vector comprising a plurality of entries, each entry including a symbol and a corresponding index,

generating a pointer P3 corresponding to a first free index in said dynamic index vector,

generating a pointer P4 corresponding to a last free index in said dynamic index vector,

generating said message by executing the following steps for each successive protection index in said message:

appending to a prior message, if any, a symbol from said dynamic index vector corresponding to said protection index,

storing that symbol in said dynamic index vector at a location corresponding to a value of P3,

storing said protection index in said dynamic index vector at a location corresponding to a value of P4,

storing said protection index as P4, and

storing as P3 a value of a next first free index in said dynamic index vector.

5,600,725

DIGITAL SIGNATURE METHOD AND KEY AGREEMENT METHOD

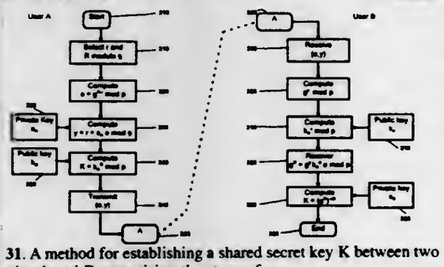
Rainer A. Rueppel, Wetzikon, Switzerland, and Kaisa Nyberg, Vienna, Austria, assignors to R3 Security Engineering AG, Aathal, Switzerland

Filed Aug. 17, 1994, Ser. No. 291,951

Claims priority, application European Pat. Off., Aug. 17, 1993, 93113119

Int. Cl.[6] H04L *9/30*

U.S. Cl. 380—30 **35 Claims**



31. A method for establishing a shared secret key K between two parties A and B comprising the steps of:

a) providing t party A random integer R and calculating a message x by exponentiating a first public value to a power derived from R;

b) providing for parties A and B respective keys k_A,k_B derived from respective private keys S_A, S_B where $k_A=g^{-S_A}$ and where $k_B=g^{-A.B}$;

c) generating a digital signature e, y of said message x by:

i) providing a secret and random value r;

(ii) providing an element $u=g^{-r}$ in a group G having a cyclic subgroup S of order p-1 and a cyclic subgroup T of the subgroup S of order q where q divides p-1;

(iii) calculating the value e from said message x and said value u according to the rule e–f(G(x), u) wherein G(x) is a value derived from said message x and the function f is such that G(x) is able to be calculated from e and u using a function $H(u^{-1},e)=G(x)$; and

(iv) calculating said value y proceeding from a value q selected to be a divisor of p-1 according to the rule $ar+bS_A+c=0 \pmod q$ where (a,b,c) is a permutation of the values e',Y,l; where e' is an integer and is derived from e and S_A is a secret value;

(d) transmitting the signature e,y from A to B;

(e) extracting the message x from the signature e,y by:

(i) deriving e' from e;

(ii) deriving the value $b'=a^{-1}c \pmod q$;

(iii) deriving the value $c'=a^{-1}c \pmod q$;

(iv) deriving the inverse in the group G of the value u from the relationship $u=k_A{}^{b'}g^{c'}$;

(v) reconstructing G(x) from u^{-1} and e according to the rule $G(x)=h(u^{-1},e)$,

(f) generating at party B said shared secret key K by exponentiating the message x to a power derived from the private key S_B; and

(g) generating at party A said shared secret key K by exponentiating to said power derived from R a second public value related to said first public value.

5,600,726

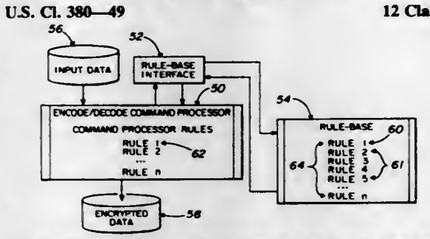
METHOD FOR CREATING SPECIFIC PURPOSE RULE-BASED N-BIT VIRTUAL MACHINES

Joseph M. Morgan, Amarillo, Tex., and Michael D. Harold, Shreveport, La., assignors to Gemini Systems, L.L.C., Shreveport, La.

Filed Apr. 7, 1995, Ser. No. 419,001

Int. Cl.[6] H04L *9/00*

U.S. Cl. 380—49 **12 Claims**



1. A method for encrypting information data from a data source comprising the steps of:

coupling at least one n-bit data string of input data as variable length n-bit data types containing bits representing said information data and including control bits to a command processor;

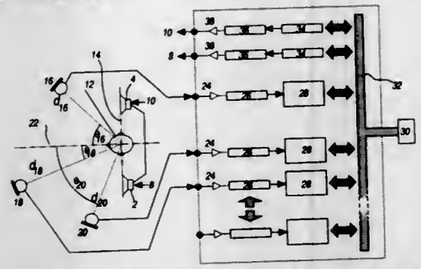
storing a plurality of encryption rules in a rule-base memory for processing the n-bit data string;

coupling a rule-base interface between said command processor and said rule-base memory for identifying specific encryption rules stored in said rule-base memory according to said control bits in said n-bit input data string received from said command processor;

modifying the n-bit data string in the rule-base in accordance with the identified encryption rules to encrypt said information data bits; and

transferring said encrypted data to said command processor for output as variable length n-bit data types.

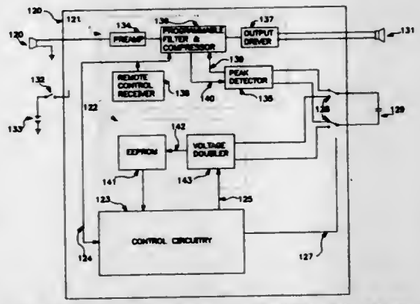
5,600,727
DETERMINATION OF POSITION
Alastair Sibbald, Maidenhead, and Richard Clemow, Gerrards Cross, both of Great Britain, assignors to Central Research Laboratories Limited, Middlesex, Great Britain
Filed Jul. 7, 1994, Ser. No. 271,602
Claims priority, application United Kingdom, Jul. 17, 1993, 9314822
Int. Cl.[6] H04R *5/027;3/00*
U.S. Cl. 381—26 **7 Claims**



1. A method of determining the position of a plurality of microphones relative to a given reference point comprising the steps of:
transmitting, in response to at least one trigger signal from a processing device, sonic signals from each of a plurality of sonic signal generators situated at known positions with respect to the given reference point;
receiving the transmitted sonic signals at each of said plurality of microphones, each of said plurality of microphones generating corresponding electrical output signals;
conveying said electrical output signals from each of said plurality of microphones to the processing device;
utilizing in the processing device the electrical output signals and the said trigger signal to determine respective times-of-flight of the sonic signals from each of the said sonic signal generators to each of said plurality of microphones; and
processing the times-of-flight together with data representative of the position of the given reference point relative to that of each of said sonic signal generators to generate indications of the distance and angular disposition of each of said plurality of microphones relative to the give reference point.

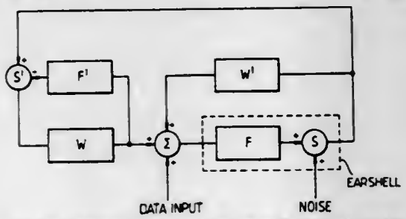
5,600,728
MINIATURIZED HEARING AID CIRCUIT
Scot R. Satre, 5235 LaCorte Bonita, Concord, Calif. 94521
Filed Dec. 12, 1994, Ser. No. 353,813
Int. Cl.[6] H04R *25/00*
U.S. Cl. 381—68.2 **1 Claim**

1. An electronic circuit for performing a first set of functions during a first period and a second set of functions during a second period wherein the first period is initiated at unscheduled times and the second period is initiated when said first set of functions is complete thus ending said first period, said circuit comprising:
a group of external passive components including at least one of
(i) at least one capacitor;
(ii) at least one inductor;
a normal use circuitry means having a first group of integrated circuit parts connected together and adapted for actively performing said first set of functions when said normal use circuitry means is connected to said group of external passive components and for being inactive when said normal use circuitry means is disconnected from said group of external passive components;



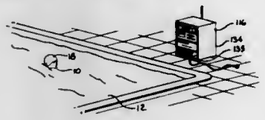
said normal use circuitry means including a microphone, an output transducer such as a speaker, and circuit means for shaping audio response;
a special use circuitry means having a second group of integrated circuit parts connected together and adapted for actively performing said second set of functions when said special use circuitry means is connected to said group of external passive components,
said special use circuitry means including EEPROM means for programming audio response of said normal use circuitry means;
means for accessing said EEPROM means connected to said EEPROM means; circuit means having terminals connected to said EEPROM means and adapted for increasing a supply voltage applied to said EEPROM means when connected to a supply voltage source and said group of external passive external components;
switch means connecting said group of external components to said circuit means for increasing said supply voltage when it is required to operate said electronic circuit for memory access and connecting said group of components to said normal use circuit means for shaping audio response when it is required to operate said electronic circuit for normal use.

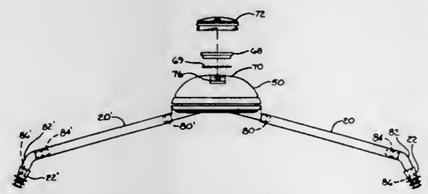
5,600,729
EAR DEFENDERS EMPLOYING ACTIVE NOISE CONTROL
Paul Darlington, and Gerald A. Powell, both of Southampton, United Kingdom, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, Hants, United Kingdom
PCT No. PCT/GB94/00151, § 371 Date Aug. 22, 1995, § 102(e) Date Aug. 22, 1995, PCT Pub. No. WO94/17512, PCT Pub. Date Aug. 4, 1994
PCT Filed Jan. 26, 1994, Ser. No. 495,661
Claims priority, application United Kingdom, Jan. 28, 1993, 9301659
Int. Cl.[6] G10K *11/16*
U.S. Cl. 381—71 **10 Claims**



1. An ear defender comprising an earshell, detector means (1) for detecting the sound level in the proximity of the wearer's ear, output means (4) for generating a noise reduction signal wig the earshell, and a digital feedback controller (W) for generating a feedback signal derived from the output of said detector means and for applying said feedback signal to the input of the output means, characterised by estimation means (F') for providing an estimation of the earshell transfer function and subtracting from the input to the feedback controller a signal representing the estimated electroacoustic transfer function of the system, and a second feedback controller (W') for providing active noise control on the basis of an average configuration for the system.

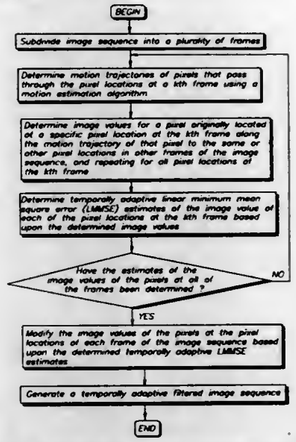
5,600,730
SWIMMING TRAINING DEVICE
Peggy J. Kenning, and John G. Kenning, both of 4907 Riverside Dr., Coral Springs, Fla. 33067
Continuation-in-part of Ser. No. 182,796, Jan. 14, 1994, which is a continuation-in-part of Ser. No. 976,527, Nov. 16, 1992, abandoned. This application Aug. 10, 1994, Ser. No. 288,319
Int. Cl.[6] H04B *3/00;1/034*
U.S. Cl. 381—77 **6 Claims**





1. A swimming training system comprising:
(a) means for transmitting electromagnetic waves, the means for transmitting broadcasting signals over a plurality of frequencies, the means for transmitting comprising:
(1) a transmitter;
(2) a microphone in electrical connection with the transmitter for broadcasting instructions;
(3) a metronome in electrical connection with the transmitter such that a timing signal is broadcast;
(b) a receiving unit capable of receiving the electromagnetic waves, the unit comprising:
(1) an antenna to receive the waves;
(2) a receiver in electrical connection with the antenna, the receiver converting the electromagnetic waves into electrical signals;
(3) at least one speaker in electrical connection with the receiver, the at least one speaker converting the signals into audible sound;
(4) a housing containing the antenna, receiver and at least one speaker therein;
(c) at least one arm connected to the housing;
(d) at least one ear plug connected to each arm, the arms and ear plugs serving as a conduit for the sound to pass from the receiving unit to the ears of a user; and
(e) a swimming cap having a sleeve formed therein, the sleeve releasably retaining the receiving unit therein.

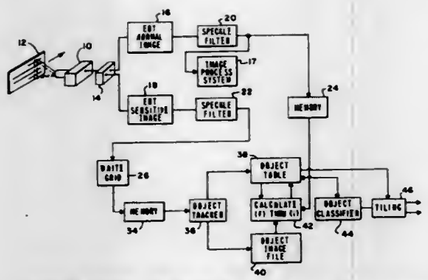
5,600,731
METHOD FOR TEMPORALLY ADAPTIVE FILTERING OF FRAMES OF A NOISY IMAGE SEQUENCE USING MOTION ESTIMATION
Muhammed I. Sezan; Mehmet K. Ozkan, and Sergei V. Fogel, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed May 9, 1991, Ser. No. 697,868
Int. Cl.[6] G06K *9/40*
U.S. Cl. 382—107 **18 Claims**



1. A method of temporally adaptive filtering frames of an image sequence in which each image of the sequence has pixel locations, comprising:
(a) subdividing an image sequence into a plurality of frames;
(b) determining motion trajectories of pixels that pass through the pixel locations at a kth frame using a motion estimation algorithm;
(c) determining image values for a pixel originally located at a specific pixel location at the kth frame along the motion trajector of that pixel to the same or other pixel locations in other frames of the image sequence, and repeating for all pixel locations at the kth frame;
(d) determining temporally adaptive linear minimum mean square error (LMMSE) estimates of the image value at each of the pixel locations at the kth frame based upon the determined image values;
(e) repeating steps b, c and d for each of the other frames of the image sequence;
(f) modifying the image values of the pixels at the pixel locations at each frame of the image sequence based upon the determined temporally adaptive LMMSE estimates; and
(g) generating a temporally adaptive filtered image sequence.

5,600,732
DOCUMENT IMAGE ANALYSIS METHOD
David M. Ott, and Cynthia D. Ott, both of Oakland, Calif., assignors to BancTec, Inc., Dallas, Tex.
Filed Dec. 8, 1994, Ser. No. 351,630
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—112 **21 Claims**

1. A method of analyzing an image of a document and the like for determining the quality of said image comprising the steps of:
acquiring an image of said document with an acquisition device which generates electrical signals related to said image;
generating a first set of electrical signals representing a normal level of sensitivity of said image;
generating a second set of electrical signals representing a greater level of sensitivity of said image, each of said sets of



electrical signals comprising an image field of adjacent pixels having either a black or white character;

scanning pixels of said second set to identify one or more objects;

measuring preselected parameters of said objects to identify a predetermined shape characteristic of said objects; and

comparing selected ones of said objects having a predetermined shape characteristic with a corresponding portion of the image field of said normal image to determine if said normal image is legible.

5,600,733

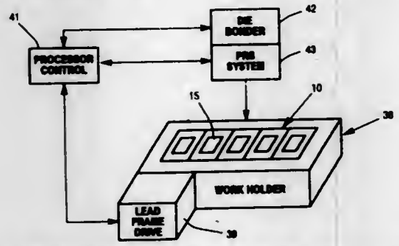
METHOD FOR LOCATING EYE POINTS ON OBJECTS SUBJECT TO SIZE VARIATIONS

Virginia N. MacDonald, Lansdale, and Don A. Tran, Perkasie, both of Pa., assignors to Kulicke and Soffa Investments, Inc, Wilmington, Del.

Filed Nov. 1, 1993, Ser. No. 144,002

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—144 **11 Claims**



1. A method for locating eye points on lead frame like objects that are subject to size variations, comprising the steps of:

acquiring a video camera image of a reference object having a known position in a PRS system,

isolating a teach window area in the camera image field which contains a reference object or eye point,

generating an edge image of interconnected pixel lines at high contrast edge portions of said reference object, said pixel lines being selected to define unique object shape and eye point,

generating a teach eye point in said teach window whose taught location is arbitrarily defined as the center of the teach window,

generating a large number of teach vectors between said teach eye point and said edge image of said interconnecting pixel lines,

reducing the large number of teach vectors by eliminating some of the large number of vectors to provide a reduced set of teach vectors having a common tail at said teach eye point and heads which are spaced uniformly along said interconnected pixel lines of said unique object shape,

storing said teach eye point and said set of teach vectors which define the location of the teach object shape relative to the video camera,

acquiring a video camera image of a find object to be located relative to said video camera,

generating interconnected pixel lines at high contrast edge portions of said find object,

generating sets of find vectors from vector candidate eye points in said image of said find object,

comparing said stored teach vectors with said sets of find vectors,

scoring the find vectors that compare best with said teach vectors,

selecting only the candidate eye points having the highest scores,

comparing the selected candidate eye points with the teach eye point, and

selecting the one candidate eye point which is closest to the teach eye point as the accurate X-Y position eye point of the find object.

5,600,734

ELECTRON BEAM TESTER

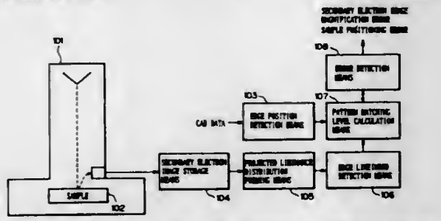
Kazuo Okubo; Hironori Teguri, and Akio Ito, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 955,804, Oct. 2, 1992, abandoned. This application Dec. 19, 1994, Ser. No. 357,983

Claims priority, application Japan, Oct. 4, 1991, 3-258140; Dec. 16, 1991, 3-332286; Feb. 3, 1992, 4-017465; Jul. 17, 1992, 4-191031; Jul. 17, 1992, 4-191171

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—147 **5 Claims**



1. An electron beam tester for scanning a sample with an electron beam emitted from an electron beam unit, to form a secondary electron image, and matching wiring patterns of the secondary electron image with wiring patterns prepared from computer aided design (CAD) data, comprising:

edge position detection means for detecting the positions Xi (i=1 to n) of edges in the CAD wiring patterns extending in parallel with an axis Y of a rectangular coordinate system defined on the CAD data;

secondary electron image storage means for storing the secondary electron image;

projected luminance forming means for forming projected luminance B(X) by accumulating luminance of the secondary electron image along an axis Y of a rectangular coordinate system defined on the secondary electron image;

edge likelihood detection means for detecting edge likelihood E(X) of the wiring patterns of the secondary electron image according to the projected luminance B(X);

pattern matching level computation means for computing a pattern matching level V according to the degree of correlation between the edge positions Xi (i=1 to n) and the edge likelihood E(X); and

error detection means for changing the edge position Xi (i= 1 to n) of the CAD wiring patterns in the range of Xi−ai≦Xi≦Xi+bi, wherein a and b are variables for defined edge detection regions, depending on secondary electron image magnification accuracy being corrected by shifting the edge position by an amount which is proportional to a difference between an X-coordinate of the edge and an X-coordinate of the center of the SEM image before correction, sampling position accuracy being corrected by shifting all edge positions by an equal amount, and fluctuation in a width of wiring being corrected by shifting the edge position by an equal amount along with an outward normal line, to find a maximum pattern matching level and then a secondary electron image magnification error and a sample positioning error corresponding to the maximum pattern matching level.

5,600,735

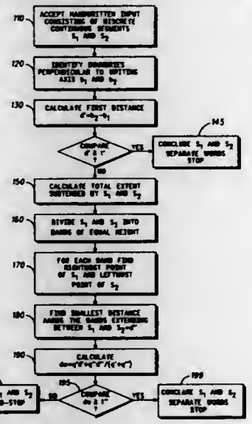
METHOD OF RECOGNIZING HANDWRITTEN INPUT

John L. C. Seybold, Portola Valley, Calif., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 10, 1994, Ser. No. 240,405

Int. Cl.[6] G06K *9/34*

U.S. Cl. 382—178 **9 Claims**



1. A method comprising the steps of:

receiving handwritten character input, which handwritten character input is comprised of at least a first and a second discrete continuous segment:

calculating of at least one distance between the first and second discrete continuous segments, the distance being substantially parallel to a writing axis of the first and second discrete continuous segments including the steps of:

calculating a plurality of distances between the first and second discrete continuous segments which are substantially parallel to the writing axis of the first and second discrete continuous segments:

identifying which of the plurality of distances has a smallest value; and

using the distance to determine whether the first and second discrete continuous segments belong to separate handwritten character inputs.

5,600,736

IMAGE PATTERN IDENTIFICATION/RECOGNITION METHOD

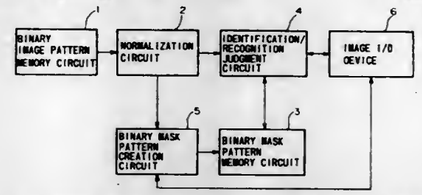
Norihiro Hagita, Atsugi, Japan, assignor to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Continuation of Ser. No. 352,175, Dec. 1, 1994, abandoned. This application Jan. 18, 1996, Ser. No. 588,296

Claims priority, application Japan, Dec. 2, 1993, 5-302507; Feb. 17, 1994, 6-020682

Int. Cl.[6] G06K *9/62*

U.S. Cl. 382—209 **5 Claims**



1. An image pattern identification/recognition method, wherein an input binary image pattern is compared to each of binary ask patterns corresponding to each of pre-created recognition categories so as to determine the recognition category to which said binary image pattern belongs;

said method comprising an identification procedure for identifying said input binary image pattern as belonging to a first recognition category when black portions of said input binary image pattern are contained in black portions contained in a binary mask pattern of said first recognition category and when said black portions of said input binary image pattern are contained not only in those black portions which are contained both in said first recognition category and a second recognition category; and

said method comprising a rejection procedure for rejecting said input binary image pattern when said input binary image pattern does not belong to any recognition category based on said identification procedure and when the black portions of said input binary image pattern correspond only to those black portions common to the binary mask pattern of said first recognition category and said second recognition category.

5,600,737

MOTION COMPENSATION PREDICTING ENCODING METHOD AND APPARATUS

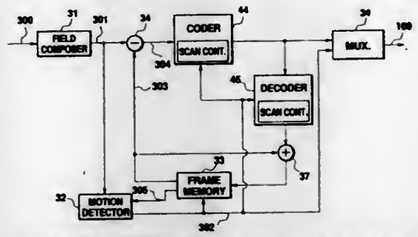
Tokumichi Murakami; Kohtaro Asai; Yoshiaki Kato, and Yoshihisa Yamada, all of Kamakura, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 861,953, Apr. 1, 1992, Pat. No. 5,428,693. This application Sep. 20, 1994, Ser. No. 309,261

Claims priority, application Japan, Apr. 12, 1991, 3-80081; Jul. 26, 1991, 3-187489; Jul. 26, 1991, 3-187490

Int. Cl.[6] G06K *9/36;9/46*

U.S. Cl. 382—232 **4 Claims**



1. A motion compensation predicting coding apparatus for receiving odd and even fields of an input image signal, forming pixel data for each odd and even field into a block to obtain a

current block image pattern, comparing the current block image pattern with a previous block image pattern to obtain a motion vector for the block, and obtaining a motion compliance prediction signal based upon the motion vector, said apparatus comprising:

a) a motion vector detector for generating a motion vector indicative of a displacement difference of the current block image pattern in one of two odd fields, two even fields, and an odd field and an even field, relative to the previous block image pattern;

b) a motion compensation prediction signal generator for generating the motion compensation prediction signal for each block of a field to be encoded, based upon said motion vector;

c) means for generating a prediction error signal for each block of a field to be encoded by subtracting said motion compensation prediction signal from the input image signal of said field to be encoded;

d) a coder for coding the prediction error signal, said coder including

i) a transformation means for performing an orthogonal transformation on the prediction error signal to produce a coefficient matrix that includes a plurality of coefficients in a single horizontal-vertical plane of the coefficient matrix;

ii) a scanning controller for determining a scanning order based on the motion vector, and for scanning said plurality of coefficients in the single horizontal-vertical plane of said coefficient matrix in accordance with the scanning order to read out said plurality of coefficients; and

iii) a quantizer for quantizing said plurality of coefficients read out from said coefficient matrix; and

e) adaptive blocking means, coupled to the motion vector detector, for providing a composed error signal, said adaptive blocking means receiving the motion vector and responsively arranging therewith the composed error signal according to one of a field independent mode and a field composition mode to produce the composed error signal in which in the field composition mode, the composed error signal is arranged into alternating lines of data corresponding to the odd and even fields of the input image, and in which in the field independent mode, the composed error signal is arranged into a group having data corresponding to one field of the input image followed by a group having data corresponding to other field.

5,600,738

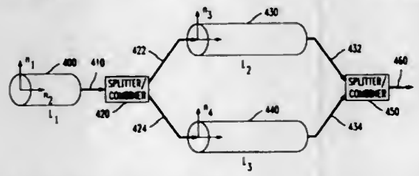
POLARIZATION DISPERSION COMPENSATION FOR OPTICAL DEVICES

Glenn D. Bergland, Berkeley Heights; Fred L. Heismann, Freehold; Steven K. Korotky, Toms River, all of N.J., and Edmond J. Murphy, Bethlehem, Pa., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 30, 1994, Ser. No. 366,935

Int. Cl.[6] G02B *6/126*

U.S. Cl. 385—11 **25 Claims**



20. An optical device comprising:

a first substrate having a fast optical axis and a slow optical axis and an optical input end and an optical output end;

first means for performing polarization beam splitting having an optical input and two optical outputs, wherein said optical input is coupled to said optical output end of said first substrate;

a second substrate having an optical input end and an optical output end, wherein said optical input end is coupled to a first one of said outputs of said polarization beam splitter;

a third substrate having an optical input end and an optical output end, wherein said optical input end is coupled to a second one of said output ends of said polarization beam splitter; and

second means for performing polarization beam combing having two optical inputs and at least one optical output end, wherein said first optical input is coupled to said optical output end of said second substrate and said second optical input is coupled to said optical output end of said third substrate;

wherein lengths or optical indices of said second or said third substrates are chosen to substantially reduce the polarization dispersion of an optical signal traversing said optical device.

5,600,739

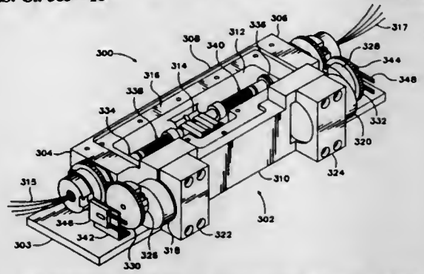
OPTICAL FIBER ALIGNMENT APPARATUS FOR A MECHANICAL OPTICAL SWITCH

Duwayne R. Anderson, and Mark D. Marineau, both of Redmond, Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Continuation-in-part of Ser. No. 223,298, Apr. 5, 1994, Pat. No. 5,438,638. This application Jun. 7, 1995, Ser. No. 488,397

Int. Cl.[6] G02B *6/26*

U.S. Cl. 385—16 **12 Claims**



1. An alignment apparatus for determining angular coordinates of intersecting points of offset closed curves in an optical switch having at least a first optical fiber disposed within a first mounting member rotating about a first independent and offset rotational axis with the first optical fiber positioned within the mounting member to move on a first closed curve and a plurality of optical fibers disposed within a second mounting member with the plurality of optical fibers within the second mounting member rotating about a second independent and offset rotational axis with the plurality of optical fibers positioned within the second mounting member to move on closed curves, the first and second mounting members having end faces in opposing relationship forming an optical interface between the first optical fiber and the plurality of optical fibers, with the first and second rotational axes being laterally offset from each other for offsetting the first closed curve from the closed curves of the plurality of optical fibers for the establishing intersecting points between the closed curves of the plurality of optical fibers within the second mounting member and the closed curve of the first optical fiber comprising:

an analytical apparatus for imaging the respective end faces of the first and second mounting members for determining the respective axes of rotation of the mounting members, the locations of the optical fibers in the respective mounting members and coordinates of the optical fibers relative to the axis of rotation of the respective mounting members, the location of at least one reference point within one of the mounting members, and relative angular coordinates of intersecting points between each of the closed curves of the plurality of optical fibers within the second mounting member and the closed curve of the first optical fiber as a function of the offset of the first and second mounting members and the reference point; and

a measurement alignment apparatus receiving the relative angular coordinates of the intersecting points between each of the closed curves of the plurality of optical fibers within the second mounting member and the closed curve of the first optical fiber from the analytical apparatus for determining the angular coordinates of the intersecting points between each of the plurality of optical fibers and the first optical fiber as a function of optimally aligning the first optical fiber with each of the plurality of optical fibers.

5,600,740

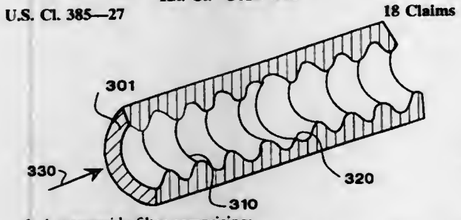
NARROWBAND WAVEGUIDE FILTER

Omar R. Asfar, 39 J Terrace View Apts., Blacksburg, Va. 24060

Filed Jun. 20, 1995, Ser. No. 493,121

Int. Cl.[6] G02B *6/26*

U.S. Cl. 385—27 **18 Claims**



1. A waveguide filter comprising:

a waveguide structure which supports propagation of a wave along the waveguide,

said waveguide structure containing a boundary,

said waveguide structure containing a filter portion having a portion of said boundary with a distortion following:

$f(z)=1+A\ F_p(K_w z)$ for $0 \leq z \leq L/2$, and

$f(z)=1-A\ F_p(K_w z)$ for $L/2 \leq z \leq L$

where

$F_p(K_w z)$ is a periodic function with period

$$P_w = \frac{2\pi}{K_w}$$

f(z) is a distance perpendicular to the boundary,

z is a distance along the structure in the direction of wave propagation

A is a dimensionless amplitude <<1

k_w is the boundary wave number chosen to satisfy the Bragg condition $k_w=2k_m$

L is the length of the filter portion waveguide.

5,600,741

ARRANGEMENT FOR COUPLING OPTOELECTRONIC COMPONENTS AND OPTICAL WAVEGUIDES TO ONE ANOTHER

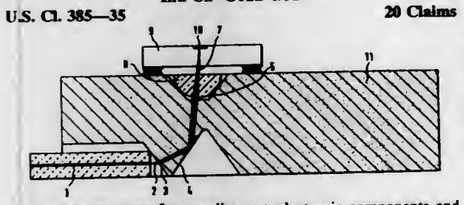
Heiner Hauer, Feilbach, and Albrecht Kuke, Auenwald, both of Germany, assignors to ANT Nachrichtentechnik GmbH, Backnang, Germany

Filed May 3, 1995, Ser. No. 432,243

Claims priority, application Germany, May 11, 1994, 44 16 563.3

Int. Cl.[6] G02B *6/32*

U.S. Cl. 385—35 **20 Claims**



1. An arrangement for coupling optoelectronic components and optical waveguides to one another, said arrangement comprising a carrier substrate (11); at least two elements selected from the group consisting of optoelectronic components (9) and optical waveguides (1) to be coupled to each other, said at least two elements being secured on the carrier substrate (11); and at least one lens (8) provided with an essentially planar surface and a spherical surface located opposite to said essentially planar surface, said spherical surface having a curvature center point; wherein the carrier substrate (11) is provided with a depression (5) bounded by walls of said carrier substrate (11), one of the at least one lens (8) is inserted in the depression (5) and the depression (5) is formed so that said lens in said depression contacts the walls of the depression (5) at points located on the spherical surface of said lens in said depression (5) and said lens contacting said walls is supported so as to be rotatable about the curvature center point of the spherical surface.

5,600,742

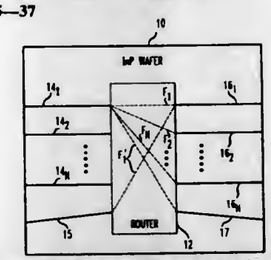
WAVELENGTH GRATING ROUTER WITH OUTPUT COUPLER

Martin Zirngibl, Middletown, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Sep. 30, 1994, Ser. No. 316,197

Int. Cl.[6] G02B *6/34*

U.S. Cl. 385—37 **2 Claims**



1. A waveguide grating router including at least one primary waveguide and at least one secondary waveguide, both on one side of said router, and N input waveguides on an opposite side of said router, said primary, secondary, and N input waveguides being coupled to corresponding free space regions in which supplied optical energy introducable to the router via one or more of the waveguides is capable of being supported in at least first and second order diffraction modes, said primary waveguide for capturing first order diffraction optical energy at at least one wavelength from corresponding free space regions in said router, and said secondary waveguide for capturing second order diffraction optical energy at the at least one wavelength, the wavelength of optical energy in said primary and secondary waveguides being substantially identical.

5,600,743

OPTOELECTRONIC MULTI-WAVELENGTH COMPONENT

Hartmut Hillmer, Darmstadt, Germany, assignor to Deutsche Telekom AG, Bonn, Germany

Filed Aug. 28, 1995, Ser. No. 520,070

Claims priority, application Germany, Aug. 31, 1994, 44 32 410.3

Int. Cl.[6] G02B *6/34*

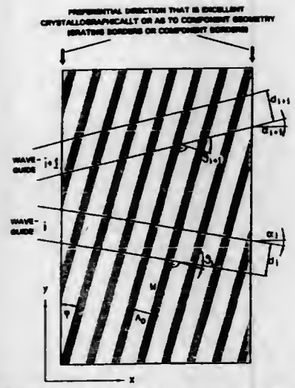
U.S. Cl. 385—37 **42 Claims**

1. Optoelectronic multi-wavelength component having a preferential direction comprising:

at least two optical waveguides for producing a desired wavelength λ_i from each waveguide i;

an optical feedback grating for at least one of the optical waveguides; the optical feedback grating having grating lines, the grating lines intersecting the at least one optical waveguide at an angle between 40 and 140 degrees;

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the grating lines of the feedback grating forming a border tilt angle with respect to the preferential direction;

a normal to the grating lines of the feedback grating forming a waveguide tilt angle ζ_i with respect to the waveguide i; and

the waveguide tilt angle required for the desired wavelength λ, for a first-order grating for each waveguide i generally following the equation:

$$\zeta_i = \arccos((\Lambda_0 \cdot 2 \cdot n_{eff,i})/(\lambda_i)).$$

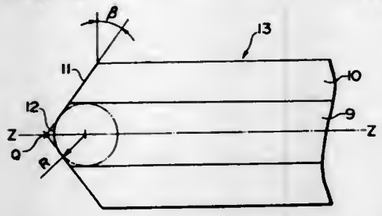
where Λ_0 is a corrugation period of the optical feedback grating and $n_{eff,i}$ is the effective refractive index of the waveguide i.

5,600,744

OPTICAL FIBER LIGHT COUPLING INTERFACE AND METHOD FOR MAKING SAME

Mitsuo Takahashi, Matsudo, Japan, assignor to Seikoh Giken Co., Ltd., Matsudo, Japan

Filed Apr. 21, 1995, Ser. No. 426,914
Claims priority, application Japan, Nov. 11, 1994, 6-303040
Int. Cl.[6] G02B *6/32*
U.S. Cl. 385—38 **4 Claims**



1. An optical fiber interface for coupling input light power from a light source to an optical fiber, said optical fiber having an optical axis, an incident end face extending transverse to said optical axis, a core region having a predetermined diameter, and a clad region surrounding said core region, wherein said end face comprises:

a first spherical surface portion with the center thereof on said optical axis and having a diameter not greater than the diameter of the core region, the first spherical surface portion of said end face being symmetrical with respect to said optical axis and extending from said optical axis along said core region toward said clad region; and

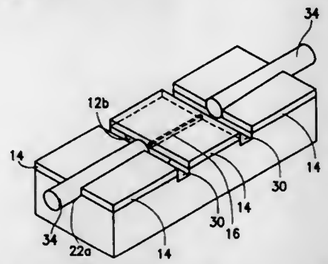
a second conical surface portion extending from the first spherical surface portion of said end face along said clad region, said second conical surface portion being tangential to the first spherical surface portion of said end face.

5,600,745

METHOD OF AUTOMATICALLY COUPLING BETWEEN A FIBER AND AN OPTICAL WAVEGUIDE

Dong-Sing Wuu; Hong-Ming Chen, both of Hsinchu; Tzung-Rue Hsieh; Hsiang-Chen Hsu, both of Hsinchu Hsien, and Ten-Hsing Jaw, Hsinchu, all of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Feb. 8, 1996, Ser. No. 598,660
Int. Cl.[6] G02B *6/00;6/34*
U.S. Cl. 385—49 **14 Claims**



1. A method of automatically coupling between a fiber and an optical waveguide, for coupling the optical waveguide on a planar optical circuit of a semiconductor substrate to the fiber used as an input/output port of said planar optical circuit, said method comprising the steps of:

forming a buffer layer on said semiconductor substrate;

forming a waveguide layer on said waveguide buffer layer;

fabricating said optical waveguide from said waveguide layer and a window abutted to an end of said optical waveguide in said waveguide layer;

anisotropically etching said semiconductor substrate under said window to form an aligning groove, wherein there is a predetermined angle between lateral faces of said aligning groove and said semiconductor substrate;

forming a cladding layer covering said optical waveguide by flame hydrolysis deposition technique and consolidation process, wherein there is a spacing between said cladding layer and said semiconductor substrate at said aligning groove;

removing said cladding layer over said aligning groove; and

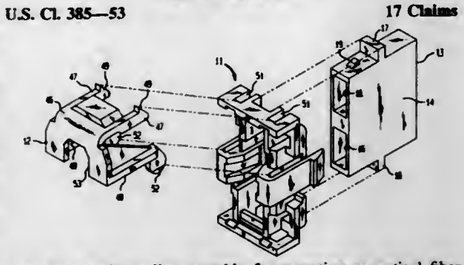
placing said fiber on said aligning groove, which can automatically align with said optical waveguide by said predetermined angle of said aligning groove.

5,600,746

PATCH PANEL AND COLLAR FOR OPTICAL FIBER COUPLERS

Jaime R. Arnett, Fishers, Ind., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Feb. 28, 1995, Ser. No. 395,736
Int. Cl.[6] G02B *6/36*
U.S. Cl. 385—53 **17 Claims**



4. An adaptive collar assembly for mounting an optical fiber coupler in an opening in a panel, wherein the coupler has first and second flanges projecting therefrom and locking members spaced from the flanges a predetermined distance, said collar assembly comprising:

a first, rear body portion sized and shaped to fit within the opening;

a second, front body portion having top, bottom and side portions sized and shaped larger than the opening and having flange means forming bearing surfaces adapted to bear against a face of the panel;

an opening having top, bottom and side surfaces extending through said first and second body portions for receiving the coupler;

means in said opening for receiving the projecting flanges of the coupler and adapted to be engaged by the locking members on the coupler;

first and second cantilevered arms extending from said second body portion at either side thereof rearwardly past said first body portion;

each of said cantilevered arms being connected to said second body portion and biased outwardly therefrom to define a space between each of said arms and the first and second body portions adjacent thereto such that when said arms are forcibly depressed toward each other said first body portion can be inserted into the opening in the panel until said bearing surfaces bear against the panel;

each of said arms having a distal end having a locking member thereon such that when the depressing forces are removed from said arms they move outwardly from said collar to cause the locking members to engage the rear of the panel adjacent the opening to lock the collar assembly within the opening; and

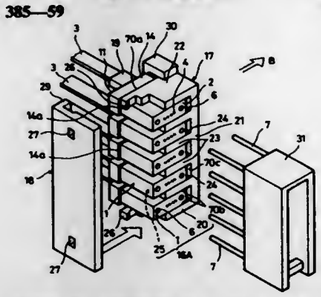
means for preventing said cantilevered arms from being depressed toward each other.

5,600,747

METHOD OF COLLECTIVELY CONNECTING MULTIPLE OPTICAL CONNECTORS AND ALIGNING AND POSITIONING JIG FOR MULTIPLE OPTICAL CONNECTORS USED IN THE METHOD

Jun Yamakawa; Hiroyuki Yanagase; Masato Shiino; Hideki Miyazaki, all of Tokyo, and Shinji Nagasawa, Mito, all of Japan, assignors to The Furukawa Electric Co., Ltd., and Nippon Telegraph and Telephone Corporation, both of Tokyo, Japan

Filed Aug. 4, 1995, Ser. No. 511,315
Claims priority, application Japan, Aug. 12, 1994, 6-211812
Int. Cl.[6] G02B *6/38*
U.S. Cl. 385—59 **10 Claims**



8. An aligning and positioning jig for use in collective connection of multiple optical connectors, each having an altered-shape portion which is at least one of a recessed shape and a projecting shape on an outer surface, said jig comprising:

a jig body;

retainers formed in said jig body for retaining first multiple optical connectors at predetermined aligned positions;

engage portions for positioning the first optical connectors so as to restrict movement of the first optical connectors at least in a forward direction toward faces of the first multiple optical connectors which are to be butted against second multiple optical connectors, in cooperation with altered-shape portions of the retained optical connectors; and

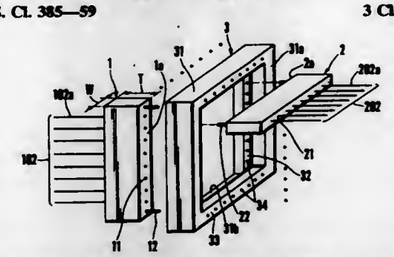
a detaching opening formed in said jig body for allowing said jig body to be detached from said first optical connectors while keeping said first optical connector in each retainer connected to a mating second optical connector.

5,600,748

OPTICAL CROSS-COUPLING APPARATUS

Hideo Kosaka, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jan. 26, 1996, Ser. No. 592,264
Claims priority, application Japan, Jan. 31, 1995, 7-032919
Int. Cl.[6] G02B *6/38*
U.S. Cl. 385—59 **3 Claims**



1. An optical cross-coupling apparatus comprising a plurality of first connector groups in each of which a plurality of optical fibers are aligned in a one-dimensional array, a like number of second connector groups in each of which a plurality of optical fibers are aligned in a one-dimensional array, and a socket in which said first and second connector groups are aligned to oppose each other crosswise and mounted such that distal end faces of respective connectors of said two connector groups oppose and are in contact with each other on one plane, wherein guide pins are provided at two end portions, in a longitudinal direction, of opposing surfaces of said connectors, and said socket is formed into a rectangular frame by assembling four prismic components having the same shape in parallel crosses, and a plurality of guide pin holes in which said guide pins are to be inserted are formed in said frame portion in one array in both vertical and horizontal directions.

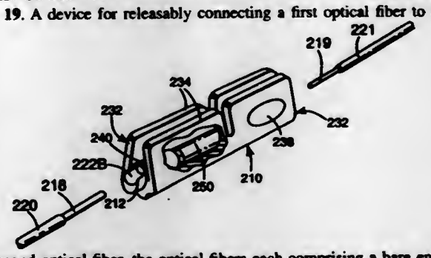
5,600,749

DEVICE WITH DIFFERENTIALLY DEFORMABLE HOUSING FOR CONNECTION OF OPTICAL ELEMENTS

Nicholas A. Lee, Woodbury; Jack P. Blomgren, Red Wing; Gordon D. Henson, Lake Elmo, and Michael A. Meis, Maplewood, all of Minn., assignors to Minnesota Mining and Manufacturing Co., St. Paul, Minn.

Filed Aug. 25, 1995, Ser. No. 519,391
Int. Cl.[6] G02B *6/38*
U.S. Cl. 385—70 **31 Claims**

19. A device for releasably connecting a first optical fiber to a second optical fiber, the optical fibers each comprising a bare end and buffer, the device comprising:



an elongate unitary mount with a generally elliptical cross-section and a longitudinal channel, wherein the channel in the mount is a V-groove having a first end and a second end, the groove comprising first and second opposed deep portions at the first and second ends, respectively, of the mount, and a shallow central portion between the first and second portions;

a connector body comprising a housing having an elongate base with an upper surface and a lower surface, a first deformable tube section integrally formed on the upper surface of the base and adjacent a first end thereof, a second deformable tube section, separate from the first deformable tube section, integrally formed on an upper surface of the base and adjacent a second end thereof distal the first end, wherein the first and second tube sections are made of a first material which may be elastically deformed to permit insertion of the optical fiber buffers between the housing and the mount and into the channel, and when undeformed compressively retain the fiber buffers in the channel and a deformable, central tube section, wherein the central tube section is made of a second material which may be elastically deformed to permit insertion of the bare fibers between the housing and the mount and into the channel, and when undeformed compressively retains the bare fibers in the channel in axially abutting relation;

a first pair of opposed lateral flanges attached to the base and contacting the first deformable tube section generally at a diameter thereof, a second pair of opposed lateral flanges attached to the base and contacting the second deformable tube section generally at a diameter thereof, wherein the flanges extend upward generally perpendicular to a plane of the base portion;

wherein the central tube section is retained in the connector body between the first and second pairs of flanges, the mount is positioned inside the central tube section and extends into the first and second deformable tube sections, and wherein the central portion of the mount lies beneath the central tube section of the housing and the first and second deep portions lie beneath the first and second deformable tube sections of the housing, respectively.

5,600,750

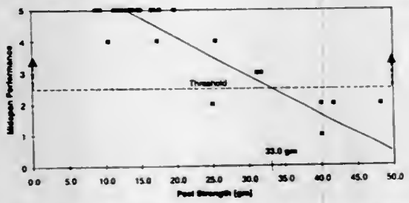
METHOD FOR MIDSPAN ENTRY OF OPTICAL RIBBON FIBER

William E. Beasley, Jr., and Taichiro Nagao, both of Durham, N.C., assignors to Sumitomo Electric Lightwave Corp., Research Triangle Park, N.C.

Continuation-in-part of Ser. No. 292,859, Aug. 19, 1994, Pat. No. 5,460,683. This application Nov. 2, 1994, Ser. No. 333,420

Int. Cl.[6] G02B *6/44*

U.S. Cl. 385—114 **16 Claims**



1. An optical ribbon fiber comprising a common encapsulant matrix and a plurality of optical fibers contained within said common encapsulant matrix and characterized in that it is particularly well suited for a ribbon midspan entry procedure comprising peeling a selected portion of the encapsulant matrix from said optical ribbon fiber, said optical ribbon fiber having a peel strength between about 5.0 and 33.0 gm and an encapsulant matrix tensile modulus greater than 38.2 Kg/mm^2, wherein said peel strength is less than said encapsulant matrix modulus.

5,600,751

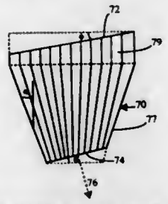
FIBER OPTIC READING MAGNIFIERS

Eliezer Peli, 32 Kendall Rd., Newton, Mass. 02159

Division of Ser. No. 228,209, Apr. 15, 1994, Pat. No. 5,511,141. This application Jan. 11, 1996, Ser. No. 583,881

Int. Cl.[6] G02B *6/06*

U.S. Cl. 385—116 **8 Claims**



1. A reading magnifier comprising:

a bundle of tightly juxtapositioned longitudinally tapered optical fibers;

a flat base end formed by a cut on a first bias angle across said bundle; and

a viewing end formed on a second bias angle across said bundle not larger than the first bias angle, wherein each of the optical fibers has a larger diameter at the viewing end than at the flat base end.

5,600,752

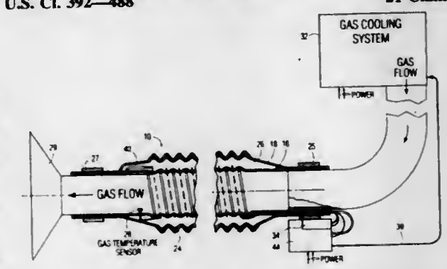
FLEXIBLE GAS HOSE ASSEMBLY WITH CONCENTRIC HELICAL TUBE MEMBERS HAVING REINFORCEMENT SPRING COILS

Edward Lopatinsky, Los Angeles, Calif., assignor to Industrial Design Laboratories, Inc., Chula Vista, Calif.

Filed Mar. 11, 1994, Ser. No. 212,166

Int. Cl.[6] A61M *16/00;* **H05B** *3/00;* **F24H** *1/10*

U.S. Cl. 392—488 **21 Claims**



1. A flexible hose assembly for conveying gas comprising,

a flexible tube member having an inlet end and an outlet end for receiving, conveying, and delivering a gas flow,

a metal spring coil member arranged along a substantial length of said tube member and in substantial engagement with the inner surface thereof for providing axial and compression strength to said tube member,

said coil member being in direct contact with the gas flow throughout a substantial length of said tube member,

a temperature sensing device within said tube member and in direct contact with the gas flow for sensing the temperature of gas when flowing therein, and

means coupled to said device for transmitting from said device to apparatus external to the hose assembly signals indicative of the gas flow temperature, and

wherein said device is arranged near the outlet end of said tube member for sensing the gas temperature of the gas that is about to exit the hose assembly and said signals are indicative of the temperature of the gas that is about to exit the hose assembly, and

wherein said means for transmitting signals indicative of the gas temperature comprises electrical leads extending from said device longitudinally through said tube member and axially in contact with a surface of said tube member and adjacent the inlet end of said tube member for connection to apparatus external to the assembly, and

wherein said tube member comprises spiral undulations along its length and said leads are wrapped along said undulations.

5,600,753

SPEECH RECOGNITION BY NEURAL NETWORK ADAPTED TO REFERENCE PATTERN LEARNING

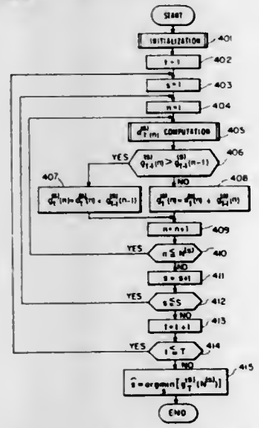
Ken-ichi Iso, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 873,153, Apr. 24, 1992, abandoned. This application Jul. 5, 1994, Ser. No. 270,416

Claims priority, application Japan, Apr. 24, 1991, 3-119086

Int. Cl.[6] G01L *1/06;* **G06F** *15/00*

U.S. Cl. 395—2.09 **2 Claims**



1. A pattern recognition method for recognizing syllables and sound elements on the basis of the comparison of input time series patterns expressed as feature vectors of the syllables and sound elements with reference pattern models using a finite status transition network, in which each status of said finite status transition network has a predictor, comprising the steps of:

(a) calculating, in each predictor, a predicted feature vector at time t from a plurality of input feature vectors between time (t−1) and time (t−τ_F) and a plurality of input feature vectors between time (t+1) and time (t+τ_B), wherein said τ_B and τ_F are predetermined natural number;

(b) determining a local distance at every t between said input feature vectors and t-th status of said finite transition network by using said input feature vectors, said predicted feature vector and a covariance matrix which accompanies t-th status of said finite status transition network;

(c) calculating an accumulated value of said local distances for every reference pattern defined by said status of said finite state transition network;

(d) detecting a minimum of said accumulated values for every reference pattern; and

(e) outputting a category of the reference pattern corresponding to said minimum as a recognition result.

5,600,754

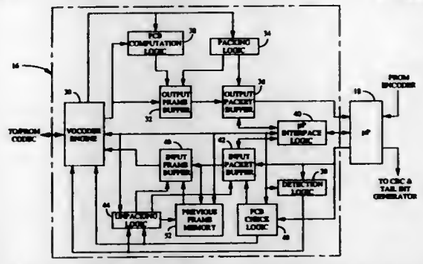
METHOD AND SYSTEM FOR THE ARRANGEMENT OF VOCODER DATA FOR THE MASKING OF TRANSMISSION CHANNEL INDUCED ERRORS

William R. Gardner, Encinitas, and Paul E. Jacobs, San Diego, both of Calif., assignors to QUALCOMM Incorporated, San Diego, Calif.

Continuation of Ser. No. 826,701, Jan. 28, 1992, abandoned. This application Feb. 14, 1994, Ser. No. 194,824

Int. Cl.[6] G01L *9/00*

U.S. Cl. 395—2.3 **36 Claims**



14. In a vocoding system in which received variable data rate frames of vocoded speech parameter data are decoded into corresponding frames of speech samples, a method for reordering said parameter data as formatted in a data packet within each received variable data rate frame wherein parameter data of a highest rate frame contains a portion of each parameter data of one parameter data type in a predetermined order within a beginning packet portion of the data packet, said beginning packet portion being followed by a remaining packet portion within which is exclusively provided another portion of each parameter data of the one set of parameter data in a predetermined order, and followed exclusively within said remaining packet portion by remaining parameter data of said variable data frame, and having parity data within said exclusively within said remaining packet portion, said parity data being computed from parameter data within said data packet, said method comprising the steps of:

receiving a highest rate frame of parameter data;

reassembling corresponding ones of said portion and said another portion of each parameter data of said one parameter data type to provide reassembled data;

computing parity data from parameter data in said received highest rate frame of parameter data;

comparing said computed parity data with said parity data in said received highest rate frame of parameter data; and

providing said reassembled data and said remaining parameter data for the reproduction of said speech samples if said computed parity data is the same as said received parity data.

5,600,755

VOICE CODEC APPARATUS

Takahiko Nakano, Ikoma, and Syuuichi Yoshikawa, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 168,218, Dec. 17, 1993, abandoned. This application Oct. 11, 1995, Ser. No. 540,314

Claims priority, application Japan, Dec. 17, 1992, 4-337650

Int. Cl.[6] G10L *3/02;9/00*

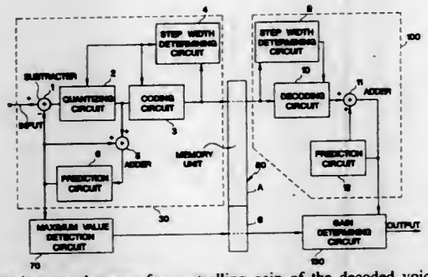
U.S. Cl. 395—2.34 **5 Claims**

1. A voice codec apparatus comprising:

predictive coding means for generating a voice code and a prediction value from an input voice signal containing noise;

maximum detecting means for detecting a maximum value of said prediction value;

decoding means for decoding said voice code to generate a decoded voice signal; and



gain control means for controlling gain of the decoded voice signal at the end of decoding to produce an output voice signal limited by the detected maximum value of said prediction value to thereby eliminate at least a portion of the noise from the input voice signal.

5,600,756

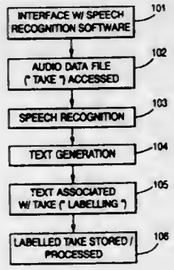
METHOD OF LABELLING TAKES IN AN AUDIO EDITING SYSTEM

Reuel A. Ely, Plantation, Fla., assignor to Sony Corporation, Japan, and Sony Electronics, Inc.

Filed May 11, 1994, Ser. No. 240,552

Int. Cl.[6] G10L *5/06*

U.S. Cl. 395—2.44 **5 Claims**



1. A method of automatically labeling takes in an audio editing system comprising:

(a) providing a workstation having memory means and a processor unit associated therewith;

(b) programming said workstation with operating system software;

(c) accessing with said workstation a digital data file corresponding to a speecb take;

(d) interfacing said system software with speech recognition software;

(e) subsequent to said interfacing and said accessing, implementing said speech recognition software to translate at least a portion of said digital data file corresponding to a speech take into a set of data that is representative of text;

(f) subsequent to said implementing, creating a file identifier which is derived from said set of data and associating said file identifier with said digital data file; and

(g) subsequent to said creating and associating, storing said digital data file and the associated file identifier on a storage medium, thereby facilitating accessing of said digital data file.

5,600,757

FUZZY RULE-BASED SYSTEM FORMED ON A SINGLE SEMICONDUCTOR CHIP

Akiyasu Yamamoto, Yokohama; Takeo Arafune, Kamakura; Tadatoshi Ishii, Matsudo; Tetsuya Kitamura, Tokyo; Toshiaki Shirasuna, and Yuichi Sekizawa, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

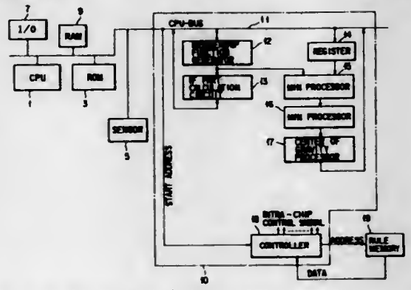
Continuation of Ser. No. 891,165, May 29, 1992, abandoned.

This application Apr. 13, 1995, Ser. No. 421,024

Claims priority, application Japan, May 31, 1991, 3-129870; May 31, 1991, 3-129871; May 31, 1991, 3-129876; May 31, 1991, 3-129877; May 31, 1991, 3-130015; May 31, 1991, 3-130016; Aug. 19, 1991, 3-206768; Sep. 4, 1991, 3-223847; Apr. 17, 1992, 4-98096

Int. Cl.[6] G06F *9/44;7/00*

U.S. Cl. 395—3 **10 Claims**



9. A one-chip fuzzy processing apparatus integrated on a one-chip semiconductor device, comprising:

a receiver for receiving values of IF part membership functions supplied from an external circuit;

a membership function generator for generating IF part membership function intermediate values and THEN part membership function intermediate values, and IF part membership function values and THEN part membership function values from the generated IF part membership function intermediate values, respectively, the membership function generator including a counter for sequentially outputting current values; and a circuit for sequentially outputting grades of THEN part membership functions using the count values from the counter as x-coordinate values;

IF part grade calculator for receiving variables received by the receiver and the IF part membership function values generated by the membership function generator and for calculating grades of the IF part membership function values corresponding to values of the variables received by the receiver;

a combining circuit for modifying the THEN part membership function values using IF part grades calculated by the IF part grade calculator, and combining modified membership function values; and

a defuzzifier for defuzzifying the modified membership function values from the combining circuit by using the IF part membership function intermediate values and THEN part membership function intermediate values.

5,600,758

METHOD AND DEVICE FOR CONDUCTING A PROCESS IN A CONTROLLED SYSTEM WITH AT LEAST ONE PRECOMPUTED PROCESS PARAMETER.

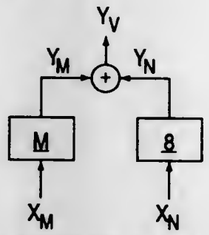
Einar Broese; Otto Gramckow, both of Erlangen; Thomas Martinetz, Munich, and Guenter Soergel, Nuernberg, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Nov. 10, 1994, Ser. No. 337,660

Claims priority, application Germany, Nov. 11, 1993, 43 38 607.5

Int. Cl.[6] G06E *1/00;3/00*

U.S. Cl. 395—21 **26 Claims**



1. A method for controlling a process with a computing means having a mathematical model of the process and with a neural network having variable network parameters, the method comprising steps of:

a) supplying input values to the mathematical model;

b) precomputing at least one selected process parameter with the mathematical model at the beginning of a process run, based on the input values supplied to the mathematical model;

c) presetting the at least one process parameter;

d) measuring the input values and the at least one process parameter during the process; and

e) adaptively improving the at least one process parameter after the process based on the measured at least one process parameter and based on the measured input values, the step of adaptively improving including sub-steps of:

I) supplying at least part of the measured input values to the mathematical model;

ii) supplying at least part of the measured input values to the neural network;

iii) forming a computed at least one process parameter with the mathematical model;

iv) forming a network response with the neural network;

v) linking the computed at least one process parameter with the network response to form a linked result;

vi) comparing the linked result with the measured process parameter to form a deviation; and

vii) adaptively modifying the variable network parameters of the neural network such that the deviation is reduced, the variable network parameters being adaptively modified to train the neural network on-line.

5,600,759

ROBOT CAPABLE OF GENERATING PATTERNS OF MOVEMENT PATH

Tatsuo Karakama, Yamanashi, Japan, assignor to FANUC Ltd., Japan

Continuation of Ser. No. 965,052, Oct. 22, 1992, abandoned, which is a continuation of Ser. No. 601,784, Nov. 2, 1990, abandoned. This application Jul. 1, 1994, Ser. No. 270,216

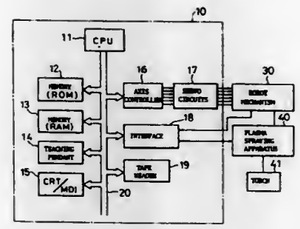
Claims priority, application Japan, Mar. 20, 1989, 1-65916

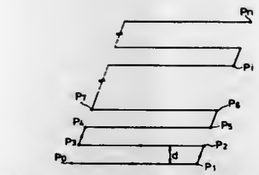
Int. Cl.[6] B25J *9/16;9/22;* **G05B** *13/00*

U.S. Cl. 395—87 **19 Claims**

1. A robot for automatically generating a movement path pattern based on previously taught data, comprising:

first teaching means for teaching only a portion of a plurality of points in a sub-pattern of a movement path pattern, said





portion of said plurality of points including a start point, an end point, and one cornering point, said movement path pattern including a plurality of segments each connected to each other to form said movement path pattern;

first storing means for storing said taught start point, end point, and one cornering point as taught data;

second teaching means for teaching a pitch between adjacent and parallel segments of said plurality of segments;

second storing means for storing said taught pitch; and

pattern generating means for automatically generating said movement path pattern based on said stored taught data and said stored taught pitch.

5,600,760

TARGET BASED DETERMINATION OF ROBOT AND SENSOR ALIGNMENT

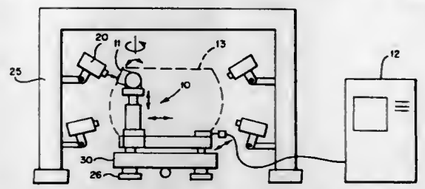
Timothy R. Pryor, Tecumseh, Canada, assignor to Sensor Adaptive Machines Inc., Windsor, Canada

Division of Ser. No. 358,882, Dec. 19, 1994, which is a division of Ser. No. 170,988, Dec. 21, 1993, Pat. No. 5,374,830, which is a continuation of Ser. No. 733,035, Jul. 22, 1991, abandoned, which is a continuation of Ser. No. 481,155, Feb. 20, 1990, abandoned, which is a continuation of Ser. No. 291,692, Dec. 29, 1988, abandoned, which is a division of Ser. No. 104,517, Sep. 28, 1987, Pat. No. 4,796,200, which is a continuation of Ser. No. 940,153, Dec. 9, 1986, abandoned, which is a continuation of Ser. No. 660,043, Oct. 12, 1984, abandoned.

This application Jun. 6, 1995, Ser. No. 465,737

Int. Cl.[6] G06F *15/46*

U.S. Cl. 395—94 **21 Claims**



1. A system for correcting location of a tool with respect to objects wherein each object is individually conveyed from station to station in a line, comprising:

a simulation of the objects conveyed,

electro-optical means for sensing an initial position of a tool with respect to the simulation in one of the stations, and

means for determining from the detected initial tool position relative to the simulation, a corrected location for said tool.

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5,600,761

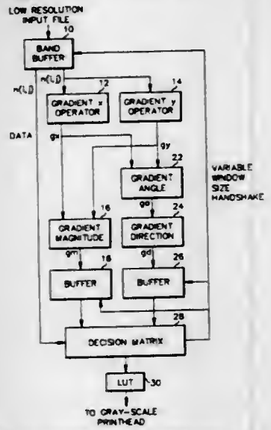
RESOLUTION ENHANCEMENT SYSTEM FOR COMBINED BINARY AND GRAY SCALE HALFTONE IMAGES

Yee S. Ng, Fairport; Hurjay Yeh, and Michael A. Pickup, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 983,169, Nov. 30, 1992, Pat. No. 5,450,531. This application Jun. 7, 1995, Ser. No. 475,447

Int. Cl.[6] G06T *5/00*

U.S. Cl. 395—128 **8 Claims**



1. An image processing system comprising:

means for operating upon a mixture of inputted image data including first binary image data and first gray-scale image data and generating second binary image data wherein the second binary image data is comprised of a mixture of the first binary image data and third binary image data representing the first gray-scale image data converted to binary image data;

means for performing edge enhancement on the second binary image data to produce gray-scale enhanced binary image data wherein the gray-scale enhanced binary image data includes a mixture of binary image data and second gray-scale image data, said gray-scale enhanced binary image data having a pixel-wise correspondence to the inputted image data;

means for selectively merging and outputting the inputted image data and the gray-scale enhanced binary image data as outputted image data, the outputted image data including:

the gray-scale enhanced binary image data selected as output by said means for selectively merging and outputting if the gray-scale enhanced binary image data pixel-wise corresponds to the first binary image data in the inputted image data; and

the inputted image data selected as output by said means for selectively merging and outputting if the inputted image data pixel-wise corresponds to the first gray-scale image data.

5,600,762

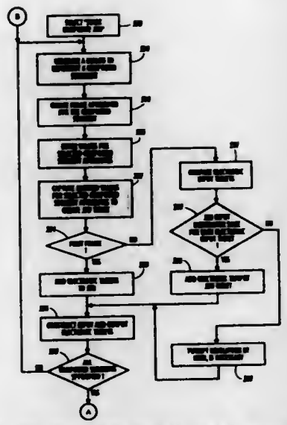
METHOD OF PROCESSING A JOB, IN A PRINTING SYSTEM, WITH A COMPOSITE JOB TICKET

David L. Salgado, Victor; Kevin F. Aubertine, Ontario; Dennis B. Ulrich, Fairport; Robert L. Sklut, Rochester; Jennifer L. Betit, Fairport, and Samuel D. Ambalavanar, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 29, 1994, Ser. No. 315,273

Int. Cl.[6] G06F *3/12*

U.S. Cl. 395—114 **10 Claims**



1. A method of processing a job, with an electronic composite job ticket, in a printing system with a user interface for programming the job with one or more selected inputs, the printing system being associated with a first output function executed with a first output subsystem and a second output function executed with a second output subsystem, the processing of the job being controlled by a first compound segment and a second compound segment with each compound segment corresponding with one of the one or more selected inputs and one of the first and second output functions, comprising:

(a) electronically generating a first dialog having a first set of attributes, the first set of attributes corresponding with the first compound segment and including both an input attribute subset for designating a manner In which a set of image data is to be provided pursuant to job processing and an output attribute subset for designating a manner in which a representation of the image data set is to be outputted with the first output subsystem;

(b) programming the electronically generated first dialog, with the user Interface, so that values are provided for selected ones of the set of attributes, the values including designated values for at least the input attribute subset and the output attribute subset;

(c) capturing and storing the attribute values, programmed in said step (b), to obtain a first ticket representative of the first compound segment;

(d) electronically generating a second dialog having a second set of attributes, the second set of attributes corresponding with the second compound segment and including both a second input attribute subset for designating a manner in which a second set of image data is to be provided pursuant to job processing and a second output attribute subset for designating a manner, in which a representation of the second set of image data is to be outputted with the second output subsystem;

(e) programming the electronically generated second dialog, with the user interface, so that values are provided for selected ones of the second set of attributes, the values for selected ones of the second set of attributes including designated values for at least the input attribute subset and the second output attribute subset;

(f) capturing and storing the attribute values, programmed in said step (e), to obtain a second ticket representative of the second compound segment;

(g) linking the first and second tickets to create the electronic composite job ticket; and

(h) subsequent to executing said step (g), processing both the first compound segment and the second compound segment, in accordance with the electronic composite job ticket, so that a copy of the set of image data is delivered to the first output subsystem for outputting of the representation of the set of image data at a first time and a copy of the second set of image data is delivered to the second output function for outputting of the representation of the second set of image data at a second time, wherein the second output function performed with the second output subsystem is distinct with respect to the first output function performed with the second output subsystem.

5,600,763

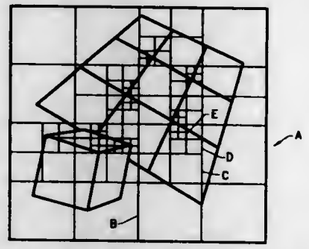
ERROR-BOUNDED ANTIALIASED RENDERING OF COMPLEX SCENES

Edward C. Greene, and Michael H. Kass, both of Palo Alto, Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Jul. 21, 1994, Ser. No. 279,251

Int. Cl.[6] G06T *15/30;17/00*

U.S. Cl. 395—120 **14 Claims**



1. A computer implemented method for rendering a 3-D scene onto a display having pixels, the 3-D scene being a view of a model space which includes a plurality of surface primitives, comprising the steps of:

a) organizing the model space into a quadtree data structure having a plurality of nodes including a root node and child nodes;

b) traversing the quadtree data structure to cull nodes which are completely hidden and to insert primitives associated with any of said nodes which may be visible into an image-space quadtree data structure;

c) recursively subdividing the quadtree data structure to resolve the visibility of primitives in a given pixel and determining an output pixel value for the given pixel by applying an antialiasing filter to color components of the primitives visible in the given pixel wherein the output pixel value is determined by interval multiplication of the color components with intervals contained in a table of intervals for the filter; and

d) displaying the 3-D scene on the display with hidden primitives removed therefrom and with antialiased color components of the visible primitives.

5,600,764

IMAGE PROCESSING APPARATUS FOR COLOR-COMPENSATING ACCORDING TO COLOR REPRODUCTION PROPERTIES OF AN IMAGE OUTPUT APPARATUS

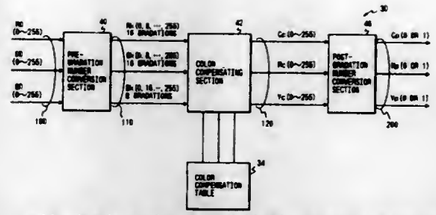
Toshiaki Kakutani, Nagano, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Mar. 3, 1994, Ser. No. 205,103

Claims priority, application Japan, Mar. 3, 1993, 5-042973; Apr. 14, 1993, 5-087529; Dec. 28, 1993, 5-352899

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—131 **16 Claims**



1. An image processing apparatus for color compensating input color image data in accordance with the color reproduction properties of an image output apparatus and outputting the color-compensated image data, the input color image data having a plurality of color components represented by gradation numbers, the image processing apparatus comprising:

a color compensation table memory for storing gradation compensating data of each of the plurality of color components at grid points in a color space divided into a grid, wherein said color space has coordinate axes corresponding to each of the plurality of color components of the color image data, and wherein said gradation compensating data relates to the color reproduction properties of the image output apparatus;

pre-gradation number conversion means for converting the gradation numbers of the input color image data into values corresponding to the most appropriate grid points in said color space by using a pre-determined gradation number conversion method based on a pre-determined condition; and

color correction means for compensating the gradation numbers of the plurality of color components of the input color image data based on the gradation compensating data of the grid points corresponding to the converted gradation numbers converted by said pre-gradation number conversion means.

5,600,765

DISPLAY SYSTEM CAPABLE OF ACCEPTING USER COMMANDS BY USE OF VOICE AND GESTURE INPUTS

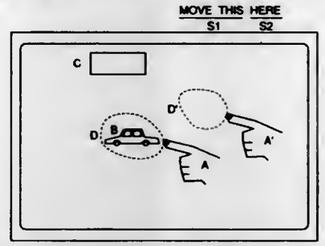
Haru Ando, Kokubunji, and Yoshinori Kitahara, Musashimurayama, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 19, 1993, Ser. No. 137,788

Claims priority, application Japan, Oct. 20, 1992, 4-282057

Int. Cl.[6] G06T *11/00*

U.S. Cl. 395—133 **18 Claims**



1. A method of accepting multimedia operation commands wherein, while pointing to either of a display object and a display position on a display screen of a graphics display system through a pointing input device, a user commands the graphics display system to cause an event on a graphics display, through a voice input device; comprising:

a first step of allowing the user to enter a string of coordinate points which surround one area for either of the display object or any desired display position by performing a pointing gesture along the string of coordinate points;

a second step of allowing said user to give a voice command together with said pointing gesture;

a third step of recognizing a command content of said voice command by a speech recognition process in response to said voice command;

a fourth step of recognizing a command content of said pointing gesture in accordance with a recognized result of said third step; and

a fifth step of executing the event on the graphics display in accordance with the command contents of said voice command and said pointing gesture.

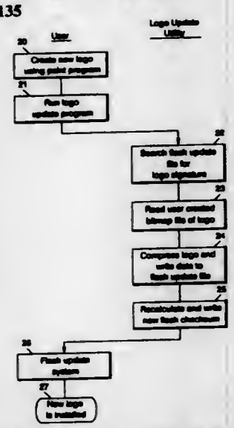
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5,600,766

METHOD AND APPARATUS FOR STORING AND DISPLAYING A POWER-ON GRAPHICAL IMAGE

David J. Deckys, Sunnyvale, Calif.; Bharat Khatri, Boca Raton, Fla.; George Mathew, Wellington, Fla.; Stanley L. Merkin, Lake Worth, Fla.; Kenneth D. Smeltzer, Austin, Tex., and Gary A. Vaiskauckas, Boca Raton, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 24, 1994, Ser. No. 295,344
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—135 **2 Claims**



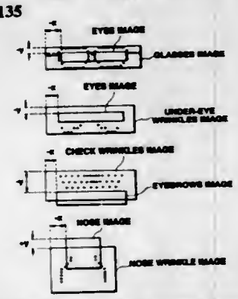
2. A method for adding a user selected graphic image to a system ROM image, comprising the steps of:
searching the Flash image file for the graphical image signature (GIS);
locating the actual graphical image data with the graphical image header;
reading the new graphical image data;
overlaying the old graphical image data into a Flash image file; and
recalculating the system ROM checksum.

5,600,767

IMAGE CREATION DEVICE

Yasushi Kakiyama, Hachioji; Tadahiro Takeguchi, and Futoshi Sato, both of Fussa, all of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Feb. 17, 1995, Ser. No. 390,387
Claims priority, application Japan, Feb. 25, 1994, 6-051077; Feb. 28, 1994, 6-052545
Int. Cl.[6] G06T *11/00*
U.S. Cl. 395—135 **15 Claims**



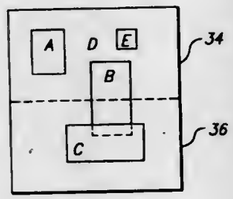
2. An image creation device for forming a desired image comprising:
a) part image storage means for storing a plurality of part images for placement at corresponding predetermined positions;
b) selection means for selecting part images from among the plurality of part images stored in said part image storage means;
c) attribute setting means for setting an attribute of the desired image to be formed;
d) synthesis means for placing at least one of the part images selected by said selection means at a specified position in accordance with the attribute set by said attribute setting means, the specified position being different from the corresponding predetermined position associated with the at least one selected part image, the synthesis means disposing each of said selected part images, except the at least one selected part image, at the corresponding predetermined position associated with each of the selected part images to thereby form the desired image;
e) subsidiary part image storage means for storing subsidiary part images to be added to corresponding part images stored in said part image storage means; and
f) subsidiary image addition means for reading from said subsidiary part image storage means a subsidiary part image to be added to the corresponding part image included in the desired image, the subsidiary image addition means adding the read subsidiary part image to the corresponding part image to modify the desired image formed by said synthesis means; and
g) output means for outputting the desired image modified by said subsidiary image addition means.

5,600,768

IMAGE GENERATION WITH DYNAMICALLY CONSOLIDATED LIST OF IMAGE DATA

Kevin W. Andresen, Campbell, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Jun. 6, 1995, Ser. No. 473,281
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—135 **28 Claims**



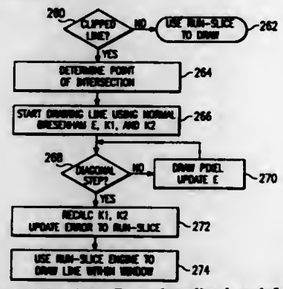
1. In a graphic imaging system, a method for storing data which describes an image in an intermediate form during processing of said data to generate the image, comprising the steps of:
generating commands which describe objects in said image and appearance states for said objects;
creating an intermediate data structure containing entries which correspond to said commands;
accumulating commands which pertain to a given type of object; and
storing the accumulated commands pertaining to the given type of object as a single entry in said data structure.

5,600,769

RUN SLICE LINE DRAW ENGINE WITH ENHANCED CLIPPING TECHNIQUES

Giang H. Dao, Houston, and John J. Watters, Spring, both of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Jan. 31, 1995, Ser. No. 380,967
Int. Cl.[6] G06T *11/00*
U.S. Cl. 395—143 **23 Claims**



1. A method of drawing a Bresenham line in a defined region of a display, wherein the Bresenham line is defined by a plurality of points each related to neighboring points on the Bresenham line by either an axial step or a diagonal step, comprising the steps of:
receiving line information defining coordinates of first and second endpoints of the Bresenham line, wherein said coordinates of said first endpoint are outside of the defined region of the display;
determining a point of intersection between the Bresenham line and the defined region of the display;
starting at said first endpoint outside of the defined region of the display, generating coordinate information, responsive to an error term and first and second constants, for points of the Bresenham line on a point by point basis until a step is taken in a predetermined direction inside the defined region of the display; and
recalculating the error term and said first and second constants to determine run-slice parameters and generating the remaining points of the Bresenham line within the defined region of the display as one or more slices, using a run slice technique.

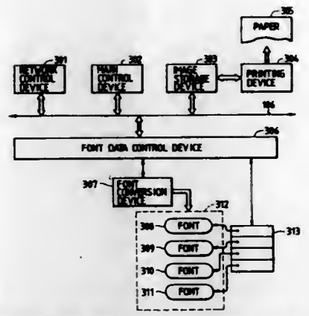
5,600,770

SYSTEM FOR CENTRALLY CONTROLLING LETTER DATA

Atsushi Kawabata; Shuuichi Miura; Kimiya Yamaashi, all of Hitachi; Yuji Taki, Takaaki; Yoshiki Kobayashi, and Shinya Tanifuji, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 997,628, Dec. 28, 1992, Pat. No. 5,444,829, which is a continuation of Ser. No. 395,764, Aug. 18, 1989, abandoned. This application Jun. 5, 1995, Ser. No. 460,846
Claims priority, application Japan, Aug. 24, 1988, 63-208397
Int. Cl.[6] G06T *11/00*
U.S. Cl. 395—805 **24 Claims**

1. A workstation for processing data and coupled to a font server via a transmission path, for processing font data from said font server having a plurality of font data, said font server for converting stored font data therein to required font data having a font format which is required by said workstation, comprising:
a network control device for controlling to access instructions and parameters according to said instruction and font data between said font server and said workstation via said transmission path;
a font cacbe memory for storing font data having font format and
a font data control device for controlling to access said font cache memory, for detecting whether said font cache memory



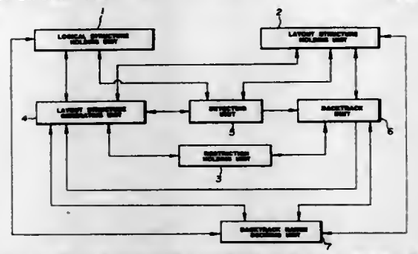
has required font data with required font format, for generating and outputting to said font server a request signal to access the required font data with the required font format if said font cache memory does not have the required font data with the required font data for receiving said required font data with the required font format from said font server, for outputting stored or received font data with the font format according to a result of said detecting;
a graphic data memory for storing graphic data for display; and
a main control device for controlling therein, for processing data and for storing said font data as graphic data in said graphic data memory.

5,600,771

METHOD OF DOCUMENT LAYOUT PROCESS AND SYSTEM THEREFOR

Naoki Hayashi, and Kazuo Saito, both of Tokyo, Japan, assignors to Fuji Xerox Co., Ltd., Japan

Continuation of Ser. No. 319,254, Oct. 6, 1994, Pat. No. 5,499,331, which is a continuation of Ser. No. 748,323, Aug. 21, 1991, abandoned. This application Sep. 29, 1995, Ser. No. 536,472
Int. Cl.[6] G06F *1/00*
U.S. Cl. 395—774 **4 Claims**



1. A method of document processing in which contents of a structured document having a specific logical structure including a plurality of logical objects and also having a predetermined first restriction condition corresponding to at least one of the logical objects are laid out in accordance with a second restriction condition of a predetermined common layout structure, so as to generate a specific layout structure including a plurality of layout objects corresponding to the specific logical structure, the method comprising the steps of:
generating the specific layout structure corresponding to the specific logical structure by carrying out layout process of the contents of the structured document in accordance with said first and second restriction conditions;
when carrying out the layout process, making the logical object having said first restriction condition corresponds to the layout object generated in correspondence with the logical object

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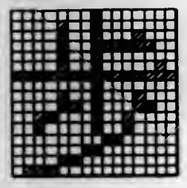
having said first restriction condition and storing the logical object and the layout object as corresponding to one another; when said the second restriction condition is not satisfied after the layout object corresponding to the logical object having said first restriction condition has been generated, determining a range of logical objects to which influence of a backtrack extends in accordance with the stored contents; and executing a re-layout process by returning back to the logical object stored as corresponding to the layout object in the determined backtrack range.

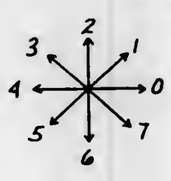
5,600,772

BIT MAP CHARACTER CONVERTOR USING CHAIN-CODES FOR THE CHARACTER FILLING PROCESS

Hao Zhou, Bejing, China, and Le Jun Shao, Singapore, Singapore, assignors to Printronix, Inc., Irvine, Calif.

Filed Aug. 17, 1994, Ser. No. 291,445
Int. Cl.[6] G06T *11/00*
U.S. Cl. 395—170 **20 Claims**





1. A process for converting outlined representations of a character into its bit mapped form to form a character font comprising:
providing a first buffer for a bit map form of a character;
providing a second buffer for a chain-code representation of the outline of the character;
drawing the outline of the character into the first buffer:
generating chain-code representations of contour of the character;
setting flags in chain-code in said second buffer to indicate contour collisions;
scanning the contours of the chain-code representations to add missing chain-code flags;
scanning and filling the inside part of the contour of the character; and,
printing said character.

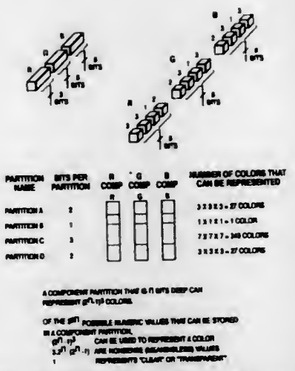
5,600,773

LOGICAL PARTITIONING OF GAMMA RAMP FRAME BUFFER FOR OVERLAY OR ANIMATION

Michael T. Vanover; Linas L. Vepstas, and Jeffrey A. Wilkinson, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 734,401, Jul. 23, 1991, abandoned. This application Feb. 16, 1994, Ser. No. 197,652
Int. Cl.[6] G06T *1/00*
U.S. Cl. 395—173 **8 Claims**

1. A method for partitioning a gamma ramp frame buffer using color pallets in an associated digital to analog converter, comprising the steps of:
scaling and off-setting data for two or more patterns to be rendered into the gamma ramp frame buffer;
dividing the bit planes of the gamma ramp frame buffer into two or more groupings;
rendering first data into a first gamma ramp grouping of bit planes in the frame buffer while selectively masking other bit planes, the first data representing the color or transparency of a first pattern at a first pixel position;
rendering second data into a second gamma ramp grouping of bit planes of the frame buffer while selectively masking other



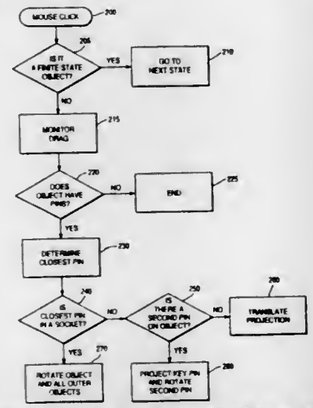
bit planes, the second data representing the color or transparency of a second pattern at the first pixel position; and
loading a set of gamma ramp color pallets with digital to analog conversion data which selectively match the color or transparency of each respective grouping of bit planes.

5,600,774

GRAPHICAL INTERFACE FOR INTERACTING CONSTRAINED ACTORS

James C. Spohrer, Santa Clara, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 992,937, Dec. 16, 1992, Pat. No. 5,450,540. This application Jan. 23, 1995, Ser. No. 377,140
Int. Cl.[6] G06F *19/00*
U.S. Cl. 395—174 **8 Claims**



1. A method for controlling a motion of actors on a display screen in response to a user input when more than one motion is possible, comprising the steps of:
selecting an actor to be moved;
determining if the selected actor can be moved;
if it is determined that the selected actor can be moved, then moving the selected actor; and
if it is determined that the selected actor cannot be moved, then returning to the selecting step;
wherein the step of selecting an actor to be moved is one of a group of steps consisting of:
selecting an actor that is pinned into a groove over an unconstrained actor;

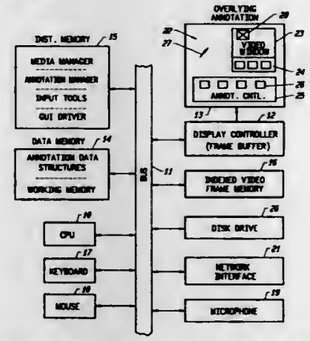
selecting an actor that is connected to a spring over an unconstrained actor;
selecting an unconstrained actor over an actor that is pinned into a socket;
selecting an unconstrained actor over an actor that is connected to a box;
selecting an unconstrained actor over an actor that is connected to glue;
selecting one actor over more than one actor; and
selecting an actor that is near the mouse selection over an actor that is further from the mouse selection.

5,600,775

METHOD AND APPARATUS FOR ANNOTATING FULL MOTION VIDEO AND OTHER INDEXED DATA STRUCTURES

Philip S. King, and Hendrik W. Nelis, both of San Francisco, Calif., assignors to emotion, inc., Palo Alto, Calif.

Filed Aug. 26, 1994, Ser. No. 296,535
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—806 **48 Claims**



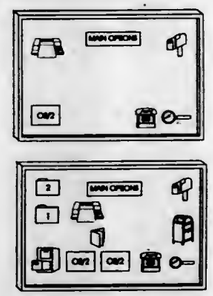
1. A method of annotation for a file of indexed data structures, data structures in the file having an index value, comprising:
displaying the file of indexed data structures using a file display routine;
selecting, in response to user input, an indexed data structure to be annotated from the file of indexed data structures being displayed;
creating, in response to user input, an annotation data structure using an annotation routine without modifying the selected data structure, the annotation data structure including a graphical element for display overlaying the selected data structure and an indication of an index value for the selected data structure;
storing the annotation data structure in an annotation memory;
monitoring the annotation memory while displaying the file of indexed data structures to detect annotation data structures for indexed data structures currently being displayed; and
overlaying the indexed data structure on the display with the graphical element of the detected annotation data structure without modifying the indexed data structure.

5,600,776

METHOD AND APPARATUS FOR AUTOMATICALLY ORGANIZING USER INTERFACE OBJECTS FOR MULTIPLE USERS ON A SINGLE WORKSTATION

William J. Johnson, Flower Mound; Larry M. Lachman, and Michael D. Smith, both of Irving, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 7, 1994, Ser. No. 271,620
Int. Cl.[6] G06F *3/00*
U.S. Cl. 395—326 **9 Claims**



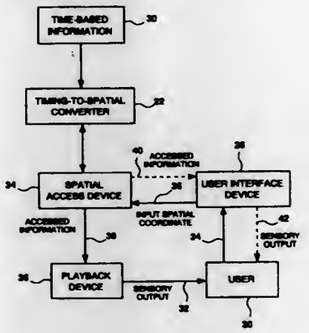
1. A method for automatic user interface object organization within a data processing system comprising at least one personal computer accessible by a plurality of users, said method comprising the steps of:
defining and storing a user desktop map for each of said plurality of users, said desktop map registering and identifying User interface objects by a preset combination of attributes thereof;
automatically recognizing one of said plurality of users;
automatically presenting said one of said plurality of users with any of said user interface objects already present, rearranged in accordance with said desktop map as previously stored;
determining a presence of a newly spawned object; and
automatically positioning said newly spawned object in accordance with said user desktop map, wherein each of said plurality of users is presented with a desktop organized and arranged according to their individual preference.

5,600,777

METHOD AND SYSTEM FOR SPATIAL ACCESSING OF TIME-BASED INFORMATION

Weijia Wang, Sunnyvale, and Sean M. White, San Francisco, both of Calif., assignors to Interval Research Corporation, Palo Alto, Calif.

Continuation of Ser. No. 172,637, Dec. 22, 1993, Pat. No. 5,461,711. This application Jul. 31, 1995, Ser. No. 509,165
Int. Cl.[6] G06F *3/02*
U.S. Cl. 395—326 **15 Claims**



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1. A system for permitting a user to spatially access and playback time-based information having a plurality of segments, the system comprising:

a timing-to-spatial converter which maps each of the plurality of segments to a corresponding one of a plurality of mapped spatial coordinates;

a user interface which defines an input coordinate space, the user interface operative to determine an input spatial coordinate corresponding to location of a portion of a user's body within the input coordinate space;

a spatial access device which accesses at least one segment of the time-based information corresponding to the input spatial coordinate;

a playback device which plays back the at least one segment of the time-based information in its original form; and

means for producing a sensory output based on the at least one segment for sensing by the portion of the user's body, wherein the sensory output aids the user in obtaining a sense of the whole of the time-based information in the input coordinate space.

5,600,778

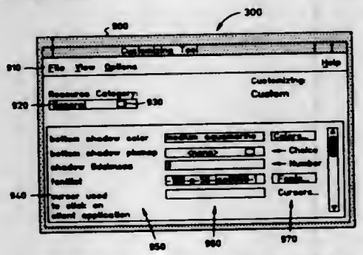
GRAPHICAL RESOURCE EDITOR FOR SOFTWARE CUSTOMIZATION

Sara J. Swanson, Mountain View; Robert F. Andrews, San Jose, and Gary M. Mandelstam, Cupertino, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 942,204, Sep. 8, 1992, abandoned. This application Sep. 8, 1995, Ser. No. 525,895

Int. Cl.[6] G06F *3/14*

U.S. Cl. 395—333 **21 Claims**



1. In combination with a data processing system the data processing system having a data processing unit, a video display terminal, a keyboard, a cursor control system including means for generating a screen cursor and a user actuatable cursor positioner for providing control inputs to the data processing system, a data storage device, and a graphical user interface system through which software applications running on the data processing system generate one or more graphical window objects on the video display terminal to provide user interaction functionality for the software applications, the appearance and behavior of the graphical window objects being partially determined by resources, a graphical resource editor for modifying selected resource values, comprising:

main window means for generating in the video display terminal a maio interface window, said main window providing a graphical user interface object for interaction with the graphical resource editor;

resource category selection means for generating in said main window a resource category selection object including a list of selectable resource category objects containing resource category descriptors corresponding to categories of editable resources, said resource category selection object providing a user activatable interface for selecting from said list of resource category objects an editable resource category;

resource display means responsive to user activation of said resource category selection object for generating in said main window a list of resource descriptors corresponding to a selected category of editable resources;

resource value display means for generating in said main window a plurality of resource value display fields containing resource values representing the status of said resource descriptors corresponding to said selected category of editable resources; and

resource value selection means for generating in said main window a set of resource value selection objects, said resource value selection objects providing user activatable interfaces for setting editable resource values.

5,600,779

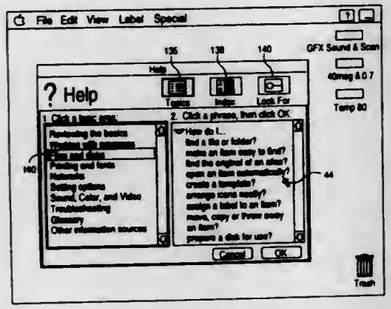
METHOD AND APPARATUS FOR PROVIDING VISUAL CUES IN A GRAPHIC USER INTERFACE

James E. Palmer, Redwood City; John R. Powers, III, Monte Sereno; Patricia J. Coleman, Menlo Park; Gregory S. Brewer, Pleasanton; Jeffrey A. Herman, Palo Alto, and Eli Cochran, Menlo Park, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 10,062, Jan. 27, 1993, Pat. No. 5,488,685. This application Jun. 7, 1995, Ser. No. 483,300

Int. Cl.[6] G06F *3/10*

U.S. Cl. 395—340 **24 Claims**



1. In a data processing display system having a display, a method for providing visual cues to a user comprising the steps of:

(a) displaying on said display a user interface having a plurality of objects;

(b) automatically drawing on said display a coach mark having at least one geometric shape to visually identify at least one of said objects on said user interface to said user, wherein the automatically drawing step (b) includes

rendering said coach mark over time to achieve the visual appearance of being animated and drawn freehand on said user interface by a human being.

5,600,780

PROGRAMMING ENVIRONMENT SYSTEM FOR CUSTOMIZING A PROGRAM APPLICATION BASED UPON USER INPUT

Rumi Hiraga, Matsudo; Yeong-chang Lien, Tokyo-to; Yoshiaki Mima, Tokyo-to, and Hiroshi Morishima, Tokyo-to, all of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

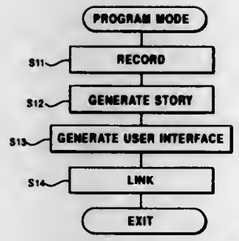
Continuation of Ser. No. 503,676, Jul. 18, 1995, Pat. No. 5,522,024, which is a continuation of Ser. No. 260,809, Jun. 16, 1994, which is a continuation of Ser. No. 676,608, Mar. 28, 1991. This application Mar. 4, 1996, Ser. No. 606,461

Claims priority, application Japan, Mar. 30, 1990, 2-81473

Int. Cl.[6] G06F *15/00; 9/00*

U.S. Cl. 395—334 **3 Claims**

1. A computer program product comprising:



PROGRAM MODE FLOWCHART

a computer usable medium having computer readable program code means embodied in said medium for creating a new application program from a plurality of existing application programs, said computer readable program code means comprising:

means for executing selected portions of said plurality of existing application programs;

means for recording, during said execution of said selected portions, a first data stream and a second data stream corresponding to a user's interaction with said plurality of existing application programs;

means for combining said first data stream and said second data stream into a single combined data stream using control commands for specifying the flow of execution for said combined data stream;

means for assigning a first graphical object to said combined data stream; and

means for executing, in response to selecting said first graphical object, said selected portions according to the specified flow of said combined data stream.

5,600,781

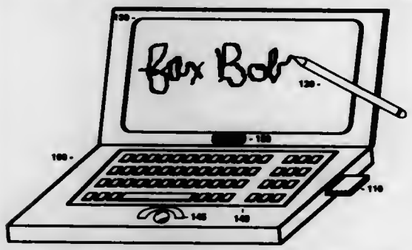
METHOD AND APPARATUS FOR CREATING A PORTABLE PERSONALIZED OPERATING ENVIRONMENT

Kenneth Root, and Thomas Willis, both of Portland, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 315,941, Sep. 30, 1994, abandoned. This application May 21, 1996, Ser. No. 651,660

Int. Cl.[6] G06F *3/14*

U.S. Cl. 395—326 **16 Claims**



1. A method of customizing a computer system for a specific computer user, said computer system having a processor, a memory and a receptacle for peripheral devices, said method comprising the steps of: defining a set of personalized user interface information that specifies how a particular user wishes to interact with computer systems; storing said set of personalized user interface information on a small portable memory device;

inserting said small portable memory device into said receptacle of said computer system;

informing at least one program executing on said computer system about said portable memory device inserted into said receptacle;

copying said set of personalized user interface information stored on said portable memory device into a local memory of said computer system using said said program executing on said computer system; and

automatically configuring said program executing on said computer system to use said personalized user interface information in said local memory of said computer system.

5,600,782

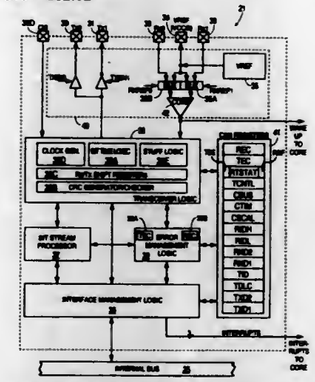
CAN INTERFACE WITH ENHANCED FAULT CONFINEMENT

Thomas W. S. Thomson, Santa Cruz, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 111,383, Aug. 24, 1993. This application Oct. 11, 1994, Ser. No. 321,351

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—182.02 **8 Claims**



1. A controller area network (CAN) interface unit comprising

a bit stream processor, the bit stream processor announcing when errors are received from a CAN bus;

error management logic coupled to the bit stream processor, the error management logic receiving errors announced by the bit stream processor, determining in which of a plurality of error states the CAN interface is operating and informing the bit stream processor of which of a plurality of states the CAN interface is operating, the states including

an error active state in which the CAN interface participates in bus communication and transmits a dominant error flag,

an error passive state in which the CAN interface participates in bus communication and transmits a recessive error flag, the error active state transitioning to the error passive state when an error count is greater than or equal to a first predetermined number, and

a busoff state in which the CAN interface does not participate in CAN bus activity, the error active state transferring control to the busoff state when a count is greater than or equal to a second predetermined number, the second predetermined number being greater than or equal to the first predetermined number, the busoff state transitioning to the error active state using a fault recovery method selected from between a first fault recovery method and a second fault recovery method, the first fault recovery method transitioning to the error active state after receiving a predetermined number of recessive bits by the CAN interface and the second fault recovery method transitioning to the error active state after receiving a predetermined number of good CAN frames, a good CAN frame including an acknowledge delimiter, an end of frame message and an intermission message.

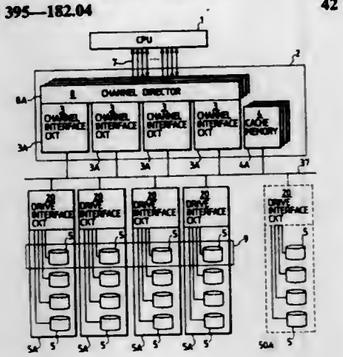
VOL 11 95 ISS 1 FE 4 1997 UMI

5,600,783

DISC ARRAY SYSTEM HAVING DISC STORAGE DEVICES DISPERSED ON PLURAL BOARDS AND ACCESSIBLE AT WITHDRAWAL OF PART OF THE BOARDS

Hitoshi Kakuta, Tokyo; Yoshifumi Takamoto, Fuchu, and Toyohiko Kagimasa, Sagamihara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 29, 1994, Ser. No. 350,080
Claims priority, application Japan, Nov. 30, 1993, 5-329810
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—182.04 42 Claims



1. A disc array system, comprising:

(a) a group of disc storage devices divided into a plurality of logical groups, each logical group comprising a plurality of disc storage devices for holding groups of error correction data, each error correction data group comprising a plurality of data and an error correction code for the plurality of data

(b) a plurality of local boards each for holding a number of disc storage devices within the group of disc storage devices;

(c) an array controller connected to the group of disc storage devices in such a manner that each local board can be disconnected from the array controller and can be connected to the array controller again thereafter, said array controller executing read requests and write requests provided by an upper device;

(c1) each write request being executed in such a manner that

(c11) an error correction code is generated which should belong to an error correction data group to which write data attached to said each write request belongs, and that (c12) the write data and the generated error correction code are written into plural disc storage devices within the group of disc storage devices as data belonging to one error correction data group;

(c2) each read request being executed in such a manner that

(c21) data requested by said each read request is read from at least one of the group of disc storage devices in case the one disc storage device is not faulty and that (c22) the requested data is recovered in case the one disc storage device is faulty, based upon one error correction code and plural other data which belong to one error correction data group to which said requested data belongs, and are held in other disc storage devices belonging to one logical group to which said one faulty disc storage device belongs;

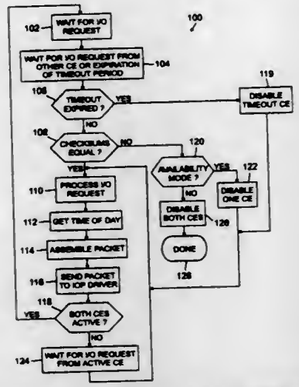
wherein said group of disc storage devices are held on said plurality of local boards in such a manner that different sub-groups of disc storage devices belonging to a same logical group are held on mutually different ones of said plurality of local boards.

5,600,784

FAULT RESILIENT/FAULT TOLERANT COMPUTING

Thomas D. Bissett, Northborough; Richard D. Florentino, Carlisle; Robert M. Glorioso, Stow; Diane T. McCauley, Hopkinton; James D. McCollum, Whitinsville, and Glenn A. Tremblay, Upton, all of Mass., assignors to Marathon Technologies Corporation, Stow, Mass.

Division of Ser. No. 159,783, Dec. 1, 1993, abandoned. This application Mar. 16, 1995, Ser. No. 405,193
Int. Cl.[6] G06F *11/00*; G01R *31/28*
U.S. Cl. 395—182.10 17 Claims



1. A method of synchronizing at least two computing elements in a computer system including the at least two computing elements and at least one controller, wherein each of the computing elements have clocks that operate asynchronously of the clocks of the other computing elements, said method comprising the steps of:

selecting one or more signals from sets of signals produced by each of the computing elements;

monitoring signals produced by the computing elements to detect a selected signal produced by one of the computing elements;

waiting for each other computing element to produce a selected signal after detecting a selected signal produced by one of the computing elements;

transmitting a time of day update from the at least one controller to each of the computing elements after receipt of selected signals from all of the computing elements; and

updating the clock of each computing element based on a time of day update received by the computing element.

5,600,785

COMPUTER SYSTEM WITH ERROR HANDLING BEFORE RESET

Mark R. Potter, Houston, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Filed Sep. 9, 1994, Ser. No. 303,404
Int. Cl.[6] G06F *11/34*
U.S. Cl. 395—182.21 6 Claims

1. A computer system that logs errors before a hardware reset, comprising:

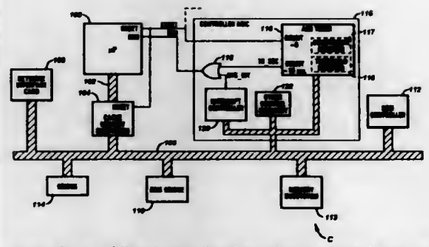
a bus with data, address, and control lines;

a microprocessor with a reset input and an interrupt input, said microprocessor coupled to said bus;

a disk controller coupled to said bus for providing data to and storing data from said microprocessor over said bus;

a bridge to an input/output bus, said bridge connected to said bus and to said input/output bus for communicating data between said bus and said input/output bus;

means for periodically executing a predetermined operation;



means for providing a reset signal to said reset input in response to said executing means failing to periodically execute said predetermined operation;

means for providing an interrupt signal to said interrupt input a predetermined period of time before said means for providing a reset signal provides said reset signal; and

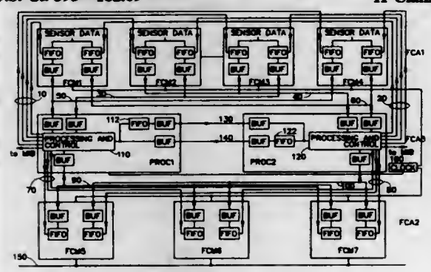
means for logging an error message in response to said means for providing an interrupt signal providing said interrupt signal.

5,600,786

FIFO FAIL-SAFE BUS

Stephen M. Baker, Roseville; Randall L. Dodson, New Hope, and Mark E. Wright, Minneapolis, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 99,790, Jul. 30, 1993, abandoned. This application Aug. 22, 1995, Ser. No. 517,668
Int. Cl.[6] G05B *9/02*; G06F *7/02*; H03M *13/00*
U.S. Cl. 395—182.09 11 Claims



1. A data processing system architecture comprising:

a plurality of data processors, each operative for deriving respective processor output data as a function of respective input data presented thereto;

a plurality of data bus means, where each one of said plurality of data bus means is coupled to only one of said plurality of data processors and each one of plurality of data processors is coupled to only one of said plurality of data bus means, each of said plurality of data bus means operative for presenting said respective input data to respective ones of said plurality of data processors;

a plurality of subsystems in which each subsystem is connected to each of the data processors, each subsystem including a set of memory device means, each one of said plurality of subsystems responsive to at least one selected input quantity, and operative for storing in each of said set of memory device means, associated with the same one of said plurality of subsystems, the same subsystem output data as a function of said at least one selected input quantity associated with the same one of said plurality of subsystems; and

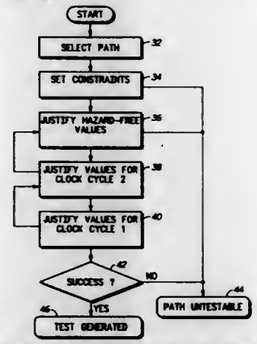
means for coupling each one of said plurality of data bus means to one of said set of memory device means of each of said subsystems, and in which each memory device means of each subsystem is coupled to only one of said plurality of data bus means, thereby permitting presenting said subsystem output data as processor means input data.

5,600,787

METHOD AND DATA PROCESSING SYSTEM FOR VERIFYING CIRCUIT TEST VECTORS

Wilburn C. Underwood, Austin; Haluk Konuk, Capitola; Walon Law, and Sungho Kang, both of Austin, all of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 31, 1994, Ser. No. 251,068
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—183.06 25 Claims



1. A method for verifying a test vector, the method comprising the steps of:

providing the test vector to a test verifier wherein the test vector is generated to test a specific circuit path within an electrical circuit, the testing of the specific circuit path giving electrical propagation time delay information for the specific circuit path, the test vector defining input values which logically affect the specific circuit path for a first test clock cycle and identifying input values which logically affect the specific circuit path for a second test clock cycle;

providing to the test verifier a circuit model which models the operation of the electrical circuit;

generating input values and output values for all circuit elements along the specific circuit path for both the first test clock cycle and the second test clock cycle by accessing the circuit model and the test vector; and

performing logical operations on the input and output values of the circuit elements along the specific circuit path to determine whether the test vector, as input to the test verifier, correctly tests the specific speed path.

5,600,788

DIGITAL TEST AND MAINTENANCE ARCHITECTURE

John D. Lofgren, and James A. Thorne, both of Orlando, Fla., assignors to Martin Marietta Corporation, Bethesda, Md.

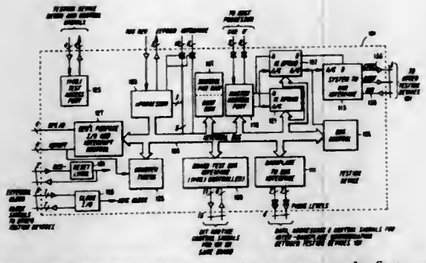
Filed Jan. 19, 1994, Ser. No. 182,835
Int. Cl.[6] G06F *11/26*
U.S. Cl. 395—183.07 26 Claims

1. A testing device comprising:

board test interface means for coupling to test points on a circuit board;

programmable processing means, coupled to the board test interface means, for controlling a test of the circuit board via the board test interface means;

first communications interface means, coupled to the programmable processing means, for multi-master coupling to a like first communications interface means located on another testing device,



wherein the programmable processing means uses the first communications interface means for communicating test commands and test results with said another testing device, and

wherein the testing device is fabricated as an integrated circuit.

5,600,789

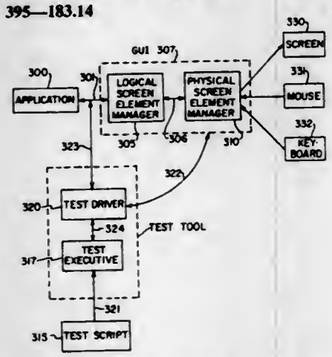
AUTOMATED GUI INTERFACE TESTING

Marsten H. Parker, Reading; Laurence R. Kepple, West Newton; Leah R. Sklar, Auburndale, all of Mass., and David C. Laroche, Hampton, N.H., assignors to Segue Software, Inc., Newton Centre, Mass.

Filed Nov. 19, 1992, Ser. No. 978,936

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—183.14 **2 Claims**



1. A method of testing an application program's use of a first Graphical User Interface (GUI) in a computer system comprising the steps of:

executing the application, the application generating display independent logical screen elements (LSE) within the first GUI in the computer system, said display independent LSEs being objects created by said application program within said GUI;

requesting an action against a named display independent LSE, said display independent LSE being named in a non-GUI specific manner;

resolving said non-GUI specific name of said display independent LSE into a GUI specific reference, wherein said resolving step comprises constructing a window tag for said named display independent LSE, said window tag uniquely identifying said display independent LSE in GUI specific terms, and wherein said constructing step comprises:

identifying a class of said named display independent LSE, said class being one of a set of classes defining characteristics of all display independent LSEs in said GUI;

extracting a default window tag from said class definition;

determining a tag part from a previous declaration of said named display independent LSE; and

combining said default window tag and said tag part into said window tag;

generating one or more GUI specific commands which accomplish said requested action; and

communicating said one or more GUI specific commands to said GUI.

5,600,790

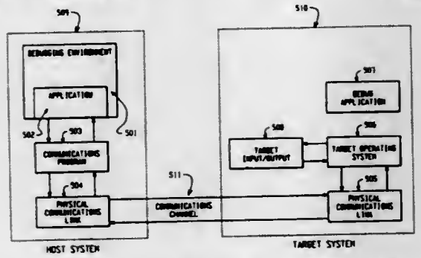
METHOD AND SYSTEM FOR LOADING AND CONFIRMING CORRECT OPERATION OF AN APPLICATION PROGRAM IN A TARGET SYSTEM

Michael A. Barnstijn; Mark E. Church; Barry W. Linkert, all of Kitchener, and Mihal Lazaridis, Waterloo, all of Canada, assignors to Research In Motion Limited, Waterloo, Canada

Filed Feb. 10, 1995, Ser. No. 386,528

Int. Cl.[6] G06F *9/455*

U.S. Cl. 395—183.14 **13 Claims**



1. A method of using a host system to test a trial application program that is intended to operate on a target system, said target system including target input/output devices, and wherein the trial application program includes operating system calls which cause an interaction with the target input/output devices, the method comprising the steps of:

(a) establishing a communications link between the host and target systems so that the trial application program operating system calls which cause an interaction with the target input/output devices can be communicated to the target system for execution;

(b) testing the trial application program by executing it on the host system, wherein during execution the trial application program generates operating system calls which must be executed on the target system in order to interact with the target input/output devices;

(c) translating, within the host system, the operating system calls generated by the trial application program into target input/output request signals;

(d) communicating the target input/output request signals over the communications link to the target system;

(e) receiving the target input/output request signals at the target system;

(f) translating, within the target system, the target input/output request signals into target operating system calls which correspond to the operating system calls generated by the trial application program; and

(g) executing, at the target system, the target operating system calls, thereby enabling an interaction with the target input/output devices while the trial application program is tested on said host system.

5,600,791

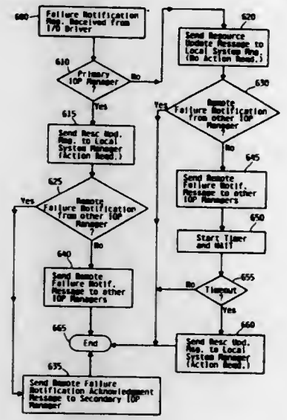
DISTRIBUTED DEVICE STATUS IN A CLUSTERED SYSTEM ENVIRONMENT

Brent A. Carlson; Frederic L. Huss; Nancy M. Schmucki, and Richard E. Zelenski, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 954,283, Sep. 30, 1992, abandoned. This application Jun. 20, 1995, Ser. No. 492,676

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—184.01 **18 Claims**



1. An apparatus for communicating error and status information, said apparatus comprising:

first, second, and third computer systems, said first, second, and third computer systems being interconnected via a shared bus;

first, second, and third system managers, said first system manager residing on said first computer system, said second system manager residing on said second computer system, and said third system manager residing on said third computer system;

a primary IOP manager and first and second secondary IOP managers, said primary IOP manager residing on said first computer system, said first secondary IOP manager residing on said second computer system, and said second secondary IOP manager residing on said third computer system;

a plurality of IOPs, each of said plurality of IOPs being capable of communicating said error and status information to said first, second, and third computer systems;

means for communicating said error and status information from a first IOP to said primary IOP manager, said first IOP being one of said plurality IOPs;

means for communicating said error and status information from said primary IOP manager to said first system manager;

means for communicating said error and status information from said primary IOP manager to said first secondary IOP manager and said second secondary IOP manager, said error and status information being communicated via said first IOP; and

means for communicating said error and status information from said first secondary IOP manager to said second system manager and means for communicating said error and status information from said second secondary IOP manager to said third system manager.

5,600,792

MICROPROCESSOR WITH PROTECTIVE DEVICE WHICH MAINTAINS A CLOCK SPEED OF THE CPU BELOW A THRESHOLD DURING PROGRAMMING OF EEPROM

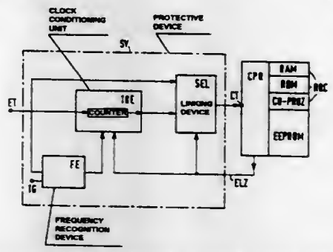
Wolfgang Pockrandt, Reichertshausen; Heinz Schuetzeneder, Munich, and Erwin Papelitzky, Pentenried, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Continuation of Ser. No. 125,551, Sep. 22, 1993, abandoned. This application Apr. 22, 1996, Ser. No. 636,907

Claims priority, application Germany, Sep. 22, 1992, 42 31 703.7

Int. Cl.[6] G06F *1/08*

U.S. Cl. 375—184.01 **20 Claims**



1. A microprocessor comprising: a central control unit;

an EEPROM-type memory connected to said central control unit; and

a protective device connected to said central control unit for assuring that a clock speed of said central control unit will not exceed a limit value at which reading of said memory is reliably assured, during a reading operation in said memory;

said protective device having a clock conditioning unit with a clock signal output and with a clock signal input for receiving an externally input microprocessor clock signal of the microprocessor, said protective device reducing the microprocessor clock by frequency division during a reading operation of said memory, so that a clock signal having a clock cycle being lengthened as compared with other operations is available during the reading operation for controlling said central control unit;

said protective device having a linking device with two clock signal inputs and one clock signal output, one of the two clock signal inputs of said linking device being connected to said clock signal input of the microprocessor for receiving the externally input microprocessor clock signal, another of the two clock signal inputs of said linking device being connected to the clock signal output of said clock conditioning unit, and the clock signal output of said linking device furnishing a clock signal for triggering said central control unit; and

said protective device having a device for frequency recognition being acted upon by the externally input microprocessor clock signal from said clock signal input of the microprocessor and a frequency limit value and being connected to said clock conditioning unit for effecting a reduction in the clock speed of the clock signal intended for said central control unit, the reduction being performed as a function of a relationship between the clock speed of a detected external microprocessor clock and the frequency limit value; and said linking device being triggered by said central control unit for causing said linking device to alternatingly supply said central control unit with the microprocessor clock applied to said clock signal input and a clock furnished by said clock conditioning unit, and said linking device being triggered for transmitting the clock furnished by said clock conditioning unit to said central control unit only during an EEPROM memory reading access.

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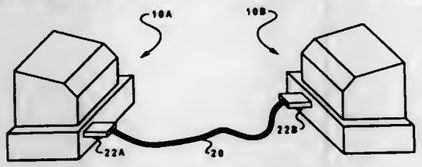
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5,600,793

METHOD AND SYSTEM OF BI-DIRECTIONAL PARALLEL PORT DATA TRANSFER BETWEEN DATA PROCESSING SYSTEMS

Joseph H. Nord, Lighthouse Point, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1994, Ser. No. 359,505
Int. Cl.[6] G06F *15/16;13/00*
U.S. Cl. 395—200.01 **9 Claims**



1. A method of bi-directional data transfer via an electrical connection coupled between a standard parallel port of a first data processing system and a standard parallel port of a second data processing system, said method comprising the steps of:

signaling said first data processing system that said second data processing system is ready to receive data;

transmitting a first packet of data to said second data processing system in conjunction with an indication that said first packet of data is valid to read;

reading said first packet of data utilizing said second data processing system;

transmitting an acknowledgment signal to said first data processing system indicating that said second data processing system has received said first packet of data;

in response to said acknowledgment signal, transmitting a subsequent packet of data to said second data processing system in conjunction with an indication that said first packet of data is no longer valid to read, wherein said subsequent packet of data and said indication that said first packet of data is no longer valid to read are output by said first data processing system in a single write operation; and

thereafter, transmitting to said second data processing system an indication that said subsequent packet of data is valid to read.

5,600,794

METHOD AND APPARATUS FOR MANAGING EXCHANGE OF METRICS IN A COMPUTER NETWORK BY EXCHANGING ONLY METRICS USED BY A NODE IN THE NETWORK

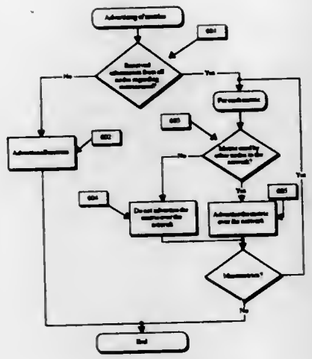
Ross Callon, Bedford, Mass., assignor to Bay Networks, Inc., Santa Clara, Calif.

Filed Aug. 4, 1995, Ser. No. 511,393
Int. Cl.[6] H01J *13/00*
U.S. Cl. 395—200.01 **20 Claims**

8. A method for minimizing network overhead in a network comprising the steps of:

a) a first node receiving from other nodes in said network utilization information identifying which of a plurality of metrics said other nodes require for selection of paths for transmission of information in said network; and

b) said first node transmitting over said network information only for those metrics which are utilized by other nodes in said network.

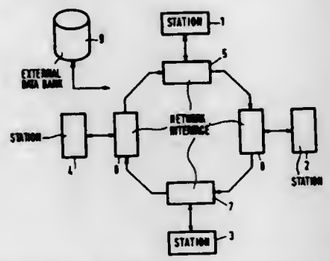


5,600,795

LOCAL NETWORK OPERATING IN ASYNCHRONOUS TRANSFER MODE (ATM) GENERATING CONTROL CELL CONTAINING INFORMATION ABOUT THE USER, ADDRESS OF THE STATION, AND USER-RELATED IDENTIFICATION

Yonggang Du, Aachen, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 29, 1994, Ser. No. 297,210
Int. Cl.[6] G06F *13/00;13/14*
U.S. Cl. 395—200.02 **16 Claims**



1. A local network operating in the asynchronous transfer mode (ATM), comprising;

a plurality of stations, said stations including means for transmitting user cells containing user-oriented information and control cells containing signalling information; and

a plurality of network interfaces, each including a coupling device and a control arrangement, said plurality of network interfaces for coupling said plurality of stations to sending and receiving lines,

wherein a control arrangement assigned to a transmitter station includes means for generating a control cell to be transmitted to a receiver station after a control cell containing a realisable request for a single (unicast) or a multiple (multicast) connection between a user of the transmitter station and a user of at least one receiver station has been received from the transmitter station, wherein the generated control cell contains in its information field information about the user, an address of the transmitter station and a user-related identification for a down-channel, and

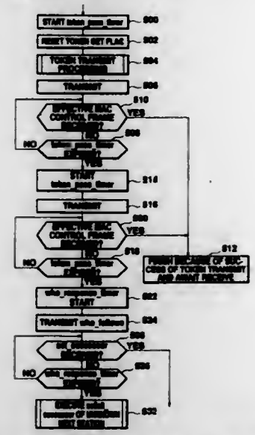
wherein a control arrangement assigned to a receiver station includes means for generating a control cell to be sent to the transmitter station after a control cell originating from the transmitter station and containing a realisable request for a connection from a user of the receiver station has been received, wherein the generated control cell contains in its information field a message about an address of the assigned receiver station and a user-related identification for an up-channel.

5,600,796

TOKEN RING FAULT RECOVERY SYSTEM FOR AUTOMATICALLY RESTORING NETWORK WHICH INCLUDES A TRANSMIT POSSIBLE AND RECEIVE IMPOSSIBLE TOKEN HOLDING STATION

Naoki Okamura, Nara; Noriyuki Takao, and Hidetoshi Takano, both of Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, and Sharp Kabushiki Kaisha, Osaka, both of Japan

Filed May 20, 1994, Ser. No. 247,207
Claims priority, application Japan, May 21, 1993, 5-120019
Int. Cl.[6] G06F *7/00;15/00*
U.S. Cl. 395—200.11 **2 Claims**



1. A communication network including a plurality of stations which constitute a logical ring to transmit and receive information, the logical ring being a single path and being established and maintained by a token passing process to pass the token, representing the right to transmit information, between the stations in the logical ring and a solicit process to solicit stations which are not in the logical ring, and the stations in the network including at least one particular station,

each of the stations as well as the particular station, comprising:

solicit means for carrying out the solicit process when holding a token;

solicit response means for transmitting a frame to respond to the solicit process carried out by any station in the network; and

token transmit means for transmitting the token to the station having transmitted a frame to respond to the solicit process, when holding the token;

each station except for the particular station further comprising:

first solicit repeat means for repeating the solicit process at most a predetermined number of times when no frame arrives from other stations in the network to respond to the solicit process, when holding the token;

idle state move means for considering that no other stations join in the logical ring when no frame to respond to the solicit process arrives until the solicit process is repeated for the predetermined number of times, and for moving to an idle state to await the arrival of a frame from any station in the network; and

return means for resuming a predetermined operation from the idle state by responding to an effective frame arriving from any station in the network;

the particular station further comprising:

second solicit repeat means for repeating the solicit process when no frame arrives from any station in the network in response to the solicit process executed by the particular station; and

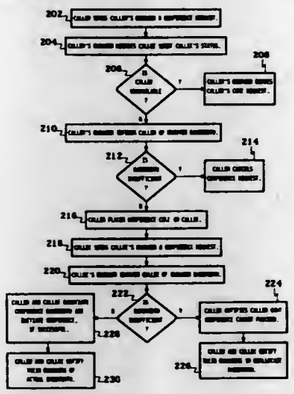
token producing means for producing the token when no other station joins in the logical ring.

5,600,797

SYSTEM FOR IDENTIFYING NEW CLIENT AND ALLOCATING BANDWIDTH THERETO BY MONITORING TRANSMISSION OF MESSAGE RECEIVED PERIODICALLY FROM CLIENT COMPUTERS INFORMING OF THEIR CURRENT STATUS

Robert A. Marshall, Portland, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 340,172, Nov. 15, 1994, which is a continuation-in-part of Ser. No. 157,694, Nov. 24, 1993, Pat. No. 5,506,954. This application Nov. 16, 1994, Ser. No. 340,634
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—200.11 **15 Claims**



1. A computer for a computer system comprising a management computer and one or more client computers interconnected over a computer network, wherein:

the computer is one of the management computer and a client computer;

the client computers can communicate over the computer network;

the management computer allocates bandwidth to the client computers for communication sessions over the computer network;

each client computer that is participating in an active communication session periodically transmits a message over the computer network to inform the management computer of current status of the active communication session; and

if the management computer receives a message from a client computer about a communication session of which the management computer was not previously aware, then the management computer allocates bandwidth for the communication session.

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5,600,798

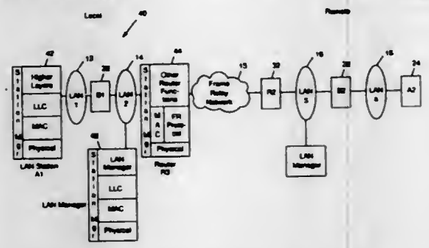
SYSTEM AND METHOD FOR CONTROLLING LAN DATA FLOW CONTROL THROUGH A FRAME RELAY NETWORK BY END POINT STATION TRANSMITTING NOTIFICATION TO LAN STATIONS BASED ON CONGESTION NOTIFICATION FROM THE FRAME RELAY NETWORK

Rao J. Cherukuri, Chapel Hill; Fuyung Lai, Raleigh, and Kian-Bon K. Sy, Cary, all of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 26, 1993, Ser. No. 143,003

Int. Cl.[6] H04L *12/46*

U.S. Cl. 395—200.13 **18 Claims**



1. For use with a frame relay network having an end point internetworking unit (IWU) connected thereto and one or more local area networks (LANs), each of said LANs conforming to one of a set of LAN protocols, all of said LAN protocols being different from the frame relay protocol, each LAN having one or more LAN stations connected thereto, said LANs being connected to said end point IWU so that said LAN stations may transmit data to said end point IWU for transmission over said frame relay network, said frame relay network providing a flow control mechanism for controlling the flow of data from said end point IWUs through said frame relay network, said frame relay network flow control mechanism comprising means for sending a frame relay network congestion notification identifying a congested portion of the frame relay network to said end point IWUs sending data to said congested portion, a system for controlling the flow of data from said LAN stations to said end point IWU, said system comprising:

a frame relay protocol element, connected to said end point IWU, for receiving from said frame relay network a frame relay network congestion notification that said frame relay network is congested and for processing said frame relay network congestion notification to determine which portion of said frame relay network is congested;

an end point IWU station manager connected to said frame relay protocol element for transmitting a LAN notification identifying said congested portion in a format conforming to the LAN protocol, based upon said frame relay network congestion notification, to said LAN stations for said LAN stations to slow the flow of data to said end point IWU destined for said congested portion;

means, connected to said end point IWU station manager and said LAN stations, for receiving said LAN notification and

a plurality of LAN station managers, each LAN station manager being connected to a corresponding LAN station, for receiving said LAN notification, for processing said LAN notification identifying said congested portion of said network, for determining whether any data is to be sent from said LAN station to said congested portion of said network and, if so, for slowing the flow of data destined for said congested portion to said end point IWU from said LAN stations.

5,600,799

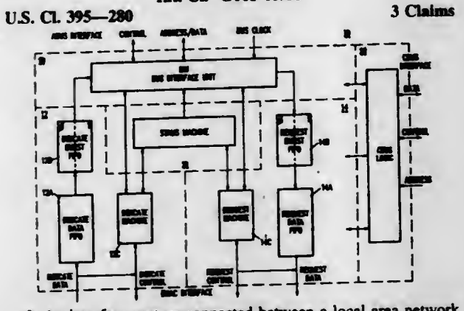
STATUS BATCHING AND FILTERING IN A MEDIA ACCESS CONTROL/HOST SYSTEM INTERFACE UNIT

Desmond W. Young, Campbell, Calif., and James R. Hamstra, Shorewood, Minn., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 334,857, Nov. 4, 1994, abandoned, which is a continuation of Ser. No. 144,467, Oct. 27, 1993, abandoned, which is a division of Ser. No. 989,942, Dec. 10, 1992, abandoned, which is a continuation of Ser. No. 516,245, Apr. 27, 1990, abandoned. This application Oct. 5, 1995, Ser. No. 539,422

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—280 **3 Claims**



1. An interface system connected between a local area network communications medium and a network station for transferring information frames between the communications medium and a memory system associated with the network station, breakpoints being provided between information frames, the interface system comprising:

a bus interface unit adapted for connection to the network station for transferring information frames between the interface system and the memory system;

an indicate mechanism connected to the bus interface unit for transferring information frames received by the interface system from the communications medium to the memory system via the bus interface unit, the indicate mechanism including a burst transfer mechanism for transferring a burst of information frames to the system memory in a single transfer operation, wherein said burst consists of a plurality of individual information frames, the indicate mechanism further including a filter mechanism for, in the event that said burst consists of a plurality of identical information frames, causing the indicate mechanism to transfer only one of said identical information frames to the system memory; and

an interrupt mechanism connected to the indicate mechanism, the interrupt mechanism providing a status interrupt to the network station only at breakpoints for new information frames.

5,600,800

PERSONAL COMPUTER SYSTEM HAVING A DOCKING BAY AND A HAND-HELD PORTABLE COMPUTER ADAPTED TO DOCK IN THE DOCKING BAY BY A FULL-SERVICE PARALLEL BUS

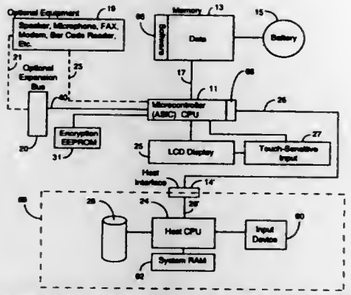
Dan Kikinis, Saratoga; Pascal Dornier, Sunnyvale, and William J. Seiler, Scotts Valley, all of Calif., assignors to Elonex I.P. Holdings, Ltd., London, England

Continuation-in-part of Ser. No. 144,231, Oct. 28, 1993, and Ser. No. 159,078, Nov. 29, 1993, Pat. No. 5,539,616, which is a continuation of Ser. No. 97,946, Jul. 26, 1993, Pat. No. 5,278,730, which is a continuation of Ser. No. 905,480, Jun. 29, 1992, abandoned. This application Jul. 19, 1994, Ser. No. 277,158

Int. Cl.[6] G06F *13/00;19/00;* **H04M** *11/00*

U.S. Cl. 395—281 **17 Claims**

1. A personal digital assistant system, comprising:



a personal digital assistant module having an enclosure, a local CPU within the enclosure for performing digital operations, a memory connected to the local CPU by a memory bus, a power supply coupled to power-using elements, a display on a surface of the enclosure, input apparatus connected to the local CPU for providing commands and data, and a host interface system including a host interface parallel bus connected to the local CPU and to a first portion of a host interface connector at a surface of the enclosure, the host interface bus including address lines, data lines, and control signal lines, the control signal lines including read/write control signals and at least one memory control signal; and

a modular computer having a plurality of enclosed module bays configured in a common plane and opening to at least one edge of the modular computer, the modular computer having an internal bus compatible in structure and protocol with the host interface bus, with at least one module bay adapted with a bus connector matable to the host interface connector to dock the personal digital assistant module and establish digital communication between the personal digital assistant module over the host interface bus.

5,600,801

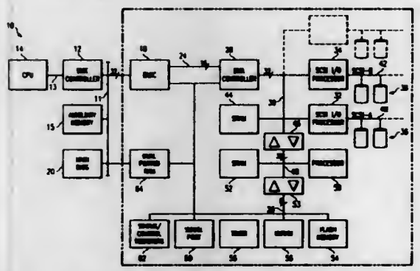
MULTIPLE FUNCTION INTERFACE DEVICE FOR OPTION CARD

Terry J. Parks, Round Rock, and Craig S. Jones, Austin, both of Tex., assignors to Dell USA, L.P., Austin, Tex.

Filed Jul. 15, 1993, Ser. No. 92,044

Int. Cl.[6] G06F *6/00*

U.S. Cl. 395—282 **32 Claims**



16. A method of initializing a computer system having an expansion bus, a BIOS coupled with said expansion bus and at least one option card inserted in said expansion bus, comprising the steps of:

upon powering up said computer system, loading an expansion BIOS stored on an option card inserted into said expansion bus into a dual ported RAM having a first port coupled to said expansion bus and a second port coupled to said option card;

said computer system searching for said expansion BIOS and executing a first initialization sequence contained in said expansion BIOS stored in said dual ported RAM upon detecting said expansion BIOS.

5,600,802

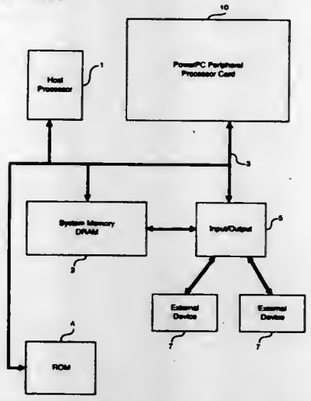
METHODS AND APPARATUS FOR TRANSLATING INCOMPATIBLE BUS TRANSACTIONS

Farid A. Yazdy, San Mateo, and Michael J. Dhuey, Cupertino, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Mar. 14, 1994, Ser. No. 212,457

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—282 **2 Claims**



1. A method of operating a computer system having a first processor and a processor direct bus whereby said first processor is replaced with a second processor, comprising the steps of:

coupling said second processor to said processor direct bus;

resetting said first processor;

generating, and applying via said processor direct bus to said first processor, a shutdown signal sequence to shut down said first processor and meanwhile asserting a reset signal to keep said first processor in a reset state;

de-asserting said reset signal; and

granting control of said computer system to said second processor;

wherein the step of generating comprises applying the shutdown signal sequence to a JTAG test port of the first processor.

5,600,803

DATA TRANSFER SYSTEM AND METHOD USING DATA BUS HAVING BI-DIRECTIONAL SERIAL DATA LINE, CLOCK LINE AND BI-DIRECTIONAL CONTROL LINE

Hiroyuki Hitsuka, and Takuya Nishimura, both of Katano, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 13, 1994, Ser. No. 242,441

Claims priority, application Japan, May 14, 1993, 5-112860

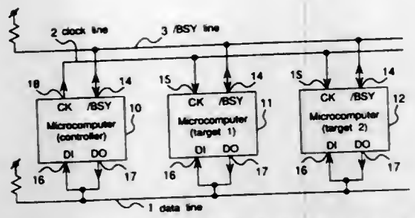
Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—287 **11 Claims**

1. A data transfer method for serially sending data frames between one controller and one or more targets for which the order of sending data is predetermined, comprising the steps of:

connecting said one controller and said one or more targets with a bidirectional data line for serially sending data constituting at least one data frame in a transfer unit, a clock line for intermittently supplying unit clocks required for sending one transfer unit of data at a predetermined output timing from said controller to said one or more targets, and a bidirectional control line;

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said controller sending a data frame or null frame through said bidirectional data line in synchronization with said unit clocks after beginning a LOW level output to said control line when said control line is HIGH;

each target having a transmission request of a data frame beginning a LOW level output to said control line while said control line is held LOW by said controller;

said controller outputting said unit clocks after resuming a LOW level output to said control line if said control line remains LOW even though said controller stops a LOW output to said control line at an output timing of said unit clock after finishing transmission of the data frame or null frame; and

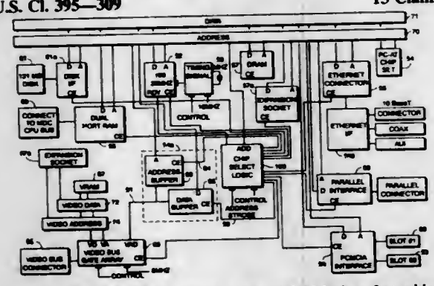
said each target, outputting a LOW level to said control line, beginning transmission of a data frame in synchronization with said unit clock after completion of transmission of the data frame or null frame by said controller and all targets having a priority in the sending order which is higher than that of the pertinent target, and stopping a LOW output to said control line by the next output timing of a unit clock after completing transmission of the data frame.

5,600,804

SHARED RAM ACCESS ARRANGEMENT

Tony K. Ip, Trabuco Canyon, Calif., assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 23, 1995, Ser. No. 409,035
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—309 **13 Claims**



1. An apparatus for accessing a shared RAM via a fast address bus and a fast data bus, both of which interface to a slower address/data bus to which the shared RAM is connected, said apparatus comprising:

an address buffer connected between the address bus and the address/data bus, said address buffer for selectably buffering address information between the address bus and the address/data bus under control of an address buffer selection signal;

a data buffer connected between the data bus and the address/data bus, said data buffer for selectably buffering data information between the data bus and the address/data bus under control of a data buffer selection signal;

a microprocessor which is connected to the address bus and to the data bus, and which outputs address information onto the address bus in order to access the shared RAM, the address information corresponding to addresses of the shared RAM, and said microprocessor being responsive to a not-ready signal by inserting wait states;

a gate array connected to the address/data bus, said gate array controlling access to the shared RAM; and

a logic array connected to the address bus to receive the address information output by said microprocessor from the address bus, said logic array being responsive to address information on the address bus which corresponds to an address of the shared RAM by activating the address buffer selection signal so as to cause said address buffer to buffer address information from the address bus onto the address/data bus, and thereafter by deactivating the address buffer selection signal and activating the data buffer selection signal so as to cause said data buffer to buffer data information from or to the address/data bus,

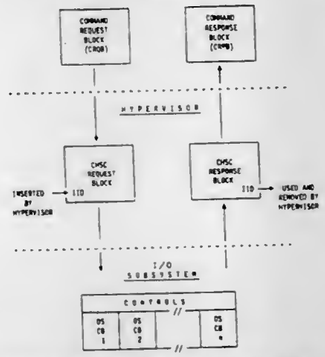
wherein said logic array activates the not-ready signal when activating the address buffer selection signal so as to cause said microprocessor to insert wait states, and deactivates the not-ready signal after the data buffer selection signal has been activated for at least one microprocessor clock cycle.

5,600,805

PASS-THROUGH FOR I/O CHANNEL SUBSYSTEM CALL INSTRUCTIONS FOR ACCESSING SHARED RESOURCES IN A COMPUTER SYSTEM HAVING A PLURALITY OF OPERATING SYSTEMS

Kenneth J. Fredericks; Robert E. Galbraith, both of Poughkeepsie; Richard R. Guyette, LaGrangeville; Marten J. Halma, Poughquag; Roger E. Hough, Highland; Suzanne M. John; James C. Mazurowski, both of Poughkeepsie; Kenneth J. Oakes, Wappingers Falls, and Leslie W. Wyman, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 15, 1992, Ser. No. 898,875
Int. Cl.[6] G06F *9/00*
U.S. Cl. 395—825 **20 Claims**



1. A method of controlling system hardware operations for a plurality of I/O subsystem call instructions issued by any of a plurality of operating systems (OSs), including control programs, executing on a computer electronic complex (CEC) in which the plurality of OSs operate in different logical partitions of resources of the CEC, comprising the steps of:

executing instructions on a central processor (CPU) of the CEC for any of the OSs, including different types of I/O subsystem call (CHSC) instructions for communicating different types of requests by OSs to the I/O subsystem for requesting different types of I/O subsystem data and operations, including a request for I/O configuration data;

sharing by the OSs of I/O resources of the I/O subsystem;

storing a pass-thru CHSC control mask (CCAM) in system storage having fields associated with different types of CHSC instructions;

accessing the CCAM during CPU execution of any type of CHSC instruction, and accessing a field in the CCAM associated with a type of CHSC instruction being currently executed by the CPU to indicate whether the CPU is to execute the CHSC instruction in a pass-thru mode or not; and

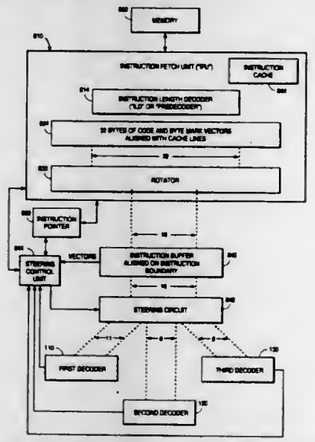
if in pass-thru mode, signalling by the CPU to the I/O subsystem to continue execution of the CHSC instruction by obtaining I/O data and performing operations indicated for the CHSC instruction, including transferring by the I/O subsystem to a storage area available to a requesting OS of requested I/O data associated only with the requesting OS, and filtering out non-meaningful data of the requested type associated with other OSs in the CEC.

5,600,806

METHOD AND APPARATUS FOR ALIGNING AN INSTRUCTION BOUNDARY IN VARIABLE LENGTH MACROINSTRUCTIONS WITH AN INSTRUCTION BUFFER

Gary L. Brown, Aloha, and Donald D. Parker, Portland, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Mar. 1, 1994, Ser. No. 204,862
Int. Cl.[6] G06F *12/04*
U.S. Cl. 395—380 **7 Claims**



4. An aligning and rotating method for aligning and rotating instruction code having multiple variable length macroinstructions included therein to an instruction buffer that steers multiple macroinstructions simultaneously to a decoder, said aligning and rotating method comprising the steps of:

a) storing a first block of instruction code in the instruction buffer so that a first buffer byte is aligned with a first macroinstruction within the first block;

b) scanning the first block beginning with the last buffer byte in a direction from back to front to determine a last byte a the last complete instruction within said instruction buffer;

c) rotating a next block of instruction code aligned with said last byte;

d) supplying all complete macroinstructions in the first block from the instruction buffer to the decoder; and

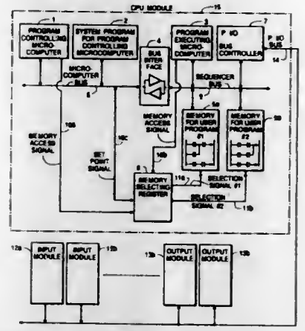
e) subsequent to said step d), storing the next block in said instruction buffer, and repeating steps b) through d).

5,600,807

PROGRAMMABLE CONTROLLER CAPABLE OF UPDATING A USER PROGRAM DURING OPERATION BY SWITCHING BETWEEN USER PROGRAM MEMORIES

Atsushi Itoh, and Tsutomu Sunaga, both of Hunabashishi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 672,123, Mar. 19, 1991, abandoned. This application Apr. 22, 1994, Ser. No. 231,642
Claims priority, application Japan, Mar. 19, 1990, 2-66792
Int. Cl.[6] G06F *9/445*
U.S. Cl. 395—421.01 **16 Claims**



1. A programmable controller comprising:

a sequence processor for executing a user program stored in a memory;

a control processor for updating a user program stored in a memory;

a first memory for storing a first user program for accessing at an address of the first memory;

a second memory for storing a second user program for accessing at an address of said second memory identical to said address of said first memory;

bus means coupling said sequence processor and said control processor to said first and second memories; and

a selector connected to said first and second memories and responsive to a mode control signal for enabling a selected one of said first and second memories to be accessed at said memory address via said bus means by said sequence processor or said control processor, said selector responding to a change in the mode control signal by enabling the other one of said first and second memories to be accessed at said memory address via said bus means by said sequence processor or said control processor without interrupting the sequence of processing.

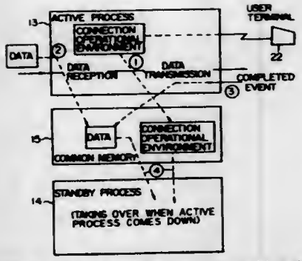
5,600,808

PROCESSING METHOD BY WHICH CONTINUOUS OPERATION OF COMMUNICATION CONTROL PROGRAM IS OBTAINED

Masayuki Kasukawa, Numazu, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 151,772, Nov. 15, 1993, abandoned, which is a continuation of Ser. No. 554,362, Jul. 19, 1990, abandoned. This application Jun. 9, 1994, Ser. No. 257,575
Claims priority, application Japan, Jul. 20, 1989, 1-188273
Int. Cl.[6] G06F *11/16*
U.S. Cl. 395—672 **8 Claims**

1. A processing method for continuous operation of a communication control program in a computer system, said computer system having an active process, a corresponding standby process and a common memory being accessed by each of said active process and said corresponding standby process, said processing method comprising:



(a) storing in said common memory, by said active process, operational environment information of each logical connection between at least one application program and user terminals, said communication control program controlling logical access between said user terminals and said at least one application program and being controlled alternatively by said active process and said corresponding standby process using said common memory;

(b) setting an under processing flag in said common memory by said active process, as an indication that an event is occurring which will prevent said corresponding standby process from continuing communication by a corresponding logical connection;

(c) clearing, by said active process, said under processing flag for said corresponding logical connection when said event is completed;

(d) reading, by said corresponding standby process, said common memory to obtain said operational environment information stored by said active process in step (a) for each logical connection; and

(e) warning a corresponding user terminal that said event has occurred with regard to said corresponding logical connection for each under processing flag set in said common memory, only when operation of said communication control program is continued by said corresponding standby process.

5,600,809

APPARATUS FOR SEQUENTIALLY READING MICROCODE WORDS WIDER THAN AN EXTERNAL BUS WIDTH TO THE OUTSIDE IN SEGMENTS AS WIDE AS THE EXTERNAL BUS

Norio Masui, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 29, 1994, Ser. No. 267,341

Claims priority, application Japan, Jun. 30, 1993, 5-160944

Int. Cl.[6] G06F *9/30*

U.S. Cl. 395—378 **4 Claims**

1. A semiconductor apparatus for data processing, comprising:

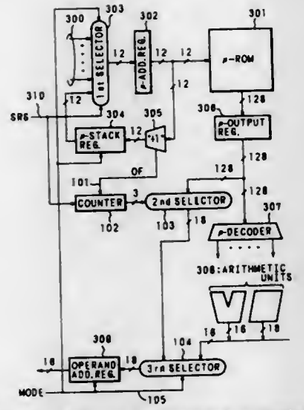
a read only memory (**301**) which stores a plurality of control codes executing internal controls;

an address register (**302**) which holds an address specifying a control code to be read next from said read only memory (**301**);

an incrementer (**305**) which increments and outputs the output of said address register (**302**) and which generates an overflow signal (OF) in case of overflowing;

a register (**304**) which always takes in and outputs values outputted from said incrementer (**305**) when a predetermined signal is an effective value, and which continues the output state having been maintained when said predetermined signals is an ineffective value;

a first selector (**303**) which outputs a value held by said register (**304**) as an address to be held by said address register (**302**) when said predetermined signal is an effective value, and which selects and outputs an address to be held by said address register (**302**) according to a predetermined sequence when said predetermined signal is an ineffective value;



arithmetic units (**308**) which executes data processing according to a control code read out from said read only memory (**301**);

a counter (**102**) which counts the number of the cases where said incrementer (**305**) generates the overflow signal (OF);

a second selector (**103**), in which a control code outputted from said read only memory (**301**) is an input data and each part obtained by dividing the input data into plural is an output data, which selects and outputs any part of the input data predetermined responsive to a count value of said counter (**102**);

a third selector (**104**) which selects and outputs respectively the output of said second selector (**103**) when said predetermined signal is an effective value, and the data of the operation result done by said arithmetic units (**308**) when said predetermined signal is an ineffective value; and

outputting means (**309**) for outputting the output of said third selector (**104**) to the outside.

5,600,810

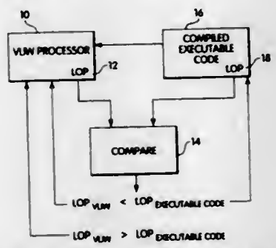
SCALEABLE VERY LONG INSTRUCTION WORD PROCESSOR WITH PARALLELISM MATCHING

Takahide Ohkami, Newton, Mass., assignor to Mitsubishi Electric Information Technology Center America, Inc., Cambridge, Mass.

Filed Dec. 9, 1994, Ser. No. 352,927

Int. Cl.[6] G06F *9/45*

U.S. Cl. 395—567 **11 Claims**



1. Apparatus for increasing the efficiency of a VLIW processor having functional units for the parallel processing of VLIW instructions embedded in compiled executable code, comprising:

means for establishing the level of parallelism of said processor;

means for establishing the level of parallelism of said executable code;

means when the level of parallelism of said processor exceeds that of said executable code for inactivating that number of said functional units which brings the level of parallelism of said processor to match that of said executable code; and,

means when the level of parallelism of said processor is less than that of said executable code for sequentially reading out portions of said executable code processable by the existing functional units of said processor whereby the level of parallelism of said processor and said executable code are matched.

5,600,811

VECTOR MOVE INSTRUCTION IN A VECTOR DATA PROCESSING SYSTEM AND METHOD THEREFOR

Jason Spielman; Yee-Wei Huang, both of Austin; Michael G. Gallup, deceased, late of Austin; Robert W. Seaton, Jr., and L. Rodney Goke, both of Austin, all of Tex., assignors to Motorola Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 40,779, Mar. 31, 1993. This application Aug. 3, 1995, Ser. No. 510,895

Int. Cl.[6] G06F *15/16*

U.S. Cl. 395—379 **18 Claims**

TABLE 2.31 VPCR BIT DEFINITIONS

BIT POSITION	BIT	DEFINITION	STATE	DESCRIPTION
t0	VX[t0] (VCR 105)	VECTOR EXTENSION BIT		USED TO EXTENDED VECTOR ARITHMETIC OPERATIONS.
2	VV (106)	VECTOR OVERFLOW BIT	0	NO OVERFLOW OCCURRED.
			1	THE PREVIOUS ARITHMETIC OPERATION GENERATED AND OVERFLOW
3	VD (108)	VECTOR DIRECTION BIT	0	IF AN OVERFLOW OCCURRED, THE OVERFLOW WAS IN THE NEGATIVE DIRECTION.
			1	IF AN OVERFLOW OCCURRED, THE OVERFLOW WAS IN THE POSITIVE DIRECTION.
4	VT (110)	VECTOR CONDITIONAL TRUE BIT	0	SHELF INACTIVE.
			1	SHELF ACTIVE.
5	VH (112)	VECTOR CONDITIONAL HISTORY BIT	0	INDICATES THAT THIS PROCESSING ELEMENT HAS NOT RUN A CONDITIONAL STATEMENT SINCE THE LAST VSHELF INSTRUCTION WAS EXECUTED.
			1	INDICATES THAT THIS PROCESSING ELEMENT HAS RUN A CONDITIONAL STATEMENT SINCE THE LAST VSHELF INSTRUCTION WAS EXECUTED.
6	VID (114)	VECTOR INPUT DATA VALID BIT	0	CORRESPONDING LOCATION IN INPUT DATA REGISTER (IDR) IS NOT VALID.
			1	CORRESPONDING LOCATION IN INPUT DATA REGISTER (IDR) IS VALID.

1. A method for executing an instruction in a data processor, comprising the steps of:

storing a first vector value in a vector register;

storing a digital data value in a processing element;

storing an enable value in a first storage circuit, the enable value corresponding to the processing element, the enable value selectively enabling the processing element to participate in execution of the instruction;

storing a history value in a second storage circuit, the history value corresponding to the processing element, the history value being used to selectively modify the enable value;

receiving the instruction at an input means;

decoding the first instruction to provide a first plurality of control values using an instruction decode means, the instruction decode means being coupled to the input means for receiving the instruction;

negating at least one of a plurality of bits of the first vector value stored in the vector register to provide a negated vector value in response to a first portion of the plurality of control values; and

storing a preselected one of a plurality of bits of the negated vector value in the second storage circuit as the history value in response to a second portion of the plurality of control values.

5,600,812

VARIABLE-LENGTH-CODE DECODERS STORING DECODING RESULTS AND CORRESPONDING CODE-BIT-LENGTH INFORMATION IN MEMORY

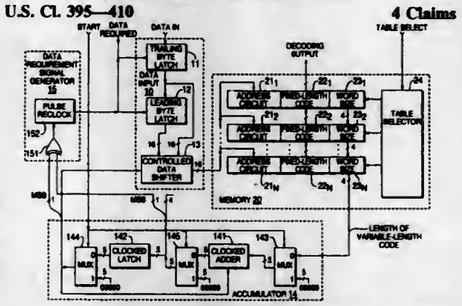
Heon-chul Park, Kyungki-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed May 3, 1995, Ser. No. 434,006

Claims priority, application Rep. of Korea, Jun. 30, 1994, 94-15677

Int. Cl.[6] G06F *9/26;9/34;12/00;12/02*

U.S. Cl. 395—410 **4 Claims**



1. A decoder for variable-length coding composed of concatenated variable-length code words, at least some of which said code words are composed of pointer and target subcodes, said decoder comprising:

a controlled data shifter receptive of unshifted said variable-length coding and responsive to a shift indication supplied thereto for shifting a selected portion of said variable-length coding to be positioned within an output window as wide as the longest variable-length code word, said shift indication being a binary number indicative of a number of bit places of desired shift for the selected portion of said variable-length coding to be positioned within said output window of said controlled data shifter;

an accumulator for accumulating code-word bit-length indications to generate said shift indication;

a first memory having a plurality of addressable storage locations a selected one of which is accessed for reading during first times responsive to said selected portion of said variable-length coding as positioned within said output window of said controlled data shifter, storing at each of its addressable storage locations a decoding result for a first decoding table, also storing at each of its addressable storage locations a binary number descriptive of the code bit-length of a variable-length code word as would give rise to the decoding result stored at that addressable storage location, and supplying from each one of the addressable storage locations in said first memory successively addressed during said first times the decoding result and the binary number descriptive of the code-word bit-length which are stored at that addressable storage location, said first memory having address lines for accessing its addressable storage locations and having first memory addressing circuitry that responds to said selected portion of said variable-length coding as positioned within said output window of said controlled data shifter to drive said address lines of said first memory;

means for supplying the code-word bit-length read from said first memory during said first times to said accumulator for accumulation;

a bin comparator included within said first memory addressing circuitry and connected to respond to ones of the leadmost bits of the selected portion of said variable-length coding positioned within said output window of said controlled data shifter, which said leadmost bits can describe a pointer subcode of a code word, for supplying from respective output connections of said bin comparator a respective bin response to each pointer subcode and a further bin response to the lack of a pointer subcode, the respective output connections of said

bin comparator connecting to respective ones of a first group of some but not all of said address lines of said first memory;

an address decoder for decoding said target subcode, said address decoder being included within said first memory addressing circuitry and having respective output connections to respective ones of a second group of said address lines of said first memory, said second group containing those of said address lines of said first memory not contained in said first group of them; and

a multiplexer included within said first memory addressing circuitry, said multiplexer being responsive to the bin responses of said bin comparator for selecting said target subcode for application to said address decoder, said multiplexer selecting said target subcode at least in part from the selected portion of said variable-length coding positioned within said output window of said controlled data shifter.

5,600,813

METHOD OF AND CIRCUIT FOR GENERATING ZIGZAG ADDRESSES

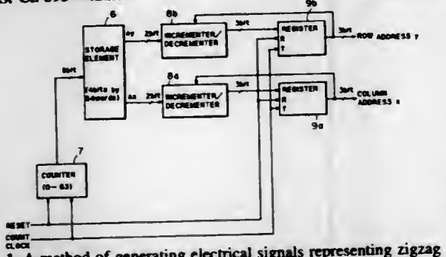
Shinichi Nakagawa; Kazuya Ishihara, and Satoshi Kumaki, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 9, 1993, Ser. No. 15,374

Claims priority, application Japan, Apr. 3, 1992, 4-081909

Int. Cl.[6] G06F *12/00*

U.S. Cl. 395—421.07 **29 Claims**



1. A method of generating electrical signals representing zigzag addresses for scanning memory addresses being arranged in the form of a matrix n rows and n columns assuming that n represents a natural number of at least two to be continuous between the last columns of first rows and first columns of last rows in adjacent pairs of rows as well as between respective rows in a zigzag manner along the first column of the first rows, the second column of the first row, the second column of the second row, the first column of the third row, . . . , the n-th column of the n-th row thereby generating electrical signals representing addresses to be obtained, said method comprising the steps of:

(a) zeroing all electrical signals representing row addresses and column addresses for specifying rows and columns being provided with said addresses and prescribing initial values of said memory addresses thereby setting initial states;

(b) successively reading a plurality of electrical signals representing differential data having information as to row and column differentials from storage means storing said differential data;

(c) obtaining electrical signals representing said row and column differentials from said electrical signals representing said differential data;

(d) adding said electrical signals representing said row and column differentials to respective one of electrical signals representing a row address of said row addresses and electrical signals representing a column address of said column addresses in one stage thereby obtaining said electrical signals representing said row address and said column address in a next state following said one stage; and

(e) successively obtaining electrical signals representing said memory addresses in said next stage from said electrical signals representing said row address and said column address in said next stage.

5,600,814

DATA PROCESSING UNIT FOR TRANSFERRING DATA BETWEEN DEVICES SUPPORTING DIFFERENT WORD LENGTH

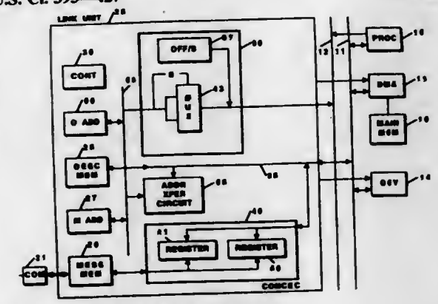
Richard A. Gahan, County Galway, and Eugene O'Neill, Galway, both of Ireland, assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 130,327, Oct. 1, 1993, abandoned. This application Apr. 26, 1995, Ser. No. 421,509

Claims priority, application Ireland, Nov. 12, 1992, 922813

Int. Cl.[6] G06F *13/10*

U.S. Cl. 395—427 **1 Claim**



1. A data processing system comprising:

a data processing unit;

a system data bus coupled to the data processing unit; said system data bus having a width being a longword which is a multiple of a shortword length;

a system address bus coupled to said data processing unit:

said data processing unit comprising:

a shortword memory means comprising a first storage location for storing descriptor shortwords and a second storage location for storing message shortwords;

means for passing shortwords between the first storage location of the shortword memory means and the system data bus individually without concatenating;

means for concatenating and deconcatenating shortwords passing between the second storage location of the shortword memory means and the system data bus to match the longword length and the shortword length, respectively;

internal address storage means, coupled to an internal address bus, including a first and second registers for storing addresses of shortwords in the first and second storage locations of said shortword memory means, respectively;

internal address processing means for passing addresses therefrom to said system address bus, the internal address processing means comprising:

a multiplexer with its two data inputs coupled to said internal address bus and fed from the internal address storage means with said shortword addresses, said multiplexer is controlled by a bit from the internal address storage means.

5,600,815

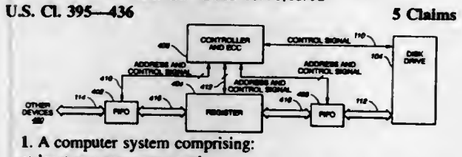
HIGH DENSITY BUFFER MEMORY ARCHITECTURE

Chong M. Lin, Sunnyvale, and Raymond J. Werner, San Jose, both of Calif., assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 357,166, Dec. 13, 1994, which is a continuation of Ser. No. 867,637, Apr. 13, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 469,928

Int. Cl.[6] G06F *13/16;13/12*

U.S. Cl. 395—436 **5 Claims**



1. A computer system comprising:

at least one processor; and

a memory system, coupled to said at least one processor, said memory system comprising:

a) a first bus means for transferring data;

b) a first memory stage means comprising a first first-in first-out (FIFO) buffer, coupled to said first bus means and to a second bus means, for storing data received from said second bus means in a first-in first-out manner, for reading out said stored data in a first-in first-out manner, and for providing said read out data to said first bus means;

c) a second memory stage means, coupled to said second bus means and to a third bus means, for storing data received from said third bus means, for clocking out said stored data in accordance with a line control data, and for supplying said clocked out data to said second bus means, wherein said second memory stage comprises a plurality of rows of shift registers, data being stored in and retrieved from said second memory stage means on a row basis such that each memory store operation operates to store data in a row of said shift registers, and each memory read operation operates to retrieve data from a row of said shift registers, each of said shift registers having a shift clock input multiplexor to select between a refresh shift clock signal and a read or write shift clock signal, wherein said refresh shift clock signal is a lower frequency than said read or write shift clock frequency;

d) a third memory stage means comprising a second FIFO buffer, coupled to said third bus means and to a fourth bus means, for storing data received from said fourth bus means in a first-in first-out manner, for reading out said stored data in a first-in first-out manner, and for supplying said read out data to said third bus means; and

e) a controller means, coupled to said first memory stage means and to said second memory stage means and to said third memory stage means, for controlling data storage and data read operations of said first memory stage means, said second memory stage means in accordance with said line control data, and said third memory stage means.

5,600,816

SYSTEM AND METHOD FOR MANAGING DATA IN A CACHE SYSTEM FOR A DISK ARRAY

Clive S. Oldfield, Southampton, and Nicholas Shaylor, Salisbury, both of England, assignors to International Business Machines Corporation, Armonk, N.Y.

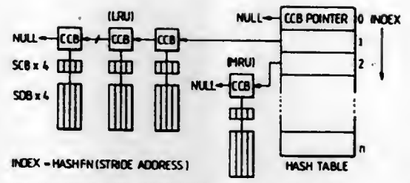
Filed Dec. 21, 1993, Ser. No. 171,935

Claims priority, application United Kingdom, Dec. 22, 1992, 9226725

Int. Cl.[6] G06F *12/08*

U.S. Cl. 395—440 **10 Claims**

1. A cache system in communication with a host application and a disk array, the disk array comprising a plurality of disk storage devices across which data is stored in strides, each stride comprising a multi-sector stripe of data on each of two or more devices of the disk array and an associated multi-sector parity stripe on a further device of the disk array, the cache system comprising:



a cache memory **50** for staging data to be transferred between a host application and a disk array **30**;

a plurality of cache control blocks, each cache control block being associated with an individual data stride, at least a portion of which is stored in the cache memory, and each cache control block identifying where in the cache data stripes making up the data stride are located,

a cache manager for maintaining an ordered list of cache control blocks, the cache control blocks in the list being ordered according to the time of last access; and

wherein in response to a write or read request from the host application for data forming part of a data stride in the cache memory, the cache control block associated with the requested data stride is moved to the most recently accessed end of the cache control block list.

5,600,817

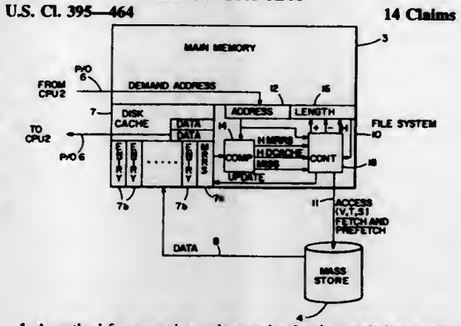
ASYNCHRONOUS READ-AHEAD DISK CACHING USING MULTIPLE DISK I/O PROCESSES ADN DYNAMICALLY VARIABLE PREFETCH LENGTH

James F. Macon, Jr., Boynton Beach, Fla.; Shauchi Ong, San Jose, Calif., and Feng-Hsien W. Shih, Hsien-Chu, Taiwan, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 899,565, Jun. 16, 1992, Pat. No. 5,410,653. This application Jan. 11, 1995, Ser. No. 371,107

Int. Cl.[6] G06F *12/08*

U.S. Cl. 395—464 **14 Claims**



1. A method for operating a data cache that is coupled to a data store, comprising the steps of:

receiving, from a requestor, a Demand for a unit of data, the unit of data being a constituent unit of data of a file comprised of a plurality of logically sequential units of data;

determining from one or more data cache entries if the Demanded unit of data is resident in said data cache; and

if the Demanded unit of data is determined to be resident in the data cache, returning the Demanded unit of data from the data cache to the requestor, wherein the step of determining includes the steps of,

determining from a predetermined one of the data cache entries if the resident Demanded unit of data is a unit of data that was most recently prefetched into the data cache from the data store during a last-executed prefetch operation, and, if it is determined that the Demanded unit of data was most recently prefetched into the data cache during the

last-executed prefetch operation, and if the Demand for the unit of data is the first Demand for a unit of data identified by the predetermined one of the data cache entries,

prefetching up to L further units of data from the data store to the data cache, wherein L represents a content of a Prefetch Block Length Counter that is selectively incremented at least when a Demanded unit of data was most recently prefetched into the data cache during the last-executed prefetch operation, otherwise

if the Demand for the unit of data is other than the first Demand for a unit of data identified by the predetermined one of the data cache entries,

incrementing the Prefetch Block Length Counter without prefetching up to L further units of data from the data store to the data cache.

5,600,818

DATA PROTECTIVE MICROPROCESSOR CIRCUIT FOR PORTABLE DATA CARRIERS, FOR EXAMPLE CREDIT CARDS

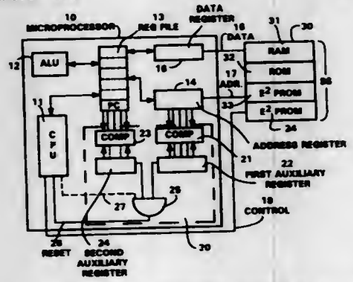
Franz Weikmann, Munich, Germany, assignor to GAO Gesellschaft fuer Automation und Organisation, Munich, Germany

Continuation of Ser. No. 358,572, Dec. 13, 1994, abandoned, which is a continuation of Ser. No. 879,007, May 6, 1992, abandoned. This application Jan. 24, 1996, Ser. No. 590,872

Claims priority, application Germany, May 8, 1991, 41 15 152.6

Int. Cl.[6] G06F *1/24*

U.S. Cl. 395—490 **19 Claims**



1. A data protective microprocessor circuit for preventing an unauthorized access to data or programs stored in memories, comprising:

a microprocessor;

a memory for storing an operating system;

at least one programmable memory for storing an individual secondary program;

first means for monitoring a particular valid address and generating a first signal;

second means for monitoring particular contents of a program counter to detect which of the stored programs are being executed and generating a second signal; and

third means for generating an inhibit signal based on said first and second signals and providing said inhibit signal to the microprocessor, whenever a program accessing an illegal address space is executed, said inhibit signal being provided to reset said microprocessor so as to forbid further execution of said program accessing the illegal address space until said program is restarted by said microprocessor after the reset.

5,600,819

MEMORY WITH SEQUENTIAL DATA TRANSFER SCHEME

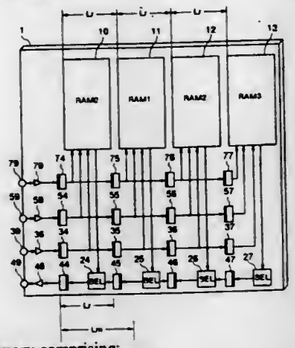
Eiki Kamada, Hadano, and Satoshi Oguni, Hachioji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 9, 1994, Ser. No. 207,744

Claims priority, application Japan, Mar. 12, 1993, 5-052601

Int. Cl.[6] G06F *12/00*

U.S. Cl. 395—496 **56 Claims**



1. A memory comprising:

a plurality of partial memories;

at least one first temporary storage means provided for each of said partial memories for supplying an address from outside of said memory to a corresponding one of said partial memories, said first temporary storage means provided for said partial memories being connected in series;

at least one second temporary storage means provided for each of said partial memories for supplying input data from outside of said memory to a corresponding one of said partial memories, said second temporary storage means provided for said partial memories being connected in series;

at least one third temporary storage means provided for each of said partial memories for receiving output data from a corresponding one of said partial memories and outputting said output data to outside of said memory, said third temporary storage means provided for said partial memories being connected in series; and

means for supplying a clock signal to said first, second, and third temporary storage means;

wherein in each of said first, second, and third temporary storage means, a distance between two adjacent temporary storage means is shorter than a maximum distance which contents in each of said temporary storage means can travel in a machine cycle time defined by a clock supplied from said clock supplying means, and

in each of said first, second, and third temporary storage means, contents stored in each of said temporary storage means are transferred to a next temporary storage means in every machine cycle as one data transfer time.

5,600,820

METHOD FOR PARTITIONING MEMORY IN A HIGH SPEED NETWORK BASED ON THE TYPE OF SERVICE

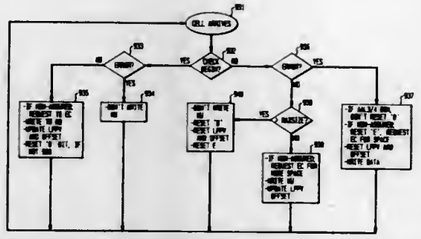
Cesar A. Johnston, Morristown, N.J., assignor to Bell Communications Research, Inc., Morristown, N.J.

Filed Dec. 1, 1993, Ser. No. 160,525

Int. Cl.[6] G06F *12/02*; H04J *3/24*

U.S. Cl. 395—497.02 **1 Claim**

1. A method for operating a high speed Asynchronous Transfer Mode (ATM) network over which data is transmitted, the high speed ATM network transporting different types of services and on different virtual channels to a network destination, the method comprising the steps of:



partitioning a memory into physical pages upon system initialization;

receiving a quality of service signal upon call setup identifying a type of service as one of best-effort traffic requiring a variable amount of memory space and reliable-type traffic requiring pre-allocated fixed amounts of memory space;

wherein if the quality of service signal identifies the type of service as reliable-type traffic, running a segmentation algorithm which assigns a permanent number of physical pages to a given connection to create a virtual first-in, first-out (FIFO) queue;

wherein if the quality of service signal identifies the type of service as best-effort type traffic, running a segmentation algorithm which assigns a permanent number of physical pages to a given connection to create a virtual first-in, first-out (FIFO) queue and if the memory space required for the best-effort type traffic exceeds the number of physical pages assigned, granting extra pages to the service to increase the size of the virtual FIFO queue if extra pages are available;

storing data into a virtual FIFO queue created for the type of service identified in the quality of service signal received at call set-up;

reassembling the data that is in the virtual FIFO queue created for the type of service identified in the quality of service signal received at call set-up; and

transferring the reassembled data to the network destination.

5,600,821

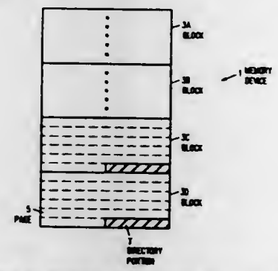
DISTRIBUTED DIRECTORY FOR INFORMATION STORED ON AUDIO QUALITY MEMORY DEVICES

Ohad Falik, Petach-Tikva; Gideon Intrater, Ramat Gan, and Zeev Collin, Haifa, all of Israel, assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jul. 28, 1993, Ser. No. 98,203

Int. Cl.[6] G06F *12/08*

U.S. Cl. 395—497.04 **28 Claims**



1. Apparatus for storing in an electronic memory device original data related to a plurality of information items, comprising:

an electronic memory device having a data storage area divided into a plurality of blocks each of which comprises a number of storage locations for storing one unit of data in each of said locations, each of said blocks having a recoverable portion in a designated part thereof from which the original data can be accurately read even though part of the electronic memory device is defective; and

control means for automatically storing the original data related to one of the plurality of information items per block, and for storing a directory for the plurality of information items by automatically storing in said designated parts of said plurality of blocks identification codes unique to the plurality of information items for which related data is respectively stored in said plurality of blocks.

5,600,822

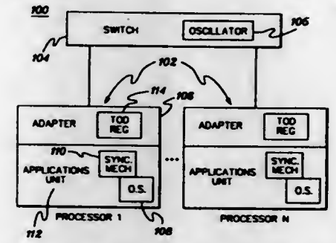
RESOURCE ALLOCATION SYNCHRONIZATION IN A PARALLEL PROCESSING SYSTEM

Donald G. Grice, Kingston, and Peter H. Hochschild, New York, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 5, 1994, Ser. No. 223,272

Int. Cl.[6] G06F *9/46*; *13/18*

U.S. Cl. 395—500 **20 Claims**



1. A method for synchronizing allocation of resources in a parallel processing system having a plurality of processors each having its own independent operating system, and each lacking information on scheduling and workload within the other processors of the plurality of processors, at least two processors of said plurality of processors executing a user application, said user application having a priority value, said method comprising the steps of:

(a) at predefined time intervals, raising said priority value for a predetermined amount of time such that said user application simultaneously receives priority at said at least two processors over processing of said at least two processors' operating systems, said raising step being independently performed at said predefined time intervals by each processor of said at least two processors executing the user application; and

(b) responsive to said step (a), and independently within each processor of the at least two processors, allocating resources to said user application having the raised priority value over processing of the processor's operating system wherein said allocating of resources is responsive to said step (a) and thereby synchronized for the user application executing within the at least two processors of said plurality of processors notwithstanding that each processor of said at least two processors has an independent operating system and lacks information on scheduling and workload of the other processors of said at least two processors.

VOL 11 95 ISS 1 FE 4 1997 UMI

5,600,823

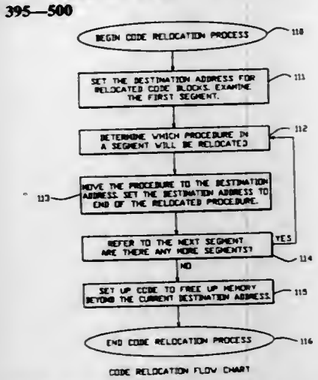
METHOD FOR OPTIMIZING SOFTWARE FOR ANY ONE OF A PLURALITY OF VARIANT ARCHITECTURES

W. Paul Sherer; Glenn W. Connery, both of Sunnyvale, and Scott A. Emery, San Jose, all of Calif., assignors to 3COM Corporation, Santa Clara, Calif.

Continuation of Ser. No. 727,824, Jul. 9, 1991, Pat. No. 5,459,854, which is a continuation-in-part of Ser. No. 533,257, Jun. 4, 1990, abandoned. This application Apr. 6, 1995, Ser. No. 417,840

Int. Cl.[6] G06F *15/177;12/02*

U.S. Cl. 395—500 **10 Claims**



CODE RELOCATION FLOW CHART

1. A method for initializing software in a host data processing system, the host having any one of a plurality of variant architectures, comprising:

loading into host memory a software module including a set of code blocks, each code block adapted for at least one of the plurality of variant architectures, wherein the software module further includes data for identifying locations of code blocks, and location-dependent entries within code blocks, based on the identified variant architecture;

after loading the software module, executing an identifying portion of the software module to identify the variant architecture of the host data processing system;

after loading the software module, executing a selecting portion of the software module to select a subset of the set of code blocks adapted for the identified variant architecture, including accessing the data in response to the identified variant architecture to identify selected code blocks;

placing the subset within the host memory in contiguous memory locations and updating location dependent entries within the subset including accessing selected code blocks and updating location-dependent entries in selected code blocks; and

freeing memory locations of the software module in host memory outside the contiguous memory locations.

5,600,824

CLOCK GENERATING MEANS FOR GENERATING BUS CLOCK AND CHIP CLOCK SYNCHRONOUSLY HAVING FREQUENCY RATIO OF N-1/N RESPONSIVE TO SYNCHRONIZATION SIGNAL FOR INHIBITING DATA TRANSFER

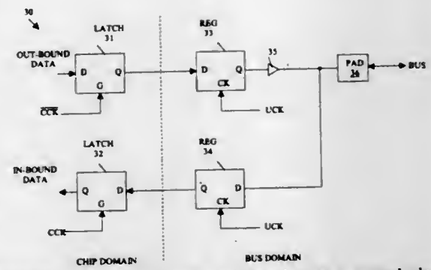
James B. Williams, Lowell, Mass.; Kenneth K. Chan, San Jose, Calif.; John F. Shelton, La Selva Beach, Calif., and Ehsan Rashid, Pleasanton, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 4, 1994, Ser. No. 191,865

Int. Cl.[6] G06F *1/04*

U.S. Cl. 395—551 **4 Claims**

1. A data communication system for communicating data between a bus running at a first clock frequency and a circuit block



operating synchronously with said data bus at a second clock frequency, said communication system comprising:

clock generation means for generating a bus clock signal at said first clock frequency and a chip clock signal at said second clock frequency wherein said first and second clock signal frequencies are in the ratio of (N−1):N where N is an integer greater than 1 and wherein said bus and chip clock signals are synchronized once every N cycles of said chip clock signal;

means for generating asynchronization signal indicating said chip clock signal cycle in which said bus and chip clock signals are synchronized;

means, connected to said circuit block, for receiving data from said bus;

means, connected to said circuit block, for transmitting data on said bus;

means, connected to said circuit block and responsive to said synchronization signal, for identifying a chip clock signal cycle in which data cannot be transmitted by said circuit block on said bus, one said chip clock signal cycle being present in each contiguous block of N said chip clock cycles; and

means, connected to said circuit block and responsive to said synchronization signal, for identifying a chip clock signal cycle in which no new data can be received from said bus, one said chip clock signal cycle being present in each contiguous block of N said chip clock cycles, wherein said receiving means comprises:

a first register connected to receive data from said bus, said first register being synchronized to said bus clock signal; and

a latch synchronized to said chip clock signal.

5,600,825

METHOD AND APPARATUS FOR DISPLAYING ON COMPUTER DISPLAY DEVICE A PORTION OF SORTED LIST AND CORRESPONDING INDICATOR OF LOCATION WITHIN LIST

Andreas F. W. Atkins, Santa Clara, and Eric M. Trehus, Milpitas, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed May 10, 1993, Ser. No. 60,453

Int. Cl.[6] G06F *7/00;* **G06T** *1/00*

U.S. Cl. 395—607 **18 Claims**

I. A method for displaying on a display area of a computer display device both a portion of a sorted list having a plurality of items and sorted according to keys and an indicator approximating a location of the portion within the list, the computer display device providing the ability to randomly access entries in a list by specifying a key, the indicator having a range of values corresponding to locations on the computer display device, said method comprising the steps of:

accessing a key of a first item in a list;

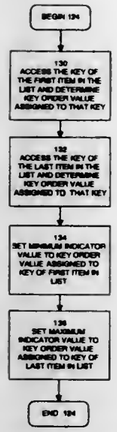
accessing a key of a last item in a list;

mapping the key of the first item in the list to a key order value;

mapping the key of the last item in the list to a key order value which is equal to or greater than the key order value mapped with the first key;

determining a range of indicator values, the range including the key order value mapped to the first key in the list, the key order value mapped to the last key in the list and the indicator values between them; and

mapping a key of a displayed item in the list to an indicator value.



5,600,826

STRUCTURED DATA PROCESSOR FOR CONVERTING BETWEEN SEQUENTIAL AND TREE STRUCTURED DATA

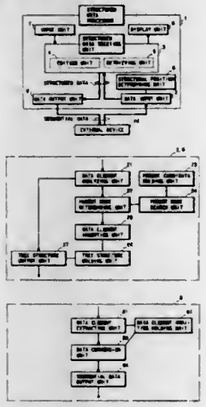
Toshiaki Ando, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Mar. 30, 1994, Ser. No. 219,894

Claims priority, application Japan, Mar. 31, 1993, 5-096676

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—611 **6 Claims**



1. A structured data processor for processing structured data of a tree structure, comprising:

data input means for receiving sequential data and converting the received sequential data into data of the tree structure, the sequential data having data elements arranged in an order of depth, each data element forming a node of the structured data and having structural depth information directly corresponding to a node level on the tree structure; and

structural position determining means for determining a structural position based on both of the structural depth information and the order of depth of each said data element of the sequential data inputted at the time of converting the sequential data by said data input means.

5,600,827

DATA MANAGEMENT, DISPLAY, AND RETRIVAL SYSTEM FOR A HIERARCHICAL COLLECTION

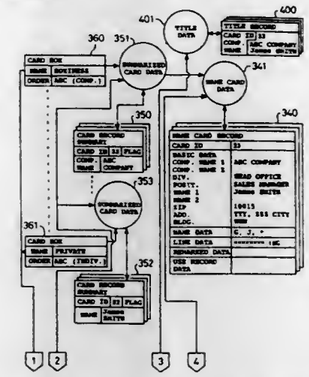
Kaoru Nakabayashi, and Akira Mochida, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed May 18, 1994, Ser. No. 245,280

Claims priority, application Japan, May 18, 1993, 5-116123

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—602 **35 Claims**



1. A data management system for managing a plurality of data sets where each data set includes a plurality of items, said data management system comprising:

data summary generating means for extracting an item data element regarding with at least part of said plurality of items out of said each data set in order to generate and store a data summary, said data summary comprising said item data element as well as relational information representing a relation of said item data element to said each data set;

group display means for displaying a plurality of groups and respective group names given to said plurality of groups in such a manner as to allow selection of a desired group, said plurality of data sets being sorted according to said plurality of groups;

sorting means for allocating said each data set to at least one of said plurality of groups;

representative data display means for, when said desired group is selected out of said plurality of groups, displaying a representative data list, which includes a plurality of said item data elements corresponding to specific data sets belonging to said desired group, in such a manner as to allow selection of a desired item data element; and

original data display means for, when said desired item data element is selected, displaying an original data set corresponding to said desired item data element based on said relational information for said desired item data element,

wherein said plurality of groups and said respective group names, said representative data list, and said original data set form a hierarchical data structure, and further said group display means, said representative data display means, and said original display means are operable such that said plurality of groups and said respective group names, said representative data list, and said original data set may all be displayed simultaneously.

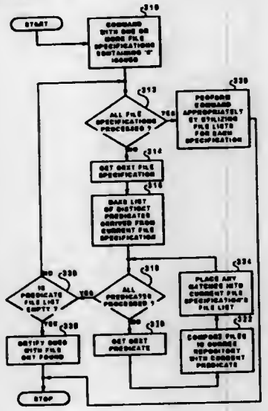
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5,600,828

FILE SPECIFICATION WILDCARD

William J. Johnson, Flower Mound, and Owen W. Weber, Coppell, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 15, 1994, Ser. No. 276,017
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—601 4 Claims



1. A method for performing a command specifying a file specification in a data processing system on a plurality of files, wherein each file has a unique identifier, said method comprising the steps of:

determining a set of predicates having at least one inclusive OR or one exclusive OR wildcard, but not both, derived from said file specification which is achieved for an exclusive OR function using a second predicate of said file specification;

determining said plurality of files by comparing files found within said data processing system to said set of predicates; and

performing said command on said plurality of files.

5,600,829

COMPUTER DATABASE MATCHING A USER QUERY TO QUERIES INDICATING THE CONTENTS OF INDIVIDUAL DATABASE TABLES

Odysseas G. Tsatalos; Marvin H. Solomon, and Yannis E. Ioannidis, all of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Sep. 2, 1994, Ser. No. 300,670
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—602 8 Claims

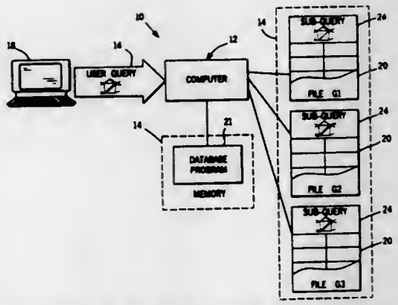
1. A database storing data and providing selected data in response to queries, the database comprising:

a) at least two tables of stored data having physical structures that link data of particular attributes together according to relations;

b) a sub-query in the same form as the user query, a different sub-query associated with each table and describing all of the attributes and relations of the table in query form; and

c) a program operating on an electronic computer communicating with the memory to:

(i) accept a user query for the database from a user; and



(ii) compare the user query to the sub-queries of the tables to generate a list of only the tables where the sub-query includes a portion of the user query;

(iii) using the list of tables to respond to the user query.

5,600,830

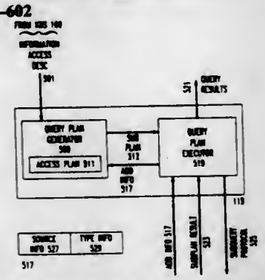
Patent Not Issued For This Number

5,600,831

APPARATUS AND METHODS FOR RETRIEVING INFORMATION BY MODIFYING QUERY PLAN BASED ON DESCRIPTION OF INFORMATION SOURCES

Alon Y. Levy, and Divesh Srivastava, both of New Providence, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation-in-part of Ser. No. 203,082, Feb. 28, 1994. This application Nov. 30, 1994, Ser. No. 347,016
Int. Cl.[6] G06F *17/30;7/00*
U.S. Cl. 395—602 12 Claims



1. An improved information system for retrieving query result information from one or more information sources in response to a query, the information system including descriptions of the information sources and the improvement comprising query execution means including:

query plan generating means for receiving the query and the descriptions of the information sources and responding thereto by generating a query plan for retrieving the query result information from the information sources; and

query plan execution means for receiving and responding to the query plan by retrieving the query result information from the information sources,

the query plan execution means retrieving additional information from the information sources in addition to the query result information and providing the additional information to the query plan generation means in the course of executing the query plan, the additional information being type information indicating a type of the retrieved query result information; and

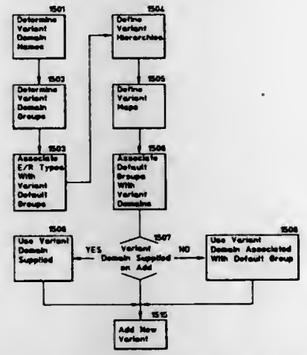
the query plan generating means responding to the additional information and to the descriptions of the information sources by making a modification of the query plan and providing the modification to the query plan execution means for execution while the query plan execution means is executing the query plan, the query plan generating means further responds to the type information and the type description in making the modification of the query plan.

5,600,832

VARIANT DOMAINS AND VARIANT MAPS IN A VERSIONED DATABASE MANAGEMENT SYSTEM

Neal R. Eisenberg, San Jose; Robert L. Huddleston, Sunnyvale; Mary C. Lehner, San Jose, and Charles S. Tribolet, Morgan Hill, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 914,955, Jul. 16, 1992, Pat. No. 5,386,559, which is a continuation-in-part of Ser. No. 799,668, Nov. 19, 1985, abandoned. This application Dec. 7, 1994, Ser. No. 350,770
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—619 22 Claims



1. A machine-readable program storage device tangibly embodying a program of instructions executable by a machine to perform method steps to provide simultaneous visibility to a plurality of variant hierarchies in a versioned data management system, said method steps comprising the steps of:

associating parts with variant domains, each part associated with a respective variant domain;

representing variant domains by variant hierarchies;

upon creation of a new variant of a part associating with the new variant a variant ID included in the variant hierarchy that represents the variant domain associated with the part:

upon drawing down a new variant of a part from an existing variant of the part, associating with the new variant a variant ID signifying a lower level in the variant hierarchy than the variant ID of the existing variant on the same branch of the variant hierarchy that represents the variant domain associated with the part; and

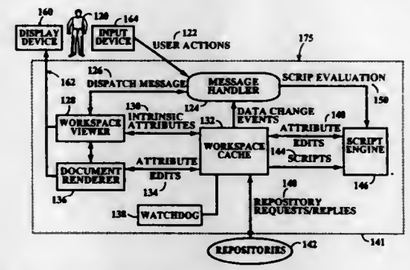
representing views of the parts by variant maps, each variant map including a set of variant IDs, each variant ID belonging to a different variant domain.

5,600,833

ATTRIBUTE PORTION BASED DOCUMENT RETRIEVAL SYSTEM WITH SYSTEM QUERY LANGUAGE INTERFACE

Jeffrey A. Senn, Pittsburgh, Pa.; Andrew D. Brown, New York City, N.Y., and Peter Lucas, Pittsburgh, Pa., assignors to Digital Equipment Corp., Maynard, Mass.

Continuation of Ser. No. 123,541, Sep. 17, 1993, abandoned. This application Mar. 24, 1995, Ser. No. 410,593
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—601 14 Claims



1. A document retrieval system, comprising:

one or more documents, each of said one or more documents having one or more attribute components, each of said one or more attribute components having a name portion and a value portion;

a user system having a display device and a cache, said cache for local storage of at least one attribute component of said documents;

one or more repositories, coupled with said user system such that messages may be sent between said one or more repositories and said user system, for permanent storage of said documents, each of said one or more repositories having a particular database program, and each of said one or more repositories having a system query language (SQL), said particular database program responsive to said system query language;

a client module on said user system, coupled with said one or more repositories, for issuing document requests to said one or more repositories, said document requests having a first format, each one of said document requests in said first format including a set of one or more attribute component name portions; and

a repository interface within each of said one or more repositories, for receiving and responding to said document requests, and for translating each said attribute component name portion in said document requests into one or more calls to functions defined in said system query language.

5,600,834

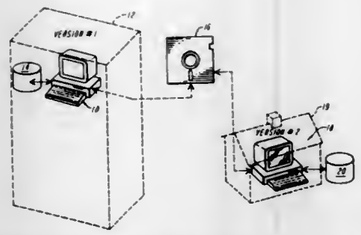
METHOD AND APPARATUS FOR RECONCILING DIFFERENT VERSIONS OF A FILE

John H. Howard, Cambridge, Mass., assignor to Mitsubishi Electric Information Technology Center America, Inc., Cambridge, Mass.

Continuation of Ser. No. 61,674, May 14, 1993, abandoned. This application Apr. 5, 1995, Ser. No. 417,446
Int. Cl.[6] G06F *15/00;7/00*
U.S. Cl. 395—617 4 Claims

1. In a computer system not utilizing a global database, but rather utilizing a collection of local databases, none of which serve as a central collection point, in which files are stored and modified at memory devices at multiple locations, apparatus for permitting the creation of new versions of a file at one location without knowledge of whether conflicting versions are created at another location, comprising:

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a portable memory device transportable between locations on which a file version is stored; and,

means for safely permitting reconciling different versions of a file transported from location to location on said portable memory device, said reconciling means including

means at first and second locations for generating a log entry at its respective location, each of said log entries including a time stamp for the version of said file on said portable memory device at said location, said timestamp serving as a unique identifier regardless of the time indicated thereby, thus to create a history of version creation and modification for said file at said first and second locations;

means at said first location for entering said log entry into said portable memory device;

means at said second location for reading out the log entry on said portable memory device and for combining the log entry from said portable memory device and a log entry at said second location so as to compare both modified versions and respective timestamps to indentify missing entries or confliction updates represented by different timestamps and thus the existence of different versions of said file;

means at said second location and upon said identification of different versions of said file for determining actions necessary to synchronize said different versions; and,

means at said second location for determining if such synchronizing action would result in loss of information, whereby combination of all versions of said file may be safely accomplished at said second location.

5,600,835

ADAPTIVE NON-LITERAL TEXT STRING RETRIEVAL

Harry T. Garland, Los Gatos; Kenneth M. Hunter, San Francisco; Michael G. Roberts, and Hadar I. Avi-Itzhak, both of Mountain View, all of Calif., assignors to Canon Inc., Tokyo, Japan

Continuation of Ser. No. 110,093, Aug. 20, 1993, abandoned. This application Nov. 20, 1995, Ser. No. 561,204

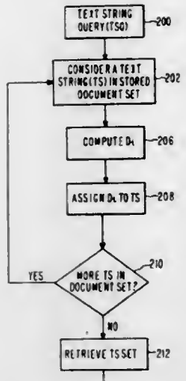
Int. Cl.[6] G06F *17/30;17/28*

U.S. Cl. 395—605 **16 Claims**

1. A computer-implemented method for selectively retrieving text strings from a plurality of stored text strings contained in a document set stored on a data storage medium accessible by a computer processor, said method comprising the steps of:

A. transmitting a text string query defined by a user to the processor;

B. generating a dissimilarity value D_i associated with the user-defined text string query and each of selected ones of the text strings in the stored document set in accordance with a first set of rules, wherein each dissimilarity value D_i is a function of at least one rule R_n from the first set of rules and a weight value w_n associated with each R_n, wherein each weight value indicates the relative importance of the associated rule in predicting a desired outcome of the retrieval;



C. retrieving a text string set, including at least one retrieved text string, from the selected text strings in accordance with a second set of rules, based upon the dissimilarity values D_i generated in step B;

D. generating a display of the retrieved text strings in a display order;

E. said user choosing at least one of the retrieved text strings from the displayed text string set for further processing; and

F. automatically adjusting the weight value w_n, defining an adjusted weight value w_n', associated with at least one rule of the first set of rules, based upon the results of the choosing step.

5,600,836

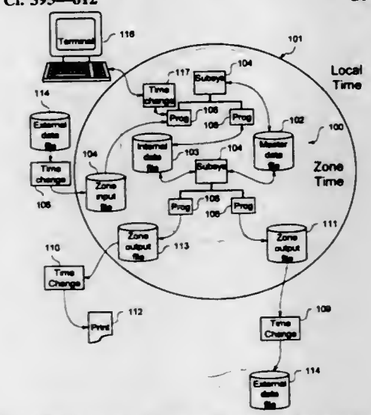
SYSTEM AND METHOD FOR PROCESSING DATE-DEPENDENT INFORMATION WHICH SPANS ONE OR TWO CENTURIES

Harvey Alter, Ambler, Pa., assignor to Turn of the Century Solution, Inc., Wayne, Pa.

Filed Nov. 14, 1995, Ser. No. 557,457

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—612 **20 Claims**



11. A method for processing date-dependent information using a computer system; the date-dependent information including dates in at most two centuries wherein the date-dependent information comprises a year field specified in a two-digit format, the method comprising the steps of:

converting input date data to be processed from local time to zone time and defining the input date data so converted as zone input date data;

processing the zone input date data in accordance with an existing application integrated into the computer system to generate zone output date data; and

converting the zone output date data into output date data.

5,600,837

MULTITASK PROCESSOR ARCHITECTURE HAVING A PLURALITY OF INSTRUCTION POINTERS

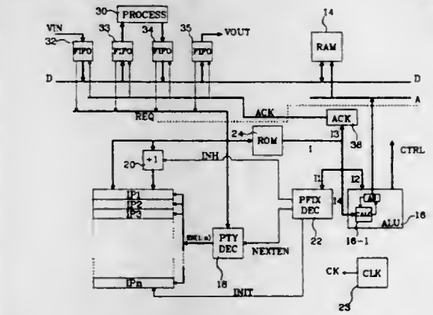
Alain Artieri, Meylan, France, assignor to SGS-Thomson Microelectronics S.A., Saint Genis Pouilly, France

Filed May 24, 1994, Ser. No. 248,472

Claims priority, application France, May 27, 1993, 93 06612

Int. Cl.[6] G06F *9/06*

U.S. Cl. 395—673 **17 Claims**



1. A processor architecture for serving a current task from among a plurality of tasks, including:

a memory for storing instructions of a plurality of programs respectively corresponding to the plurality of tasks, the memory being connected to a data bus and an address bus;

an instruction processor coupled to the data bus to sequentially receive instructions from the memory to be processed at the rate of instruction cycles;

request lines of different priority levels associated respectively with the tasks, each request line being asserted as soon as the associated task is requesting to be served;

a plurality of instruction pointers respectively associated with the tasks, each containing an address of a current instruction of the associated task to be executed, and one of the instruction pointers providing its content on said address bus at each instruction cycle as long as an associated enable line is asserted, whereby a corresponding instruction is provided to the instruction processor and executed at each instruction cycle;

a priority level decoder connected to the request lines and to the enable lines of the instruction pointers, the priority encoder asserting the enable line of the instruction pointer corresponding to the asserted request line of highest priority level; and

an incrementation circuit connected to the instruction pointers to modify the instruction pointer associated with the asserted enable line at each instruction cycle to point to the next instruction of the associated task.

5,600,838

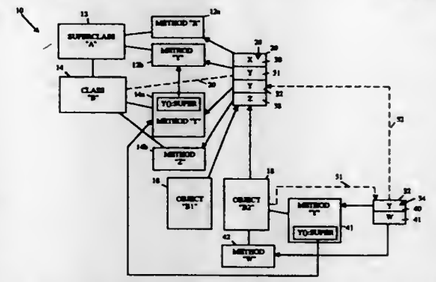
OBJECT ORIENTED DISPATCH AND SUPERCALL PROCESS AND ARRANGEMENT

Juan Guillen, Ottawa, and James M. Leask, Stittsville, both of Canada, assignors to Sybase, Inc., Emeryville, Calif.

Continuation of Ser. No. 184,492, Jan. 18, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 479,785

Int. Cl.[6] G06F *9/40*

U.S. Cl. 395—683 **12 Claims**



12. An object system for executing, in response to receipt of particular messages, methods on a general purpose computer, said system comprising:

(a) a computer comprising first and second objects, and further comprising respectively first and second instance specific dispatch tables each in turn able to include methods for execution upon receipt of a message calling for execution of the indicated method, said first object including a first selected method in said first instance specific dispatch table,

(b) means for referring a message from said first instance specific dispatch table to said second instance specific dispatch table when said first instance specific dispatch table does not include a method called for execution by said message, and

(c) means for executing said method called for by said message upon receipt by said second instance specific dispatch table.

5,600,839

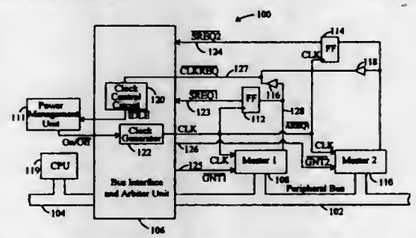
SYSTEM AND METHOD FOR CONTROLLING ASSERTION OF A PERIPHERAL BUS CLOCK SIGNAL THROUGH A SLAVE DEVICE

James R. MacDonald, Buda, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Oct. 1, 1993, Ser. No. 131,092

Int. Cl.[6] G06F *1/32;1/04*

U.S. Cl. 395—750 **18 Claims**



17. A method for controlling a peripheral bus clock signal comprising the steps of:

generating a peripheral bus clock signal within a clock generator;

providing said peripheral bus clock signal on a peripheral bus;

generating an indicator signal to a slave device indicative of a decision to stop said peripheral bus clock signal; and

if a clock request signal is not asserted by said slave device within a predetermined time after generating said indicator signal, stopping said peripheral bus clock; or

if a clock request signal is asserted by said slave device within said predetermined time after generating said indicator signal, keeping on said peripheral bus clock signal for at least a predetermined amount of time.

5,600,840

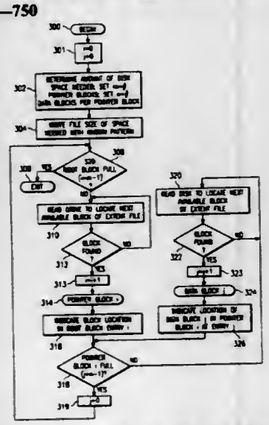
AUTOMATIC ADJUSTMENT OF DISK SPACE REQUIRED FOR SUSPEND-TO-DISK OPERATION

John J. Pearce, Del Valle, and Kendall Witte, Austin, both of Tex., assignors to Dell USA, L.P., Austin, Tex.

Filed Jan. 10, 1995, Ser. No. 370,595

Int. Cl.[6] G06F *12/16*

U.S. Cl. 395—750 **29 Claims**



1. In a computer comprising a hard disk electrically connected to a system memory, a method for automatically adjusting an amount of hard disk space needed to implement a suspend-to-disk (S2D) operation, the method comprising:

locating an S2D partition of said hard disk; determining an amount of disk space needed to store the entire contents of said system memory;

locating on said hard disk an amount of available disk space equal to said determined amount, at least a portion of which is external to said S2D partition; and

recording in the S2D partition location of said located available disk space.

5,600,841

METHOD AND APPARATUS FOR ANTICIPATORY POWER MANAGEMENT FOR LOW POWER DATA

Michael F. Culbert, San Jose, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

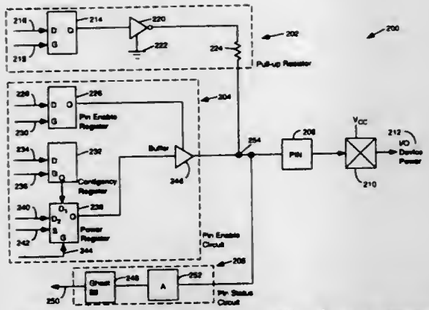
Continuation of Ser. No. 316,234, Sep. 30, 1994, abandoned. This application Apr. 18, 1996, Ser. No. 639,946

Int. Cl.[6] G06F *1/30*

U.S. Cl. 395—750 **31 Claims**

8. A method for controlling the supply of power to an I/O device attached to a General Purpose Input/Output (GPIO) of a computing device, comprising the steps of:

a) providing a GPIO including a pin enable circuit coupled to an I/O device power pin, said pin enable circuit comprising a contingency register holding a contingency bit and a power register which controls said power supply to said I/O device power pin, where said contingency bit is reflective of a power



supply priority of an I/O device incapable of power consumption management, said I/O device being powered by said I/O device power pin;

b) detecting a power fail interrupt;

c) replacing the contents of said power register with said contingency bit in response to an unanticipated system power-down condition to control the power supply to said I/O device during said unanticipated system powerdown condition such that an unrecognized I/O device receives low power supply priority;

d) determining whether a power fault interrupt occurred upon restarting said computing device;

e) detecting the presence of any unregistered I/O devices; and

f) displaying a warning message.

5,600,842

MICROPROGRAM CONTROLLER FOR CONTROLLING READOUT OF A MICROPROGRAM STORED IN MULTIPLE STORAGE AREAS

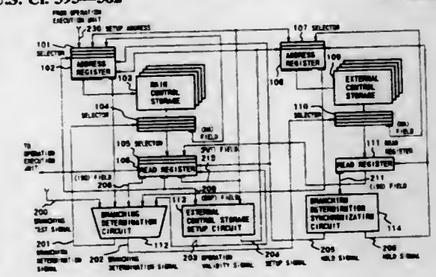
Hidetoshi Kondo, Yamanashi, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 4, 1994, Ser. No. 317,536

Claims priority, application Japan, Oct. 5, 1993, 5-248934

Int. Cl.[6] G06F *9/22*

U.S. Cl. 395—582 **17 Claims**



1. A microprogram controller comprising:

first storing means for storing a microprogram;

second storing means for storing said microprogram;

first address holding means for holding an address for reading a first microprogram word from said first storing means;

second address holding means for holding an address for reading a second microprogram word from said second storing means;

first microprogram word holding means for holding one of said first microprogram word read for execution from said first storing means and said second microprogram word read for execution from said second storing means; and

controlling means for selectively providing one of the first microprogram word read from said first storing means and the second microprogram word read from said second storing means to said first microprogram word holding means,

wherein said controlling means selects one of said first microprogram word read from said first storing means and said second microprogram word read from said second storing means as a next microprogram word to be provided to said first microprogram word holding means based on a command included in a current microprogram word held by said first microprogram word holding means.

5,600,843

RING SYSTOLIC ARRAY SYSTEM FOR SYNCHRONOUSLY PERFORMING MATRIX/NEURON COMPUTATION USING DATA TRANSFERRED THROUGH CYCLIC SHIFT REGISTER CONNECTED IN CASCADE OF TRAYS

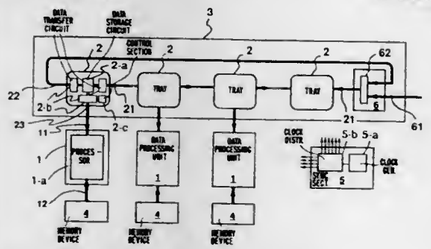
Hideki Kato; Hideki Yoshizawa; Hiroki Ieiki, all of Tokyo, and Kazuo Asakawa, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 591,138, Sep. 20, 1990, abandoned. This application Apr. 14, 1994, Ser. No. 227,472

Claims priority, application Japan, Sep. 20, 1989, 1-243969; Sep. 20, 1989, 1-243970; Sep. 20, 1989, 1-243971; Sep. 20, 1989, 1-243972

Int. Cl.[6] G06F *15/80;15/16*

U.S. Cl. 395—800 **41 Claims**



1. A parallel data processing system, comprising:

input means for inputting data; and

matrix operation means for performing a matrix operation using the data input by said input means, said matrix operation means comprising:

shift means for receiving, storing and transferring the data input, said shift means including a plurality of trays connected in cascade, each tray having a first input for receiving data of said input data and a first output for transferring the data received, at least one of said trays having a second output; and

a plurality of data processing units for processing select data of the data input, each data processing unit of said data processing units having a first input and a first output and each data processing unit corresponding to one tray of the at least one of said trays having a second output, each first input of said data processing units being coupled to a corresponding second output of the corresponding tray of the at least one of said tray data processing for receiving the select data,

said matrix operation being performed by said plurality of data processing units using the data input to said shift means and the select data transferred between corresponding ones of said trays and said data processing units synchronously.

5,600,844

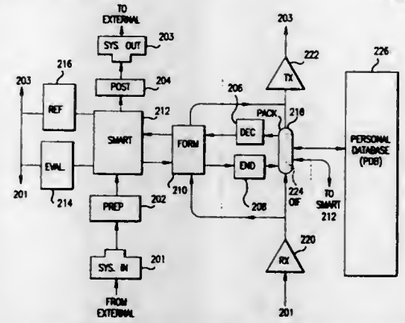
SINGLE CHIP INTEGRATED CIRCUIT SYSTEM ARCHITECTURE FOR DOCUMENT INSTALLATION SET COMPUTING

Venson M. Shaw, and Steven M. Shaw, both of 111 Reldyes Ave., Leonia, N.J. 07605

Continuation-in-part of Ser. No. 763,451, Sep. 20, 1991, abandoned. This application Apr. 5, 1993, Ser. No. 43,625

Int. Cl.[6] G06F *17/00*

U.S. Cl. 395—800 **4 Claims**



1. A document data processor having integrated circuit architecture which allows control and communications for a plurality of client-server based computing systems, said document data processor performing a plurality of kernel control functions representable by high level language procedures including an operating system, a session control, a database access and management, and a communication protocol, said document data processor comprising:

personal database means for obtaining, organizing and updating a personal knowledge content in said personal database means, said personal database means segregating, partitioning and assigning said personal knowledge content to one or a plurality of user, application and/or network environments;

packet processor connected co said personal database means for producing signals, frames, packets, cells, and/or macroblocks for document communication, and for interpreting and controlling document communication in accordance with one of a plurality of layered functions, said layered functions including operating system, protocol, and database access management, said packet processor further sensitizing external run-time conditions for application requirement, networking environment, user priority request and/or bandwidth constraint;

input/output device connected to said packet processor for transceiving data signals from external;

encoding/decoding device connected to said packet processor for encoding/decoding local or remote, and for compiling high level language procedural modules in accordance with selective procedural coding algorithms, said encoding/decoding device converting data from an internal format to an external format or converting data from said external format to said internal format;

formatting processor connected to said personal database means and said packet processor for performing internal procedural query to said personal database means and external procedural query to an application, user, and/or network in order to establish a selected list of subjects of interest of a segment document script to be retrieved, said formatting processor further partitioning said document script into a selected plurality of segmented document scripts wherein each of said segmented document script representing a single or plurality of subject of interest specified by said user, application, and/or network;

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smart object memory connected to said packet processor for establishing said high level language procedural modules, wherein each of said modules represent an executable manipulation and control procedure for said single or plurality of segmented script;

reference processor connected to said smart object memory for retrieving selected segmented document script and/or corresponding audio, graphical, and/or video script in accordance with said run-time user, application, and network environment;

bandwidth controller in communication with said formatting processor for computing a communication bandwidth request signal for said document script, said bandwidth controller producing a run-time attribute list for selective compression ratios, frame rates, internal data formats, display resolution, and for receiving run-time priority change and bandwidth shortage from said application, said user and said network; and

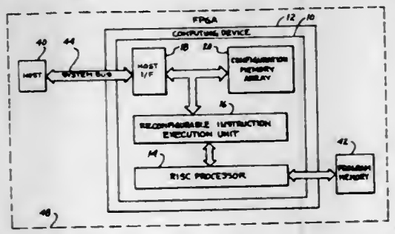
system look-up table connected to said reference processor and said smart object memory for coordinating individual subsystem pipeline operations and for maintaining overall data throughput, said system look-up table further including a means for maintaining and updating system look-up tables for encoding run-time execution sequences, and adapting with said application, said user and said network for performing look-ahead tasks, prescheduling and group instruction prefetching in accordance with input data types, and a means for supplementing individual subsystem run-time pipeline deficiencies to maintain scalable system performance.

5,600,845

INTEGRATED CIRCUIT COMPUTING DEVICE COMPRISING A DYNAMICALLY CONFIGURABLE GATE ARRAY HAVING A MICROPROCESSOR AND RECONFIGURABLE INSTRUCTION EXECUTION MEANS AND METHOD THEREFOR

Kent L. Gilson, Salt Lake City, Utah, assignor to Metalithic Systems Incorporated, Sausilito, Calif.

Filed Jul. 27, 1994, Ser. No. 281,357
Int. Cl.[6] G06F *15/31*
U.S. Cl. 395—800 **18 Claims**



1. An integrated circuit computing device comprising, in combination:

a dynamically reconfigurable gate array having a plurality of input/output (I/O) pads, a plurality of I/O blocks, a plurality of programmable logic blocks, a plurality of programmable routing resources for interconnecting said I/O pads, said I/O blocks and said logic blocks, and programming means for programming said I/O blocks, said logic blocks, and said routing resources, said programming means defining an appropriate mode of operation for said gate array;

microprocessor means comprising a Reduced Instruction Set Computer (RISC) coupled to an external source and located within said gate array by programming said programming means for processing instructions received from said external source; and

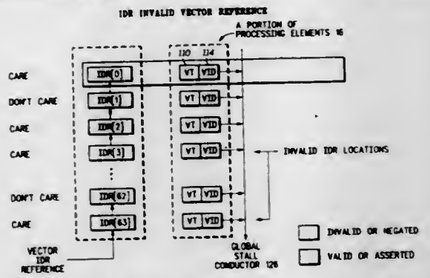
reconfigurable instruction execution means implemented within said gate array by programming said programming means and coupled to said microprocessor means for receiving and processing information received from at least one of said microprocessor means and said external source and for performing manipulation and computation of data contained within said logic blocks of said gate array according to said information received.

5,600,846

DATA PROCESSING SYSTEM AND METHOD THEREOF

Michael G. Gallup; L. R. Goke; Robert W. Seaton, Jr., and Terry G. Lawell, all of Austin, Tex., assignors to Motorola Inc., Schaumburg, Ill.

Division of Ser. No. 40,779, Mar. 31, 1993. This application Feb. 17, 1995, Ser. No. 390,831
Int. Cl.[6] G06F *15/347*
U.S. Cl. 395—800 **28 Claims**



1. A method of stalling execution of an instruction in a data processor, comprising the steps of:

receiving a vector instruction;

decoding the vector instruction to provide a first plurality of control signals;

accessing a first enable value in a first storage circuit in response to a first portion of the first plurality of control signals, the first enable value being used to selectively enable participation of a second storage circuit during execution of the vector instruction;

accessing a first validity value in a third storage circuit in response to a second portion of the first plurality of control signals, the first validity value selectively indicating when a first vector value is invalid;

asserting a stall signal when both the first enable value enables participation of the second storage circuit and the first validity value indicates the first vector value is invalid;

delaying execution of the vector instruction in the data processor when the stall signal is asserted;

completing execution of the vector instruction in the data processor when the stall signal is not asserted;

providing a valid vector value from a fourth storage circuit to the second storage circuit when the first enable value enables the second storage circuit to participate in execution of the vector instruction; and

modifying the first validity value in response to the valid vector value being written to the second storage circuit when the first enable value enables the second storage circuit to participate in execution of the vector instruction.

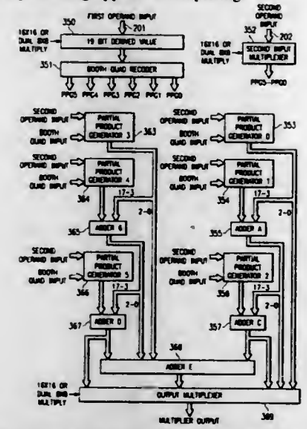
5,600,847

THREE INPUT ARITHMETIC LOGIC UNIT WITH MASK GENERATOR

Karl M. Guttag, Sugar Land, Tex.; Keith Balmer, Bedford, England; Robert J. Gove, Plano, Tex.; Christopher J. Read, Houston, Tex.; Jeremiah E. Golston, Sugar Land, Tex.; Sydney W. Poland, Katy, Tex.; Nicholas Ing-Simmons, Huntingdon, and Philip Moyse, Bronham, both of England, assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 159,282, Nov. 30, 1993. This application Jun. 7, 1995, Ser. No. 475,162
Int. Cl.[6] G06F *7/38*
U.S. Cl. 395—800 **79 Claims**

1. A data processing apparatus comprising:



an arithmetic logic unit having first, second and third data inputs for multibit digital signals representing corresponding first, second and third input signals, and a function control input signal for receiving a function signal, said arithmetic logic unit generating at an output a multibit digital signal representing a mixed arithmetic and Boolean combination of said first, second and third inputs corresponding to said function signal, said mixed arithmetic and Boolean combination including at least one combination performing a logical OR of 1) a logical AND of a first arithmetic combination of said first multibit input plus said second multibit input with said third multibit input, and 2) a logical AND of a second arithmetic combination opposite to said first arithmetic combination of said first multibit input and said second multibit input with an inverse of said third multibit input;

a first data source supplying a first multibit digital signal to said first data input of said arithmetic logic unit;

a second data source supplying a second multibit digital signal to said second data input of said arithmetic logic unit;

a third data source supplying a third multibit digital signal;

a mask generator having a data input connected to said third data source and a data output connected to said third data input of said arithmetic logic unit, said mask generator generating a multibit digital mask corresponding to said third multibit digital signal.

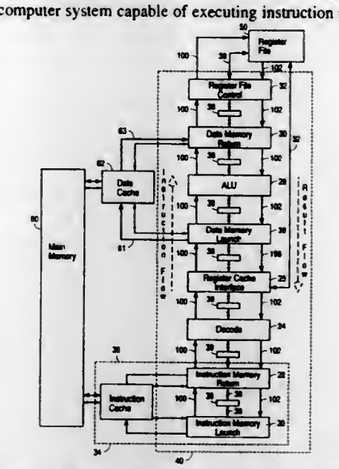
5,600,848

COUNTERFLOW PIPELINE PROCESSOR WITH INSTRUCTIONS FLOWING IN A FIRST DIRECTION AND INSTRUCTION RESULTS FLOWING IN THE REVERSE DIRECTION

Robert F. Sproull, Newton, Mass., and Ivan E. Sutherland, Santa Monica, Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Continuation of Ser. No. 140,655, Oct. 21, 1993. This application Jun. 7, 1995, Ser. No. 477,533
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—800 **60 Claims**

1. A computer system capable of executing instruction packages



defining source identifiers having source values associated therewith and destination identifiers having destination values associated therewith, comprising:

a bi-directional pipeline having a first data flow path and a second data flow path running counter to the first data flow path;

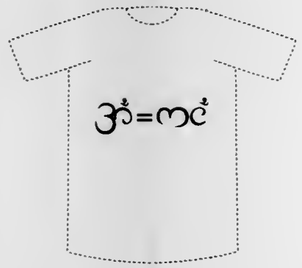
an instruction launch circuit configured to launch the instruction packages into the first data flow path at a first end of the bi-directional pipeline;

a result package generation circuit configured to generate result packages, certain ones of the result packages having a destination identifier and an associated result value, the result package generation circuit further configured to insert the result packages into the second data flow path of the bi-directional pipeline; and

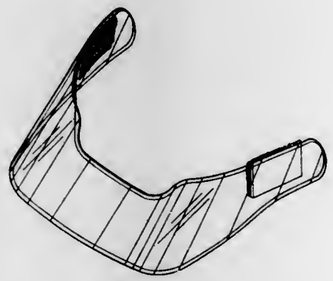
a compare circuit for to compare each one of the instruction packages flowing in the first data flow path with each encountered one of the result packages flowing through the second data flow path of the bi-directional pipeline.

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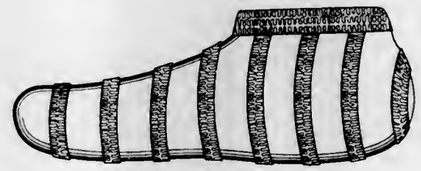
377,707
SURFACE PATTERN APPLIED TO AN UPPER BODY GARMENT
Balkrishna D. Kamat, and Asha B. Kamat, both of 24 Faulkner St., Blackburn South Victoria 3130, Australia
Filed May 24, 1995, Ser. No. 39,210
Term of patent 14 years
U.S. Cl. D2—717



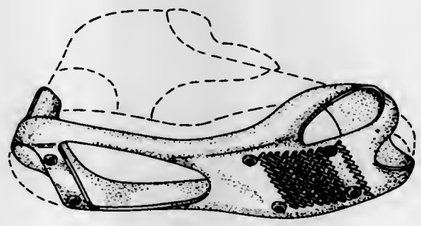
377,708
BICYCLE HAT VISOR
William P. Bay, Jr., 1065 U.S. 1 North, Ormond Beach, Fla. 32174
Filed Feb. 6, 1996, Ser. No. 50,592
Term of patent 14 years
U.S. Cl. D2—893



377,709
PROTECTIVE BOOTIE FOR A SHOE
Pamela V. Tinkler, 607 N. Montford Ave., Baltimore, Md. 21205
Filed Mar. 14, 1996, Ser. No. 51,643
Term of patent 14 years
U.S. Cl. D2—909



377,710
OVERSHOE
William T. Poust, 311 Wyckford Dr., Perkasie, Pa. 18944
Filed Feb. 21, 1996, Ser. No. 50,651
Term of patent 14 years
U.S. Cl. D2—914

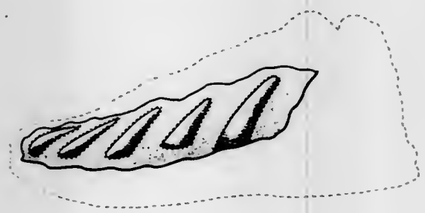


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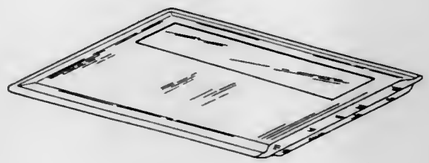
377,711
WALKING SHOE SOLE
John J. Hawker, Granada Hills, Calif., assignor to Strategic Partners, Inc., Pacoima, Calif.
Filed Jul. 14, 1994, Ser. No. 25,851
Term of patent 14 years
U.S. Cl. D2—954



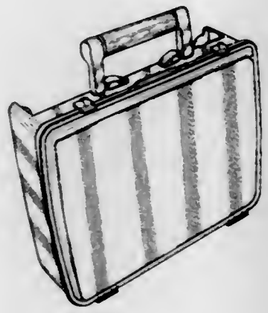
377,712
SIDE ELEMENT OF A SHOE UPPER
Eric P. Avar, Aloha, and Matthew N. Rask, Boring, both of Oreg., assignors to Nike, Inc., Beaverton, Oreg.
Filed Dec. 7, 1995, Ser. No. 47,582
Term of patent 14 years
U.S. Cl. D2—972



377,713
CARD HOLDER
Ken M. Chandler, 150 East Belt, Rangiora, New Zealand
Filed Aug. 13, 1993, Ser. No. 11,747
Claims priority, application New Zealand, Feb. 15, 1993, 24997
Term of patent 14 years
U.S. Cl. D3—247



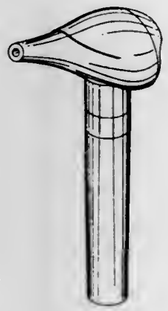
377,714
TACKLE BOX
Timothy J. Fenton, Wooster, Ohio, and James A. Schillinger, Augusta, Kans., assignors to Rubbermaid Specialty Products Inc., Wooster, Ohio
Filed Aug. 19, 1994, Ser. No. 27,374
Term of patent 14 years
U.S. Cl. D3—260



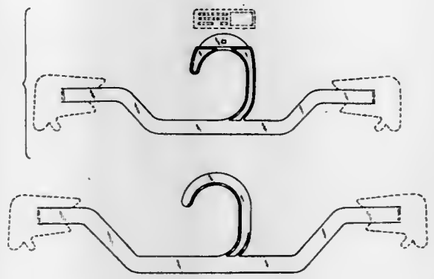
377,715
DISPOSABLE TOOTHBRUSH
Deanna L. Baldwin, 15190 Monticello Way, Morgan Hill, Calif. 95037
Filed May 1, 1996, Ser. No. 53,941
Term of patent 14 years
U.S. Cl. D4—104



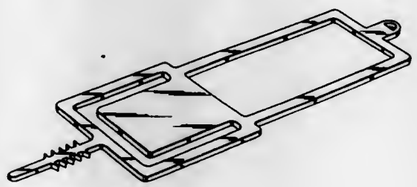
377,716
JEWELRY BUFFER AND POLISHER HEAD AND HANDLE UNIT
Douglas M. Karon, Plymouth, Minn., assignor to Jewelers Laboratories, Inc., Golden Valley, Minn.
Filed May 22, 1995, Ser. No. 39,298
Term of patent 14 years
U.S. Cl. D4—138



377,717
GARMENT HANGER
Stanley F. Gouldson, Northport, N.Y., assignor to Spotless Plastics Pty. Ltd., Victoria, Australia
Continuation-in-part of Ser. No. 13,052, Sep. 15, 1993, Pat. No. Des. 371,246, which is a continuation-in-part of Ser. No. 870,696, Apr. 16, 1992, Pat. No. Des. 350,236. This application Feb. 25, 1994, Ser. No. 19,259
Term of patent 14 years
U.S. Cl. D6—328

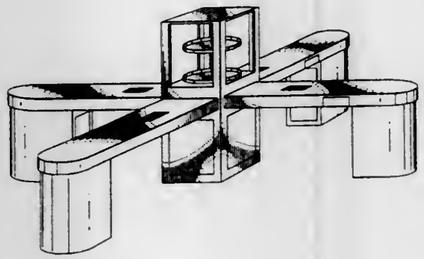


377,718
CLOTHES HANGER STRAP
Roksana Abdi, Corona, Calif., assignor to Precise Plastic Products, Inc., Garden Grove, Calif.
Filed Jan. 3, 1996, Ser. No. 48,547
Term of patent 14 years
U.S. Cl. D6—328

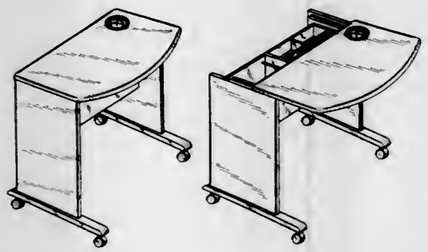


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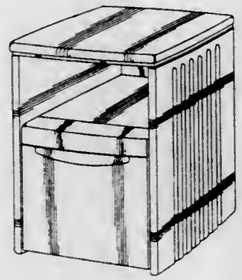
377,719
MULTIPLE DESK UNIT
Ira G. Bloom, Dallas, Tex., assignor to ASR Affiliates, Inc., Sarasota, Fla.
Filed Apr. 1, 1996, Ser. No. 52,484
Term of patent 14 years
U.S. Cl. D6—423



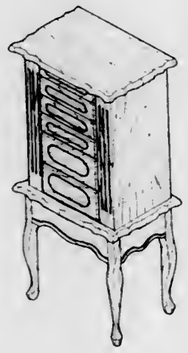
377,720
LAPTOP COMPUTER CART
Joseph E. Miller, Naples, Fla.; James M. Holler, Jamestown, N.Y., and James G. Fiala, Wayland, Mass., assignors to Bush Industries, Inc., Jamestown, N.Y.
Filed Jan. 26, 1996, Ser. No. 49,498
Term of patent 14 years
U.S. Cl. D6—425



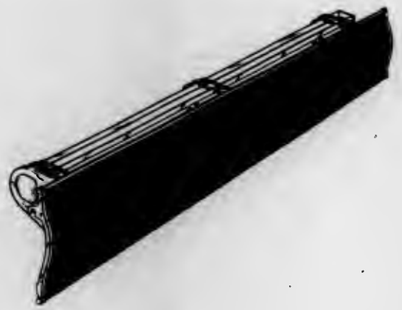
377,721
FILE CABINET
J. Kipton Pohlman, Los Angeles, Calif., assignor to Rubbermaid Office Products Inc., Maryville, Tenn.
Filed May 25, 1995, Ser. No. 39,500
Term of patent 14 years
U.S. Cl. D6—436



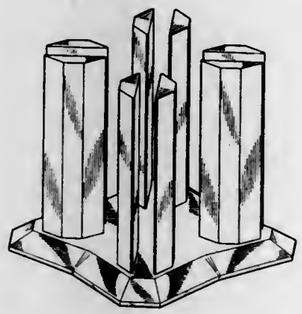
377,722
JEWELRY ARMOIRE
Chung H. Fu, No. 29, Alley 6, Lane 186, Ta-Fung Road Sec. 3, Tan-Zu Hsiang, Taichung Hsien, Taiwan
Filed Nov. 17, 1995, Ser. No. 46,857
Term of patent 14 years
U.S. Cl. D6—446



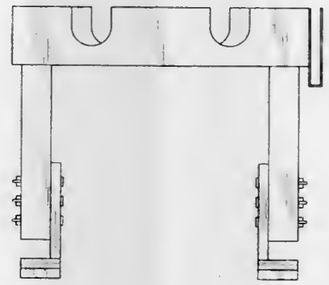
377,723
MODESTY PANEL FOR TABLE
William F. Schacht, Grand Rapids, Mich., assignor to Haworth, Inc., Holland, Mich.
Filed Jun. 9, 1995, Ser. No. 40,121
Term of patent 14 years
U.S. Cl. D6—491



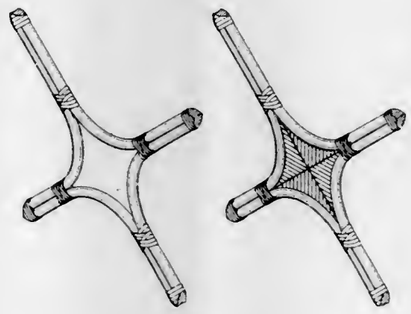
377,724
TABLE BASE
Mikhail Loznikov, 2007 Balboa St., San Francisco, Calif. 94121
Filed Dec. 29, 1995, Ser. No. 48,506
Term of patent 14 years
U.S. Cl. D6—495



377,725
THINKING MAN'S ARMREST
David J. Jackson, 1307 Herbazal St., Sonoma, Calif. 95476
Filed Dec. 18, 1995, Ser. No. 48,004
Term of patent 14 years
U.S. Cl. D6—501

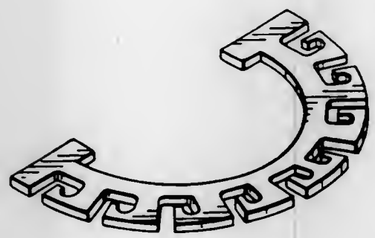


377,726
CHAIR/STOOL BACK
Manfred Steinfeld, Cook County, Ill., assignor to Shelby Williams Industries, Inc., Morristown, Tenn.
Filed Jan. 3, 1996, Ser. No. 48,555
Term of patent 14 years
U.S. Cl. D6—502

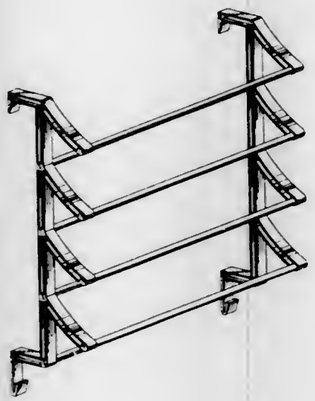


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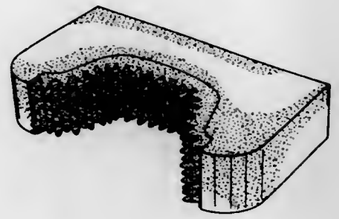
377,727
DISPLAY RACK
Brian D. Fairweather, 88 Kidmore End Road, Emmer Green, Reading Berkshire, RG4 8SL, United Kingdom
Filed Nov. 14, 1995, Ser. No. 46,427
Claims priority, application United Kingdom, Jun. 2, 1995, 2047921
Term of patent 14 years
U.S. Cl. D6—552



377,728
HANGING SHOE RACK
Richard B. Klein, Overland Park, and Chris Sersiev, Leawood, both of Kans., assignors to Lynk, Inc., Shawnee Mission, Kans.
Filed Nov. 28, 1995, Ser. No. 47,147
Term of patent 14 years
U.S. Cl. D6—570



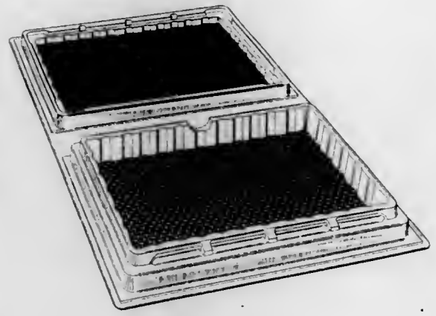
377,729
NECK SUPPORT OF SYNTHETIC FOAM
Vincenzo A. Bonaddio, Rancho Santa Margarita, and Feyyaz O. Baskent, Newport Beach, both of Calif., assignors to Foamex L.P., Linwood, Pa.
Filed Sep. 27, 1994, Ser. No. 28,997
Term of patent 14 years
U.S. Cl. D6—601



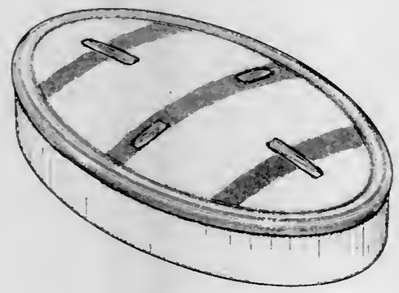
377,730
BATH TOWEL
Anthony D. Pirraglia, Bronx, and Gerard C. Riccio, Yonkers, both of N.Y., assignors to Organa Natural Products, Inc., Yonkers, N.Y.
Filed Mar. 30, 1995, Ser. No. 36,893
Term of patent 14 years
U.S. Cl. D6—608



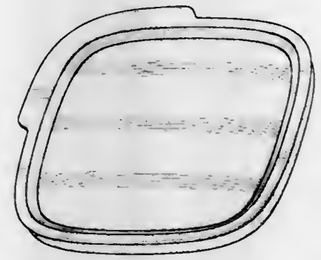
377,731
ALBUM FOR CASSETTES
Vincent O. Fernandez, Scott City, Mo., assignor to Blair Industries Incorporated, Scott City, Mo.
Filed Jun. 13, 1995, Ser. No. 40,228
Term of patent 14 years
U.S. Cl. D6—634



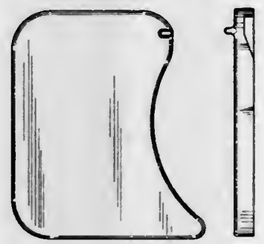
377,732
CANISTER TOP
Richard B. Ahern, Jr., Akron, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Mar. 13, 1996, Ser. No. 51,572
Term of patent 14 years
U.S. Cl. D7—391



377,733
FOOD STORAGE CONTAINER TOP
Richard B. Ahern, Jr., Akron; Derek Campbell, Dayton; Maaike Evers, Columbus, all of Ohio; Debra A. Fritsch, Grand Rapids, Mich.; Norio Fujikawa, Columbus, Ohio; David Gresham, East Hampton, N.Y.; Paul J. Kudirka, Ada, Mich.; Mark Metzler, Alto, Mich.; Donald J. Staufenberg, Dublin, Ohio, and Michael Sullivan, Ada, Mich., assignors to Rubbermaid Incorporated, Wooster, Ohio
Filed Dec. 11, 1995, Ser. No. 47,670
Term of patent 14 years
U.S. Cl. D7—392.1

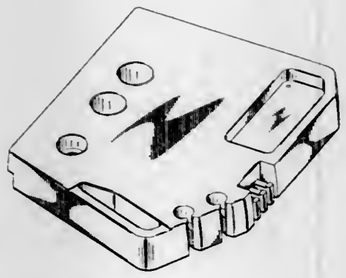


377,734
SIDE SHELF FOR A BARBEQUE GRILL
Richard Bird; Edward Golladay, Jr.; Donald Payne, all of Lousiville, Ky.; Randy Smitley, Corydon, Ind.; Calvin Sprinkle, Borden, Ind., and Marine Walls, Jeffersonville, Ind., assignors to Porcelain Metals Corporation, Louisville, Ky.
Filed Aug. 12, 1994, Ser. No. 27,087
Term of patent 14 years
U.S. Cl. D7—402

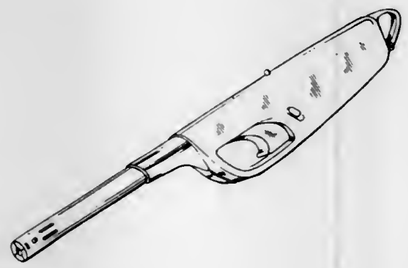


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377,735
BARBECUE GRILL SHELF
Joseph B. Craven, Columbus, Ga., assignor to W. C. Bradley Company, Columbus, Ga.
Filed Aug. 12, 1994, Ser. No. 27,111
Term of patent 14 years
U.S. Cl. D7—406



377,736
UTILITY LIGHTER
Kenji Iwagaki, Upland, and William Haffner, Huntington Beach, both of Calif., assignors to Scripto-Tokai Corporation, Fontana, Calif.
Filed Dec. 7, 1995, Ser. No. 47,586
Term of patent 14 years
U.S. Cl. D7—416



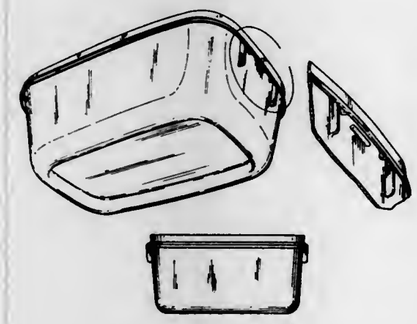
377,737
SPORT/SQUEEZE BOTTLE
Elgin R. Kristnik, P.O. Box 402, Schulenburg, Tex. 78956
Filed Jun. 16, 1994, Ser. No. 24,556
The portion of the term of this patent subsequent to Aug. 13, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—511



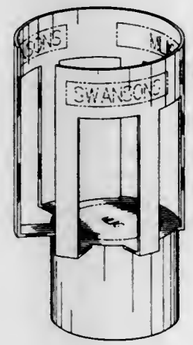
377,738
NOVELTY ILLUMINATED MUG
Michael D. Thorne, R.R. 2 Box 2275, Shickshinny, Pa. 18655-9229
Filed Jan. 16, 1996, Ser. No. 49,079
Term of patent 14 years
U.S. Cl. D7—536



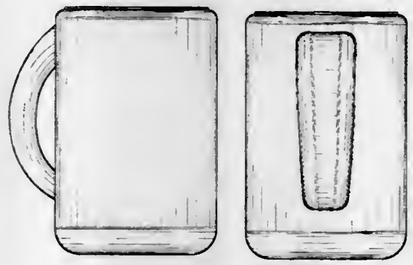
377,739
CONTAINER
Arthur R. Carlson, East Hauthorn, Australia, assignor to The Decor Corporation Pty Ltd., Victoria, Australia
Filed Jun. 23, 1995, Ser. No. 40,693
Claims priority, application Australia, Dec. 23, 1994, 4318/94
Term of patent 14 years
U.S. Cl. D7—602



377,740
TRAVEL HOLDER RECEPTIVE TO VARYING SIZES OF BEVERAGE CONTAINERS
David A. Swanson, 6720 E. 650 South, Knox, Ind. 46534
Filed Feb. 5, 1996, Ser. No. 49,913
Term of patent 14 years
U.S. Cl. D7—619



377,741
SLEEVE FOR BOTTLE
Tom B. Bennett, and Kevin Rausch, both of Wooster, Ohio, assignors to Rubbermaid Specialty Products Inc., Wooster, Ohio
Filed May 17, 1996, Ser. No. 54,656
Term of patent 14 years
U.S. Cl. D7—622



377,742
HEDGE TRIMMER
Claes H. Losdahl, and Tomas O. R. Nyqvist, both of Huskvarna, Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden
Filed Jul. 28, 1995, Ser. No. 42,718
Claims priority, application Sweden, Jan. 31, 1995, 950188
Term of patent 14 years
U.S. Cl. D8—8

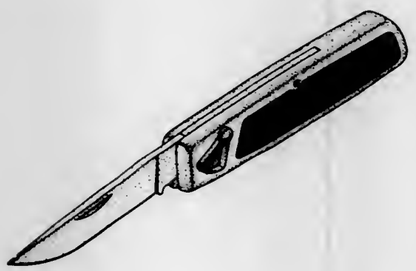


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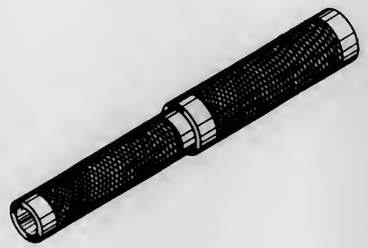
377,743
VEGETATION TRIMMER
Anthony M. DeMore, Cockeysville; Robert I. Somers, Reisterstown, both of Md., and Peter F. Welch, Toronto, Canada, assignors to Black & Decker Inc., Newark, Del.
Filed Jul. 11, 1995, Ser. No. 42,806
Term of patent 14 years
U.S. Cl. D8—8



377,744
POCKET KNIFE
Katsumi Hasegawa, Sagamihara, Japan, assignor to Kai R & D Center, Co., Ltd., Seki, Japan
Filed Nov. 14, 1995, Ser. No. 46,422
Claims priority, application Japan, Jun. 12, 1995, 7-16774
Term of patent 14 years
U.S. Cl. D8—99



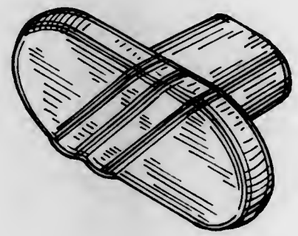
377,745
TOOL HANDLE EXTENDER
James A. Laun, 28 N. Franklin St., Cattaraugus, N.Y. 14719
Filed Nov. 7, 1995, Ser. No. 46,082
Term of patent 14 years
U.S. Cl. D8—107



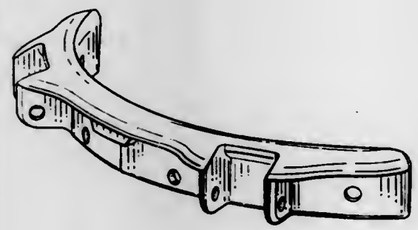
377,746
HANDLE FOR TOOLS
Yin-Han Huang, P.O. Box 53-8, Taichung, Taiwan
Filed Jan. 16, 1996, Ser. No. 49,094
Term of patent 14 years
U.S. Cl. D8—107



377,747
KNOB
Robert De'Armond, Celina, Ohio, assignor to Newell Operating Company, Freeport, Ill.
Filed Jul. 26, 1995, Ser. No. 41,909
The portion of the term of this patent subsequent to Aug. 13, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D8—310



377,748
GOLF BAG LEG HINGE BRACKET
Gary E. Keller, Mesa, and Larry J. Mackin, Phoenix, both of Ariz., assignors to Karsten Manufacturing Corporation, Phoenix, Ariz.
Filed Aug. 14, 1995, Ser. No. 42,796
Term of patent 14 years
U.S. Cl. D8—323



377,749
AIR CONDITIONER WINDOW HOLDER
Francisco R. Collado, 709 82nd St., North Bergen, N.J. 07047
Filed Aug. 9, 1995, Ser. No. 42,381
Term of patent 14 years
U.S. Cl. D8—349

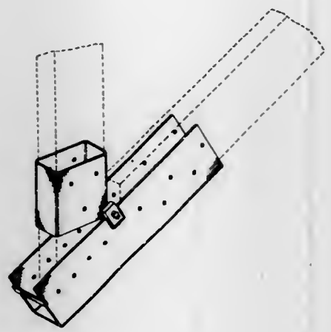


377,750
PIPE POSITIONING BRACKET
George R. Hubbard, Del Mar, Calif., assignor to Securus, Inc., San Marcos, Calif.
Division of Ser. No. 10,023, Jun. 24, 1993, Pat. No. Des. 361,503. This application Aug. 21, 1995, Ser. No. 42,883
Term of patent 14 years
U.S. Cl. D8—354



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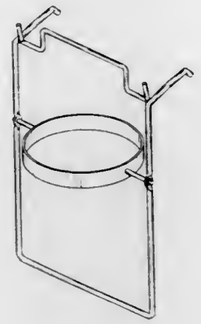
377,751
ADJUSTABLE SAFETY RAIL SUPPORT BRACKET FOR A ROOF TRUSS
Richard R. Koebbe, Cincinnati, Ohio, assignor to U.S. Pro-Tech Corp., Cincinnati, Ohio
Filed May 1, 1995, Ser. No. 38,206
Term of patent 14 years
U.S. Cl. D8—355



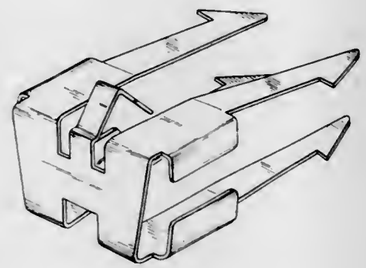
377,752
SHOWER CURTAIN SUPPORT
Daryl S. Gaudet, 5273 Mulberry St., Stephens City, Va. 22655
Filed Dec. 18, 1995, Ser. No. 48,003
Term of patent 14 years
U.S. Cl. D8—373



377,753
PAINT CAN CADDY
Robert S. Meadows, 2410 Massey Rd., DeRidder, La. 70634
Filed Apr. 15, 1996, Ser. No. 53,132
Term of patent 14 years
U.S. Cl. D8—373



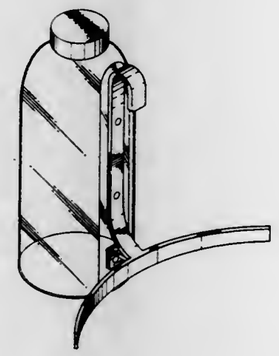
377,754
WIPER BLADE ASSEMBLY CLIP
Barry J. Abbott; Valerie M. Abbott, both of Belgrave; Stephen J. Clarke, and Dino Donchi, both of Ringwood, all of Australia, assignors to Clean Screen Wipers Pty Ltd, Boronia, Australia
Filed Jun. 12, 1995, Ser. No. 40,139
Term of patent 14 years
U.S. Cl. D8—395



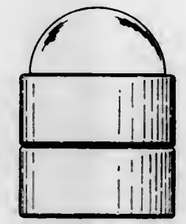
377,755
DISPENSER
Bernard Kotyuk, Jr., New York, N.Y.; Matthew S. Okin, Cresskill, N.J., and Peter Bertolini, Shelton, Conn., assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.
Filed Jun. 7, 1995, Ser. No. 39,901
Term of patent 14 years
U.S. Cl. D9—300



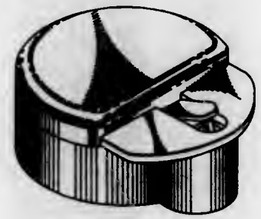
377,756
PORTABLE LIQUID CONTAINER
James E. Beardsley, 2241 12th St., Wyandotte, Mich. 48192-4103
Filed Aug. 8, 1995, Ser. No. 42,400
Term of patent 14 years
U.S. Cl. D9—337



377,757
STACKABLE JAR SET
Peter Bertolini, Shelton, and Lois Slachowitz, Greenwich, both of Conn., assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.
Filed Mar. 30, 1995, Ser. No. 36,923
Term of patent 14 years
U.S. Cl. D9—341



377,758
TAMPER-EVIDENT SAFETY CLOSURE CAP
Joseph P. Valley, Newton, N.J., assignor to Stull Closure Technoloogies, Inc., Randolph, N.J.
Filed Jun. 15, 1995, Ser. No. 40,350
Term of patent 14 years
U.S. Cl. D9—435



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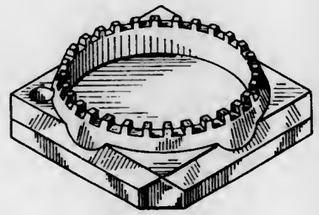
377,759
COMBINED CONTAINER AND CAP
Hervé Hot, Marceuil les Meaux, France, assignor to Motul S.A., Aubervilliers, France
Filed Jan. 4, 1996, Ser. No. 48,570
Claims priority, application France, Jul. 7, 1995, 95 3772
Term of patent 14 years
U.S. Cl. D9—520



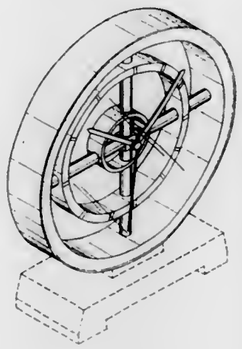
377,760
COMBINDED CONTAINER AND CAP
Hervé Hot, Mareuil-Les-Meaux, France, assignor to Motul S.A., Anbervillires, France
Filed Jan. 4, 1996, Ser. No. 48,571
Claims priority, application France, Jul. 7, 1995, 953.772
Term of patent 14 years
U.S. Cl. D9—523



377,761
HOUSING FOR CAPSULE COMPONENTS SUCH AS THERMOMETERS, CLOCKS OR COMPASSES
Gregory L. Cross, Arvada, Colo., assignor to Sun Company, Inc., Arvada, Colo.
Filed Apr. 3, 1995, Ser. No. 37,022
Term of patent 14 years
U.S. Cl. D10—1



377,762
DESK CLOCK
Shen-Yuan Chien, Ilan, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan
Filed Nov. 27, 1995, Ser. No. 47,043
Term of patent 14 years
U.S. Cl. D10—22



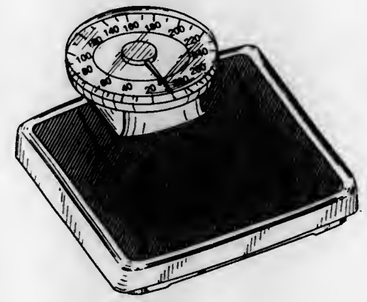
377,763
WRIST WATCH
Atsushi Goto, Kunitachi, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Nov. 20, 1995, Ser. No. 46,880
Term of patent 14 years
U.S. Cl. D10—38



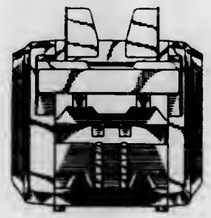
377,764
AUTOMOBILE ENGINE LASH GUAGE
Barron Pulliam, 402 SW. 51st Ter., Cape Coral, Fla. 33914
Filed Mar. 25, 1996, Ser. No. 52,167
Term of patent 14 years
U.S. Cl. D10—64



377,765
SCALE
Robert A. O'Neil, Glen Ellyn, Ill., assignor to Sunbeam Products, Inc., Fort Lauderdale, Fla.
Filed Nov. 3, 1995, Ser. No. 45,977
Term of patent 14 years
U.S. Cl. D10—92

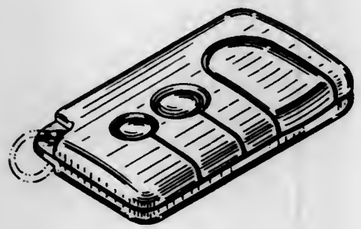


377,766
BANK NOTE COUNTER
Yasuhiro Hidaka; Iwao Yamaguchi, and Hiroyuki Oda, all of Hyogo-ken, Japan, assignors to Glory Kogyo Kabushiki Kaisha, Hyogo-ken, Japan
Filed May 19, 1995, Ser. No. 39,069
Claims priority, application Japan, Nov. 21, 1994, 6-35398
Term of patent 14 years
U.S. Cl. D10—97

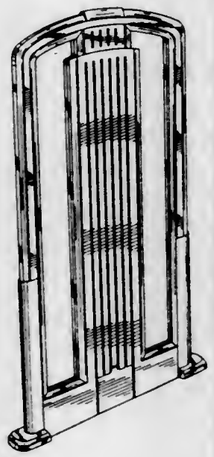


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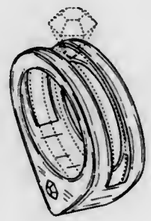
377,767
COMPACT TRANSMITTER FOR GARAGE DOOR OPENER
Loren E. Doppelt, Palatine; Jeff Condon, Chicago; Gary Prokop, Wheaton; Marianne Grisdale, and Mark D. Dziersk, both of Chicago, all of Ill., assignors to The Chamberlain Group, Inc., Elmhurst, Ill.
Filed Jan. 11, 1996, Ser. No. 48,647
Term of patent 14 years
U.S. Cl. D10—104



377,768
ANTENNA STRUCTURE FOR DETECTING ANTITHEFT TAGS IN A RETAIL ESTABLISHMENT
Anthony C. Douglas, Münster, Germany, assignor to Esselte Meto International GmbH, Heppenheim, Germany
Filed Jun. 1, 1995, Ser. No. 39,627
Claims priority, application Germany, Dec. 3, 1994, M9409558.2
Term of patent 14 years
U.S. Cl. D10—106



377,769
FINGER RING GUARD
Thomas B. Roemer, 1163 First Capitol Dr., St. Charles, Mo. 63301
Filed Dec. 29, 1995, Ser. No. 48,451
Term of patent 14 years
U.S. Cl. D11—26



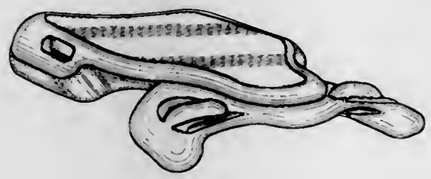
377,770
EAR ORNAMENT
Richard W. Udko, 350 S. Beverly Dr., Beverly Hills, Calif. 90212
Filed Mar. 12, 1996, Ser. No. 51,510
Term of patent 14 years
U.S. Cl. D11—75



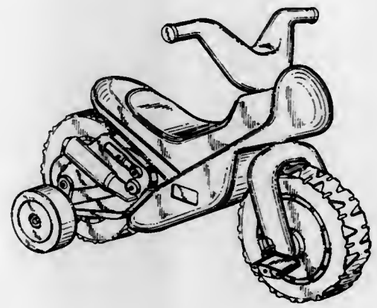
377,771
ORNAMENTAL ANGEL FIGURE
Lois P. Zito, Strongsville, and Dana L. Bullock, Hudson, both of Ohio, assignors to Maloda Inc., Hudson, Ohio
Filed Jan. 4, 1994, Ser. No. 17,088
Term of patent 14 years
U.S. Cl. D11—128



377,772
SLED
Matthew P. Williams, Wooster, Ohio, assignor to Rubbermaid Specialty Products Inc., Wooster, Ohio
Filed Feb. 9, 1996, Ser. No. 50,175
Term of patent 14 years
U.S. Cl. D12—11



377,773
CHILD'S RIDING CYCLE
Christopher W. Sloss, Olney, Ill., assignor to Roadmaster Corporation, Olney, Ill.
Filed Feb. 17, 1995, Ser. No. 35,039
Term of patent 14 years
U.S. Cl. D12—111



377,774
MOTORCYCLE BRAKE CALIPER COVER
William G. Davidson, Delafield, and Louis Netz, Grafton, both of Wis., assignors to Harley-Davidson Motor Company, Milwaukee, Wis.
Filed Aug. 2, 1995, Ser. No. 42,141
Term of patent 14 years
U.S. Cl. D12—126

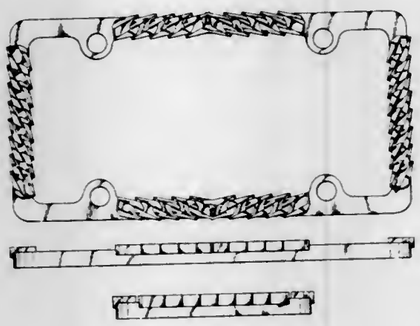


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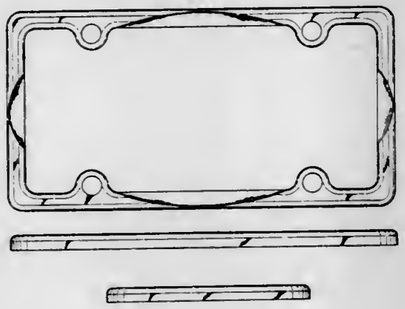
377,775
ADJUSTABLE BALLAST DOCK BUMPER
Bruce G. Barton, Jr., 5265 Mystic Lake Dr., Brighton, Mich. 48116
Filed May 8, 1996, Ser. No. 54,185
Term of patent 14 years
U.S. Cl. D12—168



377,776
LICENSE PLATE FRAME
Linda Kheyfets, Miami Beach, Fla., assignor to Rally Accessories, Inc., Miami, Fla.
Filed Feb. 29, 1996, Ser. No. 50,907
Term of patent 14 years
U.S. Cl. D12—193



377,777
LICENSE PLATE FRAME
Linda Kheyfets, Miami Beach, Fla., assignor to Rally Accessories, Inc., Miami, Fla.
Filed Feb. 29, 1996, Ser. No. 50,908
Term of patent 14 years
U.S. Cl. D12—193



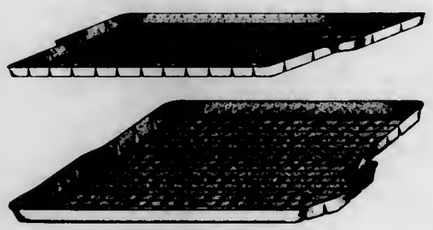
377,778
VEHICLE ATTACHED DECORATIVE TRIM
Allan D. Houser, 431 Ewing Way, Wylie, Tex. 75098
Filed Apr. 10, 1995, Ser. No. 37,292
Term of patent 14 years
U.S. Cl. D12—194



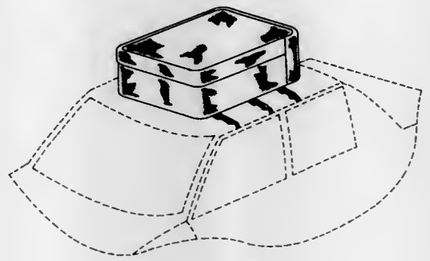
377,779
TRAILER MOUNTED MOBILE LAUNDROMAT
Ronald D. Smith, 2319 E. 10th St., Joplin, Mo. 64801
Filed Feb. 15, 1995, Ser. No. 34,903
Term of patent 14 years
U.S. Cl. D12—195



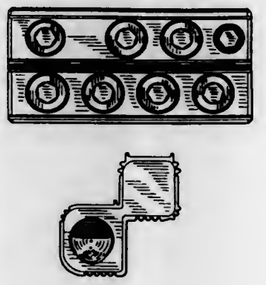
377,780
VEHICLE CARGO SPACE LINER
David F. MacNeil, 215 E. First St., Hinsdale, Ill. 60521
Filed Apr. 27, 1995, Ser. No. 38,075
Term of patent 14 years
U.S. Cl. D12—221



377,781
VEHICLE-MOUNTABLE LUGGAGE CARRIER
Dale C. Burgland, 8 W. 44 St., Kearney, Nebr. 68847
Filed Nov. 7, 1995, Ser. No. 46,080
Term of patent 14 years
U.S. Cl. D12—409

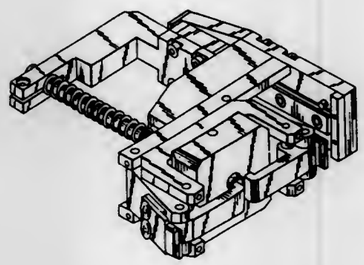


377,782
TRANSFORMER ELECTRICAL CONNECTOR
David R. Fillinger, Cincinnati, Ohio, assignor to Erico International Corporation, Solon, Ohio
Filed Jul. 14, 1995, Ser. No. 42,036
Term of patent 14 years
U.S. Cl. D13—151



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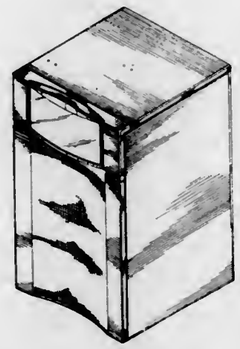
377,783
INTEGRATED CIRCUIT CHIP HOLDING DEVICE
Masato Itoh, Matsumoto, Japan, assignor to Shinano Electronics Co., Ltd., Matsumoto, Japan
Filed Jul. 14, 1994, Ser. No. 25,871
Term of patent 14 years
U.S. Cl. D13—182



377,784
FREESTANDING INTERACTIVE COMPUTERIZED INFORMATION SYSTEM
Donald Wilson, Toronto, Canada, assignor to King Products Inc., Mississauga, Canada
Filed Apr. 21, 1995, Ser. No. 37,821
Claims priority, application Canada, Dec. 22, 1994, 1994-2529
Term of patent 14 years
U.S. Cl. D14—100



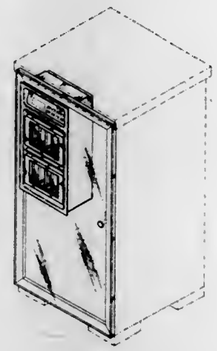
377,785
COMPUTING DEVICE
Mary E. Rybarczyk, Menomonie; Tom A. Wendt, Colfax, and Forrest B. Hobbs, Eau Claire, all of Wis., assignors to Sequent Computer Systems, Inc., Beaverton, Oreg.
Filed Aug. 22, 1995, Ser. No. 42,986
Term of patent 14 years
U.S. Cl. D14—100



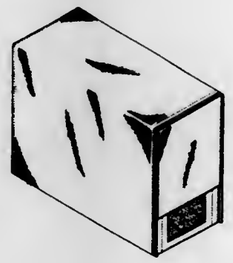
377,786
ELECTRONIC ORGANIZER HOUSING
Jeffrey M. Jones, Highland Park, Ill.; Joe T. K. Shan, Central Hong Kong, and Kenny L. K. Keung, Hong Kong, both of Hong Kong, assignors to Tiger Electronics, Inc., Vernon Hills, Ill.
Continuation-in-part of Ser. No. 33,671, Jan. 18, 1995, abandoned. This application Dec. 11, 1995, Ser. No. 47,702
Term of patent 14 years
U.S. Cl. D14—100



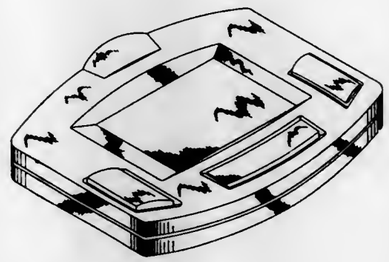
377,787
DATA-STORAGE LIBRARY DOOR ASSEMBLY
Allen E. Fleckenstein, 13212 SE. 51st Pl., Bellevue, Wash. 98006
Filed Nov. 13, 1995, Ser. No. 46,278
Term of patent 14 years
U.S. Cl. D14—107



377,788
CENTRAL PROCESSING UNIT COVER
Edward W. Carlson, 3009 E. Lake St., Minneapolis, Minn. 55406
Filed Feb. 9, 1995, Ser. No. 34,932
Term of patent 14 years
U.S. Cl. D14—114



377,789
TOUCH PAD
David Wang, Taipei, Taiwan, and Kris Verstockt, Antwerp, Belgium, assignors to Primax Electronics, Ltd., Hsi Chih Taipe Hsien, Taiwan
Filed Jul. 17, 1995, Ser. No. 41,486
Term of patent 14 years
U.S. Cl. D14—114



377,790
COMBINATION OF BASE UNITS FOR OPTICAL READERS
Lawrence R. Ober, Charlotte, N.C.; Danny M. Beadle, Mission Viejo; Gerald A. Wines, Santa Ana, both of Calif., and Lieb A. Lurie, Troy, Ohio, assignors to Hand Held Products, Inc., Charlotte, N.C.
Continuation of Ser. No. 45,473, Oct. 20, 1995. This application Mar. 25, 1996, Ser. No. 52,153
Term of patent 14 years
U.S. Cl. D14—114

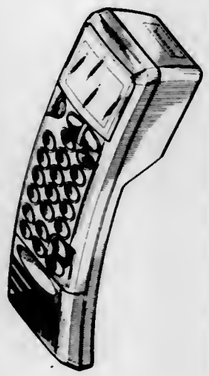


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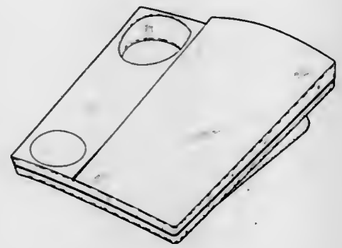
377,791
VIDEO CASSETTE
Kazushi Kirihara, and Michio Akita, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Sep. 11, 1995, Ser. No. 43,702
Term of patent 14 years
U.S. Cl. D14—121



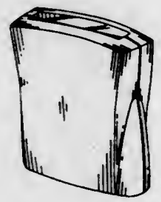
377,792
TELEPHONE HANDSET HOUSING
Phillip E. Lindeman, Gurnee, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Mar. 14, 1996, Ser. No. 51,645
Term of patent 14 years
U.S. Cl. D14—148



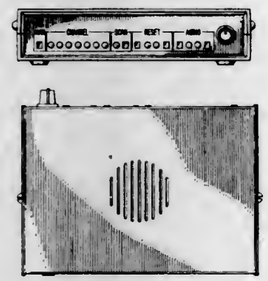
377,793
TELEPHONE STAND
Mark Biasotti, San Jose; Michael J. Nuttall, Portola Valley, both of Calif., and John H. Schaffeld, New Vernon, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.
Filed Dec. 30, 1994, Ser. No. 32,909
Term of patent 14 years
U.S. Cl. D14—149



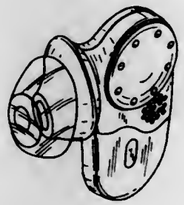
377,794
PAGER
Mark Biasotti, San Jose; Michael J. Nuttall, Portola Valley, both of Calif.; John H. Schaffeld, New Vernon, and Jose A. Sosa, Hackettstown, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.
Filed Jan. 4, 1995, Ser. No. 33,041
Term of patent 14 years
U.S. Cl. D14—191



377,795
RADIO
Daniel R. Gropper, P.O. Box 625, Vienna, Va. 22183
Filed Feb. 5, 1996, Ser. No. 49,927
Term of patent 14 years
U.S. Cl. D14—197



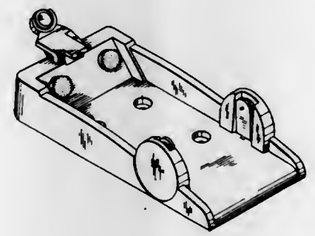
377,796
EARPHONE COMBINED WITH MICROPHONE
Haruo Hayashi, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Sep. 13, 1995, Ser. No. 43,818
Term of patent 14 years
U.S. Cl. D14—206



377,797
REMOTE CONTROL DEVICE FOR ELECTRONIC EQUIPMENT
Scott E. Stropkay, Carlisle, and Mark A. Nichols, Cambridge, both of Mass., assignors to Video Guide, Inc., Bedford, Mass.
Filed Sep. 27, 1995, Ser. No. 44,633
Term of patent 14 years
U.S. Cl. D14—218

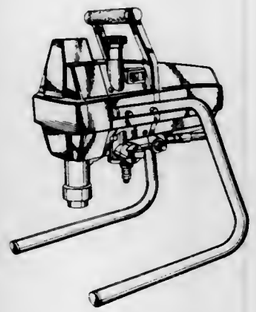


377,798
PORTABLE TELEPHONE HOLDER
Martin Heine, Troy, Ohio, assignor to Valor Enterprises, Inc., Piqua, Ohio
Filed May 24, 1996, Ser. No. 54,894
Term of patent 14 years
U.S. Cl. D14—253

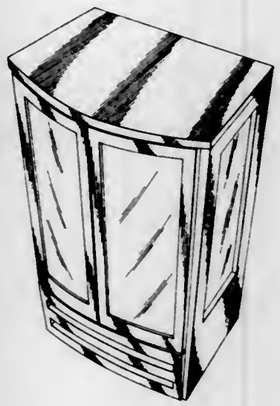


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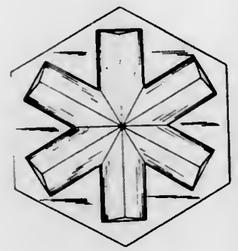
377,799
CONSUMER PISTON PAINT PUMP
Thomas F. Kruzel, Maple Grove, and Andrew L. Von Duyke, Minnetonka, both of Minn., assignors to Wagner Spray Tech Corporation, Minneapolis, Minn.
Filed Feb. 20, 1996, Ser. No. 49,812
Term of patent 14 years
U.S. Cl. D15—7



377,800
TWO DOOR REFRIGERATOR WITH CURVED DOORS
Michael A. Branz, Spartanburg; Harry A. Brancheau, Inman; Ronald D. Upton, Spartanburg, and Dan G. Hopkins, Inman, all of S.C., assignors to Specialty Equipment Companies, Inc., Berkeley, Ill.
Filed Dec. 1, 1994, Ser. No. 31,615
Term of patent 14 years
U.S. Cl. D15—85



377,801
SIX-EDGED CUTTING TOOL
Dieter Kress, Aalen, and Friedrich Haeberle, Lauchheim, both of Germany, assignors to Mapal Fabrik fur Prazisionswerkzeuge Dr. Kress KG, Aalen, Germaoy
Filed Dec. 21, 1995, Ser. No. 48,128
Claims priority, application Germany, Jun. 22, 1995, M9505214.3
Term of patent 14 years
U.S. Cl. D15—139



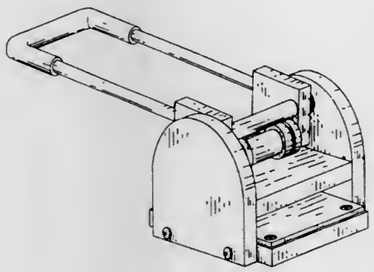
377,802
SPORTS EYEWEAR
Peter F. Leonardi, Gloversville, N.Y., assignor to Halo Sports and Safety, Inc., Gloversville, N.Y.
Filed Jan. 26, 1996, Ser. No. 51,323
Term of patent 14 years
U.S. Cl. D16—313



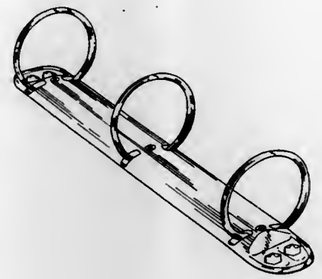
377,803
TEMPLE MEMBER FOR AN EYEGLASS FRAME
Ken Wilson, 5430 Linda Vista Rd. Apt. #2, San Diego, Calif. 92110
Filed Mar. 4, 1996, Ser. No. 51,138
Term of patent 14 years
U.S. Cl. D16—335



377,804
PAPER CUTTING PRESS
James H. Beijen, Mountain Home, Ark., assignor to School Systems, Inc., Mountain Home, Ark.
Filed Mar. 4, 1996, Ser. No. 51,119
Term of patent 14 years
U.S. Cl. D18—34



377,805
RING BINDER
Simon C. Y. To, Kowloon, Hong Kong, assignor to World Wide Stationery Manufacturing Co. Ltd., Hong Kong
Filed Oct. 20, 1995, Ser. No. 45,485
Term of patent 14 years
U.S. Cl. D19—32

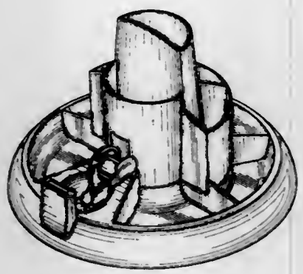


377,806
SPIN AND PICK LOTTERY PEN
Saul Samucha, San Francisco, Calif., assignor to Tradewinds International Enterprises, Inc., South San Francisco, Calif.
Filed Aug. 23, 1995, Ser. No. 43,006
Term of patent 14 years
U.S. Cl. D19—36



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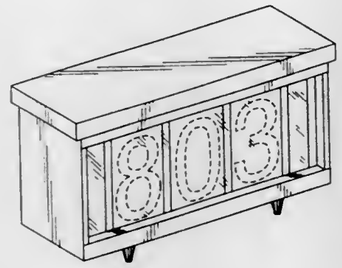
377,807
ROTARY ORGANIZER
Patrick M. Green, Maryville, and Robert R. Huerto, Farragut, both of Tenn., assignors to Rubbermaid Office Products Inc., Maryville, Tenn.
Filed Apr. 17, 1996, Ser. No. 53,216
Term of patent 14 years
U.S. Cl. D19—77



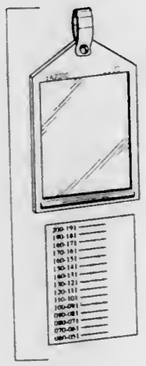
377,808
MAGNETIC BUSINESS CARD HOLDER
Matthew Coe, Cedar Grove, N.J., assignor to PharmaDesign, Inc., Warren, N.J.
Filed May 5, 1995, Ser. No. 38,407
Term of patent 14 years
U.S. Cl. D19—90



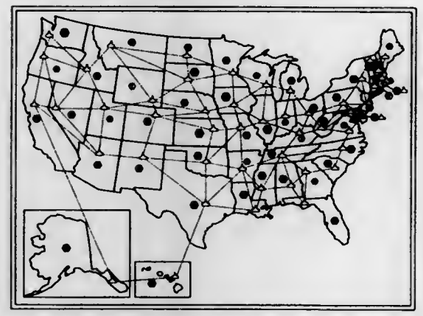
377,809
ILLUMINATED STREET ADDRESS SIGN
Jack S. DiMarco, Sr., and Beverly DiMarco, both of 3270 Deer Lick Ct., Kissimmee, Fla. 34746
Filed Mar. 1, 1995, Ser. No. 35,522
Term of patent 14 years
U.S. Cl. D20—17



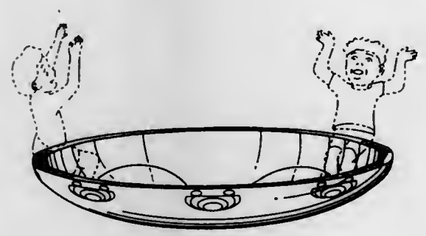
377,810
GOLFING ACCESSORY
William J. Chaperon, 2545 Golf Club Rd., Howell, Mich. 48843
Filed Feb. 24, 1995, Ser. No. 35,322
Term of patent 14 years
U.S. Cl. D20—27



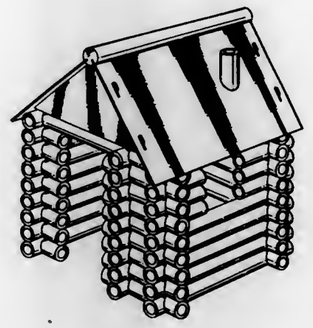
377,811
BOARD GAME
Richard C. Levy, P.O. Box 34828, Bethesda, Md. 20827
Filed Mar. 8, 1996, Ser. No. 51,378
Term of patent 14 years
U.S. Cl. D21—31



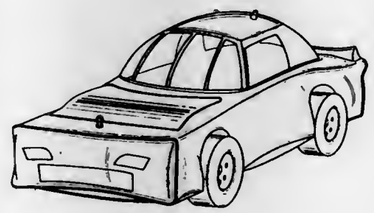
377,812
CHILD'S ROCKING TOY
Johnny W. Rister, 3104 Five Point Rd., Cottondale, Fla. 32431
Filed Aug. 21, 1995, Ser. No. 42,901
Term of patent 14 years
U.S. Cl. D21—66



377,813
PLAYHOUSE
David Hartman, Tottenham; Steven Hartman, Erin, and Michael White, Brampton, all of Canada, assignors to Industrial Thermo Polymers Limited, Brampton, Canada
Filed Apr. 10, 1996, Ser. No. 52,937
Term of patent 14 years
U.S. Cl. D21—114



377,814
INFLATABLE TOY RACING CAR
Marvin S. Lieberman, New York, N.Y., assignor to Alvimar Manufacturing Co., Inc., Long Island City, N.Y.
Filed Jul. 14, 1994, Ser. No. 25,857
Term of patent 14 years
U.S. Cl. D21—136

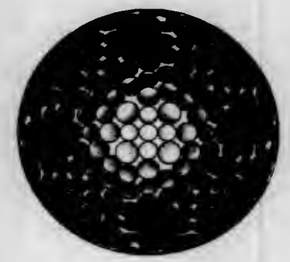


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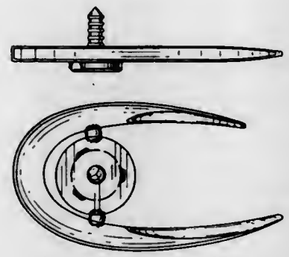
377,815
HUGGING NOVELTY
Anthony J. Deprima, 575 Westwood Dr., Dover, Del. 19904
Filed Aug. 21, 1995, Ser. No. 42,961
Term of patent 14 years
U.S. Cl. D21—168



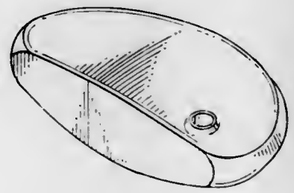
377,816
GOLF BALL DIMPLE PATTERN
Joseph F. Stiefel, Ludlow, Mass., and Donald J. Bunger, Waterbury, Conn., assignors to Lisco, Inc., Tampa, Fla.
Filed Sep. 13, 1995, Ser. No. 43,881
Term of patent 14 years
U.S. Cl. D21—205



377,817
GOLF BALL RETRIEVER
Jack A. Huber, 20833 Stephanie Dr., Canoga Park, Calif. 91306
Filed Nov. 14, 1994, Ser. No. 30,917
Term of patent 14 years
U.S. Cl. D21—206



377,818
GOLF PUTTER HEAD WITH MULTI-ARCUATE CONFIGURATION
Steven D. Gray, Poway, and Richard C. Helmstetter, Carlsbad, both of Calif., assignors to Callaway Golf Company, Carlsbad, Calif.
Filed Jan. 16, 1996, Ser. No. 47,832
Term of patent 14 years
U.S. Cl. D21—217



377,819
GOLF PUTTER
Thomas Kleinfelter, P.O. Box 249, Maple City, Mich. 49664
Filed Nov. 9, 1995, Ser. No. 46,259
Term of patent 14 years
U.S. Cl. D21—219



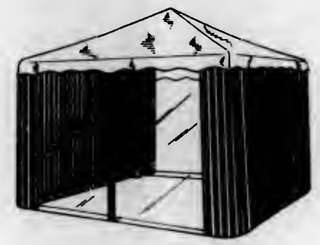
377,820
ROLLER SKATE
Peter Edauw, Camalo' Di Povegliano, and Francesco Caeran, Montebelluna, both of Italy, assignors to Nordica S.p.A., Italy, and Rollerblade, Inc., Minnetonka, Minn.
Filed Sep. 25, 1995, Ser. No. 44,453
Claims priority, application WIPO, Mar. 28, 1995, DM/032 625
Term of patent 14 years
U.S. Cl. D21—226



377,821
FLOAT
Frank C. Kuan, 4 Fl., 57, Fu Hsing N. Rd., Taipei, Taiwan
Filed May 20, 1996, Ser. No. 54,706
Term of patent 14 years
U.S. Cl. D21—237



377,822
PAVILION
Huang Lichia, P.O. Box 1-394, Chung-Ho, Taipei, Taiwan
Filed Jun. 23, 1995, Ser. No. 40,651
Term of patent 14 years
U.S. Cl. D21—253

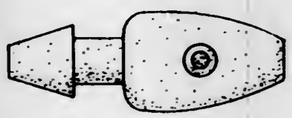


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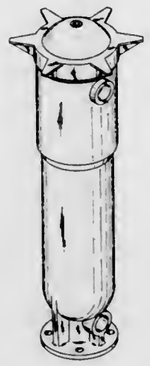
377,823
PORTABLE SHOOTING STAND
Odis E. Rainwater, 821 Nick Springs Rd., Eldorado, Ark. 71730
Filed Aug. 11, 1995, Ser. No. 42,548
Term of patent 14 years
U.S. Cl. D22—108



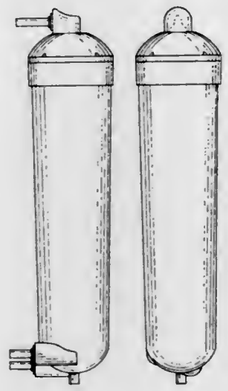
377,824
FISHING LURE
Jimmie J. McKeral, Jr., 2019 Piney Green Rd., Jacksonville, N.C. 28546
Filed Nov. 1, 1995, Ser. No. 45,872
Term of patent 14 years
U.S. Cl. D22—126



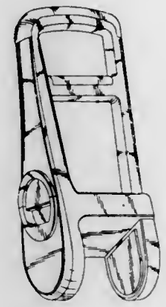
377,825
BAG FILTER VESSEL
Walter Booth, East Hanover, and Alan R. Levin, Somerville, both of N.J., assignors to H-Tech, Inc., Wilmington, Del.
Filed Oct. 27, 1995, Ser. No. 45,749
Term of patent 14 years
U.S. Cl. D23—209



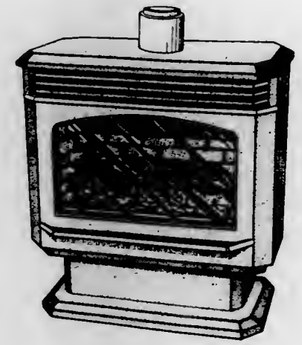
377,826
WATER PURIFICATION UNIT
Adam Robbins, San Marcos, Calif., assignor to Nimbus Water Systems, Inc., San Marcos, Calif.
Filed Feb. 23, 1996, Ser. No. 50,790
Term of patent 14 years
U.S. Cl. D23—209



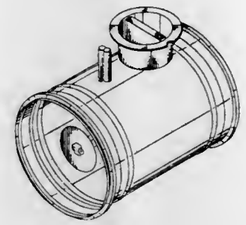
377,827
TUB HAND HOLD
Shivaprasad Dhanapal, Statesville, N.C.; Robert W. Jones, Hinsdale, Mass., and Charles F. T. Merritt, Southport, Conn., assignors to Rubbermaid Health Care Products Inc., Statesville, N.C.
Filed Nov. 14, 1995, Ser. No. 46,409
Term of patent 14 years
U.S. Cl. D23—304



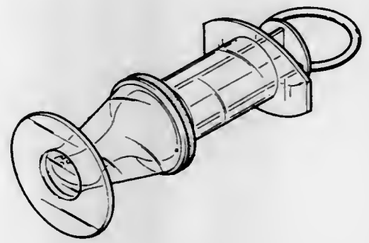
377,828
GAS FIRED HEATER
Andrew M. Wilson, Handsacre, England, assignor to Valor Limited, Birmingham, England
Filed Jul. 5, 1995, Ser. No. 41,064
Claims priority, application United Kingdom, Feb. 24, 1995, 20455889
Term of patent 14 years
U.S. Cl. D23—343



377,829
COMPONENT FOR A VENTILATION DUCT SYSTEM
Werner J. Andresen, Haderslev, Denmark, assignor to Lindab A/S, Haderslev, Denmark
Filed May 5, 1995, Ser. No. 38,480
Claims priority, application Sweden, Nov. 9, 1994, 942280
Term of patent 14 years
U.S. Cl. D23—393

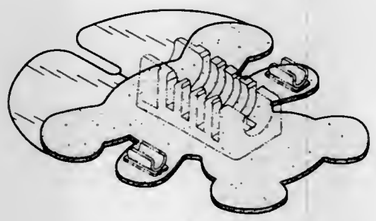


377,830
DISPENSING SYRINGE FOR ORAL MEDICATION
Wen C. Lai, 7th, No. 56, Chu Lun Street, Taipei, Taiwan
Filed Dec. 6, 1995, Ser. No. 47,502
Term of patent 14 years
U.S. Cl. D24—114



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377,831
ANCHOR PAD WITH RELEASE LAYER
Steven F. Bierman, Del Mar, Calif., assignor to Venetec International, Inc., Mission Viejo, Calif.
Filed May 17, 1995, Ser. No. 39,191
Term of patent 14 years
U.S. Cl. D24—127



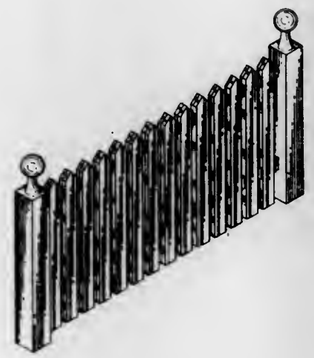
377,832
BREAST EXAMINATION REMINDER KIT
Jeffrey M. Jacober; Fran Z. Slutsky, and Joe Newman, all of Providence, R.I., assignors to The Ocean Group, Providence, R.I.
Filed Dec. 7, 1995, Ser. No. 47,568
Term of patent 14 years
U.S. Cl. D24—186



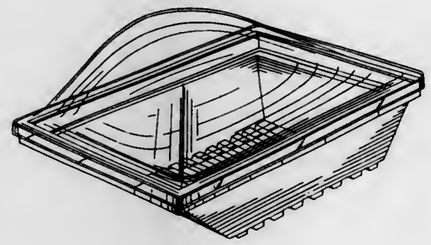
377,833
THERAPEUTIC WEIGHT TRANSFER SLING
L. Matthew Schwartz, Philadelphia, Pa., assignor to Albert Einstein Healthcare Network, Philadelphia, Pa.
Filed Aug. 28, 1995, Ser. No. 43,181
Term of patent 14 years
U.S. Cl. D24—190



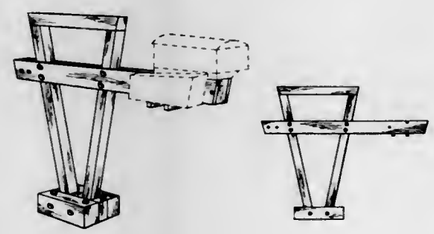
377,834
FENCE
Donald G. Simpson, 8005 James Rd., Fort Pierce, Fla. 34951
Filed Jun. 16, 1995, Ser. No. 40,386
Term of patent 14 years
U.S. Cl. D25—38



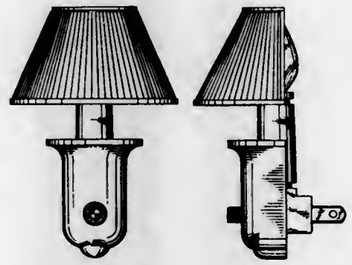
377,835
COMBINED SKYLIGHT AND BASE
Gilbert F. Fisher, III, 556 Laurel Wood Ct., Marietta, Ga. 30064, and John C. Roberts, 1125 Pinar Dr., Orlando, Fla. 32825
Filed Jan. 4, 1995, Ser. No. 48,572
Term of patent 14 years
U.S. Cl. D25—52



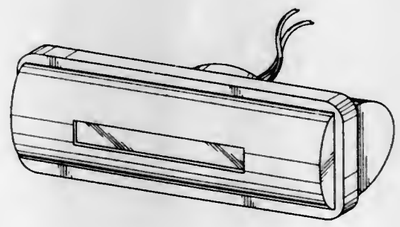
377,836
MAILBOX POST
Kenneth A. Miller, and Stanley R. Miller, both of 6835 Case Rd., North Ridgeville, Ohio 44039-2755
Filed Mar. 14, 1996, Ser. No. 51,639
Term of patent 14 years
U.S. Cl. D25—126



377,837
NIGHT LIGHT
Fred Hollinger, Kings Park, N.Y., assignor to American Tack & Hardware Co., Inc., Monsey, N.Y.
Filed Apr. 8, 1996, Ser. No. 52,831
Term of patent 14 years
U.S. Cl. D26—26

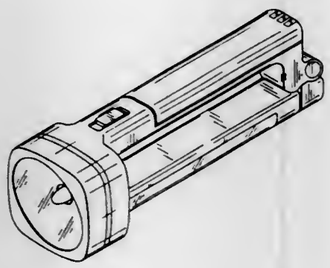


377,838
AUTOMOBILE LIGHT
Rupinder Malhotra, 1604 Stancombe Cres., Mississauga, ON, Canada
Filed Jan. 25, 1996, Ser. No. 49,516
Term of patent 14 years
U.S. Cl. D26—28

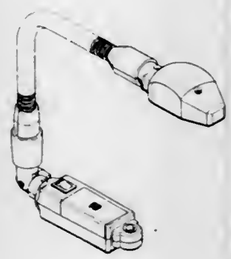


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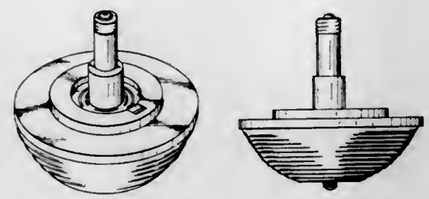
377,839
RECHARGEABLE LANTERN
Se K. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Dec. 1, 1995, Ser. No. 47,331
Claims priority, application United Kingdom, Jul. 21, 1995, 2049004
Term of patent 14 years
U.S. Cl. D26—42



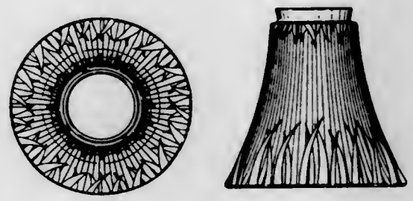
377,840
MULTI-FUNCTION LIGHT
Shu-Pang Chang, P.O. Box 96-405, Taipei 10098, Taiwan
Filed Jan. 18, 1996, Ser. No. 49,146
Term of patent 14 years
U.S. Cl. D26—62



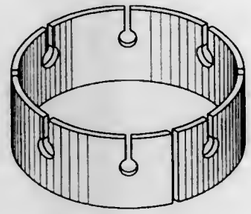
377,841
CEILING LIGHTING FIXTURE
Usman Vakil, Walnut, Calif., assignor to Lights of America, Inc., Walnut, Calif.
Filed Aug. 20, 1993, Ser. No. 12,068
Term of patent 14 years
U.S. Cl. D26—85



377,842
LIGHT SHADE
Jan Jaspers-Fayer, Idyllwild, Calif., assignor to Minka Lighting Inc., Corona, Calif.
Division of Ser. No. 24,411, Jun. 14, 1994, Pat. No. Des. 369,880. This application Jul. 11, 1995, Ser. No. 41,301
Term of patent 14 years
U.S. Cl. D26—134



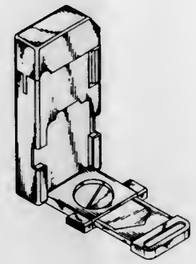
377,843
CHRISTMANS TREE LIGHT HOLDER
June M. Schering, 1615 27th St., NW., Canton, Ohio 44709
Filed Jun. 26, 1995, Ser. No. 40,740
Term of patent 14 years
U.S. Cl. D26—138



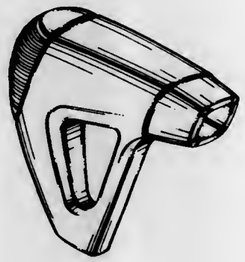
377,844
LIGHT SUPPORT STAKE
Lonnie F. Gary; Don Blevins, and Steven K. Hargrove, all of Lubbock, Tex., assignors to Industrial Molding Corporation, Lubbock, Tex.
Filed Jan. 16, 1996, Ser. No. 49,062
Term of patent 14 years
U.S. Cl. D26—138



377,845
COMBINATION CIGAR LIGHTER AND CUTTER
Susumu Maruyama, Tokyo, Japan, assignor to Colibri Corporation, Providence, R.I.
Filed May 8, 1996, Ser. No. 54,202
Term of patent 14 years
U.S. Cl. D27—142



377,846
HAIR DRYER
Lee Knuth, El Paso, Tex.; Doug Brewer, Chicago, Ill.; Julio Batiz, Santa Teresa, N.M., and Gary Koenemann, El Paso, Tex., assignors to Helen of Troy Corporation, El Paso, Tex.
Filed Jan. 14, 1994, Ser. No. 17,566
Term of patent 14 years
U.S. Cl. D28—13



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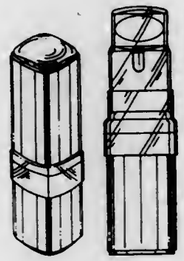
377,847
LADIES WET/DRY SHAVER
Joseph M. Sulik, Bridgeport, Conn., assignor to Remington Products Company, Bridgeport, Conn.
Filed Dec. 27, 1995, Ser. No. 48,361
Term of patent 14 years
U.S. Cl. D28—49



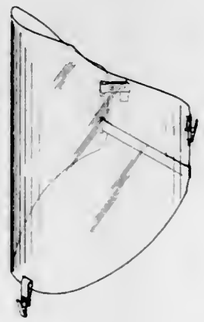
377,848
LIPSTICK CASE
Ellen Gavin, Atlantic Highlands, N.J., assignor to Cosmair, Inc., New York, N.Y.
Filed Feb. 9, 1995, Ser. No. 34,657
Term of patent 14 years
U.S. Cl. D28—85



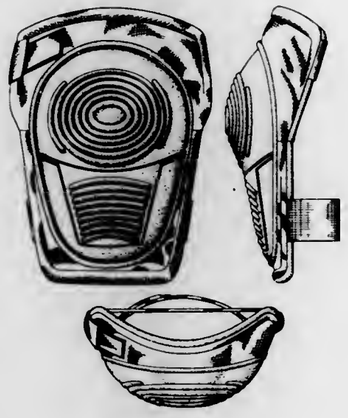
377,849
LIPSTICK CONTAINER WITH TRANSPARENT DUST PROTECTOR
Michael J. Fabrisi, Naugatuck, Conn., assignor to Rexam Cosmetic Packaging Inc., Torrington, Conn.
Continuation of Ser. No. 22,916, May 16, 1994, abandoned.
This application Aug. 23, 1995, Ser. No. 43,016
Term of patent 14 years
U.S. Cl. D28—85



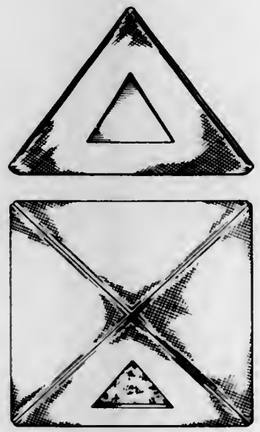
377,850
SAFETY SHIELD
Jack V. Smith, St. Petersburg, and Jesse M. Carter, Tampa, both of Fla., assignors to Chimera Research & Chemical, Inc., Tampa, Fla.
Filed Sep. 13, 1995, Ser. No. 43,886
Term of patent 14 years
U.S. Cl. D29—108



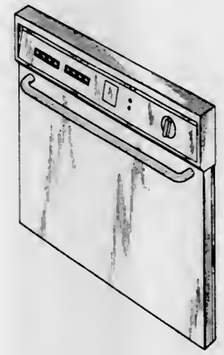
377,851
KNEEPAD
Michael Dancyger, 811 W. 58th St., Los Angeles, Calif. 90037
Filed Jan. 25, 1995, Ser. No. 34,034
Term of patent 14 years
U.S. Cl. D29—121



377,852
COVERED PET BED
Jeanne M. Iben, P.O. Box 5173, Gardnerville, Nev. 89410
Filed Apr. 8, 1996, Ser. No. 52,826
Term of patent 14 years
U.S. Cl. D30—118



377,853
DISHWASHER FRONT PANEL
Walton E. Sparks, Dublin, Ohio, assignor to White Consolidated Industries, Inc., Cleveland, Ohio
Filed Nov. 6, 1995, Ser. No. 46,016
Term of patent 14 years
U.S. Cl. D32—3

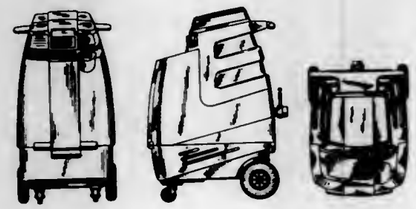


377,854
ELECTRIC VACUUM CLEANER
Jean-Marie Clouet, Argonnay, France, assignor to Cartier International B.V., Amsterdam, Netherlands
Filed Oct. 18, 1995, Ser. No. 45,401
Claims priority, application France, Apr. 28, 1995, 95/2507
Term of patent 14 years
U.S. Cl. D32—21

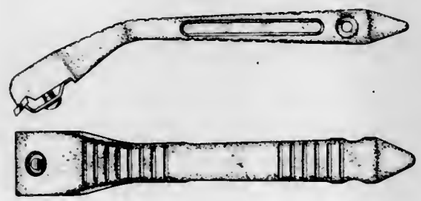


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377,855
CARPET CLEANER
John F. Labarbera, 12675 Danielson Ct. #44, Poway, Calif. 92064
Filed Jan. 9, 1996, Ser. No. 48,696
Term of patent 14 years
U.S. Cl. D32—21



377,856
SCRAPER HANDLE
William R. Hartman, 3601 W. 73rd St., Prairie Village, Kans. 66208
Filed Nov. 29, 1995, Ser. No. 47,222
Term of patent 14 years
U.S. Cl. D32—48



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 4th DAY OF FEBRUARY, 1997

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Aarts, Mathias L. C., to Sara Lee/De N.V. Vacuum package, method and apparatus for making such vacuum package filled with granular material. 5,598,684, Cl. 53-434.000.

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Dowell, Barry L.; King, Carol A.; Alexander, Debra B.; Smith, Allan H.; and O'Morchoe, Susan B., 5,599,677, Cl. 435-7.400.
Meyer, Glenn A.; and Mazer, Terrence B., 5,599,556, Cl. 424-491.000.
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Czipri, John, 5,598,803, Cl. 114-218.000.

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Adamopoulos, Eleftherios; Kim, Jungihl; Lee, Kang-Wook; Oh, Tae S.; O'Toole, Terrence R.; Purushothaman, Sampath; Ritsko, John J.; Shaw, Jane M.; Viehbeck, Alfred; and Walker, George F., to International Business Machines Corporation. Adhesive layer in multi-level packaging and organic material as a metal diffusion barrier. 5,599,582, Cl. 427-207.100.

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Advanced Waste Reduction: *See*—
Fanning, Chris E., 5,599,456, Cl. 210-668.000.
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Leone, Vincent D.; Walker, Jeffrey E.; Grichar, Charles N.; Seyffert, Kenneth W.; and McClung, Guy L., III, 5,598,930, Cl. 209-403.000.

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Fich, Preben B., to IDEAssociates Ltd. Furniture with a tubular underframe. 5,598,790, Cl. 108-153.000.

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Rudloff, Werner, 5,598,905, Cl. 188-322.160.

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Roderick, Anthony G., 5,599,238, Cl. 473-147.000.

Field, Roger C. Protective system for dental drill units. 5,599,184, Cl. 433-115.000.

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Fields, Sandra. Fortune telling game using cards. 5,599,020, Cl. 273-161.000.

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Detmers, Andreas; and Filsinger, Karl-Heinz, 5,599,013, Cl. 271-195.000.

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Lorey, Manfred, 5,599,270, Cl. 494-5.000.

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Verwey, Edwin; Rijkse, Ludwig K.; and Gillard, Michel, 5,599,873, Cl. 524-545.000.

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Youdim, Moussa B. H.; Finberg, John P. M.; Levy, Ruth; Sterling, Jeffrey; Lerner, David; Yellin, Haim; and Veinberg, Alex, 5,599,991, Cl. 564-308.000.

Findeisen, Kurt: *See*—
Müller, Klaus-Helmut; Babczinski, Peter; Santel, Hans-Joachim; Schmidt, Robert R.; Findeisen, Kurt; Lindig, Markus; Lürssen, Klaus; and Strang, Harry, 5,599,944, Cl. 548-263.600.

Fink, Paul J.: *See*—
Schaeffer, Jon C.; Bartz, Andi K.; and Fink, Paul J., 5,598,968, Cl. 228-262.310.

Finkelstein, Harvey; Flores, Victor; Singer, Murray; and Verdel, Anatoly, to Tri-Seal International, Inc. Cap liner for hot filled container and method of making. 5,598,940, Cl. 215-348.000.

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Firm Hermann Heye, The: *See*—

Struckmeier, Manfred; Graefe, Andreas; and Möller, Eckhard, 5,599,370, Cl. 65-207.000.

Firm, Inc., The: *See*—
Stone, Michael R.; and Henriksen, Mark S., 5,599,258, Cl. 482-52.000.

Firmenich SA: *See*—
Whitehead, Ian M.; and Ohleyer, Eric, 5,599,700, Cl. 435-136.000.

Fischer, Frederick B. Use of DL-lipoic acid as a medical food in the treatment of diabetes mellitus. 5,599,835, Cl. 514-440.000.

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Bieck, Torsten, 5,598,925, Cl. 206-387.100.
Plocher, Bernd; Koerber, Juergen; and Koukal, Heinz, 5,598,999, Cl. 248-311.200.

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Evans, Maurice J.; Williams, Keith A.; and Fisher, Ronald, 5,599,603, Cl. 428-66.200.

Fitness Master, Inc.: *See*—
Easley, James B.; and Tupper, Thomas G., 5,599,261, Cl. 482-130.000.

Fitzgerald, Maurice J.: *See*—
Bi, Daoshen; Fitzgerald, Maurice J.; Kearney, Frederick R.; Liang, Rong-Chang; Schwarzel, William C.; and Yeh, Tung-Feng, 5,599,650, Cl. 430-273.100.

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Funk, Dieter; Bruns, Dieter; Wenning, Rolf; and Brans, Walter, 5,599,367, Cl. 65-29.110.

Fleck, Thomas J.: *See*—
Folkins, Jeffrey J.; Bullock, Roger L.; Fleck, Thomas J.; Pietrowski, Kenneth W.; Tabb, Charles H.; Yu, Zhao-Zhi; and Gwaltney, Mark A., 5,600,430, Cl. 399-171.000.

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Boroson, Michael L.; and Fleischer, Cathy A., 5,599,766, Cl. 503-227.000.

Fleming, John A.; and Romanauskas, William A., to Sorvall Products, L.P. Energy monitor for a centrifuge instrument. 5,600,076, Cl. 73-865.900.

Fleming, John A.: *See*—
Carson, David M.; Fleming, John A.; and Miranda, Victor W., Jr., 5,600,192, Cl. 310-68.00B.

Flenø, Bent; Christensen, Ib; Larsen, Robert; Johansen, Steffen R.; and Johnson, Eric A., to Gist-brocades, N.V. Astaxanthin-producing yeast cells, methods for their preparation and their use. 5,599,711, Cl. 435-255.100.

Flexible Steel Lacing Company: *See*—
Julen, Donald L.; Ramsey, Peter M.; Drabek, David F.; and Winkelman, John H., 5,599,131, Cl. 403-342.000.

Flexiform Business Furniture Limited: *See*—
Law, Andrew J.; and Parker, Raymond, 5,599,077, Cl. 312-221.000.

Flexstake, Inc.: *See*—
Hughes, Robert K., Jr., 5,599,132, Cl. 404-6.000.

Flinchum, Harold C. Trailer ramp mechanism. 5,598,595, Cl. 14-69.500.

Floatline AB: *See*—
Svensson, Stig-Åke, 5,599,153, Cl. 414-143.200.

Flores, Victor: *See*—
Finkelstein, Harvey; Flores, Victor; Singer, Murray; and Verdel, Anatoly, 5,598,940, Cl. 215-348.000.

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McQueen, Malcolm M., 5,600,528, Cl. 361-103.000.

Fluid Power Industries, Inc.: *See*—
Harms, Louis C.; and Rosenbrock, Richard, 5,598,794, Cl. 111-177.000.

FMC Corporation: *See*—
Bauman, William C.; and Burba, John L., III, 5,599,516, Cl. 423-179.500.
Megargle, William F.; Bruhn, Wayne M.; and Clements, Steven L., 5,598,953, Cl. 222-143.000.
Schwindeman, James A.; Granger, Eric J.; Engel, John F.; and Kamienski, Conrad W., 5,600,021, Cl. 568-671.000.

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Gardano, Andrea; Strologo, Sauro; and Foa', Marco, 5,599,514, Cl. 423-55.000.

Fodor, Stephen P. A.: *See*—
Pease, R. Fabian; McGall, Glenn; Goldberg, Martin J.; Rava, Richard P.; Fodor, Stephen P. A.; Goss, Virginia; Stryer, Lubert; and Winkler, James L., 5,599,695, Cl. 435-91.100.

Foerster, Ronald E.: *See*—
Dunn, Michael J.; Atherly, Don H.; Reudink, Douglas O. J.; Feuerstein, Martin J.; Foerster, Ronald E.; Chuang, Ching; and Vendetti, Dino J., 5,600,706, Cl. 379-59.000.

Fogel, Sergei V.: *See*—
Sezan, Muhammed I.; Ozkan, Mehmet K.; and Fogel, Sergei V., 5,600,731, Cl. 382-107.000.

Foley, Geoffrey M. T.; Herbert, William G.; Swain, Eugene A.; Rasmussen, Yonn K.; and Maier, Gary J., to Xerox Corporation. Higher substrate density dip coating method. 5,599,646, Cl. 430-133.000.

Folkerts, Wiepke: *See*—
Ruigrok, Jacobus J. M.; Gijs, Martinus A. M.; Kools, Jacques C. S.; Coehoorn, Reinder; and Folkerts, Wiepke, 5,600,297, Cl. 338-32.00R.

Folkins, Jeffrey J.; Bullock, Roger L.; Fleck, Thomas J.; Pietrowski, Kenneth W.; Tabb, Charles H.; Yu, Zhao-Zhi; and Gwaltney, Mark A., to Xerox Corporation. Split recharge method and apparatus for color image formation. 5,600,430, Cl. 399-171.000.

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Cerri, Alberto; Bianchi, Giuseppe; Ferrari, Patrizia; Folpini, Elena; and Melloni, Piero, 5,599,806, Cl. 514-174.000.

Foltz, Robert S., to Xerox Corporation. Barbed ring flange assembly. 5,599,265, Cl. 492-47.000.

Fong, Vincent L., to National Semiconductor Corporation. Apparatus and method for reducing erased threshold voltage distribution in flash memory arrays. 5,600,593, Cl. 365-185.190.

Fontana, Steven A.: *See*—
Cullinan, George J.; and Fontana, Steven A., 5,599,822, Cl. 514-324.000.

Foodservice Equipment, Engineering & Consulting, Inc.: *See*—
Luebke, Clement J.; and Stanger, Keith A., 5,598,769, Cl. 99-395.000.

Forbey, Deborah: *See*—
Williams, Frank; Wheatley, William C.; Sevilla, Gentelia, John S.; Longo, Sharyn; and Forbey, Deborah, 5,599,348, Cl. 606-45.000.

Ford, George W., Jr., to Covol Technologies, Inc. Reclaiming and utilizing discarded and newly formed coke breeze, coal fines, and blast furnace revert materials, and related methods. 5,599,361, Cl. 44-553.000.

Ford Motor Company: *See*—
Beim, Rudolf; and McCarrick, Daniel W., 5,599,251, Cl. 475-275.000.
DeBano, Richard J., Jr., 5,598,951, Cl. 222-83.000.
Dutta, Kalyan, 5,599,086, Cl. 362-74.000.
Hamburg, Douglas R.; and Reed, Dennis C., 5,598,703, Cl. 60-285.000.
Holloway, Henry; and Kubinski, David J., 5,600,238, Cl. 324-207.210.
Povinger, Bela P., 5,598,823, Cl. 123-463.000.
Rao, V. Durga N.; and Yeager, David A., 5,598,763, Cl. 92-212.000.
Treusch, Christopher J.; Clark, James W., Jr.; and Panasuk, Gerard N., 5,598,824, Cl. 123-470.000.

Forgang, Stanislav; and Fanini, Otto N., to Western Atlas International, Inc. Method and apparatus for reducing signal-phase error in induction well logging instruments. 5,600,246, Cl. 324-339.000.

Fori Automation, Inc.: *See*—
Bartko, Robert J.; and Rosen, Jack H., 5,600,435, Cl. 356-139.090.

Forrest, Randall G.; Turner, Timothy L.; and Thurman, Donald M., to American National Can Company. Reformed container end. 5,598,734, Cl. 72-348.000.

Forsberg, John W.: *See*—
Jahnke, Richard W.; and Forsberg, John W., 5,599,777, Cl. 507-244.000.

Forsell, Peter. Apparatus for rotating an optical disk including an air bearing turntable. 5,600,624, Cl. 369-266.000.

Forsheda AB: *See*—
Neumann, Wieland; and Mehl, Helmut, 5,599,028, Cl. 277-199.000.

Fortin, Michel: *See*—
Caille, Jean C.; Corbier, Alain; Fortin, Michel; Hamon, Gilles; Jouquey, Simone; and Vevert, Jean P., 5,599,830, Cl. 514-398.000.

Foss, Robert A.; Lewis, Patrick M.; and Duffey, Michael P., to UVP, Inc. Bent tube lamp. 5,600,205, Cl. 313-634.000.

Foster, Clark B.: *See*—
Haber, Terry M.; Smedley, William H.; and Foster, Clark B., 5,599,351, Cl. 606-167.000.

Foster-Miller, Inc.: *See*—
Hill, Wayne S., 5,600,073, Cl. 73-861.040.

Fox, Angus C., III: *See*—
Gonzalez, Fernando; and Fox, Angus C., III, 5,600,161, Cl. 257-306.000.

Fox Chase Cancer Center: *See*—
Yen, Timothy J.; and Rattner, Jerome B., 5,599,919, Cl. 536-23.500.

Fox, Marilyn S.: *See*—
Fox, Morton H., 5,598,892, Cl. 173-170.000.

Fox, Morton H., to Fox, Marilyn S. Tool extender. 5,598,892, Cl. 173-170.000.

Francalanci, Franco: *See*—
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France, Daniel R. Apparatus for stretching a penis. 5,599,275, Cl. 600-38.000.

France Telecom: *See*—
Boyer, Pierre; Mangin, Christophe; and Servel, Michel, 5,600,645, Cl. 370-395.000.

Franckowiak, Gerhard: *See*—
Grunenberg, Alfons; Hegasy, Ahmed; Mück, Wolfgang; Franckowiak, Gerhard; and Kanikanti, Rango-Rao, 5,599,824, Cl. 514-356.000.

Franco, Polastri: *See*—
Vincenzo, Giobbio; and Franco, Polastri, 5,599,946, Cl. 548-432.000.

Francois, Yves: *See*—
Hirtz, Gangolf; Bader, Bernd; Francois, Yves; Tenconi, Bernd; and Ohnemus, Fritz, 5,600,212, Cl. 315-391.000.

Francotyp-Postalia AG & Co.: *See*—
Guenther, Stephan, 5,600,562, Cl. 364-464.110.

Frank, Dara W.: *See*—
Barbieri, Joseph T.; Frank, Dara W.; and Kulich, Scott M., 5,599,665, Cl. 435-6.000.

Frank, Harvey A.: *See*—

Surampudi, Subbarao; Narayanan, Sekharipuram R.; Vamos, Eugene; Frank, Harvey A.; Halpert, Gerald; Olah, George A.; and Prakash, G. K. Surya, 5,599,638, Cl. 429-33.000.

Franklin, Lloyd C.: *See*—
Silverman, Richard B.; Andruszkiewicz, Ryszard; Yuen, Po-Wai; Sobieray, Denis M.; Franklin, Lloyd C.; and Schwindt, Mark A., 5,599,973, Cl. 562-443.000.

Fraschilla, John: *See*—
Whelan, David A.; Fraschilla, John; and Pierce, Brian M., 5,600,325, Cl. 342-13.000.

Fredericks, Kenneth J.; Galbraith, Robert E.; Guyette, Richard R.; Halma, Marten J.; Hough, Roger E.; John, Suzanne M.; Mazurowski, James C.; Oakes, Kenneth J.; and Wyman, Leslie W., to International Business Machines Corporation. Pass-through for I/O channel subsystem call instructions for accessing shared resources in a computer system having a plurality of operating systems. 5,600,805, Cl. 395-825.000.

Freedman, Lorri. Computer keyboard. 5,600,313, Cl. 341-22.000.

Freislinger, Kirsten: *See*—
Hermann, George D.; Freislinger, Kirsten; Kim, Steven W.; Lenker, Jay A.; and Evans, Michael A., 5,599,305, Cl. 604-95.000.

Freitag, Rainer: *See*—
Burckhardt, Manfred; Eilert, Gerd; Freitag, Rainer; Mueller, Armin; Schoeb, Reinhold; Spiecker, Rainer; Kazan, Sinan; and Zimmer, Richard, 5,599,076, Cl. 303-150.000.

Frettoli, Domenico, to Ideal Standard SPA. Hinge device for securing the seat and lid to a water closet pan. 5,598,589, Cl. 4-236.000.

Freund, Peter: *See*—
Mertens, Alfred; Wolff, Hans-Peter; and Freund, Peter, 5,599,826, Cl. 514-364.000.

Freund, Peter W.; Sjoholm, Lars I.; and LaBossiere, Joseph E., to Westinghouse Electric Corporation. Refrigeration system and method utilizing combined economizer and engine coolant heat exchanger. 5,598,718, Cl. 62-238.600.

Freundt, Ulrich: *See*—
Röhm, Volker; Vesin, Gerard; and Freundt, Ulrich, 5,599,155, Cl. 414-283.000.

Frey, Thomas H.; and Lieberman, Isaiah, to Signa Scan, Inc. Method of determining the age of ink having time dependent characteristics. 5,600,443, Cl. 356-402.000.

Friedrich, Wolfgang: *See*—
Becker, Rainer; Friedrich, Wolfgang; Klink, Walter; Schossig, Juergen; and Henne, Andreas, 5,600,018, Cl. 568-483.000.

Friesner, Richard A.; Monge, Alessandro; and Gunn, John, to Trustees of Columbia University in the City of New York, The. Method for determining protein tertiary structure. 5,600,571, Cl. 364-496.000.

Frigoscandia Equipment AG: *See*—
Malmberg, Jonny; Hocker, Jon A.; Strong, John R.; and Hogan, Donald L., 5,598,915, Cl. 198-495.000.

Friis, Niels; and Frølich, Per, to Cheminova Agro A/S. Process for the preparation of 2,3,5,6-tetrachloropyridine. 5,599,939, Cl. 546-250.000.

Fritch, John F.; Aslam, Mohammad; Rios, Dora E.; and Smith, Joel C., to Hoechst Celanese Corporation. Use of 4-substituted 2-butanones to prepare nabumetone. 5,600,009, Cl. 568-318.000.

Fritz, Carl E.: *See*—
Broome, E. Clark; Capper, Harry M.; Denovich, Sam; Fritz, Carl E.; Hawk, Kenneth C.; Hower, James S.; and Robertson, James W., 5,600,716, Cl. 379-399.000.

Frohning, Carl D.: *See*—
Deckers, Gregor; Diekhaus, Gerhard; Dorsch, Bernd; Frohning, Carl D.; Horn, Gerhardt; and Horrig, Horst B., 5,600,030, Cl. 568-881.000.

Frølich, Per: *See*—
Friis, Niels; and Frølich, Per, 5,599,939, Cl. 546-250.000.

Frommer, Jurgen; and Kreutter, Erich, to ITT Cannon Electric GmbH. Contact spring arrangement. 5,599,213, Cl. 439-857.000.

Fromson, Leonard E., to Maxwell Products, Inc. User-controllable adjustable massage bed. 5,600,214, Cl. 318-120.000.

Frost, Frederick C.; Williams, Edward T.; and Saunders, Peter, to F C Frost Limited. Disposal Unit. 5,599,421, Cl. 156-359.000.

Fryar, Richard D., Jr.: *See*—
Conway, Anthony J.; Conway, Philip J.; and Fryar, Richard D., Jr., 5,599,321, Cl. 604-265.000.

Frye, Ricky J.: *See*—
Conley, Ralph F., Jr.; Frye, Ricky J.; and Gehres, Clint E., 5,598,801, Cl. 112-475.070.

FTG Data Systems: *See*—
Bartholow, Paul A.; and Loebertmann, Douglas E., 5,600,348, Cl. 345-180.000.

Fuchs, Hermann: *See*—
Baur, Rüdiger; Fuchs, Hermann; Macholdt, Hans-Tobias; Gitzel, Jörg; and Theisse, Wilfried, 5,600,003, Cl. 568-1.000.

Fuhrmann, Arthur D., III; Stevens, Craig; and Gramolini, Glenn, to BIC Corporation. Cap for writing and marking instruments. 5,599,127, Cl. 401-202.000.

Fuji Electric Co., Ltd.: *See*—
Yamada, Yoshimasa, 5,598,766, Cl. 99-331.000.

Fuji Photo Film Co., Ltd.: *See*—
Fujisaki, Yasushi; Seto, Yoshihiro; Watanabe, Seiichi; and Terashima, Kaoru, 5,599,505, Cl. 422-104.000.
Hiiro, Hiroyuki, 5,600,666, Cl. 372-24.000.
Takeshita, Yukitaka, 5,600,385, Cl. 396-319.000.
Tatsuta, Noriaki; Okegawa, Akihiko; Kawakami, Masayuki; and Koya, Keizo, 5,599,825, Cl. 514-366.000.

Fuji Photo Optical Co., Ltd.: *See*—
Katsuma, Toshiaki, 5,600,493, Cl. 359-717.000.

Fuji Xerox Co., Ltd.: *See*—
Ando, Ryo; and Mori, Hirotaka, 5,600,404, Cl. 399-18.000.
Ando, Toshiaki, 5,600,826, Cl. 395-611.000.
Hayashi, Naoki; and Saito, Kazuo, 5,600,771, Cl. 395-774.000.
Sekikawa, Yoshihito, 5,600,495, Cl. 359-819.000.
Takahashi, Kazuhiko, 5,600,415, Cl. 399-55.000.
Watanabe, Yoshiaki; and Miyazawa, Takuji, 5,600,427, Cl. 399-97.000.

Fujii, Kiyoshi: *See*—
Monoi, Makoto; Suzuki, Kenji; and Fujii, Kiyoshi, 5,600,159, Cl. 257-222.000.

Fujii, Takashi: *See*—
Mori, Hisayoshi; Goto, Norikata; Teraji, Nobushige; and Fujii, Takashi, 5,599,074, Cl. 303-113.200.

Fujimoto, Akihiko; Nagatomi, Takashi; and Sato, Naoki, to Fanuc Ltd. Drilling control apparatus. 5,599,142, Cl. 408-10.000.

Fujimoto, Hitoshi: *See*—
Kitahara, Yoshihiko; Takahashi, Yuji; and Fujimoto, Hitoshi, 5,599,014, Cl. 271-270.000.

Fujimoto, Katsunori: *See*—
Mishima, Akio; Harada, Tosiharu; Tanihara, Mamoru; Ota, Yasutaka; Okinaka, Kenji; Mori, Kohji; Kawasaki, Hirofumi; Nagai, Norimichi; Fujimoto, Katsunori; and Okuda, Yoshiro, 5,599,378, Cl. 75-348.000.

Fujino, Yoshifumi: *See*—
Kiyoura, Kazuhiro; Fujino, Yoshifumi; Bradshaw, Alex; Sasaki, Takashi; Haraguchi, Koichiro; and Matsumoto, Takeshi, 5,600,615, Cl. 369-44.350.

Fujioka, Futoshi: *See*—
Boden, Richard M.; Fylak, William J.; Hanna, Marie R.; and Fujioka, Futoshi, 5,599,960, Cl. 554-224.000.

Fujioka, Kazuo: *See*—
Aoki, Koso; Misawa, Hiromitsu; Okano, Yoji; Kozawa, Minoru; Uchida, Naoki; and Fujioka, Kazuo, 5,599,627, Cl. 428-403.000.

Fujirebio Inc.: *See*—
Matsumoto, Masakatsu; Watanabe, Nobuko; Mori, Eiko; Kobayashi, Hisako; and Ikawa, Hiroshi, 5,599,952, Cl. 549-362.000.

Fujisaki, Yasushi; Seto, Yoshihiro; Watanabe, Seiichi; and Terashima, Kaoru, to Fuji Photo Film Co., Ltd. Chemical analysis element cartridge with capping member. 5,599,505, Cl. 422-104.000.

Fujishiro, Atsushi; Ishii, Yukio; and Hara, Hitoshi, to Sumitomo Heavy Industries, Ltd. Method for controlling an ejector and injection molding machine. 5,599,486, Cl. 264-40.100.

Fujishita, Masakatsu; and Sato, Masahiro, to Hitachi, Ltd.; and Hitachi Automotive Engineering Co., Ltd. Knocking detection method for internal combustion engines and ignition timing control method therefor. 5,598,822, Cl. 123-425.000.

Fujita, Akitsugu; Kawano, Takayuki; Nakamura, Makoto; Sakai, Fumikazu; Matsumoto, Tatsuki; Oba, Shinsuke; Sueoka, Hidetoshi; Kimura, Manabu; Zama, Masato, deceased (by Kasuko Zama, Heiress), to Mitsubishi Jukogyo Kabushiki Kaisha. Method of producing a structural member. 5,599,408, Cl. 148-607.000.

Fujita Corporation: *See*—
Sato, Shinichiro, 5,599,713, Cl. 435-300.100.

Fujita, Hiroyuki: *See*—
Takatori, Masahiro; Ashi, Yoshihiro; and Fujita, Hiroyuki, 5,600,631, Cl. 370-217.000.

Fujita, Masami: *See*—
Balling, Edward N.; Fujita, Masami; Hazama, Kiyoaki; and Koizumi, Katsuyuki, 5,600,395, Cl. 396-6.000.

Fujita, Mitsuhiro: *See*—
Yabe, Manabu; Kitagawa, Masaru; Ohki, Takafumi; and Fujita, Mitsuhiro, 5,599,394, Cl. 118-319.000.

Fujita, Tatsuya: *See*—
Toyao, Tetsuya; Matsumoto, Toshiki; Aoki, Hiromasa; Fujita, Tatsuya; and Tojo, Senta, 5,599,509, Cl. 422-180.000.

Fujita, Yoshiyuki; Kaga, Kouichi; Uchida, Sadao; Umemura, Norio; and Nagata, Atsushi, to Toyoda Gosei Co., Ltd. Impact energy absorber. 5,599,043, Cl. 280-750.000.

Fujitsu Limited: *See*—
Fukuzawa, Shinichi, 5,600,514, Cl. 360-99.080.
Furuta, Tomohisa; Tanosaka, Kouji; and Takami, Yasuo, 5,600,648, Cl. 370-248.000.
Imasato, Yutaka; and Kawai, Masahito, 5,600,570, Cl. 364-496.000.
Iwakura, Yoshiyuki; and Kimura, Atsushi, 5,600,568, Cl. 364-489.000.
Kamata, Hajime; Katsuyama, Tsuneo; Suzuki, Toshimitsu; Minakuchi, Yu; and Yano, Katsuteuki, 5,600,346, Cl. 345-120.000.
Kasukawa, Masayuki, 5,600,808, Cl. 395-672.000.
Kato, Hideki; Yoshizawa, Hideki; Iciki, Hiroki; and Asakawa, Kazuo, 5,600,843, Cl. 395-800.000.
Kawashima, Shoichiro, 5,600,588, Cl. 365-154.000.
Kikuta, Rumiko, 5,600,637, Cl. 370-389.000.
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Haiko, Risto; Lehto, Ari; and Kivioja, Pekka, to Valmet Corporation. Oil feed system for a variable-crown roll. 5,599,263, Cl. 492-7.000.

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Hamburg, Douglas R.; and Reed, Dennis C., to Ford Motor Company. Air/fuel control system for an internal combustion engine. 5,598,703, Cl. 60-285.000.

Hamdi, Mohamed A.; Bouhioui, Hamid; and Rehfeld, Marc, to Saint Gobain Vitrage International "Les Miroirs" . Acoustic insulating box. 5,598,669, Cl. 52-144.000.

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Hanson, Bruce L.; Holmquist, Kurt E.; and Strahs, Lee B., to Paradyne Corporation. Enabling technique for quickly establishing high speed PSTN connections in telecommuting applications. 5,600,712, Cl. 379-142.000.

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Hiramoto, Kazuo; Hirota, Junichi; Miyata, Kenji; and Nishi, Masatsugu, 5,600,213, Cl. 315-507.000.

Nishi, Takeshi: *See*—
Shimizu, Michio; Moriya, Kouji; Nishi, Takeshi; and Kouuma, Toshimitsu, 5,600,457, Cl. 349-89.000.
Nishi, Yoshikatsu; Ohshima, Masayoshi; Kohara, Teiji; Matsui, Toshiyasu; and Natsuume, Tadao, to Nippon Zeon Co., Ltd. Ring-opening polymer and a process for production thereof. 5,599,882, Cl. 525-332.100.
Nishibayashi, Yoshiki; Tomikawa, Tadashi; and Shikata, Shin-ichi, to Sumitomo Electric Industries, Ltd. Diamond semiconductor device with P-I-N type multilayer structure. 5,600,156, Cl. 257-77.000.
Nishida, Hiroshi: *See*—
Ishikawa, Youhei; Tanizaki, Toru; Nishida, Hiroshi; Tsukai, Norimitsu; and Saito, Atsushi, 5,600,289, Cl. 333-248.000.
Nishida, Yasuhiro: *See*—
Nakamatsu, Toshio; Nishida, Yasuhiro; Watanabe, Shinichi; and Kometani, Norio, 5,599,971, Cl. 562-425.000.
Nishiguchi, Masaki; and Tokuda, Toshimasa, to Furukawa Electric Co., Ltd.; and Teijin Chemicals, Ltd. Aromatic polycarbonate, a method for producing the same, and a plastic optical waveguide using the same. 5,599,897, Cl. 528-198.000.
Nishiguchi, Yasuo: *See*—
Anzaki, Toshihiro; Nishiguchi, Yasuo; Arai, Moriyuki; Murano, Sbunji; Orito, Sadayuki; and Kurazono, Yuuji, 5,600,363, Cl. 347-237.000.
Nishiji, Makoto: *See*—
Nakajima, Shinichiro; Sato, Hideyuki; Nishiji, Makoto; and Sachettini, Paolo, 5,599,250, Cl. 475-249.000.
Nishikawa, Katsumi; and Ishibashi, Nobuyuki, to Nippon Zoki Pharmaceutical Co., Ltd. Method for measuring production activity of test substance towards FXIIa. 5,599,683, Cl. 435-13.000.
Nishimiya, Takayuki; Kanai, Masatomi; and Kawai, Toshikazu, to Central Glass Company, Limited. 2-trifluoromethyl-4-chlorobenzalchloride and 2-methyl-3-nitro-5-chlorobenzotrifluoride useful as intermediates for preparing 2-methyl-3-aminobenzotrifluoride. 5,600,036, Cl. 568-937.000.
Nishimoto, Mitsuhiko; and Matsuoka, Hirofumi, to Koyo Seiko Co., Ltd. Electric power steering apparatus. 5,600,559, Cl. 364-424.051.
Nishimura, Hiroyuki: *See*—
Adachi, Etsushi; Adachi, Hisoshi; Yamamoto, Shigeyuki; Nishimura, Hiroyuki; Minami, Shintaro; Tazima, Tooru; and Tobimatsu, Hiroshi, 5,600,151, Cl. 257-40.000.
Nishimura, Katsuhiko: *See*—
Takeda, Masami; Nakahata, Kimio; Yamazaki, Masuo; Nishimura, Katsuhiko; Yamada, Hiromichi; Nakamura, Tatsuya; Saitou, Tohru; Kosaka, Tohru; Shibuya, Takashi; Yoda, Yasuo; and Hirai, Masahide, 5,600,431, Cl. 399-226.000.
Nishimura, Matsuomi: *See*—
Miyazaki, Takeshi; Nishimura, Matsuomi; Isaka, Kazuo; Tanaka, Kazumi; Ohnishi, Toshikazu; Yoneyama, Yoshito; and Takayama, Hidehito, 5,599,502, Cl. 422-82.010.
Nishimura, Takuya: *See*—
Iitsuka, Hiroyuki; and Nishimura, Takuya, 5,600,803, Cl. 395-287.000.
Nishimura, Yoichi: *See*—
Hasegawa, Yusuke; Komoriya, Isao; and Nishimura, Yoichi, 5,600,056, Cl. 73-23.320.
Nishino, Yukio: *See*—
Miyazaki, Benichi; and Nishino, Yukio, 5,600,623, Cl. 369-219.000.
Nishio, Yoji: *See*—
Masuda, Ikuro; Kato, Kazuo; Sasayama, Takao; Nishio, Yoji; Kuboki, Shigeo; and Iwamura, Masahiro, 5,600,268, Cl. 326-110.000.
Nishioka, Takao: *See*—
Ito, Yasushi; Yamamoto, Takehisa; Nishioka, Takao; Yamakawa, Akira; and Komura, Osamu, 5,599,493, Cl. 264-234.000.
Nishiyama, Tamotsu; and Tsubata, Shintaro, to Matsushita Electric Industrial Co., Ltd. Method, system, and apparatus for automatically designing logic circuit, and multiplier. 5,600,569, Cl. 364-489.000.
Nishizawa, Atsushi: *See*—
Kusaka, Teruo; Senba, Naoji; Nishizawa, Atsushi; and Takahashi, Nobuaki, 5,600,180, Cl. 257-692.000.
Nissan Chemical Industries, Ltd.: *See*—
Katsuki, Tsutomu; Irie, Ryo; and Sasaki, Hidehiko, 5,599,957, Cl. 549-533.000.
Nissan Motor Co., Ltd.: *See*—
Hara, Tomoyuki; and Takasaki, Toshiharu, 5,599,075, Cl. 303-143.000.
Itoh, Yasuhiko, 5,598,740, Cl. 74-475.000.
Satoh, Yoshinori; and Matsumoto, Takashi, 5,600,634, Cl. 370-294.000.
Nisshin Flour Milling Co., Ltd.: *See*—
Hosogoshi, Yasunobu; Maruo, Toshio; Sakata, Yasuo; Morita, Katsumasa; Ibori, Takefumi; Kubota, Harumi; Douzono, Toshio; Nakagawa, Kanemitsu; Sugihara, Kunio; Yoshizawa, Yukio; Aridome, Yoshiaki; and Yamazaka, Shoji, 5,598,931, Cl. 209-405.000.
Nisshin Oil Mills, Ltd., The: *See*—
Suzuki, Junko; Negishi, Satoshi; Shirasawa, Seiichi; and Masuda, Yukie, 5,600,027, Cl. 568-810.000.
Nisshinbo Industries Inc.: *See*—
Mori, Hisayoshi; Goto, Norikata; Teraji, Nobushige; and Fujii, Takashi, 5,599,074, Cl. 303-113.200.
Musha, Toshimitsu; Yanai, Yuichi; Takagi, Shoji; Niwa, Yuki; and Ono, Shu, 5,598,875, Cl. 139-192.000.
Nisso Industry Co., Ltd.: *See*—
Ichikawa, Minoru; and Ishinaka, Teruhiko, 5,600,306, Cl. 340-584.000.
Nitta, Tomio; Mifune, Hideo; Seki, Masato; Kaga, Yosimitu; and Serizawa, Noriyuki, to Toksi Corporation. Safety device for use with portable heater. 5,598,833, Cl. 126-262.000.
Nitto Kohki Co., Ltd.: *See*—
Saito, Masayuki, 5,598,635, Cl. 30-362.000.
Niwa, Koichi: *See*—
Saito, Masahiko; Yamamoto, Masashi; Akasaki, Tetsuro; Niwa, Koichi; Sawahata, Jin; Nakano, Masahiro; Suzuki, Motoyuki; and Sato, Toshiya, 5,600,420, Cl. 399-302.000.
Niwa, Susumu: *See*—
Yamamoto, Hideaki; Nakatani, Mitsuo; Matsumaru, Haruo; and Niwa, Susumu, 5,600,460, Cl. 349-54.000.
Niwa, Yuki: *See*—
Musha, Toshimitsu; Yanai, Yuichi; Takagi, Shoji; Niwa, Yuki; and Ono, Shu, 5,598,875, Cl. 139-192.000.
Noda, Hirotaka: *See*—
Ito, Keiichi; Noda, Hirotaka; Shibata, Masao; Yamauchi, Kenichi; Fukuda, Masaru; Suzuki, Motoyoshi; and Ohta, Yukio, 5,598,624, Cl. 29-593.000.
Noda, Kazuo; Nakamura, Eiichi; and Yamazaki, Koichi, to Nippon Conlux Co., Ltd. Laser output control device for an optical information recording and reproducing apparatus. 5,600,621, Cl. 369-116.000.
Nogi, Toshiharu: *See*—
Hunt, Frank W.; and Nogi, Toshiharu, 5,598,826, Cl. 123-491.000.
Noise Cancellation Technologies, Inc.: *See*—
Langley, Andrew J., 5,600,106, Cl. 181-206.000.
NOK Corporation: *See*—
Umeno, Seiya, 5,599,029, Cl. 277-212.0FB.
Nokia Mobile Phones Limited: *See*—
Meche, Paul S.; and Vaisanen, Ahti, 5,600,708, Cl. 379-59.000.
Nokia Telecommunications OY: *See*—
Mäkeläinen, Kimmo; Lehmusto, Mika; and Heiskari, Mika, 5,600,636, Cl. 370-296.000.
Maenpaa, Sanna, 5,600,705, Cl. 379-58.000.
Noll, Matthias: *See*—
Warm, Berndt; Wittmer, Detlev; and Noll, Matthias, 5,600,434, Cl. 356-139.080.
Noma, Tsuyoshi: *See*—
Watanabe, Yutaka; Hachimonji, Takayuki; Yamashita, Katsuya; Sekita, Sanae; and Noma, Tsuyoshi, 5,598,712, Cl. 62-59.000.
Nomura, Tadashi: *See*—
Tabata, Hajime; Suzuki, Tetsuya; Hirose, Yoshihisa; Nagano, Koichi; Furubayashi, Masaaki; and Nomura, Tadashi, 5,599,085, Cl. 362-72.000.
Nomura, Yujiro: *See*—
Takada, Kyu; Inoue, Nozomu; Hama, Takashi; and Nomura, Yujiro, 5,600,476, Cl. 359-206.000.
Norandal USA, Inc.: *See*—
Hartz, Warren C., 5,598,633, Cl. 29-895.212.
Norcross, Kenneth L.: *See*—
Li, Yanlong; and Norcross, Kenneth L., 5,599,450, Cl. 210-603.000.
Nord, Joseph H., to International Business Machines Corporation. Method and system of bi-directional parallel port data transfer between data processing systems. 5,600,793, Cl. 395-200.010.
Nordson Corporation: *See*—
Lewis, William A.; and Taylor, Edward C., 5,598,974, Cl. 239-135.000.
Nordvall, Gunnar: *See*—
Glas, Gunilla; Hacksell, Uli; Johansson, Gary; Nilsson, Björn; Nilvebrant, Lisbeth; and Nordvall, Gunnar, 5,599,937, Cl. 546-133.000.
Noritsu Koki Co., Ltd.: *See*—
Motooka, Eiji; and Oku, Hiroshi, 5,600,498, Cl. 360-3.000.
Norkus, Norbert S.: *See*—
Warren, Harold C., III; Norkus, Norbert S.; and Smith-Lewis, Margaret J., 5,599,715, Cl. 436-17.000.
Norling, Lars-Erik. Method and plant for separating a part from a carcass. 5,599,226, Cl. 452-149.000.
North America Rescue Products: *See*—
Castellani, Robert A., 5,598,592, Cl. 5-627.000.
Northrop Grumman Corporation: *See*—
Broadwater, Stuart P.; Gibson, White E.; Skeberdis, Paul W.; and Cockey, Edward A., 5,600,576, Cl. 364-571.030.
Northwestern University: *See*—
Razeghi, Manijeh, 5,599,732, Cl. 437-105.000.
Silverman, Richard B.; Andruszkiewicz, Ryszard; Yuen, Po-Wai; Sobieray, Denis M.; Franklin, Lloyd C.; and Schwindt, Mark A., 5,599,973, Cl. 562-443.000.
Noto, Nobuhiko; Adomi, Keizo; and Takenaka, Takao, to Shin-Etsu Handotai Co., Ltd. Semiconductor light emitting device with current spreading layer. 5,600,158, Cl. 257-94.000.
Novamont S.p.A.: *See*—
Gubitosa, Giuseppe; and Casale, Bruno, 5,600,028, Cl. 568-861.000.
Novaol S.R.L.: *See*—
Gardano, Andrea; Strologo, Sauro; and Foa', Marco, 5,599,514, Cl. 423-55.000.
Novatech, Inc.: *See*—
Holcomb, Robert R., 5,599,531, Cl. 424-70.100.
Novo Nordisk A/S: *See*—
Bonnichsen, Frits F.; and Jørgensen, Peter N., 5,599,323, Cl. 604-272.000.
Greve, Folmer; and Stutz, Christian, 5,599,402, Cl. 134-22.190.
NPB Partners, Ltd.: *See*—
Schulman, Martin A., 5,600,366, Cl. 348-9.000.
NSK Ltd.: *See*—
Fukushima, Hiroshi, 5,599,252, Cl. 476-40.000.

Miyazaki, Seizo; Kitahara, Daijiro; and Saito, Shiro, 5,599,111, Cl. 384-512.000.

NTN Corporation: *See—*
Monahan, Russell E.; Wojan, Scott A.; Adler, Jonathan M.; and Kashino, Noboru, 5,598,913, Cl. 192-41.00S.

Nugent, Sean T.; and Mueller, Richard A., to G. D. Searle & Co. Fatty acid analogs and prodrugs. 5,599,947, Cl. 548-496.000.

Nunokawa, Masahiko; and Watanabe, Kenji, to Seiko Epson Corporation; and King Jim Co., Ltd. Tape printing device and tape cartridge used therein. 5,599,119, Cl. 400-621.000.

Nurre, David F. Lamp with changeable display base. 5,598,652, Cl. 40-553.000.

Nyberg, Kaisa: *See—*
Rueppel, Rainer A.; and Nyberg, Kaisa, 5,600,725, Cl. 380-30.000.

Nycomed Imaging AS: *See—*
Jørgensen, Mikkel; Rise, Frode; Andersson, Sven; Almen, Torsten; and Golman, Klaes, 5,599,522, Cl. 424-9.330.

Oakes, Kenneth J.: *See—*
Fredericks, Kenneth J.; Galbraith, Robert E.; Guyette, Richard R.; Halma, Marten J.; Hough, Roger E.; John, Suzanne M.; Mazurowski, James C.; Oakes, Kenneth J.; and Wyman, Leslie W., 5,600,805, Cl. 395-825.000.

Oba, Shinsuke: *See—*
Fujita, Akitsugu; Kawano, Takayuki; Nakamura, Makoto; Sakai, Fumikazu; Matsumoto, Tatsuki; Oba, Shinsuke; Sueoka, Hidetoshi; Kimura, Manabu; Zama, Masato, deceased, 5,599,408, Cl. 148-607.000.

Obara, Sanshiro: *See—*
Yamada, Hiroyuki; Naito, Shotaro; and Obara, Sanshiro, 5,600,215, Cl. 318-139.000.

Obayashi, Shunzi: *See—*
Saito, Takahiko; Nakanishi, Akira; Obayashi, Shunzi; and Toshikage, Hideki, 5,600,386, Cl. 396-315.000.

Obermayer, Lothar C. Portable humidifier assembly. 5,599,485, Cl. 261-107.000.

Oberth, Adolph E., to Aerojet General Corporation. Coatings for solid propellants. 5,600,088, Cl. 149-11.000.

Obrinski, Bradley A. Mooring line receptacle apparatus. 5,598,805, Cl. 114-230.000.

Ochayon, Moti; and Falk, Arie, to Iscar Ltd. Cutting insert. 5,598,751, Cl. 76-108.600.

Ochi, Hisaaki: *See—*
Yamamoto, Etsuji; Ochi, Hisaaki; Itagaki, Hiroyuki; Onodera, Yukari; and Takeuchi, Hiroyuki, 5,600,245, Cl. 324-318.000.

Ochiai, Akira; and Watanabe, Kouya, to Toshiba Kikai Kabushiki Kaisha. Static pressure table device with a tapered surface. 5,599,108, Cl. 384-123.000.

Ochiai, Toshihiko: *See—*
Miyashiro, Toshiaki; Takeuchi, Akihiko; Ochiai, Toshihiko; Kato, Motoi; Ito, Akira; Kabeya, Nobuaki; Suzuki, Takehiko; and Kume, Takao, 5,600,423, Cl. 399-313.000.

O'Connor, Michael G.: *See—*
Ju, Byung H.; O'Connor, Michael G.; and Lovgren, Eric M., 5,599,325, Cl. 604-282.000.

Oda, Hideyuki: *See—*
Igarashi, Kyoya; Kume, Tateo; Yoshida, Masato; Murakami, Nobuaki; and Oda, Hideyuki, 5,598,817, Cl. 123-179.170.

Odaira, Hiroshi; Imamura, Eiji; Wada, Yusuke; Arai, Yasushi; Sasaoka, Kenji; Mori, Takahiro; Ikegaya, Fumitoshi; and Kowatari, Sadao, to Kabushiki Kaisha Toshiba. Circuit devices and fabrication method of the same. 5,600,103, Cl. 174-265.000.

Odell, Michael: *See—*
Koivuranta, Mauri; and Odell, Michael, 5,599,427, Cl. 162-301.000.

Odell, Robert B.: *See—*
Gyure, Sandor; Odell, Robert B.; and Szabo, Sandor, 5,599,313, Cl. 604-192.000.

O'Donnell, Hugh O.: *See—*
Hardy, Robert; Coe, Paul F.; Hirst, Adrian; and O'Donnell, Hugh O., 5,599,969, Cl. 562-401.000.

O'Donnell, Joseph A.: *See—*
Jacobs, James M.; and O'Donnell, Joseph A., 5,599,301, Cl. 604-65.000.

Oelfke, Russell H.: *See—*
Colle, Karla S.; Costello, Christine A.; Oelfke, Russell H.; Talley, Larry D.; Longo, John M.; and Berluche, Enoch, 5,600,044, Cl. 585-15.000.

Oetlinger, Frank E. Presser assembly. 5,599,269, Cl. 493-468.000.

Ogasawara, Akira, to Nikon Corporation. Automatic focus adjustment device and method. 5,600,398, Cl. 396-125.000.

Ogata, Kazumi; Sakaue, Takahiro; Isowaki, Yuuichi; Nakao, Hidetoshi; and Ito, Kazuhiko, to Senju Pharmaceutical Co., Ltd. Steroid derivatives. 5,599,807, Cl. 514-176.000.

Ogata, Naoya: *See—*
Sansone, Michael J.; Onorato, Frank J.; and Ogata, Naoya, 5,599,639, Cl. 429-33.000.

Ogawa, Fumio: *See—*
Tanaka, Hirokazu; and Ogawa, Fumio, 5,600,492, Cl. 359-712.000.

Ogawa, Katsuhisa: *See—*
Sono, Koichi; Miyawaki, Mamoru; Ishizaki, Akira; Ogawa, Katsuhisa; and Sakurai, Katsuhito, 5,600,344, Cl. 345-87.000.

Ogawa, Kenji, to Mitsubishi Denki Kabushiki Kaisha. Oscillation gyro and an inspection apparatus therefor. 5,600,063, Cl. 73-504.030.

Ogawa, Shogo; Hata, Hajime; Kasuga, Ikuo; Marumo, Hiromasa; and Hayakawa, Masamichi, to Kabushiki Kaisha Sankyo Seiki Seisakusho; and Shikoku Chemicals Corporation. Polyarylene sulfide resin composition and optical pick-up parts formed from the same. 5,599,864, Cl. 524-405.000.

Ogawa, Shunichi: *See—*
Kanno, Yasunori; Fukatsu, Yoshiaki; and Ogawa, Shunichi, 5,599,087, Cl. 362-82.000.

Ogawa, Sumitaka, to Honda Giken Kogyo Kabushiki Kaisha. Transmission control apparatus for nonstage transmission of vehicles. 5,600,557, Cl. 364-428.086.

Ogawa, Yukio: *See—*
Namikawa, Mamoru; Yamaura, Tatsuo; Ogawa, Yukio; Makita, Yoshio; Yoshimura, Satoshi; and Kogure, Yuichi, 5,600,203, Cl. 313-495.000.

Ogihara, Mituhiko: *See—*
Abiko, Ichimatsu; Nakamura, Yukio; Kaminishi, Katsuzo; Shimizu, Takatoku; Tokura, Kazuo; Iguti, Yasuo; Furuya, Hiroshi; Ogihara, Mituhiko; Taninaka, Masumi; and Chiba, Mio, 5,600,157, Cl. 257-84.000.

Oguni, Satoshi: *See—*
Kamada, Eiki; and Oguni, Satoshi, 5,600,819, Cl. 395-496.000.

Ogura, Akihiro: *See—*
Thompson, Stephen P.; Oie, Masaki; Ogura, Akihiro; Takemura, Kiyoshi; and Harwood, Joseph D., 5,600,347, Cl. 345-127.000.

Ogura, Kuniaki: *See—*
Uenosono, Satoshi; and Ogura, Kuniaki, 5,599,377, Cl. 75-252.000.

Ogura, Naoyuki, to NEC Corporation. Non-volatile semiconductor device with an electrically erasable and programmable read only memory showing an extremely high speed batch erasure operation. 5,600,595, Cl. 365-185.330.

Oguri, Yasuo: *See—*
Yamada, Tsutomu; Oguri, Yasuo; Hase, Takashi; Uehara, Yasuhiko; and Toyama, Hisashi, 5,600,202, Cl. 313-467.000.

Oh, Byeung O. Method for continuously supplying activated air and apparatus therefor. 5,599,498, Cl. 422-4.000.

Oh, Chang-Jun: *See—*
Song, Won-Chul; Oh, Chang-Jun; Lee, Jong-Ryul; Choi, Hae-Wook; and Song, Bang-Sup, 5,600,186, Cl. 307-125.000.
Song, Won-Chul; Oh, Chang-Jun; Lee, Jong-Ryul; Choi, Hae-Wook; and Song, Bang-Sup, 5,600,269, Cl. 327-52.000.

Oh, Sang: *See—*
Gore, Kiron; and Oh, Sang, 5,598,964, Cl. 228-1.100.

Oh, Se-Chun, to Samsung Heavy Industries Co., Ltd. System for monitoring energy performance of secondary battery, and method therefor. 5,600,229, Cl. 320-48.000.

Oh, Tae S.: *See—*
Adamopoulos, Eleftherios; Kim, Jungihl; Lee, Kang-Wook; Oh, Tae S.; O'Toole, Terrence R.; Purushothaman, Sampath; Ritsko, John J.; Shaw, Jane M.; Viehbeck, Alfred; and Walker, George F., 5,599,582, Cl. 427-207.100.

Ohe, Masahito; and Kondo, Katsumi, to Hitachi, Ltd. Liquid crystal display device having the electric field parallel to the substrates. 5,600,464, Cl. 349-123.000.

Ohguri, Osamu, to NEC Corporation. Optical head apparatus having means to eliminate noise caused by side-lobes. 5,600,620, Cl. 369-112.000.

Ohio State Research Foundation, The: *See—*
Curley, Robert W., Jr.; and Robarge, Michael J., 5,599,953, Cl. 549-417.000.

Ohkami, Takahide, to Mitsubishi Electric Information Technology Center America, Inc. Scaleable very long instruction word processor with parallelism matching. 5,600,810, Cl. 395-567.000.

Ohki, Takafumi: *See—*
Yabe, Manabu; Kitagawa, Masaru; Ohki, Takafumi; and Fujita, Mitsuhiro, 5,599,394, Cl. 118-319.000.

Ohkubo, Naoyuki: *See—*
Miyazaki, Kenji; Ezaki, Shigeo; and Ohkubo, Naoyuki, 5,599,633, Cl. 428-675.000.

Ohleyer, Eric: *See—*
Whitehead, Ian M.; and Ohleyer, Eric, 5,599,700, Cl. 435-136.000.

Ohmi, Masanori: *See—*
Shiga, Tsutomu; Hayashi, Nobuyuki; Ohmi, Masanori; and Niimi, Masami, 5,600,184, Cl. 290-38.00R.

Ohnaka, Kiyoshi: *See—*
Kidoguchi, Isao; Ohnaka, Kiyoshi; Adachi, Hideto; Kamiyama, Satoshi; Mannou, Masaya; and Uenoyama, Takeshi, 5,600,667, Cl. 372-45.000.

Ohnemus, Fritz: *See—*
Hirtz, Gangolf; Bader, Bernd; Francois, Yves; Tenconi, Bernd; and Ohnemus, Fritz, 5,600,212, Cl. 315-391.000.

Ohnishi, Toshikazu: *See—*
Miyazaki, Takeshi; Nishimura, Matsuomi; Isaka, Kazuo; Tanaka, Kazumi; Ohnishi, Toshikazu; Yoneyama, Yoshito; and Takayama, Hidehito, 5,599,502, Cl. 422-82.010.

Ohnishi, Youichi: *See—*
Aokura, Isamu; Nago, Kumio; Yamanishi, Hitoshi; Sakakima, Hiroshi; and Ohnishi, Youichi, 5,600,520, Cl. 360-126.000.

O'Hoy, Kim L.: *See—*
Harrison, Gavin B. L.; Dempster, Robert P.; Rickard, Michael D.; Lightowlers, Marshall W.; O'Hoy, Kim L.; Johnson, Kevin S.; Heath, David D.; Lawrence, Stephen B.; and Vinton, Jennifer G., 5,599,692, Cl. 435-69.300.

Ohshima, Katsuyuki; Yamauchi, Mineo; and Kutsukake, Masaki, to Dai Nippon Insatsu Kabushiki Kaisha. Card and process for producing the same. 5,599,765, Cl. 503-227.000.

Ohshima, Masayoshi: *See—*
Nishi, Yoshikatsu; Ohshima, Masayoshi; Kohara, Teiji; Matsui, Toshiyasu; and Natsuume, Tadao, 5,599,882, Cl. 525-332.100.

Ohsugi, Hiroharu; Mikami, Shigeru; Tanabe, Hisaki; Takarada, Mitsuhiro; and Yoshikawa, Yuji, to Nippon Paint Co., Ltd. Curable resin composition comprising an acrylic copolymer containing an organohydrogenpolysiloxane macromonomer unit and an alkenyl group-containing acrylic monomer unit. 5,599,883, Cl. 525-474.000.

Ohta, Hideo: *See—*
Iijima, Takashi; and Ohta, Hideo, 5,598,778, Cl. 101-181.000.

Ohta, Kenji: *See—*
Hirokane, Junji; Katayama, Hiroyuki; Takahashi, Akira; and Ohta, Kenji, 5,600,627, Cl. 369-275.400.

Ohta, Yukio: *See—*
Ito, Keiichi; Noda, Hirotaka; Shibata, Masao; Yamauchi, Kenichi; Fukuda, Masaru; Suzuki, Motoyoshi; and Ohta, Yukio, 5,598,624, Cl. 29-593.000.

Oide, Eisuke, to Kabushiki Kaisha Ogura. Portable, power driven punch press for working on steel frame members. 5,598,737, Cl. 72-453.010.

Oie, Masaki: *See—*
Thompson, Stephen P.; Oie, Masaki; Ogura, Akihiro; Takemura, Kiyoshi; and Harwood, Joseph D., 5,600,347, Cl. 345-127.000.

Oishi, Kazuhiro: *See—*
Ishihara, Koichi; Takii, Kiyoshi; Kawarazaki, Kozo; Oishi, Kazuhiro; and Hirayama, Nobuyuki, 5,599,564, Cl. 425-190.000.

Ojima, Iwao; and Bombardelli, Ezio, to Research Foundation of State University of New York, The; and Indena SpA Gruppo Inverni Della Beffa. Anti-tumor compounds, pharmaceutical compositions, methods for preparation thereof and for treatment. 5,599,820, Cl. 514-320.000.

Oka, Yoji: *See—*
Takano, Masataka; Oka, Yoji; Takase, Akihiko; and Takahashi, Setsuo, 5,600,630, Cl. 370-218.000.

Okabe, Shinji; Iwasa, Takashi; Irie, Takushi; Furukawa, Yuichi; and Iwai, Ichiro, to Honda Giken Kogyo Kabushiki Kaisha; and Showa Aluminum Corporation. Aluminum weldment and method of welding aluminum workpieces. 5,599,467, Cl. 219-118.000.

Okada, Hideaki; and Nemoto, Shusuke, to Kanzaki Kokyukoki Mfg. Co., Ltd. Axle driving apparatus. 5,598,748, Cl. 74-606.00R.

Okada, Misako: *See—*
Tomatsuri, Kazuhiko; Okada, Misako; Ushio, Yusuke; Tomita, Yuko; and Mizogami, Satoshi, 5,600,221, Cl. 318-632.000.

Okada, Tahei: *See—*
Koyama, Sabro; Okada, Tahei; and Aiki, Yoshiaki, 5,599,780, Cl. 508-391.000.

Okamoto, Kazushige: *See—*
Ikimi, Kiyoshi; Ikeda, Yoichi; Murakami, Akira; Okamoto, Kazushige; Tokumaru, Tooru; and Hazama, Motoo, 5,600,026, Cl. 568-798.000.

Okamura, Naoki; Takao, Noriyuki; and Takano, Hidetoshi, to Toyota Jidosha Kabushiki Kaisha; and Sharp Kabushiki Kaisha. Token ring fault recovery system for automatically restoring network which includes a transmit possible and receive impossible token holding station. 5,600,796, Cl. 395-200.110.

Okamura, Shigekazu, to Mitsubishi Denki Kabushiki Kaisha. Vehicle distance data processor. 5,600,561, Cl. 364-460.000.

Okamura, Takahiro: *See—*
Saka, Kazuhito; Hashimoto, Masayoshi; Furuta, Kou; and Okamura, Takahiro, 5,598,627, Cl. 29-861.000.

Okano, Kiyoshi; and Yamaue, Satoshi, to Sharp Kabushiki Kaisha. Active matrix display having at least one nonlinear element composed of a sulfide film. 5,600,458, Cl. 349-44.000.

Okano, Yoji: *See—*
Aoki, Koso; Misawa, Hironitsu; Okano, Yoji; Kozawa, Minoru; Uchida, Naoki; and Fujioka, Kazuo, 5,599,627, Cl. 428-403.000.

Okano, Yoshiaki: *See—*
Iguchi, Michihisa; Hashizume, Hiroshi; Arai, Seiji; Okano, Yoshiaki; Sakai, Chinobu; Fukuyama, Hirotaka; Kabai, Takahito; Satou, Kouichirou; Nakamura, Tetsuya; and Katagata, Satoshi, 5,600,417, Cl. 399-279.000.

Okegawa, Akihiko: *See—*
Tatsuta, Noriaki; Okegawa, Akihiko; Kawakami, Masayuki; and Koya, Keizo, 5,599,825, Cl. 514-366.000.

Oki Electric Industry Co., Ltd.: *See—*
Abiko, Ichimatsu; Nakamura, Yukio; Kaminishi, Katsuzo; Shimizu, Takatoku; Tokura, Kazuo; Iguti, Yasuo; Furuya, Hiroshi; Ogihara, Mituhiko; Taninaka, Masumi; and Chiba, Mio, 5,600,157, Cl. 257-84.000.

Okinaka, Kenji: *See—*
Mishima, Akio; Harada, Tosiharu; Tanihara, Mamoru; Ota, Yasutaka; Okinaka, Kenji; Mori, Kohji; Kawasaki, Hirofumi; Nagai, Norimichi; Fujimoto, Katsunori; and Okuda, Yoshiro, 5,599,378, Cl. 75-348.000.

Oku, Hiroshi: *See—*
Motooka, Eiji; and Oku, Hiroshi, 5,600,498, Cl. 360-3.000.

Okubo, Kazuo; Teguri, Hiromori; and Ito, Akio, to Fujitsu Limited. Electron beam tester. 5,600,734, Cl. 382-147.000.

Okuda, Yoshiro: *See—*
Mishima, Akio; Harada, Tosiharu; Tanihara, Mamoru; Ota, Yasutaka; Okinaka, Kenji; Mori, Kohji; Kawasaki, Hirofumi; Nagai, Norimichi; Fujimoto, Katsunori; and Okuda, Yoshiro, 5,599,378, Cl. 75-348.000.

Okugaki, Akira: *See—*
Makihara, Hiroyasu; Okugaki, Akira; Kohda, Kenji; and Kaneko, Masahide, 5,600,171, Cl. 257-390.000.

Okumura, Naoyuki: *See—*
Nakata, Toshio; and Okumura, Naoyuki, 5,600,513, Cl. 360-99.080.

Olah, George A.: *See—*
Surampudi, Subbarao; Narayanan, Sekharipuram R.; Vamos, Eugene; Frank, Harvey A.; Halpert, Gerald; Olah, George A.; and Prakash, G. K. Surya, 5,599,638, Cl. 429-33.000.

Olashuk, Kenneth R.; and Shields, Lester R., to Weirton Steel Corporation. Apparatus for continuous flat-rolled steel strip cleansing and finishing operations. 5,599,395, Cl. 118-405.000.

Olbrick, Edward M.: *See—*
Lloyd, James L.; Olbrick, Edward M.; Pawlenko, Ivan; Schuss, Russell E.; and Sidone, Girard, 5,598,757, Cl. 83-23.000.

Oldfield, Clive S.; and Shaylor, Nicholas, to International Business Machines Corporation. System and method for managing data in a cache system for a disk array. 5,600,816, Cl. 395-440.000.

Olesen, Sten J.: *See—*
Kristensen, Egon; and Olesen, Sten J., 5,598,761, Cl. 92-57.000.

Olewinski, Stephen; and Brownlee, James A., to Panduit Corp. Stud engaging device. 5,598,994, Cl. 248-73.000.

Oliff, Allen I.: *See—*
DeFeo-Jones, Deborah; Garsky, Victor M.; Jones, Raymond E.; and Oliff, Allen I., 5,599,686, Cl. 435-23.000.

Olin Corporation: *See—*
Kaczur, Jerry J.; Cawlfield, David W.; Mendiratta, Sudhir K.; and Woodard, Kenneth E., Jr., 5,599,518, Cl. 423-477.000.

Oliveira, Paul L. Clamp. 5,599,007, Cl. 269-271.000.

Oliveros, Ernesto V. Data input device and correlative encoding technique. 5,600,314, Cl. 341-26.000.

Olivo, Marco; and Maccarrone, Marco, to SGS-Thomson Microelectronics S.r.l. Method for programming and testing a nonvolatile memory. 5,600,600, Cl. 365-201.000.

Olivo, Marco: *See—*
Padoan, Silvia; Maccarrone, Marco; and Olivo, Marco, 5,600,594, Cl. 365-185.240.

Olsavsky, Joseph E.: *See—*
Townsend, Harry O.; Olsavsky, Joseph E.; and Meissner, Dana L., 5,599,369, Cl. 65-157.000.

Olson, Stanley W., to Berg Technology, Inc. Blade-like terminal having a passive latch. 5,599,192, Cl. 439-65.000.

Omi, Kyoji, to Ricoh Company, Ltd. Modular copying system using light wave, electric wave, or sonic wave interconnections. 5,600,445, Cl. 358-296.000.

O'Morchoe, Susan B.: *See—*
Dowell, Barry L.; King, Carol A.; Alexander, Debra B.; Smith, Allan H.; and O'Morchoe, Susan B., 5,599,677, Cl. 435-7.400.

Omron Corporation: *See—*
Kiyomoto, Hironobu; Ekawa, Kouichi; and Hosokawa, Hayami, 5,600,487, Cl. 359-634.000.

Ona, Isao: *See—*
Ishikawa, Hiroki; Naganawa, Tsutomu; and Ona, Isao, 5,599,778, Cl. 508-208.000.

O'Neill, Eugene: *See—*
Gahan, Richard A.; and O'Neill, Eugene, 5,600,814, Cl. 395-427.000.

Ong, Bon S. Folder insert. 5,598,969, Cl. 229-67.100.

Ong, Estelita S.: *See—*
Evans, Ronald M.; Ong, Estelita S.; Segui, Prudimar S.; Thompson, Catherine C.; Umesono, Kazuhiko; and Giguere, Vincent, 5,599,904, Cl. 530-350.000.

Ong, Shauchi: *See—*
Macon, James F., Jr.; Ong, Shauchi; and Shih, Feng-Hsien W., 5,600,817, Cl. 395-464.000.

Onishi, Hiroshi: *See—*
Honjo, Kaori; Kashiwakura, Masami; Suzuki, Takaya; Akasaka, Toru; and Onishi, Hiroshi, 5,600,580, Cl. 364-708.100.

Onkor Ltd.: *See—*
Cannon, Thomas G.; DeHart, Daniel L.; and Krug, Eric M., 5,600,563, Cl. 364-468.240.

Ono, Ichiro: *See—*
Asai, Mitsuo; Uehara, Hitoshi; Ono, Ichiro; Kobayashi, Hiroaki; Kawaguchi, Jun; Shiiki, Satoshi; and Mitani, Kazuishi, 5,599,893, Cl. 528-12.000.

Ono, Kazuya: *See—*
Ikenoya, Tadakatsu; and Ono, Kazuya, 5,598,927, Cl. 206-484.000.

Ono, Masahiro: *See—*
Saiki, Yukinori; Ichikawa, Mina; Shimomura, Massatsu; Ono, Masahiro; and Watanabe, Nobuatsu, 5,599,489, Cl. 264-83.000.

Ono, Naoya: *See—*
Sato, Fumie; Amano, Takehiro; Kameo, Kazuya; Tanami, Tohru; Mutoh, Masaru; Ono, Naoya; and Goto, Jun, 5,599,838, Cl. 514-530.000.

Ono, Shu: *See—*
Musha, Toshimitsu; Yansi, Yuichi; Takagi, Shoji; Niwa, Yuki; and Ono, Shu, 5,598,875, Cl. 139-192.000.

Onoda Cement Co., Ltd.: *See—*
Saiki, Yukinori; Ichikawa, Mina; Shimomura, Massatsu; Ono, Masahiro; and Watanabe, Nobuatsu, 5,599,489, Cl. 264-83.000.

Onoda, Takumi: *See—*
Moriya, Yukio; Kinoshita, Shigeru; Onoda, Takumi; and Yokoyama, Toshio, 5,598,648, Cl. 37-348.000.

Onodera, Tsugio; and Taniguchi, Yoshiaki, to Mitsuba Electric Manufacturing Co., Ltd. Wiring structure for an electric power steering system. 5,598,899, Cl. 180-433.000.

Onodera, Yoichi: *See*—
Baba, Rika; Ueda, Ken; Onodera, Yoichi; Umetani, Keiji; Yokouchi, Hisatake; Hara, Shigekazu; Kajiyama, Tomoharu; and Takahashi, Fumitaka, 5,600,701, Cl. 378-98.200.

Onodera, Yukari: *See*—
Yamamoto, Etsuji; Ochi, Hisaaki; Itagaki, Hiroyuki; Onodera, Yukari; and Takeuchi, Hiroyuki, 5,600,245, Cl. 324-318.000.

Onorato, Frank J.: *See*—
Sansone, Michael J.; Onorato, Frank J.; and Ogata, Naoya, 5,599,639, Cl. 429-33.000.

Opfer, John C., to S & C Electric Company. Bushing assembly with circuit interrupters including polyphase operating mechanism. 5,600,112, Cl. 218-154.000.

Ophidian Pharmaceuticals, Inc.: *See*—
Carroll, Sean B.; van Boldrik, Margaret B.; and Clemens, Christopher M., 5,599,539, Cl. 424-167.100.

Opolski, Margaret P., to Surface Solutions Laboratories, Inc. Medical apparatus with scratch-resistant coating and method of making same. 5,599,576, Cl. 427-2.300.

Opticon Sensors Europe B.V.: *See*—
Peng, Ke-Ou, 5,600,120, Cl. 235-467.000.

Or, Yat S.; and Luly, Jay R., to Abbott Laboratories. Macrocyclic immunomodulators with novel cyclohexyl ring replacements. 5,599,927, Cl. 540-456.000.

Oregon Glass Company: *See*—
Adams, Lawrence O., Jr.; McCammon, Kirk C.; Henry, Larry J.; and Metcalfe, Wayne C., 5,599,422, Cl. 156-510.000.

Orenga, John; and Sailer, Edwin H., to McNeil-PPC, Inc. Environmentally friendly catamenial tampon assembly and method of construction. 5,599,293, Cl. 604-16.000.

Origin Medsystems, Inc.: *See*—
Chin, Albert K.; and Hopper, Phillip K., 5,599,297, Cl. 604-26.000.

Orita, Hiroshi: *See*—
Suzuki, Minoru; Negishi, Kiyoshi; Kawamura, Katsumi; Horie, Mikio; Orita, Hiroshi; and Suzuki, Katsuyoshi, 5,599,113, Cl. 400-120.160.

Orita, Kenichiro, to Hitachi, Ltd. Transmission path fault detecting method and system. 5,600,657, Cl. 371-20.600.

Orito, Sadayuki: *See*—
Anzaki, Toshihiro; Nishiguchi, Yasuo; Arai, Moriyuki; Murano, Shunji; Orito, Sadayuki; and Kurazono, Yuuji, 5,600,363, Cl. 347-237.000.

Orloff, David I.; Patterson, Timothy F.; and Krause, Andrew M., to Institute of Paper Science and Technology, Inc. Method and apparatus for drying a fiber web at elevated ambient pressures. 5,598,642, Cl. 34-388.000.

Ormat Industries Ltd.: *See*—
Bronicki, Lucien Y.; Grassiani, Moshe; and Amir, Nadav, 5,598,706, Cl. 60-641.200.

Oros, Edward A. Antenna. 5,600,339, Cl. 343-825.000.

O'Rourke, Michael J., to Surety Manufacturing & Testing Ltd. Horizontal lifeline energy absorber. 5,598,900, Cl. 182-3.000.

Orr, Edwina M.: *See*—
Trayner, David J.; and Orr, Edwina M., 5,600,454, Cl. 359-15.000.

Orthmann, Kurt, to Texas Instruments Incorporated. Apparatus and method for flat circuit assembly. 5,600,175, Cl. 257-532.000.

Ortho-McNeil, Inc.: *See*—
Miller, Robert G.; Miller, William C.; and Tankovitz, Oskar T., 5,598,850, Cl. 128-842.000.

Ortner, Hans: *See*—
Seemann, Hans; Ortner, Hans; and Pressler, Walter, 5,599,003, Cl. 251-30.030.

Orton, David S.: *See*—
Orton, Michael V.; and Orton, David S., 5,598,679, Cl. 52-609.000.

Orton, Michael V.; and Orton, David S. Cast concrete block and method of making same. 5,598,679, Cl. 52-609.000.

Osaheni, John A.: *See*—
Jenekhe, Samson A.; and Osaheni, John A., 5,599,899, Cl. 528-337.000.

Osanai, Akinori, to Toyota Jidosha Kabushiki Kaisha. Fuel supply control device for an engine. 5,598,828, Cl. 123-675.000.

Osawa, Fumio; Watanabe, Hideo; Sekine, Masatsugu; and Shimanuki, Taro, to Komori Corporation. Automatic plate exchange/plate registration method and apparatus. 5,598,781, Cl. 101-477.000.

Osburn, Andrew W.: *See*—
Liang, Shihua; Osburn, Andrew W.; and Garde, Gerald R., 5,599,392, Cl. 118-110.000.

Oshima, Mitsuaki; and Sakashita, Seiji, to Matsushita Electric Industrial Co., Ltd. Communication system. 5,600,672, Cl. 375-219.000.

Oskouy, Rasoul M., to Sun Microsystems, Inc. Method and apparatus for synthesizing clock signals for use with an asynchronous transfer mode system having selectable data transmission rates. 5,600,650, Cl. 370-468.000.

Osram Sylvania Inc.: *See*—
Meade, Steven L.; and Gallant, Joseph P., 5,600,198, Cl. 313-318.010.
Wright, John O., 5,599,199, Cl. 439-357.000.

Ossian, Inc.: *See*—
Ossian, Kenneth C.; and Steinhauser, Norbert J., 5,599,475, Cl. 252-70.000.

Ossian, Kenneth C.; and Steinhauser, Norbert J., to Ossian, Inc. De-icing composition and method for making same. 5,599,475, Cl. 252-70.000.

Osteosa Liquidation Trust: *See*—
Mundy, Gregory R.; Burgess, Wilson H.; and Yoneda, Toshiyuka, 5,599,708, Cl. 435-240.270.

Ota, Yasutaka: *See*—
Mishima, Akio; Harada, Tosiharu; Tanihara, Mamoru; Ota, Yasutaka; Okinaka, Kenji; Mori, Kohji; Kawasaki, Hirofumi; Nagai, Norimichi; Fujimoto, Katsunori; and Okuda, Yoshiro, 5,599,378, Cl. 75-348.000.

Otani, Tadashi: *See*—
Tsuru, Hiroyuki; Otani, Tadashi; and Urata, Keishi, 5,600,390, Cl. 396-133.000.

O'Toole, Terrence R.: *See*—
Adamopoulos, Eleftherios; Kim, Jungihl; Lee, Kang-Wook; Oh, Tae S.; O'Toole, Terrence R.; Purushothaman, Sampath; Ritsko, John J.; Shaw, Jane M.; Viehbeck, Alfred; and Walker, George F., 5,599,582, Cl. 427-207.100.

Otradovec, Steve C.: *See*—
Goettsch, Larry D.; and Otradovec, Steve C., 5,599,604, Cl. 428-105.000.

Otsuka Kagaku Kabushiki Kaisha: *See*—
Torii, Shigeru; Tanaka, Hideo; Taniguchi, Masatoshi; Sasaoka, Mitio; Shiroi, Takashi; and Kameyama, Yutaka, 5,599,925, Cl. 540-310.000.

Ott, Cynthia D.: *See*—
Ott, David M.; and Ott, Cynthia D., 5,600,732, Cl. 382-112.000.

Ott, David M.; and Ott, Cynthia D., to BancTec, Inc. Document image analysis method. 5,600,732, Cl. 382-112.000.

Oubrayrie, Jean-Jacques: *See*—
Morgavi, Paul; Marietti, Jean-Paul; and Oubrayrie, Jean-Jacques, 5,600,362, Cl. 347-218.000.

Overgaard, Thomas H.: *See*—
Smith, Gary S.; Cordova, Robert; Overgaard, Thomas H.; and Budrick, Marc T., 5,599,983, Cl. 564-98.000.

Owen, Hartley: *See*—
Collins, Nick A.; Harandi, Mohsen N.; Kondis, Edward F.; and Owen, Hartley, 5,599,439, Cl. 208-89.000.

Owen Mumford Limited: *See*—
Marshall, Jeremy; and Crossman, David D., 5,599,309, Cl. 604-136.000.

Owen, Trevor W., to Owen Tri-Cut Limited. Mail processing equipment. 5,598,686, Cl. 53-492.000.

Owen Tri-Cut Limited: *See*—
Owen, Trevor W., 5,598,686, Cl. 53-492.000.

Owens-Brockway Glass Container Inc.: *See*—
Townsend, Harry O.; Olsavsky, Joseph E.; and Meissner, Dana L., 5,599,369, Cl. 65-157.000.

Owens-Brockway Plastic Products Inc.: *See*—
Krall, Thomas J., 5,599,495, Cl. 264-515.000.

Owens Corning Fiberglas Technology, Inc.: *See*—
Burton, Charles A.; Boyd, Douglas E.; and Belt, James S., 5,599,581, Cl. 427-188.000.

Owens, Fred C., II: *See*—
Martinelli, Robert; Johnson, Dennis W.; Myers, Robert B.; Owens, Fred C., II; and Smith, Peter V., 5,599,508, Cl. 422-169.000.

Owens, Susan S. Storage device for mobile medical apparatus. 5,598,923, Cl. 206-370.000.

Ozawa, Kazuhisa; and Harada, Hiroaki, to Enplas Corporation. IC socket and its contact pin. 5,599,194, Cl. 439-72.000.

Ozawa, Masaki: *See*—
Yamada, Haruyoshi; Kobayashi, Hiroshi; Ozawa, Masaki; and Tanaka, Seiji, 5,600,387, Cl. 396-315.000.

Ozkan, Mehmet K.: *See*—
Sezan, Muhammed I.; Ozkan, Mehmet K.; and Fogel, Sergei V., 5,600,731, Cl. 382-107.000.

Pacesetter, Inc.: *See*—
Renger, Herman L., 5,598,847, Cl. 128-691.000.

Paciello, Rocco A.: *See*—
Beatty, Richard P.; and Paciello, Rocco A., 5,599,962, Cl. 556-21.000.

Pacific Communication Sciences, Inc.: *See*—
Petranovich, James E.; and Rhodes, F. Matthew, 5,600,678, Cl. 375-298.000.

Pack, Sung P.: *See*—
Hashemi, Majid M.; Tehrani, Saied N.; and Pack, Sung P., 5,599,738, Cl. 437-187.000.

Paczkowski, Henry C.: *See*—
Cohen, Leonard D.; Weiner, Scott M.; Paczkowski, Henry C.; and Zuercher, Joseph C., 5,600,253, Cl. 324-644.000.

Padmanabhan, Gobi R.: *See*—
Schinella, Richard D.; Padmanabhan, Gobi R.; and Zelayeta, Joseph M., 5,600,182, Cl. 257-763.000.

Padoan, Silvia; Maccarrone, Marco; and Olivo, Marco, to SGS-Thomson Microelectronics S.r.l. Threshold voltage measuring device for memory cells. 5,600,594, Cl. 365-185.240.

Pal, Biman; Ram, Siya; Sachdeva, Yesh P.; Shim, Jaechul; Zahr, Salah A.; Al-Farhan, Emile; and Gabriel, Richard L., to Pharm-Eco Laboratories, Inc. Amino acid-derived diaminopropanols. 5,599,994, Cl. 564-355.000.

Palazzotto, Michael C.: *See*—
Kinzer, Kevin E.; Mahoney, Wayne S.; and Palazzotto, Michael C., 5,599,622, Cl. 428-355.0EP.

Pallos, Ferenc M.; and Mathews, Christopher J., to Imperial Chemical Industries PLC. N-arylindoles and their use as herbicides. 5,599,774, Cl. 504-284.000.

Palmer, James E.; Powers, John R., III; Coleman, Patricia J.; Brewer, Gregory S.; Herman, Jeffrey A.; and Cochran, Eli, to Apple Computer, Inc. Method and apparatus for providing visual cues in a graphic user interface. 5,600,779, Cl. 395-340.000.

Palmer, Michael G.: *See*—
Marazzo, Joseph; Russo, Frank; Palmer, Michael G.; and Hartman, Gary L., 5,598,647, Cl. 37-317.000.

Palmgren, Tor H. G.: *See*—
Wang, James H.; Rosendale, David; Kurkov, Victor P.; Theard, Leslie P.; Ching, Ta Y.; Compton, Lewis R.; Palmgren, Tor H. G.; and Eichelberger, Mitchell P., 5,599,877, Cl. 525-146.000.

Palmieri, Constantino: *See*—
Guzzi, Umberto; Palmieri, Constantino; and Croci, Tiziano, 5,599,941, Cl. 546-346.000.

Palmquist, John M.: *See*—
Csipkes, Andrei; and Palmquist, John M., 5,600,439, Cl. 356-345.000.

Paloma Industries Limited: *See*—
Aoki, Yutaka; Watanabe, Yuzuru; and Mitsufuji, Kouichi, 5,599,181, Cl. 431-80.000.

Pan, Robert Y. L.; Gosselink, Eugene P.; Pancheri, Eugene J.; and Morrall, Stephen W., to Procter & Gamble Company, The. Soil release agents for granular laundry detergents. 5,599,782, Cl. 510-299.000.

Pan, Yang, to Chartered Semiconductor Manufacturing Pte Ltd. Method of making a conductive spacer lightly doped drain (LDD) for hot carrier effect (HCE) control. 5,599,726, Cl. 437-41.000.

Panarello, Febronio: *See*—
Giavazzi, Fulvio; and Panarello, Febronio, 5,599,358, Cl. 44-388.000.

Panasonic Technologies, Inc.: *See*—
Lee, Xiaoyang, 5,600,682, Cl. 375-354.000.

Panasuk, Gerard N.: *See*—
Treusch, Christopher J.; Clark, James W., Jr.; and Panasuk, Gerard N., 5,598,824, Cl. 123-470.000.

Pancheri, Eugene J.: *See*—
Pan, Robert Y. L.; Gosselink, Eugene P.; Pancheri, Eugene J.; and Morrall, Stephen W., 5,599,782, Cl. 510-299.000.

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Olewinski, Stephen; and Brownlee, James A., 5,598,994, Cl. 248-73.000.

Panek, John G.; and Gottorff, Richard L., to ITT Corporation. Method for a unitary assembly of tubing and a pressed on, interference fit, terminating fitting. 5,598,623, Cl. 29-525.000.

Panescu, Dorin: *See*—
Swanson, David K.; and Panescu, Dorin, 5,598,848, Cl. 128-696.000.

Paoletti, Gerald: *See*—
Hunter, Kenneth W.; and Paoletti, Gerald, 5,599,419, Cl. 156-281.000.

Papania, James R., to Borg-Warner Automotive, Inc. Roller clutch having individual snapping segments. 5,598,909, Cl. 192-45.000.

Papathomas, Konstantinos: *See*—
Afzali-Ardakani, Ali; Gotro, Jeffrey T.; Hedrick, Jeffrey C.; Papathomas, Konstantinos; Patel, Niranjan M.; Shaw, Jane M.; and Viehbeck, Alfred, 5,599,611, Cl. 442-180.000.

Papazian, John M.: *See*—
Sullivan, Edward V.; Casagrande, Louis G.; Edelstein, Fred; and Papazian, John M., 5,598,888, Cl. 165-263.000.

Papelitzky, Erwin: *See*—
Pockrandt, Wolfgang; Schuetzeneder, Heinz; and Papelitzky, Erwin, 5,600,792, Cl. 375-184.010.

Papst-Motoren GmbH & Co. KG: *See*—
Karwath, Arno; and Moini, Mojtaba, 5,600,216, Cl. 318-291.000.

Paradyne Corporation: *See*—
Hanson, Bruce L.; Holmquist, Kurt E.; and Strahs, Lee B., 5,600,712, Cl. 379-142.000.

Parascan Technologies Limited: *See*—
Erdentug, Mehmet A., 5,600,437, Cl. 356-237.000.

Pardee, Arthur B.: *See*—
Liang, Peng; Pardee, Arthur B.; and Bianchi, Cesario F., 5,599,672, Cl. 435-6.000.

Pardikes, Dennis G. Dry polymer processing system. 5,599,101, Cl. 366-165.100.

Paris, Jean, to Salomon S.A. Ski boot. 5,598,646, Cl. 36-118.700.

Park, Bong-Hyun, to Hyundai Motor Company. Thermoplastic resin composition having good painting and surface-polishing properties. 5,599,871, Cl. 524-504.000.

Park, Chan H.; and Hong, Jin P., to Samsung Electro-Mechanics Co., Ltd. Method for producing high-temperature superconducting Josephson devices. 5,599,465, Cl. 216-3.000.

Park, Gun C.; Choi, Do Y.; Masaharu, Ohashi; and Seo, Jae K., to Samsung Electronics Co., Ltd. Power transmission device for tape recorder. 5,600,507, Cl. 360-85.000.

Park, Heon-chul, to Samsung Electronics Co., Ltd. Variable-length-code decoders storing decoding results and corresponding code-bit-length information in memory. 5,600,812, Cl. 395-410.000.

Park, Joon-Young, to LG Semicon Co., Ltd. Static random access memory cell and method of fabricating the same. 5,599,729, Cl. 437-52.000.

Park, Kyung A., to Goldstar Electron Co., Ltd. Earth leakage breaker. 5,600,523, Cl. 361-42.000.

Park, Linda: *See*—
Mosley, Bruce; Cosman, David J.; Park, Linda; Beckmann, M. Patricia; March, Carl J.; and Idzerda, Rejean, 5,599,905, Cl. 530-350.000.

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Suzuki, Masakazu; Mori, Keisuke; Tachibana, Akifumi; Matoba, Kazunari; Asai, Hitoshi; and Miyaguchi, Kazuhisa, to J. Morita Manufacturing Corporation; and Hamamatsu Photonics Kabushiki Kaisha. Panoramic X-ray imaging apparatus. 5,600,699, Cl. 378-38.000.
Suzuki, Masaru; Hanzawa, Fumihisa; and Mogi, Manabu, to International Business Machines Corporation. Optical film and liquid crystal display device using the film. 5,600,462, Cl. 349-112.000.
Suzuki, Mikio: *See*—
Futamoto, Masaaki; Nakamura, Atsushi; Inaba, Nobuyuki; Hirayama, Yoshiyuki; Matsuda, Yoshibumi; Suzuki, Mikio; and Honda, Yukio, 5,599,580, Cl. 427-130.000.
Suzuki, Misoru; Negishi, Kiyoshi; Kawamura, Katsumi; Horie, Mikio; Orita, Hiroshi; and Suzuki, Katsuyoshi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Thermal printer. 5,599,113, Cl. 400-120.160.
Suzuki, Mitsuhiro: *See*—
Hamaki, Takayuki; Suzuki, Mitsuhiro; Tatsumi, Akinori; Shimazu, Mikio; Yamaguchi, Jun; Iwamoto, Hiroaki; Morozumi, Masahide; Kobayashi, Takuya; Horii, Seiji; and Hirose, Takako, 5,600,635, Cl. 370-280.000.
Suzuki, Motoyoshi: *See*—
Ito, Keiichi; Noda, Hirotaka; Shibata, Masao; Yamauchi, Kenichi; Fukuda, Masaru; Suzuki, Motoyoshi; and Ohta, Yukio, 5,598,624, Cl. 29-593.000.
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Suzuki, Takashi: *See*—
Umeda, Takao; Kawai, Katsuya; Saito, Yosuke; Mabuchi, Hiroyuki; Anzai, Masayasu; Miwa, Masato; Suzuki, Takashi; Mitsuya, Teruaki; and Takuma, Yasuo, 5,600,405, Cl. 399-71.000.
Suzuki, Takaya: *See*—
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Suzuki, Takehiko: *See*—
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Suzuki, Tetsuya: *See*—
Tabata, Hajime; Suzuki, Tetsuya; Hirose, Yoshihisa; Nagano, Koichi; Furubayashi, Masaaki; and Nomura, Tadashi, 5,599,085, Cl. 362-72.000.
Suzuki, Toshimitsu: *See*—
Kamata, Hajime; Katsuyama, Tsuneo; Suzuki, Toshimitsu; Minakuchi, Yu; and Yano, Katsutoshi, 5,600,346, Cl. 345-120.000.
Suzumaga, Hiroshi, to Kabushiki Kaisha Toshiba. Semiconductor device capable of detecting a tight position. 5,600,173, Cl. 257-446.000.
Suzushi, Nishimura: *See*—
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Svendsen, John A.: *See*—
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Svensson, Stig-Åke, to Floatline AB. Method and a system for transporting vehicles. 5,599,153, Cl. 414-143.200.
Swain, Eugene A.: *See*—
Foley, Geoffrey M. T.; Herbert, William G.; Swain, Eugene A.; Rasmussen, Yonn K.; and Maier, Gary J., 5,599,646, Cl. 430-133.000.
Swanson, David K.; and Panescu, Dorin, to EP Technologies, Inc. Systems and methods for positioning multiple electrode structures in electrical contact with the myocardium. 5,598,848, Cl. 128-696.000.
Swanson, Sara J.; Andrews, Robert F.; and Mandelstam, Gary M., to International Business Machines Corporation. Graphical resource editor for software customization. 5,600,778, Cl. 395-333.000.
Sweeney, Niall; Morigi, Adriano; and Gyure, Sandor, to Becton, Dickinson and Company. Needle shield assembly having a releasable lock. 5,599,318, Cl. 604-263.000.
Swierbut, Wendi M.; and Nardi, John C., to Eveready Battery Company, Inc. Cathodes for electrochemical cells having additives. 5,599,644, Cl. 429-224.000.
Swift, Joseph A.; and Wallace, Stanley J., to Xerox Corporation. High performance electric contacts. 5,599,615, Cl. 428-293.100.
Sy, Angel, to Chemical Research & Licensing Company. Process for depropanizing benzene. 5,600,049, Cl. 585-450.000.
Sy, Kian-Boa K.: *See*—
Cherukuri, Rao J.; Lai, Fuyung; and Sy, Kian-Boa K., 5,600,798, Cl. 395-200.130.
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Dvorkis, Paul; Goren, David P.; Spitz, Glenn S.; and McGlynn, Daniel R., 5,600,119, Cl. 235-462.000.
Kahn, Joel; Isaac, Richard; Devita, Joseph; McGlynn, Daniel R.; Shapira, Reuven; Bard, Simon; Katz, Joseph; and Durst, Robert, 5,600,121, Cl. 235-472.000.
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Szabo, Sandor: *See*—
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Szillat, John C.; Laudadio, Nicola; and Chin, Teresa, to United Technologies Corporation. Fuel control system for a staged combustor. 5,598,698, Cl. 60-39.060.
Szymczak, Eugene B.: *See*—
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Tabb, Charles H.: *See*—
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Taboga, Leandro, to Laboratori Taboga di Taboga Leandro. Method to prevent the exhaustion of acid copper plating baths and to recover metallic copper from solutions and sludges containing copper in an ionic form. 5,599,458, Cl. 210-710.000.
Tachibana, Akifumi: *See*—
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Takada, Tooru, to K. K. Age. Silk velvet textile and method of manufacturing the same. 5,598,615, Cl. 28-159.000.
Takagawa, Makoto: *See*—
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Takagi, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Dynamic random access memory and manufacturing method thereof. 5,600,591, Cl. 365-184.000.
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Takano, Masataka; Oka, Yoji; Takase, Akihiko; and Takahashi, Setsuo, to Hitachi, Ltd.; and Hitachi Communication Systems, Inc. Path changing system and method for use in ATM communication apparatus. 5,600,630, Cl. 370-218.000.
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Takasugi, Norio; Mafune, Eiichi; and Takahashi, Masayuki, to Daiichi Pharmaceutical Co., Ltd. Cyclic AMP derivative-containing ointment. 5,599,798, Cl. 514-47.000.
Takatori, Masahiro; Ashi, Yoshihiro; and Fujita, Hiroyuki, to Hitachi, Ltd. Self-healing ring switch and method of controlling the same. 5,600,631, Cl. 370-217.000.
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Takekoshi, Nobuhiko; Hasegawa, Takashi; Inoue, Masahiro; and Kimura, Yoichi, to Canon Kabushiki Kaisha. Image forming apparatus. 5,600,421, Cl. 399-66.000.
Takekoshi, Taro; Makigaki, Tomohiro; Ito, Hirokazu; and Arimura, Toshio, to Seiko Epson Corporation. Optical head. 5,600,619, Cl. 369-112.000.
Takemoto, Shinichi: *See*—
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Tomasiak, Mark J., to Emerson Electric Co. Wet/dry utility vacuum cleaner with a wheel mount. 5,598,605, Cl. 16-45.000.

Tomatsuri, Kazuhiko; Okada, Misako; Ushio, Yusuke; Tomita, Yuko; and Mizogami, Satoshi, to Mitsubishi Denki Kabushiki Kaisha. Control apparatus for servo system. 5,600,221, Cl. 318-632.000.

Tomeoku, Hiroshi; Yamaguchi, Kiyoshi; Takahashi, Ryukichi; Tominaka, Toshiharu; and Maki, Naoki, to Hitachi, Ltd. Superconducting apparatus and method for operating said superconducting apparatus. 5,598,710, Cl. 62-51.100.

Tomesen, Markus T.; Pennings, Engelbertus C. M.; and Schouten, Dolf, to U.S. Philips Corporation. Transmission system with polarization control. 5,600,474, Cl. 359-192.000.

Tomic, Mladomir; and Petkovsek, Gregory L., to Reynolds Consumer Products Inc. Method of thermally splicing zippers. 5,599,415, Cl. 156-159.000.

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Tompkins, Eugene. Beeper controlled auto security system. 5,600,299, Cl. 340-429.000.

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Tong, William G., to San Diego State University Foundation. Detecting analyte light absorption utilizing degenerate four wave mixing. 5,600,444, Cl. 356-432.000.

Tonogaki, Masahiko; Suga, Yuko; Kashiwazaki, Akio; and Takaide, Aya, to Canon Kabushiki Kaisha. Ink, ink-jet recording process and apparatus making use of the same. 5,599,859, Cl. 524-95.000.

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Torigoe, Shinji; and Tominaga, Shinichi, to Minnesota Mining and Manufacturing Company. Interengaging fastener member, method of producing same, and affixation member with such interengaging fastener member. 5,598,610, Cl. 24-444.000.

Torii, Shigeru; Tanaka, Hideo; Taniguchi, Masatoshi; Sasaoka, Mitio; Shiroi, Takashi; and Kameyama, Yutaka, to Otsuka Kagaku Kabushiki Kaisha. Penam derivatives. 5,599,925, Cl. 540-310.000.

Torimura, Hiroyuki, to Yamaha Corporation. Electronic musical instrument with minus-one performance responsive to keyboard play. 5,600,082, Cl. 84-610.000.

Torregrosa, Michel, to Sextant Avionique. Capacitive accelerometer with a circuit for correcting stray capacitance perturbations. 5,600,066, Cl. 73-514.180.

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Toyao, Tetsuya; Matsumoto, Toshiki; Aoki, Hiromasa; Fujita, Tatsuya; and Tojo, Senta, to Nippondenso Co., Ltd. Honeycomb body and catalyst converter having catalyst carrier configured of this honeycomb. 5,599,509, Cl. 422-180.000.

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Trayner, David J.; and Orr, Edwina M., to Richmond Holographic Research and Development Ltd. Viewing apparatus. 5,600,454, Cl. 359-15.000.

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Treusch, Christopher J.; Clark, James W., Jr.; and Panasuk, Gerard N., to Ford Motor Company. Fuel delivery system for an internal combustion engine. 5,598,824, Cl. 123-470.000.

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Triad Metal Fabricators, Inc.: *See—*
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TRW Inc.: *See—*
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TRW Repa GmbH: *See—*
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Turnbull, Roy C.; Emambakhsh, Ali S.; Schwerin, Kimberly A.; Hatten, Gwendolyn C.; and Kravetz, Marie C., 5,599,041, Cl. 280-724.000.

Tsai, David Y., to Eaton Corporation. Electric switch with dynamic brake contact shared for making and breaking a power circuit. 5,600,107, Cl. 200-1.00R.

Tsai, Larry: *See—*
Fenton, Dennis; Lai, Por-Hsiung; Lu, Hsieng; Mann, Michael; and Tsai, Larry, 5,599,690, Cl. 435-69.100.

Tsatalos, Odysseas G.; Solomon, Marvin H.; and Ioannidis, Yannis E., to Wisconsin Alumni Research Foundation. Computer database matching a nser query to queries indicating the contents of individual database tables. 5,600,829, Cl. 395-602.000.

Tseng, Horng-Huei, to Vanguard International Semiconductor Corporation. Fabrication method for polysilicon contact plugs. 5,599,736, Cl. 437-186.000.

Tsubakimoto Chain Co.: *See—*
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Tsuji, Jiro: *See*—
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Tsuji, Yoshiko: *See*—
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Tsushima, Hideaki; Barnsley, Peter E.; and McGuire, Alan, to British Telecommunications public limited company. Wavelength division optical signalling network apparatus and method. 5,600,466, Cl. 359-124.000.

Tsuzuki, Kiyohiro, to TNS Mills Inc. Apparatus and method for delivery of shiver to ring spinning machines. 5,598,692, Cl. 57-90.000.

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Müller-Gliemann, Matthias; Beuck, Martin; Kazda, Stanislav; Stasch, Johannes-Peter; Knorr, Andreas; Wohlfeil, Stefan; Hübsch, Walter; Dressel, Jürgen; Fey, Peter; Hanko, Rudolf; Krämer, Thomas; Müller, Ulrich; and Zaiss, Siegfried, 5,599,823, Cl. 514-340.000.

Zajacek, John G.: *See*—
Crocco, Guy L.; Jubin, John C., Jr.; and Zajacek, John G., 5,599,987, Cl. 564-267.000.

Zaleski, Henryk: *See*—
Izmailov, Alexandre M.; and Zaleski, Henryk, 5,599,434, Cl. 204-470.000.

Zalewski, John D.; and Brissenden, James S., to New Venture Gear, Inc. Part-time double offset transfer case. 5,599,249, Cl. 475-202.000.

Zama, Kasuko, Heiress: *See*—
Fujita, Akitsugu; Kawano, Takayuki; Nakamura, Makoto; Sakai, Fumikazu; Matsumoto, Tatsuki; Oba, Shinsuke; Sueoka, Hidetoshi; Kimura, Manabu; Zama, Masato, deceased, 5,599,408, Cl. 148-607.000.

Zama, Masato, deceased (by Kasuko Zama, Heiress): *See*—
Fujita, Akitsugu; Kawano, Takayuki; Nakamura, Makoto; Sakai, Fumikazu; Matsumoto, Tatsuki; Oba, Shinsuke; Sueoka, Hidetoshi; Kimura, Manabu; Zama, Masato, deceased, 5,599,408, Cl. 148-607.000.

Zanardo, Richard P.: *See*—
McGinley, William J.; Cannon, John R.; Green, William J.; and Zanardo, Richard P., 5,599,595, Cl. 428-33.000.

Zander, Norbert F.: *See*—
Fickenscher, Karl; and Zander, Norbert F., 5,599,909, Cl. 530-402.000.

Zanini, Gianpietro; and Corniani, Carlo, to Azionaria Costruzioni Macchine Automatiche A.C.M.A. S.p.A. Powdered material dispensing unit. 5,598,876, Cl. 141-93.000.

Zanuccoli, Pietro, to F.P.S.- Finances Products Services, S.r.l. Sulfur-based chemical soil-corrective in the form of pellets for agricultural use. 5,599,373, Cl. 71-21.000.

ZBB Technologies, Inc.: *See*—
Blazek, Wayne W.; Bolstad, James J.; Eidler, Phillip A.; Jahns, Carl D.; Miles, Ronald C.; Vidas, Robin A.; and Lex, Peter J., 5,600,534, Cl. 361-502.000.

Zborovsky, Ilya: *See*—
Rovinsky, William; and Zborovsky, Ilya, 5,599,260, Cl. 482-121.000.

Zebedee, William A.: *See*—
Spoel, Han; and Zebedee, William A., 5,599,379, Cl. 75-378.000.

Zeftek, Inc.: *See*—
Murphy, Richard F., 5,598,936, Cl. 213-61.000.

Zeik, Andrew C.: *See*—
Heys, George, Jr.; Lin, Horng J.; Wong Shui, Brian A.; and Zeik, Andrew C., 5,600,539, Cl. 361-684.000.

Zelayeta, Joseph M.: *See*—
Schinella, Richard D.; Padmanabhan, Gobi R.; and Zelayeta, Joseph M., 5,600,182, Cl. 257-763.000.

Zelenski, Richard E.: *See*—
Carlson, Brent A.; Huss, Frederic L.; Schmucki, Nancy M.; and Zelenski, Richard E., 5,600,791, Cl. 395-184.010.

Zeneca Limited: *See*—
Horowitz, Daniel M.; Hunter, Brian K.; Sanders, Jeremy K. M.; Clauss, Joachim; and George, Neil, 5,599,891, Cl. 527-202.000.

Zenith Electronics Corporation: *See*—
Citta, Richard W.; and Willming, David A., 5,600,677, Cl. 375-296.000.

Zepp, Charles M.: *See*—
Gao, Yun; Hong, Yaping; Nie, Xiaoyi; Bakale, Roger P.; Feinberg, Richard R.; and Zepp, Charles M., 5,599,985, Cl. 564-184.000.

Zerbs, Stephen T.: *See*—
Bleich, Larry L.; Moore, Warren F.; and Zerbs, Stephen T., 5,600,097, Cl. 174-110.00R.

Zetter, Mark S.: *See*—
Van Den Berg, Rian; Zetter, Mark S.; Miller, Keith L.; and Todd, Terry R., 5,600,142, Cl. 250-339.130.

Zettler, Thomas, to Siemens Aktiengesellschaft. Micromechanical component part and method for the manufacture thereof. 5,600,190, Cl. 310-40.0MM.

Zeun, Ronald; and Knauf-Beiter, Gertrude, to Ciba-Geigy Corporation. Synergistic combination of microbicides to combat fungi on plants. 5,599,828, Cl. 514-383.000.

Zexel Corporation: *See*—
Nakajima, Shinichiro; Sato, Hideyuki; Nishiji, Makoto; and Sachettini, Paolo, 5,599,250, Cl. 475-249.000.

Zhang, Fengmei: *See*—
Huang, Zhiyuan; Tian, Suxian; Xu, Yali; Zhu, Bin; Wang, Weidong; Zhang, Fengmei; and Wang, Xie, 5,600,050, Cl. 585-462.000.

Zhang, Zhong-Xuan, to Cirrus Logic, Inc. Differential amplifier and variable delay stage for use in a voltage controlled oscillator. 5,600,280, Cl. 331-57.000.

Zhang, Zuoying L.: *See*—
Kar, Barun K.; Li, Guang X.; Zhang, Zuoying L.; Joseph, Eric D.; and Shemansky, Frank A., Jr., 5,600,065, Cl. 73-504.120.

Zhao, Jin: *See*—
Nguyen, Trung T.; and Zhao, Jin, 5,600,284, Cl. 331-177.00R.

Zheng, Jian-Ping: *See*—
Jow, T. Richard; and Zheng, Jian-Ping, 5,600,535, Cl. 361-503.000.

Zhou, Chengdong: *See*—
Taylor, E. Jennings; Zhou, Chengdong; Renz, Robert P.; and Sunkara, Mahendra K., 5,599,437, Cl. 205-744.000.

Zhou, Hao; and Shao, Le Jun, to Printronix, Inc. Bit map character convertor using chain-codes for the character filling process. 5,600,772, Cl. 395-170.000.

Zhu, Bin: *See*—
Huang, Zhiyuan; Tian, Suxian; Xu, Yali; Zhu, Bin; Wang, Weidong; Zhang, Fengmei; and Wang, Xie, 5,600,050, Cl. 585-462.000.

Ziegler, Ursula E.: *See*—
Memon, Nazir A.; Weese, Richard H.; and Ziegler, Ursula E., 5,599,860, Cl. 524-151.000.

Zimmer Aktiengesellschaft: *See*—
Dilly-Louis, Wolfgang; Seelig, Joachim; and Wolf, Reinhard, 5,598,980, Cl. 241-20.000.

Zimmer, Inc.: *See*—
Atkinson, Robert W., 5,599,333, Cl. 604-326.000.

Zimmer, Richard: *See*—
Burckhardt, Manfred; Eilert, Gerd; Freitag, Rainer; Mueller, Armin; Schoeb, Reinhold; Spiecker, Rainer; Kazan, Sinan; and Zimmer, Richard, 5,599,076, Cl. 303-150.000.

Zimmerman, Daniel, to Cyro Industries. Gamma radiation sterilizable acrylic polymer. 5,599,863, Cl. 524-308.000.

Zirngibl, Martin, to Lucent Technologies Inc. Wavelength grating router with output coupler. 5,600,742, Cl. 385-37.000.

ZoMed International, Inc.: *See*—
Edwards, Stuart D.; Baker, James; Strul, Bruno; and Lax, Ronald G., 5,599,345, Cl. 606-41.000.
Edwards, Stuart D.; Baker, James; Strul, Bruno; and Lax, Ronald G., 5,599,346, Cl. 606-41.000.

Zook, Christopher P., to Cirrus Logic, Inc. Error correction method and apparatus for headers. 5,600,662, Cl. 371-40.100.

Zuercher, Joseph C.: *See*—
Cohen, Leonard D.; Weiner, Scott M.; Paczkowski, Henry C.; and Zuercher, Joseph C., 5,600,253, Cl. 324-644.000.

Zygi Limited: *See*—
Wild, Patricia, 5,598,860, Cl. 134-95.100.

Zygo Corporation: *See*—
de Groot, Peter; and Deck, Leslie L., 5,600,441, Cl. 356-357.000.

3COM Corporation: *See*—
Sherer, W. Paul; Connery, Glenn W.; and Emery, Scott A., 5,600,823, Cl. 395-500.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 4th DAY OF FEBRUARY, 1997

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Amoco Corporation: *See*—
DiFrancesco, Robert A.; and Borcherts Mahdavie, Karin, Re. 35,443, Cl. 435-194.000.

Ando, Hamae: *See*—
Yokotani, Youichirou; Kugimiya, Kouichi; and Ando, Hamae, Re. 35,441, Cl. 257-64.000.

Ascone, David. Milk and cereal container. Re. 35,437, Cl. 62-372.000.

Borcherts Mahdavie, Karin: *See*—
DiFrancesco, Robert A.; and Borcherts Mahdavie, Karin, Re. 35,443, Cl. 435-194.000.

Contiero, Claudio; Galbiati, Paola; and Zullino, Lucia, to SGS-Thomson Microelectronics, S.r.l. Mixed technology integrated circuit comprising CMOS structures and efficient lateral bipolar transistors with a high early voltage and fabrication thereof. Re. 35,442, Cl. 257-370.000.

DiFrancesco, Robert A.; and Borcherts Mahdavie, Karin, to Amoco Corporation. Purification of Q Beta replicase. Re. 35,443, Cl. 435-194.000.

Galbiati, Paola: *See*—
Contiero, Claudio; Galbiati, Paola; and Zullino, Lucia, Re. 35,442, Cl. 257-370.000.

Grilliot, Mary I.: *See*—
Grilliot, William L.; and Grilliot, Mary I., Re. 35,436, Cl. 2-93.000.

Grilliot, William L.; and Grilliot, Mary I., to Morning Pride Manufacturing, Inc. Firefighter's garments having enhanced flexibility and minimum weight. Re. 35,436, Cl. 2-93.000.

Kugimiya, Kouichi: *See*—
Yokotani, Youichirou; Kugimiya, Kouichi; and Ando, Hamae, Re. 35,441, Cl. 257-64.000.

Matsushita Electrical Industrial Co., Ltd.: *See*—
Yokotani, Youichirou; Kugimiya, Kouichi; and Ando, Hamae, Re. 35,441, Cl. 257-64.000.

Morgan Construction Company: *See*—
Starvaski, Raymond R., Re. 35,440, Cl. 242-363.000.

Morning Pride Manufacturing, Inc.: *See*—
Grilliot, William L.; and Grilliot, Mary I., Re. 35,436, Cl. 2-93.000.

Roecaberger, Edwin D. Germicidal dental floss and method for fabrication. Re. 35,439, Cl. 132-321.000.

SGS-Thomson Microelectronics, S.r.l.: *See*—
Contiero, Claudio; Galbiati, Paola; and Zullino, Lucia, Re. 35,442, Cl. 257-370.000.

Starvaski, Raymond R., to Morgan Construction Company. Loop distributor for reforming station. Re. 35,440, Cl. 242-363.000.

Yokotani, Youichirou; Kugimiya, Kouichi; and Ando, Hamae, to Matsushita Electrical Industrial Co., Ltd. Thermoelectric semiconductor having a porous structure deaerated in a vacuum and thermoelectric panel using p-type and n-type thermoelectric semiconductors. Re. 35,441, Cl. 257-64.000.

Zullino, Lucia: *See*—
Contiero, Claudio; Galbiati, Paola; and Zullino, Lucia, Re. 35,442, Cl. 257-370.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Atlantic Research Corporation: *See*—
Scheffee, Robert S., B1 4,981,534, Cl. 280-741.000.

Bailey, Norman W., to PCubid Computer Technology Inc. Low profile integrated heat sink and fan assembly. B1 5,309,983, Cl. 165-80.300.

Bawa, Jaspal S.; Couto, Luis R.; and Mancini, Giacomo J., to Thomas & Betts Corporation. Electrical connector fitting. B1 5,321,205, Cl. 174-65.0SS.

C. R. Bard, Inc.: *See*—
Rutkow, Ira M.; and Robbins, Alan W., B1 5,356,432, Cl. 623-11.000.

Construction Specialties, Inc.: *See*—
Shreiner, Thomas A., B1 5,288,048, Cl. 248-251.000.

Couto, Luis R.: *See*—
Bawa, Jaspal S.; Couto, Luis R.; and Mancini, Giacomo J., B1 5,321,205, Cl. 174-65.0SS.

Engström, Ulf F. I., to Hoganas AB. Homogeneous iron based powder mixtures free of segregation. B1 4,483,905, Cl. 428-570.000.

Hoganas AB: *See*—
Engström, Ulf F. I., B1 4,483,905, Cl. 428-570.000.

Honma, Akihiro; and Kurokawa, Masahiro, to Mitsubishi Gas Chemical Company, Inc. Method of purifying crude glycidyl (meth)acrylate. B1 5,183,539, Cl. 203-38.000.

Hunting, C. J.: *See*—
Thompson, John R.; Hunting, C. J.; Phipps, William L.; Raynesford, Steven J.; and Rittmueller, Philip H., B1 5,091,938, Cl. 380-21.000.
Thompson, John R.; Hunting, C. J.; Phipps, William L.; Raynesford, Steven J.; and Rittmueller, Philip H., B1 5,406,627, Cl. 380-20.000.

Kurokawa, Masahiro: *See*—
Honma, Akihiro; and Kurokawa, Masahiro, B1 5,183,539, Cl. 203-38.000.

Mancini, Giacomo J.: *See*—
Bawa, Jaspal S.; Couto, Luis R.; and Mancini, Giacomo J., B1 5,321,205, Cl. 174-65.0SS.

Micali, Silvio. Method for certifying public keys in a digital signature scheme. B1 5,420,927, Cl. 380-23.000.

Misawa, Toshiyuki; and Oshima, Hiroyuki, to Seiko Epson Corporation. CMOS device for use in connection with an active matrix panel. B1 5,341,012, Cl. 257-351.000.

Mitsubishi Gas Chemical Company, Inc.: *See*—
Honma, Akihiro; and Kurokawa, Masahiro, B1 5,183,539, Cl. 203-38.000.

NEC Home Electronics, Ltd.: *See*—
Thompson, John R.; Hunting, C. J.; Phipps, William L.; Raynesford, Steven J.; and Rittmueller, Philip H., B1 5,091,938, Cl. 380-21.000.
Thompson, John R.; Hunting, C. J.; Phipps, William L.; Raynesford, Steven J.; and Rittmueller, Philip H., B1 5,406,627, Cl. 380-20.000.

Oshima, Hiroyuki: *See*—
Misawa, Toshiyuki; and Oshima, Hiroyuki, B1 5,341,012, Cl. 257-351.000.

PCubid Computer Technology Inc.: *See*—
Bailey, Norman W., B1 5,309,983, Cl. 165-80.300.

Phipps, William L.: *See*—
Thompson, John R.; Hunting, C. J.; Phipps, William L.; Raynesford, Steven J.; and Rittmueller, Philip H., B1 5,091,938, Cl. 380-21.000.
Thompson, John R.; Hunting, C. J.; Phipps, William L.; Raynesford, Steven J.; and Rittmueller, Philip H., B1 5,406,627, Cl. 380-20.000.

Ponder, James E.: *See*—
Tubbs, Graham S.; and Ponder, James E., B1 4,443,811, Cl. 257-372.000.

Raynesford, Steven J.: *See*—
Thompson, John R.; Hunting, C. J.; Phipps, William L.; Raynesford, Steven J.; and Rittmueller, Philip H., B1 5,091,938, Cl. 380-21.000.
Thompson, John R.; Hunting, C. J.; Phipps, William L.; Raynesford, Steven J.; and Rittmueller, Philip H., B1 5,406,627, Cl. 380-20.000.

Rittmueller, Philip H.: *See*—
Thompson, John R.; Hunting, C. J.; Phipps, William L.; Raynesford, Steven J.; and Rittmueller, Philip H., B1 5,091,938, Cl. 380-21.000.
Thompson, John R.; Hunting, C. J.; Phipps, William L.; Raynesford, Steven J.; and Rittmueller, Philip H., B1 5,406,627, Cl. 380-20.000.

Robbins, Alan W.: *See*—
Rutkow, Ira M.; and Robbins, Alan W., B1 5,356,432, Cl. 623-11.000.

Rutkow, Ira M.; and Robbins, Alan W., to C. R. Bard, Inc. Implantable mesh prosthesis and method for repairing muscle or tissue wall defects. B1 5,356,432, Cl. 623-11.000.

Scheffee, Robert S., to Atlantic Research Corporation. Occupant restraint system and composition useful therein. B1 4,981,534, Cl. 280-741.000.

Seiko Epson Corporation: *See*—
Misawa, Toshiyuki; and Oshima, Hiroyuki, B1 5,341,012, Cl. 257-351.000.

Shreiner, Thomas A., to Construction Specialties, Inc. Ergonomic handrail. B1 5,288,048, Cl. 248-251.000.

Texas Instruments, Inc.: *See*—
Tubbs, Graham S.; and Ponder, James E., B1 4,443,811, Cl. 257-372.000.

Thomas & Betts Corporation: *See*—
Bawa, Jaspal S.; Couto, Luis R.; and Mancini, Giacomo J., B1 5,321,205, Cl. 174-65.0SS.

Thompson, John R.; Hunting, C. J.; Phipps, William L.; Raynesford, Steven J.; and Rittmueller, Philip H., to NEC Home Electronics, Ltd. Digital data cryptographic system. B1 5,091,938, Cl. 380-21.000.

Thompson, John R.; Hunting, C. J.; Phipps, William L.; Raynesford, Steven J.; and Rittmueller, Philip H., to NEC Home Electronics, Ltd. System and method for transmitting entertainment information to authorized ones of plural receivers. B1 5,406,627, Cl. 380-20.000.

Tubbs, Graham S.; and Ponder, James E., to Texas Instruments, Inc. CMOS integrated circuit device. B1 4,443,811, Cl. 257-372.000.

White, James W. Magnetic head air bearing slider assembly utilizing transverse pressurization contours. B1 4,673,996, Cl. 360-103.000.

LIST OF DESIGN PATENTEES

Abbott, Barry J.; Abbott, Valerie M.; Clarke, Stephen J.; and Donchi, Dino, to Clean Screen Wipers Pty Ltd. Wiper blade assembly clip. 377,754, Cl. D8-395.000.

Abbott, Valerie M.: *See—*
Abbott, Barry J.; Abbott, Valerie M.; Clarke, Stephen J.; and Donchi, Dino, 377,754, Cl. D8-395.000.

Abdi, Roksana, to Precise Plastic Products, Inc. Clothes hanger strap. 377,718, Cl. D6-328.000.

Ahern, Richard B., Jr., to Rubbermaid Incorporated. Canister top. 377,732, Cl. D7-391.000.

Ahern, Richard B., Jr.; Campbell, Derek; Evers, Maaike; Fritsch, Debra A.; Fujikawa, Norio; Gresham, David; Kudirka, Paul J.; Metzler, Mark; Staufenberg, Donald J.; and Sullivan, Michael, to Rubbermaid Incorporated. Food storage container top. 377,733, Cl. D7-392.100.

Akita, Michio: *See—*
Kirihara, Kazushi; and Akita, Michio, 377,791, Cl. D14-121.000.

Aktiebolaget Electrolux: *See—*
Losdahl, Claes H.; and Nyqvist, Tomas O. R., 377,742, Cl. D8-8.000.

Albert Einstein Healthcare Network: *See—*
Schwartz, L. Matthew, 377,833, Cl. D24-190.000.

Alvimar Manufacturing Co., Inc.: *See—*
Lieberman, Marvin S., 377,814, Cl. D21-136.000.

American Tack & Hardware Co., Inc.: *See—*
Hollinger, Fred, 377,837, Cl. D26-26.000.

Andresen, Werner J., to Lindab A/S. Component for a ventilation duct system. 377,829, Cl. D23-393.000.

ASR Affiliates, Inc.: *See—*
Bloom, Ira G., 377,719, Cl. D6-423.000.

Avar, Eric P.; and Rask, Matthew N., to Nike, Inc. Side element of a shoe upper. 377,712, Cl. D2-972.000.

Baldwin, Deanna L. Disposable toothbrush. 377,715, Cl. D4-104.000.

Barton, Bruce G., Jr. Adjustable ballast dock bumper. 377,775, Cl. D12-168.000.

Baskent, Feyyaz O.: *See—*
Bonaddio, Vincenzo A.; and Baskent, Feyyaz O., 377,729, Cl. D6-601.000.

Batiz, Julio: *See—*
Knuth, Lee; Brewer, Doug; Batiz, Julio; and Koenemann, Gary, 377,846, Cl. D28-13.000.

Bay, William P., Jr. Bicycle hat visor. 377,708, Cl. D2-893.000.

Beadle, Danny M.: *See—*
Ober, Lawrence R.; Beadle, Danny M.; Wines, Gerald A.; and Lurie, Lieb A., 377,790, Cl. D14-114.000.

Beardsley, James E. Portable liquid container. 377,756, Cl. D9-337.000.

Beijen, James H., to School Systems, Inc. Paper cutting press. 377,804, Cl. D18-34.000.

Bennett, Tom B.; and Rausch, Kevin, to Rubbermaid Specialty Products Inc. Sleeve for bottle. 377,741, Cl. D7-622.000.

Bertolini, Peter; and Slachowitz, Lois, to Chesebrough-Pond's USA Co., Division of Conopco, Inc. Stackable jar set. 377,757, Cl. D9-341.000.

Bertolini, Peter: *See—*
Kotyuk, Bernard, Jr.; Okin, Matthew S.; and Bertolini, Peter, 377,755, Cl. D9-300.000.

Biasotti, Mark; Nuttall, Michael J.; and Schaffeld, John H., to Lucent Technologies Inc. Telephone stand. 377,793, Cl. D14-149.000.

Biasotti, Mark; Nuttall, Michael J.; Schaffeld, John H.; and Sosa, Jose A., to Lucent Technologies Inc. Pager. 377,794, Cl. D14-191.000.

Bierman, Steven F., to Venetec International, Inc. Anchor pad with release layer. 377,831, Cl. D24-127.000.

Bird, Richard; Golladay, Edward, Jr.; Payne, Donald; Smitley, Randy; Sprinkle, Calvin; and Walls, Marine, to Porcelain Metals Corporation. Side shelf for a barbeque grill. 377,734, Cl. D7-402.000.

Black & Decker Inc.: *See—*
DeMore, Anthony M.; Somers, Robert I.; and Welch, Peter F., 377,743, Cl. D8-8.000.

Blair Industries Incorporated: *See—*
Fernandez, Vincent O., 377,731, Cl. D6-634.000.

Blevins, Don: *See—*
Gary, Lonnie F.; Blevins, Don; and Hargrove, Steven K., 377,844, Cl. D26-138.000.

Bloom, Ira G., to ASR Affiliates, Inc. Multiple desk unit. 377,719, Cl. D6-423.000.

Bonaddio, Vincenzo A.; and Baskent, Feyyaz O., to Foamex L.P. Neck support of synthetic foam. 377,729, Cl. D6-601.000.

Booth, Walter; and Levin, Alan R., to H-Tech, Inc. Bag filter vessel. 377,825, Cl. D23-209.000.

Brancheau, Harry A.: *See—*
Branz, Michael A.; Brancheau, Harry A.; Upton, Ronald D.; and Hopkins, Dan G., 377,800, Cl. D15-85.000.

Branz, Michael A.; Brancheau, Harry A.; Upton, Ronald D.; and Hopkins, Dan G., to Specialty Equipment Companies, Inc. Two door refrigerator with curved doors. 377,800, Cl. D15-85.000.

Brewer, Doug: *See—*
Knuth, Lee; Brewer, Doug; Batiz, Julio; and Koenemann, Gary, 377,846, Cl. D28-13.000.

Bullock, Dana L.: *See—*
Zito, Lois P.; and Bullock, Dana L., 377,771, Cl. D11-128.000.

Bunger, Donald J.: *See—*
Stiefel, Joseph F.; and Bunger, Donald J., 377,816, Cl. D21-205.000.

Burgland, Dale C. Vehicle-mountable luggage carrier. 377,781, Cl. D12-409.000.

Bush Industries, Inc.: *See—*
Miller, Joseph E.; Holler, James M.; and Fiala, James G., 377,720, Cl. D6-425.000.

Caeran, Francesco: *See—*
Edauw, Peter; and Caeran, Francesco, 377,820, Cl. D21-226.000.

Callaway Golf Company: *See—*
Gray, Steven D.; and Helmstetter, Richard C., 377,818, Cl. D21-217.000.

Campbell, Derek: *See—*
Ahern, Richard B., Jr.; Campbell, Derek; Evers, Maaike; Fritsch, Debra A.; Fujikawa, Norio; Gresham, David; Kudirka, Paul J.; Metzler, Mark; Staufenberg, Donald J.; and Sullivan, Michael, 377,733, Cl. D7-392.100.

Carlson, Arthur R., to Decor Corporation Pty Ltd., The. Container. 377,739, Cl. D7-602.000.

Carlson, Edward W. Central processing unit cover. 377,788, Cl. D14-114.000.

Carter, Jesse M.: *See—*
Smith, Jack V.; and Carter, Jesse M., 377,850, Cl. D29-108.000.

Cartier International B.V.: *See—*
Clouet, Jean-Marie, 377,854, Cl. D32-21.000.

Casio Computer Co., Ltd.: *See—*
Goto, Atsushi, 377,763, Cl. D10-38.000.

Chamberlain Group, Inc., The: *See—*
Doppelt, Loren E.; Condon, Jeff; Prokop, Gary; Grisdale, Marianne; and Dziersk, Mark D., 377,767, Cl. D10-104.000.

Chandler, Ken M. Card holder. 377,713, Cl. D3-247.000.

Chang, Shu-Pang. Multi-function light. 377,840, Cl. D26-62.000.

Chaperon, William J. Golfing accessory. 377,810, Cl. D20-27.000.

Chesebrough-Pond's USA Co., Division of Conopco, Inc.: *See—*
Bertolini, Peter; and Slachowitz, Lois, 377,757, Cl. D9-341.000.
Kotyuk, Bernard, Jr.; Okin, Matthew S.; and Bertolini, Peter, 377,755, Cl. D9-300.000.

Chien, Shen-Yuan, to Industrial Technology Research Institute. Desk clock. 377,762, Cl. D10-22.000.

Chimera Research & Chemical, Inc.: *See—*
Smith, Jack V.; and Carter, Jesse M., 377,850, Cl. D29-108.000.

Clarke, Stephen J.: *See—*
Abbott, Barry J.; Abbott, Valerie M.; Clarke, Stephen J.; and Donchi, Dino, 377,754, Cl. D8-395.000.

Clean Screen Wipers Pty Ltd: *See—*
Abbott, Barry J.; Abbott, Valerie M.; Clarke, Stephen J.; and Donchi, Dino, 377,754, Cl. D8-395.000.

Clouet, Jean-Marie, to Cartier International B.V. Electric vacuum cleaner. 377,854, Cl. D32-21.000.

Coe, Matthew, to PharmaDesign, Inc. Magnetic business card holder. 377,808, Cl. D19-90.000.

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LIST OF STATUTORY INVENTION REGISTRATIONS

APPLICANTS TO WHOM
STATUTORY INVENTION REGISTRATIONS WERE ISSUED ON THE
4th DAY OF FEBRUARY, 1997

Ayers, Jack D.: *See*—
Montgomery, John A.; Ayers, Jack D.; and Cowart, Gregory, H1,631, Cl. 342-1.000.
Brun, Anne M.; and Raney, Kirk H., to Shell Oil Company. Liquid laundry detergent formulations. H1,632, Cl. 510-340.000.
Coe, Richard G.: *See*—
Oetjen, David C.; McFall, Ronald R.; and Coe, Richard G., H1,634, Cl. 604-385.100.
Cowart, Gregory: *See*—
Montgomery, John A.; Ayers, Jack D.; and Cowart, Gregory, H1,631, Cl. 342-1.000.
Hiebert, Gregory L.; and Johnson, Karl F., to Lubrizol Corporation, The. Deodorizing polysulfide materials. H1,633, Cl. 528-373.000.
Johnson, Karl F.: *See*—
Hiebert, Gregory L.; and Johnson, Karl F., H1,633, Cl. 528-373.000.
Lubrizol Corporation, The: *See*—
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McFall, Ronald R.: *See*—
Oetjen, David C.; McFall, Ronald R.; and Coe, Richard G., H1,634, Cl. 604-385.100.
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Oetjen, David C.; McFall, Ronald R.; and Coe, Richard G. Compound sanitary napkin. H1,634, Cl. 604-385.100.
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CLASSIFICATION OF PATENTS

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NOTE—First number, class; second number, subclass; third number, patent number

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636.1 5,599,423
643.1 5,599,424
646.1 5,599,425

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CLASS 160

38 5,598,880
370.23 5,598,883

CLASS 162

60 5,599,426
301 5,599,427
343 5,599,428

CLASS 164

306 5,598,882
448 5,598,884
478 5,598,885

CLASS 165

80.3 B1 5,309,983
95 5,598,889
202 5,598,887
254 5,598,886
263 5,598,888

CLASS 166

276 5,598,890
308 5,598,891

CLASS 173

170 5,598,892
216 5,598,893

CLASS 174

17 VA 5,600,090
35 GC 5,600,092
35 R 5,600,091
53 5,600,093
65 SS 5,600,094
B1 5,321,205
84 R 5,600,095
5,600,096
110 R 5,600,097
135 5,600,098
257 5,600,099
261 5,600,100
5,600,101
5,600,102
265 5,600,103

CLASS 175

4.52 5,598,894
373 5,598,895

CLASS 177

136 5,600,104

CLASS 178

19 5,600,105

CLASS 180

9.48 5,598,896
287 5,598,898
417 5,598,897
433 5,598,899

CLASS 181

206 5,600,106

CLASS 182

3 5,598,900

CLASS 184

39 5,598,901
45.1 5,598,902

CLASS 188

275 5,598,903
287 5,598,904
322.16 5,598,905

CLASS 192

3.29 5,598,907
3.3 5,598,906
21.5 5,598,908
41 S 5,598,913
45 5,598,909
48.2 5,598,910
59 5,598,911
91 A 5,598,912

CLASS 193

12 5,598,914

CLASS 198

495 5,598,915
852 5,598,916

CLASS 200

1 R 5,600,107
50.28 5,600,108
61.45 R 5,600,109
61.54 5,600,110
548 5,598,917
558 5,598,918

CLASS 202

176 5,599,429

CLASS 203

38 B1 5,183,539

CLASS 204

252 5,599,430
279 5,599,431
451 5,599,432
5,599,433
470 5,599,434

CLASS 205

59 5,599,435
509 5,599,436
744 5,599,437
746 5,599,438

CLASS 206

5.1 5,598,919
148 5,598,920
214 5,598,921
299 5,598,922
370 5,598,923
372 5,598,924
387.1 5,598,925
457 5,598,926
484 5,598,927
509 5,598,928
527 5,598,929

CLASS 208

89 5,599,439
148 5,599,440
208 R 5,599,441

CLASS 209

166 5,599,442
403 5,598,930
405 5,598,931

CLASS 210

151 5,599,443
167 5,599,444
198.2 5,599,445
230 5,599,446
321.75 5,599,447
445 5,599,448
495 5,599,449
603 5,599,450
605 5,599,451
615 5,599,452
635 5,599,453
638 5,599,454
663 5,599,455
668 5,599,456
669 5,599,457
710 5,599,458
741 5,599,459
746 5,599,460
764 5,599,461
783 5,599,462
800 5,599,463

CLASS 211

41 5,598,932
74 5,598,933
151 5,598,934

CLASS 212

197 5,598,935

CLASS 213

61 5,598,936
62 R 5,598,937

CLASS 215

249 5,598,938
307 5,598,939
348 5,598,940
384 5,598,941

CLASS 216

2 5,599,464
3 5,599,465

CLASS 218

61 5,600,111
154 5,600,112

CLASS 219

69.17 5,599,466
118 5,599,467
121.14 5,599,468
121.55 5,599,469
133 5,599,470
400 5,599,471
634 5,599,472

CLASS 220

404 5,598,942
410 5,598,943
575 5,598,944
707 5,598,945
739 5,598,946

CLASS 221

150 HC 5,598,947
198 5,598,948
290 5,598,949

CLASS 222

79 5,598,950
83 5,598,951
105 5,598,952
143 5,598,953
162 5,598,954
209 5,598,955

CLASS 223

1 5,598,956
94 5,598,957

CLASS 224

198 5,598,958
315 5,598,959
324 5,598,960
404 5,598,961
542 5,598,962
664 5,598,963

CLASS 228

1.1 5,598,964
6.2 5,598,965
124.6 5,598,966
174 5,598,967
262.31 5,598,968

CLASS 229

67.1 5,598,969
305 5,598,970

CLASS 235

95 R 5,600,113
379 5,600,114
382 5,600,115
455 5,600,116
456 5,600,117
462 5,600,118
5,600,119
467 5,600,120
472 5,600,121
483 5,600,122

CLASS 236

44 A 5,598,971

CLASS 239

1 5,598,972
75 5,598,973
135 5,598,974
237 5,598,975
246 5,598,976
5,598,977
394 5,598,978

CLASS 241

5 5,598,979
20 5,598,980
189.1 5,598,981
264 5,598,982

CLASS 242

261 5,598,983
338.4 5,598,984
363 Re.35,440
395 5,598,985
597.6 5,598,986
597.8 5,598,987

CLASS 244

153 A 5,598,988
158 A 5,598,989
199 5,598,990
203 5,598,991

CLASS 246

253 5,598,992
468 5,598,993

CLASS 248

73 5,598,994
74.3 5,598,995
163.1 5,598,996
225.21 5,598,997
251 B1 5,288,048
300 5,598,998
311.2 5,598,999
500 5,599,000
505 5,599,001
552 5,599,002

CLASS 250

203.3 5,600,123
203.4 5,600,124
205 5,600,125
5,600,126
208.1 5,600,127
214 AG 5,600,128
214.1 5,600,130
5,600,131
227.11 5,600,132
227.14 5,600,133
252.1 5,600,134
261 5,600,135
288 5,600,136
306 5,600,137
330 5,600,138
5,600,139
332 5,600,140
339.13 5,600,142
349 5,600,143
363.03 5,600,144
363.04 5,600,145
396 R 5,600,146
458.1 5,600,147
495.1 5,600,148
551 5,600,149
559.29 5,600,150

CLASS 251

30.03 5,599,003

CLASS 252

8.62 5,599,613
8.63 5,599,473
62.52 5,599,474
70 5,599,475
249.01 5,599,478
299.61 5,599,479
299 63 5,599,480
358 5,599,481
389.52 5,599,482

CLASS 254

134.3 FT 5,599,004
134.3 PA 5,599,005

CLASS 256

25 5,599,006

CLASS 257

40 5,600,151
55 5,600,152
64 Re.35,441
66 5,600,153
5,600,154
72 5,600,155
77 5,600,156
84 5,600,157
94 5,600,158
222 5,600,159
288 5,600,160
306 5,600,161
311 5,600,162
314 5,600,163
321 5,600,164
325 5,600,165
324 5,600,166
335 5,600,167
336 5,600,168
351 B1 5,341,012
5,600,169
Re.35,442
372 B1 4,443,811
382 5,600,170
390 5,600,171
436 5,600,172
446 5,600,173
467 5,600,174
532 5,600,175
536 5,600,176
588 5,600,177
690 5,600,178
5,600,179
692 5,600,180
723 5,600,181
763 5,600,182
783 5,600,183

CLASS 261

44.2 5,599,484
107 5,599,485

CLASS 264

40.1 5,599,486
5,599,487
40.3 5,599,488
83 5,599,489
138 5,599,491
167 5,599,492
234 5,599,493
513 5,599,494
515 5,599,495
532 5,599,496

CLASS 269

271 5,599,007

CLASS 270

58.09 5,599,009
58.16 5,599,008

CLASS 271

3.05 5,599,010
10.11 5,599,011
182 5,599,012
195 5,599,013
270 5,599,014
272 5,599,015

CLASS 273

161 5,599,020
243 5,599,022
348.1 5,599,023

CLASS 277

53 5,599,026
163 5,599,027
199 5,599,028
212 FB 5,599,029

CLASS 280

28 5,599,030
79.11 5,599,031
204 5,599,033
276 5,599,034
414.1 5,599,035
602 5,599,036
652 5,599,037
718 5,599,038
724 5,599,041
728.2 5,599,039
729 5,599,040
730.1 5,599,042
741 B1 4,981,534
750 5,599,043

CLASS 281

19.1 5,599,044
21.1 5,599,045

CLASS 283

83 5,599,046
85 5,599,047
92 5,599,048

CLASS 290

38 R 5,600,184

CLASS 292

102 5,599,049
230 5,599,050
262 5,599,051

CLASS 294

159 5,599,052

CLASS 296

3 5,599,053
37.8 5,599,054
39.2 5,599,055
122 5,599,056
146.6 5,599,057
181 5,599,058
216 5,599,059

CLASS 297

256.15 5,599,060
270.5 5,599,061
284.11 5,599,062
325 5,599,063
344.21 5,599,064
344.22 5,599,065
383 5,599,066
411.35 5,599,067
448.1 5,599,068
452.15 5,599,069
483 5,599,070

CLASS 298

23 R 5,599,071

CLASS 303

3 5,599,072
5,599,073
113.2 5,599,074
143 5,599,075
150 5,599,076

CLASS 307

10.1 5,600,185
125 5,600,186
157 5,600,187

CLASS 310

12 5,600,188
40 MM 5,600,190
40 R 5,600,189
67 R 5,600,191
68 B 5,600,192
68 C 5,600,193
105 5,600,194
153 5,600,195
323 5,600,196
328 5,600,197

CLASS 312

221 5,599,077
5,599,078
323 5,599,079
334.7 5,599,080
406 5,599,081
409 5,599,082

CLASS 313

318.01 5,600,198
318.02 5,600,199
346 R 5,600,200
414 5,600,201
467 5,600,202
495 5,600,203
572 5,600,204
634 5,600,205

CLASS 315

32 5,600,206
39.3 5,600,207
70 5,600,208
200 A 5,600,209
307 5,600,211
391 5,600,212
507 5,600,213

CLASS 318

120 5,600,214
139 5,600,215
291 5,600,216
434 5,600,217
439 5,600,218
456 5,600,219
562 5,600,220
632 5,600,221

CLASS 320

2 5,600,222
5,600,223
5,600,224
5,600,225
20 5,600,226
21 5,600,227
43 5,600,228
48 5,600,229
5,600,230
5,600,231

CLASS 322

12 5,600,232

CLASS 323

237 5,600,233
282 5,600,234
315 5,600,235

CLASS 324

158.1 5,600,236
207.16 5,600,237
207.21 5,600,238
209 5,600,239
219 5,600,240
228 5,600,241
248 5,600,242
5,600,243
5,600,244
309 5,600,245
318 5,600,246
339 5,600,247
426 5,600,248
522 5,600,249
537 5,600,250
557 5,600,251
613 5,600,252
635 5,600,253
644 5,600,254
711 5,600,255
715 5,600,256
754 5,600,257
5,600,258
758 5,600,259
761

CLASS 326

11 5,600,260
27 5,600,261
38 5,600,262
39 5,600,263
5,600,264
41 5,600,265
57 5,600,266
73 5,600,267
110 5,600,268

CLASS 327

52 5,600,269
75 5,600,270
108 5,600,271

157 5,600,272
261 5,600,273
262 5,600,274
307 5,600,275
362 5,600,276
526 5,600,277

CLASS 330

51 5,600,278

CLASS 331

36 C 5,600,279
57 5,600,280
5,600,281
111 5,600,282
5,600,283
177 R 5,600,284

CLASS 333

1 5,600,285
26 5,600,286
195 5,600,287
214 5,600,288
248 5,600,289
252 5,600,290

CLASS 335

132 5,600,291

CLASS 336

182 5,600,293
192 5,600,294

CLASS 337

405 5,600,295

CLASS 338

22 R 5,600,296
32 R 5,600,297
162 5,600,298

CLASS 340

429 5,600,299
438 5,600,300
442 5,600,301
457 5,600,302
568 5,600,303
572 5,600,304
573 5,600,305
584 5,600,306
600 5,600,307
675 5,600,308
825.02 5,600,309
825.06 5,600,310
825.19 5,600,311
825.47 5,600,312

CLASS 341

22 5,600,313
26 5,600,314
59 5,600,315
87 5,600,316
139 5,600,317
143 5,600,318
144 5,600,319
5,600,320
5,600,321
172 5,600,322
173 5,600,323
176 5,600,324

CLASS 342

13 5,600,325
17 5,600,326
175 5,600,327
357 5,600,328
5,600,329
463 5,600,330

CLASS 343

700 MS 5,600,331
707 5,600,332
713 5,600,333
715 5,600,334
749 5,600,335
756 5,600,336
770 5,600,337
790 5,600,338
825 5,600,339
846 5,600,340
895 5,600,341
909 5,600,342

CLASS 345

74 5,600,343
87 5,600,344
100 5,600,345
120 5,600,346
127 5,600,347
180 5,600,348

CLASS 347

11 5,600,349
19 5,600,350
40 5,600,351
5,600,352
43 5,600,353
50 5,600,354
55 5,600,355
62 5,600,356
72 5,600,357
87 5,600,358
171 5,600,359
5,600,360
214 5,600,361
218 5,600,362
237 5,600,363

CLASS 348

1 5,600,364
8 5,600,365
9 5,600,366
143 5,600,368
218 5,600,369
239 5,600,370
335 5,600,371
345 5,600,372
397 5,600,373
398 5,600,374
400 5,600,375
423 5,600,376
452 5,600,377
468 5,600,378
497 5,600,379
614 5,600,380
626 5,600,381
705 5,600,382
771 5,600,383

CLASS 349

38 5,600,461
42 5,600,459
44 5,600,458
54 5,600,460
57 5,600,455
64 5,600,456
89 5,600,457
112 5,600,462
123 5,600,464

CLASS 352

27 5,600,384

CLASS 353

69 5,599,083

CLASS 355

22 5,600,402

CLASS 356

124.5 5,600,432
128 5,600,433
139.08 5,600,434
139.09 5,600,435
141.3 5,600,436
237 5,600,437
339 5,600,438
345 5,600,439
5,600,440
357 5,600,441
358 5,600,442
402 5,600,443
432 5,600,444

CLASS 358

296 5,600,445
456 5,600,448
474 5,600,450
483 5,600,451
501 5,600,452

CLASS 359

15 5,600,454
115 5,600,465
124 5,600,466
5,600,467
127 5,600,468
135 5,600,469
152 5,600,470
5,600,471
161 5,600,472
179 5,600,473
192 5,600,474
206 5,600,475
5,600,476
220 5,600,477
223 5,600,478
237 5,600,479
245 5,600,480
341 5,600,481
5,600,482
344 5,600,483
529 5,600,484
561 5,600,485
569 5,600,486
634 5,600,487
651 5,600,488
679 5,600,489
690 5,600,490
698 5,600,491
712 5,600,492
717 5,600,493
719 5,600,494
819 5,600,495
820 5,600,496
875 5,600,497
883 5,600,453

CLASS 360

3 5,600,498
40 5,600,499
46 5,600,500
51 5,600,501
5,600,502
69 5,600,503
74.2 5,600,504
77.12 5,600,505
78.14 5,600,506
85 5,600,507
96.5 5,600,508
97.02 5,600,509
5,600,510
5,600,511
98.08 5,600,512
99.08 5,600,513
5,600,514
103 B1 4,673,996
104 5,600,515
105 5,600,516
106 5,600,517
113 5,600,518
126 5,600,519
5,600,520

CLASS 361

18 5,600,521
19 5,600,522
42 5,600,523
5,600,524
56 5,600,525
65 5,600,526
93 5,600,527
103 5,600,528
187 5,600,529
234 5,600,530
302 5,600,531
305 5,600,532
321.4 5,600,533
502 5,600,534
503 5,600,535
648 5,600,536
674 5,600,537
683 5,600,538
684 5,600,539
704 5,600,540
707 5,600,541
732 5,600,542
737 5,600,543
816 5,600,544

CLASS 362

72 5,599,085
74 5,599,086
82 5,599,087
103 5,599,088
198 5,599,089
267 5,599,090
269 5,599,091
294 5,599,092
400 5,599,093
414 5,599,094

CLASS 363

21 5,600,545
5,600,546
22 5,600,547
41 5,600,548
46 5,600,549
50 5,600,550
59 5,600,551
89 5,600,552

CLASS 364

148 5,600,553
424.04 5,600,558
424.051 5,600,559
426.03 5,600,560
428.086 5,600,557
460 5,600,561
464.11 5,600,562
468.24 5,600,563
477.05 5,600,564
478.07 5,600,565
481 5,600,566
488 5,600,567
489 5,600,568
5,600,569
496 5,600,570
5,600,571
514 A 5,600,572
514 R 5,600,573
552 5,600,574
557 5,600,575
571.03 5,600,576
578 5,600,578
5,600,579
708.1 5,600,580
722 5,600,581
724.01 5,600,582
736.5 5,600,583
745 5,600,584

CLASS 365

104 5,600,586
145 5,600,587
154 5,600,588
5,600,589
175 5,600,590
184 5,600,591
185.18 5,600,592
185.19 5,600,593
185.24 5,600,594
185.33 5,600,595
189.01 5,600,596
189.05 5,600,599
189.08 5,600,597
189.11 5,600,598
201 5,600,600
203 5,600,601
205 5,600,602
207 5,600,603
230.06 5,600,604
233 5,600,605
5,600,606
233.5 5,600,607

CLASS 366

30 5,599,095
78 5,599,096
88 5,599,097
90 5,599,098
141 5,599,099
152.5 5,599,100
165.1 5,599,101
178.1 5,599,102
343 5,599,103

CLASS 367

20 5,600,608
176 5,600,609
181 5,600,610

CLASS 368

10 5,600,611

CLASS 369

13 5,600,612
32 5,600,613
44.23 5,600,614
44.35 5,600,615
48 5,600,616
97 5,600,617
112 5,600,618
5,600,619
5,600,620
116 5,600,621
219 5,600,623
266 5,600,624
270 5,600,625
275.3 5,600,626
275.4 5,600,627
291 5,600,628

CLASS 370

217 5,600,631
218 5,600,630
248 5,600,648
252 5,600,632
259 5,600,639
263 5,600,646
277 5,600,633
280 5,600,635
294 5,600,634
296 5,600,636
349 5,600,629
351 5,600,638
360 5,600,640
363 5,600,647
389 5,600,637
395 5,600,645
396 5,600,642
5,600,652
399 5,600,643
400 5,600,641
404 5,600,644
435 5,600,649
448 5,600,651
468 5,600,650
474 5,600,653
524 5,600,654
5,600,655

CLASS 371

20.2 5,600,656
20.6 5,600,657
22.1 5,600,658
37.1 5,600,659
40.1 5,600,661
5,600,662
41 5,600,663
43 5,600,664
377 5,600,660

CLASS 372

6 5,600,665
24 5,600,666
45 5,600,667
87 5,600,668

CLASS 373

38 5,600,669

CLASS 374

12 5,599,104
125 5,599,105

CLASS 375

184.01 5,600,792
208 5,600,670
211 5,600,671
219 5,600,672
224 5,600,673
244 5,600,674
261 5,600,675
283 5,600,676
296 5,600,677
298 5,600,678
317 5,600,679
327 5,600,680
345 5,600,681
354 5,600,682
363 5,600,683
377 5,600,684

CLASS 376

260 5,600,685
5,600,686
5,600,687
5,600,688
302 5,600,689
5,600,690
305 5,600,691
5,600,692
446 5,600,694

CLASS 377

51 5,600,695
60 5,600,696

CLASS 378

15 5,600,697
34 5,600,698
38 5,600,699
57 5,600,700
98.2 5,600,701
180 5,600,702

CLASS 379

57 5,600,703
58 5,600,704
5,600,705
59 5,600,706
5,600,707
5,600,708
61 5,600,709
67 5,600,710
102 5,600,711
142 5,600,712
375 5,600,713
390 5,600,714
393 5,600,715
399 5,600,716
5,600,717
406 5,600,718
438 5,600,719

CLASS 380

1 5,600,720
20 5,600,721
B1 5,406,627
21 5,600,722
B1 5,091,938
23 5,600,723
B1 5,420,927
28 5,600,724
30 5,600,725
49 5,600,726

CLASS 381

26 5,600,727
68.2 5,600,728
71 5,600,729
77 5,600,730

CLASS 382

107 5,600,731
112 5,600,732
144 5,600,733
147 5,600,734
178 5,600,735
209 5,600,736
232 5,600,737

CLASS 384

36 5,599,106
57 5,599,107
123 5,599,108
308 5,599,109
501 5,599,110
512 5,599,111
624 5,599,112

CLASS 385

11 5,600,738
16 5,600,739
27 5,600,740
35 5,600,741
37 5,600,742
5,600,743
38 5,600,744
49 5,600,745
53 5,600,746
59 5,600,747
5,600,748
70 5,600,749
114 5,600,750
116 5,600,751

CLASS 386

117 5,600,446

CLASS 392

488 5,600,752

CLASS 395

2.09 5,600,753
2.3 5,600,754
2.34 5,600,755
2.44 5,600,756
3 5,600,757
21 5,600,758
87 5,600,759
94 5,600,760
114 5,600,762
120 5,600,763
128 5,600,761
131 5,600,764
133 5,600,765
135 5,600,766
5,600,767
5,600,768
143 5,600,769
170 5,600,772
173 5,600,773
174 5,600,774
182.02 5,600,782
182.04 5,600,783
182.09 5,600,786
182.10 5,600,784
182.21 5,600,785
183.06 5,600,787
183.07 5,600,788
183.14 5,600,789
5,600,790
184.01 5,600,791
200.01 5,600,793
5,600,794
200.02 5,600,795
200.11 5,600,796
5,600,797
200.13 5,600,798
201 5,600,534
5,600,555
280 5,600,799
281 5,600,800
282 5,600,801
5,600,802
287 5,600,803
309 5,600,804
326 5,600,776
5,600,777
5,600,781
333 5,600,778
334 5,600,780
340 5,600,779
378 5,600,809
379 5,600,811
380 5,600,806
410 5,600,812
421.01 5,600,807
421.07 5,600,813
427 5,600,814
436 5,600,815
440 5,600,816
464 5,600,817
490 5,600,818
496 5,600,819

VOL 11 95 ISS 1 FE 4 1997 UMI

497.02 5,600,820
497.04 5,600,821
500 5,600,822
5,600,823
551 5,600,824
567 5,600,810
582 5,600,842
601 5,600,828
5,600,833
602 5,600,827
5,600,829
5,600,831
605 5,600,835
607 5,600,825
611 5,600,826
612 5,600,836
617 5,600,834
619 5,600,832
672 5,600,808
673 5,600,837
683 5,600,838
750 5,600,839
5,600,840
5,600,841
774 5,600,771
800 5,600,843
5,600,844
5,600,845
5,600,846
5,600,847
5,600,848
803 5,600,556
805 5,600,770
806 5,600,775
825 5,600,805

CLASS 396

6 5,600,391
5,600,395
51 5,600,399
5,600,400
125 5,600,398
133 5,600,390
5,600,397
5,600,389
166 5,600,392
249 5,600,386
315 5,600,387
319 5,600,385
324 5,600,388
513 5,600,393
542 5,600,401
565 5,600,396
647 5,600,394

CLASS 399

8 5,600,403
17 5,600,429
18 5,600,404
39 5,600,408
55 5,600,415
56 5,600,407
58 5,600,409
66 5,600,421
68 5,600,424
70 5,600,406
71 5,600,405
81 5,600,412
97 5,600,427
98 5,600,411
113 5,600,410
171 5,600,430
174 5,600,413
176 5,600,414
226 5,600,431
279 5,600,417
285 5,600,418
5,600,419
291 5,600,416
302 5,600,420
313 5,600,422
5,600,423
353 5,600,425
381 5,600,426
399 5,600,428

CLASS 400

120.16 5,599,113
124.04 5,599,114
207 5,599,115
323 5,599,116
605 5,599,117
621 5,599,119
624 5,599,120

CLASS 401

31 5,599,122
52 5,599,123
78 5,599,124
122 5,599,125
184 5,599,126
202 5,599,127

CLASS 402

79 5,599,128

CLASS 403

2 5,599,129
236 5,599,130
342 5,599,131

CLASS 404

6 5,599,132
72 5,599,133
84.1 5,599,134
101 5,599,135

CLASS 405

15 5,599,136
128 5,599,137
129 5,599,138
5,599,139
259.6 5,599,140

CLASS 407

114 5,599,141

CLASS 408

10 5,599,142
124 5,599,143
144 5,599,144
233 5,599,145

CLASS 409

234 5,599,146

CLASS 411

38 5,599,147
175 5,599,148
386 5,599,149
530 5,599,150

CLASS 414

7 5,599,151
10 5,599,152
143.2 5,599,153
278 5,599,154
283 5,599,155
490 5,599,156
501 5,599,157
685 5,599,158
744.3 5,599,159
799 5,599,160

CLASS 415

17 5,599,161
53.1 5,599,162
55.1 5,599,163
144 5,599,164

CLASS 416

97 R 5,599,166
108 5,599,167
136 5,599,168
186 R 5,599,169
190 5,599,165
5,599,170

CLASS 417

199.2 5,599,171
334 5,599,172
412 5,599,173
413.1 5,599,174
420 5,599,175
5,599,176
429 5,599,177

CLASS 418

55.1 5,599,178

CLASS 420

109 5,599,497

CLASS 422

4 5,599,498
21 5,599,499
62 5,599,500
64 5,599,501
82.01 5,599,502
82.05 5,599,503
82.08 5,599,504
104 5,599,505
131 5,599,506
135 5,599,507
169 5,599,508
180 5,599,509
197 5,599,510
232 5,599,511
299 5,599,586
300 5,599,512
311 5,599,513

CLASS 423

55 5,599,514
101 5,599,515
179.5 5,599,516
418.2 5,599,517
477 5,599,518
613 5,599,519
700 5,599,520

CLASS 424

9.33 5,599,522
9.52 5,599,523
47 5,599,524
49 5,599,525
5,599,526
5,599,527
52 5,599,528
59 5,599,529
5,599,530
63 5,599,531
70.1 5,599,532
70.16 5,599,533
78.02 5,599,534
78.04 5,599,535
85.1 5,599,536
93.2 5,599,537
130.1 5,599,538
167.1 5,599,539
190.1 5,599,541
191.1 5,599,542
5,599,543
229.1 5,599,544
282.1 5,599,545
401 5,599,546
5,599,547
5,599,548
5,599,549
404 5,599,550
405 5,599,551
423 5,599,552
435 5,599,553
448 5,599,554
488 5,599,555
491 5,599,536
500 5,599,557
532 5,599,558
538 5,599,559
570 5,599,560
670 5,599,561

CLASS 425

67 5,599,562
117 5,599,563
190 5,599,564
384 5,599,565
405.1 5,599,566
526 5,599,567
562 5,599,568

CLASS 426

48 5,599,569
105 5,599,570
321 5,599,571
5,599,572
451 5,599,573
617 5,599,575
660 5,599,574

CLASS 427

2.14 5,599,577
2.3 5,599,576
7 5,599,578
64 5,599,579
130 5,599,580
188 5,599,581
207.1 5,599,582
213.3 5,599,583
245 5,599,584
250 5,599,585
322 5,599,587
343 5,599,588
430.1 5,599,589
448 5,599,590
458 5,599,591
543 5,599,592
688 5,599,634

CLASS 428

1 5,599,593
13 5,599,594
33 5,599,595
34.2 5,599,596
35.7 5,599,598
36.3 5,599,599
36.9 5,599,600
40.1 5,599,601
56 5,599,602
66.2 5,599,603
105 5,599,604
141 5,599,605
156 5,599,606
192 5,599,608
212 5,599,609
293.1 5,599,615
304.4 5,599,616
317.3 5,599,617
323 5,599,618
332 5,599,619
343 5,599,620
344 5,599,597
349 5,599,621
355 EP 5,599,622
364 5,599,623
375 5,599,624
391 5,599,625
403 5,599,626
5,599,627
413 5,599,628
5,599,629
5,599,630
421 5,599,631
457 5,599,632
570 B1 4,483,905
675 5,599,633
692 5,599,635

CLASS 429

7 5,599,636
27 5,599,637
33 5,599,638
5,599,639
46 5,599,640
179 5,599,641
194 5,599,642
220 5,599,643
224 5,599,644

CLASS 430

126 5,599,645
133 5,599,646
200 5,599,647
256 5,599,648
270.11 5,599,649
273.1 5,599,650
280.1 5,599,651
281.1 5,599,652
314 5,599,653
324 5,599,654
325 5,599,655
382 5,599,656
503 5,599,657
533 5,599,658

CLASS 431

12 5,599,179
13 5,599,180
80 5,599,181

CLASS 432

158 5,599,182

CLASS 433

53 5,599,183
115 5,599,184
173 5,599,185
215 5,599,186

CLASS 434

19 5,599,187
195 5,599,188
370 5,599,189

CLASS 435

1.1 5,599,659
4 5,599,660
5,599,661
5 5,599,662
6 5,599,663
5,599,664
5,599,665
5,599,666
5,599,667
5,599,668
5,599,669
5,599,670
5,599,671
5,599,672
5,599,673
5,599,674
5,599,675
7.2 5,599,676
7.21 5,599,680
7.23 5,599,681
7.24 5,599,682
7.4 5,599,677
7.9 5,599,678
5,599,679
13 5,599,683
23 5,599,686
29 5,599,688
42 5,599,689
69.1 5,599,690
5,599,691
69.3 5,599,692
5,599,693
91.1 5,599,695
91.2 5,599,696
94 5,599,694
101 5,599,697
129 5,599,698
136 5,599,700
155 5,599,701
181 5,599,702
194 Re.35,443
240.27 5,599,708
252.3 5,599,709
255.1 5,599,711
267 5,599,712
300.1 5,599,713
325 5,599,704
5,599,707
366 5,599,706
373 5,599,703
378 5,599,705

CLASS 436

17 5,599,715
57 5,599,716
63 5,599,717
69 5,599,718
88 5,599,719
501 5,599,720

CLASS 437

21 5,599,722
31 5,599,723
40 5,599,724
5,599,725
41 5,599,726
43 5,599,727
44 5,599,728
52 5,599,729
69 5,599,730
70 5,599,731
105 5,599,732
160 5,599,733
164 5,599,734
165 5,599,735
186 5,599,736
187 5,599,737
5,599,738
190 5,599,739
5,599,740
192 5,599,741
194 5,599,742
5,599,743
195 5,599,744
5,599,745
200 5,599,746
209 5,599,747
225 5,599,748
228 5,599,749

CLASS 439

49 5,599,190
5,599,191
65 5,599,192
66 5,599,193
72 5,599,194
125 5,599,195
141 5,599,196
159 5,599,197
188 5,599,198
357 5,599,199
381 5,599,200
441 5,599,201
459 5,599,202
489 5,599,203
502 5,599,204
507 5,599,205
536 5,599,206
567 5,599,207
620 5,599,208
676 5,599,209
763 5,599,210
806 5,599,211
843 5,599,212
857 5,599,213
877 5,599,214

CLASS 440

6 5,599,215
53 5,599,216
88 5,599,217
89 5,599,218

CLASS 441

106 5,599,219
135 5,599,220

CLASS 442

60 5,599,612
171 5,599,614
180 5,599,611
261 5,599,610

CLASS 446

128 5,599,221

CLASS 451

39 5,599,223
236 5,599,224
535 5,599,225

CLASS 452

149 5,599,226
166 5,599,227
185 5,599,228

CLASS 454

121 5,599,229
155 5,599,230

CLASS 463

29 5,599,231
44 5,599,232

CLASS 464

52 5,599,233
145 5,599,234

CLASS 472

89 5,599,235

CLASS 473

55 5,599,236
137 5,599,237
147 5,599,238
208 5,599,239
218 5,599,240
219 5,599,021
238 5,599,241
318 5,599,242
335 5,599,243
436 5,599,017
448 5,599,016
471 5,599,025
478 5,599,024
521 5,599,018
549 5,599,019

CLASS 474

70 5,599,244
135 5,599,245
205 5,599,246

CLASS 475

128 5,599,247
202 5,599,249
249 5,599,250
275 5,599,251

CLASS 476

40 5,599,252

CLASS 477

111 5,599,253
176 5,599,254
211 5,599,255

CLASS 482

49 5,599,256
51 5,599,257
52 5,599,258
54 5,599,259
121 5,599,260
130 5,599,261
147 5,599,262

CLASS 492

7 5,599,263
39 5,599,264
47 5,599,265
56 5,599,266

CLASS 493

84 5,599,267
184 5,599,268
468 5,599,269

CLASS 494

5 5,599,270
37 5,599,271

CLASS 501

40 5,599,751
62 5,599,752
66 5,599,753
70 5,599,754
127 5,599,756
137 5,599,757

CLASS 502

34 5,599,758
80 5,599,759
115 5,599,760
152 5,599,761
210 5,599,762
402 5,599,763
417 5,599,764

CLASS 503

227 5,599,765
5,599,766

CLASS 504

116 5,599,767

5,599,768
128 5,599,769
242 5,599,770
243 5,599,771
246 5,599,772
5,599,773
284 5,599,774

CLASS 505

125 5,599,775

CLASS 507

104 5,599,776
244 5,599,777

CLASS 508

208 5,599,778
283 5,599,779
391 5,599,780

CLASS 510

119 5,599,483
135 5,599,476
220 5,599,781
299 5,599,782
412 5,599,783
417 5,599,784
5,599,785
522 5,599,786
535 5,599,787

CLASS 514

2 5,599,788
8 5,599,789
5,599,790
9 5,599,791
12 5,599,792
18 5,599,793
29 5,599,794
31 5,599,795
44 5,599,796
5,599,797
47 5,599,798
53 5,599,800
56 5,599,801
70 5,599,803
141 5,599,804
174 5,599,806
176 5,599,807
211 5,599,808
212 5,599,809
217 5,599,810
226.5 5,599,811
232.5 5,599,813
248 5,599,814
254 5,599,815
5,599,816
263 5,599,817
275 5,599,818
314 5,599,819
320 5,599,820
321 5,599,821
324 5,599,822
340 5,599,823
356 5,599,824
364 5,599,826
366 5,599,825
372 5,599,827
383 5,599,828
391 5,599,829
398 5,599,830
410 5,599,831
415 5,599,832
422 5,599,833
440 5,599,835
478 5,599,836
530 5,599,837
5,599,838
546 5,599,839
549 5,599,840
557 5,599,841
570 5,599,843
651 5,599,844
653 5,599,846
671 5,599,847
739 5,599,848

CLASS 518

700 5,599,849

CLASS 521

60 5,599,850
107 5,599,851

CLASS 523

105 5,599,852
160 5,599,853
201 5,599,854
404 5,599,855
453 5,599,856

CLASS 524

3 5,599,857
41 5,599,858
95 5,599,859
151 5,599,860
225 5,599,861
262 5,599,862
308 5,599,863
405 5,599,864
413 5,599,865
440 5,599,866
443 5,599,867
495 5,599,868
5,599,869
503 5,599,870
504 5,599,871
522 5,599,872
545 5,599,873
590 5,599,874
601 5,599,875
720 5,599,876

CLASS 525

146 5,599,877
285 5,599,879
316 5,599,880
332.1 5,599,882
381 5,599,881
474 5,599,883
509 5,599,884

CLASS 526

68 5,599,885
90 5,599,886
105 5,599,887
212 5,599,888
217 5,599,889
260 5,599,890

CLASS 527

202 5,599,891

CLASS 528

10 5,599,892
12 5,599,893
15 5,599,894
59 5,599,895
198 5,599,897
310 5,599,898
337 5,599,899
491 5,599,900

CLASS 530

328 5,599,901
330 5,599,902
331 5,599,903
350 5,599,904
5,599,905
5,599,906
385 5,599,907
387.3 5,599,908
402 5,599,909

CLASS 534

618 5,599,911
751 5,599,912
836 5,599,913

CLASS 536

4.1 5,599,914
18.7 5,599,915
20 5,599,916
22.1 5,599,917
23.1 5,599,918
23.5 5,599,919
5,599,920
24.33 5,599,921
25.3 5,599,922

CLASS 540

145 5,599,923
5,599,924
310 5,599,925
456 5,599,926
5,599,927
474 5,599,928
592 5,599,929

CLASS 544

121 5,599,930
238.2 5,599,812
258 5,599,931
361 5,599,932
402 5,599,933

CLASS 546

101 5,599,935
122 5,599,936
133 5,599,937
224 5,599,938
250 5,599,939
329 5,599,940
346 5,599,941

CLASS 548

215 5,599,942
252 5,599,943
263.6 5,599,944
5,599,945
432 5,599,946
496 5,599,947
518 5,599,948

CLASS 549

214 5,599,949
297 5,599,950
362 5,599,951
5,599,952
417 5,599,953
419 5,599,954
525 5,599,955
531 5,599,956
533 5,599,957

CLASS 552

653 5,599,958

CLASS 554

63 5,599,959
224 5,599,960

CLASS 556

21 5,599,962
33 5,599,963
179 5,599,964

CLASS 558

277 5,599,965
414 5,599,966

CLASS 560

48 5,599,967
347 5,599,968

CLASS 562

401 5,599,969
425 5,599,971
433 5,599,972
443 5,599,973
463 5,599,974
465 5,599,975
519 5,599,976
523 5,599,977
567 5,599,978
608 5,599,979
840 5,599,980
863 5,599,981

CLASS 564

94 5,599,982
98 5,599,983
157 5,599,984
184 5,599,985
216 5,599,986
267 5,599,987
272 5,599,988
290 5,599,989
296 5,599,990
308 5,599,991
314 5,599,992
328 5,599,993
355 5,599,994
426 5,599,995
442 5,599,996
450 5,599,997
455 5,599,998
477 5,599,999
480 5,600,000
504 5,600,001

CLASS 568

1 5,600,003
5,600,004
6 5,600,005
16 5,600,006
306 5,600,007
314 5,600,008
318 5,600,009
335 5,600,011
347 5,600,012
355 5,600,013
361 5,600,014
396 5,600,015
437 5,600,016
454 5,600,017
483 5,600,018
613 5,600,019
618 5,600,020
671 5,600,021
682 5,600,022
694 5,600,023
697 5,600,024
716 5,600,025
798 5,600,026
810 5,600,027
861 5,600,028
873 5,600,029
881 5,600,030
882 5,600,031
903 5,600,032
908 5,600,033
5,600,034
932 5,600,035
937 5,600,036

CLASS 570

151 5,600,037
166 5,600,038
169 5,600,039
179 5,600,040
180 5,600,041
230 5,600,042
243 5,600,043

CLASS 585

15 5,600,044
261 5,600,045
322 5,600,046
357 5,600,047
449 5,600,048
450 5,600,049
462 5,600,050
648 5,600,051
654 5,600,052
5,600,053
671 5,600,054
727 5,600,055

CLASS 588

256 5,599,272

CLASS 600

27 5,599,274
38 5,599,275
112 5,599,276
133 5,599,278
201 5,599,279

CLASS 601

15 5,599,280
94 5,599,282

CLASS 602

5 5,599,283
17 5,599,284
19 5,599,286
26 5,599,288
57 5,599,289
61 5,599,290

CLASS 604

8 5,599,291
11 5,599,292
16 5,599,293
22 5,599,294
5,599,295
26 5,599,296
5,599,297
49 5,599,298
54 5,599,299
5,599,300
65 5,599,301
68 5,599,302
80 5,599,303
94 5,599,304
95 5,599,305
96 5,599,306
101 5,599,307
118 5,599,308
136 5,599,309
164 5,599,310
175 5,599,311
191 5,599,312
192 5,599,313
207 5,599,314
218 5,599,315
232 5,599,316
256 5,599,317
263 5,599,318
264 5,599,319
265 5,599,321
270 5,599,322
272 5,599,323
280 5,599,324
282 5,599,325
5,599,326
283 5,599,327
5,599,328
284 5,599,329
317 5,599,330
5,599,331
5,599,332
326 5,599,333
368 5,599,334
5,599,335
5,599,336
385.1 5,599,337
385.2 5,599,338
387 5,599,339

CLASS 606

4 5,599,340
5 5,599,341
9 5,599,342
34 5,599,344
41 5,599,345
5,599,346
42 5,599,347
45 5,599,348
46 5,599,349
51 5,599,350
167 5,599,351

CLASS 623

1 5,599,352
11 B1 5,356,432

CLASSIFICATION OF DESIGNS

D2— 717 377,707
893 377,708
909 377,709
914 377,710
954 377,711
972 377,712
D3— 247 377,713
260 377,714
D4— 104 377,715
138 377,716
D6— 328 377,717
377,718
423 377,719
425 377,720
436 377,721
446 377,722
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	38	377,834		28	377,838		134	377,842	D28—	13	377,846	D29—	108	377,850		21	377,854
	52	377,835		42	377,839		138	377,843		49	377,847		121	377,851			377,855
	126	377,836		62	377,840			377,844		85	377,848	D30—	118	377,852		48	377,856

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P.—	9	9,790		82	9,793			9,796		88.1	9,797
	33.1	9,791		87.12	9,795		87.4	9,794			

STATUTORY INVENTION REGISTRATIONS

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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01	:	5,598,754	5,598,929	5,599,351	5,599,922	5,600,335		5,600,735
		5,599,023	5,598,934	5,599,359	5,599,928	5,600,340		5,600,752
		5,599,117	5,598,939	5,599,372	5,599,963	5,600,342		5,600,754
		5,599,311	5,598,947	5,599,397	5,599,967	5,600,349		5,600,763
		5,599,374	5,598,958	5,599,411	5,600,025	5,600,350		5,600,766
		5,599,531	5,598,959	5,599,418	5,600,079	5,600,351		5,600,768
		5,599,613	5,598,966	5,599,423	5,600,080	5,600,379		5,600,774
		5,599,977	5,598,969	5,599,425	5,600,083	5,600,405		5,600,775
		5,600,107	5,598,971	5,599,433	5,600,088	5,600,432		5,600,777
		5,600,311	5,598,989	5,599,440	5,600,089	5,600,438		5,600,778
02	:	5,598,612	5,599,000	5,599,464	5,600,095	5,600,440		5,600,779
		5,598,811	5,599,016	5,599,492	5,600,115	5,600,443		5,600,782
04	:	5,598,963	5,599,022	5,599,500	5,600,128	5,600,444		5,600,799
		5,598,977	5,599,027	5,599,535	5,600,139	5,600,450		5,600,800
		5,599,106	5,599,031	5,599,544	5,600,140	5,600,480		5,600,802
		5,599,738	5,599,063	5,599,571	5,600,142	5,600,486		5,600,804
		5,599,902	5,599,091	5,599,578	5,600,147	5,600,491		5,600,815
		5,600,065	5,599,093	5,599,590	5,600,149	5,600,499		5,600,823
		5,600,071	5,599,103	5,599,619	5,600,155	5,600,502		5,600,825
		5,600,143	5,599,123	5,599,632	5,600,169	5,600,511		5,600,832
		5,600,260	5,599,147	5,599,638	5,600,174	5,600,512		5,600,835
		5,600,287	5,599,159	5,599,662	5,600,182	5,600,516		5,600,841
		5,600,302	5,599,168	5,599,667	5,600,183	5,600,519		5,091,938
		5,600,567	5,599,171	5,599,679	5,600,188	5,600,528		5,309,983
		5,600,581	5,599,173	5,599,688	5,600,205	5,600,530		5,406,627
		5,600,603	5,599,177	5,599,690	5,600,206	5,600,538	08	: 5,598,792
		5,600,629	5,599,207	5,599,695	5,600,214	5,600,540		5,598,799
06	:	5,598,596	5,599,219	5,599,696	5,600,222	5,600,541		5,598,837
		5,598,622	5,599,220	5,599,705	5,600,231	5,600,578		5,598,914
		5,598,625	5,599,235	5,599,709	5,600,255	5,600,579		5,599,060
		5,598,675	5,599,239	5,599,728	5,600,256	5,600,584		5,599,229
		5,598,711	5,599,241	5,599,735	5,600,262	5,600,586		5,599,344
		5,598,719	5,599,242	5,599,744	5,600,263	5,600,593		5,599,552
		5,598,726	5,599,288	5,599,758	5,600,264	5,600,604		5,599,641
		5,598,753	5,599,291	5,599,764	5,600,265	5,600,650		5,599,704
		5,598,773	5,599,294	5,599,774	5,600,266	5,600,651		5,599,706
		5,598,775	5,599,297	5,599,788	5,600,267	5,600,658		5,599,912
		5,598,786	5,599,301	5,599,790	5,600,271	5,600,665		5,600,130
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		5,598,820	5,599,306	5,599,816	5,600,280	5,600,678		5,600,278
		5,598,845	5,599,315	5,599,819	5,600,282	5,600,683		5,600,338
		5,598,847	5,599,316	5,599,857	5,600,283	5,600,685		5,600,470
		5,598,848	5,599,326	5,599,901	5,600,284	5,600,687		5,600,506
		5,598,871	5,599,330	5,599,903	5,600,286	5,600,688		5,600,517
		5,598,874	5,599,341	5,599,904	5,600,290	5,600,691		5,600,563
		5,598,892	5,599,345	5,599,907	5,600,314	5,600,692		5,600,662
		5,598,903	5,599,346	5,599,915	5,600,321	5,600,711	09	: 5,598,583
		5,598,919	5,599,347	5,599,918	5,600,324	5,600,728		5,598,655
		5,598,921	5,599,349	5,599,921	5,600,332	5,600,732		5,598,698

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06	:	9,793	15	:	9,797	41	:	9,794	47	:	9,790				

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39	:	H1633			H1634	48	:	H1632	51	:	H1631				

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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1194 O.G. 618, on January 21, 1997.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on September 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective July 1, 1996, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1187 O.G. 73, on June 25, 1996.

International fees were changed, effective on February 1, 1997, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1194 O.G. 617, on January 21, 1997.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective October 1, 1996, and were announced in the *Official Gazette* at 1189 O.G. 62, on August 20, 1996.

The schedule of PCT fees (in U.S. dollars), effective February 1, 1997, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	230.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
— No corresponding prior U.S. national application filed	680.00
— Corresponding prior U.S. national application filed	440.00
— Supplemental search fee, per additional invention (payable only upon invitation)	200.00
European Patent Office as ISA	1585.00
International fees	
Basic fee	590.00
Basic supplemental fee (for each page over 30)	12.00
Designation fee per country or region	
— For the first 11 national or regional offices designated	143.00
— For each designation in excess of 11 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
— Designation fee	143.00
— Confirmation fee	71.50
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	180.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
— USPTO was ISA in PCT Chapter I	480.00
— Additional examination fee, per additional invention (payable only upon invitation)	140.00
— USPTO was not ISA in PCT Chapter I	730.00
— Additional examination fee, per additional invention (payable only upon invitation)	260.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
— All claims presented satisfied provisions of PCT Article 33(2) to (4)	48.00	96.00
— All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	350.00	700.00
USPTO was ISA but not IPEA	385.00	770.00
USPTO was neither ISA nor IPEA		
— Search report has not been prepared by the European Patent Office or the Japanese Patent Office	520.00	1040.00
— Search report has been prepared by the European Patent Office or the Japanese Patent Office	455.00	910.00
Other National fees		
— For each independent claim in excess of 3	40.00	80.00
— For each claim in excess of 20.	11.00	22.00
— For each application containing a multiple dependent claim	130.00	260.00
— Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(I)	65.00	130.00
— Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(I)	130.00	130.00

Dec. 26, 1996

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on February 08,1994 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,283,908 through 5,285,528

Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on February 06, 1990 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,897,885 through 4,899,394
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on February 04, 1986 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,567,611 through 4,569,085
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1996, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $510.00
By other than a small entity $1,020.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,025.00
By other than a small entity $2,050.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,540.00
By other than a small entity $3,080.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable $680.00
(2) unintentional $1,600.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED December 04, 1996 DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 33,880	07/505,347	04/14/92
(4,788,058)	(07/098,880)	(11/29/88)
4,485,495	06/435,056	12/04/84
4,485,500	06/456,032	12/04/84
4,485,502	06/420,279	12/04/84
4,485,509	06/521,882	12/04/84
4,485,511	06/407,085	12/04/84
4,485,515	06/375,133	12/04/84
4,485,529	06/504,942	12/04/84
4,485,533	06/452,286	12/04/84
4,485,539	06/328,076	12/04/84
4,485,541	06/363,445	12/04/84
4,485,542	06/449,352	12/04/84
4,485,544	06/350,034	12/04/84
4,485,552	06/399,927	12/04/84
4,485,554	06/497,153	12/04/84
4,485,556	06/372,361	12/04/84
4,485,563	06/446,629	12/04/84
4,485,566	06/325,421	12/04/84
4,485,569	06/492,335	12/04/84
4,485,570	06/501,029	12/04/84
4,485,577	06/394,549	12/04/84
4,485,584	06/522,698	12/04/84
4,485,585	06/374,057	12/04/84
4,485,595	06/501,244	12/04/84
4,485,605	06/232,195	12/04/84
4,485,610	06/457,371	12/04/84
4,485,612	06/333,560	12/04/84
4,485,618	06/442,146	12/04/84
4,485,619	06/416,277	12/04/84
4,485,628	06/447,267	12/04/84
4,485,635	06/451,941	12/04/84
4,485,637	06/528,632	12/04/84
4,485,639	06/467,881	12/04/84
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4,485,663	06/560,280	12/04/84
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4,485,700	06/461,242	12/04/84
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Patent Number	Serial Number	Issue Date
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4,485,878	06/431,023	12/04/84
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4,787,931	06/875,415	11/29/88
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5,167,785	07/565,216	12/01/92
5,167,787	07/696,356	12/01/92
5,167,801	07/718,594	12/01/92
5,167,803	07/594,937	12/01/92
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5,167,887	07/823,006	12/01/92
5,167,891	07/816,835	12/01/92
5,167,894	07/675,663	12/01/92
5,167,902	07/733,731	12/01/92
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5,167,907	07/742,000	12/01/92
5,167,927	07/429,628	12/01/92
5,167,937	07/699,550	12/01/92
5,167,948	07/455,432	12/01/92
5,167,952	07/771,117	12/01/92
5,167,958	07/645,820	12/01/92
5,167,962	07/744,636	12/01/92
5,167,963	07/558,923	12/01/92
5,167,964	07/835,798	12/01/92
5,167,969	07/682,253	12/01/92
5,167,973	07/567,060	12/01/92
5,167,983	07/744,063	12/01/92
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5,168,004	07/498,693	12/01/92
5,168,007	07/879,990	12/01/92
5,168,009	07/590,573	12/01/92
5,168,010	07/516,693	12/01/92
5,168,026	07/834,557	12/01/92
5,168,037	07/561,756	12/01/92
5,168,045	07/540,363	12/01/92
5,168,058	07/544,012	12/01/92
5,168,059	07/065,032	12/01/92
5,168,060	07/749,767	12/01/92
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5,168,078	07/631,671	12/01/92
5,168,080	07/713,559	12/01/92
5,168,100	07/668,207	12/01/92
5,168,101	07/257,369	12/01/92
5,168,110	07/655,779	12/01/92
5,168,114	07/808,177	12/01/92
5,168,115	07/808,445	12/01/92
5,168,117	07/640,600	12/01/92
5,168,128	07/691,338	12/01/92
5,168,131	07/589,797	12/01/92
5,168,132	07/693,383	12/01/92
5,168,152	07/751,557	12/01/92
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5,168,196	07/751,505	12/01/92
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5,168,207	07/653,833	12/01/92
5,168,223	07/738,982	12/01/92
5,168,229	07/678,831	12/01/92
5,168,231	07/487,949	12/01/92
5,168,237	07/599,425	12/01/92
5,168,241	07/495,617	12/01/92
5,168,252	07/631,890	12/01/92
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5,168,255	07/856,386	12/01/92
5,168,257	07/601,953	12/01/92
5,168,261	07/863,476	12/01/92
5,168,263	07/592,362	12/01/92
5,168,267	07/477,599	12/01/92
5,168,269	07/610,710	12/01/92
5,168,280	07/746,782	12/01/92
5,168,286	07/569,019	12/01/92
5,168,305	07/726,339	12/01/92
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5,168,379	07/646,381	12/01/92
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5,168,415	07/589,298	12/01/92
5,168,426	07/746,380	12/01/92
5,168,431	07/686,602	12/01/92
5,168,444	07/437,477	12/01/92
5,168,450	07/744,825	12/01/92
5,168,463	07/314,004	12/01/92
5,168,469	07/636,920	12/01/92
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5,168,472	07/791,802	12/01/92
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5,168,489	07/710,476	12/01/92
5,168,502	07/496,551	12/01/92
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Patents Reinstated Due to the Acceptance of a Late Maintenance Fee From 12/13/96

Patent Number	Serial Number	Filing Date	Issue Date	Granted Date
4,428,654	06/255,694	04/20/81	01/31/84	12/16/96
4,439,613	06/365,213	04/05/82	03/27/84	12/13/96
4,447,464	06/451,075	12/20/82	05/08/84	12/16/96
4,471,200	06/438,715	11/03/82	09/11/84	12/17/96
4,475,851	06/449,066	12/13/82	10/09/84	12/16/96
4,513,451	06/468,584	02/22/83	04/30/85	12/17/96
4,623,038	06/741,528	06/04/85	11/18/86	12/17/96
4,684,526	06/685,155	12/21/84	08/04/87	12/19/96
4,689,707	06/867,161	05/27/86	08/25/87	12/18/96
4,712,919	07/000,670	01/06/87	12/15/87	12/17/96
4,772,262	07/045,708	04/27/87	09/20/88	12/16/96
4,789,433	07/007,909	10/31/86	12/06/88	12/18/96
4,881,661	07/177,424	04/01/88	11/21/89	12/13/96
4,951,439	07/294,747	01/09/89	08/28/90	12/13/96
4,974,486	07/245,562	09/19/88	12/04/90	12/18/96
4,998,928	07/509,269	04/13/90	03/12/91	12/16/96
5,107,794	07/756,560	09/09/91	04/28/92	12/17/96

Patents Reinstated Due to the Acceptance of a Late Maintenance Fee From 12/20/96

Patent Number	Serial Number	Filing Date	Issue Date	Granted Date
5,141,109	07/759,509	09/13/91	08/25/92	12/27/96

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

4,438,832, Re. S.N. 08/630,901, April 4, 1996, Cl. 435/172.2, UNIQUE-T-LYMPHOCYTE LINE AND PRODUCTS DERIVED THEREFROM, David W. Golde et. al., Owner of Record: *The Regents of the University of California, Berkely, Calif.*, Attorney or Agent: Bret E. Field, Ex. Gp.: 1804

4,685,498, Re. S.N. 08/661,805, June 11, 1996, Cl. 210/222, APPARATUS FOR MAGNETIC TREATMENT OF LIQUIDS, Peter A. Kuliah, Owner of Record: *Inventor*, Attorney or Agent: Donald R. Piper Jr., Ex. Gp.: 1306

5,234,441, Re. S.N. 08/721,277, Sept. 26, 1996, Cl. 606/133, EPILATING APPLIANCE, Hans-Eberhard Heintke et. al., Owner of Record: *Braun Aktiengesellschaft, Frankfurt, Federal Republic of Germany*, Attorney or Agent: Timothy A. French, Ex. Gp.: 3301

5,282,103, Re. S.N. 08/662,528, June 13, 1996, Cl. 29/173, MAGNETIC HEAD SUSPENSION ASSEMBLY FABRICATED WITH INTEGRAL LOAD BEAM AND FLEXURE, Michael R. Hatch et. al., Owner of Record: *Read-Rite Corp., Milpitas, Calif.*, Attorney or Agent: Bradley J. Bereznak, Ex. Gp.: 2512

5,282,103, Re. S.N. 08/662,531, June 13, 1996, Cl. 29/173, MAGNETIC HEAD SUSPENSION ASSEMBLY FABRICATED WITH INTEGRAL LOAD BEAM AND FLEXURE, Michael R. Hatch et. al., Owner of Record: *Read-Rite Corp., Milpitas, Calif.*, Attorney or Agent: Bradley J. Bereznak, Ex. Gp.: 2512

5,285,313, Re. S.N. 08/598,374, Feb. 8, 1996, Cl. 359/554, IMAGE STABILIZING APPARATUS, Takashi Kobayashi et. al., Owner of Record: *Canon Kabushik Kaisha, Tokyo, Japan*, Attorney or Agent: James J. Daley, Ex. Gp.: 2507

5,314,375, Re. S.N. 08/653,192, May 24, 1996, Cl. 452/157, METHOD AND APPARATUS FOR AUTOMATICALLY SEGMENTING ANIMAL CARCASSES, William H. O'Brien et. al., Owner of Record: *Inventor*, Attorney or Agent: Michael G. Fletcher, Ex. Gp.: 3203

5,326,652, Re. S.N. 08/675,729, July 3, 1996, Cl. 429/127, BATTERY PACKAGE AND METHOD, Rickie C. Lake, Owner of Record: *Micron Communications, Inc., Boise, Idaho*, Attorney or Agent: Joseph A. Walkowski, Ex. Gp.: 1111

5,327,317, Re. S.N. 08/675,728, July 3, 1996, Cl. 361/88, SELF-TERMINATING DATA LINE DRIVER, Terry R. Lee,

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Owner of Record: *Micron Technology Inc., Boise, Idaho,* Attorney or Agent: Patrick McBride, Ex. Gp.: 2104

5,341,832, Re. S.N. 08/699,879, Aug. 23, 1996, Cl. 307/270, INDUCTIVE LOAD DRIVE CIRCUIT, PARTICULARLY FOR FUEL INJECTORS, Massimiliano Brambilla et. al., Owner of Record: *SGS Thompson Microelectronics S.R.L., Agrate Brianza, Italy,* Attorney or Agent: Bryan A. Santarelli, Ex. Gp.: 2504

5,348,164, Re. S.N. 08/715,869, Sept. 19, 1996, Cl. 209/573, METHOD AND APPARATUS FOR TESTING INTEGRATED CIRCUITS, Steve W. Heppler, Owner of Record: *Micron Semiconductor Inc., Boise, Idaho,* Attorney or Agent: Joseph A. Walkowski, Ex. Gp.: 3101

5,378,908, Re. S.N. 08/761,082, Dec. 4, 1996, Cl. 257/309, STACK CAPACITOR DRAM CELL HAVING INCREASED CAPACITOR AREA, Dae-Je Chin et. al., Owner of Record: *Samsung Electronics Co. Ltd., Suwon-City, Korea,* Attorney or Agent: Raymond C. Jones, Ex. Gp.: 2508

5,392,263, Re. S.N. 08/552,267, Nov. 2, 1995, Cl. 369/13, MAGNETO-OPTICAL DISK SYSTEM WITH SPECIFIC THICKNESS FOR PROTECTIVE LAYER ON THE DISK RELATIVE TO THE NUMERICAL APERTURE OF THE OBJECTIVE LENS, Tetsu Watanabe et. al., Owner of Record: *Sony Corp., Tokyo, Japan,* Attorney or Agent: Jay H. Maieli, Ex. Gp.: 2516

5,403,902, Re. S.N. 08/743,461, Oct. 10, 1996, Cl. 526/260, POLYMERIC SUPPORTS, Steven M. Heilmann et. al., Owner of Record: *Minnesota Mining and Manufacturing Co., St. Paul, Minn.,* Attorney or Agent: Lorraine R. Sherman, Ex. Gp.: 1505

5,459,302, Re. S.N. 08/749,492, Nov. 15, 1996, Cl. 219/693, APPARATUS AND PROCESS FOR MEASURING THE TEMPERATURE OF A SAMPLE HEATED IN A MICROWAVE CHAMBER, Patrick Jacquault, Owner of Record: *Societe Prolabo, Paris Cedex, France,* Attorney or Agent: Alan K. Roberts, Ex. Gp.: 2106

5,465,298, Re. S.N. 08/603,167, Feb. 20, 1996, Cl. 379/406, SOLID STATE ISOLATION DEVICE USING OPTO-ISOLATORS, Dennis E. Wilkinson et. al., Owner of Record: *Cermetek Microelectronics, Inc., Sunnyvale, Calif.,* Attorney or Agent: Michael A. Glenn, Ex. Gp.: 2601

5,474,496, Re. S.N. 08/710,669, Aug. 19, 1996, Cl. 453/9, COIN BANK, Jerzy Perkitny, Owner of Record: *Mag-Nif Inc., Mentor, Ohio,* Attorney or Agent: Jay F. Moldovanyi, Ex. Gp.: 3107

5,515,915, Re. S.N. 08/761,452, Dec. 3, 1996, Cl. 166/51, WELL SCREEN HAVING INTERNAL SHUNT TUBES, Lloyd G. Jones et. al., Owner of Record: *Mobil Oil Corp., Fairfax, Va.,* Attorney or Agent: Malcolm D. Keen, Ex. Gp.: 3506

5,531,354, Re. S.N. 08/742,036, Nov. 1, 1996, Cl. 220/731, SPATTER SHIELDING AND VAPOR VENTING DEVICE FOR FRYING PAN, William Cheng Uy, Owner of Record: *Inventor,* Attorney or Agent: None, Ex. Gp.: 3207

5,555,618, Re. S.N. 08/760,462, Dec. 6, 1996, Cl. 825/29, METHOD OF MAKING ELECTRODE-CARRYING CATHETER, Josef Winkler, Owner of Record: *Arrow International Investment Corp., Wilmington, Del.,* Attorney or Agent: Neal L. Rosenberg, Ex. Gp.: 3206

Commissioner Ordered Reexaminations

Notice under 37 CFR 1.11(c). The orders for reexamination listed below are open to inspection by the general public in the indicated Examining Group. Copies of the orders and other related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.2(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.24(a)(5) and 1.525(b)).

5,420,910, Reexam. No. 90/004,496, Jan. 10, 1997, Cl. 379/059, METHOD AND APPARATUS FOR FRAUD CONTROL IN CELLULAR TELEPHONE SYSTEMS UTILIZING RF SIGNATURE COMPARISON, Ronald S. Rudokas, et. al., Owner of Record: *Airtouch Communications Inc., San Francisco, Calif.,* Attorney or Agent: George H. Hates, Merchant Gould Smith Edell Welter & Schmidt, Los Angeles, Calif., Ex. Gp.: 2605, Requester: Commissioner of Patents and Trademarks, Washington, D.C.

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

Re. 34,293, Reexam. No. 90/004,506, Jan. 6, 1997, Cl. 623/013, LIGAMENT ATTACHMENT METHOD AND APPARATUS, E. Marlowe Goble, Owner of Record: *Inventor,* Attorney or Agent: M. Reid Russell, Salt Lake City, Utah, Ex. Gp.: 3308, Requester: Owner

Re. 34,993, Reexam. No. 90/004,503, Dec. 31, 1996, Cl. 600/018, METHOD OF INSERTING AN LAB DEVICE INTO THE BODY, Gerald J. Ciccitu, et. al., Owner of Record: *Arrow International Investment Corp., Wilmington, Del.,* Attorney or Agent: Amster Rothstein & Ebenstein, New York, N.Y., Ex. Gp.: 3311, Requester: Owner

4,702,433, Reexam. No. 90/004,501, Dec. 23, 1996, Cl. 242/118.1, COIL CARRIER, Hans H. Gillijam, et. al., Owner of Record: *Joe Zimmermann, Aachen, Fed'l Rep. of Germany,* Attorney or Agent: Mason Fenwick & Lawrence, Washington, D.C., Ex. Gp.: 3503, Requester: Technimark Inc., Asheboro, N.C., c/o Edward W. Rilee, Jr., Greensboro, N.C.

5,036,549, Reexam. No. 90/004,500, Dec. 9, 1996, Cl. 002/102, COMBINATION VEST/SUSPENDERS GARMENT, Garnitta C. Jackson, Owner of Record: *Inventor,* Attorney or Agent: None, Ex. Gp.: 3408, Requester: Temko & Temko, New York, N.Y.

5,124,395, Reexam. No. 90/004,504, Dec. 31, 1996, Cl. 523/166, NON-OZONE DEPLETING TIRE SEALER AND INFLATER COMPOSITION, Herst Abramowski, et. al., Owner of Record: *Radiator Specialty Co., Charlotte, N.C.,* Attorney or Agent: Stephen H. Bodenheimer, Jr., Bell Seltzer, Park & Gibson, Charlotte, N.C., Ex. Gp.: 1511, Requester: Louis F. Wagner, Oldham & Oldham Co., Akron, Ohio

5,276,927, Reexam. No. 90/004,505, Jan. 3, 1997, Cl. 005/622, RADIOLUCENT HEAD SUPPORT, James L. Day, Owner of Record: *Ohio Medical Instrument Co., Fairfax, Ohio,* Attorney or Agent: Thomas J. Burger, Wood, Herron & Evans, Cincinnati, Ohio, Ex. Gp.: 3508, Requester: Owner

5,324,128, Reexam. No. 90/004,493, Dec. 20, 1996, Cl. 401/126, SPILL PREVENTING COSMETIC APPLICATOR, Jean-Louis H. Gueret, Owner of Record: *L'Oreal, Paris, France,* Attorney or Agent: Cushman Darby & Cushman, Washington, D.C., Ex. Gp.: 3301, Requester: Owner

5,450,630, Reexam. No. 90/004,507, Jan. 7, 1997, Cl. 002/239, SOCK AND METHOD OF MAKING SAME, Don W. Hale, Owner of Record: *Wyoming Woolens, Jackson Hole, Wyo.,* Attorney or Agent: Richard L. Wood, Welsh & Katz, Chicago, Ill., Ex. Gp.: 3408, Requester: Michelle N. Lester, Cushman Darby & Cushman, Intellectual Prop. Group of Pillsbury, Washington, D.C.

5,458,282, Reexam. No. 90/004,508, Jan. 8, 1997, Cl. 229/092.8, CARD HAVING MAGNETIC SHEET SECURED TO ONE SURFACE, John J. Martin, Owner of Record: *Crane Production Inc., Louisville, Ky.,* Attorney or Agent: None, Ex. Gp.: 3207, Requester: Thomas R. Roland, Washington, D.C.

5,547,995, Reexam. No. 90/004,502, Dec. 26, 1996, Cl. 514/275, USE OF SELEGILENE IN VETERINARY MEDICINE, Marie-Sophie Filhol, et. al., Owner of Record: *Sanofi Sante Nutrition Animale, Libourne, France,* Attorney or Agent: William E. Player, Jacobson Price Holman & Stern, Washington, D.C. Ex. Gp.: 1205, Requester: Edmund J. Sease, Zarley, McKee, Thomte, Vorhees & Sease, Des Moines, Iowa

5,552,348, Reexam. No. 90/004,494, Dec. 23, 1996, Cl. 439/419, BULB SOCKET STRUCTURE, Gordon K. H. Wu, Owner of Record: *Inventor,* Attorney or Agent: Ostrolenk Faber Gerb & Soffen, New York, N.Y., Ex. Gp.: 3202, Requester: You-Jen Cheng & Tzu-Ling Cheng, Taipei, Taiwan

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Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED OCTOBER 28, 1996
DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
108,251	71/089,713	01/25/1916
108,274	71/088,264	01/25/1916
108,287	71/088,411	01/25/1916
323,276	71/358,357	04/09/1935
331,724	71/354,020	01/21/1936
331,735	71/369,299	01/21/1936
331,744	71/369,662	01/21/1936
331,749	71/365,425	01/21/1936
331,755	71/366,658	01/21/1936
331,770	71/348,444	01/21/1936
331,818	71/367,987	01/21/1936
331,829	71/369,876	01/21/1936
331,832	71/368,890	01/21/1936
331,864	71/370,284	01/21/1936
331,874	71/361,829	01/21/1936
331,881	71/369,818	01/21/1936
331,892	71/359,559	01/21/1936
331,904	71/355,843	01/21/1936
605,575	71/660,234	05/03/1955
605,858	71/668,265	05/10/1955
619,698	71/671,151	01/24/1956
619,699	71/671,388	01/24/1956
619,706	71/683,601	01/24/1956
619,707	71/683,603	01/24/1956
619,720	71/684,739	01/24/1956
619,721	71/684,933	01/24/1956
619,723	71/671,380	01/24/1956
619,725	71/675,940	01/24/1956
619,733	71/662,087	01/24/1956
619,734	71/668,535	01/24/1956
619,742	71/680,073	01/24/1956
619,751	71/683,934	01/24/1956
619,752	71/683,958	01/24/1956
619,764	71/681,446	01/24/1956
619,769	71/687,414	01/24/1956
619,785	71/689,495	01/24/1956
619,794	71/674,287	01/24/1956
619,796	71/676,425	01/24/1956
619,797	71/682,696	01/24/1956
619,799	71/683,648	01/24/1956
619,807	71/670,649	01/24/1956
619,810	71/683,570	01/24/1956
619,811	71/683,693	01/24/1956
619,822	71/686,874	01/24/1956
619,823	71/655,601	01/24/1956
619,826	71/691,198	01/24/1956
619,836	71/680,086	01/24/1956
619,840	71/683,577	01/24/1956
619,842	71/684,129	01/24/1956
619,852	71/685,294	01/24/1956
619,860	71/648,898	01/24/1956
619,872	71/678,534	01/24/1956
619,873	71/682,175	01/24/1956
619,885	71/691,169	01/24/1956
619,891	71/627,533	01/24/1956
619,892	71/674,825	01/24/1956
619,895	71/680,766	01/24/1956
619,896	71/680,929	01/24/1956
619,903	71/686,194	01/24/1956
619,904	71/686,236	01/24/1956
619,909	71/687,967	01/24/1956
619,916	71/689,617	01/24/1956
619,927	71/659,578	01/24/1956
619,930	71/681,751	01/24/1956
619,932	71/682,363	01/24/1956
619,942	71/691,288	01/24/1956
619,949	71/680,037	01/24/1956
619,955	71/680,943	01/24/1956
619,963	71/680,653	01/24/1956
619,965	71/681,551	01/24/1956
619,970	71/682,073	01/24/1956
619,971	71/682,192	01/24/1956
619,982	71/681,714	01/24/1956
619,988	71/682,202	01/24/1956
619,994	71/682,502	01/24/1956
619,998	71/683,246	01/24/1956
620,002	71/671,387	01/24/1956
620,003	71/681,715	01/24/1956
620,005	71/676,089	01/24/1956
620,007	71/677,928	01/24/1956
620,013	71/683,124	01/24/1956
620,017	71/683,517	01/24/1956
620,018	71/683,644	01/24/1956
620,022	71/686,339	01/24/1956
620,023	71/670,878	01/24/1956
620,026	71/647,698	01/24/1956
620,033	71/657,057	01/24/1956
620,034	71/658,424	01/24/1956
620,042	71/663,515	01/24/1956
620,049	71/667,540	01/24/1956
620,050	71/667,546	01/24/1956
620,051	71/667,561	01/24/1956
620,052	71/667,562	01/24/1956
620,053	71/667,969	01/24/1956
620,054	71/668,210	01/24/1956
620,062	71/672,814	01/24/1956
620,065	71/673,755	01/24/1956
620,069	71/675,242	01/24/1956
620,072	71/678,086	01/24/1956
620,076	71/683,243	01/24/1956
620,082	71/669,962	01/24/1956
620,093	71/662,876	01/24/1956
620,095	71/668,725	01/24/1956
620,101	71/679,063	01/24/1956
620,109	71/661,939	01/24/1956
620,124	71/670,593	01/24/1956
620,126	71/667,404	01/24/1956
620,129	71/665,373	01/24/1956
620,132	71/670,275	01/24/1956
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1,016,149	72/396,404	07/15/1975
1,019,699	72/423,011	09/02/1975
1,030,406	73/016,771	01/20/1976
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1,030,408	73/016,778	01/20/1976
1,030,409	73/016,779	01/20/1976
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1,030,429	73/052,176	01/20/1976
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1,030,436	73/026,387	01/20/1976
1,030,438	73/032,054	01/20/1976
1,030,440	73/034,411	01/20/1976
1,030,441	73/034,413	01/20/1976
1,030,446	73/045,880	01/20/1976
1,030,448	73/046,047	01/20/1976
1,030,451	73/046,923	01/20/1976
1,030,453	73/048,156	01/20/1976
1,030,455	73/049,182	01/20/1976
1,030,456	73/049,183	01/20/1976
1,030,457	73/049,187	01/20/1976
1,030,458	73/049,245	01/20/1976
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1,030,469	73/052,741	01/20/1976
1,030,473	73/054,133	01/20/1976
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1,030,496	73/052,952	01/20/1976
1,030,505	73/027,070	01/20/1976
1,030,508	73/037,337	01/20/1976
1,030,511	73/046,173	01/20/1976
1,030,512	73/046,517	01/20/1976
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1,030,527	73/053,598	01/20/1976
1,030,530	73/054,140	01/20/1976
1,030,533	73/054,270	01/20/1976
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1,030,540	73/054,792	01/20/1976
1,030,541	73/054,829	01/20/1976
1,030,542	73/054,830	01/20/1976
1,030,553	73/024,975	01/20/1976
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1,030,569	73/027,932	01/20/1976
1,030,570	73/028,047	01/20/1976
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1,030,573	73/031,909	01/20/1976
1,030,575	73/035,343	01/20/1976
1,030,576	73/035,645	01/20/1976
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1,030,583	73/046,808	01/20/1976
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73/043,773	01/20/1976	

Reg. Number	Serial Number	Reg. Date		
1,030,875	73/044,795	01/20/1976	Contact:	Donald B. Haslett Chernoff Vilhauer McClung Stenzel 600 Benj. Franklin Plaza One Southwest Columbia Portland, Oreg. 97258-2007 (503) 227-5631
1,030,884	73/047,808	01/20/1976		
1,030,886	73/012,266	01/20/1976		
1,030,887	73/046,217	01/20/1976		
1,030,888	73/046,318	01/20/1976		
1,030,889	73/049,236	01/20/1976		
1,030,891	73/034,485	01/20/1976		
1,030,897	73/046,902	01/20/1976	5,065,282	INTERCONNECTION MECHANISMS FOR ELECTRONIC COMPONENTS
1,030,902	73/047,399	01/20/1976		
1,030,906	73/047,993	01/20/1976		
1,030,911	73/051,052	01/20/1976		
1,030,914	73/051,223	01/20/1976	Contact:	Donald B. Haslett Chernoff Vilhauer McClung Stenzel 600 Benj. Franklin Plaza One Southwest Columbia Portland, Oreg. 97258-2007 (503) 227-5631
1,030,921	73/000,731	01/20/1976		
1,030,922	73/006,301	01/20/1976		
1,030,923	73/006,302	01/20/1976		
1,030,926	73/025,550	01/20/1976		
1,030,927	73/027,924	01/20/1976		
1,030,932	73/044,328	01/20/1976		
1,030,935	73/049,369	01/20/1976		
1,030,947	73/024,216	01/20/1976	5,231,571	PERSONAL FINANCIAL ASSISTANT COMPUTER METHOD
1,030,948	73/024,217	01/20/1976		
1,030,950	73/024,953	01/20/1976		
1,030,952	73/027,782	01/20/1976	Contact:	Mitchell S. Bigel Bell Seltzer Park & Gibson Post Office Drawer 34009 Charlotte, N.C. 28234 (919) 420-2200
1,030,954	73/028,851	01/20/1976		
1,030,956	73/030,334	01/20/1976		
1,030,959	73/049,508	01/20/1976		
1,030,965	73/053,515	01/20/1976		
1,030,966	73/055,210	01/20/1976		
1,030,968	73/045,496	01/20/1976	5,420,108	A METHOD OF CONTROLLING DIABETES MELLITUS
1,030,970	73/037,836	01/20/1976		
1,030,971	73/044,546	01/20/1976		
1,030,975	73/019,910	01/20/1976	Contact:	Isaac Shobet 70-34 Kissena Blvd. Flushing, N.Y. 11367
1,030,976	73/024,452	01/20/1976		
1,030,978	73/042,500	01/20/1976		
1,030,979	73/044,782	01/20/1976		
1,030,981	73/049,662	01/20/1976		
1,030,982	73/052,452	01/20/1976	5,425,707	METHOD FOR NON-SURGICAL TREATMENT OF CARPAL TUNNEL SYNDROME
1,030,983	73/052,541	01/20/1976		
1,030,984	73/052,653	01/20/1976		
1,030,989	73/044,349	01/20/1976		
1,030,990	73/045,254	01/20/1976	Contact:	Robert F. Zielinski Wolf Block Schorr and Solis-Cohen Twelfth Floor Packard Building S.E. Corner 15th and Chestnut St. Philadelphia, Pa. 19102-2678 (215) 977-2000
1,030,991	73/049,341	01/20/1976		
1,030,995	73/023,839	01/20/1976		
1,030,996	73/026,531	01/20/1976		
1,031,005	73/049,046	01/20/1976		
1,031,006	73/051,428	01/20/1976		
1,031,012	73/055,426	01/20/1976		
1,031,015	73/024,756	01/20/1976	5,533,526	METHOD AND APPARATUS FOR NON-SURGICAL TREATMENT OF CARPAL TUNNEL SYNDROME
1,031,016	73/024,757	01/20/1976		
1,031,020	73/046,282	01/20/1976		
1,031,022	73/048,386	01/20/1976		
1,031,029	73/022,546	01/20/1976	Contact:	Robert F. Zielinski Wolf Block Schorr and Solis-Cohen Twelfth Floor Packard Building S.E. Corner 15th and Chestnut St. Philadelphia, Pa. 19102-2678 (215) 977-2000
1,031,031	73/036,466	01/20/1976		
1,031,036	73/047,584	01/20/1976		
1,031,040	73/004,984	01/20/1976		
1,031,047	73/023,219	01/20/1976		
1,031,048	73/023,561	01/20/1976		
1,031,052	73/030,473	01/20/1976		
1,031,057	73/044,180	01/20/1976		
1,031,061	73/045,425	01/20/1976	5,567,943	PERSONAL RADIATION DETECTION DEVICE
1,031,064	73/047,144	01/20/1976		
1,031,066	73/051,143	01/20/1976		
1,031,067	73/051,909	01/20/1976	Contact:	Craig A. Plevinsky 7 Woodbury Drive Cherry Hill, N.J. 08003 (609) 751-1632
1,031,068	73/052,592	01/20/1976		
1,031,072	72/450,262	01/20/1976		
1,031,076	72/457,690	01/20/1976		
1,031,078	72/461,759	01/20/1976		
1,031,079	72/434,391	01/20/1976	5,587,988	COMPUTER CONTROLLED DISK STORAGE UNIT WITH A TELESCOPIC ARM FOR READING AND WRITING INFORMATION ON A DISK LOCATED IN A MAGAZINE
1,031,094	72/467,048	01/20/1976		

Patents Available For License or Sale

4,885,126	INTERCONNECTION MECHANISMS FOR ELECTRONIC COMPONENTS	Contact: Gilles Boulanger 2100 Route 112 Unit 106 Magog, Que Canada J1X 5X4 (819) 847-4204

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Notice of Right to Claim Priority Based Upon Applications Previously Filed in India

On January 3, 1995, the Ministry of India (Department of Industrial Development) caused a Notification to be published in *The Gazette of India*: Extraordinary [Part II-Sec. 3(ii)]. This Notification included the following text:

"[I]n exercise of the powers conferred by subsection (1) of section 133 of the Patents Act, 1970 (39 of 1970), the Central Government hereby declares each of [the members of the World Trade Organization, which includes the United States of America] to be a convention country for all the provisions of the said Act".

Section 135(1) of the Patents Act, 1970 (39 of 1970) of India provides as follows:

Without prejudice to the provisions contained in section 6, where a person has made an application for a patent in respect of an invention in a convention country (hereinafter referred to as the "basic application"), and that person or the legal representative or assignee of that person makes an application under this Act for a patent within twelve months after the date on which the basic application was made, the priority date of a claim of the complete specification, bearing a claim based on matter disclosed in the basic application, is the date of making of the basic application".

Given the above-referenced Notification in *The Gazette of India* and Section 135 of the Indian Patents Act, 1970, India is deemed a foreign country which affords privileges in the case of applications filed in the United States or to citizens of the United States similar to those afforded under 35 U.S.C. § 119. Accordingly, an application for patent for an invention filed in the United States by any person who has, or whose legal representatives or assigns have, previously regularly filed an application for a patent for the same invention in India shall have the benefit of the filing date in India in accordance with 35 U.S.C. § 119. Such persons became entitled to claim that benefit on the basis of applications filed in India on, or after, January 3, 1995, the date of publication of the above-referenced Notification in *The Gazette of India*.

January 13, 1997

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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37 CFR 1.47 Notice by Publication

Notice is hereby given of the filing of a national stage application with a petition under 37 CFR 1.47 requesting acceptance of the application without the signature of all inventors. The petition has been granted. A notice has been sent to the last known address of the non-signing inventor. The inventor whose signature is missing (John Frederick Hart) may join in the application by promptly filing an appropriate oath or Declaration complying with 37 CFR 1.63. The international application number is PCT/NZ94/00102 and was filed on 06 October 1994 in the names of John Frederick Hart and Donald Gordon Isles for the invention entitled Wiper Applicators. The national stage application number is 08/628,614 and has a 35 U.S.C. 371 date of 31 July 1996.

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37 CFR 1.47 Notice by Publication

Notice is hereby given of the filing of a national stage application with a petition under 37 CFR 1.47 requesting acceptance of the application without the signature of all inventors. The petition has been granted. A notice has been sent to the last known address of the non-signing inventor. The inventor whose signature is missing (Kenneth Fogh) may join in the application by promptly filing an appropriate oath or Declaration complying with 37 CFR 1.63. The international application number is PCT/CA95/00340 and was filed on 07 June 1995 in the names of Kenneth Fogh and Mark Gibson for the invention entitled On-Site Pipe Coating Process. The national stage application number is 08/591,508 and has a 35 U.S.C. 371 date of 08 October 1996.

Certificates of Correction
For the Week of February 11, 1997

D. 367,424	5,492,080	5,537,559	5,553,843
D. 370,269	5,492,690	5,538,063	5,554,197
D. 370,855	5,492,798	5,538,765	5,554,253
D. 372,115	5,493,004	5,539,439	5,555,048
D. 374,316	5,495,615	5,539,752	5,555,420
D. 375,495	5,496,265	5,540,151	5,555,779
4,934,796	5,496,792	5,540,310	5,556,486
4,983,418	5,497,305	5,540,418	5,556,497
5,027,282	5,498,152	5,540,795	5,556,603
5,070,353	5,498,367	5,540,873	5,556,629
5,096,626	5,498,410	5,541,594	5,556,874
5,166,317	5,498,667	5,541,729	5,557,083
5,176,118	5,499,741	5,542,750	5,557,157
5,188,455	5,502,463	5,543,179	5,557,344
5,228,393	5,502,547	5,543,308	5,557,430
5,230,038	5,502,902	5,543,590	5,557,433
5,230,459	5,504,003	5,543,826	5,557,435
5,244,275	5,504,774	5,543,921	5,557,526
5,250,304	5,505,263	5,543,976	5,557,588
5,256,398	5,507,025	5,544,459	5,557,714
5,256,911	5,507,679	5,544,593	5,557,949
5,273,627	5,508,084	5,544,647	5,558,852
5,273,747	5,508,596	5,545,019	5,558,946
5,280,540	5,509,089	5,545,257	5,558,951
5,280,728	5,510,268	5,545,537	5,559,382
5,286,879	5,510,783	5,545,833	5,559,910
5,291,792	5,511,917	5,546,064	5,559,946
5,306,725	5,513,029	5,546,158	5,559,949
5,316,300	5,513,103	5,546,175	5,560,105
5,321,849	5,514,766	5,546,709	5,560,132
5,324,711	5,515,149	5,546,873	5,560,471
5,337,394	5,515,208	5,546,883	5,560,782
5,344,753	5,516,213	5,547,212	5,561,139
5,351,105	5,516,657	5,547,249	5,561,368
5,367,207	5,518,069	5,547,306	5,561,764
5,369,617	5,519,559	5,547,584	5,562,269
5,369,643	5,519,572	5,547,651	5,563,569
5,371,673	5,519,820	5,547,689	5,563,769
5,388,815	5,521,173	5,547,876	5,563,908
5,399,408	5,521,323	5,547,965	5,564,140
5,409,866	5,521,439	5,548,044	5,564,957
5,412,471	5,521,937	5,548,060	5,565,060
5,413,631	5,522,303	5,548,380	5,565,203
5,415,910	5,523,052	5,548,420	5,565,689
5,438,245	5,525,314	5,548,503	5,565,761
5,439,438	5,525,639	5,549,018	5,565,889
5,444,487	5,526,409	5,549,566	5,566,114
5,446,854	5,526,510	5,550,035	5,566,118
5,449,213	5,526,945	5,550,310	5,566,406
5,450,608	5,527,182	5,550,796	5,566,836
5,454,004	5,527,684	5,551,192	5,566,854
5,456,332	5,528,341	5,551,199	5,567,266
5,458,643	5,529,377	5,551,282	5,567,306
5,459,148	5,529,567	5,551,442	5,567,838
5,459,150	5,530,795	5,551,523	5,568,219
5,459,176	5,531,308	5,551,679	5,568,277
5,460,810	5,532,713	5,551,878	5,568,375
5,468,619	5,533,196	5,552,111	5,568,441
5,468,791	5,534,408	5,552,193	5,568,488
5,473,731	5,534,491	5,552,303	5,569,039
5,474,998	5,534,802	5,552,471	5,569,527
5,478,212	5,535,015	5,552,800	5,569,554
5,478,932	5,535,140	5,552,811	5,570,146
5,480,378	5,535,633	5,552,911	5,570,723
5,485,648	5,536,088	5,552,938	5,570,846
5,486,816	5,537,020	5,552,945	5,571,198
5,486,918	5,537,032	5,553,053	5,571,675
5,488,556	5,537,168	5,553,078	5,572,679
5,489,102	5,537,376	5,553,488	5,572,925
5,490,052	5,537,552	5,553,756	5,573,017

5,573,265	5,574,470	5,575,305	5,576,106	5,577,150	5,577,718	5,580,662	5,583,677
5,573,379	5,574,712	5,575,627	5,576,582	5,577,303	5,577,809	5,580,932	
5,573,776	5,574,799	5,575,644	5,576,583	5,577,443	5,578,396	5,581,167	
5,573,990	5,575,176	5,575,806	5,576,918				

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Summary of Final Decisions

Issued by the

Trademark Trial and Appeal Board

December 16-20, 1996

Date Issued	Type of Case(1)	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
12-17	EX	74/206,894	Franklin Miller, Inc.	whether the term sought to be registered is generic, and, if not, whether it has acquired distinctiveness and hence is registrable under Sec. 2(f)	Refusal Affirmed (as to both issues)		"DELUMPER" [cutting and sizing units, comprising shredding, chopping and/or crushing devices particularly used for size reduction of agglomerates for use in fluid pipelines]		No
12-17	EX	74/346,491	The Lane Co., Inc.	2(e)(1)	Refusal Affirmed		"CEDAR BOUTIQUE" [retail furniture store services]		No
12-17	EX	74/507,920	Gary Klein and Darrell Voss, dba Spartan	2(d)	Refusal Affirmed		"SPARTAN" [bicycles]	"SPARTAN" [vehicle tires]	No
12-17	EX	74/553,555	Jado Bathroom and Hardware Mfg. Corp.	2(e)(1)	Refusal Reversed		"PATINA COLLECTION" [toilet paper and paper towel dispensers, toilet brushes, towel rings, towel racks, towel bars, etc.]		No
12-18	EX	74/307,611	Universal Furniture Industries, Inc.	2(d)	Refusal Affirmed		"FORM 45" [furniture, namely, modular sections of a sofa]	"FORM" [office furniture, and furniture for enclosing electronic equipment] and "FORM[4]" [furniture for enclosing electronic equipment]	No
12-18	EX	74/468,369	American Cereal Corp.	2(e)(1)	Refusal Affirmed		"GOOD 'N HEARTY" [breakfast cereals]		No
12-18	EX	74/498,406	Norwest Financial, Inc.	2(d)	Refusal Affirmed		"BUYLINE" [debit card services in association with revolving lines of credit]	"BUYLINE" [personal banking services consisting of a revolving line of credit that is activated by overdrafts and checking accounts]	No

(1)EX = EX PARTE APPEAL; OPP = OPPOSITION; CANC = CANCELLATION; CU = CONCURRENT USE; (SJ) = SUMMARY JUDGMENT; (R) = REQ. FOR RECONSIDERATION

Date Issued	Type of Case(1)	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
12-18	EX	74/527,372	Aquagen International Inc.	2(d)	Refusal Reversed		"AQUAGEN" [dietary supplements, namely, oxygen stabilizing supplements for human consumption]	"AQUAGEN" [pharmaceutical preparation for the diagnosis and treatment of allergies]	No
12-19	EX	74/204,050	Shana Knitwear, Inc.	2(d)	Refusal reversed		"DECOSPORT" (and design) [women's and children's wearable art blank sportswear and unconstructed apparel sold to the craft industry, namely, shirts, pants, skirts, shorts, sweaters and jackets]	"DECO" (and design) [clothing, namely, trousers, shorts, skirts, suits, dresses, jerseys, undershirts, shirts, singlets, waistcoats, cardigans, t-shirts and foulards]	No
12-19	EX	74/449,477	Farmland Dairies	2(d)	Refusal Affirmed		"FARMLAND DAIRIES" (and design) [light cream]	"FARMLAND" (and design) [bacon, ham and sausage]; "FARMLAND EXTRA TENDER" [pork products]; "FARMLAND" (and design) [pork products; meat products; beef products; turkey products; etc.]	No
12-19	EX	74/473,662	Baldwin Hardware Corp.	2(d)	Refusal Affirmed		"ESTATE COLLECTION" [door metal hardware, namely, mortise locks and interior levers and knobs]	"ESTATE SERIES" (and design) [metal storm doors]	No

(1)EX = EX PARTE APPEAL; OPP = OPPOSITION; CANC = CANCELLATION; CU = CONCURRENT USE; (SJ) = SUMMARY JUDGMENT; (R) = REQ. FOR RECONSIDERATION

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Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
12-20	EX	74/431,340	Joshua Leichtberg	2(d)	Refusal Affirmed		"BUTT BUSTER" [manually operated exercise equipment for firming portions of the body, namely the buttocks, upper legs, hips and abdomen]	"GUT BUSTER" [manually operated exercise equipment]; "THIGH BUSTER" [manually operated resistance-type exercise equipment]	No
12-20	EX	74/551,220	Robert E. Bowen	2(e)(1)	Refusal Affirmed		"CELLULAR DATA" [computer software for storing and analyzing data in a data base]		No

(1)EX = EX PARTE APPEAL; OPP = OPPOSITION; CANC = CANCELLATION; CU = CONCURRENT USE; (SJ) = SUMMARY JUDGMENT; (R) = REQ. FOR RECONSIDERATION

SPECIAL BOXES FOR PATENT MAIL

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Box Designations	Explanation
Box 7	Reissue applications for patents involved in litigation and subsequently filed related papers.
Box 12	Contributions to the Examiner Education Program.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Comments Patents	Public comments regarding patent related regulations and procedures.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or materials related to the Disclosure Document Program.
Box Design	The filing of all design patent applications and any communications relating thereto.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62).
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box Issue Fee	All communications following the receipt of a PTOL–85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box Missing Parts	Response to the Notice to File Missing Parts of Application and associated papers and fees.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box PATENT APPLICATION	New patent applications and associated papers and fees.
Box Patent Ext.	Applications for patent term extension and any communications relating thereto.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Provisional Patent Application	The filing of all provisional patent applications and any communications relating thereto.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return post card or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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Box TTAB FEE	Oppositions, cancellation petitions, and ex parte appeals.
Box TTAB NO FEE	Interferences, motions, and extension requests.
Box STATUS NO FEE	Written status inquiries.
Box POST REG FEE	Affidavits, renewals, corrections and amendments.
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SPECIAL BOXES APPLICABLE TO *BOTH* PATENT AND TRADEMARK MAIL

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Box 6	Mail for the Office of Procurement.
Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending litigation and disciplinary proceedings*; papers relating to pending litigation in court cases shall be mailed only to Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215 and papers relating to pending disciplinary proceedings before the Administrative Law Judge or the Commissioner shall be mailed only to the Office of the Solicitor, P.O. Box 16116, Arlington, Virginia 22215.
Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
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Reference Collections of U.S. Patents and Trademarks Available for Public Use in Patent and Trademark Depository Libraries

The following libraries, designated as Patent and Trademark Depository Libraries (PTDLs), receive patent and trademark information in various formats from the U.S. Patent and Trademark Office. Many PTDLs have on file all full-text patents issued since 1790, trademarks published since 1872, and select collections of foreign patents. All PTDLs have both the patent and trademark sections of the *Official Gazette of the U.S. Patent and Trademark Office*. The full-text utility and design patents are distributed numerically on 16 mm microfilm, and plant patents on color microfiche. Patent and trademark search systems on CD-ROM (Compact Disc-Read Only) format are available at all PTDLs to increase utilization of and enhance access to the information found in patents and trademarks. It is through the CD-ROM systems that preliminary patent and trademark searches can be conducted through the numerically arranged collections.

All information is available for use by the public free of charge.

In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

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Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	(415) 557-4500
	Sunnyvale Center for Innovation, Invention and Ideas	(408) 730-7290
Colorado	Denver Public Library	(303) 640-6249
Connecticut	New Haven: Science Park Library	(203) 786-5447
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	Springfield: Illinois State Library	(217) 782-5659
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	Boston Public Library	(617) 536-5400 Ext. 265
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	Detroit: Great Lakes Patent and Trademark Center	(313) 833-3379
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	New York Public Library (The Research Libraries)	(212) 592-7000
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Ohio	Akron - Summit County Public Library	(303) 643-9075
	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
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	Milwaukee Public Library	(414) 286-3051
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PATENT EXAMINING CORPS

BRUCE A. LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner for Patents
EDWARD R. KAZENSKE, Deputy Assistant Commissioner for Patents
STEPHEN G. KUNIN, Deputy Assistant Commissioner for Patent Policy

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, ENGINEERING AND DESIGNS, GROUP 1100—JOHN E. KITTLE, Director	308-0661	06/30/95
ORGANIC CHEMISTRY, DRUG, BIO-AFFECTING AND BODY TREATING COMPOSITION, GROUP 1200—RICHARD V. FISHER, Director	308-1235	09/06/95
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—JOHN F. TERAPANE, Director	308-0651	09/14/95
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	10/13/95
BIOTECHNOLOGY, GROUP 1800—JOHN J. DOLL, Director	308-0196	02/27/95
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director	308-1782	02/27/95
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	07/06/95
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—JOSEPH J. ROLLA, Director	305-9600	03/29/95
SPECIAL COMPUTER APPLICATIONS: COMPUTER GRAPHICS, BUSINESS PRACTICES, & DIAGNOSTIC TESTING, GROUP 2400—GERALD GOLDBERG, Director	305-3800	04/07/95
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	06/12/95
TELECOMMUNICATIONS, GROUP 2600—NICHOLAS P. GODICI, Director	305-4700	04/14/95
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	308-0661	04/21/95
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—MARGARET FOCARINO, Director	308-1113	08/14/95
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—ETHEL CROSS, Director	308-1148	07/27/95
MEDICAL INSTRUMENTS, DIAGNOSTIC EQUIPMENT AND TREATMENT DEVICES; SURGERY AND SURGICAL SUPPLIES; AMUSEMENT AND EXERCISING DEVICES; ANIMAL HUSBANDRY; SPORTING GOODS; TOBACCO PRODUCTS AND MANUFACTURING EQUIPMENT; AND PRINTING, GROUP 3300—J.J. LOVE, Director	308-0858	09/26/95
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	08/04/95
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	10/16/95

*A communication from the examiner should have been received in most applications filed prior to this date.

Patents will Expire as Follows:
(1) The term of any utility or plant patent that is in force on or results from an application filed before June 8, 1995 is the greater of the 20 year term provided in 35 U.S.C. 154(a)(2) or 17 years from grant subject to any terminal disclaimers. 35 U.S.C. 154(c)(1).
(2) All utility and plant patents granted on applications having an actual United States filing date on or after June 8, 1995 are granted for a term which begins on the date on which the patent is granted and ends 20 years from the date on which the application was filed in the United States. If the application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term ends twenty years from that date on which the earliest application was filed. 35 U.S.C. 154(a)(2).
(3) All design patents are granted for a term of 14 years from the date of the grant.
However, the term of any patent may have been curtailed by disclaimer under the provisions of 35 U.S.C. 153, have lapsed due to failure to pay maintenance fees, or have been extended under the provisions of 35 U.S.C. 154, 155, or 156. Thus, if more reliable information is needed with respect to a particular patent, then the specific patent file should be reviewed to determine the actual date of patent expiration.

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TRADEMARK OPERATION

Bruce A. Lehman, Commissioner
Philip G. Hampton, II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Office

Condition of Trademark Applications as of January 1, 1997

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 101—Ron Williams, Managing Attorney, (703) 308–9101—4th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/10/96	10/11/96
Law Office 102—Myra Kurzbard, Managing Attorney, (703) 308–9102—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/07/96	08/02/96
Law Office 103—Kathryn Erskine, Managing Attorney, (703) 308–9103—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/12/96	12/12/96
Law Office 104—Sidney Moskowitz, Managing Attorney, (703) 308–9104—6th Floor Unwrought metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/08/96	10/14/96
Law Office 105—Thomas Howell, Managing Attorney, (703) 308–9105—6th Floor Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/22/96	08/13/96
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308–9106—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/12/96	10/18/96
Law Office 107—Thomas Lamone, Managing Attorney, (703) 308–9107—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/29/96	11/12/96
Law Office 108—David Shallant, Managing Attorney, (703) 308–9108—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/08/96	10/15/96
Law Office 109—Deborah Cohn, Managing Attorney, (703) 308–9109—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/23/96	11/14/96
**Collective Marks—Class 200 **Certification Marks—Classes A & B		
Office of Trademark Services—Terron Simms, Director, (703) 308-9100 Trademark Assistance Center—(703) 308-9000 Pre-Examination—Alan Lambert, Supervisor, (703) 308-9401 ext. 188 Intent-To-Use—(ITU)—(703) 308-9500 Post Registration Section—Mary Bowman, Supervisor, (703) 308-9500 ext. 126		
Affidavits Under Sections 8 & 15 (All Classes)	10/31/96	—0—
Renewals (All Classes)	10/21/96	—0—
Section 12(c) Publications (All Classes)	07/01/96	—0—

1. ** Assigned to all Law Office

2. Applicants with inquiries concerning the status of their applications and a touch telephone should call (703) 305–8747 from 6:30 a.m. to Midnight EST, Monday through Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquiries concerning the status of their applications. See SECTION 411 of the TRADEMARK MANUAL OF EXAMINING PROCEDURE.

3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

REEXAMINATIONS

FEBRUARY 11, 1997

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 Re. 33,751 (3128th)
SYSTEM AND METHOD FOR CONTROLLED DIRECTIONAL DRILLING

Bela Geczy, Houston, Tex., and Frank DeLucia, Aberdeen, Scotland, assignors to Halliburton Company, Duncan, Okla.
Reexamination Request No. 90/003,908, Aug. 4, 1995.
Reexamination Certificate for Reissue Patent Re. 33,751, issued Nov. 26, 1991, Ser. No. 356,270, May 23, 1989.
Original No. 4,667,751, dated May 26, 1987, Ser. No. 786,817, Oct. 11, 1985.

Int. Cl.[6] E21B *7/08*

U.S. Cl. 175—61



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–36** is confirmed.

1. An improved system for controlled directional and straight drilling of a borehole wherein the entire drillstring is rotatable from the surface, including a bottomhole assembly comprised of a drill bit connected to the output shaft of a downhole motor for independent rotation from the drillstring, said motor connected at its uphole end to the drillstring, the improvement in the bottomhole assembly, comprising:

a first, concentric stabilizer, having a preselected diameter slightly smaller than the diameter of the borehole, mounted between the drill bit and motor at a preselected distance from the bit around the output shaft of said downhole motor, said shaft being concentrically located therein;

a bent motor housing connected to the downhole end of said downhole motor that has a bend from its geometric center at a predetermined angle α at its downhole end, thereby offsetting the centerline of said first stabilizer and the centerline of the drill bit face from the borehole centerline by said angle α;

a second concentric stabilizer, having a preselected diameter slightly smaller than the diameter of the borehole, mounted at a preselected distance from said first concentric stabilizer on the drillstring, said drillstring being concentrically located therein; and

a third concentric stabilizer, having a preselected diameter slightly smaller than the diameter of the borehole, mounted at a preselected distance from said second concentric stabilizer on the drillstring, said drillstring being concentrically located therein;

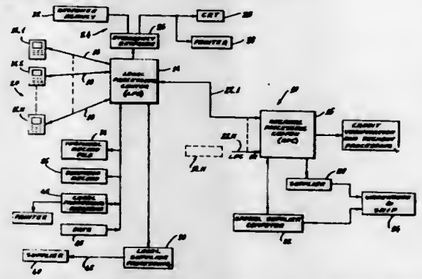
wherein the angle α of the bend in the motor housing, and the diameter and placement of the concentric stabilizers are determined by the desired path of the borehole to be drilled, said system drilling a curved borehole when only the downhole motor is activated, and drilling a straight borehole when the downhole motor is activated and both the drillstring and downhole motor housing are rotated.

B1 4,734,858 (3129th)
DATA TERMINAL AND SYSTEM FOR PLACING ORDERS

Hubert J. Schlafly, Greenwich, Conn., assignor to Portel Services Network, Inc., Greenwich, Conn.
Reexamination Request No. 90/003,740, Feb. 23, 1995.
Reexamination Certificate for Patent 4,734,858, issued Mar. 29, 1988, Ser. No. 674,696, Nov. 26, 1984.
Continuation-in-part of Ser. No. 558,303, Dec. 5, 1983, abandoned.

Int. Cl.[6] G06F *17/60;153/00*

U.S. Cl. 364—408



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **10–14** is confirmed.

Claim **1** is determined to be patentable as amended.

Claims **2–9**, dependent on an amended claim, are determined to be patentable.

New claims **15–21** are added and determined to be patentable.

1. A system for ordering services **[**of**]** *or* goods *from a supplier* by generating digital data representative of particular orders to a local processor center over telephone lines comprising:

a plurality of hand-carryable user data terminals assigned to individual users with respective uniquely associated user identification codes:

each data terminal having:

A) a data storage medium including a send memory in which ordering data and identification data for transmission to the local processing center is stored;

B) a display of alpha-numeric characters;

C) a keyboard having functional code keys and order defining keys which carry both alpha and numerical characters, and means for generating key signals respectively identifying individually actuated keys and individual alpha and numeric characters thereon;

D) said send memory storing data representative of an identification of the data terminal;

E) means for causing on said display a display of a visually readable prompt which characterizes subsequent key actuations as representative of an identification code of the user of the terminal, and means for storing said user identification code in said send memory;

F) means for causing on said display a display of selected prompts, each of which characterizes subsequent order key actuations and associated key signals as representative of predetermined data of a particular order, and means for storing key signals representative of the latter key actuations in a location of the send memory designated for said particular order;

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G) automatic dialing means for establishing a telephone communication link between the data terminal and the local processor center;

H) means for actuating said automatic dialing means and transmitting all of the data accumulated in the send memory to said local processing center over said link in a short burst; and means for receiving response data over said link from said local processing center and storing said response data in the data terminal storage medium;

I) means responsive to said response data from the local processor center for causing a corresponding display thereof on said display;

said local processor center including:

A) means for verifying data representative of terminal number and the user identification as received from respective ones of said terminals;

B) means for identifying the order data being sent by a terminal; *and for providing the order data to the supplier;*

C) means for transmitting an evaluation response to a said terminal with respect to order and identification data sent by the terminal; and

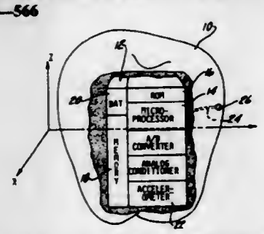
means for terminating said telephone link a predetermined short time after said evaluation response transmittal to limit the duration of said communication link.

B1 4,745,564 (3130th)

IMPACT DETECTION APPARATUS

Bernard R. Tennes, Charlotte; Galen K. Brown, Okemos; Joseph R. Clemens; Henry A. Affeldt, both of East Lansing, all of Mich.; Siamak Siyami, Tehran, Islamic Rep. of Iran; Brian A. Klug, Buchanan, and Hans R. Zapp, Okemos, both of Mich., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Reexamination Request No. 90/003,588, Sep. 26, 1994.
Reexamination Certificate for Patent 4,745,564, issued May 17, 1988, Ser. No. 827,142, Feb. 7, 1986.
Int. Cl.[6] G01P *15/04;* **G01D** *1/14;* **G06F** *17/40;19/00*
U.S. Cl. 364—566



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1 and 24 is confirmed.

Claims 2, 15, 22 and 25 are determined to be patentable as amended.

Claims 3–14, 16–21, 23, and 26–27, dependent on an amended claim, are determined to be patentable.

New claims 28–59 are added and determined to be patentable.

2. An acceleration event detector/recorder that can be contained within a housing *for detecting and recording acceleration events corresponding to those experienced by a transported article*, comprising:

transducer means for sensing accelerations along at least one axis *corresponding to accelerations experienced by a transported article*, and for producing digital signals quantifying the sensed physical quantities;

clock means for producing a digital timer signal;

memory means for storing program instructions and for storing data representing digital signals;

communication means for communicating digital information with a separate device; and

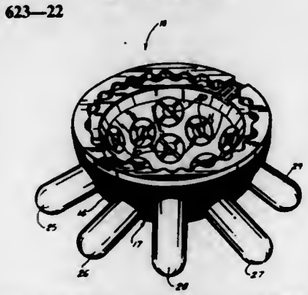
microprocessor means connected to the transducer means, the clock means, the memory means, and the communication means, and being adapted to read and execute the program instructions from the memory means, for causing the data representing both the digital signals produced by the transducer means during an interval of time of predetermined duration and the digital timer signal produced by the clock means at the beginning of the interval of time to be stored in the memory means, the interval of time beginning when at least one of the accelerations satisfies a predetermined criterion and for controlling the communication means to communicate digital information with the separate device.

B1 5,310,408 (3131st)

ACETABULAR CUP BODY PROSTHESIS

Jeff Schryver, Cordova; Jeff Shea, and Dawn M. Ryan, both of Memphis, all of Tenn., assignors to Smith & Nephew Richards Inc., Memphis, Tenn.

Reexamination Request No. 90/003,915, Aug. 11, 1995.
Reexamination Certificate for Patent 5,310,408, issued May 10, 1994, Ser. No. 938,421, Aug. 31, 1992.
Continuation-in-part of Ser. No. 830,243, Feb. 10, 1992, which is a continuation-in-part of Ser. No. 656,247, Feb. 14, 1991, Pat. No. 5,226,917.
Int. Cl.[6] A61F *2/34*
U.S. Cl. 623—22



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–21 is confirmed.

1. An acetabular cup prosthesis, comprising:

a) an acetabular cup body having an inner concave surface, an outer convex surface for engaging a patient's acetabulum, and an annular base that defines a base plane;

b) a polymeric cup liner that lines the cup body at the cup body concave surface during use, the liner having convex and concave surfaces, the concave surface defining an articulating surface that is positioned to receive and articulate with a ball of a prosthesis hip stem, and the convex surface defining a non-articulating surface that is positioned on the opposite side of the liner from the concave surface;

c) wherein the cup body concave surface has polished inner surface means that faces the convex side of liner for retarding inner debris generation, and including a polished surface having a roughness of less that eight (8) micro-inches.

REISSUES

FEBRUARY 11, 1997

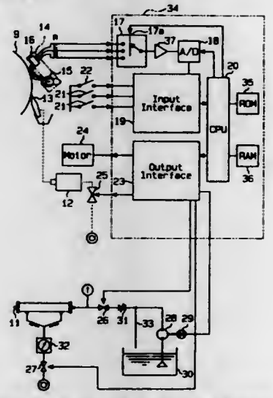
Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 35,444

INK WASHING DEVICE FOR A PRINTING MACHINE

Fumio Matsuda, Toyohashi; Isao Chonan, Ichinomiya; Hideo Kitagawa, Gifu, and Katsunori Furuta, Mino, all of Japan, assignors to Sakurai Graphic Systems Corporation, Tokyo, Japan

Original No. 5,325,780, dated Jul. 5, 1994, Ser. No. 28,798, Mar. 9, 1993. Application for reissue Nov. 6, 1995, Ser. No. 554,363
Claims priority, application Japan, Dec. 28, 1992, 4-349465
Int. Cl.[6] B41F *35/00;33/00*
U.S. Cl. 101—424 **13 Claims**



1. An ink washing device, for performing a washing operation in a printing machine, the printing machine including a plurality of ink rollers for supplying ink to a cylinder plate, a deposit roller having an outer surface where excess ink from the ink rollers is deposited, said outer surface having a luminance that varies with the amount of the deposited ink, and a spraying device for spraying washing fluid on at least one ink roller to initiate a washing operation, the ink washing device comprising:

scraping means, disposed adjacent to said deposit roller, for removing the deposited ink on said outer surface; and

operating detection means for determining the completion of the washing operation, said operating detection means including a luminance detector means responsive to said luminance of said outer surface during removal of the deposited ink, said operating detection means indicating completion of the washing operation when a luminance signal from the luminance detector means exhibits substantially no change.

Re. 35,445

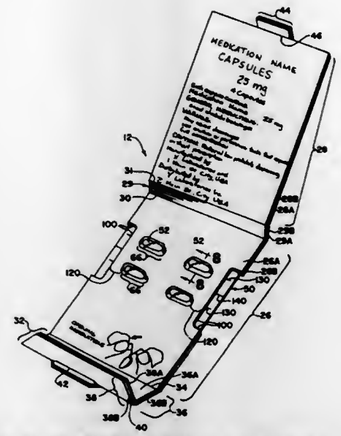
PACKAGING SYSTEM FOR MEDICATION

Raymond I. Pora, Brookfield, Ill., assignor to UDL Laboratories, Inc., Rockford, Ill.

Original No. 5,242,055, dated Sep. 7, 1993, Ser. No. 982,484, Nov. 27, 1992. Application for reissue May 22, 1995, Ser. No. 445,778
Int. Cl.[6] A61J *1/00;* **B65D** *85/58*
U.S. Cl. 206—532 **9 Claims**

1. A sealed [,] package from which a predetermined supply of discrete units of medication can be dispensed, said package comprising:

a base panel defining a predetermined number of sealed compartments corresponding to the number of medication-units to be dispensed to a patient in a predetermined time period, each said compartment containing one of said medication units,



said base panel further including opening means for accommodating the tearing of said base panel from an edge thereof into each said compartment to release said medication units;

said base panel further including:

(a) a carrier that has a transparent medication-receiving member that has a row of outwardly projecting receptacles defining said compartments for receiving said medication units; and

(b) top and bottom sheath layers on opposite sides of said carrier;

said top sheath layer including a plurality of apertures for each receiving one of said receptacles and for accommodating the projection of said receptacles through said apertures;

said bottom sheath layer having a *bottom notch along said one side edge of said base panel, said bottom* notch extending below said compartments to expose said carrier below said compartments;

said top sheath layer having a top notch along said one edge of said base panel; and

said top notch extending inwardly from said one edge but [terminates] *terminating* outwardly of said compartments so that said top sheath layer defines a land between said apertures and said top notch;

a cover panel for overlying said base panel;

a hinge means for connecting said cover panel and base panel to accommodate relative movement of said cover panel and base panel between open and closed configurations; and

a retainer means for releasably engaging said cover panel with said base panel when said cover panel and base panel are in said closed configuration.

2. A sealed [,] package from which a predetermined supply of individual medication units can be dispensed, said package comprising:

a base panel defining a predetermined number of sealed compartments corresponding to the number of medication-units to be dispensed, each said compartment containing one of said medication units;

a cover panel for overlying said base panel to accommodate relative movement of said cover panel and base panel between open and closed configurations;

said compartments being spaced-apart in a row inwardly of one edge of said base panel, said base panel further defining a

plurality of spaced-apart weakened zones which are each associated with one of said compartments and are each located between said one edge and said one compartment, said base panel including a carrier, said carrier including a transparent medication-receiving member having a row of outwardly projecting receptacles with openings on one side for defining said compartments for receiving said medication units, said carrier including a backing sheet sealed to said transparent medication-receiving member and covering each said receptacle opening; and

said base panel further including top and bottom sheath layers on opposite sides of said carrier, said top sheath layer including a plurality of apertures for each receiving one of said receptacles and accommodating the projection of said receptacles through said apertures, said bottom sheath layer having a bottom notch along said one edge of said base panel, said bottom notch extending [inwardly beyond] *below* said compartments to expose said backing sheet below said compartments, said top sheath layer having a top notch along said one edge of said base panel, said top notch extending inwardly from said one edge beyond said weakened zones but terminating outwardly of said compartments so that said top sheath layer defines a land between said apertures and said top notch.

Re. 35,446

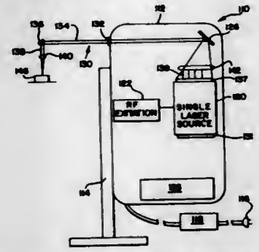
LASER MARKER SYSTEM

J. James Stone, Northbrook, Ill., assignor to Videojet Systems International, Inc., Wood Dale, Ill.

Original No. 5,294,774, dated Mar. 15, 1994, Ser. No. 103,061, Aug. 3, 1993. Application for reissue Jul. 18, 1994, Ser. No. 276,556

Int. Cl.[6] B23K *26/00*

U.S. Cl. 219—121.76 **21 Claims**



1. A laser marking system for marking indicia onto a substrate comprising:

a) an exit lens having a focal length, the surface of the substrate to be marked being positioned generally at the focal plane of the lens;

b) a single laser source [arranged so that its energy output] *operable to produce output energy* beams *which* are oriented in a generally parallel relationship; and

c) said single laser source including segmented reflecting means, *each movable between lasing and non-lasing positions,* for *selectively* generating [a plurality of] *said* output energy beams *directed to said exit lens* to create [a column of] spots on the substrate. [with a higher resolution.]

Re. 35,447

ENDOTHERMIC BLOWING AGENTS FOR STRENGTHENING WELD LINES IN MOLDED THERMOPLASTIC RESINS AND PRODUCTS

Rod A. Garcia, Montgomery, Tex.; John A. Kosin, Timonium, Md.; Gerry Mooney, Ajax, Canada, and Michael E. Tarquini, Havre de Grace, Md., assignors to J. M. Huber Corporation, Rumson, N.J.

Original No. 5,037,580, dated Aug. 6, 1991, Ser. No. 467,587, Jan. 19, 1990. Continuation-in-part of Ser. No. 352,307, May 16, 1989, Pat. No. 5,009,810. Application for reissue Jan. 23, 1995, Ser. No. 377,874

Int. Cl.[6] C09K *3/00*

U.S. Cl. 252—350 **7 Claims**

1. A composition for producing a molded foamed product having superior weld line strength which comprises at least one polymer component, an additive selected from the group consisting of fillers, pigments and combinations thereof, and a blowing agent which enhances the strength of weld lines which are produced when said composition is molded, said blowing agent comprising a mixture of a polycarboxylic acid and an inorganic carbonate, wherein said polycarboxylic acid and said inorganic carbonate have been surface treated with a component selected from the group consisting of mono-glycerides, stearic acid, silane coupling agents, fatty acids, titanates, oleates and mixtures thereof, *said inorganic carbonate comprising sodium aluminum hydroxy carbonate.*

Re. 35,448

METHOD FOR ESTABLISHING CURRENT TERMINAL ADDRESSES FOR SYSTEM USERS PROCESSING DISTRIBUTED APPLICATION PROGRAMS IN AN SNA LU 6.2 NETWORK ENVIRONMENT

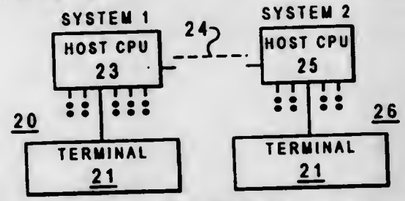
David U. Shorter, Lewisville, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Original No. 4,991,089, dated Feb. 5, 1991, Ser. No. 251,279, Sep. 30, 1988. Application for reissue Feb. 4, 1993, Ser. No. 13,507

The portion of the term of this patent subsequent to Aug. 14, 2007, has been disclaimed.

Int. Cl.[6] G06F *13/14*

U.S. Cl. 395—500 **13 Claims**



6. A method of controlling communication within a network between a host processor and a plurality of work stations which are selectably connectable to said network, said host processor including a pool of virtual machines each of which is in a ready state for assignment in response to requests from said host processor and from said plurality of work stations and wherein each virtual machine will be returned to said pool upon completion of said assignment, said method comprising the data processing system implemented steps of:

permitting a user at a selected one of said plurality of work stations to provide an authorization indication at said host processor indicating that host originated communications will be accepted;

storing said authorization indication at said host processor;

assigning an idle virtual machine for communications with said host processor which are initiated by said selected one of said plurality of work stations; and

assigning an idle virtual machine for communications with said selective one of said plurality of work stations which are initiated by said host processor only in response to a presence of an authorization indication provided by said user at said host processor.

Re. 35,449

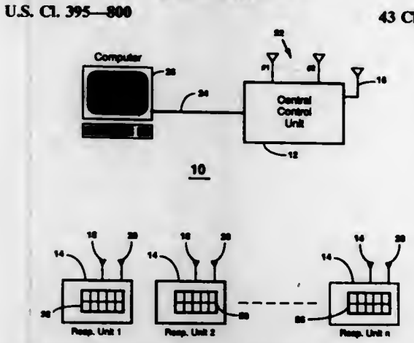
REMOTE 2-WAY TRANSMISSION AUDIENCE POLLING AND RESPONSE SYSTEM

Harry G. Derks, Holland, Mich., assignor to Fleetwood Furniture Company, Inc., Holland, Mich.

Original No. 5,093,786, dated Mar. 3, 1992, Ser. No. 303,163, Jan. 27, 1989. Application for reissue Mar. 2, 1994, Ser. No. 204,653

Int. Cl.[6] G06F *15/80*

U.S. Cl. 395—800 **43 Claims**



40. A remote response system comprising:

a central control unit including address word transmitting means for transmitting address words and data word receiving means for receiving data words;

a plurality of response units located remote from said central control unit, each of said response units including data entry means for receiving an inputted data word, address word receiving means for receiving said address words transmitted from said central control unit, circuit means responsive to said address word receiving means for identifying a particular one of said address words that have been assigned to that particular one of said response units and data word transmitting means responsive to said data entry means and said circuit means for transmitting a data word from said data entry means to said central control unit in response to identification of a particular address word assigned to that particular remote unit; and

said central control unit further including acknowledging means for examining data words received by said data word receiving means and identifying that a data word received from one of said response units is valid and for transmitting an acknowledge message to the one of said response units sending the valid data word.

Re. 35,450

SOLUBLE HUMAN INTERLEUKIN-1 RECEPTORS, COMPOSITIONS AND METHOD OF USE

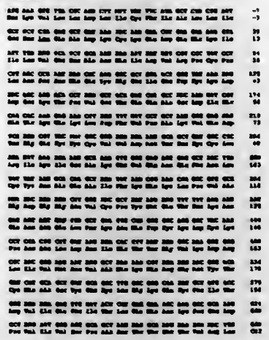
Steven K. Dower, Redmond; Carl J. March, Bainbridge Island; John E. Sims, and David L. Urdal, both of Seattle, all of Wash., assignors to Immunex Corporation, Seattle, Wash.

Original No. 5,180,812, dated Jan. 19, 1993, Ser. No. 455,488, Dec. 21, 1989. Continuation-in-part of Ser. No. 258,756, Oct. 13, 1988, Pat. No. 5,081,228, which is a continuation-in-part of Ser. No. 160,550, Feb. 25, 1988, Pat. No. 4,968,607, which is a continuation-in-part of Ser. No. 125,627, Nov. 25, 1987, abandoned. Application for reissue Jun. 14, 1993, Ser. No. 77,752

The portion of the term of this patent subsequent to Jan. 14, 2009, has been disclaimed.

Int. Cl.[6] C07K *13/00*

U.S. Cl. 530—351 **2 Claims**



1. A substantially pure and homogeneous soluble human IL-1 receptor (shuIL-1R) protein comprising a sequence of amino acids selected from the group consisting of amino acid sequences 1–318, 1–317, 1–316 and 1–315 of FIG. [1A-1B] *16A–16B.*

Re. 35,451

Patent Not Issued For This Number

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PLANT PATENTS

GRANTED FEBRUARY 11, 1997

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

9,798

MINIATURE ROSE PLANT NAMED 'SAVAMOR'

F. Harmon Saville, Newburyport, Mass., assignor to Nor'East Miniature Roses, Inc., Rowley, Mass.

Filed Dec. 18, 1995, Ser. No. 574,388
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—7.1 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, upright, well branched yet open habit, substantially as illustrated and described, characterized primarily by its very strong, lilac-like fragrance; and by buds and flowers of medium to light mauve coloration, many borne on long stems suitable for use as cut flowers of for exhibition; resembling in size those of 'BENalav' except having fewer petals and being lighter in coloration; and further characterized by a plant of vigorous growth making it a good garden perennial or specimen plant, with small to medium sized, semi-glossy foliage, and being easy to propagate from cuttings.

9,799

MINIATURE ROSE PLANT NAMED 'SAVASPARK'

F. Harmon Saville, Newburyport, Mass., assignor to Nor'East Miniature Roses, Inc., Rowley, Mass.

Filed Jan. 30, 1996, Ser. No. 593,814
Int. Cl.[6] H01H *5/00*
U.S. Cl. Plt.—10 **1 Claim**

1. A new and distinct variety of rose plant of the miniature rose class, substantially as shown and described.

9,800

PEACH TREE 'SIESTA GEM'

Chris F. Zaiger, 929 Grimes Ave,; Leith M. Gardner, 1207 Grimes Ave.; Gary N. Zaiger, 1907 Elm Ave., and Grant G. Zaiger, 4005 California Ave., all of Modesto, Calif. 95358

Filed Dec. 22, 1995, Ser. No. 577,769
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—43.1 **1 Claim**

1. A new and distinct variety of peach tree, substantially as illustrated and described, characterized by its large size, vigorous, upright growth, and being a productive and regular bearer of large, yellow flesh, clingstone fruit with good flavor and eating quality; the fruit is further characterized by being nearly globose in shape, having firm flesh with good storage and shipping abiliy, having an attractive red blush skin, and in comparison to the variety May Crest Peach (U.S. Pat. No. P.P. 4,064) the new variety has heavier production of larger size fruit.

9,801

GERANIUM PLANT NAMED 'SANBLOTCH'

Henricus G. W. Stemkens, Hoorn, Netherlands, assignor to S&G Seeds B.V., Enkhuizen, Netherlands

Filed Dec. 14, 1995, Ser. No. 572,560
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—87.12 **1 Claim**

1. A new and distinct cultivar of ivy-leaved geranium plant substantially as herein shown and described, particularly distinguished by its very short internodes and well branched plant, and its early appearing red lilac with blotch single flowers which set little seed.

9,802

GERANIUM PLANT NAMED 'SANLILAC'

Henricus G. W. Stemkens, Hoorn, Netherlands, assignor to S&G Seeds B.V., Enkhuizen, Netherlands

Filed Dec. 14, 1995, Ser. No. 572,561
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—87.12 **1 Claim**

1. A new and distinct cultivar of ivy-leaved geranium plant substantially as herein shown and described, particularly distinguished by its very short internodes and well branched plant, and its early appearing lilac single flowers which do not set seed.

9,803

GERANIUM PLANT NAMED 'SANRED'

Henricus G. W. Stemkens, Hoorn, Netherlands, assignor to S&G Seeds B.V., Enkhuizen, Netherlands

Filed Dec. 14, 1995, Ser. No. 572,832
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—87.12 **1 Claim**

1. A new and distinct cultivar of ivy-leaved geranium plant substantially as herein shown and described, particularly distinguished by its very short internodes and well branched plant, and its early appearing light red purple single flowers which do not set seed.

9,804

'ALA' ST. AUGUSTINEGRASS

James M. Holmes, McHenry County, Ill., assignor to Warren's Turf Group, Inc., South Bay, Fla.

Filed Aug. 8, 1995, Ser. No. 512,277
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—90.1 **1 Claim**

1. A new and distinct cultivar of an asexually reproduced St. Augustinegrass plant substantially as herein shown and described, with a unique combination of characters including white stigmas, yellow anthers, an absence of leaf hairs, floret number per raceme, raceme length, internode length, having good turf performance, good winter hardiness, and a distinct DNA fingerprint.

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PATENTS

GRANTED February 11, 1997

ERRATA

For CLASS	See PATENT NO.
D21–241	D377,964

For CLASS	See PATENT NO.
052–713	5,600,971
108–007	5,601,014
108–106	5,601,016
473–483	5,601,284
473–458	5,601,285
473–429	5,601,286
508–396	5,601,747
510–336	5,601,749
442–001	5,601,906
442–001	5,601,907
442–033	5,601,908
442–417	5,601,909
442–079	5,601,910
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396–175	5,602,605
396–435	5,602,606
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396–284	5,602,609
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396–133	5,602,613
396–061	5,602,614
396–228	5,602,615
396–238	5,602,616
396–246	5,602,617
399–111	5,602,623
347–002	5,602,624
399–021	5,602,625

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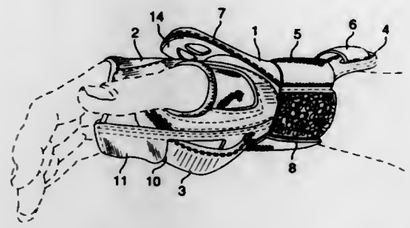
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386–047 5,602,685
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395–215 5,602,730
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GRANTED FEBRUARY 11, 1997

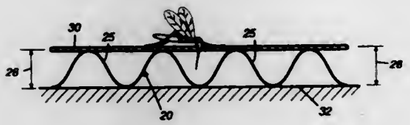
GENERAL AND MECHANICAL

5,600,849
WRIST GUARD
Antonio C. Hu, 960 Howard St., San Francisco, Calif. 94103
Filed Jul. 7, 1995, Ser. No. 499,451
Int. Cl.[6] A41D *13/08*
U.S. Cl. 2—16 **13 Claims**



1. A wrist guard for inline skating or the like, configured for wearing by a person, comprising:
a glove element having palm and back portions respectively covering at least the palm and a substantial portion of the back of the person's hand;
a support member secured to said glove element to overlie said back portion and extend rearwardly along the back side of the person's wrist, said support member comprising a first element configured to rest against the back of the person's hand, a second element configured to rest against the back of the person's wrist, and rigid third and fourth elements connecting said first and second elements to restrict backward flexion of the band, said third and fourth elements being configured to extend along right and left sides of the wrist, respectively, so as to leave the back of the wrist substantially uncovered, thereby facilitating viewing of a wristwatch if one is worn by the person.

5,600,850
MESH GARMENT FOR PROTECTION AGAINST INSECTS
Leonard K. Shannon, Rte. 3, Box 77, Wiansboro, S.C. 29180
Filed Mar. 13, 1996, Ser. No. 615,117
Int. Cl.[6] A41D *13/00*
U.S. Cl. 2—69 **12 Claims**



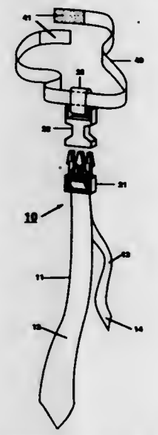
1. A garment for protection against insects comprising:
an outer layer of mesh material, said outer layer of material preventing the passage therethrough of said insects; and
an inner layer of material, said inner layer of material having a series of arches, each arch of said series of arches having a height greater than or equal to approximately 1/16 of an inch, said arches elevating said outer layer from the skin surface of the wearer so that said insects cannot bite said wearer.

5,600,851
NECKTIE CONSTRUCTION
James M. McLeod, P.O. Box 292, Valley Lee, Md. 20692
Continuation-in-part of Ser. No. 249,215, May 26, 1994. This application May 8, 1995, Ser. No. 436,114
Int. Cl.[6] A41D *25/02;25/04;25/08;25/10*
U.S. Cl. 2—144 **6 Claims**



1. A method of forming a pre-tied necktie comprising the steps of:
a) tying the tie to include a knot and a closed neck band;
b) removing a portion of the neck band to form a pair of shortened tails extending away from the knot;
c) injecting a heat activatable adhesive into the knot, between layers of the fabric within said knot;
d) placing the tie in a microwave oven and subjecting the tie to microwave heating to thereby activate said adhesive;
e) curing said adhesive within said knot to form a relatively rigidified knot construction.

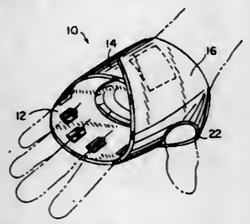
5,600,852
KNOTLESS INTERCHANGEABLE NECKWEAR
Daniel W. Dennch, 46 Cocheco St., Dover, N.H. 03820
Filed Mar. 8, 1996, Ser. No. 615,018
Int. Cl.[6] A41D *25/00;25/02;25/04*
U.S. Cl. 2—144 **2 Claims**



1. A knotless, interchangeable neckwear device comprising, in combination:
and always directly visible by someone facing the front of the wearer;

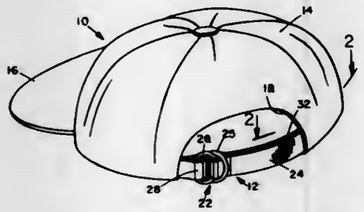
non-elastic neckband means adjustably and removably encircling the wearer's neck;
a buckle component having first and second connector elements;
said connector elements include decorative matter;
looped connecting means encompassing said neckband and passing through an aperture at a distal end of said first connector element of the said buckle component;
a vertically elongated necktie panel formed of flexible material having a front or display apron and a rear apron and passing through an aperture at a distal end of said second connector element of the said buckle component; and when said neckwear is worn by the wearer, said first and second connector elements of said buckle component are positionable in front of the wearer's neck and always directly visible by someone facing the front of the wearer.

5,600,853
ORTHOPEDIC GLOVE AND METHOD OF MAKING SAME
Edward H. Yewer, Jr., 6259 N. Hwy. 83, Hartland, Wis. 53029
Filed Aug. 2, 1994, Ser. No. 284,868
Int. Cl.[6] A41D *13/10*
U.S. Cl. 2—161.1 **15 Claims**



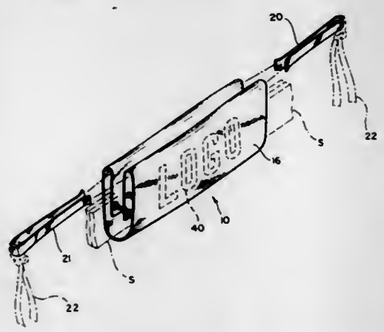
15. A hand glove, comprising:
a palm panel for extending over the palm of a hand and at least one back panel for extending over the back of the hand, said palm panel and said back panel being made of pliable sheet material which is formed into the exterior shape of a human hand, said palm panel varying in thickness to define contours of a human hand including on an interior surface of said palm panel finger cradles defined by ridges alongside said fingers and a dome which fits inside said metacarpal arch.

5,600,854
ADJUSTABLE STRAP FASTENER ASSEMBLY FOR BODY-ENCIRCLING HAT BAND, COLLAR OR BELT
Susan Henrekin, 2921 Kellogg St., San Diego, Calif. 92106
Filed Jan. 17, 1995, Ser. No. 373,743
Int. Cl.[6] A42B *1/22*
U.S. Cl. 2—195.2 **17 Claims**



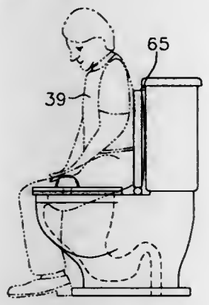
1. An adjustable strap fastener assembly for securing in a loop around a portion of a wearer's body, comprising:
an elongate member for encircling a wearer's body, the elongate member having an inner face, an outer face, and opposite first and second ends;
a pair of overlapping rings secured to the first end of the elongate member;
the second end comprising a strap for releasable threaded engagement through the rings;
the elongate member having a first interengageable fastener device on said inner face at said second end and a second interengageable fastener device for releasable engagement with the first interengageable fastener device, the second interengageable fastener device being located on said inner face at a location spaced from said second end, whereby the second end of the strap is threaded through said rings and folded back to form a loop with said inner face facing inwardly and said first interengageable fastener device overlying and secured to said second interengageable fastener device to form a secondary connection for securing the elongate member in a loop with said outer face facing outwardly from the loop.

5,600,855
DECORATIVE COVER FOR THE ADJUSTING STRAPS ON A CAP
Richard D. Ramirez, 7514 Evans Ford Rd., Clifton, Va. 22024
Continuation of Ser. No. 225,710, Apr. 11, 1994, abandoned. This application Jan. 22, 1996, Ser. No. 591,260
Int. Cl.[6] A42B *1/24*
U.S. Cl. 2—209.13 **13 Claims**



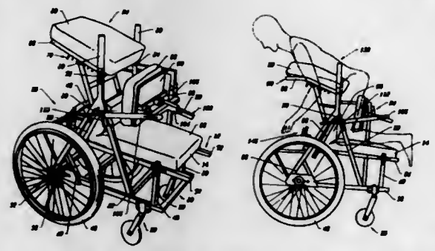
1. A decorative cap strap cover for concealing the adjusting straps on a cap, comprising:
a flat sheet of material folded to form looped ends defining elongate openings and generally parallel front and back panels, said sheet of material being foldable about the adjusting straps to substantially conceal the adjusting straps, with said looped ends disposed contiguous to one another so that the elongate openings extend parallel to the adjusting straps and the front and back panels lie on opposite sides of the adjusting straps; and
elongate fastening means inserted lengthwise into the openings defined by said looped ends to hold the looped ends contiguous to one another and secure the sheet of material in folded relationship about said adjusting straps.

5,600,856
TOILET BLOCKAGE REMOVER
Kyung T. Kang, 1616 Victory Blvd., Suite 103, Glendale, Calif. 91201
Filed Oct. 11, 1995, Ser. No. 541,149
Int. Cl.[6] E03D *9/00*
U.S. Cl. 4—255.01 **14 Claims**



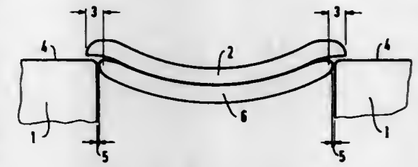
1. A toilet blockage remover comprising:
a) a soft pad with an upper face and a lower face having a cutout through the soft pad forming a thru-hole of the soft pad;
b) a toilet bowl cover with a top side and a bottom side having a cutout through the toilet bowl cover forming a thru-hole of the toilet bowl cover, wherein the upper face of the soft pad is attached to the bottom side of the toilet bowl cover so that the thru-hole of the cover substantially overlaps with the thru-hole of the soft pad, and wherein the soft pad is made of substantially softer material than the toilet bowl cover wherein the toilet blockage remover adapted to be placed over a mouth of a toilet opening with the lower face of the soft pad completely covering the mouth of the toilet opening such that a substantial seal of air tightness is created between the mouth of the toilet opening and the lower face of the soft pad; and
c) a pump having an inner wall, an outer wall, and a rim wherein the rim of the pump is attached to the top side of the toilet seat cover so the pump completely covers over the cutout of the toilet bowl cover creating a cavity with a cavity opening due to the thru-hole of the cover and the thru-hole of the soft pad.

5,600,857
VEHICLE FOR CARRYING A DISABLED PERSON
Steve Heilmann, 12985 McCourtney, Grass Valley, Calif. 95949
Filed Nov. 9, 1994, Ser. No. 336,874
Int. Cl.[6] A61G *7/08*
U.S. Cl. 5—81.1 R **11 Claims**



1. A vehicle for carrying a disabled person along a surface: comprising:
a. a base member;
b. a torso support linked to said base member and extending outwardly therefrom, said torso support lying above said base member;
c. a thigh support positioned intermediate said base member and said torso support, said thigh support including a first portion and a second portion, said first and second portions being positioned relative to each other and intended for constraining the thigh of the disabled person by sandwiching the thigh of the disabled person between said first and second portions, said first portion extending outwardly from said base member intended to contact the front of the thigh of the disabled person, said second portion being positioned to contact the rear of the thigh of the disabled person and positioned rearwardly on the base with respect to the first portion;
d. a kneeling surface, said kneeling surface being supported by said base member; and
e. transporting means linked to said base member for permitting movement of said base member relative to a surface.

5,600,858
PATIENT SUPPORT FOR USE IN A MEDICAL APPARATUS
Ulrich Baer, Neunkirchen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
Filed Apr. 25, 1995, Ser. No. 428,416
Claims priority, application Germany, May 6, 1994, 44 16 202.2
Int. Cl.[6] A61G *13/00*
U.S. Cl. 5—601 **5 Claims**

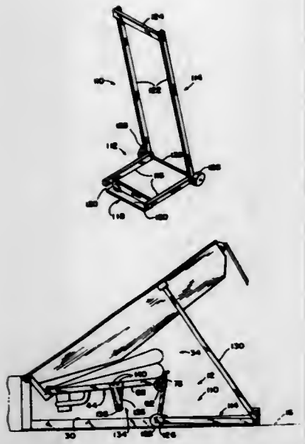


1. A patient support apparatus comprising:
a frame having two substantially horizontally aligned surfaces spaced from each other;
a patient support plate carried by said frame, said patient support plate having longitudinal sides adjoining said frame;
said patient support plate having regions of said longitudinal sides extending in self-supporting, undraped fashion over and at least partially covering said horizontally aligned surfaces of said frame; and
said patient support plate being downwardly curved between said surfaces of said frame.

5,600,859
DOCK LEVELER IN WHICH THE RAMP IS RAISED AND LOWERED USING AN INFLATABLE MEMBER AND METHOD OF USE
Charles H. Hodges, Ruxton, Md.; Martin P. Hageman, Mequon, and Monroe Mulder, Glendale, both of Wis., assignors to Kelley Company, Inc., Milwaukee, Wis.
Filed Jan. 31, 1995, Ser. No. 380,956
Int. Cl.[6] E01D *1/00*
U.S. Cl. 14—71.1 **26 Claims**

1. In a dock leveler including a pivotally mounted ramp movable between a raised position and a lowered position, the improvement comprising:
an inflatable member for moving the ramp to its raised position from its lowered position; and
a support to which the inflatable member is mounted, said support being removably mounted under the ramp, such that said support is removable from below the ramp.

14. For a dock leveler disposed over a supporting surface and including a ramp movable between a raised position and a lowered



position, a selectively actuable lifting device located below the ramp for selectively moving the ramp to its raised position from its lowered position, and a lifting device support located below the ramp, the lifting device having first and second ends, a method of raising the lifting device support, comprising:

pivotably mounting the first end of the lifting device support above the supporting surface;

engaging a lifting tool in an engaging position with the lifting device support adjacent its second end; and

moving the lifting tool to an operative lifting position in which a portion of the lifting tool is disposed between the second end of the lifting device support and the supporting surface for raising the second end of the lifting device support above the supporting surface and for causing pivoting movement of the lifting device support at the pivotable mounting of the first end of the lifting device support.

5,600,860

DILATION JOINT FOR BRIDGES AND VIADUCTS

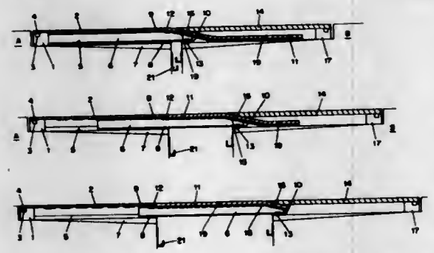
Roberto Marnetto, Rome, Italy, assignor to T.I.S. S.p.A., Rome, Italy

Filed Jun. 24, 1994, Ser. No. 265,442

Claims priority, application Italy, Jun. 24, 1993, 93A000417

Int. Cl.[6] E01D *19/06*

U.S. Cl. 14—73.1 **9 Claims**



1. A dilation joint for passage over a structural opening comprising

a first structure for disposition on a first side of said structural opening, a second structure for disposition on a second side of said structural opening, a deformable transit plate means for disposition above said structural opening, a support means for spanning across said structural opening, said support means resting on both said first structure and said second structure and slidably supporting said deformable transit plate means, a first load transit plate disposed above said first structure, a first recess located between said first load transit plate and said first structure for slidably receiving said support means between said first load transit plate means and said first structure,

a second load transit plate located above said second structure and slidably mounted on said deformable transit plate means, a second recess located between said second load transit plate and said second structure, said deformable transit plate means being slidable within said second recess, said first load transit plate and said second load transit plate lying in a first plane, and said first and second recesses being located substantially in a second plane, wherein said second plane is substantially parallel to said first plane.

5,600,861

CASTING FINISHING APPARATUS

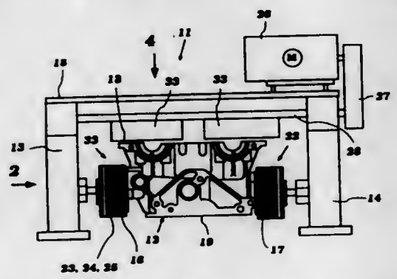
Shoji Saito, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Dec. 15, 1994, Ser. No. 356,661

Claims priority, application Japan, Dec. 15, 1993, 5-315418

Int. Cl.[6] A46B *13/00*

U.S. Cl. 15—88.2 **4 Claims**



1. An apparatus for removing burrs from castings, comprising a fixture adapted to be mounted relative to the casting for relative movement between said fixture and said casting, said fixture comprising a transmission driven by a machine, and a plurality of wire brushes journaled for rotation about parallel axes by said fixture in facing relation to the casting and spring biased relative to the casting for controlling the force applied to the casting by said brushes, said brushes being driven by said transmission, said plurality of wire brushes including at least two adjacent brushes rotated in opposite directions by said transmission.

5,600,862

PIPE SCRAPER

Randy J. Bleske, San Jose, and Joel D. Finegan, Fremont, both of Calif., assignors to Gas Research Institute, Chicago, Ill.

Filed Jan. 4, 1996, Ser. No. 582,698

Int. Cl.[6] F16L *55/18;* **B08B** *9/02*

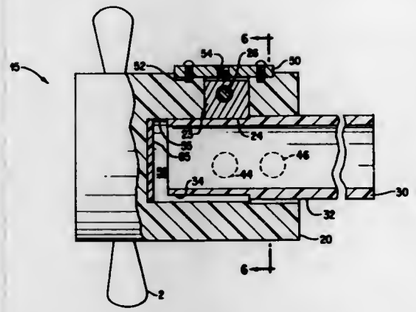
U.S. Cl. 15—104.04 **9 Claims**

1. In an apparatus for scraping an external surface of a pipe, the apparatus having a rigid body, the body having an interior surface defining a longitudinal body bore about a longitudinal axis, the body having an open end for receiving the pipe within the body bore and an opposite closed end, a blade disposed in said body bore and extending along said longitudinal axis, said blade being positioned longitudinally away from the open end and having a scraping edge, the improvement comprising:

said scraping edge of the blade projecting into the body bore, the scraping edge having a leading end and a trailing end and being positioned such that the distance of the leading end is at a longitudinal distance closer to the open end than the distance of the trailing end to said open end;

said interior surface having a first interior surface between said open end and said leading end, and a second interior surface between said trailing end and said closed end, and whereby a first distance measured between said longitudinal axis and said first interior surface is greater than a second distance measured between said longitudinal axis and said second interior surface; and

a bias member mounted within said body for urging the pipe against said interior surface when said pipe is at least partially mounted within the body bore, said bias member further comprising a contact member for contacting and abutting the pipe.



5,600,863

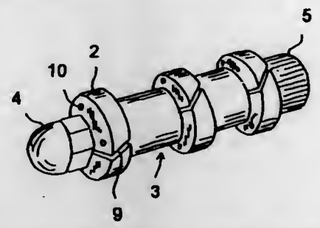
PIPE SCRAPER ASSEMBLY

Ed. Curran, 830 S. Northlake Dr., Hollywood, Fla. 33019

Continuation of Ser. No. 531,939, Sep. 21, 1995, Pat. No. 5,528,790. This application Dec. 29, 1995, Ser. No. 581,311

Int. Cl.[6] B08B *9/04*

U.S. Cl. 15—104.061 **4 Claims**



1. A pipe scraper plug assembly for scraping a pipe interior with a given inner diameter, the pipe scraper plug assembly comprising:

a substantially cylindrical body with a head and a tail end, a plurality of mutually spaced apart, substantially equidiametric rings coaxially and freely rotatably supported on said cylindrical body between said head and said tail end;

said cylindrical body and said rings together forming the pipe scraper plug assembly which is adapted to be propelled through a pipe;

said rings each having a diameter substantially corresponding to a given inner diameter of the pipe to be scraped and further wherein said rings have a plurality of axially oriented bores formed therethrough; and

said cylindrical body comprising a central axle bolt having said tail end integrally formed thereon and having a thread formed opposite said tail end, spacer sleeves coaxially supported on said axle bolt between said rings and spacing said rings apart, and said head being in the form of a bullet head with an internal thread matched to said thread on said axle bolt.

5,600,864

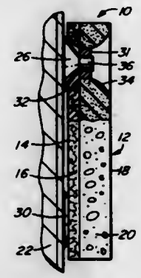
REVERSIBLE BACK SCRUBBER

Lloyd Huber, 1606-13353 108th Avenue, Surrey, British Columbia, Canada

Filed Nov. 13, 1995, Ser. No. 557,387

Int. Cl.[6] A47K *7/02*

U.S. Cl. 15—118 **8 Claims**



1. A back scrubber, comprising:

a reversible cleaning pad having two sides, each said side having a different type of cleaning surface; and

means for selectively and releasably connecting the pad to a wall of a shower stall so that either said side can face outwardly, said means including suction cups.

5,600,865

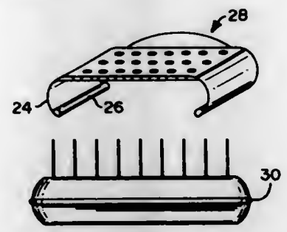
HAIR BRUSH WITH ATTACHED CLEANING FEATURE

Mark D. Morrison, 666 W. End Ave., Apt. 19J, New York, N.Y. 10025

Filed Oct. 11, 1995, Ser. No. 541,145

Int. Cl.[6] A46B *17/06*

U.S. Cl. 15—169 **4 Claims**

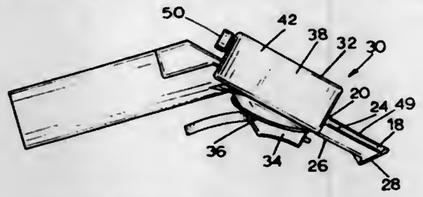


1. A hair brush having a cleaning feature which can be releasably attached to the brush comprising a base section having a multiplicity of parallel bristles extending from a bristle-holding surface thereof, a cleaning plate with two sides one side disposed on said bristle-holding surface and one side facing said bristles when in a first position and having holes through which the parallel bristles extend, said cleaning plate containing a hand-operated means for releasably engaging said cleaning plate from said base section for cleaning purposes, wherein the hand-operated means for releasably engaging said cleaning plate from said base section comprises a four-edge cleaning plate containing a top and bottom edge, the bottom edge configured to be disposed adjacent an end of said base section when the cleaning plate is in the first position and two side edges, including a protrusion on said bottom edge of said cleaning plate characterized in that the protrusion provides a raised

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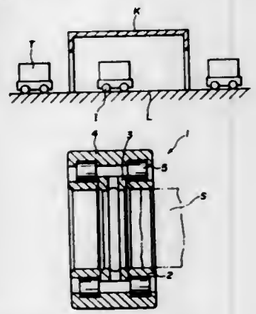
edge on the cleaning plate when said cleaning plate is disposed on the base section of the bristles of the brush, and a means for engaging said cleaning plate to said brush base on the two side edges of the plate.

5,600,866
CLEANING FLUID TANK ASSEMBLY
Robert C. Berfield, Jersey Shore, Pa., assignor to Shop Vac Corporation, Williamsport, Pa.
Filed Dec. 12, 1995, Ser. No. 571,157
Int. Cl.[6] A47L *11/34*
U.S. Cl. 15—322 **9 Claims**



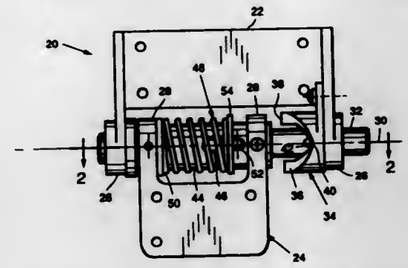
1. A fluid tank assembly, comprising:
a tank having a main body and first and second side walls adapted to matingly engage a first main surface and first and second side surfaces, respectively, of a vacuum cleaner nozzle;
a manually operable spray nozzle mounted on a second main surface of the vacuum cleaner nozzle opposite the first main surface; and
means for interconnecting the tank and the spray nozzle such that fluid stored in the tank is delivered through the interconnecting means and the spray nozzle.

5,600,867
CAR KILN WHEEL HAVING SILICON NITRIDE ROTATING MEMBERS
Tomonori Niwa, and Tetsuji Yogo, both of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan
Filed Sep. 1, 1994, Ser. No. 299,416
Claims priority, application Japan, Sep. 1, 1993, 5-052977 U
Int. Cl.[6] A47B *91/00*; B60B *33/00*
U.S. Cl. 16—45 **15 Claims**



1. A kiln car wheel comprising:
concentric inner and outer rings defining therebetween an annular space; and
a plurality of rotating members installed in said space between said inner and outer rings;
wherein each of said rotating members consists essentially of a sintered body of silicon nitride (Si_3N_4) base ceramic; and wherein each of said rotating members has a finished surface roughness (Ra) greater than 0.05; which is rougher than a mirror finished surface.

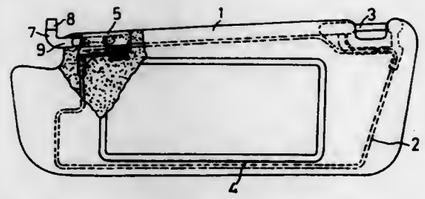
5,600,868
DEPLOYMENT HINGE
Thomas Tourville, and George Romich, both of Goleta, Calif., assignors to Santa Barbara Research Center, Goleta, Calif.
Filed Mar. 7, 1995, Ser. No. 400,164
Int. Cl.[6] E05D *7/00*
U.S. Cl. 16—277 **13 Claims**



1. A hinge system comprising at least a first hinge having:
a first hinge plate having a first hinge plate hinge pin receiver thereon;
a second hinge plate having a second hinge plate hinge pin receiver thereon;
a cylindrical hinge pin extending between the first hinge plate hinge pin receiver and the second hinge plate hinge pin receiver to pivotably join the first hinge plate and the second hinge plate, the hinge pin having a hinge pin axis coincident with a cylindrical axis of the hinge pin and about which the second hinge plate is pivotable with respect to the first hinge plate, the hinge pin being free to move in a direction parallel to the hinge pin axis relative to the second hinge plate;
a cam fixed to the first hinge plate and having a cam surface thereon;
a cam follower pin attached to and extending outwardly from the hinge pin transversely to the hinge pin axis and disposed to ride on the cam surface;
a bushing fixed to the second hinge plate and overlying the hinge pin, the bushing having a slot therein extending parallel to the hinge pin axis;
a coil spring overlying the bushing and having a first end fixed with respect to movement parallel to the hinge pin axis;
a spring driver pin attached to and extending outwardly from the hinge pin transversely to the hinge pin axis and through the slot of the bushing, the spring driver pin being disposed to contact a second end of the spring.

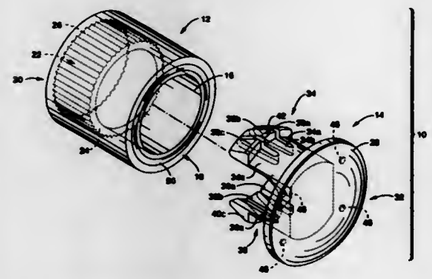
5,600,869
SUNVISOR HINGE FOR AUTOMOBILES
José A. Muñoz, Rubi, Spain, assignor to Fico I.T.M., S.A., Barcelona, Spain
PCT No. PCT/ES94/00121, § 371 Date Aug. 24, 1995, § 102(e) Date Aug. 24, 1995, PCT Pub. No. WO95/14586, PCT Pub. Date Jun. 1, 1995
PCT Filed Nov. 18, 1994, Ser. No. 491,885
Claims priority, application Spain, Nov. 25, 1993, 9302475
Int. Cl.[6] E05C *17/64*; E05D *11/08*
U.S. Cl. 16—342 **9 Claims**

1. A sunvisor for automobiles, comprising a sunvisor body; a metal reinforcing rod which reinforces said sunvisor body and has two ends; a linking body attached to said reinforcing rod; retaining



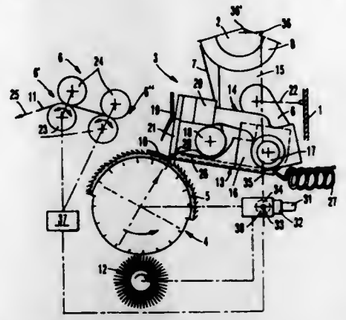
spring housed in said linking body; a sunvisor hinge having a vertical arm attachable to a base member fitted to a structure of a vehicle and a horizontal arm snugly attachable to said retaining spring, housed in said linking body so that the sunvisor body is rotatable about said horizontal arm of said sunvisor hinge, said linking body being formed as an elongated parallelopipedon with two adjoining hollow longitudinal sections including a front section and a rear section separated from one another by a wall, said front section housing said retaining spring and being open at its free end and also having means for snugly receiving both ends of said metal reinforcing rod so that said ends are aligned longitudinally and left facing each other; means for fixing a position of said retaining spring; and means for fixing a position of one of said ends of said metal reinforcing rod, said rear section of said linking body having one of its side faces open and being provided with means for fixing a position of the other of said ends of said metal reinforcing rod, said front and rear sections being sized to receive the horizontal arm of said sunvisor hinge in a snug fit when said linking body and said metal reinforcing rod have been fitted together.

5,600,870
ARTICULATING HINGE ASSEMBLY
Kyle D. Fields, El Dorado Hills, and James P. Dudley, Sacramento, both of Calif., assignors to OP-D-OP, Inc., Roseville, Calif.
Filed Mar. 7, 1996, Ser. No. 614,805
Int. Cl.[6] E05C *17/64*
U.S. Cl. 16—342 **17 Claims**



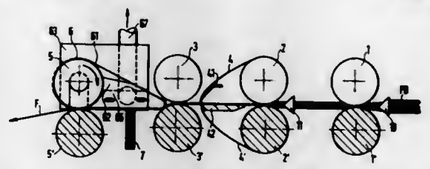
1. An articulating hinge assembly, comprising:
(a) a socket member, said socket member including a bore, said bore including a recessed region, said socket member having a plurality of serrations located in said recessed region of said bore; and
(b) a cap member, said cap member including a plurality of resilient prongs, at least one said prong including an outward facing barb, at least one said barb including an outward facing tooth.

5,600,871
COMBING MACHINE HAVING PNEUMATIC DETACHMENT ASSIST
Gerhard Mandl, Strehlgasse 8, CH-8311 Brütten, and Hans-Peter Melle, Pestalozzistrasse 12, CH-8404 Winterthur, both of Switzerland
Filed Sep. 8, 1995, Ser. No. 526,041
Int. Cl.[6] D01G *19/00*
U.S. Cl. 19—215 **6 Claims**



1. A combing machine comprising:
a pair of detachment rolls and a nipper head spaced apart from the detachment rolls, the nipper head being moveable along a path toward the detachment rolls during a forward stroke of the nipper head and away from the detachment rolls during a return stroke for accomplishing a nip of a fiber tuft; and
pneumatically operating forcing means adjacent a tuft clamping region of said nipper for directing an air blast towards fibers of said tuft to force said tuft in a direction towards said detachment rolls at least at an end of a forward stroke of said nipper head.

5,600,872
DOUBLE-BELT DRAW FRAME
Peter Artzt, Hugo-Wolf-Strasse 16, D-72 766 Reutlingen, and Martin Conzelmann, Schwabstrasse 6/1, D-72 810 Gomaringen, both of Germany
Continuation of Ser. No. 273,850, Jul. 8, 1994, abandoned. This application Nov. 1, 1995, Ser. No. 551,364
Claims priority, application Germany, Jul. 14, 1993, 43 23 472.0
Int. Cl.[6] D01H *5/26*; *5/72*
U.S. Cl. 19—244 **24 Claims**



drawing the fiber composite against the conveying belt over the width of the suction air stream defined through the belt causing the gathering together of the fiber composite; and drawing the suction air stream through the conveying belt to act on the fiber composite supported thereby at a width substantially equal to a desired width of the bundled fiber composite.

5,600,873

FLOATING TETHER CORDS

David G. May, 28 Windsor Dr., Little Rock, Ark. 72209

Continuation-in-part of Ser. No. 694,888, May 2, 1991, Pat. No. 5,235,355, which is a continuation-in-part of Ser. No. 432,619, Nov. 6, 1989, Pat. No. 5,015,085. This application Aug. 6, 1993, Ser. No. 103,185

Int. Cl.[6] A45F *5/00*

U.S. Cl. 24—3.2 **4 Claims**



1. A safety tether cord adapted to extend between a user and a watercraft ignition key for controlling and floating a watercraft ignition key, said tether cord comprising:

an elongated, flexible, looped buoyant body for floating said cord, said body adapted to be coupled to or grasped by said user and comprising:

an elongated, flexible, buoyant core of low-density, closed-cell foam;

an outer, tubular fabric sheath coaxially covering said core for strengthening and coloring said body; and,

a pair of opposing ends;

a string adapted to be coupled to said key; and,

clamp means for coupling said body to said string, said clamp means joining said string and both of said opposing ends.

5,600,874

CENTRAL CLOSURE FOR SHOES

Roland Jungkind, Garmisch-Partenkirchen, Germany, assignor to Puma AG Rudolf Dassler Sport, Germany

PCT No. PCT/DE93/01251, § 371 Date Jul. 25, 1995, § 102(e) Date Jul. 25, 1995, PCT Pub. No. WO94/17686, PCT Pub. Date Aug. 18, 1994

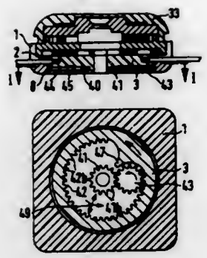
PCT Filed Dec. 27, 1993, Ser. No. 481,515

Claims priority, application Germany, Feb. 8, 1993, 43 03 569.8

Int. Cl.[6] A43B *5/00*; A43C *11/00*

U.S. Cl. 24—68 SK **16 Claims**

1. Central closure for shoes with a rotatably mounted sheave for at least one ropelike tightening element for closing the shoe, in



which the sheave is coupled to a gear by an actuating element and can be driven via the latter and the number of revolutions of the sheave can be limited by a stop, characterized in that both the sheave and an immovable part each comprise a toothing with the same tooth pitch that are effectively connected to one another, are arranged coaxially to one another, but have different diameters, in that a gap is created between the toothing of the sheave and the toothing of the immovable part by the different diameters thereof, a gearwheel that meshes with the two toothings is arranged in a freewheeling manner with the same tooth pitch is located in said gap, and in that at least one stop is located in said gap within a path of travel of the freewheeling gearwheel for limiting the travel thereof.

5,600,875

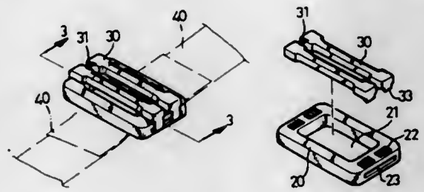
BUCKLE DEVICE FOR TIGHTENING STRAP

Chung-Hsin Chang, No. 68, Sec. 4, Mei Chuan East Road, Taichung, Taiwan

Filed Sep. 5, 1995, Ser. No. 523,268

Int. Cl.[6] A44B *11/06*

U.S. Cl. 24—200 **1 Claim**



1. A buckle device for tightening a strap, said buckle device comprising:

a body including an opening formed therein for threading the strap;

two beams each including hook means extended therefrom for engaging with said body so as to be secured to said body, said beams allowing the strap to be engaged thereon before said beams are secured to said body;

wherein said beams each including a bottom surface having a plurality of ratchet teeth formed thereon, said body including an upper surface having a plurality of ratchet teeth formed thereon for engaging with said ratchet teeth of said beams so as to prevent said beams from moving toward each other.

5,600,876

METHOD OF ASSEMBLY FOR VEHICLE SEAT LATCH INCORPORATING BACKLASH REDUCTION MECHANISM

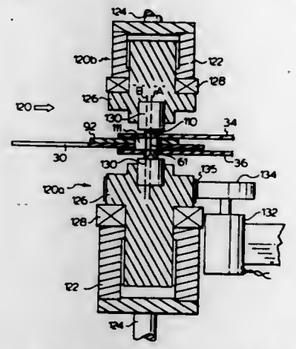
Adolf Notta, Toronto, and Gulam Premji, Mississauga, both of Canada, assignors to Bertrand Faure Ltd., Mississauga, Canada

Division of Ser. No. 15,794, Feb. 10, 1993, abandoned. This application Apr. 13, 1995, Ser. No. 426,559

Claims priority, application Canada, Jul. 31, 1992, 2075103

Int. Cl.[6] B23P *11/00*

U.S. Cl. 29—11 **14 Claims**



1. A method of assembling a backlash reduction mechanism in a selectively latchable vehicle seat hinge assembly having "N" latch members numbered "1" through "N", wherein "N" is a positive integer equal to or greater than 2, and a first hinge plate for mounting said latch members thereon, said method comprising the steps of:

placing said first hinge plate in a jig;

operatively positioning a common pivot pin on said first hinge plate;

mounting an eccentrically operative rotatably adjustable backlash reduction means on said first hinge plate in rotatable relation thereto;

operatively mounting said latch members "1" through "N" on said first hinge plate such that said latch members are positioned seriatim with respect to one another in order "1" through "N", so as to interconnect with one another and be movably operative with respect to one another;

rotationally adjusting said eccentrically operative rotatably adjustable backlash reduction means to an optimized position so as to frictionally interact with said latch member "1" such that said latch member "1" is moved generally toward the latch member "2" thereby to cause selective reduction in the amount of backlash between said latch member "1" and said latch member "2" and subsequently between other juxtaposed ones of said latch members; and,

fastening a plurality of connecting members so as operatively secure said "N" latch members and fastening said eccentrically operative rotatably adjustable backlash reduction means to said first hinge plate such that said optimized position is retained.

5,600,877

METHOD FOR MANUFACTURING AN ELECTRONIC COMPONENT

Toshiaki Sugimora; Shigeo Ojima, and Manabu Sumita, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

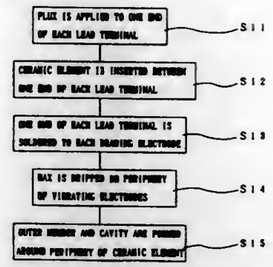
Filed Jan. 30, 1995, Ser. No. 380,299

Claims priority, application Japan, Feb. 3, 1994, 6-033187

Int. Cl.[6] H04R *17/00;19/00;43/00*

U.S. Cl. 29—25.35 **7 Claims**

1. A method for manufacturing an electronic component having an electronic element, a lead terminal soldered to said electronic



element, and an outer member formed around a periphery of said electronic element, comprising:

a step of applying a flux containing an activator of nonionic halogen group to at least one of said electronic element and said lead terminal at a portion to be soldered;

a step of soldering said electronic element and said lead terminal to each other;

a step of applying an outer resin around the periphery of said electronic element;

a step of absorbing a residual flux into said outer resin; and

a step of forming said outer member by hardening said outer resin.

5,600,878

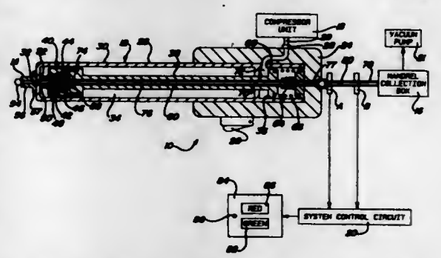
MANDREL STEM LENGTH MEASUREMENT SYSTEM FOR USE WITH BLIND RIVET SETTING TOOL

Darren S. Byrne, Naugatuck, and William E. O'Connor, Waterton, both of Conn., assignors to Emhart Inc., Newark, Del.

Filed Apr. 20, 1995, Ser. No. 426,877

Int. Cl.[6] B21J *15/28*

U.S. Cl. 29—243.525 **28 Claims**



1. A system for setting a blind rivet and for evaluating the acceptability of the set, the rivet being of the type having a frangible tubular body and an elongated mandrel that includes an enlarged head and a stem extending rearwardly of the head and through said frangible tubular body, said system comprising:

a blind rivet setting tool, said tool including a rivet pulling head for gripping and pulling said stem of said mandrel, said tool including a channel between said rivet pulling head and a point external of said tool for passage of the spent mandrel stem;

a mandrel stem collection box for receiving and holding spent mandrel stems;

a collection tube connecting said blind rivet setting tool and said mandrel stem collection box such that said spent stem passes from said blind rivet setting tool to said mandrel collection box through said collection tube;

a first sensor provided on said collection tube for sensing the bypassage of said mandrel stem, said first sensor being adapted to produce an output signal related to said bypassage of said stem;

a second sensor provided on said collection tube adjacent said first sensor for sensing the bypassage of said mandrel stem, said second sensor being adapted to produce an output signal related to said bypassage of said stem; and

a control circuit associated with said sensors, said control circuit having circuitry to:

a) receive said output signal from said first sensor;

b) receive said output signal from said second sensor;

c) calculate the velocity of said bypassing stem from said output signals of said first and second sensors;

d) determine from one of said sensors the total time taken for said mandrel stem to pass said one of said sensors;

e) use the velocity and said determined total time to calculate the actual length of said stem;

f) compare said determined actual stem length of said mandrel stem with a predetermined desired length.

5,600,879

PROCESS AND APPARATUS FOR PEELING OUTER TUBES FROM SPENT NAS CELLS BY CUTTING AND APPLYING AN IMPACT FORCE

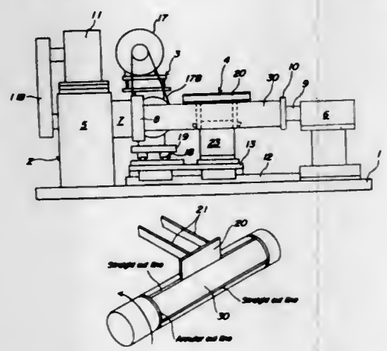
Tomonori Tsuchimoto, Hashima-Gun; Yoshihiko Kurashima, Nagoya, and Katsuichi Iwata, Ichinomiya, all of Japan, assignors to NGK Insulators, Ltd., Japan

Filed May 26, 1995, Ser. No. 451,736

Claims priority, application Japan, Jul. 25, 1994, 6-172548; Apr. 13, 1995, 7-087979

Int. Cl.[6] B23B *5/14*; **B23P** *23/02*

U.S. Cl. 29—403.3 **6 Claims**



1. A process for peeling an outer tube of a spent NaS cell, comprising the steps of:

(1) holding opposite end portions of the spent NaS cell;

(2) forming annular cut lines in the outer tube of the cell at opposite end portions thereof;

(3) forming a straight cut line in the outer tube to connect the annular cut lines;

(4) inserting a chisel into the straight cut line; and

(5) peeling the outer tube of the spent NaS cell by applying an impact force upon the outer tube of the cell through the chisel.

5,600,880

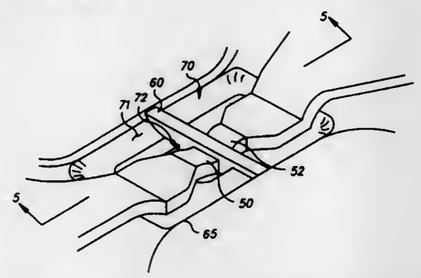
PROCESS FOR FORMING VERTICAL GAP IN A THIN FILM MAGNETIC TRANSDUCER

Hugo A. E. Santini, San Jose, and Clinton D. Snyder, Los Gatos, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 207,971, Mar. 7, 1994, abandoned. This application May 12, 1995, Ser. No. 440,513

Int. Cl.[6] G11B *5/42*

U.S. Cl. 29—603.14 **17 Claims**



1. A method for fabricating a magnetic transducer comprising the steps of:

providing a substrate having a release layer formed on a surface thereof, said substrate and release layer defining a pit having sidewalls;

forming a vertical wall of a nonmagnetic material in said pit with its ends supported by the sidewalls of the pit;

forming first and second pole pieces of a magnetic material, said pole pieces each having a pole tip disposed in the pit in opposing relationship to each other separated by said vertical wall disposed therebetween defining a magnetic gap;

magnetically coupling the pole pieces; and

separating the substrate from the magnetic transducer formed thereon by removing the release layer.

5,600,881

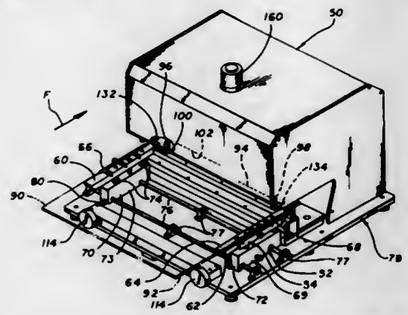
CONNECTOR SEATING PRESS

Christopher D. Wanha, Costa Mesa, Calif., assignor to ITT Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 60,665, May 13, 1993, Pat. No. 5,368,802. This application Nov. 17, 1994, Ser. No. 340,786

Int. Cl.[6] B23P *19/02*; **H01R** *43/00*; **H05K** *3/32*

U.S. Cl. 29—741 **7 Claims**



1. A press apparatus which has a base and a ram that is forcefully movable on said base, for seating a connector on a circuit board by pressing projections of the connector into board holes of the circuit board, comprising:

a support apparatus mounted on said base for supporting said circuit board with said connector thereon;

upper and lower tooling arrangements with a first of them mounted on said base and with a second of them mounted on said ram and movable by the ram toward the first of them;

said support apparatus includes a platform device positioned on said support apparatus to hold said circuit board and connector thereon vertically between said tooling arrangements, and with said platform device being vertically movable with respect to said support apparatus and said support apparatus including a vertical guide device which guides said platform device in vertical movement on said base.

5,600,882

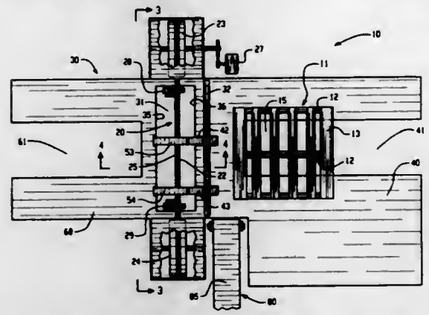
PALLET DISMANTLING MACHINE

Timothy R. Beane, 35560 E. Royalton Rd., Grafton, Ohio 44044

Filed Feb. 9, 1995, Ser. No. 385,907

Int. Cl.[6] B23P *19/00*

U.S. Cl. 29—822 **10 Claims**



1. Apparatus for dismantling a pallet having a plurality of spaced, generally parallel stringers and upper and lower deckboards extending laterally across the stringers to define open-ended spaces between the stringers, comprising:

a table assembly defining a working surface upon which a pallet can be placed and moved in a direction of travel parallel to said stringers;

a band saw assembly including a cutting span spaced above said working surface and extending angularly relative to said direction of travel;

said cutting span being adapted to engage and cut said pallet at interfaces between deckboards and stringers,

an opening in said table surface located to receive deckboards cut free of the stringers by said cutting span whereby said freed deckboards fall downwardly through said opening;

deckboard guide means adapted to extend into said open-ended spaces when said pallet is moved in said direction of travel, said guide means being adapted to engage the top of a deckboard as said pallet is moved in said direction of travel; and

at least two arms extending parallel to said direction of travel, said arms having upstream ends and downstream ends and being pivotally connected at their upstream ends to said table, the downstream ends of said arms being adapted to engage the bottom surface of said deckboard as said pallet is moved in said direction of travel;

and means biasing said arms upwardly to urge the downstream ends of said arms into lifting engagement with said deckboard to raise said deckboard upwardly into engagement with said deckboard guide means whereby said deckboard is engaged by and between said deckboard guide means and said arms;

whereby said pallet is positioned, during movement in said direction of travel, such that the interface between said stringers and a respective deckboard is in alignment with said cutting span.

5,600,883

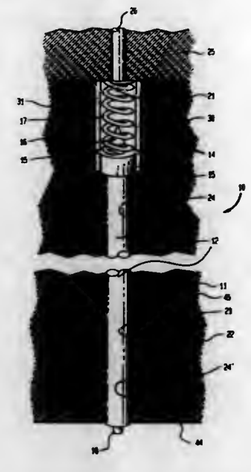
METHOD OF TIP FORMATION FOR SPRING PROBE WITH PILOTED AND HEADED CONTACT

Louis H. Faure, Poughkeepsie, and Terence W. Spoor, Marlboro, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 175,336, Dec. 29, 1993, which is a division of Ser. No. 922,588, Jul. 30, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 461,899

Int. Cl.[6] H01R *43/00*

U.S. Cl. 29—846 **8 Claims**



1. A method of manufacture of a test apparatus, said test apparatus including a support member with an array of probe cylinders and a corresponding array of test probes,

said support member having a surface and containing said array of probe cylinders each of which extends to said surface and each of said probe cylinder having an end at said surface,

said array of test probes each having an end, said array of test probes being located in said probe cylinders, said test apparatus being made by a series of steps in the sequence as follows:

inserting each said test probe of said plurality of probes into a corresponding cylinder in said array of probe cylinders in said member with the end of each said probe having its end extending below said end of said cylinder in a fully extended position,

each of said probes located within said cylinders having a proximal end and a distal end with the testing tip of each of said probes being located on said proximal end,

locating an electrically conductive compression spring within each of said cylinders, with the proximal end thereof secured to said distal end of said test probes,

providing said probes with an enlarged head at the distal end thereof with at least one longitudinal rib projecting from the periphery of said head,

providing said hollow cylinders with at least one longitudinal slot mating with said rib on said head so said probes are reciprocable within said hollow cylinders and said rib is simultaneously reciprocable with each of said probes in said slot

moving said member into a retraction position in which said probes are partially retracted within said cylinders with said ends of each of said probes extending beyond said surface by a smaller distance than in said fully extended position,

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the ends of each of said probes being planarized to provide a smooth surface of said member with said probes comprising planarized probes flush with said surface of said member,

applying a layer of resist to cover said surface of said member and said planarized ends of each of said probes,

exposing said resist to a pattern through a high precision mask with a ring formed in said resist centered upon the lower end of each of said probes,

forming a ring at said lower end of each of said planarized probes in said resist after forming said ring in said resist by etching said end through said ring in said resist to form a tip thereon, and

then releasing said member from said retraction position.

5,600,884

METHOD OF MANUFACTURING ELECTRICAL CONNECTING MEMBER

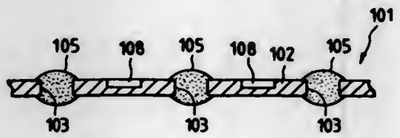
Hiroshi Kondo; Tetsuo Yoshizawa, both of Yokohama; Toyohide Miyazaki, Ibaraki-ken; Yoshimi Terayama, Odawara; Takashi Sakaki, Tokyo; Yuichi Ikegami, Osaka; Takahiro Okabayashi, Tokyo; Kazuo Kondo, Tokyo; Yoichi Tamura, Tokyo, and Yasuo Nakatsuka, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, and Sumitomo Metal Industries, Ltd., Osaka, both of Japan

Continuation of Ser. No. 837,932, Feb. 20, 1992, abandoned. This application Dec. 22, 1993, Ser. No. 171,862

Claims priority, application Japan, Feb. 25, 1991, 3-053904; Feb. 25, 1991, 3-059306; Mar. 9, 1991, 3-069091; Mar. 9, 1991, 3-069092

Int. Cl.[6] H01K *3/10*

U.S. Cl. 29—852 **10 Claims**



1. A method of manufacturing an electrical connecting member having a holding member formed of an electrically insulative materials and a plurality of electrically conductive members provided in a mutually insulated state in the holding member, one end of each of the electrically conductive members being exposed on one surface of the holding member and the other end of each of the electrically conductive members being exposed on the other surface of the holding member, said method comprising the steps of:

providing photosensitive resin as the holding member on a base body;

exposing the photosensitive resin to light by the use of a mask provided with light intercepting portions, light transmitting portions and light attenuating portions;

developing the exposed photosensitive resin to thereby form apertures in which portions of the base body are exposed in the photosensitive resin and concave holes;

removing the portions of the base body exposed in the apertures by etching to thereby form recesses;

filling the apertures and the recesses with a material for the electrically conductive members and leaving the concave holes empty; and

removing the base body.

5,600,885

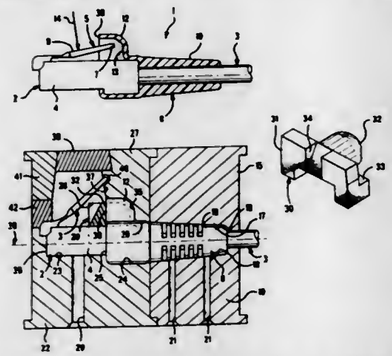
METHOD OF FABRICATING AN OVERMOLD ONTO AN ELECTRICAL CABLE ASSEMBLY TERMINATED TO A CABLE

Richard C. Schroepfer, Thompsontown, and Edward E. Knisely, Jr., Middletown, both of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Division of Ser. No. 310,553, Sep. 22, 1994, Pat. No. 5,462,457. This application May 18, 1995, Ser. No. 444,350

Int. Cl.[6] H01R *43/00;43/24;13/405*

U.S. Cl. 29—883 **6 Claims**



1. A method of fabricating an overmold onto an electrical cable assembly terminated to an electrical cable, comprising the steps of:

deflecting a resiliently deflectable latch on the cable assembly toward an insulating housing of the cable assembly,

covering the latch while deflected with a mold core pin,

molding an insulating overmold over the cable and over a rear portion of the housing and over the mold core pin, and

withdrawing the mold core pin from a pocket formed by the overmold, while leaving at least a portion of the latch within the pocket.

5,600,886

METHOD OF MAKING VORTEX FLOW BLOWER AND VANE WHEEL THEREFOR

Hiroshi Asabuki; Masayuki Fujio, both of Sakura; Takashi Watanabe, Narita; Susumu Yamazaki, Tsuchiura, and Fumiaki Ishida, Narashino, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

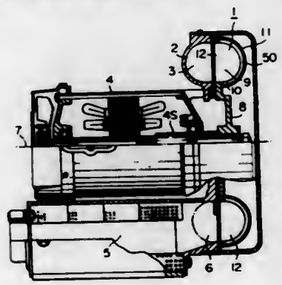
Division of Ser. No. 208,109, Feb. 22, 1994, Pat. No. 5,487,639. This application Jun. 6, 1995, Ser. No. 470,455

Claims priority, application Japan, Feb. 23, 1993, 5-033516; Mar. 17, 1993, 5-056718

Int. Cl.[6] B23P *15/00*

U.S. Cl. 29—889.3 **2 Claims**

1. A method for producing a vane wheel driven by a rotational



shaft and having vortex flow chambers which open in a direction substantially parallel to the shaft to receive the gas, to urge the gas in a substantially circumferential direction of the vane wheel according to a rotation of the shaft, and to generate and accelerate a vortex flow of the gas, comprising the steps of:

forming a vane member including a hub through which the vane member is connected to the shaft, a plurality of vanes each of which extends integrally from the hub in a substantially radial direction of the vane wheel for urging the gas in the substantially circumferential direction of the vane wheel, and a vortex flow chamber wall extending integrally from both of the hub and each of the vanes, and

forming the vortex flow chambers with a cover, the vortex flow chamber wall and the vanes by fixing the cover to the vortex flow chamber wall to keep a contact between the cover and the vortex flow chamber wall.

5,600,887

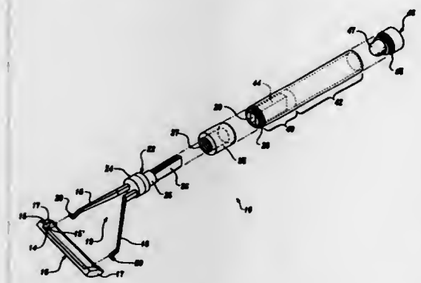
FLEXIBLE EASY-RINSING RAZOR

Brad Olson, 1003 Stitch Rd., Lake Stevens, Wash. 98258

Filed May 26, 1995, Ser. No. 451,755

Int. Cl.[6] B26B *19/44;21/14*

U.S. Cl. 30—41.5 **23 Claims**



1. A razor capable of receiving a stream of water in order to facilitate easy rinsing, the razor comprising:

(a) a blade cartridge having opposing ends;

(b) an elongated handle having a first end and a second end;

(c) a neck adjustably mounted to the first end of the handle, the neck having:

(i) a collar;

(ii) a flexible stem coupled to the collar; and

(iii) a threaded pin coupled to the flexible stem, the threaded pin extending into the first end of the handle; and

(d) a pair of mounting arms extending from the neck, the mounting arms securing the ends of the blade cartridge.

5,600,888

ELECTRIC RAZOR

Klaus Becker, Mühlhausen, Germany, assignor to Payer Elektroprodukte Gesellschaft m.b.H., Graz, Austria

PCT No. PCT/AT93/00023, § 371 Date Nov. 16, 1994, § 102(e) Date Nov. 16, 1994, PCT Pub. No. WO93/15883, PCT Pub. Date Aug. 19, 1993

PCT Filed Feb. 17, 1993, Ser. No. 290,768

Claims priority, application Austria, Feb. 17, 1992, 269/92

Int. Cl.[6] B26B *19/02*

U.S. Cl. 30—41.7 **8 Claims**

1. An electric razor comprising:

a cutter foil and a cutter head which interacts with the cutter foil and is driven by an electric motor; and,



an indicating device to recommend cutter foil replacement, said indicating device being connected to a device for detecting the load on the cutter foil and to an evaluation circuit.

5,600,889

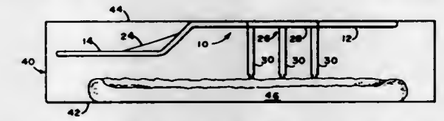
DETACHABLE LID SUPPORT WITHIN A FOOD SERVER

Irene F. Marotta, 460 Ridge Rd., Webster, N.Y. 14580

Filed Oct. 25, 1995, Ser. No. 548,055

Int. Cl.[6] A47G *21/04;* **B65D** *85/36*

U.S. Cl. 30—142 **20 Claims**



1. A food serving utensil for assisting the serving of a food article, comprising:

a blade, a handle attached to the blade, the handle interconnected to the blade by an upstanding portion, and a detachable spacer releasably connected to one of the blade and the handle, the detachable spacer including at least one leg extending in a vertical direction a sufficient distance such that upon one of the handle and the blade being adjacent the food article, the leg extending from the one of the handle and the blade prevents an adjacent portion of the one of the blade and the handle from contacting the food article; and

the blade includes an aperture within the periphery of the blade, the aperture sized to frictionally retain a portion of the spacer.

5,600,890

HAIR-CUTTING APPARATUS HAVING A TOOTHED CUTTING DEVICE AND METHOD OF MANUFACTURING A CUTTER FOR A TOOTHED CUTTING DEVICE OF SUCH APPARATUS

Stephan Leitner, Kappel, and Josef Ribitsch, Ferlach, both of Austria, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 9, 1994, Ser. No. 336,616

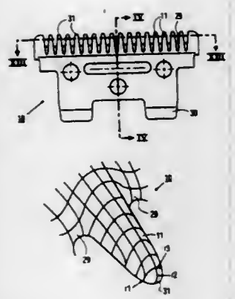
Claims priority, application Austria, Nov. 10, 1993, A 2283/93

Int. Cl.[6] B26B *19/06*

U.S. Cl. 30—223 **16 Claims**

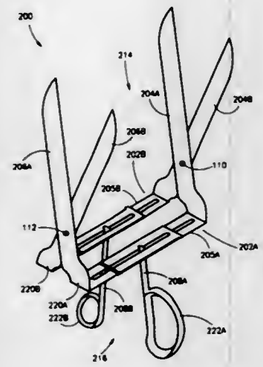
1. A hair-cutting apparatus having a toothed cutting device comprising a stationary cutter with at least one row of cutter teeth and a reciprocatingly drivable cutter with at least one row of cutter teeth, the cutter teeth having shearing faces and the two cutters being in engagement with one another by at least a part of the shearing faces of their cutter teeth, and the cutter teeth of at least one of the two cutters being rounded at their distal ends except for the area of their shearing faces, characterized in at least one cutter

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has cutter teeth which are wholly rounded at their distal ends and are in addition wholly rounded over their entire contour except for the area of their shearing faces.

5,600,891
POLY-SCISSORS DEVICE
Daniel Orgal, Bayit 49, 90855 Shoeva, Israel
Filed Oct. 5, 1995, Ser. No. 539,796
Int. Cl.[6] B26B *13/00*
U.S. Cl. 30—226 **12 Claims**



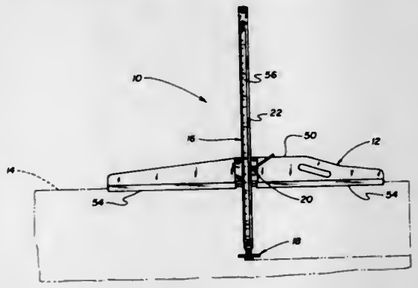
1. A poly-scissors device capable of simultaneously cutting at least two cuts in a medium, which cuts are at a constant distance from one another along their length, comprising a first element and a second element, wherein:

(a) each of said first and said second elements includes a spacer, a first cutting end, a second cutting end, and an operating end, said first and said second cutting ends connected to said spacer in a substantially parallel and spaced apart orientation and, said operating end connected to said spacer in an opposite direction relative to said first and said second cutting ends; and

(b) said first cutting end of said first element is pivotally connected to said first cutting end of said second element, and said second cutting end of said first element is pivotally connected to said second cutting end of said second element.

5,600,892
DUAL SIDE DRYWALL PANEL CUTTER
Glenn H. Peugh, 1021 Glendale Dr., Arcata, Calif. 95521; David A. Daniel, 3441 G St., Eureka, Calif. 95503, and Gary O. Pritchett, 2353 Fickle Hill Rd., Arcata, Calif. 95521
Filed Jun. 1, 1995, Ser. No. 457,120
Int. Cl.[6] B26B *29/06*
U.S. Cl. 30—292 **1 Claim**

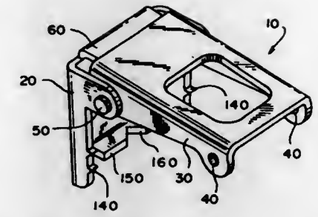
1. A dual side drywall panel cutter comprising:



a guide means for positioning along an exposed edge of a drywall panel, the guide means comprises a substantially planar handle member having a handle aperture directed therethrough permitting passage of digits of a human hand through the planar handle member to facilitate manual manipulation thereof, the planar handle member shaped so as to define a straight lower edge thereof positionable into abutting engagement with an exposed edge of the drywall panel, the guide means further comprises at least one guide channel secured to the straight lower edge of the planar handle member for maintaining an engagement of the lower planar handle member against the exposed edge of the drywall panel, the guide channel removably coupled to the lower edge of the guide means;

a support assembly adjustably coupled to the guide means and extending downwardly therefrom so as to be positionable along opposed faces of the drywall panel, the support assembly comprises a first support column slidably mounted to a front face of the guide means, a second support column slidably mounted to a rear face of the guide means, a first pair of flanges secured to the front face of the guide means in a substantially spaced and parallel orientation, with the first support column extending therebetween, a second pair of flanges secured to the rear face of the guide means in a substantially spaced and parallel orientation, with the second support column extending therebetween, the support columns joined together at upper ends thereof by at least one upper fastener directed therebetween, a spacing block interposed between the upper ends of the support columns so as to position the support columns a predetermined distance apart to accommodate the guide means therebetween, the support assembly movably mounted relative to the guide means, a clamp means for selectively securing a position of the support assembly relative to the guide means, the clamp means comprises a lock lever pivotally mounted relative to the guide means, a cam fixedly secured to the lock lever and positioned for engagement against an individual one of the pair of flanges such that rotation of the lock lever will engage the cam to bias the pair of flanges together and clamp the respective support column therebetween;

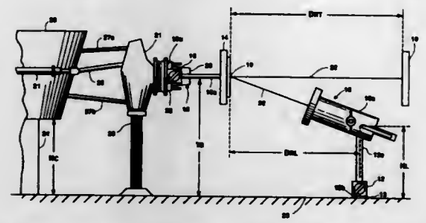
cutting means secured to lower ends of the support assembly for engaging and cutting opposed faces of the drywall panel, the cutting means comprises a first blade mounting bracket secured to a lower end of the first support column, a second blade mounting bracket secured to a lower end of the second support column, a first cutting blade secured to the first blade mounting bracket and positioned for engagement against a front face of the drywall panel, a second cutting blade secured to the second blade mounting bracket and oriented so as to project towards the first cutting blade so as to be positioned for engagement with a rear face of the drywall panel, the cutting blades adjustably coupled to the respective mounting brackets such that a distance therebetween can be selectively varied, the cutting means further comprises a first guide wheel rotatably mounted to the first blade mounting bracket and positioned for rolling engagement with the front face of the drywall panel, a second guide wheel rotatably mounted to the second blade mounting bracket so as to be positioned for rolling engagement with a rear face of the drywall panel.



a book member having a substantially planar surface defining a second plane and two supporting sides extending in a substantially perpendicular direction from the planar surface; and

means for pivotably connecting the ring member to the hook member, wherein the hook member pivots between a first extended position in which the planar surface of the hook member is substantially perpendicular to the first plane of the ring member, and a second retracted position in which the planar surface of the hook member is substantially parallel to the first plane of the ring member, wherein the hook member further comprises a contacting surface extending from the planar surface for contacting an edge of an article when using said tape measure, the contacting surface having an edge disposed between the supporting sides, the edge of the contacting surface and the edges of the supporting sides being substantially coplanar.

5,600,893
PROCESS AND SYSTEM FOR MEASURING ALIGNMENT OF AUTOMOTIVE VEHICLE SUSPENSION
Robert Phillips, 17 N. Cross Rd., Stantsburg, N.Y. 12580
Filed Jul. 19, 1995, Ser. No. 503,977
Int. Cl.[6] G01B *11/275*
U.S. Cl. 33—203.18 **19 Claims**



1. A method of aligning a suspension of an automotive vehicle, the vehicle having a chassis secured at a predetermined height above the ground, a steering shaft secured to prevent movement thereof, and a hub, said method comprising the steps of:

a) providing a suspension measurement system comprising a light source, a reflector and a target;

b) adjusting the height of the suspension to a height above the ground that is substantially equal to a radius of a tire used with the suspension;

c) removably attaching said reflector to the hub, said reflector being vertically oriented and substantially perpendicular to the hub central axis;

d) positioning the target a predetermined distance from said reflector;

e) directing a light beam to the center of said reflector for reflection onto said target, said light source being positioned such that the reflected beam of light is substantially coplanar with the directed light beam;

f) incrementally adjusting the height of the suspension in relation to an initial height and applying indicia to locations on said target to which the reflected light beam moves, each indicia corresponding to a height of the suspension that is above or below the initial height; and

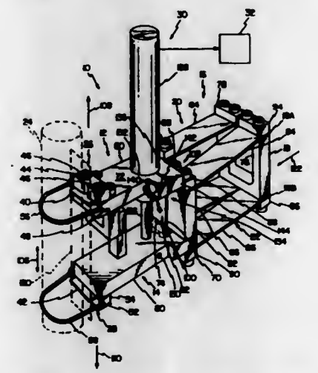
g) measuring a distance in a first orientation between a pair of indicia having the greatest first orientation distance therebetween, in comparison to any other pairs of indicia.

5,600,894
HOOKING DEVICE FOR A MEASURING TAPE
William C. Blackman, Raleigh; Edgar T. Gilliam, Franklinton, and William H. Silvester, Cary, all of N.C., assignors to Cooper Industries, Houston, Tex.
Filed Jun. 7, 1995, Ser. No. 478,759
Int. Cl.[6] G01B *3/10*
U.S. Cl. 33—758 **17 Claims**

1. A hooking device for a tape measure, comprising:

a ring member for attachment to a measuring tape of the tape measure, the ring member defining a first plane;

5,600,895
EXTENSOMETER
Richard A. Meyer, Carver, and Scott P. Iverslie, Chanhassen, both of Minn., assignors to MTS Systems Corporation, Eden Prairie, Minn.
Continuation of Ser. No. 310,854, Sep. 22, 1994, abandoned. This application Mar. 14, 1996, Ser. No. 615,794
Int. Cl.[6] G01B *5/30;7/16*
U.S. Cl. 33—789 **21 Claims**



1. An extensometer for measuring a change in distance between two points on a surface of a test specimen, comprising:

a first arm having a first end and a second end;

a second arm having a first end and a second end;

means at the first ends of each of the arms for engaging a specimen to be tested;

a support member;

first flexure means connecting the second end of the first arm to the support member, the first flexure means allowing the first arm to move relative to the support member;

second flexure means connecting the second end of the second arm to the support member, the second flexure means being

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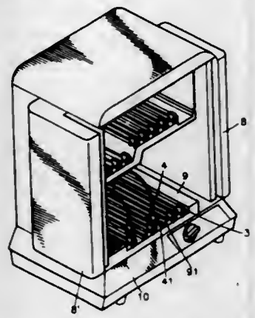
spaced-apart from the first flexure means and allowing the second arm to move relative to the support member; and means for measuring a change in distance between the first and second arms.

5,600,896

APPARATUS FOR DRYING AND STERILIZING KITCHEN UTENSILS

Yeong S. Lin, No. 16, Wu Chyuan 5 Rd., Wuku Ind'l Park, Taipei Hsien, Taiwan

Filed Jul. 10, 1995, Ser. No. 439,342
Int. Cl.[6] F26B *19/00*
U.S. Cl. 34—60 **2 Claims**



1. An apparatus for drying kitchen utensils, comprising a first axial compression means, a second axial compression means, a first roller means, a second roller means, a plurality of clamps, a plurality of tracks, a plurality of supporting pipes, a plurality of air conduits, an ozone generator, and a hot air recycling pipe, wherein:

said first and second axial compression means are respectively mounted in respective holes on two swinging door panels on the apparatus at two opposite ends, each axial compression means comprising a hollow circular base, a cap, and a compression spring connected between said circular base and said cap, said circular base having a chamber, which receives said compression spring, an outward flange at one end, and a hooked portion at an opposite end, said cap having a dome, a hooked portion moved relative to the hooked portion of said circular base, and and outward flange around the periphery;

said first and second roller means are respectively mounted in a through hole in a first sliding groove or a second sliding groove on the apparatus base of the apparatus, each roller means comprising a round wheel and a headed split bolt, said round wheel having a countersunk hole at the center, said headed split bolt being inserted through the countersunk hole on said round wheel and the through hole on the respective sliding groove, having a head at one end received within said countersunk hole and a split hook at an opposite end disposed outside the respective through hole and engaged with the bottom side of the apparatus base of the apparatus for permitting said round wheel to be turned round said headed split bolt;

said clamps are respectively made of rectangular shape, each having a bottom groove engaged with a toothed top side on one longitudinal track, which is disposed between two bars on a rack, which is mounted inside the apparatus for carrying kitchen utensils to be dried, and two bottom hooks hooked on the bottom side of the respective longitudinal track;

a plurality of supporting tubes are respectively connected to respective stub tubs on said rack, each having a longitudinal center through hole communicated with one stub tub, and a plurality of projecting strips around the longitudinal center through hole at one end remote from said rack for supporting a container for drying;

said air conduits are connected with one another and formed into a manifold for guiding ozone from said ozone generator to said track;

said hot air recycling pipe is mounted on the apparatus base of the apparatus at a back side for collecting hot ozone being passed through said rack for recycling;

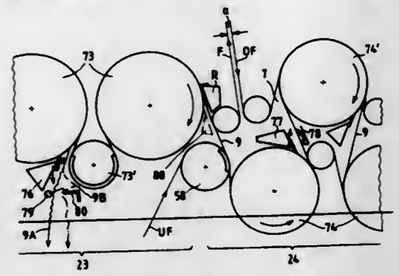
said first sliding groove and said second sliding groove each having a plurality of recessed holes for the positioning of said first and second axial compression means when said door panels are turned between the close position and the open position.

5,600,897

MIXED DRYER SECTION INCLUDING SINGLE-TIER AND DOUBLE-TIER DRYING GROUPS WITH AUTOMATIC ROPELESS THREADING

Hans-Peter Sollinger, Heidenheim; Gerhard Koltschke, Steinheim; Hans J. Walz; Peter Kahl, both of Heidenheim, and Wolfgang Mueller, Giengen, all of Germany, assignors to J.M. Voith GmbH, Germany

Continuation-in-part of Ser. No. 102,766, Aug. 6, 1993, abandoned. This application Nov. 12, 1993, Ser. No. 151,255
Claims priority, application Germany, Aug. 25, 1993, 43 28 554.6
Int. Cl.[6] D06F *58/00*; F26B *11/02*
U.S. Cl. 34—115 **70 Claims**



33. A method for threading a tail of a machine-wide travelling paper web, into a dryer section for drying said web by means of a plurality of successively arranged dryer groups, each group including a plurality of heatable dryer cylinders which come into contact with the paper web, the method comprising:

conducting said tail automatically, by means of a ropeless tail guide means through a first, initial region of the dryer section, wherein at least one of the dryer groups is configured as a single-felt dryer group in which a single endless felt and the paper web travel together meandering alternately over the dryer cylinders and over transfer rolls, and through a second region at an end of the dryer section, downstream of the single-felt dryer group wherein is provided at least one double-felt dryer group in which the paper web travels meandering alternately over upper and lower drying cylinders, with an open draw of paper web being formed between the upper and lower cylinders.

5,600,898

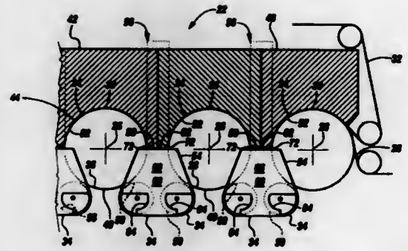
CURL CONTROL BY DRYER AIRCAPS IN TOP FELTED DRYER SECTION

Rajendra D. Deshpande, Rockton, and Jeffrey H. Pulkowski, Roscoe, both of Ill., assignors to Beloit Technologies, Inc., Wilmington, Del.

Filed Sep. 12, 1995, Ser. No. 527,848
Int. Cl.[6] F26B *11/02*
U.S. Cl. 34—116 **5 Claims**

1. A dryer section of a papermaking machine comprising:

a plurality of dryer rolls, wherein each dryer roll defines an axis of rotation, and wherein the axes of rotation of the plurality of dryer rolls are arrayed in substantially a single plane, and wherein each dryer roll has an uppermost zenith and a lowermost nadir:



at least two turning rolls between each of said plurality of dryer rolls, wherein said turning rolls have axes of rotation positioned below the common plane containing the dryer roll axes of rotation;

at least one foraminous felt wrapped around said plurality of dryer rolls and turning rolls wherein the felt wraps each zenith point of each dryer roll and does not wrap the nadir point of any dryer roll;

an air cap positioned above the dryer rolls on the at least a portion of the felt as it overwraps the dryer roll; and

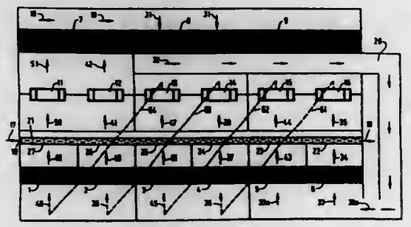
a vacuum box disposed between adjacent dryer rolls and said turning rolls positioned therebetween to prevent fluttering of a paper web as it travels between adjacent dryer rolls.

5,600,899

METHOD AND APPARATUS FOR DRYING SOLID FOODSTUFFS

Martinus P. J. M. Stevens, Beers, and Hubertus G. C. Peeters, Hegelsom, both of Netherlands, assignors to Bakcus Beheer B.V., Netherlands

Filed Oct. 26, 1994, Ser. No. 329,706
Claims priority, application Netherlands, Apr. 23, 1992, 9200740; European Pat. Off., Apr. 22, 1993, 93201172
Int. Cl.[6] F26B *3/00*
U.S. Cl. 34—487 **19 Claims**



1. A method for drying solid foodstuffs, comprising the steps of:

a) supplying the foodstuffs in a substantially flat bed,

b) supplying a relatively cool drying gas,

c) at a first location urging the drying gas to flow through or along the foodstuffs substantially perpendicularly to the direction of the bed,

d) reheating and drying the gas,

e) at a further location spaced from said first location, urging the reheated drying gas to flow through or along the foodstuffs substantially perpendicularly to the direction of the bed, the further location lying upstream of the first location as seen in the direction of supply of the foodstuffs and the temperature of the drying gas being higher at the further location than at the first location,

f) cooling the gas to below ambient temperature and redirecting it to the first location so as to form a closed circuit, and

g) discharging the dried foodstuffs.

10. An apparatus for drying solid foodstuffs, comprising:

a) foodstuff supply means for supplying the foodstuffs in a substantially flat bed,

b) gas supply and cooling means for supplying a drying gas and cooling the gas below ambient temperature,

c) first flow generating means connected in series with said gas supply and cooling means for urging the drying gas to flow through or along the bed substantially perpendicularly to the direction thereof at a first location,

d) reheating means connected in series with the first flow generating means for reheating and drying the gas,

e) further flow generating means located upstream of the first flow generating means as seen in the direction of supply, connected in series with the reheating means and arranged for urging the reheated drying gas to flow through or along the bed substantially perpendicularly to the direction thereof,

f) means for connecting the further flow generating means to the gas supply and cooling means to form a closed circuit, and

g) discharge means connected in series with the supply means for discharging the dried foodstuffs.

5,600,900

VACUUM ASSISTED WEB DRYING SYSTEM

Carl R. Marschke, Phillips, Wis., assignor to Marquip, Inc., Phillips, Wis.

Filed Apr. 19, 1995, Ser. No. 424,994
Int. Cl.[6] F26B *3/32*
U.S. Cl. 34—519 **5 Claims**

1. An apparatus for drying a traveling paper web to one face of which a zone coat of a paper-penetrating liquid-based coating has been applied, said apparatus comprising:

a stationary web supporting surface of high thermal conductivity;

means for moving the web over the surface with the uncoated web face in direct contact with said surface;

means for heating said surface to a generally uniform temperature above the boiling point of the coating liquid; and,

means for drawing a vacuum through said surface to hold the web in uniform contact therewith during drying.

5,600,901

SPIKE CONVERTIBLE SPORT SHOES

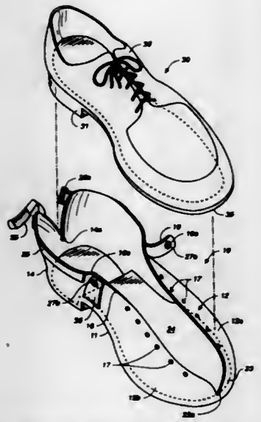
Freddie D. Leonor, 87-712 Mamualiue St., Waianae, Hi. 96792

Filed Aug. 4, 1994, Ser. No. 286,156
Int. Cl.[6] A43B *3/16*
U.S. Cl. 36—7.1 R **1 Claim**

1. An attachment for enveloping a generally flat-soled shoe, the shoe having a non-spiked shoe sole, a non-spiked shoe heel and a shoe upper, said attachment comprising:

a flexible sole and an integral heel portion, each having an array of spikes affixed within a bottom periphery of said flexible sole and said heel portion and depending from said flexible sole and said heel portion;

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an integral clam-shell upper extending from the periphery of said flexible sole and said heel portion, said clam-shell upper including a vertically slitted heel and a longitudinal slitted instep portion extending longitudinally with respect to said flexible sole, said upper being pivotally openable to envelop the flat-soled shoe;

a first closure for closing said slitted heel;

a second closure for closing said slitted instep portion;

wherein after said clam-shell upper has been enveloped over the shoe sole, shoe heel and shoe upper of the flat-soled shoe the first and second closures are adapted to be fastened to cinch-up said flexible sole, said slitted heel and said slitted instep portion against the shoe sole, the shoe heel and the shoe upper of the flat-soled shoe;

wherein said slitted instep portion extends from an ankle end of the slitted instep portion to a toe pivot end area of the slitted instep portion;

wherein said claim-shell upper comprises two halves each pivotable about a pivot area of said heel portion and at said toe pivot end area such that said upper can be opened sufficient to be placed over sides of the shoe upper and over the non-spiked shoe sole; and

further including a rounded terminal end at each of said areas to provide stress relief.

5,600,902

REMOVABLE PADS FOR USE WITH SPIKED GOLF SHOES TO PROTECT PUTTING GREENS

Edward Q. Yavitz, 3828 Spring Creek Rd., Rockford, Ill. 61114

Filed Oct. 4, 1995, Ser. No. 539,802

Int. Cl.[6] A43B *5/00;3/16;3/12;3/10*

U.S. Cl. 36—135 **5 Claims**



1. An article for protecting putting greens on golf courses when walked on by a golfer, the article being configured for attachment to a golfer's shoe, the shoe being of the type having spikes extending outwardly from a sole of the shoe, the article comprising:

a pad having an upper surface and a lower surface, the pad being penetrable by the spikes, the pad further comprising a resilient material that grips the spikes and holds the pad in place during use, wherein the pad has a thickness sufficient to prevent the spikes from extending substantially therethrough when stood upon by the golfer, further wherein the pad has a perimeter edge, the perimeter edge being generally in the shape of the shoe's sole; and

a lower layer of material laminated to the lower surface of the pad, wherein the lower layer comprises a cloth material.

5,600,903

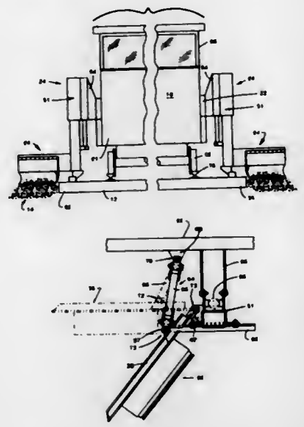
BALLAST SHOULDER CLEANER

Phillip C. McCray, Wetumpka, Ala., assignor to Knox Kershaw, Inc., Montgomery, Ala.

Continuation-in-part of Ser. No. 130,775, Oct. 4, 1993, Pat. No. 5,459,951. This application Oct. 24, 1994, Ser. No. 327,965

Int. Cl.[6] E02F *5/22*

U.S. Cl. 37—105 **14 Claims**



1. A track working machine for dressing ballast of a railroad bed having cross ties thereon for supporting a pair of spaced tracks having inner and outer surfaces, said cross ties including an upper surface and end portions extending away from said outer surfaces of said track, said machine including a frame and ballast dressing apparatus secured to said frame, said ballast dressing apparatus comprising:

at least one ballast ridge plow assembly mounted on said frame, said ridge plow assembly including a vertically and horizontally movable blade assembly having at least one blade for engaging said ballast;

a single actuating assembly carried by said frame for vertical up and down movement of said blade assembly; and

linkage means connected to said frame and to said blade assembly, said linkage means disposed for extending said blade assembly outwardly from and in predetermined angular relation with said frame solely as a result of said downward movement of said blade assembly by said single actuating assembly and for retracting said blade assembly against said frame solely as a result of upward movement of said blade assembly by said single actuating assembly.

5,600,904

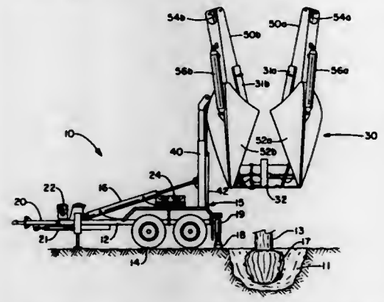
IMPACT DRIVEN TREE TRANSPLANTING APPARATUS

John M. Bowling, 9376 Lincoln Way East, Orrville, Ohio 44667

Filed Apr. 26, 1995, Ser. No. 429,539

Int. Cl.[6] A01B *13/00*

U.S. Cl. 37—302 **8 Claims**



1. An impact driven tree transplanting apparatus comprising:

a chassis;

a blade assembly including a base connected to said chassis, said blade assembly including a plurality of excavation blades slidably engaged with said base;

a plurality of pressurized fluid actuated cylinders, wherein each of said plurality of excavation blades of said blade assembly is connected to at least one of said pressurized fluid actuated cylinders such that each of said plurality of excavation blades is independently extendable and retractable relative to said base of said blade assembly with a relatively constant force in response to actuation of the pressurized fluid actuated cylinder to which it is respectively connected;

plurality of pressurized fluid actuated impact devices, wherein each of said plurality of excavation blades is connected to at least one of said impact devices to selectively receive a series of successive impact blows therefrom, wherein each of said plurality of pressurized fluid actuated impact devices is operable independently of each of said plurality of pressurized fluid cylinders; and,

an internal combustion engine providing a source of power for actuating said pressurized fluid cylinders and said pressurized fluid impact devices, whereby

said plurality of pressurized fluid actuated cylinders and said plurality of pressurized fluid actuated impact devices are operable separately and are operable in combination to urge said plurality of excavation blades into the earth.

5,600,905

DRAGLINE WITH IMPROVED PINION SHAFT MOUNTING

Harvey J. Kallenberger, Wind Lake, and John P. Mahoney, Milwaukee, both of Wis., assignors to Harnischfeger Corporation, Brookfield, Wis.

Filed Feb. 3, 1995, Ser. No. 384,703

Int. Cl.[6] E02F *3/48*

U.S. Cl. 37—394 **22 Claims**

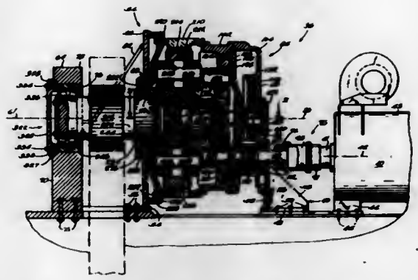
1. A dragline comprising

a main housing,

a bucket hoist mechanism mounted on said housing,

a bucket drag mechanism mounted on said main housing,

a moving mechanism for moving said main housing over the ground, said moving mechanism including a drive mechanism mounted on said main housing, an output shaft which extends along an axis and which is driven by said drive mechanism, said output shaft having inner and outer ends, said inner end of said output shaft being spline fit to said drive mechanism such that said drive mechanism causes rotation of said output shaft, a pedestal fixed to said main housing, said pedestal including a leg which has therein a bore which is centered on said axis and which has an inner diameter, an output pinion mounted on said output shaft intermediate said inner and outer ends thereof for common rotation therewith, and a bearing capsule housed in said bore, said bearing capsule rotatably supporting said outer end of said output shaft, said output pinion having an outer diameter less than said inner diameter of said bore such that said output shaft can be disconnected from said drive mechanism by pulling said output shaft and said output pinion through said bore,



a boom extending from said main housing,

a bucket,

a hoist rope extending between said bucket and said bucket hoist mechanism and over said sheave for causing vertical movement of said bucket, and

a drag rope extending between said bucket and said bucket drag mechanism for causing horizontal movement of said bucket.

5,600,906

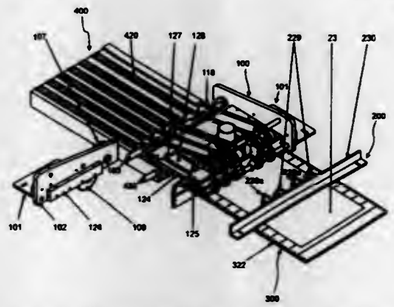
AUTOMATIC SUCTION TYPE TRANSFER OF LIMP MATERIAL ON CONVEYORS

Hadi M. N. Hamid, New Hartford, N.Y., assignor to Jet Sew Technologies, Inc., Bowling Green, Ky.

Filed Oct. 3, 1995, Ser. No. 538,220

Int. Cl.[6] D06C *3/00;* **B65H** *20/10*

U.S. Cl. 38—143 **71 Claims**



1. A method of transferring a limp workpiece from a first conveyor to a second conveyor, comprising the steps of:

(a) sensing a leading edge of the limp workpiece traveling on the first conveyor;

(b) creating a pressure differential to transfer the sensed leading edge of the limp workpiece from the first conveyor to a transfer mechanism;

(c) conveying, on the transfer mechanism, the leading edge of the limp workpiece to the second conveyor;

(d) terminating the pressure differential created in step (b), subsequent to step (c), to drop a middle portion of the limp

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workpiece excluding at least the leading edge, between the first and second conveyors to remove wrinkles from the limp workpiece; and

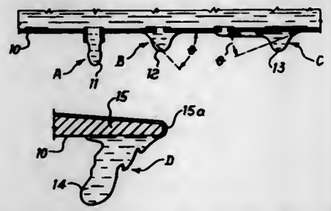
(e) conveying the limp workpiece on the second conveyor.

5,600,907

METHOD AND SYSTEM OF GENERATING A VISUAL PULSATION EFFECT DISTRIBUTED ACROSS A VISUAL OR DISPLAY SURFACE

Helmut Eigenmann, Viale S. Franscini, 1A, CH-6512 Giubiasco, Switzerland

Filed Jul. 19, 1993, Ser. No. 94,260
Int. Cl.[6] B05B 1/26
U.S. Cl. 40—406 **46 Claims**



1. A method of generating a visual pulsation effect distributed across a visual or display surface, wherein said visual or display surface comprises at least one supporting element extending along a substantially horizontal primary dimension across said visual or display surface, said at least one supporting element comprising a downward facing lower surface portion which is inclined at an angle γ (gamma) relative to the horizontal, said method comprising the steps of

providing at least one suspending film of liquid on said downward facing lower surface portion of said at least one supporting element,

feeding replenishing liquid to said at least one suspending film of liquid so as to cause distinct and individual drops of liquid to form, evolve and separate from said at least one suspending film of liquid at substantially random sites and times, said feeding of replenishing liquid being performed at a flow rate which maintains a constant amount of liquid in said at least one suspending film of liquid, further wherein said angle γ (gamma) of the lower surface portion of each supporting element, as averaged across the part wetted by said suspending film of liquid on that supporting element, relative to the horizontal, has a value that is less than 40°,

said flow rate of replenishing liquid to the suspending film of liquid on said lower surface portion of each supporting element is less than 200 ml/min per each 100 mm length along the primary dimension of said suspending film of liquid, and

said liquid has a viscosity value between 0.9 and 10 cPoise at 20° C., and a density value between 0.85 and 1.30 g/cm^3 at 20° C.

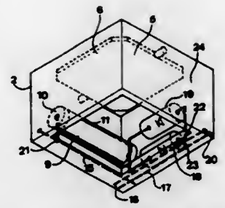
5,600,908

DISPLAYING ELEMENT

Fo Högberg, Göteborg, Sweden, assignor to Mobitec AB, Sweden

CT No. PCT/SE93/00763, § 371 Date Feb. 16, 1995, § 102(e) Date Feb. 16, 1995, PCT Pub. No. WO94/07231, PCT Pub. Date Mar. 31, 1994
PCT Filed Sep. 21, 1993, Ser. No. 387,738
Claims priority, application Sweden, Sep. 22, 1992, 9202731
Int. Cl.[6] G09F 9/30
U.S. Cl. 40—449 **28 Claims**

1. A display element adapted to be arranged together with other similar elements (1) in rows (14) and columns (13) for displaying



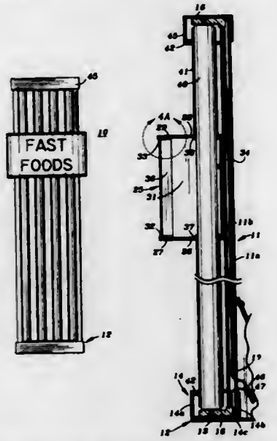
signs, said element comprising a housing (2) having outside walls; a surface element (6) connected to said housing and movable between two positions for displaying different surface information (4, 5); a coil (9) optionally magnetizable in opposite directions, said coil connected to the housing and adapted to actuate the surface element to occupy one or the other of said positions depending upon the direction of said magnetizing; said display element (1) being adapted to be selected to magnetize the coil thereof by activating a column or row to which it belongs through lines adapted to interconnect other similar display elements arranged in a column and a row, respectively, wherein said display element further comprises blocking means (18, 19) disposed within the housing (2) and arranged to block magnetizing of the coil of the display element on activation of an interconnecting line (15 and 16, 17, respectively) belonging to the row of the element last mentioned if the interconnecting line (16, 17 and 15, respectively) belonging to the column of this element is at the same time unactivated and conversely and thereby to assist in said selecting of the display element; and wherein said interconnecting lines are disposed within said housing and terminate at connection points located proximate the outside walls of the housing.

5,600,909

ILLUMINATED CHANGEABLE MESSAGE DISPLAY

Steve A. Hooper, 1837 Cord, Odessa, Tex. 79762

Filed May 19, 1995, Ser. No. 445,417
Int. Cl.[6] G09F 13/00
U.S. Cl. 40—558 **15 Claims**



1. An illuminated message display system comprising:

a) a pedestal housing;

b) a main frame supported by and extending upright from the pedestal housing;

c) a top housing for said main frame;

d) a message box supported from said main frame intermediate the pedestal housing and top housing, said message box having an open face and a back lit message card positioned in said open face;

e) an array of fluorescent lamps for back lighting the message card extending from the pedestal housing outside the main frame through the message box and into the top housing, a portion of each said lamp of said array of fluorescent lamps is exposed to view outside of said message box intermediate the pedestal housing and top cover;

f) translucent sleeves selected from the group consisting of multiple solid colors and aesthetic designs and patterns, said sleeves extending over at least the portion of the fluorescent lamps exposed to view; and

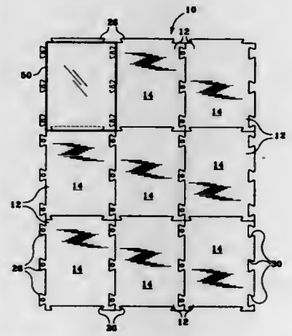
g) an electrical system within said pedestal housing, main frame and top housing for energizing the array of fluorescent lamps.

5,600,910

MODULAR DISPLAY SYSTEM

Dennis R. Blackburn, 3501 Tiffany Dr., Indianapolis, Ind. 46226

Filed Jun. 21, 1995, Ser. No. 493,134
Int. Cl.[6] G09F 7/00
U.S. Cl. 40—605 **15 Claims**



9. A modular display system comprising:

a plurality of identical, generally rectangular planar base portions, each base portion having a top surface, first and second longer sides, and first and second shorter sides, said first longer side and said first shorter side having at least one projecting tongue disposed in the plane of said base portion, and said second longer side and said second shorter side each having at least one corresponding groove, each of said at least one tongue of said first longer side of each of said base portions capable of mating with one of said at least one groove of said second longer side of another of said base portions and each of said at least one tongue of said first shorter side of each of said base portions capable of mating with one of said at least one groove of said second shorter side of another of said base portions, so that said base portions may be disposed to form an interlocking planar array;

a plurality of rectangular planar graphic portions, each graphic portion having a lower surface and an upper surface, with planar dimensions defined by each of said graphic portions substantially the same as rectangular planar dimensions defined by each of said base portions;

means for aligning attachment of each of said graphic portions to one of said base portions so that each of said top surfaces is adjacent to one of said lower surfaces, the tongues of each of said base portions project away from the graphic portion attached thereto, and each of the graphic portions overlaps and covers the grooves of the base portion attached thereto; and

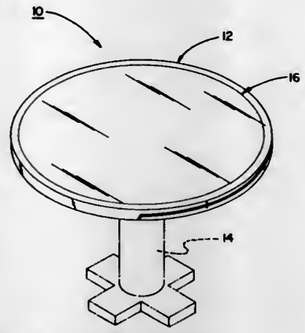
transparent cover means for coveting each of said upper surfaces.

5,600,911

MARKABLE TABLE COVER

Martin T. Lucci, 104 Spartan Ave., Staten Island, N.Y. 10303

Filed Jun. 26, 1995, Ser. No. 494,387
Int. Cl.[6] A47B 97/00
U.S. Cl. 40—611 **5 Claims**



1. A markable table cover comprising:

a clear cover means for positioning over a top of an article of furniture, wherein the cover means comprises a cover web having a shape adapted to substantially corresponding to a shape of a top of an article of furniture to which the markable table cover is to be associated; a side wall web depending from a perimeter of the cover web for placement about a top of an article of furniture; and a zipper interposed between a portion of the cover web and the side wall web for selectively permitting a portion of the cover web to be opened from the side wall web;

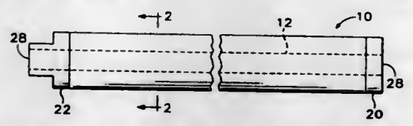
a substrate means positioned beneath the cover means and oriented so as to be positionable between the clear cover means and a top of an article of furniture for receiving indicia to be displayed through the cover means, said substrate means comprising a flexible material suitable for receiving marks from a writing instrument, the flexible material being shaped so as to fit within the cover means such that customized indicia applied to the flexible material can be viewed therethrough.

5,600,912

COMPOSITE TUBE FOR A GUN BARREL

David B. Smith, 614 E. 22nd St., Vancouver, Wash. 98663

Filed Nov. 29, 1995, Ser. No. 564,787
Int. Cl.[6] F41A 21/02
U.S. Cl. 42—76.01 **22 Claims**



1. A method of making a stiff composite tube for a gun barrel, comprising:

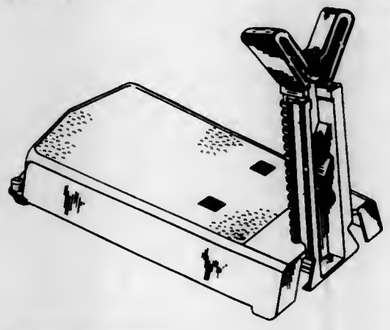
(a) wrapping a tubular metal liner with a resin matrix material containing a plurality of elongate carbon fibers;

(b) during step (a), aligning said carbon fibers parallel with the longitudinal axis of said liner;

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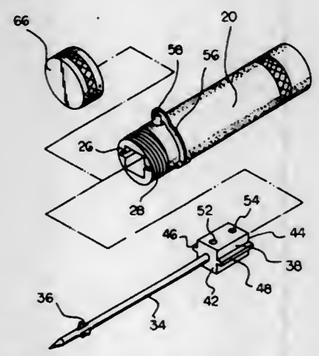
(c) curing said resin matrix material; and
(d) placing said elongate carbon fibers in compression along the longitudinal axis of said liner.

5,600,913
PISTOL REST
Steven W. Minneman, c/o MTM Molded Products Company, 3370 Obco Ct., Dayton, Ohio 45414
Continuation-in-part of Ser. No. 33,962, Jan. 24, 1995. This application Mar. 17, 1995, Ser. No. 405,586
Int. Cl.[6] F41A *23/06*
U.S. Cl. 42—94 **16 Claims**



1. A pistol rest comprising:
a base member; and
a detachable fork member lockingly secured to said base member for supporting a gun barrel;
said detachable fork member being unlocked when at least a portion of said fork member is squeezed to permit said fork member to be adjusted relative to said base member;
said base member including a center channel for slidably receiving said detachable fork member.

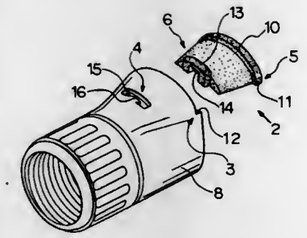
5,600,914
FISH PENETRATING TOOL
George E. Tatar, R.R. #1 County Rd. #39, Bloomingdale, Ohio 43910
Filed Mar. 5, 1996, Ser. No. 611,238
Int. Cl.[6] A01K *81/00;97/00*
U.S. Cl. 43—6 **5 Claims**



1. A fish penetrating tool having both an opened orientation and a closed orientation, the tool comprising in combination:
a handle portion having a rearward end, a forward end, an exterior surface, and an interior region, the interior region having a major hollow cylindrical portion and a minor hollow rectangular portion with a first and a second side, the minor hollow rectangular portion including a first hollow locking channel formed along a first side and a second hollow locking channel formed along a second side, the exterior surface of the handle portion adjacent the forward end being threaded, an aperture formed through the handle portion adjacent the forward end, a band of reflective material positioned upon the exterior surface and encircling the handle adjacent the rearward end;
a penetrating needle having a first end, a second end, and an intermediate extent therebetween, the first end being pointed, a plurality of outwardly extending barbs position upon the penetrating needle adjacent the first end, a locking block secured to the second end of the penetrating needle, the locking block having a forward end, a rearward end, first and second side edges, an upper surface and a lower surface, a first locking protrusion extending from the first side of the locking block and a second locking protrusion extending from the second side of the locking block, the locking block dimensoned to be received within the minor hollow rectangular portion of the handle such that the first locking protrusion is inserted within the first locking channel and the second locking protrusion is inserted within the second locking channel, a forward aperture formed within the upper surface of the locking block, a rearward aperture formed within the upper surface of the locking block;
a locking lever having a cam end and an opposite end, a spring biased peg having an upper end and a lower end and an intermediate extent therebetween, the lower end of the peg dimensioned to be received within either the forward or rearward aperture of the locking block, the peg positioned within the aperture formed within the handle portion, the cam end of the locking lever is pivotally interconnected to the peg, the lever having a first orientation wherein the peg is disengaged from apertures of the locking block and a second orientation wherein the cam brings the peg into engagement with one of the apertures of the locking block, a spring positioned about the intermediate extent of the peg and functioning to urge the peg out of engagement with one of the apertures of the locking block;
a cap having an exterior surface and a threaded interior, a band of reflective material upon the exterior surface of the cap and encircling the cap, the cap adapted to be threadably secured over the forward end of the handle, the fish penetrating tool having a first orientation wherein the rearward end of the locking block is secured within the handle portion and secured by way of the locking lever, and a second orientation wherein the forward end of the locking block is secured within the handle portion with the fish penetrating needle positioned within the major hollow cylindrical portion and the cap is threadably secured over the forward end of the handle.

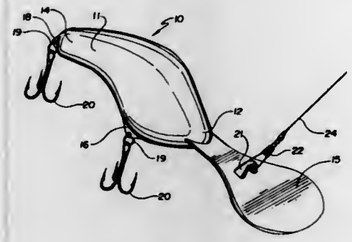
5,600,915
HOOD ASSEMBLY FOR A REEL MOUNTING DEVICE
Ryuichi Ohmura, Shizuoka-shi, Japan, assignor to Fuji Kogyo Co., Ltd., Shizuoka-ken, Japan
Filed Jun. 5, 1995, Ser. No. 464,353
Claims priority, application Japan, Jun. 9, 1994, 6-151425
Int. Cl.[6] A01K *87/06*
U.S. Cl. 43—22 **3 Claims**

1. A reel seat for a fishing rod comprising:
a hood having a cylindrical sleeve portion into which a seat body is to be inserted;
a lining piece integrally mounted in the hood and fixed on an upper inner face of said cylindrical sleeve portion;
a cavity defined by said seat body and said lining piece into which a reel foot is to be inserted;
wherein said cylindrical sleeve portion comprises a bore formed on a back portion of the cylindrical sleeve portion, an inclined



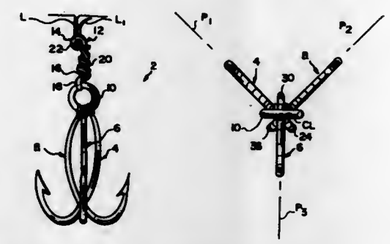
piece extending generally downwardly from a back edge of the bore, and a front engaging portion;
said lining piece comprises a back engaging portion which engages said inclined piece, and a front engaging portion which engages said front engaging portion of the cylindrical sleeve portion;
said front engaging portion of the cylindrical sleeve portion comprises a right step and a left step formed on the right and left sides of the front end of the cylindrical sleeve portion; said front engaging portion of the lining piece comprises a right bottom end and a left bottom end formed at the front end of the lining piece; and said right and left bottom ends engage said right and left steps, respectively.

5,600,916
FISHING LURE CONSTRUCTION
David N. Smith, 7637 Orchard La., Maple Grove, Minn. 55351
Filed Sep. 19, 1994, Ser. No. 308,675
Int. Cl.[6] A01K *85/16*
U.S. Cl. 43—42.47 **10 Claims**



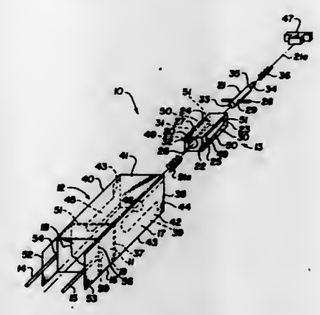
1. An artificial plastic fishing lure comprising:
a plastic lure body having a forward end and a rearward end and comprised of a pair of lure body halves secured together to form said lure body;
one or more hook attachment-eyelets connected with said lure body; and
a plastic line receiving eyelet integrally molded with said lure body near its forward end and formed of the same material as said lure body, said line receiving eyelet including a base portion joined with body and a line attachment portion disposed outwardly from said base portion, said line attachment portion having a line receiving opening and a dimension measured in a direction perpendicular to said line receiving opening and said base portion having a dimension measured in a direction perpendicular to said line receiving opening, wherein said dimension of said base portion is greater than the dimension of said line attachment portion.

5,600,917
COMPOUND FISH HOOK ASSEMBLY
Joseph T. Manno, Star Route, Box 24, Kane, Pa. 16735
Filed Jun. 5, 1995, Ser. No. 463,748
Int. Cl.[6] A01K *83/00;91/04*
U.S. Cl. 43—44.82 **14 Claims**



7. A compound fish hook assembly comprising:
a hook support;
first, second and third hooks loosely hanging from said support, each hook having a shank portion, a hook portion and a connector, said hooks so configured that they assume without constraint a generally Y-shaped configuration when viewed in plan, and wherein shank portions of each hook lie on opposite sides of a vertical center line through said assembly from respective hook portions of each hook.

5,600,918
APPARATUS FOR KILLING WEEDS
Edwin R. Carr, 4522 Maverick St., Amarillo, Tex. 79109
Filed Aug. 23, 1994, Ser. No. 294,387
Int. Cl.[6] A01B *1/00;* **A01G** *7/00*
U.S. Cl. 47—1.3 **2 Claims**



1. Weed killer apparatus comprising:
(a) rigid non-conductive hollow housing means having an upper opening;
(b) piezoelectric crystal means captured within said housing means;
(c) rotatable ram means slidably disposed within said housing means for applying a compressive force to said piezoelectric crystal means and generating a voltage across said piezoelectric crystal means;
(d) transverse pin means incorporated in said ram means;
(e) actuator means having displacement slots biased against said transverse pin means of said ram means by a first spring means;
(f) means for mounting said actuator means such that depressing said actuator means compresses said first spring means and

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said displacement slots rotate said ram means releasing said first spring means and forcing said ram means to impact said piezoelectric crystal;

(g) plunger means slidably disposed within said upper opening of said housing means having a lower contact surface biased against said actuator means by a second spring means;

(h) means for mounting said plunger means such that depressing said plunger means depresses said actuator means;

(i) probe means electrically connected to said piezoelectric crystal means for applying said voltage across the roots of a weed;

(j) sheath means incorporated within said housing means for shielding and slidably supporting said probe means such that when said plunger is depressed said probe means are extended for insertion into the roots of a weed; and

(k) support means incorporated in said housing means for supporting the weed killer apparatus during use.

5,600,919

MINERAL WOOL PRODUCTS FOR THE CULTIVATION OF PLANTS

Hans Kummermehr, Ludwigshafen, and Lothar Bihy, Kaiserslautern, both of Germany, assignors to Isover Saint-Gobain, Courbevoie, France

Continuation of Ser. No. 788,450, Nov. 6, 1991, abandoned. This application May 18, 1995, Ser. No. 444,357

Claims priority, application Germany, Nov. 6, 1990, 40 35 249.8

Int. Cl.[6] A01G *31/00*; A01C *1/06;21/00*

U.S. Cl. 47—59 **11 Claims**

1. A mineral wool product suitable for the soilless cultivation of plants, comprising:

mineral fibers bound by a binder selected from the group consisting of a phenol-formaldehyde resin and a urea-formaldehyde resin into a geometric form, said fibers bearing a water insoluble, reversibly water-adsorbing agent, said reversibly water-adsorbing agent comprising pyrogen silicic acid or precipitated silicic acid.

5,600,920

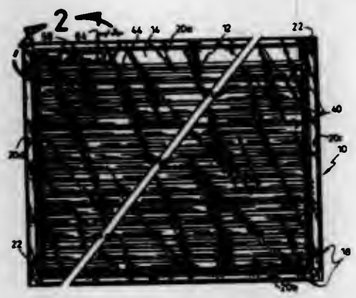
MOTORIZED LOUVER BLIND STRUCTURE IN A DOUBLE GLAZED WINDOW UNIT AND METHOD OF ASSEMBLING THE BLIND STRUCTURE

Fernand Roy, Brossard, Canada, assignor to UNICEL Inc., Boucherville, Canada

Filed Nov. 13, 1995, Ser. No. 556,649

Int. Cl.[6] E06B *7/08*

U.S. Cl. 49—64 **13 Claims**



1. In combination, a multiple glazed window unit and a louver blind structure, said window unit comprising:

a) two spaced-apart glass panels; and

b) a window frame spacing said glass panels, comprising a number of peripheral elongated members linked two by two at the corners of said window frame;

said window unit defining an inner chamber between said glass panels and inside said window frame, said louver blind structure, positioned within said inner chamber and comprising:

a) a plurality of parallel and pivotable slat members;

b) reversible power means having a driving shaft parallel to and near one of said window frame peripheral channel members;

c) actuating means linking said power means driving shaft to said slat members, causing a reversible pivoting movement of said slat members upon powering of said power means; and

d) an alignment member for correctly and securely positioning said power means driving shaft relative to said actuating means, said alignment member being located adjacent said actuating means and anchored to said window frame.

5,600,921

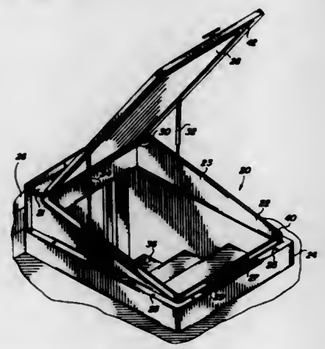
BULKHEAD DOOR ASSEMBLY

William L. Vardaro, 21 Farmhouse Rd., Bedford, N.H. 03110

Filed Sep. 6, 1994, Ser. No. 300,529

Int. Cl.[6] E06B *1/00*; E05F *1/10*

U.S. Cl. 49—380 **17 Claims**



1. A bulkhead door assembly providing a means of ingress into or egress out of a structure comprising:

a base support having a peripheral flange connected to a building foundation;

a pair of upwardly extending sidewalls integrally connected to alternate sides of said base support;

a header panel integrally connecting said pair of upwardly extending sidewalls; and

an elongated door having a proximal end rotatably connected to said header panel about a first hinge member and an insulating substrate sandwiched between a top panel and bottom panel, wherein the bottom panel includes an integrally formed peripheral recess with a resiliently deformable weather strip disposed therein.

5,600,922

CONSTRUCTION FOR FASTENING A SHEET OF TRANSPARENT PLASTIC MATERIAL IN AN OPENING OF AN AWNING

Josef Stolz, Fulda, Germany, assignor to Mehler Vario System GmbH, Fulda, Germany

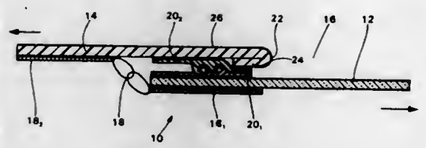
Filed Mar. 11, 1994, Ser. No. 209,813

Claims priority, application European Pat. Off., Mar. 15, 1993, 93104173

Int. Cl.[6] B60J *1/18*; E04B *7/16*

U.S. Cl. 52—74 **8 Claims**

1. A construction (10) for fastening a sheet of transparent plastic material (12) in an opening (16) of an awning (14) in a readily detachable and replaceable yet waterproof manner, comprising a



first part (18_1) of a slide fastener (18) and a first elongated sealing element (20_1) fixed on a circumferential edge of said plastic sheet, and a second part (18_2) of said slide fastener (18) and a second elongated sealing element (20_2) fixed on a circumferential edge of said awning, whereby when said plastic sheet is fastened in said opening of said awning, said first and second sealing elements overlapping and attaching to each other to form a stress-free and separable waterproof joint between the plastic sheet and the awning, and attachment of the first and second parts of said slide fastener provides a path for transferring forces between the plastic sheet and the awning.

5,600,923

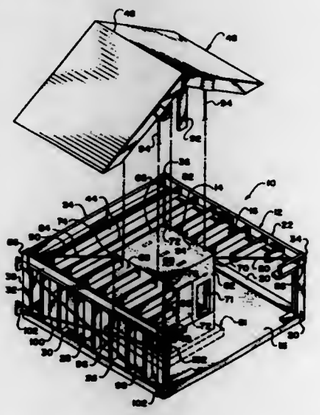
SAFE CORE BUILDING

Trevor J. Riley, 5739 - 136th Street, Surrey, B.C., Canada

Filed Aug. 8, 1994, Ser. No. 287,363

Int. Cl.[6] E04H *9/00*

U.S. Cl. 52—79.9 **4 Claims**



1. A building comprising:

an exterior shell having exterior walls with corners and a roof defining an interior space, the walls of the shell having earthquake resistant bracing including cross-shaped bracing extending between the corners, the bracing including cables and brackets connected to the walls of the shell adjacent the corners thereof, the cables being connected to the brackets, said bracing further including elongated members extending horizontally above and below openings in the walls, the cables being connected to the elongated members;

a fire resistant, structurally supportive core within the interior space and spaced-apart from the shell; and

means for structurally reinforcing the shell including support members interconnecting the shell and the core.

5,600,924

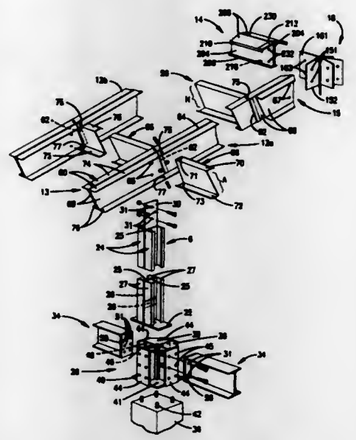
STEEL FRAME BUILDING

Gordon L. Forsberg, 8750-11 Gladiolus Dr.-#175, Fort Myers, Fla. 33908

Filed Mar. 1, 1995, Ser. No. 396,514

Int. Cl.[6] E04B *7/04*

U.S. Cl. 52—93.2 **24 Claims**



1. A building frame structure erected upon a foundation, comprising:

a plurality of vertical corner columns outside corners of the structure at a juncture of adjoining walls wherein each of said corner columns comprises a pair of corner column support beams, said corner column support beams each including a vertically extending back section having inner and outer flanges projecting from opposite sides thereof parallel to one another, said column support beams being aligned such that the back sections of each pair of column support beams are positioned in back to back relation with one another and wherein the outer flanges of each pair of corner column support beams together form an angle with one another corresponding to the angle of the corner formed between adjoining walls of the structure;

a plurality of hip and valley rafters, extending upward from corresponding vertical corner columns adapted to support a roof of the structure, said hip and valley rafters adapted to define a pitch of said roof at corners between adjoining sections of the roof, each of said rafters including a pair of rafter support beams, wherein each of the rafter support beams includes a back section having upper and lower flanges projecting from opposite sides thereof parallel to one another said rafter support beams being aligned such that the back sections of each pair of rafter support beams are positioned in back to back relation with one another and wherein the upper flanges of each pair of rafter support beams are adapted to project from the corresponding back wall at an angle corresponding to the angle at which the roof is intended to fall or rise away from the hip or valley rafter respectively;

a plurality of knife plates for interconnecting corresponding vertical corner columns and hip and valley rafters, each knife plate being fixedly received between upper ends of the column support beams of the corresponding corner column and lower ends of the rafter support beams of the corresponding hip or valley rafter; and

a plurality of purlin beams extending between adjacent hip and valley rafters to provide lateral support for the frame structure, said purlin beams being secured to said hip and valley rafters within the confines of said upper and lower flanges of the rafter support beams.

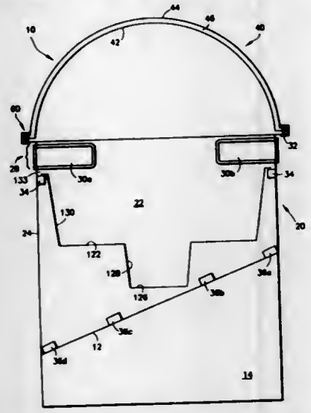
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5,600,925

ROOFTOP SKYLOUNGE HAVING HEMISPHERICAL DOME AND WRAPAROUND SEATING FOR PANORAMIC VIEWING OF COUNTRYSIDE, SNOWSTORMS, SUNSETS SUNRISES AND STARS

Gary W. Hoogervorst, 9 Heather Dr., Center Moriches, N.Y. 11934

Filed Apr. 14, 1995, Ser. No. 422,340
Int. Cl.[6] E04E 7/18
U.S. Cl. 52—200 20 Claims



1. A skylounge mounted over an opening cut into a roof of a house, comprising:

a base member having means firmly attaching said skylounge to the roof of the house, said base member having an entry opening for permitting users to enter said skylounge through said opening cut in the roof of the house, said base member having a wraparound seating area for seating 6 users; and

clear hemispheric dome means having means connecting to said base member for providing users seated on said wraparound seating area of the base member a panoramic view from the roof of the house for viewing the surrounding country side, as well as sunsets, sunrises, snowstorms and stars at night.

5,600,926

PANEL CONNECTING ARRANGEMENTS

Michael F. Ehrlich, Oakmont, Pa., assignor to Furniture Source International Inc., Pittsburgh, Pa.

Filed Oct. 31, 1995, Ser. No. 550,672
Int. Cl.[6] E04H 3/00
U.S. Cl. 52—239 23 Claims

1. A connecting arrangement for connecting a spine panel having an upper edge and a lower edge to an end of a dividing panel at substantially a right angle, said connecting arrangement comprising:

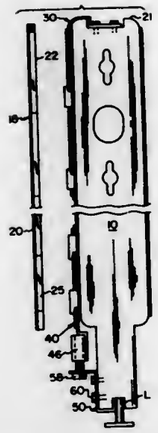
an upper mounting bracket including a lower straight section and an upper curved portion extending from an end of said lower straight section, said upper curved portion having a flat extension for connection to the upper edge of a spine panel;

said lower straight section having a substantially planar surface adapted to lie adjacent to a surface of a spine panel and an opposing surface having a plurality of spaced hooks for engagement with a modified finished end;

a lower mounting bracket including an upper straight section and a lower extension;

said upper straight section including a substantially planar surface adapted to lie adjacent to a surface of a spine panel and an opposing surface having a plurality of spaced hooks for engagement with slots in the modified finished end;

a threaded socket attached to said lower extension; and



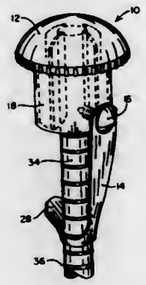
an attachment member having a first leg with a hole formed therein, a second leg substantially perpendicular to said first leg and having at least one hole formed therein for connecting members, and a threaded bolt extending through said hole in said first leg into said threaded socket on said lower extension, whereby said bolt is tightened in said socket to hold said lower mounting bracket in place on a spine panel.

5,600,927

STRAPPED REBAR END PROTECTOR

Add T. Kennon, 6 Sandy Beach, Vallejo, Calif. 94590

Filed Jun. 14, 1995, Ser. No. 431,964
Int. Cl.[6] E04C 5/16
U.S. Cl. 52—301 8 Claims



1. In combination with a rebar end protector having a wall, the improvement comprising:

an elastic strap affixed to the wall of the end protector, the strap having a rebar-receiving aperture formed at a first end of the strap;

a snap-receiving aperture formed in the wall; and

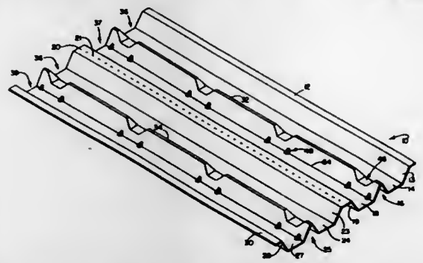
fastener means for affixing the strap to the end protector, the fastener means having a snap fastener affixed to the strap, the snap fastener engagable within the snap-receiving aperture of the wall.

5,600,928

ROOF VENT PANEL

John C. Hess, Lititz, Pa.; William R. Walter, Bancroft, Mich., and Edwin F. Trautman, Jr., Bethlehem, Pa., assignors to UC Industries, Inc., Parsippany, N.J.

Filed Jul. 27, 1995, Ser. No. 508,179
Int. Cl.[6] E04C 2/32;2/20
U.S. Cl. 52—309.4 12 Claims



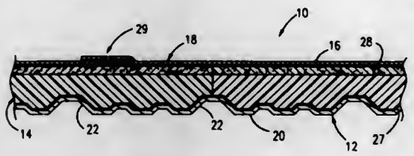
1. A structure sloping roof vent panel comprising a large elongated panel of extruded foam polystyrene sheet having lateral flanges to facilitate the fastening of the sheet to the underside of a sloping roof at the eaves, an offset wall spaced from said flanges forming an airway trough, and at least one generally triangular ridge extending from said offset wall and open from one end of the vent panel to the other, said ridge having thinner side walls than said offset wall, and formed gussets extending from said offset wall to said thinner side walls of said ridge to reinforce and strengthen said panel sheet to maintain unobstructed venting through said trough when installed.

5,600,929

FIRE RETARDANT ROOFING ADHESIVE AND METHOD OF APPLYING SAME

Paul L. Morris, 8815 W. 104th St., Overland Park, Kans. 66212

Continuation of Ser. No. 193,581, Feb. 8, 1994, Pat. No. 5,540,022, which is a continuation-in-part of Ser. No. 989,648, Dec. 11, 1992, which is a division of Ser. No. 825,982, Jan. 27, 1992, abandoned. This application Dec. 20, 1995, Ser. No. 575,831
Int. Cl.[6] E04C 1/00
U.S. Cl. 52—309.8 4 Claims



1. A roof assembly comprising:

a metal deck presenting an undulating top surface;

a layer of expanded, synthetic resin foam situated atop the deck, said foam layer presenting an undulating lower surface adjacent and substantially complemental with said deck surface and an outer surface remote from said deck, said foam layer lower surface being closely adjacent said deck top surface throughout substantially the entirety of the deck top surface;

a layer of weather-resistant material having inner and outer surfaces;

a first layer of adhesive between said foam layer outer surface and said layer of material for binding said layer of material to said foam layer; and

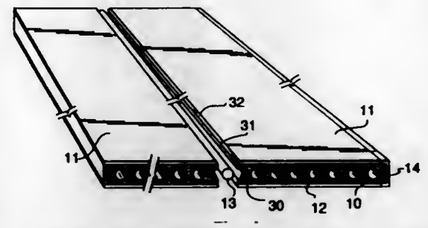
means for adhering said foam layer to the top surface of said deck including a second layer of adhesive between the lower surface of said foam layer and said deck top surface.

5,600,930

CONSTRUCTION SYSTEM USING LIGHTWEIGHT FIRE-RESISTANT PANELS

Ernest R. Drucker, 226 Searle Avenue, North York, Ontario, Canada

Continuation-in-part of Ser. No. 419,281, Apr. 10, 1995. This application Feb. 29, 1996, Ser. No. 609,005
Int. Cl.[6] E04B 2/50
U.S. Cl. 52—585.1 32 Claims



1. A fire-resistant construction system comprising lightweight rigid panels forming structural walls, ceilings or partitions and connector members for joining the rigid panels to form a structure

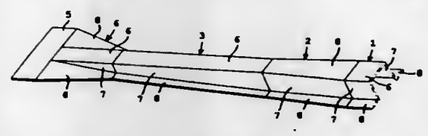
wherein (a) each rigid panel has substantial length and width relative to thickness and is formed of small ceramic or glass hollow microspheres having particle sizes of less than about 2 mm and a density of less than about 0.75 g/cc, said small microspheres being bonded together to form a rigid panel by means of a settleable binder material, and each panel also having a plurality of equally spaced holes formed therein and extending the full length of the panel, and (b) each connector member comprises an L-shaped member with each arm of said L-shaped member having tubular portions extending perpendicularly therefrom and being adapted to fit snugly within the holes of the rigid panels.

5,600,931

STRUCTURAL BEAM FOR SUPPORTING AND REINFORCING A STRUCTURE

Martin Jonsson, Luleå , Sweden, assignor to Plannja Hardtech AB, Luleå , Sweden

Filed Mar. 24, 1995, Ser. No. 409,806
Claims priority, application Sweden, Sep. 25, 1992, 9202769
Int. Cl.[6] E04C 3/30
U.S. Cl. 52—770.3 13 Claims



1. A bar construction, preferably a vehicle mounted safety bar for protection in the event of collisions, particularly side-on collisions, said bar having a generally trapezoidal and open cross-section which includes a center-flange which is embraced by two webs, and a side-flange which extends outwardly on each side of the bar and connects with a respective web, wherein the bar includes a first section of constant cross-section in a center part of the bar, wherein:

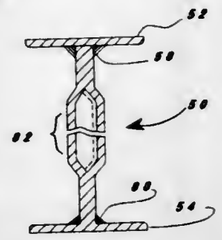
the bar includes at least one second section which has a center-flange whose width decreases towards one end of the bar, the second section has a generally constant height, a transition part of generally trapezoidal shape is located between the second section and said one bar end, and the transition part has a height which decreases towards one end of the bar.

5,600,932

BEAM WITH ENHANCED BEARING LOAD STRENGTH AND METHOD OF MANUFACTURE

Young J. Paik; David S. Paik, and Nelson S. Paik, all of 19826 S. Alameda St., Rancho Dominguez, Calif. 90221

Filed Jan. 5, 1996, Ser. No. 583,338
Int. Cl.[6] E04C 3/07
U.S. Cl. 52—745.19 10 Claims



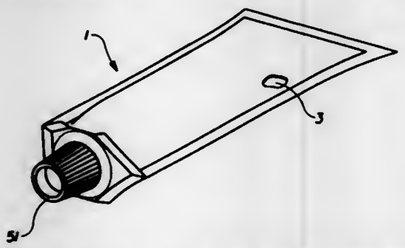
1. A method of making a support beam, comprising:
forming a first stage beam having first and second flanges unitarily connected to an intervening web having a central portion of substantially uniform thickness;
stretching the web central portion of the first stage beam in a direction to increase the distance between the flanges and simultaneously to taper the web thickness from each flange to an intermediate minimum thickness region; and
corrugating the web intermediate the flanges including the intermediate thickness region.

5,600,933

METHOD FOR PRODUCING A FLEXIBLE PLANAR GUSSETED PACKAGE FOR DISPENSING A PRODUCT THROUGH A FITMENT

Jerald R. Wiles, Sarasota, Fla., and Dana P. Gruenbacher, Fairfield, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 359,155, Dec. 19, 1994, Pat. No. 5,540,358. This application Apr. 1, 1996, Ser. No. 626,298
Int. Cl.[6] B67D 5/60
U.S. Cl. 53—133.4 6 Claims



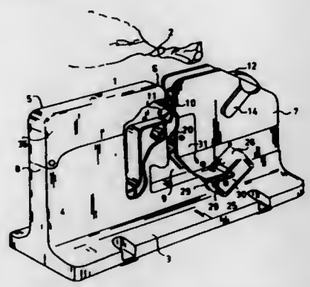
1. A method for producing a flexible package for dispensing a product through a fitment, the package having a filling end and a dispensing end, the method comprising the steps of:
a) forming a substantially rectangular web of flexible material, the web having a geometric center with an opening therethrough, a major longitudinal direction, a minor latitudinal direction, opposing major longitudinal edges, and opposing minor latitudinal edges;
b) inserting a fitment through the opening, the fitment having a dispensing end and an attachment end;
c) sealing the fitment attachment end to the web;
d) folding the web across the latitudinal direction on each side of the opening so as to form a W-gusset;
e) forming a latitudinal seal in the W-gusset on each side of the opening at least partially between the fitment and the major longitudinal edges;
f) folding the web together so that the minor latitudinal edges come substantially together at the package filling end, and the major longitudinal edges come substantially together to form opposing package side edges; and
g) sealing the opposing package side edges, thereby forming side seals which come into sealing contact with the latitudinal seals in the W-gusset.

5,600,934

DEVICE FOR APPLYING A CLOSING STRIP

Nicolaas van Rosendal, and Gerardus J. M. Timmermans, both of Hoogeveen, Netherlands, assignors to Business to Business Innovations B.V., Al Rotterdam, Netherlands

PCT No. PCT/NL93/00261, § 371 Date Jul. 21, 1995, § 102(e) Date Jul. 21, 1995, PCT Pub. No. WO94/13542, PCT Pub. Date Jun. 23, 1994
PCT Filed Dec. 7, 1993, Ser. No. 446,847
Claims priority, application Netherlands, Dec. 7, 1992, 9202118
Int. Cl.[6] B65B 51/04
U.S. Cl. 53—139.1 6 Claims



1. A device for applying a closing strip around an enclosure such as a plastic bag, comprising:
a box-like housing having two side surfaces and a peripheral surface,
a channel through which the enclosure is moved during application of the closing strip, said channel having an access side near the peripheral surface of the housing and a closed end, said channel dividing the housing in a first part and a second part, and
cutting means located at the closed end of the channel for severing the closing strip applied around the enclosure from a remainder of said closing strip,
wherein said first part of the housing is provided (a) with a first drum-shaped space for storing adhesive tape on a reel and having an adhesive face, (b) with first through-feed means for feeding a strip of adhesive tape from said first drum-shaped space to the channel, and (c) with a rotor having fins protruding into the channel for further guiding said strip of adhesive tape into the channel with the adhesive face facing outward,
wherein said second part of the housing is provided (a) with a second drum-shaped space for storing a tape-like material on a reel, and (b) with a passage having an upper and a bottom wall, said passage connecting said second drum-shaped space to said channel for feeding a strip of the tape-like material from the second drum-shaped space to the channel,
wherein on an outlet side of said passage, there is a means for adhering the strip of tape-like material to a portion of the adhesive tape strip which has not adhered to the enclosure during the guiding thereover of the enclosure,
wherein, for securing said tape-like material in the second drum-shaped space, the second part of the housing, near the access

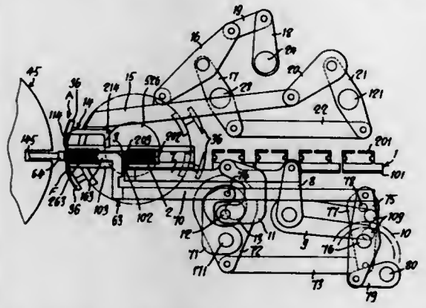
side of the channel includes a cover movably attached over the second drum-shaped space, said cover closing the second drum-shaped space and also forming the upper wall of said passage connecting the second drum-shaped space to the channel, the bottom wall of said passage being a bridge piece fixed between the two side surfaces of the housing in the second part, and
wherein said upper wall and said bottom wall of the passage co-act form-fittingly when said cover is in the position closing the second drum-shaped space, and produce a clamping action on the strip of tape-like material present therebetween in said passage.

5,600,935

MACHINE FOR PACKAGING FRAGILE CYLINDRICAL PRODUCTS, PARTICULARLY CIGARETTES OR SIMILAR

Gianfranco Isani, Caluso, and Valter Spada, Marzabotto, both of Italy, assignors to SASIB S.p.A., Bologna, Italy

Filed Jul. 20, 1995, Ser. No. 504,572
Claims priority, application Italy, Aug. 5, 1994, GE94A0094
Int. Cl.[6] B65B 11/30;19/22
U.S. Cl. 53—234 20 Claims



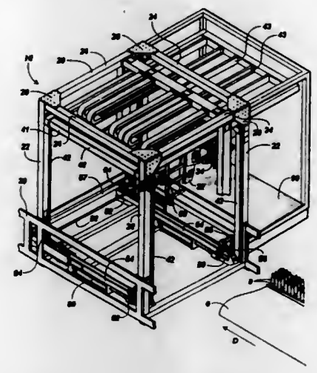
1. A machine for packaging fragile cylindrical products, particularly cigarettes, comprising:
a unit for feeding a succession of ordered groups of cigarettes;
a drum for folding wrapping slips around a group of cigarettes, this drum being provided with at least one peripheral cell, each of which houses one group of cigarettes and has a peripheral opening for the insertion of a group of cigarettes;
a station for joining a wrapping slip to a group of cigarettes, in which station the group of cigarettes is disposed in a position coinciding with and in front of the open side of the associated cell and the wrapping slip is interposed between the open insertion sider of the cigarette-carrying cell and the facing side of the group of cigarettes;
means for collecting the wrapping slip and positioning it in a predetermined position, substantially parallel to the facing sides of the group of cigarettes and of the cigarette-carrying cell;
means for gripping the group of cigarettes and inserting it, together with the wrapping slip, into the cigarette-carrying cell;
means for transferring the group of cigarettes from the unit for feeding the succession of groups of cigarettes to the station for joining them to the wrapping slips;
means for synchronized operation of the said feed unit and the said collecting/positioning, gripping/inserting and transferring means, characterized in that
the means for collecting and positioning the wrapping slips have at least two pairs of gripping suction fingers which are supported movably together along an annular path about at least one axis parallel to the axis of the folding drum, and which have a fixed relative disposition such that each of them interacts with one lateral face of the slip at one of the front and rear ends of the slip with respect to the direction of movement of the fingers along the annular path;
the means for transferring the cigarettes from the feed unit to the joining station are made in such a way that the transfer path of the groups of cigarettes is at least partially rectilinear.

5,600,936

SUSPENDED MODULAR PARTITION INSERTER

Frank Moncrief, 6310 Chadd's Pointe, Acworth, Ga. 30101; Dwight L. Smith, 1130 Kennesaw Springs Ct., Kennesaw, Ga. 30144, and David R. Bacco, 1451 Larkwood Dr., Canton, Ga. 30114

Filed Apr. 6, 1995, Ser. No. 418,102
Int. Cl.[6] B65B 21/04;59/00
U.S. Cl. 53—263 42 Claims



1. A lift frame for adjusting a vertical position of a partition inserter in a packaging machine relative to a flow of articles travelling in a downstream direction, comprising:
means for mounting a partition inserter above said flow of articles;
a plurality of vertical support members having one end attached to said mounting means and an opposite end attached to a lift assembly; and
said lift assembly for adjusting a vertical position of the opposite ends of said vertical support members;
wherein said lift assembly also adjusts a vertical position of said mounting means and the vertical position of said partition inserter, whereby said vertical position of said partition inserter may be adjusted to correspond to a height of said articles.

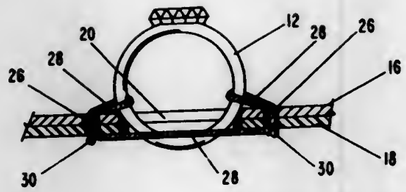
5,600,937

DISPLAY CARD AND METHOD

Peter G. Erickson, 9125 Copper Ave., NE., #427, Albuquerque, N.M. 87123, and Richard J. Shube, 3716 General Chenault, NE., Albuquerque, N.M. 87111

Filed Mar. 3, 1995, Ser. No. 398,437
Int. Cl.[6] B65B 15/02
U.S. Cl. 53—397 19 Claims

1. A method of displaying an item lending itself to display in two substantially orthogonal planes comprising the steps of:
a) providing a display card;
b) mounting an item to be displayed directly on the display card by extensibly securing the item directly to the display card;



c) displaying the item in a plane substantially parallel to the display card; and

d) displaying they item in a plane substantially perpendicular to the display card.

5,600,938

SEALING AND BAGGING APPARATUS AND METHOD

Don K. Trimble, Vashon, Wash., assignor to Kwik Lok Corporation, Yakima, Wash.

Filed Sep. 22, 1995, Ser. No. 532,430

Int. Cl.[6] B65B *51/00*

U.S. Cl. 53—417 **16 Claims**



1. Apparatus for sealing a plurality of spaced spots across the mouth of a plastic bag opening, in a bag having an open end with a gatherable neck and a closed end to only delicately seal the bag to show evidence of tampering by breaking the seal but allow the bag to be opened without tearing or destroying the bag, comprising:

a conveyor for moving a plastic bag having a generally flattened open end with a bag opening and containing a product past a sealing mechanism, the bag having two generally flattened layers forming the bag opening;

a sealing mechanism for fastening the two generally flattened layers of the bag flattened open end together at spaced spots across at least part of the generally flattened open end of the bag, the sealing mechanism including spaced sealing members that penetrate through all the layers to form a hole in each layer surrounded by fused material creating only a light gripping seal sufficient only to allow the bag to be opened without tearing or destroying the bag but sufficient to show that the bag has been separated to reveal evidence of tampering wherein the bag opening will remain partially closed by the spots but can be reopened without destroying the bag; and

a closure applicator positioned adjacent said conveyor gathering the neck of the bag and placing a releasable closing device around the gathered neck to hold the bag closed as the principal closing device for the bag.

5,600,939

SYSTEM FOR MAKING PLASTIC BLISTER PACKAGES

Anthony Giovannone, Osterville, Mass., assignor to Sencorp Systems, Inc., Hyannis, Mass.

Division of Ser. No. 399,888, Mar. 8, 1995, Pat. No. 5,522,505, which is a division of Ser. No. 285,659, Aug. 3, 1994, Pat. No. 5,404,693, which is a continuation of Ser. No. 870,485, Apr. 17, 1992, abandoned. This application May 31, 1995, Ser. No. 454,843

Int. Cl.[6] B65B *47/02;47/10*

U.S. Cl. 53—559 **16 Claims**



1. A system for preparing an article-containing blister package, which system comprises in combination:

a) card-receiving means for feeding a flat card having a window aperture therein to a defined position;

b) receiving and positioning means for feeding and positioning a cut-to-size, flat, plastic sheet of thermoformable material to cover said aperture of the positioned card;

c) tacking means to tack said plastic sheet to the card and over and about the perimeter of the aperture to hold said sheet in place for subsequent processing;

d) blister-forming means to heat said plastic sheet over the aperture and to form a blister therein to receive an article to be packaged;

e) sealing means to seal the tacked plastic sheet to the card about the perimeter of the aperture under heat and pressure with the thermoformable material;

f) blister-filling means to fill the formed blister with an article to be packaged;

g) package-covering means to cover the back of the filled blister with a back cover sheet;

h) package-sealing means to seal the back cover sheet to the card and to package the article within the blister.

5,600,940

APPARATUS FOR APPLYING LOTION TO A HOOF

Winston Rice, Box 40, Site 2, R.R. #8, Calgary, Alberta, Canada

Filed May 6, 1994, Ser. No. 238,883

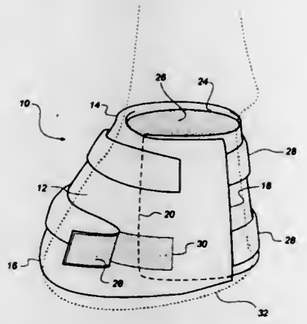
Int. Cl.[6] B68C *5/00*

U.S. Cl. 54—82 **4 Claims**

1. An apparatus for applying lotion to a hoof, comprising:

a. a cuff-like conical body having a first edge and a second edge, the conical body extending outwardly from the first edge to the second edge, the conical body being split along opposed split edges which extend between the first edge and the second edge, the conical body having an exterior surface and an interior surface;

b. an absorbent lining on the interior surface of the conical body, whereby lotion is maintained in contact with a hoof; and



c. means for securing one of the opposed split edges to the conical body adjacent both the first edge and the second edge whereby the conical body is maintained in a position over lying the hoof.

5,600,941

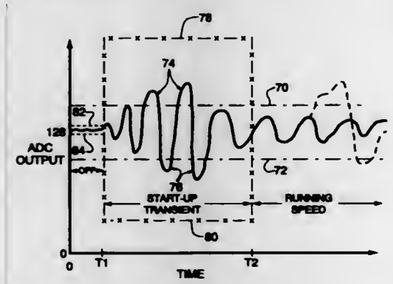
COMPENSATION FOR START-UP TRANSIENTS

Richard P. Strosser, Akron, Pa., assignor to New Holland North America, Inc., New Holland, Pa.

Filed Mar. 31, 1995, Ser. No. 414,328

Int. Cl.[6] A01D *75/18*

U.S. Cl. 56—10.2 J **11 Claims**



1. A method of operating a magnetic metal detector in a forage harvester having moving parts, including a crop feed mechanism, which induce a noise component in the detector output signal, said detector output signal including a detection component when passage of tramp metal through the crop feed mechanism is detected, said method comprising:

sensing the start of acceleration when said crop feed mechanism is started;

when the start of acceleration is sensed, establishing positive and negative thresholds at levels such that the noise component alone of the detector output signal will not exceed either threshold level while said crop feed mechanism is accelerating but said detector output signal may exceed either threshold level; and,

after the crop feed mechanism has reached a normal running speed, adjusting the positive and negative thresholds to levels whereby the detector output signal will exceed at least one of the positive and negative thresholds when a metal object is detected.

5,600,942

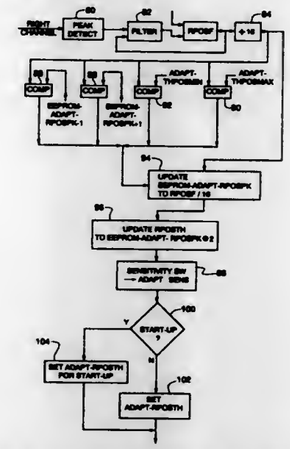
ADAPTIVE THRESHOLDING FOR METAL DETECTION

Richard P. Strosser, Akron, Pa., assignor to New Holland North America, Inc., New Holland, Pa.

Filed Mar. 31, 1995, Ser. No. 414,329

Int. Cl.[6] A01D *75/18*

U.S. Cl. 56—10.25 **5 Claims**



1. A metal detector system for detecting the passage of metal objects through a magnetic detection field, said metal detector system including at least one channel comprising a detection coil disposed in said magnetic detection field and a detection circuit for producing a channel output signal having a noise component therein, said channel output signal including a detection component upon the passage of a ferrous metal object through said magnetic detection field; means for sampling said channel output signal and producing digitized channel signals, means for comparing said digitized channel signals with positive and negative adaptive thresholds and producing an output indication when one of said digitized channel signals exceeds either said positive or said negative adaptive threshold, and means for producing positive and negative peak averages and independently setting said positive and negative adaptive thresholds according to the positive peak average and the negative peak average, respectively, of said noise component.

5,600,943

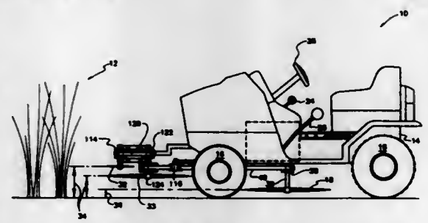
HIGH BRUSH MOWER

Cyril A. Ryan, 3050 Vincentia Rd., Palm Springs, Calif. 92262

Filed Sep. 29, 1995, Ser. No. 536,368

Int. Cl.[6] A01D *34/66;34/73;34/82;34/83*

U.S. Cl. 56—13.6 **9 Claims**



1. A mower for cutting high grass, said mower comprising:

a frame;

a motor supported on said frame;

wheels for rolling said mower along the ground, said wheels supported by said frame;

a primary cutting element mounted to said mower, and rotatably connected to said motor; and

a secondary cutting element mounted to said mower behind said primary cutting element, said secondary cutting element positioned at a height lower than that of said primary cutting element.

7. A method of converting a conventional riding mower into a mower suitable for cutting high grass, said method comprising the step of:

a) providing and mounting a primary cutting element on the riding mower, the primary cutting element located forward of the cutting element provided originally and integrally with the riding mower, the primary cutting element positioned at a cutting height above that of the original, integral cutting element.

5,600,944

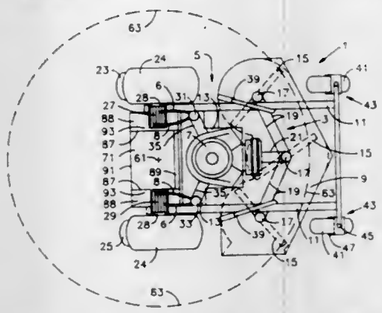
POWER MOWER WITH RIDING PLATFORM FOR SUPPORTING STANDING-OPERATOR

William R. Wright, Clarksburg, and James D. Velke, Poolesville, both of Md., assignors to Wright Manufacturing, Inc., Gaithersburg, Md.

Continuation of Ser. No. 357,740, Dec. 16, 1994, Pat. No. 5,507,138. This application Mar. 11, 1996, Ser. No. 615,518

Int. Cl.[6] A01D *34/82*

U.S. Cl. 56—14.7 **3 Claims**



1. A zero-turning-radius self-propelled power mower for operation by a standing-occupant, the mower comprising:

an engine;

at least one cutting member powered by said engine;

first and second rear drive wheels each independently driveable in both forward and reverse directions so as to allow for substantially zero-radius-turning of the mower about a turning axis when the rear drive wheels are driven in a predetermined manner, each of said first and second rear drive wheels being rotatable about corresponding axles;

a first hydrostatically powered motor connected to said first rear drive wheel and a second hydrostatically powered motor connected to said second drive wheel, said first and second hydrostatically powered motors each being positioned substantially along an axis of the corresponding wheel so that said first and second motors drive said first and second rear drive wheels respectively;

at least one pivotally mounted front wheel;

a mower deck for housing said at least one cutting member, a substantial portion of said mower deck located substantially between said rear drive wheels and said at least one front wheel;

a foot platform for supporting the standing occupant, wherein at least a portion of said foot platform is located forward of a rear edge of said first and second rear drive wheels, and wherein said foot platform is located in a position so that a substantial portion of the standing-occupant's body is located substantially at said turning axis and is substantially unaffected by centrifugal force created during zero-radius-turns of the mower; and

wherein said foot platform for supporting the standing-occupant is located at an elevation below or substantially on an axis of at least one of said rear drive wheels so as to create a low center of gravity of said mower.

5,600,945

METHOD AND APPARATUS FOR MANIPULATING A SLIVER DURING CLEANING OF AN OPEN-END SPINNING STATION

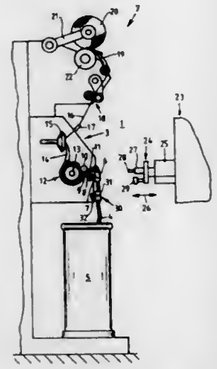
Waldemar Schmidke, Aachen; Jürgen Backhaus, Wegberg; Willi Wilms, and Harry Gatzke, both of Mönchengladbach, all of Germany, assignors to W. Schlafhorst AG & Co., Moenchengladbach, Germany

Filed Aug. 14, 1995, Ser. No. 514,761

Claims priority, application Germany, Aug. 12, 1994, 44 28 580.9

Int. Cl.[6] D01H *11/00;5/00*

U.S. Cl. 57—301 **15 Claims**



1. A method for cleaning a spinning station of an open-end spinning frame wherein a sliver is fed to a driven draw-in roller of an opening device via a sliver condenser and the sliver is held against the draw-in roller by a gripping table during spinning, the cleaning method comprising the steps of:

stopping the draw-in roller,

separating the gripping table from the draw-in roller,

aspirating an end of the sliver from between the separated draw-in roller and the gripping table by means of a switchable nozzle which is selectively operable in a suction aspiration mode and a forced air blowing mode,

removing the aspirated sliver from the draw-in roller and the gripping table,

retaining in a fixed disposition a defined length of the sliver end following its removal from between the draw-in roller and the gripping table,

performing the cleaning operation of the spinning station; and

after the cleaning operation re-inserting the sliver end between the draw-in roller and the gripping table by means of the aspiration and blower nozzle for restarting the spinning operation.

5,600,946

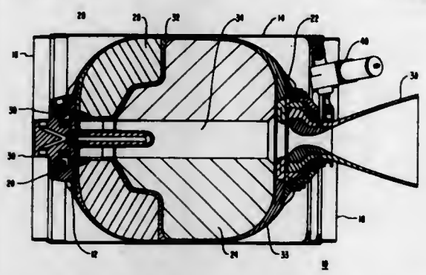
SOLID PROPELLANT DUAL PULSE ROCKET MOTOR LOADED CASE AND IGNITION SYSTEM AND METHOD OF MANUFACTURE

Daniel C. Dombrowski; Thomas J. Frey; Andrew G. Nevrincean, all of Elkton, Md., and Clyde E. Carr, Jr., Lincoln University, Pa., assignors to Thiokol Corporation, Ogden, Utah

Continuation of Ser. No. 234,308, Apr. 29, 1994, abandoned. This application Jun. 6, 1995, Ser. No. 469,759

Int. Cl.[6] F02K *9/00*

U.S. Cl. 60—253 **11 Claims**



1. A solid propellant dual phase motor comprising:

a pressure vessel having an aft opening for release of propellant materials therefrom;

a first pulse grain disposed in an aft portion of said pressure vessel;

a second pulse grain disposed in a fore portion of said pressure vessel; and

igniter means disposed in said fore portion of said pressure vessel for selectively igniting said first pulse grain and said second pulse grain said igniter means comprising a first pulse igniter disposed proximate said first pulse grain and a second pulse igniter disposed proximate said second pulse grain, said second pulse igniter comprising an igniter closure having torodial surfaces disposed therein which define an igniter chamber, said igniter closure comprising at least one nozzle port providing a path from said igniter chamber to said second pulse grain.

5,600,947

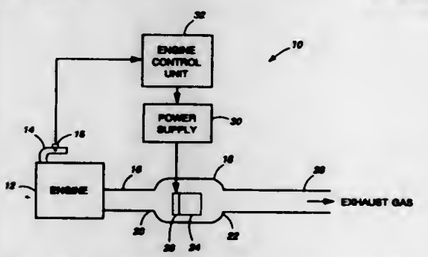
METHOD AND SYSTEM FOR ESTIMATING AND CONTROLLING ELECTRICALLY HEATED CATALYST TEMPERATURE

Michael J. Cullen, Northville, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jul. 5, 1995, Ser. No. 498,211

Int. Cl.[6] F01N *3/20*

U.S. Cl. 60—274 **20 Claims**



1. For use in reducing exhaust gas emissions of an internal combustion engine including an exhaust passage, an electrically heated catalyst disposed in the exhaust passage and having an inlet, an outlet and a heating element, and a power supply for providing power to the heating element, a method for estimating and controlling a temperature of the electrically heated catalyst, the method comprising:

sensing a mass of air flow into the engine and generating a corresponding mass air flow signal;

determining a catalyst inlet temperature at the inlet of the catalyst;

determining a heater steady-state temperature rise of the heating element based on the catalyst inlet temperature;

determining a heater instantaneous temperature rise of the heating element having a time constant based on the heater steady-state temperature rise and the mass air flow signal;

determining a total catalyst temperature of the catalyst based on the catalyst inlet temperature and the heater instantaneous temperature rise; and

controlling the heating element of the electrically heated catalyst based on the total catalyst temperature.

5,600,948

ENGINE AIR-FUEL RATIO CONTROLLER

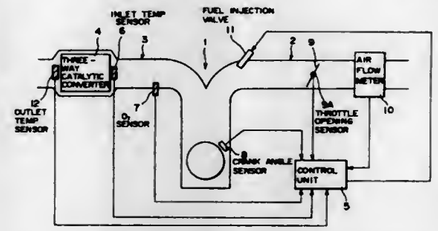
Yuki Nakajima, Yokosuka, and Kenichi Sato, Yokohama, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jul. 19, 1994, Ser. No. 277,028

Claims priority, application Japan, Jul. 29, 1993, 5-188187

Int. Cl.[6] F01N *3/28*

U.S. Cl. 60—276 **11 Claims**



1. An air-fuel ratio controller for use with an engine which has a cylinder for burning a fuel mixed with air, an intake passage for providing said air to said cylinder, a throttle for regulating an amount of said air, an exhaust passage for expelling exhaust gas from said cylinder, and a catalytic converter having an inlet and an outlet connected to said exhaust passage in order to clean said exhaust gas, said controller comprising:

sensor means for detecting an oxygen concentration in said exhaust gas,

means for feedback controlling an air-fuel ratio in said cylinder by means of a predetermined control constant according to said oxygen concentration such that said air-fuel ratio is close to a theoretical air-fuel ratio,

means for detecting an engine speed,

means for detecting an engine load,

means for setting said control constant based on said speed and load,

means for eliminating an exhaust gas temperature based on said speed and load,

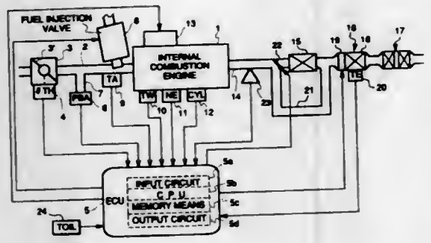
means for detecting a real exhaust gas temperature, and

means for correcting said control constant such that said air-fuel ratio tends to rich when said real exhaust gas temperature is less than said estimated exhaust gas temperature.

5,600,949
EXHAUST GAS-PURIFYING SYSTEM FOR INTERNAL COMBUSTION ENGINES

Hiroaki Kato; Yuichi Shimasaki; Akihisa Saito; Takashi Komatsuda; Toshikazu Oketani; Seiji Hatcho; Seiji Matsumoto; Takuya Aoki, and Yukio Miyashita, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 2, 1994, Ser. No. 299,116
Claims priority, application Japan, Sep. 6, 1993, 5-245927
Int. Cl.[6] F01N *3/28*
U.S. Cl. 60—284 **9 Claims**



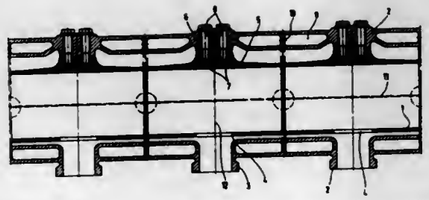
1. An exhaust gas-purifying system for an internal combustion engine having an exhaust system, comprising:
catalyzer means arranged in said exhaust system;
heater means disposed to heat said catalyzer means;
heater control means for controlling operation of said heater means; and
operating condition-detecting means for detecting operating conditions of said engine;
wherein said heater control means comprises operation-restraining means responsive to operating conditions of said engine detected by said operating condition-detecting means, for restraining operation of said heater means,
wherein said operating condition-detecting means includes engine temperature-detecting means for detecting a temperature of said engine, said operation-restraining means restraining the operation of said heater means when the temperature of said engine detected by said engine temperature-detecting means exceeds a predetermined value,
wherein said engine temperature-detecting means comprises hydraulic oil temperature-detecting means for detecting temperature of hydraulic oil in said engine.

5,600,950
EXHAUST GAS PIPE

Josef Ottenschlaeger, Tettnang, Germany, assignor to MTU Motoren-und Turbinen-Union Friedrichshafen GmbH, Friedrichshafen, Germany

PCT No. PCT/EP94/01374, § 371 Date Nov. 13, 1995, § 102(e) Date Nov. 13, 1995, PCT Pub. No. WO94/27036, PCT Pub. Date Nov. 24, 1994
PCT Filed Apr. 29, 1994, Ser. No. 545,686
Claims priority, application Germany, May 15, 1993, 43 16 333.5
Int. Cl.[6] F01N *7/10*
U.S. Cl. 60—321 **5 Claims**

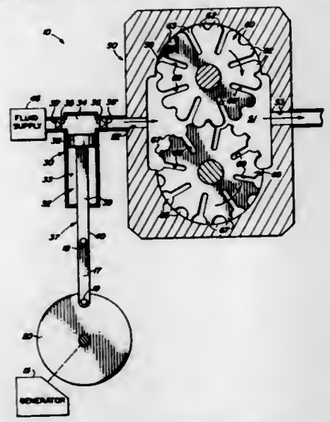
1. An exhaust gas pipe for a multi-cylinder charged internal combustion engine with an outer gas-tight housing (2) and an inwardly disposed exhaust gas pipe (1) made of single piece cast segments (5), the length of which corresponds to the cylinder spacings of the internal combustion engine, characterized in that the segments (5) comprise projections (6) opposite an inlet opening (4) at the circumference of the segments, said projections (6) resting against projections of the housing (2) provided at the inner circumference thereof, and wherein said segments are connected at this point with said housing (2) by screws (8) which are externally accessible.



5,600,951
HYDRAULIC TRANSMISSION SYSTEM

Oscar Helver, 13501 SW. 81st St., Miami, Fla. 33166

Continuation-in-part of Ser. No. 270,377, Jul. 5, 1994, abandoned. This application Apr. 3, 1995, Ser. No. 415,437
Int. Cl.[6] F16D *31/00;* **F01C** *1/08*
U.S. Cl. 60—325 **10 Claims**



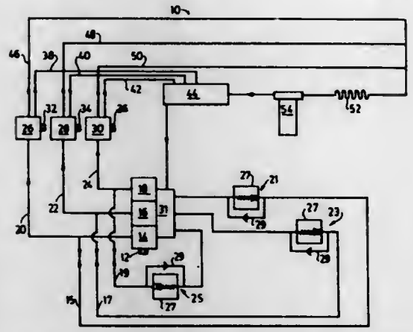
1. A hydraulic transmission system comprising:
fluid introduction means structured and disposed to supply fluid under pressure,
a turbine chamber, said turbine chamber including a fluid input opening disposed in fluid flow communication with said fluid introduction means such that fluid being supplied by said fluid introduction means will enter said turbine chamber through said fluid input opening,
a first rotor and a second rotor disposed within said turbine chamber in interlocking, driving relation with one another,
said first rotor including a first plurality of tooth elements disposed about a periphery thereof in closely spaced relation with one another so as to define a first plurality of trough sections therebetween,
said second rotor including a second plurality of trough elements disposed about a periphery thereof in closely spaced relation with one another so as to define a second plurality of tooth elements, each of said second plurality of trough elements being structured to substantially receive one of said first plurality of tooth elements drivingly and matingly therein,
said first rotor and said second rotor being rotatably disposed within said turbine chamber in substantially close, mating proximity with one another such that said first plurality of tooth elements of said first rotor are matingly and drivingly disposed relative to said plurality of second trough elements of said second rotor and said second plurality of tooth elements of said second rotor are matingly and drivingly disposed relative to said plurality of first trough elements of said first rotor,

said first rotor and said second rotor being disposed within said turbine chamber such that said fluid being pushed into said turbine chamber through said fluid input opening is drivingly directed to said first rotor and said second rotor so as to result in driving rotation of said first rotor and said second rotor towards one another,
said second rotor including at least one radial channel extending inward along a radius of said second rotor from at least one of said second plurality of trough elements, said radial channel being structured and disposed to be filled with fluid upon an initial rotation of said second rotor such that a fluid contained therein will remain in said radial channel during subsequent rotations of said second rotor and will immediately become re-pressurized upon initiation of further rotations so as to translate a rotating force from said fluid along an entire length of said radial channel,
said first rotor including at least one radial channel extending inward along a radius of said first rotor from at least one of said first plurality of trough elements, said radial channel being structured and disposed to be filled with fluid upon an initial rotation of said first rotor such that a fluid contained therein will remain in said radial channel during subsequent rotations of said first rotor and will immediately become re-pressurized, upon initiation of further rotations, so as to translate a rotating force from said fluid along an entire length of said radial channel,
said turbine chamber being structured to allow free rotation of said first rotor and said second rotor therein, while substantially minimizing free space therein around said first and said second rotors,
a fluid output opening disposed in said turbine chamber and being structured and disposed to allow passage of said fluid out of said turbine chamber and de-pressurization of said fluid that remains contained in said radial channel, subsequent to said fluid having drivingly rotated said first rotor and said second rotor, and
power take off means structured and disposed to utilize driving power resulting from rotation of said first rotor and said second rotor.

5,600,952
AUXILLIARY DRIVE APPARATUS

Giovanni Aquino, Kenmore, and Ewan Choroszylow, East Aurora, both of N.Y., assignors to Aurora Technology Corporation, East Aurora, N.Y.

Filed Sep. 26, 1995, Ser. No. 533,684
Int. Cl.[6] F16D *31/02*
U.S. Cl. 60—421 **20 Claims**

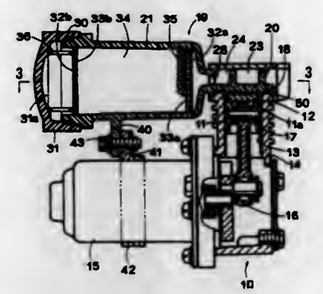


1. An auxiliary drive apparatus which comprises an engine, a first hydraulic pump driven by said engine comprising a first pump inlet and a first pump outlet, a second hydraulic pump driven by said engine comprising a second pump inlet and a second pump outlet, a third hydraulic pump driven by said engine comprising a third pump inlet and a third pump outlet, a first pressure relief valve connected in parallel to said first pump outlet of said first hydraulic pump, a first vacuum breaking valve connected in parallel to said first pump outlet of said first hydraulic pump, a first hydraulic motor connected in series to said first pump outlet of said first hydraulic pump,, a second pressure relief valve connected in parallel to said second pump outlet of said second hydraulic pump, a second vacuum breaking valve connected in parallel to said second pump outlet of said second hydraulic pump, a second hydraulic motor connected in series to said second pump outlet of said second hydraulic pump, a third pressure relief valve connected in parallel to said third pump outlet of said third hydraulic pump, a third vacuum breaking valve connected in parallel to said third pump outlet of said third hydraulic pump, and a third hydraulic motor connected in series to said third pump outlet of said third hydraulic pump wherein:
(a) said first pressure relief valve diverts fluid directly to said first pump inlet of said first hydraulic pump when the fluid discharged from said first pump outlet of said first hydraulic pump exceeds a specified limit,
(b) said second pressure relief valve diverts fluid directly to said second pump inlet of said second hydraulic pump when the fluid discharged from said second pump outlet of said second hydraulic pump exceeds a specified limit,
(c) said third pressure relief valve diverts fluid directly to said third pump inlet of said third hydraulic pump when the fluid discharged from said third pump outlet of said third hydraulic pump exceeds a specified limit,
(d) said auxiliary drive apparatus is comprised of means for isolating a first fluid discharged from said first pump outlet of said first hydraulic pump and feeding only said first fluid to said first hydraulic motor,
(e) said auxiliary drive apparatus is comprised of means for isolating a second fluid discharged from said second pump outlet of said second hydraulic pump and feeding only said second fluid to said second hydraulic motor, and
(f) said auxiliary drive apparatus is comprised of means for isolating a third fluid discharged from said third pump outlet of said third hydraulic pump and feeding only said third fluid to said third hydraulic motor.

5,600,953
COMPRESSED AIR CONTROL APPARATUS

Morito Oshita, Chiryu; Masakazu Ozawa, Toyota, and Masayoshi Hattori, Chiryu, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 26, 1995, Ser. No. 533,746
Claims priority, application Japan, Sep. 28, 1994, 6-233867; Sep. 29, 1994, 6-235289; Aug. 8, 1995, 7-202459
Int. Cl.[6] F16D *31/02*
U.S. Cl. 60—453 **13 Claims**



1. A compressed air control apparatus for supplying compressed air to a pneumatic actuator, comprising:
a compressor that includes a cylinder with an open end, a head member secured to the open end of said cylinder, a piston

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slidably positioned in said cylinder to form a pressure chamber within said cylinder between the head member and the piston for generating compressed air, an intake valve for introducing air into said pressure chamber, and a discharge valve for discharging compressed air from the pressure chamber;

dry means disposed in a dry housing for drying the compressed air discharged from said compressor;

supply valve means disposed in a supply valve housing for controlling the compressed air to be supplied to said pneumatic actuator;

exhaust valve means disposed in an exhaust valve housing for controlling the compressed air to be discharged from said pneumatic actuator,

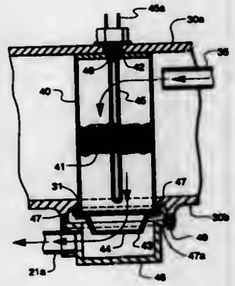
said drying housing, supply valve housing and exhaust valve housing being disposed in the vicinity of the head member, said head member, dry housing, supply valve housing and exhaust valve housing being integrally formed of synthetic resin to define a single piece integral housing.

5,600,954

TRACTOR HYDRAULIC RESERVOIR HEATING ELEMENT

Tod A. Bay, Denver, Pa., and Clinton B. Stroh, Portage, Mich., assignors to New Holland North America, Inc., New Holland, Pa.

Filed Oct. 5, 1994, Ser. No. 318,318
Int. Cl.[6] F16D *31/02*; B01D *24/00*
U.S. Cl. 60—454 **3 Claims**



1. In a tractor having a wheeled chassis adapted for movement over the ground; an engine supported on said chassis for providing operative power for said tractor; and a hydraulic system operably powered by said engine and having a plurality of remote couplers supported from said chassis for remote connection thereto, said hydraulic system further including a reservoir having first and second spaced-apart walls, a pump drawing hydraulic fluid through an intake line from said reservoir to provide a flow of hydraulic fluid under pressure to the remote couplers, and a return line to return hydraulic fluid from said remote couplers to said reservoir, the improvement comprising:

an intake screen member mounted in said reservoir in operative association with said intake line to screen hydraulic fluid prior to being drawn into said intake line;

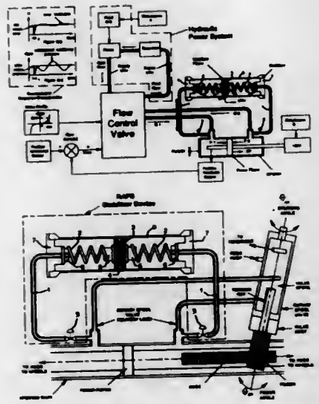
a heating member mounted on said first reservoir wall and projecting outwardly therefrom into said reservoir, said heating member being positioned on an intake side of said intake screen so that hydraulic fluid can be heated after passing through said screen member and before being drawn through said intake line, said intake screen member being mounted on said heating member.

5,600,955

HYDRAULIC SERVOACTUATOR STABILIZER DEVICE

Yilmaz Sahinkaya, 993 Laguna Cir., Foster City, Calif. 94404

Filed Jun. 9, 1995, Ser. No. 489,028
Int. Cl.[6] F16D *31/02*
U.S. Cl. 60—469 **17 Claims**



1. A stabilizer, having components with the physical properties of dimensions and mass, for reducing unwanted structural vibrations of predetermined frequency in an a hydraulic servoactuator, said servoactuator having a power piston, such vibrations caused by an unbalanced oscillatory pressure component on such power piston, said stabilizer comprising:

a.) a housing defining a cavity for containing hydraulic fluid wherein said cavity is elongated and generally cylindrical and said piston is circular in cross-section and disposed transversely across said cavity;

b.) first and second fluid delivery lines for said hydraulic fluid communicating with opposite sides of said cavity and communicating with opposite sides of said power piston, whereby said cavity is hydraulicly arranged in parallel with said power piston;

c.) a stabilizer piston slidably disposed within said cavity so as to divide said cavity into first and second sub-cavities communicating with said first and second return lines respectively, whereby movement of said stabilizer piston changes the relative size of said sub-cavities;

d.) coil springs for biasing said stabilizer piston toward an equilibrium position;

e.) a first adjustable orifice communicating with the first sub-cavity and a second adjustable orifice communicating with the second sub-cavity, the first and second orifices to fine tune the frequency of oscillation of said stabilizer piston; and

wherein the dimensions and the mass of the components thereof are selected such that said mechanism has a natural response frequency that at least partially cancels said unbalanced oscillatory pressures on said power piston.

17. In an automobile having a power steering system of the rack and pinion type that includes a hydraulicly actuated power piston, a power steering system stabilizer having a natural response frequency that matches unbalanced hydraulic oscillatory forces characteristic of said servoactuator comprising:

a.) a bousing defining a cavity for containing hydraulic fluid;

b.) first and second delivery lines for said hydraulic fluid communicating with opposite sides of said cavity and communicating with opposite sides of said power piston, whereby said cavity is hydraulicly arranged in parallel with said power piston;

c.) a stabilizer piston slidably disposed within said cavity so as to divide said cavity into first and second sub-cavities communicating with said first and second return lines respectively, whereby movement of said stabilizer piston changes the relative sizes of said sub-cavities; and

d.) at least one spring for biasing said stabilizer piston toward an equilibrium position;

e.) a first adjustable valve in a first end of said housing and a second adjustable valve in a second end of said housing to fine tune the frequency of oscillation of said piston; and

wherein the said natural response frequency of said stabilizer is determined by the equation:

$$f_{nr} = \frac{1}{2\pi}\sqrt{\frac{1}{C_r\left(L_{dl} + \frac{M_{pr}}{2A_{pr}^2}\right)}} \quad (Hz)$$

wherein f_{nr} is the stabilizer tuning frequency;
C_r is the stabilizer capacitance defined by equation,

$$C_r = \frac{A_{pr}^2}{K_{pr}} + \frac{A_{dl}l_{dl}}{\beta_{dl}} + \frac{V_{cr}}{2\beta_{cr}}$$

wherein A_{pr} is the piston area;
A_{dl} is the delivery line flow area;
K_{pr} is the spring stiffness; l_{dl} is the delivery line length;
β_{dl} is the fluid Bulk Modulus of fluid in the delivery line;
V_{cr} is the net fluid volume in the stabilizer housing;
β_{cr} the fluid Bulk Modulus of fluid in the stabilizer housing;
L_{dl} is the stabilizer delivery line inductance defined by the equation,

$$L_{dl} = \frac{\rho l_{dl}}{g_c A_{dl}}$$

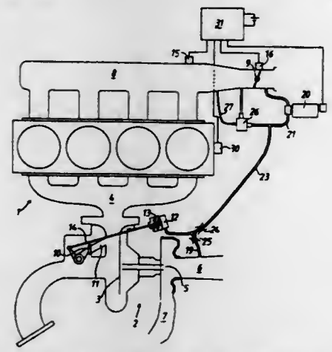
wherein ρ is the fluid density;
g_c is the gravitational constant; and
M_{pr} is the sum of piston and spring masses.

5,600,956

ARRANGEMENT AND METHOD FOR REGULATION OF THE IDLE SPEED AND CHARGE PRESSURE IN A SUPERCHARGED COMBUSTION ENGINE

Jan Nytomt, Amal, Sweden, assignor to Mecel AB, Sweden

PCT No. PCT/SE94/00647, § 371 Date Mar. 7, 1995, § 102(e) Date Mar. 7, 1995, PCT Pub. No. WO95/02119, PCT Pub. Date Jan. 19, 1995
PCT Filed Jun. 30, 1994, Ser. No. 392,994
Claims priority, application Sweden, Jul. 8, 1993, 9302365
Int. Cl.[6] F02B *37/12*
U.S. Cl. 60—602 **11 Claims**



1. An arrangement for regulation of the idle speed of a supercharged combustion engine having an inlet manifold with a throttle positioned therein and for regulation of the charge pressure in the inlet manifold, which arrangement comprises:

(a) a shunt channel connected to the inlet manifold to enable the throttle to be bypassed;

(b) an idle speed valve arranged in the shunt channel for selectively opening and closing the shunt channel;

(c) means including a selectively openable charge control regulating valve for controlling the charge pressure in the inlet manifold the charge pressure being a function of the degree of opening of the charge control valve;

(d) pressure responsive means including a diaphragm pot for regulating the degree of opening of the charge control valve;

(e) a supply duct connected from the shunt channel downstream of the idle speed valve to the pressure responsive means to selectively pressurize the pressure responsive means;

(f) an adjustable flow regulating valve positioned in the shunt channel; and

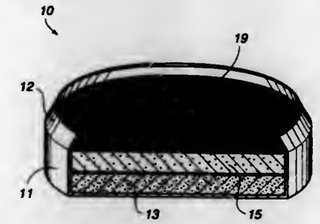
(g) means responsive to pressure arranged in the inlet manifold for adjusting the flow regulating valve.

5,600,957

DEVICE FOR MAINTAINING A VACUUM IN A THERMALLY INSULATING JACKET AND METHOD OF MAKING SUCH DEVICE

Paolo Manini, Arluno, and Fortunato Belloni, Villastanza Di Parabiago, both of Italy, assignors to SAES Getters S.p.A., Italy

Continuation of Ser. No. 479,343, Jun. 6, 1995, Pat. No. 5,544,490. This application Mar. 21, 1996, Ser. No. 620,034
Claims priority, application Italy, Jul. 7, 1994, MI94A1415
Int. Cl.[6] F17C *3/08*
U.S. Cl. 62—46.1 **10 Claims**



1. A device for maintaining a vacuum in an enclosed space, comprising:

a) a substantially gas-impermeable container having open and closed ends,

b) a first pellet formed of a getter material including a Ba-Li alloy, said first pellet being located in said container proximate to said closed end; and

c) a second pellet including a drying agent, said second pellet being located in said container proximate to said open end, said second pellet covering substantially said first pellet, said first and second pellets being compacted at a pressure effective to provide said pellets with a degree of mechanical stability and inner porosity to effectively maintain a nitrogen sorption rate of at least about one cubic centimeter/second after exposure to air for fifteen minutes.

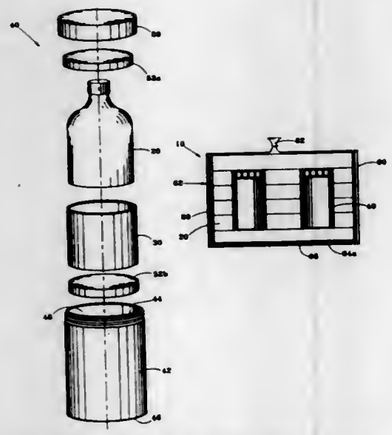
5,600,958

SHIPPER

Steve Henning, 2734 Carmel Woods Dr., Seabrook, Tex. 77586, and James A. Camp, 1713 Asbury La., Deer Park, Tex. 77536

Filed Mar. 30, 1995, Ser. No. 413,550
Int. Cl.[6] B65B *63/09*
U.S. Cl. 62—60 **21 Claims**

20. A method for shipping materials which must be precooled and maintained within a predetermined temperature range for a given period of time comprising:



(1) placing precooled material within a precleaned vessel having a contiguous wall defining a vessel cavity and a port for receiving precooled material;
(2) sealably engaging the port with a precleaned lid having an inert liner adjacent to the vessel cavity;
(3) jacketing a precooled refrigerant around the vessel so that the refrigerant maintains the precooled material within a predetermined temperature range for a given period of time;
(4) placing the refrigerant-jacketed vessel and the lid within a primary safeguard assembly comprising a receptacle having a contiguous wall defining an opening and a receptacle cavity for receiving the refrigerant-jacketed vessel and lid in sealing engagement therewith through the opening;
(5) placing a sorbent between the vessel and the receptacle wall;
(6) sealably engaging the opening of the receptacle with a cover;
(7) placing the primary safeguard containing the refrigerant jacketed vessel and the lid within a secondary safeguard assembly comprising an outer structual member, a liquid impermeable liner adjacent to an inner surface of the structural member, and a layer of thermal insulation disposed between the liner and the primary safeguard assembly, the thermal insulation having an indentation for receiving the primary safeguard assembly;
(8) transporting the assembled secondary safeguard containing the assembled primary safeguard to a remote location;
(9) opening the secondary safeguard assembly and removing the vessel from the primary safeguard assembly; and
(10) opening the vessel.

5,600,959

METHOD OF REPLACING THE LUBRICATION PRODUCT IN REFRIGERATION SYSTEMS

Marie N. Gay; Nicole Genet, both of Lyon, and Pierre Sauvi, Vernaison, all of France, assignors to Elf Antar France, Courbevoie, France

PCT No. PCT/FR94/00548, § 371 Date Jan. 11, 1996, § 102(e) Date Jan. 11, 1996, PCT Pub. No. WO94/27100, PCT Pub. Date Nov. 24, 1994
PCT Filed May 10, 1994, Ser. No. 537,742
Claims priority, application France, May 11, 1993, 93 05618
Int. Cl.[6] F25B *43/02*
U.S. Cl. 62—84 **15 Claims**

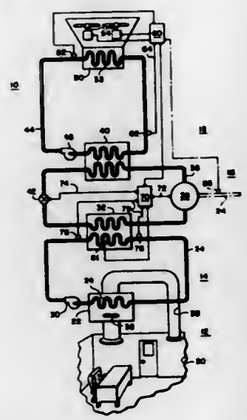
1. A method of replacing at least one CFC lubricant with at least one FHC lubricant in a refrigeration system containing a CFC fluid and a CFC lubricant before replacing the CFC fluid with an FHC fluid comprising:
(1) operating the refrigeration system until equilibrium is achieved and then switching the system off,
(2) draining the at least one CFC lubricant from the refrigeration system to leave a residual amount of said CFC lubricant therein,
(3) filling the refrigeration system with an intermediate fluid, wherein the intermediate fluid is a fluid which is compatible with the CFC fluid, capable of dissolving the CFC lubricant, and is soluble in the FHC lubricant,
(4) switching the refrigeration system on and uniformly mixing the intermediate fluid and the residual CFC lubricant to form a flushing fluid,
(5) switching the system off and then draining the flushing fluid,
(6) measuring the content of CFC lubricant in the flushing fluid,
(7) repeating steps (3), (4), (5), and (6) until the content of CFC lubricant in the flushing fluid is less than or equal to a percentage A,
(8) replacing the intermediate fluid in step (3) with the FHC lubricant,
(9) repeating steps (3), (4), and (5), except that the FHC lubricant is used in place of the intermediate fluid,
(10) measuring the content of residual intermediate fluid in the FHC lubricant,
(11) repeating steps (9) and (10) until the content of residual intermediate fluid in the FHC lubricant is less than or equal to a percentage B.

5,600,960

NEAR OPTIMIZATION OF COOLING TOWER CONDENSER WATER

Michael C. A. Schwedler; Jon R. Hage; Dennis R. Dorman, all of La Crosse, Wis., and Michael J. Stiyer, New Hope, Minn., assignors to American Standard Inc., Piscataway, N.J.

Filed Nov. 28, 1995, Ser. No. 563,848
Int. Cl.[6] F25D *17/02*; F25B *39/04*
U.S. Cl. 62—99 **25 Claims**



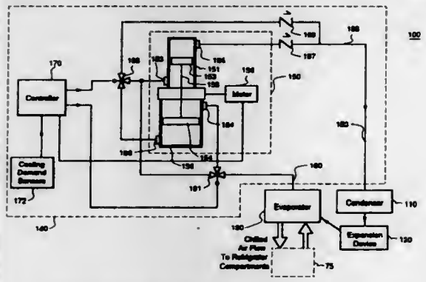
1. A method of minimizing energy usage in a chiller and cooling tower system which uses a temperature conditioned fluid to exchange heat energy between the chiller and the cooling tower system comprising the steps of:
determining a measure of chiller efficiency;
determining a measure of cooling tower efficiency;
determining a measure of the transfer rate of heat energy between the cooling tower and the chiller;
calculating a near optimal water temperature as a function of the chiller work efficiency, the cooling tower efficiency and the transfer rate; and
operating the cooling tower, responsive to the near optimal water temperature, to provide the temperature conditioned fluid at the near optimal temperature.

5,600,961

REFRIGERATION SYSTEM WITH DUAL CYLINDER COMPRESSOR

Walter Whipple, III, Amsterdam, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 7, 1994, Ser. No. 301,759
Int. Cl.[6] F25B *7/00*; F04B *23/04*
U.S. Cl. 62—175 **10 Claims**



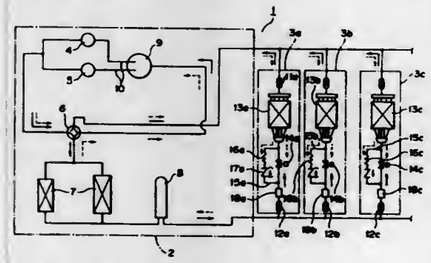
1. An energy-efficient refrigeration system comprising:
a compressor apparatus comprising a dual cylinder compressor coupled to an evaporator to receive and compress the refrigerant passing from said evaporator, said compressor comprising a first cylinder, a second cylinder and a first piston and a second piston disposed respectively in said first and second cylinders, said first and second pistons being horizontally opposed and coupled together by a fixed connecting rod; and
a compressor controller coupled to said compressor to control compressor capacity by selection of a predetermined refrigerant flow path through said compressor;
said compressor apparatus further comprising at least one refrigerant flow control valve coupled to said compressor controller so as to be responsive to control signals therefrom, said refrigerant flow control valve being disposed in a compressor plumbing manifold connected to said compressor so as to selectively establish said refrigerant flow path.

5,600,962

AIR CONDITIONER

Yukio Aizawa, Ojimamachi; Kouji Fujitani, Oota; Haruyuki Kaeriyama, Oota; Kenji Kobayashi, Oota, and Katsuhiro Tsuda, Ootsumimachi, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka-fu, Japan

Filed Nov. 3, 1994, Ser. No. 334,183
Claims priority, application Japan, Nov. 12, 1993, 5-283572; Nov. 24, 1993, 5-293342
Int. Cl.[6] F25B *41/04*
U.S. Cl. 62—204 **5 Claims**



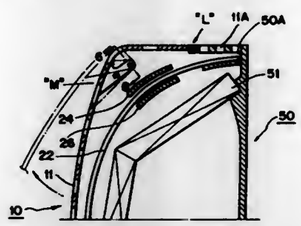
1. An air conditioner, comprising:
an outdoor unit containing a compressor and an outdoor heat exchanger therein;
plural indoor units, each of these having an indoor heat exchanger and an electric expansion valve, wherein said compressor, said outdoor heat exchanger, said electric expansion valve and said indoor heat exchanger are linked to one another in this order to constitute a refrigerant circuit; and
a pressure reducing member which is linked to said electric expansion valve in parallel in the refrigerant circuit and serves as resistance to refrigerant flowing therethrough, wherein a valve opening degree of said electric expansion valve of said indoor unit when a room heating operation is stopped is set to be smaller than a valve opening degree of said electric expansion valve of said indoor unit when the room heating operation is performed, and the resistance value of said pressure reducing member is set to be smaller than the resistance value to be provided to the refrigerant in accordance with the valve opening degree of said electric expansion valve when the room heating operation is stopped.

5,600,963

INDOOR UNIT OF AN AIR CONDITIONER SYSTEM

Byung K. Koo, Seoul; Jin S. Chung, Suwon; Ki Y. Lee, Suwon; Younsup Yoon, Suwon, and Kyung H. Yoon, Suwon, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Aug. 16, 1995, Ser. No. 515,617
Claims priority, application Rep. of Korea, Aug. 20, 1994, 94-21045; Aug. 20, 1994, 94-21046; Aug. 20, 1994, 94-21048; Aug. 20, 1994, 94-21049; Aug. 20, 1994, 94-21050; Jan. 28, 1995, 95-1450; Jan. 28, 1995, 95-1452; Jan. 28, 1995, 95-1454
Int. Cl.[6] F25D *23/12*
U.S. Cl. 62—262 **8 Claims**



1. An indoor unit of an air conditioning system, comprising front and rear cases connected to one another to define a space; a grill member hingedly mounted on said front case and forming a front air intake opening communicating with said space; a filter mounted on a rear side of said grill member and extending across said front air intake opening; said rear case including a top air intake opening formed in an upper side thereof; a heat exchanger and fan disposed in said space; a motor disposed in said space for driving said fan to draw-in air through said front and top air intake openings; said front case having a pair of first brackets disposed at upper portions of respective ends of a rear side of said front case; said front case including an access opening adjacent each first bracket; said grill member including a pair of second brackets arranged to be inserted through respective ones of said access openings to be positioned adjacent a respective first bracket; a hinge pin extending through aligned holes of each first bracket and its respective second bracket; each hinge pin including enlargements at each of its ends for retaining said hinge pins in said aligned holes; said front and rear cases having overlapping edge portions; one of said edge portions including outer and inner elements spaced apart to form a slot for receiving said other edge portion.

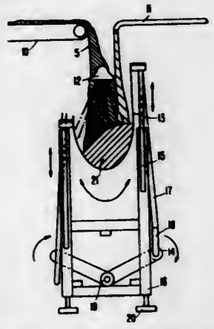
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5,600,964

APPARATUS FOR FREEZING OR DEEP-FREEZING FOOD PRODUCTS

Leone Da Dalto, and Luca Ricci, both of Treviso, Italy, assignors to Alfagel S.p.A., Treviso, Italy

Filed Mar. 8, 1995, Ser. No. 401,147
Claims priority, application Italy, Mar. 9, 1994, PN94A0013
Int. Cl.[6] F25D *17/02*
U.S. Cl. 62—373 **10 Claims**



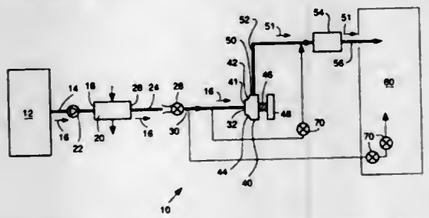
1. An apparatus for freezing food products, said apparatus comprising:
- a support framework including first and second pairs of longitudinally extensible vertical support members, wherein said first pair of support members is of a greater height than said second pair of support members;
- a flexible food support member connected to said first and second pairs of vertical support members so as to be suspended within said support framework;
- a food product feeding device positioned near said first pair of vertical support members;
- a food product freezing device located adjacent said flexible food support member; and
- a mechanical drive mechanism connected to each of said vertical support members, wherein said support members are extended and contracted to move said flexible food support member.

5,600,965

AIR CONDITIONING SYSTEM

Shihming N. Jan, Carlsbad, and Dave J. White, San Diego, both of Calif., assignors to Solar Turbines Incorporated, San Diego, Calif.

Filed Mar. 14, 1996, Ser. No. 616,144
Int. Cl.[6] F25D *9/00*
U.S. Cl. 62—401 **8 Claims**



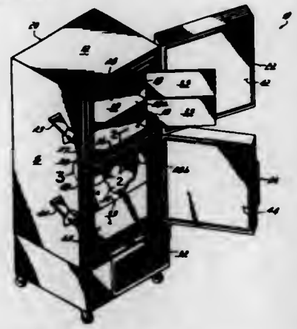
1. An air conditioning system having a source defining a flow of high pressure air being a compressor section of a gas turbine engine comprising:
- a one way valve being in communication with said flow of high pressure air;
- a heat exchanger being in communication with said flow of high pressure air exiting the one way valve;
- a flow control valve being in communication with said flow of high pressure air exiting said heat exchanger;
- a supersonic turbine device having an inlet portion defining a nozzle portion being in communication with said flow of high pressure air exiting the flow control valve, said supersonic turbine device further having an outlet portion through which a flow of spent high pressure air exits therefrom as an expanded, low pressure, cooled air;
- a water separator being in communication with said flow of low pressure air exiting the outlet portion of the supersonic turbine device; and
- a cabin zone being in communication with the flow of low pressure cooled air exiting the water separator.

5,600,966

ULTRA LOW TEMPERATURE SPLIT DOOR FREEZER

John H. Valence, Williamstown, and Keith L. Wharton, Parkersburg, both of W. Va., assignors to Forma Scientific, Inc., Marietta, Ohio

Filed May 19, 1995, Ser. No. 445,040
Int. Cl.[6] F25D *11/00;21/06;* A47B *96/04*
U.S. Cl. 62—440 **9 Claims**



1. An upright freezer comprising:
- a freezer chamber contained by insulated peripheral walls including a pair of side walls, a top wall, a bottom wall and a rear wall;
- an insulated mullion extending across a front opening of said chamber and mounted between said pair of side walls;
- an upper insulated door and a lower insulated door hingedly secured to one of said side walls and, in closed positions, said upper door sealing against upper front edge portions of said pair of side walls and front edge portions of said top wall and said mullion, said lower door sealing against lower front edge portions of said pair of side walls and front edge portions of said bottom wall and said mullion; and,
- a refrigeration unit connected to said freezer which cools said chamber to a substantially uniform temperature below about −50° C.

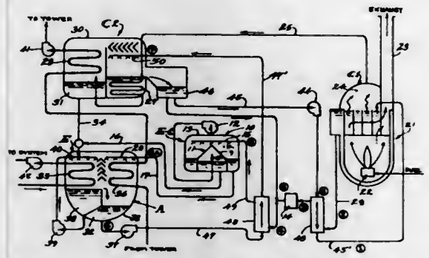
5,600,967

REFRIGERANT ENHANCER-ABSORBENT CONCENTRATOR AND TURBO-CHARGED ABSORPTION CHILLER

Milton Meckler, 930 20th St., Apt. 2, Santa Monica, Calif. 90403

Filed Apr. 24, 1995, Ser. No. 427,852
Int. Cl.[6] F25B *15/00*
U.S. Cl. 62—476 **48 Claims**

1. A refrigerant enhancer-absorbent concentrator in a closed system for increasing the chilling capacity of an absorption chiller comprised of at least one concentrator to which heat is applied to vaporize a water refrigerant and to concentrate an absorbent solution of said water refrigerant and absorbent material, having a



condenser for cooling and liquefying said vaporized water refrigerant, having an evaporator for chilling said water refrigerant by means of evaporation, there being a heat-in coil from warmer system water that is chilled therein and which discharges heat to vaporize said water refrigerant, having an absorber for condensing the vaporized water refrigerant and for its absorption into the absorbent solution, there being a heat-out coil to pick up and discharge the heat of vaporization and the heat of dilution, and means returning the absorbent solution to the at least one concentrator for recycling through said closed system,

the refrigerant enhancer-absorbent concentrator including, an evaporator means for vaporizing water refrigerant from the absorbent solution of water refrigerant and sorbent material from said at least one concentrator and for strengthening the absorbent solution discharged into the absorber of the closed system for additional absorption of water vapor therein, a vapor compressor means for pressurizing refrigerant vapor from the evaporator means, and condenser means for liquifying the water refrigerant vapor pressurized by the vapor compressor means for discharge of additional water refrigerant into the first mentioned evaporator of the closed system,

whereby the chilling effect applied to the system water is increased

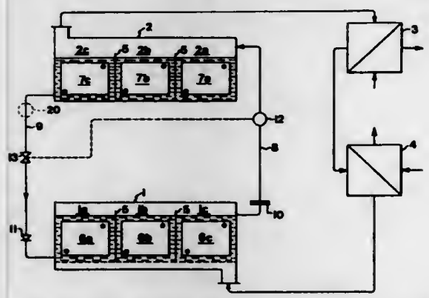
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5,600,968

ABSORPTION MACHINE WITH MULTI-TEMPERATURE COMPARTMENTS

Åke Jernqvist, Lund; Klas Abrahamsson, Sollentuna, and Anders Gidner, Lund, all of Sweden, assignors to Chematur Engineering Aktiebolag, Karlskoga, Sweden

PCT No. PCT/SE93/01072, § 371 Date Jun. 5, 1995, § 102(e) Date Jun. 5, 1995, PCT Pub. No. WO94/14017, PCT Pub. Date Jun. 23, 1994
PCT Filed Dec. 15, 1993, Ser. No. 448,499
Claims priority, application Sweden, Dec. 15, 1992, 9203775
Int. Cl.[6] F25B *15/12;15/00*
U.S. Cl. 62—484 **29 Claims**



1. An absorption machine operating with a pair of working media, the pair of working media including a working-medium solution and a working medium, the absorption machine comprising:

an absorber, the absorber including heat-exchanger assemblies;

a generator, the generator including heat-exchanger assemblies;

first and second conduits interconnecting the generator and the absorber; and

the absorber and the generator being divided into two or more compartments, the two or more compartments being in communication with one another such that the working medium in the two or more compartments of the absorber is at a constant pressure and such that the working medium in the two or more compartments of the generator is at a constant pressure, and each of the two or more compartments having a heat-exchanger assembly with separate inlets and outlets.

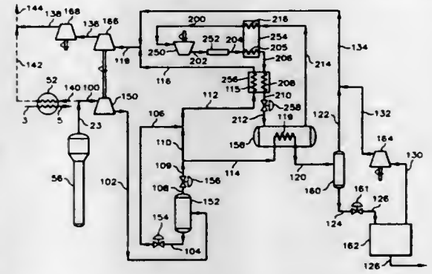
5,600,969

PROCESS AND APPARATUS TO PRODUCE A SMALL SCALE LNG STREAM FROM AN EXISTING NGL EXPANDER PLANT DEMETHANIZER

William R. Low, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 18, 1995, Ser. No. 573,973
Int. Cl.[6] F25J *3/06*
U.S. Cl. 62—622 **20 Claims**

1. A process for producing liquefied natural gas at a natural gas



expander plant comprising

(a) withdrawing a methane-rich side stream from the gas overhead stream at the demethanizer;

(b) expanding said side stream by flowing through a turbo expander thereby producing energy and a two-phase stream;

(c) splitting said two-phase stream into a first stream and a second stream;

(d) flowing said first stream and a condensible refrigerant vapor stream to a condenser wherein said first stream functions via indirect heat exchange as a coolant thereby condensing at least a portion of the condensible refrigerant stream and producing a liquid-bearing refrigerant stream and a warmed first stream;

(e) flashing said refrigerant stream of step (d) thereby creating a flashed refrigerant stream;

(f) flowing the second stream and at least a portion of the flashed refrigerant stream into an indirect heat exchange means thereby condensing at least a portion of the second stream and producing an LNG-bearing stream and a refrigerant vapor stream.

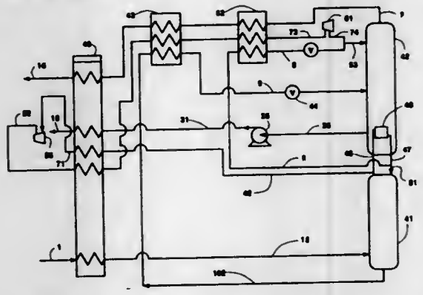
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5,600,970

CRYOGENIC RECTIFICATION SYSTEM WITH NITROGEN TURBOEXPANDER HEAT PUMP

Raymond F. Drnevich, Clarence Center, and Neil M. Prosser, Lockport, both of N.Y., assignors to Praxair Technology, Inc., Danbury, Conn.

Filed Dec. 19, 1995, Ser. No. 574,665
Int. Cl.[6] F25B *3/00*
U.S. Cl. 62—651 **11 Claims**



1. A method for operating a cryogenic rectification plant comprising:

(A) providing feed air at a pressure greater than 100 psia into a cryogenic rectification plant and separating the feed air by cryogenic rectification within the cryogenic rectification plant into oxygen-richer and nitrogen-richer fluids;

(B) withdrawing nitrogen-richer fluid from the cryogenic rectification plant and warming the withdrawn nitrogen-richer fluid;

(C) withdrawing oxygen-richer fluid from the cryogenic rectification plant as liquid and pumping the withdrawn oxygen-richer liquid to a higher pressure;

(D) compressing the warmed nitrogen-richer fluid and thereafter cooling the compressed nitrogen-richer fluid by indirect heat exchange with the pumped oxygen-richer liquid;

(E) turboexpanding the cooled nitrogen richer fluid; and

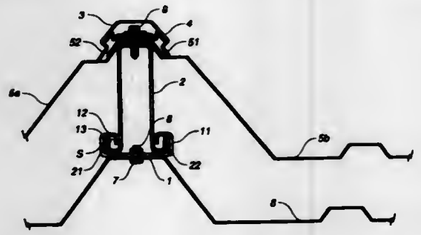
(F) passing the turboexpanded nitrogen-richer fluid into the cryogenic rectification plant.

5,600,971

ROOF PLATE MOUNTING ASSEMBLY

Whang K. Suk, 180-325, Bongcheon 11-Dong, Kwanak-Ku, Seoul, Rep. of Korea

Filed Apr. 15, 1996, Ser. No. 632,108
Int. Cl.[6] E04B *1/38*
U.S. Cl. 52—713 **2 Claims**



1. A roof plate mounting assembly comprising:

a base member fixedly mounted to a well-known tight frame, the base member having a flat body portion, upward extensions respectively upwardly extending from both lateral ends of the flat body portion, locking jaws respectively inwardly bent from the upward extensions, and a clamping hole perforated at the flat body portion;

a roof plate support member slidably coupled to the base member, the roof plate support member having a top portion, legs respectively downwardly extending from both lateral ends of the top portion, wings outwardly extending from respective lower ends of the legs, upward extensions respectively upward extending from the wings, and a clamping hole perforated at the top portion, the upward extensions being loosely engaged in spaces respectively defined by the upward extensions and locking jaws of the base member such that the roof plate is slidable along the upward extension of the base member;

a seam protecting cap extending so as to protect overlapping connecting edge portions of roof plates being coupled to each other, the seam protecting cap having a top portion, downward extensions respectively downwardly extending from both lateral ends of the top portion of the seam protecting cap, and inward jaws provided at respective lower portions of the downward extensions; and

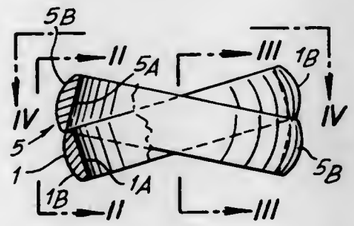
a cap support member supporting the seam protecting cap, the cap support member having a flat body portion, and extensions respectively extending from both lateral ends of the flat body portion of the cap support member, and a clamping hole perforated at the flat body portion of the cap support member, the extensions of the cap support member respectively engaging at their lower edge surfaces with the inward jaws of the seam protecting cap.

5,600,972

ANNULAR PIECE OF JEWELRY, SUCH AS A RING, WITH AT LEAST TWO COUPLED ANNULAR ELEMENTS

Raffaello Magi, Arezzo, and Rosanna Natale, Chieti, both of Italy, assignors to Unoaerre Italia S.p.A., Arezzo, Italy

Filed Dec. 27, 1995, Ser. No. 578,087
Claims priority, application Italy, Jan. 4, 1995, FI95A0002
Int. Cl.[6] A44C *9/00*
U.S. Cl. 63—15.1 **10 Claims**



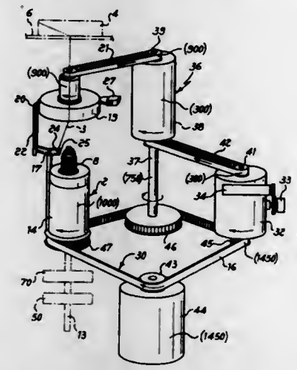
1. An annular piece of jewelry, which comprises at least two coupled annular elements, which are slightly inclined in relation to one another and one inside the other, the internal annular element having two external depressions which are virtually diametrically opposite and essentially inclined in a symmetrical manner in relation to a diametral plane, said depressions defining a seat for receiving and positioning the external annular element which is located and retained there in an inclined lying position in relation to the internal annular element.

5,600,973

PROCESS AND MACHINE FOR MANUFACTURING ELASTIC BANDS AS WELL AS BANDS THUS OBTAINED

Giuseppe Drisaldi, Via Forgaria, 11-Novara, Italy

Filed Jan. 18, 1996, Ser. No. 586,732
Claims priority, application Italy, Jul. 30, 1993, MI93A1757
Int. Cl.[6] D04B *15/50*
U.S. Cl. 66—9 A **10 Claims**



1. A process for manufacturing elastic bands with small diameter tubular fabric knitting machines, of the single-feed type, with a machine head having a fixed needle cylinder and revolving cam drum, with formation of a single stitch course at each revolution of the machine head, comprising simultaneously and independently feeding at least an inelastic thread and at least an elastic thread from separate bobbins to the machine head, which is revolving at a constant speed, providing through an instantaneous angular velocity of the bobbin V_{Rist} according to the formula:

$$V_{Rist}=V_T \pm V_T*(A_{FE}/C_{RFE})$$

wherein:

V_{Rist} is the instantaneous angular velocity of the elastic thread bobbin,

V_T is the constant angular velocity of the machine head,

A_{FE} is the feed of elastic thread, wound tension less on the bobbin to be fed to the needle cylinder at each revolution of the machine head,

C_{RFE} is and instantaneous circumference of the elastic thread cylindrical bobbin feeding the elastic yarn at a constant rate given by the circumferential length of the yarn at each revolution according to the instantaneous angular velocity of the bobbin.

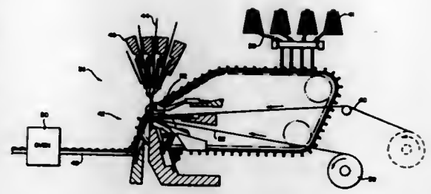
5,600,974

STIFF FABRIC COMPOSITE AND METHOD OF MAKING

Julius R. Schnegg, Burlington; Manfred H. K. Hueneke, Graham; Bobby L. McConnell, Greensboro, all of N.C., and John Rinderman, deceased, late of Norwood, N.J., assignors to Burlington Industries, Inc., Greensboro, N.C.

Division of Ser. No. 111,521, Aug. 25, 1993, Pat. No. 5,436,064, which is a continuation-in-part of Ser. No. 900,460, Jun. 18, 1992, abandoned, Ser. No. 539,154, Jun. 18, 1990, abandoned, Ser. No. 578,395, Sep. 7, 1990, abandoned, Ser. No. 711,094, Jun. 6, 1991, abandoned, and Ser. No. 884,124, May 18, 1992, abandoned. This application Oct. 31, 1994, Ser. No. 331,927
Int. Cl.[6] D04B *23/08*
U.S. Cl. 66—192 **20 Claims**

1. A method of forming a stiff fabric having stitch through warp yarns and a substrate comprising the steps of:



on a knitting machine, (a) providing a non-woven substrate for movement in the machine direction formed of first and second different fibers with said first fibers formed of thermoplastic material having a predetermined melting temperature, and (b) stitching the warp yarns and substrate each to the other, and

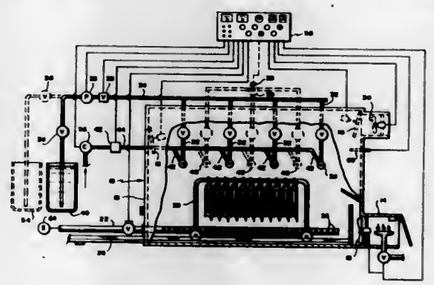
thereafter, heating the fabric to a temperature to fuse said first fibers with said second fibers of the substrate to provide a predetermined stiffness to the fabric while simultaneously retaining the definition of said second fibers as fibers in said fabric and with stitch underlaps and loops exposed and defined on opposite sides of the stiff fabric.

5,600,975

PROCESS AND APPARATUS FOR TREATING CELLULOSIC FIBER-CONTAINING FABRIC

David R. McClain, Williamsburg, and Ewart H. Shattuck, Cincinnati, both of Ohio, assignors to American Textile Processing, L.L.C., Cincinnati, Ohio

Division of Ser. No. 644,947, Jan. 23, 1991, Pat. No. 5,376,144. This application Dec. 13, 1994, Ser. No. 357,279
Int. Cl.[6] D06B *1/02*
U.S. Cl. 68—5 C **16 Claims**



1. Apparatus for treating a fabric article containing cellulosic material including a treating chamber, comprising:

aerosol generating means for introducing a liquid aerosol mist into the chamber;

means for supplying liquid cellulosic cross linking agent to the aerosol generating means for introduction into the chamber as at least part of the aerosol mist;

means for controlling the quantity of aerosol mist introduced into the chamber; and

means for supplying liquid cross linking promoting catalyst to the aerosol generating means simultaneously with the cross linking agent for introduction into the chamber as part of the aerosol mist.

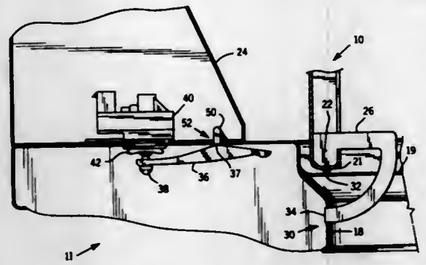
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5,600,976

WASHING MACHINE LID SWITCH ASSEMBLY

Kenyon A. Hapke, Libertyville, Ill., and Spencer C. Schantz, Dousman, Wis., assignors to U.S. Controls Corporation, New Berlin, Wis.

Filed Apr. 20, 1995, Ser. No. 425,760
Int. Cl.[6] D06F *37/28*
U.S. Cl. 68—12.26 **15 Claims**



1. A switch assembly for a top-loading washing machine having a lid hinged at one edge to move about a hinge axis between a closed position with the lid substantially aligned with the top surface of the washing machine and an open position where an edge of the lid opposite the hinged edge is raised with respect to its position when the lid is closed the switch assembly comprising:

a) an arcuate arm attached at a first end to the lid and extending downward therefrom below the top surface of the washing machine when the lid is closed and extending about the hinge axis to a second end;

b) a switch having a contact assembly linked with a downward extending operator, the operator being positioned with respect to the hinge so as to be pushed upward by the second end when the lid is in the closed position and so that the operator returns downward when the lid is in the open position;

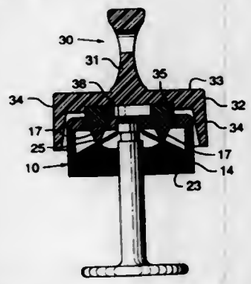
whereby the force of gravity prevents water on the lid and arcuate arm from flowing to the contact assembly of the switch.

5,600,977

MAGNETIC LOCKING DEVICE

Ludwig Piroa, Waterloo, Canada, assignor to Pinel Medical Inc., Waterloo, Canada

Filed Oct. 25, 1995, Ser. No. 547,776
Int. Cl.[6] E05B *73/00*
U.S. Cl. 70—57.1 **6 Claims**



1. A locking device comprising a pin and a button; said pin being non-magnetic and comprising a post portion substantially perpendicular to and affixed at one end to a base, and having a free end, and a perimetric indent spaced at a predetermined distance from said free end; said button comprising a substantially cylindrical enclosed casing unit surrounding at its lower surface a hole adapted to receive said free end of said pin, said casing unit enclosing a plurality of locking plates each supported at an outer portion of a support means constructed of a compressible foam material, said locking plates each being adapted to retain said post at said indent in a locked position within said button but to rotate towards an upper surface of said casing unit and to release said post in response to a magnetic force of a magnet operating at said upper surface, said hole being defined by a shoulder portion extending upwardly from said lower surface to define a cavity between said shoulder portion and an outer side wall of the button, said cavity being substantially filled with said foam material between said shoulder portion and said side wall, wherein said foam material extends above an upper free end surface of said shoulder portion to support said locking plates.

5,600,978

DEVICE FOR THE CLOSURE OF BAGS OR THE LIKE AND SECURITY SEAL

Eduardo D. C. Netto, Rio de Janeiro, Brazil, assignor to ELC Produtos de Seguranca e Comercio Ltda., Rio de Janeiro, Brazil

PCT No. PCT/BR93/00011, § 371 Date Sep. 28, 1994, § 102(e) Date Sep. 28, 1994, PCT Pub. No. WO93/19992, PCT Pub. Date Oct. 14, 1993
PCT Filed Mar. 30, 1993, Ser. No. 307,807
Claims priority, application Brazil, Mar. 31, 1992, 9201123
Int. Cl.[6] A45C *13/10*; E05B *65/52*
U.S. Cl. 70—64 **21 Claims**



1. Device for the closure of bags, comprising:

(i) a first elongate part having an outer surface and an inner surface;

(ii) a series of pins distributed along and upstanding from said inner surface of said first elongate part;

(iii) a second elongate part having an inner surface, said inner surface of said second elongate part being cooperable in face-to-face relation with said inner surface of said first elongate part;

(iv) a longitudinal passage formed in said second elongate part, said passage being confined in all transverse directions;

(v) a series of orifices through said inner surface of said second elongate part, said orifices being distributed along said second elongate part and opening into said passage;

(vi) an elongate locking element housed in said passage and shiftable longitudinally therein between a first free position in which the respective said pins can penetrate the orifices in said second part to enter said passage, and a second locked position in which said pins are locked in said orifices in said second elongate part; and

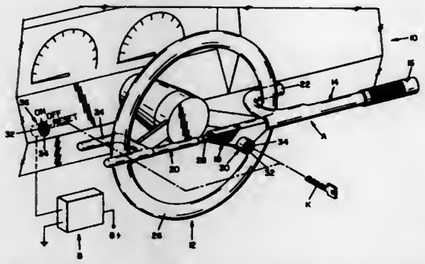
(vii) means for permitting immobilization of said locking element in said second locking position.

5,600,979

VEHICLE ANTI-THEFT SYSTEM

James E. Winner, Hollywood Beach, Fla., and John Rutkowski, Cuyahoga Falls, Ohio, assignors to Winner International Royalty Corporation, Sharon, Pa.

Continuation of Ser. No. 210,471, Mar. 21, 1994, abandoned. This application Sep. 27, 1995, Ser. No. 534,836
Int. Cl.[6] B60R *25/02*
U.S. Cl. 70—252 **32 Claims**



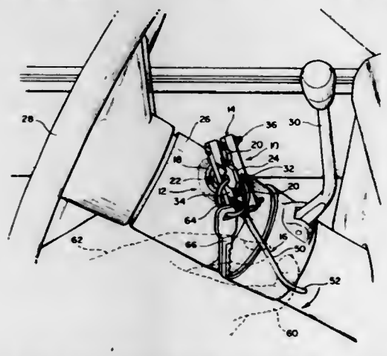
19. An anti-theft system for a vehicle having an ignition switch comprising, electrically operated security circuit means having armed and disarmed modes, control switch means separate from said ignition switch having closed and open conditions respectively providing said armed and disarmed modes, said circuit means including means connected to said control switch means for providing a security function when said circuit means is in said armed mode, and means for maintaining said security function when said control switch means changes from closed to open condition.

5,600,980

EASY START IGNITION SWITCH ADAPTER

Joseph R. Fabian, 307 First Ave., North, Lewistown, Mont. 59457

Filed Oct. 13, 1995, Ser. No. 542,928
Int. Cl.[6] E05B *19/00*
U.S. Cl. 70—408 **6 Claims**



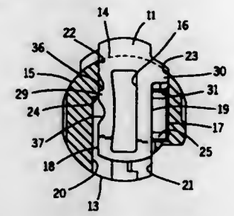
1. An easy start vehicle ignition switch adapter for a vehicle ignition switch which includes a lock cylinder actuator with diametrically opposed projections thereon which can be engaged to partially rotate the actuator for closing an ignition circuit and closing a circuit to a vehicle starter motor, said switch actuator being spring biased against movement to starter motor circuit closing position and to return the switch actuator to ignition circuit closing position after the vehicle starter motor has been actuated to start a vehicle engine and rotational force has been released from the switch actuator, said adapter comprising clamp means adapted to be mounted on said projections on the actuator, an elongated lever arm mounted on said clamp means and extending in generally perpendicular relation to the axis of rotation of the ignition switch actuator to enable application of force on the lever arm to move the switch actuator to a vehicle starting position by a vehicle operator having limited physical strength characteristics or other conditions hampering application of force by the thumb and fingers engaging the switch actuator sufficient to move the switch actuator to vehicle starting position, wherein said clamp means includes a pair of clamp members, each of which includes a flat surface on an inwardly directed side, said flat surfaces of said inwardly directed sides of said clamp members for straddling and engaging opposed outer sides of the projections on the switch actuator, clamp bolts at opposite ends of the clamp members to securely clamp the clamp members to the switch actuator projections.

5,600,981

SNAP-IN TUMBLER

Timothy A. Sievert, Milwaukee, Wis., assignor to Strattec Security Corporation, Milwaukee, Wis.

Filed Feb. 3, 1995, Ser. No. 383,225
Int. Cl.[6] E05B *27/00;15/14*
U.S. Cl. 70—492 **1 Claim**



1. A cylinder assembly for a plate tumbler lock, comprising:

a cylindrical housing defining an external cylindrical surface, opposite ends, a longitudinal axis and a key way disposed along said axis opening to one end of said housing for slidably receiving a key therein, said housing further including a tumbler ward extending radially from said axis and having an open top which opens to said external cylindrical surface, said tumbler ward defined by a pair of opposite side walls, one of said side walls including a tumbler retaining ledge formed therein and the other of said side walls including a first tumbler spring seat formed therein, and each of said side walls including a terminal edge at said external cylindrical surface defining said open top;

a plate tumbler disposed in said ward for sliding movement radially with respect to said axis, said plate tumbler including a central key-receiving opening aligned with said key way defining a top, a bottom, a first narrow side and a second opposite side, the opposite sides interconnected with said top and bottom and each including an outer side edge and an inner side edge, said outer side edge of said first narrow side including a detent projecting therefrom and said outer side edge of said second side including a leg projecting therefrom defining a second tumbler spring seat;

tumbler spring means within said housing for biasing said plate tumbler outwardly in said ward toward said open top, said tumbler spring means having a lower end engaging the first seat formed in said outer side wall and an upper end engaging said second seat formed in said leg; and

means for permitting resilient flexing of said detent inwardly toward said key-receiving opening, said means comprising:

said first narrow side of said plate tumbler dimensioned sufficiently narrow so that when said plate tumbler slidably moves in said ward between a non-assembled position and an assembled position said detent engages said retaining ledge and said first side of said plate tumbler flexes inwardly as said detent passes over said retaining ledge until said tumbler

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snap-fits into and is retained within said tumbler ward without any physical damage to said retaining ledge and said detent; and

a pair of notches in said first narrow side of said tumbler, one notch located above said detent and the other notch located below said detent, each notch includes a root defining a depth such that the distance from the root of said notch to said inner side edge of said first narrow side of said tumbler is equal to or greater than the thickness of said tumbler.

5,600,982

METHOD FOR SUPPRESSING THE INFLUENCE OF ROLL ECCENTRICITIES ON THE CONTROL OF THE ROLLED PRODUCT THICKNESS IN A ROLL STAND

Klaus-Dieter Berger, Höchstadt, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

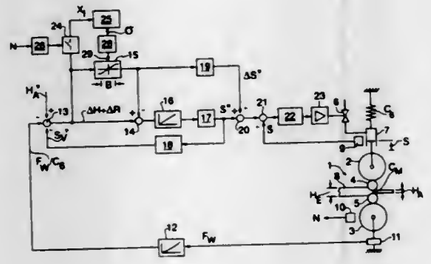
PCT No. PCT/DE93/00894, § 371 Date Mar. 22, 1995, § 102(e) Date Mar. 22, 1995, PCT Pub. No. WO94/06578, PCT Pub. Date Mar. 31, 1994

PCT Filed Sep. 20, 1993, Ser. No. 403,920

Claims priority, application Germany, Sep. 22, 1992, 42 31 615.4

Int. Cl.[6] B21B *37/00*

U.S. Cl. 72—9.2 **9 Claims**



1. A method for controlling a thickness (h_a) of a rolled product in a roll stand, comprising the steps of:

a) suppressing an influence of roll eccentricities (ΔR) on control of the thickness (h_a) in the roll stand by providing a dead zone in the control, wherein the dead zone is insensitive to signal fluctuations caused by roll eccentricities (ΔR); and

b) automatically varying a width (b) of the dead zone as a function of a magnitude of the signal fluctuations based on a continuous statistical evaluation of the signal fluctuations.

5,600,983

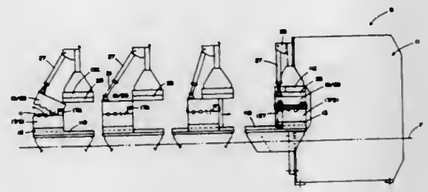
CONTROLLED TIME-OVERLAPPED HYDROFORMING

Donald R. Rigsby, Jenison, Mich., assignor to Benteler Industries, Inc., Grand Rapids, Mich.

Division of Ser. No. 241,740, May 12, 1994, which is a continuation-in-part of Ser. No. 65,126, May 20, 1993, Pat. No. 5,363,544. This application Nov. 21, 1995, Ser. No. 560,798

Int. Cl.[6] B21D *39/08*

U.S. Cl. 72—61 **14 Claims**



1. Apparatus for forming a dual wall conduit having a controlled size gap between the walls, from dual wall tubular stock, comprising:

a frame having upper and lower parts;

a fixed upper crown on said upper part, and a fixed lower bed on said lower part, spaced from said upper crown to define a hydroforming space therebetween for receiving a mold assembly;

said bed comprising a slideway extending from said space to a load-unload preform position out of said space;

a mold assembly on said slideway comprising a lower platen and an upper platen connected to said lower platen by a hinge, and mold elements defining at least two hydroforming cavities, one cavity being an elongated preform and semi-finish cavity having ends, and the other cavity being an elongated finish cavity having ends;

mold closing and preforming hydraulic cylinders operably connected to said upper mold platen at a location spaced from said hinge, for closing said upper platen onto said lower platen and creating mechanical force between said mold elements for causing selected preform finishing on dual wall tubular stock in said preform and semi-finish form cavity;

mold shifting means connected to said mold assembly for shifting said mold assembly on said slideway from said position in said space between said crown and bed, to and from said forward load-unload-preform position;

said space having a height slightly greater than said mold assembly;

said upper crown having a peripherally retained bladder device positioned over said mold assembly, a pressurized fluid source connected to said bladder device for applying a closure holding force on said mold assembly;

a first pair of tube sealing, hydroforming elements at said ends of said preform, semi-finish cavity; and

a second pair of tube sealing hydroforming elements at said ends of said finish cavity.

5,600,984

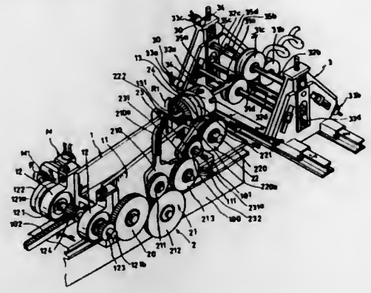
DEVICE FOR BENDING TUBES

Reen-Yuan Sheen, P.O. Box 82-144, Taipei, Taiwan

Filed Jun. 10, 1996, Ser. No. 661,119

Int. Cl.[6] B21F *3/04;3/02*

U.S. Cl. 72—145 **3 Claims**



1. A device for bending tubes comprising:

a platform;

a feeding mechanism including a sliding seat, a pair of lugs, and a chuck, said sliding seat being slidably arranged on said platform and provided with a plurality of pulleys slidably engaged with opposite side rails of said platform, said two lugs being secured to an end of said sliding seat by screws, a first axle having a first end extending through one of said lugs to engage with a first gear and a second end extending through another one of said lugs to engage with a second gear, said first axle being rotatably supported by said lugs, said first gear being threadedly engaged with an output gear of a motor drivingly connected with said sliding seat, said first axle being provided at an intermediate portion with a third gear meshed with a toothed rack fastened on a top of said platform, said chuck being pivotally mounted on an end of said sliding seat, the end of said sliding seat being provided with a first bevel gear;

a chuck controlling mechanism including a direction controlling means and a chuck driving means, said direction controlling means including a plate member pivotally arranged on said sliding seat and fourth, fifth and sixth gears pivotally mounted on said plate member, said fourth gear being constantly meshed with fifth gear which is in turn constantly engaged with the sixth gear, said chuck driving means including an arm, a second axle, seventh and eighth gears, and a second bevel gear, said arm being fixedly mounted on an ear of said sliding seat by a screw, said second axle extending through said arm and said ear to engage with said second bevel gear and being rotatably supported by said ear, said second bevel gear being constantly meshed with said first bevel gear, said seventh gear being fixedly mounted on said second axle, said arm being formed with a slot in which is fixedly mounted a third axle, said eighth gear being rotatably fitted on said third axle and meshed with said sixth gear;

an idle gear pivotally mounted on said sliding seat between second gear and said direction controlling means; and

a bending mechanism including a first roll die, a second roll die opposite to said first roll die, an upper roll die, and lower roll die each of which has a recess around a circumference thereof adapt to shape of a tube to be bent.

5,600,985

Patent Not Issued For This Number

5,600,986

SIZING PRESS AND DIE SYSTEM

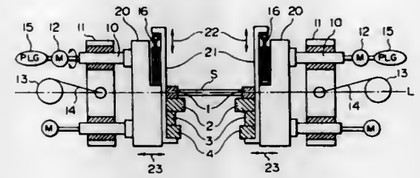
Takashi Ishikawa; Takao Yunde; Shigefumi Katsura, and Toshisada Takechi, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Jun. 6, 1994, Ser. No. 254,233

Claims priority, application Japan, Jun. 7, 1993, 5-136128

Int. Cl.[6] B21B *15/00*

U.S. Cl. 72—206 **6 Claims**



1. A sizing press for reducing the width of hot slabs of one of a low carbon steel and a stainless steel, comprising:

a stack of main press dies of at least two types of caliber configurations;

a die slider on which said main press dies are mounted;

a die shift cylinder for selectively driving said die slider and said stack of main press dies in an up and down direction relative to said hot slabs to be reduced;

a block mounted on said press to which said die slider and said die shift cylinder are attached, said block being reciprocately movable in a widthwise direction for reducing said hot slabs under pressure of said main dies;

a changing platform car which reciprocately moves between a position above said sizing press and an off-line position of said sizing press for exchanging said die slider for a new die slider;

a lifting device mounted on said changing platform car for lifting said die slider from said press to a level above said sizing press and for lowering said new die slider into said press; and

a loading/unloading device associated with said press at said off-line position for exchanging die sliders on said changing platform car.

5,600,987

DEVICE FOR POSITIONING AND LOCKING A CHOCK ON A ROLL PIN DURING INSTALLATION OF A SET OF ROLLS IN OR REMOVAL FROM A ROLL STAND

Werner Moritz, and Axel Bartea, both of Siegen, Germany, assignors to Achenbach Buschhutten GmbH, Kreuztal, Germany

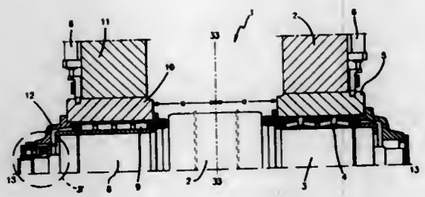
Filed Oct. 6, 1994, Ser. No. 319,100

Claims priority, application Germany, Oct. 6, 1993, 43 34 021.0

Int. Cl.[6] B21B *31/08*

U.S. Cl. 72—238 **5 Claims**

1. In a rolling mill having a rolling stand having two roll standards for supporting a roll having a roll pin at each end of said roll with an axially floating bearing interposed between a said standard and a said roll pin, and a chock surrounding said axially floating bearing and releasably secured within said standard; the improvement comprising a housing detachably secured on an outer side of said chock, said housing carrying stop elements (14) mounted for movement in a direction parallel to an axis (13—13) of said roll, first power means (16) to advance said stop elements



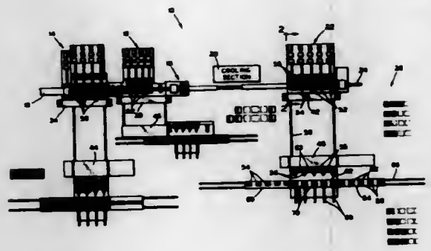
toward a midplane (33—33) of the roll and into abutment with the roll, thereby to position said housing correctly along said axis, a plurality of clamping elements (21) spaced apart about an endwise outer part (34) of said roll pin (8), second power means (25) to move said clamping elements into clamping engagement with said outer part (34) of said roll pin (8), means for releasing said clamping elements when said second power means are released and for moving said clamping elements out of engagement with said outer part (34) of said roll pin (8), and means for retracting said stop elements (14) from engagement with said roll pin (8) when said first power means (16) is deactivated.

5,600,988

MILL TOOLING CHANGEOVER SYSTEMS

Nelson D. Abbey, III, Monclova, and Richard L. Dreier, Northwood, both of Ohio, assignors to Abbey Etna Machine Company, Perrysburg, Ohio

Filed Feb. 13, 1995, Ser. No. 387,445
Int. Cl.[6] B21B *31/08*
U.S. Cl. 72—239 **21 Claims**



1. A continuous tube mill apparatus adapted for automatic changeover production of a first product to production of a second product of a different size or shape, the tube mill comprising;

a tube forming section including a plurality stand assemblies adapted to receive forming roll sets for producing a selected size and shape of tubing;

automatic manipulating apparatus for removing and replacing forming roll sets on the stand assemblies;

a storage section for storing forming roll sets for the production of tubing of a selected size and shape; and

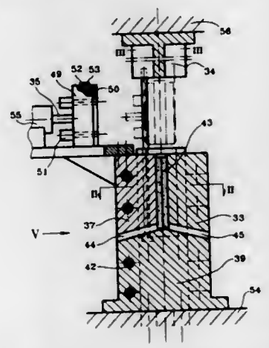
transfer system including a primary transfer cart means for transporting the stand assemblies to a position remote from the mill and secondary transfer cart means for transporting the roll set for producing a selected size and shape of tubing to said storage section and for sequentially transporting another roll set to the stand assemblies for producing another size and shape of tubing.

5,600,989

METHOD OF AND APPARATUS FOR PROCESSING TUNGSTEN HEAVY ALLOYS FOR KINETIC ENERGY PENETRATORS

Vladimir Segal, and Leonid Segal, both of 1831-A Wild Oak Cir., Bryan, Tex. 77802

Filed Jun. 14, 1995, Ser. No. 490,506
Int. Cl.[6] B21C *23/00*
U.S. Cl. 72—253.1 **9 Claims**



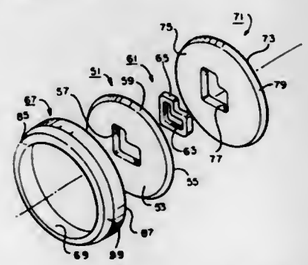
6. An apparatus for equal channel angular extrusion of billets of square cross-section area, comprising a vertical channel having a rectangular cross-section with a width corresponding to a billet cross-section and a thickness which is twice as much as the corresponding billet cross-section; two horizontal channels having square cross-sections corresponding to the billet cross-section, being continuous with and oriented in opposite directions at an angle relative to the vertical channel; two movable sliders defining side walls of the vertical and horizontal channels; a punch covering cross-sections of the vertical channel and sliders arranged to simultaneously extrude two billets from the vertical channel into the first and second horizontal channels, respectively; and means for inserting two billets side-by-side into the vertical channel.

5,600,990

METAL EXTRUSION DIE STACK AND METHOD

L. William Kelly, Beaver Falls; Edward G. Zinser, Coraopolis, and Willard S. Foster, Enon Valley, all of Pa., assignors to P.M.A.C., Ltd., Houston, Tex.

Filed Jun. 27, 1995, Ser. No. 495,799
Int. Cl.[6] B21C *23/00*
U.S. Cl. 72—255 **5 Claims**



5. A method of extruding a metal billet from an extrusion apparatus of the type which includes a billet container having a generally cylindrical interior for receiving the metal billet to be extruded and having a tapered front opening and a rear opening, the apparatus also having a ram received within the rear opening of the container for forcing the metal billet forward in the direction of the front opening, the method comprising the steps of:

mounting an extrusion die stack in cooperative relation with the container and ram for extruding the metal billet, the extrusion die stack having a direct cone geometry including a generally planar die holder provided with a front, working surface contactable by the metal billet and a rear surface and having an irregular shaped, bevelled die opening therein which communicates the front and rear surfaces, the die holder also being provided with a generally round and tapered peripheral lip;

installing a generally planar die insert within the die opening of the die holder, the die insert having at least one orifice which directly contacts the metal billet for extruding metal from the container as the ram moves the metal billet forward, and having an outer peripheral edge which has a complimentary bevel and shape to that of the bevelled die opening in the die holder;

installing a retaining ring within the tapered front opening of the billet container, the retaining ring having a generally planar front surface, a generally planar rear surface and a tapered interior profile which is complimentary to the generally round and tapered peripheral lip of the die holder for receiving the die holder and which increases in internal diameter from the front surface to the rear surface thereof, the retaining ring also being provided with a tapered exterior profile which is complimentary to the tapered front opening of the billet container;

installing a generally planar backer plate within the tapered interior profile of the retaining ring, the backer plate having a rear face and having a front face which is closely received against the rear face of the die holder when the die holder is inserted within the retaining ring, the backer plate having an extrusion opening for receiving metal which is extruded through the orifice of the die insert;

extruding metal through the orifice of the die insert by moving the ram against the metal billet in the container;

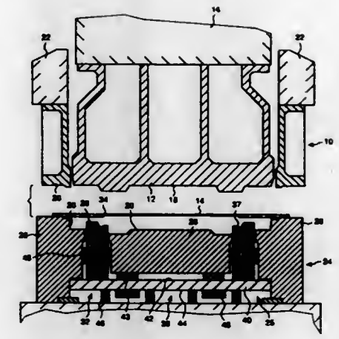
moving the container out of contact with the extrusion die stack;

cutting a length of the extruded metal from the butt end; and

moving the container back into contact with the extrusion die stack whereby the butt end remaining in the billet container forces any remaining extrusion out of the orifice in the die stack;

moving the container back out of contact with the extrusion die stack;

discarding only the butt end of the metal billet while retaining of the components of the extrusion die stack.



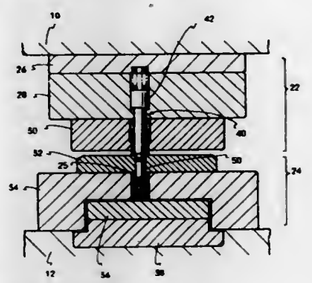
engaging surface of said second die member such that said blank engaging component can lock a portion of the blank between said blank engaging component and said first die when said first die engages said blank engaging component thereby preventing further flow of material of said portion and to permit said blank engaging component and the locked portion of the blank to be displaced axially from said first position upon engagement of said component by said first die during a forming stroke thereof.

5,600,992

DIE SET

Yoshitomo Kanazawa; Toshiyuki Nanaarashi, and Toshiki Miyazawa, all of Tokyo, Japan, assignors to Hidaka Seiki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 11, 1995, Ser. No. 371,120
Claims priority, application Japan, Feb. 10, 1994, 6-016042
Int. Cl.[6] B21D *22/00*
U.S. Cl. 72—352 **17 Claims**



1. In a die set comprising:

an upper die; and

a lower die being capable of relatively moving to and away from said upper die,

wherein a metal plate having a through-hole, which is rounded by a collar with prescribed height, is provided between said upper die and said lower die, and a flange section is formed at an end of said collar when said upper die and said lower die are closed,

wherein the improvement comprises:

a flare-punch being provided to said upper die and being capable of vertically moving therein, said flare-punch having a flange forming section for pressing the end of said collar to form said flange section, said flange forming section being provided in an end part of said flare-punch, which is capable of getting into said collar when said upper die and said lower die are closed;

5,600,991

STRETCH CONTROLLED FORMING MECHANISM AND METHOD FOR FORMING MULTIPLE GAUGE WELDED BLANKS

Werner Munzen, Howell, Mich., assignor to Ogihara America Corporation, Mich.

Filed Feb. 10, 1995, Ser. No. 387,418
Int. Cl.[6] B21D *22/22*
U.S. Cl. 72—348 **20 Claims**

1. A forming mechanism providing controlled stretch of a blank formed thereon, the forming mechanism comprising:

a first die member;

a second die member disposed in opposed facing relation to the first die member, at least one of the first die and the second die being mounted for selective movement toward and away from the other of the first die and the second die; and

a floater assembly comprising at least one blank engaging component disposed adjacent to said second die, the floater assembly being mounted for axial sliding movement relative to the second die;

said floater assembly further comprising a support assembly for said component, said support assembly being constructed and arranged to selectively dispose said at least one blank engaging component in a first position in which a blank engaging surface thereof is closer to said first die member than a blank

a biasing member for biasing said flange forming section of said flare-punch toward said lower die with elastic force equal to or greater than a pressing force for forming said flange section; and

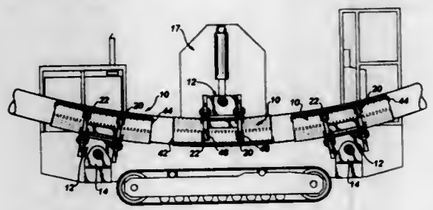
a level pin provided in said lower die, said level pin solely defining a lower dead point of said flare-punch without reference to said upper die, said level pin being capable of coming into contact with an end of said flare-punch, which has been in said collar, when said upper die and said lower die are closed.

5,600,993

FLEXIBLE SHOE FOR A BENDING MACHINE

Norman L. Heaman, 11 Meadow Crescent, Edmonton, Alberta, Canada

Filed Oct. 30, 1995, Ser. No. 550,077
Int. Cl.[6] B21D *3/10*
U.S. Cl. 72—382 **6 Claims**



1. A flexible shoe for a bending machine, comprising:

a pair of flexible resilient spring-like shafts;

a flexible web extending between the pair of shafts; and

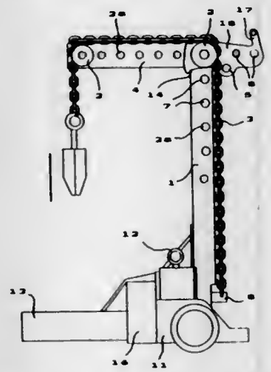
means for securing the flexible web to the shafts.

5,600,994

STRAIGHTENING BEAM

Olavi Venäläinen, Kuopio, Finland, assignor to Autorobot Finland KY, Kuopio, Finland

PCT No. PCT/FI92/00106, § 371 Date Oct. 8, 1993, § 102(e) Date Oct. 8, 1993, PCT Pub. No. WO92/18263, PCT Pub. Date Oct. 29, 1992
PCT Filed Apr. 7, 1992, Ser. No. 133,091
Claims priority, application Finland, Apr. 9, 1991, 911686
Int. Cl.[6] B21D *1/12*
U.S. Cl. 72—447 **6 Claims**



1. A straightening beam for an automotive body straightening jig, comprising:

a base beam constructed and arranged to be mounted to a frame of the straightening jig;

a vertical beam attached to said base beam for sideways rotatable movement with respect thereto;

a pulling tool member constructed and arranged to be attached to an automobile bodyshell;

guide means for guiding and adjusting the position of the pulling tool member;

an extension beam attached to the vertical beam in such a manner so as to be rotatable and lockable at different angular positions with respect thereto, the extension beam being pivotally mounted to the vertical beam by a pivot pin;

an actuator operatively associated with said vertical beam and coupled to said pulling tool member, said actuator being constructed and arranged to exert a force downwardly along said vertical beam;

at least two locking elements constructed and arranged to lock the extension beam in a desired position relative to said vertical beam;

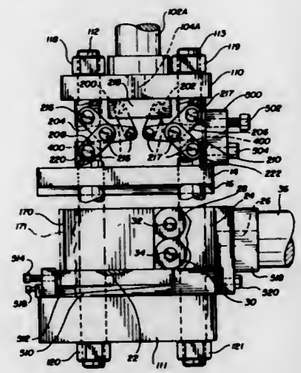
whereby when placing and locking said vertical beam and extension beam in desired positions, said pulling tool member can be oriented by use of said guide means to act from a desired direction relative to the automotive bodyshell so as to permit an entire force of the actuator to be exerted via the pulling tool member at a point on the automotive body shell to be straightened.

5,600,995

USEFUL IMPROVEMENTS IN PRESS APPARATUS

Alden O. Sherman, 85 Weston Rd., Weston, Conn. 06883

Filed Jun. 7, 1995, Ser. No. 481,069
Int. Cl.[6] B21J *9/18*; B21H *7/16*
U.S. Cl. 72—451 **8 Claims**



1. For use in forming apparatus having a die element and a roll platen element, each of which has an associated mounting structure and each of which has a flat surface which is parallel to and faces that of the other element, at least one toggle assembly to move at least one of said elements and thereby to change the distance between said surfaces comprising

an obtusely angled toggle link, the obtuse angle of which forms an angle of more than 180 degrees along one side of said link, one end of which toggle link is pivotally interconnected with an associated motion actuator means,

a second toggle link that is positioned across said exterior angle of said angled link, one end of said second link being pivotally affixed to said angled toggle link at a first pivot point located at said obtuse angle of said angled link,

the other end of said second toggle link and the other end of said angled toggle link being pivotally interconnected, one each, with said element and its associated mounting structure at second and third pivot points

said first pivot point, when the elements are in their most distant location from each other, being located at one side of a straight line between said second pivot point and said third pivot point and, by actuation of said motion actuator means, being moveable at least substantially to said line,

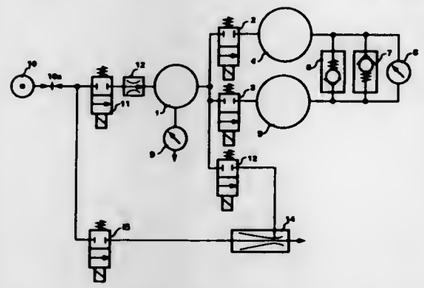
and a stop body integral with the structure of said apparatus that is adapted to restrict said toggle link and said angled toggle from moving said first pivot point by more than a predetermined distance past said line.

5,600,996

METHOD AND APPARATUS FOR TESTING THE TIGHTNESS OF HOUSINGS

Friedrich Witschi, Büren an der Aare, Switzerland, assignor to Witschi Electronic AG, Buren an der Aare, Switzerland

Filed Apr. 12, 1995, Ser. No. 419,679
Claims priority, application Switzerland, Apr. 13, 1994, 1096/94
Int. Cl.[6] G01M *3/02*; *3/36*
U.S. Cl. 73—49.2 **10 Claims**



1. A method for testing the fluid-tightness of hollow bodies by exposing a hollow body to be tested as a testpiece and a reference hollow body to a test fluid, said method comprising:

disposing said testpiece in a first measuring chamber and said reference hollow body in a second measuring chamber, said first and second measuring chambers having identical volumes;

in a prechamber, creating an overpressure or an underpressure of test fluid relative to fluid pressures within said first and second measuring chambers;

subsequently establishing fluid communication between said prechamber and said first and second measuring chambers;

measuring a change in the overpressure or the underpressure of the test fluid in said prechamber as an indicator of a free volume of fluid admitted to or expelled from said first and second measuring chambers;

if said free volume of fluid admitted to or expelled from said first and second measuring chambers exceeds a predetermined value, determining that said testpiece is leaky and discarding said testpiece; and

if said free volume of fluid admitted to or expelled from said first and second measuring chambers substantially equals said predetermined value,

a) terminating said fluid communication between said prechamber and said first and second measuring chambers,

b) measuring, by means of a gauge disposed in fluid communication between said first and second measuring chambers, a pressure differential between said first and second measuring chambers and variation thereof with time, and

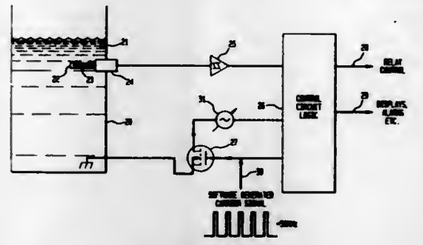
c) determining the fluid-tightness of said testpiece based on said pressure differential and said variation thereof with time.

5,600,997

CARRIER FREQUENCY SENSING OF FLUIDS IN VESSELS

William H. Kemp, Clayton, and Victor J. Shideler, Carleton, both of Canada, assignors to ITT Corporation, Harrison, N.Y.

Filed Aug. 11, 1995, Ser. No. 513,704
Int. Cl.[6] G01F *23/28*
U.S. Cl. 73—290 V **18 Claims**



1. A liquid level detection apparatus for monitoring the level of a fluid volume in a storage tank or vessel, comprising:

a capacitive probe positioned at a given level in said vessel indicative of a desired fluid level at which said probe is immersed in said fluid volume at said level;

means for injecting a carrier frequency signal into said fluid volume as contained in said vessel to cause said carrier frequency signal to propagate through said fluid volume to said probe;

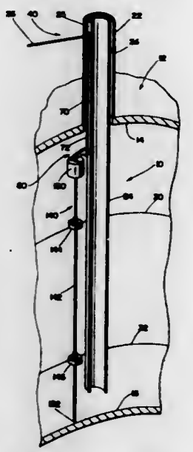
circuit means coupled to said probe for monitoring the presence of said carrier signal and responsive to the amplitude of said signal to provide a control signal when said amplitude is below a given value.

5,600,998

LEVEL SENSOR OFFSET MOUNTING MECHANISM

William R. Dean, Jr., 2414 Ralph St., Houston, Tex. 77006-2427

Filed Feb. 10, 1995, Ser. No. 386,709
Int. Cl.[6] G01F *23/30*; *23/38*
U.S. Cl. 73—309 **10 Claims**



1. A level sensor offset mounting mechanism comprising:

an upper conduit;

a connector means for connecting the upper conduit to a tank fill pipe;
said connector means constructed to receive an electrical wiring therethrough;
said upper conduit extending downward from said connector means;
said upper conduit having a lower end;
a lower portion for measuring the fluid levels within a tank;
a rotatable offset means for selectively providing horizontal offset of said lower portion from said upper conduit;
said lower portion attached to and extending downward from said rotatable offset means;
said rotatable offset means proximal said upper conduit lower end; and
a locking means for locking said rotatable offset means in either an offset position wherein said lower portion is horizontally offset from said upper conduit or an insertion position wherein said lower portion is not offset from said upper conduit.

5,600,999

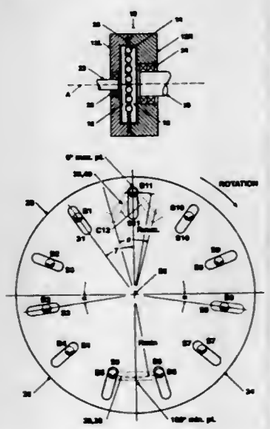
SPEED CONVERTER WITH REVERSED OUTPUT

Frank A. Folino, Weston, Mass., assignor to Synkinetics, Inc., Lowell, Mass.

Continuation-in-part of Ser. No. 196,595, Feb. 14, 1994, abandoned, which is a continuation-in-part of Ser. No. 76,010, Jun. 11, 1993, abandoned, and Ser. No. 117,141, Sep. 14, 1993, abandoned. This application Oct. 6, 1994, Ser. No. 296,528

Int. Cl.[6] F16H *1/48;57/08*

U.S. Cl. 74—122 **3 Claims**



1. Apparatus for converting a rotary input to a rotary output, the apparatus comprising:
a primary cam for providing a rotary input in a first direction,
a secondary cam having a plurality of cycles, an intermediate member, the cams and intermediate member interacting to provide a rotary output in a second direction,
the intermediate member comprising a plurality of slots, said slots separated from each other by a slot angle, the slots for receipt of respective interacting elements,
wherein said cams form a conjugate pair of devices wherein their interaction through said interacting elements defines the centerline of each said slot,
ones of said interacting elements comprising in-motion interacting elements and being put inlaid motion in said slots by said primary cam rotary input, said intermediate member being located with said conjugate pair about said common axis, and said primary cam cooperating with said intermediate member and said secondary cam for transmitting said rotary input substantially equally and simultaneously through all said oscillating in-motion interacting elements, for rotating said secondary cam as a driven device,
wherein said primary cam and said secondary cam are defined as conjugate, wherein interaction of the conjugate cams displaces all of said oscillating interacting elements along the respective loci of the interaction of said cams and said oscillating elements, displacement of said oscillating interacting elements being an equal amount at every in-motion interacting element for each angle of rotation, said interaction producing the same linear velocity for each of said in-motion interacting elements for every said angle of rotation, said displacement for rotating said driven cam an equal angle at all interacting element positions that is proportional to the ratio of the number of cycles on the drive cam to the number of cycles on the driven cam,
wherein each said secondary cam cycle subtends a cycle angle of θ and said slots are separated from each other by a slot angle of β, where $\theta > \beta$, and
wherein the primary cam has a cycle having a rise side and a fall side and wherein each secondary cam cycle comprises a rise side and a fall side, and wherein the slot angle locates the slots such that the rise side of the primary cam cycle interacts with the fall side of ones of the secondary cam cycles, wherein the secondary cam has N cycles, and the slot separation angle β is computed as follows:

$$\beta = \frac{360^\circ}{1+N} .$$

5,601,000

GEARBOX WITH INCORPORATED CLUTCH FOR SELF-PROPELLED MACHINES

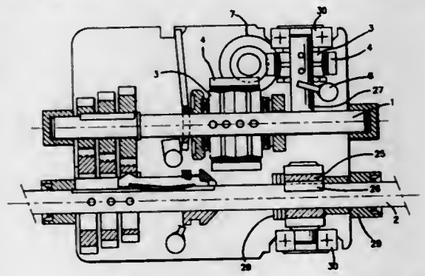
Robert Blanchard, 5, rue du Mont Mercure, 85510 Le Boupere, France

Filed Sep. 12, 1994, Ser. No. 304,704

Claims priority, application France, Sep. 10, 1993, 93 10776

Int. Cl.[6] F16H *3/083*

U.S. Cl. 74—371 **5 Claims**



1. A gearbox for self-propelled machines, comprising a frame within which are disposed a primary shaft (1) provided with a gear train (8) mounted kinematically fixed in rotation with said primary shaft, a secondary shaft (2) provided with a gear train (9) disposed coaxially and mounted freely in rotation about said secondary shaft (2), each gear of the gear train (8) of the primary shaft (1) being respectively maintained in permanent engagement with a gear of the gear train (9) of the secondary shaft (2); the improvement wherein the primary shaft (1) is driven in rotation by a speed reduction mechanism constituted by a driving member comprising an endless screw (7) in engagement with a driven member comprising at least one toothed wheel (4) adapted to be coupled with or uncoupled from said primary shaft by means of a clutch mechanism comprising a cone clutch whose cones (3) are freely slidably mounted upon and kinematically fixed in rotation with the primary shaft and are disposed within an axial recess of said driven member, and wherein said cones come in the course of their approach to each other into engagement with conical contact surfaces of said driven member, and wherein the movement of rotation of said primary shaft (1) is transmitted to the secondary shaft (2) by means of a movable key (12) mounted on the secondary shaft which, during its axial displacement, comes into contact selectively with the internal peripheral edge of a gear of the gear train (9) of the secondary shaft (2) so as selectively to key said gear (9) to the secondary shaft (2), and wherein said endless screw and said cone clutch are disposed within said frame, wherein the clutch mechanism comprises at least two toothed wheels (4*a*, 4*b*) in enqagement respectively with at least one said clutch cone (3*a*, 3*b*), said at least two toothed wheels being maintained kinematically fixed in rotation by penetration of teeth (16) projecting beyond a front surface of at least one of the wheels into interstices (17) of complementary shape of a front surface of a said wheel facing said at least one of the wheels so as to maintain between said wheels a permanent contact without play in rotation in an engaged position.

5,601,001

SPEED INDICATOR FOR A BICYCLE

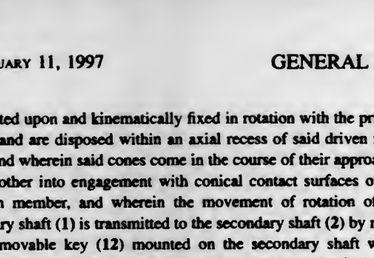
Tatsuya Kawakami, and Hitoshi Kishimoto, both of Sakai, Japan, assignors to Shimano, Inc., Sakai, Japan

Continuation of Ser. No. 205,413, Mar. 3, 1994, abandoned. This application Nov. 1, 1995, Ser. No. 551,696

Claims priority, application Japan, Mar. 9, 1993, 5-009785

Int. Cl.[6] B62M *25/04*

U.S. Cl. 74—502.2 **6 Claims**



1. An indicating apparatus for a shift controller for use with a bicycle having a plurality of speed stages, comprising:
a stationary member;
a takeup element supported by said stationary member to be rotatable about a first axis for taking up a control cable;
a shift lever for rotating said takeup element;
a pointer pivotable about a second axis fixed to said stationary member, said pointer overlapping said takeup element as viewed in a direction along said first axis;
an indicating section for cooperating with said pointer to indicate one of said speed stages selected by operation of said shift lever; and
interlock means for interlocking said pointer and said takeup element to pivot said pointer in response to rotation of said takeup element, wherein said interlock means includes a projection and an engaging portion for receiving said projection provided between said pointer and said takeup means.

5,601,002

DAMPED FLYWHEEL, ESPECIALLY FOR A MOTOR VEHICLE

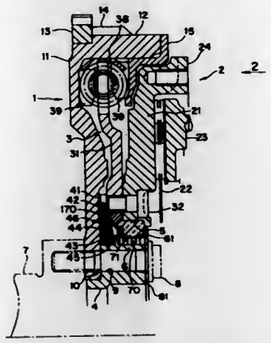
Philippe Lucienne, Aumont, France, assignor to VALEO, Paris, France

Filed May 31, 1994, Ser. No. 251,298

Claims priority, application France, Jun. 2, 1993, 93 06583

Int. Cl.[6] F16F *15/10;* **G05G** *1/00*

U.S. Cl. 74—574 **12 Claims**



1. A damped flywheel comprising: a first mass having an axially projecting centring nose, a second mass defining a central opening in the second mass, a torsion damping device arranged operatively between the first and second masses, and mounting means for mounting said first and second masses for relative rotational displacement of one with respect to the other against the action of said torsion damping device with the centring nose penetrating into said central opening, the flywheel further comprising support means interposed operatively between the said nose and central opening for mounting the second mass rotatably on the first mass, wherein said support means comprise a coating of amorphous diamond carbon material.

5,601,003

HANDLE FOR TOOLS, PARTICULARLY SCREWDRIVERS

Klaus Amtenbrink, Wuppertal; Robert Hoy, Velbert, and Martin Strauch, Wuppertal, all of Germany, assignors to Wera Werk Hermann Werner GmbH & Co., Wuppertal, Germany

PCT No. PCT/EP93/01442, § 371 Date Dec. 12, 1994, § 102(e) Date Dec. 12, 1994, PCT Pub. No. WO93/25354, PCT Pub. Date Dec. 23, 1993

PCT Filed Jun. 8, 1993, Ser. No. 351,459

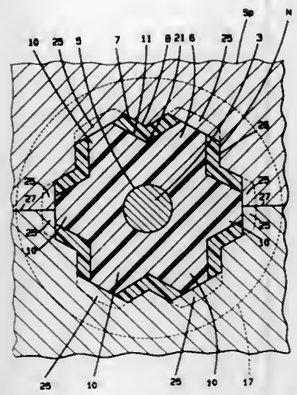
Claims priority, application Germany, Jun. 12, 1992, 42 19 253.6

Int. Cl.[6] B25G *1/00*

U.S. Cl. 81—489 **20 Claims**

1. A plastic injection-molded handle for tools, particularly screwdrivers, comprising zones of plastic of different hardness comprising a harder plastic which is harder than a softer plastic, the harder plastic being non-deformable under forces which occur as a result of an actuating load, while the softer plastic permits slight elastic deformations, and a centrally located receiving hollow space for a tang of a tool blade, and wherein the central hollow space is located in a center part having a profiled cover surface around which a cover is injected, the cover being made of the harder plastic and having depressions, the depressions resulting from profiling of the cover surface, and said depressions being

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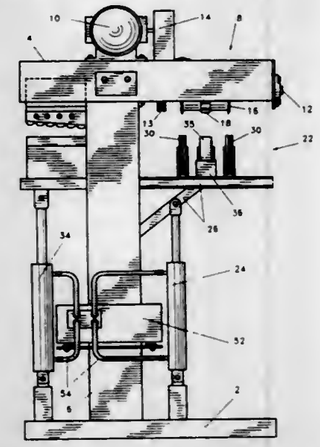
filled with a plastic which is softer than the harder plastic up to an approximately circular cross-sectional shape.

5,601,004

TIRE CUTTING APPARATUS

David A. Queen, 2972 G Rd., Grand Junction, Colo. 81504

Filed Sep. 23, 1994, Ser. No. 311,177
Int. Cl.[6] B23B *5/14*
U.S. Cl. 82—54 **2 Claims**



1. A tire cutting apparatus for severing the tread portion and sidewall portions of a tire carcass at the juncture of the base of the tread portion and upper sidewall of the tire which comprises:

a frame including an upper platform and a lower platform with channeled vertical posts positioned therebetween at about midpoint of said platforms;

electrically powered cutting assembly means mounted in said upper platform including two laterally adjustable cutting wheels and a driver roller spaced between said cutting wheels, said powered cutting assembly means causing turning of the tire and severing of the tread portion and sidewall portions of the tire; and

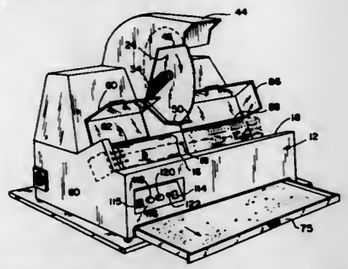
roller receiver table means vertically slidable on said vertical posts, said roller receiver table means including two laterally adjustable roller receivers which are in vertical alignment with said cutting wheels and a laterally adjustable pressure roller spaced between said roller receivers and in vertical alignment with said driver roller, said pressure roller being adapted to engage the inner surface of the tread portion of the tire and to cause positive engagement of the tire tread with said driver roller, said roller receiver table means being adapted to receive a tire carcass.

5,601,005

VARIABLE THICKNESS BREAD SLICER

Bernard L. Petersen, Marne; Alan M. Ledford, Coopersville, and Gary L. Kruse, Spring Lake, all of Mich., assignors to Oliver Products Company, Grand Rapids, Mich.

Continuation of Ser. No. 9,865, Jan. 27, 1993, Pat. No. 5,461,956. This application May 8, 1995, Ser. No. 437,457
Int. Cl.[6] B26D *1/16;5/20*
U.S. Cl. 83—221 **17 Claims**



1. A variable thickness bread slicing machine that is capable of slicing both crusty and soft breads comprising:

a support surface for a loaf of bread, including an infeed table and an outfeed table;

a circular rotational bread slicing knife;

a support arm rotationally supporting said slicing knife and shiftable to advance said knife from a non-slicing retracted position to a slicing position between, and transverse to, said infeed and outfeed tables, and to return said knife to said retracted position away from said tables and any bread thereon;

arm shifting motor means operably connected to said support arm for shifting said support arm and thereby said knife between said slicing position and said retracted position;

a drive motor that rotationally drives said knife through multiple revolutions during said shifting;

a step-by-step bread pusher shiftable along said infeed table in intermittent increments toward said slicing knife, to advance the bread in intermittent incremental steps of preselected dimension;

control means for said pusher adjacent said knife and positioned to be actuated when said pusher approaches said knife, and operably connected to said arm shifting motor means to restrain said knife in said retracted position while said pusher travels momentarily past said knife to said outfeed table to push the fully sliced bread loaf completely onto said outfeed table, and subsequently return to said infeed table; and

a user bread thickness selection device and an electronic control responsive to said selection device to vary the dimension of said increments according to a selected thickness value and thereby facilitate selection of slice thickness for individual bread loaves.

5,601,006

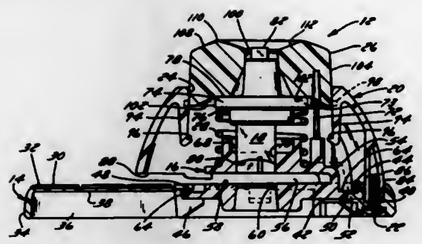
PUNCH TOOL WITH INTERCHANGEABLE DIE

Charles Quinn, Sun Prairie, and Robert T. Schofield, Madison, both of Wis., assignors to Fiskars Inc., Madison, Wis.

Filed Sep. 29, 1994, Ser. No. 314,876
Int. Cl.[6] B26F *1/14*
U.S. Cl. 83—588 **4 Claims**

1. A punch tool for punching holes through sheets, comprising:

a base;



a retainer cap attached to the base;

a die having a shearing edge of a predetermined shape;

a punch configured to cooperate with the die, the punch being disposed at least partially between the base and the retainer cap;

a resilient member disposed to act against the die and a portion of the punch;

wherein the base includes a first attachment region and the die includes a second attachment region, the first attachment region and the second attachment region each being configured to permit easy attachment and detachment of the base and the die; and

an actuator button disposed to contact the punch, wherein placing sufficient pressure against the actuator button moves the punch against the biasing force of the resilient member;

wherein the retainer cap has an aperture through which the actuator button moves;

wherein the punch includes:

a center disk portion;

a cutter edge extending from one side of the disk, the cutter edge being configured to move through the die portion shearing edge to shear sheets; and

an indicator extending from the other side of the disk to indicate the configuration of the cutter edge; and

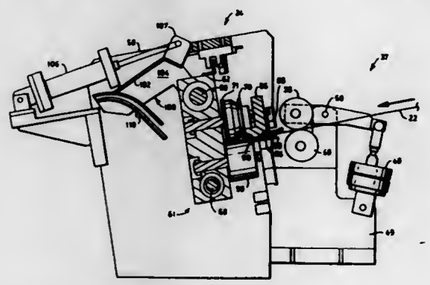
wherein the actuator button includes a hole therethrough for receiving the indicator.

5,601,007

MEDIA TABBING APPARATUS AND METHOD

Arthur H. Clough, Hardwick, and Matthew D. Guzzetta, Tewksbury, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 22, 1994, Ser. No. 343,224
Int. Cl.[6] B26D *3/08*
U.S. Cl. 83—887 **11 Claims**



1. Apparatus for cutting material along a portion of a sheet of material, said apparatus comprising:

a housing assembly;

a carriage assembly movably mounted on said housing assembly and being operable for movement along a travel path;

cutting means mounted on said carriage assembly and having at least a rotatable cutting edge disposed for cutting across one surface of the sheet as said edge travels along a cutting path so as to cut the material in response to said carriage assembly being moved along said travel path;

rotatable supporting means rotatably mounted on said carriage assembly adjacent said cutting means and having a supporting surface for movement across an opposite surface of the sheet when said carriage assembly is moved along said travel path;

said cutting edge being disposed at a predetermined distance from said rotatable supporting means surface for defining a cutting depth of the sheet such that an uncut portion of a sheet being cut has the same dimension as other uncut portions of a sheet being cut regardless of the thickness of sheet being cut;

said cutting means having a bearing surface disposed thereon, and said rotatable supporting means having a bearing surface disposed thereon, both bearing surfaces being in contact one with the other during movement of said carriage assembly along said travel path for maintaining said cutting edge relative to said supporting surface for controlling depth of cut; and,

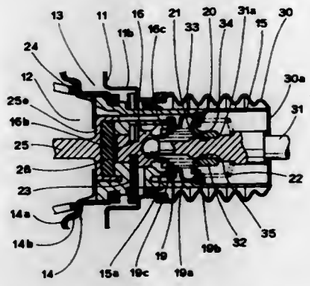
means for moving said carriage assembly along said travel path, whereby the sheet is cut by said cutting edge, wherein said cutting means and said rotatable supporting means are rotatable during movement of said carriage assembly.

5,601,008

VACUUM SERVO UNIT FOR A VEHICLE BRAKING SYSTEM

Akihiko Miwa; Yuzuru Sugiura, both of Anjo, and Shigeru Sakamoto, Susono, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, and Toyota Jidosha Kabushiki Kaisha, Toyota, both of Japan

Filed May 25, 1995, Ser. No. 450,235
Claims priority, application Japan, May 25, 1994, 6-111383
Int. Cl.[6] B60T *13/57*
U.S. Cl. 91—376 R **7 Claims**



1. A vacuum servo unit for a vehicle braking system comprising:

a housing defining therein a pressure chamber;

a movable wall member provided in said housing for dividing said pressure chamber into at least a constant pressure chamber and a variable pressure chamber;

a cylindrical member extending from a central portion of said movable wall member, and having an open end extending out of said housing;

an input member having a plunger slidably fitted into said cylindrical member in coaxial relationship therewith, and a rod connected to said plunger through a ball joint connection, said rod extending through the open end of said cylindrical member out of said cylindrical member;

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a vacuum valve member provided on an inner side of said cylindrical member, said vacuum valve member encompassing said input member and extending toward the open end of said cylindrical member;

a seal member provided on the inner side of said cylindrical member at a position closer to the open end of said cylindrical member than said vacuum valve member, said seal member being opposed to said vacuum valve member;

a control valve member having a cylindrical folding member, one end portion thereof provided with a seal portion opposed to said vacuum valve member, and the other end of said folding member air-tightly fixed to the inner side of said cylindrical member;

an air valve member mounted on said input member opposite to said seal member in slidable and air-tight relationship with said input member;

a first compression coil spring provided between said air valve member and said seal portion of said control valve member;

a first contact portion provided on said input member for actuating said seal portion of said control valve member away from said vacuum valve member;

a second contact portion provided on said input member for actuating said air valve member away from said seal member;

a second compression coil spring provided in said cylindrical member for biasing said input member to make said first contact portion of said plunger contact said seal portion of said control valve member and actuate said seal portion away from said vacuum valve member in a normal condition, said second compression coil spring biasing said input member to make said air valve member contact said seal member;

means for limiting a displacement of said input member biased by said second compression coil spring against said cylindrical member;

a third compression coil spring provided between said plunger and said air valve member; and

reaction means for applying a reaction force to said plunger in response to the advancing force applied to said movable wall member by the pressure difference between the pressure in said constant pressure chamber and the pressure in said variable pressure chamber; and

said variable pressure chamber communicating with the atmosphere through a clearance defined between said air valve member and said seal member, and said variable pressure chamber communicating with said constant pressure chamber through a clearance defined between said vacuum valve member and said seal portion of said control valve member.

5,601,009

HYDRAULIC MACHINE AND METHOD FOR ASSEMBLING A PISTON AND SLIDER SHOE UNIT

Hardy P. Jepsen, and Ove T. Hansen, both of Nordborg, Denmark, assignors to Danfoss A/S, Nordborg, Denmark

PCT No. PCT/DK93/00443, § 371 Date May 31, 1995, § 102(e) Date May 31, 1995, PCT Pub. No. WO94/16217, PCT Pub. Date Jul. 21, 1994

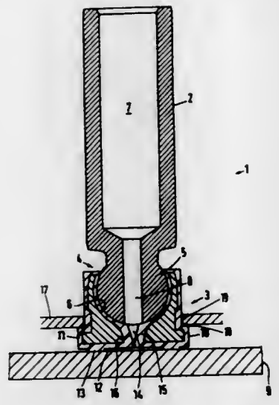
PCT Filed Dec. 23, 1993, Ser. No. 446,679

Claims priority, application Germany, Jan. 18, 1993, 43 01 123.3

Int. Cl.[6] F01B *3/00*

U.S. Cl. 92—71 **16 Claims**

1. A hydraulic machine having a piston and slider shoe in a unit, in which the piston and the slider shoe are joined to one another by way of a ball-and-socket joint having a ball formed on one of said piston and slider shoe and a socket formed in the other of said piston and slider shoe, a first contact surface located between said ball and said socket, the slider shoe lying on a control surface, a second contact surface being located between said slider shoe and said control surface, a friction-reducing layer being arranged on said first contact surface, and the friction-reducing layer being extended to at least said second contact surface.



5,601,010

PISTON UNIT OF AN INTERNAL COMBUSTION ENGINE

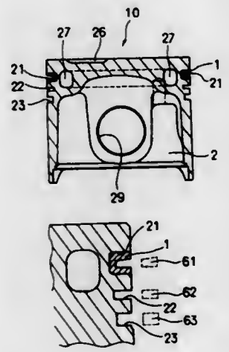
Tomohiro Sawada; Shuji Inoue, and Yuji Kato, all of Aichi pref., Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Apr. 18, 1995, Ser. No. 423,719

Claims priority, application Japan, Apr. 20, 1994, 6-106101

Int. Cl.[6] F16J *1/04*

U.S. Cl. 92—222 **4 Claims**



1. A piston unit of an internal combustion engine comprising a piston formed of aluminum base alloy and provided with a first ring groove, and a wear-proof ring fused with the first ring groove of said piston during formation, said wear-proof ring being formed of a copper-zinc alloy with its thermal expansion coefficient in the range from 19.5×10^{-6}m/m° C. to 22.0×10^{-6}m/m° C., said copper-zinc alloy containing 57–64 wt. % of copper, 22–36 wt. % of zinc and 1.5–5.2 wt. % of aluminum.

5,601,011

COOKING APPARATUS SUCH AS FRYER OR THE LIKE FOR FRYING FOOD

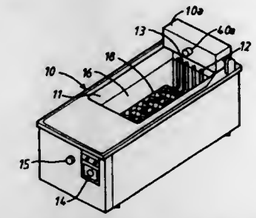
Katsunobu Minari, Nagoya, and Kaori Ueda, Toyoake, both of Japan, assignors to Hoshizaki Denki Kabushiki Kaisha, Toyoake, Japan

Division of Ser. No. 411,863, Mar. 28, 1995, Pat. No. 5,471,911, which is a continuation of Ser. No. 972,017, Nov. 6, 1992, abandoned. This application Sep. 5, 1995, Ser. No. 523,619

Claims priority, application Japan, Mar. 9, 1992, 4-21342; Mar. 9, 1992, 4-21343; Mar. 9, 1992, 4-86385; Mar. 9, 1992, 4-86386; Sep. 28, 1992, 4-258354

Int. Cl.[6] A47J *37/12*

U.S. Cl. 99—337 **2 Claims**



1. A cooking apparatus for frying food having an oil tank filled therein with cooking oil to be maintained in a heated condition by a heating means, the cooking apparatus comprising:

a housing having said oil tank disposed therein;

mode selection means on said housing for selecting a first frying mode when the food is first frying materials having an interior portion which is not to be heated, and for selecting a second frying mode when the food is second frying materials other than the first frying materials of which the interior portion is not to be heated;

detection means disposed in the housing adjacent the cooking oil for detecting an amount of vapor rising from the food after the food has been thrown into the heated cooking oil, said detection means having a vapor detecting element mounted on said housing and located above the surface of the cooking oil to be directly exposed to the vapor rising from the food;

first means for determining if said detected amount of vapor has reached a first peak thereof in the first frying mode if the first frying mode is selected, and if so determining frying completion of the first frying materials; and

second means for determining when a predetermined time lapses after said detected amount of vapor has reached a second peak thereof in the second frying mode When the second frying mode is selected, and if so determining frying completion of the second frying materials.

5,601,012

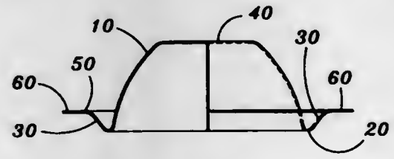
APPARATUS FOR BAKING BREAD BOWLS AND METHOD OF USE THEREOF

Joseph Ellner, 8549 N. Servite Dr. #105, Milwaukee, Wis. 53223

Filed Sep. 5, 1995, Ser. No. 523,261

Int. Cl.[6] A22C *7/00;* **A23P** *1/00;* **A47J** *43/18*

U.S. Cl. 99—428 **18 Claims**



1. A bread bowl baker comprising:

a concavo-convex body including a wide diameter circumference and a narrow diameter circumference;

a first end coextensively joined to said wide diameter circumference, said first end i) having an axially outermost extent that defines a first end plane and ii) including a nonplanar cylindrical flange that a) doubles back from the axially outermost extent to form a raised edge, said raised edge defining a raised edge plane that is noncoplanar with said first end plane and b) includes an outer perimeter that is at least partially cylindrical;

a second end coextensively joined to said narrow diameter circumference, said second end defining a second end plane;

a widened end portion coextensively joined to said nonplanar cylindrical flange; and

a plurality of handles adjacent said widened end portion,

wherein said plurality of handles include a first integrally formed handle and a second integrally formed handle.

5,601,013

ARRANGEMENT FOR GENERATING STEAM IN OVENS

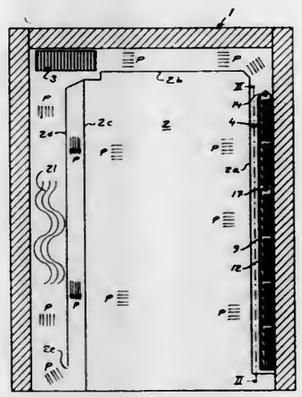
Lennart Larsson, Borås, and Jonas Persson, Fristad, both of Sweden, assignors to Sveba-Dahlen AB, Sweden

Filed Nov. 13, 1995, Ser. No. 557,957

Claims priority, application Sweden, Nov. 17, 1994, 9403983

Int. Cl.[6] A21B *1/00;1/08;* **A21C** *13/00;* **F24C** *15/32*

U.S. Cl. 99—476 **7 Claims**



1. An arrangement for generating steam in ovens comprising a stand whicb carried a plurality of superposed and generally horizontally extending gutter means (8, 9), the bottoms of the gutter means including a plurality of through-penetrating holes (11), the holes functioning to allow water to pass to underlying gutter means, and further comprising members (12) mounted adjacent said holes and partially covering said holes, characterized in that at least two of the gutter means are arranged one above the other; in that the members (12) have an elongated form and extend through holes (11) in said at least two gutter means (8, 9) and in that the cross-sectional area of said elongated members (12) adjacent the locations where the elongated members pass through the holes is smaller than the cross-sectional areas of said gutter means.

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5,601,014
LIFT AND TILT TABLE

Jay B. Stevens; Richard K. Gronczewski; Bradley R. Holloway, and William H. Yeakle, all of Angola, Ind., assignors to Vestil Manufacturing Company, Angola, Ind.

Filed Jun. 28, 1995, Ser. No. 495,938
Int. Cl.[6] A47F 5/12
U.S. Cl. 108—7 **4 Claims**



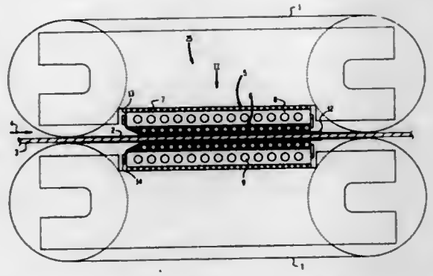
1. A lift and tilt table assembly comprising:
a base having forward and rear portions;
a deck having forward and rear portions;
a forward arm having one of its ends pivotally connected to the forward portion of said base and having its other end pivotally connected to the forward portion of said deck;
a rear arm having one of its ends pivotally connected at a rear pivotal connection to the rear portion of said base and having its other end pivotally connected to said deck between said forward and rear portions of said deck, said rear pivotal connection being movable between a rearmost position on said base and an intermediate position towards said forward portion of said base;
an extensible cylinder having one of its ends pivotally connected between the ends of said rear arm and having its other end pivotally connected the rear portion of said deck;
a lock arranged to hold said rear pivotal connection in said rearmost position when said lock is in a locked condition;
a lock release for releasing said lock; and
wherein when said extensible cylinder is not extended, said forward and rear arms are both rotated to position said deck at its lowest and untilted position, parallel and adjacent to said base; when said extensible cylinder is being extended with said lock being in its locked condition, said forward and rear arms will rotate to simultaneously tilt and lift said deck, and when said lock release is actuated releasing said lock, and said extensible cylinder is extended, said forward and rear arms will rotate and said rear pivotal connection will move from said rearmost position to said intermediate position so that said deck will be sequentially tilted and raised.

5,601,015
APPARATUS FOR CONTINUOUSLY MAKING A MULTILAYERED, FLAT WORKPIECE

Rolf Röttger, Melle, and Rudolf Heinrich, Oelde, both of Germany, assignors to Firma Theodor Hymmen, Bielefeld, Germany

Filed Oct. 18, 1994, Ser. No. 325,674
Int. Cl.[6] B30B 5/06
U.S. Cl. 100—93 P **16 Claims**

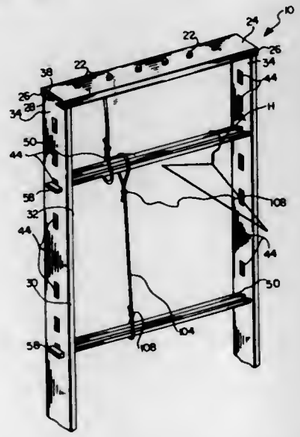
1. Apparatus for continuously making multilayered flat workpieces; comprising:
two press belts spaced from each other to, define a reaction zone for passage of a workpiece in a conveying direction; and
pressure applicator means acting on at least one of said press belts for applying pressure onto the workpiece, said pressure application means including a pressure plate and an elastically deformable pressure pad cooperating with said pressure plate and provided in the form of a plurality of neighboring hoses, each having a first and a second end and containing pressure fluid to define a pressure compartment in the reaction zone at the workpiece-distant side of said press bolt, said hoses extending transversely to the conveying direction of the workpiece and being connected to each other at their first ends by a first distribution passage and at their second ends by a second distribution passage with the first and second distribution passages being located outside the pressure plate which viewed in plan view.



5,601,016
ADJUSTABLE SHELF SYSTEM AND METHOD

Walter Witte, 3267 NW. 123rd Ave., Sunrise, Fla. 33323

Filed Jun. 7, 1995, Ser. No. 481,075
Int. Cl.[6] A47B 9/00
U.S. Cl. 108—106 **18 Claims**

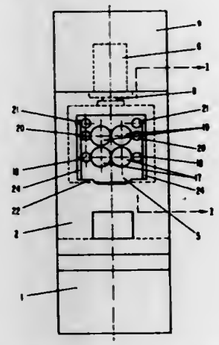


1. A suspended shelf system for securing to an elevated structure for retaining various items, comprising:
a system mounting track member and means for securing said track member to said elevated structure,
at least two suspension members, each having a suspension member mounting end with track member engaging means for securing each said suspension member to said track member, such that each said suspension member hangs substantially vertically from said track member, and such that said suspension members are spaced apart from each other,
at least one connecting rail having two connecting rail ends, each said connecting rail end including suspension member engaging means, for mounting substantially horizontally between and engaging said spaced apart suspension members for retaining item hangers and shelf structures,
wherein each said suspension member additionally comprises a plurality of connecting rail mounting ports recessed in a longitudinal series along the length of each said suspension member for receiving said suspension member engaging means,
wherein each said connecting rail has two connecting rail ends, and each said suspension member engaging means includes a rail flat end segment extending longitudinally from the connecting rail, and wherein each said rail flat end segment includes a pair of opposing rail notches which define a rail T-portion at said rail end for engaging said rail mounting ports in said suspension members.

5,601,017
DEVICE FOR PARALLEL GUIDING OF A RAM OF A HYDRAULIC PRESS

Hans Schoen, Lange Horst 87, 45527 Hattingen, Germany

Filed Nov. 22, 1995, Ser. No. 562,199
Claims priority, application Germany, May 4, 1995, 195 16 359.1
Int. Cl.[6] B30B 1/34;15/24
U.S. Cl. 100—258 R **10 Claims**

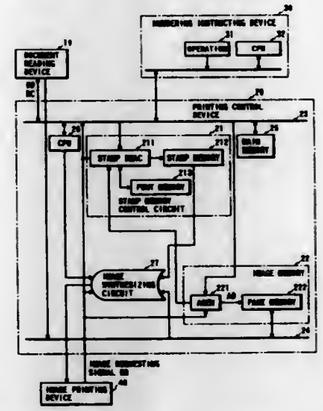


1. A device for parallel guiding of a reciprocating press ram of a hydraulic press, said device comprising:
a press ram of a rectangular contour;
a drive unit comprising hydraulic cylinders for reciprocating said press ram;
said press ram having a first and a second oppositely arranged lateral walls;
a first gear set comprised of:
a) at least two first inner shafts rotatably connected to said press ram so as to extend from said first lateral wall to said second lateral wall such that free ends of said first inner shafts project from said lateral walls;
b) first meshing inner gear wheels, wherein at least two of said first meshing inner gear wheels are fixedly connected to said free ends of said first inner shafts at said first lateral wall and at least two of said first meshing inner gear wheels are fixedly connected to said free ends of said first inner shafts at said second lateral wall, said first inner gear wheels being of identical size;
c) said at least two first inner shafts positioned in a first common horizontal plane;
d) two first outer shafts rotatably connected to said press ram so as to extend from said first lateral wall to said second lateral wall such that free ends of said first outer shafts project from said lateral walls;
e) said first outer shafts positioned in said first common horizontal plane opposite one another relative to said at least two first inner shafts;
f) a first outer gear wheel fixedly connected to each one of said free ends of said first outer shafts, wherein said first outer gear wheels mesh with an adjacent one of said first inner gear wheels; and
g) all of said first outer gear wheels having identical size; and
four toothed racks positioned parallel to a direction of travel of said press ram, wherein each one of said first outer gear wheels meshes with one of said toothed racks.

5,601,018
AUTOMATIC STAMPING DEVICE

Tomohiko Iimura, and Hitoshi Ejima, both of Saitama, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 417,262, Apr. 5, 1995, abandoned.
This application Jul. 10, 1996, Ser. No. 677,906
Claims priority, application Japan, Jun. 30, 1994, 6-172012
Int. Cl.[6] B41J 5/00
U.S. Cl. 101—45 **9 Claims**



1. An automatic stamping device, comprising:
numbering instructing means for permitting an operator to selectively designate numbering information from any one of plural types of numbering information for a plurality of sheets of documents;
reading means for reading the plurality of sheets of the documents to output document image data;
printing control means, connected to the numbering instructing means and the reading means, for requesting the numbering information from the numbering instructing means, for counting the number of the documents read by the reading means to produce a counting result, and for generating a read control signal;
memory means, connected to the reading means, for storing the document image data output by the reading means;
address generating means for, in response to the read control signal from the printing control means, generating addresses for addressing the memory means to read out the document image data;
stamp image data producing means, connected to receive the numbering information from the printing control means for producing stamp image data, the stamp image data including a frame line with a preacribed shape and a train of characters within said frame line the train of characters being dependent upon the type of numbering information designated by the operator and the counting result produced by the printing control means, the stamp image data producing means monitors the addresses generated by the address generating means and outputs the stamp image data when one of the addresses falls within a predetermined range;

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image data synthesizing means, connected to the memory means and the stamp image data producing means, for superimposing said document image data and said stamp image data to produce printing image data; and

image data outputting means, connected to the image data synthesizing means for printing the printing image data on sheets of paper.

5,601,019

ROTARY STENCIL PRINTER HAVING GEAR TRAIN FOR SYNCHRONIZING INNER PRESS ROLLER WITH PRINTING DRUM AND INCLUDING BRAKE FOR PRESS BIAS CONTROL

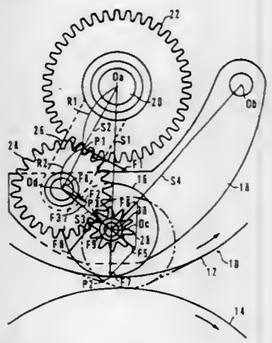
Yoshiharu Ohinata; Yasuhiro Takahashi, and Yoshihiro Noguchi, all of Minato-ku, Japan, assignors to Riso Kagaku Corporation, Tokyo, Japan

Filed Dec. 5, 1995, Ser. No. 567,163

Claims priority, application Japan, Dec. 8, 1994, 6-331071; Mar. 28, 1995, 7-094325

Int. Cl.[6] B41L *13/04*

U.S. Cl. 101—129 **7 Claims**



1. A method of controlling a rotary stencil printer including brake means for braking rotation of at least one gear wheel disposed on a supporting arm so that a reaction torque generated by actuation of the brake means generates a biasing force to bias an inner press roller in a radially outwardly direction of a printing drum, comprising the steps of:

applying a first braking force to the at least one gear wheel during a start-up phase of a printing operation; and

applying a second braking force to the at least one gear wheel after the start-up phase of the printing operation whereby the second braking force is less than the first braking force.

5,601,020

APPARATUS FOR REDUCING PROCESSION OF A TUBULAR PRINTING SLEEVE

Douglas J. Dawley, Epping, and James B. Vrotacoe, Rochester, both of N.H., assignors to Heidelberger Druckmaschinen AG, Heidelberg, Germany

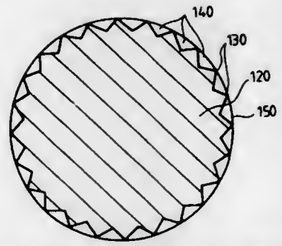
Division of Ser. No. 209,779, Mar. 11, 1994, abandoned, which is a continuation-in-part of Ser. No. 7,453, Jan. 22, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 470,564

Int. Cl.[6] B41F *27/06;27/12;* B41L *29/12*

U.S. Cl. 101—217 **8 Claims**

1. An apparatus for reducing procession of a gapless tubular printing sleeve in a printing press caused by at least one fluid wave trapped between the printing sleeve and a cylinder, the apparatus comprising:

a gapless tubular printing sleeve;



a cylinder having a circumferential surface adapted to receive and mount the gapless tubular printing sleeve;

means for connecting an interface of the cylinder and the gapless printing sleeve to a region of pressure lower than the pressure in the fluid wave to allow the fluid wave, which is trapped at the interface and advancing in front of a nip between the cylinder and an adjacent cylinder, to escape to the region of low pressure;

wherein the connecting means includes

the cylinder having the circumferential surface with a rough contour defined by peaks and valleys, the printing sleeve riding on the peaks and the fluid wave escaping via the valleys.

5,601,021

PRINTING CYLINDER HOLDING APPARATUS FOR PRINTING MACHINE

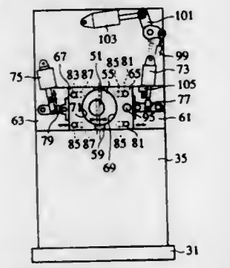
Torao Katabira, Shizuoka-ken, and Kazuyuki Baba, Tokyo, both of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 12, 1996, Ser. No. 600,259

Claims priority, application Japan, Feb. 17, 1995, 7-029587

Int. Cl.[6] B41F *27/00*

U.S. Cl. 101—218 **5 Claims**



1. A printing cylinder holding apparatus for a printing machine, comprising:

a substrate;

a pair of frames mounted on said substrate and arranged on both sides of a printing cylinder having a pair of shaft portions positioned at opposite ends of the printing cylinder, one of said pair of frames having an opening through which a cylindrical printing member mountable on the printing cylinder may be positioned on and removed from the printing cylinder;

a pair of bearing members mounted on said frames, respectively, for rotatably supporting the printing cylinder shaft portion thereon;

a pair of bearing holding members arranged on said frames so as to face each other, each of said bearing holding members being movable between a holding position at which said bearing holding members hold one of said bearing members and an unholding position at which said bearing holding members release said one of said bearing members to form an opening for allowing said cylindrical printing member to be positioned on and removed from the printing cylinder;

an actuator for moving said bearing holding members between said holding position and said unholding position; and

stopper means for mechanically setting said holding position and said unholding position of said bearing holding members.

5,601,022

PROCESS AND DEVICE FOR PRODUCING A PRINTING FORM WITH A NARROW TRANSFER FOIL

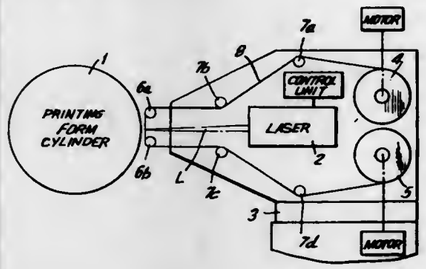
Horst Dauer, Rohrbach; Bernhard Feller, Friedberg; Arnim Franz-Burgholz, Augsburg, and Josef Göttling, Friedberg, all of Germany, assignors to MAN Roland Druckmaschinen AG, Offenbach am Main, Germany

Filed Jan. 18, 1995, Ser. No. 374,139

Claims priority, application Germany, Aug. 27, 1994, 44 30 555.9

Int. Cl.[6] B41C *1/055;1/10;1/06*

U.S. Cl. 101—467 **19 Claims**



1. A process for producing a printing form on a printing form cylinder by controlled heating in accordance with an image with at least one laser beam of a laser print head, comprising:

applying controlled elements of the image to a rotating printing form cylinder having a printing form surface and a printing form width;

moving the at least one laser beam in a direction across the printing form width;

conveying a strip-type transfer foil, having a strip width that is substantially smaller than the printing form width so that the printing form and the transfer foil oppose one another over a small surface area, continually between the printing form cylinder and the at least one laser beam close to the printing form surface during imaging in a direction orthogonal to the moving direction of the laser beam so that a sufficient quantity of material is transferred from the transfer foil to the printing form by the at least one laser beam and so that gas produced during imaging can escape due to the small opposing surface area; and

moving the foil simultaneously and synchronously with the movement of the at least one laser beam across the printing form width.

5,601,023

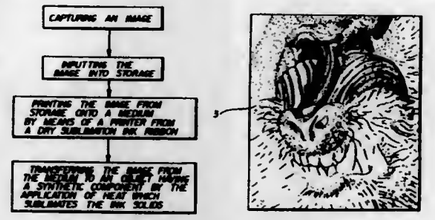
PERMANENT HEAT ACTIVATED TRANSFER PRINTING PROCESS AND COMPOSITION

Nathan S. Hale, and Ming Xu, both of Mt. Pleasant, S.C., assignors to Sawgrass Systems, Inc., Mt. Pleasant, S.C.

Continuation-in-part of Ser. No. 506,894, Jul. 25, 1995, and Ser. No. 287,756, Mar. 8, 1994, Pat. No. 5,487,614, which is a continuation of Ser. No. 195,851, Feb. 10, 1994, Pat. No. 5,431,501, said Ser. No. 506,894is a continuation-in-part of Ser. No. 299,736, Sep. 1, 1994, Pat. No. 5,488,907, which is a continuation-in-part of Ser. No. 195,851, which is a continuation-in-part of Ser. No. 724,610, Jul. 2, 1991, Pat. No. 5,302,223, which is a continuation-in-part of Ser. No. 549,600, Jul. 9, 1990, abandoned. This application Dec. 1, 1995, Ser. No. 565,999

Int. Cl.[6] B41L *35/14*

U.S. Cl. 101—488 **10 Claims**



1. A method of printing using heat activated dye solids by means of a printer which uses liquid ink, comprising the steps of:

a. preparing a liquid ink formulation comprising a heat activated dye, a liquid carrier, and an emulsifying enforcing agent which is soluble in said liquid carrier and has an affinity for said heat activated dye and surrounds individual particles of said heat activated dye and separates said individual particles from said liquid carrier, and which allows heat activation of said heat activated dye at the temperature at which said heat activated dye activates, and wherein said heat activated dye is a finely divided solid which is substantially insoluble in said liquid carrier;

b. supplying a printer with said liquid ink formulation;

c. printing said liquid ink formulation in a desired image by means of said printer onto a medium at a temperature which is below the temperature at which said heat activated dye activates; and

d. transferring said image from said medium to an object on which the image is to appear by thermal means at a temperature which is sufficient to activate the heat activated dye, so as to cause the heat activated dye to transfer onto said object.

5,601,024

OPTICAL PROXIMITY FUSE

Gunther Sepp, Ottobrunn; Walter Hermann, Kirchseeon, and Richard Benedikter, Putzbrunn, all of Germany, assignors to Daimler-Benz Aerospace AG, München, Germany

Filed Nov. 1, 1990, Ser. No. 627,397

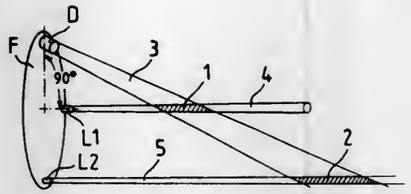
Claims priority, application Germany, Nov. 14, 1989, 39 37 859.4

Int. Cl.[6] F42C *13/02*

U.S. Cl. 102—213 **10 Claims**

1. Optical proximity fuse of a missile with laser transmitters and optical receivers, whose beam paths bundled by optical means are oriented in such a way at a small angle to the direction of flight that they intersect in predetermined measuring segments, wherein radiation reflected from objects in these measuring segments is evaluated for derivation of a firing pulse, characterized in that at least two laser transmitters oriented at angles differing from each other and a common optical receiver are arranged at different points on a front side of the missile, that the measuring segments in which a first and a second transmitter beam path intersects a

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receiver beam path lie at different spacings from the missile and at different side distances from a longitudinal axis of the missile, wherein the measuring segment of the first transmitter beam path closer to the missile corresponds to a predetermined target segment, that the laser transmitters are modulated with identification response codes differing from each other, that means for discrimination of the identification response codes are provided in a receiver circuitry, and that a firing signal is only generated if both transmitter identification response codes are present at the receiver within a predetermined time interval and with receiving intensities lying within predetermined ranges, and that the instant of the firing signal is derived in a predetermined manner from the chronological sequence and the chronological spacing of the two signal identification response codes received.

5,601,025

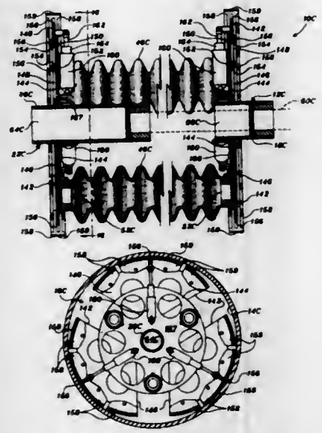
ROBOTIC VEHICLE

W. Donald Box, Oak Ridge, Tenn., assignor to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Continuation-in-part of Ser. No. 212,355, Jun. 30, 1994, Pat. No. 5,497,707, which is a continuation-in-part of Ser. No. 949,898, Sep. 23, 1992, Pat. No. 5,293,823. This application Apr. 17, 1995, Ser. No. 422,868

Int. Cl.[6] B61B *13/00*

U.S. Cl. 104—138.2 **3 Claims**



1. A robotic vehicle for travel through a conduit, said robotic vehicle comprising:

a forward housing including a hub portion, said forward housing being provided with surface engaging means for selectively engaging at least one wall of the conduit, whereby said forward housing is selectively held in a stationary position within the conduit by said surface engaging means, said surface engaging means of said forward housing including a plurality of extendable appendages, each said extendable appendage being radially extendable relative to said hub portion between a retracted position and a radially extended position whereby said extendable appendage can be selectively moved into engagement with at least one wall of the conduit, said forward housing including a shoe holder slidably mounted on said hub portion of said forward housing so as to be radially extendable, each said shoe holder carrying a plurality of shoe members for selectively engaging at least one wall of the conduit;

a rear housing including a hub portion, said rear housing being provided with surface engaging means for selectively engaging at least one wall of the conduit, whereby said rear housing is selectively held in a stationary position within the conduit by said surface engaging means, said surface engaging means of said rear housing including a plurality of further extendable appendages, each said further extendable appendage being radially extendable relative to said hub portion between a retracted position and a radially extended position whereby said further extendable appendage can be selectively moved into engagement with at least one wall of the conduit, each said extendable appendage of said rear housing including a shoe holder slidably mounted on said hub portion of said rear housing so as to be radially extendable, each said shoe holder carrying a plurality of shoe members for selectively engaging at least one wall of the conduit;

at least three selectively extendable members, each said extendable member defining a cavity therein and defining a forward end portion secured to said forward housing and a rear end portion secured to said rear housing; and

means for selectively pressurizing gas into the cavity of a selected one of said extendable members for axially extending said one of said extendable members and increasing the distance between said forward end portion of said one of said extendable members and said rear end portion of said one of said extendable members, and for selectively evacuating gas from the cavity of a selected one of said extendable members for axially retracting said one of said extendable members and decreasing the distance between said forward end portion of said one of said extendable members and said rear end portion of said one of said extendable members.

5,601,026

PRESSURE-MEDIUM ACTIVATED LINEAR DRIVE SYSTEM

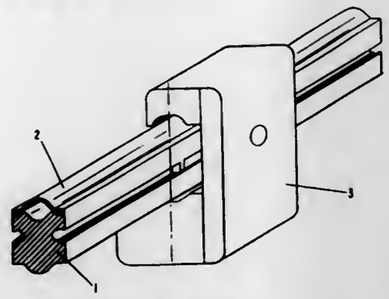
Fritz Röthemeyer, Isernhagen; Harald Kranz, Elze; Stefan Wode, Hanover; Wolfgang Kleiner, Hagenburg; Rainer Alles, Isernhagen; Roland Merten, Peine, and Dieter Landweer, Hanover, all of Germany, assignors to Continental Aktiengesellschaft, Hanover, Germany

Filed May 12, 1995, Ser. No. 440,420

Claims priority, application Germany, May 13, 1994, 44 16 934.5

Int. Cl.[6] E01B *25/00*

U.S. Cl. 104—155 **9 Claims**



1. A linear drive system comprising:

a guide rail;

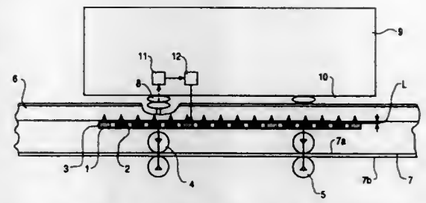
a transport device movable along said guide rail;

at least one tubular, flexible hollow body connected to and positioned along an extension of said guide rail, said hollow body consisting essentially of an elastomeric material and having a first and a second end;

said at least one hollow body loadable with a pressure medium from one of said first and second ends;

at least one squeezing roller rotatably connected to said transport device for forcing sealingly said at least one hollow body against a counter element; and

said guide rail consisting essentially of a flexible elastomer.



5,601,027

POSITIONING SYSTEM WITH DAMPED MAGNETIC ATTRACTION STOPPING ASSEMBLY

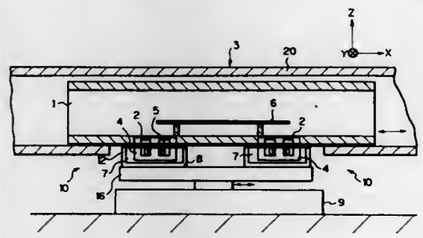
Hiroyuki Shinozaki; Fumio Kondo; Satoshi Mori; Masao Matsumura, and Takeshi Yoshioka, all of Kanagawa-ken, Japan, assignors to Ebara Corporation, Tokyo, Japan

Filed Nov. 22, 1994, Ser. No. 345,809

Claims priority, application Japan, Nov. 22, 1993, 5-316047; Dec. 21, 1993, 5-345264

Int. Cl.[6] B60L *13/04*; **B61K** *7/00*

U.S. Cl. 104—249 **24 Claims**



1. A positioning system for stopping a transport car travelling along a transport path at a predetermined stop position along said transport path, said positioning system comprising:

a first member mounted at said stop position;

a second member mounted on said transport car

said first and second members being operable to be coupled together by a magnetic attraction force causing said transport car to stop at said stop position and

at least one of said first and second members being mounted on the respective said stop position or said transport car by a damper operable to damp vibration of said transport car in a direction of movement thereof during stopping thereof at said stop position.

5,601,028

VEHICLE DRIVEN BY A LINEAR MOTOR

Gottfried Blümel, Odelzhausen; Wolfgang Schlögl, Gräpelfing; Frieder Scholz, Hausham, and Karel Pechaty, Starnberg, all of Germany, assignors to Magnetbahn GmbH, Starnberg, Germany

Filed Apr. 14, 1995, Ser. No. 422,539

Claims priority, application Germany, Apr. 21, 1994, 44 13 899.7

Int. Cl.[6] B60L *13/10*

U.S. Cl. 104—282 **6 Claims**

1. A vehicle system for driving and supporting a vehicle by magnetic force along a vehicle travel path, comprising

(a) a guide rail extending along the vehicle travel path;

(b) longitudinal stators stationarily mounted along said guide rail;

(c) a vehicle including a vehicle shell and a vehicle chassis supporting the vehicle shell; the vehicle having a weight essentially composed of the weight of said shell, said chassis and a useful load;

(d) a carrier bar secured to said chassis and extending generally parallel to said guide rail;

(e) permanent magnets mounted on said carrier bar for cooperating with said longitudinal stators to generate a magnetic carrying force opposing the vehicle weight;

(f) first and second guide rollers each having a roller shaft rigidly supported relative to said carrier bar and rollingly engaging said guide rail for maintaining constant an airgap between said permanent magnets and said longitudinal stators; said first rollers taking up and transmitting to said guide rail any downwardly-directed forces representing a first difference between the vehicle weight and the magnetic carrying force and not exceeding a first load limit of said first guide rollers; said second rollers taking up and transmitting to said guide rail any upwardly-directed forces representing a second difference between the magnetic carrying force and the vehicle weight and not exceeding a second load limit of said second guide rollers; said first difference constituting a deficiency in said magnetic carrying force to entirely compensate for the vehicle weight and said second difference constituting an excess in said magnetic carrying force to entirely compensate for the vehicle weight;

(g) electromagnets carried by said vehicle; said electromagnets having an energized and a de-energized state; in said energized state said electromagnets generating an electromagnetic force compensating for loads on either of said first and second rollers; and

(h) means for placing said electromagnets into said energized state when either of said first or second load limit is exceeded.

5,601,029

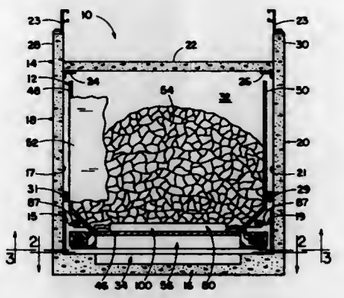
NONCONTACT LATERAL CONTROL SYSTEM FOR USE IN A LEVITATION-TYPE TRANSPORT SYSTEM

John J. Geraghty, and Allan P. Poland, both of Lakewood, Colo., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Mar. 23, 1995, Ser. No. 408,796

Int. Cl.[6] B60L *13/06*

U.S. Cl. 104—284 **2 Claims**



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1. In a levitation-type transport system including a transit corridor having a pair of spaced apart first and second sidewalls, a container having first and second end portions and positioned within said transit corridor, means for levitating said container within said transit corridor and a propulsion system associated with said transit corridor for moving said levitated container through said transit corridor, a noncontact lateral control system for preventing said levitated container from contacting said transit corridor first and second sidewalls as said levitated container is moved therethrough, comprising:

(a) first proximity sensor means associated with said first end portion of said container operable to sense the lateral position of said first end portion of said container within said transit corridor relative to said transit corridor first and second sidewalls and provide a first linear output signal means representative of the sensed lateral position of said container first end portion;

(b) second proximity sensor means associated with said second end portion of said container operable to sense the lateral position of said second end portion of said container within said transit corridor relative to said transit corridor first and second sidewalls and provide a second linear output signal means representative of the sensed lateral position of said container second end portion;

(c) first electromagnet means associated with said container first end portion;

(d) second electromagnet means associated with said container second end portion; and

(e) controller means for receiving said first linear output signal means from said first proximity sensor means, calculating the actual lateral position of said container first end portion within said transit corridor based on the value of said first linear output signal means and providing in response to said calculated actual lateral position of said container first end portion within said transit corridor a first output signal to said first electromagnet means operable to energize said first electromagnet means and create a magnetic attraction between said first electromagnet means and one of said transit corridor first and second sidewalls of sufficient strength to move said container first end portion through magnetic action laterally within said transit corridor until said container first end portion is centered laterally within said transit corridor; and

(f) controller means for receiving said second linear output signal means from said second proximity sensor means, calculating the actual lateral position of said container second end portion within said transit corridor based on the value of said second linear output signal means and providing in response to said calculated actual lateral position of said container second end portion within said transit corridor a second output signal to said second electromagnet means operable to energize said second electromagnet means and create a magnetic attraction between said second electromagnet means and one of said transit corridor first and second sidewalls of sufficient strength to move said container second end portion through magnetic action laterally within said transit corridor until said container second end portion is centered laterally within said transit corridor,

said levitation means including a first permanent magnet arrangement positioned on said transit corridor and a second permanent magnet arrangement connected to said container;

wherein the electric power required to operate each of said pair of first and second proximity sensor means and each of said pair of first and second electromagnet means is provided by a series of wire conductors connected with said first and second controller means, suspended from said container and intersecting magnetic fields generated by said first permanent magnet arrangement.

5,601,030

RAILRAOD BOGIE, FOR CONNECTING VEHICLES IN AN ARTICULATED TRAIN

Michael F. Brouillette, R.D. 2, Box 613, Millerstown, Pa. 17062

Filed Mar. 4, 1996, Ser. No. 610,202
Int. Cl.[6] B61F 3/12
U.S. Cl. 105—159 **4 Claims**



1. A new and improved railroad bogie for effecting the transportation of truck trailers over railroad tracks comprising, in combination:

a bogie body having a lower generally horizontal frame wit a front end and a rear end and elongated sides therebetween, the bogie body also having an upstanding front plate and rear plate and with side plates having lower ends therebetween secured to the frame to define an open top;

a pair of front railroad wheels with an axle rotatably secured to the frame adjacent to the front end and a pair of rear railroad wheels with an axle secured to the frame adjacent to the rear end;

a pair of front support arms and a pair of rear support arms, the front and rear support arms being pivotally secured to the frame adjacent to the front and rear ends respectively for rotatable movement between a lower inoperative position and a raised operative position for supporting portions of truck trailers to be transported, the support arms each being in a generally A-shaped configuration with an intermediate first cross beam and with a first pivot rod at lower ends and with a transverse brace at upper ends, each transverse brace being formed in an L-shaped configuration with a lower horizontal extent and an upper vertical extent for receiving a portion of a truck trailer to be supported and transported;

a pneumatic cylinder for each pair of support arms and having a lower end pivotally secured with respect to a second pivot rod and an upper end pivotally secured to said first cross beam, the cylinder adapted to raise and lower the transverse braces;

a pair of vertical connected posts having upper ends rotatably secured to the cross beam and free lower ends positionable in cups secured to the frame adjacent to central extents thereof;

a brake system having horizontally reciprocable shoes coupled to the frame and movable into and out of locking contact with the axles with a source of pressurized air for providing pressurized air for generating actuating forces and with pneumatic lines positioned on the frame and extending from adjacent the forward end to adjacent the rear end for the passage of said pressurized air from the sources for braking the wheels and with an actuation wheel secured to one side of the frame for the manual providing of actuating forces for braking the wheels; and

coupling mechanisms extending forwardly of the forward end and rearwardly of the rearward end for coupling together plural bogies to be transported in systems configuration.

5,601,031

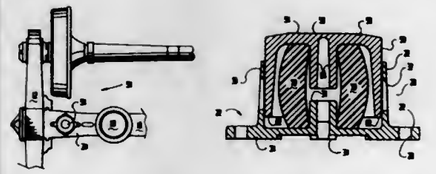
CONSTANT CONTACT SIDE BEARING

Robert L. Carlson, Skokie, Ill., assignor to Miner Enterprises, Inc., Geneva, Ill.

Filed Jun. 14, 1994, Ser. No. 260,290
Int. Cl.[6] B61F 5/00
U.S. Cl. 105—199.3 **3 Claims**

1. An improved three piece side bearing for a railcar, said side bearing comprising:

a) a cast bottom housing having a base with a flange mounting plate adapted to be attached to a bolster of a railcar truck;



b) said bottom housing having an upwardly extending cylindrical wall section, said wall section having relatively thin walls and not being subjected to a compressive weight of the railcar;

c) said bottom housing also having a cylindrical, center post extending from said base to a position above said plate;

d) (a) a top cap having a wear resistant surface for engaging the bottom of a rail car,

e) said top cap having downward depending cylindrical walls that telescope inside the extending walls of the bottom housing, said depending cylindrical walls terminating in abutment edges that engage the bottom housing to limit vertical reciprocation of the cap relative to the bottom housing;

f) said top cap also having a center post section extending downwardly in vertical juxtaposition with said cylindrical center post of said bottom housing for also assisting in limiting vertical reciprocation of the top cap relative to the bottom housing, and for supporting the wear surface of the top cap;

g) a continuously formed one piece, generally cylindrical elastomeric compressive spring having a top surface contacting said top cap, a bottom surface contacting said bottom housing, and a centerbore passing through said spring, said spring being formed of an elastomer having a ratio of plastic strain to elastic strain that is greater than 1.5 to 1, the molecular structure of said spring being oriented as a result of plastic deformation of said member in at least one direction, and

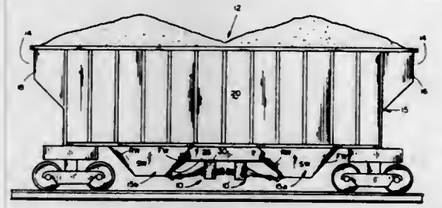
h) said depending cylindrical wails of said top cap and said upwardly extending cylindrical wall section of said bottom housing being provided with at least one cooperating vertical guide for maintaining the alignment of said top cap with said bottom housing.

5,601,032

APPARATUS FOR OPENING AND CLOSING RAILROAD HOPPER CAR DISCHARGE DOORS

Alois J. Koech, Columbus, Nebr., assignor to Industrial Engineering Co., Columbus, Nebr.

Filed Feb. 6, 1996, Ser. No. 596,070
Int. Cl.[6] B61D 7/26
U.S. Cl. 105—304 **25 Claims**



1. In combination with a railroad hopper car having rearward and forward ends and including at least one hopper body bottom having at least one forwardly presented discharge opening formed therein, a door selectively closing said discharge opening, said door having an upper and lower end, said door being pivotally secured at its upper end to the said hopper car, comprising:

at least one mounting frame operatively secured to said hopper body forwardly of and below the pivotal connection of said door to said hopper body;

said frame extending downwardly from said hopper body and having an upper end, a lower end, a rearward end and a forward end;

a vertically disposed pivot frame assembly having an upper end, a lower end, a rearward end and a forward end;

said pivot frame assembly comprising first and second, horizontally spaced-apart pivot frames;

each of said pivot frames being pivotally secured, about a horizontal axis, intermediate its upper and lower ends and intermediate its rearward and forward ends, to said mounting frame intermediate the upper and lower ends thereof;

a linkage pivotally connecting the rearward end of said pivot frame to said door;

a pivot arm assembly including first and second pivot arms;

each of said first and second pivot arms comprising a vertically disposed upper arm member having upper and lower ends and an elongated lower arm member having rearward and forward ends;

said lower end of each of said upper arm members being secured to the associated lower arm member intermediate the rearward and forward ends thereof;

the upper end of each of said upper arm members being pivotally secured to said mounting frame above and forwardly of the pivotal connection between said pivot frames and said mounting frame;

an elongated power cylinder including a cylinder body having rearward and forward ends and a cylinder rod movably extending rearwardly therefrom and being movable between retracted and extended positions;

said forward end of said cylinder body being operatively pivotally connected, about a horizontal axis, to said forward end of said lower arm members of said pivot arms;

said cylinder rod being pivotally connected, about a horizontal axis, to said pivot frames below and forwardly of the pivot conn ction between said pivot frames and said mounting fram .;

the extension of said cylinder rod from said cylinder body causing said pivot frames to pivot with respect to said mounting frame thereby causing said linkage to move the door secured thereto from a closed position to an open position;

the retraction of said cylinder rod into said cylinder body causing said pivot frames to pivot with respect to said mounting frame thereby causing said linkage to move the door secured thereto from an open position to a closed position.

5,601,033

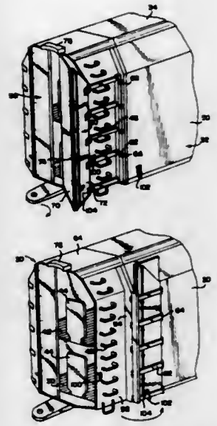
DOOR STRUCTURE FOR A RAILCAR IN AN ARTICULATED TRAIN

Donald J. Ehrlich, Lafayette; Rodney P. Ehrlich, Monticello; Francis S. Smidler, and DeWayne B. Williams, both of Lafayette, all of Ind., assignors to Wabash National Corporation, Lafayette, Ind.

Filed Sep. 25, 1995, Ser. No. 533,869
Int. Cl.[6] B61D 19/00
U.S. Cl. 105—355 **16 Claims**

1. A railcar for an articulated train having a plurality of railcars which are connected together and spaced apart from each other by a small distance, said railcar comprising a body having an interior and an exterior and includes a front end, a rear end and sides and having a door structure including a first door member and a second door member attached to at least one end of said body, said door members opening to open at least a portion of said end of said body, said door members closing to close said end of said body, said first door member and said second door member each having first and second panels, said first panels of said door members being foldable relative to said second panels of said door members, and further including structure for connecting said door members to said body, said connecting structure including a first pivot structure proximate to said end of said body around which said panels can rotate open said end of said body, and a second pivot structure around which said panels can rotate to move said panels

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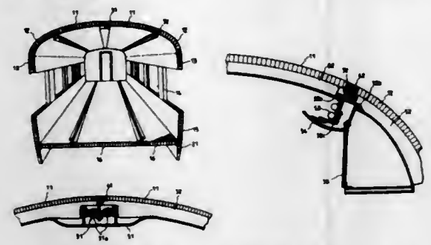
and said first pivot structure away from said end of said body to lie adjacent to said exterior of said sides of said body.

5,601,034

ROLLING STOCK AND METHOD FOR EQUIPPING THE INTERIOR THE SAME

Takashi Tao; Yasuo Ishimaru; Morishige Hattori; Keiji Ohmura, and Hideshi Ohba, all of Kudamatsu, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 20, 1994, Ser. No. 309,417
Claims priority, application Japan, Sep. 20, 1993, 5-232807
Int. Cl.[6] B61D *17/00*
U.S. Cl. 105—423 9 Claims



1. A rolling stock having a body structure fitted with a plurality of equipment mounted on inner surfaces of said body structure, said rolling stock comprising:

a plurality of support members for supporting said equipment, said support members extending longitudinally of the body structure parallel to each other and being mounted on the inner surfaces of the body structure;

each support member having a support portion, in which equipment holding means for fixedly holding equipment on the support member is fitted, said support portion extending longitudinally of the body structure;

a plurality of mounting portions for each equipment to be fixed to the equipment holding means of the plurality of support members wherein said equipment holding means engage said mounting portions such that positions of the mounting portions relative to the equipment holding means are adjustable in a longitudinal direction and in directions perpendicular to the longitudinal direction of the body structure;

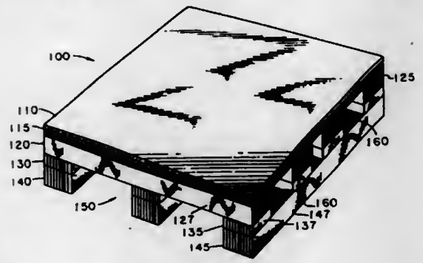
wherein each equipment is fixed to a plurality of said support members, a first mounting portion of each equipment being fixedly hooked by hook means to one of the support members, and a second mounting portion of each equipment being fixedly screwed by screw means to another of the support members.

5,601,035

CORRUGATED FIBERBOARD PALLET

Morris A. Herring, and Morris A. Herring, Jr., both of Tucson, Ariz., assignors to Ecological Pallets Limited, Tucson, Ariz.

Division of Ser. No. 274,027, Jul. 12, 1994, which is a continuation-in-part of Ser. No. 885,657, May 19, 1992, Pat. No. 5,327,839, which is a continuation of Ser. No. 797,273, Nov. 25, 1991, Pat. No. Des. 337,406. This application Jun. 7, 1995, Ser. No. 475,498
Int. Cl.[6] B65D *19/00*
U.S. Cl. 108—51.3 11 Claims



1. A corrugated fiberboard pallet, comprising:

a multiple-ply, corrugated fiberboard top member having an upper surface and a lower surface, corrugations of said multiple-ply top member extending in a first direction;

a plurality of multiple-ply corrugated fiberboard runners each having an upper surface and a lower surface, the upper surface of each of which being affixed to the lower surface of said top member and corrugations of each of which extending in one of the first direction and a direction transverse to the first direction;

a plurality of multiple-ply corrugated fiberboard supports each having an upper surface and a lower surface, the upper surface of each of which being affixed to the lower surface of respective ones of said runners and corrugations of each of which extending in one of the first direction and the direction transverse to the first direction; and

a plurality of multiple-ply corrugated fiberboard rails each having an upper surface and a lower surface, the upper surface of each of which being affixed to a respective grouping of said supports and corrugations of each of which extending in one of the first direction and the direction transverse to the first direction.

5,601,036

ADJUSTABLE TABLE

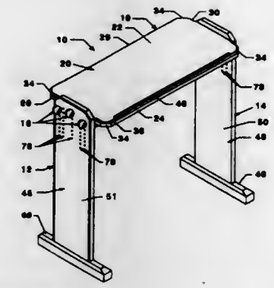
Joyce R. Kieser, and Henry S. Kieser, both of 46 Fox Den Rd., W. Simsbury, Conn. 06092

Filed Apr. 13, 1995, Ser. No. 421,538
Int. Cl.[6] A47B *9/00*
U.S. Cl. 108—107 13 Claims

1. An adjustable table comprising:

a. a table top having a top surface and opposed end surfaces,

b. female fasteners in each of said end surfaces in two rows spaced apart in a direction perpendicular to said top surface, a first row containing one female fastener and a second row containing four female fasteners, said fasteners in said second row being positioned such that there are two female fasteners on either side of a plane perpendicular to said top surface and containing the female fastener in said first row,



c. male fastening members,

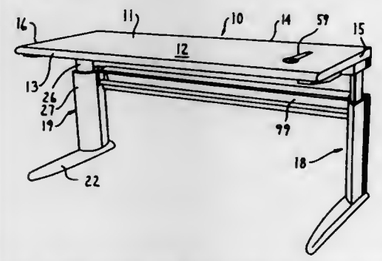
d. vertical support members having a plurality of apertures therein for receiving a male fastening member therethrough for removable attachment to said female fasteners, said apertures being arranged in five vertically extending columns defining a center column, a left and right outside column and a left and right intermediate column, each column having a plurality of vertically spaced apertures therein, one given aperture in each center column being provided for a given height of said table top, one aperture in each of either said left and right intermediate column or said left and right outside column aligning with a first set of female fasteners in said second row when said top is positioned horizontally for receiving a male fastening member therethrough for releasable attachment to a respective aligned female fastener to secure said table top to said support members with the top surface in a horizontal position, and one aperture in each of the other said left and right intermediate column or said left and right outside column being aligned with a second set of female fasteners in said second row when said table top is tilted for receiving a male fastening member therethrough for releasable attachment to a respective aligned female fastener to secure said table top to said support members with the top surface in a tilted position.

5,601,037

TABLE WITH RECESSED HEIGHT-ADJUSTING CRANK

Kevin L. Meyer, Hudsonville; David F. Lyons, Grosse Pointe Farms, both of Mich.; Jorge Q. Davies; George J. Simoni, both of Hanworth, England, and Roberto G. Fraquelli, London, England, assignors to Haworth, Inc., Holland, Mich.

Continuation-in-part of Ser. No. 489,083, Jun. 9, 1995, abandoned. This application Sep. 14, 1995, Ser. No. 528,436
Int. Cl.[6] A47B *9/00*
U.S. Cl. 108—147 21 Claims



1. In an upright freestanding table having a horizontally enlarged worksurface having enlarged upper and lower surfaces, and a pair of leg assemblies fixed to and projecting downwardly from the worksurface adjacent opposite end edges thereof for supportive engagement with a floor, each leg assembly including vertically elongate upper and lower leg members which vertically telescope one within the other, a height-adjusting mechanism extending vertically of and interconnected between the respective upper and lower leg members for permitting selective height adjustment of the upper leg member relative to the lower leg member, and a drive arrangement drivingly connected to the height-adjusting mechanisms of the leg assemblies for permitting simultaneous height adjustment thereof, said drive arrangement including a rotatable driven member associated with each height-adjusting mechanism at a location disposed adjacent the lower surface of the worksurface, said drive arrangement also including an intermediate drive member drivingly connected to said driven members and a rotatable driving member disposed adjacent the lower surface of the worksurface and disposed in driving engagement with said intermediate drive member, and a manually-activated crank arrangement rotatably drivingly connected to said driving member, the improvement wherein said crank arrangement comprises:

a horizontally-elongated recess formed in said worksurface and opening upwardly through the upper surface thereof, said recess defining a generally cylindrical pocket at one end thereof which opens downwardly from said upper surface, said recess at the other end defining a passage which extends transversely through the worksurface between the upper and lower surfaces thereof;

a support member rotatably disposed within said pocket for rotation relative to said worksurface about a main axis which extends substantially perpendicularly with respect to said upper surface, means fixed to said worksurface for rotatably supporting said support member so that said support member is positioned in its entirety substantially at or below said upper surface, said support member having a shaft part which projects downwardly along said main axis and is coaxially and nonrotatably connected to said driving member;

a generally L-shaped crank for interconnection to said support member to permit rotation thereof about said main axis, said crank including an elongate crank arm which adjacent an outer free end thereof is provided with a handle fixed thereto and extending transversely therefrom, said handle being adapted to be manually gripped; and

pivotal interconnecting means connected between said support member and said crank arm adjacent an inner end thereof for permitting the crank arm to be swingably moved generally within a vertical plane between a storage position and a use position, said L-shaped crank when in said storage position being disposed with the crank arm extending horizontally along and within the recess so that a top surface of the crank arm is substantially flush with said upper surface and said handle projects vertically downwardly through said passage, said L-shaped crank when in said use position being disposed entirely above said upper surface with said crank arm projecting approximately horizontally and radially away from said support member and said handle projecting upwardly from said crank arm.

5,601,038

SUPPLEMENTAL SHELVING SYSTEM FOR REMOVABLY MOUNTING SHELVES IN A SHELVING STRUCTURE

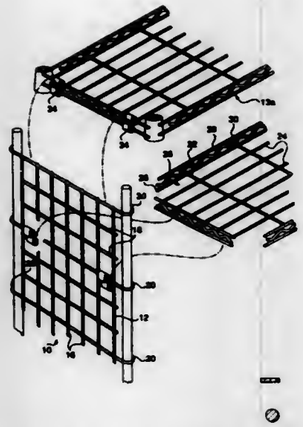
Robert J. Welch, Dallas, and Cheryl L. Knifflin, Mountaintop, both of Pa., assignors to Metro Industries, Inc., Reno, Nev.

Filed Sep. 9, 1994, Ser. No. 301,424
Int. Cl.[6] A47B *57/00*
U.S. Cl. 108—193 10 Claims

1. A supplemental shelving system used with an existing shelving structure having at least one horizontal shelf, said supplemental shelving system comprising:

a pair of removable supporting grids to be vertically supported on the existing shelving structure, each said supporting grid including a plurality of spaced vertical members and a plurality of spaced horizontal members secured to said vertical members at intersecting portions to form a substantially planar rigid structure;

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suspending means for suspending each said supporting grid from said existing horizontal shelf;

a removable shelf, and

means supporting said removable shelf on said pair of supporting grids, wherein

said suspending means comprises an S-shaped hook engable with at least one said horizontal shelf and at least one said horizontal member of said supporting grid, and wherein

said existing shelving structure includes at least one support post for supporting at least one said horizontal shelf and said supporting grid includes means for embracing said post.

5,601,039

METHOD AND APPARATUS FOR PROVIDING A GAS SEAL IN A RETURN DUCT AND/OR CONTROLLING THE CIRCULATING MASS FLOW IN A CIRCULATING FLUIDIZED BED REACTOR

Timo Hyppänen, Karhula, Finland, assignor to Foster Wheeler Energia Oy, Helsinki, Finland

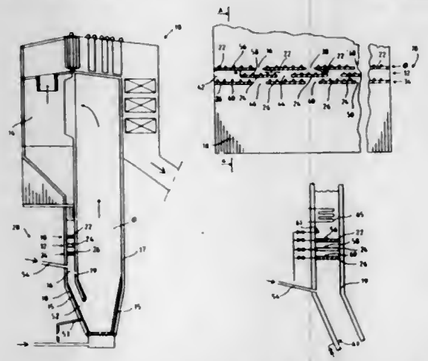
PCT No. PCT/FI93/00208, § 371 Date Nov. 4, 1994, § 102(e) Date Nov. 4, 1994, PCT Pub. No. WO93/23703, PCT Pub. Date Nov. 25, 1993

PCT Filed May 18, 1993, Ser. No. 331,605

Claims priority, application Finland, May 21, 1992, 922319

Int. Cl.[6] F23G *5/00*

U.S. Cl. 110—245 **20 Claims**



1. A method of operating a circulating fluidized reactor, which reactor has a slot-shaped vertical return duct defined by two substantially vertical plane wall panels, with ends joining the wall panels; said method comprising the steps of:

(a) defining a regulation zone in the return duct utilizing substantially horizontally disposed barriers in the return duct, provided at at least two different vertical levels in the return duct, so that circulating particles of the circulating fluidized bed reactor are prevented from freely circulating through the regulation zone; and

(b) effecting circulation of the particles in the regulation zone defined by the barriers by supplying gas to the regulation zone, and to form a solids column in the regulation zone between the substantially horizontally disposed barriers, the solid column forming a gas seal between the barriers.

9. Apparatus for controlling a circulating fluidized bed reactor, having circulating particles with a predetermined flow angle, comprising:

a circulating fluidized bed reactor including a reactor zone, a particle separator, and a slot-shaped return duct defined by primarily vertical plane wall panels with ends joining the wall panels, the return duct returning the circulating particles separated by the separator to the reactor zone;

a regulation zone in the return duct defined by at least two generally horizontal stationary barriers having vertically non-aligned openings therein, the barriers vertically spaced a distance, and the opening horizontally spaced a distance, so that an angle α is defined between a lower barrier opening and an immediately adjacent upper barrier opening, the angle α being less than the circulating particles flow angle so that a gas seal is formed between the barriers; and

means for supplying gas to the regulation zone to control the rate of flow of the circulating particles through the regulation zone.

5,601,040

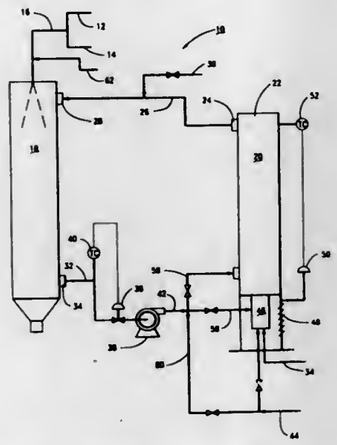
LANDFILL LEACHATE, GAS AND CONDENSATE DISPOSAL SYSTEM

Eugene C. McGill, 2445 E. 156th North, Skiatook, Okla. 74070

Filed Jan. 9, 1995, Ser. No. 370,498

Int. Cl.[6] F23J *11/00*

U.S. Cl. 110—345 **24 Claims**



1. A method for disposing of landfill leachate, gas and condensate, the method comprising:

combusting a first portion of landfill gas to produce hot flue gas;

contacting the landfill leachate and condensate with the hot flue gas to vaporize all of the leachate and condensate to form a composite gas stream; and

combusting the composite gas stream to convert noxious components remaining therein to non-polluting compounds.

5,601,041

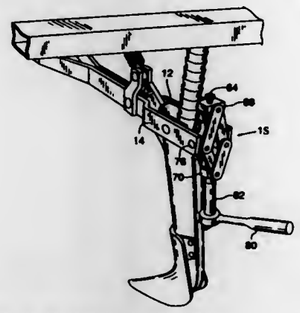
METHOD AND TOOL FOR QUICK REPLACEMENT OF DRILL BOOTS

James Boyde, Lloyd, Mont., assignor to Alexander C. Johnson, Lloyd, Mont.

Filed Sep. 28, 1995, Ser. No. 530,668

Int. Cl.[6] A01C *5/00*

U.S. Cl. 111—153 **15 Claims**



1. A quick release drill boot comprising:

a boot for receiving grain;

an arm having a first end for attaching the arm to a frame of a grain drill and a second end having furcations (12, 14) forming a Y-shaped yoke, the boot clamped between the furcations of the yoke and mounted thereon by a pair of oppositely directed first studs engaged in a coaxial pair of first bores in the furcations, the yoke having distal ends of a predetermined spacing extending beyond the boot; and

a separator mounted between the distal ends of the yoke, the separator having a contracted condition sized to fit between the distal ends and an expanded condition exceeding the predetermined spacing of the distal ends, and further including a pair of oppositely directed self-locating second studs (76, 78) on opposite sides thereof, the self-locating second studs received in a coaxial pair of second bores in the distal ends of the yoke, and a spreading mechanism for separating the furcations from the boot responsive to expansion of the separator to, spread the distal ends of the yoke apart by flexing the furcations so as to disengage the first studs from the first bores, thereby unclamping the boot from the yoke, allowing the boot to be removed from the yoke.

5,601,042

SAFETY DEVICE FOR ZIGZAG SEWING MACHINE AND ZIGZAG SEWING MACHINE HAVING THE SAME

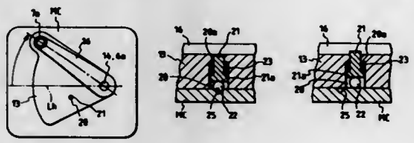
Seiji Goto, Tokyo, Japan, assignor to Juki Corporation, Tokyo, Japan

Filed Sep. 6, 1995, Ser. No. 524,489

Claims priority, application Japan, Sep. 6, 1994, 6-212790

Int. Cl.[6] D05B *3/02;19/14*

U.S. Cl. 112—462 **5 Claims**



1. In a zigzag sewing machine comprising:

a sewing needle;

a needle swinging mechanism for swinging said sewing needle right and left;

a swing width adjusting mechanism for adjusting the swing width of said sewing needle which is swung by said needle swinging mechanism;

a basic line setting mechanism for setting a middle basic line which is located at the middle of the swing width of said sewing needle, a right basic line located on the right side of said middle basic line, or a left basic line located on the left side of said middle basic line; and

a pattern setting mechanism for selecting either a regular pattern sewing mode or an inverse pattern sewing mode, the improvement which comprises:

pattern change inhibiting means which, where a basic line other than said middle basic line has been set by said basic line setting mechanism, prevents a regular pattern sewing mode set by said pattern setting mechanism from being changed to an inverse pattern sewing mode; and

basic line change inhibiting means which, where an inverse pattern sewing mode has been set by said pattern setting means, prevents said middle basic line set by said basic line setting mechanism from being changed to other than said middle basic line.

5,601,043

METHOD OF MANUFACTURING THREAD-STITCHED BOOKS AND ARRANGEMENT FOR CARRYING OUT THE METHOD

Roland Grunder, Verdesmwald, Switzerland, assignor to Grapha-Holding AG, Hergiswil, Switzerland

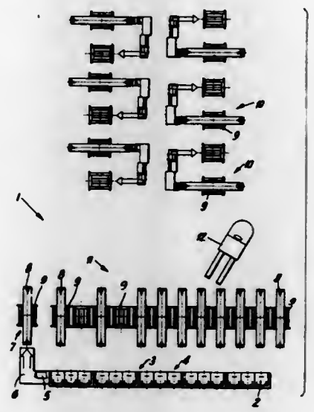
Continuation of Ser. No. 54,000, Apr. 26, 1993, abandoned.

This application Feb. 10, 1995, Ser. No. 388,167

Claims priority, application Switzerland, May 2, 1992, 01410/92

Int. Cl.[6] B42C *19/08*

U.S. Cl. 112—475.04 **14 Claims**



1. A method of manufacturing thread-stitched books, the method comprising gathering individual folded printed sheets into sheet blocks in a gathering unit carrying out gathering cycles, loading the sheet blocks after each gathering cycle on a block receiving unit of a storage means releasably connected to the gathering unit, supplying batches of the sheet bloks to at least one book sewing machine, and subsequently binding the printed sheets into book blocks by sewing together the individual printed sheets in the at least one book sewing machine.

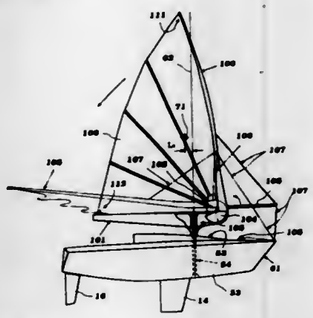
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5,601,044

SAILBOAT

Ioki Hara, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Aug. 4, 1995, Ser. No. 511,353
Claims priority, application Japan, Aug. 4, 1994, 6-183185; Aug. 4, 1994, 6-183186
Int. Cl.[6] B63B 35/00
U.S. Cl. 114—39.1 11 Claims



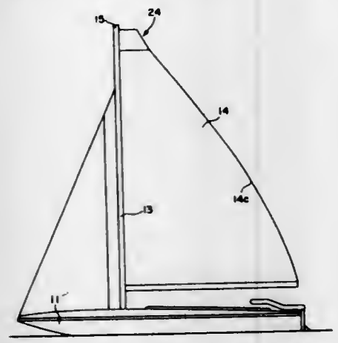
1. A sailboat and mast arrangement, said sailboat having a hull, a boom supported for pivotal movement about a generally vertical axis disposed between the ends of said boom, a mast at one end of said boom and adapted with said boom to support a sail having a leading edge affixed to said mast and a trailing edge affixed to said boom, the center of pressure of the wind forces acting on said sail in normal positions being disposed to the rear of the vertical axis about which the boom pivots and spaced a substantially lesser distance from said pivot axis than the from of said boom, and a keel depending from said hull and disposed so that its forward end terminates adjacent said pivot axis of said boom.

5,601,045

SAILBOAT FLOTATION APPARATUS

Gordon G. Bowers, Jr., 15817 White Pine Dr., Wayzata, Minn. 55391, and Bradley M. Robinson, 20614 Linwood Rd., Excelsior, Minn. 55331

Continuation of Ser. No. 370,028, Jan. 9, 1995, abandoned. This application Oct. 13, 1995, Ser. No. 543,148
Int. Cl.[6] B63H 9/04
U.S. Cl. 114—103 24 Claims



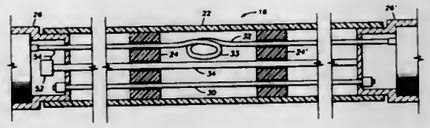
1. A sail that is adapted for use with a watercraft such as a sail boat which has a mast and is movable relative to the mast between a hoisted position and a lowered position in combination with a flotation device, said sail having a top portion that has opposite sides, said floatation device comprising a first and a second panel section, each panel section including a plurality of floatation panels having opposite edges and means for hingedly connecting each panel to the adjacent panel in edge to edge relationship, each panel belong made of a rigid material that will float in water, and an envelope adapted to slip over the sail top portion and having a first and a second pocket for respectively containing the first and second panel sections and respectively retaining the first and second panel sections on the opposite sides of the sail.

5,601,046

MEANS AND METHOD FOR DYNAMICALLY MONITORING THE STRETCH OF A SEISMIC STREAMER CABLE

Carl O. Berglund, Houston, Tex., assignor to Teledyne Brown Engineering, Huntsville, Ala.

Filed Mar. 18, 1996, Ser. No. 617,301
Int. Cl.[6] B63B 21/66
U.S. Cl. 114—244 6 Claims



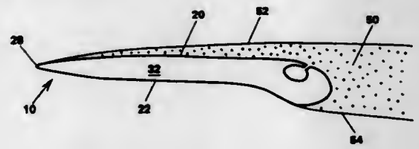
1. A seismic streamer-cable section, comprising in combination:
an elongated flexible jacket endowed with a mechanical/electrical termination at opposite ends;
at least one resilient stress member mounted inside said jacket, the opposite ends of which are fastened to the respective terminations;
a plurality of electrical conductors mounted inside said jacket for transmitting electrical signals through said section to a signal-receiving device;
a longitudinally-extensible distributed-capacitance means operatively associated with said jacket;
means, electrically coupled to said distributed-capacitance means, for measuring the change in capacitance as a function of jacket elongation.

5,601,047

DUALCAVITATING HYDROFOIL STRUCTURES FOR MULTI-SPEED APPLICATIONS

Young T. Shen, Potomac, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 414,836, Mar. 31, 1995, Pat. No. 5,551,369. This application Jun. 25, 1996, Ser. No. 668,662
Int. Cl.[6] B63B 1/24
U.S. Cl. 114—274 20 Claims



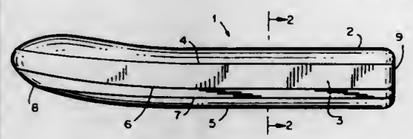
1. A dualcavitating hydrofoil for providing dynamic lift to a marine vehicle, comprising:
an upper surface having an aft upper segment;
a lower surface wherein said upper and lower surfaces define a profile of said dualcavitating hydrofoil; and
boundary layer circulation control means for generating a flow over said aft upper segment such that boundary layer separation over said upper surface is avoided during normal subcavitating operation;
wherein said upper and lower surfaces function to provide a lift force sufficient to lift the marine vehicle above a water surface,
said upper surface being adapted to efficiently produce said lift force during normal subcavitating operation at subcavitating speeds wherein said upper and lower surfaces are substantially fully wetted, and
said profile being adapted to efficiently produce said lift force above normal subcavitating speeds wherein at least a portion of said upper surface is enveloped within a cavity generated by said profile and substantially all of said lower surface is wetted.

5,601,048

BOAT HULL SHELL HAVING AN INTEGRAL SUPPORT STRUCTURE

Gary D. MacDougall, PO Box 58632, Greenmount, Auckland, New Zealand

Division of Ser. No. 105,720, Aug. 12, 1993, Pat. No. 5,458,844. This application Jun. 7, 1995, Ser. No. 475,377
Int. Cl.[6] B63B 5/24
U.S. Cl. 114—357 20 Claims



1. A plastic boat hull shell structure comprising opposing inner and outer shells which are integrally joined around peripheral portions thereof and which are also integrally joined at adjacent regions within said periphery by interior stiffening means including at least one longitudinal stiffening member integrally joined to and extending between said inner shell and a region of continuity of the outer surface of said outer shell, said stiffening means being of a predetermined first thickness along a first portion which extends between said inner and outer shells and of a predetermined second thickness along a second portion which is integrally joined to said outer shell.

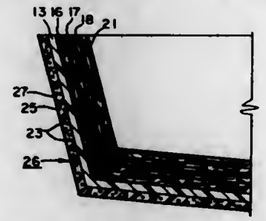
5,601,049

BOAT HULL

Robert C. Hordis, Moorestown, N.J., and Robert P. Anderson, Jr., Lecanto, Fla., assignors to Spraycore Composites, Inc., Wildwood, Fla.

Filed Jun. 7, 1995, Ser. No. 479,325
Int. Cl.[6] B63B 5/24
U.S. Cl. 114—357 20 Claims

13. In a method of modifying and protecting a boat hull against



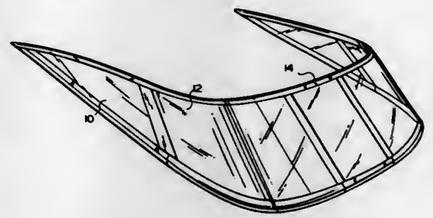
blistering on the underwater surface of the boat hull, said boat hull having an outer gelcoat layer, the method comprising
applying a layer of barrier coat material to the outer gelcoat layer to form a barrier coat layer,
said barrier coat material comprising microspheres thoroughly mixed in a synthetic resin matrix,
bonding the barrier coat layer to the outer gelcoat layer,
applying a second gelcoat layer to the outer surface of the barrier coat layer,
and bonding the second gelcoat layer to the barrier coat layer.

5,601,050

SECTIONAL WINDSHIELD SYSTEM FOR BOATS

Edward J. Erskine, Northville, and Andrew Furlong, Gloversville, both of N.Y., assignors to N.A. Taylor Co., Inc., Gloversville, N.Y.

Filed Aug. 30, 1995, Ser. No. 520,879
Int. Cl.[6] B63B 17/00
U.S. Cl. 114—361 6 Claims



1. A sectional boat windshield system comprising:
a plurality of boat windshield sections each having a transparent windshield surrounded by a frame including a bottom, at least one vertical on an end edge thereof and a sub-top;
an elongated top rail for spanning adjoining windshield sections when assembled to form a boat windshield with said top rail overlying the sub-tops of adjoining windshield sections and spanning their full lengths;
a seal between said top rail and said sub-tops of adjoining windshield sections;
said seal including an elongated resilient sealing strip between said sub-tops and said top rail;
an elongated resilient locking strip between said sub-tops and said top rail for locking the sub-tops and top rail to one another;
said sealing strip extending along one side of the windshield between said sub-tops and said top rail, said resilient locking strip extending along an opposite side of the windshield between said sub-tops and said top rail for biasing said top rail toward said sub-tops to compress said seal.

5,601,051

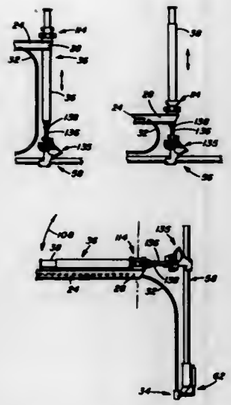
APPARATUS FOR REPAIRING THE REFRACTORY LINING OF A REFRACTORY VESSEL

Robert A. Bajek, Sewickley, Pa., assignor to BMI, Inc., Carnegie, Pa.

Division of Ser. No. 213,032, Mar. 15, 1994, Pat. No. 5,419,922. This application Apr. 20, 1995, Ser. No. 425,479
Int. Cl.[6] B05B 13/06; C21B 7/04
U.S. Cl. 118—306 12 Claims

1. Gunning apparatus for repairing the refractory lining of a refractory vessel comprising,
a telescoping mast,
said telescoping mast being extendable in length between a position fully collapsed in length to a position fully extended in length corresponding to the length of the refractory vessel,
carriage means for positioning said telescoping mast at a preselected location within the vessel,

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said telescoping mast pivotally mounted on said carriage means for movement between a vertical position and a horizontal position,

a boom member mounted on said telescoping mast,

means for moving said boom member in linear and arcuate paths relative to said telescoping mast,

a spray nozzle positioned on said boom member,

means for supplying a mixture of refractory material and water to said nozzle for spraying onto the lining of the vessel,

means for extending and retracting said mast between said fully extended position and said fully retracted position to locate said boom member and said spray nozzle at a preselected elevation within the refractory vessel, and

said telescoping mast being movable in said fully collapsed position above said carriage means to withdraw said boom member to a position adjacent to said carriage means where said telescoping mast and said boom member are pivoted to a horizontal position opposite said carriage means.

5,601,052

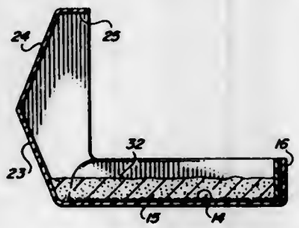
LITTER BOX ASSEMBLY

John W. Rood, 15120 E. Greene Valley Rd., Fountain Hills, Ariz. 85268, and John D. Rood, Fountain Hills, Ariz., assignors to John W. Rood, Fountain Hills, Ariz.

Filed Mar. 20, 1995, Ser. No. 408,149

Int. Cl.[6] A01K *1/035*

U.S. Cl. 119—166 **10 Claims**



3. A litter box assembly comprising: a substantially rectangular, open base portion having a bottom seating surface; a litter holding means attached to said base portion at one end thereof; and a removable sifting device having a sifting surface, said sifting device being operatively disposed flat within said base portion such that said sifting surface is in surface-to-surface engagement with said base portion, said litter holding means including a plurality of end walls attached to and disposed at preselected angles relative to each other cumulatively summing to less than 270° to provide at least one alternative seating surface for said litter box assembly, said litter holding means further having a first side wall and a second side wall attached to each of said plurality of end walls such that said first side wall and said second side wall are in spaced generally parallel relationship to each other and define with said plurality of end walls a compartment for temporarily receiving and holding litter therein whereby said litter is movable into said litter holding means from said open base portion when said litter box assembly is rotated to be consecutively seated respectively on each of said plurality of end walls whereupon said litter is transferred completely into said litter holding means from said open base portion and said bottom seating surface is left completely free of litter to facilitate the reinsertion of said sifting device into said base portion.

5,601,053

Patent Not Issued For This Number

5,601,054

DOG BARKING RESTRAINING DEVICE

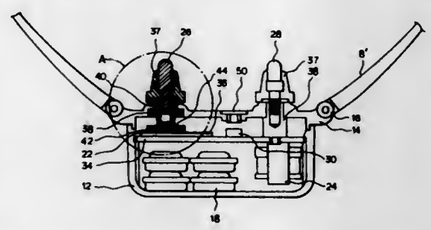
Ho-Yun So, Incheon, Rep. of Korea, assignor to Han Seung Enterprise Co., Ltd., Incheon, Rep. of Korea

Filed Dec. 28, 1994, Ser. No. 365,588

Claims priority, application Rep. of Korea, Oct. 18, 1994, 94-26683

Int. Cl.[6] A01K *15/00*

U.S. Cl. 119—718 **4 Claims**



1. A dog barking restraining device, the device comprising:

DC power source means;

vibration signal detecting means for detecting a vibration signal generated from a vocal chord of a dog when the dog barks;

control means for receiving a signal of the vocal chord of the dog detected by the vibration signal detecting means and generating a control signal which determines whether or not to elicit an impulse wave;

impulse wave generating means for generating the impulse wave according to said control signal received from the control means;

impulse wave strength adjusting means for adjusting the strength of the impulse wave output from the impulse wave generating means;

a pair of electrodes for applying to the neck of the dog the impulse wave generated in the impulse wave generating means; said electrodes operably connected to said vibration detection means such that the vibration signal generated from the vocal chord of the dog is transmitted through the electrodes to said vibration detection means.

5,601,055

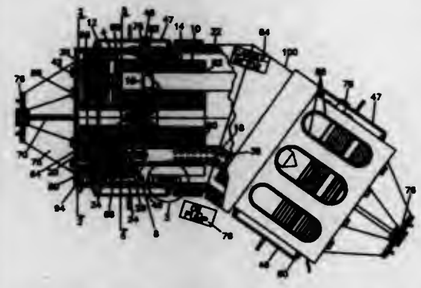
ROTARY VEE ENGINE WITH SUPPLY PISTON INDUCTION

Robert M. Haines, 10182 Josephine, Thornton, Colo. 80229

Filed Nov. 2, 1994, Ser. No. 333,256

Int. Cl.[6] F02B *57/06*

U.S. Cl. 123—43 A **7 Claims**



1. In a rotary engine of a type including two cylinder blocks that are cylindrical in shape and mounted within a housing, wherein each cylinder block is supported within the housing to allow rotation, and wherein each cylinder block contains a plurality of parallel cylinders each containing a portion of a double ended piston, and further wherein the cylinder blocks are angled in relation to each other of between 90 and 180 degrees to form a "V", and as the pistons move from an inside portion of the "V" to an outside portion of the "V" the free volume of each cylinder changes allowing for compression and expansion of a fuel air admixture, and still further wherein each cylinder block is connected to an output system for providing the engine with rotational power output, a fuel supply system comprising:

a supply cylinder corresponding to each power cylinder contained within said rotary engine;

means for providing a fuel air admixture to each said supply cylinder, as a supply piston within said supply cylinder moves through an intake stroke;

means connecting each said supply cylinder and said corresponding power cylinder, and rotating therewith, for conducting said fuel air admixture from each said supply cylinder to said corresponding power cylinder.

5,601,056

DEVICE FOR ACTUATING THE VALVES IN INTERNAL COMBUSTION ENGINES BY MEANS OF REVOLVING CAMS

Peter Kuhn, Prankolstrasse 61, D-6940 Weinheim; Gerhard Kachel, Weltzienstiasse 7, and Helmut Schon, Rheingoldstrasse 2, both of D-7500 Karlsruhe, all of Germany

Continuation of Ser. No. 232,136, Apr. 25, 1994, abandoned. This application Oct. 11, 1995, Ser. No. 540,929

Claims priority, application Germany, Oct. 25, 1991, 41 35 257.2

Int. Cl.[6] F01L *1/08;1/12;13/00*

U.S. Cl. 123—90.16 **15 Claims**

1. A device for actuating a valve in an internal combustion engine, said device comprising:

a casing;

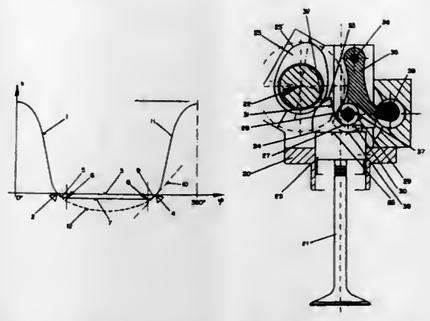
a stop connected to said casing;

a cam rotatably attached to said casing;

a tappet driven by said cam;

an output link movably associated with said casing and disposed between said tappet and valve whereby the output link motion is transmitted to the valve; and

said cam and tappet forming a cam/tappet interface wherein said cam causes a positive acceleration to occur on said tappet and said output link, said cam shaped such that in the interval between valve closure and reopening the positive acceleration



is essentially constant, the positive acceleration being away from said cam and toward a valve opening direction, said output link engaging said stop permitting said tappet to become free floating during said interval, wherein said tappet at least momentarily is free to move with respect to said cam and said output link and is permitted to maintain contact with said cam due to inertial forces.

5,601,057

VALVE ACTUATING SYSTEM FOR A MULTICYLINDER INTERNAL COMBUSTION ENGINE

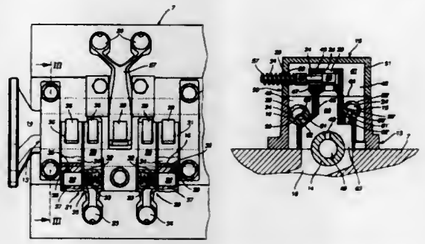
Willy Treyz, Neckartailfingen; Markus Dismann, Kemen; Christoph Reckzügel, Stuttgart, and Gerhard Doll, Esslingen, all of Germany, assignors to Mercedes Benz AG, Stuttgart, Germany

Filed May 28, 1996, Ser. No. 654,164

Claims priority, application Germany, May 29, 1995, 195 19 601.5

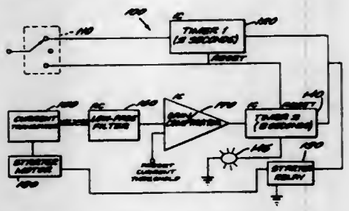
Int. Cl.[6] F01L *1/18*

U.S. Cl. 123—90.16 **12 Claims**



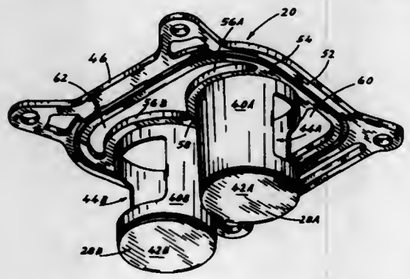
1. A valve actuating system for a multicylinder internal combustion engine having for each cylinder at least one intake valve and one exhaust valve, a camshaft supported in bearing pedestals mounted on a cylinder head, an arrangement of rocker arms pivotally supported by rocker arm support shafts also mounted on said bearing pedestals such that said rocker arms are operable by said cam shaft for actuating said valves, a coupling lever arranged adjacent at least one of said rocker arms and including a hydraulically operable coupling device for coupling said coupling lever with the adjacent rocker arm, and valve means arranged on at least one of said bearing pedestals and defining, with said bearing pedestal a pressure control space, at least one of said rocker arm support shafts having an axial pressurized fluid passage providing for communication between said pressure control space and said hydraulically operable coupling devices, said valve means being adapted to control the admission of pressurized fluid to said pressure control space and, consequently, to said coupling devices in said coupling levers.

5,601,058
STARTING APPARATUS FOR INTERNAL COMBUSTION ENGINES
Gregory M. Dyches, Barnwell, S.C., and Aed M. Dudar, Augusta, Ga., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.
Filed Mar. 6, 1995, Ser. No. 399,347
Int. Cl.[6] F02N *11/08*
U.S. Cl. 123—179.2 **19 Claims**



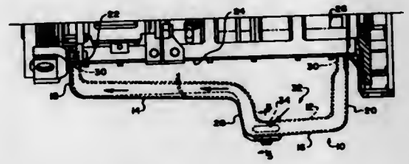
1. An apparatus for starting an engine having a starter motor, said apparatus comprising:
means in electrical connection with said starter motor for activating said starter motor; and
means in electrical connection with said activating means and said starter motor for sensing electrical current drawn by said starter motor, said sensing means including a filter in electrical connection with a transducer, said transducer issuing an analog voltage signal related to said electrical current when sensing said electrical current drawn by said starter motor to said filter, said activating means including
comparing means in electrical connection with said filter for comparing the filtered analog voltage signal to a preselected value, said comparing means issuing an output signal when said filtered analog voltage signal is less than or equal to said preselected value.

5,601,059
FUEL DISTRIBUTION INSERT FOR INTERNAL COMBUSTION ENGINE
Brian R. White; Grant W. Hines, and Vince E. Notareschi, all of Stillwater, Okla., assignors to Brunswick Corporation, Lake Forest, Ill.
Filed Aug. 9, 1995, Ser. No. 513,136
Int. Cl.[6] F02M *29/00*
U.S. Cl. 123—184.21 **10 Claims**



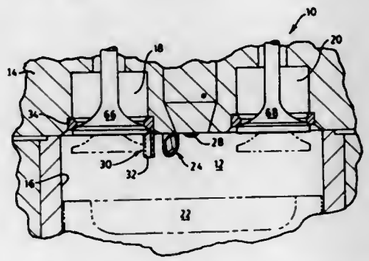
1. An internal combustion engine comprising:
a fuel-air supply system;
a fuel-air intake manifold having a plenum and having an inlet receiving a fuel-air mixture from the fuel-air supply system; and
a fuel distribution insert at the inlet having at least one shroud extending into the plenum, the shroud defining a subchamber of substantially less volume than the plenum, the shroud being a tube having a sidewall extending generally parallel to the direction of the fuel-air flow through the inlet into the plenum and an end wall enclosing the bottom of the tube, and wherein the shroud has one or more exit windows in the sidewall to the plenum.

5,601,060
CAST OIL PAN FOR INTERNAL COMBUSTION ENGINE
Richard A. Smietanski, Lockport, and Wayne R. Sidor, Northlake, both of Ill., assignors to Navistar International Transportation Corp., Chicago, Ill.
Filed Mar. 26, 1996, Ser. No. 622,078
Int. Cl.[6] F01M *11/06*
U.S. Cl. 123—195 C **12 Claims**



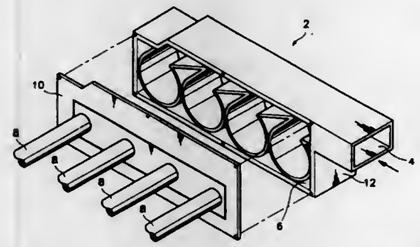
1. A reversible, completely drainable oil pan for accommodating front and rear sump applications, the oil pan including a transversely centered, longitudinally extending integrally cast suction passage having a screened intake disposed within a sump area of the oil pan and terminating in upwardly facing outlets of substantially the same area as the suction passage disposed respectively at each end of the oil pan.

5,601,061
ENGINE INTAKE AIR DEFLECTOR
Chuong Q. Dam; Kerry A. Delvecchio, both of Peoria, Ill., and Martin L. Willi, West Lafayette, Ind., assignors to Caterpillar Inc., Peoria, Ill.
Filed May 16, 1996, Ser. No. 648,737
Int. Cl.[6] F02B *3/00*
U.S. Cl. 123—298 **17 Claims**



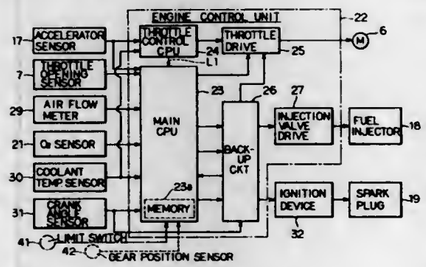
1. An internal combustion engine having a combustion chamber, a cylinder head, a cylinder, an air intake port disposed in said head and opening into the combustion chamber, and a heating device disposed in the combustion chamber, comprising:
a deflector disposed in the combustion chamber at a preselected location between the heating device and air intake port, said deflector being of a size sufficient for diverting the flow of intake air from directly impinging on and reducing the temperature of the heating device;
a supporting member connecting the deflector to said head and maintaining said deflector at said preselected location.

5,601,062
INTAKE SYSTEM FOR ENGINE
Yoonsuk Kim, Kyungki-do, Rep. of Korea, assignor to Hyundai Motor Company, Rep. of Korea
Filed Aug. 31, 1995, Ser. No. 522,488
Claims priority, application Rep. of Korea, Sep. 1, 1994, 94-22511
Int. Cl.[6] F02M *29/04*
U.S. Cl. 123—306 **14 Claims**



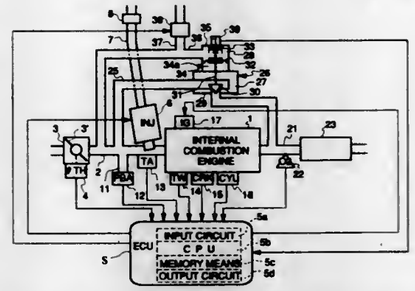
1. A swirl generating system for an intake system of an engine having an intake chamber for temporarily storing air drawn into the engine, comprising:
intake guide plates against which air drawn into the intake chamber strikes; and
a plurality of partially cylindrical tubes integrally formed with the intake guide plates so that air striking the intake guide plates flows with a swirling motion in a predetermined direction.

5,601,063
FAIL-SAFE ENGINE ACCELERATOR-THROTTLE CONTROL
Hideyuki Ohashi, Toyota; Kazuhiro Nishigaki, Gifu, and Sanae Hirata, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Japan
Filed Jan. 29, 1996, Ser. No. 591,973
Claims priority, application Japan, Feb. 2, 1995, 7-015879; Oct. 27, 1995, 7-280927
Int. Cl.[6] F02D *7/00*
U.S. Cl. 123—396 **55 Claims**



1. An engine control apparatus comprising:
a throttle valve provided in an intake passage of an engine and urged in the valve opening direction;
an accelerator sensor that detects the position of an accelerator operating member;
a throttle actuator that regulates an opening of the throttle valve;
throttle opening controller for driving the throttle actuator to control the opening of the throttle valve in accordance with the accelerator operating member position detected by the accelerator sensor;
abnormality detecting means for detecting an abnormality occurring in at least one of the accelerator sensor, the throttle actuator and the throttle opening controller;
actuator stopping means for stopping the driving of the throttle actuator if the abnormality detecting means detects an abnormality;
a cooperative member movable with the throttle valve;
a restricting member mechanically connected to the accelerator operating member and movable to a position corresponding to the accelerator operating member position so that when the driving of the throttle actuator is stopped, the restricting member contacts the cooperative member to restrict the throttle valve from further moving toward a valve opening, and thus regulates opening of the throttle valve in accordance with the accelerator operating member position while remaining in contact with the cooperative member; and
output torque controller for, at the time of abnormality detection by the abnormality detecting means, controlling at least one of an amount of fuel to be injected into the engine and ignition timing so as to curb an engine output torque increase otherwise caused by valve opening movement performed after driving of the throttle actuator is stopped until the restricting means contacts the cooperative member.

5,601,064
FUEL INJECTION CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES
Sachito Fujimoto; Yutaka Taniguchi; Ryuji Sato; Keiji Tsujii, and Toru Kitamura, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 26, 1995, Ser. No. 548,486
Claims priority, application Japan, Oct. 27, 1994, 6-287264
Int. Cl.[6] F02D *41/06*
U.S. Cl. 123—491 **9 Claims**



1. In a fuel injection control system for an internal combustion engine having an intake passage having a wall surface, and at least one combustion chamber, including adherent fuel-dependent correction control means for carrying out adherent fuel-dependent correction by calculating an amount of fuel to be injected into said intake passage such that a sum of a direct supply amount of fuel directly drawn into said combustion chamber of said engine without adhering to said wall surface of said intake passage out of a whole amount of fuel injected into said intake passage, and a carried-off amount of fuel carried off said wall surface of said intake passage into said combustion chamber out of fuel adhering to said wall surface of said intake passage is equal to a required fuel amount for said engine,
the improvement comprising:
engine start-detecting means for detecting a starting condition of said engine;
adherent fuel-dependent correction control-limiting means for limiting operation of said adherent fuel-dependent correction control during said starting condition of said engine; and
carried-off fuel amount-setting means for setting said carried-off fuel amount to a predetermined value based on at least one

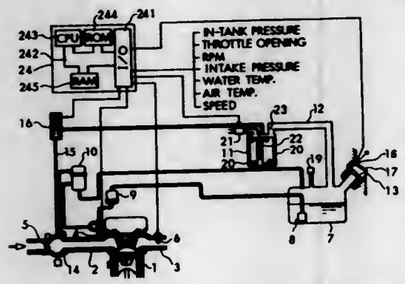
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operating parameter of said engine when said engine has shifted from said starting condition to a basic operating condition after starting.

5,601,065
FUEL EVAPORATION GAS TRANSPIRATION PREVENTION SYSTEM

Hiroshi Tamura, Kariya; Junya Morikawa, Kasugai; Kazuto Maeda, Nishio, and Nobuhiko Koyama, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 26, 1995, Ser. No. 427,908
Claims priority, application Japan, Apr. 27, 1994, 6-089295
Int. Cl.[6] F02M *37/04*
U.S. Cl. 123—516 **13 Claims**



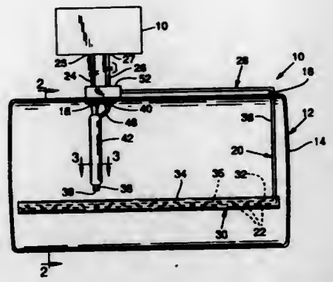
1. A fuel evaporation gas transpiration prevention system comprising:
- a fuel tank for storing fuel to be supplied to an internal combustion engine;
- a canister for adsorbing fuel evaporation gas from the fuel tank in an adsorbent provided in the canister;
- a communication pipe for connecting the fuel tank to the canister;
- a refueling determination means for determining whether a vehicle is in refueling condition; and
- a valve unit that connects an interior of the canister to atmosphere if refueling is determined by the refueling determination means, the valve unit also connects the interior of the canister to the atmosphere if the vehicle is not refueling and pressure within the fuel tank is higher than a predetermined value higher than atmospheric pressure, and the valve unit connects the interior of the canister to atmosphere if the vehicle is not refueling and fuel evaporation gas is to be supplied from the canister to an intake pipe, the valve unit shutting off interior of the canister from the atmosphere under any other condition.

5,601,066
FUEL SYSTEM FOR HEATING AND COOLING FUEL

Ibrahim Qutub, Beaverton, Oreg., assignor to Freightliner Corporation, Portland, Oreg.

Continuation of Ser. No. 173,667, Dec. 23, 1993, Pat. No. 5,533,486. This application Nov. 15, 1995, Ser. No. 559,466
Int. Cl.[6] F02M *15/00*
U.S. Cl. 123—541 **12 Claims**

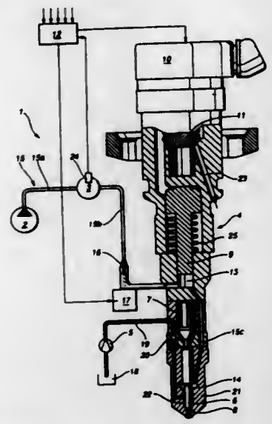
1. A fuel system for an engine of a motor vehicle comprising:
- a fuel tank;
- a fuel delivery flow path along which fuel from the fuel tank is delivered to an engine;
- a fuel return flow path along which unused fuel warmed by the engine is returned to the fuel tank; and
- a fuel cooling heat exchanger in the fuel tank, the heat exchanger being in the fuel return flow path in a position to receive fuel returning to the fuel tank and to cool the returning fuel, the fuel cooling heat exchanger being separated from the fuel delivery flow path so as to avoid blending in the heat exchanger of returning fuel with fuel being delivered to the engine.



5,601,067
FUEL INJECTION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Friedrich Wirbeleit; Wolfgang Lehner, both of Esslingen, and Alois Raab, Aalen, all of Germany, assignors to Daimler-Benz AG, Stuttgart, Germany

Filed Jun. 27, 1995, Ser. No. 495,185
Claims priority, application Germany, Jun. 28, 1994, 44 22 552.0
Int. Cl.[6] F02B *13/00;3/00*
U.S. Cl. 123—575 **6 Claims**

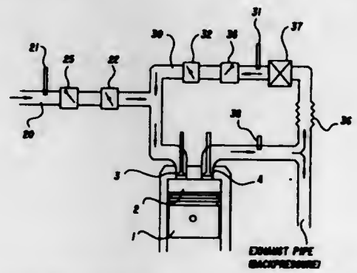


1. A fuel injection system for injecting fuel under pressure into a combustion chamber of an internal combustion engine, said system comprising: a dual fuel injector having a housing defining at one end thereof a fuel injection nozzle and a nozzle needle movably disposed in said housing and normally closing said injection nozzle, said housing defining around said nozzle needle an annular space in communication with a fluid source and a pressure chamber in communication with said annular space, a pressure-intensifying plunger arranged so as to be movable into and out of a working space which is in communication with said pressure chamber and with a fuel supply line, a control valve disposed in said fuel supply line for controlling admission of fuel to said working space, an electromagnetic valve-controlled pressurized hydraulic operating fluid supply for moving said plunger into said working space to pressurize fuel therein and also in said pressure chamber whereby said nozzle needle is lifted and the fluid in said annular space is ejected from said nozzle together with the fuel from said pressure chamber, and a control unit for controlling said electromagnetic valve and said fuel line control valve so as to close said fuel supply line for a controlled period of time while said plunger is moving out of said working space thereby generating in said working space a vacuum for drawing an amount of fluid into said annular space around said nozzle which depends on the time period for which said fuel line is closed by said control valve.

5,601,068
METHOD AND APPARATUS FOR CONTROLLING A DIESEL ENGINE

Ryoichi Nozaki, Tokyo, Japan, assignor to Nozel Engineering Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 498,336, Jul. 5, 1995, abandoned. This application Mar. 12, 1996, Ser. No. 614,265
Int. Cl.[6] F02D *41/14*; F02M *25/07*
U.S. Cl. 123—676 **11 Claims**

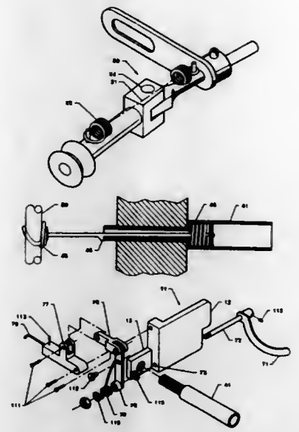


1. A controlling apparatus of a diesel engine for decreasing the detrimental compositions of exhaust gas by supplying an appropriate amount of oxygen for fuel burning comprising:
- a recirculating pipe, having a recirculated gas temperature sensor and a recirculated gas throttle valve, for recirculating exhaust gas between exhaust system and intake system;
- an intake pipe having an outside air temperature sensor and an outside air throttle valve;
- a fuel sensor;
- an engine state sensor;
- an air calculating section for calculating a required amount of air on the basis of an amount of fuel detected by said fuel sensor and the outside air temperature detected by said outside air temperature sensor,
- an outside air introduction control section for operating said outside air throttle valve responding to the calculated required amount of air;
- a recirculated gas calculating section for receiving information of the calculated required amount of air and for calculating a required recirculated gas flow rate on the basis of information from said recirculated gas temperature sensor and said engine state sensor; and
- a recirculating gas control section for operating said recirculated gas throttle valve responding to the calculated amount of recirculated gas.

5,601,069
RETRACTABLE ARROW REST

James F. Clark, Rte. 2, Box 19, Amity, Ark. 71921

Filed Nov. 3, 1994, Ser. No. 333,797
Int. Cl.[6] F41B *5/22*
U.S. Cl. 124—44.5 **13 Claims**



1. An arrow rest assembly for a bow, comprising:
- a mounting block attachable to the bow;
- an arrow rest attached to the mounting block, said arrow rest including an arrow support attached to a shaft movable between extended and retracted positions, said arrow rest positioned such that when said shaft is in the extended position, the arrow support is in a position to support an arrow nocked on the bow, and when the shaft is in the retracted position, the arrow support is located a distance away from the arrow to allow unobstructed flight;
- a retaining assembly for retaining said arrow on said arrow support and for maintaining said shaft in said extended position, comprising:
- a manually operable lever rotatably affixed to said mounting block;
- said manually operable lever including an actuating rod connected to an articulated arm assembly,
- said articulated arm assembly comprising a first arm rotatably connected to said mounting block, and a second arm rotatably connected to said first arm;
- a retaining pin assembly rotatably affixed to said mounting block and also rotatably affixed to said second arm, said retaining pin assembly including a retaining pin,
- said retaining pin assembly manually movable between an engaged position in which said retaining pin contacts said arrow and firmly holds it onto said arrow support and prevents retraction of said arrow shaft, and a release position in which said retaining pin is out of contact with said arrow.

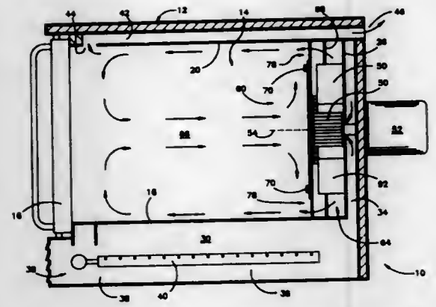
5,601,070
CONVECTION OVEN

Thomas C. Hotard, Fuquay-Varina, and Robert D. Morrison, Cary, both of N.C., assignors to Middleby Marshall, Inc., Elgin, Ill.

Filed Jun. 17, 1996, Ser. No. 664,699
Int. Cl.[6] F24C *15/32*
U.S. Cl. 126—21 A **32 Claims**

1. A convection oven, comprising:
- a) an insulated oven chamber having a floor, a ceiling, a plurality of walls, and an access door;
- b) an inlet air passageway communicating at one end with ambient external air and at another end with said oven chamber;
- c) a heating element for heating air in said inlet air passageway;
- d) an exhaust passageway communicating with said oven chamber for exhausting air therefrom;
- e) a baffle plate spaced from one of said walls, said baffle plate dividing said oven chamber into a baking compartment in which food is cooked and a blower compartment;

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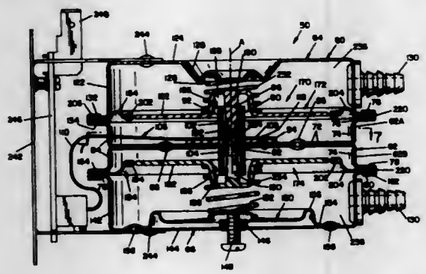
f) a blower fan disposed in said blower compartment for drawing heated air from said inlet air passageway into said oven chamber, circulating the heated air in said oven chamber, and expelling air through said exhaust passageway, whereby rotation of said blower fan tends to create high pressure zones in two diagonally opposing corners of said blower compartment and low pressure zones in two other diagonally opposing corners of said blower compartment;

g) a first pair of diverter plates disposed in said blower compartment on diametrically opposite sides of said blower fan; and

h) a second pair of diverter plates disposed in said blower compartment on diametrically opposite sides of said blower fan;

i) wherein said two sets of diverter plates are arranged so as to reduce air pressure in said high pressure zones and increase air pressure in said low pressure zones, thereby tending to equalize air pressure within said oven chamber and ensure uniform cooking of food therein.

5,601,071
FLOW CONTROL SYSTEM
Larry L. Carr, Chesterland, and Dennis S. Mizerak, Brunswick, both of Ohio, assignors to Tridelta Industries, Inc., Mentor, Ohio
Filed Jan. 26, 1995, Ser. No. 378,481
Int. Cl.[6] F24H *3/00*
U.S. Cl. 126—116 A **52 Claims**



26. A control system for monitoring and adjusting a pressure differential value across a fluid flow chamber, said control system comprising:

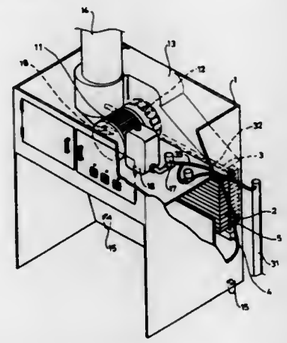
differential sensor means for sensing a first measured pressure at a first location along the fluid flow chamber and a second measured pressure at a second location along the fluid flow chamber, and providing a series of pulses having a frequency related to the pressure differential value;

means for determining a time to count a predetermined number of said series of pulses and for converting said time into an indication of the measured pressure differential value;

calculation means for calculating a deviation between the indication of measured pressure differential value and a predetermined pressure differential value; and

means for changing the pressure differential value in accordance with said deviation.

5,601,072
ATOMIZING DEVICE FOR OILY SMOKE
Teng-Hsien Hsu, No. 105, Lin-Hsi Street, Lin-Ya District, Kaohsiung, Taiwan
Filed Jun. 12, 1996, Ser. No. 661,997
Int. Cl.[6] F24C *15/20*
U.S. Cl. 126—299 E **7 Claims**



1. An oily smoke atomizing device comprising:

a housing including an inlet and an outlet for oily smoke to pass therethrough and a drainage hole;

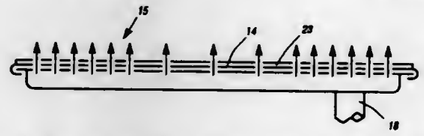
a passage defined in the housing and having a first end in fluid communication with the inlet and a second end in fluid communication with the outlet;

a plurality of atomizing plates mounted in the passage, each said atomizing plate comprising a plurality of first tubes and a plurality of second tubes, each said first tube having a first hole defined therein and a plurality of first blades projecting from an inner periphery thereof and extending counterclockwise, each said second tube having a second hole defined therein and a plurality of second blades projecting from an inner periphery thereof and extending clockwise, said first tubes and said second tubes being arranged so that one said first tube on an upper said atomizing plate aligns with a corresponding said second tube on a lower said atomizing plate and so that one said second tube on an upper said atomizing plate aligns with a corresponding said first tube on a lower said atomizing plate, thereby defining an oily smoke passage for separating oil contained in the oily smoke into oil particulates;

a water tube disposed above the atomizing plates and including a plurality of nozzles for supplying water drops to the first tubes of the atomizing plates for absorbing the oil particulates in the oily smoke passing through the oily smoke passage and carrying downwardly the oil particulates downwardly to the drainage hole; and

a fan mounted in the housing for indrafting the oily smoke from the inlet through the oily smoke passage to the outlet.

5,601,073
FLAT PAN GAS BURNER FOR GAS FIREPLACES
Ronald J. Shimek, 6665 W. Hwy. 13, Savage, Minn. 55378
Filed Jan. 6, 1995, Ser. No. 369,742
Int. Cl.[6] F24C *3/00*
U.S. Cl. 126—512 **19 Claims**



1. A pan type gas burner for a gas log fireplace system, comprising:

a pan formed in a sheet of metal,

attachment flanges formed at the upper edges of said pan for attachment to a burner plate,

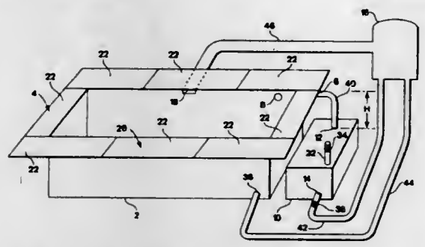
a gas pipe aperture formed in said pan,

a gas pipe adapter coupled to said aperture of said pan,

a burner plate attached to said attachment flanges to form a closed gas burner, and

a plurality of gas flame apertures in said burner plate adapted to create a desired predetermined flame pattern.

5,601,074
AUTOMATIC SOLAR HEATING SYSTEM
Erich G. Eckart, Öttingenstrasse 54, D-80538 Munich, Germany
Filed Apr. 12, 1995, Ser. No. 420,866
Claims priority, application Germany, Apr. 22, 1994, 44 14 111.4
Int. Cl.[6] F24J *2/42*
U.S. Cl. 126—561 **19 Claims**



1. An automatic solar heating system for an open-air swimming pool which includes a basin for holding bathing water at a water level, the basin having a basin inlet and a basin outlet, the solar heating system comprising:

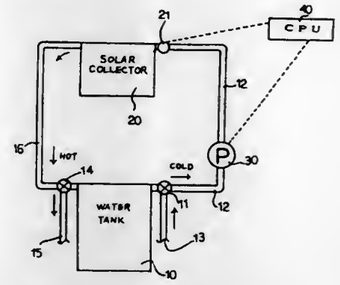
a solar heating unit including a basin boundary, the basin boundary including a heater inlet, a heater outlet and a circulation path, the heater inlet being disposed below the water level, the basin boundary being constructed and arranged to receive solar irradiation to heat the bathing water that flows through the circulation path between the heater inlet and the heater outlet, the bathing water at the heater outlet being heated bathing water, the basin boundary also including an upper surface adapted to be walked thereon;

a warm water tank adapted to hold the heated bathing water, the warm water tank including a tank inlet and a tank outlet, the tank inlet being disposed at a level below the heater outlet, the tank inlet being fluidly coupled to the heater outlet; and

a pump-filter unit fluidly coupled to the tank outlet and the basin inlet;

wherein the basin boundary and the warm water tank are constructed and arranged to siphon the bathing water from the basin into the warm water tank through the circulation path.

5,601,075
SOLAR ENERGY COLLECTING SYSTEM
Herman Lai, No. 25, Ta Gin Street, Taichung, Taiwan
Filed Jul. 24, 1995, Ser. No. 506,014
Int. Cl.[6] F24J *2/40*
U.S. Cl. 126—585 **2 Claims**



1. A solar energy collecting system comprising:

at least one water tank for receiving water therein,

at least one solar collector for collecting solar energy and for heating the water to a heating temperature,

a pipe coupling said water tank to said solar collector for supplying water from said water tank to said solar collector,

a pump for pumping water from said water tank to said solar collector,

a hose coupling said solar collector to said water tank for receiving heated water in said water tank from said solar collector,

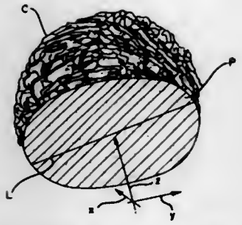
a temperature sensor engaged in said pipe and arranged close to said solar collector for sensing a water temperature of the water flowing from said water tank to said solar collector and for sensing the heating temperature of the water, and

a processing means connected to said temperature sensor for receiving the water temperature and the heating temperature from said temperature sensor and for determining a first temperature difference by deducting the water temperature from the heating temperature, said processing means including an initial temperature difference and including a temperature difference decreasing value so as to decrease said initial temperature difference step by step and so as to determine a second temperature difference, said processing means being connected to said pump for operating said pump and for pumping the water into said solar collector when said first temperature difference reaches said second temperature difference.

5,601,076
SPHEROIDAL CRYSTAL SUGAR AND METHOD OF MAKING
Gerald Battist; Garry L. Myers, both of Reston, and Richard C. Fuisz, Great Falls, all of Va., assignors to Fuisz Technologies Ltd., Chantilly, Va.
Continuation of Ser. No. 119,974, Sep. 10, 1993, Pat. No. 5,518,551. This application Jun. 5, 1995, Ser. No. 462,178
Int. Cl.[6] C13F *1/02;3/00*
U.S. Cl. 127—58 **17 Claims**

1. A sugar product comprising:

a substantially spheroidal polycrystallite which comprises crystallites having a diameter no greater than about 50 μm arranged around a spheroidal center forming a polycrystallite,



said polycrystallite having a continuous three-dimensional structure.

5,601,077

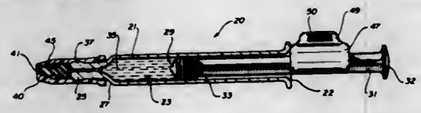
NASAL SYRINGE SPRAYER WITH REMOVABLE DOSE LIMITING STRUCTURE

Claude Imbert, La Tronche, France, assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Aug. 7, 1991, Ser. No. 742,675

Int. Cl.[6] A61M *11/00;5/315;5/31;* **A62B** *7/00*

U.S. Cl. 128—200.14 **13 Claims**



1. A syringe sprayer comprising:

an elongate barrel having an open proximal end, a chamber for retaining fluid and a tip portion extending from a distal end of said barrel having a passageway therethrough communicating with said chamber;

a stopper slidably positioned in fluid-tight engagement inside said barrel;

an elongate plunger rod projecting proximally from said stopper and extending outwardly from said proximal end of said barrel;

a spray nozzle extending outwardly from said tip portion of said barrel having a conduit therethrough in fluid communication with said passageway, a distal end of said nozzle having a spray aperture in fluid communication with said conduit;

said nozzle including internal valve means for allowing liquid under pressure in said chamber to flow distally through said conduit and said aperture while preventing unpressurized liquid in said chamber from flowing through said aperture; and

dose limiting means for preventing delivery of a pre-determined amount of liquid in said chamber through said passageway by limiting said distal motion of said plunger rod with respect to said barrel, said dose limiting means also including override means for allowing removal of said dose limiting means from said syringe sprayer and delivery of all of the liquid in said chamber.

5,601,078

BREATHING APPARATUS WITH A DISPLAY UNIT

Uwe Schaller; Detlef Wolter, both of Jena; Hansjochen Schuck, Stockelsdorf, and Ralf Drews, Lübeck, all of Germany, assignors to Drägerwerk AG, Lübeck, Germany

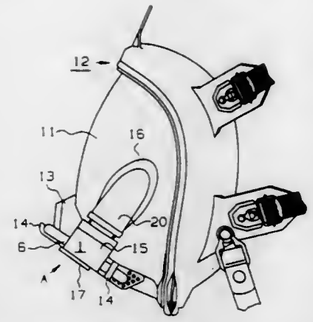
Filed May 22, 1995, Ser. No. 447,231

Claims priority, application Germany, Jul. 16, 1994, 44 25 262.5

Int. Cl.[6] A62B *18/08*

U.S. Cl. 128—205.23 **17 Claims**

1. A breathing apparatus with a display unit for the transmission of measured data via a display field of the display unit into a field of vision of the person wearing the breathing apparatus, comprising:



a breathing mask with mask body;

an LC display forming said display field, said LC display being viewable from within the mask body, said LC display being transparent at least for transmission radiation, said breathing mask having a face shield, a tube being provided between said LC display and said face shield, whereby the transmission radiation emerging from the LC display is directed at least piece-wise through said tube to said face shield, a sealing element being provided between said tube and said face shield;

an optical concentrator, including means disposed outside said mask body for collecting ambient light via a light entering surface and including means for emitting collected light via a light exiting surface toward said LC display, said optical concentrator being provided as said transmission radiation source for said LC display;

an additional light source positioned for irradiating said LC display; and

a photoelectric sensor positioned for detecting ambient light intensity, said photoelectric sensor being actively connected to said additional light source for controlling a light intensity of said additional light source as a function of the ambient light intensity.

5,601,079

NON-INVASIVE QUANTIFICATION OF GLUCOSE CONTROL, AGING, AND ADVANCED MAILLARD PRODUCTS BY STIMULATED FLUORESCENCE

Jacob Y. Wong, 4589 Camino Molinero, Santa Barbara, Calif. 93110; Bent Formby, 1625 Overlook La., Santa Barbara, Calif. 93103, and Charles M. Peterson, 1075 San Antonio Creek Rd., Santa Barbara, Calif. 93111

Continuation-in-part of Ser. No. 852,085, Mar. 12, 1992, Pat. No. 5,370,114. This application Sep. 16, 1994, Ser. No. 307,125

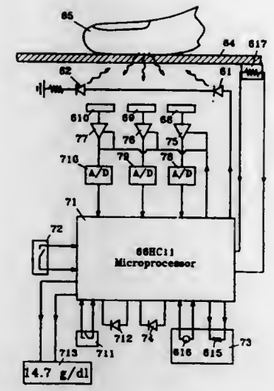
Int. Cl.[6] A61B *6/00*

U.S. Cl. 128—633 **18 Claims**

1. A non-invasive, blood chemistry measurement apparatus for measuring a concentration of a selected blood component within a sample of blood, said apparatus comprising:

a source of light in the wavelength range from 200–600 nm, whereby this light can pass through a person's epidermis without undue absorption by the epidermis;

means for detecting light that is emitted from molecules of the selected blood component in response to light from said source of light; and



means, responsive to said means for detecting, for calculating a concentration of said selected blood component.

5,601,080

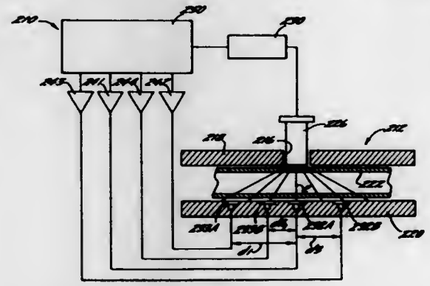
SPECTROPHOTOMETRIC BLOOD ANALYSIS

Luis Oppenheimer, Winnipeg, Canada, assignor to Coretech Medical Technologies Corporation, Winnipeg, Canada

Filed Dec. 28, 1994, Ser. No. 365,033

Int. Cl.[6] A61B *5/00*

U.S. Cl. 128—633 **18 Claims**



1. A method for optically determining blood parameters, said method comprising:

a) directing at least one light beam into a patient's blood, and detecting and measuring light emerging from the blood at a plurality of distinct detection locations one of which is predominantly sensitive to directly emerging light;

b) deriving constant values related to said distinct detection locations, based upon data from said detecting and measuring, and data for a selected blood parameter; and

c) selecting at least three distinct detection locations from said plurality of distinct detection locations, for later determining said blood parameter.

5,601,081

METHOD AND APPARATUS FOR DEDUCING BIOELECTRIC CURRENT SOURCES

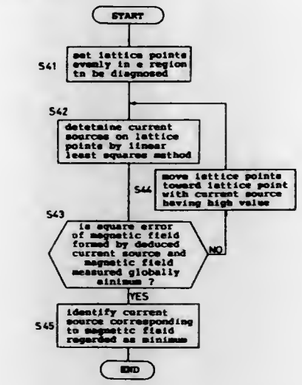
Sadamu Tomita, Momoyama-Mohrinagatonishimachi; Shigeki Kajihara, Uji; Yoshikazu Yoshida, Tsuzuki-gun, and Naokazu Yamaki, Fujisawa, all of Japan, assignors to Shimadaszu Corporation, Kyoto, Japan

Filed Jun. 2, 1994, Ser. No. 252,788

Claims priority, application Japan, Jun. 4, 1993, 5-160450; Jun. 4, 1993, 5-160451; Sep. 30, 1993, 5-245615; Nov. 26, 1993, 5-320956; Nov. 26, 1993, 5-320958; Mar. 17, 1994, 6-047220

Int. Cl.[6] A61B *5/05*

U.S. Cl. 128—653.1 **2 Claims**



1. A method of deducing physical quantities including positions, sizes and orientations of bioelectric current sources, said method comprising:

a magnetic field measuring step for measuring minute magnetic fields formed by said bioelectric current sources in a region under examination of an examinee, with a plurality of magnetic sensors arranged adjacent said region under examination;

a lattice point setting step for setting a plurality of lattice points in said region under examination, said lattice points being smaller in number than said magnetic sensors;

a first current source computing step for deriving unknown current sources by adding a condition to minimize a square error of a magnetic field formed by an unknown current source at each of said lattice points and a magnetic field measured by each of said magnetic sensors;

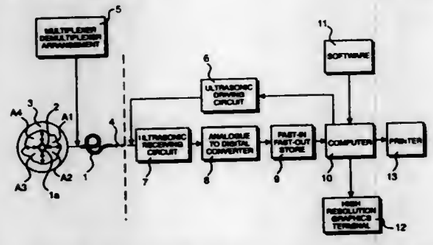
a checking step for checking whether the square error of the magnetic field computed from said current source derived and the magnetic field actually measured by each of said magnetic sensors is a global minimum;

a lattice point rearranging step for moving said lattice points toward a lattice point having a large current value among the current sources computed at said first current source computing step, when said square error is determined to differ from said global minimum;

a current source identifying step for repeating said first current source computing step to said lattice point rearranging step, and regarding as a true current source the current source corresponding to a magnetic field occurring when said square error is determined to be said global minimum at said checking step.

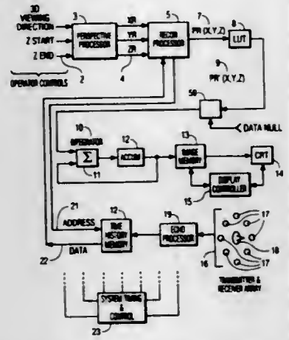
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5,601,082
MEDICAL ULTRASOUND IMAGING
Christopher J. Barlow, Etobicoke, Canada; Robert J. Dickinson, and Richard I. Kitney, both of London, England, assignors to Intravascular Research Limited, London, England
Filed Oct. 2, 1995, Ser. No. 537,589
Claims priority, application United Kingdom, Sep. 30, 1994, 9419778
Int. Cl.[6] A61B 8/00
U.S. Cl. 128—660.07 19 Claims



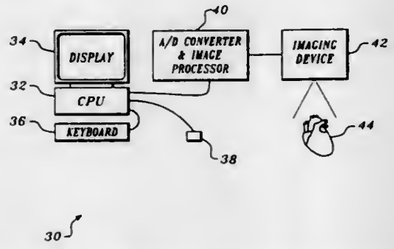
1. A method of overcoming a ringdown problem when operating an ultrasonic imaging system for imaging internal organs of a human body in which ultrasonic signals are transmitted and echoes thereof received, comprising the steps of:
generating a reference scan,
updating said reference scan to be equal to a long term running average of scans, and
then subtracting said running average from a current A-scan to remove the ringdown.

5,601,083
REAL TIME 3D IMAGING DEVICE USING FILTERED ELLIPSOIDAL BACKPROJECTION
Forrest Anderson, P.O. Box 1400, Bernalillo, N.M. 87004
Continuation-in-part of Ser. No. 908,951, Jul. 6, 1992, Pat. No. 5,235,857, which is a continuation-in-part of Ser. No. 595,609, Oct. 12, 1990, abandoned, which is a continuation-in-part of Ser. No. 387,615, Jul. 28, 1989, Pat. No. 5,090,245, which is a continuation-in-part of Ser. No. 287,590, Dec. 15, 1988, abandoned, which is a continuation-in-part of Ser. No. 205,298, Jun. 10, 1988, abandoned, which is a continuation-in-part of Ser. No. 106,577, Oct. 7, 1987, Pat. No. 5,134,884, which is a continuation-in-part of Ser. No. 858,696, May 2, 1986, Pat. No. 4,706,499. This application Aug. 9, 1993, Ser. No. 103,962
Int. Cl.[6] A61B 8/15
U.S. Cl. 128—660.07 6 Claims



1. An ellipsoidal backprojection imaging device comprising an array of receiver elements, each element of the array being related to an image reconstruction point angle of a receiver apodizer;
a receiver apodizer having an apodization amplitude function means for providing an apodization amplitude for weighting echoes associated with each receiver element where said apodization amplitude function is a function of the image reconstruction point angle of said receiver elements; and
an ellipsoidal backprojection image reconstruction processor for reconstructing said images from said weighted echoes.

5,601,084
DETERMINING CARDIAC WALL THICKNESS AND MOTION BY IMAGING AND THREE-DIMENSIONAL MODELING
Florence H. Sheehan, Mercer Island; Edward L. Bolson, and Huaichuan Jin, Seattle, all of Wash., assignors to University of Washington, Seattle, Wash.
Continuation-in-part of Ser. No. 82,404, Jun. 23, 1993, Pat. No. 5,435,310. This application May 26, 1995, Ser. No. 451,757
Int. Cl.[6] A61B 8/00
U.S. Cl. 128—661.04 26 Claims

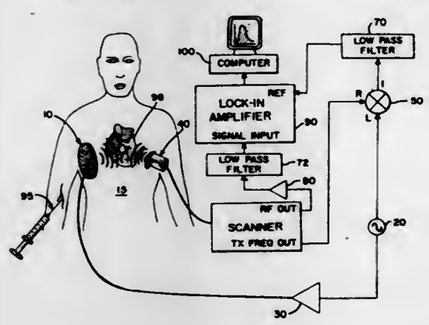


1. A method for analyzing characteristic cardiac parameters of a patient's heart, comprising the steps of:
(a) imaging a heart to produce imaging data;
(b) modeling the heart using the imaging data, producing modeling data corresponding to an inner surface and an outer surface of the heart, at a plurality of times during a cardiac cycle, including at an end systole and at an end diastole of the cardiac cycle;
(c) using the inner surface of the heart produced with the modeling data, creating a mesh of connected polygons that represent the inner surface of the heart, said polygons including a plurality of connected edges that meet at vertices of the polygons;
(d) determining a normal for a face of each of the polygons;
(e) determining a vertex normal for each of the vertices by averaging the normals for the faces of the polygons meeting at the vertices;
(f) extending the vertex normals as a plurality of line segments that intersect the outer surface at a plurality of points, said line segments extending between the vertices of the polygons on the inner surface and the points on the outer surface;
(g) connecting midpoints of the line segments to form a mesh having a plurality of connected polygons with vertices disposed at the midpoints of the line segments, said mesh representing the center surface; and
(h) using the center surface represented by the mesh formed by connecting the midpoints of the line segments, determining characteristic cardiac parameters for the heart.

5,601,085
ULTRASOUND IMAGING
Jonny Ostensen; Morton Eriksen; Lars Hoff; Sigmund Frigstad; Nils Sponheim, and Knut Dyrstad, all of Oslo, Norway, assignors to Nycomed Imaging AS, Oslo, Norway
Filed Oct. 2, 1995, Ser. No. 538,286
Int. Cl.[6] A61B 8/00
U.S. Cl. 128—662.02 8 Claims

1. A method of imaging vasculated tissue of a human or non-human subject, said tissue containing an ultrasound contrast agent, which method comprises generating successive ultrasound images of said tissue, scanning a plurality of elements of each of said images for one or more image parameters, calculating correlation values in respect of said image parameter(s) for corresponding elements in said successive images, identifying any region or regions for which there is a change in said correlation values exceeding a defined level and generating a display of said region or regions.

5,601,086
BEAT FREQUENCY ULTRASONIC MICROSPHERE CONTRAST AGENT DETECTION SYSTEM
Robert A. Pretlow, III, Kirkland, Wash.; William T. Yost, Newport News, and John H. Cantrell, Jr., Yorktown, both of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed May 12, 1995, Ser. No. 440,266
Int. Cl.[6] A61B 8/06
U.S. Cl. 128—662.02 11 Claims



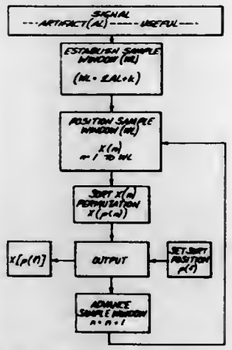
1. An apparatus for detecting the presence of ultrasonically relative microsphere contrast agents in a fluid, comprising:
means for directing ultrasonic energy into a region of the fluid at a first discrete frequency, the first frequency being approximately at a resonant frequency of the microspheres in the range of 1 MHz–30 MHz;
means for simultaneously directing ultrasonic energy into the region of fluid at a second discrete frequency that is also an approximate resonant frequency of the microspheres, wherein the microspheres in the fluid interact to emit sum and difference frequencies; and
means for detecting the sum and difference frequencies.

5,601,087
SYSTEM FOR DIAGNOSING TISSUE WITH GUIDEWIRE
Richard C. Gunderson, Maple Grove; James S. Sharrow, Bloomington, and Jeffrey A. McBroom, Champlin, all of Minn., assignors to SpectraScience, Inc., Minnetonka, Minn.
Continuation of Ser. No. 154,289, Nov. 18, 1993, Pat. No. 5,439,000, which is a continuation-in-part of Ser. No. 977,985, Nov. 18, 1992, Pat. No. 5,383,467. This application Jun. 7, 1995, Ser. No. 488,258
Int. Cl.[6] H61B 6/00
U.S. Cl. 128—664 17 Claims



1. A tissue diagnosis and treatment system comprising:
a) a guidewire comprising a hollow tube having a solid wall defined by inner and outer diameters, the tube further having proximal and distal ends, the hollow tube having sufficient torsional rigidity to transmit substantially all angular rotation applied at the proximal end to the distal end, flexible means attached to the distal end of the tube for providing flexibility at the distal end of the guidewire, the flexible means forming a hollow bore aligned axially with the tube, an optical fiber having proximal and distal ends, the optical fiber contained within the inner diameter of the hollow tube and bore of the flexible means and extending between the proximal and distal ends of the guidewire; and
b) a diagnostic apparatus for spectroscopically diagnosing tissue, the diagnostic apparatus comprising:
1) a source of illumination adjacent the proximal end of the guidewire, the source providing illumination entering the proximal end of the optical fiber of the guidewire; and
2) means for analyzing returned illumination entering the distal end of the guidewire to provide a diagnosis of the tissue.

5,601,088
SYSTEMS AND METHODS FOR FILTERING ARTIFACTS FROM COMPOSITE SIGNALS
David K. Swanson, Mountain View; Doria Pancescu, Sunnyvale, and James G. Whayne, Saratoga, all of Calif., assignors to EP Technologies, Inc., Sunnyvale, Calif.
Filed Feb. 17, 1995, Ser. No. 390,104
Int. Cl.[6] A61B 5/04
U.S. Cl. 128—697 40 Claims



1. An element for filtering an artifact from a composite signal comprising sample values arranged with respect to time, the element comprising

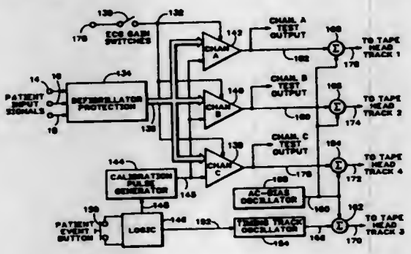
means for selecting sets of WL sample values in time-sequence along the composite signal,
means for arranging the WL sample values of each set into ordered positions following a predetermined permutation,
means for determining the duration, AL, of the artifact in terms of the number of sample values that the artifact contains,
means for selecting one of the ordered positions, z, within each permutation taking into account the artifact duration, AL, and
means for generating a filter output comprising the sample values occupying the ordered position, z, of each permutation in time-sequence with the composite signal.

5,601,089

METHOD AND APPARATUS FOR BOOSTING THE AMPLITUDE OF ECG SIGNALS WITHIN A PREDETERMINED FREQUENCY RANGE

J. Daren Bledsoe; David L. Burton; Brian D. Setterberg, and Alan V. Andresen, all of McMinnville, Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 31,437, Mar. 12, 1993, Pat. No. 5,406,955.
This application Jan. 26, 1995, Ser. No. 379,046
Int. Cl.[6] A61B 5/0436
U.S. Cl. 128—711 5 Claims



1. A recorder, comprising:
a plurality of patient monitor lines for connecting a plurality of electrodes attached to a patient to said recorder;
said recorder for recording ECG signals on an audio tape for later playback on a playback system, said recorder and said playback system accounting for losses in said ECG signals, said ECG signals sensed by said electrodes attached to said patient, said ECG signals having an ECG signal amplitude and an ECG signal frequency, said recorder further comprising:
an amplifier including a pre-emphasis gain boost characteristic for selectively boosting the amplitude of the ECG signals within a predetermined frequency range as a function of the ECG signal frequency and not the ECG signal amplitude prior to recording to compensate for said losses in the ECG signals due to the recording and playback of the ECG signals.

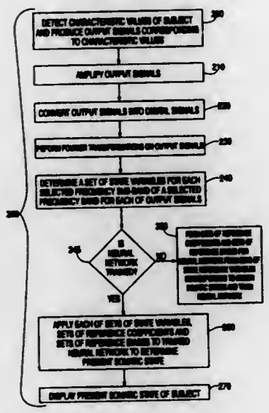
5,601,090

METHOD AND APPARATUS FOR AUTOMATICALLY DETERMINING SOMATIC STATE

Toshimitsu Musha, Tokyo, Japan, assignor to Brain Functions Laboratory, Inc., Kawasaki, Japan

Filed Jul. 12, 1994, Ser. No. 274,196
Int. Cl.[6] A61B 5/04
U.S. Cl. 128—731 22 Claims

1. Apparatus for automatically determining a present somatic state of a human subject, comprising:
a plurality of sensors which produce output signals for detecting characteristic values of said subject when affixed to a body of said subject;



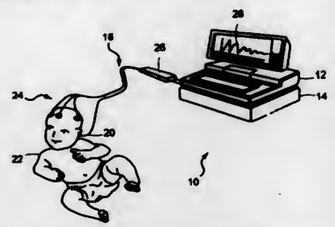
amplifiers for amplifying said output signals;
a processor for:
digitizing said output signals,
performing Fourier transformations on said digitized output signals,
determining a set of state variables for each of a plurality of selected frequency sub-bands of a selected frequency band for each of said output signals,
containing sets of reference weights and sets of reference biases for a neural network, wherein each of said sets of reference weights and each of said sets of reference biases is formed from a set of state reference variables corresponding to a known somatic state, and
applies each of said sets of state variables, and sets of reference weights and said sets of reference biases to said neural network to determine present somatic state of said subject; and
a display for displaying the present somatic state of said subject;
wherein:
the present somatic state is an emotional state selected from the group consisting of joy, anger, happiness, sadness, elation, surprise, disgust and fear.

5,601,091

AUDIOMETRIC APPARATUS AND ASSOCIATION SCREENING METHOD

William F. Dolphin, Weston, Mass., assignor to SonaMed Corporation, Weston, Mass.

Filed Aug. 1, 1995, Ser. No. 509,836
Int. Cl.[6] A61B 5/00
U.S. Cl. 128—746 37 Claims



1. An audiometric apparatus comprising:
a signal processor for generating a first stimulus signal;
a probe electrically coupled to the signal processor and insertible in a subject's ear, the probe including (i) a transmitter for transmitting the first stimulus signal into the subject's ear and (ii) a receiver for receiving a first response signal from the subject's ear;
an electrode, electrically coupled to the signal processor and attachable to the subject's scalp, for sensing a second response signal from the subject's scalp; and
the signal processor processing the first response signal to provide an evoked otoacoustic emission signal and processing the second response signal to provide an auditory evoked potential signal.

5,601,092

METHOD FOR MAKING THIN WALLED CLOSED ENDED TUBULAR ARTICLES OF THERMOPLASTIC ELASTOMERS

Robert G. Miller, North York; William C. Miller, Windsor, and Oskar T. Tankovitz, North York, all of Canada, assignors to Ortho-McNeil, Inc., Canada

Division of Ser. No. 159,002, Nov. 29, 1993, abandoned. This application May 31, 1995, Ser. No. 455,784
Int. Cl.[6] A61F 6/04
U.S. Cl. 128—844 2 Claims



1. A condom of thermoplastic elastomer, said condom having an axially centered tubular body, an open end and an opposite closed end, said tubular body having a maximum diameter at a point along said axis adjacent to said closed end and said tubular body having a minimum diameter at a point along said axis between said point of maximum diameter to and including said open end with the ratio of maximum diameter to minimum diameter between about 1.05/1 and 1.25/1.

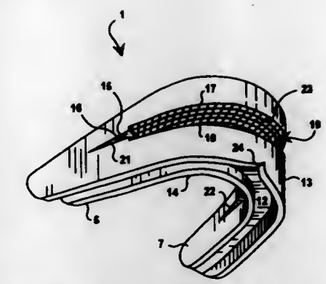
5,601,093

SNORE-INHIBITING DEVICE

David V. Sheehan, 24791 Via San Felipe, Mission Viejo, Calif. 92692

Filed Apr. 1, 1996, Ser. No. 625,229
Int. Cl.[6] A61F 5/56
U.S. Cl. 128—848 12 Claims

1. A snore-inhibiting device for insertion between a user's upper and lower teeth-and-gum structures and behind said user's upper and lower lips, which comprises:
a pair of U-shaped jaw-pieces made of molded plastic material;
a first one of said pieces shaped and dimensioned to loosely cap said upper structure and a second one of said pieces being shaped and dimensioned to loosely cap said lower structure;
said pieces including co-extensively matching, opposite interfaces and integrally joined right and left rearward portions;
said interfaces having a pair of substantially symmetrical, oppositely lined-up, elongated, shallow depressions located in median, forward sections of said pieces, said depressions being spaced apart from said rearward portions; and



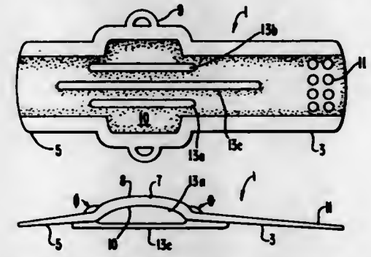
said depressions forming an elongated slot shaped and dimensioned to allow insertion therethrough of a tip portion of said user's tongue.

5,601,094

OPHTHALMIC SHUNT

George R. Reiss, 4711 E. Cochise Dr., Phoenix, Ariz. 85028-4223

Filed Nov. 22, 1994, Ser. No. 346,213
Int. Cl.[6] A61M 27/00
U.S. Cl. 128—899 16 Claims



1. An ophthalmic shunt implantable in a human eye, the eye having a sclera, a limbus, a cornea and a choroid, wherein the shunt consists essentially of:
a central portion exhibiting a convex outer surface, a concave inner surface and sides;
an anterior tab with a smooth exterior surface extending along a longitudinal axis from one end of said central portion;
a posterior tab with a smooth outer surface extending along said longitudinal axis from an opposite end of said central portion;
a support wall projecting from said concave inner surface and extending along a longitudinal axis to maintain a shape of said shunt when inserted into an eye and to maintain a channel between said central portion and an outer surface of said eye; and
stitching loops extending laterally outward from the sides of the central portion for securing said shunt to said eye.

5,601,095

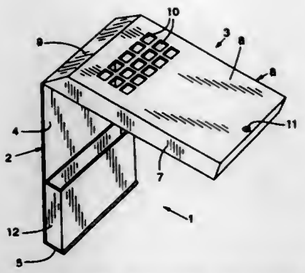
CIGARETTE DISPOSAL BIN

Martyn A. Bright, 64, Margaret Road, New Barnet, Herts, EN4 9NX, England

Filed May 20, 1994, Ser. No. 247,140
Claims priority, application United Kingdom, Oct. 11, 1993, 9320885; Mar. 4, 1994, 9404224
Int. Cl.[6] A24F 19/14
U.S. Cl. 131—235.1 9 Claims

1. A cigarette disposal bin comprising:

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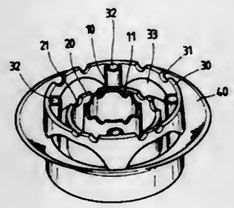


an outer, vertically walled shell having a predetermined horizontal cross-sectional area, and defining at least one aperture through which a cigarette may be inserted into the bin;

a separate collection device located within the outer shell below the at least one aperture for collecting cigarettes inserted into the bin; and

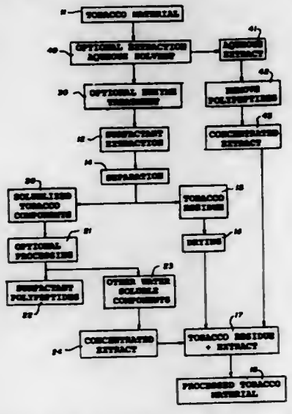
an inclined baffle means mounted within the outer shell below the at least one aperture in a position to direct cigarettes inserted through the at least one aperture into said collection device, the baffle means having a lower edge defining an opening into the collection device, the opening having a cross-sectional area that is of dimension sufficient to permit a cigarette inserted into the bin through said at least one aperture to slide into said collection device but that is substantially less than said predetermined horizontal cross-sectional area of the outer shell thereby to restrict circulation of air into said collection device thereby promoting extinguishment of a cigarette in the collection device and restricting the escape of smoke from a cigarette in the collection device through the at least one aperture, the collection device retaining cigarettes in the cigarette disposal bin.

5,601,096
ASHTRAY
Hsi H. Lin, P.O. Box 82-144, Taipei, Taiwan
Filed Jul. 1, 1996, Ser. No. 674,146
Int. Cl.[6] A24F *19/00*
U.S. Cl. 131—240.1 **2 Claims**



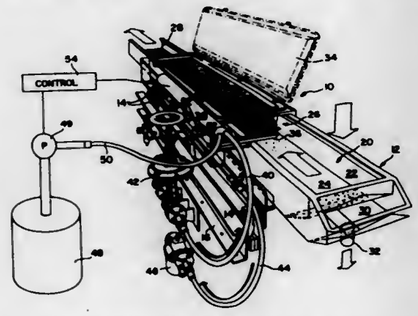
1. An asbtray comprising a cylindrical center upright wall defining a cylindrical storage chamber and having a plurality of radial top dents, a cylindrical intermediate upright wall concentrically raised around said cylindrical center upright wall and defining with it an annular chamber and having a plurality of radial top dents corresponding to and below the elevation of the radial top dents of said cylindrical center upright wall, a cylindrical outer upright wall concentrically raised around said cylindrical intermediate upright wall and defining with it an annular chamber and having a plurality of radial top dents corresponding to and above the radial top dents of said cylindrical center upright wall and said cylindrical intermediate upright wall, and an outward flange raised around the periphery of said cylindrical outer upright wall and curving smoothly outwardly upwards, said cylindrical outer upright wall having a plurality of openings spaced around the periphery below the top dents thereof above the connecting area between said outward flange and said cylindrical outer upright wall.

5,601,097
TOBACCO TREATMENT
Yves D. De Grandpré, Boucherville; Minoo H. Bilimoria, and Andrew R. Porter, both of Montreal, all of Canada, assignors to Imasco Limited, Montreal, Canada
Continuation-in-part of Ser. No. 816,520, Dec. 31, 1991, Pat. No. 5,311,886. This application Jan. 6, 1993, Ser. No. 1,358
Int. Cl.[6] A24B *3/12*
U.S. Cl. 131—297 **20 Claims**



1. A method for reducing the protein content of tobacco material wherein the tobacco material is extracted with an anionic surfactant.

5,601,098
METHOD AND APPARATUS FOR APPLYING METHOPRENE TO ORIENTAL TOBACCO
Herman van Lierde, Izmir, Turkey, assignor to Dimon Incorporated, Danville, Va.
Filed Jun. 2, 1995, Ser. No. 460,574
Int. Cl.[6] A24B *3/18*
U.S. Cl. 131—300 **9 Claims**

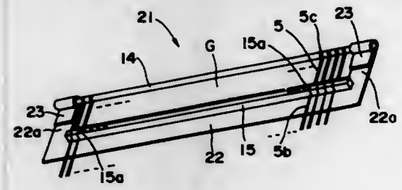


1. A method for applying liquid methoprene to oriental tobacco to inhibit the growth of tobacco beetles, the method comprising the steps of:

subjecting oriental tobacco leaves to kinetic energy of high-pressure dry steam exiting from nozzles against and through the tobacco leaves;

injecting the liquid methoprene into the steam before it exits the nozzles.

5,601,099
METHOD FOR HAIR JOINING, HAIR USED FOR THE METHOD, AND JOINING HAIR RETAINER
Kousuke Mochizuki, and Ryuji Teratoko, both of Tokyo, Japan, assignors to Aderans Co., Ltd., Tokyo, Japan
Division of Ser. No. 230,836, Apr. 21, 1994, Pat. No. 5,497,796. This application Jun. 7, 1995, Ser. No. 480,057
Claims priority, application Japan, Apr. 27, 1993, 5-100640; Apr. 27, 1993, 5-100641
Int. Cl.[6] A41G *3/00;5/00*
U.S. Cl. 132—201 **12 Claims**



1. A joining hair retainer comprising:

a retainer body;

a rod-like member disposed on one end portion of said retainer body; and

an elongated cushion member disposed on said retainer body in such a manner as to be spaced apart from said rod-like member, and having a plurality of cuts;

reducible looped portions formed on one ends of a plurality of joining hairs allowing said rod-like member to pierce therethrough and free ends side thereof being inserted respectively into and clamped by said plurality of cuts in said cushion member.

5,601,100
WASHING APPARATUS
Kunihiko Kawakami; Yasunori Kurahashi; Takao Morisaki; Osamu Monma; Seiji Sato; Akihiro Hayashi; Hideho Taguchi; Keiji Kameishi; Naoto Minamikawa; Koji Ogawa; Masanori Kato, and Hirotaka Abou, all of Nakatsugawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 26, 1994, Ser. No. 329,274
Claims priority, application Japan, Oct. 28, 1993, 5-270201; Apr. 4, 1994, 6-065353; Apr. 4, 1994, 6-065354; Apr. 4, 1994, 6-065355; Apr. 5, 1994, 6-066972
Int. Cl.[6] B08B *3/02*
U.S. Cl. 134—56 R **28 Claims**

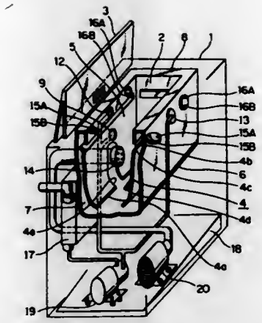
1. A washing apparatus comprising:

a main body having an opening provided in the upper portion thereof for allowing an object to be washed to be moved therethrough into and out of said main body;

an outer vessel defining therein a washing space communicated with said opening;

an inner vessel disposed within said outer vessel with a space formed therebetween and said inner vessel having at a bottom wall thereof an opening communicated with said space between said inner and outer vessels;

first means for injecting clean water, without detergent, at a high pressure into said washing space, disposed in said inner or outer vessel;

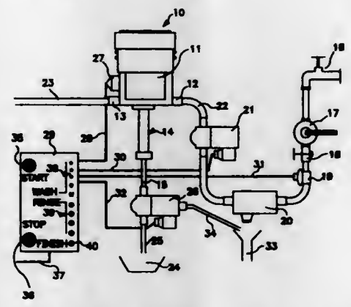


second means for injecting water at a pressure lower than that of the water injected from said first water injection means, disposed above said first water injection means;

means for pressurizing clean water connected to said first water injection means; and

a source of clean water for supplying clean water, without detergent to said water pressurizing means.

5,601,101
WASHING SYSTEMS
Robert D. Grapes, and Mark R. Bell-Booth, both of Palmerston North, New Zealand, assignors to Precision Dispensing Systems Limited, New Zealand
PCT No. PCT/NC93/00063, § 371 Date Jan. 31, 1995, § 102(e) Date Jan. 31, 1995, PCT Pub. No. WO94/03286, PCT Pub. Date Feb. 17, 1994
PCT Filed Aug. 4, 1993, Ser. No. 379,533
Claims priority, application New Zealand, Aug. 4, 1992, 243834
Int. Cl.[6] B08B *13/00*
U.S. Cl. 134—56 R **13 Claims**



3. A washing system for in place washing of a machine or equipment, the system comprising:

supply means connectable to two sources of washing fluid with one being at a higher temperature than the other, said supply means being controllable to regulate a flow of said washing fluid to the machine or equipment;

means for adding a cleaning additive to the washing fluid;

control means for controlling the pressure of said flow between a first pressure and a second pressure, wherein said first pressure is higher than said second pressure such that controlled changes in the pressure of said flow of washing fluid to the machine or equipment can be effected; and

a doser unit for supply of a metered quantity of cleaning additive to said flow, said doser unit including a sensing means for sensing the operation of the doser unit,

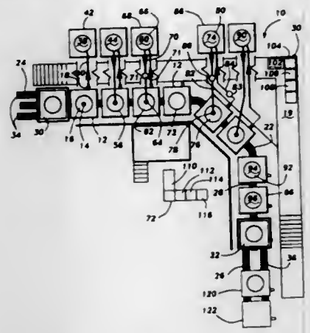
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wherein said control means disconnects the supply of cleaning additive after a predetermined flow of washing fluid to the machine or equipment.

5,601,102
TOTE CLEANING SYSTEM

Stephen Rivette; Michael Doherty, both of Fenton; Charles Savage, St. Johns; Charles Jones, Gaines, and Jeffrey Ristinger, Grand Blanc, all of Mich., assignors to Vinewood Corporation, Durand, Mich.

Filed Nov. 13, 1995, Ser. No. 556,306
Int. Cl.[6] B06B *3/02;9/14*
U.S. Cl. 134—62 **20 Claims**

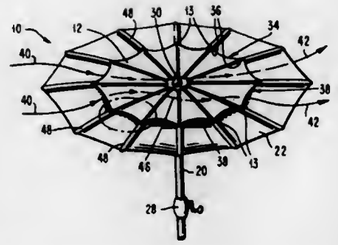


1. A system for cleaning totes, each tote having a fill opening and a dispensing valve, said fill opening and said valve being open to an interior chamber of said tote, said system comprising:
- a conveyor line having a receiving end and a discharging end, said conveyor line adapted to transport totes from said receiving end to said discharging end,
- means adjacent said receiving end of said conveyor line for washing said tote by cycling a wash solution through said tote, said washing means having a wash lid secured to said fill opening,
- means downstream from said washing means for rinsing the interior chamber of the tote, said rinsing means having a rinse lid attachable to said fill opening,
- means downstream from said rinsing means for drying the interior chamber of the tote, said drying means having a drying lid attachable to said fill opening.

5,601,103
UMBRELLA HAVING PARTIAL TOP CANOPY AND UNDERSIDE CANOPY CONNECTED WITH CANOPY RIB SLEEVES TO FORM WIND VENT AND STABILIZE THE RIBS

Emanuel Dubinsky, 3 Cross Ridge Rd, Chappaqua, N.Y. 10514

Filed Oct. 3, 1995, Ser. No. 538,590
Int. Cl.[6] A45B *25/22*
U.S. Cl. 135—33.7 **10 Claims**



1. In an umbrella having an umbrella pole, frame support ribs including canopy cover ribs having an upper side and an underside and stretcher ribs, said canopy cover ribs being pivotally connected to said stretcher ribs for opening and closing said umbrella, said canopy cover ribs having upper ends pivotally connected to said umbrella pole at a top portion thereof, each of said canopy cover ribs having a cross-section with a substantional thickness between a top and a bottom and a lower end with an end tip portion and a middle portion between said upper end and said lower end, a ribholder connected to one end of each of said stretcher ribs and encircling said umbrella pole and adapted for slidable movement along said umbrella pole for extending and retracting said frame support ribs for respectively opening and closing said umbrella, and canopy cover means for covering said canopy cover ribs, the improvement of which comprises:
- (a) said canopy cover means including a partial top canopy located on said upper side of said canopy cover ribs and extending from said upper end out to said middle portion of each of said canopy cover ribs for partially covering said canopy cover ribs, and an underside outer canopy having a general ring shape with an opening in the center; said underside outer canopy being secured to said underside of said canopy cover ribs and extending between said middle portion and said end tip portion of each of said canopy cover ribs;
- (b) canopy cover attachment means for securing said underside outer canopy to said underside of said canopy cover ribs, said canopy cover attachment means including canopy rib sleeves formed on the top side of said underside outer canopy and adapted for receiving therein each of said canopy cover ribs between their said middle portions and said end tip portions thereof, said underside outer canopy comprising individual panels made of canopy material and extending between each adjacent canopy rib sleeve, said canopy panels being sewn together along a line along the bottoms of each canopy rib sleeve and canopy cover rib to form said underside outer canopy extending alone the bottom of said canopy rib sleeves and said canopy cover ribs, and
- (c) means for securing said partial top canopy to said middle portion of each canopy cover rib at said upper side thereof, whereby a defined, constantly open air vent opening is formed between said partial top canopy and said underside outer canopy, and between said adjacent canopy cover ribs for venting crosswind through said air vent openings;

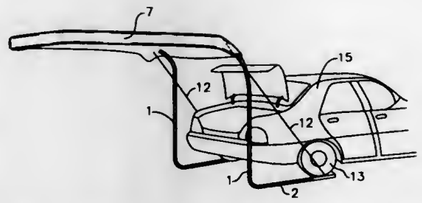
whereby said connection of said partial rod canopy to said upper side of each canopy rib and said underside outer canopy to said bottom of each rib sleeve forms a double canopy link and constantly open vent passages extending between adjacent canopy ribs which extends substantially around the umbrella.

5,601,104
AUTO TENT

Walter R. Perkins, Greenville, N.C., assignor to The Hatteras Group, Greenville, N.C.

Filed Jan. 22, 1996, Ser. No. 589,591
Int. Cl.[6] E04H *15/06*
U.S. Cl. 135—88.06 **4 Claims**

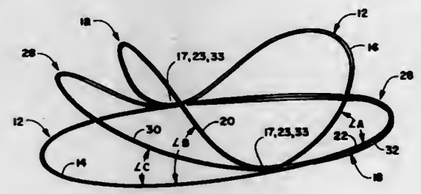
1. A canopy adapted to extend in a horizontal plane from an upright supporting structure, said canopy comprising a flexible planar panel supported on at least three sides by a canopy frame secured to the edges of said panel, said canopy frame comprising a pair of spaced elongated members which extend horizontally in parallel with one another to engage towards their respective distal ends, the ends of a horizontal elongated end cross piece, thereby to form a generally rectangular horizontal canopy frame; the two proximal ends of said horizontally extending elongated members forming said canopy frame engaging at right angle said upright supporting structure which comprises two elongated parallel vertical supports whose upper ends each engage said respective proximal ends of the horizontally extending canopy frame members and whose lower ends each engage one end of respective parallel horizontal elongated supports which extend at right angles away from said vertical supports in the opposite direction to said canopy frame to each engage at its other end a flat horizontal anchor plate having sufficient dimensions to engage firmly between a vehicle tire and underlying surface.



5,601,105
SELF-ERECTING TENT

Charles A. Bien, 12208 Buckskin Trail, Poway, Calif. 92064, and Andrew Panno, Jr., 1061 Stonecrest La., Escondido, Calif. 92027

Filed Apr. 8, 1996, Ser. No. 629,007
Int. Cl.[6] E04H *15/40*
U.S. Cl. 135—126 **5 Claims**

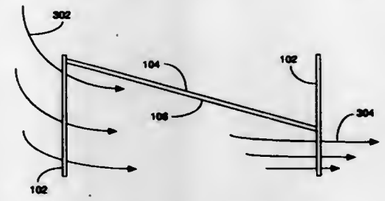


1. A self-erecting tent structure comprising:
- a continuous resilient first closed loop frame member; it has a front half that forms a front base portion that lays in a horizontal plane in its uncoiled state; it has a rear half that forms a rear arch portion that extends upwardly and rearwardly at a first acute angle from a horizontal plane; said front half and said rear half of said first closed loop meet each other at diametrically opposed first mid-point;
- a continuous resilient second closed loop frame member; it has a front half that forms an upper front arch portion that extends upwardly and rearwardly at a secood acute angle from a horizontal plane; it has a rear half that forms a rear base portion that lays in a horizontal plane in its uncoiled state; said front half and rear half of said second closed loop meet each other at diametrically opposed second mid-point;
- a continuous resilient third closed loop frame member; it has a front half that forms a lower front arch portion that extends upwardly and forwardly at a third acute angle from a horizontal plane; said second angle is greater than said third angle; it has rear half that forms a rear base portion that lays in a horizontal plane in its uncoiled state adjacent the rear half of said second closed loop member; said front half and said rear half of said third closed loop meet each other at diametrically opposed third mid-points;
- a tent body having a lower front panel, and upper front panel, a central panel and a rear panel;
- said lower front panel having a front door opening; it has an upper edge and a lower edge; a front floor sleeve is formed along said bottom edge and a lower front arch sleeve is formed along its top edge;
- said upper front panel having an upper edge and a lower edge; said lower front arch sleeve is formed along its lower edge and an upper front arch sleeve is formed along its top edge;
- said central panel having a front edge and a rear edge; said upper front arch sleeve is formed along its front edge and a rear arch sleeve is formed along its rear edge;
- said rear panel having a front edge and a rear edge; said rear arch sleeve is formed along its front edge and a rear floor sleeve is formed along its rear edge;
- said first closed loop frame member is threaded through said front floor sleeve and said rear arch sleeve;
- said second closed loop frame member is threaded through said upper front arch sleeve and said rear floor sleeve; and
- said third closed loop frame member is threaded through said lower front arch sleeve and said rear floor sleeve.

5,601,106
MULTI-SCREEN SOLAR BARRIER

John J. Guasto, 330 SE. 20th Ave., Apt. 214, Deerfield Beach, Fla. 33441

Filed Feb. 16, 1995, Ser. No. 389,251
Int. Cl.[6] E04H *15/42*
U.S. Cl. 135—156 **10 Claims**



1. A portable multi-screen sunscreen, comprising:
- at least one first support section, the first support section having an upper portion for attaching at least one shade screen and one UV screen, and a lower end having means to removably embed the first support section in ground;
- at least one second support section, the second support section having an upper portion for attaching at least one shade screen and one UV screen, and a lower end having means to removably embed the second support section in ground;
- a shade screen, the shade screen attached in an open position at a first end to the upper portion of the first support section and attached at a second end to the upper portion of the second support section such that sunlight is substantially blocked by the shade screen when it is in the open position;
- a UV screen, the UV screen attached in an open position at a first end to the upper portion of the first support section and attached at a second end to the upper portion of the second support section such that the UV portion of the sunlight is substantially blocked by the UV screen when it is in the open position;
- the shade screen and the UV screen each having separate attachment means such that the shade screen or the UV screen can be independently detached from at least the first or the second support sections such that they can be retracted from the open to the closed position;
- a shade screen retractor means attached to a first end of the shade screen, the shade screen retractor means having a first spring loaded roller means, the first spring loaded roller means attached to the shade screen such that when the shade screen is released from the open position, the first spring loaded roller means retracts the shade screen to a closed position;
- a UV screen retractor means attached to a first end of the UV screen, the UV screen retractor means having a second spring loaded roller means, the second spring loaded roller means attached to the UV screen such that when the UV screen is

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released from the open position, the second spring means retracts the UV screen to a closed position;

the shade screen retractor means and the UV screen retractor means are enclosed in a single housing assembly, the housing assembly having means to attach to the first or second support sections such that the shade screen can be selectably mounted above the UV screen or the UV screen can be selectably mounted above the shade screen;

the second end of the shade screen having a positioning dowel attached to its end such that the shade screen positioning dowel can be used to adjust the height of the shade screen by moving the shade screen positioning dowel to a different aperture; and

the second end of the UV screen having a positioning dowel attached to its end such that the UV screen positioning dowel can be used to adjust the height of the UV screen by moving the UV screen positioning dowel to a different aperture.

5,601,107

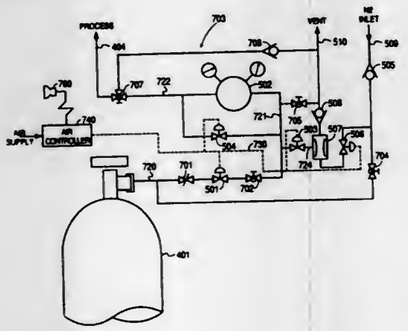
AUTOMATED PROCESS GAS SUPPLY SYSTEM FOR EVACUATING A PROCESS LINE

Gary M. Moore, San Jose, and Richard S. Pairish, San Ramon, both of Calif., assignors to Moore Epitaxial, Inc., San Jose, Calif.

Continuation of Ser. No. 109,191, Aug. 19, 1993, Pat. No. 5,417,236, which is a division of Ser. No. 860,915, Mar. 31, 1992, Pat. No. 5,240,024. This application May 18, 1995, Ser. No. 444,329

Int. Cl.[6] F16K *17/36*

U.S. Cl. 137—15 **7 Claims**



1. A method for operating a gas supply system comprising:

establishing a flow of a process gas to a process line through said gas supply system during normal operations; and thereafter,

stopping the flow of said process gas through said gas supply system to said process line upon the occurrence of a predetermined abnormal event; and

evacuating said process gas from said process line through said gas supply system upon the occurrence of said predetermined abnormal event.

5,601,108

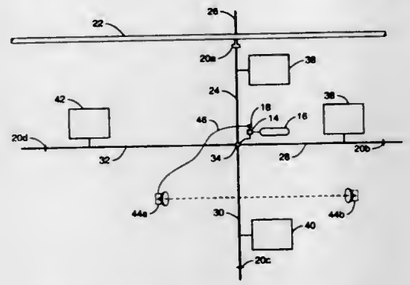
GAS LINE SAFETY EVACUATION APPARATUS AND METHOD

Scott M. Perry, P.O. Box 1778, Colfax, Calif. 95713, assignor to Scott M. Perry, Colfax; Georgia Carole, Valley Center; Elleen Gegax; Frank Gegax, both of San Diego, and Raymond J. Patterson, Valley Center, all of Calif.

Filed Dec. 20, 1995, Ser. No. 578,062

Int. Cl.[6] F16K *17/36*

U.S. Cl. 137—15 **20 Claims**



1. A fluid line evacuation apparatus, comprising:

(a) monitoring means for detecting hazardous disruptive events;

(b) means for evacuating flammable hydrocarbon fluid from fluid lines, said fluid lines communicating with at least one building, said fluid lines external to said building, said evacuating means responsive to said monitoring means; and

(c) storage means for holding said flammable hydrocarbon fluid removed from said fluid lines by said evacuating means.

5,601,109

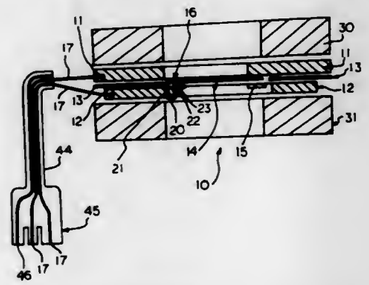
FLUID FLOW MONITOR

Scott Muddiman, Burlington, Canada, assignor to Process Equipment Limited, Burlington, Canada

Filed Mar. 15, 1995, Ser. No. 404,436

Int. Cl.[6] F16K *17/40;37/00*

U.S. Cl. 137—68.18 **10 Claims**



1. In a fluid monitor comprising

first and second electrically conductive annular support members in axial alignment;

an electrically insulating annular member between said support members;

a first connecting means on said first support member and a second connecting means on said second support member, the first and second connecting means being diametrically spaced on the support members;

an electrically conductive member extending between said first and second connecting means and releasably connected thereto;

electrical connection means on each of said support members; and

the improvement comprising one of said electrically conductive annular support members having a larger internal diameter and a smaller external diameter than the other.

5,601,110

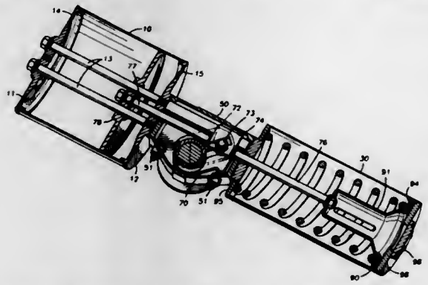
MODULE LOCKING DEVICE

Michael E. Rembert, Cypress, and Robert W. Milner, Katy, both of Tex., assignors to Bettis Corporation, Waller, Tex.

Filed Sep. 11, 1995, Ser. No. 526,353

Int. Cl.[6] F16K *43/00;* **F01B** *29/00;31/00*

U.S. Cl. 137—316 **6 Claims**



1. An improved spring return module, for use in a valve actuator, said module including:

a spring cylinder having opposed end covers;

coil spring means seated against one of said spring cylinder end covers and against a spring guide mechanism;

said spring guide mechanism including a seat for said coil spring means and said mechanism being movable between a valve-open first position and a no-spring-load second position, said spring guide mechanism having an intermediate valve-closed third position, said coil spring when under load, biasing said spring guide toward said second position, and further including means for releasably receiving a reciprocating pull rod;

a reciprocating pull rod;

combination means for preventing disengagement of said reciprocating pull rod and said spring guide mechanism when said coil spring is under load and allowing disengagement when not under load, said combination means comprising;

cooperative male and female fastener means, respectively provided said rod and spring guide for preventing relative rotation between said rod and said spring guide mechanism when said spring is under load; and

means for facilitating movement of said spring guide mechanism from said third position to said second position whereat said disengagement may occur and wherefrom safe disassembly may be accomplished.

5,601,111

METHOD FOR AUTOMATICALLY CIRCULATING AND THEN HALTING CIRCULATION OF WASTEWATER IN A WASTEWATER PUMP STATION, AND A VALVING DEVICE THEREFORE

Bengt Sodergard, Upplands Vasvby, Sweden, assignor to ITT Flygt AB, Solna, Sweden

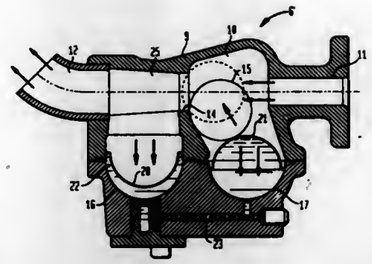
Continuation of Ser. No. 229,969, Apr. 19, 1994, abandoned. This application Jul. 17, 1995, Ser. No. 502,876

Int. Cl.[6] F04B *1/00*

U.S. Cl. 137—498 **5 Claims**

1. A valving device, comprising:

a housing having an inlet chamber and an outlet chamber formed therewithin, said inlet chamber being larger than said outlet chamber;



means for admitting a pressured fluid into said inlet chamber, and for discharging said pressured fluid from said outlet chamber along a given flow path;

detached means within said inlet chamber movable from a first position thereof remote from said flow path, to a second position thereof intrusive of said flow path for preventing fluid flow through said inlet chamber and outlet chamber; and

means within said inlet chamber and outlet chamber, responsive to differential fluid pressure between said inlet chamber and outlet chamber, for moving said detached means from said first position thereof to said second position, and said detached means, in absence of said pressured fluid, moves from said second position to said first position by gravity.

5,601,112

CHECK VALVE

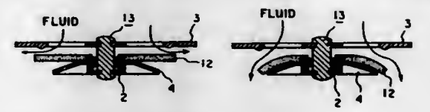
Mutsuo Sekiya; Hirofumi Doi; Takakazu Tochimoto, and Masashi Wakisaka, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 13, 1995, Ser. No. 387,597

Claims priority, application Japan, Oct. 4, 1994, 6-240173

Int. Cl.[6] F16R *15/14*

U.S. Cl. 137—512.15 **4 Claims**



1. A check valve, comprising:

a) a cylindrical hollow case (5,6) through which fluid can pass;

b) a valve seat (3) having an outer peripheral edge supported by an inner wall of said hollow case to separate an inner space of said hollow case into an upstream space and a downstream space, a communicating hole (30) being provided in said valve seat to establish communication between said upstream space and said downstream space within said hollow case;

c) a flexible valve element (12) mounted downstream of said valve seat;

d) spring means (2) having one end engaging only a central portion of said valve element for urging said valve element in a direction of said valve seat so as to block said communicating hole in said valve seat when no fluid pressure is applied to said valve element from said upstream space, via said hole; and

e) valve element guiding and supporting means (4,11,13) distinct from the spring means for supporting said valve element such that said valve element, in an undeformed state, is movable in an axial direction to partially open the valve in response to a first magnitude (ΔP_1) of fluid pressure, and for restricting a range of further movement of said valve element such that said valve element can deform to reach a fully open position of the valve when the fluid pressure exceeds said first magnitude,

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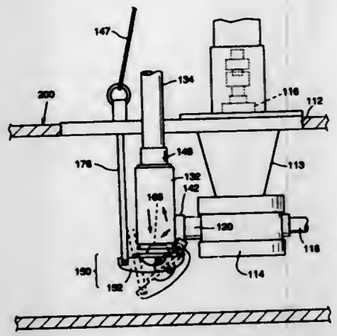
wherein said guiding and supporting means includes a shaft (13) coupled at one end with said valve seat and extending in said axial direction, and a bushing (11) fitted onto said shaft, slidable therealong, and coupled with said valve element, and wherein the guiding and supporting means further includes a deformation limiting stopper (4) coupled with another, opposite end of the shaft, and another, opposite end of the spring means engages a central portion of the stopper.

5,601,113

HOT VALVE FOR SUBMERGED PUMP SYSTEM

Leslie J. M. Cleasby, Novato, Calif., assignor to Cleasby Manufacturing Company, Inc., San Francisco, Calif.

Filed Feb. 17, 1995, Ser. No. 390,086
Int. Cl.[6] F16K *1/20*
U.S. Cl. 137—568 **19 Claims**



1. A hot valve for immersion into a hot melting kettle wherein a pump circulates a substance within the kettle and pumps the substance out of the kettle through a discharge pipe having a cross-sectional area, and wherein the pump includes an output port within the kettle, the hot valve comprising:

a surge chamber in fluid communication with the discharge pipe, the surge chamber including a cross-sectional area greater than the cross-sectional area of the discharge pipe and further including an inlet in fluid communication with the output port of the pump and a circulation outlet open to the interior of the kettle, the surge chamber having a discharge outlet fluidly coupled with the discharge pipe, the surge chamber and discharge pipe arranged such that a flow path extends from the output port of the pump, through the surge chamber, and into the discharge pipe; and

a valve having a valve seat moveable between a closed condition at least partially obstructing the circulation outlet of the surge chamber and an opened condition in which the valve seat is outside of and spaced from the circulation outlet of the surge chamber; and

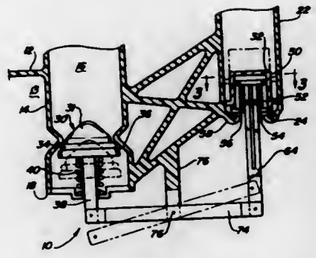
actuating means for moving the valve between the closed and open conditions.

5,601,114

FUEL TANK VALVE ASSEMBLY

Sean P. Hummel, Howell, Mich., assignor to Pilot Industries, Inc., Dexter, Mich.

Filed Feb. 2, 1996, Ser. No. 594,637
Int. Cl.[6] F02M *31/06*; B65B *31/06*
U.S. Cl. 137—588 **7 Claims**



1. A valve assembly for use in conjunction with a fuel tank having a fill neck and a vent conduit, said fill neck defining a passageway having one end open to said fuel tank and a second end adapted to receive fuel, said vent conduit having one end open to said fuel tank and a second end forming a vent opening, a valve assembly comprising:

a fuel valve fluidly positioned in series with said fill neck passageway, said fuel valve movable along a first axis from a closed position to an open position in response to fuel flow through said fill neck passageway,

a vent valve fluidly positioned in series with said vent conduit, said vent valve movable along a second axis between an open and a closed position, said first and second axes being spaced apart and parallel to each other,

means for connecting said fuel and vent valves together so that said valves move in unison between their respective open and closed positions, said connecting means comprising an elongated link having one end connected to said fuel valve and a second end connected to said vent valve, said link having a mid point connected to said fill neck, said link extending in a direction transverse to said first and second axes,

means for urging said fuel and vent valves towards their respective closed positions,

wherein said vent valve further comprises an actuator and a valve member, said actuator being connected to said connecting means, said valve member having an annular surface which sealingly engages a seat on said vent conduit when said vent valve assembly is in said closed position, and resilient means for connecting said actuator to said valve member so that said valve member remains in said closed position despite movement of said actuator within predefined limits.

5,601,115

MULTIPORT SAMPLING VALVE

Arthur B. Broerman, Bartlesville, Okla., assignor to Vantage Technologies, Inc., North Branch, N.J.

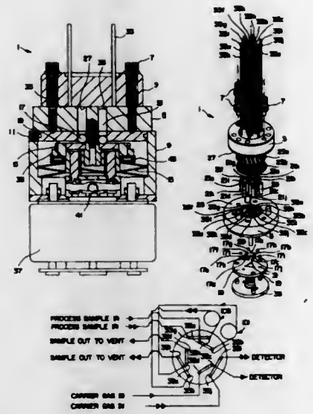
Filed May 31, 1995, Ser. No. 454,681
Int. Cl.[6] F16K *11/10*
U.S. Cl. 137—595 **19 Claims**

1. A multiport valve comprising (A) a plunger body having a first, flat face and a second, flat face, (B) a detent plate; (C) a flat surface abutting the first, flat face of the plunger body; (D) at least one diaphragm inserted between the first, flat face of the plunger body and the flat surface abutting the first, flat face of the plunger body covering the area therebetween; (E) a multiplicity of plungers and (F) a multiplicity of spherical bodies wherein:

(1) the first, flat face of the plunger body comprises at least two circular grooves with the grooves pierced at equal intervals by a multiplicity of cylindrical, plunger passages with each, plunger passage (a) passing through the plunger body to the opposing, second, flat face, (b) retaining therein a plunger and (c) retaining partially therein a spherical body;

(2) the surface abutting the grooved, first, flat face of the plunger body includes transport tubing openings aligned at equal intervals in at least two circular patterns concentric with and having the same diameter as a circular groove of the plunger body and with openings aligned between the plunger passages of the plunger body; and

(3) the detent plate (a) comprises a flat face having indentions, half the number as the number of transport tube openings,



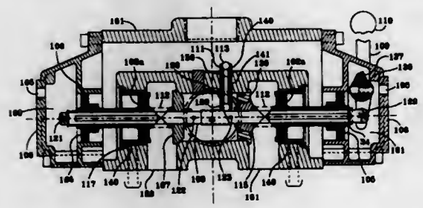
therein aligned at equal intervals in at least two circular patterns concentric with and having the same diameter as the circular grooves; (b) is held in position with the flat face of the detent plate facing the second, flat face of the plunger body so that the flat face of the detent plate holds each spherical body in sufficient, rollable tension in a retaining, plunger passage against a plunger to seal the diaphragm at the opposing end of the plunger against the surface abutting the grooved, first, flat face of the plunger body; and (c) is rotatable around an axis designated by a line joining the centers of the circles described by the two circular grooves and the circular patterns of indentations so that on partial rotation of the detent plate, the spherical bodies providing tension on a portion of the plungers in the same groove simultaneously come to rest in indentations thereby allowing relaxation of the sealing of the diaphragm by this portion of the plungers against the abutting surface.

5,601,116

AIR WINCH CONTROL VALVE

Leslie J. Sell, Bothell, Wash., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Division of Ser. No. 301,082, Sep. 6, 1994, Pat. No. 5,558,125.
This application May 20, 1996, Ser. No. 650,496
Int. Cl.[6] F16K *11/16*
U.S. Cl. 137—625.27 **5 Claims**



1. A directional air valve comprising:

a valve body having a valve bore formed longitudinally therethrough;

a pressurized air supply chamber within said valve body and accessing each longitudinal end;

an exhaust port accessing said bore intermediate said each longitudinal end;

a reciprocating longitudinal shaft disposed within said valve bore having a diameter less than said valve bore;

an opposed pair of poppet valve members disposed at each longitudinal end of said valve bore intermediate said pressurized air supply chamber and said exhaust port;

each of said poppet valve members cooperating with a valve seat formed in said bore to effect control of supply of pressurized air and exhaust to and from an air motor;

a means for longitudinally reciprocating said longitudinal shaft;

a work supply port accessing said valve bore intermediate one of said opposed pair of poppet valve members;

a return port accessing said valve bore intermediate a second of said opposed pair of poppet valve members;

the function of said work supply port and said return port being interchangeable;

said poppet valve members being disposed for selective longitudinal reciprocation along said longitudinal shaft; and

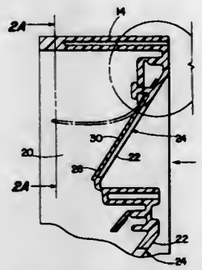
each pair of poppet valves is provided with a pressure compensating piston external of said pair of poppet valves and said longitudinal bore.

5,601,117

FLAP-TYPE PRESSURE RELIEF VALVE

Jeffrey C. Lewis, Rochester Hills, and James F. Fleck, Warren, both of Mich., assignors to TRW Inc., Cleveland, Ohio

Filed Feb. 21, 1995, Ser. No. 393,130
Int. Cl.[6] F16K *15/14*; B60H *1/26*
U.S. Cl. 137—855 **12 Claims**



1. In a flap-type pressure relief valve including a frame defining a flow passage and a flap valve element positioned to overlie the flow passage, the improvement comprising:

retainer pins extending from the frame through openings in a peripheral edge of the flap valve element; and,

a retainer bar pivotally joined with the frame at a first edge and cooperating with the retaining pins at a second edge to overlie a peripheral edge of the flap valve element and retain the valve flap element on the retainer pins.

5,601,118

DISCHARGE VALVE APPARATUS OF COMPRESSOR

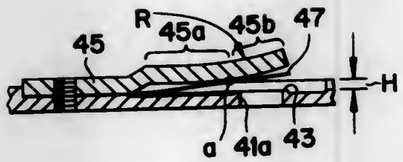
Geun-Sik Jang, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Rep. of Korea

Filed Aug. 9, 1995, Ser. No. 513,023
Claims priority, application Rep. of Korea, Jun. 3, 1995, 95-12621 U
Int. Cl.[6] F16K *15/14*
U.S. Cl. 137—856 **5 Claims**

1. In a compressor for compressing refrigerant, and discharging the compressed refrigerant through a discharge hole formed in a plate of the compressor and controlled by a discharge valve apparatus, the discharge valve apparatus comprising:

a reed normally assuming a closed state closing said discharge hole, and being yieldable against compressed refrigerant of a predetermined pressure;

an elastic spring overlying said reed for imposing a restoring force to said reed, said spring including an inner anchored



end, and a movable portion extending outwardly from said anchored end, and terminating at a free end of said spring; and

a valve stopper overlying said spring for limiting the extent of travel of said reed and movable spring portion in a hole-opening direction, said valve stopper comprising:

and inner anchored end,

an outer free end, and

a surface extending outwardly from said anchored end to said free end of said stopper, said surface facing said plate and disposed at a distance therefrom,

an outer section of said surface arranged to overlie said hole, said surface configured to be contacted by a portion of said spring disposed between said anchored and free ends of said spring, said contact occurring at a location on said surface between said anchored and free ends of said stopper, said outer section of said surface being convexly curved such that a distance between said outer section and said hole gradually increases toward said free end of said stopper to maintain a spacing between said outer section and a free end of said spring during opening of said hole,

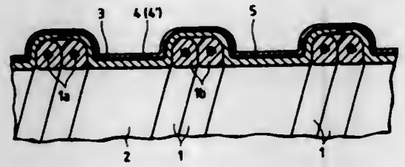
an inner section of said surface extending from said anchored end of said stopper to said contact location being recessed away from said plate sufficiently to avoid being contacted by said spring during opening of said hole, said inner section being flat and spaced from said plate by a uniform distance to limit the opening travel of the discharge reed.

5,601,119

HOSE INCLUDING REINFORCING THREADS AND METHOD OF PRODUCING THE SAME

Shiro Kanao, 9-18, Nanpeidai 4-chome, Takatsuki-shi, Osaka, Japan

Filed Dec. 9, 1993, Ser. No. 163,719
Claims priority, application Japan, Dec. 9, 1992, 4-352612
Int. Cl.[5] F16L *11/118*
U.S. Cl. 138—133 **6 Claims**



1. A hose including reinforcing threads, comprising:

a plurality of coated conductive wires spirally wound with a predetermined pitch, wherein one pitch is defined as a distance between adjoining coated conductive wires;

an inner wall forming a pipe wall, said inner wall being formed of a spirally wound band material, said band material being wound with a width equal to plural pitches of said coated conductive wires thereby to increase a winding efficiency and facilitate a winding operation, said inner wall being bonded to said coated conductive wires;

a plurality of reinforcing threads disposed in a corrugated state on outer surfaces of said inner wall and said coated conductive wires along a pipe axis direction with a suitable interval in a circumferential direction; and

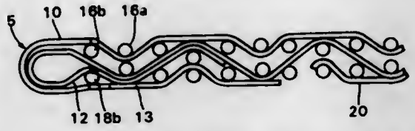
an outer wall formed at an outside of said reinforcing threads and which is bonded to said inner wall, said outer wall including a portion over said coated conductive wires protruding outward so that said outer wall is spirally corrugated, wherein said outer wall is formed of a plurality of synthetic resin band materials spirally wound for every pitch of said coated conductive wires.

5,601,120

PIN SEAM WITH DOUBLE END LOOPS AND METHOD

Stephanie Kuckart, Selterschlag; Gisela Fickers, Windmühlenweg, and Ernst Schröder, Rotterweg, all of Belgium, assignors to Asten, Inc., Charleston, S.C.

Filed Jan. 30, 1996, Ser. No. 594,267
Int. Cl.[6] D03D *13/00;15/00*
U.S. Cl. 139—383 AA **27 Claims**



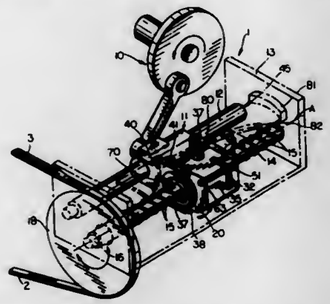
1. A papermakers fabric comprising a woven fabric body having opposing ends, said fabric body having a system of MD yarns interwoven with a system of CMD yarns; on each end of the fabric, at least some of said MD yarns forming a first series of end loops; and a second series of loops formed concentric with at least some of said first series loops to define with said first series loops, double end loops on at least one end of said fabric for facilitating seaming the fabric ends together.

5,601,121

DEVICE FOR CONTROLLING THE GRIPPER STRAPS ON LOOMS

Carlo Bonacina, Niblonno, Italy, assignor to Intrapatent Limited, Dublin, Ireland

PCT No. PCT/EP93/02955, § 371 Date Jun. 20, 1995, § 102(e) Date Jun. 20, 1995, PCT Pub. No. WO94/10363, PCT Pub. Date May 11, 1994
PCT Filed Oct. 25, 1993, Ser. No. 424,287
Claims priority, application Italy, Oct. 23, 1992, CO92A0014
Int. Cl.[6] D03D *47/12*
U.S. Cl. 139—449 **8 Claims**



1. A device (1) for controlling at least one gripper strap (2) on continuous weft feed looms, comprising:

a connecting rod-crank drive mechanism (10) for controlling translation of a slide (11) along a straight path defined by fixed guide means (12,13);

a worm screw (14) parallel to said path and mounted in an idleable manner on a fixed support (13) integral with said guide means, said worm screw (14) being fitted to a pinion (18) controlling at least one gripper strap (2); and

a nut screw (20) in a nut screw body (35) associated said slide (11) and having worm screw reading means (21) for engaging and rotating said worm screw (14) as a consequence of said translation of said slide (11) along said path, said nut screw (20,35) comprising at least two half elements (30) each having said worm screw reading means (21) said half elements being adapted to be adjustable relative to said worm screw (14) in order to maintain a desired level of slack; wherein:

(i) said at least two half elements (30) are mounted within the slide (11) so as to be movable relative to each other along an axis (A) of said worm screw; and

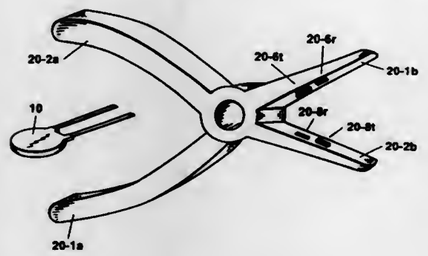
(ii) first cam means (32) fitted one of to said slide (11) and said nut screw body (35) surrounding said elements (30) for relatively displacing in opposite directions said half elements (30) of said nut screw (20) such that any undesired level of slack between worm screw threads (15) and said reading means (21) is taken up.

5,601,122

DUAL MODE SINGLE DEVICE DUAL ACTION LEAD FORMING TOOL

Robert C. Beauchesne, Brockton, Mass., assignor to Bull HN Information Systems Inc., Billerica, Mass.

Filed Jul. 27, 1995, Ser. No. 508,199
Int. Cl.[6] B21F *45/00*
U.S. Cl. 140—106 **14 Claims**



1. A tool for forming the leads of a component having menicus on portions thereof which is to be mounted vertically on a printed circuit board, said tool comprising:

a long nose plier body having two major pieces, each piece having jaw element portion with a flat working surface and a handle portion, the pieces being pivotally connected by a pivot so that as the two handle portions are squeezed toward each other, the jaw portions come together placing the flat working surfaces in contact, each jaw element flat work surface containing:

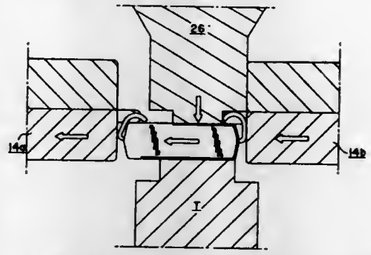
a set of lead forming elements consisting of a forming tooth element and a forming receptacle element positioned adjacent to each other in a predetermined order, the predetermined order of the lead forming elements of one set being opposite to the predetermined order of lead forming elements of the other set so that when the jaw element portions are closed, pairs of like positioned forming tooth and forming receptacle elements of the sets cooperate together to bend both leads of the component placed across the working surfaces of the jaw element portions into a desired configuration in a single operation for preventing any lead meniscus from coming in contact with the printed circuit board when the component is vertically mounted on the board.

5,601,123

SOJ REFORMING AND RECONDITIONING METHOD AND APPARATUS

Frank V. Linker, Sr., Springfield, and Tim Claffey, Glen Mills, both of Pa., assignors to American Tech Manufacturing Corporation, Glenolden, Pa.

Continuation of Ser. No. 48,666, Apr. 16, 1993, Pat. No. 5,431,197. This application Mar. 16, 1995, Ser. No. 405,526
The portion of the term of this patent subsequent to Apr. 16, 2013, has been disclaimed.
Int. Cl.[6] B21F *45/00*
U.S. Cl. 140—147 **11 Claims**



1. A method for reconditioning leads of a device having a body portion with at least one planar face disposed in a predetermined plane and at least one row of generally J-shaped leads extending angularly from the body portion comprising the steps of:

supporting the device between an anvil having reforming surfaces and a support surface; and

displacing at least one slide assembly and anvil relative to one another in the general direction of said predetermined plane to reform the leads to conform to predetermined peak-to-peak and coplanarity parameters.

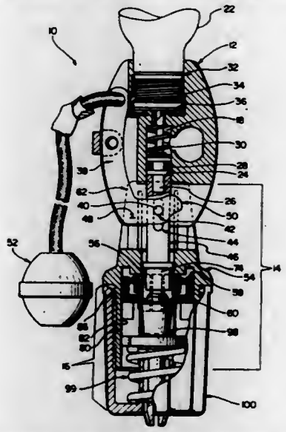
5,601,124

AUTOINFLATOR WITH APERTURED HOUSING

Jacek M. Weinheimer, Treasure Island, and Lyman W. Fawcett, Jr., St. Petersburg, both of Fla., assignors to Halkey-Roberts Corporation, St. Petersburg, Fla.

Filed Feb. 7, 1995, Ser. No. 385,040
Int. Cl.[6] B63C *9/24*
U.S. Cl. 141—19 **15 Claims**

1. A gas inflator for an inflatable article, the inflator being



selectively operable either manually or automatically upon its subjection to water, comprising in combination:

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an inflator body, said inflator body having a means for attaching a gas-containing capsule to said body, a piercing pin having a rear end portion, whereby said piercing pin is movable in said inflator body toward said capsule, a manual operating means acting on the said rear end portion of said piercing pin to thrust said piercing pin towards said capsule;

an intermediate pin, said intermediate pin having a rearward end portion, a forward circular cylindrical portion, and a flange therebetween, whereby said forward circular cylindrical portion has a forward end, said intermediate pin being aligned with said piercing pin whereby said forward end confronts and is selectively adapted to engage said rear end portion of said piercing pin;

a circular cylindrical actuator body, said actuator body having a means for securing said actuator body to said inflator body, a central bore for receiving said rearward end portion of said intermediate pin, a body flange that engages said flange of said intermediate pin, a thin-walled skirt, said thin-walled skirt having external threads, an internal surface, and a plurality of guide grooves on said internal surface, and opposing apertures positioned upward from said skirt, said opposing apertures having a bottom internal surface that slopes downward so to thereby promote the flow of water splashes away from air passages located in the back of said apertures, said apertures allowing air and water to pass through to the internal surface of said skirt when completely immersing said inflator under water, while at the same time preventing mere water splashes from passing through to the internal surface of said skirt and prematurely activating the automatic inflator;

a longitudinally centrally extending actuator pin, said actuator pin having a circular flat head portion, wherein said flat head portion includes a back side, a front side, and a pair of radially protruding opposed edge tabs, a circular cylindrical stem portion longitudinally centrally extending from said back side of said circular flat head portion, an actuator head longitudinally centrally protruding from said front side of said circular flat head portion, said actuator head having an engaging end, and a guide nipple, said engaging end and guide nipple being received by said releasable blocking means, said pair of radially protruding opposed edge tabs thereby engaging said plurality of guide grooves on said internal surface of said thin-walled skirt to prevent the actuator pin and releasable blocking means from twisting relative to each other when assembling said automatic inflator;

a cylindrical cap, said cap having internal screw threads, a closed end having an internal end surface, an internal cylindrical boss, a boss end lip protruding radially inward, and a boss end lip groove to allow flexibility in said boss end lip, whereby said internal cylindrical boss is concentrically extending from said internal end surface about the longitudinal axis of said cap; and

a coil compression spring, whereby said coil compression spring has an internal diameter significantly larger than the external diameter of said cylindrical boss so as to facilitate the concentrical positioning of said compression spring around said cylindrical boss in said cap, said compression spring being positioned between said closed end of said cap and said back side of said flat head portion of said actuator pin, said actuator pin being secured to said end surface of said cap,

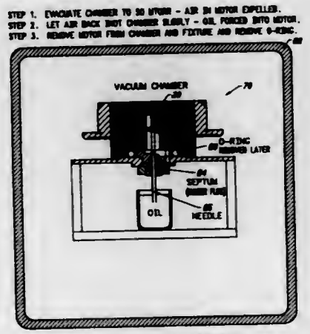
said cap being threadedly engaged with said thin-walled skirt on said cylindrical actuator body thereby compressing said compression spring between said internal end surface of said cap and said flat head portion of said actuator pin, whereby said actuator pin is forcibly thrust toward said intermediate pin by said compression spring when said releasable blocking means is subjected to water and releases said actuator head, said intermediate pin thereby being thrust toward said piercing pin and forcing said piercing pin to pierce said capsule.

5,601,125

VACUUM FILL TECHNIQUE FOR HYDRODYNAMIC BEARING

Norbert S. Parsoneault, and Clinton A. Stark, both of Watsonville, Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Jul. 18, 1995, Ser. No. 503,568
Int. Cl.[6] B65B *31/00*
U.S. Cl. 141—51 **7 Claims**



VACUUM FILL TECHNIQUE DESCRIPTION

1. An improved method for filling a hydrodynamic bearing with liquid comprising the steps of establishing an air-tight seal around the entire bearing volume, establishing a pathway from a source of liquid into the hydrodynamic bearing, placing the bearing and liquid in a vacuum chamber, evacuating the vacuum chamber to a sufficiently low pressure that the air within the bearing will expand and exit through the pathway and through the liquid, slowly returning the ambient pressure surrounding the bearing and liquid to ambient pressure, and removing the pathway into the hydrodynamic bearing, leaving the bearing filled with liquid.

5,601,126

VESSEL FOR TRANSFERRING AND DISPENSING LIQUID

Michael W. Schrepfer, Elk Grove Village, and Lee A. Schoon, Downers Grove, both of Ill., assignors to UOP, Des Plaines, Ill.

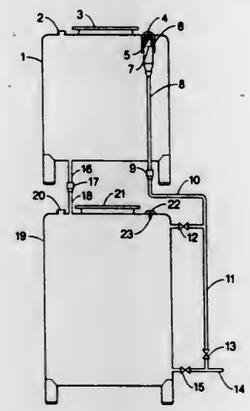
Continuation-in-part of Ser. No. 223,940, Apr. 5, 1994, abandoned. This application Dec. 12, 1994, Ser. No. 354,195
Int. Cl.[6] B65B *1/04*
U.S. Cl. 141—59 **7 Claims**

7. A method for transferring liquid from an upper vessel containing said liquid to a lower vessel containing gas while simultaneously recovering essentially all of said gas from said lower vessel in said upper vessel wherein said method comprises:

(a) flowing said liquid from a lower locus of said upper vessel via a first conduit in communication with said upper vessel and said lower vessel into said lower vessel;

(b) flowing said gas from an upper locus of said lower vessel via a second conduit which enters a lower locus of said upper vessel and transports said gas upwardly through at least about 80% of the vertical height of said upper vessel; and,

(c) flowing said gas from an upper terminal end of said second conduit and through a circuitous path defined by said upper terminal end of said second conduit in cooperation with a cylindrical baffle connected to and extending downwardly from an upper surface of said upper vessel and coaxially



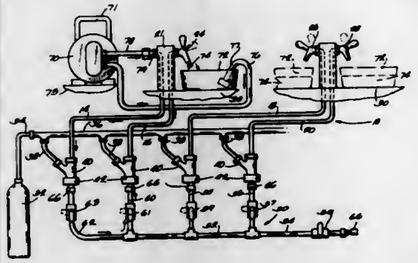
surrounding the terminal end of said second conduit to define an annular space.

5,601,127

BEVERAGE DISPENSER CLEANING SYSTEM

Scott A. Hanson, 2032 County Road A, Neenah, Wis. 54956

Filed Aug. 16, 1995, Ser. No. 515,713
Int. Cl.[6] B65B *1/04;3/04*
U.S. Cl. 141—91 **4 Claims**



1. A system for cleaning or sanitizing beverage dispensing equipment which includes a plurality of beverage sources each connected to a dispensing tap by means of a connecting conduit removably coupled to one of said sources and said tap comprising;

a manifold having a manifold body with a plurality of flexible hoses attached thereto, each of said hoses having a first end in fluid flow connection with said manifold body and a second end provided with a fitting adapted to be connected to one of said connecting conduits when disconnected from its beverage source,

a source of solution for cleaning or sanitizing said taps and said connecting conduits,

a pump connected by an inflow hose to said source of solution and connected to an outflow hose, said outflow hose having an output end with a fitting adapted to be connected in fluid flow communication to one of said connecting conduits when disconnected from one of said beverage dispensing taps,

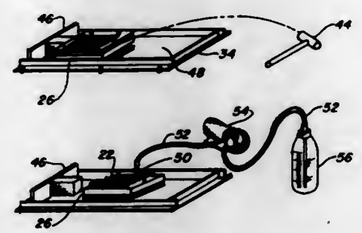
whereby said cleaning/sanitizing solution can be circulated from said source through said one tap to said manifold and outward through said connecting conduits to the others of said plurality of taps.

5,601,128

AMPULE BREAKING METHOD AND APPARATUS

Charles F. Furphy, 2136 Via Teca St., San Clemente, Calif. 92673

Filed Sep. 5, 1995, Ser. No. 523,587
Int. Cl.[6] B65D *83/00*
U.S. Cl. 141—98 **14 Claims**



3. An ampule breaking apparatus for simultaneously breaking the necks of a plurality of medication containing ampules comprising:

an ampule holder, having a plurality of bores therein in the same relative position as an ampule shipping container, and an upright ampule occupying each bore, also a plurality of upstanding keeper posts positioned on top of the holder near an outside edge,

a shear plate, having neck receiving holes, riding over the ampule necks slideably disposed upon the keeper posts,

a mallet for striking the shear plate and breaking off the ampule necks simultaneously, a tray having a flat bottom and raised sides for receiving the ampule holder and collecting the ampule necks when broken by the mallet striking the shear plate, and

a T-shaped sweep slideably positioned within the tray on the bottom permitting the holder to rest thereupon when the shear plate is hit, also providing a blade to clear away broken necks and debris created by simultaneously opening the enclosed ampules.

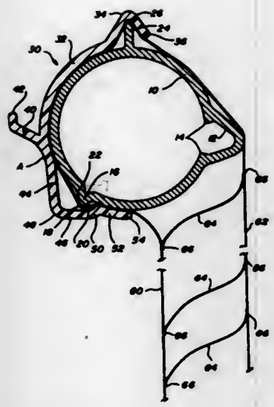
5,601,129

ROLLER AND CLIP FOR MOUNTING A FLEXIBLE MATERIAL

Wendell B. Colson, Boulder, and Terry L. Akins, Louisville, both of Colo., assignors to Hunter Douglas Inc., Upper Saddle River, N.J.

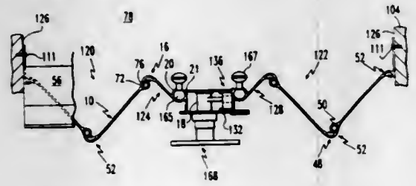
Continuation of Ser. No. 921,021, Jul. 29, 1992, Pat. No. 5,456,304, which is a continuation-in-part of Ser. No. 717,284, Jun. 20, 1991, Pat. No. 5,320,154, which is a continuation-in-part of Ser. No. 626,916, Dec. 13, 1990, abandoned. This application Jan. 9, 1995, Ser. No. 370,025
Int. Cl.[6] A47H *13/00*
U.S. Cl. 160—121.1 **6 Claims**

1. A roller for supporting and storing a flexible fabric light control material, said roller adapted to cooperate with an auxiliary clip that secures said fabric to said roller and defines with the roller a plurality of spaced apart ribs for supporting said material rolled thereon to preclude wrinkling and creasing thereof, said roller comprising a cylindrical tube defining an outer surface, a longitudinally extending material supporting primary rib projecting outwardly from said surface and being generally V-shaped in cross-section and having an outer rounded apex, and a pair of spaced apart outwardly extending longitudinally extending secondary clip engaging ribs spaced from said v-shaped rib on said surface, one of



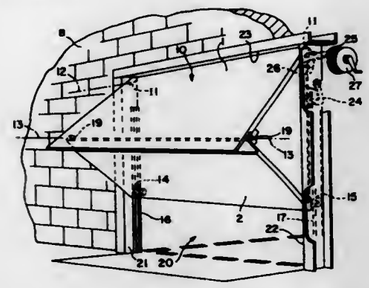
said secondary ribs being a flat plate rib having a tapered and rounded outer edge.

5,601,130
SHUTTER BLADE, ASSEMBLY AND METHOD
Robert I. Werner, Northbrook; Gennady Z. Plavnik, Buffalo Grove, both of Ill.; Eric C. Horne, and Fred L. Murrin, both of Greenville, Pa., assignors to Werner Co., Greenville, Pa.
Filed May 18, 1994, Ser. No. 245,709
Int. Cl.[6] E06B *3/48*
U.S. Cl. 160—183 **12 Claims**



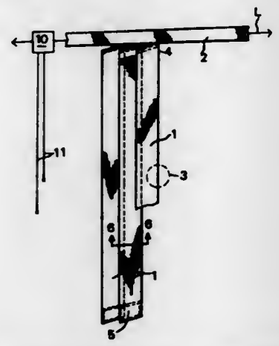
1. A shutter blade assembly comprising:
a track mechanism; and
a shutter blade screen comprising a plurality of shutter blades foldably connected in series and movably connected to the track mechanism, each shutter blade comprising a center portion having a receiving end and a hooking end, said receiving end having a first opening and a second opening adjacent to but separate from said first opening, said first opening connecting with a hooking end of another shutter blade, said shutter blade contacting the track mechanism through said second opening, said second opening being of hemispherical shape, said first opening is defined by a first opening surface and the hooking end has a surface, and a common wall between the first opening and the second opening, the side of the common wall which defines part of the first opening surface has a first valley and at least a second valley and a third wall therebetween, said first opening surface being of opposite shape as the hooking end surface so the hooking end surface fits into and conforms with the first opening surface and there are essentially no gaps therebetween when the hooking end of another shutter blade and the first opening surface are in a folded state.

5,601,131
CANOPY-FORMING DOOR
Drew W. Morris, P.O. Box 10111, Greenville, S.C. 29603
Filed Jan. 2, 1996, Ser. No. 582,216
Int. Cl.[6] E05D *15/26*
U.S. Cl. 160—207 **6 Claims**



1. A door for covering an opening when in a closed position, said opening being defined by a structure having a first side wall, said door comprising:
a first panel hinged to said structure;
a second panel hinged to said first panel;
said first and second panels overlapping when said door is in said closed position;
said first panel extending horizontally beyond said second panel when said door is in an opened position;
a first guiding member communicating with a side of said second panel; and
a first track mounted to said first side wall accommodating said first guiding member,
whereby upon upwardly moving said first panel or said second panel, said first panel and said second panel form a canopy over said door opening.

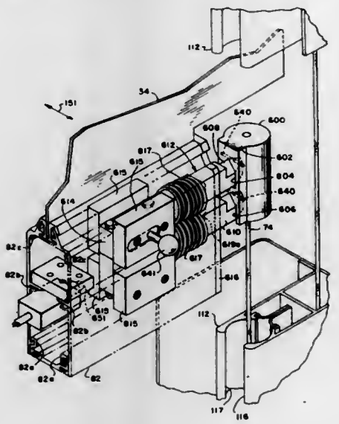
5,601,132
VERTICAL BLINDS AND METHOD FOR MAKING THE SAME
Carolyn Goodman, 48 Farrwood Dr., Andover, Mass. 01810
Filed Feb. 1, 1995, Ser. No. 390,366
Int. Cl.[6] E06B *3/12*
U.S. Cl. 160—236 **20 Claims**



1. A fused multilayer vertical blind (1) comprising:
a pliable backing member (7);
a first fabric (6) being attached to a first surface of said backing member to provide a sturdy yet pliable and supple blind; and

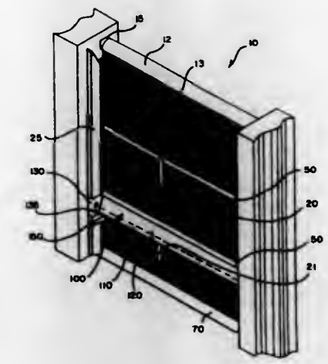
a fray stopping material being applied at least along exposed outwardly facing longitudinal edge portions of at least said first fabric (6) to prevent undesired fraying of said fabric therealong.

5,601,133
ROLL-UP DOOR
LeRoy G. Krupke, Carrollton; Douglas R. Fuller, Garland; Dennis A. Kaigren, Richardson, and Anthony J. Sheltou, Garland, all of Tex., assignors to Overhead Door Corporation, Dallas, Tex.
Continuation-in-part of Ser. No. 414,580, Mar. 31, 1995. This application May 16, 1995, Ser. No. 441,816
Int. Cl.[6] A47G *5/02*
U.S. Cl. 160—265 **6 Claims**



1. A roll-up door for forming a barrier across a doorway comprising:
rotatable shaft means having a flexible closure mounted thereon to be rolled and unrolled to form a movable closure for said doorway;
spaced apart guide means disposed generally at opposite sides of said doorway; and
latch means disposed at opposite sides of a bottom edge of said closure for latching said closure to respective ones of said guide means for linear traversal along said guide means, said latch means comprising a first member comprising a slide member supported in said guide means for linear traversal therealong and a second member supported on said closure and cooperable with said first member to releasably latch said bottom edge of said closure to said guide means, said second member comprising a latch member projecting into a slot formed in said slide member, cooperating retaining means on said members of said latch means, respectively, for latching said closure to said guide means, said latch means being operable to provide disconnection of said bottom edge of said closure from said guide means in response to a force acting on said closure generally transversely with respect to the plane of said closure, said latch member being cooperable with cam surfaces defining said slot in said slide member and said cam surfaces defining said slot in said slide member cooperate with corresponding cam surfaces formed on said latch member to effect linear translation of said slide member relative to said latch member to effect disconnection of said latch member from said slide member and urging of said latch member out of said slot in said slide member whereby at least one of said members of said latch means undergoes one of limited rotation and linear translation with respect to the other member in response to said force to effect disconnection of said bottom edge of said closure from said guide means.

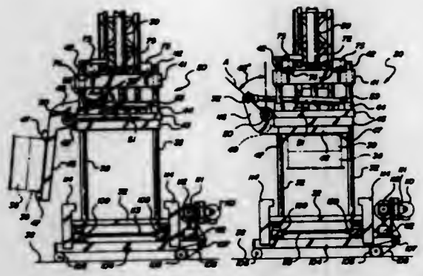
5,601,134
RETAINER ASSEMBLY FOR ROLL-UP DOOR
Cary Pinkalla, Fox Point, Wis., and Garrett L. Goins, Dubuque, Iowa, assignors to Rite-Hite Corporation, Milwaukee, Wis.
Filed Mar. 23, 1995, Ser. No. 409,312
Int. Cl.[6] E06B *5/00;5/02*
U.S. Cl. 160—271 **8 Claims**



1. A vertical retainer assembly for use with a roll-up door that selectively blocks and unblocks a doorway, the door including a curtain attached to a horizontally disposed roller, the vertical retainer assembly comprising,
vertical members disposable on either side of the doorway, the vertical members including vertically-disposed guide tracks for receiving and guiding the curtain in a vertical plane,
a horizontally disposed member attachable along the width of the curtain, the horizontal member being movable out of a vertical plane of the door; and
a retaining surface on at least one of the vertical members, the retaining surface being external to the guide track associated with the at least one vertical member, the vertical member and associated guide track including aligned horizontal slots disposed adjacent the retaining surface the horizontal member being selectively engageable with the retaining surface by being movable through said aligned horizontal slots between a position wherein it is disposed within the guide track, and a position wherein it is disposed externally to the guide track for engagement with the retaining surface to vertically retain the horizontal member and the curtain to which it is attached.

5,601,135
MOLD LOADING IN LOW-PRESSURE CASTING
Daniel L. Merrill, Montaque, Mich., assignor to CMI International, Inc., Southfield, Mich.
Filed Jan. 30, 1996, Ser. No. 593,502
Int. Cl.[6] B22D *17/12*
U.S. Cl. 164—306 **20 Claims**

1. A low-pressure casting apparatus for conveying molten metal upwardly from a molten metal bath to a mold thereabove, said apparatus comprising:
a base plate (32) for supporting a drag (34) of a mold above the molten metal bath;



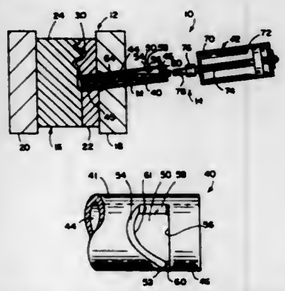
a plurality of guide posts (38) extending upwardly from said base plate (32) and defining an operating area therebetween;
a fixed platen (41) supported by said posts (38) in fixed vertical spacing above said base plate (32);
a movable platen (43) guided for vertical movement in said operating area defined by and between said guide posts (38);
a ram actuator (39) interconnecting said fixed platen (41) and said movable platen (43) for moving said movable platen (43) vertically on said guide posts (38);
a tilt plate (45) operatively connected to said movable platen (43) and presenting a downwardly facing attachment surface under said movable platen (43) in an operating position for supporting the cope (36) of the mold under said movable platen;
said apparatus characterized by a mechanism for moving said tilt plate (45) laterally of said guide posts (38) to a loading position outside said operating area with said attachment surface facing sufficiently upwardly to allow the cope (36) and drag (34) defining the mold to rest thereon under the force of gravity.

5,601,136

INCLINED DIE CAST SHOT SLEEVE SYSTEM

Dennis S. Shimmell, Hudsonville, Mich., assignor to Nelson Metal Products Corporation, Grandville, Mich.

Filed Jun. 6, 1995, Ser. No. 468,256
Int. Cl.[6] B22D *17/10*
U.S. Cl. 164—312 **14 Claims**



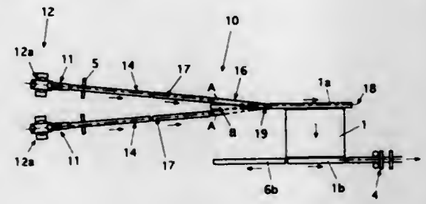
1. A die casting material delivery system comprising:
a shot sleeve inclined from the horizontal and having an upper end and a lower end, said sleeve defining an internal bore and a pour hole communicating with said bore, said pour hole proximate said upper end of said sleeve and having a forward extent a rearward extent, and a lower extent; and
a plunger means for ejecting molten material from said bore, said plunger means including a tip and being movable in a linear direction between (a) a retracted position in which said tip is aligned with said rearward extent of said pour hole such that said pour hole is open and (b) an extended position in which said tip is generally aligned with said forward extent of said pour hole such that said pour hole is closed,
said shot sleeve defining a first volume above a first horizontal plane through said lower extent and forward of a second plane through said rearward extent, said shot sleeve defining a second volume between said second plane and a third plane through said forward extent, both of said second and third planes being generally perpendicular to said direction, said first volume and said second volume being generally equal, whereby, when said bore is filled with molten metal up to said lower extent of said pour hole and said plunger means is in said retracted position, substantially all air is displaced through said pour hole as said tip moves from said retracted position to said extended position without causing metal to spurt from said pour hole.

5,601,137

CONTINUOUS STEEL PLATE MANUFACTURING FACILITIES

Yuji Abe, Yokohama; Shigeki Narishima, Yokosuka, and Kinichi Higuchi, Yokohama, all of Japan, assignors to Ishikawajima-Harima Heavy Industries Co., Ltd., Tokyo, Japan

Filed Dec. 21, 1995, Ser. No. 576,348
Claims priority, application Japan, Jan. 19, 1995, 7-006111
Int. Cl.[6] B22D *11/12*; **B21B** *1/46*;*13/22*
U.S. Cl. 164—418 **11 Claims**



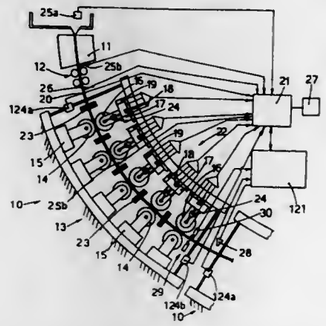
1. A continuous steel plate manufacturing facility comprising:
continuous casting equipment having a plurality of strands for horizontally transporting slabs;
a plurality of rows of slab conveyers for conveying slabs downstream from said strands, each of which rows is arranged in a line continuously downstream of each of said strands; and
a single slab transporting apparatus, disposed downstream of said rows of slab conveyers, for horizontally transporting slabs from said rows of slab conveyers to a single rolling line disposed downstream of said rows of slab conveyers,
each of said strands and each of said rows of slab conveyers defining a continuous slab casting line which diagonally intersects, at an intersection point, on said slab transporting apparatus with a slab feeding line in communication with said rolling line,
said slab transporting apparatus being horizontally swingable about the intersection point between a receiving position A, wherein said slab transporting apparatus is disposed on an extension of one of said continuous slab casting lines, and a feed-out position B, and wherein said slab transporting apparatus is disposed in alignment with said slab feeding line.

5,601,138

METHOD FOR THE CONTROLLED PRE-ROLLING OF THIN SLABS LEAVING A CONTINUOUS CASTING PLANT, AND RELATIVE DEVICE

Bruno Di Giusto; Fulvio Fasano; Wogler Ruzza, all of Udine; Mirco Striuli, San Dona' Di Piave; Alfredo Lavazza, Solbiate Olona; Andrea Carboni, Milan, and Giovanni Coassin, Pordenone, all of Italy, assignors to Danieli & C. Officine Meccaniche SpA, Buttrio, Italy

Continuation of Ser. No. 177,765, Jan. 4, 1994, Pat. No. 5,488,987, which is a continuation-in-part of Ser. No. 963,734, Oct. 20, 1992, abandoned. This application Nov. 3, 1995, Ser. No. 553,015
Claims priority, application Italy, Oct. 31, 1991, UD91A0184; May 17, 1993, UD93A0083
Int. Cl.[6] B22D *11/16;11/12*
U.S. Cl. 164—452 **30 Claims**



1. An assembly for the controlled pre-rolling of thin slabs leaving a continuous casting mold including foot rolls, the assembly being positioned a short distance from the mold and immediately downstream of the foot rolls of the casting mold such that the slab passing through the assembly has a liquid core, the assembly having at least one segment, each segment comprising:
a stationary sector provided adjacent a first major surface of the slab and comprising a plurality of rolls; and
a movable sector provided adjacent a second major surface of the slab and comprising a plurality of rolls associated with at least one hydraulic capsule governed by a servovalve for positioning the rolls of the movable sector.

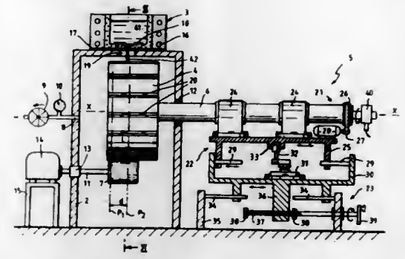
5,601,139

PROCESS AND MACHINE FOR MANUFACTURE OF AMORPHOUS METAL RIBBONS

Alain Remy, Chalon-sur-Saone, France, assignor to SEVA, Chalon-sur-Saone, France

PCT No. PCT/FR94/00028, § 371 Date Jul. 12, 1995, § 102(e) Date Jul. 12, 1995, PCT Pub. No. WO94/15738, PCT Pub. Date Jul. 21, 1994
PCT Filed Jan. 11, 1994, Ser. No. 464,861
Claims priority, application France, Jan. 13, 1993, 93 00216
Int. Cl.[6] B22D *11/06*
U.S. Cl. 164—463 **6 Claims**

1. A process for the production of amorphous metal ribbons comprising the steps of:
a) projecting at least one stream of liquid metal (42) onto a receiving surface (4) moving at a high speed,
b) simultaneously with step a), establishing a continuous reciprocating motion between said receiving surface and said stream of liquid metal in a direction perpendicular to a direction of movement of said receiving surface, and
c) periodically shifting a relative center position of said receiving surface and said stream of liquid metal.

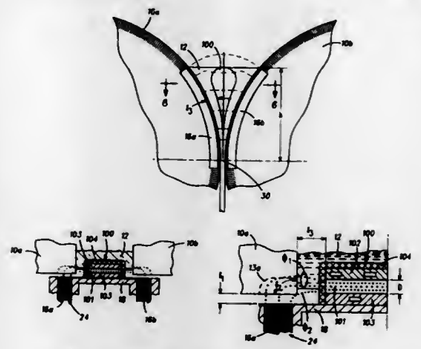


5,601,140

APPARATUS FOR EFFICIENT SIDEWALL CONTAINMENT OF MOLTEN METAL WITH HORIZONTAL ALTERNATING MAGNETIC FIELDS UTILIZING A FERROMAGNETIC DAM

Walter F. Praeg, Palos Park, Ill., assignor to ARCH Development Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 952,519, Jul. 23, 1993, Pat. No. 5,385,201. This application Jan. 31, 1995, Ser. No. 381,717
Int. Cl.[6] B22D *27/02;11/04*
U.S. Cl. 164—503 **24 Claims**



1. Apparatus for casting sheets of metal from molten metal, comprising:
a containment means having an open side;
horizontal alternating magnetic field production means for containing molten metal in at least a first portion of said open side with an electromagnetic force; and
a dam comprising a ferromagnetic material disposed adjacent said open side, said dam containing molten metal from leaking from at least a second portion of said open side.

5,601,141

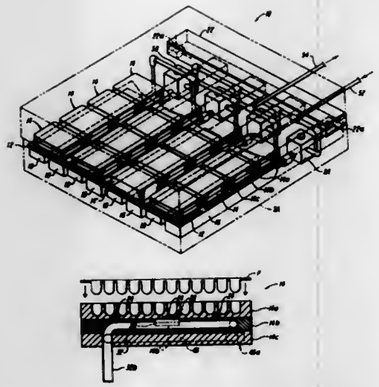
HIGH THROUGHPUT THERMAL CYCLER

Steven J. Gordon, Jamaica Plain, and Anthony J. Christopher, Andover, both of Mass., assignors to Intelligent Automation Systems, Inc., Cambridge, Mass.

Filed Oct. 13, 1992, Ser. No. 959,775
Int. Cl.[6] F25B *29/00*
U.S. Cl. 165—263 **13 Claims**

1. A thermal cycler for the batch processing of biological and chemical samples, comprising,

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at least one module mounted on the base plate, said module including (i) a sample mounting plate having an upper surface adapted to receive the samples in a good thermal transfer relationship, (ii) a cooling plate having a passage therein to conduct a flow of cooling fluid and (iii) a heating plate located generally between said sample plate and said cooling plate, said cooling plate and said heating plate being constructed to cool and heat said sample mounting plate independently,

at least one heating element mounted in said heating plate,

at least one temperature sensor associated with said at least one heating plate and located adjacent the associated samples, said sensor producing a signal corresponding to the temperature of said samples, and

means for controlling the flow of electrical current and cooling fluid to at least one said module in response to the output signal of said sensor, said controlling means producing a cooling to a pre-selected temperature by cooling below said pre-selected temperature and then heating to said pre-selected temperature.

5,601,142

HEATER OR AIR CONDITIONING UNIT, IN PARTICULAR FOR INSTALLATION IN A MOTOR VEHICLE

Reinhard Hildebrand, Redwitz, and Siegfried Petters, Weitramsdorf, both of Germany, assignors to Valeo Klimasysteme GmbH, Rodach, Germany

Filed Dec. 19, 1994, Ser. No. 358,434

Claims priority, application European Pat. Off., Dec. 20, 1993, 93120557

Int. Cl.[6] B60H *1/00*

U.S. Cl. 165—42 **21 Claims**

1. A heater/air conditioner kit for use in a motor vehicle, comprising:

a unit housing having a feed-through duct, said housing receiving an incoming air flow and delivering said air flow to at least one air outlet;

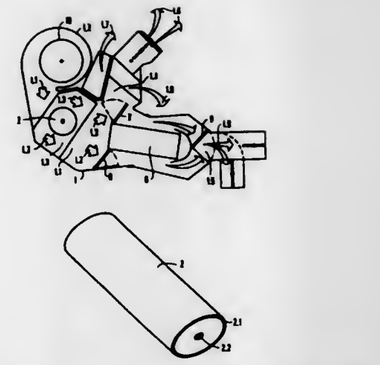
an installation space in said unit housing;

an evaporator; and

an air guide device;

wherein said evaporator and said air-guide device are separately mountable in said installation space, wherein said evaporator is mounted in said installation space when the kit is used as an air conditioner and wherein said air-guide device is mounted in said installation space when the kit is used as a heater;

wherein said air-guide device provides air guidance free of turbulence and is arranged transverse to said incoming air flow with a first output-side air flow below said air-guide device and a second output-side air flow above said air-guide device.



5,601,143

LABORATORY REGRIGERATOR, IN PARTICULAR A REFRIGERATED INCUBATOR

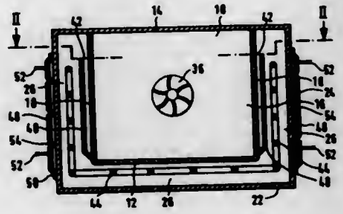
Peter M. Binder, Säntisstrasse 74A, 88662 Überlingen, Germany

Filed Feb. 24, 1995, Ser. No. 393,899

Claims priority, application Germany, Feb. 25, 1994, 44 06 145.5

Int. Cl.[6] F24C *7/06*

U.S. Cl. 165—61 **9 Claims**



1. A refrigerated laboratory incubator with circulating air temperature control, comprising:

an inner basin defining a useful storage volume, the inner basin including rear and side walls, at least one of the walls having apertures therein leading into the useful storage volume for conveying air into the useful storage volume;

an outer basin surrounding the inner basin and forming a chamber therebetween for retaining a circulating volume of air, the outer basin including an outer side;

a fan positioned exterior to the inner basin for removing air from the useful storage volume;

a refrigerator unit including at least one plate evaporator supplied with circulating air and having a heat exchanger surface, the at least one plate evaporator being formed by a portion of the outer side of the outer basin and a sheet affixed to and in plane heat-conductive contact with the portion of the outer side.

5,601,144

APPARATUS FOR FLUID RECOVERY FROM PLURALITY OF WELLS

Ben Keet, North Melbourne, Australia, assignor to Geo & Hydro International Pty. Ltd., Melbourne, Australia

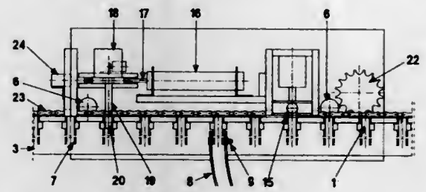
PCT No. PCT/AU93/00595, § 371 Date Jul. 24, 1995, § 102(e) Date Jul. 24, 1995, PCT Pub. No. WO94/12762, PCT Pub. Date Jun. 9, 1994

PCT Filed Nov. 23, 1993, Ser. No. 436,428

Claims priority, application Australia, Nov. 24, 1992, PL 5992

Int. Cl.[6] E21B *43/00*

U.S. Cl. 166—263 **19 Claims**



1. An apparatus for recovering fluid from a plurality of wells, the apparatus including

a plurality of orifices arranged side by side, each orifice in fluid communication with at least one of the wells;

connecting means, including a carriage movable above the orifice, to connect a suction pump to the orifices in groups of one or more at a time;

wherein the connecting means and the orifices are automatically movable relative to each other so that in use the suction pump may be connected for sequential pumping periods to different said groups of one or more orifices, thereby allowing the removal of fluid from the plurality of remote wells by the suction pump.

5,601,145

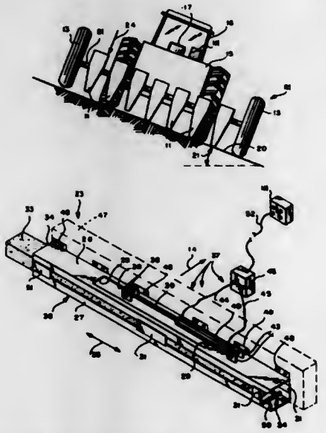
FARM IMPLEMENT HILLSIDE LEVELING DEVICE

L. D. Thompson, Rte. 2, Box 872, Max Meadows, Va. 24360

Filed Mar. 22, 1995, Ser. No. 408,399

Int. Cl.[6] E02F *9/18*

U.S. Cl. 172—4.5 **18 Claims**



1. A farm implement comprising:

a plurality of equipment heads for engaging earth, to act on the earth;

a carriage mounting said plurality of equipment heads for movement in a first direction; and

means for levelling said equipment heads when moving in the first direction over terrain that is sloped in a second direction substantially perpendicular to the first direction so that said equipment heads remain in proper operative engagement with earth, said means comprising: a channel shaped structure mounted so that it is substantially stationary with respect to said carriage and extends substantially in said second direction; a movable ballast element mounted in said channel shaped structure; a powered ballast element moving device having a first portion mounted to said ballast element, a second portion mounted to said channel shaped structure, and a force applicator for moving said first portion with respect to said second portion in said second direction to reposition said ballast element with respect to said channel shaped structure.

5,601,146

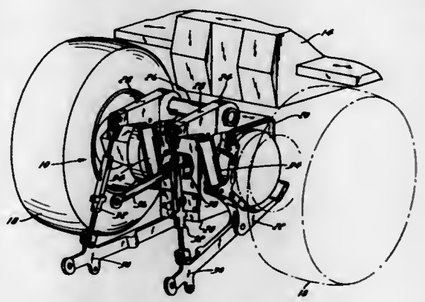
HITCH ASSEMBLY FOR A TRACTOR

Daniel K. Schlegel, Racine, and Michael D. Morton, Salem, both of Wis., assignors to Case Corporation, Racine, Wis.

Filed Aug. 15, 1995, Ser. No. 515,517

Int. Cl.[6] A01B *59/043*

U.S. Cl. 172—439 **23 Claims**



1. A hitch assembly for a work vehicle, comprising:

a first and a second hitch support, each support comprising a single piece structure including a plurality of mounting apertures for attaching the hitch to the vehicle, an actuator support, a rocker support and a draft link support;

a rocker pivotally coupled to the rocker supports, the rocker including a rockshaft and first and second rocker arms;

first and second hitch actuators coupled to the actuator supports of the first and second hitch supports respectively and to the rocker, the hitch actuators being movable between hitch raised and hitch lowered positions to raise and lower the rocker arms;

first and second draft links pivotally supported on the draft link supports of the first and second hitch supports respectively; and

first and second lift links coupled to the first and second draft links and to the first and second rocker arms respectively to pivotally move the draft links in response to corresponding movement of the rocker arms.

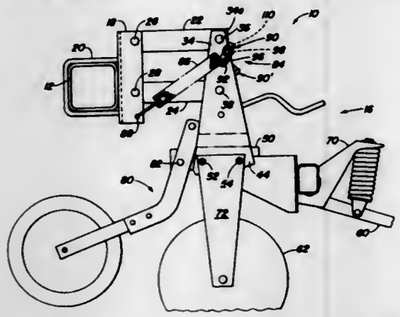
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5,601,147

AGRICULTURAL RIG PRESSURE ADJUSTMENT WITH OVERCENTER TOGGLE

Terry L. Lowe, Ankeny, and James T. Noonan, Johnston, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Nov. 17, 1995, Ser. No. 559,979
Int. Cl.[6] A01B 63/32
U.S. Cl. 172—624.5 11 Claims



1. In an agricultural rig having a main frame and a linkage pivotally connected to the main frame and extending rearwardly therefrom, rig down pressure structure for providing an adjustable down force on the rig, the down pressure structure comprising:

a toggle connected to the rig for pivoting about a toggle axis between first and second positions;

a spring structure tensioned between the main frame and the toggle and having first and second ends, the first end connected to the main frame and the second end connected to the toggle;

structure connected to the toggle for moving the toggle between the first and second positions to thereby adjust the tension in the spring; and

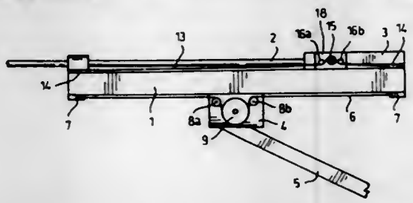
wherein the toggle includes a protrusion which contacts the rig at two different overcenter locations corresponding to the first and second positions of the toggle.

5,601,148

ARRANGEMENT FOR MEASURING THE POSITION OF A FEED BEAM IN A ROCK DRILLING APPARATUS AND/OR MEASURING THE POSITION OF A ROCK DRILL

Pekka Heiskanen, Nokia; Pauli Lemmetty, and Matti Rissanen, both of Tampere, all of Finland, assignors to Tamrock Oy, Finland

PCT No. PCT/FI93/00335, § 371 Date Feb. 24, 1995, § 102(e) Date Feb. 24, 1995, PCT Pub. No. WO94/06999, PCT Pub. Date Mar. 31, 1994
PCT Filed Aug. 25, 1993, Ser. No. 387,868
Claims priority, application Finland, Sep. 11, 1992, 924085
Int. Cl.[6] E21C 11/00
U.S. Cl. 173—21 9 Claims



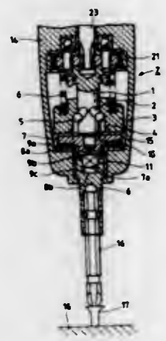
1. An arrangement for measuring the position of a feed beam relative to a cradle in a drill unit in a rock drilling apparatus, comprising a cradle attachable to a boom, a feed beam installed in the cradle for movement relative to the cradle in a longitudinal direction of the feed beam, and a rock drill connected to the feed beam movably in said longitudinal direction of the feed beam, the arrangement further comprising an elongated substantially inelastic, flexible cogged belt fixed at opposite ends thereof to the feed beam for movement with the feed beam in said longitudinal direction, and a gear mounted in said cradle and engaged by teeth of said cogged belt, wherein with the movement of the feed beam relative to the cradle, said cogged belt turns about said gear for a part of the periphery of said gear and rotates said gear, and an indicator measures rotation of the gear and emits signals proportional to the movement of the feed beam, such that the position of the feed beam relative to the cradle is measured.

5,601,149

NOISE REDUCTION MECHANISM FOR PERCUSSION TOOLS

Yoshimitsu Kawasaki, Mito; Mitsuyuki Ishikawa, Katsuta; Takao Tanabe, Mito, and Toshiaki Uchida, Katsuta, all of Japan, assignors to Hitachi Koki Company Limited, Tokyo, Japan

Filed Jan. 25, 1995, Ser. No. 378,374
Claims priority, application Japan, Feb. 25, 1994, 6-028081
Int. Cl.[6] B25D 17/11; B25B 21/02
U.S. Cl. 173—93.5 11 Claims



1. A percussion hammer tool comprising:

a spindle driven by a drive means about an axis;

a percussion operating mechanism, slidably coupled with said spindle, for generating a percussion force to rotate and hit an anvil;

said anvil being divided into an engaging portion engageable with said percussion operating mechanism and a tip tool holding portion for holding a tip tool, said engaging portion and said tip tool holding portion being angularly locked with each other having confronting faces separated from each other with a clearance space, said confronting faces being normal to an axis of said anvil;

a torque transmitting mechanism transmitting an angular component of said percussion force from said engaging portion to said tip tool holding portion, while making said engaging portion and said tip tool holding portion displaceable telescopically along an axis of said anvil; and

a cushion member provided in said clearance space between said confronting surfaces of said engaging portion and said tip tool holding portion, so that said cushion member suppresses noise produced from an axial component of said percussion force transferred from said engaging portion to said tip tool holding portion;

wherein said confronting faces are normal to the axis of said anvil and are constituted by a flange provided at a base end of said tip tool holding portion, and by an engaging flange of said engaging portion engageable with said percussion operating mechanism.

5,601,150

Patent Not Issued For This Number

5,601,151

DRILLING TOOL

Tommy M. Warren, Coweta, Okla., assignor to Amoco Corporation, Chicago, Ill.

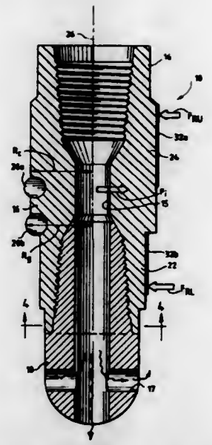
Continuation-in-part of Ser. No. 275,020, Jul. 13, 1994, abandoned. This application Sep. 11, 1995, Ser. No. 527,173
Int. Cl.[6] E21B 7/08
U.S. Cl. 175—75 20 Claims

1. In a curve drilling assembly that is connectable to a rotary drill string for drilling a curved subterranean borehole having a bottom, having walls, having an inside radius and having an outside radius, the assembly comprising a flexible drill pipe section, a hole opener for enlarging the curved borehole comprising:

a base disposed about a longitudinal bit axis for connecting to the downhole end of the flexible drill pipe section;

a gauge portion that is disposed about said longitudinal bit axis, that extends from said base, that has an uphole end and that has a downhole end;

a nose disposed about said longitudinal bit axis and extending from said gauge portion;



a plurality of cutting elements that are carried by and extend from said gauge portion and that produce a lateral force on said hole opener at the downhole end of said hole opener in response to the rotation of the hole opener in the borehole;

lower reaction pad means, carried by and extending from said gauge portion to trail said cutting elements by a maximum of 180 degrees and located generally below said plurality of cutting elements, for continuously contacting the borehole wall during rotation of the hole opener and for receiving a reactive force that is from said borehole, that is in response to said lateral force and that is directed adjacent to said downhole end of said gauge portion, said lower reaction pad means extending from said longitudinal bit axis by no more than the bore in which said hole opener is inserted; and

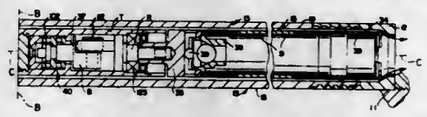
upper reaction pad means, carried by and extending from said gauge portion to trail said cutting elements by a maximum of 180 degrees and located generally above said plurality of cutting elements, for continuously contacting the borehole wall during rotation of the hole opener and for receiving a reactive force that is from said borehole, that is in response to said lateral force and that is directed adjacent to said uphole end of said gauge portion of said hole opener, said upper reaction pad means extending from said longitudinal bit axis by approximately the same amount as said cutting elements, said lower reaction pad means and said upper reaction pad means having the effect of directing said longitudinal axis of said base portion to be tangent to the centerline of the curved portion of the borehole in which it is inserted.

5,601,152

VIBRATOR CORE DRILLING APPARATUS

Simon J. Harrison, Callander, Canada, assignor to Boart Longyear Inc., North Bay, Canada

Filed Mar. 23, 1995, Ser. No. 409,194
Int. Cl.[6] E21B 25/00
U.S. Cl. 175—246 18 Claims

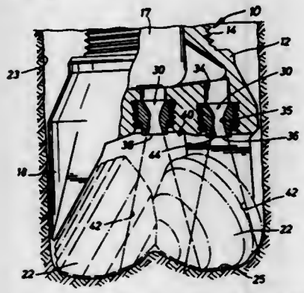


1. A wire line drilling apparatus having an axial extending central axis and being movable axially inwardly through a rotatable drill string toward a bit end of the drill string having a core bit thereat to a position adjacent to the bit end of the drill string to

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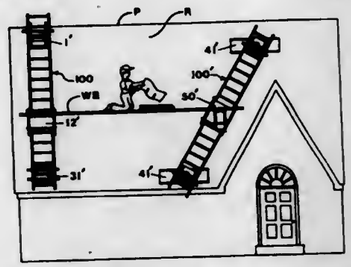
latchingly engage a drill string latch seat and is retractable axially outwardly through the drill string in a direction away from the bit end of the drill string, said drill string having a central axis, comprising an axially extending latch body having a central axis, an outer end portion and an inner end portion, a latch mounted to the latch body for movement between a latch seated position for releasably retaining the latch body in the drill string adjacent to the core bit and cooperate with the drill string when the drill string is rotated to rotate the latch body, and a latch release position permitting the latch body being retracted through the drill string, an axially extending latch retractor mounted to the latch body for limited axial movement relative to the latch body to retract the latch from its latch seated position, said latch retractor having an outer overshot coupling portion, axially elongated tubular means for receiving a core therein, said tubular means having an open axial inner end and an axial outer end, and mechanical vibrational means for imparting axial reciprocal movement to the tubular means as the tubular means receives a core and the latch body is rotated while permitting the latch body rotating relative to the tubular means, the vibrational means having an axial outer end connected to the latch body inner end and an axial inner end connected to the tubular means axial outer end, the vibrational means including a bearing spindle having a cylindrical portion, said cylindrical portion having a central axis, a bearing tube having a central axis that is coaxial with the latch body central axis, means for mounting the bearing tube to the latch body to extend axially inwardly of the latch body and to rotate the bearing tube as the latch body is rotated, bearing means mounted by the bearing tube for mounting said cylindrical portion to have the cylindrical portion central axis inclined at an acute angle relative to the bearing tube central axis and permitting the bearing tube to rotate relative to the cylindrical portion and to move the cylindrical portion and thereby the bearing spindle to vary the angular position of the cylindrical portion central axis relative to the bearing tube central axis, and means connecting the bearing spindle to the tubular means to reciprocate the core receiving means as the bearing spindle is moved.

5,601,153
ROCK BIT NOZZLE DIFFUSER
Jerry Enzinger, and Richard C. Lyon, both of Anchorage, Ak., assignors to Smith International, Inc., Houston, Tex.
Filed May 23, 1995, Ser. No. 448,063
Int. Cl.[6] E21B *10/18*
U.S. Cl. 175—340 **2 Claims**



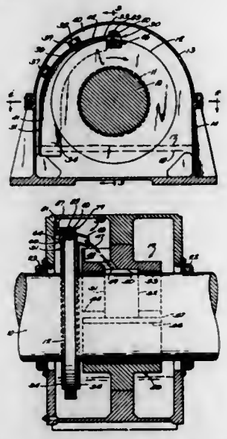
1. A rotary cone rock bit for use in an earthen formation, the rock bit being operated with drilling fluid, the rock bit comprising:
a rock bit body having a first open pin end adapted to be connected to a drill string and a second cutting end, said second cutting end comprising one or more rotary cutter cones rotatively retained on journal beatings extending from one or more rock bit leg segments connected to a dome portion formed by said bit body, said bit body further forming a plenum chamber therein for receiving said drilling fluid, said chamber is in fluid communication with the first open pin end, and
one or more diffuser type jets, the diffuser jets being formed by a nozzle body, said nozzle bodies are connected to said dome portion of said bit body near an outer peripheral edge of the dome and adjacent a gage diameter formed by the bit, said nozzle body forming a first entrance end and a second exit end in communication with a fluid passage formed by the nozzle body, intermediate said first and second ends of said nozzle body is a restricted throat section, said fluid passage below said throat section is conically shaped diverging from the smaller in diameter restricted throat section to a larger in diameter second exit end of the nozzle body, a combined angle of the conically shaped nozzle portion is 30 degrees or less, the conically shaped divergent nozzle portion serves to diffuse the fluid without inducing turbulent flow as the fluid exits said second nozzle exit end thereby generating additional bulk fluid motion since the diffused fluid exiting the nozzle has an increased surface area resulting in increased bottom hole cleaning and less cone erosion.

5,601,154
PORTABLE SUSPENDED ROOF SCAFFOLD SYSTEM
Gary W. Eisenmenger, 4503 Fox Run Rd., Louisville, Ky. 40207
Continuation-in-part of Ser. No. 103,454, Aug. 6, 1993. This application Apr. 13, 1994, Ser. No. 228,182
Int. Cl.[6] E06C *7/14*
U.S. Cl. 182—45 **16 Claims**



1. Ladder apparatus for use on a sloped roof structure, the ladder apparatus comprising:
a ladder including a pair of generally parallel, longitudinally extending side rails interconnected by longitudinally spaced rungs, the ladder having first and second ends;
a first standoff including a ladder mount portion mounting the first standoff on the ladder at a location closer to the first end than the second end of the ladder, and support means spaced from the ladder mount portion and capable of engaging the sloped roof structure at a distance from the ladder;
a second standoff including a ladder mount portion mounting the second standoff on the ladder at a location spaced from the first standoff toward the second end of the ladder, and support means disposed for engaging the sloped roof structure a substantial distance from the ladder;
the first and second standoffs being arranged on the ladder for cooperating to support the ladder on the sloped roof structure at a location spaced generally above the sloped roof structure;
said support means of the first and second standoffs each comprising a support bar extending laterally outwardly from the standoff for engagement with spaced apart rafters of the sloped roof structure for supporting the ladder between the rafters;
the first standoff further including a securement portion constructed for securing the ladder on the sloped roof structure, and wherein the ladder mount portion of the first standoff mounts the first standoff for pivoting with respect to the ladder generally about the ladder mount portion between a first position in which the securement portion of the first standoff is out of position for engaging the sloped roof structure to secure the ladder and a second position in which the securement portion is in position for engaging the sloped roof structure to secure the ladder on the sloped roof structure.

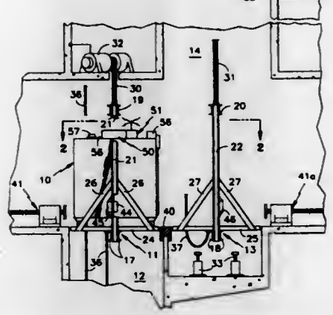
5,601,155
JOURNAL BEARING USING DISK FOR TRANSPORTING LUBRICANT
Willis W. Gardner, Waukesha, Wis., assignor to Delaware Capital Formation, Inc., Waukesha, Wis.
Filed Jul. 5, 1995, Ser. No. 498,325
Int. Cl.[6] F01M *1/00*
U.S. Cl. 184—11.2 **11 Claims**



1. Apparatus for supplying lubricating oil to the interface of the journal on a shaft and a bearing for the journal, comprising:
a housing and a bearing supported in the housing,
a shaft extending through the housing and the bearing, the housing having a sump for containing oil arranged below the level of the shaft,
an oil transport disk having a peripheral surface, the disk being fixed on the shaft and having a diameter sufficiently large for a segment of the disk below the shaft to be immersed in the oil in the sump as the disk rotates with the shaft,
a scraper unit mounted in the housing adjacent the disk at a place substantially opposite of the oil level for scraping off oil that clings to the disk from said peripheral surface for the oil to be fed to the bearing,
an oil capturing shroud in the housing and comprised of axially spaced apart side walls and a rear wall defining a channel-shaped cross-sectional configuration having an open side opposite of the rear wall through which a part of the disk after having emerged from the oil in the sump extends as the disk rotates with the shaft,
said oil capturing shroud having a lower end portion extending into said oil from about the level of the oil in said sump and having an end portion extending to said scraper unit.

11. A self lubricating journal bearing comprising:
a housing and a journal shaft extending through the housing and a bearing supported in the housing in which the shaft is journaled,
an oil sump in the housing in a position below the shaft and an oil transport disk on the shaft, the diameter of the disk being such that a segment of the disk passes through the oil as the shaft rotates and the disk emerges for transporting oil to a place above the bearing, and a scraper unit positioned for scraping oil from the disk when the segment rotates to a level above the bearing, the scraper unit including:
a body having generally vertically extending nominally front and rear surfaces spaced from each other and having vertically spaced apart top and bottom surfaces, the body having a passageway formed in it, the passageway having a width at least large enough for the periphery of the oil transport disk to rotate through the passageway,
the height of the passageway measured from said bottom surface is less than the distance between said top and bottom surfaces to thereby result in the passageway being closed on top and providing at the end of the passageway into which the disk enters a vertical edge constituting a scraper said edge being angulated transversely of the periphery of the disk for diverting the oil on the disk to a discharge opening at a side of the passageway.

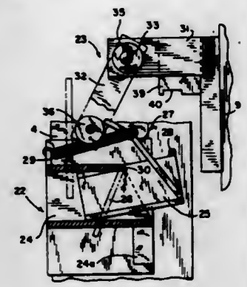
5,601,156
MAINTAINING COMMUNICATIONS AND POWER DURING TRANSFER OF HORIZONTALLY MOVEABLE ELEVATOR CAB
Richard C. McCarthy, Simsbury; Joseph Bittar, Avon; Frederick H. Barker, Bristol; Bruce A. Powell, Canton; Samuel C. Wan, Simsbury; Paul Bennett, Waterbury; Anthony Cooney, Unionville, and John K. Salmon, deceased, late of South Windsor, all of Conn., assignors to Otis Elevator Company, Farmington, Conn.
Continuation-in-part of Ser. No. 565,647, Nov. 29, 1995, abandoned. This application Apr. 10, 1996, Ser. No. 630,223
Int. Cl.[6] B66B *9/00*
U.S. Cl. 187—249 **17 Claims**



1. An elevator system in a building, comprising:
a pair of elevators, each having a hoistway and an elevator car frame moveable between upper and lower ends of the corresponding boistway, the upper end of one of said hoistways coinciding at a given level of said building with the lower end of the other one of said hoistways;
a cab which can be loaded onto the car frame of either of said elevators;
a first socket/plug assembly disposed on said cab and having a plurality of electrical contacts connected to circuits in said cab; and
a plurality of second socket/plug assemblies, each having a plurality of electrical contacts complimentary to the contacts on said first socket/plug assembly, disposed on each of said car frames for engaging said first socket/plug assembly to connect circuits on said cab with circuits on one of said car frames when said cab is loaded onto said one car frame.

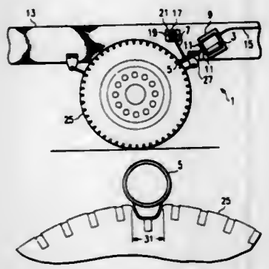
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5,601,157
DECKLOCK
Gene M. Barth, West Bend, Wis., assignor to Pflow Industries, Milwaukee, Wis.
Filed Apr. 18, 1995, Ser. No. 423,368
Int. Cl.[6] B66B *5/16*
U.S. Cl. 187—351 **20 Claims**



1. A vertical conveyor comprising a supporting structure, a carriage adapted to support cargo and moveable relative to said supporting structure from a first lower level to a second upper level and a third level above said upper level, drive means for moving said carriage among said lower, said upper and said third levels, locking means mounted on said supporting structure and disposed to interconnect said carriage and supporting structure and moveable among a release position, an extended position, and a locking position, biasing means continuously urging said locking means towards said release position, actuating means for moving said locking means from said release position to said extended position as said carriage moves from said lower level to said third level, said locking means in said extended position being out of contact with said carriage and prevented against return to said release position as urged by said biasing means, said actuating means moving said locking means from said extended position to said locking position as said carriage moves from said third level to said upper level; the subsequent movement of said carriage from said upper level to said third level enabling said locking means to return to said release position by means of said biasing means, operation of said drive means being discontinued at said third level to allow said carriage to move to said lower level.

5,601,158
WHEEL BLOCKING SYSTEM
Louis F. Klusmeyer; Oscar E. Warren; Ronnie Rogers, and Bob J. Beard, all of San Antonio, Tex., assignors to TransTech Resources, Inc., San Antonio, Tex.
Filed Nov. 13, 1995, Ser. No. 514,271
Int. Cl.[6] B60T *1/04*
U.S. Cl. 188—31 **9 Claims**



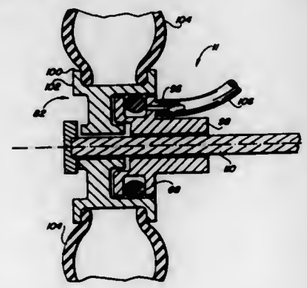
6. A wheel blocking device for a wheeled vehicle comprising:

a pressure foot arm having a first end to which a pressure foot is attached and a second end which is adapted to be pivotally connected to one of a frame of the vehicle and a vehicle axle;

an actuator having a first end adapted to be connected to one of the vehicle frame and the vehicle axle and a second end connected to one of the pressure foot arm and the pressure foot; and

a power source for actuating the actuator; whereby when the power source is applied to the actuator, the pressure foot is forced into engagement with a vehicle tire, such that the pressure foot substantially indents the tire to a pedetermined degree without contacting the ground.

5,601,159
BRAKE ASSEMBLY FOR MODEL VEHICLES AND METHOD
Robert S. Violett, 170 State Road 419, Winter Springs, Fla. 32708
Filed Jul. 15, 1994, Ser. No. 275,832
Int. Cl.[6] B65H *59/10*
U.S. Cl. 188—67 **16 Claims**



1. A brake comprising:

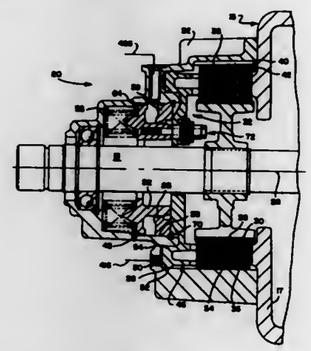
a shaft having a bore extending through at least a portion of the shaft along a rotation axis, the bore defined by an inner surface of the shaft;

a cylindrical rod having an outer surface, the rod dimensioned to loosely fit within the bore for rotating the shaft about the rotation axis, the axis coaxial with the cylindrical rod rotation axis, the rod having a continuous groove within the rod outer surface about a perimeter of the rod, the groove for receiving an O-ring, the groove having side walls and a bottom wall;

a flexible O-ring having side surfaces in contact with the groove side walls thereby forming a chamber with the bottom wall, an outside surface of the O-ring forming a gap with the shaft inner surface win a first position wherein the shaft freely rotates about the shaft rotation axis, the shaft inner surface rotating over the rod outer surface in the first position, the O-ring sufficiently flexible for expanding from the first position to a second position for making frictional contact with the shaft inside surface; and

means for increasing pressure within the chamber sufficient for expanding the O-ring to a second position wherein the O-ring outside surface makes frictional contact with the shaft inside surface with sufficient frictional force for restricting rotation of the shaft about the rod.

5,601,160
HYDRAULICALLY ACTUATED BRAKE ASSEMBLY FOR AN OFF-HIGHWAY IMPLEMENT
Joachim Horsch, Lombard, Ill., assignor to Case Corporation, Racine, Wis.
Filed Oct. 20, 1994, Ser. No. 326,546
Int. Cl.[6] B60T *8/32*
U.S. Cl. 188—71.5 **25 Claims**



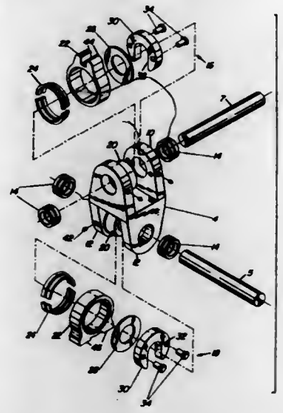
25. A hydraulically actuated brake assembly for an off-highway implement, comprising:

a stationary housing that surrounds a turning shaft to which a braking action is to be applied by the brake assembly;

an actuator assembly and a pack of intermixed brake plates, with some of said brake plates being adapted to turn with the shaft while others remain in nonrotatable association with the housing, each brake plate having wetted friction brake surfaces on opposite sides thereof, said actuator assembly including an annular brake piston that combines with said housing to define a fluid receiving cavity, said piston being movable along an axis of the shaft between a released position, wherein a fixed clearance is provided between the piston and the brake plates thereby relieving the braking force on said shaft, and an engaged position, wherein said piston applies a force against the brake plates to impart a braking action to the brake plates and thereby to the shaft; and

a brake release mechanism including a plurality of self-compensating brake release assemblies peripherally disposed about said actuator assembly for urging said brake piston toward its released position, each brake release assembly comprising a mounting member that extends generally parallel to the shaft, a spring mechanism arranged coaxially about and radially from said mounting member for yieldingly moving said brake piston toward its released position, and a spring retainer assembly for captively entrapping the spring mechanism between first and second axially spaced surfaces disposed at opposite ends of said spring mechanism, with said spring retainer assembly being arranged in operable association with the mounting member while permitting compression of said spring mechanism in response to axial movement of said brake piston toward an engaged position, and wherein the spring retainer assembly including said first and second surfaces being axially movable along the length of said mounting member to compensate for wear of the friction brake surfaces on the brake members while maintaining the fixed clearance between the brake piston and the brake members following the return of the brake piston to its released position.

5,601,161
SNUBBER BRAKE ASSEMBLY
Alex Brigden, Bay 4, 101 Spears Road, Quesnel B.C., Canada
Filed Mar. 31, 1995, Ser. No. 412,333
Int. Cl.[6] F16F *7/04*; B66C *13/06*
U.S. Cl. 188—83 **9 Claims**



1. A snubber brake assembly for use with suspended, swingable bodies such as a logging machine grapple, said assembly including:

at least one pair of spaced, parallel lugs;

a pivot shaft extending through said lugs;

a brake subassembly having its components coaxially located on said pivot shaft between said lugs, said subassembly including inner and outer brake housings having matching, frusto-conical tapered surfaces directed towards one another, and brake shoes located intermediate said inner and outer housings; and

means on said pivot shaft for applying an adjustable compressing force to said housings and said brake shoes therebetween, including a saddle plate straddling and removably mounted on said pivot shaft and adjustment means associated with said saddle plate for applying said compressing force on said housings and brake shoes to inhibit pivotal movement of components supported by said lugs;

said saddle plate and said brake shoes being so formed as to be removable from said pivot shaft without dismantling the complete brake subassembly and whereby the removal of said saddle plate provides for movement of selected components of the subassembly on the pivot shaft to remove, repair or replace said brake shoes.

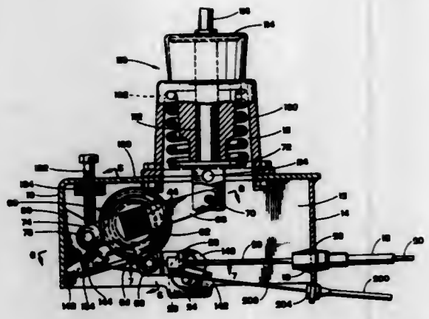
5,601,162
SPRING APPLIED AUTOMATIVE PARKING BRAKE SYSTEM
Robert L. Heimann, Moberly, Mo., assignor to Orscheln Co., Moberly, Mo.
Filed Dec. 13, 1994, Ser. No. 368,831
Int. Cl.[6] F16D *65/16*; B60K *41/28*
U.S. Cl. 188—170 **18 Claims**

1. A parking brake system for tensioning the parking brake cable of a vehicle, comprising:

a housing adapted to be connected to the vehicle;

a pivot assembly adapted to be connected at a first point of said pivot assembly the vehicle brake cable and rotatably positioned around a main pivot within said housing;

a main spring positioned along a main spring longitudinal axis, said main spring having a fixed end positioned adjacent said housing and a free end positioned adjacent a second point of



said pivot assembly, said main spring biasing said pivot arm assembly toward a brake-applied position;

a spring compression assembly capable of compressing said main spring along said main spring longitudinal axis such that said pivot arm assembly is rotated toward a brake-released position;

a retaining assembly capable of retaining said pivot arm assembly in said brake-released position; and

a releasing assembly for releasing said retaining assembly, thereby permitting said main spring to return said pivot arm assembly toward said brake-applied position.

5,601,163

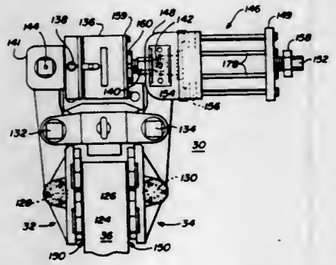
AUTOMATIC ADJUSTER FOR BRAKE CALIPERS

Richard L. Kent, White Deer, Tex., assignor to IRI International Corporation, Pampa, Tex.

Filed Mar. 5, 1996, Ser. No. 610,732

Int. Cl.[6] F16D *65/24*

U.S. Cl. 188—170 **9 Claims**



1. An automatic slack adjustment device for pivotal brake caliper arms having brake pads on opposing sides of a disc-type brake drum comprising:

a first housing having first and second body portions (**188**, **198**);

said first body portion having an outer end (**140**) for coupling to one brake caliper pad and an inner cup-shaped end having end plate and a sidewall with a first portion of side wall (**190**) having a first inside diameter and a second contiguous sidewall portion having a second inside diameter greater than the first inside diameter;

said second body portion having an outer end for coupling to a second opposed brake caliper pad and an inner cylindrical end for insertion in said inner cup-shaped end of said first body portion, said inner cylindrical end having an outside diameter spaced from and being slidably associated with said first and second inside diameters of said first body portion inner cup-shaped end;

an orifice in said second body portion enables fluid under pressure to force said first and second body portions apart a predetermined distance to close the brake calipers and provide a braking action;

a plurality of stacked split snap rings compressed in said space between said first inside diameter of said cup-shaped end and said outside diameter of said inner cylindrical end;

an annular retaining ring in the space between said second inner diameter of said cup-shaped end and said outer diameter of said inner cylinder; and

a projection on the outer diameter of said inner cylindrical end to prevent said plurality of stacked split snap rings from moving with respect to said inside diameter of said inner cup-shaped end such that when said first and second body portions are forced sufficiently far apart due to wear of said brake caliper pads, one of said compressed snap rings is forced into the space between said inner cylindrical end and said second inside diameter of said inner cup-shaped end above said retainer ring to prevent said inner cup-shaped end from resuming its original position when pressure is removed thus compensating automatically for any brake caliper wear.

5,601,164

DEVICE USING ELECTRORHEOLOGICAL FLUID

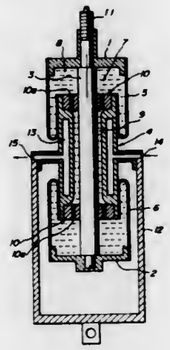
Toshiyuki Ohsaki, and Satoru Kawamata, both of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Nov. 9, 1994, Ser. No. 338,082

Claims priority, application Japan, Nov. 11, 1993, 5-282606

Int. Cl.[6] F16F *9/42;9/53*

U.S. Cl. 188—274 **2 Claims**



1. A device using an electrorheological fluid comprising; a fluid enclosing space, an electrorheological fluid in the fluid enclosing space, a restrictive passage for the electrorheological fluid and electrodes arranged on the restrictive passage, means for cooling the electrorheological fluid disposed around the fluid enclosing space, wherein said device comprises a vibration damper having an upper face plate and a lower face plate attached to a rigid rod serving as an electrode and each plate separated from each other at a given interval in an axial direction of the rigid rod, a cylindrical member serving as an electrode disposed around the rigid rod spaced from the face plates, rubber sleeves liquid-tightly connecting both end portions of the cylindrical member to both the face plates to deride a closed liquid chamber, said electrorheological fluid in the closed liquid chamber, said restricted passage formed between the rigid rod and the cylindrical member, sliding guide members secured to inner peripheral surfaces of both end portions of the cylindrical member for smoothing relative motion of the rigid rod to the cylindrical member in its axial direction, and said means for cooling comprises a passage for a refrigerant formed in the cylindrical member to surround the restricted passage.

5,601,165

ROTARY ACTUATOR, A ROTARY ACTUATOR IN A MOTOR VEHICLE SUSPENSION, AND A METHOD OF MASS PRODUCING ROTARY ACTUATORS

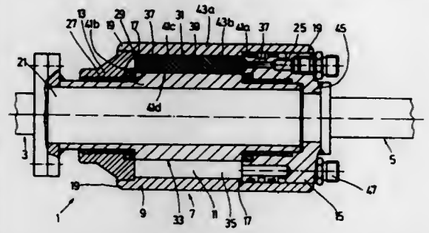
Horst Oppitz, Dittelbrunn; Stefan Schiffer, Schonungen, and Bernhard Schmitt, Wasserlosen, all of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Germany

Filed Oct. 28, 1994, Ser. No. 331,115

Claims priority, application Germany, Nov. 5, 1993, 43 37 768.8

Int. Cl.[6] F03C *4/00;* **B60G** *21/055;* **F04C** *9/00*

U.S. Cl. 188—296 **20 Claims**



1. A sealing arrangement in a rotary actuator comprising:

cylinder means having at least two inwardly radially extending opposed ribs;

shaft means rotatable about a confined arc within the cylinder means, said shaft means including at least two radially extending opposed vanes, each of said ribs and vanes including a longitudinal groove and a longitudinally extending seal within each groove;

said cylinder means comprising a longitudinally extending recess in an interior wall of the cylinder means on at least one side of each rib, said recesses being adjacent to the ribs;

said shaft means including longitudinally extending shaft recesses on at least one side of each vane, said shaft recesses being adjacent to the vanes;

each of said seals being radially compressed between said shaft means and said cylinder means during operation of the rotary actuator; and

each of said recesses and said shaft recesses being dimensioned to correspond to the thickness of each seal and being dimensioned to relieve at least a portion of the compression of each seal.

5,601,166

ALIGNING TYPE ROLLER CLUTCH

Masayuki Beppu, Iwata, and Toshihide Gotoh, Shizuoka-ken, both of Japan, assignors to NTN Corporation, Osaka-fu, Japan

Filed Sep. 6, 1995, Ser. No. 524,028

Int. Cl.[6] F16D *41/06*

U.S. Cl. 192—45 **4 Claims**

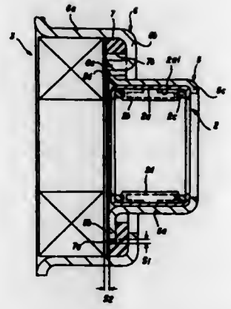
1. An aligning type roller clutch for controlling a direction of rotation of a rotatable shaft supported for rotation in a main frame through a rolling contact bearing, comprising:

a bearing housing, for receiving the rolling contact bearing, is formed integrally with the main frame;

a clutch housing for receiving a roller clutch;

an outer flange portion of the clutch housing and an inner flange portion of the bearing housing axially engage with each other;

tooth portions and notch portions circumferentially engageable with each other are distributively provided in the bearing housing and the clutch housing; and



radial and axial clearances are formed between the bearing housing and clutch housing for floating the clutch housing relative to the bearing housing, wherein the clutch housing is alignably attached to the main frame.

5,601,167

ONE-WAY CLUTCH

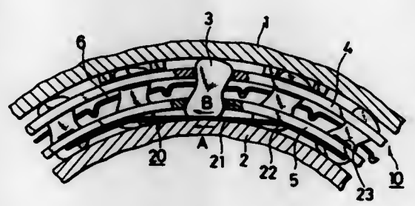
Yoshio Kinoshita; Tatsuo Suzuki, and Hirobumi Shirataki, all of Shizuoka-ken, Japan, assignors to NSK-Warner K.K., Tokyo, Japan

Filed Jul. 13, 1995, Ser. No. 502,127

Claims priority, application Japan, Jul. 15, 1994, 6-194497

Int. Cl.[6] F16D *41/069*

U.S. Cl. 192—45.1 **5 Claims**



1. In a one-way clutch having engagement members for transmitting drive force from one of an outer ring and an inner ring to the other, an inner and outer retainers holding said engagement members in place, a clutch member for selectively maintaining said engagement members in contact with an annular outer wall of said inner ring and an annular inner wall of said outer ring, and a drag strip, said engagement members, inner and outer retainers, clutch member and drag strip being all disposed between said annular outer wall of said inner ring and said annular inner wall of said outer ring, the improvement wherein said drag strip comprises:

a sliding main body for being brought into contact with said annular outer wall of said inner ring, and

a hanger extending at a right angle from at least one of opposite ends of said sliding main body into an engagement-member-receiving window of said inner retainer and, on a side edge of said normally maintained in contact with an edge of said engagement-member-receiving window of said inner retainer, having an engagement portion engageable with said edge of said engagement-member-receiving window, said engagement portion being located in the same plane as said side edge of said hanger, whereby said hanger is maintained in engagement with said inner retainer by means of said engagement portion.

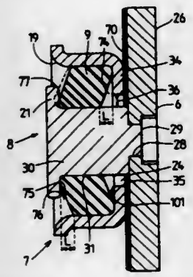
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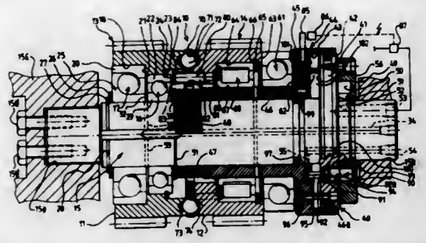
5,601,168

POWER TRANSMITTTING DEVICE

Toshihiro Hayashi, Anjo; Akira Kishibuchi, Nagoya; Junichi Ohguchi, Toyoake, and Haruhisa Shibata, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 14, 1995, Ser. No. 421,870
Claims priority, application Japan, Apr. 15, 1994, 6-076822; Mar. 30, 1995, 7-072975
Int. Cl.[6] F16D 27/112;27/14
U.S. Cl. 192—55.6 12 Claims





1. A power transmitting device for intermittently transmitting power to a rotating machine, comprising:

a first rotating member which receives power from a driving force source to rotate;

a first rotated member having an engaging surface facing one end face of said first rotating member and selectively engaging therewith or disengaging therefrom;

a second rotated member fixed to a non-engaging surface side of said first rotated member, for transmitting power to a drive shaft of a rotating machine;

a cylindrically recessed elastic member housing portion provided in said second rotated member and having an insertion hole in a bottom portion thereof;

an elastic member provided in said elastic member housing portion and contacting to an inner peripheral wall of said elastic member housing portion; and

a fixing member tightly inserted in said elastic member in a direction of the drive shaft and penetrating said insertion hole to fix said first rotated member and said second rotated member together, a first gap being formed between an outer peripheral wall of said fixing member and a peripheral wall of said insertion hole in a rotating direction of the drive shaft of the rotating machine,

wherein said first gap is set smaller than a first deformation and displacement of said elastic member which is generated based on a first maximum torque exerted on said elastic member immediately after one end face of said first rotating member has engaged with said engaging surface of said first rotated member, and larger than a second deformation and displacement which is generated based on a second maximum torque upon steady operation after a lapse of predetermined time after the one end face of said first rotating member engages with said engaging surface of said first rotated member.

5,601,169

FLUID PRESSURE OVERLOAD RELEASE CLUTCH

Leszek M. Wodecki, Rockford, Ill., assignor to British Autogard Limited, Cirencester, United Kingdom

Filed Feb. 18, 1994, Ser. No. 198,887
Int. Cl.[6] F16D 25/08;43/20
U.S. Cl. 192—56.33 17 Claims

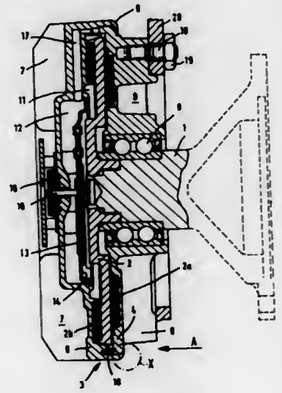
1. In a clutch comprising a pair of relatively rotatable and axially movable drive members, each having torque transmitting abutments, a relievable biasing means to bias the drive members axially towards each other so as to be disengagably connected in torque transmitting relationship by a plurality of torque transmitting elements which are interposed between the drive members and which are biased into torque transmitting relationship with the torque transmitting abutments by the biasing means when the clutch is engaged and relieving means to relieve the relievable biasing means so that the torque transmitting elements are movable out of torque transmitting relationship with the torque transmitting abutments to disengage the clutch and a cage, which is free to rotate relative to both the drive members during disengagement, to guide the torque transmitting elements, the improvement including a static support means wherein one of said drive members is mounted on and externally of the static support means so as to be axially located and rotatable relative to the static support means and the other of said drive members is mounted on and externally of the static support means and each of said drive members is provided with a torque transmitting connection independently of said static support means so as to provide a torque path through the clutch which is not transmitted through the static support means.

5,601,170

FLUID FRICTION COUPLING

Hans Martin, and Harald Dax, both of Stuttgart, Germany, assignors to Behr GmbH & Co., Stuttgart, Germany

Filed Nov. 2, 1994, Ser. No. 334,311
Claims priority, application Germany, Nov. 9, 1993, 43 38 163.4
Int. Cl.[6] F16D 35/00
U.S. Cl. 192—58.681 10 Claims



1. A fluid friction coupling comprising:

a drive shaft;

a housing defining a work chamber and being rotatably journalled on said drive shaft;

a drive disc mounted on said drive shaft so as to be rotatable in said work chamber;

said housing containing a viscous medium and said drive disc and said housing conjointly defining means for transmitting torque from said drive disc to said housing via fluid friction in said viscous medium;

said housing having an inner housing part having a first peripheral edge and an outer housing part having a second peripheral edge;

said peripheral edges conjointly defining a form-tight interlocked interface;

one of said housing parts having a plurality of cooling ribs formed thereon to define a plurality of cooling rib extensions reaching to said peripheral edge of said one housing part;

said cooling rib extensions being raised portions defining a plurality of recesses between said cooling rib extensions;

the other one of said edges being a flange having a periphery and said flange having a plurality of outermost edge regions along said periphery; and,

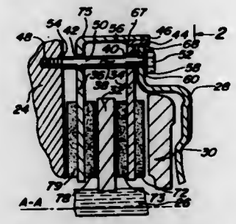
said outermost edge regions on the one hand and said cooling rib extensions and said recesses on the other hand being joined together to conjointly form a tooth-like interengagement defining said form-tight interlocked interface.

5,601,171

BRACKET ASSEMBLY FOR TORQUE TRANSMITTING DEVICE

Richard A. Flotow, Butler, Ind., assignor to Dana Corporation, Toledo, Ohio

Filed Jun. 23, 1994, Ser. No. 264,546
Int. Cl.[6] F16D 13/68
U.S. Cl. 192—70.13 5 Claims



1. In a friction torque device of the type having a driving member and a housing, wherein a pressure plate and a driven member are sandwiched between the housing and the driving member rotating about an axis, the friction torque device further comprising:

plurality of first brackets circumferentially distributed about the axis each bracket including a generally planar base plate, said base plate of said bracket having a friction surface adapted to contact the driven member;

a plurality of dowels fixed to the driving member at an outer periphery thereof with the brackets slidably disposed on an associated one of the dowels, the dowels thereby providing axial and non-rotatable movement of the brackets relative to the driving member;

a guide member coupled to said base plate of said bracket, said guide member adapted to cooperate with a member of the friction torque device for maintaining a substantially planar orientation of said base plate with respect to an engaging surface of the driven member during axial movement of said base plate;

a plurality of second brackets circumferentially distributed about the axis, each second bracket including a generally planar second base plate, said second base plate having a friction surface adapted to contact the driven member and being slidably disposed on an associated one of the dowels, the dowels thereby providing axial and non-rotatable movement relative to the driving member; and

a second guide member coupled to said base plate of said second bracket, said guide member adapted to cooperate with said first bracket for maintaining a substantially planar orientation of said second base plate with respect to the engaging surface of the driven member during axial movement of said second base plate.

5,601,172

POWER TAKE OFF CLUTCH ENGAGEMENT CONTROL SYSTEM FOR COLD WEATHER STARTING

Satish L. Kale, Willowbrook; William L. Schubert, Downers Grove, and Robert M. Peceny, Joliet, all of Ill., assignors to Case Corporation, Racine, Wis.

Continuation-in-part of Ser. No. 283,960, Aug. 1, 1994, Pat. No. 5,549,185. This application May 5, 1995, Ser. No. 435,749
Int. Cl.[6] F16D 48/02; B60K 28/04
U.S. Cl. 192—85 R 20 Claims

1. In a vehicle having a power source for producing rotational motion, a power take-off (PTO) shaft for supplying rotational motion to at least one piece of equipment other than the vehicle, a clutch including an input shaft coupled to the power source and an output shaft coupled to the PTO shaft, and an operator area, a control system comprising:

a clutch control coupled to the clutch to engage and disengage the clutch in response to an engagement signal;

a sensor associated with the operator area to produce a presence signal representative of the presence of an operator in the operator area;

an output transducer disposed to generate an output signal representative of rotation of the output shaft;

a PTO ON/OFF switch; and

a control circuit coupled to the clutch control, the sensor, the output transducer, and the ON/OFF switch, wherein the control circuit applies the engagement signal to the clutch control in response to a change in status of the ON/OFF switch to ON, and terminates application of the engagement signal to the clutch control if the presence signal indicates that an operator is not present, a first predetermined period of time elapsed, and the output signal indicates that the output shaft is substantially stationary.

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5,601,173

LINER SUPPORT DISC FOR SUPPORTING FRICTION LINERS, ESPECIALLY FOR A MOTOR VEHICLE

Jacques Thirion de Briel, Colombes, France; Gino Villata, Buttigliera D'Asti, Italy, and Michel Biard, Issy-Les-Moulineaux, France, assignors to Valeo, Paris, France

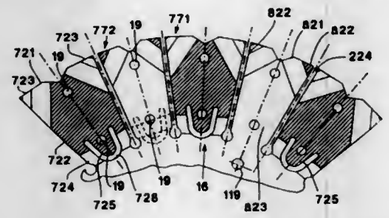
PCT No. PCT/FR94/00752, § 371 Date May 22, 1995, § 102(e) Date May 22, 1995, PCT Pub. No. WO95/00769, PCT Pub. Date Jan. 5, 1995

PCT Filed Jun. 21, 1994, Ser. No. 382,009

Claims priority, application France, Jun. 21, 1993, 93 07475; European Pat. Off., Jul. 15, 1993, 93401832; France, Nov. 9, 1993, 93 13341

Int. Cl.[6] F16D *13/64*

U.S. Cl. 192—107 C **11 Claims**



1. A liner support disc for a clutch friction wheel comprising at least one central portion (**16**) and a peripheral portion divided into at least one series of radial blades (**771-971-1071-1471**) of tripod type, in which said blades have, defined by bent portions (**721-921-1121-1421**), a central support zone (**722-922-1022-1422**) and two peripheral support zones (**723-923-1023-1423**) on either side of said central zone, said peripheral zones being offset axially with respect to said central zone, and in which said central support zone is joined to the at least one central portion (**16**) through a foot which includes an inclined zone in the form of a longitudinal bent portion (**724-924-1024**) at right angles to the radial axis of symmetry of a said blade, characterized in that the central zone (**722-922-1022-1422**) of at least some of the tripod blades (**771-971-1071-1471**) is extended centrally (at **725-925-1025**) radially inwardly by virtue of a slot (**726-926-1026**) formed in the longitudinal bent portion (**724-924-1024**).

5,601,174

CLUTCH PLATE AND METHOD FOR ITS MANUFACTURE

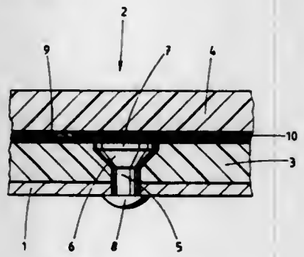
Norbert Schulz, Marienheide, Germany, assignor to Raybestos Industrie-Produkte GmbH, Morbach, Germany

Filed Apr. 10, 1995, Ser. No. 418,653

Claims priority, application Germany, Apr. 21, 1994, 44 14 058.4

Int. Cl.[6] F16D *69/04;13/64*

U.S. Cl. 192—107 M **9 Claims**



1. A rotatable clutch plate comprising:

a driven plate having opposite facing first and second major surfaces, and at least one rivet hole extending from the first major surface to the second major surface;

an annular friction lining positioned over said first major surface of said driven plate, said friction lining having opposite facing first and second sides, wherein said friction lining includes first and second layers of friction material, said first layer having a recess sized for a head of a rivet; and

a rivet positioned in said rivet hole of said driven plate and securing said first side of said friction lining to said driven plate, said rivet having a head received in said recess in said first layer of said friction lining, said first layer of said friction lining being secured to said first major surface of said driven plate by said rivet, and said second layer of said friction lining being adhered to said first layer in face to face contact therewith, wherein said first layer of said friction lining is positioned between said second layer of said friction lining and said driven plate, and wherein said second layer of said friction lining covers said rivet.

5,601,175

LUBRICATION SYSTEM FOR ONE-WAY CLUTCH

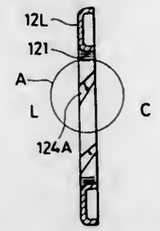
Yoshio Kinoshita, and Hideo Yanagihara, both of Shizuoka-ken, Japan, assignors to NSK-Warner K.K., Tokyo, Japan

Filed Nov. 1, 1995, Ser. No. 551,417

Claims priority, application Japan, Nov. 1, 1994, 6-304164

Int. Cl.[6] F16D *13/74*

U.S. Cl. 192—113.32 **8 Claims**



1. In a lubrication system for a one-way clutch, said system including plural lube oil grooves formed obliquely to a central axis of said one-way clutch in an inner or outer peripheral wall of an end bearing to introduce a lube oil into said one-way clutch, the improvement wherein said lube oil grooves are each formed with varied widths, depths and/or shapes in cross-section from an outer opening on a side opposite to clutch members to an inner opening on a side of said clutch members so that a difference is produced between an amount of the lube oil, which is to be allowed to flow into the side of said clutch members from said outer opening via said inner opening owing to pumping action of said lube oil groove, and another amount of the lube oil to be allowed to flow out from said outer opening via said inner opening.

5,601,176

ARMATURE ASSEMBLY IN AN ELECTROMAGNETIC COUPLING DEVICE

Takashi Ishimaru, and Toshio Takahashi, both of Kiryu, Japan, assignors to Ogura Clutch Co., Ltd., Japan

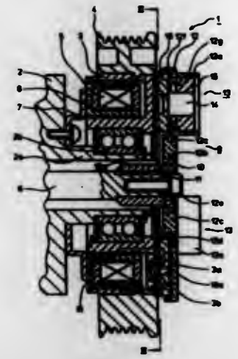
Filed Apr. 13, 1995, Ser. No. 421,480

Claims priority, application Japan, Apr. 15, 1994, 6-101496; Nov. 10, 1994, 6-301563

Int. Cl.[6] F16D *27/112;65/21*

U.S. Cl. 192—200 **13 Claims**

1. An armature assembly for an electromagnetic coupling device comprising an armature hub, with a boss and a flange, that is adapted to be connected to and rotate with an input shaft;



an armature support member made from a composite material, attached to the armature hub and extending radially outward from the armature hub and having rubber damper holders on its radially outer portion;

a rubber damper mounted in each rubber damper holder;

a coupling post attached to each rubber damper;

an armature, with a radially inner edge, a radially outer edge and a rotor contact surface, attached to each coupling post;

an armature stop surface on the armature hub flange radially positioned between the radially inner edge of the armature and each of the coupling posts, which contacts the armature and limits axial movement of the armature relative to the hub and toward the rubber dampers; and

a generally annular space extending axially from the armature to the armature support member and radially outward from the armature stop surface on the armature hub flange to at least the radially outer edge of the armature when the armature is in contact with the armature stop surface and wherein the generally annular space provides sufficient clearance to accommodate normal deformation of the armature support member without holding the armature out of contact with the armature stop surface.

5,601,177

TAMPER-RESISTANT VENDING MACHINE

Kenneth W. Oden, Charles Town, W. Va., assignor to Royal Vendors, Inc., Kearneysville, W. Va.

Filed Jun. 17, 1994, Ser. No. 262,053

Int. Cl.[6] G07F *1/04*

U.S. Cl. 194—348 **10 Claims**

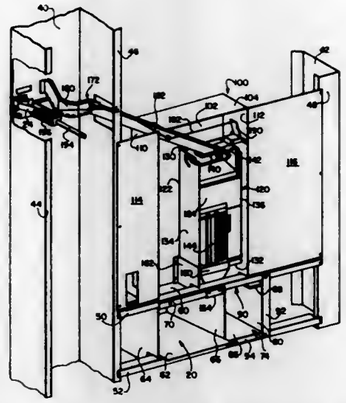
1. A tamper-resistant door for an enclosure such as a vending machine, said door comprising:

a conventionally-positioned product delivery port including an upper wall;

a cash box vault positioned centrally of said door spaced from the edges thereof and horizontally adjacent said delivery port for receiving a cash box, said cash box vault including a top having an opening therein;

a coin return chute having a coin discharge and positioned in said upper wall of said product delivery port;

a coin changer positioned over said product delivery port and said cash box vault, said coin changer having opposed front and back faces, opposed top and bottom faces, and opposed side faces, an inlet for receiving coins, a first outlet in communication with said coin return chute for returning change through said delivery port, and a second outlet in communication with said opening in said cash box vault for depositing change into a cash box in said cash box vault; and



a changer vault enclosing at least said front, top, and side faces of said coin changer.

5,601,178

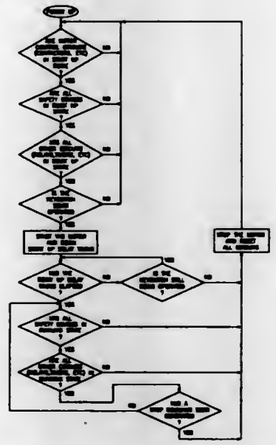
DETECTION OF ESCALATOR SAFETY CIRCUIT COMPONENT OPERABILITY

Vlad Zaharia, 35 Highland St., Rocky Hill, Conn. 06067, and John Faup, 34 Berkshire Way, Simsbury, Conn. 06070

Filed Mar. 16, 1995, Ser. No. 405,475

Int. Cl.[6] B66B *25/00*

U.S. Cl. 198—323 **16 Claims**



1. A passenger transporting assembly having a motor, a plurality of passenger safety circuits including at least one speed-dependent safety circuit, a master power switch, and a manually operated keyswitch, said transporting assembly comprising:

a) means for determining whether motor control circuit components in said assembly are in a start up state when said master power switch has been closed;

b) means for determining whether said passenger safety circuits are in a start up state when said master power switch has been closed;

c) means for delivering start up power to said motor when said keyswitch has been closed and said motor contact circuit

components and said passenger safety circuits are all determined to be in a start up state;

d) means for delivering power to a start up delay timer means when start up power is applied to said motor;

e) means for determining whether said speed-dependent safety circuits are operating at full running speed;

f) means for determining whether said start up delay timer means is energized; and

g) means for interrupting power to said motor when said speed-dependent safety circuits are determined to be operating at less than full running speed during operation of said start up delay timer means, and when said keyswitch has been released after start up of the motor.

5,601,179

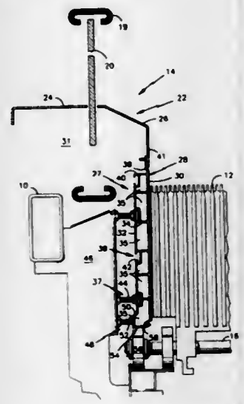
BALUSTRADE SKIRT PANEL

Gerald Wente, Pohl, and Willy Adrian, Oberakirchen, both of Germany, assignors to Otis Elevator Company, Farmington, Conn.

Continuation of Ser. No. 185,739, Jan. 24, 1994, which is a continuation-in-part of Ser. No. 7,418, Jan. 22, 1993, abandoned. This application Jan. 5, 1996, Ser. No. 583,579

Int. Cl.[6] B65G *15/00*

U.S. Cl. 198—335 **21 Claims**



1. A balustrade skirt panel for a passenger conveying device having a plurality of moving treadplates, comprising:

a formed, seamless cross-sectional profile extending in a lengthwise direction, wherein said profile includes,

a front surface;

a back surface;

a plurality of ribs, extending between said front and back surfaces;

means for maintaining said skirt panel in close proximity to the treadplates; and

means for mounting a face panel, said face panel to be attached to said front surface of said skirt panel, wherein said means for mounting said face panel comprises a slot integrally formed in said profile for receiving an edge of said face panel;

wherein said front surface, said back surface, and said ribs extending therebetween, form integral structural members extending along the length of said skirt panel.

5,601,180

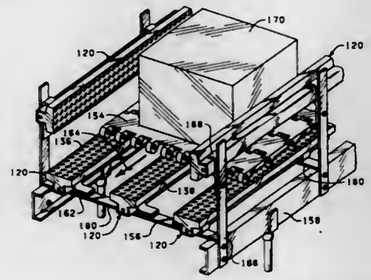
CONVEYOR APPARATUS HAVING A BELT AND OBJECT GUIDE WITH A NODULAR CONTACT SURFACE

Dorian F. Steeber, 14 Mountain Vista Rd., Taylors, S.C. 29687; Robert E. Reaser, 283 Sugar Creek La., Greer, S.C. 29650, and William G. Faulkner, 6701 Newman Dr., Oklahoma, Okla. 73162

Continuation-in-part of Ser. No. 488,645, Jun. 8, 1995. This application Jan. 4, 1996, Ser. No. 582,860

Int. Cl.[6] B65G *43/00*

U.S. Cl. 198—502.1 **27 Claims**



1. A conveyor apparatus for transporting an object, comprising:

a conveyor belt;

conveyor belt guide means for guiding and supporting at least a portion of the conveyor belt, the conveyor belt guide means comprising at least one conveyor belt guide member adapted for sliding engagement with the conveyor belt, the guide member having a plurality of nodules extending therefrom so as to define a low friction contact surface for reducing drag between the conveyor belt and the conveyor belt guide member when the conveyor belt is in sliding engagement with the conveyor belt guide member; and

means for actuating the conveyor belt such that the conveyor belt slides over the conveyor belt guide member of the conveyor belt guide means.

5,601,181

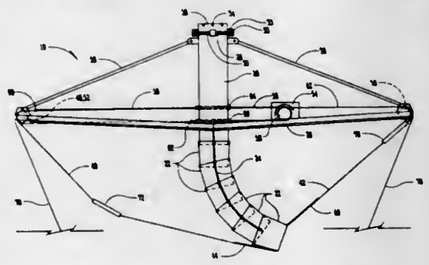
ADJUSTABLE GRAIN ELEVATOR SPOUT

Tim J. Lindhorst, 707 280th St., Lone Rock, Iowa 50559

Filed May 23, 1995, Ser. No. 447,986

Int. Cl.[6] B65G *21/10*

U.S. Cl. 198—536 **23 Claims**



1. An adjustable grain elevator spout comprising:

a mounting portion attachable to the spout of a grain elevator;

at least one lateral arm coupled to and extending laterally from the mounting portion;

a movable spout having an upper portion and a lower portion, said upper portion coupled to the mounting portion such that said spout is in communication with the spout of the grain elevator, said lower portion being movable between a first and second position, said second position being toward said lateral arm;

a cable system coupled to the movable spout proximate the lower portion, and being operatively coupled to the lateral arm; and

a prime mover operatively coupled to the cable system for controlling the movement of the movable spout by manipulating the tensions of the cable system to move the movable spout between the first and second positions.

5,601,182

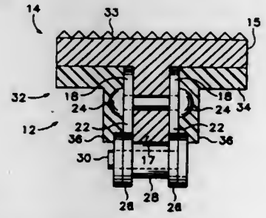
PRECISION FEED CHAIN

John W. Tidland, 3408 NE. Corbin Rd., Vancouver, Wash. 98686

Filed Sep. 27, 1994, Ser. No. 312,763

Int. Cl.[6] B65G *15/42*

U.S. Cl. 198—692 **10 Claims**



1. A feed chain comprising:

multiple support platforms each having a top member and at least one downwardly directed bottom member;

coupling means for pivotally joining adjacent support platforms together forming a single continuous chain capable of advancing in a longitudinal direction;

an elongated guide assembly for supporting the support platforms, the guide assembly having an internal channel for snugly receiving the bottom member of each support platform thereby allowing the chain to advance in said longitudinal direction while at the same time maintaining the support platforms in a stable latitudinal and horizontal orientation; and

plastic wear slides attached to the support platform for providing a low resistive surface between said support platform and the guide assembly, the plastic wear slides each including a vertical portion snugly positioned between the support platform and an inside face of the guide assembly channel and a horizontal portion for supporting the top member above the guide assembly.

5,601,183

TWO-POLE MAKE-BEFORE-BREAK SWITCH

M. Douglas Boyd, Hanover Park; Tom J. Oshgan, Mount Prospect, and Robert Krawczyk, Rolling Meadows, all of Ill., assignors to Eaton Corporation, Cleveland, Ohio

Filed Nov. 15, 1991, Ser. No. 792,966

Int. Cl.[6] H01H *1/60;1/46*

U.S. Cl. 200—553 **15 Claims**

1. A two-pole make-before-break switch comprising:

a base housing;

a cover member secured to said base housing;

an actuating member disposed above said cover member;

a first contact assembly mounted on an interior portion of said base housing;

said first contact assembly including a first common contact blade member having a first contact element, an upper resilient blade member having a second contact element, and a lower fixed contact member having a third contact element, said first, second and third contact elements being electrically connected to a first terminal, a second terminal and a third terminal respectively disposed on the bottom exterior of said housing;

a spacer member being disposed for suspending said first contact element between said second and third contact elements when said switch is in the unactivated state;

said upper resilient blade member being movable between a first position where said second contact element is spaced apart from said first contact element and a second position where said second contact element is in engagement with said first contact element;

a second contact assembly mounted on an interior portion of said base housing;

said second contact assembly including a second common contact blade member having a fourth contact element, an upper fixed blade member having a fifth contact element, and a lower fixed blade member having a sixth contact element, said fourth, fifth and sixth contact elements being electrically connected to a fourth terminal, said second terminal and a fifth terminal respectively disposed on the bottom exterior of said base housing;

said second contact blade member being movable with a snap action between a first position where said fourth contact element is in engagement with said fifth contact element and a second position where said fourth contact element is in engagement with said sixth contact; and

said actuator initially moving said upper resilient blade member of said first contact assembly so as to cause engagement of said first and second contact elements prior to the moving of said second common contact blade member so as to cause the snap action engagement of said fourth and sixth contact elements during a manual-up mode of operation.

5,601,184

METHOD AND APPARATUS FOR USE IN PHOTOCHEMICALLY OXIDIZING GASEOUS VOLATILE OR SEMI-VOLATILE ORGANIC COMPOUNDS

Theodore S. Welgold, Boise, Id., assignor to Process Technologies, Inc., Spokane, Wash.

Filed Sep. 29, 1995, Ser. No. 536,778

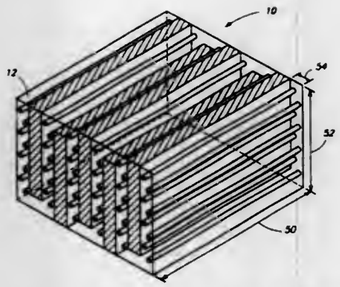
Int. Cl.[6] C07C *1/00;51/00;* C07F *1/00;* B01J *19/00*

U.S. Cl. 204—157.15 **39 Claims**

1. An apparatus for photochemically oxidizing gaseous volatile or semi-volatile organic compounds comprising:

a reactor vessel having a plurality of reaction chambers provided therein, the reaction chambers having respective chamber lining sidewalls;

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a source of ultraviolet light provided within the reaction chambers to oxidize gaseous volatile or semi-volatile organic compounds fed to the reaction chambers into gaseous oxidation products;

the sidewalls of the reaction chambers comprising a dry porous cementitious and chemically sorbent material, the sorbent material being chemically reactive with the gaseous oxidation products to produce solid reaction products incorporated in the reaction chamber sidewalls; and

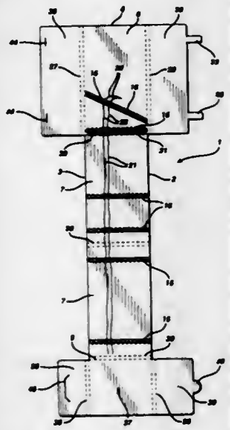
the sidewalls of the reaction chambers comprising at least one baffle mounted relative to the reactor vessel, the baffle defining a gas flow path within the reactor vessel between a gas inlet and a gas outlet, the baffle comprising at least a portion of the respective reaction chamber sidewalls with the the baffle itself comprising the dry porous cementitious and chemical sorbent material.

5,601,185

PACKAGE WITH SURGICAL SUTURE MATERIAL

Rainer Behring, Itzstedt, and Ulrich Schnoor, Bad Bramstedt, both of Germany, assignors to Ethicon, Inc., Somerville, N.J.

Filed Aug. 8, 1995, Ser. No. 512,729
Int. Cl.[6] A61B *17/06*
U.S. Cl. 206—63.3 **1 Claim**



1. Package with surgical suture material

a) having a base plate (1) which has a first long edge (2), a second long edge (3), an upper short edge (4) and a lower short edge (5), and an outer face, and which is divided by at least one fold (3) running transversely to the first and second long edges (2, 3) into a needle-holding section (6) starting at the upper short edge (4) and at least one thread-holding section (7) connected thereby, whereby provided at the needle-holding section (6) is at least one needle holder (16) and at each thread-holding section (7) at least one thread holder (15) running transversely to the first and second long edges (2, 3),

b) having at least one needle-thread combination comprising a thread and a needle (20, 21) said needle (20) secured at a front thread end (22), whereby each needle-thread combination (20, 21) is disposed into the needle-holding section (6) and the thread-holding section (7), and whereby each thread (21) is held by a plurality of thread holders and the needles (20) are held by each needle holder (16), so that the threads (21) are kept spaced apart, or having one or several threads (21), whereby at least one thread (21) is disposed onto the needle-holding section (6) and at least one thread-holding section (7), and whereby each thread (21) is held by at least one thread holder (15) and the front end of each thread (22) is held by the needle holder (16), so that each thread (21) is kept spaced apart,

c) whereby the base plate (1) is folded along folds (30) in concertina shape, so that each thread-holding section (7) and each needle-holding section (6) lie opposite one another,

d) whereby, in the folded state of the base plate (1), the front end of each needle-thread combination (20, 21) and the needle holder (16) is located on the outer face of the folder base plate (1),

e) and having first closure devices (35, 26) which are connected to the first and second long edges (2, 3) of the base plate (1), so that the folder base plate (1) is secured against unfolding,

f) and having a cover plate (37) arranged such that it is able to be folded over at one of the upper or lower short edges (4, 5) in order to cover the front end of the needle-thread combinations (20, 21) or the front end of the threads (21) lying on the needle-holding section (6) and having second closure devices (38, 39) which are arranged at the cover plate (37) in order to hold the cover plate (37) bent into the needle-holding section (6) in this position,

g) wherein the cover plate (37) is arranged at the lower short edge (5) of the base plate (1), and the second closure devices (38, 39) are arranged at the first and second long edges of the cover plate (37) and the first closure devices (35, 36) are arranged at the first and second long edges (2, 3) of the needle-holding section (6),

h) wherein the first and second closure devices (35, 36, 38, 39) are designed as closure plates (35, 36, 38, 39) which can be folded around towards the folded base plate (1), and closure means (43, 45) are formed at the closure plates (36, 39) which engage with closure means (44, 46) of the corresponding closure plates (35, 38),

i) wherein the cover plate (37) and the first and second closure plates (35, 36, 38, 39) are formed as one piece with the base plate (1),

j) wherein the needle holder (16) is arranged at an angle to the first and second long edges (2, 3) of the base plate (1),

k) wherein the location where the thread (21) is directed around section (6, 7) in the folded state of the base plate (1), each fold (30) is formed as a member of a series of holds (31), which represents an additional guide for each thread (21),

l) wherein each thread holder (15) and each needle holder (16) is formed as glued-on foam strips which are provided with holding slots (17, 18, 19) which run transversely,

m) wherein the form strips of the thread holders (15) have a triangular cross-section with a flat base face (11) and either a straight or curved face (12, 13),

n) wherein an interior angle of the cross-section, formed by the flat base (11) and one face (13) is an obtuse angle, and

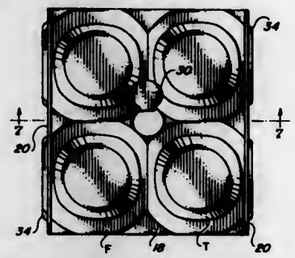
o) wherein a side edge (14) of the foam strip is formed in zigzag shape, and each holding slot (17, 19) is arranged at different places of the strip, whereby different cross-sectional areas of each holding slots (17, 19) are thereby provided.

5,601,186

TUB CARRIER

Neal Van Hine, Clifton, and Frederick Naumann, Old Tappan, both of N.J., assignors to Riverwood International Corporation, Atlanta, Ga.

Filed Nov. 13, 1995, Ser. No. 554,955
Int. Cl.[6] B65D *71/40*
U.S. Cl. 206—141 **4 Claims**



1. A package, comprising:

at least four similar articles, each article having a top portion and a flange extending outwardly from the top portion;

the articles being arranged in two rows, with the flanges of adjacent articles being connected to each other;

the flanges being shaped so that there is an opening between adjacent flanges of the four articles;

a carrier having a top panel and opposite side panel flaps connected to the top panel along fold lines;

the side panel flaps including slots through which portions of adjacent flanges of adjacent articles extend;

the top panel containing a finger hole substantially aligned with the opening between the adjacent flanges of the articles;

the top panel including a tab covering the finger hole; and

the tab being connected to the top panel by a fold line;

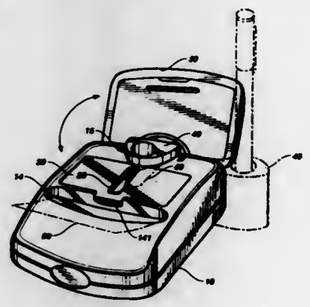
the tab being of such size and shape with respect to the size and shape of the finger hole that when the package is lifted by the finger hole the tab can be folded down through the opening between adjacent flanges of the four articles and up against the underside of the adjacent flanges of two of the adjacent articles.

5,601,187

DUPLICATE NOTEPAPER CASE

Lin Sheng-Wen, 4F, No. 335, Sec. 3, Chen Tai Rd., Wu Ku Hsiang, Taipei Hsien, Taiwan

Filed Mar. 29, 1996, Ser. No. 624,168
Int. Cl.[6] A45C *11/34*
U.S. Cl. 206—214 **15 Claims**



1. A case comprising:

a main case body;

a subordinate case body mounted in said main case body;

a perpetual calendar socket pivotally connected to said main case body so as to movable between a first position covering said subordinate case body and a second position exposing a perpetual calendar in said perpetual calendar socket; and

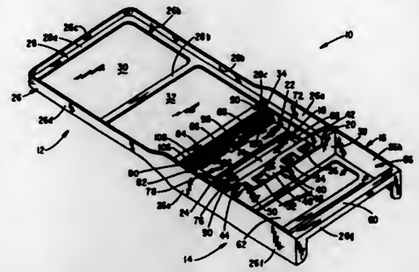
a pen socket pivotally connected to said main case body and movable between a retracted position and an accessible position.

5,601,188

SECURITY PACKAGE WITH INTERNAL POCKET FOR A SURVEILLANCE TAG

Larry Dressen, Waconia, and Barry Gregerson, Deephaven, both of Minn., assignors to Emplast, Inc., Shakopee, Minn.

Filed Apr. 18, 1996, Ser. No. 634,444
Int. Cl.[6] B65D *85/57;85/575*
U.S. Cl. 206—308.2 **15 Claims**



1. An anti-theft security package comprising:

a frame member of unibody construction having a handle member integrally attached to a containment structure, said containment structure including an article containment area, a surveillance tag containment area, a lock structure disposed between said article containment area and said surveillance tag containment area, and a rotating lid member;

said article containment area including a generally rectangular access aperture for inserting and removing an article into and out of said article containment area;

said surveillance tag containment area including an access aperture for inserting and removing a surveillance tag into and out of said surveillance tag containment area;

said lock structure including first locking means formed therein;

said rotating lid member having a surveillance tag enclosing portion hingedly attached to said surveillance tag containment area, a lock portion extending from said surveillance tag enclosing portion, and an article securing portion extending from said lock portion, said lock portion having second locking means aligned with said first locking means of said lock structure;

whereby the hinged rotation of said rotating lid member seals said access aperture of said surveillance tag containment area with said surveillance tag enclosing portion, lockedly engages said first locking means and said second locking means, and secures said article within said article containment area with said article securing portion.

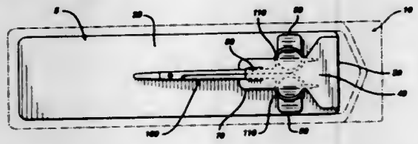
6. A security package of unibody construction for use with an audio-visual article, such as an audio cassette, a video cassette, a compact disc, and the like, comprising:

a handle member integrally connected to a containment structure;

said containment structure including surveillance tag containment means for receiving a surveillance tag, article containment means for receiving an audio-visual article therein, and lid means hingedly attached to said surveillance tag containment means for enclosing said surveillance tag therewithin and for securing said audio-visual article within said article containment means.

12. A security package of unibody construction comprising:
a handle member attached to a containment structure;
said containment structure including a surveillance tag pocket having a single access aperture, an article pocket having a single access aperture and at least one viewing aperture, a lid member hingedly attached to said surveillance tag pocket, and first lock means disposed between said surveillance tag pocket and said article pocket; and
said lid member having an enclosing portion capable of sealing off said access aperture of said surveillance tag pocket, a securing portion capable of extending partially into said access aperture of said article pocket to secure an article therewithin, and second lock means disposed between said enclosing portion and said securing portion capable of lockingly engaging with said first lock means to maintain said enclosing portion in sealed relation over said access aperture of said surveillance tag pocket and to maintain said securing portion in position within said access aperture of said article pocket to secure said article therewithin.

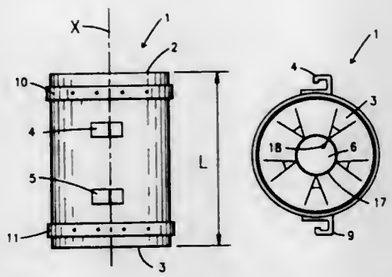
5,601,189
FOLDER PACKAGE FOR ELECTROSURGICAL SCISSORS
Constance Roshdy, New Egypt, N.J., assignor to Ethicon, Inc., Somerville, N.J.
Filed May 17, 1996, Ser. No. 649,151
Int. Cl.[6] B65D *73/00*
U.S. Cl. 206—363 **8 Claims**



1. A foldable package for electrosurgical scissors, comprising:
a base panel;
a scissors retaining panel foldably connected to the base panel, the scissors retaining panel having a bottom section and an intermediate, middle section and a top, the bottom section having opposed notches for receiving finger rings of electrosurgical scissors;
a pair of opposed tabs extending laterally outward from the middle section of the scissors retaining panel for retaining the finger rings of electrosurgical scissors, each tab member having a pair of fold lines dividing the tabs into inner and outer sections; and,
a tab member extending distally from the top of the scissor retaining panel for retaining the blade members of an electrosurgical scissor, the tab member comprising a U-shaped slit forming a retention tab and an opening, and a slit in the top of the tab member intersecting the U-shaped slit thereby forming opposed L-shaped members in the tab member adjacent to the U-shaped slit.

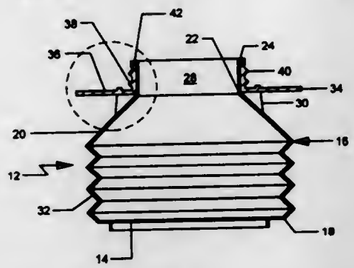
5,601,190
NEWSPAPER POUCH
Thomas Weber, Brunnentalstrasse 100/1, D-78532 Tuttlingen, Germany
Filed Apr. 13, 1995, Ser. No. 421,228
Claims priority, application Germany, Nov. 9, 1994, 9417908 U
Int. Cl.[6] B65D *85/66*
U.S. Cl. 206—389 **8 Claims**

1. Newspaper carrying pouch (1) constructed as a tubular shaped flexible container dimensioned to receive a roll pack (7), the tubular shaped flexible container comprising:



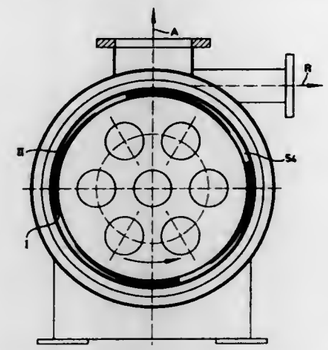
a cylindrical body having first and second ends,
at least first and second mounting ears for carrying the pouch (4, 5) located on the outer wall of the tubular shaped container and axially spaced apart from each other with respect to the central axis of the tubular shaped container,
a first lid part (2) closing off said tubular container at its first end,
a second lid part (3) comprised of a natural or synthetic flexible material provided on the container second end, and at least partially closeable by a draw string between a closed position for protecting contents of said container and an open position through which a roll pack (7) can be introduced into the container (1), and
first and second ring shaped strengthening members following the circumference of said cylindrical body and provided at the cylindrical body rim where the first and second lid parts respectively meet the cylindrical body.

5,601,191
LIQUID SPECIMEN VESSEL
James W. Meador, Houston, Tex., assignor to KVM Technologies, Inc., Houston, Tex.
Continuation-in-part of Ser. No. 227,040, Apr. 13, 1994, Pat. No. 5,409,117. This application Apr. 13, 1995, Ser. No. 421,555
Int. Cl.[6] A61M *1/00*
U.S. Cl. 206—569 **34 Claims**



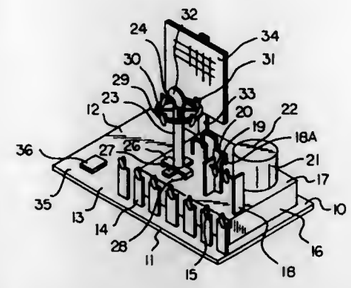
1. A liquid vessel, comprising:
(a) a container including a stiff floor, a sidewall connected at a lower portion of the sidewall to the floor and having an upper portion including a rim surrounding an opening into the container, said sidewall further including a flexure portion below said upper portion thereof,
(b) a closure for said container, said closure including a stiff base smaller than said opening and a sidewall connected at a lower portion of the sidewall to the base, said sidewall including a flexure portion, said base having a topside and a bottomside, said bottomside including a dependent stiff projection of length to extend adjacent said container floor upon closure of said container, said topside including at least one upstanding nozzle opening only to said bottomside.

5,601,192
PRESSURE SORTER FOR FIBER SUSPENSIONS
Wilhelm H. Hutzler, Reutlingen, and Erich Czerwoniak, Pfullingen, both of Germany, assignors to Hermann Finckh Maschinenfabrik GmbH & Co., Pfullingen, Germany
PCT No. PCT/EP92/01393, § 371 Date Dec. 12, 1994, § 102(e) Date Dec. 12, 1994, PCT Pub. No. WO94/00634, PCT Pub. Date Jan. 6, 1994
PCT Filed Jun. 20, 1992, Ser. No. 351,329
Int. Cl.[6] B07B *1/04;1/52*
U.S. Cl. 209—273 **28 Claims**



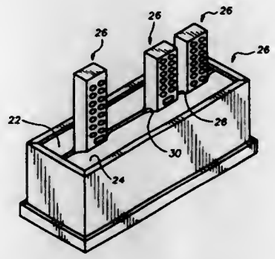
1. A pressure sorter for fiber suspensions comprising:
a housing and a screen stationarily mounted therein, said screen being symmetrical to a screen axis and separating a supply chamber encircled by said screen from an accepts chamber lying outside said screen in said housing, a rotor having a circumferential periphery and being drivable about the screen axis by a motor, said rotor periphery together with an inlet side of the screen limiting the supply chamber in radial direction,
an inlet for the fiber suspension to be treated communicating with a first axial end of the supply chamber and a rejects outlet communicating with a second axial end of the supply chamber,
profiled elements are provided at said rotor periphery for generating positive and negative pressure pulses in the fiber suspension, each of said profiled elements having a first flank lying in front in rotational direction for driving the fiber suspension in rotational direction, as well as a second flank lying behind the first flank in a direction opposite to the direction of rotation for sucking back liquid from the accepts chamber through the screen and into the supply chamber,
a rotor peripheral surface sector is provided between two profiled elements following one another in circumferential direction of the rotor for every axial section of the rotor acting on the screen,
said profiled elements protruding in radial direction beyond said rotor peripheral surface sector and said sector being part of a peripheral surface area parallel to the screen inlet side as well as symmetrical to the screen axis, wherein, when measured in circumferential direction of the rotor, a maximum length of each profiled element is at least approximately equal to or greater than a minimum length of the rotor peripheral surface sector following in a direction opposite to the direction of rotation, whereas the minimum length of said rotor peripheral surface sector is at least 30% of an approximation of the maximum length of the profiled element lying in front thereof in the direction of rotation, and wherein the profiled elements are designed and arranged at the rotor periphery such that, when seen in the direction of the screen axis, the rotor peripheral surface sectors form through-channels between the profiled elements along the region of the rotor surrounded by the screen, and wherein the longitudinal direction of the first flank forms an acute angle with the axial direction.

5,601,193
DESK ORGANIZER
Philip L. Santoya, 37-20 81st. St. Apt. 1K, Jackson Heights, N.Y. 11372
Filed Feb. 27, 1995, Ser. No. 342,887
Int. Cl.[6] A47F *5/00*
U.S. Cl. 211—11 **6 Claims**



1. A new and improved free-standing desk organizer which comprises: a flat base member forming a first level; an elevated rectangular platform secured to said base member and forming a second level; a plurality of spaced vertical members secured to both said first and said second level, said spaced members forming groups distinct one from another; a plurality of note clips supported by said vertical members; and indicia supported by at least one of such vertical members in each such group identifying areas of varying urgency of action to be taken with respect notes placed in said note clips.

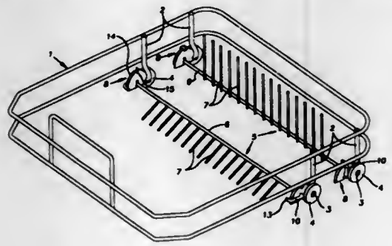
5,601,194
REMOTE CONTROL STAND
Lemen K. Brinston, P.O. Box 71592, New Orleans, La. 70172
Filed Jun. 5, 1995, Ser. No. 461,108
Int. Cl.[6] A47F *7/00*
U.S. Cl. 211—13 **10 Claims**

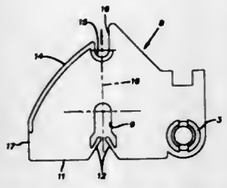


1. A remote control stand comprising:
an outer housing having a base portion and an interior chamber having an access opening in connection therewith located at a top of said housing; and
first and second resilient members adjacently disposed within said interior chamber in a manner such that a portion of a remote control may be placed between a first and second adjacent surface of said first and second resilient members, respectively, through said access opening; at least one of said first and second resilient members including recessed areas defined by said adjacent surface.

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5,601,195
BASKET WITH A MOVABLE DIVIDER FOR A DISHWASHER
Giancarlo Finola, Pavia, and Giuseppe Sergi, Milan, both of Italy, assignors to Electrolux Zanussi Elettrodomestici S.p.A., Pordenone, Italy
Filed Mar. 30, 1995, Ser. No. 413,602
Claims priority, application Italy, Apr. 1, 1994, PN940009 U
Int. Cl.[6] A47F 7/00
U.S. Cl. 211—41 9 Claims

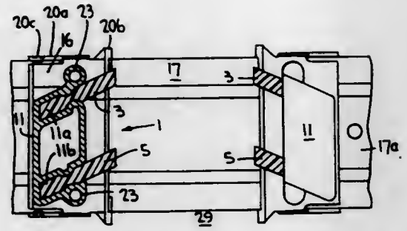




1. A dishwasher basket comprising a frame structure; at least one comb-like divider pivotably mounted on the frame, said divider including a pivot member and a plurality of teeth extending from the pivot member, the divider being selectively movable between an erect position and a lowered position; at least one support member fixed to the frame structure and having an elongate hole and a cam profile terminating upwardly with a recess that is substantially aligned with a major axis of the elongate hole, said pivot member being slidable and pivotable in the elongate hole; and at least one shaped projection of the pivot member adapted for slidably co-operating with the cam profile, said recess being adapted for receiving said shaped projection when the movable divider is in said erect position, the shaped projection being disengageable from said recess with an upward movement of the pivot member in said elongate hole in such a way as to permit the movable divider to rotate towards said lowered position.

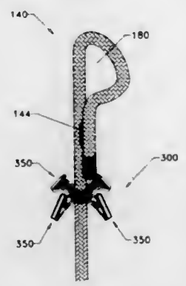
5,601,196
DEVICE FOR SUSPENDING AN ELONGATED OBJECT
Alfred Heer, Tödistr. 44, 8344 Bäretswil, and Alfred Dubach, Bäretswil, both of Switzerland, assignors to Alfred Heer, Baretswil, Switzerland
PCT No. PCT/CH94/00087, § 371 Date Jan. 27, 1995, § 102(e) Date Jan. 27, 1995, PCT Pub. No. WO94/27487, PCT Pub. Date Dec. 8, 1994
PCT Filed May 11, 1994, Ser. No. 379,454
Claims priority, application Switzerland, May 27, 1993, 1600/93
Int. Cl.[6] A47B 81/02
U.S. Cl. 211—65 17 Claims

1. A device for suspending a substantially elongated object comprising at least one clamp directed toward a support or a further clamp such that the object's own weight firmly affixes the object between said at least one clamp and said support or said at least one clamp and said further clamp, wherein said at least one clamp comprises at least two mutually vertically spaced rest segments or at least one planar surface which engage one vertical side



of the object being suspended in said device and forces the object against the support or the further clamp, and furthermore wherein said at least one clamp is pivotally mounted in such a manner that said at least two rest segments or said at least one vertical planar surface are pivotable about two connection points such that each rest segment is pivotable about a particular connection point or the planar surface is pivotable in a parallelogramic manner about two connection points, whereby a curved downward motion towards the support or the further clamp affixes the object.

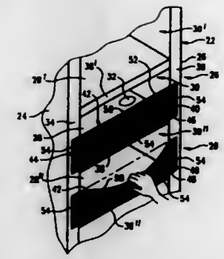
5,601,197
HANGING STORAGE DEVICE WITH MULTI-POSITIONAL CLIP ASSEMBLIES
Dean Baxter, 1621 Village Trail, Keller, Tex. 76248
Filed Jan. 27, 1995, Ser. No. 379,728
Int. Cl.[6] A47F 5/08
U.S. Cl. 211—117 20 Claims



1. A hanger device for connection to a support comprising:
a sleeve;
means for connecting said sleeve about a support;
a collar;
means for rotatably mounting said collar about said sleeve in a first plane generally normal to a central axis passing through the support;
means for rotatably connecting at least one clamp to said collar in rotation in a second plane generally normal to said first plane;
means for pivotally mounting said rotatable clamp in movement about an imaginary axis spaced from said collar in a third plane generally normal to said second plane.

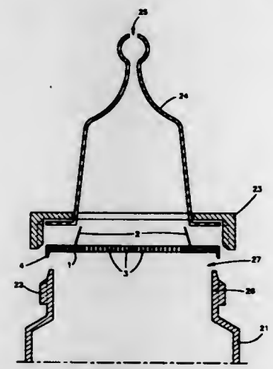
5,601,198
FLEXIBLE BARRIER FOR A SHELF
Doris L. Reed, 2816 SW. 300th Pl., Federal Way, Wash. 98023
Filed Dec. 12, 1994, Ser. No. 353,716
Int. Cl.[6] A47F 7/00
U.S. Cl. 211—183 20 Claims

1. An apparatus for attachment to a rigid or semi-rigid structure, such as to a shelf, cabinet, cupboard, bookcase, or piece of furniture, that defines a compartment or enclosure within which an object may be held, the structure having a plurality of front or leading edges thereof positioned adjacent to the compartment or enclosure, said apparatus comprising:



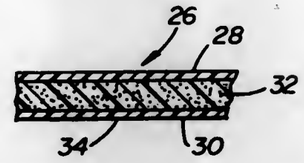
(a) a flexible, sheet-like barrier;
(b) means for imparting elastic characteristics or properties to said flexible barrier, said elastic means being attached to or incorporated within said flexible barrier; and
(c) means for securing said flexible barrier to at least two of the front or leading edges of the structure, said elastic means enabling said flexible barrier to be stretched and pulled at least partially aside to an open position whereby the object may be removed from within the compartment or enclosure or be placed therein; said elastic means urging said flexible barrier to return to a closed position to prevent the object from inadvertently falling from the compartment or enclosure.

5,601,199
FILTER ELEMENT FOR A BEVERAGE CONTAINER
Irene Marty, Hegnauerstr. 2, 8602 Wangen, Switzerland
Filed Jan. 5, 1995, Ser. No. 368,997
Claims priority, application Switzerland, Jan. 5, 1994, 24/94; Dec. 13, 1994, 3765/94
Int. Cl.[6] A61J 9/00;11/04; B65D 23/04;39/02
U.S. Cl. 215—11.1 10 Claims



9. A nursing bottle comprising:
a neck portion with an outlet opening having an inner diameter, an outer diameter, and an outer thread located adjacent to said outlet opening;
a cap member in the manner of a threaded collar with a central opening, adapted to be screwed onto said neck portion of said nursing bottle by engaging said outer thread;
a nipple with a beverage outlet aperture having a first diameter and inserted into said central opening of said cap member;
a filter element, inserted between said cap member and said outlet opening, comprising a filter member made of polyethylene and having a diameter slightly larger than said outer diameter, said filter member also having a top surface and a bottom surface and a plurality of holes therethrough, each of said holes having a second diameter smaller than said first diameter;
said filter member comprising a substantially disc-shaped first filter member body and a substantially disc-shaped second filter member body, said first and second filter member bodies being coaxially arranged and rotatable with respect to each other around a common central axis, said filter member being provided with a first annular rib running along the circumferential edge of said second filter member body and projecting from said bottom surface to engage said outlet opening of said neck portion, and a second annular rib projecting from said top surface of said filter member towards said nipple and having a smaller diameter than said first annular rib;
said second filter member body being further provided with means including a plurality of notches located along its circumferential edge and running radially inward to form a plurality of individual yielding tongue members for resting on the edge of said outlet opening of said neck portion.

5,601,200
CAP LINER FOR HOT FILLED CONTAINER AND METHOD
Harvey Finkelstein, Washington Township, N.J.; Victor Flores, Goldens Bridge, N.Y., and Murray Singer, St. Clark, N.J., assignors to Tri-Seal International, Inc., Blauvelt, N.Y.
Filed Sep. 6, 1991, Ser. No. 755,733
Int. Cl.[6] B65D 53/04
U.S. Cl. 215—348 7 Claims

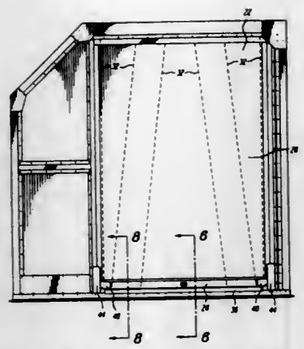


1. A cap liner in the form of a disk having an intermediate layer for positioning against the inside of the cap and a lower outer layer bonded to said intermediate layer, said intermediate layer comprising a resilient foamed homogenous admixture of polyethylene and 10–98% of polypropylene, and said outer layer comprising a substantially homogenous admixture of polyethylene and 10–98% of polypropylene.

5,601,201
AIR CARGO CONTAINER
Robert Looker, Carpinteria, Calif., assignor to Satco Inc., El Segundo, Calif.
Continuation-in-part of Ser. No. 235,681, Apr. 29, 1994, abandoned. This application Jun. 6, 1995, Ser. No. 466,827
Int. Cl.[6] B65D 90/00
U.S. Cl. 220—1.5 7 Claims

1. A door assembly for a cargo container, comprising:
a first door post spaced apart from a second door post, each door post having an upper end and a lower end;
a transom connecting the upper ends of the door posts;
a threshold connecting the lower ends of the door posts;
a flexible curtain having a first side edge and a second side edge;
a doorbar attached to a lower edge of the curtain and having a first plate slidably positioned in a first recess in the first door post, and a second plate slidably positioned in a second recess in the second door post, with the first and second recesses

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extending in the first and second door posts, respectively, substantially from the threshold to the transom;

a first retainer spring attached to the first side edge of the curtain and extending substantially the length thereof and slidably positioned within substantially the entire length of the first recess, and a second retainer spring attached to the second side edge of the curtain and extending substantially the length thereof and slidably positioned within the entire length of the second recess; and

a latch for latching the doorbar into a closed position.

5,601,202

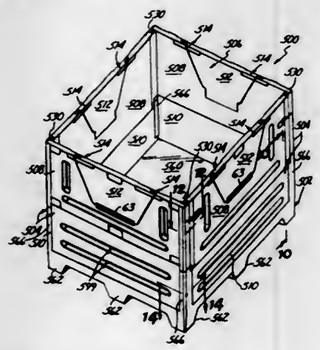
TRANSPORT CHAMBER

Patrick E. Meacham, Lakeville; Mark W. Wallace, Minneapolis; Carl Nyberg, Bloomington, all of Minn.; William W. Thompson, Midlothian, Va., and Conrad Huffstutler, Liberty Hill, Tex., assignors to Temp Top Container Systems, Inc., Edina, Minn.

Continuation-in-part of Ser. No. 178,189, Jan. 6, 1994. This application Jan. 13, 1995, Ser. No. 372,192

Int. Cl.[6] B65D *6/16*

U.S. Cl. 220—6 **17 Claims**



8. A transport container comprising:

a base;

a plurality of side walls, said side walls being essentially perpendicularly connected to the base to form a container having an inner cavity, each of the side walls being formed of first and second wall panels, said first and second wall panels being hingedly connected; and

means for selectively connecting and disconnecting adjacent first wall panels to allow the first wall panels to fold down relative to the second wall panels hingedly connected thereto; wherein the first and second wall panels include cooperating stepped hinge flanges to form a stepped connection.

5,601,203

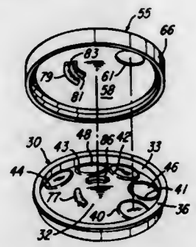
RECYCLABLE CONTAINER AND ROTATABLE CLOSURE OF PLASTICS MATERIAL

Charles J. Brun, Jr., Xenia, Ohio, assignor to Electra Form, Inc., Vandalia, Ohio

Continuation of Ser. No. 209,704, Mar. 14, 1994, Pat. No. 5,449,085. This application Sep. 6, 1995, Ser. No. 524,341

Int. Cl.[6] B65D *47/02;51/18*

U.S. Cl. 220—253 **17 Claims**



1. A portable container adapted to receive and retain a pressurized fluid and to provide for conveniently opening said container, comprising a hollow body defining a chamber for receiving the fluid and including an upper annular neck portion defining an open top for said body, a top end wall member covering said open top and including a peripheral portion adjacent said neck portion, a fluid-tight connection between said neck portion of said body and said peripheral portion of said top end wall member, a closure member having a peripheral portion supported by said container for rotation of said closure member relative to said body, at least one opening within said top end wall member and at least one opening within said closure member, said openings being generally aligned at one rotary position of said closure member to provide for the free flow of fluid from said chamber, said openings being out of alignment at a second rotary position of said closure member, a flexible sealing ring molded as an integral part of said top wall member and of the same material, said sealing ring including a flexible lip projecting upwardly and engaging said closure member around said opening within said top wall member to form a fluid-tight seal between said top end wall member and said closure member when said closure member is in said second position, and said sealing ring forming an increasingly tighter fluid-tight seal with said closure member in response to an increase in the fluid pressure within said chamber.

5,601,204

TANK VAULT WITH SEALED LINER

William Y. Hall, 1360 Capitol Dr., #135, San Pedro, Calif. 90732

Continuation-in-part of Ser. No. 759,703, Sep. 11, 1991, abandoned, which is a continuation of Ser. No. 664,411, Feb. 27, 1991, abandoned, which is a continuation of Ser. No. 452,690, Dec. 19, 1989, abandoned. This application Jun. 5, 1992, Ser. No. 892,812

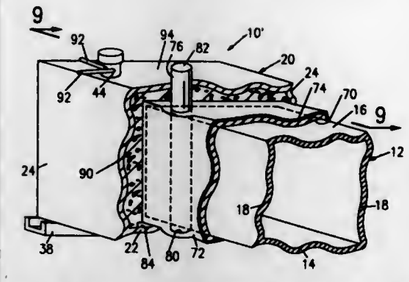
Int. Cl.[6] B65D *90/04*

U.S. Cl. 220—469 **21 Claims**

1. A tank assembly for storing liquids comprising:

an inner tank having an interior within which liquids are stored, said inner tank having outer wall surfaces;

a liquid absorbing material which will not disintegrate upon contact with liquid contents of the inner tank, said liquid absorbing material disposed about said outer wall surfaces of said inner tank;



a sheet-like liquid impervious material surrounding said liquid absorbing material, said sheet-like liquid impervious material defining an envelope surrounding said liquid absorbing material which prevents passage of liquids and moisture across said envelope;

an outermost tank surrounding said inner tank, liquid absorbing material and sheet-like liquid impervious material, said outermost tank spaced from said sheet-like liquid impervious material such that a space is defined between said sheet-like liquid impervious material and said outermost tank; and

a pourable air-entrapped concrete insulating material disposed in said space defined between said outermost tank and said sheet-like liquid impervious material, said pourable air-entrapped concrete insulating material being cured in situ.

5,601,205

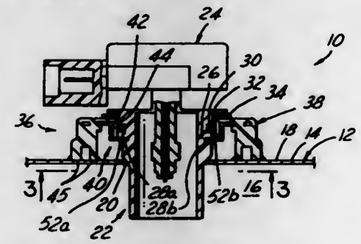
FUEL TANK ASSEMBLY

Alan R. Prechtel, Pulheim-Brauweiler, Germany; Michael J. Boehk, Ypsilanti, Mich.; Daniel J. Kmiecik, Dearborn Heights, Mich., and Danny P. Forbes, Belleville, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 1, 1996, Ser. No. 617,725

Int. Cl.[6] B65D *45/28*

U.S. Cl. 220—562 **15 Claims**



1. A fuel tank assembly, comprising:

a plastic fuel tank having a wall defining an outer surface and an interior volume for storing fuel therein, a portion of said wall further defining a generally cylindrical opening therethrough;

an instrument having a generally cylindrical piece extending through said opening in said fuel tank wall such that said instrument communicates with said interior volume of said fuel tank;

a retainer assembly attached to the outer surface of said fuel tank wall for releasably securing said instrument to said fuel tank, said retainer assembly including:

a plastic, ring-like member having a generally cylindrical inner wall disposed around said generally cylindrical piece of said instrument, said inner wall defining a circumferentially extending sealing surfaced and

a reinforcing member carried within said ring-like member adjacent to and generally concentric with said sealing surface; and

a sealing member interposed between said generally cylindrical piece of said instrument and said sealing surface of said retainer assembly for preventing fuel vapors from escaping between said instrument and said sealing surface.

5,601,206

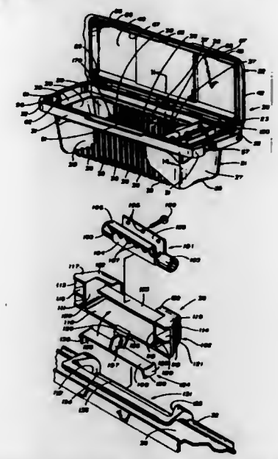
TRUCK BOX

Joel C. Haas; Michael D. Howell, both of Jupiter, Fla.; David G. Mann, and Matthew P. Williams, both of Wooster, Ohio, assignors to Rubbermaid Specialty Products, Inc., Wooster, Ohio

Filed Jun. 6, 1995, Ser. No. 469,074

Int. Cl.[6] B65D *25/00;1/34;43/16;* **B60R** *9/00*

U.S. Cl. 220—527 **34 Claims**



1. A container comprising a base portion having a bottom surface, opposed front and rear walls extending upwardly from said bottom surface, and opposed end walls joined to said front and rear walls and with said front and rear walls forming an open top; a cover for closing said open top; and a latch assembly for selectively latching said cover to said base portion; said latch assembly including a first latch hook pivotal on a pivot point from a position engaging said cover to a position releasing said cover, a second latch hook pivotal on a pivot point from a position engaging said cover to a position releasing said cover, a first latch handle pivotally received in one of said opposed end walls, a second latch handle pivotally received in the other of said opposed end walls, and operating means connecting said handles to said latch hooks so that upon pivoting one said handle, both said latch hooks will pivot to release said cover without moving the other said handle.

5,601,207

BITE VALVE HAVING A PLURALITY OF SLITS

Joseph R. Paczonay, 3050 Aptos Hill Ln., Aptos, Calif. 95003

Filed Mar. 13, 1996, Ser. No. 615,611

Int. Cl.[6] A61M *31/00;* **A61F** *2/00*

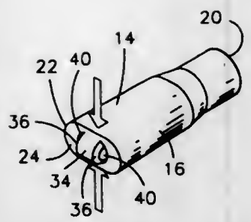
U.S. Cl. 220—703 **22 Claims**

19. In combination:

a container for containing liquid;

a liquid delivery tube leading from said container; and

bite valve apparatus connected to said liquid delivery tube for positioning in the mouth of an individual for selectively delivering liquid from said container for consummation by the individual, said bite valve apparatus being formed of resilient, flexible material, and comprising:



a hollow body portion defining an interior for accommodating fluid received from said container through said delivery tube, said body portion including a fluid inlet end communicating with said interior connected to said delivery tube for receiving liquid from the container and a fluid outlet end spaced from said fluid inlet end; and

a deformable closure connected to said body portion and extending across the fluid outlet end of said body portion, said closure including an outer closure surface and an inner closure surface spaced from said outer closure surface and having a plurality of slits formed therein, said plurality of slits being spaced from one another and extending between said outer closure surface and said inner closure surface, and at least one portion of said closure being located between and defined by said plurality of slits and cooperating with the remainder of said closure to maintain said slits in closed condition to prevent liquid flow through said slits from said interior, said at least one portion changing shape upon application of opposed external forces on said bite valve apparatus to open said plurality of slits and form a plurality of openings allowing liquid flow from said interior.

5,601,208

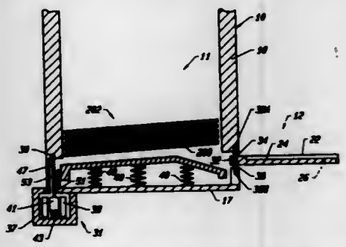
VENDING APPARATUS AND SYSTEM FOR AUTOMATED DISPENSING OF DISKS

Ed Scott, Anaheim Hills, Calif., assignor to Sony Corporation, Tokyo, Japan, and Sony Trans Com Inc., Irvine, Calif.

Division of Ser. No. 275,808, Jul. 15, 1994, Pat. No. 5,523,551. This application Oct. 18, 1995, Ser. No. 544,897

Int. Cl.[6] B65G *59/00*

U.S. Cl. 221—256 **13 Claims**



11. A vending apparatus for dispensing digital storage disks, comprising:

a body having a chamber sized for storing a plurality of disks stacked in substantially vertical orientation such that one of the disks in the stack is in a disk ejection location within the chamber, the body including

a base, and

a wall surrounding the base, the wall having a slot adjacent to the disk ejection location and sized to allow passage of a disk through it; and

user interface means for receiving a disk dispensing request from a user;

control means responsive to the disk dispensing request for generating dispensing control signals;

a solenoid mounted to the wall and configured for receiving current pulses corresponding to the dispensing control signals and for producing a magnetic field upon receipt of said current pulses; and

a magnetically conductive plunger disposed within the solenoid, the plunger having a tip extending at least partially through a hole in the wall adjacent to the disk ejection location, the plunger slidable within the solenoid in response to the magnetic field to advance the plunger tip into the disk ejection location.

5,601,209

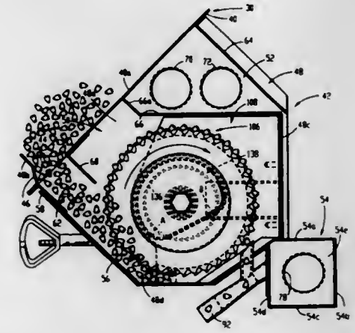
SEED METERING APPARATUS

Barry B. Barsi, and Lawrence S. J. Grodecki, both of Yorkton, Canada, assignors to Morris Industries, Ltd., Saskatchewan, Canada

Filed Jul. 10, 1995, Ser. No. 500,193

Int. Cl.[6] B65H *3/06*

U.S. Cl. 221—266 **17 Claims**



1. In a seed metering device for separating a bulk quantity of seeds into several separate streams, each stream containing seeds traveling at regular spaced intervals, the improvement comprising:

a receiving chamber for receiving and collecting a supply of seeds to be separated;

a bank of side-by-side metering discs mounted for rotation about a common axis,

each of said discs having a marginal periphery movable within said chamber during at least a portion of the circular path of travel of the disc for exposing said periphery to the supply of seeds in the chamber,

each of said discs having a circumferential series of seed cups spaced around its marginal periphery for receiving and temporarily retaining seeds from the supply as the discs rotate;

a structure for maintaining pressure at the seed cups as they move through said chamber and for a time thereafter whereby to encourage seeds to stay in their cups until the pressure is terminated,

said structure further being operable to terminate said pressure at a certain point in the path of travel of each cup whereby to cause the seeds of each disc to drop from their cups at spaced intervals;

a plurality of transfer conduits disposed for intermittently receiving seeds from corresponding ones of the discs, there being a conduit for each disc; and

means for generating a stream of pressurized air within each of said conduits for conveying the seeds of that conduit to a point of delivery while maintaining their mutually spaced relationship.

5,601,210

TAP FOR DISPENSING A DRINK MADE FROM A CONCENTRATE, AND DRINKS DISPENSER APPARATUS EQUIPPED WITH SUCH A TAP

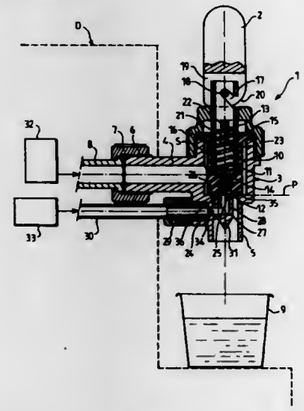
Edward D. Kelly, Palm Harbour, Fla., and Jean-Pierre Saubade, Cestas, France, assignors to Societe Civile de Recherche O.D.Y., France

Filed Jun. 6, 1995, Ser. No. 470,269

Claims priority, application France, Jun. 28, 1994, 94 07923

Int. Cl.[6] B67D *5/56*

U.S. Cl. 222—129.1 **20 Claims**



1. Tap (1) for dispensing a drink made from the mixture of a main liquid, particularly water, and of a concentrate, comprising a liquid-inlet nozzle (4), an outlet nozzle (5) and controlled-opening valve means (S) located between the inlet nozzle (4) and the outlet nozzle (5) , comprising a line (24) for injecting the concentrate into the outlet nozzle (5), while the liquid-inlet nozzle (4) is reserved just for the main liquid, and the injection line (24) terminates in a concentrate-injection orifice (25) situated at a point such that the valve means (S) simultaneously close the main liquid inlet nozzle (4) and the concentrate-injection line (24), the valve (10) being of the type having translational movement in the direction of the axis of the outlet nozzle (5), characterized in that the valve (10) is capable of bearing against a closure seat (26) situated in a plane (P) orthogonal to the axis of the outlet nozzle (5), and in that the concentrate-injection orifice (25) is situated in the plane (P) of the closure seat (26) of the valve (10).

5,601,211

CONTAINER FOR LIQUID DISPENSER

Donald D. Foster, St. Charles, Mo., assignor to Contico International, Inc., St. Louis, Mo.

Continuation of Ser. No. 358,692, Dec. 19, 1994, Pat. No. 5,485,942, which is a division of Ser. No. 227,565, Apr. 14, 1994, Pat. No. 5,373,973, which is a continuation of Ser. No. 984,876, Dec. 2, 1992, abandoned, which is a continuation-in-part of Ser. No. 829,759, Jan. 31, 1992, abandoned. This application Jun. 1, 1995, Ser. No. 456,674

Int. Cl.[6] B67D *5/42*

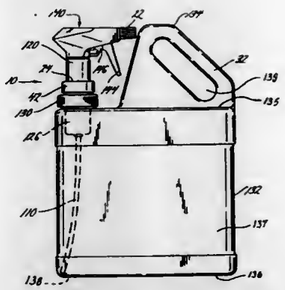
U.S. Cl. 222—143 **15 Claims**

1. In combination, a container and a liquid dispenser, the combination comprising:

a liquid dispenser having a pump for drawing a liquid substance into the pump and dispensing the substance from the pump;

a container body having a top wall and a bottom wall and at least one sidewall extending between the top wall and bottom wall, the top wall, bottom wall and sidewall all surrounding an interior volume of the container;

an opening in the top wall of the container;



a fastener on the container for securing the liquid dispenser on the top wall of the container; and

a crown formed in a portion of the container top wall adjacent the top wall opening, the crown extending upwardly from the top wall at least approximately to the top of the liquid dispenser when the liquid dispenser is secured to the container top wall.

5,601,212

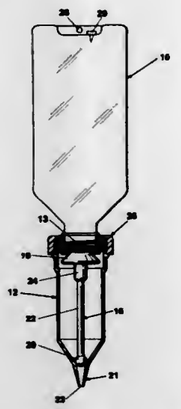
DISPENSING UNIT FOR A THREADED NECK BOTTLE

Gary K. Lee, 5827 S. 81st East Pl., Tulsa, Okla. 74145

Continuation-in-part of Ser. No. 227,730, Apr. 14, 1994, Pat. No. 5,524,795. This application Mar. 15, 1995, Ser. No. 404,335

Int. Cl.[6] B67D *5/06*

U.S. Cl. 222—205 **14 Claims**



1. A dispensing unit for use with a bottle having an externally threaded neck and a ring molded into its externally threaded neck, comprising:

a hollow flexible nipple having,

(1) a converging end,

(2) an enlarged externally threaded end portion; and

(3) a generally cylindrical body connected between said converging end and said enlarged externally threaded end portion;

(4) a plurality of annular ridges in said converging end;

an integral connector having,

(a) an annular ring having an inner diameter and an outer diameter an upper surface and a lower surface;

(b) an outer cylinder section of about the same diameter as said outer diameter made integral with said annular ring and having internal threads to receive the enlarged external threaded end portion of said nipple;

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(c) an inner cylindrical section integral with said annular ring and having internal threads to receive said threaded neck, the diameter of said inner cylinder being about the same as the inner diameter of said cap;

(d) an annular seating surface supported by said inner cylindrical section and facing away from said annular ring;

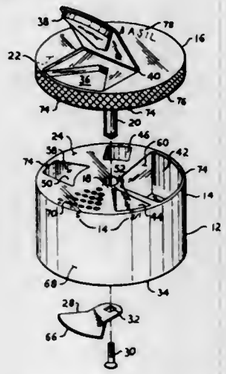
a plunger having a rod and a semi-spherical ball valve at one end for seating in said converging end of said nipple and a truncated cone shaped member at the other.

5,601,213

CONTAINER LID WITH QUANTITY MEASURES

Jennifer J. Daniello, P.O. Box 14824, N. Palm Beach, Fla. 33408-0824

Filed May 2, 1996, Ser. No. 641,731
Int. Cl.[6] G01F *11/26*
U.S. Cl. 222—456 **20 Claims**



11. A container and container lid with quantity measures, comprising in combination:

a container providing for the storage therein and dispensing of a material therefrom, with said container having a open top;

a container lid having a fixed cylindrical central body with a first end and an opposite second end, a plurality of first chambers and second chambers therein, and a central passage therethrough, with said chambers being disposed radially about said central body and each being separated by a radial wall extending between said first end and said second end of said central body, with each said radial wall being spaced apart from one another by an arcuate span, and with each of said chambers subtending a separate arcuate volume of said cylindrical body and being open to said first end and said second end of said central body, and with at least said first chambers each having a different volume from one another;

said container lid further including a circular cover adapted to rotate relative to said central body, with said cover having an inner surface with a central shaft extending therefrom and adapted to engage said central passage of said central body to secure said cover to said central body adjacent said first end thereof, and further having a dispensing opening subtending an arcuate span of said circular cover substantially equal to said arcuate span between each said radial wall of said central body at said second end thereof, and selectively openable closure means for said dispensing opening, and;

said central shaft of said circular cover of said lid having a distal end with a central body chamber closure plate immovably secured thereto, thereby sandwiching said central body between said circular cover and said closure plate, with said closure plate subtending an arcuate span substantially equal to said arcuate span between each said radial wall of said central body at said second end thereof and of said dispensing opening of said circular cover, and lying in direct registry with said circular cover, whereby;

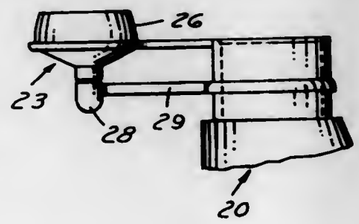
said container lid is affixed to said open top of said container having a material therein, said container and said container lid affixed thereto are inverted, said circular cover is rotated to misalign said dispensing opening and said closure plate relative to a selected one of said first chambers thereby allowing material from said container to flow downwardly from said open top into said selected one of said first chambers, and said circular cover is further rotated to align said dispensing opening of said circular cover with said selected one of said first chambers, thereby positioning said closure plate across said selected one of said first chambers to preclude further flow of material therein, and said selectively openable closure means of said circular cover is opened to allow a predetermined amount of material defined by said arcuate volume of said selected one of said first chambers to flow therefrom.

5,601,214

PLASTIC CONTAINER HAVING AN INJECTION MOLDED FINISH WITH AN INTEGRAL CLOSURE ATTACHED THERETO

Ralph B. Hendricksoa, Temperance, Mich., and Carl E. Koeniger, Toledo, Ohio, assignors to Owens-Brockway Plastic Products Inc., Toledo, Ohio

Filed Mar. 8, 1995, Ser. No. 400,736
Int. Cl.[6] B67D *3/00*
U.S. Cl. 222—517 **8 Claims**



1. A plastic container comprising

a plastic hollow body portion, and integral finish having an end forming an opening,

a plastic closure,

said plastic closure including an integral plug portion adapted to extend into the opening of the finish, and integral strap connecting the closure to the upper end of the finish adjacent the opening,

said strap lying in a single plan integral with said finish adjacent said opening in said finish,

said strap having a weakened line positioned such as to define an integral hinge dividing said strap into two flat strap portions, one said strap portion being integral to said finish and the other said flat portion having a free end,

the other said flat portion including the integral plug portion,

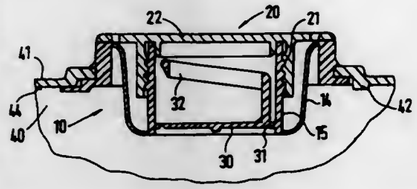
such that when the other said flat portion is folded, said plug portion is brought into alignment with the opening in the finish; wherein said closure further includes a spout extending axially away from the plug portion and the spout further including an integrally molded sealing plug that is severable to provide for dispensing the contents through an opening in the spout.

5,601,215

CLOSURE FOR A CONTAINER

Bernd Stolz, Neunkirchen, Germany, assignor to Heinrich Stolz GmbH & Co. KG, Germany

Continuation-in-part of Ser. No. 340,589, Nov. 16, 1994. This application May 18, 1995, Ser. No. 444,009
Claims priority, application Germany, May 19, 1994, 44 17 492.6; Feb. 16, 1995, 19 505 142.2
Int. Cl.[6] B65D *25/44*
U.S. Cl. 222—529 **17 Claims**



1. In a container closure for a container having a lower closure element and a closure cap placed on the lower closure element, the lower closure element connected to an opening of the container by a base element having a contact flange which rests on an inner wall of the container against a contact face formed in an area of the opening of the container, at least one locking projection disposed on the base element in an axial direction of the container closure and at a distance from the contact flange, said at least one locking projection extending over a rim of the opening and holding said lower container element axially immovable in the container,

the improvement comprising:

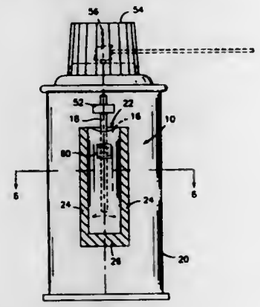
at least one stop (11*a*) positioned on the base element (13), at least one counter-element (42) positioned on the container (40), operational contact between the at least one stop (11*a*) and the at least one counter-element (42) preventing a turning of the base element (13) with respect to the opening.

5,601,216

PACKAGING INCLUDING HOLDER ATTACHMENT FOR TUBULAR APPLICATORS AND THE LIKE

John Visco, 334 Jeffer St., Ridgewood, N.J. 07450

Filed Dec. 13, 1995, Ser. No. 571,391
Int. Cl.[6] B65B *13/16*
U.S. Cl. 222—538 **21 Claims**



1. A method for making an attachment for a product in a container, comprising the steps of:

providing a back sheet having a front surface and a back surface, said back surface having means for securing to said container;

providing a front sheet having a front surface and a back surface;

positioning an applicator means for said product between said front surface of said back sheet and said back surface of said front sheet; and

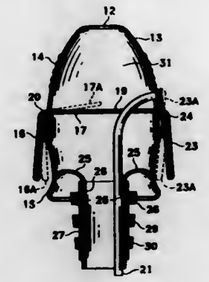
securing said front sheet to said back sheet so as to provide said attachment including said applicator means enclosed between said front sheet and said back sheet whereby said attachment can be attached to said container with said means for securing.

5,601,217

TRIGGER ACTIVATED LEAK-PROOF POURER

William Wagner, P.O. Box 1095, Monroe, N.Y. 10950

Filed Aug. 21, 1995, Ser. No. 517,503
Int. Cl.[6] B67D *3/00*
U.S. Cl. 222—481.5 **7 Claims**



1. A removable liquid dispensing stopper adapted to be inserted into the neck of an open bottle designed for the containment of liquids, said stopper comprising:

a hollow body member having side walls, a top, an interior and an exterior; liquid dispensing means for the exit of liquid from the hollow body member, said liquid dispensing means being situated in the top of said hollow body member and communicating with the interior thereof;

a horizontally oriented partition situated within the hollow body member and dividing the interior into two sections;

a slot located in said partition extending from the perimeter to the center thereof;

closing means dimensioned to fit said slot, for preventing liquid from passing through said slot when said closing means is properly positioned;

a manually operated means situated on the exterior of the hollow body member and communicating with said closing means to activate said closing means;

delivery tube means fixedly attached about the interior circumference of the hollow body member below the partition and tapering downward to a constant bore portion sized to fit loosely within the neck of the bottle, said delivery tube means extending from the hollow body member into the neck of the bottle for providing the access through which the liquid flows from the bottle into the hollow body member;

compressible sealing means, fixedly attached to the exterior surface of the constant bore portion of said delivery tube means for providing a tight seal of the delivery tube means within the neck of the bottle; and

pressure equalizing means to permit air to enter said bottle to facilitate the flow of liquid therefrom.

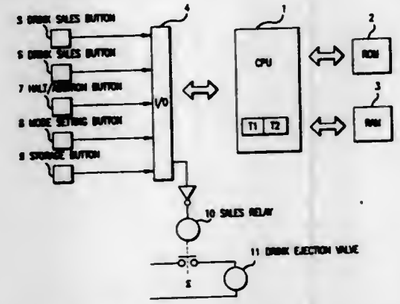
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5,601,218

FIXED-QUANTITY DRINK VENDING MACHINE

Katsumi Takenaka, Mie, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Mar. 28, 1995, Ser. No. 413,210
Claims priority, application Japan, Apr. 4, 1994, 6-065928; Aug. 10, 1994, 6-187973
Int. Cl.[6] B67D *5/10*
U.S. Cl. 222—641 **5 Claims**



1. A drink vending machine for providing fixed amounts of drinks through an ejection valve, comprising:

sales buttons for selling the drinks;

a sales amount memory device for memorizing the amounts of the drinks to be sold as an opening duration of the ejection valve;

a valve controller connected to the sales buttons and the sales amount memory device, said valve controller opening the ejection valve by operation of one of the sales buttons;

mode setting means connected to the valve controller for shifting a mode to a setting mode for setting amounts of the drinks to be sold;

drink sales halt means connected to the valve controller, said drink sales halt means, while the drink is ejecting from the ejecting valve by actuation of the sales button in the setting mode, halting the ejection of the drink when actuated;

a first timer connected to the valve controller, said first timer in the setting mode counting the opening duration of the ejection valve from a time the sales button is pushed to a time the drink sales halt means is actuated; and

sales amount registration means connected to the sales amount memory device and the first timer, said sales amount registration means, in the setting mode, storing the counted opening duration of the ejection valve, said counted opening duration stored in the sales amount registration means being used as the amount of the drink to be sold in response to operation of the sales button in a sales mode.

5,601,219

CLOTHES HANGER COVERED WITH A TOY DOLL

Chao Y. Chen, 8F-3, No. 321, Fu Hsing S. Road, Sec. 1, Taipei, Taiwan

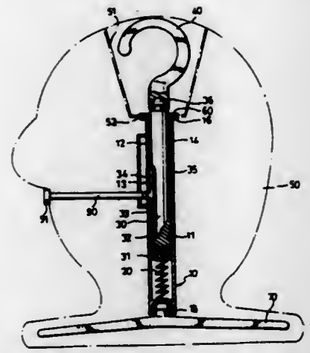
Filed May 13, 1996, Ser. No. 645,275
Int. Cl.[6] A47G *25/32;25/14*
U.S. Cl. 223—85 **7 Claims**

1. A clothes hanger comprising:

a sleeve having a first end, a second end, and a sleeve body connected to the first end and second end of said sleeve, said sleeve body having a longitudinal sliding groove on the inside, a first coupling slot near said first end, and a second coupling slot near said second end;

a spring mounted inside said sleeve;

a shaft having a first end, a second end, and a shaft body connected between the first end and second end of said shaft, the second end of said shaft being inserted into the first end of said sleeve and stopped above said spring, said shaft body comprising a longitudinal sliding rib moved in the longitudinal sliding groove of said sleeve, and a longitudinal springy strip raised from a hole thereof, said longitudinal springy strip having a raised coupling portion adapted for engaging one of the first and second coupling slots of said sleeve;



a hook coupled to the first end of said shaft;

a toy doll covered around said sleeve, said toy doll having a covering face and a through hole in said covering face corresponding to the first end of said sleeve;

a ring cap fastened to the first end of said sleeve and the through hole of the covering face of said toy doll to hold down the cover face of said toy doll; and

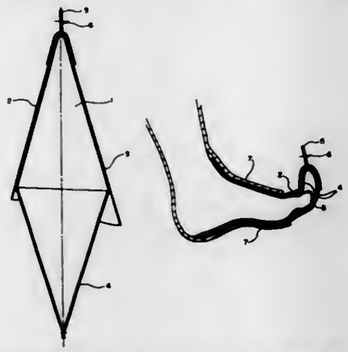
a hanging bar coupled to the second end of said sleeve.

5,601,220

MEANS FOR PUTTING ON THERAPEUTIC ELASTIC STOCKINGS

Johannes G. H. M. Vossen, Nieuwstadt, Netherlands, assignor to Arion International B.V., Hoensbrock, Netherlands

Continuation of Ser. No. 183,492, Jan. 19, 1994, abandoned, which is a continuation of Ser. No. 839,776, Apr. 16, 1992, Pat. No. 5,356,057. This application Jun. 7, 1995, Ser. No. 475,880
Claims priority, application Netherlands, Oct. 23, 1989, 8902619
Int. Cl.[6] A47G *23/90*
U.S. Cl. 223—112 **8 Claims**



1. A device for putting on therapeutic elastic stockings comprising:

a first, generally cone shaped member constructed of a thin, low friction material and having a first mouth end, a first toe end and a first side wall extending between said first mouth end and said first toe end, said first mouth end being larger in cross-sectional dimension than said first toe end and said first side wall extending substantially along a straight line path between said first mouth end and said first toe end to define said first cone shaped member;

a second, generally cone shaped member constructed of a thin, low friction material and having a second mouth end, a second toe end and a second side wall extending between said second mouth end and said second toe end, said second mouth end being larger in cross-sectional dimension than said second toe end and said second side wall extending substantially along a straight line path between said second mouth end and said second toe end to define said second cone shaped member;

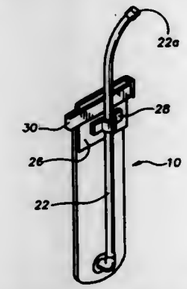
said first and second toe ends being free of connection to one another and said first and second members being joined at their first and second mouths, respectively, thereby enabling said second member to be inserted within said first member with said first and second side members adjacent to one another to define a structure having an open mouth for introduction of the foot of the user.

5,601,221

INSULATED BEVERAGE POUCH SYSTEM

Joseph M. Karr, 908 Chaumont Ave., Dauphin Island, Ala. 36528

Filed Feb. 2, 1996, Ser. No. 597,565
Int. Cl.[6] A45F *5/00*
U.S. Cl. 224—148.2 **15 Claims**



1. An insulated beverage pouch system comprising:

an insulated outer carrying bag having a pouch compartment formed therein that is accessible through a sealable compartment access flap, said carrying bag having at least one strap member positionable over said shoulder of a user in a manner to allow the user to carry said carrying bag in a hands free manner;

a flexible, inner beverage pouch of a size sufficient to allow said inner beverage pouch to be completely disposed within said pouch compartment with said compartment access flap sealed, said inner beverage pouch having a beverage cavity formed therein, an access opening into said beverage cavity at one end thereof, a bottom cavity portion formed at an opposite end thereof, and a draw tube having a first end in fluid communication with said bottom cavity portion of said beverage cavity; and

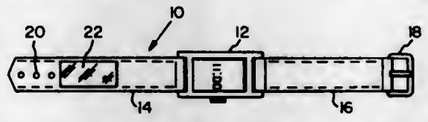
a clip mechanism having a first and second pivotally connected clip portion, said first clip portion having two, first-clamping ridges oriented in parallel that extend upwardly from a planar surface thereof, a first end pivotally attached to said second clip portion, and a second end having a first securing mechanism portion of an interlocking clip securing mechanism attached thereto, said second clip portion having three, second-clamping ridges oriented in parallel to each other that extend upwardly from a planar surface thereof, a first end of said second clip portion pivotally attached to said first end of said first clip portion, and a second end of said second clip portion having a second securing mechanism portion of said interlocking clip securing mechanism attached thereto, said first-clamping ridges being spaced and located on said first clip portion and said second-clamping ridges being spaced and located on said second clip portion in a manner such that when said first and second clip portions are pivoted in a first direction, said two first-clamping ridges have a second-clamping ridge disposed therebetween and said first and second securing mechanism portions of said interlocking clip securing mechanism are securable together to lock said first and second clip portions in a substantially fixed position with respect to each other, a section of said inner pouch between said bottom cavity portion and said access opening being positionable between said first and second clip portions in a manner to provide a liquid tight barrier between said bottom cavity portion and said access opening when said first and second clip portions are locked in the substantially fixed position with respect to each other with said interlocking clip securing mechanism.

5,601,222

MAGNIFYING WRISTBAND

Richard Y. Haddad, 2315 Morrow Rd., Pittsburgh, Pa. 15241

Filed May 25, 1995, Ser. No. 450,088
Int. Cl.[6] A44C *5/00*
U.S. Cl. 224—165 **10 Claims**



1. A wristband adapted to secure a device having a display face to a user's wrist, said wristband comprising:

a band adapted to be connected to the device and adapted to at least partially embrace the user's wrist; and

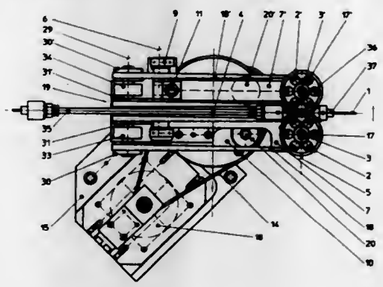
a transparent magnification strip fixedly embedded within said band, said band and magnification strip having a stowed position and said band being movable to a position with the magnification strip over the display face.

5,601,223

CABLE TRANSPORTING AND TURNING DEVICE

Max Koch, Meggen; Alois Lustenberger, Littau, and Urs Dober, Immensee, all of Switzerland, assignors to Komax Holding AG, Meggen, Switzerland

Filed Oct. 23, 1995, Ser. No. 546,596
Claims priority, application Switzerland, Oct. 21, 1994, 03171/94
Int. Cl.[6] B65H *20/04;20/40*
U.S. Cl. 226—172 **18 Claims**



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11. A cable transporting and turning device for feeding predetermined lengths of cable to at least one cable processing station located peripherally relative to said device, comprising:

a turning platform having a first turning axis defined therethrough;

first and second cantilever arms operatively mounted on said turning platform and extending perpendicular to said first turning axis, each of said cantilever arms being further mounted toward a base end thereof so as to swivel about a second turning axis defined perpendicular to said first turning axis;

first and second transporting rollers operatively engaged with each other for gripping a cable to be transported therebetween, each of said first and second transporting rollers being rotatably mounted on a distal end of a corresponding one of said first and second cantilever arms, each of said first and second transporting rollers being further rotatably mounted along first and second axes of rotation, respectively, defined parallel to one another and parallel to said first turning axis;

a first drive means operatively connected to said first and second transporting rollers, for synchronously driving said first and second transporting rollers;

a second drive means for rotatively driving said turning platform about the first turning axis, said first drive means being mounted on said turning platform so as to drive said transporting rollers while said turning platform is rotatively driven, wherein

at least said first cantilever arm includes means for laterally adjusting said first transporting roller thereon relative to said second transporting roller;

an inlet cable guide on a cable feed side of said transporting rollers that opens in a cable gripping area; and

an outlet cable guide on a cable delivery side of said transporting rollers that opens in a cable outlet area.

5,601,224

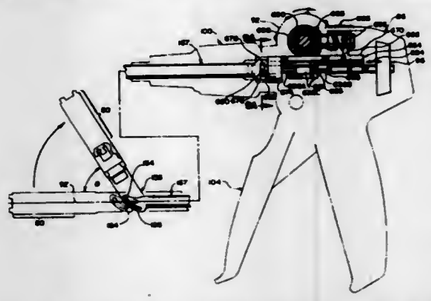
SURGICAL INSTRUMENT

Gregory D. Bishop, Hamilton; John A. Hibner, Maineville, and Livyn O. Okorocha, Cincinnati, all of Ohio, assignors to Ethicon, Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 959,184, Oct. 9, 1992, Pat. No. 5,381,943. This application Jun. 10, 1994, Ser. No. 259,322

Int. Cl.[6] A61B *17/068*

U.S. Cl. 227—175.1 **3 Claims**



1. In an articulating surgical instrument having a reciprocatable articulation driver member engaged with a pivoting portion that is pivotable between first and second positions in response to linear movement of said articulation driver member, a control mechanism for moving said articulation driver member between extended and retracted positions with increased mechanical advantage at one of said extended and retracted positions, said control mechanism comprising: a frame integral with said instrument containing said articulation driver member;

a tooth on said articulation driver member; and

a helical gear engaged with said tooth and mounted for rotation in said frame, said helical gear having a decreasing pitch over at least a portion of its length.

5,601,225

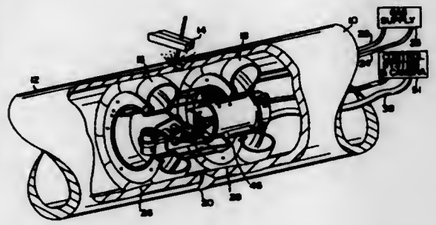
WELDING APPARATUS

J. W. Weed; Robert J. Lowery, and Robert L. Knipschield, all of Charlotte, N.C., assignors to J. A. Jones Applied Research Company, Charlotte, N.C.

Continuation of Ser. No. 740,315, Aug. 5, 1991, Pat. No. 5,435,478. This application Jul. 25, 1995, Ser. No. 506,806

Int. Cl.[6] B23K *37/053;9/02*

U.S. Cl. 228—9 **7 Claims**



1. An apparatus for aiding in welding a pipe structure, comprising in combination:

a) first and second expandable spaced apart seals adapted to be positioned in said pipe structure and on opposed sides of a region subjected to a welding process, each of said spaced apart seals having a circular exterior surface selectively expandable to contact and form a seal with an interior surface of said piping structure, and a circular inner surface;

b) a light-transmitting tubular shield support extending between said first and second seals and mating with said circular inner surfaces to position said first and said second seals in spaced relationship with each other;

c) an optical assembly having a selectable field of view and supported within an interior of said tubular shield support and rotatable about a major axis of said tubular shield support for producing an image of a portion of said inner surface of said piping structure that is within the field of view of said optical assembly; and

d) fluid supply means for supplying a pumpable fluid to a region between an exterior surface of said tubular shield support and the interior of said pipe structure, and between said first and second seals, and said light-transmitting shield support providing a protective barrier between said fluid and said optical assembly for shielding said optical assembly from said fluid.

5,601,226

DEVICE FOR ASSEMBLING SEMICONDUCTOR CHIPS BETWEEN TWO HEAT SINKS

Claude Pouet, Tours, and Yoland Collumeau, Rochecorbon, both of France, assignors to SGS-Thomson Microelectronics S.A., Saint Genis Pouilly, France

Division of Ser. No. 289,947, Aug. 12, 1994, Pat. No. 5,462,219, which is a continuation of Ser. No. 82,668, Jun. 25, 1993, Pat. No. 5,351,873. This application Jun. 7, 1995, Ser. No. 481,891

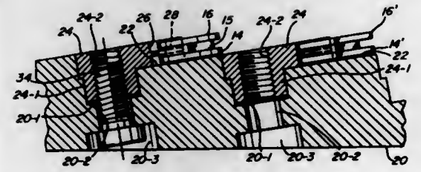
Claims priority, application France, Jun. 26, 1992, 92 08282

Int. Cl.[6] B23K *31/02;37/04*

U.S. Cl. 228—123.1 **9 Claims**

1. A method for soldering a heat sink to a chip, the method comprising the steps of:

A. providing an inclined surface and a stop located thereon;



B. positioning the chip and the heat sink adjacent one another on the inclined surface, so that the stop holds the chip and the heat sink in a predetermined configuration relative to one another against the force of gravity, and placing solder adjacent both the chip and the heat sink;

C. melting the solder; and

D. cooling the solder to bond the heat sink and the chip together in the predetermined configuration.

5,601,227

PROCESS FOR THE PRODUCTION OF SERVICE BOXES

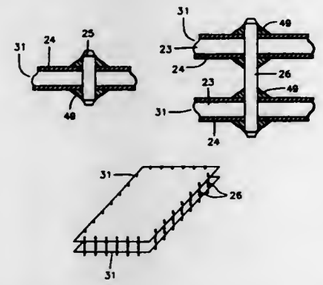
Rodolfo Kroebel Nieto, and Josep Ma Altes Balana, both of Valls, Spain, assignors to Mecanismos Auxiliares Industriales, S.A. M.A.I.S.A., Valls, Spain

Filed Oct. 13, 1994, Ser. No. 322,344

Claims priority, application Spain, Oct. 13, 1993, 9302193

Int. Cl.[6] H05K *3/28*

U.S. Cl. 228—180.1 **2 Claims**



1. In a process of manufacture and welding of printed circuit boards, the improvement comprising

welding a printed circuit board with an alloy of the formula 95% tin and 5% antimony having a melting point greater than 183° C., the printed circuit board being made of glass fiber on external surfaces and epoxy paper internally,

applying a water-repellent liquid to the printed circuit board, said water-repellent liquid including a content of solid substances dissolved in turpentine, and

evaporating the turpentine to form a completely transparent film on the printed circuit board of a thickness of 0.03 mm.

5,601,228

SOLDER-PRECIPITATING COMPOSITION AND MOUNTING METHOD USING THE COMPOSITION

Takao Fukunaga, Yokohama; Kazuhito Higasa; Hirokazu Shiroishi, both of Hiratsuka; Seishi Kumamoto, Aichi-ken; Takahiro Fujiwara, Hiratsuka, and Noriko Katayama, Akashi, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, and Harima Chemicals, Inc., Kakogawa, both of Japan

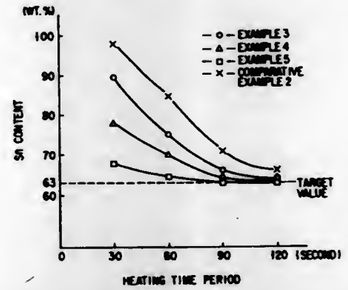
PCT No. PCT/JP94/02047, § 371 Date Aug. 2, 1995, § 102(e) Date Aug. 2, 1995, PCT Pub. No. WO95/15834, PCT Pub. Date Jun. 15, 1995

PCT Filed Dec. 6, 1994, Ser. No. 501,085

Claims priority, application Japan, Dec. 6, 1993, 5-340024

Int. Cl.[6] H05K *3/34;* **B23K** *35/34*

U.S. Cl. 228—180.21 **9 Claims**



1. A solder-precipitating composition containing Sn-Pb alloy powder and an organic acid salt of Pb as essential components, and capable of precipitating solder as a result of substitution reaction between Sn contained in the Sn-Pb alloy powder and Pb ions contained in the organic acid salt of Pb.

8. A mounting method comprising the steps of:

supplying a conductor on a board with a solder-precipitating composition which contains Sn-Pb alloy powder and an organic acid salt of Pb as essential components;

heating the solder-precipitating composition supplied on the conductor, to precipitate solder on the conductor and pre-coat the conductor with solder, as a result of ion substitution reaction between Sn in the Sn-Pb alloy powder and Pb ions in the organic acid salt of Pb;

mounting a device on the solder pre-coated conductor; and

melting the solder layer to securely mount the device on the conductor.

5,601,229

CONDUCTIVE METAL BALL ATTACHING APPARATUS AND METHOD, AND BUMP FORMING METHOD

Siniti Nakazato, and Teruaki Kasai, both of Fukuoka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 27, 1995, Ser. No. 562,959

Claims priority, application Japan, Nov. 28, 1994, 6-292937

Int. Cl.[6] H01L *21/60;* **B23K** *1/00;3/00*

U.S. Cl. 288—246 **24 Claims**

1. A conductive metal ball attaching apparatus for attaching a plurality of conductive metal balls onto electrodes of a workpiece, said apparatus comprising:

a pickup head having at its lower side a plurality of absorber holes for vacuum-absorbing the conductive metal balls;

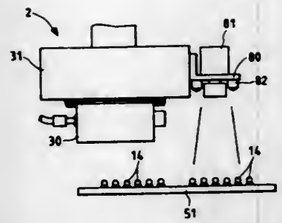
light detecting means for detecting light entering said pickup head through at least one of said absorber holes;

a conductive metal ball feed section for feeding the conductive metal balls to said pickup head;

a bonding material feed section for feeding a bonding material;

a workpiece positioning section for positioning the workpiece;

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a discard section for discarding the conductive metal ball absorbed to the absorber hole of said pickup head and applied with the bonding material;

pickup head moving means for moving said pickup head to said conductive metal ball feed section, said bonding material feed section, said workpiece positioning section and said discard section;

first light irradiating means for irradiating light onto the lower side of said pickup head while the pickup head moves from said conductive metal ball feed section to said bonding material feed section;

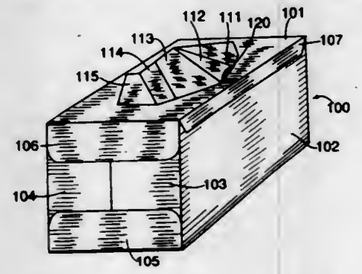
second light irradiating means for irradiating light onto the lower side of said pickup head while the pickup head moves from said bonding material feed section to said workpiece positioning section; and

attaching error detecting means for detecting an attaching error of the conductive metal ball onto said workpiece.

5,601,230
INTEGRATED PACKAGING AND FUNNEL CONSTRUCTION

Jackie E. Bell, Racine, Wis., assignor to Union Camp Corporation, Wayne, N.J.

Filed Dec. 15, 1995, Ser. No. 573,028
Int. Cl.[6] B65D *5/42*
U.S. Cl. 229—103 **30 Claims**



1. An integrated packaging system for containers of pourable materials, comprising:

a top panel;

a bottom panel;

at least two side panels, attached to the top and bottom panels;

at least two end panels, attached to the top and bottom panels;

the top, bottom, side and end panels forming a box for enclosing the containers of pourable material; and

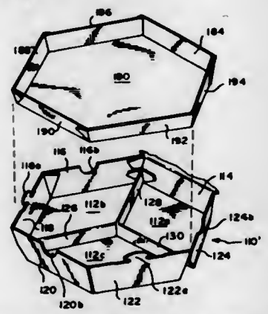
funnel means, formed from at least one of the top, bottom, side and bottom panels, for forming a funnel to aid in pouring the pourable materials from the containers, said funnel means being adapted to be separated from the at least one of the top, bottom, side and bottom panels, the funnel means having fold lines for enabling folding into a frustumated pyramidal shape with a first opening and a second opening, the first opening being larger than the second opening and the first and the second openings being at opposite ends of the funnel;

whereby an integrated packaging system formed including a box with a funnel for pouring the contents of the containers is provided.

5,601,231
PARTITIONED MEAL TRAY OR CONTAINER AND BLANK FOR FORMING SAME

Liming Cai, West Chester, Pa., assignor to Dopaco, Inc., Downingtown, Pa.

Filed May 11, 1995, Ser. No. 438,793
Int. Cl.[6] B65D *5/20;5/4805*
U.S. Cl. 229—110 **19 Claims**



1. A container for bolding food products, said container being defined from a unitary blank and comprising a planar base and a plurality of straight, equal length sidewalls having respective bottom edges integrally joined to said planar base, each of said sidewalls having opposed ends joined at an obtuse angle to corresponding ends of adjacent sidewalls to define corners, said plurality of sidewalls and said corners defining a periphery of said container;

said container further comprising a plurality of integral internal partitions extending along said planar base, each of said internal partitions having first and second ends, at least two of said internal partitions each having its first end joined to a respective one of said corners, said at least two of said internal partitions having their second ends joined together, a further one of said internal partitions having a first end joined to said peripbery of said container and a second end joined to said second ends of said at least two of said internal partitions.

5,601,232
BOTTOM CLOSURE RESTRAINMENT APPARATUS FOR PALLETIZED BULK BIN CONTAINER

James C. Greenlee, El Paso, Tex., assignor to Stone Container Corporation, Chicago, Ill.

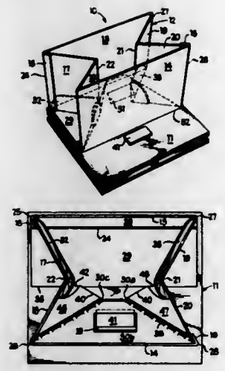
Filed Sep. 8, 1995, Ser. No. 535,611
Int. Cl.[6] B65D *5/32;5/36*
U.S. Cl. 229—117.05 **10 Claims**

1. A bottom closure restrainment apparatus for a palletized bulk bin container for aligning and restraining at least two juxtaposed flaps forming a bottom of said container when said container is fully deployed upon articulation from an undeployed position for restrained receipt of articles therewithin an interior region of said container during containment, storage and transportation of said articles, said bottom closure restrainment apparatus comprising:

pallet means for supporting and moving said container, said pallet means having a top surface on which said container is positioned;

said container bottom including a bottom panel having a front edge, a back edge and one or more side edges;

said bottom panel comprising at least two bottom flap portions, at least one of which is not affixed to said pallet means in said undeployed position;



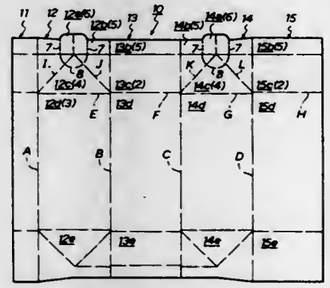
bottom closure restraint means for maintaining said at least two bottom flap portions in restrained aligned position relative to each other upon articulation of said container to said deployed position; and

said bottom closure restraint means comprising one or more geometrically-shaped apertures in said at least one unaffixed bottom flap portion and one or more corresponding post elements emanating from the top surface of said pallet means for operable telescopically mated receipt within said one or more apertures to restrain and align the position of said at least one unaffixed bottom flap portion in a position restrainably juxtaposed to another of said at least two flap positions.

5,601,233
CONTAINER

Isao Kageyama, and Michiaki Fujita, both of Tokyo, Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Oct. 18, 1995, Ser. No. 543,263
Claims priority, application Japan, Oct. 28, 1994, 6-265402
Int. Cl.[6] B65D *5/54*
U.S. Cl. 229—216 **1 Claim**



1. A container comprising:

a hexahedron-shaped container body having a pair of side wall members and a top plate member;

a pair of lug members, each of said lug members being triangular shaped in a plan view, each of said lug members being provided on opposite ends of an upper end portion of said container body and having extended end portions which extend sidewardly, each of said lug members being connected to said top plate member and each of said side wall members, an interior of each of said lug members being in communication with an interior of said container body; and

a sealing wall member, provided in an erected posture between the extended end portions of said lug members, for sealing said container body, said sealing wall member being connected to said top plate member and each of said lug members;

wherein:

a protruded portion is formed on at least one end portion of said sealing wall member and protruded upwardly beyond an upper edge portion of said sealing wall member;

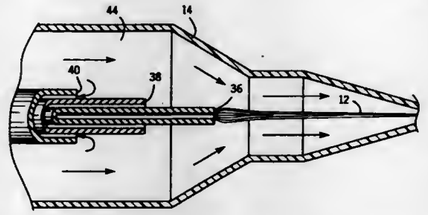
a cutting guide line is formed in said sealing wall member which extends downwardly from an inner end portion of said protruded portion, said cutting guide line defining a border between the sealing wall member and the protruded portion; and

a cutting guide half line is formed on each of said lug members in such a manner that the cutting guide half line is continuously connected to said cutting guide line, for forming an opening portion at said lug member, said cutting guide half line forming a border between said lug members and the corresponding extended end portions.

5,601,234
FLUID NOZZLE AND METHOD OF INTRODUCING A FLUID

Roderick W. Larue, Sebastopol, Calif., assignor to Abbott Laboratories, Abbott Park, Ill.

Continuation-in-part of Ser. No. 283,379, Aug. 1, 1994, abandoned. This application Dec. 15, 1994, Ser. No. 356,432
Int. Cl.[6] B05B *17/04;15/02*
U.S. Cl. 239—1 **7 Claims**



1. A method of introducing a fluid, the method comprising the steps of:

(a) providing a first fluid conveying conduit, a second fluid conveying conduit and a third fluid conveying conduit, the second fluid conveying conduit substantially surrounding the first fluid conveying conduit and the third fluid conveying conduit substantially surrounding both the first fluid conveying conduit and the second fluid conveying conduit;

(b) flowing a first fluid through the first fluid conveying conduit;

(c) flowing a second fluid through the second fluid conveying conduit;

(d) flowing a third fluid through the third fluid conveying conduit; and

(e) substantially simultaneously cleaning both the second fluid conveying conduit and the first fluid conveying conduit.

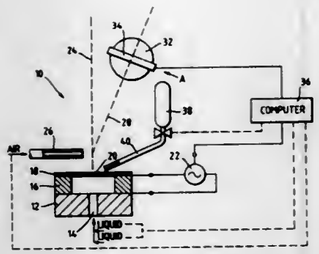
5,601,235
AEROSOL GENERATOR

David R. Booker, Weymouth, and Kevin D. Horton, Poole, both of United Kingdom, assignors to United Kingdom Atomic Energy Authority, Harwell, United Kingdom

Filed Nov. 15, 1994, Ser. No. 340,869
Claims priority, application United Kingdom, Dec. 4, 1993, 9324938
Int. Cl.[6] B05B *12/04;17/06*
U.S. Cl. 239—4 **8 Claims**

1. An aerosol generator comprising means to define an orifice, means to supply a liquid to one side of the orifice-defining means

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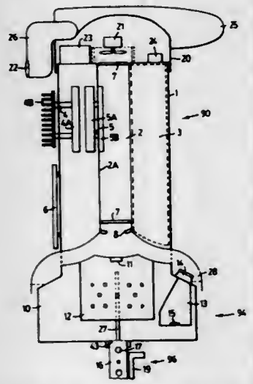
so a jet of liquid emerges from the orifice, and means to vibrate the orifice-defining means, means to monitor the size distribution of droplets in the jet after it has emerged, and means responsive to signals from the monitoring means to control the means causing the vibration.

5,601,236

PLANT WATERING DEVICE AND METHOD FOR PROMOTING PLANT GROWTH

Keith F. Weld, 2855 West 39th Avenue, Vancouver, British Columbia, Canada

Filed Jan. 18, 1995, Ser. No. 374,317
Int. Cl.[6] A01G *27/00;29/00*
U.S. Cl. 239—63 **18 Claims**



1. A plant watering and root growth enhancement apparatus for use in arid soils, said apparatus comprising:

a storage receptacle for receiving and storing water;

an elongate water delivery tube having a closed lower end and an open upper end, the tube being insertable into the soil adjacent a plant, and the open end being in flow communication with the storage receptacle, the delivery tube having a plurality of openings spaced along its length to enable the release of water from the storage receptacle into the soil proximate the roots of the plant; and

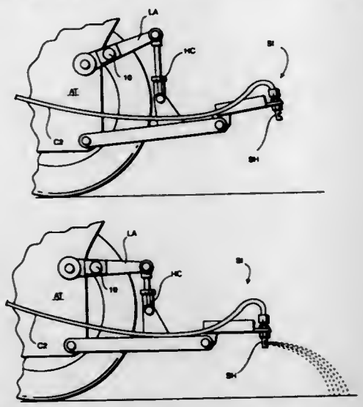
control means coacting with the openings spaced along the delivery tube for regulating the quantity of water released from the delivery tube to the roots of the plant at addressable depths, said control means comprising an elongate gating member slidably affixed to the delivery tube and disposed in sealing relation over the openings along its length, whereby sliding of the gating member allows the release of water from one opening at a time; and markings on the delivery tube which align with indicators spaced along the gating member to identify the opening from which water is flowing and its relative depth.

5,601,237

ACTUATOR ASSEMBLY FOR AGRICULTURAL SPRAYERS

Richard D. Harding, Pearl; Neil M. Payne, and James A. Trigg, both of Bolton, all of Miss., assignors to Spray Saver Corporation, Pearl, Miss.

Filed Apr. 4, 1995, Ser. No. 417,136
Int. Cl.[6] B05B *1/20*
U.S. Cl. 239—166 **22 Claims**



1. An actuator assembly for connection to a lift arm of an agricultural vehicle which senses whether the lift arm is in a raised or lowered position and in response thereto respectively disables or enables the flow of agricultural chemicals to a spray head associated with the agricultural vehicle, said actuator assembly comprising:

a cylindrically-shaped annular support housing adapted to being connected to the lift arm and positioned in a substantially vertical mounting plane;

a switch housing disc; and

a gravity-operated switch contained within said switch housing disc and disposed in a switch plane which is substantially perpendicular to said mounting plane for sensing the lift arm in its raised and lowered positions and, in response thereto, respectively disabling and enabling the flow of agricultural chemicals to the spray head associated with the agricultural vehicle, wherein

said switch housing disc is Coupled operatively to said annular support housing for turning movements about a generally horizontal axis to allow the switch housing to be adjustable through a range of angular orientations relative to a horizontal reference plane containing said axis so as to allow angular adjustment of said switch plane relative to said horizontal reference plane whereby gravity actuation of said switch is adjustable by selective turning movement of said switch housing disc which thereby angularly adjusts said switch plane in which said switch is disposed.

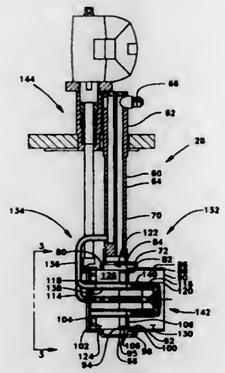
5,601,238

FUEL INJECTION NOZZLE

Doug C. Rawlins, Murrieta, and Kenneth O. Smith, San Diego, both of Calif., assignors to Solar Turbines Incorporated, San Diego, Calif.

Filed Nov. 21, 1994, Ser. No. 342,513
Int. Cl.[6] B05B *7/10*
U.S. Cl. 239—403 **17 Claims**

1. A fuel injection nozzle including a pilot means, a first mixing chamber having a preestablished cross-sectional area having an air passing therethrough and in which a means for introducing fuel is positioned therein and said fuel and air are mixed and a second



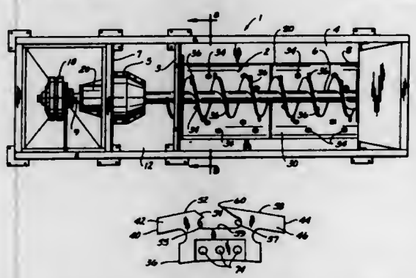
mixing chamber having a preestablished cross-sectional area being larger than that of the first mixing chamber and having said mixture of air and fuel from said first mixing chamber passing therethrough and having additional fuel mixed therewith.

5,601,239

BULK MATERIAL SHREDDER AND METHOD

Greg M. Smith, St. Louis, and Thomas Harrawood, Leslie, both of Mo., assignors to Wood Waste Energy, Inc., St. Louis, Mo.

Filed Jul. 5, 1995, Ser. No. 498,236
Int. Cl.[6] B02C *19/22*
U.S. Cl. 241—29 **15 Claims**



15. A method for shredding solid fracturable material comprising:

rotating an auger within shredder housing having a trough, a discharge end having a discharge aperture for discharge of shredded material out of said trough, and an opposite end remote from the discharge end;

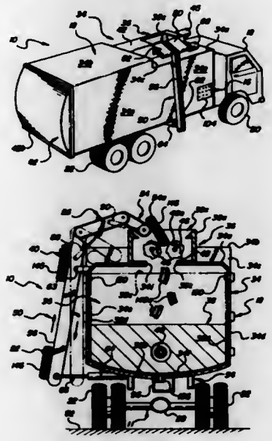
placing the material within the housing and in contact with the auger so that teeth mounted on the periphery of the auger and projecting radially therefrom impact the material and cause it to be pulled against shredder members mounted on the trough, each tooth of at least some of the teeth having a leading shredding component at a leading edge of the tooth as the auger is rotated and a trailing shredding component at a trailing edge of the tooth as the auger is rotated, there being a void between the leading component and the trailing component for receiving material being shredded therein for pulling said material in the auger's direction of rotation, said each tooth further having a sharp forwardly pointing shredder point on a leading edge of the rearward shredding component of said tooth, at least some of said shredder members having adjacent side walls which define a corner, said members being arranged on the trough with said adjacent side walls in oblique relation relative to the auger's direction of rotation such that the corner of each member is disposed for first contact with material moving in the direction of said rotation.

5,601,240

MOBILE TIRE SHREDDER

Paul Merklinger, Windsor, Canada, and Bruce Brewer, Farmers Branch, Tex., assignors to Royal Recovery Systems, Inc., Windsor, Canada

Continuation-in-part of Ser. No. 398,137, Mar. 3, 1995. This application Apr. 20, 1995, Ser. No. 425,842
Int. Cl.[6] B02C *21/02*
U.S. Cl. 241—101.74 **5 Claims**



1. A motor vehicle comprising:

a cab;

a hollow body structure positioned rearwardly of the cab, defining a storage chamber, and including a top wall and a front wall positioned rearwardly of the cab to define a space therebetween;

a shredder mounted on the body structure in overlying relation to the storage chamber and including a bottom discharge discharging downwardly into the storage chamber and a shredder box having an open top;

a door closing the open rear end of the body structure and defining the rear end of the storage chamber;

a compactor positioned in the storage chamber and movable rearwardly within the storage chamber;

power means operative to move the compactor within the storage chamber from a forward position to a rearward position proximate the rear end of the body structure; and

conveyor means positioned in the space and defining a conveyor path including a vertical conveyor path portion extending upwardly within the space from a lower conveyor loading location proximate the support surface for the vehicle to an upper location proximate the top wall of the body structure and a horizontal path portion extending rearwardly in overlying relation to the top wall of the body structure from the upper location of the vertical path portion to a conveyor discharge location proximate the open top of the shredder box.

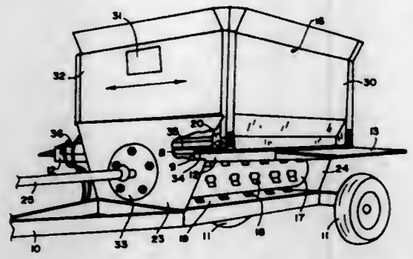
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5,601,241

MATERIAL DISINTEGRATING APPARATUS

Douglas K. Brewster, P.O. Box 339, Earl Grey, Saskatchewan, Canada

Filed Jun. 12, 1995, Ser. No. 491,296
Int. Cl.[6] B02C *13/04/21/02*
U.S. Cl. 241—101.76 **23 Claims**



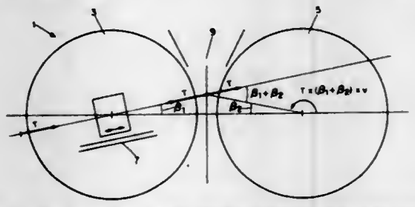
1. A machine for disintegrating bales of material comprising in combination, a frame means having a longitudinal axis and including a hitch means for towing, transport wheels rotatably mounted on said frame means, a front end upright plate, a rear end upright plate, a planar material supporting means mounted on said frame means by means of said front end upright plate and said rear end upright plate, a first opening located in a central portion of said planar material supporting means, at least one control grid member extending across said first opening, a material receiving chamber moveably mounted on said planar material supporting means, a first drive means for moving said material receiving chamber in a reciprocating motion substantially transverse to said longitudinal axis thereby moving said material received therein over said first opening, rotary material disintegrating means rotatably mounted on said frame means by means of said front end upright plate and said rear end upright plate, said rotary material disintegrating means including a drum having pivotal material engaging elements mounted thereon which during rotation protrude above said material support means through said first opening thereby engaging and disintegrating said material positioned over said first opening and discharge means mounted on said frame means in communication with said rotary material disintegrating means and including a second opening for egress of material that has been engaged and disintegrated by said rotary material disintegrating means.

5,601,242

ROLLER PRESS

Knud T. Andersen, Copenhagen, Denmark, assignor to F. L. Smidth & Co. A/S, Denmark

PCT No. PCT/EP94/01070, § 371 Date Jul. 24, 1995, § 102(e) Date Jul. 24, 1995, PCT Pub. No. WO94/23840, PCT Pub. Date Oct. 27, 1994
PCT Filed Apr. 7, 1994, Ser. No. 508,964
Claims priority, application Denmark, Apr. 13, 1993, 421/93
Int. Cl.[6] B02C *4/32*
U.S. Cl. 241—230 **4 Claims**



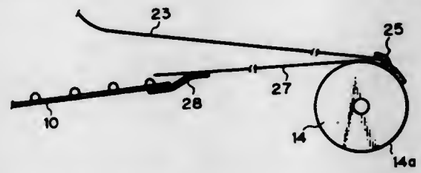
1. A roller press for grinding granular material, said roller press comprising at least two rollers, wherein each roller rotates in a direction opposite to the rotational direction of each adjacent roller thereby forming a grinding bed between each two adjacent rollers, at least one of said rollers being displaceable in a guideway, wherein only one of any two adjacent rollers is connected to and driven by a driving means thereby imparting a resultant force on the non-driven roller, said guideway for said at least one displaceable roller being oriented to permit movement of the displaceable roller in a direction substantially parallel to the direction of said resultant force.

5,601,243

PACKAGE OF TERMINAL SERIES STRIP

Masaki Inagaki, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Japan

Filed Oct. 18, 1994, Ser. No. 324,917
Claims priority, application Japan, Nov. 4, 1993, 5-301071
Int. Cl.[6] B65H *75/28;* **B65D** *73/02*
U.S. Cl. 242—160.2 **3 Claims**



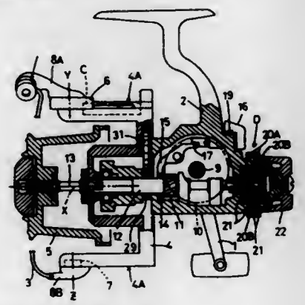
1. A package comprising a bobbin, a strip adapted to be wound around said bobbin, a plurality of terminals spaced longitudinally apart on said strip, a first intermediate layer sheet adapted to be disposed between successive coils of said strip wound around said bobbin, an auxiliary strap of predetermined length extending between a leading end of said strip and said bobbin, said auxiliary strap being a turned-back portion of said first intermediate layer sheet, and a folded portion secured to said bobbin.

5,601,244

SPINNING REEL WITH MOVABLE LINE GUIDE ALONG REEL AXIS

Yuzo Kawabe, Izumi; Kenichi Sugawara, Sakai, and Yasuhiro Hitomi, Hashimoto, all of Japan, assignors to Shimano Inc., Osaka, Japan

Filed Aug. 4, 1994, Ser. No. 285,943
Claims priority, application Japan, Aug. 4, 1993, 5-193237; Sep. 9, 1993, 5-224093; Sep. 14, 1993, 5-228435
Int. Cl.[6] A01K *89/01*
U.S. Cl. 242—232 **22 Claims**



1. A spinning reel comprising:
a reel body;
a handle;

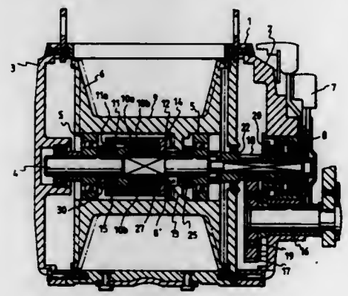
a spool supported in a forward position of said reel body; and
a rotor rotatable about an axis by drive transmitted from said handle to wind a fishing line on said spool, said rotor including:
a first arm and a second arm extending forwardly from peripheries of said rotor;
a line guide portion mounted on said first arm to be movable substantially in fore and aft directions of said reel body;
a bail extending from a vicinity of said line guide portion;
a reciprocating mechanism for moving said line guide portion, said reciprocating mechanism being disposed radially outwardly of said spool and extending in said fore and aft direction, said reciprocating mechanism being mounted on one of said first arm and said second arm; and
an intermediate transmission device extending radially of said axis to transmit the drive from said handle to said reciprocating mechanism, said intermediate transmission device including a sun gear fixedly provided on said reel body, and a planet gear for interlocking said sun gear and said reciprocating mechanism.

5,601,245

BRAKE SYSTEM FOR USE IN DOUBLE BEARING TYPE FISHING REEL

Hiroshi Hashimoto, Tokyo, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan

Continuation of Ser. No. 217,718, Mar. 25, 1994, abandoned. This application Feb. 16, 1996, Ser. No. 602,607
Claims priority, application Japan, Mar. 26, 1993, 5-090417
Int. Cl.[6] A01K *89/015;89/033*
U.S. Cl. 242—260 **10 Claims**



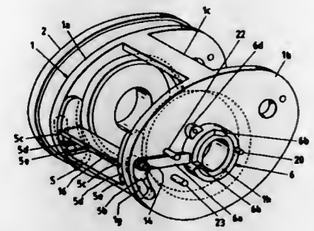
1. A brake system for use in a fishing reel having a pair of side plates, the brake system comprising:
a spool shaft rotatably supported with respect to the side plates and extending in an axial direction;
a spool rotatably arranged on the spool shaft and relatively translatable with respect to the spool shaft, the spool defining a radially inner chamber between the spool and the spool shaft;
first and second bearing means for rotatably supporting said spool on said spool shaft, wherein said first bearing means is disposed at one end of said spool and the second bearing means is disposed at an opposite end of said spool, said inner chamber positioned between said bearing means;
braking means disposed within the chamber, and having a first brake member non-rotatably coupled to the spool shaft and a second braking member rotatably coupled to the spool shaft and frictionally engaging with the first braking member; and
interlocking means for selectively interlocking the second braking member with the spool to prevent a relative rotation therebetween;
wherein the interlocking means includes a first engagement portion provided on the spool and a second engagement portion provided on the second braking member and located opposite to the first engagement portion for engaging with the first engagement portion by the translation of the spool with respect to the spool shaft, said interlocking means being disposed within said chamber.

5,601,246

ADJUSTABLE THUMB PLACEMENT MEMBER FOR A FISHING REEL

Hideaki Takahashi, Tokyo, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan

Filed Feb. 21, 1995, Ser. No. 391,350
Claims priority, application Japan, Feb. 22, 1994, 6-047919
Int. Cl.[6] A01K *89/015*
U.S. Cl. 242—261 **12 Claims**



1. A fishing reel comprising:
a reel main body having a pair of side plates;
a spool rotatably supported between said side plates;
a clutch mechanism for switching said spool between a spool free state and a winding state;
a movable thumb placement member connected to said clutch mechanism so that said clutch mechanism is operated by movement of said thumb placement member to switch said spool between said spool free state and said winding state, said thumb placement member having a thumb placement portion located to receive a thumb of an angler thereon; and
a means for selectively positioning said thumb placement portion in one of a plurality of relative positions with respect to said thumb placement member while maintaining said spool in said winding state.

5,601,247

Patent Not Issued For This Number

5,601,248

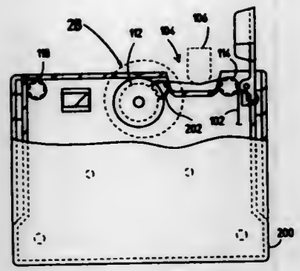
TAPE GUIDE FOR DIGITAL DATA TAPE MINI-CARTRIDGE

Paul V. Begley; Kevin L. Miller, both of Loveland, and Kenneth G. Richardson, Fort Collins, all of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 533,290, Sep. 25, 1995, abandoned, which is a continuation of Ser. No. 219,604, Mar. 29, 1994, abandoned. This application May 22, 1996, Ser. No. 651,404
Int. Cl.[6] G11B *23/087*
U.S. Cl. 242—346 **3 Claims**

1. A guide for a tape in a digital tape mini-cartridge, the tape having a back surface, the digital tape mini-cartridge having a drive wheel adjacent to the guide, the guide comprising:
a curved surface providing an area in contact with the back surface of the tape that is substantially greater than 0.616 mm^2;

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the curved surface extending beyond the area in contact with the back surface of the tape but not interfering with the drive wheel;

the tape having a top edge and a bottom edge;

the guide having a guide top and a guide bottom;

a top flange on the guide top, the top flange does not interfere with the drive wheel;

a bottom flange on the guide bottom, the bottom flange does not interfere with the drive wheel;

wherein if the top edge of the tape is in contact with the top flange, the top flange provides contact with substantially greater than 0.097 mm of the top edge of the tape; and

wherein if the bottom edge of the tape is in contact with the bottom flange, the bottom flange provides contact with substantially greater than 0.097 mm of the bottom edge of the tape;

the drive wheel having a drive wheel top flange; and

the top flange of the guide fitting below the drive wheel top flange.

5,601,249

BRAKING DEVICE FOR MAGNETIC TAPE RECORDER

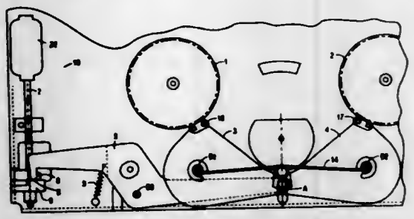
Hartmut Schandl, Vienna, Austria, and Fritz Weisser, St. Georgen, Germany, assignors to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen

Continuation of Ser. No. 183,930, Jan. 21, 1994, abandoned, which is a continuation of Ser. No. 979,728, Nov. 16, 1992, abandoned. This application May 10, 1995, Ser. No. 437,919

Claims priority, application Germany, Mar. 21, 1990, 40 08 996.7

Int. Cl.[6] G11B *15/32*; G03B *1/04*

U.S. Cl. 242—355.1 **14 Claims**



13. A braking device for a tape player/recorder, comprising:

a reel platter for mounting a tape reel;

a motor;

a drive shaft coupled to said motor;

a lever being pivotably mounted for engaging and moving a brake pad between a brake-applied position in contact with said reel platter to prevent rotation of said reel platter and a brake-released position to enable rotation of said reel platter;

means for urging said brake pad toward said brake-applied position;

a first rotatable means coupled to said drive shaft for engaging and progressively pivoting said lever to move said brake pad toward said brake-released position; and,

a second rotatable means coupled to said drive shaft for engaging said lever for maintaining said brake pad in said brake released position and for enabling said brake pad to be abruptly pivoted into said brake-applied position by said urging means.

5,601,250

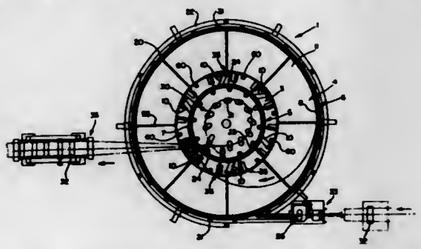
STRIP ACCUMULATOR

Michael S. Wheeler, Chagrin Falls, and Orst P. Kuryio, Norton, both of Ohio, assignors to Guild International Inc., Bedford, Ohio

Filed Jan. 24, 1996, Ser. No. 590,788

Int. Cl.[6] B65H *20/26*

U.S. Cl. 242—364.1 **26 Claims**



1. A strip accumulator for supporting a continuous length of strip material consisting of a plurality of convolutions having substantially vertical axes comprising a plurality of circumferentially spaced, generally radially extending stationary idler rolls for supporting an inner bundle of such convolutions on edge, a rotatable outer support surrounding said stationary idler rolls for supporting an outer bundle of such convolutions on edge, said stationary idler rolls and said outer support having a gap therebetween, a drive mechanism for rotating said outer support around said stationary idler rolls during filling of said accumulator with the strip material, a plurality of circumferentially spaced lifters positioned between said stationary idler rolls adjacent radial outer ends of said stationary idler rolls, and actuator mechanisms for positioning said lifters in a lower position below a plane defined by upper surfaces of said stationary idler rolls during the transfer of the convolutions of said outer bundle from said outer support to said stationary idler rolls and in a raised position intersecting such plane for lifting the convolutions of said inner bundle off said stationary idler rolls and transferring such convolutions to said outer support as the convolutions of said inner bundle expand during filling of said accumulator with the strip material.

5,601,251

ADJUSTABLE AUTOMATIC LOCKING RETRACTOR

Michael K. Hishon, New Baltimore; Harley L. Kapanka, Auburn Hills, and Steven Stoll, Mt. Clemens, all of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Mar. 31, 1995, Ser. No. 414,505

Int. Cl.[6] B60R *22/415*

U.S. Cl. 242—382.2 **14 Claims**

1. A seat belt retractor comprising:

spool means for storing a seat belt wound on said spool means, said spool means being rotatable about an axis in belt withdrawal and belt retraction directions;

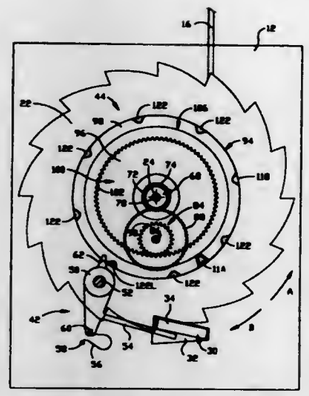
a ratchet wheel fixed for rotation with said spool means;

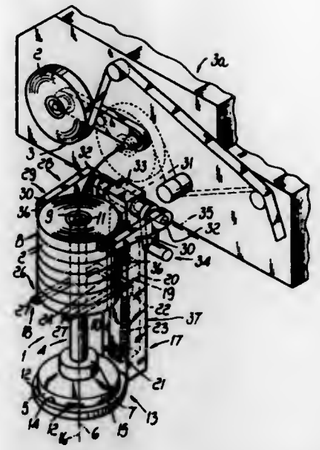
movable pawl means having a blocking position for blocking said ratchet wheel and said spool means against rotation in the belt withdrawal direction and a release position for permitting rotation of said ratchet wheel and said spool means in the belt withdrawal direction;

movable control means for automatically causing movement of said pawl means between the release position and the blocking position, said control means including first and second members, said first member being mounted to said second member for conjoint movement with said second member, said first member including actuator means positioned on said control means for causing movement of said pawl means to the blocking position when said actuator means reaches an actuation position during movement of said control means; and

drive means for moving said control means upon rotation of said spool means, said drive means moving said control means and causing movement of said actuator means to the actuation position during withdrawal of a predetermined length of the seat belt;

said control means including adjustment means for permitting adjustment of the position of said actuator means on said control means resulting in a change in the predetermined length of the seat belt which is withdrawn prior to said actuator means reaching the actuation position, said adjustment means including interlock means on said first and second members which is locked during mounting of said first member to said second member in one of several relative positions for preventing relative movement between said first and second members and unlocked during dismounting of said first member from said second member for permitting repositioning of said first member relative to said second member to another of the several relative positions.





positioning said cartridge magazine in a specific reference position with reaspect to the user machine; extraction means for disengaging in succession the reels from said supporting and guiding means and for feeding said reels to the user machine; movement means for moving said reels along said supporting and guiding means until said reels occupy, in succession, a position in which they are engageable by said extraction means; and said cartridge magazine comprises a base, said base being removably coupled to said centering means, said supporting and guiding means comprising a stem that extends from a side face of said base along said axis, said stem being rigidly coupled to said base, whereby said stem is adapted to engage the reels of a stack of mutually coaxial reels.

5,601,252

DEVICE FOR FEEDING REELS TO A USER MACHINE

Florenzo Draghetti, Villafontana Di Medicina, Italy, assignor to G.D. S.p.A., Bologna, Italy

Filed Jan. 9, 1995, Ser. No. 370,079

Claims priority, application Italy, Jan. 20, 1994, BO94A0015

Int. Cl.[6] B65H *19/12*

U.S. Cl. 242—559.1 **13 Claims**

1. Device for feeding reels to a user machine, said device comprising in combination:

at least one replaceable cartridge-type magazine for reels, said magazine having supporting and guiding means for a plurality of reels, said supporting and guiding means extending along an axis thereof and said reels being arrangeable on said supporting and guiding means coaxially to each other and to said axis; and

transfer means for transferring said reels to the user machine, wherein said transfer means comprises: centering means for

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5,601,253

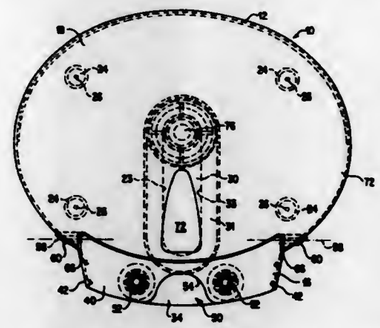
DISPENSER FOR ROLLED SHEET MATERIAL

John S. Formon, Marietta, and Stephanie McIntyre, Atlanta, both of Ga., assignors to Georgia-Pacific Corporation, Atlanta, Ga.

Filed Sep. 20, 1995, Ser. No. 530,897

Int. Cl.[6] B65H *16/08*

U.S. Cl. 242—595.1 **41 Claims**



1. A dispenser for storing and dispensing flexible sheet material from a roll having an axis of rotation, a periphery surface and a hollow core, said dispenser comprising:

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a housing for containing the roll of flexible sheet material to be dispensed, said housing including a first wall having a closed guide track, and an opening for dispensing the flexible sheet material from the roll therethrough, said guide track having opposed vertical surfaces, an upper surface, and a lower surface;

a guide mandrel, said guide mandrel having a first portion slidably retained between said opposed vertical surfaces, said upper surface and said lower surface of said guide track, and a second portion positionable within the hollow core of the roll of flexible sheet material; and

a support member, said support member being mounted for rotation about a first axis located below the axis of rotation of the roll, said support member positioned adjacent said opening in contact with the periphery surface of the roll, and supporting the roll during the dispensing of the flexible sheet material from the roll.

5,601,254

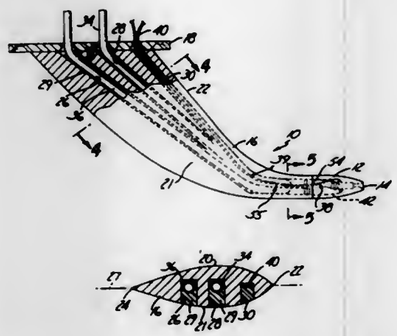
SINGLE SIDED BACKBONE STRUT FOR AIR DATA SENSOR

Rafael A. Ortiz, Minneapolis, and Theodore P. Dale, Savage, both of Minn., assignors to Rosemount Aerospace Inc., Burnsville, Minn.

Filed Oct. 28, 1994, Ser. No. 330,990

Int. Cl.[6] B64D 47/00

U.S. Cl. 244—1 R **21 Claims**



1. A solid strut for an air data sensor having a desired cross-sectional shape, a base end and an outer end;

the strut having a first side extending from the base end to the outer end, the first side having a surface contoured smoothly to said desired shape from a leading edge to a trailing edge;

said strut having a second side extending from the base end to the outer end and extending from the leading edge to the trailing edge and having a plurality of spaced apart grooves adjacent the base end with separate elongated members in the grooves, and said plurality of grooves merging into a single channel adjacent the outer end, said single channel being of size to receive elongated members from the grooves; and

a retaining material filling the grooves and securing the conduit in the grooves.

5,601,255

METHOD AND APPARATUS FOR FLIGHT PATH CORRECTION OF PROJECTILES

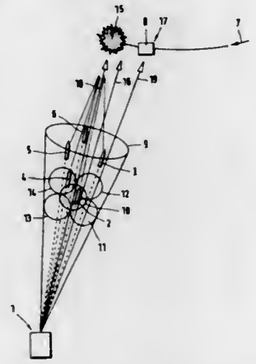
Rudolf Romer, Kaarst; Gerd Wollmann, Oberhausen, and Helmut Mlosph, Lauf a.d. Pegnitz, all of Germany, assignors to Rheinmetall Industrie GmbH, Ratigen, and TZN Forschungs-und Entwicklungszentrum Unterluss, GmbH, Uterluss, both of Germany

Filed May 8, 1995, Ser. No. 438,018

Claims priority, application Germany, May 7, 1994, 44 16 211.1

Int. Cl.[6] F41G 7/26

U.S. Cl. 244—3.13 **11 Claims**



10. A method of flight path correction of at least one projectile employing a guide beam, with said method including continuously acquiring target data, including speed, range and direction of movement, in a fire-guidance system associated with a firing device for the at least one projectile, transmitting the target data to a laser apparatus that produces the guide beam, receiving the guide beam by a respective receiving apparatus on each of the at least one projectile within the guide beam, and correcting the course of the at least one projectile in response to the target data on the guide beam; the improvement comprising:

a) orienting the guide beam toward a collision point of a target being tracked and the at least one projectile which was calculated on the basis of the target data;

b) subdividing the guide beam into guide beam segments (partial beams) including a central guide beam segment that is oriented toward the collision point and a plurality of outer guide beam segments disposed around the central guide beam segment;

c) differently modulating each of the guide beam segments;

d) with the aid of the respective receiving apparatus, determining the angular position necessary for the correction, with respect to the collision point, of the respectively associated at least one projectile from the modulation of the particular guide beam segment in which the respectively associated at least one projectile is located;

e) phase-modulating the central guide beam segment; and,

f) determining the roll position of the respective projectile with the aid of a corresponding demodulator in the respective projectile.

5,601,256

AIRCRAFT STABILIZING SYSTEM

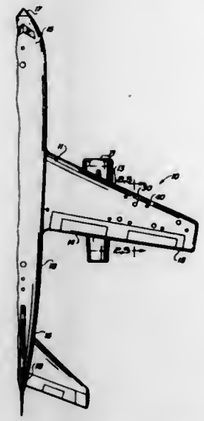
Leonard Harris, 730 Normandy P., Delray Beach, Fla. 33484

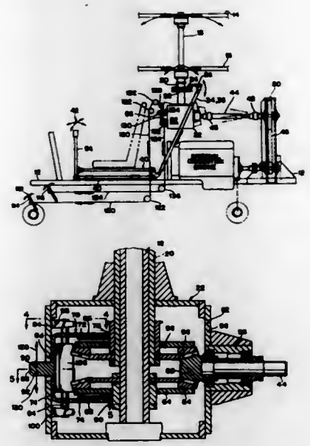
Filed Feb. 13, 1995, Ser. No. 387,585

Int. Cl.[6] B64B 1/36

U.S. Cl. 244—52 **4 Claims**

1. An aircraft stabilizing system for use on aircraft having a fuselage section and wings comprising:





sensing means positioned and disposed at a plurality of predetermined locations on the aircraft for detecting and measuring external forces exerted on said aircraft due to sudden changes in atmospheric pressure at said predetermined locations,

thrust means for providing a propulsive force sufficient to counteract said external forces detected by said sensing means so that said external forces and said propulsive force are in equilibrium, thereby maintaining the stability of said aircraft,

a plurality of ports positioned at predetermined locations and each structured to house said thrust means therein, said ports being oriented at one of a plurality of select angles relative to said aircraft so that said propulsive force may be selectively directed in a specific direction by actuating said thrust means in one or more of said ports oriented in said specific direction, each of said ports including an opening at the external surface of said aircraft and closure means for closing said opening, thereby concealing said thrust means therein,

activation means for selectively activating said thrust means, said activation means being operably interconnected to said thrust means, and

computer control means for controlling said thrust means, said closure means and said activation means, said computer control means being operably interconnected to said sensing means, said closure means and said activation means, wherein upon detection of said external forces acting on one or more of said predetermined locations by said sensing means, said computer control means operates said closure means in a select one or more of said ports to an open position and further operates said activation means resulting in activation of said thrust means in said select open ports, thereby generating said propulsive force in said specific direction sufficient to counteract said external forces.

5,601,257

AIR VEHICLE YAW CONTROL SYSTEM

H. Smith McKann, Fredericksburg, Va., assignor to Benchmark Corporation, Fredericksburg, Va.

Filed Aug. 11, 1994, Ser. No. 288,916

Int. Cl.[6] B64C 27/52

U.S. Cl. 244—17.25 **19 Claims**

1. A yaw control system for an air vehicle having a pair of coaxially mounted contrarotating rotors, comprising:

a first drive means for rotating a first rotor in a first rotational direction, said first drive means including a first rotatable drive gear with a first friction surface, said first friction surface being substantially planar;

a second drive means for rotating a second rotor in a second rotational direction opposite to the first rotational direction, said second drive means including a second rotatable drive gear with a second friction surface, said second friction surface being substantially planar;

first and second friction pads located adjacent to and releasably engagable with said friction surfaces of said first and second drive gears, respectively, for applying a frictional drag force on said drive gears and said drive means in opposition to rotation thereof to rotate the rotors; and

control means, supporting said friction pads, for selectively moving each of said friction pads between a first position engaging and applying the frictional drag force on the respective drive gear to produce a turning torque on the air vehicle and a second position disengaged and spaced from the respective drive gear for said drive means to rotate the rotors without the frictional drag force.

5,601,258

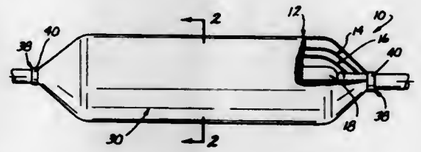
SPACECRAFT SHIELD

Ken A. McClymonds, Irvine, Calif., assignor to McDonnell Douglas Corporation, Huntington Beach, Calif.

Filed Jul. 25, 1994, Ser. No. 280,076

Int. Cl.[6] B64G 1/22

U.S. Cl. 244—158 R **21 Claims**



1. A spacecraft having a shield for protecting the spacecraft from impacting particles, the shield comprising:

a bumper element generally enclosing the spacecraft and comprising a plurality of spaced layers;

a cloud stopper element generally enclosing the spacecraft and located within the bumper element, the cloud stopper element being separated from the bumper element and comprising a metallic layer and an adhesive layer; and

a fragment stopper element generally enclosing the spacecraft and located within the cloud stopper element.

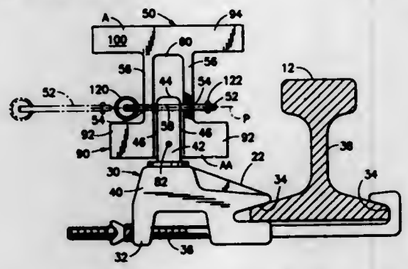
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5,601,259

TWO-WAY SAFETY TRIP FOR RAILWAY VEHICLES

Anthony J. DiChiara, Garden City, N.Y., assignor to Boda Industries, Inc., South Hackensack, N.J.

Filed Mar. 26, 1996, Ser. No. 622,071
Int. Cl.[6] B61L 3/04
U.S. Cl. 246—283 C 15 Claims



1. A two-way safety trip for placement adjacent a railway track along which a railway vehicle travels in either one of opposite first and second directions of travel, the railway vehicle having a braking mechanism including an actuator for traveling along a given path of travel as the railway vehicle travels along the track such that the safety trip will engage the actuator to activate the braking mechanism when the railway vehicle is traveling in a selected one of the first and second directions of travel to stop the travel of the railway vehicle in the one of the first and second directions of travel, and will engage the actuator to not activate the braking mechanism when the railway vehicle is traveling in the other of the first and second directions of travel so as to permit continued travel of the railway vehicle in the other of the first and second directions of travel, the safety trip comprising:

a bracket;

attachment means for attachment of the bracket adjacent the track, at a basal location wherein at least a portion of the bracket is placed adjacent the path of travel of the actuator of the braking mechanism;

a trip member;

mounting means mounting the trip member upon the bracket for pivotal movement about a pivotal axis located adjacent the path of travel of the actuator of the braking mechanism when the bracket is attached at the basal location, the pivotal movement being between a first position and a second position;

stop means on the bracket, the stop means being spaced from the pivotal axis about which the trip member is mounted;

a trip arm on the trip member for extending from the pivotal axis into the path of travel of the actuator when the trip member is in the first position, and for extending out of the path of travel of the actuator when the trip member is in the second position;

a stop arm on the trip member for extending toward the stop means to engage the stop means when the trip member is in the first position, and for extending away from the stop means when the trip member is in the second position; and

biasing means biasing the trip member into the first position;

the stop means including a first stop facing in a direction opposite to the first direction of travel of the railway vehicle and a second stop facing in a direction opposite to the second direction of travel of the railway vehicle, when the bracket is attached at the basal location;

the mounting means including selective means for selectively mounting the trip member upon the bracket in either one of a first mounting orientation and a second mounting orientation;

the first mounting orientation being such that the stop arm confronts the first stop when the trip member is in the first position, with the trip arm extending into the path of travel of the actuator, for permitting pivotal movement of the trip member from the first position toward the second position in a first pivotal direction in response to engagement of the actuator with the trip arm as the actuator moves along the path of travel during travel of the railway vehicle in the first direction of travel so as to enable continued travel of the railway vehicle in the first direction of travel, and for precluding pivotal movement of the trip member from the first position toward the second position in a second pivotal direction in response to engagement of the actuator with the trip arm as the actuator moves along the path of travel during travel of the railway vehicle in the second direction of travel so as to trip the actuator and activate the brake mechanism to bring the railway vehicle to a stop; and

the second mounting orientation being such that the stop arm confronts the second stop when the trip member is in the first position, with the trip arm extending into the path of travel of the actuator, for permitting pivotal movement of the trip member from the first position toward the second position in the second pivotal direction in response to engagement of the actuator with the trip arm as the actuator moves along the path of travel during travel of the railway vehicle in the second direction of travel so as to enable continued travel of the railway vehicle in the second direction of travel, and for precluding pivotal movement of the trip member from the first position toward the second position in the first pivotal direction in response to engagement of the actuator with the trip arm as the actuator moves along the path of travel during travel of the railway vehicle in the first direction of travel so as to trip the actuator and activate the brake mechanism to bring the railway vehicle to a stop;

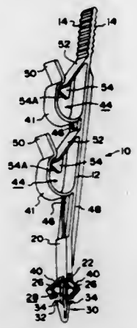
whereby the safety trip will stop the travel of the railway vehicle in the selected one of the first and second directions of travel and will permit continued travel of the railway vehicle in the other of the first and second directions of travel.

5,601,260

ENGAGING STRUCTURE OF RETAINER

Katsuyoshi Shinohara, Hirakata, and Takahiko Inari, Osaka, both of Japan, assignors to NIFCO, Inc, and Matsushita Electric Industrial Co. Ltd., both of Japan

Filed May 11, 1995, Ser. No. 437,387
Claims priority, application Japan, May 27, 1994, 6-115394
Int. Cl.[6] F16L 3/22
U.S. Cl. 248—68.1 17 Claims



1. An engaging structure of a retainer for securing the retainer in a mounting hole extending through a mounting plate including front and back surfaces, comprising:

a main body;

leg bodies extending from the main body, said leg bodies being substantially parallel to each other and being separated from each other by a gap, each of said leg bodies having a base end and a distal end;

a tapered anchor portion connecting the distal ends of said leg bodies to each other;

pawl pieces projecting from a base end of said anchor portion in a direction such that the pawl pieces diverge from each other, distal ends of said pawl pieces being adapted to elastically abut the back surface of the mounting plate, such that upon application of a force that is directed to pull said anchor portion out of the mounting hole, said pawl pieces are pressed and expanded outwardly so as to plane-contact the back surface of the mounting plate; and

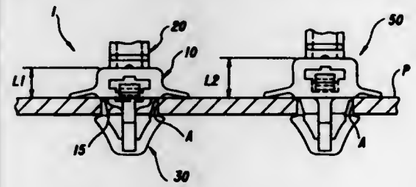
urging means projecting from outer surfaces of said leg bodies, said urging means having distal ends adapted to elastically contact the front surface of the mounting plate.

5,601,261

BAND CLIP

Takashi Koike, Yokohama, Japan, assignor to Kato Hatsujo Kaisha, Ltd., Kanagawa, Japan

Filed Jul. 27, 1995, Ser. No. 508,025
Claims priority, application Japan, Jul. 29, 1994, 6-178842
Int. Cl.[6] F16B 15/00
U.S. Cl. 248—71 1 Claim



1. A band clip, comprising:

a lock portion having a first side and a second side;

a band portion elongated from said first side for winding at least wires thereon; and

a stem portion formed at said second side for inserting said stem portion into a fitting aperture formed in a holding member to be engaged therein,

wherein said lock portion has a through hole for drawing said band portion therein with said wires wound by said band portion, said through hole being formed transversely to an inserting direction of said stem portion, and

wherein said lock portion is formed with a convex portion in said second side such that said convex portion fits into said fitting aperture, whereby said lock portion is partially accommodated in the fitting aperture.

5,601,262

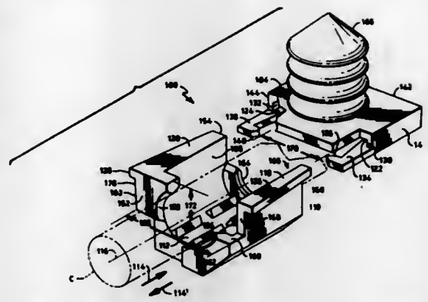
CABLE LOCATOR

John O. Wright, York, Pa., assignor to Osram Sylvania Inc., Danvers, Mass.

Continuation of Ser. No. 412,628, Mar. 29, 1995, abandoned.
This application Jul. 30, 1996, Ser. No. 688,569
Int. Cl.[6] F16L 3/08
U.S. Cl. 248—74.4 8 Claims

1. A cable locator comprising:

a base having a first surface, at least one opposite second surface, and a cable-receiving channel formed by said first surface, said cable-receiving channel extending in the direction of a longitudinal axis of said base, said base further including a first flanged member located at one side of said cable receiving channel and a second flanged member located at an opposite second side of said cable receiving channel, said first flanged member comprising a first tapered surface and said second flanged member comprising a second tapered surface, said first tapered surface and said second tapered surface extending generally in the direction of said longitudinal axis, and further wherein said first groove comprises a first tapered base surface and said second groove comprises a second tapered base surface, said first tapered surface mating with said first tapered base surface and said second tapered surface mating with said second tapered base surface, in a closed mode,



a cover releasably attachable to said base for enclosing said cable-receiving channel in said closed mode and exposing said cable-receiving channel in an open mode, and further wherein said cover includes a first groove at one edge of said cover and a second groove at an opposite edge of said cover, said first flanged member mating with said first groove and said second flanged member mating with said second groove, in said closed mode, said first groove comprising a first leg which includes a first tip which extends generally in the direction of said second groove, said second groove comprising a second leg which includes a second tip which extends generally in the direction of said first tip, said first leg and said second leg extending from a bridging member of said cover, generally in the direction of said longitudinal axis in said closed mode; and

a locating element forming a part of one of said base and said cover.

5,601,263

TREE-MOUNTED SPRAY APPARATUS AND METHOD

Susan S. Thayer, Winter Haven, Fla., assignor to Thayer Industries, Inc., Dundee, Fla.

Filed Oct. 11, 1994, Ser. No. 320,303
Int. Cl.[6] B05B 15/06
U.S. Cl. 248—75 2 Claims



1. A mounting bracket for positioning an agricultural sprayer adjacent tree or bush foliage to be sprayed, the bracket comprising:

means for interfacing with a trunk or limb of the tree or bush foliage to be sprayed;

means for connecting the interfacing means to fastening means for attaching the interfacing means to the trunk or limb;

means for supporting the agricultural sprayer in spaced relation to the interfacing means and in a plurality of orientations relative to the trunk or limb; and

a first member having a generally flat face having a polygonal aperture therein;

the means for interfacing and the means for connecting comprising a base and a neck piece having means for removably and adjustably coupling with the fastening means, wherein:

the base is dimensioned to partially encompass the trunk or limb when the base is affixed thereto;

the base has a proximal side for interfacing with the trunk or limb and a distal side;

the neck piece has a distal end;

the neck piece protrudes from the distal side of the base with the distal end protruding away from the base;

the supporting means are affixed to the distal end of the neck piece;

the first member is affixed to the distal end of the neck piece;

the supporting means comprises a second member having a first face, a second generally flat face, and a locking piece protruding from the second face, the locking piece having:

a polygonal shaft matable with the polygonal aperture; and

a tip having a larger diameter than the polygonal aperture but having sufficient flexibility to be snap fit thereinto;

the supporting means further comprises means for gripping tubing of an agricultural sprayer affixed to the first face; and

the locking piece is disengagable from the aperture in the first member, the second member is rotatable relative to the first member, and the locking piece is snappable into the aperture in the first member, thereby permitting a supporting of the agricultural sprayer in a plurality of orientations.

5,601,264

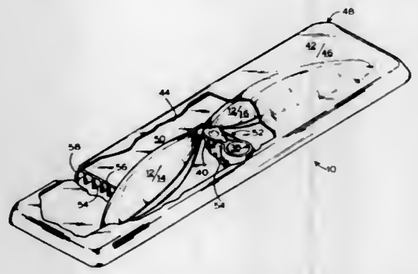
WRIST REST

Stephen Peart, 21116 Locust Dr., Los Gatos, Calif. 95031

Filed Apr. 4, 1994, Ser. No. 222,701

Int. Cl.[6] B68G *5/00*

U.S. Cl. 248—118.1 **24 Claims**



1. A change-configuration fluid-environment wrist rest comprising:

a bladder having elongate lobes operatively connected by an isthmus; and

change-configuration fluid-control mechanism including a pump operatively connected to the bladder for controlling the introduction of fluid into the bladder, and a valve operatively connected to the bladder for controlling the release of fluid from the bladder; wherein:

one of the lobes, when inflated, has a top and a middle; and

the contour of the inflated lobe is such that, when viewed from above, a cross-section of the lobe progresses from a single point to an ellipse as the plane in which the inflated lobe is cross-sectioned progresses from the top toward the middle of the lobe.

5,601,265

DEVICE FOR LOCKING AN APPARATUS ON A SUPPORT NOTABLY A CAMERA ON A TRIPOD

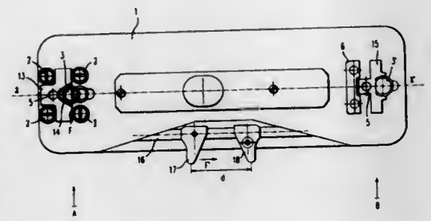
Rene-Serge Lopez, Le Plessis Bouchard, France, assignor to Thomson Broadcast, Cergy-Pontoise Cedex, France

Filed Apr. 27, 1995, Ser. No. 429,858

Claims priority, application France, May 17, 1994, 94 05988

Int. Cl.[6] F16M *11/02*

U.S. Cl. 248—177.1 **8 Claims**



1. Device for locking an apparatus on a support, comprising:

two hooking parts which are attachable to the apparatus, a top plate equipped with two attachment fittings, said fittings being engageable with said two hooking parts, and two push-buttons fitted in said top plate, said two push-buttons allowing said two attachment fittings to slide simultaneously and to engage said two booking parts.

5,601,266

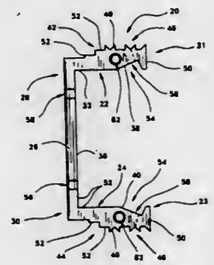
MOUNTING BRACKET FOR WALL PANEL LOCKS

Joseph C. Fleming, III, 17301 Edwards Rd., Cerritos, Calif. 90701

Continuation of Ser. No. 234,047, Apr. 28, 1994, Pat. No. 5,480,117. This application Sep. 1, 1995, Ser. No. 522,700

Int. Cl.[6] A47F *5/08*

U.S. Cl. 248—231.9 **10 Claims**



1. A member for use in anchoring a locking member to a frame of a panel, comprising:

a primarily U-shaped bracket including an elongate base having two ends and a leg extending from each end of said base, said legs having an inner and an outer surface, said base and legs defining a substantially rectangular inner bracket perimeter for acceptance of a rectangular locking member therein, said bracket further including frictional engagement means for securing the bracket to the frame, said frictional engagement means comprising a surface irregularity along a portion of said outer surface of at least one of the legs.

5,601,267

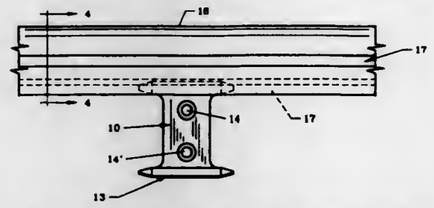
AWNING ROD BRACKET

Donald R. Caine, Greensboro, N.C., assignor to Camco Manufacturing, Inc., Greensboro, N.C.

Filed Jan. 17, 1995, Ser. No. 373,611

Int. Cl.[6] F21L *15/08*

U.S. Cl. 248—223.41 **10 Claims**



1. An awning rod bracket for suspending an article, said bracket comprising: a first bolt, a planar body, said body defining an aperture, said first bolt attached to said body, a second bolt, said second bolt attached to said body, said first and said second bolts attached along opposite sides of said body, said first and said second bolts each having a cylindrical configuration, said first bolt having a diameter smaller than said second bolt.

5,601,268

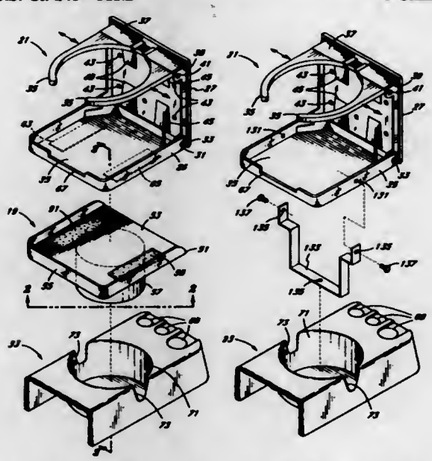
DRINK HOLDER SUPPORT STRUCTURES INTERFITTING WITHIN EXISTING SPACE

Richard Dunchock, 535 S. Coast Hwy., Unit 59, Laguna Beach, Calif. 92651

Filed Jun. 7, 1995, Ser. No. 484,498

Int. Cl.[6] A47K *1/08*

U.S. Cl. 248—311.2 **6 Claims**



1. A support system for supporting a drink container support comprising:

a vertically downwardly extending portion for deriving support from and fitting into an existing space in a vehicle interior and wherein said vertically downwardly extending portion has a flat surface;

a shoe portion overlying and connected to said downwardly extending portion, partially surrounded by an abbreviated height vertical wall and defining a space between lengths of said abbreviated height vertical wall to accommodate a portion of a self contained drink container support; and

a layer of adhesive material engaging said flat surface.

5,601,269

DUAL-CUP RACK AND PINION CUPHOLDER

Tomislav Jankovic, Etobicoke, Canada, assignor to Larizza Industries, Inc., Troy, Mich.

Filed Jun. 7, 1995, Ser. No. 484,989

Int. Cl.[6] F16M *13/00*

U.S. Cl. 248—311.2 **10 Claims**



1. A stowable container holder apparatus for a vehicle comprising:

a housing having a recess;

a tray slidably supported in said housing and moveable with respect to said housing between a retracted stowed position in said recess and an extended position extending from said recess;

at least two holders rotatably supported on said tray for pivoting between a collapsed position with said holders rotated to a vertical position to pass into said recess, and a use position to rotate from said vertical position outwardly to a horizontal position with said holders transverse to said recess preventing passage into said recess; and

said holders including a base and support walls connected upwardly therefrom for supporting a container; a first of said holders including said support walls separated by a first predetermined distance and the second of said holder including said support walls separated by a second predetermined distance greater than said first predetermined distance so that said support walls of said first holder may be pivoted from said horizontal position into said support walls of said second holder in said vertical position with said support wall overlapping and said bases substantially vertical in said collapsed position, and rotating outwardly therefrom with said bases substantially horizontal and said support walls vertically extending in said use position.

5,601,270

PAPER HOLDER ON WHICH A SHEET OF PAPER CAN BE SUPPORTED AT DIFFERENT INCLINATIONS

Cheng-Sung Chen, No. 380, Chung-Hua Rd., Tou-Liu City, Yun-Lin Hsien, Taiwan

Filed Oct. 12, 1995, Ser. No. 543,857

Int. Cl.[6] B65D *85/62*

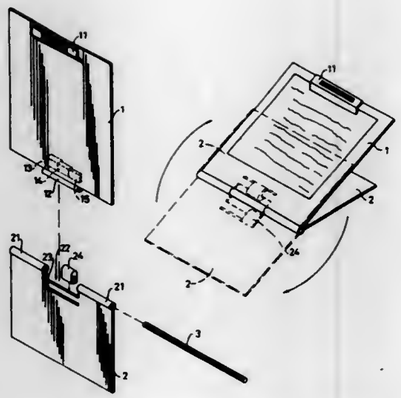
U.S. Cl. 248—454 **3 Claims**

1. A paper holder, comprising a generally rectangular holder plate and a clip member mounted on plate and adapted to clamp a sheet of paper which is placed on a front side surface of the holder plate;

the holder plate having a rear side surface opposite to the front side surface and a horizontal row of interconnected abutting blocks which are fixed on the rear side surface thereof and which are different in thickness so as to define a stepped surface thereon; and

a support plate attached pivotally and inclinedly to the holder plate and having a horizontally movable sliding unit thereon to contact said stepped surface in such a manner that the sliding unit abuts against a selected one of the blocks of the holder plate so as to form a predetermined angle between the

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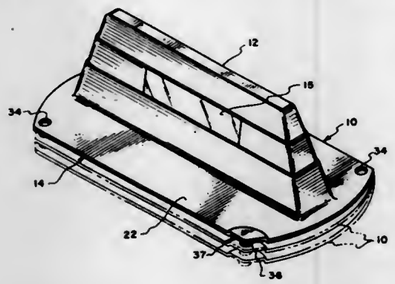
holder plate and the support plate, the sliding unit being movable on the support plate for removal from the selected one of the blocks to abut against another one of the blocks, thereby changing an angle between the holder plate and the support plate.

5,601,271

PACKAGE RESTRAINING BARRIERS FOR CARGO COMPARTMENTS OF VEHICLES

Paul Janowski, Topanga, and Terry A. Carter, Canoga Park, both of Calif., assignors to Rx For Organization, Canoga Park, Calif.

Filed Jun. 8, 1995, Ser. No. 488,657
Int. Cl.[6] A47B 97/00
U.S. Cl. 248—503 10 Claims



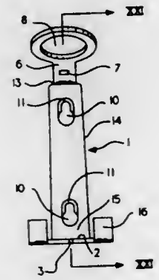
1. A cargo restraining barrier device comprising:
a vertical wall;
flange means along opposite sides of said vertical wall;
gripping means on an underside of said flange means;
said vertical wall constructed to allow said cargo restraining barriers to be stacked for storage in as small a space as possible;
whereby a plurality of said cargo restraining barriers positioned around packages being transported and in abutment with a wall of a cargo area securely hold said packages in place preventing them from sliding or tipping.

5,601,272

CANDLE HOLDER

William E. Adams, Butler County, Pa., and William Raftery, Stark County, Ohio, assignors to Adams Mfg. Corp., Portersville, Pa.

Continuation-in-part of Ser. No. 101,738, Aug. 4, 1993, Pat. No. 5,419,527. This application May 26, 1995, Ser. No. 451,300
Int. Cl.[6] F23D 3/16
U.S. Cl. 248—518 24 Claims



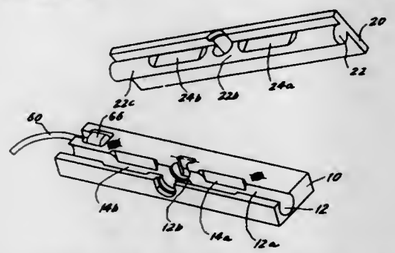
1. A candle holder comprising:
a base;
an upright attached to the base and adapted to receive a figure having a slot sized to fit over the upright, the upright shaped to permit attachment of at least one suction cup to the upright; and
a candle support extending from the upright over the base and sized to engage a candle placed on the base and prevent the candle from falling from the base when the candle is subjected to forces acting on the candle in a direction parallel to the base, the candle support having an opening, the opening being adapted to receive a tongue which extends longitudinally in the slot of the figure wherein the opening and the tongue cooperate to restrain the figure from movement.

5,601,273

LOCKING DEVICE FOR ARRESTING A PORTABLE OBJECT TO A STATIONARY OBJECT

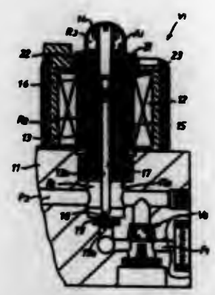
Meir Avganim, 156 Moshav, Gealiya, Israel

Filed Aug. 16, 1995, Ser. No. 515,814
Claims priority, application Israel, Aug. 19, 1994, 110720
Int. Cl.[6] F16M 13/00
U.S. Cl. 248—551 14 Claims



1. A locking device for connecting a portable object to a stationary object, the device comprising:
a first block member and a second block member which are slidable engageable along an axis;
the first block member being formed with a recess extending along the axis, the recess having a series of undercut portions and a series of non-undercut portions, arranged in staggered relationship to one another; and

the second block member being formed with a projecting rib extending along the axis, the rib having a first series of portions which permit overlapping cooperation with the undercut portions, and a second series of portions which are freely insertable into and out of the undercut portions of the first member in a direction perpendicular to the axis, and
the first and second portions of the second block member are arranged in a complementary staggered relationship to that of the undercut portions and the non-undercut portions of the first block member; and locking means for interlocking the block members to each other after the block members are slidably engaged.

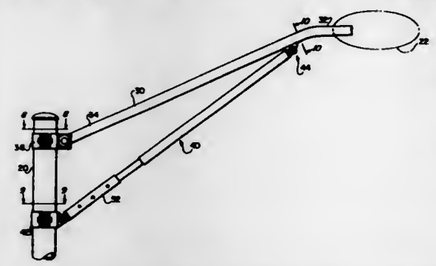


5,601,274

VIBRATION ISOLATING LIGHTING POLE BRACKET ARM

Ray C. Miner, and Phillip R. Shaffer, both of Abingdon, Va., assignors to Kearney-National, Inc., White Plains, N.Y.

Filed Jun. 13, 1995, Ser. No. 489,717
Int. Cl.[6] F16M 13/00
U.S. Cl. 248—594 8 Claims



1. A vibration isolating lighting pole bracket arm assembly comprising:
an upper, cantilevered member for supporting a lighting fixture;
a lower bracing member for damping vibrations transmitted to said lighting fixture;
said upper member having first connection means for being pivotally connected to a vertical lighting pole and second connection means for being pivotally connected to a first end of said lower, bracing member;
said lower bracing member comprising an inner tube having first and second ends and an outer tube having a closed end and an open end;
said inner tube having a first cylindrical sleeve bearing press fit over said first end of said inner tube and said first end of said inner tube with said first sleeve bearing being slidably received within said outer tube; and
said outer tube having a second cylindrical sleeve bearing press fit into said open end of said outer tube with said second sleeve bearing being slidably engaged with an outer periphery of said inner tube.

5,601,275

SOLENOID OPERATED VALVE

Hideharu Hironaka, Kariya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Aichi-ken, Japan

Filed Jul. 26, 1995, Ser. No. 507,609
Claims priority, application Japan, Jul. 29, 1994, 6-178918; Apr. 17, 1995, 7-091137
Int. Cl.[6] F16K 31/06
U.S. Cl. 251—129.15 11 Claims

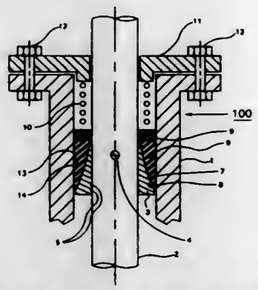
1. A solenoid operated valve having a valve housing formed with a valve chamber positioned between an inlet passage and an outlet passage; a solenoid winding mounted on said valve housing; an end closed sleeve concentrically assembled with said solenoid winding and having an opening end mounted on said valve housing; a stationary element disposed within said end closed sleeve and mounted on said valve housing together with said end closed sleeve to form a fluid chamber in a closed end portion of said sleeve, said fluid chamber being communicated with said valve chamber through an axial bore of said stationary element; a movable element disposed within said fluid chamber to be moved toward said stationary element against a return spring loaded thereto when said solenoid winding is activated; a movable valve rod engaged at one end thereof with said movable element for movement therewith and extending into said valve chamber through the axial bore of said stationary element; a valve body disposed within said valve chamber to be moved by said valve rod; a valve seat mounted within said valve chamber and located between said inlet and outlet passages to be closed by said valve body; and
a hydraulic damping mechanism including an annular sealing member coupled with said movable element and slidably engaged with an internal surface of said end closed sleeve to form a damper chamber and fluid restriction means arranged to provide a fluid communication between said damper chamber and said valve chamber.

5,601,276

RETROFIT VALVE STEM SEAL ASSEMBLY

John J. Wordin, 735 N. 900 East, Shelley, Id. 83274-5209

Filed Feb. 12, 1996, Ser. No. 600,403
Int. Cl.[6] F16K 41/06
U.S. Cl. 251—214 3 Claims



1. A retrofit valve stem seal assembly including means for providing uniform wear at all points of contact between contacting parts, said assembly comprising:
a rotatable valve stem adaptor firmly attached to a rotatable valve stem including a sliding tractrix surface for sliding contact with a stem packing,
a stem packing including a complementary tractrix surface for contacting said sliding tractrix surface, and including a surface for contacting a bonnet wall,

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a bonnet including a wall portion for contacting said stem packing surface, and

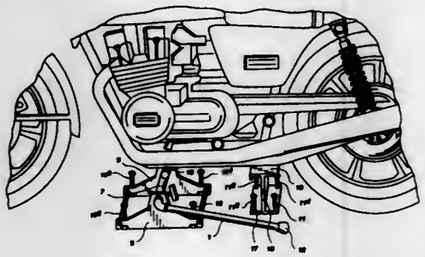
means for urging said stem packing against said valve stem adaptor and said bonnet, whereby a seal is created and maintained between said stem packing and said valve stem adaptor and a seal is created and maintained between said stem packing and said bonnet, wherein said sliding tractrix surface contacting said complementary tractrix surface of said stem seal adaptor are such that wear between said sliding tractrix surface and complementary tractrix surface is uniform at all points of contact between said sliding tractrix surface and said complementary tractrix surface, and such that said urging means is effective in creating and maintaining said seal between said valve stem adaptor and said stem packing.

5,601,277

JACKING SYSTEM FOR TWO WHEELED VEHICLES

Raymond G. Larson, 14284 S. Elsbrook Clr., Draper, So. Mountain, Utah 84020

Filed Apr. 5, 1996, Ser. No. 628,191
Int. Cl.[6] B66F *7/22*
U.S. Cl. 254—131 **9 Claims**



1. A jacking mechanism for raising and stabilizing a two wheeled vehicle from a surface from which the motorcycle is being lifted comprising;

a frame having two parallel support members;

said parallel support members being opposite each other and separated by two parallel connecting members;

said parallel connecting members being attached to said parallel support members; said parallel support members and said parallel connecting members forming a base having four corners;

said parallel support members having an opening;

said openings in said support members being opposite each other;

a lever mechanism;

said lever mechanism having a lever member;

said lever member being attached to a rotational member;

said rotational member being pivotally supported by said openings in said supporting members;

said rotational member having multiple lifting support members rigidly attached;

said lifting support members being rigidly attached to a cylindrical lifting member;

said cylindrical lifting member having a resilient low friction surface pliable enough to grip said vehicle without marring the finish of said vehicle;

said multiple lifting support members being positioned on said rotational member in relationship to said lever member to raise said cylindrical lifting member to a center position of maximum height from said surface from which the motorcycle is being lifted and lowering said cylindrical lifting member slightly past the zenith of rotation to provide force on the lever member pressing said lever member against said surface from which the motorcycle is being lifted;

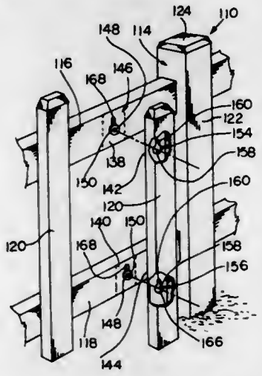
and height adjusting means being attached to each of said four corners of said base providing a method of adjusting the height of said base and providing a method of leveling said two wheeled vehicle.

5,601,278

PICKET FENCE

Loren Graber, P.O. Box 42, 3446 US 6 E., Bremen, Ind. 46506

Continuation-in-part of Ser. No. 373,543, Jan. 17, 1995, abandoned. This application Apr. 10, 1996, Ser. No. 630,204
Int. Cl.[6] E04H *17/24*
U.S. Cl. 256—66 **18 Claims**



1. Picket fence comprising a pair of substantially vertical posts, a top rail member and a bottom rail member supported by each of said posts and extending therebetween so that each of said top and bottom rail members is supported substantially horizontally by said posts, multiple picket members extending between said top and bottom rail members substantially parallel to said posts, and releasable locking means for securing each of said picket members to both said top and bottom rail members, said releasable locking means includes a cleat on one of said members and a recess in the other member, said recess having a locking portion, said cleat being received within the recess and then forced into the locking portion of the recess as the one member is moved relative to the other member.

5,601,279

PICKET FENCE INCLUDING SLATS HAVING U-SHAPED ATTACHMENT RAILS

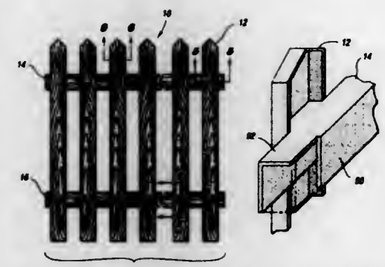
Carl I. Schwartz, Grand Blac, Mich.; Robert L. Kniss, St. Louis, Mo.; William D. Goslin, Clio, Mich.; Richard W. Cantley, Troy, Mich.; James Grzybowski, Lapeer, Mich., and James Gruda, Rochester, Mich., assignors to Plastics Research Corporation, Flint, Mich.

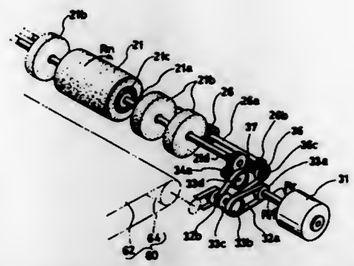
Filed Jun. 7, 1995, Ser. No. 481,054
Int. Cl.[6] E04H *17/14*
U.S. Cl. 256—66 **32 Claims**

1. A pair of posts installed in a ground mass, said posts laterally spaced from each other and having at least one transverse support member extending therebetween, a modular fence construction, comprising:

a plurality of pickets; and

at least one transverse rail affixed to said plurality of pickets, said rail including a channel adapted to receive said at least one transverse support member along substantially the entire length thereof, said plurality of pickets and said at least one transverse rail formed as a unitary piece and adapted to mate with like unitary pieces so as to provide said modular fence construction.



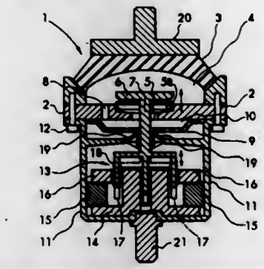


5,601,280

LIQUID-SEALED MOUNTING DEVICE

Shigeyoshi Nagaya, Kasugai; Masanori Sugiura, Chiryu, and Kiyonari Honda, Ichinomiya, all of Japan, assignors to Nippondenso Co., Ltd, Kariya, Japan

Filed Jan. 19, 1995, Ser. No. 375,479
Claims priority, application Japan, Jan. 20, 1994, 6-004791
Int. Cl.[6] F16F *5/00*
U.S. Cl. 267—140.14 **12 Claims**



1. A liquid-sealed mounting device comprising:

two liquid chambers having a liquid sealed therein,

a first orifice for allowing communication between said two liquid chambers and that allows liquid to pass therethrough; said first orifice normally remaining open;

a second orifice for allowing communication between said two liquid chambers and that allows liquid to pass therethrough;

a vibratable valve body for opening and closing said second orifice; and

an actuator for driving said valve body between an open and closed position and vibrating said valve body when the valve body is closing said second orifice;

wherein said valve body includes a valve stem having a passage which is able to connect with said second passage so that said valve stem opens or closes said second passage.

5,601,281

AUTOMATIC DOCUMENT FEEDING DEVICE

Toshihiro Kubodera, and Shuji Ishimaru, both of Yamanashiken, Japan, assignors to NISCA Corporation, Yamanashiken, Japan

Filed Dec. 29, 1994, Ser. No. 365,698
Claims priority, application Japan, Dec. 29, 1993, 5-350136
Int. Cl.[6] B65H *5/06*
U.S. Cl. 271—10.04 **11 Claims**

1. An automatic document feeding device mounted to an image processing device having a document reading portion, which comprises a document feed unit having a document supply tray on which one or more documents are stacked, said document feed unit being adapted to send out the documents one by one from said document supply tray, a document transport unit placed on the document reading portion of said image processing device for bringing said document sent from said document feed unit to said document reading portion for processing, and a document discharge unit having a document discharge tray for discharging said document from said document reading portion to said document discharge tray, said document feed unit including:

a reversible electric motor for selectively producing a rotary motion in a positive or negative direction,

a document feed roller supported by a first rotating shaft, which rotates in a positive direction to forward the document sent from said document supply tray,

a document feeding passage formed around at least one part of said document feed roller,

a first one-way clutch disposed on said first rotating shaft for transmitting said rotary motion of said motor to said feed roller only when said motor rotates in a positive direction,

at least one idle -roller free-rotatably supported on said first rotating shaft,

at least one registering roller supported by a second rotating shaft parallel to said first rotating shaft and being in contact with said at least one idle roller, which rotates in the negative direction to forward the document just after said document being fed along said document feeding passage arrives at said at least one registering roller, and

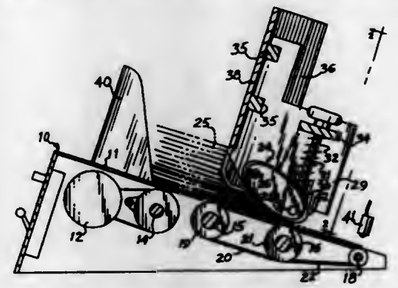
a second one-way clutch for transmitting a rotary motion of said motor to said at least one registering roller only when said motor rotates in a negative direction.

5,601,282

SHINGLE FEEDER

Alfred Milo, 11400 Fourth St. North, St. Petersburg, Fla. 33716, and Todd Werner, 1400 49th Ave. NE., St. Petersburg, Fla. 33703

Filed Sep. 18, 1995, Ser. No. 529,915
Int. Cl.[6] B65H *3/04*
U.S. Cl. 271—35 **6 Claims**



1. A feeder, for feeding pieces from a stack of pieces, said pieces being fed one at a time from the bottom of said stack of pieces, said feeder comprising a plurality of belts for receiving said stack

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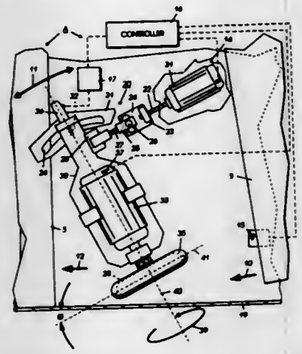
of pieces thereon, gate means for detaining some pieces of said stack of pieces while allowing the lowermost piece of said stack of pieces to pass said gate means, and means for driving said plurality of belts for feeding said lowermost piece, said gate means comprising a gate member elliptical in side elevational view and flat in front and rear elevational views, and having its major axis disposed at an acute angle to said plurality of belts so that said stack of pieces enters the acute angle, a fixed pivot for mounting the upper, rearward end of said gate member and a movable pivot for mounting the lower, forward end of said gate member, means for raising and lowering said movable pivot for varying the space between said gate member and said plurality of belts, and means for giving the flat surface of said gate member a high coefficient of friction.

5,601,283

CROSS ROLL REGISTRATION DESKEW BASED ON PAPER WEIGHT

Timothy S. Pinckney, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 11, 1996, Ser. No. 586,474
Int. Cl.[6] B65H *7/02*
U.S. Cl. 271—228 **14 Claims**



1. In an electrostatographic printing machine having a photoreceptor belt passing through an inlet end of a transfer zone, and copy sheet transport means for supplying a copy sheet to the inlet end of the transfer zone, the improvement for reducing transfer of images onto skewed copy sheets by ensuring deskew of the copy sheets prior to reaching the transfer zone, characterized by:

a registration edge;

an idler roll;

a driven cross roll that mates with said idler roll for registering copy sheets against said registration edge;

a pivotable support onto which said driven cross roll is mounted for pivotal movement about a predetermined point on said drive cross roll;

a motor connected to said pivotable support for moving said pivotable support in a predetermined direction;

a copy sheet basis weight detector positioned upstream of said driven cross roll and adapted to sense the weight of copy sheets before they reach said driven cross roll; and

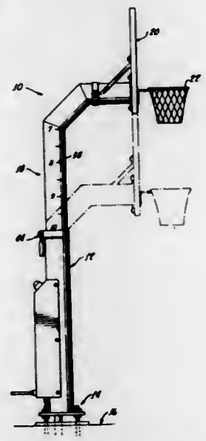
a controller, said controller being adapted to receive a signal from said basis weight detector and in turn actuate said motor to pivot said pivotable support a predetermined amount.

5,601,284

ADJUSTABLE BASKETBALL GOAL

Scott Blackwell, 1322 Wallace Rd. NW. #38, Salem, Oreg. 97304, and James Cahill, 157 Cherry St., Dallas, Oreg. 97338

Filed Feb. 12, 1996, Ser. No. 600,265
Int. Cl.[6] A63B *63/08*
U.S. Cl. 473—483 **21 Claims**



1. An adjustable basketball goal comprising:

a fixed support;

means for mounting said fixed support in a substantially vertical position;

a movable support, telescoped within said fixed support;

means for mounting a basketball rim and backboard to said movable support;

drive means for hydraulically forcing said movable support upwardly and downwardly with respect to said fixed support in order to enable selective adjustment of a height of the rim above the ground, said height being selectively adjustable between a minimum and a maximum setting, said drive means comprising a water piston having a rod extending therefrom and mounted in an operative relationship between the fixed and movable supports, and means for providing fluid communication between the water piston and a conventional garden hose; and

swivel means, disposed along the rod, for rotatably mounting the movable support within the fixed support in order to enable 360 degrees of rotation of the rim and backboard about an axis defined by the fixed support.

5,601,285

BASEBALL CATCHING TRAINING DEVICE

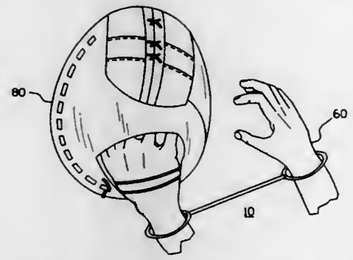
Malcolm M. Baxter, III, 581 Buena Pkwy., Bridgewater Township, Somerset County, N.J. 08807

Filed Dec. 18, 1995, Ser. No. 573,668
Int. Cl.[6] A63B *69/00*
U.S. Cl. 473—458 **19 Claims**

1. A baseball catching training device, which comprises:

a) A first yoke for removable attachment to a first wrist of a user and a second yoke for removable attachment to a second wrist of said user, said first yoke and said second yoke being made of flexible material, being elongated and having a middle portion and each having two opposing ends, said opposing ends having complementary attachment mechanisms for removably attaching one opposing end to an opposite opposing end;

b) a connecting strap having a first end and a second end, said first end being connected to the middle portion of said first yoke and said second end being connected to the middle portion of said second yoke, said connecting strap being flexible and stretchable and being elongated and having a length no greater than 18 inches; and,



c) a glove attachment means for removable attachment to a baseball glove.

5,601,286

DEVICE FOR PRACTICING BASEBALL HITTING

Norman R. Flerbaugh, 4679 Tamworth Dr., Pamal Harbor, Fla. 34685

Continuation-in-part of Ser. No. 217,284, Mar. 23, 1994, abandoned. This application Jul. 3, 1995, Ser. No. 497,854
Int. Cl.[6] A63B *69/40*
U.S. Cl. 473—429 **7 Claims**



1. A new and improved device for practicing baseball hitting comprising, in combination:

a vertically extending cylindrical post having an exterior diameter and a hollow interior, the post having a plurality of horizontally extending vertically apertures formed diametrically therethrough, the post being fabricated of a rigid material;

a primary base formed of a rigid material in a square configuration having a diagonal, the primary base having a horizontal lower planar,surface and a horizontal upper planar surface, the primary base having a cylindrical brace centrally located on and upstanding from the upper surface, the cylindrical brace having an internal diameter adapted to receive the post by having its lower end slidably positioned within the brace, the primary base having a plurality of holes extending therethrough for the receipt of bolts, the holes being located at a fixed distance from the brace;

an indoor base in a circular configuration of a diameter greater than the diagonal of the primary, base, the indoor base having holes extending therethrough positioned in alignment with the holes of the primary base, the indoor base being formed of two similarly shaped semi-circular sections couplable along a diametric parting line, the parting line also including a dove-tail projection and a complementary dove-tail recess on each section for removable separation therebetween;

a plurality of bolts each having a head positioned beneath the indoor base and a threaded upper end with a central section therebetween positioned through the holes of the indoor base and primary base and also including associated complimentary nuts having threaded interiors removably positioned over the threaded ends of the bolts;

a cap removably positioned on the upper end of the post to effect the closure thereof;

substantially horizontally extending arm formed of a semi-rigid elastomeric material, said arm having an interior end and an exterior end, with a intermediate portion coupling therebetween, the intermediate portion being-of a greater area adjacent to the interior end than the exterior end, the interior end being formed with a bore extending therethrough, the bore having an internal diameter adapted to slidably fit over the exterior diameter of the post, the exterior end of said arm being formed in the size and shape of a baseball for being struck by a player swinging a bat; and

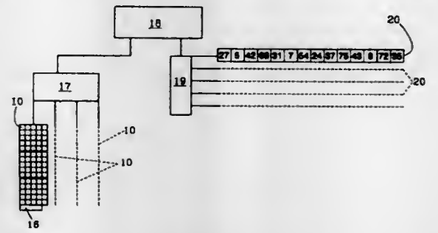
a pair of placement pins having a head on the exterior end and an interior end having a diameter to slidably fit into diametrically aligned apertures of the post, the placement pins adapted to be positioned at spaced locations immediately above and immediately below the bore of said arm to ensure its retention at a vertical elevation to which it is set prior to being hit.

5,601,287

SYSTEM FOR DRAWING WINNERS IN A LOTTERY

Per Lundin, Brandmansgatan 8, S-421 68 Västra Frölunda, Sweden

PCT No. PCT/SE92/00543, § 371 Date Feb. 7, 1995, § 102(e) Date Feb. 7, 1995, PCT Pub. No. WO94/03873, PCT Pub. Date Feb. 17, 1994
PCT Filed Aug. 7, 1992, Ser. No. 382,020
Int. Cl.[6] A63F *3/06*
U.S. Cl. 273—138.2 **7 Claims**



1. A method for drawing winners in a lottery with a predetermined prize dividend comprising the steps of:

(a) providing a plurality of printed bingo type lottery tickets that are each provided with a unique identification number and a unique counter comprising a quantity of different numbers arranged in rows and columns, the numbers arranged across each row being row number sequences that are played in the lottery;

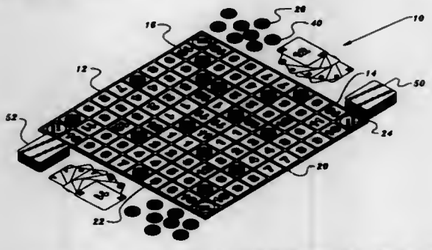
(b) storing the identification number and the row number sequences of each lottery ticket in a first register readable by a microprocessor;

(c) creating a plurality of drawing number sequences by means of a computer in such a way that each of the drawing number sequences is unique and gives a selected number of prizewinning row number sequences among the counters on the plurality of tickets, which selected number of prizewinning row number sequences corresponds to the predetermined prize dividend;

(d) storing said plurality of drawing number sequences in a second register that is readable by the microprocessor;

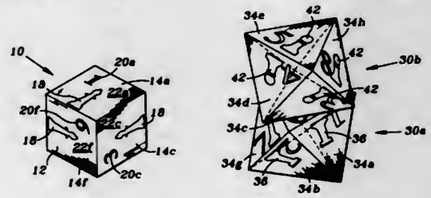
(e) selecting one number sequence of the plurality of drawing number sequences by a random draw among said plurality of drawing number sequences stored in the second register;
(f) comparing the selected number sequence by means of the microprocessor to the row number sequences stored in the first register;
(g) identifying row number sequences whose numbers are comprised in the selected number sequence by means of the microprocessor; and
(h) presenting the selected number sequence.

5,601,288
CHIPS DOWN BOARD GAME
Daniel D. White, and Elaine White, both of 19163 Colorado, Roseville, Mich. 48066
Filed Dec. 14, 1995, Ser. No. 572,035
Int. Cl.[6] A63F *3/00*
U.S. Cl. 273—271 **1 Claim**



1. A new and improved chips down board game for play by two or more players comprising in combination:
a game board defining a playing surface having a plurality of box-like spaces thereon, the playing surface having a center line capable of dividing the game board into two halves, each half of the game board having four groupings of box-like spaces having numerical indicia numbering one through twelve, each box-like space within one of the four groupings of box-likes spaces being adjacent at least one other box-like space, each of the four groupings of box-like spaces on each half having a different color, the color of each grouping of box-like spaces being chosen form the group of colors consisting of red, yellow, blue and green, two of the box-like spaces of the game board having an identical color and numerical indicia, one of the two identical box-like spaces being positioned in one half while the other of the two identical box-like spaces being positioned in another half of the game board, the game board having four corner spaces with indicia encased within a circle, the game board having four center box-like spaces with each center box-like spaces having identical numerical indicia thereon;
a plurality of red circular chips, the red chips having a top side and a bottom side, the top side of the red chip having a white dot centrally positioned thereon, the red chips for positioning on the box-like spaces of the game board in rows by a game player;
a plurality of blue circular chips, the blue chips having a top side and a bottom side, the top side of the blue chip having a white dot centrally positioned thereon, the blue chips for positioning on the box-like spaces of the game board in rows by the game player;
two decks of playing cards, each deck of playing cards consisting of a plurality of cards with each card having an underside, the underside of some of the cards having numerical indicia thereon numbering one through twelve for matching the numerical indicia on the game board, the underside of the same cards having a color being chosen form the group of colors consisting of red, yellow, blue and green, one of the cards of the plurality of cards capable of being pulled from one of the decks of cards, the pulled card capable of matching the numerical indicia and color of any two of the box-like spaces within one of the four groupings of box-like spaces on the game board, the pulled card capable of allowing one of the red or blue chips to be placed on the game board in any one of the matching box-like spaces being unoccupied by one of the chips;
two wild cards being added to each of the two decks and having indicia on an underside thereof, each wild card capable of allowing the addition of one of the red or blue chips;
two take a chip cards being added to each of the two decks and having indicia on an underside thereof, each take a chip card capable of allowing the removal of one of the red or blue chips; and
two put a chip cards being added to each of the two decks and having indicia on an underside thereof, each put a chip card capable of allowing the addition of one of the red or blue chips.

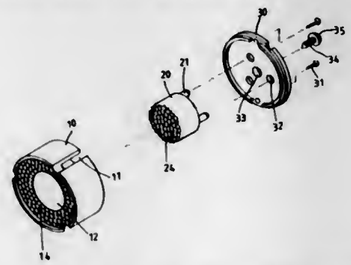
5,601,289
CHESS PIECE FOR A THREE-DIMENSIONAL VERTICAL STACKING CHESS GAME
Lloyd E. Hollister, 809 Llano Trail, Grand Prairie, Tex. 75052
Filed Oct. 16, 1995, Ser. No. 543,736
Int. Cl.[6] A63F *3/02*
U.S. Cl. 273—290 **14 Claims**



1. A chess piece for a three-dimensional vertical stacking chess game comprising:
a body including a plurality of faces for abutting stacking engagement with a face of another chess piece;
a first indicia appearing on each of said plurality of faces representing a single chess piece; and
a second indicia appearing on each of said plurality of faces representing a vertical level of game play, wherein said first indicia is distinguishable from said second indicia.

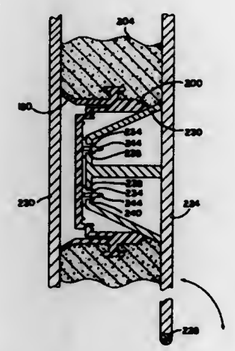
5,601,290
DOUBLE BULLSEYE FOR DART GAME
Chih-Hao Yiu, Fl. 7-1, No. 30, Lin Sen Road, Taichung, Taiwan
Filed Sep. 18, 1995, Ser. No. 529,565
Int. Cl.[6] F41J *3/00*
U.S. Cl. 273—376 **2 Claims**

1. A double bullseye for a dart game being slidably engaged in the dart game for engaging with a plurality of switch points, said double bullseye comprising:
an outer bullseye including a front portion having a plurality of openings formed therein for receiving a dart therein and



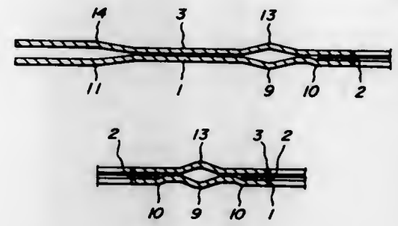
including rear portion, and including a center portion having cylindrical wall formed therein, said cylindrical wall, including a rear cap formed therein, said rear cap including at least one orifice formed therein, said outer bullseye including at least one limb extended rearward beyond said rear portion of said outer bullseye,
an inner bullseye slidably engaged in said cylindrical wall and including a front portion having a plurality of boles for receiving the dart therein and including a rear portion having at least one leg extended therefrom for slidably engaging with said orifice of said rear cap of said cylindrical wall and for engaging with the switch points, said leg being allowed to extend outward beyond said rear cap and beyond said limbs of said outer bullseye for engaging with the switch points, and
stop means secured to said inner bullseye and engaged with said rear cap so as to prevent said inner bullseye from disengaging from said outer bullseye,
said leg being shorter than said limb when said front portion of said bullseye is flush with said front portion of said outer bullseye such that said leg is prevented from engaging with said switch points when said limb is forced to engage with the switch points by the outer bullseye, and said leg being moved rearward beyond said limb in order to engage with the switch points when said inner bullseye is moved inward of the cylindrical wall.

5,601,291
EMBEDDED IN CONCRETE, ELASTOMERIC SEAL FOR PIPES
Norman W. Gavin, 2545 Ridge Rd., North Haven, Conn. 06473
Filed Mar. 29, 1995, Ser. No. 412,673
Int. Cl.[6] F16J *15/10*
U.S. Cl. 277—9.5 **6 Claims**



1. An elastomeric seal for sealingly receiving a pipe through a concrete wall of a subterranean vessel, said seal comprising:
a cylindrical housing having a central axis, a first end, a second end, an inner side and an outer side,
anchor means comprising said outer side of said cylindrical housing, adapted for being cast in said concrete wall so there is a watertight seal between said concrete wall and said cylindrical housing,
a first, cylindrical wall of generally uniform diameter, having a first end and having a second end attached to said inner side of said cylindrical housing, said first end extending axially into said cylindrical housing,
a second, generally radial, annular wall having a radially outward side attached to the first end of said first wall, and
said second wall comprising means for sealing against a pipe inserted through said cylindrical housing,
said first cylindrical wall being concentric with said central axis,
said second wall being generally normal to said first wall,
said housing and said first cylindrical wall comprising a cylindrical slot between them generally concentric with said first wall,
said second, generally radial, annular wall having a radially inward side,
a third, cylindrical wall of generally uniform diameter having a first end and having a second end attached to said radially inward side of said second wall, and comprising said means for sealing against a pipe inserted through said cylindrical housing,
a fourth, generally radial, annular wall having a radially outward side attached to the first end of said third, cylindrical wall, and comprising said means for sealing against a pipe inserted through said cylindrical housing.

5,601,292
METAL GASKET ASSEMBLY WITH SHIMS
Akira Tanaka, Ohmiya, and Masamichi Hoshi, Ohomiya, both of Japan, assignors to Nippon Leakless Industry Co., Ltd., Tokyo, Japan
Filed Sep. 26, 1994, Ser. No. 312,397
Claims priority, application Japan, Mar. 14, 1994, 6-042468
Int. Cl.[6] F16J *15/08*
U.S. Cl. 277—180 **1 Claim**



1. A metal gasket assembly for a cylinder head comprising:
a metal substrate having a predetermined shape with apertures including cylinder openings, bolt holes, coolant openings and lubricant openings, said metal substrate being provided with half-beads in regions adjacent to the cylinder openings and full-beads in regions therearound; and
ring-shaped shims;
said ring-shaped shims being attached to said metal substrate so that they come into contact with the half-beads on a substrate surface where bulges of the full-beads are not situated, on a side of said half-beads opposite said full-beads and in a recess defined by said half beads, further comprising a metal by-plate provided with full-beads in regions corresponding to the full-beads of said metal substrate, but being free from half-beads in regions corresponding to the half-beads of said metal substrate, wherein said metal substrate and said metal by-plate are laminated such that a bulge of each full-bead of said metal substrate is situated back to back with and extends in an opposite direction from the corresponding full-bead of said metal by-plate.

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5,601,293

SLIDING MEMBER WITH HARD TERNERY FILM

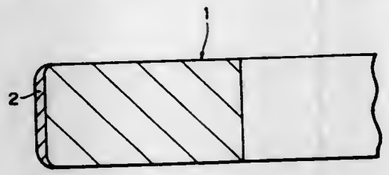
Hiroto Fukutome, Okaya; Nobuyuki Yamashita, and Shoji Tanaka, both of Shiojiri, all of Japan, assignors to Teikoku Piston Ring Co., Ltd., Tokyo, Japan

Filed Dec. 20, 1995, Ser. No. 575,329

Claims priority, application Japan, Dec. 22, 1994, 6-336265; Jan. 19, 1995, 7-024729

Int. Cl.[6] F16J 9/26

U.S. Cl. 277—235 A 3 Claims



1. A sliding member having a hard film covering at least the sliding surface of said sliding member, said hard film being a ternary film comprising molybdenum, chromium, and 4 to 22 percent nitrogen by weight, and including at least molybdenum nitride and chromium nitride, and having a Vickers hardness of 1400 to 2600, and having the film crystal grain size of less than 1 μm.

5,601,294

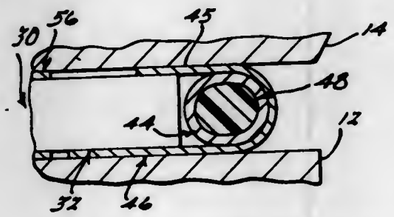
HEAD GASKET

Bernard G. Stritzke, 333 E. Turner Ave., Roselle, Ill. 60172

Continuation-in-part of Ser. No. 431,554, May 1, 1995, abandoned. This application Feb. 22, 1996, Ser. No. 603,914

Int. Cl.[6] F16J 15/32

U.S. Cl. 277—235 B 3 Claims



1. A gasket for disposition between the cylinder head and block of an internal combustion engine comprising;

a flat metal gasket body having discrete apertures for the flow of combustion gases, cooling fluid and oil therethrough;

a sealed metal combustion gas sealing tube disposed in each combustion gas aperture in said gasket body;

a non-compressible thermally expandible media totally filling each of said sealing tubes;

an elastomeric coolant seal molded about each coolant flow and oil aperture in said gasket body;

a first shim plate on one side of said gasket body, spaced from the elastomeric seals on said one side and having annular lips reentrantly folded about said metal combustion gas sealing tubes and over the opposite side of said gasket body, respectively; and

a second shim plate on the opposite side of said gasket body spaced from the reentrantly folded lips of said first shim and from the elastomeric coolant seals on the opposite side of said gasket body whereby compression of said metal combustion gas sealing tubes and elastomeric coolant seals is limited by said gasket body and shim plates.

5,601,295

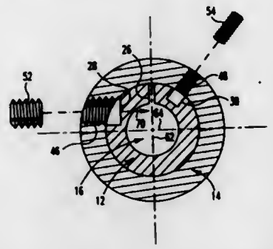
TOOL HOLDER SYSTEM FOR INDUSTRIAL CUTTING TOOLS

Arthur A. Baker, P.O. Box 96, Pendleton, Ind. 46064

Filed Dec. 29, 1995, Ser. No. 580,813

Int. Cl.[6] B23B 31/20;31/34

U.S. Cl. 279—46.5 15 Claims



1. A tool holder system for mounting a cutting tool to a drive unit of a cutting tool apparatus, the tool holder system comprising:

a collet having a longitudinal bore therein for receiving a tool; and

a collet holder having a longitudinal bore therein for receiving said collet and said tool received in said collet, said collet holder being adapted to be coupled to said drive unit of said cutting tool apparatus,

the collet including:

a narrow slit extending through a wall thereof from an outer surface of said collet to said longitudinal bore; and

a force-receiving portion provided on said outer surface, said force-receiving portion being spaced from said slit by a distance of less than 90 degrees; and

the collet holder including:

at least one aperture aligned with said force-receiving portion when said collet is received within said collet holder for receiving at least one pressing member for pressing against said force-receiving portion of said collet for closing said slit in said collet to clamp said collet around said tool.

13. A tool holder system for mounting a cutting tool to a drive unit of a cutting tool apparatus, the tool holder system comprising:

a collet having a longitudinal bore therein for receiving a tool;

a collet holder having a longitudinal bore therein for receiving said collet and said tool received in said collet,

said collet holder being adapted to be coupled to said drive unit of said cutting tool apparatus;

first means for radially adjusting the position of said collet holder with respect to an axis of rotation of said drive unit; and

second means for axially adjusting the orientation of said collet holder with respect to said axis of rotation of said drive unit.

5,601,296

TOBOGGAN

Max Reinhard, Kirschblütenweg 7, D-61348 Bad Homburg, Germany

Filed Aug. 28, 1995, Ser. No. 519,712

Claims priority, application Germany, Sep. 9, 1994, 9414628 U

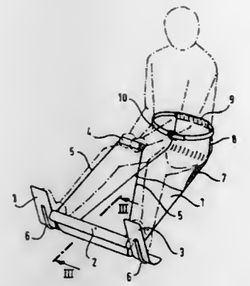
Int. Cl.[6] B62B 15/00

U.S. Cl. 280—18 11 Claims

1. A toboggan comprising:

a gliding part being thin in comparison to its length and breadth and being made of glidable material, which can be rolled up, said gliding part having a front region near an edge directed in a direction of gliding;

an elongated cross-bracing coupled to the gliding part at the front region of the gliding part,



wherein said cross bracing includes a hollow member means for receiving said gliding part so that said gliding part can be rolled up in the cross bracing; and

wherein is further included a pair of foot-support means mounted on the cross bracing, spaced apart from one another for supporting feet of a user seated on a seat side of the gliding part of the toboggan, opposite a snow side of the gliding part.

5,601,297

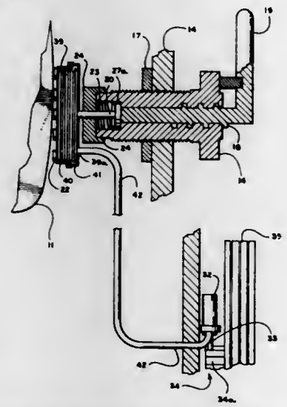
UNIVERSAL INFANT CARRIER CART

Linda P. Stein, 14 Jackman Ridge, Windham, N.H. 03087

Filed Dec. 20, 1994, Ser. No. 369,587

Int. Cl.[6] B62B 7/12

U.S. Cl. 280—30 20 Claims



1. A clamping infant carrier support frame for holding infant carriers of various sizes, the clamping infant carrier support frame being a fixed part of a stroller, the stroller having a frame and a plurality of wheels attached to the frame, the clamping infant carrier support frame comprising:

a clamping support frame having an inner surface and an outer surface, the support frame having an opening therethrough,

a clamp body having a first end and a second end, the first end having an opening which extends longitudinally to the second end, the clamp body positioned in the opening in the clamping support frame and engaging with the inner surface of the clamping support frame,

actuator means for actuating a clamp on the infant carrier, the actuator means located inside the clamp body, and

a clamp disk having a front side and a back side, the front side having grips and the back side being juxtaposed with the actuator means.

5,601,298

WHEELBARROW

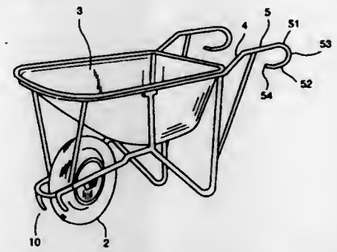
Yoshihisa Watanabe, Mie, Japan, assignor to Suntool Co., Ltd., Mie, Japan

Filed Sep. 18, 1995, Ser. No. 529,554

Claims priority, application Japan, Jun. 28, 1995, 7-006478 U

Int. Cl.[6] B62B 1/10

U.S. Cl. 280—47.31 2 Claims



1. A wheelbarrow comprising a wheel, a tray, a pair of handles, and a front guard,

wherein each of said handles include a roundish handlegrip for facilitating smooth roundish movement of a handgrip thereon in forward dumping operation, each of said handles comprising a first grip, a second grip below said first grip, and a round grip portion provided at a rear end thereof connecting said first grip and said second grip,

and wherein said front guard is provided in front of said wheel and includes a pair of round bar portions extending a length substantially downwardly and partially along the circumference of said wheel, such that at least a lower end of each of said round bar portions can contact a surface upon which said wheelbarrow rests to stably support said wheelbarrow so that said wheelbarrow may be rocked back and forth stably and smoothly in a head down position on said round bar portions in a forward dumping operation.

5,601,299

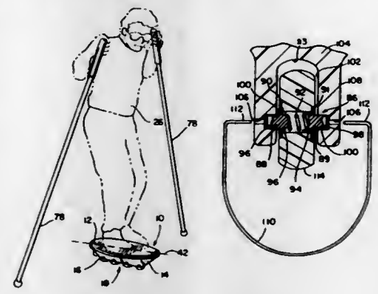
INLINE SKATEBOARD

Young W. Yun, 11400 W. Arrowhead Dr., Hales Corners, Wis. 53130; Lawrence B. Martel, 1212 S. 64 St., West Allis, Wis. 53214; Keith Janick, 716 N. Barstow, Waukesha, Wis. 53186, and Ralph J. Bruno, 2405 W. Bolivar, Milwaukee, Wis. 53221

Division of Ser. No. 499,999, Jul. 10, 1995, Pat. No. 5,549,331, which is a continuation-in-part of Ser. No. 253,680, Jun. 3, 1994, abandoned. This application Apr. 3, 1996, Ser. No. 626,996

Int. Cl.[6] A63C 17/06

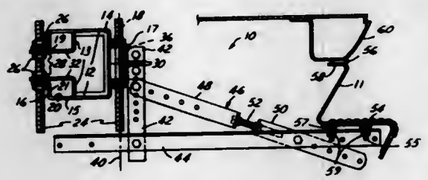
U.S. Cl. 280—87.042 4 Claims



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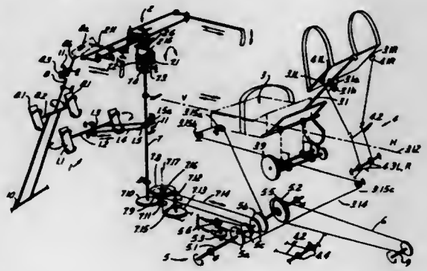
1. An inline skateboard assembly comprising:
a board body having a front edge, a rear edge, a continuous, contoured top surface adapted to support a rider's feet at any position thereon, a continuous, contoured bottom surface adapted to face a ground terrain, a length and a width;
a pair of parallel mounting rails depending downwardly from said bottom surface along a medial portion thereof to form a U-shaped channel, each of said mounting rails being spaced equidistantly from the longitudinal center line and lying coextensive with the length of said board body, each of said mounting rails having an inboard side and an outboard side, each side of said inboard sides being formed with first apertures extending therein;
a plurality of parallel mounting shafts extending transversely across said U-shaped channel, each of said mounting shafts having outwardly biased end portions which are received and retained within said first apertures of said mounting rails, each of said outboard sides of said mounting rails being formed with second apertures extending therein and in communication with said first apertures, each of said mounting shafts supporting a respective wheel for rotation relative to said pair of mounting rails; and
a user operated tool having opposed members insertable through said second apertures and engageable with said end portions of said mounting shafts for simultaneously moving said end portions inwardly, thereby permitting said wheels to be removed from said mounting rails.

5,601,300
VEHICLE FRAME MOUNTING BRACKET SYSTEM
Raymond W. Fink, Elkhart; Malcom E. Pendleton, Goshen, and H. John Veenstra, Middlebury, all of Ind., assignors to Kesco/Williams, Inc., Middlebury, Ind.
Filed May 31, 1994, Ser. No. 251,794
Int. Cl.[6] B60R 3/00
U.S. Cl. 280—166 **16 Claims**



1. A combination of a motor vehicle frame member and a bracket assembly adapted to be attached to the motor vehicle frame member for supporting an accessory on the vehicle, comprising:
a primary bracket assembly mounted on the vehicle frame member;
a mounting bracket extending laterally from the frame and upon which the accessory is mounted;
a leveling bracket assembly of selectively adjustable length connected to the primary bracket assembly and to end of the mounting bracket distal to the primary bracket assembly, four adjusting the vertical position of the end of the mounting bracket distal to the primary bracket assembly;
a substantially vertical support member supported by the primary bracket assembly;
said mounting bracket extending substantially horizontally from the support member to the accessory; and
said leveling bracket assembly of selectively adjustable length having a first end portion with a plurality of holes for selective positioning and a second end portion with a plurality of holes for selective positioning; and a threaded adjuster connecting the first end portion with the second end portion wherein turning of the threaded adjustor displaces the accessory relative to the frame member wherein the first end portion is connected to the support member at a point separate from the mounting bracket and the second end portion is connected to the mounting bracket, thereby forming an angle therebetween and sustaining a principal share of any vertical loads induced by the accessory.

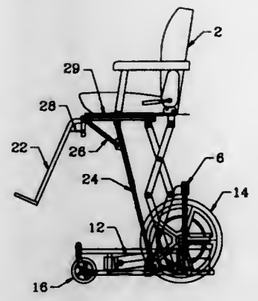
5,601,301
DRIVE SYSTEM FOR MUSCLE-POWERED EQUIPMENT AND VEHICLES, IN PARTICULAR BICYCLES
Qingshan Liu, Bogenstrasse 11, D-8000 Munchen 80, Germany
Continuation of Ser. No. 861,855, Jun. 18, 1992, Pat. No. 5,345,883. This application Sep. 30, 1994, Ser. No. 316,532
Claims priority, application Germany, Dec. 18, 1989, 39 41 768.9
Int. Cl.[6] B62M 1/12;1/20
U.S. Cl. 280—233 **14 Claims**



1. A muscle-powered drive mechanism for, vehicles or other equipment with at least one drive component, the drive movement of which is adapted to be transmitted to a drive shaft using a movement transmission system, comprising a drive component formed by a seat backrest drive mechanism whose drive movement is generated by a movement of a seat backrest independently from the movement and relative position of a seat surface, the seat backrest drive mechanism adapted to exercise muscles in back and abdominal regions of a user.

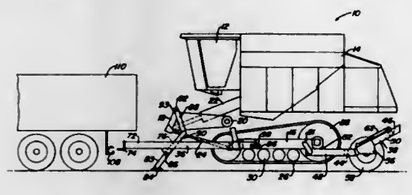
5,601,302
FULL ACCESS WHEELCHAIR
John E. Beard, Chassell, Mich.; James C. Conwell, Grove City, Pa.; Randolph C. Puls, Austin; Jeffrey C. Savela, Houston, both of Tex., and David M. Rothbauer, Holt, Mich., assignors to Board of Supervisors of Louisiana State University and Agricultural and Mechanical College Office of Technology Transfer, Baton Rouge, La.
Continuation of Ser. No. 253,624, Jun. 3, 1994, abandoned, which is a continuation of Ser. No. 789,012, Nov. 7, 1991, abandoned. This application Sep. 21, 1995, Ser. No. 531,465
Int. Cl.[6] A61G 5/00
U.S. Cl. 280—250.1 **5 Claims**

1. In a wheelchair having a pair of front wheels and a pair of rear wheels, said pair of front wheels and said pair of rear wheels being separated by a distance; wherein each of said wheels includes a lowest point, and wherein said lowest points define a baseplane; a seat and a pair of leg supports, said leg supports having a length and being characterized by a vertical angle between said leg supports and said baseplane; the improvement comprising:
(a) means for moving said seat to any selected height between a lowest elevation of about ten inches above said baseplane and a highest elevation of about forty inches above said baseplane;
(b) means, responsive to said moving means, for adjusting the length of said leg supports and for adjusting the vertical angle



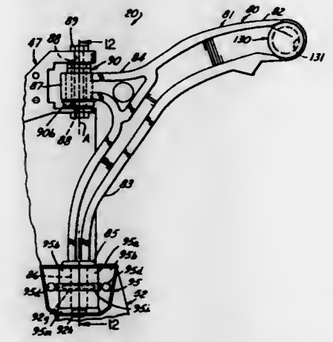
of said leg supports, to provide constant and comfortable support for the legs of a user of said wheelchair; and
(c) a normal height seating configuration of said seat between said lowest elevation and said highest elevation;
wherein said adjusting means is operative when the height of said seat is below the normal height seating configuration;
wherein said adjusting means is inoperative when the height of said seat is above the normal height seating configuration; and
wherein said distance between said pair of front wheels and said pair of rear wheels remains constant at all times.

5,601,303
COMBINE TRAILER
Mark R. Underwood, Burr Oak, Kans., assignor to Deere & Company, Moline, Ill.
Filed Jul. 20, 1994, Ser. No. 277,954
Int. Cl.[6] B60F 5/00
U.S. Cl. 280—414.5 **20 Claims**



1. A vehicle and trailer assembly comprising in combination:
a vehicle having a frame and a lift arm which is movable between a raised and lowered position, the vehicle being supported on the ground;
a first frame support which couples to one end of the frame;
at least one wheel mounted to the first frame support;
a second frame support which couples to an opposite end of the frame, the frame of the vehicle thereby forming an intermediate section of the trailer assembly between the first and second frame supports; and
lift means mounted to the second frame support and coupling to the lift arm of the vehicle, the lift means raising the vehicle from the ground when the lift arm is moved to one of the raised and lowered position so that the vehicle is supported on the first and second frame supports with the wheel of the first frame support in contact with the ground for towing the vehicle; and wherein
the first and second frame supports rigidly couple to the vehicle frame.

5,601,304
FRONT SUSPENSION ARM MOUNTING ARRANGEMENT
Raymond H. Tilly, Rochester Hills; Carolyn R. Hartleip, Lake Orion, and Roman T. Kogut, Sterling Heights, all of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.
Filed Dec. 19, 1995, Ser. No. 574,663
Int. Cl.[6] B60G 3/00
U.S. Cl. 280—673 **13 Claims**

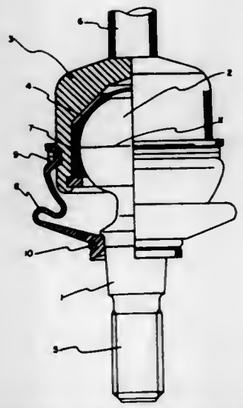


1. An arrangement for mounting a suspension lower control arm about a swing axis to a vehicle support frame, said arrangement comprising:
a control arm formed with a lateral arm portion provided with an axial bore receiving a front bushing assembly therein and an aft projecting arm portion ending in an integral rear stem extending through a rear elastomeric bushing axial passage, said rear bushing having a generally oval-like cross section defined by upper and lower curved surfaces joined by planar sides;
said frame having a front fitting bolt for pivotal connection with said front bushing assembly, and a rear housing formed with a cavity, said housing defining an undersurface having a cavity access opening from which opposed side faces of said cavity extend upwardly terminating in a curved ceiling, said cavity configured and sized for receiving an upper portion of said rear bushing therein while a remaining lower portion of said rear bushing extends below said undersurface;
a rear bushing retainer comprising a concave central body conforming to said rear bushing lower surface, said retainer having a pair of side flanges, each said flange adapted for securement by a fastener to an opposed portion of said undersurface so as to trap said rear bushing between said cavity and said retainer body whereby said front fitting bolt and said rear stem are aligned on the swing axis.

5,601,305
BALL-AND-SOCKET JOINT FOR CHASSIS PARTS IN MOTOR VEHICLES
Alfons Nordloh, Visbek, and Volker Grube, Diepholz, both of Germany, assignors to Lemförder Metallwaren AG, Lemförde, Germany
Filed Oct. 11, 1995, Ser. No. 540,949
Claims priority, application Germany, Oct. 12, 1994, 44 36 428.8
Int. Cl.[6] B60G 7/02; F16C 11/08
U.S. Cl. 280—674 **6 Claims**

1. A ball-and-socket joint for chassis parts in motor vehicles, the ball-and-socket joint comprising:
a joint ball;
a pivot pin, said joint ball being provided on said pivot pin;
a housing;

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a sliding shell made of plastic, said joint ball being mounted within said housing in said sliding shell, said sliding shell having an outer jacket which is tightly enclosed by an inner jacket of the housing, said outer jacket having recesses,

a highly elastic material which is highly elastic compared with material of the said sliding shell is arranged in a recess on the outer jacket of the said sliding shell.

5,601,306

VEHICLE SUSPENSION SYSTEM

Christopher Heyring, Eagle Bay, Australia, assignor to Kinetic Limited, Dunsorough, Australia

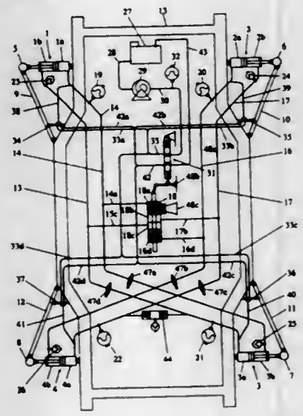
PCT No. PCT/AU94/00661, § 371 Date Apr. 9, 1996, § 102(e) Date Apr. 9, 1996, PCT Pub. No. WO95/11814, PCT Pub. Date May 4, 1995

PCT Filed Oct. 28, 1994, Ser. No. 628,626

Claims priority, application Australia, Oct. 28, 1993, PM2880

Int. Cl.[6] B62D *7/02*

U.S. Cl. 280—702 **14 Claims**



1. A suspension system for a vehicle having a load vehicle body, and at least one pair of front ground engaging wheels and at least one pair of rear ground engaging wheels connected to the vehicle body to support same and each wheel being displaceable relative to the vehicle body in a generally vertical direction, the suspension system comprising a double acting ram interconnected between each wheel and the vehicle body, each ram including first and second fluid filled chambers varying in volume in response to relative vertical movement between the respective wheel and the vehicle body, each front wheel ram being connected to the diagonally opposite rear wheel ram by a respective pair of fluid communicating conduits, a first one of said pair of conduits connecting the first chamber of the front wheel ram to the second chamber of the rear wheel ram and the second one of said pair of conduits connecting the second chamber of the front wheel ram to the first chamber of the rear wheel ram, each pair of conduits and the front and rear wheel rams interconnected thereby constituting a respective fluid circuit whereby first and second fluid circuits are formed, and a pressure distribution means operatively interposed between the first and second fluid circuits and adapted to substantially maintain pressure equilibrium between said fluid circuits, said pressure distribution means comprising two primary pressure chambers, each divided into two individual secondary pressure chambers by force transfer means therebetween, the force transfer means in each primary pressure chamber being operatively interconnected by interconnection means to transfer motion therebetween, a fluid reservoir to receive fluid from the fluid communicating conduits, a fluid pump to deliver fluid to the fluid communicating conduits, individual wheel valve means operable in response to the disposition of an individual respective wheel relative to the vehicle body, control means operable in response to the disposition of the force transfer means within the pressure distribution means, said wheel valve means and control means together selectively provide fluid communication between the fluid communicating conduits and the pump or reservoir, to thereby adjust and maintain a desirable attitude and height of the vehicle to compensate for loading and other changes.

5,601,307

VEHICLE SUSPENSION SYSTEM

Christopher B. Heyring, Eagle Bay; Bryan J. Harries; Bradley J. Dimmock, both of Dunsborough, and Raymond C. Heslewood, Busselton, all of Australia, assignors to Kinetic Limited, Dunsborough, Australia

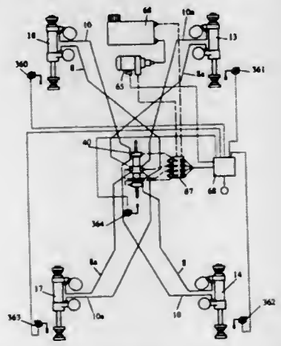
PCT No. PCT/AU94/00646, § 371 Date Apr. 9, 1996, § 102(e) Date Apr. 9, 1996, PCT Pub. No. WO95/11813, PCT Pub. Date May 4, 1995

PCT Filed Oct. 24, 1994, Ser. No. 624,638

Claims priority, application Australia, Oct. 26, 1993, PM 2012; Feb. 25, 1994, PM 4092; Jun. 1, 1994, PM 6044

Int. Cl.[6] B60G *11/26*

U.S. Cl. 280—707 **16 Claims**



1. A vehicle suspension system for a vehicle body supported by a plurality of wheels arranged in lateral and longitudinal spaced relation to the vehicle body, including individual fluid ram means arranged between each wheel and the vehicle body, each fluid ram means including a double acting ram having an upper and lower chamber, conduit means individually communicating the upper chamber of the respective rams with the lower chamber of the respective diagonally opposite ram to provide fluid circuits therebetween, a load distribution means operably interposed between the fluid circuits and adapted to at least substantially equalize the pressure in said fluid circuits and thereby maintain substantially consistent loading on all the wheels during non-dynamic wheel movement independent of the vertical disposition of the wheel, the load distribution means having a body supporting at least one displaceable member, the displacement of said displaceable member being a function of the average height of each pair of diagonally opposite wheels, sensor means adapted to generate a signal indicative of the positional relation of each of the wheels relative to the vehicle body, control means arranged to receive said signals and determine the average height of the vehicle body relative to selected pairs of orthogonally adjacent wheels at a selected location between the respective pair of orthogonally adjacent wheels, and adjustment means operable in response to variation of said determined average heights from a respective preset datum height for each said pair of wheels to adjust the quantity of fluid in said circuits communicating with the rams of said orthogonally adjacent wheels to establish said preset datum height between the orthogonally adjacent wheels and the vehicle body at said selected locations, wherein a further sensor means is provided for generating a signal indicative of the positional relation of the at least one displaceable member relative to the body of the load distribution means, the control means being adapted to receive the signal from the further sensor means and to determine and compare the average height of each pair of diagonally opposite wheels with the position of the displaceable member, the adjustment means adjusting the quantity of fluid in the fluid circuits to return the position of the displaceable member to an optimum position to facilitate the operation of the load distribution means.

5,601,308

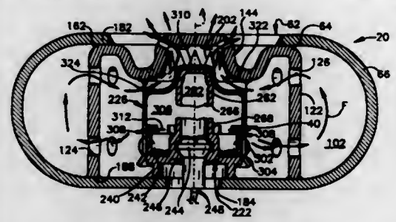
INFLATOR, INFLATION FLUID HEATER AND ASSEMBLY METHODS

Jess A. Cuevas, Scottsdale, Ariz., assignor to TRW Inc., Lyndhurst, Ohio

Filed May 23, 1995, Ser. No. 447,796

Int. Cl.[6] B60R *21/26*

U.S. Cl. 280—736 **37 Claims**



1. An inflator for inflating an air bag, said inflator comprising:

a housing having a central axis and defining a toroidal chamber for inflation fluid surrounding the central axis, said housing including a first housing portion and a second housing portion disposed within said first housing portion, said second housing portion engaging and fixed to a pair of axially spaced annular surfaces of said first housing portion;

a flow passage extending through said second housing portion to permit the flow of inflation fluid from the toroidal chamber to a location outside said housing;

a closure member fixed to said second housing portion to block the flow of inflation fluid from the toroidal chamber to the flow passage when unruptured and to permit the flow of inflation fluid from the toroidal chamber to the flow passage when ruptured;

an actuatable initiator for generating an initiating gas upon actuation;

a casing having a base section fixed to one of said first and second housing portions and a movable section connected to said base section, said casing supporting said initiator, said movable section separating from said base section in response to actuation of said initiator to effect the rupture of said closure member;

an ignitable material supported by said casing for producing combustion products upon being ignited by said initiating gas to heat and pressurize the inflation fluid; and

stop means movable with said movable section of said casing for limiting movement of said movable section relative to said second housing portion and for defining a flow path for inflation fluid to flow through from said toroidal chamber to said flow passage in said second housing portion.

5,601,309

HYBRID GAS GENERATOR FOR SAFETY SYSTEMS IN ROAD VEHICLES

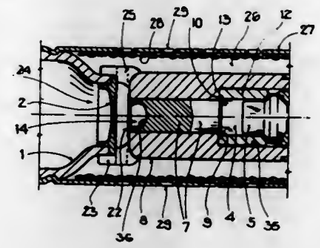
Richard Bender, Lauf; Uwe Dölling, Heidenstein; Christian Herget, Peissenberg; Harald Seidel, Neunkirchen, and Bernhard Vetter, Bruckmühl, all of Germany, assignors to TEMIC Bayern-Chemie Airbag GmbH, Aschau, Germany

Filed Dec. 7, 1995, Ser. No. 568,999

Claims priority, application Germany, Dec. 8, 1994, 44 43 680.7

Int. Cl.[6] B60R *21/26*

U.S. Cl. 280—737 **15 Claims**



1. A hybrid gas generator for safety systems in road vehicles, comprising

a) an initial container for compressed gas which is closed by a bursting diaphragm,

b) a second container with a combustion chamber and an electrically ignitable propellant system, whereby

c) the second container includes a propellant gas outlet sleeve, which contains a movable piston as the means of destroying the bursting diaphragm,

wherein:

d) the piston has a flange-shaped projection which fits against a shoulder on the inner surface of the propellant gas outlet sleeve and is designed such that when the propellant system is ignited the piston is moved towards the bursting diaphragm whilst shearing off the flange-shaped projection, and

e) the operating pressure in the combustion chamber is determined by the shearing surface of the flange-shaped projection on the piston.

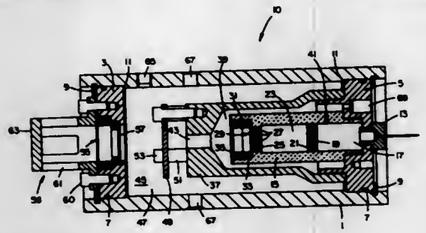
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5,601,310

HYBRID INFLATOR AND METHOD OF USE

Michael Di Giacomo, Warrenton, and Robert S. Scheffee, Lorton, both of Va., assignors to Atlantic Research Corporation, Gainesville, Va.

Filed Sep. 19, 1995, Ser. No. 530,047
Int. Cl.[6] B60R *21/28*
U.S. Cl. 280—741 **15 Claims**



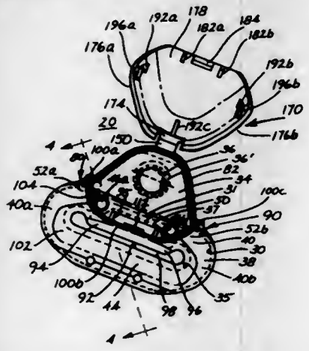
1. A hybrid inflator comprising:
a) a pressure vessel forming a chamber;
b) an igniter mounted to said pressure vessel;
c) a solid propellant contained within said pressure vessel to be ignited by said igniter;
d) a liquid fuel stored in said pressure vessel so as to be pressurized by ignition of said solid propellant;
e) a first mixing chamber within said pressure vessel for receiving said liquid fuel and products of combustion of said solid propellant, said products of combustion vaporizing and superheating said liquid fuel;
f) a second chamber within said pressure vessel storing a compressed oxidizing gas, said second chamber in communication with said first mixing chamber so that said vaporized and superheating liquid fuel is ignited when contacting said compressed oxidizing gas to form an inflator gas; and
g) a burst disk-containing outlet in said pressure vessel to release said inflator gas from said second chamber.

5,601,311

SEAT BELT WEB GUIDE

Robert C. Pfeiffer, Loudon, Tenn.; Philip H. Gonlea, Romulus, and Stephan F. Vetter, St. Clair, both of Mich., assignors to AlliedSignal Inc., Morristown, N.J.

Continuation of Ser. No. 198,162, Feb. 17, 1994, abandoned. This application Apr. 3, 1995, Ser. No. 416,020
Int. Cl.[6] B60R *22/00*
U.S. Cl. 280—801.1 **15 Claims**



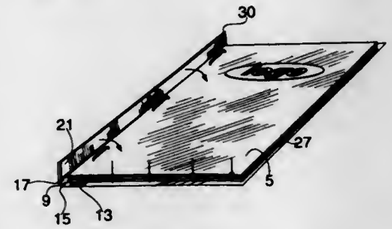
1. A seat belt web guide comprising:
a load absorbing core including a first part having a first opening and a second part having a second opening,
a coating material for coating the core and said first and second openings, said coating material including:
a first portion whereby a low friction surface is provided upon which a safety belt may slide, said first portion being integrally formed about the second opening,
a second portion forming an integral hinge connected to the part of said coating material which coats said core, said second portion further forming a fastener cover extending from said hinge.

5,601,312

TWO-PIECE COVER FOR BINDING A PLURALITY OF SHEETS

James D. Funkhouser, Redkey, Ind., assignor to Pengad, Inc., Bayonne, N.J.

Filed Dec. 2, 1994, Ser. No. 348,299
Int. Cl.[6] B42D *1/10*
U.S. Cl. 281—21.1 **27 Claims**



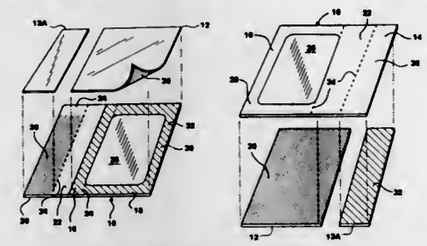
1. A two-piece cover for manually binding a stack of loose sheets into a booklet or brochure, comprising:
front and rear cover panels, each containing longitudinal side edges and wherein the front cover panel is readily adapted to having printed or graphic material applied to at least one side thereof by way of printing means;
the rear cover panel including a generally rectangular sheet having a flap portion extending along one longitudinal side edge thereof, a spine portion and a remaining portion, and wherein the flap portion is separated from said remaining portion of the rear cover panel by two hinge-forming scorelines situated along the spine portion and parallel to the longitudinal side edge of the rear cover panel, the spatial distance between the two scorelines being slightly greater than the height of the stack of loose sheets;
adhesive means situated along the longitudinal side edge of the rear cover panel and along the flap portion for securing the rear cover panel to the front cover panel;
the front cover panel including a generally rectangular sheet secured to the stack of loose sheets by way of securing means situated along the longitudinal side edge of the front cover panel;
wherein the rear cover panel is adapted to be secured to the front cover panel by bringing the adhesive means on the rear cover panel longitudinal side edge into contact with the longitudinal side edge of a bottom sheet of the stack of loose sheets secured to the front cover panel, so that the flap portion of the rear cover panel is positioned along the same longitudinal side edge containing the securing means of the front cover, thereby permitting the flap portion of the rear cover panel to overlap the longitudinal side edge of the front cover panel when the flap portion is folded longitudinally along the scoreline, whereby the front and rear cover panels and the stack of sheets are secured to one another by said adhesive means.

5,601,313

MULTIPART FORM AND LABEL COMBINATION

Patrick A. Konkol, Cincinnati; Lawrence W. Arway, Kettering; Loren Schafer, Dayton, all of Ohio; Cynthia S. Willard, Denver, Colo., and Hugh B. Skees, Dayton, Ohio, assignors to The Standard Register Company, Dayton, Ohio

Filed Feb. 6, 1995, Ser. No. 383,836
Int. Cl.[6] B42D *15/00*
U.S. Cl. 283—81 **32 Claims**



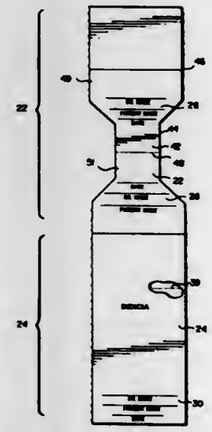
1. A multipart form and label combination comprising:
a printable face ply having first and second major surfaces and a transparent, printable film ply having a pressure sensitive adhesive on at least a portion of one surface thereof adhered to said second major surface of said face ply; said combination including first and second portions which are separable from one another, said face ply of said first portion including a die cut label having a removable peripheral matrix to expose said adhesive on said film ply.

5,601,314

C-FOLDED PHARMACY LABEL

Susanne L. Burns, Sacramento, and H. Frank Grimmett, San Jose, both of Calif., assignors to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Oct. 3, 1995, Ser. No. 538,810
Int. Cl.[6] B42D *15/00*
U.S. Cl. 283—81 **21 Claims**



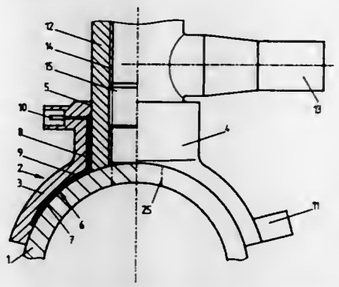
1. A label comprising:
a face stock having top and bottom faces;
pressure-sensitive adhesive on said top and bottom faces;
a release liner engaging said pressure-sensitive adhesive along said top and bottom faces;
a line of separation between said top and bottom faces of the face stock enabling said top face with the release liner therealong and a portion of the release liner along said bottom face to be folded about a first foldline along the release liner at a location intermediate opposite ends of the bottom face and into generally parallel relation to the bottom face thereby exposing a portion of the pressure-sensitive adhesive along the bottom face for securement to a container;
said folded top face with release liner having a second foldline forming first and second parts thereof on opposite sides of said second foldline for folding said first part of said top face with the release liner about said second foldline into registration with the bottom face and between said bottom face and said second part; and
image transfer material along a portion of said bottom face in registration with said first part of said top face folded about said second foldline for transferring indicia written on said bottom face portion onto said folded top face portion.

5,601,315

MOLDED CONNECTOR FOR BRANCH CONNECTIONS FOR A PIPELINE

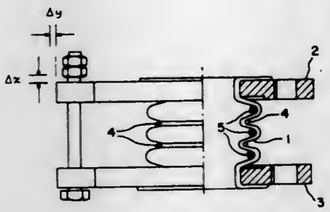
Lars Bunger, and Helmut Hilger, both of Schaffhausen, Switzerland, assignors to Georg Fischer Rohrleitungssysteme AG, Schaffhausen, Switzerland

Filed Apr. 7, 1995, Ser. No. 418,284
Claims priority, application Switzerland, Apr. 29, 1994, 1 338/94
Int. Cl.[6] F16L *13/02*
U.S. Cl. 285—21.2 **6 Claims**



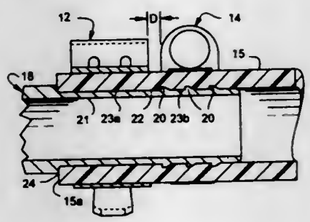
1. A plastic molded connector for use in connecting a plastic branch pipe on a plastic pipeline comprises a saddle part portion and a pipe socket portion, said saddle part portion having a curved inner surface provided with a first electric heating winding for contacting and partially surrounding said plastic pipeline and said pipe socket portion having an inner surface defining an opening for receiving a plastic branch pipe provided with a second selective heating winding on said inner surface for contacting said plastic branch pipe wherein said first and second electric heating windings are connected together to form a welding element, wherein each end of the welding element forms a connection for a welding apparatus so that a weld can be produced simultaneously between saddle part and pipeline as well as between pipe socket and the branch pipe, and wherein said saddle part portion has an outer diameter and an inner diameter defined by said inner surface of said pipe socket portion and said first heating winding is spirally wound proceeding from the outer diameter to the inner diameter and the second heating winding is a cylindrical winding on said inner surface substantially perpendicular to said first heating winding, said pipe socket portion includes clamping means mounted thereon for clamping said pipe socket portion to said plastic branch pipe.

5,601,316
BELLOWS FOR CONNECTING HOSES OR APPARATUS FOR OPERATION IN A VACUUM
Ernest Totino, Rufline; Alain Mathieu, Vandieres; Henri Wojtaszyn, Moselle, and Bernard Gouthier, Thiaucourt, all of France, assignors to Le Carbone Lorraine, Courbevole, France
Filed Feb. 17, 1995, Ser. No. 390,047
Claims priority, application France, Feb. 22, 1994, 94 02220
Int. Cl.[6] F16J *3/00*; F01B *19/00*; F16L *27/11*
U.S. Cl. 285—226 9 Claims



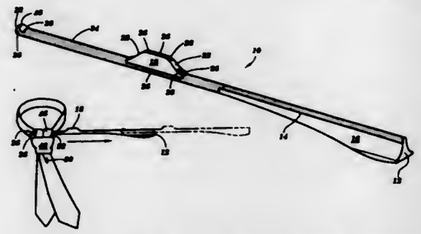
1. A bellows for connecting hoses or apparatus operating in a partial vacuum, comprising a corrugated tube having outer and inner surfaces and corrugations having crests and troughs, said corrugated tube comprising reinforcing rings on the outer surface placed at the troughs of the corrugations, and toric reinforcing rings on the inner surface placed at the crests of the corrugations, the toric reinforcing rings being open and thereby having a length which is adjustable so as to adapt to deformation of the corrugations in use, said open toric reinforcing rings comprising opposite ends contained within flexible tube in which said ends slide.

5,601,317
CLAMPING SYSTEM
William H. Crouse, and Richard V. LaHue, both of Danville, Ky., assignors to Signet Systems, Inc., Harrodsburg, Ky.
Filed Feb. 1, 1995, Ser. No. 382,247
Int. Cl.[6] F16L *55/00*
U.S. Cl. 285—242 18 Claims



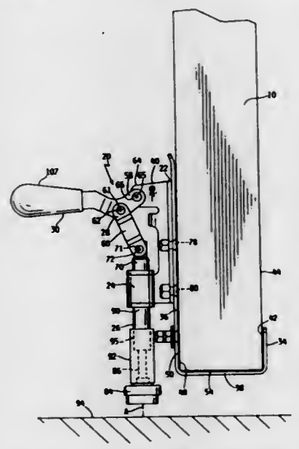
1. A hose to coupling joint comprising:
a tube-like fitting;
an elastomeric hose disposed on said fitting;
a constant tension, metallic clamp circumfereotially disposed about the hose and clamping the hose on said fitting with substantially constant tension to maintain a clamping force on the hose and expand and contract as the hose expands and contracts to avoid permanent compression and deformation of the hose; and
a constant displacement clamp circumferentially disposed about the hose and clamping the hose to said fitting, said constant displacement clamp being axially spaced along said hose from said constant tension clamp.

5,601,318
NECKTIE KNOT TYING DEVICE
Robert M. Rusing, 4304 E. Campbell, #2054, Phoenix, Ariz. 85018
Filed Oct. 12, 1995, Ser. No. 541,271
Int. Cl.[6] A47G *25/90*; A41D *25/08*
U.S. Cl. 289—17 10 Claims



1. A tool for aiding in the tying of a necktie knot comprising:
a) a substantially rigid elongate bar having a handle portion toward one end and a rod-like knot finishing portion toward the other end; and
b) a raised disc-like projection integral with said tool, said projection located between said handle and said finishing portion, said projection extending outwardly from said tool and having a base, sloping side walls, a top, and a rounded transition portion from the sidewalls to the top, said side walls forming a smooth incline from the bar to the top of the projection, the base of said projection being about 1.5 inches in length.

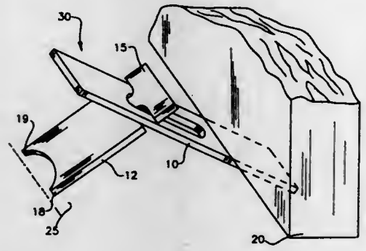
5,601,319
DOOR LOCKING DEVICE
Eugene W. Morin, 10906 202nd Ave. Northwest, Elk River, Minn. 55330
Filed Mar. 29, 1995, Ser. No. 412,467
Int. Cl.[6] E05C *1/06*
U.S. Cl. 292—139 18 Claims



1. A removable locking device for placement between a door and a floor surface, the door having a bottom edge portion, the device comprising:
a) a J-shaped bracket for engaging the bottom edge portion of the door;

b) a substantially vertical plunger, the plunger slidably mounted to the J-shaped bracket, the plunger having a foot portion for frictionally engaging the floor surface;
c) a linkage having a first link and a second link the first link pivotally connected to the J-shaped bracket and pivotally connected to the second link, both said pivotal connections being about axes arranged to be parallel to an inside surface of the door, the second link pivotally connected to the plunger, the linkage having an over-center extended position and a folded position, whereby the plunger is moveable between a lower engagement position with the floor surface and an upward retracted position and whereby in the over-center extended position the linkage exerts a clamping force between the bottom edge portion of the door and the floor surface thereby locking the door in place and securing the J-shaped bracket at the bottom edge portion of the door; and
d) a handle connected to the linkage for moving the linkage between the over-center position and the folded position.

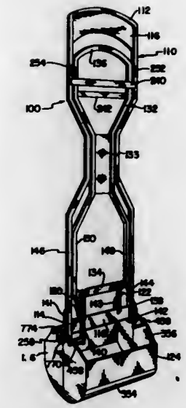
5,601,320
TWO PIECE PORTABLE DOORSTOP
Earnest G. Miller, 325 Comanche Rd., Shelbyville, Ky. 40065
Filed Dec. 5, 1995, Ser. No. 567,667
Int. Cl.[6] E05C *17/54*
U.S. Cl. 292—343 5 Claims



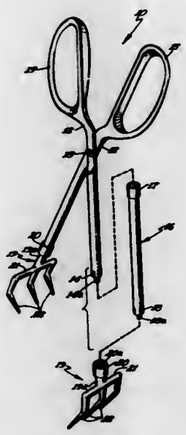
1. A two piece doorstop, comprising:
a wedge member, said wedge member substantially rectangular and having a longitudinal slot formed therein;
a second back support member having a rectangular engagement head at one end and a first and a second spur at the opposite end, said rectangular engagement head inserted into said longitudinal slot of said wedge member;
wherein said wedge member forms an upwardly angled surface which abuts against the lower edge of a door preventing said door from being opened.

5,601,321
LITTER AND REFUSE RETRIEVAL DEVICE
Allen Simon, East Northport, N.Y., assignor to Four Paws Products, Ltd., Hauppauge, N.Y.
Continuation-in-part of Ser. No. 31,375, Nov. 23, 1994, Pat. No. Des. 368,003. This application Nov. 28, 1994, Ser. No. 358,487
Int. Cl.[6] A01K *29/00*; E01H *1/12*
U.S. Cl. 294—1.4 4 Claims

1. A refuse retrieval device comprising:
an elongated outer frame member having a handle at one end and mounting means at another end;
an elongated inner frame member carried by the outer frame member having a handle at one end and two pair of linkage arms at another end, said linkage arms integrally formed with said inner frame member;
a pair of scoop means having a first end and a second end, the first end and the second end being pivotally mounted on the mounting means, each end of the scoop means also pivotally connected to one pair of the linkage arms; and
a spring biasing mechanism connected to the inner frame member and the outer frame member for biasing the pair of scoops in a closed position.



5,601,322
AQUARIUM TOOL
Robert Forest, 8000 Offenhauser Rd. #6E, Reno, Nev. 89511
Filed Nov. 17, 1995, Ser. No. 559,939
Int. Cl.[6] B25B *7/22*; B25J *1/02*
U.S. Cl. 294—3 5 Claims



1. An aquarium tool kit for use in structuring, maintaining and restructuring aquariums of any size and shape, comprising a pair of elongate handle members pivotally interconnected together intermediate their ends, each of said handle members having a hand grip element at one end thereof and a coupling element at the other end thereof,
an aquarium implement for performing a specific function selected from the group comprising a pair of tined rock grippers, a double net, a pair of pincher elements, a scoop, a

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brush, a sponge, and a blade, said implement having coupling means secured thereto,

a pair of elongate extension members each having a coupling element on each end thereof and each extension member including a bendable portion intermediate the ends thereof to permit adjustment of the angular shape of each extension member,

said handle members, aquarium implements and extension members being sized and dimensioned for exclusive use in aquariums, each extension member being releasably coupled to one of said handle members and an implement whereby a selected implement is coupled to an extension member for performing a specific function.

5,601,323

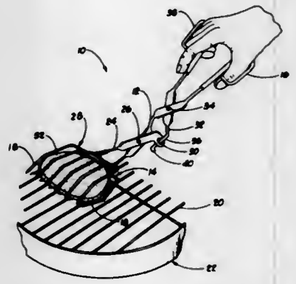
COOKING TONG APPARATUS

Armond A. Kaiser, 7521 NW. 25th Ter., Bethany, Okla. 73008

Filed Jun. 5, 1995, Ser. No. 461,138

Int. Cl.[6] A47J *43/28*

U.S. Cl. 294—7 **10 Claims**



1. An improved cooking tong apparatus for use with a grill comprising:

a first tong element having a first end and a second end;

a first jaw attached to the first tong element at the first end thereof, the first jaw having a plurality of spaced apart tines;

a first handle attached to the first tong element at the second end thereof;

a second tong element pivotally attached to the first tong element at a first pivot point, the second tong element having first and second ends, the second end of the second tong element having a bar engaging bore therein;

a first pivotal attachment means for pivotally attaching the first and second tong elements at the first pivot point;

a second jaw attached to the second tong element at the first end thereof, the second jaw having a plurality of spaced apart tines, wherein the first and second jaws are disposed in opposing gripping engagement to each other so that the first and second jaws open and close as the first and second tong elements are pivoted about the first pivot point;

a third tong element pivotally attached to the first tong element at a second pivot point disposed between the first handle and the first pivot point, the third tong element having a first end and a second end;

an actuating bar attached to the first end of the third tong element, the actuating bar slidably engaging the bar engaging bore in the second tong element and disposed therethrough;

a second pivotal attachment means for attaching the first and third tong elements at the second pivot point; and

a second handle attached to the third tong element at the second end thereof, wherein the second handle is disposed opposite the first handle and wherein the actuating bar attached to the third tong element slidably engages the bar engagement bore of the second tong element as the first and second handles are pivoted about the second pivot point such that the first and second jaws open and close.

5,601,324

SAMPLE CONTAINER CLAMP

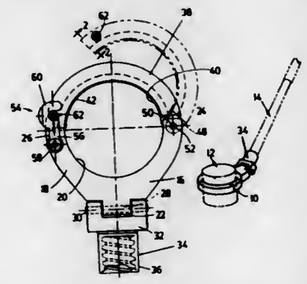
Kenneth S. Purcell, P.O. Box 1344, Greenwood, Nova Scotia, Canada

Filed Dec. 4, 1995, Ser. No. 566,963

Claims priority, application Canada, Jun. 14, 1995, 2151783

Int. Cl.[6] B25J *15/00*

U.S. Cl. 294—31.2 **14 Claims**



1. A clamp for a generally cylindrical container, comprising: a first clamp member having an arcuate inner surface; a second clamp member having an arcuate inner surface; means hingedly connecting the second clamp member at one end thereof to an adjacent end of said first clamp member; means for locking the other end of said second clamp member to the other end of said first clamp member; friction means in the form of an elongated strip of resilient material adhered to said arcuate inner surface of said second clamp member and having a thickness at said arcuate inner surface of said second clamp member that is greater than the thickness at a radially innermost edge thereof; and handle attachment means hingedly connected to said first clamp member intermediate the ends thereof.

5,601,325

MATERIAL MOVING SHOVEL AND THE LIKE

Thomas J. Sokaski, Andover, Ohio, assignor to Toolite Incorporated, Ashtabula, Ohio

Continuation-in-part of Ser. No. 278,967, Jul. 22, 1994, abandoned. This application Aug. 1, 1995, Ser. No. 510,036

Int. Cl.[6] A01B *1/04*

U.S. Cl. 294—49 **18 Claims**

1. A material moving tool comprising:

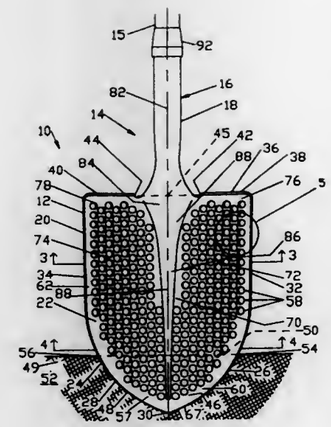
a blade, and

means for manipulating said blade,

said blade having an outside perimeter defining the area of said blade,

said blade having a plurality of apertures therethrough,

and a material supporting surface defined by said outside perimeter and said apertures, wherein said material supporting surface is from between 80% to 50% of said area of said blade



and wherein each of said apertures has an area from between about 0.012 square inches to about 0.2 square inches.

5,601,326

LOAD-LIFTING DEVICE OR LASHING DEVICE

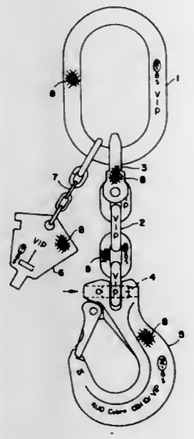
Reinhard G. E. Smetz, Baldingen, Germany, assignor to RUD-Kettenfabrik Rieger & Dietz GmbH. u. Co., Aalen-Unterkochen, Germany

Filed May 1, 1995, Ser. No. 432,287

Claims priority, application Germany, May 11, 1994, 9407926 U

Int. Cl.[6] B66C *1/40*

U.S. Cl. 294—82.1 **5 Claims**



1. A load-lifting device or lashing device, said device comprising a plurality of parts including at least one lead transfer means formed by a chain strand, at least one lead accepting means attached to one end of said load transfer means, and at least one lifting means attached to another end of said load transfer means, wherein each of said plurality of parts is provided with a coating (8) which shows that the parts are of the same class, and which contains an indicator color.

5,601,327

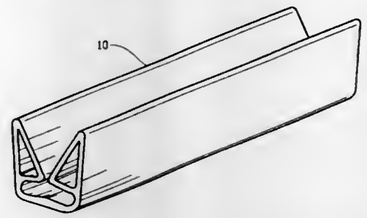
DETACHABLE ADD-ON TOTE-BAG HANDLE-SHEATH

Kenneth C. Cho, 2572 Uklah St., Port Hueneme, Calif. 93041

Filed Jul. 31, 1995, Ser. No. 509,548

Int. Cl.[6] A45C *13/26*; B65D *33/06*

U.S. Cl. 294—171 **8 Claims**



1. A handle-sheath, for deployment onto one or more existing handles of a carried item in the category of shopping bags, tote bags, wire baskets and coat hangers, for hand comfort when carrying heavy loads, comprising a predetermined length of flexible material made to have a uniform cross-sectional configuration such that said handle-sheath can be formed in an extrusion process, the cross-sectional configuration defining:

an upwardly-facing generally V-shaped entry channel formed by a pair of downwardly-converging guide surfaces;

a throat region at lower extremities of the guide surfaces and defining a predetermined minimum entry channel width;

a conduit region, disposed in a lower portion of said handle-sheath beneath said throat region and communicating therewith, extending outwardly symmetrically therefrom, bounded by a pair of opposed sidewall surfaces, a generally horizontal floor portion having an upwardly-facing floor surface extending between the sidewall surfaces and sloping downwardly from a raised central region to the opposed sidewall surfaces, and a pair of ceiling surfaces each extending from said throat region to corresponding sidewall surfaces, said conduit region being made to have a pair of opposed side regions each dimensioned to accommodate one handle;

whereby said handle-sheath may be deployed for carrying the item by inserting one or more handles, via said entry channel through said throat region into the corresponding conduit side regions;

said throat region being dimensioned to make the minimum entry channel width, under an unstressed material condition, smaller than a designated nominal handle diameter;

whereby each inserted handle, under the unstressed material condition, is caused to be retained substantially captivated in said conduit region, the handle having been initially inserted thereinto by flexing said handle-sheath in a manner to separate the guide surfaces sufficiently to allow entry of the handle.

5,601,328

BONDED FITTING OF WINDSHIELDS ONTO THE WINDOW APERTURE FLANGE OF MOTOR VEHICLE BODIES

Ulrich Bruhnke, Ehningen; Wolfram Frey, Althengstett; Martin Kruse, Bondorf; Anton Epple, Rottenburg, and Heinz Faix, Gechingen, all of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

Filed Jun. 8, 1995, Ser. No. 488,733

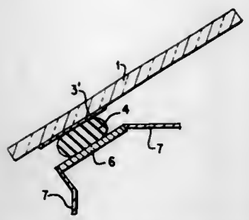
Claims priority, application Germany, Jun. 24, 1994, 44 22 122.3; Oct. 26, 1994, 44 38 197.2

Int. Cl.[6] B60J *1/02*

U.S. Cl. 296—96.21 **26 Claims**

1. Load-bearing bonded fitting of a windshield onto a windshield flange of a window aperture of a motor vehicle body, said bonded fitting comprising:

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a bead of adhesive formed of rapidly setting synthetic material applied between an inside windshield surface and the windshield flange, and

a pressure-sensitive adhesive strip attached between the windshield and the bead of adhesive at each of two lower corners of the windshield, said pressure-sensitive adhesive strips having respective adhesive sides facing the inside windshield surface and being permanently flexible, said pressure-sensitive adhesive strips at the two lower corners of the windshield serving to accommodate removal of the windshield without requiring cutting of the bead of adhesive in a region of the two lower corners where the bead of adhesive is covered by the respective pressure-sensitive adhesive strips.

5,601,329

SEALING SYSTEM FOR SEALING VEHICLE WINDOW PANES AGAINST A VEHICLE HOOD

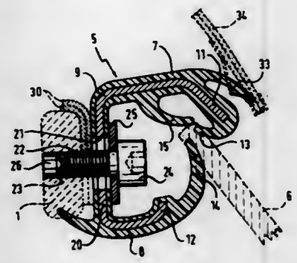
Klaus Glagow, Wasserburg, and Sebastian Jäger, Hannover, both of Germany, assignors to Metzeler Automotive Profiles GmbH, Lindau/Bodensee, Germany

Filed Nov. 14, 1994, Ser. No. 338,956

Claims priority, application Germany, Nov. 23, 1993, 43 39 896.0

Int. Cl.[6] E06B *3/48*

U.S. Cl. 296—146.14 **12 Claims**



1. Sealing system for sealing side window panes of a vehicle against the a vehicle hood, comprising:

a folding hood rod assembly having rigid roof frame edge parts having outer faces, extending longitudinally; window guide profiles capable of vertical, longitudinal and horizontal adjustment screwed on to the outer faces of the roof frame parts, the window guide profiles including sealing lips which bear against a window pane.

5,601,330

VEHICLE ROOF WITH TWO COVER ELEMENTS

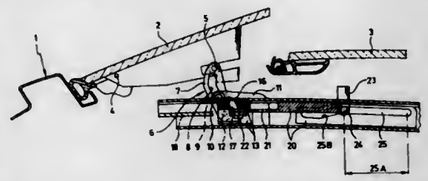
Thomas Ulbrich, Kaufering; Thomas Wikelski, Schlagenhofen; Johann Mayer, Petershausen; Olaf Kraschienski, München, and Christian Toduta, Germering, all of Germany, assignors to Webasto Karosseriesysteme GmbH, Germany

Filed Jan. 30, 1996, Ser. No. 594,236

Claims priority, application Germany, Feb. 15, 1995, 195 05 006.1

Int. Cl.[6] B60J *7/053;7/22*

U.S. Cl. 296—217 **10 Claims**



1. Vehicle roof with two cover elements which selectively close and at least partially expose a roof opening in a fixed vehicle roof, said cover elements comprising a front cover element in the form of a wind deflector strip which is mounted to pivot around a pivot axis located near a front edge thereof and which is connected to a raising mechanism for raising of a rear edge of the wind deflector strip above the fixed vehicle roof, and a rear cover element in the form of a sliding cover which is lowerable below the fixed vehicle roof by means of a lowering mechanism and which can be moved under the fixed vehicle roof on slide elements which are movable along guide rails which are secured to the fixed vehicle roof; wherein the wind deflector strip and sliding cover are actuated by means of a common drive; wherein the sliding cover has front and rear slide elements to which the lowering mechanism is coupled; wherein front and rear auxiliary slide elements are provided which are movable relative to the front and rear slide elements, respectively, and which are automatically coupleable and decouplable with the respective slide element and with respect to a part secured to the fixed vehicle roof by means of respective front and rear locking blocks which are movable perpendicularly relative to directions of movement of the respective slide element; and wherein the raising mechanism for wind deflector strip is automatically coupled and decoupled to the front slide element by the front locking block.

5,601,331

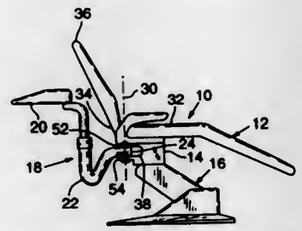
INTEGRATED DENTAL CHAIR AND POST-MOUNTED DELIVERY SYSTEM

George K. Austin, Jr., Newberg, and William F. Fisher, Oregon City, both of Oreg., assignors to A-Dec, Inc., Newberg, Oreg.

Filed Apr. 6, 1995, Ser. No. 418,244

Int. Cl.[6] A61G *15/14*

U.S. Cl. 297—170 **12 Claims**



1. A dental chair system, comprising:

a seat base to which a seat of a dental chair may be fastened, the seat base defining a clearance slot therein beneath the seat, the seat base including a first bracket and a second bracket spaced apart from the first bracket;

a support post having one end pivotally mounted to the seat base within the slot at a vertical pivot axis and the support post being pivotable about the axis through an angle of at least 270°, the other end of the support post extending from the seat base and exposed for permitting dental equipment to be mounted thereto, the support post being pivotally mounted between the first and second brackets at the vertical pivot axis;

a hollow spacer mounted inside the post; and

a threaded member extending through the first bracket, the spacer, and the post and threading into the second bracket thereby to provide the pivotal mounting of the post to the brackets, and

in which threading the threaded member draws both the first bracket and second bracket closer together to increase the resistance to pivoting of the post.

5,601,332

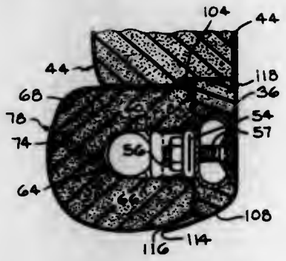
REPLACEABLE SEAT BOOSTER WITH AN INFLATABLE AIR CUSHION MODULE

Elaine S. Schultz, Troy, and S. Ato Awotwi, Lathrup Village, both of Mich., assignors to Hoover Universal, Inc., Plymouth, Mich.

Filed Jan. 30, 1995, Ser. No. 380,092

Int. Cl.[6] B60R *21/00*

U.S. Cl. 297—216.13 **5 Claims**



1. A seat component for a vehicle seat comprising:

a seat frame;

a first foam pad mounted on said frame and having opposite side edges;

a side bolster module for attachment to said seat frame along one of said side edges of said first foam pad, said side bolster module including a bolster frame, an inflatable air cushion and a gas generator for inflating said air cushion mounted to said bolster frame, a bolster foam pad covering said air cushion and said gas generator, a side bolster trim cover substantially surrounding said bolster foam pad and means for releasably attaching said bolster frame to said seat frame along said one side edge whereby said bolster module forms a replaceable side bolster for said seat component along said one side edge of said first foam pad; and

a main trim cover substantially covering said first foam pad, said main trim cover including an extending flap portion covering said seat frame opposite from said side bolster module, said flap portion and said bolster trim cover including cooperating means for releasably attaching said flap portion to said bolster trim cover.

5,601,333

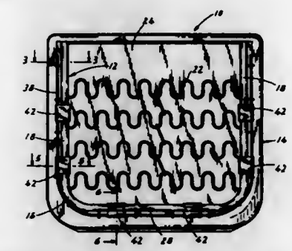
SEAT RETENTION SYSTEM

John M. Bostrom, Waterford, and Douglas P. Gennrich, Cudahy, both of Wis., assignors to H. O. Bostram Company, Inc., Waukesha, Wis.

Filed Sep. 11, 1995, Ser. No. 526,158

Int. Cl.[6] A47C *31/00*

U.S. Cl. 297—218.5 **11 Claims**



11. Apparatus for attaching a cushion assembly to a framework, said apparatus comprising:

the framework including a rigid, substantially U-shaped, tubular member;

the cushion assembly including a generally horizontally disposed cushion having an upstanding sidewall provided with an inner side and an outer side, and a mounting strip disposed on the inner side of said sidewall, said mounting strip being secured to said sidewall; and

a plurality of retaining clips detachably securing the cushion assembly to the framework, each of said clips having a first portion slidably mounted on said mounting strip and secured thereto and a second portion engageable in a snap-fit with said tubular member beneath said cushion,

each retaining clip being integrally formed with an envelope portion substantially surrounding said mounting strip and defining a vertically extending bearing surface engageable with a first peripheral portion of said tubular member, a flat, generally horizontal planar surface extending from the envelope portion and defining a horizontally extending bearing surface engageable with a second peripheral portion of said tubular member, and a resilient spring arm having a flat, generally vertical planar surface extending from the horizontally extending bearing surface and merging into an inwardly directed planar surface defining an angularly extending bearing surface engageable with a third peripheral portion of said tubular member.

5,601,334

INTEGRATED CHILD SEAT WITH DETACHABLE BOOSTER SEAT

William D. Marks, Plymouth, Mich., assignor to Hoover Universal, Inc., Plymouth, Mich.

Filed Jul. 14, 1995, Ser. No. 502,869

Int. Cl.[6] B60N *2/30*

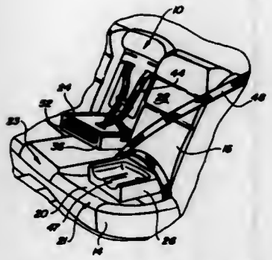
U.S. Cl. 297—238 **2 Claims**

1. A vehicle seat assembly comprising:

a generally horizontal adult seat bottom;

a generally upright seat back extending upwardly at a rear end of said seat bottom and forming a biteline therebetween, said adult seat bottom and said seat back having a lateral width sufficient to form at least two designated seating positions for two seat occupants to sit side by side in said seat assembly;

a child seat integrated into said seat assembly at one of said designated seating positions, said child seat including a first child seat panel having proximal and distal ends, said first child seat panel being attached to said seat assembly at said proximal end for movement between a stowed position in which said one seating position can be used by an adult and a



use position in which said first child seat panel extends generally horizontally and an upper surface thereof forms a seating surface for a child occupant of said child seat, a second child seat panel positioned adjacent said distal end of said first child seat panel and restraint means for use by a child seat occupant positioned upon said first child seat panel;

means for removably attaching said second child seat panel to said first child seat panel including a coupler attached to said second child seat panel and a first mating coupler at the distal end of said first child seat panel; and

a second mating coupler adjacent said biteline at another of said designated seating positions for attachment to said coupler whereby said second child seat panel can be removed from said first child seat panel and moved laterally and placed upon said adult seat bottom at said another of said designated seating positions and said coupler attached to said second mating coupler to provide a raised seat for a child seated thereon.

5,601,335

AUDITORIUM SEATING SYSTEM

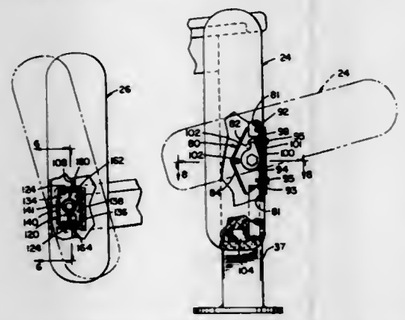
David C. Woods, Quakertown, Pa., and Richard A. Koprowski, Green Bay, Wis., assignors to Krueger International, Inc., Green Bay, Wis.

Continuation of Ser. No. 959,980, Oct. 13, 1992, Pat. No. 5,393,120. This application Nov. 7, 1994, Ser. No. 335,246

The portion of the term of this patent subsequent to Feb. 28, 2012, has been disclaimed.

Int. Cl.[6] A47C *3/00*

U.S. Cl. 297—301.3 **8 Claims**



1. A seat mounting assembly for a seating assembly including a seat, for pivotably mounting the seat to a support, comprising:

a shaft extending from the support;

a bushing fixedly mounted to the shaft and defining a spherical outer surface; and

a socket mounted to the seat and defining an inner surface having a contour corresponding to the spherical outer surface of the bushing for receiving and engaging the spherical outer surface of the bushing to provide pivoting movement of the seat relative to the support;

wherein the socket and the bushing provide the sole means of constant engagement between the seat and the support for pivotably mounting the seat to the support, and wherein the socket and the portion of the seat adjacent the socket are free from interference with the support to enable the seat to be moved through a range of angular positions relative to the shaft by movement of the socket on the bushing.

5,601,336

AUTO BALANCING ERGONOMIC ARMCHAIR

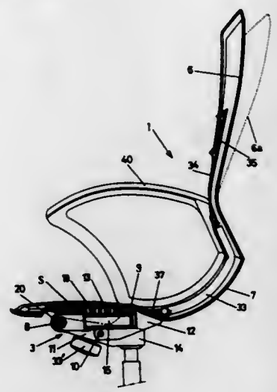
Victor Troyas-Bermejo, Navarra, Spain, assignor to Manufacturas Metalicas Jevit, S.A., Navarra, Spain

Filed Apr. 21, 1995, Ser. No. 427,115

Claims priority, application Spain, Apr. 21, 1994, 9400840; Apr. 21, 1994, 9400841

Int. Cl.[6] A47C *3/00*

U.S. Cl. 297—300.4 **15 Claims**



1. An ergonomic self balancing armchair comprising a seating element, a rigid holding support for receiving the seating element and a mechanism for regulating the angular position of the seating element relative to the support, a frame defining a seating area, attached to the regulating mechanism and a seat back area, a leading cushioned element attached and fixed to the frame, wherein the regulating mechanism includes an articulated triangle structure having angular ends having first, second, and third rotating horizontal spindles, a fixed length and fixed position first side, a fixed length and tilting position second side and a variable length and tilting position third side, the second and third sides having means to support and fix the seating element, the first side attached to the regulating mechanism, the first spindle disposed between the first and third sides having a torsion bar rotatably attached to the fixed length and position first side and rigidly attached to the variable length and position third side, and the torsion bar is attached to an adjustable angular position lever, a free end of the lever supports an actuation control attached to the fixed length and position first side, and the frame has an internal surface for fixedly receiving a reinforcing element for enhancing the rigidity of the rear section of the seating area which controls the cross-sectional bending capacity of the seat back area and allows a certain torsion degree or capacity of said seat back.

5,601,337

CHAIR

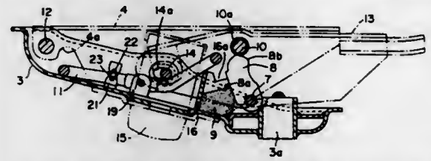
Mitsunobu Choda; Hideo Nishimura; Atsuo Okamoto, all of Kamakura, and Shigeo Negishi, Anjo, all of Japan, assignors to Uchida Yoko Co., Ltd., Tokyo-to, and Meiko Industry Co., Ltd., Aichi-ken, both of Japan

Filed Jul. 21, 1994, Ser. No. 278,259

Claims priority, application Japan, Jul. 27, 1993, 5-040867 U

Int. Cl.[6] A47C *3/00*

U.S. Cl. 297—302.1 **20 Claims**



1. A chair in which a base member is fitted onto an upper portion of a leg assembly in contact with a floor, and a seat portion and a back rest are provided on an upper portion of a support plate which is capable of reclining with respect to said base member, said chair comprising:

a cam-shaped link which is rotatable about a pin provided in said base member;

an upper portion of said link protruding towards said support plate;

an elastic member made of rubber which is compressed directly by said link upon rotation of said link and which is provided in a bottom portion of said base member; and

a shaft portion in contact with said link, and which causes said link to change in rotational position in response to the reclining action of said support plate.

5,601,338

SEAT STRUCTURE WITH ADJUSTABLE SUSPENSION

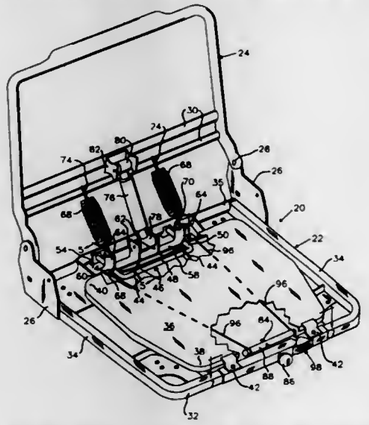
Robert J. Wahls, Pinckney, Mich., assignor to Michigan Seat Company, Jackson, Mich.

Filed Mar. 23, 1995, Ser. No. 408,942

Int. Cl.[6] A47C *3/32*

U.S. Cl. 297—313 **15 Claims**

1. An adjustable resilient supported seat comprising, in combination, a frame having a front rail and side rails having rear portions, said frame including a back support mounted upon said side rails' rear portions, a seat bottom pan having a front portion and a rear portion, hinge means attaching said pan front portion to said frame front rail permitting said pan rear portion to be vertically displaceable with respect to said frame side rails' rear portions, pan rear portion support means mounted on said frame, springs mounted upon said frame producing a resilient biasing force operatively associated with and supporting said pan rear portion support means and adjustment means mounted on said frame selectively adjusting the location of application of said resilient biasing force with respect to said hinge means and said pan rear portion support means to adjust the magnitude of said resilient biasing force upon said pan rear portion support means to vary the weight bearing characteristics of said seat bottom pan.



5,601,339

SYSTEM FOR THE ASSEMBLY AND CLAMPING OF SEATS WHICH CAN BE DISMANTLED

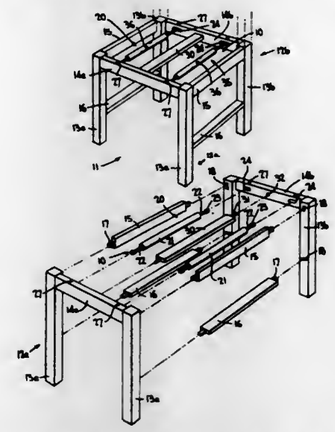
Gianfranco Buiani, S. Giovanni Al Natisone, Italy, assignor to Buiani Lino & Figli Srl, Italy

Filed Oct. 6, 1995, Ser. No. 539,961

Claims priority, application Italy, Nov. 18, 1994, UD94A0187

Int. Cl.[6] A47C *7/00*

U.S. Cl. 297—440.1 **14 Claims**



1. Assembly and clamping system for seating apparatus comprising a first side element and a second side element structurally connected by a mateable connecting means to each other by at least two lateral cross-members, and extending between said first side element and said second side element at least one tensioner means having a first end and a second end which cooperatively engage an anchorage means situated in an inward facing sidewall of each said first side element and said second side element respectively, wherein each of said anchorage means includes an opening which extends only partially into each of said first side element and said second side element or each of said anchorage means is fixedly attached to each of said inward facing sidewall of said first side element and said second side element.

5,601,340

READY-TO-ASSEMBLE UPHOLSTERED FURNITURE

Max W. Stout, 117 Penny Rd., High Point, N.C. 27260

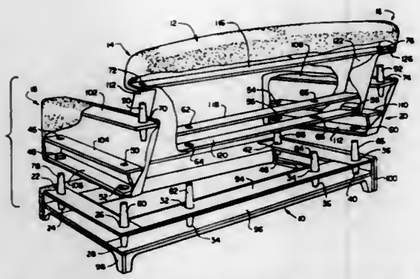
Filed May 20, 1994, Ser. No. 247,015

Int. Cl.[6] A47C *4/02*

U.S. Cl. 297—440.16 **11 Claims**

1. A ready-to-assemble seating structure comprising:

(a) a seat frame having an upper seat frame member with an upper surface, a lower surface, and downwardly tapered sockets extending from said upper surface to said lower surface, and a lower seat frame member with an upper surface, a lower



surface, and downwardly tapered sockets extending from said upper surface to said lower surface, the sockets in said upper seat frame member being axially aligned with the sockets in said lower seat frame member;

(b) a backrest frame having a lower backrest frame member with an upper surface, a lower surface, and upwardly tapered sockets extending from said lower surface to said upper surface, and a upper backrest frame member with an upper surface, a lower surface, and upwardly tapered sockets extending from said lower surface to said upper surface, the sockets in said upper backrest frame member being axially aligned with the sockets in said lower backrest frame member, and with sockets in the upper and lower seat frame members; and

(c) a plurality of connectors having two opposed, outwardly tapered ends, one of which is configured to removably engage aligned sockets in said seat frame and the other of which is configured to removably engage aligned sockets in said backrest frame.

5,601,341

DRIVE GEAR AND GUIDE ARRANGEMENT FOR A MINING MACHINE, IN PARTICULAR A DISK SHEARER

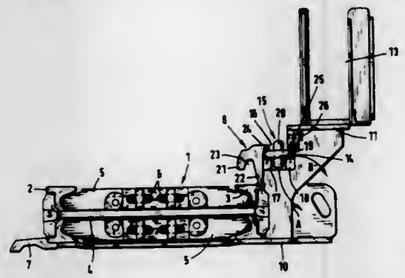
Gerhard Merten; Frank Fischer, and Bernd Steinkuhl, all of Lünen, Germany, assignors to DBT Deutsche Bergbau-Technik GmbH, Germany

Filed May 15, 1995, Ser. No. 441,266

Claims priority, application Germany, Jul. 7, 1994, 44 23 925.4

Int. Cl.[6] E21C *29/10;35/12*

U.S. Cl. 299—43 **57 Claims**



1. A drive gear and guide arrangement for a mining machine, which operates above a chain scraper conveyor, having a guide rail arranged on a trough section of said chain scraper conveyor, on the stowing side, at a level above said trough section, said guide rail extending alongside said chain scraper conveyor forming a chain duct for a drive gear chain for the moving forward of said mining machine, said guide rail including a profile lug which engages over horizontal chain links of said drive gear chain and holds said chain links on a chain support in said chain duct, said guide rail having a rolled profile which forms a sealing strip that closes off said chain duct of the drive gear chain on the side of the conveyor, said chain duct open on said stowing side for discharge of fine material, said guide rail profiled roughly in the shape of a U-section with downward extending legs of different lengths, wherein the longer stowing side leg forms a sealing strip and in the area underneath said chain duct, said leg being fixed to said trough section or to parts attached to the latter on its stowing side by welding.

5,601,342

DEVICE FOR MOUNTING AND REMOVING SKATE WHEELS

Johann Perner, Graz, Austria, assignor to Koflach Sport Gesellschaft m.b.H. & Co. KG, Austria

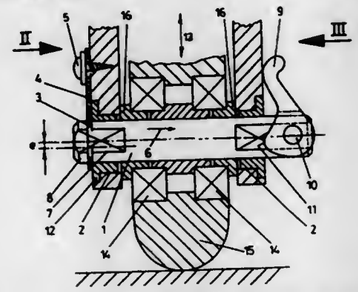
PCT No. PCT/AT94/00063, § 371 Date Jan. 10, 1995, § 102(e) Date Jan. 10, 1995, PCT Pub. No. WO94/26366, PCT Pub. Date Nov. 24, 1994

PCT Filed May 9, 1994, Ser. No. 367,154

Claims priority, application Austria, May 12, 1993, 934/93

Int. Cl.[6] A63G *17/00*

U.S. Cl. 301—5.3 **3 Claims**



1. A device for mounting and removing rollers in single-track roller skates, in which roller axles are inserted through aligned openings of a frame and are mounted in the openings, and in which at least one roller axle has at one of its free ends an engagement recess for receiving a removable locking member, the device comprising a bolt lever rotatably mounted on a pivot pin extending perpendicular to the roller axle at the other of said free ends of the roller axle, said bolt lever having a cam surface which in a locking position, forces the roller axle against the removable locking member.

5,601,343

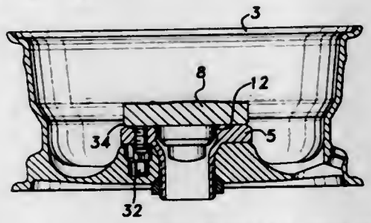
UNITARY WHEEL SYSTEM FOR ROAD VEHICLES

Rudiger Hoffken, Alte Handelstrasse 14a, 57439 Attendorn, Germany

Filed Aug. 31, 1994, Ser. No. 298,776

Int. Cl.[6] B60B *27/00*

U.S. Cl. 301—35.63 **7 Claims**



1. A unitary wheel system for attaching to a vehicle hub, said wheel system comprising:

a wheel rim having a from side and a rear side, a plurality of blind holes being formed in said rear side at selected angular positions around a centric wheel rim bore, said blind holes each further including an elongated and slotted shape in cross section which extends radially outwardly from said centric wheel rim bore;

a hub adapter including a centric and externally threaded cylindrical part with a front end and an open rear end facing the vehicle hub and attaching means for mounting said hub adapter to the vehicle hub;

a central closing nut being positioned over said centric wheel rim bore at said front side of said wheel rim, said central closing nut having interior threads which interengage with said exterior threads of said hub adapter cylindrical part at said front end to mount said hub adapter to said wheel rim;

a plurality of centering elements extending from the vehicle hub and inserting through said outwardly slotted blind holes in said wheel rim to center said wheel rim along said outwardly slotted blind holes; and

a distance ring member selected according to a uniform annular dimension and being positioned so as to occupy an otherwise open space between the vehicle hub and a central bore of said open end of said hub adapter upon mounting said hub adapter to the vehicle hub.

5,601,344

FLUID PRESSURE CONTROL DEVICE FOR ANTISKID BRAKE SYSTEM

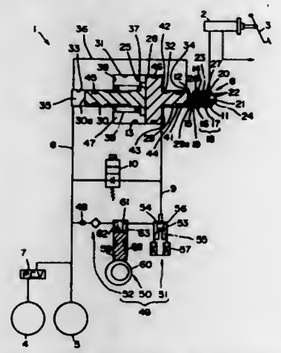
Kunihiro Matsunaga, and Hiromi Ando, both of Yamanashi-ken, Japan, assignors to Tokico Ltd., Kanagawa-ken, Japan

Continuation-in-part of Ser. No. 214,092, Mar. 16, 1994, abandoned, which is a continuation of Ser. No. 893,680, Jun. 5, 1992, abandoned. This application Oct. 6, 1995, Ser. No. 540,566

Claims priority, application Japan, Jun. 18, 1991, 3-146327

Int. Cl.[6] B60T *8/36*

U.S. Cl. 303—115.4 **5 Claims**



1. A brake fluid pressure adjustment device comprising:

a main fluid path which communicates a wheel cylinder to a master cylinder, and a bypass path branching from said main fluid path;

said bypass being provided with:

(a) a normally closed magnetic valve which opens when the brake fluid pressure in said wheel cylinder is to be forcibly lowered, and thereby permitting the brake fluid to flow into said bypass path;

(b) a reservoir for storing the brake fluid flowing through said normally closed magnetic valve; and

(c) a pumping mechanism which returns the brake fluid in said reservoir back to said main fluid path;

and between the bypass path and the master cylinder of the main fluid path, is provided,

(d) a normally open valve which closes when the brake fluid flows into the bypass path upon opening of said normally closed magnetic valve;

and wherein said pumping mechanism comprises:

(e) a pumping means for withdrawing and discharging the brake fluid when the brake fluid pressure in said wheel cylinder is to be forcibly reduced and when the brake fluid in said reservoir is returning back to said main fluid path;

(f) a suction valve which is disposed between said pumping means and said reservoir and which has a bypass path control valve element and a seat which close off the bypass path by coming into mutual contact and open the bypass path by mutually separating, opening when the brake fluid pressure on the pumping means side is lower than the brake fluid pressure on the reservoir side by a set amount as a result of the separation of the bypass path control valve element and the seat, and closing when the brake fluid pressure on the pumping means side is not lower than the brake fluid pressure on the reservoir side by said set amount as a result of mutual contact between the bypass control valve element and the seat;

(g) a discharge valve which is disposed between said pumping means and said main fluid path, which opens when the brake fluid pressure on the pumping means side is higher than the brake fluid pressure on the main fluid path side by a set amount, and closes when the brake fluid pressure on the pumping means side is not higher than the brake fluid pressure on the main fluid path side by said set amount; and

(h) an electromagnetic means for forcibly maintaining said suction valve in an opened position which supports a state wherein said bypass path control valve element and said seat are separated when the brake fluid pressure in said wheel cylinder is to be forcibly reduced, thereby stopping the discharging of the brake fluid from said discharge valve to said main fluid path, and releasing said suction valve from the opened position when the brake fluid pressure in said wheel cylinder is to be forcibly increased, thereby allowing the discharging of the brake fluid from said discharge valve to said main fluid path.

5,601,345

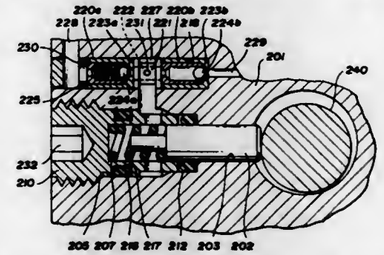
STATIONARY SEAL ABS PUMP

Wendell D. Tackett, Ann Arbor, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Filed Dec. 16, 1994, Ser. No. 358,233

Int. Cl.[6] B60T *8/40*

U.S. Cl. 303—116.4 **20 Claims**



1. A piston-type pump suitable for use in supplying pressurized fluid to an ABS system, comprising:

a) a pump body containing a bore adapted to receive a piston element;

b) a solid piston element having an elongated portion, said elongated portion sliding directly in said bore, one end of said piston element extending outwardly beyond said pump body;

c) a return spring urging said piston outward of said pump body and onto sliding engagement with a drive member capable of imparting an oscillatory motion to said piston element;

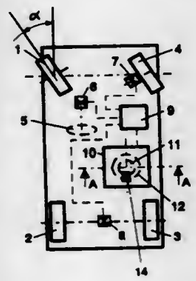
d) a stationary seal sealingly engaging said piston element;
e) a pump cavity whose internal volume changes in response to said oscillatory motion of said piston element;
f) inlet/outlet passages communicating with said pump cavity;
g) inlet and outlet check valves adapted to ensure unidirectional flow of said fluid through said inlet/outlet passages.

5,601,346

ANTI-SKIDDING PROCESS AND DEVICE FOR VEHICLES

Martin P. Lustenberger, Villars-sur-Glane, and Heinrich K. Feichtinger, Hinteregg, both of Switzerland, assignors to Digi Sens AG Digitale Messtechnik, Meyriez, Switzerland

Continuation of Ser. No. 307,830, Sep. 28, 1994, abandoned. This application Mar. 25, 1996, Ser. No. 616,044
Claims priority, application Switzerland, Feb. 5, 1993, 350/93; WIPO, Jan. 26, 1994, PCT/CH94/00016
Int. Cl.[6] B62D *37/00*; B60T *8/00*; *8/32*
U.S. Cl. 303—146 **20 Claims**



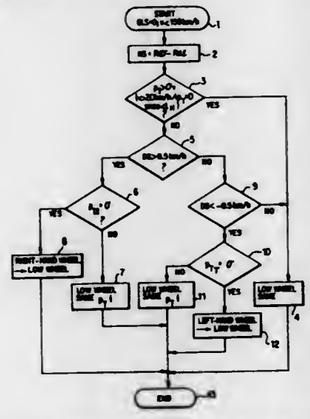
1. A process for the prevention of skidding of vehicles with at least two wheels of which at least one is steerable, wherein said process comprises the steps of:
measuring an actual rotary acceleration of the vehicle around a vertical axis of the vehicle with a rotary accelerometer (8);
measuring a rotary speed of at least one of the wheels (1-4) of the vehicle with a speed pick-up (7);
measuring a change in a turn angle of the at least one steerable wheel (1, 4) with an angle measuring device (6);
calculating with a real-time computer (9) a nominal rotary acceleration of the vehicle along the vertical axis of the vehicle based on the measurement of the rotary speed from the angle measuring device (6) and the measurement of the change in the turn angle from the speed pick-up (7), comparing the nominal rotary acceleration with the actual rotary acceleration from the measurements of the rotary accelerometer (8) and calculating the difference between the nominal rotary acceleration and the actual rotary acceleration; and
selectively decelerating one of two flywheels (12), rotating in the travel plane of the vehicle and in a contra-rotating direction, based on the difference between the nominal rotary acceleration and the actual rotary acceleration, by applying a braking force to the one of said two flywheels with a brake assembly (14) in such a way that a counter-torque is generated with a strength and direction which will reduce the difference between the nominal rotary acceleration and the actual rotary acceleration, thereby reducing the skidding process of the vehicle.

5,601,347

MOTOR VEHICLE TRACTION SYSTEM CONTROL OSCILLATION DAMPING METHOD USING LOW-ADHESION WHEEL BRAKE INTERVENTION

Gerhard Fischle, Esslingen; Matthias Baumann, Boeblingen; Ralph Klingel, Winnsheim, and Carola Pfister, Plochingen, all of Germany, assignors to Mercedes-Benz AG, Germany

Filed May 30, 1995, Ser. No. 453,002
Claims priority, application Germany, May 28, 1994, 44 18 769.6
Int. Cl.[6] B60T *8/32*; B60K *28/16*
U.S. Cl. 303—191 **16 Claims**



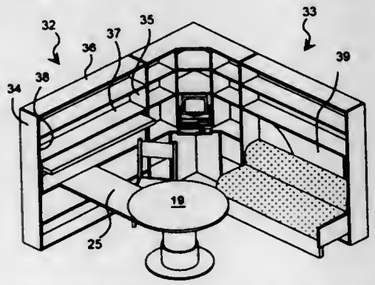
1. A method of damping control oscillations of a motor vehicle traction control system, comprising the steps of operating with brake intervention on a low-adhesion wheel, and causing an interchange of the low-adhesion wheel to be controlled from one driving wheel to an opposite driving wheel, at the earliest, by determining when a rotational speed of a previous high-adhesion wheel is greater by a specified value than the rotational speed of the previous low-adhesion wheel and further by determining when there is no longer any brake pressure at the previous low-adhesion wheel.

5,601,348

MULTI-CONFIGURATION FURNISHING ELEMENTS

Leonid E. Minkovski, 2370 Yosemite, Palm Springs, Calif. 92264

Filed Mar. 30, 1995, Ser. No. 413,825
Int. Cl.[6] A47B *83/04*
U.S. Cl. 312—237 **20 Claims**



1. A multi-configuration furniture assembly having a plurality of compatibly dimensioned components comprising:

a substantially stationary wall unit structure having an outer facade substantially orthogonal to a floor;
a recess extending behind said outer facade;
a rigid platform;
means for pivotally mounting said platform to said wall unit, thereby allowing angular movement of said platform with respect to said wall unit between a first closed position and a second open position;
said platform having an outer surface and a well set into said outer surface;
a rigid shelf pivotally mounted to said platform thereby allowing angular movement of said shelf between a first closed state and a second open state with respect to said platform;
wherein while said platform is in said second open position and said shelf is in said second open position state, said shelf contacts a floor and provides support to said platform, resisting further movement of said platform toward a floor;
wherein while said platform is in said first closed position and said shelf is in said second open state, a substantially planar surface of said shelf is oriented substantially parallel to a floor;
said shelf being retractable into said well;
wherein said shelf has an outer face; and
wherein said outer face, said outer facade and said outer surface lie substantially within a first plane when said platform is in said first closed position and said shelf is in said first closed state;
wherein said means for pivotally mounting said platform to said wall unit comprise:
a bedframe;
means for pivotally mounting said bedframe to said wall unit, allowing angular movement of said bedframe with respect to said wall unit between an up position and a down position; and
means for pivotally mounting said platform to said bedframe, allowing angular movement of said platform with respect to said bedframe;
wherein:
said means for pivotally mounting said bedframe to said wall unit comprise a first hinge;
said means for pivotally mounting said platform to said bedframe comprise a second hinge; and
said first and second hinges being positioned within a second plane orthogonal to a floor when said bedframe is in said up position. position and said shelf is in said first closed state.

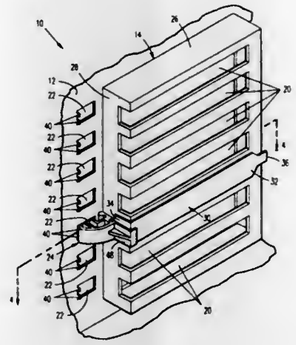
5,601,349

CAPTIVE LATCH MECHANISM FOR USE WITH AN EXPANSION CARD CAGE IN A PERSONAL COMPUTER

George T. Holt, Austin, Tex., assignor to Dell U.S.A., LP, Austin, Tex.

Filed Jul. 25, 1995, Ser. No. 507,680
Int. Cl.[6] A47B *47/00*
U.S. Cl. 312—265.6 **20 Claims**

1. A card guide retaining device in combination with a computer chassis having a wall and an interiorly-positioned card cage associated with said wall, said card cage having a card guide slot therein, said card guide retaining device comprising:
a retainer having a first end extending to within said computer chassis through a retainer aperture in said wall, said retainer aperture corresponding to said card guide slot, and
a second end extending out from said retainer aperture exterior to said computer chassis, said first end including a gripping surface to engage and retain a card guide positioned about said card guide slot, said second end having a flanged portion to contact an exterior surface of said wall, said retainer



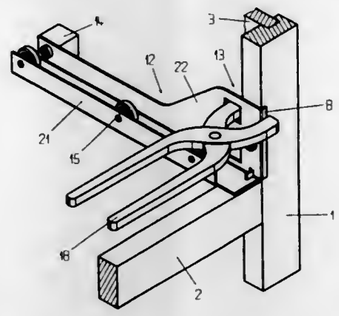
movable between an engaged position and a disengaged position from an exterior of computer chassis, said retainer configured to provide a retaining force from said wall to said card guide when in said engaged position.

5,601,350

SUPPORT RAIL FOR A DRAWER PULL OUT GUIDE

Erich Röck, Höchst, Austria, and Fredi Dubach, Adetswil, Switzerland, assignors to Julius Blum Gesellschaft m.b.H., Höchst, Austria

Filed Feb. 23, 1995, Ser. No. 392,504
Claims priority, application Austria, Feb. 25, 1994, 397/94
Int. Cl.[6] A47B *88/00*
U.S. Cl. 312—334.1 **12 Claims**



1. A support rail to be mounted on a vertical frame member of a front frame of an article of frame furniture, said support rail to be part of a pull-out guide for guiding movement of a drawer into and out of the article of furniture, said support rail comprising:
an elongated vertical fastening web;
at least one stop web integral with a front end of said fastening web and projecting laterally therefrom, said stop web forming means to abut a front surface of the vertical frame member when said support rail is mounted thereon;
at least one retaining member on said fastening web at a position spaced in a rearward direction from said stop web, said retaining member having a construction enabling it to be pressed against a rear surface of the vertical frame member when said support rail is mounted thereon; and
such that said stop web and said retaining member together form a clamping device with which to embrace the vertical frame member and to mount said support rail thereon without machining thereof.

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5,601,351

HIGH-EFFICIENCY ILLUMINATION DEVICE AND IMAGE PROJECTION APPARATUS COMPRISING SUCH A DEVICE

Adrianus H. J. van den Brandt, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 1, 1995, Ser. No. 457,944

Claims priority, application European Pat. Off., Jun. 1, 1994, 94201560

Int. Cl.[6] G03B *21/14*

U.S. Cl. 353—20 **19 Claims**



1. An illumination device for supplying a beam of linearly polarized light having a non-rotationally symmertrical beam cross-section at a location of an object to be illuminated, said device comprising:

a light source;

a reflector;

an optical integrator for forming the beam cross-section and for realising a uniform light distribution across the beam cross-section; and

a polarizing system for converting light supplied by said light source into linearly polarized light, wherein said polarizing system is arranged in a radiation path between said light source and said optical integrator.

5,601,352

IMAGE DISPLAY DEVICE

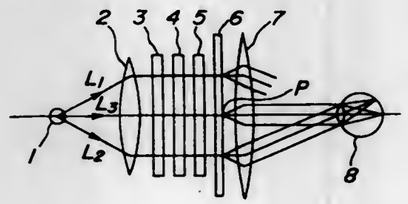
Toshiro Okamura, Hino, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 20, 1995, Ser. No. 504,472

Claims priority, application Japan, Jul. 29, 1994, 6-178156

Int. Cl.[6] G03B *21/00*

U.S. Cl. 353—31 **18 Claims**



1. An image display device of eye projection type comprising an image display means for displaying a video image, and a projection optical system for projecting an image displayed on the image display means onto eyes of a viewer; said image display means including a plurality of liquid crystal display elements juxtaposed on the same optical axis as an optical axis of the projection optical system and an illuminating means arranged behind the plural liquid crystal elements and for generating substantially collimated luminous flux, wherein a luminous flux diffusion optical system for diffusing the luminous flux from the plural liquid crystal display elements is arranged between the plural liquid crystal display elements and the projection optical system.

5,601,353

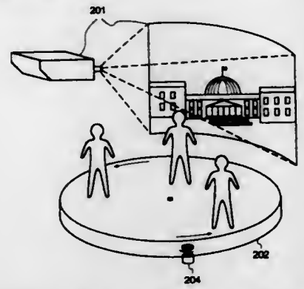
PANORAMIC DISPLAY WITH STATIONARY DISPLAY DEVICE AND ROTATING SUPPORT STRUCTURE

Michael Naimark, San Francisco, and Lee Felsenstein, Palo Alto, both of Calif., assignors to Interval Research Corporation, Palo Alto, Calif.

Filed Dec. 20, 1995, Ser. No. 575,302

Int. Cl.[6] G03B *21/00*

U.S. Cl. 353—122 **18 Claims**



1. A system for displaying a panoramic view to a viewing audience, comprising:

means for displaying a portion of the panoramic view that corresponds to a particular rotational orientation of the panoramic view, the means for displaying being fixed in position;

means for controlling the means for displaying so that various portions of the panoramic view can be displayed;

means for supporting the viewing audience so that the viewing audience can look at the means for displaying;

means for rotating the means for supporting so that the viewing audience must change viewing direction to continue looking at the means for displaying as the means for supporting rotates; and

means for synchronizing operation of the means for rotating and the means for controlling the means for displaying so that the means for supporting is rotated in a synchronous manner with the rotation of the orientation of the portion of the panoramic view displayed by the display device.

5,601,354

ILLUMINATING DEVICE

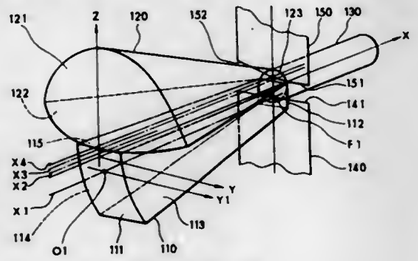
Yasutoshi Horii, Toyoake, and Hideyuki Kato, Nishio, both of Japan, assignors to Nippondenso Co., Ltd, Kariya, Japan

Filed Mar. 21, 1995, Ser. No. 408,160

Claims priority, application Japan, Mar. 22, 1994, 6-050842; Mar. 8, 1995, 7-048075

Int. Cl.[6] G02B *6/00*

U.S. Cl. 362—32 **13 Claims**



1. An illuminating device comprising;

a light source;

lens body means irradiating light from said light source; and

defining member means disposed on a light path from said light source to said lens body means and defining a predetermined light distribution pattern,

wherein said defining member means has an end section which defines a cut line of said light distribution pattern and which is disposed approximately coincident with an imaginary optical axis of said lens body means, and

wherein said lens body means has an optical axis at an outside thereof and a reflecting surface along said optical axis, and wherein said imaginary optical axis is a projected image of said optical axis obtained when using said reflecting surface as a symmetrical projection plane.

5,601,355

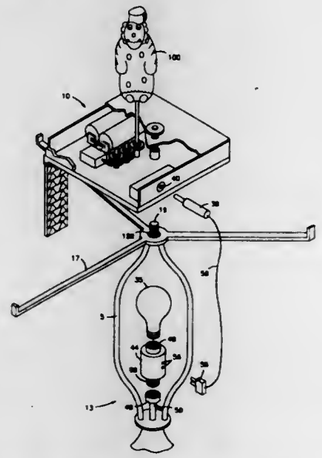
DEVICE FOR ROTATING A LAMP FINIAL

George Valentino, 2667 Roackaway Ave., Oceanside, N.Y. 11572

Filed Oct. 2, 1995, Ser. No. 537,471

Int. Cl.[6] F21V *21/30*

U.S. Cl. 362—35 **13 Claims**



1. A device for rotating a decorative finial about a lamp of the type having a lamp socket connected to an external source of household electrical current and a light bulb, said device including:

a housing;

means for securing said housing to said lamp;

means for mounting said decorative finial on said housing; and

means for rotating said decorative finial relative to said housing, said means for rotating including:

a power source;

a D.C. motor mounted on said housing and connected to said power source;

a drive shaft connected between said D.C. motor and said decorative finial; and

a photoelectric element connected between said power source and said D.C. motor and positioned adjacent to the light bulb, said photoelectric element adapted to interrupt the flow of power to the D.C. motor upon sensing the absence of light emanating from said light bulb to thereby prevent rotation of the decorative finial.

5,601,356

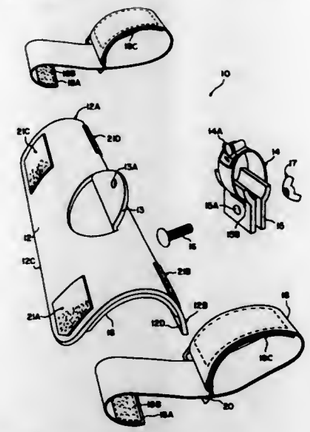
FLASHLIGHT STAND AND WRIST MOUNT SYSTEM

Dean K. McWilliams, 430 Westwood Dr., Ft. Collins, Colo. 80524

Filed Jun. 16, 1995, Ser. No. 491,214

Int. Cl.[6] A45F *5/00*; F21L *15/08*

U.S. Cl. 362—103 **5 Claims**



1. A flashlight holder system comprising:

(a) an elongated base member having a curved cross-sectional shape;

(b) attachment means for attaching a flashlight to said base member; wherein said attachment means comprises a ring having an adjustable diameter; wherein said ring is pivotally attached to said base member by means of a bolt;

(c) adjustable straps carried by the base member for attaching said base member to a user's arm, wherein said straps include hook and loop fasteners;

(d) lock means for locking said attachment means in a fixed position relative to said base member.

5,601,357

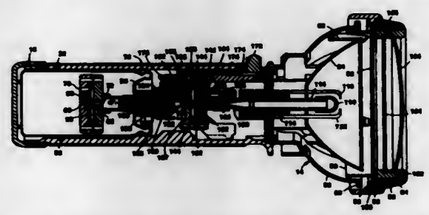
PORTABLE GAS APPLIANCE

Anand Rangarajan, Acton, Mass., assignor to ThermoLyte Corporation, Waltham, Mass.

Filed Dec. 29, 1995, Ser. No. 580,861

Int. Cl.[6] F21L *19/00*

U.S. Cl. 362—179 **28 Claims**

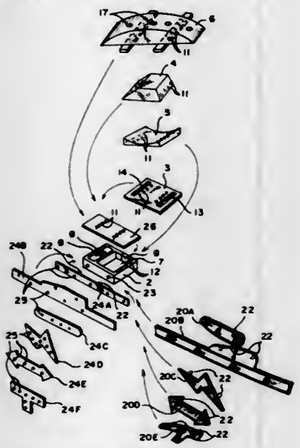


1. A gas powered appliance comprising housing structure with a fuel inlet port and recess structure for receiving fuel canister structure in communication with said inlet port, fuel supply conduit structure in said housing structure that has an outlet port, fuel control structure in said housing structure for controlling flow of fuel from said inlet port through said fuel supply conduit structure to said outlet port, fuel canister structure adapted for disposition in said recess structure, said fuel canister structure having a body portion, and outlet valve structure on said body portion for cou-

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pling to said inlet port when said fuel canister structure is disposed in said recess structure, and check valve structure for disposition in said recess structure in cooperation with said outlet valve structure for preventing liquid fuel from reaching said flow control structure when the fuel canister structure is disposed in the recess structure.

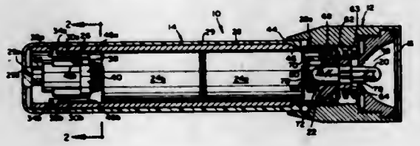
5,601,358
UNIVERSAL POWER PACK
Tseng L. Chien, 8F. No. 29, Alley 73, Lin Shen Street, Shi-Chi Town, Taipei, Hseng, Taiwan
Filed Aug. 31, 1995, Ser. No. 522,124
Int. Cl.[6] F21L 7/00
U.S. Cl. 362—190 **11 Claims**



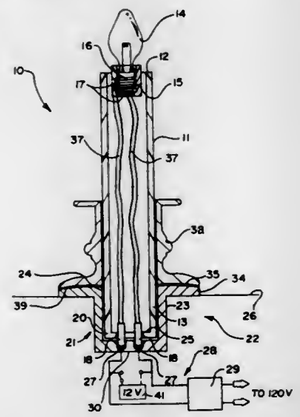
1. A universal power pack, comprising:
a housing having compartments for a battery and electrical lighting element control circuitry;
at least two housing covers; and
mounting means for alternatively mounting the at least two housing covers to the housing one at a time such that each of the at least two housing covers is a replacement for remaining ones of the at least two housing covers,
wherein said at least two housing covers have different shapes, thereby enabling said housing to have different configurations for mounting to a variety of different surfaces and objects.

5,601,359
FLASHLIGHT HAVING RESILIENT SLEEVE
Raymond L. Sharrah, Collegeville; John DiNenna, Bridgeport, and David A. Rufe, Schwenksville, all of Pa., assignors to Streamlight, Inc., Norristown, Pa.
Filed May 25, 1995, Ser. No. 450,736
Int. Cl.[6] F21L 7/00
U.S. Cl. 362—204 **23 Claims**

1. A method for assembling a flashlight barrel having a forward end and a rear end, comprising:
providing a metal casing having a generally tubular form for holding at least one battery;
positioning a switch assembly within the casing such that a fluid passage is provided between the switch assembly and the casing;
coupling the forward end of the metal casing with a flow of compressed gas such that the flow of gas passes through the tube and out of the rear end;
aligning a resilient sleeve with the rear end of the casing such that the sleeve is at least partially inflated by the flow of gas; and
sliding the resilient sleeve toward the forward end of the casing.



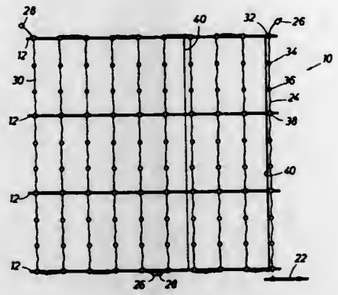
5,601,360
PLUG-IN ELECTRICAL CANDLE FOR A WINDOW SILL
James G. Paquette, 2235 Conowingo Rd., Bel Air, Md. 21015
Filed Jun. 7, 1996, Ser. No. 657,587
Int. Cl.[6] H01R 33/00
U.S. Cl. 362—226 **24 Claims**



1. In combination with a low-voltage socket installed in a window sill, the window sill having an upper surface, wherein the socket comprises a hollow cylindrical body having a receptacle, coinciding with the upper surface of the window sill, and having a contact end, and wherein a pair of electric contacts are provided at the contact end,
a replaceable electric candle, comprising:
a tubular body having a top portion and a lower portion spaced therefrom,
a low-voltage bulb removably secured at the top of the tubular body,
a pair of prongs secured to the lower portion of the tubular body,
conductive means within the tubular body electrically connecting the pair of prongs with the low-voltage bulb, and
a decorative sleeve slipped over the tubular body of the electric candle, the decorative sleeve having a bottom,
wherein, when the electric candle is being used, the bottom of the decorative sleeve leans against the receptacle end of the cylindrical body of the socket, and the lower portion of the tubular body of the electric candle is received within the cylindrical body of the socket, such that the pair of prongs engages said pair of the electrical contacts, thereby supplying electric power to the low-voltage bulb and mechanically stabilizing the electric candle within the socket, and

wherein, when not being used, the electric candle is lifted out of the socket.

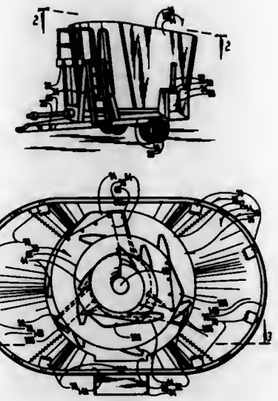
5,601,361
CELEBRATION ELECTRIC LIGHT NET
Lonnie Lawrence, 3842 Kenwood, Odessa, Tex. 79762
Filed Oct. 17, 1994, Ser. No. 323,889
Int. Cl.[6] F21V 21/00
U.S. Cl. 362—238 **20 Claims**



1. A supportive net for a light string wherein the light string comprises multiple decorative lamps where each lamp is supported in a lamp base and the lamp bases are connected on a power providing cable, the supportive net comprising:
(a) a plurality of strands having spaced eyelets, each of said eyelets arranged to releasably connect to and hold a light string lamp to position the lamp in a desired pattern defined by the supportive net;
(b) said net defined by at least two parallel strands, and each strand including at least one eyelet receiving and supporting one of said multiple decorative lamps of the light string;
(c) a plurality of transverse connective strands connect said two parallel strands, and said transverse connective strands serve as spacers between eyelets contained only in said parallel strands; and
(d) wherein said at least two parallel strands and said transverse connective strands define an MxN open weave net where M and N represent the number of strands and spacers in said net.

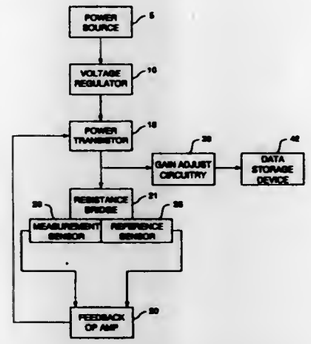
5,601,362
VERTICAL FEED MIXER WITH FEED DEFLECTORS
Reggie L. Schuler, Griswold, Iowa, assignor to Schuler Manufacturing & Equipment Co., Inc., Griswold, Iowa
Filed Jun. 4, 1996, Ser. No. 658,169
Int. Cl.[6] B01F 7/00
U.S. Cl. 366—309 **20 Claims**

1. An improved vertical feed mixer having a floor and a sidewall defining a mixing chamber with an open upper end and a discharge opening, and a vertically oriented auger rotatably mounted within the mixing chamber, the auger including a shaft and flighting with a leading edge and a peripheral edge, the improvement comprising:



a deflector extending along the peripheral edge of the flighting so as to direct feed material inwardly toward the shaft.

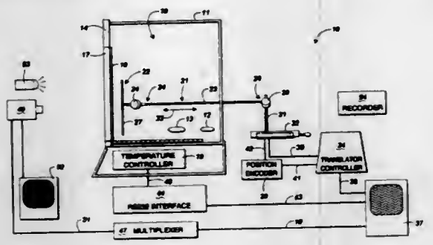
5,601,363
QUENCH SYSTEM COOLING EFFECTIVENESS METER AND METHOD OF OPERATING SAME
Gary D. Keil, Elmwood; Wayne A. Supak, Washington, and Sheryl A. Tipton, East Peoria, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.
Filed Jun. 9, 1994, Ser. No. 255,625
Int. Cl.[6] G01K 7/00
U.S. Cl. 374—45 **27 Claims**



1. An apparatus for measuring the effectiveness of a quench system, comprising in combination:
a fluid tight housing;
a reference temperature sensor attached to said housing;
a measurement temperature sensor attached to said housing; and
circuit means connected to said reference temperature sensor and said measurement sensor for producing a current through said measurement sensor thereby causing said measurement sensor to produce heat, for controlling said current to produce a desired temperature differential between said measurement sensor and said reference sensor, and for producing a signal that is a function of the cooling effectiveness of the quench system, wherein said circuit means is installed within said fluid tight housing.

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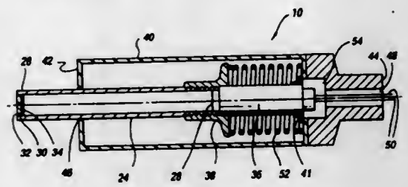
5,601,364
METHOD AND APPARATUS FOR MEASURING THERMAL WARPAGE
Ifeanyi C. Ume, Stone Mountain, Ga., assignor to Georgia Tech Research Corporation, Atlanta, Ga.
Filed Jun. 14, 1994, Ser. No. 259,434
Int. Cl.[6] G01N *17/00;3/60;* **G01B** *11/24;11/30*
U.S. Cl. 374—57 **15 Claims**



1. A method for measuring thermally induced warpage in specimens using a heating chamber for housing and heating a specimen, an illumination source, a grating, and a camera, the method comprising the steps of:
placing and supporting the specimen in the heating chamber;
illuminating the specimen with light from the illumination source directed through the grating onto the specimen, thereby forming shadow moiré fringes on the specimen;
capturing a first image of the shadow moiré fringes with the camera;
heating the specimen in the heating chamber to cause the temperature of the specimen to follow a desired temperature profile over a period of time;
capturing subsequent images of shadow moiré fringes with the camera over the period of time while also recording the temperature of the specimen over the period of time; and
determining the warpage of the specimen as a function of temperature by evaluating the first image of shadow moiré fringes, the subsequent images of the shadow moiré fringes captured over the period of time, and the temperature of the specimen recorded over the period of time.

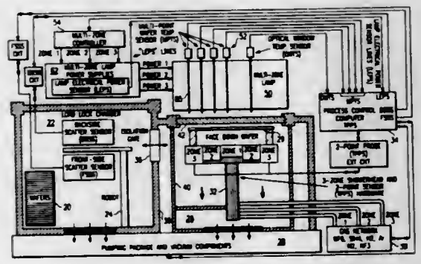
7. An apparatus for measuring thermally induced warpage in specimens comprising:
a heating chamber having a transparent window formed therein;
means for selectively controlling the temperature within said heating chamber;
means for supporting a specimen in an observation orientation, and an observation position within said heating chamber;
a grating supported in parallel relationship to said observation orientation, said grating being a selected distance from said observation position within said heating chamber;
a light source for illuminating the specimen through said grating such that shadow moiré fringes are formed on the specimen;
a camera positioned for capturing images of the shadow moiré fringes;
means for monitoring the temperature of the specimen over time; and
evaluation means for determining the warpage of the specimen by evaluating the captured images of the shadow moiré fringes in relation to the temperature of the specimen as monitored over time.

5,601,365
SENSING DEVICE FOR CONTROLLING ELECTROMAGNETIC FIELD GENERATOR FOR ADHESIVE CURING
Chi Li, Orchard Lake, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Division of Ser. No. 311,976, Sep. 26, 1994, Pat. No. 5,518,560. This application Feb. 20, 1996, Ser. No. 603,823
Int. Cl.[6] G01J *5/02*
U.S. Cl. 374—121 **16 Claims**



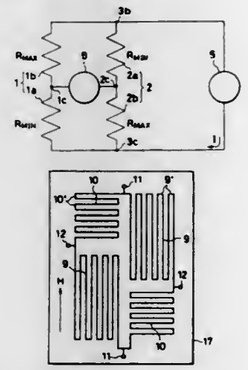
1. A temperature-sensing device that senses the extent of conductive heat energy from a thermally conductive automotive body panel member being adhesively cured to a second body panel member via an electromagnetic field, the sensing device comprising:
a thermally insulative tube having first and second ends;
a heat transfer member mounted on the first end of the tube and having oppositely facing first and second surfaces, the first surface engaging one of the thermally conductive members to receive conductive heat energy therefrom, and the second surface radiating transferred heat energy through the tube; and
a sensor mounted on the second end of the tube to detect the extent of heat energy radiated through the tube and hence the extent of conductive heat energy from the thermally conductive member.

5,601,366
METHOD FOR TEMPERATURE MEASUREMENT IN RAPID THERMAL PROCESS SYSTEMS
Ajit P. Paranjpe, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Oct. 25, 1994, Ser. No. 329,014
Int. Cl.[6] G01J *5/10*
U.S. Cl. 374—126 **7 Claims**



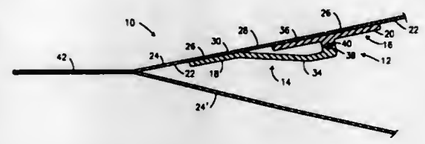
1. A method for real-time obtaining emissivity and temperature values of a semiconductor wafer in a processing system having at least one lamp arranged in at least one zone, said method using a reference wafer having a known reflectivity and said method comprising the steps of:
measuring pyrometry signals for said reference wafer and generating calibration curves from said measurements;
measuring pyrometry signals for said semiconductor wafer by time modulating said lamps so as to obtain a time-averaged component of said pyrometry signals and an amplitude-modulated component of said pyrometry signals; and
obtaining said temperature and emissivity values from said calibration curves and said measured pyrometry signals for said semiconductor wafer.

5,601,367
TEMPERATURE SENSOR FOR SENSING TEMPERATURE IN A MAGNETIC FIELD
Koichi Nara, Tsukuba, Japan, assignor to Agency of Industrial Science & Technology, Ministry of International Trade & Industry, Tokyo, Japan
Filed Mar. 14, 1995, Ser. No. 403,959
Claims priority, application Japan, Mar. 18, 1994, 6-074309
Int. Cl.[6] G01K *7/16*
U.S. Cl. 374—183 **7 Claims**



1. A temperature sensor comprising
a first sensor section disposed in a substantially uniform magnetic field and including a first conductor having a macroscopic current path directed in a prescribed direction with respect to that of the magnetic field, a second conductor having a macroscopic current path directed in a direction different from that of the first conductor and a first voltage detection point at a connection point between the first conductor and the second conductor, resistance values of the first conductor and the second conductor being set such that the magnetic field produces identical changes in resistance in the first and second conductors,
a second sensor section disposed in the same magnetic field as the first sensor section and including a third conductor having a macroscopic current path and a resistance value whose conditions are substantially identical with those of the first conductor, a fourth conductor having a macroscopic current path and a resistance value whose conditions are substantially identical with those of the second conductor and a second voltage detection point at a connection point between the third conductor and the fourth conductor,
heat coupling means for imparting substantially uniform temperature to the first sensor section and the second sensor section,
a first current supply point at a connection point between the first conductor of the first sensor section and the fourth conductor of the second sensor section, and
a second current supply point at a connection point between the second conductor of the first sensor section and the third conductor of the second sensor section,
environmental temperature of the magnetic field being measured based on a voltage occurring between the first voltage detection point of the first sensor section and the second voltage point of the second sensor section when current is supplied to the first sensor section and the second sensor section through the first current supply point and the second supply point.

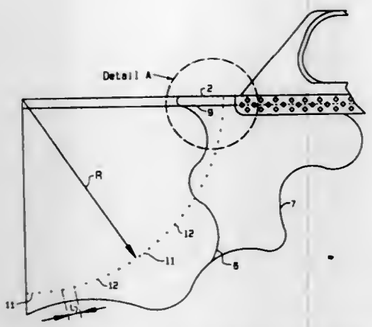
5,601,368
TAMPER-EVIDENT CONTAINER WITH RECLOSABLE FASTENER AND METHOD FOR MAKING
William A. Bodolay, and Michael J. Bodolay, both of Lakeland, Fla., assignors to Lakeland Micro, Inc, Lakeland, Fla.
Continuation-in-part of Ser. No. 299,575, Sep. 1, 1995, abandoned. This application May 11, 1995, Ser. No. 439,130
Int. Cl.[6] B65D *33/34*
U.S. Cl. 383—5 **10 Claims**



1. In an improved tamper-evident container formed at least in part from a flexible material wherein access to the interior of the container is provided by an aperture formed through the flexible material, said aperture being defined by removing a removable portion of said flexible material, the improvement in combination therewith comprising a predetermined length of a reclosable, zipper-type fastener having generally opposed distal ends, each of said distal ends being splotch sealed to form a flattened broadened segment, said fastener attached to said container in sealing relation surrounding said aperture forming an hermetic seal around said removable portion, said fastener comprising: a pair of mating reclosable sealing strips, each of said strips comprising a strip base segment attached to a common inside surface of said flexible material; each of said strips further comprising a second segment integral with its corresponding base segment and free from said common inside surface; one of said strips comprising a male fastener part formed at a junction of one of said second segments and its corresponding base segment and the other of said strips comprising a female fastener part in receiving relation to said male part, and said aperture comprising said removable portion of said flexible material being formed in overlying relation to said second segments.

5,601,369
LOAD CARRYING BAG WITH PERFORATED TEAR LINE OPENING
Angela L. Moseley; Gay A. Hoag, and George W. Durbin, all of Tomah, Wis., assignors to Union Camp Corporation, Wayne, N.J.
Continuation-in-part of Ser. No. 167,757, Dec. 15, 1993, Pat. No. 5,482,376. This application Apr. 5, 1995, Ser. No. 417,407
The portion of the term of this patent subsequent to Jan. 9, 2013, has been disclaimed.
Int. Cl.[6] B65D *33/00*
U.S. Cl. 383—209 **11 Claims**

1. In a bag for carrying a load and having a top edge, a bottom edge, opposite side edges and overlying front and back faces and constructed of plastic material, the improvement comprising:
a) a tear line extending along each of the front and back faces of said bag between said top edge and a side edge, each tear line being defined substantially by an arcuate shape defined, in turn, by a line of perforations;
b) the perforations of the tear line are comprised of uncut and cut segments to define a ratio of uncut to cut segments;
c) the perforations have at least two ratios of uncut and cut segments along said tear line; and

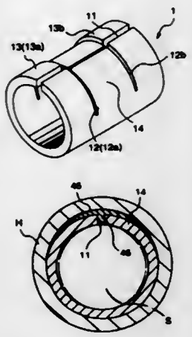


d) a first cut segment of the perforations extends through the top edge of the bag.

5,601,370
BUSH

Takayuki Shibayama, and Masatoshi Inoue, both of Nagoya, Japan, assignors to Daido Metal Company Ltd., Nagoya, Japan

Filed Jul. 10, 1995, Ser. No. 500,249
Claims priority, application Japan, Jul. 18, 1994, 6-188838
Int. Cl.[6] F16C *27/00;33/02*
U.S. Cl. 384—215 **6 Claims**

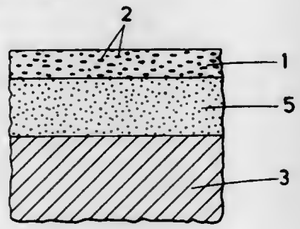


1. A bearing structure comprising:
a bush having an axially extending slit which divides the bush at a part of the circumference, a plurality of cuts extending from the slit in a circumferential direction of the bush over a substantially half of the circumferential length of the bush so as to partially divide the bush in the axial direction, at least two contacting portions provided on at least both end sides of the bush, said contacting portions being elastically brought into contact with the inner surface of a housing in which the bush is mounted, and at least one elastic engagement portion provided between the contacting portion, which elastically engage with a rotary shaft; and
a filler piece which is interposed between the inner surface of the housing and the outer surface of the elastic engagement portions.

5,601,371
SLIDING SURFACE BEARING

Franz Koroschetz, Gmunden, and Erich Pühringer, Oberweis, both of Austria, assignors to MIBA Gleitlager Aktiengesellschaft, Laakirchen, Austria

Filed Feb. 7, 1995, Ser. No. 384,767
Claims priority, application Austria, Feb. 21, 1994, A 342/94
Int. Cl.[6] F16C *33/12*
U.S. Cl. 384—276 **4 Claims**

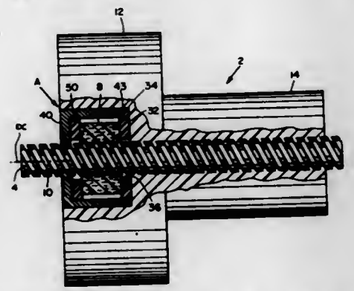


1. In a sliding surface bearing comprising
a back shell and
a roll-clad sliding surface layer consisting of an aluminum alloy comprising dispersed soft interstitial elements,
the improvement comprising a layer underlying said sliding surface layer, the underlying layer consisting of an aluminum alloy selected from the group consisting of precipitation-hardenable aluminum alloys and precipitation-hardened aluminum alloys, and the underlying layer having a greater hardness than the sliding surface layer.

5,601,372
VIBRATION REDUCING BRUSHING

Keith W. Erikson, Hollis, and Kenneth W. Erikson, Amherst, both of N.H., assignors to Kerk Motion Products, Inc., Hollis, N.H.

Filed Jun. 5, 1995, Ser. No. 462,818
Int. Cl.[6] F16C *33/02;27/02*
U.S. Cl. 384—278 **17 Claims**

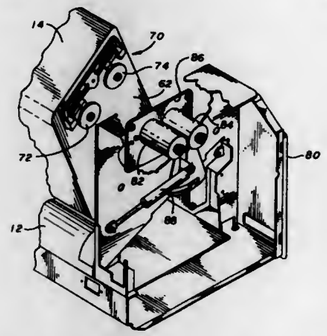


1. A centralizing bushing associated with a shaft for reducing noise and fluctuations between the bushing and the shaft when they are moving relative to each other, comprising:
a rider mounting the bushing;
a bearing within the bushing engagable with and surrounding the shaft;
the bearing having at least one face extending radially of the shaft;
high friction, elastomeric means engagable with said face for limiting movement of the bearing away from the shaft when the rider is under unbalanced radial load conditions; and
cap means securing the bearing and the elastomeric means within the rider.

5,601,373
SPUR GEAR RATCHET MECHANISM FOR THERMAL TRANSFER PRINTER

Duane M. Fox, Snohomish, Wash., assignor to Intermec Corporation, Everett, Wash.

Filed Jan. 29, 1996, Ser. No. 591,967
Int. Cl.[6] B41J *29/387*
U.S. Cl. 400—191 **20 Claims**



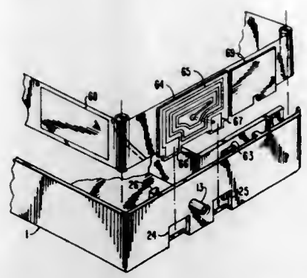
1. An apparatus for printing symbology onto a print media, comprising:
a housing having a fixed base portion and a pivotal cage portion, said cage portion being selectively moveable between a closed operational position and an open non-operational position;
a print region disposed within said housing and means for drawing said print media to said print region;
means for transporting a thermal transfer ribbon to said print region, said transport means comprising at least one rotatable hub driven by an associated drive gear, said hub being capable of carrying a roll of said thermal transfer ribbon, said transporting means being disposed within said pivotal cage portion for selective movement in association therewith;
at least one drive motor fixedly attached to said base portion and having a pinion that engages with said drive gear only upon said cage portion being moved to said closed operational position; and
means for impeding rotation of said at least one rotatable hub upon disengagement between said drive gear and said pinion of said at least one drive motor by movement of said cage portion from said closed operational position to said open non-operational position.

5,601,374
ENDLESS INK RIBBON CARTRIDGE WITH PROTECTED RIBBON SPLICE, AND A PROTECTION ARRANGEMENT THEREFOR

Gianpaolo Cavagnolo, Milan, Italy, assignor to Bull HN Information Systems Italia S.p.A., Turin, Italy

Filed Oct. 11, 1995, Ser. No. 540,646
Claims priority, application European Pat. Off., Nov. 25, 1994, 94830549
Int. Cl.[6] B41J *33/00*
U.S. Cl. 400—247 **7 Claims**

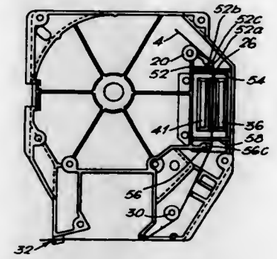
1. A protection arrangement for an endless inked ribbon cartridge comprising:
an oscillator for generating a periodic pulsive signal,
a reference integrator network having a predetermined first, time constant and being supplied said periodic pulsive signal,
a measuring integrator network being supplied said periodic pulsive signal and being coupled to a varying reactance type detector element accommodated within said cartridge, said detector element detecting a varying reactance element attached to an inked ribbon of said cartridge when said varying reactance element runs close past said detector element, said measuring integrator network having a second time constant the value of which depends at least in part on said detector element, and
circuit means connected to said reference network and said measuring network for recognizing variations of the second time constant from the first time constant.



5,601,375
AUTOMATIC TAPE DETECTING AND TAPE WIDTH IDENTIFYING PRINTING APPARATUS AND TAPE HOLDER

Charles R. Sims, Fowlmere; Michael A. Beadman, Steeple Morden, and Andrew R. B. Halket, Cambridge, all of United Kingdom, assignors to Esselte N.V., St. Niklaas, Belgium

Continuation of Ser. No. 71,122, Jun. 2, 1993, Pat. No. 5,456,545. This application May 17, 1995, Ser. No. 443,220
Claims priority, application United Kingdom, May 6, 1992, 9212004
Int. Cl.[6] B41J *29/18*
U.S. Cl. 400—708 **15 Claims**



1. A tape printing device comprising:
a zone for receiving tape for printing having a predetermined path for the passage of said tape wherein, on reception, said tape passes along said predetermined path;
an optical sensing arrangement comprising first and second optical sensing assemblies each comprising a light emitter, a light receiver, and a sensing path between said light emitter and said light receiver, said light receiver being arranged to receive light emitted from the light emitter when the sensing path is not obstructed, said first light sensing assembly being arranged in a first sensing position wherein tape of a first width present in said predetermined path obstructs said sensing path of said first sensing assembly, and said second sensing assembly being arranged in a second sensing position wherein tape of a second width present in said predetermined path obstructs said sensing path of said second sensing assembly;
a controller for receiving signals from said light receivers and for controlling operation of the printing device in response to

said signals, said signals representing a first state in which tape of a first width is present, a second state in which tape of a second width is present, and a third state in which no tape is present; and

means for receiving a tape holding case which houses tape of one of said first and second widths and providing tape positioned between said light emitter and said light receivers.

5,601,376

RETRACTABLE WRITING INSTRUMENT HAVING REPLACEABLE CARTRIDGE

Iskandar Badr, Milford, Conn., and Edgar B. Chiswell, Greenville, S.C., assignors to BIC Corporation, Milford, Conn.

Continuation of Ser. No. 959,166, Oct. 9, 1992, Pat. No. 5,336,006. This application Jul. 25, 1994, Ser. No. 280,066

Int. Cl.[6] B43K *24/04;25/00*

U.S. Cl. 401—104 **1 Claim**



1. In a writing instrument of the type having a barrel, a plunger, and a writing element disposed within the barrel, the barrel having a mounting mechanism for a pocket clip, the mounting mechanism including a raised fulcrum and at least one pair of slots passing through the barrel, the improvement which comprises:

a pocket clip having a body portion, engaging means provided at a first end of said body portion for engaging the barrel of the writing instrument, unitary leaf spring means provided at a second end of said body portion for biasing said first end towards the barrel, and mounting means disposed intermediate said first and second ends which cooperates with the mounting mechanism of the barrel for pivotably mounting said pocket clip to the barrel, said mounting means including at least one pair of spaced apart tangs depending perpendicularly from said body portion and each including an inwardly extending flange portion;

wherein said tangs are received in the slots of said barrel to mount said pocket clip to the barrel.

5,601,377

YOKE OF UNIVERSAL JOINT AND METHOD OF PRODUCING SAME

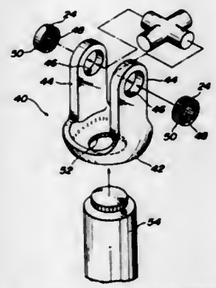
Masakiyo Ohya, Kosai City, Japan, assignor to Fuji Kiko Co., Ltd., Tokyo, Japan

Filed Jun. 24, 1994, Ser. No. 264,948

Claims priority, application Japan, Jul. 29, 1993, 5-187764

Int. Cl.[6] B21K *1/14*

U.S. Cl. 403—58 **8 Claims**



1. A yoke of an universal joint, which is substantially U-shaped, monolithic in construction and produced from a blank having a middle portion and first and second end portions, the yoke comprising:

first and second arm portions which are respectively prepared from the first and second end portions of the blank, opposed to each other in a direction perpendicular to a longitudinal direction of the yoke and uniform in thickness; and

a base portion which is prepared from the middle portion of the blank and is substantially parabolic in shape, the base portion being thinner than the first and second arm portions in thickness as a result of cold forging of the middle portion.

2. A yoke of a universal joint, the yoke being substantially U-shaped and including a base portion and first and second arm portions, the yoke being prepared by a method and comprising the following steps in sequence:

(a) shearing a metal plate which is rectangular in shape and has a first uniform width and a first uniform thickness so as to form a blank which is rectangular in shape and consists of a middle portion and first and second end portions;

(b) squeezing the middle portion of the blank by cold forging so that the middle portion is expanded to have first and second peripheral bulge portions which are opposed to each other and so that the expanded middle portion becomes substantially oval in shape and thinner than the first and second end portions in thickness; and

(c) pressing the blank with a press machine to produce the yoke so that the expanded middle portion and the first and second end portions of the blank are turned into the base portion and the first and second arm portions of the yoke, respectively.

5,601,378

ROD-END BEARING DEVICE

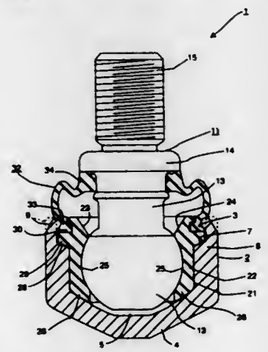
Takao Fukukawa, Fukuroi; Masao Takayama, Hamamatsu, and Masahiro Yamada, Shizuoka, all of Japan, assignors to Kabushiki Kaisha Somic Ishikawa, Tokyo, Japan

Filed Dec. 5, 1995, Ser. No. 565,969

Claims priority, application Japan, Dec. 8, 1994, 6-305251

Int. Cl.[6] F16C *11/06*

U.S. Cl. 403—140 **4 Claims**



4. A rod-end bearing device comprising:

a housing;

a ball seat in said housing;

a ball stud;

said ball stud including a ball slidingly fitted in said ball seat;

said ball stud including a stud portion extending outward from said ball seat;

means for retaining said ball seat in said housing;

an indented portion about a perimeter of said ball seat;

a dust cover including a raised portion fitted into said indented portion;

a contact point between said stud portion and said ball seat when said ball stud is deflected to its maximum angular extent; and

means for directing force from said contact point through said ball seat and into said housing at a point remote from, and axially inward of said indented portion.

5,601,379

SUPPORT PLATE STRUCTURE FOR A SCREEN WIPER MECHANISM

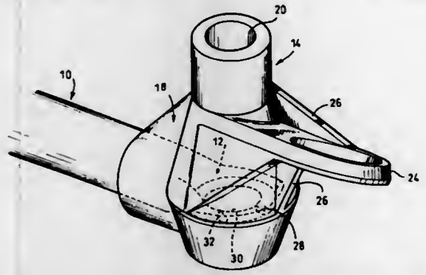
Joël Princet, Chatellerault, France, assignor to Valeo Systemes D'Essuyage, La Verriere, France

Filed Sep. 27, 1995, Ser. No. 534,738

Claims priority, application France, Sep. 28, 1994, 94 11705

Int. Cl.[6] B60S *1/34*

U.S. Cl. 403—269 **9 Claims**



1. A screen wiper mechanism including a rotatable screen wiper drive spindle, the mechanism comprising an elongate tubular structural element having a free end portion, the free end portion being flattened to define an outer periphery and a general plane of the free end portion, the free end portion having edges formed on the outer periphery thereof that are raised away from the general plane defined by the free end portion, and a support bearing fixed to the free end portion for supporting the drive spindle, the bearing having a bearing body molded onto the free end portion.

5,601,380

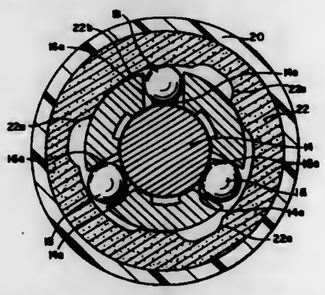
QUICK DISCONNECT COUPLING DEVICE

Jeffrey A. Guthrie, Birdsboro, and James C. Stiles, Shillington, both of Pa., assignors to Neapco, Inc., Pottstown, Pa.

Filed Jul. 18, 1995, Ser. No. 503,594

Int. Cl.[6] A01B *71/06;* **F16B** *21/00*

U.S. Cl. 403—359 **9 Claims**



1. A coupling device suitable for connecting an externally splined shaft having a circumferential groove therein to an internally splined member comprising:

an internally splined member having a plurality of radial openings in the sides thereof,

a plurality of balls carried by the respective openings in said internally splined member for protrusion between the splines into the groove in the externally splined shaft,

a twist collar positioned on said internally splined member and rotatable through a predetermined angle relative thereto, said twist collar having therein cam structure extending around the interior periphery of said twist collar, a plurality of dwells in said cam structure at spaced locations corresponding to the plurality of radial openings in the sides of the internally splined member, a single inclined cam surface on said cam structure, said single inclined cam surface interconnecting two adjacent dwells, said single inclined cam surface being positioned to engage only one of said balls during rotation of said twist collar to force said one ball into the groove in the externally splined shaft and insure that the one ball will be tightly engaged within the groove of the shaft, and

a torsion spring having one end connected to said internally splined member and the other end of said torsion spring being connected to said twist collar, said torsion spring being constructed for rotation through said predetermined angle, said torsion spring stopping against first stop structure to permit the operator to determine how far to rotate the twist collar to cause said balls to be aligned with said dwells in the insert before bringing the internally splined member into engagement with the externally splined shaft and said torsion spring stopping against second stop structure when rotated in the opposite direction so that the cam structure is prevented from rotating past said second stop in the driving direction after the twist collar has been released by the operator and said cam surface has forced said one ball into the groove in the externally splined shaft thereby preventing axial movement between the shaft and the internally splined member.

5,601,381

IRRIGATION APPARATUS INCLUDING PULSATORS

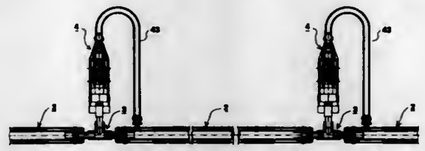
Yoram Hadar, Ramat, and Noam Lemelshtrich, Herzlia Pituah, both of Israel, assignors to Lego Irrigation Ltd., Natania, Israel

Filed Aug. 31, 1995, Ser. No. 522,443

Claims priority, application Israel, Sep. 4, 1994, 110856

Int. Cl.[6] E02B *13/00*

U.S. Cl. 405—43 **19 Claims**



1. Irrigation apparatus, comprising:

a feeder line connectible to a source of pressurized water;

an outer line of larger diameter than, and enclosing, said feeder line to define an annular water chamber between the outer line and the feeder line;

said outer line including a plurality of irrigation devices spaced along its length communicating with said water chamber;

and a plurality of pulsator devices spaced along the length of the feeder line and connecting the feeder line to said water chamber.

5,601,382

SOLAR ENERGY IN-SITU SOIL DESORPTION APPARATUS

Lawrence J. Corte, Lakewood, Colo., assignor to K N Energy, Inc., Lakewood, Colo.

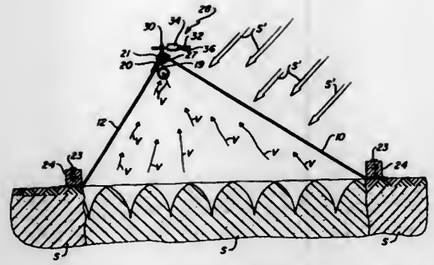
Division of Ser. No. 289,243, Mar. 14, 1994. This application May 4, 1995, Ser. No. 435,088

Int. Cl.[6] B08B *5/00*

U.S. Cl. 405—128 **2 Claims**

1. A tent-like apparatus for removing volatile contaminants from in-situ soil by heating the in-situ soil and air within said apparatus, said apparatus comprising:

a first sunlight-transmitting side panel having first and second ends and a lower edge, said lower edge being in contact with



the surface of the ground, said first panel extending from the surface of the ground to a first top edge at an apex axis;

a second sunlight-transmitting side panel having first and second ends and a lower edge, said lower edge being in contact with the surface of the ground, said second panel extending from the surface of the ground to a second top edge at the apex axis and connected to said first top edge to form a longitudinal peak;

a first sunlight-transmitting end panel extending from the surface of the ground to the apex axis and connected to said first ends of said first and second side panels;

a second sunlight-transmitting end panel extending from the surface of the ground to the apex axis and connected to said second ends of said second side panels, said first and second side panels and said first and second end panels forming a tent-like structure having an interior air space;

an exhaust vent formed along said peak so that air containing volatile contaminants can escape;

a flap normally covering said exhaust vent;

a flap control mean on said flap responsive to increased air pressure within said apparatus due to heating the air to open said flap to allow air containing volatile contaminants released from the soil during heating to escape from the apparatus; and

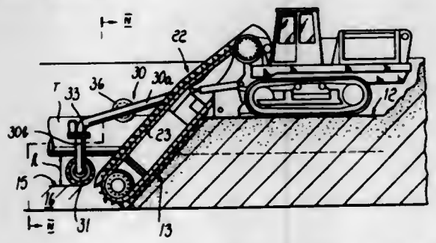
an intake means positioned through said apparatus on one of said panels or ends thereof above said lower edge for replenishing escaped air.

5,601,383

EXCAVATION METHOD AND APPARATUS FOR ACCESSING UNDERGROUND PIPES OF PIPELINES FOR GAS, OIL, AND THE LIKE FOR MAINTENANCE AND/OR RESTORATION

Pierluigi Zanin, Padua, Italy, assignor to Goriziane S.p.A., Via Aquileia, Italy

Filed Apr. 4, 1995, Ser. No. 416,553
Claims priority, application Italy, Apr. 14, 1994, TO94A0288
Int. Cl.[6] F16L *1/00*
U.S. Cl. 405—154 **13 Claims**



1. Excavation method for accessing underground pipes of pipelines for oil, gas, and the like for maintenance and/or repair, comprising the following operating steps:

forming, above a pipe, a preliminary excavation which is delimited by vertical sides and by a flat bottom such that the preliminary excavation has a depth which is substantially tangent to an upper part of said pipe;

digging, starting from the bottom of the preliminary excavation, two lateral trenches each of which being adjacent to a respective opposite side of the pipe such that said two lateral trenches mutually converge downwardly and extend deeper than a level set for a final excavation bed that lies below the pipe, so as to form respective lateral collection channels and such that said two trenches being separated, in a region below the pipe, by a continuous wall;

removing, by cutting, the continuous wall that separates the trenches in the region below the pipe;

dumping corresponding residual material of said wall into the lateral collection channels such that said lateral collection channels are filled with the residual material to a level not exceeding a level of the final excavation bed; and

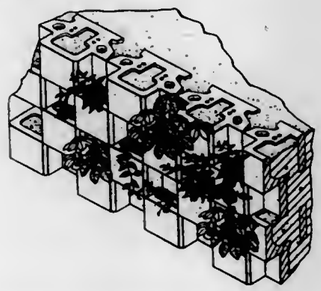
forming a gap having a preset height in said region below the pipe.

5,601,384

PLANTABLE RETAINING WALL

William B. Dawson, Maple Grove, Minn., assignor to Keystone Retaining Wall Systems, Inc., Bloomington, Minn.

Filed Jun. 7, 1995, Ser. No. 480,287
Int. Cl.[6] E02D *29/02*
U.S. Cl. 405—284 **17 Claims**



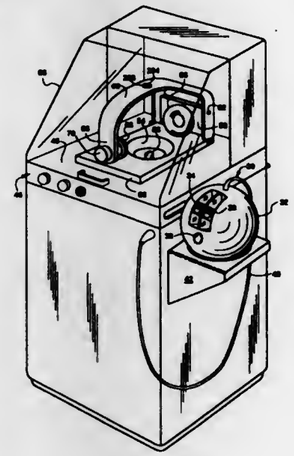
1. A retaining wall having a plurality of rows, each row having a plurality of blocks arranged side by side, each block having top and bottom surfaces spaced apart from and substantially parallel to the other, the top and bottom surfaces each having a front edge and a rear edge, a front face extending between the top and bottom surfaces and having a pair of side edges, a rear face extending between the rear edge of the top and bottom surfaces, a pair of side walls extending between the top and bottom surfaces, one of the side walls extending between one of the side edges of the front and rear faces, the other of the side walls extending between the other of the side edges of the front and rear faces, each side wall having first, second and third surfaces, the first surface extending from a side edge of the front face towards the rear face to the second surface, the second surface of each side wall extending away from the other side wall to the third surface, the third surface extending from the second surface to the rear face, and a plant receiving cavity formed in the top surface, the blocks being aligned such that the second surfaces of adjacent blocks form vertical indented surfaces, the rows being aligned such that the indented surfaces of one row are positioned above the plant receiving cavities in the next lower row such that a substantial portion of said plant receiving cavity is exposed.

5,601,385

APPARATUS FOR FITTING AND DRILLING BOWLING BALLS

Bill E. Towers, Belmont, Mich.; Ladislav Jurik, Brookfield, and Richard L. Weinbreaner, Lemont, both of Ill., assignors to Brunswick Bowling & Billiards, Muskegon, Mich.

Filed Nov. 14, 1994, Ser. No. 336,143
Int. Cl.[6] B23B *41/00*
U.S. Cl. 408—3 **34 Claims**



19. Apparatus for drilling holes in a bowling ball comprising:

a table having an upper surface;

a carriage;

a boring tool mounted beneath said table upper surface;

means mounting said carriage and said boring tool on said table for relative movement in two material transverse direction thereon;

an upwardly opening ball receiving pocket on said carriage and adapted to receive and support, under the influence of gravity, a ball above said upper surface and in a position to be intercepted by said boring tool;

means for reciprocating said boring tool through said pocket and array from said pocket;

an arm mounted on said carriage and in a position overlying said pocket, said arm including a first ball gripping surface rotatable about a generally horizontal axis;

a second ball gripping surface on said carriage and rotatable about said generally horizontal axis;

said ball gripping surfaces being on opposite sides of said pocket;

means for rotating at least one of said ball gripping surfaces about said generally horizontal axis; and

means for effecting relative movement of said ball gripping surfaces toward and away from each other along said generally horizontal axis;

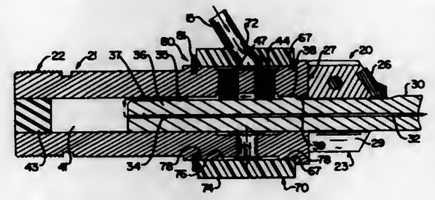
said generally horizontal axis lying slight above a parallel, generally horizontal plane that is located to pass through the center of a ball when a ball is resting in said pocket, whereby when a ball is resting in said pocket and said ball gripping surfaces are moved toward each other, the ball will be lifted out of said pocket until its center is on said generally horizontal axis.

5,601,386

CUTTER BODY INCLUDING CUTTING FLUID GLAND

Wesley G. Wells, St. Louis, Mo., assignor to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Jan. 18, 1995, Ser. No. 375,407
Int. Cl.[6] B23B *51/06*
U.S. Cl. 408—57 **23 Claims**



1. A machining tool comprising:

a cutter comprising

an elongate, generally cylindrical shank having a first end adjacent a cutting portion and a second end opposite the first end, wherein said shank has a longitudinal bore therethrough defining a fluid passageway for delivering a cutting fluid from an external source to a cutting portion of the cutter and a workpiece;

a cylindrical land disposed medially between the first end and the second end;

a forward flat extending from said land forward to the first end; and

a rear flat extending from said land rearward to the second end; and

a cutter body comprising

a generally cylindrical chuck having opposed ends, a medial portion, and a longitudinal bore at least partially therethrough for receiving the cutter in gripping relation therein, the bore of said chuck defining a fluid passageway such that the bore of said chuck is in fluid communication with the bore of the cutter, the medial portion of said chuck having a first opening therein defining a fluid passageway such that the first opening is in fluid communication with the bore of said chuck; and

an annular cutting fluid gland surrounding the medial portion of said chuck such that said chuck is rotatable relative to said gland, said gland having a second opening therein defining a fluid passageway such that the second opening is in fluid communication with the first opening of the medial portion of said chuck;

the second opening of said gland, the first opening of the medial portion of said chuck, the bore of said chuck and the bore of the cutter defining a continuous fluid passageway for delivering the cutting fluid from the external source to the cutting portion of the cutter and the workpiece.

5,601,387

DEPTH ADJUSTING SYSTEM FOR A POWER TOOL

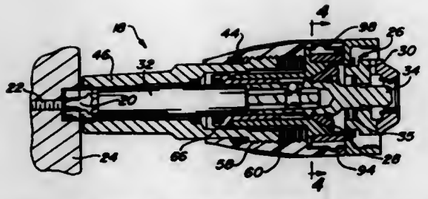
Christopher P. Sanford, Abingdon, and Ashok S. Subramanian, Owings Mills, both of Md., assignors to Black & Decker Inc., Newark, Del.

Filed Jun. 7, 1995, Ser. No. 486,665
Int. Cl.[6] B25B *21/00*
U.S. Cl. 408—113 **20 Claims**

1. A depth adjusting system for a power tool having a housing, the depth adjusting system comprising:

a nose portion connected to the housing;

a depth adjusting subassembly releasably connected to the nose portion, the subassembly including an adjustment member mounted for rotatable non-axial movement relative to the nose portion during depth adjusting movement of the adjustment member; and



a joining member for establishing releasable interconnection between the subassembly and the nose portion, the joining member including a substantially rigid portion engaging the subassembly and a resilient portion for biasing the substantially rigid portion into engagement with the subassembly.

5,601,388

TOOL HOLDER FOR A ROTARY AND/OR CHISEL HAMMER

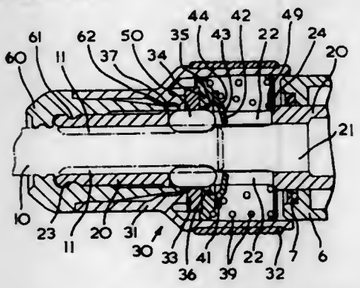
Martin Lauterwald, Frankfurt, Germany, assignor to Black & Decker Inc., Newark, Del.

Filed Feb. 16, 1995, Ser. No. 400,051

Claims priority, application Germany, Feb. 18, 1994, 44 05 697.4

Int. Cl.[6] B23B *31/10*

U.S. Cl. 408—239 R **8 Claims**



1. A tool holder for rotary and chisel hammers comprising:

a sleeve body having front and rear ends and a central opening and axis for receiving the tool;

at least two axis parallel openings within said sleeve body;

at least two roller-shaped locking bodies which partially protrude through the axis parallel opening when the tool is locked in said sleeve, wherein said at least two locking bodies are displaceable between a locked position and an unlocked position;

an adjustment sleeve surrounding said sleeve body and biased in a forward direction, wherein said adjustment sleeve is moveable between forward and rear positions, such that movement of said adjustment sleeve forward locks said locking bodies and movement of said adjustment sleeve to the rear unlocks said locking bodies;

a resiliently deformable cap connected to the front of said sleeve body, which acts to define the maximum forward movement of said adjustment sleeve;

an abutment ring connected to and surrounded by said adjustment sleeve;

a support ring adjacent to said abutment ring and surrounded by said adjustment sleeve, such that said support ring contacts said at least one locking body when said locking body is in its locked position; and

a ring element including two ring segments and located about said sleeve body, wherein said ring element is biased in a forward direction and said locking bodies contact and displace said ring segments in a rearward direction when the tool is inserted.

5,601,389

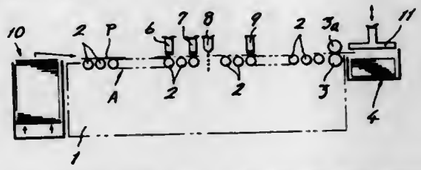
AUTOMATIC BOOK BINDING MACHINE FOR CUT-SHEETS

Isao Minami, Tokyo, Japan, assignor to Minami Seiki Co., Ltd., Tokyo, Japan

Filed Feb. 21, 1995, Ser. No. 391,127

Int. Cl.[6] B42C *13/00*

U.S. Cl. 412—14 **1 Claim**



1. An automatic book binding machine for cut-sheets, comprising:

a main body;

a belt conveyor mounted on said main body, said belt conveyor having an entrance and an exit and including a plurality of rollers and a plurality of belts, said belts being arranged in at least two rows;

a feeder for cut-sheets, wherein the cut-sheets have four sides and selectively include a detectable mark to govern application of glue to the cut-sheets, a front cover, an inner body and a back cover printed and sorted in a predetermined order, with the front cover having an identification mark for identifying one book from other books, said feeder being mounted on the main body at the entrance of said belt conveyor and adapted to feed cut-sheets stored therein;

a detection sensor mounted on said belt conveyor for detecting one end of the cut-sheets, said detection sensor having front and rear sides;

a nozzle mounted on said belt conveyor and controlled by said detection sensor to automatically apply a linear band of glue along one edge of the cut-sheets;

a first mark sensor mounted on said belt conveyor on the front side of each said detection sensor for detecting a detectable mark and in response to such detection, controlling the nozzle to stop application of glue to the cut-sheets;

a second mark sensor mounted on said belt conveyor at the rear side of said detection sensor for detecting said detectable mark and in response to such detection, controlling the nozzle to resume application of glue to the cut-sheets; and

a pressing plate mounted on said main body at the exit of said conveyor for stacking up for storage the cut-sheets onto which the linear band of glue has been applied, in a predetermined order while aligning the four sides of each cut-sheet and pressing the glue-applied areas of the cut-sheets for each book from the top of said front cover in cooperation with said first and second mark sensors.

5,601,390

CONVEYOR-TYPE THREE DIMENSIONAL PARKING SYSTEM

Craig N. Cummings, 73-1126 Ahulani St., Kailua-Kona, Hi. 96740

Filed Aug. 4, 1995, Ser. No. 511,373

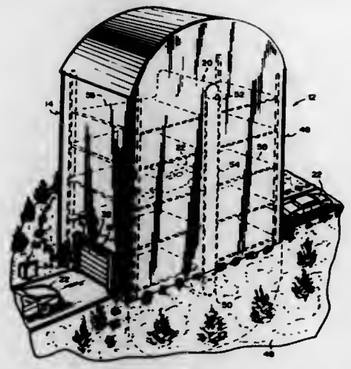
Int. Cl.[6] E04H *6/00*

U.S. Cl. 414—251 **2 Claims**

1. A conveyor-type three dimensional parking system which comprises:

a) a storage structure having an entrance port and an exit port comprising garage building extending above and below ground level with said entrance and exit ports at ground level at opposite sides of said building;

b) a conveyor assembly positioned vertically within said garage building for holding a plurality of motor vehicles and comprising a pair of spaced apart rollers in which the first roller is located below ground level and the second roller is located above ground level with a continuous conveyor belt extending



vertically between said rollers, and a plurality of horizontally maintained parking platforms for the motor vehicles carried by said continous belt so that said platforms travel up one side of said building and down the opposite side of said building between and around said rollers, each platform having a stopping point aligned with said entrance port on one side of said building and a stopping point on the opposite side of said building aligned with said exit port;

c) a pair of power operated doors covering said entrance port and said exit port of said garbage building;

d) means operated by each driver for actuating said entrance door to open permitting each driver to drive a motor vehicle through said entrance port and onto platform at the stopping point aligned with said entrance port in said storage structure comprising a credit card scanner and security card dispensing device located adjacent to the entrance door to dispense a security card when said driver inserts a credit card into said credit card scanner and causing said entrance door to open permitting said driver to enter and park said motor vehicle on the platform aligned with said entrance port; and

e) means operated by each driver for actuating said conveyor assembly to deliver said motor vehicle to the stopping point aligned with said exit port and the exit door to open comprising a security card scanner located adjacent to said exit door so that each driver can retrieve said motor vehicle from said conveyor assembly and then drive out through said exit port of said storage structure when said driver inserts said security card into said security card scanner causing said conveyor assembly to operate to place said motor vehicle behind said exit door and said exit door to open.

5,601,391

DUAL GRIPPER PICKER ASSEMBLY FOR AN AUTOMATED STORAGE SYSTEM

Jack M. Gazza, Tucson, Ariz., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 491,469, Jun. 9, 1995, abandoned, which is a continuation of Ser. No. 264,095, Jun. 21, 1994, Pat. No. 5,460,476. This application Feb. 8, 1996, Ser. No. 598,310

Int. Cl.[6] B65G *1/02*

U.S. Cl. 414—280 **10 Claims**

1. A picker assembly for transporting a storage medium from a storage cell to a storage device and vice versa, the picker assembly comprising:

a mounting channel;

a fore gripper mounted parallel to said mounting channel;

an aft gripper mounted parallel to said mounting channel and tandem to said fore gripper;

a cam motor;

a cam drive train for coupling a rotation of said cam motor to said fore and aft grippers for closing said fore gripper and opening said aft gripper when said cam motor is rotated to a first position, for closing said aft gripper and opening said fore gripper when said cam motor is rotated to a second position, and for opening both said fore and aft grippers when said cam motor is rotated to a third position; and

a translation motor coupled to said fore and aft grippers for translating the storage medium from said fore gripper to said aft gripper when said translation motor is rotated in a first direction, and for translating the storage medium from said aft gripper to said fore gripper when said translation motor is rotated in a second direction.

5,601,392

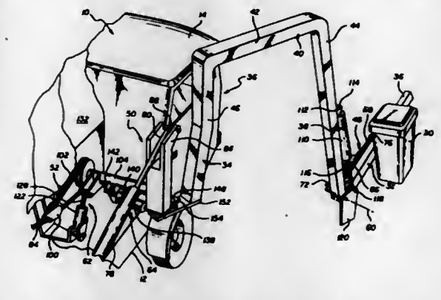
FRONT-SIDE LIFTING AND LOADING APPARATUS

Fred T. Smith, and Fred P. Smith, both of Alpine, Utah, assignors to Gallon Solid Waste Eqt., Inc., Gallon, Ohio

Continuation of Ser. No. 118,564, Sep. 9, 1993, Pat. No. 5,470,187. This application Jun. 7, 1995, Ser. No. 482,031

Int. Cl.[6] B65F *3/02*

U.S. Cl. 414—408 **25 Claims**



14. A device for handling a material collection container, the device operably engaged to a vehicle having a frame, a forwardly-mounted cab, and a storage container mounted on the frame rearwardly of the cab, the storage container having an inlet opening, comprising:

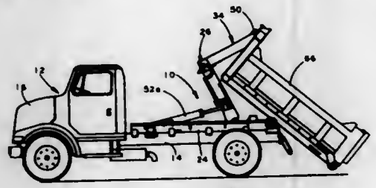
a mechanism for engaging the collection container;

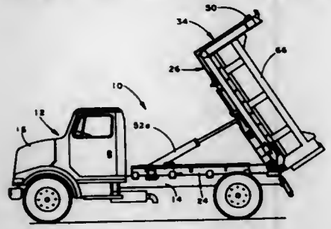
a lift assembly including a lift arm mounted at a first end portion to the storage container and rearward of the cab, and connected at a second end portion to the engaging mechanism;

a first powered actuator for moving the lift arm upwardly and rearwardly relative to the storage container and over the cab between a load position, at which the engaging mechanism is located near ground level, and an off-load position, at which the engaging mechanism is adjacent the inlet opening; and

a second powered actuator for pivoting the lift arm about a vertical axis to move the engaging mechanism to a position laterally displaced from the storage container.

5,601,393
DUAL CAPACITY HOOK-LIFT HOIST
Thomas J. Waldschmitt, Ankeny, Iowa, assignor to Swaploader U.S.A., Ltd., Des Moines, Iowa
Filed Mar. 1, 1994, Ser. No. 203,939
Int. Cl.[6] B60P *1/48*
U.S. Cl. 414—498 **13 Claims**

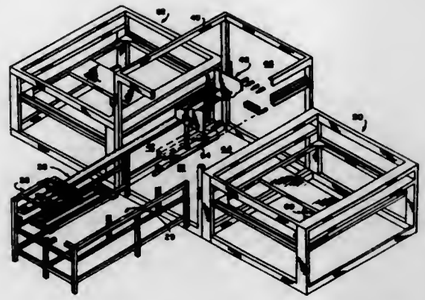




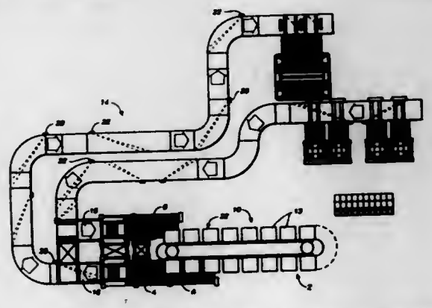
1. In a hook-lift hoist mounted on a wheeled chassis having front wheels and including at least one hydraulic cylinder for loading a detached object onto said chassis and for tilting said loaded object to a raised off-loading position, wherein said chassis has a maximum carrying capacity, wherein said chassis has a maximum loading capacity before said front wheels become unloaded, wherein said chassis-mounted hook-lift hoist has a maximum loading capacity, and wherein said chassis-mounted hook-lift hoist has a maximum dumping capacity, the improvement comprising pressure relief means for limiting said loading capacity of said chassis-mounted hook-lift hoist below said maximum loading capacity of said chassis and for limiting said dumping capacity of said chassis-mounted hook-lift hoist above said maximum loading capacity of said chassis and up to approximately said carrying capacity of said chassis.

5,601,394
WORKLOAD REGULATOR FOR AUTOMATED PRODUCTION
Wayne T. Chiappe, Hinsdale, Ill., and Randy W. Gasquoine, Stockton, Calif., assignors to Sardee Industries, Inc., Oak Brook, Ill.
Continuation of Ser. No. 638,679, Jan. 8, 1991, Pat. No. 5,123,796, which is a continuation of Ser. No. 287,479, Dec. 20, 1988, Pat. No. 4,983,095, which is a division of Ser. No. 906,863, Sep. 11, 1986, Pat. No. 4,808,057. This application Jun. 23, 1992, Ser. No. 902,388
Int. Cl.[6] B65G *1/02*
U.S. Cl. 414—786 **2 Claims**

1. In an industrial process, the method of balancing first rate at which articles are being supplied from a first, upstream work station with a second rate at which such articles are in demand at a second, downstream work station, said method including providing at least one inbound staging area for receiving said articles from said first work station, and an outbound staging area for advancing articles to said second, downstream work station, said method including successively removing said articles in groups from said inbound staging area and transferring said groups of articles to said outbound staging area without substantial change in said first and second rates at which said articles are received and advanced, respectively, said method further including determining when an amount of articles called for by said second work station is less than an amount of articles being received at said inbound staging area, thereupon removing some of the groups of articles arriving at said inbound staging area from said inbound staging area from time to time, and placing such groups of articles in transient storage, and when the second rate at which said articles are called for to be used by said second work station exceeds the first rate at which said articles are being received at said work station, removing articles in groups from transient storage and placing such groups of articles at said outbound staging area.



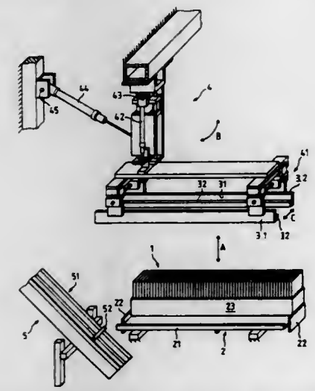
5,601,395
ORGANIZER SYSTEM AND METHOD FOR A ROTATABLE STORAGE STRUCTURE
Robert Lichti, Sr., Lake Almanor Peninsula; Clay Bernard, II, Pt. Richmond; Daniel C. Perry, San Jose, and Stanley H. Lukken, San Francisco, all of Calif., assignors to Computer Aided Systems, Inc., Hayward, Calif.
Division of Ser. No. 139,566, Oct. 18, 1993, Pat. No. 5,556,247, which is a continuation of Ser. No. 794,294, Nov. 14, 1991, Pat. No. 5,282,712, which is a continuation of Ser. No. 481,575, Feb. 16, 1990, abandoned, which is a division of Ser. No. 192,419, Apr. 29, 1988, Pat. No. 4,983,091, which is a continuation-in-part of Ser. No. 824,718, Jan. 31, 1986, abandoned, Ser. No. 821,257, Jan. 22, 1986, Pat. No. 4,752,175, and Ser. No. 31,989, Mar. 30, 1987, abandoned, which is a continuation-in-part of Ser. No. 732,937, May 13, 1985, abandoned. This application Jun. 7, 1995, Ser. No. 482,495
Int. Cl.[6] B65G *1/10*
U.S. Cl. 414—786 **7 Claims**



1. A method of storing and retrieving loads from a rotational storage carousel having multiple load-accommodating stations, comprising:
delivering a load to a lift which can carry the load to a position associated with a related load-accommodating station of the storage carousel wherein the load-accommodating stations are mounted for travel about an endless loop having a pair of substantially parallel straight reaches and opposing end portions joining the straight reaches;
moving the load-accommodating stations about the endless loop;

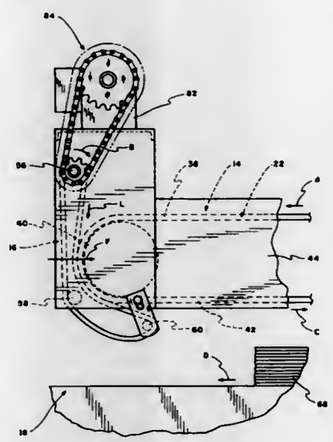
directing a load toward the storage carousel in a direction substantially parallel to a longitudinal extension thereof and inserting the load onto a selected load-accommodating station while the load-accommodating station remains in continuous motion about the endless loop;
extracting a stored load from a load-accommodating station while the load-accommodating station remains in continuous motion about the endless loop and moving the extracted load away from the storage carousel in a direction substantially parallel to the major longitudinal extension of the storage carousel; and
synchronizing the operation of said inserting and extracting steps with the movement of the load-accommodating stations to facilitate insertion and extraction of a load onto and from, respectively, of the storage carousel.

5,601,396
METHOD AND DEVICE FOR MANIPULATING STACKED FLAT ARTICLES
Samuel Staub, Oberdürnten, Switzerland, assignor to Ferag AG, Hinwil, Switzerland
Filed Aug. 31, 1995, Ser. No. 521,811
Claims priority, application Switzerland, Oct. 10, 1994, 03041/94
Int. Cl.[6] B65G *69/00*; B65B *5/00*
U.S. Cl. 414—786 **12 Claims**



1. A method for manipulating a plurality of substantially similar flat articles each having two main surfaces and at least one pair of opposite edge portions delimiting the main surfaces, the flat articles being arranged in a stack such that consecutive ones of their main surfaces contact one another, outermost ones of the flat articles thereby forming two faces of the stack and consecutive superimposed edge portions of the flat articles thereby forming opposite edge surfaces of the stack, the method comprising the steps of:
providing a first stabilizing means and a second stabilizing means, each of the stabilizing means being effective for stabilizing the stack in a freely selectable spatial orientation whereby at least two opposite portions of the opposite edge surfaces extending from one face of the stack to another face of the stack are accessible when the stack is being stabilized in either of the stabilizing means;
providing a clamping mechanism including a pair of clamping jaws having substantially flat and elastically deformable clamping surfaces facing each other and having a length greater than a distance between the two faces of the stack;
positioning the clamping surfaces parallel to the at least two opposite portions of the opposite edge surfaces of the stack when the stack is being stabilized by the first stabilizing means;
moving the clamping jaws toward each other into contact with the at least two opposite portions of the opposite edge surfaces of the stack after the step of positioning thereby clamping the stack between the clamping jaws whereby the clamping surfaces are deformed;
moving the clamping jaws together with the stack to the second stabilizing means; and
releasing the stack by moving the clamping jaws away from each other.

5,601,397
APPARATUS FOR COUNTING AND STACKING TORTILLAS
Manuel Lopez, and Rafael Lopez, both of Chicago, Ill., assignors to El Milagro, Inc., Chicago, Ill.
Filed Jan. 11, 1994, Ser. No. 180,097
Int. Cl.[6] B65G *57/08*
U.S. Cl. 414—790.7 **14 Claims**



1. An apparatus for stacking a plurality of flexible, generally planar articles, said apparatus comprising:
a first belt support having a first end, an upper surface, a second end, and a lower surface;
a first conveyor belt extending along and defining a path around said first belt support, said first conveyor belt suitable for moving the planar articles placed on said first belt along said path from said first end to said second end;
a second belt support having first, second and third rollers, said first and second rollers being vertically aligned and outwardly offset from said second end of said first belt support, said third roller inwardly offset from said second end of said first belt support;
a second conveyor belt extending around said second belt support and biased against said first belt only adjacent said second end of said first belt support where the planar articles are in a substantially vertical position as they pass between said first and second belts;
a third conveyor belt for receiving said planar articles from said first conveyor belt after they pass between said first and second belts and for transporting the planar articles as desired; and
power means for driving said first, second, and third conveyor belts.

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5,601,398
FUEL PUMP INCLUDING AXIALLY MOVABLE END COVERS FOR FEEDING FUEL FROM A SUPPLY TANK TO AN INTERNAL ENGINE

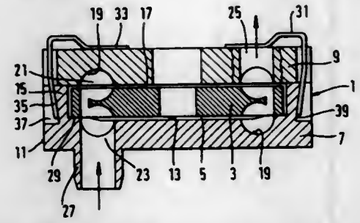
Juergen Treiber, Bamberg; Kurt Frank, Schorndorf, and Werner Schmid, Tamm, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Oct. 26, 1995, Ser. No. 548,843

Claims priority, application Germany, Oct. 26, 1994, 44 38 249.9

Int. Cl.[6] F04D *29/42;5/00;* **F02M** *37/04*

U.S. Cl. 415—55.1 **12 Claims**



1. An assembly for feeding fuel from a supply tank to an internal combustion engine, which comprises a feed pump (1) including a disk-shaped impeller (3) which rotates in a cylindrical pump chamber (5), said pump chamber is delimited by a stationary first housing part with a first pump chamber wall (13) forming a suction cover (7,207) and by a stationary second housing part bearing on the latter and forming an intermediate housing (9,209) with a second pump chamber wall (17), and at the same time feeds fuel from a suction port (23) in the suction cover (7,207) to a delivery port (25) in the intermediate housing (9,209), at least one resilient connecting element that connects said suction cover relative to said intermediate housing in such a way that a relative axial movement in relation to an axis of rotation of the impeller (3) is permitted between the suction cover (7,207) and the intermediate housing (9,209).

5,601,399
INTERNALLY COOLED GAS TURBINE VANE

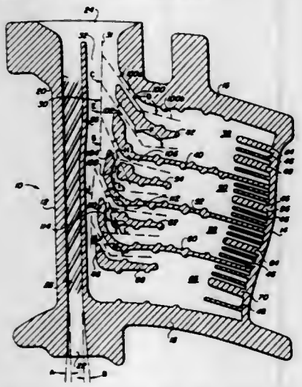
Nnawuihe A. Okpara, Peoria; Chester L. Henry, Tempe, and Michael K. Bischoff, Mesa, all of Ariz., assignors to Allied-Signal Inc., Morris Township, N.J.

Filed May 8, 1996, Ser. No. 647,079

Int. Cl.[6] F04D *29/38*

U.S. Cl. 415—115 **17 Claims**

1. A turbine distributor vane comprising:



an air inlet opening positioned at a first side of the vane;

a first air passage extending along a leading edge from the first side to a second side, wherein the first air passage communicates with the air inlet opening and terminates at an opening at the second side; and

an inner cooling cavity positioned between the first air passage and a trailing edge and separated from the first air passage by a divider, wherein the inner cooling cavity comprises;

a first channel deflector, a second channel deflector and a third channel deflector, each of which extend through the inner cooling cavity from the trailing edge toward the divider separating the first air passage from the inner cooling cavity;

a first outer turning member positioned between an inner wall of the first side and the first channel deflector;

a first inner turning member positioned between the first channel deflector and the second channel deflector;

a second inner turning member positioned between the second channel deflector and the third channel deflector;

a second outer turning member positioned between the third channel deflector and an inner wall of the second side.

5,601,400
CENTRIFUGAL BLOWER IMPROVED TO REDUCE VIBRATION AND NOISE

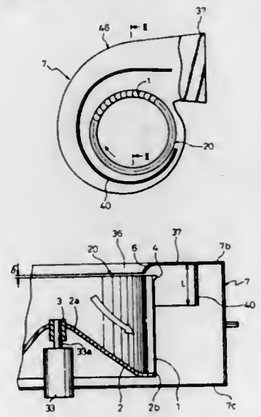
Yasushi Kondo, Aichi-gun; Koji Ito, Nagoya; Teruhiko Kameoka, Okazaki, and Manabu Miyata, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 15, 1995, Ser. No. 529,133

Claims priority, application Japan, Sep. 16, 1994, 6-221915

Int. Cl.[6] F04D *29/44;29/66*

U.S. Cl. 415—119 **2 Claims**



1. A centrifugal blower comprising:

a casing having a top wall which has a spiral periphery, a bottom wall which has a spiral periphery, a side wall spirally extending along the periphery of the bottom wall, the side wall being connected to the bottom wall, and an intermediate wall spirally extending along the periphery of the top wall, the intermediate wall connecting the top and side walls and the intermediate wall substantially forming an L shape which has a substantially vertical wall connected to the top wall, and a substantially horizontal wall connected to the vertical wall and to the side wall;

a centrifugal fan rotationally provided within the casing, the centrifugal fan having a bottom plate and a plurality of blades separated along the periphery of the bottom plate, the plurality of blades extending substantially parallel to the rotational axis; and

the casing providing a spiral duct for the air flow, the duct having a substantially rectangular section, perpendicular to the flow direction, which has a cut out portion at the radially outer top corner by the intermediate wall.

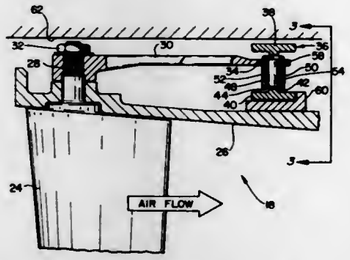
5,601,401
VARIABLE STAGE VANE ACTUATING APPARATUS

Alfred P. Matheny, Jupiter, and Brian H. Terpos, Palm City, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 21, 1995, Ser. No. 576,413

Int. Cl.[6] F01D *17/12*

U.S. Cl. 415—160 **5 Claims**



1. An apparatus for actuating variable stage vanes, comprising:

a plurality of pivot arms, each having a first end for fixed attachment with one of the vanes, and a second end;

a synchronizing ring, having a first flange, a second flange, a web extending between said flanges, and a plurality of openings disposed in said web; and

means for pivotly attaching said pivot arms to said synchronizing ring, said means disposed within said openings.

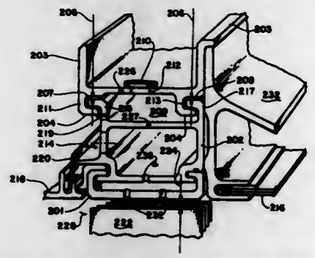
5,601,402
TURBO MACHINE SHROUD-TO-ROTOR BLADE DYNAMIC CLEARANCE CONTROL

Thomas G. Wakeman, Lawrenceburg, Ind., and Robert J. Cornmeier, Cincinnati, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 6, 1986, Ser. No. 874,201

Int. Cl.[6] F01D *11/08*

U.S. Cl. 415—173.2 **33 Claims**



1. A method for operating a low leakage, close radial clearance turbomachine comprising the steps of:

selecting for said turbomachine a static rotor-to-stator shroud radial clearance value selected to produce rotor-on-stator rubbing collision during worst case transient operation thereof;

determining the turbomachine transient operating conditions capable of inducing said rotor-on-stator rubbing collision;

sensing the onset of turbomachine operating conditions approaching said rotor-on-stator rubbing collision conditions;

increasing said rotor-to-stator shroud radial clearance from a first predetermined low leakage value to a second, higher leakage, collision avoidance, predetermined value for the duration of said transient rubbing collision inducing operating conditions;

returning said radial clearance to a close, predetermined low leakage value following cessation of said transient rubbing collision inducing operating conditions; and maintaining said rotor-to-stator shroud clearance in a dynamically corrected partially rubbing free condition using a predetermined analog algorithm response to turbomachine operating conditions whereby said sensing, increasing and returning sequence radial clearance is supplementary to said analog algorithm radial clearance.

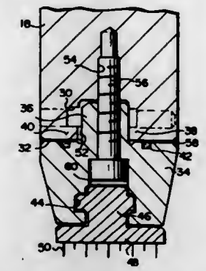
5,601,403
APPARATUS AND METHODS FOR MODIFYING A TURBINE DIAPHRAGM FOR USE WITH A REDUCED ROTOR LAN DIAMETER

Shawn W. Galbraith, Scotia; William V. Coll, Niskayuna; Dennis R. Ahl, Sprakers, and Keith E. Seconde, Schenectady, all of N.Y., assignors to General Electric Co., Schenectady, N.Y.

Division of Ser. No. 304,908, Sep. 13, 1994. This application Jun. 7, 1995, Ser. No. 472,577

Int. Cl.[6] F01D *5/00*

U.S. Cl. 415—173.6 **4 Claims**



1. A turbine diaphragm for accommodating a rotor, comprising:

a diaphragm body having a radially inner bore and an inwardly recessed dovetail;

at least one segment ring having a dovetail formed along an inner face thereof and dimensioned to in part complete a radial gap between the diaphragm bore and the reduced diameter rotor, said one segment ring having a tenon projecting radially outwardly from an outer face thereof and received within the inwardly recessed dovetail on the diaphragm body, at least one seal strip disposed along said outer face of said one segment ring and shaped along a radially outer surface to substantially follow the contour of the diaphragm bore face such that the circular segment ring fits about the bore; and

means for securing the one segment ring to the diaphragm body.

5,601,404
INTEGRAL DISC SEAL

Larry Collins, Newport, Great Britain, assignor to Rolls-Royce PLC, London, England

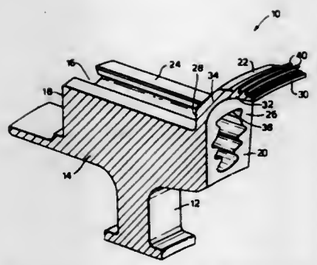
Filed Nov. 1, 1995, Ser. No. 551,316

Claims priority, application United Kingdom, Nov. 5, 1994, 9422542

Int. Cl.[6] F01D *11/02*

U.S. Cl. 415—173.7 **24 Claims**

1. A sealing arrangement for use in an axial flow turbo machine having a main flow annulus which includes:



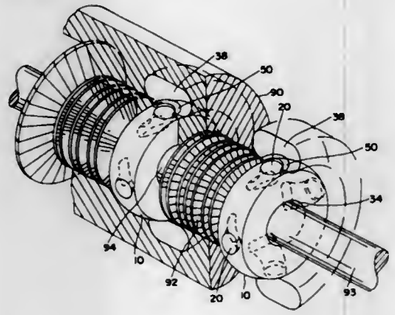
a rotor disc, a portion of the rotor disc defining a disc periphery,
a rotatable annular flow boundary fixed in relation to and spaced from the disc periphery,
a non-rotatable annular flow boundary axially adjacent to and spaced from the rotatable annular flow boundary to form a gap therebetween, and
an annular sealing member formed integrally with the disc periphery and extending from the disc periphery to bridge the gap between the rotatable and the non-rotatable annular flow boundaries.

5,601,405

VALVE APPARATUS FOR STEAM TURBINES

George J. Coates, 1811 Murray Dr., Wall Township, N.J. 07719

Filed Aug. 14, 1995, Ser. No. 514,589
Int. Cl.[6] F01D *9/02*
U.S. Cl. 415—202 **10 Claims**



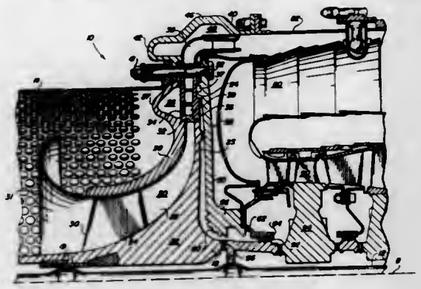
1. A valve assembly for a steam turbine comprising:
a turbine housing having a centrally-disposed shaft therein, a plurality of turbine blades mounted on said shaft extending radially outwardly therefrom, a steam source for the introduction of steam into said housing, a valve assembly positioned in said housing for control of said introduction of said steam, said valve assembly comprising:
a valve having a drum body of spherical section formed by two parallel planar sidewalls of a sphere disposed about a center thereof thereby defining a spherically-shaped end wall and formed with a shaft receiving aperture, said drum body formed with a plurality of apertures in a sidewall thereof and a channel extending between each of said plurality of apertures in said sidewall with a corresponding aperture formed in said spherically-shaped end wall, said valve being positioned about said shaft of said turbine and rotatable independently of said shaft of said turbine
a casing, defining a valve accommodating cavity, encapsulating said spherical end wall of said valve, said casing having an inner wall and outer wall defining a ring-like chamber about said spherical shaped end wall of said valve, said inner wall of said casing having a plurality of apertures alignable with said apertures on said spherical end wall of said valve, said ring-like chamber in communication with said steam source;
a sealing means positioned about said apertures in said inner wall of said casing and in communication with said spherical end wall of said valve for opening and closure of said plurality of apertures in said inner wall by rotation of said valve.
a means for rotation of said valve independently of said shaft of said turbine.

5,601,406

CENTRIFUGAL COMPRESSOR HUB CONTAINMENT ASSEMBLY

Chi F. Chan, Mesa, and Steven J. Pringnitz, Gilbert, both of Ariz., assignors to AlliedSignal Inc., Morris Township, N.J.

Filed Dec. 21, 1994, Ser. No. 362,069
Int. Cl.[6] F04D *29/44*
U.S. Cl. 415—206 **7 Claims**



1. A gas turbine engine comprising:
a turbine mounted to a shaft defining an axial direction;
a combustor in fluid communication with said turbine;
an impeller mounted to said shaft and having an axial inlet and a radial outlet, said impeller being disposed between a front shroud and a back shroud;
an inner and outer annular wall circumscribing said radial outlet, said walls spaced apart axially to define therebetween a diffuser;
a housing extending radially and axially from said outer annular wall so as to circumscribe said annular walls and said shrouds, said housing having a radially extending arch portion that defines a circumferential channel; and
said back shroud having a radially inner end with a plurality of grooves and a middle portion extending from said inner end, said middle portion having a shape similar to that of the back surface of said impeller.

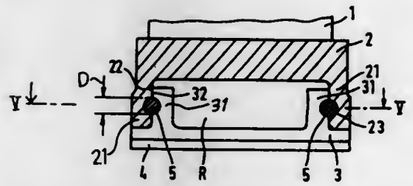
5,601,407

STATOR FOR TURBOMACHINES

Werner Humhauser, Moosburg, Germany, assignor to MTU Motoren- und Turbinen- Union Muenchen GmbH, Munich, Germany

Filed Mar. 1, 1996, Ser. No. 609,557
Claims priority, application Germany, Mar. 6, 1995, 195 07 673.7
Int. Cl.[6] F04D *29/44*
U.S. Cl. 415—209.2 **20 Claims**

1. A stator assembly for a turbomachine, comprising a plurality of individual vanes, a plurality of vane segment roots with at least one of said vanes extending from each of said roots, a plurality of support segments arranged at a radially inner curved side of said vane segment roots, a sealing liner arranged on said support segments, and a securing wire separably securing said support segments to said vane segment roots, wherein each said vane segment root comprises at least one annular first flange having an annular first mating surface with an annular first groove therein, each said support segment comprises at least one annular second flange having an annular second mating surface with an annular second groove therein, said first and second flanges engage one another with said first and second mating surfaces overlapping each other and said annular first and second grooves complementing each other to form therebetween an annular channel having a channel cross-sectional profile, and said securing wire is arranged in said annular channel to effect said separable securing of said support segments to said vane segment roots.

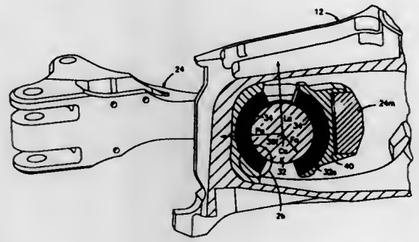


5,601,408

AXISYMMETRIC ELASTOMERIC BEARING ASSEMBLY FOR HELICOPTER ROTORS

David H. Hunter, Cheshire, Conn.; Francis E. Byrnes, White Plains, N.Y., and Douglas E. Tritsch, Beavercreek, Ohio, assignors to Sikorsky Aircraft Corporation, Stratford, Conn.

Filed Mar. 18, 1996, Ser. No. 617,458
Int. Cl.[6] B64C *27/35*
U.S. Cl. 416—134 A **6 Claims**



1. An axisymmetric elastomeric bearing assembly (**30**) for an articulated rotor hub assembly (**10**) having a yoke (**24**) and a driving hub retention member (**12**), said axisymmetric elastomeric bearing assembly (**30**), furthermore, for use in combination with said yoke (**24**) and hub retention member (**12**) and operative for accommodating multidirectional displacement of a rotor blade assembly (**14**) of the rotor hub assembly (**10**), said axisymmetric elastomeric bearing assembly (**30**) being characterized by:
a central bearing element (**32**) having a spherical bearing surface (**32***s*) defining a bearing focal point (**30***f*);
spherical elastomeric elements (**34**) bonded to said spherical bearing surface (**32***s*) on opposing sides of said bearing focal point (**30***f*),
each of said spherical elastomeric elements (**34**) having a plurality of alternating layers of elastomer and nonresilient shims (**36**, **38**), said elastomer and nonresilient shims having a center of curvature C_c which is coincident with said bearing focal point (**30***f*) and disposed at increasing radii therefrom; and
a bearing endplate (**40**) bonded to each of said spherical elastomeric elements (**34**), said bearing endplates (**40**) for use in combination with said yoke (**24**) and hub retention member (**12**);
said spherical elastomeric elements (**34**) defining a centerline C_L which extends through the center of each spherical elastomeric element (**34**) and intersects said bearing focal point (**30***f*);
said elastomer layers (**36**) of said spherical elastomeric elements (**34**) defining innermost and outermost elastomer layers (**36***i*, **36***o*), having a compressive strength allowable δ_{Allow}, and being operative to react centrifugal loads C_f of said rotor blade assembly (**14**);
said innermost and outermost elastomer layers (**36***i*, **36***o*) of said spherical elastomeric elements (**34**) having free edges and defining inner and outer radius dimensions Ri and Ro, respectively, measured from said bearing focal point (**30***f*);
said free edge of said innermost elastomer layer (**36***i*) and said bearing focal point (**30***f*) defining a first line L1, said first line L1 forming an angle β with respect to said centerline C_L;
said free edges of said innermost and outermost elastomer layers (**36***i*, **36***o*) defining a second line L2, said second line L2 forming an angle α with respect to a line C_{PL} parallel to said centerline C_L;
said angle β being between about 65 degrees to about 85 degrees;
said angle α being between about 35 degrees to about 55 degrees; and
said inner radius dimension Ri being greater than or equal to

$$\sqrt{Cf/\pi \mathrm{Sin}\beta^2 \delta_{Allow}}\ ;$$

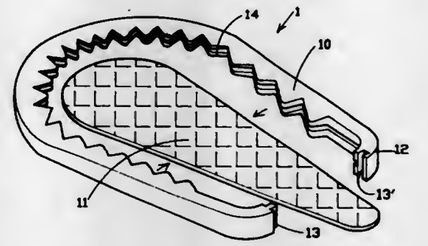
whereby said central bearing element (**32**) is rotationally self-positioning to effect load and motion sharing between said spherical elastomeric elements (**34**).

5,601,409

FAN BLADE FOR CEILING FANS

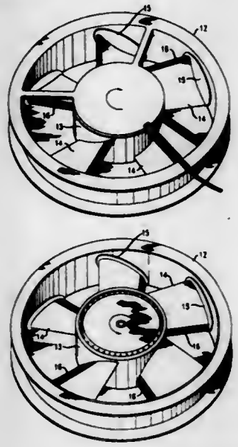
Yung C. Huang, 4, 3F, No. 36, Shu-Hsin Rd., Shu-Lin Town, Taipei Hsien, Taiwan

Filed Jan. 16, 1996, Ser. No. 587,021
Int. Cl.[6] F04D *29/34*
U.S. Cl. 416—229 R **13 Claims**



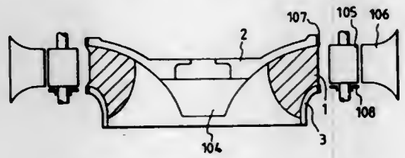
1. A fan blade comprising an open frame, and a flat, thin blade body fastened to said open frame, said open frame having a coupling head at one end for coupling to a motor shaft and a tail at an opposite end the thickness of said open frame gradually reducing from said coupling head toward said tail.

5,601,410
FAN HAVING BLADES WITH SOUND REDUCING MATERIAL ATTACHED
Daniel A. Quinlan, Warren, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.
Filed Aug. 31, 1995, Ser. No. 522,485
Int. Cl.[6] F04D 29/38
U.S. Cl. 416—241 A **24 Claims**



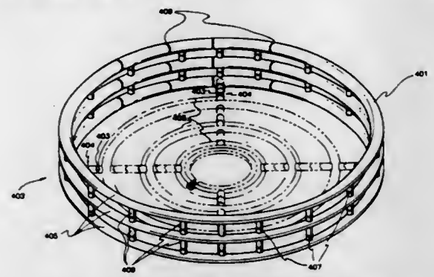
1. An air moving device comprising a rotatable shaft assembly and a plurality of fan blades coupled to said rotatable shaft assembly, each of said fan blades having a trailing edge when the rotatable shaft assembly is rotated in a given direction, wherein at least one of the fan blades has a sound reducing material attached to a surface thereof alongside the trailing edge thereof, wherein said sound reducing material comprises an aerodynamic energy absorbing material, and wherein said aerodynamic energy absorbing material comprises felt.

5,601,411
STAINLESS STEEL TYPE 13CR5NI HAVING HIGH TOUGHNESS, AND USAGE THE SAME
Kenichi Usami, Hitachi; Hiroshi Takayasu, Tomobe-machi; Tsutomu Onuma, Hitachi; Makoto Kanda, Toukai-mura; Masao Kawakami, Hitachinaka; Fumio Sakamoto, Ibaraki-machi; Tsugio Fushimi, Hitachinaka, and Tsugio Yoshikawa, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jun. 19, 1995, Ser. No. 492,449
Claims priority, application Japan, Jun. 17, 1994, 6-158247; Jul. 27, 1994, 6-175114
Int. Cl.[6] F01D 5/14
U.S. Cl. 416—241 R **4 Claims**



1. A runner for a hydraulic turbine comprising cast members made of stainless steel wherein the stainless steel is high toughness 13Cr5Ni group stainless steel comprising:
C: 0.008–0.03% (by weight, all of the following elements);
Si: max. 1%.;
Mn: max. 2%;
Cr: 10.0–14.0%;
Ni: 4.0–7.0%; and
Mo: 0.2–2.0%; wherein the (Cr/Ni) ratio is in a range of 2.0–3.0.

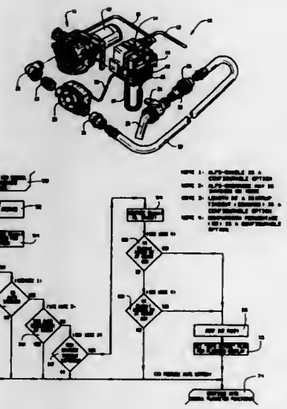
5,601,412
VARIABLE SIZE CIRCULAR FAN GUARD
Stephen D. Vice, 1730 Ratliff Rd., Sharpsburg, Ky. 40374
Filed Oct. 31, 1995, Ser. No. 550,986
Int. Cl.[6] F04D 29/66
U.S. Cl. 416—247 R **10 Claims**



1. A variable size circular fan blade guard comprising:
a circular guard securing means located at the center of said circular guard for affixing said fan blade guard to a fan housing, said circular guard securing means comprising positioning means for positioning said fan blade guard with respect to a fan and fastening means for attaching said fan blade guard to the fan;
a circular body comprising concentrically arranged circular rings extending centered with respect to and about said circular guard securing means and held in place by linear radial pieces extending linearly outwardly from said circular guard securing means, said linear radial pieces including notches within the body of each one of said linear radial pieces, said notches being equally spaced from said circular guard securing means and used for removing an outermost said circular ring from said fan blade guard by breaking said linear radial pieces at said notches, and thereby shortening the diameter of said fan blade guard.

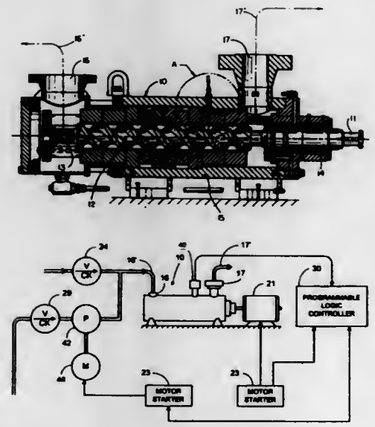
5,601,413
AUTOMATIC LOW FLUID SHUT-OFF METHOD FOR A PUMPING SYSTEM
Gregory A. Langley, Derby, and David L. Hansen, Wichita, both of Kans., assignors to Great Plains Industries, Inc., Wichita, Kans.
Filed Feb. 23, 1996, Ser. No. 606,268
Int. Cl.[6] F04B 49/00
U.S. Cl. 417—12 **20 Claims**

1. In a continuous flow pumping system having a pump in fluid communication with a tank of liquid and adapted to transfer the liquid out of the tank, and a pump controller in communication with the pump, a method of automatically stopping the pump when the tank is empty comprising the steps of:
sampling, by the pump controller, of a pump parameter value after an initial pump start-up time interval;
calculating whether there is any percentage change in said pump parameter value once every predetermined sampling time interval relative to an average of pump parameter values taken over a predetermined average time interval;
comparing said percentage change of said pump parameter value to a predetermined pump parameter value percentage change; and



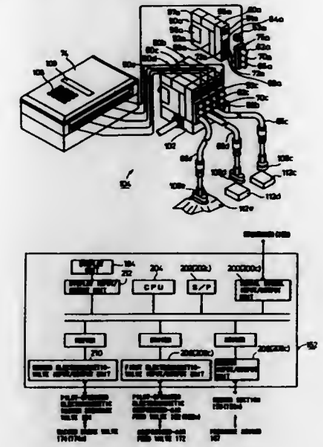
stopping the pump when said percentage change of said pump parameter value is greater than said predetermined pump parameter value percentage change.

5,601,414
INTERSTAGE LIQUID/GAS PHASE DETECTOR
John R. DiRe, Charlotte, N.C., assignor to IMO Industries, Inc., Monroe, N.C.
Filed Sep. 25, 1995, Ser. No. 533,302
Int. Cl.[6] F04B 49/06
U.S. Cl. 417—44.2 **14 Claims**



1. A positive displacement pump which comprises:
a series of isolated volumes for building the internal pressure gradient of the pump from the pump inlet to its outlet;
a programmable logic circuit for signaling impending abnormal pressure conditions in the pump and, upon the onset of such conditions, modifying pump operation to compensate for the abnormal conditions; and
a pressure monitoring device for detecting selected disruption in the normal pressure gradient of the pump indicative of the impending abnormal conditions and signaling the logic circuit of the impending conditions,
the pressure monitoring device having a pressure sensing device in at least one isolated volume for sensing internal pressure gradients of the pump.

5,601,415
FLUID PRESSURE DEVICE
Shigekazu Nagai; Hiroshi Matsushima; Yoshiharu Ito, and Akio Saitoh, all of Ibaraki-ken, Japan, assignors to SMC Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 453,826, May 30, 1995, which is a continuation of Ser. No. 193,060, Mar. 8, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 478,437
Claims priority, application Japan, Sep. 10, 1991, 3-258388; Sep. 10, 1991, 3-258389
Int. Cl.[6] B25J 15/06
U.S. Cl. 417—187 **3 Claims**



1. A fluid pressure device comprising:
a fluid unit which includes a vacuum generating source, said fluid unit comprising a solenoid controlled selector for changing a vacuum state inside said fluid unit from a negative pressure state to a positive pressure state and from a positive pressure state to a negative pressure state, a pressure sensor detecting switch, a filter, and a check valve;
an interface block mounted to said fluid unit, said interface block comprising means for electrically energizing and de-energizing said solenoid-controlled selector, means for transmitting information from said pressure detecting switch regarding said vacuum state, a serial/parallel signal converter, and a serial signal input/output means;
wherein said serial/parallel signal converter converts serial control signals transmitted from a sequencer into parallel signals which are supplied to said means for electrically energizing and de-energizing said solenoid-controlled selector, and further converts parallel signals transmitted from said means for transmitting information into serial confirmation signals which are supplied to said sequencer to confirm that a predetermined vacuum state has been reached; and
wherein said serial signal input/output means controls input of said serial control signals from said sequencer and output of said serial confirmation signals to said sequencer.

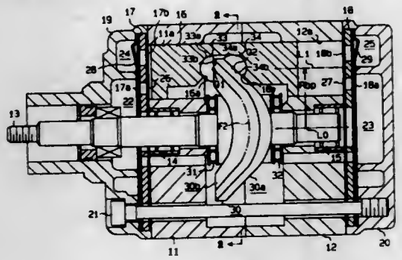
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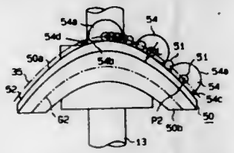
5,601,416

WAVE CAM TYPE COMPRESSOR

Kazuo Murakami; Toshiro Fujii, and Kazuaki Iwama, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Continuation-in-part of Ser. No. 363,609, Dec. 23, 1994, which is a continuation-in-part of Ser. No. 254,970, Jun. 7, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 475,043
Claims priority, application Japan, Jun. 28, 1994, 6-146746
Int. Cl.[6] F04B 1/12
U.S. Cl. 417—269 **18 Claims**





1. A wave cam type compressor having a wave cam body mounted on a drive shaft for integral rotation with the drive shaft, and a piston disposed within a cylinder bore and operably connected to the cam body, whereby rotation of the drive shaft is converted into reciprocating movement of the piston with a predetermined piston stroke between a top dead center and a bottom dead center in said cylinder bore to compress fluid supplied to the cylinder bore, said compressor comprising:
- a cam surface on said cam body for driving the piston;
- a shoe interposed between the cam surface and the piston, said shoe being arranged to follow a predetermined path on the cam surface; and
- said cam surface being cylindrical and continuously convex with its elements in end projection defining a plane curve such that said predetermined path is free from points of inflection.

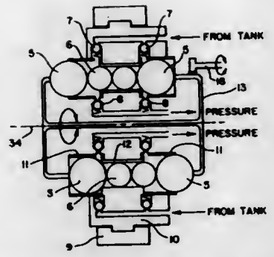
5,601,417

HYDRAULIC PUMP WITH BALL BEARING PISTONS

Raymond P. Haluda; John J. Hoffman, both of South Bend, Ind., and Charles Lord, Niles, Mich., assignors to Ball Bearing Pump, Inc., South Bend, Ind.

Filed Nov. 21, 1995, Ser. No. 560,203
Int. Cl.[6] F04B 27/08
U.S. Cl. 417—271 **12 Claims**

1. A hydraulic pump, comprising:
- a body including at least one chamber, said body further including a fluid inlet and a fluid outlet disposed in fluid communication with each said cylinder;
- at least one pair of ball bearings respectively disposed within each said chamber, each said pair of ball bearings including a larger diameter ball bearing and a smaller diameter ball bearing, said larger diameter ball bearing and said smaller diameter ball bearing disposed in abutting relationship to each other and slidable within said respective chamber, each said larger diameter ball bearing and each said smaller diameter ball bearing being disposed in sealing relationship with said respective chamber, each said pair of ball bearings configured to displace a volume of fluid when slid within said respective chamber.

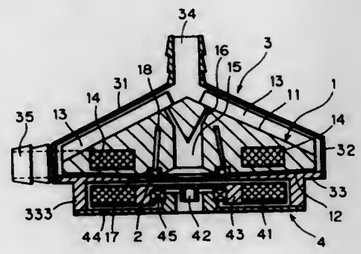


5,601,418

BLOOD PUMP

Yasuhisa Ohara; Kenzo Makinouchi, and Yukihiko Nosé, all of Houston, Tex., assignors to Kyocera Corporation, Kyoto, Japan, and Baylor College of Medicine, Houston, Tex.

Continuation of Ser. No. 55,233, Apr. 28, 1993, abandoned. This application Jun. 8, 1995, Ser. No. 488,719
Int. Cl.[6] F04B 17/00; 15/02
U.S. Cl. 417—420 **8 Claims**



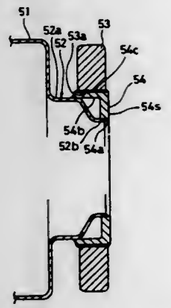
1. A blood pump, comprising:
- a casing defining an inlet, an outlet and a bottom,
- a substantially conical impeller rotatably accommodated in the casing, the impeller defining a side, a bottom, a rotational axis and an upper end, the side and the upper end of the impeller being unsupported by a bearing,
- pump vanes provided on the side of the impeller,
- magnet means provided on the bottom of the impeller for rotating the impeller,
- magnet drive means disposed opposite to the magnet means with the casing intervened therebetween for supporting the impeller above the bottom of the casing and for rotating the impeller around the rotational axis of the impeller in cooperation with the magnet means, and
- at least three balls above the bottom of the casing for rotatably supporting the impeller.

5,601,419

NOZZLE STRUCTURE FOR A FULL-CIRCUMFERENTIAL FLOW PUMP

Makoto Kobayashi; Masakazu Yamamoto; Yoshio Miyake; Tsuyoshi Maeda; Hiromi Sakacho, and Koji Isemoto, all of Fujisawa, Japan, assignors to Ebara Corporation, Tokyo, Japan

Division of Ser. No. 337,184, Nov. 7, 1994, Pat. No. 5,478,215, which is a division of Ser. No. 46,850, Apr. 14, 1993, Pat. No. 5,388,971. This application Sep. 20, 1995, Ser. No. 530,909
Claims priority, application Japan, Apr. 14, 1992, 4-120173; Apr. 14, 1992, 4-120174; Apr. 14, 1992, 4-120176; Apr. 14, 1992, 4-120179; Jun. 1, 1992, 4-165383; Jun. 1, 1992, 4-165384; Jun. 5, 1992, 4-171685
Int. Cl.[6] F04B 39/12
U.S. Cl. 417—423.14 **8 Claims**



1. A pump having a pump casing encasing fluid to be handled by the pump, said pump casing comprising:
- a nozzle provided on said pump casing, said pump casing being made of sheet metal;
- a flange detachably mounted on said nozzle; and
- a seal surface provided on an axial end of said nozzle for mating with another flange to be coupled to said detachably mounted flange;
- wherein said detachably mounted flange does not contact liquid to be handled by the pump.

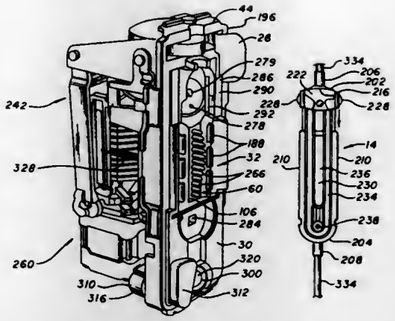
5,601,420

INTERLOCK, LATCHING, AND RETAINING MECHANISM FOR AN INFUSION PUMP

Eric A. Warner, Vista; Don S. Minami, Monte Sereno; Paul L. Howard, Palo Alto, and Phillip M. Hobson, Los Altos, all of Calif., assignors to IVAC Medical Systems, Inc., San Diego, Calif.

Filed Sep. 12, 1994, Ser. No. 305,468
Int. Cl.[6] F04B 43/08
U.S. Cl. 417—474 **42 Claims**

1. An interlock, latching and retaining mechanism for placing an infusion set into operating position on an infusion system having fluid flow control and pumping structure, comprising:
- a faceplate;
- a latch arm, said latch arm being rotatably mounted to said faceplate; and
- means cooperating with said latch arm and said faceplate for placing the infusion set into operating position with the fluid flow control and pumping structure of the infusion system, wherein said cooperating means includes a shaft adapted to rotate in response to movement of the latch arm and place the infusion set into operating position with the fluid flow control and pumping structure of the infusion system.

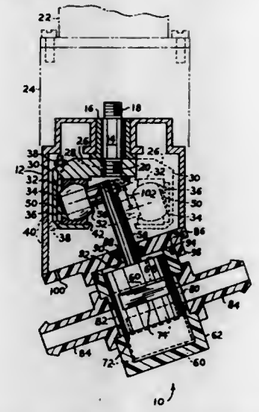


5,601,421

VALVELESS DOUBLE ACTING POSITIVE DISPLACEMENT FLUID TRANSFER DEVICE

W. Ken Lee, 3531 Princeton Corners La., Marietta, Ga. 30062

Filed Feb. 26, 1996, Ser. No. 607,109
Int. Cl.[6] F04B 39/10; F01L 21/02
U.S. Cl. 417—492 **20 Claims**



1. A valveless, double acting, positive displacement fluid transfer device, comprising:
- a rotary shaft having a first end and an opposite second end, with said second end having a radial arm affixed thereto and extending therefrom;
- said radial arm having a distal end including a spherical bearing shell having a spherical bearing therein;
- a single plunger adapted to rotate and reciprocate simultaneously within a corresponding single cylinder, with said plunger having a plunger rod end with a concentric plunger rod extending therefrom, an opposite distal end, and a lateral surface closely and sealingly fitting within said cylinder;
- said plunger further having an internal first fluid passage extending from said plunger rod end through a first opening in said lateral surface, and a separate second fluid passage extending from said distal end through a second opening in said lateral surface, with said first opening and said second opening being diametrically opposite one another;
- said cylinder having a lateral cylinder wall including a first port and a second port therethrough, with said first port and said second port being in coaxial alignment;

said plunger, said plunger rod, and said cylinder being angularly offset from said rotary shaft, and;

said plunger rod including a distal end having a bearing pin affixed thereto and extending radially therefrom, with said bearing pin having a distal end to which said spherical bearing is secured, whereby;

said plunger rotates with said rotary shaft as said rotary shaft revolves, and simultaneously reciprocates by means of said angular offset between said plunger and said rotary shaft, with said first opening and said second opening of said plunger alternatingly communicating with said first port and said second port of said cylinder with each reciprocating stroke of said plunger within said cylinder, to provide a double action of said fluid transfer device and positive displacement by means of said sealingly fitted plunger within said cylinder and said separate first and second internal fluid passages within said plunger.

5,601,422

ASSEMBLY FOR FEEDING FUEL OUT OF A SUPPLY TANK TO AN INTERNAL COMBUSTION ENGINE

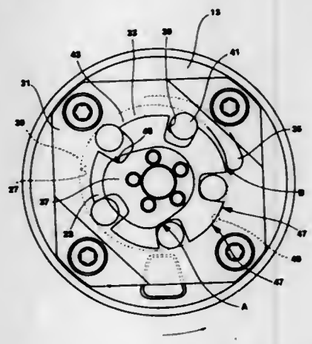
Juergen Treiber, Bamberg; Hartmuth Kraemer, Ditzingen; Thomas Wuensch, Ludwigsburg; Stefan Woerz, Schwieberdingen, and Willi Strohl, Beilstein, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Oct. 19, 1995, Ser. No. 545,147

Claims priority, application Germany, Oct. 19, 1994, 44 37 377.5

Int. Cl.[6] F04C *2/344;13/00;15/00*

U.S. Cl. 418—15 **4 Claims**



1. An assembly for feeding fuel out of a supply tank to an internal combustion engine, comprising a housing, a pumping chamber (33) in said housing, a roller cell type feed pump (1) which is driven in rotation by an electric drive motor (3), said feed pump includes a disk-shaped feed pump rotor (23) which is rotated in said pumping chamber (33) by said electric motor (3), said chamber (33) is delimited by a baseplate (13), by a wall of a bore (27) of an intermediate ring (29) and by a cover plate (31), the disk-shaped pump rotor (23) is mounted eccentrically relative to the bore (27) of the intermediate ring (29) and has a plurality of rollers (41) each guided by said pump rotor (23) in a radial groove (39), the rollers (41) are pressed, as a result of a centrifugal force, against the wall of the bore (27) of the intermediate ring (29) by rotation of the pump rotor (23), said wall acting as a running track, and, at the same time said wall delimits a pump working space (43) in the pumping chamber (33) between two adjacent rollers (41), a suction port (35) is located in the baseplate (13) and arranged in a region of the rotating pump working spaces (43), a delivery port (37) located in the cover plate (31) and a narrow-gap region (47) arranged between the delivery port (37) and said suction port (35) in the direction of rotation of the pump rotor (23) and located between the wall of the bore (27) of the intermediate ring (29) and the circumferential surface of the pump rotor (23), wherein the respective pump working space (43), when the pump rotor passes through the narrow-gap region (47), opens the suction port (35) only after complete emergence from overlap with the delivery port (37), and a degassing bore (49) is provided in the baseplate (13) in a region of the narrow-gap region.

5,601,423

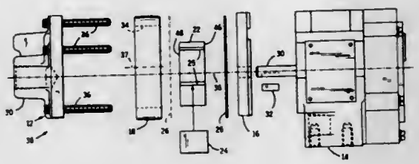
HIGH CLEARANCE SLIDING VANE PUMP

Meredith W. Meece; William T. Thurmon, and Richard G. Dupree, all of Monroe, La., assignors to Thomas Industries Inc., Monroe, La.

Filed Oct. 2, 1995, Ser. No. 537,555

Int. Cl.[6] F01C *19/08*

U.S. Cl. 418—131 **5 Claims**



1. In a sliding vane vapor pump of the type having a housing, a rotor received in a cylinder defined in the housing, the rotor having an axis which is eccentric to the cylinder, vanes slidable in slots in the rotor so as to follow the cylinder when the rotor is rotated about its axis, and a rotary drive shaft for rotating the rotor about its axis, the improvement wherein a diaphragm plate is secured to the housing adjacent to, generally parallel with and spaced axially out of contact with an end of said rotor when said plate is relaxed, the plate being flat and resilient so as to flex to move an inner area of said plate axially closer to the rotor as a vacuum drawn by said pump increases to an abnormal operating level and to retract said inner area axially away from said rotor as said vacuum subsides to a normal operating level.

5,601,424

METHOD FOR REDUCING NO_x USING ATOMIZING STEAM INJECTION CONTROL

Gary S. Bernstein, Wadsworth, and Thomas K. Milo, Akron, both of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Division of Ser. No. 275,870, Jul. 15, 1994, Pat. No. 5,543,116. This application Apr. 13, 1995, Ser. No. 420,999

Int. Cl.[6] F23J *7/00*

U.S. Cl. 431—4 **5 Claims**

1. A method for controlling NO_x comprising the steps of:

establishing a control curve for a combustion source indicating NO_x levels for the combustion source based on atomizing steam injection flow rates, firing rates and fuel flow rates provided to at least one burner of the combustion source;

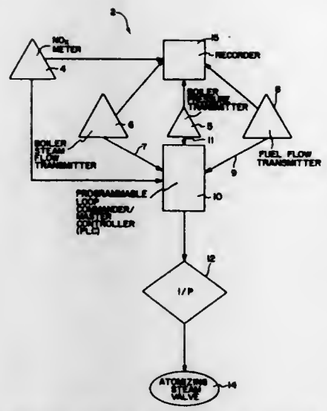
measuring atomizing steam injection flow rate to each burner;

measuring combustion source firing rate;

measuring fuel flow rate provided to each burner;

measuring NO_x level at the combustion source flue gas outlet;

determining a NO_x level for the combustion source based on the fuel flow rate, atomizing steam injection flow rate, the measured NO_x level and combustion source firing rate; and



adding atomized steam to each burner for lowering the NO_x level according to the control curve.

5,601,425

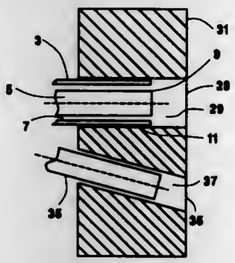
STAGED COMBUSTION FOR REDUCING NITROGEN OXIDES

William T. Kobayashi, San Paulo-SP, Brazil; Arthur W. Francis, Jr., Monroe, and Hisashi Kobayashi, Putnam Valley, both of N.Y., assignors to Praxair Technology, Inc., Danbury, Conn.

Filed Jun. 13, 1994, Ser. No. 259,110

Int. Cl.[6] F23C *5/00*

U.S. Cl. 431—8 **9 Claims**



1. A process for combusting fluid fuel with reduced nitrogen oxides generation, said process comprising:

(a) injecting at least one fluid fuel stream into a combustion zone through a nozzle having an opening at a tip that is recessed from an internal opening of at least one refractory port defined by at least one wall surrounding said combustion zone;

(b) shrouding at least a portion of a length of said at least one fluid fuel stream with a substoichiometric amount of at least one primary oxidant stream injected at a velocity less than 200 feet per and partially combusting said fluid fuel with the primary oxidant to form partially combusted products;

(c) injecting at least one secondary oxidant stream angled away from said fluid fuel stream and primary oxidant stream, or from a point spaced from where said fluid fuel and primary oxidant streams are injected, or from an opposite point from where said fluid fuel and primary oxidant streams are injected, wherein said secondary oxidant stream has a spacing distance, an ejection angle and a velocity that establishes a gas circulation pattern that promotes entrainment of ambient gas to dilute said at least one secondary stream, and wherein said at least one secondary stream injected is such that the volume ratio of said secondary oxidant to said primary oxidant is greater than 2.4:1 but less than 9:1;

(d) diluting said secondary oxidant stream with a large volume of ambient gas containing an oxygen concentration of about 0.5 to about 15 percent by volume to form a diluted stream; and

(e) mixing said diluted stream to said partially combusted product and thereafter combusting said partially combusted product with the oxygen in said diluted stream.

5,601,426

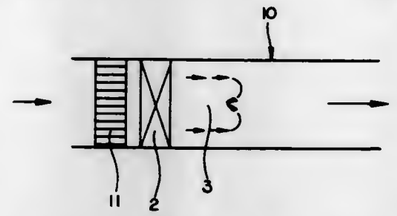
CATALYTIC METHOD

William C. Pfefferle, 51 Woodland Dr., Middletown, N.J. 07748

Division of Ser. No. 835,556, Feb. 14, 1992, Pat. No. 5,453,003, which is a continuation-in-part of Ser. No. 639,812, Jan. 9, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 480,499

Int. Cl.[6] F02M *27/02*

U.S. Cl. 431—170 **8 Claims**



1. A high turndown ratio thermal gas phase combustion system for operation at temperatures well below the stable operating temperature of conventional gas turbine combustors comprising:

a. a thermal reaction chamber, having a fluid inlet and an outlet;

b. continuous catalyst means for stabilizing lean combustion in said chamber, mounted in the fluid inlet;

c. means for passing a lean admixture of fuel and air into contact with said catalyst means to produce a reacted admixture having a temperature below the safe operating temperature of said catalyst means, and

d. means for passing said reacted admixture to said thermal reaction chamber for stable combustion; said catalyst means being a channeled catalyst body, said channels having a flow path of no more than about 6 mm and a ratio of channel path length to diameter of less than about 2 to 1 whereby the flow path through which the portion of fluid admixture passes through the channel is no more than one-half the length for full boundary layer build-up in the channel.

5,601,427

WASTE MELTING FURNACE AND A METHOD OF MELTING WASTES

Tatsuo Yuasa, Kakamigahara, and Tetsuhisa Sugiura, Kani, both of Japan, assignors to Daidotokushuko Kabushikikaisha, Japan

Filed Jul. 24, 1995, Ser. No. 506,051

Claims priority, application Japan, Jul. 25, 1994, 6-193595; Jul. 25, 1994, 6-193596; Jul. 26, 1994, 6-193545; Jul. 27, 1994, 6-195924

Int. Cl.[6] F27D *15/02;1/00;1/02*

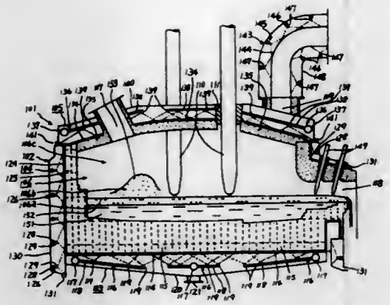
U.S. Cl. 432—77 **8 Claims**

1. A waste melting furnace comprising a furnace body which surrounds melts, wastes to be placed on the melts, and a space above the melts and the wastes,

a waste inlet, a melt outlet, and a gas outlet being disposed in said furnace body,

heating means for heating the wastes being disposed in said furnace body so that wastes charged through said waste inlet are heated by the heating means and melted,

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wherein

at least a portion of said furnace body is made of a metal material,

an inner peripheral face of said metal material portion is covered by a lining for protecting said furnace body, said lining having a relatively small thickness which allows an erosion protection effect due to cooling which is conducted from a side of an outer face, to reach a side of an inner face, and

spray means for spraying coolant on an outer peripheral face of said furnace body in order to cool said lining of said relatively thin portion, via said metal material portion is disposed outside said furnace body.

5,601,428

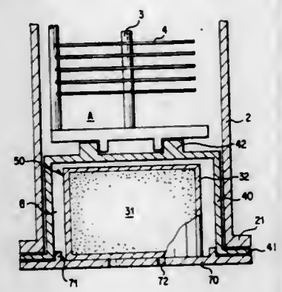
VERTICAL HEAT-TREATING APPARATUS AND HEAT INSULATOR

Shinichi Okoshi, Yamagata, and Hiroyuki Kimura, Fukui, both of Japan, assignors to Shin-Etsu Quartz Products Co. Ltd., Tokyo, Japan

Division of Ser. No. 170,164, Dec. 23, 1993, Pat. No. 5,480,300. This application Oct. 6, 1995, Ser. No. 540,136

Int. Cl.[6] F27D *3/12*

U.S. Cl. 432—241 **2 Claims**



1. A heat insulator disposed between a heating and a non-heating zone in a furnace core tube for insulating and retaining heat in said heating zone, wherein said heat insulator is formed with a porous body of quartz glass having numerous inner microspaces, said porous body comprising a quartz glass foam having an apparent density of 0.1 to 0.8 g/cm^3, a continuous porosity of 60% or less, concentrations of each of Na, K, Li, Cu, Ni, Ca and Ce of 1 ppm or less, a total concentration of metallic impurities of 100 ppm or less, and an OH group content of 100 ppm or less.

5,601,429

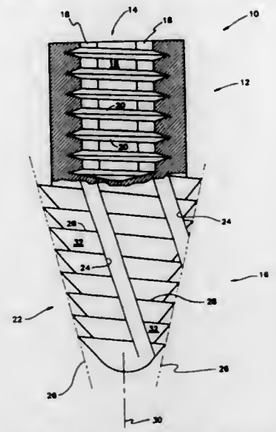
DENTAL IMPLANT ANCHOR

Gordon D. Blacklock, 14116 Grand NE., Albuquerque, N.M. 87123

Filed Aug. 11, 1995, Ser. No. 514,386

Int. Cl.[6] A61C *8/00*

U.S. Cl. 433—174 **4 Claims**



1. A dental implant anchor for receiving and securing a replacement tooth within a person's jaw, said anchor having an elongated body including a proximal end and a distal end, said proximal end having means defining a cavity for receiving a post of a post and core component of the replacement tooth secured within said anchor,

said body being tapered at said distal end, and having external threads having crests collectively defining a tapered outermost boundary and a thread pitch line, whereby said external threads engage different sections of bone tissue,

said external threads having an upper surface defining a first angle included between said upper surface and said thread pitch line, and a lower surface defining a second angle included between said lower surface and said thread pitch line, said first angle being an acute angle greater than zero and said second angle being an acute angle greater in magnitude than that of said first angle, whereby unintended withdrawal from bone tissue is opposed by said external threads,

said body further comprising means defining a plurality of spiralled relief grooves extending longitudinally along said body and extending through all convolutions of said external threads, said external threads having a first pitch, and said spiralled relief groove having a second a pitch of magnitude different from that of said first pitch, said second pitch oriented in the same direction as said first pitch of said external threads, whereby said spiralled relief groove acts in a complementary manner with respect to said external threads.

5,601,430

PROCESS FOR THE REMOVAL OF SOFT TOOTH DECAY USING A UNIQUE ABRASIVE FLUID STREAM

V. Kim Kutsch, Albany, Oreg., and Michael Everett, Glendale, Calif., assignors to Kreativ, Inc., Albany, Oreg.

Filed Sep. 15, 1995, Ser. No. 528,850

Int. Cl.[6] A61C *15/00*

U.S. Cl. 433—215 **12 Claims**

1. A dental repair process for removing soft tooth decay from a tooth, including

(a) creating an abrasive fluid stream by metering abrasive particulates into a flowing fluid, said abrasive particulates being a non-toxic material having a hardness as measured on the Mohs scale in the range of between 3.0 and 4.0, and an average particle size of from 10 to 200 microns; and

(b) directing said fluid stream towards the soft tooth decay for a time sufficient so that the fluid stream breaks down the soft tooth decay into fragments which are carried away from the tooth by the fluid stream.

5,601,431

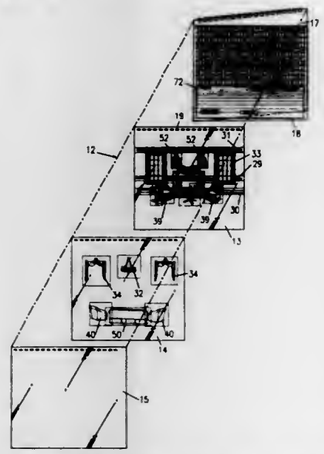
INTERIOR DESIGN SYSTEM AND METHOD

Cheryl Howard, 10719 Ashton Ave., Los Angeles, Calif. 90024

Filed May 3, 1995, Ser. No. 433,138

Int. Cl.[6] G09B *25/00*

U.S. Cl. 434—79 **32 Claims**



1. For use in an interior design system, a sheet of design pieces comprising:

a backing sheet having a relatively stiff body, and a plastic face on said body;

a plurality of individual design pieces each comprising a transparent carrier sheet composed of clear static cling vinyl and bearing a print of a decorating article, each of said design pieces being substantially larger than the print on the carrier sheet, and overlying said face, said carrier sheets being edge-to-edge sections of a single sheet corresponding in size and shape to the size and shape of the backing sheet and separated from each other along lines cut in said single sheet;

said face and said transparent carrier sheets providing interactive means for holding the design pieces removably on the backing sheet, whereby the design pieces are stored in a preselected pattern on said backing sheet for removal and replacement on the backing sheet.

5,601,432

EDUCATIONAL ORGANIZER

Marilyn M. Bergman, Narberth, Pa., assignor to Mastery Rehabilitation Systems, Inc., Bala Cynwyd, Pa.

Filed Jan. 20, 1995, Ser. No. 376,965

Int. Cl.[6] G09B *19/00*

U.S. Cl. 434—118 **42 Claims**

1. A compensatory assistance apparatus for use by a user with cognitive impairment which allows the user to make entries and files therein, said apparatus comprising:

a first computer having a monitor and a graphical user interface that displays only one application on the monitor at any time, said graphical user interface requiring the exiting of said application before entering another application, each application displaying on said monitor a predetermined number of user prompts and working information at predetermined locations on the monitor using predetermined colors;

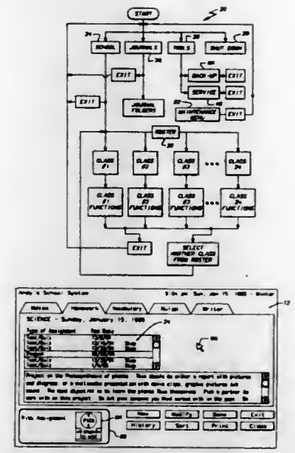
said graphical user interface using a movable pointer, said graphical user interface restricting said movable pointer in displacement in all directions in said displayed application so as to always remain in the view of the user;

said graphical user interface displaying a guidance icon that graphically instructs the user what the user must do to respond;

said graphical user interface automatically saving all files and entries created by the user to said first computer without user intervention;

input means for inputting data to said first computer and for controlling said movable pointer; and

output means for outputting data from said first computer.



5,601,433

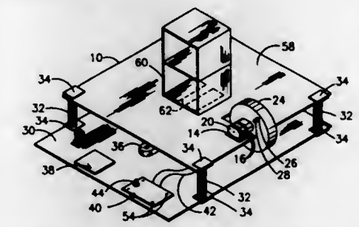
EARTHQUAKE TOY, EDUCATIONAL DEVICE OR THE LIKE

Kenyon D. Potter, 3042 Steiner St., San Francisco, Calif. 94123

Filed May 2, 1994, Ser. No. 236,577

Int. Cl.[6] G09B *19/26;23/08*

U.S. Cl. 434—130 **14 Claims**



1. An educational device for simulating earthquakes, comprising:

a flat base;

a flat table disposed above said flat base in vertically spaced relation thereto;

at least one flexible and resilient spring means disposed in interconnecting relation between said flat base and said flat table;

a first clamping means for connecting a first end of said spring means to said flat base and a second clamping means for clamping a second end of said spring means to said flat table;

each of said first and second clamping means being a "U"-shaped clip that respectively engages said flat base and said flat table;

said first end of said spring means being secured to a top side of said clip engaged to said flat base and said second end of said spring means being secured to a bottom side of said clip engaged to said flat table.

5,601,434

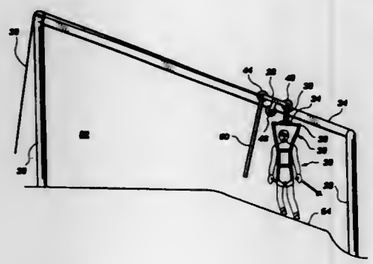
METHOD AND APPARATUS FOR TEACHING SKIING TECHNIQUES

Steven N. Winters, 2605 Commonwealth Ave., Salt Lake City, Utah 84109

Continuation-in-part of Ser. No. 401,627, Mar. 9, 1995, abandoned. This application Mar. 7, 1996, Ser. No. 614,807

Int. Cl.[6] A63B *69/18*

U.S. Cl. 434—253 **28 Claims**



1. A method for teaching skiing skills requiring sliding the skis sideways such as the hockey stop, parallel turn, skidding at various angles and others to skiers equipped with skis comprising the steps of:

supporting the skier in a means for harnessing that is pivotally and slidingly engaged to a support structure, the support structure running a distance along a ski surface sufficient for teaching a desired ski skill;

accelerating the skier to a sufficient speed for teaching the desired ski skill;

pivoting the skier so that the length of the skis are non-parallel to the direction of travel along the ski surface causing the skier to slide the skis sideways in a manner required by the desired ski skill thereby training the skier in that skill within the safe and guided confines of the means for harnessing and support structure and in a way that the skier experiences the feel of the technique without fear and learns the muscle coordination skills associated with the technique.

5,601,435

METHOD AND APPARATUS FOR INTERACTIVELY MONITORING A PHYSIOLOGICAL CONDITION AND FOR INTERACTIVELY PROVIDING HEALTH RELATED INFORMATION

Roger J. Quy, Belvedere, Calif., assignor to Intercare, Irvine, Calif.

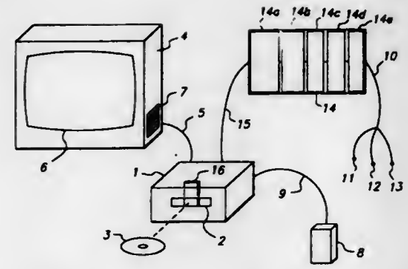
Filed Nov. 4, 1994, Ser. No. 334,643

Int. Cl.[6] G09B *5/00*

U.S. Cl. 434—307 R **30 Claims**

1. An apparatus for interactively monitoring a physiological condition and for interactively providing health-related information comprising:

a. a television set;



b. a multimedia processor coupled to provide audio and visual signals to the television set;

c. an interface device coupled to control the multimedia processor;

d. a physiological data monitor coupled to provide a signal representative of a physiological parameter of a user to the interface device;

e. a patient isolating circuit coupled between the physiological data monitor and the interface device; and

f. a program controller coupled provide a control signal to the multimedia processor based upon the user's input, so as to provide health related information to the user in an interactive manner based upon the signal representative of the physiological parameter and the control signal.

22. A method of interactively monitoring a physiological condition and for interactively providing health-related information comprising the steps of;

a. providing educational information related to a physiological parameter to a user by a multimedia processor, wherein the educational information is stored on a CD-ROM;

b. sensing an analog signal representative of a physiological parameter of the user wherein the analog signal is sensed by a physiological data monitor coupled to a patient isolating circuit of an interface device;

c. converting the analog signal into a stream of digital values to the multimedia processor, wherein the analog signal is converted by the interface device;

d. displaying physiological information derived from the digital values on a television screen.

5,601,436

APPARATUS AND METHOD FOR GENERATING AND PRESENTING AN AUDIOVISUAL LESSON PLAN

David Sudman, Gurnee; Joseph Ulowetz, Northbrook; Dilip Singhi, Glenview, and Maureen Pajerski, Rolling Meadows, all of Ill., assignors to Rauland-Borg Corporation, Skokie, Ill.

Continuation of Ser. No. 40,468, Apr. 1, 1993, Pat. No. 5,385,475. This application Jan. 30, 1995, Ser. No. 380,088

Int. Cl.[6] G09B *5/00*

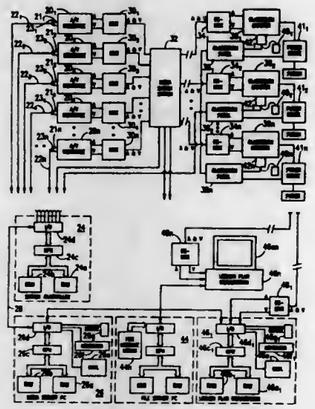
U.S. Cl. 434—307 R **15 Claims**

1. In a system for providing audiovisual output signals from a plurality of audiovisual resources to a plurality of monitors, an apparatus for connecting a selected one of the resources to at Least one of the monitors and for controlling the operation of the selected resource, comprising:

an input device for receiving input information and including a transmitter for transmitting wireless signals representative of the received information, the information including the identity of the selected audiovisual resource and at least one control command corresponding to a controllable operation of that audiovisual resource;

a memory means;

a receiver for receiving the wireless signals transmitted from the input device;



a processor means operatively connected to the receiver and the memory means for reading the information transmitted from the input device and for writing the information into the memory;

a switching network for connecting signals from the audiovisual resources to the monitors;

a communication mechanism connected to each of the audiovisual resources for providing remote control signals to the audiovisual resources for controlling the operation thereof; and

a controller means for reading the memory means and for controlling the switching network to selectively connect the selected audiovisual resource identified in the memory means to at least one monitor, and for reading the control command in the memory means and for transmitting a remote control signal corresponding to that command on the communication mechanism to control the operation of the selected audiovisual resource to provide audiovisual output signals from the selected audiovisual resource to at least one monitor.

10. In a system for providing audiovisual output signals from a plurality of audiovisual resources to a plurality of monitors, a method of connecting a selected one of the audiovisual resources to at lease one of the monitors and controlling the operation of the selected resource, comprising the steps of:

receiving input information on an input device, the information including the identity of the selected audiovisual resource and at least one control command corresponding to a controllable operation of that audiovisual resource;

transmitting wireless signals from the input device representative of the received information;

receiving the wireless signals and writing by a processor means the information represented by those signals as electronic data into a memory means; and

reading the memory with a controller means to determine the selected audiovisual resource identified therein and controlling a switching network via said controller means to selectively connect signals from that selected audiovisual resource to at least one monitor, and reading the memory means to determine the control command identified therein and transmitting a remote control signal corresponding to the control command onto a communication mechanism to control the operation of the selected audiovisual resource to provide audiovisual output signals from the selected audiovisual resource to at least one monitor.

5,601,437

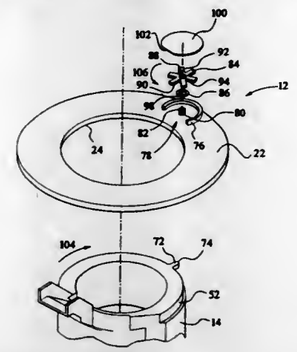
CLOCKSPRING WITH CENTERING DISPLAY DEVICE

Jeffery A. Harvey, Warren, Mich., and Gerald L. McClure, Hamilton, Ill., assignors to Methode Electronics, Inc., Chicago, Ill.

Filed Oct. 17, 1994, Ser. No. 324,776

Int. Cl.[6] H01R *39/00*

U.S. Cl. 439—15 **22 Claims**



1. A clockspring comprising:

a) housing having an outer radial wall and a top which extends perpendicularly from said outer radial wall, said radial wall having a maximum diameter;

b) a hub rotatably mounted to said housing;

c) a ribbon cable coiled around said hub and connected to said housing and said hub; and

d) means contained within said maximum diameter and on both said top of said housing and said hub for incrementally indicating when said hub is centered with respect to said housing including a post mounted counter wheel rotatably attached to said top and a pawl mounted to said hub.

5,601,438

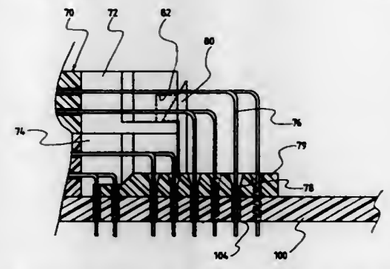
INDEPENDENT SOCKET FOR USE WITH STACKED MEMORY CARD CONNECTOR ASSEMBLY

Yu-Ming Ho, Taipei Hsieh, Taiwan, and Robert G. McHugh, Evergreen, Colo., assignors to Hon Hai Precision Ind. Co., Ltd., Taipei, Taiwan

Filed Dec. 12, 1994, Ser. No. 354,369

Int. Cl.[6] H01R *23/70*

U.S. Cl. 439—64 **5 Claims**



1. A connector assembly for surface mounting on a PC board, comprising:

a lower connector and an upper connector aligned and stacked with each other in a vertical direction, each connector including an insulative housing having a plurality of passageways

extending therethrough in a front-to-end direction for receiving a corresponding number of first contacts therein;

an independent auxiliary alignment socket disposed substantially spaced from and in front of said lower connector, whereby said socket is generally aligned with the lower connector in the front-to-end direction and is parallel to the housing thereof;

said socket including an elongated insulative housing having a plurality of passageways extending therethrough in the vertical direction for receiving therein a corresponding number of second contacts wherein each second contact of the socket has a contact section adapted to be electrically and mechanically engaged with tails of the first contacts of the upper connector, respectively, and a tail section adapted to be surface-mounted on the PC board; and

a pair of mounting blocks positioned at two opposite ends of the housing of the socket, each mounting block at least including mounting means for independently retaining said socket onto the PC board with no structural fixation relationship to the housings of the upper connector and the lower connector; wherein said connector is a memory card connector whereby a pair of guiding arms extend at two opposite ends of the housing in the front-to-end direction; and wherein each mounting block has a triangular pier on each side for stabilization of the socket on the PC board, and the tails of the second contacts of the socket are confined within an area defined by two lengthwise opposite piers.

5,601,439

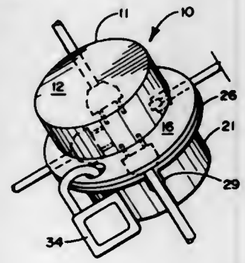
Patent Not Issued For This Number

5,601,440

PLUG LOCK OUT APPARATUS

Julian Richter, 18780 N.E. 18th Ave., Unit #122, North Miami Beach, Fla. 33179

Filed Feb. 13, 1996, Ser. No. 600,701
Int. Cl.[6] H01R *13/44*
U.S. Cl. 439—134 **7 Claims**



1. A plug lock out appratus for securing electrical cord-plug head combinations comprising, in combination;

a first lid member having an close-ended top and an open-ended bottom, and an inside having a female threaded portion, said bottom comprising an annular ring flange having a hole therethrough;

a second lid member having an open-ended top and a close-ended bottom, and an exterior having a male threaded portion for matable engagement with the said female threaded portion of the first lid member, and an annular ring member segregated by a plurality of elongated slots for housing the said cord-plug head combinations wherein the said annular ring member has a bole therethrough; and,

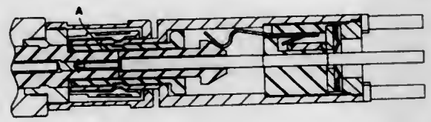
means for securing said first lid member and said second lid member together.

5,601,441

SELF-TERMINATING ELECTRICAL CONNECTOR

David Weinstein, Yorktown Heights, and Gino Antonini, Pelham, both of N.Y., assignors to Kings Electronics Co., Inc., Tuckahoe, N.Y.

Filed Aug. 30, 1995, Ser. No. 521,550
Int. Cl.[6] H01R *29/00*
U.S. Cl. 439—188 **3 Claims**



1. A self-terminating electrical connector adapted to conduct an electrical signal when mated to a mating connector, said mating connector having a mating connector body and a mating center conductor, and terminate said signal by providing an appropriate impedance upon disengagement of said mating connector, said electrical connector comprising:

a connector body having a front body face formed as a connector port, and a rear body face, said rear body face being adapted to connect to a coaxial signal source;

a center conductor coaxially mounted within, and electrically isolated from, said connector body;

a terminating resistor having a first resistor face and a second resistor face, said second resistor face being in conductive contact with said connector body;

a conductive spring having a first spring end and a second spring end, said second spring end being in conductive contact with said first resistor face; said first spring end having a sloped surface movable between a first spring position, in which said first spring end is in conductive contact with said center conductor, and a second spring position, in which contact between said first spring end and said center conductor is interrupted; and

a slidable plunger formed of an insulative material, coaxially mounted on said center conductor proximal to said front body face, said plunger having a sloped mating surface adapted to mate with said first spring end, said plunger being movable against force of said conductive spring, between a forward position and a rearward position, forward movement of said plunger being limited by a stop;

whereby insertion of a mating connector into said front body face of said connector body causes electrical contact between said connector body and a mating connector body of said mating connector, and between said center conductor and a mating center conductor of said mating connector, said insertion further causing rearward movement of said plunger, whereby said sloped mating surface forces movement of said first spring end to said second spring position, whereby contact between said first spring end and said center conductor is interrupted; and

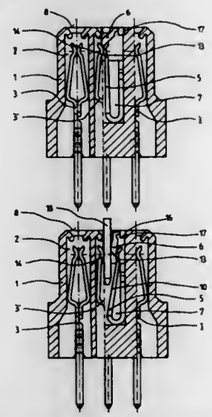
withdrawal of said mating connector from said front body face of said connector body interrupts electrical contact between said connector body and said mating connector body, and between said center conductor and said mating center conductor, said withdrawal further allowing for forward movement of said plunger under force of said conductive spring, to a forward position, whereby said sloped mating surface of said plunger allows movement of said first spring end to said first spring position due to mating between said sloped mating surface of said plunger and said first spring end, wherein contact between said first spring end and said center conductor is re-established and, when said rear body face is connected to said coaxial power source, an impedance is established between said connector body and said center conductor through said resistor and said conductive spring.

5,601,442

SWITCH PLUG

Dietmar Harting, Espelkamp; Gunter Pape, Bielefeld, and Doris Wichering, Osnabruck, all of Germany, assignors to Harting Elektronik GmbH, Germany

Filed Dec. 15, 1995, Ser. No. 573,138
Claims priority, application Germany, Sep. 27, 1995, 195 35 913.5
Int. Cl.[6] H01R *13/703*
U.S. Cl. 439—188 **13 Claims**



1. Switch plug with contact springs arranged in contact chambers of an insulating body, wherein contact blades of a corresponding mating plug are capable of being introduced into the contact chambers and thereby come into contact with the contact springs and in which at least one jumper is provided which short circuits two adjacent contact springs when no mating plug is plugged in and wherein the short circuit is cleared when the blade contacts are introduced into the contact chambers, characterized in that

the jumper (5) made of spring elastic, conductive material is inserted into a recess (7) between two contact chambers (2), whereby lateral contact arms (13) of the jumper protrude into the contact chambers and bear resiliently against the contact legs of the contact springs (3'), and in that in the entry zone of the contact chambers (2) an elastic actuating component (6) made of plastic material is provided which upon introduction of a contact blade (19) acts on the jumper (5) in such a way that the contact arms (13) thereof are pushed away from the contact legs (14) of the spring contacts (3') and the short circuit is cleared.

5,601,443

AUTO SEIZING CONNECTOR

Vadim Stinsky, Ithaca, and Thomas G. Macek, Endicott, both of N.Y., assignors to Augat Inc., Mansfield, Mass.

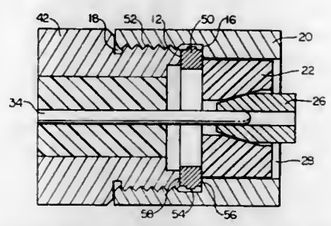
Filed Oct. 25, 1995, Ser. No. 547,866
Int. Cl.[6] H01R *13/15*
U.S. Cl. 439—263 **12 Claims**

1. An auto seizing connector comprising:

a first connector portion defining a first aperture for receiving a closing collar;

a closing collar movably disposed within said first aperture, said closing collar defining a second aperture for receiving a first electrical terminal, wherein relative movement of said closing collar with respect to said first electrical terminal causes said terminal to move from a first engagement position to a second engagement position;

a second connector portion for supporting a second electrical terminal, wherein said second electrical terminal is engageable with said first electrical terminal; and



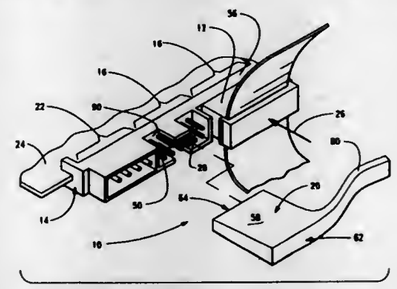
an extension fitting positioned between said first connector portion and said second connector portion, said extension fitting having a first end for abutting said second connector portion and a second end for abutting said closing collar, said extension fitting including a boss on at least a portion thereof.

5,601,444

APPARATUS FOR SECURING A RIBBON CABLE PLUG TO A PRINTED CIRCUIT BOARD CONNECTOR

Alvin E. Cox, Yukon, Okla., assignor to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Aug. 22, 1995, Ser. No. 517,905
Int. Cl.[6] H01R *13/62*
U.S. Cl. 439—299 **8 Claims**



1. An apparatus for securing a ribbon cable plug to a printed circuit board connector, comprising:

a retaining plug constructed of a material comprising an organic polymer, the retaining plug comprising a body member having an integral tongue projecting laterally from the body member at one end of the body member; and

retaining plug mounting means, formed partially on the printed circuit board connector and partially on the opposite end of the retaining plug, for mounting the retaining plug on the printed circuit bard connector so as to extend the tongue of the retaining plug across the distal end of the ribbon cable plug at such times that the ribbon cable plug is mated with the printed circuit board connector.

5,601,445

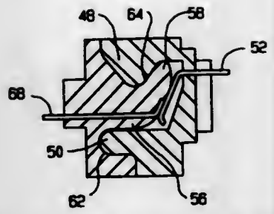
ELECTRICAL AND STRUCTURAL INTERCONNECTOR

Jeffery D. Schipper, Poway, and David R. Williams, Temecula, both of Calif., assignors to IMED Corporation, San Diego, Calif.

Filed Mar. 13, 1995, Ser. No. 403,502
Int. Cl.[6] H01R *4/50*
U.S. Cl. 439—341 **2 Claims**

1. An electrical and structural interconnector, comprising:

a first part having a body portion with a hook-shaped portion extending in a direction outward and upward from the body portion and terminating along an upturned edge to define an



upwardly opening recess between said edge and the first part body portion, said body portion defining an inwardly directed recess under said first part extending portion;

at least one electrical conductor extending through said first part and terminating in a contact surface on an outer surface of said extending portion;

a detachable second part having a body portion with a main body recess defined by an upper wall having a downward directed portion and a lower wall including an extension of said second part body portion, wherein said main body recess is configured and dimensioned to slidingly receive said first part extending portion when rotated into said recess in the outward and upward direction with said downward directed portion engaged in said first part upward opening recess and said second part extension received in said first part inwardly directed recess such that contact between said portions secures said first part against movement in lateral or vertical directions with respect to the second part; and

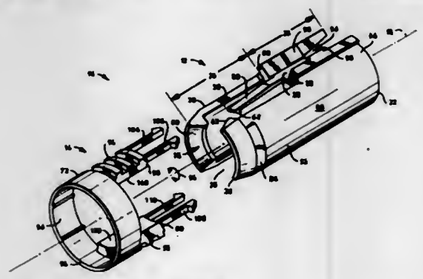
at least one electrical conductor extending through said second part and terminating in a contact surface positioned within said main body recess to be contacted by said first part contact surface and resiliently deformed by said first part extending portion when received in said recess to provide an electrical connection between said conductors.

5,601,446

CONNECTOR LATCH AND ASSEMBLY

John O. Wright, York, Pa., assignor to Osram Sylvania Inc., Danvers, Mass.

Filed Nov. 7, 1995, Ser. No. 553,162
Int. Cl.[6] H01R *13/627*
U.S. Cl. 439—357 **20 Claims**



1. A connector latch, comprising:

an inner member having a bore which extends therethrough along a longitudinal axis from a first end to an opposite second end, said inner member comprising a first segment and an opposite second segment, said opposite second segment comprising a base portion, said inner member comprising a plurality of first legs which extend in the direction of said longitudinal axis from said base portion towards said first end, at least one first leg of said plurality of first legs comprising a first protuberance which protrudes towards said longitudinal axis, said first protuberance being movable towards and away from said longitudinal axis, each first leg of said plurality of first legs being spaced from an adjacent first leg in a circumferential direction relative to said longitudinal axis to provide a respective first opening between adjacent first legs; and

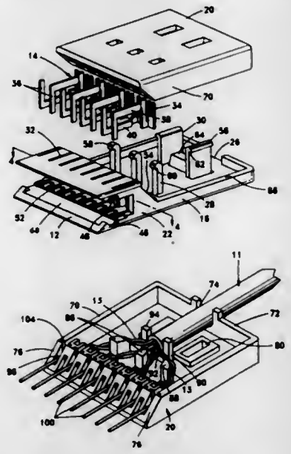
an outer sleeve concentric with said inner member and having an inner surface adjacent an outer surface of said inner member, said outer sleeve being movable in the direction of said longitudinal axis towards and away from said first protuberance to a first position and second position, respectively.

5,601,447

PATCH CORD ASSEMBLY

Carl G. Reed, 6780 Greenbrook Dr., Clemmons, N.C. 27012, and Clifford F. Lincoln, 1433 Vernon Ridge Ct., Atlanta, Ga. 30338

Filed Jun. 28, 1995, Ser. No. 496,165
Int. Cl.[6] H01R *4/24*
U.S. Cl. 439—404 **10 Claims**



1. A patch cord cable assembly for use in a high speed transmission cable network, where the assembly is capable of transmitting data at 100 MHz frequency while offering near-end crosstalk (NEXT) at EIA/TIA 568-A Category 5 performance levels, said assembly comprising:

(a) a twisted pair cable including plural twisted pairs of wires, each pair having a different twist length, the twist for each pair being uniform over the length of the cable with the exception of portions of the cable adjacent the ends of the cable,

(b) a cable jacket surrounding the plural twisted wire pairs, and

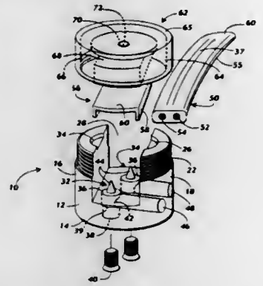
(c) an electrical connector on each end of the cable assembly, where at least one of said connectors comprises a pair of interfitting housing members, a plurality of side-by-side electrical terminals positioned between said housing members for establishing electrical contact with the individual wires in the cable, said terminals being arranged at essentially one end of the housing members and the cable is caused to enter said housing members from an opposite end thereof, one of said housing members including a cable jacket stop intermediate said ends and plural, spaced-apart posts between said cable jacket stop and said one end, whereby said jacketed cable is fed into said one housing member and the end of said jacket seats in said cable jacket stop with each pair of twisted wires continuing toward said one end, guided by spaced-apart posts to control spacing, bend radius, and length of each pair, and the respective ends of individual wires are positioned for termination to respective electrical terminals.

5,601,448

CONNECTOR FOR LIGHTING SYSTEM AND METHOD

Kar K. Poon, Kowloon, Hong Kong, assignor to Sunskill Industries, Ltd., Kowloon, Hong Kong

Filed Mar. 21, 1995, Ser. No. 408,546
Int. Cl.[6] H01R *4/24*
U.S. Cl. 439—419 **6 Claims**



1. A connector for electrical communication between a low-voltage lamp and an electrical cable connected with a source of low-voltage electricity, comprising:

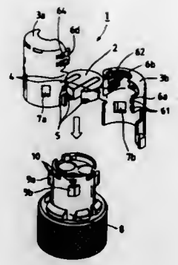
a base with two opposed sections extending in a first direction therefrom and defining a channel having a longitudinal axis therebetween, a distal end of each section having a threaded radially outward surface for receiving a threaded cap;

a pair of spaced-apart nails held in the base and extending from the channel with one of the nails on respective sides of the longitudinal axis, each nail defining a threaded axial bore open to a surface of the base for receiving a screw and a slotted opening in a side of the nail for receiving a wire from a low-voltage lamp, the wire secured in electrical communication with the nail by the screw;

a cap having a threaded interior surface for engaging the two threaded sections; and

a presser pivotally mounted to an interior bottom surface of the cap, the presser sized for being received between the two sections for bearing against the electrical cable in the channel,

whereby an electrical cable, being received longitudinally in the channel, is piercingly engaged for electrical communication with the nails by the cap being threadingly screwed onto the two sections.



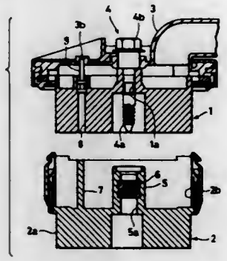
securing means for securing said half covers to each other in a position where said half covering circumscribe at least a portion of said connector housing to thereby fixedly secure said rear holder to said connector housing.

5,601,450

MATABLE CONNECTOR

Akira Nabeshima; Kaoru Watanabe, and Toshikazu Saba, all of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Mie, Japan

Division of Ser. No. 198,282, Feb. 18, 1994, Pat. No. 5,486,119.
This application Jun. 7, 1995, Ser. No. 478,783
Claims priority, application Japan, Mar. 19, 1993, 5-18644 U; Mar. 19, 1993, 5-18645 U; Mar. 19, 1993, 5-18646 U
Int. Cl.[6] H01R *3/00*
U.S. Cl. 439—489 **4 Claims**



5,601,449

REAR HOLDER COVER OF WATERPROOF CONNECTOR

Yasuhisa Shinji, and Hiraji Takase, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Oct. 25, 1994, Ser. No. 329,645
Claims priority, application Japan, Oct. 25, 1993, 5-287230
Int. Cl.[6] H01R *13/56*
U.S. Cl. 439—447 **16 Claims**

1. A rear holder cover of an electrical waterproof connector for securing a terminal to a connector housing comprising:

a rear holder in which a wire associated with said terminal is received in an insertion direction;

a plurality of hinge connection portions each having a first end and a second end, wherein said first end of each of said plurality of hinge connection portions is connected to said rear holder, wherein said rear holder is insertable into said connector housing by movement in said insertion direction parallel to a longitudinal axis, and wherein said hinge connection portions are pivotally movable in a direction perpendicular to said insertion direction and about respective axes which are parallel to said longitudinal axis;

a plurality of half covers respectively connected to said second end of each of said plurality of hinge connection portions; and

1. A connector comprising: a first connector housing and a second connector housing, wherein a bolt is provided on said first connector housing, a nut is provided on said second connector housing, and by tightening said bolt relative to said nut, said first and second connector housings are displaced relative to each other in a connecting direction to be fitted together, the connector further comprising:

an indicator disposed on one of said first and second connector housings, said indicator being displaced in accordance with the displacement of said first and second connector housings in the connection direction to indicate a fitting-completed condition of said first and second connector housing, the indicator comprising:

a bar-like projection on said second connector housing extending from a base of said second connector housing;

an insertion aperture in said first connector housing opposing said projection and sized to receive said projection wherein said insertion aperture is separate and spatially offset from the bolt;

a detection pin movable within said insertion aperture between a concealed position and a visible position, said projection movably positioning said detection pin to the visible position upon a fitting-completed condition of said first and second connector housings.

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5,601,451
COMBINATION CONNECTOR

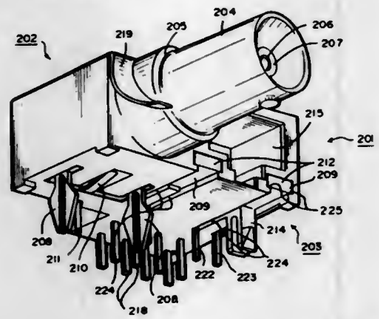
Francisco R. Driones, Markham, and Kamal S. Boutros, Richmond Hill, both of Canada, assignors to Amphenol Corporation, Wallingford, Conn.

Continuation-in-part of Ser. No. 252,425, Jun. 1, 1994, Pat. No. 5,407,366, which is a continuation-in-part of Ser. No. 219,161, Mar. 28, 1994, Pat. No. 5,401,192. This application Apr. 17, 1995, Ser. No. 422,865

The portion of the term of this patent subsequent to Mar. 28, 2014, has been disclaimed.

Int. Cl.[6] H01R *13/658;13/66*

U.S. Cl. 439—490 **12 Claims**



1. A combination connector, comprising a BNC connector and modular jack connector, wherein the BNC connector and the modular jack connector share a single molded housing, each connector having a respective housing section, the housing sections being molded together as one piece to form the single molded housing, and wherein the single molded housing includes an opening into which is fitted an indicator light.

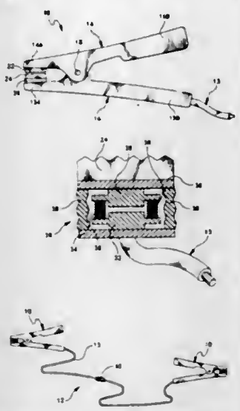
5,601,452
NON-ARCING CLAMP FOR AUTOMOTIVE BATTERY JUMPER CABLES

Anthony A. Ruffa, Niantic, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 3, 1995, Ser. No. 538,266

Int. Cl.[6] H01R *11/22*

U.S. Cl. 439—504 **4 Claims**



1. A clamp for a jumper cable comprising:

a pair of gripping members, each having a jaw end and a handle end, said gripping members being pivotably connected to each other about an axis between the jaw ends and the handle ends;

spring means mounted on the gripping members for normally urging the jaw ends toward each other and the handle ends away from one another;

a first jaw member secured to the jaw end of one of said gripping members;

a second jaw member secured to the jaw end of the other of said gripping members; and

a pressure switch positioned between said second jaw member and said gripping member such that spring pressure provided by said spring means is operative for closing said pressure switch when said clamp is mounted on a battery terminal, said pressure switch being encapsulated by a flexible insulating material, said pressure switch having a first contact in electrical communication with said second jaw member, and further having a second contact in electrical communication with an electrically conductive cable.

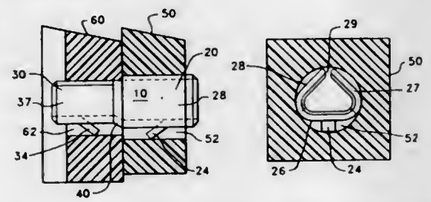
5,601,453
ELECTRICAL CONNECTOR HOLD-DOWN

David C. Horchler, Millersburg, Pa., assignor to Berg Technology, Inc., Reno, Nev.

Filed Jul. 20, 1994, Ser. No. 277,989

Int. Cl.[6] H01R *13/73*

U.S. Cl. 439—567 **33 Claims**



1. A hold-down for interconnecting a first structure to a second structure via a circular bore within the first structure and a circular bore within the second structure, said hold-down comprising:

a first body having a base portion, a first side portion, and a second side portion forming the first body wherein the diameter of the smallest circle which encompasses the first body is greater than the diameter of the circular bore within the first structure, and the first body having a gap formed between ends of the first side portion and second side portion so that the diameter of the smallest circle which encompasses the first body may be made smaller than the diameter of the circular bore within the first structure so that the first body of the hold-down may be inserted into the circular bore within the first structure,

a second body having a base portion, a first side portion, and a second side portion forming the second body wherein the diameter of the smallest circle which encompasses the second body is greater than the diameter of the circular bore within the second structure, and the second body having a gap formed between ends of the first side portion and second side portion so that the diameter of the smallest circle which encompasses the second body may be made smaller than the diameter of the circular bore within the second structure so that the second body of the bold-down may be inserted into the circular bore within the second structure,

said first and second structures are interconnected by the first and second bodies of the hold down wherein each body of the hold-down provides a plurality of points of contact against side walls of the circular bore within the structures when the body of the hold-down is inserted in the bore because the diameter of the smallest circle that encompasses the body of the hold-down is greater than the diameter of the bore prior to insertion into the bore.

5,601,454
METHOD OF AND CONSTRUCTION FOR DETECTING DEFECT IN LANCE

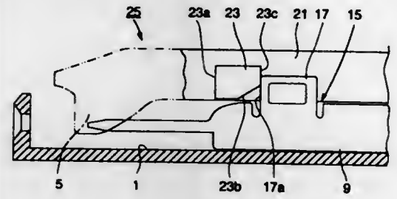
Kenya Suzuki, and Shinji Kodama, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Jul. 14, 1995, Ser. No. 502,058

Claims priority, application Japan, Jul. 14, 1994, 6-162271

Int. Cl.[6] H01R *13/40*

U.S. Cl. 439—595 **5 Claims**



3. A lance defect detection construction for detecting a defect in a lance projected into a terminal receiving chamber in a connector housing through insertion of a terminal into said terminal receiving chamber, comprising:

a side beak formed on a side surface of said lance; and

a retaining piece portion formed on said terminal;

wherein when a distal end portion of said lance is not displaced by said terminal inserted into said terminal receiving chamber, said side beak abuts against said retaining piece portion to hinder insertion of said terminal, thereby detecting said defect in said distal end portion of said lance.

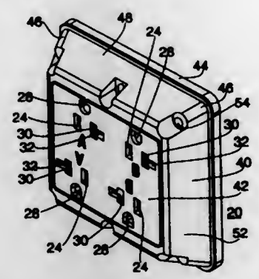
5,601,455
QUADRIPLEX RECEPTACLE

Harcharan S. Bagga, 2227 Eastchester Rd., Bronx, N.Y. 10467

Filed Feb. 10, 1995, Ser. No. 385,297

Int. Cl.[6] H01R *25/00*

U.S. Cl. 439—650 **26 Claims**



1. An electrical apparatus having at least two electrical receptacles therein comprising:

a) body means having a central longitudinal axis and having a first generally closed surface, a second generally open surface, spaced apart from and generally parallel with said first surface; a cavity extending inwardly from said second surface towards said first surface and a plurality of first apertures extending from said cavity through said body means to said first surface;

b) at least two first contacts, one for each of said at least two electrical receptacles, each of said at least two first contacts positioned adjacent a first aperture of said at least two receptacles to receive and retain a first blade of a three blade electrical plug inserted through an associated first aperture into each of said at least two first contacts;

c) line bus means coupled to each of said at least two first contacts and positioned inside said body cavity, said line bus means selectively separable into two separate line bus means each associated with a different one of said at least two first contacts;

d) at least two second contacts, one for each of said at least two electrical receptacles, each of said at least two second contacts positioned adjacent a different first aperture of said at least two receptacles to receive and retain a second blade of a three blade electrical plug inserted through said associated different first aperture into each of said at least two second contacts;

e) neutral bus means coupled to each of said at least two second contacts and positioned inside said body cavity;

f) at least two third contacts, one for each of said at least two electrical receptacles, each of said at least two third contacts positioned adjacent a further first aperture to receive and retain a third blade of a three blade electrical plug inserted through said associated further first aperture into each of said at least two third contacts;

g) cover means positionable over said body means second surface and attachable to said body means to generally close said second surface; a plurality of second apertures extending through said cover means into said cavity and aligned with associated first apertures in said body means;

h) ground bus means coupled to each of said at least two third contacts and positioned over said cover means with said at least two third contacts extending through associated second apertures into said cavity and adjacent associated first apertures;

i) a first plurality of ribs in said cavity to support said line bus means either as one line bus means or two separate line bus means; and

j) a second plurality of ribs in said cavity to support said neutral bus means in said cavity completely encircling said line bus means and electrically insulated therefrom.

5,601,456
BUS BAR CONNECTOR

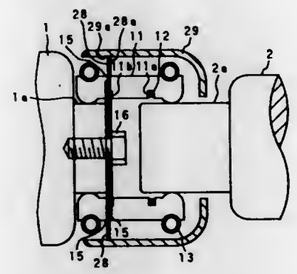
Hiroshi Takeuchi, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 406,041, Mar. 17, 1995, Pat. No. 5,482,481, which is a division of Ser. No. 45,814, Apr. 9, 1993, Pat. No. 5,423,700. This application Oct. 10, 1995, Ser. No. 540,485

Claims priority, application Japan, Oct. 4, 1992, 4-118306

Int. Cl.[6] H01R *13/18*

U.S. Cl. 439—821 **2 Claims**



1. A bus bar connector comprising:

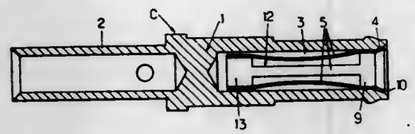
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a contact member including a plurality of contact plates which contact first and second conductive units to thereby electrically connect the first and second conductive units;
a shield for covering the contact member, said shield having an annular groove formed in an inner wall of the shield; and
a circular guide plate having projecting parts which project in a radial direction thereof to be fitted in the annular groove of the shield, said circular guide plate being fixed to one of the conductive units and having a plurality of grooves into which the plurality of contact plates of the contact member are fitted, so as to radially support the plurality of contact plates.

5,601,457
FEMALE ELECTRICAL CONTACT OF THE SOCKET TYPE

Jean-François Le Gall, Saint-Cloud, France, assignor to Framatome Connectors International, Courbevoie, France

Filed Oct. 21, 1994, Ser. No. 327,672
Claims priority, application France, Oct. 22, 1993, 93 12637
Int. Cl.[6] H01R *13/187*
U.S. Cl. 439—843 **5 Claims**

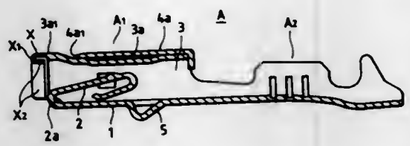


1. A female electrical contact of the socket type comprising a tubular body defining a housing having a front inlet orifice for receiving a male electrical contact of the pin type, and a plurality of elastically deformable contact springs which are curved radially inward and which extend substantially longitudinally, said contact springs being distributed in a cylinder to constitute a cage, said contact springs being fixed to said tubular body adjacent to front ends of said contact springs, and said front ends of said contact springs being connected to one another by a front ring which fits over an outline of said housing in a vicinity of said inlet orifice and is secured to said housing, wherein rear ends of said contact springs are also connected to one another by means of a rear ring, said rear ring having a transverse size smaller than a transverse size of said housing and being free to move longitudinally inside said housing, and wherein respective central zones of said contact springs are curved radially inwards.

5,601,458
ELECTRIC TERMINAL

Hideki Ohsumi; Seiji Kozono, and Michio Akashi, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Aug. 31, 1994, Ser. No. 298,675
Claims priority, application Japan, Aug. 31, 1993, 5-216040
Int. Cl.[6] H01R *11/22*
U.S. Cl. 439—852 **11 Claims**

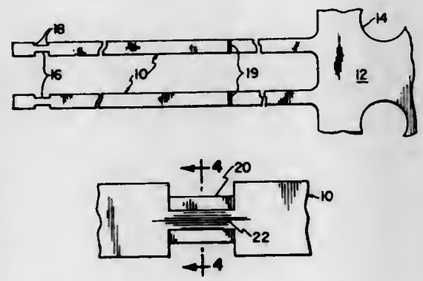


1. A terminal comprising:
an electric wire connecting portion for connecting a wire;
an electric contact portion including:
a turnback elastic contact plate provided at a distal end of a base plate of the electric contact portion;
a pair of side plates upwardly extending from the base plate;
a pair of top plates bending inside, which are continuously coupled to the side plate, respectively, one top plate being superimposed on the other top plate;
at least one swollen portion provided on at least one of the side plate and the one top plate, wherein the swollen portion includes a backing plate extending outwardly from the one top plate, and side backing plates extending inwardly from the side plates, respectively, and wherein the side backing plates include engagement holes, respectively; and
a cap in the form of a square tube, the cap having a pair of side walls, an upper wall and a lower wall, the side walls having projections, respectively, corresponding to the engaging holes, the lower wall having a large cutout portion, the upper wall having a small cutout portion.

5,601,459
SOLDER BEARING LEAD AND METHOD OF FABRICATION

Jack Seidler, Flushing, N.Y., assignor to North American Specialties Corporation, Flushing, N.Y.

Filed Sep. 29, 1994, Ser. No. 315,204
Int. Cl.[6] H01R *4/02*
U.S. Cl. 439—876 **9 Claims**

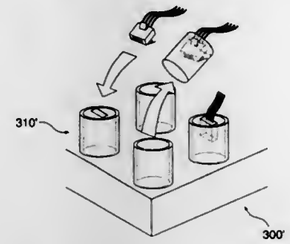


1. A connector arrangement for a substrate having a row of conductive pads, comprising:
a carrier strip of electrically conductive material of substantially uniform thickness,
a plurality of elongated conductive leads, each integrally connected to said carrier strip at one end of the lead, said leads being parallel and spaced corresponding to said pads,
each lead comprising:
a generally flat body portion of substantially uniform width and thickness, with an upper surface and a lower surface,
a longitudinally extending solder-bearing portion at a predetermined position along said lead adjoining said flat body portion and having a cross-section with undercuts at the edges of said solder-bearing portion, an interior portion of said cross-section having a tip extending at least to the same extent as the lower surface of said adjoining flat body portion,
a shoulder between said solder-bearing portion and said flat body portion at an end of said solder-bearing portion, and
a solder mass mechanically formed about said solder-bearing portion, and extending around said undercuts and substantially to said tip, said solder mass formed at a temperature below the melting point of said solder mass,
whereby said solder mass is prevented from longitudinal movement by said shoulder and from transverse movement by said undercuts, and said lead may be soldered to a corresponding pad by placing said tip in contact with said pad and reflowing said solder mass.

5,601,460
GEL FILLED MODULAR ELECTRICAL CONNECTING BLOCK

Gerald L. Shimirak, Danville; Jackie Thomas, Sunnyvale; Miguel Morales; Yogendra S. Dhanik, both of Fremont, and Darcey Messner, Sunnyvale, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Division of Ser. No. 286,763, Aug. 5, 1994, Pat. No. 5,427,547, which is a division of Ser. No. 6,917, Jan. 22, 1993, Pat. No. 5,376,019, which is a continuation-in-part of Ser. No. 802,950, Dec. 3, 1991, Pat. No. 5,246,383, which is a continuation-in-part of Ser. No. 791,749, Nov. 12, 1991, Pat. No. 5,195,125, which is a continuation of Ser. No. 584,325, Sep. 17, 1990, Pat. No. 5,111,497. This application Mar. 28, 1995, Ser. No. 411,449
Int. Cl.[6] H01R *13/52*
U.S. Cl. 439—936 **2 Claims**

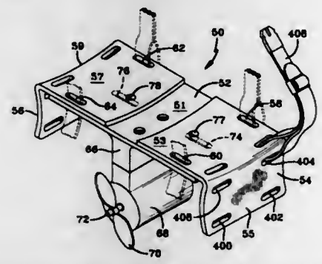


1. A sealed plug comprising:
a plug encapsulated in and by a sufficient quantity of shaped gel having an elongation of at least about 100% and a Voland gram hardness of about 15–50 grams such that said gel surrounds the plug and is capable of sealing at least a second plug upon the connection of the two plugs through the use of a mating socket, said shaped gel having a substantially cylindrical shape.

5,601,461
FLOAT TUBE PROPULSION APPARATUS

Steven W. Mills, 13207 Centerburg Rd., Sunbury, Ohio 43074

Filed Nov. 6, 1995, Ser. No. 553,956
Int. Cl.[6] B60L *11/02*
U.S. Cl. 440—6 **15 Claims**

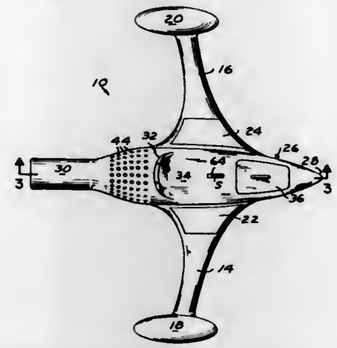


1. A propulsion apparatus for attachment to a float tube having an outer skin extending around and conforming to a cylindrical portion of the float tube forming a curved outer surface, the apparatus comprising:
(a) a mount including a first mounting panel having a concave face conformed to seat against the curved outer surface of the float tube and a second mounting panel having a concave face conformed to seat against the curved outer surface of the float tube wherein the mounting panels are adjustably mounted to a central mount member for adjustably spacing the concave, mounting panel faces;
(b) a first fastener, at least a portion of which is conformed to attach to the outer skin of the float tube for removably fastening the first mounting panel to the outer skin;
(c) a second fastener, at least a portion of which is conformed to attach to the outer skin for removably fastening the second mounting panel to the outer skin;
(d) a motor housing pivotally connected to the mount and housing a motor to which a propeller is attached; and
(e) an energy source providing energy to the motor.

5,601,462
TOY BOAT

Onnie Harlow, 603 W. Shawnee, Tahlequah, Okla. 74464

Filed Apr. 22, 1996, Ser. No. 636,049
Int. Cl.[6] B60L *11/02*
U.S. Cl. 440—6 **12 Claims**



1. A toy boat, comprising;
an elongated tubular hull having a forward closed end and a rearward cylindrical water containing open end portion and having an aircraft type horizontal wing cooperatively projecting laterally from opposite sides of the hull intermediate its ends;
a hollow ovate pod secured to each said wing opposite said hull and having its major axis parallel with the longitudinal axis of said hull;
a bulkhead dividing said hull to form a forward motor compartment,
said hull having water admitting openings rearwardly of said bulkhead;
a battery and a battery operated motor in said motor compartment;
a propeller in said cylinder portion opposite its open end;
drive shaft means operatively connecting said motor with said propeller for forcing water through the cylindrical rearward open end portion and propelling said boat forwardly; and,
boat control means including a rudder and wiring means connecting said battery with said motor.

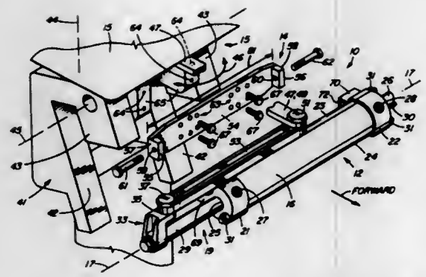
5,601,463
FLUID ACTUATED CYLINDER WITH OUTBOARD MOTOR MOUNTING

Jacob Kobelt, 1654 Ocean Park Road, Surrey, British Columbia, Canada

Filed Jun. 26, 1995, Ser. No. 494,788
Int. Cl.[6] B63H *5/12*
U.S. Cl. 440—61 **20 Claims**

1. A fluid cylinder steering apparatus for mounting on a marine outboard motor for swivelling the motor for steering, the apparatus comprising a steering cylinder which includes:

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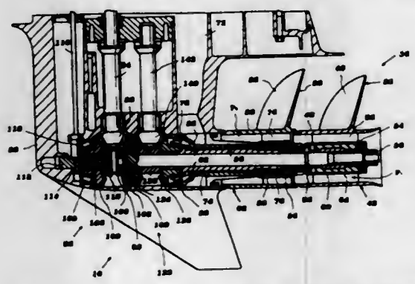


(a) a tubular body portion having a bore disposed about a cylinder axis, and first and second open end portions,
(b) a piston rod and piston reciprocable axially relative to the bore of the body portion,
(c) first and second end caps enclosing the first and second open end portions of the body portion respectively, each end cap having a cap boss with a respective cap fastener opening and an axially disposed piston rod opening to receive the piston rod passing therethrough, and
(d) retainers cooperating with the end caps to retain the end caps on the body portion,

the steering apparatus also comprising a mounting bracket which includes:

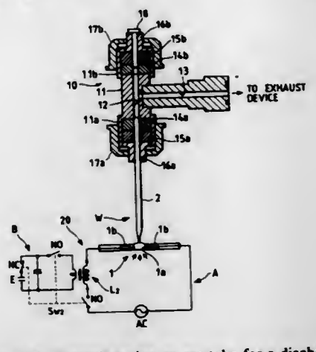
(e) a bracket body portion and a pair of bracket bosses extending therefrom, each bracket boss having a respective bracket fastener opening and being located to cooperate with a respective cap boss to form a pair of aligned fastener openings, a boss fastener cooperating with each pair of aligned fastener openings to secure the mounting bracket to the end caps of the steering cylinder, the bracket body portion being adapted to be secured to an outboard motor mount.

5,601,464
TRANSMISSION SYSTEM FOR COUNTER-ROTATIONAL PROPULSION DEVICE
Hiroshi Ogino, and Yoshikazu Nakayasu, both of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan
Filed Nov. 30, 1994, Ser. No. 347,286
Claims priority, application Japan, Nov. 30, 1993, 5-300234
Int. Cl.[6] B63H *21/28*
U.S. Cl. 440—75 **43 Claims**



1. An outboard drive for a watercraft comprising a drive shaft adapted to be rotationally driven by a motor of the outboard drive and extending into a lower unit of the outboard drive, a first transmission which selectively couples said drive shaft to a first propulsion shaft which drives a first propulsion device external to the lower unit, and a second transmission provided between said first propulsion shaft and a second propulsion shaft, said second propulsion shaft driving a second propulsion device external to the lower unit, said second transmission configured to rotate said second propulsion shaft in a rotational direction opposite of the rotational direction that said first transmission rotatably drives said first propulsion shaft, said first and second transmissions being arranged within said lower unit of the outboard drive along an axis of said first propulsion shaft.

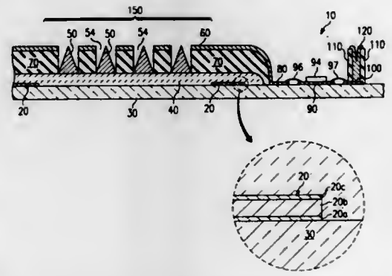
5,601,465
METHOD FOR MANUFACTURING ARC TUBE FOR DISCHARGE BULB
Takeshi Fukuyo; Shinichi Irisawa, and Akihiro Nagata, all of Shizuoka, Japan, assignors to Koito Manufacturing Co., Ltd., Tokyo, Japan
Filed Jul. 25, 1995, Ser. No. 507,673
Claims priority, application Japan, Aug. 8, 1994, 6-185841
Int. Cl.[6] H01J *9/38*
U.S. Cl. 445—6 **5 Claims**



1. A method for manufacturing an arc tube for a discharge bulb, comprising the steps of:
disposing a pair of electrodes opposite one another in an arc tube;
connecting an exhaust tube to said arc tube;
exhausting gas from said arc tube through said exhaust tube;
introducing an inert gas into said arc tube through said exhaust tube;
connecting an arc discharge generating circuit to the oppositely disposed electrodes;
passing a current between said electrodes with said arc discharge generating circuit to carry out an ion bombardment process in which an arc discharge is caused between said electrodes in an inert gas atmosphere, a current density of a current applied to said electrodes by said arc discharge generating circuit during said ion bombardment process being in a range of 30 to 100 A/mm^2;
exhausting gas from said arc tube through said exhaust tube;
degassing said arc tube while heating said arc tube;
introducing a metal halide as a luminous material, mercury, and a rare gas into said arc tube through said exhaust tube; and
tipping off said exhaust tube.

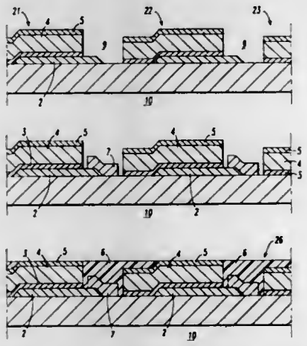
5,601,466
METHOD FOR FABRICATING FIELD EMISSION DEVICE METALLIZATION
Chi-Cheong Shen, Richardson, and Lester L. Hodson, McKinney, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Apr. 19, 1995, Ser. No. 424,833
Int. Cl.[6] H01J *9/02*
U.S. Cl. 445—24 **13 Claims**

1. A method of fabricating an electron emission apparatus comprising the steps of:



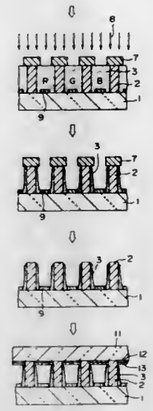
forming a conductive mesh structure on an insulating substrate, said conductive mesh structure comprising niobium, titanium tungsten and aluminum;
providing a resistive layer on said insulating substrate and said conductive mesh structure;
forming an insulating layer over said resistive layer;
forming a conductive layer on said insulating layer;
forming a plurality of apertures through said conductive layer and through said insulating layer; and
forming microtip emitters on said resistive layer within each of said apertures in said conductive layer.

5,601,467
METHOD FOR MANUFACTURING A LOW RESISTANT ELECTROLUMINESCENT DISPLAY DEVICE
Roger Carroll, Willimantic, Conn., assignor to Northrop Grumman Corporation, Los Angeles, Calif.
Filed Jun. 19, 1995, Ser. No. 491,651
Int. Cl.[6] H01J *9/227*
U.S. Cl. 445—24 **6 Claims**



1. A method of fabricating an electroluminescent display panel comprising the steps of
a) providing a substrate;
b) applying a layer of transparent ITO electrode material over the glass substrate;
c) etching the ITO layer to define a plurality of ITO electrodes;
d) applying a dielectric, phosphor and dielectric stack over the ITO electrodes;
e) etching the dielectric, phosphor and dielectric stack to a desired pattern such that there is a cavity above one edge of each ITO electrode to form a preform structure;
f) annealing the preform structure;
g) applying a metal assist structure over an exposed edge of each ITO electrode;
h) applying a planarization layer over the metal assist electrodes; and
i) applying top electrodes over the dielectric phosphor and dielectric stacks.

5,601,468
PLASMA DISPLAY PANEL AND METHOD FOR FORMING FLUORESCENT SCREENS OF THE SAME
Hideaki Fujii; Hiroshi Ishiga; Masatoshi Harayama, and Motohiro Oka, all of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Japan
Continuation of Ser. No. 274,780, Jul. 14, 1994, abandoned, and a continuation of Ser. No. 960,110, Oct. 13, 1992, abandoned. This application Mar. 20, 1996, Ser. No. 618,771
Claims priority, application Japan, Oct. 14, 1991, 3-292025; Nov. 21, 1991, 3-331559; Jun. 23, 1992, 4-187399
Int. Cl.[6] H01J *9/227*
U.S. Cl. 445—24 **12 Claims**



1. A method for forming fluorescent screens of a plasma display panel, comprising the steps of:
disposing a plurality of barrier ribs on a rear plate;
filling predetermined discharging spaces with three types of paste of fluorescent substances for red, green, and blue;
performing a sandblasting process using a sandblasting mask with openings, each of said openings being smaller than the area of each of said discharging spaces; and
performing a sintering process to form said fluorescent screens on said rear plate and the wall surfaces of said barrier ribs.

5,601,469
FASTENING DEVICE FOR CLOTH DOLLS AND DECORATIVE ARTICLES
Chen C. Yang, 8F-3, No. 321, Fu Hsing S. Road, Sec. 1, Taipei, Taiwan
Filed Jan. 10, 1995, Ser. No. 370,892
Int. Cl.[6] A63H *3/00*
U.S. Cl. 446—73 **2 Claims**

1. A composite cloth doll comprising:
a cloth doll having at least one arm or leg with a through-hole;
at least one fastening device fastened to said through-hole of said cloth doll, said fastening device including a fastening assembly and a button ring, said fastening assembly having a fastening portion and a pin head with a pin bole, said button ring having an annular rim and a fastening hole, and said fastening hole of said button ring being engaged with said fastening portion of said fastening assembly; and
a decorative article having at least one protrusive pin, said protrusive pin is dimensioned such that it can be inserted into

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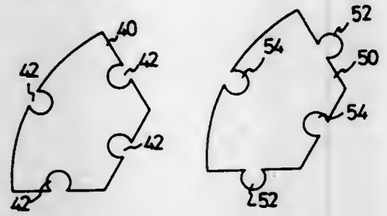
said pin hole of said pin head, thereby permitting said decorative article to be engaged with said cloth doll to form said composite cloth doll.

5,601,470

TOY BUILDING BLOCK PUZZLE

Li-ho Yao, No. 14, Lane 113, Haiamen St., Taipei, Taiwan

Filed Jan. 2, 1996, Ser. No. 582,096
Int. Cl.[6] A63H *33/08; A63F 9/10*
U.S. Cl. 446—127 **3 Claims**



1. A toy construction block puzzle comprising:

a plurality of at least three different shaped and interconnectible toy building elements, each toy building element comprising a hollow block having a closed upper end, an open lower end, and a peripheral side wall interconnecting the lower and upper ends, with at least one recess defined in the peripheral side wall, at least one lug, extending outwardly from the peripheral side wall, the lug and recess being dimensioned and shaped to press fit together thereby interlocking a plurality of blocks together in a horizontal plane;

the peripheral side walls of a first of said elements being shaped as a square with a pair of lugs extending outwardly from a respective mediate point of each of two first opposing straight sides and a pair of recesses, each recess defined in a respective mediate point of each of two second opposing straight sides;

the peripheral side walls of a second of said elements being shaped as an isosceles triangle with one lug extending from a mediate portion of one straight side and a recess defined in a respective mediate portion of each of the two remaining straight sides; and

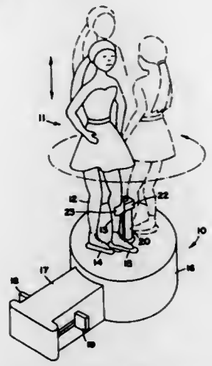
the peripheral side walls of a third of said elements being shaped as a truncated sector of a circle, having a first straight edge, a second and third straight edges which oppose each other and are non-parallel, and an arcuate edge opposing the first straight edge.

5,601,471

SKATING DOLL PLATFORM

Melvin Kennedy, 825 Marbella La., Lantana, Fla. 33462

Filed Nov. 15, 1995, Ser. No. 559,418
Int. Cl.[6] A63H *1/00;3/00;13/02*
U.S. Cl. 446—236 **7 Claims**



1. A platform and a doll resembling a figure skater, mounted on said platform comprising:

A. a stage,

B. an upright bearing anchored on the stage;

C. a slidable shaft extending through the bearing and coupled at its upper end to a leg of the doll to support the doll above the stage, a lower end of the shaft projecting into a space below the stage; and

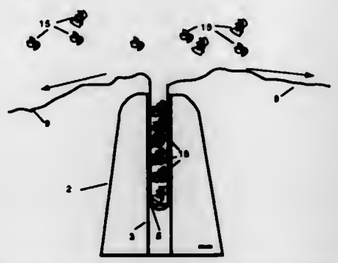
D. a finger-actuated mechanism disposed in said space operatively coupled to the shaft, said mechanism including first means actuated by a first finger of a player to cause said shaft to rotate and thereby spin the doll, and second means actuated by a second finger of the player to cause the shaft to slide upwardly in said bearing to lift the doll above the stage whereby when the doll concurrently spins and lifts it then stimulating a figure skating movement.

5,601,472

METHOD OF FORMING A SIMULATED TOY VOLCANO AND METHOD OF USE THEREOF

Robin L. Parker, 3200 Spalding Cir., Anchorage, Ak. 99507

Division of Ser. No. 364,960, Dec. 28, 1994, Pat. No. 5,512,003. This application Aug. 18, 1995, Ser. No. 516,947
Int. Cl.[6] A63H *33/30;13/10;29/00*
U.S. Cl. 446—475 **7 Claims**



1. The method of causing a simulated volcano to erupt comprising the steps of:

a) forming an outer volcano shell having a central cylindrical tube portion, having a top and a bottom;

b) placing an eruption disk in the bottom of said central cylindrical tube portion;

c) installing a means for causing said eruption disk to be upwardly propelled through said central cylindrical tube portion;

d) installing a plurality of eruption objects above said eruption disk; and

e) activating said means for causing said eruption disk to be upwardly propelled, thereby causing said plurality of eruption objects to be upwardly and outwardly propelled from the top of said central cylindrical tube portion, wherein activating said means for causing said eruption disk to be upwardly propelled includes the steps of:

i) forming a pair of parallel slots within said eruption disk;

ii) placing a length of ribbon, having two ends and a center, through said pair of parallel slots such that the eruption disk is placed at the center of the length of ribbon;

iii) placing the eruption disk with the length of ribbon installed in the bottom of the central cylindrical tube portion; and

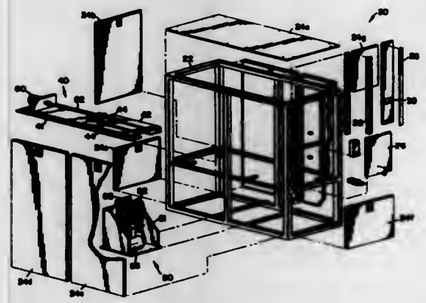
iv) extending the two ends of the length of ribbon upwardly through the central cylindrical tube portion such that the two ends of the ribbon drape over the outer volcano shell.

5,601,473

SKATE SHARPENING APPARATUS AND METHOD

Randy L. Strain, Minneapolis; Jeffrey P. Jannetto, White Bear Lake Township, and Robert M. Evans, North Branch, all of Minn., assignors to M.J.S. Manufacturing, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 161,660, Dec. 3, 1993, abandoned. This application Feb. 24, 1995, Ser. No. 396,185
Int. Cl.[6] B24B *3/40;47/02;49/03*
U.S. Cl. 451—5 **29 Claims**



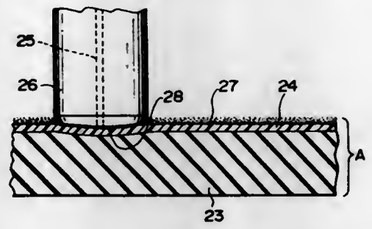
1. A method of automatically sharpening an ice skate blade comprising the step of controlling movement of a rotating grinding wheel relative to the blade in first and second directions such that the grinding wheel grinds the blade according to a predetermined profile that is representative of an arc having a predetermined radius, the first direction being generally parallel to a longitudinal axis of the blade, and the second direction being generally perpendicular to a bottom surface of the blade; whereby the grinding wheel does not rely on a pre-existing profile of the blade when grinding the blade.

5,601,474

POLISHING DISC OF SPHERICAL SURFACE POLISHING DEVICE FOR OPTICAL FIBER END SURFACE AND METHOD FOR POLISHING SPHERICAL SURFACE OF OPTICAL FIBER END SURFACE

Mitsuo Takahashi, Matsudo, Japan, assignor to Seikoh Giken Co., Ltd., Chiba-ken, Japan

Filed Dec. 7, 1994, Ser. No. 350,523
Claims priority, application Japan, Jul. 13, 1994, 6-184060
Int. Cl.[6] B24B *1/00*
U.S. Cl. 451—28 **8 Claims**



8. A polishing disc for polishing a tip end surface of an optical fiber into a spherical shape, the optical fiber being supported by a ferrule, the polishing disc comprising:

a flat base plate comprised of an elastic material, and

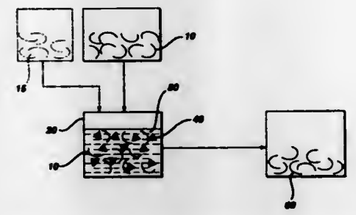
a soft, abrasive-free plastic film adhered to said flat base plate, and having a rough surface formed by a rugged pattern, the rough surface having a surface roughness of 0.2 to 1 micron for retaining an abrasive powder supplied to said polishing disc, wherein the tip end surface of the optical fiber is polished by pressing the optical fiber against the polishing disc, and causing a relative movement between the tip end surface and the polishing disc.

5,601,475

METHOD OF MANUFACTURING SURGICAL NEEDLES HAVING BLUNT TIPS

Jerry W. Stametz, Freemonsburg, Pa., and William C. McJames, Belle Meade, N.J., assignors to Ethicon, Inc., Somerville, N.J.

Continuation of Ser. No. 280,911, Jul. 27, 1994, abandoned. This application Jun. 17, 1996, Ser. No. 664,896
Int. Cl.[6] B24B *31/033*
U.S. Cl. 451—35 **34 Claims**



1. A method of manufacturing a surgical needle having a blunt tip, comprising:

placing at least one taper point surgical needle having a pointed piercing tip into an abrasive media; and,

contacting the needle with the abrasive media for a sufficient amount of time and thereby abrading the needle to effectively convert the pointed piercing tip into a blunt tip.

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5,601,476

METHOD FOR PRECISION-GRINDING A BEZEL AT THE INLET BORE A WORKPIECE

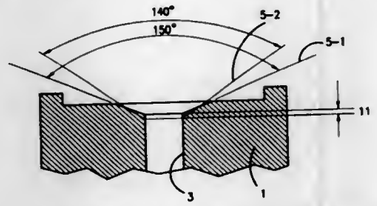
Rainer Maier, Nürtingen, Germany, and Rudolf Koenigswieser, Steyr, Austria, assignors to Kadia-Maschinenbau Kopp GmbH & Co., Nurtingen, and Robert Bosch GmbH, Stuttgart, both of Germany

Filed Dec. 15, 1994, Ser. No. 357,123

Claims priority, application Germany, Dec. 15, 1993, 43 42 681.6

Int. Cl.[6] B24B *1/00*

U.S. Cl. 451—51 **5 Claims**



1. A method for precision-grinding a bezel at the inlet of a bore of a workpiece to have a desired nominal angle using a first and a second grinding tool, each grinding tool having a conical grinding section with an angle slightly greater than the desired nominal angle and an angle which corresponds to the desired nominal angle, respectively, and with at least the second grinding tool having a guiding rod, comprising the steps of:

a. generating a bezel at the inlet of the bore of the workpiece by grinding the workpiece at the inlet of the bore with the first grinding tool to have a first shape defining an angle correspondingly slightly greater than the desired nominal angle;

b. honing the bore to generate a honed bore; and

c. generating the desired nominal angle of the bezel by further grinding the bezel with the second grinding tool thus generating the desired nominal angle of the bezel, while simultaneously guiding the second grinding tool in the honed bore.

5,601,477

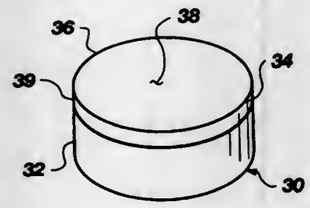
POLYCRYSTALLINE ABRASIVE COMPACT WITH HONED EDGE

John A. Bunting, Provo, and Kenneth M. Jensen, Orem, both of Utah, assignors to U.S. Synthetic Corporation, Orem, Utah

Filed Mar. 16, 1994, Ser. No. 214,946

Int. Cl.[6] B24B *1/00*

U.S. Cl. 451—59 **2 Claims**



1. A method of manufacturing polycrystalline abrasive compacts comprising:

(a) providing a tungsten carbide substrate;

(b) applying a polycrystalline diamond layer onto the tungsten carbide substrate to define a generally planar upper cutting surface formed at a substantially right angle with sides thereof; and

(c) honing the junction of the polycrystalline diamond layer upper cutting surface and the sides with a flexible, non-rigid honing apparatus to form rounded corners.

5,601,478

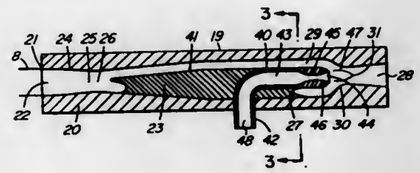
FLUIDIZED STREAM ACCELERATOR AND PRESSUISER APPARATUS

Terry Mesher, Victoria, Canada, assignor to Job Industries Ltd., Vancouver, Canada

Continuation-in-part of Ser. No. 203,584, Mar. 1, 1994, abandoned. This application Apr. 14, 1995, Ser. No. 421,778

Int. Cl.[6] B24C *3/12*

U.S. Cl. 451—75 **6 Claims**



1. A fluid accelerator and pressurizer apparatus for accelerating and pressurizing a fluidized stream of particulate material, comprising:

a nozzle housing defining a flow passage for the flow of the fluidized stream;

a first constriction in the flow passage;

a blast nozzle located in the flow passage;

said blast nozzle having an outlet end portion directed towards said first constriction for discharging a blast medium through said first constriction;

a further passage in said blast nozzle for the flow of the blast medium through said blast nozzle; and

a second constriction in said further passage for accelerating the blast medium to supersonic speed and thereby forming in said flow passage a flow front which is impenetrable by the fluidized stream and which co-operates with said first constriction to form an effective nozzle for accelerating the fluidized stream;

said flow passage being provided with a grounded lining to counteract build-up of electrostatic charge on said nozzle housing.

5,601,479

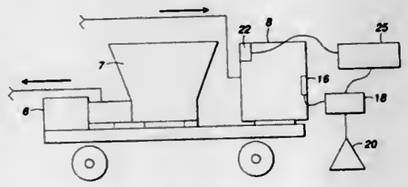
METHOD AND APPARATUS FOR DECONTAMINATING STRUCTURES

Eugene W. Santos, 106 Canvasback La., Suite A, Summerville, S.C. 29483

Filed Sep. 28, 1994, Ser. No. 314,236

Int. Cl.[6] B24C *9/00*

U.S. Cl. 451—87 **6 Claims**



1. An apparatus for decontaminating structures, said apparatus comprising:

an abrasive blasting device for projecting abrasive material onto a structure, said blasting device comprising means for receiving abrasive material pumped into said blasting device at a preselected pressure, said means for receiving abrasive material mechanically coupled to a nozzle such that the abrasive material received by said receiving means is directed to said nozzle at a preselected pressure, thereby causing the abrasive material to be projected from said nozzle at a high rate of speed onto a portion of a structure being decontaminated to abrade a layer of base material from said structure, whereby contaminated material along with the layer of base material is removed from the structure;

pumping means mechanically coupled to said means for receiving the abrasive material, said pumping means comprising means for delivering the abrasive material at a preselected pressure to said means for receiving abrasive material;

enclosure means mechanically coupled to said abrasive blasting device, said enclosure means encompassing at least said nozzle for forming a vacuum envelope around said nozzle and the portion of the structure upon which the abrasive material is being projected;

vacuum means mechanically coupled to said enclosure means for providing a reverse air flow in said enclosure means such that any base material abraded from the structure, any contaminated material removed along with the layer of base material and the abrasive material projected onto a portion of the structure within the vacuum envelope is reclaimed by said vacuum means;

a collection chamber mechanically coupled to said vacuum means for receiving and storing the reclaimed material abraded from the structure and the abrasive material projected onto the structure;

a radiation detector located in said collection chamber for detecting radiation and for determining when a predetermined radiation level has been reached or exceeded and for outputting a warning signal when the predetermined radiation level has been reached or exceeded; and

switching means electrically coupled to said pumping means for controlling the operation of said pumping means and thereby controlling the delivery of the abrasive material from said pumping means to said means for receiving abrasive material.

5,601,480

CLEANING MACHINE FOR TREATING GOODS WITH LIQUID AND GRANULES

Bengt Nilén, Landskrona, Sweden, assignor to PW-System AB, Landskrona, Sweden

PCT No. PCT/SE93/00351, § 371 Date Oct. 24, 1994, § 102(e) Date Oct. 24, 1994, PCT Pub. No. WO93/21814, PCT Pub. Date Nov. 11, 1993

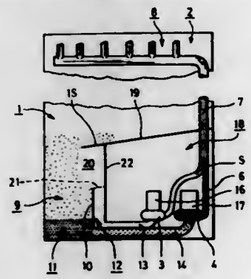
PCT Filed Apr. 22, 1993, Ser. No. 325,334

Claims priority, application Sweden, Apr. 24, 1992, 9201304

Int. Cl.[6] B24C *3/04;9/00*

U.S. Cl. 451—88 **14 Claims**

1. Cleaning machine for alternative treatment of goods with



liquid only or with liquid mixed with granules which are heavier than the liquid, said cleaning machine comprising

a treating chamber (2);

a pump device (3, 4) for circulating the liquid with or without granules and discharge thereof through nozzles (8) towards the goods in said treating chamber (2); and

a collecting container (1) located beneath said treating chamber (2);

said collecting container (1) comprising a space (9) for liquid and granules, said space (9) communicating with said treating chamber (2), said space (9) being divided by means of a separating means (10) into a first section (11), containing granules and liquid, and a second section (12), containing liquid only; and

said collecting container (1) further comprising at least one closed space (18);

said pump device (3, 4) having a first pump (4) and a second pump (3), said second pump (3) being separate from said first pump (4), said first and second pumps (4 and 3) being provided in said closed space (18);

said first section (11) being connected with said first pump (4) and said second section (12) being connected with said second pump (3); and

said first and second pumps (4, 3) being selectively operable for treatment of the goods in said treating chamber (2) either with granules and liquid by operation of said first pump (4) or with liquid only by operation of said second pump (3).

5,601,481

METHOD AND MACHINING APPARATUS FOR USE ESPECIALLY IN THE SANDING OF ITEMS OF WOOD IN A SANDING MACHINE

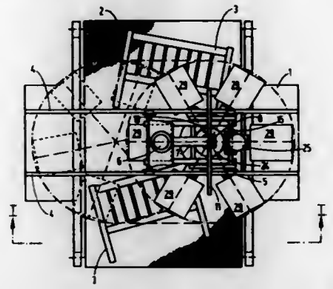
Keld O. Hundebøl, Ansager, Denmark, assignor to HH Patent A/S, Ansager, Denmark

Continuation of Ser. No. 154,921, Nov. 18, 1993, abandoned, which is a division of Ser. No. 950,416, Sep. 23, 1992, Pat. No. 5,291,689, which is a division of Ser. No. 699,181, May 19, 1991, abandoned. This application Feb. 15, 1995, Ser. No. 390,283

Claims priority, application Denmark, May 22, 1990, 1271/90

Int. Cl.[6] B24B *7/00*

U.S. Cl. 451—178 **1 Claim**



1. Sanding apparatus for uniformly sanding a surface of an article comprising:

spindle drive means, means for rotating said spindle drive means;

a sanding head formed of a plurality of spindles, each spindle extending radially from said spindle drive means, a sanding roller located on each said spindle;

means for rotating each of said spindles with the sanding rollers thereon;

means for conveying the article to be sanded beneath the sanding rollers along a path in a first direction, the sanding head having a diameter corresponding substantially to a width of the conveying means;

means for moving the spindle drive means and the rotating spindles thereon in a second direction different from the first direction as the articles are moved in the first direction beneath the sanding head, the sanding head moving beyond the width of the conveying means, such that the contact speed and angle of attack of the sanding rollers changes dynamically on all portions of the surface, outer areas of the article surface treated substantially the same as inner areas of the article surface to provide a uniformly sanded surface, and;

means for vertically adjustably displacing the spindle drive means during sanding while maintaining the spindle drive means in a planar orientation.

5,601,482

ROD-SHAPED WORKPIECE GRINDER

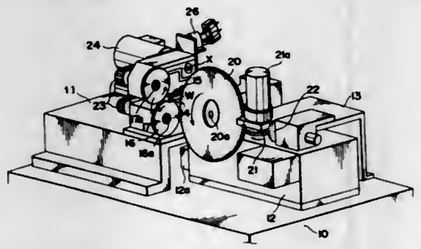
Hideki Kinoshita, Hiroshima-ken, and Hisao Ohuchi, Hiroshima, both of Japan, assignors to Toyo Advanced Technologies Co., Ltd., Hiroshima, Japan

Filed Nov. 17, 1995, Ser. No. 559,083

Claims priority, application Japan, Nov. 18, 1994, 6-284927; Nov. 18, 1994, 6-284932

Int. Cl.[6] B24B *3/00*

U.S. Cl. 451—246 **7 Claims**



1. A rod-shaped workpiece grinder comprising:

a shoe which abuts against a circumferential surface of a rod-shaped workpiece supplied in a grinding position;

a pair of rolls which rotatably abut against the circumferential surface of said rod-shaped workpiece, at least one of the rolls being able to be put in and out of contact with said rod-shaped workpiece, at least one of the rolls being driven to rotate;

a backing plate which abuts against a rear end surface of said rod-shaped workpiece; and

a grinding wheel which puts its circumferential surface in abrasive contact with a front end surface of said rod-shaped workpiece by being driven to rotate to grind the front end surface of said rod-shaped workpiece.

5,601,483

POWER TOOL

Boris Rudolf, Stuttgart; Walter Blutharsch, Sindelfingen; Andreas Peisert, and Thomas Veit, both of Stuttgart, all of Germany, assignors to C. & E. Fein GmbH & Co., Stuttgart, Germany

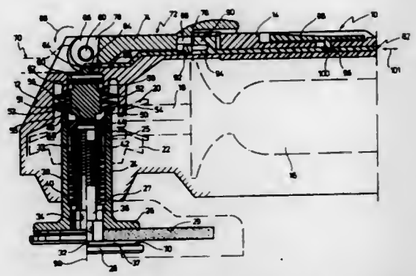
Filed Oct. 14, 1994, Ser. No. 323,396

Claims priority, application Germany, Oct. 27, 1993, 43 36 620.1

Int. Cl.[6] B24B *41/04*

U.S. Cl. 451—359 **15 Claims**

1. Power tool, comprising a hollow spindle driven by a motor, a quick clamping device to receive a tool between a clamping flange and a counterflange, wherein the quick clamping device includes a tension spindle, coaxial with the hollow spindle, that is tensioned in an axial direction by means of elastic elements and is displaceable in the axial direction relative to the hollow spindle, by means



of a clamping lever, between a clamped position in which the tool is nonrotatably retained between the flanges, and a released position in which the flanges are disengaged in the axial direction for manual changing of the tool; and further comprising a switch movable into an activated position to actuate the motor, and a link rod arranged between said clamping lever and said switch and engaging said switch and said clamping lever so that said clamping lever is blocked against movement into said released position when said switch is in its activated position.

5,601,484

DEVICE FOR TRANSPORTING WAFER MAGAZINES

Erich Adler, and Marlies Mages, both of Jena, Germany, assignors to Jenoptik GmbH, Jena, Germany

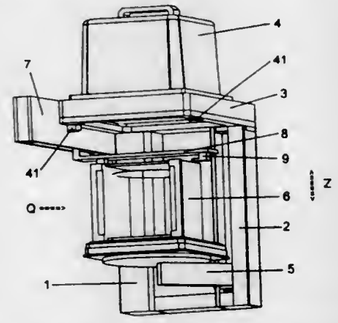
PCT No. pct/ep94/02447, § 371 Date Apr. 3, 1995, § 102(e) Date Apr. 3, 1995, PCT Pub. No. WO95/05003, PCT Pub. Date Feb. 16, 1995

PCT Filed Jul. 25, 1994, Ser. No. 406,976

Claims priority, application Germany, Aug. 5, 1993, 43 26 309.7

Int. Cl.[6] F24F *3/16*

U.S. Cl. 454—187 **18 Claims**



7. In a device for use in a clean room for transporting wafer magazines between an upper removal position and a lower depositing position from which the wafer magazines are transferred to at least one processing station, these wafer magazines being deposited in a magazine container on a releasable bottom and, together with a closing element of a holding plate, form a transport object for an elevator formed of an elevator drive and holding member, the improvement comprising:

a rigid gripper arm having gripper elements;

a linear drive for said rigid gripper arm being provided for the purpose of transferring the magazines;

a supporting column to which said near drive is attached so that an air passage opening is formed by space between the supporting column and said elevator drive; and

said linear drive being vertically adjustable in the movement direction of the elevator.

5,601,485

BLACKOUT PANELS

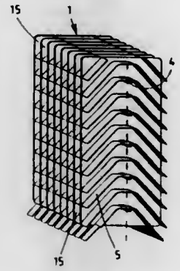
Antonio Gigola, Via IV° Novembre, 3, 25046 Cazzago San Martino (Brescia), Italy

Filed Oct. 2, 1995, Ser. No. 537,998

Claims priority, application Italy, Oct. 5, 1994, BS94A0116

Int. Cl.[6] F24F *7/00*

U.S. Cl. 454—277 **18 Claims**



1. A modular element for producing blackout panels with airflow passages, comprising; a plate; a first plurality of spaced fins protruding from at least one face of the plate to define therebetween channels having open sides between the outer edges of said fins, and with opposing ends of said channels facing onto opposing lateral side edges of the plate; connecting means designed to permit the assembly of a series of the plates in spaced, confronting relation with each other to form a blackout panel having said one face of each plate in said series confronting upon and having said open sides of the channels thereon closed by the opposite side of the next adjacent plate in said series.

5,601,486

COTTON BASKET DOOR AND LID STRUCTURE

Francis E. Schlueter, Des Moines, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Aug. 3, 1995, Ser. No. 510,889

Int. Cl.[6] A01F *12/60*

U.S. Cl. 460—119 **23 Claims**

1. In a cotton harvester having a fore-and-aft extending frame adapted for forward movement over a field of cotton plants, dumpable cotton basket structure for receiving harvested cotton and dumping the harvested cotton in a receptacle such as a module builder or cotton trailer, the basket structure comprising:

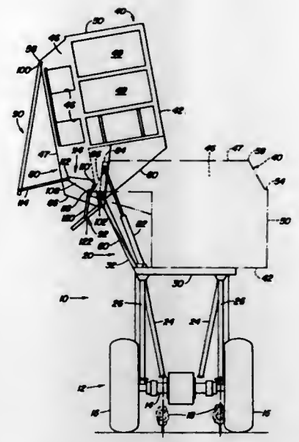
support structure extending upwardly from the frame;

a cotton basket having a floor, front and rear end walls extending upwardly from the floor, a dump-side wall extending upwardly from the floor between the end walls to a pivot area, and an upright side wall opposite the dump-side wall;

a basket pivot rockably connecting the basket pivot area to the support structure for rocking of the basket about a fore-and-aft extending basket axis;

cylinder structure connected between the frame and the basket for rocking the basket about the basket axis between a lowered field-working position and raised dump position, wherein in the raised dump position, the dump side wall is pivoted upwardly and outwardly from the field-working position slightly more than approximately 90 degrees and the dump side wall is angled downwardly to facilitate dumping of the cotton from the basket;

the basket further including movable door structure having open and closed positions, and an upper lid extending between the



dump side and upright walls and pivotally connected for rocking with respect to the walls about a fore-and-aft extending lid axis located near the upright side wall, the upper lid rockable between a containment position defining with the walls and floor an area generally closed to egress of cotton when the movable door structure is in the closed position, and an open position wherein a portion of the lid is rocked outwardly from the walls when the basket is in the raised dump position to define a downwardly and outwardly directed opening for egress of cotton from the basket when the movable door structure is in the open position; and

wherein the upper lid is biased towards the containment position until the basket is substantially in the dump position so that loss of cotton from the basket is minimized as the basket is rocked to the dump position.

5,601,487

ELECTRONIC GAME DEVICES AND METHODS

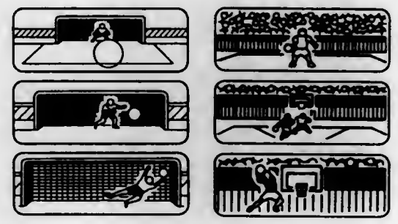
Jun Oshima, Akigawa, and Eri Kakimoto, Tokyo, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed May 22, 1995, Ser. No. 446,407

Claims priority, application Japan, May 31, 1994, 6-139710

Int. Cl.[6] A63F *9/24*

U.S. Cl. 463—4 **15 Claims**



1. An electronic soccer game device for playing a penalty kick game, the device comprising:

a player data memory for storing plural player data of players which take part in a soccer game;

a parameter memory for storing parameters corresponding respectively to the plural player data stored in said player data memory, the parameters being different from one another;

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player selecting means for selecting player data which is to take part in the soccer game from among the plural player data stored in said player data memory;

first parameter reading means for reading out from said parameter memory a parameter corresponding to the player data selected by said player selecting means;

ball displaying means for displaying a ball to be used in the penalty kick game;

point displaying means for displaying and moving a point onto the ball displayed by said ball displaying means at a speed corresponding to the parameter read out by said first parameter reading means;

point stopping means for stopping the point being moved by said point displaying means to indicate a position where the ball displayed by said ball displaying means is to be kicked; and

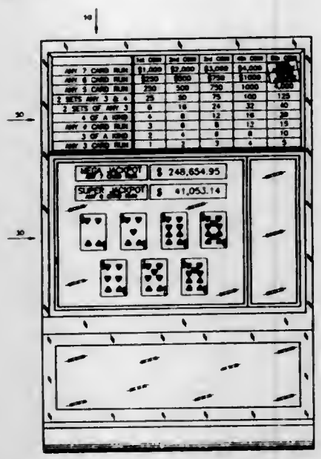
first goal control means for determining based on the position indicated by said point stopping means whether a goal is successful or not.

5,601,488

ELECTRONIC RUMMY GAME

Thomas P. Kadlic, 1750 S. Rainbow Blvd., Suite #2, Las Vegas, Nev. 89117

Filed Nov. 8, 1994, Ser. No. 336,271
Int. Cl.[6] A63F *1/00*
U.S. Cl. 463—13 **19 Claims**



9. A method of playing a card game on an electronic gaming machine operated by a player and that uses only a player's hand to determine winning and losing outcomes comprising:

a) displaying seven cards from only one standard deck of playing cards;

b) the player selecting which of the seven cards the player wishes to hold and which of the seven cards the player wishes to discard;

c) displaying replacement cards from the one standard deck for those cards that the player has discarded;

d) determining whether the resulting seven cards form a seven card run;

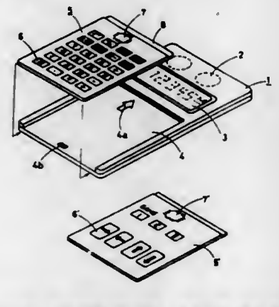
e) providing the player an award if a seven card run results.

5,601,489

COMPACT ELECTRONIC APPARATUS WITH REMOVABLE PROCESSING UNITS

Shigeki Komaki, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 602,929, Oct. 25, 1990, abandoned, which is a continuation of Ser. No. 413,712, Sep. 28, 1989, abandoned, which is a continuation of Ser. No. 186,718, Apr. 28, 1988, Pat. No. 4,890,832, which is a continuation of Ser. No. 898,819, Aug. 18, 1986, abandoned, which is a continuation of Ser. No. 539,190, Oct. 5, 1983, abandoned. This application Aug. 29, 1994, Ser. No. 296,176
Claims priority, application Japan, Oct. 13, 1982, 57-179452
The portion of the term of this patent subsequent to Jan. 2, 2007, has been disclaimed.
Int. Cl.[6] A63F *9/24*
U.S. Cl. 463—44 **18 Claims**



1. An electronic apparatus having a first function and performing a second function different from said first function according to instructions and data inputted through a keyboard, comprising:

a main body having a power source;

a receiving portion formed in said main body; and

a plurality of integrated circuit card means, each for enabling the electronic apparatus to perform an operation of a distinct category of the electronic apparatus, said integrated circuit card means being shaped to fit securely in said receiving portion;

each said integrated circuit card means including,

means for changing the physical configuration of at least a portion of the keyboard, and

a memory integrated circuit chip.

5,601,490

TRACK RACING GAME MACHINE

Toshiaki Nakagawa, Fujimi; Hiroshi Yokota; Kouichi Ozaki, both of Tokyo-to, and Kiyoshi Furukawa, Kobe, all of Japan, assignors to Konami Co., Ltd., Hyogo-ken, Japan

Filed Aug. 23, 1994, Ser. No. 294,525
Claims priority, application Japan, Aug. 25, 1993, 5-210737
Int. Cl.[6] A63F *9/14*
U.S. Cl. 463—63 **11 Claims**

1. A game machine comprising:

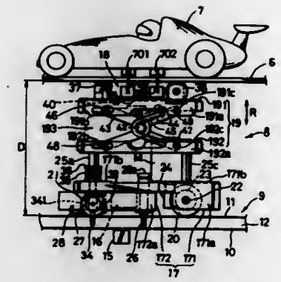
a plurality of vehicles each having a drive motor;

a running track having an upper surface, a plurality of running lanes on said running track, each of said running lanes including a guide groove opening up onto said upper surface;

a common conductor extending along each of said guide grooves;

guide means on each of said vehicles, each of said guide means being moveable in a respective guide groove to guide each vehicle in its respective guide groove, said guide means contacting said common conductor as the guide means moves in the respective guide groove;

said guide means comprising an electrically conductive pin extending substantially vertically from said vehicle, said electrically conductive pin being electrically connected to the drive motor on the respective vehicle, said electrically conductive pin having a lower end slidably contacting said common conductor;



said vehicle comprising a first frame and a second frame, pivot means pivotably connecting said first frame to said second frame, said pivot means comprising a pivot pin which is slidably disposed in said guide groove, said pivot pin being spaced from said electrically conductive pin, said pivot pin and said electrically conductive pin each guiding the vehicle in its respective guide groove;

a plurality of separate conductor lines disposed on said upper surface juxtaposed to each guide groove and extending generally parallel to each respective guide groove;

contact means on each of said vehicles connected to the drive motor on the respective vehicle, each of said contact means overlying a respective conductor line on said upper surface of said running track, each of said contact means slidably contacting a different one of said plurality of conductor lines such that each drive motor is thereby electrically connected to a separate conductor line; and

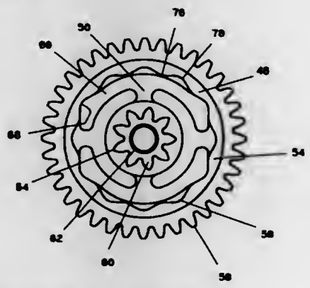
power supply means supplying electric power to said conductor lines such that each drive motor is thereby connected to said power supply means via a separate conductor line.

5,601,491

QUIET APPLIANCE CLUTCH

Chun W. Chan, Indianapolis, and Robert F. Weaver, Brownsburg, both of Ind., assignors to Emerson Electric Co., St. Louis, Mo.

Continuation of Ser. No. 95,323, Jul. 21, 1993, abandoned. This application Dec. 5, 1995, Ser. No. 567,733
Int. Cl.[6] F16D *7/00*
U.S. Cl. 464—37 **11 Claims**



1. A quiet appliance clutch, comprising:

(a) an outer member, comprises:

(1) a gear wheel having gear teeth disposed circumferentially,

(2) an embossed rim integral with the gear wheel,

(3) sinusoidally shaped contours integral with the embossed rim and,

(b) an inner member, comprises:

(1) a pinion gear having a bore engaging a center stem defining a rotational axis and the pinion gear having pinion teeth disposed circumferentially,

(2) cantilever-shaped springs integral with the inner member extending from the pinion gear, and,

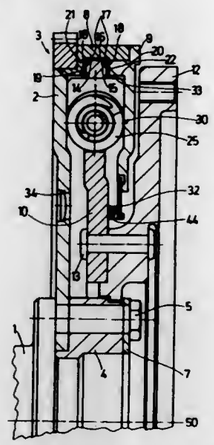
(3) a protrusion integral with each cantilever-shaped spring engaging the contours so both the outer member and inner member rotate as a unit upon a common axis until a predetermined torque limit is reached and then the protrusion slips by slideably engaging the contours to convert torque to tensional energy in a sinusoidal function by the cantilever-shaped springs displace inwardly to store a bending moment and then to convert tensional energy to torque in a sinusoidal function by the cantilever-shaped springs releasing the bending moment reducing vibration because the protrusion slideably engages the contours maintaining substantial contact with the contours.

5,601,492

TWO MASS FLYWHEEL FOR A MOTOR VEHICLE TRANSMISSION HAVING A SEPARATE THRUST BEARING BETWEEN THE TWO MASSES

Bernhard Schierling, Kürnach; Ralf Till, Euerbach, and Jörg Sudau, Niederwerrn, all of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Germany

Continuation-in-part of Ser. No. 322,598, Oct. 13, 1994. This application Apr. 25, 1995, Ser. No. 428,705
Claims priority, application Germany, Oct. 15, 1993, 43 35 287.3; Sep. 14, 1994, 44 32 625.4
Int. Cl.[6] F16D *3/14*
U.S. Cl. 464—68 **21 Claims**



1. A flywheel for an internal combustion engine of a motor vehicle for transmitting mechanical rotary power from an internal combustion engine to a transmission, said flywheel comprising:

a first flywheel portion and a second flywheel portion, said second flywheel portion being disposed adjacent said first flywheel portion;

said first flywheel portion comprising means for non-rotationally connecting said first flywheel portion to a crankshaft of an internal combustion engine;

said first flywheel portion being rotatable about an axis of rotation, said axis of rotation having a first axial direction parallel to said axis of rotation, and a second axial direction opposite to the first axial direction;

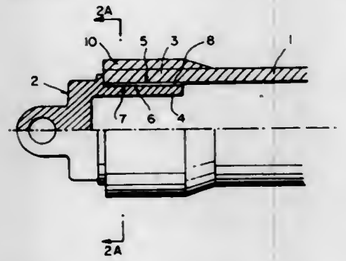
said second flywheel portion being rotatable about said axis of rotation;
means for connecting together said first flywheel portion and said second flywheel portion for rotating said second flywheel portion with said first flywheel portion;
each of said first flywheel portion and said second flywheel portion comprising a peripheral portion disposed radially away from the axis of rotation;
a bearing being disposed to permit and facilitate rotation between said first flywheel portion and said second flywheel portion; and
said bearing being disposed between said peripheral portions of said first and second flywheel portions.

5,601,493

DRIVE SHAFT MADE OF FIBER REINFORCED PLASTICS, AND METHOD FOR CONNECTING PIPE MADE OF FIRE-REINFORCED PLASTICS

Akiko Nakazono; Yoshifumi Nakano; Kohji Yamatsuta; Yasuo Shinohara, and Hitoshi Murotani, all of Ibaraki, Japan, assignors to Sumitomo Chemical Company Limited, Osaka, Japan

Filed Oct. 22, 1993, Ser. No. 139,648
Claims priority, application Japan, Oct. 22, 1992, 4-284229
Int. Cl.[6] F16C *3/00*
U.S. Cl. 464—181 **11 Claims**



1. A drive shaft made of fiber-reinforced plastics comprising
a pipe made of fiber-reinforced plastics having a connecting portion and a protective layer,
said protective layer has a thickness and a circumferential modulus of elasticity of not more than 30 Gpa, is provided on the connecting portion,
a fitting having a connecting portion with serrations having a height formed on one of the inner and outer surfaces of the connecting portion, the fitting has a circumferential modulus of elasticity,
the serrations fittingly engage the protective layer of the pipe so that there are spaces between the serrations and the protective layer,
an adhesive fills the space between the serrations and the protective layer.

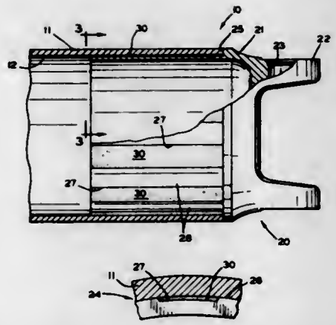
5,601,494

END FITTING HAVING ADHESIVE CHANNELS FOR DRIVE SHAFT ASSEMBLY

James A. Duggan, Temperance, Mich., assignor to Dana Corporation, Toledo, Ohio

Filed May 31, 1994, Ser. No. 251,505
Int. Cl.[6] F16C *3/00*
U.S. Cl. 464—182 **12 Claims**

1. A drive shaft assembly comprising:
a hollow drive shaft tube having an open end and an inner surface defining an inner dimension;



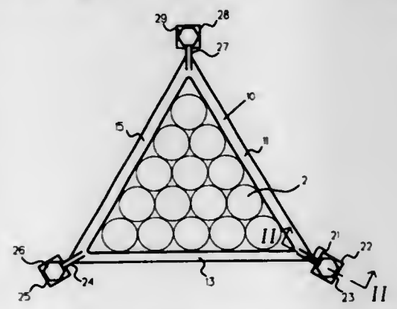
an end fitting including a body and a sleeve portion extending from said body, said sleeve portion having an outer surface defining an outer dimension which is slightly larger than said inner dimension, said outer surface having a channel formed therein, said sleeve portion being disposed within said drive shaft tube such that said outer surface of said sleeve portion of said end fitting frictionally engages said inner surface of said drive shaft tube; and
an adhesive material provided in said channel to form a permanent adhesive bond between said sleeve portion and said inner surface of said drive shaft tube.

5,601,495

BILLIARDS BALL RACK

Kenneth Silverman, 30 Treeview Dr., Melville, N.Y. 11747

Filed Jun. 3, 1994, Ser. No. 253,371
Int. Cl.[6] A63D *15/00*
U.S. Cl. 473—40 **11 Claims**



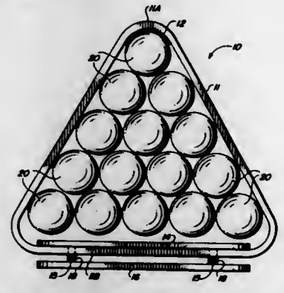
1. An apparatus to arrange a group of balls into a compact formation of a predetermined pattern on the playing surface of a billiards table, said apparatus comprising:
a frame having a plurality of side walls forming an opening, where the angle formed between the interior of at least one of the side walls and the playing surface of the billiards table is less than ninety degrees;
at least two elongated support legs attached to the side walls of the frame; and
at least two elongated sleeves having a free end placeable on the billards table, movably mounted on the support legs and where said sleeves are adapted to be movable, relative to the support legs, between an extended position and a retracted position,
wherein the group of balls placed within the frame are compacted when said sleeves are in the retracted position.

5,601,496

POOL BALL RACK

Christopher E. Beanchamp, 601 W. 11th Ave., Apt. 320, Denver, Colo. 80204

Filed Mar. 25, 1996, Ser. No. 621,526
Int. Cl.[6] A63D *15/00*
U.S. Cl. 473—40 **2 Claims**



1. A pool ball rack for compact triangular arrangement of fifteen pool balls on a pool table comprising
an equilateral triangular frame having three similar upstanding walls including a rear wall, the walls joined together with smoothly rounded interior corners including the apex of the frame which lies remote from the rear wall, the frame sized to enclose and loosely group fifteen pool balls;
a strip of resilient material affixed to the smoothly rounded interior of the apex of the frame designed to prevent rotation during racking of the pool ball which forms the apex of a triangle of fifteen pool balls;
a first elongated upstanding panel positioned against the inner surface of the rear wall of the frame;
means including a pair of helical springs designed to bias the first elongated panel against the rear wall of the frame; and
a second elongated upstanding panel positioned outside the frame lying parallel to the rear wall of the frame and connected to the biasing means for pushing the first elongated panel toward and against the five rearmost pool balls immediately following the racking of the balls to form the fifteen pool balls into a compact triangular formation.

5,601,497

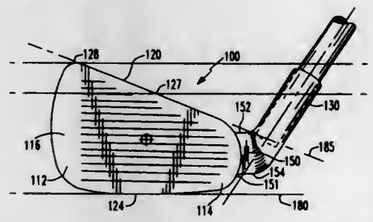
Patent Not Issued For This Number

5,601,498

GOLF CLUB HEAD WITH SHANKLESS HOSEL

Anthony J. Antonious, 7738 Calle F acil, Sarasota, Fla. 34238

Continuation of Ser. No. 124,205, Sep. 21, 1993, abandoned. This application Sep. 21, 1995, Ser. No. 531,884
Int. Cl.[6] A63B *53/04*
U.S. Cl. 473—305 **44 Claims**



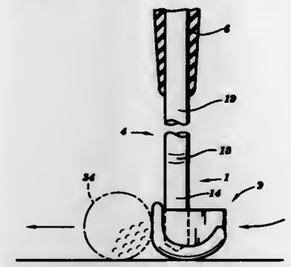
1. An iron type golf club head for hitting a golf ball comprising:
a golf club head body having a heel portion, a toe portion, a bottom sole, a top ridge, and a planar, lofted ball striking face having a loft greater than 12 degrees, the ball striking face intersecting with a forwardmost progression of said bottom sole to define a leading edge of the ball striking face of said golf club head, the most outward exterior surfaces of said heel portion, toe portion and ball striking face defining an outer periphery of the club head;
a hosel permanently and nonrotatably fixed to said body adjacent said heel portion, the entire hosel being located beyond the outer periphery of the club head, said hosel including a top, a bottom, a front surface, a rear surface, and an inward, toe-facing surface;
no portion of said bosel extending beyond, in a rear to front direction, the leading edge of the club face; and
said hosel including a tubular shaft socket for accepting a golf club shaft, said tubular shaft socket having interior walls and an extended longitudinal axis, said walls and axis being spaced from and not intersecting any portion of the club head body.

5,601,499

GOLF PUTTER

Frank W. Segaline, 717 Mamie Rd., El Paso, Tex. 79932

Filed Sep. 8, 1995, Ser. No. 524,654
Int. Cl.[6] A63B *53/04*
U.S. Cl. 473—313 **17 Claims**



1. A golf putter comprising:
an elongated shaft having a first end portion and a second end portion; and
a head member secured to said first end portion of said shaft and wherein said head member includes a central section, two side sections that have a 'J'-shaped cross-section, a front surface adapted for contacting a golf ball, a rear surface opposite said front surface and wherein said front and rear surfaces form opposite sides of each of said side sections, and a curved bottom surface that forms a 'U'-shaped arcuate path extending between the front and rear surfaces of the head member, said two side sections that have a 'J'-shaped cross-section and said curved bottom surface both allowing a rocking action for preventing said head member from catching during a swing and facilitating application of top spin during said swing.

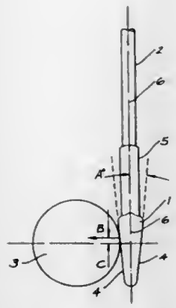
5,601,500

GOLF PUTTER HEAD

Barry E. Shipley, 17/77 Rosalind St., Cammeray, NSW 2067, Australia

PCT No. PCT/AU93/00283, § 371 Date Nov. 3, 1994, § 102(e) Date Nov. 3, 1994, PCT Pub. No. WO93/22008, PCT Pub. Date Nov. 11, 1993
PCT Filed May 6, 1993, Ser. No. 325,295
Claims priority, application Australia, May 6, 1992, PL2282
Int. Cl.[6] A63B *53/04*
U.S. Cl. 473—314 **4 Claims**

1. A golf club putter including: a golf club head having:



a body having a central plane and a front planar face for striking a golf ball, the front planar face being at a negative angle in the range of 4°–8° to the central plane so that a bottom edge of the front planar face is closer to the central plane than is a top edge of the front planar face, and wherein the center of gravity of the head is substantially aligned with a point on the front planar face which is the point of impact with the golf ball; said golf club head having a fully enclosed chamber located therein, the chamber being symmetrically positioned relative to the central plane and dimensioned such that the front planar face is defined by a uniformly, relatively thin wall; a shaft; and

attachment means aligned on the central plane for attaching said shaft to a top portion of said body so that said shaft extends upward and generally parallel to the central plane.

5,601,501

IRON TYPE GOLF CLUB HEAD

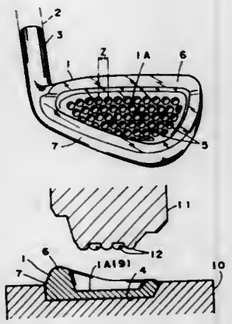
Kenji Kobayashi, Tsubame, Japan, assignor to K.K. Endo Seisakusho, Japan

Filed Oct. 2, 1995, Ser. No. 538,296

Claims priority, application Japan, Aug. 1, 1995, 7-196725

Int. Cl.[6] A63B *53/04*

U.S. Cl. 473—350 **9 Claims**



1. An iron-type golf club head comprising:

a metallic head body having a shaft attaching portion at one side and a face at its front side;

a plurality of cavities formed in a back surface of said head body, each being formed semispherical and opposite to the face thereof, said cavities being formed by forging.

5,601,502

THREE-PIECE SOLID GOLF BALL

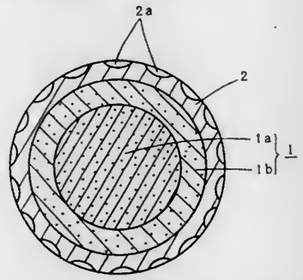
Hidenori Hiraoka, Akashi, and Yoshimasa Koizumi, Kobe, both of Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo-ken, Japan

Filed Dec. 28, 1994, Ser. No. 365,110

Claims priority, application Japan, Dec. 28, 1993, 5-353231

Int. Cl.[6] A63B *37/06*

U.S. Cl. 473—373 **12 Claims**



1. A three-piece solid golf ball comprising a core **1** and a cover covering said core **1**, said core **1** having a two-layer structure composed of a center **1***a* and an outer shell **1***b*, wherein the center **1***a* is prepared from an α,β-unsaturated carboxylic acid metallic salt in an amount of 13 to 28 parts by weight based on 100 parts by weight of a base rubber and the outer shell **1***b* is prepared from an α,β-unsaturated carboxylic acid metallic salt in an amount of 28 to 35 parts by weight based on 100 parts by weight of a base rubber and wherein a surface hardness (measured by JIS-C type hardness tester) of the core **1** is 75 to 88 and a compression deformation amount of the core **1** is 2.7 to 5.0 mm.

5,601,503

GOLF BALL

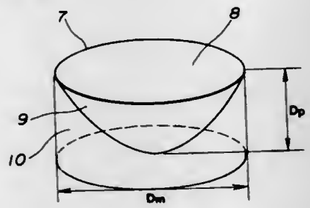
Hisashi Yamagishi; Hiroshi Higuchi, and Jun Shindo, all of Chichibu, Japan, assignors to Bridgestone Sports Co., Ltd., Tokyo, Japan

Filed Mar. 6, 1996, Ser. No. 613,201

Claims priority, application Japan, Mar. 6, 1995, 7-072349

Int. Cl.[6] A63B *37/14*

U.S. Cl. 473—384 **1 Claim**



1. A golf ball having a multiplicity of dimples in its surface, said golf ball having a weight of 40 to 45 grams and a diameter of 43 to 47 mm, wherein

the dimples occupy at least 60% of the ball surface and satisfy the condition:

$$0.35 \leq V_0 \leq 0.60$$

wherein provided that each dimple has a circular edge, V_0 is the volume of the dimple space below a circular plane circumscribed by the dimple edge, divided by the volume of a cylinder whose bottom is said circular plane and whose height is the maximum depth of the dimple from the bottom.

5,601,504

PROTECTION DEVICE FOR PULLEY BEARINGS

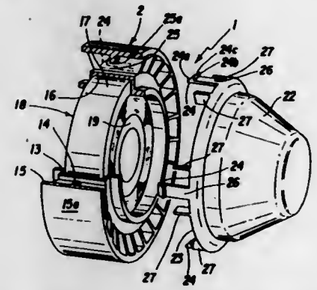
Carlo E. Rocca, Torino, and Mark P. Foley, Beinasco, both of Italy, assignors to Dayco Europe S.p.A., Airasca, Italy

Filed Jul. 26, 1995, Ser. No. 506,769

Claims priority, application Italy, Jul. 28, 1994, MI94A1629

Int. Cl.[6] F16H *57/04*

U.S. Cl. 474—91 **11 Claims**



1. A device for protecting bearings of pulleys in belt drives, said belt drive having a bearing with a fixed inner ring rigidly fitted around a supporting core and a rotating outer ring which is anchored in an engagement housing provided inside a pulley, said pulley having a fastening collar in which said engagement housing is secured and a connecting disc-shaped flange extending coaxially around said fastening collar substantially in a plane perpendicular to an axis of the collar, and a rolling cylindrical portion circumscribing coaxially the fastening collar and the disc-shaped flange, said rolling cylindrical portion having an outer working area for acting in contact with a driving belt,

said device comprising:

a cover having a circumferential connecting portion shaped to operatively engage with a terminal edge of said fastening collar;

hooking means operatively connected with the cover, and shaped for insertion into corresponding through engaging openings in said disc-shaped flange, so that said circumferential connecting portion is maintained in abutment relationship on the disc-shaped flange to removably fix the cover to said pulley;

interconnecting elastic means between the hooking means and the cover to snap lock the hooking means on radially outer edges of said engaging openings.

5,601,505

HYDRAULIC TENSIONER

Naosumi Tada, Nabari, Japan, assignor to Borg-Warner Automotive, K.K., Nabari, Japan

Filed Sep. 8, 1995, Ser. No. 524,205

Claims priority, application Japan, Sep. 12, 1994, 6-244594; Oct. 21, 1994, 6-283000; Dec. 28, 1994, 6-338851; Mar. 8, 1995, 7-78303; Mar. 8, 1995, 7-78304

Int. Cl.[6] F16H *7/08*

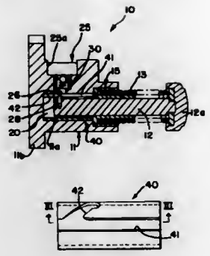
U.S. Cl. 474—110 **11 Claims**

1. A hydraulic chain tensioner comprising:

a housing having an opening forming a fluid filled chamber;

a plunger slidably received within said fluid chamber;

a spring positioned at the rear end of said plunger, said spring biasing the plunger in a protruding direction from a retracted position in the chamber;



a passage in said housing allowing fluid communication from an external source of pressurized fluid to said chamber;

a check valve provided between said external source of pressurized fluid and said chamber, said check valve permitting passage of fluid into said chamber and restricting passage of fluid out of said chamber;

a stopper sleeve connected to the housing, said stopper sleeve being positioned to permit axial and rotational movement of said plunger within said sleeve;

a stopper pin attached to the rear end of said plunger and protruding above the outer surface of said plunger; said stopper sleeve having a first groove parallel to the axis of said plunger, said stopper pin being positioned for movement within said first groove, said stopper sleeve having a second groove intersecting said first groove, said stopper pin engaging said sleeve in said second groove to retain said plunger in said retracted position.

5,601,506

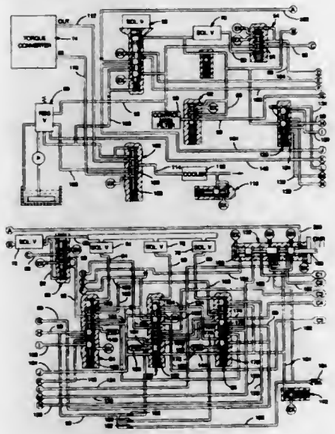
ELECTRO-HYDRAULIC CONTROL SYSTEM IN A POWER TRANSMISSION

Charles F. Long, Pittsboro; Jeffrey J. Cole, Plainfield, and Phillip F. McCauley, Zionsville, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 13, 1995, Ser. No. 543,243

Int. Cl.[6] F16H *61/00*

U.S. Cl. 475—120 **4 Claims**



1. An electro-hydraulic control in a power transmission having a plurality of torque transmitting means comprising:

a source of fluid pressure;

a source of electrical signals;

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a plurality of off/on solenoid valves communicating with the fluid source and the electrical source and being normally closed in the absence of an electrical signal;

a first electrically controlled proportional pressure control valve means connected with the fluid source and the electrical source for providing a maximum pressure level in the absence of an electric signal and being controllable to pressure levels below said maximum as determined by electrical signals from said source;

a second electrically controlled proportional pressure control valve means connected with the fluid source and the electrical source for providing a minimum pressure level in the absence of an electrical signal and being controllable to pressure levels above said minimum as determined by electrical signals from said source;

a selector valve means for selecting forward and reverse drives;

a plurality of relay shift valve means each having a spring set position and a pressure set position for selectively directing fluid pressure from said source and from both said proportional pressure control valve means to said torque transmitting means to selectively control the engagement thereof to establish six forward ratios and one reverse ratio when the solenoid valves and the proportional pressure valves are provided with electrical signals;

passage means for conducting fluid from said source to said solenoid valves, said control valve means and said relay valve means, and from said relay valve means to said selector valve means; and

said relay valve means and said selector valve means being positionable to selectively establish at least one forward ratio and the reverse ratio when electric signals are discontinued and said source of fluid pressure is supplying pressurized fluid.

5,601,507

MECHANICAL GEARING

Heerke Hoogenberg, Eshuisstraat 4, NL-7462, RA Rijssen, Netherlands

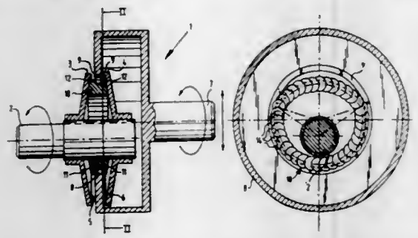
PCT No. PCT/NL94/00061, § 371 Date Nov. 30, 1995, § 102(e) Date Nov. 30, 1995, PCT Pub. No. WO94/21940, PCT Pub. Date Sep. 29, 1994

PCT Filed Mar. 17, 1994, Ser. No. 525,548

Claims priority, application Netherlands, Mar. 19, 1993, 9300492

Int. Cl.[6] F16H *1/32*

U.S. Cl. 475—165 **7 Claims**



1. Mechanical gearing comprising a frame, a first shaft mounted rotatably on the frame and carrying a pair of friction wheels which are disposed at a distance from each other and which have mutually facing friction surfaces together converging outward, a second shaft which is mounted on the frame parallel to but eccentrically relative to the first shaft and which carries a belt engaging wheel which has an annular belt engaging surface situated axially between the friction wheels of the first shaft, and a closed belt of mutually abutting push links, which belt forms on mutually opposite sides surfaces co-acting with the pair of friction wheels and on a radially outermost surface forms a surface co-acting with the single belt engaging wheel.

5,601,508

BEVEL GEAR DIFFERENTIAL LOCK

Viktor M. Kuzevanov, ul.Krasnoznamennaya, d. 16, kv. 32, 454106 Chelyabinsk, Russian Federation

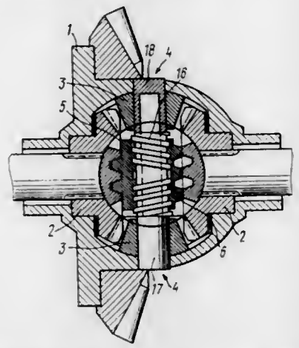
PCT No. PCT/RU93/00304, § 371 Date Mar. 27, 1995, § 102(e) Date Mar. 27, 1995, PCT Pub. No. WO94/24459, PCT Pub. Date Oct. 27, 1994

PCT Filed Dec. 15, 1993, Ser. No. 406,964

Claims priority, application Russian Federation, Feb. 2, 1993, 93006039; Feb. 2, 1993, 93006205

Int. Cl.[6] F16H *48/06;48/20;48/26*

U.S. Cl. 475—231 **6 Claims**



1. A differential housing lock for a bevel gear differential comprising:

a housing;

a pair of counter-positioned bevel gears disposed within said housing;

a pinion being disposed between said counter-positioned bevel gears and in contact therewith, causing said bevel gears to interact with each other; and

a shaft serving both as a pinion shaft, and as an insert having projections, said projections being tooth shaped, wherein said teeth of the projections are adapted for operational interaction with the teeth of at least one of the counter-positioned bevel gears, so that at different angular velocities of said gears, the teeth of said insert engages the teeth of said bevel gears causing reciprocating motion of said insert in the plane of the shaft axis of said pinion.

5,601,509

TAPER ROLLER CONTINUOUSLY VARIABLE TRANSMISSION

Carlos Munoz, Placentia, Calif., assignor to Nissan Research & Development, Inc., Farmington Hills, Mich.

Filed Juo. 27, 1995, Ser. No. 495,706

Int. Cl.[6] F16H *15/42*

U.S. Cl. 476—53 **22 Claims**

1. An apparatus comprising:

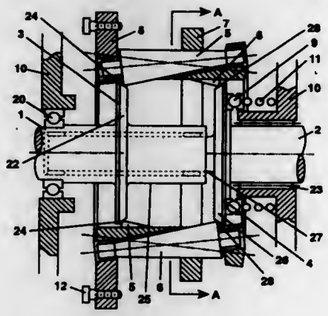
an input shaft having a first axis of rotation;

an output shaft having a second axis of rotation which is parallel to said first axis of rotation;

a first set of cones tapered in a first direction, each cone of said first set of cones having an axis of rotation oriented such that a portion of a surface thereof is parallel to a portion of the surface of every other cone of said first set of cones;

a second set of cones tapered in a second direction opposite to said first direction, each cone of said second set of cones having an axis of rotation oriented such that a portion of a surface thereof is parallel to a portion of the surface of every other cone of said second set of cones;

a power transfer ring which tractionally engages said first and second sets of cones on the parallel surface portions thereof to



transfer power from said first set of cones to said second set of cones, said power transfer ring having an axis of rotation which is oblique relative to the axes of rotation of said first set of cones and the axes of rotation of said second set of cones and said power transfer ring being movable axially of said first and second sets of cones along said parallel surface portions to vary the power transfer ratio from said first set of cones to said second set of cones,

said input shaft being in operative driving engagement with said first set of cones to cause rotation of said first set of cones when said input shaft rotates, and

said second set of cones being in operative driving engagement with said output shaft to cause rotation of said output shaft when said second set of cones rotate.

5,601,510

FAILURE DETECTING SYSTEM AND METHOD FOR AUTOMATIC TRANSMISSION

Ryuzo Sakakiyama, Tokyo; Kiminaga Shirakawa, Yamanashi Pref., and Kazunari Tezuka, Saitama Pref., all of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

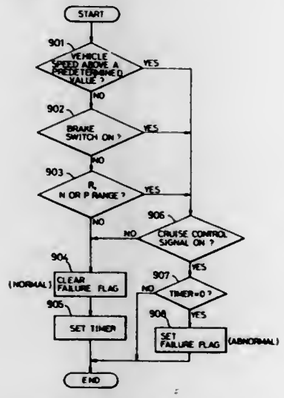
Division of Ser. No. 282,310, Jul. 29, 1994, Pat. No. 5,486,147.

This application Jun. 15, 1995, Ser. No. 490,705

Claims priority, application Japan, Jul. 29, 1993, 5-188196; Jul. 29, 1993, 5-188197; Aug. 30, 1993, 5-214284; Dec. 27, 1993, 5-332180

Int. Cl.[6] B60K *41/20;41/06;* **F16H** *61/12;59/36*

U.S. Cl. 477—96 **20 Claims**



1. A failure detecting system for an automatic transmission control system of a vehicle, comprising:

vehicle speed detecting means for detecting a vehicle speed and providing a vehicle speed signal indicative thereof;

a cruise control unit mounted on said vehicle for controlling said automatic transmission at a cruising speed and for generating a cruise control signal indicative thereof; and

transmission control prohibiting means responsive to said cruise control signal and said vehicle speed signal for prohibiting control of said automatic transmission by said cruise control unit, when said vehicle speed, detected by said vehicle speed detecting means, is smaller than a cruise control prohibiting value.

5,601,511

TEMPERATURE CONTROL SYSTEM FOR A VEHICLE POWER TRAIN

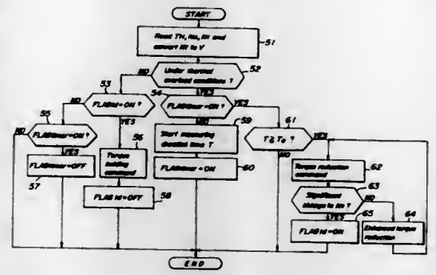
Hirofumi Michioka, Fujisawa, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed May 26, 1995, Ser. No. 452,119

Claims priority, application Japan, May 27, 1994, 6-115192

Int. Cl.[6] F16H *59/72*

U.S. Cl. 477—98 **5 Claims**



1. A control system for a power train of an automotive vehicle which includes an engine and a hydraulically controlled automatic transmission, comprising:

a first detector means for detecting a throttle opening of the engine;

a second detector means for detecting an engine speed;

a third detector means for detecting a vehicle speed;

a judgment means connected to said first, second and third detector means, for judging on the basis of the detected throttle opening, engine speed and vehicle speed whether or not the transmission is under a thermally overloaded condition, and

a torque limiter means connected to said judgment means, for limiting an engine torque when the transmission has been judged to be under the overloaded condition.

5,601,512

REVERSE SPEED CONTROL FOR LAWN MOWERS

Dane T. Scag, Elm Grove, Wis., assignor to Snapper, Inc., McDonough, Ga.

Filed Oct. 19, 1995, Ser. No. 543,873

Int. Cl.[6] B60K *41/04*

U.S. Cl. 477—111 **3 Claims**

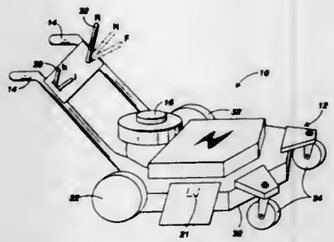
1. A lawn mower comprising:

a frame;

an engine mounted relative to said frame said engine having an ignition source;

a drive wheel capable of being driven by said motor in either a forward or a reverse direction;

engine speed control means for controlling the speed of said engine between a range including a low and high speed;



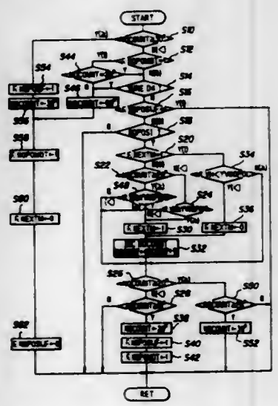
engine ignition shut-off means for shutting off said ignition source of said engine responsive to the placement of said engine speed control means at said high speed when said drive wheel is driven in reverse.

5,601,513

SYSTEM FOR DETECTING SHIFTER POSITION SENSOR MALFUNCTION

Takashi Arai; Atsushi Abe; Koichi Funatsu, and Tadashi Yamatani, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 26, 1995, Ser. No. 548,624
Claims priority, application Japan, Oct. 31, 1994, 6-290633
Int. Cl.[6] F16H *61/12;59/10*
U.S. Cl. 477—115 **9 Claims**



1. A system for detecting malfunction of a transmission of a vehicle, comprising:

vehicle speed detecting means for detecting a traveling speed of the vehicle;

a shift lever installed in the vehicle for allowing a driver to select one of a plurality of positions each corresponding to gear ranges in the transmission;

shift lever position detecting means for detecting a position selected by the driver to output a signal indicative of the position;

counting means for counting, when the signal is absent, the number of times that the detected vehicle speed exceeds a prescribed speed in a period starting when an ignition switch is turned on and ending when the ignition switch is turned off; and

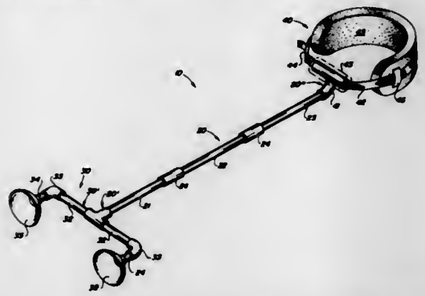
determining means for determining that said shift lever position detecting means fails when the count reaches a prescribed number.

5,601,514

SWIMMING EXERCISE DEVICE

Tom Horn, 5521 Hawkes Bluff Ave., Davie, Fla. 33331

Filed Oct. 30, 1995, Ser. No. 544,967
Int. Cl.[6] A63B *69/12*
U.S. Cl. 482—55 **16 Claims**



1. To be used in a swimming pool of the type including at least one substantially vertical wall surface, a swimming exercise device comprising:

a substantially elongate, generally rigid resistance member, said resistance member including a first end and a second end,

abutment means disposed on said first end of said resistance member, said abutment means being structured to facilitate, substantially stable, substantially perpendicular abutted engagement of said resistance member with the wall surface of the swimming pool so as to prevent movement of said resistance member towards the wall surface of the swimming pool,

harness means secured to said second end of said resistance member, said harness means being structured and disposed to be secured to an individual such that upon the individual swimming towards the abutment means, in substantially parallel relation to a central axis of said resistance member, movement of the individual towards the wall surface of the swimming pool is prevented, and

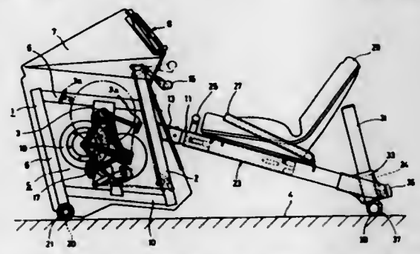
said harness means including a belt member structured to be secured about the individual's waist.

5,601,515

ADJUSTABLE RECUMBENT BICYCLE EXERCISER

Masaaki Matsumoto, Sakai, Japan, assignor to Cat Eye Co., Ltd., Osaka, Japan

Continuation of Ser. No. 907,163, Jul. 1, 1992, abandoned.
This application Mar. 21, 1994, Ser. No. 216,078
Claims priority, application Japan, Jul. 5, 1991, 3-052147 U
Int. Cl.[6] A63B *21/00*
U.S. Cl. 482—57 **10 Claims**



6. An adjustable recumbent bicycle exerciser by which a user practices a pedalling exercise in a reclining position, comprising a first frame, a pedal shaft on said first frame, pedals on said pedal shaft for rotating said pedal shaft to apply a load to a rotatable means, a center post connected to said first frame, a second frame slidably secured to said center post, a lock pin for locking the second frame to the center post in a selected position, a seat on the second frame facing the first frame and supporting the user, the second frame being slidably adjustable to adjust the position of the seat carried thereon with respect to the pedal shaft, an end frame secured to the second frame and having an opening therein, a seat post slidable in said opening in the end frame, a fastener for securing the seat post in a selected position in said end frame, and levelling means secured to the seat post for adjusting the horizontal position of the seat with respect to the floor.

5,601,516

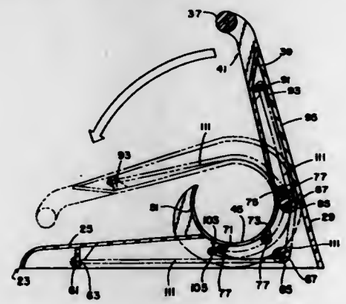
Patent Not Issued For This Number

5,601,517

ARM EXERCISE DEVICE

Terry M. Haber, 25011 Castlewood, El Toro, Calif. 92630; William H. Smedley, 33285 Blanche Dr., Lake Elsinore, Calif. 92330, and Clark B. Foster, 23631 Wakefield Ct., Laguna Niguel, Calif. 92677

Filed Jun. 23, 1994, Ser. No. 264,708
Int. Cl.[6] A63B *21/04*
U.S. Cl. 482—121 **9 Claims**



1. A resistance device comprising:

a base member having a plurality of roller bearings and a pair of curvalinear slots; a pivoting member attached to said base member and engaging said plurality of roller bearings to be rotatable thereover, said pivoting member having grip means at which said pivoting member is manually grasped for imparting a rotational force to said pivoting member, a straight surface projecting from a curved surface that surrounds an axis of pivot, said straight and curved surfaces adapted to accept an elbow and arm of a user thereagainst, and a pair of opposing flanges bounding at least said curved surface for limiting the lateral movement of said pivoting member with respect to said base member, each curvalinear slot of said base member lying adjacent a respective one of said pair of flanges and each one of said pair of flanges having at least one aperture in alignment with a respective one of said curvalinear slots; said resistance device further comprising bearing screws depending from said apertures and continuing into said respective one of said curvalinear slots to ride in said curvalinear slots and to pivotally attach said pivoting member to said base member; and

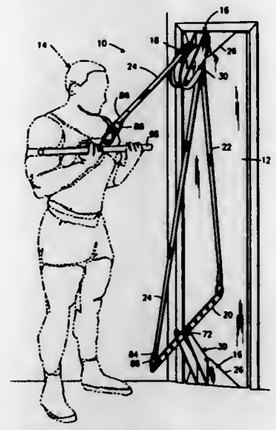
at least one resilient member, connected between said base member and said pivoting member and providing urging force to said pivoting member in a first direction proportional to displacement in a second direction.

5,601,518

PORTABLE EXERCISE DEVICE

Mitchell Weintraub, 1131 Arlanie Rd., Brooksville, Fla. 34609

Filed Sep. 1, 1995, Ser. No. 522,847
Int. Cl.[6] A63B *21/04*
U.S. Cl. 482—129 **7 Claims**



1. A portable exercise device comprising:

a pair of bases spaced apart from one another, each base being configured for attachment to a support means;

a member having a peripheral edge, said member being pivotally attached to one of said pair of bases;

a bar having a first end and a second end, said bar being pivotally attached, at a pivot point intermediate said first and second ends of said bar, to the other one of said pair of bases, said pivot point defining a first part of said bar extending from said pivot point to and including said first end of said bar and a second part of said bar extending from said pivot point and including said second end of said bar;

a longitudinally extending biasing means having first and second ends, said first end being connected to said base to which said member is attached thereto and said second end of said biasing means being attached to said second part of said bar; and

a strap having a first end and a second end, said first end of said strap being attached to said first part of said bar and a portion of said strap, intermediate said first and second ends thereof, engaging a portion of said peripheral edge of said member and said second end of said strap extending free from said member.

5,601,519

ABDOMINAL EXERCISING MACHINE

John S. Comereski, 113 Halloran Dr., P.O. Box 401, Breesport, N.Y. 14816

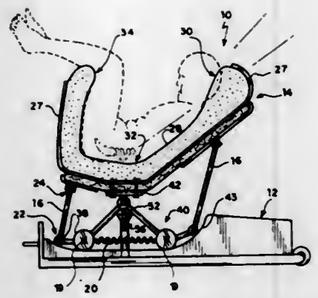
Filed Nov. 21, 1995, Ser. No. 561,456
Int. Cl.[6] A63B *23/02*
U.S. Cl. 482—142 **17 Claims**

1. An exercise apparatus for exercising abdominal muscles of a human comprising:

a base; having an inclined surface

a platform having a head-end section, a leg-end section and a middle section, said platform being collapsible at said middle section and wherein said end-positions are defined by a resting state, wherein said middle section and head-end section define a level platform portion having said head-end section

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and middle section provided in relative positions to each other to accommodate said platform in close conformity to a back of the human in a posture having a relaxed lordotic spine, and a collapsed state, wherein said middle section and said head-end section define an angled platform having said head-end section at an angle relative to said middle section to accommodate said platform in close conformity with the back of the human upon said platform in a posture wherein the spine is maximally flexed forward;

a deformable cushioning means, having a first end and a second end, dimensioned and configured to have a convex bolster integrally provided between said first end and said second end, said bolster being dimensioned and configured to generally fit the curvature defined by the lower lordotic spine, said cushioning means further dimensioned and configured to closely fit and rest upon said platform;

support means for elevating said platform above said base, said support means further comprising a plurality of support members, a first support member of said plurality of support members having a first platform end and a first translating end, said first support member being pivotally attached by said first platform end to said head-end section and a second support member of said plurality of support members, having a second platform end and a second translating end, said second support member being pivotally attached to said leg-end section at said second platform end, said first translating end and said second translating being end in communication with said inclined surface of said base member to guide said translating ends along said inclined surface thereby causing said platform to pass throughout a range of inclined positions;

a resistance means operably attached to and in communication with said middle section in a manner so as to permit movement of said platform from said resting state through said range of positions upon application of a force created during flexure of the lower and middle spine of the human to said bolster and middle section, said resistance means further operably attached to and in communication with said first translating end and said second translating end in a manner to allow pivotal movement of said head-end section and said leg-end section inwardly about said middle section throughout said range of positions upon movement of said middle section;

whereby the curvature of the lordotic spine of the human is supported by said bolster during said resting state, and whereby further the human may exercise abdominal muscles by repeated application of the force caused by flexure of the lower and middle spine against said bolster, middle section and resistance means to achieve said range of positions of said exercise apparatus.

5,601,520

WEAR-RESISTANT HARD-SURFACING FOR THE ROLLS OF HIGH-PRESSURE ROLL PRESSES

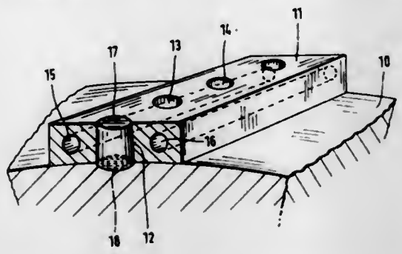
Michael Wollner, Im Sohl; Ludger Alsmann, Köln, and Frank Fischer-Helwig, Am Löhe, all of Germany, assignors to Klöckner-Humboldt-Deutz AG, Cologne, Germany

Filed Jul. 11, 1994, Ser. No. 273,479

Claims priority, application Germany, Jul. 17, 1993, 43 24 074.7

Int. Cl.[6] B02C *4/30*

U.S. Cl. 492—33 **7 Claims**



1. A high-pressure roll press comprising:

a roll having a roll surface (**10**);

a plurality of columnar nub pins (**17**) extending radially outwardly from said roll surface at predetermined intervals from one another, said nub pins being formed of two or more layers of deposited by surface weld passes on said roll surface through openings in a mold placed on said roll at the time of welding, the radially outward surface weld layers of said nub pins formed of alloying materials which are different from the alloying materials by which the radially inward surface weld layers of said nub pins are formed.

5,601,521

METHOD FOR MANUFACTURING A DIVIDER FOR A CARDBOARD BOX

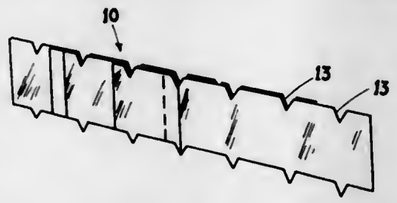
Maria J. Plamas Xapelli, Barcelona, Spain, assignor to Videcart, S.A., Navarra, Spain

Filed May 9, 1995, Ser. No. 437,467

Claims priority, application Spain, May 10, 1994, 9400980

Int. Cl.[6] B31F *5/04;* **B31B** *1/14*

U.S. Cl. 493—346 **9 Claims**



1. A method for manufacturing a divider for insertion into cardboard boxes, comprising the steps of:

continuously feeding strips of flexible material along a path, each of said strips moving initially in a different plane,

providing said strips with longitudinal grooves which will define fold lines in a longitudinal direction and which divide the strip into longitudinal bands,

applying an adhesive to at least some of said strips in transversely offset positions,

directing said strips to converge progressively until they overlap on each other and adhere to each other under pressure applied at the transversely offset positions at which the adhesive is applied to said at least some of said strips to form an assembly of strips which are overlapped and adhered to one another, and

cutting the assembly of strips which are overlapped and adhered to one another by means of at least one transverse cutting operation to provide pieces which will constitute the folded dividers which will be unfolded and adhered to at least two opposite sides of a box, said cutting step comprising the step of forming at least one inwardly directed recess at a first longitudinal end of each of said pieces and forming at least one outwardly directed projection at an opposite, second longitudinal end of each of said pieces.

5,601,522

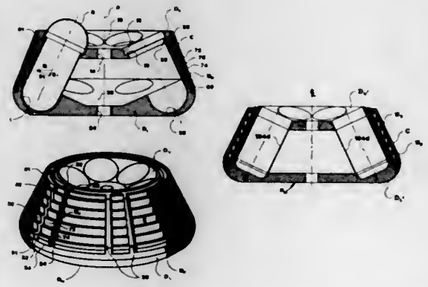
FIXED ANGLE COMPOSITE CENTRIFUGE ROTOR FABRICATION WITH FILAMENT WINDINGS ON ANGLED SURFACES

Alireza Piramoon, Santa Clara, Calif., assignor to Piramoon Technologies, Mountain View, Calif.

Filed May 26, 1994, Ser. No. 249,592

Int. Cl.[6] B04B *5/02*

U.S. Cl. 494—16 **32 Claims**



1. A composite fixed angle rotor having a frustum profile with a central spin axis and peripheral inclined sample tube apertures comprising:

a plurality of composite material discs including at least a top disc and a bottom disc, said top disc having a relatively small diameter for forming the top of said rotor, said bottom disc having a relatively large diameter for forming the bottom of said frustum shaped rotor;

each said disc having parallel and overlying laminate layers and defining said peripheral inclined sample tube apertures symmetrically distributed with respect to the central spin axis of said frustum shaped rotor, said peripheral inclined sample tube apertures symmetrically distributed with respect to said top disc being spaced radially inwardly of said peripheral inclined sample tube apertures symmetrically distributed with respect to said bottom disc;

said discs when overlying one another defining at the periphery thereof a stepped profile containing steps with respect to the spin axis of said rotor for retaining said circumferential filament windings disposed on the exterior of said rotor; and

circumferential filament windings disposed about said steps normal to said spin axis, said circumferential filament windings filling said steps to impart to said rotor said frustum profile.

5,601,523

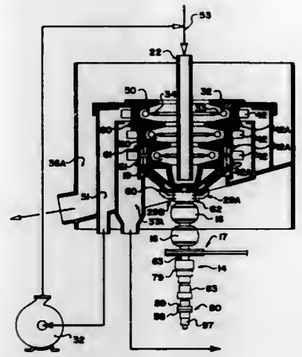
METHOD OF SEPARATING INTERMIXED MATERIALS OF DIFFERENT SPECIFIC GRAVITY WITH SUBSTANTIALLY INTERMIXED DISCHARGE OF FINES

Benjamin V. Knelson, 20321-86th Avenue, Langley, British Columbia, Canada

Filed Jul. 13, 1995, Ser. No. 502,019

Int. Cl.[6] B01D *43/00;* **B04B** *11/00*

U.S. Cl. 494—29 **20 Claims**



13. A method of separating intermixed particulate materials of different specific gravity comprising:

providing a centrifuge bowl having a peripheral wall and an open mouth;

rotating the bowl about a longitudinal axis so as to rotate the peripheral wall around the axis;

providing a feed material of intermixed particulate materials of different specific gravity and feeding the feed material to the bowl so as to pass over the peripheral wall and to cause a beavier portion of the materials to collect on the peripheral wall while a remaining lighter portion of the feed material escapes from the open mouth;

defining on the peripheral wall for rotation therewith at least one first axially localized, annular recess extending radially outwardly from the peripheral wall for collecting said heavier materials while said lighter materials pass over the first recess;

defining on the peripheral wall for rotation therewith at least one second axially localized, annular recess extending radially outwardly from the peripheral wall for collecting said heavier materials while said lighter materials pass over the second recess, the second recess being downstream of the first recess to receive materials passing therefrom and such that the lighter materials from the second recess pass toward said open mouth for discharge;

providing at the first and second recesses discharge means at an outer surface of the recesses, each for causing materials collecting in the recess to discharge outwardly from the peripheral wall under centrifugal forces generated by the rotation of the bowl;

collecting the outwardly discharged materials from the first recess;

collecting the outwardly discharged materials from the second recess separately from the materials from the first recess;

and returning the materials from the second recess to the feed material.

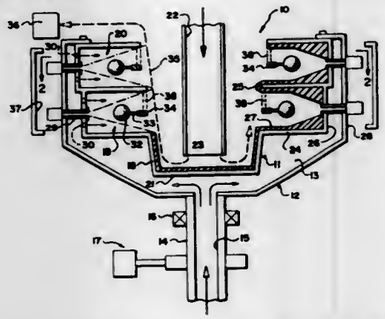
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METHOD OF SEPARATING INTERMIXED MATERIALS OF DIFFERENT SPECIFIC GRAVITY WITH SUBSTANTIALLY INTERMIXED DISCHARGE OF FINES

Benjamin Knelson, 20321-86th Avenue, Vancouver, British Columbia, Canada

Filed Aug. 4, 1995, Ser. No. 511,478
Int. Cl.[6] B01D *43/00;* **B04B** *11/04*
U.S. Cl. 494—29 **14 Claims**



1. A method of separating intermixed materials of different specific gravity comprising:

providing a centrifuge bowl having a peripheral wall and an open mouth;

rotating the bowl about a longitudinal axis so as to rotate the peripheral wall around the axis;

providing a feed material and feeding the feed material to the bowl so as to pass over the peripheral wall and to cause heavier materials to collect on the peripheral wall with a remainder of the feed material escaping from the bowl through the open mouth;

defining on the peripheral wall at least one first axially localized annular recess extending radially outwardly of the peripheral wall for collecting the heavier materials;

defining on the peripheral wall at least one second axially localized annular recess extending radially outwardly of the peripheral wall for collecting the heavier materials, the second recess being downstream of the first recess;

providing at the first and second recesses first and second discharge means each at an outer surface of the respective recess, each for allowing materials collecting in the area to discharge outwardly from the peripheral wall under centrifugal forces generated by rotation of the bowl;

providing each of the first and second discharge means with valve means for controlling discharge of the materials from the recesses;

collecting the outwardly discharged materials from the first and second recesses;

and providing first and second control means for separately controlling the valve means of the first and second recesses respectively so as to provide for each of said first and second recesses different discharge characteristics.

5,601,525

HARD-TYPE ENDOSCOPE APPARATUS

Mitsumasa Okada, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 15, 1995, Ser. No. 389,017
Claims priority, application Japan, Apr. 11, 1994, 6-072074
Int. Cl.[6] A61B *1/06*
U.S. Cl. 600—160 **10 Claims**

1. A hard-type endoscope apparatus equipped with an inserting portion, an observation optical system inserted in the inserting portion, and a lens-barrel holding the observation optical system, comprising:



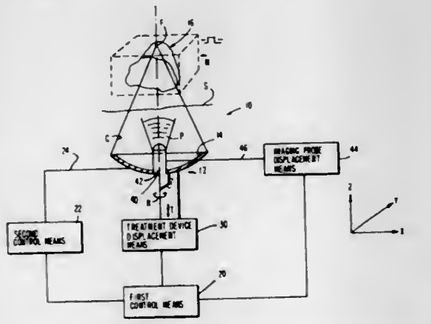
a molded tubular member provided at least in the lens-barrel along an optical path of the observation optical system, the tubular member being a single layer made of synthetic resin materials including an additive, the additive simultaneously forming matting irregularities on an inner surface of the tubular member at a time of molding the tubular member, so as to reduce a cost to manufacture the endoscope apparatus.

5,601,526

ULTRASOUND THERAPY APPARATUS DELIVERING ULTRASOUND WAVES HAVING THERMAL AND CAVITATION EFFECTS

Jean-Yves Chapelon, Villeurbanne; Dominique Cathignol, Genas; Albert Gelet, Lyon, and Emmanuel Blanc, S. Genis-Laval, all of France, assignors to Technomed Medical Systems, Bron, and Institut National de la Sante et de la Recherche Medicale, Paris, both of France

PCT No. PCT/FR92/01210, § 371 Date Nov. 29, 1994, § 102(e) Date Nov. 29, 1994, PCT Pub. No. WO93/12742, PCT Pub. Date Jul. 8, 1993
PCT Filed Dec. 21, 1992, Ser. No. 244,953
Claims priority, application France, Dec. 20, 1991, 91 15942; Dec. 20, 1991, 91 15943
Int. Cl.[6] A61N *7/00*
U.S. Cl. 601—3 **40 Claims**



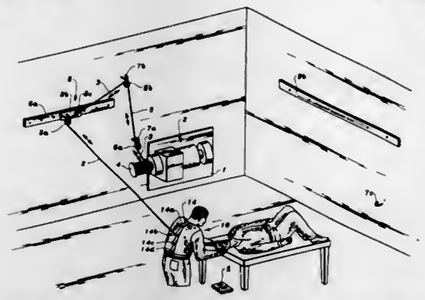
21. An apparatus for performing therapy using ultrasound, comprising at least one treatment device comprising at least one piezoelectric transducer element designed to provide at least said therapy for the purpose of destroying a target to be destroyed, said target including tissue which may be located inside a body of a mammal, and control means for said device in order to carry out said therapy, said piezoelectric transducer element being designed to supply ultrasonic waves focused onto a focal point or region F determining the tissue zone to be submitted to said therapy, said apparatus further comprising control means for causing said treatment device to supply ultrasonic waves of two types, thermal waves, for producing a predominantly thermal effect on the tissues to be treated, and cavitation waves, for producing a predominantly cavitation effect on said tissues to be treated when such tissues are exposed to said two types of ultrasonic waves.

5,601,527

SPINE SLING SUPPORT

David M. Selkowitz, 4920 Coronado Ave., Oakland, Calif. 94618

Filed Jun. 7, 1995, Ser. No. 485,627
Int. Cl.[6] A61H *1/00*
U.S. Cl. 601—23 **10 Claims**



1. A spine sling support device for upper body support against gravity, while allowing performance of a function and access to a desired area for performance of said function, said device comprising:

body support means releasably secured to an upper thorax portion of a user to support the upper thorax of the user against gravity in a variable forward inclined posture and to minimize compression and tension applied to the spinal column of the user;

a support line connected to said body support means;

a motor mounted on a substantially rigid and stable surface, and a spool secured to the output shaft of said motor;

said support line wound about said spool and adapted to be let out and taken up;

remote control means operated by the user to rotate said motor and spool and selectively take up or let out said line and control tension on said line; and,

means for engaging a portion of said line extending between said spool and said body support means and belaying the user, said means for engaging defining a selectively variable angular relationship between said portion of said line and said body support means at any location within the desired area.

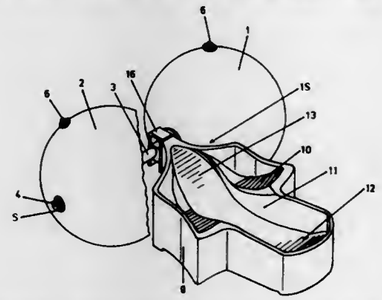
5,601,528

OBSTETRIC DEVICE

Donatello Mancarella, Auf dem Kämpchen 33, 42699 Solingen, Germany

Filed Apr. 3, 1995, Ser. No. 415,439
Int. Cl.[6] A61H *19/00*
U.S. Cl. 601—45 **11 Claims**

1. Obstetric device with two balloon or ring-shaped bodies (1, 2)



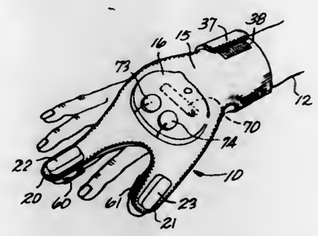
of essentially identical design, which are positioned on an axis which forms the connecting line between the two bodies (1, 2) and runs in the horizontal direction when positioned for use, where the bodies (1, 2) are arranged and connected to one another by connecting means in such a way that, when set down on a floor surface, their upper sections are separated from one another by a gap (8) and their top sides form a seat (7) for a parturient sitting on the two bodies (1, 2), and a pedestal-like base (9) with means to be detachably positioned in an essentially stable, fixed spatial relationship to the balloon or ring-shaped bodies (1, 2), where the pedestal-like base (9) has footrests (10) on which the parturient sitting on the seat (7) can rest her feet, the base (9) being detachably connected to the connecting means in said gap between the two balloon bodies (1, 2).

5,601,529

FINGER MASSAGE APPARATUS

Matt J. Wollman, North Hollywood, Calif., assignor to HWE, Inc., North Hollywood, Calif.

Filed Apr. 17, 1995, Ser. No. 422,879
Int. Cl.[6] A61H *11/00;23/06*
U.S. Cl. 601—74 **13 Claims**



1. A finger massage apparatus mountable on the hand and wrist of a user, comprising:

a control enclosure having a top surface and a bottom surface and including a rotatable control switch;

means for securing the control enclosure to the user, said means comprising a strap having hook and loop fasteners for securing the strap around the user's wrist;

a motor housing comprising an upper motor housing member and a lower motor housing member coupled together to form a motor housing cavity therebetween;

a vibrating motor contained within the motor housing cavity for providing vibrations to the user's fingers;

insulated electrical lead wires extending forwardly from the control enclosure to the motor, said insulated lead wires being housed within a resilient member adapted to hide the insulated lead wires from view;

one or more annular coupling members for securing the motor housing to the user's finger, each coupling member attached to the motor housing and adapted to wrap around and snugly engage a single finger of the user;

a power source housed within the control enclosure and electrically coupled to the vibrating motor by the electrical lead wires; and

a motor controller housed within the control enclosure for regulating electric current delivered from the power source to the motor, said motor controller comprising a current control element coupled to the rotatable control switch, whereby vibration intensity induced by the motor can be varied through rotation of the switch.

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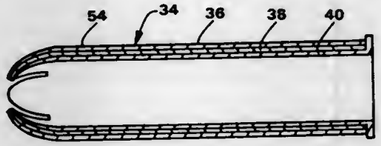
PAPER APPLICATOR CONTAINING A WATER-INSOLUBLE COATING

Steven J. Nielsen, Greenville; Yihua Chang, Appleton; Allan J. Krueger, Winneconne; Tammy J. Rentmeester, Appleton, and Richard R. Tews, Larsen, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jun. 7, 1995, Ser. No. 477,045

Int. Cl.[6] A61F *13/20*

U.S. Cl. 604—11 **30 Claims**



1. A tampon applicator comprising:

a) at least one elongated tubular member formed from at least one layer of paper and having an interior surface and an exterior surface, said tubular member capable of holding a substance which is to be inserted into a body cavity; and

b) a water-insoluble, single layer of coating formed on at least one of said interior and exterior surfaces, said coating comprising from between about 95 percent by weight to about 98 percent by weight of ethylene vinyl acetate and from between about 2 percent by weight to about 5 percent by weight of a slip agent, said coating providing said tubular member with a dry coefficient of kinetic friction ranging from between 0.38 to 0.53 and a wet coefficient of kinetic friction ranging from between 0.82 to 1.03, said low dry and wet coefficient of kinetic friction values facilitating insertion of said applicator into said body cavity.

5,601,531

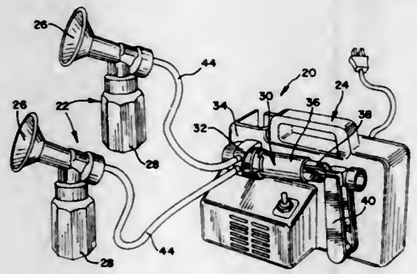
BREAST PUMP ASSEMBLY AND METHOD OF USING SAME

Brian H. Silver, Cary, Ill., assignor to Medela, Incorporated, McHenry, Ill.

Filed Feb. 16, 1995, Ser. No. 390,859

Int. Cl.[6] A61M *1/06*

U.S. Cl. 604—74 **14 Claims**



1. An improved breast pump assembly comprising:

a piston pump having a piston which is reciprocated in a piston cylinder by a piston rod,

a motor drive unit which reciprocally moves said piston rod within the interior of said piston cylinder to generate a vacuum, said piston cylinder further having an interior, an output end and another end through which said piston rod extends in use,

a cylinder holder connected to said output end of said piston cylinder, said cylinder holder being mounted to said motor drive unit for reciprocal movement of said piston rod, said cylinder holder having two ports which communicate with said piston cylinder interior;

two breast pumping units each comprising a breast hood which receives a woman's breast therein for the expression of milk, a container for expressed milk which is in fluid communication with said breast hood, and a tube connected at one end to a respective one of said two ports and at the other end to a respective breast hood; and

a selector on said cylinder holder, said selector being movable to connect a vacuum generated within said piston cylinder interior to one or both of said two ports.

5,601,532

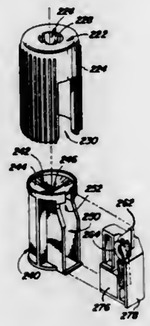
LOCKING SAFETY COVER FOR SHARP INSTRUMENTS

Rodolfo Gaba, Simi Valley, Calif., assignor to Graphic Controls Corporation, Buffalo, N.Y.

Continuation-in-part of Ser. No. 472,553, Jun. 7, 1995, which is a continuation-in-part of Ser. No. 376,399, Jan. 23, 1995, Pat. No. 5,533,974, which is a continuation-in-part of Ser. No. 94,842, Jul. 20, 1993, Pat. No. 5,417,659. This application Jan. 11, 1996, Ser. No. 583,989

Int. Cl.[6] A61M *5/32*

U.S. Cl. 604—110 **17 Claims**



1. A safety device for capping the point of a needle, comprising: a housing; a needle retainer with the housing and including a wheel and a spring biasing the wheel towards two intersecting walls; and a cover on the housing, the cover having an opening adapted to engage a hub on the needle.

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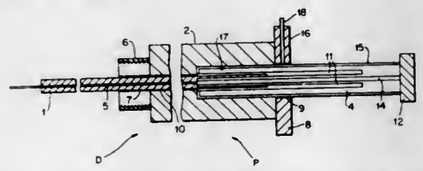
ENDOSCOPIC PUNCTURE NEEDLE DEVICE

Søren Hancke, Hellerup, and Peter Vilmann, Copenhagen, both of Denmark, assignors to GIP Medizin Technik GmbH, Grassau, Germany

Filed Jun. 6, 1995, Ser. No. 468,354

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—164 **8 Claims**



1. An endoscopic puncture needle device comprising: an elastic catheter for insertion into an instrument channel of an endoscope; a flexible hollow puncture needle extending through the catheter; a cylindrical handle casing extending in a longitudinal direction of the hollow puncture needle, a proximal end of the catheter being connected to a distal end of the casing; and a hollow rod connected to proximal end of the hollow puncture needle, for reciprocating the hollow puncture needle within the catheter, said hollow rod being mounted in the handle casing coaxially with the proximal end of the catheter and displaceably in the longitudinal direction such that a distal end of the hollow needle can be driven out of the catheter in a distal direction by displacing the hollow rod in the casing; wherein a distal end portion of the handle casing is provided with a thread for connection to the instrument channel of the endoscope for passing the catheter through the instrument channel.

5,601,534

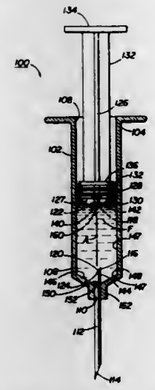
DISPOSABLE HYPODERMIC SYRINGE AND NEEDLE COMBINATION

Raymond A. Turner, Memphis, Tenn., assignor to The University of Memphis, Memphis, Tenn.

Filed Jun. 7, 1995, Ser. No. 486,191

Int. Cl.[6] A61M *5/32*

U.S. Cl. 604—195 **8 Claims**



1. A disposable hypodermic syringe comprising:

(a) an elongate, rigid, hollow chamber having a longitudinal axis, a posterior opening and an anterior opening smaller than the posterior opening;

(b) a hollow needle axially disposed within the anterior opening, having a first end outside the chamber in fluid communication with an opposed second end, the second end disposed within the chamber and in fluid communication therewith;

(c) axially slidable means sealingly engaged within the chamber for drawing a fluid into the chamber through the first end of the needle and for expelling the fluid from the chamber through the second end of the needle, the means for drawing and expelling having a anterior end and a posterior end and comprising means for manually gripping extending out of the posterior opening of the chamber, means for deflecting the second end of the needle during operation of the syringe, and means for retracting the needle; wherein the second end of the needle includes means for engaging a deflecting means and means for engaging a retracting means, wherein the axially slidable means for drawing the fluid into the chamber and expelling the fluid from the chamber comprises an elongate, axial rod disposed within the chamber and a piercable piston for forming a slidable seal within the chamber, wherein the piston is disposed within the chamber and between the anterior opening of the chamber and an end of the elongate, axial rod and the piston is operatively coupled to the elongate axial rod so that axial movement of the rod results in axial movement of the piston, wherein

(i) the means for deflecting the second end of the needle during operation of the syringe comprises a nipple on the end of the elongate, axial rod disposed within the chamber;

(ii) the means for retracting the needle comprises a surface of the nipple facing the posterior opening of the hollow chamber;

(iii) the means for engaging a deflecting means comprises a sloping cut in the second end of the needle disposed within the chamber;

(iv) the means for engaging a retracting means comprises a barb in a portion of the second end of the needle disposed within the chamber; and

(v) the rod is operable to cause the piston to be pierced by the second end of the needle disposed within the chamber to bring the nipple into contact with the sloping cut, thereby radially biasing the second end of the needle disposed within the chamber.

5,601,535

SAFETY DEVICE FOR HYPODERMIC NEEDLE OR THE LIKE

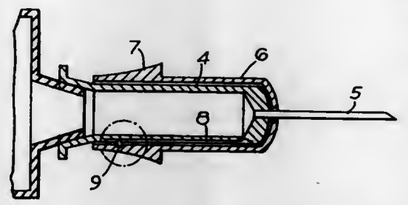
Phillip O. Byrne; Penelope R. Sisson, and Harry R. Ingham, all of Newcastle upon Tyne, England, assignors to British Technology Group Ltd., London, England

Continuation of Ser. No. 709,999, Jun. 4, 1991, which is a continuation of Ser. No. 595,664, Oct. 11, 1990, Pat. No. 5,084,030, which is a continuation of Ser. No. 241,256, Sep. 7, 1988, abandoned, which is a continuation of Ser. No. 888,376, Jul. 23, 1986, Pat. No. 4,826,490. This application Dec. 3, 1993, Ser. No. 160,859

Claims priority, application United Kingdom, Jul. 29, 1985, 8509149

Int. Cl.[6] A61M *5/32*

U.S. Cl. 604—198 **20 Claims**



1. For use with clinical apparatus operably applicable to a patient by way of a deliberate skin puncture, a needle assembly operable to effect said skin puncture and comprising:

a support structure having a first end region;

a needle having one end portion fixedly mounted in said structure to form therewith a sub-assembly and an opposite end portion of said needle projecting from said structure to terminate in a skin-puncturing tip having an opening therein, the needle being longitudinally hollowed to provide a direct fluid flow pathway extending therethrough between said opening which is in said tip and the remainder of the needle from said one end portion, the needle having no obstruction therein along the entire length of said pathway so that direct fluid flow along the entire length of the pathway is permitted;

a guard mounted around part of said sub-assembly for movement relative thereto in the longitudinal direction of said needle from a first position in which said tip is exposed to effect said deliberate puncture, to a second position in which said tip is embraced by said guard to prevent unintended skin puncture;

a locking mechanism including first and second elements, said first element being a projection from one of said sub-assembly and guard, said second element being a stop surface defining a space bordering the other of said sub-assembly and guard, said elements each extending transversely of said needle

longitudinal direction, said elements being spaced apart in said longitudinal direction when said guard is in said first position, said projection being subject to a bias force acting between said sub-assembly and guard during said relative movement, and said projection being automatically irreversibly moved into said space alongside said stop surface in response to said bias force when said guard is in said second position to inhibit a returning relative movement thereof towards said first position; and

a stop mechanism effective to constrain said guard from movement towards and around the apparatus when in place, which mechanism is located in said first end region of said support structure.

5,601,536

NEEDLE TIP COVER

Mark A. Crawford, Sandy; Timothy J. Erskine, and Gerald H. Peterson, both of Salt Lake City, all of Utah, assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Division of Ser. No. 364,071, Dec. 27, 1994, Pat. No. 5,558,651, which is a continuation of Ser. No. 114,988, Aug. 12, 1993, abandoned, which is a continuation of Ser. No. 512,284, Apr. 20, 1990, abandoned. This application Jun. 5, 1995, Ser. No. 463,618

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—263 **5 Claims**



1. A catheter introducer set, comprising:

a catheter adapter having a distal end and a proximal end with an external surface;

a cannula secured to the distal end of the catheter adapter;

a needle hub having a proximal end and an open distal end;

a needle having a sharp distal end and a proximal end secured to the needle hub, the needle being coaxially disposed within the open distal end of the needle hub and the cannula and having a change of contour therealong; and

a needle cover coaxially disposed about the needle and disposed between the needle hub and the proximal end of the catheter adapter and having a distal end engaging the external surface of the proximal end of the catheter adapter to maintain the needle cover in engagement with the catheter adapter and a proximal end disposed within the open distal end of the needle hub and wherein the proximal end of the needle cover engages the change in contour along the needle to obstruct the sharp distal end of the needle when the sharp distal end of the needle is withdrawn into the needle cover.

5,601,537

CATHETER SYSTEM

James J. Frassica, 5 Essex Pl., Chelmsford, Mass. 01824

Filed Jun. 5, 1995, Ser. No. 463,194

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—264 **16 Claims**

1. A catheter for catheterizing mammalian genito-urinary and gastro-intestinal passages, said catheter comprising a flexible catheter tube having a lower end and an upper end and a lumen communicating there between, said upper end of said tube configured with an external screw thread of uniform pitch, said thread having a thread height of at least one fifth (1/5) of the outside



diameter of said catheter tube and a thread pitch not greater than the circumference of said thread.

5,601,538

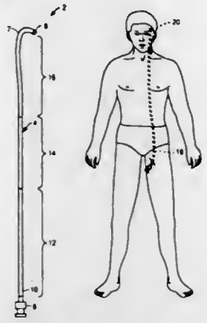
FLOW DIRECTED CATHETER WITH HYDROPHILIC DISTAL END

Mark E. Deem, San Francisco, Calif., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Mar. 7, 1995, Ser. No. 399,677

Int. Cl.[6] A61M *25/00*

U.S. Cl. 604—280 **22 Claims**



22. A flow directed catheter comprising:

a hollow catheter body made of a hydrophilic material and having a proximal section, a midsection and a distal section, at least a portion of the body being radiopaque;

the body having lubricious interior and exterior surfaces; and

the proximal section having an equilibrium water content of about 0 to 70% water by mass when hydrated, the midsection having an equilibrium water content of about 10 to 80% water by mass when hydrated and the distal section having an equilibrium water content of about 50 to 90% water by mass when hydrated, whereby the hydrated distal section is supple and flows with blood flow as a part of the blood flow.

5,601,539

MICROBORE CATHETER HAVING KINK-RESISTANT METALLIC TUBING

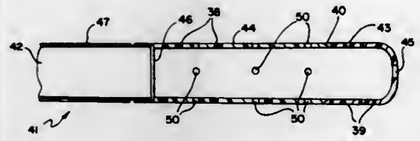
Philip P. Corso, Jr., Davie, Fla., assignor to Cordis Corporation, Miami Lakes, Fla.

Continuation of Ser. No. 147,134, Nov. 3, 1993, abandoned. This application Jul. 25, 1995, Ser. No. 506,669

Int. Cl.[6] A61M *25/00*

U.S. Cl. 604—282 **17 Claims**

1. A microbore cerebrovascular catheter having enhanced kink-resistance, comprising:



an elongated proximal shaft defining the body of the microbore cerebrovascular catheter, said proximal shaft being a length of flexible metallic tubing to provide a flexible proximal shaft having a proximal end and a distal end, said flexible metallic tubing being a metallic alloy including nickel and titanium as the principal components, said nickel and titanium being in an approximate 50:50 mixture;

a hub member secured to said proximal end of the elongated proximal shaft;

a distal shaft in direct operative securement to said distal end of the elongated proximal shaft such that fluids pass between said proximal and distal shafts, said distal shaft being a polymeric tubing, said distal shaft being the distalmost component of the catheter and having an aperture through a wall portion thereof for passage of fluids from said proximal shaft and therethrough to a patient's tissue; and

said elongated proximal shaft flexible metallic tubing is kink-resistant and has greater torsional strength than does said distal shaft polymeric tubing, said metallic alloy of said proximal shaft has austentic properties selected to substantially preclude temperature-induced shape changes during use and at temperatures above its A_f temperature, at which reversion to an austentic state is complete, and said kink-resistant flexible proximal shaft is readily bendable from an original configuration to another configuration without kinking that is experienced by a substantially identically shaped and sized shaft which is made of stainless steel, including returning to the original configuration without leaving a crease therein.

5,601,540

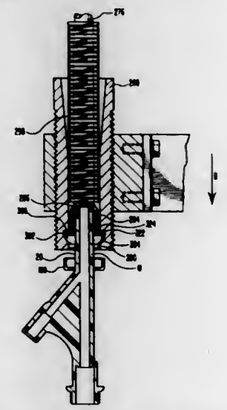
APPARATUS FOR POSITIONING A SPLIT RING OVER AN ENLARGED FLANGE

Brian Stevens, 1560 W. 1800 North, Pleasant Grove, Utah 84062

Filed Jul. 14, 1995, Ser. No. 502,751

Int. Cl.[6] A61M *1/00*; **B23P** *19/04*

U.S. Cl. 604—283 **21 Claims**



1. An apparatus for advancing an annular flange having an outer diameter and positioned on the exterior surface of an elongated body through an opening in an expandable split ring, the opening in the unexpanded split ring having an inner diameter smaller than the outer diameter of the flange, the apparatus comprising:

(a) a rigid, substantially cylindrical shaft comprising:

(i) a retaining shaft having an outer diameter smaller than the inner diameter of the split ring;

(ii) an expansion shaft having an outer diameter larger than the inner diameter of the split ring, said expansion shaft also having an interior surface defining a recess sized to receive the flange on the elongated body; and

(iii) a frustoconical transition shaft extending from said retaining shaft to said expansion shaft;

(b) a housing having a top end, a bottom end with an end face positioned thereat, and an interior surface defining a passageway extending therebetween, said passageway being sized to snugly receive the split ring received on said retaining shaft;

(c) means for urging the split ring received on said retaining shaft against said transition shaft; and

(d) means for moving said housing relative to said shaft, said housing being moved between a first position and a second position, the split ring being freely exposed adjacent to said end face of said housing in said first position such that said means for urging radially outwardly expands the split ring around said transition shaft, said end face pressing the split ring over said expansion shaft having the flange received in said recess thereof and onto said elongated body as said housing is moved from said first position to said second position.

5,601,541

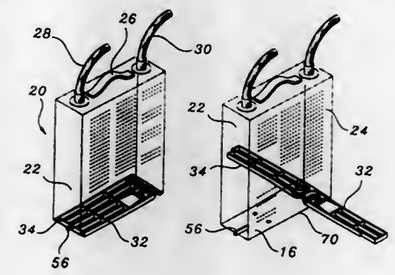
FOOTSTAND FOR CHEST DRAINAGE UNIT

David R. Swisher, St. Louis, Mo., assignor to Sherwood Medical Company, St. Louis, Mo.

Filed Dec. 20, 1994, Ser. No. 359,486

Int. Cl.[6] A61M *1/00*

U.S. Cl. 604—322 **16 Claims**



1. A footstand in combination with a medical container, the medical container having a generally rectangular container, the footstand comprising:

a pair of legs pivotally secured to the container, the legs having a length generally equal to the width of the container and each leg having a proximal and distal end, the legs being allowed to rotate between a first inoperative position wherein said legs do not stabilize the container to a second operative position wherein said legs stabilize the container; and

each leg having gear teeth provided thereon which interact with the gear teeth of the other leg such that when one leg is pivoted from the first non-stabilizing position to the second position stabilizing the container, the other leg is moved in a similar manner from the first position to the second position stabilizing the container.

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5,601,542

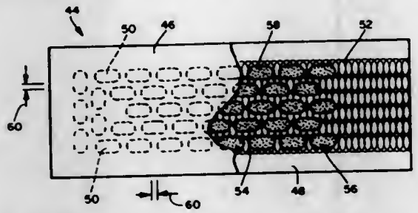
ABSORBENT COMPOSITE

Mark K. Melius, Appleton; Sandra M. Yarbrough, Menasha; Melissa C. Putzer, Oshkosh; Stanley R. Kellenberger, and Shannon K. Byerly, both of Appleton, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation of Ser. No. 145,452, Oct. 29, 1993, abandoned, which is a continuation-in-part of Ser. No. 16,312, Feb. 24, 1993, abandoned. This application Mar. 25, 1996, Ser. No. 621,390

Int. Cl.[6] A61F *13/15;13/20*

U.S. Cl. 604—368 90 Claims



1. An absorbent composite suitable for use in a disposable absorbent garment, said absorbent composite comprising:

means for containing a superabsorbent material; and

a superabsorbent material contained by said containment means, said superabsorbent material having a Pressure Absorbency Index of at least 120 and a 16-hour extractables level of less than about 13 weight percent said superabsorbent being present in said containment means in an amount of from about 30 to about 100 weight percent based on total weight of said containment means and said superabsorbent material.

5,601,543

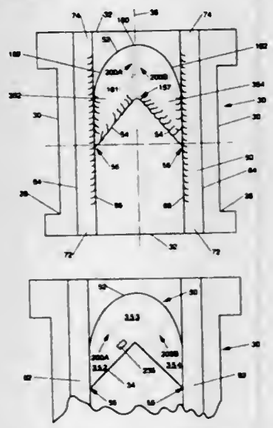
ABSORBENT ARTICLE HAVING A SELECTIVELY WEAKENED POCKET CUFF

Kimberly A. Dreier, Cincinnati, and Donald C. Roe, West Chester, both of Ohio, assignors to The Proctor & Gamble Company, Cincinnati, Ohio

Filed Dec. 6, 1994, Ser. No. 349,776

Int. Cl.[6] A61F *13/15*

U.S. Cl. 604—385.1 15 Claims



1. A disposable absorbent article having longitudinal edges, a front end edge, a rear end edge, a longitudinal centerline and a lateral centerline, the disposable absorbent article comprising:

a liquid pervious topsheet;

a liquid impervious backsheet joined to the topsheet;

an absorbent core positioned between the topsheet and the backsheet; and

a pocket cuff joined to the disposable absorbent article to form a pocket recess, the pocket cuff having an open edge having laterally spaced apart open edge ends, and wherein a first portion of the pocket cuff is separable from a second portion of the pocket cuff along a predetermined line of weakness, and wherein the predetermined line of weakness comprises a generally laterally extending predetermined line of weakness, the generally laterally extending predetermined line of weakness being spaced longitudinally from the open edge.

5,601,544

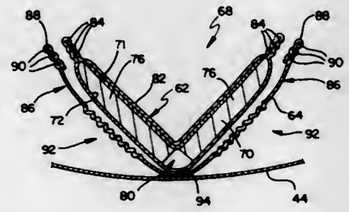
CHILD'S TRAINING PANT WITH ELASTICIZED SHAPED ABSORBENT AND METHOD OF MAKING THE SAME

Frank S. Glaug; Richard H. Thiessen, both of Appleton; Robert L. Popp, Hortonville; Shirlee A. Weber, Neenah, and Richard T. Wehrle, New London, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Dec. 23, 1993, Ser. No. 171,580

Int. Cl.[6] A61F *13/15*

U.S. Cl. 604—385.2 19 Claims



1. A disposable absorbent child's training pant, comprising:

a generally liquid permeable pant body comprising a front waist section, a back waist section, a crotch section, a waist opening, and a pair of leg openings,

an absorbent composite disposed in said pant body at least at said crotch section thereof, said absorbent composite comprising a longitudinally extending absorbent central portion and a pair of longitudinally extending absorbent side portions, said absorbent central portion having a higher basis weight than one of said absorbent side portions, each said side portion having a static absorbent height,

an elastic member elastically associated with each said absorbent side portion,

a weakened area between each said absorbent side portion and said absorbent central portion for allowing each said absorbent side portion to be movable upwardly relative to said absorbent central portion,

a liquid impermeable layer disposed between said absorbent composite and said pant body, said liquid impermeable layer being attached to said absorbent central portion and comprising a pair of longitudinally extending side flaps having respective flap distal edges and dynamic flap heights, said dynamic flap heights being greater than said static absorbent heights, and

a flap elastic member elastically associated with each said flap distal edge for gathering a respective said side flap.

5,601,545

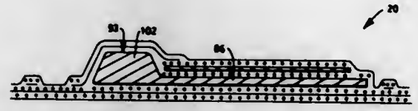
DISPOSABLE ABSORBENT ARTICLE WITH IMPROVED WAIST CONTAINMENT AND GASKETING

Frank S. Glaug, Appleton; Robert L. Popp, Hortonville, and Richard H. Thiessen, Appleton, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jun. 29, 1994, Ser. No. 268,054

Int. Cl.[6] A61F *13/15*

U.S. Cl. 604—385.2 11 Claims



1. A disposable absorbent article, comprising:

a backsheet comprising a front portion with a front edge and a back portion with a back edge,

an absorbent structure disposed on said backsheet,

said absorbent structure comprising

(i) an absorbent layer comprising a front edge and a back edge, and a front section having a front section thickness and a front section surface, and a back section having a back section thickness and a back section surface, said front section thickness being greater than said back section thickness and defining an inner absorbent wall extending between said front section surface and said back section surface,

(ii) a surge layer disposed on said absorbent layer, said surge layer comprising a front edge and a back edge, said surge layer front edge and said surge layer back edge being respectively spaced inwardly of said absorbent layer front edge and said absorbent layer back edge, said surge layer being in liquid communication with said inner absorbent wall,

a liquid impermeable baffle layer overlying said front edge of said absorbent layer, and

a waist elastic member joined at said backsheet front portion, said waist elastic member comprising a front edge and a back edge, said waist elastic member back edge being spaced from said front edge of said absorbent layer a distance of at least about 3 centimeters.

5,601,546

DISPOSABLE DIAPER

Hiroyuki Tanji, and Makoto Suekane, both of Ehime-ken, Japan, assignors to Uni-Charm Corporation, Ehime-ken, Japan

Filed Mar. 21, 1995, Ser. No. 408,260

Claims priority, application Japan, Mar. 24, 1994, 6-053632

Int. Cl.[6] A61F *13/15*

U.S. Cl. 604—385.2 2 Claims

1. A disposable diaper comprising:

a liquid-permeable topsheet;

a liquid-impermeable backsheet;

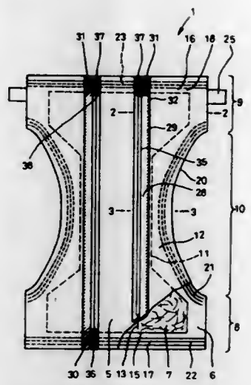
a liquid-absorbent core sandwiched between said topsheet and said backsheet;

said topsheet, said backsheet and said core assembled together so as to form a front zone, a rear zone and a crotch zone extending between said front zone and said rear zone;

a pair of cuffs extending longitudinally and generally parallel to each other along said front zone, said rear zone and said crotch zone;

each of said cuffs having a base side edge and an elastic free side edge extending generally parallel in plan view to said base side edge, said cuffs being bonded along said base side edges to said topsheet, said free side edges in an unfolded condition, being directed inwardly of said diaper and transversely opposed to each other, and located inside transversely opposite side edges of said core so that said transversely opposite side edges are not covered with cuffs;

said cuffs being folded longitudinally along said free side edges outwardly of said diaper and being bonded at longitudinally opposite ends thereof to non-folded portions of said cuffs, wherein an outermost longitudinal edge of said free side edge is folded over the top of said free side edge and thereby is directed inward of said diaper.



5,601,547

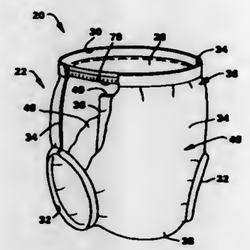
WAIST ELASTIC SYSTEM WITH IMPROVED MODULUS OF ELASTICITY FOR A CHILD'S TRAINING PANT

Margaret A. Kato, and Frank S. Glaug, both of Appleton, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed May 31, 1995, Ser. No. 455,298

Int. Cl.[6] A61F *13/15*

U.S. Cl. 604—385.2 26 Claims



1. A waist elastic system for a disposable absorbent pant comprising a chassis including a front panel, a back panel, a crotch panel, and an absorbent structure on said crotch panel, said front panel and said back panel being selectively joined to form a waist opening and a pair of leg openings, said waist elastic system comprising:

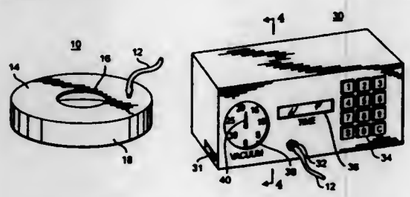
an elongate sleeve member defining an elongate passage therein, and being generally peripherally disposed about said waist opening, and

an elongate elastic member disposed within said elongate passage,

said waist elastic system having an average maximum rate of change of modulus of elasticity over a first three cycles of about 2.50 grams per millimeter in an extension range between about 175 millimeters to about 325 millimeters.

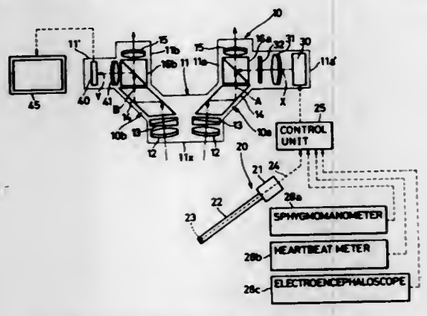
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5,601,548
OPEN ANGLE GLAUCOMA TREATMENT APPARATUS AND METHOD
G. Richard Smith, Fountain Hills, Ariz., and John T. LiVecchi, Scranton, Pa., assignors to Ophthalmic International, L.L.C., Fountain Hills, Ariz.
Filed Nov. 7, 1994, Ser. No. 334,935
Int. Cl.[6] A61B 17/00
U.S. Cl. 606—1 12 Claims



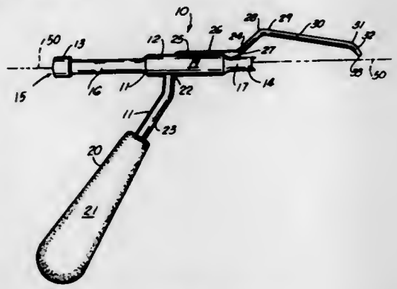
1. An open angle glaucoma treatment apparatus comprising:
a vacuum source configured to produce an amount of vacuum; and
a vacuum applicator coupled to said vacuum source, said vacuum applicator being configured to contact the frontal surface of an eye such that said amount of vacuum is introduced between said frontal surface of said eye and said vacuum applicator for a duration of time between 15 and 120 seconds; wherein
said vacuum applicator has an outer annular wall sized to circumscribe an area of said frontal surface of said eye, said area being located over the Canal of Schlemm of said eye.

5,601,549
MEDICAL OBSERVING INSTRUMENT
Kunihiko Miyagi, Saitama-ken, Japan, assignor to Machida Endoscope Co., Ltd., Tokyo, Japan
Filed Nov. 2, 1995, Ser. No. 552,284
Claims priority, application Japan, Nov. 17, 1994, 6-308220
Int. Cl.[6] A61B 17/36
U.S. Cl. 606—4 12 Claims



1. A medical observing instrument comprising:
(a) a microscope having a body and an enlarging optical system received in said body, said enlarging optical system including an objective lens and an ocular lens to thereby obtain a first image, said enlarging optical system further including a beam splitter disposed between said objective lens and said ocular lens;
(b) an endoscope separated from said microscope; and
(c) image display means connected to said endoscope and displaying a second image obtained by said endoscope, said image display means being received in said body of said microscope and placed adjacent to said beam splitter, said second image displayed in said image display means being sent to said ocular lens through said beam splitter.

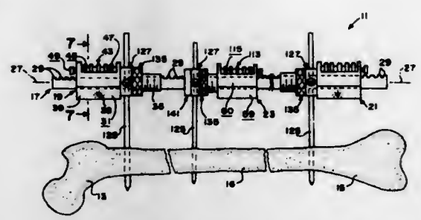
5,601,550
PELVIC PIN GUIDE SYSTEM FOR INSERTION OF PINS INTO ILIAC BONE
Rene D. Esser, 881 Lurline Dr., Foster City, Calif. 94404
Filed Oct. 25, 1994, Ser. No. 329,068
Int. Cl.[6] A61B 17/56
U.S. Cl. 606—54 15 Claims



1. A pelvic pin guide apparatus comprising:
a) an elongated instrument body;
b) the instrument body including a tubular barrel with an outer surface and an inner central longitudinal bore;
c) a handle that extends laterally from the outer surface of the barrel for gripping and manipulating the instrument body during surgical placement of holes in the patient's pelvis;
d) a pointer extending from the proximate end of the barrel and along a line that is generally parallel to and offset from the central longitudinal axis of the barrel bore, the pointer having a sharp distal tip that can be used by the surgeon to track the surface of the patient's pelvic cortex during a drilling of surgically placed holes that are drilled by the surgeon into the patient's pelvis;
e) the pointer distal tip being offset a few millimeters from a line that coincides with the central longitudinal axis of the barrel, the pointer distal tip being spaced away from the distal end of the barrel along a line that coincides with the central longitudinal axis of the barrel;
f) the bore being sized and shaped to hold a generally cylindrically shaped drill and wherein the pointer distal tip is positioned adjacent the outer surface of the drill when the drill is extended through the barrel to the pointer.

5,601,551
GEARED EXTERNAL FIXATOR
Harold S. Taylor, and J. Charles Taylor, both of Memphis, Tenn., assignors to Smith & Nephew Richards, Inc., Memphis, Tenn.
Filed Mar. 1, 1995, Ser. No. 396,925
Int. Cl.[6] A61B 17/56
U.S. Cl. 606—54 18 Claims

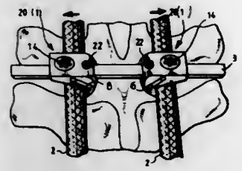
1. An external fixator for securing first and second bone elements during a healing process; said external fixator comprising:
(a) an elongated bar;
(b) a first carriage for mounting on said bar and for securement to the first bone element;



(c) a second carriage for mounting on said bar and for securement to the second bone element;
(d) a first drive mechanism associated with said first carriage for driving said first carriage along the length of said bar; and
(e) a second drive mechanism associated with said second carriage for driving said second carriage along the length of said bar independent of said first carriage;
wherein the fixator controls the relative alignment of said first and second bone segments during the healing processes.

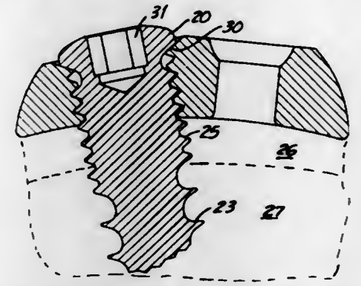
5,601,552
FIXING DEVICE FOR A RIGID TRANSVERSE CONNECTION DEVICE BETWEEN RODS OF A SPINAL OSTEOSYNTHESIS SYSTEM
Yves P. Cotrel, Paris, France, assignor to Sofamor, S.N.C., Rang Du Fliers, France
Filed Mar. 18, 1994, Ser. No. 210,890
Int. Cl.[6] A61B 17/72
U.S. Cl. 606—61 10 Claims





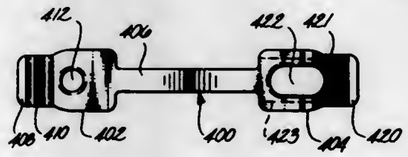
1. Fixing hook for interconnecting a rod of a spinal osteosynthesis system with a rigid transverse bar and for clamping the rod against the bar, said fixing hook comprising:
a body;
a passage defined in said body for receiving the bar, said passage having a height at least equal to the thickness of the bar, extending throughout a length of said body, freely opening out at its ends and terminating at one end in an aperture defined in said body and having a height exceeding the thickness of the bar; and
a curved strip portion extending from said body for receiving a rod therein, said aperture being provided in a connection region between said body and said curved strip portion;
wherein said passage defines edge portions in said body so shaped as to define ramps inclined toward said curved strip portion against which the rod slides so as to facilitate putting the rod in position within said curved strip portion;
further wherein said curved strip portion has a first curved region having a first radius of curvature equal to the radius of curvature of the rod which is to bear therein, followed, toward a free end portion of said curved strip portion, by a second region which is raised in the direction toward said body and having a different second radius of curvature; and
further wherein said second radius of curvature has a center of curvature offset away from said body toward said curved strip portion relative to the center of curvature of said first radius of curvature.

5,601,553
LOCKING PLATE AND BONE SCREW
Linda Trebing, Devon, Pa., and John Thalgott, Las Vegas, Nev., assignors to Synthes (U.S.A.), Paoli, Pa.
Filed Oct. 3, 1994, Ser. No. 317,246
Int. Cl.[6] A61B 17/70;17/80;17/84
U.S. Cl. 606—61 16 Claims



1. A bone plate comprising an upper surface and a lower surface for application to a bone, the lower surface being curved to conform to a cylindrical bone and the upper surface having two flat intersecting planes, a first screw hole having an axis normal to one of said intersecting planes and a second screw hole having an axis normal to the other intersecting plane, said planes providing directional guides for insertion of screws in said holes.

5,601,554
BRANCH CONNECTOR FOR SPINAL FIXATION SYSTEMS
Robert S. Howland, Seal Beach, and James Rinner, Fountain Valley, both of Calif., assignors to Advanced Spine Fixation Systems, Inc., Cypress, Calif.
Continuation of Ser. No. 169,689, Dec. 17, 1993, abandoned, which is a continuation-in-part of Ser. No. 26,518, Mar. 4, 1993, Pat. No. 5,330,473. This application Nov. 3, 1994, Ser. No. 334,792
Int. Cl.[6] A61B 17/70
U.S. Cl. 606—61 6 Claims



4. A cross brace assembly for cross bracing a first spine rod and a second spine rod comprising:

a cross brace wherein the cross brace comprises a first and second lower saddle integrally formed at each end of the cross brace;

upper saddles; and

means for connecting the upper saddles and cross brace to the first and second spine rods to thereby cross brace the first and second spine rods wherein the connecting means comprises an adjusting means for connecting the upper saddles to the cross brace comprising:

an elongated aperture in the second lower saddle of the cross brace and an aperture in the first lower saddle;

an aperture in each one of the upper saddles;

a pin passing through the elongated aperture in the second lower saddle of the cross brace and the aperture of one of the upper saddles, such that the pin can slide along the length of the elongated aperture to thereby allow adjustable connection of the upper saddle to the cross brace; and

a bolt passing through the other aperture in the cross brace and the other upper saddle.

5,601,555

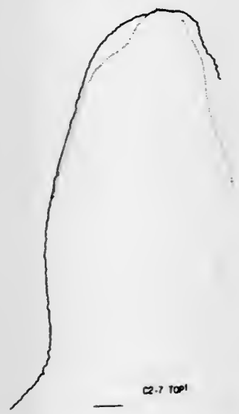
MOSKOVICH CLAMPS FOR INTERLAMINAR CERVICAL FIXATION

Ronald Moskovich, 1010 Constable, Mamaroneck, N.Y. 10543

Division of Ser. No. 195,478, Feb. 14, 1994, Pat. No. 5,496,320. This application Jan. 9, 1995, Ser. No. 369,950

Int. Cl.[6] A61B *17/56*

U.S. Cl. 606—61 **7 Claims**



4. A method of manufacturing implants and prostheses comprising the steps of:

(a) collecting specimens of body parts from a plurality of individuals,

(b) measuring the shape and size of each specimen,

(c) digitizing and storing the measured shape and size of each specimen,

(d) partitioning the measured specimen shapes and sizes into clusters of similar shapes and sizes,

(e) computing a surgical implant shape and size or medical prosthesis shape and size to fit well each cluster, and

(f) manufacturing a set of implants or prostheses with one member of the set with the shape and size of each of the computed shapes and sizes, said manufacturing being independent of a patient into which the implant or prosthesis is to be implanted.

5,601,556

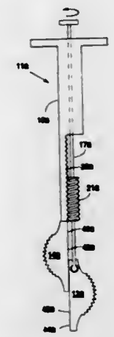
APPARATUS FOR SPONDYLOLISTHESIS REDUCTION

Madhavan Pisharodi, 942 Wild Rose La., Brownsville, Tex. 78520

Continuation-in-part of Ser. No. 210,229, Mar. 18, 1994. This application Jun. 7, 1995, Ser. No. 486,322

Int. Cl.[6] A61B *17/56;17/58;* **A61F** *2/30*

U.S. Cl. 606—61 **18 Claims**



1. Apparatus for aligning adjacent vertebrae comprising:

an elongate handle having a longitudinal bore therethrough;

a mandrel positioned in-the bore in said handle and movable therein:

a body comprised of first and second side-by-side members, the first member being mounted to the end of said handle and the second member being mounted to the end of said mandrel; and

means formed on said body for selectively engaging adjacent vertebrae when said body is inserted therebetween to prevent relative movement between the respective first and second members and the respective adjacent vertebrae to which the first and second members are engaged.

5,601,557

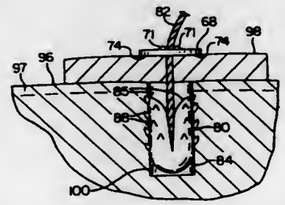
ANCHORING AND MANIPULATING TISSUE

John O. Hayhurst, 14751 SE. Wanda Dr., Milwaukie, Oreg. 97222

Division of Ser. No. 192,813, Apr. 20, 1988, abandoned, which is a continuation-in-part of Ser. No. 848,341, Apr. 4, 1986, Pat. No. 4,741,330, which is a continuation of Ser. No. 496,116, May 19, 1983, abandoned, which is a continuation-in-part of Ser. No. 380,043, May 20, 1982, abandoned. This application Jun. 12, 1991, Ser. No. 715,113

Int. Cl.[6] A61B *17/56;17/04*

U.S. Cl. 606—72 **7 Claims**



1. A method for anchoring in bone a member and attached suture, comprising the steps of:

forming a hole in the bone;

attaching a suture to a member;

lodging the member within the hole by pressing the member with attached suture into the hole; and

attaching tissue to the suture so that the tissue is secured against the bone.

5,601,558

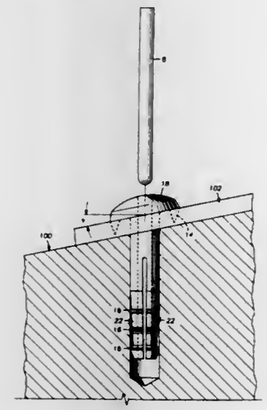
SOFT TISSUE ANCHORS AND SYSTEMS FOR IMPLANTATION

Paul A. Torrie, Marblehead, and Gary P. Tallent, Gloucester, both of Mass., assignors to Smith & Nephew Endoscopy, Inc., Andover, Mass.

Division of Ser. No. 58,631, May 6, 1993, Pat. No. 5,380,334, which is a continuation-in-part of Ser. No. 18,449, Feb. 17, 1993, abandoned. This application Oct. 13, 1994, Ser. No. 322,201

Int. Cl.[6] A61B *17/56*

U.S. Cl. 606—72 **20 Claims**



1. A surgical implant for anchoring soft tissue to bone, the implant comprising:

(i) a radially-outward expandable anchor stud for inserting in a hole in bone, the stud having proximal and distal ends and an elongate body with an outer surface and a longitudinal axis; the stud further comprising:

(a) a longitudinal bore extending along the longitudinal axis for receiving a stud-expanding pin;

(b) at least two radially-outward expandable legs on the distal end of the stud for gripping sides of a bone hole;

(c) a plurality of barbs on the outer surface of the elongate stud for gripping the sides of a bone hole and resisting forces in the direction of withdrawing the stud from the bone hole; and

(d) an enlarged head at the proximal end of the stud, the enlarged head having an undersurface at an angle β relative to a plane perpendicular to the longitudinal axis and comprising a plurality of downwardly extending spikes for engaging soft tissue beneath the undersurface; and

(ii) a stud-expanding pin for inserting in the longitudinal bore of the stud body to expand the at least two legs radially outward for gripping the sides of a bone hole.

5,601,559

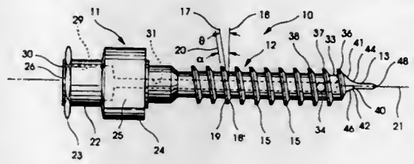
INTRAOSSEOUS NEEDLE

Richard J. Melker; Peter F. Gearen; Gary J. Miller, all of Gainesville, Fla.; Michael P. DeBruyne, Bloomington, Ind., and Lisa Molitor, Gainesville, Fla., assignors to Cook Incorporated, Bloomington, Ind., and University of Florida Research Foundation, Gainsville, Fla.

Continuation-in-part of Ser. No. 74,216, Jun. 9, 1993, Pat. No. 5,431,655, which is a continuation of Ser. No. 884,323, May 11, 1992, Pat. No. 5,484,442, which is a continuation of Ser. No. 627,020, Dec. 13, 1990, abandoned, which is a continuation-in-part of Ser. No. 261,699, Oct. 24, 1988, abandoned. This application Feb. 4, 1994, Ser. No. 192,006

Int. Cl.[6] A61B *5/00*

U.S. Cl. 606—79 **34 Claims**



1. An intraosseous needle, comprising:

a threaded shaft having first and second opposing ends and a passageway extending from the first end toward the second end, said threaded shaft including a plurality of thread portions;

boring means for initiating penetration of said shaft into bone, said boring means formed as part of said second end;

wherein said shaft has at least one opening proximal to the second end and in communication with the passageway;

wherein said boring means is generally conical with a pointed tip;

wherein said boring means is solid and has at least two cutting edges;

wherein said at least one opening is a side port located behind said boring means;

wherein said boring means has a pair of concave indentations which define said at least two cutting edges; and

wherein at least one thread portion proximal said first end has a greater major diameter than at least one thread portion proximal said second end.

5,601,560

TOOL BIT FOR A MOTOR DRIVEN SURGICAL INSTRUMENT

Eddy H. Del Rio, Royal Palm Beach, and William E. Anspach, Jr., Palm Beach Gardens, both of Fla., assignors to The Anspach Effort, Inc., Palm Beach Gardens, Fla.

Filed Oct. 7, 1994, Ser. No. 320,057

Int. Cl.[6] A61B *17/56*

U.S. Cl. 606—80 **3 Claims**

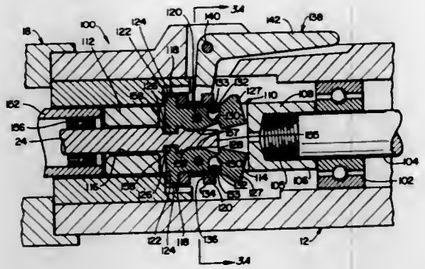
1. A tool bit for a motor driven surgical instrument which has a housing and a lock pawl pivotally mounted in the housing with a tab on said lock pawl, said tool bit comprising:

a shaft having first and second ends and having an axial stop, adjacent the first end, adapted to engage the lock pawl thereby providing longitudinal axial resistance to retain the tool bit in the surgical instrument; and

a bit formed at the second end of said shaft,

said shaft having a first portion between the axial stop and the first end, said first portion having an outer surface,

said shaft having a second portion between the axial stop and the second end, said second portion defining a pair of slots having



flat surfaces adjacent the axial stop, said flat surfaces being positioned radially inwardly relative to the outer surface of said first portion.

5,601,561
GUIDED BONE RASP
Glenn C. Terry, Seale, Ala., and Walter A. Thurber, Flagstaff, Ariz., assignors to W. L. Gore & Associates, Inc., Newark, Del.
Filed Jan. 17, 1995, Ser. No. 373,663
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—85 **23 Claims**



1. A surgical tool for preparation of a graft path wherein the graft path includes a first and a second tunnel in bone, said tool comprising an elongated guide body capable of extending through said first tunnel and being positioned within said second tunnel, and an elongated rasping body having a rasping portion capable of entering and extending beyond a first tunnel for rasping a surface along said graft path,

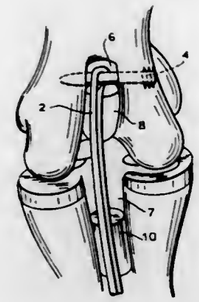
said rasping portion being coaxial with said guide body portion and guided by said guide body portion for rotational and axial movement relative to the guide body portion along the graft path.

5,601,562
FORKED INSERTION TOOL AND METNOD OF ARTHROSCOPIC SURGERY USING THE SAME
Eugene M. Wolf, San Francisco, Calif., and Richard D. Grafton, Naples, Fla., assignors to Arthrex, Inc., Naples, Fla.
Filed Feb. 14, 1995, Ser. No. 388,284
Int. Cl.[6] A61F *5/00*
U.S. Cl. 606—86 **4 Claims**

1. A method of arthroscopic surgery using a cannulated, cylindrical implant and a graft, the method comprising the steps of:

(a) forming a tunnel in a bone;

(b) forming a loop in the graft by looping the graft over a distal U-shaped fork of a forked insertion tool, the loop lying in a plane and having an apex;



(c) inserting the looped graft into the tunnel using the forked insertion tool;

(d) inserting a guide pin through the bone along an axis that is substantially perpendicular to the plane of the loop of the graft such that the guide pin extends through a proximal U-shaped fork of the forked insertion tool, the proximal U-shaped fork being perpendicular to the distal U-shaped fork such that the guide pin passes through the inserted graft loop near the apex of the loop;

(e) removing the forked insertion tool, leaving the graft looped over the guide pin;

(f) advancing the cannulated cylindrical implant over the guide pin and into the tunnel, the cannulated cylindrical implant including:

(i) a smooth cylindrical shank for supporting the looped graft, the smooth cylindrical shank having a first diameter,

(ii) a back end provided with threads for securing the implant into the bone, the back end having a second diameter greater than the first diameter, and

(iii) a front end provided with a taper for allowing the implant to slide between the graft and the guide pin;

(g) sliding the implant transversely along the guide pin and between the graft and the guide pin such that the taper slips under the looped graft and the graft is looped over the implant;

(h) coupling a driver to the back end of the implant and rotating the implant with the driver such that the outer threads of the implant screw into the bone; and

(i) removing the driver and the guide pin, leaving the implant secured into the bone and extending transversely across the tunnel with the graft looped over the smooth cylindrical shank of the implant.

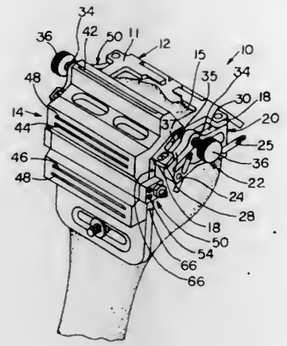
5,601,563
ORTHOPAEDIC MILLING TEMPLATE WITH ATTACHABLE CUTTING GUIDE
Dennis W. Burke, 245 Highland St., Milton, Mass. 02186; Terry L. Dietz, Columbia City, Ind., and Daniel O'Connor, East Taunton, Mass., assignors to Zimmer, Inc., Warsaw, Ind., and Dennis W. Burke, Milton, Mass.
Filed Aug. 25, 1995, Ser. No. 519,496
Int. Cl.[6] A61F *5/00*
U.S. Cl. 606—86 **12 Claims**

1. An apparatus for guiding a cutting device to remove portions of the bone for accommodation of a prosthetic implant, said apparatus comprising:

a milling template attachable to bone, said milling template having at least one slot extending therethrough configured to accommodate a milling device;

a cutting guide for guiding a cutting blade said cutting guide having at least one slot extending therethrough configured to accommodate a cutting blade;

connection means engaging said milling template and said cutting guide for removably connecting said cutting guide to said milling template such that said slot in said cutting guide is



aligned with the cutting slot in said milling template, said slot in said milling template being wider transverse to its longitudinal direction than the slot in said cutting guide.

5,601,564
CANNULATED BROACH FOR TOTAL JOINT ARTHROPLASTY
Ramon B. Gustilo, Eden Prairie, and Todd J. Hein, Minneapolis, both of Minn., assignors to Orthopaedic Innovations, Inc., Minneapolis, Minn.
Continuation of Ser. No. 158,603, Nov. 24, 1993, abandoned.
This application Sep. 14, 1995, Ser. No. 528,063
Int. Cl.[6] A61B *17/56*
U.S. Cl. 606—86 **6 Claims**

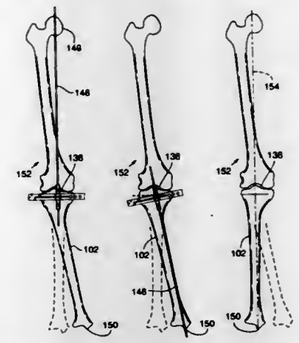


1. An orthopedic broach apparatus for use on intramedullary cancellous bone and cortical bone, the apparatus comprising:

an asymmetrical main body portion having an outer broaching surface for removing bone and dressing the bone surface, and a longitudinal bore extending the length of said main body; and

a centering rod, sufficiently rigid so as to be capable of being driven through intramedullary cancellous bone to become substantially embedded within the intramedullary cancellous bone along a line projecting along the centering rod's longitudinal axis aligned with the central axis of the bone, and having a diameter substantially equivalent to the longitudinal bore diameter so as to be telescopically slidably engageable within the longitudinal bore, wherein the centering rod is positionable in the longitudinal bore for guiding the asymmetrical main body along the centering rod's longitudinal axis.

5,601,565
OSTEOTOMY METHOD AND APPARATUS
Randall J. Huebner, 18560 SW. Hart Rd., Aloha, Oreg. 97005
Filed Jun. 2, 1995, Ser. No. 459,516
Int. Cl.[6] A61F *5/00*; **A61B** *17/58*
U.S. Cl. 606—87 **23 Claims**



1. A method of performing an osteotomy to excise a wedge-shaped piece of a bone by making first and second angularly-displaced generally planar cuts, the method comprising:

providing a saw guide and an elongate alignment member coupled to the saw guide, where the saw guide establishes a cut plane and the elongate axis of the alignment member projects generally transversely out from the cut plane;

pivotally mounting the saw guide on the bone;

establishing a first configuration where the alignment member is aligned with a first preselected anatomical landmark and where the saw guide is positioned so that the cut plane established by the saw guide matches the plane of the first cut;

in conjunction with the step of establishing, making a first cut with the saw guide positioned so that the cut plane established by the saw guide matches the plane of the first cut;

pivoting the saw guide and the alignment member so that the alignment member is aligned with a second preselected anatomical landmark and the orientation between the saw guide and the alignment member is the same as in the first configuration; and

making a second cut in the bone in the cut plane established by the saw guide as it is positioned in the step of pivoting.

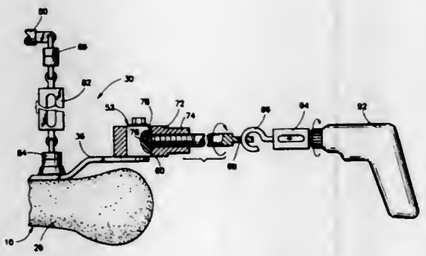
5,601,566
METHOD AND APPARATUS FOR THE ALIGNMENT OF A FEMORAL KNEE PROSTHESIS
Mark N. Dance, Ladner; Mark Ward, Surrey, both of Canada, and David T. Pollock, Glen Rock, N.J., assignors to Osteonics Corp., Allenbale, N.J.
Filed Feb. 22, 1994, Ser. No. 199,069
Int. Cl.[6] A61B *17/58*
U.S. Cl. 606—88 **14 Claims**

1. Apparatus for determining the direction of the mechanical axis of a femur of a patient in relation to the corresponding knee of the patient, the apparatus comprising:

means for placing the knee of the patient in an equilibrium position wherein external forces on the knee are balanced so that the knee remains essentially stationary at the equilibrium position and is freely deflectable from the equilibrium position in response to a further external force applied to the femur;

means for applying a force to the femur at a predetermined location relative to the mechanical axis of the femur;

means for directing the applied force in a direction such that the knee is undeflected from the equilibrium position while the force is applied to the femur in said direction; and



means for employing said direction of the applied force to indicate the direction of the mechanical axis of the femur.

5,601,567

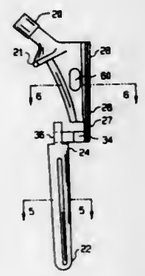
METHOD OF SIZING A FEMORAL CANAL USING A MODULAR FEMORAL TRIAL HIP REPLACEMENT SYSTEM

Glenn Swajger, Wayne, and Thomas J. Parchinski, Wanaque, both of N.J., assignors to Howmedica Inc., N.Y., N.Y.

Division of Ser. No. 268,472, Jun. 30, 1994. This application Apr. 3, 1996, Ser. No. 630,895

Int. Cl.[6] A61B *17/56*

U.S. Cl. 606—102 **22 Claims**



22. Method for sizing a femoral canal of a resected femur for a prosthetic implant comprising:

(a) providing a two-piece femoral trial member having a stem to be inserted into the femoral canal comprising a distal trial component having digital and proximal ends and predetermined dimensions; a proximal trial component having predetermined dimensions, a proximal end adapted to extend proximally from the femoral canal, a collar section adapted to rest on the femur and a distal end extending distally from the collar and adapted to be inserted into the femoral canal; means for connecting the proximal end of the distal trial component to the distal end of the proximal component to form the femoral trial member wherein the stem of the femoral trial member is formed by the combination of the distal end of the proximal trial component the distal trial component;

(b) inserting the distal trial component into the femoral canal and sizing the distal stem portion of the femoral canal by comparison with the distal trial component;

(c) inserting the distal end of the proximal trial component into the femoral canal until the collar section rests on the femur and sizing the proximal stem portion of the femoral canal by comparison with the proximal trial component;

(d) combining the proximal and distal trial components to form the femoral trial member; and

(e) inserting the femoral trial member within the femoral canal and checking the fit of the stem of the femoral trial member within the femoral canal.

5,601,568

HANDLE FOR THE CONTROLLED RELATIVE SLIDING OF A SHEATH AND OF A STEM; APPARATUS COMPRISING SUCH A HANDLE AND METHOD FOR IMPLANTING A BLOOD FILTER USING A HANDLE

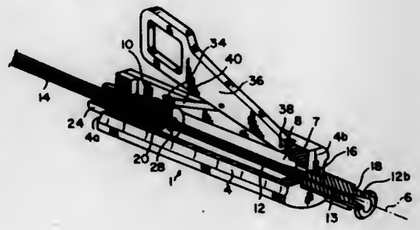
Gérard Chevillon, Montrouge, and Guy Nadal, Poitiers, both of France, assignors to B. Braun Celsa (Societe Anonyme), Chasseneuil Du Poitou, France

Filed Jul. 20, 1994, Ser. No. 277,753

Claims priority, application France, Apr. 11, 1994, 94 04241

Int. Cl.[6] A61F *11/00*

U.S. Cl. 606—108 **10 Claims**



1. A medical apparatus for the implantation of a radially expandable blood filter in an internal duct of a living body of a human being or animal, said apparatus comprising:

a tubular sheath adapted to receive internally, in a sliding manner, a blood filter in a radially folded state;

a push-stem slidably engaged within the sheath for relatively displacing the filter and the sheath;

an operating handle for substantially coaxial relative sliding of said sheath and said push-stem, said handle comprising:

a hollow body having an axis and including a front end and a rear end, said sheath and said push-stem being engaged with said hollow body, said push-stem extending axially between said front and rear ends of said hollow body;

a carriage slidably disposed in said hollow body so as to be axially movable therein along a predetermined path of travel;

a pivoting lever mounted on said hollow body for controlling the sliding of said carriage and inducing the relative axial displacement between said sheath and said push-stem so as to ensure that the blood filter emerges from said sheath and undergoes expansion;

wherein said push-stem includes a hollow tube which is fixedly secured to said hollow body and which emerges from said hollow body at the rear end thereof, and said sheath is detachably connected to said carriage; and

wherein said pivoting lever is articulated on said hollow body adjacent to the rear end thereof and is movable from a first position in which the lever is in substantial parallel alignment with said hollow body to a second position in which the lever is disposed at an angle relative to said handle, wherein the blood filter is located in said sheath at said first position of the pivoting lever, and wherein the pivoting lever is moved to said second position to pull the sheath back relative to the push-stem so as to position the blood filter outside the sheath.

5,601,569

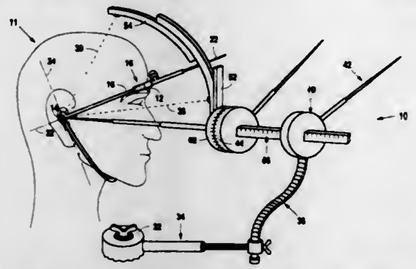
STEREOTACTIC FRAME AND LOCALIZATION METHOD

Madhavan Pisharodi, 844 Central Blvd., Suite 1200, Brownsville, Tex. 78520

Division of Ser. No. 77,026, Jun. 15, 1993, Pat. No. 5,387,220. This application Aug. 29, 1994, Ser. No. 271,025

Int. Cl.[6] A61B *19/00*

U.S. Cl. 606—130 **5 Claims**



1. A stereotactic frame for use conjunctively with a spherical coordinate system for locating a target point in a patient's head supported by a head frame during surgery, comprising:

a. a fixed mount member for securing said stereotactic frame to said head frame, said fixed mount member including a bar;

b. means for positioning said stereotactic frame in any necessary position relative to said head frame in order to place said stereotactic frame adjacent to said patient's head;

c. means for locking said stereotactic frame in any necessary position adjacent to said patient's head;

d. a first disc affixed to said positioning means, said first disc having a centered opening,

e. a second disc secured to a first end of an elongated rod, said elongated rod slidably engaging said centered opening of said first disc; and

f. a third disc rotatably attached to said second disc.

5,601,570

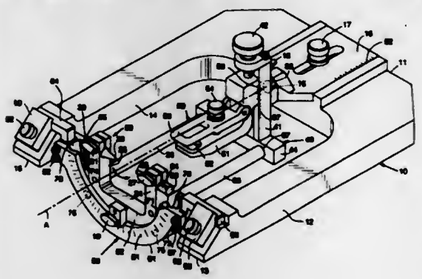
STEREOTAXIC ROTATIONAL ADAPTOR

Bert L. Altmann, Long Beach, and J. David Kopf, Tujunga, both of Calif., assignors to David Kopf Instruments, Tujunga, Calif.

Filed Mar. 14, 1995, Ser. No. 403,296

Int. Cl.[6] A61B *19/00*

U.S. Cl. 606—130 **2 Claims**



1. A head support for use in small animal brain research rotatable about an axis A comprising:

rotatable cradle means including two ear bars and a nose clamp for providing three point support for the head of said small animal,

said cradle means comprising a first section which carries said ear bars and a second section connected to said first section, said second section carrying said nose clamp,

a stationary, crescent-shaped yoke means for supporting said first section of said cradle means whereby said first section of said cradle means is rotatable relative to said yoke means so that said ear bars rotate about said axis A,

a stationary, pivotal support means located on axis A for supporting said second section of said cradle means,

mounting means carried by said nose clamp for connection to said pivotal support means allowing said nose clamp to rotate about said axis A as said ear bars rotate about said axis A.

5,601,571

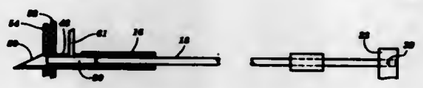
SURGICAL FASTENER IMPLANTATION DEVICE

Gerald Moss, R.D. #1, West Sand Lake, N.Y. 12196

Continuation of Ser. No. 243,946, May 17, 1994, abandoned. This application May 22, 1995, Ser. No. 445,642

Int. Cl.[6] A61B *17/04*

U.S. Cl. 606—139 **11 Claims**



1. A fastener insertion device for inserting a shaped fastener into a body, said shaped fastener iocluding a head portion and a filament portion extending from said head portion, said fastener insertion device comprising:

an elongated, hollow needle member having a beveled, distal end portion, the beveled, distal end portion of said needle member including a slotted portion for releasably receiving the head portion of a shaped fastener therein;

a longitudinally displaceable slide mechanism movably enclosed within said elongated hollow needle member; and

an actuator, operably coupled to said slide mechanism, for longitudinally displacing said slide mechanism within said elongated hollow needle member, said actuator including a trigger;

wherein, said actuator displaces said slide mechanism toward the distal end portion of said elongated, hollow needle member in response to a displacement of said trigger away from the distal end portion of said elongated, hollow needle member, and wherein the displacement of said slide mechanism toward the distal end portion of said elongated, hollow needle member ejects the head portion of a shaped fastener from the slotted portion of said needle member.

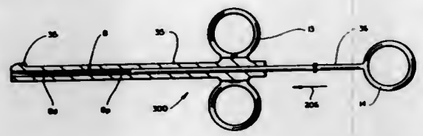
VOL 1195 ISS 2 FEB 11 1997 UMI

VOL 1195 ISS 2 FEB 11 1997 UMI

5,601,572
DEVICE OR APPARATUS FOR MANIPULATING MATTER HAVING A ELASTIC RING CLIP

Lee M. Middlemas, Portola Valley; Walter R. Pyka, Redwood City, both of Calif.; Michael Buhler, Madeira Beach, Fla.; Philippe Poucet, Fremont, Calif.; Karl Van Dyk, Fremont, Calif.; James E. Jervis, Atherton, Calif., and Reza Zadno, Newark, Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Division of Ser. No. 22,259, Feb. 24, 1993, which is a continuation-in-part of Ser. No. 843,775, Feb. 28, 1992, which is a continuation-in-part of Ser. No. 594,768, Oct. 9, 1990, abandoned, and Ser. No. 608,117, Nov. 1, 1990, abandoned, and Ser. No. 594,769, Oct. 9, 1990, abandoned, and Ser. No. 608,121, Nov. 1, 1990, abandoned, and Ser. No. 594,871, Oct. 9, 1990, abandoned, and Ser. No. 594,896, Oct. 9, 1990, abandoned, and Ser. No. 594,874, Oct. 9, 1990, abandoned, and Ser. No. 594,873, Oct. 9, 1990, abandoned, and Ser. No. 656,651, Feb. 15, 1991, abandoned, and Ser. No. 631,809, Dec. 21, 1990, Pat. No. 5,589,923, which is a continuation-in-part of Ser. No. 394,463, Aug. 16, 1989, abandoned. This application Jun. 7, 1995, Ser. No. 486,550
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—139 6 Claims



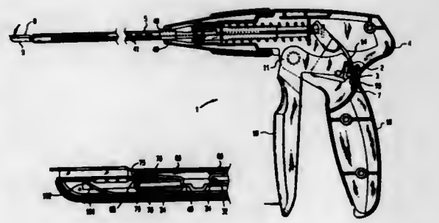
1. A surgical instrument apparatus comprising a ring clip elastic member which, i) has a piercing end portion and a non-piercing end portion and a transverse wire dimension, ii) has a first shape when not subject to mechanical stress, iii) has a second shape when subject to mechanical stress, and iv) returns toward said first shape upon at least partial relief of said mechanical stress; a cylinder which has, i) a proximal end portion and a distal end portion, and ii) an inside dimension not smaller than said transverse wire dimension of said ring clip, such that a substantially straightened ring clip may be disposed within said cylinder; and a piston which has, i) a proximal end portion and a distal end portion, and ii) an outer dimension slightly smaller than the inside dimension of said cylinder, such that said piston may be disposed with said cylinder proximal to said ring clip and may be inserted through said cylinder to extrude said ring clip out of said cylinder.

5,601,573
STERILE OCCLUSION FASTENERS AND INSTRUMENTS AND METHOD FOR THEIR PLACEMENT

Mark Fogelberg, Wilsonville, Oreg.; J. David Hughett, Hamilton, Ohio; C. Kerwin Braddock; Michael E. Boehm, both of Cincinnati, Ohio; David Stefanchik, Mason, Ohio, and Michael A. Murray, Bellevue, Ky., assignors to Ethicon Endo-Surgery, Inc., Cincinnati, Ohio

Division of Ser. No. 204,847, Mar. 2, 1994, abandoned. This application Mar. 15, 1995, Ser. No. 404,662
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—143 33 Claims

1. An instrument for applying surgical clips comprising:
an instrument shaft having a lumen extending therethrough and a distal end;
opposed tissue compressing surfaces coupled to the distal end of the instrument shaft;
a clip advancing device for advancing a clip in a position over a compressed tissue structure compressed between said surfaces; and
a clip disengaging device arranged to disengage the clip from a first open position to a tissue ligating position over tissue compressed by said tissue compressing surfaces, said clip

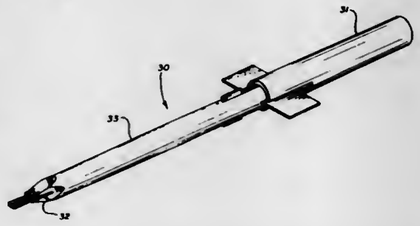


disengaging device comprising a spring arranged to lift said clip from said instrument.

5,601,574
STERILE CLIPS AND INSTRUMENT FOR THEIR PLACEMENT

David Stefanchik, Mason, and Edward J. Biehle, IV, Westchester, both of Ohio, assignors to Ethicon, Inc., Cincinnati, Ohio

Continuation of Ser. No. 144,926, Oct. 28, 1993, Pat. No. 5,474,567, which is a division of Ser. No. 944,584, Sep. 14, 1992, Pat. No. 5,342,373. This application Apr. 20, 1995, Ser. No. 425,964
Int. Cl.[6] A61B *17/04*
U.S. Cl. 606—143 26 Claims

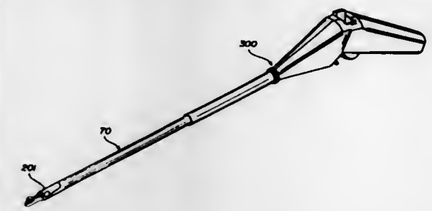


1. A method of applying a surgical fastener to body tissue comprising: providing a plurality of surgical fasteners, each said surgical fastener having facing tissue clamping portions that are movable between a normally closed tissue clamping position and an open tissue receiving position; locating each said surgical fastener within a fastener applying instrument with the tissue clamping portions thereof in the closed position, said applying instrument having an actuation mechanism that feeds a surgical fastener to the distal end of the instrument; positioning the distal end of said instrument adjacent the body tissue to be clamped; operating said actuation mechanism to feed each said surgical fastener toward the distal end of said instrument, and move the tissue clamping portions of said surgical fastener from the closed position to the open position so that said tissue clamping portions diverge from each other distally of said instrument; positioning the body tissue to be clamped between the tissue clamping portions of said surgical fastener; and returning the tissue clamping portions of said surgical fastener to the closed position to clamp the body tissue therebetween.

5,601,575
NEEDLE DRIVING DEVICE

John P. Mensanger, Cincinnati; Robert F. Welch, Maineville, and Brett Swensgard, Mauldion, all of Ohio, assignors to Ethicon Endo-Surgery, Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 308,295, Sep. 2, 1994. This application Oct. 6, 1994, Ser. No. 319,182
Int. Cl.[6] A61B *17/04*
U.S. Cl. 606—147 8 Claims

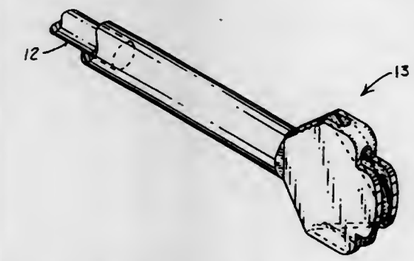


1. In combination:
a curved surgical needle; and
a surgical suture device comprising:
a shaft;
a rod extending through the shaft and movable therein;
a cartridge connected to said shaft;
a suture fixedly held on a rotatable suture wheel placed on said cartridge said suture wheel having a mechanism for mating with said rod and said cartridge having a proximal end attached to said shaft; and
an actuating mechanism connected proximally to said shaft, said actuating mechanism operable to cause said rod to rotate said suture wheel;
a needle holder for endoscopically engaging said needle, said holder comprising:
a tubular endoscopic section ending in a distal, needle holding end effector lying along a longitudinal axis on said needle holder;
said end effector containing a groove for placing said needle transverse to the longitudinal axis of said end effector and a grasping finger located distal said groove, said finger capable of being emplaced over said needle when said needle is seated in said groove.

5,601,576
SURGICAL KNOT PUSHER AND METHOD OF USE

Micki E. Garrison, Belmont, Calif., assignor to Heartport Inc., Redwood City, Calif.

Filed Aug. 10, 1994, Ser. No. 288,674
Int. Cl.[6] A61B *17/04*
U.S. Cl. 606—148 32 Claims

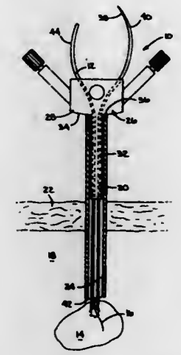


1. A surgical knot pusher, comprising: an elongate shaft having a proximal end and a distal end,
a knot pushing surface proximate said distal end, said knot pushing surface defining an arc having a convex curvature, said arc having a first end, a second end and an apex intermediate said first end and said second end,
a first suture path extending along said arc from said apex to said first end and a second suture path extending along said arc from said apex to said second end,
said first suture path and said second suture path lie within a groove, said groove being defined by a first wall and a second wall, said first wall and said second wall being approximately parallel to one another,
said groove between said first wall and said second wall has a first depth proximate said apex of said arc and a second depth proximate said first end and said second end of said arc, said second depth being greater than said first depth,
and an eyelet positioned along said first suture path, said eyelet having an aperture therethrough, said aperture being in alignment with said first suture path.

5,601,577
APPARATUS FOR ASSISTING THE TYING OF A SUTURE

Harrith M. Hasson, 2551 N. Clark St., 9th Fl., Chicago, Ill. 60614

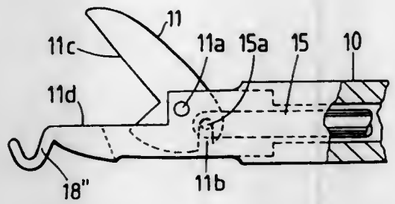
Filed Oct. 25, 1994, Ser. No. 328,879
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—148 17 Claims



1. An instrument for facilitating the formation of a knot in a flexible line having a first portion extending through a tissue/organ and first and second free ends projecting away from the first portion, said instrument comprising:
a body defining a passage through which the first and second free ends of the flexible line can be passed in a first direction to be exposed at a tying location on the body;
repositionable first means on the body for supporting a suture loop defined by wrapping the first and second free ends of the flexible line around each other,
said first means being repositionable between a) a first position wherein the first means supports a suture loop and b) a second position wherein a suture loop supported on the first means can be released from the first means; and
second means on the body spaced from the first means for releasably holding one of the first and second free ends of the flexible line,
whereby the other of the first and second free ends of the flexible line can be held and the loop contracted to cinch the tissue/organ through which the flexible line extends by directing at least one of the first and second free ends of the flexible line at the loop off of the first means and through the body passage in a direction opposite to the first direction.

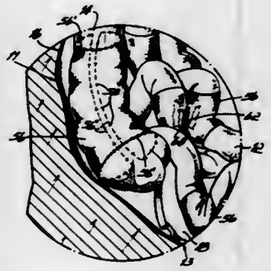
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5,601,578
ENDOSCOPIC SUTURING DEVICE
Donald L. Murphy, Geelong, Australia, assignor to Miranic Investments Pty. Ltd., Geelong, Australia
PCT No. PCT/AU93/00434, § 371 Date Apr. 7, 1995, § 102(e) Date Apr. 7, 1995, PCT Pub. No. WO94/05217, PCT Pub. Date Mar. 17, 1994
PCT Filed Aug. 26, 1993, Ser. No. 387,946
Claims priority, application Australia, Aug. 28, 1992, PL4378; Mar. 2, 1993, PL7562
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—148 **9 Claims**



1. An endoscopic suturing device, comprising an elongate hollow tube, one end of which includes, as part thereof, a thread engaging and loop forming spiral hook member and a thread or needle jaw member, and means operable at the other end of the tube for actuating said jaw member, said means for actuating said jaw member comprising an actuating member engaging an elongate actuating rod extending through said tube and coupled to said jaw member, whereby axial movement of the actuating member causes said actuating rod to actuate said jaw member.

5,601,579
METHOD FOR THE TREATMENT OF BOWEL ADHESIONS
John N. Semertzides, Cincinnati, Ohio, assignor to Medex, Inc., Dublin, Ohio
Filed Dec. 29, 1994, Ser. No. 365,774
Int. Cl.[6] A61B *17/04*
U.S. Cl. 606—151 **23 Claims**



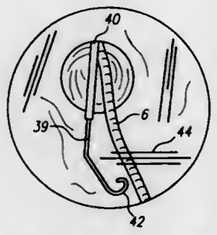
1. A method for treating the human bowel with an adhesion barrier in the form of a flexible strip of material, the method comprising the steps of:
surgically accessing a portion of the human bowel having an adhesion; and,
applying said flexible strip of material to an outer surface of said bowel portion over the adhesion and which portion of the bowel is free of infection-inducing leakage.

5,601,580
VENOUS VALVE CUTTER
Mark C. Goldberg, Boston, Mass., and Alexander Poloyko, Morton Grove, Ill., assignors to Uresil Corporation, Skokie, Ill.
PCT No. PCT/US93/03358, § 371 Date Jan. 9, 1995, § 102(e) Date Jan. 9, 1995, PCT Pub. No. WO93/20764, PCT Pub. Date Oct. 28, 1993
Continuation-in-part of Ser. No. 865,850, Apr. 4, 1992, Pat. No. 5,304,189. This PCT application Apr. 9, 1993, Ser. No. 313,229
Int. Cl.[6] A61B *17/32*
U.S. Cl. 606—159 **5 Claims**



1. A method of in-situ removal of venous valve leaflets from a saphenous vein having a proximal end and a distal end and a lumen tapering from its distal end to its proximal end comprising:
a) introducing at the proximal end of the vein a valve cutter assembly with a blunt-tipped head and an irrigation channel at its distal tip;
b) introducing fluid through the distal tip of the blunt-tipped head to dilate the vein and, with the vein distended, advancing the valve cutter assembly distally;
c) removing the blunt-tipped head when the assembly reaches the sapheno-femoral junction or an adequate distal tributary of the saphenous vein and replacing it with an appropriately sized valve cutter head also having an irrigation channel at its distal tip and clamping the saphenous vein at its open fossa ovalis or distal to the distal saphenous valve;
d) positioning the valve cutter head at the distal end of the vein, injecting fluid through the channel in the cutter head thereby closing the valve;
e) pulling back on the valve cutter assembly to engage and cut the most distal valve and then maintaining hydrostatic pressure while the valve cutter assembly is pulled down to engage and cut each sequential valve until all valves have been rendered incompetent; and
f) repeating steps d) and e) with a plurality of appropriately sized valve cutter heads to match the heads to the vein's tapering lumen.

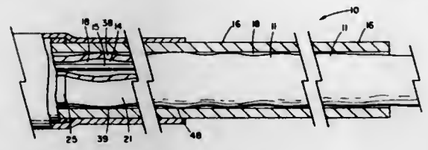
5,601,581
METHODS AND DEVICES FOR BLOOD VESSEL HARVESTING
Thomas J. Fogarty, Portola Valley; Kenneth H. Mollenauer, Santa Clara; Michelle Y. Monfort; George D. Hermann, both of Los Gates, and Allan R. Will, Atherton, all of Calif., assignors to General Surgical Innovations, Inc., Palo Alto, Calif.
Filed May 19, 1995, Ser. No. 444,424
Int. Cl.[6] A61B *17/22*
U.S. Cl. 606—159 **24 Claims**



1. A method for harvesting a blood vessel comprising:

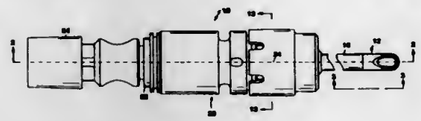
providing a long slender rod with a handle on one end and a sideways hook on the other end; and
manipulating the rod so as to slide the sideways hook around the blood vessel; and
pushing and/or pulling the rod to slide the hook along the blood vessel until the blood vessel is separated from the surrounding tissue.

5,601,582
CUTTING CATHETER
Susan C. Shelton, Ararat, N.C.; Neal E. Fearnot, West Lafayette, and Thomas A. Osborne, Bloomington, both of Ind., assignors to Wilson-Cook Medical Inc., Winston-Salem, N.C.; MED Institute Inc., W. Lafayette, and Cook Inc., Bloomington, both of Ind.
Filed Nov. 16, 1994, Ser. No. 340,565
Int. Cl.[6] A61B *17/32;17/20*
U.S. Cl. 606—170 **21 Claims**



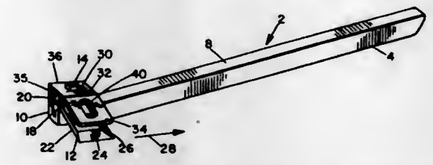
1. A cutting catheter (**10**) comprising:
an inner, elongated member of an elastic material having a proximal end, a distal end, and a first passage extending longitudinally therein;
a compression member positioned in said first passage and attached to said inner member proximate said proximal end and distally therefrom, said compression member in a selected position longitudinally compressing and radially expanding said inner member proximate said proximal end to an elastic limit of said inner member; and
an outer, elongated member having an inner passage extending therethrough, positioned around a proximal portion of said inner member, and a distal portion of said inner passage having a cross-sectional area in which said inner member can radially expand no greater than said elastic limit thereof, whereby the radial expansion of said inner member in said outer member is distributed longitudinally and distally from the attachment of said compression member to said inner member before said elastic limit of said inner member is reached.

5,601,583
SURGICAL INSTRUMENT
John R. Donahue, Pottstown, Pa., and Graham Smith, Plaistow, N.H., assignors to Smith & Nephew Endoscopy Inc., Andover, Mass.
Filed Feb. 15, 1995, Ser. No. 388,992
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—170 **30 Claims**



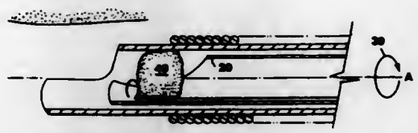
1. A surgical instrument comprising:
a base;
a support member extending distally from said base and carrying at a distal region a window defining an opening;
a surgical tool at least partially disposed at said distal region of said support member and movable to cut tissue extending through said opening; and
a shield rotatably mounted at said distal region of said support member so that said shield can be rotated with respect to said window to at least partially cover said opening.

5,601,584
SCALPEL WITH INTEGRATED VISUAL CONTROL APERTURE
Zein E. Obagi, 9033 Wilshire Blvd., Ste. 100, Beverly Hills, Calif. 90211-1800, and Anton Magnet, Seal Beach, Calif., assignors to Zein E. Obagi, Beverly Hills, Calif.
Continuation-in-part of Ser. No. 139,777, Oct. 22, 1993, abandoned. This application May 15, 1995, Ser. No. 441,278
Int. Cl.[6] A61B *17/32*
U.S. Cl. 606—172 **11 Claims**



1. A scalpel as for thin section surgery to a patient's skin comprising:
an elongated handle having two opposite ends, a top, a bottom, and opposed sides connecting said top and bottom, the disposition of such all being defined with reference to the orientation of said scalpel when in the grip of a user;
a cutting blade extending laterally from said handle beyond one of said sides at one of said ends; and
depth-of-cut limiting means extending laterally from said handle beyond said one of said sides from said one of said ends and disposed parallel to and spaced apart from said cutting blade, said limiting means also having an aperture therein;
whereby in use during said thin section skin surgery said cutting blade is oriented generally parallel to a surface of said skin, said limiting means limits the maximum thickness of skin tissue that can be cut with said cutting blade; and progress of the cut of said scalpel during said surgery can be visually monitored by said user through said aperture.

5,601,585
MULTI-MOTION SIDE-CUTTING BIOPSY SAMPLING DEVICE
Michael S. Banik, Cincinnati, Ohio, and Donald E. Robinson, Hopkinton, Mass., assignors to Boston Scientific Corporation, Natick, Mass.
Filed Feb. 8, 1994, Ser. No. 193,255
Int. Cl.[6] A61B *17/28*
U.S. Cl. 606—180 **12 Claims**



1. An instrument for obtaining tissue samples from a site deep within the body, comprising:
a flexible elongated proximal portion for following a long, torturous path to said site, and a distal end for removing a tissue sample from the body,

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said distal end including a sampling element including an inner sampling tube and an outer sleeve, said inner sampling tube including a tube wall defining a tissue-receiving cutout for prolapse of tissue therethrough and said outer sleeve including a sleeve wall defining a tissue-receiving cutout for prolapse of tissue therethrough, and a storage space located along an axis of said instrument suitable for storage of multiple, successively taken samples,

said inner tube being actuatable in a first, rotational motion about the axis of said instrument to separate a tissue sample prolapsed through said cutout in said outer sleeve and said cutout in said inner tube from the body, and a second, axial motion for moving said separated sample axially, and

a retention formation provided on a limited area of an inner surface of said outer sleeve for engaging samples.

5,601,586

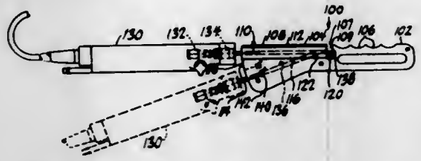
VARIABLE ANGLE ROTATING SHAVER

Joseph Fucci, Port Richey; Fred B. Dinger, III, Belleair; A. Frank Trott, Largo; Kenneth M. Adams, Pinellas Park, and William F. Mazurek, Palm Harbor, all of Fla., assignors to Linvatec Corporation, Largo, Fla.

Division of Ser. No. 265,558, Jun. 24, 1994, Pat. No. 5,411,514, which is a continuation of Ser. No. 26,613, Mar. 5, 1993, abandoned, which is a continuation-in-part of Ser. No. 954,899, Sep. 30, 1992, abandoned. This application Jan. 17, 1995, Ser. No. 373,165

Int. Cl.[6] A61B *17/32*

U.S. Cl. 606—180 **9 Claims**



1. A tool for facilitating the bending of the outer elongated tube of a rotatable shaver comprising:

a unitary body provided with at least one bending station at which a longitudinally extending tube may be bent;

each said bending station comprising;

a holding portion for holding a selected end of said outer tube against movement in a direction transverse to the axis of the outer tube, said holding portion comprising a channel adapted to accept an end of the outer tube and enabling a user to rotate the outer tube about its axis by rotating the tool itself to enable the bend to be created in any radial direction; and

a fulcrum portion spaced a predetermined distance from said holding portion; and

a fixing portion situated on the side of said fulcrum portion opposite said holding portion, said fixing portion comprising a surface adapted to contiguously engage said outer tube to enable said outer tube to be bent to a predetermined angle relative to the axis of said holding portion.

8. A tool for bending the outer elongated tube of a rotatable shaver comprising:

an integral body comprising:

a tube holding portion adapted to hold a selected end of an outer tube against movement in a direction transverse to the axis of said outer tube, said holding portion enabling a user to rotate an outer tube about its axis to enable the bend to be created in any radial direction;

rotational index means for indicating rotational alignment of said selected end relative to said tube holding portion;

lateral index means for indicating the angle between a proximal portion of said outer tube and a distal portion thereof;

an anvil portion spaced a predetermined distance from said holding portion;

window means for viewing a selected portion of said selected end of said outer tube and for preventing lateral impingement of said selected portion against any surface during the bending of an outer tube in the tool.

5,601,587

Patent Not Issued For This Number

5,601,588

ENDOSCOPIC PUNCTURE NEEDLE

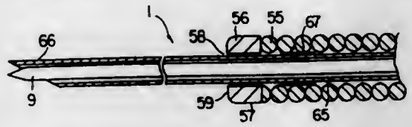
Masatoshi Tonomura, Koganei, and Minoru Shinozuka, Hachioji, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 27, 1995, Ser. No. 534,298

Claims priority, application Japan, Sep. 29, 1994, 6-235588; Aug. 24, 1995, 7-215716

Int. Cl.[6] A61B *17/34*

U.S. Cl. 606—185 **7 Claims**



1. An endoscopic puncture needle insertable into a channel of an endoscope for aspirating and sampling a tissue in a body cavity, the endoscopic puncture needle insertable into and having a sufficient length to pass through the channel of the endoscope and comprising a flexible outer sheath, a flexible inner sheath advanceably and retreatably inserted through the outer sheath, formed by a metallic pipe and having a distal end, and a needle element formed at the distal end of the inner sheath in which the needle element is separate from the inner sheath and connected to the inner sheath.

5,601,589

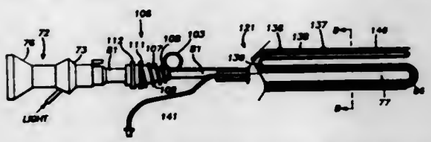
EXTRALUMINAL BALLOON DISSECTION APPARATUS AND METHOD

Thomas J. Fogarty, Portola Valley; George D. Hermann, Los Gatos, and Jan M. Echeverry, San Jose, all of Calif., assignors to General Surgical Innovations, Inc., Palo Alto, Calif.

Filed Jun. 29, 1994, Ser. No. 267,484

Int. Cl.[6] A61M *29/00;5/00*

U.S. Cl. 606—192 **8 Claims**



1. A balloon dissection apparatus for forming an anatomic space alongside an elongate structure in a body, comprising:

a tunneling shaft having proximal and distal extremities;

a flexible elongate cylindrical balloon carried by said tunneling shaft and having proximal and distal extremities, the elongate balloon being circumferentially disposed about said tunneling shaft and being folded inwardly to reduce its length, and having a fully inflated length of greater than said tunneling shaft; and

an inflation tube coupled to the balloon for inflating the balloon.

5,601,590

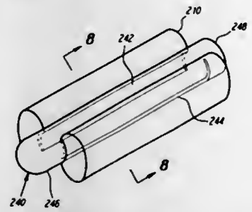
EXPANDABLE CANNULAS

Peter M. Bonutti, Effingham, and James S. Hawkins, Urbana, both of Ill., assignors to General Surgical Innovations, Inc., Palo Alto, Calif.

Division of Ser. No. 254,368, Jun. 6, 1994, which is a division of Ser. No. 13,942, Feb. 4, 1993, Pat. No. 5,320,611. This application Apr. 4, 1995, Ser. No. 416,083

Int. Cl.[6] A61M *29/02*

U.S. Cl. 606—192 **3 Claims**



1. An expandable cannula comprising:

a rigid needle member having a tubular wall with an outer circumferential surface and an inner circumferential surface, said needle member having proximal and distal ends, said inner circumferential surface defining in said needle member a longitudinally extending central fluid passage, said needle member having a fluid port extending radially between said outer circumferential surface and said inner circumferential surface and placing the central fluid passage in fluid communication with said outer circumferential surface of said needle member; and

a balloon attached to said outer circumferential surface of said needle member, said balloon being bonded to said needle member at at least one location along the length of said needle member;

said cannula having a collapsed condition in which said balloon is contracted on said outer circumferential surface of said needle member, and an expanded condition in which said balloon is expanded radially outwardly from said needle member along substantially its entire length, said cannula further comprising at least one sleeve having at least one expansion slot therein, said sleeve being disposable circumferentially around said balloon, said balloon being expandable radially outwardly against said sleeve and partially through said expansion slot, said sleeve thereby controlling the expansion of said balloon.

5,601,591

STENT FOR USE IN PROSTATIC URETHRA, APPARATUS AND PLACEMENT DEVICE FOR SAME AND METHOD

Stuart D. Edwards, Los Altos, and Ronald G. Lax, Grass Valley, both of Calif., assignors to Vidamed, Inc., Menlo Park, Calif.

Filed Sep. 23, 1994, Ser. No. 310,976

Int. Cl.[6] A61M *29/00*

U.S. Cl. 606—198 **18 Claims**



1. A device for introducing a stent into a portion of a urethra extending through a prostate by use of a probe having proximal and distal extremities with a passageway extending from the proximal extremity to the distal extremity, a scope mounted on the proximal extremity of the probe and extending into the passageway along a first longitudinal axis, the device comprising an elongate element having proximal and distal extremities and extending along a second longitudinal axis, the elongate element having a transverse size adapted to permit the elongate element to be removably disposed in the passageway adjacent the scope with the second longitudinal axis spaced apart from the first longitudinal axis, stent securing means carried by the distal extremity of the elongate element adapted to secure the stent to the distal extremity of the elongate element, handle means mounted on the proximal extremity of the elongate element adapted to advance the distal extremity of the elongate element with the stent thereon into the passageway of the probe so that the elongate element is disposed adjacent the scope with the second longitudinal axis spaced apart from the first longitudinal axis and at least a portion of the stent extending beyond the distal extremity of the probe into said portion of the urethra and means carried by the handle means actuable to release the stent from the stent securing means into said portion of the urethra.

5,601,592

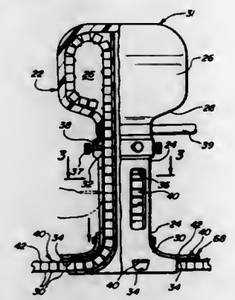
MECHANICAL LIFT SYSTEM FOR SURGERY

Edward E. Weng, 51077 Sand Shores, Shelby Township, Macomb County, Mich. 48316

Filed Jan. 5, 1995, Ser. No. 368,983

Int. Cl.[6] A61M *29/00*

U.S. Cl. 606—198 **22 Claims**



1. A mechanical lift system comprising:

a main body having an axis and a plurality of axial channels, said main body further having an aperture at one end of each said channel, said channels curving outwardly at a point adjacent said apertures;

a plurality of suspension members slidably disposed within said channels, said suspension members being slidable through said channels, said suspension members being extendable and retractable through said apertures in said main body, each of said suspension members having means thereon for allowing bending of said suspension members in a first direction generally parallel to said axis, but resisting bending of said suspension members in a second direction opposed to said first direction.

5,601,593

STENT FOR PLACEMENT IN A BODY TUBE

Lutz Freitag, Hemer, Germany, assignor to Willy Rüsch AG, Kernen, Germany

Filed Aug. 18, 1995, Ser. No. 517,162

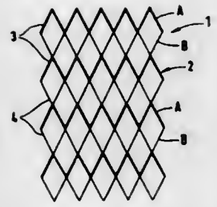
Claims priority, application Germany, Mar. 6, 1995, 195 08 005.0

Int. Cl.[6] A61M *29/00*

U.S. Cl. 606—198 **10 Claims**

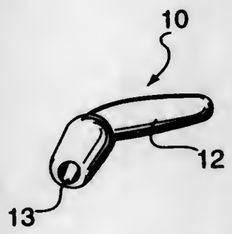
1. A stent for placement in a body tube, the stent comprising a flexible support structure, the support structure comprising at least

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two groups of wires meshed together, wherein the at least two groups of wires are of a material having shape memory, and wherein the shape memory of the material of one group of wires is different from the shape memory of another group of wires.

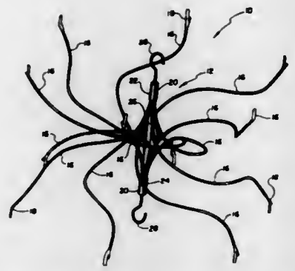
5,601,594
NASAL STENT
Barry D. Best, 4811 - 1 Croydon Road, Campbell River, British Columbia, Canada
Filed Sep. 14, 1995, Ser. No. 528,818
Int. Cl.[6] A61M *29/00*
U.S. Cl. 606—199 **12 Claims**



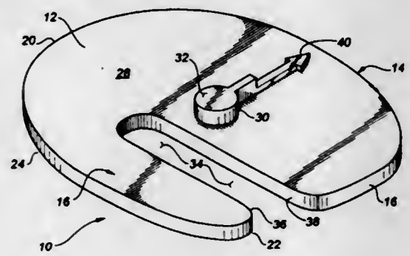
1. A nasal stent for packing the nasal cavity following surgery, comprising:
. a deformable cylinder having a breathing passageway therethrough capable of staying deformed sufficiently long to be inserted into the nasal cavity and having a memory which enables it to return and having a memory which enables it to return to its original shape, said cylinder being of a diameter slightly larger than that of the nasal cavity of a user at an entrance-way into said nasal cavity so that said stent will be held in place by the pressure of walls of said nasal cavity on said cylinder at the entrance-way,
wherein said cylinder has a smooth outer substantially non-absorbent surface.

5,601,595
REMOBABLE THROMBUS FILTER
Scott R. Smith, Chaska, Minn., assignor to SciMed Life Systems, Inc., Maple Grove, Minn.
Filed Oct. 25, 1994, Ser. No. 328,629
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—200 **15 Claims**

1. A thrombus filter configured for placement within a blood vessel lumen, and having a longitudinal axis, the filter comprising:
first and second units, each unit including a plurality of elongated struts, each strut having a joining end where the respective struts of each unit are joined together, each strut having a free end opposite the joining end, and each strut having at least two curves such that in a longitudinal planar projection of the filter each strut has a first direction of curvature proximate the joining end and an opposite direction of curvature closer to the free end, wherein each strut may be defined by a polar coordinate system having a z axis, an r axis, and an angle theta, wherein the z axis is the longitudinal axis of the filter, the r axis extends in a radial direction, and angle theta is an angular distance from a reference line, and r and theta increase simultaneously along a portion of the strut, and wherein each strut curves in a spiral-like fashion; and
the units are coupled together in opposition such that the free ends of the struts of the first unit are generally oriented in a first longitudinal direction and the free ends of the struts of the second unit are generally oriented in the opposite longitudinal direction.



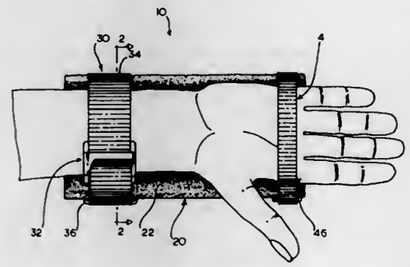
5,601,596
HAEMOSTATIC PRESSURE PAD
Anthony H. K. Lam, 10151 - 74 Street N.W., Edmonton, Alberta, Canada
Filed Jan. 4, 1995, Ser. No. 368,481
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—201 **6 Claims**



1. A haemostatic pressure pad, comprising:
a plinth-like body including a first finger portion having a first end and a second end, a second finger portion having a first end and a second end, the first finger portion and the second finger portion being conjoined at the respective second ends, the first finger portion being larger than the second finger portion, the plinth-like body having a contact face and an attachment face;
a boss having a key hole shaped aperture positioned on the attachment face of the first finger portion, such that a piston from an haemostatic compression device is insertable into the key hole shaped aperture to attach the plinth-like body to an haemostatic compression device;
a channel having substantially parallel sidewalls positioned between the first finger portion and the second finger portion, the channel extending inwardly from the respective first ends of the first finger portion and the second finger portion and terminating at the conjoined respective second ends, the channel passing through the plinth-like body from the contact face to the attachment face; and

an arrow positioned on the attachment face of the first finger portion, the arrow extending away from the second finger portion substantially perpendicularly to the channel, thereby assisting health care professionals in positioning the plinth-like body.

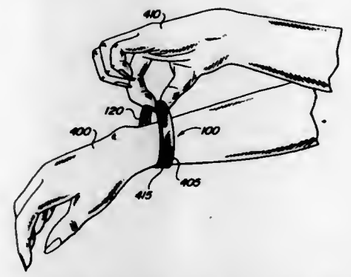
5,601,597
COMBINATION RADIAL ARTERY OCCLUDER AND WRIST SPLINT
Michael E. Arrowood; Mark Thorne, both of Raleigh, and Curtis W. Thornton, Cary, all of N.C., assignors to TAT Inc., Raleigh, N.C.
Filed Nov. 13, 1995, Ser. No. 557,966
Int. Cl.[6] A16F *5/00*
U.S. Cl. 606—203 **12 Claims**



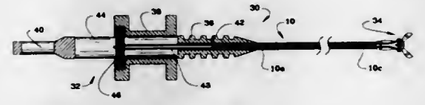
1. A radial artery occluder for occluding blood flow through the radial artery following a catheterization procedure comprising:
a) a wrist splint extending along the distal end of the patient's forearm and the back of the patient's hand, said splint having first and second ends;
b) an adjustable pressure strap attached to a first end of said wrist splint and which extends around the distal end of the patient's forearm;
c) a pressure-applying pad disposed along said pressure strap for localizing pressure on the radial artery of the patient to stop the flow of blood through the radial artery while allowing blood flow in the ulnar artery to continue; and
d) an adjustable securing strap attached to a second end of the splint and which extends around the palm of the patient's hand to immobilize the patient's wrist.

5,601,598
TREATMENT DEVICE TO AID IN LONG-TERM CESSATION OF SMOKING
Gary R. Fisher, 2251 Federal Ave., Los Angeles, Calif. 90064
Continuation-in-part of Ser. No. 902,970, Jun. 23, 1992, Pat. No. 5,501,697. This application Aug. 8, 1994, Ser. No. 287,209
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—204 **17 Claims**

1. A device for use by a person to overcome cigarette smoking addiction comprising:
a wrist band having a non-elastic stimulator segment, a non-elastic wrist attachment segment, and an elastic segment connected between said non-elastic segments;
said stimulator segment including:
a fastening strip;
a retaining strip extending along and substantially co-extensive with said fastening strip, at least one of said strips having an opening therein; and
a stimulator element secured between said strips and having a rounded protrusion on at least one side thereof, said stimulator element being mounted so that said protrusion is accessible through said opening for contacting an acupuncture point on a user's wrist when the wrist band is installed thereon.

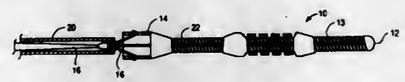


5,601,599
FLEXIBLE SURGICAL INSTRUMENTS INCORPORATING A HOLLOW LUMEN COIL HAVING AREAS OF DIFFERENT PRELOAD TENSION
George Nunez, Miami, Fla., assignor to Symbiosis Corporation, Miami, Fla.
Filed Sep. 23, 1994, Ser. No. 311,141
Int. Cl.[6] A61B *17/28;10/00*
U.S. Cl. 606—205 **8 Claims**



1. A surgical instrument, comprising:
a) a helically wound continuous filament hollow lumen coil wherein said filament is wound with a first preload tension for a first number of turns and wound with a second preload tension for a second number of turns, said second preload tension being different from said first preload tension;
b) a proximal handle coupled to a proximal end of said coil; and
c) a distal end effector coupled to a distal end of said coil.

5,601,600
ENDOLUMINAL COIL DELIVERY SYSTEM HAVING A MECHANICAL RELEASE MECHANISM
Dai Ton, San Jose, Calif., assignor to Conceptus, Inc., San Carlos, Calif.
Filed Sep. 8, 1995, Ser. No. 525,485
Int. Cl.[6] A61B *17/28*
U.S. Cl. 606—206 **16 Claims**



1. An endoluminal coil delivery system comprising:
an endoluminal coil;
a first elongate body;
jaws affixed to the first body, said jaws engaging the coil; and
a second elongate body which articulates relative to the first body to manipulate the jaws and decouple the coil;
wherein the coil comprises a fitting which mates with the jaws to prevent axial and rotational movement of the coil relative to the first body; and
wherein the jaws comprise a plurality of pins which engage an associated plurality of detents on the fitting.

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5,601,601

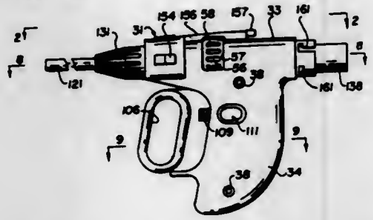
HAND HELD SURGICAL DEVICE

Elisha A. Tal, San Francisco; Michael Hogendijk, Sunnyvale; Michael J. Orth, San Jose; Jeffrey J. Christian, San Jose; Jeffrey E. Holmes, San Jose, and Robert D. Berkowitz, Menlo Park, all of Calif., assignors to Unisurge Holdings, Inc., Duluth, Ga.

Continuation-in-part of Ser. No. 806,666, Dec. 13, 1991, Pat. No. 5,433,725. This application Jul. 29, 1994, Ser. No. 282,892

Int. Cl.[6] A61B *17/34*

U.S. Cl. 606—207 **19 Claims**



1. A hand-held surgical device for use with a tool having proximal and distal extremities, the tool having tool parts and an actuation mechanism for operating the tool parts, the tool parts being disposed at the distal extremity of the tool and the proximal extremity being sized to be adapted to be grasped by the human hand and for use in performing a laparoscopic medical procedure comprising a handle assembly having proximal and distal extremities and having a bore extending therethrough from the proximal extremity to the distal extremity, said bore being sized so that the tool can be removably positioned within the bore so that the tool parts extend out of the bore at the distal extremity of the handle assembly and so that the proximal extremity of the tool remains out of the bore at the proximal extremity of the handle assembly to permit the tool to be grasped by the human hand to facilitate positioning of the tool within the bore, said handle assembly including hand operated means adapted to cause operation of the actuation mechanism of said tool and for causing rotational movement of the tool.

5,601,602

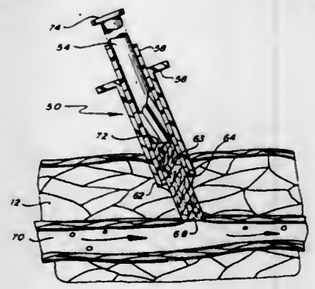
INSERTION ASSEMBLY AND METHOD OF INSERTING A VESSEL PLUG INTO THE BODY OF A PATIENT

Bradford C. Fowler, Woodinville, Wash., assignor to Quinton Instrument Company, Bothell, Wash.

Continuation of Ser. No. 163,496, Dec. 6, 1993, Pat. No. 5,478,352, which is a continuation of Ser. No. 993,328, Dec. 18, 1992, Pat. No. 5,275,616, which is a continuation of Ser. No. 826,719, Jan. 28, 1992, Pat. No. 5,192,300, which is a continuation of Ser. No. 591,342, Oct. 1, 1990, Pat. No. 5,108,421. This application Nov. 16, 1994, Ser. No. 340,507

Int. Cl.[6] A61B *17/04*

U.S. Cl. 606—213 **45 Claims**



1. A closure device for sealing an incision formed in the body of a patient wherein the incision extends from the skin of the patient into a target organ or blood vessel of the patient, said closure device comprising:

an elongate vessel plug formed of a hemostasis promoting material and having distal and proximal portions and said vessel plug adapted to be received in the incision such that said distal portion is located at a first predetermined position in the incision adjacent to the outer surface of the target organ or blood vessel of the patient and said proximal portion is located at a second predetermined position adjacent to the outer skin surface of the patient and said vessel plug is positioned in the incision to obstruct the flow of fluids therethrough without extending into the target organ or blood vessel of the patient.

5,601,603

USE OF AND PROCESS FOR THE INTRODUCTION OF FIBRIN SEALANT INTO A PUNCTURE CHANNEL

Oskar Illi, Schwerzenbach, Switzerland, assignor to White Spot AG, Switzerland

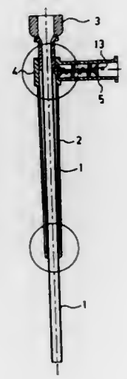
PCT No. PCT/CH94/00114, § 371 Date Feb. 16, 1995, § 102(e) Date Feb. 16, 1995, PCT Pub. No. WO94/28798, PCT Pub. Date Dec. 22, 1994

PCT Filed Jun. 9, 1994, Ser. No. 387,728

Claims priority, application Switzerland, Jun. 16, 1993, 1792/93

Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—213 **12 Claims**



1. In a device for introducing a two-component fibrin sealant into a puncture channel in the vicinity of an arterial or venous puncture point, said device comprising a sealing cannula (2), through which a working cannula, having an open distal end and a proximal end with a fixedly connected medical coupling, extends axially from an upper end through a lower end of said sealing cannula (2), said working cannula movable within said sealing cannula (2) and suitable for conveying intravascular instruments through said working cannula into a vessel, the improvement comprising: the working cannula (1) surrounded at a distance by the sealing cannula (2), whereby the fibrin sealant is conveyed from a connector (5) connected to said upper end of said sealing cannula (2) to at least one slit-shaped radially directed outlet opening (6) in the sealing cannula (2) between the sealing cannula (2) and the working cannula (1); and said sealing cannula (2) comprising a reinforced cuff (4) formed as one piece on an upper end of said sealing cannula (2), an inner diameter of said sealing cannula (2) being reduced from an area of the termination of the connector (5) to the at least one slit-shaped radially directed outlet opening (6).

5,601,604

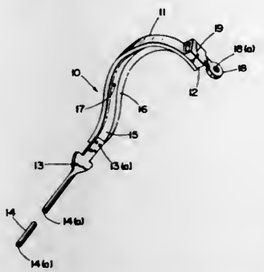
UNIVERSAL GASTRIC BAND

Vernon L. Vincent, Santa Barbara, Calif., assignor to Inamed Development Co., Caranteria, Calif.

Filed May 27, 1993, Ser. No. 68,411

Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—216 **1 Claim**



1. A gastric band for the treatment of morbid obesity, said band being adapted for laparoscopic placement around the stomach of a patient, said band comprising a body portion having a head end and a tail end and an inner stomach-facing surface therebetween, said tail end comprising an elongate tubular member having means thereon for providing a fluid tight connection of said tubular member to an injection reservoir, said head end having means thereon for receiving said tail end and locking said band into a circle having an inner diameter and an inflatable member substantially entirely coextensive with said inner stomach-facing surface of said body portion of said gastric band when said band is locked into said circle having said inner diameter, and which said inflatable member is in fluid communication with said tubular member.

5,601,605

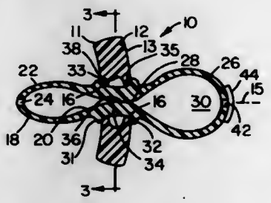
INFANT PACIFIER - FLUID ADMINISTERING UNIT

Dewey E. Crowe, and Sarah Barron, both of 808 E. Eighth Ave., Johnson City, Tenn. 37601

Filed Aug. 29, 1995, Ser. No. 521,121

Int. Cl.[6] A61J *17/00;7/00*

U.S. Cl. 606—236 **9 Claims**



1. A fluid dosage administering unit comprising a generally shield shaped body means having first and second sides and having aperture means therethrough around a generally transverse axis, said aperture means being defined by first wall means, flexible nipple means in the form of an infants pacifier nipple having an inlet and a sucking orifice means spaced from said inlet; fluid dispenser means having fluid reservoir means and a fluid outlet therefor; said nipple means and dispenser means being provided as a single elongated elastomeric, substantially hermetically sealed element with a longitudinal mid-region thereof being frictionally mounted on said body means within said wall means in fixed position along said axis with said nipple means and said dispenser means being thereby positioned on opposite sides of said body means with said inlet and said outlet being adapted for fluid communication with each other whereby a passage is provided for placing said reservoir in fluid communication with said sucking orifice means and whereby medicine or other fluid in the nipple and reservoir means, or only in the nipple may be administered by either the baby sucking on the nipple or by squeezing the bulb, or both to facilitate transfer of the medicine into the baby's mouth; and wherein pressure responsive valve means is provided within said passage whereby fluid in said reservoir means is caused to flow through said valve means and out of said sucking orifice means only upon pressurizing the fluid in said reservoir means.

5,601,606

Patent Not Issued For This Number

5,601,607

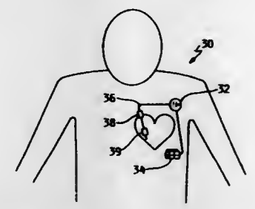
IMPLANTABLE CARDIOVERTER DEFIBRILLATOR HOUSING PLATED ELECTRODE

Theodore P. Adams, Edina, Minn., assignor to Angeion Corporation, Plymouth, Minn.

Continuation-in-part of Ser. No. 321,782, Oct. 12, 1994, Pat. No. 5,447,521, which is a division of Ser. No. 854,862, Mar. 19, 1992, Pat. No. 5,376,103. This application Jan. 23, 1995, Ser. No. 376,805

Int. Cl.[6] A61N *1/39*

U.S. Cl. 607—5 **11 Claims**



1. An implantable cardioverter defibrillator system comprising a pulse generator, a lead connecting said pulse generator to a first electrode whereby an electrical pulse generated by said pulse generator is conducted to said first electrode, a second electrode, said second electrode comprising an external area of said pulse generator, said external area being in electrical contact with pulse generation circuitry of said pulse generator wherein a pulse generated through said first electrode is discharged against said second electrode, said external area being coated with an oxidation resistant material.

5,601,608

METHODS AND APPARATUS FOR APPLYING CHARGE-BALANCED ANTIARRHYTHMIA SHOCKS

Gabriel Mouchawar, Newhall, Calif., assignor to Pacesetter, Inc., Sylmar, Calif.

Filed Feb. 2, 1995, Ser. No. 382,766

Int. Cl.[6] A61N *1/39*

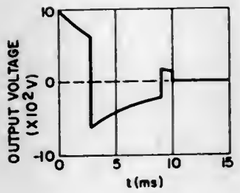
U.S. Cl. 607—5 **13 Claims**

1. Apparatus for applying a charge-balanced antiarrhythmia shock to the heart of a patient to reduce the effects of post shock block, comprising:

means for applying at least one positive shock phase to the heart, said positive shock phase having a positive shock phase current; and

means for applying at least one negative shock phase to the heart, said negative shock phase having a negative shock phase current, wherein the time-integrated positive shock

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phase current substantially equals the time-integrated negative shock phase current, and further wherein each shock phase is a portion of a single exponential decay waveform.

5,601,609

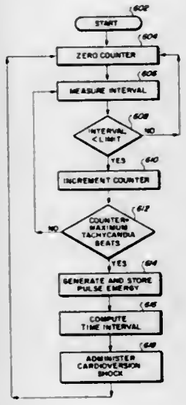
IMPLANTABLE CARDIAC STIMULATING DEVICE AND METHOD FOR ADMINISTERING SYNCHRONIZED CARDIOVERSION SHOCK THERAPY TO PROVIDE PREEMPTIVE DEPOLARIZATION

James L. Duncan, Alpharetta, Ga., assignor to Pacesetter, Inc., Sylmar, Calif.

Continuation-in-part of Ser. No. 123,025, Sep. 15, 1993, abandoned. This application Mar. 14, 1995, Ser. No. 403,593

Int. Cl.[6] A61N *1/362*

U.S. Cl. 607—5 **31 Claims**



17. An implantable cardioversion shock therapy system, comprising:

means for detecting a tachycardia episode;

means for delivering a cardioversion shock to cardiac tissue in response to the tachycardia episode; and

means for delaying delivery of the cardioversion shock by a predetermined time interval measured from a preceding tachycardia beat and preemptively before an expected tachycardia beat.

5,601,610

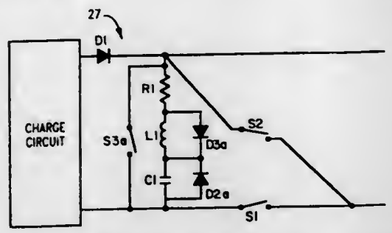
CURRENT LEAKAGE PREVENTION CIRCUIT FOR AN EXTERNAL DEFIBRILLATOR

Eric Persson, Minnetonka, Minn., assignor to SurvivaLink Corporation, Minneapolis, Minn.

Continuation of Ser. No. 41,006, Mar. 31, 1993, Pat. No. 5,484,452. This application Nov. 30, 1995, Ser. No. 565,365

Int. Cl.[6] A61N *1/39*

U.S. Cl. 607—5 **22 Claims**



1. An external defibrillator high voltage circuit for generating defibrillation pulses, including:

first and second output terminals configured for electrical interconnection to electrodes;

first and second charge supply terminals configured for interconnection to a charging voltage supply;

at least one capacitor for storing electrical energy;

at least one charging switch responsive to charging control signals, for electrically interconnecting each capacitor to the charge supply terminals to charge the capacitor when switched to an electrically closed state;

a plurality of discharging switches responsive to discharge control signals, for electrically interconnecting each capacitor between the first and second output terminals to produce defibrillation pulses when switched to an electrically closed state, wherein the discharging switches include at least two switches interconnected to each other at a leakage shunting node and in a series circuit between one of the capacitors and the second output terminal; and

a leakage shunting switch electrically interconnected between the leakage shunting node and the first output terminal, for electrically interconnecting the leakage shunting node to the first output terminal when switched to an electrically closed state and thereby reducing leakage currents through a patient when defibrillation pulses are not being produced, and electrically isolating the leakage shunting node from the first output terminal when defibrillation pulses are produced.

5,601,611

OPTICAL BLOOD FLOW MEASUREMENT APPARATUS AND METHOD AND IMPLANTABLE DEFIBRILLATOR INCORPORATING SAME

Timothy A. Fayram, Gilroy, and George J. Benedict, Santa Cruz, both of Calif., assignors to Ventritex, Inc., Sunnyvale, Calif.

Filed Aug. 5, 1994, Ser. No. 286,306

Int. Cl.[6] A61N *1/39*

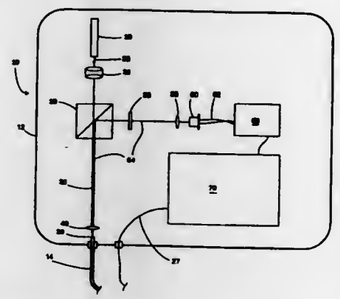
U.S. Cl. 607—6 **12 Claims**

8. An implantable defibrillator including an optical blood flow measurement apparatus, said measurement apparatus comprising:

a housing having a port for transmitting light between the housing interior and exterior;

a light source within the housing and in optical communication with the port, such that at least a portion of light emitted by the light source is transmitted along a first beam path between the light source and the port;

a photodetector having an electrical output, the photodetector being responsive to the intensity of light impinging on the detector, the photodetector being positioned within the housing and in optical communication with the port, such that at least a portion of light entering the port from outside the housing is transmitted along a second beam path between the port and the detector to impinge on the detector;



a processor connected to the photodetector's electrical output for providing a blood flow measurement output;

a flexible elongated light conduit having a first end optically connected to the housing port, and a light transmissive distal tip for placement at a site of flowing blood, such that light from the light source is transmitted through the conduit, out of the distal tip, and such that at least a portion of any reflected light is received by the distal tip, and transmitted to the detector to generate a signal;

whereby light is directed from the light source to the light transmissive tip and into the blood flow and a portion of the light is reflected back to the distal tip and a portion of the reflected light is transmitted to the detector to generate a signal indicative to the blood flow; and

whereby at least a first portion of the defibrillator is contained within the housing and operably connected to the processor, said processor including means to detect a blood flow rate from said reflected light, the defibrillator further including means for detecting a cardiac arrhythmia and means for delivering a therapy in response thereto, the means for detecting a cardiac arrhythmia being responsive to the detected blood flow rate signal from the processor, such that operation of the means for delivering is dependent on the detected blood flow rate.

5,601,612

METHOD FOR APPLYING A MULTIPHASIC WAVEFORM

Bradford E. Gliner, Bellevue; Thomas D. Lyster, Bothell; Clinton S. Cole, Kirkland; Daniel J. Powers, and Carlton B. Morgan, both of Bainbridge Island, all of Wash., assignors to Heartstream, Inc., Seattle, Wash.

Division of Ser. No. 103,837, Aug. 6, 1993. This application Feb. 14, 1996, Ser. No. 601,234

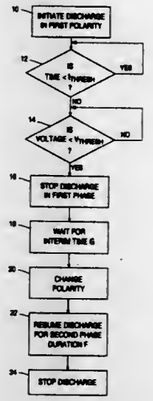
Int. Cl.[6] A61N *1/39*

U.S. Cl. 607—7 **5 Claims**

1. A method for applying electrotherapy to a patient through electrodes connected to an energy source, the method comprising the following steps:

discharging the energy source across the electrodes to deliver electrical energy to the patient in a multiphasic waveform;

monitoring a patient-dependent electrical parameter during the discharging step;



adjusting a discharge parameter of a later phase of the multiphasic waveform as a function of a value of the electrical parameter during an earlier phase.

5,601,613

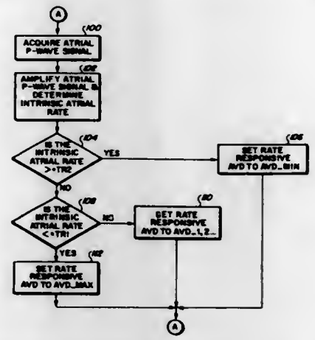
METHOD AND APPARATUS FOR PROVIDING ENHANCED 2:1 BLOCK RESPONSE WITH RATE-RESPONSIVE AV DELAY IN A PACEMAKER

Joseph J. Florio, Sunland, and Roy B. Medlin, West Hills, both of Calif., assignors to Pacesetter, INc., Sylmar, Calif.

Filed Feb. 7, 1995, Ser. No. 385,023

Int. Cl.[6] A61N *1/362*

U.S. Cl. 607—14 **18 Claims**



1. An implantable pacemaker, comprising:

atrial sensing means for sensing an intrinsic atrial rate in an atrial chamber of the heart;

pulse generating means for generating pacing pulses for delivery to the atrial and ventricular chambers of the heart;

defining means for defining a block entry rate and a block exit rate, the block entry and block exit rates being substantially equal; and

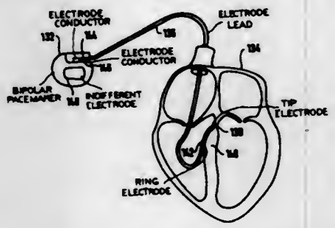
control means, coupled to the atrial sensing means, the pulse generating means, and to the defining means, for determining when the intrinsic atrial rate exceeds the block entry rate and when the intrinsic atrial rate falls below the block exit rate, and for pacing in the ventricle in a 2:1 block response when the intrinsic atrial rate exceeds the block entry rate and for terminating the 2:1 block response mode when the intrinsic atrial rate falls below the block exit rate.

5,601,614

METHOD AND DEVICE FOR DETERMINING WHETHER ELECTRICAL SIGNALS IN A HEART ARE CAUSED BY AN ATRIAL DEPOLARIZATION

Christer Ekwall, Spanga, Sweden, assignor to Pacesetter AB, Solna, Sweden

Filed Apr. 14, 1994, Ser. No. 227,325
Claims priority, application Sweden, May 12, 1993, 9301628
Int. Cl.[6] A61N 1/362
U.S. Cl. 607—25 16 Claims



1. A method for determining whether electrical signals obtained from a heart having a ventricular septum are caused by an atrial depolarization of the heart or by a ventricular depolarization of the heart, comprising the steps of:

positioning an electrode surface in contact with the ventricular septum in said heart for sensing electrical signals arising in the ventricular septum;

obtaining electrical signals with said electrode surface arising in said ventricular heart tissue located nearest the atrial half of the heart; and

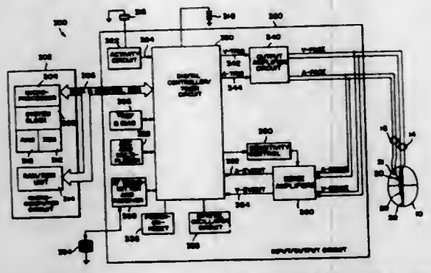
analyzing said electrical signals to distinguish electrical signals caused by atrial depolarization from electrical signals caused by ventricular depolarization.

5,601,615

ATRIAL AND VENTRICULAR CAPTURE DETECTION AND THRESHOLD-SEEKING PACEMAKER

H. T. Markowitz, Roseville; John C. Stroebel, Blaine; Ren Zhou, Mounds View, and John C. Rueter, Shoreview, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Aug. 16, 1994, Ser. No. 291,304
Int. Cl.[6] A61N 1/37
U.S. Cl. 607—28 37 Claims



37. An apparatus comprising a dual chamber pacemaker pulse generator for attachment with atrial and ventricular sensing and pacing electrodes to an atrial and ventricular chamber of a patient's heart, respectively and having means for detecting capture during that refractory period which follows the delivery of a pacing pulse in one of said chambers by sensing depolarizations of tissue in the other of said chambers and having timing means for excluding sensed depolarizations too close in time to the delivery of a pacing pulse in said one chamber.

5,601,616

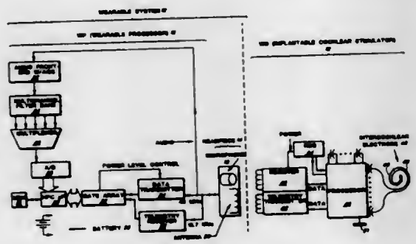
Patent Not Issued For This Number

5,601,617

MULTICHANNEL COCHLEAR PROSTHESIS WITH FLEXIBLE CONTROL OF STIMULUS WAVEFORMS

Gerald E. Loeb, and Michael A. Faltys, both of Northridge, Calif., assignors to Advanced Bionics Corporation, Sylmar, Calif.

Filed Apr. 26, 1995, Ser. No. 429,749
Int. Cl.[6] A61N 1/36; H04R 25/00
U.S. Cl. 607—56 25 Claims



23. A multichannel cochlear prosthesis comprising:

a speech processor;

a cochlear stimulator; and

means for coupling the speech processor and the cochlear stimulator together so that data signals and control signals may be passed therebetween;

said speech processor including:

template storage means for storing a set of coefficients that represent a particular temporospatial pattern of stimulus waveforms,

means responsive to the set of coefficients stored in the template storage means for generating data and control signals that specify a particular temporospatial pattern of controlled stimulus waveforms to be generated by respective channels within the cochlear stimulator; and

said cochlear stimulator including:

means for receiving said data and control signals from the speech processor,

a multiplicity of channels, each having at least one pair of electrodes associated therewith,

means for generating a controlled stimulus waveform for each of the multiplicity of channels as a function of said data and control signals received from the speech processor, and

means for applying the controlled stimulus waveform to at least two of the multiplicity of channels so that the specified controlled stimulus waveform appears across the paired electrodes of at least two channels.

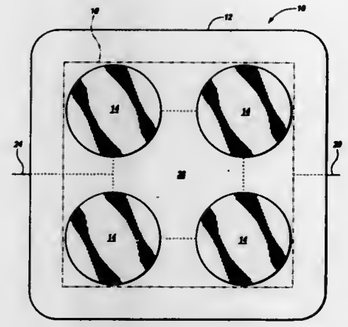
5,601,618

STIMULATION AND HEATING DEVICE

Brian C. James, 888 Boulevard of the Arts, #803, Sarasota, Fla. 34236

Filed Feb. 26, 1996, Ser. No. 606,585
Int. Cl.[6] A61N 1/18; A61F 7/00
U.S. Cl. 607—71 3 Claims

2. A combination soft body tissue stimulator and heating device comprising;



a flexible molded pad having one side thereof defining a working surface and having a plurality of separate electrically conductive areas integrally molded with said molded pad and each having an exposed conductive surface generally coplanar with said working surface;

a plurality of thin disposable double-sided adhesive electrodes each adhesively attachable onto a skin area over the soft tissue in an array which substantially aligns with said conductive areas, wherein adhesive attachment between said conductive areas and said electrodes provides an only means for attachment of said molded pad to the skin areas and further provides means for transferring electrical current through said electrodes to said skin areas;

resistive heating means embedded in said molded pad electrically isolated from said conductive areas for heating an area of said molded pad which is generally coextensive with said conductive areas;

means for electrically connecting said conductive areas to a source of pulsed electrical current for stimulating the soft body tissue;

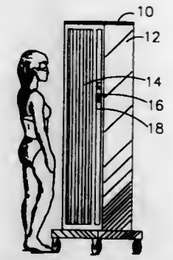
means for electrically connecting said resistive heating means to a source of electric power for heating the soft body tissue.

5,601,619

PHOTOTHERAPEUTIC DEVICE AND METHOD

Howard J. Drechsler, 26900 N. Woodland Rd., Beachwood, Ohio 44122

Filed Dec. 13, 1993, Ser. No. 166,092
Int. Cl.[6] A61N 5/06
U.S. Cl. 607—88 7 Claims



1. A coded prescription-controlled phototherapy treatment dispensing device comprising:

First means for generating therapeutic light emissions treatments;

Second means for activation and deactivation of said first means;

Third means for timing the length of each said therapeutic light emission treatments;

Fourth means for limiting said therapeutic light emission treatments to a prescribed number;

Fifth means for generating and displaying a first coded sequence of numerals when said first means has been activated a predetermined number of times;

Sixth means to cross reference said first coded sequence of numerals to a second coded prescription sequence of numerals prescribing a second sequence of treatments;

Seventh means adapted to override said fourth means responsive to a signal;

Eighth means to convert said second coded prescription sequence of numerals into said signal; and

Ninth means to relay said signal to said seventh means, whereupon said coded prescription-controlled phototherapy dispenser is programmed to provide a second series of phototherapy treatments.

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5,601,620

ACIDIC HAIR DYE COMPOSITIONS WHICH COMPRISE ACID DYES, BENZYL ALCHOL, AND POLYSILOXANES

Hiroshi Ishikawa, Yokohama, Japan, assignor to Shiseido Company Ltd., Tokyo, Japan

Continuation of Ser. No. 937,895, Sep. 30, 1992, abandoned.
This application May 17, 1995, Ser. No. 442,941
Claims priority, application Japan, Aug. 20, 1991, 3-232189; Feb. 14, 1992, 3-42354
Int. Cl.[6] A61K 7/13
U.S. Cl. 8—405 5 Claims

1. An acid dye composition for hair comprising:
(A) 1% to 10% by weight of benzyl alcobol,
(B) 0.001% to 0.1% by weight of an acid dye, and
(C) 0.01% to 5.0% by weight of at least one polysiloxane, all based upon the total amount of the composition, the ratio (A)/(B) being 15 to 1250 and the pH of the composition being 1.5 to 4.5.

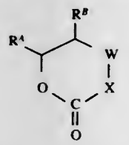
5,601,621

PROCESS FOR THE PRODUCTION OF A FIBER MATERIAL AND PROCESS FOR THE DYEING OF THE MODIFIED FIBER MATERIAL WITH ANIONIC TEXTILE DYES

Andreas Schrell, Frankfurt am Main; Werner H. Russ, Flörsheim/Main, and Thomas Riehm, Hattersheim am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Continuation of Ser. No. 96,506, Jul. 22, 1993, abandoned.
This application Feb. 13, 1995, Ser. No. 387,368
Claims priority, application Germany, Jul. 24, 1992, 42 24 441.2
Int. Cl.[6] D06P 1/38;3/872; D06M 13/10;13/402
U.S. Cl. 18—493 5 Claims

3. A process for the modification of a fiber material containing hydroxy or carboxamido groups, or hydroxy and carboxamido groups which comprises exposing the fiber material to a composition consisting essentially of a compound of the formula (1)



(1)

in which
R^A is hydrogen or alkyl of 1 to 3 carbon atoms, unsubstituted or substituted by hydroxy or a group of the formula (2) or (3)
in which
R^1 is hydrogen, methyl or ethyl,
R^2 is hydrogen, methyl or ethyl, and
R^3 is hydrogen, methyl or ethyl, or
R^1 and R^2 together with the nitrogen atom are a saturated heterocyclic radical formed by an alkylene of 5 to 8 carbon atoms or by two alkylenes of 1 to 4 carbon atoms and an oxygen or an amino of the formula —NH—, and
$Z^{(-)}$ is an anion;
R^B has one of the meanings given for R^A;
W is a direct bond or a group of the formula $—CHR^C—$ in which R^C has one of the meanings given for R^A;
X is a group —O— or —NH—;
containing at least one primary, secondary or tertiary amine group or quaternary ammonium group as a substituent to the cyclus or forming a part of said ring, or being both, in an aqueous, alkaline solution at a pH of between 10 and 14 and then fixing the compound of the formula (1) onto said fiber material at a temperature of between 100° and 230° C.

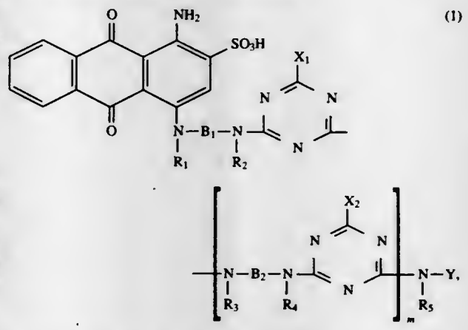
5,601,622

FIBRE-REACTIVE ANTHRAQUINONE DYES, PROCESS FOR THEIR PREPARATION, AND THEIR USE

Bernhard Müller, Efringen-Kirchen, Germany, assignor to Ciba-Geigy Corporation, Tarrytown, N.Y.

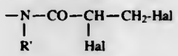
Filed Oct. 11, 1995, Ser. No. 541,008
Claims priority, application Switzerland, Oct. 14, 1994, 3093/94
Int. Cl.[6] D06P 3/66; C09B 1/30;1/34
U.S. Cl. 8—676 16 Claims

1. An anthraquinone dye of the formula



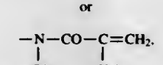
(1)

in which R_1, R_2, R_3, R_4 and R_5 independently of one another am hydrogen or am substituted or unsubstituted C_1–C_{12}alkyl,
X_1 and X_2 independently of one another are chlorine or fluorine,
B_1 is a C_2–C_{12}alkylene radical which is unsubstituted or substituted by hydroxyl, sulfo or sulfato and is uninterrupted or is interrupted by oxygen; or is a cyclohexylene radical, C_1–C_4alkylene-cyclohexylene radical, cyclohexylene-C_1–C_4alkylene radical, C_1–C_4alkylene-cyclohexylene-C_1–C_4alkylene radical or cyclohexylene-methylene-cyclohexylene radical which is unsubstituted or is substituted in the cyclohexylene ring by C_1–C_4alkyl; or is a C_1–C_4alkylene-phenylene radical, phenylene-C_1–C_4alkylene radical or C_1–C_4alkylene-phenylene-C_1–C_4alkylene radical which is unsubstituted or is substituted in the phenylene ring by C_1–C_4alkyl, C_1–C_4alkoxy, C_2–C_4alkanoylamino, sulfo, halogen or carboxyl,
B_2 is an aromatic bridge member,
Y is hydrogen, C_1–C_{12}alkyl which is unsubstituted or is substituted by hydroxyl, sulfo or sulfato and which C_1–C_{12}alkyl, with the exception of methyl, is uninterrupted or is interrupted by oxygen, or Y is phenyl or naphthyl each of which is unsubstituted or substituted by C_1–C_4alkyl, C_1–C_4–alkoxy, C_2–C_4alkanoylamino, halogen, sulfo, carboxyl or a fibre-reactive group, and
m is the number 0 or 1, with the proviso that, if m is the number 0, the radical Y is phenyl or naphthyl as defined above and the radical Y contains a fibre-reactive group of the formula



(2a)

or



(2b)

in which Hal is halogen and R' is hydrogen or C_1–C_4alkyl.

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ELECTROLYTIC CELL AND ELECTROLYTIC PROCESS WITHIN A CARBON DIOXIDE ENVIRONMENT

Denis G. Fauteux, 359 Arlington St., Acton, Mass. 01720, and Arthur A. Massucco, 20 Tamarack Rd., Natick, Mass. 01760

Filed Aug. 3, 1995, Ser. No. 510,750
Int. Cl.[6] H01M 6/00
U.S. Cl. 29—623.1 8 Claims

1. An electrolytic process associated with fabrication of an electrolytic cell comprising the steps of:
- inserting sub components of an electrolytic cell into a chamber having an atmosphere,
- at least one of the sub components includes a lithium source anode, an electrolyte and a cathode wherein at least one of the electrolyte, anode or cathode is acrylic based,
- displacing the atmosphere within the chamber with carbon dioxide,
- displacing oxygen, which may be in the at least one of the acrylic based anode, cathode or electrolyte, with carbon dioxide to, in turn, facilitate a free-radical chain growth reaction,
- fabricating the sub components into components for use in the electrolytic cell, and
- assembling the fabricated components into an electrolytic cell.

5,601,624

FUEL COMPOSITION WITH REACTION PRODUCT OF OXYGENATED AMINE, DICARBONYL LINKING AGENT, AND HYDROCARBYL(ENE) AMINE

James T. Carey, Medford, N.J.; John Hiebert, Levittown, Pa., and Andrew G. Horodysky, Cherry Hill, N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Apr. 10, 1995, Ser. No. 419,305
Int. Cl.[6] C10L 1/22;1/24;1/18
U.S. Cl. 44—347 6 Claims

1. A fuel composition comprising a liquid hydrocarbon or liquid oxygenated fuel or mixtures thereof and a minor multifunctional dispersant, antiwear, demulsifying, rust and corrosion inhibiting, rust inhibiting, deposit reducing, friction reducing, and antioxidant proportion of an oxygenated alkyl amine additive product of reaction prepared by reacting an oxygenated amine of the formula:

$$H_2N(CR_1R_2)_xO_yR_3$$

where R_1, R_2 and R_3 are hydrogen or C_1-C_{40} hydrocarbyl or hydrocarbylene or a mixture thereof, and which can additionally contain a heteroatom selected from oxygen, nitrogen, or sulfur; x=1 to 40, and y=1 to 200, with (i) a dicarbonyl or dicarbonyl generating compound linking agent of the following structure:

$$R_{17}COCR_{18}O$$

where R_{17} and R_{18} are hydrogen or C_1-C_{30} linear, branched, or cyclic hydrocarbyl or carbylene, or a mixture thereof and can optionally contain at least one heteroatom selected from a member of the group consisting of sulfur, oxygen, and nitrogen and (ii) a C_1 to C_{300} hydrocarbyl or hydrocarbylene amine of the formula:

$$R_6R_7R_8N$$

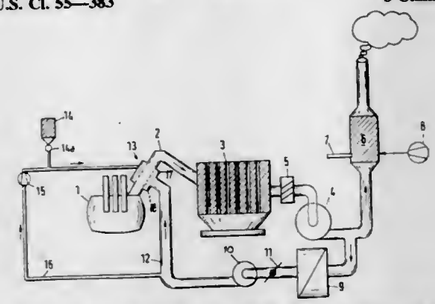
where R_6, R_7 and R_8 are hydrogen or a C_1 to C_{300} linear, branched or cyclic hydrocarbyl or hydrocarbylene, or is a mixture thereof and can additionally contain a heteroatom selected from sulfur, oxygen or nitrogen, wherein the reaction is carried out at temperatures varying from ambient to about 250° C., under pressures varying from ambient to about 100 psi for a time sufficient to produce an oxygenated alkylamine additive product.

5,601,625

PROCESS AND DEVICE FOR REMOVING HEAVY METALS AND COMPOUNDS CONTAINING HEAVY METALS

Klaus H. Ulrich, Heiligenhaus, Germany, assignor to Mannesmann Aktiengesellschaft, Düsseldorf, Germany

Filed Dec. 7, 1994, Ser. No. 352,341
Claims priority, application Germany, Dec. 7, 1993, 43 42 494.5
Int. Cl.[6] B01D 51/00
U.S. Cl. 55—383 8 Claims



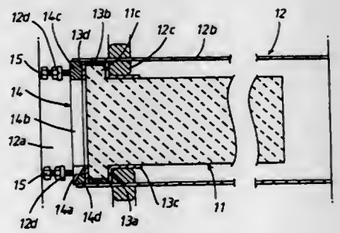
1. A device for removing heavy metals and compounds containing heavy metals from waste gas of a metallurgical vessel, comprising: gas cleaning means for cleaning flue gas from the metallurgical vessel, said gas cleaning means including a filter; a flue gas feed line connected between the metallurgical vessel and the filter; suction means downstream of the filter for sucking the flue gas from the metallurgical vessel through the filter and for putting out a flow of clean flue gas; a branch line arranged downstream of the suction means whereby a portion of cleaned flue gas is diverted from the outlet flow of the suction means; fan means connected in the branch line for transporting the diverted portion of cleaned gas; means arranged in the branch line for cooling the diverted clean gas portion; and means for mixing the diverted, cooled clean gas portion with the flue gas in the flue gas feed line.

5,601,626

SUPPORT CONSTRUCTION OF FILTER ELEMENT IN DUST COLLECTING APPARATUS

Yoshiaki Hori, Nagoya, and Yasuo Akitsu, Handa, both of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Jun. 7, 1995, Ser. No. 472,777
Claims priority, application Japan, Aug. 4, 1994, 6-183767
Int. Cl.[6] B01D 46/24; C04B 38/00
U.S. Cl. 55—493 5 Claims



1. A support construction for a ceramic filter element adapted for use in a dust collecting apparatus, said filter element comprising porous ceramic material and having a thin walled cellular structure formed with a plurality of axially extending passages separated from each other by thin partition walls, a first group of the axial passages being in the form of inlet passages each closed at one end thereof and open at the other end thereof to introduce therein exhaust gases to be purified, while a second group of the axial passages being in the form of outlet passages each open at one end thereof to discharge purified gases therefrom and closed at the other end thereof,

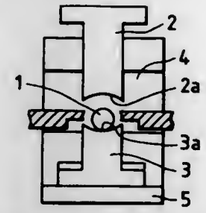
wherein said ceramic filter element is mounted within a tubular support housing having an inward flange formed at the inner periphery thereof, said tubular support housing enclosing an outer periphery of said filter element, said filter element having one end portion formed at the outer periphery thereof with an outward flange which is coupled with an internal wall surface of said support housing through an encircling sealing means and engaged at one side thereof with the inward flange of said support housing, and wherein a pressure plate in the form of a window frame is coupled within one end portion of said support housing and pressed against the outward flange of said filter element at the other side thereof such that the outward flange of said filter element is clamped by said pressure plate and the inward flange of said support housing.

5,601,627

METHOD FOR MOLDING OPTICAL ELEMENT

Masashi Mashige, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 63,685, May 20, 1993, abandoned.
This application Mar. 3, 1995, Ser. No. 400,384
Claims priority, application Japan, May 21, 1992, 4-153103; Apr. 19, 1993, 5-114188
Int. Cl.[6] C03B 23/00;11/00; B29D 11/00
U.S. Cl. 65—102 3 Claims



1. A method for molding an optical element sequentially comprising a molding step, a cooling and a separating step, and a removal step, wherein said molding step comprises:
- (i) providing an upper mold member and a lower mold member for press molding a glass material, each of said upper mold member and said lower mold member being in a casing;
- (ii) placing the glass material on a molding face of said lower mold member and lowering said upper mold member so that a molding face of said upper mold member comes into contact with the glass material to close said upper and lower mold members, to effect press molding of said glass material, wherein the glass material is in contact with both the molding face of the lower mold member and the molding face of the upper mold member by said closing of said upper and lower mold members;
- (iii) heating said upper and said lower mold members with the glass material in between to a predetermined temperature;
- (iv) shaping the glass material according to the molding faces of said upper and said lower mold members by applying a pressing force to said glass material, thereby forming a molded optical glass element by transferring an optically functional face to said glass material, corresponding to the molding faces of said upper and said lower mold members;

wherein said cooling and separating step comprise:
- (i) cooling said upper mold member and said lower mold member and said molded optical glass element, wherein the cooling comprises the steps of; cooling said upper mold member and said lower mold member by cooling means to a predetermined temperature, and then rapidly separating said molded optical glass element from said contact with the molding faces of the upper mold member and the lower mold member, thereby relaxing internal stress in said molded optical glass element;
- (ii) returning said molded optical glass element to the molding face of the lower mold member and lowering said upper mold member to close said lower and said upper mold members again so as to maintain the shape of the molded optical glass element without any deformation of the molded optical glass element; and

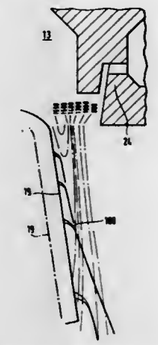
wherein said removal step comprises:
- (i) executing a cooling step on said upper and lower mold members until a removal temperature for said molded optical glass element is reached; and executing a removal step of said molded optical glass element comprising separating said upper mold member from said lower mold member and the molded optical glass element by elevating said upper mold member; and
- (ii) removing the molded optical glass element from said lower mold member.

5,601,628

METHOD FOR THE PRODUCTION OF MINERAL WOOL

Jean Battigelli, Rantigny; Guy Berthier, Clermont, both of France; Hans Furtak, Speyer am Rhein, Germany, and Daniel Sainte-Foi, Clermont, France, assignors to Isover Saint-Gobain, France

PCT No. PCT/EP92/01915, § 371 Date Aug. 20, 1994, § 102(e) Date Aug. 2, 1994, PCT Pub. No. WO94/04469, PCT Pub. Date Mar. 3, 1994
PCT Filed Aug. 20, 1992, Ser. No. 211,171
Int. Cl.[6] C03B 37/04
U.S. Cl. 65—461 9 Claims



1. A method for producing mineral wool, comprising:

feeding a molten mineral material that is fluid at a liquidus temperature above 1,200° C. and has a viscosity of less than 5,000 poises at said liquidus temperature into a spinner having a spinner wall, said spinner wall comprising a peripheral wall having a plurality of orifices;

centrifuging the molten mineral material through said plurality of orifices thereby forming a plurality of filament cones emanating outwardly from said plurality of orifices, each of said filament cones having a length;

enveloping said spinner wall in a heated gas flow that flows along said peripheral wall;

heating said heated gas flow by an annular burner externally and concentrically disposed with respect to said spinner;

attenuating said plurality of filament cones by subjecting said plurality of filament cones to an attenuating effect of said heated gas flow to thereby form final fibers; and

adjusting the lengths of said plurality of filament cones and a configuration of said heated gas flow so that a majority of said plurality of filament cones emanating outwardly from said plurality of orifices consecutively intersects a multiplicity of

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isotherms representing decreasing temperatures of said heated gas flow and increasing corresponding viscosities of the molten mineral material, wherein said majority intersects a 100 poise isotherm representing a 100 poise isotherm temperature of said heated gas flow and a corresponding viscosity of the molten mineral material of 100 poises so that a portion of said heated gas flow having temperatures less than said 100 poises isotherm temperature envelop said majority of said plurality of filament cones.

5,601,629

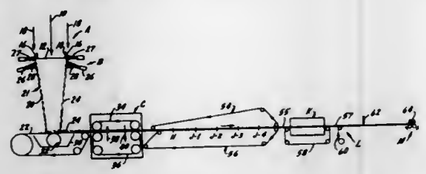
APPARATUS FOR PRODUCING A FIBERGLASS PACK WITH TWO STEPS OF BINDER APPLICATION

Clarence H. Helbing, 1315 Hale Rd., Shelbyville, Ind. 46176

Continuation-in-part of Ser. No. 147,658, Nov. 5, 1993, abandoned, which is a division of Ser. No. 998,126, Dec. 29, 1992, Pat. No. 5,324,337. This application Dec. 16, 1994, Ser. No. 357,000

Int. Cl.[6] C03B *37/00*

U.S. Cl. 65—529 **7 Claims**



1. An apparatus for producing a fiberglass product, the apparatus comprising:

a forming station for forming glass fibers into a fiberglass pack,

the forming station including means for adding a first amount of binder to the fiberglass pack to form a partially bindered fiberglass pack, the first amount of binder being less than a final desired amount of binder required in the fiberglass product,

first conveying means for transporting the partially bindered fiberglass pack to a means for curing the partially bindered fiberglass pack,

means for curing the partially bindered fiberglass pack to form a cured blanket,

second conveying means for transporting the partially bindered fiberglass pack through the means for curing,

third conveying means for moving the cured blanket through a post curing supplemental binder application means,

¶ the third conveying means including porous belts having an upper belt and a lower belt with the cured blanket sandwiched therebetween,

¶ the upper belt and the lower belt having a porosity sufficient to permit a second amount of binder to be added to the blanket by passing the binder through one of the belts to impregnate the blanket,

the post curing supplemental binder application means being arranged to add the second amount of binder to the cured blanket which, in combination with the first amount, is in excess of the final desired amount required in the fiberglass product,

¶ the post curing supplemental binder application means further including (a) a plenum chamber, and (b) means for forcing binder through one of the belts of the third conveying means and into the blanket by pressurized fluid, the binder being entrained in the pressurized fluid in the plenum chamber,

means for stripping binder in excess of the final desired amount required in the blanket,

fourth conveying means for transporting the blanket through a means for removing excess moisture, and

means for removing excess moisture from the blanket without curing that portion of the second amount of binder which remains in the blanket.

5,601,630

PROCESS FOR THE PRODUCTION OF SYNTHETIC RUTILE

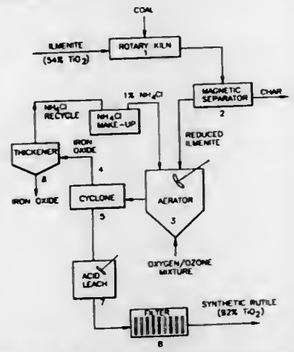
Walter Hoecker, Subiaco, Australia, assignor to The Commonweath Industrial Gases Limited, Chatswood, Australia

Filed Feb. 22, 1994, Ser. No. 199,470

Claims priority, application Australia, Feb. 23, 1993, PL7460

Int. Cl.[6] C21B *11/06;* **C22B** *34/12*

U.S. Cl. 75—435 **6 Claims**



1. A process for the production of synthetic rutile comprising reacting a titanium ore containing iron oxide with a reducing agent to produce a reduced titanium ore containing metallic iron, contacting the reduced titanium ore with an aqueous solution containing an oxidizing gas selected from the group consisting of oxygen, ozone and a mixture thereof to thereby oxidize at least a portion of the metallic iron and produce said synthetic rutile.

5,601,631

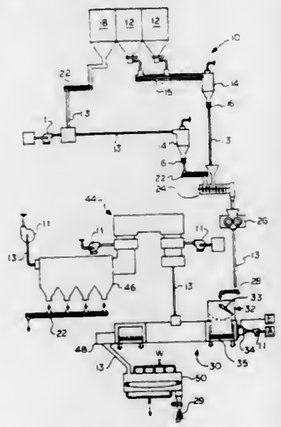
PROCESS FOR TREATING METAL OXIDE FINES

Franklin G. Rinker, Perrysburg, and Deane A. Horne, Toledo, both of Ohio, assignors to Maumee Research & Engineering Inc., Perrysburg, Ohio

Filed Aug. 25, 1995, Ser. No. 519,844

Int. Cl.[6] C21B *13/08*

U.S. Cl. 75—484 **19 Claims**



1. A process for treating metal oxide fines to recover elemental iron from iron-bearing materials including iron-bearing ores, steel mill waste and other metallurgical process waste, the process comprising the steps of:

a) combining iron-bearing materials, having metal oxides including iron oxides therein, with carbonaceous material having volatile matter therein to form a dry mixture;

b) agglomerating the dry mixture under conditions sufficient to mobilize the volatile matter from the carbonaceous material to bond the dry mixture and form green compacts;

c) loading the green compacts into a zone of a preheated rotary hearth furnace void of compacts to form a layer of compacts having a mean layer depth no more than about two compacts high;

d) heating the green compacts for about 5 to 12 minutes at a temperature of between about 2150° F. to 2350° F. to reduce the compacts and evolve undesirable oxides from the compacts; and

e) discharging the reduced compacts from the rotary hearth furnace.

5,601,632

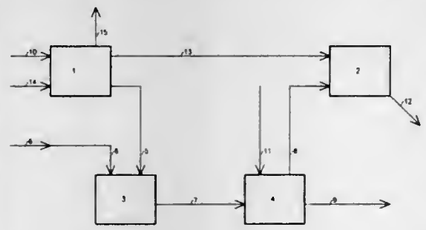
METHOD AND AN APPARATUS FOR THE PURIFICATION OF RESIDUAL PRODUCTS FROM FLUE GAS PURIFICATION PLANTS

Bjarne H. Jensen, Valby, Denmark, assignor to Fls Miljø A/S, Denmark

Filed Jun. 20, 1995, Ser. No. 492,851

Int. Cl.[6] C22B *3/02;3/04*

U.S. Cl. 75—743 **10 Claims**



1. A method for the removal of leachable soluble salts and leachable heavy metals from residual products from dry- or semidry-processes for the purification of flue gas comprising the steps of

using salt-containing but salt-subsaturated waste water from wet-process flue gas purification plant as leaching water,

forming a suspension of the residual product in the leaching water,

filtering the suspension in a filtration step while leaching out soluble salts and leachable heavy metals from the filter cake produced thereby producing a filtrate containing the salts and heavy metals,

adding the filtrate and the salts and heavy metals dissolved therein to a waste water-treatment plant wherein the heavy metals are separated from the water,

removing the leached residual product in the form of a filter cake containing bound salt residues and bound heavy metals as a dump-safe residual product.

5,601,633

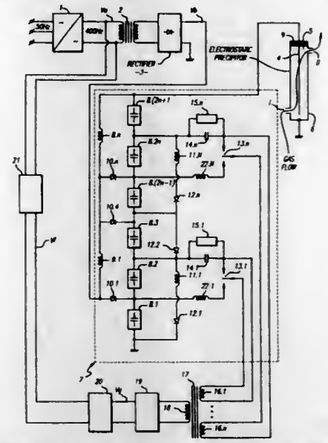
HIGH VOLTAGE ELECTRICAL METHOD FOR REMOVING ECOLOGICALLY NOXIOUS SUBSTANCES FROM GASES

Lazar Z. Ponizovsky, App. 21, 9/11 Tovarishtchesky Per.; Aleksander Z. Ponizovsky, App. 319, 39, Ostrovityanov Str.; Viktor A. Potapov, App. 48, 50, Leningradsky Prosp., and Adolf P. Shvedchikov, App. 52, 180, Prospekt Mira, all of Moscow, Russian Federation

Division of Ser. No. 319,379, Oct. 6, 1994, Pat. No. 5,542,967. This application May 23, 1996, Ser. No. 652,896

Int. Cl.[6] B03C *3/66*

U.S. Cl. 95—81 **5 Claims**



1. A method for removing noxious substances from a fluid stream, comprising:

providing an electrical precipitator having a reaction chamber and a corona-producing electrode extending into said reaction chamber;

causing the fluid stream to pass through said reaction chamber;

providing a power supply supplying a rectified voltage output in response to an alternating current line voltage input;

connecting said power supply to a multi-stage generator comprising a plurality of capacitive power storage units adapted for charging to a predetermined constant direct current voltage by the rectified voltage output of said power supply;

triggering said power storage units to produce a pulsating voltage superimposed on said constant charged direct current voltage; and

applying said pulsating voltage superimposed on said constant direct current charged voltage to said coronaproducing electrode.

5,601,634

PURIFICATION OF FLUIDS BY ADSORPTION

Ravi Jain, Bridgewater, and Sidney S. Stern, Highland Park, both of N.J., assignors to The BOC Group, Inc., New Providence, N.J.

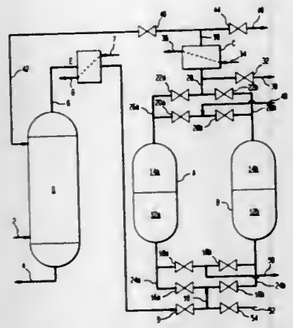
Continuation-in-part of Ser. No. 129,638, Sep. 30, 1993, abandoned. This application Aug. 29, 1994, Ser. No. 295,425

Int. Cl.[6] B01D *53/04*

U.S. Cl. 95—114 **17 Claims**

1. A process for purifying a mixture of a specific fluid component and at least one impurity comprising subjecting said mixture to a temperature swing adsorption process having an adsorption step which comprises passing a liquid-vapor blend of said mixture or of said mixture in vapor form and substantially impurity-free specific fluid component in liquid form upwardly through at least one bed of adsorbent which adsorbs said at least one impurity more

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strongly than said specific fluid component, and passing purified specific fluid component out through the top of said bed of adsorbent, the temperature of said at least one bed of adsorbent at the beginning of said adsorption step being between the bubble point and the dew point of said mixture, said adsorption process being conducted under conditions such that substantially no impurity-containing specific fluid component liquid passes out through the top of said bed of adsorbent with said purified specific fluid.

5,601,635

METHOD AND APPARATUS FOR DEAERATING A LIQUID IN A SUBSTANTIALLY CLOSED LIQUID CIRCULATION SYSTEM

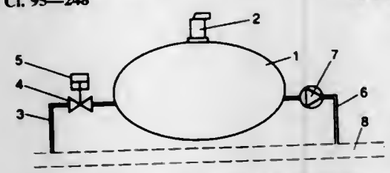
Franciscus Roffelsen, Helmond, Netherlands, assignor to Spiro Research B.V., Helmond, Netherlands

Filed Oct. 25, 1994, Ser. No. 328,503

Claims priority, application Netherlands, Nov. 4, 1993, 9301908

Int. Cl.[6] B01D *19/00*

U.S. Cl. 95—248 **10 Claims**



1. A method for deaerating a liquid in a substantially closed liquid circulation system, in which an amount of liquid is withdrawn from the circulation system and is introduced via a valve into a reservoir, the pressure in the reservoir is reduced for aleaerating the liquid and the liquid is sucked from the reservoir by means of a pump and added to the circulation system again, and separated air is discharged via a vent unit to the environment, wherein the valve is alternately opened and closed according to a predetermined timing sequence, while the pump keeps working continuously, the reservoir being closed except for connections to the circulation system, the pump and the vent unit.

5. A deaeration apparatus comprising:

a liquid reservoir which is closed except for a supply pipe, an air relief valve and a discharge pipe connected thereto;

the supply pipe being connected to a substantially closed liquid circulation system;

a supply valve disposed in the supply pipe which is opened and closed on a timed basis for controlling the periodic transfer of liquid from the substantially closed liquid circulation system via the supply pipe to the reservoir;

the air relief valve operable in one direction only for allowing air to escape from the reservoir;

the discharge pipe being connected to the liquid circulation system; and

a pump disposed in the discharge pipe for continuously discharging liquid from the reservoir to the liquid circulation system thereby reducing the pressure in the reservoir and aiding in the discharge of air from the liquid in the reservoir when the valve is closed and wherein air is separated from the liquid when the valve is opened due to dispersion of the liquid in the reduced pressure environment in the reservoir.

5,601,636

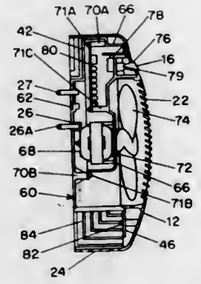
WALL MOUNTED AIR CLEANER ASSEMBLY

Dov Z. Glucksman, Wenham, Mass., assignor to Appliance Development Corp., Danvers, Mass.

Filed May 30, 1995, Ser. No. 453,896

Int. Cl.[6] B03C *3/32*

U.S. Cl. 96—63 **13 Claims**



1. An air cleaner assembly for filtering air in a space contained at least in part by a wall, the air cleaner assembly being adapted to be supported by an electrical receptacle mounted in the wall, the air cleaner assembly comprising:

a housing having a perimeter wall including inlet grill means for drawing air into the cleaner assembly, and outlet grill means for discharging filtered air from the cleaner assembly;

filtering means for filtering air, said filtering means comprising a filter disposed within said housing;

fan means for directing air into said housing and through said filtering means when receiving electrical power and for producing filtered air, said filtered air discharged out of said outlet grill means, said filtering means disposed circumferentially about said fan means and adjacent to said inlet grill means so that said fan means draws air into said inlet grill means through said filter means and discharges said filtered air out through said outlet grill means; and

a plug, directly attached to said housing that is mateable directly with the wall mounted electrical receptacle to provide power to said fan means for directing air into the housing only when the plug is mated with the receptacle.

5,601,637

ELECTROLESS GOLD PLATING SOLUTION

Hiroshi Wachi, Kanagawa-ken, and Yutaka Otani, Hiratsuka, both of Japan, assignors to Electroplating Engineers of Japan, Limited, Tokyo, Japan

Filed Aug. 14, 1995, Ser. No. 514,721

Claims priority, application Japan, Aug. 19, 1994, 6-195349

Int. Cl.[6] C23C *18/52*

U.S. Cl. 106—1.23 **9 Claims**

1. An electroless gold plating solution containing gold as a gold alkali metal cyanide, a boron-based reducing agent, and an alkali metal hydroxide as a pH adjustor, wherein 5–99 mg/l of sodium nitrobenzenesulfonate, p-nitrobenzoic acid or mixtures thereof are added.

5,601,638

THICK FILM PASTE

Junzo Fukuda, Nagoya; Akio Harada, Osaka, and Susumu Nishigaki, Nagoya, all of Japan, assignors to Sumitomo Metal (SMI) Electronics Devices Inc., Mine, and Daiken Chemical Company, Osaka, both of Japan

Filed Nov. 20, 1995, Ser. No. 560,710

Claims priority, application Japan, Nov. 21, 1994, 6-286448

Int. Cl.[6] C09D *11/14;* **C23C** *20/04;20/06*

U.S. Cl. 106—19 C **11 Claims**

1. A thick film paste for use in the preparation of a ceramic wiring substrate by a printing process, which comprises inorganic particles dispersed in a vehicle comprising an organic resin and a solvent, optionally together with an inorganic binder, said solvent comprising 2-tetradecanol or a mixture of 2-tetradecanol and another solvent.

5,601,639

SYSTEM AND METHOD FOR ACHIEVING RUNNABILITY AND JET STRAIGHTNESS FOR A DIGITAL COLOR PRESS

Shiow-Meei L. Myers; Hilarion Braun; Larry G. Calhoun; Bipin G. Bhatt, and Eric J. Stevenson, all of Dayton, Ohio, assignors to Scitex Digital Printing, Inc., Dayton, Ohio

Filed May 4, 1995, Ser. No. 434,601

Int. Cl.[6] C09D *11/02*

U.S. Cl. 106—22 R **10 Claims**

1. A primary color ink jet ink composition for use with a digital color press, the primary color ink jet ink composition comprising a liquid vehicle, a single dye component, the dye component being water soluble and selected from the group consisting of Direct Yellow 86, Acid Red 249, Acid Red 92 and Direct Blue 199, an ethoxylated acetylenic diol surfactant and ethylene glycol.

5,601,640

COMMAND-CURABLE COMPOSITION

Helen M. Anstice, London, and John W. Nicholson, Hampton, both of England, assignors to British Technology Group Limited, London, England

PCT No. PCT/GB87/00085, § 371 Date Mar. 23, 1995, § 102(e) Date Mar. 23, 1995, PCT Pub. No. WO88/05651, PCT Pub. Date Aug. 11, 1988

PCT Filed Nov. 1, 1993, Ser. No. 403,861

Claims priority, application United Kingdom, Nov. 4, 1992, 9223068

Int. Cl.[6] A61K *6/08;6/06*

U.S. Cl. 106—35 **14 Claims**

1. A command-curable composition comprising:

(a) a partly esterified phosphonic acid being equivalent to the reaction product between a precursor of a poly(vinyl phosphonic acid) and a polyhydric alcohol, in the mole ratio (0.2–5.0) phosphonic acid groups: 1 esterifying group;

(b) an initiator;

(c) cation-leachable glass powder and/or amphoteric or basis metal oxide;

(d) poly(vinyl phosphonic acid); and

(e) a bulky molecule compatible with component (a) and having at least two vinyl groups through which it may cross-link/polymerize to yield a completely hydrophobic polymer, said bulky molecule being a dimethacrylate;

said partly esterified phosphonic acid (a) being present in an amount to promote adhesion and to promote compatibility and miscibility of the other components of the composition;

the weight ratio of component (d) to component (c) being from 1:2 to 1:5.5; and

the weight ratio of component (d) to component (a)+component (e) being from 1:1.3 to 1:2.7.

5,601,641

MOLD RELEASE COMPOSITION WITH POLYBUTADIENE AND METHOD OF COATING A MOLD CORE

William D. Stephens, Clearwater, Fla., assignor to TSE Industries, Inc., Clearwater, Fla.

Continuation-in-part of Ser. No. 196,653, Feb. 14, 1994, abandoned, which is a continuation-in-part of Ser. No. 43,038, Apr. 5, 1993, Pat. No. 5,298,556, which is a continuation-in-part of Ser. No. 917,772, Jul. 21, 1992, Pat. No. 5,219,925.

This application Dec. 15, 1995, Ser. No. 573,000

Int. Cl.[6] C09D *109/00;109/10;4/00;* **C08L** *9/00*

U.S. Cl. 106—38.25 **10 Claims**

1. An aqueous mold release composition for use in coating core surfaces in contact with rigid or flexible urethane foams, or urethanes, silicones, natural rubber, neoprene or other synthetic elastomers, the composition comprising by weight:

0.1 to 12% a silane selected from the group consisting of methyl trimethoxysilane, ethyl-triethoxysilane, fluoro-triethoxysilane, methyl triethoxysilane, vinyl triethoxysilane, vinyl trimethoxysilane, Gamma-ureidopropyltrialkoxysilane, where the alkoxy group has one to three carbon atoms, Gamma-glycidoxypropyltrimethoxysilane, octyltriethoxysilane, Gamma-amino propyltriethoxysilane, Gamma-isocyanatopropyltriethoxysilane, tetraethoxysilane, Gamma-methacryloxypropyl trimethoxysilane, Beta- (3, 4-epoxycyclohexyl) ethyltrimethoxy-silane, Gamma-mercaptopropyltrimethoxysilane, and vinyl-tris (2-methoxyethoxy) silane,

0 to 16% a methyl terminated polydimethylsiloxane emulsified polymer,

0 to 10% a non-ionic surfactant,

0 to 8% a fluorinated alkyl ester surfactant,

0 to 2.5% an ethoxylated amine surfactant,

0 to 12.5% a silanol terminated polydimethylsiloxane having a weight average molecular weight of 400 to 310,000,

0.1 to 8% a lower alkyl alcohol wherein the alkyl has 1–3 carbon atoms,

0 to 2% a fungicide,

0 to 20% a metallic salt of an organic acid,

0.5 to 2% a weak acid to maintain the pH between 4.5–5.5,

0.1 to 15% hydroxyl terminated polybutadiene, and

40 to 97% water.

5,601,642

BITUMINOUS COMPOSITIONS FOR SOUNDPROOFING MATERIALS

Bruno M. G. Drieskens, Sint-Gillis; Jean-Phillippe Hallet, Woluwe Sant-Pierre, and Nicoles M. Lecouvet, Braine-L'Alleud, all of Belgium, assignors to Fina Research, S.A., Feluy, Belgium

Filed Jul. 29, 1994, Ser. No. 282,664

Claims priority, application Belgium, Jul. 29, 1993, 09300793

Int. Cl.[6] C09D *195/00*

U.S. Cl. 106—273.1 **6 Claims**

1. A soundproofing bituminous composition comprising the following mixture:

(a) 25 to 95 weight percent of oxidized bitumen;

(b) 5 to 75 weight percent of styrene-conjugated dienes block copolymers; and,

(c) 0 to 20 weight percent of process oil, the total representing 100 weight percent of the mixture.

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5,601,643

FLY ASH CEMENTITIOUS MATERIAL AND METHOD OF MAKING A PRODUCT

Thomas Silverstrim, Collingdale; Hossein Rostami, Philadelphia, both of Pa.; Jesus Larralde, Clovis, Calif., and Anamolah Samadi, Philadelphia, Pa., assignors to Drexel University, Philadelphia, and By-Products Development Co., Collingdale, both of Pa.

Continuation of Ser. No. 507,096, Jul. 26, 1995, abandoned, which is a continuation of Ser. No. 389,850, Feb. 17, 1995, abandoned. This application May 16, 1996, Ser. No. 649,413

Int. Cl.[6] C04B *12/04*

U.S. Cl. 106—624 20 Claims

1. A high strength cementitious binder mixture comprising fly ash and an alkali metal or alkaline earth metal silicate binder, the silicate binder comprising an alkali metal or alkaline earth metal silicate component and an alkali metal or alkaline earth metal hydroxide component wherein the silicate binder has a SiO_2:M_2O weight ratio of about 0.20:1 to about 0.75:1, wherein M is selected from the group consisting of Na, Li, K, ½Ca and ½Mg and, further, wherein sufficient silicate binder is present to provide said cementitious binder mixture with a compressive strength after curing of at least about 2000 psi.

5,601,644

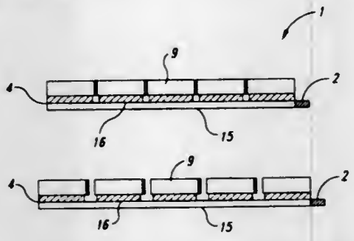
MULTICOLOR STAMP PAD

Ryo Yasoshima, Tokyo, Japan, assignor to Tsukineko, Inc., Redmond, Wash.

Filed May 19, 1995, Ser. No. 446,205

Int. Cl.[6] B41K *1/42*

U.S. Cl. 118—46 18 Claims



1. A multicolor stamp pad comprising a plurality of ink pads disposed in a line on an extension member such that said ink pads contact one another when said extension member is non-extended and do not contact one another when said extension member is extended.

5,601,645

SUBSTRATE HOLDER FOR A SUBSTRATE SPIN TREATING APPARATUS

Masahiro Nonomura, and Masaru Kitagawa, both of Kyoto, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Japan

Filed Oct. 20, 1994, Ser. No. 326,525

Claims priority, application Japan, Oct. 28, 1993, 5-294212

Int. Cl.[6] B05C *11/02*

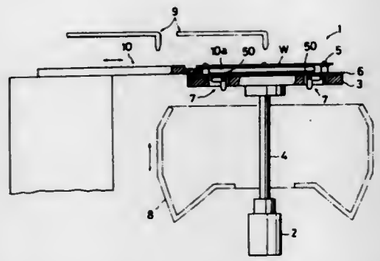
U.S. Cl. 118—52 17 Claims

1. A substrate holder for use in a substrate spin treating apparatus which carries out a desired treatment by supplying treating liquid to an upward facing surface of a substrate that is spinning, said substrate holder comprising:

a turntable rotatable in a horizontal plane;

drive means for rotating said turntable;

support means arranged on said turntable for supporting a substrate in a horizontal posture and spaced above an upper surface of said turntable;



a vertically movable member disposed between said turntable and a substrate being supported by said support means; and

raising and lowering means for lowering said vertically movable member to a lower position adjacent said turntable when said turntable is at rest, and raising said vertically movable member to an upper position where said vertically movable member is adjacent a substrate being supported by said support means to protect a lower surface of the substrate from adhesion of the treatment liquid when said turntable is in rotation.

5,601,646

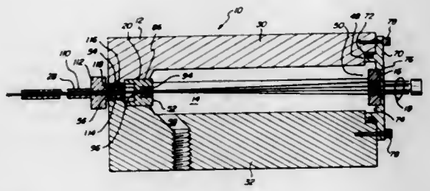
APPARATUS FOR APPLYING GEL TO A PLURALITY OF OPTICAL FIBERS

Scott J. Gardner, and Scotty B. Hansley, both of Hickory, N.C., assignors to Alcatel NA Cable Systems, Inc., Claremont, N.C.

Filed May 26, 1995, Ser. No. 451,536

Int. Cl.[6] B05C *3/00*

U.S. Cl. 118—405 12 Claims



1. An apparatus for applying gel to a plurality of optical fibers, comprising:

a housing, said housing having a cavity therein, said cavity having a first end terminating proximate a first end wall of said housing and a second end terminating within said housing, said housing includes first and second members cooperatively sized and shaped such that when placed together the cavity is formed, said members being secured together along a first side thereof by a hinge means and being provided with one or more latch means on a second side thereof;

means, disposed at said first end of said cavity, for separating a plurality of optical fibers entering into said cavity, said means for separating said optical fibers including a faceplate having a plastic insert associated therewith, said plastic insert having a plurality of spaced apart holes therethrough, each of said spaced apart holes being cooperatively sized to allow one of said optical fibers to pass therethrough;

means, disposed at said second end of said cavity, for guiding said optical fibers out of said cavity; and

injecting means, in fluid communication with said housing, for injecting a gel into said cavity such that each said optical fiber is coated with said gel.

5,601,647

PRODUCTION OF A MAGNETIC RECORDING MEDIUM

Albert Pertzsch, München; Reinhard Kraetschmer, Landsberg; Michael Breitsameter, Munich, and Siegfried Rieger, Groebenzell, all of Germany, assignors to BASF Magnetics GmbH, Mannheim, Germany

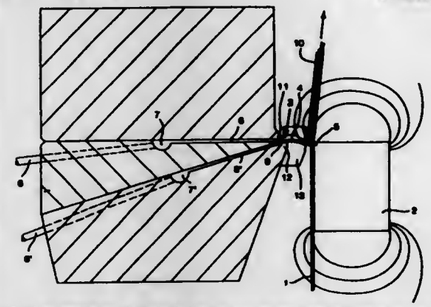
PCT No. PCT/EP93/02017, § 371 Date Feb. 1, 1995, § 102(e) Date Feb. 1, 1995, PCT Pub. No. WO94/03890, PCT Pub. Date Feb. 17, 1994

PCT Filed Jul. 29, 1993, Ser. No. 379,528

Claims priority, application Germany, Aug. 7, 1992, 42 26 139.2; Aug. 7, 1992, 42 26 138.4

Int. Cl.[6] B05D *3/12*

U.S. Cl. 118—419 8 Claims



1. An apparatus for applying one or more magnetizable layers one on top of the other to a flexible nonmagnetic substrate comprising an extrusion coater having at least two coater slots, wherein an upper edge of an upper outlet orifice arranged in the transport direction of the substrate is recessed with respect to a lower edge of a lower outlet orifice, a right parallelepiped magnet whose upper edge is opposite a common outlet orifice of the coater slots at a distance of from 0.1 to 5 mm away therefrom is arranged behind the substrate and parallel thereto, a stripping plate which extends essentially perpendicular to the common outlet orifice is mounted at both coating edges, the outflowing coating dispersion runs off along an inner surface of a stripping plate, and the stripping plate is extended by an amount (a) beyond the lower or upper extruder edge in the direction of the coated substrate (1).

5,601,648

APPARATUS FOR APPLYING TREATING LIQUOR TO A TRAVELING TEXTILE WEB

Helge Freisberg, Monchen-Gladbach, and Peter Mevissen, Erkelenz, both of Germany, assignors to A. Monforts GmbH & Co., Monchen-Gladbach, Germany

Filed Aug. 9, 1993, Ser. No. 104,188

Claims priority, application Germany, Aug. 7, 1992, 42 26 170.8

Int. Cl.[6] B05C *3/12*

U.S. Cl. 118—419 7 Claims

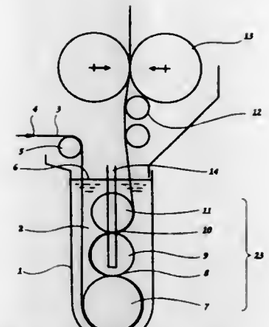
1. An apparatus for applying treating liquor to a traveling textile web comprising:

(a) a vat containing treating liquor;

(b) at least three web guiding rolls submerged in the treating liquor in said vat and arranged in a substantially vertical sequence with adjacent rolls being in contact to form nips therebetween, said rolls being arranged for guiding the textile web down into the treating liquor, under the lowermost roll of said vertical sequence of rolls, through the nips adjacent rolls and then away from the treating liquor;

(c) the upper roll of said adjacent rolls being supported in said vat for resting under its own weight on the next lower of said adjacent rolls to apply pressure at the nip on the textile web traveling therethrough; and

(d) drive means for driving at least one of the rolls of said plurality of rolls with at least one other roll of said plurality of rolls being driven by surface contact with an adjacent roll for positive feed at a uniform surface speed of the textile web through the treating liquor to substantially prevent the longitudinal stretching of the textile web.



5,601,649

OXIDE SUPERCONDUCTING FILM MANUFACTURING APPARATUS

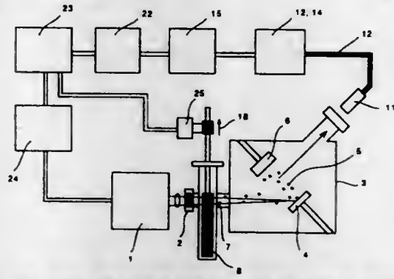
Kousou Fujino; Satoshi Takano; Noriyuki Yoshida, all of Osaka; Tsukushi Hara, and Hideo Ishii, both of Chofu, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Japan

Continuation of Ser. No. 97,789, Jul. 26, 1993, Pat. No. 5,489,338. This application Jun. 29, 1995, Ser. No. 496,564

Claims priority, application Japan, Jul. 30, 1992, 4-203859

Int. Cl.[6] C23C *14/28*

U.S. Cl. 118—688 5 Claims



1. An oxide superconducting film manufacturing apparatus employing laser ablation method, said apparatus comprising:

a thin film forming chamber having a laser-transparent laser entrance window;

a target, being provided in said thin film forming chamber, containing components of an oxide superconductor;

a laser beam source for irradiating said target with a laser beam from the exterior of said thin film forming chamber through said laser entrance window;

first detection means for detecting intensity of light emission from a specific luminous species contained in particles being scattered from said target during film formation;

means for controlling power of said laser beam being emitted from said laser beam source so that said intensity of light emission from said luminous species is constant during film formation in response to a light emission intensity detection output from said first detection means;

second detection means for detecting a control limit of said control means;

a movable laser-transparent plate being provided between said laser entrance window and said target; and

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means for moving said movable laser-transparent plate in response to a detection output from said second detection means.

5,601,650

PROCESS AND DEVICE FOR DYEING HISTOLOGICAL PREPARATIONS ARRANGED ON MICROSCOPE SLIDES

Helmut Goldbecker, and Reinhard Vauth, both of Isernhagen, Germany, assignors to Medite Gesellschaft fur Medizintechnik mbH, Burgdorf, Germany

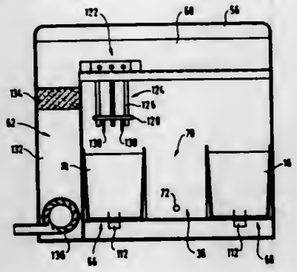
PCT No. PCT/DE92/00453, § 371 Date Jan. 27, 1994, § 102(e) Date Jan. 27, 1994, PCT Pub. No. WO92/21953, PCT Pub. Date Dec. 10, 1992

PCT Filed May 26, 1992, Ser. No. 150,168

Claims priority, application Germany, May 29, 1991, 41 17 833.5

Int. Cl.[6] B05C *11/00;3/00;* B05D *3/00;1/38*

U.S. Cl. 118—697 42 Claims



10. Device for simultaneously performing a plurality of methods for dyeing histological preparations arranged on microscope slides, said device comprising:

a plurality of slide holders;

a feed station, the feed station having a plurality of positions for the slide bolders;

a plurality of processing stations;

control means, comprising a memory in which a plurality of program lines for dyeing methods is stored, each program line including transport times, processing times, processing temperatures and locations of individual processing stations, wherein, said feed station positions are identified in the memory for a dyeing program to be conducted, and a computer that calculates a program start for each selected dyeing method for a non-overlapping parallel run of the program lines;

a conveyor for individually transporting each object slide holder to the processing stations, the conveyor including coupling elements to releasably engage a slide holder so that the conveyor is available to transport another slide holder;

the conveyor being operatively connected to the control means, wherein the control means directs the conveyor to transport each slide holder in succession from the feed station to a series of processing stations according to a dyeing method selected for said each slide bolder;

the control means controlling the conveyor for transport of the slide holders to the processing stations in a parallel non-overlapping processing sequence; and,

a removal station in which slide holders are placed after a dyeing program is completed.

5,601,651

FLOW CONTROL VALVE FOR USE IN FABRICATION OF SEMICONDUCTOR DEVICES

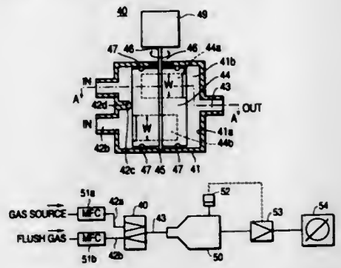
Masahiro Watabe, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 121,508, Sep. 16, 1993, abandoned. This application Dec. 14, 1994, Ser. No. 355,647

Claims priority, application Japan, Sep. 17, 1992, 4-246978; Jul. 30, 1993, 5-190604

Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—715 6 Claims



5. A vapor phase deposition apparatus for depositing a semiconductor layer on a substrate from a vapor phase material, comprising:

a plurality of containers for storing and supplying gaseous source materials of said semiconductor layer;

a reaction chamber for supporting said substrate;

a piping system connected to said plurality of containers and to said reaction chamber for supplying said gaseous source materials from said plurality of containers to said reaction chamber; and

a fluid switching valve provided on said piping system for selectively supplying said plurality of gaseous source materials to said reaction chamber;

said fluid switching valve comprising:

a valve box having a plurality of inlets for introducing a plurality of fluids, a single outlet for discharging a fluid, and a single passage of fluid defined by an inner wall and provided in said valve box so as to communicate between said plurality of inlets and said single outlet;

a valve element provided in said passage of said valve box so as to be rotatable about a rotational axis, said valve element having an outer surface in conformity to said inner wall of said passage of fluid for inhibiting said fluid to pass from said inlet to said outlet through said passage; and

a compartment wall means provided in engagement with said valve element for inhibiting a fluid introduced into any one of said plurality of inlets to flow to the other inlets;

said outer surface of said valve element being formed to inhibit a passage of said fluid from said inlet to said outlet for an arbitrary rotational angle of said valve element about said rotational axis;

said valve element carrying, on said outer surface thereof, a plurality of grooves provided in correspondence to said plurality of inlets such that each of said grooves extend along said outer surface of said valve element for an arc length when viewed in a direction of said rotational axis, each of said plurality of grooves guiding a fluid introduced to a corresponding inlet to said single outlet;

each of said plurality of grooves having a cross sectional area that changes from a first end of said groove to a second, opposite end of said groove;

each of said plurality of grooves being formed with mutually different angular positions when viewed in said direction of said rotational axis;

each of said plurality of grooves being formed to have a shape such that said fluid switching valve provides a substantially constant conductance of fluid.

5,601,652

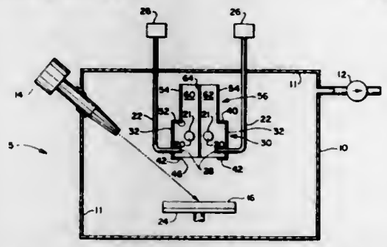
APPARATUS FOR APPLYING CERAMIC COATINGS

Richard S. Mullin, Pomfret, Conn.; Leo A. Riendeau, Springfield, Mass., and Nicholas E. Ulion, Marlborough, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Aug. 3, 1989, Ser. No. 389,216

Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—723 EB 11 Claims



1. In an electron beam physical vapor deposition apparatus for applying a coating to the surface of a component, said apparatus comprising a coating chamber defining a first volume, means for supporting a ceramic target within said coating chamber, means for evacuating said coating chamber, and means for evaporating said target by impinging an electron beam onto said target within said coating chamber, the improvement which comprises an enclosure within said coating chamber, said enclosure chamber defining a second volume less than said first volume and including means for securing the component to be coated therewithin and over the ceramic target, said enclosure including an opening adjacent to the target for admitting into said enclosure evaporant produced by impingement of said electron beam upon said coating target, means for admitting anionic constituent of the ceramic into said enclosure, and means for venting such anionic constituent from said enclosure.

5,601,653

APPARATUS FOR PERFORMING PLASMA PROCESS ON SEMICONDUCTOR WAFERS AND THE LIKE AND METHOD OF PERFORMING PLASMA PROCESS

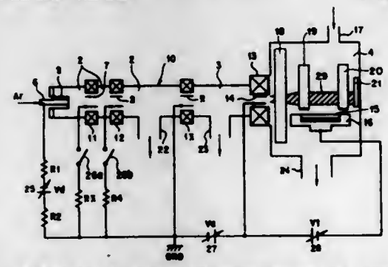
Masao Ito, Kitakami, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 29, 1994, Ser. No. 235,656

Claims priority, application Japan, Apr. 30, 1993, 5-104405; Apr. 19, 1994, 6-080344

Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—723 FE 3 Claims



1. An apparatus for performing plasma process on a semiconductor wafer or other material to be processed, comprising:

means for drawing an electron beam from an electron source plasma and for accelerating it;

a reaction chamber for receiving the electron beam and for allowing the to-be-processed material to be subjected to process by a created sheet-like plasma;

means for introducing into the reaction chamber a gas undergoing a reaction excited by the electron beam; and

at least one pair of magnet means, positioned in the reaction chamber in an opposed spaced relation with an electron beam path set therebetween, for forming a sheet-like electron beam by their magnetic field and for creating the sheet-like plasma through a gas reaction excited by the sheet-like electron beam so that a uniform plasma process can be performed at a uniform rate on the to-be-processed material wherein, in a solid reference plane extending perpendicularly from a Z-axis corresponding to a center line of the electron beam path, the at least one pair of magnet means, while maintaining a spacing at a value in a direction parallel to a Y-axis direction which is right-angled relative to the Z-axis direction, are positioned in a direction parallel to an X-axis direction and in opposed relation on opposite sides of the X-axis, which is right-angled relative to the Z-axis direction and the Y-axis direction.

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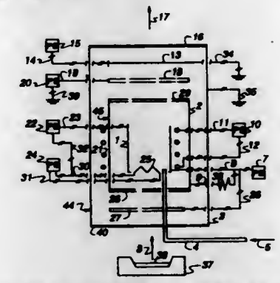
FLOW-THROUGH ION BEAM SOURCE

Robert W. Springer, Los Alamos, N.M., assignor to The Regents of the University of California, Office of Technology Transfer, Alameda, Calif.

Filed May 31, 1996, Ser. No. 657,844

Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—723 HC 8 Claims



1. An apparatus for forming a charge neutral ion beam comprising:

a. a means for isolating a plasma from its surrounding environment having a delivery aperture through which an ion beam passes, wherein said ion beam is formed of ions produced in said plasma;

b. a plasma chamber having a receiving end and a discharge end, said plasma chamber being disposed within said isolating means in such manner that ions which pass out of said plasma chamber discharge end pass through said delivery aperture;

c. a means for establishing a positive electrical potential between said plasma chamber and a reference location, whereby the magnitude of said electrical potential is effective to form a plasma;

d. a means for providing plasma gas to said receiving end of said plasma chamber;

e. a means for providing electrons to said receiving end of said plasma chamber;

f. a means for providing a magnetic field within said isolating means, such that lines of force of said magnetic field are normal to an electric field formed as a result of said electrical potential applied to said plasma chamber;

g. an accelerating grid disposed across said ion beam in a location adjacent to said plasma chamber and within said isolating means;

h. a means for maintaining a negative electrical potential between said accelerating grid and said reference location;

i. a means for providing electrons to said ion beam in a sufficient quantity to substantially neutralize said ion beam, wherein said electron providing means is located downstream of said accelerating grid;

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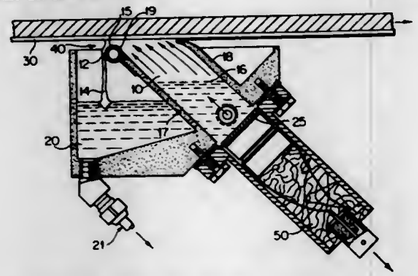
j. a retarding grid disposed adjacent to said plasma chamber receiving end;
k. a means for maintaining said retarding grid at a positive electrical potential about equal to the value of said plasma chamber electrical potential; and
l. a means for providing a feed material to said receiving end of said plasma chamber.

5,601,655

METHOD OF CLEANING SUBSTRATES

Hendrik F. Bok, 52 Thompson St., Fairhaven, Mass. 02719, and Philip J. Birbara, 52 Elm St., Windsor Locks, Conn. 06096

Filed Feb. 14, 1995, Ser. No. 388,076
Int. Cl.[6] B08B *3/00;3/04;3/12*
U.S. Cl. 134—1 **9 Claims**



1. Method of cleaning flat substrates comprising:
a. inverting a flat substrate to be cleaned such that a substrate surface to be cleaned is facing down;
b. moving the flat substrate horizontally in a preselected direction;
c. flowing an inclined stream of cleaning liquid at an acute angle, relative to the inverted substrate and opposite to the preselected movement direction of the substrate;
d. concurrently with flowing of the inclined stream, acoustically vibrating said flowing cleaning liquid parallel to flowing direction of the inclined stream of cleaning liquid;
e. elevating said flowing cleaning liquid at a point adjacent the substrate such that said flowing cleaning liquid contacts the substrate and forms a leading edge meniscus and trailing edge meniscus between said oppositely flowing cleaning liquid and said moving substrate to create a weir effect and clean the substrate;
f. injecting additional cleaning liquid transversely of the substrate into the flowing inclined stream of cleaning liquid, at a point which is adjacent the leading edge meniscus thereof and the substrate to be cleaned, so as to lift the inclined stream of cleaning liquid and to create an enhanced weir effect, while simultaneously discharging all of said flowing cleaning liquid downwardly and away from said moving substrate.

5,601,656

METHODS FOR CLEANING SILICON WAFERS WITH AN AQUEOUS SOLUTION OF HYDROFLUORIC ACID AND HYDRIODIC ACID

Li Li, Meridian, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Sep. 20, 1995, Ser. No. 530,940
Int. Cl.[6] B08B *3/04;3/08*
U.S. Cl. 134—2 **18 Claims**

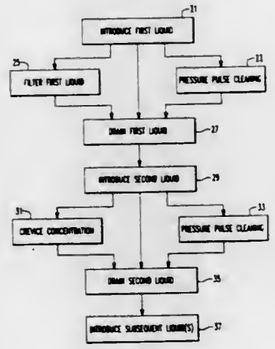
1. A method of cleaning a silicon wafer comprising the steps of:
cleaning a silicon surface of the silicon wafer in an aqueous solution of hydrofluoric acid and hydriodic acid in the presence of oxygen and light, wherein the aqueous solution of hydrofluoric acid and hydriodic acid has a concentration of hydrofluoric acid of about 0.1M–10M and has a concentration of hydriodic acid of about 0.001M–1M.

5,601,657

TWO-STEP CHEMICAL CLEANING PROCESS

Allen J. Baum, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 105,571, Aug. 13, 1993, Pat. No. 5,413,168. This application Apr. 24, 1995, Ser. No. 427,318
The portion of the term of this patent subsequent to May 9, 2012, has been disclaimed.
Int. Cl.[6] B08B *3/10;9/00*
U.S. Cl. 134—3 **21 Claims**



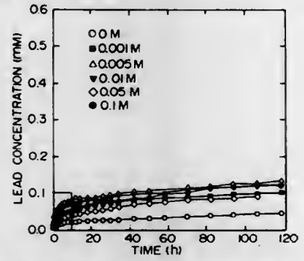
1. A method for cleaning a heat exchanger having a primary and a secondary side defined by a plurality of tubes, said tubes being supported by a plurality of tube support plates spaced apart from the secondary side of said tubes by a plurality of crevice regions, said secondary side having deposits on its surfaces and in said crevice regions, the method comprising the steps of:
introducing a first cleaning liquid into said secondary side;
supplying heat to said first cleaning liquid through said tubes from said primary side while maintaining a pressure above said first cleaning liquid equal to or greater than the saturation pressure;
reducing the pressure above said first cleaning liquid to below the boiling point pressure to effect boiling of said first cleaning liquid in said crevice regions of at least a first of said tube support plates;
terminating the step of reducing the pressure and returning the pressure above said first cleaning liquid to at least the saturation pressure;
removing at least a portion of said first cleaning liquid and solubilized deposits from said secondary side after a first period of time within said secondary side;
introducing a second cleaning liquid into said secondary side;
maintaining said second cleaning liquid within said secondary side a second period of time for penetration of said second cleaning liquid into said crevice regions, said second period of time being longer than said first period of time;
draining said secondary side of said heat exchanger.

5,601,658

METHOD OF TREATING LEAD-CONTAINING SURFACES TO PASSIVATE THE SURFACE LEAD

Benito J. Marinas, Champaign; Connie Bogard, Kildeer, both of Ill.; Yi Jiang, and Hsin-Ting Lan, both of West Lafayette, Ind., assignors to Purdue Research Foundation, West Lafayette, Ind.

Filed Jun. 30, 1995, Ser. No. 497,216
Int. Cl.[6] C23G *1/10*
U.S. Cl. 134—3 **26 Claims**



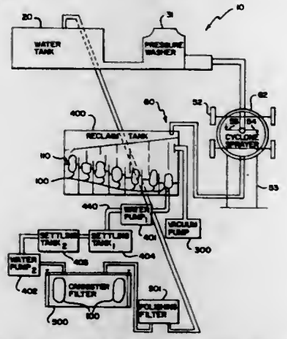
1. A method of treating a lead-containing copper-based alloy body to reduce the availability of lead to be removed therefrom comprising the steps of:
providing a $CuAc_2$ solution at a pH in the range of from about 3 to about 5 and at a $CuAc_2$ molar concentration of from about 0.001M to about 0.1M;
subjecting the alloy body to the $CuAc_2$ solution for a period of time effective to reduce the availability of lead; and washing the alloy body to remove the $CuAc_2$ solution.

5,601,659

MOBILE POWER WASH SYSTEM WITH WATER RECLAMATION AND HYDROCARBON REMOVAL METHOD

Richard D. Rohrbacher, Phoenix, Ariz., assignor to Cyclone Surface Cleaning, Inc., Tempe, Ariz.

Filed Mar. 13, 1995, Ser. No. 402,835
Int. Cl.[6] B08B *5/04;7/04*
U.S. Cl. 134—10 **8 Claims**



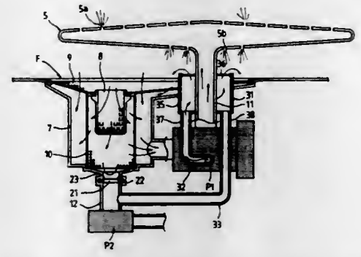
1. A method of cleaning flat surfaces using a cyclonic power wash system including a water storage means for storing a supply of water that is to be used for cleaning, a filter recycling system including a tank for receiving reclaimed water and mater that has been picked up, and means for transferring the filtered water from said filter recycling system tank into the water storage means so that it may be further used for cleaning by said power wash system,
wherein the improvement comprises the step of:
pessurizing water from the storage means;
spraying the pressurized water on the surface to be cleaned;
reclaiming the sprayed water along with mater picked up from the surface to be cleaned;
depositing the reclaimed water and picked up matter into the recycling tank;
placing a plurality of polypropylene bags in said recycling tank;
absorbing hydrocarbons suspended in or floating on the reclaimed water in said plurality of polypropylene bags.

5,601,660

FOOD DEBRIS FILTERING APPARATUS FOR DISHWASHER AND METHOD THEREOF

Simon Jeon, and Joon W. Kim, both of Seoul, Rep. of Korea, assignors to LG Electronics Inc., Rep. of Korea

Filed Jan. 11, 1996, Ser. No. 584,893
Claims priority, application Rep. of Korea, Sep. 19, 1995, 30720/1995
Int. Cl.[6] B08B *3/02*
U.S. Cl. 134—10 **12 Claims**



11. A food debris filtering method for a dishwasher, comprising the steps of:
a discharging path blocking step which stops a driving of washing water discharging means in a dish washing mode and blocks a washing water discharging path in cooperation with washing water circulation means;
a washing water circulation and refiltering step which sprays a part of washing water filtered by a filtering apparatus in cooperation with a driving of said washing water circulation means and supplies the remaining part thereof to an assistant filter;
a food debris gathering and storing step which gathers food debris filtered by the assistant filter and stores the thusly filtered food debris in a certain box;
a washing water discharging flowing path opening step which stops a driving of the washing water circulation means and opens a washing water flowing path by driving the washing water discharging means in a discharging mode; and
a food debris discharging step which discharges food debris to the outside of the system together with washing water in cooperation with a driving of the washing water discharging means.

5,601,661

METHOD OF USE OF THERMOPHOTOVOLTAIC EMITTER MATERIALS

Joseph B. Milstein, 134 Foster St., Brighton, Mass. 02135, and Ronald G. Roy, 15 Guile Ave., Tewksbury, Mass. 01876

Filed Jul. 21, 1995, Ser. No. 505,402
Int. Cl.[6] H01L *31/058*
U.S. Cl. 136—253 **7 Claims**

1. The method of using as a thermophotovoltaic emitter material a reticulated solid material comprising one or more periodic reticulated mesh physical structures which have a periodic reticulated with pore size in the range of 0.1 micron to 500 microns; and



wherein said material is fabricated from one or more substances selected from the group consisting of:

a. polycrystalline aluminum oxide and single crystalline aluminum oxide;
b. oxides, including chromium-doped aluminum oxide, titanium-doped aluminum oxide, yttrium aluminum garnet, synthetic garnets, perovskites, and spinels;
c. elemental silicon and elemental germanium;
d. III-V compounds, including gallium arsenide, indium phosphide, and gallium aluminum arsenide;
e. II-VI compounds, including zinc selenide, zinc sulphide, cadmium telluride, mercury telluride, and mercury cadmium telluride;
f. rare-earth doped oxide glasses; and
g. materials, including epoxies and plastics, which have a high dielectric constant and can be infiltrated into a porous body and then solidified;

in which broadband thermal or heat energy is applied to the material and one or more narrow intense emission bands are produced and directed to at least one photovoltaic cell for absorption therein and conversion to electrical energy.

5,601,662

METHOD OF INTRODUCING MAGNETIC ANISOTROPY INTO MAGNETIC MATERIAL

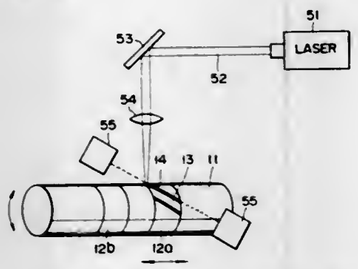
Takahiro Hirai, Kamakura; Tadahiko Kobayashi, and Masashi Sahashi, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 29, 1990, Ser. No. 545,628

Claims priority, application Japan, Jun. 30, 1989, 1-169620; Nov. 17, 1989, 1-298941

Int. Cl.[6] H01F *1/03*

U.S. Cl. 148—100 **17 Claims**



17. A method of introducing magnetic anisotropy into a magnetic material, comprising:

providing an energy beam having a spot size;

scanning said energy beam in a scanning direction at a scanning rate and scanning pitch thereby to selectively and locally heat a surface of said magnetic material to form a pattern of boundary phases apart from each other by 200 μm to 2 mm for magnetically dividing a main phase of said magnetic material into a plurality of regions to impart magnetic anisotropy to the divided main phase regions in a direction perpendicular to the scanning direction.

5,601,663

PROCESS FOR FORMING A BLACK OXIDE ON ALUMINUM ALLOYS AND A SOLUTION THEREFOR

Ravi Rungta, East Amherst; Robert R. Ahrens, Angola, and Mingguang Zhu, Buffalo, all of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 22, 1996, Ser. No. 605,405

Int. Cl.[6] C23F *7/00*

U.S. Cl. 148—271 **14 Claims**

1. A solution for forming a black oxide on a surface of an aluminum-containing metal, the solution comprising, per liter, about 0.05 to about 0.8 grams of tolyltriazole, about 0.2 to about 1.5 grams of sebacic acid, about 15 to about 50 milliliters of hexanoic acid, distilled water, about 1.6 to about 3.2 grams of sodium chloride, about 1.5 to about 3.0 grams of sodium sulfate and about 1.4 to about 2.8 grams of sodium bicarbonate, and a substance for maintaining the pH of the solution at about 7.5 to about 8.5 at a temperature of about 80° C. to about 90° C.

5,601,664

CORROSION-RESISTANT MAGNETIC MATERIAL

Theodore Kosa, Reading; Stephen M. Lukes, North Douglassville; Douglas W. Dietrich, Wernersville, and Terry A. DeBold, Wyomissing, all of Pa., assignors to CRS Holdings, Inc., Wilmington, Del.

Continuation of Ser. No. 321,229, Oct. 11, 1994, abandoned. This application Nov. 8, 1995, Ser. No. 555,508

Int. Cl.[6] C22C *38/18*

U.S. Cl. 148—325 **12 Claims**

1. A free-machining, corrosion resistant, ferritic steel alloy consisting essentially of, in weight percent, about:

C	0.05 max.
Mn	0.1–2.0
Si	0.70–1.5
P	0.035 max.
S	0.1–0.5
Cr	15–20
Mo	1.00–3.00
Ti	0.02 max.
Al	0.05 max.
Nb	0.1–0.6
Ni	0.2–0.6
Cu	0.25 max.
N	0.06 max.

and the balance is essentially iron, wherein Cr, Mo, and Nb are balanced such that the alloy contains at least about 1.5% Mo when less than about 0.35% Nb and less than about 18% Cr are present, and the elements C, N, and Nb are balanced within their respective weight percent ranges such that the ratio, Nb/(C+N), is about 7–12.

5,601,665

PROCESS FOR IMPROVING THE BEND FORMABILITY OF COPPER ALLOYS

Ronald N. Caron, Branford, and John F. Breedis, Trumbull, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Division of Ser. No. 233,147, Apr. 25, 1994, Pat. No. 5,486,244, which is a continuation-in-part of Ser. No. 135,760, Oct. 18, 1993, Pat. No. 5,370,840, and Ser. No. 971,499, Nov. 4, 1992, Pat. No. 5,306,465. This application May 8, 1995, Ser. No. 436,894

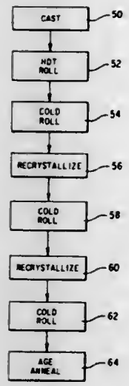
Int. Cl.[6] C22F *1/08*

U.S. Cl. 148—554 **29 Claims**

1. A method for the manufacture of a copper alloy, comprising the steps of:

a) casting a copper alloy containing chromium, zirconium and less than about 0.25%, by weight, of nickel;

b) heating said copper alloy for at least partial homogenization;



c) following step (b), hot rolling said copper alloy to an area reduction in excess of about 50% and then immediately quenching said copper alloy;

d) cold rolling said copper alloy to an area reduction in excess of about 25%;

e) solutionizing said copper alloy thereby removing coarse second phase precipitates from the alloy;

f) cold rolling said copper alloy to final gauge; and

g) after step (f) aging by heating said copper alloy.

5,601,666

Patent Not Issued For This Number

5,601,667

PROCESS FOR PRODUCING HOT FORGED STEEL HAVING EXCELLENT FATIGUE STRENGTH, YIELD STRENGTH, AND MACHINABILITY

Toshihiko Takahashi, Chiba-ken; Tatsuro Ochi, Hokkaido, and Fusao Ishikawa, Chiba-ken, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Jun. 8, 1995, Ser. No. 454,138

Claims priority, application Japan, Oct. 12, 1993, 5-254333

Int. Cl.[6] C21D *8/00*

U.S. Cl. 148—649 **2 Claims**

1. A process for producing a hot forged steel of ferrite +bainite structure type usable as structural steel in an as hot forged and aged condition, and having excellent fatigue strength, yield strength and machinability, which process comprises:

applying hot forging to a steel material comprising, by weight,

C: 0.10–0.35%,

Si: 0.15–2.00%,

Mn: 0.40–2.00%,

S: 0.03–0.10%,

Al: 0.0005–0.050%,

Ti: 0.003–0.050%,

N: 0.0020–0.0070%,

V: 0.30–0.70%, and with the balance being Fe and impurities, wherein the finishing temperature of the forging is not less than 1050° C.;

cooling the steel thereafter so that 80% or more of the metallographic structure after transformation is ferrite+bainite structure; and

applying an aging treatment to the steel at a temperature of 200°–700° C. to precipitate VC and VN.

5,601,668

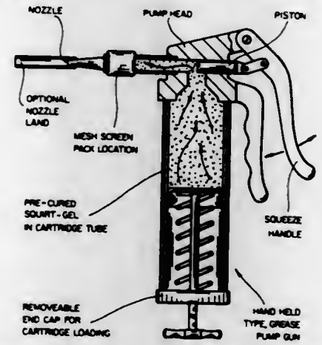
ENVIRONMENTAL SEALING

William D. Uken, Fremont, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 195,727, Feb. 14, 1994, Pat. No. 5,418,001, which is a continuation of Ser. No. 666,552, Mar. 7, 1991, Pat. No. 5,286,516, which is a continuation of Ser. No. 275,444, Nov. 23, 1988, abandoned, which is a continuation-in-part of Ser. No. 126,655, Dec. 1, 1987, abandoned. This application May 23, 1995, Ser. No. 448,007

Int. Cl.[6] B03D *5/12*; H01B *13/00*

U.S. Cl. 156—48 **17 Claims**



1. A method of environmentally protecting a substrate which comprises:

(a) providing a sealing material having an ultimate elongation according to ASTM D638-80 of at least 100% and a cone penetration according to ASTM D217-68 at 21° C. of greater than 100 (10^{-1} mm);

(b) subjecting the material to mechanical deformation in the presence of a solvent or suspending medium; and

(c) then causing the material to flow over a surface of the substrate.

12. A method of environmentally sealing a substrate which comprises:

(a) providing a sealing material having an ultimate elongation according to ASTM D638-80 of at least 100% and a cone penetration according to ASTM D217-68 at 21° C. of greater than 100 (10^{-1} mm);

(b) providing a container around the substrate;

(c) subjecting the material to shear; and

(d) placing the material into the container such that it surrounds the substrate.

14. A method according to claim 12, in which:

(a) the material is subjected to shear;

(b) then the material is placed into the container; and

(c) then the container with the material therein is positioned around the substrate.

5,601,669

APPARATUS AND METHOD FOR ATTACHING FITMENTS TO CARTONS

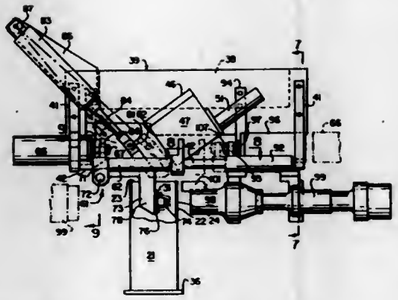
Rodger A. Moody, San Jose; Gerald M. Blain, Los Gatos, and Ronald J. Billet, Sunnyvale, all of Calif., assignors to Portola Packaging, Inc., San Jose, Calif.

Filed Oct. 4, 1994, Ser. No. 317,561

Int. Cl.[6] B32B *31/16*

U.S. Cl. 156—73.1 **9 Claims**

1. A method of attaching a fitment to a carton wherein said carton comprises a rectangular tube having walls and an open upper end, one said wall being formed with a hole and wherein said fitment comprises a spout smaller than said hole, and a peripheral flange at one end of said spout larger than said hole, said method comprising the steps of



moving said carton substantially horizontally parallel to a first substantially vertical plane to a fitment application position with said open end exposed, holding said carton stationary,

moving a first carriage substantially parallel to a second substantially vertical plane, substantially perpendicular to said first vertical plane to a first carriage retracted position,

oscillating an arm pivotally mounted on said first carriage substantially parallel to said second vertical plane, to a first arm position, said arm having a spud,

applying a fitment to said spud while said arm is in first arm position adjacent said fitment application position,

oscillating said arm substantially parallel to said second vertical plane to a second arm position with said spud and said fitment inside said carton and said fitment aligned with said hole,

moving said first carriage substantially horizontally substantially parallel to said second vertical plane from said first carriage retracted position to a first carriage advance position and thereby moving said fitment laterally so that said spout protrudes out through said hole and said flange engages the inside of said one wall,

moving a second carriage on which is mounted an annular welding head substantially horizontally substantially parallel to said second vertical plane from a second carriage retracted position to a second carriage projected position with said head engaging said one wall and surrounding said hole, said spout fitting inside said welding head,

clamping said one wall and said flange between said welding head and said arm, and

welding said flange to said one wall in weld.

5,601,670

FLEXIBLE AND NON-WATER ABSORBING INSULATION SYSTEM

George D. Rhoades, LaGrange, Ill., assignor to Liquid Carbonic Corporation, Oak Brook, Ill.

Continuation of Ser. No. 152,855, Nov. 15, 1993, abandoned. This application Jun. 2, 1995, Ser. No. 458,447

Int. Cl.[6] B29C *65/00*

U.S. Cl. 156—80 **30 Claims**

1. A method for thermally insulating an article, said method comprising

(a) wrapping the exposed surfaces of the article to be insulated with at least two wraps of a flexible sheet material having (1) a first thermoplastic layer having gas-filled cells formed in one planar surface and a relatively smooth surface as the second and opposite planar surface, (2) a second metallized thermoplastic layer, and (3) a bonding layer interdisposed between and directly contacting both the relatively smooth surface of the first layer and the second layer for bonding the first and second layers to each other, whereby the exposed surfaces of the article are wrapped with the flexible sheet material such that, for each wrap, the gas-filled cell surface of the first layer is located in closer proximity to the exposed surface of the article than the second layer bonded to that first layer; and

(b) securing the flexible sheet material to hold the flexible sheet material in place around the article;

whereby the article is insulated by one layer of gas-filled cells and one layer of metallized thermoplastic per each wrap of the flexible sheet material.

5,601,671

PROCESS AND INSTALLATION FOR THE MANUFACTURE OF NARROW FABRICS, IN PARTICULAR PATTERNED LABEL RIBBONS

Francisco Speich, Oberfrick, Switzerland, assignor to Textilma AG, Oberfrick, Switzerland

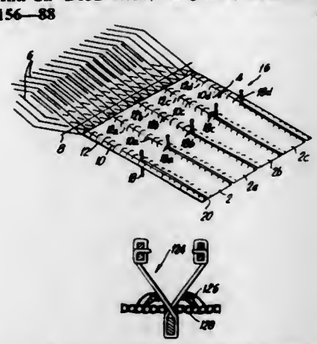
PCT No. PCT/CH92/00120, § 371 Date Jan. 28, 1994, § 102(e) Date Jan. 28, 1994, PCT Pub. No. WO93/02241, PCT Pub. Date Feb. 4, 1993

PCT Filed Jun. 24, 1992, Ser. No. 30,180

Claims priority, application Switzerland, Jul. 18, 1991, 2143/91

Int. Cl.[6] D03D *47/50;* **D03J** *1/06;* **D06H** *7/00*

U.S. Cl. 156—88 **22 Claims**



1. A process for the manufacture of narrow fabrics, the process comprising manufacturing a wide fabric run with hollow fabric areas extending along predefined cutting lines, each hollow fabric area being manufactured by providing a front fabric portion and a rear fabric portion, the front fabric portion and the rear fabric portion having edges, wherein the edges of the front and rear fabric portions are connected to each other to form a hollow space, cutting the fabric run along the cutting lines such that the front and rear fabric portions are not connected to one another, and laterally shortening the rear fabric portions of the cut hollow fabric areas relative to the front fabric portions.

14. An apparatus for manufacturing narrow fabrics, the apparatus comprising a device for manufacturing a wide fabric run with hollow fabric areas extending along predefined cutting lines, each hollow fabric area having a front fabric portion and rear fabric portion, each fabric portion having edges, wherein the edges of the front and rear fabric portions are connected to each other to form a hollow space, and a cutting device for cutting the fabric run along the cutting lines into single narrow fabrics such that the front and rear fabric portions are not connected to one another and the rear fabric portion is shorter than the front fabric portion.

5,601,672

METHOD FOR MAKING CERAMIC SUBSTRATES FROM THIN AND THICK CERAMIC GREENSHEETS

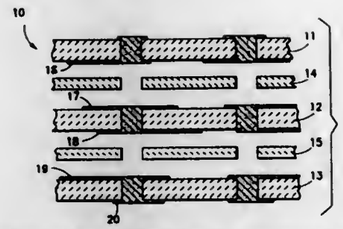
Jon A. Casey; Dinesh Gupta, both of Poughkeepsie, N.Y., and James R. Wylder, Round Rock, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 1, 1994, Ser. No. 333,010

Int. Cl.[6] B32B *31/12;31/26*

U.S. Cl. 156—89 **10 Claims**

1. Method for making multilayer ceramic substrates from a plurality of dielectric ceramic greensheet layers patterned with



paste-applied conductive circuit layers interconnected by paste-applied conductive vias, including at least one thin dielectric ceramic greensheet layer having a thickness less than about 3 mils which is susceptible to undergoing distortion and loss of mechanical strength if conductive paste is applied directly thereto, comprising the steps of producing a plurality of thick dielectric ceramic greensheet layers and at least one said thin greensheet layer, wherein said thick dielectric ceramic greensheet layers are thicker than said at least one thin greensheet layer, forming vias in each of said greensheet layers; applying conductive metal paste to at least the undersurface of one of said thick greensheet layers and to at least the upper surface of another of said thick greensheet layers to fill the vias and form conductive circuit layers thereon; drying said filled vias and circuit layers; interposing a said thin greensheet layer, which is devoid of conductive metal paste, between a pair of said thick greensheet layers so that the opposed surfaces of said thin greensheet layer each contact a said dried conductive circuit layer present on a said thick greensheet layer; and laminating and sintering said layers to form a multi-layer ceramic substrate having a conductive circuit layer present between each of said greensheet layers and having conductive vias interconnected therewith.

5,601,673

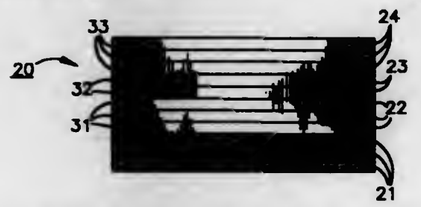
METHOD OF MAKING CERAMIC ARTICLE WITH CAVITY USING LTCC TAPE

John H. Alexander, Goletta, Calif., assignor to Ferro Corporation, Cleveland, Ohio

Filed Jan. 3, 1995, Ser. No. 367,560

Int. Cl.[6] B32B *31/04;31/26*

U.S. Cl. 156—89 **3 Claims**



1. A method for making a ceramic electronic device formed of multiple layers of dielectric tape having a cavity therein and at least one shelf portion protruding laterally into the cavity spaced from the cavity floor comprising the steps of:

constructing a laminated product using strips of dielectric tape comprising fusible ceramic particles and a binder, said strips being cut to predetermined dimensions and superposed so as to define a cavity with a floor and side walls, and with at least one horizontal shelf portion extending from a side wall into said cavity, said shelf portion being spaced above said floor;

filling said cavity during the construction of said laminated product with a fugitive insert to support said shelf portion, said fugitive insert comprising multiple strips of tape formed of an evanescent material having approximately the same thickness as said strips of dielectric tape so as to provide the laminated product comprising multiple strips of said dielectric tape and said cavity filled with multiple strips of said tape formed of an evanescent material; and

firing said laminated product to fuse said ceramic particles of said dielectric tape and to burn off said fugitive insert to provide a ceramic article with a cavity and a shelf parallel to the cavity floor.

5,601,674

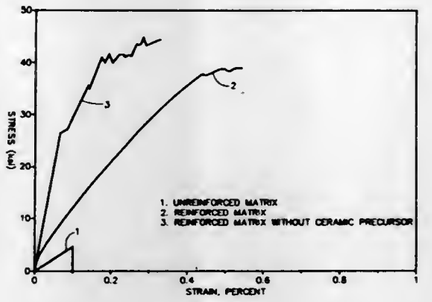
FIBER REINFORCED CERAMIC MATRIX COMPOSITE MEMBER AND METHOD FOR MAKING

Andrew Szweda, Middletown; Michael L. Millard, Sharonville, both of Ohio, and Michael G. Harrison, Bear, Del., assignors to General Electric Company, Cincinnati, Ohio

Division of Ser. No. 341,339, Nov. 16, 1994, Pat. No. 5,488,017, which is a continuation of Ser. No. 129,802, Sep. 28, 1993, abandoned, which is a continuation of Ser. No. 740,549, Aug. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 341,000, Apr. 14, 1989, abandoned. This application Jun. 7, 1995, Ser. No. 473,391

Int. Cl.[6] C04B *38/00*

U.S. Cl. 156—89 **18 Claims**



1. A method of making a fiber-reinforced composite member having a ceramic matrix characterized by open porosity uniformly distributed therein so as to control the strength of a matrix-to-fiber bond between the ceramic matrix and reinforcing fibers within the fiber-reinforced composite member, the method comprising the steps of:

mixing a polymer substance, inorganic particles and a quantity of ceramic particles to form a matrix mixture slurry, the inorganic particles constituting a particulate inorganic filler which exhibits net expansion relative to the ceramic particles when heated, the polymer substance, the ceramic particles and the inorganic particles being combined in proportions that yield the open porosity in the ceramic matrix following a subsequent heating step in which the polymer substance is transformed to a substantially crystalline ceramic phase that constitutes a portion of the ceramic matrix;

interspersing the matrix mixture slurry about oxidation-stable reinforcing fibers to form a body; and

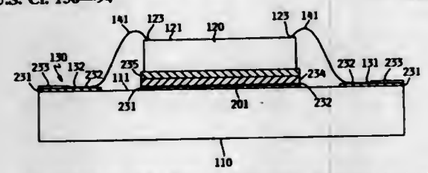
heating the body so as to produce the fiber-reinforced composite member, the heating step being conducted in an oxidizing atmosphere so as to transform the polymer substance to yield the substantially crystalline ceramic phase and produce the open porosity uniformly distributed within the ceramic matrix, the substantially crystalline ceramic phase and the ceramic particles forming the ceramic matrix such that the substantially crystalline ceramic phase bonds the ceramic particles to the reinforcing fibers, the open porosity of the ceramic matrix being generated in an amount sufficient to control the strength of the matrix-to-fiber bond between the ceramic matrix and the reinforcing fibers such that the load-carrying characteristic of the fiber-reinforced composite member is characterized as being fiber-dominated and not matrix-dominated.

5,601,675

REWORKABLE ELECTRONIC APPARATUS HAVING A FUSIBLE LAYER FOR ADHESIVELY ATTACHED COMPONENTS, AND METHOD THEREFOR

Mark K. Hoffmeyer, and David A. Sluzewski, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 6, 1994, Ser. No. 349,854
Int. Cl.[6] B32B 35/00
U.S. Cl. 156—94 15 Claims



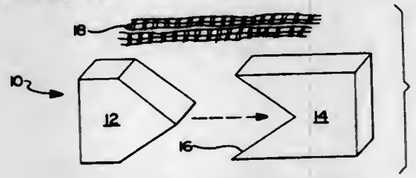
1. A method of fabricating an electronics apparatus including components each having a relatively large flat face at a pad location of a carrier having wiring means for interconnecting such components and possibly other components, comprising:
coating said carrier at said pad locations with a layer of fusible material having a selected melting temperature;
coating said layer of fusible material with a layer of adhesive material having a melting temperature substantially greater than said selected melting temperature;
fixedly attaching said components to said layer of adhesive material at said pad location;
connecting said components to said wiring means on said carrier;
determining that one of said original components at one of said pad locations must be replaced;
applying heat to said fusible layer sufficient to melt it at said one pad location while not affecting said layer of adhesive material;
mechanically separating said one component and all of said layer of adhesive material at said one pad location, from said carrier;
replacing said layer of adhesive material above said layer of fusible material at said one pad location;
fixedly attaching a replacement component at said one pad location; and
connecting said replacement component to said wiring means on said carrier.

5,601,676

COMPOSITE JOINING AND REPAIR

Kristin B. Zimmerman, St. Clair Shores, and Dahsin Liu, Okemos, both of Mich., assignors to The Board of Trustees Operating Michigan State University, East Lansing, Mich.

Filed Feb. 25, 1994, Ser. No. 201,771
Int. Cl.[6] B32B 31/00
U.S. Cl. 156—98 13 Claims



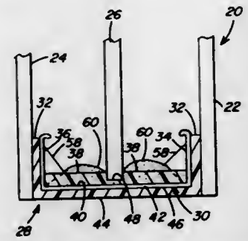
1. A method for repairing a portion of a fiber-reinforced resin composite material structural member subjected to forces in a plurality of directions, said method comprising the steps of:
identifying a damaged portion of the structural member;
defining a cutting path on the structural member around said damaged portion, wherein said cutting path is non-linear and includes at least one projection or recess;
cutting along said cutting path to remove said damage portion from the structural member and to provide the structural member with a defined periphery;
creating a repair piece of a fiber-reinforced resin composite material;
forming a piece periphery of the repair piece complementary to the defined periphery;
aligning the piece periphery with the defined periphery;
joining the repair piece with the structural member by mechanically interlocking the defined periphery of the structural member and the piece periphery of the repair piece to form a projection and recess type connection;
and adhering at least one fiber-reinforced patch onto an outer surface adjacent the defined and piece peripheries to cover and strengthen the peripheries and form a three dimensional bond.

5,601,677

METHOD OF MAKING A GLAZING UNIT HAVING THREE OR MORE GLASS SHEETS AND HAVING A LOW THERMAL EDGE

Edmund A. Leopold, Hudson, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 102,596, Aug. 5, 1993, Pat. No. 5,531,047.
This application May 24, 1995, Ser. No. 449,595
Int. Cl.[6] B29C 47/02; E06B 3/64;3/673
U.S. Cl. 156—109 20 Claims



1. A method of making an insulating glazing unit having at least three sheets comprising the steps of:
providing three sheets, two of the sheets defined as a first outer sheet and a second outer sheet, and the third sheet defined as an intermediate sheet;
providing a flat substrate having opposed edges and a leading end between the opposed edges and a major surface between the opposed edges with center portion of the major surface between and spaced from the opposed edges defined a receiving surface;
shaping the flat substrate to provide a spacer having a predetermined length, a base, a first outer leg extending upwardly from the base, a second outer leg extending upwardly from the base and spaced from the first outer leg to provide the spacer with a general U-shaped cross section wherein surface of the base facing the space between the first and second outer leg is the receiving surface;
flowing a layer of a pliable material onto the receiving surface the layer having spaced raised portions with a depression between the spaced raised portions, the depression defined as a groove;
encircling the intermediate sheet with the spacer while positioning the peripheral edge portions of the intermediate sheet in the groove to provide a spacer frame about the intermediate sheet where the first and second outer legs of the spacer are first and second outer legs respectively of the spacer frame, wherein during the practice of the encircling step the spaced raised portions of the layer of the pliable material limit movement of the intermediate sheet toward outer legs of the spacer frame; and

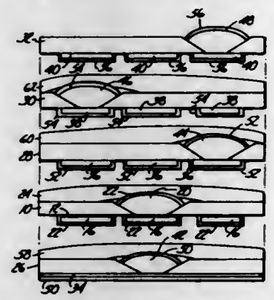
securing the outer legs of the spacer frame and the outer sheets together to provide respective compartments between one of the outer sheets and the intermediate sheet and the other outer sheet and the intermediate sheet.

5,601,678

METHOD FOR PROVIDING ELECTRICAL INTERCONNECTIONS BETWEEN ADJACENT CIRCUIT BOARD LAYERS OF A MULTI-LAYER CIRCUIT BOARD

Joel A. Gerber, St. Paul, and Peter A. Gits, White Bear Lake, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 74,113, Jun. 8, 1993, Pat. No. 5,401,913.
This application Jan. 23, 1995, Ser. No. 384,586
Int. Cl.[6] B29C 65/48; H05K 3/42;3/46
U.S. Cl. 156—150 13 Claims



1. A method of making a multi-layer interconnect, comprising:
depositing a trace metal layer on a first side of a first circuit board layer;
forming a via hole extending between the first side and a second side of the first circuit board layer, wherein the via hole extends to the trace metal layer;
depositing a via metal in the via hole such that said via metal forms a crown outward from said via hole on said second side of said first circuit board layer;
depositing an electrical contact on a first side of a second circuit board layer;
aligning the first circuit board layer with the second circuit board layer, wherein an adhesive is between the first and second circuit board layers and the electrical contact of the second circuit board layer is generally aligned with a via of the first circuit board layer; and
laminating the first circuit board layer to the second circuit board layer wherein the via metal of the first circuit board layer electrically contacts the electrical contact of the second circuit board layer.

5,601,679

THERMOFORMED COMPOSITE ARTICLE OF MANUFACTURE AND PROCESS FOR PRODUCING SAID ARTICLE

Charles M. Mulcahy, Clarksburg, Mass., and Kurt A. Weiss, Stephentown, N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed Apr. 11, 1994, Ser. No. 226,148
Int. Cl.[6] B29C 47/00; B28B 5/00
U.S. Cl. 156—242 16 Claims

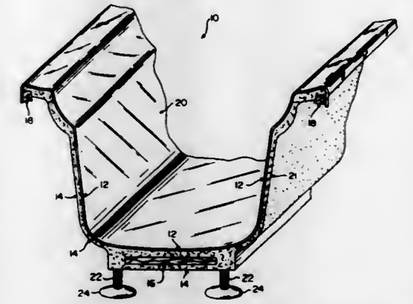
1. A method for thermoforming a composite article of manufacture, comprising the steps of:
(A) adhering a sheet of thermoplastic material to a non-thermoplastic substrate to form a laminate wherein a first portion of the sheet is supported on the substrate and a second portion of the sheet is not supported on the substrate;
(B) aligning the second portion of the sheet with a mold for thermoforming the second portion of the sheet into a predetermined shape; and
(C) thermoforming said second portion of the sheet to form the composite article, wherein the composite article comprises a continuous layer of the thermoplastic material, said layer having a first region wherein the layer is supported on said substrate and having a second region wherein the layer is not supported on the substrate and the layer exhibits the predetermined shape.

5,601,680

POLYESTER BACKED ACRYLIC COMPOSITE MOLDED STRUCTURE AND METHOD OF MANUFACTURING THEREOF

Karl T. Kuszaj, East Brunswick, N.J.; Ronald D. Barndt, Tatamy, Pa., and Jeffery E. Willis, Lawrenceville, N.J., assignors to American Standard Inc., Piscataway, N.J.

Division of Ser. No. 164,646, Dec. 8, 1993, which is a continuation of Ser. No. 881,943, May 12, 1992, abandoned, which is a continuation-in-part of Ser. No. 516,284, Apr. 30, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 474,430
Int. Cl.[6] B29C 39/02
U.S. Cl. 156—242 5 Claims



1. A method for manufacturing a polymeric composite sanitary structure, comprising:
forming a polymeric shell having a finish-side and non-finish side to a suitable shape;
arranging said polymeric shell in a mold;
introducing an uncured blended mixture of unsaturated thermosetting polymeric backing material consisting essentially of at least one component selected from the group consisting of polyester, epoxy, acrylic, vinyl ester and blends thereof, styrene, a curing promoter, a peroxide cross-linking promoter and a filler into said mold to force said backing material to directly coat the non-finish side of said shell; and
curing said molded thermosetting polymeric backing material at a suitable temperature and sufficient time to allow hardening and cross-linking of the thermosetting polymeric material and bonding directly to said non-finish side of the polymeric shell in order to permit demolding of the composite structure without damage, said cross-linking polymeric backing material having sufficient strength, eliminating the need for additional reinforcing layers, isocyanate and a silane coupling agent.

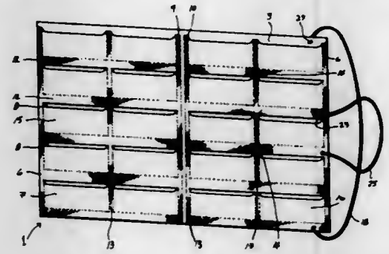
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5,601,681

METHOD OF CONSTRUCTION OF MULTIPURPOSE CARDCARRIER OR MENU

Edward L. Bayro, 208 Winnsboro Ct. Suite D, Schaumberg, Ill. 60193

Filed Jun. 24, 1994, Ser. No. 265,398
Int. Cl.[6] B32B 31/18;31/12
U.S. Cl. 156—268 5 Claims



1. A method for constructing a folder comprising front and back leaves, a frosted vinyl sheet and adhesive, said leaves each having an exterior and interior surface, said method comprising the steps of:

a. coating said exterior surface of said leaves,

b. printing stripes of pressure sensitive adhesive on said vinyl sheet, said sheet having an upper and lower surface, said stripes printed on said lower surface,

c. pressing said lower surface of said sheet smoothly upon said interior surface of said leaves,

d. die cutting said sheet to produce slits, thereby providing three sided pockets within said folder.

5,601,682

METHOD OF MAKING REFLECTIVE DECALS

Andre G. Longtin, Weare, N.H., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Jul. 28, 1992, Ser. No. 920,656
Int. Cl.[6] B32B 31/08;31/18;31/28
U.S. Cl. 156—272.2 20 Claims



1. A method of making reflective decals, comprising the steps of automatically:

(a) moving in a given direction a first web of reflective material comprising a reflective face stock layer, a first adhesive layer, and a first liner layer, the first adhesive layer sandwiched between the reflective face stock layer and the first liner layer;

(b) applying a second adhesive layer to the moving first web first liner layer, and applying a second liner layer to the second adhesive layer to produce a second web;

(c) moving the second web in a given direction;

(d) printing the moving second web reflective face stock to provide indicia thereon;

(e) drying the printed indicia;

(f) die cutting the printed second web to separate a matrix containing reflective stock, first adhesive, first liner, and second adhesive, from surrounding printed decals, the decals spaced from each other and connected by the second liner;

(g) removing the matrix material from association with the decals, and second liner to produce a third web containing the decals spaced along the second liner; and

(h) applying the decals from the third web to a carrier so that the second layer of adhesive affixes the decals to the carrier.

5,601,683

PHOTOCOPY RESISTANT DOCUMENT AND METHOD OF MAKING SAME

J. Philip Martin, San Antonio, Tex., assignor to Clarke American Checks, Inc., San Antonio, Tex.

Division of Ser. No. 254,352, Jun. 6, 1994, Pat. No. 5,510,199.
This application Jan. 25, 1996, Ser. No. 591,030
Int. Cl.[6] B32B 31/00
U.S. Cl. 156—277 6 Claims

1. A method of making a document consisting essentially of a substrate having a matte surface, a photocopy-resistant, non-fluorescent, background indicia and a non-photocopy-resistant, non-fluorescent textual indicia printed on the matte surface of the substrate comprising the steps of:

preparing a mixture consisting essentially of a solvent-eradicable dye and a resin-based carrier;

printing the mixture onto the matte surface of the substrate so that upon drying, the mixture the photocopy-resistant, non-fluorescent, background indicia is obtained, the color of the photocopy-resistant, background indicia being selected from the group consisting of gray specifically identified by trademark "Pantone Matching System" number 428, gray specifically identified by trademark "Pantone Matching System" number 426 and bluish gray specifically identified by trademark "Pantone Matching System" number 282;

preparing an ink consisting essentially of resin-based carrier and non-solvent-eradicable, pigment particles; and

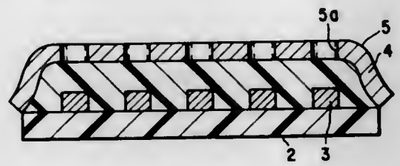
printing the ink onto the matte surface of the substrate over the photocopy-resistant, non-fluorescent, background indicia so that upon drying, the ink the non-photocopy-resistant, non-fluorescent textual indicia is obtained.

5,601,684

METHOD FOR MANUFACTURING AN ION FLOW ELECTROSTATIC RECORDING HEAD

Naohito Shiga, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 1, 1993, Ser. No. 115,427
Claims priority, application Japan, Sep. 3, 1992, 4-235895; Jan. 18, 1993, 5-006009
Int. Cl.[6] B32B 31/14
U.S. Cl. 156—278 13 Claims



1. A method for manufacturing an ion flow electrostatic recording head including: a plurality of first electrodes extending in parallel to one another on an insulating substrate; a plurality of second electrodes intersecting said plurality of first electrodes to form a matrix and having openings at positions corresponding to intersections of said plurality of first electrodes and said plurality of second electrodes, on the matrix; and a dielectric layer interposed between said plurality of first electrodes and said plurality of second electrodes, said plurality of first electrodes and said plurality of second electrodes jointly constituting ion generating portions arranged in a matrix pattern; said method comprising the steps of:

(a) forming a conductive film on the dielectric layer which together with said first plurality of electrodes constitutes a multilayer structure on the insulating substrate; and

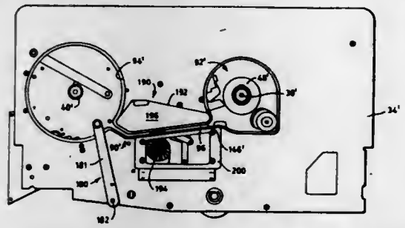
(b) applying a plating to said conductive film to form said plurality of second electrodes, said applying of the plating including a first step of applying a chemical plating to the conductive film and a second step of applying an electroless plating thereto.

5,601,685

LAMINATOR AND LOADING SYSTEM THEREFOR

John B. Morse, Boston, Mass.; Keith D. Joncas, Londonderry, N.H., and Kenneth A. McAuley, Framingham, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 240,460, May 10, 1994, abandoned. This application Nov. 17, 1994, Ser. No. 341,526
Int. Cl.[6] B32B 31/04
U.S. Cl. 156—540 13 Claims



1. A laminating apparatus for facilitating the loading of a roll of a laminating web along a path through a laminating nip formed by a pair of laminating rolls located between a spindle supply and a take-up spindle comprising:

inboard support means for supporting an inboard end of each of the supply and take-up spindles and the laminating rolls, and an outboard support means in spaced relationship with the inboard support means for supporting an outboard end of the laminating rolls, said outboard support means being formed with a continuous aperture therein, said aperture including a supply aperture aligned with the supply spindle for receiving thereon a roll of laminating web, a take-up aperture aligned with the take-up spindle for allowing the passage of a filled take-up roll to pass therethrough, and a threading slot connecting said supply aperture and said take-up aperture corresponding to a path for the laminating web through the laminating nip between the supply and take-up spindles;

means for establishing a load path and an operating path for the web;

said means for establishing a load path and an operating path comprises roller means mounted between said inboard and outboard support means for movement in a direction transverse of said threading slot, from a first position on one side of said slot and being retracted from engagement with the web to a second position on the other side of said slot and for engaging the web; and

said means for establishing a load path includes a handle actuating means which is coupled to one of said roller means so as to move said one roller means between said first and second positions, whereby said handle actuating means obstructs passage of the web into said threading slot.

5,601,686

WAFER TRANSPORT METHOD

Yoshio Kawamura, Kokubunji-ken; Yoshifumi Kawamoto, Kanagawa; Fumihiko Uchida; Kenichi Mizuishi, both of Hachioji; Natsuki Yokoyama, Mitaka; Eiichi Murakami, Tokorozawa; Yoshinori Nakayama, Sayama, and Eiichi Seya, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

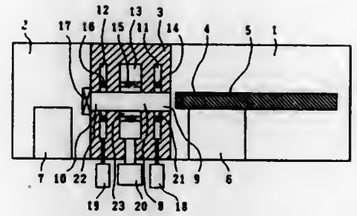
Continuation of Ser. No. 308,442, Sep. 19, 1994. This application May 3, 1996, Ser. No. 642,510
Claims priority, application Japan, Sep. 20, 1993, 5-233065
Int. Cl.[6] H01L 21/00
U.S. Cl. 156—643.1 22 Claims

1. A wafer transport method, comprising the steps of:

preparing a process equipment, said equipment including

a process chamber;

a transport chamber for transporting a wafer to said process chamber;



a communicating corridor arranged between said process chamber and said transport chamber; and

a transport mechanism for transporting said wafer;

forming a conductance part in said communicating corridor by inserting a part of said transport mechanism into said communicating corridor;

opening a shutoff valve for shutting off said process chamber and said communicating corridor; and

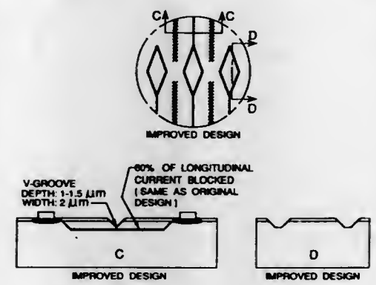
passing a part of said transport mechanism through said communicating corridor.

5,601,687

MASK DESIGN

Robert W. Herrick, Santa Barbara, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 11, 1995, Ser. No. 526,857
Int. Cl.[6] H01L 21/47
U.S. Cl. 156—644.1 2 Claims



1. A mask design process for fabricating a semiconductor upon a planar substrate which has a top surface with a longitudinal length dimension and a lateral width dimension, said process comprising the steps of:

etching the planar substrate using a mask pattern onto the top surface of the planar substrate, wherein the etching step forms a plurality of v-shaped grooves that run along said longitudinal dimension and, wherein said v-shaped grooves each terminate in diamond shaped indentations which have a raised island in the center;

depositing a dielectric layer upon said semiconductor including said v-shaped grooves to reduce thereby lateral current leakage and upon said diamond shaped indentions to reduce thereby longitudinal current leakage; and

a planarization step wherein said dielectric layer is etched and the semiconductor is contacted with ohmic metal contacts.

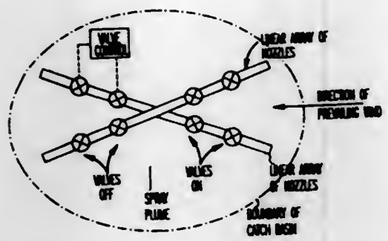
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5,601,688

METHOD OF AND MEANS FOR SPRAYING DROPLETS

Gad Assaf, Rehovot, and Joseph Weinberg, Netanya, both of Israel, assignors to Ormat Industries Ltd., Yavne, Israel

Continuation-in-part of Ser. No. 711,406, Jun. 5, 1991, abandoned, and a continuation of Ser. No. 480,045, Feb. 14, 1990, abandoned. This application Oct. 30, 1992, Ser. No. 969,571
Int. Cl.[6] B01D *1/16;3/42;* C02F *1/04*
U.S. Cl. 159—44 13 Claims



1. A method for controlling the horizontal distance traveled by droplets of starting solution sprayed into a gaseous medium from a location above a catch basin as the droplets fall vertically from said location, and where the gaseous medium has a horizontal velocity component, said method including the step of controlling the size of the droplets as a function of said horizontal velocity component including pressurizing said starting solution and spraying through two sets of nozzles when the horizontal velocity component exceeds a threshold, and through only one of said two sets of nozzles when the horizontal velocity component is less than said threshold.

4. Apparatus for evaporating water from an aqueous solution into air having a downwind velocity component, said apparatus comprising:

(a) a catch basin;

(b) first and second sprayers located vertically above said catch basin for spraying droplets of said solution into the air for effecting evaporation of water from the droplets as the latter travel downwind and fall vertically toward the catch basin;

(c) a sensor for sending air speed in the downwind direction;

(d) a controller for controlling the size of the droplets sprayed into the air by said first and second sprayers in response to the sensor for controlling the maximum horizontal distance traveled by said droplets:

(e) wherein each of said first and second sprayers comprises a linear array of spray nozzles; and

(f) wherein the linear array of said first sprayer is in a direction different from the direction of the linear array of the second sprayer.

5,601,689

DEINKING PROCESSES

Guerino G. Sacripante, Oakville; David F. Rutland, Milton; Walter Mychajlowskij, Georgetown, all of Canada, and J. Stephen Kittelberger, Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 27, 1995, Ser. No. 394,990
Int. Cl.[6] D21C *5/02*
U.S. Cl. 162—5 31 Claims

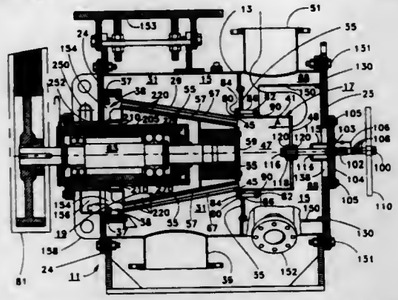
1. A process for removing a fused image from a substrate consisting essentially of contacting the image with an aqueous solution consisting essentially of water, a surfactant, ionic salts and a caustic reagent.

5,601,690

METHOD FOR SCREENING PULP

W. Thomas Gauld, Mobile; Ronald Visser, Theodore, and Arthur V. Jepsen, Mobile, all of Ala., assignors to Gauld Equipment Company, Theodore, Ala.

Filed Jul. 11, 1994, Ser. No. 273,467
Int. Cl.[6] D21C *9/08;* B07B *1/22*
U.S. Cl. 162—55 7 Claims



1. A method for controlling the quality and throughput of an accepts portion of a pulp slurry without stopping a rotor-operated screen used to produce the accepts portion, the method comprising the steps of:

(a) continuously introducing a pulp slurry into a primary screening zone between a rotor impeller and a screen having a clearance therebetween;

(b) operating the rotor to generate regions of disturbance in the pulp slurry within the primary screening zone, so that a portion of the slurry passes through apertures in the screen, thereby becoming the accepts portion;

(c) monitoring at least one portion selected from the group consisting of feed portion, accepts portion, rejects portion, and combinations thereof, to determine at least one parameter selected from the group consisting of accepts throughput rate, accepts dirt content, accepts debris content, reject rate, reject concentration, feed rate, debris level in feed, and combinations thereof, and

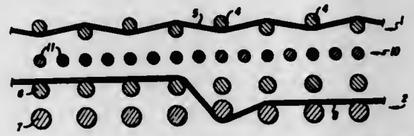
(d) while continuing to introduce pulp slurry into the primary screening zone, adjusting the clearance between the rotor impeller and the screen so that at least one determined parameter is brought into a desired range.

5,601,691

MULTILAYERED PRESS SCREEN FOR WET PRESSES OF A PAPER MACHINE

Franz F. Kufferath, Lommesemstrasse 37, D-52353 Düren, Germany

Filed Sep. 23, 1993, Ser. No. 125,190
Claims priority, application Germany, Sep. 26, 1992, 42 32 319.3
Int. Cl.[6] D21F *3/00*
U.S. Cl. 162—358.2 9 Claims



1. A press screen for wet presses of a paper machine, comprising a plurality of woven layers, one of said layers having a water reservoir having capillary and adhesive water retention properties, said reservoir being integrated into said layer at a distance from both a contact surface for a web to be dewatered and from a machine running side of the screen,

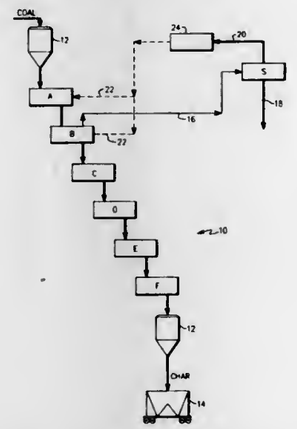
wherein the water reservoir is formed by additional threads running in a direction selected from the group of directions consisting of a cross direction of the screen and a longitudinal direction of the screen, and wherein the threads of the water reservoir form a woven layer of cloth having a high capillarity, said layer having a large wettable surface and a hydraulic dewatering resistance higher than any other layer.

5,601,692

PROCESS FOR TREATING NONCAKING COAL TO FORM PASSIVATED CHAR

Franklin G. Rinker, Perrysburg; Deane A. Horne, Toledo, both of Ohio; Dennis W. Coolidge, Gillette, Wyo., and Ernest P. Esztergar, La Jolla, Calif., assignors to Tek-Kol Partnership, LaJolla, Calif.

Filed Dec. 1, 1995, Ser. No. 565,851
Int. Cl.[6] C10L *9/10*
U.S. Cl. 201—9 17 Claims



1. A continuous process for treating noncaking coal to form stable char, the process comprising the sequential steps of:

a) providing a noncaking coal feed;

b) drying the coal to remove moisture therefrom and form a dry coal;

c) pyrolyzing the dry coal by progressively heating substantially all of the coal to a temperature sufficient to vaporize and remove low end volatile materials from the coal to form char and sufficient to mobilize at least a portion of high end volatile materials within the char and at least partially collapse micropores within the char;

d) cooling the char to a temperature sufficient to demobilize the volatile materials within the at least partially collapsed micropores of the char to pyrolytically passivate the char and form a char having about 14–22 wt % high end volatiles;

e) oxidatively passivating the char of step d) with a process gas having about 3%–21% by volume oxygen by chemisorption of oxygen;

f) substantially simultaneously rehydrating and cooling the char to form a char having about 5–10 wt % moisture; and

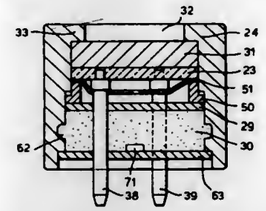
g) finally passivating the char of step f) with a process gas having about 3%–21% by volume oxygen by chemisorption of oxygen to form stable char.

5,601,693

GAS SENSOR

David F. Davies, Locks Heath, United Kingdom, assignor to City Technology Limited, Portsmouth, United Kingdom

Filed Jan. 20, 1995, Ser. No. 375,856
Claims priority, application United Kingdom, Jan. 28, 1994, 9401634
Int. Cl.[6] G01N *27/12;27/26*
U.S. Cl. 204—400 17 Claims



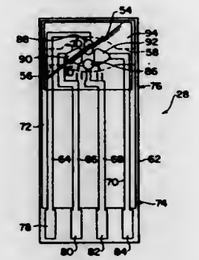
1. A device for sensing a gas, the device comprising a track carrying substrate which defines at least one aperture; at least one gas sensitive catalytic bead element wherein said element is coupled to conductors, wherein said conductors are coupled to tracks of said track carrying substrate and wherein said catalytic bead element is mounted in or adjacent to said aperture; and an inert material positioned adjacent said catalytic bead element and in said aperture to substantially prevent convection currents and improve the shock resistance of the device.

5,601,694

ELECTROCHEMICAL SENSORS

Thomas C. Maley, Medway; Paul A. D'Orazio, Mendon; Bonnie C. Dalzell, Sherborn; Peter G. Edelman, Franklin; James E. Flaherty, Attleboro; Richard W. Mason, Millis, and Robert R. McCaffrey, Franklin, all of Mass., assignors to Ciba Corning Diagnostics Corp., Medfield, Mass.

Division of Ser. No. 266,824, Jun. 27, 1994, Pat. No. 5,494,562. This application Jul. 27, 1995, Ser. No. 508,276
Int. Cl.[6] G01N *27/26*
U.S. Cl. 204—415 9 Claims



1. An interference electrode, comprising:

an electrically nonconductive substrate; and

an electrically conductive material adhered to a portion of said substrate, a first portion of said electrically conductive material being covered with an electrically insulating dielectric coating, and a second portion of said electrically conductive material being covered with an inactive layer comprising an inactive protein immobilized onto platinized carbon powder particles, wherein said particles are distributed substantially uniformly throughout said inactive layer; and

a semi-permeable membrane covering said inactive layer.

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5,601,695

ETCHANT FOR ALUMINUM ALLOYS

Yoshihisa Muranushi, Yokohama, Japan, assignor to Atotech U.S.A., Inc., Somerset, N.J.

Filed Jun. 7, 1995, Ser. No. 487,438
Int. Cl.[6] C25D *5/44;3/12*
U.S. Cl. 205—213 **21 Claims**

1. A process for treating an aluminum-copper or an aluminum-silicon alloy to improve adhesion of metal layers to said alloy comprising:

(a) contacting said alloy with an acidic tin immersion composition to produce a tin immersion coating on said alloy;

(b) contacting said tin immersion coating with an etchant to substantially remove said tin immersion coating to produce an etched alloy surface having a microporous structure;

(c) further coating said microporous structure with a metal by an immersion metal coating process to yield an immersion metal coated aluminum substrate; and

(d) electrolytically coating said immersion metal coated aluminum substrate with a metal.

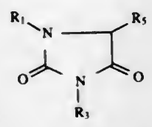
5,601,696

SILVER PLATING BATHS AND SILVER PLATING METHOD USING THE SAME

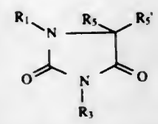
Takanobu Asakawa, Hiratsuka, Japan, assignor to Electroplating Engineers of Japan Limited, Tokyo, Japan

Filed Oct. 3, 1995, Ser. No. 538,602
Claims priority, application Japan, Oct. 4, 1994, 240288
Int. Cl.[6] C25D *3/46;* **C23C** *16/00;18/00*
U.S. Cl. 205—263 **15 Claims**

1. A silver electroplating bath consisting of at least one inorganic acid salt of silver used as a silver compound, at least one hydantoin compound of the following formula used as a complex-forming agent



wherein R_1, R_3 and R_5 each independently represent hydrogen, an alkyl group having 1–5 carbon atoms, an aryl group or an alcohol, and



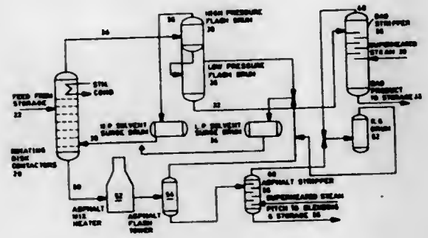
wherein R_1, R_3, R_5 and R_5' each independently represent hydrogen, an alkyl group having 1–5 carbon atoms, an aryl group or an alcohol, and at least one of a salt of an inorganic acid and a carboxylate as a conductive salt said bath optionally containing a gloss controlling agent.

5,601,697

DEMETALLATION-HIGH CARBON CONVERSION PROCESS, APPARATUS AND ASPHALT PRODUCTS

Charles B. Miller, Ashland; Howard F. Moore, Catlettsburg; David P. Wesley, Ashland; Robert H. Wombles, Ashland; Carlton H. Jewitt, Catlettsburg; Roger E. Hayner, Flatwoods, all of Ky.; William H. Gilkerson, Sr., Huntington, W. Va., and Charles R. Gannon, Ashland, Ky., assignors to Ashland Inc., Ashland, Ky.

Filed Aug. 4, 1994, Ser. No. 286,714
Int. Cl.[6] C10C *3/08*
U.S. Cl. 208—945 **8 Claims**



1. A process for upgrading carbometallic topped crude oil by a combination of distillation, extraction and cracking to produce products of lower molecular weight boiling in the transportation fuel range and conjointly produce enhanced asphalts, said process comprising in combination:

a) vacuum distilling said topped crude oil to produce separately an overhead product comprising hydrocarbons boiling in the range of about 340°–540° C. (650°– 1000° F.) and a bottoms product comprising hydrocarbons boiling above about 450° C. (850° F.), comprising metal contaminants in excess of 10 ppm and comprising concarbon in excess of 4%;

b) extracting said bottoms product from step a by intimate contact with a solvent under a pressure sufficient to maintain a liquid phase to produce separately a substantially insoluble product comprising asphaltenes and a substantially soluble product comprising deasphalted oil;

c) thereafter reducing the pressure on said substantially soluble product in a reduced pressure zone to recover a lower boiling fraction comprising at least about 90% of said solvent, and a higher boiling deasphalted oil boiling in the range above about 540° C. (1004° F.);

d) introducing said deasphalted oil into a zone of higher temperature to distill off a lower boiling product comprising additional quantities of said solvent, and a higher boiling bottoms product comprising stripped deasphalted oil;

e) heating said substantially insoluble product from extracting step b to a temperature in the range of about 200°–370° C. (400°–700° F.);

f) introducing said heated insoluble product into a reduced pressure zone wherein an overheads product is produced, said overheads product comprising at least about 90% of said solvent, and a bottoms asphalt product boiling in the range above about 540° C. (1004° F.);

g) introducing said asphalt product into a zone of lower pressure or contact with steam to produce an overhead product comprising still additional quantities of said solvent and a higher boiling product comprising pitch;

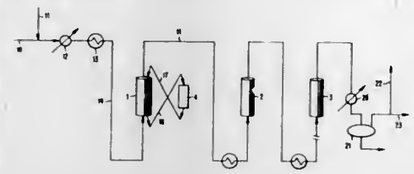
h) contacting said stripped deasphalted oil product from step d in a riser contactor for about 0.5 to about 5.0 seconds at a temperature of about 900°–1100° F. with a zeolite-containing catalyst having a matrix comprising alumina and/or silica to produce products of lower molecular weight then said deasphalted oil and to produce products comprising transportation fuels, light gases, and slurry oil comprising catalyst tines and hydrocarbons boiling in the range of about 330°–540° C. (630° F. to about 1100° F.).

5,601,698

PROCESS FOR REFORMING HYDROCARBON FEEDSTOCKS OVER A SULFER SENSITIVF CATALYST

Robert A. Innes, San Rafael, Calif., assignor to Chevron Chemical Company, San Ramon, Calif.

Continuation of Ser. No. 264,292, Jun. 23, 1994, abandoned. This application Nov. 14, 1995, Ser. No. 557,544
Int. Cl.[6] C10G *59/02;35/04*
U.S. Cl. 208—64 **10 Claims**



1. A process for reforming a hydrocarbon feedstock containing at least 20 ppbw sulfur, which process comprises passing the hydrocarbon feedstock through at least first and second reforming zones which are serially connected, with each of said first and second reforming zones containing a highly sulfur sensitive reforming catalyst, and with the catalyst in the first reforming zone being regenerated more frequently than the catalyst in the second reforming zone, and with effluent from the first reforming zone being passed to the second reforming zone without removing sulfur.

5,601,699

METHOD FOR CRACKING HYDROCARBONS

Thomas F. Degnan, Moorestown, N.J.; Terry E. Helton, Glen Mills, Pa., and Grant H. Yokomizo, Edison, N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Division of Ser. No. 245,275, May 18, 1994, Pat. No. 5,472,922. This application May 19, 1995, Ser. No. 444,978
Int. Cl.[6] C10G *11/02*
U.S. Cl. 208—114 **18 Claims**

1. A method of cracking hydrocarbons comprising contacting said hydrocarbons under catalytic cracking conditions with an attrition resistant catalyst composition prepared by the steps of:

a) forming a slurry by combining a siliceous crystalline material (Z) having the structure of zeolite Beta, zeolite ZSM-12, or zeolite ZSM-20, with a source of phosphorous (P) and at least two compounds selected from a source of silica (S), clay (C), and a source of alumina (A) in a mixer under aqueous conditions, wherein the siliceous crystalline material (Z), the source of silica (S), the clay (C), and the source of alumina (A) are added to the slurry in the mixer in a sequence selected from SCZP, CSZP, SAZCP, ASZCP, SAZPC, ASZPC, SAPZC, ASPZC, CPZSA, PCZSA, SCZPA, CSZPA, APZSC, and PAZSC in a short-hand representation, wherein the siliceous crystalline material, the source of silica, the clay, and the source of alumina are added to the slurry in the sequence and in amounts effective to produce an attrition index of less than or equal to about 10 for the catalyst composition after the catalyst composition has been calcined; and

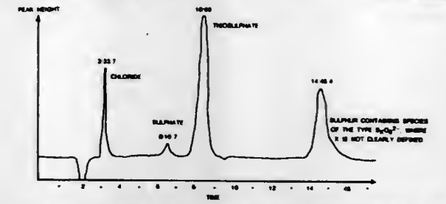
b) spray drying the slurry at a pH less than or equal to about 5.

5,601,700

SCAVENGING OF HYDROGEN SULPHIDE

Norman Bridge, Lancashire, and Robert McGowan, Aberdeenshire, both of United Kingdom, assignors to William Blythe Limited, England, and Blacksmith Chemical Services, Scotland

Filed Dec. 23, 1994, Ser. No. 362,979
Claims priority, application United Kingdom, Jun. 26, 1992, 9213628
Int. Cl.[6] C10G *19/00*
U.S. Cl. 208—208 R **11 Claims**



1. A method of removing hydrogen sulphide from crude oil or an oil and water emulsion which method comprises treating the crude oil or an oil and water emulsion with a solution of sulphite or bisulphite selected from the group consisting of alkali metals, alkaline earth metals, ammonium sulphite and ammonium bisulphite, wherein the pH of the solution of sulphite or bisulphite is maintained between about 4 and about 7 by the addition of an alkali, so as to prevent sulphur precipitation in the crude oil or oil and water emulsion being treated.

5,601,701

PROCESS FOR THE ELIMINATION OF MERCURY FROM HYDROCARBONS BY PASSAGE OVER A PRESULPHURATED CATALYST

Charles Cameron, Paris; Jean Cosyns, Maule; Patrick Sarrazin, Rueil Malmaison; Jean Paul Boitiaux, Poissy, and Philippe Courty, Houilles, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Feb. 8, 1994, Ser. No. 193,590
Claims priority, application France, Feb. 8, 1993, 93 01443
Int. Cl.[6] C10G *45/04*
U.S. Cl. 208—251 H **17 Claims**

1. In a process for the elimination of mercury from a hydrocarbon feedstock comprising mercury compounds and from 0 to 1000 mg of sulphur/kg, wherein the feedstock, in the presence of hydrogen, is brought in a first step into contact with a catalyst consisting essentially of at least one metal component and a support, the resultant treated feedstock then being brought in a second step into contact with a mercury retention bed comprising sulphur or a metallic sulphide, the improvement wherein the metal component of the catalyst consists essentially of at least one presulfurized metal selected from the group consisting of iron, nickel, cobalt, molybdenum, tungsten, chromium and palladium, at least 5% and at most 50% by weight of said metal or metals being in the form of its sulphide, and wherein said catalyst is obtained in a first step by impregnation of a catalyst precursor comprising said supported metal or metals in the metallic and/or oxide form, using an aqueous or organic solution or an aqueous or organic suspension comprising a reducing agent and at least one sulphur containing agent selected from the group consisting of

(a) at least one organic polysulphide mixed with elemental sulphur,

(b) at least one organic disulphide optionally mixed with elemental sulphur,

(c) at least one organic or inorganic sulphide optionally mixed with elemental sulphur, and

(d) elemental sulphur,

said impregnated precursor then being thermally treated in a second step, and wherein the contact with the catalyst takes place at a temperature of 120° C. to 250° C. and a pressure of 1 to 40 bars,

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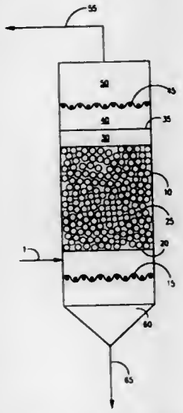
and that the contact with the retention bed takes place at a temperature of less than 220° C. and at a volumetric flow of 1 to 50 h^{-1}.

5,601,702

REMOVAL OF ACIDIC HALIDES FROM GAS STREAMS

Tsoung Y. Yan, Wayne, Pa., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Dec. 30, 1994, Ser. No. 367,498
Int. Cl.[6] C10G *19/073;25/00*; B01D *24/00*
U.S. Cl. 208—308 **13 Claims**



1. A process for removing acidic halides from a gas phase containing acidic comprising:

a. disposing solid particles of caustic as a porous bed;

b. dissolving at least some of said solid caustic in an aqueous layer covering said solid particles;

c. coating or immersing said aqueous layer with an immiscible hydrocarbon liquid phase; and

d. reactively extracting acidic halides from said gas phase by passing said gas through said porous bed.

5,601,703

FLOTATION MACHINE AND PROCESS FOR REMOVING IMPURITIES FROM COALS

Kazimierz Szymocha; Boleslaw Ignasiak; Wanda Pawlak, all of Edmonton, Canada; Conrad Kulik, Newark, and Howard E. Lebowitz, Mountain View, both of Calif., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Division of Ser. No. 131,514, Oct. 4, 1993, Pat. No. 5,472,094. This application Dec. 5, 1995, Ser. No. 567,191
Int. Cl.[6] B03D *1/16*
U.S. Cl. 209—164 **3 Claims**

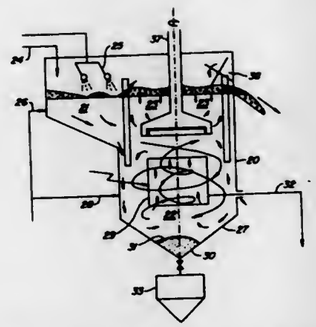
1. A method of operating a hydraulic separator comprising a washing zone, a settling zone and a flotation zone, said zones in fluid communication, comprising the steps of:

(a) feeding a stream of fluid suspended materials comprising coal particles or microagglomerates, mineral particles and water into the washing zone of said separator;

(b) washing said suspended materials in said washing zone to separate said mineral particles from said coal particles or microagglomerates using high velocity sprays of water;

(c) directing said separated suspended materials from the washing zone to the settling and flotation zones;

(d) creating spiral and vortexing hydrodynamic flow patterns within the settling zone to further separate said mineral particles from said coal particles;



(e) creating a froth from coal particles which rise to said flotation zone by using agitation and aeration to recover a coal product stream characterized by substantially reduced sulfur and ash content compared to said feed stream; and

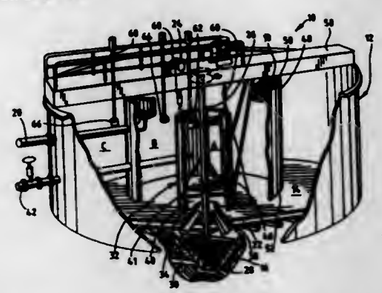
(f) collecting said mineral particles that settle by gravity in said settling zone.

5,601,704

AUTOMATIC FEEDBACK CONTROL SYSTEM FOR A WATER TREATMENT APPARATUS

Eli Salem, Deal, and Frank Morenski, Sparta, both of N.J., assignors to The Graver Company, Union, N.J.

Filed Apr. 11, 1994, Ser. No. 225,650
Int. Cl.[6] C02F *1/52*
U.S. Cl. 210—86 **17 Claims**



1. An automatic feedback control system for use with a recirculating solids contact clarifier having a reaction zone, a flocculation zone, a separation zone, a raw water inlet, a treated water outlet, a recirculator member, an adjustable chemical inlet and an adjustable sludge blow off outlet, comprising:

first, second and third suspended solids concentration measuring devices, one device each for the respective reaction, flocculation and separation zones, each of said devices providing a substantially continuous output which provides an indication of the amount of suspended solids present at least at a particular portion of said respective reaction, flocculation and separation zones; and

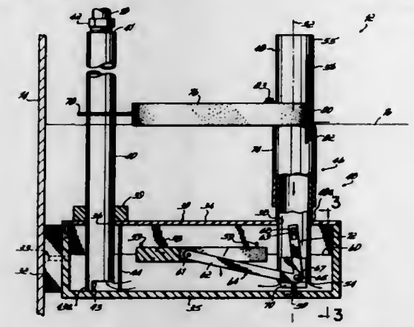
an automatic regulator member in operable communication with said first, second and third measuring devices and with the recirculator member, adjustable chemical inlet and adjustable sludge blow off outlet, said regulator member capable of detecting a difference between established set points and said outputs of said first, second and third measuring devices and automatically adjusting at least one of said recirculator member, said adjustable chemical inlet and said sludge blow off outlet to adjust the level of solids within the clarifier to an optimum level.

5,601,705

SKIMMER/COALESCHER SYSTEM FOR REMOVING AND SEPARATING TRAMP OIL FROM AN AQUAEOUS COOLANT

James A. Glasgow, 7481 N. Timberline Dr., Cincinnati, Ohio 45243

Filed Jun. 6, 1995, Ser. No. 466,388
Int. Cl.[6] C02F *1/40*
U.S. Cl. 210—104 **15 Claims**



1. A skimming apparatus for skimming a liquid mixture of at least two liquid components from a tank containing the mixture, comprising:

a bracket;

a substantially enclosed housing mounted to the bracket to locate the housing in the tank at a vertical position below a normal operating level for the liquid mixture contained therein;

an outlet tube secured to the housing and having a bottom end extending into the housing, the outlet tube adapted to convey liquid outwardly from the housing via the bottom end;

an intake structure secured to the housing, the intake structure having an upper end which floatably adjusts with respect to the level of the liquid mixture in the tank to gravitationally convey liquid into the housing via an inlet located adjacent the upper end; and

a mechanical sensor located in the housing and operatively connected to the intake structure to vary the size of the inlet depending on the depth of liquid in the housing, thereby to maintain a liquid level in the housing above the bottom end of the outlet tube.

5,601,706

SEWAGE TREATMENT APPARATUS INCLUDING AGGREGATE SEPARATOR

Horst Brenner, Breslauer Str. 14, D-71717 Beilstein, Germany, assignor to Horst Brenner, Beilstein, Germany

PCT No. PCT/DE94/00095, § 371 Date Jul. 24, 1995, § 102(e) Date Jul. 24, 1995, PCT Pub. No. WO94/17917, PCT Pub. Date Aug. 18, 1994
PCT Filed Feb. 1, 1994, Ser. No. 495,685
Claims priority, application Germany, Feb. 6, 1993, 9301654 U
Int. Cl.[6] B01D *21/00*
U.S. Cl. 210—172 **14 Claims**

1. A waste water treatment apparatus, comprising:

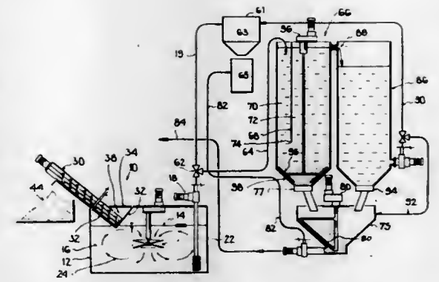
a waste water reservoir;

a device for circulating the waste water in the reservoir;

a chamber for accumulating an aggregate-containing waste water and for replenishing the waste water reservoir with waste water;

a separator for separating aggregate from the aggregate-containing waste water accumulated in the replenishing chamber;

a settling tank located downstream of the waste water reservoir;



a conduit for directly connecting the waste water reservoir with the settling tank; and

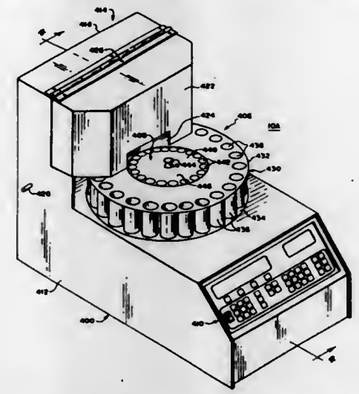
conduit means for connecting the settling tank with cement mixing means for supplying a clarified water in the cement mixing means when necessary.

5,601,707

APPARATUS AND METHOD FOR SUPERCRITICAL FLUID EXTRACTION OR SUPERCRITICAL FLUID CHROMATOGRAPHY

Dale L. Clay; Robert W. Allington; Daniel G. Jameson, all of Lincoln, Nebr., and Robin R. Winter, Newburg, Oreg., assignors to Isco, Inc., Lincoln, Nebr.

Division of Ser. No. 382,650, Feb. 2, 1995, which is a continuation-in-part of Ser. No. 96,919, Jul. 23, 1993, abandoned, which is a continuation-in-part of Ser. No. 27,257, Mar. 5, 1993, Pat. No. 5,268,103, which is a continuation-in-part of Ser. No. 908,458, Jul. 6, 1992, Pat. No. 5,198,197, which is a division of Ser. No. 795,987, Nov. 22, 1991, Pat. No. 5,160,624, which is a continuation-in-part of Ser. No. 553,119, Jul. 13, 1990, Pat. No. 5,094,753. This application Jul. 12, 1995, Ser. No. 501,536
Int. Cl.[6] B01D *11/00;15/08*
U.S. Cl. 210—198.2 **31 Claims**



23. Apparatus for automatic high-temperature high-pressure extraction processing of a sample with an extraction fluid comprising:

more than two samples each in individual sealable sample containers located in a first transport means;

said sample containers insertable and removable from the said first transport means;

said sample containers having a first flow port and a second flow port, and the said sample disposed between the said flow ports;

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programming means for causing first transport means to move a selected one of the said more than two sample containers with its contained sample to a location corresponding to a place of extraction;

means for heating the said selected sample container and extraction fluid to a set temperature;

means for pressurizing said process of extraction within a pressure vessel means;

said selected sample container at the said place of extraction being sealed to the pressure of said pressurizing;

extraction fluid flow means producing an extraction fluid flow;

a first connecting means disposed to conduct fluid from the said extraction fluid flow means to the first flow port of the selected sample container;

said extraction fluid flow means forcing extraction fluid through said first fluid flow connecting means and through the first flow port of said selected sample container containing said sample wherein said extraction fluid contacting said sample at said heated and pressurized conditions produce an extract from the sample;

a plurality of collection containers located in a second transport means;

said programming means causing the selection of a collection container in the said second transport means in correspondence with the said selection of a sample container in the said first transport means;

said second fluid flow connecting means being disposed to conduct said extract from the said second flow port of the said selected sample container containing sample to the said selected collection container to receive said extract, wherein means are provided for forcing flow of extraction fluid with extract from the said selected sample container to the said selected collection container;

said selected collection container receiving extract from only one selected sample container; and

said second transport means moving the said selected sample container after the said container has received extract.

5,601,708

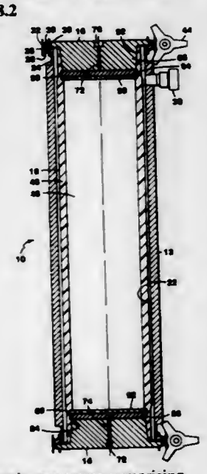
APPARATUS FOR PRESSURIZING A REMOVABLE CHROMATOGRAPHY CARTRIDGE

Peter J. Leavesley, Charlottesville, Va., assignor to Dyax Corp., Cambridge, Mass.

Continuation of Ser. No. 224,264, Apr. 7, 1994, abandoned. This application Sep. 14, 1995, Ser. No. 528,060

Int. Cl.[6] B01D *15/08*

U.S. Cl. 210—198.2 **16 Claims**



1. Chromatography apparatus comprising

a replaceable chromatography cartridge having a thin, flexible outer wall that has a processing chamber therein that contains a stationary phase, said wall being deformable in response to a pressure differential across said outer wall to compress said stationary phase therein, said cartridge having an inlet end defining an inlet to said cartridge and an outlet end defining an outlet of said cartridge, said outer wall having an inlet peripheral end surface around said inlet in a plane transverse to an axis from said inlet to said outlet, said outer wall having an outlet peripheral end surface around said outlet in a plane transverse to said axis,

an enclosure having a pressurizable chamber sized to removably receive said chromatography cartridge therein and apply pressure to the outside of said cartridge so as to affect conditions within said processing chamber within said cartridge,

said enclosure having an opening to said pressurizable chamber sized to receive said chromatography cartridge therethrough,

said enclosure having an enclosure sealing structure surrounding said opening, and

a cap sized to close said opening and having a flow passage for directing a sample to be analyzed to said processing chamber within said cartridge when said cartridge is in said pressurizable chamber,

said cap having a cap sealing structure for mating with said enclosure sealing structure to make a sealable connection therewith around said opening,

said cap having a sharp protruding member that surrounds said flow passage, is inside of said cap sealing structure, and is directed toward said pressurizable chamber for making sealable engagement with said cartridge therein by digging into said inlet peripheral end surface of said wall of said cartridge, whereby said sharp protruding member provides a sealable connection for said flow passage through said cap to said processing chamber within said cartridge and separates said processing chamber from said pressurizable chamber.

5,601,709

PLATE ASSEMBLY FOR FILTER PRESS

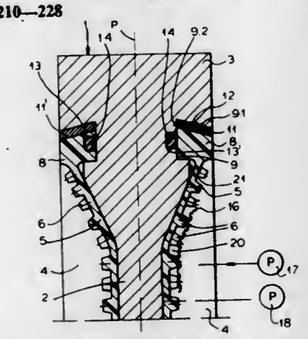
Heinz Ruhland, Geislingen, Germany, assignor to Lensor Kunststoff-Presswerk GmbH + Co.KG, Senden, Germany

Filed May 23, 1995, Ser. No. 448,321

Claims priority, application Germany, Jun. 7, 1994, 44 19 865.5

Int. Cl.[6] B01D *25/176*

U.S. Cl. 210—228 **10 Claims**



1. A filter-plate assembly comprising:

a backing wall having an outwardly directed face and formed with an annular and elongated groove opening outward at the face, having confronting inner and outer flanks, and of a predetermined transverse width;

a filter plate adjacent the wall and having

an outer peripheral and annular frame set in the groove, having transversely oppositely directed inner and outer faces, and of a width substantially less than the width of the groove so as to define between one of the faces and the respective flank an outwardly open annular gap, and

a generally planar central panel within the frame and having a back face turned toward and forming a compartment with the wall and a front face turned away from the wall and adapted to be overlain by a filter cloth; and

a retaining bar set in the gap and braced transversely between the one face of the frame of the plate and the respective flank of the groove of the backing wall.

5,601,710

FILTERING APPARATUS OF WATER PURIFIER

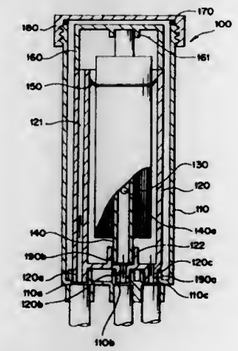
Deok-Joung Yoon, and In-Seog Chung, both of Suwon, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jul. 10, 1995, Ser. No. 500,060

Claims priority, application Rep. of Korea, Jul. 8, 1994, 94-16944; Sep. 30, 1994, 94-25719; Sep. 30, 1994, 94-25722; Nov. 14, 1994, 94-30251; Nov. 14, 1994, 94-30252

Int. Cl.[6] B01D *27/08*

U.S. Cl. 210—232 **24 Claims**



1. A water purifier, comprising:

an outer housing having a top opening at its upper end and including a first hole for admitting unfiltered water, a second hole for discharging filtered water, and a third hole for discharging unfiltered water;

an inner housing disposed in said outer housing and sized to be removable and installable through said top opening;

a filter element disposed in said inner housing and including an inflow side communicating with said first hole for receiving and filtering unfiltered water, and an outflow side communicating with said second hole for discharging filtered water;

a first removable lid for closing said top opening of said outer housing, said inner housing and filter element being removable from said outer housing as a unit upon removal of said first lid therefrom; and

a second removable lid for closing an open end of said inner housing, said filter element being removable from said inner housing upon removal of said second lid therefrom;

said third hole communicating with said inflow side of said filter element for discharging unfiltered water for when the filter element is to be changed.

5,601,711

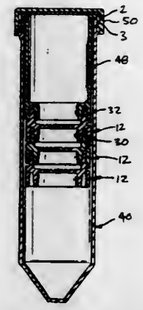
SELECTIVE SEPARATION FILTER DEVICE

Eric Sklar, Northville; Peter L. Graham, Pinckney, and Jane Larson, Ann Arbor, all of Mich., assignors to Gelman Sciences Inc., Ann Arbor, Mich.

Filed Oct. 31, 1994, Ser. No. 331,974

Int. Cl.[6] B01D *27/00;21/26*

U.S. Cl. 210—238 **9 Claims**



1. A filtration apparatus for the selective separation of materials from a fluid sample, said apparatus comprising:

at least two filter modules, each module comprising a generally cylindrical member having an inlet end with a coupling member of a first type defined thereupon, an outlet end with a coupling member of a second type defined thereupon, and a fluid flow path defined therebetween, each module further including a filter medium supported therein in said fluid flow path so that the entirety of a volume of fluid passing along said fluid flow path from said inlet and to said outlet end will pass through said filter medium, wherein each coupling member of said first type is reversibly engageable with each coupling member of the second type so that said modules may be connected together so that the outlet end of a first module will be engaged with the inlet end of a second module; and

a sample reservoir comprising a generally cylindrical member having an inlet end, an outlet end and a fluid flow passage therebetween, said sample reservoir having a coupling member of said second type defined at the outlet end thereof, so that the outlet end of said sample reservoir is reversibly engageable with the inlet end of one of said at least two modules; whereby, the entirety of a volume of fluid which is introduced into the sample reservoir will pass in series through the filter medium of the first module and the filter medium of the second module.

5,601,712

CENTRIFUGAL APPARATUS FOR BIOLOGICAL WASTE DISPOSAL

Mathew J. Adams; Kenneth R. Lamaster, both of Indianapolis; David B. Mennel; Jeffrey C. Rapp, both of Greenwood, all of Ind.; Lewis I. Schwartz, Bratenahl; Norman L. Siegel, Mentor, both of Ohio, and Joseph H. Wilson, Speedway, Ind., assignors to Ecomed, Inc., Indianapolis, Ind.

Division of Ser. No. 209,818, Mar. 11, 1994, Pat. No. 5,534,162. This application Jun. 6, 1995, Ser. No. 468,368

Int. Cl.[6] B01D *21/26*

U.S. Cl. 210—297 **27 Claims**

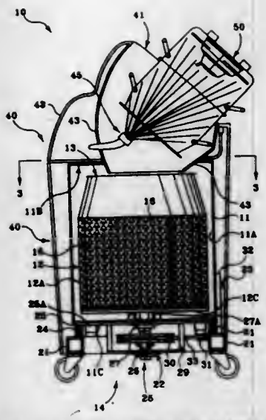
9. An apparatus for separately disposing of solid and liquid biological waste, comprising:

a portable container for wet biological waste,

a liquid-tight container,

a foraminous biological waste container, with small foramina sized to bar passage of biological waste, supported for spinning within the liquid-tight container with an opening adapted to the receive wet biological waste from said portable container,

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driving means for spinning said biological waste container, said driving means and said biological waste container cooperating to provide, upon spinning, sufficient centrifugal force acting on the wet biological waste to urge liquid from the wet biological waste through the foramina and into the liquid-tight container, and

means for removing liquid from the liquid-tight container.

5,601,713

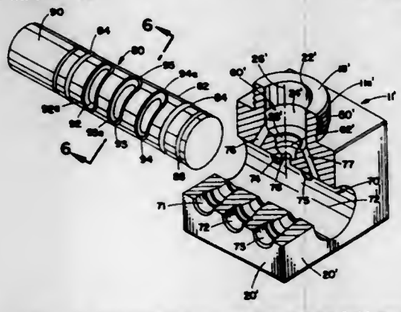
FILTER SYSTEMS AND APPARATUS

Donald P. Mayeaux, Prairieville, La.; James E. Gotch, Willoughby, and Christopher J. Kmetko, Solon, both of Ohio, assignors to Nupro Company, Willoughby, Ohio

Filed Dec. 6, 1994, Ser. No. 349,919

Int. Cl.[6] B01D *35/157*

U.S. Cl. 210—426 **10 Claims**



8. A filter assembly particularly suited for use in fluid analyzer systems for particulate or coalescing filtration of fluids comprising:

a body defining a filter chamber with a filter element positioned in the filter chamber to divide the filter chamber into first and second portions;

a valve chamber in the body;

at least five fluid flow passages connecting from the exterior of the body to the valve chamber; and,

a valve means in the valve chamber movable between first and second positions, said valve means including flow controlling means operable in the first position of said valve means to connect a first and a second of the fluid flow passages with the first portion of the filter chamber and simultaneously connect a third flow passage with the second portion of the filter chamber while preventing flow through the fourth and fifth of the flow passages, said flow controlling means operable when said valve means is in the second position to prevent flow through the first, second and third flow passages while connecting the fourth flow passage to the first portion of the filter chamber and connecting the fifth flow passage with the second portion of the filter.

5,601,714

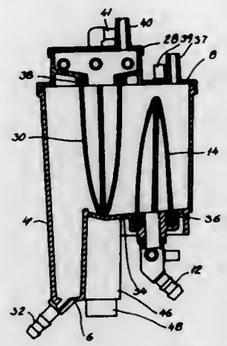
DEVICE FOR FILTRATION AND COLLECTION OF BLOOD

Sverre M. Haveland, Frederiksberg, Denmark, assignor to Polystan Holding A/S, Vaerlose, Denmark

Filed Jun. 30, 1994, Ser. No. 268,491

Int. Cl.[6] B01D *29/00;29/13;29/50;* **A61M** *1/00*

U.S. Cl. 210—436 **5 Claims**



1. A device for filtration and collection of blood from two different sources during a surgical procedure, said device comprising:

a housing made of a rigid material and having a cover, side walls and a bottom wall;

a reservoir defined within the device for collecting filtered blood and provided with and a blood outlet in the bottom wall;

a first blood filter element inside the housing comprising in series a layer of porous defoaming material and a screen filter;

a first blood inlet in said housing, which inlet is connected with means providing a first blood path in the device through said first blood inlet, said first blood filter element, said reservoir and said blood outlet;

a second blood filter element comprising in series a layer of porous defoaming material, a depth filter and a stocking;

at least one second blood inlet in the cover, which inlet is connected with means providing a second blood path in the device through said second blood inlet, said second blood filter element, said reservoir and said blood outlet;

a gas vent in said cover of the housing in communication with said reservoir;

wherein the housing above the bottom wall comprises a wall forming a ledge in said reservoir and defining a bottom wall in a portion of the reservoir with enlarged cross-section;

said first blood filter element at the lower end thereof is connected with said ledge, in the bottom wall of which said first blood inlet is placed;

said second blood filter element is mounted in the cover and is extending downwards towards said ledge, with which it is in contact;

said first blood filter element is extending upwards from said ledge and is self-supporting; and

said first and second blood filter elements are arranged side by side in parallel relationship.

5,601,715

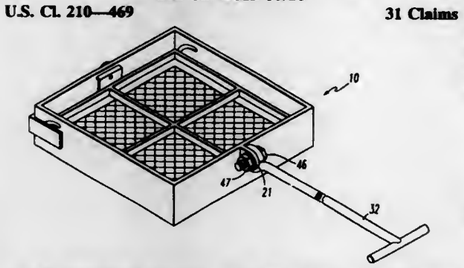
MUTLI-STAGE GREASE TRAP FILTER AND SKIMMER

Dennis G. Middleton, Altoona, and Robert J. Starr, Tyrone, both of Pa., assignors to New Pig Corporation, Tipton, Pa.

Filed Sep. 8, 1995, Ser. No. 525,288

Int. Cl.[6] B01D *35/28*

U.S. Cl. 210—469 **31 Claims**



1. An apparatus for removing grease from a grease trap, wherein the grease trap has at least one compartment that is bordered and defined by two sets of opposed, vertical side walls, so as to have a length and a width, and by a bottom, and wherein a fluid having a selected viscosity is provided within the grease trap compartment and grease having a selected viscosity is also entered into the grease trap compartment such that the grease forms a layer generally atop the fluid, the apparatus comprising:

a mounting portion that is securable to at least one vertical side wall of the grease trap compartment;

a housing portion that is pivotally connected to the mounting portion, wherein the housing portion has a length and width substantially similar to that of the grease trap compartment;

a filter media that is attached to the housing portion; and

means for pivoting the housing portion relative to the mounting portion, the pivot means including at least one pin being connected to the mounting portion and the at least one pin being disposed through at least one arcuate aperture of the housing portion, wherein the at least one pin may travel along the arcuate aperture when the housing portion is pivoted such that the housing portion may pivot from a position below the layer of grease through a position above the layer of grease such that the filter media skims the layer of grease.

5,601,716

FILTER MATERIAL

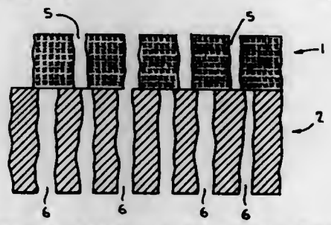
Günter Heinrich, Gernsbach, and Roland Köchel, Rheinstetten, both of Germany, assignors to PAPCEL - Papier und Cellulose Technologie-und Handels-GmbH, Gernsbach, Germany

Continuation of Ser. No. 268,565, Jul. 6, 1994, abandoned. This application May 29, 1996, Ser. No. 654,788

Claims priority, application Germany, Dec. 1, 1993, 9318405 U

Int. Cl.[6] B01D *39/04*

U.S. Cl. 210—490 **14 Claims**



1. A filter material for use in preparing tea or coffee beverages comprising an at least two layer non-woven substrate material wherein a first layer has a plurality of pores therein, is made on a paper-making machine and is composed of natural fibers; a second layer has a plurality of pores therein and comprises a plurality of individual synthetic fibers deposited in a heated state onto said first layer such that said synthetic fibers are fused with each other and with the natural fibers; said first layer and said second layer are substantially planar and superimposed with respect to each other; and said pores of said second layer are arrayed in such a manner to said pores of said first layer that a majority of the pores of the second layer do not coincide with pores of the first layer such that said filter material simultaneously readily diffuses liquid through said first layer and said second layer while substantially retaining solids on said filter material.

5,601,717

FILTER MEDIA CARTRIDGE

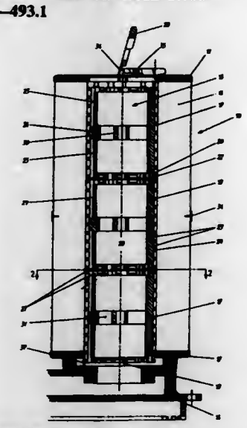
Guy Villette, Saint Vallier de Thiey, and Claude Terracol, Brie Angonnes, both of France, assignors to Siebec S.A., France

Filed Oct. 31, 1995, Ser. No. 550,756

Claims priority, application France, Nov. 9, 1994, 94 13785

Int. Cl.[6] B01D *27/06*

U.S. Cl. 210—493.1 **12 Claims**



1. A filter cartridge, comprising:

a pleated filter medium formed into a cylinder having upper and lower ends, the filter medium including radially extending pleats providing external folds defining an outer cylindrical contour and inner folds defining a central chamber;

upper and lower end caps respectively closing the upper and lower ends of the filter medium, said lower end cap having an opening;

a rigid hollow core provided in said central chamber of the filter medium; and

an outer collar circumferentially surrounding the filter medium, the outer collar comprising a plurality of radially inner uniformly spaced teeth receiving therebetween the external folds of the pleats, the collar being slidable along the longitudinal axial direction of the filter medium toward each of the end caps.

5,601,718

METHOD OF MAKING A FILTER FOR PREPARATIONS

Motohiro Tsubakino, Himeji, Japan, assignor to Taiho Industries Co., Ltd., Tokyo, Japan

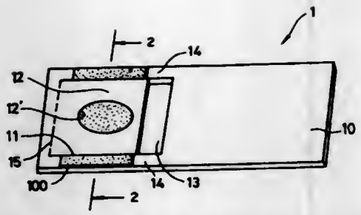
Division of Ser. No. 201,190, Feb. 24, 1994, Pat. No. 5,547,571. This application May 24, 1995, Ser. No. 449,374

Claims priority, application Japan, Feb. 26, 1993, 5-061279

Int. Cl.[6] B01D *35/00;* **G01N** *33/48*

U.S. Cl. 210—495 **1 Claim**

1. A method of making a filter for preparation which comprises forming a filter frame by cutting a flexible sheet of material to have



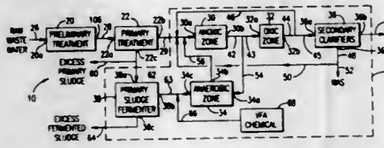
an external size suitable to set on a glass slide, and slitting said filter frame to form two slits with a central hole therebetween; said two slits defining inner edges of parallel framing parts in said filter frame and outer edges of a presser part; pulling one end of said presser part upward; inserting a porous filter sheet between said presser part and the parallel framing parts; releasing said presser part downward and restoring said presser part to an original position, so that said filter sheet contacts an under surface of said presser part, is contained in said slits between said presser part and said parallel framing parts, adheres to an upper surface of said parallel framing parts, and a portion of said filter sheet is exposed through said central hole for receiving mounting specimens thereon.

5,601,719

BIOLOGICAL NUTRIENT REMOVAL PROCESS FOR TREATMENT OF WASTEWATER

James M. Hawkins, Charlotte, N.C., and Cindy Wallis-Lage, Prairie Village, Kans., assignors to Black & Veatch, Kansas City, Mo.

Filed Jan. 11, 1996, Ser. No. 584,518
Int. Cl.[6] C02F *3/30*
U.S. Cl. 210—605 **12 Claims**



1. A method of treating wastewater which contains undesirable contaminant levels of BOD, phosphorus and nitrogen, to reduce the concentration of such contaminants, said method comprising the steps of:

providing an anoxic zone, an oxic zone, and an anaerobic treatment zone, each having bacterial agents therein,

said anoxic zone being provided with bacteria which are maintained under conditions and are operable to effect biological denitrification,

said oxic zone being provided with bacteria which are maintained under conditions and are operable to oxidize BOD, undergo luxury phosphorus uptake and to form nitrates,

introducing an organic substrate into said anaerobic zone, said anaerobic zone being provided with bacteria containing stored phosphorus which are maintained under conditions and are operable to undergo biological absorption of at least a portion of said substrate and release of at least a portion of stored phosphorus,

introducing said wastewater into the anoxic zone to effect bacterial denitrification and reduction of BOD;

discharging an anoxic effluent stream from said anoxic zone and splitting said anoxic effluent stream into an oxic influent stream and an anoxic recycle stream,

directing the oxic influent stream into the oxic zone;

directing the anoxic recycle stream into the anaerobic zone;

discharging an anaerobic effluent stream from said anaerobic zone and directing said anaerobic effluent stream to said anoxic zone;

discharging an oxic effluent stream from said oxic zone, said oxic effluent containing a quantity of activated sludge, directing a portion of said oxic effluent stream in the form of an oxic recycle stream to said anoxic zone and separating at least a portion of said activated sludge from said oxic effluent stream to form a return activated sludge stream; and

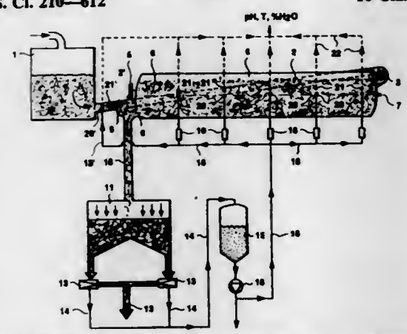
introducing said return activated sludge stream into said anoxic zone.

5,601,720

CONTROLLING A FERMENTATION PLANT

Walter Schmid, Puntenstrasse 5, CH-8152 Opfikon, Switzerland

Filed Apr. 20, 1994, Ser. No. 230,340
Claims priority, application Switzerland, Apr. 21, 1993, 1197/93
Int. Cl.[6] C02F *3/00*
U.S. Cl. 210—612 **10 Claims**



1. A method for controlling a fermentation plant, comprising the steps of:

feeding biogenic wastes into the entrance of a fermentor, said fermentor comprising methanobacteria, said methanobacteria decomposing said biogenic wastes to decomposed biogenic wastes, said biogenic wastes having a pH and comprising one or more dry substance components, said decomposition taking place by the regenerative flow method; and

passing said decomposed biogenic wastes to an anaerobic rotting stage;

wherein said pH and the value of said one or more dry substance components of said decomposing biogenic wastes are respectively monitored and adjusted at a plurality of points in said fermentor, and wherein the rate of throughput of said biogenic wastes in the fermentor is controlled by monitoring the rate of addition of said biogenic wastes to said entrance of said fermentor and by recycling decomposed biogenic wastes to said fermentor.

3. Process according to claim 1, characterized by the fact that the fermentor is controllably heated in predefined areas.

5,601,721

METHOD FOR REDUCING THE SELENIUM CONCENTRATION IN AN OIL REFINERY EFFLUENT

Ronald J. Lukaszewicz, Irvine; Darrel L. Gallup, Chino Hills, and Brian J. Kelly, Corona, all of Calif., assignors to Union Oil Company of California, El Segundo, Calif.

Filed Apr. 29, 1994, Ser. No. 236,548
Int. Cl.[6] C02F *1/42*
U.S. Cl. 210—670 **28 Claims**

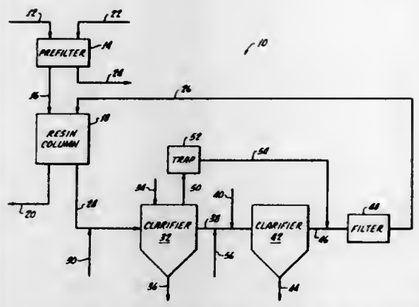
1. A method for removing selenocyanate from an aqueous liquid, the method comprising the sequential steps of:

(a) passing the aqueous liquid through an acrylic, strong base, anion exchange resin to produce a resin effluent having a total selenocyanate concentration less than the total selenocyanate concentration in the aqueous liquid;

(b) eluting the resin with an aqueous solution to form a selenocyanate-containing eluent; and

(c) repeating steps (a) and (b) at least 25 cycles without substantial fouling of the acrylic, strong base, anion exchange resin prior to regenerating said resin;

herein said aqueous liquid comprises sour water.

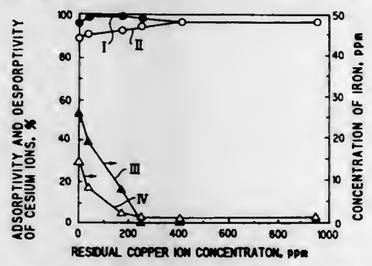


5,601,722

METHOD FOR THE PREPARATION OF AN ION EXCHANGER FOR CESIUM IONS AND METHOD FOR THE REGENERATION THEREOF

Koichi Tanihara, Tosu, Japan, assignor to Agency of Industrial Science and Technology, Tokyo-to, Japan

Filed Nov. 13, 1995, Ser. No. 554,980
Int. Cl.[6] F23G *7/00*
U.S. Cl. 210—673 **6 Claims**



1. A method for the preparation of an ion exchanger for cesium ions consisting of a porous anion exchange resin supporting a water-insoluble copper hexacyanoferrate (II) within the pores of the resin which comprises the steps of:

(a) bringing a porous anion exchange resin into contact with an aqueous solution of a water-soluble salt of hexacyanoferrate (II) so as to convert the anion exchange resin into the form of the hexacyanoferrate (II) ions followed by washing with water;

(b) bringing the anion exchange resin into contact with an aqueous solution of a copper salt to react with the hexacyanoferrate (II) ions so as to deposit a water-insoluble copper hexacyanoferrate (II) in the pores of the anion exchange resin;

(c) bringing the anion exchange resin into contact with an aqueous solution of an oxidizing agent to convert the copper hexacyanoferrate (II) into an oxidized form; and

(d) bringing the anion exchange resin into contact with an aqueous solution of a reducing agent in the presence of monovalent cations and with an aqueous solution containing copper ions either simultaneously or successively.

5. A method for the regeneration of an ion exchanger for cesium ions consisting of a porous anion exchange resin supporting a water-insoluble copper hexacyanoferrate (II) within the pores and containing cesium ions adsorbed thereon which comprises the steps of:

(e) bringing the ion exchanger into contact with an aqueous solution of an oxidizing agent to effect desorption of the cesium ions from the ion exchanger; and

(f) bringing the ion exchanger into contact with an aqueous solution of a reducing agent in the presence of monovalent cations and with an aqueous solution containing copper ions either simultaneously or successively.

5,601,723

METHOD OF INHIBITING SCALE AND CORROSION IN AQUEOUS SYSTEMS USING LOW MOLECULAR WEIGHT POLYMERS

Thomas C. Kirk, Langhorne, and David Witiak, Yardley, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 223,351, Apr. 5, 1994. This application Jun. 6, 1995, Ser. No. 471,916
Int. Cl.[6] C02F *1/00; C23F 11/10*
U.S. Cl. 210—701 **10 Claims**

1. A method of inhibiting scale formation in a water circulating system by adding at least one polymer product to the water circulating system at a level of from 0.1 to 500 ppm, wherein the polymer product is prepared by a process, comprising:

a) establishing an initial charge of water in a reactor;

b) adding into the reactor to form a reaction mixture

i) from 1 to 35 weight percent of at least one water soluble chain transfer agent selected from alkali metal salts of sulfites;

ii) at least one water soluble initiator,

iii) at least one metal promoter,

iv) from about 65 to about 95 weight percent, based on the total weight of monomer added to the reactor, of at least one water soluble monoethylenically unsaturated monocarboxylic acid monomer,

v) from about 5 to about 35 weight percent, based on the total weight of monomer added to the reactor, of at least one monoethylenically unsaturated dicarboxylic acid monomer selected from the group consisting of maleic acid, mesaconic acid, fumaric acid, citraconic acid, α-methylene glutaric acid, maleic anhydride, cis-3,4,5,6-tetrahydrophthalic anhydride, and combinations thereof, and

vi) from 0 to about 40 weight percent, based on the total weight of monomer added to the reactor, of one or more water soluble carboxyl-free monoethylenically unsaturated monomers, wherein the total weight percent of monomers iv), v), and vi) equals 100 weight percent;

c) maintaining the reaction mixture at a temperature of from about 60° C. to about 120° C. over a reaction time;

d) maintaining the reaction mixture at a pH of 3 or less over the reaction time; and

e) recovering a water soluble polymer product having a weight average molecular weight less than 30,000; wherein the chain transfer agent, initiator, and monoethylenically unsaturated monocarboxylic acid monomer iv) are added to the reactor over at least 25 percent of the reaction time.

5,601,724

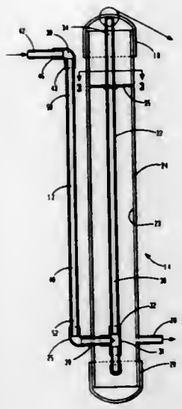
METHOD OF AERATION OF LIQUIDS

Denis J. St. Pierre, Stony Plain, Canada, assignor to Aquatex Group Industrie, S.A., Edmonton, Canada

Division of Ser. No. 96,359, Jul. 23, 1993, Pat. No. 5,460,731. This application Jul. 3, 1995, Ser. No. 498,690
Int. Cl.[6] C02F *1/74; B01D 37/00; B01F 3/04*
U.S. Cl. 210—722 **9 Claims**

1. An apparatus for aeration of liquids comprising:

a tower-like pressure vessel having a top, a bottom, an interior, an exterior, an inlet and an outlet, the inlet and the outlet to



the vessel being adjacent to the bottom of the vessel; the inlet connected to an external source of a mixture of gas bubbles and liquid; and

the pressure vessel having a cylindrical conduit in the interior oriented substantially vertically, the interior conduit having a first end connected to the inlet of the pressure vessel and extending continuously to a second end disposed immediately adjacent to the top of the pressure vessel thereby forming a gap which serves as a flow restriction causing gas bubbles to pass upward more quickly through the restriction and pneumatically accelerate the liquid said gap being of sufficient size so as to cause the gas bubbles and liquid to spray through the gap.

5,601,725

HYDROPHOBICALLY MODIFIED POLYMERS FOR SLUDGE DEWATERING

Daniel K. Chung, Burlington, Canada; Chandrashekar S. Shetty, and Manian Ramesh, both of Lisle, Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Oct. 23, 1995, Ser. No. 546,660

Int. Cl.[6] C02F *11/14*

U.S. Cl. 210—727 **4 Claims**

1. A method for the dewatering of sludge-containing industrial wastewater containing organic matter of a proteinaceous or cellulosic nature comprising the steps of:

A. adding to the sludge-containing industrial waste water an effective dewatering amount of a hydrophobically-modified polyelectrolyte copolymer coagulant selected from the group consisting of diallyldimethyl ammonium chloride-co-dimethylaminoethylacrylate benzyl chloride quaternary, diallyldimethyl ammonium chloride-co-dimethylaminoethylacrylate cetyl chloride quaternary, diallyldimethyl ammonium chloride-co-dimethylaminoethylmethacrylate benzyl chloride quaternary, diallyldimethyl ammonium chloride-co-dimethylaminoethylmethacrylate cetyl chloride quaternary and diallyldimethyl ammonium chloride-co-ethyl hexyl acrylate;

B. adding to the sludge-containing coagulant treated industrial waste water an effective dewatering amount of a flocculant selected from the group consisting of acrylamide-co-acrylic acid, acrylamide-co-dimethylaminoethyl acrylate methyl chloride quaternary and poly(acrylamide),

C. allowing the sludge-containing industrial waste water to separate into a water phase and a sludge phase; and

D. recovering said separated phases.

5,601,726

HYDROXAMETED POLYMERS IN THE BAYER PROCESS TO REDUCE SOLIDS

Robert W. Cole, San Patricio, Tex., assignor to Cytec Technology Corp., Wilmington, Del.

Continuation-in-part of Ser. No. 254,338, Jun. 6, 1994, abandoned. This application Oct. 31, 1995, Ser. No. 550,908

Int. Cl.[6] B01D *21/01*

U.S. Cl. 210—727 **13 Claims**

1. In the Bayer alumina process wherein there is produced a settler feed stream and streams containing suspended solids flowing into initial stages of a washer train, the improvement which comprises 1) admixing with either or both of said streams an effective amount of A) a first, water-soluble polymer containing pendant hydroxamic acid or salt groups and having a molecular weight below about 7,000,000 and then B) an effective amount of a blend of i) an anionic, water-soluble, acrylic flocculant and ii) a second, water-soluble polymer containing pendant hydroxamic acid or salt groups and having a molecular weight higher than said first polymer to flocculate the suspended solids, wherein the blend comprises from about 10 to about 90 weight percent of the second polymer and about 90 to about 10 weight percent of the anionic flocculant and 2) removing the resulting flocculated suspended solids from the stream or streams.

5,601,727

DEVICE AND METHOD FOR SEPARATING PLASMA FROM A BIOLOGICAL FLUID

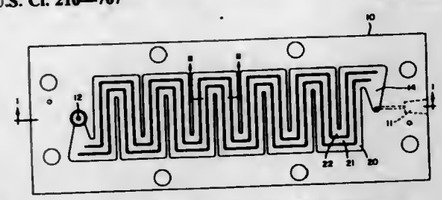
Thomas J. Bormann, Melville; Vlado I. Matkovich; Thomas C. Gsell, both of Glen Cove, and David B. Pall, Roslyn Estates, all of N.Y., assignors to Pall Corporation, East Hills, N.Y.

PCT No. PCT/US92/09542, § 371 Date Aug. 2, 1994, § 102(e) Date Aug. 2, 1994, PCT Pub. No. WO93/08904, PCT Pub. Date May 13, 1993

Continuation-in-part of Ser. No. 787,067, Nov. 4, 1991, abandoned. This PCT application Nov. 3, 1992, Ser. No. 232,174

Int. Cl.[6] B01D *37/00;61/00*

U.S. Cl. 210—767 **14 Claims**



1. A method for processing a biological fluid comprising:

directing a biological fluid tangentially to the surface of a separation medium in at least one serpentine fluid flow channel whereby plasma-rich fluid passes through the separation medium and plasma-depleted fluid passes tangentially across the separation medium.

5,601,728

CELL STRAINER ASSEMBLY AND METHOD OF USE

John J. Kayal, Wayne, N.J.; Seiji Fukushima, Chiba, Japan, and Thomas Fleming, St. Paul, Minn., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

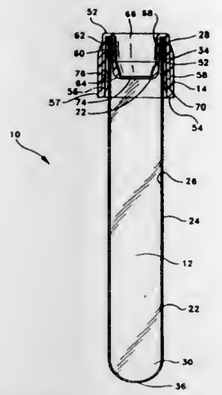
Continuation of Ser. No. 298,247, Aug. 30, 1994, Pat. No. 5,518,612. This application Nov. 30, 1995, Ser. No. 565,468

Int. Cl.[6] B01D *63/08*

U.S. Cl. 210—768 **2 Claims**

1. A method of removing impurities from a suspension of cells or tissues comprising:

(a) associating a cell strainer cap for filtering suspensions comprising a top portion, a bottom portion, an annular skirt extending from said top portion to said bottom portion and



having an inner surface and outer surface, an inner inverted skirt portion surrounded by said inner surface of said annular skirt and extending from said top portion toward said bottom portion, an annular space between said inner surface of said annular skirt and said inverted skirt portion, an orifice in said top portion of said annular skirt, means for filtering a suspension covering said orifice, and protrusions on said inner surface of said annular skirt and said inverted skirt portion into the open end of a tube;

(b) pouring a sample liquid into said top portion of said cell strainer cap;

(c) collecting the residual of said sample into said tube and said suspension in said means for filtering in said cell strainer cap;

(d) removing said cell strainer cap from said tube; and

(e) analyzing said suspension remaining in said cell strainer cap.

5,601,729

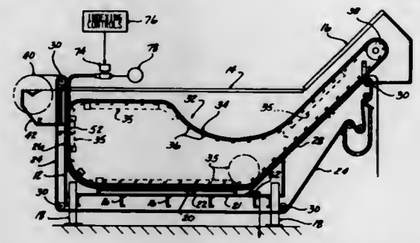
FILTER APPARATUS AND METHOD WITH MEDIA EDGE SEALING

Jack R. Bratten, West Bloomfield, Mich., assignor to Filtra-Systems Company, Southfield, Mich.

Continuation-in-part of Ser. No. 535,546, Sep. 28, 1995, which is a division of Ser. No. 813,161, Dec. 24, 1991, abandoned. This application Dec. 6, 1995, Ser. No. 568,154

Int. Cl.[6] B01D *37/00;33/00*

U.S. Cl. 210—783 **3 Claims**



3. In a tank filter of the type having a vacuum box in a tank covered with a perforate plate adapted to be overlain with permanent filter media belt and a strip of disposable filter media to carry out filtration of a liquid in the tank, the method of sealing side edges of the permanent media belt and the disposable media strip disposed thereon comprising the steps of:

mounting a permanent filter media belt loop so as to extend along a path through said tank and across said vacuum box perforate plate, out one end of said tank, down around the bottom of said tank and back into the other end of said tank;

inserting a section of disposable filter media strip into a convergent space defined between a portion of said conveyor and said permanent filter media belt;

indexing said permanent filter media belt and said disposable media strip across said perforate plate through said path solely by frictionally engaging a segment of said permanent filter media belt with a powered flight conveyor loop mounted above said tank by positioning a lower segment of said conveyor to frictionally engage a portion of said disposable filter media strip extending across said vacuum box perforate plate to drive said disposable media strip and said permanent filter media belt through said path to simultaneously advance successive segments of each onto said perforate cover;

extending the side edges of said permanent media belt and said disposable media strip substantially outward of said flight conveyor;

mounting an inflatable tube seal in a confining recess extended along and over each of said side edges; and,

inflating each tube seal to engage and seal said disposable media strip respective side edge, as well as the side edges of said underlying permanent media belt.

5,601,730

PROCESS AND APPARATUS FOR REMOVAL OF UNWANTED FLUIDS FROM PROCESSED BLOOD PRODUCTS

Roger E. Page, Hayling Island; Keith S. Morris, Emsworth; Graham D. Lowe, Hayling Island, all of United Kingdom, and Vlado I. Matkovich, Glen Cove, N.Y., assignors to Pall Corporation, East Hills, N.Y.

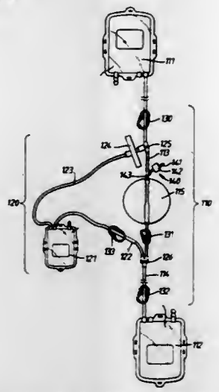
PCT No. PCT/GB93/01849, § 371 Date Mar. 21, 1995, § 102(e) Date Mar. 21, 1995, PCT Pub. No. WO94/05344, PCT Pub. Date Mar. 17, 1994

PCT Filed Sep. 1, 1993, Ser. No. 392,884

Claims priority, application United Kingdom, Sep. 2, 1992, 9218581

Int. Cl.[6] B01D *37/00;36/00*

U.S. Cl. 210—806 **31 Claims**



1. A method of removing unwanted fluid from a processed blood product comprising:

passing a blood product from a closed first container through a functional biomedical device to produce a processed blood product;

flowing the processed blood product and an unwanted fluid from the functional biomedical device to a second container through a passage;

separating the unwanted fluid from the processed blood product in the second container;

preventing the flow of the unwanted fluid from the second container through the passage to the functional biomedical device; and

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passing the unwanted fluid from the second container to the first container through an outlet providing fluid communication between the second container and the first container, said outlet including a barrier medium which allows the passage therethrough of the unwanted fluid but prevents the passage therethrough of the processed blood product.

5,601,731

PROCESS FOR THE PRODUCTION OF AN OPTOELECTRONIC COMPONENT HAVING A DEFINED AXIAL VARIATION OF THE COUPLING COEFFICIENT AND A DEFINED AXIAL DISTRIBUTION OF THE PHASE SHIFT

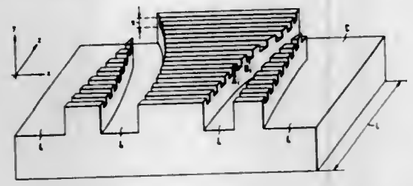
Hartmut Hillmer, Darmstadt, Germany, assignor to ANT Nachrichtentechnik GmbH, Backnang, Germany

Filed Mar. 9, 1995, Ser. No. 401,168

Claims priority, application Germany, Mar. 9, 1994, 44 07 832.3

Int. Cl.[6] H01L *21/00*; B44C *1/22*

U.S. Cl. 216—2 **3 Claims**



1. Process for production of an optoelectronic component having a defined coupling coefficient distribution and a defined phase shift distribution, the optoelectronic component comprising a semiconductor substrate provided with a plurality of semiconductor layers arranged in a vertical direction in the semiconductor substrate and with a DFB or DBR grating structure provided with a plurality of grating trenches having a grating trench depth (a), using semiconductor structuring techniques including photoresist techniques and etching techniques, said process comprising the steps of:

a) providing a photomask defining lateral and axial geometry of grating fields of the optoelectronic component, the defining of the lateral and axial geometry of the grating fields including defining grating boundaries between regions of the optoelectronic component having the grating trenches and grating-free regions, said grating boundaries having a mathematical curvature;

b) performing a spin-on deposition of a photoresist on the semiconductor layers of the semiconductor substrate;

c) structuring the semiconductor layers so that the DFB or DBR grating structure is located between the spin-on photoresist and the semiconductor substrate;

d) after performing the spin-on deposition of the photoresist in step b), exposing the photoresist using the photomask provided in step a) to form the optoelectronic component in the semiconductor substrate; and

e) after the exposing of step d), etching surfaces of the optoelectronic component which are to be free of the grating fields to remove material to a minimum depth reaching a horizontal xz-plane passing through the semiconductor substrate corresponding to deepest positions in the grating trenches of the grating fields.

5,601,732

PROTECTING FILM FOR WAFER AND METHOD FOR GRINDING SURFACE OF WAFER WITH THE SAME

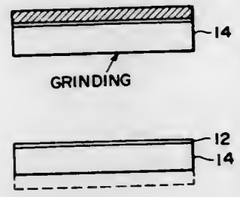
Masahiro Yoshida, Nagasaki, Japan, assignor to Sony Corporation, Japan

Filed Nov. 9, 1995, Ser. No. 555,786

Claims priority, application Japan, Nov. 15, 1994, 6-305528

Int. Cl.[6] B44C *1/22*

U.S. Cl. 216—36 **11 Claims**



4. A method of grinding a back of a substrate comprising the steps of:

appending a protecting tape for a substrate surface on a surface of a substrate and grinding a back of the substrate;

dipping the substrate ground at the back into isopropanol; and

dissolving the protecting tape for the substrate surface and removing the tape from the surface of the substrate.

5,601,733

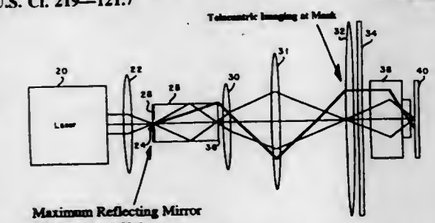
FULL FIELD MASK ILLUMINATION ENHANCEMENT METHODS AND APPARATUS

William N. Partlo, San Diego, Calif., assignor to Cymer, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 129,414, Sep. 30, 1993, abandoned. This application Sep. 30, 1994, Ser. No. 316,541

Int. Cl.[6] B23K *26/06*

U.S. Cl. 219—121.7 **27 Claims**



1. A mask illumination system for use with a mask having a part thereof which is transmissive to define a desired pattern and which is otherwise reflective comprising:

a laser for providing laser emission;

first lens means for focusing the laser emission;

a plate having a reflective face and a first transmissive area therein, the plate being positioned substantially perpendicular to an axis of the laser emission approximately at a position of focus of the emission so that the emission projects through the first transmissive area in the plate;

a light pipe having an exit end, and having an entrance end positioned adjacent to the plate so as to receive the emission passing through the first transmissive area in the plate, the light pipe having reflective inner walls;

a mask having reflective portions and transmissive portions;

a telecentric field lens positioned to receive the laser emission which has passed through the light pipe and to direct the same substantially perpendicular to the mask;

the laser emission striking reflective portions of the mask being reflected back to the plate to miss the first transmissive area in the plate and be re-reflected by the reflective face back to the mask at different positions, thereby making available for potential use part of the laser emission not previously passing through the transmissive portions of the mask, the telecentric field lens guiding the reflected laser emission from the mask to the light pipe.

5,601,734

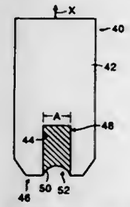
ELECTRODE FOR A PLASMA ARC TORCH

Lifeng Luo, Mayfield Heights, Ohio, and Richard W. Couch, Jr., Hanover, N.H., assignors to Hypertherm, Inc., Hanover, N.H.

Continuation of Ser. No. 283,070, Jul. 29, 1994, Pat. No. 5,464,962, which is a continuation-in-part of Ser. No. 886,067, May 20, 1992, Pat. No. 5,310,988. This application Nov. 6, 1995, Ser. No. 554,638

Int. Cl.[6] B23K *10/00*

U.S. Cl. 219—121.52 **20 Claims**



1. An electrode for use in a plasma arc torch, the electrode comprising:

an elongated electrode body formed of a high thermal conductivity material and having a bore disposed in a bottom end of the electrode body along a central axis extending longitudinally through the elongated electrode body;

an insert formed of a high thermionic emissivity material disposed in the bore such that an emission surface of the insert is exposed;

the emission surface being initially shaped to define a predetermined recess in the insert, the predetermined recess having an initial depth relative to a central axis extending longitudinally through the electrode body which is proportional to an operating current level of the torch, a diameter of the insert, and a plasma gas flow pattern in the torch.

5,601,735

LONG-SIZED TUBULAR GROUNDING CONTAINER UNIT FOR GAS-INSULATED ELECTRICAL DEVICE AND LASER WELDING DEVICE FOR MANUFACTURING THE SAME

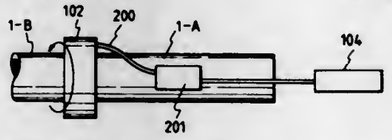
Hideo Kawamoto; Tokio Yamagiwa; Shinji Fukuda; Masayoshi Hashiura; Osamu Isshiki; Shigetaka Takeuchi, and Masaki Murashita, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 13, 1993, Ser. No. 45,249

Claims priority, application Japan, Apr. 13, 1992, 4-092968; Sep. 18, 1992, 4-249936

Int. Cl.[6] B23K *26/00*

U.S. Cl. 219—121.63 **9 Claims**



1. A laser welding device for constructing a long-sized tubular grounding container unit by connecting tubular barrels, comprising:

a welding head disposed around respective facing ends of two tubular barrels arranged to be joined at the respective facing ends;

a work head, including condensing means disposed in said welding bead for condensing a laser beam onto the respective facing ends for welding the respective facing ends to form a joint, said work head being arranged to rotate around an outer circumference of the welded tubular barrels at the joint;

a laser oscillator for generating a laser beam; and

means for transmitting the laser beam from said laser oscillator to said condensing means in synchronism with the rotation of said work head;

wherein said laser beam transmitting means includes an optical fiber wound around one of the tubular barrels to permit extension of the optical fiber during rotation of said work head.

5,601,736

BUTT WELDING PROCESS USING HIGH DENSITY ENERGY BEAM

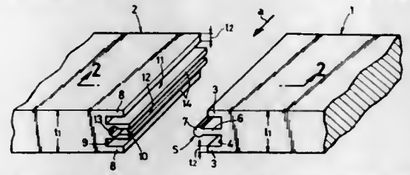
Yuji Saitoh; Minoru Mohko, and Masakazu Sato, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 21, 1995, Ser. No. 517,274

Claims priority, application Japan, Aug. 22, 1994, 6-197046

Int. Cl.[6] B23K *26/00*

U.S. Cl. 219—121.64 **10 Claims**



1. A butt welding process using a high density energy beam, comprising the steps of:

butting welding protrusions between first and second metal members by the steps of

bringing an engagement projection of said first metal member into engagement with an engagement recess of the second metal member,

resiliently deforming at least one of said engagement projection and said engagement recess to achieve a locking engagement between said engagement projection and said engagement recess thereby maintaining a butted state; and

irradiating the high density energy beam to said butt welding protrusions to bond said welding protrusions to each other.

5,601,737

SURFACE TREATING PROCESS INVOLVING ENERGY BEAM IRRADIATION ONTO MULTILAYERED CONDUCTOR PARTS OF PRINTED CIRCUIT BOARD

Nobuyuki Asahi, and Jun Tatsuta, both of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Jun. 29, 1994, Ser. No. 268,168

Claims priority, application Japan, Jul. 27, 1993, 5-007294; Jul. 27, 1993, 5-082119

Int. Cl.[6] B23K *26/00;26/12*

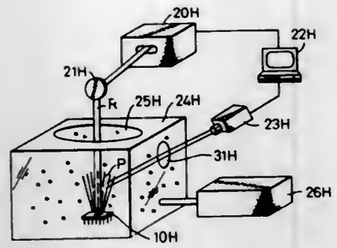
U.S. Cl. 219—121.66 **42 Claims**

1. A surface treating process with energy beam irradiation onto multilayered conductor parts on a printed circuit board, the process comprising the steps of:

forming, on a substrate of an organic material for said printed circuit board, said conductor parts each comprising a lamination of a plurality of layers of different metal materials; and

irradiating an energy beam onto a surface of said conductor parts under such irradiating conditions that the conductor parts are

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subjected to a surface treatment for once melting only the topmost surface part of a top layer of said plurality of layers of the conductor parts, the melting stopping short of a next layer of another metal material in the lamination, to thus avoid forming any alloy between adjacent layers of said lamination.

5,601,738

METHOD AND APPARATUS FOR TREATING MATERIAL WITH A LASER

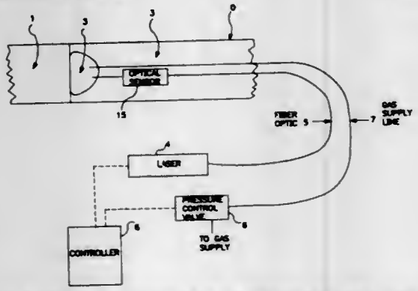
Ralf Engelhardt, Uetze, and Alfred Vogel, Lübeck, both of Germany, assignors to Medizinisches Laserzentrum Lubeck GmbH, Lubeck, Germany

Filed Jul. 14, 1994, Ser. No. 276,045

Claims priority, application Germany, Jul. 15, 1993, 43 23 757.6

Int. Cl.[6] B23K *26/12;26/14*

U.S. Cl. 219—121.84 **4 Claims**



2. A method of irradiating a target material with laser radiation from a laser source, said target material located within and obstructing an interior of a liquid conveyance means which has interior walls, said radiation delivered to said target material through a first fiber optic conductor having a terminal end in closely spaced proximity from said target material, said space between said terminal end and said target material occupied with a liquid within said liquid conveyancing means, said method comprising the steps of:

providing a second fiber optic conductor alongside of said first fiber optic conductor;

providing a means for removing said liquid from said space, comprising a pilot laser pulse generated from said laser source, said pilot pulse of a relatively long duration and low energy and delivered to said target material over said second fiber optic conductor, said pilot laser pulse creating a vapor bubble in said liquid material, wherein said bubble is slowly generated so not to create a pressure shockwave within said interior of said liquid conveyancing means, said bubble absorbing energy from said pilot laser pulse and eventually bursting, wherein said liquid is displaced away from said target material when said bubble bursts;

generating a processing laser pulse of a relatively short impulse duration and high energy so that said high energy pulse is delivered through the first fiber optic conductor directly to the target material for removal thereof,

wherein removal of said liquid eliminates a source of relatively high and damaging pressure against said target material and said interior of said conveyancing means which is normally generated when said liquid is vaporized during exposure to said laser pulse, and

wherein removal of said liquid reduces energy losses associated with said liquid normally resulting from heat absorption and conduction during said exposure to said processing laser pulse, thereby allowing a greater ablation efficiency in removing said target material, without damage to said interior walls as normally caused by said pressure source.

5,601,739

METHOD AND APPARATUS FOR CONTROLLING ARC WELDING ROBOT

Shinji Okumura; Takahide Hirayama, and Ryuichi Morita, all of Kitakyushu, Japan, assignors to Kabushiki Kaisha Yaskawa Denki, Fukuoka, Japan

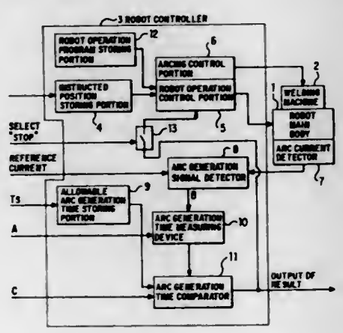
PCT No. PCT/JP94/00407, § 371 Date Sep. 7, 1995, § 102(e) Date Sep. 7, 1995, PCT Pub. No. WO94/21416, PCT Pub. Date Sep. 29, 1994

PCT Filed Mar. 15, 1994, Ser. No. 507,430

Claims priority, application Japan, Mar. 17, 1993, 5-084198

Int. Cl.[6] B23K *9/095*

U.S. Cl. 219—130.01 **8 Claims**



1. A method of controlling an arc welding robot performing a welding operation including at least one weld, the method comprising the steps of:

initiating execution of a program controlling said arc welding robot to perform said welding operation at a known linear rate;

detecting presence of arc generation by detecting an energized state wherein an arc current or arc voltage is equal to or greater than a predetermined value;

measuring a total time duration of the detected presence of arc generation from a beginning to an end of said performance of said welding operation;

comparing said total time duration to a predetermined time period prescribed for said welding operation when said arc welding robot has completed the welding operation; and

determining that an abnormality exists when said total time duration is less than said predetermined time period.

5,601,740

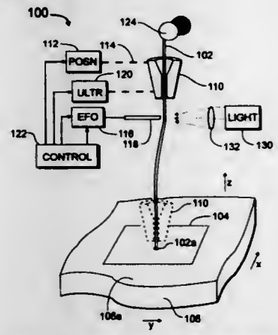
METHOD AND APPARATUS FOR WIREBONDING, FOR SEVERING BOND WIRES, AND FOR FORMING BALLS ON THE ENDS OF BOND WIRES

Benjamin N. Eldridge, Danville, and Gaetan L. Mathieu, Livermore, both of Calif., assignors to Formfactor, Inc., Livermore, Calif.

Continuation-in-part of Ser. No. 452,255, May 26, 1995, which is a continuation-in-part of Ser. No. 340,144, Nov. 15, 1994, which is a continuation-in-part of Ser. No. 152,812, Nov. 16, 1993, Pat. No. 5,476,211. This application Dec. 18, 1995, Ser. No. 573,945

Int. Cl.[6] B23K *9/06*

U.S. Cl. 219—130.4 **34 Claims**



1. Method of performing wirebonding, comprising:

bonding a bond wire to a terminal of an electronic component with a capillary;

playing the bond wire out of the capillary;

severing the bond wire with a discharge from an electrode; and

while severing the bond wire, illuminating at least one of the electrode and the bond wire with ultraviolet light.

5,601,741

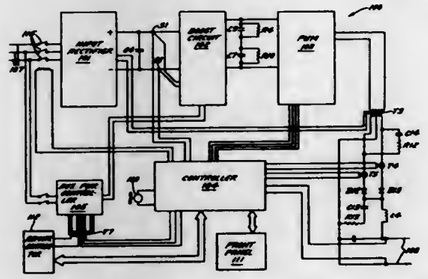
METHOD AND APPARATUS FOR RECEIVING A UNIVERSAL INPUT VOLTAGE IN A WELDING POWER SOURCE

James M. Thommes, Escondido, Calif., assignor to Illinois Tool Works, Inc., Glenview, Ill.

Filed Nov. 18, 1994, Ser. No. 342,378

Int. Cl.[6] B23K *9/10*

U.S. Cl. 219—130.21 **24 Claims**



1. A welding power source capable of receiving a range of input voltages, comprising:

an input rectifier configured to receive any input voltage within the range of input voltages, and configured to provide a first dc signal;

a dc voltage stage configured to receive the first dc signal and providing a second dc signal;

an inverter configured to receive the second dc signal and providing a second ac signal and configured to receive at least one control input;

an output transformer configured to receive the second ac signal and providing a third ac signal having a current suitable for welding;

an output circuit configured to receive the third ac signal and providing a welding signal;

a controller configured to provide at least one control signal to the inverter; and

an auxiliary power source configured to receive any voltage within a range of auxiliary input voltages and configured to provide a control power signal to the controller.

5,601,742

HEATING DEVICE FOR AN INTERNAL COMBUSTION ENGINE WITH PTC ELEMENTS HAVING DIFFERENT CURIE TEMPERATURES

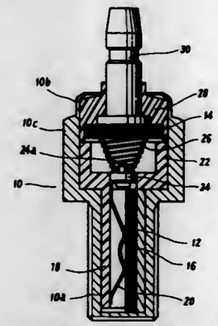
Takahisa Yamashita, Suntoh-gun, Japan, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 23, 1994, Ser. No. 294,298

Claims priority, application Japan, Sep. 3, 1993, 5-243672

Int. Cl.[6] B60L *1/02*

U.S. Cl. 219—207 **7 Claims**



1. A heating device for heating an item by using electrical current comprising at least one first PTC element for heating, a second PTC element having a great electrical resistance increase at a prescribed Curie temperature level which is electrically connected in series with said at least one first PTC element, said at least one first PTC element having a much higher Curie temperature then said second PTC element said second PTC element restricting the electrical current flow in the device at a time when an ambient temperature for the device exceeds said prescribed Curie temperature level and a main body for the device which compactly houses said first and second PTC elements said main body being an electrically and thermally conductive heatsink for the device in electrical series connection with said first and second PTC elements.

5,601,743

APPARATUS FOR DETERMINING THE SOLID CONTENTS OF A SLUG BY INDUCTION HEATING

Felix Mednikov; Karl Wiespeintner, both of Ortenburg, Germany, and Walter Uhlmann, Mörschwil, Switzerland, assignors to Bühler AG, Uzwil, Switzerland

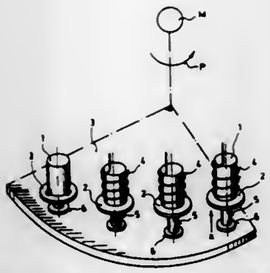
Filed Sep. 26, 1995, Ser. No. 534,061

Claims priority, application Switzerland, Apr. 27, 1995, 01208/95

Int. Cl.[6] H05B *6/06*

U.S. Cl. 219—635 **21 Claims**

1. An apparatus for determining the contents of solids in a heated elongated slug of thixotropic metal having a longitudinal axis, the apparatus comprising:



heating means including an inductive heating coil for heating the slug; and

sensor means including at least one measuring coil providing an output signal, said at least one measuring coil being comprised of electrical windings;

wherein said at least one measuring coil is enclosed by said heating coil, and encloses a space for receiving said slug;

said output signal is representative of contents of solids of the slug; and

said apparatus further comprises solid-content evaluation means responsive to said output signal for determining the contents of solids in the slug.

5,601,744

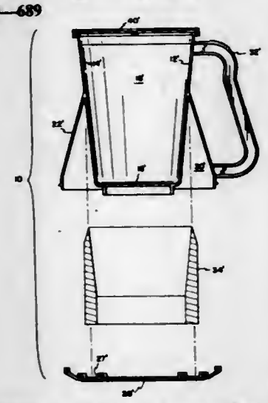
DOUBLE-WALLED MICROWAVE CUP WITH MICROWAVE RECEPTIVE MATERIAL

Wayne D. Baldwin, Asheboro, N.C., assignor to Vesture Corp., Asheboro, N.C.

Continuation-in-part of Ser. No. 371,502, Jan. 11, 1995, abandoned. This application Jun. 28, 1996, Ser. No. 672,309

Int. Cl.[6] H05B *6/80*

U.S. Cl. 219—689 **10 Claims**



1. A container for holding a beverage fluid, said container comprising:

an inner vessel having walls including a bottom wall and a side wall defining in a fluid retaining volume and having an opening for admitting and discharging a fluid into and from said volume;

an outer wall at least partially surrounding said vessel and cooperating with said walls of said vessel to define an enclosed chamber at least practically surrounding said inner vessel;

a microwave receptive material disposed within said chamber; and

at least one of said inner vessel and said outer wall is formed of a material which is generally transparent to microwave radiation and having a container melting point temperature greater than a melting point temperature of said microwave receptive material and less than a temperature of vaporization of said microwave receptive material.

5,601,745

MICROWAVE OVEN WITH TEMPERATURE AND PRESSURE MEASURING DEVICE

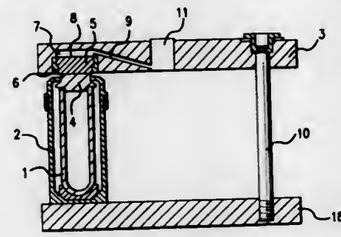
Andreas Schalk; Peter Kettisch; Helmut Sinabell, all of Graz, and Johannes Zach, Marein, all of Austria, assignors to Anton Paar KG, Graz-Strassgang, Austria

Filed Apr. 10, 1995, Ser. No. 421,158

Claims priority, application Germany, Apr. 18, 1994, 44 13 426.6

Int. Cl.[6] H05B *6/68*

U.S. Cl. 219—710 **11 Claims**



1. A microwave oven for decomposition of chemical substances, comprising:

a control unit for generating a microwave field, said control unit being positioned outside said microwave field;

at least one pressure-tight analysis vessel, sealed with a lid and being positioned in said microwave field of said microwave oven whereby heat is supplied to said analysis vessel;

measurement sensors on said analysis vessel;

a device for measuring pressure and temperature in said analysis vessel, said measuring device being in a microwave-tight housing inside said microwave field;

a first non-electrical line connecting said measurement sensors to said measurement device; and

a second non-electrical line connecting said measurement device to said control unit.

5,601,746

WET-SLIPPAGE OF TEXTILE MATERIAL AND WET LUBRICANT THEREFOR

Bernard Danner, and Francis Palacin, both of Riedisheim, France, assignors to Sandoz Ltd., Basel, Switzerland

Filed Sep. 26, 1994, Ser. No. 312,025

Claims priority, application Germany, Sep. 28, 1993, 43 32 963.2

Int. Cl.[6] D06M *13/02;13/10;* **C09D** *191/06;* **D06P** *7/00*

U.S. Cl. 252—8.86 **10 Claims**

1. A process for the treatment of textile fabrics comprising contacting the textile fabrics with a textile treatment agent (T), selected from the group consisting of textile pretreatment agents, textile main treatment agents and textile aftertreatment agents, and a wet lubricant, which is an aqueous dispersion (D) of a wax (W) dispersed in the aqueous phase by means of a dispersant (B), wherein in (D) the wax (W) consists of

(A) an oxidized hydrocarbon wax or a mixture of oxidized hydrocarbon waxes or a mixture of (A) and at least one non-oxidized hydrocarbon wax (P), the wax (W) having an acid number in the range of 5 to 70, and the dispersant (B) is selected from the group consisting of

a non-ionic, anionic, or amphoteric dispersant or a mixture of two or more of these dispersants, which dispersant (B) displays an HLB>7,

wherein the weight ratio of (B) to (W) is in the range of 10 to 50 parts (B) for every 100 parts by weight (W), and the dispersion (D) optionally contains at least one protective colloid (C), wherein the weight ratio of (C) to (W) is in the range of 2.5 to 30 parts (C) for every 100 parts by weight (W), but (D) is substantially free of waxes other than (A) and (P), and of surfactants other than dispersant (B) and protective colloid (C), in an aqueous liquor, wherein the weight ratio of the aqueous liquor to the textile fabric is in the range of 3:1 to 40: 1, and

washing the textile treatment agent (T) out of the textile fabric at the end of the treatment process.

5,601,747

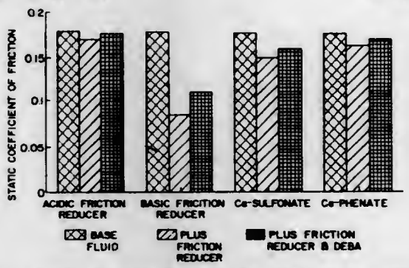
INCREASING THE FRICTION DURABILITY OF POWER TRANSMISSION FLUIDS THROUGH THE USE OF OIL SOLUBLE COMPETING ADDITIVES (PTF-054C)

Roger K. Nibert, Hampton; Ricardo A. Bloch, Scotch Plains; Jack Ryer, East Brunswick, and Raymond F. Watts, Long Valley, all of N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Division of Ser. No. 170,469, Dec. 20, 1993, Pat. No. 5,520,831. This application Jun. 7, 1995, Ser. No. 476,179

Int. Cl.[6] C10M *141/02*

U.S. Cl. 508—396 **9 Claims**



1. A method of controlling the friction coefficients and improving the friction durability of an oleaginous composition, which comprises:

adding to a major portion of an oil of lubricating viscosity a friction controlling and friction durability improving effective amount of an oil soluble combination of chemical additives comprising (a) a first chemical additive comprising a polar head group other than a dialkoxylated amino group and a friction reducing substituent group, wherein said polar head group is a sulfur acid or a phenate, and (b) a second chemical additive having a dialkoxylated amino polar head group and non-friction reducing substituent group.

5,601,748

METHOD OF MAKING FERROELECTRIC-FERROMAGNETIC COMPOSITE MATERIALS

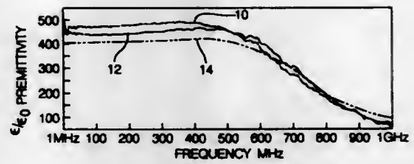
Said A. Mansour, West Lafayette, Ind.; Adolph L. Michell, Harrison Township, Macomb County, Mich.; Joseph V. Mantese, Troy, Mich., and Dennis F. Dungan, Clinton Township, Macomb County, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 1, 1996, Ser. No. 626,088

Int. Cl.[6] C04B *35/26;35/465;35/468;35/47*

U.S. Cl. 252—62.9 R **6 Claims**

1. A method of making a composite ferroelectric-ferromagnetic material for use as an electromagnetic interference attenuator, where the ferroelectric constituent is one or more ferroelectric materials selected from the group consisting of barium titanate



($BaTiO_3$), strontium titanate ($SrTiO_3$) and barium strontium titanate ($Ba_xSr_{1-x}TiO_3$) and said ferromagnetic constituent is an AFe_2O_4ferrite where A is copper or copper with one or more of lithium, magnesium, manganese, nickel and zinc, comprising:

mixing a said ferroelectric material having a grain size in the range of about one to five microns with at least two fluxing constituents of like grain size and selected from the group consisting of lithium compounds and the oxides or oxide precursor compounds of barium and copper,

calcining said ferroelectric and fluxing material mixture,

comminuting the calcined mixture to provide fluxed ferroelectric particles having a specific surface area of about 1.5 to 5.0 m^2/g,

mixing said fluxed ferroelectric particles with particles of a ferromagnetic material having a grain size in the range of about one to five microns in the proportions of 30 to 70 percent by volume ferroelectric and the balance ferromagnetic, and

sintering the mixture at a temperature in the range of 1060° C. to 1150° C. to form a said ferroelectric-ferromagnetic composite consisting essentially of a first phase of grains of said ferroelectric interconnected with a second phase of grains of ferromagnetic, such that said ferroelectric and ferromagnetic phases retain their respective distinct electromagnetic properties.

5,601,749

STABILISED GEL SYSTEM AND PRODUCTION THEREOF

Sean G. Hall, Hillsborough, and John T. McCullins, Belfast, both of United Kingdom, assignors to S.B. Chemicals Limited of Blaris Industrial Estate, Northern Ireland

Continuation of Ser. No. 910,127, Sep. 15, 1992, abandoned. This application Oct. 6, 1993, Ser. No. 132,662

Claims priority, application United Kingdom, Jan. 15, 1990, 9000833

Int. Cl.[6] C11D *9/10;9/18;9/32;3/065*

U.S. Cl. 510—336 **52 Claims**

1. A liquid built detergent composition which contains suspended builder particles substantially uniformly distributed therein, said composition consisting essentially of a stable hydrosol of silicic acid formed by neutralising a solution of from about 3% w/w up to about 8% w/w (based upon the weight of the composition) of an alkali metal silicate to a pH in the range of from about 1.0 to about 8.0 in the presence of from about 2% w/w up to about 30% w/w (based upon the weight of the composition) of a tenside, said hydrosol containing (i) an amount in excess of its solubility limit and in the range of from about 5% w/w up to about 40% w/w of a particulate builder substantially uniformly distributed therein, (ii) from 0.5% w/w up to about 30% w/w of at least one non-ionic surfactant, (iii) from 0 to about 5% w/w of a bleach, (iv) from 0 to about 5% of a bleach activator, and (v) from 0 to about 5% w/w in total of one or more minor ingredients, any minor ingredient being present in an amount of up to about 2% w/w and being selected from preservatives, optical brighteners, fragrances, foam depressants, foam boosters, foam stabilisers, soaps, dyes, pigments, buffers, corrosion inhibitors, sequestration agents, anti-ingestion agents, humectants, enzymes, enzyme stabilisers, fabric softeners and fabric conditioners.

5,601,750

ENZYMATIC BLEACH COMPOSITION

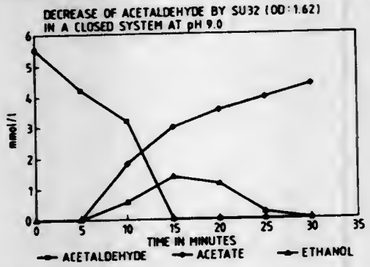
Todd Domke, Newtown, Pa.; Charles C. Nunn, Rutherford, N.J.; Marco L. Giuseppin, Schiedam, Netherlands; Rudolf J. Martens, Vlaardingen, Netherlands; Ton Swarthoff, Hellevoetsluis, Netherlands, and Cornelis T. Verrips, Maasluis, Netherlands, assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Filed Sep. 7, 1994, Ser. No. 301,860

Claims priority, application European Pat. Off., Sep. 17, 1993, 93202706

Int. Cl.[6] C09K 3/00; C11D 3/386;3/395

U.S. Cl. 252—186.38 11 Claims



1. Bleach composition comprising:

(a) an effective amount of an enzymatic hydrogen peroxide-generating system to generate hydrogen peroxide;

(b) an effective amount of a bleach catalyst sufficient to interact with the hydrogen peroxide and which is a coordination complex comprising manganese or iron ions;

(c) an effective amount of an enzymatic aldehyde decomposing system which comprises intact yeast cells to remove any unpleasant aldehyde smell.

5,601,751

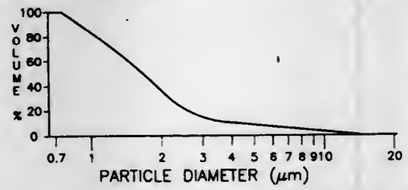
MANUFACTURING PROCESS FOR HIGH-PURITY PHOSPHORS HAVING UTILITY IN FIELD EMISSION DISPLAYS

Charles M. Watkins, and Surjit S. Chadha, both of Meridian, Id., assignors to Micron Display Technology, Inc., Boise, Id.

Filed Jun. 8, 1995, Ser. No. 488,795

Int. Cl.[6] C09K 11/00;11/08

U.S. Cl. 252—301.4 R 20 Claims



1. A process for preparing a high-purity phosphor having utility as a luminescent in a field emission display, said process comprising:

providing a host lattice starting material and a dopant starting material;

combining said host lattice starting material and said dopant starting material in a precursor mixture having an initial average particle size and substantially free of any contaminant-generating components containing a Group IA ion or a Group IIA ion;

processing said precursor mixture to obtain a sized precursor mixture having an average precursor particle size less than about 2 microns;

placing said sized precursor mixture in a heat treatment vessel formed from platinum; and

heating said sized precursor mixture in said heat treatment vessel to a temperature between about 1200° C. and 2000° C. for a time sufficient to infiltrate said dopant starting material into said host lattice starting material, thereby producing a high-purity phosphor.

5,601,752

DEFOAMER COMPOSITIONS AND PROCESS FOR DEFOAMING AQUEOUS SYSTEMS

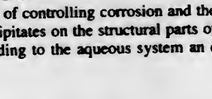
Donald G. Jenkins, Duluth, Ga., assignor to Nottingham Company, Atlanta, Ga.

Filed Mar. 10, 1995, Ser. No. 402,148

Int. Cl.[6] B01D 19/04; C07C 233/01

U.S. Cl. 252—321 11 Claims

1. In a process of controlling foam in an aqueous foaming system which includes the addition of foam control agents to said system, wherein the improvement is adding a composition of the following formula as one of the foam control agents with at least one other defoamer:



wherein:

R is a hydrocarbon radical having from 10–20 carbon atoms selected from the group consisting of linear and branched alkyl radicals and linear and branched unsaturated radicals;

R^1 is a reactive alkoxy radical of from 2 to 4 carbon atoms;

y is an integer of at least 1;

A is selected from the group consisting of ethylene, propylene and butylene radicals; and

x is an integer of at least 1.

5,601,753

BLOWING COMPOSITION, METHOD FOR PRODUCING FOAM USING THE COMPOSITION AND FOAM

Yukio Omure, and Satoshi Ide, both of Osaka, Japan, assignors to Daikin Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 290,702, Aug. 12, 1994, abandoned. This application Jun. 17, 1996, Ser. No. 665,841

Claims priority, application Japan, Feb. 14, 1992, 4-028451

Int. Cl.[6] C09K 3/00

U.S. Cl. 252—350 4 Claims

1. A blowing composition comprising (1) difluoromethane only, or at least two members selected from the group consisting of difluoromethane, 1,1-difluoroethane 1,1,1-trifluoroethane and (2) at least one member selected from the group consisting of, i-butane, n-butane, pentane, isopentane, cyclopentane and dimethylether.

5,601,754

WATER TREATMENT POLYMER CONTAINING POLY[OXY-[(HYDROXYMETHYL)-1,2-ETHANEDIYL]] MACROMONOMERS AND METHODS OF USE THEREOF

William S. Carey, Ridley Park, and Andrew Solov, Holland, both of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

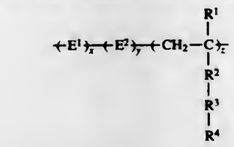
Filed Apr. 21, 1995, Ser. No. 426,516

Int. Cl.[6] C02F 5/10; C23F 11/12

U.S. Cl. 252—396 6 Claims

1. A method of controlling corrosion and the deposition of scale imparting precipitates on the structural parts of an aqueous system comprising adding to the aqueous system an effective amount for

the purpose of a water soluble polymer having the structure:



wherein E^1 comprises the repeat unit obtained after polymerization of one or more α, β ethylenically unsaturated monomers, selected from the group consisting of a carboxylic acid, a lower alkyl (C_1–C_6) ester of a carboxylic a hydroxylated lower alkyl (C_1–C_6) ester, and amide forms thereof; E^2 comprises the repeat unit obtained after polymerization of one or more α, β ethylenically unsaturated monomer containing a sulfonic acid functionality, R^1 is a hydrogen or a lower (C_1–C_3) alkyl; R^2 is —CH_2—O— or —C(=O)—O—; R^3 is —(—CH_2—CH(—CH_2—OH)—O—)—$_n$; n is an integer greater than 1; and R^4 is hydrogen, or C1–C20 alkyl; and x is the molar percentage being between 1–98 molar %, y is the molar percentage being between 1–98 molar %, z is the molar percentage being between 98–1 molar %, wherein the sum of x, y and z equal 100%.

5,601,755

DIELECTRICS COMPRISING METHYL/BENZYL DERIVATIVES OF DIPHENYLMETHANE

Raymond Commandeur, Vizille; Noelle Berger, Ecully, and Pierre Jay, Saint-Didier Au Mont D'Or, all of France, assignors to Atochem, Puteaux, France

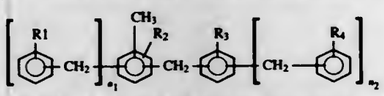
Continuation of Ser. No. 216,507, Mar. 22, 1994, abandoned, which is a continuation of Ser. No. 959,347, Oct. 13, 1992, abandoned, which is a continuation of Ser. No. 661,228, Feb. 27, 1991, abandoned. This application Mar. 6, 1995, Ser. No. 399,998

Claims priority, application France, Feb. 27, 1990, 90 02421

Int. Cl.[6] C07C 1/16;2/02;15/16; H01B 3/22

U.S. Cl. 252—570 32 Claims

1. A composition of matter adopted for dielectric application, comprising an immixture having a dielectrically effective amount of benzyltoluene, benzylxylene, (methylbenzyl)toluene and (methylbenzyl)xylene, which does not have a significant amount of crystals at a temperature of −45° C., further comprising at least 10% by weight of an isomer or isomers of the formula (A);



(A)

in which R_1, R_2, R_3 and R_4, which may be identical or different, are each a hydrogen atom or a methyl radical and n_1 and n_2 are each 0, 1 or 2, with the proviso that n_1+n_2 is greater than or equal to 1 and less than or equal to 3, and comprising at least 60 parts by weight of said immixture of toluene/xylene compounds, and further wherein said benzyltoluene comprises at least 70% by weight of said immixture of toluene/xylene compounds.

5,601,756

LIQUID ULTRAVIOLET STABILIZER AND METHOD

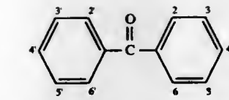
John V. Swearengin, 2012 Gain Rd., El Dorado, Ark. 71730

Filed Aug. 23, 1995, Ser. No. 518,244

Int. Cl.[6] F21V 9/04

U.S. Cl. 252—589 18 Claims

1. A UV stabilizer comprising an admixture of two or more different benzophenones having the general formula of:



wherein 2 is OH, 2' is H or OH, 4 is OC_nH_{2n+1} and 4' is H or OC_nH_{2n+1}, said admixture being liquid at 22° C.

5,601,757

GASIFICATION-TUBE MODULE AND REACTOR FOR CELL CULTIVATION

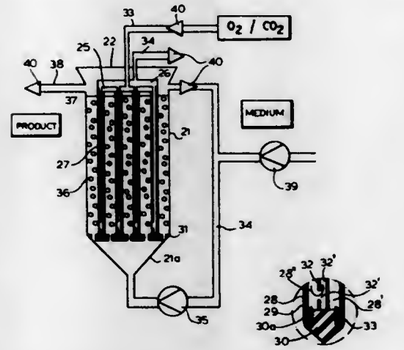
Manfred Biselli, Jülich; Christoph Born, Aachen; Bernd Scröder, and Christian Wandrey, both of Jülich, all of Germany, assignors to Forschungszentrum Julich GmbH, Julich, Germany

Filed Aug. 18, 1995, Ser. No. 517,008

Claims priority, application Germany, Aug. 24, 1994, 9413575 U; Aug. 24, 1994, 9413576 U; Feb. 16, 1995, 195 05 109.2; Feb. 16, 1995, 195 05 110.6

Int. Cl.[6] C10J 1/08; C12M 3/00

U.S. Cl. 261—122.1 23 Claims



1. A gasification module for bubble-free gasification of a culture medium in a cell culture reactor, said gasification module comprising:

a vertically elongated non-porous tubular membrane having an upper end and a lower end, said membrane being permeable to at least one component of a gas;

a closure member at said lower end closing said membrane tube from an exterior thereof;

a shape-stable axially extending inner tube within said membrane and extending from said closure member of said lower end to said upper end, said membrane being spaced from said inner tube to form an outer passage, said inner tube having an opening at said lower end connecting said outer passage with the inside of said inner tube forming an inner passage; and

means forming fittings at said upper end for connecting one of said passages to a source of gas and the other of said passages to a gas outlet, said fitting for the inner passage extending above the upper end of said tubular membrane.

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5,601,758

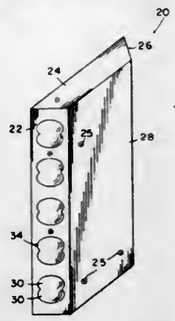
METHOD FOR FABRICATING A LENS/MIRROR TOWER

Neville K. Lee, Sherbourn; Amit Jain, Marlboro, both of Mass., and Erwin Keppeler, Marktoberdorf, Germany, assignors to Quantum Corporation, Milpitas, Calif.

Division of Ser. No. 79,484, Jun. 18, 1993, Pat. No. 5,452,283, which is a continuation of Ser. No. 847,520, Mar. 6, 1992, Pat. No. 5,260,928. This application Dec. 1, 1994, Ser. No. 348,039

Int. Cl.[6] B29D *11/00*

U.S. Cl. 264—1.38 **7 Claims**



1. A method of fabricating a lens/mirror tower for an optical storage device, said tower having a plurality of lens and mirror elements integrally-formed on a monolithic substrate and configured to direct an optical beam to one of a plurality of closely-spaced disks having recording disk surfaces configured to store data, said method comprising the steps of:

constructing a generally trapezoidal substrate having first and second sides, said first side being generally longer than said second side, and having an angular back surface opposing a generally planar front surface;

disposing said front surface of said substrate in aligned contact relation with cavities of a lens array mold, said cavities of a lens array mold, said cavities configured as overlapping pairs arranged in aligned relation as defined by the spacing between said recording disk surfaces and containing curable resin material having a property that provides adherence to said substrate;

curing said resin material such that said resin adheres to said front surface of said substrate to create a replicated lens array;

coating said back surface with reflective material to provide a mirror surface; and

coating said first side and said front surface of said substrate with anti-reflective material such that said resulting tower has a plurality of lens and mirror elements integrally formed on a monolithic substrate and configured to direct the optical beam to any of said plurality of closely spaced disks of said optical storage device.

5,601,759

METHOD FOR MOLDING CONTACT LENSES

Attilio Apollonio, Livonia, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

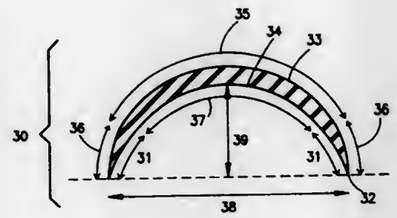
Filed Oct. 5, 1993, Ser. No. 134,131

Int. Cl.[6] B29D *11/00*

U.S. Cl. 264—2.5 **12 Claims**

1. In a method of molding contact lenses in mold assemblies having anterior molds with anterior mold cavity defining surfaces and posterior molds with posterior mold cavity defining surfaces to produce a contact lens series having a range of optical powers and common fitting characteristics including a common effective base curve, the improvement comprising:

providing a set of anterior mold types wherein each anterior mold type has a different anterior mold defining surface and wherein the number of anterior mold types in the set is less than the number of optical powers in the contact lens series;



providing a set of posterior mold types wherein each posterior mold type has a different posterior mold defining surface and wherein the number of posterior mold types in the set is less than the number of optical powers in the contact lens series; and

selectively combining anterior mold types with posterior mold types to form a series of mold assemblies corresponding to the contact lens series having the range of optical powers and common fitting characteristics including a common effective base curve.

5,601,760

MILK DERIVED WHEY PROTEIN-BASED MICROENCAPSULATING AGENTS AND A METHOD OF USE

Moshe Rosenberg, Davis, Calif., assignor to The Regents of the University of California, a California Corporation, Oakland, Calif.

Filed Sep. 1, 1994, Ser. No. 299,918

Int. Cl.[6] B01J *13/02;13/04*

U.S. Cl. 264—4.1 **22 Claims**

1. A method for microencapsulation of a volatile or a non-volatile core material in a wall system consisting essentially of a whey protein, said method comprising steps:

(a) preparing the wall system using whey protein;

(b) mixing a core system within the wall system;

(c) dispersing the core system in the wall system to form emulsion, dispersion or a combination thereof;

(d) microencapsulating the emulsion, dispersion or the combination of step (c); and

(e) harvesting a microencapsulated product.

5,601,761

ENCAPSULATED ACTIVE MATERIALS AND METHOD FOR PREPARING SAME

Dwight K. Hoffman, Midland; David V. Dellar, Beaverton, both of Mich., and Herman W. Schlameus, San Antonio, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 26, 1994, Ser. No. 311,818

Int. Cl.[6] B01J *13/02;13/20;13/22*

U.S. Cl. 264—4.3 **16 Claims**

1. A method of encapsulating an active material in a coating material immiscible therewith, the coating material having a melting point above ambient temperature, the method comprising the steps of:

a) dispersing the active material in the coating material at a temperature sufficient to melt the coating material;

b) forming droplets of active material interspersed with the coating material;

c) cooling the droplets to solidify the coating material; and

d) contacting the droplets with a solvent that dissolves the active material but does not dissolve the coating material, so as to remove active material from the surface of the coating material.

5,601,762

METHOD FOR ENHANCING THE PROPERTIES OF A STRING USED IN A STRINGING DEVICE

Harry M. Ferrari, Pittsburgh, and Ronald H. Carr, Monroeville, both of Pa., assignors to Ferrari Importing Company, Mich.

Filed Dec. 14, 1993, Ser. No. 167,380

Int. Cl.[6] B29C *35/10;71/00*

U.S. Cl. 264—473 **22 Claims**

1. A method for processing a string for use in a stringed device, said method comprising the steps of:

(a) providing a string having at least one fiber, said fiber including a material influencing the measurable physical properties of elasticity, flexibility, ductility, and resiliency of said fiber; and

(b) contacting said material of said fiber with a solvent that causes partial dissolution of said material of said fiber for increasing at least one of said measurable physical properties thereof.

5,601,763

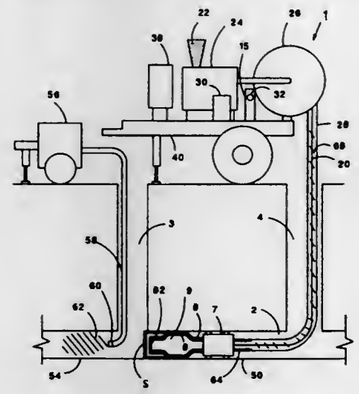
IN SITU PIPELINE REHABILITATION SYSTEM

Robert M. Hunter; Frank M. Stewart, and William H. Hunter, all of 320 S. Wilson Ave., Bozeman, Mont. 59715

Filed Nov. 29, 1994, Ser. No. 345,996

Int. Cl.[6] B29C *47/06;63/34*

U.S. Cl. 264—36 **19 Claims**



1. A process for in situ lining of a pipeline having an interior, said interior having an interior surface, comprising the steps of

heating at least the interior surface to a temperature in the range 90° C. to 130° C.,

extruding a tube of thermoplastic liner material within the interior of said pipeline through a movable extrusion die, said tube being generally circular in cross section and said tube having an outside diameter smaller than the inside diameter of said pipeline, and

expanding said tube so that the outside diameter of said tube is substantially equal to the inside diameter of said pipeline,

wherein said interior surface is heated immediately prior to liner installation by means of a flash heater located adjacent to said movable extrusion die.

5,601,764

PROCESS FOR MAKING TIC-BASE/SIC WHISKER COMPOSITE CERAMIC CUTTING TOOLS

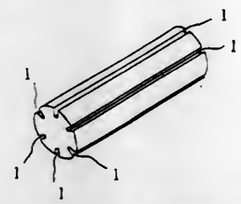
Junichiro Suzuki; Shoji Sakakibara; Akiyasu Okuno, and Masakazu Watanabe, all of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Division of Ser. No. 131,571, Oct. 4, 1993, Pat. No. 5,439,854, which is a continuation of Ser. No. 78,496, Jul. 28, 1987, abandoned. This application Aug. 8, 1995, Ser. No. 512,636

Claims priority, application Japan, Jul. 31, 1986, 61-178834; Aug. 15, 1986, 61-190483; Oct. 6, 1986, 61-236077; Oct. 6, 1986, 61-237593

Int. Cl.[6] C04B *35/52*

U.S. Cl. 264—40.1 **19 Claims**



1. A process for producing a TiC-base/SiC whisker composite ceramic comprising:

(1) providing a powdery base mixture consisting essentially of 5 to 40% by weight SiC whisker, 10% by weight or below of a sintering aid, and the balance being a TiC-base composition represented by the following formula in atomic fraction: $(Ti_aM_b)(C_cN_dO_eB_f)_g$ where:

M denotes at least one of transition metal elements of Groups IVa, Va and VIa, except Ti, according to the International Periodic Table; and a+b=1, 0<b≦0.5, c+d+ e+f=1, 0.5≦c≦1.0, 0≦d≦0.5, 0≦e≦0.3, 0≦f≦0.5, 0.6≦g≦1.1;

(b) thoroughly mixing said mixture to uniformly disperse the SiC whisker therein;

(c) compacting and sintering the resultant mixture in a nonoxidizing atmosphere at a temperature of 1,500°–2,000° C.

5,601,765

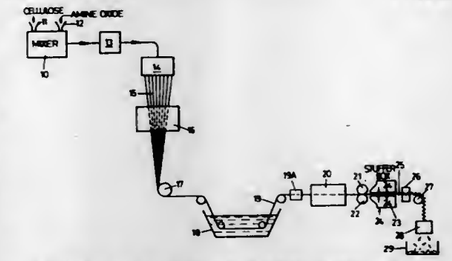
METHOD FOR MANUFACTURING CRIMPED SOLVENT-SPUN CELLULOSE FIBRE OF CONTROLLED QUALITY

Alan Sellars, South Humberside; Ronald D. Payne, Humberside; Penny E. Letts, South Humberside, and Neville P. Bluckert, Lincs, all of England, assignors to Courtaulds Fibres (Holdings) Limited, London, England

Continuation of Ser. No. 66,778, May 24, 1993, abandoned. This application Mar. 22, 1995, Ser. No. 409,636

Int. Cl.[6] D01D *13/02;* **D02G** *1/12*

U.S. Cl. 264—40.1 **5 Claims**



1. A method for the production of staple cellulose fibre which comprises dissolving cellulose in an amine oxide solvent to form a hot cellulose solution, extruding the hot solution through a die assembly to form a multi-filamentary tow of continuous filaments, passing the tow of continuous filaments through a water bath to

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leach out the amine oxide, crimping the leached tow in a stuffer box while simultaneously injecting dry steam into the stuffer box, withdrawing the crimped tow from the stuffer box and moving it along a predetermined path while applying tension to the tow in the range of 0.55 pounds/kilotex to 1.88 pounds/kilotex, projecting a light beam across the crimped tow as it is moved along said path under tension in said range, measuring the degree by which the beam is obscured by the tow and generating a signal when the beam is obscured by more than a predetermined amount, and then passing the tow downstream of the beam to a cutter and cutting the tow with the cutter to form a staple fibre.

5,601,766

METHOD OF MAKING A SUN VISOR FOR MOTOR VEHICLES

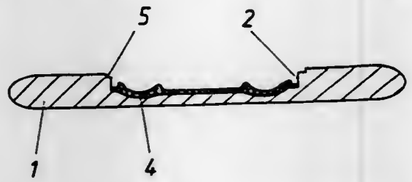
Lothar Viertel, Altforweiler, Germany, and Patrick Welter, La Chambre, France, assignors to Gebr. Happich GmbH, Germany

Division of Ser. No. 335,984, Nov. 8, 1994, Pat. No. 5,477,429. This application May 9, 1995, Ser. No. 437,363

Claims priority, application Germany, Nov. 8, 1993, 43 38 019.0

Int. Cl.[6] B29C *44/06*

U.S. Cl. 264—45.4 **15 Claims**



1. A method of manufacturing a sun visor comprising

introducing a first type of polypropylene particles into a first foam mold and there molding the first polypropylene particles into a sun visor body having a main surface with a depression therein;

introducing a second type of polypropylene particles into a second foam mold and there molding the second polypropylene particles into a shaped body which is shaped to fit into the depression in the surface of the sun visor body;

introducing the shaped body into the depression of the sun visor body and pressing the shaped body against the bottom of the depression in the sun visor body to form a reflector within the depression in the sun visor body.

5,601,767

PROCESS FOR THE PRODUCTION OF A CELLULOSE MOULDED BODY

Heinrich Firgo; Dieter Eichinger, both of Vöcklabruck, and Markus Eibl, Lambach, all of Austria, assignors to Lenzing Aktiengesellschaft, Austria

Filed Jun. 6, 1995, Ser. No. 483,565

Claims priority, application Austria, Sep. 5, 1994, A 1698/94

Int. Cl.[6] B29C *47/00;* **C08J** *3/11;* **D01F** *2/24*

U.S. Cl. 264—101 **14 Claims**

1. A process for producing a cellulose molded body comprising the steps of:

a) feeding a cellulose-containing material into an aqueous solution of a tertiary amine-oxide to form a suspension of the cellulose containing material, wherein the cellulose-containing material substantially comprises a material selected from the group consisting of shredded waste paper, shredded cellulose-containing fabrics, shredded annual plants, chemically broken up annual plants and mixtures thereof,

b) removing water from the suspension while simultaneously intensively mixing the suspension at elevated temperature and reduced pressure for sufficient time to produce a cellulose solution, and

c) molding the cellulose solution in a molding device and introducing the molded cellulose solution into a precipitation bath wherein precipitation of cellulose occurs thereby forming a cellulose molded body.

5,601,768

PROCESS FOR PREPARATION OF A POLYESTER FILM FOR MAGNETIC RECORDING MEDIA

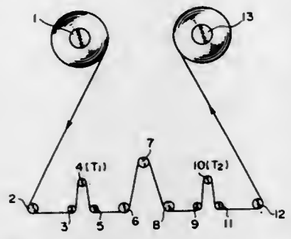
Hideshi Kurihara, Sagamihara; Sadayoshi Miura, Yamato, and Tsuyoshi Nagai, Sagamihara, all of Japan, assignors to Teijin Limited, Osaka, Japan

Division of Ser. No. 250,115, May 26, 1994, Pat. No. 5,496,618, which is a continuation of Ser. No. 903,323, Jun. 24, 1992, abandoned. This application Jun. 2, 1995, Ser. No. 458,671

Claims priority, application Japan, Jun. 28, 1991, 3-183913

Int. Cl.[6] B32B *3/00;27/14*

U.S. Cl. 264—131 **7 Claims**



1. A process for preparation of a polyester film for magnetic recording media wherein on the surface of one side or both sides of the film,

(i) the film has fine protuberances having an average height of 0.15 μm or less at a rate of 1.0×10^4 to 1.0×10^8 per mm^2,

(ii) the fine protuberances are composed of fine particles whose surface is coated with a binder resin,

(iii) the fine protuberances are stuck on the film surface by the binder resin,

(iv) the film does not substantially have the binder resin on the film surface other than in the vicinity of the fine protuberances, and

(v) the average surface roughness (Ra) of the film surface is in the range of 0.001 to 0.01 μm,

which process comprises applying onto the surface of one side or both sides of a polyester film a dispersion comprising a readily volatile liquid medium having uniformly dispersed therein fine particles whose surface is coated with a binder resin; and drying the resultant film.

5,601,769

PROCESS FOR MAKING A COMPOSITE MEMBRANE WITH HIGH SELECTIVITY AND FLUX

Henricus M. Fortuin, Maastricht, and Petrus H. M. Stokman, Geleen, both of Netherlands, assignors to DSM N.V., Netherlands

Division of Ser. No. 160,167, Dec. 2, 1993, abandoned. This application Jun. 2, 1995, Ser. No. 471,325

Claims priority, application Belgium, Dec. 3, 1992, 9201062

Int. Cl.[6] B29C *67/20*

U.S. Cl. 264—135 **17 Claims**

1. A process for the manufacture of a composite membrane comprising a non-porous coating on a microporous polymeric support, said process comprising drawing a polymeric film and forming the composite membrane, wherein the polymeric film becomes more porous during said drawing and has an initial layer applied thereto, the initial layer containing the material of the non-porous coating or a precursor thereof, wherein when said drawing is commenced the initial layer is present in a liquid state, and wherein the viscosity of the initial layer is increased during said drawing.

5,601,770

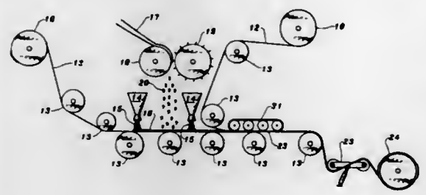
METHOD FOR PRODUCING SHEET MOLDING COMPOUNDS UTILIZING A MULTILAYERED, MULTISTRUCTURED, MULTIPOLYMER RELEASE / BARRIER FILM

John D. Maligie, Carson, Calif., assignor to Airtech International, Inc., Carson, Calif.

Filed Sep. 29, 1995, Ser. No. 536,684

Int. Cl.[6] B29C *39/20;43/30;* **B32B** *27/08;27/34*

U.S. Cl. 264—172.19 **14 Claims**



1. An improved method for producing sheet molding compounds, said method including the steps of casting a layer of heat-curable thermosetting resin, in a fluid form, onto a continuously advancing polymeric film; introducing reinforcing material onto the advancing fluid layer; casting a second layer of heat-curable thermosetting resin, in a fluid form on top of the reinforcing fibers; contacting a polymeric film to the top surface of said reinforced fluid layer thereby forming a sandwiched composite; advancing said sandwiched composite through a series of kneading and compaction rolls, and winding the sandwiched composite into a roll for partial curing; the improvement comprising:

using as the polymeric film a multilayered, multipolymer release/barrier film, said multilayered film having a surface tension of less than 30 dynes/cm as tested per ASTM D2578, a tensile strength greater than 8000 psi as determined by ASTM D882, and a styrene permeability of below about 2.0×10^{-11} g. cm/cm^2-hr.

5,601,771

PROCESS FOR THE PRODUCTION OF CELLULOSE FIBRES

Hartmut Rüf, Vöcklabruck, Austria, assignor to Lenzing Aktiengesellschaft, Austria

Filed Jan. 5, 1995, Ser. No. 465,320

Claims priority, application Austria, Sep. 5, 1994, 1699/94

Int. Cl.[6] D01F *2/02;11/02;* **D06M** *13/144*

U.S. Cl. 264—187 **11 Claims**

1. A process for the production of cellulose filaments comprising the steps of extruding a solution of cellulose in an aqueous tertiary amine-oxide through spinning holes of spinneret thereby forming filaments and conducting the extruded filaments across an air gap into a substantially aqueous precipitation bath wherein said extruded filaments, while being conducted across the air gap, are contacted with an aliphatic alcohol, said alcohol being present exclusively in a gaseous state.

5,601,772

METHOD TO PRODUCE BOWLS OF A PLASTIC MATERIAL AND BOWLS THUS PRODUCED

Claudia Contessi, Dignano, Italy, assignor to Plastic Legno Giocattoli di Contessi & C.Snc, Dignano, Italy

Continuation of Ser. No. 283,920, Aug. 3, 1994, abandoned. This application Sep. 13, 1995, Ser. No. 527,433

Claims priority, application Italy, Aug. 12, 1993, UD93A0161

Int. Cl.[6] B29C *45/00*

U.S. Cl. 264—328.1 **13 Claims**

1. Method of producing a one piece spherical solid plastic bowl comprising providing a mixture of polypropylene and at least one additive and/or a dye after suitable dosing, introducing said mixture into a molding press, heating said mixture to a temperature of 180°–210° C. to provide a molten mass, injecting said molten mass under pressure into a mold maintained at a temperature of 50°–60° C., and maintaining under pressure following injection for 20–60 seconds to provide a one piece spherical solid plastic bowl, extracting the plastic bowl from the mold, and cooling the plastic bowl in water prior to removal of flash from the bowl.

5,601,773

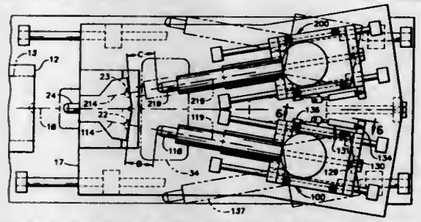
CO-INJECTION MACHINE

Gerhard G. Schmidt, Cincinnati, and Mark Elsass, Batavia, both of Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed May 12, 1995, Ser. No. 439,925

Int. Cl.[6] B29C *45/22*

U.S. Cl. 264—328.8 **29 Claims**



1. An injection apparatus for injecting separate and distinct streams of plasticated material that are introduced into an injection mold to provide an injected product, said apparatus comprising:

(a) a machine base including a mold element support;

(b) an injection manifold having first and second injection site means for receiving plasticated material and manifold nozzle means for discharging plasticated material, said nozzle means including at least one manifold nozzle;

(c) a first injection unit, including a first injection nozzle;

(d) a second injection unit, including a second injection nozzle;

(e) means for biasing said first and second injection nozzles into respective first and second injection site means; and

(f) means for simultaneously moving said injection manifold and said first and second injection units, in unison, with respect to said mold element support.

5,601,774

METHOD OF USING AN AQUEOUS MOLD-RELEASING AGENT

Hiroyuki Kohama; Hitonari Butsugan; Misako Higo, and Nobuhiko Tachiri, all of Shiga-ken, Japan, assignors to Kabushiki Kaisha Neos, Kobe, Japan

Continuation of Ser. No. 791,321, Nov. 14, 1991, abandoned. This application Jan. 24, 1994, Ser. No. 185,238

Claims priority, application Japan, Nov. 16, 1990, 2-312528

Int. Cl.[6] B28B *7/36*

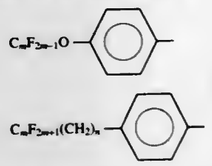
U.S. Cl. 264—338 **2 Claims**

1. A method of molding polyurethane in a mold which method comprises:

applying to a mold cavity an aqueous mold-releasing agent comprising at least one of the fluorine-containing sulfonates in combination with a member selected from the group consisting of wax, a silicone oil and mixtures thereof, said sulfonates being represented by the following formula (I):

$$(XSO_3)_lM \quad (I)$$

wherein X is the following fluorine-containing groups:



wherein m is 3–9 and n is 0–2, M is a member selected from the group consisting of an alkali metal atom, an alkaline earth metal atom, zinc atom, an alkylamine residue, an alkanolamine residue and an ammonium group, and l is equal to the valence of M, at least partially drying the mold-releasing agent and placing polyurethane into contact with the mold cavity.

5,601,775

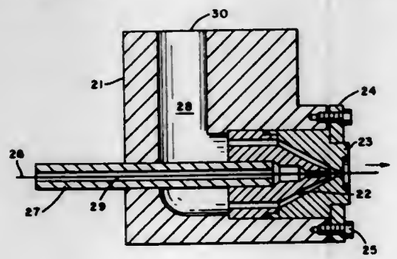
PROCESS FOR MAKING AN ABRASION RESISTANT QUASI MONOFILAMENT

David V. Cunningham, Midlothian, Va.; Sheldon Kavesh, Whippany, N.J.; Christopher P. Griffin, Chester, Va., and Allan R. Hall, West Warwick, R.I., assignors to AlliedSignal Inc., Morristown, N.J.

Filed Mar. 24, 1995, Ser. No. 410,534

Int. Cl.[6] B29C *47/02*; D02G *3/36*

U.S. Cl. 264—469 **22 Claims**



1. A process for making an abrasion resistant quasi monofilament, comprising the steps of:

a. continuously feeding a core polyethylene multi-filament yarn having a tenacity of at least about 15 g/d and a tensile modulus of at least about 500 g/d through a crosshead die, while simultaneously

b. supplying a polymer melt at a temperature greater than the melting point of the core yarn to the die, for

c. sheathing the core yarn within the die with the melt under a sufficient pressure to cause the melt to adhere to the core yarn; and

d. cooling the sheathed yarn to below the melting point of the polymer melt.

5,601,776

METHOD AND A MOULD FOR FORMING AN EXPANSION, SUCH AS A SOCKET, IN A PIPE, AND A PLASTIC PIPE

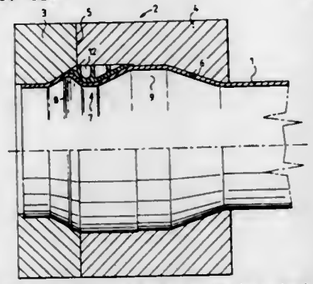
Ari Tuominen, Villähde, Finland, assignor to Uponor Innovation AB, Fristad, Sweden

Filed Sep. 8, 1994, Ser. No. 302,516

Claims priority, application Finland, Nov. 2, 1993, 934848

Int. Cl.[6] B29C *49/20*

U.S. Cl. 264—516 **4 Claims**



1. In a method for forming an expansion in a plastic pipe in a mould provided with an inner mould surface and including a ring shaped mould body having only two axially successive parts relatively moveable in the axial direction of the said mould body for closing and opening said mould, the improvements comprising the steps of:

inserting a mould ring into said mould body, the surface of said mould ring forming at least a part of said inner mould surface;

closing said mould body;

heating at least the part of said pipe which is to be formed as an expansion;

placing said pipe part in said mould body;

applying an internal pressure inside said pipe part to expand the same against said inner mould surface and thereby form said expansion and to lock said mould ring to said expansion;

cooling said pipe part;

opening said mould body; and

removing said pipe part from said mould together with said mould ring which is locked to said expansion.

5,601,777

PROCESS FOR COMPRESSING GRANULAR MATERIAL IN A MOLDING BOX

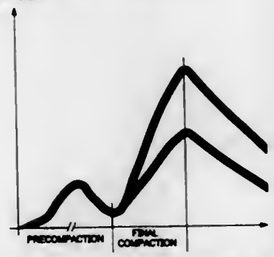
Kurt Fischer, and Hans Leutwiler, both of Schaffhausen, Switzerland, assignors to Georg Fischer Giesserelanlagen AG, Schaffhausen, Switzerland

Filed Oct. 21, 1994, Ser. No. 327,321

Claims priority, application Switzerland, Oct. 27, 1993, 3236/93

Int. Cl.[6] B27N *3/02*

U.S. Cl. 264—517 **5 Claims**



1. A process for compressing granular material in a molding box having a pattern plate, a casting pattern on said pattern plate and a mold frame mounted on said pattern plate so as to define therewith a mold cavity around said casting pattern comprising the steps of:

(a) feeding said granular material to said mold cavity such that said granular material surrounds and covers said casting pattern thereby forming a surface layer of said granular material;

(b) precompacting said granular material by applying a first pressure surge of compressed gaseous medium to said surface layer of said granular material at a first rate of pressure change over time so as to produce a first pressure p1 over said material followed immediately by a second pressure surge of compressed gaseous medium to said surface layer of said granular material in an uninterrupted manner at a second rate of pressure change over time so as to produce a second pressure p2 over said material wherein said second rate of pressure change over time is greater than said first rate of pressure change over time;

(c) reducing said second pressure p2 to a third pressure p3; and

(d) further compacting said precompacted granular material to final compaction.

5,601,778

PROCESS FOR PRODUCING A RESIN FILM BASED ON A COPOLYMER OF ETHYLENE AND VINYL ACETATE

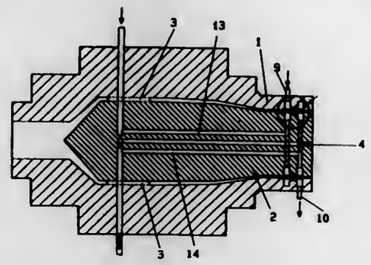
Claude Dehennau, Waterloo; Serge Dupont, Vilvoorde, both of Belgium, and Martin Vonk, Enkhuizen, Netherlands, assignors to Solvay & Cie, Belgium

Division of Ser. No. 673,814, Mar. 22, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 477,631

Claims priority, application Belgium, Mar. 30, 1990, 9000360

Int. Cl.[6] B29C *47/86*

U.S. Cl. 264—519 **5 Claims**



1. A process for producing a resin film based on a copolymer of ethylene and vinyl acetate, comprising:

forming a sleeve of the resin film by blow extrusion through an extrusion die having a core and a cooling zone and superficially cooling at least one of the faces of the extrusion die and of the resin film produced by using a coolant fluid whose temperature T is chosen so as to obey the relationship:

$$-20°\,C. < T < \frac{Tc - Tm[aG^n + A(Ld/L)^2 + B(Ld/L)]}{1 - [aG^n + A(Ld/L)^2 + B(Ld/L)]}$$

in which:

Tc is the temperature at which the Napierian logarithm of the relationship between the length at break and the initial length of a test specimen of the copolymer has a value of 87% of its value at 180° C., the elongation at break being measured by means of an elongational viscometer at a constant pull rate gradient of 5 s^{-1}

Tm is the mean temperature of the copolymer as it leaves the die

a is equal to 0.24

G is given by the relationship $\rho \times Cp \times \vec{V} \times H^2/\lambda \times L$

in which:

ρ is the density of the copolymer

Cp is the specific heat of the copolymer

$\vec{V}$ is the mean flow velocity of the copolymer through the extrusion die

H is the height of the gap between the core and the extrusion die

λ is the thermal conductivity of the copolymer

L is the length of the cooling zone

n is equal to 0.1688

A is equal to −0.0148

Ld is the distance between the end of the cooling zone and the end of the die

B is equal to 0.2175.

5,601,779

METHOD FOR MANUFACTURING HOLLOW RESIN PRODUCTS

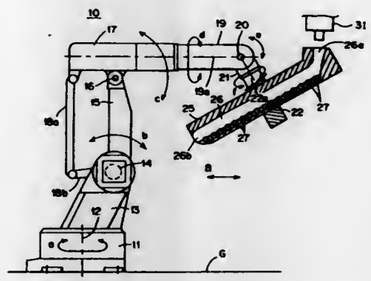
Hajime Ishikawa, Toyonaka; Masaaki Ogawa, Kobe; Ryosuke Hasegawa, Kobe, and Hideo Yamamoto, Kobe, all of Japan, assignors to Tigers Polymer Corporation, Toyonaka, Japan

Division of Ser. No. 329,648, Oct. 25, 1994. This application Oct. 12, 1995, Ser. No. 542,300

Claims priority, application Japan, Oct. 26, 1993, 5-266811; Sep. 29, 1994, 6-234958

Int. Cl.[6] B29C *49/04*; *49/64*

U.S. Cl. 264—520 **7 Claims**



1. A method of manufacturing hollow resin products which are curved two-dimensionally or three-dimensionally, the method comprising the steps of:

extruding a tubular parison from an extruder at a constant speed and cutting the parison at a specified length;

receiving the parison extruded from the extruder into a conveyer having a feeding means which is driven at the same speed as the extruding speed of the parison;

maintaining the parison in the conveyer by stopping the feeding means temporarily;

feeding a leading portion of the parison to a trailing portion thereof successively through an outlet of the conveyer into a cavity of a lower mold of a blow molding machine by driving the feeding means, the cavity being curved two-dimensionally or three-dimensionally; and

closing the lower mold with an upper mold of the blow molding machine and blowing compressed gas into the parison in the blow molding machine;

wherein:

the parison is locally heated by the feeding means which is at a higher temperature than the parison in order to prevent a portion of the surface thereof which is in contact with the feeding means from cooling; and

the parison is fed from the conveyer into the cavity of the lower mold in a manner such that the portion of the surface of the parison which has been in contact with the feeding means and which has been heated thereby is in contact with the lower mold.

5,601,780

PROCESS FOR THE PREPARATION OF RE-USABLE BOTTLES STARTING FROM MODIFIED PET

Ernesto Occhiello, Novara, and Riccardo Po', Leghorn, both of Italy, assignors to Enichem SpA, Milan, and Inca International SpA, Matera, both of Italy

Filed May 18, 1995, Ser. No. 444,368
Claims priority, application Italy, May 27, 1994, MI94A1087
Int. Cl.[6] B29C *49/06*
U.S. Cl. 264—523 6 Claims

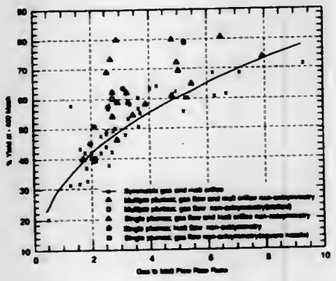
1. Process for the preparation of re-usable transparent bottles, comprising injection blow moulding a copolymer consisting essentially of the polyesterification product of terephthalic acid, ethylene glycol, 0.1 to 10 mol %, based on terephthalic acid, of an aromatic diacid different from terephthalic acid selected from the group consisting of isophthalic acid, 2,6-naphthalenedicarboxylic acid, 4,4'-biphenyldicarboxylic acid and 4,4'-oxydibenzoic acid, and from 0.1–15 mol %, based on terephthalic acid, of an aromatic hydroxyacid.

5,601,781

CLOSE-COUPLED ATOMIZATION UTILIZING NON-AXISYMMETRIC MELT FLOW

Russell S. Miller, Ballston Spa; Steven A. Miller, Amsterdam, and Lawrence A. Wojcik, Ballston Lake, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 22, 1995, Ser. No. 415,914
Int. Cl.[6] B22F *9/08*
U.S. Cl. 266—202 16 Claims



9. A system for the close-coupled atomization of liquid metal in an enclosure, the system comprising:

a crucible;

a fluid nozzle operatively positioned in the enclosure;

a melt guide tube operatively connected to the crucible and operatively positioned relative to the fluid nozzle;

a plenum, operatively connected to the fluid nozzle and operatively positioned relative the melt guide tube for providing at least one atomizing fluid to the fluid nozzle; and

a non-axisymmetric configured melt guide tube exit orifice, operatively formed in the melt guide tube, for providing non-axisymmetric melt flow to interact with the at least one fluid at a point proximate the melt guide tube exit orifice, the melt guide tube exit orifice configuration resulting in an interaction of the fluid and the non-axisymmetric molten metal such that about a five (5)% to about a thirteen (13)% positive variance in the fine powder yield is obtained as compared to a substantially similar system having axisymmetric fluid flow and an axisymmetric molten metal flow.

5,601,782

ABRASIVE RESISTANT HIGH MANGANESE CAST STEEL

Saburo Kunioka, Kawagoe, and Hiroshi Toriyama, Omiya, both of Japan, assignors to Shinhokoku Steel Corporation, Tokyo, Japan

PCT No. PCT/JP94/00130, § 371 Date Sep. 27, 1995, § 102(e) Date Sep. 27, 1995, PCT Pub. No. WO95/20686, PCT Pub. Date Aug. 3, 1995
PCT Filed Jan. 31, 1994, Ser. No. 532,768
Int. Cl.[6] C22C *38/38*
U.S. Cl. 420—74 1 Claim



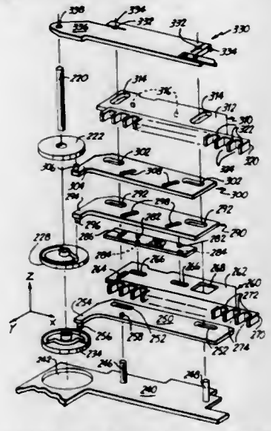
1. An abrasive resistant high manganese cast steel characterized by comprising: 1.3–1.4 weight % of C, 0.05–0.20 weight % of Si, 14.0–15.0 weight % of Mn, 0.5–1.5 weight % of Cr, 0.3–0.8 weight % of V, 0.2–0.4 weight % of Ti, and 0.5–1.0 weight % of Mo, and a balance of Fe and inevitable impurities.

5,601,783

VESSEL TRANSPORT DEVICE FOR AUTOMATIC CHEMICAL ANALYSIS

David Breeser, St. Paul; Alan Wirbisky, Eden Prairie, and Ross Krogh, Waconia, all of Minn., assignors to Pasteur Sanofi Diagnostics, France

Continuation-in-part of Ser. No. 175,424, Dec. 23, 1993, abandoned. This application Jun. 15, 1994, Ser. No. 260,183
Int. Cl.[6] G01N *35/04*
U.S. Cl. 422—65 8 Claims



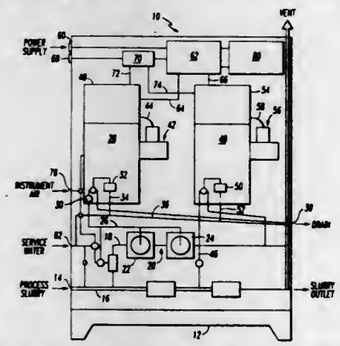
1. An apparatus for moving reaction vessels to or from an assay resource station in an automated chemical analyzer comprising a vessel shuttle having a plurality of movable plates and at least two cams, the plates including first and second vessel carrying plates adapted to move cooperatively with respect to one another to advance one of said vessels stepwise along a generally linear path without net motion of the first and second vessel carrying plates as the vessel is advanced one step, the first and second vessel carrying plates each comprising a plurality of fingers defining recesses for receiving vessels, the first vessel carrying plate having at least one cam following orifice and the second vessel carrying plate having at least two cam following orifices, said cam following orifices receiving and coacting with said cams to move the first vessel carrying plate in a direction substantially perpendicular to said linear path and to move the second vessel carrying plate rectilinearly both generally parallel to and generally perpendicular to said linear path, one of the first and second vessel carrying plates being disposed generally vertically above the other of the first and second vessel carrying plates.

5,601,784

ON-LINE CONTROL AND MONITORING SYSTEM FOR WET LIME/LIMESTONE FLUE GAS DESULFURIZATION PROCESS

Robert L. Glover, Southlake, Tex.; Robert E. Moser, Palo Alto, Calif.; Frank Meserole, Austin; Carl Richardson, Round Rock, both of Tex.; Gerard B. Maybach, Getzville, N.Y.; Gordon Maller, Louisville, Ky., and Timothy Hanley, Holly Springs, N.C., assignors to Electric Power Research Institute, Palo Alto, Calif.

Filed Sep. 9, 1994, Ser. No. 302,438
Int. Cl.[6] G01N *30/02;21/00;* C01B *17/22*
U.S. Cl. 422—70 10 Claims



1. An on-line control and monitoring system for monitoring selected process control indicators and parameters in a wet lime/limestone flue gas desulfurization process for removing sulfur dioxide from flue gas, wherein said control and monitoring system operates concurrently with the conduct of the flue gas desulfurization process to provide data relative to selected process control indicators and parameters that can be used to control the conduct of the flue gas desulfurization process while the flue gas desulfurization process is operating, wherein said on-line control and monitoring system comprises:

(a) a housing supporting said on-line control and monitoring system;

(b) a supply of flue gas desulfurization process slurry withdrawn from said flue gas desulfurization process while said flue gas desulfurization process is being conducted and directed through a fluid conducting conduit to a continuous filtration system mounted in said housing;

(c) said continuous filtration system being fluidically connected to at least one automatic analyzer mounted in said housing to filter said process slurry supply to provide a continuous supply of analytical quality slurry filtrate;

(d) said at least one automatic analyzer being capable of automatically quantitatively analyzing said slurry filtrate at selected intervals to produce data relating to a selected flue gas desulfurization process control indicator or parameter; and

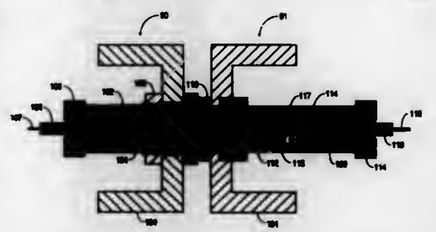
(e) a control system operationally connected to said automatic analyzer and to said flue gas desulfurization process capable of receiving and processing the data produced by said analyzer and making any adjustments in the conduct of the flue gas desulfurization process indicated by said data to be necessary to optimize sulfur dioxide removal efficiency.

5,601,785

CONNECTOR FOR DETACHABLE COLUMN CARTRIDGE FOR GAS CHROMATOGRAPH

William R. Higdon, Pleasanton, Calif., assignor to Microsensor Technology, Inc., Fremont, Calif.

Continuation-in-part of Ser. No. 100,022, Jul. 30, 1993, Pat. No. 5,298,225, which is a continuation-in-part of Ser. No. 812,532, Dec. 23, 1991, Pat. No. 5,236,668. This application Mar. 28, 1994, Ser. No. 218,605
Int. Cl.[6] B01L *11/00*
U.S. Cl. 422—103 15 Claims



1. A connector joining two capillary tubes, said connector comprising:

first and second fittings, each of said first and second fittings having a tapered bore and an orifice at an end of said bore, said orifice being positioned on an axis of said fitting and on a surface of said fitting;

a first capillary tube inserted into said tapered bore of said first fitting;

a second capillary tube inserted into said tapered bore of said second fitting;

an end of said first capillary tube being spaced apart from said orifice of said first fitting and an end of said second capillary tube being spaced apart from said orifice of said second fitting, said orifice of said first fitting having a diameter no greater than an outside diameter of said first capillary tube and said orifice of said second fitting having a diameter no greater than an outside diameter of said second capillary tube;

a sleeve positioned so as to guide the surface of said first fitting into contact with the surface of the second fitting such that the orifice of the first fitting is aligned with the orifice of the second fitting, the contact between the surfaces of the first and second fittings creating a gas tight seal around said orifices.

5,601,786

AIR PURIFIER

Gerald C. Monagan, 14247 Ridge Rd., Albion, N.Y. 14411

Continuation-in-part of Ser. No. 252,757, Jun. 2, 1994, abandoned. This application Jun. 1, 1995, Ser. No. 456,518
Int. Cl.[6] A61L *9/20*
U.S. Cl. 422—168 21 Claims

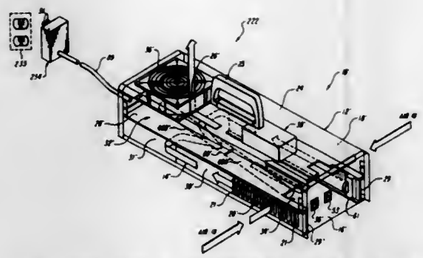
1. An air purification system, comprising

pollutant detection means for detecting the presence of at least one pollutant in the air, the pollutant detection means being capable of generating a pollutant indicator signal indicative of the presence of the pollutant in the air in quantities above a selected level, and

a housing having an irradiation chamber,

means for passing air through the irradiation chamber,

a radiation source mounted in the irradiation chamber for irradiating the air passing therethrough, and



power control means in communication with one of said radiation source and said pollutant detection means for selectively supplying power to said radiation source in response to said pollutant indicator signal to actuate said radiation source for a time sufficient to purify the air.

5,601,787

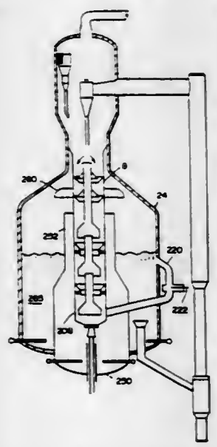
APPARATUS FOR HOT CATALYST STRIPPING IN A BUBBLING BED CATALYST REGENERATOR

Hartley Owen, Belle Mead, N.J., and Paul H. Schipper, Wilmington, Del., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation of Ser. No. 726,445, Jul. 5, 1991, abandoned, which is a division of Ser. No. 515,941, Apr. 26, 1990, Pat. No. 5,032,252. This application Jun. 4, 1992, Ser. No. 893,965

Int. Cl.[6] F27B *15/08;* **B01J** *8/04*

U.S. Cl. 422—144 **7 Claims**



1. An apparatus for the fluidized catalytic cracking of a heavy feed to lighter more valuable products comprising:

a reactor vessel;

a riser reactor cracking means having a base connective with a source of heavy feed and connective with a catalyst regeneration means containing in a lower portion thereof a bubbling dense phase fludized bed of regenerated catalyst;

a riser outlet at the top of the riser reactor cracking means and within said reactor vessel connective with a catalyst disengaging means for separating a cracked product vapor stream from a spent catalyst stripper stream, and discharging said spent catalyst into a catalyst stripper means, said stripper means having a primary and a secondary stripping means;

said primary catalyst stripping means supported by said catalyst regeneration means, said primary stripping means receiving spent catalyst from said disengaging means and producing a stripper effluent vapor stream and a stripped catalyst stream which is discharged down into a primary stripper catalyst standpipe;

said secondary catalyst stripping means, located beneath said primary catalyst stripping means and at least partially within said lower portion of said catalyst regeneration means, said secondary catalyst stripping means having an upper portion and a lower portion, said upper portion of said secondary stripping means receiving stripped catalyst from said primary stripper catalyst standpipe and said lower portion of said secondary stripping means receiving secondary stripping gas and producing secondary stripper vapor which is discharged, via at least one secondary stripping vapor discharge means isolated from and passing through said primary stripping means, said at least one secondary stripping discharge means extending from said lower portion of said secondary stripping means to said disengaging means, and stripped catalyst which is discharged from said lower portion of said secondary catalyst stripping means; and

said catalyst regeneration means, beneath and encompassing said secondary stripping means, receiving stripped catalyst discharged from said secondary stripping means and maintaining said stripped catalyst as a bubbling dense phase fluidized bed of catalyst in a lower portion thereof and regenerating spent catalyst by contact with a source of regeneration gas and producing a regenerated catalyst stream and a dilute phase flue gas stream comprising entrained catalyst;

and wherein said primary catalyst stripping means has a vertical axis and said regeneration means comprises:

a coke combustor means in a lower portion of said regeneration means, having a vertical axis, a base region with a cross sectional area and an upper region of reduced cross sectional area relative to said base region; and said base region is connective with a means for addition of regeneration gas; and

a dilute phase transport riser means having a vertical axis, axially aligned with and encompassing both said primary stripping means catalyst standpipe and said secondary catalyst stripping means, said transport riser connective with the upper region of the coke combustor means and transporting catalyst and regeneration gas as a dilute phase from said upper region of said coke combustor up through said transport riser means to an outlet in an upper portion of said transport riser means wherein regenerated catalyst and flue gas are discharged and separated to form a regenerated catalyst stream which collects in said lower portion of said regeneration means.

5,601,788

COMBINED CYCLE POWER PLANT WITH CIRCULATING FLUIDIZED BED REACTOR

Timo Hyppänen, Karhula; Juhani Isaksson, Kotka; Timo Eriksson; Teuvo Pulkkinen, both of Karhula, all of Finland, and Steven J. Provol, San Diego, Calif., assignors to Foster Wheeler Energia OY, Finland

Continuation-in-part of Ser. No. 164,888, Dec. 10, 1993, Pat. No. 5,460,788, which is a continuation-in-part of Ser. No. 953,297, Sep. 30, 1992, Pat. No. 5,281,398, which is a continuation of Ser. No. 765,450, Sep. 25, 1991, abandoned. This application Apr. 21, 1995, Ser. No. 427,094

Int. Cl.[6] F22B *1/00;* **F27B** *15/08*

U.S. Cl. 422—147 **29 Claims**

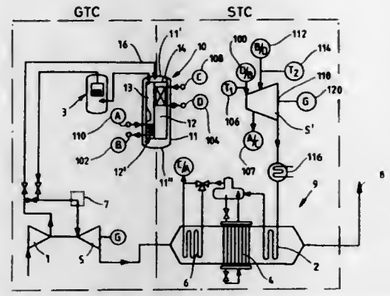
1. Combined cycle power plant comprising:

a gas compressor means for providing pressurized gas at pressure greater than 2 bar;

a gas turbine means for driving the gas compressor means;

a pressure vessel, circular in cross-section, and capable of withstanding pressures greater than 2 bar, and having a top and a bottom section;

a pressurized circulating fluidized bed reactor enclosed by the pressure vessel, the circulating fluidized bed reactor having a reactor chamber including substantially planar walls;



means for conveying the pressurized gas from said gas compressor means into said pressure vessel;

means for feeding fuel into said reactor chamber;

means for leading hot combustion gases away from said reactor;

at least one centrifugal separator disposed within said pressure vessel, and having an inlet connected to said means for leading hot combustion gases away from said reactor chamber, a gas outlet leading from said at least one separator out of said pressure vessel to the gas turbine means for expansion therein, and a return duct for recirculating separated solid particles from said separator to said reactor chamber;

said at least one centrifugal separator comprising a vertical vortex chamber having distinctly planar walls defining an interior gas space, said gas space having a cross section that is distinctly non-circular, having a circularity greater than or equal to 1.15; and

a bubbling fluidized bed heat exchanger chamber disposed in the pressure vessel and in communication with said reactor chamber, said fluidized bed heat exchanger chamber having a common wall section with a substantially planar wall of the reactor chamber, wherein the bubbling fluidized heat exchanger chamber is positioned below the vortex chamber, has a second wall and third wall each formed of an extension of a respective planar side wall of the vortex chamber, and the heat exchanger chamber has a cross-sectional profile similar to a cross-sectional profile of the vortex chamber.

5,601,789

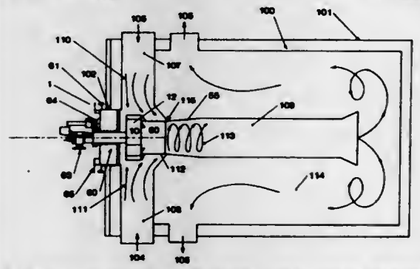
RAW GAS BURNER AND PROCESS FOR BURNING OXYGENIC CONSTITUENTS IN PROCESS GAS

Andreas Rühl, De Pere; Patrick McGehee; Kim Anderson, both of Green Bay, all of Wis., and Serguei Charamko, Potts Point, Australia, assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Dec. 15, 1994, Ser. No. 356,601

Int. Cl.[6] B01D *50/00;53/34;* **F23D** *14/62*

U.S. Cl. 422—168 **14 Claims**



1. A burner assembly for combusting volatile organic substances in a process gas comprising: a mixing chamber having burner fuel inlet means and process gas inlet means for introducing burner fuel and process gas into said burner assembly; a combustion chamber in communication with said mixing chamber; said mixing chamber including a swirl generator comprising a plurality of vanes for swirl mixing said burner fuel and process gas together as they flow through and out of said mixing chamber and into said combustion chamber; and a lance having an inlet in communication with said process gas inlet means and an outlet in communication with said combustion chamber, whereby said swirl-mixed burner fuel and process gas combust within said combustion chamber.

5,601,790

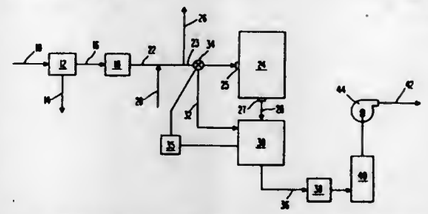
METHOD AND AFTERBURNER APPARATUS FOR CONTROL OF HIGHLY VARIABLE FLOWS

John D. Stilger; Richard J. Martin, both of San Jose; Mark R. Holst, Concord, and Samson C. Yee, Fremont, all of Calif., assignors to Thermatrix, Inc., San Jose, Calif.

Continuation of Ser. No. 92,980, Jul. 16, 1993, abandoned. This application Apr. 21, 1995, Ser. No. 426,641

Int. Cl.[6] B01D *53/34*

U.S. Cl. 422—168 **18 Claims**



1. An apparatus for destruction of volatile organic compounds from process fumes comprising:

an oxidizer having an inlet and an outlet;

a pipe connected to the inlet of the oxidizer;

an afterburner having:

(a) an inlet port connected to the outlet from the oxidizer;

(b) an outlet port; and

(c) a section located between the inlet port and the outlet port, said section including a matrix bed of inert ceramic heat resistant material, said material having a surface that does not substantially catalyze the oxidation of the volatile organic compounds at temperatures below 1400° F., and comprising an upstream side in flow communication with the inlet port and a downstream side in flow communication with the outlet port;

a bypass conduit connected to the afterburner so as to be in flow communication with the upstream side of the matrix bed; and

a control valve connecting the bypass conduit to the pipe and capable of controlling the amount of a gaseous stream within the pipe that is delivered to the oxidizer and the amount that is diverted to the bypass conduit.

5,601,791

ELECTROSTATIC PRECIPITATOR FOR COLLECTION OF MULTIPLE POLLUTANTS

Norman Plaks, Raleigh; Charles B. Sedman, Hillsborough, and Leslie E. Sparks, Durham, all of N.C., assignors to The United States of America as represented by the Administrator of the U.S. Environmental Protection Agency, Washington, D.C.

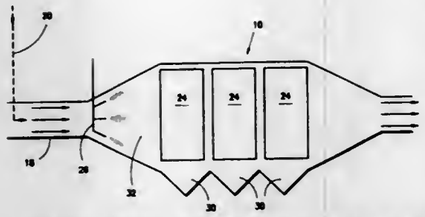
Filed Dec. 6, 1994, Ser. No. 350,295

Int. Cl.[6] B03C *3/00;3/04*

U.S. Cl. 422—169 **18 Claims**

1. A process for removing acidic gaseous contaminants and particulates from a gas comprising:

providing an electrostatic precipitator including at least one charging section and at least one electrostatic collector section disposed downstream of said charging section, within a housing defining a gas flow path; said electrostatic collector sec-



tion having a plurality of parallel grounded collector electrode plates defining a plurality of gas flow lanes therebetween and a plurality of charged electrode plates parallel to said grounded collector electrode plates and centered within respective gas flow lanes; said charging section having a linear array of alternating discharge electrodes and grounded collector electrodes transverse to the gas flow path, said grounded collector electrodes each being mechanically joined to a terminal end of at least one grounded collector electrode plate; a gas entry port in said housing and upstream of said charging section; a transition zone between said gas entry port and said charging section; a gas exit port in said housing and downstream of said electrostatic collector section; and duct means, outside said housing, for conveying acidic gas discharged from a gas generating means to said gas entry port;

spraying an aqueous acid gas neutralizing agent into the gas passing through said housing at a point within said transition zone upstream of said electrostatic collector section, moisture content of said acid gas neutralizing agent being sufficient to reduce resistivity of particulates in the gas and to increase density of the gas;

passing said gas through said transition zone being of sufficient length for said neutralizing agent and the acidic gases to react and form neutral salts;

then passing said gas through said charging and electrostatic collector sections;

collecting the particulates on the grounded collector electrode plates of said electrostatic collector section thereby purifying the gas before the gas passes through the gas exit port; and

spraying said grounded collector electrode plates with water to remove the particulates, unreacted neutralizing agent and the neutral salts collected on the grounded collector electrode plates.

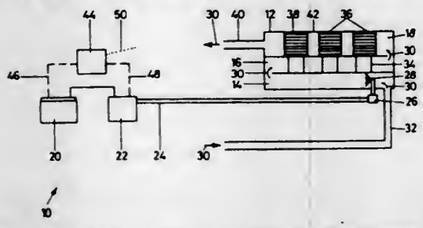
5,601,792

CLEANING EXHAUST GASES FROM COMBUSTION INSTALLATIONS

Hans T. Hug, Grabenwiese 87, CH-8484 Weisslingen; Axel Hartenstein, Wolfrangenstrasse 42, CH-8413 Neftenbach, and Michael Hug, Hofweg 2, CH-9547 Heiterschen TG, all of Switzerland

Division of Ser. No. 20,841, Feb. 19, 1993, Pat. No. 5,431,893.
This application Apr. 10, 1995, Ser. No. 419,158
Claims priority, application Switzerland, Feb. 24, 1992, 00556/92
Int. Cl.[6] B01D *50/00*
U.S. Cl. 422—169 **10 Claims**

1. In an exhaust gas cleaning system having a reagent tank



supplying a dilute urea solution, a metering system downstream of said reagent tank for metering the dilute urea solution, and a supply and atomization device for feeding the dilute urea solution to a plant for treating the exhaust gases, the improvement comprising:

the plant comprises a pyrolysation channel, a mixing channel downstream of the pyrolysation channel and a reaction channel downstream of the mixing channel;

the supply and atomization device comprises first pipe means for transporting compressed air and a second pipe means within said first pipe means for transporting the aqueous urea solution wherein the second pipe means is spaced from the first pipe means, and an atomization nozzle for receiving the compressed air and aqueous urea solution for atomizing same into the pyrolysation channel;

at least two cross-flow mixers located in the mixing channel at a spaced distance from each other;

at least two catalyst means located within the reaction channel at a spaced distance, said at least two catalyst means comprises a reduction catalyst followed by an oxidation catalyst; and

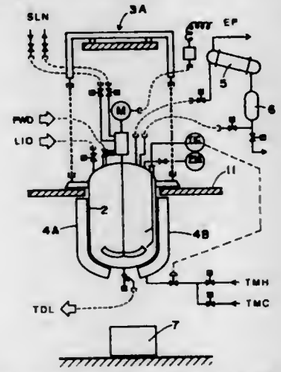
means for feeding the exhaust gas to the pyrolysation channel wherein the exhaust gas mixes with the atomized aqueous urea solution to form a mixture which passes sequentially through the mixing channel and the reaction channel where it contacts the at least two cross-flow mixers and the at least two catalyst means respectively.

5,601,793

SMALL-CAPACITY MULTI-PURPOSE BATCH PLANT

Hiroaki Fujimori, and Hiroyuki Miyoshi, both of Yokohama, Japan, assignors to JGC Corporation, Tokyo, Japan

Continuation of Ser. No. 203,493, Feb. 28, 1994, abandoned, which is a continuation of Ser. No. 854,911, Mar. 20, 1992, abandoned. This application May 25, 1995, Ser. No. 450,568
Claims priority, application Japan, Mar. 26, 1991, 3-062064
Int. Cl.[6] F28D *21/00*; B01L *7/00*; B01J *19/00*; F28F *5/00*
U.S. Cl. 422—202 **4 Claims**



1. A small capacity multi-purpose batch plant for carrying out processes in which chemical reactions are controlled and/or physical changes are caused by heating or cooling, said small capacity multi-purpose batch plant, comprising:

a plurality of floor stages;

a plurality of transportable vessels, each transportable vessel capable of being charged therein with materials, and being transported depending on at least a type of process said materials therein must undergo by heating or cooling of said transportable vessel;

jacket means for receiving therein at least one of said transportable vessels, and for heating or cooling said transportable vessels;

temperature control means, operably connected to said jacket means, for controlling said temperature of said jacket means used for heating or cooling said transportable vessels and for effecting at least said type of process in which at least one of:

(a) chemical reactions of said materials contained in said transportable vessels are controlled and (b) physical changes of said materials are caused;

means for transporting said transportable vessels in horizontal directions in the same floor stage among said floor stages, and in vertical directions between said plurality of floor stages based on at least said type of process, said jacket means being separable from said at least one of said transportable vessels received therein, wherein said jacket means comprises a plurality of members, and wherein said jacket means is attachable to and detachable from said at least one of said transportable vessels by closing and opening, respectively, said plurality of members capable of providing said type of process said materials in said transportable vessel must undergo by heating or cooling said transportable vessel; and

closing and opening means for respectively attaching said jacket means to and detaching said jacket means from said at least one of said transportable vessels, wherein said closing and opening means includes rollers operably coupled to upper portions of said jacket means and rails mounted lower than said floor stage along which said rollers travel, and wherein said closing and opening means further includes a plurality of wires and pulleys which are driven by at least a pulley operably coupled to said upper portions of said jacket means.

5,601,794

PITCH TYPE CARBON FIBERS AND PROCESS FOR THEIR PRODUCTION

Iwao Yamamoto; Hiroyuki Aikyo; Akihiko Yoshiya, all of Yokohama, and Kazuo Shirosaki, Sagamihara, all of Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

Continuation of Ser. No. 996,166, Dec. 23, 1992, abandoned.
This application Sep. 30, 1994, Ser. No. 315,490
Claims priority, application Japan, Dec. 25, 1991, 3-343660; Dec. 25, 1991, 3-357039; Feb. 13, 1992, 4-026927; Feb. 14, 1992, 4-059687; Aug. 12, 1992, 4-215018
The portion of the term of this patent subsequent to May 25, 2010, has been disclaimed.
Int. Cl.[6] D01F *9/12*
U.S. Cl. 423—447.2 **3 Claims**

1. A pitch-based carbon fiber made from a pitch having (1) a glass transition temperature width of at least 40° C. as measured by a differential scanning calorimeter, (2) a proportion of the optically anisotropic phase of at least 10% and at most 70% by volume, and (3) a quinoline-insoluble content of at most 5% by weight, said carbon fiber having the following characteristics:

Tensile Strength $\geqq$329 kg/mm^2

Tensile Module $\geqq$58 ton/mm^2

0° Compression Strength $\geqq$58 kg/mm^2.

5,601,795

CALOMEL (HG_2CL_2) PURIFICATION PROCESS

Donald L. Ball, Castlegar, and Richard S. Varley, Trail, both of Canada, assignors to Cominco Ltd., Vancouver, Canada

Filed Oct. 31, 1995, Ser. No. 551,038
Int. Cl.[6] C01B *9/00*; C01G *13/00*
U.S. Cl. 423—491 **30 Claims**

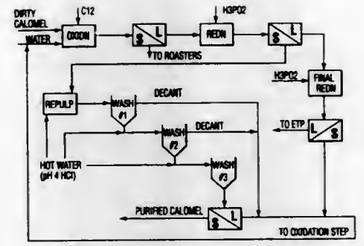
1. A process for treating impure calomel to produce purified calomel comprising:

(a) incorporating impure calomel into an aqueous slurry;

(b) oxidizing the aqueous slurry with an oxidizing agent to form soluble mercuric chloride;

(c) separating the aqueous slurry containing the soluble mercuric chloride into liquid and solid components;

(d) contacting the liquid component with a reducing agent to precipitate purified calomel; and



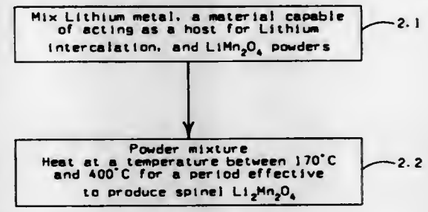
(e) separating the precipitated purified calomel from the liquid component.

5,601,796

METHOD OF MAKING SPINEL LI2MN2O4 COMPOUND

Roger E. Frech, and Weiwei Huang, both of Norman, Okla., assignors to The Board of Regents of the University of Oklahoma, Norman, Okla.

Filed Nov. 22, 1995, Ser. No. 561,778
Int. Cl.[6] C01G *45/12*
U.S. Cl. 423—599 **17 Claims**



1. A method for producing spinel $Li_2Mn_2O_4$ comprising the steps of:

(a) mixing effective amounts of Li metal, $LiMn_2O_4$ and a material capable of acting as a host for Li intercalation to form a mixture containing a molar ratio ranging from about 0.1:1 to about 1.5:1 of Li metal to $LiMn_2O_4$ and containing a weight ratio ranging from about 1:15 to about 3:7 of the material capable of acting as a host for Li intercalation to $LiMn_2O_4$; and

(b) heating the mixture of Li metal, $LiMn_2O_4$ and the material capable of acting as a host for lithium intercalation at a temperature of at least about 170° C., but not more than about 400° C. for a period of time effective to produce spinel $Li_2Mn_2O_4$.

14. A method for producing spinel $Li_2Mn_2O_4$ comprising the steps of:

(a) mixing effective amounts of LiC_x, wherein x ranges between about 6 to about 48, and $LiMn_2O_4$ to form a mixture containing a molar ratio ranging between 0.1:1 to about 1.5:1 of LiC_x to $LiMn_2O_4$; and

(b) heating the mixture of $LiMn_2O_4$ and LiC_x to a temperature between about 170° C. to about 400° C. for a period of time effective to produce spinel $Li_2Mn_2O_4$.

5,601,797

LIQUID-PHASE CATALYST-ASSEMBLY FOR CHEMICAL PROCESS TOWER

Joseph C. Gentry, Houston, Tex., assignor to Glitsch, Inc., Dallas, Tex.

Continuation of Ser. No. 206,748, Mar. 4, 1994, abandoned, which is a continuation-in-part of Ser. No. 132,059, Oct. 5, 1993, Pat. No. 5,389,343, which is a continuation-in-part of Ser. No. 927,749, Aug. 10, 1992, Pat. No. 5,277,847. This application Jan. 17, 1996, Ser. No. 587,558

Int. Cl.[6] C01G *1/00*

U.S. Cl. 423—659 **3 Claims**



1. An improved method of operation of a process column utilizing catalyst media therein for promoting a chemical reaction of liquid constituents, said method of operation of said column including the steps of flowing liquid downwardly and vapor upwardly within said column for interaction and mass transfer therebetween, wherein the improvement comprises the steps of defining a liquid-only region within said column, segregating vapor flow from said liquid-only region by removing said vapor from said column and preventing said vapor from being exposed to said liquid-only region and to said catalyst media, disposing said catalyst media in said liquid-only region of said column and chemically reacting said liquid constituents one with the other in said liquid-only region in the presence of said catalyst.

5,601,798

PROCESS FOR PREPARING ZEOLITE Y WITH INCREASED MESOPORE VOLUME

David A. Cooper, Morrisville; Thomas W. Hastings, Barto, both of Pa., and Elliot P. Hertzenberg, Wilmington, Del., assignors to PQ Corporation, Valley Forge, Pa.

Continuation-in-part of Ser. No. 116,635, Sep. 7, 1993, abandoned, and Ser. No. 117,776, Sep. 8, 1993, abandoned. This application Aug. 30, 1994, Ser. No. 298,158

Int. Cl.[6] C01B *39/24*

U.S. Cl. 423—700 **21 Claims**

1. A stabilized zeolite having the structure of zeolite Y and mesopore volume contained in mesopores of about 2 nm to about 60 nm in diameter wherein the relationship between the SiO_2/Al_2O_3 molar ratio ("SAR"), the unit cell constant, a_o, and mesopore volume is defined by the following table:

Zeolite Type	SiO_2/AlO_3 Molar Ratio	Unit Cell Constant(Å)	Mesopore Volume (cc/g)
USY	5–10	$24.6 \geq a_o \geq 24.5$	0.202 or greater
VUSY	5–15	$24.5 > a_o \geq 24.3$	0.313 or greater.

5,601,799

PARTIALLY DELIPIDATED D25 POLYSACCARIDE COMPOSITION FOR IMAGING AND DIAGNOSIS

Hans Binz, Beaumont; Lucien Dussourd D'Hinterland; Gérard Normier, both of Castres; Alain Le Pape, Langeais; Michel Favaron, St. Julien en Genevois, and Souhail Delassan, Gaillard, all of France, assignors to Pierre Fabre Medicament, Boulogne, France

Continuation of Ser. No. 192,833, Feb. 7, 1994, abandoned, which is a continuation of Ser. No. 54,347, Apr. 27, 1993, abandoned, which is a continuation of Ser. No. 666,805, Mar. 8, 1991, abandoned. This application Jan. 6, 1995, Ser. No. 369,430

Claims priority, application France, Mar. 8, 1990, 90 02957

Int. Cl.[6] A61M *36/00;* **A61K** *31/715;51/06*

U.S. Cl. 424—1.73 **7 Claims**

1. A composition for imaging and diagnosis comprising:

a physiologically acceptable carrier; and

a D25 polysaccharide compound, or its amide, ester, ether, oxide, and quaternary ammonium derivatives, or salts thereof, having two β-hydroxymyristic acids bound thereto via an amide linkage, wherein the amount of free and bound palmitic fatty acids is less than about 0.5% by weight of the compound; wherein at least 85% by weight of the compound exists in aqueous solution in monomeric form; and wherein the compound is labeled with a detectable amount of a radioactive, paramagnetic or fluorescent marker.

5,601,800

MULTIFUNCTIONAL LIGANDS FOR POTENTIAL USE IN THE DESIGN THERAPEUTIC OR DIAGNOSTIC RADIOPHARMACEUTICAL IMAGING AGENTS

Kattesh V. Katti; Wynn A. Volkert; Alan R. Ketring, and Prahlad R. Singh, all of Columbia, Mo., assignors to Curators of the University of Missouri, Columbia, Mo.

PCT No. PCT/US92/09742, § 371 Date Jul. 29, 1994, § 102(e) Date Jul. 29, 1994, PCT Pub. No. WO93/08839, PCT Pub. Date May 13, 1993

Continuation-in-part of Ser. No. 790,579, Nov. 8, 1991, abandoned. This PCT application Nov. 9, 1992, Ser. No. 211,905

Int. Cl.[6] A61K *51/04*

U.S. Cl. 424—1.77 **2 Claims**

1. A method of using phosphinimine ligands includes the steps of: complexing the phosphinimine ligand with ^{99m}Tc; administering to a body an amount of the complex to allow localization of the complex at a predetermined site in the body; and radioimaging the site by detecting the complex localized at the site.

5,601,801

RADIOLABELLED ANGIOTENSIN CONVERTING ENZYME INHIBITORS

Richard J. Flanagan, St. Lazare; Duncan H. Hunter, London; Vincenzo Quiquero, Mississauga, and Pamela Zabel, St. Mary's, all of Canada, assignors to Merck Frosst Canada, Inc., Kirkland, Canada

Filed Aug. 2, 1994, Ser. No. 284,767

Int. Cl.[6] A61K *51/04;* **A01N** *43/42;* **C07D** *417/00;257/04*

U.S. Cl. 424—1.85 **3 Claims**

1. A compound which is N^{α}-((S)-1-carboxy-3-phenylpropyl-N^{ϵ}-3-iodo-benzoyl-L-lysyl-L-proline, wherein iodo is selected from ^{127}I, ^{123}I, ^{125}I, and ^{131}I.

5,601,802

METHODS OF MRI ENHANCEMENT USING COMPOUNDS HAVING IMPROVED FUNCTIONALIZATION

Gregory W. Hemmi, Sunnyvale, Calif.; Jonathan L. Sessler, Austin, Tex., and Tarak D. Mody, Sunnyvale, Calif., assignors to Pharmacyclics, Inc., Sunnyvale, Calif., and Board of Trustees, Univ. of TX Sys., Austin, Tex.

Continuation of Ser. No. 459,333, Jun. 2, 1995. This application Jun. 7, 1995, Ser. No. 486,886

Int. Cl.[6] C07D *225/00;* **G01N** *24/08*

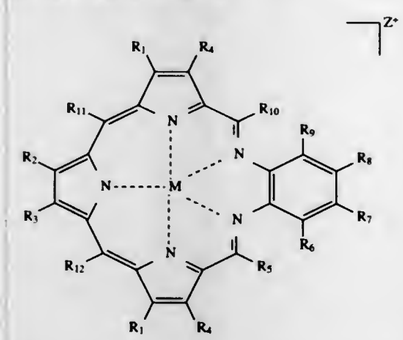
U.S. Cl. 424—9.363 **16 Claims**

1. A method of magnetic resonance image enhancement in a subject, the method comprising:

administering to the subject an effective amount of a texaphyrin; and

imaging the subject using a magnetic resonance device;

wherein the texaphyrin has structure:



wherein

M is a paramagnetic metal cation;

R_1–R_4, R_7 and R_8 are independently hydrogen, halide, hydroxyl, alkyl, aryl, haloalkyl, nitro, formyl, acyl, hydroxyalkyl, oxyalkyl, oxyhydroxyalkyl, saccharide, carboxy, carboxyalkyl, carboxyamidealkyl, a site-directing molecule,

a catalytic group, or a couple to a site-directing molecule or to a catalytic group;

R_6 and R_9 are independently selected from the groups of R_1–R_4, R_7 and R_8, with the proviso that the halide is other than iodide and the haloalkyl is other than iodoalkyl;

R_5 and R_{10}–R_{12} are independently hydrogen, alkyl, aryl, hydroxyalkyl, oxyalkyl, oxyhydroxyalkyl, carboxyalkyl, carboxyamidealkyl or a couple to a saccharide, to a site-directing molecule or to a catalytic group;

at least one of R_5, R_6, R_9, R_{10}, R_{11} and R_{12} is other than hydrogen; and

Z is an integer less than or equal to 5.

5,601,803

SILICA ABRASIVE DENTIFRICE OF REDUCED STRINGLESS AND IMPROVED FLAVOR

James G. Masters, 9 Londonderry Dr., Flemington, N.J. 08822; Michael Prencipe, 39 Spruce St., Princeton Junction, N.J. 08550; Julie A. Burke, 301 Jarvis Pl., Somerset, N.J. 08873, and Linda J. Vellekoop, Rt. 1 Box 364 Amwell Rd., Neshanic, N.J. 08853

Filed May 26, 1995, Ser. No. 451,289

Int. Cl.[6] A61K *7/16;7/18*

U.S. Cl. 474—49 **22 Claims**

1. A dentifrice composition which exhibits enhanced flavor intensity and reduced stringiness, the dentifrice being comprised of a silica abrasive, water, humectant, flavor, thickener and a cellulose gel comprised of a coprocessed mixture of a microcrystalline cellulose and a cellulose gum.

5,601,804

DICITRATE CYCLIC DIESTER DENTIFRICE

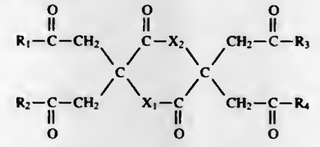
William C. Thomas, Jr.; Christopher D. Batich, and Daniel L. Purich, all of Gainesville, Fla., assignors to The University of Florida, Gainesville, Fla.

Division of Ser. No. 261,581, Jun. 6, 1994, and a continuation-in-part of Ser. No. 80,017, Jun. 18, 1993, Pat. No. 5,376,553. This application Jun. 2, 1995, Ser. No. 459,681

Int. Cl.[6] A61K *7/16;7/24*

U.S. Cl. 424—49 **1 Claim**

1. A dentifrice for inhibiting dental plaque formation or dental calculus, said dentifrice comprising dicitrate cyclic diester having the general structure



wherein R_1=R_2=R_3=R_4=OH and X_1=X_2=O, or a salt thereof.

5,601,805

METHOD OF CONDITIONING ENAMEL, DENTINE AND SIMILAR SUBSTRATES TO OBTAIN ADHESIVE BONDING OF POLYMERIC MATERIALS

Maria A. Georgescu, 19-28 Grove St., Ridgewood, N.Y. 11385

Filed Feb. 27, 1995, Ser. No. 394,460

Int. Cl.[6] A61K *7/24;6/00;* **C08L** *15/00*

U.S. Cl. 424—55 **6 Claims**

1. A process to obtain a strong and durable adhesive bond between a tooth structure and a polymeric material, which comprises;

mechanically preparing a tooth surface to receive the polymeric material, whereby a smear layer on the surface is formed; and

applying to the smear layer, a conditioner which comprises a dilute aqueous solution of an organic carboxylic acid selected from the group consisting of hydroxy and amino carboxylic acids; and

adhering to the conditioned and mechanically prepared tooth surface a polymeric material.

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5,601,806

METHODS FOR SCAVENGING ACTIVE OXYGEN COMPOUNDS AND PREVENTING DAMAGE FROM ULTRA VIOLET B RAYS USING TAURINE ANALOGUES

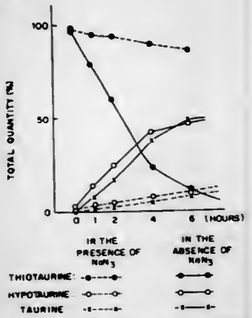
Manabu Katsumata; Keiko Kiuchi, both of Kanagawa-ken; Tomoyasu Tashiro, Tokyo, and Saburo Uchikuga, Kanagawa-ken, all of Japan, assignors to Sogo Pharmaceutical Company Limited, Tokyo, Japan

Division of Ser. No. 994,960, Dec. 22, 1992, abandoned. This application Sep. 20, 1994, Ser. No. 309,139

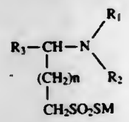
Claims priority, application Japan, Dec. 27, 1991, 3-357993; Sep. 22, 1992, 4-276789

Int. Cl.[6] A61K *7/42;* **A01N** *37/12;33/02;* **C01B** *17/64*

U.S. Cl. 424—59 **3 Claims**



1. A method for scavenging active oxygen compounds comprising applying to the skin of a living body an effective amount for inhibiting ultraviolet B rays for scavenging active oxygen compounds of a compound of the formula:



wherin R_1 and R_2 may be identical or different, each representing a hydrogen atom, a saturated or unsaturated linear or branched alkyl or acyl group of from 1–22 carbon atoms, or an amidino group;

R_3 represents a hydrogen atom or —$COOR_4$, where R_4 represents a hydrogen atom, a saturated or unsaturated linear or branched alkyl group with carbon number 1–22, or an alkali metal or alkaline earth metal; M represents a hydrogen atom or an alkali metal; and n represents either 0 or 1.

5,601,807

CERAMIC TYPE SUNSCREENS

Hisatoshi Asaoka, Hamauracho 2-46-9, Niigata 951, Japan

Filed May 19, 1995, Ser. No. 445,377

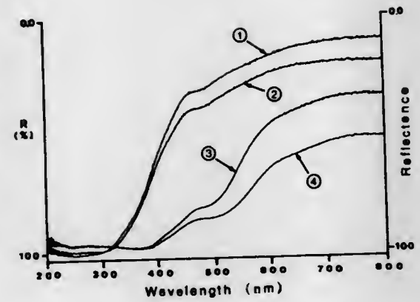
Int. Cl.[6] A61K *7/42*

U.S. Cl. 424—59 **2 Claims**

1. Synthetic sunscreen materials having a composition expressed in terms of moles of oxides as follows:

$$mRO{:}vB_2O_3{:}wFe_2O_3{:}xSiO_2{:}yTiO_2{:}zH_2O$$

wherein "R" is selected from the group consisting of hydrogen, alkyl groups containing 1–4 carbon atoms, and mixtures thereof, "m" is a value between 0 and about 1200, "v" is a value between 0 and about 500, "w" is a value between 0 and about 100, "x" is a value between 0 and about 200, "y" is a value between 1 and about 300 and "z" is a value of from 0 to about 300, said synthetic sunscreen materials in calcined form having a characteristic X-ray powder diffraction pattern comprising interplanar spacings and



corresponding assigned strengths as set forth below:

Interplanar Spacing, (Å)	Assigned Strength
4.89 ± 0.04	w–vw
4.09 ± 0.04	m–vw
3.47 ± 0.02	m–vw
3.24 ± 0.02	vs
2.75 ± 0.02	m–vw
2.49 ± 0.02	s
2.45 ± 0.02	vw
2.40 ± 0.02	vw
2.18 ± 0.02	m
2.05 ± 0.02	vw
1.97 ± 0.02	vw
1.85 ± 0.02	vw
1.68 ± 0.02	s
1.62 ± 0.02	m–w
1.54 ± 0.02	vw
1.48 ± 0.02	w–vw
1.35 ± 0.02	m–w
1.34 ± 0.02	w–vw.

5,601,808

COSMETIC COMPOSITIONS FOR APPLICATION TO THE NAIL

Myriam Mellul, l'Hay-les-Roses, and Valérie de la Poterie, le Chatelet en Brie, both of France, assignors to L'Oreal, Paris, France

Filed Apr. 7, 1995, Ser. No. 418,297

Claims priority, application France, Apr. 8, 1994, 94 04202

Int. Cl.[6] A61K *7/04*

U.S. Cl. 424—61 **13 Claims**

1. A cosmetic composition for application to a nail, comprising as a film-forming agent an aqueous dispersion of particles of at least one polyurethane and of at least one radical-polymerization polymer containing carboxyl groups, wherein said at least one polyurethane has a glass transition temperature (Tg) less than or equal to 30° C., and

wherein, when the Tg of said at least one polyurethane is greater than 0° C., said at least one radical-polymerization polymer has a minimum film-forming temperature (MFT) less than or equal to 30° C. and/or is present in the amount of from 5 to less than 60% by weight, and

wherein, when the Tg of said at least one polyurethane is less than 0° C., said at least one radical-polymerization polymer is present in the amount of from 5 to 70% by weight.

5,601,809

AXILLARY MALODOR NEUTRALIZATION

Iris J. Davis, Gaithersburg, Md., assignor to The Gillette Company, Boston, Mass.

Continuation of Ser. No. 911,872, Sep. 26, 1986. This application May 9, 1994, Ser. No. 240,208

Int. Cl.[6] A61K *7/32*

U.S. Cl. 424—65 **10 Claims**

1. A method of axillary malodor neutralization comprising contacting the malodor with a malodor-reducing concentration of a sulfhydryl reactant.

5,601,810

MASCARA COMPOSITION

Jack Mausner, New York, N.Y., assignor to Chanel, Inc., Piscataway, N.J.

Filed Nov. 22, 1995, Ser. No. 561,516

Int. Cl.[6] A61K *7/032*

U.S. Cl. 424—70.7 **45 Claims**

1. An emulsified mascara composition comprising:

(a) a protein component comprising at least one uncoated protein selected from the group consisting of keratin and protein derived from silk powder in substantially homogenized form;

(b) a vegetable wax component comprising at least one vegetable wax selected from the group consisting of rose wax and jasmine wax; and

(c) a vitamin component comprising at least one vitamin selected from the group consisting of fatty acid esters of ascorbic acid, tocopherol esters, and panthenol; the protein component, the vegetable wax component, and the vitamin component each being present in quantities sufficient to contribute to the condition of the eyelashes of a wearer to which the mascara composition is applied.

5,601,811

SUBSTANTIVE WATER-SOLUBLE CATIONIC UV-ABSORBING COMPOUNDS

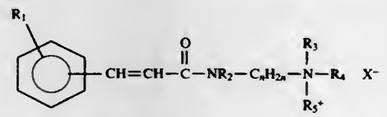
Kevin F. Gallagher, Lincrost, and Abel G. Pereira, Belleville, both of N.J., assignors to Croda, Inc., Parsippany, N.J.

Filed Aug. 1, 1994, Ser. No. 283,575

Int. Cl.[6] A61K *7/06*

U.S. Cl. 424—709 **20 Claims**

1. A composition comprising one or more active ingredients and a cinnamido alkyl amine cationic quaternary salt having the formula:



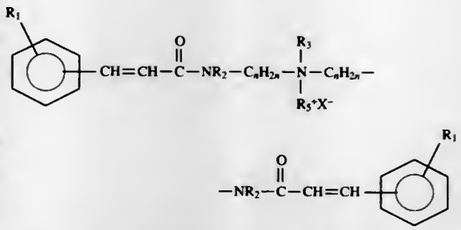
wherein R_1 is hydrogen;

R_2 is selected from the group consisting of hydrogen, —R_6—OH and alkyl groups containing up to 18 carbon atoms, and R_3 and R_4 are independently selected from the group consisting of —R_6—OH and alkyl groups containing up to 18 carbon atoms, wherein R_6 is a polyalkylene oxide containing up to 20 moles of an alkylene oxide selected from the group consisting of ethylene oxide, propylene oxide and mixtures thereof;

R_5 is selected from the group consisting of alkyl groups containing up to 18 carbon atoms and benzyl groups;

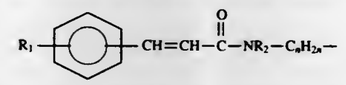
n is an integer between 1 and 18, inclusive; and X^- is an anion.

9. A composition comprising one or more active ingredients and a his cinnamido amine cationic quaternary salt having the formula:



wherein each R_1 is independently selected from the group consisting of hydrogen, halogen, alkoxy groups containing from one up to 22 carbon atoms, NO_2, NH_2, OH and N,N'-dialkylamino groups containing from two up to 22 carbon atoms;

each R_2 is independently selected from the group consisting of hydrogen, —R_6—OH and alkyl groups containing up to 18 carbon atoms, and R_3 is selected from the group consisting of —R_6—OH, alkyl groups containing up to 18 carbon atoms and cinnamido alkyl groups having the formula:

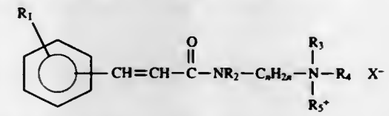


wherein R_6 is a polyalkylene oxide containing up to 20 moles of an alkylene oxide selected from the group consisting of ethylene oxide, propylene oxide and mixtures thereof;

R_5 is selected from the group consisting of alkyl groups containing up to 18 carbon atoms and benzyl groups;

n is an integer between 1 and 18, inclusive; and X^- is an anion.

12. An aqueous solution or dispersion comprising water and up to about 90% w/w of a water-soluble cinnamido alkyl amine cationic quaternary salt having the formula:



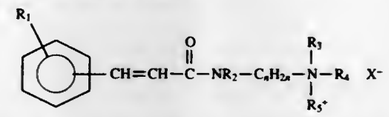
wherein R_1 is hydrogen;

R_2 is selected from the group consisting of hydrogen, —R_6—OH and alkyl groups containing up to 18 carbon atoms, and R_3 and R_4 are independently selected from the group consisting of —R_6—OH and alkyl groups containing up to 18 carbon atoms, wherein R_6 is a polyalkylene oxide containing up to 20 moles of an alkylene oxide selected from the group consisting of ethylene oxide, propylene oxide and mixtures thereof;

R_5 is selected from the group consisting of alkyl groups containing up to 18 carbon atoms and benzyl groups;

n is an integer between 1 and 18, inclusive: and x— is an anion.

20. A composition comprising one or more active ingredients and a cinnamido amine cationic quaternary salt, wherein said quaternary salt has the formula:



wherein R_1 is selected from the group consisting of halogen, NO_2, NH_2, OH and N,N'-dialkylamino groups containing from two up to 22 carbon atoms;

R_2 is selected from the group consisting of hydrogen, —R_6—OH and alkyl groups containing up to 18 carbon atoms, and R_3 and R_4 are independently selected from the group consist-

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ing of —R_6—OH and alkyl groups containing up to 18 carbon atoms, wherein R_6 is a polyalkylene oxide containing up to 20 moles of an alkylene oxide selected from the group consisting of ethylene oxide, propylene oxide and mixtures thereof;
R_5 is selected from the group consisting of alkyl groups containing up to 18 carbon atoms and benzyl groups;
n is an integer between 1 and 18, inclusive; and x— is an anion.

5,601,812

HAIR THICKENING AND CONDITIONING GELATIN COMPOSITION FOR TOPICAL APPLICATION

Leslie Grossman, Evergreen, Colo., assignor to Top Stock, Inc., Randolph, N.J.

Filed Jun. 1, 1995, Ser. No. 457,610
Int. Cl.[6] A61K *7/06*
U.S. Cl. 424—70.15 **10 Claims**

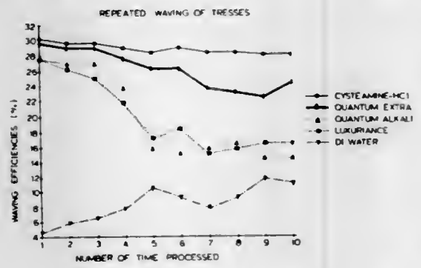
1. A hair thickening composition for topical application comprising an aqueous solution of gelatin at a concentration between about 0.30 and about 15% by weight, a water-soluble cosmetic film-forming polymer at a concentration greater than 60% that of said gelatin and between about 0.10 and about 15% by weight, and an acid neutralizing agent to maintain said solution at a pH range between about 6.0 and about 9.5, within which said gelatin and said film-forming polymer are stable together at their respective concentrations.

5,601,813

CYSTEAMINE PERMANENT WAVE COMPOSITION AND METHOD

Arun Nandagiri, Libertyville; Richard A. Abbott, Downers Grove; Renee E. Nardone, Chicago, all of Ill., and Edward T. Borish, Mahwah, N.J., assignors to Helene Curtis, Inc., Rolling Meadows, Ill.

Continuation of Ser. No. 186,808, Jan. 25, 1994, Pat. No. 5,456,907, which is a continuation-in-part of Ser. No. 96,364, Jul. 22, 1993, Pat. No. 5,382,426, which is a division of Ser. No. 819,113, Jan. 10, 1992, Pat. No. 5,260,054. This application Aug. 2, 1995, Ser. No. 510,428
Int. Cl.[6] A61K *7/06;7/11;* **A45D** *2/12;7/04*
U.S. Cl. 424—70.51 **33 Claims**



1. A composition capable of breaking sulfur to sulfur bonds in human hair when in contact with said human hair so that said hair can be reconfigured in a predetermined configuration, comprising
(a) an aqueous solution of a cysteamine in an amount of at least about 7.8% by weight;
(b) from about 2% to about 5% in total, of less than 1% each of additives selected from the group consisting of fragrances, dyes, opacifiers, pearlescing agents, thickening agents, foam stabilizers, preservatives, water softening agents, acids, bases and buffers; and
(c) sufficient alkali that the composition has a pH of at least about 7.8.

5,601,814

USE OF IL-6 TO TREAT TOXIC SHOCK

Beverly Barton, West Orange, and Jennifer Shortall, Flanders, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Aug. 5, 1994, Ser. No. 286,315
Int. Cl.[6] A61K *45/05*
U.S. Cl. 424—85.2 **6 Claims**

1. A method for treating toxic shock in a mammal comprising administering an effective amount of IL-6 to a mammal afflicted with toxic shock.

5,601,815

IL-4 AND IL-10 TO DOWNREGULATE DELAYED-TYPE HYPERSENSITIVITY AND CYTOKINE EXPRESION BY T-CELLS

Fiona Powrie, 2250 Latham St. No. 22, Mountain View, Calif. 94040, and Robert Coffman, 239 Echo La., Portola Valley, Calif. 94028

Continuation of Ser. No. 933,462, Aug. 21, 1992, abandoned. This application Sep. 21, 1995, Ser. No. 531,994
Int. Cl.[6] A61K *45/05*
U.S. Cl. 424—85.2 **17 Claims**

1. An in vivo method of potentiating IL-10 mediated inhibition of cytokine production by T cells in a mammal wherein said method comprises co-administering to the mammal an effective amount of each of IL-4 and IL-10.

5,601,816

INFECTIOUS BOVINE RHINOTRACHEITIS VIRUS INSERTION MUTANTS, VACCINES CONTAINING SAME, AND METHODS FOR THE PRODUCTION OF SAME

Malon Kit, and Saul Kit, both of Houston, Tex., assignors to Novagene, Inc., and Baylor College of Medicine, both of Houston, Tex.

Continuation of Ser. No. 899,013, Jun. 15, 1992, abandoned, which is a continuation of Ser. No. 148,725, Jan. 26, 1988, abandoned. This application Feb. 22, 1995, Ser. No. 392,406
Int. Cl.[6] A61K *39/265;35/76;* **C12N** *7/00;7/01*
U.S. Cl. 424—93.2 **46 Claims**

1. An infectious bovine rhinotracheitis virus which fails to produce any functional thymidine kinase as a result of an insertion in the thymidine kinase gene.

5,601,817

CONTROLLING OOMYCETE-CAUSED DISEASES IN PLANTS USING *FUSARIUM PROLIFERATUM*

Abraham Sztejnberg, Rehovot, Israel, and Roger C. Pearson, deceased, late of Geneva, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Continuation of Ser. No. 242,978, May 16, 1994, abandoned. This application Jan. 30, 1995, Ser. No. 381,150
Int. Cl.[6] A01N *63/04;63/00;* **C12N** *1/14*
U.S. Cl. 424—93.5 **16 Claims**

1. A method for controlling Oomycetes species-caused plant disease comprising applying to plant surfaces to be protected an Oomycete species-inhibiting amount of *Fusarium proliferatum* wherein the Oomycetes species is from a genus selected from the group consisting of Plasmorpara, Bremia, Pseudoperonospora, Peronospora and Sclerospora.

5,601,818

CANCER THERAPY UTILIZING MALIGNANT CELLS EXPRESSING HSV-TK

Scott M. Freeman, New Orleans, La.; George N. Abraham, Rochester; Craig S. McCune, Huson, both of N.Y.; Frederick L. Moolten, West Newton, Mass., and David Koeplin, Los Angeles, Calif., assignors to University of Rochester, Rochester, N.Y.

Continuation of Ser. No. 919,027, Jul. 23, 1992, abandoned, and a continuation-in-part of Ser. No. 736,391, Jul. 26, 1991, abandoned. This application Dec. 8, 1994, Ser. No. 351,891
Int. Cl.[6] A61K *48/00;* **C12N** *15/00*
U.S. Cl. 424—93.21 **15 Claims**

1. A method for eliminating cancer cells from a mammal afflicted with a cancerous tumor comprising:
(a) administering to said mammal a population of transformed cancer cells comprising the thymidine kinase gene from a human herpes virus that is expressed so as to increase the susceptibility of said transformed cancer cells to an antiviral nucleoside analog, wherein said transformed cancer cells are administered at or adjacent to the cancerous tumor; and
(b) administering to said mammal an amount of said nucleoside analog effective to kill a portion of said transformed cancer cells, wherein the killing of said transformed cancer cells results in tumor regression.

5,601,819

BISPECIFIC ANTIBODIES FOR SELECTIVE IMMUNE REGULATION AND FOR SELECTIVE IMMUNE CELL BINDING

Johnson T. Wong, Westwood, and Robert B. Colvin, Cambridge, both of Mass., assignors to The General Hospital Corporation, Boston, Mass.

Continuation of Ser. No. 75,343, Jun. 10, 1993, abandoned, which is a continuation of Ser. No. 683,254, Apr. 10, 1991, abandoned, which is a continuation-in-part of Ser. No. 231,193, Aug. 11, 1988, abandoned. This application Sep. 14, 1994, Ser. No. 305,856
Int. Cl.[6] G01N *33/53;* **C07K** *16/00;* **A61K** *39/395*
U.S. Cl. 424—136.1 **34 Claims**

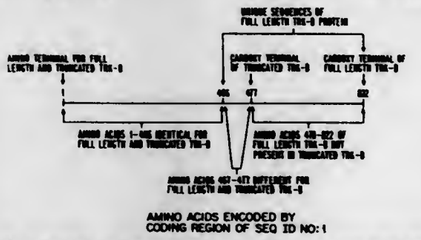
1. A bispecific monoclonal antibody having a common Fc portion, a first FAB portion specific for CD3 and a second FAB portion specific for the interleukin-2 receptor, CD28, CD45 or CDTfr.

5,601,820

COMPOSITIONS AND METHODS OF MAKING AND USING HUMAN FULL LENGTH TRK-B

Garrett M. Brodeur, and Akira Nakagawara, both of Philadelphia, Pa., assignors to Children's Hospital of Philadelphia, Philadelphia, Pa.

Filed Jul. 7, 1994, Ser. No. 271,454
Int. Cl.[6] A61K *39/395;* **C12Q** *1/68;* **C12P** *19/34;* **C07H** *21/02*
U.S. Cl. 424—138.1 **22 Claims**



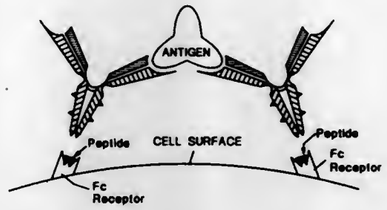
10. A method of determining whether a human neuroblastoma cell has mRNA that encodes full length TRK-B receptor protein comprising:
detecting the presence of an RNA molecule that encodes a full length TRK-B receptor intracellular domain by hybridizing a probe or primer to TRK-B mRNA from said neuroblastoma cell or to cDNA generated from said mRNA, wherein said probes or primers are identical or fully complementary to a sequence in nucleotides 1–158 or 1749–3707 of SEQ ID NO: 1, and detecting said hybridization.

5,601,821

IMMUNOACTIVE PEPTIDES AND ANTIBODIES AND THEIR USE IN ANTI-ALLERGY TREATMENT

Denis R. Stanworth, Birmingham; Ian V. Lewin, Tamworth; Sarita Nayyar, Wolverhampton, all of England, and Valerie Jones, Gwynedd, Wales, assignors to National Research Development Corporation, London, England

Continuation of Ser. No. 102,692, Aug. 5, 1993, abandoned, which is a continuation of Ser. No. 776,380, Nov. 26, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 480,505
Claims priority, application United Kingdom, Jun. 15, 1989, 8913737
Int. Cl.[6] A61K *38/08;39/385;39/395;* **C07K** *16/18*
U.S. Cl. 424—139.1 **15 Claims**



1. An immunogen comprising: i) a moiety consisting of a histamine-releasing synthetic peptide, and ii) a moiety capable of eliciting antibodies against said peptide while inhibiting histamine release by said peptide, wherein said histamine-releasing peptide has the sequence:

Lys—Thr—Lys—Gly—Ser—Gly—Phe—Phe, SEQ ID NO: 4
Arg—Lys—Thr—Lys—Gly—Ser—Gly—Phe—Phe, SEQ ID NO: 5
Lys—Thr—Lys—Gly—Ser—Gly—Phe—Phe—Val—

Phe, SEQ ID NO: 6

Lys—Thr—Lys—Gly—Ser—Gly—Phe—Phe—Val—Phe—

Ser—Arg, SEQ ID NO: 7 or
Lys—Thr—Lys—Gly—Ser—Gly—Phe—Phe—Val,

SEQ ID NO: 8 and

wherein said histamine-releasing peptide is amidated or non-amidated.

5,601,822

γ, δ T CELL RECEPTOR AND METHODS FOR DETECTION

Michael B. Brenner, Ashland; Jack L. Strominger, Lexington; Johnathan Seidman, Milton; Stephen H. Ip, Framingham, and Michael S. Krangel, Newtonville, all of Mass., assignors to T Cell Sciences, Inc., Needham; President and Fellows of Harvard College, and Dana Farber Cancer Institute, both of Cambridge, all of Mass.

Continuation of Ser. No. 16,252, Feb. 19, 1987, Pat. No. 5,340,921, which is a continuation-in-part of Ser. No. 882,100, Jul. 3, 1986, abandoned. This application Nov. 19, 1993, Ser. No. 155,978

Int. Cl.[6] C07K *14/725*

U.S. Cl. 424—144.1 **26 Claims**

1. A purified polypeptide fragment of a δ chain of a T cell antigen receptor, which δ chain is characterized by:

(a) being associated in a complex with the T3 antigen when found on the surface of a T cell;

(b) not being reactive with antibodies to the alpha, beta T cell antigen receptor;

(c) not being reactive with antibodies to shared determinants on the beta chain of the T cell antigen receptor; and

(d) not being reactive with antibodies to the γ chain of the T cell antigen receptor;

such polypeptide fragment being characterized by:

(a) being antigenic;

(b) not being reactive with antibodies to the alpha, beta T cell antigen receptor;

(c) not being reactive with antibodies to shared determinants on the beta chain of the T cell antigen receptor;

(d) not being reactive with antibodies to the γ chain of the T cell antigen receptor; and

(e) having at least one intrachain, covalent, disulphide bridge.

5,601,823

AVIAN ANTITOXINS TO CLOSTRIDIUM DIFFICLE TOXIN A

James A. Williams; John A. Kink; Christopher M. Clemens, all of Madison, and Sean B. Carroll, Cottage Grove, all of Wis., assignors to Ophidian Pharmaceuticals, Inc., Madison, Wis.

Continuation-in-part of Ser. No. 985,321, Dec. 4, 1992, which is a continuation-in-part of Ser. No. 429,791, Oct. 31, 1989, Pat. No. 5,196,193. This application Dec. 2, 1993, Ser. No. 161,907

Int. Cl.[6] A61K *39/395;* **C07K** *16/02;16/12*

U.S. Cl. 424—167.1 **15 Claims**

1. A composition comprising polyclonal avian antitoxin in an aqueous solution directed against *Clostridium difficile* toxin A, said composition being suitable for administration to a subject during a treatment period, wherein said polyclonal avian antitoxin neutralizes said toxin in vivo.

5,601,824

HOMOBIDENTAL, TRIFUNCTIONAL LINKERS USED IN IMMUNOLOGICALLY ACTIVE CONJUGATES

Eva Heess, Staraberg; Erasmus Huber, Finning; Christine Markert-Hahn, Seeshaupt, and Beatus Ofenloch-Haehnle, Wielenbach, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

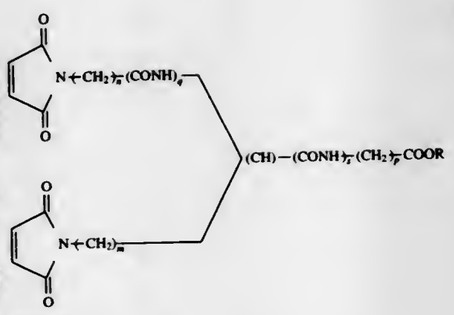
Division of Ser. No. 219,469, Mar. 29, 1994, Pat. No. 5,519,142. This application Feb. 23, 1996, Ser. No. 606,098

Claims priority, application Germany, Mar. 29, 1993, 43 10 141.8

Int. Cl.[6] A61K *39/40;39/44*

U.S. Cl. 424—179.1 **5 Claims**

1. Conjugate of two haptens and one protein, coupled through a linker which linker is a compound of formula I



(I)

wherein,

R is an ester activating group;

m & n are the same or different and are 0–6;

q & s are 0 or 1; and

p is 0 when s is 0, and p is 2–4 when s is 1 wherein the haptens are linked to the linker via the maleinimido groups of the linker, and the protein is linked to the linker via the ester-activating group of the linker.

5,601,825

THERAPEUTIC CONJUGATES OF TOXINS AND DRUGS

Hans J. Hansen, Mystic Island; Gary L. Griffiths, Morristown; Anastasia Lentine-Jones, Pittstown, and David M. Goldenberg, Short Hills, all of N.J., assignors to Immunomedics, Inc., Warren, N.J.

Division of Ser. No. 882,177, May 11, 1992, Pat. No. 5,541,297, which is a continuation-in-part of Ser. No. 760,466, Sep. 17, 1991, Pat. No. 5,328,699, Ser. No. 581,913, May 5, 1990, abandoned, Ser. No. 518,707, May 7, 1990, abandoned, and Ser. No. 392,280, Aug. 10, 1989, Pat. No. 5,128,119, which is a continuation-in-part of Ser. No. 364,373, Jun. 12, 1989, abandoned, said Ser. No. 760,466is a continuation-in-part of Ser. No. 408,241, Sep. 18, 1989, abandoned, and Ser. No. 364,373, said Ser. No. 581,913is a continuation of Ser. No. 176,421, Apr. 1, 1988, Pat. No. 5,061,641, said Ser. No. 518,707is a continuation-in-part of Ser. No. 176,421. This application May 26, 1995, Ser. No. 452,131

Int. Cl.[6] A61K *39/395;* **C07K** *19/00;16/30;16/20*

U.S. Cl. 424—183.1 **14 Claims**

1. A method of treating patients having a tumor or a disease caused by an infectious agent, said method comprising the step of administering a hypoimmunogenic immunoconjugate that comprises an antibody Fab or Fab' fragment that specifically binds to a tumor-associated antigen of a targeted tumor cell or an antigen associated with a protozoan, said tumor-associated antigen being on a lymphoma, carcinoma, sarcoma, leukemia or myeloma cell, wherein said antibody fragment is conjugated through a first thiol-binding linker to a drug or modified toxin devoid of a functional receptor-binding domain, and wherein said antibody fragment is further conjugated through at least a second thiol-binding linker to at least one polysaccharide or polyol group, wherein the antibody thiol groups linked to said linkers are derived from reduction of heavy chain disulfide bonds, and wherein said antigen internalizes said conjugate into the cytoplasm of the cells of said tumor, into the cytoplasm of cells containing said protozoan, or into said protozoan itself.

5,601,826

PEPTIDE WHICH PRODUCES PROTECTIVE IMMUNITY AGAINST TETANUS

Jane L. Halpern, Washington, D.C., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation of Ser. No. 906,841, Jun. 30, 1992, abandoned, which is a continuation-in-part of Ser. No. 373,862, Jun. 30, 1989, abandoned. This application Apr. 20, 1994, Ser. No. 231,437

Int. Cl.[6] A61K *39/08;38/10;* **C12N** *7/08*

U.S. Cl. 424—190.1 **9 Claims**

1. A peptide comprising a linear tetanus-toxin-specific epitope, wherein said epitope is defined by the amino acid sequence of SEQ ID NO:1 and said peptide does not comprise additional epitopes of the native tetanus toxin.

5,601,827

DIPHTHERIA TOXIN VACCINES

R. John Collier, Wellesley Hills; Kevin Killeen, Milton, and John Mekalanos, Cambridge, all of Mass., assignors to President and Fellows of Harvard College, Cambridge, Mass.

Continuation of Ser. No. 227,196, Apr. 13, 1994, abandoned, which is a continuation of Ser. No. 901,712, Jun. 18, 1992, abandoned. This application May 23, 1995, Ser. No. 447,413

Int. Cl.[6] A61K *39/05;48/00;* **C12N** *15/31*

U.S. Cl. 424—190.1 **19 Claims**

1. A DNA encoding an immunologically cross-reactive form of diphtheria toxin Fragment A, wherein the codons corresponding to Val-147 and Glu-148 of naturally-occurring diphtheria toxin (FIG. 1; SEQ ID NO:1) are absent from said DNA.

5,601,828

CD8 DERIVATIVES AND METHODS OF USE FOR CELLULAR MODULATION AND ENHANCEMENT OF CELLULAR ENGRAFTMENT

Mark L. Tykocinski, Shaker Heights, and David R. Kaplan, Cleveland Heights, both of Ohio, assignors to TKB Associates Limited Partnership, Pepper Pike, Ohio

Continuation of Ser. No. 691,475, Apr. 25, 1991, Pat. No. 5,242,687, which is a continuation-in-part of Ser. No. 323,770, Mar. 15, 1989, abandoned. This application Aug. 24, 1993, Ser. No. 112,005

Int. Cl.[6] A61K *39/00;45/00*

U.S. Cl. 424—193.1 **26 Claims**

1. Method for specifically reducing T-cell proliferation or cytotoxicity directed to an alloantigen or a MHC-associated antigen, comprising the steps of:

(a) providing a non-naturally occurring membrane which presents in, or on its surface, an extracellular domain portion of CD8 and said alloantigen or said MHC-associated antigen wherein said extracellular domain portion of CD8 comprising at least the Immunoglobulin V homolog domain is covalently linked to a molecule which binds covalently or non-covalently with a cell surface molecule, and

(b) exposing said membrane to T-cells able to respond to said alloantigen or MHC-associated antigen, for a time and under conditions sufficient to reduce the specific cellular immune response of said T-cells to said alloantigen or MHC-associated antigen.

5,601,829

PHARMACEUTICAL COMPOSITION OF ACTIVITY IN THE TREATMENT OF COGNITIVE AND/OR NEUROIMMUNE DYSFUNCTIONS

Eliseo Quintanilla Almagro, and Joaquin Diaz Alperi, both of Alicante, Spain, assignors to Especialidades Farmaceuticas Centrum, S.A., Spain

Filed May 3, 1995, Ser. No. 433,621

Claims priority, application Spain, May 6, 1994, 94/00957; Feb. 23, 1995, 95/00363

Int. Cl.[6] A61K *35/78*

U.S. Cl. 424—195.1 **8 Claims**

1. A method of producing a neuroprotective effect in a patient in need thereof by administering a neuroprotective effective amount of a pharmaceutical composition into the patient, utilizing a pharmaceutical composition for the treatment of cognitive, neurodegenerative or neuroimmune dysfunction disorders containing a neuroprotective effective amount of an active ingredient and an acceptable pharmaceutical vehicle, in which the active agent comprises an isolated, natural hydrosoluble extract of the rhizome or leaves of Phlebodium decumanum, Polypodium aereum, Polypodium leucotomos, Polypodium vulgare, Polypodium trisereiale, Pteridium aquilinum, Dryopteris crassirhizoma and Cyathea taiwamiana.

5,601,830

STAPHYLOCOCCUS AUREUS ENTEROTOXIN H AND METHODS OF USE

Yi C. Su, and Amy C. Lee Wong, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Mar. 31, 1995, Ser. No. 414,804

Int. Cl.[6] A61K *39/085;* **C07K** *1/00;2/00*

U.S. Cl. 424—237.1 **10 Claims**

1. A generally pure protein composition isolated from staphylococci containing a protein having an N-terminal amino acid sequence of Glu Asp Leu His Asp Lys Ser Glu Leu Thr Asp Leu Ala Leu Ala Asn Ala Tyr Gly Gln Tyr Asn His Pro Phe Ile Lys Glu Asn Ile, SEQ. ID. NO. 1, and having the following characteristics:

Isoelectric point	5.7	
Molecular weight	28.5 kD	(SDS-PAGE)
	27.3 kD	(gel filtration).

5,601,831

VACCINES FOR NONTYPABLE *HAEMOPHILUS INFLUENZAE*

Bruce A. Green, Pittsford, and Gary W. Zlotnick, Penfield, both of N.Y., assignors to Praxis Biologics, Inc., Rochester, N.Y.

Continuation-in-part of Ser. No. 320,971, Mar. 9, 1989, abandoned. This application Mar. 9, 1990, Ser. No. 491,466

Int. Cl.[6] A61K *39/102;39/385*

U.S. Cl. 424—256.1 **33 Claims**

1. A vaccine composition comprising essentially pure protein "e" of *Haemophilus influenzae* or a peptide of protein "e" comprising an epitope or epitopes thereof, in a pharmaceutically acceptable vehicle; wherein the protein "e" of *Haemophilus influenzae* or the peptide of protein "e" elicits a protective immune response in a mammalian host.

5,601,832

Patent Not Issued For This Number

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5,601,833

PROTECTIVE, NUTRITIVE AND/OR FIRMING COMPOSITION FOR THE SIMULTANEOUS TREATMENT OF THE SURFACE LAYERS AND DEEP LAYERS OF THE SKIN, AND USE THEREOF

Alain Ribier; Jean-Thierry Simonnet, both of Paris; Elisabeth Picard, Meudon La Foret, and Jacqueline Griat, Ablon, all of France, assignors to L'Oreal, Paris, France

Filed Dec. 30, 1994, Ser. No. 366,741
Claims priority, application France, Dec. 30, 1993, 93 15868
Int. Cl.[6] A61K *9/127*
U.S. Cl. 424—401 **17 Claims**

1. A protective, nourishing and/or firming composition for the simultaneous treatment of the layers of the stratum corneum and deep layers of the skin, comprising a dispersion mixture of:

(a) a first dispersion of lipid vesicles which are capable of penetrating into the deep layers of the skin and which contain at least one active agent selected from the group consisting of protective, nutritive and firming agents, for treating these deep layers and

(b) a second dispersion of lipid vesicles which are capable of penetrating into the layers of the stratum corneum of the skin and which contain at least one active agent selected from the group consisting of protective and nutritive agents, for treating these layers of the stratum corneum, and wherein said vesicles of said first dispersion ensure a distribution of N-(1oxyl-2,2,6,6 -tetramethyl-4-piperidyl)-N-dimethyl-N-hydroxyethylammonium iodide (ASL) in the stratum corneum $>1\times10^{-7}$ cm^2/s and in that said vesicles of said second dispersion ensure a distribution of ASL in the stratum corneum $<1\times10^{-7}$ cm^2/s.

5,601,834

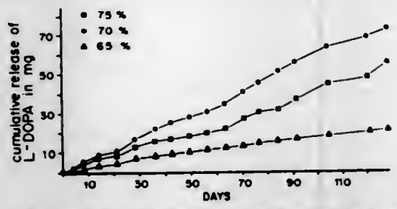
Patent Not Issued For This Number

5,601,835

POLYMERIC DEVICE FOR CONTROLLED DRUG DELIVERY TO THE CNS

Bernhard A. Sabel, Egmating, Germany; Andrew Freese, Jamaica Plain, Mass.; William M. Saltzman, Baltimore, Md., and Matthew J. During, Westport, Conn., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 20,190, Feb. 16, 1993, abandoned, which is a continuation of Ser. No. 795,046, Nov. 20, 1991, abandoned, which is a continuation of Ser. No. 407,930, Sep. 15, 1989, abandoned, which is a continuation-in-part of Ser. No. 43,695, Apr. 29, 1987, Pat. No. 4,883,666. This application Jan. 12, 1994, Ser. No. 180,117
Int. Cl.[6] A61F *2/00*; A61K *9/00*
U.S. Cl. 424—424 **14 Claims**



1. A method for treating disorders characterized by insufficient function of the central nervous system comprising:

selecting a compound for treating the disorder by replacing or supplementing a normal function in the central nervous system selected from the group consisting of L-dopa, dopamine, carbidopa, choline, acetylcholine, cholinergic neuronotrophic agents, gangliosides, nerve growth enhancing agents, antipsychotic agents, antidepressants, excitatory amino acid antagonists and agonists, antiepileptic medications, enzymes, beta-interferon and combinations thereof;

encapsulating said compound within said polymer to form a polymeric device, the device formed of a biocompatible polymer that is plastically deformable selected from the group consisting of ethylene vinyl acetate, polyurethanes, polystyrenes, polyamide, polyacrylamide, and combinations thereof having a non-porous polymer coating thereon with one or more openings, with limited water sorptivity and slight permeability to the passage of small, aqueous-soluble molecules, wherein said compound is linearly released from said polymeric device over a sustained period of time of at least 65 days at a predetermined level and rate when implanted in a patient at a specific site within the central nervous system where the compound is released directly into the central nervous system and the device remains essentially intact throughout the release period.

5,601,836

NUTRITIONAL SUPPLEMENT FOR CALVING RUMINANT ANIMALS

Richard B. Parker, Portland, Oreg., assignor to Great Lakes Biochemical Company, Inc., Milwaukee, Wis.

Continuation-in-part of Ser. No. 84,862, Jun. 28, 1993, abandoned. This application Feb. 1, 1994, Ser. No. 189,695
Int. Cl.[6] A61K *9/00*
U.S. Cl. 424—438 **25 Claims**

1. A nutritional supplement for ruminant animals comprising in unit dosage form,

a prophylactically effective amount of a calcium compound selected from the group consisting of calcium propionate and a mixture of calcium propionate and calcium oxide, and about 1% to about 12% by weight based on the total weight of the nutritional supplement of a water soluble magnesium salt as active ingredients in a polyethylene glycol gel carrier present in an amount of 85%–180% by weight based on the weight of the calcium compound effective to impart flowability to said nutritional supplement, said nutritional supplement being capable of inhibiting or preventing the onset of a triad of ailments—hypocalcemia, ketosis and tetany—that occur in ruminant animals during freshening.

5,601,837

PSYLLIUM CHOLESTYRAMINE COMPOSITIONS WITH IMPROVED PALATABILITY

Nabil G. Kardouche, Loveland, and John A. Colliopoulos, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 278,707, Jul. 22, 1994, abandoned, which is a continuation of Ser. No. 113,560, Aug. 27, 1993, abandoned, which is a continuation of Ser. No. 895,194, Jun. 5, 1992, abandoned, which is a continuation of Ser. No. 630,595, Dec. 20, 1990, abandoned. This application Jun. 2, 1995, Ser. No. 460,028
Int. Cl.[6] A61K *31/785*
U.S. Cl. 424—439 **10 Claims**

1. An oral pharmaceutical composition comprising:

(a) from about 1% to 75%, by weight, psyllium husk with more than about 97% of the psyllium husk being smaller than about 100 mesh screen;

(b) from about 1% to 65%, by weight, cholestyramine; and wherein the ratio of the psyllium husk to the cholestyramine is from about 3:1 to about 1:2; and wherein the composition delivers from 1 g to 30 g of the psyllium husk and from about 4 g to about 30 g of the cholestyramine daily when the composition is taken orally in one or more doses.

5,601,838

METHOD FOR TREATING PAIN ASSOCIATED WITH HERPES-ZOSTER AND POST-HERPETIC NEURALGIA

Harry Hind, Los Altos, Calif., assignor to Hind Health Care, Inc., Los Altos, Calif.

Continuation of Ser. No. 325,373, Mar. 17, 1989, abandoned. This application May 18, 1990, Ser. No. 526,771
The portion of the term of this patent subsequent to May 2, 2012, has been disclaimed.
Int. Cl.[6] A61K *9/70*; A61L *15/00*
U.S. Cl. 424—443 **6 Claims**

1. A method for reducing pain associated with herpes-zoster and post-herpetic neuralgia, said method comprising:

applying at the site of pain:

(1) a composition comprising lidocaine in a physiologically acceptable vehicle capable of transdermal penetration for a time sufficient for said lidocaine to be transported across said skin to the site of pain involvement in an amount sufficient to relieve said pain, said vehicle comprising from 1–20 weight percent lidocaine, and;

(2) an occlusive dressing of a physiologically acceptable plastic film;

whereby extended pain relief is obtained substantially after said applying and after any anesthetic effect of such lidocaine is terminated.

5,601,839

TRIACETIN AS A PENETRATION ENHANCER FOR TRANSDERMAL DELIVERY OF A BASIC DRUG

Danyi Quan; Ninad A. Deshpanday; Srinivasan Venkateshwaran, and Charles D. Ebert, all of Salt Lake City, Utah, assignors to TheraTech, Inc., Salt Lake City, Utah

Filed Apr. 26, 1995, Ser. No. 429,757
Int. Cl.[6] A61F *13/02*
U.S. Cl. 424—448 **22 Claims**

1. A method of enhancing the rate of transdermal penetration of a basic drug having a pK_a of about 8.0 or greater comprising applying to a selected application situs a matrix patch comprising

(a) a biocompatible polymer layer, wherein said biocompatible polymer is an adhesive selected from the group consisting of acrylics, vinyl acetates, natural and synthetic rubbers, ethylenevinylacetate copolymers, polysiloxanes, polyacrylates, polyurethanes, plasticized polyether block amide copolymers, plasticized styrene-rubber block copolymers, and mixtures thereof;

(b) an effective amount of a percutaneously absorbable basic drug having a pK_a of about 8.0 or greater selected from the group consisting of oxybutynin, scopolamine, fluoxetine, epinephrine, morphine, hydromorphone, atropine, cocaine, buprenorphine, chlorpromazine, imipramine, desipramine, methylphenidate, methamphetamine, lidocaine, procaine, pindol, nadolol, carisoprodol, and acid addition salts thereof; and

(c) an effective amount of a permeation enhancer consisting essentially of triacetin.

5,601,840

Patent Not Issued For This Number

5,601,841

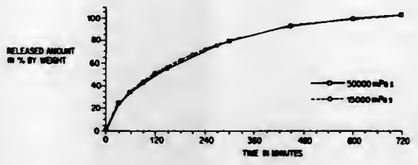
Patent Not Issued For This Number

5,601,842

SUSTAINED RELEASE DRUG FORMULATION CONTAINING A TRAMADOL SALT

Johannes H. A. Bartholomaeus, Aachen, Germany, assignor to Gruenenthal GmbH, Aachen, Germany

Continuation of Ser. No. 300,325, Sep. 2, 1994, abandoned. This application Jan. 16, 1996, Ser. No. 585,741
Claims priority, application Germany, Sep. 3, 1993, 43 29 794.3
Int. Cl.[6] A61K *9/22*; *9/28*
U.S. Cl. 424—464 **9 Claims**



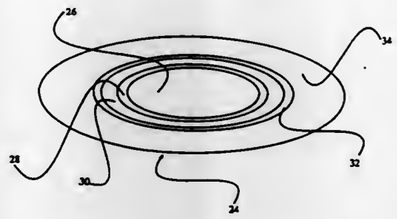
1. A drug formulation in tablet form with sustained release of an active ingredient, said drug formulation consisting essentially of from 10 to 85% by weight of non-moisture sensitive, physiologically acceptable tramadol hydrochloride as said active ingredient; from 10 to 40% by weight of at least one pharmaceutically acceptable matrixing agent selected from the group consisting of methylhydroxypropylcelluloses, hydroxyethylcelluloses and hydroxypropylcelluloses having a viscosity between 3,000 and 150,000 mPas in a 2% by weight aqueous solution at 20° C., and from 0 to 80% by weight of conventional excipients selected from the group consisting of fillers, lubricants, and glidants.

5,601,843

PHARMACEUTICAL TABLET COMPOSITION

Rene A. Gimet, Valbonne; Jean C. Jinot, Cagnes-sur-Mer; Christian Magnet, Chanceaux sur Choisille; Isabelle Maroteaux, Antibes, all of France; Francoise M. Nevoux, Evanston, Ill.; Roger E. Scoyer, Jemeppe-sur-Sambre, Belgium, and Barbara J. Struthers, Deerfield, Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Continuation of Ser. No. 973,451, Nov. 9, 1992, abandoned, which is a continuation of Ser. No. 518,353, May 3, 1990, abandoned. This application Jul. 18, 1994, Ser. No. 276,299
Int. Cl.[6] A61K *9/30*; *9/28*
U.S. Cl. 424—475 **10 Claims**



1. A pharmaceutical tablet composition comprising:

a. a core consisting of a therapeutically-effective amount of a nonsteroidal anti-inflammatory agent selected from diclofenac and piroxicam; and

b. a mantle coating surrounding the core comprising a therapeutically-effective amount of misoprostol.

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5,601,844
SUSTAINED RELEASE MEDICINAL PREPARATION

Akira Kagayama, Ikoma; Sumihisa Kimura, Kawanishi; Saburo Murata, Takarazuka; Sachiyo Tanimoto, Kadoma, and Takehisa Hata, Nagaokakyo, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

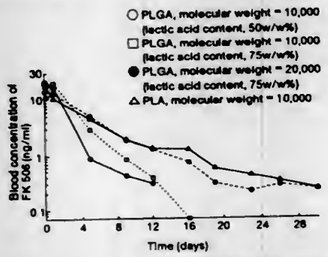
PCT No. PCT/JP93/01672, § 371 Date May 18, 1995, § 102(e) Date May 18, 1995, PCT Pub. No. WO94/10981, PCT Pub. Date May 26, 1994

PCT Filed Nov. 11, 1993, Ser. No. 424,498

Claims priority, application Japan, Nov. 18, 1992, 4-308885

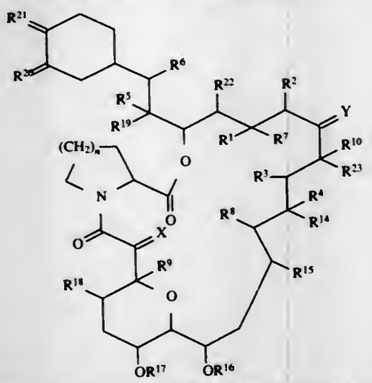
Int. Cl.[6] A61K *9/16;9/50;9/48;31/44*

U.S. Cl. 424—489 **7 Claims**



1. A sustained release medicinal preparation characterized by enclosing a tricyclo compound of the following general formula (I) or a pharmaceutically acceptable salt thereof in fine microspheres made of a pharmaceutically acceptable biodegradable polymer selected from the group consisting of polylactic acid, copolymer of lactic acid and glycolic acid, and mixtures thereof.

(I)



wherein each vicinal pair of R^1 and R^2, R^3 and R^4, R^5 and R^6 independently may,

a) represent two vicinal hydrogen atoms, or

b) form a second bond between the vicinal carbon atoms to which they are attached;

in addition to the meanings above, R^2 may represent an alkyl group;

R^7 represents hydrogen, hydroxy group, protected hydroxy or alkyloxy group or, in conjunction with R^1, it may represent oxo group;

R^8 and R^9 independently represent hydrogen or hydroxy group;

R^{10} represents hydrogen, alkyl group, alkyl group substituted by one or more hydroxy groups, alkenyl group, alkenyl group substituted by one or more hydroxy groups, or alkyl group substituted by oxo group;

X represents oxo group, (hydrogen atom, hydroxy group), (hydrogen atom, hydrogen atom) or —CH_2O—;

Y represents oxo group, (hydrogen atom, hydroxy group), (hydrogen atom, hydrogen atom) or N—$NR^{11}R^{12}$ or N—OR^{13};

R^{11} and R^{12} independently represent hydrogen atom, or alkyl, aryl or tosyl group;

R^{13}, R^{14}, R^{15}, R^{16}, R^{17}, R^{18}, R^{19}, R^{22} and R^{23} independently represent hydrogen atom or alkyl group;

R^{20} and R^{21} independently represent oxo group, or they may independently represent (R^{20}_a, hydrogen atom) and (R^{21}_a, hydrogen atom) respectively; R^{20}_a and R^{21}_a independently represent hydroxy group, alkyloxy group, or $OCH_2OCH_2CH_2OCH_3$ or R^{21}_a is protected hydroxy group;

in addition, R^{20}_a and R^{21}_a may together represent an oxygen atom in an epoxide ring;

n is 1, 2 or 3;

in addition to the meanings above, Y, R^{10} and R^{23}, together with the carbon atoms to which they are attached, may represent a 5- or 6-membered N-, S- and/or O-containing heterocyclic ring, which may be saturated or unsaturated, and which may be substituted by one or more groups selected from alkyl group, hydroxy group, alkyl group substituted by one or more hydroxy groups, alkyloxy group, benzyl and —$CH_2Se(C_6H_5)$.

5,601,845
PHARMACEUTICAL SPHEROID FORMULATION

Ian R. Buxton; Helen Critchley; Stewart T. Leslie; Derek A. Prater, all of Cambridge, United Kingdom; Ronald B. Miller, Basle, Switzerland, and Sandra T. A. Malkowska, Cambridge, United Kingdom, assignors to Euro-Celtique, S.A., Luxembourg

Continuation of Ser. No. 425,888, Apr. 21, 1995, abandoned, which is a continuation of Ser. No. 926,501, Aug. 5, 1992, abandoned. This application Jun. 18, 1996, Ser. No. 666,636

Claims priority, application United Kingdom, Aug. 12, 1991, 9117361; Oct. 29, 1991, 9122967

Int. Cl.[6] A61K *9/16;9/62;9/26*

U.S. Cl. 424—495 **17 Claims**

1. A solid, controlled release oral diltiazem formulation providing a one day dosage of diltiazem comprising

spheroid cores consisting of from about 60% to about 85% diltiazem or a pharmaceutically acceptable salt thereof and from about 15% to about 40% by weight of a spheronizing agent consisting of microcrystalline cellulose, said spheroid cores being in a sufficient amount to render a therapeutic effect over a one day period,

said spheroid cores being coated with from about 1% to about 25% by weight of a controlled release material comprising ethyl cellulose in an amount effective to provide controlled release diltiazem over a one day period when said composition is exposed to aqueous solutions.

5,601,846
PROTEINOID MICROSPHERES AND METHODS FOR PREPARATION AND USE THEREOF

Sam J. Milstein, Brooklyn, and Martin L. Kantor, Mamaroneck, both of N.Y., assignors to Emisphere Technologies, Inc., Hawthorne, N.Y.

Division of Ser. No. 920,346, Jul. 27, 1992, Pat. No. 5,443,841, which is a continuation-in-part of Ser. No. 898,909, Jun. 15, 1992, abandoned. This application May 9, 1995, Ser. No. 437,698

Int. Cl.[6] A61K *9/16;9/26;9/50;9/54*

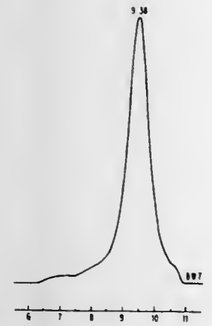
U.S. Cl. 424—499 **22 Claims**

1. A method for delivering a biologically active agent to a mammal in need of said agent, said method comprising orally administering a composition comprising:

(A) a biologically active agent encapsulated,

(B) within a microsphere carrier, said carrier comprising a proteinoid comprising

(i) at least one monomer selected from the group consisting of tyrosine and phenylalanine;



(ii) at least one monomer selected from the group consisting of glutamic acid, pyroglutamic acid, glutamine, and aspartic acid; and

(iii) optionally at least one monomer selected from the group consisting of lysine, arginine, and ornithine, and

(C) a physiologically compatible excipient said proteinoid being soluble within a selected pH range.

5,601,847
MICROBICIDES

Albert B. Bassi, Jr., High Point, N.C., assignor to Ciba-Geigy Corporation, Tarrytown, N.Y.

Continuation of Ser. No. 171,894, Dec. 21, 1993, abandoned, which is a continuation of Ser. No. 41,640, Apr. 1, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 462,448

Int. Cl.[6] A01N *37/12;37/44;59/20*

U.S. Cl. 424—633 **18 Claims**

1. A foliage fungicidal composition efficacious against foliage plant pathogens consisting essentially of synergistic fungicidally effective amounts of metalaxyl and copper hydroxide in a weight ratio between about 1.2 and about 1.10.

5,601,848
METHODS FOR THE TREATMENT OF GASTROINTESTINAL DISORDERS

Barry J. Marshall, Perth, Australia, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 744,842, Jun. 13, 1985, abandoned. This application Jul. 8, 1987, Ser. No. 70,857

Int. Cl.[6] A61K *33/24;31/60;31/29*

U.S. Cl. 424—653 **22 Claims**

1. A method, for the treatment of a human or lower animal subject having an infectious gastrointestinal disorder caused or mediated by *Campylobacter pyloridis*, by combating said *Campylobacter pyloridis* infection in said subject, comprising the step of orally administering to said subject from about 50 milligrams to about 5000 milligrams of bismuth, per day, for from 3 to 56 days, wherein said bismuth is selected from the group consisting of bismuth aluminate, bismuth subcarbonate, bismuth citrate, bismuth subgalate, bismuth subnitrate, bismuth tartrate, bismuth subsalicylate, and mixtures thereof.

5,601,849
PREVENTATIVE TREATMENT OF WOOD

Richard C. Dunstan, Redmond, and John F. Bartlett, Kent, both of Wash., assignors to Perma-Chink Systems, Inc., Redmond, Wash.

Continuation-in-part of Ser. No. 543,149, Oct. 13, 1995, abandoned, which is a continuation of Ser. No. 199,612, Feb. 22, 1994, abandoned. This application Oct. 25, 1995, Ser. No. 548,274

Int. Cl.[6] A01N *59/14*

U.S. Cl. 424—660 **17 Claims**

1. A method for protecting a wooden component against attack by destructive insects and fungi, said method comprising the step of applying to an exposed surface of the component a wood preservative paste comprising a boron-based pesticide dispersed in a carrier which is so formulated as to release the active constituent from the paste for translocation into said component upon the wood preservative paste being contacted by moisture, said carrier comprising a solid polyethylene glycol and a liquid polyethylene glycol and said pesticide being present in an amount such that said paste is effective to protect wood to which the paste is applied against insecticidal and fungal attack.

5,601,850
CENTER MECHANISM OF TIRE VULCANIZING PRESS

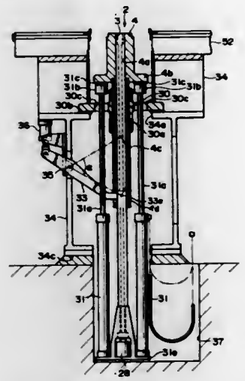
Kashiro Ureshino, Takasago, Japan, assignor to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Continuation-in-part of Ser. No. 253,550, May 4, 1994, abandoned. This application May 22, 1995, Ser. No. 446,332

Claims priority, application Japan, May 7, 1993, 5-131073

Int. Cl.[6] B29C *35/00*

U.S. Cl. 425—48 **6 Claims**



5. A center mechanism of a tire vulcanizing press having a press frame and a bladder, the center mechanism comprising:

a hub for bolding a lower portion of a bladder, the hub having a central hole;

a center post for holding an upper portion of said bladder, said center post being inserted through said central hole of said hub;

a fluid cylinder unit having one end connected to said hub and the other end connected to a bottom end of said center post for moving said center post relative to said hub; and

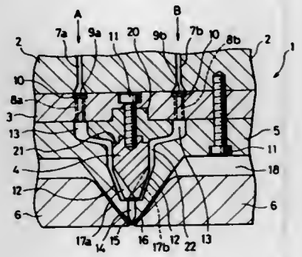
an actuator for moving said hub and said center post as a unit.

5,601,851

MELT-BLOW SPINNERET DEVICE

Taju Terakawa, Shiga-ken, Japan, assignor to Chisso Corporation, Osaka-fu, Japan

Continuation of Ser. No. 316,328, Sep. 19, 1994, abandoned. This application Mar. 28, 1996, Ser. No. 623,980
Claims priority, application Japan, Oct. 4, 1993, 5-271327
Int. Cl.[6] B29C *47/04;47/30*
U.S. Cl. 425—72.2 **13 Claims**



1. A pinneret device for producing combined filaments consisting of different kinds of single component filaments by melt-blow spinning, comprising:

a spinning-resin-feeding plate having respective spinning-resin-introducing grooves for introducing two kinds of spinning resins;

a distributing plate attached to the spinning-resin-feeding plate and having a first major surface abutting a major surface of the spinning-resin-feeding plate, said distributing plate having distributing grooves for respectively distributing the spinning-resins fed from the spinning-resin-introducing grooves of the spinning-resin-feeding plate;

a nozzle plate fixed to the distributing plate and having a first surface abutting a second major surface of the distributing plate, said nozzle plate having a cavity and a plurality of spinning-resin-introducing holes formed in a bottom interior surface of a downwardly-extending portion of the nozzle plate, said spinning-resin-introducing holes opening towards the cavity and respectively communicating with a plurality of spinning nozzles formed in the tip portion of the nozzle plate, said spinning nozzles opening away from the spinning-resin-introducing holes;

a separating plate in the cavity and attached to the second major surface of the distributing plate, said separating plate having a lower part and having separating grooves engraved from side portions of the separating plate to a bottom portion of said lower part, facing the plurality of spinning-resin-introducing holes of the nozzle plate, for introducing the different spinning resins into the plurality of spinning-resin-introducing holes, wherein said separating plate is divided into an upper member and a lower member, said lower member being attached to said upper member detachably, the side surface and a bottom surface of the bottom portion of said lower member being provided with said separating grooves said bottom surface of the separating plate being elongated, and at least one of said separating grooves for receiving one of the spinning resins and at least one other of said separating grooves for receiving another of the spinning resins are shifted with respect to each other on the bottom surface of the separating plate in a lengthwise direction thereof; and

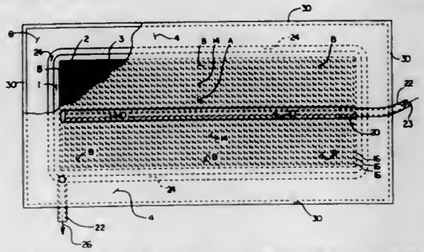
a clearance-defining plate having a V-shaped groove for receiving the downwardly-extending portion of the nozzle plate therein, said clearance-defining plate being arranged to provide a gas-introducing clearance between the nozzle plate and the clearance-defining plate for stretching the combined resins using the introduced gas as the combined resins emerge from the spinning nozzles.

5,601,852

UNITARY VACUUM BAG FOR FORMING FIBER REINFORCED COMPOSITE ARTICLES AND PROCESS FOR MAKING SAME

William Seemann, Gulfport, Miss., assignor to Scrimp Systems, LLC, Warren, R.I.

Continuation of Ser. No. 250,169, May 27, 1994, Pat. No. 5,439,635, which is a continuation-in-part of Ser. No. 18,827, Feb. 18, 1993, Pat. No. 5,316,462. This application Jun. 5, 1995, Ser. No. 465,230
Int. Cl.[6] B29C *70/44*
U.S. Cl. 425—112 **14 Claims**



1. A vacuum bag for forming a fiber reinforced composite structure by vacuum bag molding comprising in a unitary structure:

a vacuum bag having a periphery and an inner surface;

a resin distribution conduit in said inner surface, connected with a repeating, internal plurality of small channels on said inner surface;

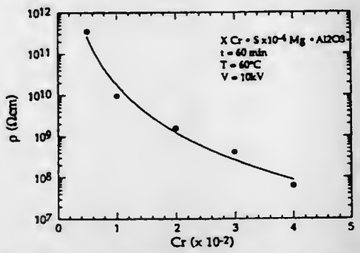
said unitary structure covering the fiber reinforced composite structure on a rigid mold.

5,601,853

ELECTRICALLY CONDUCTIVE CERAMICS AND THEIR USE IN FIBER CHARGING APPARATUS

Thomas K. Bednarz, Richmond, Va., and Kurt R. Mikeska, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 282,939, Jul. 29, 1994. This application Mar. 7, 1995, Ser. No. 400,224
Int. Cl.[6] B29C *35/10*
U.S. Cl. 425—174.8 E **3 Claims**



1. An apparatus for electrostatically charging a continuous fibrous material being forwarded in a path from a source to a collecting means including a charged ion gun and an opposed grounded target electrode positioned on opposite sides of said path between said source and said collecting means, wherein:

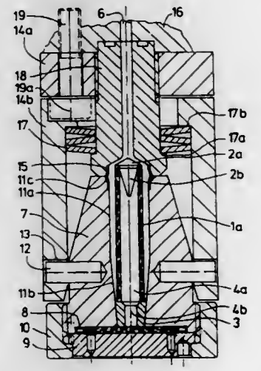
said target electrode has a ceramic surface facing said ion gun, said ceramic surface being formed of a stable electronic conductor comprising a polycrystalline, solid solution alumina-based ceramic composition having a volume resistivity of from about 1×10^7 to 5×10^{10} ohm-cm measured at the operating temperature and a Vickers hardness of at least about 5 GPa.

5,601,854

SPINNING HEAD WITH FILTER CARTRIDGE

Heinz D. Schroeder, Frankfurt am Main, and Guenter Koschinek, Dietzenbach, both of Germany, assignors to Zimmer Aktiengesellschaft, Germany

Filed Oct. 5, 1994, Ser. No. 317,667
Claims priority, application Germany, Dec. 17, 1993, 43 43 270.0
Int. Cl.[6] B29C *47/36*
U.S. Cl. 425—192 S **12 Claims**



1. A spinning head for spinning polymer melts comprising

a cap,

a die block casing secured to said cap,

wall means defining a central melt passage extending through said casing and having a tapered end,

a die plate mounted on said casing adjacent said tapered end, said plate having an area not exceeding 90 cm^2,

a filter cartridge disposed within said central melt passage and extending between said die plate and said cap,

said cartridge comprising a seamless metal cloth cylinder radially spaced from said central melt passage to define a space surrounding said cartridge and having one covered end adjacent said cap,

a tapered connector at the other end of said cartridge in self-sealing engagement with the wall means at said tapered end, said connector having a central opening connecting said central melt passage with said die plate, and

means defining a polymer melt inlet in said cap connecting to said central melt passage whereby polymer melt flows over said cover, axially into the space surrounding said cartridge, radially through said metal cloth cylinder and axially through said connector to said die plate.

5,601,855

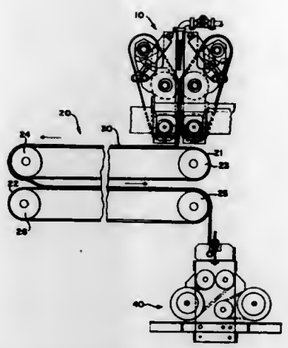
APPARATUS FOR PRODUCING SHREDDED CHEESE

Orville C. Fager; Scott G. Andrews, both of Green Bay; Dennis R. Ferdon, Abrams; David J. Garnett, and Matthew T. Stenzel, both of Green Bay, all of Wis., assignors to Schreiber Foods, Inc., Green Bay, Wis.

Division of Ser. No. 106,330, Aug. 12, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 473,071
Int. Cl.[6] A23C *19/00;* **A23P** *1/00;* **B26D** *1/00*
U.S. Cl. 425—294 **33 Claims**

1. An apparatus for producing food shreds of predetermined dimensions comprising:

a sheet former comprising at least one outlet that extrudes food in substantially liquid form upon an outer surface of at least one moving surface such that the extruded food forms a substantially continuous sheet of food;



a casting line positioned downstream of the sheet former and comprising at least one endless belt that transports the sheet of food on an outer surface of the belt;

a shear cut assembly positioned downstream of the casting line and comprising two shear rollers mounted transversely to the direction of the incoming sheet of food, each shear roller having a plurality of adjacent slots, the shear rollers being positioned with respect to each other such that projecting portions of each shear roller are positioned within corresponding slots in the other shear roller, and further comprising a motor that causes the shear rollers to rotate about their longitudinal axes, whereby the incoming sheet of food is sliced into ribbons of food having widths corresponding to the width of the slots as the food passes between the shear rollers;

a comb assembly comprising a plurality of fingers extending into the slots of the rollers to remove the ribbons of food from the slots;

a cross cut assembly comprising a plurality of elongate blades disposed transversely to the direction of the incoming ribbons of food, each of the elongate blades disposed substantially parallel to a common axis of rotation and at a common distance from the axis of rotation, and further comprising a motor that causes the elongate blades to revolve about the axis of rotation;

an anvil which is positioned downstream of the shear cut assembly and which receives on a surface of the anvil the ribbons of food produced by the shear cut assembly, the anvil further being disposed to cooperate with the elongate blades of the cross cut assembly to slice the ribbons of food to a predetermined length.

5,601,856

SPINNING BEAM

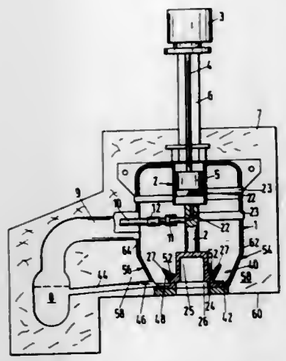
Willi Kretzschmar, Grosswallstadt, and Erik Ortmayer, Linsengericht, both of Germany, assignors to Rieter Automatik GmbH, Grossostheim, Germany

Filed Apr. 11, 1995, Ser. No. 419,986
Claims priority, application Germany, Sep. 8, 1993, 9313586 U; Switzerland, Jul. 26, 1994, 02350/94
Int. Cl.[6] D01D *4/00*
U.S. Cl. 425—378.2 **11 Claims**

1. A spinning beam for melt-spinning filaments, comprising:

a heating box, the heating box having a spinneret at a bottom

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thereof, and the heating box having a profile that tapers downwardly at the bottom in a zone of the spinneret.

5,601,857

EXTRUDER FOR EXTRUSION MANUFACTURING

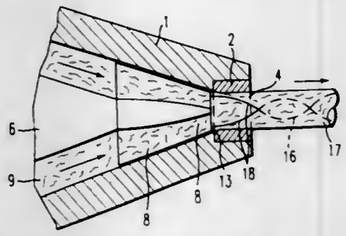
Arno Friedrichs, Hamburg, Germany, assignor to Konrad Friedrichs KG, Kulmbach, and Gottlieb Gühring KG, Ebingen, both of Germany

Continuation of Ser. No. 725,596, Jul. 19, 1991, abandoned. This application Nov. 14, 1994, Ser. No. 340,449

Claims priority, application Germany, Jul. 5, 1990, 40 21 383.8; Jun. 19, 1991, 41 20 165.5

Int. Cl.[6] B29C *47/24*; B30B *11/26*

U.S. Cl. 425—381 **28 Claims**



1. An extruder for extrusion manufacturing one of a hard metal and a ceramic rod with at least one helical inner bore and having a smooth outer surface substantially free of elevations and depressions, comprising:

a housing;

a die connected to said housing;

a forcing mechanism forcing a plasticized mass through said die wherein said mass is shaped in the form of a billet having a cross-section;

a spinner twisting said mass uniformly over the cross-section of the billet, said spinner being located in said housing upstream of said die and being surrounded by an axial flow of said mass;

a smooth downstream channel located downstream of said spinner such that said mass emerges from said channel through said die;

a mechanism suspending a filament in said mass, wherein said filament follows a twisting movement of said twisted mass so as to form a helical inner bore therein;

said housing having an interior coaxial mandrel supporting said spinner, said mandrel being located upstream of said spinner wherein said filament is projected from a downstream end of said spinner into said die at eccentrically arranged locations.

5,601,858

NON-STICK CHEWING GUM

Gul Mansukhani, Staten Island, N.Y.; Jesse J. Kiefer, Belvidere, and Nick D'Ottavio, Hackettstown, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Dec. 29, 1994, Ser. No. 365,650

Int. Cl.[6] A23G *3/30*

U.S. Cl. 426—3 **26 Claims**

1. A non-stick chewing gum base composition which is free from fats, waxes, and elastomer solvent resins, comprising:

(1) a blend of polyvinyl acetates having different molecular weights in an amount of from about 45% to about 92% by weight, effective to provide good chew properties;

(2) a non-fat, non-wax and non-elastomer solvent resin plasticizer in an amount of from about 3% to about 15% by weight, effective to provide chew bulkiness and softness; and

(3) a filler in an amount of from about 5% to about 30% by weight, effective to provide flavor release and integrity;

wherein said percentages by weight are based on the total weight of the gum base composition.

5,601,859

CHEWING GUM INDIVIDUALLY WRAPPED WITH WRAPPER BEARING TRANSFERABLE TATTOO

Joanne Penaluna, Winston-Salem, N.C., assignor to Nabisco Inc, Parsippany, N.J.

Filed Feb. 1, 1995, Ser. No. 382,064

Int. Cl.[6] B65D *85/60*

U.S. Cl. 426—5 **5 Claims**

1. A product comprising an individual stick of chewing gum wrapped in a paper wrapper having an inner surface which contacts said gum and an outer surface, wherein the inner surface of said wrapper is coated with a food grade wax and the outer surface of said wrapper does not contain wax, does not contain adhesive, and is imprinted with one or more complete patterns formed of ink comprising food grade vegetable dye and food grade polyvinyl alcohol, wherein said one or more complete patterns are integrally transferable from said wrapper to human skin upon moistening of the ink sufficiently with water to effect release of the pattern from the wrapper.

5,601,860

CORANDOMIZED FAT COMPOSITIONS FOR INFANT FORMULAS

Eric L. Lien, Malvern, and Rudolph M. Tomarelli, Phoenixville, both of Pa., assignors to American Home Products Corporation, Madison, N.J.

Continuation-in-part of Ser. No. 891,539, Jun. 1, 1992, abandoned, which is a continuation of Ser. No. 620,851, Nov. 30, 1990, abandoned. This application May 13, 1994, Ser. No. 242,763

Int. Cl.[6] A23L *1/30*

U.S. Cl. 426—72 **52 Claims**

1. A nutritionally complete food product adapted for human infant nutrition, comprising a protein source, a carbohydrate source, vitamins, minerals, and a corandomized, all vegetable oil fat composition, wherein the fat composition comprises

(a) 20–29%, calculated on the weight of the fat composition, of one or more lauric acid oils selected from coconut oil, babassu oil, and palm kernel oil;

(b) 26–38%, calculated on the weight of the fat composition, of one or two palmitic acid oils selected from palm oil and palm olein oil;

(c) 14–30%, calculated on the weight of the fat composition, of one or more oleic acid oils selected from olive oil, safflower oleic oil, sunflower oleic oil, and canola oil; and

(d) 14–27%, calculated on the weight of the fat composition, of one or more linoleic acid oils selected from corn oil, cottonseed oil, safflower oil, soybean oil, and sunflower oil,

wherein at least the palmitic acid oils and the lauric acid oils are corandomized, and wherein the amounts of the oils being such that the fat composition contains, per 100 parts by weight of the total fatty acids present as triglycercides,

(i) 10–17 parts of lauric acid;

(ii) 11–22 parts of palmitic acid;

(iii) 3–8 parts of stearic acid;

(iv) 30–43 parts of oleic acid; and

(v) 13–23 parts of linoleic acid.

5,601,861

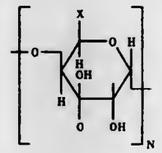
METHOD OF MAKING BATTERED AND/BREADED FOOD COMPOSITIONS USING CALCIUM PECTINS

Timothy Gerrish, 23 Turkey Hollow Rd., Kennett Square, Pa. 19348; Camille Higgins, 7350 Lindell Apt. 303, St. Louis, Mo. 63130, and Kay Kresl, 720 Denton Ct., Crestwood, Mo. 63126

Filed May 30, 1995, Ser. No. 453,423

Int. Cl.[6] A23L *1/0524*

U.S. Cl. 426—303 **27 Claims**



N is an integer from 200 to 800

X is independently selected N times from $-\overset{O}{\overset{\|}{C}}-OM$, $-\overset{O}{\overset{\|}{C}}-NH_2$

M is H^+, Na^+, $\frac{1}{2}Ca$, CH

1. A method of inhibiting oil absorption/adsorption of a food product cooked in the oil, the method consisting of the following steps:

a) coating a foodstuff with a batter composition to produce a batter-coated foodstuff;

b) coating the batter-coated foodstuff with a calcium salt enriched crumb composition to obtain a batter and crumb-coated food product wherein the calcium salt is dispersed throughout the crumb composition; and

c) applying an aqueous solution of calcium reactive pectin to the batter and crumb-coated food product wherein the calcium salt and the pectin interact to form a calcium pectin film on the surface of the crumb composition.

5,601,862

PROCESS FOR LAYERING STRIPS OF FOOD MATERIAL

Lars Askman, Billesholm; Anders B. Ganrot, Bjuv, and Werner Leonhardt, Astorp, all of Sweden, assignors to Nestec S.A., Vevey, Switzerland

Division of Ser. No. 287,181, Aug. 8, 1994, Pat. No. 5,509,350. This application Jan. 30, 1996, Ser. No. 593,847

Claims priority, application European Pat. Off., Sep. 3, 1993, 93114125

Int. Cl.[6] A21D *6/00*

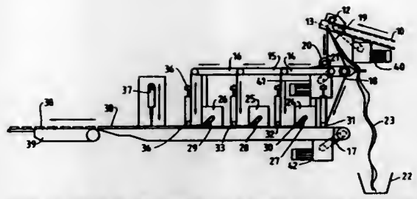
U.S. Cl. 426—502 **14 Claims**

1. A process for layering strips of food material comprising:

forming a plurality of parallel strips of flexible food material;

advancing a first conveyor belt, guiding one of the plurality of strips onto the advancing belt to obtain a first strip on the first advancing belt and transporting the first strip on the first advancing belt;

advancing a second conveyor belt at a position above the first advancing belt, guiding a second strip of the plurality of strips onto the second advancing belt and transporting the second strip on and then off of the second advancing belt and guiding the off-transported second strip so that the off-transported second strip is guided to lie over and advance with the first strip transported on the first advancing belt to form a layered product transported on the first advancing belt.



5,601,863

REDUCED POLYDEXTROSE

G. Wayne Borden; Raymond C. Glowaky; Russell J. Hausman; Constantine Sklavounos, and Harry O. Tobiassen, all of Groton, Conn., assignors to Cultor Food Science, Cultor, Ltd, New York, N.Y.

Continuation of Ser. No. 107,487, Aug. 17, 1993, abandoned, which is a continuation of Ser. No. 657,911, Feb. 20, 1991, abandoned. This application Sep. 28, 1994, Ser. No. 313,940

Int. Cl.[6] A23L *1/00*; C07H *1/00*

U.S. Cl. 426—548 **28 Claims**

1. In a water-soluble highly branched polydextrose wherein the linkage 1–6 predominates, having number average molecular weight between about 1,500 and 18,000, and having been prepared by a process which comprises melting dextrose in the presence of a food-acceptable polycarboxylic acid catalyst, the improvement comprising said polydextrose having less than about 1% reducing glucose groups by weight expressed as glucose.

5,601,864

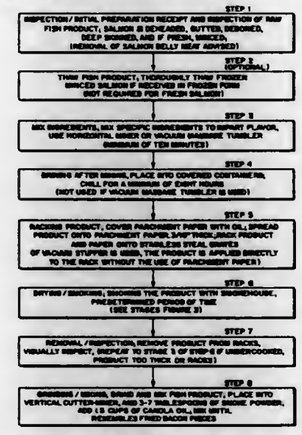
FISH-BASED FOOD PRODUCT RESEMBLING FRIED BACON PIECES

Duff W. Mitchell, P.O. Box 21938, Juneau, Ak. 99801

Filed Mar. 20, 1995, Ser. No. 406,593

Int. Cl.[6] A23L *1/325*

U.S. Cl. 426—643 **23 Claims**



1. A food topping having the flavor, texture, and appearance of bacon which has been cooked and separated into a plurality of individual pieces, comprising a mixture of:

fish meat which has been headed, gutted and deboned;
a flavor altering mixture comprising a fish flavor masking agent, salt and water; and
an edible oil;
wherein the fish meat and the flavor altering mixture are mixed into a paste, spread into a thin sheet, cooked for a predetermined period of time to produce a pliable sheet, cut into a plurality of individual pieces less than ¼ inch in diameter, and mixed with the edible oil, and wherein the food topping does not contain nitrates.

5,601,865

FLAVOR ENCAPSULATION

Charles V. Fulger, and Lewis M. Popplewell, both of Cockeysville, Md., assignors to McCormick & Company, Inc., Sparks, Md.

Continuation of Ser. No. 948,737, Sep. 22, 1992, abandoned. This application Apr. 10, 1995, Ser. No. 419,953
Int. Cl.[6] A23L *1/22*
U.S. Cl. 426—650 **20 Claims**

1. A process for incorporating a volatile component into a matrix, comprising:
(1) heating and mixing a matrix and a volatile component to obtain a liquid melt comprising said volatile component and said matrix; and
(2) solidifying said melt under a pressure sufficient to prevent substantial volatilization of said volatile component, wherein said solidifying is carried out in a pressure vessel under a pressure which is greater than the vapor pressure of said volatile component at the temperature of said melt, to obtain a dense, amorphous solid directly upon said solidifying said melt, wherein said volatile component is selected from the group consisting of diacetyl and acetaldehyde.

5,601,866

SUGAR-BASED HARD BOILED SWEET AND PROCESS FOR ITS MANUFACTURE

Michel Serpelloni, Les Bethune, and Guillaume Ribadeau-Dumas, Lambersart, both of France, assignors to Roqueyye Freres, Lestrem, France

Filed Jun. 6, 1995, Ser. No. 470,464
Claims priority, application France, Dec. 26, 1994, 94 15648
Int. Cl.[6] A23G *3/00*
U.S. Cl. 426—660 **30 Claims**

1. Sugar-based hard boiled candy containing, on a dry matter basis, less than 35% of sucrose and more than 65% of a composition of carbohydrates other than sucrose, and having a water content higher than 4% and a glass transition temperature of at least 38° C., said temperature being measured for a water content of about 4.5%.

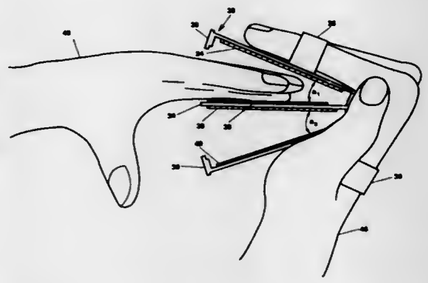
5,601,867

METHOD AND APPARATUS FOR GENERATING FINGERPRINTS AND OTHER SKIN PRINTS

Harold R. Riedl, Adelphi, and Robert E. Jehle, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 22, 1995, Ser. No. 493,608
Int. Cl.[6] A61B *5/117*; B41K *1/00*
U.S. Cl. 427—1 **29 Claims**

1. Method for generating a print of human skin, comprising:
coating an area of said skin with a substance which includes an organic solvent;
impressing said area onto an image recorder; and
withdrawing said area from said image recorder;
said image recorder including a substrate, an electron-donating chromogenic composition and an electron-accepting developer composition which are dispersed on said substrate, and a binder material which is substantially soluble to said organic solvent and which generally maintains separation of said electron-donating chromogenic composition and said electron-accepting developer composition until said impressing, whereupon some said binder material is solubilized by at least some said organic solvent.



17. Apparatus for generating a print of human skin, comprising:
an image producer, said image producer including a matrix and an organic solvent which is contained by said matrix whereby, when an area of said skin contacts said image producer, said image producer delivers onto said skin area a quantity of substance, thereby coating said skin area with said substance quantity, said substance quantity including a portion of said organic solvent; and
an image recorder for being impressed upon and withdrawn from by said coated skin area, said image recorder including a substrate, an electron-donating chromogenic composition and an electron-accepting developer composition which are dispersed on said substrate, and a binder material which is substantially soluble to said organic solvent;
wherein said binder material generally maintains separation of said electron-donating chromogenic composition and said electron-accepting developer composition until said being impressed upon, whereupon some said binder material is solubilized by at least some said organic solvent portion which is included in said substance quantity with which said skin area has been coated.

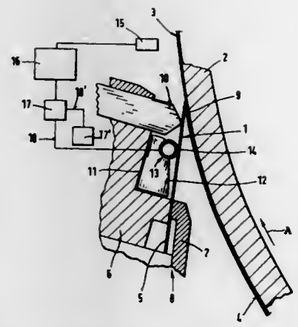
5,601,868

METHOD OF COATING SHEET MATERIAL WITH AN OSCILLATING DOCTOR BLADE

Norbert Gerhardt, Celle, Germany, assignor to TZN Forschungs- und Entwicklungszentrum GmbH, Unterlüss, Germany

Filed Sep. 18, 1995, Ser. No. 529,543
Claims priority, application Germany, Sep. 16, 1994, 44 33 048.0
Int. Cl.[6] B05D *3/12*
U.S. Cl. 427—8 **7 Claims**

1. A method of continuously applying a coating to a running web, comprising the following steps:
(a) applying a coating to the running web;
(b) providing a doctor blade;
(c) providing a clamping device;
(d) clamping the doctor blade in said clamping device such that the doctor blade engages the web and applied coating along a scraping line; and



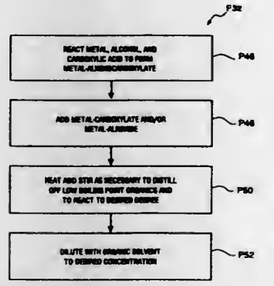
(e) crushing deposits situated between the web and the doctor blade to eliminate streaks in the coating caused by the doctor blade; the crushing step including the step of periodically imparting oscillations to the doctor blade between said clamping device and said scraping line for generating a fluctuating pressure at which the doctor blade engages said web.

5,601,869

METAL POLYOXYALKYLATED PRECURSOR SOLUTIONS IN AN OCTANE SOLVENT AND METHOD OF MAKING THE SAME

Michael C. Scott, and Carlos A. Paz de Araujo, both of Colorado Springs, Colo., assignors to Symetrix Corporation, Colorado Springs, Colo.

Division of Ser. No. 291,366, Aug. 16, 1994, which is a continuation of Ser. No. 134,493, Oct. 19, 1993, abandoned, which is a continuation of Ser. No. 807,439, Dec. 19, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 478,399
Int. Cl.[6] B05D *5/12*
U.S. Cl. 427—126.3 **6 Claims**



1. A method of producing a thin-film metal oxide integrated circuit quality thin-film suitable for use in electronic components from a liquid precursor solution, said method comprising the steps of:
reacting a metal alkoxycarboxylate with a reagent selected from a group consisting of metal carboxylates and metal alkoxides to form a bimetallic complex having an —O—M—O—M—O— group, said reaction occurring in an essentially water-free solution having at least a 5% molar concentration of said metal alkoxycarboxylate; wherein M is a metal;
combining said bimetallic complex with an octane solvent, thereby forming a mixture;
coating an integrated circuit substrate with said mixture to form a film of said mixture upon said substrate; and
annealing said film to form a solid metal oxide having a thickness of less than about ten microns.

5,601,870

FLEXIBLE RUBBER ARTICLE AND METHOD OF MAKING

Wu-Nan Haung, Greer; Niles R. Manwill, Belton; Adana Muschelewicz, Easley, and Fung-Bor Chen, Greer, all of S.C., assignors to Maxxim Medical, Inc., Sugar Land, Tex.

Division of Ser. No. 264,588, Jun. 23, 1994, Pat. No. 5,545,451, which is a continuation of Ser. No. 896,642, Jun. 10, 1992, abandoned. This application May 19, 1995, Ser. No. 445,229
Int. Cl.[6] B05D *1/18*
U.S. Cl. 427—133 **5 Claims**

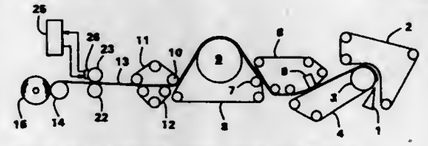
1. A method for making a multi-layer glove for use in medical procedures comprising:
dipping a cleaned and coagulant coated hand mold having a surface in a first bath comprising an anionic emulsion of aqueous natural rubber latex;
forming a first film of said latex on said surface;
removing said mold having said film from said first bath;
dipping said mold having said first film in a second bath comprising an aqueous emulsion of anionic natural rubber latex, polyurethane latex, poly(acrylamide-acrylic acid, sodium salt) and polyethylene oxide;
forming a second film from said emulsion of said second bath over said first film;
removing said mold having said second film over said first film from said second bath;
dipping said mold having said first film and said second film into a third bath containing an aqueous emulsion of an acrylic copolymer and a fluorocarbon telomer resin;
forming a third film over said second film and said first film from said third bath emulsion;
removing said mold having said third film over said second film and said first film from said third bath;
drying and curing said films on said mold to form a multi-layer unitary structure having a surface for contacting a wearer on said form;
stripping and everting said unitary structure from said mold thereby exposing on said structure a surface for contacting a patient;
applying a coating of lubricant to at least one of said surfaces of said structure;
washing and autoclaving said structure; and
tumbling dry said structure, wherein said method results in formation of a glove.

5,601,871

SOFT TREATED UNCREPED THROUGHDRIED TISSUE

Duane G. Krzysik, 1112 E. Melrose Ave., Appleton, Wis. 54911; Theodore E. Farrington, Jr., 2121 Twin Willows Dr., Appleton, Wis. 54915; Lee P. Garvey, 113 Florida Ave., Little Chute, Wis. 54140; Cynthia W. Henderson, 411 Lowell Pl., Neenah, Wis. 54956; Robert D. Sauer, 8897 South Rd., Fremont, Wis. 54940; Michael J. Smith, 1124 Tullar Rd., Neenah, Wis. 54956, and Michael C. Tuck, W2760 Brookhaven Dr., Appleton, Wis. 54915

Filed Feb. 6, 1995, Ser. No. 384,171
Int. Cl.[6] D21H *23/22*
U.S. Cl. 427—288 **24 Claims**



1. A method of making a tissue product comprising:
(a) heating a composition comprising an oil and a wax to a temperature above the melting point of the composition, causing said composition to melt, said composition having a melting point of from about 30° to about 70° C.;

(b) applying from about 100 to about 1,000,000 deposits of the melted composition per square inch to one or both surfaces of an uncreped throughdried tissue web; and
(c) resolidifying the deposits of the melted composition.

5,601,872

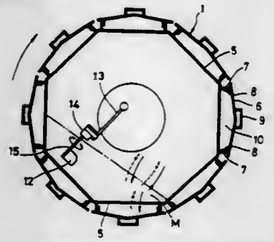
Patent Not Issued For This Number

5,601,873

METHOD FOR GRANULATING AND COATING

Shinzo Nakazawa; Shoichi Moro, both of Ashikaga; Shuri Yamada, and Masanori Ogawa, both of Tokyo, all of Japan, assignors to Tokyo Tanabe Company Limited, and Freund Industrial Company Limited, both of Tokyo, Japan

Division of Ser. No. 211,757, Apr. 15, 1994, Pat. No. 5,538,195. This application May 18, 1995, Ser. No. 444,911
Claims priority, application Japan, Oct. 22, 1991, 3-273738
Int. Cl.[6] B05D 7/00
U.S. Cl. 427—212 **4 Claims**



1. A method for granulating and coating, comprising the steps of:
providing a granulating and coating apparatus including a rotary drum;
positioning powder and granules in said rotary drum;
providing a baffle means extending into said powder and granules; and
granulating and coating said powder and granules by using said granulating and coating apparatus including while granulating and coating:
rotating said rotary drum about a substantially horizontal axis, and
continuously or intermittently rotating said baffle means while maintaining said baffle means immersed in said powder and granules.

5,601,874

METHOD OF MAKING MOISTURE RESISTANT ALUMINUM NITRIDE POWDER AND POWDER PRODUCED THEREBY

Kevin E. Howard; Daniel F. Carroll, both of Midland, and Scott J. Biskupski, Bay City, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 351,450, Dec. 8, 1994, Pat. No. 5,508,110. This application Dec. 27, 1995, Ser. No. 578,931
Int. Cl.[6] B05D 7/00
U.S. Cl. 427—215 **11 Claims**

1. A method for making a moisture-resistant aluminum nitride-containing powder, comprising:
(a) oxidizing an aluminum nitride-containing powder by contacting with an oxygen containing atmosphere at elevated temperatures,
(b) coating a layer of a silicate onto said aluminum nitride-containing powder having aluminum nitride on at least a portion of its surface, the silicate having substituents thereon selected from the group consisting of alkyl and alkoxyalkyl radicals, and
(c) heat-treating the coated aluminum nitride-containing powder at a temperature of from 350° to 1000° C. for a period of time sufficient to cause the silicate to react with the surface aluminum nitride thereby forming treated aluminum nitride-containing powder having a layer of Si—Al—O—N bonded to the surface aluminum nitride.

5,601,875

METHOD OF CRUSHING AND GRINDING

Carl-Olof Palm, Turku, Finland, assignor to Partek Concrete Ltd., Helsinki, Finland

PCT No. PCT/FI91/00255, § 371 Date Feb. 15, 1994, § 102(e) Date Feb. 15, 1994, PCT Pub. No. WO93/03832, PCT Pub. Date Mar. 4, 1993
PCT Filed Aug. 15, 1991, Ser. No. 193,208
Int. Cl.[6] B05D 7/00; B02C 1/00
U.S. Cl. 427—221 **8 Claims**

1. A method for effecting a physico-chemical reaction in, and further processing, a crystalline or amorphous material A, the method comprising:
(a) crushing or grinding said material A thereby forming new fractured surfaces and,
(b) subjecting the crushed or ground material to a following process step,
said step (a) comprising grinding or crushing the material A in an environment V1 in order to provide the newly fractured surfaces with characteristics suitable for the following process step, whereby
the physico-chemical property of said environment V1 is so selected that a bond or compound is formed between the fractured surfaces of material A and the molecules of the said environment V1, and
the physico-chemical composition of said environment V1 is so selected that components disadvantageous in view of the following process step of the crushed or ground material are prevented from getting to the fractured surfaces,
such that in said following process, step (b) is carried out in another environment V2 and said bond or compound formed between the fractured surfaces of material A and the molecules of the environment V1 is such that at least one molecule of the bond or compound is compatible with carrying out the further processing step of the crushed or ground material in said environment V2;
said method characterized in that the environment V1 contains propene, the environment V2 contains polypropylene plastic and the material A is talc.

5,601,876

WATER BASED CRACKLE FINISH AND A METHOD FOR APPLICATION THEREOF

Ryan C. Oates; Wade R. Potter; Brian Bottem; William A. Maligie, all of Chico, and William F. Hagen, Paradise, all of Calif., assignors to Alternative Materials Technology, Inc., Chico, Calif.

Filed Dec. 15, 1993, Ser. No. 168,766
Int. Cl.[6] B05D 5/02
U.S. Cl. 427—257 **17 Claims**

1. A water based crackle finish for a surface comprising a base coating disposed on the surface, the base coating being a water soluble low molecular weight polymer, a crackle coating disposed on the base coating, the crackle coating being an aqueous emulsion of a high molecular weight polymer.

5,601,877

METHOD OF SEAM CLOSURE FOR SHEET TRANSFER AND OTHER PAPER PROCESSING BELTS

Lawrence G. Miller, Raynham; Robin Lottl-Fassnacht, Marshfield, and Henry M. Cooke, Randolph, all of Mass., assignors to Albany International Corp., Albany, N.Y.

Filed Jun. 9, 1994, Ser. No. 257,565
Int. Cl.[6] D03D 3/04
U.S. Cl. 427—373 **22 Claims**



1. A method for closing a seam in a polymeric-resin-coated paper-processing belt comprising the steps of:
providing a pin-seamable papermaker's fabric, said fabric having a paper side, a non-paper side and seaming loops at two widthwise edges for forming a seam;
joining said pin-seamable papermaker's fabric into endless form with a first pintle by directing said first pintle through a passage defined when said seaming loops at said two widthwise edges are interdigitated with one another;
coating a side of said papermaker's fabric with a first polymeric resin material;
curing said first polymeric resin material to produce said polymeric resin-coated paper processing belt;
removing said first pintle;
cutting said cured first polymeric resin material at said seam to place said belt in open-ended form;
installing said belt on a paper machine;
joining said belt into endless form with a second pintle by directing said second pintle through a passage defined when said seaming loops at said two widthwise edges of said pin-seamable papermaker's fabric are interdigitated with one another, whereby said first polymeric resin material has a slit adjacent to said seaming loops;
providing a viscous paste including a second polymeric resin material and a blowing agent;
applying said viscous paste to said seam;
causing said blowing agent in said viscous paste to generate gas whereby said viscous paste may become a foam; and
curing said foam.

5,601,878

PROCESS FOR THE PRODUCTION OF A TWO-COAT FINISH, AND POWDER COATINGS SUITABLE FOR THIS PROCESS

Wolfgang Kranig, Senden; Klaus Cibura, Münster; Joachim Woltering, Münster; Christopher Hilger, Münster, and Josef Rademacher, Münster, all of Germany, assignors to BASF Lacke + Farben AG, Muenster-Hiltrup, Germany

PCT No. PCT/EP93/01601, § 371 Date Jan. 26, 1995, § 102(e) Date Jan. 26, 1995, PCT Pub. No. WO94/01504, PCT Pub. Date Jan. 20, 1994
PCT Filed Jun. 23, 1993, Ser. No. 362,528
Claims priority, application Germany, Jul. 7, 1992, 42 22 194.3
Int. Cl.[6] C08L 67/02;73/02
U.S. Cl. 427—386 **5 Claims**

1. Process for the production of two-coat finishes on a substrate surface, comprising the steps of
(1) applying a pigmented basecoat to the substrate surface,
(2) forming a polymer film from the coat applied in step (1),
(3) applying a powder clearcoat which contains an epoxide group-containing polyacrylate resin as binder to the resulting basecoat film, and subsequently
(4) baking the basecoat together with the powder clearcoat, characterized in that the powder clearcoat employed in step (3) as crosslinking agent contains a mixture of
(A) 5 to 95 percent by weight of a compound which contains on statistical average at least two carboxyl groups and at least one acid anhydride group per molecule, or a mixture of such compounds, selected from the group consisting of polyanhydrides of aliphatic polycarboxylic acids, polyanhydrides of cycloaliphatic polycarboxylic acids, and mixtures thereof, and
(B) 95 to 5 percent by weight of a carboxyl group-containing polyester resin obtained by reacting
(b1) a diol or a mixture of diols,
(b2) a compound which contains per molecule at least three functional groups selected from the group consisting of hydroxyl, primary amine, secondary amine, carboxyl and acid anhydride groups, one acid anhydride group being regarded as equivalent to two carboxyl groups, and a mixture of such compounds and
(b3) a compound selected from the group consisting of dicarboxylic acid, a dicarboxylic acid anhydride, and mixtures thereof in a molar ratio of (b1):(b2):(b3) =0.0 to 3.0:1.0:1.5 to 9.0 to give a polyester resin having an acid value of 40 to 300, the percentages by weight relating to (A)+(B)=100 percent by weight.

5,601,879

PROCESS UTILIZING LATEX COMPOSITION CONTAINING SPECIFICALLY DEFINED ALCOHOL ETHOXYLATE SURFACTANT AND HYDROPHOBIC DEFOAMING AGENT

Michael J. Anchor, Northville, Mich.; Rebecca P. Hollis, Flemington, N.J., and Gregory W. Drewno, Riverview, Mich., assignors to BASF Corporation, Mount Olive, N.J.

Division of Ser. No. 321,103, Oct. 11, 1994. This application May 24, 1995, Ser. No. 447,530
Int. Cl.[6] B05D 3/02
U.S. Cl. 427—391 **16 Claims**

1. A process for the application in the absence of excessive foaming of a substantially uniform polymeric film to a substrate comprising:
(a) applying to a substrate a layer of a latex composition consisting essentially of (i) an aqueous dispersion medium, (ii) approximately 40 to 60 percent by weight of discrete polymeric particles present in said aqueous dispersion medium formed by the polymerization of at least one ethylenically-unsaturated monomer, (iii) approximately 0.25 to 1.5 percent by weight dissolved in said aqueous medium of a normally liquid predominantly hydrophobic nonionic alcohol ethoxylate surfactant of the formula:

$$R—O—(CH_2CH_2O)_x—H,$$

having a molecular weight of approximately 260 to 600 where R is an alkyl group containing approximately 8 to 14 carbon atoms, and x is approximately 3 to 9, and (iv) approximately 0.05 to 1 percent by weight dispersed in said aqueous medium of a solely hydrophobic defoaming agent selected from the group consisting of hydrocarbon-based mineral oil, organosiloxane, metal soap, and mixtures of the foregoing, and

(b) removing water by volatilization from said layer of latex composition present on said substrate to form a substantially uniform polymeric film on said substrate that is suitable for use as a coating or adhesive.

5,601,880

PROCESS FOR THE PRODUCTION OF A MULTICOAT FINISH AND AQUEOUS BASECOAT SUITABLE FOR THIS PROCESS

Stephan Schwarte, Emsdetten; Arnold Dobbelstein, deceased, late of Münster; Walter Lassmann, Münster; Susanne Piontek, Münster; Jürgen Niemann, Würzburg; Klaus Elkelmann, and Ulrich Poth, both of Münster, all of Germany, assignors to BASF Lacke & Farben, AG, Muenster-Hiltrup, Germany

Continuation of Ser. No. 927,522, Sep. 17, 1992, abandoned.

This application Aug. 5, 1994, Ser. No. 286,587

Claims priority, application Germany, Mar. 28, 1990, 40 09 858.3

Int. Cl.[6] B05D *3/02; 1/36*

U.S. Cl. 427—407.1 **29 Claims**

1. A process for the production of a multicoat finish, including the steps of:

(1) applying an aqueous, pigmented basecoat to a substrate surface as basecoat,

(2) forming a polymer film from the coating applied in stage (1),

(3) applying a transparent topcoat to the basecoat, and subsequently

(4) baking the basecoat together with the topcoat; wherein the basecoat contains a water-thinnable, uncrosslinked polyacrylate resin prepared by a solution polymerization process consisting essentially of the steps of:

(I) polymerizing

(a1) 40 to 90% by weight of a (meth)acrylic acid ester essentially free from carboxyl groups selected from the group consisting of alkyl acrylates, alkyl methacrylates, cycloaliphatic acrylic acid esters, cycloaliphatic methacrylic acid esters, and mixtures thereof,

(a2) 0 to 45% by weight of an ethylenically unsaturated monomer which contains at least one hydroxyl group per molecule and is essentially free from carboxyl groups, or a mixture of such monomers, and

(a3) 0 to 40% by weight of an ethylenically unsaturated monomer essentially free from carboxyl groups, which is different from (a 1) and (a2),

in an organic solvent or mixture of solvents in the presence of at least one polymerization initiator, and

(II) adding, after at least 80% by weight of the monomers in stage (I) have reacted,

(b1) 2.5 to 15% by weight of an ethylenically unsaturated monomer containing at least one carboxyl group per molecule, or a mixture of such monomers, and

(b2) 0 to 60% by weight of an ethylenically unsaturated monomer essentially free from carboxyl groups, or a mixture of such monomers, and continuing the polymerization to obtain the polyacrylate resin, and

(III) neutralizing, at least partially, the polyacrylate resin and dispersing it in water;

wherein the sum of (a1), (a2), (a3), (b1), and (b2) is 100% and further wherein the uncrosslinked polyacrylate resin has a hydroxyl value of 0 to 200, an acid value of 20 to 100, a glass transition temperature (T_G) of −40° to +60° C., and a molecular weight of between 2,500 and 20,000.

5,601,881

METHOD AND DEVICE FOR COATING A BODY ROTATING ABOUT AN AXIS

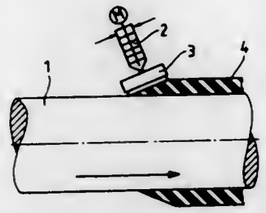
Wolfgang Grimm; Dirk Brüning, both of Leverkusen; Klaus Recker; Hans-Dieter Ruprecht, both of Köln, and Heinz Müller, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of Ser. No. 276,724, Jul. 18, 1994, abandoned. This application May 8, 1995, Ser. No. 436,940

Claims priority, application Germany, Jul. 30, 1993, 43 25 653.8

Int. Cl.[6] B05D *5/00; B29C 53/62*

U.S. Cl. 427—425 **3 Claims**



1. A method for coating a body comprising:

i) rotating the body about an axis,

ii) ejecting a polyurethane reaction mixture through a sheet die onto said rotating body, with said sheet die being disposed at an angle α to said axis, and wherein the sheet die is maintained at a uniform distance of from 1 to 10 mm above the point at which said reaction mixture is applied to said rotating body,

iii) effecting relative movement between said rotating body and said sheet die in a direction parallel to said axis,

iv) synchronizing the rate of reaction of said reaction mixture and said relative movement with the circumferential speed of said rotating body in such a way that successive convolutions overlap in the form of scales and connect together seamlessly, and

v) wherein said circumferential speed is less than the speed at which said reaction mixture emerges from said sheet die.

5,601,882

PROCESS FOR MANUFACTURING CUT THREADS AND ASSOCIATED DEVICE

Eric Augier, Chambery; Timothy Johnson, Vimines, and Patrick Moireau, Curienne, all of France, assignors to Vetrotex France, Chambery, France

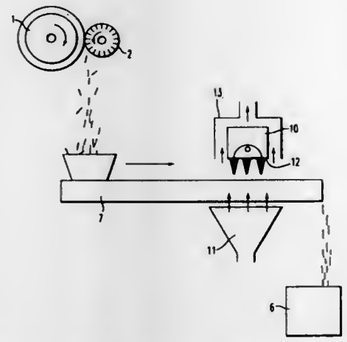
Filed Jul. 29, 1994, Ser. No. 282,476

Claims priority, application France, Jul. 29, 1993, 9309322

Int. Cl.[6] B05D *3/06*

U.S. Cl. 427—513 **7 Claims**

1. A process for manufacturing cut threads, comprising the steps of:



cutting glass threads composed of continuous filaments, these filaments being coated with a non-aqueous liquid size which can react under actinic radiation; and

subjecting the cut threads to at least one actinic radiation.

5,601,883

MICROWAVE ENHANCED CVD METHOD FOR COATING PLASTIC WITH CARBON FILMS

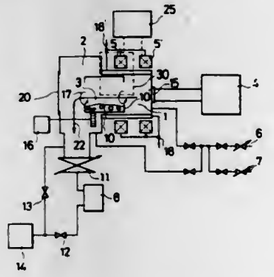
Shumpei Yamazaki, Tokyo, Japan, assignor to Semicondoctor Energy Laboratory Co., Inc., Kanagawa-ken, Japan

Continuation of Ser. No. 16,674, Feb. 11, 1993, abandoned, which is a division of Ser. No. 765,467, Sep. 26, 1991, abandoned, which is a continuation of Ser. No. 496,180, Mar. 20, 1990, abandoned, which is a continuation of Ser. No. 154,287, Feb. 10, 1988, abandoned. This application Sep. 28, 1994, Ser. No. 314,456

Claims priority, application Japan, Feb. 10, 1987, 62-28957

Int. Cl.[6] B05D *3/06;* **C23C** *16/00*

U.S. Cl. 427—577 **15 Claims**



1. A plasma processing method comprising the steps of:

introducing a reactive gas comprising hydrogen gas and a carbon containing raw material gas into a reaction chamber

introducing a microwave into said chamber;

establishing a magnetic field in said reaction chamber;

causing a cyclotron resonance by said microwave and said magnetic field within said reaction chamber thereby forming a plasma of carbon and hydrogen containing gas; and

treating a substrate with said plasma,

wherein said substrate is not intentionally heated during the treating of said substrate with said plasma and wherein a combination of crystalline and amorphous carbon is formed on a surface of said substrate while an etching step is simultaneously performed on said amorphous carbon by hydrogen plasma during the treating of said substrate with the plasma to leave only crystalline carbon on said substrate.

5,601,884

RETARDATION FILM AND PRODUCTION THEREOF

Toshihiro Ohnishi; Takanobu Noguchi, and Masato Kuwabara, all of Tsukuba, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Apr. 21, 1995, Ser. No. 426,908

Claims priority, application Japan, Apr. 22, 1994, 6-084684

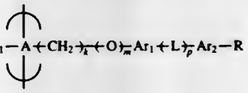
Int. Cl.[6] G02F *1/13*

U.S. Cl. 428—1 **19 Claims**

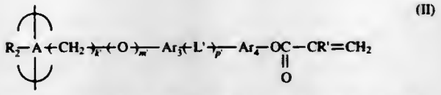
1. A retardation film comprising a polymerized liquid crystal oligomer, said oligomer having positive intrinsic birefringence and a glass transition temperature of 50° C. or below and showing nematic or smectic phase, said film having its optical axis in the film plane, a value of retardation measured at 546 nm at 30° C. of 100 nm or above, and the ratio of the value of retardation, measured at 546 nm, at 80° C. to that at 30° C. being 0.95–0.5.

2. The retardation film according to claim 1, wherein the liquid crystal oligomer comprises linear-chain or cyclic liquid crystal oligomers having the following recurring units (I) and (II):

(I)



(II)



wherein A, which is the same in each formula, is a group represented by the following formula (III) or (IV):

(III)



(IV)



wherein, in the formula (III), —Si—O— is a main chain of the recurring unit (I) or (II) and, in the formula (IV), —C—CH_2— is a main chain of the recurring unit (I) or (II) and the COO group is bonded to $(CH_2)_k$ or $(CH_2)_{k'}$ group of the formulae (I) and (II), respectively; when A is the formula (III), R_1 and R_2 are independently hydrogen, an alkyl group having 1 to 6 carbon atoms or a phenyl group, and when A is the formula (IV), R_1 and R_2 are independently hydrogen or an alkyl group having 1 to 6 carbon atoms; k and k' are independently an integer of 2 to 10; m and m' are independently 0 or 1; Ar_1, Ar_2, Ar_3 and Ar_4 are independently a 1,4-phenylene group, a 1,4-cyclohexylene group, a pyridine-2,5-diyl group or a pyrimidine-2,5-diyl group; L and L' are independently —CH_2—O—, —O—CH_2—, —COO—, —OCO—, —CH_2—CH_2—, —CH=N—, —N=CH— or a divalent group represented by the following formula:



p and p' are independently 0 or 1; R is hydrogen, halogen, a cyano group, an alkyl group having 1 to 10 carbon atoms or an alkoxy group having 1 to 10 carbon atoms; and R' is hydrogen or an alkyl group having 1 to 5 carbon atoms, and the recurring units (I) and (II) are contained in one molecule of said oligomer in an amount of n and n', respectively, wherein n and n' are each an integer of 1 to 20 and satisfy the relation of $4 \leqq n+n' \leqq 21$ and n:n'=20:1 to 1:3.

18. A liquid crystal display device comprising a liquid crystal cell comprising a liquid crystal layer held between a pair of

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transparent substrates provided with transparent electrodes, said liquid crystal layer having positive intrinsic birefringence and oriented substantially horizontally with a belical axis aligned to the substrates when no electric field is applied, at least one polarizing film provided outside said liquid crystal cell, and a retardation film of claim 1 disposed between said liquid crystal cell and said polarizing film.

5,601,885

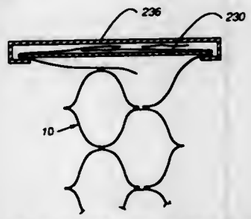
SUPPORT SYSTEM FOR SUPPORTING A VERTICALLY DISPOSED MULTI-CELL PANEL

Terry Akins, Louisville, Colo., assignor to Hunter Douglas Inc., Upper Saddle River, N.J.

Division of Ser. No. 720,163, Jun. 27, 1991, Pat. No. 5,482,750, which is a continuation-in-part of Ser. No. 635,198, Jan. 2, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 479,610

Int. Cl.[6] B32B *3/12*

U.S. Cl. 428—12 **1 Claim**



1. A support system for supporting a vertically disposed multi cell panel including at least one row of vertically superposed, horizontal tubular cells, said support system including an elongated support strip and an opposing elongated stiffening strip, one of said strips including beaded projections projecting toward the other strip and the other strip including openings formed therethrough registered with said projections and into which said projections may be inserted and retentively retained by the heads thereon, said stiffening member being adapted to be inserted into an upper cell of said multi cell panel after which, by movement of said strips toward each other, said projections may pierce upper wall portions of the cell containing said stiffening strip and be projected into said openings.

5,601,887

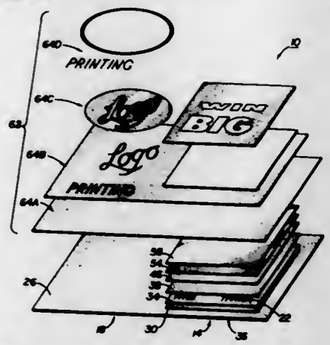
EMBOSSED CARD

Benny R. Rich, Oakwood; James J. Carides, Lawrenceville, and Jon M. Brawner, Duluth, all of Ga., assignors to Dittler Brothers Incorporated, Atlanta, Ga.

Continuation-in-part of Ser. No. 407,185, Mar. 21, 1995, which is a continuation-in-part of Ser. No. 195,759, Feb. 14, 1994, abandoned, and Ser. No. 260,699, Jun. 16, 1994, Pat. No. 5,532,046. This application May 30, 1995, Ser. No. 452,873

Int. Cl.[6] B42D *15/00*

U.S. Cl. 428—29 **4 Claims**



1. A card comprising:
a. a base comprising a first area and a second area, each having an upper surface;
b. symbols printed in the first area of the base;
c. removable means, in the form of an opaque coating applied in the first area, for obscuring the symbols from view; and
which first and second areas are embossed to create irregular features of their upper surfaces.

5,601,886

ARTIFICIAL TURF

Yoshio Ishikawa, Kishiwada, and Hiroaki Fukumoto, Kitakatsuragi-gun, both of Japan, assignors to Otsuka Kagaku Kabushiki Kaisha, Osaka, Japan

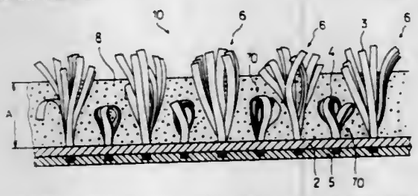
PCT No. PCT/JP93/01843, § 371 Date Jun. 5, 1995, § 102(e) Date Jun. 5, 1995, PCT Pub. No. WO95/09949, PCT Pub. Date Apr. 13, 1995

PCT Filed Dec. 20, 1993, Ser. No. 446,770

Claims priority, application Japan, Jul. 10, 1993, 5-251743

Int. Cl.[6] A41G *1/00*

U.S. Cl. 428—17 **2 Claims**



1. An artificial turf wherein tufts of artificial grass are implanted in rows on a backing structure to form a pile surface, and tufts of assist filaments shorter than the artificial grass are implanted to form rows between the rows of tufts of artificial grass, and wherein a sand layer is also provided on the backing structure such that at least a portion of the artificial grass projects from the surface of the sand layer and the tufts of assist filaments are buried in the sand layer.

5,601,888

FIRE-RESISTANT MEMBERS CONTAINING GYPSUM FIBERBOARD

George F. Fowler, Suwanne, Ga., assignor to Georgia-Pacific Corporation, Atlanta, Ga.

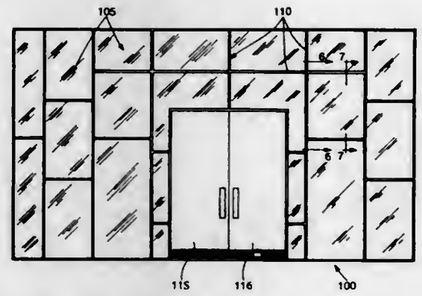
Filed Feb. 14, 1995, Ser. No. 388,018

Int. Cl.[6] E04F *13/04;13/18;* **C04B** *11/06;* **C09D** *5/16*

U.S. Cl. 428—34 **29 Claims**

1. A method of preparing an improved structure of the type having a glass panel supported by at least first and second framing members and having at least a 20 minute ASTM E-152 fire test rating, characterized by the steps comprising:
attaching said first framing member to said second framing member to provide support for said glass panel, at least one of said framing members comprising a gypsum-containing fiberboard composition having a density of at least about 60 lbs/ft^3, a flexural strength of at least about 30 lbs (½ inch thick material), and a screw-holding capacity of at least about 400 lbs, said composition containing a substantially uniform distribution of solids including about 65 wt.% to about 97 wt.% set gypsum dihydrate and about 1.5 wt.% to about 30 wt.% paper fiber.

14. An improved structure comprising:



(a) a glass panel; and
(b) framing members for framing and supporting said glass panel, at least one of said framing member comprising a gypsum-based framing member having a density of at least about 60 lbs/ft^3.

5,601,889

RADIO FREQUENCY WELDABLE POLYMER ARTICLES

Deenadayalu Chundury, Newburgh, Ind., and Rajeev S. Bhatia, Willington, Conn., assignors to Ferro Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 890,759, May 29, 1992, abandoned. This application Sep. 22, 1994, Ser. No. 310,810

Int. Cl.[6] B32B *27/08;27/32;27/30;1/08*

U.S. Cl. 428—34.3 **15 Claims**

1. An article prepared by the process comprising the steps of:
(I) preparing a polymer composition by blending
(A) at least one ethylene vinyl acetate copolymer,
(B) at least one propylene homopolymer or at least one propylene ethylene copolymer, and
(C) from about 0.1% to about 35% by weight of one or more polymers selected from the group consisting of:
(i) at least one copolymer of at least one vinyl aromatic compound and a conjugated diene; and
(ii) at least one co-, or terpolymer of an alpha-olefin, and at least one monomer selected from the group consisting of an acrylic acid, an acrylic ester and mixtures thereof; and
(II) forming the polymer composition into the article, wherein the article is halogen free.

5,601,890

IRRADIATION CROSSLINKED ACRYLATED POLYOLEFIN TUBING

Clement U. Bourgault, Fitchburg, Mass., assignor to Alpha Wire Corporation, Elizabeth, N.J.

Continuation of Ser. No. 59,233, May 7, 1993, abandoned. This application Nov. 1, 1994, Ser. No. 332,639

Int. Cl.[6] B29D *22/00*

U.S. Cl. 428—35.1 **6 Claims**



1. A tubing consisting essentially of a crosslinked acrylated polyolefin, having been sterilized, and being adhesive to a substrate and heat sealable after cyclic autoclave sterilization and being resistant to permanent discolorization after cyclic gamma and electron beam sterilization.

5,601,891

PLASTIC CONTAINER MADE FROM A FUSION BLEND OF POST CONSUMER PLASTIC AND ETHYLENE POLYMERS

James N. Herman, Sylvania, and James M. Fargher, Holland, both of Ohio, assignors to Owens-Illinois Plastic Products Inc., Toledo, Ohio

Continuation of Ser. No. 842,839, Feb. 27, 1992, abandoned. This application Mar. 29, 1994, Ser. No. 219,810

Int. Cl.[6] C08L *23/06*

U.S. Cl. 428—35.7 **2 Claims**

1. A plastic container comprising
a blow molded container,
said container being made from a fusion blend consisting essentially of a blend of:
pellets of post consumer resin of homopolymer high density polyethylene resin; and
pellets of virgin high density polyethylene copolymer resin,
said pellets of post consumer resin having a density of 0.961±0.002 and a melt index of 0.75±0.2 dgm and polypropylene blended with the post consumer resin not to exceed 3% by weight,
said pellets of virgin high density polyethylene copolymer resin having a density of at least about 0.94 gm/ml and a melt index less than about 0.5 gm/10 min.,
said post consumer resin ranging between about 15% to 50% and said virgin high density copolymer resin ranging between about 50% to 85%, by weight of the fusion blend,
such that the stress crack resistance, top load and drop impact properties of the container are maintained as contrasted to the loss of such properties that have been heretofore resulted from the use of post consumer resins.

5,601,892

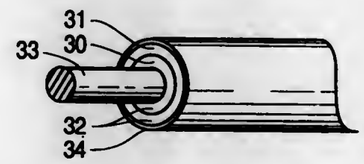
HOLLOW RODS WITH NICKEL COATED GRAPHITE FIBERS

James D. McIntosh, Hackettstown, N.J., assignor to Abu AB, Svangsta, Sweden

Filed Jul. 19, 1995, Ser. No. 504,024

Int. Cl.[6] B29D *22/00*

U.S. Cl. 428—35.8 **11 Claims**



1. A bollow, rod having a flexible, resilient body of a generally circular exterior cross section from a tip end to a butt end along an axis, wherein said body comprises a multi-ply construction comprising at least one inner ply of graphite fibers in a first thermoset resin matrix and at least one outer ply of nickel-coated graphite fibers in a second thermoset resin matrix.

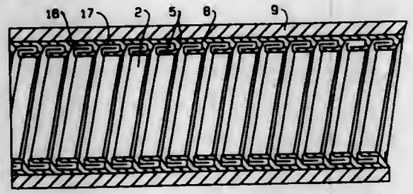
VOL 11 95 ISS 2 FE 11 1997 UMI

5,601,893

FLEXIBLE METAL PIPES WITH A SHRINKABLE POLYMER SHEATH, A PROCESS FOR THEIR FABRICATION, AND THEIR UTILIZATION AS FLEXIBLE TUBULAR CONDUITS

Albert Strassel, Oullins, and Jean Hardy, Barentin, both of France, assignors to Elf Atochem S.A., Puteaux, and Coflexip S.A., Paris, both of France

Continuation-in-part of Ser. No. 120,621, Sep. 10, 1993, abandoned. This application Nov. 17, 1994, Ser. No. 340,997
Claims priority, application France, Sep. 10, 1992, 92.10810; Mar. 10, 1994, 94.02765
Int. Cl.[6] F16L *11/08*
U.S. Cl. 428—35.9 29 Claims



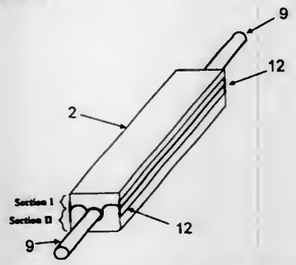
1. A flexible metal pipe whose outer surface has interstitial spaces (5), said pipe being covered with a sealing sheath of shrinkable polymer (9), wherein an elastomer layer (8) is provided intermediate between the shrinkable polymer sheath and the metal pipe, said intermediate elastomer layer being in the form either of a continuous tubular envelope or of a tape, and said intermediate elastomer layer being positioned in said interstitial spaces.

5,601,894

INSULATED INTRAVENOUS ADMINISTRATION TUBING AND DRIP CHAMBERS

Gary F. Maruschak, Baltimore City, Md., assignor to Johns Hopkins Hospital, Baltimore, Md.

Filed Jul. 6, 1995, Ser. No. 499,091
Int. Cl.[6] B32B *7/00*
U.S. Cl. 428—35.9 17 Claims



1. An insulation device in combination with intravenous tubing, the insulation device comprising:

a flexible wrap material assembly comprising transparency to provide visibility of enclosed portions of said intraveneous tubing surrounding and insulating the intravenous tubing, said wrap material assembly including means defining an interior wall having an inner surface and an outer surface, said inner surface of said interior wall defining an interior channel; an exterior wall having an inner surface and an outer surface, said exterior wall being spaced from said interior wall so as to define an insulation air space therebetween; an access opening extending the length of the wrap material assembly from said outer surface of said exterior wall to said interior channel for insertion of the intravenous tubing; and

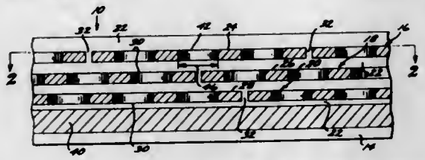
support means comprising a plurality of spaced structures for maintaining the interior channel generally centered within the exterior wall so as to maintain said insulating air space between the interior and exterior walls.

5,601,895

FLEXIBLE PUNCTURE PROOF MATERIAL

Frank W. Cunningham, 1801 Via Estudillo, Palos Verdes Estates, Calif. 90274

Continuation-in-part of Ser. No. 60,734, May 10, 1993, abandoned. This application Dec. 28, 1994, Ser. No. 365,056
Int. Cl.[6] F41H *1/02*
U.S. Cl. 428—66.6 48 Claims



1. A flexible puncture proof material for preventing a puncture by a sharp element having a pointed end, the flexible puncture proof material comprising:

a flexible layer for providing a flexible substrate and for providing a binding and embedding substrate for binding and embedding capture elements;

a first plurality of capture elements for capturing the pointed end of the sharp element, the first plurality of capture elements being essentially identical and arranged in a first two dimensional array bound to and embedded in the flexible layer;

a second plurality of capture elements for capturing the pointed end of the sharp element, each capture element being essentially identical to the first plurality of capture elements, the second plurality of capture elements arranged in a second two dimensional array bound to and embedded in the flexible layer, the second two dimensional array offset by a fraction of a width dimension of one of the capture elements relative to the first two dimensional array for capturing the pointed end of the sharp element if the pointed end of the sharp element passes between the first plurality of capture means; and

a third plurality of capture elements for capturing the pointed end of the sharp element, each capture element being essentially identical to the first plurality of capture elements, the third plurality of capture elements arranged in a third two dimensional array bound to and embedded in the flexible layer, the third two dimensional array offset by a fraction of the width dimension of one of the capture elements relative to the first two dimensional array and to the second two dimensional array for capturing the pointed end of the sharp element if the pointed end of the sharp element passes between the first plurality of capture elements and between the second plurality of capture elements wherein each of said plurality of capture elements has at least one aperture large enough to accept and capture said pointed end of said sharp element and small enough to prevent said pointed end from passing through said aperture.

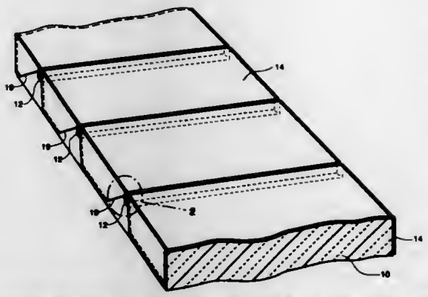
5,601,896

FABRIC-COVERED BOARD STRUCTURE AND PROCESS OF MANUFACTURE

Darryl C. Bodine; Harold N. Graybeal, both of Lancaster, Pa., and Nancy E. Mentzer, Macon, Ga., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Mar. 25, 1993, Ser. No. 37,606
Int. Cl.[6] B32B *1/04;3/28;31/00*
U.S. Cl. 428—68 2 Claims

1. A decorative panel comprising a baseboard having a plurality of transverse grooves in at least one surface of said baseboard dividing said baseboard into rectangular modules; and a fabric



covering said surface of the baseboard, the fabric being tucked into the grooves in said surface of the baseboard to a greater depth than the width of the groove to provide the appearance of individual rectangular panels, one above another.

5,601,897

VACUUM INSULATION PANEL HAVING CARBONIZED ASPHALT COATED GLASS FIBER FILLER

Donn R. Vermilion, Newark; Carl R. Strauss, Granville; Herbert L. Hall, Jr., Newark, and Frederick H. Poon, Granville, all of Ohio, assignors to Owens-Corning Fiberglass Technology Inc., Summit, Ill.

Continuation-in-part of Ser. No. 325,087, Oct. 17, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 486,479
Int. Cl.[6] B32B *1/06*
U.S. Cl. 428—69 10 Claims



1. A vacuum insulation panel comprising:

a sealed evacuated metal jacket defining an interior space; and

an insulating media in said interior space comprising glass fibers having a carbonized asphalt coating thereon.

5,601,898

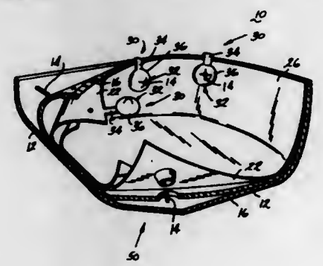
Patent Not Issued For This Number

5,601,899

SHEET WITH INTEGRAL FASTENER

Michael T. Campbell, Grand Rapids, Mich., assignor to Cascade Engineering, Inc., Grand Rapids, Mich.

Filed Mar. 17, 1995, Ser. No. 405,732
Int. Cl.[6] B32B *3/06*
U.S. Cl. 428—99 28 Claims



1. In a sheet material for mounting on a wall with a stud extending from the wall and through the sheet of material, a fastener formed with the sheet having an opening therethrough adapted to receive the stud and be retained securely thereon, and the improvement comprising:

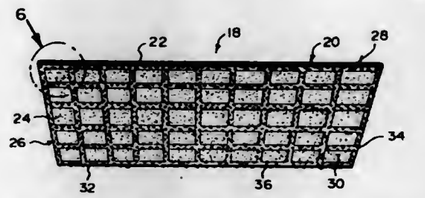
the fastener being of unitary construction with the sheet and having a protrusion with the opening at a central portion of the protrusion.

5,601,900

ANTI-SKID MAT

Herbert Doscher, 499 Davie St., Westbury, N.Y. 11590

Filed Jun. 5, 1995, Ser. No. 462,206
Int. Cl.[6] E01C *11/24;15/00;* B32B *3/16*
U.S. Cl. 428—149 1 Claim



1. An anti-skid mat of extended length for placement upon a slippery support surface comprising:

a) a one piece resilient matrix sheet member of rubber elastic material having a top surface and a bottom surface and conforming means to help said sheet member be more flexible to conform to the contour of irregular ground surfaces; and

b) means on said bottom surface of said resilient matrix sheet member for preventing slippage of said resilient matrix sheet member on said slippery support surface comprising a plurality of gripping granules of a silicon carbide substance embedded into said bottom surface spaced apart and extending partially out of said bottom surface to engage said slippery support surface, said conforming means consisting of said means on said bottom surface being formed into a grid pattern, thereby forming a safe walkway for a person, when the person steps upon said top surface of said resilient matrix sheet member.

5,601,901

Patent Not Issued For This Number

5,601,902

MULTILAYER PRINTED CIRCUIT BOARDS AND MULTICHIP-MODULE SUBSTRATES, WITH LAYERS OF AMORPHOUS HYDROGENATED CARBON

Albert Hammerschmidt, Erlangen, and Siegfried Birkle, Hoechstadt, both of Germany, assignors to Siemens Aktiengesellschaft, München, Germany

Filed May 17, 1995, Ser. No. 443,298
Claims priority, application Germany, May 20, 1994, 44 17 775.5
Int. Cl.[6] B32B *9/00*
U.S. Cl. 428—209 2 Claims

1. A moisture-resistant layered composite for use as a multilayer printed circuit board or a multichip-module substrate, the layered composite comprising: a layered composite of high-temperature-stable plastic and conductive tracks; and a layer of amorphous, hydrogenated carbon (a—C:H) having a thickness of 0.1 to 5 μm and having a water permeation coefficient of $<1.1\times10^{-13}$ m^2/s and

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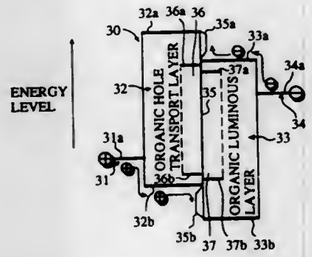
a hardness gradient, the a—C:H layer being situated on the plastic of the plastic/conductor composite.

5,601,903

ORGANIC ELECTROLUMINESCENT ELEMENTS

Takanori Fujii; Takeshi Sano; Masayuki Fujita; Yuji Hamada, all of Osaka, and Kenichi Shibata, Wakayama, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Aug. 25, 1994, Ser. No. 295,548
Claims priority, application Japan, Aug. 27, 1993, 5-213168
Int. Cl.[6] B32B *7/02;* **H05B** *33/02*
U.S. Cl. 428—212 **14 Claims**



1. An organic EL element comprising a pair of a hole injecting electrode and an electron injecting electrode sandwiching an organic luminous layer and an organic carrier transport layer placed one on top of the other to have a boundary between the organic luminous layer and the organic carrier transport layer, wherein

one of the organic luminous layer and the organic carrier transport layer, whichever is placed closer to the hole injecting electrode, is doped with a first organic material, the first organic material being made of at least one substance, a minimum level of a conducting band of the first organic material being lower than a minimum level of a conducting band of the layer which is doped with the first organic material.

5,601,904

MAGNETIC RECORDING MEDIUM AND PROCESS FOR PRODUCING THE SAME

Kousaku Tamari, Hiroshima, and Takanori Doi, Hatsukaichi, both of Japan, assignors to Toda Kogyo Corporation, Japan

Filed Mar. 15, 1995, Ser. No. 403,368
Claims priority, application Japan, Mar. 16, 1994, 6-072663
Int. Cl.[6] G11B *5/66*
U.S. Cl. 428—212 **10 Claims**

1. A magnetic recording medium comprising:

a substrate;

an NiO primary layer formed on the substrate, in which the plane (200) is substantially oriented in parallel with the surface of the substrate; and

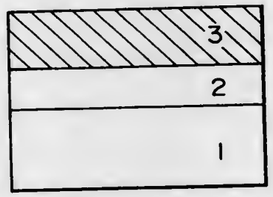
a Co-containing maghemite thin film formed on the NiO primary layer, in which the plane (400) is substantially oriented in parallel with the surface of the substrate, the molar ratio of Co to Fe is not less than 0.01:1 to less than 0.10:1, the spacing of the plane (400) is not more than 2.082 Å and wherein the coercive force of said film is less than 3000 Oe.

5,601,905

LAMINATE FOR INSULATION PROTECTION OF CIRCUIT BOARDS

Hisashi Watanabe, Kisarazu; Takashi Tanaka, Kimizu; Kaoru Okamoto, Chiba; Keiji Yoshizawa, Futtsu; Hiroyuki Chinju, and Isamu Takarabe, both of Kimizu, all of Japan, assignors to Nippon Steel Chemical Co., Ltd., Japan

Continuation of Ser. No. 27,843, Mar. 8, 1993, abandoned.
This application Feb. 27, 1995, Ser. No. 395,516
Claims priority, application Japan, Mar. 10, 1992, 4-86208; Mar. 31, 1992, 4-105596
Int. Cl.[6] B32B *7/02;27/08;* **C08G** *73/10;* **H05K** *3/28*
U.S. Cl. 428—215 **9 Claims**



1. A laminate for insulation protection of circuit boards, the laminate comprising a release sheet having provided on one side thereof, a photosensitive resin layer and a polyimide precursor resin layer,

wherein,

the photosensitive resin is an ultraviolet ray-reactive or electron beam-reactive photosensitive resin having a thickness of 2 to 100 μm, and the polyimide precursor resin is obtained by the reaction of:

(A) a diamine compound or a diisocyanate obtained by reaction of a diamine compound with phosgene, with

(B) a tetracarboxylic acid or trimellitic acid, or an acid anhydride, acid chloride or ester of a tetracarboxylic acid or trimellitic acid, and has a thickness of 2 to 300 μm,

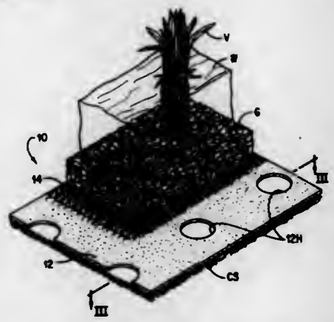
with the proviso that the laminate does not include a circuit board.

5,601,906

GEOSYNTHETIC BARRIER TO PREVENT WILDLIFE ACCESS TO CONTAMINATED SEDIMENTS

Karen S. Henry, Lyme, N.H., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 17, 1994, Ser. No. 245,120
Int. Cl.[6] B32B *9/00*
U.S. Cl. 442—1 **12 Claims**



1. A geosynthetic barrier adapted to deny wildlife access to contaminated sediments, comprising;

a geocomposite comprising a geosynthetic drainage matrix and formed of a top layer juxtaposed on a bottom layer which is adapted to be placed on said sediments;

said top layer comprising a geosynthetic drainage matrix having a plurality of openings formed therein; and

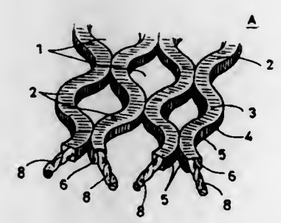
said bottom layer comprising a geotextile having a plurality of openings formed therein so as to allow gases to escape from said contaminated sediments on which said geocomposite is placed.

5,601,907

THREE-DIMENSIONALLY CONSTRUCTED NET

Koichi Matsumoto, Fukui, Japan, assignor to Asahi Doken Kabushiki Kaisha, Fukui, Japan

Filed Jul. 21, 1994, Ser. No. 278,666
Int. Cl.[6] D03D *3/00*
U.S. Cl. 442—1 **14 Claims**



1. A three-dimensionally constructed net comprising:

cord portions which define mesh openings in said net, wherein said cord portions are in the form of a hollow three-dimensional construction capable of ventilation and water permeation, and wherein said cord portions have inserted therein a plurality of ventilative and water-permeable pipe bodies which are crosswise joined together.

5,601,908

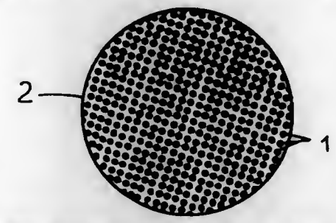
Patent Not Issued For This Number

5,601,909

PERMANENT ELECTRODE CARRIER USING TOURMALINE

Tetsujiro Kubo, 408, 2-chome, 5-12, Shibuya, Shibuy-ku, Tokyo 150, Japan

Continuation of Ser. No. 162,326, Dec. 7, 1993, abandoned.
This application Dec. 7, 1995, Ser. No. 569,051
Int. Cl.[6] B32B *5/16*
U.S. Cl. 442—417 **6 Claims**



1. A fabric formed from a plurality of yarns, wherein at least a portion of said plurality of yarns contains fine tourmaline powders having a diameter of about 0.3 to 5 microns.

5,601,910

RUG UNDERLAY SUBSTANTIALLY IMPERVIOUS TO LIQUIDS

Peter M. Murphy, Ooltewah, Tenn., and Edward J. Greenwood, Hockessin, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 18, 1995, Ser. No. 424,754
Int. Cl.[6] B32B *27/00*
U.S. Cl. 442—79 **14 Claims**

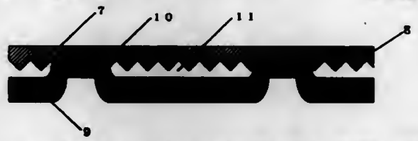
1. A carpet underlay comprising a fibrous non-woven substrate composed of natural or synthetic fibers having a coating of adhesive on one or both sides, and said substrate having in or on it a repellent finish which makes said substrate substantially impervious to water or other liquids, whereby 20 ml of water or oil poured on said substrate from a height of 6 cm makes no wet spot after 30 minutes, or a wet spot having a diameter of no more than 2.54 cm, on a paper towel located directly beneath the location on said substrate on which said water or oil has been poured.

5,601,911

CAPSULE TYPE RETROREFLECTIVE SHEETING

Katsura Ochi, Kazo; Osamu Tanaka, and Manabu Ogawa, both of Sano, all of Japan, assignors to Nippon CarbideKogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 22, 1995, Ser. No. 587,760
Claims priority, application Japan, Nov. 24, 1994, 6-312339
Int. Cl.[6] B32B *3/26*
U.S. Cl. 428—304.4 **25 Claims**



1. In a capsular retroreflective sheeting which contains a light-transmitting protective film, a support film and connecting walls which partially connect the two films to form sealed cells therebetween, and wherein said cells have disposed therein retroreflective elements and further wherein said connecting walls are formed by thermoforming said support film, the improvement comprising as said support film a film comprising a resin composition containing a thermofusible resin having functional groups which are reactable

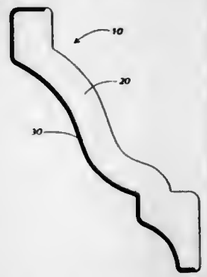
with crosslinking agent and a shearing stress at 180° C. within a range of 9×10^3 to 1×10^5 dyne/cm^2 and a crosslinking agent, said resin composition being capable of forming after the crosslinking reaction a non-fusible, crosslinked resin having a shearing stress at 180° C. of at least 1×10^6 dyne/cm^2.

5,601,912

COMPOSITE CELLULAR COEXTRUSION WITH RECYCLED COMPONENTS

Robert Ellingson, 14101 Industrial Park Blvd., NE., Covington, Ga. 30209

Filed Apr. 27, 1995, Ser. No. 429,590
Int. Cl.[6] B32B *5/18*
U.S. Cl. 428—318.6 **3 Claims**



1. A thermoplastic article for use in building construction comprising:

a blown cellular core of polystyrene, including about 15% high-impact polystyrene and from about 20–85% recycled polystyrene and having a specific gravity of from about 0.30 to about 0.75;

a coextruded cap layer comprising high-impact polystyrene, said cap layer having a thickness of from about 0.01 to 0.02 inches; and

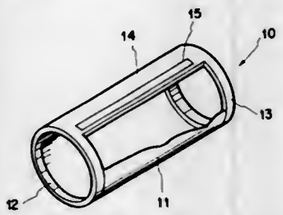
said thermoplastic article is in the shape of crown molding.

5,601,913

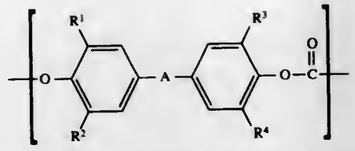
TRANSFER MATERIAL CARRYING MEMBER AND IMAGE FORMING APPARATUS

Noriko Ohtani; Naoto Fujimura, both of Yokohama; Kiyoshi Sakai, Hachioji; Teigo Sakakibara, Yokohama, and Yuichi Hashimoto, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 9,732, Jan. 27, 1993, abandoned.
This application Feb. 2, 1994, Ser. No. 190,564
Claims priority, application Japan, Jan. 30, 1992, 4-038459
Int. Cl.[6] B32B *5/16*; G03G *15/16*
U.S. Cl. 428—323 **30 Claims**



1. A transfer material carrying member for electrophotography comprising conductive metal oxide particles dispersed in a polycarbonate resin formed from a repeating unit represented by the following Formula (1):



wherein A represents a straight-chain, branched or cyclic alkylidene group, an aryl-substituted alkylidene group, an arylenedialkylidene group, —O—, —S—, —CO—, —SO— or —SO_2—; and R^1, R^2, R^3 and R^4 each represent a hydrogen atom, a halogen atom, an alkyl group having 1 to 4 carbon atoms, or an alkenyl group, said transfer material carrying member having a volume resistivity from 1.5×10^{14} Ω·cm to 1.2×10^{16} Ω·cm.

5,601,914

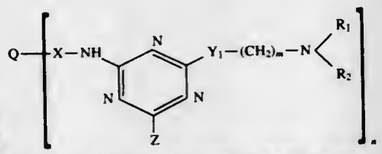
MAGNETIC RECORDING MEDIUM HAVING A BACKCOAT LAYER CONTAINING A TRANSITION METAL FATTY ACID SALT

Michio Yabuno; Yoshio Hara, and Masami Kuwahara, all of Tokyo, Japan, assignors to Toyo Ink Manufacturing Co., Ltd., Tokyo, Japan

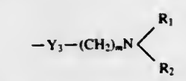
Filed Feb. 24, 1995, Ser. No. 394,160
Claims priority, application Japan, Feb. 25, 1994, 6-027765; Dec. 2, 1994, 6-299459
Int. Cl.[6] G11B *5/71*
U.S. Cl. 428—323 **10 Claims**

1. A magnetic recording medium comprising a magnetic layer and a backing layer, each formed on a different side of a non-magnetic support, said backing layer being formed from a coating material comprising 0.5 to 10 parts by weight of a transitional metal-containing fatty acid salt having 5–11 carbon atoms, 0.1 to 50 parts by weight of an organic coloring compound of formula I or II, 100 parts by weight of carbon black, and 20 to 1,000 parts by weight of a binder:

general formula (I)



wherein Q represents an organic coloring residue group derived from a coloring agent selected from the group consisting of phthalocyanine, benzimidazolone, anthraquinone, and qunacridone, X represents a direct bond, —CONH—Y_2—, or —SO_2NH—Y_2— (Y_2: a phenylene), Y_1 represents —NH—, Z represents a hydroxyl group, or

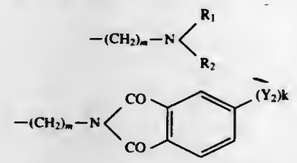


(Y_3: —NH—), R_1 and R_2 each independently represents an alkyl group having 1–4 carbon atoms, m represents an integer of 3, and n represents an integer of 1;



general formula (II)

wherein Q represents an organic coloring residue group derived from a coloring agent selected from the group consisting of phthalocyanine, benzimidazolone, anthraquinone, and qunacridone, X represents a direct bond, —CONH—Y_1—, —SO_2NH—Y_1—, —$CH_2NHCOCH_2NH$—Y_1— (Y_1: a methylene), or —CONH-◆-SO_2NH— (◆: a phenylene), Y represents a substituted group represented by one of the following formulae:



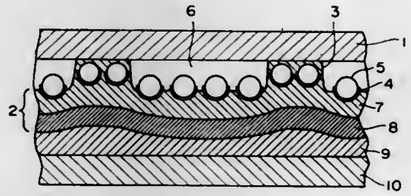
(R_1 and R_2 each independently represent an alkyl group having 1–4 carbon atoms, Y_2 represents a hydrogen atom, and m represents an integer of 1 or 2), and n represents an integer of 1 or 2.

5,601,915

RETROREFLECTIVE SHEETING

Katsura Ochi, Kashiwa; Masaki Yoshizawa, Sano, and Osamu Tanaka, Hiratsuka, all of Japan, assignors to Nippon Carbide Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 15, 1995, Ser. No. 404,608
Claims priority, application Japan, Mar. 18, 1994, 6-072862
Int. Cl.[6] B32B *5/16*
U.S. Cl. 428—323 **26 Claims**



1. Retroreflective sheeting comprising

a support sheet comprising a surface layer,

retroreflective glass beads having reflective and non-reflective portions, reflective portions of said beads being embedded in said surface layer as substantially a monolayer and non-reflective portions thereof protruding out of said surface layer, and

a light-transmissive protective film overlying the retroreflective glass beads and bonded at a portion of the surface thereof to the support sheet;

wherein the surface layer of the support sheet comprises a resin composition comprising (a) at least one thermofusible resin having a glass transition temperature not higher than 50° C. and a shearing stress in the range of 2×10^5 to 1.5×10^6 dyne/cm^2, and (b) at least one cellulose derivative having a glass transition temperature not lower than 90° C.

5,601,916

MAGNETIC RECORDING MEDIUM HAVING A MAGNETIC LAYER COMPRISING HEXAGONAL FERRITE PARTICLES

Nobuo Yamazaki; Hitoshi Noguchi, and Shinji Saito, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 7, 1995, Ser. No. 524,680
Claims priority, application Japan, Oct. 14, 1994, 6-249489
Int. Cl.[6] G11B *5/706*
U.S. Cl. 428—329 **2 Claims**

1. A magnetic recording medium, comprising a nonmagnetic support having thereon a magnetic layer comprising ferromagnetic particles dispersed in a binder, wherein the magnetic recording medium comprises a magnetic layer comprising hexagonal ferrite magnetic particles, the magnetic layer containing the hexagonal ferrite magnetic particles having a coercive force of from 1,700 to 5,000 Oe, an anisotropic magnetic field of more than 3,000 Oe a ratio of the coercive force to the anisotropic magnetic field thereof of from 0.30 to 1.0, and an in-plane squareness ratio of from 0.65 to 1.00, and wherein a nonmagnetic layer comprising inorganic nonmagnetic particles dispersed in a binder, a lower magnetic layer comprising ferromagnetic particles dispersed in a binder, or a multilayer structure comprising the nonmagnetic layer and the lower magnetic layer is provided on the nonmagnetic support, and the magnetic layer containing the hexagonal ferrite magnetic particles is provided on the nonmagnetic layer or the lower magnetic layer.

5,601,917

PAINT FILM-PROTECTIVE SHEET

Komaharu Matsui, Kanagawa; Takeshi Eda; Hiroshi Ueda, both of Hyogo; Kenichi Shibata, Osaka; Toshitaka Suzuki, Osaka; Hiroyoshi Onishi, Osaka; Kenichi Okada, Osaka; Tsuyoshi Inoue, Osaka; Mitsuru Horada, Osaka; Kenji Sano, Osaka, and Keiji Hayashi, Osaka, all of Japan, assignors to Nitto Denko Corporation, Osaka, and Kansai Paint Co., Ltd., Hyogo, both of Japan

Filed Oct. 10, 1995, Ser. No. 541,976
Claims priority, application Japan, Oct. 11, 1994, 6-334726; Apr. 19, 1995, 7-119130
Int. Cl.[6] B32B *7/12*
U.S. Cl. 428—356 **7 Claims**

1. A paint film-protective sheet comprising a supporting substrate having formed thereon a pressure-sensitive adhesive layer, said layer comprising i) a rubber-based polymer with a solubility parameter of less than or equal to 8.1 (cal/cm^3)$^{1/2}$ and an aliphatic unsaturated carbon-to-carbon bond content of less than or equal to 5%, and ii) an additive having a high polarity, said additive having a molecular weight of at least 500 g/mol and a solubility parameter of at least 9.5 (cal/cm^3)$^{1/2}$.

5,601,918

LARGE DENIER POLYESTER AND NYLON FILAMENTS

Frederick L. Travelute, Charlotte, N.C.; Robert E. Hoffman, Catawba, and Mendel L. Poston, Jr., Pamplico, both of S.C., assignors to Wellman, Inc., Shrewsbury, N.J.

Division of Ser. No. 392,033, Feb. 22, 1995. This application Mar. 29, 1996, Ser. No. 622,898
Int. Cl.[6] D02G *3/00*
U.S. Cl. 428—364 **5 Claims**

1. A hollow translucent thermoplastic polymer filament selected from the group consisting of polyester and nylon of at least 30 denier.

5,601,919

BUILDING COMPONENT

Michael W. Symons, Pretoria, South Africa, assignor to Tower Technologies (Proprietary) Limited, Transvall, South Africa

Filed Oct. 1, 1993, Ser. No. 130,174
Claims priority, application South Africa, Oct. 1, 1992, 92/7558
Int. Cl.[6] D02G *3/00*
U.S. Cl. 428—375 **14 Claims**

1. A building component comprising a core formed from a natural fibre material, said fibre material having been impregnated with a liquid composition comprising a thermosetting resin, an extending liquid for the thermosetting resin and a catalyst for the thermosetting resin, the thermosetting resin having been polymerized, and an encapsulating layer encapsulating the core, the encapsulating layer being formed from a composition comprising from 10% to 80% by weight of the composition of a hydraulic binder, from 6% to 60% by weight of the hydraulic binder of a polymer

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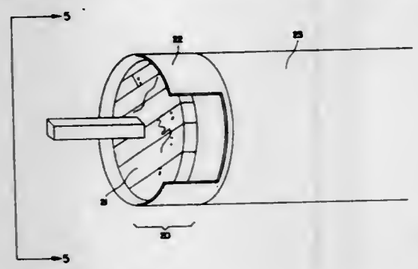
selected from the group consisting of a water soluble polymer, a water dispersible polymer, and a water miscible polymer, and water to rehydrate the hydraulic binder, the composition having hardened to form the encapsulating layer.

5,601,920

COVERED ROLL AND A METHOD FOR MAKING THE SAME

Jan A. Paasonen, Kerava, and Seppo A. Ylisalo, Järvenpää, both of Finland, assignors to Stowe Woodward Licensco, Inc., Wilmington, Del.

Filed Apr. 6, 1995, Ser. No. 418,421
Int. Cl.[6] B32B *9/00*
U.S. Cl. 428—375 **27 Claims**



1. A covered roll comprising:
a roll core base;
a compressive layer having a top surface and a bottom surface and a void space therebetween, said compressive layer circumferentially surrounding said roll core base; and
a cover, said circumferentially surrounding compressive layer;
said compressive layer being rigid enough to support said surrounding cover and compressible enough to change in volume in response to the volume changes which occur in said cover as a result of the stresses created during processing.

5,601,921

ALUMINIUM-SALT IMPREGNATED FIBRES, A METHOD FOR THEIR MANUFACTURE, FLUFF CONSISTING OF SUCH FIBRES, AND THE USE OF THE FIBRES AS ABSORPTION MATERIAL

Inger V. Eriksson, Sundsvall, Sweden, assignor to Molnlycke AB, Goteborg, Sweden

Continuation of Ser. No. 842,147, Mar. 23, 1992, abandoned. This application Jun. 28, 1994, Ser. No. 266,618
Claims priority, application Sweden, Sep. 27, 1989, 8903180; Jul. 20, 1990, 9002475
Int. Cl.[6] B32B *9/00*
U.S. Cl. 428—389 **22 Claims**

1. Aluminum-salt impregnated organic pulp fibers, showing improved liquid dispersion properties in horizontal and vertical direction in an absorption body which includes said fibers, for use in absorption articles, wherein the fibers have an increased absorption rate improved by the impregnation by a factor of 1.3–4, and wherein the fibers have an aluminum content of 3–100 g/kg, calculated on dry pulp, said fibers having been impregnated with aluminum salt in aqueous solution at a pH of 5–11, said fibers being dried and in the form of fluff.

5,601,922

Patent Not Issued For This Number

5,601,923

MONO-DISPERSED IRREGULAR-SHAPED FINE POLYMER PARTICLES

Mikio Koyama; Yoshiaki Koizumi; Kenji Hayashi, all of Hino, and Jiro Takahashi, Hachioji, all of Japan, assignors to Konica Corporation, Tokyo, Japan

Division of Ser. No. 11,977, Feb. 1, 1993, abandoned. This application Nov. 23, 1994, Ser. No. 345,086
Claims priority, application Japan, Feb. 14, 1992, 4-028180
Int. Cl.[6] G03G *15/06*
U.S. Cl. 428—402 **15 Claims**

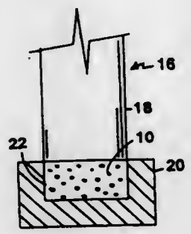
1. A toner for electrophotography having an irregular shape manufactured by a process which comprises the steps of:
(a) associating mono-dispersed polymer particles in a dispersing solution by adding one kind of hydrophilic-hydrophobic amphoteric organic solvents having mutual solubility in water between 0.1 to 50 % to the dispersing solution wherein the polymer particles have an average particle size smaller than the average size of the toner; and
(b) adding another kind of hydrophilic-hydrophobic amphoteric organic solvent which has infinite solubility in water to the dispersing solution.

5,601,924

MANUFACTURING PARTICLES AND ARTICLES HAVING ENGINEERED PROPERTIES

Alan F. Beane, Gilford, and Glenn L. Beane, Plymouth, both of N.H., assignors to Materials Innovation Inc., West Lebanon, N.H.

Division of Ser. No. 339,577, Nov. 14, 1994, Pat. No. 5,453,293, which is a continuation of Ser. No. 102,532, Aug. 4, 1993, abandoned, which is a continuation of Ser. No. 731,809, Jul. 17, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 474,701
Int. Cl.[6] B32B *5/16*
U.S. Cl. 428—403 **22 Claims**



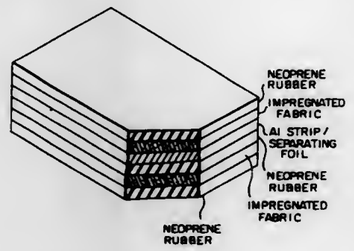
1. An article comprising a plurality of particles, at least some of said particles comprising a first material having a first value of at least one intrinsic property, and having a surface on which a coating comprising a second material is formed, said coating having a second value of said at least one intrinsic property, said second value differing from said first value, the volume of said coating being relative to the volume of the particles, said particles being consolidated to cause said particles to be joined to each other, said article exhibiting a third value of said at least one intrinsic property, said first material, said second material, and said volume of said coating relative to said volume of said particle being such that said article exhibits said third value of said at least one intrinsic property, said third value of said at least one intrinsic property being a function of said first and second values and the ratio of the volume of said coating relative to the volume of said particles.

5,601,925

PENETRATION AGENT

Günter Kurz, Tamins, and Manfred Wenzler, Domat/Ems, both of Switzerland, assignors to EMS-Inventa AG, Zurich, Switzerland

Filed Mar. 3, 1995, Ser. No. 398,133
Claims priority, application Germany, Mar. 4, 1994, 44 07 246.5
Int. Cl.[6] B05D *3/00;3/12;* B32B *27/38*
U.S. Cl. 428—413 **10 Claims**



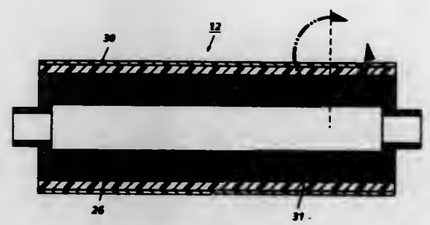
1. An adhesion promoter composition for penetrating and impregnating a reinforcement substrate, consisting essentially of effective adhesion and penetrating amounts of an isocyanate adhesion promoter and at least one non-volatile linear aliphatic monoglycide ether having at least 10 carbon atoms and having a viscosity at 25° C. of less than 10 mPa*s as a penetration-enhancing agent.

5,601,926

HEAT AND PRESSURE FUSER AND SILICONE/VITON FUSER ROLL THEREFOR

Rabin Moser, Victor, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 1, 1994, Ser. No. 299,386
Int. Cl.[6] B32B *9/04*
U.S. Cl. 428—447 **10 Claims**



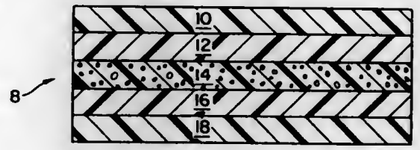
1. A multilayered fuser member for fusing thermoplastic resin toner images to a substrate in a fuser apparatus of the type wherein a polymeric release agent is applied to the surface of the fuser member, said fuser member comprising:
a core member;
a first layer of a material having good wear resistance, said first layer being adhered to said core member; and
a second layer of material having good toner release and copy quality properties, said second layer being adhered to said first layer and forming an outermost layer of said fuser member, said second layer comprising silicone rubber.

5,601,927

CLING SIGNAGE

Roger P. Plourde, Paxton, Mass., assignor to Furon Company, Laguna Niguel, Calif.

Filed Dec. 5, 1994, Ser. No. 349,628
Int. Cl.[6] B32B *27/00;7/12*
U.S. Cl. 428—448 **27 Claims**



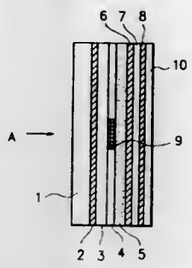
1. A multilayered cling signage sheet which comprises:
a first layer to provide structural integrity to the sheet;
a second print receptive layer adhered to one side of the first layer; and
a third low modulus cling elastomer layer having a thickness of between 0.0002 to 0.0020 adhered to the other side of the first layer, the cling elastomer characterized in that it will releasably and repeatedly adhere to a substantially flat surface.

5,601,928

SHEET FOR MARKING, MARKED SHEET, AND METHOD FOR MANUFACTURING SAID SHEET

Masato Katayama, Yokohama; Eiichi Suzuki, Asaka; Mamoru Sakaki, Yamato; Akio Kashiwazaki, Yokohama, and Mifune Hirose, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 22, 1994, Ser. No. 310,334
Claims priority, application Japan, Sep. 24, 1993, 5-238022; Jun. 3, 1994, 6-122327
Int. Cl.[6] B32B *27/00*
U.S. Cl. 428—500 **15 Claims**



1. A marking sheet, comprising
a transparent sheet (a) formed of polyvinyl chloride which has an embossed pattern on the front surface thereof; and
a transparent sheet (b) formed of polyethylene terephthalate, a transparent ink retaining layer (c) containing a hydrophilic resin and an opaque ink transporting layer (d) which are sequentially disposed on the rear surface of said transparent sheet (a).

5,601,929
FLOOR COVERING HAVING A HIGHLY FILLED TERPOLYMER INK
Carl E. Sideman, Lititz, Pa., assignor to Armstrong World Industries, Inc., Lancaster, Pa.
Continuation of Ser. No. 78,487, Jun. 21, 1993, abandoned, which is a continuation of Ser. No. 561,688, Aug. 1, 1990, abandoned. This application Sep. 19, 1994, Ser. No. 532,286
Int. Cl.[6] B32B 27/30
U.S. Cl. 428—518 11 Claims

1. A floor covering comprising a decorative layer and a base, said decorative layer comprising a filler and binder resin, wherein the binder resin is a vinyl chloride/vinyl acetate/maleic acid terpolymer, the decorative layer after drying has at least 43% and no greater than 53% by weight of the vinyl chloride/vinyl acetate/maleic acid terpolymer, the filler is selected from the group consisting of platey material and titanium dioxide particles, wherein the decorative layer is adhered to the base, the cohesion of the binder resin within the decorative layer being greater than the adhesion between the decorative layer and the base whereby upon being delaminated in a tensile test the floor covering fails within the base and not in the decorative layer.

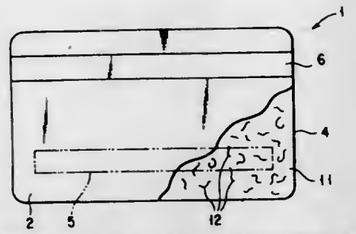
5,601,930
DECOR SHEET AND DECORATIVE LAMINATES PREPARED THEREFROM
Mahendra Mehta, Pittsfield, Mass., and Larry O. Hill, Frankfort, Ohio, assignors to The Mead Corporation, Dayton, Ohio
Continuation-in-part of Ser. No. 227,025, Apr. 13, 1994, abandoned. This application Feb. 15, 1995, Ser. No. 388,718
Int. Cl.[6] B32B 21/14;29/00
U.S. Cl. 428—535 19 Claims

1. A decorative laminate comprising a laminating resin-impregnated decor sheet and a plurality of laminating resin-impregnated core sheets, said decor sheet being treated with a sizing agent such that said sheet is only partially impregnated with said laminating resin, said sizing agent being a sizing agent which is capable of substantially reducing the amount of laminating resin absorbed by said decor sheet.

4. The decor sheet for use in a decorative laminate comprising a fibrous mat having a top portion and a bottom portion in the thickness direction of the mat, wherein the bottom portion of said fibrous mat includes a sizing agent and the top portion of said fibrous mat is essentially free of said sizing agent sucb that said top portion absorbs at least 10% more laminating resin per unit volume than said bottom portion when the decor sheet is saturated with a laminating resin.

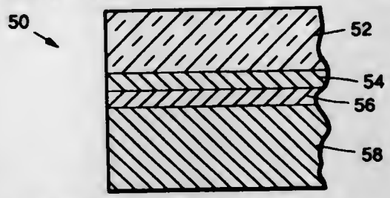
5,601,931
OBJECT TO BE CHECKED FOR AUTHENTICITY AND A METHOD FOR MANUFACTURING THE SAME
Hidekazu Hoshino; Itsuo Takeuchi; Masumi Yoda; Minoru Kosuiya, and Tsugutaka Sugahara, all of Yokohama, Japan, assignors to NHK Spring Company, Ltd., Yokohama, Japan
Filed Dec. 1, 1994, Ser. No. 347,976
Claims priority, application Japan, Dec. 2, 1993, 5-303033; Dec. 2, 1993, 5-303065; Dec. 10, 1993, 5-310423; Jun. 10, 1994, 6-128878
Int. Cl.[6] B42D 107/00
U.S. Cl. 428—537.5 2 Claims

1. A card-like object to be checked for authenticity, comprising:
card base members of a synthetic resin or paper;
a magnetic-polymer-filled layer attached to the card base members, the magnetic-polymer-filled layer including a base material formed of paper containing a plurality of wood pulp fibers and magnetic polymer elements randomly interspersed within said paper, each of the elements including a fibrous element main body formed of a high-molecular weight material and a magnetic metal powder contained therein;



a scanning region located in the magnetic-polymer-filled layer for checking the object for authenticity; and
a code indicator section for storing encoded information associated with a detection signal obtained in accordance with the distribution of the magnetic polymer elements in the scanning region.

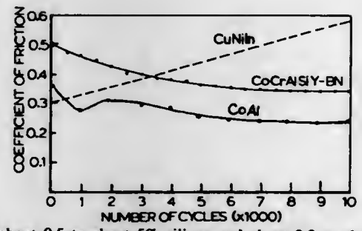
5,601,932
COPPER COMPOSITES DIRECTLY BONDED TO CERAMICS
Alvin L. Krum, Huntington Beach, and William T. Campbell, Costa Mesa, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Division of Ser. No. 268,488, Jun. 30, 1994, Pat. No. 5,490,627. This application Nov. 6, 1995, Ser. No. 554,580
Int. Cl.[6] B32B 15/20;15/04
U.S. Cl. 428—610 4 Claims



1. A metal-ceramic structure comprising:
a copper composite substrate having a diffused copper region adjacent the surface thereof,
a copper-copper oxide eutectic layer formed upon said substrate, and
a ceramic member bonded to said copper-copper oxide eutectic layer.

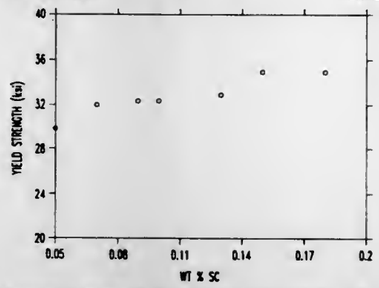
5,601,933
LOW FRICTION COBALT BASED COATINGS FOR TITANIUM ALLOYS
Karel Hajmrle, and Anthony P. Chilkowich, both of Fort Saskatchewan, Canada, assignors to Sherritt Inc., Fort Saskatchewan, Canada
Continuation-in-part of Ser. No. 214,263, Mar. 17, 1994, abandoned. This application Jul. 20, 1995, Ser. No. 504,638
Int. Cl.[6] B32B 15/00
U.S. Cl. 428—660 30 Claims

1. A mechanical component of titanium or titanium alloy having a contacting surface for use in an apparatus having an opposed, contacting surface of titanium or titanium alloy which in operation subjects the surface of said mechanical component and the opposed contacting surface of the apparatus to metal-to-metal wear comprising: the surface of said mechanical component or the opposed contacting surface of the apparatus having a lubricous, protective coating consisting essentially of cobalt and at least one alloying element selected from the group consisting, by weight, of about 17 to about 35% chromium, about 3 to about 12.5% alumi-



num, about 0.5 to about 5% silicon and about 0.3 to about 2% yttrium for contact transfer of a portion of the lubricous, protective coating from the coated surface to the opposed, contacting surface whereby the surfaces are protected from metal-to-metal wear.

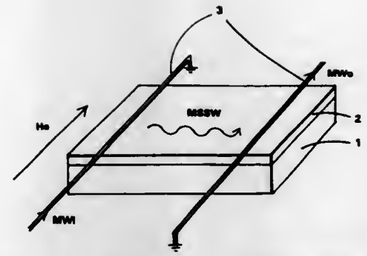
5,601,934
MEMORY DISK SHEET STOCK AND METHOD
Charles W. Bartges, Delmont; Stephen E. Baumann, Penn Hills; Robert W. Hyland, Jr., Oakmont; Craig L. Jensen, Pittsburgh; Gary P. Tarcy, Plum, all of Pa.; K. Dean Vinnedge, and Troy C. Skeen, both of Bettendorf, Iowa, assignors to Aluminum Company of America, Pittsburgh, Pa.
Continuation-in-part of Ser. No. 299,836, Sep. 1, 1994, Pat. No. 5,554,428. This application Jun. 5, 1995, Ser. No. 465,284
Int. Cl.[6] B32B 3/00
U.S. Cl. 428—688 18 Claims



1. A memory disk sheet stock having improved strength levels, said memory disk stock comprising an alloy composition which consists essentially of about 1–11 wt.% magnesium, up to about 5 wt. % zinc, up to about 1 wt. % copper, up to about 0.3 wt. % zirconium, up to about 0.2 wt. % iron, up to about 0.2 wt. % silicon, and about 0.02–0.2 wt. % of a dispersoid-forming element selected from the group consisting of: scandium, erbium, thulium, lutetium, ytterbium, hafnium and yttrium, the balance aluminum and impurities.

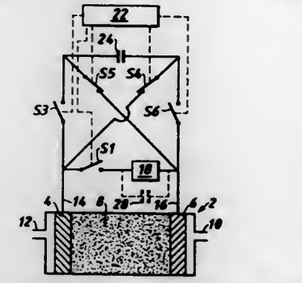
5,601,935
SURFACE MAGNETOSTATIC WAVE DEVICE
Masaru Fujino; Takashi Fujii; Makoto Kumatoriya; Takenori Sekijima, and Hiroshi Takagi, all of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Japan
Filed Sep. 7, 1994, Ser. No. 302,348
Claims priority, application Japan, Sep. 8, 1993, 5-223552
Int. Cl.[6] G11B 5/66
U.S. Cl. 428—692 20 Claims

1. A surface magnetostatic wave device comprising:
a gadolinium gallium garnet substrate having a crystallographic plane azimuth of one of a (110) plane, a (100) plane, or a (211) plane;
an Fe-containing garnet single crystal film grown on said gadolinium gallium garnet substrate;



a magnetic field applied to said Fe-containing garnet single crystal film in a first direction; and
a pair of electrodes electrically connected to said Fe-containing garnet single crystal film, said pair of electrodes being arranged to generate a magnetostatic surface wave moving in a direction substantially perpendicular to said first direction.

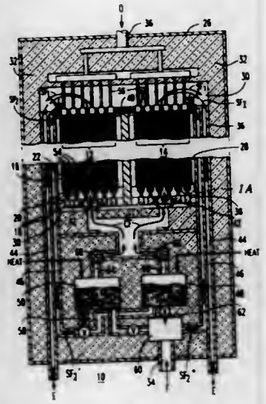
5,601,936
METHOD OF OPERATING A FUEL CELL
Christopher D. Dudfield, Loughborough, and Andrew L. Dicks, Ashby De La Zouch, both of England, assignors to British Gas plc, London, England
Filed May 16, 1995, Ser. No. 441,733
Claims priority, application United Kingdom, Jun. 16, 1994, 9412073
Int. Cl.[6] H01M 8/04
U.S. Cl. 429—13 28 Claims



1. A method of operating a fuel cell of the type comprising an anode and a cathode each comprising catalyst means comprising platinum, the method comprising supplying gaseous fuel comprising hydrogen and/or a gaseous alcohol to said anode and supplying gaseous oxidant comprising oxygen to said cathode, operating the fuel cell at a temperature which does not exceed substantially 250° C., providing an interruptable first circuit externally of the cell for electric current derived from the cell to flow in the external circuit from the cathode to the anode by reason of the cathode being at a positive potential relative to the anode, providing a second circuit externally of the cell, said second circuit comprising electrical energy supply means for supplying selectively a reverse D.C. potential to said anode and cathode thereby putting the anode at a positive potential with respect to said cathode, interrupting and completing the first circuit alternately and operating the second circuit whereby when the first circuit is interrupted the reverse D.C. potential is applied simultaneously by means of the second circuit and when the first circuit is completed application of said reverse D.C. potential ceases, said first circuit being completed for a first time period and said reverse D.C. potential being applied for a second time period, said first time period being at least substantially ten times greater than said second time period, and the second time period being not greater than substantially 0.25 seconds.

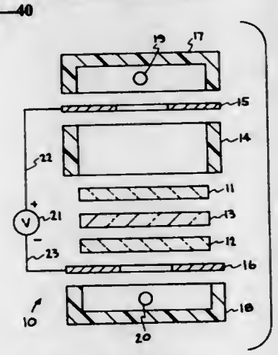
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5,601,937
HYDROCARBON REFORMER FOR ELECTROCHEMICAL CELLS
Arnold O. Isenberg, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Jan. 25, 1995, Ser. No. 378,298
Int. Cl.[6] H01M 8/04
U.S. Cl. 429—17 **6 Claims**



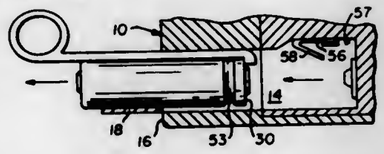
1. An electrochemical fuel cell generator apparatus, comprising:
a generator chamber containing at least one fuel cell bundle, the bundle containing a plurality of parallel, elongated electrochemical fuel cells, each cell including an exterior fuel electrode, an interior air electrode, and a solid oxide electrolyte disposed between the fuel electrode and the air electrode;
an oxidant gas inlet connected to the interior of the fuel cells;
a fuel gas inlet connected to the generator chamber and to the exterior of the fuel cells;
a combustion chamber connected to the generator chamber for combusting a spent oxidant and a portion of spent fuel gas exiting from the generator chamber;
at least one exhaust gas channel connected to the combustion chamber for passing hot combusted exhaust gas exiting from the combustion chamber;
at least one spent fuel gas recirculation channel connected to the generator chamber for recirculating a second portion of the spent fuel gas exiting from the generator chamber;
at least one reforming chamber connected to the generator chamber, said at least one reforming chamber including an iron oxide bed, heating means for said iron oxide bed, inlet means for introducing a fresh hydrocarbon gas over said iron oxide bed, and a fuel gas outlet channel from the at least one reforming chamber connected to the fuel gas inlet to the generator chamber;
a fresh hydrocarbon gas inlet connected to the reforming chamber;
a mixing chamber connected to the fresh hydrocarbon gas inlet and the spent fuel gas recirculation channel for combining a portion of the spent fuel gas containing water vapor and carbon dioxide in the spent fuel gas recirculation channel with a fresh hydrocarbon feed gas prior to entering the reforming chamber;
at least one reforming catalyst regeneration chamber connected to the generator, said at least one reforming catalyst regeneration chamber including an iron metal bed, heating means for said iron metal bed, and a fuel gas outlet channel from the at least one reforming catalyst regeneration chamber connected to the fuel gas inlet to the generator chamber;
a spent fuel inlet channel connected to the reforming catalyst regeneration chamber for introducing a portion of the spent fuel gas containing water vapor and carbon dioxide in the spent fuel recirculation channel to the reforming catalyst regeneration chamber;
control means connected to the at least one reforming chamber and the at least one reforming catalyst regeneration chamber, said control means interchanging, one for the other, the at least one reforming chamber and the at least one reforming catalyst regeneration chamber upon exhaustion of the iron oxide reforming catalyst bed and the iron metal bed in each chamber, respectively, to continuously reform a hydrocarbon gas and supply a fuel gas to an electrochemical generator fuel cell for electrochemical conversion to electrical energy.

5,601,938
CARBON AEROGEL ELECTRODES FOR DIRECT ENERGY CONVERSION
Steven T. Mayer, San Leandro; James L. Kaschmitter, Pleasanton, and Richard W. Pekala, Pleasant Hill, all of Calif., assignors to Regents of the University of California, Oakland, Calif.
Filed Jan. 21, 1994, Ser. No. 183,876
Int. Cl.[6] H01M 4/96
U.S. Cl. 429—40 **19 Claims**

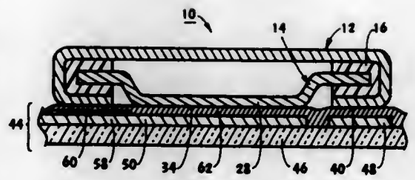


10. An improved fuel cell including:
a pair of carbon aerogel electrodes;
a separator positioned intermediate said electrodes;
said electrodes and said separator being located within a housing;
a pair of current collector plates positioned adjacent said electrodes; and
a pair of gas manifolds positioned adjacent said current collector plates.

5,601,939
BATTERY CONTACT ARRANGEMENT AND BATTERY REMOVAL TOOL
Dennis R. Zander, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Jun. 5, 1995, Ser. No. 464,183
Int. Cl.[6] H01M 2/10
U.S. Cl. 429—98 **8 Claims**

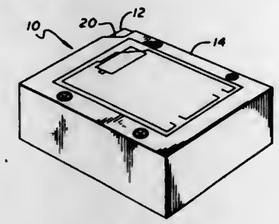


1. In a photographic camera, a combination comprising:
a cylindrical battery having a longitudinal axis, the battery having a first battery terminal on a first end face thereof and a second battery terminal comprised of a conductive cylindrical jacket having a second end face unitary with the jacket, the jacket having a peripheral groove therein;
a camera housing having a cavity therein, the cavity being closed at a first end and open at a second end, the housing including a cover for closing the cavity, the cavity having a wall for limiting motion of the battery when the battery is inserted into the cavity to longitudinal sliding motion with respect to the axis of the battery;
a first contact disposed within the cavity at the first end of the cavity and having a contact area facing the axial end face of the battery when the battery is slid into the cavity for making contact with the first battery terminal;
a second contact for engaging the second battery terminal in the groove in the conductive cylindrical jacket of the battery; and
a printed circuit board within the housing, the printed circuit board having the first and second contacts mounted thereon.



an electrically conducting adhesive connecting said negative contact and said negative contact surface.

5,601,940
BATTERY HOLDER
Henry M. Denecke, N. Hollywood, Calif., assignor to Denecke, Inc., North Hollywood, Calif.
Filed May 11, 1995, Ser. No. 439,288
Int. Cl.[6] H01M 2/10
U.S. Cl. 429—100 **22 Claims**



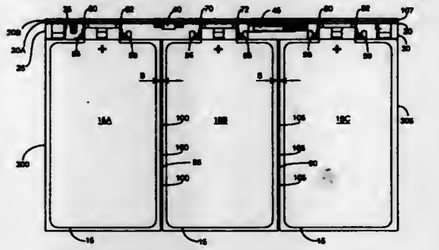
1. A battery holder, for enabling insertion and removal of a battery which includes a polarity contact at one end thereof for supplying battery power to a device, adapted to releasably retain the battery therein, and to enable contact with the polarity contact of the battery for electrical connection thereof, comprising:
(a) a housing for the battery, including means for enabling insertion, retention, and removal of the battery comprising an opening in the housing for enabling insertion and removal of the battery and a portion of the housing which extends over a portion of the battery upon insertion of the battery into the housing for enabling retention of the battery in the housing; and
(b) means in the housing for contacting the polarity contact of the battery for enabling electrical connection thereof.

5,601,941
IMPROVED BATTERY ASSEMBLY
Mark E. Tuttle, Boise, Id., assignor to Micron Communications, Inc., Boise, Id.
Division of Ser. No. 517,504, Aug. 21, 1995, Pat. No. 5,558,679. This application Jul. 16, 1996, Ser. No. 682,045
Int. Cl.[6] H01M 2/30
U.S. Cl. 429—121 **20 Claims**

1. An assembly comprising:
a battery having a positive contact surface and a negative contact surface;
a substrate for mounting said battery thereon;
a positive contact mounted on said substrate;
a negative contact mounted on said substrate;
an electrically conducting adhesive connecting said positive contact and said positive contact surface; and

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5,601,942
PORTABLE BATTERY PACK APPARATUS AND METHOD OF FABRICATION THEREOF
Vincent Fedele, Stow, Mass., assignor to VST Technologies, Inc., Concord, Mass.
Continuation-in-part of Ser. No. 114,768, Aug. 31, 1993, Pat. No. 5,436,089. This application Feb. 8, 1995, Ser. No. 385,286
Int. Cl.[6] H01N 2/24
U.S. Cl. 429—159 **11 Claims**



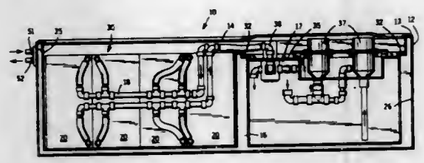
1. A battery pack for a portable electronic apparatus, said battery pack comprising:
a connective member having first and second opposed sides;
a plurality of flat first cells situated in side-by-side relationship, each first cell having a connector end facing the first side of the connective member, each first cell having an upper and lower major surface, the upper surfaces of the first cells being aligned in a common upper plane, the lower surfaces of the first cells being aligned in a common lower plane;
a plurality of flat second cells situated in side-by-side relationship, each second cell having a connector end facing the second side of the connective member, each second cell having an upper and lower major surface, the upper surfaces of the second cells being aligned in the common upper plane, the lower surfaces of the second cells being aligned in the common lower plane;
an upper plastic connective sheet adhesively coupled to the upper surfaces of the flat first cells and the flat second cells; and
a lower plastic connective sheet adhesively coupled to the lower surfaces of the flat first cells and the flat second cells thus forming a substantially multi I-beam like structure which provides structural integrity to said battery pack.

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5,601,943
MODULE FOR AN AQUEOUS BATTERY SYSTEM

Phillip A. Eidler, Muskego, and Eric Loppnow, Milwaukee, both of Wis., assignors to ZBB Technologies, Inc., Wauwatosa, Wis.

Filed Oct. 26, 1995, Ser. No. 548,490
Int. Cl.[6] H01M *6/04*
U.S. Cl. 429—163 **13 Claims**



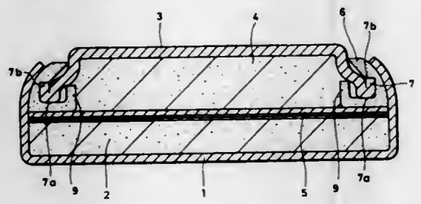
1. A module for use with liquid electrolyte, electric energy storing devices, the module comprising:
- a double-walled container having an innerwall, an outerwall located in spaced relation relative to the innerwall, and a top opening having a rim;
- a first reservoir for holding a liquid defined by the inner and outer walls, and having a top portion with an opening therein;
- a compartment for holding at least one electric energy storing device, defined by the innerwall, having a top opening with a peripheral edge, and surrounded by the first reservoir; and
- a second reservoir for holding a liquid, defined by the innerwall, having a top opening with a peripheral edge, and positioned in nested relationship relative to the first reservoir.

where, in operation, when liquid is stored in the second reservoir and in the first reservoir, liquid in the second reservoir will mix with liquid stored in the first reservoir in the event of a puncture of a portion of the innerwall which defines the second reservoir.

5,601,944
BUTTON TYPE ALKALINE BATTERY

Norishige Yamaguchi, and Kiyoshi Hosoda, both of Fukushima, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 9, 1995, Ser. No. 474,148
Claims priority, application Japan, Jun. 16, 1994, 6-157981; Sep. 30, 1994, 6-237714; Feb. 20, 1995, 7-030805
Int. Cl.[6] H01M *2/08*
U.S. Cl. 429—174 **34 Claims**



1. A button type alkaline battery comprising:
- a negative electrode cup having a cuff portion and an outwardly directed step,
  - the cuff portion having an inside-facing surface, a bottom surface and an outside-facing surface, the bottom surface is disposed between and connected to the inside-facing and outside-facing surfaces, the outside-facing surface of the cuff portion further comprises a head end, the head end of the outside-facing surface of the cuff portion being disposed above the outwardly directed step;
- a positive electrode can;
- a gasket.

5,601,945
BATTERY ELEMENT CONTAINING POROUS SUBSTRATES

Thomas J. Clough, Grover Beach, Calif., assignor to Ensci Inc., Pismo Beach, Calif.

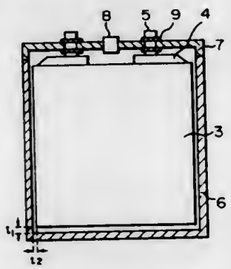
Continuation-in-part of Ser. No. 293,699, Aug. 19, 1994, Pat. No. 5,549,990, which is a division of Ser. No. 874,178, Apr. 24, 1992, abandoned, which is a continuation-in-part of Ser. No. 770,557, Oct. 3, 1991, abandoned, which is a continuation-in-part of Ser. No. 621,660, Dec. 3, 1990, Pat. No. 5,204,140, which is a continuation-in-part of Ser. No. 348,789, May 8, 1989, Pat. No. 5,167,820, Ser. No. 348,788, May 8, 1989, Pat. No. 5,039,845, Ser. No. 348,787, May 8, 1989, abandoned, and Ser. No. 348,786, May 8, 1989, Pat. No. 5,182,165, each which is a continuation-in-part of Ser. No. 272,517, Nov. 17, 1988, abandoned, and Ser. No. 272,539, Nov. 17, 1988, abandoned, each which is a continuation-in-part of Ser. No. 82,277, Aug. 6, 1987, Pat. No. 4,787,125, which is a division of Ser. No. 843,047, Mar. 24, 1986, Pat. No. 4,713,306. This application Jun. 6, 1995, Ser. No. 471,476
Int. Cl.[6] H01M *4/14*
U.S. Cl. 429—204 **26 Claims**

1. A battery element useful as at least a portion of a plate in a lead acid battery, comprising a plurality of acid resistant three-dimensional resilient organic, porous particles having sulfuric acid electrolyte contained in the pores of said porous particles and an active material, provided that at least a portion of said porous particles are incorporated into said material and said porosity and resiliency allows for participation of the sulfuric acid electrolyte contained in the pores of said particles during discharge of the active material.

5,601,946
RECTANGULAR SEALED ALKALINE STORAGE BATTERY AND MODULE BATTERY THEREOF

Yohei Hattori, Kadoma; Nobuyasu Morishita, Fujiidera; Hiromu Matsuda, Hyogo-ken, and Munehisa Ikoma, Nara-ken, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 23, 1994, Ser. No. 264,500
Claims priority, application Japan, Dec. 7, 1993, 5-306384
Int. Cl.[6] H01M *10/24*
U.S. Cl. 429—206 **25 Claims**



1. A rectangular sealed alkaline storage battery comprising:
- a container having an opening, a bottom wall and at least one inner side wall;
- an electrode group having at least one longer side face and at least one shorter side face and disposed in the container so as to have a top portion and a bottom portion, the electrode group comprising (i) positive electrode plates and negative electrode plates disposed in alternation, (ii) separators separating adjacent ones of the positive and negative electrode plates and (iii) poles provided at the top portion;
- an alkali electrolyte in said container; and
- a cover disposed on the container to seal the opening of the container and provided with a safety vent, wherein:

  - a position of the electrode group in the container is controlled by fixing the poles provided at the top portion of the electrode group to the cover;
  - spaces are provided between the bottom portion of the electrode group and the bottom wall of the container and between the at least one shorter side face of the electrode group and the at least one inner side wall of the container;
  - the positive electrode plates, the negative electrode plates, or both the positive electrode plates and the negative electrode plates are covered in their entireties by the separators, the separators extending from the bottom portion to the top portion of the electrode group, each of the separators being formed by a continuous sheet which is folded into a U-shape to cover a bottom end of a respective one of the positive electrode plates, the negative electrode plates, or both the positive electrode plates and the negative electrode plates;
  - distance t_1 between the bottom portion of the electrode group and the bottom wall of the container satisfies a relation 2 mm$\leqq t_1$<10 mm; and
  - distance t_2 between the at least one shorter side face of the electrode group and the at least one inner side wall satisfies a relation 1 mm$\leqq t_2$<5 mm.

5,601,947
ELECTROACTIVE HIGH STORAGE CAPACITY POLYCARBON-SULFIDE MATERIALS AND ELECTROLYTIC CELLS CONTAINING SAME

Terje A. Skotheim, Shoreham, and Igor P. Kovalev, Setauket, both of N.Y., assignors to Moltech Corporation, Tucson, Ariz.

Filed Jun. 7, 1995, Ser. No. 478,330
Int. Cl.[6] H01M *4/02*
U.S. Cl. 429—213 **31 Claims**

1. An electrochemically active polycarbonsulfide material, which in its oxidized state, is of the general formula 1

$$+C(S_x)+_n$$

wherein x ranges from greater than 2.5 to about 50, and n is greater than or equal to 2.

5,601,948
GAS PLASMA TREATMENT OF CATHODES TO IMPROVE CELL PERFORMANCE

Michael Binder, Brooklyn, N.Y.; Robert J. Mammone, South Plainfield, and William L. Wade, Jr., Neptune, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

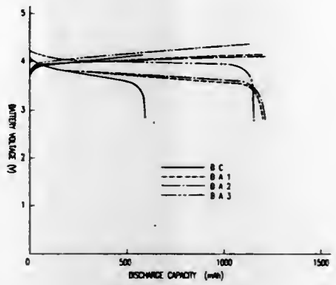
Filed Apr. 11, 1995, Ser. No. 420,268
Int. Cl.[6] H01M *4/04*
U.S. Cl. 429—218 **14 Claims**

1. A method of forming an electric cell comprising the steps of:
(b) providing an electrode material wherein the electrode material is porous carbon black;
(c) inserting the electrode material into a plasma etcher;
(d) filling the plasma etcher with a reactive gas mixture;
(e) exposing the electrode material to a gas plasma for from 0.5 seconds to 5 minutes; and
(f) installing the electrode material in an electric cell having an electrolyte of the general formula $R_pO_rX_t$, where R is selected from the group consisting of sulfur, carbon and silicon; O is oxygen; and X is selected from the group consisting of fluorine, chlorine, bromine, and iodine; and the subscripts p, r, and t are greater than 0.

5,601,949
ION CONDUCTIVE MATERIAL FOR SECONDARY BATTERY

Masahisa Fujimoto; Koji Nishio, and Toshihiko Saitoh, all of Osaka, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 134,079, Oct. 8, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 466,197
Claims priority, application Japan, Nov. 19, 1992, 4-335660
Int. Cl.[6] H01M *10/38;10/42*
U.S. Cl. 429—218 **9 Claims**



1. A secondary battery comprising:
- a positive electrode having a material containing reversibly intercalated alkaline earth metal ions, said material being selected from the group consisting of $BaNiO_3$, $BaNiO_2$, $BaCoO_3$, $BaCoO_{2.8}$, $BaFeO_3$, $SrNiO_3$, $SrCoO_{2.5}$, $SrCoO_{2.8}$, $SrCoO_3$, $SrFeO_4$, $SrFe_{2.5}$, $SrFeO_3$, $CaCo_2O_4$, $Ca_3Co_4O_9$, $Ca_3Co_2O_5$, $Ca_3Co_2O_6$, $CaFeO_3$, $CaFeO_2$, $MgNiO_2$, $MgCo_2O_4$ and $MgFe_2O_4$;
- a negative electrode having a carbon composition which intercalates alkaline earth metal ions reversibly; and
- an electrolyte having an organic solvent and a solute, said solute including an alkaline earth metal salt.

5,601,950
NON-AQUEOUS ELECTROLYTE SECONDARY CELL

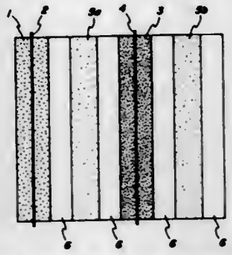
Takayuki Yamahira, and Yoshiaki Takeuchi, both of Fukushima, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 22, 1995, Ser. No. 493,464
Claims priority, application Japan, Jun. 29, 1994, 6-148311
Int. Cl.[6] H01M *4/36;4/58;4/62*
U.S. Cl. 429—218 **8 Claims**

1. A non-aqueous secondary cell comprising:
- an active cathode material comprising a lithium composite oxide;
- an electrolyte comprising a lithium salt dissolved in a non-aqueous organic solvent; and
- a sintered composite anode comprising a metal support with a thermoplastic binder free electrically conductive sintered carbonaceous material having a volume density of from about 0.8 to about 1.95 g/ml disposed thereon, said sintered composite anode being obtained from compression molding a carbonaceous starting material comprising a thermoplastic binder free binder pitch to said metal support to form a composite product and thereafter sintering the composite product by heating in an inert gas at an elevated temperature of from about 500° C. to about 1000° C. until sintering is substantially complete.

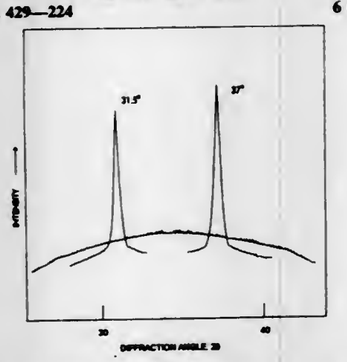
VOL 1195 ISS 2 FE 11 1997 UMI

5,601,951
RECHARGEABLE LITHIUM ION CELL
Arden P. Johnson, Brookline, and Carl R. Schlaikjer, Concord, both of Mass., assignors to Battery Engineering, Inc., Hyde Park, Mass.
Continuation-in-part of Ser. No. 531,200, Sep. 19, 1995, abandoned. This application Feb. 15, 1996, Ser. No. 601,980
Int. Cl.[6] H01M 2/02
U.S. Cl. 429—218 **22 Claims**



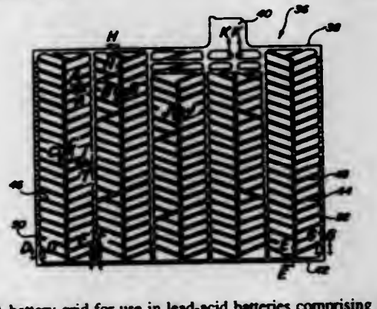
1. In a soluble positive electrode rechargeable electrochemical cell the combination of a positive electrode formed of carbon and a binder, a negative electrode formed also of carbon and a binder, an electrolyte salt dissolved in sulfur dioxide, and the carbon of said positive electrode having a larger specific surface area than the specific surface area of the carbon in said negative electrode.

5,601,952
LITHIUM-MANGANESE OXIDE ELECTRODE FOR A RECHARGEABLE LITHIUM BATTERY
Sankar Dasgupta, c/o The Electrofuel Manufacturing Company Ltd. 21 Hanna Avenue, Toronto, Ontario, Canada, and James K. Jacobs, 69 Albany Avenue, Toronto, Ontario, Canada
Filed May 24, 1995, Ser. No. 448,768
Int. Cl.[6] H07M 4/50
U.S. Cl. 429—224 **6 Claims**



5. A rechargeable non-aqueous lithium battery comprising:
i) a battery housing;
ii) a negative electrode comprising elemental lithium;
iii) a lithium ion containing non-aqueous electrolyte, selected from the group consisting of: a lithium ion containing solid polymer laminate, a microporous polymer laminate impregnated with a lithium ion containing organic liquid and particles of a lithium ion containing solid polymer;
iv) a positive electrode comprising particles of an amorphous lithium-manganese oxide compound containing lithium and manganese such that the atomic ratio Li:Mn is greater than 0.4 in the charged state of said rechargeable non-aqueous lithium battery and said atomic ratio is less than 1.5 in the discharged state of said rechargeable non-aqueous lithium battery, said amorphous lithium-manganese oxide compound having average particle size less than 5 μm; and
v) a pair of charge collector means, one of said pair of charge collector means being in contact with said negative electrode and the other of said charge collector means being in contact with said positive electrode.

5,601,953
BATTERY GRIDS
Raymond L. Schenk, Marysville, Mich., assignor to Venture Enterprises, Incorporated, Grosse Pointe, Mich.
Continuation of Ser. No. 249,874, May 26, 1994, abandoned. This application Jun. 19, 1995, Ser. No. 492,221
Int. Cl.[6] H01M 4/74
U.S. Cl. 429—241 **3 Claims**



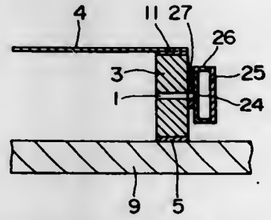
1. A battery grid for use in lead-acid batteries comprising a top frame, a lug extending from said top frame, a bottom border extending essentially parallel to said top frame opposite said lug, a reticulum having a left end and a right end and extending between and connecting said top frame to said bottom border, a left side border extending from said top frame to said bottom border and connected to said left end of said reticulum at a series of junctions, and a right side border extending from said top frame to said bottom border and connected to said right end of said reticulum at a series of junctions, wherein at least one of said left side border and said right side border has a slot formed between a pair of adjacent junctions to relieve stress.

5,601,954
ATTENUATED PHASE SHIFT MASK COMPRISING PHASE SHIFTING LAYER WITH PARABOLICALLY SHAPED SIDEWALLS
Zoran Krivokapic, Santa Clara, and Christopher A. Spence, Sunnyvale, both of Calif., assignors to Advanced Micro Devices Incorporated, Sunnyvale, Calif.
Division of Ser. No. 250,898, May 31, 1994. This application Jun. 5, 1995, Ser. No. 469,148
Int. Cl.[6] G03F 9/00
U.S. Cl. 430—5 **8 Claims**



1. A process for fabricating an attenuated phase shift mask comprising a first layer having a transmission in the range of about 3 to 10% formed on a transparent substrate and a second layer comprising a transparent material having a thickness to provide a desired phase shift and formed on said first layer, said process comprising:
(a) providing said transparent substrate;
(b) forming said first layer on a surface of said transparent substrate;
(c) forming said second layer on said first layer;
(d) forming a masking layer on said second layer;
(e) patterning and etching said masking layer to expose portions of said second layer;
(f) etching through said exposed portions of said second layer with an isotropic wet etching process, thereby forming first openings which are defined by substantially parabolically-profiled walls and exposing portions of said first layer;
(g) removing said masking layer; and
(h) etching through said exposed portions of said first layer to form second openings.

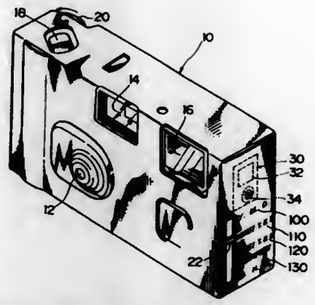
5,601,955
MASK PROTECTIVE DEVICE
Minoru Fujita, and Hiroaki Nakagawa, both of Yamaguchi-ken, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan
Filed Aug. 10, 1995, Ser. No. 513,518
Claims priority, application Japan, Aug. 11, 1994, 6-189676; Jun. 15, 1995, 7-147974
Int. Cl.[6] G03F 9/00
U.S. Cl. 430—5 **13 Claims**



1. A mask protective device comprising:
(a) a frame having a size to surround a layout pattern on a mask;
(b) a thin film mounted to cover one opening end face of said frame;
(c) a bonding means for bonding the other opening end face of said frame on the mask;
(d) a vent formed in the frame to communicate the inside of said frame to the outside of said frame; and
(e) a filter means having a filtration area larger than the sectional area of said vent and mounted on the frame to cover said vent so that there is a certain space between said frame and said filter means.

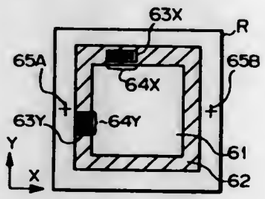
5,601,956
FILM UNIT WITH LENS AND DEVELOPMENT METHOD THEREOF
Masafumi Inuiya, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Apr. 5, 1995, Ser. No. 417,128
Claims priority, application Japan, Apr. 8, 1994, 6-070662
Int. Cl.[6] G03B 17/24
U.S. Cl. 430—21 **16 Claims**

9. A system for including date and/or time information on photographs from film of a disposable film unit, said system comprising:
said disposable film unit, and
development equipment operated according to a development process;
wherein said disposable film unit comprises:



a lens and a shutter, in a light proof case,
a roll of film loaded in said case, having a plurality of frames, each frame of which has a corresponding frame number; and
a date record unit;
wherein said date record unit comprises:
a release detector indicating a release of said shutter,
a frame number counter outputting said frame number corresponding to a current one of said frames, and incrementing said frame number in response to said indication from said release detector,
a timer providing a current date and/or time,
memory, and
means for writing said current date and/or time corresponding to said current frame, and said frame number corresponding to said current frame, in a respective address of said memory, when said release detector indicates said release; and
wherein said development process includes the steps of:
removing, from said disposable film unit, said roll of film and said date record unit;
identifying one of said plurality of frames;
reading, from said memory, said date and/or time and said frame number corresponding to said identified frame;
developing said film; and
printing one of said photographs from said identified frame, said photograph having thereon information corresponding to said date and/or time read from said memory.

5,601,957
MICRO DEVICES MANUFACTURING METHOD COMPRISING THE USE OF A SECOND PATTERN OVERLYING AN ALIGNMENT MARK TO REDUCE FLATTENING
Shinji Mizutani, Kanagawa-ken; Kazuya Ota, Tokyo, and Masahiko Yasuda, Kanagawa-ken, all of Japan, assignors to Nikon Corporation, Tokyo, Japan
Filed Jun. 1, 1995, Ser. No. 457,232
Claims priority, application Japan, Jun. 16, 1994, 6-134006; Jul. 13, 1994, 6-183002
Int. Cl.[6] G03F 9/00
U.S. Cl. 430—22 **10 Claims**



1. An exposure method including:

a first step of forming on a substrate an alignment mark including a concave and convex pattern, said mark being formed by said concave and convex pattern arranged with a pitch which is smaller than the predetermined value between adjacent convex portions having a width of not less than a predetermined value;

a second step of forming a coat over said alignment mark and the other area on said substrate;

a third step of flattening said coat; and

a fourth step of applying a photosensitive material on said coat flattened by said third step and projecting a mask pattern thereto.

5,601,958

METHOD FOR PREPARATION OF PRINTING PLATE BY ELECTROPHOTOGRAPHIC PROCESS

Eiichi Kato; Makoto Momota, and Hiroyuki Ohishi, all of Shizuoka, Japan, assignors to Fujl Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 28, 1995, Ser. No. 413,467

Claims priority, application Japan, Apr. 8, 1994, 6-095691

Int. Cl.[6] G03G *13/28*

U.S. Cl. 430—49 **17 Claims**

1. A method for preparation of a printing plate by an electrophotographic process comprising forming a peelable transfer layer capable of being removed upon a chemical reaction treatment on a surface of an electrophotographic light-sensitive element, forming a toner image by an electrophotographic process on the transfer layer, heat-transferring the toner image together with the transfer layer onto a receiving material having a surface capable of providing a hydrophilic surface suitable for lithographic printing at the time of printing, and removing the transfer layer on the receiving material by the chemical reaction treatment, wherein the transfer layer is formed by an electrodeposition coating method using thermoplastic resin grains (AL) each containing a resin (A_1) having a glass transition point of from 10° C. to 140° C. or a softening point of from 35° C. to 180° C. and a resin (A_2) having a glass transition point of not more than 45° C. or a softening point of not more than 60° C. and its glass transition point or softening point is at least 2° C. lower than that of the resin (A_1).

5,601,959

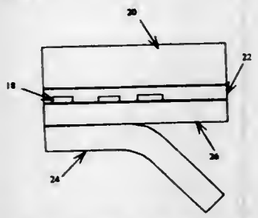
DIRECT TRANSFER ELECTROGRAPHIC IMAGING ELEMENT AND PROCESS

Donald A. Brault, Southbridge; Douglas A. Cahill, Belchertown; Dene H. Taylor, Holyoke, all of Mass., and Anthony K. Webb, Vancouver, Wash., assignors to Rexam Graphics, Inc., South Hadley, Mass.

Continuation-in-part of Ser. No. 115,562, Sep. 3, 1993, abandoned. This application Jan. 13, 1995, Ser. No. 372,858

Int. Cl.[6] G03G *13/01*

U.S. Cl. 430—126 **15 Claims**



1. An electrographic element comprising a transparent, releasable dielectric image receptive layer having a dielectric adhesive activation temperature T_{Ad} supported on an electrically conductive carrier sheet for use in producing an image on a permanent receptor substrate having a front surface, by a process comprising:

(a) Applying an adhesive coating to form an adhesive layer on said substrate front surface, the adhesive coating being tacky at a temperature less than the adhesive activation temperature T_{Ad} of the dielectric layer;

(b) Producing a toned mirror image of the image on the image receptive layer of the electrographic element

(c) Contacting the image receptive layer and the toned image thereon, to the adhesive layer and adhering the electrographic element to the substrate; and

(d) Separating and removing the carrier sheet from the dielectric image receptive layer, whereby the dielectric image receptive layer and the toned image remain on the substrate;

said releasable dielectric image receptive layer having a bonding force with the carrier sheet which is weaker than the bonding force between the image receptive layer and the adhesive layer at a temperature below said dielectric adhesive activation temperature T_{Ad}.

5,601,960

PROCESSES FOR LOW MELT CROSSLINKED TONER RESINS AND TONER

Hadi K. Mahabadi; Enno E. Agur, both of Toronto; T. Brian McAneney, Burlington; Sheau V. Kao; Gerald R. Allison, both of Oakville; Michael S. Hawkins, Cambridge, all of Canada; Bernard Grushkin, Pittsford, N.Y.; J. Stephen Kittelberger, Rochester, N.Y.; Joo T. Chung, Penfield, N.Y., and William H. Hollenbaugh, Jr., Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 332,315, Oct. 31, 1994, Pat. No. 5,500,324. This application Nov. 13, 1995, Ser. No. 555,954

Int. Cl.[6] C08G *63/20*

U.S. Cl. 430—137 **23 Claims**

1. A process consisting essentially of:

(a) reactive melt mixing of a base resin with a chemical initiator and crosslinking of said base resin to enable a highly crosslinked precursor resin, said highly crosslinked precursor resin being substantially free of sol, and comprising uncrosslinked portions and crosslinked portions, said crosslinked portions comprised of high density crosslinked microgel particles; and

(b) accomplishing dilution by melt mixing said highly crosslinked precursor resin of (a) with a base resin to form a partially crosslinked toner resin, said toner resin being substantially free of sol, and comprising linear uncrosslinked portions and crosslinked portions, said crosslinked portions comprised essentially of high density crosslinked microgel particles, wherein said microgel particles are present in an amount of from about 1 to about 45 percent by weight of said toner resin.

5,601,961

HIGH-SENSITIVITY POSITIVE-WORKING PHOTORESIST COMPOSITION

Kazuhiko Nakayama; Taku Nakao; Kousuke Doi; Nobuo Tokutake; Hidekatsu Kohara, and Toshimasa Nakayama, all of Kanagawa-ken, Japan, assignors to Tokyo Ohka Kogyo Co., Ltd., Japan

Filed Mar. 29, 1995, Ser. No. 412,889

Claims priority, application Japan, Mar. 29, 1994, 6-059490

Int. Cl.[6] G03F *7/023*

U.S. Cl. 430—192 **44 Claims**

1. A positive-working photoresist composition which comprises, as a uniform mixture:

(A) an alkali-soluble resinous ingredient as a film-forming agent; and

(B) a quinone diazide group-containing compound as a photosensitizing agent,

said alkali-soluble resinous ingredient being a combination of at least two kinds of alkali-soluble novolac resins selected from the group consisting of:

(a) a first novolac resin which is a condensation product of a mixture of phenolic compounds consisting of from 35 to 48% by moles of m-cresol and from 52 to 65% by moles of p-cresol with an aldehyde compound and has a weight-average molecular weight in the range from 2100 to 3800 as prepared;

(b1) a second novolac resin which is a condensation product of a mixture of phenolic compounds consisting of from 50 to 70% by moles of m-cresol and from 30 to 50% by moles of a xylenol with an aldehyde compound and has a weight-average molecular weight in the range from 2100 to 3800 as prepared; and

(c1) a third novolac resin which is a condensation product of a mixture of phenolic compounds consisting of from 60 to 80% by moles of m-cresol and from 20 to 40% by moles of a trimethyl phenol with an aldehyde compound and has a weight-average molecular weight in the range from 2100 to 3800 as prepared

said combination of at least two kinds of the alkali-soluble novolac resins as a whole having a weight-average molecular weight in the range from 3000 to 7000 after removal of the low molecular-weight fractions.

5,601,962

THERMAL TRANSFER PROCESS WHEREIN A REDUCING AGENT AND TONING AGENT ARE TRANSFERRED TO A RECEIVING ELEMENT CONTAINING A THERMOREDUCIBLE SILVER SOURCE

Geert Defleuw, Kessel-Lo, and Wilhelmus Janssens, Aarschot, both of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Continuation of Ser. No. 400,347, Mar. 8, 1995. This application Apr. 16, 1996, Ser. No. 633,518

Claims priority, application European Pat. Off., Mar. 25, 1994, 94200787

Int. Cl.[6] G03C *8/00;8/26*

U.S. Cl. 430—200 **5 Claims**

1. A thermal imaging process comprising, in order, the steps of:

a) bringing a donor layer of a donor element into face to face relationship with a receiving layer of a receiving element to obtain an assemblage,

b) image-wise heating the assemblage, thereby causing image-wise transfer of an amount of a thermotransferable reducing agent and an amount of a thermotransferable toning agent to said receiving element, the amount of transferred reducing agent and toning agent being proportional to the amount of heat supplied,

c) separating said donor element from said receiving element, and

d) overall heating said receiving element, wherein

(i) said donor element comprises on a support, (a) a donor layer comprising a binder, a thermotransferable reducing agent which is capable of reducing a silver source to metallic silver upon heating, and a thermotransferable toning agent and (b) on a side of the support opposite a side comprising said donor layer, a heat-resistant backing layer, and

(ii) said receiving element comprises said receiving layer on a support, said receiving layer comprising a silver source which is capable of being reduced by means of heat in the presence of a reducing agent.

5,601,963

SILVER HALIDE EMULSIONS

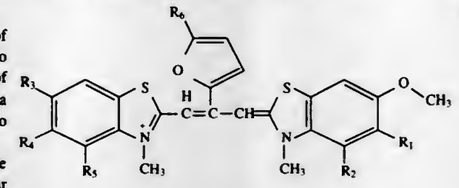
Michael P. Filosa, Medfield; Zbigniew J. Hinz, Melrose, and Mark T. Spitler, Concord, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jun. 28, 1996, Ser. No. 673,328

Int. Cl.[6] G03C *1/18;1/26;8/06;8/10*

U.S. Cl. 430—217 **25 Claims**

1. A light-sensitive photographic silver halide emulsion spectrally sensitized to near infrared radiation above about 700 nm with a sensitizing dye represented by the formula



(I)

$(Z)_{p-1}$

wherein:

R_1 is methoxy or halogen;

R_2 is hydrogen;

R_3 is hydrogen or methoxy;

R_4 is methoxy;

R_5 is hydrogen;

R_6 is hydrogen or an alkyl group (C_nH_{2n+1}) wherein n is an integer from 1 to 4;

R_1 and R_2 or R_4 and R_5, taken together, can represent a saturated or unsaturated, 5- or 6-membered carbocyclic or heterocyclic ring wherein the heteroatom is sulfur or oxygen;

Z is a photographically-acceptable counterion as needed to balance the charge of the molecule; and

p is 1 when the molecule is not positively charged; or p is greater than 1 when the molecule is positively charged.

5,601,964

SILVER HALIDE PHOTOGRAPHIC MATERIALS

Morio Yagihara, and Hisashi Okada, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 946,796, Sep. 18, 1992, which is a continuation of Ser. No. 666,443, Mar. 11, 1991, which is a continuation of Ser. No. 168,116, Mar. 14, 1988. This application Mar. 28, 1994, Ser. No. 219,404

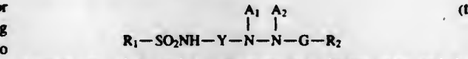
Claims priority, application Japan, Mar. 13, 1987, 62-58513

The portion of the term of this patent subsequent to Nov. 20, 2007, has been disclaimed.

Int. Cl.[6] G03C *1/06*

U.S. Cl. 430—264 **15 Claims**

1. A silver halide photographic material comprising a support and at least one light-sensitive silver halide emulsion layer formed thereon, said emulsion layer containing at least one nucleating compound represented by formula (I):



(I)

wherein one of A_1 and A_2 represents a hydrogen atom and the other represents a sulfinic acid residue or an acyl group;

R_1 represents an aromatic group substituted by a ureido substituent or an aryloxy substituent which may each be further substituted;

R_2 represents a hydrogen atom, an alkyl group, an aryl group, an alkoxy group, an aryloxy group, or an amino group;

G represents a carbonyl group, a sulfonyl group, a sulfoxy group, a phosphoryl group, or an iminomethylene group; and

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Y represents a phenylene group or a naphthylene group; the sum of the total carbon atoms of said R_1, R_2 and Y being at least 13.

5,601,965

INCREASING ADHESION OF DRY FILM PHOTOPOLYMERIZABLE COMPOSITIONS

Richard T. Mayes, Newark, Del., assignor to MacDermid Imaging Technology, Inc., Waterbury, Conn.

Continuation of Ser. No. 562,315, Nov. 22, 1995, abandoned, which is a continuation of Ser. No. 786,632, Nov. 1, 1991, abandoned. This application May 20, 1996, Ser. No. 650,213

Int. Cl.[6] G03C *1/72*

U.S. Cl. 430—281.1 **17 Claims**

1. An aqueous alkaline-developable dry film photopolymerizable composition, which composition comprises a hydroxyl modified copolymer of vinyl chloride/vinyl acetate, said hydroxyl modified copolymer being present in an mount of 0.5 to 2 percent based on the weight of the dry-film photopolymerizable composition.

5,601,966

METHODS FOR FABRICATING FLAT PANEL DISPLAY SYSTEMS AND COMPONENTS

Nalin Kumar, Austin, and Chenggang Xie, Cedar Park, both of Tex., assignors to Microelectronics and Computer Technology Corporation, Austin, Tex.

Division of Ser. No. 147,700, Nov. 4, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 475,167

Int. Cl.[6] G03F *7/00*

U.S. Cl. 430—313 **38 Claims**

1. A method of fabricating a pixel of a triode pixel display cathode comprising the steps of:

forming a conductive stripe on a face of a substrate;

forming a layer of insulator on the conductive stripe;

forming a layer of conductor on the insulator layer;

patterning and etching the layer of insulator and the layer of conductor to form a plurality of apertures exposing portions of the conductive stripe;

etching through the apertures to undercut portions of the layer of insulator forming a portion of a sidewall of each of the apertures; and

forming regions of amorphic diamond on the exposed portions of the conductive stripe.

5,601,967

BLUE SENSITIZED TABULAR EMULSIONS FOR INVERTED RECORD ORDER FILM

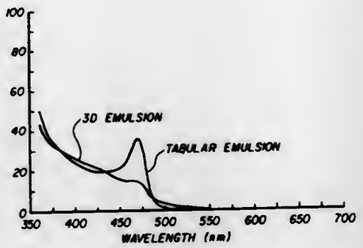
Thomas B. Brust, and James T. Kofron, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 632,686, Dec. 19, 1990, abandoned. This application Feb. 19, 1991, Ser. No. 656,660

Int. Cl.[6] G03C *1/00;1/14*

U.S. Cl. 430—505 **8 Claims**

1. A color photographic negative film wherein a blue sensitive layer is below a green sensitive layer and said blue sensitive layer comprises blue-sensitized tabular grain with an aspect ratio of at least 5 that are sensitized with a blue dye which absorbs light primarily in the region between 450 and 520 nanometers and wherein said film further comprises a yellow colored masking coupler that forms magenta dye when developed and absorbs blue light in the 400–450 nanometer range during exposure.



5,601,968

COLOR PHOTOGRAPHIC SILVER HALIDE MATERIAL

Beate Weber, Leichlingen; Hans Langen, Bonn; Uwe Dahlhaus, Burscheid, and Thomas Hübsch, Leverkusen, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Germany

Filed Apr. 18, 1996, Ser. No. 634,503

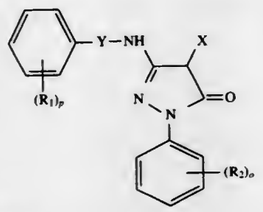
Claims priority, application Germany, Apr. 25, 1995, 195 15 143.7

Int. Cl.[6] G03C *7/396;7/38*

U.S. Cl. 430—551 **9 Claims**

1. A color photographic silver halide material comprising a support and least one silver halide emulsion layer applied thereto wherein said at least one silver halide emulsion layer contains at least one 2-equivalent pyrazolone magenta coupler of the formula (I)

(I)



in which

each R_1 is identical or different and means hydrogen, alkyl, aryl, acyl, fluorine, chlorine, bromine, sulphonyl, silyl, nitro, alkoxycarbonyl, cyano, aroxycarbonyl, acylamino, sulphonamido or trifluoromethyl,

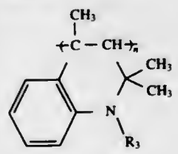
each R_2 is identical or different and means fluorine, chlorine, bromine, acyl, alkyl, alkoxy, alkoxycarbonyl, cyano, alkylsulphonyl, arylsulphonyl, alkoxysulphonyl, aroxysulphonyl, acylamino, sulphonamido, trifluoromethyl or nitro,

X means an elimination group,

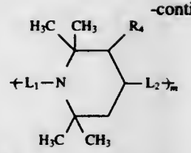
Y means a direct bond or CO and

o and p are identical or different and mean a number from 1 to 5, and at least one amine which contains repeat units of the formulae (II) or (III)

(II)



-continued



in which

R_3 means hydrogen or alkyl

R_4 means hydrogen or alkyl

L_1 means a divalent group,

L_2 means —O— or —NR_7—,

m is a number greater than 2,

n is a number at greater than 2;

R_7 means hydrogen or alkyl.

5,601,969

PREPARATION OF TABULAR EMULSION GRAINS RICH IN CHLORIDE

Ann L. Verbeeck, Begijnendijk, Belgium, assignor to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Oct. 10, 1991, Ser. No. 774,188

Claims priority, application European Pat. Off., Oct. 19, 1990, 90202792

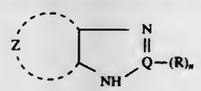
Int. Cl.[6] G03C *1/07;1/035;1/005*

U.S. Cl. 430—569 **12 Claims**

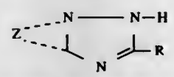
1. Method for the preparation of silver halide tabular emulsion grains, containing at least 75% chloride, wherein at least 50% of the total projected area of all the grains is provided by said tabular grains, and wherein said tabular grains exhibit an average aspect ratio of at least 5:1, an average thickness not greater than 0.5 micron and an average diameter of at least 0.6 micron, comprising the following steps:

preparing a dispersion medium containing a gelatino-peptizer, and a heterocyclic compound according to general formula (Ia) or (Ib) in a concentration ranging from 10^{-4} to 10^{-2} molar, said medium being adjusted to a pH between 5.0 and 9.0 and to a pCl between 1.0 and 2.0 by means of a chloride ions providing salt; formula (Ia) and (Ib) are:

(Ia)



(Ib)



wherein Z represents the atoms necessary to form a fused on aromatic carbocyclic or heterocyclic ring;

R is hydrogen or alkyl, alkenyl, aryl, alkoxy, hydroxy, mercapto, carboxy, amino or halogen; n is 1 or 0, and

Q represents carbon in which case n=1, or Q represents nitrogen, in which latter case n=0.

performing a silver halide precipitation comprising at least one double jet step by introducing in said dispersion medium at least one solution containing chloride ions and at least one solution containing silver ions in such a way that pCl is maintained between 1.0 and 2.0, pH is maintained between 5.0 an 9.0 and the concentration of compound (Ia) or (Ib) is maintained between 10^{-4} molar and 10^{-2} molar;

removing excess of soluble salts by a wash technique performed at a pH value comprised between 4.0 and 9.0.

5,601,970

(III) PHOTOGRAPHIC ELEMENTS EXHIBITING IMPROVED STABILITY

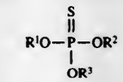
Roger Lok, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 3, 1995, Ser. No. 367,961

Int. Cl.[6] G03C *1/34*

U.S. Cl. 430—610 **12 Claims**

1. A photographic element comprising a support having thereon a silver halide emulsion layer which is greater than about 50 mole % silver chloride, wherein the emulsion layer contains a thiophosphate ester of the structure:



wherein R^1, R^2 and R^3 are independently selected from the group consisting of an aliphatic, carbocyclic or heterocyclic group, and wherein any two of R^1, R^2 and R^3 may be bonded together to form a 5 or 6-membered ring.

5,601,971

HARDENING OF HYDROPHILIC COLLOIDS WITH IMIDAZOLIUM AND TRIAZINE COMBINATIONS

Ludovic Fodor; Richard R. M. Jones, both of Hendersonville, N.C.; Reinhold Rüger, Rödermark, Germany; Timothy D. Weatherill, Hendersonville, and Rolf T. Weberg, Brevard, both of N.C., assignors to Sterling Diagnostic Imaging, Inc., Glasgow, Del.

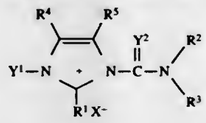
Continuation-in-part of Ser. No. 208,778, Mar. 11, 1994, abandoned, and Ser. No. 36,380, Mar. 24, 1993, abandoned, which is a continuation of Ser. No. 817,629, Jan. 7, 1992. This application Mar. 8, 1995, Ser. No. 401,057

Claims priority, application Germany, Jun. 18, 1991, 41 19 982.0

Int. Cl.[6] G03C *1/30;* **B05D** *3/04*

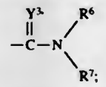
U.S. Cl. 430—621 **28 Claims**

1. A photographic element comprising a silver halide containing photosensitive layer wherein a first hydrophilic colloid layer is hardened with 0.01 to 1.0 millimoles per gram of hydrophilic colloid of at least one imidazolium compound of formula:



wherein:

Y^1 is an alkyl of 1 to 24 carbons; aryl of 6 to 24 carbons; aralkyl of 7 to 25 carbons; a 5- or 6-membered ring containing atoms chosen from the group consisting of C, N, O, and S; —$L^1CR^8CH_2$ or a polymer thereof; —$C(Y^4)E$; or



E is an alkyl of 1 to 24 carbons; aryl of 6 to 24 carbons; aralkyl of 7 to 25 carbons; —OR^9; —CN; or a 5- or 6-membered ring containing atoms chosen from the group consisting of C, N, O, and S;

L^1 is a linking group;

R^1 is hydrogen; alkyl of 1 to 24 carbons; aryl of 6 to 24 carbons; aralkyl of 7 to 25 carbons; —OR^{10}; halogen; nitro; carboxyl; mercapto; alkylamino of 1 to 24 carbons; or a 5- or

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6-membered ring containing atoms chosen from the group consisting of C, N, O, and S;

R^2 and R^3 independently represent hydrogen; alkyl of 1 to 24 carbons; aryl of 6 to 24 carbons; or aralkyl of 7 to 25 carbons; or R^2 and R^3 independently represent, or are taken together to represent, a 5- or 6-membered ring containing atoms chosen from the group consisting of C, N, O, and S;

R^4 and R^5 independently represent hydrogen; alkyl of 1 to 24 carbons; aryl of 6 to 24 carbons; aralkyl of 7 to 25 carbons; nitro; carboxyl; mercapto; $—OR^{11}$; halogen; alkylamino of 1 to 24 carbons; or a 5- or 6-membered ring containing atoms chosen from the group consisting of C, N, O, and S; or R^4 and R^5 taken together represent a 5- or 6-membered ring containing atoms chosen from the group consisting of C, N, O, and S;

X^- is a counterion;

Y^2, Y^3 and Y^4 independently represent O or S;

R^6 and R^7 independently represent hydrogen; alkyl of 1 to 24 carbons; aryl of 6 to 24 carbons; aralkyl of 7 to 25 carbons; or a 5- or 6-membered ring containing atoms chosen from the group consisting of C, N, O, and S; or R^6 and R^7 taken together represent the atoms chosen from C, N, O and S necessary to form a 5- or 6-member ring;

R^8 represents a hydrogen; alkyl of 1 to 24 carbons; $—C(O)R^{28}$; —CN; or aryl of 6 to 24 carbons;

R^9 represents hydrogen; alkyl of 1 to 24 carbons; or aryl of 6 to 24 carbons;

R^{10} and R^{11} independently represent hydrogen or alkyl of 1 to 5 carbons; and

R^{28} represents hydrogen; alkyl of 1 to 24 carbons; alkoxy of 1 to 24 carbons; amine; or alkylamine of 1 to 24 carbons.

5,601,972

LONG TERM STORAGE OF RED CELLS IN UNFROZEN SOLUTION

Harold R. Meryman, Ashton, Md., assignor to Organ, Inc., Chicago, Ill.

Filed Mar. 24, 1995, Ser. No. 409,599

Int. Cl.[6] A01N *1/02*; A61K *35/14;35/18*

U.S. Cl. 435—2 **20 Claims**

1. A method for preparing red cells for storage under refrigerated conditions, comprising:

separating plasma from the red cells in a red cell suspension while retaining residual plasma; and

adding a biologically compatible solution to said red cells, wherein said biologically compatible solution has an effective osmolality of less than 70 mOsm.

5,601,973

SEROREACTIVE REGIONS ON HPV 16 PROTEINS E1 AND E2

Martin Müller, Heidelberg, and Lutz Gissmann, Wiesloch, both of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg, Germany

Continuation of Ser. No. 913,613, Jul. 16, 1992, abandoned. This application May 3, 1994, Ser. No. 237,418

Claims priority, application Germany, Jul. 18, 1991, 41 23 760.9

Int. Cl.[6] A61K *39/12;39/00*; C07K *5/00*; C12N *15/00*

U.S. Cl. 435—5 **15 Claims**

1. A peptide selected from the group consisting of the following amino-acid sequences:

I. DKILTHYENDS (SEQ ID NO:8)

II. DKILTHYENDSTDLRDHI (SEQ ID NO:9)

III. DLRDHIDYWKH (SEQ ID NO:10)

IV. AIYYKAREMGFKHINHQWPTLA (SEQ ID NO:11)

V. AIYYKAREMGFKHINHQWPTLAVSKNKAL (SEQ ID NO:12)

VI. YYKAREMGFKHINHQVVPTLAVSKN (SEQ ID NO:13)

VII. INHQVVPTLAVSKNKALQAI (SEQ ID NO:14)

VIII. INHQVVPTLAVSKNKAL (SEQ ID NO:15)

IX. TLAVSKNKALQAIELQLTLETIYNSQYSNEKWTLQDV (SEQ ID NO:16)

X. QLTLETIYNSQYSNEKWTLQDVSLE (SEQ ID NO:17)

XI. TLETIYNSQYSNEK (SEQ ID NO:18)

XII. TSVFSSNEVSSPEII (SEQ ID NO:19)

XIII. VFSSNEVSSPEIIRQHLANHPAATHTKAVALGTEET (SEQ ID NO:20).

5,601,974

METHOD OF DETECTING VIRAL INFECTION IN VACCINATED ANIMALS

Leonard E. Post, Ann Arbor, and Darrell R. Thomsen, Kalamazoo, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 133,933, Oct. 12, 1993, abandoned, which is a continuation of Ser. No. 848,640, Mar. 9, 1992, Pat. No. 5,275,934, which is a division of Ser. No. 308,719, Feb. 9, 1989, Pat. No. 5,128,128, which is a division of Ser. No. 49,865, Mar. 27, 1987, Pat. No. 4,810,634, which is a continuation-in-part of Ser. No. 760,130, Jul. 29, 1985, abandoned. This application Dec. 19, 1994, Ser. No. 358,668

Int. Cl.[6] C12Q *1/70*; A61K *48/00*; G01N *33/53*

U.S. Cl. 435—5 **20 Claims**

1. A method for determining whether a vaccinated animal has been infected with a virulent wild-type virus comprising detecting the presence or absence of antibodies specific for a detectable antigen of said virulent wild-type virus in serum from said vaccinated animal, wherein said vaccinated animal has been vaccinated against said virulent wild-type virus with a vaccine that comprises a properly incapacitated virus lacking said detectable antigen of said wild-type virus which allows the serological distinction between vaccinated and infected animals.

5,601,975

METHOD FOR SCREENING POTENTIAL THERAPEUTICALLY EFFECTIVE ANTIVIRAL AGENTS

Mark L. Bonyhadi, Belmont; Joseph M. McCune, San Francisco, and Hideto Kaneshima, Palo Alto, all of Calif., assignors to SyStemix, Inc., Palo Alto, Calif.

Division of Ser. No. 109,305, Aug. 19, 1993. This application Jun. 6, 1995, Ser. No. 466,420

Int. Cl.[6] C12Q *1/70*

U.S. Cl. 435—5 **10 Claims**

1. A method of determining characteristics of viral infection and pathology comprising:

a. providing a culture of intact unstimulated human thymic lobules;

b. incubating the culture under conditions suitable to maintain cell viability;

c. exposing the lobules culture to a virus capable of infecting the lobules;

d. observing the cells from the lobules for viral activity; and

e. comparing the observations of step d with a hypothetical mechanism.

5,601,976

METHOD FOR DETECTING TARGET NUCLEIC ACID IN SPECIMEN

Akio Yamane; Takanori Oka; Satoru Nakagami, and Kenichi Miyoshi, all of Koda-Cho, Japan, assignors to Wakunaga Seiyaku Kabushiki Kaisha, Japan

Continuation of Ser. No. 415,358, Aug. 24, 1989, abandoned. This application Sep. 16, 1992, Ser. No. 945,573

Claims priority, application Japan, Dec. 25, 1987, 62-328785; Jun. 16, 1988, 63-149157; Sep. 16, 1988, 63-231737

Int. Cl.[6] C12Q *1/68*; C07H *21/04*; C12P *19/34*; C12N *15/00*

U.S. Cl. 435—6 **19 Claims**

1. A method of detecting the presence or absence of an objective nucleic acid in a sample, wherein the objective nucleic acid is a single-stranded or double-stranded DNA, which method comprises:

A) where the objective nucleic acid is a double-stranded DNA, subjecting the sample to denaturing conditions which disintegrates the double-stranded DNA into two single strands,

B) amplifying a DNA sequence of the objective nucleic acid in the sample by subjecting the sample to a DNA polymerase chain extension reaction, the objective nucleic acid being either the single-stranded DNA when the objective nucleic acid is single-stranded or being one of the two single strands obtained in step A) when the objective nucleic acid is double-stranded, said amplifying step comprising

a step (i) of forming a double stranded product characterized in using said DNA sequence as a template, four unit monodeoxyribonucleotidetriphosphates having no label for detection and a pair of single-stranded primer nucleic acids that are shorter than the template but are long enough to specifically hybridize with the template, solely a first member of the primer pair having a label for detection and solely a second member of the primer pair having an added site capable of specifically binding with an added site on a solid carrier or support, the double-stranded product being composed of the template and a synthesized nucleic acid complementary to the template formed from the first or second members of the primer pair,

a step (ii) of disintegrating the double-stranded product of the step (i) into two single strands and

a step (iii) of repeating the steps (i) and (ii) wherein at least one of the single strands obtained in step (ii) is used as the template and the step (ii) is omitted in a final cycle, thereby obtaining an amplified product of said DNA sequence, which product has a double stranded structure and contains both the added site capable of specifically binding with the added site on the solid carrier or support as well as the label for detection;

C) contacting the sample obtained in step B) with the solid carrier or support under conditions wherein the added site of the amplified product specifically binds with the added site on the solid carrier or support, to immobilize the amplified product onto the solid carrier or support;

D) separating the solid carrier or support having the amplified product immobilized thereon from the rest of the sample; and

E) subjecting the solid carrier or support having the amplified product immobilized thereon to a process for detection of the label for detection contained in the amplified product, to thereby determine whether there is the label for detection on the solid carrier or support and to thereby detect the presence or absence of the objective nucleic acid in the sample.

5,601,977

ENZYME-CATALYZED CHEMILUMINESCENT DETECTION OF PROTEINS AND NUCLEIC ACIDS USING HYDROXYARYL CYCLIC DIACYLHYDRAZIDE COMPOUNDS

Hashem Akhavan-Tafti, Sterling Heights, and Richard S. Handley, Canton, both of Mich., assignors to Lumigen, Inc., Southfield, Mich.

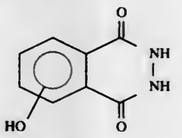
Continuation-in-part of Ser. No. 965,231, Oct. 23, 1992. This application Dec. 23, 1992, Ser. No. 996,110

Int. Cl.[6] C12Q *1/68*

U.S. Cl. 435—6 **39 Claims**

1. In a method for detecting a member of a specific binding pair labeled with a peroxidase enzyme in an assay procedure by a chemiluminescent reaction, the improvement which comprises the chemiluminescent reaction caused by:

(a) reacting with the binding pair on a surface a hydroxyaryl cyclic diacylhydrazide of the formula:



a phenolic enhancer compound in an amount which enhances light production from the diacylhydrazide in the presence of the peroxidase and decreases background chemiluminescence and a peroxide so that light is produced for detecting the member of the specific binding pair.

5,601,978

OLIGONUCLEOTIDES AND METHODS FOR THE DETECTION OF CHLAMYDIA TRACHOMATIS

John D. Burczak, Highland Park; John J. Carrino, Gurnee; Paul A. Klonowski, Wonder Lake; Matthew T. Manlove, Vernon Hills; Ronald L. Marshall, Zion; Edward K. Pabich, Chicago, all of Ill., and John A. Salituro, Kenosha, Wis., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Sep. 3, 1993, Ser. No. 116,389

Int. Cl.[6] C12Q *1/68*; C12P *19/34*; C07H *21/04*

U.S. Cl. 435—6 **21 Claims**

1. A composition for detecting target DNA from *Chlamydia trachomatis*, said composition comprising a set of four oligonucleotide probes, said set consisting of probe set 5 (SEQ ID NOS. 22–25) as defined herein.

3. A method for detecting the presence of target DNA from *Chlamydia trachomatis* in a sample, said method utilizing a ligase chain reaction comprising the steps of:

a) mixing together a sample suspected of containing said target DNA, and at least one probe set according to claim 1;

b) providing one or more, but less than all four deoxynucleotide triphosphates, a polymerase, and a ligase;

c) denaturing said mixture of sample and probe set to separate double stranded DNA;

d) hybridizing said probe set to said denatured DNA thereby creating hybridized probes having a gap between each probe of each probe pair;

e) correcting said hybridized probes in a template-dependent manner thereby creating adjacent and ligatable probes;

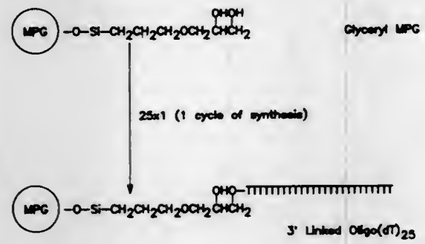
f) ligating said adjacent probes to form reorganized probes;

g) repeating steps b) through f) at least once; and

h) determining the extent of formation of reorganized probes as a measure of the presence of target DNA from *Chlamydia trachomatis*.

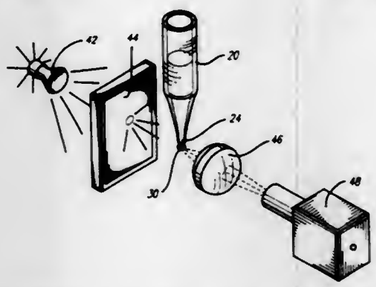
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5,601,979
PREPASRATION AND USE OF MAGNETIC CONTROLLED PORE GLASS HAVING OLIGONUCLEOTIDES SYNTHESIZED THEREON
Yuan N. Wong, Boonton, N.J., assignor to CPG, Inc., Lincoln Park, N.J.
Continuation-in-part of Ser. No. 794,910, Nov. 20, 1991. This application Sep. 16, 1994, Ser. No. 307,307
Int. Cl.[6] C12Q *1/68;1/70;* **G01N** *33/00;* **C12P** *19/34*
U.S. Cl. 435—6 **15 Claims**



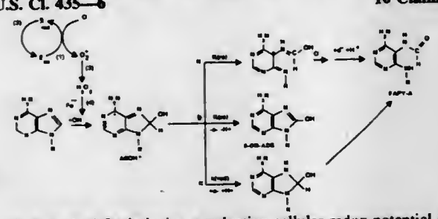
6. A method which comprises:
(i) providing an unprotected first oligonucleotide bound 3' to particulate magnetic porous glass;
(ii) providing a sample containing at least one oligonucleotide which may or may not have a sequence complementary to said first oligonucleotide;
(iii) combining said first oligonucleotide with said sample under conditions appropriate to cause hybridization of said first oligonucleotide with an oligonucleotide present in said sample having a sequence complementary to said first oligonucleotide hybridized with said sequences of said oligonucleotide present in said sample;
(iv) determining whether hybridization occurs between said first oligonucleotide and an oligonucleotide present in said sample.

5,601,980
MANUFACTURING METHOD AND APPARATUS FOR BIOLOGICAL PROBE ARRAYS USING VISION-ASSISTED MICROPIPETTING
Gary B. Gordon, Saratoga; Scott A. Conradson, Los Altos Hills, and Kay Lichtenwalter, San Jose, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Sep. 23, 1994, Ser. No. 311,374
Int. Cl.[6] G01N *35/10*
U.S. Cl. 435—6 **20 Claims**



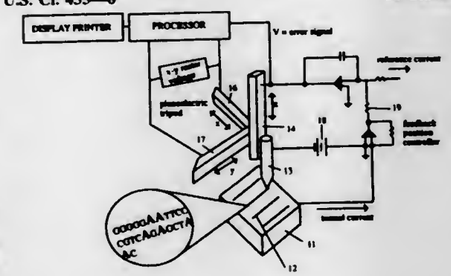
1. An apparatus for spotting a biological probe onto an array, comprising:
a micropipette containing a quantity of biological probe in solution, and means for manipulating said micropipette to a selected location within an array;
a pressure source in communication with said micropipette, a droplet of said biological probe being provided at an open tip of said micropipette by application of pressure from said pressure source;
means for estimating a volume measurement of said droplet; and
means for discontinuing application of said pressure upon reaching a predetermined volume for said droplet.

5,601,981
METHODS FOR DETERMINING AND AGENTS FOR MODULATING CELLULAR REDOX POTENTIAL AND GENOTOXIC STATES
Donald C. Malins, Seattle, Wash., assignor to Pacific Northwest Research Foundation, Seattle, Wash.
Continuation of Ser. No. 55,818, Apr. 30, 1993, abandoned. This application Oct. 6, 1994, Ser. No. 319,251
Int. Cl.[6] C12Q *1/68;* **A61K** *48/00*
U.S. Cl. 435—6 **16 Claims**



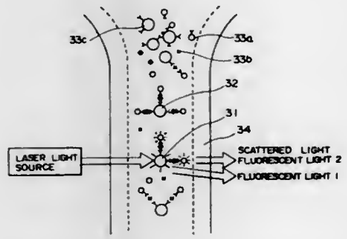
1. A method for inducing a reductive cellular redox potential in a targeted cell group having DNA and monitoring the same comprising the steps of:
a) introducing a gene expression activator into said targeted cells wherein the gene is induced to increase its expression and further wherein said gene encodes a free radical detoxifying enzyme;
b) obtaining a test specimen from the test subject known to have the targeted cells;
c) assaying the DNA associated with said test specimen for concentration levels of at least one ring-opened derivative and for at least one hydroxyl adduct; and
d) comparing the concentration level of the at least one ring-opened derivative to the concentration level of the at least one hydroxyl adduct, wherein a reductive cellular redox potential exists when formation of ring-opened derivatives are favored over hydroxyl adducts.

5,601,982
METHOD AND APPARATUS FOR DETERMINING THE SEQUENCE OF POLYNUCLEOTIDES
Jeannine P. Sargent, 22270 Kendle St., Cupertino, Calif. 95014, and Jeff Marks, 4730 Cielo Vista Way, San Jose, Calif. 95129
Filed Feb. 7, 1995, Ser. No. 384,919
Int. Cl.[6] C12Q *1/68*
U.S. Cl. 435—6 **16 Claims**



1. An apparatus for determining the sequence of a nucleic acid, comprising:
a fabricated substrate comprising at least one alignment path having a nucleic acid binding surface;
a scanning microscope for scanning along said alignment path to provide an output signal representative of the position of each labeled base in said nucleic acid sequence;
a data processor for processing the signal to provide an output signal representative of the sequence of said nucleic acid.

5,601,983
METHOD FOR SPECIMEN MEASUREMENT
Hidehito Takayama, Chigasaki; Matsuomi Nishimura, Ohmiya; Kazumi Tanaka, Yokohama; Toshikazu Ohnishi, Machida, and Takeshi Miyazaki, Ebina, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 948,313, Sep. 22, 1992, abandoned. This application Feb. 28, 1995, Ser. No. 395,631
Claims priority, application Japan, Oct. 1, 1991, 3-253625
Int. Cl.[6] C12Q *1/68*
U.S. Cl. 435—6 **3 Claims**



1. A method for measuring a specimen in the presence of noise components comprising the steps of:
(a) preparing a first reagent formed by binding a first substance which binds to a specified component in the specimen, with carrier particles, and a second reagent formed by labelling a second substance which binds to said specified component with a first label said first label being a fluorescent substance, said carrier particles being labelled with a second label different from said first label;
(b) reacting the specimen with said first reagent having said second label and said second reagent having said first label to form complexes of a reaction product in a sample liquid which sample liquid optionally includes noise components;
(c) generating a laminar flow of said sample liquid to align components of said sample liquid present from said steps (a) and (b) along a sample liquid flow path;
(d) irradiating the aligned components of the sample liquid in the flow paths at an excitation wavelength to generate a forward scattered light signal from the complex and the noise components, a second signal from the second label of the carrier particles selected from the group consisting of a first fluorescent signal and a first harmonic wavelength forward scattered light signal and a second fluorescent signal from the first label which signal is distinguishable from said first fluorescent signal, wherein said second signal is a minimum threshold value for triggering detection of said second fluorescent signal; and
(e) individually measuring the components of said sample liquid to measure said specified component, said measurement comprising the steps of detecting said second signal, and said second fluorescent signal in response to the second signal trigger; and measuring a fluorescent intensity of the detected second fluorescent signal from the first label to measure the presence of the specified component in the specimen.

5,601,984
METHOD FOR DETECTING, THE PRESENSE OR AMOUNT OF A TAXONOMIC GROUP OF ORGANISMS USING SPECIFIC R-RNA SUBSEQUENCES AS PROBES
David E. Kohne, La Jolla, Calif., assignor to Gen-Probe Incorporated, San Diego, Calif.
Division of Ser. No. 199,486, Feb. 22, 1994, which is a continuation of Ser. No. 179,922, Jan. 11, 1994, abandoned, which is a continuation of Ser. No. 857,081, Mar. 19, 1992, Pat. No. 5,288,611, which is a continuation of Ser. No. 584,432, Sep. 12, 1990, abandoned, which is a continuation of Ser. No. 464,717, Jan. 12, 1990, abandoned, which is a continuation of Ser. No. 353,208, May 17, 1989, abandoned, which is a continuation of Ser. No. 655,365, Sep. 4, 1984, abandoned, which is a continuation-in-part of Ser. No. 456,729, Jan. 10, 1983, abandoned. This application Jun. 2, 1995, Ser. No. 456,653
Int. Cl.[6] C12Q *1/68*
U.S. Cl. 435—6 **9 Claims**

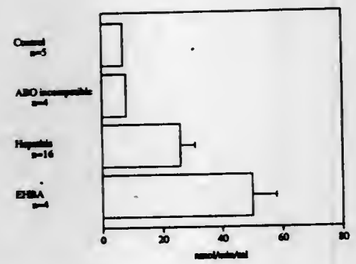
1. A method for specifically detecting the presence or amount of a taxonomic group of organisms in a sample, said taxonomic group selected from the group consisting of species, genus, family, order, class, phylum, and kingdom, comprising the steps of:
a) contacting a sample which may contain ribosomal sequence containing nucleic acids from any of the organisms of the taxonomic group to be detected with a probe which hybridizes with a subsequence of a rRNA subunit or a rRNA subunit gene that is specific to the taxonomic group of organisms under hybridization conditions, wherein the probe does not hybridize with the entire sequence of the rRNA subunit or the rRNA subunit gene,
b) incubating the probe and the sample under hybridization conditions, such that the probe hybridizes with the taxon-specific rRNA subsequence but not with non-taxon-specific sequences which will prevent specific detection of said taxonomic group of organisms, and
c) assaying for hybridization of the probe with the taxon-specific rRNA subsequence in order to detect the presence or amount of the taxonomic group of organisms in the sample.

5,601,985
METHOD OF DETECTING ABNORMALLY PHOSPHORYLATED TAU(τ)
John Q. Trojanowski, and Virginia M-Y. Lee, both of Philadelphia, Pa., assignors to Trustees of the Univ. of Pennsylvania, Philadelphia, Pa.
Division of Ser. No. 145,827, Oct. 29, 1993, which is a continuation-in-part of Ser. No. 745,384, Aug. 14, 1991, abandoned. This application Jun. 27, 1995, Ser. No. 495,308
Int. Cl.[6] G01N *33/53*
U.S. Cl. 435—7.1 **4 Claims**

1. A method of detecting abnormally phosphorylated τ in a test sample, said method comprising:
(a) contacting a test sample with an antibody which specifically reacts with τ which has an abnormally phosphorylated serine in the sequence LysSerProVal (SEQ ID NO:3); and,
(b) detecting the presence of said antibody bound to said τ.

5,601,986
ASSAYS AND DEVICES FOR THE DETECTION OF EXTRAHEPATIC BILIARY ATRESIA
Laszlo Takacs, Newbury Park, Calif., assignor to Amgen Inc., Thousand Oaks, Calif.
Filed Jul. 14, 1994, Ser. No. 275,887
Int. Cl.[6] G01N *33/573*
U.S. Cl. 435—7.4 **18 Claims**

1. A method of screening for extrahepatic biliary atresia, the method comprising the steps of:



a) contacting a test sample to an antibody specific for dipeptidyl peptidase IV thereby producing antibody-bound dipeptidyl peptidase IV;

b) contacting said antibody-bound dipeptidyl peptidase IV with a protease substrate reactive with dipeptidyl peptidase IV, thereby initiating a reaction; and

c) detecting the reaction of said substrate or the formation of a detectable reaction product, wherein the reaction or presence of the reaction product results from the presence of dipeptidyl peptidase IV in the test sample and is correlated with extrahepatic biliary atresia.

5,601,987

IMMUNODIAGNOSIS OF PARASITOSES DUE TO A PROTOZOON IN MOLLUSKS

Henri Grizel, Arvert; Eric Mialhe, La Tremblade; Francis Paolucci, and Hervé Rogier, both of Montpellier, all of France, assignors to Sanofi, and Institut Francais de Recherche pour L'Exploitation de la mer - Ifermer, both of Paris, France

Filed Apr. 25, 1988, Ser. No. 185,439

Claims priority, application France, Apr. 24, 1987, 87 05856

Int. Cl.[6] G01N *33/569;33/577*

U.S. Cl. 435—7.22 **9 Claims**

1. A process for the immunological detection of the intracellular forms of a protozoan belonging to the specie *Bonamia ostrese* parasitizing the blood of a mollusk, which comprises taking a sample of the hemolymph of a mollusk infested by said protozoan and detecting the presence of the protozoan by contacting said sample with monoclonal antibodies which specifically recognize said protozoan and detecting any immunological complexes thereby formed wherein the preparation of the monoclonal antibodies comprises the steps of:

1) extracting said protozoan from the hemolymph of an infested mollusk, which extraction comprises the steps of:

removing any organ having a fibrous nature;

crushing the mollusk devoid of said organ in the presence of a homogenization liquid, to produce an homogenized crushed mixture having particulate elements therein;

clarifying the homogenized crushed mixture by filtration to produce a filtrate containing said particulate elements and concentrating the particulate elements by centrifugation;

removing the particulate elements other than the protozoan sought by several differential centrifugations, thereby recovering said protozoan;

preparing a purified suspension of said recovered protozoan; and

2) using said purified suspension to prepare monoclonal antibodies which specifically recognize said protozoan.

5,601,988

IMMUNOCAPTURE ASSAY FOR CANCER PROCOAGULANT ANTIBODY COMPLEX IN BIOLOGICAL SAMPLES

Stuart G. Gordon, Denver, Colo., assignor to ImmunOnc, Inc., Lenexa, Kans.

Continuation-in-part of Ser. No. 48,421, Apr. 14, 1993, abandoned, which is a continuation-in-part of Ser. No. 135,877, Oct. 13, 1993, abandoned, which is a continuation-in-part of Ser. No. 894,094, Jun. 5, 1992, abandoned, which is a continuation-in-part of Ser. No. 758,524, Sep. 6, 1991, abandoned, which is a continuation-in-part of Ser. No. 247,843, Sep. 22, 1988, abandoned, which is a continuation-in-part of Ser. No. 313,285, Feb. 17, 1989, Pat. No. 4,943,524, which is a continuation of Ser. No. 69,454, Jul. 2, 1987, abandoned. This application May 20, 1994, Ser. No. 246,840

Int. Cl.[6] G01N *33/574;33/53;33/537;33/564*

U.S. Cl. 435—7.23 **18 Claims**

1. A method for measuring cancer procoagulant (CP) that is complexed with an antibody (a CP antibody complex) in a biological sample of an animal species comprising the steps of:

(a) adsorbing an anti-CP antibody onto a solid support;

(b) contacting an amount of said biological sample to said anti-CP antibody adsorbed onto said support so that said CP antibody complex is quantitatively captured by said anti-CP antibody adsorbed onto said solid support;

(c) rinsing away the non-CP material from said solid support;

(d) contacting said captured CP antibody complex to an anti-immunoglobulin antibody conjugated to a label, wherein said immunoglobulin is of said species; and

(e) determining the amount of said label bound to said solid support.

5,601,989

IMMUNE REACTIVITY TO EXPRESSED ACTIVATED ONCOGENES FOR DIAGNOSIS AND TREATMENT OF MALIGNANCY

Martin A. Cheever, Mercer Island, and David J. Peace, Seattle, both of Wash., assignors to Washington Research Foundation, Seattle, Wash.

Division of Ser. No. 820,409, Jan. 13, 1992, Pat. No. 5,320,947, which is a continuation-in-part of Ser. No. 470,645, Jan. 26, 1990, abandoned. This application May 31, 1994, Ser. No. 251,590

Int. Cl.[6] G01N *33/53;33/574*

U.S. Cl. 435—7.23 **20 Claims**

1. A method of screening for the presence of a malignancy in a warm-blooded animal, wherein an activated oncogene or cancer-related gene is associated with the malignancy, comprising the steps of:

(a) contacting a body fluid, suspected of containing antibodies specific for a protein expression product having an altered primary sequence of an activated oncogene or cancer-related gene associated with the malignancy, with at least one protein expression product having an altered primary sequence of an activated oncogene or cancer-related gene associated with the malignancy;

(b) incubating the body fluid under conditions and for a time sufficient to allow immunocomplexes to form; and

(c) detecting the presence or absence of one or more immunocomplexes formed between the protein expression product and antibodies in the body fluid specific for the protein expression product, thereby determining the presence or absence of the malignancy.

5,601,990

METHODS OF DIAGNOSING COLORECTAL TUMORS AND METASTASIS THEREOF

Scott A. Waldman, Ardmore, Pa., assignor to Thomas Jefferson University, Philadelphia, Pa.

Filed Sep. 13, 1994, Ser. No. 305,056

Int. Cl.[6] G01N *33/574;33/53*

U.S. Cl. 435—7.23 **8 Claims**

1. An in vitro method of determining whether or not an individual has metastasized colorectal cancer cells comprising the steps of examining a sample of extraintestinal tissue and/or body fluids from an individual to determine whether ST receptor protein is being expressed by cells in said sample, wherein expression of ST receptor protein is indicative of the presence of metastasized colorectal cancer cells in said sample.

5,601,991

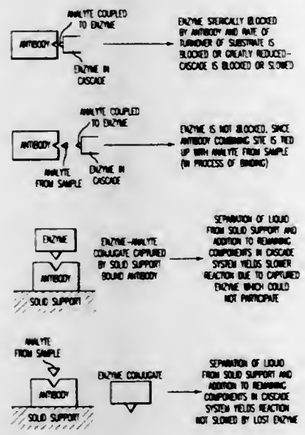
DRY CHEMISTRY CASCADE IMMUNOASSAY AND AFFINITY ASSAY

Bruce J. Oberhardt, Raleigh, N.C., assignor to Cardiovascular Diagnostics, Inc., Durham, N.C.

Continuation of Ser. No. 18,415, Feb. 17, 1993, abandoned. This application Feb. 13, 1995, Ser. No. 387,373

Int. Cl.[6] G01N *33/53*

U.S. Cl. 435—7.91 **86 Claims**



1. A method for performing an affinity assay comprising:

a) contacting a sample to be assayed for the presence of an analyte with a dry reagent comprising:

1) an analyte-conjugated initiator comprising said analyte conjugated to a reaction cascade initiator, wherein said reaction cascade initiator is an initiator for a reaction cascade selected from the group consisting of a lytic cascade and a coagulation cascade;

2) a binding pair partner which specifically binds to said analyte; and

3) magnetic particles,

to form an assay mixture comprising (i) said binding pair partner bound to said analyte, (ii) said binding pair partner bound to said analyte-conjugated initiator, and (iii) unbound analyte-conjugated initiator, wherein either a steric or exclusion mechanism is selected to couple a binding pair interaction in said assay mixture with said reaction cascade, wherein:

in said steric mechanism, when the binding pair partner binds with the analyte-conjugated initiator, the reaction cascade initiator is sterically blocked from initiating the reaction cascade, providing a rate for the reaction cascade which is directly proportional to the amount of unbound analyte-conjugated initiator, and thus directly proportional to amount of said analyte in the sample, and

in said exclusion mechanism, the binding pair partner that specifically binds with said analyte is bound to a solid support and any analyte present in said sample will compete with analyte-conjugated initiator for reaction with said binding pair partner, wherein initiation of the reaction cascade by said unbound analyte-conjugated initiator provides a rate of the reaction cascade which is directly proportional to the amount of said analyte in the sample;

b) separating the solid support including (i) said binding pair partner bound to said analyte and (ii) said binding pair partner bound to said analyte-conjugated initiator from (iii) said unbound analyte-conjugated initiator, when said exclusion mechanism is employed;

c) incubating either (i) said assay mixture when said steric mechanism is employed or (ii) said unbound analyte-conjugated initiator when said exclusion mechanism is employed, with one or more cascade components, to form an incubation mixture, wherein said one or more cascade components is present in an amount sufficient to make initial reaction of said initiator a rate-limiting step in said reaction cascade, wherein said one or more cascade components are sufficient to complete said reaction cascade upon initiation by said initiator, and wherein when said exclusion mechanism is employed, said one or more cascade components are added to said assay mixture after said contacting step, or when said steric mechanism is employed, said one or more cascade components are either present in said dry reagent prior to said contacting step or added to said assay mixture after said contacting step;

d) applying a magnetic field to said assay mixture, wherein said magnetic field is an alternating magnetic field selected from the group consisting of an oscillating magnetic field, a rotating magnetic field and a moving static magnetic field;

e) activating said reaction cascade initiator to initiate said reaction cascade, wherein when said reaction cascade is a coagulation cascade, the coagulation cascade proceeds to formation of a fibrin clot and wherein when said reaction cascade is a lytic cascade, the lytic cascade proceeds by lysis of a fibrin clot;

f) monitoring a response of said magnetic particles to the magnetic field by an optical means to provide a time varying optical signal; and

g) determining a concentration of said analyte in said sample by analysis of said time varying optical signal.

5,601,992

PEPTIDE LIBRARY FORMATS AND METHODS RELATING THERETO

Michael R. Lerner; Channa K. Jayawickreme, both of Hamden, Conn., and Ethan A. Lerner, Brookline, Mass., assignors to Bunsen Rush Laboratories, Inc., Newton, Mass.

Continuation of Ser. No. 68,904, May 28, 1933, abandoned, which is a continuation-in-part of Ser. No. 917,502, Jul. 21, 1992, abandoned. This application Sep. 9, 1994, Ser. No. 303,585

Int. Cl.[6] G01N *33/53*

U.S. Cl. 435—7.2 **5 Claims**

1. A method for detecting the interaction between a peptide and a target, comprising:

(I) placing the target in a container;

(ii) overlaying the target with a substrate that is free of the target, the substrate constructed and arranged to permit only substantially localized diffusion of the peptides therein;

(iii) applying a plurality of beads to the surface of the substrate in a manner such that the beads are separated from the target by the substrate and such that the beads are substantially spaced-apart from one another and are immobilized on the substrate, each bead having associated therewith multiple

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copies of only a single peptide, wherein at least a substantial portion of the multiple copies is associated with each bead via non-covalent bonds;

(iv) allowing the substantial portion of the multiple copies to diffuse through the substrate and interact with the target, thereby resulting in a localized signal at the target;

(v) detecting the localized signal; and

(vi) associating the localized signal with one or a limited number of the plurality of beads applied to the substrate.

5,601,993

ANTI-BILE ACID ANTIBODIES AND METHOD FOR ASSAYING BILE ACIDS IN FECES BY USING THE SAME

Motonari Kano, Tokyo; Masaru Matsumoto; Hiroshi Wada, both of Saitama-ken, and Koki Motegi, Tokyo, all of Japan, assignors to Yaugengaisha B.S.R., and Yamato Jihan Kabushikigaisha, both of Tokyo, Japan

Filed Jun. 10, 1994, Ser. No. 258,483

Int. Cl.[6] G01N *33/543*; C07K *16/18*

U.S. Cl. 435—7.93 **1 Claim**

1. A method of detecting colon cancer and latent colon cancer comprising the steps of:

measuring the concentration of primary bile acid in feces by an ELISA method employing an anti-bile acid antibody for the primary bile acid, said antibody prepared in a rabbit in response to cholic acid-24-BSA used as the immunogen;

measuring the concentration of secondary bile acid in the feces by an ELISA method employing an anti-bile acid antibody for the secondary bile acid, said antibody prepared in a rabbit in response to deoxycholic acid-24-BSA used as the immunogen;

calculating the concentration ratio of the secondary bile acid to the primary bile acid from the measured concentrations; and

employing the concentration ratio as a diagnostic indicator of said colon cancer.

5,601,994

IMMUNOASSAY WITH NOVEL LABELED DRUG HAPTEN ANALOGUES

Marsha D. B. Oesick, Rochester; Ignazio S. Ponticello, Pittsford; Susan J. Danielson; Barbara A. Brummond, both of Rochester, and David A. Hilborn, Henrietta, all of N.Y., assignors to Johnson & Johnson Clinical Diagnostics, Inc., Rochester, N.Y.

Continuation of Ser. No. 851,436, Mar. 16, 1992, abandoned, which is a continuation of Ser. No. 712,328, Jun. 7, 1991, abandoned. This application Apr. 28, 1994, Ser. No. 235,114

Int. Cl.[6] G01N *33/535*

U.S. Cl. 435—7.93 **7 Claims**

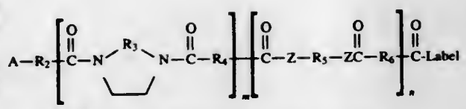
1. An immunoassay method for a hydantoin or a barbiturate drug comprising the steps of:

A. contacting a liquid sample containing the drug, with a labeled analog of the drug in the presence of immobilized antibodies for the drug under conditions that promote the formation of antibody-drug immunocomplexes;

separating bound labeled drug analog from unbound labeled drug analog;

B. contacting bound labeled drug analog or unbound labeled drug analog with a developer solution; separating bound labeled drug analog from unbound labeled drug analog; and

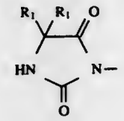
C. determining the quantity of the drug in the liquid by measuring bound labeled or unbound labeled drug analog; wherein the labeled drug analog conforms to the structure:



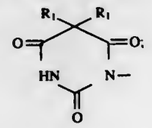
(I)

wherein

A represents a hydantoin nucleus of the structure



or a barbiturate nucleus of the structure



wherein

R_1 each independently represents hydrogen, alkyl of 1 to 10 carbon atoms, or phenyl;

R_2 represents C_1 to C_{10} alkylene or such alkylene groups interrupted with at least one or more ester groups, amide groups —O—, —S—or —NR—, wherein R represents hydrogen or C_1 to C_6 alkyl;

R_4, R_5 and R_6, each independently, represent C_1 to C_{10} alkylene or such alkylene groups interrupted with ester groups, amide groups, —O—, —S— or —NR—, wherein R represents hydrogen or C_1 to C_6 alkyl;

R_3 represents C_1 to C_6 alkylene;

Z represents —O—, —S— or —NR—, wherein R represents hydrogen or C_1 to C_6 alkyl;

Label represents an enzyme

m is 0, 1 or 2;

n is 0, 1 or 2;

m +n >0; and

further provided that (i) at least one of the R_1 groups is phenyl; and (ii) the bracketed components of structure I can appear therein in any order and wherein, the linking group is other than a derivative of a saturated or unsaturated monocarboxylic acid having from 2 to 12 carbon atoms.

5,601,995

APPARATUS AND METHOD FOR DETECTING COAGULATION IN BLOOD SAMPLES

Thomas Exner, Gordon, Australia, assignor to Gradipore Limited, North Ryde, Australia

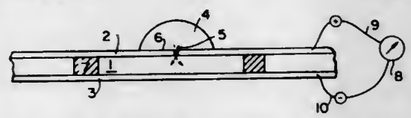
PCT No. PCT/AU93/00459, § 371 Date Mar. 3, 1995, § 102(e) Date Mar. 3, 1995, PCT Pub. No. WO94/06007, PCT Pub. Date Mar. 17, 1994

PCT Filed Sep. 6, 1993, Ser. No. 397,158

Claims priority, application Australia, Sep. 4, 1992, PL4503

Int. Cl.[6] C12Q *1/56*; G01N *31/22*

U.S. Cl. 435—13 **25 Claims**

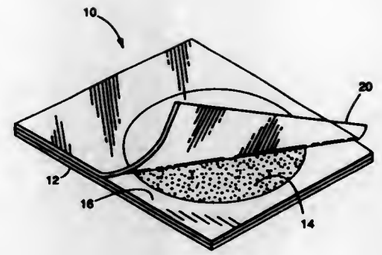


1. A method of determining a propensity of a blood sample to change from a liquid state to a coagulated state, said method comprising the steps of:

a) providing a porous sheet, at least one surface of said porous sheet being in contact with an impervious layer;

b) applying the blood sample to an exposed surface of the porous sheet so that said blood sample spreads through the porous sheet; and

c) after the applying of step b), measuring at least one of a spreading extent and a spreading rate of said blood sample in said porous sheet by one of optical means, measuring an electrical conductivity across the porous sheet, measuring an electrical potential across the porous sheet and measuring an electrical resistance of the porous sheet, to determine the propensity of said blood sample to change from a liquid state to a coagulated state.



5,601,996

Patent Not Issued For This Number

5,601,997

CHEMOTAXIS ASSAY PROCEDURE

Ruy Tchao, Philadelphia College of Pharmacy and Science, 600 S. 43rd St., Philadelphia, Pa. 19104

Filed Feb. 3, 1995, Ser. No. 383,058

Int. Cl.[6] C12Q *1/02*

U.S. Cl. 435—29 **15 Claims**

1. A non-destructive chemotaxis assay procedure comprising the steps of:

a) labeling cells with a fluorescent dye;

b) placing the labeled cells in a first chamber;

c) placing a chemical agent in a second chamber adjacent to said first chamber, said chemical agent being capable of inducing migration of said labeled cells from said first chamber to said second chamber;

d) separating said first chamber from said second chamber with a radiation opaque membrane, said radiation opaque membrane having a plurality of substantially perpendicular transverse pores therein;

e) stimulating the labeled cells on the side of the membrane closest to said second chamber with electromagnetic radiation of a first wavelength whereby said labeled cells will emit electromagnetic radiation of a second wavelength; and

f) measuring the emitted electromagnetic radiation from the side of the radiation opaque membrane closest to the second chamber; wherein said radiation opaque membrane comprises a film which is not substantially transmissive to at least one of said first and second wavelengths of electromagnetic radiation.

5,601,998

CULTURE MEDIUM AND DEVICE FOR DETECTION AND ENUMERATION OF ENTEROBACTERIACEAE

Patrick A. Mach; Peter D. Wickert, and Carl A. Adams, all of P.O. Box 33427, St. Paul, Minn. 55133-3427

Filed Aug. 18, 1994, Ser. No. 292,784

Int. Cl.[6] C12Q *1/04;1/00;1/02;1/10*

U.S. Cl. 435—34 **13 Claims**

1. A bacterial culture medium comprising glucose and a pH indicatorbuffer system to detect and enumerate EntCrobacteriaceae growing in the medium wherein the medium contains selected amounts of glucose, pH indicator and buffer to prevent colored indicator zones from excessively diffusing in the medium.

5,601,999

ANTITUMOR POLYSACCHARIDE-GLYCAN COMPLEXES

Takeshi Matsuzaki; Masato Nagaoka; Koji Nomoto; Shusuke Hashimoto, and Teruo Yokokura, all of Tokyo, Japan, assignors to Kabushiki Kaisha Yakult Honsha, Tokyo, Japan

Filed Sep. 1, 1994, Ser. No. 299,414

Int. Cl.[6] C12P *19/00;19/04*

U.S. Cl. 435—72 **8 Claims**

1. An antitumor agent consisting essentially of a polysaccharide-glycan complex obtained by treating a Gram-positive bacteria selected from the group consisting of Streptococcus, Lactobacillus and Bifidobacterium with an achromopeptidase enzyme produced by a bacterium belonging to the genus Achromobacter.

5,602,000

METHOD FOR ENZYMATIC SYNTHESIS OF OLIGONUCLEOTIDES

Edward D. Hyman, 2100 Sawmill Rd., River Ridge, La. 70123

Continuation-in-part of Ser. No. 161,224, Dec. 2, 1993, Pat. No. 5,516,664, Ser. No. 100,671, Jul. 30, 1993, and Ser. No. 995,791, Dec. 23, 1992, Pat. No. 5,436,143. This application Jun. 23, 1995, Ser. No. 464,778

The portion of the term of this patent subsequent to Dec. 23, 2012, has been disclaimed.

Int. Cl.[6] C12P *19/34*; C12Q *1/68;1/70*; A61K *38/43*

U.S. Cl. 435—91.1 **29 Claims**

1. A method for synthesizing an oligonucleotide of a defined sequence, comprising the steps of:

(a) combining (1) an oligonucleotide primer and (2) a blocked nucleotide or a blocked nucleotide precursor that forms a blocked nucleotide in situ, in a reaction mixture in the presence of a chain extending enzyme effective to couple the blocked nucleotide to the 3'-end of the oligonucleotide primer such that a primer-blocked nucleotide product is formed, wherein the blocked nucleotide comprises a nucleotide to be added to form part of the defined sequence and a blocking group attached to the 3'-end of the nucleotide effective to prevent the addition of more than one blocked nucleotide to the primer;

(b) removing the blocking group from the 3'-end of the primer-blocked nucleotide product to form a primer-nucleotide product, whereby the reaction mixture contains any unreacted starting materials that may remain, primer-nucleotide product and reaction by-products; and

(c) repeating at least one cycle of steps (a) and (b) using the primer-nucleotide product from step (b) as the oligonucleotide primer of step (a) in the subsequent cycle without separation of the primer-nucleotide product from the remainder of the reaction mixture.

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5,602,001

CELL-FREE METHOD FOR SYNTHESIZING A PROTEIN

Fred R. Kramer, Bronx; Eleanor A. Miele, Brooklyn, both of N.Y., and Donald R. Mills, Englewood, N.J., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y.

Continuation of Ser. No. 989,193, Dec. 11, 1992, abandoned, which is a division of Ser. No. 784,620, Oct. 30, 1991, abandoned, which is a continuation of Ser. No. 256,746, Oct. 12, 1988, abandoned, which is a division of Ser. No. 614,350, May 25, 1984, Pat. No. 4,786,600. This application Apr. 29, 1994, Ser. No. 235,199

Int. Cl.[6] C12P 21/02; C12N 15/09

U.S. Cl. 435—68.1 3 Claims

1. A cell-free method of synthesizing a protein which comprises

a) incubating a recombinant single-stranded RNA molecule; said recombinant single-stranded RNA molecule comprising an internal region, a recognition sequence for binding an RNA directed RNA polymerase, a sequence for initiation of product strand synthesis by the RNA directed RNA polymerase, and a heterologous sequence encoding the protein derived from a different RNA molecule inserted at a specific site in said internal region; with the RNA directed RNA polymerase under suitable conditions permitting RNA replication so as to obtain a sample of RNA molecules which includes copies of the recombinant RNA molecule;

b) preparing a mixture containing

i) a suitable amount of RNA molecules from the sample or derivatives of RNA molecules from the sample, the RNA molecules or derivatives comprising a sequence encoding the protein;

ii) a cellular extract capable of synthesizing the protein encoded by the heterologous sequence; and

iii) an effective amount of appropriate amino acids and buffer; and

c) incubating the mixture under suitable conditions permitting enzymatic synthesis of the protein.

5,602,002

PROCESS FOR THE PRODUCTION OF LOW-CHROMIUM PROTEIN HYDROLYZATES

Eberhard Eilers, Ulm, and Andreas Sander, Illertissen, both of Germany, assignors to Gruenau Illertissen GmbH, Illertissen, Germany

PCT No. PCT/EP93/03151, § 371 Date Jul. 19, 1995, § 102(e) Date Jul. 19, 1995, PCT Pub. No. WO94/10856, PCT Pub. Date May 26, 1994

PCT Filed Nov. 10, 1993, Ser. No. 436,348

Claims priority, application Germany, Nov. 19, 1992, 42 38 979.8

Int. Cl.[6] C12P 21/06

U.S. Cl. 435—68.1 18 Claims

1. A process for the production of a low-chromium protein hydrolyzate comprising the steps of: (1) partially hydrolyzing a chromium-containing nonpartially-denatured protein in an aqueous medium in the presence of an alkalino earth metal oxide or hydroxide and in the presence of a proteolytic enzyme to form a partial hydrolyzate; and (2) further hydrolyzing said hydrolyzate in the presence of an alkaline earth metal oxide or hydroxide at a pH value of from about 11 to about 13.

5,602,003

N-ACETYLGLUCOSAMINYLTRANSFERASE V GENE

J. Michael Pierce, Athens; Mohamed G. Shoreibah, Comer, both of Ga.; Beverly S. Adler, Newbury Park, Calif., and Nevis L. Fregien, Miami, Fla., assignors to University of Georgia Research Foundation, Athens, Ga.

Continuation-in-part of Ser. No. 905,795, Jun. 29, 1992, abandoned. This application Feb. 10, 1993, Ser. No. 16,863

Int. Cl.[6] C07H 21/04; C12N 5/10

U.S. Cl. 435—69.1 13 Claims

1. An isolated DNA molecule consisting of a nucleotide sequence encoding a polypeptide having N-acetylglucosaminyl transferase V activity, said nucleotide sequence having at least 70% nucleotide sequence homology with a nucleotide sequence as given in SEQ ID NO:15 from nucleotide 299 to nucleotide 2521, said nucleotide sequence having been derived from rat, wherein said encoded polypeptide has an amino acid sequence as given in SEQ ID NO:16.

5,602,004

THERMOPHILIC FUNGAL EXPRESSION SYSTEM

Ejner B. Jensen, and Karuppan C. Boominathan, both of Davis, Calif., assignors to Novo Nordisk Biotech, Inc., Davis, Calif.

Filed Jul. 20, 1994, Ser. No. 278,473

Int. Cl.[6] C12P 21/02; C12N 1/15

U.S. Cl. 435—69.1 19 Claims

1. A recombinant Thielavia strain comprising a nucleic acid sequence encoding a heterologous protein.

5,602,005

PRIMATE INTRA-ACROSOMAL SPERM ANTIGEN FOR USE IN A CONTRACEPTIVE VACCINE

John C. Herr, Charlottesville, and Richard M. Wright, Palmyra, both of Va., assignors to The University of Virginia Alumni Patents Foundation, Charlottesville, Va.

Continuation of Ser. No. 858,798, Mar. 27, 1992, abandoned, which is a continuation-in-part of Ser. No. 481,491, Feb. 16, 1990, Pat. No. 5,436,157, which is a continuation-in-part of Ser. No. 318,551, Mar. 3, 1989, abandoned. This application Aug. 18, 1994, Ser. No. 292,045

Int. Cl.[6] C07K 14/435;1/22; C12N 15/12; A61K 35/52

U.S. Cl. 435—69.3 22 Claims



1. A substantially purified intra-acrosomal primate sperm antigen that remains associated with said primate sperm after the acrosome reaction, wherein said antigen is bound by monoclonal antibodies produced by cell line ATCC No. HB10039.

5,602,006

HETEROPOLYMERIC PROTEIN PRODUCTION METHODS

Christie A. Kelton, Hopkinton; Noreen P. Nugent, Framingham, and Scott C. Chappel, Boston, all of Mass., assignors to Genzyme Corporation, Cambridge, Mass.

Division of Ser. No. 95,853, Jul. 23, 1993, which is a continuation of Ser. No. 780,556, Oct. 16, 1991, Pat. No. 5,240,832, which is a continuation of Ser. No. 368,628, Jun. 20, 1989, abandoned. This application May 31, 1995, Ser. No. 455,396

Int. Cl.[6] C12P 21/02; C12N 5/10;15/16

U.S. Cl. 435—69.4 8 Claims

1. A method for increasing the production of a protein in a host cell transformed with a vector comprising DNA encoding for said protein, wherein said protein is the α-subunit of a dimeric protein selected from the group consisting of luteinizing hormone, follicle stimulating hormone, chorionic gonadotropin and thyroid stimulating hormone, comprising:

(a) providing a vector comprising a promoter, a structural gene encoding said α-subunit of said dimeric protein and a terminating sequence, said promoter, structural gene and terminating sequence being operatively linked to permit expression of said gene when a host cell is appropriately transformed by said vector, wherein said structural gene comprises a coding region and at least one intron, wherein one intron is immediately 5' to the coding region of the α-subunit, with the proviso that said structural gene is not the entire genomic sequence of the gene encoding said α-subunit;

(b) transforming host cells with said vector; and

(c) culturing said transformed cells under conditions by which the α-subunit protein is produced,

whereby an amount of α-subunit protein is produced which is greater than that which can be produced under comparable conditions using a structural gene encoding the α-subunit which is the cDNA without introns.

5,602,007

RECOMBINANT DNA MOLECULES

Ashley R. Dunn; Nicholas M. Gough, both of North Balwyn, and Donald Metcalf, Balwyne, all of Australia, assignors to Research Corporation Technologies, Inc., Tucson, Ariz.

Continuation of Ser. No. 708,765, Mar. 6, 1985, abandoned. This application Dec. 9, 1988, Ser. No. 283,108

Claims priority, application Australia, Mar. 21, 1984, PG4173/84

Int. Cl.[6] C12P 21/02; C12N 1/21;15/70

U.S. Cl. 435—69.5 31 Claims

1. A method of producing mammalian GM-CSF comprising culturing a host cell transformed by an expression vector which comprises a promoter which functions in said host and a DNA which hybridizes to the plasmid pGM37 or pGM38 wherein said DNA encodes mammalian GM-CSF in said host and wherein said DNA is in orientation with said promoter such that in said host cell the mammalian GM-CSF DNA is expressed.

5,602,008

DNA ENCODING A LIVER EXPRESSED CHEMOKINE

Craig G. Wilde, Sunnyvale; Phillip R. Hawkins; Olga Bandman, both of Mountain View, and Jeffrey J. Seilhamer, Los Altos Hills, all of Calif., assignors to Incyte Pharmaceuticals, Inc., Palo Alto, Calif.

Filed Nov. 29, 1994, Ser. No. 347,492

The portion of the term of this patent subsequent to Sep. 7, 2014, has been disclaimed.

Int. Cl.[6] C07K 14/52; C12N 15/19

U.S. Cl. 435—69.5 5 Claims

1. A recombinant DNA molecule comprising DNA encoding liver expressed chemokine (LVEC-1) of amino acid sequence shown in SEQ ID NO: 2.

5,602,009

DOMINANT NEGATIVE CHIMERAS OF THE STEROID/THYROID SUPERFAMILY OF RECEPTORS

Ronald M. Evans, La Jolla, Calif.; Stanley M. Hollenberg, Seattle, Wash.; Anthony E. Oro, San Diego, Calif.; Klaus Damm, Munich, Germany, and Richard A. Heyman, Encinitas, Calif., assignors to The Salk Institute for Biological Studies, La Jolla, Calif.

PCT No. PCT/US90/03113, § 371 Date May 10, 1993, § 102(e) Date May 10, 1993

Continuation-in-part of Ser. No. 358,696, May 26, 1989, abandoned, which is a continuation-in-part of Ser. No. 289,561, Dec. 23, 1988, abandoned. This PCT application May 25, 1990, Ser. No. 777,232

Int. Cl.[6] C12N 15/62

U.S. Cl. 435—69.7 20 Claims

1. A process for preparing a trans-repressing chimeric receptor of the steroid/thyroid superfamily of receptors, said process comprising

expressing, in a recombinant host cell, transfected DNA encoding said receptor; wherein said receptor comprises:

(1) a first amino acid sequence which is a DNA-binding domain, through which said chimeric receptor is capable of binding to a hormone response element of a wild type receptor, and

(2) a second amino acid sequence which is positioned at the carboxy-terminal end of the DNA-binding domain, wherein said second sequence comprises at least the 84 carboxy-terminal amino acids of the carboxy-terminal portion of the v-erbA protein as defined by amino acid numbers 313–398 of FIG. 1;

wherein said chimeric receptor represses transcription from a promoter normally trans-activated by said wild type receptor.

5,602,010

DNA ENCODING EQUINE-GAMMA INTERFERON AND RECOMBINANT PRODUCTION OF EQUINE IFN-γ POLYPEPTIDES

Rudolf Hauptmann, Ebreichsdorf, Austria; Adolf Himmler, San Francisco, Calif., and Peter Swetly, Vienna, Austria, assignors to Boehringer Ingelheim International GmbH, Germany

Continuation of Ser. No. 780,978, Oct. 23, 1991, abandoned, which is a division of Ser. No. 131,420, Dec. 10, 1987, abandoned. This application Jun. 17, 1994, Ser. No. 263,214

Claims priority, application Germany, Dec. 10, 1986, 36 42 096.4

Int. Cl.[6] C12N 15/23;15/71;5/10;1/21

U.S. Cl. 435—69.51 21 Claims

1. A purified and isolated DNA molecule coding for a polypeptide which has the biological and immunological properties of EqIFN-gamma comprising the following nucleotide sequence, or a degenerate variant thereof:

R[1]- TAC TGC CAG GCT GCT TTC TTT

AAA GAA ATC GAA AAC CTG AAA

GAA TAC TTC AAC GCT CGT AAC

CCA GAC GTT GGT GAC GGT GGT

CCG CTG TTC CTG GAC ATC CTG

AAA AAC TGG AAA GAA GAC TCT

GAC AAA AAG ATC ATC CAG TCT

CAG ATC GTT TCT TTC TAC TTC

AAA CTG TTC GAA AAC CTG AAA

GAC AAC CAG GTT ATC CAG AAA

-continued

TCG ATG GAC ACT ATC AAA GAA

GAT CTG TTC GTT AAA TTC TTC

AAC TCG TCG ACT TCT AAA CTG

GAA GAC TTC CAG AAA CTG ATC

CAG ATC CCA GTT AAC GAC CTG

AAA GTT CAG CGT AAG GCT ATC

TCT GAA CTG ATC AAA GTT ATG

AAC GAC CTG TCT CCA AAA GCT

AAC CTG CGT AAA CGT AAA CGT

TCT CAG AAC CCA TTC CGT GGT

CGT CGT GCT CTT CAG TAA.

wherein R^1 represents:

ATG AAT TAT ACA AGT TTT ATC

TTG GCT TTT CAG CTG TGT GCG

ATT TTG GGT TCT TCT ACC TAT.

ATG TAT.

TAT.

ATG AAT TAT ACA AGT TTT ATC

TTG GCT TTT CAG CTG TGT GCG

ATT TTG GGT TCT TCT ACC TAC.

ATG TAC, or

TAC.

5,602,011

PURIFIED *THERMOCOCCUS BAROSSII* DNA POLYMERASE

Robert A. Luhm, Mequon, Wis.; Olga B. d'Heanezel; Guy D. Duffaud, both of Raleigh, N.C.; James F. Jolly, Glendale, Wis.; Robert M. Kelly, Cary, N.C., and Eve Y. Ting, Brookfield, Wis., assignors to Pharmacia Biotech Inc., Milwaukee, Wis., and North Carolina State University, Raleigh, N.C.

Filed Jan. 18, 1995, Ser. No. 375,134

Int. Cl.[6] C12N *9/12;15/54;* C12P *19/34*

U.S. Cl. 435—91.2 **24 Claims**

1. A preparation of purified DNA polymerase native to *Thermococcus barossii.*

5,602,012

MICROBIOLOGICAL PROCESS FOR MAKING UK-61,689

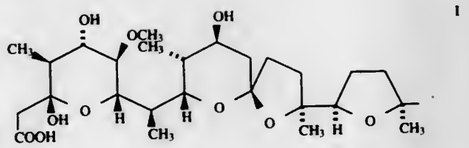
Edward J. Tynan, III, Gales Ferry, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation of Ser. No. 935,673, Aug. 25, 1992, abandoned, which is a continuation of Ser. No. 506,722, Apr. 9, 1990, abandoned, which is a continuation of Ser. No. 113,563, Oct. 26, 1987, abandoned. This application Nov. 22, 1994, Ser. No. 344,313

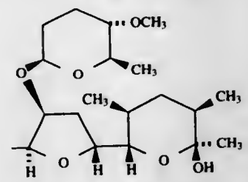
Int. Cl.[6] C12P *17/16*

U.S. Cl. 435—117 **6 Claims**

1. A process for making the compound UK-61,689 having the formula (I)



1



which comprises fermenting, in an aqueous medium containing assimilable sources of carbon, nitrogen and inorganic salts under submerged aerobic conditions, a strain belonging to the genus Actinomadura, wherein said strain is a mutant obtained by mutating a UK-58,852 producing strain of *Actinomadura roseorufa* and which mutant produces UK-61,689 upon cultivation in said aqueous nutrient medium, until a recoverable amount of compound UK-61,689 accumulates in the whole broth; and recovering compound UK-61,689.

5,602,013

PROCESS FOR PRODUCING N-SUBSTITUTED-1-DEOXYNOJIRIMYCIN

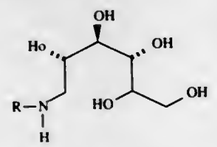
Roy W. Grabner, Ballwin; Bryan H. Landis; Ping T. Wang, both of Manchester, all of Mo.; Michael L. Prunier, Vernon Hills, and Mike G. Scaros, Arlington Heights, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Division of Ser. No. 585,588, Sep. 20, 1990, abandoned. This application May 19, 1995, Ser. No. 444,636

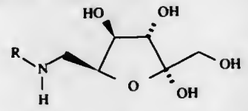
Int. Cl.[6] C12P *17/06;17/04;19/26*

U.S. Cl. 435—125 **14 Claims**

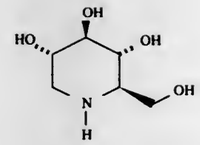
1. A process which comprises aminating D-glucose to an N-substituted glucamine of the formula:



or salts thereof, wherein R is phenyl, C_1–C_{10} alkyl, C_1–C_{10} alkyl substituted with phenyl or carboxyl, or C_2–C_{10} alkyl substituted with hydroxy, oxidizing said N-substituted glucamine with a microorganism or extract thereof, which oxidizes said glucamine to produce a compound of the formula:



wherein R is as described above, and then reducing said compound to produce N-substituted-1-deoxynojirimycin of the formula:



wherein R is as described above, and recovering the N-substituted-1-deoxynojirimycin.

5,602,014

REGULATORY SYSTEM FOR EXPRESSION OF NITRILASE GENE

Yurie Mizumura, and Fujio Yu, both of Yokohama, Japan, assignors to Nitto Chemical Industry Co., Ltd., Tokyo, Japan

Filed Dec. 22, 1995, Ser. No. 577,184

Claims priority, application Japan, Dec. 28, 1994, 6-337652

Int. Cl.[6] C12N *15/00;15/09;1/21;* C12P *21/00*

U.S. Cl. 435—129 **19 Claims**

3. A regulatory system comprising (a) the polypeptide having the sequence of SEQ ID NO:1 and (b) the polypeptide having the sequence of SEQ ID NO:2.

5,602,015

AUTOANTIBODIES WHICH ENHANCE THE RATE OF A CHEMICAL REACTION

Paul Sudhir, Omaha, Nebr., assignor to Igen, Inc., Gaithersburg, Md.

Continuation of Ser. No. 775,956, Oct. 25, 1991, abandoned, which is a continuation-in-part of Ser. No. 343,081, Apr. 25, 1989, Pat. No. 5,236,836. This application Jun. 13, 1994, Ser. No. 259,151

Int. Cl.[6] C12N *9/00*

U.S. Cl. 435—188.5 **46 Claims**

1. An extract of blood serum comprising an autoantibody which catalytically enhances the rate of cleavage of a peptide bond in a substrate, said extract having been prepared by a process comprising the steps of:

(a) identifying an animal with autoantibodies to a self-antigen of said animal;

(b) isolating an extract of blood serum containing said autoantibodies; and

(c) screening said extract containing said autoantibodies to identify an autoantibody which catalytically enhances the rate of said cleavage:

wherein said substrate is selected from the group consisting of a peptide hormone, a peptide neurotransmitter, a peptide neuromodulator, a viral protein, a bacterial protein, and a tumor protein.

5,602,016

D-AMINO ACID OXIDASE FROM *F. SOLANI* AND DNA THEREFOR

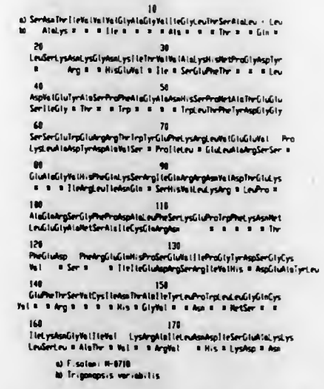
Takao Isogai, Tsukuba; Hiroki Ono, Osaka, and Hitoshi Kojo, Tsukuba, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Continuation of Ser. No. 126,891, Sep. 27, 1993, abandoned, which is a continuation of Ser. No. 3,854, Jan. 11, 1993, abandoned, which is a continuation of Ser. No. 418,524, Oct. 10, 1989, abandoned. This application Dec. 22, 1994, Ser. No. 361,708

Claims priority, application Japan, Oct. 13, 1988, 63-260332

Int. Cl.[6] C12N *9/02;9/06;15/35;15/70*

U.S. Cl. 435—189 **5 Claims**



1. An isolated DNA molecule which encodes a D-amino acid oxidase of *F. solani*, set forth in SEQ ID NO. 3.

5,602,017

CHOLESTEROL OXIDASE

Kinya Fujishiro, Shizuoka-ken, and Takayuki Uwajima, Machida, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Division of Ser. No. 14,531, Feb. 8, 1993, Pat. No. 5,371,005, which is a continuation of Ser. No. 798,660, Nov. 26, 1991, abandoned, which is a continuation-in-part of Ser. No. 683,539, Apr. 10, 1991, abandoned. This application Jun. 17, 1994, Ser. No. 262,338

Claims priority, application Japan, Apr. 10, 1990, 2-94296

Int. Cl.[6] C12N *1/21;9/04;15/53;* C12R *1/13*

U.S. Cl. 435—190 **14 Claims**

1. A process for producing cholesterol oxidase having the following physicochemical properties:

(a) activity which catalyzes the reaction of oxidizing cholesterol in the presence of oxygen to form hydrogen peroxide and 4-cholesten-3-one;

(b) an isoelectric point at a pH of 4.7;

(c) substrate specificity so that the oxidase acts on cholesterol, β-sitosterol, stigmasterol, pregnenolone, dehydroisoandrosterone and estradiol but does not act on vitamin D_3, cholic acid, androsterone, cholesterol linoleate or lanosterol;

(d) a working pH in a range of 5.0 to 7.5, and maintaining an enzyme stability in a pH of 5.3 to 7.5, when heated at 50° C. for 60 minutes;

(e) optimum temperature of enzyme activity of about 50° C.;

(f) inactivation of the oxidase at a pH of 10.0 or more or at a pH of 4.0 or less when heated at 50° C. for an hour and inactivation of the oxidase by about 83% when heated at a pH of 7.0 and a temperature of 60° C. for an hour;

(g) inhibition of the oxidase by p-chloromercury benzenesulfonate, silver nitrate and o-hydroxyquinoline and in the

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presence of bovine serum albumin, resistance to heat and stability of the oxidase during storage are improved;

(h) Michaelis' constant to cholesterol (Km value) of 3.0×10^{-5}M; and

(i) molecular weight of about 43,000 (gel filtration), which comprises culturing in a medium *Escherichia coli* carrying a recombinant plasmid DNA comprising a gene coding for said cholesterol oxidase and derived from *Brevibacterium sterolicum*, until cholesterol oxidase is accumulated in the culture and recovering cholesterol oxidase therefrom.

5,602,018

HYPOGLYCOSYLATED RECOMBINANT GLUCOSE OXIDASES

Erhard Kopetzki, Penzberg, and Klaus Lehnert, Hammersbach, both of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

PCT No. PCT/EP93/02054, § 371 Date Feb. 7, 1995, § 102(e) Date Feb. 7, 1995, PCT Pub. No. WO94/03608, PCT Pub. Date Feb. 17, 1994

PCT Filed Aug. 2, 1993, Ser. No. 374,770

Claims priority, application Germany, Aug. 7, 1992, 42 26 095.7; Jan. 25, 1993, 43 01 904.8

Int. Cl.^{6} C12N *9/04;1/14;* C12P *21/06*

U.S. Cl. 435—190 **2 Claims**

1. Recombinant glucose oxidase obtainable from *A. niger* having a molecular weight of about 68–80 kDa, a specific activity of about 200 U/mg enzyme plus carbohydrate, a carbohydrate portion of about 12% and a residual activity of at least 30% after incubation for two hours at a temperature of 55° C.

5,602,019

DNA ENCODING MAMMALIAN PHOSPHODIESTERASES

Joseph A. Beavo; Kelley J. Bentley, both of Seattle, Wash.; Harry Charbonneau, W. Lafayette, Ind., and William K. Sonnenburg, Seattle, Wash., assignors to The Board of Regents of The University of Washington, Seattle, Wash.

Division of Ser. No. 872,644, Apr. 20, 1992, Pat. No. 5,389,527, which is a continuation-in-part of Ser. No. 688,356, Apr. 19, 1991, abandoned. This application Aug. 29, 1994, Ser. No. 297,510

Int. Cl.^{6} C12N *1/16;9/16;15/55;15/63*

U.S. Cl. 435—196 **25 Claims**

1. A purified and isolated polynucleotide comprising the DNA sequence encoding a mammalian Ca^{2+}/calmodulin stimulated cyclic nucleotide phosphodiesterase enzyme set out in SEQ ID NO: 5.

5,602,020

THERMOSTABLE, SALT TOLERANT, WIDE PH RANGE NOVEL CHITOBIASE

Roger A. Laine, Baton Rouge, La., and Chin-Yih Ou, Dunwoody, Ga., assignors to Board of Supervisors of Louisiana State University and Agricultural and Mechanical College, Baton Rouge, La.

Continuation of Ser. No. 844,301, Feb. 27, 1992, abandoned. This application Dec. 21, 1993, Ser. No. 171,208

Int. Cl.^{6} C12N *9/42;9/24;15/56;15/63*

U.S. Cl. 435—209 **8 Claims**

1. A composition of matter comprising a substantially pure chitobiase originating from *Vibrio parahemolyticus;* wherein said chitobiase has substantially the substrate specificity shown in the table of the FIGURE accompanying the specification; wherein said chitobiase retains approximately 85% of its activity in pH 7.0 phosphate buffer and 1 M NaCl; wherein said chitobiase retains approximately 56% of its activity in pH 7.0 phosphate buffer and 2 M NaCl; and wherein said chitobiase retains approximately 28% of its activity in pH 7.0 phosphate buffer at 3 M NaCl.

5,602,021

METHOD FOR GENERATING PROTEOLYTIC ENZYMES SPECIFIC AGAINST A SELECTED PEPTIDE SEQUENCE

Claude G. Davis, Foster City, Calif., and Gordon G. Guay, Chelmford, Mass., assignors to Catalytic Antibodies, Inc., San Francisco, Calif.

Filed Dec. 29, 1994, Ser. No. 366,591

Int. Cl.^{6} C12N *9/50;9/52*

U.S. Cl. 435—219 **14 Claims**

1. A method of generating a protease enzyme capable of cleaving a target polypeptide having a selected amino acid sequence, comprising

identifying a wild-type protease enzyme capable of cleaving a polypeptide at an amino acid sequence that is homologous to, but distinct from, the amino acid sequence of said polypeptide target,

introducing into host cells a phage system composed of: (i) a phage containing a gene encoding a mutant of said wild-type protease, and capable of expressing said mutant, under suitable expression conditions, and (ii) a helper phage bearing a gene encoding a product necessary for the production of infectious phage, where said gene is modified to include an oligonucleotide sequence encoding said polypeptide target, such that the resulting modified gene product, containing the polypeptide target, prevents host cell infection by said phage system, and where cleavage of said target by an appropriate mutant protease results in an active gene product that allows production of infectious phage,

growing the host cells under conditions in which the mutant protease is expressed in the host cells,

screening the host cells for production of infectious phage, and

isolating the protease genes associated with the infectious phage, where said genes encode protease enzyme specific against the target sequence.

5,602,022

PRODUCTION OF INFECTIOUS BURSAL DISEASE VIRUS IN MAMMALIAN CELL LINE

Piet Van Der Marel, Venray, and Pieter G. Mooren, Kronenberg, both of Netherlands, assignors to Akzo Nobel, N.V., Arnhem, Netherlands

Continuation of Ser. No. 350,656, May 11, 1989, Pat. No. 5,192,539. This application Nov. 20, 1992, Ser. No. 979,107

Claims priority, application Netherlands, Jul. 21, 1988, 8801843

Int. Cl.^{6} C12N *7/02;7/04;7/06;7/08;* A61K *39/12*

U.S. Cl. 435—236 **7 Claims**

1. A method for the production of inactivated infectious bursal disease virus (IBDV), comprising:

(a) culturing IBDV in a mammalian cell line for two to ten days;

(b) harvesting the IBDV from the cultured cell line; and

(c) inactivating the harvested IBDV by a chemical inactivating substance or physical inactivation.

5,602,023

PHARMACEUTICAL PRODUCT CONTAINING LIVE, STABILIZED VIRUS FOR THE THERAPY OF VIRAL AND MALIGNANT DISEASES AND PROCESS FOR PREPARING THE SAME

Laszlo K. Csatary, 2100 S. Ocean La., #2503, Fort Lauderdale, Fla. 33316

PCT No. PCT/US93/02441, § 371 Date Nov. 2, 1994, § 102(e) Date Nov. 2, 1994, PCT Pub. No. WO93/18790, PCT Pub. Date Sep. 30, 1993

PCT Filed Mar. 23, 1993, Ser. No. 302,873

Claims priority, application Hungary, Mar. 24, 1992, 976/92/9669; Aug. 17, 1992, 976/92/26547

Int. Cl.^{6} C12N *7/04*

U.S. Cl. 435—236 **11 Claims**

1. A highly purified stable vaccine suitable for administration to humans produced from a live, stabilized virus apathogenic to humans comprising arian bursitis virus or Newcastle disease virus stabilized with an effective amount of a protective colloid comprising a modified starch.

5,602,024

DNA ENCODING A HYPOTHALAMIC ATYPICAL NEUROPEPTIDE Y/PEPTIDE YY RECEPTOR (Y5) AND USES THEREOF

Christophe P. G. Gerald, Ridgewood; Mary W. Walker, Elmwood Park; Theresa Branchek, Teaneck, all of N.J., and Richard L. Weinshank, New York, N.Y., assignors to Synaptic Pharmaceutical Corporation, Paramus, N.J.

Filed Dec. 2, 1994, Ser. No. 349,025

Int. Cl.^{6} C07H *21/00;* C12N *15/12;15/63;5/10*

U.S. Cl. 435—325 **30 Claims**

1. An isolated nucleic acid molecule encoding a human Y5 receptor having the amino acid sequence shown in Seq. ID No. 4.

5,602,025

NON-TUMORIGENIC CELL LINES FOR EXPRESSION OF GENES

David W. Barnes, Corvallis, Oreg., assignor to The State of Oregon, Eugene, Oreg.

Continuation of Ser. No. 177,637, Jan. 4, 1994, Pat. No. 5,474,930, which is a continuation of Ser. No. 852,490, Mar. 16, 1992, abandoned, which is a continuation of Ser. No. 540,460, Jun. 18, 1990, abandoned, which is a continuation of Ser. No. 35,814, Apr. 8, 1987, abandoned. This application Jun. 6, 1995, Ser. No. 468,195

Int. Cl.^{6} C12N *5/00;15/00*

U.S. Cl. 435—69.1 **11 Claims**

1. A non-tumorigenic human cell line derived from human embryo cells which exhibits a predominantly diploid karyotype and is capable of greater than 30 generations growth in serum-free media, said cell line being further capable of expressing exogenously introduced genes.

5. A method for producing a protein of interest, comprising:

introducing into a non-tumorigenic human cell line derived from human embryo cells which exhibits a predominantly diploid karyotype and is capable of greater than 30 generations growth in serum-free media, a gene encoding a protein of interest;

growing said cell line in a serum-free media; and

isolating the protein product encoded by said gene and produced by said cell line.

5,602,026

CULTURING LIVER CELLS BETWEEN TWO SUPPORTS

James Dunn, Cambridge; Ronald G. Tompkins, Boston, and Martin L. Yarmush, Sharon, all of Mass., assignors to The General Hospital Corporation, Boston, and Massachusetts Institute of Technology, Cambridge, both of Mass.

Continuation of Ser. No. 717,857, Jun. 19, 1991, abandoned, which is a continuation of Ser. No. 258,309, Oct. 14, 1988, abandoned. This application Oct. 28, 1994, Ser. No. 331,167

Int. Cl.^{6} C12N *5/02;5/00*

U.S. Cl. 435—395 **12 Claims**

1. A method for maintaining hepatocytes in culture, comprising contacting the hepatocytes with a support comprising two layers, said support comprising sterilized collagen and having a configuration that permits each of at least a portion of the hepatocytes to form at least one apical surface and at least two discrete basal surfaces, wherein fewer than 1% of the cells present in the culture are non-hepatocytic cells.

5,602,027

CELL LINE TRIH8 OBTAINED BY THE FUSION OF THE HUMAN EPIDERMOID CARCINOMA CELL LINE A431 WITH THE TOS/H8 HYBRIDOMA

Hideaki Hagiwara, Takarazuka, and Hideo Yuasa, Kasai, both of Japan, assignors to Yoshihide Hagiwara, Takarazuka, Japan

Filed Dec. 16, 1992, Ser. No. 991,596

Claims priority, application Japan, Dec. 25, 1991, 3-356551

Int. Cl.^{6} C12N *5/12;5/24*

U.S. Cl. 435—344 **1 Claim**

1. The fused cell line TriH8 having the FRI accession number FERM BP-4452.

5,602,028

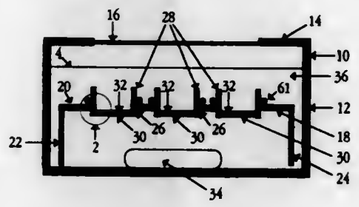
SYSTEM FOR GROWING MULTI-LAYERED CELL CULTURES

Andrew I. Minchinton, Vancouver, Canada, assignor to The University of British Columbia, Vancouver, Canada

Filed Jun. 30, 1995, Ser. No. 497,587

Int. Cl.^{6} C12N *5/00;* C12M *3/00*

U.S. Cl. 435—401 **20 Claims**



8. A method of growing a multi-layered cell culture comprising supporting and adhering a first major surface of an initial seed layer of cells of said culture on one major surface of a permeable membrane having a pair of opposed major surfaces, submerging said culture supported and adhered to said membrane in a liquid cell growth medium for cells in said culture contained in a growth chamber, circulating said medium past said culture to deliver nutrients to said culture by passage through said membrane to said one major surface of said cell culture and directly to an exposed second major surface of said cell culture remote from said membrane thereby to transfer nutrients from said medium to both said

major surfaces of said cell culture and grow a said cell culture into a multi-layered substantially planer cell culture mat on said membrane.

5,602,029

METHOD FOR FABRICATING SUBSTRATE FOR CELL CULTURE AND METHOD FOR CELL ARRANGEMENTS

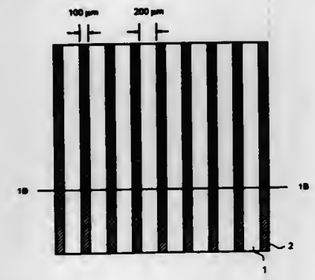
Shigeyuki Miyamoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 22, 1995, Ser. No. 493,415

Claims priority, application Japan, Jun. 27, 1994, 6-144277

Int. Cl.[6] C12N *5/00;11/00;* C12M *1/40*

U.S. Cl. 435—395 **6 Claims**



1. A method for selectively arranging cells on a substrate, said method comprising the steps of:

providing a substrate with at least a first and a second substrate area, said first substrate area having deposited thereon an immobile enzyme membrane, said second substrate area not having said immobile enzyme membrane;

selecting at least one of said first and said second substrate area as a selected cell cultivation area of said substrate for cell cultivation;

determining for a culture medium a constant enzyme substrate concentration of 0 or greater on the basis of the selection for cell cultivation; and

exposing said substrate to the culture medium, containing said concentration of enzyme substrates, to arrange said cells on said selected cell cultivation area.

5,602,030

RECOMBINANT GLUCOSE UPTAKE SYSTEM

Lonnie O. Ingram, Gainesville, Fla.; Jacob L. Snoep, Groede, and Nico Arfman, Delft, both of Netherlands, assignors to University of Florida Research Foundation, Gainesville, Fla.

Filed Mar. 28, 1994, Ser. No. 218,914

Int. Cl.[6] C12N *9/12;15/54;1/21;15/63*

U.S. Cl. 435—252.3 **10 Claims**

1. A recombinant host bacterium which expresses heterologous DNA that encodes a functional Zymomonas glucose-facilitated diffusion protein and a functional protein that catalyzes the ATP-dependent phosphorylation of glucose.

5,602,031

DNA ENCODING MOLECULES CONTAINING AT LEAST ONE PEPTIDE SEQUENCE CARRYING ONE OR SEVERAL EPITOPES CHARACTERISTIC OF A LIVER STAGE ANTIGEN PRODUCED BY *P. FALCIPARUM* IN HEPATOCYTES AND COMPOSITIONS CONTAINING THEM

Claudine Marchand, Paris; Pierre Druilhe, Saint Maude; Odile Puijalon-Mercereau, Issy les Moulineaux, and Gordon Langsley, Paris, all of France, assignors to Institut Pasteur, Paris, France

Division of Ser. No. 275,139, Oct. 6, 1988. This application Jun. 5, 1995, Ser. No. 462,062

Claims priority, application France, Feb. 9, 1987, 87 01543

Int. Cl.[6] C07H *21/04;* C12N *15/30;* C07K *14/445*

U.S. Cl. 435—252.3 **7 Claims**

1. An isolated or purified nucleotide sequence encoding a polypeptide produced in hepatocytes infected by *P. falciparum* comprising the sequence:

Leu-Ala-Lys-Glu-Lys-Leu-Gln-X-Gln-Gin-Ser-Asp-Leu-Glu-Gln-Glu-Arg

in which:

X is "glu" (peptide sequence 1) or "gly" (peptide sequence II).

5,602,032

***BACILLUS THURINGIENSIS* MUTANTS WHICH PRODUCE HIGH YIELDS OF CRYSTAL DELTA-ENDOTOXIN**

Chi-Li Liu; Pamela G. Marrone; Jewel M. Payne, all of Davis, Calif.; Hanne Gurtler, Holte, and Annette S. Petersen, Birkerød, both of Denmark, assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation-in-part of Ser. No. 182,904, Jan. 14, 1994, abandoned, which is a continuation of Ser. No. 906,038, Jun. 26, 1992, Pat. No. 5,279,962, which is a continuation of Ser. No. 613,337, Nov. 14, 1990, abandoned. This application Jan. 25, 1995, Ser. No. 377,888

Claims priority, application Denmark, Nov. 17, 1989, 5805/89; Dec. 12, 1989, 6274/89

Int. Cl.[6] C12N *1/20*

U.S. Cl. 435—252.31 **18 Claims**

1. A method for controlling a pest comprising applying to the pest a pesticidally effective amount of a composition which comprises (a) a mutant of a parental *Bacillus thuringiensis* strain producing higher amounts of a crystal delta-endotoxin with a greater pesticidal activity than a corresponding parental strain wherein the crystal delta-endotoxin produced by the mutant *Bacillus thuringiensis* strain has a crystal volume which is at least about 1.5 times the crystal volume of said parental swain and an activity directed towards the same pest as a crystal delta-endotoxin produced by the parental *Bacillus thuringiensis* strain and (b) a pesticidally acceptable carrier.

5,602,033

COCCIDIOSIS VACCINE

Arno Vermeulen, Cuyk; Rein Dijkema, Mi Oss, and Jacobus J. Kok, Dh Nijmegen, all of Netherlands, assignors to Akzo Nobel N.V., Arnhem, Netherlands

Filed Jun. 27, 1989, Ser. No. 371,947

Claims priority, application Netherlands, Jun. 27, 1988, 8801627

Int. Cl.[6] C12N *1/20*

U.S. Cl. 435—252.33 **11 Claims**

1. An isolated and purified DNA molecule derived from *Eimeria acervulina*, wherein said DNA molecule encodes an antigenic polypeptide consisting of the amino acid sequence of FIG. 2.

5,602,034

EXPRESSION AND SECRETION OF HETEROLOGOUS PROTEINS IN YEAST EMPLOYING TRUNCATED ALPHA-FACTOR LEADER SEQUENCES

Patricia Tekamp-Olson, San Francisco, Calif., assignor to Chiron Corporation, Emeryville, Calif.

Continuation of Ser. No. 864,206, Apr. 3, 1992, abandoned, which is a continuation of Ser. No. 670,352, Mar. 13, 1991, abandoned, which is a continuation of Ser. No. 530,477, May 29, 1990, abandoned, which is a continuation of Ser. No. 139,682, Dec. 30, 1987, abandoned. This application Sep. 27, 1994, Ser. No. 313,540

Int. Cl.[6] C12N *1/15;15/09;15/63;15/81*

U.S. Cl. 435—254.11 **31 Claims**

1. A yeast cell comprising a DNA construct that provides for the expression and secretion of a non-yeast protein, said DNA construct comprising

a yeast recognized transcription initiation sequence, linked 5' to a coding sequence under the control of both said yeast recognized transcription initiation sequence and

a yeast-recognized termination sequence, said yeast-recognized termination sequence being 3' to said coding sequence,

wherein said coding sequence encodes a precursor polypeptide comprised of a leader sequence and said non-yeast protein linked by a processing site that provides for the cleavage of said non-yeast protein from said precursor polypeptide,

wherein said leader sequence is about the first 25 to about the first 50 N-terminal residues of a yeast alpha-factor leader polypeptide,

comprises a single yeast alpha-factor precursor glycosylation site and comprises a signal peptide of a yeast alpha-factor precursor comprising the first about 19 to about 23 N-terminal residues of said alpha-factor precursor.

5,602,035

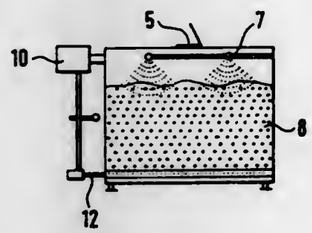
APPARATUS AND METHOD FOR TREATMENT OF ORGANICALLY CONTAMINATED SOIL

Klaus Sonnen, Waldstrasse 23, 56220 Bassenheim, and Hans Sonnen, Schweitzerstrasse 36, 56203 Höhr-Grenzhausen, both of Germany

Filed Oct. 28, 1994, Ser. No. 330,440

Int. Cl.[6] C12M *1/00*

U.S. Cl. 435—262 **13 Claims**



1. An apparatus for biological or chemical treatment or both of a material containing harmful substances, said apparatus comprising a container being assembled by a plurality of segments which are connected to each other to form the container, said container comprising two end segments and one or more intermediate segments which are positioned between the end segments, the number of intermediate sections being adaptable to the quantity of material to be treated, the interior of said container being closed off from the outside atmosphere in a gas-tight manner, said apparatus further including a conduit, which is in fluid connection with the interior of said container at a vertically upper section and at a vertically lower section of the container, said conduit establishing a closed gas flow circuit including the interior of the container.

5,602,036

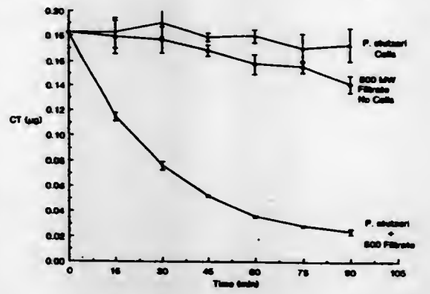
METHOD AND COMPOSITIONS FOR REMEDIATION

Craig S. Criddle, Okemos; Gregory M. Tatara, and Michael J. Dybas, both of Lansing, all of Mich., assignors to Board of Trustees operating Michigan State University, East Lansing, Mich.

Continuation of Ser. No. 246,621, May 20, 1994, abandoned, which is a continuation-in-part of Ser. No. 62,872, May 14, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 488,536

Int. Cl.[6] C12S *1/00*

U.S. Cl. 435—262 **17 Claims**



1. In a method for anaerobic degradation of an aliphatic halogenated hydrocarbon the improvement which comprises:

(a) introducing extracellular metabolites produced by Pseudomonas KC DSM 7136 (ATCC 55595) in a first growth medium, wherein the growth medium contains a nitrogen source, a carbon source, an inorganic phosphate salt, an inorganic sulfur salt, an electron donor, an electron acceptor and trace minerals, and wherein the metabolites separated from the growth medium and separated from the Pseudomonas KC from the first growth medium when combined with *Pseudomonas fluorescens* ATCC 13525 produces degradation of carbon tetrachloride in a second growth medium containing the nitrogen source, the carbon source, the inorganic phosphate salt, the inorganic sulfur salt, the electron donor, the electron acceptor and the trace minerals wherein the metabolites are introduced into a material containing the aliphatic halogenated hydrocarbon and an indigenous or added bacterium other than the Pseudomonas KC which does not degrade the halogenated hydrocarbon to carbon dioxide and other end products, wherein the bacterium other than the Pseudomonas KC and the metabolites together can degrade the halogenated hydrocarbon to carbon dioxide and other end products and wherein the bacterium is a member selected from the group consisting of Pseudomonas, Bacillus and Escherichia and mixtures thereof; and

(b) degrading the halogenated hydrocarbon with the bacterium to produce the carbon dioxide and the other end products.

5,602,037

COMBINATION REAGENT HOLDING AND TEST DEVICE

Roy Ostgaard, Plantation, Fla.; Stephen Schoenberg, Redwood City; Thomas R. Stone, San Francisco, both of Calif.; Sourav K. Kundu, Cooper City, Fla., and Ted S. Geiselman, Bolton, Mass., assignors to Dade International, Inc., Deerfield, Ill.

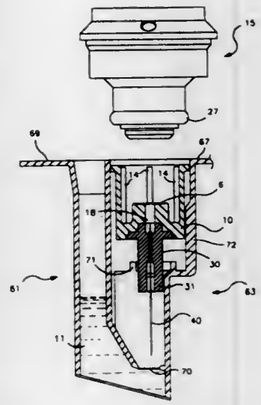
Filed Jun. 30, 1994, Ser. No. 269,184

Int. Cl.[6] G01N *33/86*

U.S. Cl. 436—69 **24 Claims**

23. A method of testing platelet function which comprises passing blood through a test cartridge, the test cartridge comprising a housing through which the blood flows during the assay, wherein the housing defines:

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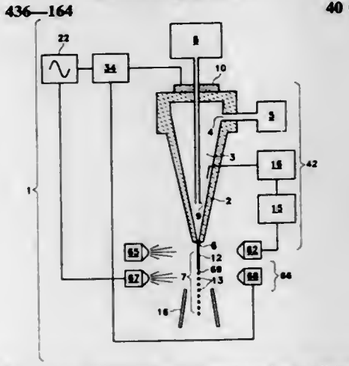


(a) a test chamber and a holding chamber for holding a sample of the blood to be tested wherein the holding chamber and test chamber are separated by a pierceable member;
(b) a partition member disposed in the test chamber, the partition member having an opening therethrough and containing at least one reagent which activates the aggregation of platelets;
(c) a transfer member movably mounted in the test chamber, wherein said transfer member can be moved towards and pierce the pierceable member; and
(d) a receiving chamber disposed in the test chamber between the partition member and the transfer member for receiving blood from the transfer member;
wherein the method comprises the steps of:
(i) providing a sample of blood to the holding chamber;
(ii) preincubating the sample under predetermined conditions;
(iii) moving the transfer member towards and through the pierceable member and into contact with the blood in the holding chamber;
(iv) causing the pressure in the test chamber to become sufficiently negative to cause blood to flow through the transfer member into the receiving chamber and through the opening in the partition member;
(v) measuring the amount of time it takes for the formation of a platelet plug at the opening in the partition member thereby stopping the flow of blood; and
(vi) correlating the time determined in step (v) with a predetermined value.

5,602,038
METHOD OF DETERMINING RENAL CLEARANCES
Michael Kell, Atlanta, Ga., assignor to Private Clinic Laboratories, Inc., Atlanta, Ga.
Continuation-in-part of Ser. No. 279,400, Jul. 25, 1994, Pat. No. 5,500,372. This application Jan. 25, 1996, Ser. No. 591,406
Int. Cl.[6] G01N *33/50*
U.S. Cl. 436—98 **6 Claims**

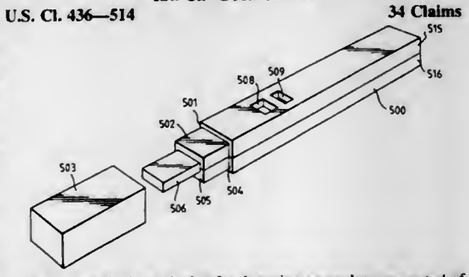
1. A method of determining creatinine clearance for use in detecting and monitoring renal dysfunction comprising the steps of:
(a) obtaining spot samples of urine and blood from a person;
(b) measuring specific gravity and creatinine concentration of the urine sample;
(c) calculating the specific gravity factor;
(d) measuring creatinine concentration of plasma of the blood sample; and
(e) calculating creatinine clearance as a function of the calculated urine specific gravity factor, the measured urine creatinine concentration and the measured plasma creatinine concentration.

5,602,039
FLOW CYTOMETER JET MONITOR SYSTEM
Ger Van den Engh, Seattle, Wash., assignor to The University of Washington
Filed Oct. 14, 1994, Ser. No. 323,352
Int. Cl.[6] G01N *15/14*
U.S. Cl. 436—164 **40 Claims**



1. A flow cytometer system which monitors jet conditions comprising:
a. a nozzle container establishing a nozzle volume and having a nozzle exit;
b. a sheath fluid port located within said nozzle volume;
c. a substance introduction port located within said nozzle volume;
d. an analysis area below said nozzle exit wherein a jet occurs;
e. a substance property sensor which senses emissions from said analysis area over a substance wavelength band;
f. a jet illumination source directed towards said analysis area and which emits electromagnetic emissions over a monitor wavelength band which is substantially separate from said substance wavelength band; and
g. a jet condition sensor which receives emissions from said analysis area and which is responsive to said monitor wavelength band.

5,602,040
ASSAYS
Keith May, Bedfordshire; Michael E. Prior, Northamptonshire, and Ian Richards, Bedford, all of England, assignors to Unilever Patent Holdings B.V., Netherlands
Continuation of Ser. No. 876,448, Apr. 30, 1992, abandoned, which is a division of Ser. No. 795,266, Nov. 19, 1991, abandoned, which is a continuation of Ser. No. 294,146, Feb. 27, 1989, abandoned. This application May 12, 1994, Ser. No. 241,675
Claims priority, application England, Apr. 27, 1987, 8709873; United Kingdom, Oct. 30, 1987, 8725457
Int. Cl.[6] G01N *33/558*
U.S. Cl. 436—514 **34 Claims**



1. An analytical test device for detecting an analyte suspected of being present in a liquid biological sample, said device comprising:

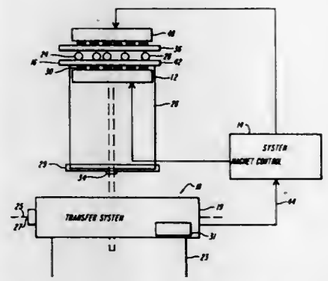
a) a hollow casing having a first end, a second end, a longitudinal axis, and a liquid biological sample application aperture adjacent to said first end;
b) a displaceable shroud disposed on said first end for shielding said liquid biological sample application aperture;
c) a test strip comprising a dry porous carrier disposed within said hollow casing, said dry porous carrier communicating directly or indirectly with the exterior of said hollow casing through said liquid biological sample application aperture to receive applied said liquid biological sample; said dry porous carrier having a detection zone; said hollow casing including means permitting observation of said detection zone from outside said casing; said test strip, in the dry unused state, containing upstream from said detection zone a labelled reagent capable of specifically binding with said analyte to form a first complex of said labelled reagent and said analyte, said labelled reagent being labelled with a particulate direct label, wherein said labelled reagent is dry on said test strip prior to use and is released into mobile form by said liquid biological sample,
wherein mobility of said labelled reagent within said test strip is facilitated by at least one of 1) coating at least a portion of said test strip upstream from said detection zone with, or 2) drying said labelled reagent onto a portion of said test strip upstream of said detection zone in the presence of, a material comprising sugar, in an amount effective to reduce interaction between said test strip and said labelled reagent;
said dry porous carrier containing in said detection zone a means for binding said first complex, said means for binding comprising specific binding means and being immobilized in said detection zone;
migration of said liquid biological sample through said dry porous carrier conveying by capillarity said first complex to said detection zone of said dry porous carrier whereat said binding means binds said first complex thereby to form a second complex;
said second complex being observable via said detection zone observation means, thereby to indicate the presence of said analyte in said liquid biological sample.

5,602,041
FISH SERUM AS A BLOCKING REAGENT
Evelyn S. Sawyer, and Philip J. Sawyer, both of Kennebunkport, Me., assignors to Sea Run Holdings, Inc., Arundel, Me.
Filed Aug. 26, 1994, Ser. No. 297,262
Int. Cl.[6] G01N *33/53*
U.S. Cl. 436—518 **21 Claims**

1. A method of using a blocking reagent in an immunoassay process, comprising:
a. immobilizing biomolecules to a surface; and
b. saturating non-occupied sites on the surface with a blocking reagent; wherein
c. the blocking reagent comprises fish serum.

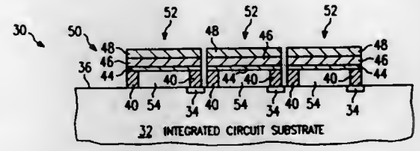
5,602,042
METHOD AND APPARATUS FOR MAGNETICALLY SEPARATING BIOLOGICAL PARTICLES FROM A MIXTURE
Fredric Farber, Brookline, Mass., assignor to Cytyc Corporation, Boxborough, Mass.
Filed Apr. 14, 1994, Ser. No. 227,665
Int. Cl.[6] G01N *33/553*
U.S. Cl. 436—526 **31 Claims**

1. A system for collecting biological particles from a fluid medium, said system comprising
tag means for dispersing in the fluid medium and comprising a magnetically responsive material having at least one substance immobilized upon an exterior surface for coupling to said biological particles,



magnetic field source means for generating within said fluid medium a magnetic field to establish a flow of biological particles coupled to said tag means,
plate means having a surface for positioning within said flow for collecting said biological particles thereon, and
transfer means, coupled to said plate means, for withdrawal of said plate means and said biological particles collecting thereon from the fluid medium.

5,602,043
MONOLITHIC THERMAL DETECTOR WITH PYROELECTRIC FILM AND METHOD
Howard R. Beratan, and Charles M. Hanson, both of Richardson, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Jan. 3, 1995, Ser. No. 368,067
Int. Cl.[6] H01L *31/09*
U.S. Cl. 437—3 **15 Claims**



1. A method for fabricating a monolithic thermal detector having a focal plane array of thermal sensors disposed on an integrated circuit substrate comprising the steps of:
forming a first layer of electrically conductive material on one surface of the integrated circuit substrate;
anisotropically etching the first layer of electrically conductive material to form supporting structures for respective thermal sensors;
forming a second layer of thermal insulating material on the one surface of the integrated circuit substrate with the supporting structures disposed therein;
forming a third layer of electrically conductive material on the supporting structures and the layer of insulating material;
forming a thin film layer of thermal sensitive material on the third layer of electrically conductive material;
forming a fourth layer of electrically conductive material on the thin film layer;
etching the layer of thermal insulating material, the third and fourth layers of electrically conductive material and the thin film layer of thermal sensitive material to form the plurality of thermal sensors which comprise the focal plane array disposed on the integrated circuit substrate; and
applying heat to one side of the thin film layer of thermal sensitive material with the layer of thermal insulating material disposed between the one surface of the integrated circuit substrate and the thin film layer of thermal sensitive material to anneal the thin film layer.

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5,602,044

MEMORY WITH ON-CHIP DETECTION OF BIT LINE LEAKS

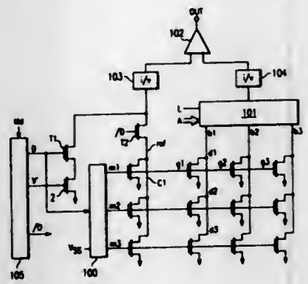
Olivier Rouy, Aix-en-Provence, France, assignor to SGS-Thomson Microelectronics, S.A., Gentilly Cedex, France

Division of Ser. No. 268,695, Jun. 16, 1994, Pat. No. 5,539,694, which is a division of Ser. No. 55,536, Apr. 28, 1993, Pat. No. 5,351,214. This application Jun. 6, 1995, Ser. No. 473,549

Claims priority, application France, Apr. 30, 1992, 92 05420

Int. Cl.[6] G01R *31/26*; H01L *21/66*

U.S. Cl. 437—8 **6 Claims**



1. A method for manufacturing floating-gate memories, comprising the steps of:

(a.) manufacturing wafers each containing a plurality of floating-gate-memory integrated circuits, each including:

an array of memory cells organized in rows and columns, wherein each said cell includes a floating gate transistor;

address decode logic, connected to access a selected one of said rows of cells, and to connect a selected column for sensing, in accordance with an externally received address;

a read reference current source, comprising at least one unprogrammed floating gate transistor;

a leakage-detect current source, connected to be activated, in test mode, to supply a leakage reference current which is less than a current supplied by said read reference current source; and

a sense amplifier configured to perform differential current comparison;

wherein, during a normal read operation, said sense amplifier is connected to differentially compare the current drawn on a selected column with current supplied by said read reference current source;

and wherein, during test mode, said sense amplifier is connected to differentially compare the current drawn on a selected column with current supplied by said leakage-detect reference current source;

(b.) applying signals to induce each said integrated circuit to enter into said test mode of operation, each said integrated circuit thereafter performing on-chip-self-test steps which include differential comparison of said leakage reference current with, for each successive column, the current drawn on that column while no rows are selected;

(c.) identifying as defective all columns in which excessive leakage current is found in said step (b); and

(d.) IF sufficient redundant columns to repair all defective columns are available on-chip, THEN repairing all defective columns, or ELSE discarding said integrated circuit.

5,602,045

METHOD FOR MAKING A SEMICONDUCTOR DEVICE

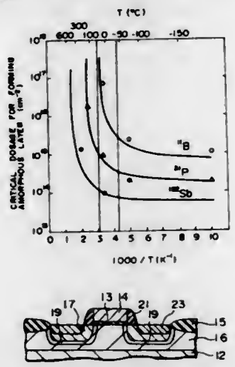
Hideki Kimura, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 25, 1996, Ser. No. 591,772

Claims priority, application Japan, Jan. 30, 1995, 7-032977

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—24 **14 Claims**



1. A method for making a semiconductor device comprising the steps of:

providing a silicon substrate;

cooling the substrate to a temperature of −40° C. or less and implanting Si ions into a surface of the substrate at a dosage of from about 1×10^{15} to 1×10^{16} ions/cm^2 to preamorphize the surface of the silicon substrate to form an amorphous layer having a first depth dimension;

implanting impurity ions in the preamorphized surface to form an impurity layer having a second depth dimension less than that of the amorphous layer; and

thereafter, annealing the silicon substrate in an atmosphere comprising a halogen element after said impurity implantation step to activate the implanted impurity ions.

5,602,046

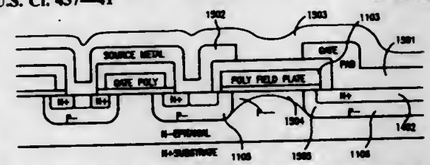
INTEGRATED ZENER DIODE PROTECTION STRUCTURES AND FABRICATION METHODS FOR DMOS POWER DEVICES

Daniel Calafut, Sunnyvale; Izak Bencuya, San Jose, and Steven Sapp, Felton, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Apr. 12, 1996, Ser. No. 631,080

Int. Cl.[6] H01L *21/266*

U.S. Cl. 437—41 **24 Claims**



1. A method of fabricating an overvoltage protection device for an input of a semiconductor device, the method comprising the steps of:

growing a gate oxide layer on an underlying epitaxial layer of a first conductivity type;

forming a gate conductive layer on the gate oxide layer;

defining a first photolithographic mask over the gate conductive layer that protects a gate region and a field plate region;

etching the conductive layer through the first photolithographic mask so as to form a gate and a field plate;

implanting body impurities of a second conductivity type to form a transistor body implant region and an input pad body implant region;

removing the first photolithographic mask;

performing a thermal body drive-in step to diffuse the body impurities of the second conductivity type vertically and laterally to form a diffused transistor body region and a diffused input pad body implant region;

defining a second photolithographic mask that exposes a heavy body contact region within the diffused transistor body region;

implanting body contact impurities of the second conductivity type to form a heavy body implant region;

removing the second photolithographic mask;

performing a thermal body contact drive-in step to diffuse the body contact impurities of the second conductivity type vertically and laterally to form a diffused beavy body region;

defining a third photolithographic mask that exposes a source region within the diffused transistor body region and a zener diode cathode region within the diffused input pad body region;

implanting source impurities of the first conductivity type to form a source implant region and a zener cathode implant region;

removing the third photolithographic mask;

performing a thermal source drive-in step to diffuse the source impurities of the first conductivity type vertically and laterally to form a diffused source region and a diffused zener cathode region;

depositing an insulation layer;

defining a fourth photolithographic mask that protects the gate and a portion of the field plate and exposes portions of the diffused source region and the diffused zener cathode region;

etching the insulation layer through the fourth photolithographic mask;

depositing a metal layer;

defining a fifth photolithographic mask that protects an input pad metal region and a source metal region and exposes a region overlying the field plate; and

etching the metal layer through the fifth photolithographic mask.

5,602,047

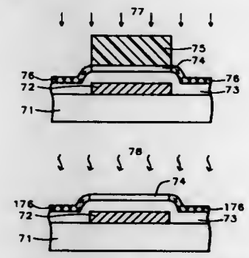
PROCESS FOR POLYSILICON THIN FILM TRANSISTORS USING BACKSIDE IRRADIATION AND PLASMA DOPING

Hsiung-Kuang Tsai, Taipei, and Lee-Tyng Chen, Hsirn, both of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Jun. 13, 1996, Ser. No. 663,441

Int. Cl.[6] H01L *21/84*;*21/306*;*21/326*;*21/479*

U.S. Cl. 437—41 **14 Claims**



1. A process for manufacturing a thin film transistor comprising:

(a) providing a dielectric substrate, having front and rear surfaces, that is transparent to actinic radiation;

(b) depositing a first metallic layer on said front surface and then patterning and etching the metallic layer to form a gate;

(c) depositing an insulating layer on said gate and said front surface;

(d) depositing a layer of undoped amorphous silicon on said insulating layer;

(e) coating so as to contact said layer of undoped amorphous silicon with a layer of positive photoresist and then exposing the photoresist to actinic radiation directed to first pass through said rear surface and insulating layer, then through the layer of amorphous silicon and then through the photoresist, said gate acting as an optical mask;

(f) developing the layer of photoresist, thereby forming a photoresist mask that is in exact alignment with the gate;

(g) exposing the photoresist mask and the layer of amorphous silicon to a gaseous plasma that includes dopant material, thereby forming doped sublayers, in the amorphous silicon, that do not overlap the gate;

(h) removing the photoresist mask and then laser annealing the entire amorphous silicon layer, including said doped sublayers, whereby said layer of amorphous silicon crystallizes into polysilicon, said doped sublayers grow thicker and the dopants are activated;

(i) depositing a second metallic layer on said polysilicon layer and then patterning and etching said second metallic layer so that it does not overlap the gate;

(k) coating the polysilicon and second metallic layers with a passivation layer; and

(l) etching and forming bonding pads through said passivation layer, to the level of said second metallic layer.

5,602,048

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE AND METHOD OF MANUFACTURING THE SAME

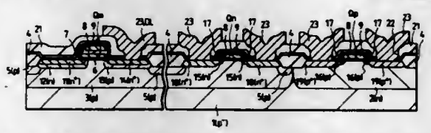
Kazuhiro Komori, Higashikurume; Satoshi Meguro, Hiondemachi; Toshiaki Nishimoto, Tama; Hitoshi Kume, Musashino, and Hideaki Yamamoto, Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 147,037, Nov. 4, 1993, Pat. No. 5,445,980, which is a continuation of Ser. No. 914,542, Jul. 16, 1992, abandoned, which is a division of Ser. No. 794,648, Nov. 18, 1991, Pat. No. 5,153,144, which is a continuation of Ser. No. 349,221, May 8, 1989, abandoned. This application May 17, 1995, Ser. No. 443,036

Claims priority, application Japan, May 10, 1988, 63-114420; Jun. 20, 1988, 63-152747

Int. Cl.[6] H01L *21/8247*

U.S. Cl. 437—43 **11 Claims**



1. A method of manufacturing a memory cell which includes a single MISFET and which comprises a first gate insulating film formed on a main surface of a semiconductor substrate, a floating gate electrode formed on said first gate insulating film, a second gate insulating film formed on said floating gate electrode and a control gate electrode formed on said second gate insulating film, said method comprising the steps of:

providing a semiconductor substrate having a main surface, with a first gate insulating film formed on said main surface and a first conductive film serving as said floating gate electrode and formed over said first gate insulating film;

forming a first insulating film on parts of said main surface corresponding to both ends of said first conductive film as viewed in a channel direction of said MISFET;

forming a first semiconductor region in said semiconductor substrate, said first semiconductor region extending to a position under said first conductive film, said forming the first semiconductor region including ion-implanting an impurity into a region of said main surface for forming said first semiconductor region, through said first insulating film, in self-alignment with said first conductive film, a film thickness

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of said first gate insulating film being such that electrons are transferred from said first conductive film to said first semiconductor region by tunneling through said first gate insulating film;

after said ion-implanting step, removing said first insulating film; and

after said removing step, oxidizing the semiconductor substrate to form an oxide film on said region for said first semiconductor region.

5,602,049

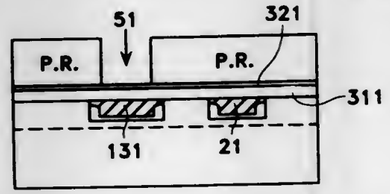
METHOD OF FABRICATING A BURIED STRUCTURE SRAM CELL

Jemmy Wen, and Joe Ko, both of Hsin-Chu, Taiwan, assignors to United Microelectronics Corporation, Hsin-Chu, Taiwan

Filed Oct. 4, 1994, Ser. No. 322,939

Int. Cl.[6] H01L *21/70;27/00*

U.S. Cl. 437—52 **9 Claims**



1. A method of fabricating a buried structure SRAM cell comprising the steps of:

forming a well of a first conductivity type in a silicon substrate;

forming a pad oxide over said substrate;

masking and then etching said pad oxide to form source/drain trenches in said substrate;

introducing dopants with said first conductivity type into said substrate to raise punch-through voltage between source and drain trenches;

forming a silicon dioxide layer at a surface of said source/drain trenches;

filling said source/drain trenches and covering an entire substrate with a first polycrystalline silicon layer formed by deposition method;

etching back said first polycrystalline silicon layer to form recesses at said source/drain trenches;

partially removing said silicon dioxide layer to form a residual silicon dioxide layer by a wet etching and then filling said recesses and covering an entire substrate with a doped first polycrystalline silicon layer, wherein dopants being of a second conductivity type to form a P-N junction by diffusion;

etching back said doped first polycrystalline layer to form source/drain regions of a MOSFET in said recesses using said pad oxide as end point detection;

removing said pad oxide, masking said substrate and then etching said doped first polycrystalline silicon layer and substrate to form gate trenches;

filling said gate trenches with a thickness of a dielectric layer to control a channel width of a pass transistor of SRAM cells;

masking said gate trenches so as to leave only the gate trenches of said pass transistor exposed and then implanting dopants of said first conductivity type to form a channel stop region at a wall of said gate trenches of said pass transistor;

removing said making and dielectric layer filled on gate trenches, then ion-implanting the gate trenches to adjust a threshold voltage of said MOSFET;

then thermally growing a gate oxide over an entire surface of the substrate followed by masking and etching the gate oxide to form a buried contact region;

depositing a doped second polycrystalline silicon to fill said gate trenches and cover the entire substrate;

etching back said doped second polycrystalline silicon to form a gate electrode of said MOSFET, while the gate oxide on the surface of the substrate being used as end point detection;

depositing an inter-poly dielectric layer;

masking and etching said inter-poly dielectric layer to form vias in which poly-loads can be connected to the gate electrode and source/drain regions; and

depositing a third polycrystalline silicon over the substrate and then patterned to form poly-loads of SRAM cells.

5,602,050

METHOD OF MAKING A SEMICONDUCTOR DEVICE WITH CONDUCTORS ON STEPPED SUBSTRATE HAVING PLANAR UPPER SURFACES

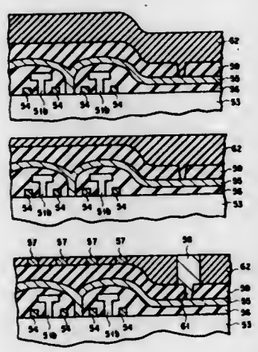
Akira Sudo, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Japan

Division of Ser. No. 226,338, Apr. 12, 1994, Pat. No. 5,420,462. This application Mar. 1, 1995, Ser. No. 396,799

Claims priority, application Japan, Apr. 13, 1993, 5-086084; Apr. 6, 1994, 6-086365

Int. Cl.[6] H01L *21/265;21/70;27/00;21/465*

U.S. Cl. 437—52 **8 Claims**



1. A method of manufacturing a semiconductor device comprising:

a step of forming a step portion on a semiconductor substrate;

a step of forming an insulating film along said step portion over said semiconductor substrate;

a step of polishing and flattening an upper surface of said insulating film;

a step of forming first grooves in said upper surface of said insulating film, said first grooves being characterized by a first depth;

a step of forming second grooves in said upper surface of said insulating film, said second grooves being characterized by a second depth, said first depth being unequal to said second depth;

a step of depositing a conductive film on said insulating film in which said first and second grooves are formed; and

a step of polishing an upper surface of said conductive film to remove first portions of said conductive film while leaving second portions of said conductive film, said second portions corresponding to said grooves to thereby form conductors in said grooves.

5,602,051

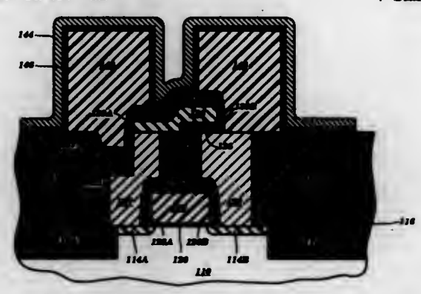
METHOD OF MAKING STACKED ELECTRICAL DEVICE HAVING REGIONS OF ELECTRICAL ISOLATION AND ELECTRICAL CONNECTION ON A GIVEN STACK LEVEL

John E. Cronin, Milton; John K. DeBrosse, Burlington, both of Vt., and Hing Wong, Norwalk, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 6, 1995, Ser. No. 540,387

Int. Cl.[6] H01L *21/8242*

U.S. Cl. 437—52 **7 Claims**



1. A method for electrically isolating a first lower conductor disposed in an insulating region from a first upper conductor disposed over at least a portion of the first lower conductor having an upper surface wherein a second lower conductor is disposed in the insulating region and electrically isolated from the first lower conductor; and a second upper conductor is disposed over at least a portion of the second lower conductor, and electrically connected thereto,

said method comprising the step of forming a recess in the upper surface of the first lower conductor that is self-aligned to the subsequently-formed first upper conductor, said recess being at least partially filled with an insulator, thereby electrically isolating the first lower conductor from the first upper conductor.

5,602,052

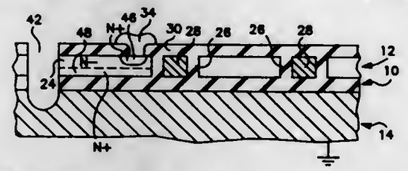
METHOD OF FORMING DUMMY ISLAND CAPACITOR

James D. Beasom, Melbourne Village, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Apr. 24, 1995, Ser. No. 427,231

Int. Cl.[6] H01L *21/70;27/00*

U.S. Cl. 437—60 **43 Claims**



40. A method of forming a capacitor in a bonded wafer comprising the steps of:

a) forming a homogeneous device wafer to a handle wafer with a layer of insulation therebetween;

b) selectively forming one or more device islands in the device wafer;

c) selectively dividing the area of the device wafer not used in the formation of device islands into one or more device wafer areas;

d) contacting at least one of the device wafer areas and the handle wafer whereby the device wafer area forms a first capacitor plate and the handle wafer forms a second capacitor plate separated from the first capacitor plate by the insulation area.

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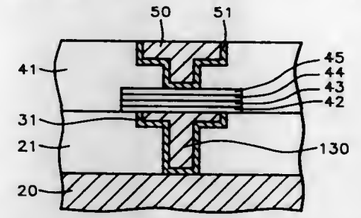
METHOD OF MAKING A DUAL DAMASCENE ANTIFUSE STRUCTURE

Jiazhen Zheng, Singapore, Singapore, and Lap Chan, San Francisco, Calif., assignors to Chartered Semidconductor Manufacturing Pte, Ltd., Singapore, Singapore

Filed Apr. 8, 1996, Ser. No. 628,068

Int. Cl.[6] H01L *21/70*

U.S. Cl. 437—60 **8 Claims**



1. A method for manufacturing an antifuse structure comprising:

(a) providing a first conductive layer;

(b) depositing a first insulating layer on said first conductive layer;

(c) patterning and then etching said first insulating layer thereby forming a trench therein;

(d) patterning and then etching said first insulating layer, including said trench, thereby forming a cavity extending from inside said trench down to the level of said first conductive layer;

(e) depositing a barrier layer on said first insulating layer and on all walls of said trench and said cavity;

(f) depositing a second conductive layer so as to more than fill said cavity and said trench;

(g) removing said second conductive layer and said barrier layer as far as the level of said first insulating layer, thereby forming a first dual damscene connector having an upper surface;

(h) depositing a first layer of silicon nitride on the antifuse structure;

(i) depositing a first layer of amorphous silicon on said first layer of silicon nitride;

(j) depositing a second layer of silicon nitride on said first layer of amorphous silicon;

(k) depositing a second layer of amorphous silicon on said second layer of silicon nitride;

(l) patterning and then etching said first and second layers of silicon nitride and amorphous silicon to form a pedestal that overlaps said first dual damascene connector;

(m) depositing a second insulating layer on said first insulating layer and on said second layer of amorphous silicon; and

(n) forming a second dual damascene connector that extends through said second insulating layer down to, and making electrical contact to, said second layer of amorphous silicon.

5,602,054

METHOD FOR FORMATION OF A WELL IN A DIELECTRICALLY ISOLATED ISLAND

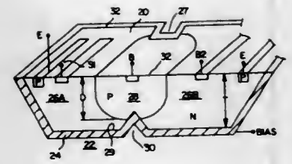
James D. Beasom, Melbourne Village, Fla., assignor to Harris Corporation, Melbourne, Fla.

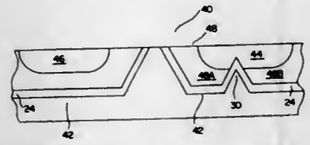
Division of Ser. No. 91,819, Jul. 13, 1993, Pat. No. 5,438,221, which is a division of Ser. No. 840,548, Feb. 25, 1992, Pat. No. 5,270,569, which is a continuation of Ser. No. 651,327, Feb. 5, 1991, Pat. No. 5,306,944, which is a continuation-in-part of Ser. No. 470,197, Jan. 24, 1990, abandoned. This application Sep. 21, 1994, Ser. No. 309,573

Int. Cl.[6] H01L *21/225*

U.S. Cl. 437—62 **8 Claims**

1. A method of manufacturing both isolating wells and non-isolating wells in an island of a first conductivity type semiconduc-





tor without separate manufacturing steps for each type of well comprising the steps of:

(a) providing an electrically isolating, upwardly extending projection that penetrates into a bottom of the island at a location where an isolating well is to be thereafter formed,

the projection being provided at the time of and by the process steps of creating the sides of the island; and

(b) thereafter diffusing plural wells into the island, each of the wells having generally the same depth, that depth being less than the thickness of the island and greater than the thickness of the island less the height of the projection,

at least one of the wells being in a location in registration with the projection and contacting the projection to thereby create an isolating well, and

at least one of the wells being in a location not in registration with the projection thereby creating a non-isolating well.

5,602,055

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE INCORPORATING A SELECTIVELY DEPOSITED CONTACT

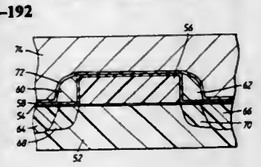
Howard C. Nicholls, Cardiff, and Michael J. Norrington, Clacton on Sea, both of United Kingdom, assignors to Inmos Limited, United Kingdom

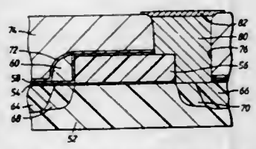
Division of Ser. No. 119,519, Sep. 10, 1993, Pat. No. 5,541,434. This application Jun. 7, 1995, Ser. No. 484,645

Claims priority, application United Kingdom, Sep. 11, 1992, 9219268

Int. Cl.[6] H01L *21/28*

U.S. Cl. 437—192 **20 Claims**





1. A method of fabricating a semiconductor device incorporating a refractory metal contact, the method comprising the steps of:

(a) providing a silicon substrate having an oxide layer thereon, a doped polysilicon region disposed on the oxide layer and a silicon nitride layer over the doped polysilicon region and the oxide layer;

(b) forming side wall spacers on the silicon nitride layer adjacent the doped polysilicon region;

(c) depositing a dielectric layer over the side wall spacers and the silicon nitride layer;

(d) forming a contact hole in the dielectric layer which removes one side wall spacer and exposes a portion of the doped polysilicon region and a laterally adjacent portion of the silicon substrate; and

(e) selectively depositing a contact into the contact hole thereby electrically connecting together the doped polysilicon region and the silicon substrate.

5,602,056

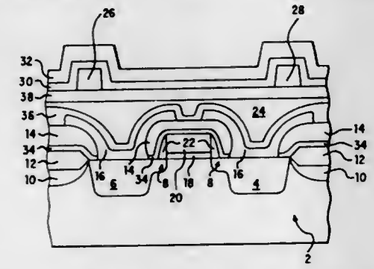
METHOD FOR FORMING RELIABLE MOS DEVICES USING SILICON RICH PLASMA OXIDE FILM

Vivek Jain, Milpitas; Dipankar Pramanik, Cupertino; Subhash R. Nariani, San Jose, and Kuang-Yeh Chang, Los Gatos, all of Calif., assignors to VLSI Technology, Inc., San Jose, Calif.

Continuation of Ser. No. 794,922, Nov. 20, 1991, abandoned, which is a continuation-in-part of Ser. No. 775,085, Oct. 11, 1991, Pat. No. 5,374,833, which is a continuation-in-part of Ser. No. 476,089, Mar. 5, 1990, Pat. No. 5,057,897. This application May 4, 1995, Ser. No. 434,528

Int. Cl.[6] H01L *21/44*

U.S. Cl. 437—195 **13 Claims**



1. A method of making an integrated circuit comprising the steps of:

forming a plurality of electrical devices having gates on a substrate;

forming an isolation layer between said electrical devices for electrically isolating the electrical devices;

forming a first silicon-enriched oxide layer on said isolation layer and gates of said electrical devices;

providing a first metallization layer above said first silicon-enriched oxide layer;

providing a second silicon-enriched oxide layer on said first metallization layer; and

providing a second metallization layer above said second silicon-enriched oxide layer.

5,602,057

PROCESS OF MAKING A SEMICONDUCTOR DEVICE USING CRYSTAL GROWTH BY A NUCLEATION SITE IN A RECESSED SUBSTRATE AND PLANARIZATION

Hideshi Kawasaki, Yamato, and Hiroyuki Tokunaga, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

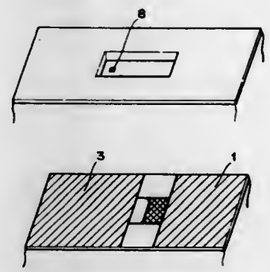
Continuation of Ser. No. 73,386, Jun. 9, 1993, abandoned, which is a division of Ser. No. 795,805, Nov. 21, 1991, Pat. No. 5,243,200. This application Feb. 27, 1995, Ser. No. 395,184

Claims priority, application Japan, Nov. 22, 1990, 2-319511

Int. Cl.[6] H01L *21/44;21/48*

U.S. Cl. 437—203 **15 Claims**

9. A process for producing a semiconductor device, which comprises the steps of:



(a) providing a substrate having a recess with a bottom surface, said recess having a shorter side of < 100 μm, a longer side of <200 μm and a depth of <50 μm and a nucleation surface formed in the recess and offset from the center of the bottom surface of the recess;

(b) conducting a vapor deposition to grow a crystalline first semiconductor region having a first conductive type on the nucleation surface until at least a part of the first semiconductor region contacts the surface of the substrate;

(c) vapor depositing a crystalline second semiconductor region having a second conductive type opposite to the first conductive type until at least a part of the second semiconductor region contacts the surface of the substrate;

(d) flattening the first and the second semiconductor regions such that the surface of the substrate and the flattened surfaces of the first and the second semiconductor regions form a single planar surface; and

(e) forming on said single planar surface portions which are electrically connected to each of the first and the second semiconductor regions.

5,602,058

METHOD AND APPARATUS FOR APPLYING A WAFER TO A MOUNT PLATE

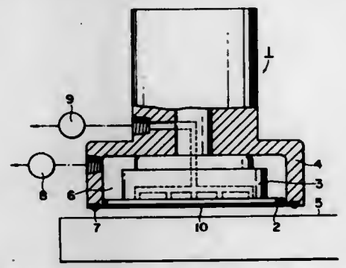
Kimiwaka Ooizumi, Sayama, and Kouichi Tanaka, Higashiyamato, both of Japan, assignors to Enya Systems Limited, Japan

Filed Dec. 20, 1994, Ser. No. 359,880

Claims priority, application Japan, Dec. 21, 1993, 5-344669

Int. Cl.[6] H01L *4/60*

U.S. Cl. 437—209 **31 Claims**



1. A method for applying a wafer to a mount plate, comprising the steps of:

providing a wafer having a lower surface coated with an adhesive layer;

applying the wafer at an upper surface thereof to a vacuum holder to hold the wafer through suction;

placing a vacuum-tight sealing enclosure over the wafer and the surface of the mount plate to define a sealed space while maintaining the lower surface of the wafer at a predetermined distance from the surface of the mount plate; and

evacuating the sealed space at a degree of vacuum higher than the degree of vacuum of the vacuum holder to effect release of the wafer from the vacuum holder and dropping of the wafer onto the surface of the mount plate.

5,602,059

SEMICONDUCTOR DEVICE AND METHOD FOR MANUFACTURING SAME

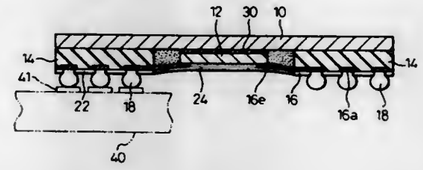
Michio Horiuchi, and Yoichi Harayama, both of Nagano, Japan, assignors to Shinko Electric Industries Co., Ltd., Nagano, Japan

Filed Sep. 8, 1995, Ser. No. 525,078

Claims priority, application Japan, Sep. 8, 1994, 6-214428

Int. Cl.[6] H01L *21/60*

U.S. Cl. 437—209 **8 Claims**



1. A method of manufacturing a semiconductor device, comprising the steps of:

defining, on a main surface of a flat package substrate, a semiconductor chip mount portion having a periphery and a peripheral surface portion of the main surface extending about and outwardly from the periphery of the semiconductor chip mount portion;

joining an elastic layer to the peripheral surface portion of the main surface of the flat package substrate, said elastic layer having a thickness larger than a thickness of a semiconductor chip to be mounted on the semiconductor chip mount portion and having an inner wall surrounding, and at least in part defining, a cavity encompassing the semiconductor chip mount portion;

joining a wiring pattern film, having wiring patterns for connection with said semiconductor chip, to an exposed surface of said elastic layer;

positioning a semiconductor chip within said cavity and joining a back surface of said semiconductor chip to the semiconductor chip mount portion of the main surface of the flat package substrate;

sealing said semiconductor chip within said semiconductor device by potting same in a potting material; and

joining external connection terminals to respective ends of said wiring patterns on the wiring pattern film.

5,602,060

PROCESS FOR THE PRODUCTION OF SEMICONDUCTOR DEVICES

Michiko Kobayashi; Syun-ichi Fukuyama; Yoshihiro Nakata; Masanori Naitou; Hiroshi Kudo, and Yoshiyuki Ohkura, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

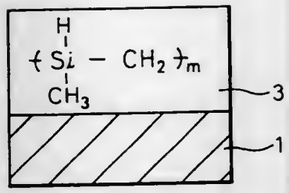
Continuation of Ser. No. 297,990, Aug. 30, 1994, abandoned. This application Jan. 4, 1996, Ser. No. 582,808

Claims priority, application Japan, Aug. 31, 1993, 5-214649; Aug. 30, 1994, 6-204832

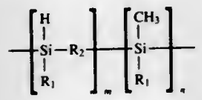
Int. Cl.[6] B05D *3/02*

U.S. Cl. 437—238 **10 Claims**

1. A process for the production of a semiconductor device which comprises the steps of applying a solution of polycarbosilane of the general formula (1):



(1)



in which

R_1 represents a hydrogen atom, a substituted or unsubstituted alkyl group having 1 to 4 carbon atoms or a substituted or unsubstituted aryl group;

R_2 represents a substituted or unsubstituted methylene or methyn group; and

m and n each is a positive integer satisfying the condition of $10<m+n<1000$ and a ratio of m and N is less than 0.3, in a solvent onto a substrate having electrically conductive components fabricated therein, and curing the coated layer of the polycarbosilane at a temperature of not less than 350° C. in an oxidizing atmosphere to thereby convert the polycarbosilane layer to a silicon oxide layer.

5,602,061

PROCESS AND APPARATUS FOR MANUFACTURING MOS DEVICE

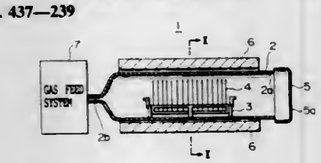
Nobuyoshi Fujimaki, Tokyo, Japan, assignor to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

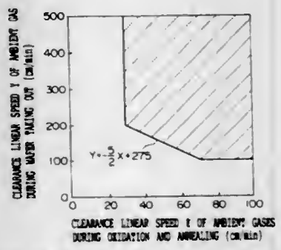
Filed Dec. 16, 1993, Ser. No. 167,031

Claims priority, application Japan, Dec. 17, 1992, 4-355269

Int. Cl.[6] H01L *21/316*

U.S. Cl. 437—239 **16 Claims**





1. A process for manufacturing MOS devices from substantially disc-shaped semiconductor wafers, comprising the steps of:

providing a horizontal heat treating furnace, the horizontal heat treating furnace including a horizontal cylindrical tube with opposite open ends, holding means mounted within the tube for holding the semiconductor wafer in a vertical position transverse against the longitudinal axis of the tube, a gas feed system connected to one open end of the tube and feeding a flow of an oxidizing gas into the tube at an oxidizing step to produce an oxidizing ambient, the gas feed system feeding a flow of an annealing gas to the oxidized semiconductor wafer at an annealing step to produce an annealing ambient, and closing means removably mounted to the other open end of the tube for closing it, the closing means in a mounted position allowing a gas in the tube to flow outside the tube, the closing means in a removed position allowing the semiconductor wafer to be put into and taken out of the tube;

controlling first clearance linear speeds (1st CLSs) X which is the flows of the oxidizing and annealing gases defined as ratios of those flow rates to the area of a clearance between the semiconductor wafer and the interior surface of the tube to be at least 30 cm/min at the oxidizing and annealing steps;

controlling a second clearance linear speed (2nd CLS) Y which is the flow of the annealing gas defined as a ratio of that flow rate to the area of said clearance to be at least 100 cm/min throughout the duration of a step of taking the semiconductor wafer out of the tube; and

controlling a relation between the 1st CLSs X and the 2nd CLS Y so that $Y \geqq -2.5X+275$, wherein X, Y>0.

5,602,062

METHOD FOR PREPARING A BORON NITRIDE COMPOSITE

Tadao Sato, Ami, and Milan Hubáček, Kawasaki, both of Japan, assignors to National Institute for Research in Inorganic Materials, Tsukuba, Japan

Filed Sep. 28, 1995, Ser. No. 535,816

Claims priority, application Japan, Jan. 18, 1995, 7-023509

Int. Cl.[6] C04B *35/5835*

U.S. Cl. 501—96 **4 Claims**



1. A method for preparing a boron nitride composite, which comprises heating a molten mixture of urea, boric acid and a metal element compound to obtain boron nitride having the metal element or the metal element compound dispersed and supported therein.

5,602,063

LIGHTWEIGHT SPRAYABLE TUNDISH LINING COMPOSITION

Julie A. Dody, Easton, Pa., and Charles R. Rumpeltin, Jr., Odessa, Fla., assignors to Minteq International, Inc., New York, N.Y.

Filed Mar. 30, 1995, Ser. No. 413,286

Int. Cl.[6] C04B *35/03*

U.S. Cl. 501—108 **19 Claims**

7. A disposable lining material comprising;

from about 0.1 to about 2 weight percent of a stiffening agent comprising an alkali metal free phosphate compound;

from about 0.1 to about 2 weight percent of a set retarding agent;

from about 0.1 to about 15 weight percent of at least one density reducing material comprising hollow ceramic microspheres having diameters of about 5 to about 500 microns;

from about 0.1 to about 5 weight percent of a plasticizer; and

at least about 80 weight percent of a basic refractory aggregate comprising magnesia, magnesite, olivine, doloma, dolomite, calcia, or mixtures thereof.

5,602,064

METHOD OF PRODUCING MICROWAVE DIELECTRIC

Jae B. Kim; Suk J. Yun, and Hyun J. Kim, all of Seoul, Rep. of Korea, assignors to L.G. Electro-Components Ltd., Rep. of Korea

Filed Nov. 3, 1995, Ser. No. 552,708

Claims priority, application Rep. of Korea, Nov. 4, 1994, 94-28902

Int. Cl.[6] C04B *35/46;35/49*

U.S. Cl. 501—134 **1 Claim**

1. A method of producing a microwave dielectric, which comprises controlling the temperature coefficient of the resonance frequency of the dielectric by adjusting the amount of an amorphous portion of the dielectric with quenching of the dielectric material in a temperature range where its liquid phase exists.

5,602,065

PROCESS FOR PREPARING FUNCTIONAL CERAMICS

Teruo Higa, 509, Aza Shimashi, Ginowan-Shi, Okinawa-Ken, Japan

Division of Ser. No. 263,461, Jun. 22, 1994, Pat. No. 5,521,131. This application Jan. 11, 1996, Ser. No. 585,238

Claims priority, application Japan, Jun. 25, 1993, 5-204391

Int. Cl.[6] C04B *33/00*

U.S. Cl. 501—141 **5 Claims**

1. A process for preparing a ceramic comprising calcining a ceramic material with 25 to 40 weight percent of microorganisms and/or culture fluid thereof at a temperature and for a time sufficient for calcination to take place,

wherein at least five microorganisms are selected and at least one microorganism is selected from each of the five groups of actinomycetes, phototrophic bacteria, lactic acid bacteria, mold fungi and yeast wherein

said actinomycetes belong to genus Streptomyces, Streptoverticillium, Nocardia, Micromonospora, or Rhodococcus;

said phototrophic bacteria belong to genus Rhodopseudomonas, Rhodospirillum, Chromatium, or Chlorobium;

said lactic acid bacteria belong to genus Lactobacillus, Propionibacterium, or Pediococcus;

said mold fungi belong to genus Aspergillus or Mucor; and

said yeast belong to genus Saccharomyces or Candida.

5,602,066

METHOD OF MAKING A LIQUID WASHED SELECTIVATED ZEOLITE CATALYST

Jeffrey S. Beck, Princeton, and David L. Stern, Lawrenceville, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Jun. 29, 1995, Ser. No. 441,106

Int. Cl.[6] B01J *29/06*

U.S. Cl. 502—64 **9 Claims**

1. A method for preparing a selectivated catalyst composition, said method comprising the steps of:

(a) contacting a catalyst comprising an intermediate pore size zeolite with an organosilicon compound under conditions sufficient to deposit a siliceous material on said catalyst;

(b) calcining the organosilicon containing material in an oxygen containing atmosphere under conditions sufficient to remove organic material therefrom and leave said siliceous material on said catalyst;

(c) directly washing the catalyst from step (b) with water; and

(d) drying the washed catalyst from step (c).

5,602,067

PROCESS AND A CATALYST FOR PREVENTING REACTOR FOULING

Thomas E. Nowlin, West Windsor; Frederick Y. Lo, Edison, both of N.J.; Ronald S. Shinomoto, Norristown, Pa., and Pradeep P. Shirodkar, Somerset, N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 229,516, Apr. 19, 1994, Pat. No. 5,473,028, which is a division of Ser. No. 997,421, Dec. 28, 1992, Pat. No. 5,332,706. This application Nov. 3, 1994, Ser. No. 333,685

Int. Cl.[6] B01J *31/00;* C08F *4/646*

U.S. Cl. 502—104 **44 Claims**

1. A process for supporting alumoxane and derivatives thereof on a support, wherein the process comprises

providing a sample comprising a support of silica wherein the sample has a total pore volume; and wherein the support has a pore volume of 0.5 to 5.0 cc/g and has pores of an average diameter of about 50 to 500 angstroms;

providing a solution comprising an alumoxane and a solvent for said alumoxane,

wherein said solution has a volume in a range of from in excess of the total pore volume of the sample and to less than about twice the total pore volume of the sample, and

wherein the volume of said solution is less than that required to form a slurry of said sample in said solution;

wherein the alumoxane is characterized by a formula (a) and/or (b), wherein (a) is $R—(Al(R)—O)_x—AlR_2$ for linear alumoxanes and (b) $(—Al(R)—O)_y$ for cyclic alumoxanes and wherein x is 1 to 40, y is 3–40 and R is a C_1–C_8 alkyl group

wherein the solution has a concentration of alumoxane expressed as Al weight percent which ranges from 5 to 20,

wherein the alumoxane provides aluminum in an amount sufficient to provide a ratio of Al to silica (wt/wt) from 0.10 to 0.40;

contacting the sample with said volume of said solution and allowing the solution to impregnate the pores of support,

after said contacting recovering particles of support impregnated with alumoxane.

5,602,068

Patent Not Issued For This Number

5,602,069

GLASS CLEANING COMPOSITION

Karen Wisniewski, Bound Brook, N.J.; Guy Broze, Grace-Hollogne, and Anne-Marie Misselyn, Villers-l'eveque, both of Belgium, assignors to Colgate-Palmolive Co., Piscataway, N.J.

Filed Oct. 14, 1994, Ser. No. 323,335

Int. Cl.[6] C11D *1/82*

U.S. Cl. 502—182 **6 Claims**

1. A glass cleaning composition consisting essentially of approximately by weight:

(a) 2% to 15% of an aliphatic alcohol having about 1 to about 4 carbon atoms;

(b) 0 to 10% of a monoalkyl ether of a glycol;

(c) 0.05% to 1.0% of a zwitterionic, said zwitterionic surfactant being selected from the group consisting of betaines and sultaines;

(d) 0.05 to 1.5% of a silicone glycol; and
(e) the balance being water, said composition having a viscosity at 25° C. of 1 to 25 cps and being free of xanthan gum and has a pH of 6.5 to 8.0.

5,602,070

PROCESS FOR PREPARING SILVER CATALYST

Nabil Rizkalla, River Vale, N.J., assignor to Scientific Design Company, Inc., Little Ferry, N.J.

Continuation of Ser. No. 370,550, Jan. 9, 1995, Pat. No. 5,444,034. This application May 5, 1995, Ser. No. 436,001
Int. Cl.[6] B01J *23/50;* **C07D** *301/10*
U.S. Cl. 502—347 **7 Claims**

1. In the process for preparing a supported silver catalyst for the vapor-phase oxidation of ethylene to ethylene oxide, comprising the steps of:
(a) impregnating a porous support having a surface area of about 0.2 to 2.0 m^2/g with a hydrocarbon solution of a silver salt of an organic acid which is substantially free of water and acid and sufficient to provide 3 to 25 wt % silver on the support; and
(b) subjecting the silver impregnated support of step (a) to activation by heating,
(c) impregnating the activated silver impregnated support of step (b) with solution containing an alkali metal compound to obtain a finished catalyst having about 1 to 6×10^{-3} gew of the alkali metal per kg of catalyst;
wherein the improvement is that said alkali containing solution is a substantially anhydrous alcoholic solution containing cesium carbonate or cesium bicarbonate.

5,602,071

BEAD FOR REMOVING DISSOLVED METAL CONTAMINANTS

Bobby L. Summers, Jr., Hudson; Lester B. Gress, Brecksville; Warren H. Philipp, Olmsted Twp., and Scott B. Eastep, Westlake, all of Ohio, assignors to Aero-Terra-Aqua Technologies Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 249,733, May 26, 1994. This application May 17, 1995, Ser. No. 446,897
Int. Cl.[6] B01J *20/22;* **B01D** *15/08;* **C02F** *1/42*
U.S. Cl. 502—401 **20 Claims**

1. A bead comprising peat moss and a binder, said binder being poly(carboxylic acid) effectively crosslinked with a crosslinking agent and effectively neutralized with an alkali metal, an alkaline earth metal, or a mixture thereof, said peat moss being effectively immobilized in said bead, said bead being capable of sorbing a metal or metalloid dissolved in a dilute aqueous solution at a concentration of less than 10 ppm, said metal or metalloid being selected from the group consisting of silver, iron, chromium, cobalt, uranium, mercury, nickel, arsenic, aluminum, cadmium, lead, manganese, copper, and zinc.

10. A method of making a metal-ion-sorbing bead, said bead being effective to sorb metal ions from a dilute aqueous solution, said metal being selected from the group consisting of silver, iron, chromium, cobalt, uranium, mercury, nickel, aluminum, cadmium, lead, manganese, copper, and zinc, the method comprising the steps of:
a) combining nonliving biomass and binder solution into a mixture, said binder solution comprising poly(carboxylic acid) and a crosslinking agent;
b) forming the mixture into a first bead;
c) heating said first bead to effectively crosslink said poly(carboxylic acid) with said crosslinking agent to form an effectively crosslinked binder; and
d) effectively neutralizing said crosslinked binder with an alkali metal, an alkaline earth metal, or a mixture thereof.

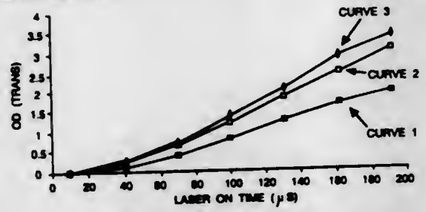
17. A method of removing a metal or metalloid ion from a dilute aqueous solution in which said ion is present, said method comprising the steps of:
a) contacting said solution with a bead for a period of time sufficient to allow said bead to sorb said ion, said bead comprising peat moss and a binder, said binder being poly-(carboxylic acid) effectively crosslinked with a crosslinking agent and effectively neutralized with an alkali metal, an alkaline earth metal, or a mixture thereof, said peat moss being effectively immobilized in said bead; and
b) sorbing said ion onto said bead.

5,602,072

THERMAL TRANSFER PRINTING DYE SHEET

Kenneth W. Hutt, Nr Manningtree, and Ian R. Stephenson, St. Andrews, both of England, assignors to Imperial Chemical Industries PLC, United Kingdom

Filed Jan. 26, 1995, Ser. No. 347,321
Claims priority, application United Kingdom, Apr. 2, 1993, 9307082
Int. Cl.[6] B41M *5/035;5/38*
U.S. Cl. 503—227 **10 Claims**



8. A method of thermal printing comprising positioning a dye sheet in contact with a receiver sheet and projecting laser light into the dye sheet, characterised in that the laser light is projected through the receiver sheet and a reflective layer is positioned in the dye sheet such that laser light not absorbed on the first pass is reflected back so as to be absorbed on a second pass.

5,602,073

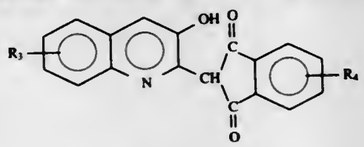
THERMAL TRANSFER SHEET

Nobuyuki Harada, Tokyo-To, Japan, assignor to Dai Nippon Printing Co., Ltd., Japan

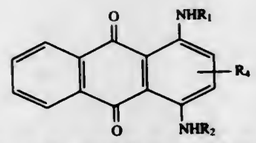
Filed Dec. 28, 1994, Ser. No. 365,437
Claims priority, application Japan, Dec. 28, 1993, 5-349361
Int. Cl.[6] B41M *5/035;5/38*
U.S. Cl. 503—227 **7 Claims**

1. A thermal transfer sheet comprising a long substrate sheet and, provided on said substrate sheet, a plurality of dye layers, said dye layers including a yellow dye layer comprising a binder and a dye represented by the following formula (Y) and a cyan dye layer comprising a dye represented by the following formula (C):

(Y)



(C)



wherein R_1 and R_2 represent an alkyl group, a substituted or unsubstituted aryl group, or an aralkyl group, R_3 represents a

substituted or unsubstituted alkyl group, an alkoxy group, an alkylcarbonylamino group, an alkylsulfonylamino group, an alkylaminocarbonyl group, an alkylaminosulfonyl group, or a halogen atom, R_4 represents an alkoxycarbonyl group, an alkylaminocarbonyl group, an alkoxy group, an aryloxy group, an alkyl group, a cycloalkyl group, a heterocyclic groups, a halogen atom, or a hydrogen atom.

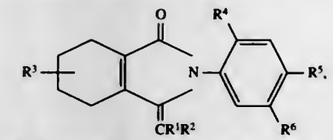
5,602,074

SUBSTITUTED ISOINDOLONES USEFUL AS PLANT GROWTH REGULATORS

Ralf Klintz, Bochum; Elisabeth Heistracher, Ludwigshafen; Peter Schaefer, Bad Durkheim; Gerhard Hamprecht, Weinheim; Uwe Kardorff, Mannheim; Matthias Gerber, Limburgerhof; Karl-Otto Westphalen, Speyer, and Helmut Walter, Obrigheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP93/01216, § 371 Date Nov. 22, 1994, § 102(e) Date Nov. 22, 1994, PCT Pub. No. WO93/24456, PCT Pub. Date Dec. 9, 1993
PCT Filed May 14, 1993, Ser. No. 343,563
Claims priority, application Germany, May 23, 1992, 42 17 137.7
Int. Cl.[6] C07D *209/46;209/48;* **A01N** *43/38*
U.S. Cl. 504—100 **12 Claims**

1. A substituted isoindolone of the formula I



I

where the variables have the following meanings:
R^1 and R^2 are
hydrogen, C_1–C_6-alkyl, C_2–C_6-alkenyl, C_2–C_6-alkynyl, tri-(C_1–C_6-alkyl)silyl-C_2–C_6-alkynyl, C_1–C_6-alkoxy-C_1–C_6-alkyl, cyano, C_1–C_6-cyanoalkyl, C_1–C_6-alkoxycarbonyl, formyl, C_1–C_6-alkylcarbonyl, phenylcarbonyl where the phenyl ring may be unsubstituted or may be substituted by one to three radicals selected from the group consisting of C_1–C_6-alkyl, C_1–C_6-alkoxy, halogen, cyano, nitro and trifluoromethyl, C_1–C_6-alkoxycarbonyl-C_1–C_6-alkyl, C_1–C_6-alkoxycarbonyl-C_2–C_6-alkenyl, C_3–C_8-cycloalkyl and C_1–C_6-haloalkyl,
or, if R^1 is hydrogen, R^2 is additionally phenyl which may be unsubstituted or may be substituted by one to three radicals selected from the group consisting of C_1–C_6-alkyl, C_1–C_6-alkoxy, halogen, cyano, nitro and trifluoromethyl,
or R^1 and R^2, together with the common C atom to which they are bonded, form a three- to eight-membered saturated or unsaturated non-aromatic carbo- or heterocycle which ring may contain one to three N atoms and an additional oxygen or sulfur atom and also one or two carbonyl groups as ring members, which ring may be substituted by one to three identical or different C_1–C_6-alkyl groups;
R^3 is
hydrogen or C_1–C_6-alkyl;
R^4 is
hydrogen or halogen;
R^5 is
hydrogen, halogen, nitro, cyano or trifluoromethyl;
R^6 is
a 3- to 8-membered heterocyclyl which may be saturated or partially or completely unsaturated and may optionally contain one to four heteroatoms selected from the group consisting of one to four nitrogen atoms, one or two oxygen atoms and one or two sulfur atoms, where the heterocycle may optionally be substituted by one of the following substituents on each substitutable atom: C_1–C_6-alkyl, C_2–C_6-alkenyl, halogen, cyano, nitro, C_1–C_6-haloalkyl, C_1–C_6-alkoxy or C_1–C_6-alkoxycarbonyl, or
one of the following groups: —A—CN, —A—CO—B, —$C(R^{10})$=O, —$C(R^{10})$=S, —$C(R^{10})$=N—R^{11}, —$C(X^1R^{14})(X^2R^{15})R^{10}$, —$P(R^{12})(R^{13})$=O, where
A is
a C_1–C_4-alkylene, C_2–C_4-alkenylene or C_2–C_4-alkynylene chain which may in each case be unsubstituted or may optionally be substituted by one or two radicals selected from the group consisting of halogen, cyano, C_1–C_6-alkyl, C_1–C_6-alkoxycarbonyl and C_1–C_6-alkylcarbonyl;
B is
hydrogen, C_1–C_6-alkyl, C_3–C_6-alkenyl, C_3–C_6-alkynyl, C_1–C_6-haloalkyl, C_3–C_8-cycloalkyl
—OR^{16} or —SR^{16}, where R^{16} is
hydrogen, C_1–C_6-alkyl, C_3–C_6-alkenyl, C_3–C_6-alkynyl, C_3–C_8-cycloalkyl, C_2–C_6-haloalkyl,
phenyl which may be unsubstituted or may be substituted by one to three radicals selected from the group consisting of C_1–C_6-alkyl, C_2–C_6-alkenyl, halogen, cyano, nitro, C_1–C_6-alkoxy and C_1–C_6-alkoxycarbonyl,
C_1–C_6-cyanoalkyl, C_3–C_6-haloalkenyl, C_1–C_6-alkoxycarbonyl, C_1–C_6-alkoxy-C_1–C_6-alkyl, C_1–C_6-alkoxycarbonyl-C_1–C_6-alkyl or C_1–C_6-alkoximino-C_1–C_6-alkyl;
phenyl which may be unsubstituted or may be substituted by one to three radicals selected from the group consisting of C_1–C_6-alkyl, C_3–C_6-alkenyl, halogen, cyano, nitro, C_1–C_6-alkoxy and C_1–C_6-alkoxycarbonyl;
—NR^8R^9, where R^8 and R^9 independently of one another are hydrogen, C_1–C_6-alkyl, C_3–C_6-alkenyl, C_3–C_6-alkynyl, C_3–C_8-cycloalkyl, C_1–C_6-haloalkyl, C_1–C_6-alkylcarbonyl, C_1–C_6-alkoxycarbonyl, C_1–C_6-alkoxy-C_1–C_6-alkyl or phenyl which may be unsubstituted or may be substituted by one to three radicals selected from the group consisting of C_1–C_6-alkyl, C_2–C_6-alkenyl, halogen, cyano, nitro, C_1–C_6-alkoxy and C_1–C_8-alkoxycarbonyl, or where
R^8 and R^9, together with the common nitrogen atom, form a saturated or partially or completely unsaturated 4- to 7-membered ring which may additionally contain one or two further heteroatoms as ring members, selected from the group consisting of nitrogen, oxygen and sulfur;
C_1–C_6-alkoxy-C_1–C_6-alkyl, di-(C_1–C_6-alkoxy)-C_1–C_6-alkyl, C_1–C_6-alkylthio-C_1–C_6-alkyl;
R^{10} is
hydrogen or cyano
C_1–C_6-alkyl, C_3–C_6-alkenyl, C_3–C_6-alkynyl,
C_1–C_6-haloalkyl,
C_3–C_8-cycloalkyl,
C_1–C_6-alkoxycarbonyl,
C_1–C_6-alkoxycarbonyl-C_1–C_6-alkyl,
R^{11} is
hydrogen, C_1–C_6-alkyl, C_3–C_6-alkenyl, C_3–C_6-alkynyl, C_3–C_8-cycloalkyl, C_1–C_6-haloalkyl,
phenyl which may be unsubstituted or may optionally be substituted by one to three radicals selected from the group consisting of C_1–C_6-alkyl, C_3–C_6-alkenyl, halogen, cyano, nitro, C_1–C_6-alkoxy and C_1–C_6-alkoxycarbonyl,
C_1–C_6-alkoxy-C_1–C_6-alkyl, hydroxyl,
C_3–C_6-alkenyloxy, C_3–C_6-alkynyloxy, C_5–C_7-cycloalkoxy, C_5–C_7-cycloalkenyloxy, C_1–C_6-haloalkoxy, C_3–C_6-haloalkenyloxy, C_3–C_8-cycloalkyl-C_1–C_6-alkoxy,
C_1–C_6-alkylcarbonyloxy,
C_1–C_6-cyanoalkoxy, C_1–C_6-alkoxy-C_1–C_6-alkoxy, C_1–C_6-alkoxycarbonyl-C_1–C_6-alkoxy, hydroxy-C_1–C_6-alkoxy, C_1–C_6-alkylthio-C_1–C_6-alkoxy, C_1–C_6-alkylamino-C_1–C_6-alkoxy, di-(C_1–C_6-alkyl)-amino-C_1–C_6-alkoxy,
phenyl-C_1–C_6-alkoxy, phenyl-C_3–C_6-alkenyloxy or phenyl-C_3–C_6-alkynyloxy, where in each case one or two methylene groups of the alkoxy, alkenyloxy and alkynyloxy chains may be replaced by oxygen, sulfur and/or a C_1–C_6-alkylamino chain, and where the phenyl ring may be unsubstituted or may optionally be substituted by one to three substituents selected from the group consisting of C_1–C_6-

alkyl, C_2–C_6-alkenyl, halogen, cyano, nitro, C_1–C_6-alkoxy and C_1–C_6-alkoxycarbonyl,

—NR^8R^9;

R^{12} and R^{13} are

C_1–C_6-alkoxy or phenyl which may be unsubstituted or may optionally be substituted by one to three radicals selected from the group consisting of C_1–C_6-alkyl, C_1–C_6-haloalkyl, C_3–C_6-alkenyl, halogen, cyano, nitro, C_1–C_6-alkoxy and C_1–C_6-alkoxy-carbonyl; X^1 and X^2 are oxygen or sulfur;

R^{14} and R^{15} are

C_1–C_6-alkyl, C_3–C_6-alkenyl, C_3–C_6-alkynyl or C_1–C_6-alkoxy-C_1–C_6-alkyl or

R^{14} and R^{15} together are a two- to four-membered carbon chain which may be unsaturated and which, optionally, may contain a carbonyl group as a chain member,

where the carbon chain may be unsubstituted or may optionally be substituted by one to three radicals selected from the group consisting of C_1–C_6-alkyl, C_2–C_6-alkenyl, halogen, cyano, nitro, amino, C_1–C_6-alkoxy, C_3–C_6-alkenyloxy, C_3–C_6-alkynyloxy, carboxyl, C_1–C_6-alkoxycarbonyl, C_1–C_6-haloalkyl, C_1–C_6-alkoxy-C_1–C_6-alkyl, C_3–C_6-alkenyloxy-C_1–C_6-alkyl, C_3–C_6-alkynyloxy-C_1–C_6-alkyl, C_1–C_6-hydroxyalkyl and C_1–C_6-cyanoalkyl;

or R^5 and R^6

together are a saturated or partially or completely unsaturated three- to five-membered carbon chain which, optionally, may contain one or two oxygen, sulfur or nitrogen atoms and/or a carbonyl group as a chain member, and where the chain may be unsubstituted or may optionally be substituted by one or two radicals selected from the group consisting of cyano, nitro, amino, halogen, C_1–C_6-alkyl, C_1–C_6-haloalkyl, C_2–C_6-alkenyl, C_3–C_6-alkynyl, C_1–C_6-cyanoalkyl, C_1–C_6-alkoxycarbonyl-C_1–C_6-alkyl,phenyl-C_1–C_6-alkyl and 3- to 8-membered heterocyclyl-C_1–C_6-alkyl, where the heterocycle may in turn be saturated or partially or completely unsaturated and may optionally contain one to four heteroatoms selected from the group consisting of one to four nitrogen atoms, one or two oxygen atoms and one or two sulfur atoms;

excluding those compounds of formula I in which R^1 and R^2 are hydrogen and R^5 and R^6 together form a substituted chain —CH=CH—NH— and excluding those compounds of formula I in which R^1 and R^2 are hydrogen and R^4 is fluorine and R^5 and R^6 together are a substituted chain —O—CH_2—CO—NH—,

and the agriculturally utilizable salts of the compounds of formula I.

5,602,075

N-ARYL[1,2,4]TRIAZOLO[1,5-A]PYRAZINE-2-SULFONAMIDE HERBICIDES

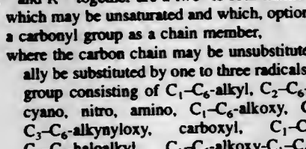
Zoltan Benko, Indianapolis; John J. Jachetta, Zionsville; Mark J. Costales, and Kim E. Arndt, both of Indianapolis, all of Ind., assignors to DowElanco, Indianapolis, Ind.

Filed Jul. 11, 1994, Ser. No. 273,258

Int. Cl.[6] A01N *43/653*

U.S. Cl. 504—235 **21 Claims**

1. An N-aryl[1,2,4]triazolo[1,5-a]pyrazine-2-sulfonamide compound of the formula:

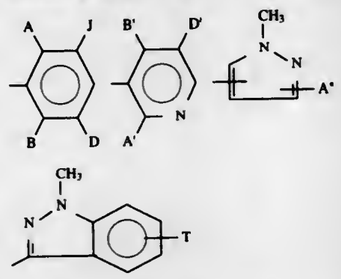


wherein

X, Y, and Z each independently represents H, CH_3, CF_3, F, Cl, Br, or $(C_1$–$C_3)$alkoxy;

V represents H, COR', CO_2R^*, or $CONR^{*'}_2$;

Ar represents an aromatic moiety of one of the formulas:



A represents F, Cl, Br, CO_2R^*, $CONR^{*'}_2$, $(C_1$–$C_2)$haloalkyl, NO_2, CN, SOR', or SO_2R';

B represents H, CH_3, C_2H_5, F, Cl, Br, CN, OR', SR', NR'^{*}_2, phenyl, or phenoxy, each phenyl and phenoxy optionally possessing 1 to 3 substituents selected from the group consisting of F, Cl, Br, CN, CF_3, NO_2, and CH_3;

D and J each independently represents H or CH_3 with the proviso that at least one of D and J represents H;

A' and B' each independently represents H, R', OR', $S(O)_nR'$, F, Cl, Br, I, CN, NO_2, C_6H_5, CO_2R^*, or $CONR^{*'}2$ with the proviso that not more than one of A' and B' represents H;

D' represents H, F, Cl, Br, I, CF_3, or CH_3;

A" represents F, Cl, Br, I, CF_3, SCF_3, CN, CO_2R^*, or $CONR^{*'}_2$ and is located in the 4-position when the point of attachment is the 3- or 5-position and represents F, Cl, Br, I, CF_3, or CH_3 and is located in the 3- and/or 5-position when the point of attachment is the 5-position;

T represents H or F;

n represents 0, 1, or 2;

R' represents $(C_1$–$C_3)$alkyl optionally singly to completely substituted with fluorine;

R* represents $(C_1$–$C_4)$ alkyl, $(C_3$–$C_4)$ alkenyl, or $(C_3$–$C_4)$ alkynyl;

R*' represents H or $(C_1$–$C_4)$alkyl; and when V represents H, the agriculturally acceptable salts thereof.

5,602,076

CERTAIN FUNGICIDES, PESTICIDES AND PLANT GROWTH REGULANTS

Vivienne M. Anthony, Maidenhead; John M. Clough, Marlow; Paul DeFraine, Wokingham, and Christopher R. A. Godfrey, Bracknell, all of England, assignors to Zeneca Limited, London, England

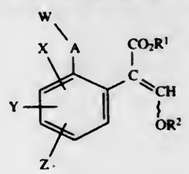
Continuation of Ser. No. 239,845, May 9, 1994, Pat. No. 5,470,819, which is a continuation of Ser. No. 738,311, Jul. 31, 1991, abandoned, which is a division of Ser. No. 465,526, Jan. 17, 1990, Pat. No. 5,057,146, which is a continuation of Ser. No. 39,252, Apr. 17, 1987, abandoned. This application Mar. 29, 1995, Ser. No. 412,450

Claims priority, application United Kingdom, Apr. 17, 1986, 8609454; Dec. 23, 1986, 8630825

Int. Cl.[6] C07D *239/22;* **A01N** *43/54*

U.S. Cl. 504—239 **14 Claims**

1. A compound having the formula (I):



(I)

or a stereoisomer thereof, where W is a substituted pyrimidinyl group linked to A by any one of its carbon atoms; A is either an oxygen atom or $S(O)_n$ wherein n is 0, 1 or 2; X, Y and Z, which are the same of different, are hydrogen or halogen atoms, or hydroxy, optionally substituted alkyl, optionally substituted alkenyl, optionally substituted aryl, optionally substituted alkynyl, optionally substituted alkoxy, optionally substituted alkylthio, optionally substituted aryloxy, optionally substituted arylalkoxy, optionally substituted acyloxy, optionally substituted amino, optionally substituted acylamino, nitro, cyano, $—CO_2R^3$, $—CONR^4R^5$, —COR^6 or $—S(O)_mR^7$ (wherein m is 0, 1 or 2) groups, or any two of the groups X, Y and Z, when they are in adjacent positions on the phenyl ring join to form a fused ring, either aromatic or aliphatic; R^1 and R^2, which are the same or different, are optionally substituted alkyl groups; and R^3, R^4, R^5, R^6 and R^7 which are the same or different, are hydrogen atoms or optionally substituted alkyl, optionally substituted cycloalkyl, optionally substituted cycloalkylalkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted aryl or optionally substituted aralkyl groups; and metal complexes thereof.

5,602,077

PYRIMIDINE COMPOUNDS AS HERBICIDES

Kofi S. Amuti, Wilmington; Wonpyo Hong, Hockessin, both of Del., and Joseph E. Semple, San Diego, Calif., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

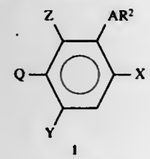
PCT No. PCT/US92/11330, § 371 Date Jul. 13, 1994, § 102(e) Date Jul. 13, 1994, PCT Pub. No. WO93/14073, PCT Pub. Date Jul. 22, 1993

Continuation-in-part of Ser. No. 821,118, Jan. 15, 1992, abandoned. This PCT application Dec. 30, 1992, Ser. No. 256,339

Int. Cl.[6] C07D *239/553;239/557;239/545;* **A01N** *43/54*

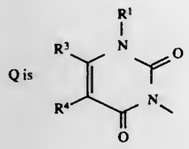
U.S. Cl. 504—243 **16 Claims**

1. A method for controlling the growth of undesired vegetation in plantation crops selected from the group consisting of citrus, sugarcane, coffee, banana, oil palm, loblolly pine, rubber, cocoa, grapes, plantain, pineapple, fruit trees and nut trees which comprises applying to the locus of the crop an herbicidally effective amount of a compound of Formula I



I

wherein



Q is

Q-1

A is O or S;

R^1 is C_1-C_4 alkyl optionally substituted with one or more halogen, OR^5, SR^6 or CN; C_3-C_6 alkenyl or C_3-C_6 alkynyl, each optionally substituted with 1–3 halogen atoms; formyl; or C_2-C_6 alkanoyl;

R^2 is H, isopropyl, allyl, propargyl, $CH(CH_3)C{\equiv}CH$, benzyl, $CHR^7CO_2R^8$ or may be taken together with Z;

R^3 is C_1-C_4 alkyl, C_1-C_4 haloalkyl or $N(CH_3)_2$;

R^4 is H or halogen;

R^5 and R^6 are independently H or C_1-C_3 alkyl;

R^7 and R^8 are independently C_1-C_2 alkyl;

X is Cl or Br;

Y is F or Cl;

Z is H or may be taken together with R^2 as $—CH_2CHR^9$ such that the linking A atom is attached to the methine carbon;

R^9 is C_1-C_3 alkyl, C_1-C_3 haloalkyl, cyclopropyl, vinyl, C_2 alkynyl, CN, $C(O)R^{10}$, CO_2R^{10}, $CONR^{10}R^{11}$, $CR^{12}R^{13}C(O)R^{10}$, $CR^{12}R^{13}CO_2R^{10}$, $CR^{12}R^{13}CONR^{10}R^{11}$, $CHR^{12}OH$, $CHR^{12}OC(O)R^{10}$ or $CHR^{12}OC(O)NR^{10}R^{11}$; and

R^{10}, R^{11}, R^{12} and R^{13} are independently H or C_1-C_3 alkyl.

5,602,078

DIALKYL-1-H-3-(2,4-DIMETHYLPHENYL)-PYRROLIDINE-2,4-DIONES, THEIR PREPARATION AND THEIR USE

Reiner Fischer, Monheim; Thomas Bretschneider, Siegburg; Bernd-Wieland Krüger, Bergisch Gladbach; Hans-Joachim Santel, Leverkusen; Markus Dollinger; Christoph Erdelen, both of Leichlingen, and Ulrike Wachendorff-Neumann, Monheim, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

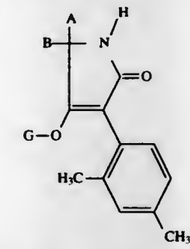
Division of Ser. No. 200,138, Feb. 22, 1994, Pat. No. 5,504,057. This application Dec. 4, 1995, Ser. No. 566,781

Claims priority, application Germany, Mar. 1, 1993, 43 06 259.8

Int. Cl.[6] A01N *43/36;* **C07D** *207/12*

U.S. Cl. 504—283 **7 Claims**

1. A dialkyl-1-H-3-(2,4-dimethylphenyl)-pyrrolidine-2,4-dione of the formula



in which

A represents alkyl which is optionally substituted by halogen and

B represents C_2–C_{10}-alkyl or

A and B together with the carbon atom to which they are bonded represent an unsubstituted spiro carbocyclic ring,

G represents hydrogen.

5,602,079

METHOD AND APPARATUS FOR FABRICATING SUPERCONDUCTOR DEVICE

Tsuyoshi Takenaka, Himeji; Katsumi Suzuki, Kodaira; Shuichi Fujino, Oomiya, and Youichi Enomoto, Nerima-ku, all of Japan, assignors to International Superconductivity Technology Center, Tokyo; Kawasaki Jukogyo Kabushiki Kaisha, Hyogo-ken; NEC Corporation, and Mitsubishi Materials Corporation, both of Tokyo, all of Japan

Filed Jun. 6, 1994, Ser. No. 254,707

Claims priority, application Japan, Jun. 10, 1993, 5-138709

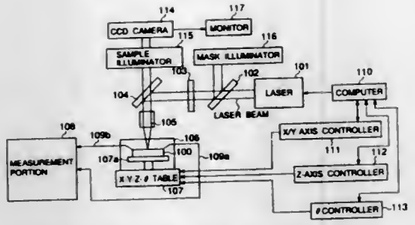
Int. Cl.[6] B23K *26/12*

U.S. Cl. 505—310 **6 Claims**

1. A method of fabricating a superconducting device, comprising the steps of:

forming an environment at less than or equal to a superconducting transition temperature, in order to enclose a superconducting device that comprises a superconducting film formed on a substrate;

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measuring a predetermined device characteristic relating to said superconducting device in said environment; and

shining a laser beam onto said superconducting film in said environment, based on said predetermined device characteristic measured in the previous measurement step so as to thermally remove said superconducting film.

5,602,080

METHOD FOR MANUFACTURING LATTICE-MATCHED SUBSTRATES FOR HIGH-T_C SUPERCONDUCTOR FILMS

Johannes G. Bednorz, Wolfhausen; Jochen D. Mannhart, Thalwil; Carl A. Mueller, Hedingen, all of Switzerland, and Darrell G. Schlom, State College, Pa., assignors to International Business Machines Corporation, Armonk, N.Y.

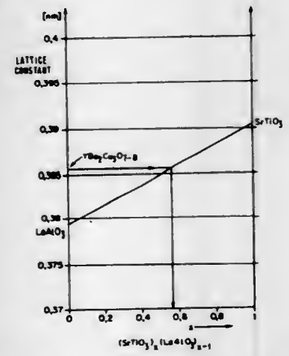
Continuation of Ser. No. 945,759, Sep. 16, 1992, abandoned.

This application Feb. 9, 1994, Ser. No. 193,919

Claims priority, application European Pat. Off., Sep. 16, 1991, 91810732

Int. Cl.[6] C30B *15/20*

U.S. Cl. 505—451 **6 Claims**



1. A method for manufacturing lattice-matched substrate for a high T_c superconductor film wherein said film has a film lattice constant, said film has an orientation and a perovskite subcell and said substrate has an interfacial phase corresponding to said perovskite subcell, comprising:

choosing at least two materials from the group of known substrate materials, of which one has a first lattice constant smaller than said lattice constant of the selected superconductor material for the orientation selected, and of which another has a second lattice constant greater than said lattice film constant;

extensively milling said at least two materials to form powders;

mixing said powders intimately wherein the weight percentages of said powders are chosen such that said substrate has a substrate lattice constant substantially matched to said film lattice constant;

providing a single-crystal of the desired orientation from the chosen materials for the deposition of the superconductor film by drawing of the single crystal from the molten mixture of the powdered chosen materials and the cutting of the crystal to the desired size.

5,602,081

METHOD OF PREPARING METAL OXIDE CRYSTAL

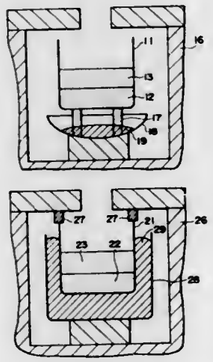
Masaru Nakamura; Yasuji Yamada, both of Tokyo; Minoru Tagami, Funabashi; Yuh Shiohara, Chigasaki, and Shoji Tanaka, Tokyo, all of Japan, assignors to International Superconductivity Technology Center, and Mitsubishi Cable Industries, both of Japan

Filed May 9, 1994, Ser. No. 240,068

Claims priority, application Japan, May 10, 1993, 5-108570; May 10, 1993, 5-108571; May 17, 1993, 5-115062

Int. Cl.[6] C30B *15/00;29/16;29/22;15/02*

U.S. Cl. 505—451 **22 Claims**



1. A method of preparing a crystal of a Y-series 123 metal oxide, comprising contacting a metal oxide substrate with a liquid phase which contains a melt of a mixture of metal oxides and in which a solid phase is present at a position different from the position at which said substrate and said liquid phase contact, said solid phase providing said liquid phase with solutes which constitute said Y-series 123 metal oxide so that said solutes are transported to the position at which said substrate and said liquid phase contact, thereby permitting said Y-series 123 metal oxide to grow on said substrate as primary crystals, said substrate serving as a seed crystal for growth of said Y-series 123 metal oxide, wherein said liquid phase is contained in a crucible which is held in an atmosphere selected from the group consisting of vapors of silver, vapors a silver alloy or vapors of a silver compound.

7. A method of preparing a crystal of a Y-series 123 metal oxide, comprising contacting a metal oxide substrate with a liquid phase which contains a melt of a mixture of metal oxides and in which a solid phase is present at a position different from the position at which said substrate and said liquid phase contact, said solid phase providing said liquid phase with solutes which constitute said Y-series 123 metal oxide so that said solutes are transported to the position at which said substrate and said liquid phase contact, thereby permitting said Y-series 123 metal oxide to grow on said substrate as primary crystals, said metal oxide substrate serving as a seed crystal for growth of said Y-series 123 metal oxide, wherein said liquid phase is contained in a crucible which is immersed in a melt selected from the group consisting of silver, silver alloys and silver compounds.

5,602,082

EFFICIENCY OF ETHOXYLATED/PROPOXYLATED POLYOLS WITH OTHER ADDITIVES TO REMOVE WATER FROM SHALE

Arthur H. Hale, Houston, Tex., and Eric van Oort, Rijswijk, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 23, 1994, Ser. No. 372,796

Int. Cl.[6] C09K *7/02*

U.S. Cl. 507—115 **6 Claims**

1. A process for improving the osmotic efficiency of shale during the drilling of a well comprising drilling the well with a drilling fluid comprising an ethoxylated-propoxylated glycol and a salt selected from the group consisting of alkali metal silicates, alkali metal and alkaline earth metal chlorides and nitrates, tartrates and dihydrogen-phosphates.

5,602,083

USE OF SIZED SALTS AS BRIDGING AGENT FOR OIL BASED FLUIDS

Allen Gabrysch, Houston, and Billy G. Chesser, Spring, both of Tex., assignors to Baker Hughes Inc., Houston, Tex.

Filed Mar. 31, 1995, Ser. No. 414,482

Int. Cl.[6] E21B *43/00;33/138;43/267*

U.S. Cl. 507—200 **23 Claims**

1. An oil-based fluid system for controlling fluid losses during hydrocarbon recovery operations, comprising:

an oil;

a distribution of salt particle sizes, where the salt is selected from the group consisting of alkali metal salts and alkali earth metal salts;

a suspending agent for suspending the salt particles in the oil; and

a filtration control agent.

5,602,084

DETERGENT ADDITIVES FOR LUBRICATING OILS, THEIR PREPARATION AND USE

David J. Moreton, Hull, United Kingdom, assignor to BP Chemicals (Additives) Limited, London, England

Filed May 24, 1995, Ser. No. 449,773

Claims priority, application United Kingdom, Jun. 3, 1994, 9411093

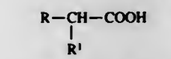
Int. Cl.[6] C10M *159/20*

U.S. Cl. 508—391 **32 Claims**

1. An additive concentrate suitable for incorporation in a finished lubricating oil composition, the additive concentrate comprising

(a) a lubricating oil, and

(b) a lubricating oil soluble detergent which is an overbased metal salt obtained by an overbasing process including a carbonation step and modified by reaction to incorporate from greater than 2 to less than 40% by weight based on the weight of the concentrate of either (i) at least one carboxylic acid having the formula (I):



(I)

wherein R is a C_{10} to C_{24} alkyl or alkenyl group and R^1 is hydrogen, a C_1 to C_4 alkyl group or a $—CH_2—COOH$ group, or an anhydride or an ester derivative thereof, or (ii) a di- or polycarboxylic acid containing from 36 to 100 carbon atoms or an anhydride or an ester thereof, and further modified to incorporate by addition prior to carbonation a hindered phenol or naphthol having antioxidant activity.

5,602,085

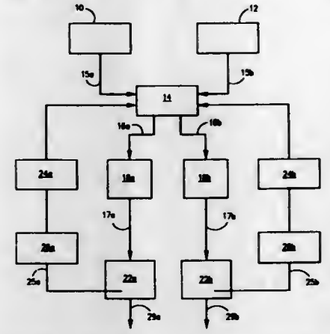
MULTI-PHASE LUBRICANT

Brian K. Peterson, Yardley, Pa., and Andrew Jackson, Pennington, N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation of Ser. No. 319,763, Oct. 7, 1994, abandoned. This application Oct. 5, 1995, Ser. No. 538,998

Int. Cl.[6] C10M *157/00;157/10*

U.S. Cl. 508—579 **6 Claims**



1. A lubricant composition for a system requiring lubrication during operation, comprising:

(a) a synthetic polyalphaolefin selected from the group consisting of polymeric C_5 to C_{20} olefins and mixtures thereof; and

(b) a polyalkylene glycol lubricant of higher viscosity than the (a) synthetic polyalphaolefin which influences the viscosity of the hydrocarbon lubricant under a condition which is sufficient to make the hydrocarbon lubricant and the polyalkylene glycol lubricant at least partially miscible.

5,602,086

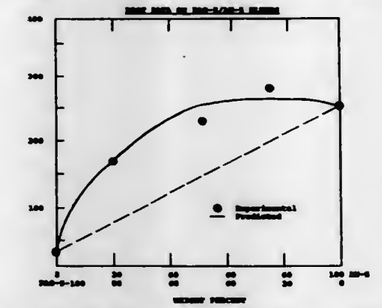
LUBRICANT COMPOSITIONS OF POLYALPHAOLEFIN AND ALKYLATED AROMATIC FLUIDS

Quang N. Le, Cherry Hill, and Joosup Shim, Wenonah, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation of Ser. No. 495,241, Jun. 27, 1995, abandoned, which is a continuation of Ser. No. 376,538, Jan. 20, 1995, abandoned, which is a continuation of Ser. No. 915,392, Jul. 20, 1992, abandoned, which is a continuation of Ser. No. 639,861, Jan. 11, 1991, abandoned. This application Apr. 19, 1996, Ser. No. 634,135

Int. Cl.[6] C10M *111/04*

U.S. Cl. 508—591 **24 Claims**



1. In a polyalphaolefin-based lubricant composition comprising a mixture of synthetic fluids of lubricating viscosity comprising (1) a polyalphaolefin lubricant fluid, (2) a lubricant fluid to confer

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solvency and elastomer compatibility, and (3) an additive package comprising corrosion inhibitors, metal passivators, dispersants, and antioxidants,

the improvement comprising

the use of an alkylated naphthalene as the lubricant fluid to confer solvency and elastomer compatibilty, the polyalphaolefin fluid comprising from about 95 to about 99 wt % based on the total weight of the composition, and the alkylated naphthalene from about 1 to about 5 wt % based on the total weight of the composition, the composition having improved oxidation stability and thermal solubility, elastomer compatibility and hydrolytic stability.

5,602,087

COMPOSITION

Ravi Subramanyam, North Brunswick, and Ben Gu, East Brunswick, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Aug. 2, 1994, Ser. No. 284,857

Int. Cl.[6] C11D *1/14*

U.S. Cl. 510—127 **4 Claims**

1. A solid cleansing composition comprising

a. about 3 to 90 wt. % of a compound of the formula

$$ROCH_2CH_2SO_3^-X^+$$

wherein R is alkyl or alkenyl of eight to twenty two carbon atoms, inclusive or a mixture thereof and X is an alkali metal, alkaline earth metal, ammonium or substituted ammonium in combination with

b. about 7 to 50 wt. % of a soap or synthetic surfactant selected from the group consisting of anionic surfactants other than a, nonionic surfactants and amphoteric surfactants and

c. about 4 to 12 wt. % of moisture.

5,602,088

FLOATING SOAP AND METHOD

Richard Tokosh, Saddle Brook, N.J.; Linda Dunseath, and Joseph Stephenson, both of Cincinnati, Ohio, assignors to Avon Products, Inc., Suffern, N.Y.

Filed Jun. 7, 1995, Ser. No. 487,958

Int. Cl.[6] C11D *17/04;11/00;17/02*

U.S. Cl. 510—144 **2 Claims**

1. A process for making a floating soap, comprising the following steps:

(a) preparing a solid soap formulation;

(b) extruding a soap billet from said solid soap formulation with an extruder having a hollow-making means such that a hollow recess is formed within said billet; and

(c) stamping said billet such that said hollow recess is pneumatically sealed off; and

(d) implanting a select substance to displace the air or gas in said recess, said substance has a density less than that of water, and being a water-soluble starch.

5,602,089

OIL BASED COMPOSITION CLEAN UP METHOD AND COMPOSITION FOR USE THEREIN

Thomas J. Pennaz, Brooklyn Park, Minn., assignor to Deluxe Corporation, Shoreview, Minn.

Division of Ser. No. 41,830, Apr. 1, 1993, Pat. No. 5,411,596. This application Mar. 8, 1995, Ser. No. 400,855

Int. Cl.[6] C09D *9/00;9/04;* **C11D** *3/60*

U.S. Cl. 510—171 **6 Claims**

1. A clean up composition for use in connection with the clean up of an oil based composition comprising:

about 5–60% by weight of a solubility of controlling component compatible with said oil based composition, wherein said solubility controlling component comprises a water reducible resin having pH dependent water solubility and an Acid Number greater than 25, said solubility controlling component being further present in sufficient quantity for said oil based composition to be substantially water insoluble at an acidic pH and water washable at an alkaline pH, and

about 30–95% by weight of a diluent compatible with both said solubility controlling component and said oil based composition, said diluent further being present in sufficient quantity to provide said clean up composition with a viscosity less than about 300 centipoise.

5,602,090

SURFACTANTS BASED AQUEOUS COMPOSITIONS WITH D-LIMONENE AND HYDROGEN PEROXIDE AND METHODS USING THE SAME

Arman V. Melikyan, and Patrick H. Stewart, both of Danville, Ill., assignors to Alphen, Inc., Georgetown, Ill.

Filed Dec. 27, 1995, Ser. No. 578,971

Int. Cl.[6] C11D *1/831;3/39;3/44;17/08*

U.S. Cl. 510—372 **4 Claims**

1. A clear stable liquid micro-emulsion cleanser composition comprising:

a. from about 0.5% to 10% of a terpene selected from mono- and sesquiterpenes and mixtures thereof;

b. from about 0.5% to about 10% of a water soluble glycol ether solvent;

c. from about 0.5% to about 10% of an isopropylamine salt of linear alkyl benzene sulfonic acid as a first anionic surfactant;

d. from about 0.4% to about 10% of a sodium 1-octane sulfonate as a second anionic surfactant to provide coupling and stability effects;

e. from about 0.5% to about 10% of an alkyl ethoxylate nonionic surfactant with an HLB of 11 to 15 to approximate the HLB of the terpene solvent;

f. from about 2.0% to about 22.8% by weight of a 35% by weight aqueous solution of hydrogen peroxide;

g. from about 0.2% to 4% by weight of a food grade anti-oxidant based on the terpene weight percentage to stabilize the terpene;

h. from about 1.0% to 5.0% by weight of a polyacrylate-polyalcohol polymer used as a thickening agent; and

i. deionized water.

2. A cleaning composition according to claim 1 wherein said terpene solvent is D-limonene.

5,602,091

INSTANTANEOUSLY SELF-FOAMING LIQUID CLEANSING COMPOSITION

James A. Monson, Ramsey; Dawn T. Anderson, Minneapolis; James L. Kurtz, Plymouth, and Joseph I. Kravitz, Champlin, all of Minn., assignors to Dowbrands L.P., Indianapolis, Ind.

Division of Ser. No. 365,992, Dec. 29, 1994, abandoned, which is a continuation of Ser. No. 208,004, Mar. 8, 1994, abandoned, which is a continuation of Ser. No. 920,724, Jul. 28, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 481,975

Int. Cl.[6] C11D *17/00*

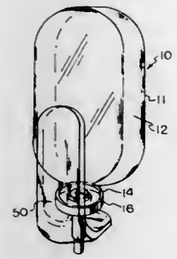
U.S. Cl. 510—406 **4 Claims**

1. A non-pressurized, non-compartmentalized dispenser of a deformable barrier material, the dispenser comprising a vessel formed with:

1) a deformable peripheral wall having an open neck;

2) a positive shut off valve member comprising a tubular valve stem having a central dispensation passage for dispensing a liquid; and

3) an actuating means which is biased towards the deformable barrier material of the dispenser;



and wherein said dispenser contains a composition comprising a stable, aqueous, self-foaming, self-leveling liquid consisting essentially of a mixture of:

(a) an effective amount of water to form a stable, aqueous, self-foaming, self-leveling liquid when mixed with components (b) and (c);

(b) from about 0.1 to about 60 percent by weight of a surfactant wherein said surfactant is an anionic surfactant, a nonionic surfactant, an amphoteric surfactant, or a mixture of at least two of anionic, nonionic, amphoteric, and cationic surfactants, said surfactant selected to form a stable, self-foaming, self-leveling liquid when mixed with components (a) and (c); and

(c) from about 1 to about 20 percent by weight of of a dual purpose pressure agent selected to form an integral part of the composition and selected to volatilize upon spreading the composition with a single motion, wherein said dual purpose pressure agent is

(A) neopentane,

(B) a mixture of at least one gaseous hydrocarbon having 4 carbon atoms and a nonvolatile silicone oil, or

(C) a mixture of at least one gaseous hydrocarbon having 4 carbon atoms and at least one liquid hydrocarbon selected from iso-pentane, pentane, 2,3-dimethylbutane, hexane, iso-hexane, and mineral oil, said dual purpose pressure agent selected to form a stable, self-foaming, self-leveling liquid when mixed with components capable of providing said liquid composition with

(i) a self-foaming property upon dispensation as a liquid from said container, and

(ii) a vapor pressure of from about 0.1 psig to about 17 psig above atmospheric pressure at a temperature of about 22° C. in said container, said dual purpose pressure agent selected to form a stable, aqueous, self-foaming, self-leveling liquid when mixed with components (a) and (b);

said resultant stable, aqueous, self-foaming, self-leveling liquid having a vapor pressure of from about 0.1 to about 17 psig in excess of atmospheric pressure at a temperature of 22° C. in said container, said resultant stable, aqueous, self-foaming, self-leveling liquid adapted to be dispensed in the form of a liquid from said container, whereby the liquid foams instantaneously on spreading.

5,602,092

CONCENTRATED AQUEOUS LIQUID DETERGENT COMPOSITIONS CONTAINING DEFLOCCULATING POLYMERS

Stephen T. Repinec, Jr., Flemington; Marianne Zappone, Mount Holly; Robert L. Fuller, Asbury, and Santhana V. Krishnan, Randolph, all of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 271,299, Jul. 6, 1994. This application Sep. 18, 1995, Ser. No. 529,936

Int. Cl.[6] C11D *3/37;11/00;17/08*

U.S. Cl. 510—434 **30 Claims**

1. A concentrated liquid detergent composition (CLDC) comprising lamellar surfactant droplets dispersed in an aqueous electrolytic continuous phase, said composition comprising mixture of:

a) from about 10 to 45% by weight of surfactant;

b) at least one detergent builder in an amount of from about 5 to 40%, by weight of said composition;

c) from about 0.01 to about 5% by weight of a deflocculating polymer composition containing acrylic polymer chains of the structure P-QR wherein P represents a polymer chain segment of a hydrophilic acrylic polymer, and QR represents a hydrophobic end-cap group wherein R is an organic hydrophobic radical containing from about 4 to 28 carbon atoms, and Q is selected from the group consisting of S, SO, and SO_2;

d) a polymeric stabilizing agent comprised of a high molecular weight cross-linked polyacrylic acid compound having a molecular weight greater than about one million in an amount from about 0.01 to about 0.5% by weight of the CLDC; and

e) water.

5,602,093

DISHWASHING MACHINE RINSE AIDS CONTAINING APG, ALKYL POLYGLYCOL ETHER AND ORGANIC CARBOXYLIC ACID

Juergen Haerer; Theodor Altenschoepfer, both of Duesseldorf; Peter Jeschke, Neuss, and Christian Nitsch, Duesseldorf, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP93/02632, § 371 Date Apr. 7, 1995, § 102(e) Date Apr. 7, 1995, PCT Pub. No. WO94/07977, PCT Pub. Date Apr. 14, 1994

PCT Filed Sep. 28, 1993, Ser. No. 416,684

Claims priority, application Germany, Oct. 7, 1992, 42 33 699.6

Int. Cl.[6] C11D *3/22;1/72;3/20*

U.S. Cl. 510—514 **13 Claims**

1. A liquid rinse aid for dishwashing machines consisting essentially of: (1) about 0.5% to about 20% by weight of an alkyl polyglycoside of the formula $C_nH_{2n+1}—O—(C_6H_{10}O_5)_x—H$, where n= 8–16 and 1<x<3; (2) about 1 to about 20% by weight of an alkyl polyglycol ether of the formula $C_8—C_{18}—O—(EO)_y—R$ where R=H or C_mH_{2m+1} with m=1 to 4: and y=1 to 15 and; (3) about 1 to about 50% by weight of an organic carboxylic acid selected from the group consisting of aliphatic hydroxy dicarboxylic acids, hydroxy tricarboxylic acids and saturated aliphatic dicarboxylic acids, wherein the ratio by weight of (1) to (2) is from about 3:1 to about 1:1.5, add wherein said rinse aid is free from foam inhibitors and thickeners, is substantially free from other solubilizers, and is homogenous at a temperature in the range of from about 0° to about 65° C.

13. A method for the aftertreatment of the clean contents of an automatic dishwashing machine comprising treating said contents with the rinse aid of claim 1.

5,602,094

TREATMENT OF TUMORS

David Goddard, 21 Gateway Dr., Great Neck, N.Y. 11021

Filed Mar. 29, 1994, Ser. No. 219,506

Int. Cl.[6] A61K *38/09*

U.S. Cl. 514—12 **5 Claims**

1. A method for inducing necrosis of malignant glioma in mammals including humans, which comprises administering to such a mammal in need thereof, a sustained release composition comprising a malignant glioma necrosis inducing amount of phospholipase activating protein (PLAP) or a synthetic PLAP peptide, having phospholipase A_2 enzyme activating activity, in combination with a pharmaceutically acceptable carrier or diluent.

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RECOMBINANT PSEUDOMONAS EXOTOXIN WITH INCREASED ACTIVITY

Ira H. Pastan, Potomac, and David J. Fitzgerald, Silver Springs, both of Md., assignors to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Continuation of Ser. No. 901,709, Jun. 18, 1992, abandoned. This application Mar. 15, 1995, Ser. No. 405,615

Int. Cl.[6] C07K *14/21*

U.S. Cl. 514—12 **13 Claims**

1. An isolated and purified recombinant Pseudomonas exotoxin (PE) molecule having a deletion in the amino terminal end of domain II such that the molecule is at least twenty times more cytotoxic to target cells than unmodified PE40 in a cytotoxicity assay wherein the cytotoxicity to the target cells of unmodified PE40 and the recombinant PE molecule is measured by assaying against the target cells (i) PE40 fused to a ligand binding agent specific for the target cells and (ii) the recombinant PE molecule fused to a ligand binding agent specific-for the target cells.

5,602,096

METHOD OF USING A SECRETABLE GLIAL MITOGENIC FACTOR TO INDUCE ACETYLCHOLINE RECEPTOR SYNTHESIS

Andrew Goodearl, Chorleywood; Paul Stroobant, London, both of United Kingdom; Luisa Minghetti, Bagnacavallo, Italy; Michael Waterfield, Newbury, United Kingdom; Mark Marchionni; Mario S. Chen, both of Arlington, Mass., and Ian Hiles, London, England, assignors to Ludwig Institute for Cancer Research, New York, N.Y., and Cambridge Neuroscience Research Inc., Cambridge, Mass.

Division of Ser. No. 36,555, Mar. 24, 1993, Pat. No. 5,530,109, which is a continuation-in-part of Ser. No. 965,173, Oct. 23, 1992, abandoned, Ser. No. 940,389, Sep. 3, 1992, abandoned, Ser. No. 907,138, Jun. 30, 1992, abandoned, and Ser. No. 863,703, Apr. 3, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 472,008

Claims priority, application United Kingdom, Apr. 10, 1991, 9107566

Int. Cl.[6] A61K *38/18*

U.S. Cl. 514—12 **2 Claims**

1. Method for inducing acetylcholine receptor synthesis in a cell, comprising contacting said cell with an amount of the secretable glial growth factor encoded by SEQ ID NO: 21 sufficient to stimulate synthesis of acetylcholine receptors.

5,602,097

SYNTHETIC ANTIBIOTICS

David L. Edwards, San Antonio, Tex., assignor to Ceres Technologies, Inc., Houston, Tex.

Filed Sep. 13, 1994, Ser. No. 305,768

Int. Cl.[6] A61K *38/00;* **C07K** *7/00*

U.S. Cl. 514—17 **28 Claims**

1. An antibiotic composition comprising at least one of the peptides having the sequence defined in Seq. ID Nos. 2–7, 9–11, 13–28 and 31.

5,602,098

INHIBITION OF FARNESYLTRANSFERASE

Said Sebti; Andrew Hamilton, and Churl M. Seong, all of Pittsburgh, Pa., assignors to University of Pittsburgh, Pittsburgh, Pa.

Filed May 18, 1993, Ser. No. 62,287

Int. Cl.[6] A61K *38/06*

U.S. Cl. 514—18 **10 Claims**

1. A peptidomimetic represented by the formula:

C-β-X

wherein

C is a cysteinyl moiety;

X is an amino acid; and

β is a residue of ortho-, meta- or para- aminobenzoic acid, or

β is a residue of an aminoalkylbenzoic acid;

and pharmaceutically acceptable salts thereof.

5,602,099

δ OPIOID RECEPTOR ANTAGONISTS

Peter Schiller, Montreal, Canada, assignor to Aktiebolaget Astra, Sodertalje, Sweden

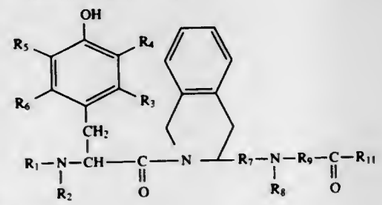
Filed Jan. 4, 1994, Ser. No. 176,938

Claims priority, application Sweden, Jan. 5, 1993, 9300012

Int. Cl.[6] A61K *38/07*

U.S. Cl. 514—18 **10 Claims**

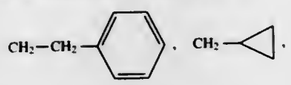
1. A compound of the formula I



I

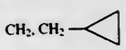
wherein

R_1 is H, $CH_3(CH_2)_n$— wherein n=0–12,



CH_2—CH=CH_2 or arginine;

R_2 is H, $CH_3(CH_2)_n$— wherein n=0–12,



or CH_2—CH=CH_2;

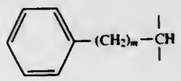
R_3, R_4, R_5, R_6 are all H or

R_4 and R_5 are both H and R_3 and R_6 are both lower alkyl groups or R_3, R_5, R_6 are all H and R_4 is F, Cl, Br, OH, NH_2 or NO_2;

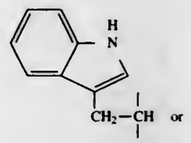
R_7 is C=O or CH_2;

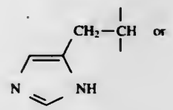
R_8 is H or a lower alkyl group;

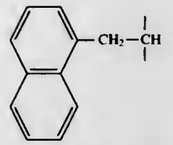
R_9 is

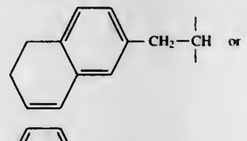


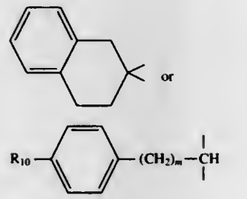
wherein m is 0–2 or







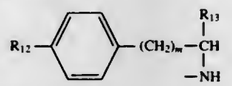




wherein

R_{10} is H, F, Cl, Br or I and m is 0–2;

R_{11} is OH, NH_2 or

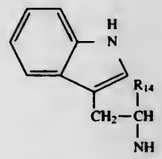


wherein

R_{12} is H, NO_2, F, Cl, Br or I, m is 0–2;

R_{13} is —COOH, —$CONH_2$, —CH_2OH, or —CO—X, wherein X is an amino acid, or a peptide of 2–7 amino acids; or

R_{11} is



wherein

R_{14} is COOH, $CONH_2$, CH_2OH, or —CO—X, wherein X is an amino acid, or a peptide of 2–7 amino acids;

with the exception of the compounds Tyr-Tic-Phe-OH, Tyr-Tic-Phe-NH_2, Tyr-Tic-Phe-Phe-OH, Tyr-Tic-Phe-Phe-NH_2, Tyr-Tic-Trp-Phe-NH2, Tyr-Tic-Trp-Phe-OH, Tyr-Tic-Phe-Phe(P-NO_2)-OH, Tyr-Tic-Trp-Phe(p-NO_2)-OH, Tyr-Tic-Trp-Phe-NH_2, and Tyr-Tic-Phe-Phe-Leu-Nle-Asp-NH_2.

10. A method for treating pain in a mammal suffering therefrom comprising administering to said mammal a compound of claim **1**.

5,602,100

DERMORPHIN ANALOGS HAVING PHARMACOLOGICAL ACTIVITY

William L. Brown, Laval, and Peter W. Schiller, Montreal, both of Canada, assignors to Astra AB, Sodertalje, Sweden

Continuation-in-part of Ser. No. 374,521, Jun. 30, 1989, Pat. No. 5,312,899. This application Apr. 21, 1994, Ser. No. 238,038

Claims priority, application Canada, Jun. 30, 1988, 570874

The portion of the term of this patent subsequent to May 16, 2011, has been disclaimed.

Int. Cl.[6] A61K *38/00;38/02;* **C07K** *5/00;7/00*

U.S. Cl. 514—18 **11 Claims**

1. A peptide of formula I:

H-Tyr-A-Phe-B-NH_2 (I)

wherein:

A is selected from the group consisting of D-α-amino acids;

B is selected from the group consisting of α-amino acids; and

the overall net positive charge of the peptide is +2 or greater.

5,602,101

ANTITHROMBOTIC AGENTS

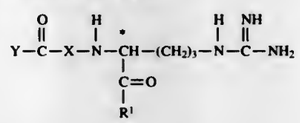
Aaron L. Schacht, Indianapolis; Robert T. Shuman, Greenwood; Gerald F. Smith, Indianapolis; James H. Wikel, Greenwood, and Michael R. Wiley, Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 206,500, Mar. 4, 1994, abandoned. This application Oct. 5, 1994, Ser. No. 318,600

Int. Cl.[6] C07K *5/00;7/00;17/00;* **A61K** *38/00*

U.S. Cl. 514—18 **90 Claims**

1. A compound having the



I

where

R^1 is hydrogen;

X is prolinyl or azetidinyl-2-carbonyl;

Y is a group



where R is benzyl, phenyl, cyclopentyl, cyclohexyl, cyclopentyl-CH_2— or cyclohexyl-CH_2—;

Z is

—S(O)n— or a bond;

R^2 is C_1–C_6 alkyl, C_1–C_2 perfluoroalkyl, —$(CH_2)_g$—COOH, C_1–C_6 alkoxy, (C_1–C_4 alkoxy)C_1–C_4 alkyl, cyclopentyl, cyclohexyl, (C_5–C_6 cycloalkyl)CH_2—, amino, mono(C_1–C_4)alkylamino, di(C_1–C_4)alkylamino, unsubstituted or

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substituted aryl, where aryl is phenyl or naphthyl, unsubstituted or substituted benzyl, a 5 or 6 member unsubstituted or substituted heterocyclic ring, having one or two heteroatoms, one of which is nitrogen and the second heteroatom is selected from sulfur, oxygen and nitrogen, or methylene substituted with a 5 or 6 membered unsubstituted or substituted heterocyclic ring having one nitrogen atom or two hetero atoms one of which is nitrogen and the second heteroatom is selected from sulfur, oxygen and nitrogen; or a 9 or 10 membered unsubstituted or substituted fused bicyclic heterocyclic ring;

g is 1, 2 or 3;

n is 1 or 2; and pharmaceutically acceptable salts and solvates thereof;

provided that when R is benzyl, phenyl, cyclopentyl or cyclohexyl and Z is



or a bond, R^2 is other than C_1–C_6alkyl, C_1–C_2 perfluoroalkyl, C_1–C_6 alkoxy or unsubstituted phenyl; and

further provided that when Z is —S(O)n—, then R^2 is other than unsubstituted or substituted naphthyl or a 9 or 10 membered unsubstituted or substituted fused bicyclic heterocyclic ring.

5,602,102

DIPEPTIDYL PEPTIDASE-I INHIBITORS AND USES THEREOF

Dwain L. Thiele, Coppell; Peter E. Lipsky, Dallas, and Michael J. McGuire, Irving, all of Tex., assignors to Board of Regents, The Univ. of TX System, Austin, Tex.

Filed May 29, 1992, Ser. No. 890,422

Int. Cl.[6] A61K *38/05*

U.S. Cl. 514—19 **7 Claims**

1. A method for treating organ allograft rejection or graft-versus-host disease in a mammal comprising administering to said mammal an effective amount of a compound having the following structure:

$$H_2N—CH(R^1)—CO—NH—CH(R^2)—CO—X$$

wherein

R^1 is H, $—CH_2OH$, $—CH(CH_3)_2$, $—CH_2CH(CH_3)_2$, or a C_1–C_6 alkyl group;

R^2 is benzyl, $—CH_2$-(para-hydroxyphenyl), or a C_1–C_6 alkyl group;

X is $—CHN_2$ or $—CH_2S^+(CH_3)_2$.

5,602,103

CEREBRAL FUNCTION-AMELIORATING AGENT

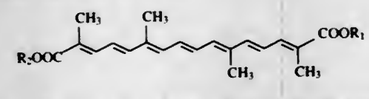
Minoru Sugiura, Takahagi; Hiroshi Saito, Tokyo, and Yukihiro Syoyama, Kasuga, all of Japan, assignors to Nippon Mektron, Limited, Tokyo, Japan

Filed Mar. 3, 1995, Ser. No. 398,238

Int. Cl.[6] A61K *31/70;* **C07H** *3/00*

U.S. Cl. 514—25 **3 Claims**

2. A method of treating memory deficit induced by ethanol which comprises administering to a subject experiencing a memory deficit induced by ethanol an effective amount of an ameliorating compound which has the formula:



wherein R_1 and R_2 are gentiobiose groups or glucose groups and are the same or different from each other.

5,602,104

POLYCYCLIC AROMATIC DERIVATIVES, PROCESS FOR PREPARING THE SAME AND PHARMACEUTICAL AND COSMETIC COMPOSITIONS CONTAINING THE SAME

Braham Shroot, Antibes; Jacques Eustache, Grasse; Oliver Watts, Cagnes S/Mer; Jean-Michel Bernardon, Nice, and Philippe Nedoncelle, Grasse, all of France, assignors to Centre International de Recherches Dermatologiques Galderma (Cird Galderma), Valbonne, France

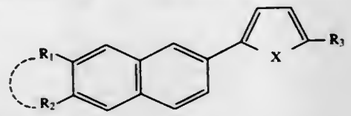
Division of Ser. No. 859,046, Mar. 27, 1992, Pat. No. 5,434,180, which is a division of Ser. No. 580,916, Sep. 12, 1990, Pat. No. 5,124,473, which is a continuation-in-part of Ser. No. 887,618, Jul. 21, 1986, abandoned. This application Apr. 13, 1995, Ser. No. 421,235

Claims priority, application Luxembourg, Jul. 25, 1985, 86022

Int. Cl.[6] A01N *43/08;* **C07D** *307/02;333/16*

U.S. Cl. 514—25 **15 Claims**

1. A polycyclic aromatic compound having the formula



(I)

wherein

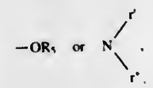
X represents O or S,

R_1 represents hydrogen, branched alkyl having 3–15 carbon atoms, alkoxy having 1–6 carbon atoms or 1-adamantyl,

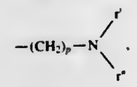
R_2 represents hydrogen, hydroxy, linear or branched alkyl having 1–15 carbon atoms or alkoxy having 1–6 carbon atoms, with the proviso that R_1 and R_2 are not simultaneously hydrogen, or R_1 and R_2 together with the adjacent carbon atoms of the naphthalene ring form a 5 or 6 carbon ring optionally substituted by at least one lower alkyl radical, or interrupted by an oxygen atom,

R_3 represents $—CH_2OH$ or $—COR_4$ or R_3 represents $—CH_3$ when R_1 and R_2 taken together form a 5 or 6 carbon ring,

R_4 represents



R_5 represents hydrogen, alkyl having 1–20 carbon atoms, monohydroxyalkyl, polyhydroxyalkyl, aryl or aralkyl optionally substituted, or the residue of a sugar or the radical



p is 1, 2 or 3,

r' and r" represent hydrogen, lower alkyl, monohydroxyalkyl, polyhydroxyalkyl, aryl optionally substituted as the residue of an amino acid or the residue of an amino sugar, or taken together form a heterocycle,

and the salts of said polycyclic aromatic compound of formula I.

5,602,105

CARDIOTROPIC FORMULATION

Nikolai V. Karsanov, ulitsa Gotua, 16, kv. 96, Tbilisi; Galina V. Sukoian, ulitsa Ordzhonikidze,2, kv.12, Rustavi; Zinaida G. Khuganshvili, Gldansky massiv, 4 mikroraion, korpus 101, kv. 28, Tbilisi; Dali R. Tatuiashvili, plato Tsutsubidze, 4 mikroraion, korpus 16, kv. 60, Tbilisi; Evgenia V. Selikhova, prospekt Tsritsy Tamary, 18, kv. 104, Tbilisi; Nodar N. Kipshidze, ulitsa Sumbatashvili-Juzhina, 9, kv. 2, Tbilisi, and Eteri L Guchua, Digomsky massiv, 1 kvartal, korpus 11, kv.5., Tbilisi, all of Georgia

Continuation of Ser. No. 228,747, Apr. 18, 1994, abandoned. This application Jun. 28, 1995, Ser. No. 495,298

Int. Cl.[6] A61K *31/135;31/54;31/705;38/16*

U.S. Cl. 514—26 **14 Claims**

1. An improved cardiotropic composition containing a cardiac glycoside and β-adrenergic receptor stimulant wherein the improvement comprises the inclusion of nicotinamide adenine dinucleotide, cytochrome C and inosine, wherein the composition comprises by parts by weight:

cardiac glycoside	0.05–0.2
β-adrenergic receptor stimulant selected from oxyfedrine and nonachlazin	0.3–3.5
nicotinamide adenine dinucleotide	0.5–5
cytochrome C	5–15
inosine	20–250.

and pharmaceutically acceptable carriers and diluents.

5,602,106

16-MEMBERED MACROLIDE DERIVATIVES

Keiichi Ajito; Osamu Hara; Ken-ichi Kurihara; Nobue Kikuchi; Minako Araake; Akira Shimizu; Tsuneo Okonogi; Shigeharu Inouye, and Seiji Shibahara, all of Kanagawa, Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

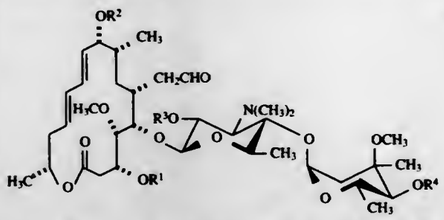
Filed Jul. 8, 1994, Ser. No. 271,996

Claims priority, application Japan, Jul. 8, 1993, 5-169418; Nov. 30, 1993, 5-300686; May 19, 1994, 6-105096; Jun. 8, 1994, 6-126654; Jun. 27, 1994, 6-145125

Int. Cl.[6] A61K *31/70;* **C07H** *17/08*

U.S. Cl. 514—30 **26 Claims**

26. A antimicrobial composition comprising a compound represented by the formula (I):



(I)

wherein R^1 represents a hydrogen atom or a substituent group which protects a hydroxyl group; R^2 represents a hydrogen atom or a substituent group which protects a hydroxyl group; R^3 represents a hydrogen atom or a straight-chain aliphatic acyl group having 2 to 4 carbon atoms; and R^4 represents a hydrogen atom or a straight-chain aliphatic or aromatic acyl group having up to 10 carbon atoms;

or a pharmaceutically acceptable salt thereof in combination with a pharmaceutically acceptable carrier.

5,602,107

POUR-ON FORMULATIONS CONSISTING OF GYLCOLS, GLYCERIDES AND AVERMECTIN COMPOUNDS

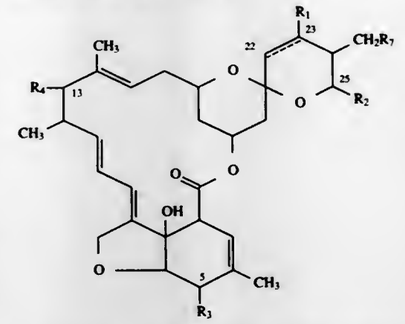
Hoo-Kyun Choi, Blue Bell, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 333,937, Nov. 3, 1994, abandoned, which is a continuation of Ser. No. 59,787, May 10, 1993, abandoned. This application Nov. 20, 1995, Ser. No. 561,208

Int. Cl.[6] A61K *31/70;31/225;31/045*

U.S. Cl. 514—30 **9 Claims**

1. A topical pour-on formulation for the treatment of ecto and endoparasites, which provides a zero-milk withdrawal time in dairy animals, consisting of from about 40 to about 100% q.s., v/v of a glyceride or derivative thereof carrier selected from the group consisting of propylene dicaprylate/dicaprate, and caprylic/capric triglyceride, and from about 0.005 to about 10% w/v of an avermectin compound having the formula:



where the broken line indicates a single or a double bond at the 22, 23-positions;

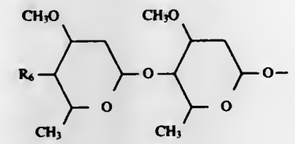
R_1 is hydrogen or hydroxy, provided that R_1 is present only when the broken line indicates a single bond;

R_2 is alkyl of from 1 to 6 carbon atoms or alkenyl of from 3 to 6 carbon atoms or cycloalkyl of from 3 to 6 carbon atoms;

R_3 is hydroxy, methoxy, or $=NOR_5$; where R_5 is hydrogen or lower alkyl;

R_7 is hydrogen, hydroxy or lower alkyl; and

R_4 is



where R_6 is hydroxy, amino, mono- or di-C_1–C_6 alkylamino or C_1–C_6 alkanolylamino.

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5,602,108

SEMISYNTHETIC DIASTEREOMERICALLY PURE N-GLYCIDYLANTHRACYCLINES, A PROCESS FOR THE STEREOSELECTIVE PREPARATION THEREOF AS THE USE THEREOF AS CYTOSTATICS

Manfred Gerken, Marburg; Monika Grimm, Biebertal; Ernst Raab, Marburg; Dieter Hoffmann, Marburg, and Reiner Straub, Marburg, all of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg, Germany

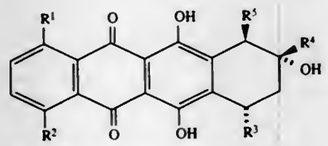
Continuation of Ser. No. 358,676, Dec. 19, 1994, abandoned, which is a continuation of Ser. No. 198,378, Feb. 18, 1994, abandoned, which is a continuation of Ser. No. 71,347, Jun. 3, 1993, abandoned, which is a continuation of Ser. No. 789,986, Nov. 12, 1991, abandoned. This application Jun. 5, 1995, Ser. No. 464,468

Claims priority, application Germany, Nov. 14, 1990, 40 36 155.1

Int. Cl.[6] A61K *37/00;* **C07M** *15/24*

U.S. Cl. 514—34 **9 Claims**

1. An N-glycidylanthracycline derivative of the following formula I,



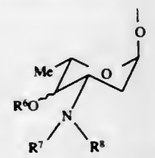
I

in which

R^1 is hydrogen or a hydroxyl group,

R^2 is hydrogen, a hydroxyl group or an alkyloxy (C_1–C_4) group,

R^3 is hydrogen, a hydroxyl group or a structure of the formula II



II

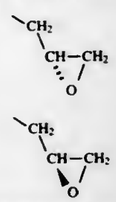
R^4 is CH_2CH_3, $COCH_3$, $COCH_2OH$, $CHOHCH_3$ or $CHOHCH_2OH$,

R^5 is hydrogen, a hydroxyl group, a methoxycarbonyl group or a structure of the formula II,

R^6 is hydrogen, an alkyl group (C_1–C_4), an allyl group, a benzyl group or mono- or di-methyloxy-substituted benzyl group or a tetrahydropyranyl group,

R^7 is hydrogen, an alkyl group (C_1–C_4), an allyl group, a benzyl group or a mono- or di-methyloxy-substituted benzyl group, and

R^8 is a structure of the formula III or IV



III

IV

or the salts thereof with an inorganic or organic acid; and in which either one or both of R^3 and R^5 is a structure of the formula II.

9. A pharmaceutical composition comprising a compound as claimed in claim 1 together with a pharmaceutically acceptable carrier.

5,602,109

METHOD TO ENHANCE THE IMMUNE SYSTEM OF A HUMAN

Marc L. Masor, Worthington, and Milo D. Hilty, Westerville, both of Ohio, assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Jan. 10, 1994, Ser. No. 178,686

Int. Cl.[6] A61K *31/70;* **A23L** *1/10*

U.S. Cl. 514—45 **24 Claims**

1. A method of improving the immune response sensitivity of the the immune system of a human infant, wherein said method comprises feeding a human infant in need of treatment a formula, the improvement comprising feeding said human infant a formula consisting essentially of:

1) protein, said protein being of a concentration of between 10 and 35 grams per liter of formula;

2) fat, said fat being of a concentration of between 20 and 45 grams per liter of formula;

3) carbohydrates, said carbohydrates being of a concentration of between 60 and 110 grams per liter of formula; and

4) at least 70 mg of nucleotide equivalents per liter of formula, said nucleotide equivalents are nucleotide equivalents of each of adenosine, cytidine, guanosine and uridine, and wherein the concentration of said cytidine nucleotide equivalents are in the range of from 29 to 39 mg/liter of said formula, the concentration of said uridine nucleotide equivalents are in the range of from 15 to 20 mg/liter of said formula, the concentration of said adenosine nucleotide equivalents are in the range of from 10 to 15 mg/liter of said formula, and the concentration of said guanosine nucleotide equivalents are in the range of from 14 to 20 mg/liter of said formula.

5,602,110

METHOD AND COMPOSITION FOR TREATING CYSTIC FIBROSIS

Mitchell L. Drumm, Brecksville, and Thomas J. Kelley, Mayfield Heights, both of Ohio, assignors to Case Western Reserve University, Cleveland, Ohio

Continuation-in-part of Ser. No. 299,013, Aug. 31, 1994, abandoned. This application Jan. 26, 1995, Ser. No. 378,638

Int. Cl.[6] A61K *31/70;31/52;31/445;31/44*

U.S. Cl. 514—47 **17 Claims**

1. A method of treating cystic fibrosis in a patient, comprising administering to the patient a treatment comprising, in combination, an amount of a first component and an amount of a second component, said first component being an inhibitor which is specific for a cGMP-inhibited type III cAMP phosphodiesterase, said second component being an adenylate cyclase activator, the amount of the first component and the amount of the second component, in combination, being a therapeutically effective treatment amount.

5,602,111

AGENT FOR INDUCING PHYTOALEXIN AND METHOD FOR INDUCING PHYTOALEXIN

Akira Misaki, Ashiya; Keiji Sekiya, Takatsuki, and Kazuhiko Yamatoya, Izumisano, all of Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan

PCT No. PCT/JP93/00728, § 371 Date Nov. 28, 1994, § 102(e) Date Nov. 28, 1994

PCT Filed May 28, 1993, Ser. No. 343,453

Claims priority, application Japan, May 29, 1992, 4-163501

Int. Cl.[6] A61K *31/715;* **C07G** *3/00;* **C09B** *47/04*

U.S. Cl. 514—54 **7 Claims**

1. A composition for inducing a phytoalexin comprising an effective amount of a xyloglucan-oligosaccharide for inducing said phytoalexin obtained by degrading a polysaccharide derived from Tamarind seed and has the following physical properties:

① a viscosity of a 10% by weight aqueous solution of the oligosaccharide measured at 25° C. by means of a BL model viscometer at 30 rpm being not more than 10 cps,

② negative with an iodine color reaction,

③ a constituent sugar ratio (glucose/xylose/galactose) of 4/3.5-2/2-0,

④ a mean molecular weight of 600–3000, and

⑤ 10–15% by weight of a heptasaccharide, 30–40% by weight of an octasaccharide and 35–45% by weight of a nonasaccharide being contained therein,

and a suitable carrier.

5,602,112

PHARMACEUTICAL FORMULATION

Joseph Rubinfeld, Danville, Calif., assignor to SuperGen, Inc., Emeryville, Calif.

Continuation-in-part of Ser. No. 116,724, Sep. 3, 1993, abandoned, which is a continuation-in-part of Ser. No. 900,664, Jun. 19, 1992, abandoned. This application Aug. 26, 1994, Ser. No. 297,249

Int. Cl.[6] A61K *31/715;31/70;31/045;47/00*

U.S. Cl. 514—58 **31 Claims**

1. A composition of matter comprising an anti-ulceration effective amount of a substituted cyclodextrin compound and a cytotoxic anti-cancer drug that is soluble in aqueous solution and a sugar alcohol.

5,602,113

PYRIDOBENZO- AND PYRIDIOTHIENO-DIAZEPINES USEFUL FOR THE TREATMENT OF HIV INFECTION

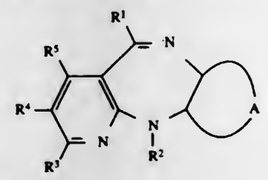
Karl D. Hargrave, Brookfield; Ernest Cullen; John R. Proudfoot, both of Newtown; Karl G. Grozinger, Ridgefield; Kollol Pal, New Milford, and Julian Adams, Ridgefield, all of Conn., assignors to Boehringer Ingelheim Pharmaceuticals, Inc., Ridgefield, Conn.

Continuation of Ser. No. 239,651, May 9, 1994, abandoned, which is a continuation of Ser. No. 91,105, Jul. 13, 1993, abandoned, which is a continuation of Ser. No. 967,609, Oct. 27, 1992, abandoned, which is a continuation of Ser. No. 838,378, Feb. 19, 1992, abandoned, which is a continuation of Ser. No. 652,146, Feb. 7, 1991, abandoned. This application Dec. 29, 1994, Ser. No. 365,647

Int. Cl.[6] A61K *31/55;* **C07D** *471/04;495/14*

U.S. Cl. 514—81 **5 Claims**

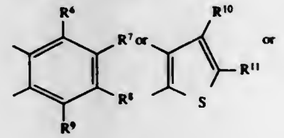
1. A compound of the formula I



(I)

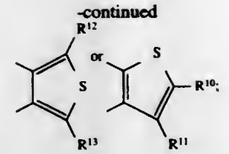
wherein,

A is a fused ring of the formula



or

-continued



R^1 is cyano, chloro, bromo, imidazolyl, phosphetanyl, phospholanyl, or phosphorinanyl, or a group of the formula $—OR^{14}$, $—SR^{14}$, $—SOR^{14}$, $—SO_2R^{14}$, $—NH_2$, $—NHR^{14}$, $—NR^{14}R^{15}$, $—PR^{14}R^{15}$, $—P(OR^{14})(OR^{15})$, $—P(O)(OR^{14})(OR^{15})$, $—PO_3H_2$, $—P(NR^{14}R^{15})(NR^{14}R^{15})$ or $—P(O)(NR^{14}R^{15})$ wherein R^{14} and R^{15} are each independently alkyl of 1 to 4 carbon atoms, which may optionally be substituted by a cyano or alkoxycarbonyl group of 2 to 4 carbon atoms, cyclopropyl or cyclobutyl, or the group $—NR^{14}R^{15}$ is pyrrolidine, piperidine, or morpholine;

R^2 is alkyl or fluoroalkyl of 1 to 5 carbon atoms, cycloalkyl of 3 to 5 carbon atoms, alkenyl or alkynyl of 2 to 5 carbon atoms, alkoxyalkyl or alkylthioalkyl of 2 to 4 carbon atoms, alkanoyl of 2 to 4 carbon atoms, hydroxyalkyl of 2 to 5 carbon atoms, arylmethyl (wherein the aryl moiety is phenyl, thienyl or furanyl, which is either unsubstituted or substituted by alkyl or alkoxy of 1 to 3 carbon atoms, hydroxyl, or halogen), phenyl (which is either unsubstituted or substituted by alkyl or alkoxy of 1 to 3 carbon atoms, halogen or hydroxyl) or alkoxy- carbonylmethyl wherein the alkoxy moiety contains 1 to 5 carbon atoms;

R^3, R^4, and R^5 are each independently hydrogen, alkyl of 1 to 3 carbon atoms or chloro, with the proviso that at least one of these substituents is hydrogen; or,

one of R^3, R^4 and R^5 is butyl, alkanoyl of 1 to 3 carbon atoms, hydroxyalkyl of 1 to 4 carbon atoms, alkoxycarbonyl of 2 to 3 carbon atoms, alkoxycarbonylalkyl wherein both the alkoxy and alkyl moieties contain 1 to 2 carbon atoms, halogen, trihalomethyl, hydroxyl, alkoxy of 1 to 3 carbon atoms, alkythio of 1 to 3 carbon atoms, alkanoyloxy of 2 to 3 carbon atoms, alkanoylamino of 1 to 3 carbon atoms, aminoalkyl of 1 to 3 carbon atoms, mono- or di-alkylamino or mono- or di-alkylaminocarbonyl wherein each alkyl moiety contains 1 to 2 carbon atoms, carboxyalkyl of 2 to 3 carbon atoms, cyano, nitro, carboxyl, carbamyl, amino, azido or mono- or di-alkylaminoalkyl wherein the alkyl moieties each contain 1 to 2 carbon atoms, and the remaining two substituents are hydrogen or methyl;

R^6, R^7, R^8 and R^9 are each hydrogen; or,

one of R^6, R^7, R^8 and R^9 is alkyl of 1 to 4 carbon atoms, alkanoyl of 1 to 3 carbon atoms, alkoxycarbonyl of 2 to 3 carbon atoms, hydroxyalkyl of 1 to 4 carbon atoms, alkoxycarbonylalkyl wherein both the alkoxy and alkyl moieties contain 1 to 2 carbon atoms, halogen, trihalomethyl, hydroxyl, alkoxy of 1 to 3 carbon atoms, alkylthio of 1 to 3 carbon atoms, alkanoyloxy of 2 to 3 carbon atoms, alkanoylamino of 1 to 3 carbon atoms, aminoalkyl of 1 to 3 carbon atoms, mono- or di-alkylamino or mono- di-alkylaminocarbonyl wherein each alkyl moiety contains 1 to 2 carbon atoms, carboxylalkyl of 2 to 3 carbon atoms, cyano, nitro, carboxyl, carbamyl, amino, azido or mono- or di-alkylaminoalkyl wherein each alkyl moiety contains 1 to 2 carbon atoms, and the remaining three substituents are hydrogen or two of the remaining three substituents are hydrogen and one is methyl, ethyl or halogen;

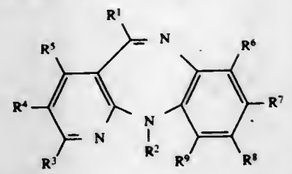
R^{10} or R^{11} is hydrogen, alkyl of 1 to 4 carbon atoms, cyano, nitro, halogen or alkanoyl of 1 to 3 carbon atoms, with the remaining substituent being hydrogen, chloro, methyl or ethyl; and,

R^{12} and R^{13} are each independently hydrogen, alkyl of 1 to 4 carbon atoms, halogen or nitro;

or a pharmaceutically acceptable addition salt thereof.

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3. A compound of the formula Ia:



(Ia)

wherein,
R^1 is cyano, chloro, imidazolyl, or a group of the formula $—OR^{14}$, $—SR^{14}$, $—SOR^{14}$, $—SO_2R^{14}$, $—NH_2$, $—NHR^{14}$, or $—NR^{14}R^{15}$ wherein R^{14} and R^{15} are each independently alkyl of 1 to 4 carbon atoms, which may optionally be substituted by a cyano or alkoxycarbonyl group of 2 to 4 carbon atoms, cyclopropyl or cyclobutyl, or the group $—NR^{14}R^{15}$ is pyrrolidine, piperidine, or morpholine;
R^2 is alkyl of 2 to 3 carbon atoms, cyclopropyl or allyl;
R^3 through R^9 are each hydrogen; or,
R^3, R^4, R^5, R^6, and R^9 are each hydrogen; and,
R^7 and R^8 are each independently hydrogen, methyl, or chloro, with the proviso that at least one of R^7 and R^8 is methyl or chloro;
or a pharmaceutically acceptable addition salt thereof.

5,602,114

Patent Not Issued For This Number

5,602,115

BISPHOSPHONIC ACID DERIVATIVES AS ANTI-ARTHRITIC AGENTS

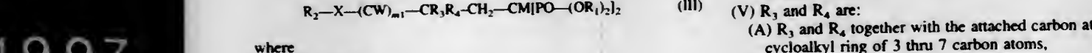
Richard A. Nugent, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 19,964, Feb. 19, 1993, Pat. No. 5,412,141, which is a continuation-in-part of Ser. No. 570,274, Aug. 21, 1990, abandoned. This application Nov. 28, 1994, Ser. No. 345,508

Int. Cl.[6] C07F *9/576;9/547;* **A61K** *31/665*

U.S. Cl. 514—105 **10 Claims**

1. An acyclic bisphosphonate of the formula



(III)

where
(I) m_1 is 0 or 1;
(II) M is —H, —Cl or $—CH_3$;
(III) where both $—OR_1$ on the same P are taken together along with $—CH_2—CH_2—$, $—CH_2—CH_2—CH_2—$ or $—CH_2—C(CH_3)_2—CH_2—$ to form a heterocyclic ring containing one —P—, two —O— and two or three carbon atoms;
(IV) R_2 is
(A) —♦ optionally substituted with 1 or 2 —♦ or with 1 thru 3
(1) —F,
(2) —Cl,
(3) —Br,
(4) —I,
(5) $—NO_2$,
(6) —CN,
(7) $—CF_3$,
(8) C_1–C_{10} alkyl,
(9) C_3–C_7 cycloalkyl,
(10) —OH,
(11) C_1–C_4 alkoxy,
(12) —SH,
(13) $—NH_2$,
(14) $—O—CO—R_{2\text{-}1}$ where $R_{2\text{-}1}$ is
(a) C_1–C_{10} alkyl,
(b) C_3–C_7 cycloalkyl,
(15) $—(CH_2)_{n1}—COO—R_{2\text{-}2}$ where n_1 is 1 thru 3 and $R_{2\text{-}2}$ is
(a) —H,
(b) C_1–C_6 alkyl,
(c) $—CH_2—$♦,
(d) $—N—CO—R_{2\text{-}3}$ where $R_{2\text{-}3}$ is
(i) C_1–C_{10} alkyl,
(ii) C_3–C_7 cycloalkyl,
(e) $—(CH_2)_{n4}—COO—R_{2\text{-}9}$ where n_4 is 1 thru 3 and $R_{2\text{-}9}$ is
(i) —H,
(ii) C_1–C_6 alkyl,
(iii) —♦,
(16) $—O—S(O)_2—R_{2\text{-}4}$ where $R_{2\text{-}4}$ is
(a) C_1–C_{10} alkyl,
(b) —♦ optionally substituted with 1 thru 3
(i) —F,
(ii) —Cl,
(iii) —Br,
(iv) —I,
(v) $—NO_2$,
(vi) —CN,
(vii) $—CF_3$,
(viii) C_1–C_{10} alkyl,
(ix) —OH,
(x) C_1–C_4 alkoxy,
(xi) —O—♦,
(xii) C_1–C_4 alkylthio,
(xiii) $—N—CO—R_{2\text{-}3}$ where $R_{2\text{-}3}$ is as defined above,
(17) $—N(R_{2\text{-}5})(R_{2\text{-}6})$ where $R_{2\text{-}5}$ and $R_{2\text{-}6}$ are the same or different and are (a) —H,
(b) C_1–C_6 alkyl,
(c) C_3–C_7 cycloalkyl,
(d) —♦,
(18) $—N(R_{2\text{-}7})—CO—R_{2\text{-}3}$ where $R_{2\text{-}7}$ is
(a) —H,
(b) C_1–C_6 alkyl,
(c) C_3–C_7 cycloalkyl,
(d) —♦ and where $R_{2\text{-}3}$ is as defined above,
(19) $—N(R_{2\text{-}7})—CO—O—R_{2\text{-}8}$ where $R_{2\text{-}8}$ is
(a) —H,
(b) C_1–C_6 alkyl,
(c) C_3–C_7 cycloalkyl,
(d) —♦ and
(e) $—CH_2—$♦, and where $R_{2\text{-}7}$ is as defined above,
(20) $—N(R_{2\text{-}7})—CO—N(R_{2\text{-}5})(R_{2\text{-}6})$ where $R_{2\text{-}5}$, $R_{2\text{-}6}$ and $R_{2\text{-}7}$ are as defined above,
(21) $—N(R_{2\text{-}7})—SO_2—R_{2\text{-}4}$ where $R_{2\text{-}4}$ and $R_{2\text{-}7}$ are as defined above,
(V) R_3 and R_4 are:
(A) R_3 and R_4 together with the attached carbon atom form a cycloalkyl ring of 3 thru 7 carbon atoms,
(B) R_3 is —H and R_4 is:
(1) —H,
(2) $R_{2\text{-}4}$,
(3) $—CO—O—R_{2\text{-}8}$,
(4) $—CO—R_2$,
(5) —CN,
(6) $—CO—NH—R_2$,
(7) $—NH—CO—R_{2\text{-}1}$,
(8) $—S—R_{2\text{-}8}$,
(C) R_3 is —H and R_4 is:
(1) —F,
(2) —Cl,
(3) —Br,
(4) —I,
(D) R_3 and R_4 are the same or different and are C_1–C_{10} alkyl;
(VI) W_1 is:
(A) =O,
(B) =S,
(C) $=N—N(R_{2\text{-}7})_2$ where $R_{2\text{-}7}$ is as defined above,
(D) $W_{1\text{-}1}$:$W_{1\text{-}2}$ where $W_{1\text{-}1}$ and $W_{1\text{-}2}$ are the same and are
(1) C_1–C_4 alkoxy,
(E) W_1 is —H:—$W_{1\text{-}5}$ where $W_{1\text{-}5}$ is:
(1) —OH,
(2) —SH,
(3) $—NH_2$,
(4) $—S—W_{1\text{-}6}$ where $W_{1\text{-}6}$ is C_1–C_4 alkyl,
(5) $—O—CO—R_{2\text{-}1}$ where $R_{2\text{-}1}$ is as defined above,
(6) $—O—S(O)_2—R_{2\text{-}4}$ where $R_{2\text{-}4}$ is as defined above,
(7) $—N(R_{2\text{-}5})(R_{2\text{-}6})$ where $R_{2\text{-}5}$ and $R_{2\text{-}6}$ are as defined above,
(8) $—N(R_{2\text{-}7})—CO—R_{2\text{-}1}$ where $R_{2\text{-}1}$ and $R_{2\text{-}7}$ are as defined above,
(9) $—N(R_{2\text{-}5})—CO—O—R_{2\text{-}8}$ where $R_{2\text{-}5}$ and $R_{2\text{-}8}$ are as defined above,
(10) $—N(R_{2\text{-}7})—CO—N(R_{2\text{-}5})(R_{2\text{-}6})$ where $R_{2\text{-}5}$, $R_{2\text{-}6}$ and $R_{2\text{-}7}$ are as defined above,
(11) $—N(R_{2\text{-}7})—SO_2—R_{2\text{-}4}$ where $R_{2\text{-}6}$ and $R_{2\text{-}7}$ are as defined above;
(VII) X is $—(CH_2)_{n2}—$ or $—(CH=CH)_{n3}—$ where n_2 is 0 thus 5 and n_3 is 0 thru 2, with the proviso that when R_4 is $—R_{2\text{-}4}$, m_1 is 1, or pharmaceutically acceptable salts thereof.

5,602,116

METHOD FOR TREATING AND PREVENTING SECONDARY HYPERPARATHYROIDISM

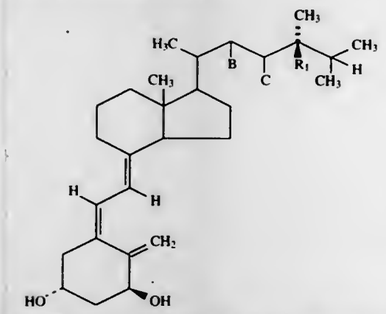
Joyce C. Knutson, Madison; Charles W. Bishop, Verona, and Richard B. Mazess, Madison, all of Wis., assignors to Bone Care International, Inc., Madison, Wis.

Continuation-in-part of Ser. No. 119,895, Sep. 10, 1993, Pat. No. 5,403,831, which is a continuation of Ser. No. 812,056, Mar. 5, 1992, abandoned, which is a continuation of Ser. No. 569,412, Aug. 17, 1990, Pat. No. 5,104,864, which is a continuation of Ser. No. 227,371, Aug. 2, 1988, abandoned. This application Apr. 3, 1995, Ser. No. 415,488

Int. Cl.[6] A61K *31/59*

U.S. Cl. 514—167 **9 Claims**

1. A method for lowering or maintaining lowered serum parathyroid hormone in human patients suffering from hyperparathyroidism secondary to end stage renal disease, comprising: administering to said patients an effective amount of a vitamin D analog to lower and maintain lowered serum parathyroid hormone levels, said analog comprising formula (I):



(I)

wherein B and C are either hydrogen or a carbon-carbon double bond between C_{22} and C_{23}; and R_1 is hydrogen or hydroxyl provided that when B and C are a double bond, R_1 is hydrogen.

5,602,117

CEPHALOSPORIN COMPOUNDS

George Burton, Wallington, and Stephen C. M. Fell, Horsham, both of England, assignors to Pfizer Inc., New York, N.Y.

PCT No. PCT/GB92/02231, § 371 Date Jun. 1, 1994, § 102(e) Date Jun. 1, 1994, PCT Pub. No. WO93/11131, PCT Pub. Date Jun. 10, 1993

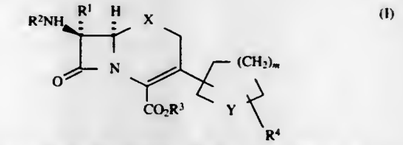
PCT Filed Dec. 1, 1992, Ser. No. 244,568

Claims priority, application United Kingdom, Dec. 3, 1991, 9125645

Int. Cl.[6] A61K *31/545*

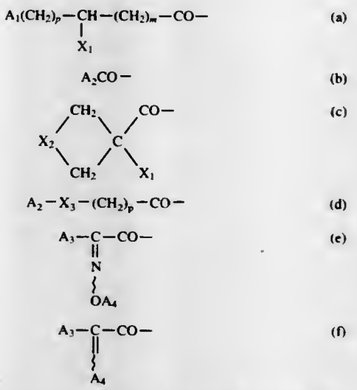
U.S. Cl. 514—202 **9 Claims**

1. A compound of formula (I) or a pharmaceutically acceptable salt thereof:



(I)

wherein R^1 is hydrogen, methoxy or formamido; R^2 is an acyl group of any one of the formulae (a) to (f):



(a)

(b)

(c)

(d)

(e)

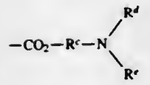
(f)

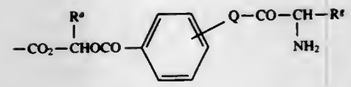
wherein p is 0, 1 or 2; m is 0, 1 or 2; A_1 is C_{1-6}alkyl, optionally substituted C_{1-6}alkyl, C_{3-6}cycloalkyl, cyclohexenyl, cyclohexadienyl, optionally substituted phenyl, thienyl, pyridyl, optionally substituted thiazolyl, C_{1-6}alkylthio or C_{1-6}alkyloxy; X_1 is a hydrogen or halogen atom, a carboxylic acid, carboxylic ester, sulphonic acid, azido, tetrazolyl, hydroxy, acyloxy, amino, ureido, acylamino, heterocyclylamino, guanidino or acylureido group; A_2 is phenyl, 2,6-dimethoxyphenyl,2-alkoxy-1-naphthyl, 3-arylisoxazolyl, or 3-aryl-5-methylisoxazolyl; a substituted C_{1-6}alkyl group; or a substituted dithietane; X_2 is $—CH_2OCH_2—$, $—CH_2SCH_2—$ or C_{1-6}alkylene group; X_3 is an oxygen or sulphur atom; A_3 is phenyl, substituted phenyl, furyl, aminothiazolyl or aminothiadiazolyl in which the amino group is optionally protected; and A_4 is hydrogen, C_{1-6}alkyl, C_{3-8}cycloalkyl, C_{3-8}cycloalkyl(C_{1-6})alkyl, C_{1-6}alkoxycarbonyl(C_{1-6})alkyl, C_{2-6}alkenyl, carboxyC_{1-6}alkyl, C_{2-6}alkynyl, aryl or C_{1-6}alkyl substituted by up to three aryl groups; wherein the optional substituent is R_4 as defined below;
CO_2R^3 is a carboxy group, a carboxylate anion, or a readily removable carboxy protecting group of formula (i), (ii), (iii), (iv) or (v):

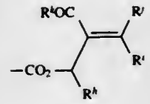


(i)

-continued







wherein R^a is hydrogen, C_{1-6}alkyl, C_{3-7}cycloalkyl, methyl, or phenyl, R^b is C_{1-6}alkyl, C_{1-6}alkoxy, phenyl, benzyl, C_{3-7}cycloalkyl, C_{3-7}cycloalkyloxy, C_{1-6}alkyl (C_{3-7}) cycloalkyl, 1-amino (C_{1-6}) alkyl, or 1-(C_{1-6}alkyl)amino (C_{1-6})alkyl; or R^a and R^b together form a 1,2 -phenylene group optionally substituted by one or two methoxy groups; R^c represents C_{1-6}alkylene optionally substituted with a methyl or ethyl group; R^d, R^e and R^f independently represent C_{1-6}alkyl; R^g represents hydrogen or phenyl optionally substituted by up to three of halogen; C_{1-6}alkyl, or C_{1-6}alkoxy; Q is oxygen or NH; R^h is hydrogen or C_{1-6}alkyl, R^i is hydrogen, C_{1-6}alkyl optionally substituted hy halogen, C_{2-6}alkenyl, (C_{1-6}alkoxy)carbonyl, aryl or heteroaryl; or R^h and R^i together form C_{1-6}alkylene; R^j represents hydrogen, C_{1-6}alkyl or (C_{1-6}alkoxy) carbonyl; and R^k represents C_{1-8}alkyl or C_{1-8}alkoxy, C_{1-6}alkoxy(C_{1-6})alkoxy or aryl;

R^4 represents hydrogen or up to four of C_{1-6}alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, C_{1-6}alkoxy, hydroxy, halogen, amino, C_{1-6}alkylamino, acylamino, (C_{1-6}dialkyl) amino, CO_2R, $CONR_2$, SO_2NR_2, wherein R is hydrogen or C_{1-6}alkyl, aryl or heterocyclyl, which may be the same or different and wherein any R^4 alkyl substituent is optionally substituted by any other R^4 substituent;

X is S, SO, or SO_2;

Y is S; and

m is 1 or 2;

wherein "aryl" is phenyl or naphthyl, each optionally substituted with up to five of halogen, mercapto, C_{1-6}alkyl, phenyl, C_{1-6}alkoxy, hydroxy (C_{1-6}) alkyl, mercapto (C_{1-6}) alkyl, halo(C_{1-6})alkyl, hydroxy, amino, nitro, carboxy, C_{1-6}alkylcarbonyloxy, C_{1-6}alkoxycarbonyl, formyl, or C_{1-6}alkylcarbonyl groups; "heterocyclyl" and "heterocyclic" is an aromatic or non-aromatic, single or fused ring containing from 4 to 7 ring atoms which atoms may be up to four of oxygen, nitrogen or sulphur, which rings may be substituted by up to three of halogen, C_{1-6}alkyl, C_{1-6}alkoxy, halo (C_{1-6}) alkyl, hydroxy, carboxy, carboxy salts, C_{1-6}alkoxycarbonyl, C_{1-6}alkoxycarbonyl (C_{1-6}) alkyl, aryl, or oxo; and "heteroaryl" is an aromatic heterocyclic ring.

5,602,118

(ii) **2-THIOSUBSTITUTED CARBAPENEMS**

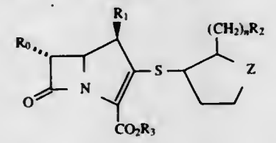
Yang-I Lin, Tappan; Pannyota Bitha, Nanuet; Subas Sakya, Pomona, all of N.Y.; Timothy W. Strohmeyer, Demarest; Karen Bush, Princeton, both of N.J.; Carl B. Ziegler, Pearl River, and Gregg B. Feigelson, Airmont, both of N.Y., assignors to American Cyanamid Company, Madison, N.J.

(iii) **Continuation-in-part of Ser. No. 33,684, Mar. 16, 1993, abandoned. This application Jan. 26, 1994, Ser. No. 182,781**

Int. Cl.[6] A61K *31/395;* **A01N** *43/00;* **C07D** *487/04*

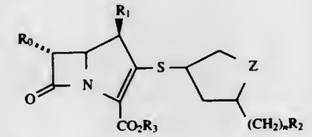
U.S. Cl. 514—210 **53 Claims**

(iv) 1. A compound of the formula:



(v)

or

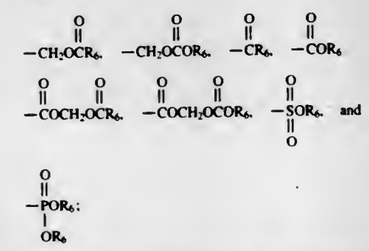


wherein:

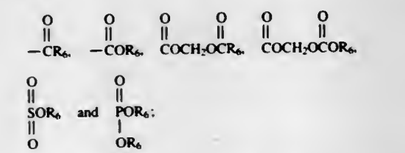
(A) Z is oxygen;

(B) R_0 is hydrogen, (C_1–C_2)alkyl, CH_2OR_4, CH_2NHR_5, $CH(OR_4)CH_3$, $CHFCH_3$ or $CH(NHR_5)CH_3$; wherein

(i) R_4 is selected from hydrogen, and moieties of the formulae:



(ii) R_5 is selected from hydrogen, and moieties of the formulae:



(iii) R_6 is selected from a straight, branched or substituted (C_1–C_{18})alkyl, (C_2–C_{18})alkenyl, unsubstituted or substituted (C_3–C_7)monocyclo (C_1–C_{10}) alkyl, unsubstituted or substituted (C_5–C_{10}) bicyclo (C_1–C_{10})alkyl, aryl or substituted aryl, heteroaryl or substituted heteroaryl, heterocyclyl or substituted heterocyclyl; wherein the heterocyclyl moiety is a monocyclic or bicyclic group having 1–10 carbon atoms and 1–4 heteroatoms selected from oxygen, nitrogen or sulfur atoms and each ring of the heterocycle is comprised of 4 to 7 atoms, the heteroaryl group is an aromatic monocyclic or bicyclic heterocyclic group of 5–12 atoms

wherein the heteroatom or heteroatoms are selected from 1–4 oxygen, nitrogen or sulfur atoms; the substitution for the alkyl, monocycloalkyl and bicycloalkyl moieties are selected from trifluoromethyl, pentafluoroethyl, amino, mono(C_1–C_6)alkylamino, di(C_1–C_6)alkylamino, hydroxy, (C_1–C_6)alkoxy, (C_3–C_8)cycloalkoxy, carboxy, (C_2–C_{10})carboalkoxy, cyano and (C_1–C_{10})carboxamido; the substitution for the aryl, heteroaryl and heterocyclyl moieties is selected from (C_1–C_6)alkyl, (C_1–C_6)mono-, di- or polyfluoroalkyl, hydroxy, (C_1–C_6)alkoxy, (C_3–C_8) cycloalkoxy, amino, mono(C_1–C_6)alkylamino, di-(C_1–C_6)alkylamino, carboxy, (C_2–C_{10})carboalkoxy, cyano and (C_1–C_{10})carboxamido;

(C) R_1 is straight or branched (C_1–C_8)alkyl, straight or branched (C_2–C_8)alkenyl, (C_3–C_8)cycloalkyl; or $(CH_2)_nR$; wherein n' is an integer of from 1–6; R is selected from CF_3, C_2F_5, fluorine, chlorine, bromine, hydroxy, alkoxy, nitrile, azido, amidino, formamidino, guanidino and NR'R"; wherein

(i) R' and R" are independently selected from hydrogen, straight or branched (C_1–C_6)alkyl, straight or branched (C_1–C_6)alkoxy, 2-hydroxyethyl, 2-azidoethyl and 2-aminoethyl;

(ii) and when R' is hydrogen or straight or branched (C_1–C_6)alkyl, R" may also be selected from amino, hydroxy, mono (C_1–C_6)alkylamino, di(C_1–C_6)alkyl-amino, acyl, benzoyl, dihydroxybenzoyl, an acyl residue of an amino acid or peptide said amino acid selected from the group consisting of alanine, glycine, arginine, cysteine, isoleucine, leucine, lysine, methionine, phenylalanine, proline, aminopimelic acid and threonine, and straight or branched substituted (C_1–C_6)alkyl wherein said alkyl substituent is selected from hydroxy, (C_1–C_6)alkoxy, azido, amino, mono(C_1–C_6)alkylamino, di- (C_1–C_6)alkylamino, guanidino, nitrile, carboxy, formimidoyl and phenyl; or

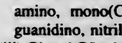
(iii) R' and R" taken together with the associated nitrogen is an unsubstituted or substituted monocyclic or bicyclic heterocyclic ring having up to four (4) heteroatoms in each ring independently selected from oxygen, nitrogen and sulfur, wherein said substituent is selected from straight or branched (C_1–C_6)alkyl, straight or branched (C_1–C_6)alkoxy, (C_3–C_8)cycloalkyl, (C_3–C_8)cycloalkoxy, trifluoromethyl, hydroxy, halogen (selected from bromine, chlorine, fluorine and iodine), amino, nitrile, carboxy, carbamido, carbamoyl, straight or branched mono(C_1–C_6)alkylamino, straight or branched di(C_1–C_6)alkylamino, and amino (C_1–C_6)alkyl;

(D) n is an integer from 1–3;

(E) R_2 is:

(i) —OCOCH$_3$, —OCOCF$_3$, —OSO$_2$Ph, azido;

(ii) a moiety of the formula:

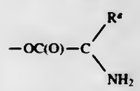


wherein n" is an integer from 0–2; and R^a is

(a) hydrogen or an

(b) organic group bonded via a carbon atom selected from substituted or unsubstituted (C_1–C_6)alkyl, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl, substituted or unsubstituted heteroaryl (C_1–C_6)alkyl, substituted or unsubstituted heterocyclyl; said substitution is selected from (C_1–C_6)alkyl, hydroxy (C_1–C_6) alkoxy, phenyl, heterocyclyl, amino, amidino, guanidino, carboxamido, carbamoyl (C_1–C_6)alkanoylamino, mono- and di(C_1–C_6)alkylamino;

(iii) or R_2 is selected from hydroxy, —OR^a, —OC(O)R^a, —OC(O)OR^a, —OC(O)NR"R^a or

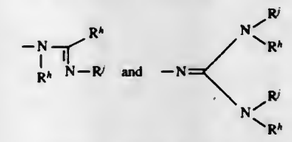


wherein R^a is independently selected and is as hereinabove defined;

(iv) or R_2 is an organic residue bonded via a nitrogen atom, selected from:

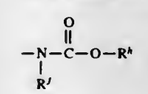
(a) NO_2 and NR^hR^j wherein R^h and R^j are independently selected from hydrogen, amino, substituted amino, substituted or unsubstituted (C_1–C_8)alkyl, aryl, wherein the substituents in the above mentioned substituted alkyl and amino are selected from the group consisting of amino, mono-, di- and tri(C_1–C_6)alkylamino, hydroxyl, oxo, carboxyl, alkoxyl, chloro, fluoro, bromo, nitro, —SO_2NH_2, phenyl, benzyl, acyloxy, alkoxylcarbonyloxy, cycloalkoxycarbonyloxy and carboxamido;

(b) moieties of the formulae:



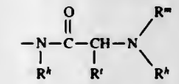
wherein R^h and R^j are as hereinabove defined;

(c) acylamino moieties of the formula:



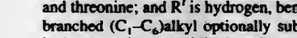
wherein R^h and R^j are as hereinabove defined;

(d) an amino moiety containing an acyl residue of an amino acid or peptide represented by the formula:



wherein R^h is as hereinabove defined; R^m is hydrogen or an acyl residue of an amino acid or peptide said amino acid selected from the group consisting of alanine, glycine, arginine, cysteine, isoleucine, leucine, lysine, methionine, phenylalanine, prolite, aminopimelic acid and threonine; and R^t is hydrogen, benzyl, and straight or branched (C_1–C_6)alkyl optionally substituted with halo, hydroxy, amino, guanidinyl, carboxy, phenyl, aminocarbonyl, alkylthio, hydroxyphenyl or heterocyclyl;

(e) an acylcic quaternary ammonio moiety of the formula:



wherein R_7, R_8 and R_9 are the same or different and are selected from hydrogen, a straight or branched (C_1–C_6) alkyl, and substituted (C_1–C_6)alkyl, wherein the substitution is selected from hydroxy, (C_1–C_6)alkoxy, azido, amino, (C_1–C_6)alkylamino, di(C_1–C_6)-alkylamino, guanidino, nitrile, carboxy, formimidoyl and phenyl; alternatively, R_7 and R_8 taken together are —$(CH_2)_2X(CH_2)_2$—, wherein X is $(CH_2)_w$, wherein w is an integer from 0 to 2 oxygen, sulfur NH, NR^h, NOH and NOR^h wherein R^h is as hereinabove defined and B^- is a physiologically acceptable anion;

(f) a quaternized heteroaryl wherein the heteroaryl moiety must contain at least one positively charged nitrogen atom in association with a physiologically acceptable anion, wherein the quaternized heteroaryl is optionally substituted by R^a as hereinabove defined;

(v) or R_2 is —CHR^hR^j wherein R^h and R^j are as hereinabove defined, provided that when R_2 is —CHR^hR^j then R^h and R^j cannot both be hydrogen;

(F) R_3 is selected from hydrogen; a straight or branched (C_1–C_4)alkyl group; a (C_1–C_4)alkoxymethyl group; a straight or branched 1-(C_1–C_3)aliphatic acyloxy-ethyl or methyl

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group; a straight, branched or cyclic 1-(C_1–C_6)alkoxycarbonyloxyethyl or methyl group; a phthalidyl group; and water soluble cations selected from the group consisting of lithium, sodium, potassium, ammonium and tetra (C_1–C_6)alkyl ammonium or a pharmaceutically acceptable salt thereof.

5,602,119

SUCCINOYLAMINO HYDROXYETHYLAMINO SULFAMIC ACID DERIVATIVES USEFUL AS RETROVIRAL PROTEASE INHIBITORS

Michael L. Vazquez, 233 Saratoga Ct., Gurnee, Ill. 60031; Richard A. Mueller, 562 Stonegate Ter., Glencoe, Ill. 60022; John J. Talley, 1079 Darwick Ct., St. Louis, Mo. 63132; Daniel P. Getman, 66 Sunnyhill Ct., Chesterfield, Mo. 63017; Gary A. DeCrescenzo, 536 Schrader Farm Dr., St. Peters, Mo. 63376, and Eric T. Sun, 7614 Palmilla Dr., Apt. 58, San Diego, Calif. 92212

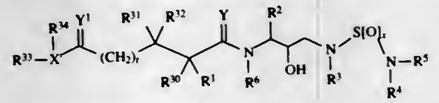
PCT No. PCT/US93/10460, § 371 Date Jan. 31, 1995, § 102(e) Date Jan. 31, 1995

PCT Filed Oct. 29, 1993, Ser. No. 379,573

Int. Cl.[6] C07C *307/02;* **A61K** *31/18;31/40;31/535*

U.S. Cl. 514—210 **74 Claims**

1. A compound represented by the formula:



or a pharmaceutically acceptable salt, or ester thereof wherein:

R^1 represents hydrogen, —$CH_2SO_2NH_2$, —$CH_2CO_2CH_3$, —CO_2CH_3, —$CONH_2$, —$CH_2C(O)NHCH_3$, —$C(CH_3)_2(SH)$, —$C(CH_3)_2(SCH_3)$, —$C(CH_3)_2(S[O]CH_3)$, —$C(CH_3)_2(S[O]_2CH_3)$, alkyl, haloalkyl, alkenyl, alkynyl and cycloalkyl radicals, and amino acid side chains selected from asparagine, S-methyl cysteine and methionine and the sulfoxide (SO) and sulfone (SO_2) derivatives thereof, isoleucine, allo-isoleucine, alanine, leucine, tert-leucine, phenylalanine, ornithine, histidine, norleucine, glutamine, threonine, glycine, allo-threonine, serine, O-alkyl serine, aspartic acid, beta-cyano alanine and valine side chains;

R^2 represents alkyl, aryl, cycloalkyl, cycloalkylalkyl and aralkyl radicals, which radicals are optionally substituted with a group selected from alkyl and halogen radicals; —NO_2, —C≡N, CF_3, —OR^9, —SR^9, wherein R^9 represents hydrogen and alkyl radicals;

R^3 represents alkyl, haloalkyl, alkenyl, alkynyl, hydroxyalkyl, alkoxyalkyl, cycloalkyl, cycloalkylalkyl, heterocycloalkyl, heteroaryl, heterocycloalkylalkyl, aryl, aralkyl, heteroaralkyl, aminoalkyl and mono- and disubstituted aminoalkyl radicals, wherein said substituents are selected from alkyl, aryl, aralkyl, cycloalkyl, cycloalkylalkyl, heteroaryl, heteroaralkyl, heterocycloalkyl, and heterocycloalkylalkyl radicals, or in the case of a disubstituted aminoalkyl radical, said substituents along with the nitrogen atom to which they are attached, form a heterocycloalkyl or a heteroaryl radical, and thioalkyl, alkylthioalkyl and arylthioalkyl radicals and the sulfone and sulfoxide derivatives thereof;

R^4 and R^5 independently represent hydrogen and radicals as defined by R^3 or together with a nitrogen atom to which they are bonded form a heterocycloalkyl or a heteroaryl radical;

R^6 represents hydrogen and alkyl radicals;

R^{30}, R^{31} and R^{32} independently represent hydrogen and alkyl, alkenyl and alkynyl radicals, or one of R^1 and R^{30} together with one of R^{31} and R^{32} and the carbon atoms to which they are attached form a cycloalkyl radical;

R^{33} and R^{34} independently represent hydrogen and radicals as defined for R^3, or R^{33} and R^{34} together with X' represent cycloalkyl, aryl, heterocyclyl and heteroaryl radicals, provided that when X' is O, R^{34} is absent.

X' represents N, O and C(R^{17}) wherein R^{17} represents hydrogen and alkyl radicals;

x represents 1, or 2;

t represents either 0, 1 or 2; and

Y and Y' independently represent O, S and NR^{15} wherein R^{15} represents hydrogen and radicals as defined for R^3.

5,602,120

BENZYL-SUBSTITUTED COMPOUNDS HAVING DOPAMINE RECEPTOR AFFINITY

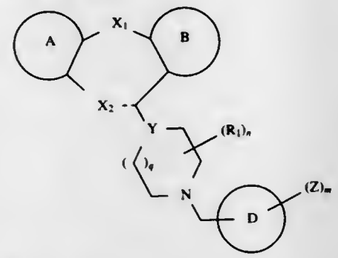
Jian-Min Fu, Brampton; Ashok Tehim, Mississauga, and Robert A. Kirby, Acton, all of Canada, assignors to Allelix Biopharmaceuticals, Inc., Mississauga, Canada

Filed Dec. 12, 1994, Ser. No. 354,766

Int. Cl.[6] A61K *31/55;* **C07D** *413/04;417/04*

U.S. Cl. 514—211 **17 Claims**

1. A compound of Formula I:



wherein:

A and B are independently selected from the group consisting of benzene unsubstituted or substituted with 1 or 2 substituents selected independently from hydroxyl, halo, C_{1-4}alkyl, amino, nitro, cyano, halo-substituted C_{1-4}alkyl, C_{1-4}alkoxy, halo-substituted C_{1-4}alkoxy, C_{1-4}alkoxycarbonyl, C_{1-4}acyl, cyclo-C_{3-7}alkyl, HS-C_{1-4} alkylene, C_{1-4}alkylthio, halo-substituted C_{1-4}alkylthio, cyanothio, tetrazolyl, N-piperidinyl, N-piperazinyl, N-morpholinyl, acetamido, C_{1-4}alkylsulfonyl, halosulfonyl, halo-substituted C_{1-4}alkylsulfonyl, C_{1-4}alkylsulfoxyl, sulfonamido, C_{1-4}alkylseleno, and OSO_3H;

X_1 is selected from O, S, SO_2 and SO,

X_2 - - - is N═;

Y is selected from CH and N;

Z is cyano;

R_1 represents C_{1-4}alkyl;

m is 1, 2 or 3;

n is 0, 1 or 2;

q is 1 or 2; and

D is a 5, 6 or 7-membered, saturated or unsaturated, homo- or heterocyclic ring;

and acid addition salts, solvates or hydrates thereof.

5,602,121

ALKYL-SUBSTITUTED COMPOUNDS HAVING DOPAMINE RECEPTOR AFFINITY

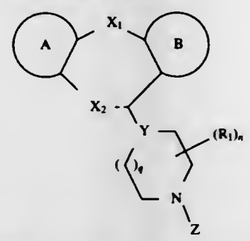
Jian-Min Fu, Brampton, Canada, assignor to Allelix Biopharmaceuticals, Inc., Mississauga, Canada

Filed Dec. 12, 1994, Ser. No. 354,793

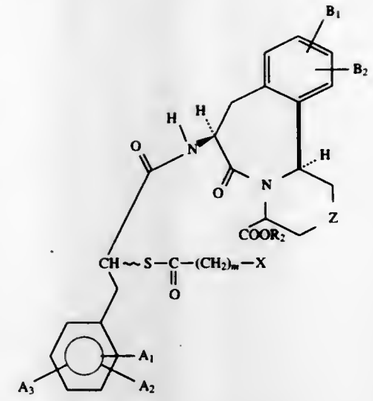
Int. Cl.[6] A61K *31/55;* **C07D** *413/04;417/04*

U.S. Cl. 514—211 **16 Claims**

1. A compound of Formula I:



(I)



wherein:

A and B are independently selected from the group consisting of benzene unsubstituted or substituted with 1 or 2 substituents selected independently from hydroxyl, halo, C_{1-4}alkyl, amino, nitro, cyano, halo-substituted C_{1-4}alkyl, C_{1-4}alkoxy, halo-substituted C_{1-4}alkoxy, C_{1-4}alkoxycarbonyl, C_{1-4}acyl, cyclo-C_{3-7}alkyl, HS-C_{1-4} alkylene, C_{1-4}alkylthio, halo-substituted C_{1-4}alkylthio, cyanothio, tetrazolyl, N-piperidinyl, N-piperazinyl, N-morpholinyl, acetamido, C_{1-4}alkylsulfonyl, halosulfonyl, halo-substituted C_{1-4}alkylsulfonyl, C_{1-4}alkylsulfoxyl, sulfonamido, C_{1-4}alkylseleno, and OSO_3H;

X_1 is O or S,

X_2 . . . is N═;

Y is selected from N and CH;

R_1 represents C_{1-4}alkyl;

n is 0, 1 or 2;

q is 1 or 2; and

Z is n-hexyl;

and acid addition salts, solvates or hydrates thereof.

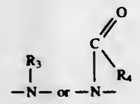
wherein

B_1 and B_2 are each independently hydrogen; hydroxy; —OR_1 wherein R_1 is a C_1–C_4 alkyl or an Ar—Y— group wherein Ar is aryl and Y is a C_0–C_4 alkyl; or, where B_1 and B_2 are attached to adjacent carbon atoms, B_1 and B_2 can be taken together with said adjacent carbons to form a benzene ring or methylenedioxy;

A_1, A_2 and A_3 are each independently hydrogen; hydroxy; nitro; amino; fluoro, chloro, —OR_1 or an Ar—Y group; or, where A_1 and A_2 are attached to adjacent carbon atoms, A_1 and A_2 can be taken together with said adjacent carbons to form a benzene ring or methylenedioxy;

R_2 is hydrogen, a C_1–C_4 alkyl, an Ar—Y— group or —CH_2O—C(O)$C(CH_3)_3$;

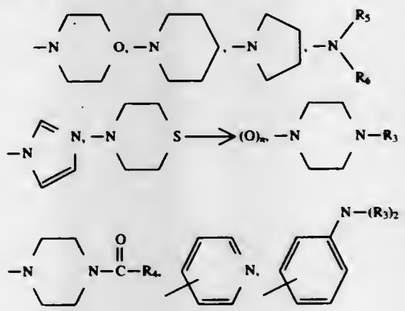
Z is —CH_2—, —O—, —S—,



or a bond wherein R_3 is hydrogen, a C_1–C_4 alkyl or an Ar—Y— group and R_4 is —CF_3, a C_1–C_{10} alkyl or an Ar—Y— group;

m is an integer 0 to 5;

X is selected from the group consisting of



and

5,602,122

METHOD FOR LOWERING TOTAL SERUM CHOLESTEROL AND TREATING HYPERCHOLESTEROLEMIA WITH AMINOACETYLMERCAPTO DERIVATIVES

Gary A. Flynn; John F. French, and Richard C. Dage, all of Cincinnati, Ohio, assignors to Merrell Pharmaceuticals Inc., Cincinnati, Ohio

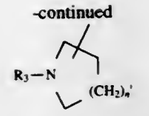
Continuation of Ser. No. 217,350, Mar. 24, 1994, abandoned. This application Oct. 26, 1995, Ser. No. 548,604

Int. Cl.[6] A61K *31/55*

U.S. Cl. 514—214 **6 Claims**

1. A method of lowering total serum cholesterol in a patient in need thereof comprising administering to said patient a therapeutically effective hypocholesterolemic amount of a compound of the formula

-continued



wherein R_5 and R_6 are each independently a C_1–C_4 alkyl or an Ar—Y— group and n is an integer 0–2; n' is an integer 1–2; and the pharmaceutically acceptable salts thereof.

5,602,123

THERAPEUTIC AGENT FOR MYOCARDIAL ISCHEMIC DAMAGES OR REPERFUSION

Yasushi Abiko; Hiroko Hashizume; Akiyoshi Hara, all of Asahikawa; Yoichi Yamauchi, Komae, and Junichi Kawagoe, Sayama, all of Japan, assignors to Kowa Co., Ltd., Nagoya, Japan

Filed Oct. 26, 1995, Ser. No. 548,678
Claims priority, application Japan, Nov. 2, 1994, 6-269503
Int. Cl.[6] A61K *31/55*
U.S. Cl. 514—218 **2 Claims**

1. A method for restoring lowered heart function caused by myocardial ischemia-reperfusion, which comprises administering to a patient suffering from said lowered heart function an effective amount of a compound of the following formula (1), an acid addition salt thereof, or a hydrate thereof:

(1)



wherein R^1, R^2, R^3, R^4, R^5 and R^6 are identical to or different from each other, and each represent a lower alkoxy group, and A and A' are identical to or different from each other and each represent a lower alkylene group.

5,602,124

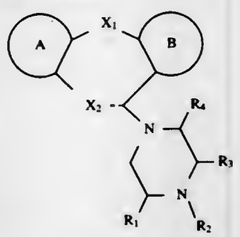
5-HT2 RECEPTOR LIGANDS

Ashok Tehim, Mississauga; Jian-Min Fu, Brampton, and Sumanas Rakhit, Mississauga, all of Canada, assignors to Allelix Biopharmaceuticals, Inc., Mississauga, Canada

Filed Dec. 12, 1994, Ser. No. 354,765
Int. Cl.[6] A61K *31/55;* **C07D** *403/04*
U.S. Cl. 514—220 **23 Claims**

1. A compound of Formula I:

(I)



wherein:

A and B are independently selected from the group consisting of benzene unsubstituted or substituted with 1 or 2 substituents selected independently from hydroxyl, halo, C_{1-4}alkyl, amino, nitro, cyano, halo-substituted C_{1-4}alkyl, C_{1-4}alkoxy, halo-substituted C_{1-4}alkoxy, C_{1-4}alkoxycarbonyl, C_{1-4}acyl, cyclo-C_{1-7}alkyl, HSC_{1-4}alkylene, C_{1-4}alkylthio, halo-substituted C_{1-4}alkylthio, cyanothio, tetrazolyl, N-piperidinyl, N-piperazinyl, N-morpholinyl, acetamido, C_{1-4}alkylsulfonyl, halosulfonyl, halo-substituted C_{1-4}alkylsulfonyl, C_{1-4}alkylsulfoxyl, sulfonamido, C_{1-4}alkylseleno, and OSO_3H;

X_1 is selected from NH, N-C_{1-4}alkyl and N-acetyl;

X_2 - - - is N=;

R_1 is C_{1-6}alkyl optionally substituted with a substituent selected from OH, halo, C_{1-4}alkyl and C_{1-4}alkoxy; and

R_2, R_1 and R_1 are independently selected from H and R_1, wherein either R_3 or R_4 is R_1;

and acid addition salts, solyates or hydrates thereof.

5,602,125

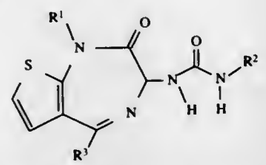
THIENODIAZEPINE DERIVATIVES AS CHOLECYSTOKININ AND GASTRIN ANTAGONISTS

William R. Carling, Bishops Stortford, and Victor G. Matassa, Furneux Pelham, both of Great Britain, assignors to Merck, Sharp & Dohme, Ltd., Hoddesdon, England

PCT No. PCT/GB93/01782, § 371 Date Feb. 28, 1995, § 102(e) Date Feb. 28, 1995, PCT Pub. No. WO94/05673, PCT Pub. Date Mar. 17, 1994
PCT Filed Aug. 20, 1993, Ser. No. 392,778
Claims priority, application United Kingdom, Aug. 28, 1992, 9218412
Int. Cl.[6] A61K *31/55;* **C07D** *495/04*
U.S. Cl. 514—221 **9 Claims**

1. A compound of Formula (I) or a pharmaceutically acceptable salt thereof:

(I)

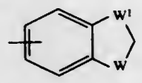


wherein:

R^1 represents H, C_{1-6}alkyl optionally substituted by one or more halo, C_{3-7}cycloalkyl, cyclopropylmethyl, $CH_2CO_2R^5$ (where R^5 is C_{1-4}alkyl) or $CH_2CONR^6R^7$ (where R^6 and R^7 each independently represents H or C_{1-4}alkyl, or R^6 and R^7 together form a chain $(CH_2)_p$ where p is 4 or 5);

R^2 represents a phenyl group optionally substituted by one or more substituents selected from C_{1-6}alkyl, halo, hydroxy, C_{1-4}alkoxy, $(CH_2)_q$-tetrazolyl optionally substituted in the tetrazole ring by C_{1-4}alkyl, $(CH_2)_q$-imidazolyl, $(CH_2)_q$triazolyl (where q is 0, 1, 2 or 3), 5-hydroxy-4-pyrone, NR^6R^7, NR^9COR^5, $NR^9COR^9R^5$ (where R^9 and R^9 are each independently H or C_{1-4}alkyl), $CONR^6R^7$ (where R^6 and R^7 are as previously defined), $SO(C_{1-6}$ alkyl), $SO_2(C_{1-6}$alkyl), trifluoromethyl, $CONHSO_2R^8$, SO_2NHCOR^8 (where R^8 is C_{1-6}alkyl, optionally substituted aryl being phenyl optionally substituted by a substitutent selected from the group consisting of: C_{1-4}alkyl, C_{1-4}alkoxy, halo and trifluoromethyl; 2,2-difluorocyclopropane or trifluoromethyl), SO_2NHR^{10} (where R^{10} is a nitrogen containing heterocycle selected from the group consisting of: thiazole, thiadiazole, and pyrazino), $B(OH)_2$, $(CH_2)_qCO_2H$, where q is as previously defined; or

R^2 represents a group



where W represents CH_2 or NR^9, where R^9 is as previously defined and W^1 represents CH_2, or W and W^1 each represent O; and

R^3 represents C_{3-7}cycloalkyl optionally substituted by one or more C_{1-4}alkyl groups, or R^3 is $NR^{11}R^{12}$, where R^{11} and R^{12} each independently represent H; C_{1-12}alkyl optionally substituted by NR^9R^9 (where R^9 and R^9 are as previously defined) or an azacyclic selected from morpholinyl and piperidinyl or azabicyclic group selected from 3-aza-bicyclo[3.2.2]nonan-3-yl; C_{4-9} cycloalkyl optionally substituted by one or more C_{1-4}alkyl groups; C_{4-9} cycloalkylC_{1-4}alkyl optionally substituted in the cycloalkyl ring by one or more C_{1-4}alkyl groups; optionally substituted aryl which is selected from the group consisting of: phenyl, thienyl, furyl, pyrrolyl and pyridyl, which can be substituted with a group selected from the group consisting of: C_{1-4}alkyl, C_{1-4} alkoxyl, halo and trifluoromethyl; optionally substituted arylC_{1-6}alkyl wherein optionally substituted aryl is defined immediately prior; or azacyclic or azabicyclic groups as defined above; or R^{11} and R^{12} together form the residue of an optionally substituted azacyclic or azabicyclic ring system selected from 3-azabicyclo[3.2.2]nonan-3-yl.

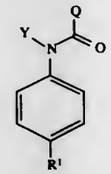
5,602,126

ARTHROPODICIDAL ANILIDES

William E. Barnette, West Chester, Pa.; Charles R. Harrison, Newark, Del.; George P. Lahm, Wilmington, Del.; David W. Piotrowski, Bear, Del., and Keith D. Wing, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

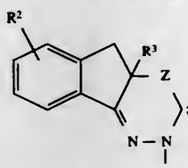
Division of Ser. No. 146,210, Nov. 22, 1993, Pat. No. 5,500,438. This application Nov. 22, 1995, Ser. No. 562,131
Int. Cl.[6] A01N *43/88;* **C07D** *273/04;285/16*
U.S. Cl. 514—222.2 **7 Claims**

1. A compound of the formula



wherein

Q is selected from the group



Q-2

R^1 is selected from the group Cl, Br, CF_3, OCF_3, OCF_3H and OSO_2CF_3;

R^2 is selected from the group H, F, Cl, Br, CF_3, OCF_3, OCF_2H and OCH_2CF_3;

Y is selected from the group NR^6R^7, $N{=}CR^8R^9$ or OR^6;

R^3 is selected from the group CO_2Me, CO_2Et, Ph, 4-F-Ph, 4-Cl-Ph and C_1-C_3 alkyl;

R^6 is selected from the group H, C_1-C_4 alkyl, C_1-C_4 haloalkyl, C_2-C_4 alkenyl, C_2-C_4 alkynyl, $SO_2NR^9R^9$ SO_2R^{10}, COR^8, $CONR^9R^9$, CO_2R^8, phenyl optionally substituted with halogen of C_1-C_4 alkoxy, and benzyl optionally substituted with halogen;

R^7 is selected from the group H, C_1-C_4 alkyl and COR^8;

R^8 is selected from the group H, C_1-C_4 alkyl, C_1-C_4 haloalkyl and phenyl optionally substituted by a group selected from halogen, CN, NO_2, CF_3 and OCF_3;

R^9 is selected from the group H and C_1-C_4 alkyl;

R^8 and R^9 can be taken together as $—CH_2CH_2CH_2—$, $CH_2CH_2CH_2CH_2$ and $—CH_2CH_2CH_2CH_2CH_2—$;

R^{10} is selected from the group C_1-C_4 alkyl and C_1-C_4 haloalkyl; and

Z is selected from the group CH_2, O, S and NR^6.

5,602,127

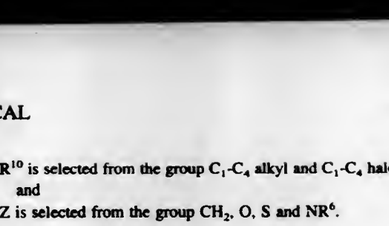
(ALKANESULTAM-1-YL)-BENZIMIDAZOL-1-YL)-1YL)-METHYL-BIPHENYLS USEFUL AS ANGIOTENSIN-II ANTAGONISTS

Norbert Hauel, Schemmerhofen; Berthold Narr, deceased, late of Biberach; Uwe Ries, Biberch; Jacobus C. A. van Meel, Mittelbiberach; Wolfgang Wienen, Biberach/Riss; and Michael Entzeroth, Warthausen, all of Germany, assignors to Karl Thomae GmbH, Biberach an der Riss, Germany

Division of Ser. No. 385,936, Feb. 9, 1995, which is a continuation-in-part of Ser. No. 94,835, Jul. 20, 1993, abandoned, Ser. No. 201,139, Feb. 24, 1994, abandoned, Ser. No. 257,608, Jun. 9, 1994, abandoned, and Ser. No. 237,477, May 3, 1994, abandoned, which is a continuation of Ser. No. 40,778, Mar. 31, 1993, abandoned, said Ser. No. 201,139is a continuation of Ser. No. 832,193, Feb. 6, 1992, abandoned, said Ser. No. 257,608is a continuation of Ser. No. 7,315, Jan. 21, 1993, abandoned. This application Jun. 1, 1995, Ser. No. 456,978
Claims priority, application Germany, May 25, 1991, 41 17 121.7; Jun. 2, 1991, 41 03 492.9; Nov. 16, 1991, 41 37 812.1; Jan. 22, 1992, 42 01 554.5; Apr. 11, 1992, 42 12 250.3; Jun. 17, 1992, 42 19 782.1; Jul. 22, 1992, 42 24 133.2; Jul. 27, 1992, 42 24 752.7; Aug. 4, 1992, 42 25 756.5
Int. Cl.[6] A61K *31/54;* **C07D** *279/02*
U.S. Cl. 514—222.2 **8 Claims**

1. A compound of the formula I

(I)



wherein

R_1 is in the 4-position and represents a C_{1-4}-alkyl, C_{3-7}-cycloalkyl or trifluoromethyl group,

R_2 represents a 5-, 6- or 7-membered alkyleneimino group in which a methylene group is replaced by a sulphonyl, or R_2 represents a 5-, 6- or 7-membered alkyleneimino group which is substituted by one or two C_{1-3}-alkyl groups and in which alkyleneimino group a methylene group is replaced by a sulphonyl,

R_3 represents a C_{1-5}-alkyl group or cyclopropyl, and

R_4 denotes a 1H-tetrazolyl group or an $R_aO—CO—$ group, wherein

R_a denotes a hydrogen atom or a straight-chained or branched C_{1-4}-alkyl group,

or a pharmaceutically acceptable salt thereof.

8. A method for treating hypertension which comprises administering to a mammalian host suffering from the same an antihypertensive amount of a compound as in any one of claims 1, 2, 3, 4, 5 or 6.

5,602,128

N-HETEROCYCLOALKYL CARBOXAMIDES AS SEROTONERGIC AGENTS

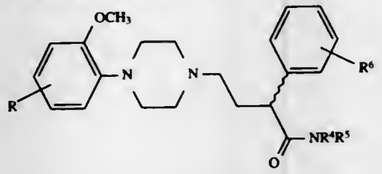
Reinhardt B. Bandy, Yardley, Pa., and Scott C. Berta, N. Brunswick, N.J., assignors to American Home Products Corporation, Madison, N.J.

Filed Dec. 2, 1994, Ser. No. 348,651

Int. Cl.[6] A61K *31/535;31/54;* **C07D** *413/04;417/02*

U.S. Cl. 514—227.8 **7 Claims**

1. A compound of the formula:

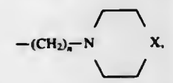


where:

R and R^6 are members independently selected from the group consisting of H, CN, OR^2, NO_2, NR^2R^3, NR^2COR^3, NR^2COOR^3, COR^2, $COOR^2$, $CONR^2R^3$, SR^2, SOR^2, SO_2R^2, $SO_2NR^2R^3$, alkyl of 1 to 6 carbon atoms, alkenyl of 2 to 6 carbon atoms, alkynyl of 2 to 6 carbon atoms, perhaloalkyl of 1 to 6 carbon atoms, and a halogen; in which R^2 and R^3 are alkyl of 1 to 6 carbon atoms, alkenyl of 2 to 6 carbon atoms, alkynyl of 2 to 6 carbon atoms, phenyl, or benzyl;

R^4 is a member selected from the group consisting of H, alkyl of 1 to 6 carbon atoms, heteroalkyl of 2 to 6 carbon atoms, in which the hetero atom is oxygen, sulfur or nitrogen, alkenyl of 2 to 6 carbon atoms and alkynyl of 2 to 6 carbon atoms;

R^5 is



where X is O, S or NR^7 and R^7 is H or alkyl of 1 to 6 carbon atoms and n is 1, 2, 3, 4, 5, or 6;

or a pharmaceutically acceptable salt thereof.

5,602,129

N-(3-HYDROXY-4-PIPERIDINYL) (DIHYDROBENZOFURAN, DIHYDRO-2H-BENZOPYRAN OR DIHYDROBENZODIOXIN)CARBOXAMIDE DERIVATIVES

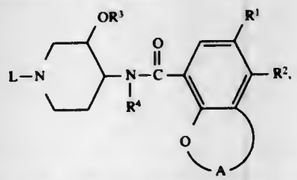
Georges H. P. Van Daele, Turnhout, and Frans M. A. Van den Keybus, Essen, both of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Division of Ser. No. 301,825, Sep. 7, 1994, Pat. No. 5,552,553, which is a division of Ser. No. 489,419, Mar. 6, 1990, Pat. No. 5,374,637, which is a continuation-in-part of Ser. No. 326,941, Mar. 22, 1989, abandoned. This application Apr. 13, 1995, Ser. No. 421,727

Int. Cl.[6] A61K *31/53;* **C07D** *403/14*

U.S. Cl. 514—241 **30 Claims**

1. A compound of the formula:



(I)

an N-oxide form, a pharmaceutically acceptable salt thereof, or a stereochemically isomeric form thereof, wherein:

A represents a group of the formula:

$—CH_2—O—$ (a-4),

$—CH_2—CH_2—O—$ (a-5), or

$—CH_2—CH_2—CH_2—O—$ (a-6),

wherein one or two hydrogen atoms in said groups (a-4) to (a-6) may be replaced by a C_{1-6}alkyl group;

R^1 represents hydrogen, halo, C_{1-6}alkylsulfonyl, or aminosulfonyl;

R^2 represents hydrogen, amino, mono- or di(C_{1-6}alkyl)amino, arylC_{1-6}alkylamino, or C_{1-6}alkylcarbonylamino;

R^3 and R^4 each independently represent hydrogen or C_{1-6}alkyl; and

L represents a group of the formula:

$—Alk—R^5$ (b-1); or

$—Alk—X—R^6$ (b-2);

wherein:

each Alk represents C_{1-6}alkanediyl;

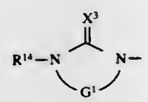
R^5 and R^6 represent Het; and

X represents O, S, SO^2, or NR^7wherein R^7 represents hydrogen, C_{1-6}alkyl, or aryl;

wherein in the foregoing:

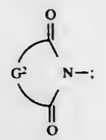
Het represents a group of the formula:

(d-1)



or

(d-2)



wherein:

X^3 represent O or S;

R^{14} represents hydrogen, C_{1-6}alkyl or arylC_{1-6}alkyl;

R^{15} represents hydrogen, halo, C_{1-6}alkyl or aryl;

G^1 represents $—CH_2—CH_2—$, $—CH=CH—$, $—N=N—$, or $—CO—CH_2—$, wherein one or two hydrogen atoms each independently may be replaced by C_{1-6}alkyl;

G^2 represents $—CH_2—CH_2—$or $—CH_2—N(R^{14})—$, wherein R^{14} is as defined above and wherein one or two hydrogen atoms each independently may be replaced by C_{1-6}alkyl; and

aryl represents phenyl or phenyl substituted with 1, 2, or 3 substituents each independently selected from the group consisting of halo, hydroxy, C_{1-6}alkyl, C_{1-6}alkyloxy, aminosulfonyl, C_{1-6}alkylcarbonyl, nitro, trifluoromethyl, amino, and aminocarbonyl.

5,602,130

DISUBSTITUTED ACETYLENES BEARING HETEROAROMATIC AND HETEROBICYCLIC GROUPS HAVING RETINOID LIKE ACTIVITY

Roshantha A. Chandraratna, Mission Viejo, Calif., assignor to Allergan

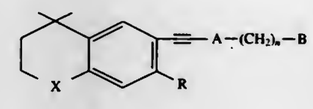
Continuation-in-part of Ser. No. 27,627, Mar. 8, 1993, Pat. No. 5,380,877, which is a division of Ser. No. 792,832, Nov. 15, 1991, Pat. No. 5,234,926, which is a division of Ser. No. 326,191, Mar. 20, 1989, Pat. No. 5,089,509, which is a continuation-in-part of Ser. No. 246,037, Sep. 15, 1988, abandoned, which is a continuation of Ser. No. 28,279, Mar. 20, 1987, abandoned. This application Oct. 14, 1994, Ser. No. 323,174

The portion of the term of this patent subsequent to Feb. 2, 2010, has been disclaimed.

Int. Cl.[6] A61K *31/505;31/495;31/38;31/47*

U.S. Cl. 514—247 **21 Claims**

1. A process of treating a mammal afflicted with a condition or disease which is susceptible to treatment by a therapeutic agent having retinoid-like activity, the process comprising administering to said mammal an effective dose of a pharmaceutical composition including a pharmaceutically acceptable excipient and a compound having the formula



where X is S, O, or NR' where R' is hydrogen or lower alkyl; R is hydrogen or lower alkyl; A is pyridyl, thienyl, furyl, pyridazinyl, pyrimidinyl or pyrazinyl; n is 0–4; and B is H, —COOH or a pharmaceutically acceptable salt thereof, or an ester thereof with a saturated aliphatic alcohol of ten or fewer carbon atoms, or with a cyclic or saturated aliphatic cyclic alcohol of 5 to 10 carbon atoms, or with phenol or with a lower alkylphenol, or an amide or a mono or di-substituted amide thereof, the subtituents on the amide being selected from a group consisting of saturated aliphatic radicals of ten or fewer carbon atoms, cyclic or saturated aliphatic cyclic radicals of 5 to 10 carbon atoms, and phenyl or lower alkylphenyl radicals, or B is CH_2OH or an ester derivative thereof derived from a saturated aliphatic acid of ten or fewer carbon atoms, or from a cyclic or saturated aliphatic cyclic acid of 5 to 10 carbon atoms, or from benzoic acid, or an ether derivative thereof derived from a saturated aliphatic radical of ten or fewer carbon atoms, or from a cyclic or saturated aliphatic cyclic radical of 5 to 10 carbon atoms, or from phenyl or lower alkylphenyl radical, or B is —CHO or a lower alkyl acetal derivative thereof, or an acetal derivative thereof formed with a lower alkyl diol, or B is $—COR_1$ or a lower alkyl ketal derivative thereof, or a ketal derivative thereof formed with a lower alkyl diol, where R_1 is $—(CH_2)_mCH_3$ where m is 0–4, or a pharmaceutically acceptable salt of the compound defined in said formula.

5,602,131

EBURNANE ANALOGUES

Jean-Daniel Brion, Saint-Leu-la-Foret; Claude Thal, Sceaux; Luc Demuynck, Orleans; Jean-Gilles Parmentier, Issy les Moulineaux; Jean Lepagnol, Chaudon; Pierre Lestage, Paris; Jean-François Pujol, Lyons; Pascal Schmitt, Metz-Queleu, and Pierre Potier, Paris, all of France, assignors to Adir et Compagnie, Courbevoie, France

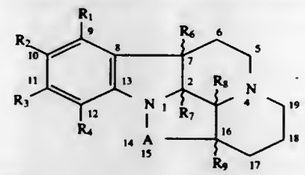
Filed Dec. 13, 1994, Ser. No. 354,660

Claims priority, application France, Dec. 14, 1993, 93 14944

Int. Cl.[6] C07D *471/04;471/14;* **A61K** *31/50;31/44*

U.S. Cl. 514—248 **7 Claims**

1. A compound selected from those of formula (I):



(I)

wherein:

R_1, R_2, R_3 and R_4, which may be identical or different, are: selected independently of one another from:

hydrogen,

halogen,

hydroxy,

linear or branched (C_1–C_6)-alkyl optionally substituted by one or more halogens, by one or more amino, by one or more nitro, by one or more linear or branched (C_1–C_6)-alkoxy and/or by one or more aryl, selected from phenyl and naphthyl, which are themselves optionally substituted by one or more halogens, nitro, amino, (C_1–C_6)-alkyl and/or (C_1–C_6)-alkoxy,

and linear or branched (C_1–C_6)-alkoxy optionally substituted by one or more halogens, by one or more amino, by one or more nitro, and/or by one or more linear or branched (C_1–C_6)-alkoxy,

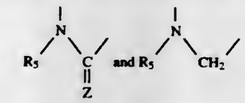
or R_1, R_2, R_3 and R_4, taken in pairs and carried by adjacent carbon atoms, form methylenedioxy or ethylenedioxy,

R_6 and R_7: either each simultaneously represents hydrogen, adopting a cis-configuration with respect to one another, or together form a bond,

R_8 and R_9: either each simultaneously represents hydrogen, adopting a cis- or trans-configuration with respect to one another, or together form a bond, in the which case R_6 and R_7 also together form a bond,



represents a bivalent radical selected from



Z is selected from oxygen and sulfur,

wherein

R_5 is selected from hydrogen and linear or branched (C_1–C_6)-alkyl optionally substituted by one or more:

halogens,

linear or branched (C_1–C_6)-alkoxy,

phenyl, optionally being substituted by one or more linear or branched (C_1–C_6)-alkyl, and/or linear or branched (C_1–C_6)-alkoxy, those alkyl and alkoxy radicals optionally being substituted by one or more aryl, selected from phenyl and naphthyl, which are unsubstituted or substituted by one or more groups selected from halogens, amino, nitro, (C_1–C_6)-alkyl and/or (C_1–C_6)-alkoxy, or radicals



wherein R_{10} and R_{11} are selected independently of one another from hydrogen, linear or branched (C_1–C_6)-alkyl and linear or branched (C_1–C_6)-alkoxy,

or their N-oxides, optical isomers, alone or in mixture, and where appropriate, their pharmaceutically-acceptable addition salts with an acid.

5,602,132

BRANCHED-AMINO-SUBSTITUTED THIAZOLES, PROCESSES FOR THEIR PREPARATION AND THE PHARMACEUTICAL COMPOSITIONS WHICH CONTAIN THEM

Pierre M. Roger, Montigny le Bretonneux; Daniel A. Gully, Muret; Gilles V. Courtemanche, St. Martin du Tertre; Claudie S. Gautier, Paris; Michel J. Gesiin, Villeneuve-Tolosane, and Camille G. Wermuth, Strasbourg, all of France, assignors to Sanofi, Paris, France

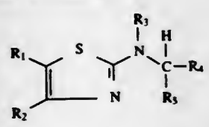
Filed Dec. 21, 1994, Ser. No. 360,351

Claims priority, application France, Dec. 21, 1993, 93 15386

Int. Cl.[6] C07D 277/18; A61K 31/425;31/44;31/495

U.S. Cl. 514—252 **16 Claims**

1. A Compound of formula I:

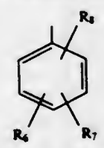


(I)

in which,

R_1 is selected from a hydrogen atom and an alkyl radical of 1 to 5 carbon atoms,

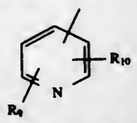
R_2 is selected from a radical of formula (A):



(A)

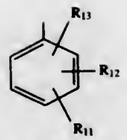
(in which R_6 represents a hydroxyalkyl radical of 1 to 5 carbon atoms and R_7 and R_8, which may be identical or different, each are selected from hydrogen atom, a halogen atom and a hydroxyalkyl radical of 1 to 5 carbon atoms, a trifluoromethyl, an alkoxy radical of 1 to 5 carbon atoms and an alkyl radical of 1 to 5 carbon atoms),

a radical of formula (B):



(B)

(in which R_9 and R_{10}, which may be identical or different, each are selected from hydrogen atom, a halogen atom, an alkyl radical of 1 to 5 carbon atoms and an alkoxy radical of 1 to 5 carbon atoms), and a radical of formula (C):



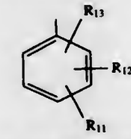
(C)

(in which R_{11}, R_{12} and R_{13}, which may be identical or different, each are selected from a hydrogen atom, a halogen, atom, a trifluoromethyl, an alkoxy radical of 1 to 5 carbon atoms and an alkyl radical of 1 to 5 carbon atoms),

R_3 is selected from alkyl radical of 1 to 5 carbon atoms, a hydroxyalkyl radical of 1 to 5 carbon atoms, a 2-tetrahydropyranyloxyalkyl radical in which the alkyl radical contains from 1 to 5 carbon atoms, an alkoxyalkyl radical of 2 to 10 carbon atoms and an acyloxyalkyl radical of 3 to 11 carbon atoms,

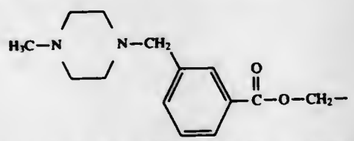
R_4 is selected from a cycloalkyl radical of 3 to 6 carbon atoms, a hydroxyalkyl radical of 1 to 5 carbon atoms, an alkoxyalkyl radical of 2 to 10 carbon atoms, a cycloalkyloxyalkyl radical of 4 to 11 carbon atoms, a hydroxyalkyloxyalkyl radical of 2 to 10 carbon atoms, an acyloxyalkyloxyalkyl radical of 3 to 12 carbon atoms, an acyloxyalkyl radical of 3 to 11 carbon atoms and an alkylthioalkyl radical of 2 to 10 carbon atoms, and,

R_5 is selected from a cycloalkyl radical of 3 to 6 carbon atoms, a phenyl radical a thienyl radical a pyridyl radical (which are optionally -substituted with one or more groups selected from halogen atoms, alkoxy radicals of 1 to 5 carbon atoms, alkyl radicals of 1 to 5 carbon atoms and trifluoromethyl radicals), and a radical of formula (D):



(C)

(in which R_{14} is selected from a carboxyl radical, a carboxyalkyl radical of 2 to 6 carbon atoms where acyl=R'C(O)-and R'=hydrocarbon, an alkoxycarbonyl radical of 2 to 6 carbon atoms, an acyloxyalkyl radical of 3 to 11 carbon atoms, an alkoxyalkyl radical of 2 to 10 carbon atoms, an aralkoxyalkyl radical of 8 to 16 carbon atoms (which is optionally substituted on the aromatic ring with one or more groups selected from halogen atoms, alkoxy radicals of 1 t 3 carbon atoms and trifluoromethyl radicals), a monohalo alkyl radical of 1 to 5 carbon atoms, a linear or branched hydroxyalkyl radical of 1 to 5 carbon atoms, a radical of formula (E):



(E)

and a sulfooxyalkyl radical of 1 to 5 carbon atoms), a 3-hydroxyalkyl-6-pyridyl radical add, a 2-hydroxyalkyl- 5-pyridyl radical (in which the alkyl radicals contain from 1 to 5 carbon atoms), on condition, however, that when R_3 represents an alkyl radical of 1 to 5 carbon atoms, R_4 represents a cycloalkyl radical and R_5 is selected from a cycloalkyl radical and a phenyl radical, a thienyl radical and a pyridyl radical (which are optionally substituted with one or more groups selected from halogen atoms, alkoxy radicals of 1 to 5 carbon atoms,

alkyl radicals of 1 to 5 carbon atoms and trifluoromethyl radicals), R_2 does not represent a radical of formula (C),

a stereoisomer and a non-toxic addition salt thereof.

5,602,133

USE OF THIAZOLIDINEDIONE DERIVATIVES AND RELATED ANTIHYPERGLYCEMIC AGENTS IN THE TREATMENT OF DISEASE STATES AT RISK FOR PROGRESSING TO NONINSULIN-DEPENDENT DIABETES MELLITUS

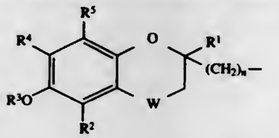
Tammy Antonucci, Meguon, Wis.; Dean Lockwood, Ann Arbor, and Rebecca Norris, Kewadin, both of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 292,585, Aug. 23, 1994, Pat. No. 5,457,109, which is a continuation-in-part of Ser. No. 122,251, Sep. 15, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 469,398

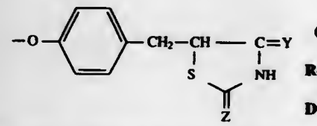
Int. Cl.[6] A61K 31/425;31/41;31/44;31/42

U.S. Cl. 514—252 **43 Claims**

1. A method of treating polycystic ovary syndrome comprising administering to a host suffering therefrom a therapeutically effective amount of a compound of Formula I in unit dosage form:



I



wherein R^1 and R^2 are the same or different and each represents a hydrogen atom or a C_1–C_5 alkyl group;

R^3 represents a hydrogen atom, a C_1–C_6 aliphatic acyl group, an alicyclic acyl group, an aromatic acyl group, a heterocyclic acyl group, an araliphatic acyl group, a (C_1–C_6 alkoxy)carbonyl group, or an aralkyloxycarbonyl group;

R^4 and R^5 are the same or different and each represents a hydrogen atom, a C_1–C_5 alkyl group or a C_1–C_5 alkoxy group, or R^4 and R^5 together represent a C_1–C_4 alkylenedioxy group; n is 1, 2, or 3;

W represents the $—CH_2—$, >CO, or CH—OR^6 group (in which R^6 represents any 1 of the atoms or groups defined for R^3 and may be the same as or different from R^3); and

Y and Z are the same or different and each represents an oxygen atom or an imino (=NH) group;

and pharmaceutically acceptable salts thereof.

5,602,134

POSITIVE INOTROPIC AND LUSITROPIC PYRROLOQUINOLINONE DERIVATIVES

Eddy J. E. Freyne, Rumst, and Alfons H. M. Raeymaekers, Beerse, both of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

PCT No. PCT/EP94/01960, § 371 Date Nov. 29, 1995, § 102(e) Date Nov. 29, 1995, PCT Pub. No. WO95/00512, PCT Pub. Date Jan. 5, 1995

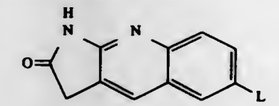
PCT Filed Jun. 15, 1994, Ser. No. 553,580

Claims priority, application European Pat. Off., Jun. 21, 1993, 93201771

Int. Cl.[6] A01N 43/38;43/42; C07D 471/02

U.S. Cl. 514—253 **14 Claims**

1. A compound having the formula



(I)

a pharmaceutically acceptable addition salt thereof or a stereochemically isomeric form thereof, wherein

L is a radical of formula —O-Alk-$(NH)_p$-C(=O)-R^1, wherein

Alk is C_{1-6}alkanediyl;

p is 0 or 1; and

R^1 is hydroxy, C_{1-4}alkyloxy or —NR^2R^3, wherein

R^2 is hydrogen or C^{1-4}alkyl; and

R^3 is C_{3-7}cycloalkyl or piperidinyl, which is optionally substituted with C_{1-4}alkyl or phenylmethyl or C_{3-7}cycloalkylmethyl;

R^2 and R^3 may also be joined together to form piperazinyl, optionally substituted with C_{3-7}cycloalkyl, C_{3-7}cycloalkylmethyl, C_{1-6}alkyl optionally substituted with one or two hydroxy groups, 2,2-dimethyl-1,3-dioxolanylmethyl, benzyl, halophenylmethyl, (cyclopentyloxy)(methoxy)phenylmethyl, diphenylC_{1-4}alkyl, pyridinyl, pyrimidinyl or phenyl optionally substituted with C_{1-4}alkyloxy or halo; or

R^2 and R^3 are joined together to form piperidinyl, optionally substituted with imidazolylcarbonyl.

5,602,135

PHENYL OR HETEROARYL AND TETRAHYDRONAPHTHYL SUBSTITUTED DIENE COMPOUNDS HAVING RETINOID LIKE BIOLOGICAL ACTIVITY

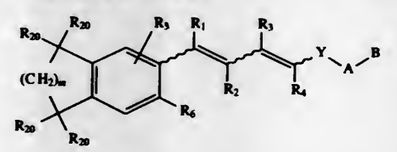
Roshantha A. Chandraratna, Mission Viejo, Calif., assignor to Allergan

Division of Ser. No. 138,275, Oct. 18, 1993, Pat. No. 5,475,022. This application Jun. 2, 1995, Ser. No. 458,394

Int. Cl.[6] A61K 31/495;31/44; C07D 237/08;213/54

U.S. Cl. 514—253 **11 Claims**

1. A compound of the formula



wherein m is 1–4;

R_1–R_4 independently are hydrogen, lower alkyl of 1 to 6 carbons, Cl, Br, or I;

R_5 is hydrogen, lower alkyl of 1 to 6 carbons, Cl, Br, I, lower alkoxy or lower thioalkoxy of 1–6 carbons;

R_6 is hydrogen, lower alkyl, Cl, Br, I, OR_{11}, SR_{11}, $OCOR_{11}$, $SCOR_{11}$, NH2, NHR_{11}, $N(R_{11})_2$, $NHCOR_{11}$ OR NR_{11}—COR_{11};

R_{20} is independently hydrogen or lower alkyl;

Y is a heteroaryl group selected from the group consisting of pyridyl pyridazinyl, pyrimidinyl and pyrazinyl;

A is $(CH_2)_n$ where n is 0–5, lower branched chain alkyl having 3–6 carbons, cycloalkyl having 3–6 carbons, alkenyl having 2–6 carbons and 1 or 2 double bonds, alkynyl having 2–6 carbons and 1 or 2 triple bonds;

B is COOH or a pharmaceutically acceptable salt thereof, $COOR_8$, $CONR_9R_{10}$,—CH_2OH, CH_2OR_{11}, CH_2OCOR_{11}, CHO, $CH(OR_{12})_2$, $CHOR_{13}O$, —COR_7, $CR_7(OR_{12})_2$, or $CR_7OR_{13}O$, where R_7 is an alkyl, cycloalkyl or alkenyl group containing 1 to 5 carbons, R_8 is an alkyl group of 1 to 10 carbons, or a cycloalkyl group of 5 to 10 carbons, or R_8 is phenyl or lower alkylphenyl, R_9 and R_{10} independently are hydrogen, an alkyl group of 1 to 10 carbons, or a cycloalkyl group of 5–10 carbons, or phenyl or lower aklylphenyl, R_{11} is lower alkyl, phenyl or lower alkylphenyl, R12 is lower alkyl, and R_{13} is divalent alkyl radical of 2–5 carbons, with the proviso that the diene and A-B moieties are attached to adjacent carbon atoms of the heteroaryl group symbolized by Y.

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5,602,136

PYRIMIDINE COMPOUNDS AND THEIR USE AS PHARMACEUTICALS

Gerd Rähter; Theo Schotten, both of Hamburg; Wolfgang Stenzel, Reinbek, and Michael Paal, Hamburg, all of Germany, assignors to Beiersdorf-Lilly GmbH, Hamburg, Germany

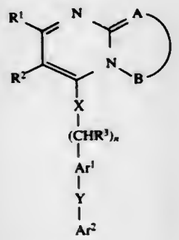
Division of Ser. No. 254,803, Jun. 6, 1994. This application May 26, 1995, Ser. No. 451,586

Claims priority, application European Pat. Off., Jun. 10, 1993, 93304513

Int. Cl.[6] A61K *31/505*; **C07D** *239/70*

U.S. Cl. 514—257 **14 Claims**

1. A compound of the formula



(I)

in which

R^1 is either R^{1a} selected from

a) hydrogen,

b) C_{1-8}-alkyl, C_{3-8}-cycloalkyl, C_{4-8}-cycloalkylalkyl, or C_{4-8}-alkylcycloalkyl, which optionally are substituted by one or more fluoro or chloro substituents, or by a single hydroxy, C_{1-4}-alkoxy, or C_{1-4}alkylthio,

c) phenyl or phenyl-C_{1-3}-alkyl,

d) C_{2-8}-alkenyl, C_{3-8}-cycloalkenyl, or C_{2-8}-alkynyl, which optionally are substituted by phenyl, or

R^{1b} selected from

a) C_{1-6}-alkylthio, C_{3-6}-cycloalkylthio, C_{1-6}-alkoxy, C_{3-6}-cycloalkoxy, mono-C_{1-6} -alkylamino, or mono-C_{3-6}cycloalkylamino, in which an alkyl group optionally is substituted by phenyl or by one or more fluoro substituents,

b) phenylthio or phenoxy,

c) di-C_{1-}-alkylamino in which the alkyl groups are the same or different or together form a polymethylene ring with three, four, five, or six carbon atoms, which optionally are interrupted by an oxygen atom and optionally is substituted by one or more fluoro substituents,

d) mono-phenylamino or mono-C_{1-4}-alkyl-monophenylamino, in which the phenyl group optionally is substituted and the alkyl groups optionally are substituted by one or more fluoro substituents, or

e) halo,

R^2 is

a) hydrogen,

b) C_{1-8}-alkyl, which optionally is substituted by one or more fluoro substituents,

c) optionally substituted phenyl, or

R^1 and R^2 together form a C_{3-5} polymethylene chain, which optionally is interrupted by an oxygen or sulfur atom,

R^3 is hydrogen or C_{1-4}-alkyl, and n is 0 or 1,

X is O, S, or NR^4, and

R^4 is

a) hydrogen,

b) C_{1-8}-alkyl, C_{3-8}-cycloalkyl, C_{4-8}-cycloalkylalkyl, or C_{4-8} -alkylcycloalkyl, which optionally are substituted by phenyl or by one or more fluoro substituents,

c) optionally substituted phenyl,

d) $(CH_2)_mCOOR^{22}$,

e) $(CH_2)_mCONR^{23}R^{24}$,

f) $(CH_2)_mCOOP^1$, in which P^1 is a carboxy-protecting group,

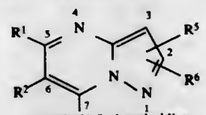
g) $(CH_2)_mCN$,

h) $(CH_2)_m$(5-tetrazolyl),

and m is 1 or 2 in groups d), e), f), g) or h)

=A—B— together with the pyrimidine ring forms

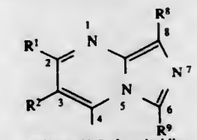
a) a pyrazolo[1,5-a]pyrimidine of formula (A),



(A)

pyrazolo [1,5-a] pyrimidine

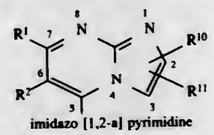
c) an imidazo[1,5-a]pyrimidine of formula (C),



(C)

imidazo [1,5-a] pyrimidine

or d) an imidazo[1,2-a]pyrimidine of formula (D),



(D)

imidazo [1,2-a] pyrimidine

in which

R^5 is

a) hydrogen,

b) C_{1-8}-alkyl, C_{3-8}-cycloalkyl, C_{4-8}-cycloalkylalkyl, or C_{4-6}-alkylcycloalkyl, which optionally are substituted by one or more fluoro or chloro substituents,

c) phenyl-C_{1-3}-alkyl,

d) hydroxy, C_{1-6}-alkoxy, C_{3-6}-cycloalkoxy, C_{1-3}-phenylalkoxy, or phenoxy, in which the phenyl groups are optionally substituted and the alkyl and cycloalkyl groups optionally are substituted by one or more fluorine atoms,

c) halo,

f) mercapto,

g) C_{1-6}-alkylthio, C_{1-6}-alkylsulfinyl, C_{1-6}-alkylsulfonyl, C_{3-6}-cycloalkylthio, C_{3-6}-cycloalkylsulfinyl, or C_{3-6}-cycloalkylsulfonyl, which optionally are substituted by one or more fluorine atoms,

h) phenylthio, phenylsulfinyl, phenylsulfonyl, phenyl-C_{1-3}-alkylthio, phenyl-C_{1-3}-alkyl sulfinyl, or phenyl-C_{1-3}-sulfonyl, in which the phenyl groups optionally are substituted,

i) optionally substituted phenyl,

j) cyano,

k) $COOR^{22}$,

l) $CONR^{23}R^{24}$,

m) 5-tetrazolyl,

n) $COOP^1$, in which P^1 is a carboxy-protecting group,

o) SO_3H,

p) $SO_2NR^{23}R^{24}$,

q) nitro or nitroso, with the proviso that these groups are not connected to C-2 of the heterocycle,

r) $NR^{23}R^{24}$,

s) C_{1-6}-alkanoyl or 1-hydroxy-C_{1-6}-alkyl, which optionally is substituted by one or more fluorine atoms,

t) benzoyl or phenylhydroxymethyl, in which the phenyl group optionally is substituted,

u) $NH(C_{1-6}$-alkanoyl) or $NH(C_{1-6}$-alkylsulfonyl), in which the alkyl groups optionally are substituted by one or more fluorine atoms,

v) NH(benzoyl) or NH(benzenesulfonyl), in which the phenyl group optionally is substituted.

R^6 is

a) hydrogen,

b) C_{1-8}-alkyl, C_{3-8}-cycloalkyl, C_{4-8}-cycloalkylalkyl, or C_{4-8}-alkylcycloalkyl, which optionally are substituted by one or more fluoro or chloro substituents,

c) halo,

d) optionally substituted phenyl,

e) C_{1-6}-alkylthio, C_{1-6}-alkylsulfinyl, C_{1-6}-alkylsulfonyl, C_{3-6}-cycloalkylthio, C_{3-6}-cycloalkylsulfinyl, or C_{3-6}-cycloalkylsulfonyl, which optionally are substituted by one or more fluorine atoms,

R^5 and R^6 together may form a C_{3-5} polymethylene chain;

R^8 is

a) hydrogen,

b) C_{1-8}-alkyl, C_{3-8}-cycloalkyl, C_{4-8}-cycloalkylalkyl, or C_{4-8}-alkylcycloalkyl, which optionally are substituted by one or more fluoro or chloro substituents,

c) halo,

d) optionally substituted phenyl,

e) nitro,

f) cyano,

g) 5-tetrazolyl,

h) $COOR^{22}$,

i) $CONR23R^{24}$,

j) $COOP^1$, in which $P^1$is a carboxy-protecting group,

k) NR^{23} R^{24},

l) $NH(C_{1-6}$-alkanoyl) or $NH(C_{1-6}$-alkylsulfonyl), in which the alkyl groups optionally are substituted by one or more fluorine atoms,

m) NH(benzoyl) or NH(benzenesulfonyl), in which the phenyl group optionally is substituted,

R^9 is

a) hydrogen,

b) C_{1-8}-alkyl, C_{3-8}-cycloalkyl, C_{4-8}-cycloalkylalkyl, or C_{4-8}-alkylcycloalkyl which optionally are substituted by one or more fluoro or chloro substituents,

c) an optionally substituted phenyl group,

d) cyano,

e) $COOR^{22}$,

f) $CONR^{23}R^{24}$,

g) 5-tetrazolyl,

h) $COOP^1$, in which P^1 is a carboxy-protecting group,

i) formyl,

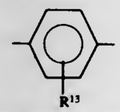
j) hydroxymethyl,

R^{10} has independently the same meaning as R^5,

R^{11} has independently the same meaning as R^6,

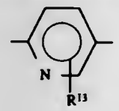
Ar^1 is a group selected from

a) 1,4-phenylene of formula (E),

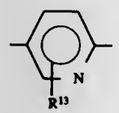


(E)

b) 1,4-substituted pyridine of formula (F) or formula (G),

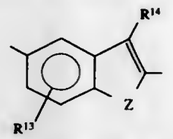


(F)



(G)

or c) benzofuran, benzothiophene, or indole of formula (H),



(H)

in which the group Z is O, S, or NR^{12}, and R^{12} is hydrogen or C_{1-4}-alkyl,

and in each of the groups Ar^1 the substituent

R^{13} is

a) hydrogen,

b) halo,

c) C_{1-4}-alkyl,

d) C_{1-4}-alkoxy,

e) trifluoromethyl,

f) nitro,

R^{14} is

a) hydrogen,

b) C_{1-6}-alkyl, C_{3-6}-cycloalkyl, C_{4-6}-cycloalkylalkyl, or C_{4-6}-alkylcycloalkyl, which optionally are substituted by one or more fluoro or chloro substituents.

c) C_{2-4}-alkenyl or C_{3-6}-cycloalkenyl,

d) halo,

e) cyano,

f) nitro,

g) C_{1-6}-alkanoyl, in which the alkyl group optionally is substituted by one or more fluorine atoms,

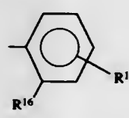
h) C_{1-6}-alkoxy,

i) $COOR^{22}$,

j) $CONR_{23}R_{24}$,

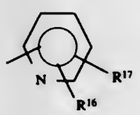
Ar^2 is a group selected from

a) phenyl of formula (I),



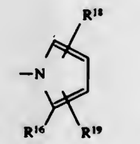
(I)

b) pyridine of formula (J),



(J)

c) 1-pyrrolyl of formula (K),



(K)

or d) a five-membered heterocycle of formula (L),

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5,602,137

PYRIMIDINE COMPOUNDS AND THEIR USE AS PHARMACEUTICALS

Gerd Rühter; Theo Schotten, both of Hamburg; Wolfgang Stenzel, Reinbek, and Michael Paal, Hamburg, all of Germany, assignors to Beiersdorf-Lilly GmbH, Hamburg, Germany

Division of Ser. No. 254,803, Jun. 6, 1994. This application May 26, 1995, Ser. No. 451,799

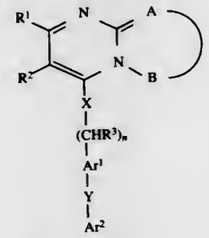
Claims priority, application European Pat. Off., Jun. 10, 1993, 93304513

Int. Cl.[6] A61K *31/505*; C07D *239/70*

U.S. Cl. 514—258 10 Claims

1. A compound of the formula

(I)



in which

R^1 is either R^{1a} selected from

a) hydrogen,

b) C_{1-8}-alkyl, C_{3-8}-cycloalkyl, C_{4-8}-cycloalkylalkyl, or C_{4-8}-alkylcycloalkyl, which optionally are substituted by one or more fluoro or chloro substituents, or by a single hydroxy, C_{1-4}-alkoxy, or C_{1-4}-alkylthio,

c) phenyl or phenyl-C_{1-3}-alkyl,

d) C_{2-8}-alkenyl, C_{3-8}-cycloalkenyl, or C_{2-8}-alkynyl, which optionally are substituted by phenyl, or

R^{1b} selected from

a) C_{1-6}-alkylthio, C_{3-6}-cycloalkylthio, C_{1-6}-alkoxy, C_{3-6}-cycloalkoxy, mono-C_{1-6}-alkylamino, or mono-C_{3-6}-cycloalkylamino, in which an alkyl group optionally is substituted by phenyl or by one or more fluoro substituents,

b) phenylthio or phenoxy,

c) di-C_{1-4}-alkylamino, in which the alkyl groups are the same or different or together form a polymethylene ring with three, four, five, or six carbon atoms, which optionally are interrupted by an oxygen atom and optionally is substituted by one or more fluoro substituents,

d) mono-pheuylamino or mono-C_{1-4}-alkyl-monophenylamino, in which the alkyl groups optionally are substituted by one or more fluoro substituents,

e) halo,

R^2 is

a) hydrogen,

b) C_{1-8}-alkyl, which optionally is substituted by one or more fluoro substituents,

c) phenyl, or

R^1 and R^2 together form a polymethylene chain containing three, four or five carbon atoms, which optionally is interrupted by an oxygen or sulfur atom,

R^3 is hydrogen or C_{1-4}-alkyl, and n is 0 or 1,

X is O, S, or NR^4, and

R^4 is

a) hydrogen,

b) C_{1-8}-alkyl, C_{3-8}-cycloalkyl, C_{4-8}-cycloalkylalkyl, or C_{4-8}-alkylcycloalkyl, which optionally may be substituted by phenyl or by one or more fluoro substituents,

c) phenyl,

d) $(CH_2)_mCOOR^{22}$,

e) $(CH_2)_mCONR^{23}R^{24}$,

f) $(CH_2)_mCOOP^{16}$, in which P^1 is a carboxy-protecting group,

g) $(CH_2)_mCN$,

h) $(CH_2)_m$(5-tetrazolyl),

and m is 1 or 2 in groups d), e), f), g) or h),

(L)



in which the group V is O, S, SO, SO_2, or NR^{15}, the group W is CH or N, and

R^{15} is hydrogen or C_{1-4}-alkyl, with the proviso that in groups Ar^2 of formula (J) and (L) the substituent

R^{16} and the group Y are in ortho positions, and in each of the groups Ar^2 the substituent

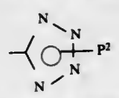
R^{16} is hydrogen, a bioisostere of a carboxylic acid which gives a compound of formula I having a pK_a value between one and eleven,

$COOP^1$, in which P^1 is a carboxy-protecting group, or a group selected from

a) cyano,

b) a protected 5-tetrazolyl of formula (M),

(M)



in which the group P^2 is a protecting group,

d) nitro,

e) amino,

f) mercapto,

g) SO_2Cl,

h) $SO_2(OC_{1-4}$-alkyl),

i) $PO(OC_{1-4}$-alkyl$)_2$,

R^{17} has independently the same meaning as R^{13},

R^{18} and R^{19} are independently selected from

a) hydrogen,

b) C_{1-6}-alkyl, C_{3-6}-cycloalkyl, C_{4-6}-cycloalkylalkyl, or C_{4-6}-alkylcycloalkyl, which optionally are substituted by one or more fluoro or chloro substituents,

c) C_{2-6}-alkenyl or C_{3-6}-cycloalkenyl

d) halo,

e) nitro,

f) cyano,

g) C_{1-4}-alkylthio,

Y is a group selected from

a) single bond, CHR^{20}, $CHR^{20}CH_2$, $OCHR^{20}$, $OCHR^{20}CH_2$, $SCHR^{20}$, $SCHR^{20}CH_2$, $NR^{21}CHR^{20}$, $NR^{21}CHR^{20}CH_2$, CH_2CHR^{20}, $CH_2CHR^{20}CH_2$,

b) O, S, SO_2, NR^{21}, CO, CONH, NHCO, CH_2O, CH_2S, CH_2NR^{21}, with the proviso that when Y is (b), Ar^1 is 1,4-phenylene of formula (E) and Ar^2 is phenyl of formula (I),

R^{20} is hydrogen or

a)COOH,

b) $COOP^1$, in which P^1 is a carboxy-protecting group,

d) 5-tetrazolyl,

e) cyano,

f) a protected 5-tetrazolyl of formula (M),

with the proviso that one of the substituents R^{16} and R^{20} is hydrogen and the other is a substituent other than hydrogen,

R^{21} and R^{22} are independently selected from hydrogen or C_{1-6}-alkyl, and

R^{23} and R^{24} are independently selected from hydrogen or C_{1-4}-alkyl, or together may form a C_{3-5} polymethylene chain, which optionally is interrupted by an oxygen atom;

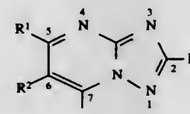
or a pharmaceutically acceptable salt thereof,

with the proviso that R^1 together with R^2 forms a C_{3-5} polymethylene chain, which optionally is interrupted by an oxygen or sulfur atom, and/or R^5 together with R^6 forms a C_{3-5} polymethylene chain.

=A - B - together with the pyrimidine ring forms,

a [1,2,4]triazolo[1,5-a]pyrimidine of formula (B),

(B)



[1,2,4] triazolo [1,5-a] pyrimidine

in which

R^7 is

a) hydrogen,

b) C_{1-8}-alkyl, C_{3-8}-cycloalkyl, C_{4-8}-cycloalkylalkyl, or C_{4-8}-alkylcycloalkyl, which optionally are substituted by one or more fluoro or chloro substituents,

c) phenyl-C_{1-3}-alkyl,

d) hydroxy, C_{1-6}-alkoxy, C_{3-6}-cycloalkoxy, C_{1-3}-phenylalkoxy, or phenoxy, in which the alkyl and cycloalkyl groups optionally are substituted by one or more fluorine atoms,

e) halo,

f) mercapto,

g) C_{1-6}-alkylthio, C_{1-6}-alkylsulfinyl, C_{1-6}-alkylsulfonyl, C_{3-6}-cycloalkylthio, C_{3-6}-cycloalkylsulfinyl, or C_{3-6}-cycloalkylsulfonyl, which optionally are substituted by one or more fluorine atoms,

h) phenylthio, phenylsulfinyl, phenylsulfonyl, phenyl-C_{1-3}-alkylthio, phenyl-C_{1-3}-alkylsulfinyl, or phenyl-C_{1-3}-sulfonyl,

i) phenyl,

j) cyano,

k) $COOR^{22}$,

l) $CONR^{23}R^{24}$,

m) 5-tetrazolyl,

n) $COOP^1$, in which P^1 is a carboxy-protecting group,

o) SO_3H,

p) $SO_2NR^{23}R^{24}$,

r) $NR^{23}R^{24}$,

s) C_{1-6}-alkanoyl or 1-hydroxy-C_{1-6}-alkyl, which optionally are substituted by one or more fluorine atoms,

t) benzoyl or phenylhydroxymethyl,

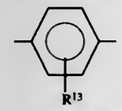
u) NH(C_{1-6}-alkanoyl) or NH(C_{1-6}-alkylsulfonyl), in which the alkyl groups optionally are substituted by one or more fluorine atoms,

v) NH(benzoyl) or NH (benzenesulfonyl),

Ar^1 is a group selected from

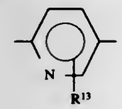
a) 1,4-phenylene of formula (E),

(E)

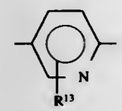


b) 1,4-substituted pyridine of formula (F) or formula (G),

(F)

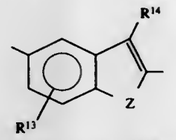


(G)



or c) benzofuran, benzothiophene, or indole of formula (H),

(H)



in which the group Z is O, S, or NR^{12}, and R^{12} is hydrogen or C_{1-4}-alkyl,

and in each of the groups Ar^1 the substituent

R^{13} is

a) hydrogen,

b) halo,

c) C_{1-4}-alkyl,

d) C_{1-4}-alkoxy,

e) trifluoromethyl,

f) nitro,

R^{14} is

a) hydrogen,

b) C_{1-6}-alkyl, C_{3-6}-cycloalkyl, C_{4-6}-cycloalkylalkyl , or C_{4-6}-alkylcycloalkyl, which optionally are substituted by one or more fluoro or chloro substituents,

c) C_{2-6}-alkenyl or C_{3-6}-cycloalkenyl,

d) halo,

e) cyano,

f) nitro,

g) C_{1-6}-alkanoyl, in which the alkyl group optionally is substituted by one or more fluorine atoms,

h) C_{1-6}-alkoxy,

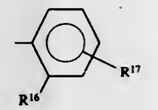
i) $COOR^{22}$,

j) $CONR^{23}R^{24}$,

Ar^2 is a group selected from

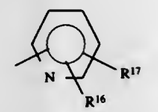
a) phenyl of formula (I),

(I)



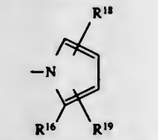
b) pyridine of formula (J),

(J)



c) 1-pyrrolyl of formula (K),

(K)



or d) a five-membered heterocycle of formula (L),

(L)



in which the group V is O, S, SO, SO_2, or NR^{15}, the group W is CH or N, and R^{15} is hydrogen or C_{1-4}-alkyl, with the proviso that

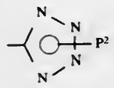
in groups Ar^2 of formula (J) and (L) the substituent R^{16} and the group Y are in ortho positions, and in each of the groups Ar^2 the substituent

R^{16} is hydrogen, an acidic substituent, the group $COOP^1$ in which P^1 is a carboxy-protecting group or a group selected from

a) cyano,

b) a protected 5-tetrazolyl of formula (M)

(M)



in which the group P^2 is a protecting group,

c) $COO(C_{1-4}$-alkyl),

d) nitro,

e) amino,

f) mercapto,

g) SO_2Cl,

h) $SO_2(OC_{1-4}$-alkyl),

i) $PO(OC_{1-4}$-alkyl$)_2$,

R^{17} has independently the same meaning as R^{13},

R^{18} and R^{19} are independently selected from

a) hydrogen,

b) C_{1-6}-alkyl, C_{3-6}-cycloalkyl, C_{4-6}-cycloalkylalkyl, or C_{4-6}-alkylcycloalkyl, which optionally are substituted by one or more fluoro or chloro substituents,

c) C_{2-6}-alkenyl or C_{3-6}-cycloalkenyl,

d) halo,

e) nitro,

f) cyano,

g) C_{1-4}-alkylthio,

Y is a group selected from

a) a direct bond, CHR^{20}, $CHR^{20}CH_2$, $OCHR^{20}$, $OCHR^{20}CH_2$, $SCHR^{20}$ $SCHR^{20}CH_2$, $NR_{21}CHR^{20}$, $NR^{21}CHR_{20}CH_2$, CH_2CHR^{20}, $CH_2CHR^{20}CH_2$,

b) O, S, SO_2, NR^{21}, CO, CONH, NHCO, CH_2O, CH_2S, CH_2NR^{21}, with the proviso that when Y is (b) Ar^1 is 1,4-phenylene of formula (E) and Ar^2 is phenyl of formula (I),

R^{20} is hydrogen or

a) COOH,

b) $COOP^1$, in which P^1 is a carboxy-protecting group,

d) 5-tetrazolyl,

e) cyano,

f) a protected 5-tetrazolyl of formula (M), with the proviso that one of the substituents R^{16} and R^{20} is hydrogen and the other is a substituent other than hydrogen,

R^{21} and R^{22} are independently selected from hydrogen or C_{1-6}-alkyl, and

R^{23} and R^{24} are independently selected from hydrogen or C_{1-4}-alkyl, or together may form a polymethylene chain containing three, four or five carbon atoms, which optionally are interrupted by an oxygen atom; the phenyl group of R^{1a}c), R^{1b}b), R^{1b}d), R^2c), R^4c), R^7d), R^7h), R^7i), R^7t), R^7v), being unsubstituted or substituted by at least one member selected from the group consisting of halo, C_{1-4}-alkoxy, C_{1-4}-alkylthio, C_{1-4}-alkylsulfinyl, C_{1-4}-alkylsulfonyl, cyano, nitro, trifluoromethyl or hydroxy,

or a pharmaceutically acceptable salt thereof.

5,602,138

NKA AFFECTING PIPERIDYL HETEROBICYCLIC COMPOUNDS

Scott C. Miller, Newark, Del., assignor to Zeneca Limited, London, United Kingdom

Filed Dec. 2, 1994, Ser. No. 349,117

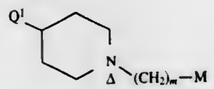
Claims priority, application European Pat. Off., Dec. 7, 1993, 9325074

Int. Cl.[6] C07D *239/80;401/14;* **A61K** *31/445;31/505*

U.S. Cl. 514—259 **8 Claims**

1. A compound of formula I:

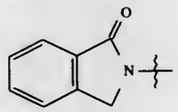
(I)



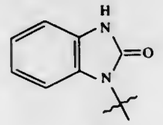
wherein:

Q_1 is a nitrogen linked radical selected from the radicals of formulae VII–IX:

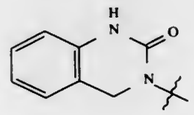
(VII)



(VIII)



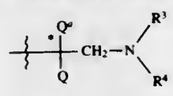
(IX)



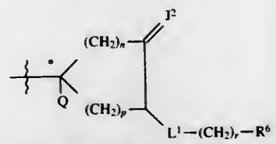
m is 2 or 3;

M is a residue of formula Ia or formula Ib:

(Ia)



(Ib)



wherein Q is phenyl which may bear one or two substituents independently selected from halo, trifluoromethyl, hydroxy, (1–3C)alkoxy, (1–3C)alkyl land methylenedioxy; or Q is thienyl, imidazolyl, benzo thiophenyl or naphthyl any of which may bear a halo substituent; or Q is biphenylyl; or Q is carbon-linked indolyl which may bear a benzyl substituent at the 1-position;

Q^a is hydrogen, (1–4C)alkyl, or a radical of formula $—(CH_2)_q—NR^7R^8$ in which q is 2 or 3 and R^7 and R^8 are independently (1–4C)alkyl or NR^7R^8 is piperidino or 4-benzylpiperidino;

R^3 is hydrogen, methyl or (2–6C)n-alkyl which may bear a terminal amino radical;

R^4 is $—C(=O)R^5$, $—C(=O)OR^5$ or $—C(=J^1)NHR^5$ in which J^1 is oxygen or sulfur and R^5 is hydrogen, (1–6C)alkyl, phenyl(1–3C)alkyl (in which the phenyl may bear one or more halo, hydroxy, (1–4C)alkoxy or (1–4C)alkyl substituents), pyridyl(1–3C)alkyl, naphthyl(1–3C)alkyl, pyridylthio(1–3C)alkyl, styryl, 1-methylimidazol-2-ylthio(1–3C)alkyl, aryl (which may bear one or more halo, hydroxy, (1–4C)alkoxy or (1–4C)alkyl substituents), heteroaryl (which may bear one or more halo, hydroxy, (1–4C)alkoxy or (1–4C)alkyl substituents), or (when R^4 is $—COR^5$) α-hydroxybenzyl;

n is 0, 1, 2 or 3;

p is 1 or 2, and when p is 2, n is 1 and J^2 is two hydrogens;

J^2 is oxygen or two hydrogens;

L^1 is carbonyl or methylene;

r is 0, 1, 2, or 3; and

R^6 is phenyl which may bear one or more halo, trifluoromethyl, (1–4C)alkyl, hydroxy or (1–4C)alkoxy substituents (and particularly one or more chloro or fluoro substituents); naphthyl which may bear one or more halo, trifluoromethyl, (1–4C)alkyl or hydroxy substituents; pyridyl; thienyl; indolyl; quinolinyl; benzothienyl or imidazolyl; or when L^1 is carbonyl, the group $—(CH_2)_r—R_6$ may be a benzyl group bearing an α-substituent selected from hydroxy, (1–4C)alkoxy and (1–4)alkyl, and further wherein the phenyl portion of the benzyl group may bear one or more substituents selected independently from halo, trifluoromethyl, (1–4C)alkyl, hydroxy (1–4C)alkyl, hydroxy and (1–4C)alkoxy; or the N-oxide of the piperidino nitrogen indicated by Δ; or a pharmaceutically acceptable salt thereof; or a quaternary ammonium salt thereof in which the piperidino nitrogen indicated by Δ is a quadricovalent ammonium nitrogen wherein the fourth radical on the nitrogen R^9 is (1–4C)alkyl or benzyl and the associated counterion A is a pharmaceutically acceptable anion.

5,602,139

METHOD FOR AMELIORATING THE ADVERSE EFFECTS OF AGING

Suresh L. S. Rattan, Aarhus V, Denmark, assignor to Senetek PLC, Maryland Heights, Mo.

Continuation of Ser. No. 206,041, Mar. 4, 1994, Pat. No. 5,371,089, which is a continuation of Ser. No. 954,614, Sep. 30, 1992, abandoned, which is a continuation-in-part of Ser. No. 611,903, Nov. 9, 1990, abandoned, which is a division of Ser. No. 19,150, Feb. 26, 1987, abandoned. This application Aug. 19, 1994, Ser. No. 292,721

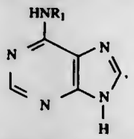
The portion of the term of this patent subsequent to Dec. 6, 2011, has been disclaimed.

Int. Cl.[6] A61K *31/52*

U.S. Cl. 514—261 **4 Claims**

1. A method for ameliorating one or more of the adverse effects of aging on mammalian cells in vivo, said method comprising contacting said mammalian cells in vivo with a composition that contains an effective concentration of one or more 6-(substituted amino)purine cytokinins selected from the group consisting of the compounds of kinetin, zeatin, benzyl adenine, isopentenyl adenine, (6-(3-hydroxymethyl-3-methylallyl)-aminopyrine), 6-(3,3-dimethlyallyl)aminopyrine, 6-(benzyl)aminopyrine, 6-(pbenyl)aminopyrine, 6-(n-alkyl)aminopyrine, in which the n-alkyl group has 4, 5, or 6 carbons, 6-(cyclohexyl) methylaminopurine, those compounds comprising Formula I,

Formula I



in which R_1 is furfuryl, phenyl, benzyl, n-alkyl of 4, 5, or 6 carbons, (cyclohexyl) methyl, 3,3-dimethylallyl, and 3-hydroxymethyl-3-methylallyl, and wherein the concentration is sufficient to ameliorate one or more of the adverse effects of aging on said mammalian cells in vivo, whereby the 6-(substituted amino)purine cytokinin is effective for ameliorating one or more of the adverse effects of aging of said mammalian cells in vivo without significantly altering the growth rate and total proliferative capacity of said mammalian cells in vivo.

5,602,140

PURINE DERIVATIVES AND SUPPRESSANTS FOR INFLAMMATORY DISEASES

Yoshiaki Isobe; Nobuyoshi Chiba; Yuso Goto, and Hideharu Sato, all of Toda, Japan, assignors to Japan Energy Corporation, Tokyo, Japan

Filed Mar. 27, 1995, Ser. No. 410,838

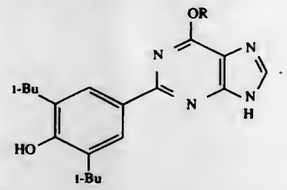
Claims priority, application Japan, Mar. 28, 1994, 6-081000; Mar. 7, 1995, 7-074651; Mar. 8, 1995, 7-077394

Int. Cl.[6] A61K *31/52;* **C07D** *473/30;233/90*

U.S. Cl. 514—262 **5 Claims**

1. A purine derivative shown by formula (I):

(I)



wherein,

R is selected from the group consisting of H atom, a straight chain alkyl group having 1–10 carbon atoms, a branched chain alkyl group having 3–10 carbon atoms, an alkyl group having 1–10 carbon atoms substituted with one carboxyl group, 4-carboxybenzyl group and phenethyl group;

or pharmacologically acceptable salt thereof.

5,602,141

CAMPTOTHECIN DERIVATIVES AND PROCESS FOR THEIR PREPARATION

Angelo Bedeschi, Milan; Franco Zarini, Settimo Milanese; Walter Cabri, Rozzano; Ilaria Candiani, Busto Arsizio; Sergio Penco, and Laura Capolongo, both of Milan, all of Italy, assignors to Pharmacia & Upjohn S.P.A., Milan, Italy

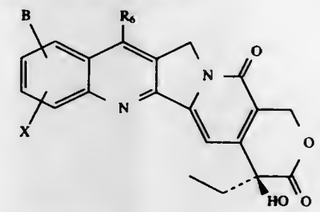
Filed Feb. 15, 1995, Ser. No. 389,190

Claims priority, application United Kingdom, Feb. 16, 1994, 9402934

Int. Cl.[6] A61K *31/47;* **C07D** *491/22*

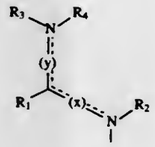
U.S. Cl. 514—279 **6 Claims**

1. A compound of the formula (I)

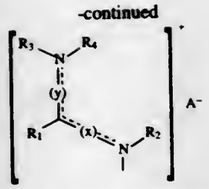


wherein B is a group B' or B"

B'

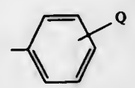


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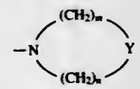
wherein one of (x) and (y) is a single bond and the other is a double bond;

R_1, R_2, R_3 and R_4 are each independently hydrogen, C_1–C_6-alkyl, C_3–C_7 cycloalkyl, phenyl C_1–C_6 alkyl or a group of the formula



wherein Q is hydrogen, C_1–C_6 alkyl, C_1–C_6 alkoxy, C_1–C_6 acyloxy or a halogen atom, or

R_3 and R_4 together with the nitrogen atom to which they are linked form a group of the formula



wherein Y is —CH_2— and m and n are each independently an integer of 1 to 5 and m+n is not greater than 5; and

A is a pharmaceutically acceptable anion of a pharmaceutically acceptable inorganic or organic acid,

provided that when B is a group B', then one of R_2, R_3 and R_4 is absent;

R_6 is hydrogen or C_1–C_6 alkyl;

X is hydrogen, C_1–C_6-alkyl, C_1–C_6-alkoxy, C_1–C_6 acyloxy, C_3–C_7 cycloalkyl, C_3–C_7 cycloalkoxy, benzoyloxy, hydroxy, nitro, a halogen atom or a methylenedioxy group linked to the position 10 and 11 of the molecule; or

a pharmaceutically acceptable salt thereof.

5,602,142

DNA-AFFINIC HYPOXIA SELECTIVE CYTOTOXINS

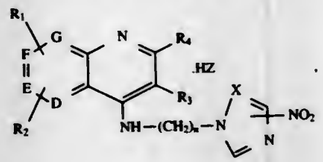
Maria V. Papadopoulou-Rosenzweig, Skokie, and William D. Bloomer, Winnetka, both of Ill., assignors to Evanston Hospital Corporation, Evanston, Ill.

Filed Dec. 21, 1994, Ser. No. 361,220

Int. Cl.[6] A61K *31/47*; C07D *221/06;219/12*

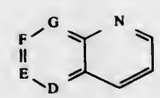
U.S. Cl. 514—290 **16 Claims**

1. A hypoxia selective cytotoxin having the structural formula:

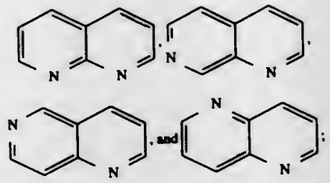


wherein

B' is



is selected from the group consisting of



R_1 and R_2, independently, are selected from the group consisting of methyl, halo, hydrogen, trifluoromethyl, methoxy, cyano, and methylsulfo; R_3 and R_4 taken together are a five or six-membered nonaromatic ring system; n is an integer 1 through 5; X is carbon or nitrogen; and Z is a physiologically acceptable anion.

5,602,143

METHOD FOR REDUCING INTRAOCULAR PRESSURE IN THE MAMMALIAN EYE BY ADMINISTRATION OF GUANYLATE CYCLASE INHIBITORS

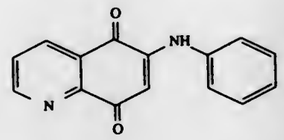
Achim H. Krauss, Irvine, Calif., assignor to Allergan, Waco, Tex.

Filed Dec. 8, 1994, Ser. No. 352,018

Int. Cl.[6] A61K *31/44*

U.S. Cl. 514—299 **5 Claims**

1. A method of treating animals of the mammalian species, including humans, for the purpose of reducing intraocular pressure in the eye of the mammal, comprising the step of administering to the mammal an ophthalmic composition which comprises as its active ingredient one or more compounds having guanylate cyclase inhibition activity compounds selected from the group consisting of compounds represented by the formula:



and pharmaceutically acceptable salts thereof.

5,602,144

THIENOPYRIDONES

Rudolf Gottschlich, Reinheim; Joachim Leibrock, Griesheim; Christian Noe, Frankfurt, all of Germany; Michael Berger, Vienna, Austria, and Hans-Peter Buchstaller, Sulzbach/Ts., Germany, assignors to Merck Patent Gesellschaft mit Beschrankter Haftung, Darmstadt, Germany

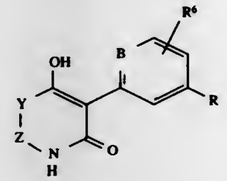
Filed Dec. 14, 1995, Ser. No. 572,750

Claims priority, application Germany, Dec. 15, 1994, 44 44 815.5

Int. Cl.[6] A61K *31/435*; C07D *495/04*

U.S. Cl. 514—301 **9 Claims**

1. Thienopyridones of the formula I

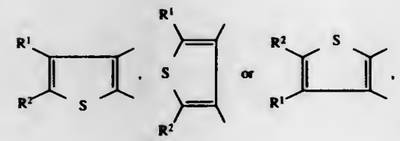


wherein

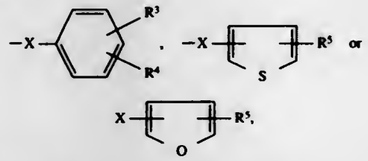
B is CH or N,



is



R is H,



R^1, R^2 and R^5 are in each case H, A or Hal,

R^3 and R^4 are in each case H, A, OH, OA, Hal, CF_3, NO_2, NH_2, NHA, N $(A)_2$ or NHAc,

R^6 is H or Hal,

X is —CH_2—, —CO—, —O—, —NH—, —NA— or —S—,

A is C_{1-4}-alkyl,

Ac is C_{1-6}-alkanoyl, or benzoyl and

Hal is F, Cl, Br or I, or a pharmacologically acceptable salt thereof.

5,602,145

BICYCLIC FIBRINOGEN ANTAGONISTS

James Samanen, Phoenixville, Pa., assignor to Smithkline Beecham Corporation, Philadelphia, Pa.

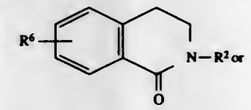
Continuation of Ser. No. 222,202, Apr. 1, 1994, abandoned, which is a continuation of Ser. No. 74,248, Jun. 9, 1993, abandoned. This application May 22, 1995, Ser. No. 445,986

Int. Cl.[6] C07D *217/24*; A61K *31/47*

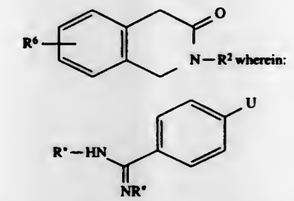
U.S. Cl. 514—309 **9 Claims**

1. A compound of the formula:

(II)



(III)



wherein:

R^6 is

U is NR'CO, CONR', $(CH_2)CO$, CH═CH, CH_2O, OCH_2 or $(CH_2)_2$;

R^2 is R^7, CH_2R^7 or $CH_2CH_2R^7$;

R^7 is COR^8, COR'_2R^9, $C(S)R^8$, $S(O)_mOR'$, $S(O)_mNR'R^*$, or NO_2;

R^8 is —OR', —NR'R*, —NR'SO_2R', —NR'OR', —$OCR'_2C(O)OR'$, —$OCR'_2OC(O)$—R', —$OCR'_2C(O)NR'_2$ or CF_3;

R^9 is —OR', —CN, —S(O)$_m$R', $S(O)_mNR'_2$, —C(O)R'C(O)NR'_2 or —CO_2R';

R' is H, C_{1-6}alkyl, C_{3-7}cycloalkyl-C_{0-4}alkyl or Ar—C_{0-4}alkyl;

R* is R', —C(O)R' or —C(O)OR^{15};

R^{15} is H, C_{1-6}alkyl or Ar—C_{0-4}alkyl;

m is 1 or 2; and

r is 0 to 2;

or pharmaceutically acceptable salts thereof.

5,602,146

4-IMINOQUINOLINES, PROCESSES FOR THEIR PREPARATION, AND THEIR USE

Uta-Maria Bömhardt-Troughton, Raleigh, N.C.; Manfred Rösner, Eppstein/Taunus; Rudolph Bender, Bad Soden am Taunus, and Christoph Meichsner, Liederbach, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 80,845, Jun. 24, 1993, abandoned. This application Jan. 13, 1995, Ser. No. 372,828

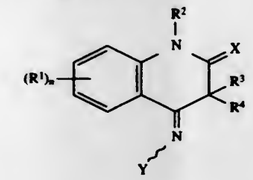
Claims priority, application Germany, Jun. 27, 1992, 42 21 210.3

Int. Cl.[6] A61K *31/47*; C07D *215/04;215/12;215/16*

U.S. Cl. 514—312 **1 Claim**

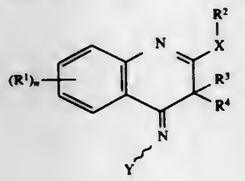
1. A compound of the formula I

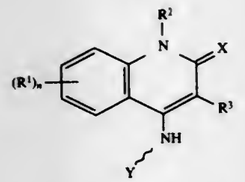
(I)

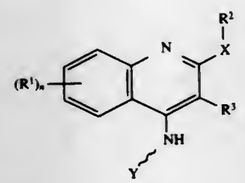


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or a tautomeric form thereof, of the formula Ia, Ib or Ic







in which:

n is
zero,
one,
two,
three
or four,
the individual substituents R1 independently of one another are
fluorine, chlorine, bromine, iodine, trifluoromethyl, trifluoromethoxy, hydroxyl, alkyl, cycloalkyl, alkoxy, alkoxy-(alkoxy), alkylthio, alkylsulfinyl, alkylsulfonyl, nitro, amino, azido, alkylamino, dialkylamino, piperidino, morpholino, 1-pyrrolidinyl, acyl, acyloxy, acyl-amino, cyano, carbamoyl, carboxyl, alkyloxycarbonyl, hydroxysulfonyl or sulfamoyl

or

a phenyl, phenoxy, phenoxycarbonyl, phenylthio, phenylsulfinyl, phenylsulfonyl, phenoxysulfonyl, phenylsulfonyloxy, anilinosulfonyl, phenylsulfonylamino, benzoyl, morpholine, or pyridine radical which is optionally substituted by up to five radicals R5 which are independent of one another,

in which R5 can be
fluorine, chlorine, bromine, iodine, cyano, trifluoro-methyl, trifluoromethoxy, nitro, amino, azido, alkyl, cycloalkyl, alkoxy, alkylthio, alkylsulfinyl, alkyl-sulfonyl, alkylamino, dialkylamino, alkyloxycarbonyl, phenyl or phenoxy,

X is oxygen, sulfur or substituted nitrogen N—R2 or N—O—R2, in which R2 can have the meanings given below,

Y is R6, O—R6, S—R6, N—R6R7, N=C—R6R7 or C—R6R7R8, in which R6, R7 and R8 can have the meanings given below,

R2, R6, R7 and R8 can be identical or different and can be, independently of one another,
hydrogen,
alkyl, which is optionally substituted by fluorine, chlorine, bromine, iodine, cyano, amino, mercapto, hydroxyl, acyloxy, benzoyloxy, benzyloxy, phenoxy, alkoxy, alkylamino, dialkylamino, alkylthio, alkyl-sulfonyl, phenylsulfonyl, oxo, thioxo, carboxyl or carbamoyl;
alkenyl, which is optionally substituted by fluorine, chlorine, bromine, iodine, cyano, amino, mercapto, hydroxyl, acyloxy, benzoyloxy, benzyloxy, phenoxy, alkoxy, alkylamino, dialkylamino, alkylthio, alkyl-sulfonyl, phenylsulfonyl, oxo, thioxo, carboxyl or carbamoyl; (Ia)
alkynyl, which is optionally substituted by fluorine, chlorine, bromine, iodine, cyano, amino, mercapto, hydroxyl, acyloxy, benzoyloxy, benzyloxy, phenoxy, alkoxy, alkylamino, dialkylamino, alkylthio, alkyl-sulfonyl, phenylsulfonyl, oxo, thioxo, carboxyl or carbamoyl;
cycloalkyl, which is optionally substituted by fluorine, chlorine, bromine, iodine, cyano, amino, mercapto, hydroxyl, acyloxy, benzoyloxy, benzyloxy, phenoxy, alkoxy, alkylamino, dialkylamino, alkylthio, alkyl-sulfonyl, phenylsulfonyl, oxo, thioxo, carboxyl or carbamoyl;
cycloalkenyl, which is optionally substituted by fluorine, chlorine, bromine, iodine, cyano, amino, mercapto, hydroxyl, acyloxy, benzoyloxy, benzyloxy, phenoxy, alkoxy, alkylamino, dialkylamino, alkylthio, alkylsulfonyl, phenylsulfonyl, oxo, thioxo, carboxyl or carbamoyl; (Ib)
(cycloalkyl)-(alkyl), which is optionally substituted by fluorine, chlorine, bromine, iodine, cyano, amino, mercapto, hydroxyl, acyloxy, benzoyloxy, benzyloxy, phenoxy, alkoxy, alkylamino, dialkylamino, alkylthio, alkylsulfonyl, phenylsulfonyl, oxo, thioxo, carboxyl or carbamoyl;
(cycloalkenyl)-(alkyl), which is optionally substituted by fluorine, chlorine, bromine, iodine, cyano, amino, mercapto, hydroxyl, acyloxy, benzoyloxy, benzyloxy, phenoxy, alkoxy, alkylamino, dialkylamino, alkylthio, alkylsulfonyl, phenylsulfonyl, oxo, thioxo, carboxyl or carbamoyl; (Ic)
alkylcarbonyl, which is optionally substituted by fluorine, chlorine, bromine, iodine, cyano, amino, mercapto, hydroxyl, acyloxy, benzoyloxy, benzyloxy, phenoxy, alkoxy, alkylamino, dialkylamino, alkylthio, alkylsutfonyl, phenylsulfonyl, oxo, thioxo, carboxyl or carbamoyl;
alkenylcarbonyl, which is optionally substituted by fluorine, chlorine or hydroxyl, alkoxy, oxo or phenyl;
(cycloalkyl)carbonyl, which is optionally substituted by fluorine, chlorine or hydroxyl, alkoxy, oxo or phenyl;
(cycloalkenyl)carbonyl, which is optionally substituted by fluorine, chlorine or hydroxyl, alkoxy, oxo or phenyl;
(cycloalkyl)-(alkyl)carbonyl, which is optionally substituted by fluorine, chlorine or hydroxyl, alkoxy, oxo or phenyl;
(cycloalkenyl)-(alkyl)carbonyl, which is optionally substituted by fluorine, chlorine or hydroxyl, alkoxy, oxo or phenyl;
alkyloxycarbonyl, which is optionally substituted by fluorine, chlorine, bromine, hydroxyl, alkoxy, alkyl-amino, diatkylamino or alkylthio;
alkenyloxycarbonyl, which is optionally substituted by fluorine, chlorine, hydroxyl, alkoxy, oxo or phenyl;
alkynyloxycarbonyl, which is optionally substituted by fluorine, chlorine, hydroxyl, alkoxy, oxo or phenyl;
alkylthiocarbonyl, which is optionally substituted by fluorine, chlorine, hydroxyl, alkoxy, oxo or phenyl;
alkenylthiocarbonyl, which is optionally substituted by fluroine, chlorine, hydroxyl, alkoxy, oxo or phenyl;
alkylamino- or dialkylaminocarbonyl, which is optionally substituted by fluorine, chlorine, hydroxyl, alkoxy, oxo or phenyl;
alkenylamino- or dialkenylaminocarbonyl, which is option-ally substituted by fluorine, chlorine, hydroxyl, alkoxy, oxo or phenyl;
alkylsulfonyl, which is optionally substituted by fluorine, chlorine, hydroxyl, alkoxy, alkylthio, oxo or phenyl;
alkenylsulfonyl, which is optionally substituted by fluorine, chlorine, hydroxyl, alkoxy, oxo or phenyl;
or aryl, arylcarbonyl, aryl(thiocarbonyl), (arylthio)-carbonyl, (arylthio)thiocarbonyl, aryloxycarbonyl, (arylamino)thiocarbonyl, arylsulfonyl, arylalkyl, aryl-alkenyl, arylalkynyl, arylalkylcarbonyl, arylalkenyl carbonyl or arylalkoxycarbonyl, which are substituted by up to five radicals R5 which are independent of one another, in which R5 is as defined above;
or morpholine, or pyridine, with the proviso that R2 is not a hetero compound,

and

R3 and R4 are identical or different and independently of one another are
hydrogen,
alkyl, which is optionally substituted by fluorine, chlorine, hydroxyl, amino, mercapto, acyloxy, benzoyloxy, benzyloxy, phenoxy, alkoxy, alkylamino, dialkylamino, alkylthio, alkyl-sulfonyl, alkylsulfinyl, carboxyl or carbamoyl;
or C_{3-5} cyclo-spiro;

in which, in the tautomeric forms of formulas Ib and Ic, R4 of the compound of formula I is hydrogen;

or an optical isomer thereof, a diastereomer in the pure form or in the form of a mixture of diastereomers, or an addition salt thereof, with the exception of the compounds in which, simultaneously, R3 and/or R4 are hydrogen and Y is R6 or CR6R7R8 and the compounds in which, simultaneously, R1 is Cl, R2 is H or CH3, R3 is OH, R4 is phenyl, X is O and Y is H or OH.

5,602,147

PIPERIDINYL THIACYCLIC DERIVATIVES

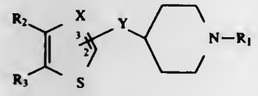
Albert A. Carr; John M. Kane; George D. Maynard; Hsien C. Cheng, all of Cincinnati, and Mark W. Dudley, Somerville, all of Ohio, assignors to Merrell Pharmaceuticals Inc., Cincinnati, Ohio

Division of Ser. No. 281,943, Jul. 28, 1994, Pat. No. 5,476,861, which is a division of Ser. No. 201,149, Feb. 24, 1994, Pat. No. 5,371,093, which is a continuation of Ser. No. 76,268, Jun. 11, 1993, abandoned, which is a continuation of Ser. No. 835,658, Feb. 13, 1992, abandoned. This application Jun. 1, 1995, Ser. No. 456,590

Int. Cl.[6] A61K *31/445*; C07D *417/02*

U.S. Cl. 514—321 **9 Claims**

1. A compound of the formula:

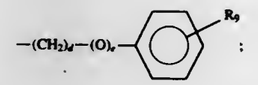


optical isomers or pharmaceutically acceptable salts thereof, wherein

Y is —C(H)(OH)—, wherein Y is attached at the heterocycle position 2 or 3;

X is carbon, CH or nitrogen, provided that when Y is attached at the 3 position X is carbon, and when Y is attached at the 2 position X is CH or nitrogen;

R_1 is $-(CH_2)_n-Z-(CH_2)_mCOR_5$, —C(O)$R_8$ or



;

R_2 and R_3 are the same or different and are hydrogen or C_{1-4} alkyl;

Z is a bond, O, or S;

R_5 is OH, C_{1-4} alkoxy or $—NR_6R_7$;

R_6 and R_7 are same or different and are H or C_{1-4} alkyl;

R_8 is C_{1-4} alkyl, C_{1-4} alkoxy;

R_9 is H, C_{1-4} alkyl, C_{1-4} alkoxy, OH, chloro, bromo, fluoro, $—CF_3$, $—NHC(O)R_{10}$, or CO_2R_{11};

R_{10} is C_{1-4} alkyl or C_{1-4} alkoxy;

R_{11} is hydrogen or C_{1-4} alkyl;

n is an integer from 0–3 provided that when Z is not a bond, n is an integer from 2–3;

m is an integer from 1 to 3;

d is an integer from 1–5; and

e is zero or 1, provided that when e is 1:

d is an integer from 2 to 5.

5,602,148

LIQUID COMPOSITIONS BASED ON DERIVATIVES OF 1,4 SUBSTITUTED PIPERIDINE

Jean-Marc Bobee, Verrieres Le Buisson, and Anne Coutel, Voegtlinshoffen, both of France, assignors to Rhone-Poulenc Rorer S.A., Antony, France

Continuation of Ser. No. 104,052, Aug. 16, 1993, abandoned. This application Feb. 21, 1995, Ser. No. 391,286

Claims priority, application France, Mar. 13, 1991, 91 03049

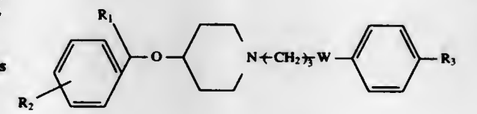
Int. Cl.[6] A61K *31/445*

U.S. Cl. 514—326 **11 Claims**

1. A liquid pharmaceutical composition comprising:

(a) a compound corresponding to the formula:

(I)



in which:

R1 represents a thienyl group; a phenyl group optionally substituted with a halogen, an alkoxy group containing 1 to 6 carbon atoms, or an alkyl group containing 1 to 6 carbon atoms,

R2 represents a halogen atom, a hydrogen atom, an alkoxy group containing 1 to 6 carbon atoms, or an alkyl group containing 1 or 6 carbon atoms,

R3 represents a halogen atom, a hydrogen atom, an alkoxy group containing 1 to 6 carbon atoms, an alkyl group containing 1 to 6 carbon atoms, an alkylthio group containing 1 to 6 carbon atoms, a cycloalkyl group containing 5 or 6 carbon atoms or a group of the formula:



where R4 and R5 represent, independently of one another, a hydrogen atom or an alkyl group containing 1 to 6 carbon atoms, and R6 represents a cycloalkyl group containing 3 to 6 carbon atoms, a hydroxymethyl or carboxyl group or alkoxycarbonyl group containing 2 to 7 carbon atoms, and

W represents a carbonyl or hydroxymethylene group or a salt of the compound of formula (I);

(b) polyethylene glycol as a solubilizing agent, said polyethylene glycol being present in a weight ratio to compound of formula I of between 100 and 500; and said composition being aqueous and having a pH between 4 and 4.5.

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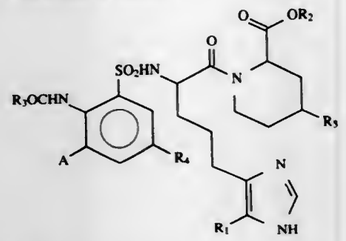
5,602,149

1-OXO-2-(PHENYLSULPHONYLAMINO) PENTYPIPERIDINE DERIVATIVES, THEIR PREPARATION AND THEIR THERAPEUTIC APPLICATION

Jean Michel Altenburger, Meudon, and Gilbert Lassalle, Clamart, both of France, assignors to Synthelabo, Le Plessis Robinson, France

Filed Dec. 22, 1995, Ser. No. 577,935
Claims priority, application France, Dec. 23, 1994, 94 15549
Int. Cl.[6] A61K *31/445;* C07D *211/32*
U.S. Cl. 514—326 9 Claims

1. A compound of formula (I)



(I)

in which

R_1 represents a hydrogen atom or a (C_1–C_4) alkyl group,

R_2 represents a hydrogen atom or a straight or branched (C_1–C_4) alkyl group,

R_3 represents a straight or branched (C_1–C_7)alkyl group, a group —$(CH_2)_nOCH_3$ (where n is 1, 2 or 3) or a group —$CH_2O(C_2H_4O)_m$=CH_3(where m is 1, 2 or 3),

R_4 represents a hydrogen atom or a halogen atom,

R_5 represents a straight or branched (C_1–C_4)alkyl group and

A represents a phenyl or heterocyclic group optionally substituted with one or more substituents independently chosen from halogen atoms, straight or branched (C_1–C_4) alkyl, straight or branched (C_1–C_4) alkoxy and trifluoromethyl groups, or a cyclo(C_5–C_8)alkyl group, in the form of the free base or of a pharmaceutically acceptable addition salt.

5,602,150

TREATMENT OF CENTRAL NERVOUS SYSTEM DISORDERS ASSOCIATED WITH PSYCHOTIC BEHAVIOR AND DEMENTIA WITH A COMBINATION OF NEUROLEPTIC DRUGS AND TAURINE, OR DERIVATIVES THEREOF, TO PREVENT THE DEVELOPMENT OF TARDIVE DYSKINESIA

Theodore I. Lidsky, Atlantic Highlands, N.J., assignor to Research Foundation for Mental Hygiene, Inc., Albany, N.Y.

Continuation of Ser. No. 956,109, Oct. 2, 1992, abandoned. This application May 15, 1995, Ser. No. 440,824
Int. Cl.[6] A61K *31/445;31/56;31/195;31/13*
U.S. Cl. 514—327 34 Claims

1. A pharmaceutical composition for preventing the development of tardive dyskinesia in a patient, comprising a combination of a D_2 receptor-blocking neuroleptic drug and taurine, or derivatives thereof, in a pharmaceutically-acceptable carrier.

5,602,151

CHOLESTEROL ESTER HYDROLASE INHIBITORS

Richard E. Mewshaw, Plainsboro, N.J.; Thomas J. Commons, Wayne, and Donald P. Strike, St. Davids, both of Pa., assignors to American Home Products Corporation, Madison, N.J.

Division of Ser. No. 277,396, Jul. 19, 1994, abandoned, which is a division of Ser. No. 62,026, May 13, 1993, Pat. No. 5,391,571, which is a continuation of Ser. No. 771,580, Oct. 4, 1991, abandoned, which is a continuation of Ser. No. 594,241, Oct. 9, 1990, abandoned, which is a continuation-in-part of Ser. No. 436,841, Nov. 15, 1989, abandoned. This application Dec. 15, 1995, Ser. No. 572,993
Int. Cl.[6] A61K *31/445;* C07D *211/06*
U.S. Cl. 514—327 30 Claims

1. A compound which is:

4-phenyl-1-piperidinecarboxylic acid 4-phenoxyphenyl ester;

4-methyl-1-piperidinecarboxylic acid 4-(4-methylphenoxy)phenyl ester;

4-methyl-1-piperidinecarboxylic acid 4-(4-chlorophenoxy)phenyl ester;

4-methyl-1-piperidinecarboxylic acid 4-(4-methoxyphenoxy)phenyl ester;

4-methyl-1-piperidinecarboxylic acid 2-bromo-4-phenoxyphenyl ester;

4,4-dimethyl-1-piperidinecarboxylic acid 4-phenoxyphenyl ester;

4-methyl-1-piperidinecarboxylic acid 2-fluoro-4-phenoxyphenyl ester;

4-ethyl-1-piperidinecarboxylic acid 4-phenoxyphenyl ester;

1,4-piperidinedicarboxylic acid 4-ethyl-1-(4-phenoxyphenyl) diester;

4-hydroxy-1-piperidinecarboxylic acid 4-phenoxyphenyl ester;

4-propyl-1-piperidinecarboxylic acid 4-phenoxyphenyl ester;

1,4-piperidinedicarboxylic acid 1-(4-phenoxyphenyl ester);

3,3-dimethyl-1-piperidinecarboxylic acid 4-phenoxyphenyl ester;

4-(acetyloxy)-1-piperidinecarboxylic acid 4-phenoxyphenyl ester;

4-methyl-1-piperidinecarboxylic acid 2-(methoxycarbonyl)-4-phenoxyphenyl ester;

4-(1-methylethyl)-1-piperidinecarboxylic acid 4-phenoxyphenyl ester;

1,4-piperidinedicarboxylic acid 4-dodecyl 1-(4-phenoxyphenyl) diester;

4-methyl-1-piperidinecarboxylic acid 2-cyano-4-phenoxyphenyl ester;

4-methyl-1-piperidinecarboxylic acid 2-(hydroxycarbonyl)-4-phenoxyphenyl ester;

4-(hydroxymethyl)-1-piperidinecarboxylic acid 4-phenoxyphenyl ester;

4-(bromomethyl)-1-piperidinecarboxylic acid, 4-phenoxyphenyl ester;

4-methyl-1-piperidinecarboxylic acid 2-(dodecyloxycarbonyl)-4-phenoxyphenyl ester;

4-(iodomethyl)-1-piperidinecarboxylic acid 4-phenoxyphenyl ester;

4-(diethylaminomethyl)-1-piperidinecarboxylic acid 4-phenoxyphenyl ester;

1-[(4-phenoxyphenoxy)carbonyl]-4-piperidinemethanaminium iodide;

4-(dihexylaminomethyl)-1-piperidinecarboxylic acid 4-phenoxyphenyl ester; or

2-methyl-1-piperidinecarboxylic acid 4-phenoxyphenyl ester; or a pharmaceutically acceptable salt thereof.

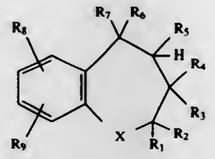
5,602,152

BENZOXEPINES

Jean J. Berthelon, Lyons; Michel Brunet, Toussieu; Marc Noblet, Lyons; Philippe Durbin, Villeurbainne; Daniel Guerrier, Salt-Genis-Laval, and Trong N. Luong, Crepieux la Pape, all of France, assignors to Merck Patent Gesellschaft mit Beschrankter Haftung, Darmstadt, Germany

PCT No. PCT/EP93/03445, § 371 Date Aug. 5, 1994, § 102(e) Date Aug. 5, 1994, PCT Pub. No. WO94/13658, PCT Pub. Date Jun. 23, 1994
PCT Filed Dec. 7, 1993, Ser. No. 284,454
Claims priority, application France, Dec. 7, 1992, 92 14720
Int. Cl.[6] A61K *31/44;* C07D *405/04*
U.S. Cl. 514—337 10 Claims

1. A compound of the formula:



in which:

X represents O,

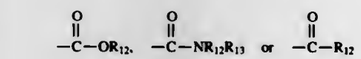
R_1, R_2, R_3 and R_4, which are identical or different, represent a hydrogen atom or a C_1–C_7 alkyl group;

R_5 represents a hydrogen atom or a hydroxyl group;

R_6 represents a 2-pyridyl, 2-pyridyl N-oxide, 3-pyridyl, 3-pyridyl N-oxide, 4-pyridyl, 3-hydroxy-4-pyridyl group, optionally substituted on the carbon atoms by 1 to 3 substituents chosen from hydroxyl, nitro, cyano, C_1–C_7 alkyl and C_1–C_7 alkoxy;

R_7 represents a hydrogen atom or a hydroxyl, C_1–C_7 alkoxy or C_1–C_7 acyloxy group;

R_8 and R_9, which are identical or different, represent a hydrogen or halogen atom, a hydroxyl, nitro, cyano, trifluoromethyl, trifluoromethoxy, pentafluoroethyl, C_1–C_7 alkyl, C_1–C_7 alkoxy, C_1–C_7 alkylthio, C_1–C_7 acylthio, C_1–C_7 alkylsulfonyl or C_1–C_7 alkylsulfinyl group, a group of formulae:



in which R_{12} and R_{13} which are identical or different, represent a hydrogen atom or a C_1–C_7 alkyl group, or R_8 and R_9 represent a C_6–C_{10} aryl, (C_6–C_{10})-arylsulfonyl or (C_6–C_{10})arylsulfinyl group, optionally substituted by one to six substituents chosen from halo, hydroxyl, nitro, cyano, carboxyl, carbamoyl, trifluoromethyl, trifluoromethoxy, pentafluoroethyl, C_1–C_7 alkyl, C_1–C_7 alkoxy, C_1–C_7 alkylthio, C_1–C_7 acylthio, C_1–C_7 alkylsulfonyl or C_1–C_7 alkylsulfinyl,

or R_8 and R_9 together form a group $(CH_2)_n$, n being 4,

an N-oxide thereof or a pharmaceutically acceptable salt thereof.

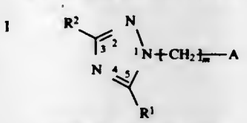
5,602,153

METHOD OF USING 1-ARYLHETEROARYLALKYL SUBSTITUTED-1H-1,2,4-TRIAZOLE COMPOUNDS FOR TREATMENT OF A GLAUCOMA DISORDER

David B. Reitz, Chesterfield, Mo., assignor to G.D. Searle & Co., Chicago, Ill.

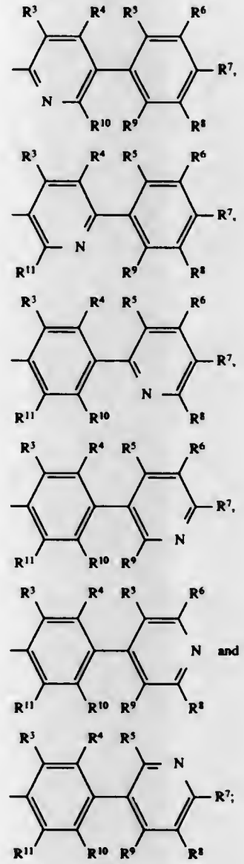
PCT No. PCT/US92/02801, § 371 Date Aug. 19, 1993, § 102(e) Date Aug. 19, 1993, PCT Pub. No. WO92/18092, PCT Pub. Date Dec. 10, 1992
Continuation-in-part of Ser. No. 686,324, Apr. 12, 1991, Pat. No. 5,155,117. This PCT application Apr. 10, 1992, Ser. No. 107,724
Int. Cl.[6] H01N *43/40*
U.S. Cl. 541—340 24 Claims

1. A therapeutic method for treating a glaucoma disorder, said method comprising administering to a subject susceptible to or afflicted with such disorder a therapeutically-effective amount of an active compound of Formula I



(I)

wherein A is selected from



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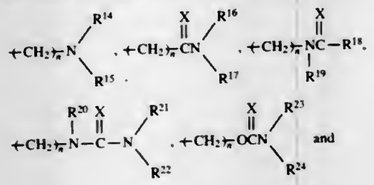
wherein m is a number selected from one to four, inclusive;

wherein R^1 is selected from hydrido, alkyl, hydroxyalkyl, haloalkyl, cycloalkyl, cycloalkylalkyl, formyl, aralkyl, aryl, alkylaryl, alkoxyaryl, haloaryl, aroyl, alkoxyalkyl, alkylcarbonyl, alkylcarbonylalkyl, alkoxycarbonyl, alkenyl, cycloalkenyl, aralkoxycarbonyl, alkynyl, alkylthiocarbonyl, alkylthiothiocarbonyl, arylthiocarbonyl, arylthiothiocarbonyl, aralkylthiocarbonyl, alkylthiocarbonyl, alkylsulfinyl, alkylsulfonyl, aralkylsulfinyl, aralkylsulfonyl, arylsulfinyl, arylsulfonyl, heteroaryl having one or more ring atoms selected from oxygen, sulfur and nitrogen atoms, and amido radicals of the formula

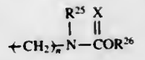


wherein X is oxygen atom or sulfur atom; wherein each of R^{12} and R^{13} is independently selected from hydrido, alkyl, cycloalkyl, cyano, amino, monoalkylamino, dialkylamino, hydroxyalkyl, cycloalkylalkyl, alkoxyalkyl, aralkyl and aryl, and wherein R^{12} and R^{13} taken together may form a heterocyclic group having five to seven ring members including the nitrogen atom of said amido radical and which heterocyclic group may further contain one or more hetero atoms as ring members selected from oxygen, nitrogen and sulfur atoms and which heterocyclic group may be saturated or partially unsaturated; wherein each of R^{12} and R^{13} taken together may form an aromatic heterocyclic group having five ring members including the nitrogen atom of said amido radical and which aromatic heterocyclic group may further contain one or more additional nitrogen atoms;

wherein each of R^2 through R^{11} is independently selected from hydrido, alkyl, hydroxyalkyl, halo, haloalkyl, cycloalkyl, cycloalkylalkyl, cycloalkylhaloalkyl, cycloalkylcarbonyl, formyl, alkoxy, aralkyl, aralkylhaloalkyl, aryl, alkylaryl, alkoxyaryl, haloaryl, aroyl, aryloxy, aryloxyalkyl, aralkoxy, alkoxyalkyl, alkylcarbonyl, alkylcarbonylalkyl, alkoxycarbonyl, alkenyl, cycloalkenyl, alkynyl, cyano, nitro, carboxyl, carboxyalkyl, alkylcarbonyloxy, alkylcarbonyloxyalkyl, alkoxycarbonylalkyl, aralkoxycarbonylalkyl, aralkylcarbonyloxyalkyl, mercaptocarbonyl, mercaptothiocarbonyl, mercaptoalkyl, alkoxycarbonyloxy, alkylthio, cycloalkylthio, cycloalkylalkylthio, alkylthiocarbonyl, alkylcarbonylthio, alkylthiocarbonyloxy, alkylthiocarbonylthio, alkylthiothiocarbonyl, alkylthiocarbonylthio, arylthio, arylthiocarbonyl, arylcarbonylthio, arylthiocarbonyloxy, arylthiocarbonylthio, arylthiothiocarbonyl, arylthiothiocarbonylthio, aralkylthio, aralkylthiocarbonyl, aralkylcarbonylthio, aralkylthiocarbonyloxy, aralkylthiocarbonylthio, alkylthiocarbonyl, aralkylthiocarbonylthio, mercapto, alkylsulfinyl, alkylsulfonyl, aralkylsulfinyl, aralkylsulfonyl, arylsulfinyl, arylsulfonyl, phthalimido, phthalimidoalkyl, heteroaryl, heteroarylalkyl, cycloheteroalkyl, cycloheteroalkylalkyl and cycloheteroalkylcarbonylalkyl wherein each of said heteroaryl- and cyclohetero-containing groups has one or more ring atoms selected from oxygen, sulfur and nitrogen atoms, and wherein each of R^2 through R^{11} may be further independently selected from amino and amido radicals of the formula



-continued



wherein X is oxygen atom or sulfur atom;

wherein each n is a number independently selected from zero to six, inclusive;

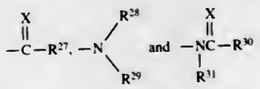
wherein each of R^{14} through R^{26} is independently selected from hydrido, alkyl, cycloalkyl, cyano, amino, monoalkylamino, dialkylamino, hydroxyalkyl, cycloalkylalkyl, alkoxyalkyl, aralkyl and aryl, and wherein R^{14} and R^{15} taken together, R^{16} and R^{17} taken together, R^{18} and R^{19} taken together, R^{21} and R^{22} taken together and R^{23} and R^{24} taken together may each form a heterocyclic group having five to seven ring members including the nitrogen atom of said amino or amido radical and which heterocyclic group may further contain one or more hetero atoms as ring members selected from oxygen, nitrogen and sulfur atoms and which heterocyclic group may be saturated or partially unsaturated; wherein R^{14} and R^{15} taken together, R^{16} and R^{17} taken together, R^{21} and R^{22} taken together and R^{23} and R^{24} taken together may each form an aromatic heterocyclic group having five ring members including the nitrogen atom of said amino or amido radical and which aromatic heterocyclic group may further contain one or more hetero atoms as ring atoms selected from oxygen, nitrogen and sulfur atoms;

and wherein each of R^3 through R^{11} may be further independently selected from hydroxy and acidic moieties of the formula

$$-Y_nA$$

wherein n is a number selected from zero through three, inclusive, and wherein A is an acidic group selected to contain at least one acidic hydrogen atom, and the amide, ester and salt derivatives of said acidic moieties; wherein Y is a spacer group independently selected from one or more of alkyl, cycloalkyl, cycloalkylalkyl, alkenyl, alkynyl, aryl, aralkyl and heteroaryl having one or more ring atoms selected from oxygen, sulfur and nitrogen atoms;

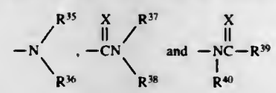
and wherein any of the foregoing R^1 through R^{26}, Y and A groups having a substitutable position may be substituted by one or more groups independently selected from hydroxy, alkyl, alkenyl, alkynyl, aralkyl, hydroxyalkyl, haloalkyl, halo, oxo, alkoxy, aryloxy, aralkoxy, aralkylthio, alkoxyalkyl, cycloalkyl, cycloalkylalkyl, aryl, aroyl, cycloalkenyl, cyano, cyanoamino, nitro, alkylcarbonyloxy, alkoxycarbonyloxy, alkylcarbonyl, alkoxycarbonyl, aralkoxycarbonyl, carboxyl, mercapto, mercaptocarbonyl, alkylthio, arylthio, alkylthiocarbonyl, alkylsulfinyl, alkylsulfonyl, haloalkylsulfonyl, aralkylsulfinyl, aralkylsulfonyl, arylsulfinyl, arylsulfonyl, heteroaryl having one or more ring atoms selected from oxygen, sulfur and nitrogen atoms, and amino and amido radicals of the formula



wherein X is oxygen atom or sulfur atom; wherein each of R^{27} through R^{31} is independently selected from hydrido, alkyl, cycloalkyl, cycloalkylalkyl, aralkyl, aryl, DR^{32} and



wherein D is selected from oxygen atom and sulfur atom and R^{32} is selected from hydrido, alkyl, cycloalkyl, cycloalkylalkyl, aralkyl and aryl; wherein each of R^{27}, R^{28}, R^{29}, R^{30}, R^{31}, R^{33} and R^{34} is independently selected from hydrido, alkyl, cycloalkyl, cyano, hydroxyalkyl, haloalkyl, cycloalkylalkyl, alkoxyalkyl, alkylcarbonyl, alkoxycarbonyl, carboxyl, alkylsulfinyl, alkylsulfonyl, arylsulfinyl, arylsulfonyl, haloalkylsulfinyl, haloalkylsulfonyl, aralkyl and aryl, and wherein each of R^{27}, R^{28}, R^{29}, R^{30}, R^{31}, R^{33} and R^{34} is further independently selected from amino and amido radicals of the formula



wherein X is oxygen atom or sulfur atom; wherein each of R^{35}, R^{36}, R^{37}, R^{38}, R^{39} and R^{40} is independently selected from hydrido, alkyl, cycloalkyl, cyano, hydroxyalkyl, cycloalkylalkyl, alkoxyalkyl, haloalkylsulfinyl, haloalkylsulfonyl, aralkyl and aryl, and wherein each of R^{28} and R^{29} taken together and each of R^{30} and R^{31} taken together may form a heterocyclic group having five to seven ring members including the nitrogen atom of said amino or amido radical, which heterocyclic group may further contain one or more hetero atoms as ring members selected from oxygen, nitrogen and sulfur atoms and which heterocyclic group may be saturated or partially unsaturated; wherein each of R^{28} and R^{29} taken together and each of R^{33} and R^{34} taken together may form an aromatic heterocyclic group having five ring members including the nitrogen atom of said amino or amido radical and which aromatic heterocyclic group may further contain one or more hetero atoms as ring atoms selected from oxygen, nitrogen and sulfur atoms; or a tautomer thereof or a pharmaceutically-acceptable salt thereof.

5,602,154

2-(2,3,5,6-TETRAFLUORO-4-PYRIDYL)-1,2,5-THIADIAZOLIDIN-3-ONE 1,1-DIOXIDES AND COMPOSITIONS AND METHOD OF USE THEREOF

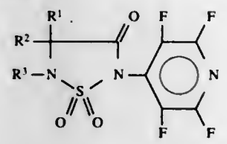
Ranjit C. Desai, Towamencin Township, Montgomery County, Pa., assignor to Sanofi Winthrop, Inc., New York, N.Y.

Division of Ser. No. 348,439, Dec. 2, 1994. This application May 19, 1995, Ser. No. 444,480

Int. Cl.[6] A61K *31/44*

U.S. Cl. 514—342 **4 Claims**

1. A method for the treatment of emphysema, cystic fibrosis, chronic bronchitis or adult respiratory distress syndrome which comprises administering to a patient in need of such treatment an effective human leukocyte elastase inhibiting amount of a compound of the formula:



wherein R' is hydrogen, lower-alkyl, or phenyl-lower-alkyl;

R^2 is hydrogen, lower-alkyl, or phenyl-lower-alkyl; and

R^3 is hydrogen, or lower-alkyl; or

a pharmaceutically acceptable acid-addition salt thereof; or where applicable, an enantiomer or a racemic mixture thereof.

5,602,155

PLATELET AGGREGATION INHIBITORS

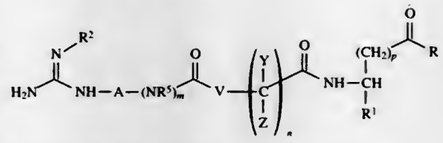
Peter G. Ruminski, Ballwin, Mo., assignor to G. D. Searle & Co., Chicago, Ill.

Filed Jan. 17, 1995, Ser. No. 375,338

Int. Cl.[6] C07D *213/36;213/56;213/57;* **A61K** *31/44*

U.S. Cl. 514—357 **7 Claims**

1. A compound of the formula



or a pharmaceutically acceptable salt thereof wherein

R^2 is selected from the group consisting of hydrogen, and lower alkyl;

A is lower alkylene, optionally substituted by lower alkyl, cycloalkyl or aryl;

m is an integer 0 or 1;

R^5 is selected from the group consisting of hydrogen and lower alkyl;

V is selected from the group consisting of $—CH_2—$, and $—N(R^6)—$, wherein R^6 is selected from the group consisting of H and lower alkyl;

Y and Z are independently selected from the group consisting of hydrogen, branched or straight lower alkyl and cycloalkyl;

n is an integer selected from 0, 1, 2 or 3;

p is an integer selected from 1, 2 or 3;

R is $X\text{-}R^3$ wherein X is selected from the group consisting of O, and S, wherein R^3 is selected from the group consisting of hydrogen, lower alkyl, aryl and arylalkyl; and

R^1 is pyridyl.

5,602,156

METHOD FOR INHIBITING METALLOPROTEINASE EXPRESSION

Elise C. Kohn, Olney, and Lance A. Liotta, Potomac, both of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 122,277, Sep. 17, 1993, abandoned. This application Mar. 10, 1994, Ser. No. 209,089

Int. Cl.[6] A61K *31/41;31/415*

U.S. Cl. 514—359 **13 Claims**

1. A method of inhibiting expression of matrix metalloproteinase in a host afflicted with a disease associated with overexpression of matrix metalloproteinase, comprising treating said host with an effective amount of a compound of formula:

$$Y—(CH_2)_p—Ar^1—X—Ar^2 \qquad (I)$$

wherein:

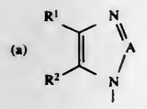
is an integer of from 0 to 4;

Ar^1 and Ar^2 are each aromatic moieties independently selected from the group consisting of phenyl, naphthyl, and substituted versions thereof;

X is a linking moiety selected from the group consisting of O, S, SO_2, CO, CHCN, straight chain alkyl, alkoxy, and alkoxyalkyl; and

Y is a nitrogen-containing heterocyclic moiety selected from the group consisting of: radicals of the formula

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(a) 

(II)

wherein:
A is N or CH,
R^1 is a member selected from the group consisting of hydrogen, $—CONH_2$, $—CONHR^5$, $—CO_2H$, $—CO_2R^5$, $—SO_2NH_2$,
R^2 is a member selected from the group consisting of hydrogen, amino, $—NHCOC_6H_5$, $—NHCOR^5$, —NHCHO, $—NHR^5$, $—N(R^5)_2$ and
R^5 is lower alkyl of from 1 to 6 carbon atoms, and
(b) 1,2,4-triazolyl, pyrazinyl, purinyl, pyrimidinyl, 1,2,3-triazolo-{4,5-d}-pyrimidinyl, and substituted versions thereof;
said disease being a member selected from the group consisting of nerve disorders, degenerative cartilagenous diseases, decubitus ulcers, arthritis, Alzheimer's disease, wound healing, corneal ulcers and fertility problems.

5,602,157

COMPOUNDS USEFUL FOR TREATING ALLERGIC AND INFLAMMATORY DISEASES

Siegfried B. Christensen, IV, Philadelphia, Pa., assignor to SmithKline Beecham Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 968,762, Oct. 30, 1992, abandoned, which is a continuation-in-part of Ser. No. 862,030, Apr. 2, 1992, abandoned. This application May 18, 1995, Ser. No. 443,641

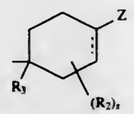
Int. Cl.[6] A61K *31/275*; **C07C** *255/50*

U.S. Cl. 514—362 **3 Claims**

1. A compound of Formula (I):

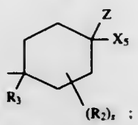
(I)

wherein:
R_1 is $—(CR_4R_5)_nC(O)O(CR_4R_5)_mR_6$, $—(CR_4R_5)_nC(O)NR_4(CR_4R_5)_mR_6$, $—(CR_4R_5)_nO(CR_4R_5)_mR_6$, or $—(CR_4R_5)_rR_6$ wherein the alkyl moieties may be optionally substituted with one or more halogens;
m is 0 to 2;
n is 1 to 4;
r is 0 to 6;
R_4 and R_5 are independently selected from hydrogen or a C_{1-2} alkyl;
R_6 is hydrogen, methyl, hydroxyl, aryl, halo substituted aryl, aryloxy C_{1-3} alkyl, halo substituted aryloxy C_{1-3} alkyl, indanyl, indenyl, C_{7-11} polycycloalkyl, tetrahydrofuranyl, furanyl, tetrahydropyranyl, pyranyl, tetrahydrothienyl, thienyl, tetrahydrothiopyranyl, thiopyranyl, C_{3-6} cycloalkyl, or a C_{4-6} cycloalkyl containing one or two unsaturated bonds, wherein the cycloalkyl and heterocyclic moieties may be optionally substituted by 1 to 3 methyl groups or one ethyl group;
provided that:
a) when R_6 is hydroxyl, then m is 2; or
b) when R_6 is hydroxyl, then r is 2 to 6; or
c) when R_6 is 2-tetrahydropyranyl, 2-tetrahydrothiopyranyl, 2-tetrahydrofuranyl, or 2-tetrahydrothienyl, then m is 1 or 2; or
d) when R_6 is 2-tetrahydropyranyl, 2-tetrahydrothiopyranyl, 2-tetrahydrofuranyl, or 2-tetrahydrothienyl, then r is 1 to 6;
e) when n is 1 and m is 0, then R_6 is other than H in $—(CR_4R_5)_nO(CR_4R_5)_mR_6$;
X is YR_2, halogen, nitro, NR_4R_5, or formyl amine;
Y is O or S(O)m';
m' is 0, 1, or 2;
X_2 is O or NR_8;
X_3 is hydrogen or X;
X_4 is



(a)

or



(b)

X_5 is H, R_9, OR_8, CN, $C(O)R_8$, $C(O)OR_8$, $C(O)NR_8R_8$, or NR_8R_8;
R_2 is independently selected from the group consisting of $—CH_3$ and $—CH_2CH_3$ optionally substituted by 1 or more halogens;
s is 0 to 4;
R_3 is $—CH{=}CR_8R_8$;
Z is $C(Y')R_{14}$, $C(O)OR_{14}$, $C(Y')NR_{10}R_{14}$, $C(NR_{10})NR_{10}R_{14}$, CN, $C(NOR_8)R_{14}$, $C(O)NR_8NR_8C(O)R_8$, $C(O)NR_8NR_{10}R_{14}$, $C(NOR_{14})R_8$, $C(NR_8)NR_{10}R_{14}$, $C(NR_{14})NR_8R_8$ $C(NCN)NR_{10}R_{14}$, $C(NCN)SR_9$, (2-, 4- or 5-imidazolyl), (3-, 4- or 5-pyrazolyl), (4- or 5-triazolyl(1,2,3), (3- or 5-triazolyl(1,2,4), (5-tetrazolyl), (2-, 4- or 5-oxazolyl), (3-, 4- or 5-isoxazolyl), (3- or 5-oxadiazolyl(1,2,4), (2-oxadiazolyl(1,3,4), (2-thiadiazolyl(1,3,4), (2-, 4-, or 5-thiazolyl), (2-, 4-, or 5-oxazolidinyl), (2-, 4-, or 5-thiazolidinyl), or (2-, 4-, or 5-imidazolidinyl); wherein all of the heterocylic ring systems may be optionally substituted one or more times by R_{14};
the dotted line in formula (a) represents a single or double bond;
Y' is 0 or S;
R_7 is $—(CR_4R_5)_qR_{12}$ or C_{1-6} alkyl wherein the R_{12} or C_{1-6} alkyl group is optionally substituted one or more times by C_{1-2} alkyl optionally substituted by one to three fluorines, —F, —Br, —Cl, $—NO_2$, $—NR_{10}R_{11}$, $—C(O)R_8$, $—C(O)OR_8$, $—OR_8$, —CN, $—C(O)NR_{10}R_{11}$, $—OC(O)NR_{10}R_{11}$, $—OC(O)R_8$, $—NR_{10}C(O)NR_{10}R_{11}$, $—NR_{10}C(O)R_{11}$, $—NR_{10}C(O)OR_9$, $—NR_{10}C(O)R_{13}$, $—C(NR_{10})NR_{10}R_{11}$, $—C(NCN)NR_{10}$ R_{11}, $—C(NCN)SR_9$, $—NR_{10}C(NCN)SR_9$, $—NR_{10}C(NCN)NR_{10}R_{11}$, $—NR_{10}S(O)_2R_9$, $—S(O)m'$ R_9, $—NR_{10}C(O)C(O)NR_{10}R_{11}$—$NR_{10}C(O)C(O)R_{10}$, thiazolyl, imidazolyl, oxazolyl, pyrazolyl, triazolyl, or tetrazolyl;
q is 0, 1, or 2;
R_{12} is C_3–C_7-cycloalkyl, (2-, 3- or 4-pyridyl), pyrimidyl, pyrazolyl, (1- or 2-imidazolyl), thiazolyl, triazolyl, pyrrolyl, piperazinyl, piperidinyl, morpholinyl, furanyl, (2- or 3-thienyl), (4- or 5-thiazolyl), quinolinyl, naphthyl, or phenyl;
R_8 is independently selected from hydrogen or R_9;
R_8 is R_8 or fluorine;
R_9 is C_{1-4} alkyl optionally substituted by one to three fluorines;
R_{10} is OR_8 or R_{11};
R_{11} is hydrogen, or C_{1-4} alkyl optionally substituted by one to three fluorines; or when R_{10} and R_{11} are as $NR_{10}R_{11}$ they may together with the nitrogen form a 5 to 7 membered ring optionally containing at least one additional heteroatom selected from O,N or S;
R_{13} is oxazolidinyl, oxazolyl, thiazolyl, pyrazolyl, triazolyl, tetrazolyl, imidazolyl, imidazolidinyl, thiazolidinyl, isoxazolyl, oxadiazolyl, or thiadiazolyl, and each of these heterocyclic rings is connected through a carbon atom and each may be unsubstituted or substituted by one or two C_{1-2} alkyl groups;
R_{14} is hydrogen or R_7; or when R_{10} and R_{14} are as $NR_{10}R_{14}$ they may together with the nitrogen form a 5 to 7 membered ring optionally containing one or more additional heteroatoms selected from O, N, or S;
provided that:
f) when R_{12} is N-pyrazolyl, N-imidazolyl, N-triazolyl, N-pyrrolyl, N-piperazinyl, N-piperidinyl, or N-morpholinyl, then q is not 1; or
or the pharmaceutically acceptable salts thereof.

5,602,158

1-[(1,4-BENZODIOXANYL)ALKYL]-3-(HETEROARYL) PYRROLIDINES AND RELATED COMPOUNDS AND THEIR THERAPEUTIC UTILITY

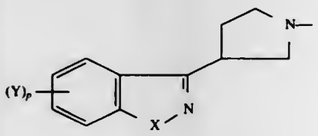
Edward J. Glamkowski, Warren, and Yulin Chiang, Covent Station, both of N.J., assignors to Hoechst Marion Roussel, Inc., Kansas City, Mo.

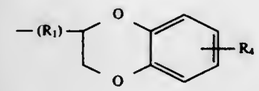
Division of Ser. No. 329,000, Oct. 25, 1994, which is a continuation-in-part of Ser. No. 144,265, Oct. 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 969,383, Oct. 30, 1992, Pat. No. 5,364,866, which is a continuation-in-part of Ser. No. 788,269, Nov. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 944,705, Sep. 5, 1991, abandoned, which is a continuation of Ser. No. 619,825, Nov. 29, 1990, abandoned, which is a continuation of Ser. No. 456,790, Dec. 29, 1989, abandoned, which is a continuation-in-part of Ser. No. 354,411, May 19, 1989, abandoned. This application Jun. 6, 1995, Ser. No. 469,501

Int. Cl.[6] A61K *31/495;31/55;31/505;31/44;* **C07D** *401/00;403/00;417/00;419/00;221/04;275/04;239/02*

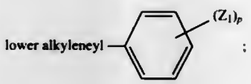
U.S. Cl. 514—373 **14 Claims**

1. A compound of the formula:





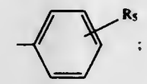
wherein,
X is —O—, —S—, —NH—, or $—N(R_2)—$;
R_2 is selected from the group consisting of lower alkyl, aryl lower alkyl, aryl, cycloalkyl, aroyl, alkanoyl, alkoxycarbonyl, and phenysulfonyl groups;
aryl is as defined hereinafter;
p is 1 or 2;
Y is hydrogen, lower alkyl, hydroxy, chlorine, fluorine, bromine, iodine, lower alkoxy, trifluoromethyl, nitro, or amino;
R_1 is $—CR_{24}R_{27}—(CR_{23}R_{24})_n—CR_{24}R_{27}—$ where n is 0, 1, 2, or 3; or
$—CHR_{24}—CH{=}CH—CHR_{24}—$,
$—CHR_{24}—C{\equiv}C—CHR_{24}—$,
$CHR_{24}—CH{=}CH—CR_{23}R_{24}—CHR_{24}—$,
$—CHR_{24}—CR_{23}R_{24}—CH{=}CH—CHR_{24}—$,
$—CHR_{24}—C{\equiv}C—CR_{23}R_{24}—CHR_{24}—$, or
$—CHR_{24}—CR_{23}R_{24}—C{\equiv}C—CHR_{24}—$,
the —H═CH— bond being cis or trans;
R_{23} is hydrogen, $(C_1–C_{18})$ linear alkyl, phenyl, hydroxy, $(C_1–C_{18})$alkoxy, aryloxy, aryl$(C_1–C_{18})$alkyloxy, $(C_1–C_{18})$alkanoyloxy, hydroxy$(C_1–C_6)$alkyl, $(C_1–C_{18})$alkoxy(C_1C_6)alkyl, phenyl$(C_1–C_6)$alkoxy, aryl$(C_1–C_{18})$alkyloxy$(C_1–C_6)$alkyl, $(C_1–C_{18})$alkanoyloxy$(C_1–C_6)$alkyl, or



where Z_1 is lower alkyl, —OH, lower alkoxy, $—CF_3$, $—NO_2$, $—NH_2$, or halogen, and p is as previously defined; and
R_{24} is hydrogen, $(C_1–C_{18})$ linear alkyl, phenyl, hydroxy$(C_1–C_6)$alkyl, $(C_1–C_{18})$alkoxy$(C_1–C_6)$alkyl, phenyl$(C_1–C_6)$alkyloxy, aryl$(C_1–C_{18})$alkyloxy$(C_1–C_6)$alkyl, $(C_1–C_{18})$alkanoyloxy$(C_1–C_6)$alkyl, or



where Z_1 is as previously defined, and p is as previously defined;
R_{27} is hydrogen or R_{24} and R_{27} taken together with the carbon to which they are attached form C═O or C═S; and
R_4 is hydrogen, lower alkyl, lower alkoxy, hydroxy, tri$(C_1–C_6)$alkylsilyloxy, hydroxy lower alkyl, alkanoyloxy lower alkyl, amino, mono- or dialkylamino, $(C_1–C_{18})$acyl amino, $(C_1–C_{18})$alkanoyl, trifluoromethyl, chlorine, fluorine, bromine, —O—C(═O)—($C_1–C_{18}$straight or branched chain) alkyl or —C(═O)-aryl;
in which aryl is phenyl or



where R_5 is hydrogen, lower alkyl, lower alkoxy, hydroxy, chlorine, fluorine, bromine, iodine, lower monoalkylamino, lower dialkylamino, nitro, cyano, trifluoromethyl, trifluoromethoxy;
and, any hydroxy group attached to an aliphatic or aromatic carbon atom, or any primary or secondary nitrogen atom may be acylated with a $(C_4–C_{18})$carboxylic group, in addition, any nitrogen atom may alternatively be acylated with a $(C_4–C_{18})$alkoxycarbonyl group;
all geometric, optical and stereoisomers thereof;
or a pharmaceutically acceptable acid addition salt thereof.

VOL 11 95 ISS 2 FE 11 1997 UMI

5,602,159

3-HETEROARYL-1-PYRROLIDINEALKYLTHIOLS AND DERIVATIVES THEREOF AND THEIR THERAPEUTIC UTILITY

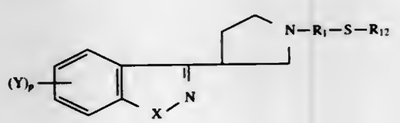
Edward J. Glamkowski, Warren; Yulin Chiang, Covent Station; Joseph T. Strupczewski, Flemington, all of N.J.; Kenneth J. Bordeau, Kintnersville, Pa.; Peter A. Nemoto, Raritan, and John J. Tegeler, Bridgewater, both of N.J., assignors to Hoechst-Roussel Pharmaceuticals, Inc., Somerville, N.J.

Division of Ser. No. 329,000, Oct. 25, 1994, which is a continuation-in-part of Ser. No. 144,265, Oct. 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 969,383, Oct. 30, 1992, Pat. No. 5,364,866, which is a continuation-in-part of Ser. No. 788,269, Nov. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 944,705, Sep. 19, 1991, abandoned, which is a continuation of Ser. No. 619,825, Nov. 19, 1990, abandoned, which is a continuation of Ser. No. 456,790, Dec. 29, 1989, abandoned, which is a continuation-in-part of Ser. No. 354,411, May 19, 1989, abandoned. This application Jun. 6, 1995, Ser. No. 470,715

Int. Cl.[6] A61K *31/495;31/55;31/505;31/44;* **C07D** *401/04;403/00;417/00;419/00, 221/04;275/04;239/02*

U.S. Cl. 514—373 **14 Claims**

1. A compound of the formula:



wherein

X is —O—, —S—, —NH—, or —N(R_2);

R_2 is selected from the group consisting of lower alkyl, aryl lower alkyl, aryl, cycloalkyl, aroyl, alkanoyl, and phenylsulfonyl groups;

aryl is as defined hereinafter;

p is 1 or 2;

Y is hydrogen, lower alkyl, hydroxy, chlorine, fluorine, bromine, iodine, lower alkoxy, trifluoromethyl, nitro, or amino;

R_1 is —$CR_{24}R_{27}$—$(CR_{23}R_{27})_n$—, where n is 0, 1, 2 or 3; or

—CHR_{24}CH═CH—CHR_{24}—,

—CHR_{24}—C≡C—CHR_{24}—,

—CHR_{24}—CH═CH—$CR_{23}R_{24}$—CHR_{24}—,

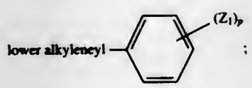
—CHR_{24}—$CR_{23}R_{24}$—CH═CH—CHR_{24}—,

—CHR_{24}—C≡C—$CR_{23}R_{24}$—CHR_{24}—, or

—CHR_{24}—$CR_{23}R_{24}$—C≡C —CHR_{24},

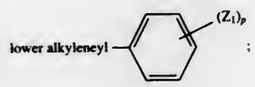
the —CH═CH— bond being cis or trans;

R_{23} is hydrogen, (C_1–C_{18}) linear alkyl, phenyl, hydroxy, (C_1–C_{18})alkoxy, aryloxy, aryl(C_1–$_{18}$)alkyloxy, (C_1–C_{18})alkanoyloxy, hydroxy(C_1–C_6)alkyl, (C_1–C_{18})alkoxy(C_1–C_6)alkyl, phenyl(C_1–C_6)alkyloxy, aryl(C_1–C_{18})alkyloxy(C_1–C_6)alkyl, (C_1–C_{18})alkanoyloxy(C_1–C_6)alkyl or



where Z_1 is lower alkyl, —OH, lower alkoxy, —CF_3, —NO_2, —NH_2, or halogen, and p is as previously defined;

R_{24} is hydrogen, (C_1–C_{18}) linear alkyl, phenyl, hydroxy(C_1–C_6)alkyl, (C_1–C_{18})alkoxy(C_1–C_6)alkyl, phenyl (C_1–C_6)alkyloxy, aryl(C_1–C_{18})alkyoxy(C_1–C_6)alkyl, (C_1–C_{18})alkanoyloxy(C_1–C_6)alkyl or



where Z_1 and p are as previously defined;

R_{27} is hydrogen or R_{24} and R_{27} taken together with the carbon to which they are attached form C═O or C═S;

R_{12} is selected from the group consisting of:

hydrogen,

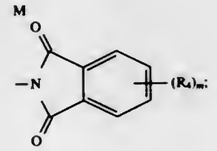
alkyl,

—C(═O)—(C_1–C_{18} straight chain or branched) alkyl,

—C(═O)—$NR_{13}R_{14}$,

—C(═O)—$NR_{15}R_{16}$,

—$S(=O)_2$—R_{17}, and



where R_{13} is selected from the group consisting of hydrogen and (C_1–C_{18})alkyl groups;

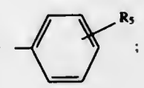
where R_{14} is selected from the group consisting of hydrogen and (C_1–C_{18})alkyl groups;

where $NR_{15}R_{16}$ taken together form a ring structure selected from the group consisting of piperidinyl, morpholinyl and piperazinyl;

where R_4 is hydrogen, lower alkyl, lower alkoxy, hydroxy, tri(C_1–C_6)alkylsilyloxy, hydroxy lower alkyl, alkanoyloxy lower alkyl, amino, mono- or dialkylamino, (C_1–C_{18})acyl amino, (C_1–C_{18})alkanoyl, trifluoromethyl, chlorine, fluorine, bromine, —O—C(═O)—(C_1–C_{18}straight or branched chain) alkyl or —C(═O)-aryl;

where R_{17} is selected from the group consisting of (C_1–C_{18})alkyl and aryl groups;

where aryl is phenyl or



and where R_5 is hydrogen, lower alkyl, lower alkoxy, hydroxy, chlorine, fluorine, bromine, iodine, lower monoalkylamino, lower dialkylamino, nitro, cyano, trifluoromethyl, or trifluoromethoxy;

all geometric, optical, and stereoisomers thereof, or a pharmaceutically acceptable acid addition salt thereof.

5,602,160

AMINOKETONE DERIVATIVES AND USE THEREOF

Hideki Tanada; Kazuya Sakai; Seitaro Kajiya; Norio Ohto; Kazutoshi Horikomi, all of Chiba-ken; Akira Matsubara; Hideshi Shimizu, both of Kanagawa-ken, and Akira Mizuchi, Chiba-ken, all of Japan, assignors to Mitsui Toatsu Chemicals Incorporated, Japan

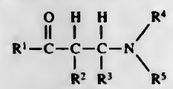
Division of Ser. No. 243,235, May 16, 1994, Pat. No. 5,498,619, which is a division of Ser. No. 839,434, Feb. 24, 1992, Pat. No. 5,338,857. This application Apr. 17, 1995, Ser. No. 423,208

Claims priority, application Japan, Aug. 4, 1989, 1-201410; Feb. 26, 1991, 3-30739

Int. Cl.[6] A61K *31/38;31/42;31/425*

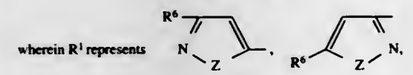
U.S. Cl. 514—378 **6 Claims**

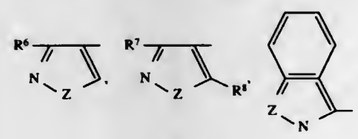
1. A method of treating pollakiuria which comprises administering to a person in need of same an effective amount of an aminoketone compound represented by the following formula (I):

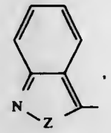


(I)

wherein R^1 represents







R^6 represents a halogen atom, a lower alkyl group, a benzyl group, a benzoyl group, a pyridyl group, a furyl group, a furyl group substituted by one or more lower alkyl groups, a thienyl group, a thienyl group substituted by one or more lower alkyl groups, a phenyl group, a phenyl group substituted by one or more halogen atoms or one or more lower alkoxy, lower alkyl, trifluoromethyl, cyano, nitro, amino, dimethylamino, acetamido, methanesulfonylamido, acetyl or lower alkoxycarbonyl groups, or a naphthyl group; R^7 and R^8 independently represent a phenyl group or a lower alkyl group; and z is an oxygen or sulfur atom;

R^2 represents a hydrogen atom, a lower alkyl, benzyl, methoxy, phenyl, allyl, trifluoromethyl- or lower-alkoxy-substituted lower alkyl, or cyclopropylmethyl group, and R^3 represents a hydrogen atom or a lower alkyl group, provided R^2 and R^3 are not both hydrogen, or R^2 and R^3 are coupled together to form a five membered or six-membered alicyclic group; and R^4 and R^5 independently represent saturated or unsaturated lower alkyl groups, or R^4 and R^5 are coupled together into a pyrrolidine ring, said pyrrolidine ring being optionally substituted by one or more methyl, acetyl and benzyl groups;

or a physiologically acceptable salt of said aminoketone compound.

5,602,161

TETRAZOLYLPHENYL PIVALATE DERIVATIVES AND MEDICINAL COMPOSITION CONTAINING THE SAME AS EFFECTIVE COMPONENT

Kenji Naito; Ryoki Takahashi; Daisuke Morizono; Mitsuji Agata; Hatsunori Toyofuku, and Makoto Maeda, all of Tokyo, Japan, assignors to Wakamoto Pharmaceutical Co., Ltd., Tokyo, Japan

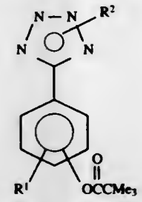
Filed Mar. 6, 1995, Ser. No. 398,786

Claims priority, application Japan, Mar. 10, 1994, 6-065419

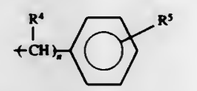
Int. Cl.[6] C07D *257/04;* **A61K** *31/41*

U.S. Cl. 514—381 **21 Claims**

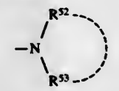
1. A tetrazolylphenyl pivalate derivative represented by the following general formula or a pharmaceutically acceptable salt thereof:



wherein R^1 represents a hydrogen atom, a lower alkyl group, a di-lower alkylamino group or a lower alkoxy group; R^2 represents (i) a hydrogen atom, (ii) a lower alkyl group, (iii) a group represented by the formula: —$(CH_2)_k$—R^3 (wherein k represents an integer ranging from 1 to 5 and R^3 represents an amino group, a carboxyl group, a hydroxyl group, a pyridyl group, a piperidinocarbonyl group, a phenylaminocarbonyl group, a guanidinobenzoyloxy group, a guanidinobenzoylamino group, a lower alkoxycarbonyl group, a di-lower alkylamino group, a tert-butoxycarbonylamino group, or an aralkyloxy group carrying a lower alkoxy group) or (iv) a group represented by the following general formula:



wherein n is an integer ranging from 0 to 4; R^4 represents a hydrogen atom, a phenyl group or a group: —CO—$R^{4\,1}$ (wherein $R^{4\,1}$ represents a hydroxyl group, a benzyloxy group or a glycine residue); R^5 represents a hydrogen atom, a hydroxyl, carboxyl, nitro, trihalomethyl, lower alkoxy, lower alkyl, lower alkanoyl, carboxy-lower alkoxy, carboxy-lower alkyl, amino-lower alkyl, amino-lower alkoxy, amino-lower alkanoylamino, tert-butoxycarbonyl-lower alkoxy, tert-butoxycarbonylamino-lower alkoxy, (tert-butoxycarbonyl) (lower alkyl)amino, lower alkoxycarbonyl, lower alkoxy group-carrying aralkyloxy, di-lower alkylamino-lower alkyl, di-lower alkylamino-lower alkoxy or lower alkanesulfonamido group, or a group: —CO—$R^{5\,1}$ (wherein $R^{5\,1}$ represents an amino acid residue, an amino acid benzyl ester residue, a benzyloxycarbonylamino-lower alkylamino group or an amino-monolower alkylamino group), or a group represented by the following general formula:



wherein $R^{5\,2}$ and $R^{5\,3}$ may be the same or different and each represents a hydrogen atom or a lower alkyl group or $R^{5\,2}$ and $R^{5\,3}$ may form a heterocyclic ring together with the nitrogen atom to which they are bonded.

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5,602,162

IMIDAZOLE, TRIAZOLE AND TETRAZOLE DERIVATIVES

Raymond Baker, Much Hadham; Victor G. Matassa, Furneux Pelham, and Leslie J. Street, Harlow, all of England, assignors to Merck, Sharp & Dohme Ltd., Hoddesdon, England

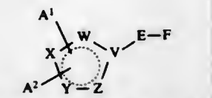
Division of Ser. No. 156,140, Nov. 22, 1993, Pat. No. 5,451,588, which is a division of Ser. No. 827,187, Jan. 28, 1992, Pat. No. 5,298,520. This application May 10, 1995, Ser. No. 438,621

Claims priority, application United Kingdom, Feb. 1, 1991, 9102222; Apr. 3, 1991, 9106917; Jun. 21, 1991, 9113415; Oct. 23, 1991, 9122451

Int. Cl.[6] A61K *31/41;* **C07D** *403/04;403/06*

U.S. Cl. 514—381 **8 Claims**

1. A compound of formula I, or a pharmaceutically acceptable salt thereof:



(I)

wherein the broken circle represents two non-adjacent double bonds in any position in the five-membered ring;

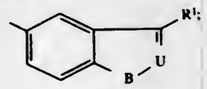
two, three or four of V, W, X, Y and Z represent nitrogen and the remainder represent carbon provided that, when two of V, W, X, Y and Z represent nitrogen and the remainder represent carbon, then the said nitrogen atoms are in non-adjacent positions within the five-membered ring;

A^1 represents hydrogen, methyl, ethyl, benzyl or amino;

A^2 represents a non-bonded electron pair when four of V, W, X, Y and Z represent nitrogen and the other represents carbon; or, when two or three of V, W, X, Y and Z represent nitrogen and the remainder represent carbon, A^2 represents hydrogen, methyl, ethyl, benzyl or amino;

E represents a bond or a straight or branched alkylene chain containing from 1 to 4 carbon atoms;

F represents a group of formula



U represents or C—R^2;

B represents N—R^3;

R^1 represents —CH_2-CHR^4-NR^6R^7; and

R^2, R^3, R^4, R^6 and R^7 independently represent hydrogen or C_{1-6} alkyl; with the exception of the compound N,N-dimethyl-2-[5-(1,2,4-triazol-1-ylmethyl)- 1H-indol-3-yl]ethylamine and pharmaceutically acceptable salts thereof.

5,602,163

IMIDAZOLE, TRIAZOLE AND TETRAZOLE DERIVATIVES

Raymond Baker; Victor G. Matassa, both of Hertfordshire, and Leslie J. Street, Essex, all of England, assignors to Merck, Sharp & Dohme Ltd., Hoddesdon Hertfordshire, England

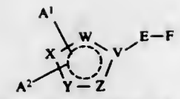
Division of Ser. No. 156,140, Nov. 22, 1993, Pat. No. 5,451,588, which is a division of Ser. No. 827,187, Jan. 28, 1992, Pat. No. 5,298,520. This application May 25, 1995, Ser. No. 452,185

Claims priority, application United Kingdom, Feb. 1, 1991, 9102222; Apr. 3, 1991, 9106917; Jun. 21, 1991, 9113415; Oct. 23, 1991, 9122451

Int. Cl.[6] A61K *31/41;* **C07D** *409/06*

U.S. Cl. 514—382 **8 Claims**

1. A compound of formula I, or a pharmaceutically acceptable salt or prodrug thereof:



(I)

wherein the broken circle represents two non-adjacent double bonds in any position in the five-membered ring;

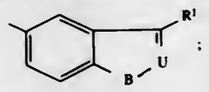
two, three or four of V, W, X, Y and Z represent nitrogen and the remainder represent carbon provided that, when two of V, W, X, Y and Z represent nitrogen and the remainder represent carbon, then the said nitrogen atoms are in non-adjacent positions within the five-membered ring;

A^1 is selected from the group consisting of hydrogen, hydrocarbon, a heterocyclic group, halogen, cyano, trifluoromethyl , —OR^z, —SR^z, —NR^zR^y, —NR^zCOR^y, —$NR^zCO_2R^y$, —$NR^zSO_2R^y$, and —$NR^zCTNR^zR^y$; wherein R^z and R^y independently represent hydrogen, hydrocarbon or a heterocyclic group as defined above, or R^z and R^y together represent a C_{2-6} alkylene group; with the proviso that in the radicals —OR^z and —SR^z, R^z is C_{1-6} alkyl;

A^2 represents a non-bonded electron pair when four of V, W, X, Y and Z represent nitrogen and the other represents carbon; or, when two or three of V, W, X, Y and Z represent nitrogen and the remainder represent carbon, A^2 is selected from the group consisting of hydrogen, hydrocarbon a heterocyclic group as defined above, halogen cyano, trifluoromethyl, —OR^z, —SR^z, —NR^zRy, —NR^zCORY, —$NR^zCO_2R^y$, —$NR^zSO_2R^y$, and —$NR^zCTNR^zR^y$; wherein R^z and R^y are as defined above; and wherein the hydrocarbon and heterocyclic group, can be substituted by one or more groups selected from C_{1-6} alkyl, adamantyl, phenyl, halogen, C_{1-6} haloalkyl, C_{1-6} aminoalkyl, trifluoromethyl, C_{1-6} alkoxy, phenyloxy, oxo, C_{1-3} alkylenedioxy, nitro, cyano, carboxy, C_{2-6} alkoxycaxbonyl, C_{2-6} alkoxy-carbonyl(C_{1-6})alkyl, C_{2-6} alkylcarbonyloxy, phenylcarbonyloxy, C_{2-6} alkylcarbonyl, phenylcarbonyl, C_{1-6} alkylthio, C_{1-6} alkylsulphinyl, C_{1-6} alkylsulphonyl, phenylsulphonyl, —NR^yR^w, —NR^yCOR^w, —$NR^ySO_2R^w$, —$NR^ySO_2R^w$, —$CH_2NR^ySO_2R^w$, —$NHCONR^yR^w$, —$CONR^yR^w$, —$SO_2NR^yR^w$, and —$CH_2SO_2NR^y$ R^w in which R^y and R^w independently represent hydrogen, C_{1-6} alkyl, phenyl or phenyl(C_1alkyl, or R^y and R^w together represent a C_{2-6} alkylene group;

E represents a bond or a straight or branched alkylene chain containing from 1 to 4 carbon atoms;

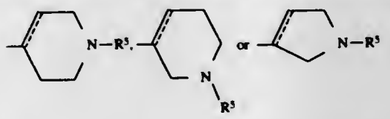
F represents a group of formula



U represents C—R^2;

B represents oxygen, or sulphur;

R^1 represents —CH_2—CHR^4—NR^6R^7 or a group of formula



in which the broken line represents an optional chemical bond;

R^2, R^4, R^5, R^6 and R^7 independently represent hydrogen or C_{1-6} alkyl;

R^z and R^y independently represent hydrogen, hydrocarbon or a heterocyclic group, or R^z and R^y together represent a C_{2-6} alkylene group;

R^z represents hydrogen, hydrocarbon or a heterocyclic group;

T represents oxygen, sulphur or a group of formula ═N—G; and

G represents hydrocarbon, a heterocyclic group or an electron-withdrawing group selected from cyano, nitro, —COR^z, CO_2R^z and SO_2R^z; and wherein in each instance "hydrocarbon" represents C_{1-6}alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, C_{3-7}cycloalkyl, C_{3-7}cycloalkyl(C_{1-6})alkyl, phenyl or phenyl(C_{1-6})alkyl; in each instance "heterocyclic group" represents C_{3-7}heterocycloalkyl or C_{3-7}heterocycloalkyl(C_{1-6})alkyl wherein heterocycloalkyl is selected from azetidinyl, pyrrolidyl, piperidyl, piperazinyl, and morpholinyl; and in each instance "heteroaryl" is selected from pyridyl, quinolyl, isoquinolyl, pyridizinyl, pyrazinyl, pyranyl, furyl, benzofuryl, dibenzofuryl, thienyl, benzthienyl imidazolyl, oxadiazolyl and thiadiazolyl.

5,602,164

ANTI-OBESITY DRUGS

Meir Shimitzky, Kfar Shmaryahu, and Avner Shenfeld, Rehovot, both of Israel, assignors to Senyorina Ltd., Kfar Shmaryahu, Israel

Continuation of Ser. No. 524,961, Sep. 8, 1995, which is a continuation-in-part of Ser. No. 325,422, Dec. 19, 1994, abandoned. This application Mar. 18, 1996, Ser. No. 616,948

Claims priority, application Israel, Apr. 28, 1992, 101708

Int. Cl.[6] A61K *31/415;31/40;31/235;31/24*

U.S. Cl. 514—400 **2 Claims**

1. A method of treatment of obesity, comprising administering to an individual in need thereof, an effective amount of an active compound having the general formula I:

$$R_4—(CH_2)_{13\ CO—N(R1)}—CH(R_2)—CO(—R_3) \quad \text{(I)}$$

where

R_1 represents H or CH_3;

R_2 represents a side chain of a naturally occurring amino acid;

R_3 represents OH, OCH_2CH_3 or NH_2;

n is 6–18 and

R_4 represents CH_3 or a group having the feneral Formula II:

$$R_3—CO—CH(R_2)—N(R_1)—CO— \quad \text{(II)}$$

where

R_1, R_2 and R_3 have the above meanings.

5,602,165

TRANSDERMAL ABSORPTIVE DRUG FORMULATION

Shinji Kamiji, Tokyo; Jun Imai, Kanagawa-ken, and Hiromichi Kodaira, Tochigi-ken, all of Japan, assignors to Kyorin Seiyaku Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 97,319, Jul. 26, 1993, abandoned, which is a continuation of Ser. No. 283,246, Dec. 12, 1988, abandoned. This application May 10, 1994, Ser. No. 240,962

Claims priority, application Japan, Dec. 10, 1987, 62-312593

Int. Cl.[6] A61K *31/415*

U.S. Cl. 514—406 **10 Claims**

1. A transdermal absorptive drug formulation containing an anti-bronchial asthma effective amount of 3-isobutyryl-2-isopropylpyrazolo[1,5-a]pyridine.

5,602,166

CYTOKINE INHIBITORS

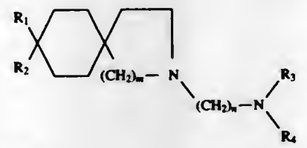
Alison M. Badger, Bryn Mawr, and Wanda B. High, Wayne, both of Pa., assignors to SmithKline Beecham Corporation, Philadelphia, Pa.

Continuation of Ser. No. 887,628, May 22, 1992, abandoned, which is a continuation of Ser. No. 657,578, Feb. 19, 1991, abandoned. This application Oct. 15, 1993, Ser. No. 138,178

Int. Cl.[6] A61K *31/40;31/44*

U.S. Cl. 514—409 **12 Claims**

1. A method of treating bone resorption disease in a mammal, including a human, in need thereof which comprises administering to such mammal an effective amount of a compound of the Formula



Formula (I)

wherein:

n is 3–7;

m is 1 or 2;

R_1 and R_2 are the same or different and are selected from hydrogen or straight chain, branched chain or cyclic alkyl, provided that the total number of carbon atoms contained by R_1 and R_2 when taken together is 5–10; or R_1 and R_2 are joined together to form a cyclic alkyl group having 3–7 carbon atoms;

R_3 and R_4 are the same or different and are selected from hydrogen or straight chain alkyl having 1–3 carbon atoms; or R_3 and R_4 are joined together with the nitrogen to form a heterocyclic group having 5–8 atoms; or a pharmaceutically acceptable salt or hydrate or solvate thereof.

5,602,167

4-ARYLCYCLOHEPTA[C] PYRROLE ANALGESICS

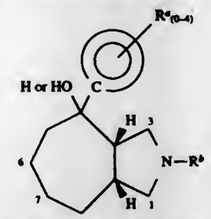
Richard J. Carmosin, Quakertown; John R. Carson, Norristown, and Philip M. Pitis, North Wales, all of Pa., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed May 17, 1995, Ser. No. 443,141

Int. Cl.[6] C07D *209/02;* **A61K** *31/395*

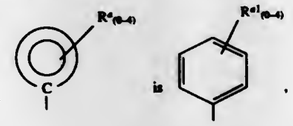
U.S. Cl. 514—412 **12 Claims**

1. A compound having analgesic activity of the general formula: I



including the purified stereoisomers and pharmaceutically acceptable salts thereof,

wherein



is

R^{a1} is selected from the group consisting of halogen, C_{1-4}alkyl, substituted C_{1-4}alkyl (wherein the substituent is C_{1-4}alkoxy, hydroxy or perhalo), C_{1-4}alkoxy, substituted C_{1-4}alkoxy (wherein the substituent is perfluoro), di(C_{1-4}alkyl)amino, C_{1-4}alkylsulfonyl and phenyl;

R^{a2} is selected from the group consisting of halogen or C_{1-4}alkyl; and

R^b is selected from the group consisting of hydrogen, C_{1-4} alkyl, C1–4alkenyl, C_{1-6}cycloalkylmethyl and C_{1-6}cycloalkyl;

with the proviso that where there is a 4-position hydroxy then such is trans to the 3a and 6a hydrogens.

5,602,168

1-(N'-(ARYLALKYLAMINOALKYL)) AMINOISOINDOLES; DOPAMINE RECEPTOR SUBTYPE SPECIFIC LIGANDS

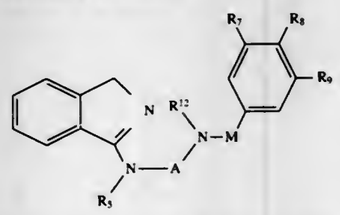
Xiao-shu He, Branford, Conn.; Brian de Costa, Toronto, Canada, and Jan W. F. Wasley, Madison, Conn., assignors to Neurogen Corporation, Branford, Conn.

Filed Jun. 5, 1995, Ser. No. 464,336

Int. Cl.[6] A61K *31/40;31/33;* **C07D** *209/44;217/02;263/16*

U.S. Cl. 514—416 **7 Claims**

1. A compound of the formula:



or the pharmaceutically acceptable salts thereof wherein:

A represents alkylene of 2–5 carbon atoms;

M represents alkylene of 2–5 carbon atoms;

R_5 represents hydrogen or alkyl of 1–6 carbon atoms;

R_7, R_8, and R_9 independently represent hydrogen, halogen, hydroxy, lower alkyl, or lower alkoxy; and

R_{12} represents hydrogen or alkyl of 1–6 carbon atoms.

5,602,169

3-SUBSTITUTED OXINDOLE DERIVATIVES AS POTASSIUM CHANNEL MODULATORS

Piyasena Hewawasam, Middletown; Nicholas A. Meanwell, East Hampton, and Valentin K. Gribkoff, Wallingford, all of Conn., assignors to Bristol-Myers Squibb Company, Princeton, N.J.

Continuation-in-part of Ser. No. 477,047, Jun. 7, 1995. This application Apr. 19, 1996, Ser. No. 635,316

Int. Cl.[6] A61K *31/40;* **C07D** *209/12*

U.S. Cl. 514—418 **10 Claims**

1. A compound which is (3S)-(+)-(5-chloro-2-methoxyphenyl)-1,3-dihydro-3-fluoro-6-(trifluoromethyl)-2H-indol-2-one.

5,602,170

MEDICINAL THIOPHENE COMPOUNDS

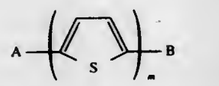
Ching-Te Chang, Taipei; Kuo-Mou Chen, Hsinchu; Wann-Huang Liu, Hsinchu; Fen-Lan Lin, Hsinchu, and Rong-Tsun Wu, Taipei, all of Taiwan, assignors to Industrial Technology Research Institute, Taiwan

Continuation-in-part of Ser. No. 838,516, Feb. 19, 1992, abandoned. This application Sep. 8, 1994, Ser. No. 302,278

Int. Cl.[6] A61K *31/38*

U.S. Cl. 514—444 **19 Claims**

1. A method of treating inflammation comprising administering to a subject in need thereof a pharmaceutical composition which contains an effective amount of a compound of the following formula:



wherein m is 2–4; and each of A and B, independently, is H, C_{1-7} alkyl, C_{2-7} alkenyl, C_{2-7} alkynyl, $(CH_2)_oCHO$, $(CH_2)_oCOOH$, C_{1-7} alkoxy, C_{2-7} alkoxyalkyl, C_{1-7} hydroxyalkyl, CN, NO_2, halogen, $CH(OR^1)$ $CO.R^1$, NR^2R^3 or its acid salt, $CO.NR^2R^3$, $CHR^1NR^2R^3$ or its acid salt, $CH{=}NR^2$, $C{=}CR^4$, $CR^1{=}CR^5R^6$, $CO.CH{=}CHR^7$, $CH{=}CHR^8$, or $COOR^9$; in which each of n and o, independently, is 0–4; R^1 is C_{1-4} alkyl or C_{1-4} acyl; each of R^2 and R^3, independently, is H, C_{1-4} alkyl, or C_{1-4} hydroxyalkyl; R^4 is H, C_{1-4} alkyl, C_{2-4} alkenyl COR^2, $COOR^{10}$, C_{1-4} hydroxyalkyl or its acid ester or 2-tetrahydropyranyl ether, C_{1-4} dihydroxyalkyl or its acid ester or 2-tetrahydropyranyl ether, C_{1-4} halogenated alkyl; OR^1, or NHR^7; each of R^5 and R^6, independently, is H, CHO, COR^1, COOH, $COOR^9$, CN, or halogen; R^7 is H, C_{1-4} alkyl, 2-thienyl, mono-substituted phenyl, or di-substituted phenyl; R^8 is $COOR^2$, CO.CHO, C_{1-4} hydroxyalkyl or its acid ester or 2-tetrahydropyranyl ether; and R^9 is H, C_{1-4} alkyl, phenyl, mono-substituted phenyl, di-substituted phenyl, or 2-thienyl.

5,602,171

METHODS OF INHIBITING PHOSPHATASE ACTIVITY AND TREATMENT OF DISORDERS ASSOCIATED THEREWITH USING NAPHTHOPYRONES AND DERIVATIVES THEREOF

Peng C. Tang, Moraga, and Gerald McMahon, Kenwood, both of Calif., assignors to Sugen Inc., Redwood City, Calif.

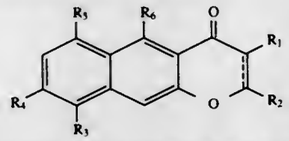
Filed Jun. 7, 1995, Ser. No. 481,955

Int. Cl.[6] A61K *31/35;* **C07D** *309/32*

U.S. Cl. 514—455 **12 Claims**

1. A method of inhibiting protein tyrosine phosphatase activity which comprises administering to a mammal an effective amount of a compound having the formula (I):

Formula I



or a pharmaceutically acceptable salt thereof, wherein:

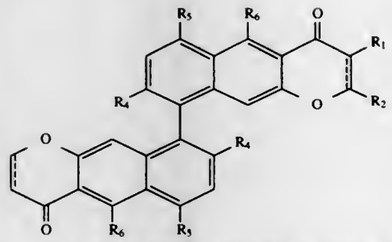
— represents a single or double bond;

R1, R2, which are the same or different, are C1 to C4 substituted or unsubstituted alkyl group or a substituted or unsubstituted aryl group;

R4, R5, R6, which are the same or different, are H, OH, substituted or unsubstituted C1 to C4 alkoxy, substituted or unsubstituted aryl, substituted or unsubstituted C1 to C6 alkyl, alkylaryl, arylalkoxy, ester, carboxylic acid, carboxamide, carbamate, or cyano;

R3 is a substituent identical to that of formula I providing a compound of formula II:

Formula II



or a pharmaceutically acceptable salt thereof; or R_3 is a substituted or unsubstituted aryl group which links to formula I directly, or by amide, carbon or ketone groups.

5,602,172

METHODS OF INHIBITING *PNEUMOCYSTIS CARINII* PNEUMONIA, *GIARDIA LAMBLIA*, AND CRYPTOSPORIDIUM AND COMPOUNDS USEFUL THEREFOR

David W. Boykin, Atlanta, Ga.; Christine C. Dykstra, Chapel Hill, N.C.; Richard R. Tidwell, Pittsboro, N.C.; James E. Hall, Chapel Hill, N.C.; W. David Wilson; Arvind Kumar, both of Atlanta, Ga., and Byron L. Blagburn, Auburn, Ala., assignors to The University of North Carolina at Chapel Hill, Chapel Hill, N.C.; Auburn University, Auburn, Ala., and Georgia State University Research Foundation, Inc., Atlanta, Ga.

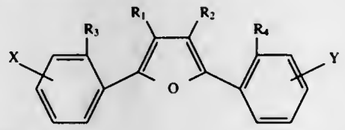
Continuation of Ser. No. 339,487, Nov. 14, 1994, abandoned, which is a continuation-in-part of Ser. No. 238,766, May 6, 1994. This application May 30, 1995, Ser. No. 453,276

Int. Cl.[6] A61K *31/34*

U.S. Cl. 514—461 **19 Claims**

1. A method of treating *Pneumocystis carinii* pneumonia in a subject in need of such treatment, comprising administering to said subject a compound of Formula (I):

(I)

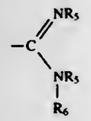


wherein:

R_1 and R_2 are each independently selected from the group consisting of H, loweralkyl, aryl, alkylaryl, aminoalkyl, aminoaryl, halogen, oxyalkyl, oxyaryl, or oxyarylalkyl;

R_3 and R_4 are each independently selected from the group consisting of H, loweralkyl, oxyalkyl, alkylaryl, aryl, oxyaryl, aminoalkyl, aminoaryl, or halogen; and

X and Y are located in the para or meta positions and are selected from the group consisting of H, loweralkyl, oxyalkyl, and



wherein:

each R_5 is independently selected from the group consisting of H, loweralkyl, alkoxyalkyl, hydroxyalkyl, aminoalkyl, alkylaminoalkyl, cycloalkyl, aryl, or alkylaryl or two R_5 groups together represent C_2-C_{10} alkyl, hydroxyalkyl, or alkylene; and

R_6 is H, hydroxy, loweralkyl, alkoxyalkyl, hydroxyalkyl, aminoalkyl, alkylamino, alkylaminoalkyl, cycloalkyl, hydroxycycloalkyl, alkoxycycloalkyl, aryl, or alkylaryl;

or a pharmaceutically acceptable salt thereof, in an amount effective to treat *Pneumocystis carinii* pneumonia.

5,602,173

COMPOUNDS USEFUL FOR TREATING ALLERGIC AND INFLAMMATORY DISEASES

Siegfried B. Christensen, IV, Philadelphia, Pa., assignor to SmithKline Beecham Corporation, Philadelphia, Pa.

PCT No. PCT/US93/01988, § 371 Date Sep. 29, 1994, § 102(e) Date Sep. 29, 1994, PCT Pub. No. WO93/19747, PCT Pub. Date Oct. 14, 1993

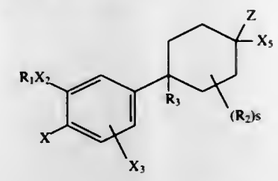
Continuation-in-part of Ser. No. 968,760, Oct. 30, 1992, abandoned, which is a continuation-in-part of Ser. No. 862,112, Apr. 2, 1992, abandoned. This PCT application Mar. 5, 1993, Ser. No. 313,096

Int. Cl.[6] A61K *31/275;* **C07C** *255/50*

U.S. Cl. 514—475 **5 Claims**

I. A compound of Formula (I):

(I)



wherein:

R_1 is $-(CR_4R_5)_nC(O)O(CR_4R_5)_mR_6$, $-(CR_4R_5)_nC(O)NR_4(CR_4R_5)_mR_6$,$-(CR_4R_5)_nO(CR_4R_5)_mR_6$, or $-(CR_4R_5)_rR_6$ wherein the alkyl moieties may be optionally substituted with one or more halogens;

m is 0 to 2;

n is 1 to 4;

r is 0 to 6;

R_4 and R_5 are independently selected from hydrogen or a C_{1-2} alkyl;

R_6 is hydrogen, methyl, hydroxyl, aryl, halo substituted aryl, aryloxyC_{1-13} alkyl, halo substituted aryloxyC_{1-13} alkyl, indenyl, indenyl, C_{7-11} polycycloalkyl C_{3-6} cycloalkyl, or a C_{4-6} cycloalkyl containing one or two unsaturated bonds, wherein the cycloalkyl moiety may be optionally substituted by 1 to 3 methyl groups or one ethyl group;

provided that:

a) when R_6 is hydroxyl, then m is 2; or

b) when R_6 is hydroxyl, then r is 2 to 6; or

c) when n is 1 and m is 0, then R_6 is other than H in $-(CR_4R_5)_nO(CR_4R_5)_mR_6$;

X is YR_2, halogen, nitro, NR_4R_5, or formyl amine;

Y is O;

m' is a number having a value of 0, 1, or 2 ;

X_2 is O or NR_8;

X_3 is hydrogen or X;

R_2 is independently selected from $-CH_3$ or $-CH_2CH_3$ optionally substituted by 1 or more halogens;

s is 0 to 4;

R_3 is CN;

Z is $CR_8R_8OR_{14}$, $CR_8R_8OR_{15}$, CR_8R_8SR14, $CR_8R_8SR_{15}$, $CR_8R_8S(O)_{m'}R_7$, $CR_8R_8NR_{10}R_{14}$, $CR_8R_8NR_{10}S(O)_2NR_{10}R_{14}$, $CR_8R_8NR_{10}S(O)_2R_7$, $CR_8NR_{10}C(Y')R_{14}$, $CR_8R_8NR_{10}C(O)OR_7$, $CR_8R_8NR_{10}C(Y')NR_{10}R_{14}$, $CR_8R_8NR_{10}C(NCN)NR_{10}R_{14}$, $CR_8R_8NR_{10}C(CR_4NO_2)NR_{10}R_{14}$, $CR_8R_8NR_{10}C(NCN)SR_9$, $CR_8R_8NR_{10}C(CR_4NO_2)SR_9$, $CR_8R_8C(O)OR_{14}$, $CR_8R_8C(Y')NR_{10}R_{14}$, $CR_8R_8C(NR_{10})NR_{10}R_{14}$, CR_8R_8CN, CR_8R_8(tetrazolyl), CR_8R_8(imidazolyl),

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CR_8R_8(imidazolidinyl), CR_8R_8(pyrazolyl), CR_8R_8(thiazolyl), CR_8R_8(thiazolidinyl), CR_8R_8(oxazolyl), CR_8R_8(oxazolidinyl), CR_8R_8(triazolyl), CR_8R_8(isoxazolyl), CR_8R_8(oxadiazolyl), CR_8R_8(thiadiazolyl), CR_8R_8(morpholinyl), CR_8R_8(piperidinyl), CR_8R_8(piperazinyl), CR_8R_8(pyrrolyl), $CR_8R_8C(NOR_8)R_{14}$, $CR_8R_8C(NOR_{14})R_8$, $CR_8R_8NR_{10}C(NR_{10})SR_9$, $CR_8R_8NR_{10}C(NR_{10})NR_{10}R_{14}$, $CR_8R_8NR_{10}C(O)C(O)NR_{10}R_{14}$, or $CR_8R_8NR_{10}C(O)C(O)OR_{14}$;

Y' is O;

R_7 is $-(CR_4R_5)_qR_{12}$ or C_{1-6} alkyl wherein the R_{12} or C_{1-6} alkyl group is optionally substituted one or more times by C_{1-2} alkyl optionally substituted by one to three fluorines, —F, —Br, —Cl, $—NO_2$, $—NR_{10}R_{11}$, $—C(O)R_8$, $—C(O)OR_8$, $—OR_8$, —CN, $—C(O)NR_{10}R_{11}$, $—OC(O)NR_{10}R_{11}$, $—OC(O)R_8$, $—NR_{10}C(O)NR_{10}R_{11}$, $—NR_{10}C(O)R_{11}$, $—NR_{10}C(O)OR_9$, $—C(NR_{10})NR_{10}R_{11}$, $—C(NCN)NR_{10}R_{11}$, $—C(NCN)SR_9$, $—NR_{10}C(NCN)SR_9$, $—NR_{10}C(NCN)NR_{10}R_{11}$, $—NR_{10}S(O)_2R_9$, $—S(O)_mR_9$, $—NR_{10}C(O)C(O)NR_{10}R_{11}$, $NR_{10}C(O)C(O)R_{10}$;

q is 0, 1, or 2;

R_{12} is C_{3-7} cycloalkyl, (2-, 3- or 4-pyridyl), pyrimidyl, pyrazolyl, (1- or 2-imidazolyl), thiazolyl, triazolyl, pyrrolyl, piperazinyl, piperidinyl, morpholinyl, furanyl, (2- or 3-thienyl), (4- or 5-thiazolyl), quinolinyl, naphthyl, or phenyl;

R_8 is independently selected from hydrogen or R_9;

$R_{8'}$ is R_8 or fluorine;

R_9 is C_{1-4} alkyl optionally substituted by one to three fluorines;

R_{10} is OR_8 or R_{11};

R_{11} is hydrogen, or C_{1-4} alkyl optionally substituted by one to three fluorines; or when R_{10} and R_{11} are as $NR_{10}R_{11}$ they may together with the nitrogen form a 5 to 7 membered ring optionally containing at least one additional heteroatom selected from O, N, or S;

R_{14} is hydrogen or R_7;

R_{15} is $C(O)R_{14}$, $C(O)NR_4R_{14}$, $S(O)_2R_7$, or $S(O)_2NR_4R_{14}$;

or the pharmaceutically acceptable salts thereof.

5,602,174

TREATMENT

Harald Maschler, Gronau, Germany, assignor to Beecham Wuelfing GmbH & Co., Munich, Germany

Division of Ser. No. 845,522, Mar. 4, 1992, abandoned. This application Jun. 1, 1995, Ser. No. 458,046

Claims priority, application United Kingdom, Feb. 15, 1986, 8603765 U

Int. Cl.[6] A61K *31/27*; **C07C** *271/44*

U.S. Cl. 514—478 **3 Claims**

1. A compound of formula (IIa):



(IIa)

wherein R_1 and R_4 each represent 3,4 dimethoxyphenyl; $R_2{}^2$ is CO_2R^7 wherein R_7 is phenyl, 2-, 3- and 4-nitrophenyl, 3,5-dinitrophenyl, 3-methoxyphenyl, 3-methoxy-6-methylphenyl, 2-trifluoromethylphenyl, 2,4,6 -trimethylphenyl, 2,6-dichlorophenyl, 4-cyanophenyl, 4-chlorophenyl and 4-methylphenyl; and R_3 is hydrogen.

5,602,175

RETROVIRAL PROTEASE INHIBITORS

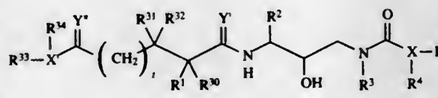
John J. Talley, Chesterfield, Mo., and Kathryn L. Reed, Raleigh, N.C., assignors to G.D. Searle & Co., Chicago, Ill.

Division of Ser. No. 886,663, May 20, 1992, abandoned, which is a continuation-in-part of Ser. No. 789,643, Nov. 14, 1991, abandoned, which is a continuation-in-part of Ser. No. 615,210, Nov. 19, 1990, abandoned. This application May 25, 1995, Ser. No. 450,606

Int. Cl.[6] A61K *31/19*; **C07C** *233/77*

U.S. Cl. 514—487 **47 Claims**

1. Compound represented by the formula:



or a pharmaceutically acceptable salt, prodrug or ester thereof, wherein t is either 0 or 1;

R^1 represents hydrogen, $—CH_2SO_2NH_2$, $—CO_2CH_3$, $—CH_2CO_2CH_3$, $—CONH_2$, $—CONHCH_3$, $CON(CH_3)_2$—$CH_2CONHCH_3$, $—CH_2CON(CH_3)_2$, hydroxy, aralkyl, $—CH_2C(O)R^*$, alkyl, alkenyl, alkynyl and cycloalkyl radicals and amino acid side chains selected from asparagine, S-methyl cysteine and the corresponding sulfoxide and sulfone derivatives thereof, glycine, leucine, isoleucine, alloisoleucine, tert-leucine, phenylalanine, ornithine, alanine, histidine, norleucine, glutamine, valine, threonine, serine, aspartic acid, beta-cyano-alanine and allo-threonine side chains, where R^* represents R^{38} or $—NR^{38}R^{39}$and R^{38} and R^{39} represent hydrogen or an alkyl radical having from 1 to about 4 carbon atoms;

R^2 represents alkyl, aryl, cycloalkyl, cycloalkylalkyl, and aralkyl radicals which radicals are optionally substituted with a group selected from alkyl, halogen $—NO_2$, OR^9, and SR^9 radicals wherein R^9 represents hydrogen and alkyl radicals;

R^3 represents alkyl, alkenyl, alkynyl, hydroxyalkyl, alkoxyalkyl, cycloalkyl, cycloalkylalkyl, heterocycloalkyl, heteroaryl, heterocycloalkylalkyl, aryl, aralkyl, heteroaralkyl, aminoalkyl, and mono- and disubstituted aminoalkyl radicals where said substituents are selected from alkyl, aryl, aralkyl, cycloalkyl, cycloalkylalkyl, heteroaryl, heteroalkyl, heterocycloalkyl, and heterocycloalkylalkyl radicals;

R^4 and R^5 independantly represent hydrogen and radicals as defined by R^3, or together with the carbon atom to which they are bonded represent cycloalkyl, heterocycloalkyl, aryl and heteroaryl radicals;

R^{30}, R^{31} and R^{32} represent radicals as defined for R^1, or one of R^1 and R^{30} together with one of R^{31} and R^{32} and the carbon atoms to which they are attached form a cycloalkyl radical;

R^{33} and R^{34} independently represent hydrogen and radicals as defined for R^3, or R^{33} and R^{34} together with X' represent cycloalkyl, aryl, heterocyclyl and heteroaryl radicals, provided that when X' is O, R^{34} is absent;

X represents O and $C(R^{17})$, wherein R^{17} represents hydrogen and alkyl radicals;

X' represents $C(R^{17})$, N or O; and

Y, Y', Y" independently represent O and S.

5,602,176

PHENYL CARBAMATE

Albert Enz, Basel, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

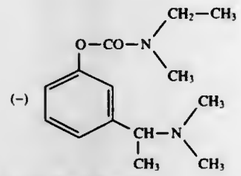
Continuation of Ser. No. 353,848, Dec. 24, 1994, abandoned, which is a continuation of Ser. No. 110,622, Aug. 23, 1993, abandoned, which is a continuation of Ser. No. 6,904, Jan. 21, 1993, abandoned, which is a continuation of Ser. No. 925,365, Aug. 4, 1992, abandoned, which is a continuation of Ser. No. 859,171, Mar. 27, 1992, abandoned, which is a continuation of Ser. No. 750,334, Aug. 27, 1991, abandoned, which is a continuation of Ser. No. 664,189, Mar. 4, 1991, abandoned, which is a continuation of Ser. No. 589,343, Sep. 27, 1990, abandoned, which is a continuation of Ser. No. 408,640, Sep. 18, 1989, abandoned, which is a continuation of Ser. No. 285,177, Dec. 15, 1988, abandoned, which is a continuation of Ser. No. 162,568, Mar. 1, 1988, abandoned. This application Jun. 6, 1995, Ser. No. 466,502

Claims priority, application Germany, Mar. 4, 1987, 37 06 914.4

Int. Cl.[6] A61K *31/27*

U.S. Cl. 514—490 **12 Claims**

1. The (S)-[N-ethyl-3-[(1-dimethylamino)ethyl]-N-methyl-phenyl-carbamate] enantiomer of formula I substantially free of its (R) isomer



I

in free base or acid addition form.

5,602,177

FORMULATIONS OF DELTAMETHRIN

Rudolf Heinrich, Kelkheim; Thomas Maier, Frankfurt am Main; Jean Kocur, Hofheim am Taunus, and Rainer Schlicht, Bad Camberg, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Continuation of Ser. No. 830,644, Feb. 4, 1992, abandoned. This application Mar. 15, 1995, Ser. No. 404,940

Claims priority, application Germany, Feb. 6, 1991, 41 03 467.8; Aug. 22, 1991, 41 27 757.0

Int. Cl.[6] A01N *25/12*;*53/08*

U.S. Cl. 514—521 **3 Claims**

1. Water-emulsifiable granules having an average particle diameter of 0.3 to 5 mm, which granules comprise

2 to 70% by weight of deltamethrin and

10 to 80% by weight of an at least partially water-soluble shell-forming structural material, which shell-forming structural material is comprised of a polyvinyl alcohol obtained by partial hydrolysis of polyvinyl acetate, or of a mixture of such polyvinyl alcohols.

5,602,178

BATH PRODUCTS CONTAINING MENTHYL LACTATE

Robert Caroselli, East Brunswick; Theodore Clemente, Jr., Belle Mead, and Sandra E. Sandbeck, Metuchen, all of N.J., assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Filed Nov. 14, 1994, Ser. No. 339,377

Int. Cl.[6] A01N *37/00*; **A61K** *31/215*

U.S. Cl. 514—529 **5 Claims**

1. A method of achieving a relaxing, invigorating, tingling bath in the substantial absence of a menthol aroma, comprising incorporating into said bath a bath product formulation comprising menthyl lactate in an amount of about 0.5% to about 15% by weight of said formulation together with a bath product suitable carrier therefor.

5,602,179

OPTICALLY-ACTIVE DERIVATIVES OF (R) 5-PENTYLAMINO-5-OXOPENTANOIC ACID WITH ANTAGONISTIC ACTIVITY TOWARDS CHOLECYSTOKININ AND A METHOD FOR THEIR PREPARATION

Francesco Makovec; Rolando Chisté, both of Monza; Walter Peris, Milan, and Luigi Rovati, Monza, all of Italy, assignors to Rotta Research Laboratorium S.p.A., Milan, Italy

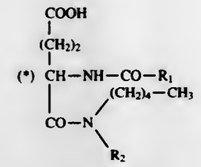
Division of Ser. No. 131,573, Oct. 4, 1993, Pat. No. 5,391,574, which is a continuation of Ser. No. 902,561, Jun. 22, 1992, abandoned, which is a continuation of Ser. No. 425,148, Oct. 23, 1989, abandoned, which is a continuation of Ser. No. 152,724, Feb. 5, 1988, abandoned. This application Dec. 1, 1994, Ser. No. 352,818

Claims priority, application Italy, Feb. 5, 1987, 67076//87

Int. Cl.[6] A61K *31/195*

U.S. Cl. 514—563 **16 Claims**

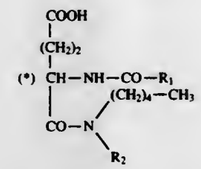
1. Pharmaceutically active derivatives of (R) 5-pentylamino-5-oxopentanoic acid having the formula:



(I)

in which R_1 is 3,4-dichlorophenyl and R_2 is selected from the group consisting of pentyl group and 3-methoxypropyl group in which the substituents on the central chiral group (marked with an asterisk in formula (I)) have the R (rectus) conformation, and pharmaceutically-acceptable salts thereof.

2. A pharmaceutical preparation including, as the active constituent, an anti-cholecystokinin effective amount of a compound selected from pharmaceutically active derivatives of (R) 5-pentylamino-5-oxopentanoic acid having the formula:



(I)

in which R_1 is 3,4-dichlorophenyl and R_2 is selected from the group consisting of the pentyl group and the 3-methoxypropyl group in which the substituents on the central chiral group (marked with an asterisk in formula (I)) have the R (rectus) conformation, and pharmaceutically-acceptable salts thereof.

3. A pharmaceutical preparation as in claim 2, further including pharmaceutically-acceptable inactive ingredients selected from the group consisting of excipients, binders, flavourings, dispersants, preservatives, humectants and mixtures thereof.

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5,602,180

METHOD OF ADMINISTERING EDTA COMPLEXES

Ronald Bennett, Laughlin, Nev., assignor to World Health Group, Laughlin, Nev.

Filed Mar. 31, 1995, Ser. No. 416,038

Int. Cl.[6] A01N *37/00;* **A01J** *25/12*

U.S. Cl. 514—578 **2 Claims**

1. A method of administering EDTA complexes to a patient, said method comprising steps of

forming a suppository containing disodium EDTA and controlled-release agents which release the disodium EDTA over a period of about three to four hours after placement in the anus, and then

administering the suppository to the patient.

5,602,181

NAPHTHYL ETHERS, THEIR PREPARATION, COMPOSITIONS CONTAINING THEM AND THEIR USE

Wassilios Grammenos, Ludwigshafen; Reinhard Kirstgen, Neustadt; Hartmann König, Limburgerhof; Klaus Oberdorf, Heidelberg; Hubert Sauter, Mannheim; Gisela Lorenz, Neustadt, and Eberhard Ammermann, Heppenheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

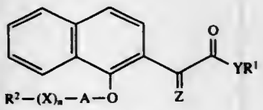
Filed Oct. 12, 1994, Ser. No. 321,770

Claims priority, application Germany, Oct. 12, 1993, 43 34 709.6

Int. Cl.[6] C07C *321/28;233/09*

U.S. Cl. 514—618 **11 Claims**

1. A naphthyl ether of formula I



(I)

wherein:

A is unsubstituted or substituted phenyl;

n is 1;

X is sulfur or nitrogen, the nitrogen atom carrying a radical selected from the group consisting of hydrogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_3–C_6-cycloalkyl, unsubstituted phenyl, substituted phenyl, unsubstituted benzyl and substituted benzyl;

Y is nitrogen, the nitrogen atom carrying a radical selected from the group consisting of hydrogen, C_1–C_4-alkyl and C_1–C_4-alkoxy;

Z is $CHOCH_3$, $NOCH_3$, $CHCH_3$ or $CHCH_2CH_3$;

R^1 is C_1–C_4-alkyl;

R^2 is unsubstituted or substituted C_1–C_6-alkyl, C_3–C_6-cycloalkyl, C_2–C_6-alkenyl, C_3–C_6-alkynyl, unsubstituted or substituted phenyl.

5,602,182

TASTE MASKING PSEUDOEPHEDRINE HCL CONTAINING LIQUIDS

Shankar D. Popli, Marlton, and Zenaida O. Go, Hammonton, both of N.J., assignors to American Home Products Corporation, Madison, N.J.

Division of Ser. No. 388,867, Jan. 30, 1995. This application Jun. 7, 1995, Ser. No. 481,109

Int. Cl.[6] A61K *9/10;31/135*

U.S. Cl. 514—653 **12 Claims**

1. A taste masked, liquid pharmaceutical composition comprising pseudoephedrine HCl and a liquid excipient base consisting essentially of water and per 100 milliliters of said base (i) about 5 to about 20 grams of polyethylene glycol having a molecular weight of about 1000 to about 2000, and (ii) about 0.05 to about 0.6 grams of sodium carboxymethyl cellulose, the weight ratio of said polyethylene glycol to said sodium carboxymethyl cellulose being between about 100:1 and about 20:1, the pH of the excipient base being between about 2.5 and about 5 and the spindle viscosity being between about 150 and about 1000 centipoises at 50 RPM, said pseudoephedrine HCl being dissolved in the liquid excipient base.

5,602,183

DERMATOLOGICAL WOUND HEALING COMPOSITIONS AND METHODS FOR PREPARING AND USING SAME

Alain Martin, Ringoes, and Ammunje S. Nayak, Great Meadows, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 53,922, Apr. 26, 1993, abandoned, which is a continuation of Ser. No. 663,500, Mar. 1, 1991, abandoned. This application May 22, 1995, Ser. No. 446,964

Int. Cl.[6] A61K *31/045;31/07*

U.S. Cl. 514—724 **23 Claims**

1. A therapeutic dermatological-wound healing composition useful to minimize and treat diaper dermatitis which comprises a therapeutically effective amount of:

(1) a buffering agent to maintain the pH of the dermatitis in a range from about 5 to about 8;

(2) an anti-inflammatory agent; and

(3) a wound healing composition, wherein the wound healing composition comprises:

(a) pyruvate selected from the group consisting of pyruvic acid, pharmaceutically acceptable salts of pyruvic acid, and mixtures thereof;

(b) an antioxidant; and

(c) a mixture of saturated and unsaturated fatty acids wherein the fatty acids are those fatty acids required for the repair of cellular membranes resuscitation of injured mammalian cells; wherein components a, b, and c are present in amounts sufficient to synergistically enhance wound healing.

5,602,184

MONOTERPENES, SESQUITERPENES AND DITERPENES AS CANCER THERAPY

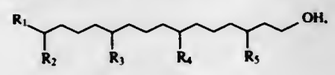
Charles E. Myers, Rockville; Jane Trepel, Bethesda; Edward Sausville, Silver Spring; Dvorit Samid, Rockville; Alexandra Miller, Hyattsville, and Gregory Curt, Rockville, all of Md., assignors to The United States of America as represented by Department of Health and Human Services, Washington, D.C.

Filed Mar. 3, 1993, Ser. No. 25,471

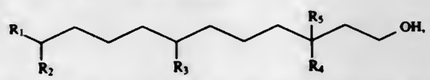
Int. Cl.[6] H61K *31/045*

U.S. Cl. 514—739 **19 Claims**

1. A method of treating prostate cancer comprising administering an effective amount of terpene to a mammal having prostate cancer, said terpene selected from the group consisting of a diterpene of the formula



and a sesquiterpene of the formula



wherein R_1, R_2, R_3, R_4, and R_5 are selected from the group consisting of a hydrogen and a lower alkyl group, and wherein the terpene contains at least one site of unsaturation.

5,602,185

SUBSTITUTED TRIFLUOROSTYRENE COMPOSITIONS

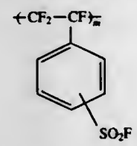
Charles Stone, Vancouver; Alfred E. Steck, West Vancouver, and Robert D. Lousenberg, North Vancouver, all of Canada, assignors to Ballard Power Systems Inc., Burnaby, Canada

Continuation-in-part of Ser. No. 124,924, Sep. 21, 1993, Pat. No. 5,422,411. This application Jun. 6, 1995, Ser. No. 480,098

Int. Cl.[6] C08J *5/22;* **C08F** *14/18*

U.S. Cl. 521—27 **45 Claims**

1. A polymeric composition comprising:



where m is an integer greater than zero.

5,602,186

RUBBER DEVULCANIZATION PROCESS

Ronald D. Myers; Peter Nicholson; John B. MacLeod, and Michael E. Moir, all of Calgary, Canada, assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Oct. 27, 1995, Ser. No. 549,593

Int. Cl.[6] C08J *11/10*

U.S. Cl. 521—41 **26 Claims**

1. A process for devulcanizing a rubber vulcanizate by desulfurization, comprising the steps of:

contacting rubber vulcanizate crumb with a solvent and an alkali metal to form a reaction mixture; heating the reaction mixture in the absence of oxygen and with mixing to a temperature sufficient to cause the alkali metal to react with sulfur in the rubber vulcanizate; and maintaining the temperature below that at which thermal cracking of the rubber occurs, thereby devulcanizing the rubber vulcanizate.

5,602,187

POLYETHYLENE TEREPHTHALATE DECONTAMINATION

Simon M. West, Williamston, Australia, assignor to Swig Pty Ltd., Malvern, Australia

Continuation-in-part of Ser. No. 331,669, Nov. 16, 1994, Pat. No. 5,504,121. This application Apr. 1, 1996, Ser. No. 625,125

Claims priority, application Australia, May 18, 1992, PL2470; Jan. 27, 1993, PL6951

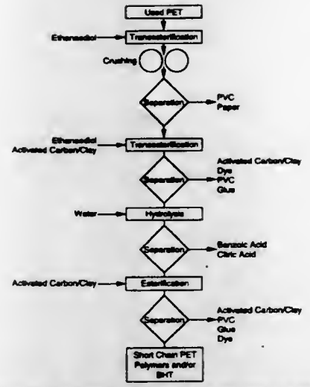
Int. Cl.[6] C08J *11/04*

U.S. Cl. 521—48.5 **32 Claims**

1. A process for removing contaminants from material containing polyethylene terephthalate ("PET") including the following steps:

(a) transesterifying the material containing PET by mixing ethanediol having a temperature at or about the boiling point of ethanediol with the material for a predetermined period of time to form a mixture containing embrittled PET; and

(b) crushing the mixture and separating uncrushed material from the crushed material which contains PET.



5,602,188

BIODEGRADABLE RESIN FOAM AND METHOD AND APPARATUS FOR PRODUCING SAME

Motoyasu Nakanishi, Fuji, Japan, assignor to Suzuki Sogyo Co., Ltd., Shizuoka, Japan

Filed Jul. 12, 1994, Ser. No. 274,038

Claims priority, application Japan, Jul. 13, 1993, 5-195378; Jul. 16, 1993, 5-199214; Jul. 16, 1993, 5-199215; Jul. 20, 1993, 5-201094; Jul. 20, 1993, 5-201095; Aug. 25, 1993, 5-232339; Oct. 29, 1993, 5-294198; Oct. 29, 1993, 5-294199; Oct. 29, 1993, 5-294200

Int. Cl.[6] C08J *9/08;* **B29D** *7/00*

U.S. Cl. 521—82 **40 Claims**

1. A method for producing a biodegradable resin foam comprising the steps of:

arranging an air-permeable forming mold in front of a cylinder formed at a front portion thereof with a narrowed opening

charging a biodegradable resin starting material containing biodegradable resin and moisture in the cylinder;

raising a temperature of the biodegradable resin to fluidize the biodegradable resin while forcibly transferring the biodegradable resin starting material toward the narrowed opening in the cylinder;

extruding the fluidized biodegradable resin from the cylinder into the air-permeable forming mold to rapidly release the biodegradable resin from a heated and pressurized environment in the cylinder to foam the biodegradable resin by an expansion force caused by vaporization of the moisture resulting from rapidly releasing fluidized biodegradable resin which is in a heated and pressurized environment and in which the moisture is trapped; and

forming the foamed biodegradable resin into a shape depending on a configuration of the forming mold.

5,602,189

PROCESS FOR FORMING POLYISOCYANTATE-BASED FOAM AND PRODUCT FORMED THEREBY

Richard Stevenson, Mesa, Ariz., assignor to Intercool Energy Corporation, Latham, N.Y.

Filed Mar. 4, 1996, Ser. No. 610,743

Int. Cl.[6] C08G *18/00*

U.S. Cl. 521—131 **12 Claims**

1. A process for preparing a polyisocyanate-based foam that has reduced flammability and superior cell structure without the use of CFC's, by reacting a polyisocyanate with an isocyanate-reactive material and a blowing agent, in which said blowing agent comprises a mixture of a major portion of HCFC-123, a minor portion

of HCFC-141b, and about 1 to 30 mole percent of a hydrocarbon selected from the group consisting of hexane and octane and mixtures thereof.

5,602,190

PROCESS FOR THE PRODUCTION OF HARD POLYURETHANE FOAMS

Wilhelm Lamberts, Leverkusen; Norbert Eisen, Köln, both of Germany, and James Thompson-Colon, Clara, Mexico, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany, and Bayer Corporation, Pittsburgh, Pa.

PCT No. PCT/EP93/01959, § 371 Date Jan. 27, 1995, § 102(e) Date Jan. 27, 1995, PCT Pub. No. WO94/03515, PCT Pub. Date Feb. 17, 1994

PCT Filed Jul. 22, 1993, Ser. No. 374,708

Claims priority, application Germany, Aug. 4, 1992, 42 25 760.3

Int. Cl.[6] C08J 9/08

U.S. Cl. 521—131 8 Claims

1. A process for the production of hard polyurethane foams by reacting

1) compounds having molecular weights of from 150 to 1500, having at least two hydrogen atoms that are reactive with isocyanate groups, and having one tertiary nitrogen atom in the molecule, with

2) polyisocyanates

in the presence of

3) foaming agents consisting essentially of one or more pure hydrocarbons,

and, optionally,

4) other auxiliary substances and additives.

5,602,191

PREPARATION OF RADIATION-CURABLE ACRYLATES THAT ARE STORAGE STABLE WITH ISOCYANATE CROSSLINKING AGENTS

Wolfgang Reich, Maxdorf; Erich Beck, Schriesheim; Edmund Keil, Heuchelheim; Ulrich Erhardt, Ladenburg, and Adolf Nuber, Iggelheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

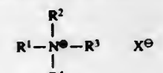
Filed May 31, 1995, Ser. No. 455,621

Claims priority, application Germany, Jun. 8, 1994, 44 20 012.9

Int. Cl.[6] C08F 2/46

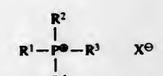
U.S. Cl. 522—174 8 Claims

1. A process for the preparation of a storage stable composition comprising a radiation-curable acrylate and an isocyanate crosslinking agent, which comprises reacting a hydroxy compound with acrylic acid or methacrylic acid in a first stage and, in a second stage, reacting the reaction product of the first stage with an epoxide compound in the presence of, as a catalyst, a quaternary ammonium or phosphonium compound of the formula



I

or



II

where $X^{\ominus}$ is an opposite ion and R^1 to R^4 independently of one another are each C_1–C_{18}-alkyl which may be substituted by one or two phenyl groups or are each C_6–C_{12}-aryl which may be substituted by one or two C_1–C_6-alkyl groups, to form a radiation-curable acrylate, and then adding thereto an isocyanate crosslinking agent.

5,602,192

PROCESS FOR PRODUCING SAND MOLD

Akira Yoshida; Naoki Kyochika; Tsutomu Tanaka; Katsumi Matsuyama, and Kazuhiko Kiuchi, all of Aichi, Japan, assignors to Kao Corporation, Tokyo, Japan

Continuation of Ser. No. 719,632, Jun. 24, 1991, abandoned.

This application Nov. 19, 1993, Ser. No. 154,726

Claims priority, application Japan, Jul. 5, 1990, 2-178634; Aug. 31, 1990, 2-229718; Dec. 27, 1990, 2-408225

Int. Cl.[6] B22C 1/12; 1/18

U.S. Cl. 523—145 28 Claims

1. A process for producing a casting sand mold from reclaimed sand, which comprises:

a) blending (1) reclaimed sand, (2) a binder comprising a water-soluble alkaline phenolic resin, (3) a hardening agent comprising an organic ester compound, and (4) one or more additives comprising a group IB to VIII metal, in an amount of from 0.0001 to 10 parts by weight per 100 parts by weight of reclaimed sand to form a mixture, wherein said water-soluble alkaline phenolic resin of said binder (2) is curable with said organic ester compound of said hardening agent (3), and is obtained from alkaline or acidic reaction of a phenol compound, selected from the group consisting of phenol, cresol, resorcinol, 3, 5-xylenol, bisphenol A, and substituted phenols, with an aldehyde compound selected from the group consisting of formaldehyde, acetoaldehyde, furfural aldehyde, and mixtures thereof, and wherein the water-solubility of said resin has optionally been increased by the addition of an alkali selected from the group consisting of sodium hydroxide, potassium hydroxide, lithium hydroxide, and mixtures thereof;

b) molding said mixture; and

c) curing said molded mixture to form said casting mold.

5,602,193

AQUEOUS DISPERSIONS OF EPOXY RESINS

Charles J. Stark, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 31, 1995, Ser. No. 551,206

Int. Cl.[6] C08K 3/20; C08L 63/00

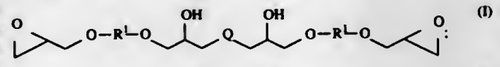
U.S. Cl. 523—403 12 Claims

1. An aqueous dispersion comprising:

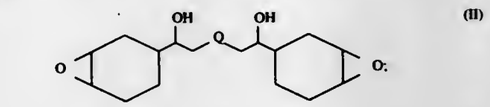
a) water;

b) at least one epoxy resin having a functionality of greater than about 1.0 epoxide group per molecule;

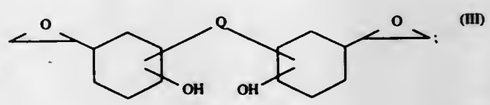
c) from about 1 to about 20 weight percent, based on the epoxy resin of at least one epoxy-functional polyether as having the formula:



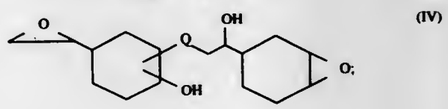
I



II



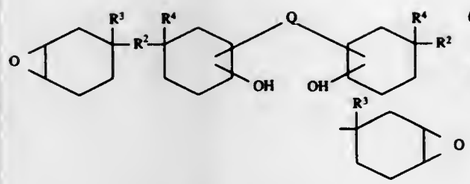
III



IV

or

-continued



V

wherein Q is A or B, R^1 is independently a divalent hydrocarbon group, R^2 is a divalent aliphatic group optionally containing ether or ester groups or together with R^3 or R^4 form a spiro ring optionally containing heteroatoms, and R^3 and R^4 are independently hydrogen or R^3 or R^4 together with R^2 form a spiro ring optionally containing heteroatoms such as oxygen, X and Y are independently hydrogen, methyl or ethyl group with the provision that if X is methyl or ethyl, Y is hydrogen or if Y is methyl or ethyl, X is hydrogen and n+m+o is a positive real number from about 15 to 450, and where Q is B, n+o is a real number in an amount effective to provide emulsifying property.

5,602,194

Patent Not Issued For This Number

5,602,195

POLYMERIC FILM AND PROCESS FOR THE PREPARATION THEREOF

Moon-Sun Kim; Sang-Il Kim, both of Suwon-si; Young-Jin Lee, Anyang-si, and Bum-Sang Kim, Seoul, all of Rep. of Korea, assignors to SKC Limited, Seoul, Rep. of Korea

Filed Jul. 24, 1995, Ser. No. 505,979

Claims priority, application Rep. of Korea, Jul. 27, 1994, 94-18272; Jul. 27, 1994, 94-18273; Dec. 1, 1994, 94-32362; Dec. 7, 1994, 94-33121; Dec. 9, 1994, 94-33402

Int. Cl.[6] C08K 5/42

U.S. Cl. 524—84 8 Claims

1. A polymeric film prepared by a process which comprises: compounding a film forming resin mixture in a compounder; extruding the mixture to give a cast sheet; extending the sheet to form the film, wherein the film forming resin mixture contains 100 parts by weight of a polyester resin having an intrinsic viscosity ranging from 0.4 to 0.9 dl/g, 5 to 50 parts by weight of a polyolefin resin having a melt flow index ranging from 1.0 to 25 g/10 min and/or a styrene resin having a melt flow index ranging from 1.5 to 20 g/10 min, and 0.01 to 1.0 part by weight of a metal sulfonate of the following formula (I) having an acid value of 1.0mg KOH/g or less:

I

wherein,

R_1 is a C_5–C_{20} alkyl group; and

Me is an alkali metal or alkali earth metal; and the compounding and extruding steps are carried out under the condition satisfying the following formulae:

$200° C. \leq T_i \leq 250° C.$

$T_f = T_i + 30° C.$ and

$T_f + 10° C. \leq T_p \leq T_f + 50° C.$

wherein,

T_i is an initial inlet temperature of the compounder;

T_f is an outlet temperature of the compounder; and

T_p is a temperature of the extruded resin mixture.

5,602,196

BISPHENOL ESTER DERIVATIVES

Bernard Gilg, Louis-La-Chaussée, France, and Rita Pitteloud, Praroman, Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

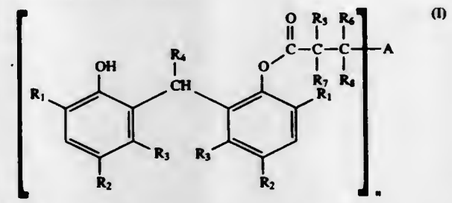
Filed Nov. 27, 1995, Ser. No. 562,774

Claims priority, application Switzerland, Dec. 5, 1994, 3684/94

Int. Cl.[6] C08K 5/41; C07C 69/76

U.S. Cl. 524—171 16 Claims

1. A compound of formula I



I

wherein

the substituents R_1 are each independently of one another C_1–C_{25}alkyl, C_2–C_{24}alkenyl, C_5–C_{12}cycloalkyl, C_1–C_4alkyl-substituted C_5–C_{12}cycloalkyl, C_5–C_{12}cycloalkenyl, C_1–C_4alkyl-substituted C_5–C_{12}cycloalkenyl, phenyl, C_1–C_4alkyl-substituted pheayl, C_7–C_9phenylalkyl or —CH_2—S—X_1,

the substituents R_2 are each independently of one another hydrogen, C_1–C_{25}alkyl, C_2–C_{24}alkenyl, C_5–C_{12}cycloalkyl, C_1–C_4alkyl-substituted C_5–C_{12}cycloalkyl, C_5–C_{12}cycloalkenyl, C_1–C_4alkyl-substituted C_5–C_{12}cycloalkenyl, phenyl, C_1–C_4alkyl-substituted phenyl, C_7–C_9phenylalkyl, —CH_2—S—X_1, —$(CH_2)_pCOO$—X_2 or —$(CH_2)_qO$—X_3,

the substituents R_3 are each independently of one another hydrogen or C_1–C_4alkyl,

R_4 is hydrogen or C_1–C_8alkyl,

R_5 is hydrogen, C_1–C_{10}alkyl, phenyl, —CH_2—COO—X_4 or CN,

R_6 is hydrogen, C_1–C_4alkyl, phenyl, —COO—X_5, —CN or —$CON(X_6)(X_7)$,

R_7 is hydrogen or C_1–C_{10}alkyl,

R_8 is hydrogen, C_1–C_4alkyl or phenyl,

X_1 is C_1–C_{25}alkyl, C_5–C_{12}cycloalkyl, C_1–C_4alkyl-substituted C_5–C_{12}cycloalkyl, phenyl, C_1–C_4alkyl-substituted phenyl, C_7–C_9phenylalkyl or —$(CH_2)_rCOO$—Y_1,

X_2, X_4 and X_5 are each independently of one another C_1–C_{25}alkyl, C_5–C_{12}cycloalkyl, C_1–C_4alkyl-substituted C_5–C_{12}cycloalkyl, phenyl, C_1–C_4alkyl-substituted phenyl or C_7–C_9phenylalkyl,

X_3 is C_1–C_{25}alkyl, C_5–C_{12}cycloalkyl, C_1–C_4alkyl-substituted C_5–C_{12}cycloalkyl, phenyl, C_1–C_4alkyl-substituted phenyl, C_7–C_9phenylalkyl, C_1–C_{25}alkanoyl, C_3–C_{25}alkenoyl, a C_3–C_{25}alkanoyl which is interrupted by oxygen, sulfur or >N—Y_2, C_6–C_9cycloalkylcarbonyl, benzoyl, C_1–C_4alkyl-substituted benzoyl, theaoyl or furoyl,

X_6 and X_7 are each independently of the other hydrogen, C_1–C_{25}alkyl, C_2–C_{24}alkenyl, C_5–C_{12}cycloalkyl, C_1–C_4alkyl-substituted C_5–C_{12}cycloalkyl, C_5–C_{12}cycloalkenyl,

C_1–C_4alkyl-substituted C_5–C_{12}cycloalkenyl, phenyl, C_1–C_4alkyl-substituted pbenyl or C_7–C_9phenylalkyl,

Y_1 is C_1–C_{25}alkyl, C_5–C_{12}cycloalkyl, C_1–C_4alkyl-substituted C_5–C_{12}cycloalkyl, pbenyl, C_1–C_4alkyl-substituted phenyl or C_7–C_9phenylalkyl,

Y_2 is hydrogen or C_1–C_8alkyl,

p is 0, 1 or 2,

q is an integer from 0 to 8,

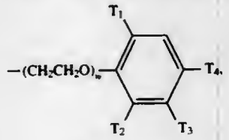
r is 1 or 2,

n is an integer from 1 to 4, and,

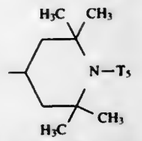
when n is 1, A is a group —O—Z_1, —N(Z_2)(Z_3), —NH(OZ_4), —O—N=C(Z_5)(Z_6), —S(O)$_m$$Z_7$, —NH—$Z_8$ or —S—Z_8, or A is also an unsubstituted or C_1–C_4alkyl-substituted heterocyclic radical which has the free valence at a nitrogen atom,

Z_1 is hydrogen, C_1–C_{25}alkyl, C_3–C_{25}alkyl which is interrupted by oxygen, sulfur or >N—Y_2, C_3–C_{24}alkenyl, a monocyclic saturated hydrocarbon radical containing 5 to 20 carbon atoms, a bicyclic saturated hydrocarbon radical containing 7 to 20 carbon atoms, a tricyclic saturated hydrocarbon radical containing 10 to 20 carbon atoms, C_5–C_{12}cycloalkenyl, C_1–C_4alkyl-substituted C_5–C_{12}cycloalkenyl, C_7–C_9phenylalkyl which is substituted at the phenyl ring by C_1–C_4alkyl; tetrahydrofurfuryl, tetrahydroabietyl, C_1–C_{25}alkanoyl, C_3–C_{25}alkenoyl, C_3–C_{25}alkanoyl which is interrupted by oxygen, sulfur or >N—Y_2, C_6–C_9cycloalkylcarbonyl, benzoyl, C_1–C_4alkyl-substituted benzoyl, thenoyl, furoyl or a group of formula IIa or IIb,

(IIa)



(IIb)



Z_2 is hydrogen, C_1–C_{25}alkyl, OH-substituted C_2–C_{25}alkyl, C_3–C_{24}alkenyl, C_5–C_{12}cycloalkyl, C_1–C_4alkyl-substituted C_5–C_{12}cycloalkyl, phenyl, C_1–C_4alkyl-substituted phenyl, C_7–C_9phenylalkyl, C_1–C_{25}alkanoyl, C_3–C_{25}alkenoyl, C_3–C_{25}alkanoyl which is interrupted by oxygen, sulfur or >N—Y_2, C_6–C_9cycloalkylcarbonyl, benzoyl, C_1–C_4alkyl-substituted benzoyl, thenoyl, furoyl, —$(CH_2)_p$COO—X_2 or a radical of formula IIb,

Z_3 is hydrogen, C_1–C_{25}alkyl, OH-substituted C_2–C_{25}alkyl, C_3–C_{24}alkenyl, C_5–C_{12}cycloalkyl, C_1–C_4alkyl-substituted C_5–C_{12}cycloalkyl, phenyl, C_1–C_4alkyl-substituted phenyl, C_7–C_9phenylalkyl or a group of formula IIb, or

Z_2 and Z_3, taken together, are C_3–C_6alkylene, C_3–C_6oxoalkylene or C_3–C_6alkylene which is interrupted by oxygen, sulfur or >N—T_6,

Z_4 is C_1–C_{25}alkyl, C_5–C_{12}cycloalkyl, C_1–C_4alkyl-substituted C_5–C_{12}cycloalkyl, phenyl, C_1–C_4alkyl-substituted phenyl or C_7–C_9phenylalkyl,

Z_5 and Z_6 are each independently of the other hydrogen, C_1–C_{25}alkyl, C_2–C_{24}alkenyl, C_5–C_{12}cycloalkyl, C_1–C_4alkyl-substituted C_5–C_{12}cycloalkyl, C_5–C_{12}cycloalkenyl, C_1–C_4alkyl-substituted C_5–C_{12}cycloalkenyl, phenyl, C_1–C_4alkyl-substituted phenyl or C_7–C_9phenylalkyl, or

Z_5 and Z_6, together with the linking carbon atom, form an unsubstituted or a C_1–C_4alkyl-substituted C_5–C_{12}cycloalkylidene ring,

Z_7 is C_1–C_{25}alkyl, C_5–C_{12}cycloalkyl, C_1–C_4alkyl-substituted C_5–C_{12}cycloalkyl, phenyl, C_1–C_4alkyl-substituted phenyl, C_7–C_9phenylalkyl or —$(CH_2)_r$COO—Y_1,

Z_8 is unsubstituted or C_1–C_4alkyl-substituted 2-benzoxazolyl or unsubstituted or C_1–C_4alkyl-substituted 2-benzothiazolyl,

T_1 and T_2 are each independently of the other hydrogen, C_1–C_{25}alkyl, C_2–C_{24}alkenyl, C_5–C_{12}cycloalkyl, C_1–C_4alkyl-substituted C_5–C_{12}cycloalkyl, C_5–C_{12}cycloalkenyl, C_1–C_4alkyl-substituted C_5–C_{12}cycloalkenyl, phenyl, C_1–C_4alkyl-substituted phenyl, C_7–C_9phenylalkyl or —CH_2—S—X_1,

T_3 is hydrogen or C_1–C_4alkyl,

T_4 is hydrogen, C_1–C_{25}alkyl, C_2–C_{24}alkenyl, C_5–$_{12}$cycloalkyl, C_1–C_4alkyl-substituted C_5–C_{12}cycloalkyl, C_5–C_{12}cycloalkenyl, C_1–C_4alkyl-substituted C_5–C_{12}cycloalkenyl, phenyl, C_1–C_4alkyl-substituted phenyl, C_7–C_9phenylalkyl, —CH_2—S—X_1, —$(CH_2)_p$COO—X_2 or —$(CH_2)_q$O—X_3,

T_5 is hydrogen, C_1–C_8alkyl, —OH-substituted C_2–C_4alkyl, Ó, —OH, —NO, —CH_2CN, C_1–C_{18}alkoxy, C_5–C_{12}cycloalkoxy, C_3–C_8alkenyl, C_7–C_9phenylalkyl, C_7–C_9phenylalkyl which is substituted at the phenyl ring by C_1–C_4alkyl; C_1–C_8alkanoyl, C_3–C_8alkenoyl or benzoyl,

T_6 is C_1–C_{12}alkyl, C_5–C_{12}cycloalkyl, C_1–C_4alkyl-substituted C_5–C_{12}cycloalkyl, phenyl,

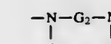
C_1–C_4alkyl-substituted phenyl or C_7–C_9phenylalkyl,

m is 1 or 2,

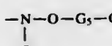
w is 0 or 1,

when n is 2, A is a group of formula IIIa, IIIb, IIIc, IIId, IIIe or IIIf,

(IIIa)



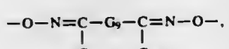
(IIIb)



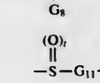
(IIIc)



(IIId)



(IIIe)



(IIIf)



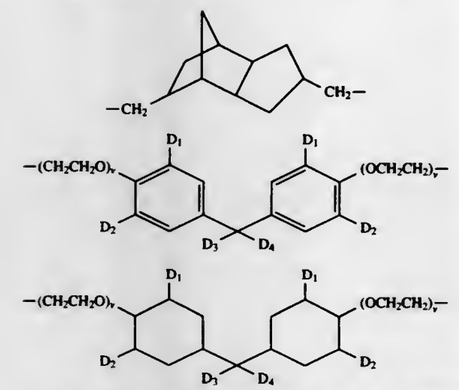
G_1 and G_3 are each independently of the other hydrogen, C_1–C_{25}alkyl, C_3–C_{24}alkenyl, C_5–C_{12}cycloalkyl, C_1–C_4alkyl-substituted C_5–C_{12}cycloalkyl, phenyl, C_1–C_4alkyl-substituted phenyl, C_7–C_9phenylalkyl, —$(CH_2)_p$COO—X_2 or a radical of formula IIb,

G_2 is C_2–C_{12}alkylene, C_4–C_{20}alkylene which is interrupted by oxygen, sulfur or >N—Y_2, C_4–C_{20}alkenylene, C_4–C_{20}alkynylene, (C_1–C_4alkylene)-phenylene-(C_1–C_4alkylene), a monocyclic saturated hydrocarbon radical with two free valences and containing 5 to 12 carbon atoms, a bicyclic saturated hydrocarbon radical with two free valences and containing 7 to 30 carbon atoms, phenylene, C_1–C_4alkyl-substituted phenylene, naphthylene, C_2–C_{20}alkanedioyl, C_4–C_{20}alkenedioyl or carboxybenzoyl,

G_4 and G_6 are each independently of the other hydrogen, C_1–C_{25}alkyl, C_3–C_{24}alkenyl, C_5–C_{12}cycloalkyl, C_1–C_4alkyl-substituted C_5–C_{12}cycloalkyl, phenyl, C_1–C_4alkyl-substituted phenyl, C_7–C_9phenylalkyl or a group of formula IIb,

G_5 is C_2–C_{12}alkylene, C_4–C_{20}alkylene which is interrupted by oxygen, sulfur or >N—Y_2, C_4–C_{20}alkenylene, C_4–C_{20}alkynylene, (C_1–C_4alkylene)-phenylene-(C_1–C_4alkylene), a monocyclic saturated hydrocarbon radical with two free valences and containing 5 to 12 carbon atoms, a bicyclic saturated hydrocarbon radical with two free valences and containing 7 to 30 carbon atoms, phenylene, C_1–C_4alkyl-substituted phenylene or naphthylene,

G_7 is C_2–C_{20}alkylene, C_4–C_{20}alkylene which is interrupted by oxygen, sulfur or >N—Y_2, C_4–C_{20}alkenylene, C_4–C_{20}alkynylene, (C_1–C_4alkylene)-phenylene-(C_1–C_4alkylene), a monocyclic saturated hydrocarbon radical with two free valences and containing 5 to 12 carbon atoms, a bicyclic saturated hydrocarbon radical with two free valences and containing 7 to 30 carbon atoms, phenylene, C_1–C_4alkyl-substituted phenylene or naphthylene, C_2–C_{20}alkanedioyl, C_4–C_{20}alkenedioyl, carboxybenzoyl or a group of formula IVa, IVb or IVc



G_8 and G_{10} are each independently of the other hydrogen, C_1–C_{25}alkyl, C_3–C_{24}alkenyl, C_5–C_{12}cycloalkyl, C_1–C_4alkyl-substituted C_5–C_{12}cycloalkyl, phenyl, C_1–C_4alkyl-substituted phenyl, C_7–C_9phenylalkyl or a group of formula IIb,

G_9 and G_{11} are C_2–C_{12}alkylene, C_4–C_{20}alkylene which is interrupted by oxygen, sulfur or >N—Y_2, C_4–C_{20}alkenylene, C_4–C_{20}alkylene, (C_1–C_4alkylene)-phenylene-(C_1–C_4alkylene), a monocyclic saturated hydrocarbon radical with two free valences and containing 5 to 12 carbon atoms, a bicyclic saturated hydrocarbon radical with two free valences and containing 7 to 30 carbon atoms, phenylene, C_1–C_4alkyl-substituted phenylene or naphthylene,

G_{12} is hydrogen, C_1–C_{25}alkyl, C_3–C_{24}alkenyl, C_5–C_{12}cycloalkyl, C_1–C_4alkyl-substituted C_5–C_{12}cycloalkyl, phenyl, C_1–C_4alkyl-substituted phenyl, C_7–C_9phenylalkyl or a group of formula IIb,

the substituents D_1 are each independently of the other hydrogen, C_1–C_8alkyl, C_5–C_{12}cycloalkyl, C_1–C_4alkyl-substituted C_5–C_{12}cycloalkyl, phenyl, C_1–C_4alkyl-substituted phenyl or C_7–C_9phenylalkyl,

the substituents D_2 are each independently of the other hydrogen, C_1–C_8alkyl, C_5–C_{12}cycloalkyl, C_1–C_4alkyl-substituted C_5–C_{12}cycloalkyl, phenyl, C_1–C_4alkyl-substituted phenyl or C_7–C_9phenylalkyl,

D_3 and D_4 are each independently of the other hydrogen, CF_3, C_1–C_{12}alkyl or phenyl, or

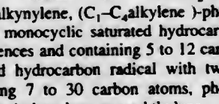
D_3 and D_4, together with the linking carbon atom, form an unsubstituted or C_1–C_4alkyl-substituted C_5–C_{12}cycloalkylidene ring,

t is 1 or 2,

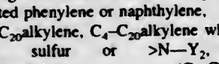
v is 0 or 1,

when n is 3, A is a group of formula Va, Vb or Vc,

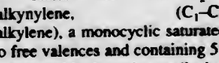
(Va)



(Vb)



(Vc)

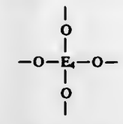


E_1 is C_3–C_7alkanetriyl,

E_2 and E_3 are C_2–C_8alkylene,

when n is 4, A is a group of formula VI

(VI)



(IVa)

and E_4 is C_4–C_{10}alkanetetrayl or C_4–C_{10}alkanetetrayl which is interrupted by oxygen.

(IVb)

5,602,197

REVERSIBLE POLYMER GEL BINDERS FOR POWDER FORMING

Ronald E. Johnson, Tioga, Pa., and Jean M. News, Wilmington, Del., assignors to Corning Incorporated, Corning, N.Y.

Continuation-in-part of Ser. No. 785,984, Oct. 31, 1991, abandoned, which is a continuation of Ser. No. 358,571, May 30, 1989, abandoned. This application Nov. 25, 1992, Ser. No. 981,262

The portion of the term of this patent subsequent to Jun. 18, 2008, has been disclaimed.

Int. Cl.^{6} C08L *91/06*

U.S. Cl. 524—275 **16 Claims**

1. A binder composition consisting essentially, in weight percent, of about 30–80% of a low-melting wax selected from the group consisting of fatty alcohols, fatty acids, fatty glycols, fatty glycerides, and esters thereof having a melting temperature not exceeding about 80° C., 1–40% of at least one high molecular weight organic polymer selected from the group consisting of ultrahigh molecular weight polyethylene, polyethylene/acrylic acid copolymers, butyl methacrylate/acrylic acid copolymers, and styrene tri-block copolymers which is miscible with the low-melting wax and forms a reversible gel therein, 0–20% total of modifying waxes, and 0–15% total of functional binder additives selected from the group consisting of particle dispersants, lubricants, and mold release agents.

5,602,198

AMINOPLAST CURED ACID ETCH RESISTANT COATING WITH GOOD DURABILITY

Suryya K. Das, Pittsburgh; Soner Kilic, Gibsonia; Michael A. Mayo, Pittsburgh, and Andrew J. Lauer, Lower Burrell, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 198,718, Feb. 18, 1994, Pat. No. 5,445,850. This application Apr. 26, 1995, Ser. No. 429,412

Int. Cl.^{6} C08L *33/10;61/32*

U.S. Cl. 524—589 **6 Claims**

1. A curable film-forming clearcoat composition for a basecoat/clearcoat composite coating where the clearcoat is acid etch resistant comprising:

(1) about 75 to 85 percent by weight based on total resin solids weight of an acrylic polymer consisting essentially of: a hydroxyl-containing acrylic solution polymer which is the reaction product of:

about 40 to about 90 percent by weight based on the total weight of monomers used in preparing the hydroxyl containing acrylic solution polymer of a cycloaliphatic or aromatic ester of (meth)acrylic acid selected from the group consisting of cyclohexyl methacrylate and t-butyl-cyclohexyl methacrylate, and

about 6 to about 25 percent by weight based on total weight of monomers used in preparing the hydroxyl containing acrylic solution polymer of a hydroxyl functional acrylic monomer selected from the group consisting of hydroxypropyl acrylate, hydroxypropyl methacrylate, 2-hydroxybutyl acrylate, 4-hydroxybutyl acrylate, 2-hydroxybutyl methacrylate, and 4-hydroxybutyl methacrylate; and

(2) about 15 to 30 percent by weight based on total resin solids weight of an aminoplast crosslinking agent.

5,602,199

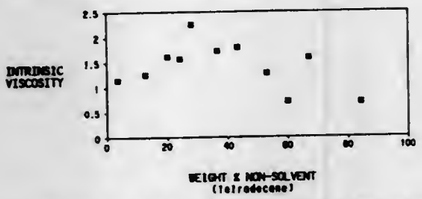
PROCESS FOR PRODUCING POLYESTERS

Edward B. Jones, Hendersonville, Tenn., and Robert R. Burch, Exton, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 212,667, Mar. 11, 1994, abandoned. This application Jun. 30, 1995, Ser. No. 497,138

Int. Cl.[6] C08K *5/06;* **C08J** *3/00*

U.S. Cl. 524—755 **8 Claims**



1. A process for polymerization to a polyester product selected from the group consisting of poly(ethylene terephthalate) and poly(1,4-butylene terephthalate), which process comprises heating and agitating a mixture comprising a solvent, non-solvent, and one or more members of the group consisting of polymerizable monomers, oligomers, or lower molecular weight polyesters which produces such a polyester product at a temperature of about 200° C. or higher, while co-distilling from the mixture a polymerization by-product and the solvent, non-solvent, or solvent and non-solvent;

provided that the polyester product and the solvent form a first liquid phase separate from a second liquid phase formed predominantly by the non-solvent at said temperature, said agitating being sufficient to disperse said first liquid phase as a non-continuous or discrete phase in the form of droplets in said second liquid phase, and wherein the ratio of the solvent to non-solvent, while allowing the formation of more than one single liquid phase, results in the first liquid phase having a viscosity that is sufficiently low to prevent the droplets from prematurely agglomerating.

5,602,200

POLYAMIDE/POLYOLEFIN BLENDS

Rolf B. Wissmann, Taunus, Germany, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 196,222, Mar. 22, 1994, abandoned. This application Aug. 25, 1995, Ser. No. 519,330

Claims priority, application Germany, Sep. 25, 1991, 4131988.7

Int. Cl.[6] C08G *63/48*

U.S. Cl. 525—66 **13 Claims**

1. A polymeric composition which comprises:

(a) 45–88% by weight of a polyamide;

(b) 10–25 % by weight of an unmodified polypropylene or unmodified polyethylene;

(c) 0–15% by weight of a carboxylic acid or maleic anhydride-grafted ethylene-propylene-diene elastomer comprising 50–80% by weight of ethylene units, 10–50% by weight of propylene units, and 1–10% by weight of units of a diene of 6–12 carbon atoms, the sum of all these percentages being 100% by weight, and having a carboxylic acid or maleic anhydride content of 0.05–3% by weight of the elastomer; and

(d) 2–15% by weight of a carboxylic acid or maleic anhydride grafted polyethylene or polypropylene; said polyamide having a capillary melt viscosity at 285° C. and 1000s^{-1} of less than 30 Pa.s, said melt viscosity being lower than the melt viscosity of the unmodified polyethylene or unmodified polypropylene and lower that the combined melt viscosity of the unmodified polyethylene or unmodified polypropylene and of the grafted ethylene-propylene-diene elastomer; and wherein the weight percentages for (a), (b), (c), and (d) are based on the total of (a), (b), (c), and (d) only:

said composition forming during injection molding a continuous polyamide phase, and a dispersed phase comprising unmodified polypropylene or unmodified polyethylene.

5,602,201

IMPACT RESISTANT RESIN COMPOSITION

Tomohide Fujiguchi; Akihiro Saito, and Hideyuki Itoi, all of Utsunomiya, Japan, assignors to General Electric Company, Pittsfield, Mass.

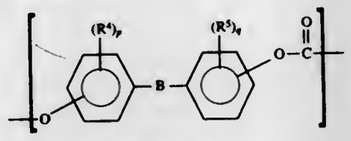
Filed Jan. 13, 1995, Ser. No. 372,258

Claims priority, application Japan, Jan. 12, 1994, 6-013103

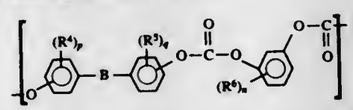
Int. Cl.[6] C08G *63/48;64/00*

U.S. Cl. 525—67 **8 Claims**

1. Impact-resistant resin composition comprising the reaction product of (A) 1–99 parts by weight of a copolymeric polycarbonate, in which there are structural units represented by the following formula (Structure 1):



and the following formula (Structure 2):



where R^4 and R^5 are independently halogen atoms or univalent hydrocarbon groups; B is $—(R^1—)C(—R^2)$ where R^1 and R^2 are independently hydrogen atoms or univalent hydrocarbon groups, $—C(=R^3)—$ where R^3 is a divalent hydrocarbon group, —O—, —S—, —SO— or $—SO_2—$; R^6 is a hydrocarbon group having 1–10 carbon atoms, its halogenated derivative or halogen atom; and p, q and n are independently integers of 0–4; and wherein the amount of the structural unit of Structure 2 is in the range of 2–90 mol % the structural units of Structure 1 and Structure 2 or a mixture thereof based on (A); (B)1–99 parts by weight of a copolymer containing (a) aromatic vinyl monomer and (b) vinyl cyanide monomer as a component; and at the same time, on the total amount of (A) and (B) of 100 parts by weight, (C) 0.5–40 parts by weight of a copolymer containing (a) aromatic vinyl monomer, (b) vinyl cyanide monomer and (c) elastomer as a component; and (D) 0.5–40 parts by weight of a rubber complex graft copolymer comprising rubber complex containing 3–90 wt % polyorganosiloxane and 10–97 wt % polyalkyl (meth)acrylate with a vinyl monomer grafted wherein said rubber complex has an average particle size of 0.08–0.6mm and whereby the low temperature impact resistance of said composition is substantially improved.

5,602,202

METHODS OF USING ACRYLATE-CONTAINING POLYMER BLENDS

James D. Groves, Hudson, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 361,058, Dec. 21, 1994, abandoned, which is a continuation-in-part of Ser. No. 182,573, Jan. 14, 1994, abandoned. This application Jun. 22, 1995, Ser. No. 493,570

Int. Cl.[6] B05D *3/00;* **C09J** *125/10;133/00*

U.S. Cl. 525—73 **5 Claims**

1. A method of enhancing adhesion between a substrate and an adhesive comprising the steps of:

priming said substrate by applying to said substrate a blend comprising

(a) a block copolymer comprising

(i) a polystyrene block and

(ii) a polydiene block or a hydrogenated polydiene block, said polydiene block or hydrogenated polydiene block containing an average of one or more carboxyl groups; and

(b) a polymer comprising a polymerization reaction product of two or more mono-ethylenically unsaturated monomers in which:

(i) at least one of the monomers is an acrylic or methacrylic acid ester of a non-tertiary alcohol having 1 to 14 carbon atoms, inclusive, and

(ii) at least one of the monomers is a nitrogen-containing monomer selected from the group consisting of an N-vinyllactam and an N,N-dialkylacrylamide; and

applying an adhesive to the primed substrate.

5,602,203

OLEFIN RESIN COMPOSITION

Tatsuo Hamanaka, Ichihara; Tadashi Hikasa, Sodegaura; Yoshitsugu Takai, Kyoto, and Tetsuya Yamada, Otsu, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation-in-part of Ser. No. 148,778, Nov. 26, 1993, abandoned. This application Mar. 1, 1995, Ser. No. 396,580

Claims priority, application Japan, Nov. 26, 1992, 4-316903

Int. Cl.[6] C08F *255/02*

U.S. Cl. 525—74 **15 Claims**

1. An olefinic resin composition which comprises 100 parts by weight of a thermoplastic olefin elastomer consisting of a polyolefin resin and an olefinic copolymer rubber and 0.5 to 30 parts by weight of a modified polyolefin obtained by reacting a low-molecular weight polyolefin, having a number average molecular weight of 2,000 to 20,000 and an amount of double bonds at the terminal or in the molecule of 1.5 or more per 1,000 carbon atoms, with an unsaturated carboxylic acid (arthydride) to obtain an unsaturated carboxylic acid (anhydride)-modified polyolefin, and then reacting said unsaturated carboxylic acid (anhydride)-modified polyolefin with an aminoalcohol represented by the formula $H_2N—R—OH$ in which R represents an alkylene, arylene or aralkylene group having 18 or less carbon atoms, wherein said polyolefin resin is polypropylene, a random copolymer of propylene and 15 mole % or less of at least one other α-olefin or a block copolymer of propylene and 30 mole % or less of at least one other α-olefin.

5,602,204

THERMOSETTING COMPOSITION

Toan Harimoto, Kakogawa; Toshiro Nanbu, Kobe; Jo Kawamura, Akashi, and Hisao Furukawa, Kobe, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 277,110, Nov. 29, 1988, abandoned. This application May 22, 1991, Ser. No. 703,718

Claims priority, application Japan, Nov. 30, 1987, 62-302046

Int. Cl.[6] C08L *43/04*

U.S. Cl. 525—209 **8 Claims**

1. A thermosetting composition comprising:

(A) a hydroxyl group-containing acrylic resin having a hydroxyl value of 20 to 150 mg KOH/g,

(B) an alkoxysilane group-containing acrylic copolymer and

(C) a compound accelerating or promoting the reactioo of said component (A) and said component (B).

5,602,205

N-(SUBSTITUTED) MALEIMIDES AND COMPOSITIONS INCORPORATING THE SAME

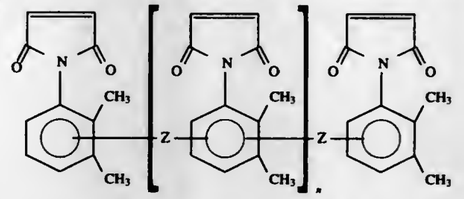
Balwant Singh, and Robert J. Tynik, both of Stamford, Conn., assignors to Cytec Technology Corp., Wilmington, Del.

Division of Ser. No. 185,425, Jan. 21, 1994, which is a continuation-in-part of Ser. No. 7,225, Jan. 22, 1993, Pat. No. 5,314,950. This application Apr. 27, 1995, Ser. No. 430,051

Int. Cl.[6] C08C *19/28;* **C07D** *207/452*

U.S. Cl. 525—282 **12 Claims**

1. A polyfunctional maleimide of the general formula



wherein n is 0 or larger; and Z is selected from an alkylene group, an alkyl substituted alkylene group and a dialkyl substituted alkylene group.

5,602,206

BLOCK COPOLYMER PROCESS

Binnur Z. Gunesin, New York, N.Y., and Patricia J. Nelson, Franklin Township, N.Y., assignors to BASF Corporation, Mt. Olive, N.J.

Filed Mar. 4, 1992, Ser. No. 845,569

Int. Cl.[6] C08F *293/00;27/00*

U.S. Cl. 525—314 **7 Claims**

1. An anionic dispersion polymerization process for the preparation of a linear block copolymer containing an odd number of blocks including A blocks of a polymerized styrenic compound which is styrene or an alkyl-substituted styrene, said A blocks being the end or terminal blocks of the polymer and alternating along the block copolymer chain with elastomeric B blocks of polymerized conjugated diene units, said process comprising initially contacting the total amount of styrenic compound to be utilized in forming the block copolymer under polymerization reaction conditions with an anionic initiator and a dispersant in an inert dispersion medium in which the block copolymer is insoluble, such that a predetermined amount of said styrenic compound which is less than that initially charged is polymerized to form a living A block of the desired molecular weight, adding an amount of conjugated diene corresponding to the desired molecular weight of a first elastomeric B block of polymerized diene appended to the

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initially formed A block, allowing the polymerization of said diene to proceed to completion while the polymerization of styrenic compound is interrupted due to the greater tendency of the diene to polymerize, allowing the polymerization of styrenic compound to continue either to completion to form a second and final A block, if a triblock copolymer having the structure A-B-A is desired, or again allowing a predetermined amount of styrenic compound which is less than the total amount of styrenic compound remaining to form a second A block, adding a second amount of said diene and allowing it to polymerize to form a second B block, either allowing the remainder of styrenic compound to polymerize, if a five-block copolymer having the structure A-B-A-B-A is desired, or repeating the last two steps until a block copolymer having the desired structure is obtained, and recovering said block copolymer.

5,602,207

SUPPORT AND METHOD FOR IMMOBILIZING POLYPEPTIDES

Victoria L. Boyd, San Carlos, and Pau-Miau Yuan, San Jose, both of Calif., assignors to The Perkin-Elmer Corporation, Foster City, Calif.

Continuation-in-part of Ser. No. 3,197, Jan. 11, 1993, abandoned. This application Sep. 29, 1993, Ser. No. 129,607

Int. Cl.[6] A61K *38/02*

U.S. Cl. 525—326.2 **2 Claims**

1. An activated solid support for immobilizing a polypeptide, said support comprising

a dry polyvinylidene difluoride membrane having (i) surface-attached enol ester groups and (ii) surface attached sulfonate groups, said support being capable of storage in dry form for at least three months without a significant reduction in the support's capacity to covalently bind polypeptides.

5,602,208

AMINOALKANOLAMIDE ESTERS AS PROCESSING AIDS FOR THERMOPLASTICS

Joerg-Dieter Klamann, Bremerhaven; Dieter Kramptiz, Moenchengladbach; Andreas Lippmann, Kaarst, and Uwe Ploog, Haan, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP92/01832, § 371 Date Mar. 14, 1994, § 102(e) Date Mar. 14, 1994, PCT Pub. No. WO93/03903, PCT Pub. Date Mar. 4, 1993

PCT Filed Aug. 11, 1992, Ser. No. 196,085

Claims priority, application Germany, Aug. 20, 1991, 41 27 471.7

Int. Cl.[6] C08F *20/34*

U.S. Cl. 525—374 **20 Claims**

1. A composition of matter useful as a thermoplastic material comprising a homogeneous blend of:

at least one thermoplastic polymer selected from the group consisting of polyamides, polyesters, polycarbonates, polystyrenes and copolymers, polyethylenes, polypropylenes or blends thereof, and

at least one compound of the formula (I)



(I)

wherein:

R^1 and R^2 may be the same or different and represent an aliphatic, saturated alkyl group containing 1 to 49 carbon atoms with the proviso that R^1 and R^2 together contain at least 14 carbon atoms, a mono- or polyunsaturated alkylene group containing 5 to 21 carbon atoms, a phenyl group or an alkylphenyl group containing 1 to 22 carbon atoms in the alkyl group and

X is an aliphatic, saturated difunctional alkyl group containing 2 to 50 carbon atoms wherein the ratio by weight of the compound of formula (I) to thermoplastic polymer is from 0.01:100 to 10:100.

5,602,209

CREPING ADHESIVE CONTAINING OXAZOLINE POLYMERS

Joseph E. Warchol, West Norriton, and Cynthia D. Walton-Bongers, London Grove, both of Pa., assignors to Houghton International, Inc., Valley Forge, Pa.

Continuation of Ser. No. 352,371, Dec. 8, 1994, abandoned. This application Jun. 1, 1995, Ser. No. 457,590

Int. Cl.[6] C08G *63/91;65/32;* **C08L** *67/00;71/00*

U.S. Cl. 525—410 **6 Claims**

1. A creping adhesive concentrate consisting essentially of about 1 percent to about 25 percent of an oxazoline polymer by weight and a polyethyleneimine.

5,602,210

MOLECULAR COMPOSITE MATERIAL COMPOSED OF LIQUID CRYSTAL POLYMER AND THERMOPLASTIC POLYMER AND METHOD FOR PRODUCING SAME

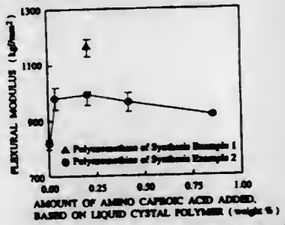
Tatsuya Hattori, and Kazuhiro Kagawa, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 526,660, Sep. 11, 1995, Pat. No. 5,565,530. This application Jul. 3, 1996, Ser. No. 674,921

Claims priority, application Japan, Sep. 12, 1994, 6-244589; Aug. 28, 1995, 7-242528

Int. Cl.[6] C08F *283/00*

U.S. Cl. 525—419 **5 Claims**



1. A molecular composite material comprising a liquid crystal polymer, a thermoplastic polymer and a compatibilizing agent having at least one functional group showing compatibility and/or reactivity to said liquid crystal polymer and/or said thermoplastic polymer, wherein said liquid crystal polymer is polyazomethine or its copolymer.

5,602,211

ADDUCTS OF EPOXY RESINS AND ACTIVE HYDROGEN CONTAINING COMPOUNDS CONTAINING MESOGENIC MOIETIES

Robert E. Hefner, Jr., and Jimmy D. Earls, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 118,485, Sep. 8, 1993, Pat. No. 5,414,121, which is a division of Ser. No. 562,289, Aug. 3, 1990, Pat. No. 5,276,184. This application Jan. 18, 1995, Ser. No. 374,281

Int. Cl.[6] C08L *63/00;* **C08G** *59/06*

U.S. Cl. 525—430 **17 Claims**

1. An adduct containing one or more rodlike mesogenic moieties per molecule which adduct results from the reaction of (1) one or more compounds containing an average of more than one vicinal epoxide group per molecule and (2) one or more compounds

containing two or more hydrogen atoms per molecule which are reactive with an epoxide group thereby forming an adduct essentially free of epoxy groups and containing active hydrogen atoms reactive with an epoxy group; with the proviso that at least one member of components (1) and (2) contain one or more rodlike mesogenic moieties per molecule; wherein components (1) and (2) are meltable or soluble under conditions necessary for their derivatization or further reaction; and wherein components (1) and (2) are employed in amounts which provide a ratio of equivalents of hydrogen reactive with an epoxide group per equivalent of epoxide of from about 2:1 to about 100:1.

5,602,212

LINEAR COPOLYESTER CONTAINING PHOSPHOROUS, PROCEDURE FOR ITS PREPARATION AND ITS USE AS A FLAME-RETARDANT ADDITIVE

Carlo Neri, San Donato Milanese, and Gianluigi Landoni, Milan, both of Italy, assignors to Enichem Synthesis S.p.A., Palermo, Italy

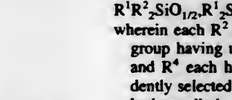
Division of Ser. No. 247,525, May 23, 1994, Pat. No. 5,550,207, which is a continuation of Ser. No. 992,591, Dec. 18, 1992, abandoned. This application May 28, 1996, Ser. No. 653,848

Claims priority, application Italy, Dec. 18, 1992, MI91A3399

Int. Cl.[6] C08F *20/00*

U.S. Cl. 525—437 **19 Claims**

1. An organic polymer selected from the group consisting of linear polyesters having an aliphatic and/or aromatic structure, polyolefins, polyamides, polycarbonates, polyphenylene oxides, styrene polymers, ethylene-propylene rubbers, ethylene-propylene-diene monomers, and ethylene vinyl acetate, which organic polymers are flame-stabilized by the addition of a linear copolyester composed of the polycondensation product of a dicarboxylic aromatic acid with a C_2–C_6 alkylene glycol and with a monomer which, in the chain of the copolyester, produces units having the formula:



where R_1 represents a linear, branched or cyclic alkylene radical and R_2 represents a C_1–C_6 alkyl group or a phenyl radical; the copolyester having a phosphorous content equal to at least 2.5% by weight.

5,602,213

HEAT RESISTANT COMPOSITION BISMALEIMIDE-MODIFIED POLYURETHANE

Sheng-Yaw Hsu, Taichung; Tzong-Ming Lee, Tainan, and Jing-Pin Pan, Hsinchu, all of Taiwan, assignors to Industrial Technology Research Institute, Taiwan, China

Filed Jul. 9, 1993, Ser. No. 89,797

Int. Cl.[6] C08F *283/04*

U.S. Cl. 525—454 **14 Claims**

1. A heat resistant composition comprising

(a) a polyamideimideurethane,

(b) a bismaleimide oligomer, and

(c) a solvent

wherein the bismaleimide oligomer is in an amount of about 1 to 35 percent by weight based on the overall solid contents.

5,602,214

SILICONE PRESSURE-SENSITIVE ADHESIVE COMPOSITIONS

Shaow B. Lin, Schenectady, and Stuart R. Kerr, III, Troy, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Continuation of Ser. No. 282,856, Jul. 29, 1994, abandoned, which is a continuation of Ser. No. 61,794, May 13, 1993, abandoned. This application Aug. 22, 1995, Ser. No. 524,147

Int. Cl.[6] C08F *283/00*

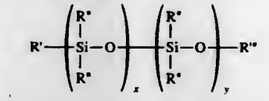
U.S. Cl. 525—478 **11 Claims**

1. A curable pressure sensitive adhesive (PSA) composition having improved quick stick properties consisting essentially of:

(A) a silicone adhesive composition consisting essentially of:

(i) about 45 to 75 percent of a resin copolymer consisting primarily of $R_3SiO_{1/2}$ and $SiO_{4/2}$ units and containing up to 5 molar percent of $R_2SiO_{2/2}$ and $RSiO_{3/2}$ units, wherein each R individually is hydrocarbon radical containing up to 6 carbon atoms and wherein there are from 0.6 to 0.9 $R_3SiO_{1/2}$ units for every $SiO_{4/2}$ units and wherein the resin comprises from about 0.2% to about 5.0% by weight, based upon the total resin weight of hydroxy radicals, and

(ii) about 25 to about 55 percent of a silicone polymer gum having the formula



where each R^* is independently selected from alkyl, alkenyl, phenyl, aryl or arylalkyl, R''' is either a hydrogen or R^{11}, R' is either a hydroxy or R^*, wherein the sum x+y is a number sufficient to give silicone gum a viscosity of from about 800,000 cps to about 200,000,000 cps at 25° C., and the total solids weight of (A)(i) and (A)(ii) being 100 parts, and optionally (iii) an organic solvent; and

(B) about 2 to bout 30 parts by weight, based on the weight of (A)(i) and (A)(ii) being 100 parts, of silicone fluid of the general formula

$R^1R^2{}_2Si(OSiR^1{}_2)_m(OSiR^3R^4)_nOSiR^2{}_2R^1$ or

copolymers comprising

$R^1R^2{}_2SiO_{1/2}$,$R^1{}_2SiO_{2/2}$,$R^3R^4SiO_{2/2}$, or $R^1SiO_{3/2}$ units,

wherein each R^2 independently is an alkyl, aryl, or arylalkyl group having up to 10 carbon atoms; and wherein R^1,R^3, and R^4 each having up to 10 carbon atoms and independently selected from alkyl, aryl, aryalkyl, alkaryl, hydroxy, hydroxyalkyl, allyl, hydrogen, epoxide-containing-aliphatic, cycloaliphatic, aromatic, amine, aminocarboxy, fully- or partially fluorinated alkyl, alkenyl or aryl, and wherein n+m is such that the viscosity of the fluid is between 35 and 100,000 cps at 25° C., wherein said fluid is compatible with said silicone adhesive composition (A).

5,602,215

POLYMER SCALE DEPOSITION PREVENTIVE AGENT AND PROCESS OF PRODUCING POLYMER USING THE SAME

Mikio Watanabe, and Toshihide Shimizu, both of Ibaraki-ken, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Oct. 11, 1995, Ser. No. 540,768

Claims priority, application Japan, Oct. 12, 1994, 6-272876

Int. Cl.[6] C08F *2/00;4/615*

U.S. Cl. 526—62 **17 Claims**

1. A process for producing a polymer comprising polymerizing a monomer having an ethylenically unsaturated double bond in a polymerization vessel having a polymer scale deposition preventive coating film on its inner wall surfaces, wherein said coating film comprises an aluminum fluoride.

5,602,216

PROCESS AND APPARATUS FOR PERFORMING A POLYMERISATION IN A TUBE REACTOR

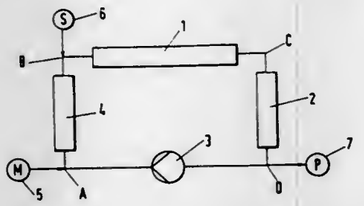
Jacques Juvet, Aesch bei Neftenbach, Switzerland, assignor to Sulzer Chemtech AG, Winterthur, Switzerland

Filed Jul. 22, 1996, Ser. No. 681,437

Claims priority, application European Pat. Off., Jul. 26, 1995, 95810486

Int. Cl.[6] C08F 2/02

U.S. Cl. 526—64 **8 Claims**



1. Process for carrying out a polymerisation in a tube reactor comprising the following steps:

mixing a freshly introduced monomer with a returned monomer-polymer mixture as well as cooling the mixture to a prescribed initial temperature,

admixing an inactivatable polymerisation starter, the inactivation of which begins when heated above a decomposition temperature, as well as performing a partial polymerisation in the tube reactor,

heating the mixture leaving the tube reactor to at least the said decomposition temperature, and finally

returning a portion of the mixture and removal of the other portion as product.

5,602,217

PROCESS OF POLYMERIZATION USING AGED ACTIVATORS

Moses O. Jejelowo, Kingwood, Tex., assignor to Exxon Chemical Patents Inc., Wilmington, Del.

Division of Ser. No. 271,598, Jul. 7, 1994, Pat. No. 5,468,702. This application Aug. 16, 1995, Ser. No. 515,788

Int. Cl.[6] C08F 4/648

U.S. Cl. 526—129 **10 Claims**

1. A process for polymerizing olefins alone or in combination with one or more other olefins, said process comprising polymerizing in the presence of a catalyst system, said catalyst system comprising at least one metallocene catalyst component and at least one alkylalumoxane activator that has been in combination with an inorganic oxide support material and aged for 300 hours or more.

5,602,218

PROCESS FOR THE PREPARATION OF A POLY-1-OLEFIN

Werner Breuers, Eppstein; Ludwig Böhm, Hattersheim, and Rainer Lecht, Kelkheim, all of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Filed Nov. 3, 1994, Ser. No. 333,858

Claims priority, application Germany, Nov. 6, 1993, 43 37 985.0

Int. Cl.[6] C08F 4/64

U.S. Cl. 526—159 **17 Claims**

1. A process for the preparation of a polyolefin by the polymerization of an alpha-olefin at a temperature of 50° to 150° C. and at a pressure of 1 to 40 bar, in the presence of a catalyst composed of a transition metal component (component A) and an organometallic compound (component B), wherein component A has been prepared by

a) reacting an organomagnesium compound of the formula $R^1_xMgR^2_{2-x}$, wherein R^1 and R^2 are identical or different alkyl radicals having 2 to 12 carbon atoms and x is a number from 0 to 2, with a primary aliphatic chlorohydrocarbon in an amount of 0.5 to 2.5 mol of chlorohydrocarbon, based on 1 mol of organomagnesium compound, optionally in the presence of an organoaluminum compound of the formula $AlR^3_n(OR^4)_{3-n}$, wherein R^3 and R^4 are identical or different alkyl radicals having 1 to 8 carbon atoms and n is 0, 1, 2 or 3, or in the presence of the reaction product of aluminum trialkyls or aluminum dialkyl hydrides with diolefins containing 4 to 20 carbon atoms, at a temperature of 30° to 110° C.,

b) treating the resulting solid with an alcohol in an amount of 0.001 to 1 mol per gram atom of magnesium contained in the solid, at a temperature of −20° to 150° C., and

c) reacting the resulting support with one or more compounds of the formula $M^1X_m(OR^5)_{4-m}$, wherein M^1 is titanium or zirconium, R^5 is an alkyl radical having 2 to 10 carbon atoms, X is a halogen atom and m is an integer from 0 to 4, in an amount of 0.1 to 5 mol per gram atom of magnesium contained in the support, at a temperature of 20° to 180° C.,

a device for producing shock waves being used instead of a stirrer in steps a), b) and c) for the thorough mixing of the reactants.

5,602,219

PROCESS FOR PREPARING CYCLOOLEFIN COPOLYMERS

Michael Aulbach, Hofheim; Michael-Joachim Brekner, Frankfurt; Frank Küber, Oberursel; Frank Osan, Kelkheim; Thomas Weller, Mainz, and Jürgen Rohrmann, Kelkheim, all of Germany, assignors to Hoechst Aktiengesellschaft, Germany

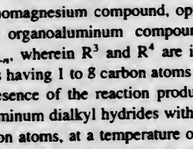
Continuation of Ser. No. 195,558, Feb. 14, 1994, abandoned. This application May 22, 1995, Ser. No. 446,414

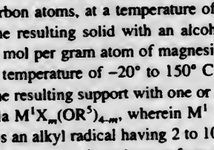
Claims priority, application Germany, Feb. 12, 1993, 43 04 307.0

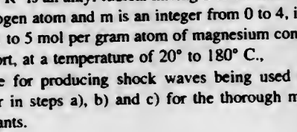
Int. Cl.[6] C08F 4/62;232/08

U.S. Cl. 526—160 **14 Claims**

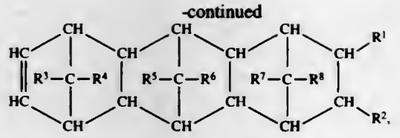
1. A process for preparing a cycloolefin copolymer by polymerization of from 0.1 to 99.9% by weight, based on the total amount of monomers, of at least one polycyclic olefin of the formula I, II, III, IV or VI

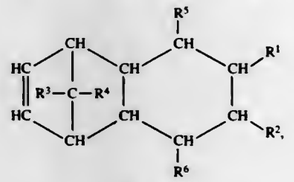

(I)

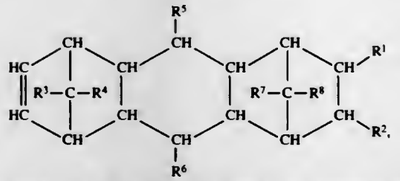

(II)


(III)

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(IV)

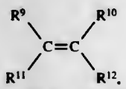

(V)


(VI)

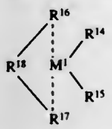
in which R^1, R^2, R^3, R^4, R^5, R^6, R^7 and R^8 are identical or different and are a hydrogen atom a C_6–C_{10}-aryl radical or a C_1–C_8-alkyl radical, where identical radicals in the various formulae can have different meanings, from 0 to 99.9% by weight, based on the total amount of the monomers, of a cycloolefin of the formula VII


(VII)

in which n is from 2 to 10, from 0.1 to 99.9% by weight, based on the total amount of monomers, of ethylene and from 0 to 99.9% by weight, based on the total amount of monomers, of at least one acyclic 1-olefin of the formula VII


(VIII)

in which R^9, R^{10}, R^{11} and R^{12} are identical or different and are a hydrogen atom a C_6–C_{10}-aryl radical or a C_1–C_8-alkyl radical, at temperatures from 20° to 150° C. and a pressure from 0.01 to 64 bar, in the presence of a catalyst which comprises at least one cocatalyst and at least one metallocene of the formula XI

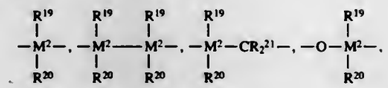

(XI)

in which

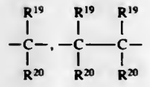
M^1 is titanium, zirconium, hafnium, vanadium, niobium or tantalum,

R^{14} and R^{15} are identical or different and are a hydrogen atom, a halogen atom, a C_1–C_{10}-alkyl group, a C_1–C_{10}-alkoxy group, a C_6–C_{10}-aryl group, a C_6–C_{10}-aryloxy group, a C_2–C_{10}-alkenyl group, a C_7–C_{40}-arylalkyl group or a C_8–C_{40}-arylalkenyl group,

R^{18} is



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$=BR^{19}$, $=AlR^{19}$, —Ge—, —Sn—, —O—, —S—, =SO, $=SO_2$, $=NR^{19}$, =CO, $=PR^{19}$ or $=P(O)R^{19}$, where R^{19}, R^{20} and R^{21} are identical or different and are a hydrogen atom, a halogen atom, a C_1–C_{10}-alkyl group, a C_1–C_{10}-fluoroalkyl group, a C_6–C_{10}-fluoroalkyl group, a C_6–C_{10}-aryl group, a C_1–C_{10}-alkoxy group, a C_2–C_{10}-alkenyl group, a C_7–C_{40}-arylalkyl group, a C_8–C_{40}-arylalkenyl group or a C_7–C_{40}-alkylaryl group or R^{19} and R^{20} or R^{19} and R^{21} in each case form a ring with the atoms connecting them,

M^2 is silicon, germanium or tin,

wherein R^{16} is a cyclopentadienyl group and R^{17} is an indenyl group.

5,602,220

FREE RADICAL POLYMERISATION PROCESS

David M. Haddleton, Warwickshire, and Andrew V. G. Muir, London, both of United Kingdom, assignors to Zeneca Limited, London, England

PCT No. PCT/GB94/01693, § 371 Date Feb. 9, 1996, § 102(e) Date Feb. 9, 1996, PCT Pub. No. WO95/04759, PCT Pub. Date Feb. 16, 1995

PCT Filed Aug. 2, 1994, Ser. No. 596,230

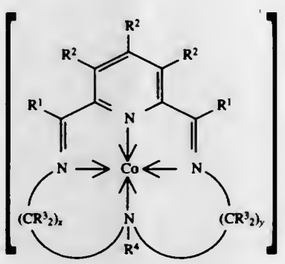
Claims priority, application Great Britain, Aug. 9, 1993, 9316525

Int. Cl.[6] C08F 4/26;20/10;12/08;4/04

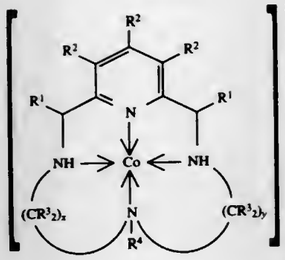
U.S. Cl. 526—172 **14 Claims**

1. Process for the free-radical polymerisation of olefinically unsaturated monomer(s) using a free-radical initiator, wherein said polymerisation is performed in the presence of a compound for effecting molecular weight control, said molecular weight control compound being selected from Cobalt II chelates of the following formulae I, II and III:

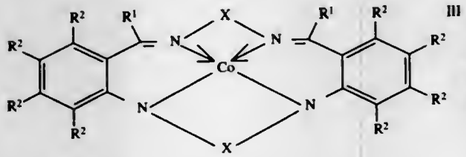
I



-continued



II



III

wherein:
x and y are independently 2 to 5;
each R^1, R^2, R^3 and R^4 is independently selected from H, C1–C12 alkyl, optionally substituted aryl, OR^5 where R^5 is C1 to C12 alkyl or optionally substituted aryl, CO_2R^5, SO_3H, $C(=O)R^5$, CO_2H, NO_2, OH, NR^5_2, NH_2, NHR^5, SR^5, SH, CN, SO_3R^5, halogen, 2-furyl and 3-furyl;
each X is independently selected from $(CR^6_2)_n$, $(CR^6_2O)_n$, optionally substituted o-phenylene, and optionally substituted 1,8-napbthylene, where each R^6 is independently selected from H and C1 to C12 alkyl, and n is 1 to 10;
and wherein said cobalt chelates of formulae I and II possess a positive charge of 2 and are associated with an anion or anions for balancing the positive charge, while that of formula III is neutral;
and also Co III analogues of said cobalt II chelates of formulae I, II and III in which the Co atom is additionally covalently bonded, in a direction at right angles to the macrocyclic chelate ring system, to H, a halide ion or other anion, or a homolytically dissociatable organic group.

5,602,221

PRESSURE SENSITIVE ADHESIVES WITH GOOD LOW ENERGY SURFACE ADHESION

Greggory S. Bennett, Hudson, Wis., and Christopher A. Haak, Oakdale, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 150,425, Nov. 10, 1993, abandoned. This application Sep. 29, 1995, Ser. No. 537,034
Int. Cl.[6] C08F 218/00
U.S. Cl. 526—307.7 **24 Claims**

I. A composition consisting essentially of a pressure sensitive adhesive polymer consisting of the reaction product of:
(a) 25–97 parts by weight of an acrylic acid ester of a monohydric alcohol whose homopolymer has a T_g less than 0° C.;
(b) 3–75 parts by Weight of a non-polar ethylenically unsaturated monomer whose homopolymer has a solubility parameter of no greater than 10.50 and a T_g greater than 15° C.; and
(c) 0–5 parts by weight of a polar ethylenically unsaturated monomer whose homopolymer has a solubility parameter greater than 10.50 and a T_g greater than 15° C.,
the relative amounts of said acrylic acid ester, said non-polar ethylenically unsaturated monomer, and said polar ethylenically unsaturated monomer being chosen such that the 90° peel adhesion of said reaction product to a polypropylene surface is at least 2 lbs/0.5 in. after a 72 hour dwell at room temperature as measured according to Test Procedure B. with the proviso that the composition contains essentially no emulsifier.

5,602,222

PROCESS FOR MAKING AN ACRYLONITRILE, METHACRYLONITRILE AND OLEFINICALLY UNSATURATED MONOMERS

Richard C. Smierciak, Aurora; Eddie Wardlow, Jr., Shaker Hts., and Lawrence E. Ball, Akron, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation of Ser. No. 333,943, Nov. 3, 1994, abandoned, which is a continuation of Ser. No. 150,515, Nov. 10, 1993, abandoned. This application Oct. 13, 1995, Ser. No. 543,230
Int. Cl.[6] C08F 220/44
U.S. Cl. 526—342 **37 Claims**

1. A process for polymerizing an acrylonitrile monomer, a methacrylonitrile monomer, and an olefinically unsaturated monomer to make an acrylonitrile/methacrylonitrile/olefinically unsaturated multipolymer, said process comprising the steps of:
heating an initial multimonomer mixture comprising acrylonitrile monomer, methacrylonitrile monomer and olefinically unsaturated monomer under an inert atmosphere in the range of about 40° C. to about 120° C.;
adding an initiator to an initial multimonomer mixture to start a polymerization reaction;
adding a multimonomer feed mixture comprising acrylonitrile monomer, methacrylonitrile monomer and olefinically unsaturated monomer to a polymerization mixture wherein the multimonomer feed mixture is added at a fixed and constant molar ratio of acrylonitrile monomer to methacrylonitrile monomer to olefinically unsaturated monomer and at a constant rate which is less than the rate at which the monomers are converted into multipolymer.

5,602,223

ETHYLENE-α-OLEFIN COPOLYMER AND A MOLDED ARTICLE THEREFOR

Toshio Sasaki, Ichihara; Kohzoh Miyazaki, Sodegaura; Hiroyuki Shiraishi, Sodegaura; Yuji Shigematsu, Ichihara; Hirofumi Johoji, Ichihara; Akio Uemura, Ichihara, and Yufu Sato, Ichihara, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation of Ser. No. 357,785, Dec. 16, 1994, abandoned, which is a continuation of Ser. No. 118,266, Sep. 9, 1993, abandoned. This application Mar. 5, 1996, Ser. No. 611,018
Claims priority, application Japan, Sep. 10, 1992, 4-241749
Int. Cl.[6] C08F 210/02
U.S. Cl. 526—348.1 **21 Claims**

I. An ethylene-α-olefin copolymer having:
(A) a density (ρ) of from 0.870 to 0.945 g/cm^3,
(B) a ratio (TVR) of trans-vinylene type carbon-carbon double bonds to total carbon-carbon double bonds as determined with an infrared absorption spectrum being 35% or more,
(C) a weight average molecular weight (MW) of from 3.0×10^4 to 6.0×10^5,
(D) a ratio (Mw/Mn) of a weight average molecular weight (Mw) to a number average molecular weight (Mn) being from 3 to 20,
(E) a coefficient (Px) of moldability represented by the following formula (1) of from 0.05 to 0.60.

$$Px=Mb/Mw \quad (1)$$

wherein Mb is an average molecular weight of fragments between branchings, and Mw is a weight average molecular weight, and
(G) a swelling ratio (SR) of 1.25 or more.

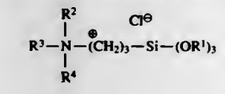
5,602,224

SILICONE ALKYL QUATS

Richard O. Vrckovnik, Toronto, Canada, and Anthony J. O'Lenick, Jr., Lilburn, Ga., assignors to Siltech Inc., Norcross, Ga.

Filed Mar. 19, 1996, Ser. No. 617,571
Int. Cl.[6] C08G 77/06
U.S. Cl. 528—21 **20 Claims**

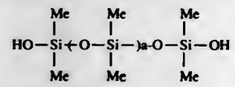
1. An silicone polymer made by the reaction of
(a) a cationic alkoxy silane conforming to the following structure:



wherein;
R^1 is methyl or ethyl;
R^2 is alkyl having from 6 to 20 carbon atoms;
R^3 and R^4 are each independently selected from the group consisting of alkyl having from 1 to 20 carbon atoms and

$$-(CH_2CH_2O)x-(CH_2CH(CH_3)O)y-(CH_2CH_2O)z-H$$

x, y and z are each independently integers ranging from 0 to 20, with the proviso that x+y+z is greater than 1;
(b) a silanol conforming to the following structure:



a is an integer from 10 to 2000;
Me is methyl; and
(c) an amine catalyst selected from the group consisting of monoethanolamine, diethanolamine, triethanolamine, alkyl amine conforming to the following structure:

$$CH_3-(CH_2)b-NH_2$$

b is an integer ranging from 0 to 19; and cyclohexylamine.

5,602,225

PROCESS FOR IMPARTING OIL- AND WATER-REPELLENCY TO TEXTILE FIBRES, SKIN, LEATHER AND THE LIKE

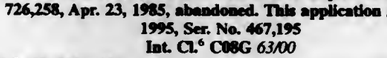
Laura Montagna, Arese; Mauro Scapin, Busto Arsizio, and Padmanabhan Srinivasan, Milan, all of Italy, assignors to Ausimont S.p.A., Milan, Italy

Filed Oct. 13, 1995, Ser. No. 542,918
Claims priority, application Italy, Oct. 13, 1994, MI94A2086
Int. Cl.[6] C08G 77/04
U.S. Cl. 528—25 **15 Claims**

1. Process for imparting oil- and water-repellency to textile fibers, skin, leather substrates, which comprises applying on said substrates a composition comprising a functionalized (per)fluoropolyoxyalkylene with silane groups having the formula:

$$R_f-O-CFY-L-Si(R_1)_a(OR_2)_{3-a} \quad (I)$$

wherein:
R_f is a (per)fluoropolyoxyalkylene chain; Y is —F or —CF_3; L is a divalent organic group; R_1 and R_2, equal to or different from each other, are selected from C_1–C_6 alkyls, optionally containing one or more ether bridges, C_6–C_{10} aryls, alkylaryls or arylalkyls C_7–C_{12}; α is an integer from 0 to 2;
and a phosphoric monoester having the formula:



(II)

wherein:
R'_f is a (per)fluoropolyoxyalkylene chain; Y' is —F or —CF_3; L' is a divalent organic group; β=1, Z^+ is selected from H^+ or M^+ wherein M is an alkaline metal or $N(R_3)_4^+$ wherein the R_3 groups, equal to or different from each other, are H or C_1–C_6 alkyls.

5,602,226

METHOD OF MAKING MULTIDIMENSIONAL POLYESTERS

Hyman R. Lubowitz, Rolling Hills Estates, Calif.; Clyde H. Sheppard, Bellevue, and Ronald R. Stephenson, Kirkland, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 176,518, Apr. 1, 1988, abandoned, which is a continuation-in-part of Ser. No. 810,817, Dec. 17, 1985, abandoned, which is a continuation-in-part of Ser. No. 726,258, Apr. 23, 1985, abandoned. This application Jun. 6, 1995, Ser. No. 467,195
Int. Cl.[6] C08G 63/00
U.S. Cl. 528—181 **21 Claims**

1. A method for making multidimensional polyesters comprising the step of reacting a compound of the formula: Ar-(Q)$_w$ wherein
Ar=a pbenylene radical of valency w;
w=a small integer greater than or equal to 3;
Q=—OH or —COX; and
X=halogen
with substantially a stoichiometric amount of a compound of the formula: R-P wherein
R=a monovalent radical; and
P=—OH, if Q=—COX or —COX, if Q=—OH
in a solvent under an inert atmosphere in the presence of an effective amount of a thallium catalyst.

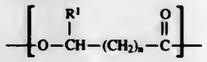
5,602,227

BIODEGRADABLE COPOLYMERS

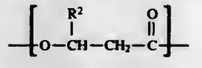
Isao Noda, Fairfield, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 467,373, Jun. 6, 1995, abandoned, which is a division of Ser. No. 422,009, Apr. 13, 1995, Pat. No. 5,489,470, which is a continuation of Ser. No. 364,917, Dec. 28, 1994, abandoned, which is a division of Ser. No. 306,349, Sep. 15, 1994, abandoned, which is a continuation-in-part of Ser. No. 247,539, May 23, 1994, abandoned, which is a continuation of Ser. No. 187,969, Jan. 28, 1994, abandoned. This application Aug. 30, 1995, Ser. No. 522,427
Int. Cl.[6] C08G 63/06; 63/66
U.S. Cl. 528—361 **6 Claims**

1. A biodegradable copolymer comprising at least two randomly repeating monomer units wherein the first randomly repeating monomer unit has the structure



wherein R^1 is H, or C_1 or C_2 alkyl, and n is 1 or 2; the second randomly repeating monomer unit has the structure



wherein when R^1 is C_1 or C_2 and n is 1, R^2 is a C_{12}–C_{19} alkyl or alkenyl; when R^1 is C_1 or C_2 and n is 2, R^2 is a C_4–C_{19} alkyl or

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alkenyl; and when R^1 is H and n is 1 or 2 , R^2 is a C_{4-C19} alkyl or alkenyl; and wherein at least 50% of the randomly repeating monomer units have the structure of the first randomly repeating monomer unit.

5,602,228

NICKEL PHOSPHATE CATALYSTS

Ying Wang, Diamond Bar; Matthew L. Marrocco, III, Santa Ana, and Mark S. Trimmer, Monrovia, all of Calif., assignors to Maxdem Incorporated, San Dimas, Calif.

Filed Jun. 6, 1995, Ser. No. 467,099

Int. Cl.[6] C08G *61/00;61/02;* C07C *1/26*

U.S. Cl. 528—397 **44 Claims**

1. A method of coupling aryl halides to form biaryl or polyaryl compounds, the method comprising the steps of:

providing an aryl halide selected from the group consisting of an aryl chloride, an aryl bromide, and an aryl iodide; and

mixing the aryl halide in an anhydrous aprotic solvent with a nickel compound or nickel complex, a phosphite ligand, and a reducing metal to thereby form said biaryl or polyaryl compound.

5,602,229

PENTAPEPTIDE ANTIBIOTICS

Adriano Malabarba, Binasco; Romeo Ciabatti, Novate Milanese, and Jürgen K. Kettenring, Varese, all of Italy, assignors to Gruppo Lepetit S.p.A., Gerenzano, Italy

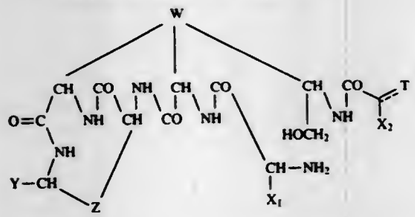
Continuation of Ser. No. 298,237, Aug. 30, 1994, abandoned, which is a continuation of Ser. No. 122,820, Sep. 17, 1993, abandoned, which is a continuation of Ser. No. 961,213, Oct. 15, 1992, abandoned, which is a continuation of Ser. No. 842,799, Feb. 27, 1992, abandoned, which is a continuation of Ser. No. 552,275, Jul. 12, 1990, abandoned. This application May 15, 1995, Ser. No. 440,868

Claims priority, application European Pat. Off., Jul. 18, 1989, 89113132

Int. Cl.[6] C07K *7/64*

U.S. Cl. 530—317 **9 Claims**

1. A pentapeptide antibiotic of formula (I)



wherein W, Z, X_1, X_2, and T represent the relative portions of an antibiotic derived from the ristocetin type dalbaheptides or the vancomycin type dalbaheptides wherein y represents a carboxy acid group, a lower alkyl carboxy ester, or a hydroxymethyl group; the salts of the pentapeptide with acids or bases; or the innersalts of the pentapeptide.

5,602,230

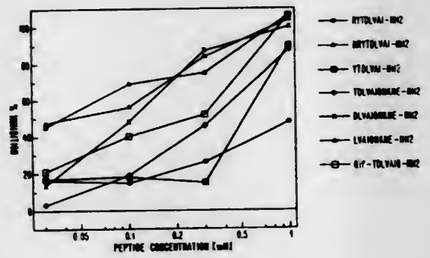
PEPTIDE INHIBITORS OF SELECTIN BINDING

George A. Heavner, Malvern, Pa.; Leon Epps, Baltimore, Md., and Marian Kruszynski, West Chester, Pa., assignors to Centocor, Inc., Malvern, Pa.

Continuation of Ser. No. 889,650, May 19, 1992, abandoned. This application May 10, 1995, Ser. No. 438,475

Int. Cl.[6] A61K *38/08;* C07K *7/06*

U.S. Cl. 530—327 **15 Claims**



1. A peptide selected from the group consisting of

Arg-Tyr-Thr-Asp-Leu-Val-Ala-Ile-NH_2 (SEQ ID NO: 1)

Tyr-Thr-Asp-Leu-Val-Ala-Ile-NH_2 (SEQ ID NO: 4)

Thr-Asp-Leu-Val-Ala-Ile-Gln-Asn-Lys-Asn-Glu-NH_2 (SEQ ID NO: 7)

Asp-Leu-Val-Ala-Ile-Gln-Asn-Lys-Asn-Glu-NH_2 (SEQ ID NO: 6)

Leu-Val-Ala-Ile-Gln-Asn-Lys-Asn-Glu-NH_2 (SEQ ID NO: 8)

Thr-Asp-Leu-Val-Ala-Ile-Gln-NH_2 (SEQ ID NO: 9)

and

Nif-Thr-Asp-Leu-Val-Ala-Ile-Gln-NH_2 (SEQ ID NO: 10).

5,602,231

PROCESS FOR MAKING PEPTIDES

Ronald Cotton, and Michael B. Giles, both of Congleton, England, assignors to Zeneca Limited, London, United Kingdom

Continuation of Ser. No. 165,546, Dec. 13, 199[illegible] abandoned, which is a continuation of Ser. No. 898,831, Jun. 15, 1992, abandoned. This application May 26, 1995, Ser. No. 452,096

Claims priority, application United Kingdom, Jun. 14, 1991, 9112825

Int. Cl.[6] C07K *1/04;1/06*

U.S. Cl. 530—334 **7 Claims**

1. In a process for the solid phase synthesis of a peptide comprising the steps of:

(a) attaching the carboxylic end of a first single N-protected amino acid to a solid support via a linking group;

(b) removing the N-protecting group under conditions such that said attached amino acid remains connected to said solid support and coupling an additional single N-protected amino acid to the unprotected N-terminus of said first single amino acid;

(c) removing the N-protecting group under conditions such that said attached amino acids remain connected to said solid support and coupling an additional single N-protected amino acid to the unprotected N-terminus of the attached amino acids;

(d) repeating step (c) until said peptide is synthesized;

(e) removing the N-protecting group from the N-terminus of said peptide;

(f) cleaving said linking group whereby said peptide is released from said solid support; and

(g) isolating said peptide,

the improvement comprising performing each of steps (a)–(f) under solid phase conditions, selecting in the performance of steps (a) through (d) as the first or additional N-protected amino acid at least one active ester or imidazolide of a Fmoc-protected aza-amino acid and removing the Fmoc-protecting group in steps (b), (c), (d) and (e) under mild basic conditions to form an aza-amino-containing peptide.

5,602,232

METHOD FOR PRODUCING METAL-INTERFERON-α CRYSTALS

Paul Reichert, Montville; Charles McNemar, High Bridge; Nagamani Nagabhushan; Tattanahalli L. Nagabhushan, both of Parsippany; Stephen Tindall, Madison, and Alan Hruza, Hackettstown, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation-in-part of Ser. No. 24,330, Feb. 25, 1993, Pat. No. 5,441,734. This application Dec. 14, 1994, Ser. No. 356,021

Int. Cl.[6] C07K *14/56*

U.S. Cl. 530—351 **17 Claims**

1. A method for producing a crystalline metal interferon (INF)α-2 comprising:

forming an aqueous solution of IFN α-2 and a metal acetate salt at a pH of from about 5 to about 7, wherein the solution has an initial concentration of IFNα-2 of from 5 to about 80 mg of IFN α-2/ml of solution, the metal acetate salt is either zinc acetate or cobalt acetate, and the solution has an initial concentration of the metal acetate salt of from 70 mM to 120 mM; and

warming the solution until supersaturation occurs and metal IFN α-2 crystals appear, wherein the solution has an initial temperature of from about 4° C., and the solution is warmed to a temperature of about 22° C.

5,602,233

PROCESS FOR PRODUCTION OF INHIBITED FORMS OF ACTIVATED BLOOD FACTORS

Robert King, Fremont, Calif., assignor to COR Therapeutics, Inc., South San Francisco, Calif.

Continuation of Ser. No. 330,978, Oct. 28, 1994. This application Jun. 7, 1995, Ser. No. 484,558

Int. Cl.[6] C07K *14/745;1/18;* A61K *38/36;* C12P *21/06*

U.S. Cl. 530—381 **13 Claims**

1. A process for preparing an inhibited form of an activated blood factor, comprising the steps of providing a partially purified preparation containing blood factor Factor VII, treating the partially purified preparation to convert the blood factor to an activated blood factor and to convert the activated blood factor to an inhibited form in a single step, and then recovering the resulting inhibited activated blood factor.

5,602,234

STABLE ANTIBODY SOLUTION AND METHOD FOR PREPARING SAME

Yoichi Sawayanagi, Tokyo, Japan, assignor to Dojin Iyaku-Kako Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 167,198, Dec. 16, 1993, abandoned. This application Feb. 13, 1995, Ser. No. 387,375

Claims priority, application Japan, Dec. 17, 1992, 4-337478

Int. Cl.[6] C07K *16/00;14/765*

U.S. Cl. 530—390.5 **2 Claims**

1. A method for stabilizing an antibody or a labelled antibody comprising adding albumin and an azo dye selected from the group consisting of Direct Blue 53 (Evan's Blue) and Direct Red 28 (Congo Red) to a solution of an antibody or a labelled antibody.

5,602,235

Patent Not Issued For This Number

5,602,236

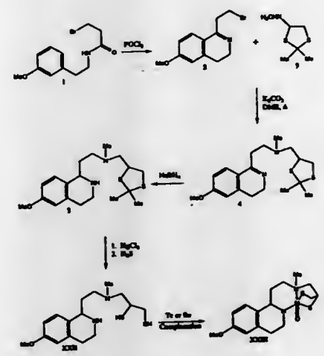
METAL-CONTAINING STEROID MIMICS AND LIGANDS USEFUL IN THE PREPARATION THEREOF

Raghavan Rajagopalan, Maryland Heights, Mo., assignor to Mallinckrodt Medical, Inc., St. Louis, Mo.

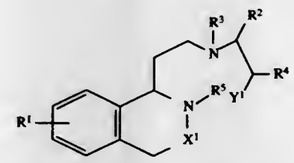
Filed Apr. 8, 1994, Ser. No. 224,928

Int. Cl.[6] C07F *5/00;13/00;* C07J *73/00*

U.S. Cl. 534—10 **16 Claims**



1. A ligand having the structure:



where R^1 and R^2 are the same or different and each is selected from the group consisting of hydrogen, hydroxyl, carboxyl, amino, alkyl, aryl, alkaryl, alkaroyl, hydroxyalkyl, hydroxyalkaroyl, alkoxy, alkoxycarbonoyl and carbamoyl and where the carbon containing portions of R^1 and R^2 contain between 1 and 10 carbon atoms; R^3, R^4 and R^5 are the same or different and each is selected from the group consisting of hydrogen, alkyl, hydroxyalkyl, aminoalkyl, carboxyalkyl and mercaptoalkyl and where the carbon containing portions of R^3, R^4 and R^5 contain between 1 and 6 carbon atoms; X^1 is selected from the group consisting of —CH_2, —CHOH, —C═O, —$CHCH_2SH$, and —$CHCO_2H$; and Y^1 is selected from the group consisting of —SH, and —NR^6R^7, R^6 and R^7 being the same or different and are defined in the same manner as R^1 and R^3, respectively.

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5,602,237

1:2 METAL COMPLEXES OF POLYAZO DYES HAVING A SULPHO SUBSTITUTED 1-HYDROXY-2-NAPHTHYL GROUP AS THE COUPLING COMPONENT AND THEIR USE AS DYESTUFFS

Jordi B. Barra, and Jose R. Sorolla, both of Barcelona, Spain, assignors to Sandoz Ltd., Basle, Switzerland

Filed Mar. 29, 1995, Ser. No. 412,670

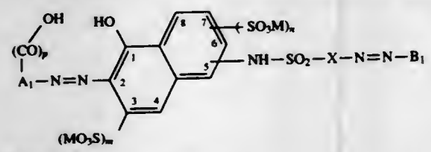
Claims priority, application United Kingdom, Mar. 30, 1994, 9406289

Int. Cl.[6] **C09B** *45/26;45/30;45/32;* **D06P** *1/10*

U.S. Cl. 534—718 **23 Claims**

1. A 1:2 metal complex of (i) a polyazo compound of formula

(I)



wherein

$-A_1-(CO)_p-OH$ signifies the radical of a diazo component of formula $H_2N-A-(CO)_p-OH$,

in which the substituent $-(CO)_p-OH$ is in ortho-position to the diazotizable amino group, NH_2,

—A— is a bivalent aromatic radical, and p signifies 0 or 1.

—X— signifies a bivalent aromatic radical,

$-B_1$ signifies the radical of a coupling component, HB,

m signifies 0 or 1,

n signifies 0,1 or 2,

and M signifies hydrogen or a cation, with the proviso that m+n=1 or 2;

(ii) two different polyazo compounds of said formula (I);

(iii) a polyazo compound of formula (I) and one or more chromophoric or a non-chromophoric complex-forming ligands provided that said chromophoric or a non-chromophoric complex-forming ligands are not polyazo compounds of formula (I);

or a mixture of such complexes.

22. A process for the dyeing of a substrate dyeable with anionic dyes, comprising applying a 1:2 metal complex or a mixture thereof according to claim 1 to a substrate dyeable with anionic dyes.

5,602,238

AZOTHIOPHENE DYES CONTAINING A 2,4,6-TRIAMINO-3-CYANOPYRIDINE COUPLING COMPONENT

Jürgen Schaetzer, Rheinfelden, Germany, assignor to Ciba-Geigy Corporation, Tarrytown, N.Y.

Filed Aug. 25, 1995, Ser. No. 519,226

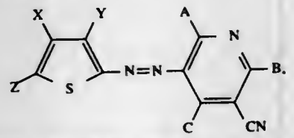
Claims priority, application Switzerland, Aug. 29, 1994, 2639/94

Int. Cl.[6] **C09B** *29/033;29/42;67/22;* **D06P** *3/54*

U.S. Cl. 534—766 **10 Claims**

1. A dye of the formula

(1)



wherein X is hydrogen, halogen, C_1–C_8alkyl or phenyl which is unsubstituted or substituted by fluoro, chloro, bromo, methyl, methoxy or nitro; Y is cyano or nitro; Z is nitro, cyano, acetyl, benzoyl, formyl, $-CH=C(CN)_2$ or $-CH=C(CN)CO_2R$, and R is C_1–C_4alkyl, and A, B and C are each independently of one another $-NH_2$ or $-N(R_1)R_2$, and R_1 and R_2 are each independently of each other hydrogen, phenyl which is unsubstituted or substituted by hydroxy, C_1–C_4alkyl, halogen or C_1–C_4alkoxy, or is unsubstituted or C_1–C_4alkyl-substituted C_4–C_7 cycloalkyl, or C_1–C_{18}alkyl which is unsubstituted or substituted by halogen, cyano, C_2–C_4alkanoyloxy, hydroxy, C_1–C_4alkoxy, phenoxy or phenyl, which phenyl or phenoxy is in turn unsubstituted or substituted by hydroxy, C_1–C_4alkyl, halogen or C_1–C_4alkoxy, and the C_1–C_{18}alkyl radical is optionally interrupted by one or more oxygen atoms, or wherein R_1 and R_2, together with the linking nitrogen atom, form a piperidinyl, pyrrolidinyl or morpholinyl radical.

5,602,239

5-O-DESOSAMINYLERYTHRONOLIDE DERIVATIVES

Yoko Misawa; Toshifumi Asaka; Masato Kashimura; Shigeo Morimoto, and Katsuo Hatayama, all of Tokyo, Japan, assignors to Taisho Pharmaceutical Co., Ltd., Japan

PCT No. PCT/JP94/00087, § 371 Date Jul. 13, 1995, § 102(e) Date Jul. 13, 1995, PCT Pub. No. WO94/17088, PCT Pub. Date Aug. 4, 1994

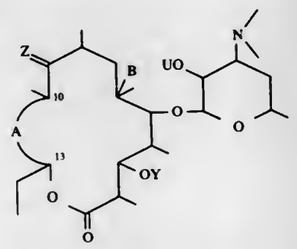
PCT Filed Jan. 24, 1994, Ser. No. 491,860

Claims priority, application Japan, Jan. 26, 1993, 5-010351

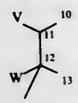
Int. Cl.[6] **C07H** *17/08*

U.S. Cl. 536—7.4 **1 Claim**

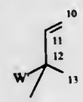
1. A 5-O-desosaminylerythronolide derivative represented by the formula:



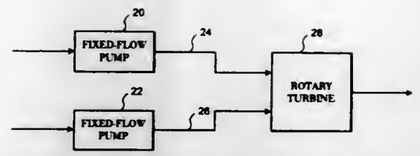
wherein A is a group represented by the formula:



(wherein V is a hydroxyl group, W is a hydrogen atom or a hydroxyl group, or V and W together with the carbon atoms at the 11- and 12-positions form a cyclic carbonate group) or a group represented by the formula:



(wherein W' is a hydrogen atom or a hydroxyl group), B is a hydroxyl group or a methoxy group, U is a hydrogen atom or a C_2–C_8 alkanoyl group, Y is a tetrahydropyranyl group, a tetrahydrofuranyl group, a phenyl group, a phenyl group substituted by one to 5 members selected from the group consisting of halogen atoms, nitro groups, trifluoromethyl groups and amino groups, a glucopyranosyl group, a ribopyranosyl group, a glucopyranosyl group substituted by an acetyl group or a benzyl group on the hydroxyl group, a ribopyranosyl group substituted by an acetyl group or a benzyl group on the hydroxyl group, a benzyl group, a benzyl group substituted by a C_1–C_3 alkyl group; or methyl group, Z is an oxygen atom or a group represented by the formula: =N-O-R^1 (wherein R^1 is a hydrogen atom, a C_2–C_8 alkanoyl group, a benzyl group or a benzyl group substituted by one to 5 members selected from the group consisting of halogen atoms and C_1–C_4 alkyl groups) or a pharmaceutically acceptable acid addition salt thereof.



5,602,240

BACKBONE MODIFIED OLIGONUCLEOTIDE ANALOGS

Alain De Mesmaeker, Kaenerkinden, Switzerland; Jacques Lebreton, Marseilles, France; Adrian Waldner, Allschwil, Switzerland, and Phillip D. Cook, Carlsbad, Calif., assignors to Ciba Geigy AG., Basel, Switzerland, and Isis Pharmaceuticals, Inc., Carlsbad, Calif.

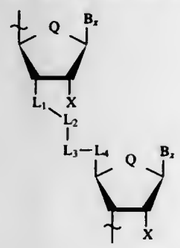
PCT No. PCT/US92/04305, § 371 Date Apr. 25, 1994, § 102(e) Date Apr. 25, 1994, PCT Pub. No. WO92/20823, PCT Pub. Date Nov. 26, 1992

Continuation-in-part of Ser. No. 703,619, May 21, 1991, Pat. No. 5,378,825, which is a continuation-in-part of Ser. No. 566,836, Aug. 13, 1990, Pat. No. 5,223,618, and a continuation-in-part of Ser. No. 558,663, Jul. 27, 1990, Pat. No. 5,138,045. This PCT application May 21, 1992, Ser. No. 140,206

Int. Cl.[6] **C07H** *21/00;* **C12N** *15/11*

U.S. Cl. 536—22.1 **20 Claims**

1. An oligonucleotide analog comprising the structure:



wherein:

B_x is a variable base moiety;

Q is 0, CH_2, CHF or CF_2;

X is H; OH; C_1 to C_{10} lower alkyl, substituted lower alkyl, alkaryl or aralkyl; F; Cl; Br; CN; CF_3; OCF_3; OCN; O—, S—, or N-alkyl; O—, S—, or N-alkenyl; $SOCH_3$; SO_2CH_3; ONO_2; NO_2; N_3; NH_2; heterocycloalkyl; heterocycloalkaryl; aminoalkylamino; polyalkylamino; or substituted silyl;

L_1—L_2—L_3—L_4 is selected from NR—C(O)—CH_2—CH_2—, NR—C(S)—CH_2— CH_2, CH_2—NR—C(O)—CH_2, CH_2—NR—C(S)—CH_2, CH_2—CH_2— NR—C(O), CH_2—CH_2—NR— C(S), C(O)—NR—CH_2—CH_2, C(S)—NR—CH_2—CH_2, CH_2—C(O)—NR—CH_2, and CH_2 —C(S)—NR—CH_2 where R is hydrogen, alkyl, substituted alkyl, aralkyl, alkenyl, alkaryl, aminoalkyl, hydroxyalkyl, heterocycloalkyl, or heterocycloaralkyl; and

the remaining subunits are natural or synthetic.

5,602,241

METHOD FOR PURIFYING POLYSACCHARIDES

Kazumasa Maruyama; Kazuyuki Yamamoto; Shigehiro Nagura, and Taira Homma, all of Nigata, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan, and Shin-Etsu Bio, Inc., San Diego, Calif.

Filed Mar. 14, 1995, Ser. No. 403,450

Int. Cl.[6] **C07G** *17/00;* **C07H** *1/06*

U.S. Cl. 536—127 **20 Claims**

1. In a method for continuously precipitating a polysaccharide dissolved in an aqueous solution wherein a hydrophilic organic solvent for the polysaccharide is admixed with the aqueous solution to cause the polysaccharide to precipitate from the solution, the improvement which comprises:

simultaneously feeding the aqueous solution containing the dissolved polysaccharide and the hydrophilic organic solvent, respectively through separate constant flow rate-pumps to produce non-pulsating metered first and second streams of each of the solution and the hydrophilic organic solvent, respectively, which streams are unaffected by pressure changes in the aqueous solution or the hydrophilic organic solvent fed to the respective pumps;

introducing the first and second streams from each of the respective pumps, simultaneously, into a rotary turbine to mix the solution and the hydrophilic organic solvent and precipitate the polysaccharide; and

cutting the precipitated polysaccharide with an interlocking cutter which comprises a fixed cutter and a rotary cutter, and continuously withdrawing a suspension of finely cut polysaccharide particles.

5,602,242

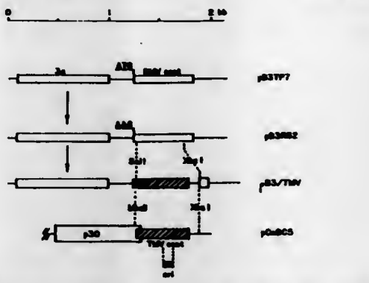
HYBRID RNA VIRUS

Paul G. Ahlquist; Roy C. French, both of Madison, and Robert F. Sacher, McFarland, all of Wis., assignors to Mycogen Plant Science, Inc., San Diego, Calif.

Continuation of Ser. No. 158,082, Nov. 23, 1993, abandoned, which is a continuation of Ser. No. 978,313, Nov. 17, 1992, abandoned, which is a continuation of Ser. No. 518,242, May 4, 1990, abandoned, which is a continuation of Ser. No. 12,253, Feb. 9, 1987, abandoned. This application May 22, 1995, Ser. No. 445,990

Int. Cl.[6] **C12N** *15/33;15/40;15/82;15/83*

U.S. Cl. 536—23.72 **11 Claims**



1. A hybrid RNA molecule capable of infection of and replication in a host cell, said hybrid RNA molecule comprising a first RNA sequence derived from a first virus and a second RNA sequence from a second virus have a morphologically-different type of coat protein, said second RNA sequence comprising an origin of assembly and encoding a coat protein heterologous to said first virus, wherein the coat protein gene of said first virus is deleted from or inactivated in said first RNA sequence and said second RNA sequence is substituted therefor to produce a hybrid RNA molecule capable of expressing the coat protein gene of said second virus, and wherein said hybrid molecule is constructed in vitro from said first virus RNA sequence and said second RNA sequence, or wherein said hybrid molecule is descended from a nucleic acid molecule constructed in vitro using recombinant DNA technology.

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5,602,243

DCC PROBES, PRIMERS, AND KITS

Bert Vogelstein, Baltimore, Md., assignor to The Johns Hopkins University, Baltimore, Md.

Division of Ser. No. 227,527, Apr. 14, 1994, Pat. No. 5,532,108, which is a continuation of Ser. No. 460,981, Jan. 4, 1990, abandoned. This application May 17, 1995, Ser. No. 442,761

Int. Cl.[6] **C07H** *21/02;21/04;* **C12P** *19/34;* **C12Q** *1/68*

U.S. Cl. 536—24.3 **13 Claims**

1. A kit for amplification of a DCC gene by polymerase chain reaction, comprising:

a first isolated set consisting of pairs of single stranded DNA primers, wherein the sequence of said primers is complementary to human wild-type DCC gene coding sequences as shown in FIG. 4, said set priming synthesis of a second set consisting of one or more oligonucleotides, said second set consisting of all nucleotides of the DCC gene coding sequences as shown in FIG. 4.

5,602,244

POLYNUCLEOTIDE PHOSPHORODITHIOATE COMPOUNDS

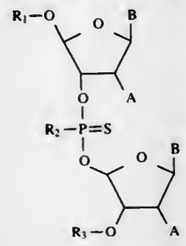
Marvin H. Caruthers, Boulder, Colo.; Wolfgang K.-D. Brill, Schopfheim, Germany; Eric Yau, Mercer Island, Wash.; Michael Ma, New York, N.Y., and John Nielsen, Horsholm, Denmark, assignors to Competitive Technologies, Inc., Westport, Conn.

Division of Ser. No. 332,829, Oct. 31, 1994, which is a continuation-in-part of Ser. No. 12,532, Feb. 2, 1993, abandoned, which is a division of Ser. No. 643,381, Jan. 22, 1991, Pat. No. 5,218,103, which is a continuation-in-part of Ser. No. 488,805, Mar. 5, 1990, abandoned, which is a continuation of Ser. No. 367,645, Jun. 19, 1989, abandoned, which is a continuation of Ser. No. 198,886, May 26, 1988, abandoned, Ser. No. 417,387, Oct. 5, 1989, abandoned, which is a continuation-in-part of Ser. No. 314,011, Feb. 22, 1989, abandoned, which is a continuation-in-part of Ser. No. 198,886, May 26, 1988, abandoned. This application May 8, 1995, Ser. No. 436,714

Int. Cl.[6] **C07H** *21/00;19/10;19/20*

U.S. Cl. 536—25.6 **5 Claims**

1. A compound according to the general formula:



wherein A which may be the same or different is —OH, —H, —halogen, —SH, $—NH_2$, azide, $—OR_4$, $—SR_4$ or $—NR_4$ wherein R_4 is a heteroatom substituted or unsubstituted blocking group;

wherein B which may be the same or different is a nucleoside or deoxynucleoside base; wherein R_1 and R_3 which may be the same or different are —H or a blocking group; and

wherein R_2 is selected from the group consisting of

(1) S-R_5 where R_5 is a heteroatom substituted or unsubstituted alkyl, aryl, aralkyl, cycloalkyl, cycloalkylalkyl, alkenyl, cycloalkenyl, aralkenyl, alkynyl, aralkynyl or cycloalkynyl;

(2) NHR_6 and NR_6R_7

(a) wherein R_6 and R_7 taken together with the nitrogen atom to which they are attached is a heterocyclic containing up to 5 carbon atoms in the cyclic structure which structure may contain up to an additional 5 carbon atoms pendant thereon,

(b) wherein R_6 and R_7 each taken separately is a heteroatom substituted or unsubstituted alkyl, aryl, aralkyl, cycloalkyl, cycloalkylalkyl, alkenyl, cycloalkenyl, aralkenyl, alkynyl, aralkynyl, or cycloalkynyl group,

(c) wherein R_6 and R_7 when taken together with the nitrogen atom to which they are attached is a saturated or unsaturated nitrogen heterocycle including at least one additional heteroatom from the group consisting of nitrogen, oxygen and sulfur;

(3) sulfur double-bonded to the phosphorous atom; and

(4) oxygen double-bonded to the phosphorous atom.

5,602,245

ONE VESSEL STEREOSELECTIVE GLYCOSYLATION OF PURINES AND PYRIMIDINES

Julie Wurster, Atlanta; Dennis C. Liotta, McDonough; Jianying Wang, Atlanta, all of Ga., and Lawrence J. Wilson, Palo Alto, Calif., assignors to Emory University, Atlanta, Ga.

Filed Nov. 4, 1992, Ser. No. 970,691

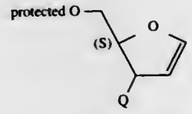
Int. Cl.[6] **C07H** *1/00;19/00;* **C07C** *313/14;* **C07D** *305/10*

U.S. Cl. 536—55.3 **11 Claims**

1. A process for the preparation of a compound selected from the group consisting of 2',3'-didehydronucleosides, 2'-deoxynucleosides, and 2',3'-dideoxy-2',3'-didehydronucleosides comprising:

A) forming a 5'-(protected oxy)-2'α-(arylsulfenyl)-3'(Q)-β-purine or pyrimidine nucleoside by reacting in one vessel

i) a 5-(S)-6-(protected oxy)-4-Q-4,5-dihydrofuran of the structure

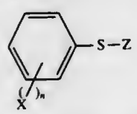


wherein Q is selected from the group consisting of hydrogen, N_3, OH, halo, alkyl, aryl, NH_2, and O-alkyl;

(ii) a protected purine or pyrimidine base;

(iii) a Lewis acid which catalyzes the glycosylation of the base with the dihydrofuran with high β-stereoselectivity; and

(iv) an aryl sulfenyl compound of the structure



wherein Z is any appropriate leaving group under the conditions of reaction, X is alkyl, aryl, nitro, halo, or CN, and n is 0, 1, 2, 3, 4, or 5; and then

B) removing the 2-α-sulfenyl moiety.

5,602,246

PROCESS FOR THE PREPARATION OF FLUDARABINE OR FLUDARABINE PHOSPHATE FROM GUANOSINE

John G. Bauman, Alameda, and Randolph C. Wirsching, Livermore, both of Calif., assignors to Schering Aktiengesellschaft, Berlin, Germany

Filed Nov. 25, 1992, Ser. No. 981,114

Int. Cl.[6] **C07H** *1/00;19/167;19/20*

U.S. Cl. 536—55.3 **34 Claims**

1. A process comprising:

subjecting guanosine to

(a) conversion of the 6-keto group into a 6-amino group,

(b) conversion of the 2-amino group into a 2-fluoro group, and

(c) conversion of the ribofuranosyl moiety to an arabinofuranosyl moiety,

wherein said ribofuranosyl moiety is converted to an arabinofuranosyl moiety via a 3',5'-di-O-acyl-2'—OSO_2R^2 intermediate wherein each of the acyl groups have up to 12 C atoms and R^2 is C_{1-4}-perfluoroalkyl or perfluorophenyl.

5,602,247

PROCESS FOR THE PURIFICATION OF AQUEOUS SOLUTIONS OF TERTIARY AMINE-OXIDES

Eduard Mülleder, Linz, and Heinrich Firgo, Vöcklabruck, both of Austria, assignors to Lenzing Aktiengesellschaft, Austria

PCT No. PCT/AT95/00022, § 371 Date Aug. 14, 1995, § 102(e) Date Aug. 14, 1995, PCT Pub. No. WO95/23885, PCT Pub. Date Sep. 8, 1995

PCT Filed Feb. 1, 1995, Ser. No. 454,315

Claims priority, application Austria, Mar. 1, 1994, A 430/94

Int. Cl.[6] **D01F** *13/02;* **B01J** *39/22;41/16*

U.S. Cl. 536—57 **11 Claims**

1. A process for preparing cellulose molded bodies comprising the steps of:

(a) dissolving cellulose in an aqueous solution of a tertiary amine oxide to produce a moldable cellulose solution,

(b) molding said cellulose solution,

(c) conducting said molded cellulose solution into an aqueous precipitation bath, thereby precipitating a cellulose molded body and contaminating the precipitation bath,

(d) purifying said contaminated precipitation bath by contacting said contaminated precipitation bath with an ion exchanger, said ion exchanger comprising a cellulose carrier having attached ion exchange groups, thereby producing a purified precipitation bath.

5,602,248

PROCESS FOR PREPARATION OF 9α-CHLORO-11β-FORMYLOXYPREGNA-3,20-DIONES

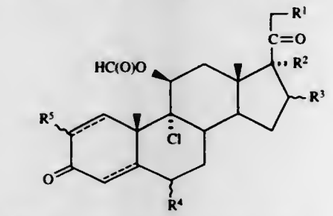
Richard W. Draper, North Caldwell, and Eugene J. Vater, Lyndhurst, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Mar. 16, 1995, Ser. No. 405,110

Int. Cl.[6] **C07J** *75/00*

U.S. Cl. 540—61 **31 Claims**

1. A process for producing a compound of the formula:



wherein:

the broken lines represent optional bonds;

R^1 is selected from H, Cl or F;

R^2 is selected from hydroxy or $—OR^6$;

R^3 is selected from hydrogen, lower alkyl, or α-OR^7; or R^2 and R^3 taken together represent a 16α,17α-lower alkylidenedioxy having up to 13 carbon atoms;

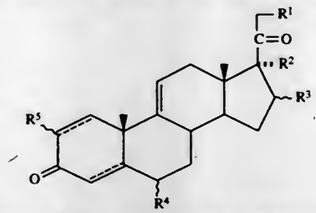
R^4 is selected from hydrogen, α-methyl, α-bromo, α-chloro, α-fluoro, β-fluoro and α-fluoromethyl;

R^5 is selected from hydrogen, methyl, fluorine, chlorine and bromine;

R^6 is an acyl radical of: (1) a hydrocarbon carboxylic acid having from 2 to 12 carbon atoms; (2) an aromatic carboxylic acid wherein said aromatic group contains from 6 to 12 carbon atoms; (3) an arylhydrocarbon carboxylic acid wherein said aryl group contains from 6 to 12 carbon atoms, and said hydrocarbon carboxylic acid group represents a straight or branched chain carboxylic acid having from 2 to 12 carbon atoms; (4) a heteroaromatic carboxylic acid having at least one oxygen atom in the heteroaryl ring and wherein oxygen is the only heteroatom in the heteroaryl ring, and wherein the aromatic heterocyclic group contains from 2 to 14 carbon atoms; or (5) a heteroarylhydrocarbon carboxylic acid having at least one oxygen atom in the heteroaryl ring and wherein oxygen is the only heteroatom in the heteroaryl ring, and wherein the aromatic heterocyclic group contains from 2 to 14 carbon atoms, and said hydrocarbon carboxylic acid group represents a straight or branched chain carboxylic acid having from 2 to 12 carbon atoms; said acyl radical having from 2 to 12 carbon atoms; and

R^7 is an acyl radical of a hydrocarbon carboxylic acid having from 2 to 12 carbon atoms;

said process comprising reacting, under anhydrous conditions and under an inert atmosphere, a compound of the formula:



wherein R^1, R^2, R^3, R^4, and R5 are as defined above, with: (1) a chlorinating reagent selected from an N-chloroimide or an N-chloroamide; (2) an anhydrous strong acid selected from orthophosphoric acid, alkylsulfonic acids, fluoroalkylsulfonic acids or arylsulfonic acids; and (3) anhydrous dimethylformamide; said reaction being conducted at a temperature within the range of about −78° to about 0° C.

5,602,249

PROCESS FOR THE PRODUCTION OF COPPER PHTHALOCYANINE PIGMENT

Michichika Hikosaka, Tokyo, Japan, assignor to Toyo Ink Manufacturing Co., Ltd., Tokyo, Japan

Filed Mar. 29, 1995, Ser. No. 412,887

Claims priority, application Japan, Apr. 1, 1994, 6-064951

Int. Cl.[6] **C09B** *67/50;47/04*

U.S. Cl. 540—144 **15 Claims**

1. A process for the production of a copper phthalocyanine by heating a phthalic acid, a nitrogen source, a copper compound and a catalyst in an inert solvent in the presence of a surfactant, which surfactant can be removed or deactivated by hydrolysis with an acid or an alkali when purifying the reaction product or forming the reaction product into a pigment after the reaction, said surfactant having formula (1):

$$(R^1—B)_k—A(X_m, Y_n) \qquad (1)$$

wherein R^1 is alkyl or alkenyl having 1 to 20 carbon atoms; B is —COO—, or —CO—; k is an integer of 1 or 2; A is a direct bond, a saturated or unsaturated hydrocarbon, or a sorbitan residue; X is hydrogen, hydroxyl or $—COO^-M^+$; m is an integer of 0 to 3; Y is

hydrogen, hydroxyl, or $-(OCH_2CH_2)_p-Z$ or $-D-SO_3^-M^+$, where p is an integer of 1 to 20, Z is —OH or $-(OCOR^2)$ with R^2 being a saturated or unsaturated hydrocarbon having 1 to 20 carbon atoms, D is —O— or a direct bond; M is K or Na; and n is an integer of 0 to 3, provided that when B is —CO—, B forms —COO— together with A or Y.

5,602,250

6-(SUBSTITUTED METHYLENE)PENEMS AND INTERMEDIATES

Nigel J. P. Broom, Reigate, and Frank P. Harrington, Crawley, both of England, assignors to SmithKline Beecham p.l.c., England

PCT No. PCT/EP93/02894, § 371 Date Apr. 28, 1995, § 102(e) Date Apr. 28, 1995, PCT Pub. No. WO94/10178, PCT Pub. Date May 11, 1994

PCT Filed Oct. 20, 1993, Ser. No. 428,101

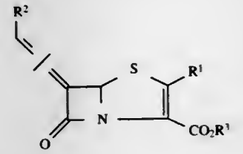
Claims priority, application United Kingdom, Oct. 29, 1992, 9222700

Int. Cl.[6] C07D *519/06;* **A61K** *31/43*

U.S. Cl. 540—310 **12 Claims**

1. A compound of formula (I):

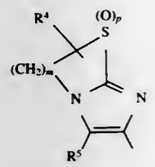
(I)



in which:

R^1 is hydrogen, $—R^6$ or $—SR^6$, where R^6 is an unsubstituted or substituted (C_{1-10})hydrocarbon or heterocyclyl group;

R^2 is a fused bicyclic heterocyclic ring system of the formula:



wherein R^4 and R^5 are independently selected from the group consisting of hydrogen, (C_{1-6})alkanoyl, (C_{1-6})alkanoyloxy, heterocyclyl, amino, (C_{1-6})alkankoylamino, (mono or di)-(C_{1-6}) alkylamino, hydroxy, (C_{1-6})alkoxy, sulpho, mercapto, (C_{1-6}) alkylthio, (C_{1-6})alkylsulphinyl, (C_{1-6})alkylsulphonyl, heterocyclylthio, arylthio, sulphamoyl, carbamoyl, amidino, guanidino, nitro, halogen, carboxy, carboxy salts, carboxy esters, arylcarbonyl, and heterocyclylcarbonyl groups, and also unsubstituted or substituted (C_{1-6})alkyl, (C_{2-6})alkenyl, (C_{2-6})alkynyl, aryl, and aryl(C_{1-6})alkyl groups; m is 2 or 3; p is zero, 1 or 2;

and R^3 is hydrogen, a salt-forming cation or an ester-forming group; and the symbol =/= indicates that the double bond may be in either the E or Z configuration.

5,602,251

ARTHROPODICIDAL OXADIAZINE INTERMEDIATE

Gary D. Annis, Landenberg, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

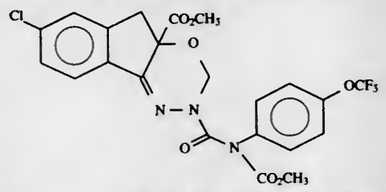
Division of Ser. No. 418,047, Apr. 6, 1995. This application Oct. 19, 1995, Ser. No. 545,134

Int. Cl.[6] C07D *273/04*

U.S. Cl. 544—66 **4 Claims**

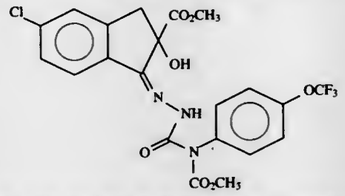
1. A process for preparing a compound of the formula:

II



which comprises: contacting the compound having the formula:

I



with an acetal derivative in the presence of a Lewis acid.

5,602,252

TRICYCLIC PTERIDINONES AND A PROCESS FOR THEIR PREPARATION

David D. Davey, El Sobrante, Calif., assignor to Berlex Laboratories, Inc.

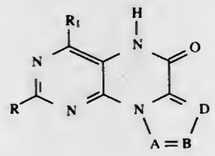
Division of Ser. No. 961,987, Oct. 16, 1992, which is a continuation-in-part of Ser. No. 844,324, Mar. 2, 1992, abandoned, which is a continuation of Ser. No. 649,384, Feb. 1, 1991, abandoned, which is a continuation-in-part of Ser. No. 437,574, Nov. 17, 1989, abandoned. This application Feb. 8, 1994, Ser. No. 193,543

Int. Cl.[6] C07D *487/14;* **A61K** *31/505*

U.S. Cl. 544—115 **5 Claims**

1. A process for the production of a compound of the following Formula I

I



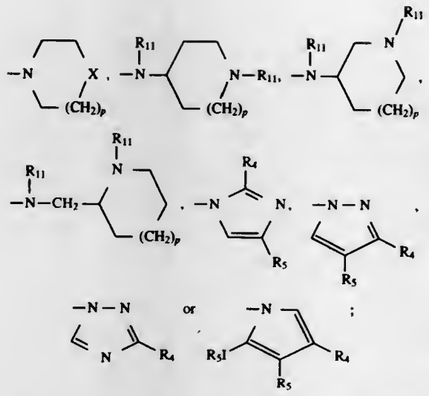
wherein

A is N or CR_2;

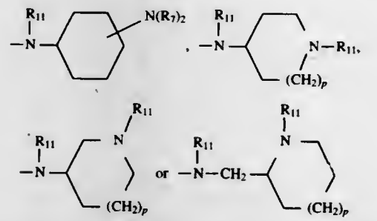
B is N or CR_2;

D is N or CR_3;

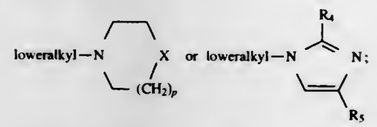
R is hydrogen, hydroxy, loweralkyl, loweralkoxy, cycloalkyl, aryl, aryloxy, pyridinyl, 3-pyridinyloxy, $R_6S(O)_n$, W—ALK—Q, $—N(R_7)_2$,



R_1 is hydrogen, hydroxy, loweralkyl, loweralkoxy, cycloalkyl, aryl, aryloxy, pyridinyl, 3-pyridinyloxy, $R_6S(O)_n$, W—ALK—Q, $—N(R_7)_2$,



R_2 is hydrogen, C_1–C_8 straight or branched chain alkyl optionally substituted by 2 adjacent hydroxyl groups, C_3–C_8 straight or branched chain alkenyl, loweralkylloweralkoxy, aryl, pyridinyl, loweralkylcycloalkyl, loweralkylaryl, loweralkylpyridinyl, loweralkylaryloxy, loweralkylpyridinyloxy, loweralkyl-$N(R_8)_2$,



R_3 is hydrogen, loweralkyl, aryl, pyridinyl, loweralkylaryloxy or loweralkylpyridinyl;

R_4 is hydrogen, C_1–C_8 straight or branched chain alkyl, C_3–C_8 straight or branched chain alkenyl, loweralkylcycloalkyl or loweralkylaryl;

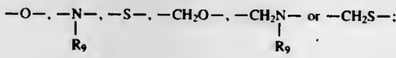
R_5, R_5' are the same or independently hydrogen or loweralkyl;

R_6 is loweralkyl, aryl, pyridinyl, loweralkylaryl or loweralkylpyridinyl;

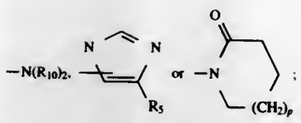
R_7 are the same or independently hydrogen, loweralkyl, aryl or pyridinyl;

R_8 is the same as R_7;

Q is



W is hydrogen, hydroxy, loweralkyl, loweralkoxy, aryl, aryloxy, pyridinyl which may be substituted by 1 or 2 hydroxy groups, pyridinyloxy,



R_9, R_{10} take the same meaning as R_7;

R_{11} are the same or independently hydrogen or methyl;

X is $—CH_2—$, —O—, $—S(O)_n—$ or $—NR_{10}$;

ALK is a C_1–C_4 straight or branched chain alkyl optionally substituted by a mono hydroxyl group which cannot be attached to a carbon atom adjacent to Q or W when Q or W are hetero atoms;

n is the integer 0, 1 or 2;

p is the integer 0 or 1;

and the pharmaceutically acceptable salts thereof;

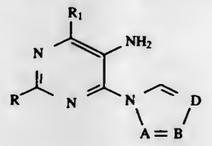
with the proviso that:

only one of A and B and

only one of B and D can be N

which comprises reacting a compound of the following Formula II:

II



wherein

R, R_1, A, B and D have the same meaning as in Formula I; with a 1–4 equivalent excess of a doubly activated carbonic acid derivative in an inert aprotic solvent at a temperature of from 150° C. to about 200° C. for about 30 minutes to 6 hours.

5,602,253

PEPTIDES DERIVATIVES

Karl T. Antonsson, Lindome; Ruth E. Bylund, Västra Frölunda, and Nils O. I. Nilsson, Fjärås, all of Sweden, assignors to Aktiebolaget Astra, Sodertalje, Sweden

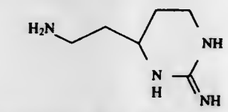
Continuation of Ser. No. 382,036, Aug. 19, 1994. This application Jun. 6, 1995, Ser. No. 468,046

Claims priority, application Sweden, Jun. 3, 1993, 9301916

Int. Cl.[6] C07D *239/14;* **A61K** *31/505*

U.S. Cl. 544—330 **1 Claim**

1. The compound of the formula:



or a protected form thereof, wherein the amidino group is either mono-or diprotected at the nitrogens or a salt thereof.

5,602,254

METHOD FOR MAKING QUINOLINE CARBOXYLIC ACIDS OR NAPHTHYRIDINE CARBOXYLIC ACIDS IN FREE BASE FORM

Gary J. Dozeman, Zeeland; Kenneth T. Porter, and James N. Wemple, both of Holland, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed May 26, 1995, Ser. No. 452,208

Int. Cl.[6] C07D *215/56;471/02*

U.S. Cl. 546—123 **18 Claims**

1. A method of making quinolone carboxylic acids or naphthyridine carboxylic acids in free base form, the method comprising:

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a. Dissolving a quinolone carboxylic acid salt or naphthyridine carboxylic acid salt in a solvent system to form a solution;
b. Combining the solution containing the quinolone carboxylic acid salt or naphthyridine carboxylic acid salt with a calcium salt in an amount in the range of about 0.01% to about 5.0% by weight of the quinolone carboxylic acid salt or naphthyridine carboxylic acid salt and a base, the combination resulting in the formation of a precipitate; and
c. Collecting the precipitate.

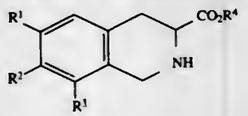
5,602,255

PROCESS FOR PRODUCING TETRAHYDROISOQUINOLINE-3-CARBOXYLIC ACID COMPOUNDS

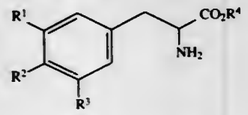
Yukihiro Kuge, Kawachinagano; Toru Sugaya, Nara, and Shinji Tomioka, Hashimoto, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 211,922, Apr. 25, 1994, abandoned. This application Apr. 4, 1995, Ser. No. 416,512
Claims priority, application Japan, Aug. 31, 1992, 4-231043
Int. Cl.[6] C07D *217/26*
U.S. Cl. 546—147 **5 Claims**

1. A process for producing 1,2,3,4-tetrahydroisoquinoline-3-carboxylic acid compounds or salts thereof of the formula:



wherein R^1, R^2 and R^3 independently represent hydrogen, hydroxy or lower alkoxy and R^4 represent hydrogen, lower alkyl, aryl or aralkyl, which comprises reacting phenylalanine compounds with formaldehyde or paraformaldehyde in the presence of sulfuric acid or hydrobromic acid, the phenylalanine compounds being:



wherein R^1, R^2, R^3 and R^4 have the same meaning as defined above.

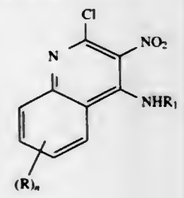
5,602,256

PROCESS FOR 1H-IMIDAZO[4,5-C]QUINOLINES

Jean-Denis André, Pithiviers, and Daniel Lagin, Dadonville, both of France, assignors to Riker Laboratories, Inc., St. Paul, Minn.

Division of Ser. No. 606,513, Oct. 31, 1990, which is a division of Ser. No. 426,677, Oct. 26, 1989, Pat. No. 4,988,815. This application May 31, 1995, Ser. No. 454,932
Int. Cl.[6] C07D *215/18;215/42*
U.S. Cl. 546—180 **3 Claims**

1. A process for preparing a compound of the formula



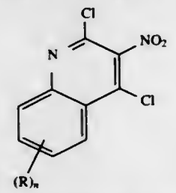
wherein

R_1 is selected from the group consisting of: straight chain or branched chain alkyl of one to about 10 carbon atoms; straight chain or branched chain alkenyl of 3 to about 10 carbon atoms wherein the olefinic unsaturation is at least one carbon atom removed from the 1-nitrogen; substituted straight chain or branched chain alkenyl of 3 to about 10 carbon atoms wherein the olefinic unsaturation is at least one carbon atom removed from the 1-nitrogen, and wherein the substituent is selected from the group consisting of lower alkyl, cycloalkyl of 3 to about 6 carbon atoms, and cycloalkyl of 3 to about 6 carbon atoms substituted by lower alkyl; substituted straight chain or branched chain alkyl of one to about 10 carbon atoms, wherein the substituent is selected from the group consisting of lower alkyl, cycloalkyl of 3 to about 6 carbon atoms, and cycloalkyl of 3 to about 6 carbon atoms substituted by lower alkyl; hydroxyalkyl of one to about 6 carbon atoms; and dihydroxyalkyl of one to about 6 carbon atoms;

each R is independently selected from the group consisting of lower alkoxy, halogen, and lower alkyl, and

n is an integer from zero to 2, with the proviso that if n is 2, then said R groups together contain no more than 6 carbon atoms;

which process comprises reacting a compound of the formula



wherein R and n are as defined above, with a compound of the formula

R_1NH_2

in a solvent comprising a base.

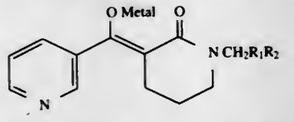
5,602,257

SYNTHESIS OF NICOTINIC ANALOGS

John A. Zoltewicz, and Michael P. Cruskie, both of Gainesville, Fla., assignors to University of Florida Research Foundation, Gainesville, Fla.

Continuation-in-part of Ser. No. 662,867, Mar. 1, 1991, abandoned. This application Sep. 9, 1994, Ser. No. 304,100
Int. Cl.[6] C07D *401/04*
U.S. Cl. 546—193 **17 Claims**

1. A process for making an anabaseine salt, comprising the steps:
(a) reacting a piperidone aminal with an activated derivative of nicotinic acid under conditions suitable for formation of an aminal nicotinoyl piperidone salt having the formula:



where R_1 and R_2 are lower alkyl, or where R_1 and R_2 form a morpholine or piperidine ring attached at the nitrogen and where the metal is a Group 1 alkaline metal; and
(b) converting said aminal salt in the presence of strong acid to an anabaseine salt.

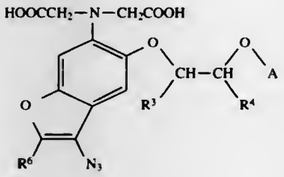
5,602,258

AZIDE-CONTAINING CHELATORS WHOSE AFFINITY FOR CALCIUM ION IS DECREASED BY ILLUMINATION

Roger Y. Tsien, La Jolla, and Stephen R. Adams, Poway, both of Calif., assignors to The Regents of University of California, Oakland, Calif.

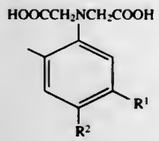
Filed Oct. 23, 1992, Ser. No. 968,002
Int. Cl.[6] C07D *263/30*
U.S. Cl. 548—235 **21 Claims**

1. An azide compound of the formula:



and the pharmaceutically acceptable non-toxic salts and esters thereof, wherein:

A is



R^1 and R^2 are each independently selected from the group consisting of —H, and C_1 to C_4 alkyl, —F, —Cl, —Br, —C_1 to C_4 alkoxy, —NO_2, —COO^-, and —$NH(C{=}O)R^5$, where R^5 is —H, or C_1 to C_{18} alkyl;

R^3 and R^4 are each independently selected from the group consisting of —H, and C_1 to C_4 alkyl, and

R^6 is an isoxazole group, said isoxazole group having 0, 1 or 2 ring substituents.

5,602,259

METHOD FOR PRODUCING 4-HYDROXY-5-METHYL-3[2H]-FURANONE AND USES OF SAME

Yong C. Boo, Suwon; Che O. Jeon, Seoul; Byeong G. Lee; Kyung W. Ro, both of Suwon, and Eun J. Kim, Seoul, all of Rep. of Korea, assignors to Pacific Corporation, Rep. of Korea

Filed Dec. 12, 1994, Ser. No. 355,328
Claims priority, application Rep. of Korea, Dec. 17, 1993, 1993-28308; Apr. 21, 1994, 1994-08411
Int. Cl.[6] C07D *307/32*
U.S. Cl. 549—313 **3 Claims**

1. A method for producing 4-hydroxy-5-methyl-3[2H]-furanone, which comprises the steps of:
(a) extracting 4-hydroxy-5-methyl-3[2H]-furanone from the barks or needles of the plants of *Pinaceae* species with a polar solvent;
(b) evaporating an extract obtained in the step (a) to give a concentrate and distributing the concentrate with water and an oil-soluble solvent to give an aqueous layer;
(c) evaporating the aqueous layer of the step (b), and subjecting the resulting concentrate to a chromatography on a reverse phase distribution column employing as an eluant a mixture of water-:acetonitle:methanol= 70–95:0–20:2.5–30% by weight to give active fractions containing 4-hydroxy-5-methyl-3[2H]-furanone; and
(d) recrystallizing the active fractions with water or methanol to give a purified 4-hydroxy-5-methyl-3[2H]-furanone.

5,602,260

SELECTED O-QUINONEDIAZIDE SULFONIC ACID ESTERS OF PHENOLIC COMPOUNDS AND THEIR USE IN RADIATION-SENSITIVE COMPOSITIONS

Andrew J. Blakeney, Seekonk, Mass.; Arturo N. Medina, Pawtucket; Medhat A. Toukhy, Barrington, both of R.I.; Lawrence Ferreira, Fall River, and Sobhy Tadros, Seekonk, both of Mass., assignors to OCG Microelectronic Materials, Inc., Cheshire, Conn.

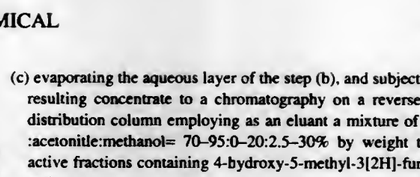
Division of Ser. No. 384,501, Feb. 1, 1995. This application May 26, 1995, Ser. No. 451,939
Int. Cl.[6] C07D *407/10;* **C07C** *39/15*
U.S. Cl. 549—362 **3 Claims**

1. A phenolic compound selected from the group consisting of formulae (IA) and (IIA):

(IA)



(IIA)



wherein R_1, R_2, R_{11}, and R_{12} are each independently selected from the group consisting of hydrogen, hydroxyl, halogen, lower alkyl group having 1 to 4 carbon groups, lower alkyl ether groups having 1 to 4 carbon atoms and lower alkyl thioether groups having 1 to 4 carbon atoms;

wherein R_3, R_4, R_5, R_6, R_7, R_8, R_9, R_{10}, R_{13}, and R_{14} are each independently selected from the group consisting of hydrogen, halogen, lower alkyl groups having 1 to 4 carbon atoms, lower alkyl ether group having 1 to 4 carbon atoms and lower alkyl thioether groups having 1 to 4 carbon groups;

wherein x and y are each independently selected from an integer from the group 0, 1, 2, 3, and 4;

wherein Ra, Rb, Rc, and Rd are each independently selected from hydrogen and a lower alkyl group having 1 to 4 carbon atoms;

wherein v and w are each independently selected from an integer from the group 0 and 1 and each sum of v and w on a fused ring equals 1 or 2; and

wherein A and B are each independently selected from the group consisting of oxygen, sulfur, and a methylene radical with the proviso that if the compounds are of the formula (IA), at least one of R_5–R_{10} is other than hydrogen.

5,602,261

TRITERPENE DERIVATIVES OF AZADIRACHTIN HAVING INSECT ANTIFEEDANT AND GROWTH INHIBITORY ACTIVITY AND A PROCESS FOR EXTRACTING SUCH COMPOUNDS FROM THE NEEM PLANT

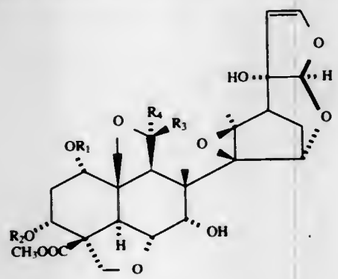
Bhimsen A. Nagasampagi; Supada R. Rojatkar; Mandakini M. Kulkarni; Vimal S. Joshi; Vidya S. Bhat; Mukund G. Sane, and Nagaraj R. Ayyangar, all of Maharashtra, Ind., assignors to Council of Scientific & Industrial Research, New Delhi, Ind.

Division of Ser. No. 977,618, Nov. 17, 1992, Pat. No. 5,395,951. This application Oct. 6, 1994, Ser. No. 319,298

Int. Cl.[6] C07D *317/70*

U.S. Cl. 549—383 **1 Claim**

1. Isolated Triterpene derivative of Azadirachtin according to the formula



wherein

R_1 is Bez, R_2 is Ac, R_3 is OH and R_4 is $COOCH_3$;

R_1 is Tig, R_2 is Ac, R_3 is H and R_4 is OH; or

R_1 is H, R_2 is Tig, R_3 is $COOCH_3$ and R_4 is H;

where Bez represents benzoyl, Ac represents acetyl and Tig represents tigloyl.

5,602,262

PROCESS FOR THE PREPARATION OF 2-DEOXY-2,2-DIFLUORO-β-D-RIBO-PENTOPYRANOSE

David D. Wirth, Lafayette, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Feb. 3, 1995, Ser. No. 383,047

Int. Cl.[6] C07D *309/10;317/16*

U.S. Cl. 549—417 **19 Claims**

1. A process for the preparation of D-3,3-difluoro-4,5,6-trihydroxy-5,6-O-(1-ethylpropylidene)hexene (I) the improvement which comprises:

reacting in a reaction mixture an organometallic complex of 3-bromo-3,3-difluoropropene with D-glyceraldehyde pentanide in a non-reactive organic solvent until the hexene (I) is formed as erythro and threo isomers with a molar excess of the erythro isomer in the reaction mixture.

9. A process for the preparation of 2-deoxy-2,2-difluoro-β-D-ribo-pentopyranose (IIIA) which comprises:

(a) reacting D-3,3-difluoro-4,5,6-trihydroxy-5,6-O-(1-ethylpropylidene)hexene (I) in a first reaction mixture with ozone in a non-reactive organic solvent and removing a resulting product which contains D-2,2-difluoro-3,4,5-trihydroxy-4,5-O-1-ethylpropylidene)pentaldehyde (II) from the organic solvent;

(b) reacting in a second reaction mixture the resulting product containing the pentaldehyde (II) with water to produce the pentopyranose (IIIA) in the second reaction mixture: and

(c) separating the pentopyranose (IIIA) from the second reaction mixture.

5,602,263

SYNTHESES OF D-CHIRO-3-INOSOSE AND (+)-D-CHIRO INOSITOL

Tomas Hudlicky, and Martin Mandel, both of Blacksburg, Va., assignors to Virginia Tech Intellectual Properties, Blacksburg, Va.

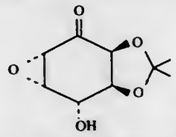
Division of Ser. No. 974,057, Nov. 10, 1992, abandoned, which is a continuation-in-part of Ser. No. 956,522, Oct. 5, 1992, abandoned. This application Mar. 24, 1995, Ser. No. 410,180

Int. Cl.[6] C07D *317/50;317/70*

U.S. Cl. 549—433 **6 Claims**

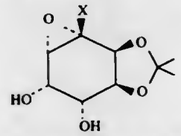
1. A process for the preparation of a compound of the formula:

23



the process comprising reducing an epoxydiol having the formula:

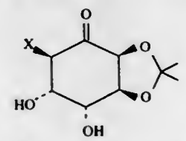
12



wherein X is Cl or Br; with SmI_2 in an appropriate solvent at a temperature of from about −90° C. to about 50° C.

4. A process for the preparation of a compound of the formula:

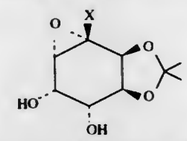
22



wherein X is Cl or Br;

the process comprising treating an epoxydiol having the formula:

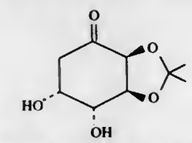
12



wherein X is Cl or Br; with a reducing agent selected from the group consisting of SmI_2, and tris(trimethylsilyl)silane, alone or in combination with a radical initiator, at a temperature of from about −90° C. to about 110° C.

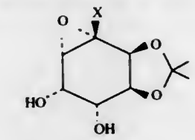
5. A process for the preparation of a compound of the formula:

21



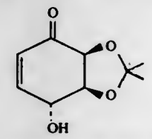
the process comprising treating an epoxydiol having the formula:

12



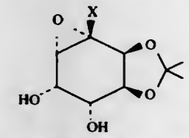
wherein X is Cl or Br; with a reducing agent selected from the group consisting of SmI_2, tributyltinhydride, and tris(trimethylsilyl)silane, alone or in combination with a radical initiator, at a temperature of from about −90° C. to about 110° C.

6. A process for the preparation of a compound of the formula:



the process comprising reducing an epoxydiol having the formula:

12



wherein X is Cl or Br; with SmI_2 at a temperature of from about −90° C. to about 50° C.

5,602,264

HIGHLY REACTIVE, WATER SOLUBLE CARBODIIMIDES, INTERMEDIATES AND DERIVATIVES THEREOF

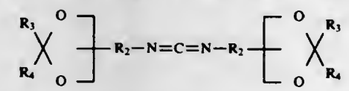
Henry Rapoport, Berkeley, Calif., and Frank S. Gibson, Syracuse, N.Y., assignors to The Regents of the University of California, Oakland, Calif.

Filed Nov. 28, 1994, Ser. No. 345,514

Int. Cl.[6] C07D *317/26;317/28*

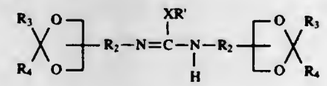
U.S. Cl. 549—448 **7 Claims**

1. A carbodiimide having the structure illustrated by Structure I



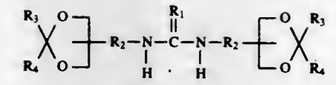
where R_2 is an alkylene having 1 to 5 carbons, and R_3 and R_4 are each H, an alkyl having 1 to 5 carbons, a cycloalkyl having 5–6 carbons, an aryl having 6 carbons or a heteroaryl having 3 to 5 carbons, and the heteroatom is one or more of N, O, or S, and wherein R_3 and R_4 can be the same or different.

2. A carbodiimide derivative having the structure illustrated by Structure II



where R' is an alkyl having 1 to 12 carbons, a cycloalkyl having 3 to 6 carbons, or a heterocycloalkyl having 3 to 6 carbons, where the heteroatom is N, O, or S, X is O or S, R2 is an alkyl having 1 to 5 carbons, and R_3 and R_4 are each selected from the group consisting of H, an alkyl having 1 to 5 carbons, a cycloalkyl having 5 or 6 carbons, an aryl having 6 carbons, and a heteroaryl having 3 to 5 carbons and the heteroatom is one or more of N, O, or S, and wherein R_3 and R_4 can be the same or different.

3. A carbodiimide intermediate having the structure illustrated by Structure III



where R_1 is O or S, R_2 is an alkylene having 1 to 5 carbons, and R_3 and R_4 are each H, an alkyl having 1 to 5 carbons, a cycloalkyl having 5 to 6 carbons, an aryl having 6 carbons, or a heteroaryl having 3 to 5 carbons and the heteroatom is one or more of N, O, or S.

5,602,265

FRACTIONATION OF TRIGLYCERIDE OILS

Marcelle van den Kommer, Gouda, Netherlands; Paul R. Smith, Wellingborough, Great Britain; Adrianus Visser; Cornelis Winkel, both of Maassluis, Netherlands, and Deryck Cebula, Bedford, Great Britain, assignors to Van den Bergh Foods Co., Division of Conopco, Inc., Lisle, Ill.

Filed Jul. 19, 1994, Ser. No. 277,536

Claims priority, application European Pat. Off., Jul. 27, 1993, 93305924

Int. Cl.[6] C07C *51/43*

U.S. Cl. 554—211 **6 Claims**

1. A process for separating solid fatty material from a triglyceride oil comprising the steps of:

a. heating the oil or a solution of the oil in an inert solvent until a substantial amount of solid material is no longer present;

b. adding a crystallization modifying substance to the oil or to the solution of the oil;

c. cooling the oil resulting in crystallizing a solid stearin phase besides a liquid olein phase; and

d. recovering the stearin phase by separating it from the olein phase, where the crystallization modifying substance is a comb-shaped polymer selected from the group consisting of inulin of which 5–100% of the hydroxyl groups on the fructose subunits are connected to (C8–C24) unbranched alkyl chains and 0–95% of the hydroxyl groups have been esterified with a (C1–C8)-alkyl containing fatty acid.

5,602,266

MICROPOROUS SQUARE PYRAMIDAL-TETRAHEDRAL FRAMEWORK VANADIUM PHOSPHATES AND THEIR PREPARATION

Robert C. Haushalter, Little York, N.J.; Mohammad I. Khan, Skokie, Ill.; Linda M. Meyer, Easton, Pa., and Jon A. Zubieta, Syracuse, N.Y., assignors to NEC Research Institute, Inc., Princeton, N.J.

Filed Nov. 29, 1995, Ser. No. 564,760

Int. Cl.[6] C07F *9/02*

U.S. Cl. 556—13 **4 Claims**

1. A vanadium oxide phosphate composition characterized by a framework of $V_5O_9(PO_4)_2$ pentamers having the generic formula

$$(A)_a(B)_b[V_5O_9(PO_4)_2]\cdot\chi H_2O$$

where A is one or more metals chosen from the group of alkali metals or alkaline-earth metals consisting of Li, Na, K, Rb, Cs, Mg, Ca, Sr and Ba, B is an organic template of the form R_4N^+ or a cyclic ammonium cation of the general formula

$R_{3-f}N[(CH_2)_e]_hNR_{3-f}$

where f is either 1 or 2, g is an integer at least one and preferably no greater than 4, and h is one greater than f in which R is one or more materials chosen from the group consisting of H, C_nH_{2n+1}, $C_nH_{2n}NO_2$ where n has a value equal to or less than 4 and Q is either H or C_nH_{2n+1}, and at least one of a and b is greater than zero and they are such as to provide charge neutrality to the compound.

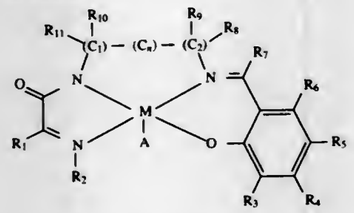
5,602,267

ORGANOMETALLIC CATALYSTS FOR EPOXIDIZING PROCHIRAL OLEFINS AND A NEW CLASS OF AMID-SALICYLIDENE LIGANDS

Shu-Hai Zhao, Corpus Christi, Tex., assignor to Hoechst Celanese, North Somerville, N.J.

Filed May 26, 1995, Ser. No. 450,739
Int. Cl.[6] C07F *13/00;7/00;11/00;5/00*
U.S. Cl. 556—45 **40 Claims**

1. A process which comprises reacting a prochiral or chiral compound in the presence of an optically active metal-ligand complex catalyst, in enantiomeric form, to produce an optically active product, said optically active metal-ligand complex catalyst having the formula:



wherein R_1 and R_2 are independently selected from the group consisting of hydrogen, substituted or unsubstituted alkyl C_1–C_{50}; substituted and unsubstituted phenyl, naphthyl, and anthracyl, and a cyclic ring encompassing both R_1 and R_2 and containing a total of 3 to 50 atoms selected from the group consisting of carbon atoms, oxygen atoms, nitrogen atoms, sulfur atoms, and mixtures thereof, with the proviso that the substituents on the alkyl, phenyl, naphthyl, anthracyl, and cyclic rings can be nitro, halogen, alkoxy, carboxylate, amino, amide, silyl, and siloxyl; R_3–R_8 and R_{11} are independently selected from the group consisting of substituted or unsubstituted alkyl and aryl; nitro; halogen; hydrogen; alkoxy; carboxylate; amino; amide; silyl; and siloxyl; R_4 and R_5, R_5 and R_6, and R_6 and R_7 may also (in addition to the above) form a cyclic ring containing a total of 2 to 6 atoms selected from the group consisting of carbon atoms, oxygen atoms, nitrogen atoms, sulfur atoms, and mixtures thereof and said ring can be substituted or unsubstituted; R_9 and R_{10} are independently selected from the group consisting of hydrogen; alkyl C_1–C_{20}; substituted and unsubstituted phenyl, naphthyl, and anthracyl; and a cyclic ring encompassing both R_9 and R_{10} and containing a total of 2 to 6 atoms selected from the group consisting of carbon atoms, oxygen atoms, nitrogen atoms, sulfur atoms, and mixtures thereof; M is a transition metal ion; A is an anion; n is either 0, 1, or 2; and (C^1), (C^n), and (C^2) are independently or jointly part of an unsubstituted or substituted aryl group.

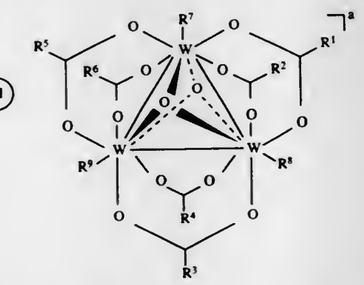
5,602,268

PROCESS FOR PRODUCING TUNGSTEN CLUSTERS

Ella Y. Fung, St. Louis, Mo., assignor to Mallinckrodt Medical, Inc., St. Louis, Mo.

Filed Jul. 20, 1995, Ser. No. 504,611
Int. Cl.[6] C07F *11/00*
U.S. Cl. 556—57 **16 Claims**

1. A process for producing compounds of the general formula:



wherein R^1 is $—C_tH_zZ_m$ or $—(C_tH_zZ_n)(C_6H_{(5-q)}Z_q)_p$; R^2 is $—C_tH_zZ_m$ or $—(C_tH_zZ_n)(C_6H_{(5-q)}Z_q)_p$; R^3 is $—C_tH_zZ_m$ or $—(C_tH_zZ_n)(C_6H_{(5-q)}Z_q)_p$; R^4 is $—(C_tH_zZ_m)$ or $—(C_tH_zZ_n)(C_6H_{(5-q)}Z_q)_p$; R^5 is $—C_tH_zZ_m$ or $—(C_tH_zZ_n)(C_6H_{(5-q)}Z_q)_p$; R^6 is $—C_tH_zZ_m$ or $—(C_tH_zZ_n)(C_6H_{(5-q)}Z_q)_p$; Z is a functional group attachable on aliphatic chains or aromatic rings; R^7 is an anionic molecule, neutral molecule, $—C_tH_zZ_m$ or $—(C_tH_zZ_n)(C_6H_{(5-q)}Z_q)_p$; R^8 is an anionic molecule, neutral molecule, $—C_tH_zZ_m$ or $—(C_tH_zZ_n)(C_6H_{(5-q)}Z_q)_p$; R^9 is an anionic molecule, neutral molecule, $—C_tH_zZ_m$ or $—(C_tH_zZ_n)(C_6H_{(5-q)}Z_q)_p$; k is about 0–20; l is about 0–50; m is about 1–50; n is about 0–50; p is about 1–10; q is about 1–5; M is a counter positive or negative ion; and a is about −6–+6, comprising heating a bi-oxo capped tri-tungsten cluster in the presence of a carboxylate ligand, provided the ligand is in excess of the tri-tungsten cluster, and recovering a fully or partially substituted tri-tungsten cluster.

5,602,269

ORGANOMETALLIC DERIVATIVES OF GROUP IIIA AND PROCESS FOR THEIR PREPARATION

Paolo Biagini, Trecate; Gabriele Lugli, S. Donato Milanese; Luigi Abis, Cagliari, and Piero Andreussi, Milan, all of Italy, assignors to Enichem Elastomeri S.r.l., Milan, Italy

Filed Jul. 18, 1995, Ser. No. 503,618
Claims priority, application Italy, Jul. 29, 1994, MI94A1635
Int. Cl.[6] C07F *5/06*
U.S. Cl. 556—170 **8 Claims**

1. A compound of the formula (I): $M(C_6F_5)_3$, wherein M is aluminum.

2. A process for the preparation of a compound having formula (I): $M(C_6F_5)_3$, which comprises:

reacting $B(C_6F_5)_3$ with a compound having the formula: $M(H)_nR_m$, wherein M is aluminum and R is a member selected from the group consisting of aliphatic, cycloaliphatic, benzylic, linear or branched, monofunctional radicals containing from 1 to 20 carbon atoms; n+m=3 and n is 0 or 1.

5,602,270

PHOSPHAZENE DERIVATIVES AND USE OF SAME AS STABILIZERS FOR OILS AND GREASES BASED ON PERFLUOROPOLYETHERS

Paolo Odello, Turin; Walter Navarrini, Boffalora Ticino, both of Italy; Richard D. Chambers, Durham, Great Britain, and Costante Corti, Milan, Italy, assignors to Ausimont S.p.A., Milan, Italy

Division of Ser. No. 149,834, Nov. 8, 1993, Pat. No. 5,441,655.
This application May 19, 1995, Ser. No. 444,428
Claims priority, application Italy, Nov. 10, 1992, MI92A2569
Int. Cl.[6] C07F *9/659;9/6581;9/24*
U.S. Cl. 558—80 **10 Claims**

1. Phosphazene derivatives of cyclic or linear structure, having formula:



where:
n is 0 in the case of a cyclic structure, n is 1 in the case of a linear structure;
m is an integer from 3 to 7;
groups A, like or different from one another, are selected from:
(i) R—Q—, in which Q is a divalent group selected from: —O—, —S—, —NR_1— (in which R_1 is hydrogen or a C_1–C_4 alkyl), and —NH—NH—; R is a C_6–C_{12} aryl group, optionally substituted by one or more groups selected from: C_1–C_4 alkyls, $—OR_2$, $—NR_3R_4$, $—NO_2$, —F and —Cl, where R_2, R_3 and R_4 are hydrogen or C_1–C_4 alkyls;
(ii) R_f—$CH_2O(CH_2O)_s$—, wherein: s=0, 1 or 2; R_f is a perfluoropolyethereal chain having a molecular weight ranging from 400 to 10,000 and composed of repeating units selected from:
(a)

and (CFXO), where X i s —F or $—CF_3$;
(b) (CF_2CF_2O) and (CF_2O);
(c)



(CF_2CF_2O) and (CFXO) , where X i s —F or $—CF_3$;



(d)

(e) (CYZ—CF_2CF_2O), where Y and Z, like or different from each other, are F, Cl or H;

(f) (CF_2CF_2O);

the various repeating units being statistically distributed along the chain;
with the proviso that at least a group of type (i) and at least a group of type (ii) are present in the same molecule; groups R—Q— being also capable of forming, if linked to the same P atom, a cyclic structure of type:



6. A phosphazene derivative of cyclic or linear structure having the following formula:



where:
n is 0 in the case of a cyclic structure and n is 1 in the case of a linear structure;
m is an integer from 3 to 7; and
the A groups, like or different from each other, are selected from the groups consisting of:
(i) R—Q—, where
Q is a divalent group selected from the group consisting of —O—, —S—, —NH—NH—, and —NR_1—, where R_1 is hydrogen or a C_1–C_4 alkyl group; and R is selected from the group consisting of C_6–C_{12} aryl groups, and C_6–C_{12} aryl groups substituted by one or more groups selected from the group consisting of C_1–C_4 alkyls, $—OR_2$, $—NR_3R_4$, $—NO_2$, —F, and —Cl,
where R_2, R_3, and R_4 are selected from the group consisting of hydrogen or C_1–C_4 alkyls; and
(ii) R_f—$CH_2O(CH_2CH_2O)_s$—; where:
s is equal to 0, 1, or 2; and R_f is a polyethereal chain having a molecular weight ranging from 400 to 10,000 and composed of repeating units selected from the group consisting of:



(a)

where:
T is a fluoroalkyl group selected from the group consisting of $—CF_3$, $—C_2F_5$, $—C_3F_5$, $—C_3F_7$, $—CF_2Cl$, $—C_2F_4Cl$, and $—C_3F_6Cl$;
X is —F or $—CF_3$;
Z is —F, —Cl or $—CF_3$; and
m and n are numbers such that the n/m ratio ranges from 0.01 to 0.5, and the molecular weight ranges from 400 to 10,000;



(b)

where:
T' is a fluoroalkyl group selected from the group consisting of $—CF_3$, $—C_2F_5$, $—CF_2Cl$, and $—C_2F_4Cl$;
Z' is —F or —Cl; and
p and q are numbers such that the q/p ratio ranges from 0.5 to 2 and, the molecular weight ranges from 400 to 10,000;



(c)

where:
T'' is a fluoroalkyl group selected from the group consisting of $—CF_3$, $—C_2F_5$, $—C_3F_7$, $—CF_2Cl$, $—C_2F_4Cl$, and $—C_3F_6Cl$;
X'' is —F or $—CF_3$;
Z'' is —F, —Cl, or $—CF_3$; and
r, s and t are numbers such that (r+s) ranges from 1 to 50, the t/(r+s) ratio ranges from 0.1 to 0.05, and the molecular weight is from 400 to 10,000;



(d)

where:
T''' is $—C_2F_5$, or $—C_3F_7$; and
u is a number such that the molecular weight ranges from 400 to 10,000;



(e)

where:
Y and Z, equal or different, are F, Cl or H;
T^{IV} is selected from the group consisting of $—CF_3$, $—C_2F_5$, and $—C_3F_7$; and
v is a number such that the molecular weight ranges from 400 to 10,000; and



(f)

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where:
T^V is $—CF_3$, or $—C_2F_5$; and
w is a number such that the molecular weight ranges from 400 to 10,000;
such that at least one group of type (i) and at least one group of type (ii) are present in the phosphazene derivative molecule; and such that groups —R—Q, if linked to the same phosphorus atom, are capable of forming a cyclic structure with the following formula:



5,602,271

PROCESS FOR THE PREPARATION OF ARYL CARBONATES

Pieter Ooms; Hans-Josef Buysch, both of Krefeld, and Norbert Schön, Darmstadt, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jun. 23, 1995, Ser. No. 494,111

Claims priority, application Germany, Jul. 7, 1994, 44 23 863.0

Int. Cl.[6] C07C *68/02;69/96*

U.S. Cl. 558—274 **16 Claims**

1. A process for the preparation of aryl carbonates by reaction of aromatic monohydroxy compounds with phosgene or chloroformic acid esters of aromatic hydroxy compounds, wherein the reaction is carried out at a temperature in the region of 50° to 450° C., at a pressure of 0.05 to 20 bar in the presence of one or more metallates of type $A_xB_yO_z$ as heterogeneous catalysts, wherein:
A represents a mono-, di-, or trivalent metal cation;
B represents a tri-, tetra-, penta- or hexavalent metal cation;
x represents a number in the range of 1 to 4;
y represents a number in the range of 1 to 2;
z represents a number taken from the group consisting of 3, 6, 7, and 9; provided that A and B do not represent the same metal cation.

5,602,272

REDUCTION AND RESOLUTION METHODS FOR THE PREPARATION OF COMPOUNDS USEFUL AS INTEMEDIATES FOR PREPARING TAXANES

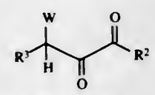
Wen-Sen Li, Marlboro, and John K. Thottathil, Robbinsville, both of N.J., assignors to Bristol-Myers Squibb Company, Princeton, N.J.

Filed Jun. 21, 1994, Ser. No. 263,869

Int. Cl.[6] C07C *229/00*

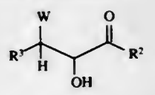
U.S. Cl. 560—39 **13 Claims**

1. A method for the chemical reduction of a compound of the formula I:



(I)

to form a compound of the formula II:



(II)

where
W is $—N_3$; $—NH_2$; or —NH—C(O)—R^1;
R^1 is aryl; or —O-alkyl;
R^2 is —OH: or —O-alkyl; and
R^3 is aryl; or heterocyclo;
comprising the steps of contacting said compound of the formula I with a reducing agent capable of reducing said compound of the formula I to form said compound of the formula II, and effecting said reduction.

5,602,273

RELEASE TAG COMPOUNDS PRODUCING KETONE SIGNAL GROUPS

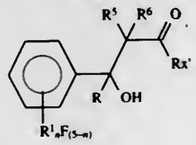
Roger W. Giese, Quincy, Mass.; Samy Abdel-Baky, Cary, N.C., and Linxiao Xu, Cambridge, Mass., assignors to Northeastern University, Boston, Mass.

Division of Ser. No. 53,608, Apr. 22, 1993, Pat. No. 5,516,931, which is a continuation-in-part of Ser. No. 710,318, Mar. 11, 1985, Pat. No. 5,360,819, which is a continuation-in-part of Ser. No. 344,394, Feb. 1, 1982, Pat. No. 4,709,016. This application Feb. 8, 1996, Ser. No. 598,468

Int. Cl.[6] C07C *69/76*

U.S. Cl. 560—60 **5 Claims**

1. A β-hydroxyketo release tag compound having the structure



wherein
R^1=H, CF_3, R, or OR;
n=0–2;
R=C1 to C8 alkyl, benzyl, or phenyl which can contain one or more H, D, or F;
R^5=H or R;
R^6=H or R; and
CORx'=reactivity group.

5,602,274

POLYANHYDRIDE CONTAINING NON-CYCLIC ANHYDRIDE MOIETIES

Michael L. Gould; David A. Grilli; Marvin L. Dettloff; Richard A. Hickner, all of Lake Jackson, and James A. Rabon, West Columbia, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 194,785, Feb. 10, 1994, Pat. No. 5,428,082, which is a continuation of Ser. No. 974,569, Nov. 12, 1992, abandoned. This application Feb. 28, 1995, Ser. No. 396,458

Int. Cl.[6] C07C *69/75*; C08G *67/04*

U.S. Cl. 360—126 **19 Claims**

1. A polyanhydride having a molecular weight of less than about 2000 that comprises:
(a) a polyvalent organic moiety;
(b) a plurality of ester linkages bonded to the polyvalent organic moiety;
(c) divalent organic moieties bonded to the ester linkages;
(d) non-cyclic anhydride moieties bonded to the divalent organic moieties and
(e) bonded to each non-cyclic anhydride moiety, a hydrogen atom or a lower alkyl group containing from 1 to 6 carbon atoms.

5,602,275

URETHANES AND UREAS THAT INDUCE CYTOKINE PRODUCTION

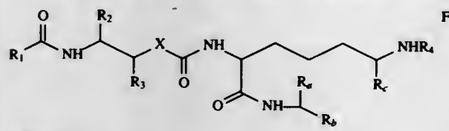
Semiramis Ayral-Kaloustian, Tarrytown; Steven R. Schow, Washingtonville; Mila T. Du, Suffern, all of N.Y., and James J. Gibbons, Jr., Westwood, N.J., assignors to American Cyanamid Company, Madison, N.J.

Division of Ser. No. 213,303, Mar. 14, 1994, Pat. No. 5,545,662, which is a division of Ser. No. 63,174, May 12, 1993, Pat. No. 5,312,831. This application May 25, 1995, Ser. No. 449,878

Int. Cl.[6] C07C *261/00*

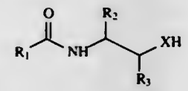
U.S. Cl. 560—159 **2 Claims**

1. A process for preparing a compound of having the structure



FORMULA I

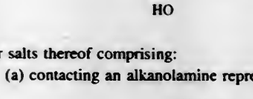
wherein:
R_1 is selected from the group consisting of hydrogen, a substituted or unsubstituted (C_1–C_{20}) alkyl group, a substituted or unsubstituted cycloalkyl group, a substituted or unsubstituted cycloalkylalkyl group, a vinyl group, an acetylene group, a substituted or unsubstituted amino group, a substituted or unsubstituted acylamino group, a substituted or unsubstituted aryl group, a substituted or unsubstituted aralkyl group, a substituted or unsubstituted aryloxy group, a substituted or unsubstituted alkoxyaryl group, a substituted or unsubstituted alkoxyaralkyl group and a substituted or unsubstituted monocyclic or bicyclic heterocyclic group containing from 1 to 4 hetero atoms selected from the group consisting of nitrogen, sulfur and oxygen atoms; R_a and R_3 are independently selected from hydrogen, substituted or unsubstituted (C_1–C_6) alkyl, substituted or unsubstituted alkoxyalkyl, substituted or unsubstituted cycloalkyl, substituted or unsubstituted cycloalkylalkyl, substituted or unsubstituted aryl, substituted or unsubstituted arakyl, substituted or unsubstituted alkoxyaralkyl, vinyl, acetylene and a substituted or unsubstituted monocyclic or bicyclic heterocycle containing from 1 to 4 heteroatoms selected from the group consisting of nitrogen, sulfur and oxygen atoms provided that, in the case of R_3, the hetero atoms in said heterocycle are not directly bonded to the —CH— group of the —CH—X— moiety; and R_2, R_b and R_c are independently selected from carboxy or protected carboxy, carboxy or protected carboxyloweralkyl and carboxyamide; X is oxygen or nitrogen; and R_4 is H or an amino protecting group; wherein the substituents in the aforementioned substituted alkyl, cycloalkyl, cycloalkylalkyl, amino, acylamino, aryl, aralkyl, aryloxy, alkoxyaryl, alkoxyaryalkyl and heterocyclic groups are selected from the group consisting of halogen, hydroxyl, lower alkyl, lower alkoxy, aryloxy, aralkyloxy, amino, mono- or di-lower alkylamino, arylamino, aralkyamino, carboxyl, formyl, lower alkoxycarbonyl, aryloxycarbonyl, aralkyloxycarbonyl, lower alkylthio, arylthio, aralkylthio, arylsulfinyl, aralkylsulfinyl, lower alkylsulfonyl, arylsulfonyl, aralkylsulfonyl and a monocyclic or bicyclic heterocyclic group having 1–4 hetero atoms selected from nitrogen, sulfur and oxygen; or a pharmaceutically acceptable salt thereof which comprises reacting a compound of the formula:



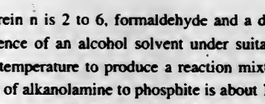
with an activated carbonyl equivalent of the formula:



where Y is a leaving group to obtain a compound of the formula:



which is further reacted with a compound of the formula:



to obtain a compound of Formula I.

5,602,276

PROCESS FOR PREPARING N-PHOSPHONOMETHYLAMINO CARBOXYLIC ACIDS

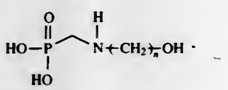
Michael K. Stern, University City; Brian K. Cheng, Chesterfield; Jerry R. Ebner, St. Peters, and Dennis P. Riley, Ballwin, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 427,936, Apr. 26, 1995, abandoned, which is a continuation-in-part of Ser. No. 269,722, Jul. 1, 1994, abandoned. This application Jul. 1, 1996, Ser. No. 674,084

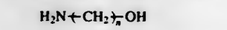
Int. Cl.[6] C07F *9/38*

U.S. Cl. 562—16 **26 Claims**

1. A process for preparing N-hydroxyalkylaminomethylphosphonic acid represented by the formula



or salts thereof comprising:
(a) contacting an alkanolamine represented by the formula



wherein n is 2 to 6, formaldehyde and a dialkyl phosphite in the presence of an alcohol solvent under suitable conditions of time and temperature to produce a reaction mixture wherein the molar ratio of alkanolamine to phosphite is about 1:1 to about 8:1 and the molar ratio of formaldehyde to alkanolamine is about 0.125:1 to about 3:1, and
(b) hydrolyzing said reaction mixture under acidic or basic conditions.

5,602,277

SUBSTITUTED BENZENE DERIVATIVES USEFUL AS NEURAMINIDASE INHIBITORS

Yarlagadda S. Babu; Pooran Chand, and David A. Walsh, all of Birmingham, Ala., assignors to BioCryst Pharmaceuticals, Inc., Birmingham, Ala.

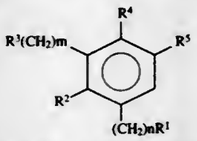
Filed Mar. 30, 1995, Ser. No. 413,886

Int. Cl.[6] C07C *279/18*; A61K *31/19*

U.S. Cl. 562—439 **25 Claims**

1. A method for the treatment of infections caused by viral influenza, said method comprising the step of:

administering to a host in need of such treatment a pharmaceutically-effective amount of a compound of the Formula (I):



(I)

or pharmaceutically-suitable salts or prodrug forms thereof, wherein:

n is 0–1;

m is 0–3;

p is 0–1;

R^1 is selected from the group consisting of —CO_2H, —SO_2H, —SO_3H, —PO_3H_2, and tetrazolyl; provided that n is 1 when R^1 is other than SO_2H;

R^2 is selected from the group consisting of H, —OH, and —NH_2;

R^3 is selected independently at each occurrence from the group consisting of —OR, —$N(R)_2$, —N_3, —$NHC(R^6)NH_2$, —CN, —$C(R^6)NH_2$, H, —$C(R)(=N)NHC(=NH)NH_2$, —$C(=N)RC(=NH)NH_2$, NHCN, and CH=NOH;

R^4 is selected from the group consisting of H, —OR, —$(CH_2)_pNHR^7$, and —$C(O)NHR^8$;

R^5 is selected from the group consisting of H, —$(CH(R^3)_2)_nCH_2R^3$, —$NHC(R^6)NH_2$, —CH=$CHCH_2R^3$, and CH=NOH;

R^6 is selected from the group consisting of =NH, =NOH, =NCN, =O, and =S;

R^7 is selected from the group consisting of —$C(=Y)R^8$, —$S(O_2)R$, —$C(O)OR^8$, —$C(=Y)$ NHR^8, and —$CH_2C(=Y)R^8$;

R^8 is selected from the group consisting of C_1–C_4 linear or branched alkyl substituted with 0–3 halogens on each carbon;

R is selected from the group consisting of H, C_1–C_4 linear or branched alkyl, C_1–C_4 linear or branched alkyl-OH, C_1–C_4 linear or branched alkyl-NH_2; and

Y is O or S.

5,602,278

N-OXIDES AND DERIVATIVES OF CHLORAMBUCIL FOR TREATING HYPOXIC TUMOR CELLS

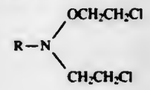
Lynn Kirkpatrick, 29 Palmer Crescent, Emerald Park, Saskatchewan, Canada

Filed Oct. 20, 1994, Ser. No. 326,327

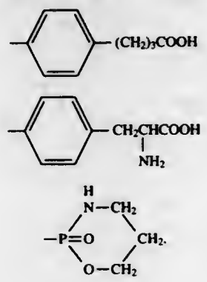
Int. Cl.[6] C07C *229/28*; C07F *9/547*

U.S. Cl. 562—452 **13 Claims**

1. A compound having the formula:



wherein R is selected from the group consisting of:



5,602,279

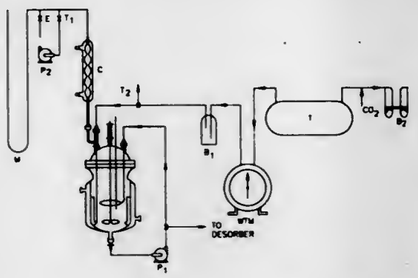
PRIMARY HINDERED AMINOACIDS FOR PROMOTED ACID GAS SCRUBBING PROCESS

Warren A. Thaler, Flemington; Guido Sartori; W. S. Winston Ho, both of Annandale, all of N.J.; Larry J. Shulik, Baytown, Tex., and George E. Milliman, Fanwood, N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

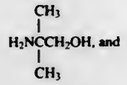
Continuation of Ser. No. 906,779, Jun. 30, 1992, abandoned, which is a continuation of Ser. No. 546,123, Jun. 28, 1990, abandoned, which is a continuation of Ser. No. 290,126, Dec. 27, 1988, abandoned, which is a continuation-in-part of Ser. No. 179,995, Apr. 11, 1988, Pat. No. 4,919,904, which is a division of Ser. No. 93,734, Sep. 8, 1987, Pat. No. 4,759,866, which is a continuation of Ser. No. 852,322, Apr. 15, 1986, abandoned. This application Apr. 15, 1994, Ser. No. 228,535

Int. Cl.[6] C07C *51/295*

U.S. Cl. 562—526 **3 Claims**



1. A process for preparing a gas scrubbing solution which includes aminoisobutyric acid or its salts comprising the step of reacting the sterically hindered amine, 2-amino-2-methyl-1-propanol (AMP),



an excess of potassium hydroxide, KOH, at a temperature from about 120° C. to about 300° C. to produce said aminoisobutyric acid for said gas scrubbing solution.

5,602,280

PROCESS FOR PRODUCTION OF UNSATURATED ALDEHYDE AND UNSATURATED CARBOXYLIC ACID

Koichi Nagai, Nihama; Yoshisaburou Nomura, Ehime-ken, and Yoshihiko Nagaoka, Nihama, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jun. 27, 1994, Ser. No. 266,190

Claims priority, application Japan, Jun. 25, 1993, 5-154885; Dec. 13, 1993, 5-312267

Int. Cl.[6] C07C *51/16*

U.S. Cl. 562—546 **29 Claims**

1. A process for producing an unsaturated aldehyde and a carboxylic acid which comprises subjecting propylene, isobutylene or tertiary butanol to gas phase catalytic oxidation with molecular oxygen in the presence of (i) a catalyst comprising composite oxide represented by the formula

$$Mo_aBi_bFe_cA_dB_eC_fD_gO_x$$

wherein Mo, Bi, Fe and O represent molybdenum, bismuth, iron and oxygen, respectively; A represents nickel and/or cobalt; B represents at least one element selected from the group consisting of manganese, zinc, calcium, magnesium, tin and lead; C represents at least one element selected from the group consisting of phosphorus, boron, arsenic, tellurium, tungsten, antimony and silicon; D represents at least one element selected from the group consisting of potassium, rubidium, cesium and thallium; in case of a being 12, $0<b\leqq10$, $0<c\leqq10$, $1\leqq d\leqq10$, $0\leqq e\leqq10$, $0\leqq f\leqq20$ and $0<g\leqq2$; and x has a value dependent on the oxidation state of the respective elements and (ii) a molybdenum oxide which in itself is substantially inert to said gas phase catalytic oxidation to provide the corresponding unsaturated aldehyde and unsaturated carboxylic acid.

5,602,281

PROCESS FOR PREPARING PHYSICALLY STABLE CRYSTALLINE GAMMA MODIFICATION OF PARA-AMINOBENZENESULFONAMIDE

Nikolai B. Leonidov, ulitsa Zatonnaya, Korpus 1, kv. 158, Moscow, Russian Federation

PCT No. PCT/RU93/00274, § 371 Date May 11, 1995, § 102(e) Date May 11, 1995, PCT Pub. No. WO95/05361, PCT Pub. Date Feb. 23, 1995

PCT Filed Nov. 16, 1993, Ser. No. 416,830

Claims priority, application Russian Federation, Aug. 19, 1993, 93041684

Int. Cl.[6] C07C *311/39*;*303/44*

U.S. Cl. 564—86 **12 Claims**

1. A process for preparing a physically stable crystalline gamma modification of para-aminobenzenesulfonamide, the process comprising the steps of:

(a) providing a solution of para-aminobenzenesulfonamide in water, in an organic solvent, or in a mixture of water and organic solvent;

(b) cooling the solution with a cooling agent at a rate of at least 2° C./min to form crystals of the gamma modification of para-aminobenzenesulfonamide; and

(c) separating and drying the crystals formed in step (b).

5,602,282

PROCESS FOR THE PREPARATION OF 2-AMINO-2-ARYLETHANOLS AND NOVEL INTERMEDIATES

Reinhard Lantzsch, Wuppertal; Ernst Kysela, Bergisch Gladbach, and Albrecht Marhold, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

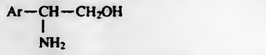
Filed Aug. 4, 1995, Ser. No. 511,207

Claims priority, application Germany, Aug. 12, 1994, 44 28 533.7

Int. Cl.[6] C07C *213/00*

U.S. Cl. 564—358 **4 Claims**

1. A process for the preparation of compounds of the formula (I)



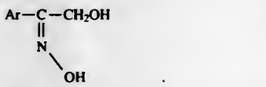
(I)

in which

Ar represents aryl or hetaryl each unsubstituted or identically or differently monosubstituted to pentasubstituted, by:

halogen, alkyl, halogenoalkyl, alkoxy, halogenoalkoxy, unsubstituted or substituted cycloalkyloxy or unsubstituted or substituted phenyl,

which comprises catalytically hydrogenating compounds of the formula (II)



(II)

in which

Ar has the meaning given above,

using Raney nickel or Raney cobalt in the presence of a diluent and in the presence of a base.

5,602,283

MULTI-STAGE PROCESS FOR PREPARING N-ALKYL-3,4-DIALKYL-2,6-DINITROANILINES

Morris Sarel, Rehovot, Israel, assignor to Agan Chemical Manufacturers Ltd., Ashdod, Israel

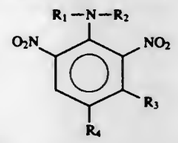
Division of Ser. No. 264,450, Jun. 23, 1994, Pat. No. 5,475,148. This application May 23, 1995, Ser. No. 447,964

Claims priority, application Israel, Jun. 24, 1993, 106118

Int. Cl.[6] C07C *209/18*

U.S. Cl. 564—399 **28 Claims**

1. A process for preparing N-alkyl-3,4-dialkyl-2,6-dinitroanilines of the formula

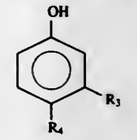


wherein

R_1 is hydrogen, C_1 to C_6 straight or branched chain alkyl group; and

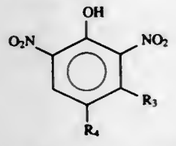
R_2, R_3 and R_4 are independently C_1 to C_6 straight or branched chain alkyl group optionally substituted by one or more halogen groups, characterized in that

a. a 3,4-dialkyl phenol of the formula



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is selectively nitrated with nitric acid in stage I in a two phase system to form 3,4-dialkyl-2,6-dinitrophenol of the formula:



b. the 3,4-dialkyl-2,6-dinitrophenol in stage II is alkylated with an alkylating agent in the presence of a base and a catalytic amount of a phase transfer catalyst selected from the group consisting of

$(R')_4Q^+X^-$

wherein

R' may be the same or different C_1 to C_{16} straight or branched alkyl groups, benzyl, substituted benzyl;

Q is N or P; and

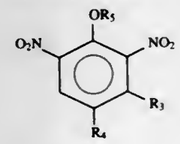
X is Cl, Br, I or HSO_4;

a macrocyclic ether and polyethylene glycols of formula

$HO-(CH_2CH_2O-)_n-CH_2CH_2OH$

where n is an integer from 10 to 50,

in an organic solvent to form 3,4-dialkyl-2,6-dinitro alkoxybenzene of the formula:



where

R_5 is an alkyl group having 1 to 6 carbon atoms;

c. the 3,4-dialkyl-2,6-dinitro alkoxybenze is reacted in stage III with an amine of the formula



where R_1 and R_2 are defined above, in the presence of a catalytic amount of base or halide to form N-alkyl-3,4-dialkyl-2,6-dinitroaniline; and

d. the N-alkyl-3,4-dialkyl-2,6-dinitroaniline is recovered.

5,602,284

PROCESS FOR SEPARATING OFF AMINOBIPHENYL FROM DIPHENYLAMINE

Frank Arndt; Hans-Josef Buysch, both of Krefeld, and Rudolf Wiemers, Meerbusch, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Sep. 11, 1995, Ser. No. 526,146

Claims priority, application Germany, Sep. 13, 1994, 44 32 554.1; Sep. 13, 1994, 44 32 553.3; Sep. 19, 1994, 44 33 265.3; Oct. 25, 1994, 44 38 003.8; Oct. 26, 1994, 44 38 173.5

Int. Cl.[6] C07C *209/86*

U.S. Cl. 564—433 **10 Claims**

1. A process for separating off aminobiphenyl from diphenylamine, wherein the diphenylamine to be purified is treated at 50° to 310° C. with 1 to 10,000 mol of a substance containing double-bonded oxygen of the formula

(I),

in which

A represents the C_1–C_{20} radical of a carbonyl compound selected from the group consisting of saturated and unsaturated, open-chain or cyclic, aliphatic or aromatic aldehydes, ketches and quinones, the radical of a non-substituted or substituted urea and the radical of a nitroso compound or an oxygen atom,

per mole of aminobiphenyl present and then the diphenylamine is separated off from the treated mixture.

5,602,285

PROCESS FOR PREPARING PHENETHANOL ETHERS

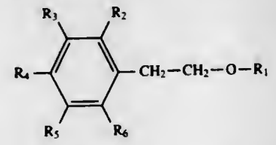
John R. Durrwachter; Humberto Ramos, Jr., and Mohammad Aslam, all of Corpus Christi, Tex., assignors to Hoechst Celanese Corp., Somerville, N.J.

Continuation-in-part of Ser. No. 83,951, Jun. 24, 1993, abandoned. This application Dec. 23, 1994, Ser. No. 363,508

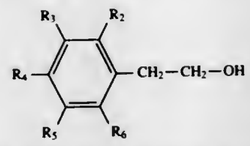
Int. Cl.[6] C07C *41/00*

U.S. Cl. 568—626 **15 Claims**

1. A method of preparing a phenethanol ether of the formula:



comprising the etherification step of reacting a phenethyl alcohol of the formula:



with an aliphatic primary alcohol having the formula R_1OH in the presence of an acid catalyst in an enclosed reactor at a temperature in the range of about 100° C. to about 150° C. to generate the phenethanol ether in a yield of at least about 50%, wherein R_1 is a primary alkyl group, R_2, R_3, R_5, and R_6 are independently hydrogen, an alkyl group, an unsubstituted or a substituted aryl group, a hydroxy group, an alkoxy group, an unsubstituted or a substituted aryloxy group, a halogen, an acyl group, an aroyl group, an alkyl group terminated with a carboxylic acid or acid derivative group, an acyloxy group, an aroyloxy group, an amino group, an alkyl substituted amino group, an amino group substituted with one or more substituted or unsubstituted aryl groups, a nitrile group or a nitro group, and R_4 is hydroxy or methoxy.

5,602,286

PROCESS FOR RECOVERING XANTHOPHYLLS FROM CORN GLUTEN

Harapanahalli S. Muralidhara, Plymouth, Minn., assignor to Cargill, Incorporated, Minneapolis, Minn.

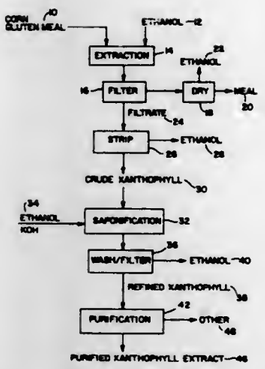
Filed Jun. 7, 1995, Ser. No. 486,376

Int. Cl.[6] C07C *35/21*

U.S. Cl. 568—816 **33 Claims**

1. A method for recovering xanthophylls from corn gluten, said method comprising

(1) drying corn gluten to a water content of less than about 12 weight percent;



(2) extracting the dried corn gluten with a first alcohol;

(3) collecting the extract containing crude xanthophylls from step (2) to obtain the crude xanthophylls;

(4) treating the crude xanthophylls with a second alcohol containing a base;

(5) removing the second alcohol from the treated crude xanthophylls to recover refined xanthophylls; and

(6) collecting the refined xanthophylls.

5,602,287

SYNTHESES OF D-CHIRO-3-INOSOSE AND (+)-D-CHIRO INOSITOL

Tomas Hudlicky, and Martin Mandel, both of Blacksbury, Va., assignors to Virginia Tech Intellectual Properties, Blacksburg, Va.

Division of Ser. No. 974,057, Nov. 10, 1992, abandoned, which is a continuation-in-part of Ser. No. 956,522, Oct. 5, 1992, abandoned. This application Mar. 24, 1995, Ser. No. 410,611

Int. Cl.[6] C07C *35/16*

U.S. Cl. 568—833 **2 Claims**

1. A process for preparing D-chiro-inositol 6 comprising reducing D-chiro-3-inosose 10 with a reducing agent selected from the group consisting of zinc borohydride and sodium borohydride at a temperature between about −10° C. to about 110° C., in acetonitrile.

5,602,288

CATALYTIC PROCESS FOR PRODUCING CF_3CH_2F

V. N. Mallikarjuna Rao, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 29, 1992, Ser. No. 891,390

Int. Cl.[6] C07C *19/08*

U.S. Cl. 570—176 **19 Claims**

1. A process for producing 1,1,1,2-tetrafluoroethane from 2-chloro-1,1,1,2-tetrafluoroethane comprising the steps of: contacting a gaseous mixture containing said 2-chloro-1,1,1,2-tetrafluoroethane and chlorine with a chlorination catalyst at a temperature of from about 225° C. to about 450° C. to produce 2,2-dichloro-1,1,1,2-tetrafluoroethane, wherein the chlorination catalyst is selected from the group consisting of carbon catalysts; and reacting said 2,2-dichloro-1,1,1,2-tetrafluoroethane with hydrogen in the presence of a carbon-supported precious metal catalyst at a temperature of from about 100° C. to 250° C. to produce 1,1,1,2-tetrafluoroethane.

5,602,289

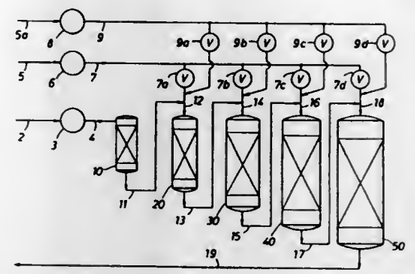
CONVERSION OF METHANOL TO GASOLINE

Christiaan P. van Dijk, Houston, Tex., assignor to Starchem, Inc., Houston, Tex.

Filed Nov. 9, 1994, Ser. No. 336,430

Int. Cl.[6] C07C *1/20;1/22*

U.S. Cl. 585—315 **17 Claims**



1. A method of making hydrocarbon compounds by contacting an alkoxy compound with an MTG catalyst, comprising the steps of:

combining an effluent gas product from a preceding MTG reaction zone which is at a temperature T_R with

(a) an alkoxy compound; and

(b) a diluent gas comprising a C_{2-} recycle gas, a C_{3+} recycle gas, steam, hydrogen, or mixtures thereof,

to form a combined gas stream wherein in the combined gas stream;

1. the alkoxy compound is present in a quantity that provides an alkoxy equivalent which exceeds that added to the preceding MTG reaction zone from which the effluent product gas was formed; and

2. the diluent gas composition is of a temperature and composition and is present in an amount that:

(a) provides for the combined gas stream to have a temperature of from about 650° F. to about 720° F., and

(b) provides for the combined gas stream to have specific heat content that limits temperature increase of the gas stream to less than 150° F. upon reaction of the alkoxy compound content thereof to hydrocarbon compounds;

(c) provides for a total water content following reaction of the alkoxy compound to hydrocarbon compounds that does not exceed a partial pressure of water (as steam) of 2.2 ata; and

contacting the combined gas stream with an MTG catalyst in a succeeding reaction zone to form a new effluent product gas.

5,602,290

PRETREATMENT OF DILUTE ETHYLENE FEEDSTOCKS FOR ETHYLBENZENE PRODUCTION

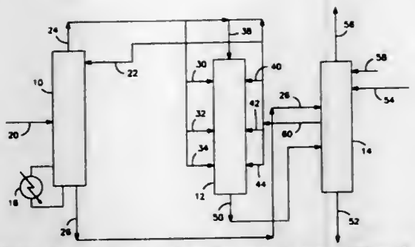
Kevin J. Fallon, Boston, Mass., assignor to Raytheon Engineers & Constructors, Inc., Lexington, Mass.

Filed May 30, 1995, Ser. No. 453,646

Int. Cl.[6] C07C *2/66*

U.S. Cl. 585—448 **36 Claims**

1. In a process for preparing ethylbenzene by the catalytic alkylation of benzene with ethylene in an alkylation step carried out in a first alkylation reactor, the improvement comprising utilizing a scrubbing step for absorbing excessive quantities of higher olefins from a rich ethylene feedstock prior to the alkylation step by contacting the rich ethylene feedstock with a lean aromatic stream consisting essentially of benzene, ethylbenzene and mixtures thereof and thereafter separating a rich aromatic stream,



together with said higher olefins, to create a lean ethylene feedstock, and directing Said lean ethylene feedstock to said first alkylation reactor.

5,602,291

PROCESS FOR ISOMERIZING C_5/C_6 NORMAL PARAFFINS WITH RECYCLING NORMAL PARAFFINS AND METHYL-PENTANES

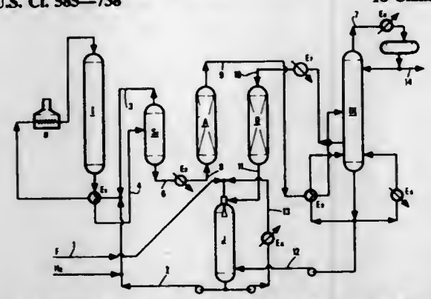
Ari Minkkinen, Saint Nom la Breteche; Andre Deschamps, Noisy le Roi, and Jean-Paul Carlou, Orgeval, all of France, assignors to Institut Francais du Petrole, France

Continuation of Ser. No. 28,914, Mar. 8, 1993, abandoned. This application Jun. 14, 1994, Ser. No. 261,031

Claims priority, application France, Mar. 6, 1992, 92 02812

Int. Cl.[6] C07C *5/12;7/12*

U.S. Cl. 585—738 **18 Claims**



1. A process for the isomerization of n-paraffins into paraffins in a charge consisting essentially of a C_5/C_6 fraction, comprising:

passing a fresh charge consisting essentially of a C_5/C_6 fraction into an isomerization reactor in an isomerization stage, said charge being mixed with a recycle flow containing a major proportion of n-paraffins and methyl-pentanes from a desorption stage;

isomerizing the charge in said isomerization stage;

feeding the effluent from said isomerization stage into a separator;

separating said effluent into a vapor phase and a liquid effluent phase containing C_5/C_6 which constitutes crude isomerate;

recycling said vapor phase to said isomerization stage;

vaporizing said liquid effluent phase containing C_5/C_6 to form a vapor flow;

passing said vapor flow upwardly through a first adsorber filled with a molecular sieve in an adsorption stage to retain n-paraffins from the vapor flow;

collecting as a vapor head effluent an isomerate free of n-paraffins from said adsorption stage;

passing, in a desorption stage, a gaseous flow containing a major proportion of methyl-pentanes and deficient in n-paraffins from a deisobexanization stage downwardly through a second adsorber and lowering the pressure of said second adsorber whereby the gaseous flow strips adsorbed n-paraffins from the molecular sieve in said second absorber;

alternating said desorption stage with said adsorption stage;

recycling effluent from said desorption stage to said isomerization stage as said recycle flow; and

passing said vapor head effluent from said adsorption stage to a distillation column in said deisohexanization stage to produce a liquid residue, an isomerate and said gaseous flow containing a major proportion of methyl pentanes which is fed, as a desorbent, to said desorption stage.

5,602,292

CATALYST FOR THE HYDROISOMERIZATION OF LONG-CHAIN N-PARAFFINS AND PROCESS FOR PREPARING IT

Carlo Perego, Carnate; Laura Zanibelli, Milan; Cristina Flego, Trieste; Alberto Del Bianco, Magenta, and Giuseppe Bellussi, Piacenza, all of Italy, assignors to Enircerche S.p.A., Milan, Italy

Division of Ser. No. 99,650, Jul. 30, 1993, abandoned. This application May 25, 1995, Ser. No. 449,957

Claims priority, application Italy, Jul. 31, 1992, MI92A/1895

Int. Cl.[6] C07C *5/13*

U.S. Cl. 585—750 **3 Claims**

1. Process for hydroisomerizing n-paraffins containing more than 15 carbon atoms, characterized in that the n-paraffin, or a mixture of n-paraffins, is brought into contact, under hydroisomerization conditions, with a bifunctional catalyst comprising:

(a) a carrier of acidic character constituted by silica-alumina gel, amorphous as determined by X-ray analysis, with a molar ratio of SiO_2:Al_2O_3 comprised within the range of from 30:1 to 500:1, a surface area comprised within the range of from 500 to 1,000 m^2/g, with a porosity comprised within the range of from 0.3 to 0.6 ml/g, with a diameter of pores comprised within the range of from 10 to 30 Å;

(b) one or more metals belonging to Group VIIIA, in amounts comprised within the range of from 0.05 to 5% by weight.

5,602,293

PROCESS FOR SEPARATING A FEEDSTOCK STREAM ESSENTIALLY CONSISTING OF HYDROGEN, METHANE AND C_3/C_4-HYDROCARBONS

Heinz Bauer, München, Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Germany

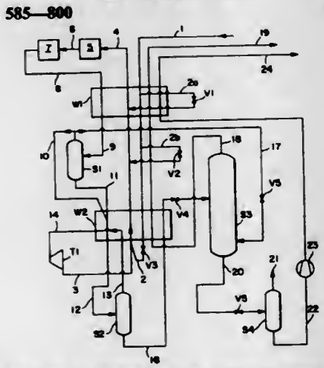
PCT No. PCT/EP93/01182, § 371 Date Apr. 14, 1995, § 102(e) Date Apr. 14, 1995, PCT Pub. No. WO94/08923, PCT Pub. Date Apr. 28, 1994

PCT Filed May 12, 1993, Ser. No. 416,844

Claims priority, application Germany, Oct. 16, 1992, 42 35 006.9

Int. Cl.[6] C07C *7/00*

U.S. Cl. 585—800 **8 Claims**



1. In a process for separating a raw feedstock stream consisting essentially of hydrogen, methane and C_3/C_4-hydrocarbons, com-

prising in a pretreatment step, dehydrogenating said raw feedstock in a dehydrogenation reactor (5) to convert isobutane to isobutene; partially condensing the pretreated feedstock stream in at least one partial condensation stage; separating the partially condensed stream into a C_3/C_4-hydrocarbon-rich fraction (16) and into an H_2/CH_4 fraction (14); and mixing an at least partial stream of the H_2/CH_4 fraction with the raw feedstock stream prior to said pretreatment step, the improvement wherein said pretreated feedstock stream is partially condensed in at least two partial condensation stages (W1)(W2), said improvement further comprising;

(a) withdrawing an H_2/CH_4 gas fraction and a liquid fraction (11) from a first separator (S1); and dividing the latter gas fraction into first and second partial streams (10, 17);

(b) mixing said first partial stream (10) together with said liquid fraction (11) from first separator (S1); partially condensing the resultant mixture and passing the resultant partial condensate to a second separator (S2), to separate a C_3/C_4-hydrocarbon-rich liquid fraction (16) at the bottom of the second separator (S2) and a high purity H_2-rich gas fraction at the top;

(c) mixing said C_3/C_4 hydrocarbon-rich liquid fraction (16) from the bottom of the second separator with the second partial stream of H_2/CH_4 gas fraction (17) from the first separator (S1) and passing the resultant mixture to a stripping column (S3);

(d) withdrawing a C_3/C_4-rich product fraction (20) from the bottom of the stripping column (S3), and withdrawing an H_2-rich gas fraction (18) from the top of stripping column (S3), the latter H_2-rich gas fraction having a lower purity than said high purity H_2-rich gas fraction; and

(e) heating said high purity H_2-rich gas fraction (13) from the top of second separator (S2) in heat exchange with process streams to be cooled, and mixing the resultant heated high purity H_2-rich gas fraction with said raw feedstock stream (2, 2*a*, 2*b*) upstream of said pretreatment, whereby the high purity of the H_2-rich gas leads to a superior suppression of carbon black formation in the dehydrogenating step as compared to a less pure H_2-rich gas.

5,602,294

SEPARATION OF O-XYLENE FROM P-XYLENE AND M-XYLENE BY EXTRACTIVE DISTILLATION

Lloyd Berg, 1314 S. Third Ave., Bozeman, Mont. 59715

Filed May 31, 1995, Ser. No. 455,855

Int. Cl.[6] B01D *3/40*; C07C *7/08*

U.S. Cl. 585—864 **1 Claim**

1. A method for recovering o-xylene from a mixture of o-xylene, p-xylene and m-xylene which comprises distilling a mixture of o-xylene, p-xylene and m-xylene in the presence of an extractive distillation agent, recovering the p-xylene and the m-xylene as overhead product and obtaining the o-xylene and the extractive distillation agent as bottoms product, wherein said extractive distillation agent consists of one material selected from the group consisting of o-cresol, dichloroacetic acid, methyl salicylate and 1-tetradecanol.

5,602,295

METHODS FOR THE ELIMINATION OF CYANIDES IN THE DEHALOGENATION OF HALOFLUOROCARBONS

Marc W. Abel, Columbus; Robert W. Mouk, Westerville; Alan F. Heydnk, Columbus, and Albert E. Abel, Powell, all of Ohio, assignors to Commodore Laboratories, Inc., Columbus, Ohio

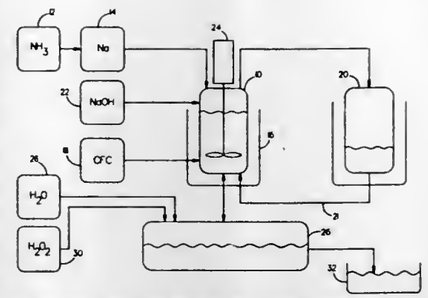
Continuation-in-part of Ser. No. 360,398, Dec. 21, 1994, Pat. No. 5,559,278, which is a continuation-in-part of Ser. No. 207,289, Mar. 7, 1994, Pat. No. 5,414,200. This application May 5, 1995, Ser. No. 435,781

Int. Cl.[6] A62D *3/00*

U.S. Cl. 588—205 **26 Claims**

1. A method of chemically dehalogenating a refrigerant which comprises the steps of:

(i) providing a halofluorohydrocarbon refrigerant;



(ii) reacting said halofluorohydrocarbon refrigerant with an ammonia or other nitrogen-containing base to dehalogenate said refrigerant, said reaction yielding a composition comprising a cyanide compound;

(iii) reacting said cyanide compound with a base selected from the group consisting of an alkali metal hydroxide and an alkaline earth metal hydroxide to provide a reaction mixture comprising a cyanide compound of said base, and

(iv) hydrolyzing with water said cyanide compound of said base to yield a composition substantially free of said compound.

5,602,296

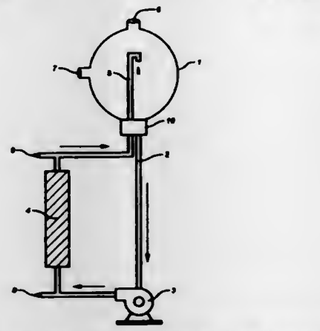
PROCESS FOR IN-SITU BIDEGRADATION OF CHLORINATED ALIPHATIC HYDROCARBONS BY SUBSURFACE HYDROGEN INJECTION

Joseph B. Hughes; Charles J. Newell, both of Houston, and R. Todd Fisher, Sugar Land, all of Tex., assignors to Groundwater Services, Inc., Houston, Tex.

Filed Aug. 11, 1995, Ser. No. 514,276

Int. Cl.[6] A67D *3/00*; C02F *1/70*

U.S. Cl. 588—205 **20 Claims**



1. A method for stimulating in-situ microbial biodegradation of halogenated organic compounds in an aqueous subsurface environment comprising delivering hydrogen in the absence of nutritional factors into said aqueous subsurface environment.

5,602,297

MULTISTAGE DOUBLE CLOSED-LOOP PROCESS FOR WASTE DECONTAMINATION

Chi-Shang Wang, 5923 Fairmont, Woodridge, Ill. 60517

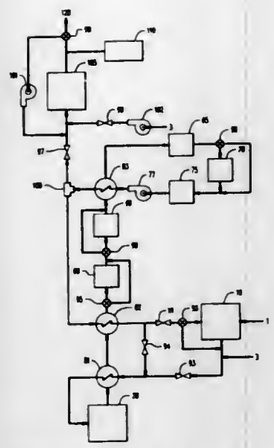
Filed Feb. 8, 1995, Ser. No. 385,637

Int. Cl.[6] A62D *3/00*

U.S. Cl. 588—207 **8 Claims**

1. A process for the decontamination of contaminated liquid waste and solid waste having surface contamination, said waste containing, halogenated volatile organic compounds, non-

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halogenated volatile organic compounds, hydrocarbons, toxic metals, precious metals, particulates, the process comprising:

evaporating said contaminants in an evaporator;

passing the resulting vapor stream from the evaporator to a first heat exchanger where it is heated;

passing the resulting vapor stream from the first heat exchanger to a non-combustion thermal reactor, destroying chemical bonds of volatile organic compounds in the vapor stream passed to the non-combustion thermal reactor by means of heating, and producing hydrocarbons, water vapor, carbon dioxide, carbon monoxide, and when the destroyed chemical bonds are of halogenated volatile organic compounds, also producing halogen acids;

passing the resulting heated vapor stream from the non-combustion thermal reactor to the first heat exchanger where it is cooled;

passing the resulting cooled vapor stream from the first heat exchanger to a plurality of secondary heat exchangers where it is further cooled;

passing the resulting further cooled vapor stream from the plurality of secondary heat exchangers to a first sorber and removing the halogen acids produced in destroying the chemical bonds of halogenated volatile organic compounds produced in the non-combustion thermal reactor by sorbing;

passing the resulting vapor stream from the first sorber to a second reactor with a fluidized bed section, catalytic layers, and an expansion chamber and removing toxic metals and recovering precious metals by means of nucleation, condensation, deposition, and agglomeration in the fluidized bed section, removing volatile organic compounds, semi-volatile organic compounds, and carbon monoxide by adsorption and absorption in the catalytic layers, and lowering the temperature and pressure of the vapor stream passed from the fluidized bed section and catalytic layers in the expansion chamber;

passing the resulting stream from the second reactor to a second sorber and removing particulates through sorbing;

passing the resulting stream from the second sorber to a third sorber and removing remaining volatile organic compounds through gas adsorption, passing the resulting stream from the third sorber to a blower, and passing the stream from the blower to a splitter valve where the stream from the blower is split into a recycle stream and an exhaust stream;

passing the recycle stream to the secondary heat exchangers, heating it in the secondary heat exchangers, mixing the heated recycle stream with the vapor stream passed from the evaporator, preheating the mixture of heated recycle stream and vapor stream from the evaporator in the first heat exchanger, and destroying the organic bonds of volatile organic compounds in the mixture in non-combustion thermal reactor;

mixing the exhaust stream with air and passing the mixed air exhaust stream to a catalytic oxidizer and oxidizing volatile organic compounds, carbon monoxide, and hydrocarbons in the mixed air exhaust stream;

passing the mixed air exhaust stream from the catalytic oxidizer to monitoring equipment, continuously monitoring the mixed air exhaust stream from the catalytic oxidizer for carbon monoxide and total hydrocarbon content and either venting the monitored mixed air exhaust stream, or recycling the monitored mixed exhaust stream to further oxidize volatile organic compounds, carbon monoxide, and hydrocarbons in the catalytic oxidizer passing all of the further oxidized mixed air exhaust stream into the recycle stream, while closing off the evaporator from fresh waste feed;

measuring inlet and outlet temperatures, pressures, and flows at the first exchanger, secondary heat exchangers, non-combustion thermal reactor, first sorber, second reactor, particulate sorber, and catalytic oxidizer with thermocouples, pressure transducers, and flowmeters; and

controlling the flows, pressures, and temperatures by means of diagnostic indicators and controlling equipment linked to a computer.

5,602,298

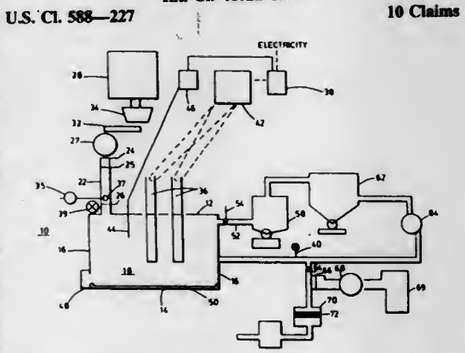
METHOD AND APPARATUS FOR CONVERTING ORGANIC MATERIAL INTO HYDROGEN AND CARBON BY PHOTODECOMPOSITION

George B. Levin, Pittsburgh, Pa., assignor to Advanced Waste Treatment Technology, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 24,092, Feb. 25, 1993, abandoned, which is a continuation-in-part of Ser. No. 333,092, Apr. 4, 1989, Pat. No. 5,100,638. This application Apr. 10, 1995, Ser. No. 418,648

Int. Cl.[6] A62D *3/00*

U.S. Cl. 588—227 **10 Claims**



1. A method of processing waste material comprising organic matter consisting of solids, liquids, or mixtures of solids and liquids, by decomposing the organic matter into its elemental components in a processing system comprising a reactor having a substantially closed internal reaction chamber with interior walls and controlled-access inlet and outlet openings, the method comprising the steps of:

(a) supplying energy to the reaction chamber to maintain the reaction chamber at an energy level, as indicated by temperatures in the range of about 1100° C. to about 1800° C., sufficient to induce the interior walls of the reaction chamber to emit black-body radiation;

(b) generating a radiation field as a result of radiative emissions from the interior walls of the reaction chamber;

(c) introducing waste material through the inlet opening into the reaction chamber of the reactor to expose the organic matter to said radiation field;

(d) retaining the waste material within the reaction chamber until the organic matter is decomposed into its elemental constituents, including carbon and hydrogen, as a result of absorbing energy from said radiation field;

(e) withdrawing an exhaust stream comprising carbon and hydrogen from the reaction chamber through the outlet opening;

(f) removing carbon from the exhaust stream;

(g) recycling a portion of the exhaust stream to the reaction chamber to maintain a preselected proportion of carbon in the exhaust stream; and

(h) separating hydrogen from the exhaust stream.

5,602,299

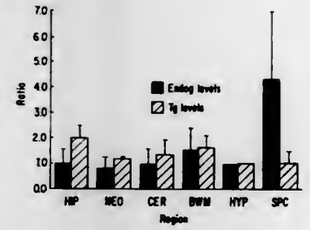
TRANSGENIC ANIMAL MODELS FOR NEURODEGENERATIVE DISEASE

Robert A. Lazzarini, New York, N.Y., assignor to Mount Sinai School of Medicine of the City University of New York, New York, N.Y.

Filed Sep. 23, 1992, Ser. No. 950,092

Int. Cl.[6] A01K *67/00*; C12N *15/00*

U.S. Cl. 800—2 **3 Claims**



2. A transgenic mouse or progeny thereof, containing, integrated into its genome, a transgene comprising the human neurofilament subunit M (NF-M) coding sequence controlled by the human neurofilament subunit M (NF-M) regulatory sequence, which drives neural-enriched expression of the human neurofilament subunit M (NF-M) coding sequence in the transgenic mouse so that the mouse exhibits brain neurofibrillary tangles and Pick-like bodies.

5,602,300

PROCESS FOR DETECTING MUTATIONS, TRANSGENIC MAMMAL TRANSGENIC MAMMALIAN CELL, AND PROCESS FOR TESTING AGENTS OR CONDITIONING FOR MUTAGENIC PROPERTIES

Jan A. Gossen, Waddinxveen, and Jan Vijg, Zegveld, both of Netherlands, assignors to Ingeny B.V., Netherlands

PCT No. PCT/NL92/00062, § 371 Date Dec. 29, 1993, § 102(e) Date Dec. 29, 1993, PCT Pub. No. WO92/17605, PCT Pub. Date Oct. 15, 1992

PCT Filed Apr. 2, 1992, Ser. No. 122,562

Claims priority, application Netherlands, Apr. 2, 1991, 9100567

Int. Cl.[6] C12N *5/00;15/00;* A61K *49/00*

U.S. Cl. 800—2 **26 Claims**



1. A process for detecting mutations in a lacZ gene integrated into the DNA of a transgenic mammal or transgenic mammalian cell, which DNA contains one or more copies of a linearized plasmid containing a lacZ gene including lacZ operator sequence as marker gene, comprising isolating DNA from cells of the transgenic mammal or the transgenic mammalian cells, fragmenting the isolated DNA by treatment with a restriction enzyme which can cut the plasmid out of the DNA, placing the fragmented DNA into contact with solid particles to which a lacZ operator binding material is bound, separating from non-bound DNA the solid particles having plasmid DNA bound thereon via the interaction between the lacZ operator binding material and the lacZ operator, releasing the plasmid DNA from the solid particles, circularizing the released plasmid DNA, transforming a host restriction-negative, lacZ-negative and galE-negative bacterial host with the obtained plasmid, and culturing transformed bacteria on a lactose-containing medium on which only the bacteria lacking galactosidase as a result of a mutation in the lacZ gene can grow.

12. A transgenic mouse having incorporated into its DNA one or more copies of a plasmid containing a lacZ gene including lacZ operator sequence.

5,602,301

NON-HUMAN MAMMAL HAVING A GRAFT AND METHODS OF DELIVERING PROTEIN TO MYOCARDIAL TISSUE

Loren J. Field, Indianapolis, Ind., assignor to Indiana University Foundation, Bloomington, Ind.

Filed Nov. 16, 1994, Ser. No. 153,664

Int. Cl.[6] C12N *5/00;* A61K *48/00;* A01N *63/00;* C12P *21/06*

U.S. Cl. 800—2 **13 Claims**

1. A non-human mammal which has a myocardial graft, the mammal comprising:

viable skeletal myoblasts or cardiomyocytes having a detectable marker directly introduced into the myocardial tissue of the mammal.

5,602,302

MODELS FOR ASTHMA GUINEA PIG

Hiroki Mikami, and Ryoji Nishibata, both of Hyogo, Japan, assignors to Nippon Zoki Pharmaceutical Co., Ltd., Osaka, Japan

Continuation of Ser. No. 796,258, Nov. 19, 1991, abandoned. This application Dec. 30, 1993, Ser. No. 175,740

Claims priority, application Japan, Nov. 21, 1990, 2-319705

Int. Cl.[6] C12N *15/00;* A61K *49/00*

U.S. Cl. 800—2 **24 Claims**

1. Bronchial hypersensitive guinea pigs prepared by:

(a) identifying guinea pigs with bronchial hypersensitivities to acetylcholine and histamine by measuring the time interval from the start of inhalation of acetylcholine and histamine by the guinea pigs to prostration of the guinea pigs caused by dyspnea, wherein the guinea pigs have bronchial sensitivities of less than 250 seconds to 0.08% acetylcholine and less than 150 seconds to 0.025% histamine, and

(b) brother-sister mating or selectively mating with their cousins or unrelated guinea pigs those hypersensitive guinea pigs identified in (a), so that the appearance rate for guinea pigs with said bronchial sensitivities is at least 90% in at least the fifth generation.

5,602,303

Patent Not Issued For This Number

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5,602,304

HAIRLESS MOUSE

Hiroshi Suzuki, Urawa, and Keigo Yorozu, Kamiina-gun, both of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 875,407, Apr. 29, 1992, abandoned. This application Feb. 18, 1994, Ser. No. 197,619

Claims priority, application Japan, Apr. 30, 1991, 3-099088

Int. Cl.[6] C12N *5/00;* **A61K** *49/00*

U.S. Cl. 800—2 **2 Claims**

1. The DEC strain of mouse which inherits by a dominant gene the following properties:

(1) the mouse suffers from alopecia when 6 to 7 weeks old;

(2) the alopecia gradually progresses, and over about 5 months a hairless condition is reached, as observed by the naked eye;

(3) at 12 to 13 weeks old, the eyeballs of all suffering mice project;

(4) melanin pigment is deposited in the epidermal base layer and corium connective tissue; and

(5) increased melanin pigment is deposited in response to UV radiation.

5,602,305

IMMUNODEFICIENT ANIMAL MODEL FOR STUDYING T CELL-MEDIATED IMMUNE

Jordan S. Pober, Guilford; Christopher C. W. Hughes, New Haven; Allan G. Murray, Branford; Philip W. Askenase, Hamden, all of Conn., and Peter Petzelbauer, Vienna, Austria, assignors to Yale University, New Haven, Conn.

Filed Mar. 31, 1994, Ser. No. 220,900

Int. Cl.[6] C02N *15/00;* **A61K** *49/00*

U.S. Cl. 800—2 **34 Claims**

1. An immunodeficient rodent animal, wherein the immunodeficient animal comprises:

(i) a graft of a vascularized organ tissue of a mammal, wherein said organ is selected from the group consisting of skin, kidney, bronchus, and heart, said organ containing microvessels lined by endothelial cells from the donor of the organ and said microvessels being inosculated with microvessels of said immunodeficient animal;

(ii) circulating human T lymphocytes allogeneic for said graft in an amount sufficient for said animal to exhibit an acute T-cell mediated immune response directed against said graft; and

(iii) at least one agent capable of rendering inactive the Natural Killer cells of the animal rodent, said agent being present in an amount sufficient to substantially deplete the animal's active Natural Killer cells.

5,602,306

SYNTHESIS OF FUNCTIONAL HUMAN HEMOGLOBIN AND OTHER PROTEINS IN ERYTHROID TISSUES OF TRANSGENIC ANIMALS

Tim M. Townes; Thomas M. Ryan, both of Birmingham, Ala.; Richard D. Palmiter, Seattle, Wash.; Ralph L. Brinster, Gladwyne, and Richard R. Behringer, Philadelphia, both of Pa., assignors to The UAB Research Foundation, Birmingham, Ala.; The Trustees of the University of Pennsylvania, Philadelphia, Pa., and Board of Regents of the University of Washington, Seattle, Wash.

Continuation of Ser. No. 923,007, Jul. 30, 1992, abandoned, which is a continuation of Ser. No. 472,531, Jan. 30, 1990, abandoned, which is a continuation-in-part of Ser. No. 412,977, Sep. 26, 1989, abandoned. This application Jul. 13, 1994, Ser. No. 275,313

Int. Cl.[6] C12N *15/00*

U.S. Cl. 800—2 **30 Claims**

1. A transgenic pig produced by a method comprising introducing into a single-celled pig embryo two species of recombinant nucleic acid molecule, one of which comprises at least one erythroid-specific β-globin DNase I hypersensitive site directing expression of human α-globin protein and the other of which comprises at least one erythroid-specific β-globin DNAse I hypersensitive site directing expression of human β-globin protein, whereby a transgenic pig expressing human hemoglobin is produced.

16. A transgenic mouse produced by a method comprising introducing into a single-celled mouse embryo two species of recombinant nucleic acid molecule, one of which comprises at least one erythroid-specific β-globin DNase I hypersensitive site directing expression of human α-globin protein and the other of which comprises at least one erythroid-specific β-globin DNAse I hypersensitive site directing expression of human β-globin protein, whereby a transgenic mouse expressing human hemoglobin is produced.

5,602,307

NON-HUMAN ANIMAL HAVING PREDEFINED ALLELE OF A CELLULAR ADHESION GENE

Arthur L. Beaudet, Houston, Tex.; Raymond Wilson, Timonium, Md.; Allan Bradley, Houston, Tex.; William E. O'Brien, Houston, Tex.; James Sligh, Houston, Tex.; Christie Ballantyne, Houston, Tex., and Daniel Bullard, Houston, Tex., assignors to Baylor College of Medicine, Houston, Tex.

Continuation of Ser. No. 928,010, Aug. 12, 1992, abandoned. This application Sep. 20, 1994, Ser. No. 309,549

Int. Cl.[6] C12N *15/00;5/00;* **A61K** *49/00*

U.S. Cl. 800—2 **12 Claims**

1. A transgenic mouse comprising non-naturally occurring alleles of a CD18 gene introduced into its genome via homologous recombination in an embryonic stem cell, wherein said introduction results in the inactivation of the endogenous alleles of said mouse and a reduced capacity of said mouse to mediate cellular adhesion.

7. A transgenic mouse comprising non-naturally occurring alleles of a ICAM-1 gene introduced into its genome via homologous recombination in an embryonic stem cell, wherein said introduction results in the inactivation of the endogenous alleles of said mouse and a reduced capacity of said mouse to mediate cellular adhesion.

5,602,308

Patent Not Issued For This Number

5,602,309

TRANSGENIC MICE WHICH OVEREXPRESS NERVE GROWTH FACTOR

Kathryn M. Albers, and Brian M. Davis, both of Lexington, Ky., assignors to University of Kentucky Research Foundation, Lexington, Ky.

Continuation of Ser. No. 131,424, Oct. 4, 1993, abandoned. This application May 8, 1995, Ser. No. 438,122

Int. Cl.[6] C12N *15/00;* **C12P** *21/00;* **A01K** *67/00*

U.S. Cl. 800—2 **5 Claims**



1. A transgenic mouse whose somatic and germ cells contain and express a gene encoding for mouse nerve growth factor, said mouse exhibiting hyperinnervation when compared to a normal mouse, and said gene having been introduced into fertilized mouse embryo of said mouse or an ancestor of said mouse by microinjection, and wherein said gene is introduced into said mouse as plasmid k14-NGF-hGH, deposited as of ATCC Accession.

5,602,310

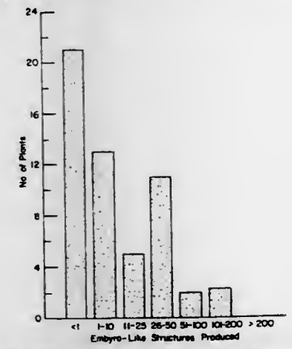
INCREASING THE ANTHER CULTURABILITY OF MAIZE

Joseph F. Petolino, 703 W. Ohio, Urbana, Ill. 61801

Continuation of Ser. No. 839,024, Feb. 18, 1992, Pat. No. 5,306,864, which is a continuation of Ser. No. 657,844, Feb. 19, 1991, abandoned, which is a continuation of Ser. No. 279,467, Dec. 2, 1988, abandoned. This application Mar. 31, 1994, Ser. No. 221,297

Int. Cl.[6] A01H *5/00;1/04;* **C12N** *15/02*

U.S. Cl. 800—200 **2 Claims**



1. A maize plant having anther culture characteristics of 1391 39-bulk designated by ATCC number 40519 which is identified by a restriction fragment length polymorphism map, wherein the genome is identified by a band of about 10.8 kilobases (kb) when digested with restriction enzyme Eco RI and probed with Ceres 60 probe; a band of about 13.0 kb when digested with restriction enzyme Hind III and probed with restriction enzyme Ceres 97; and a band of about 17.0 kb when digested with restriction enzyme SstI and probed with Ceres 135.

2. A maize plant of claim 1, wherein said maize plant is produced by a three-way cross of (H99×FR16)×Pa91.

5,602,311

SOYBEANS AND SOYBEANS PRODUCTS HAVING HIGH PALMITIC ACID CONTENT

Walter R. Fehr, and Earl G. Hammond, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Continuation of Ser. No. 180,114, Jan. 12, 1994, abandoned, which is a continuation of Ser. No. 839,328, Feb. 20, 1992, abandoned, which is a continuation-in-part of Ser. No. 461,341, Jan. 5, 1990, abandoned. This application Jan. 20, 1995, Ser. No. 376,466

Int. Cl.[6] A01H *5/00;5/10;* **C12N** *15/01*

U.S. Cl. 800—200 **14 Claims**

2. A soybean plant which upon self pollination yields mature seed that exhibits an elevated palmitic acid content and is the product of crossing a first soybean parent that is A1937NMU-85 having ATCC Accession No. 97618, with a second soybean parent that is Elgin EMS-421 having ATCC Accession No. 97617, and wherein the soybean plant resulting from said cross yields mature seed that provides an endogenous oil comprising palmitic acid in an amount higher than the endogenous palmitic acid content of the parent having the higher palmitic acid content when the parents plants and the offspring of said cross are grown under the same conditions, and wherein the elevated palmitic acid content of the offspring of the cross is a heritable trait.

5,602,312

HYBRID MAIZE PLANT AND SEED (3223)

Thomas C. Barker, Princeton, Ind., and Michael W. Trimble, Johnston, Iowa, assignors to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Filed Mar. 3, 1995, Ser. No. 398,632

Int. Cl.[6] A01H *1/02;4/00;5/00;* **C12N** *5/04*

U.S. Cl. 800—200 **7 Claims**

1. Hybrid maize seed designated 3223 and having ATCC accession number 97576.

2. A hybrid maize plant designated 3223 and its parts, representative seed capable of producing said hybrid maize plant having ATCC accession number 97576.

5,602,313

PINK-FLOWERED, HIGH PROTEIN SOYBEAN PLANTS AND METHODS FOR THEIR PRODUCTION

Cecil D. Nickell, Urbana, and Paul A. Stephens, Peru, both of Ill., assignors to Research Corporation Technologies, Inc., Tucson, Ariz.

Continuation of Ser. No. 883,687, May 15, 1992, Pat. No. 5,457,274. This application Jun. 7, 1995, Ser. No. 486,890

Int. Cl.[6] A01H *5/00;5/10;1/06;1/04*

U.S. Cl. 800—200 **34 Claims**

19. A soybean plant having the flower color gene wp.

5,602,314

INBRED CORN LINE ZS1022

Mario R. Carlone, Jr., Granger, Iowa, assignor to Zenco (No. 4) Limited, London, England

Filed Mar. 28, 1995, Ser. No. 412,366

Int. Cl.[6] A01H *5/00;4/00;1/00;* **C12N** *5/04*

U.S. Cl. 800—200 **11 Claims**

1. Inbred corn seed designated ZS1022 seed of which has been deposited with ATCC and carry ATCC number 97628.

5,602,315

INBRED CORN LINE ZS1202

Mark J. Messmer, Ankery, and Richard G. Stelpflug, Slater, both of Iowa, assignors to Zenco (No. 4) Limited, London, England

Filed Mar. 28, 1995, Ser. No. 412,367

Int. Cl.[6] A01H *1/02;4/00;5/00;* **C12N** *5/04*

U.S. Cl. 800—200 **11 Claims**

1. Inbred corn seed designated ZS1202 seed of which has been deposited in the ATCC under deposit number 97629.

2. A corn plant produced by the seed of claim 1.

5,602,316

INBRED CORN LINE ZS1783

Richard G. Stelpflug, Slater, and Mark J. Messmer, Ankeny, both of Iowa, assignors to Zenco (No 4) Limited, London, England

Filed Mar. 28, 1995, Ser. No. 413,204

Int. Cl.[6] A01H *5/00;4/00;1/00;* **C12N** *5/04*

U.S. Cl. 800—200 **11 Claims**

1. Inbred corn seed designated ZS1783 seed of which has been deposited with ATCC and carry ATCC number 97676.

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5,602,317
INBRED CORN LINE PHAAO
Roy Luedtke, Jr., Thompson, N. Dak., assignor to Pioneer Hi-Bred International, Inc., Des Moines, Iowa
Continuation of Ser. No. 187,281, Jan. 24, 1994, abandoned. This application May 22, 1995, Ser. No. 445,992
Int. Cl.[6] A01H *5/00;4/00;1/02;* **C12N** *5/04*
U.S. Cl. 800—200 **10 Claims**

1. Inbred corn seed designated PHAA0 and having the genotype of ATCC Accession No. 97658.

2. A corn plant and its parts produced by the seed of claim 1.

5,602,318
INBRED MAIZE LINE PHDG1
Todd E. Piper, Eau Claire, Wis., assignor to Pioneer Hi-Bred International, Inc., Des Moines, Iowa
Filed Sep. 21, 1995, Ser. No. 531,811
Int. Cl.[6] A01H *5/00;4/00;1/00;* **C12N** *5/04*
U.S. Cl. 800—200 **14 Claims**

1. Seed of maize inbred line designated PHDG1 and having ATCC Accession No 97663.

5,602,319
SOYBEAN CULTIVAR 9243035090
William K. Rhodes, Queenstown, Md.; Yolanda I. Otero-Ortiz, Aguadille, Puerto Rico, and Craig K. Moots, Taylorville, Ill., assignors to Asgrow Seed Company, Kalamazoo, Mich.
Filed Dec. 4, 1995, Ser. No. 566,508
Int. Cl.[6] A01H *5/00;5/10;* **C12N** *5/04*
U.S. Cl. 800—200 **9 Claims**

1. A soybean seed designated 9243035090, deposited as ATCC Accession Number 97716.

5,602,320
SOYBEAN CULTIVAR A4922
William K. Rhodes, Queentown, Md., assignor to Asgrow Seed Company, Kalamazoo, Mich.
Filed Dec. 4, 1995, Ser. No. 566,925
Int. Cl.[6] A01H *5/00;5/10;* **C12N** *5/04*
U.S. Cl. 800—200 **9 Claims**

1. A soybean seed designated A4922, deposited as ATCC Accession Number 97631.

5,602,321
TRANSGENIC COTTON PLANTS PRODUCING HETEROLOGOUS POLYHYDROXY(E) BUTYRATE BIOPLASTIC
Maliyakal John, Middleton, Wis., assignor to Monsanto Company, St. Louis, Mo.
Continuation of Ser. No. 980,521, Nov. 20, 1992, abandoned. This application May 12, 1994, Ser. No. 241,943
Int. Cl.[6] C12N *15/29;15/82;5/04;* **A01H** *5/00*
U.S. Cl. 800—205 **12 Claims**

1. A cotton plant comprising in its genome heterologous genetic constructs encoding ketothiolase, acetoacetyl CoA reductase, and PHB synthase, wherein each construct comprises:

(a) a fiber-specific promoter isolated from cotton plants; and

(b) a coding sequence encoding a bioplastic-producing enzyme that catalyzes the production of a PHB bioplastic molecule from substrates present in the fiber-producing plant,

wherein the coding sequence is selected from sequences encoding ketothiolase, acetoacetyl CoA reductase, and PHB synthase,

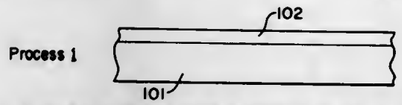
wherein the promoter is operably connected upstream from the coding sequence; and

(c) a transcriptional termination sequence operably connected to the coding sequence.

5,602,322
CONSTITUTITIVE TRIPLE RESPONSE GENE AND MUTATIONS
Joseph R. Ecker, Erial, N.J., and Joseph J. Kieber, LaGrange Park, Ill., assignors to The Trustees of the University of Pennsylvania, Philadelphia, Pa.
Continuation-in-part of Ser. No. 3,311, Jan. 12, 1993, Pat. No. 5,444,166, which is a continuation-in-part of Ser. No. 928,464, Aug. 10, 1992, Pat. No. 5,367,065. This application Jun. 17, 1994, Ser. No. 261,432
Int. Cl.[6] A01H *4/00*
U.S. Cl. 800—205 **15 Claims**

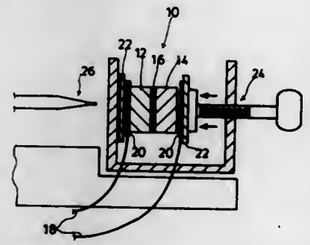
9. A plant transformed to comprise an exogenous nucleic acid sequence of SEQ ID NO: 3.

5,602,323
METHOD OF MANUFACTURING REFERENCE SAMPLES FOR CALIBRATING AMOUNT OF MEASURED DISPLACEMENT AND REFERENCE SAMPLE, AND MEASURING INSTRUMENT AND CALIBRATION METHOD
Tadahiro Ohmi, 1-17-301, Komegabukuro 2-chome, Aoba-ku, Sendai-shi, Miyagi-ken 980, Japan
PCT No. PCT/JP93/00075, § 371 Date Jul. 18, 1994, § 102(e) Date Jul. 18, 1994, PCT Pub. No. WO93/14377, PCT Pub. Date Jul. 22, 1993
PCT Filed Jan. 21, 1993, Ser. No. 256,613
Claims priority, application Japan, Jan. 21, 1992, 4-030062
Int. Cl.[6] H01L *21/465*
U.S. Cl. 73—1 J **8 Claims**



1. A method of manufacturing a reference sample for use in calibrating displacement measurements of an inter-atom force microscope, said reference sample including a predetermined amount of displacement, said displacement measurements being measured by means of an inter-atom force microscope having a probe with a lead end and wherein a surface of a sample to be measured and the lead end of the probe are placed in opposition with a very small gap therebetween, whereby a force operating between atoms constituting said sample to be measured and said probe is converted into a mechanical displacement, said method comprising the step of etching a stepped portion of a pattern in said reference sample, in a sealed vessel, while accurately controlling the speed of etching said stepped portion of a pattern and wherein an etching agent is used which has an extremely low etching speed and comprises aqueous ammonia which has been added to an ammonium fluoride solution whereby a concentration of free hydrogen fluoride is adjusted to a low level.

5,602,324
GAS SENSOR AND GAS DISCRIMINATING METHOD
Hiroaki Yanagida, Tokyo; Masaru Miyayama, Kawasaki, and Kazuyasu Hikita, Omiya, all of Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan
PCT No. PCT/JP94/01650, § 371 Date Apr. 25, 1995, § 102(e) Date Apr. 25, 1995, PCT Pub. No. WO95/10039, PCT Pub. Date Apr. 13, 1995
PCT Filed Oct. 3, 1994, Ser. No. 424,366
Claims priority, application Japan, Oct. 5, 1993, 5-249526; Feb. 25, 1994, 6-028125
Int. Cl.[6] G01N *27/12;27/04;27/02*
U.S. Cl. 73—23.2 **9 Claims**



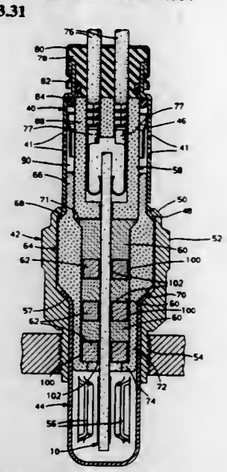
1. A gas sensor comprising:

a sensor head having a p-type oxide semiconductor and an n-type oxide semiconductor on which a junction part is formed by hetero-joining end surfaces thereof;

signal applying means for applying AC signals onto which a DC bias is superposed to said junction part; and

impedance measuring means for measuring impedance characteristics of said junction part.

5,602,325
EXHAUST SENSOR HAVING FLAT PLATE CERAMIC SENSING ELEMENT AND A SEALING PACKAGE
Mark R. McClanahan, Goodrich, and Kaius K. Pollkarpus, Davison, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Continuation-in-part of Ser. No. 505,026, Jul. 21, 1995, abandoned, which is a continuation-in-part of Ser. No. 313,688, Sep. 27, 1994, abandoned. This application Oct. 23, 1995, Ser. No. 547,082
Int. Cl.[6] G01N *27/04*
U.S. Cl. 73—23.31 **7 Claims**



1. An exhaust gas sensor comprising:

an outer housing;

a flat plate sensing element carried within the housing;

a plurality of alternating layers of solid-state, sintered glass and spacer surrounding a portion of said flat plate sensing element; and

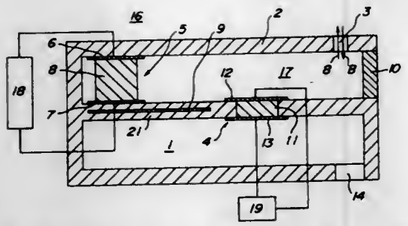
a ceramic body surrounding each of said layers of solid-state, sintered glass and spacer, said ceramic body extending from said layers to the outer housing, further comprising a thin layer of solid-state, sintered glass between the ceramic body and each spacer, and a thin layer of solid-state, sintered glass between each spacer and the flat plate sensing element.

5,602,326
APPARATUS AND METHOD FOR MEASURING CONCENTRATIONS OF GAS COMPONENTS
Tomonori Takahashi, Chita; Toshihiro Yoshida, Nagoya; Takao Murase, Konan; Nobuhide Kato, Ama-gun, and Yuji Katsuda, Nagoya, all of Japan, assignors to NGK Insulators, Ltd., Japan
Filed Oct. 20, 1995, Ser. No. 546,542
Claims priority, application Japan, Oct. 24, 1994, 6-258109
Int. Cl.[6] G01N *7/00*
U.S. Cl. 73—31.06 **6 Claims**

1. An apparatus for measuring a concentration of a specific gas component in an external atmosphere, comprising:

a measuring chamber for receiving a sampling of the external atmosphere;

gas diffusion resistance means for providing communication between said measuring chamber and the external atmosphere;



an oxygen pump for controlling the oxygen partial pressure of the atmosphere contained in said measuring chamber, said oxygen pump being arranged proximate said gas diffusion means and comprising (i) an ion conductive solid electrolyte element, (ii) a first electrode formed on one side of said ion conductive solid electrolyte element, and (iii) a second electrode formed on an opposite side of said ion conductive solid electrolyte element, one of said first and second electrodes being exposed to said measuring chamber; and

a metal oxide semiconductor element arranged in said measuring chamber remote from said gas diffusion means relative to the position of said oxygen pump, wherein a measured resistance of said metal oxide semiconductor element represents the concentration of the specific gas component to be measured, regardless of changes in oxygen partial pressure of the external atmosphere.

5,602,327

LEAKAGE-SOUND DETECTING APPARATUS

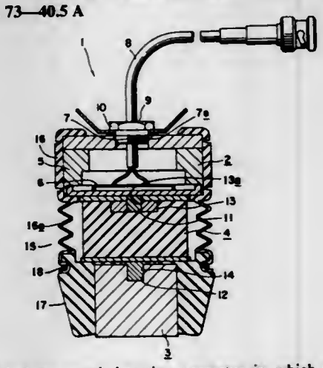
Yukio Torizuka, Niiza; Hiroshi Uno, Saitama, and Kouji Kitazume, Tokyo, all of Japan, assignors to Fuji Tecom, Inc., Tokyo, Japan

Filed Sep. 6, 1995, Ser. No. 524,085

Claims priority, application United Kingdom, Feb. 12, 1993, 9324799; Japan, Mar. 25, 1993, 5-090630; Mar. 29, 1993, 5-121863

Int. Cl.[6] G01M *3/24*; H04R *17/00*

U.S. Cl. 73—40.5 A **6 Claims**



1. A leakage-sound detecting apparatus in which a detection portion having a piezoelectric element encased in a casing and a pedestal portion made of a rigid material are connected through a mechanical resonant member made of a soft material, wherein a lower extending portion incised with internal threads is provided on the lower wall portion of a casing of the detection portion, a buffer-member supporting portion bored with an insert hole is provided on the upper surface portion of the mechanical resonant member, the lower end of the lower extending portion is located at the insert hole, the lower extending portion and the buffer-member supporting portion are connected by a stop screw, and a buffer member is arranged between the lower wall portion of the casing and the buffer-member supporting portion to form a buffer portion.

5,602,328

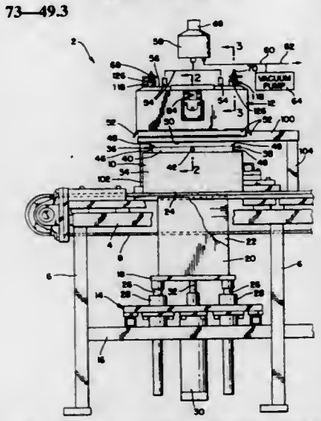
BATTERY LEAK TESTING METHOD

William P. Palmer, Anderson, Ind., assignor to General Motors Corporation, Detriot, Mich.

Filed Dec. 18, 1995, Ser. No. 574,083

Int. Cl.[6] G01M *3/16*

U.S. Cl. 73—49.3 **4 Claims**



1. A method for leak testing a hydrogen-generating battery having a vent for exhausting said hydrogen from said battery comprising the steps of:

plugging said vent sufficiently to permit hydrogen developed within said battery during said testing to build up to a predetermined superambient pressure;

positioning said battery in an overlying enclosure;

overcharging said battery to generate sufficient hydrogen within said battery to raise the pressure in said battery to said predetermined superambient pressure; and

analyzing the atmosphere in said enclosure for the presence of hydrogen.

5,602,329

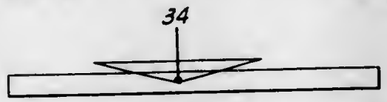
METHOD AND APPARATUS FOR MEASURING FRACTURE TOUGHNESS OF A MATERIAL

Frederick G. Haubensak, Redwood City, Calif., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Aug. 9, 1995, Ser. No. 513,091

Int. Cl.[6] G01N *3/42*

U.S. Cl. 73—82 **29 Claims**



1. A method for determining the fracture toughness of a material comprising:

(1) providing a material characterized by a fracture toughness;

(2) indenting said material by applying a load with an indenter to produce an indented material including a crack characterized by a crack shape and wherein said crack shape is further characterized by a crack length, a crack tip, and a crack opening displacement;

(3) removing said load and said indenter from said material;

(4) examining said indented material microscopically to obtain a micrograph image of said crack shape; and using said micrograph image to determine said fracture toughness by utilizing a measurement of said crack opening displacement as a function of distance from said crack tip.

5,602,330

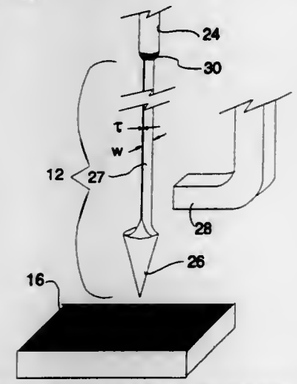
NON-CONTACT FORCE MICROSCOPE HAVING A COAXIAL CANTILEVER-TIP CONFIGURATION

Ralph V. Chamberlin, Tempe, Ariz., and Anthony DiCarlo, Holladay, Utah, assignors to Arizona Board of Regents acting on behalf of Arizona State University, Tempe, Ariz.

Division of Ser. No. 241,745, May 12, 1994, Pat. No. 5,509,300. This application May 25, 1995, Ser. No. 449,923

Int. Cl.[6] G01B *5/28*

U.S. Cl. 73—105 **7 Claims**



1. A cantilever-tip configuration for use in a non-contact force microscope for measuring selected forces and force gradients of a sample, said configuration comprising an elongated cantilever portion and a sharpened tip portion operatively associated with and disposed in substantially coaxial relationship with said cantilever portion.

5,602,331

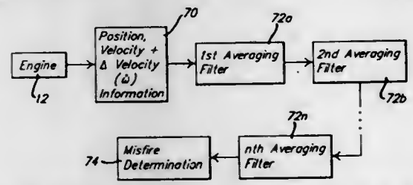
ENGINE MISFIRE DETECTION WITH CASCADE FILTER CONFIGURATION

John M. Prevost, Jackson, Mich., assignor to Chrysler Corporation, Auburn Hills, Mich.

Filed Jun. 6, 1995, Ser. No. 468,113

Int. Cl.[6] G01M *15/00*

U.S. Cl. 73—116 **12 Claims**



1. An apparatus for detecting misfires of cylinder firings in an internal combustion engine comprising:

means for measuring changes in engine speed corresponding to each of a plurality of expected cylinder firings;

first filter means for calculating an average change in engine speed over a plurality of cylinder firings for each expected cylinder firing and determining a first deviation between the average change in engine speed and a current change in engine speed corresponding to each expected cylinder firing, said first filter means outputting a series of said first deviations;

second filter means for calculating an average change in the first deviations output from the first filter means and determining a second deviation between the average change in first deviations and a current change in the first deviations corresponding to a selected cylinder; and

comparison means for comparing the second deviation of the second filter means to a threshold value to determine if a misfire has occurred for the selected cylinder.

5,602,332

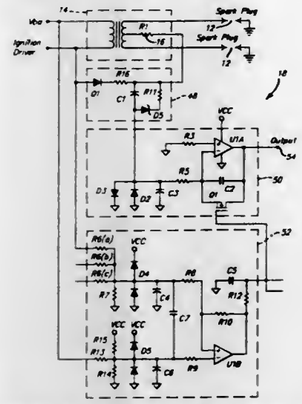
IONIZATION MISFIRE DETECTION APPARATUS AND METHOD FOR AN INTERNAL COMBUSTION ENGINE

Jan S. Pyko, Bloomfield Twp., Mich., assignor to Chrysler Corporation, Auburn Hills, Mich.

Continuation of Ser. No. 319,384, Jan. 9, 1995, abandoned, which is a continuation of Ser. No. 28,106, Mar. 8, 1993, Pat. No. 5,392,641. This application Feb. 12, 1996, Ser. No. 600,560

Int. Cl.[6] G01M *15/00*

U.S. Cl. 73—117.3 **11 Claims**



1. An apparatus for detecting misfire in cylinders of an internal combustion engine in a vehicle comprising:

at least one camshaft position sensor to determine a position of the cylinders of the internal combustion engine;

an ionization misfire detector to detect misfire by measuring a change in ionization current for the cylinders, said ionization misfire detector comprising a microprocessor, memory, A/D convertors, signal conditioning, an ignition driver, a current integrator circuit, a voltage source circuit, and an integrator reset circuit;

a synchronizer for synchronizing the determined position of the cylinders to the measured change in ionization current to identify individual cylinders;

a misfire counter counting detected misfire over a predetermined period of time for each of the cylinders;

said voltage source circuit comprising a first capacitor, a first resistor in parallel with said first capacitor, a second resistor and a first diode in series and connected to said first capacitor and a second diode interconnecting said first capacitor and said first resistor; and

said current integrator circuit comprising a transistor, an operational amplifier, a third resistor and a second capacitor.

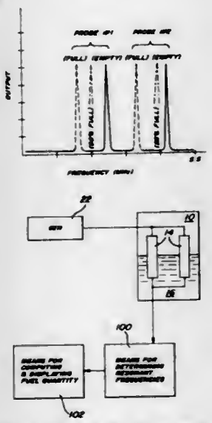
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5,602,333

APPARATUS FOR MEASURING THE LEVEL OF A LIQUID IN A TANK

David A. Larrabee, Downingtown; John S. Wyler, Berwyn, and Farid Ahmad, Collegeville, all of Pa., assignors to Smiths Industries, Malvern, Pa.

Filed Jun. 17, 1994, Ser. No. 261,844
Int. Cl.[6] G01F 17/00;23/00
U.S. Cl. 73—149 13 Claims



8. Apparatus for measuring the level of a liquid in a tank comprising:

a plurality of probes disposed in the tank for at least partial immersion in the liquid;

means electrically coupled to each probe for providing a series LC resonant circuit defining a distinct resonant frequency, said resonant frequency being a function of the level of immersion of the probe in the liquid;

means connecting said series LC resonant circuits in electrical parallel relation, said LC resonant circuits being operable in ranges of resonance which do not overlap one another;

a generator for applying electrical input signals at selected ones of different frequencies to said probe resonant circuits;

means for determining said probe resonant frequencies; and

means electrically coupled to said probe resonant frequency determining means for comparing stored resonant frequencies with known liquid levels and computing and displaying the quantity of said liquid in said tank;

whereby the quantity of liquid in the tank can be determined from said resonant frequency measurements.

5,602,334

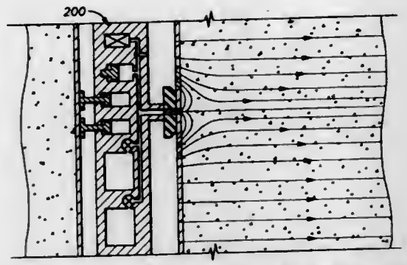
WIRELINE FORMATION TESTING FOR LOW PERMEABILITY FORMATIONS UTILIZING PRESSURE TRANSIENTS

Mark A. Proett, and Margaret C. Waid, both of Houston, Tex., assignors to Halliburton Company, Houston, Tex.

Filed Jun. 17, 1994, Ser. No. 261,512
Int. Cl.[6] E21B 49/00;49/10
U.S. Cl. 73—152.05 33 Claims

1. A method for real-time determination of permeability of an earth formation traversed by a well borehole, said formation having a permeability in the range of approximately 0.001 to 1.000 millidarcies, the steps comprising:

(a) disposing a formation tester in said well borehole, said formation tester including formation fluid communications means, a pretest chamber and piston, said piston being disposed and reciprocally moveable within said pretest chamber, pressure and flow measurement means, and flowlines in communication with said fluid communications means, prestest chamber, pressure and flow measurement means and sample chamber;



(b) establishing fluid communications between said tester and the earth formation;

(c) drawing earth formation fluid into said fluid communications means, flowlines and prestest chamber for a first time period by inducing a pressure differential between said tester and the formation and measuring pressure of said fluid over said first time period;

(d) calculating fluid in situ compressibility at the end of said first time period as a function of the volume of fluid in communication with said pretest chamber and flowlines and a fluid pressure time differential during said first time period;

(e) terminating said induced pressure differential and continuing to measure pressure for a second, indeterminate, time period;

(f) calculating and plotting real time formation permeability during said second time period;

(g) calculating and plotting tight zone formation permeability during said second time period;

(h) calculating and plotting tight zone initial sandface pressure during said second time period;

(i) continuing to perform steps (f) through (h) until a predetermined criteria is met; and

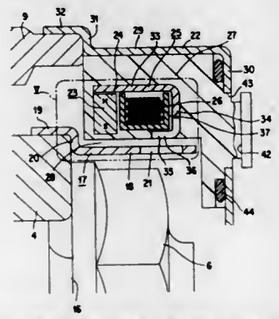
(j) recording tight zone formation permeability and initial sandface pressure when said predetermined criteria is met.

5,602,335

ROLLING BEARING UNIT FITTED WITH ROTATIONAL SPEED SENSOR

Hideo Ouchi, Fujisawa, Japan, assignor to NSK Ltd., Tokyo, Japan

Filed Oct. 16, 1995, Ser. No. 543,713
Claims priority, application Japan, Oct. 17, 1994, 6-250898
Int. Cl.[6] G01P 1/02
U.S. Cl. 73—494 6 Claims



1. A rolling bearing unit with a rotational speed sensor comprising a stationary outer ring member having an open end portion and an outer ring raceway on an inner peripheral face thereof, the open and portion of the outer ring member having inner and outer

diameters, a rotatable inner ring assembly having an inner ring raceway on an outer peripheral face thereof, a plurality of rolling elements provided between the outer ring raceway and the inner ring raceway, a cover fixed to the open end portion of the outer ring member, an annular sensor supported generally circumferentially inside the cover and having opposite axial sides, and a rotatable tone wheel made from a magnetic material and supported on the inner ring assembly,

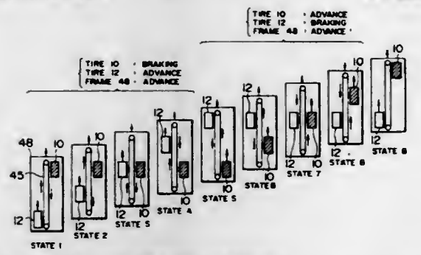
the cover comprising a cylindrical portion with axial ends for retaining the sensor therein, having an inner diameter which is larger than the inner diameter of the open end portion of the outer ring member and smaller than the outer diameter of the open end portion of the outer ring member, an end plate bent radially inward from one of the axial ends of the cylindrical portion, a step portion having an outer peripheral rim and bent radially outward from the other axial end of the cylindrical portion, and an engaging portion bent from the outer peripheral rim of the step portion axially away from the cylindrical portion and externally secured to the open end portion of the outer ring member, so that the sensor is clamped on its opposite axial sides between the end plate and the open end portion of the outer ring member with the engaging portion externally secured to the open end portion of the outer ring member.

5,602,336

FLOW DETECTION APPARATUS EMPLOYING TIRE PROBES HAVING ULTRASONIC OSCILATORS MOUNTED THEREIN

Shinichi Takeuchi; Ryo Ishiyama; Yutaka Kashiwase; Kinuko Kato, and Ryobei Motegi, all of Tokyo, Japan, assignors to Tokimec Inc., Tokyo, Japan

Filed Nov. 8, 1994, Ser. No. 337,462
Claims priority, application Japan, Nov. 12, 1993, 5-282918
Int. Cl.[6] G01N 29/06;29/10;29/26
U.S. Cl. 73—624 4 Claims



1. A flaw detection apparatus, comprising:

a tire probe comprising a pair of tires baving respective ultrasonic oscillators mounted therein, each of said ultrasonic oscillators for transmitting or receiving ultrasonic waves applied to a test object, and a driving means for rotationally driving each of said tires independently to change a relative position therebetween;

a control means for controlling said driving means to alternately rotate and fix said pair of tires during each of successive definite periods such that a one of said pair of tires is rotated in one definite period while the other of said pair of tires is fixed in said one definite period, and such that said one of said pair of tires is fixed in a next definite period while said other of said pair of tires is rotated in said next definite period;

a reception data acquisition memory means for acquiring and storing waveform data of ultrasonic reception signals at each of a plurality of predetermined relative positions of said pair of tires during each of said definite periods;

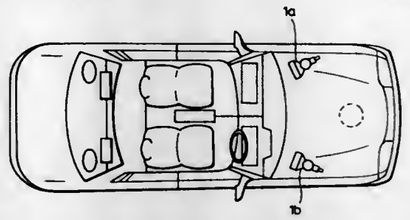
an adding means for adding each waveform data per corresponding time, said waveform data acquired with said reception data acquisition memory means.

5,602,337

ABNORMAL SOUND DETECTING APPARATUS

Susumu Ishimoto, Higashimurayama, Japan, assignor to Auto Konig; Tokyo, Japan

Filed May 3, 1993, Ser. No. 56,493
Claims priority, application Japan, May 14, 1992, 4-120910
Int. Cl.[6] G01H 11/06
U.S. Cl. 73—658 9 Claims



1. An abnormal sound detecting apparatus comprising:

a) at least two acoustoelectric conversion means, each converting an acoustic pressure into an electrical signal;

b) two amplifier means for amplifying the electrical signals from said at least two acoustoelectric conversion means, respectively;

c) two volume controller means, provided at input sides of said two amplifier means, for controlling the electrical signals from said at least two acoustoelectric conversion means;

d) a change-over switch means for changeably supplying the electrical signals from said at least two acoustoelectric conversion means to said two amplifier means through said two volume controller means, respectively, and;

e) a stereopbonic head phone for receiving output signals from said two amplifier means to covert the same to sounds, respectively, wherein each of said change-over switch means has at least two pair of fixed contacts, each of said pair being connected in common, at least one pair of fixed contacts which are connected to different acoustoelectric conversion means, respectively, and a pair of movable contacts, the acoustoelectric conversion means being connected respectively to one of said fixed contacts of said change-over means, and said movable contacts being changeably connected respectively to one of said pair of fixed contacts of said change-over means and to said amplifier means through said volume controller means, respectively.

5,602,338

DIFFERENTIAL PRESSURE DETECTING APPARATUS

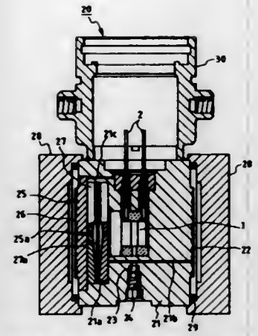
Mitsuru Tamai; Etsuro Ito; Masahiro Osakabe, and Seiji Suzuki, all of Kanagawa, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed May 4, 1995, Ser. No. 434,710
Claims priority, application Japan, May 10, 1994, 6-095993
Int. Cl.[6] G01L 13/02;15/00
U.S. Cl. 73—716 8 Claims

1. A differential pressure detecting apparatus comprising:

a main body having a closed-end hole having a countersunk portion and formed in the outer circumferential surface of said main body at right angles to the axis of said main body, and a pressure transmission hole, said main body including a differential pressure detector inserted into said closed-end hole and having leads led out from the other end surface of said main body, a first seal diaphragm provided in one end surface of said main body for receiving one of introduced pressures relating to a differential pressure to be measured, said pressure transmission hole transmitting the received introduced pressure to said differential pressure detector;

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a sub-body inserted into said countersunk portion of said closed-end hole, and having a hole through which the received introduced pressure is transmitted to said differential pressure detector, said sub-body including a second seal diaphragm provided in the outer end surface of said sub-body for receiving the other introduced pressure;

a first cover provided on said one end surface of said main body, and having a hole for introducing a first pressure for said first seal diaphragm; and

a second cover provided on said outer circumferential surface of said main body, and having a hole for introducing a second pressure for said second seal diaphragm;

wherein a pressure transmitting liquid is enclosed in an inside space between said main body and said sub-body.

5,602,339

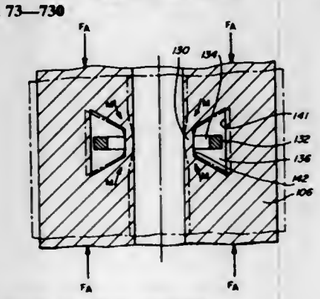
INJECTION MOLDING MACHINE PRESSURE TRANSDUCER WITH TRAPEZOIDAL CAVITY

William Wareham, Marion, Mass., assignor to Dynisco, Inc., Sharon, Mass.

Continuation-in-part of Ser. No. 217,645, Mar. 24, 1994, Pat. No. 5,440,932. This application Jun. 29, 1995, Ser. No. 496,418

Int. Cl.[6] G01L *7/02*

U.S. Cl. 73—730 **37 Claims**



1. A pressure transducer comprising:

a body;

an inner ring, coupled to the body, through which molten material flows, the inner ring expanding in response to pressure from the molten material;

an outer ring, coaxial with the inner ring; and

at least one flexure, connecting the inner and outer rings, that translates the expansion of the inner ring to the outer ring;

wherein the body includes a cavity within which the outer ring is located.

5,602,340

SELECTIVE PRESSURE TAP FOR A PRESSURE DETECTOR

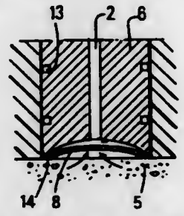
Christian Lemaire, Nanterre, and François Kalaydjian, Rueil-Malmaison, both of France, assignors to Institut Francais, du Petrole, Rueil Malmaison, France

Filed Dec. 19, 1995, Ser. No. 575,042

Claims priority, application France, Dec. 19, 1994, 94 15376

Int. Cl.[6] G01L *7/00*

U.S. Cl. 73—756 **5 Claims**



5. A method for installing a pressure tap against a solid porous sample saturated with a first fluid and with at least one other fluid through a hole in a wall of a sealed enclosure containing the sample, said pressure tap comprising an elongated body having at one end a ferrule with seal means and with an end face, an axial channel extending through the elongated body and opening in the end face, connection means for connecting the axial channel to the pressure detector, at least one semipermeable membrane permeable to the first liquid and means for tightly securing the pressure tap in the hole, said method comprising positioning the at least one semipermeable membrane against the sample at a bottom of the hole in the enclosure and pressing the at least one semipermeable membrane against the sample by screwing the elongated body into the hole in the enclosure so that the end face presses against the at least one semipermeable membrane.

5,602,341

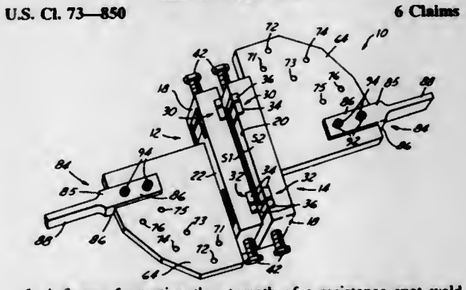
TEST FIXTURE FOR SPOT WELDS

Yung-Li Lee, Troy; Timothy Wehner, Auburn Hills; Thomas Morrissett, Troy; Eric Pakalnins, Hartland, and Ming-Wei Lu, Ann Arbor, all of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed May 7, 1996, Ser. No. 643,902

Int. Cl.[6] G01N *3/20*

U.S. Cl. 73—850 **6 Claims**



1. A fixture for testing the strength of a resistance spot weld connecting two overlapping, generally parallel first and second test strips, said fixture comprising first and second test units,

said first test unit having a first clamping frame and said second test unit having a second clamping frame,

said first clamping frame having a front face and a rear face and releasable first clamping means for gripping and holding the first test strip on the front face thereof,

said second clamping frame having a front face and a rear face and releasable second clamping means for gripping and holding the second test strip on the front face thereof,

a first elongated pull bar,

means on the rear face of said first clamping frame mounting said first pull bar in selected angular positions extending rearwardly away from said first clamping frame,

a second elongated pull bar,

means on the rear face of said second clamping frame mounting said second pull bar in selected angular positions extending rearwardly away from said second clamping frame,

the first pull bar in any of one of its selected angular positions being aligned with the second pull bar in one of its selected angular positions,

said pull bars having end portions capable of being grasped by suitable pulling mechanism to apply a separating force on the strips.

5,602,342

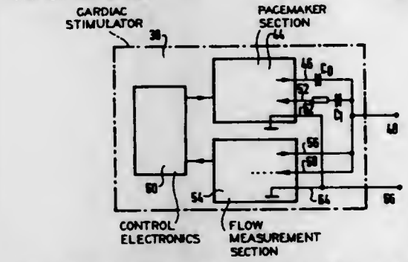
METHOD AND DEVICE FOR MEASURING THE FLOW OF AN ELECTROLYTIC FLUID

Hans Strandberg, Sundbyberg, Sweden, assignor to Pacesetter AB, Solna, Sweden

Continuation of Ser. No. 511,524, Aug. 4, 1995, abandoned, which is a continuation of Ser. No. 177,933, Jan. 6, 1994. This application Jul. 10, 1996, Ser. No. 677,910

Int. Cl.[6] A61B *5/00*

U.S. Cl. 73—861.08 **29 Claims**



1. A method for measuring a change in the flow of an electrolytic fluid consisting of the steps:

connecting two stationary electrodes respectively to opposite poles of a power source;

immersing said two stationary electrodes spaced from each other in an electrolytic fluid whose flow is to be measured and briefly producing respective electrochemical reactions at each stationary electrode in said electrolytic fluid, said reactions having an equilibrium condition at a reference flow of said electrolytic fluid;

measuring an electrical characteristic arising between said two stationary electrodes as a result of the flow of said electrolytic fluid causing a change in said electrical characteristic from said equilibrium condition by supplying a continuous current to said two stationary electrodes and measuring a resulting voltage between said electrodes; and

identifying changes in said flow of said electrolytic fluid from said reference flow exclusively from the measurement of said electrical characteristic while maintaining said electrodes stationarily immersed in said electrolytic fluid.

5,602,343

METHOD OF, AND APPARATUS FOR, MEASURING THE VELOCITY OF A FLUID

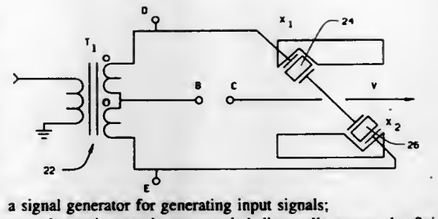
Dean Franklin, Columbia, Mo., assignor to The Curators of the University of Missouri, Columbia, Mo.

Filed Oct. 10, 1995, Ser. No. 541,549

Int. Cl.[6] G01F *1/00*

U.S. Cl. 73—861.29 **6 Claims**

1. An apparatus for measuring the velocity of fluid flowing in a fluid path, comprising:



a signal generator for generating input signals;

two ultrasonic transducers coupled diagonally across the fluid path, and connected in series to the signal generator such that equal and opposite input signals are simultaneously applied to each transducer;

a signal processor for combining the output signals of each transducer caused by the ultrasonic signal transmitted by the other transducer across the fluid path to obtain a destructive interference signal and a constructive interference signal and comparing the amplitude of the destructive interference signal with the amplitude of the transducer output signal to obtain a measure of the velocity of the fluid.

5,602,344

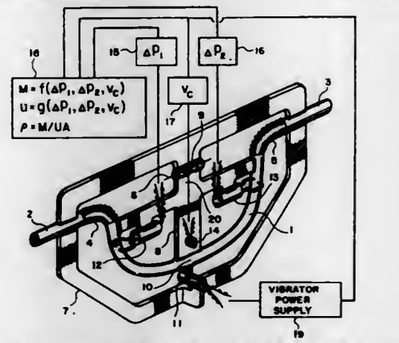
INERTIA FORCE FLOWMETER

Hyok S. Lew, and Yon S. Lew, both of 7890 Oak St., Arvada, Colo. 80005

Filed Sep. 1, 1994, Ser. No. 299,362

Int. Cl.[6] G01F *1/84*

U.S. Cl. 73—861.356 **20 Claims**



1. An apparatus for measuring flow rate of fluid media moving through at least one flow passage under a lateral reciprocating motion, comprising in combination:

a) at least one flow passage;

b) means for generating a lateral reciprocating motion of the flow passage in directions substantially perpendicular to a reference plane defined by the center line of the flow passage in a mode wherein amplitude of the .lateral reciprocating motion of the flow passage has a minimum value at two opposite extremities of the flow passage and has a maximum value at a center section of the flow passage;

c) a first differential pressure transducer converting a difference between two fluid pressures respectively tapped from fluid media located on two opposite sides of the reference plane at a first section of the flow passage, to a first alternating electrical signal; and a second differential pressure transducer converting a difference between two fluid pressures respectively tapped from fluid media located on two opposite sides of the reference plane at a second section of the flow passage, to a second alternating electrical signal; and

d) means for determining a difference between the first and second alternating electrical signals as a measure of flow rate of fluid media moving through the flow passage.

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DOUBLE STRAIGHT TUBE CORIOLIS TYPE MASS FLOW SENSOR

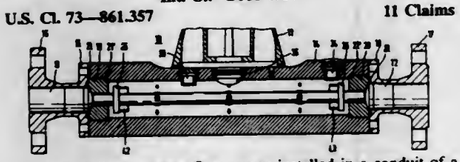
Alfred Wenger, Neftenbach, Switzerland; Gerhard Eckert, Rheinfelden; Rainer Lorenz, Lörrach, both of Germany; Ennio Bitto, Aesch, Switzerland; Patrick Fleury, Courtételle, Switzerland, and Ole Koudal, Reinach, Switzerland, assignors to Endress + Hauser Flowtec AG, Reinach, Switzerland

Filed May 3, 1995, Ser. No. 434,016

Claims priority, application European Pat. Off., May 26, 1994, 94108148; Sep. 19, 1994, 94114725

Int. Cl.[6] G01F *1/84*

U.S. Cl. 73—861.357 **11 Claims**



1. A Coriolis-type mass flow sensor installed in a conduit of a given diameter so as to be axially aligned with said conduit, where the conduit carries a fluid to be measured, the mass flow sensor comprising:

an inlet tube and an outlet tube configured

to connect the mass flow sensor with the conduit,

an inlet manifold and an outlet manifold,

an external support tube having

ends fixed to the inlet manifold and the outlet manifold, respectively, and with their faces to the inlet tube and the outlet tube, respectively,

two parallel, straight measuring tubes of the same inside diameter and the same wall thickness each having its two ends fixed in parallel bores of the inlet manifold in alignment with the inlet tube and in parallel bores of the outlet manifold in alignment with the outlet tube, respectively,

two node plates interconnecting the two measuring tubes near the inlet manifold and the outlet manifold, respectively,

one vibration exciter per measuring tube

which vibration exciters are mounted opposite each other and excite the measuring tubes into oppositely directed resonance vibrations in only one plane of vibration, and

a pair of spaced-apart electrodynamic sensors positioned along each of the measuring tubes for sensing the vibrations of the measuring tubes, the pair of electrodynamic sensors positioned along one measuring tube being located opposite the pair of electrodynamic sensors positioned along the other measuring tube.

5,602,346

MASS FLOWMETER CONVERTER

Hirokazu Kitami, and Toshihiro Abe, both of Tokyo, Japan, assignors to Oval Corporation, Tokyo, Japan

Filed May 31, 1995, Ser. No. 455,420

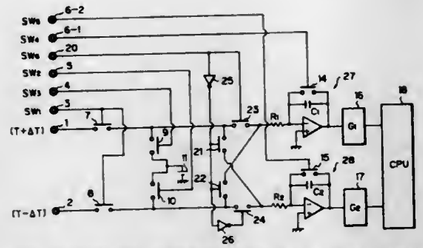
Claims priority, application Japan, Jun. 6, 1994, 6-123577; Jun. 20, 1994, 6-137229; Dec. 15, 1994, 6-311402; Feb. 9, 1995, 7-021536; May 2, 1995, 7-108901

Int. Cl.[6] G01F *1/84*

U.S. Cl. 73—861.356 **9 Claims**

2. A mass flowmeter converter for use in a mass flowmeter wherein a Coriolis force acting on a flow tube driven with a constant frequency about supporting points of said flow tube is detected as a time difference ΔT between displacement signals detected at symmetrically opposed positions on said flow tube at a given time T and a mass flowrate proportional to said time difference ΔT is determined, and in which the displacement signals are converted to lagging and leading pulses having a constant crest value and respective pulse widths (T+ΔT) and (T−ΔT), the mass flowmeter converter comprising:

a gate circuit which is closed and opened at a specified interval for inputting the lagging and leading pulses;



a first charging and discharging circuit and a second charging and discharging circuit for simultaneously receiving N (N>1) number of leading pulses and lagging pulses respectively through the gate circuit and storing charges thereof, and discharging the charges using a reference voltage source when the gate circuit is open;

a first zero-crossing detecting circuit for detecting a zero crossing of a discharge voltage discharged after charging the first charging and discharging circuit;

a second zero-crossing detecting circuit for detecting a zero crossing of a discharge voltage discharged after charging the second charging and discharging circuit;

means for outputting a mass flowrate proportional to a zero-crossing time difference between the zero crossing detected by the first zero-crossing detector and the zero crossing detected by the second zero-crossing detector;

an input pulse switching circuit for switching an input of the first charging and discharging circuit from the leading pulses to the lagging pulses and for switching an input of the second charging and discharging circuit from the lagging pulses to the leading pulses; and

age deterioration correcting means for correcting a measured mass flowrate in accordance with a deviation of zero-crossing time difference between the zero-crossing time difference obtained by inputting the leading pulses into the first charging and discharging circuit and the lagging pulses into the second charging and discharging circuit and a zero-crossing time difference between a zero-crossing time obtained by inputting the lagging pulses into the first charging and discharging circuit and the leading pulses into the second charging and discharging circuit.

5,602,347

TOOL LIFE CONTROL METHOD BASED ON DISTURBANCE LOAD TORQUE OF MOTOR

Shunsuke Matsubara; Yasusuke Iwashita, and Tadashi Okita, all of Oshino-mura, Japan, assignors to Fanuc Ltd., Japan

PCT No. PCT/JP94/00336, § 371 Date Nov. 15, 1994, § 102(e) Date Nov. 15, 1994, PCT Pub. No. WO94/21425, PCT Pub. Date Sep. 29, 1994

PCT Filed Mar. 2, 1994, Ser. No. 335,879

Claims priority, application Japan, Mar. 17, 1993, 5-81204

Int. Cl.[6] G06F *15/00*

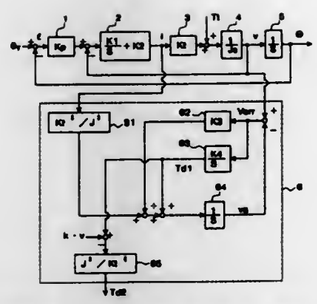
U.S. Cl. 73—862.193 **6 Claims**

1. A method of controlling a tool life of a machine tool having a spindle and a feed shaft, comprising the steps of:

(a) executing a predetermined machining operation on a predetermined workpiece using said machine tool;

(b) estimating, using a disturbance estimating observer, a disturbance load torque acting on a motor for driving said spindle or a motor for driving said feed shaft during the execution of said machining operation;

(c) comparing said estimated disturbance load torque with a set reference value and outputting a tool life termination signal when said estimated disturbance load torque reaches the set reference value; and



controlling said tool life of said machine tool based on said tool life termination signal.

5,602,348

METHOD AND EQUIPMENT FOR TAKING A SAMPLE

Jouni Takakarhu, Helsinki, and Klaus Nyfors, Porvoo, both of Finland, assignors to Borealis Polymers Oy, Porvoo, Finland

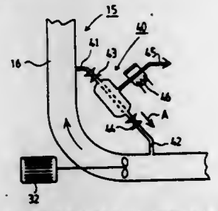
PCT No. PCT/FI94/00182, § 371 Date Feb. 12, 1996, § 102(e) Date Feb. 12, 1996, PCT Pub. No. WO94/27134, PCT Pub. Date Nov. 24, 1994

PCT Filed May 10, 1994, Ser. No. 553,363

Claims priority, application Finland, May 12, 1993, 932159

Int. Cl.[6] B01F *3/04*

U.S. Cl. 73—864.81 **3 Claims**



2. Equipment for taking a sample from a loop reactor (15) in slurry polymerization, characterized in that the equipment comprises an in-line filter (40) which communicates with the slurry, which flows in a pipe (16) of the loop reactor (15), through a first flow duct (41) at one end thereof and through a second flow duct (42) at the other end thereof, and that the first flow duct (41) communicates with the pressure side of a circulating pump (32) of the loop reactor (15) and the other flow duct (42) communicates with the suction side of the circulating pump (32) of the loop reactor (15).

5,602,349

SAMPLE INTRODUCTION SYSTEM FOR A FLOW CYTOMETER

Ger Van den Engh, Seattle, Wash., assignor to The University of Washington, Seattle, Wash.

Filed Oct. 14, 1994, Ser. No. 323,348

Int. Cl.[6] G01N *35/10*

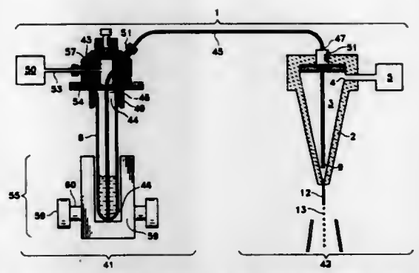
U.S. Cl. 73—864.85 **9 Claims**

1. A method of introducing a sample for flow cytometer processing comprising the steps of:

a. establishing a nozzle volume;

b. attaching a substance supply tube to said nozzle volume;

c. attaching a sample container having an outer surface to said substance supply tube, said sample container serving as a reservoir for a substance to be supplied via the supply tube to the nozzle volume;



d. sealing said sample container to said substance supply tube by a seal which engages said sample container about said outer surface;

e. introducing a flow of sheath fluid into said nozzle volume;

f. applying a pressure to said sample container; and

g. allowing said substance to flow from said sample container to said sheath fluid in said nozzle volume.

5,602,350

METHOD FOR COMPACTING COMPACTABLE MATERIALS AND IMPROVED LUBRICANT FOR SAME

Randall M. German; Anthony Griffo, and Tracy Potter, all of State College, Pa., assignors to The Penn State Research Foundation, University Park, Pa.

Filed May 15, 1995, Ser. No. 440,858

Int. Cl.[6] C22C *33/02;27/04*

U.S. Cl. 75—231 **29 Claims**

20. A pressed and sintered compact comprising a compactable material selected from the group consisting of ferrous alloys, non-ferrous metals and non-metals, wherein compactable material is admixed with a lubricant, said lubricant including a vinyl halide, wherein said compactable material is pressed to form a compact having a green density of 6.8 to 7.3 g/cm^{3}and wherein said compact is heated in an atmosphere comprising hydrogen at 400° to 700° C. and then sintered at 1120° to 1265° C.

5,602,351

GRAND PIANO-LIKE KEYBOARD INSTRUMENT FOR SELECTIVELY PRODUCING ACOUSTIC SOUND AND SYNTHESIZED SOUND

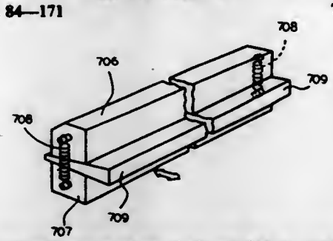
Kiyoshi Kawamura, and Yasutoshi Kaneko, both of Shizuoka, Japan, assignors to Yamaha Corporation, Japan

Filed Dec. 27, 1993, Ser. No. 174,179

Claims priority, application Japan, Nov. 30, 1993, 5-323437

Int. Cl.[6] G10D *15/00*

U.S. Cl. 84—171 **7 Claims**



1. A keyboard instrument selectively entering an acoustic sound producing mode and an electronic sound producing mode, comprising:

a) a grand piano including a stationary board member mounted thereon, the grand piano further comprising:

a-1) a keyboard having a plurality of keys turnable with respect to the stationary board member, said plurality of

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keys being selectively depressed in both acoustic and electronic sound producing modes by a player,

a-2) a plurality of key action mechanisms, each of which is respectively coupled with one of said plurality of keys, and is selectively actuated by said one of said plurality of keys when said player depresses said one key, each of said plurality of key action mechanisms having:

an action bracket stationary with respect to said stationary board member,

a whippen assembly coupled with said one of said plurality of keys for rotation around one end thereof with respect to said action bracket,

a repetition lever flange projecting from an intermediate portion of the whippen assembly,

a repetition lever swingably supported by said repetition lever flange and having a through-hole formed in one end portion thereof,

a jack rotatably supported by an end portion of said whippen assembly and having a toe and a contact portion projecting through said through-hole,

a regulating button supported by said action bracket and opposed to said toe, and

a repetition spring coupled with said repetition lever for urging said repetition lever in a direction to increase a gap between said one end portion of said repetition lever and said end portion of said whippen assembly,

a-3) a plurality of hammer mechanisms each of which is coupled with a respective one of the key action mechanisms, and each having a hammer head and a hammer shank, wherein each said hammer head is connected with a respective one of the hammer shanks and wherein:

each said hammer mechanism is driven for rotation by the respective one of said key action mechanisms to which it is coupled when said player selectively depresses said one key that is coupled with the respective one of said key action mechanisms; and

each said hammer shank of each said hammer mechanism being swingably supported by said action bracket of the respective one of said key action mechanisms and held in contact with said contact portion of said jack of the respective one of said key action mechanisms to which each said hammer mechanism is coupled while said one key that is coupled with said respective one of said key action mechanisms is in a rest position,

a-4) a plurality of sets of strings associated with said plurality of hammer mechanisms, and stretched over said plurality of key action mechanisms, at least one of said sets of strings being struck by one of the hammer heads in said acoustic sound producing mode when the player selectively depresses said one of said plurality of keys;

b) a stopper means entering into a free position in said acoustic sound mode for allowing at least one of said plurality of hammer heads to strike at least one of said sets of strings when said player depresses at least one of said plurality of keys, and said stopper means entering into a blocking position in said electronic sound producing mode for blocking said plurality of sets of strings from said hammer heads when said player selectively depresses said keys;

c) a gap regulating means between at least one of said regulating buttons and at least one of said toes for changing the gap therebetween; and

d) an electronic sound producing means monitoring said plurality of keys to determine which keys are depressed by said player in said electronic sound producing mode, and operative to electronically produce sounds corresponding to the keys depressed by said player;

wherein:

said stopper means comprises a rotatable rod and a cushion member attached to the rotatable rod, said cushion member being opposed to said hammer shank of each of the plurality of hammer mechanisms when the stopper means is in said blocking position, and

said gap regulating means comprises:

an upper rail member fixed to each of said action brackets,

a lower rail member connected with each of said regulating buttons,

spring means coupled between said upper rail member and said lower rail member for urging said lower rail member towards said upper rail member,

a wedge means slidably inserted between said upper rail member and said lower rail member, and

an actuator connected with said wedge means, and moving said wedge means between a retracted position in said acoustic sound mode and a projecting position in said electronic sound producing mode.

5,602,352

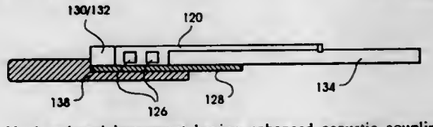
VIBRATO ASSEMBLY AND ACOUSTIC COUPLING SYSTEM FOR STRINGED INSTRUMENTS

Richard E. Huff, 1408 Solana Dr., Belmont, Calif. 94002

Continuation-in-part of Ser. No. 287,119, Aug. 8, 1994, Pat. No. 5,435,219. This application Jul. 24, 1995, Ser. No. 521,373

Int. Cl.[6] G10D *3/00*

U.S. Cl. 84—291 **25 Claims**



11. A stringed instrument having enhanced acoustic coupling and a vibrato assembly, comprising:

a. an instrument neck having anchors that fasten a first end of a string to the instrument neck;

b. a vibrato armature attached to the second end of the string;

c. a vibrato base;

d. an elastic member having a first end attached to the vibrato armature and a second end attached to the vibrato base to flexibly connect the vibrato armature to the vibrato base; and

e. an acoustic coupling plate fastened to the instrument neck and the vibrato base to acoustically couple the string, the vibrato armature, the elastic member, the vibrato base, the metal coupling plate, and the instrument neck.

5,602,353

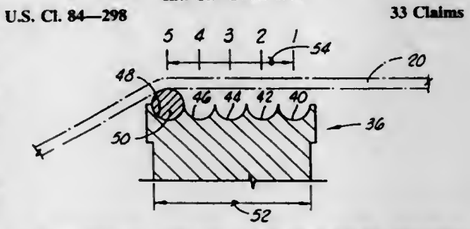
BRIDGE SADDLE WITH ADJUSTABLE INTONATION SYSTEM

Henry E. Juszkiewicz, 1050 Acorn Dr., Suite B, Nashville, Tenn. 37210, and Timothy P. Shaw, 1341 Cheyenne Blvd., Madison, Tenn. 37115

Continuation of Ser. No. 897,787, Jun. 12, 1992, abandoned. This application Jan. 4, 1995, Ser. No. 368,744

Int. Cl.[6] G10D *3/04*

U.S. Cl. 84—298 **33 Claims**



1. An intonation adjustment system for a stringed instrument having a plurality of strings and an instrument saddle supporting the strings, said instrument saddle having a saddle slot therein, said saddle slot having a width parallel to a length of said strings, said system comprising:

a saddle setup tool having a definite number of selectable distinctly spaced intonation points within said width of said saddle slot so that a preferred one of said selectable distinctly spaced intonation points can be determined for each of said strings of said instrument.

5,602,354

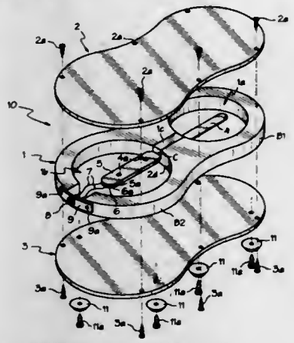
ACOUSTICAL RHYTHM BOARD

Thomas E. Martin, 6229 Savannah Ave., Cincinnati, Ohio 45224

Filed Mar. 2, 1995, Ser. No. 397,358

Int. Cl.[6] G10D *13/08*

U.S. Cl. 84—410 **13 Claims**



1. An acoustical rhythm board comprising:

a housing containing a hollow acoustic chamber,

a resonator mounted within said chamber, and

said resonator comprising a rigid flat strip and having mounted upon it at least one transducer for producing electronic signals generated by acoustical vibrations of the resonator.

5,602,355

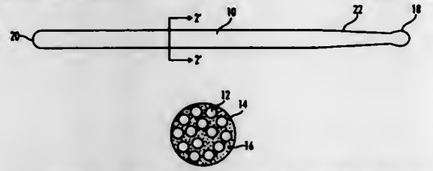
PERCUSSION IMPACT IMPLEMENTS AND METHODS FOR MAKING THE SAME

Howard S. Lipp, Torrance, Calif., assignor to Main Line Equipment Incorporated, Carson, Calif.

Filed Oct. 13, 1994, Ser. No. 322,784

Int. Cl.[6] G10D *13/02*

U.S. Cl. 84—422.4 **22 Claims**



1. A drumstick shaped body defining an elongated dimension and containing fibers; the body comprising:

a resin material coating said fibers;

wherein each fiber contained in the body extends along the elongated dimension of the body, the fibers distributed throughout a cross-section of the body, the cross-section being perpendicular to the elongated dimension of the body; and

the body further comprising a filler material distributed throughout the perpendicular cross-section of the body.

5,602,356

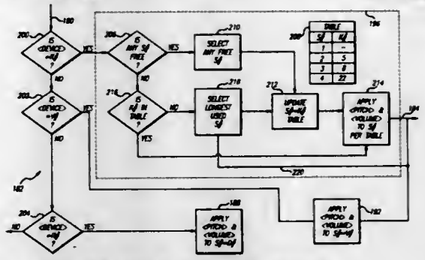
ELECTRONIC MUSICAL INSTRUMENT WITH SAMPLING AND COMPARISON OF PERFORMANCE DATA

Bernard Mohrbacher, Santa Barbara, Calif., assignor to Franklin N. Eventoff, Ferndale, Wash.

Filed Apr. 5, 1994, Ser. No. 223,197

Int. Cl.[6] A63H *5/00*; **G04B** *13/00*; **G10H** *7/00*

U.S. Cl. 84—609 **11 Claims**



1. An electronic musical instrument, comprising:

memory means for storing data related to pre-recorded music;

Sampling means for deriving samples from a performance of the pre-recorded music;

comparison means for comparing said samples to a portion of said data to synchronize said data with said performance; and

means responsive to said data and to playing by a musician during said performance to produce music related to the pre-recorded music.

5,602,357

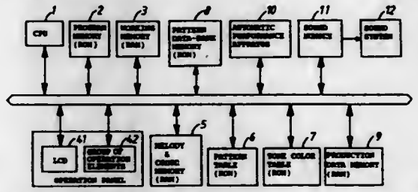
ARRANGEMENT SUPPORT APPARATUS FOR PRODUCTION OF PERFORMANCE DATA BASED ON APPLIED ARRANGEMENT CONDITION

Eiichiro Aoki, Hamamatsu, and Kazunori Maruyama, Tama, both of Japan, assignors to Yamaha Corporation, Japan

Filed Dec. 2, 1994, Ser. No. 349,082

Int. Cl.[6] G09B *15/04*; **G10H** *1/36*; *1/38*

U.S. Cl. 84—634 **9 Claims**



1. An apparatus for producing accompaniment performance data for a musical tune comprising:

input means for inputting an arrangement condition for each of a plurality of sections of said musical tune, each said input arrangement condition indicating at least one characteristic of each of said plurality of sections for which said arrangement condition is input;

memory means for storing a plurality of accompaniment patterns;

designation means for designating one of said stored accompaniment patterns for each one of said plurality of sections based upon the respective input arrangement condition for each of said plurality of sections; and

means for producing accompaniment performance data for said musical tune utilizing said accompaniment patterns designated by said designating means.

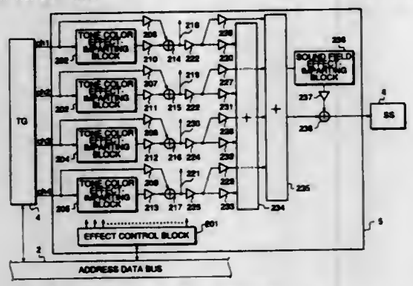
VOL 11 95 ISS 2 FE 11 1997 UMI

5,602,358

EFFECT IMPARTING DEVICE AND ELECTRONIC MUSICAL INSTRUMENT INCORPORATING SAME

Takao Yamamoto; Yoichiro Ogai, and Kiyoshi Hasebe, all of Hamamatsu, Japan, assignors to Yamaha Corporation, Japan

Filed Sep. 13, 1994, Ser. No. 305,168
Claims priority, application Japan, Nov. 2, 1993, 5-297218
Int. Cl.[6] G10H 1/02;5/00
U.S. Cl. 84—662 10 Claims



1. An effect imparting device comprising:

a plurality of effect imparting means for imparting effects to musical tone signals;

bypass means for bypassing at least one of said effect imparting means;

bypass directing means for giving a direction for causing said bypass means to bypass said at least one effect imparting means; and

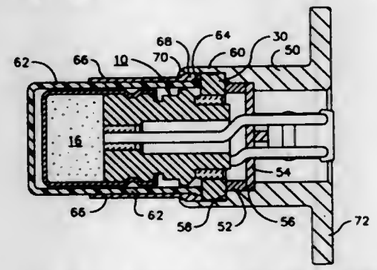
bypass control means responsive to said direction from said bypass directing means, for controlling said bypass means to bypass said at least one effect imparting means, wherein said plurality of effect imparting means include a plurality of first effect imparting means for imparting respective different tone color effects to said musical tone signals transmitted via a plurality of channels, and at least one second effect imparting means for imparting at least one sound field effect to said musical tone signals.

5,602,359

AIRBAG INGNITER WITH INTEGRAL SENSITIVITY IDENTIFICATION

Roger S. Hambro, Orefield, Pa., and Glenn R. Chatley, Mesa, Ariz., assignors to ICI Americas, Inc., Wilmington, Del.

Filed Aug. 14, 1995, Ser. No. 514,615
Int. Cl.[6] F42C 11/00
U.S. Cl. 102—202.5 3 Claims



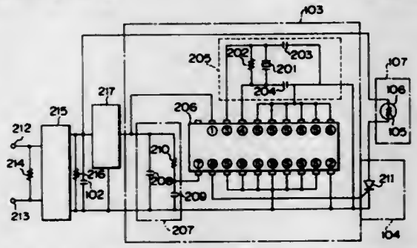
1. In an airbag igniter having an igniter body, a pyrotechnic charge and electrical means for causing ignition of said charge, the improvement comprising a ring attached to the igniter body and surrounding a portion of the igniter body, and a pattern of annular grooves in the ring, the pattern of annular grooves indicating the sensitivity of the electrical means, in which the ring is a mounting ring having an outwardly facing surface, in which the pattern of annular grooves is formed in said outwardly facing surface, and including a supporting retainer having a wall and means securing the mounting ring in fixed relation to the retainer whereby the pattern of grooves is hidden from visual inspection by said wall of the supporting retainer, and in which said wall of the supporting retainer is X-ray permeable, whereby said grooves can be inspected automatically by means of an X-ray source and X-ray detection means.

5,602,360

ELECTRONIC DELAY IGNITER AND ELECTRIC DETONATOR

Midori Sakamoto, and Masaaki Nishi, both of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP95/00557, § 371 Date Jun. 7, 1995, § 102(e) Date Jun. 7, 1995, PCT Pub. No. WO96/03614, PCT Pub. Date Feb. 8, 1996
PCT Filed Mar. 27, 1995, Ser. No. 454,376
Claims priority, application Japan, Jul. 28, 1994, 6-177113; Sep. 7, 1994, 6-213577
Int. Cl.[6] F23Q 7/02; C06B 29/02
U.S. Cl. 102—220 24 Claims



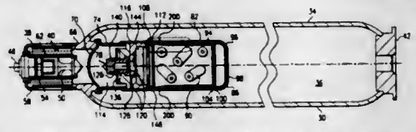
1. An electronic delay igniter comprising: a firing capacitor for storing energy required for firing by applying a voltage from an external power supply, an electronic timer unit provided with a solid state oscillator driven by the energy stored in said firing capacitor for outputting an output signal after a preset delay time, a switching unit for transmitting the firing energy by the output signal, and an ignition unit having an ignition charge which ignites on receiving the firing energy transmitted by said switching unit, wherein the voltage applied by the external power supply has a voltage application range where said electronic timer is operated to operate said switching unit, but said ignition charge does not ignite even when the energy from said firing capacitor is received.

5,602,361

HYBRID INFLATOR

Brian K. Hamilton, Littleton, and James L. Baglini, Englewood, both of Colo., assignors to Oea, Inc., Aurora, Colo.

Filed Mar. 18, 1994, Ser. No. 210,668
Int. Cl.[6] C06D 5/06; B60R 21/28
U.S. Cl. 102—288 13 Claims



1. An inflator for an automotive inflatable safety system, comprising:

an inflator housing;

a pressurized medium contained within said inflator housing, said pressurized medium consisting essentially of a predetermined amount of an inert gas and a predetermined amount of oxygen;

a gas generator assembly interconnected with said inflator housing and comprising a gas generator housing and at least one gas generator outlet;

a propellant contained within said gas generator housing, wherein said propellant is a gun type propellant, said gun type propellant being selected from the group consisting of single-base propellants, double-base propellants, triple-base propellants, and nitramine propellants; and

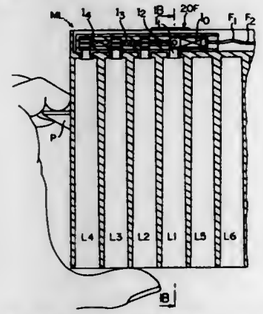
an inflator activation assembly, wherein said pressurized medium is released from said inflator housing and said propellant is ignited to produce propellant gases.

5,602,362

ELECTROMAGNETIC DECOY WITH DELAYED EJECTION

Alain A. Billard, 65, Av. Saint Germier, and André R. Santalucia, 3, rue Pierre Capelle, both of Muret, France

Filed Dec. 9, 1982, Ser. No. 447,773
Claims priority, application France, Dec. 11, 1981, 81-23196
Int. Cl.[6] F42B 4/26;4/14; B64D 1/04
U.S. Cl. 102—357 8 Claims



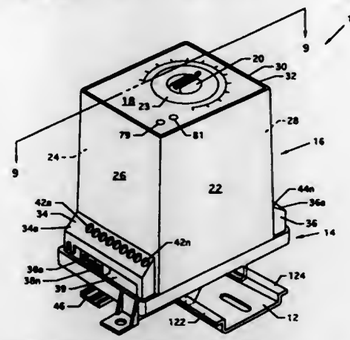
1. A device for launching electromagnetic decoys comprising a launching structure equipped with at least one group of cells for housing respective decoy-bearing members, said cells being open at one end, at least one means for the initiation and sequential transmission of ignition to a first of said cells and then sequentially to each other cell; each decoy-bearing member comprising a case having wall means enclosing a space for receiving decoys, each said cell having an ejection charge associated therewith and each said case being disposable in a said cell so that ignition of a said respective ejection charge will be transmitted to said respective decoy-bearing member, said wall means of each said case having an opening through which the decoys are dispensed, the improvement comprising a cover slidably and removably received on said wall means so as to close said opening, each said case having means for removing said respective cover, a said case being slidably receivable in a said cell, each case having at one end thereof means for housing a cover removing charge and means for conveying the product of ignition of said ejection charge to activate said cover removing charge with activation thereof being effective to actuate said means for removing said cover, means for delayed action ignition transmission energizable by said ejection charge being provided, said device including means for delaying removal of said respective covers, said delaying removal means comprising, on each said decoy-bearing member at each end thereof a peripheral groove carrying therein each a resilient gas-filled hollow seal means for exerting a retaining action effective between a said case and the interior of a said cell to slow down the ejection of a said respective case from said respective cell.

5,602,363

DIN RAIL MOUNTED ENCLOSURE

Theodore T. Von Arx, La Cresent, Minn., assignor to Watlow/Winona, Inc., Winona, Minn.

Filed Sep. 7, 1993, Ser. No. 117,504
Int. Cl.[6] H02G 3/08
U.S. Cl. 174—52.1 20 Claims



1. A DIN rail mounting device comprising,

a. a rectangular, planar, base member having a first, passive bracketing device and a second, active, bracketing device extending from one side thereof;

b. said first, passive, bracketing device including a first support bar extending perpendicularly from said planar base member;

c. said first bracketing device further including first and second L-brackets bracketing said first support bar and having inwardly facing lips for engagement with the underside of a lip portion of DIN rail;

d. said first support bar and said first and second L-brackets positioned to engage said lip portion of said DIN rail; and,

e. said second, active, bracketing device including:

1. a second support bar parallel to said first support bar and extending perpendicularly from said planar base member,

2. a movable hinge member parallel to said second support bar and extending perpendicularly from said planar base member,

3. a locking lip portion extending inwardly from said movable hinge member to engage the underside of the lip portion of said DIN rail while said hinge is in a surface position, and,

4. a lever portion extending outwardly from said movable hinge member, whereby motion of said lever portion toward said planar base member causes said locking lip portion to move outwardly to disengage from said DIN rail and allow upward, rotational, motion of said planar base member, freeing said planar base member from said DIN rail.

5,602,364

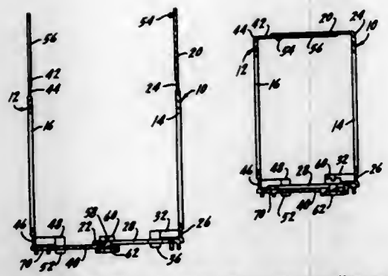
PANEL CHANNEL

George Ustin, Croton-on-Hudson, N.Y., assignor to Buchanan Construction Products, Inc., Hackettstown, N.J.

Filed Apr. 8, 1994, Ser. No. 224,709
Int. Cl.[6] H02G 3/04
U.S. Cl. 174—68.3 5 Claims

1. A cable duct including a plurality of end-to-end connectable sections, each section being adjustable in width and formed of two interengaging plastic panel members which, in combination, form side walls, cover and base of each section, each panel member includes one of said side walls, a cover portion and a base portion, said side wall being joined to said cover portion and base portion by an integrally hinged connection, each panel member, when folded at its hinged connection, forming said side wall, said portion of the cover and said portion of the base, a plurality of integral latches for holding said base portion in a folded condition relative to said side wall, each latch including a locking member integrally

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formed into one of said side walls and a corresponding opening formed in the base portion, cooperating fastening means on each cover and on each base, said cooperating fastening means being formed and adapted to provide for securing said base portions together and said cover portions together, with variable spacing between said side walls, the cooperating fastening means for securing said base portions one to another include a transverse slot in the base portion of one of said panel members, a fastener opening in alignment therewith in the base portion of the other of said panel members and a fastening member, the cooperating fastening means for securing said cover portions one to another include a locking member integrally formed into said one cover portion and a corresponding opening formed in said another cover portion.

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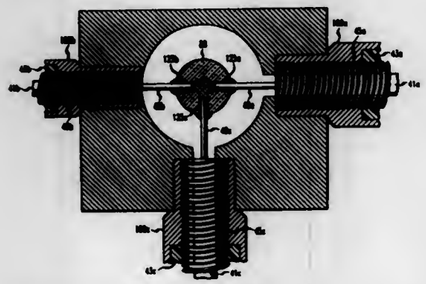
MICROWAVE DUPLEXER AND COMPONENT

Omar J. Bobadilla, Parsippany; John M. DelColle, Morris Township, Morris County; Andy Y. Ng, Edison, and Gary D. Stuck, Matawan, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 955,596, Oct. 9, 1992, abandoned, and a continuation of Ser. No. 147,106, Nov. 3, 1993, abandoned, which is a continuation of Ser. No. 955,577, Oct. 2, 1992, abandoned. This application Jun. 22, 1994, Ser. No. 263,624

Int. Cl.[6] H02G *15/08*

U.S. Cl. 174—71 C **17 Claims**



1. A microwave duplexer comprising:

a metallic "T" junction block having a top, bottom and sides and having formed therein a central microwave transmitting cavity accessible by way of an opening to an outside of said block, said block also having formed therein three unthreaded bores horizontally extending through respective walls of said block from the outside to said cavity;

three coaxial lines respectively corresponding to said three bores, each of said lines comprising concentric radially spaced outer and inner metallic conductors extending between a junction end of said each of said lines at said block, and a remote end of said each of said lines away from said block, the outer conductor of said each of said lines having a forward portion at the junction end within the corresponding bore in said block, and the inner conductor of said each of said lines extending at its junction end radially inward beyond its outer conductor to a common electromechanical junction in said cavity with the inner conductors of others of said lines;

three tubular metallic ferrules respectively corresponding to said three lines and fitted on the three lines at their junction ends, each of said ferrules having an unthreaded forward portion with external knurling, wherein the forward portion is seated in press fitted relation in the corresponding bore in said block, said bore being of smaller diameter than an outer diameter of an outer surface of said knurling when said forward portion is radially uncompressed so as to produce maintained pressure contact between the knurling on said ferrule and said block; and

metallic connections integrally uniting the forward portion of said each of said ferrules and the outer conductor of a corresponding line to provide between said forward portion of said each of said ferrules and said outer conductor a mechanically and electrically continuous path for transmission of microwave energy.

5,602,366

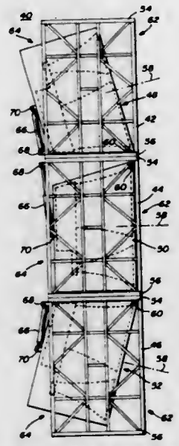
SPACEFRAME WITH ARRAY ELEMENT POSITIONING

Michael J. Whelan, Simi Valley, and William J. Gelow, Thousand Oaks, both of Calif., assignors to Harman International Industries Incorporated, Northridge, Calif.

Filed Oct. 12, 1995, Ser. No. 542,364

Int. Cl.[6] H05K *5/00*

U.S. Cl. 181—144 **12 Claims**



1. A spaceframe with loudspeaker array positioning including:

a frame structure having a top and bottom and a front and back;

at least one loudspeaker array having a sound-emitting axis and being pivotally mounted on said frame structure with the sound-emitting axis pointed toward the front of said frame structure and having pivotal movement in a vertical plane; and

an adjustable length tilt mechanism attached between said frame structure and said loudspeaker array for independently tilting said at least one loudspeaker array about said pivotal point so as to tilt and hold said loudspeaker sound-emitting axis in a desired direction in the vertical plane to provide sound to a defined listening area, said adjustable tilt mechanism including:

a first hollow arm having first and second ends with the first end pivotally connected to said frame structure;

a second arm having third and fourth ends with the third end pivotally connected to said loudspeaker array and said second and fourth ends of said first and second arms being slidably coupled to each other; and

locking means for fixedly positioning said second arm with respect to said first arm to position said loudspeaker sound-emitting axis within said frame structure in said desired direction.

5,602,367

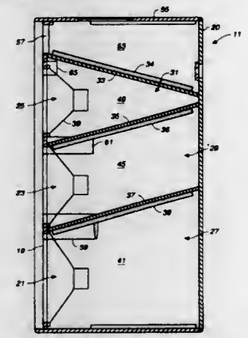
MULTIPLE TUNED HIGH POWER BASS REFLEX SPEAKER SYSTEM

John D. Meyer, Berkeley, Calif., assignor to Meyer Sound Laboratories Incorporated, Berkeley, Calif.

Filed Dec. 19, 1994, Ser. No. 359,522

Int. Cl.[6] H05K *5/00*

U.S. Cl. 181—156 **15 Claims**



1. A bass reflex speaker system comprising

a first low frequency transducer facing forward into free space,

a first ported chamber behind said first low frequency transducer, said first ported chamber being tuned to a first resonant frequency within the low frequency audio band,

a second low frequency transducer facing forward into free space and disposed adjacent said first low frequency transducer, and

a second ported chamber behind said second low frequency transducer, said second ported chamber being tuned to a second resonant frequency in the low frequency audio band different from said first resonant frequency

said first and second ported chambers being acoustically isolated to prevent said first chamber from acoustically coupling to said second chamber.

5,602,368

MUFFLER FOR AN INTERNAL COMBUSTION ENGINE

Hiroto Kaneso, Hachiouji, Japan, assignor to Apex Co., Ltd., Japan

Filed Nov. 14, 1994, Ser. No. 338,902

Claims priority, application Japan, Dec. 24, 1993, 5-345891

Int. Cl.[6] F01N *1/00*

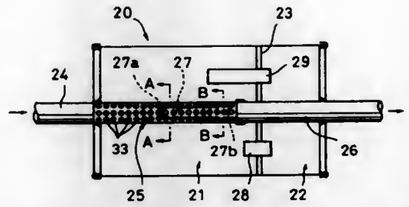
U.S. Cl. 181—255 **12 Claims**

1. A muffler for an internal combustion engine comprising:

a muffler body including an entry port for introducing exhaust fluid into said muffler body, at least one chamber provided in said muffler body, and an exit port for discharging the exhaust fluid out of said muffler body, said entry and exit ports being disposed in linear alignment with each other;

a first pipe section extending continuously between said entry and exit ports within said muffler body so as to allow the exhaust fluid to pass through said first pipe section in a predetermined exhaust flow direction from said entry port to said exit port, said first pipe section including a porous portion having a plurality of small through-holes formed across a wall thickness thereof in such a manner that said porous portion of said first pipe section communicates with said chamber via said small through-holes; and

a second pipe section including a pipe of a given length that is inserted in said porous portion of said first pipe section and forming a gap between an outer peripheral surface of said pipe and an inner peripheral surface of said porous portion of said first pipe section, said gap having upstream and downstream end portions as defined by said exhaust flow direction, said upstream end portion of said gap being in communication with an inner space of said porous portion of said first pipe section.



5,602,369

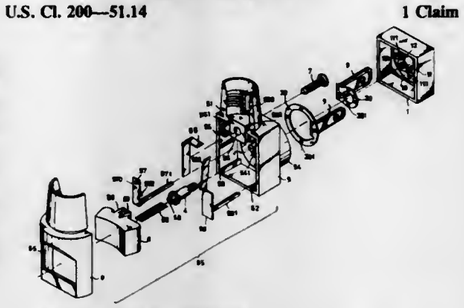
LAMP RECEPTACLE

Tseng-Fan Chu, No. 24, Hsin Shyue Street, Hsinchu City, and Tzu-Chih Lin, No. 46,Lane 188, Dong Lin Rd., Chu Dong Chen, Hsinchu Hsien, both of Taiwan

Filed Dec. 15, 1995, Ser. No. 573,376

Int. Cl.[6] H01R *33/955*

U.S. Cl. 200—51.14 **1 Claim**



1. A lamp receptacle, comprising:

a mounting base having an inside with a center, an upright female screw on said center of said inside, a first annular groove around said upright female screw, a plurality of first recessed portions equiangularly spaced in said first annular groove, a second annular groove concentrically disposed about said first annular groove, a plurality of second recessed portions equiangularly spaced in said second annular groove, a first blade mounting slot in said first annular groove, and a second blade mounting slot in said second annular groove;

a first contact blade and a second contact blade respectively mounted on said mounting base for connection to a power supply outlet, said first contact blade inserted through said first blade mounting slot, fixed in place and having a locating ring at one end fitted into said first annular groove; said locating ring of said first contact blade having at least four equiangularly spaced recessed portions respectively fitted into said first recessed portions of said first contact blade; said second contact blade inserted through said second blade mounting slot, fixed in place and having a locating ring at one end fitted into said second annular groove; said locating ring

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of said second contact blade having at least four equiangularly spaced recessed portions respectively fitted into said second recessed portions of said second contact blade;

a receptacle body connected to said mounting base and adapted to hold a lamp bulb, said receptacle body including a front half shell and a rear half shell connected together by screw means, said front half shell comprising a tubular front coupling portion defining an axle hole, said front half shell and said rear half shell each having a plurality of contact mounting grooves, said rear half shell having a switch mounting hole and two locating grooves for mounting an ON/OFF switch;

a bolt inserted through said axle hole of said tubular front coupling portion and threaded into said female screw of said mounting base to fix said front half shell and said mounting base together and permitting said mounting base to be turned relative to said receptacle body;

a first metal contact plate, a second metal contact plate, and a third metal contact plate respectively fastened to said contact mounting grooves of said front half shell and said rear half shell, said first metal contact plate having a projecting rod at one end fitted into a hole on said tubular front coupling portion of said front half shell and disposed in contact with one recessed portion of said locating ring of said second contact blade and a round hole at an opposite end coupled to a projection on said front half shell, said third metal contact plate having a projecting rod at one end fitted into a hole on said tubular front coupling portion of said front half shell and disposed in contact with one recessed portion of said locating ring of said first contact blade and a tip at an opposite end fastened to one mounting groove on said front half shell; and

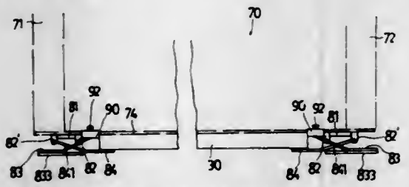
an ON/OFF switch mounted in said switch mounting hole of said rear half shell, said ON/OFF switch comprising two locating blocks respectively inserted into said locating grooves of said rear half shell, a bottom stub stem, a spring having one end connected to said bottom stub stem and an opposite end connected to said bolt, and an actuating rod; said actuating rod of said ON/OFF switch being forced to move said second metal contact plate into contact with said first metal contact plate to close a circuit when said ON/OFF switch is switched on; said actuating rod of said ON/OFF switch being released from said second metal contact plate and causing said second metal contact plate to disconnect from said first metal contact plate when said ON/OFF switch is switched off.

5,602,370

SAFETY SWITCH FOR ELECTRIC ROLLING DOORS

David Kau, No. 24, Lane Ting-Keng, Ching-Yung Tsun, Chung-Liao Hsiang, Nantu Hsien, Taiwan

Filed Sep. 1, 1995, Ser. No. 522,936
Int. Cl.[6] H01H *3/16*
U.S. Cl. 200—61.43 **3 Claims**



1. A safety switch for a door comprising:

a follower bar molded from elastic material and fastened to the bottom rail of an electric rolling door, said follower bar comprising a casing having a longitudinal top open chamber, two parallel top flaps bilaterally and partially covered over said longitudinal top open chamber, an longitudinal inside chamber, and two longitudinal ribs inside said longitudinal inside chamber;

a sheet insulator longitudinally mounted inside the longitudinal top open chamber of said follower bar and having two longitudinal rows of through holes corresponding to the longitudinal ribs of said follower bar;

a first metal sheet and a second metal sheet longitudinally mounted inside the longitudinal top open chamber of said follower bar and separated by said sheet insulator and covered by said top flaps; and

two actuators respectively fastened to two opposite ends of the bottom rail of the electric rolling door, each actuator comprising a top plate fastened to one end of the bottom rail of the electric rolling door and having a first pair of downward lugs and a second pair of downward lugs, a first pressure plate pivoted to said first pair of downward lugs, said first pressure plate having a through hole near one end, a second pressure plate having one end inserted through the through hole of said first pressure plate and pivoted to said second pair of downward lugs and an opposite end attached to the casing of said follower bar at a bottom side;

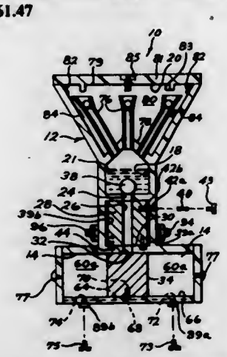
wherein when the casing of said follower bar or one actuator is stopped by an object during the down stroke of the electric rolling door, the casing of said follower bar is deformed to force said longitudinal ribs upwards against said metal sheets, causing said metal sheets to contact each other at the through holes of said sheet insulator and to further cut off power supply from the electric rolling door.

5,602,371

MOTOR VEHICLE ELECTRICAL SYSTEM DEACTIVATING SWITCH

Joe Kerns, and Sandra J. Kerns, both of 620 Weed Keltner Rd., Edmonton, Ky. 42129

Filed Oct. 10, 1995, Ser. No. 541,343
Int. Cl.[6] H01H *35/14*; **B60K** *28/14*; **F02B** *77/00*
U.S. Cl. 200—61.47 **20 Claims**



1. A motor vehicle electrical system deactivating device comprising a housing,

a first chamber defined by said housing for normally containing a quantity of electrically conductive liquid,

a first pair of electrical contact terminals attached to opposing housing end walls which partially define said first chamber, for electrical contact with each other through said liquid when said liquid is disposed in said first chamber,

a second chamber defined by said housing and positioned above said first chamber,

means for transferring said liquid from said first chamber to said second chamber when said housing is tilted by at least a minimum predetermined angle with the horizontal such that electrical continuity between said first pair of terminals is interrupted as a result of such tilting,

a third chamber defined by said housing and located under said first chamber, and

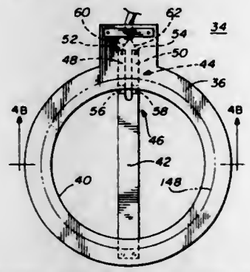
means for relocating said liquid from said first chamber to said third chamber upon application in at least one direction of a first impact force to a motor vehicle in which said housing is mounted such that electrical continuity between said first pair of terminals is interrupted as a result of said first force.

5,602,372

DIFFERENTIAL PRESSURE FLOW SENSOR

John L. Strelow, Broken Arrow, Okla., assignor to Oklahoma Safety Equipment Co., Broken Arrow, Okla.

Filed Dec. 1, 1995, Ser. No. 566,403
Int. Cl.[6] H01H *35/40*
U.S. Cl. 200—81.9 R **15 Claims**



1. A flow pressure sensor for use in a pressure flow line including:

only first and second annular insulated support rings in abutting superimposed relationship for mounting in the flow line, each of the annular insulated support rings having an open center portion defining a central flow passageway;

a thin metallic flow sensor having a planar shape and extending in a common plane across the open center portion and having a first end mounted between the first and second annular insulating rings on one side of the open center portion and a second end mounted in said common plane between the first and second annular insulating rings on the opposite side of the open center portion;

the thin flat metallic flow sensor having first and second sections, the first section extending at least partially across the open center portion for detachable connection to the second section to form a normally closed switch that opens when a pressure flow of a predetermined magnitude occurs in the flow line; and

the planar shape of the first section providing a factor in determining the pressure magnitude at which the normally closed switch opens to provide an indication of an open electrically conductive path.

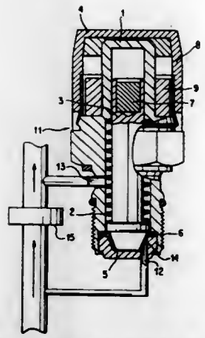
5,602,373

DIFFERENTIAL PRESSURE SWITCH WITH AN ADJUSTING PISTON DRIVEN BY A RESTORING SPRING FOR AN OIL-SEPARATING AIR FILTER

Bernd Sauer, Obersulm, and Michael Wolf, Gaeufelden, both of Germany, assignors to Filterwerk Mann & Hummel GmbH, Ludwigsburg, Germany

Filed Apr. 6, 1995, Ser. No. 417,862
Claims priority, application Germany, Apr. 6, 1994, 9405685 U
Int. Cl.[6] H01H *35/34*
U.S. Cl. 200—82 E **13 Claims**

1. A differential pressure indicator for use in a system including an oil separating air filter element which separates an unfiltered air zone from a filtered air zone and which filters a mixture of air and oil, comprising a housing, a piston arranged in said housing and exposed to pressures of two different pressure zones, one of said pressure zones being in communication with said unfiltered air zone, and the other of said pressure zones being in communication with said filtered air zone, and a rolling member arranged in said housing adjacent one end of said piston, wherein said piston is movable in response to a relative change in pressure between said two pressure zones and is biased in one direction by a restoring spring, and wherein said different pressure zones are separated by said rolling membrane.

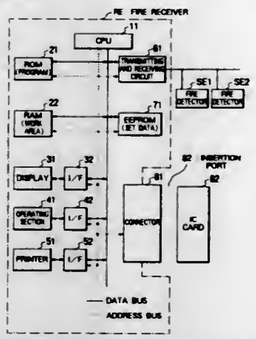


5,602,374

FIRE RECEIVER IN FIRE ALARM SYSTEM

Akio Tsumuji, and Kouichi Hishino, both of Tokyo, Japan, assignors to Nohmi Bosai Ltd., Tokyo, Japan

Filed Mar. 21, 1995, Ser. No. 407,666
Claims priority, application Japan, Mar. 25, 1994, 6-079616
Int. Cl.[6] G06F *17/00*
U.S. Cl. 235—375 **6 Claims**



1. A fire receiver for use in a fire alarm system in which said fire receiver is connected to a plurality of terminal devices through signal lines, and in which said fire receiver calls each of said terminal devices by polling to collect predetermined information and to execute predetermined control, said fire receiver comprising:

card connecting means having a connector for an IC card in which data regarding said terminal devices is stored, said IC card being adapted to be connected to the connector within said fire receiver;

card reading means for reading the data stored in said IC card connected to said connector;

data fetching means for fetching the data stored in said IC card through said card reading means if a connection of said IC card to said card connecting means is detected when power supply to said fire receiver is turned on, and for fetching

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predetermined data from said terminal devices by polling said terminal devices if no connection of said IC card to said card connecting means is detected when power supply to said first receiver is turned on; and

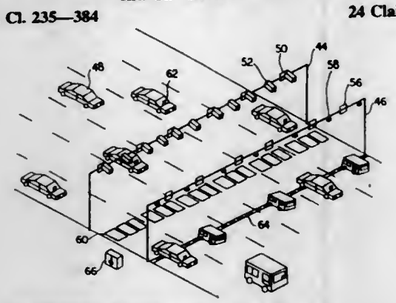
control means connected to said terminal devices and the data fetching means for operating said terminal devices according to the data fetched by said data fetching means.

5,602,375

AUTOMATIC DEBITING SYSTEM SUITABLE FOR FREE LANE TRAVELING

Shuichi Sunahara, Aichi-ken; Souichi Ishikawa, Nagoya; Takehiko Okuda, Toyota; Hajime Amano, Aichi-ken; Kouichi Yagi, and Masanori Omae, both of Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 420,687, Apr. 12, 1995, abandoned.
This application Jun. 11, 1996, Ser. No. 661,703
Claims priority, application Japan, Apr. 13, 1994, 6-074659; Feb. 21, 1995, 7-032142; Apr. 7, 1995, 7-082523
Int. Cl.[6] G07B *15/02*
U.S. Cl. 235—384 **24 Claims**



1. An automatic debiting system comprising:

a first gantry disposed so as to span a road having a predetermined number of lanes;

a second gantry disposed so as to span said road and positioned on a downstream side of said first gantry along a vehicle advancing direction;

debiting means arranged on said first gantry for radio communicating with vehicles traveling said road to impose tolls thereon; and

debiting confirmation means arranged on said second gantry for radio communicating with vehicles traveling said road to confirm that tolls have been correctly imposed thereon.

5,602,376

HAND-MOUNTED OPTICAL SCANNER SYSTEM

Edward P. Coleman, Rochester; Vincent T. LaManna, Webster, and Daniel Bentley, Rochester, all of N.Y., assignors to PSC Inc., Webster, N.Y.

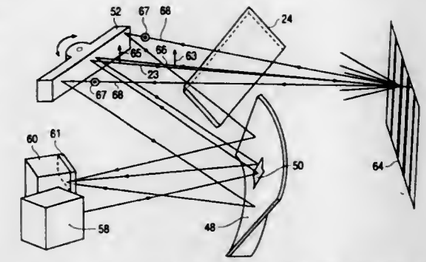
Filed May 7, 1993, Ser. No. 59,045
Int. Cl.[6] G06K *7/10*
U.S. Cl. 235—462 **10 Claims**

1. A portable code symbol scanner comprising:

a light source for producing a light beam,

means for scanning said light beam along a path transverse to an optical axis of said scanner,

a window, mounted at Brewster's angle with respect to said optical axis, for transmitting therethrough said light beam to and from said code symbol, and



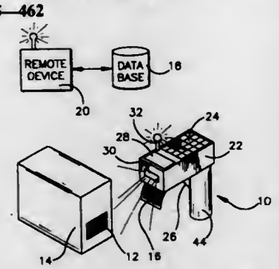
a polarizer positioned to filter said light beam returning from said code symbol and transmitted through said window.

5,602,377

BAR CODE DATAFORM SCANNING AND LABELING APPARATUS AND METHOD

William E. Beller, Akron, Ohio, and Yajlun P. Wang, Fort Myers, Fla., assignors to Metanetics Corporation, Fort Meyers, Fla.

Filed Mar. 1, 1995, Ser. No. 396,519
Int. Cl.[6] G06K *7/10*
U.S. Cl. 235—462 **26 Claims**



1. A method of providing a two dimensional bar code dataform for a product having a bar code dataform associated with the product, the steps of the method comprising:

a) scanning the product's bar code dataform;

b) decoding the dataform to generate decoded data related to the product;

c) selecting data to comprise the two dimensional bar code, the selected data including at least a portion of the decoded data and additional data related to the product;

d) encoding the selected data to produce the two dimensional bar code dataform; and

e) printing the two dimensional bar code dataform on a label to be attached to the product.

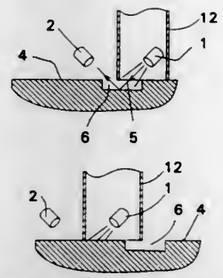
5,602,378

DETECTION BY A SCANNER OF RADIATION FROM THE SCANNER REFLECTED FROM A BAR CODE

Harri O. Vaarala, Peuratie 6, FIN 96440 Rovaniemi, Finland

PCT No. PCT/FI95/00158, § 371 Date Jul. 20, 1995, § 102(e) Date Jul. 20, 1995, PCT Pub. No. WO95/26537, PCT Pub. Date Oct. 5, 1995
PCT Filed Mar. 24, 1995, Ser. No. 492,056
Claims priority, application Finland, Mar. 25, 1994, 941386
Int. Cl.[6] G06K *7/10*
U.S. Cl. 235—462 **11 Claims**

1. A method for detecting imprinted markings (6, 6*a*) made into an object, especially a bar code comprising, said markings (6, 6*a*) being formed to at least one second level (8) which differs from a



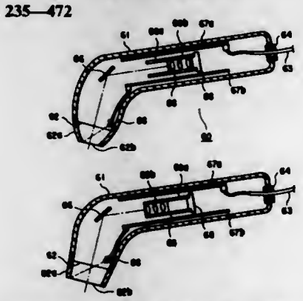
first level (4) representing the base surface level of said object, wherein the surface of at least that level (4 or 8) which is lower, is arranged to provide reflection of a radiation (5) at least to some extent, said method utilizing radiation transmitting (1) and, correspondingly, receiving (2) means located apart from said transmitting means, characterized in that said radiation transmitting (1) and receiving (2) means are separated from each other by a separating wall (3) which is arranged essentially transversely with respect to the surface of said object and having an edge (7) extending from the surface level of said transmitting and/or receiving means (1, 2) in close relationship with the surface (4) of said object, said separating wall (3) preventing the passage of said radiation (5) from said transmitting means (1) to said receiving means (2) at such locations of said object, where the surface (4) which is positioned at a higher level will extend essentially to said edge (7) of said separating wall (3).

5,602,379

OPTICAL CODE READER

Mitsuo Uchimura, Numazu; Masashi Suzuki, Mishima; Yoshinori Akazawa, Amagasaki, and Takashi Itoh, Fuji, all of Japan, assignors to Kabushiki Kaisha TEC, Shizuoka, Japan

Filed May 31, 1994, Ser. No. 251,402
Claims priority, application Japan, May 31, 1993, 5-129016; Sep. 28, 1993, 5-241567; Sep. 28, 1993, 5-241568
Int. Cl.[6] G06K *7/10*
U.S. Cl. 235—472 **12 Claims**



1. An optical code reader which is held in a hand of an operator and which is brought near an article having a 2-dimensional code affixed thereto at the time of reading, the optical code reader comprising:

light source means for illuminating the 2-dimensional code on the article;

reading means for reading the 2-dimensional code from a light reflected by the article; and

a frame member for housing said light source means and said reading means, said frame member having a read window which defines a reading area viewed by said reading means;

wherein said reading means includes:

an image sensor for sensing an image formed thereon and converting the image to an electrical signal;

a lens block having an optical lens system for focusing the reflected light received via said read window to form the image on said image sensor, an optical path between said read window and said optical lens system having an optimum length determined according to a magnification of the optical lens system; and

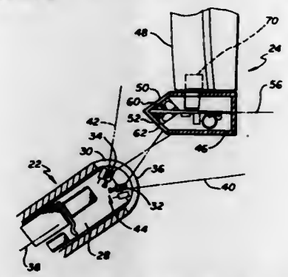
mounting means for removably mounting on said frame member said lens block and an attachment cap which is optionally provided and which has an opening serving as said read window.

5,602,380

BARCODE SCANNER-READER WIRELESS INFRARED LINK

Jon M. Bishay, Mukilteo, Wash., assignor to Intermec Corporation, Everett, Wash.

Continuation of Ser. No. 136,795, Oct. 14, 1993, abandoned.
This application Jun. 20, 1995, Ser. No. 493,202
Int. Cl.[6] G06K *7/10*
U.S. Cl. 235—472 **24 Claims**



1: In a barcode reader having a barcode scanning unit which scans barcodes with a reflected lightbeam connected to a barcode reading unit which receives reflected lightbeam data from the scanning unit and advises the scanning unit to stop scanning when decodable data has been transmitted by the scanning unit and received by the reading unit, apparatus for wirelessly bi-directionally connecting the scanning unit to the reading unit comprising:

a) the scanning unit including a first infrared transmitter/receiver portion having at least one infrared-transmitting diode and at least one infrared-detecting photodiode therein positioned to transmit and receive infrared signals within a first conical area of operability disposed about a first line-of-sight; and,

b) the reading unit including a second infrared transmitter/receiver portion having at least one infrared-transmitting diode and at least one infrared-detecting photodiode therein positioned to transmit and receive infrared signals within a second conical area of operability disposed about a second line-of-sight above horizontal and have at least one infrared-transmitting diode and at least one infrared-detecting photodiode therein positioned to transmit and receive infrared signals within a third conical area of operability disposed about a third line-of-sight below horizontal;

wherein, an infrared signal transmitted by said scanning unit within either one of said second and said third conical areas of operability can be received by said reading unit.

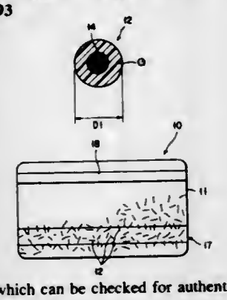
VOL 11 95 ISS 2 FE 11 1997 UMI

5,602,381

OBJECTS TO BE CHECKED FOR AUTHENTICITY, AND METHOD AND APPARATUS FOR CHECKING WHETHER OR NOT OBJECTS ARE AUTHENTIC

Hidekazu Hoshino; Itsuo Takeuchi; Masumi Yoda; Tatsuya Kurihara, and Minoru Komiya, all of Yokohama, Japan, assignors to NHK Spring Co., Ltd., Yokohama, Japan

Filed May 16, 1994, Ser. No. 243,582
Claims priority, application Japan, May 19, 1993, 5-117118; Dec. 2, 1993, 5-303032; Dec. 8, 1993, 5-308317
Int. Cl.[6] G06K 19/12
U.S. Cl. 235—493 15 Claims



1. An object which can be checked for authenticity, said object comprising:

a base member formed of a nonmagnetic material, said base member comprising paper containing a plurality of wood pulp fibers;

a scanning region located at a specific portion of said base member;

a plurality of magnetic polymer elements scattered at random in said scanning region and oriented in a plurality of unspecified directions, each of said magnetic polymer elements including a flexible element main body formed of a high molecular material and having a powder of magnetically-soft material contained therein, said high molecular material being selected from the group consisting of polyethylene, polyester, urethane, and acrylic resin, and said powder of magnetically-soft material having a particle diameter of 1 μm or less and high permeability;

said magnetic polymer elements being integrally incorporated in the paper of said base member together with the wood pulp fibers of the paper such that the wood pulp fibers and said magnetic polymer elements are tangled together three-dimensionally; and

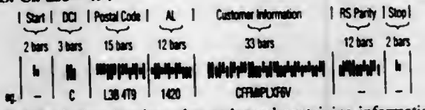
a code indicator section for storing encoded information corresponding to an output which is obtained in accordance with a state of said magnetic polymer elements scattered in said scanning region.

5,602,382

MAIL PIECE BAR CODE HAVING A DATA CONTENT IDENTIFIER

Joseph Ulvr, Carp, and Adrian T. S. C. Kho, Kanata, both of Canada, assignors to Canada Post Corporation, Ontario, Canada

Filed Oct. 31, 1994, Ser. No. 331,955
Int. Cl.[6] G06K 19/06
U.S. Cl. 235—494 27 Claims



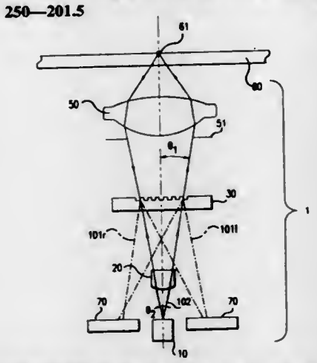
1. A mail piece bearing a bar codeword containing information for the processing of the mail piece, the bar codeword having a plurality of parallel bars each of which has a state selected from a plurality of possible states, the bar codeword comprising a start field followed by a data content identifier (DCI) field specifying the structure of the codeword followed by at least one data field, followed by a Reed-Solomon parity field, followed by a stop field.

5,602,383

OPTICAL APPARATUS FOR OPTICALLY READING AND RECORDING INFORMATION

Taro Takekoshi, and Masatoshi Yonekubo, both of Nagano-ken, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed May 15, 1995, Ser. No. 440,915
Claims priority, application Japan, May 17, 1994, 6-103036
Int. Cl.[6] G02B 7/04;27/40; G11B 7/00
U.S. Cl. 250—201.5 44 Claims



1. An optical head having a forward optical path and a rearward optical path through which a light beam travels for use in an optical recording apparatus, comprising:

a light beam emitting assembly that emits a light beam in said forward optical path;

a light beam separating assembly, wherein the light beam travels through said light beam separating assembly in said forward optical path as a non-diffracted light beam;

a light beam focusing element that focuses the non-diffracted light beam in said forward optical path onto an optical recording medium;

a light detection device, wherein a rearward light beam reflected from said optical recording medium follows said rearward optical path through said light beam focusing element and said light beam separating assembly such that the rearward light beam is deflected in said rearward optical path to said light detection device; and

a lens element positioned in at least one of said forward optical path and said rearward optical path such that at least one of a magnification and a numerical aperture of the optical head associated with said forward optical path and at least one of a magnification and a numerical aperture of the optical head associated with said rearward optical path are independently set wherein the magnification of said forward optical path is greater than the magnification of said rearward optical path.

5,602,384

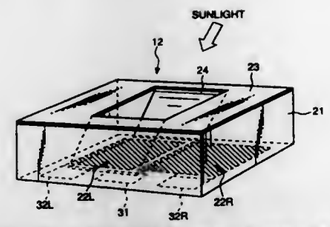
SUNLIGHT SENSOR THAT DETECTS A DISTRUBITION AND AMOUNT OF THERMAL LOAD

Naochika Nunogaki; Makoto Shirai; Manabu Yamada; Yutaka Maeda; Masaya Nakamura; Masanori Fukutani, and Katsuhide Akimoto, all of Kariya, Japan, assignors to Nippondenso Co., Ltd., Koriya, Japan

PCT No. PCT/JP93/01599, § 371 Date Sep. 20, 1994, § 102(e) Date Sep. 20, 1994, PCT Pub. No. WO94/11703, PCT Pub. Date May 26, 1994
PCT Filed Nov. 4, 1993, Ser. No. 256,298
Claims priority, application Japan, Nov. 6, 1992, 4-296815; Nov. 6, 1992, 4-297280; May 26, 1993, 5-124103
Int. Cl.[6] G01C 21/02;21/24; F24J 2/38
U.S. Cl. 250—203.4 33 Claims

1. A sunlight sensor comprising:

light-cutoff means that selectively transmits sunlight;



light-detection means having a plurality of planar shaped light-detection sections positioned in a same plane; and

an intermediate element between said light-detection sections and said light-cutoff means, said intermediate element passes sunlight selectively transmitted by said light-cutoff means, and

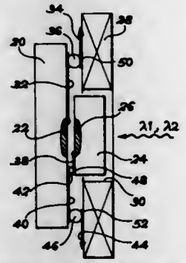
detecting means for detecting both the distribution and total amount of thermal load present in an environment in which said sensor is located in accordance with outputs of said plurality of light-detection sections, wherein said light-detection sections are shaped and positioned relative to said light-cutoff means such that an output of said light-detection means is directly proportional to said thermal load.

5,602,385

TWO WAVE BAND RADIATION DETECTOR HAVING TWO FACING PHOTODETECTORS AND METHOD FOR MAKING SAME

Lydie Mathieu, Voreppe; Francois Marion, and Christian Lucas, both of Saint Egreve, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Nov. 17, 1994, Ser. No. 341,072
Claims priority, application France, Nov. 23, 1993, 93 13992
Int. Cl.[6] G01J 3/50
U.S. Cl. 250—226 11 Claims



1. A radiation detector which is sensitive in two wave bands, said detector comprising:

first substrate;

first photodetection element having a front face formed in a first surface of said first substrate, said first photodetection element being sensitive to radiation in a first wave band;

a second substrate;

second photodetection element having a front face formed in a second surface of said second substrate, said second photodetection element being sensitive to radiation in a second wave band;

said second substrate being transparent to at least said first wave band;

said first and second surfaces being adjacent so that the front face of said first photodetection element is faced toward the front face of said second photodetection element; and

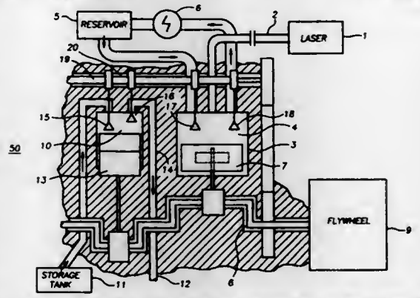
said first and second substrates being interconnected by conductive connection spheres.

5,602,386

OPTICALLY POWERED REMOTE MICRO DEVICES EMPLOYING FIBER OPTICS

Wolfgang Neuberger, Monchen-Gladbach, Germany, assignor to Ceramoptec Industrues, Inc., East Longmeadow, Mass.

Continuation of Ser. No. 301,695, Sep. 7, 1994, abandoned.
This application Sep. 1, 1995, Ser. No. 522,994
Int. Cl.[6] H02K 7/00; G02B 6/00
U.S. Cl. 250—227.11 13 Claims



1. A micro device, occupying a volume no greater than 200 mm^3, comprising:

a chamber;

a thermodynamic medium within said chamber;

at least one optical fiber being optically connected to said chamber so as to transmit optical energy into said medium;

said at least one optical fiber being also optically connected to a source of optical radiation;

said source providing optical radiation of a wavelength which is absorbed by said medium;

said medium being able to expand rapidly upon absorption of said wavelength of said optical radiation;

a means for said medium to exit said chamber and for fresh medium to re-enter said chamber during each operating cycle of said device; and

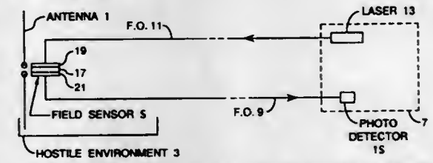
a reservoir of thermodynamic medium having access to said chamber so that fresh medium be available to re-enter said chamber each operating cycle.

5,602,387

METHOD OF PROTECTING AN RF RECEIVER IN A HOSTILE ELECTROMAGNETIC ENVIRONMENT

Tracey S. Bowen, Albuquerque, N.M., assignor to The United States of America as represented by the Secretary of the Air Force, Washigton, D.C.

Filed Jun. 26, 1995, Ser. No. 494,859
Int. Cl.[6] H01J 5/16
U.S. Cl. 250—227.17 1 Claim



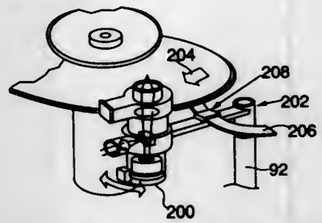
1. A method of detecting radio frequency signals within a potentially hostile electromagnetic environment comprising the steps of:

(a) positioning a metallic radio frequency signal detecting antenna within said potentially hostile electromagnetic environment, said antenna having no ancillary electronic circuitry subject to burnout due to very high strength fields within said potentially hostile electromagnetic environment;

(b) positioning an electro-optic field sensor adjacent said antenna and electrically coupled thereto;

(c) transmitting an interrogating light beam through a fiber optic cable from a remote processing site to and through said electro-optic field sensor;
(d) transmitting a modulated light beam passed through said electro-optic field sensor back through a fiber optic cable to said remote site; and
(e) detecting at said remote site, the degree of modulation of said modulated light beam caused by a radio frequency signal sensed by said antenna.

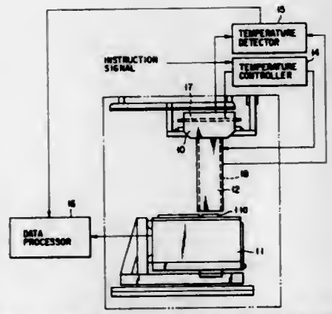
5,602,388
ABSOLUTE AND DIRECTIONAL ENCODER USING OPTICAL DISK
Glenn J. Maenza, Glen Mills, Pa., assignor to Sony Corporation, Tokyo, Japan, and Sony Music Entertainment, Inc., New York, N.Y.
Filed Sep. 9, 1994, Ser. No. 304,014
Int. Cl.[6] G01D *5/34*
U.S. Cl. 250—231.13 **13 Claims**



1. An optical rotary encoder adapted to be coupled to a device of which it is desired to determine the rotational motion thereof, comprising:
an optical disk having, at fixed radial distances, at least two substantially identical, adjacent tracks of pits and lands except that one of the tracks is approximately ninety degrees out of phase from the other of said tracks;
means for coupling said optical disk to said device such that rotary motion of said device results in corresponding rotary motion of said optical disk; and
optical disk read means for reading the at least two substantially identical, adjacent tracks and generating an output in response to the pits and lands thereon indicative of the rotary motion of said device.

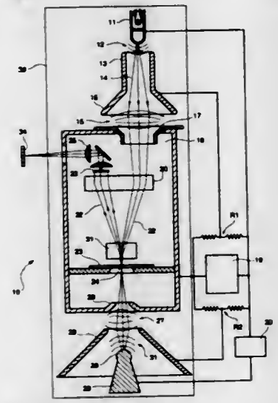
5,602,389
INFRARED SENSOR CALIBRATION APPARATUS USING A BLACKBODY
Akira Kato, Yokohama, and Kayoko Kondo, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Jul. 13, 1995, Ser. No. 501,936
Int. Cl.[6] G01J *5/06*
U.S. Cl. 250—252.1 **3 Claims**

1. An infrared sensor calibration apparatus comprising:
a blackbody radiating infrared rays;
a cylindrical cover member placed between said infrared sensor and said blackbody, one end being connected to an infrared radiation surface of said blackbody such that said cylindrical cover member is thermally independent of said blackbody and another end being provided opposite to the incidence entry of said infrared sensor at a predetermined distance, at least an inner surface of said cylindrical member being painted black;
temperature control means for setting each of the temperatures of said blackbody and said cylindrical cover member to a predetermined value;
temperature detecting means for detecting temperatures of said blackbody and said cylindrical cover member; and



calibration means for obtaining an intensity of the infrared rays incident upon an incidence entry of said infrared sensor based on the temperatures of said blackbody and said cylindrical cover member detected by the temperature detecting means and comparing the intensity with an output of said infrared sensor, thereby calibrating said infrared sensor.

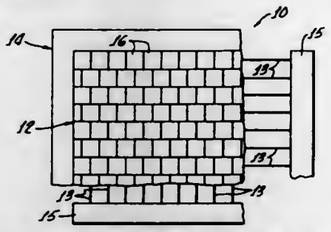
5,602,390
ELECTROSTATIC REPULSION ION MICROSCOPE
Walter L. Colterjohn, Jr., 1201 Oak Ridge Clr., Barrington, Ill. 60010
Filed Apr. 3, 1996, Ser. No. 626,848
Int. Cl.[6] H01J *49/46*
U.S. Cl. 250—309 **16 Claims**



1. An ion microscope comprising:
an ion source for generating a beam of positive ions;
an object mounting electrode (OME) having a convex end for receiving an object to be viewed and having an electrical potential relative to said ion source sufficient to repel positive ions;
an enclosure having a negative electrical potential relative to said ion source into which the ions are drawn as a beam of positive ions from said ion source toward said OME and generating said beam of repelled positive ions;
an ion detector for detecting the spatial relationship of said beam of repelled positive ions and for generating an image of said object received by said OME;
an electrostatic lens, having an entrance pupil, for directing said beam of positive ions toward an electrostatic center of said convex end of said OME, so as to have a near normal incidence to a surface of said convex end of said OME, such that when said beam of positive ions is repelled, the repelled beam of positive ions return back through said electrostatic

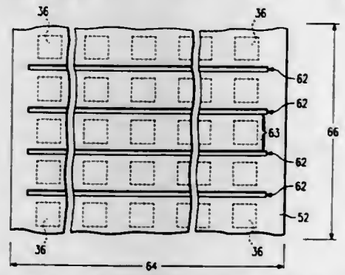
lens toward said ion detector, with said electrostatic lens causing the repelled ion beam to be focused upon said detector and to project said image of said object upon it; and
a magnetic source for producing a magnetic field for deflecting said beam of positive ions and said beam of repelled positive ions sufficient to enable said ion detector to be located outside of a path of said beam of positive ions prior to being repelled.

5,602,391
QUINCUNX SAMPLING GRID FOR STARING ARRAY
Michael Y. Pines, Los Angeles, and Robert L. Sendall, Chatsworth, both of Calif., assignors to Hughes Electronics, Los Angeles, Calif.
Filed Feb. 23, 1995, Ser. No. 393,603
Int. Cl.[6] G01J *5/06;* **H04N** *5/33*
U.S. Cl. 250—332 **18 Claims**



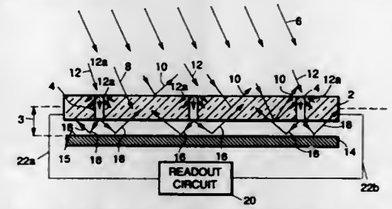
1. A staring imaging device for detecting radiant energy from a source object, said device comprising: a semiconductor substrate; and
a sampling grid of multiple like pixels formed on said substrate, said grid having a quincunx arrangement providing means for extending measurement of a minimum resolvable temperature (MRT) difference of said radiant energy beyond the Nyquist theoretical limit.

5,602,392
THERMAL CROSSTALK REDUCTION FOR INFRARED DETECTORS WITH COMMON ELECTRODES
Robert A. Owen, Rowlett; William K. Walker, Plano; Steven E. Frank, McKinney; Charles M. Hanson, Richardson; Kevin N. Sweetser, Garland; Edward G. Meissner, Dallas, and Howard R. Beratan, Richardson, all of Tex., assignors to Texas Instruments, Dallas, Tex.
Division of Ser. No. 381,676, Jan. 31, 1995. This application Jun. 7, 1995, Ser. No. 476,409
Int. Cl.[6] H01L *27/146*
U.S. Cl. 250—338.3 **14 Claims**



1. A hybrid thermal detector including a focal plane array mounted with a thermal isolation structure on an integrated circuit substrate, comprising:
at least three thermal sensors in said focal plane array for providing a sensor signal output representative of thermal radiation incident to said focal plane array, said focal plane array having two axes;
an optical coating coupled to said thermal sensors, said optical coating having elongated parallel slots intermediate said thermal sensors extending along substantially the entire length of said array along one of said axes, said optical coating comprising an electrically-conducting coat, said slots configured so that said electrically-conducting coat of said optical coating provides an electrical connection to said thermal sensors;
wherein said thermal isolation structure is disposed between said focal plane array and said integrated circuit substrate, wherein said thermal isolation structure projects from said integrated circuit substrate for mounting said focal plane array and for coupling the focal plane array to said integrated circuit substrate; and
contact pads disposed on said integrated circuit substrate, for receiving a sensor signal output from said thermal sensors through said thermal isolation structure..

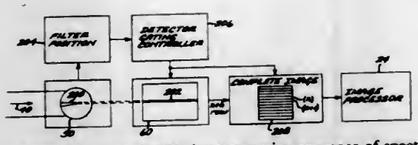
5,602,393
MICROBOLOMETER DETECTOR ELEMENT WITH ENHANCED SENSITIVITY
Henry M. Gerard, Capistrano Beach, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Filed Jun. 7, 1995, Ser. No. 479,917
Int. Cl.[6] G01J *5/02;5/20*
U.S. Cl. 250—338.4 **21 Claims**



1. A microbolometer detector element, comprising:
an optically absorptive material structure characterized by an electrical resistivity that varies as a function of its temperature, said structure absorbing a portion of incident optical radiation at a design wavelength, and having a plurality of openings that diffract another portion of said incident optical radiation,
a radiation director spaced from said absorptive structure and positioned to redirect said diffracted radiation to said structure, the spacing causing said re-directed radiation to constructively interfere with incident radiation at said structure that has not been reflected by said structure, and destructively interfere with incident radiation at said structure that has been reflected by said structure, and
a sensor connected to sense said absorptive structure's electrical resistivity.

5,602,394
IMAGING SPECTRORADIOMETER
Mark Dombrowski, and James Lorenz, both of Escondido, Calif., assignors to Surface Optics Corporation, San Diego, Calif.
Continuation-in-part of Ser. No. 49,035, Apr. 19, 1993, Pat. No. 5,424,543. This application Jun. 7, 1995, Ser. No. 485,583
Int. Cl.[6] G01T *1/36;1/29;* **G01J** *5/10*
U.S. Cl. 250—339.02 **20 Claims**

1. An imaging spectroradiometer, comprising:
a light collector, including
a lens which produces a two-dimensional viewed image of a scene,



means for spectrally filtering a repeating sequence of spectral images from the viewed image over a preselected spectrum of wavelengths, the means for spectrally filtering including means for repeating the spectral imaging of the scene over the preselected spectrum at a preselected sequence repetition frequency, and

means for scanning a filter window of a preselected wavelength transmission across the scene during each repetition, and

a detector which receives the image of the preselected spectrum of wavelengths from the means for spectrally filtering and produces an electronic signal of an amplitude of each of a plurality of pixels, and wherein the detector electronically scans a detection gate window across the scene in synchronization with the scanning of the filter window; and

an image processor operating substantially in real time, comprising

a memory which temporarily stores the electronic signals produced by the detector as a plurality of pixelated electronic images, each image corresponding to an amplitude of the scene viewed at one of the preselected wavelengths,

means for correcting the amplitudes of the pixels of the electronic images responsive to preselected systematic sources of error and means for calibrating the amplitudes responsive to the properties of the light collector, producing a corrected and calibrated electronic image, and

means for correlating the corrected and calibrated electronic image with a preselected response function to produce an electronic image of a preselected spectral characteristic.

5,602,395

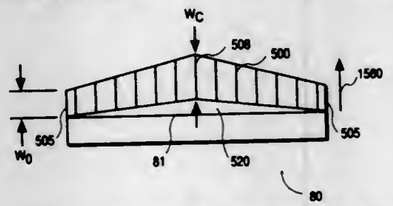
GAMMA CAMERA HAVING PARTIAL SEPTAS AND MOVING SEPTAS FOR POSITRON EMISSION TOMOGRAPHY (PET)

Peter Nellemann, Pleasanton; Horace H. Hines, San Jose, all of Calif.; Gerd Muehllehner, Wayne, Pa., and Matthew J. Murphy, Los Altos, Calif., assignors to ADAC Laboratories, Milpitas, Calif.

Filed Oct. 2, 1995, Ser. No. 537,008

Int. Cl.[6] G01T *1/166*

U.S. Cl. 250—363.03 **36 Claims**



1. A gamma camera for creating an image of an object, the gamma camera comprising:

a detector having a scintillator, the scintillator having an imaging surface; and

a first layer of septa disposed between the object and the imaging surface, the first layer including a plurality of individual septa disposed along the imaging surface, such that a gap exists between the imaging surface and the first layer of septa, wherein the gap has a size defined with respect to each of the individual septa, and wherein the size of the gap with respect to each of the septa depends upon the location of each of said septa relative to the imaging surface.

5,602,396

Patent Not Issued For This Number

5,602,397

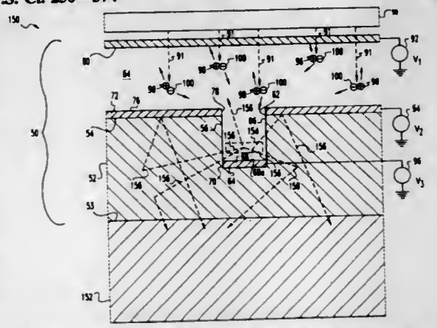
OPTICAL IMAGING SYSTEM UTILIZING A CHARGE AMPLIFICATION DEVICE

William K. Pitts; Kevin M. Walsh, both of Louisville, Ky., and Keith Solberg, Bloomington, Ind., assignors to University of Louisville Research Foundation, Inc., Louisville, Ky.

Filed Nov. 1, 1995, Ser. No. 551,556

Int. Cl.[6] H01J *47/02*

U.S. Cl. 250—374 **26 Claims**



1. An imaging device for providing a radiative representation of charges comprising:

a substrate having a top surface and an opposite bottom surface, said top surface defining a cavity having a cavity sidewall extending into said substrate;

a gaseous medium disposed within said cavity, said gaseous medium including charges resulting from ionization thereof; and

means for establishing avalanche ionization of charges with said gaseous medium within said cavity to thereby provide amplified emission of photons from said gaseous medium;

wherein said cavity sidewall is operable to absorb emitted photons incident thereupon, and said substrate is operable to direct the absorbed photons impinging upon said top surface thereof from within said substrate toward said bottom surface of said substrate.

5,602,398

NONDISPERSIVE INFRARED RADIATION SOURCE

Daniel W. Knodle, Seattle, and Thomas R. Clary, Issaquah, both of Wash., assignors to Pryon Corporation, Menomonee Falls, Wis.

Filed Dec. 22, 1995, Ser. No. 577,719

Int. Cl.[6] H05B *3/26*

U.S. Cl. 250—504 R **18 Claims**

1. A nondispersive infrared radiation source comprising:

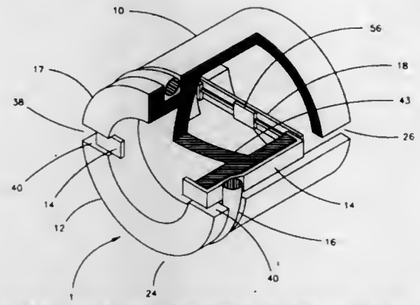
a base having a first end, a second end, a circumference and a predetermined length;

said base further having, a bore formed in said base at substantially said second end;

a plurality of formed pins, each said formed pin having a first end, a second end and a predetermined length;

an o-ring being sized to be received by an o-ring groove formed in said circumference at said first end of said base;

a thick film resistor electrically connected to said second end of each of said formed pins; and



a reflective surface which terminates said bore of said base.

5,602,399

SURFACE POSITION DETECTING APPARATUS AND METHOD

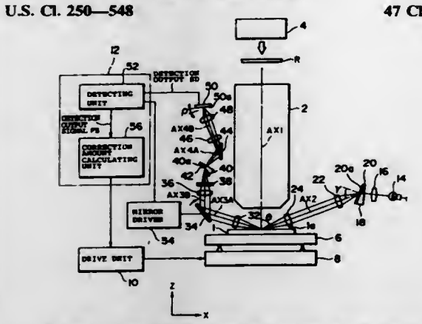
Hideo Mizutani, Yokohama, Japan, assignor to Nikon Corporation, Japan

Continuation of Ser. No. 264,672, Jun. 23, 1994, abandoned. This application Jan. 2, 1996, Ser. No. 581,973

Claims priority, application Japan, Jun. 23, 1993, 5-151861; Dec. 9, 1993, 5-309187

Int. Cl.[6] G03B *27/42*

U.S. Cl. 250—548 **47 Claims**



1. A surface position detecting apparatus, which projects an image of a predetermined measurement pattern obliquely onto a surface of a plate object to be detected, which converges reflected light from the detected surface to re-image the image of said measurement pattern, and which then performs position detection of the detected surface relative to a predetermined reference plane in accordance with a re-imaged position of the image of said measurement pattern, comprising:

a light source;

an irradiation optical system for irradiating light from said light source obliquely onto said reference plane;

a pattern plate having said measurement pattern, said pattern plate being located on a predetermined first plane so that the image of said measurement pattern is formed on said reference plane by said irradiation optical system;

a converging optical system for, in a state where the detected surface of said object to be detected is substantially coincident with said reference plane, converging light irradiated from said irradiation optical system and then reflected by the detected surface to re-image the image of said measurement pattern on a predetermined second plane; and

detecting device for detecting said re-imaged position of the image of the measurement pattern on said second plane;

wherein the image of said measurement pattern comprises a linear image extending in a predetermined direction; and

wherein said pattern plate is disposed such that an angle α between a direction in which the line image of said measurement pattern on the detected surface is displaced when the detected surface is moved along a direction perpendicular to said reference plane, and a longitudinal direction of the line image of said measurement pattern is in the range of from greater than 0° to less than 90°.

5,602,400

SURFACE POSITION DETECTING METHOD AND APPARATUS INCLUDING DETECTION AND CORRECTION OF ERRORS, SUCH AS SURFACE POSITION ERRORS OR TILT, IN EXPOSURE REGIONS

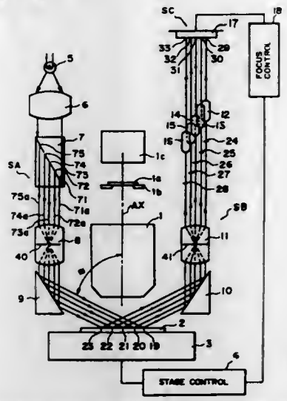
Haruna Kawashima, Utsunomiya, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 541,022, Oct. 11, 1995, abandoned, which is a continuation of Ser. No. 107,609, Aug. 18, 1993, abandoned. This application Apr. 23, 1996, Ser. No. 636,723

Claims priority, application Japan, Aug. 19, 1992, 4-244267; Dec. 18, 1992, 4-355965

Int. Cl.[6] G01N *21/86*

U.S. Cl. 250—548 **59 Claims**



1. A registration method usable with a projection optical system for projecting patterns of a first object simultaneously upon a second object having a surface step, for measuring at different locations the surface position of the second object with respect to the direction of an optical axis of the projection optical system prior to projection of the patterns onto the second object to bring the surface of the second object into coincidence with an image plane of the projection optical system on the basis of the measurement, said method comprising the steps of:

bringing, into coincidence with the image plane position of the projection optical system, the surface position at a location of the second object, on which location a pattern, of the patterns of the first object, having a smaller depth of focus, is or is to be projected, and thereby determining any tilt of the surface of the second object with respect to the image plane of the projection optical system; and

correcting any determined tilt of the surface of the second object with respect to the image plane of the projection optical system.

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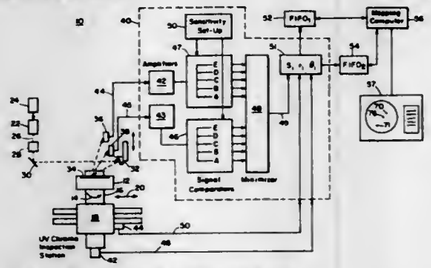
DATA PROCESSING SYSTEM AND METHOD FOR A SURFACE INSPECTION APPARATUS

Sergey V. Broude, Newton Centre; Nicholas Allen, Bedford; Abdu Boudour, West Newton; Eric Chase, Carlisle; Carl Johnson, Tweksbury; Pascal Miller, North Chelmsford, and Jay Ormsby, Salem, all of Mass., assignors to QC Optics, Inc., Burlington, Mass.

Filed Jul. 10, 1995, Ser. No. 499,933

Int. Cl.[6] G01N *21/86*

U.S. Cl. 250—559.45 **14 Claims**



1. A surface inspection system comprising:

a laser beam source;

means for focusing a laser beam from said source onto the surface;

means for rotating and translating said surface with respect to said means for focusing to trace a spiral pattern with said laser beam on said surface;

detection means for detecting scattering of said laser beam from the surface;

means, responsive to said detection means, for calculating the size of any detected particles on the surface and for determining the position of said detected particles on the surface;

memory means for storing the size and position data of any detected particles; and

means, responsive to said memory means, for recording said size and position data of any detected particles in said memory means on each revolution but transferring said stored data out of said memory means once per M revolutions.

5,602,402

RADIATION IMAGE READ-OUT METHOD AND APPARATUS

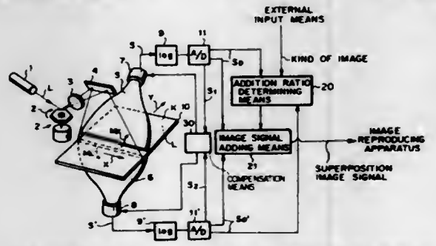
Hiroaki Yasuda, Kanagawa-ken, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 9, 1995, Ser. No. 513,187

Claims priority, application Japan, Oct. 14, 1994, 6-249613; Nov. 24, 1994, 6-289511; Nov. 24, 1994, 6-289512

Int. Cl.[6] G01N *23/04*

U.S. Cl. 250—587 **26 Claims**



1. A radiation image read-out method comprising the steps of:

i) exposing a stimulable phosphor sheet, on which a radiation image has been stored, to stimulating rays, which have been produced by a stimulating ray source and cause the stimulable phosphor sheet to emit light in proportion to the amount of energy stored thereon during its exposure to radiation,

ii) photoelectrically detecting the light, which is emitted from the front surface of the stimulable phosphor sheet, and the light, which is emitted from the back surface of the stimulable phosphor sheet, respectively with two photoelectric read-out means, two image signals being thereby obtained, and

iii) adding the two image signals to each other in a predetermined addition ratio, an addition image signal, which represents the radiation image, being thereby obtained,

wherein the improvement comprises the steps of:

a) photoelectrically detecting predetermined reference light with the two photoelectric read-out means, two reference signals being thereby obtained,

b) calculating a representative value of each of the two reference signals, two representative values being thereby obtained,

c) calculating the ratio between said two representative values, and

d) compensating for a change of the addition ratio with the passage of time in accordance with said ratio between said two representative values.

5,602,403

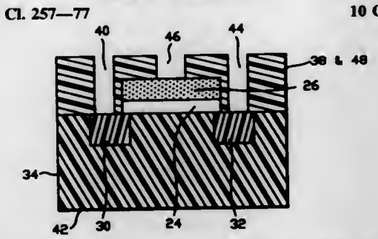
ION IMPLANTATION BURIED GATE INSULATOR FIELD EFFECT TRANSISTOR

Monti E. Aklufi, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 1, 1991, Ser. No. 662,696

Int. Cl.[6] H01L *31/0312*

U.S. Cl. 257—77 **10 Claims**



1. A buried gate insulator field effect semiconductor transistor comprising:

a source comprised of a semiconductor material;

a substrate comprised of said semiconductor material, said substrate being adjacent to said source;

a drain comprised of said semiconductor material, said drain being adjacent to said substrate;

an ion implanted gate dielectric insulator comprised of a compound of said semiconductor material; said gate insulator being adjacent to said source, said drain and said substrate; said gate insulator being solid and able to withstand processing conditions;

a gate comprised of said semiconductor material, said gate being adjacent to said gate dielectric insulator, said gate dielectric insulator electrically insulating said source, said drain and said substrate from said gate;

a protective layer; said protective layer covering said source, said drain, said substrate and said gate; said protective layer having windows for electrical connection to said source, said drain, said substrate and said gate;

said substrate and said gate being vertically aligned; and

said semiconductor material being selected from the Group consisting of carbon, germanium, silicon carbide, and the non-silicon compound semiconductors.

5,602,404

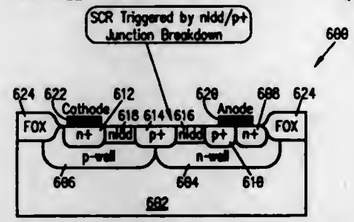
LOW VOLTAGE TRIGGERING SILICON CONTROLLED RECTIFIER STRUCTURES FOR ESD PROTECTION

Hung-Sheng Chen; Chin-Miin Shyu, and C. S. Teng, all of San Jose, Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jan. 18, 1995, Ser. No. 374,135

Int. Cl.[6] H01C *29/74;31/111;23/62*

U.S. Cl. 257—112 **4 Claims**



1. A silicon controlled rectifier (SCR) structure formed in a semiconductor substrate and utilizable for electrostatic discharge protection, the SCR structure comprising:

a first well of a first conductivity type formed in the semiconductor substrate;

a second well of a second conductivity type formed in the semiconductor substrate adjacent to the first well to define a first junction between the first and second wells;

a first heavily doped region of the first conductivity type formed in the first well;

a second heavily doped region of the second conductivity type formed in the first well adjacent to the first heavily doped region to define a second junction between the first and second heavily doped regions;

a third heavily doped region of the first conductivity type formed in the second well;

a fourth heavily doped region of the second conductivity type formed to span the first junction between the first and second wells;

a first lightly doped region of the first conductivity type formed in the first well between the second heavily doped region and the fourth heavily doped region;

a second lightly doped region of the first conductivity type formed in the second well between the third heavily doped region and the fourth heavily doped region;

a conductive anode formed over the second junction between the first and second heavily doped regions and in electrical contact therewith;

a conductive cathode formed over the third heavily doped region and in electrical contact therewith.

5,602,405

SEMICONDUCTOR DEVICE WITH BASE FORMED BY THE JUNCTION OF TWO SEMICONDUCTORS OF THE SAME CONDUCTIVE TYPE

Yoshio Terasawa, Hitachinaka, Japan, assignor to NGK Insulators, Ltd., Nagoya, Japan

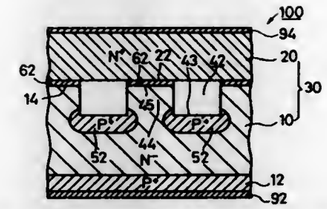
Filed Jun. 6, 1995, Ser. No. 468,823

Claims priority, application Japan, Sep. 5, 1994, 6-211008

Int. Cl.[6] H01L *29/74;31/111*

U.S. Cl. 257—136 **7 Claims**

1. In a semiconductor device including an anode, a cathode, a semiconductor substrate provided between the anode and the cathode, a base within the semiconductor substrate and a gate provided in the base for controlling a current flowing between the anode and the cathode, the improvement wherein the base is formed by the junction of two semiconductors of the same conductive type, and the junction thereof is performed through a metal layer and/or a metal silicide layer.



5,602,406

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE WITH REDUCED CLOCK SIGNAL LINE NOISE

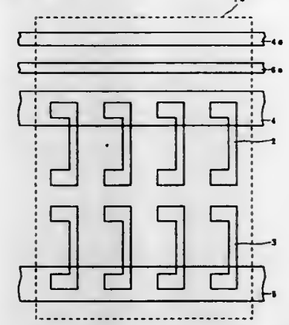
Masatomi Okabe, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 102,198, Aug. 5, 1993, abandoned. This application Aug. 21, 1995, Ser. No. 517,193

Claims priority, application Japan, Aug. 26, 1992, 4-226756

Int. Cl.[6] H01L *27/10;23/552*

U.S. Cl. 287—207 **18 Claims**



1. A macro-cell of a semiconductor integrated circuit, comprising:

a clock signal line formed in a particular level interconnection layer of multi-level-layer interconnections of said macro-cell, for transmitting a clock signal;

a first power-supply line formed in said particular level interconnection layer to be adjacent to said clock signal line, for supplying said macro-cell with a first power-supply potential;

a second power-supply line for supplying said macro-cell with a second power-supply potential different from said first power-supply potential;

a third power-supply line formed in said particular level interconnection layer to be adjacent to said clock signal line and supplied with either of said first and second power-supply potentials; and

wherein said clock signal line is placed between said first power-supply line and said third power-supply line.

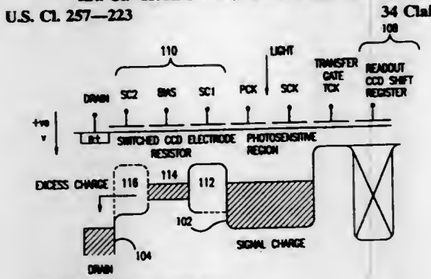
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5,602,407

SWITCHED CCD ELECTRODE PHOTODETECTOR

William D. Washkurak, and Savvas G. Chamberlain, both of Waterloo, Canada, assignors to Dalsa, Inc., Canada

Continuation of Ser. No. 251,376, May 31, 1994, abandoned.
This application Nov. 29, 1995, Ser. No. 563,752
Int. Cl.[6] H01L 27/148;29/768; G11C 19/28
U.S. Cl. 257—223 34 Claims



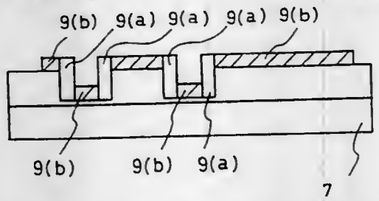
1. A photodetector comprising:
a substrate of a first conductivity type;
a drain of a second conductivity type formed in the substrate;
a collection well formed in the substrate within which photocharge is generated; and
a charge coupled device provided between the collection well and the drain and operable to transfer a portion of the photocharge from the collection well to the drain, the charge coupled device having a channel region with a central portion, a ratio of the charge coupled device being defined by a ratio of a potential difference between the collection well and the central portion and a resulting current flowing through the charge coupled device, the resulting current being proportional to the potential difference between the collection well and the central portion.

5,602,408

SEMICONDUCTOR DEVICE HAVING POLYCRYSTALLINE SILICON LOAD DEVICES

Hitomi Watanabe, and Hiroaki Takasu, both of Chiba, Japan, assignors to Seiko Instruments Inc., Japan

Filed Apr. 10, 1995, Ser. No. 419,356
Claims priority, application Japan, Apr. 25, 1994, 6-086943; Feb. 15, 1995, 7-027124
Int. Cl.[6] H01L 23/62
U.S. Cl. 257—350 19 Claims



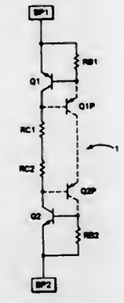
1. A semiconductor device comprising: a silicon semiconductor substrate having a step portion formed on a surface thereof; an insulating film formed at least on the step portion of the silicon semiconductor substrate; and a polycrystalline silicon layer formed uniformly on at least a side surface of the step portion of the silicon semiconductor substrate and a top surface of the insulating film, the polycrystalline silicon layer formed on the side surface of the step portion comprising a resistance element, and a portion of the polycrystalline silicon layer formed on the top surface of the insulating film being doped with an impurity to form a conductive element.

5,602,409

BIDIRECTIONAL ELECTRICAL OVERSTRESS PROTECTION CIRCUIT FOR BIPOLAR AND BIPOLAR-CMOS INTEGRATED CIRCUITS

Andrew H. Olney, Burlington, Mass., assignor to Analog Devices, Inc., Norwood, Mass.

Filed Jul. 13, 1995, Ser. No. 501,999
Int. Cl.[6] H01L 23/62
U.S. Cl. 257—362 15 Claims



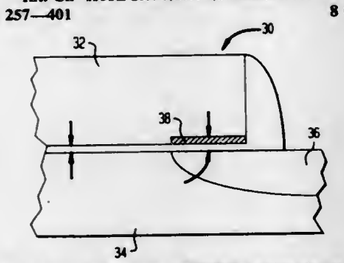
1. An electrical overstress (EOS) protection circuit connected between first and second integrated circuit (IC) terminals, comprising:
first and second contra-directed diode-connected bipolar EOS transistors of a first conductivity having emitter, base and collector terminals, connected in series between said first and second IC terminals, one of said EOS transistors having a reverse-biased junction and the other having a forward-biased junction in response to a voltage differential across said IC terminals such that said EOS circuit inhibits current flow between said IC terminals in response to a voltage differential less than the reverse breakdown voltage of said EOS transistor with a reverse-biased junction, and
first and second parasitic bipolar transistors of a second conductivity having emitter, base and collector terminals, said parasitic transistors being connected in series to provide a current path between the base terminals of said EOS transistors that actuates the EOS transistor with a reverse-biased junction during an EOS event between said IC terminals.

5,602,410

OFF-STATE GATE-OXIDE FIELD REDUCTION IN CMOS

Udo Schwalke, Heidenstein, Germany, and Wilfried Hansch, South Burlington, Vt., assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 25, 1995, Ser. No. 519,669
Int. Cl.[6] H01L 29/76;29/94;31/062;31/113
U.S. Cl. 257—401 8 Claims



1. An improved submicron MOSFET semiconductor device comprising:
a semiconductor body having a top surface;
a comparatively thin dielectric layer on said top surface forming a gate dielectric element;

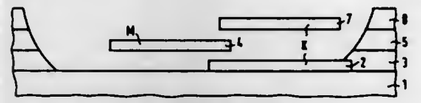
a gate electrode of doped semiconductor material on said thin dielectric layer wherein a surface potential on said semiconductor body is responsive to said gate electrode;
means for electrically isolating said gate electrode from said semiconductor body, said means comprising a high-resistivity part of said gate electrode adjoining said gate dielectric, said high-resistivity part having a sufficient doping concentration and a conductivity type wherein during the operation of the device a depletion layer is formed extending from the gate dielectric into the high-resistivity part of said gate electrode.

5,602,411

MICROMECHANICAL COMPONENT WITH A DIELECTRIC MOVABLE STRUCTURE, AND MICROSYSTEM

Thomas Zettler, München, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Apr. 28, 1995, Ser. No. 431,492
Claims priority, application Germany, Apr. 28, 1994, 44 14 969.7
Int. Cl.[6] H01L 29/82
U.S. Cl. 257—417 14 Claims



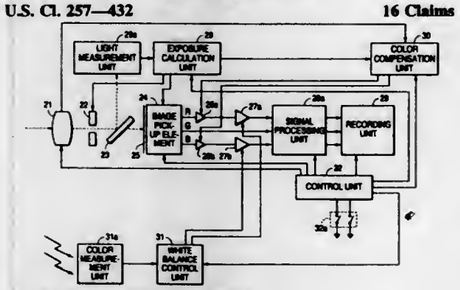
1. A micromechanical component, comprising:
a fixed micromechanical structure having a pair of capacitor plates being formed of at least one conductive layer and being spaced apart defining an interstice therebetween; and
a movable micromechanical structure formed of a dielectric layer, said dielectric layer being movable into and movable out of said interstice between said plates.

5,602,412

IMAGING DEVICE WHICH ADJUSTS THE RATIO OF COLOR EXCITATION VALUES PRODUCED BY AN IMAGE PICKUP ELEMENT IN ACCORDANCE WITH AN EXIT PUPIL POSITION AND THE SIZE OF AN APERTURE

Masahiro Suzuki, Kawasaki, and Koichiro Kawamura, Ichihara-shi, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Aug. 15, 1995, Ser. No. 515,424
Claims priority, application Japan, Aug. 15, 1994, 6-191640; Feb. 14, 1995, 7-025463
Int. Cl.[6] H01L 31/00
U.S. Cl. 257—432 16 Claims



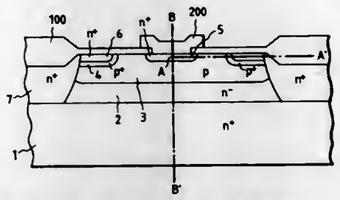
1. An imaging device, comprising:
an optical unit which passes light from a subject, the optical unit having an exit pupil position;
an image pickup element having a light receiving side and an on-chip micro-lens arranged on the light receiving side, the image pickup element receiving, on the light receiving side, the light from the subject passing through the optical unit, and producing an image signal from the received light, the image signal having corresponding color excitation values; and
a color compensation mechanism adjusting a ratio of the color excitation values of the image signal produced by the image pickup element by adjusting at least one of the color excitation values in correspondence with the exit pupil position of the optical unit.

5,602,413

AVALANCHE PHOTOTRANSISTOR

Masakazu Morishita, Atsugi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 627,303, Dec. 14, 1990, abandoned.
This application May 7, 1993, Ser. No. 57,455
Claims priority, application Japan, Dec. 15, 1989, 1-324987
Int. Cl.[6] H01L 31/11
U.S. Cl. 257—438 6 Claims



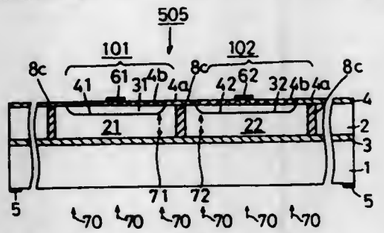
1. A photoelectric conversion device comprising:
an emitter region of a first conductivity type;
a base region of a second conductivity type opposite to the first conductivity type, said base region having (1) a first base section arranged adjacent to and below said emitter region, and (2) a second base section of an impurity concentration higher than that of said first base section, said second base section arranged adjacent to an upper portion of said first base section and above a lower portion of said first base section, separated from said emitter region by said upper portion of said first base section; and
a collector region of the first conductivity type, having (1) a first collector section, an impurity concentration of which is lower than that of said first base section, arranged substantially below said first base section, (2) a second collector section, an impurity concentration of which is higher than that of said first base and collector sections, arranged adjacent to an upper portion of said second base section and above a lower portion of said second base section to form a junction with said second base section, and separated from said first base section by said upper portion of said second base section, and (3) a third collector section, an impurity concentration of which is also higher than that of said first base and collector sections, arranged adjacent to said second collector section, said second base section, said first base section and said first collector section, in that order
wherein said second base section is made sufficiently thin so that when a voltage of less than an avalanche breakdown voltage is applied across the junction between said second base section and said second collector section a depletion layer extends from that junction into said first base section.

5,602,414

INFRARED DETECTOR HAVING ACTIVE REGIONS AND ISOLATING REGIONS FORMED OF CDHGTE

Kotaro Mitsui; Zenpei Kawazu; Kazuo Mizuguchi; Seiji Ochi; Yuji Ohkura; Norio Hayafuji; Hirotaka Kizuki; Mari Tsugami; Akihiro Takami, and Manabu Katoh, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 16, 1994, Ser. No. 260,791
Claims priority, application Japan, Jun. 18, 1993, 5-147162
Int. Cl.[6] H01L 31/00
U.S. Cl. 257—442 7 Claims



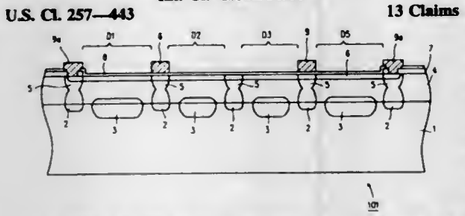
1. An infrared detector comprising:
a semiconductor substrate of a first conductivity type and having opposite front and rear surfaces;
a first CdHgTe layer of the first conductivity type having a first Cd concentration and disposed on the front surface of the semiconductor substrate;
a second CdHgTe layer of the first conductivity type having a second Cd concentration lower than the first concentration of Cd and disposed on the first CdHgTe layer;
a plurality of spaced apart first CdHgTe regions of a second conductivity type, opposite the first conductivity type, disposed in the second CdHgTe layer and having a third Cd concentration;
at least one second CdHgTe region of the first conductivity type extending transverse to the substrate through the second CdHgTe layer to the first CdHgTe layer, separating respective first CdHgTe regions from each other, and having a fourth Cd concentration larger than the second Cd concentration; and
a third CdHgTe layer disposed on and covering the second CdHgTe layer and the first and second CdHgTe regions, having a fifth Cd concentration larger than the second Cd concentration, having the second conductivity type opposite the first CdHgTe regions, and the first conductivity type elsewhere.

5,602,415

LIGHT RECEIVING DEVICE WITH ISOLATION REGIONS

Masaru Kubo, Kitakatsuragi-gun; Naoki Fukunaga, Tenri, and Motohiko Yamamoto, Ikoma-gun, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 2, 1995, Ser. No. 458,772
Claims priority, application Japan, Jul. 14, 1994, 6-162412
Int. Cl.[6] H01L 31/00
U.S. Cl. 257—443 13 Claims



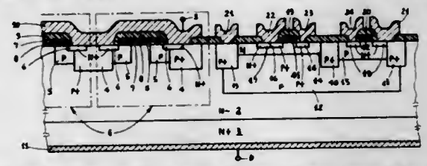
1. A light receiving device comprising: a semiconductor substrate of a first conductivity type;
a first semiconductor layer of a second conductivity type formed on said semiconductor substrate;
isolation regions of the first conductivity type extending from a surface of said first semiconductor layer remote from said substrate into said semiconductor substrate, said isolation regions splitting said first semiconductor layer into a plurality of first semiconductor regions of the second conductivity type;
a portion of said isolation regions of the first conductivity type which extends into said semiconductor substrate having a higher impurity density than that of said semiconductor substrate;
said plurality of first semiconductor regions of the second conductivity type and portions of the semiconductor substrate of the first conductivity type below said plurality of first semiconductor regions forming a plurality of light detecting photodiode portions for detecting signal light respectively, and
second semiconductor regions of the second conductivity type buried in a part of said portions of said semiconductor substrate forming the light detecting photodiode portions, said second semiconductor regions being positioned in the vicinity of the portion of the isolation region which extends into said substrate, extending into said plurality of first semiconductor regions of the second conductivity type and having a higher impurity density than that of said plurality of first semiconductor regions of the second conductivity type, such that the diffusion length for optical carriers in the vicinity of the isolation region is reduced.

5,602,416

POWER INTEGRATED CIRCUIT ("PIC") STRUCTURE

Raffaele Zambrano, San Giovanni La Punta, Italy, assignor to Consorzio per la Ricerca sulla Microelettronica nel Mezzogiorno, Catania, Italy

Filed May 17, 1995, Ser. No. 443,053
Claims priority, application European Pat. Off., May 19, 1994, 94830229
Int. Cl.[6] H01L 29/00;29/76;29/94
U.S. Cl. 257—500 20 Claims



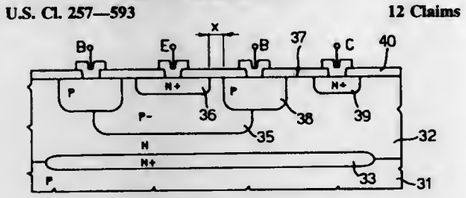
1. A PIC structure comprising a lightly doped semiconductor layer of a first conductivity type, superimposed over a heavily doped semiconductor substrate of the first conductivity type, wherein a power stage and a driving and control circuit are integrated, the power stage comprising at least one heavily doped deep body region of the second conductivity type and at least one body region of the second conductivity type extending from the top surface of the lightly doped layer thereinto, and the driving and control circuitry comprising first conductivity type-channel MOSFETs and second conductivity type-channel MOSFETs respectively formed inside second conductivity type well regions and first conductivity type well regions which are included in at least one isolated lightly doped region of the first conductivity type completely surrounded and isolated from the lightly doped layer of the first conductivity type by means of a respective isolation region of a second conductivity type comprising a first, buried region of the second conductivity type, and a second, heavily doped annular region of the second conductivity type extending from a top surface of the lightly doped layer to said buried region, laterally delimiting said isolated lightly doped region of the first conductivity type, wherein said annular region and said at least one deep body region have a same depth with respect to a top surface of the lightly doped semiconductor layer.

5,602,417

LOW-NOISE BIPOLAR TRANSISTOR OPERATING PREDOMINANTLY IN THE BULK REGION

Flavio Villa, Milan, Italy, assignor to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Filed Sep. 26, 1994, Ser. No. 312,386
Claims priority, application European Pat. Off., Sep. 27, 1993, 93830393; Jul. 21, 1994, 94830370
Int. Cl.[6] H01L 27/082;27/102
U.S. Cl. 257—593 12 Claims



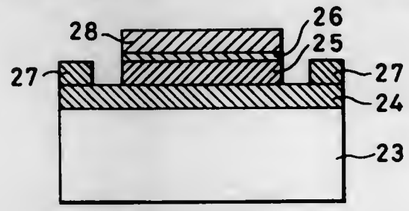
1. A low noise bipolar transistor formed in a layer of semiconductor material having a surface portion and a deeper bulk portion, the transistor comprising:
an N+ emitter region;
a P– base well portion surrounding said N+ emitter region;
an N+ collector region; and
a P annular region located adjacent the surface portion and laterally surrounding, at a lateral distance at least equal to the bulk depletion depth in said base well portion, about the emitter region; wherein,
said N+ emitter region is in the surface portion, and a portion of said P-base well portion is located between the annular region and the N+ emitter region such that the transistor operates predominantly in the bulk portion when in a conducting state.

5,602,418

NITRIDE BASED SEMICONDUCTOR DEVICE AND MANUFACTURE THEREOF

Hideaki Imai, Fuji; Kunio Miyata, Kyoto, and Tadahiko Hirai, Koganei, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP92/01016, § 371 Date Sep. 22, 1994, § 102(e) Date Sep. 22, 1994, PCT Pub. No. WO94/03931, PCT Pub. Date Feb. 17, 1994
PCT Filed Aug. 7, 1992, Ser. No. 211,322
Int. Cl.[6] H01L 27/15;33/00;29/04
U.S. Cl. 257—627 24 Claims



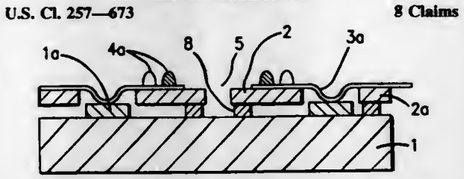
1. A nitride semiconductor device comprising:
a substrate;
a first layer of an oriented polycrystalline nitride semiconductor of less than 5000 Angstroms thickness disposed directly on said substrate;
an operating layer of a single crystal nitride semiconductor disposed directly on said first layer; and
at least two electrical terminals connected at predetermined locations, at least one of said terminals being connected directly to said first layer.

5,602,419

CHIP CARRIER SEMICONDUCTOR DEVICE ASSEMBLY

Hidetoshi Takeda, and Manabu Bonkohara, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Dec. 16, 1994, Ser. No. 358,005
Claims priority, application Japan, Dec. 16, 1993, 5-317080
Int. Cl.[6] H01L 23/495
U.S. Cl. 257—673 8 Claims



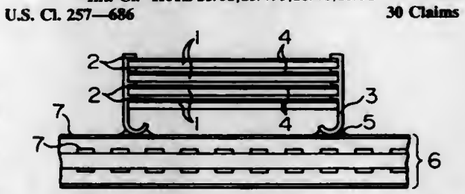
1. A chip carrier semiconductor device assembly comprising:
a packaging substrate;
a semiconductor chip having a surface on which a plurality of contact pads are provided;
a plurality of spacers provided on said semiconductor chip, said plurality of spacers having the same height as said contact pads;
a tape carrier provided on said spacer to form a space between said top surface of said chip and said tape carriers said tape carrier having a center opening positioned at a center of said semiconductor chip and a peripheral opening region which encompasses said center opening, said peripheral opening region being spaced apart from said center opening, said peripheral opening region being positioned over said contact pads, said tape carrier being divided into an inner section which is positioned inside said peripheral opening region and outside said center opening and an outer section which is positioned outside said peripheral opening region, said tape carrier having a bottom surface which is positioned at substantially the same level as said top surface of said contact pads; and
a plurality of leads provided over said tape carrier, each of said leads extending from said top surface of said inner section of said tape carrier across said peripheral opening region onto said outer section of said tape carrier, each of said leads being securely bonded onto both said inner and outer sections of said tape carrier, and each of said leads having a V-shaped bent portion in said peripheral opening, said bent portion falling onto said top surface of said contact pad so that a bottom of said bent portion contacts said top surface of said contact pad, said bent portion having a difference in level substantially equal to a thickness of said tape carrier.

5,602,420

STACKED HIGH MOUNTING DENSITY SEMICONDUCTOR DEVICES

Masatsugu Ogata, Hitachi; Teruo Kitamura, Katsuta; Shuji Eguchi, Ibaraki-ken, and Kenji Akeyama, Gunma-ken, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 117,933, Sep. 7, 1993, abandoned.
This application Apr. 27, 1995, Ser. No. 429,463
Claims priority, application Japan, Sep. 7, 1992, 4-238015
Int. Cl.[6] H01L 23/02;23/495;23/48;23/52
U.S. Cl. 257—686 30 Claims



1. A high mounting density semiconductor device comprising a stack of a plurality of semiconductor elements, stacked in a first

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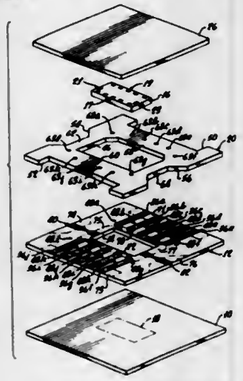
direction, mounted on a mounting board, each semiconductor element having bumps respectively deposited on electrodes formed on marginal edges of a first surface of each of the plurality of semiconductor elements, the device further including a plurality of corresponding leads disposed closely adjacent to said stack of a plurality of semiconductor elements and extending only in said first direction alongside said stack, with projections extending from the leads for bonding to the bumps, a respective lead being electrically connected to bumps on at least two of the semiconductor elements, said leads being bonded to said bumps respectively so that each of the leads is electrically bonded directly to corresponding bumps of said plurality of semiconductor elements, thereby electrically integrally assembling said plurality of semiconductor elements, wherein said bumps on at least two of the semiconductor elements, to which the respective lead is electrically connected, are on respective faces of the at least two of the semiconductor elements, said respective faces each facing in a same direction, whereby first surfaces of the at least two of the semiconductor elements face in the same direction, and wherein said stack is mounted on said mounting board via said leads.

5,602,421

MICROWAVE MONOLITHIC INTEGRATED CIRCUIT PACKAGE WITH IMPROVED RF PORTS

Kuo-Hsin Li, Irvine, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jan. 31, 1995, Ser. No. 381,379
Int. Cl.[6] H01L *29/40;23/34;23/04*
U.S. Cl. 257—728 **19 Claims**



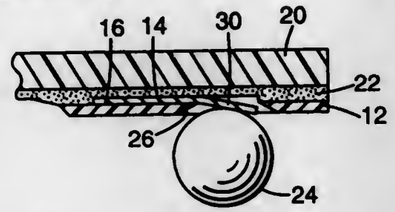
1. A high frequency integrated circuit chip package comprising:
an electrically conductive base,
a dielectric substrate having an opening therein and bonded to said base,
a package wall section bonded to said substrate and circumscribing said opening wherein said wall section includes a rail,
a lid adapted to be bonded to said package wall section,
a plurality of conductive traces formed on said dielectric substrate and positioned between a portion of said substrate and said wall section, at least some of said traces forming an input/output transmission line having a series connected microstrip line trace section, a shielded strip line trace section, and a capacitor trace section wherein an intermediate line section of said input/output transmission line is covered by said rail of said wall section and inner and outer line sections of said input/output transmission line are exposed,
a plurality of vias extending through said wall section and substrate between said lid and base, and
an electrically conductive filling in said vias.

5,602,422

FLEXIBLE LEADS FOR TAPE BALL GRID ARRAY CIRCUIT

Randolph D. Schueller, Austin, and David J. Windschitl, Leander, both of Tex., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Jun. 16, 1995, Ser. No. 491,229
Int. Cl.[6] H01L *23/48;23/52;29/40*
U.S. Cl. 257—738 **2 Claims**



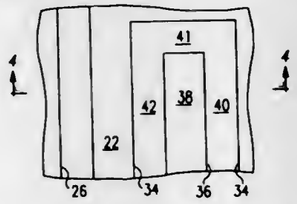
1. A flexible circuit for attachment to a printed circuit board, said flexible circuit comprising:
a base comprising a flexible polymeric sheet, said base having two major surfaces;
a via hole through said base;
a conductive trace disposed on a first major surface of said base and defining electrical circuitry terminating at a cantilever end spanning a portion of said via hole, said cantilever end being angularly displaced from said conductive trace to extend into said via hole;
an elongate slit terminating at one end thereof at said via hole to permit greater movement of said cantilever end relative to the plane of said flexible polymeric sheet; and
a solder ball attached to said cantilever end from a second major surface of said base such that a subsequent attachment of a printed circuit board to said flexible circuit from said second major surface will accommodate physical displacement of said flexible circuit and said printed circuit board.

5,602,423

DAMASCENE CONDUCTORS WITH EMBEDDED PILLARS

Manoj K. Jain, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 333,015, Nov. 1, 1994. This application Jun. 7, 1995, Ser. No. 479,989
Int. Cl.[6] H01L *29/40;23/48;23/52*
U.S. Cl. 257—752 **4 Claims**



1. A semiconductor device having a damascene metallization structure thereon, said structure comprising:
an insulating layer formed on a substrate, said insulating layer having a substantially planar upper surface with a plurality of channels formed therein;
at least one pillar formed within said channels and extending substantially to the level of said upper surface; and

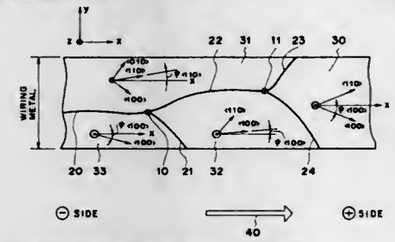
conductors inlaid in said channels such that the top surface of said conductors is substantially coplanar with said insulating layer upper surface, at least one of said conductors comprising a set of contiguous conducting segments inlaid such as to surround said pillar.

5,602,424

SEMICONDUCTOR CIRCUIT DEVICE WIRING WITH F.C.C. STRUCTURE, PLANE ORIENTION (100) AND ALIGNED WITH THE CURRENT DIRECTION

Kazuo Tsubouchi, 30-38, Hitokita 2-chome, Taihaku-ku, Sendai-shi, Miyagi-ken; Tadahiro Ohmi, 1-17-301, Komegafukuro 2-chome, Aoba-ku, Sendai-shi, Miyagi-ken; Yohei Hiura, 14-10-345, Shinkoyasu 2-chome, Kanagawa-ku, Yokohama-shi, Kanagawa-ken, and Kazuya Masu, 3-3-201, Mikamine 1-chome, Taihaku-ku, Sendai-shi, Miyagi-ken, all of Japan

Continuation of Ser. No. 872,051, Apr. 22, 1992, abandoned. This application Jan. 18, 1994, Ser. No. 182,389
Claims priority, application Japan, Apr. 25, 1991, 3-095558
Int. Cl.[6] H01L *29/417*
U.S. Cl. 257—771 **3 Claims**



1. A semiconductor circuit device comprising:
a semiconductor body;
an insulating film provided on said body;
a contact hole formed in said insulating film;
a conductor buried in said contact hole; and
a wiring provided on both of said conductor and said insulating film;
wherein said wiring comprises a face-centered cubic lattice structure of a single crystal metal having a plane orientation (**100**), and the crystal axis direction along which nearest neighboring atoms in said single crystal metal are arranged and the electric current direction through said wiring cross each other at an angle of 22.5° or less.

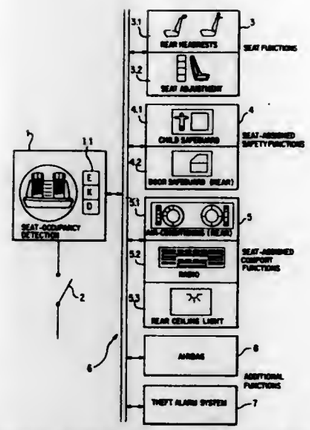
5,602,425

MOTOR VEHICLE SEAT-OCCUPANCY-DETECTION DEVICE

Volker Wilhelmi, Esslingen, and Ernst Maier, Stuttgart, both of Germany, assignors to Mercedes-Benz AG, Germany

Filed Nov. 16, 1994, Ser. No. 343,889
Claims priority, application Germany, Nov. 16, 1993, 43 39 113.3
Int. Cl.[6] B60K *28/04*
U.S. Cl. 307—10.1 **14 Claims**

1. Arrangement for controlling safety, comfort and seat functions with respect to seats of a vehicle, comprising:
a plurality of sensors for detecting occupancy and loading of a vehicle seat, a separate such sensor being assigned to each of a plurality of respective seats of said vehicle;
first means for actuating seat functions for at least one vehicle seat in response to detected loading of said vehicle seat;
second means for actuating safety functions for said at least one vehicle seat in response to detected loading of such vehicle seat; and



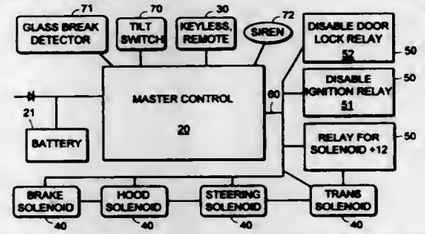
third means for actuating comfort functions for said at least one vehicle seat in response to detected occupancy or nonoccupancy of said vehicle seat.

5,602,426

AUTOMOTIVE THEFT-PREVENTION SYSTEM USING A KEY PAD AND A REMOTE SIGNALING MODULE

Ernest Ecker, 45 Washington St., Holliston, Mass. 01746

Filed May 19, 1995, Ser. No. 445,253
Int. Cl.[6] B60R *25/00*
U.S. Cl. 307—10.2 **2 Claims**



1. A method for providing security to a motor vehicle having a passenger door and a driver's door, the method comprising the steps of:
providing a security system having a plurality of solenoid-actuated locking mechanisms for locking engagement with critical components of the motor vehicle, a plurality of relay switches for disabling particular components of the motor vehicle, a master control unit having a digital key pad, a remote signaling module having an activation button for transmitting an activation signal to the master control unit and a deactivation button for transmitting a deactivation signal to the master control unit, and means for relaying the activation and deactivation signals from the master control unit to the plurality of solenoid-actuated locking mechanisms and plurality of relay switches;
remotely transmitting the activation signal to the master control unit by depressing the activation button on the remote signaling module;
relaying the activation signal from the master control across the relaying means to the plurality of solenoid-actuated locking mechanisms and the plurality of relay switches;
urging the solenoid-actuated locking mechanisms into locking engagement with the critical components of the motor vehicle by using the activation signal;

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disabling particular components of the motor vehicle by using the activation signal to disengage the relay switches;

remotely transmitting the deactivation signal to the master control unit by depressing the deactivation button once on the remote signaling module;

unlocking the driver's door on the motor vehicle;

operating the digital key pad to enter a security code into the master control unit to deactivate the system; and

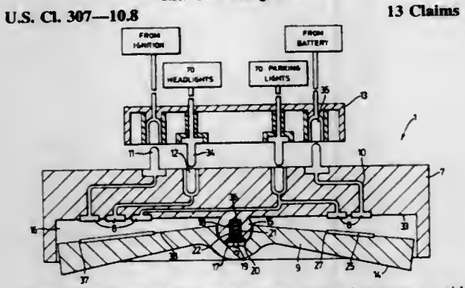
unlocking the passenger door, disengaging the solenoid-actuated locking mechanisms, and enabling the relay switches by depressing the deactivation button a second time.

5,602,427

VEHICLE LIGHTING SWITCH

Risto E. Dimitriev, 100 Gowan Avenue, Apt. #701, Toronto, Ontario, Canada

Filed Jul. 28, 1995, Ser. No. 508,962
Int. Cl.[6] B60Q *1/04*
U.S. Cl. 307—10.8 **13 Claims**



1. A lighting switch for use in a vehicle lighting system, said vehicle lighting system including headlights, parking lights, an ignition switch, a storage battery and wire means connecting said lighting switch, headlights, parking lights, ignition switch and battery together in a circuit, the lighting switch comprising:

a switch housing, said switch housing being releasably secured to the dash of a vehicle through the use of a mounting plate that includes electrically conductive posts and receptacles that mesh with corresponding electrically conductive posts and receptacles on said switch housing to secure said switch housing to said mounting plate, said posts and receptacles forming part of the electrical circuit of said vehicle lighting system;

a plurality of electrical contacts on said switch housing, at least one separate electrical contact being electrically bonded to each of said vehicle headlights, parking lights, ignition switch and battery such that said headlights and said parking lights are electrically isolated from one another and from said ignition switch and said battery thereby preventing the flow of electricity between said headlights and said parking lights, between said headlights and said ignition switch and said battery, and between said parking lights and said ignition switch and said battery, except through the forming of electrical connections between said contacts; and,

a three position manually operable contact engaging means having a first position, a second position and a third position, movement of said manually operable contact engaging means between said first, second and third positions creating and breaking electrical connections between said electrical contacts;

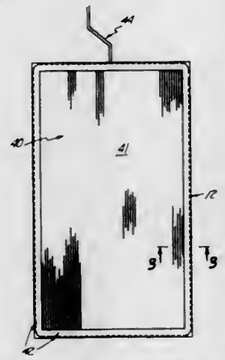
wherein said manually operable contact engaging means when in said first position prevents electrical energy from flowing to either said headlights or said parking lights, said manually operable contact engaging means when in said second position permits electrical energy to flow from said battery to said parking lights with said headlights being electrically isolated from said battery and said ignition switch, and said manually operable contact engaging means when in said third position permits electrical energy to flow from said ignition switch to both said headlights and said parking lights, said lighting switch thereby preventing the flow of electrical energy directly from said battery to said headlights such that electrical energy is only able to flow to said headlights when said manually operable contact engaging means is in said third position and said ignition switch is turned on thereby prohibiting the leaving of said headlights on when said ignition switch is turned off and the inadvertent discharge of the storage battery.

5,602,428

SWITCH MAT WITH ACTIVE THRESHOLD

Joseph F. Schultz, and Duane M. Jensen, both of Brainerd, Minn., assignors to Acrometal Companies, Inc., Plymouth, Minn.

Filed Jun. 7, 1995, Ser. No. 484,652
Int. Cl.[6] H01H *35/00*
U.S. Cl. 307—119 **40 Claims**



1. A pressure sensitive switch mat capable of interconnection with other such switch mats on all sides to eliminate non-activation zones, the switch mat having a bottom surface and a top surface, the top surface including a main activation portion and an activation edge on all sides of the top surface, the activation edge surrounding and connecting to the main activation portion and the activation edge comprising:

a connector retaining lip;

an actuation platform connected to the retaining lip such that an actuation force applied to the actuation platform actuates the switch mat; and

an end portion connecting the actuation platform to the bottom surface of the switch mat.

5,602,429

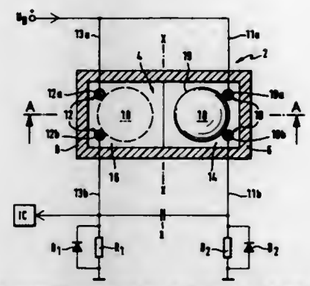
SAFETY SHUT-OFF DEVICE

Heinz Scgiebelhuth, Frankfurt, Germany, assignor to Braun Aktiengesellschaft, Kronberg, Germany

Filed Apr. 6, 1995, Ser. No. 417,925
Claims priority, application Germany, Apr. 9, 1994, 44 12 294.2
Int. Cl.[6] H01H *35/02*
U.S. Cl. 307—121 **17 Claims**

1. A pressing iron including a sensing assembly for signaling when the pressing iron is in use, said sensing assembly comprising:

an inclination sensor including a movable actuating member, and



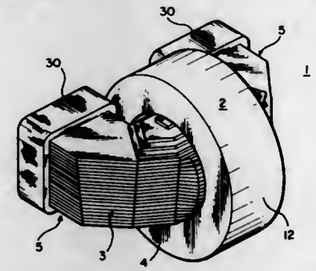
a displacement sensor sharing said movable actuating member with said inclination sensor, wherein said movable actuating member moves in response to an inclination of the pressing iron thereby causing the inclination sensor to detect when the pressing iron has been inclined at an angle at least equal to a predetermined angle relative to a horizontal plane, and moves in response to an acceleration of the pressing iron associated with an ironing motion of the pressing iron thereby causing the displacement sensor to detect when the pressing iron is in use.

5,602,430

SUPERCONDUCTING ELECTROMAGNET ARRANGEMENT FOR A MAGNETIC LEVITATION SYSTEM

Swarn S. Kalsi, Fort Salonga, and Michael Proise, Garden City, both of N.Y., assignors to Grumman Aerospace Corporation, Los Angeles, Calif.

Filed May 23, 1994, Ser. No. 247,599
Int. Cl.[6] B60L *13/00*; H02K *41/00*
U.S. Cl. 310—12 **36 Claims**



1. An electromagnet arrangement for providing magnetic forces for levitating and propelling a magnetic levitation vehicle along a magnetically permeable guide rail, the electromagnet arrangement comprising:

a magnetically permeable core having a plurality of magnetic poles facing the rail, the poles being separated from the rail by an air gap of a predetermined length;

at least one high-critical-temperature superconducting coil surrounding the core for inducing a magnetic field in the core to cause the poles of the core to become attracted to the rail when current is supplied to the coil; and

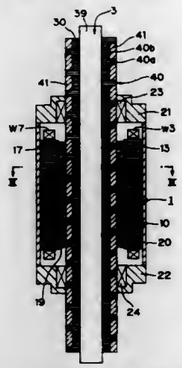
a plurality of control coils surrounding respectively the magnetic poles of the core, said control coils receiving excitation current in response to a change in the air gap length between the poles and the rail for effecting an increase in the magnetic forces of attraction between the core poles and the rail, said excitation current being supplied in an amount commensurate with an amount required to correct the air gap length between the poles and the rail back to said predetermined length, wherein the control coils are HTS coils operated in AC mode.

5,602,431

LINEAR MOTOR

Hirobumi Satomi, and Takao Iwasa, both of Kashiwa, Japan, assignors to Oriental Motor Co., Ltd., Tokyo, Japan

Filed Sep. 29, 1994, Ser. No. 315,063
Claims priority, application Japan, Sep. 29, 1993, 5-242372
Int. Cl.[6] H02K *41/02*
U.S. Cl. 310—14 **3 Claims**



1. A linear motor comprising a stator including a stator core having an even number of salient poles disposed at an equal pitch angle radially inward and windings wound on said salient poles individually and a mover including a mover core disposed within said stator to be supported movably in the shaft direction and having a plurality of mover teeth disposed on an outer peripheral surface thereof in the shaft direction, characterized in that

a plurality of permanent magnet poles magnetized radially to have polarities different alternately in the shaft direction are disposed at an equal pitch on inner peripheral surfaces of said salient poles of said stator core and said mover teeth are disposed at a pitch equal to twice the disposition pitch of said permanent magnet poles, said mover core being formed by laminating mover core elements each formed by laminating a predetermined number of mover iron plates of said mover core with said mover core elements being rotated sequentially by an angle determined by an arrangement of teeth disposed on outer peripheral portions of said mover iron plates, said stator salient poles being constituted by pairs of said salient poles adjacent to each other and including m sets of salient pole groups each composed of (N/m) salient poles disposed uniformly at an angle of (720 m/N) degrees where the number of salient poles is N and the phase number of said motor is m, said windings wound on (N/m)−1 or (N/m)−2 salient poles belonging to said salient pole groups being connected to have opposite polarities to each other between said pair of salient poles and being connected to have the same polarity to each other between said salient poles which do not constitute said pair of salient poles and are disposed opposite to each other to interpose said salient pole pair belonging to other salient poles therebetween to constitute phase windings for m phases, remaining salient poles which do not participate in phase configuration of said salient pole group for the phases being caused to detect a position in the shaft direction and a movement direction of said mover as sensor poles, whereby said linear motor can be operated as an m-phase linear pulse motor or a brushless DC linear motor.

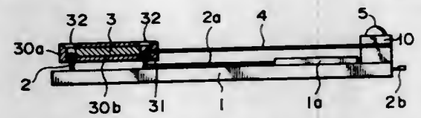
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5,602,432

SILENT WARNING VIBRATION GENERATOR FOR PORTABLE EQUIPMENT

Nagao Mizutani, Sayama, Japan, assignor to Sayama Precision Industries Co., Ltd., Saitama, Japan

Filed Aug. 10, 1994, Ser. No. 288,566
Claims priority, application Japan, Aug. 11, 1993, 5-220657
Int. Cl.[6] H02K *33/00*
U.S. Cl. 310—15 12 Claims



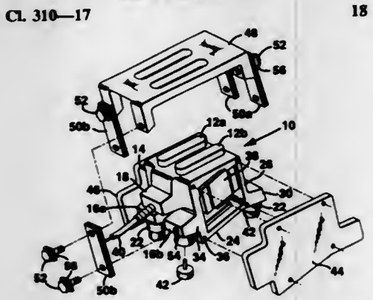
1. A silent warning vibration generator for a portable equipment, comprising:
(a) a base;
(b) an internal movable member vibratably supported on said base via a single leaf spring and having a disc-shape inner yoke, an outer yoke situated outside said inner yoke with a magnetic gap, and a permanent magnet for causing magnetic flux in said magnetic gap; and
(c) a coil mounted on said base so as to cross the magnetic flux in said magnetic gap, whereby said internal movable member will vibrate when an electric current flows In said coil.

5,602,433

MODULAR DRIVE COMPONENT FOR A VIBRATORY FEEDER DEVICE

David A. Brence, Blairsville, and Kenneth M. Marshall, Indiana, both of Pa., assignors to FMC Corporation, Chicago, Ill.

Filed Nov. 10, 1994, Ser. No. 339,225
Int. Cl.[6] H02K *33/12*
U.S. Cl. 310—17 18 Claims



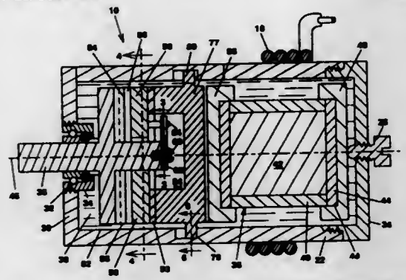
1. In a vibratory device including a first mass, a second mass, spring means connecting said first mass to said second mass, motion inducing means carried by one of said first or second masses, the improvement comprising:
said first mass comprising at least one core mass, at least a first select mass secured to one end of said at least one core mass and a second select mass secured to another end of said at least one core mass;
wherein the sum of the mass of said select masses and said core mass is ratioed to the mass of said second mass to produce a corresponding displacement ratio between said first and second masses.

5,602,434

PULSE CONTROLLED MOTION CONVERSION SYSTEM FOR MAGNETOSTRICTIVE MOTOR

Harold R. Riedl, Adelphi, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 31, 1995, Ser. No. 414,884
Int. Cl.[6] H02K *41/06;7/06*
U.S. Cl. 310—26 7 Claims



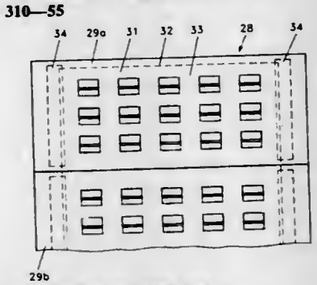
1. In a motor system having a rotor, a magnetostrictive element and means for producing a cyclically pulsating magnetic field inducing axial deformation of the magnetostrictive element; a mechanism for converting the axial deformation of the magnetostrictive element into unidirectional angular movement of the rotor, comprising: rotatable transmitting means for imparting torque to the rotor, means responsive to relative angular displacement between the rotor and the transmitting means from a limit position for angularly biasing return of the transmitting means to said limit position, and clutch means responsive to said axial deformation of the magnetostrictive element for displacing the transmitting means from the limit position relative to the rotor to induce the torque imparted to the rotor.

5,602,435

GAS-COOLED ELECTRICAL MACHINE

Markus Iseli, Mülligen, Switzerland; Lothar Koppetsch, Mannheim Vogelstrang, Germany, and Hans Zimmermann, Mönchaltorf, Switzerland, assignors to ABB Management AG, Baden, Switzerland

Filed Aug. 17, 1994, Ser. No. 291,829
Claims priority, application Switzerland, Aug. 17, 1993, 02449/93
Int. Cl.[6] H02K *9/00;9/06;1/32*
U.S. Cl. 310—55 5 Claims



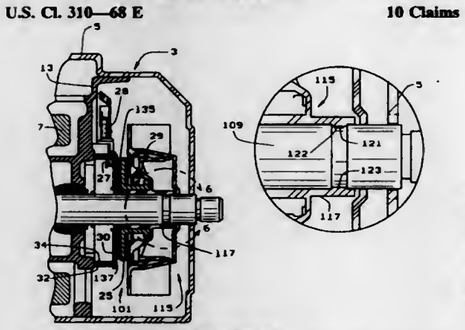
2. An electrical machine comprising:
a foundation having a foundation pit with coolers therein;
a housing mounted on said foundation;
a rotor in said housing;
a stator in said housing, said stator having a laminated stator core and winding conductors arranged in slots on an internal circumference of the laminated stator core, the laminated stator core comprising individual laminated core elements separated from one another by spacer webs to form radial cooling slits;
cold gas chambers positioned in said housing at an external circumference of said laminated stator core;
hot gas chambers positioned in said housing between an external circumference of said laminated stator core and said housing for receiving hot gas from said radial cooling slits;
perforations formed in at least one metal plate in said housing, and located between said stator and said coolers, for permitting the hot gas in said hot gas chambers to flow to said coolers in said foundation pit so as to be cooled;
means for circulating the cooled gas in said foundation pit to said cold gas chambers; and
at least one restrictor device at said perforations for restricting and controlling the flow of hot gas from said hot gas chambers to said coolers,
wherein the at least one metal plate comprises a plurality of plate elements which are spaced apart from one another and leave a gap free between them.

5,602,436

MOTOR STARTING SWITCH WITH ADJUSTABLE RUNNING CLEARANCE

Jeffrey S. Sherman, and Raymond D. Hellman, both of St. Louis, Mo., assignors to Emerson Electric, Co., St. Louis, Mo.

Continuation of Ser. No. 130,662, Oct. 1, 1993, abandoned.
This application Apr. 19, 1996, Ser. No. 636,846
Int. Cl.[6] H02K *11/00*
U.S. Cl. 310—68 E 10 Claims



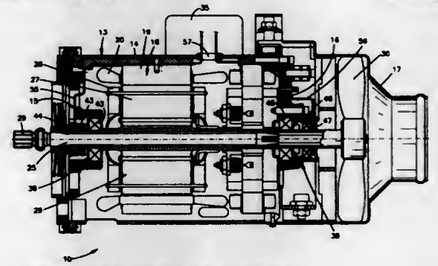
1. A dynamoelectric machine having
a stator, said stator including a main winding and an auxiliary winding, a rotor rotatably journaled with respect to the stator, and a rotor shaft having a longitudinal axis extending axially from said rotor;
a starting switch operable to de-energize said auxiliary winding upon the motor obtaining a predetermined speed; and
a centrifugal actuator mounted on said rotor shaft and operatively connected to said starting switch for actuation of said switch in response to said rotor obtaining said predetermined speed; said centrifugal actuator including:
a sleeve journaled on said shaft for rotation therewith;
a switch engaging member slidably journaled on said sleeve for axial movement with respect to said sleeve, said switch engaging member having a circular flange at a top thereof, said flange having an upper surface; and
a contact which is engaged by said switch engaging member when said motor obtains said predetermined speed, said contact being spaced a predetermined distance from said switch engaging member flange;
a single radially inwardly projecting finger of a predetermined shape on said sleeve and a single corresponding groove in said shaft, said groove being correspondingly shaped to said single finger and receiving said finger, said finger and groove cooperating to prevent inadvertent longitudinal movement of said sleeve with respect to said shaft to maintain said distance between said contact and said switch engaging member; and
a brake for stopping rotation of said rotor upon the removal of power to the dynamoelectric machine, said brake functioning as a shim, said brake including a plurality of loose, with respect to each other and said actuator, non-attached parts positioned adjacent said flange.

5,602,437

BEARING FAILURE DETECTOR FOR ELECTRIC GENERATOR

Mohammad Shahamat, Stow, and Stephen F. Brucker, Aurora, both of Ohio, assignors to Lucas Aerospace Power Equipment Corporation, Aurora, Ohio

Filed Jul. 27, 1994, Ser. No. 281,241
Int. Cl.[6] H02K *7/08;11/00;* G08B *21/00*
U.S. Cl. 310—90 5 Claims



1. An electrical generator which comprises:
a housing assembly;
a stator assembly fixedly mounted with respect to the housing assembly;
a bearing assembly supported by housing assembly, the bearing assembly including main bearings having an internal clearance;
a shaft supported for rotation in the bearing assembly and extending through the housing assembly;
a rotor assembly mounted on the shaft for rotation therewith inside the stator assembly; and
a bearing failure detector comprising
a ring of an electrically conductive material which encircles the shaft and having a central opening through which the shaft extends, the ring directly contacting the shaft when the internal clearance of the main bearings has been enlarged by a predetermined amount, which enlargement indicates the need for replacement of the bearings,
a lead permanently affixed to the ring at a connection point for connecting the detector to a control circuit to electrically sense contact of the ring by the shaft, and
a layer of electrically insulating material coating the ring to insulate the ring from components of the generator other than the shaft, the coating layer of electrically insulating material completely encasing the ring and the connection point except along the central opening where the ring is capable of directly contacting the shaft to expose the electrically conductive material around the entire periphery of the central opening.

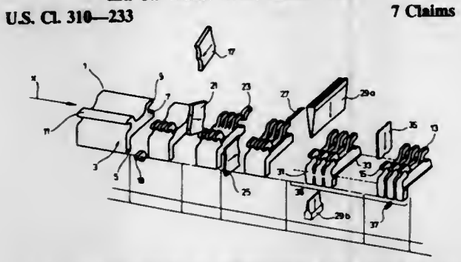
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5,602,438

ROLL COMMUTATOR FOR ELECTRIC MOTORS AND DYNAMOS, AND METHOD OF MANUFACTURING IT

Ludwig Reinsecker, Ludwigsburg-Pflugfelden; Martin Schwertle, Schwieberdingen; Winfried Brettmann, Bad Salzdetfurth; Friedrich Behrens, Diekholzen; Hans Delerling, Hildesheim; Peter Franz, Diekholzen; Siegfried Hauptmann, Hildesheim; Claus Pollack, Bettrum, and Stefan Ossenkopp, Hildesheim, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Continuation of Ser. No. 108,636, Aug. 25, 1993, abandoned.
This application Oct. 24, 1995, Ser. No. 547,631
Claims priority, application Germany, Feb. 28, 1991, 41 06 307.4
Int. Cl.[6] H01R *43/06*; H02K *13/00*
U.S. Cl. 310—233 7 Claims



1. A continuous element for manufacturing a roll commutator for electric motors, with a plurality of bars adjacent to one another annularly, the continuous element comprising a continuous metal section having one side which is provided with projections before production of the bars, said projections being formed so that they serve as anchoring claims after rolling up of the metal section and at least two said anchoring claws are provided on each of said bars, said metal section having a substantially L-shaped base body with a shorter arm and a longer arm, said projections being formed continuously at a side of said longer arm which is opposite to said shorter arm, said projections having ends which project outwardly in opposite directions from one another parallel to said longer arm.

5,602,440

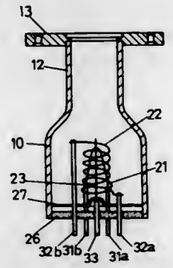
Patent Not Issued For This Number

5,602,441

VACUUM IONIZATION GAUGING TUBE

Nobuharu Ohsako; Toshio Kikuchi, and Wakao Watanabe, all of Fuchu, Japan, assignors to Anelva Corporation, Tokyo, Japan

Filed Aug. 26, 1992, Ser. No. 935,214
Claims priority, application Japan, Sep. 6, 1991, 3-254552
Int. Cl.[6] H01J *27/00*
U.S. Cl. 313—230 6 Claims



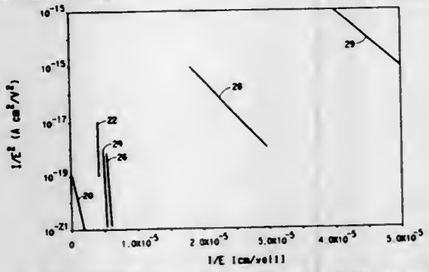
1. A Bayard-Alpert (B-A) type vacuum ionization gauging tube comprising:
(a) a filament having a total surface area in the range between 6 mm^2 and 20 mm^2;
(b) a grid formed like a coil from metal wire having a diameter of 0.1 mm to 0.3 mm, said coil having a diameter of between 5 mm and 7 mm and a length of between 15 mm and 20 mm, and across which said coil can be energized;
(c) an ion collector electrode having substantially the same length as said grid coil;
(d) a metal envelope enclosing said filament, said grid and said ion collector electrode and maintained at a potential lower than the potential of said filament.

5,602,439

DIAMOND-GRAPHITE FIELD EMITTERS

Steven M. Valone, Santa Fe, N.M., assignor to The Regents of the University of California, Office of Technology Transfer, Alameda, Calif.

Filed Feb. 14, 1994, Ser. No. 196,343
Int. Cl.[6] H01J *1/02*
U.S. Cl. 313—310 14 Claims



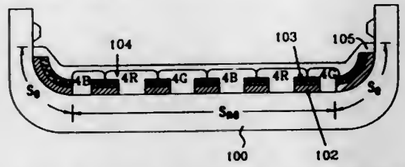
1. A field emission electron emitter comprising an electrode consisting essentially of a conductive carbon and diamond wherein said diamond is a coating upon a substrate of said conductive carbon.

5,602,442

CATHODE RAY TUBE HAVING A METAL OXIDE FILM OVER A BLACK MATRIX

Hae-Beob Jeong, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Nov. 30, 1994, Ser. No. 350,164
Claims priority, application Rep. of Korea, Dec. 1, 1993, 1993-26141
Int. Cl.[6] H01J *29/28;29/10*
U.S. Cl. 313—466 5 Claims



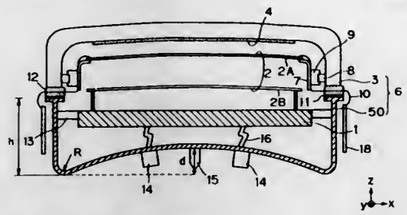
1. A fluorescent plate of color cathode ray tube comprising:
(a) a black matrix layer formed on an effective plane of a glass panel at regular intervals, said black matrix layer having a regular pattern having mean particle diameter between about 0.1 and 0.7 μm;
(b) a metallic oxide layer formed on said patterned black matrix layer, a mean particle size of said metal oxide being larger than that of said black matrix; wherein said metallic oxide has a thickness range of from greater than 3 to 10 μm and a mean particle size range of 0.4–1.5 μm.
(c) a fluorescent layer formed on said patterned metal oxide layer and directly on the glass panel therebetween; and
(d) a metal reflection layer formed on said fluorescent layer taken along effective and non-effective plane of said glass panel, wherein said effective plane is a flat portion and non-effective plane is a curved one.

5,602,443

CATHODE-RAY TUBE

Shunichi Igeta; Akira Inoue; Minoru Hojo; Hiroo Kobayashi, all of Kyoto; Shiro Takada, Hyogo; Masayuki Miyazaki, Hyogo, and Akio Inoue, Hyogo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 7, 1995, Ser. No. 499,189
Claims priority, application Japan, Jun. 12, 1994, 6-302378
Int. Cl.[6] H01J *31/00;29/70;1/62;29/00*
U.S. Cl. 313—477 R 10 Claims



1. A cathode-ray tube comprising:
a vacuum housing being formed by joining side surface portions of a front glass vessel and a back metal vessel with each other, said front glass vessel including a front surface and a fluorescent screen applied to an inner surface of said front glass vessel;
a cathode portion being provided on said back metal vessel side; and
electron beam control means for controlling collision of an electron beam being generated from said cathode portion onto said fluorescent screen,
said back metal vessel having said side surface portion of a prescribed width extending toward said side surface portion of said front glass vessel and a bottom surface portion opposite to said fluorescent screen of said front glass vessel,
said bottom surface portion provided with a depression of a prescribed amount bent toward said fluorescent screen,
said back metal vessel further including a corner portion joining said side surface portion and said bottom surface portion said corner portion having a prescribed radius R of curvature.

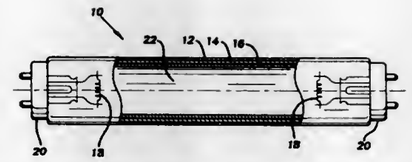
5,602,444

FLUORESCENT LAMP HAVING ULTRAVIOLET REFLECTING LAYER

Jon B. Jansma, Pepper Pike, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 28, 1995, Ser. No. 519,919
Int. Cl.[6] H01J *1/62;63/04*
U.S. Cl. 313—489 15 Claims

1. A mercury vapor discharge lamp comprising a light-transmissive envelope having an inner surface, means for providing a discharge, a discharge-sustaining fill gas sealed inside said envelope, a phosphor layer inside the envelope and adjacent the inner surface of the envelope, and a barrier layer between the envelope and the phosphor layer, the barrier layer comprising a blend of gamma alumina and alpha alumina, said alumina blend being 5 to 80 weight percent gamma alumina and 20 to 95 weight percent alpha alumina.

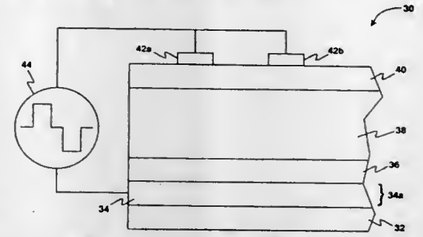


5,602,445

BLUE-VIOLET PHOSPHOR FOR USE IN ELECTROLUMINESCENT FLAT PANEL DISPLAYS

Rajendra Solanki, Portland, Oreg.; Weiran Kong, Sunnyvale, Calif., and Shafqat Ahmed, Beaverton, Oreg., assignors to Oregon Graduate Institute of Science and Technology, Beaverton, Oreg.

Filed May 12, 1995, Ser. No. 440,203
Int. Cl.[6] H01J *1/62*; H05B *33/14*
U.S. Cl. 313—503 11 Claims



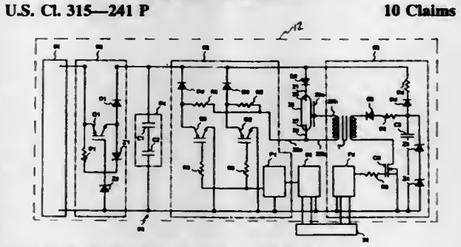
1. A thin film electroluminescent (TFEL) element in a display comprising a transparent substrate, a transparent conducting film defining a first electrode, a first dielectric layer, a luminescent layer, and a second dielectric layer, each layer formed on top of the other on the substrate, the second dielectric layer being provided with a second electrode, the luminescent layer including:
a strontium chloride ($SrCl_2$) host layer; and
a rare earth dopant.

5,602,446

FAST REPETITION RATE (FRR) FLASHER

Zbigniew Kolber, Shoreham, and Paul Falkowski, Stony Brook, both of N.Y., assignors to Associated Universities, Inc., Washington, D.C.

Continuation-in-part of Ser. No. 138,984, Oct. 11, 1993. This application Mar. 23, 1995, Ser. No. 409,060
Int. Cl.[6] H05B *37/00*
U.S. Cl. 315—241 P 10 Claims



1. A fast repetition rate flasher, comprising:
a power supply;

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a discharge capacitor operably connected to be charged by said power supply;

a flash lamp for producing a series of flashes in response to discharge of said discharge capacitor;

a triggering circuit operably connected to said flash lamp for initially ionizing said flash lamp;

a current switch operably connected between said flash lamp and said discharge capacitor, said current switch having at least one insulated gate biopolar transistor for switching current that is operable to initiate a controllable discharge of said discharge capacitor through said flash lamp; and

control means connected to said current switch for controlling the rate of discharge of said discharge capacitor thereby allowing fast rate triggering without the need to fully discharge and recharge the discharge capacitor between flashes, to effectively keep said flash lamp in an ionized state between successive discharges of said discharge capacitor.

5,602,447

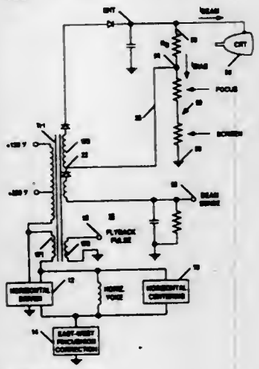
CATHODE RAY TUBE FOCUS SUPPLY

Lawrence E. Smith, Noblesville, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Aug. 3, 1994, Ser. No. 285,329

Int. Cl.[6] H01J *29/70;* **G09G** *1/04*

U.S. Cl. 315—411 **1 Claim**



1. A circuit, comprising:

a high voltage transformer;

a horizontal deflection circuit coupled to a primary winding of said transformer, said horizontal deflection circuit causing flyback pulses in secondary windings of said transformer;

a plurality of diodes and said secondary windings coupled alternately in a series arrangement of voltage boosting stages, said series arrangement having a high voltage output terminal for energizing a cathode ray tube;

a resistive chain having an input terminal coupled to said high voltage output terminal, having a focus output terminal for energizing a focus electrode of said cathode ray tube and having at least one intermediate tap between said input terminal and said focus output terminal; and,

said series arrangement having at least one intermediate tap coupled to said intermediate tap of said resistive chain by an independent conduction path, each of said intermediate taps having a voltage level, established independently of said conduction path, corresponding approximately to a voltage level of said focus output terminal approximately five percent (5%) of said high voltage.

5,602,448

ELECTRIC POWERED BICYCLE

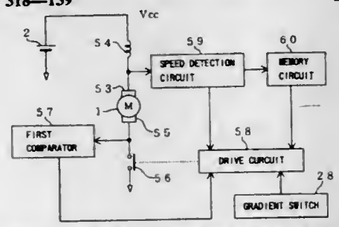
Osamu Yaguchi, Kashiwazaki, Japan, assignor to Kabushiki Kaisha Riken, Tokyo, Japan

Division of Ser. No. 532,529, Sep. 22, 1995, which is a continuation of Ser. No. 304,706, Sep. 12, 1994, abandoned. This application Apr. 1, 1996, Ser. No. 625,862

Claims priority, application Japan, Sep. 14, 1993, 5-252535; Dec. 29, 1993, 5-353791

Int. Cl.[6] B62M *23/02;* **H02P** *5/00*

U.S. Cl. 318—139 **5 Claims**



1. A control circuit for a DC motor for use in a vehicle comprising:

a DC motor having brushes and said DC motor being mounted on a vehicle;

a power supply for supplying electric power to the DC motor to run the vehicle;

a speed detection circuit for converting the rotational speed of said DC motor through one of said brushes of said motor which generate a period of pulse trains, said period of said pulse trains being converted to an analog electric signal;

a capacitor means for storing said analog electric signal when said analog electric signal is lower than a memorized analog signal by a predetermined value; and

a drive circuit for comparing the presence of said analog electric signal with said memorized analog signal from said capacitor means to provide an output to control said power to said DC motor.

5,602,449

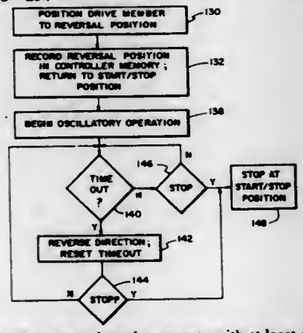
MOTOR CONTROLLED SURGICAL SYSTEM AND METHOD HAVING POSITIONAL CONTROL

Kenneth W. Krause, Sandown, N.H., and Douglas D. Sjostrom, Reading, Mass., assignors to Smith & Nephew Endoscopy, Inc., Andover, Mass.

Continuation-in-part of Ser. No. 135,297, Oct. 12, 1993, abandoned, which is a continuation-in-part of Ser. No. 867,871, Apr. 13, 1992, Pat. No. 5,270,622. This application Apr. 11, 1995, Ser. No. 420,243

Int. Cl.[6] H02P *6/20;6/24;* **A61B** *17/32*

U.S. Cl. 318—254 **30 Claims**



1. A surgical system adapted to operate with at least one surgical device, said surgical system having a handpiece containing a motor having a motor armature and adapted to receive and drive said surgical device, said surgical device being driven through a continuum of positions by said handpiece, said system comprising,

a controller for controlling the driving of said surgical device,

sensors in said motor for generating electrical signals indicative at least of a motor drive relative position,

said controller being responsive to said relative position electrical signals for identifying a current position of said motor drive relative to the motor drive relative position,

a position identifier for identifying to said controller a start-stop position for said driven surgical device for leaving said surgical device in a known condition,

a stop switch electrically connected to said controller, and

said controller being responsive to-actuation of said stop switch for stopping driven movement of said surgical device at substantially said start-stop position.

5,602,450

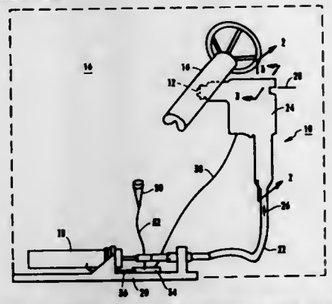
APPARATUS FOR REMOTELY OPERATING AN AUTOMOBILE IGNITION SWITCH

Allan L. Cowan, Stockbridge; Mark A. Froelich, Onsted; Donald W. Grimaudo, Riverview; Frederick J. Shaffer, Brooklyn, and Jeffrey P. Zyburt, Chelsea, all of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Jul. 31, 1995, Ser. No. 509,256

Int. Cl.[6] G01M *19/00*

U.S. Cl. 318—265 **17 Claims**



1. An actuator engageable with a steering column of an vehicle to selectively establish a position of an ignition switch in the steering column, comprising:

an ignition switch operating shaft engageable with the ignition switch and rotatable relative to the steering column, the ignition switch operating shaft defining an ignition switch operating shaft axis;

a drive shaft coupled to the ignition switch operating shaft for translating rotational motion of the drive shaft to the ignition switch operating shaft, the drive shaft defining a drive shaft axis offset from the ignition switch operating shaft axis; and

a motor coupled to the drive shaft to rotate the drive shaft, the motor being mounted on the vehicle such that the motor establishes substantially no pre-load stress on the steering column.

5,602,451

ELECTRIC POWER STEERING CIRCUIT DEVICE

Shinichi Kohge, and Shunichi Wada, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 28, 1995, Ser. No. 496,163

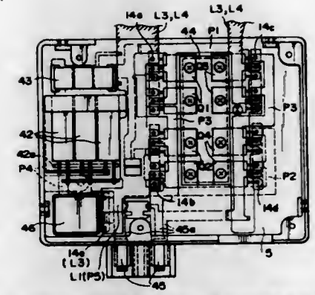
Claims priority, application Japan, Jun. 30, 1994, 6-149617

Int. Cl.[6] B62D *5/04;* **H05K** *3/30*

U.S. Cl. 318—293 **9 Claims**

1. An electric power steering circuit device, comprising:

a microcomputer;



a bridge circuit including a plurality of semiconductor switching elements for switching, based on an output signal from said microcomputer, a motor current output by a battery to drive a motor;

wiring patterns for bridge connecting said plurality of semiconductor switching elements and for flowing a large current, said wiring patterns comprising metal plates fixedly held by molding;

an insulated printed-circuit board for mounting said microcomputer; and

a heat radiating plate for mounting said semiconductor switching elements, said heat radiating plate and said insulated printed-circuit board being overlapped through a predetermined space.

5,602,452

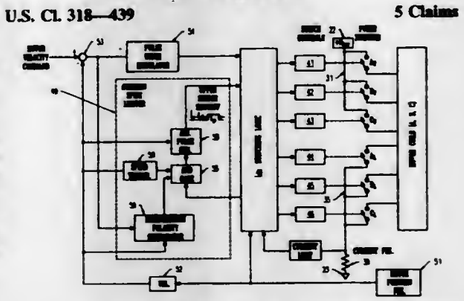
REGENERATION CURRENT-SPIKE LIMITER FOR SIX-STEP MOTOR DRIVES

Mark J. Underhill, East Aurora, N.Y., assignor to Moog Inc., East Aurora, N.Y.

Filed Sep. 19, 1995, Ser. No. 531,172

Int. Cl.[6] H02P *6/00*

U.S. Cl. 318—439 **5 Claims**



1. In a switching controller for a DC brushless motor having Y-connected field coils, having three electrically-controllable first switches, each first switch connected between a positive supply voltage and a terminal of a respective one of said field coils, and having three electrically-controllable second switches, each second switch connected between a negative supply voltage and another terminal of a respective one of said field coils, said switches being sequentially operated in a six-step mode to drive said motor, the improvement which comprises:

means for sensing regenerative operation of said motor;

means for sensing motor speed;

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means for momentarily opening a conducting one of said first switches for a predetermined time after a predetermined delay following a point in time when one of said second switches is closed and another of said second switches is opened, the duration of such momentary opening and the length of said predetermined delay being controlled as functions of said sensed regenerative operation and said motor speed;

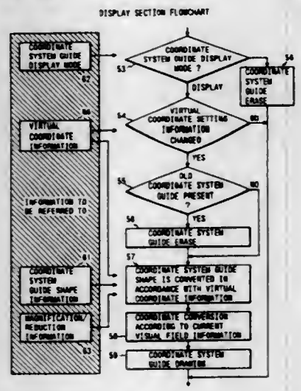
whereby excessive current spikes in said conducting first switch will be eliminated.

5,602,453

COORDINATE SYSTEM DISPLAY GUIDE FOR A NUMERICAL CONTROL APPARATUS

Katsuhide Sekikawa, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 23, 1993, Ser. No. 21,117
Claims priority, application Japan, Feb. 27, 1992, 4-040995
Int. Cl.[6] G06F *15/20*
U.S. Cl. 318—570 **26 Claims**



1. A numerical control apparatus for controlling a cutting machine for cutting a workpiece according to a predetermined tool path, the tool path being defined relative to a coordinate system by a cutting program, said numerical control apparatus comprising:

guide means for generating data representing a coordinate system guide;

a graphic display device for displaying said coordinate system guide so that an operator can determine whether the tool path is defined relative to a desired coordinate system;

means for inputting data representing a selected axis and a rotational value and for rotating a currently set virtual coordinate system in an amount corresponding to said rotational value about said selected axis to provide an updated virtual coordinate system;

means for updating and displaying in real-time on said graphic display device said coordinate system guide; and

means for displaying data pertaining to the amount of change between said currently set and updated virtual coordinate system;

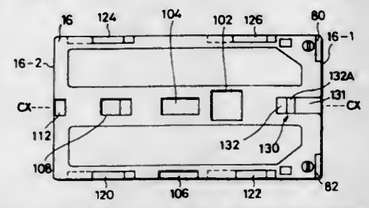
wherein said coordinate system guide comprises a representation of a virtual coordinate system, said virtual coordinate system being relative to a workpiece coordinate system whose origin represents a zero point relative to the workpiece.

5,602,454

BATTERY PACK HAVING IDENTIFICATION RECESSES AND TERMINALS

Hiroyuki Arakawa, Tochigi, and Hidero Mitsui, Kanagawa, both of Japan, assignors to Sony Corporation, Japan

Filed Aug. 19, 1993, Ser. No. 108,248
Claims priority, application Japan, Sep. 18, 1992, 4-249896
Int. Cl.[6] H01M *10/48*
U.S. Cl. 320—2 **21 Claims**



8. A battery pack having a battery accommodated therein comprising:

a detection portion formed at a bottom surface of said battery pack, said detection portion engaging an engagement portion formed on a connection portion of an electrical apparatus to which said battery pack is connected, said detection portion providing an indication of a total electric power output amount provided by said battery pack,

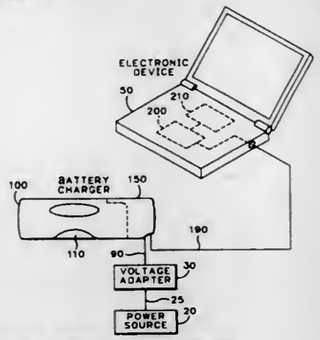
wherein said detection portion physically hinders attachment of said battery pack to said apparatus if said power output of said battery pack is incompatible with said apparatus.

5,602,455

PORTABLE BATTERY CHARGER WITH INTEGRALLY ATTACHED OUTPUT CABLE

Charles S. Stephens; David Williams; Tuan Tran; Masahiko Muranami, all of Corvallis; Terry Bradley, Monroe; Preston Brown, Eugene, and Curtis Rose, Corvallis, all of Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 4, 1994, Ser. No. 334,472
Int. Cl.[6] H01M *10/44;10/46*
U.S. Cl. 320—2 **14 Claims**



1. A portable battery charger, comprising:

a battery charger case forming a battery cavity capable of receiving a battery;

battery charger circuitry adjacent to said battery cavity in said battery charger case;

a first jack adjacent to said battery cavity in said battery charger case for receiving an input cable plug connected to an input cable, said input cable connected to a power source;

an output cable having a first end and a second end, said first end integrally attached to said portable battery charger, said second end connected to an output cable plug;

said output cable being of sufficient length to wrap around the perimeter of said battery charger case and allowing said output cable plug to be inserted into said first jack instead of said input cable plug, thereby placing said output cable in a stowage position; and

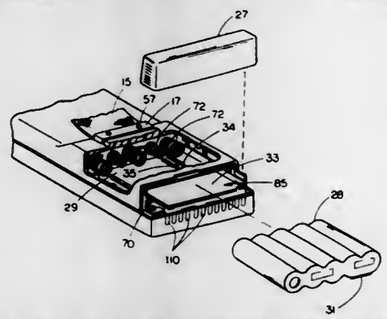
said battery charger circuitry charging said battery from said power source when said battery is inserted in said battery cavity and said input cable plug is inserted into said first jack.

5,602,456

HAND HELD COMPUTERIZED DATA COLLECTION TERMINAL WITH RECHARGEABLE BATTERY PACK SENSOR AND BATTERY POWER CONSERVATION

Keith K. Cargin, Jr., 3219 Blue Ridge Dr., NE.; Darrell L. Boatwright, 5731 Michael Dr., NE., both of Cedar Rapids, Iowa 52402; Stephen J. Kelly, 1405 McGowan Blvd., Marion, Iowa 52302, and William T. Gibbs, 4722 GreenValley Dr., SE., Cedar Rapids, Iowa 52403

Division of Ser. No. 289,322, Aug. 11, 1994, Pat. No. 5,515,303, which is a continuation of Ser. No. 984,980, Nov. 30, 1992, abandoned, which is a continuation-in-part of Ser. No. 921,449, Jul. 28, 1992, abandoned, which is a continuation-in-part of Ser. No. 707,954, May 22, 1991, abandoned, which is a continuation-in-part of Ser. No. 364,594, Jun. 7, 1989, abandoned, which is a continuation-in-part of Ser. No. 339,330, Apr. 14, 1989, abandoned, said Ser. No. 984,980is a continuation-in-part of Ser. No. 777,393, Jan. 7, 1992, Pat. No. 5,410,141, which is a continuation-in-part of Ser. No. 364,902, Jun. 8, 1989, abandoned, and Ser. No. 364,594, Jun. 7, 1989, abandoned. This application Jun. 13, 1995, Ser. No. 489,887
Int. Cl.[6] H02J *7/00;* **H01M** *10/44*
U.S. Cl. 320—2 **15 Claims**



1. A battery pack system for providing rechargeable battery power for a portable data collection terminal and for enabling recharging while received in power supplying relation to such a terminal, said battery pack system comprising:

(a) a battery pack comprised of a multiplicity of side by side rechargeable battery cells having parallel longitudinal axes, said battery pack having a positive conductive contact and a negative conductive contact;

(b) said battery pack further comprising a plate with an electrically conductive short-circuit element;

(c) the battery pack having opposite sides providing broad extended surfaces to define a generally oblong cross sectional contour with the short-circuit element only at one of the opposite sides; and

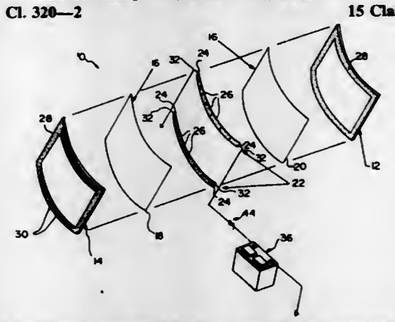
(d) wherein said electrically conductive short-circuit element is positioned so as to be capable, when said battery pack is in operational engagement with the portable data collection terminal, of contacting two probes of the portable data collection terminal and to thereby enable sensing of the presence of the battery pack, and wherein said plate and said electrically conductive short-circuit element do not contact said positive conductive contact or said negative conductive contact of said battery pack.

5,602,457

PHOTOVOLTAIC SOLAR CELL LAMINATED IN VEHICLE WINDSHIELD

Carl J. Anderson, Lake Orion, and Howard E. Mitchell, Clarkston, both of Mich., assignors to Exide Corporation, Reading, Pa.

Continuation of Ser. No. 367,820, Jan. 3, 1995, abandoned. This application Jun. 13, 1996, Ser. No. 663,376
Int. Cl.[6] H02J *7/00;* **B32B** *17/00;* **B60J** *1/00*
U.S. Cl. 320—2 **15 Claims**



1. A laminated windshield for a moving vehicle comprising:

outer and inner glass layers both having substantially the same non-planar shape;

first and second layers of PVB, and

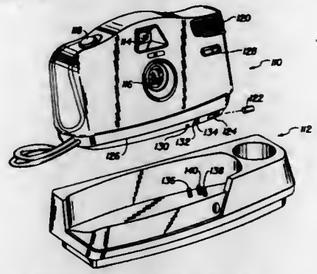
a string of solar cells sandwiched between said first and second layers of PVB which are sandwiched betweeo the outer and inner glass layers that are laminated together.

5,602,458

RECHARGEABLE CAMERA HAVING OPERATIONAL INHIBIT OF A FLASH UNIT POWER STORAGE CIRCUIT DURING RECHARGING

David R. Dowe, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 107,397, Aug. 16, 1993, Pat. No. 5,498,949. This application Oct. 5, 1995, Ser. No. 539,456
Int. Cl.[6] H01M *10/46*
U.S. Cl. 320—5 **3 Claims**



2. A rechargeable camera system comprising:

a charging cradle that provides electrical energy; and

a camera having

an objective lens,

a shutter button,

a battery circuit that receives electrical energy from a camera battery,

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a flash unit having a flash tube and a power storage circuit that stores electrical energy from the battery circuit and provides it to the flash tube, the power storage circuit including an energy storage device in which the electrical energy is stored and at least one switching transistor that directs electrical energy from the battery circuit to the energy storage device,

a recharging connector adapted to mate with the charging cradle and thereby receive electrical energy from the charging cradle that it provides to the camera battery of the battery circuit, and

a power switch operable between an "on" condition and an "off" condition such that the power switch directs electrical energy from the battery circuit to the power storage circuit when the power switch is in the "on" position and directs electrical energy from the recharging connector to the battery circuit when the power switch is in the "off" position; wherein:

the power storage circuit further includes biasing means for placing the switching transistor into a non-conducting condition in response to the electrical energy received from the battery circuit when the power switch is in the "on" position and the recharging connector is mated with the charging cradle, thereby placing the power storage circuit in an inoperative condition and preventing the power storage circuit from providing electrical energy to the flash tube.

5,602,459

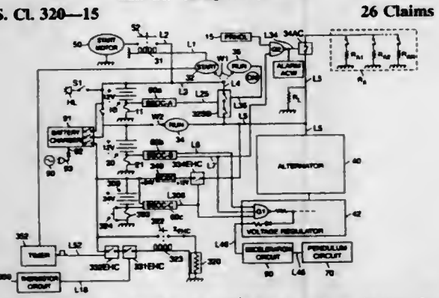
FUEL SAVING MULTI-BATTERY CHARGING SYSTEM AND METHODS

Wesley A. Rogers, Grosse Pointe Park, Mich., assignor to Electronic Development Inc., Grosse Pointe Park, Mich.

Division of Ser. No. 344,739, Nov. 23, 1994, and a continuation-in-part of Ser. No. 919,011, Jul. 23, 1992, Pat. No. 5,444,378, which is a continuation-in-part of Ser. No. 607,237, Oct. 31, 1990, Pat. No. 5,179,340, which is a continuation-in-part of Ser. No. 218,539, Jul. 13, 1988, Pat. No. 4,968,941, said Ser. No. 344,739is a division of Ser. No. 977,921, Nov. 18, 1992, Pat. No. 5,397,991. This application Jun. 6, 1995, Ser. No. 468,210

Int. Cl.[6] H02J *7/14;7/00*

U.S. Cl. 320—15 **26 Claims**



1. A method for operating a rechargeable storage battery for operating accessory circuits in an automotive vehicle, comprising:

consuming fuel in an engine of the automotive vehicle while the engine is running;

discharging the battery to operate vehicle accessory circuits while not recharging the battery and while the engine is running;

monitoring the state of charge of the battery;

indicating whether the battery state of charge is below a first charge threshold; and

recharging the battery, whether or not the engine is running, using a line power charger having an input for receiving a supply of electricity thereby saving fuel.

5,602,460

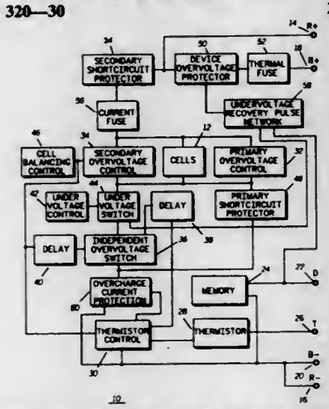
OVERCHARGE CURRENT PROTECTION CIRCUIT AND BATTERY PACK USING SAME

Jose M. Fernandez, Lawrenceville; Vernon Meadows, Lilburn; Erika D. Mack, Duluth, and Ilonga P. Thandiwe, Atlanta, all of Ga., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 28, 1995, Ser. No. 430,669

Int. Cl.[6] H02J *7/04*

U.S. Cl. 320—30 **26 Claims**



1. A battery pack for use with a charger having a charge current level and providing a first charge current level in excess of an optimum charge current level and switchable to a second charge current level not exceeding said optimum charge current level upon indication of said battery pack reaching an undesirable temperature, said battery pack having a positive and a negative charging terminal, said battery pack comprising:

at least one battery cell through which charge current flows;

a temperature sensing element for sensing the temperature of said at least one battery cell and providing a signal to said charger indicating said temperature;

temperature signal switch means coupled parallel with said temperature sensing element for simulating an undesirable battery temperature to said charger when actuated; and

temperature signal switch control means for sensing said charge current level and actuating said temperature signal switch means when said charge current level exceeds an optimum charge current level.

5,602,461

Patent Not Issued For This Number

5,602,462

UNINTERRUPTIBLE POWER SYSTEM

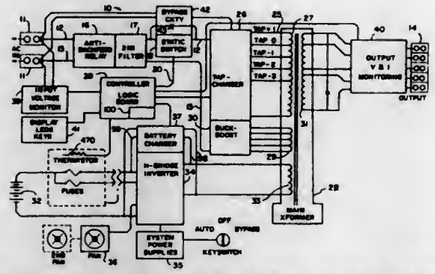
Frederick A. Stich, Wisconsin Rapids; Thomas G. Hubert, Necedah; David L. Layden, New Lisbon, and Donald K. Zahrte, Necedah, all of Wis., assignors to Best Power Technology, Incorporated, Necedah, Wis.

Filed Feb. 21, 1995, Ser. No. 391,761

Int. Cl.[6] G05F *1/16;* **H02J** *7/00;9/00*

U.S. Cl. 323—258 **51 Claims**

1. An uninterruptible power system of the type having AC input terminals which may be connected to an AC power system, AC output terminals to which a load may be connected, a transformer with a primary connected to receive AC input power provided to the AC input terminals, a secondary connected to the output terminals, and an auxiliary primary, an inverter connected to the auxiliary primary, a battery supplying DC power to the inverter, the inverter adapted to switch to provide alternating polarity of the



battery voltage across the auxiliary primary to provide AC output power at the secondary and at the output terminals to supply the load when power from the AC power system is not available, the improvement comprising:

(a) a plurality of primary tap switches connected between the input terminals and the primary and placed at different effective voltage levels along the primary;

(b) tap closing means for closing a selected one of the plurality of primary tap switches in response to a primary tap control signal;

(c) a buck-boost winding on the transformer;

(d) buck-boost winding switching means connected to the primary and the buck-boost winding for selectively responding to a buck-boost control signal to connect the buck-boost winding to act as a boost to effectively increase the secondary to primary turns ratio by passing an opposing current through the buck-boost winding so as to create a flux in the transformer in opposition to a flux in the primary, to act as a buck to effectively reduce the secondary to primary turns ratio by passing an aiding current running in a direction through the buck-boost winding so as to create a flux in the transformer aiding the flux in the primary, or to be bypassed altogether such that there is no current in the buck-boost winding to provide a normal turns ratio between the secondary and primary; and

(e) control means for providing the primary tap control signal to close a selected one of the primary tap switches and for providing the buck-boost winding control signal to connect the buck-boost winding so that the voltage level at the output terminals is maintained within a selected range of a preferred output voltage level despite changes in the voltage level at the input terminals.

5,602,463

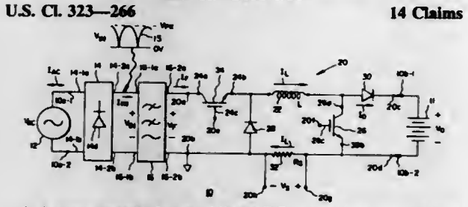
DC POWER SUPPLY WITH ENHANCED INPUT POWER FACTOR USING A BUCK AND BOOST CONVERTER

Clark A. Bendall, Endicott, and William A. Peterson, Vestal, both of N.Y., assignors to Lockheed Martin Corporation, Bethesda, Md.

Filed Dec. 11, 1995, Ser. No. 568,884

Int. Cl.[6] G05F *1/56*

U.S. Cl. 323—266 **14 Claims**



1. A power supply for providing a DC voltage/current to a load from an AC source, comprising:

I) rectifying means, energized by said AC source, for generating unipolar voltage pulses having a peak value; and

II) a buck+boost convertor having:

an inductive element with first and second terminals;

a controllable buck switching device having a controlled-conduction circuit coupled to said inductive element first terminal, and a control electrode at which a signal will control current conduction through said controlled-conduction circuit;

a controllable boost switching device having a controlled-conduction circuit coupled to said inductive element second terminal, and a control electrode at which a signal will control current conduction through said controlled-conduction circuit;

a current-sensing element coupled in series with the inductive element;

a first unidirectionally-conducting element connected across a portion of said series circuit and poled to cause current flow in a first direction through said inductive element when said buck switching device is in a non-conductive OFF condition and the inductive current flows through one of the load and the boost switching device;

a second unidirectionally-conducting element connected in series with said load and poled to cause current flow through said load when said boost switching device is not in the conductive condition;

said unipolar voltage pulses being applied to a series circuit formed of the buck and boost switching device controlled-conduction circuits, said inductive element, and said current-sensing element; and

control means, coupled to said current-sensing element and to said buck and boost switching devices, for causing the AC source current to be proportional to the AC source voltage, by operating said convertor (a) in a buck mode, by controlling the inductive element current to be substantially proportional to the square of the magnitude of the AC input voltage when the magnitude of the unipolar voltage across said circuit is greater than the desired output voltage, and (b) in a boost mode, by controlling the inductive element current to be substantially proportional to the magnitude of the AC input voltage when the magnitude of the unipolar voltage across said circuit is less than the desired output voltage.

5,602,464

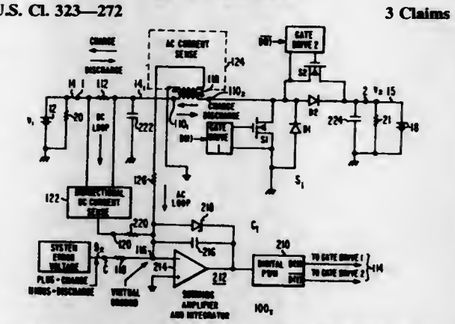
BIDIRECTIONAL POWER CONVERTER MODULES, AND POWER SYSTEM USING PARALLELED MODULES

Frank A. Linkowsky, Jamesburg, N.J., and John D. Bingley, Yardley, Pa., assignors to Martin Marietta Corp., East Windsor, N.J.

Filed Jul. 24, 1995, Ser. No. 505,939

Int. Cl.[6] G05F *1/445*

U.S. Cl. 323—272 **3 Claims**



1. A bidirectional paralleled power converter apparatus for coupling between a first source of direct electrical energy and a second source of electrical energy, the voltage of said first source of direct electrical energy being less than the voltage of said second source of direct electrical energy, said converter comprising:

a source of power converter apparatus reference voltage;

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power converter apparatus error signal generating means including an output port, and also including a first input port coupled to said source of power converter apparatus reference voltage and also including a second input port coupled to receive a sample of power converter apparatus feedback voltage, for generating, at said output port of said power converter apparatus error signal generating means, a power converter apparatus error signal representative of voltage error;

at least one bidirectional switching power converter, said bidirectional switching power converter including a first power port coupled to said first source of direct electrical energy, and a second power port coupled to said second source of direct electrical energy, said bidirectional switching power converter further including a feedback signal input port coupled to said output port of said power converter apparatus error signal generating means, said bidirectional switching power converter further comprising:

(a) inductance means including first and second terminals;

(b) power coupling means coupled to said first and second power ports and to said first and second terminals of said inductance means, for, in a first (boost) mode of operation, periodically coupling said inductance means alternately (i) across said first power port and (ii) between said first and said second power ports, for transferring energy from said first source of direct electrical energy to said second source of direct electrical energy, and for, in a second (buck) mode of operation, periodically coupling said inductance means (i) between said first (1) and said second power port and (ii) across said first power port, for transferring energy from said second source of direct electrical energy to said first source of direct electrical energy, and for changing between said first and second modes of operation under the control of the duty cycle of a switching control signal;

(c) resistance-type current sensing means serially coupled with said inductance means, for generating a current representative voltage representative of the current flowing in said inductance means;

(d) control means including a first input port, and an output port, said output port of said control means being coupled to said power coupling means, and responsive to the sum of currents applied to said first input port of said control means, for generating said switching control signal for said power coupling means;

(e) second coupling means coupled to said first input port of said control means and to said feedback signal input port of said bidirectional switching power converter, for converting said power converter apparatus error signal into a power converter apparatus control current, and for coupling said power converter apparatus control current to said first input port of said control means;

(f) third coupling means coupled to said resistance-type current sensing means and to said first input port of said control means, for converting said current representative voltage representative of the current flowing in said inductance means into an inductance-current representative current, and for coupling said inductance-current representative current to said first input port of said control means;

whereby switching noise associated with said current-representative voltage representative of the current flowing in said inductance means tends to destabilize said bidirectional switching power converter; said bidirectional switching power converter further comprising:

(g) low-pass filtering means coupled to said resistance-type current sensing means, for low-pass filtering said current representative voltage representative of the current flowing in said inductance means, to thereby produce a signal representative of the low frequency components of the current in said inductance means, and for applying said signal representative of the low-frequency components of the current in said inductance means to said first input port of said control means;

which thereby stabilizes said bidirectional switching power converter, but tends to destabilize said paralleled power converter apparatus, because the bandwidth of said inductance-current representative current is less than the bandwidth of said power converter apparatus error signal; said bidirectional switching power converter further comprising:

(h) transformer-type current sensing means magnetically coupled to said inductance means, and coupled to said first input port of said control means, for generating a high frequency inductor signal current representative of the high-frequency components of current flowing in said inductance means, and for coupling said high-frequency inductor signal current to said first input port of said control means;

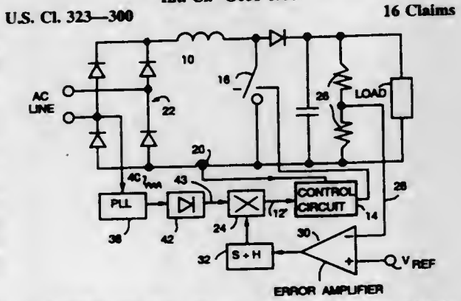
whereby signals representative of both said low-frequency components and said high-frequency components of said current in said inductance means are applied to said first port of said control means, the bandwidth of said bidirectional switching power converter is increased, and said paralleled power converter apparatus is thereby stabilized.

5,602,465

METHOD AND CIRCUIT TO IMPROVE OUTPUT VOLTAGE REGULATION AND NOISE REJECTION OF A POWER FACTOR CONTROL STAGE

Stefano Clemente, Rolling Hills Estate, Calif., assignor to International Rectifier Corporation, El Segundo, Calif.

Filed Aug. 30, 1994, Ser. No. 298,429
Int. Cl.[6] G05F 5/00
U.S. Cl. 323—300 **16 Claims**



1. A method for improving output voltage regulation and noise rejection of a power factor control stage providing power to a load, said method comprising:

generating a voltage reference signal that is in phase lock with an input alternating current power line signal but is independent of voltage excursions of the alternating current line signal; and

providing said voltage reference signal to a control circuit for controlling an electronic switch coupled to an input line providing power to the load, said electronic switch being pulsed on and off by said control circuit to force the current in the input line providing power to the load to follow said voltage reference signal, whereby the input alternating current line current is in a substantially constant predetermined phase relationship with the input alternating current line voltage.

5,602,466

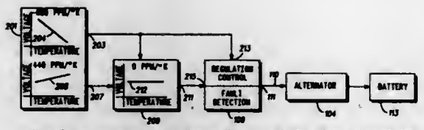
DUAL OUTPUT TEMPERATURE COMPENSATED VOLTAGE REFERENCE

Arthur J. Edwards, Hoffman Estates, Ill., assignor to Motorola Inc., Schaumberg, Ill.

Filed Feb. 22, 1994, Ser. No. 200,021
Int. Cl.[6] G05F 3/16
U.S. Cl. 323—313 **2 Claims**

1. A dual output temperature compensated voltage reference comprising:

bandgap reference means having a first output for providing a first signal dependent on temperature, and a second output for providing a second signal dependent on the first signal,



wherein a temperature dependence of the first signal has a slope opposite a temperature dependence of the second signal, wherein said bandgap reference means includes a bandgap reference circuit and a transistor having a base terminal for receiving the first signal and an output terminal for providing the second signal, wherein the output terminal of the transistor is an emitter terminal; and

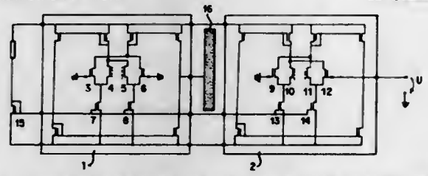
cooperative means coupled to the first and second outputs of said bandgap reference means, said cooperative means for combining the first and second signals, wherein said cooperative means has a third output for providing a third signal dependent on the first and second signals, wherein the cooperative means comprise a series connected resistive divider, and wherein one end of the series connected resistive divider is coupled to the first output of said bandgap reference means and another end of the series connected resistive divider is coupled to the emitter terminal of the transistor and the third output of the cooperative means is provided at a junction of the series connected resistive divider opposite the ends.

5,602,467

CIRCUIT FOR MEASURING ION CONCENTRATIONS IN SOLUTIONS

Mathias Krauss, Ammerbuch; Beate Hildebrandt, Muchow; Christian Kunath, and Eberhard Kurth, both of Dresden, all of Germany, assignors to Fraunhofer-Gesellschaft zur Foerderung der angewandten Forschung e.V., Munich, Germany

PCT No. PCT/DE93/00690, § 371 Date Apr. 24, 1995, § 102(e) Date Apr. 24, 1995, PCT Pub. No. WO94/06005, PCT Pub. Date Mar. 17, 1994
PCT Filed Aug. 4, 1993, Ser. No. 392,792
Claims priority, application Germany, Aug. 28, 1992, 42 28 609.3
Int. Cl.[6] G01R 27/26
U.S. Cl. 324—71.1 **13 Claims**



1. Circuit for measuring ion concentrations in solutions using ion-sensitive field effect transistors (ISFETs), a common reference electrode in the solution, and an output providing a sensor signal, the circuit comprising:

two measuring amplifiers;

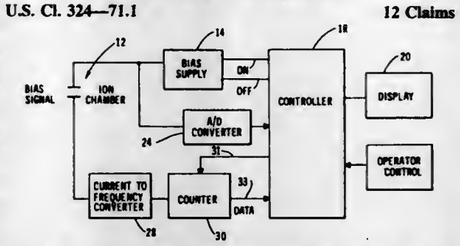
two ISFETs and two identical FETs connected in an input stage of each of said two measuring amplifiers in such a manner that an output voltage of the first measuring amplifier corresponds to a difference of a mean value of a threshold voltage of said two ISFETs and an FET threshold voltage, and an output voltage of the second measuring amplifier corresponds to a difference of the threshold voltages of said two ISFETs, in which the two FETs and two ISFETs of the first measuring amplifier are identical to those of the second measuring amplifier, the output voltage of the first amplifier being connected to a common reference electrode of all of the ISFETs and the output voltage of the second amplifier corresponding to said sensor signal.

5,602,468

METHOD AND APPARATUS FOR ION CHAMBER IDENTIFICATION

Tim Harrington, Monrovia, Calif., assignor to Radcal Corporation, Monrovia, Calif.

Filed Aug. 7, 1995, Ser. No. 512,067
Int. Cl.[6] G01R 27/26; G01N 27/22
U.S. Cl. 324—71.1 **12 Claims**



1. A method of identifying a particular type of ion-chamber having a bias electrode and a signal electrode; the method comprising the steps of:

(a) measuring the capacitance between the electrodes;

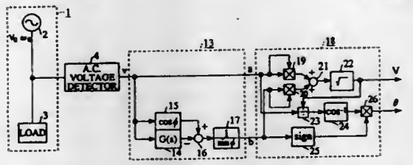
(b) comparing the capacitance thus measured to a listing of various ion chambers to identify the ion chamber having a capacitance comparable to the measured capacitance.

5,602,469

APPARATUS FOR DETECTING THE AMPLITUDE AND PHASE OF AN A.C. SIGNAL

Toshiyuki Fujii; Shinzo Tamai; Hatsuhiko Naitoh, and Naohiro Toki, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 331,366, Oct. 27, 1994, Pat. No. 5,498,955.
This application Nov. 28, 1995, Ser. No. 563,674
Claims priority, application Japan, Feb. 10, 1994, 6-16607
Int. Cl.[6] G01R 25/04
U.S. Cl. 324—76.77 **4 Claims**



1. An apparatus for detecting the amplitude and phase of an a.c. signal in an object system, said apparatus comprising:

a.c. signal detection means for detecting the a.c. signal of said object system;

signal split means for splitting the detected a.c. signal into two a.c. signals that are out of phase with each other by 90°, said signal split means including a calculation circuit which calculates an a.c. signal that is phase-shifted by the amount of the phase characteristic thereof at the frequency of the detected a.c. signal, a first amplifying circuit which multiplies the detected a.c. signal by the cosine of the phase characteristic, and a second amplifying circuit which multiplies, by the reciprocal of the sine of the phase characteristic, the output of said first amplifying circuit subtracted by the output of said calculation circuit; and

amplitude and phase detection means for detecting the amplitude and phase of the detected a.c. signal by implementing the polar coordinate transformation for the split a.c. signals.

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5,602,470

CIRCUIT ARRANGEMENT FOR STARTING DETECTION OF THREE-PHASE GENERATOR

Walter Kohl, Bietigheim-Bissingen; Rainer Mittag, Kornwestheim, and Matthias Hoeber, Aachen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

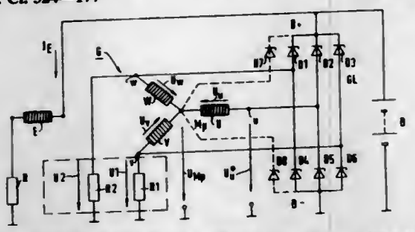
PCT No. PCT/DE94/00856, § 371 Date Apr. 10, 1995, § 102(e) Date Apr. 10, 1995, PCT Pub. No. WO95/05606, PCT Pub. Date Feb. 23, 1995

PCT Filed Jul. 23, 1994, Ser. No. 416,780

Claims priority, application Germany, Aug. 16, 1993, 43 27 485.4

Int. Cl.[6] G01P *3/46*

U.S. Cl. 324—177 **3 Claims**



1. A circuit arrangement for a starting detection of a generator having an excitor winding and three-phase windings, comprising a voltage regulator which regulates an output voltage of the generator by influencing an exciting current of the excitor winding; means for connecting the three-phase windings of the generator at a point; a first resistor arranged so that one of the phase windings is connected to ground via said first resistor; a second resistor arranged so that another of the phase windings is connected to ground via said second resistor; means for evaluating a voltage across said first resistor as a rotational-speed-dependent alternating voltage; means for comparing said rotational-speed-dependent alternating voltage with a threshold voltage; and means for detecting a beginning of the rotation of the generator when the evaluated voltage exceeds the threshold voltage.

5,602,471

ANGLE SENSOR INCLUDING ANGULARLY SPACED SENSOR UNITS

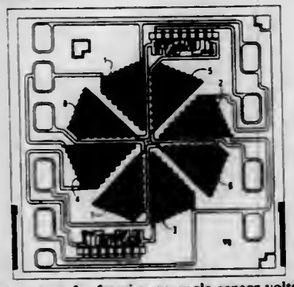
Michael Muth, Stelle; Volker Graeger, Buchholz, and August Petersen, Henstedt-Ulzburg, all of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 8, 1995, Ser. No. 401,866

Claims priority, application Germany, Mar. 10, 1994, 44 08 078.6

Int. Cl.[6] G01B *7/30;* **G01R** *33/09;* **G01D** *5/14*

U.S. Cl. 324—207.21 **21 Claims**



1. An angle sensor for forming an angle sensor voltage which is a measure of an angle α indicating the orientation of a rotatable element relative to the angle sensor, said angle sensor comprising:

first and second angularly spaced apart sensor units which measure the orientation of the rotatable member in a contactless manner in accordance with respective sensor characteristics such that respective first and second sensor voltages of the first and second sensor units are similar but angularly shifted sinusoidal functions of the angle α to be measured;

circuit means responsive to the first and second sensor voltages for forming at least three output voltages having values which are a measure of the angle α over different respective proportionality ranges, and which remain at limit values when the angle α is outside the respective proportionality range; and

a summing circuit having inputs and an output, said inputs of said summing circuit being connected to the output voltages of the circuit means and wherein the angle sensor voltage is formed at the output of said summing circuit.

5,602,472

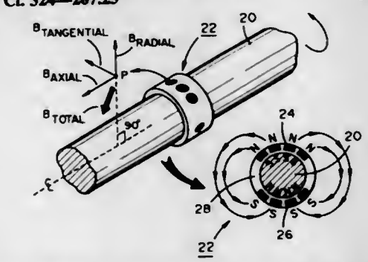
APPARATUS AND METHOD FOR DETERMINING ANGULAR POSITION AND ROTATIONAL SPEED USING A ROTATING MAGNET AND A DIRECTIONAL MAGNETOMETER

Roderick G. Bergstedt, Fort Wayne; Donald J. Scheiber, Columbia City; Thomas G. Klapheke, Fort Wayne, and Russell C. Smith, Albion, all of Ind., assignors to Hughes Electronics, Los Angeles, Calif.

Continuation of Ser. No. 242,156, May 13, 1994, abandoned, which is a continuation-in-part of Ser. No. 5,318, Jan. 15, 1993, abandoned. This application Oct. 20, 1995, Ser. No. 546,343

Int. Cl.[6] G01B *7/30;* **G01P** *3/487;* **B60T** *8/32*

U.S. Cl. 324—207.25 **5 Claims**



3. An apparatus for detecting the angular position, rotational speed, and/or acceleration of a rotatable member, comprising:

(a) an annular magnetic source circumferentially disposed on said rotatable member and rotatable therewith, said magnetic source generating tangential, radial, and axial magnetic flux field components;

(b) a directional magnetometer, having a toroidal core with two secondary output windings thereon, disposed at a location, radially spaced from said magnetic source, in proximity to said magnetic source, said directional magnetometer being oriented so as to detect the amplitude(s) and/or change of amplitude(s) of one or more said magnetic flux field components, and to provide outputs from said secondary windings indicative thereof;

(c) said outputs being modified, to equalize measured peak amplitudes of said magnetic flux field components and/or to compensate for environmental distortion thereof, by orienting said toroidal core such that said toroidal core lies in a plane at an angle between the plane of said annular magnetic source and a plane perpendicular to said plane of said annular magnetic source; and

(d) means to receive said outputs and to determine therefrom the angular position, rotational speed, and/or acceleration of said rotatable member.

5,602,473

METHOD AND APPARATUS FOR ANALYSIS OF MAGNETIC CHARACTERISTICS OF MAGNETIC DEVICE, MAGNETIC HEAD, AND MAGNETIC RECORDING AND REPRODUCING APPARATUS

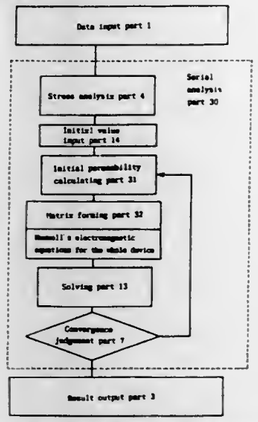
Yoshiaki Mizoh, Neyagawa; Koichi Osano, Osaka, and Masaya Sakaguchi, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 17, 1995, Ser. No. 390,782

Claims priority, application Japan, Feb. 18, 1994, 6-021035; Jan. 12, 1995, 7-003482

Int. Cl.[6] G01B *7/24;7/14*

U.S. Cl. 324—209 **13 Claims**



1. A method for analysis of magnetic characteristics of a magnetic device conducted by measuring magnetic characteristics of the magnetic device composed of a magnetic material and a non magnetic material with the use of an analysis apparatus, and comprising the steps of:

inputting data related to characteristics of the substances composing said magnetic device, data related to a structure of said magnetic device divided into a plurality of parts, data concerning boundary conditions for analysis of the structure of said magnetic device, and data concerning boundary conditions for analysis of a magnetic field of said magnetic device into said analysis apparatus,

obtaining a stress distribution for each of the plurality of divided parts on the basis of the data related to said boundary conditions,

obtaining magnetic characteristics for each of said plurality of parts based on the data concerning the boundary conditions of the magnetic field and the stress distribution of said magnetic device, and

obtaining magnetic characteristics of the whole magnetic device based on said magnetic characteristics for each of said plurality of parts.

5,602,474

DETECTING CRACKS IN NON-UNIFORM AREAS OF METAL PARTS INCLUDING POSITION CORRELATION

Willard C. Morrey, Jr., Palm City, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jun. 6, 1995, Ser. No. 469,339

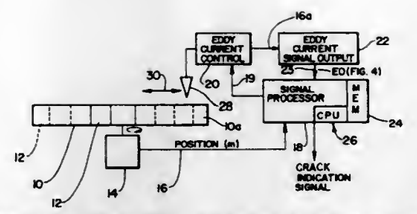
Int. Cl.[6] G01N *27/82;27/72;* **G01B** *7/30*

U.S. Cl. 324—238 **4 Claims**

1. An eddy current testing method, characterized by:

assigning location codes to locations along the edge of a metallic part;

producing an eddy current generated signal for each of the locations;



storing first signal values, each having a value of the eddy current generated signal for each location code;

identifying first and second location codes beyond the beginning and end of periodic changes in said first signals;

producing correlation signals from said first and second location codes and other of said location codes, said correlation signals having a magnitude manifesting an extent of correlation between the first signal value for the locations from said first and second location codes and the first signal values of other location codes, said correlation signals being expressed by the function $D(m)\cdot T(1)+D(m+1)\cdot T(2)+D(m+n-1)\cdot T(n)$, where n is a number of locations between said first and second locations. T is the level of said first signal at each of said n locations, m is number of locations along said edge and D is the level of said first signal at each of said m locations;

identifying third and fourth location codes at the beginning and end of each periodic change of maximum correlation in said correlation signals;

producing a width signal with a magnitude manifesting the average increment between said third and fourth location codes, said width signal having n increments;

producing an average first signal value for each of said n increments by determining the average of the first signal value for each of corresponding n increments between said third and fourth location codes; and

producing a deviation signal manifesting the difference between said average first signal value and each of said first signal values; and

producing a detection signal the magnitude of said detection. Signal being a function of the characteristics of said deviation signal relative to a reference value for said deviation signal.

5,602,475

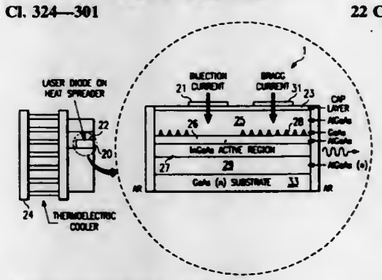
LASER PUMPED MAGNETOMETER

Christopher L. Bohler, Allen, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 4, 1994, Ser. No. 222,151

Int. Cl.[6] G01R *33/24*

U.S. Cl. 324—301 **22 Claims**



1. A helium magnetometer comprising:

(a) an enclosure containing an isotope of helium;

(b) means for providing a discharge for exciting said isotope to a metastable level;

(c) a radiation detector position adjacent said enclosure; and

(d) a single line radiation light source comprising one of a (single mode), or (distributed feedback) or distributed Bragg

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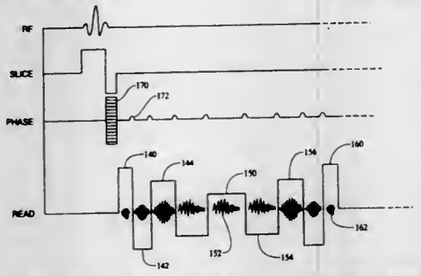
reflection laser for directing a beam of light through said enclosure to said radiation detector.

5,602,476

ULTRA-FAST MR IMAGING DATA ACQUISITION SCHEME USING MIXED BANDWIDTH DATA

Haiying Liu, Euclid; Rao P. Gullapalli, and Mark J. Loncar, both of Richmond Heights, all of Ohio, assignors to Picker International, Inc., Highland Heights, Ohio

Filed Aug. 17, 1995, Ser. No. 516,386
Int. Cl.[6] G01R *33/20*
U.S. Cl. 324—309 **16 Claims**



1. In a magnetic resonance imaging system including a magnet which generates a temporally constant magnetic field through an examination region, gradient magnetic field coils and a gradient magnetic field controller which generates at least phase and read magnetic field gradient pulses in orthogonal directions across the examination region, a radio frequency pulse controller and digital transmitter which induce dipoles in the examination region to resonance such that radio frequency resonance signals are generated, a receiver which receives and demodulates the radio frequency magnetic resonance signals to produce a series of data lines, the receiver being associated with an analog-to-digital converter such that the data lines are digital, a data memory which stores the digital data lines, and a reconstruction processor which reconstructs the data lines from the data memory into an image representation, the improvement comprising:

a read gradient scaler which scales amplitude and width of selected read gradient pulses such that a bandwidth of the radio frequency magnetic resonance signals received during the scaled read gradient is altered;

a sampling rate control which controls a sampling rate of each received radio frequency magnetic resonance signal in accordance with the change in bandwidth; and,

the gradient magnetic field and radio frequency pulse controllers being controlled such that data lines with the lowest bandwidth are phase-encoded with the smallest phase-encoding angles and data lines with the greatest positive and negative phase-encoding angles have the highest bandwidth.

5,602,477

NUCLEAR MAGNETIC RESONANCE FREEZING SENSOR

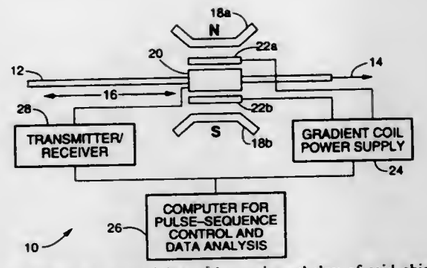
Michael J. McCarthy, and David S. Reid, both of Davis, Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Feb. 6, 1995, Ser. No. 384,568
Int. Cl.[6] G01V *3/00*
U.S. Cl. 324—315 **10 Claims**

1. A nuclear magnetic resonance freezing sensor, comprising:

(a) means for subjecting an object containing fluid to nuclear magnetic resonance imaging and acquiring images of said object;

(b) means for identifying the ice content in said object while said fluid freezes from said images; and



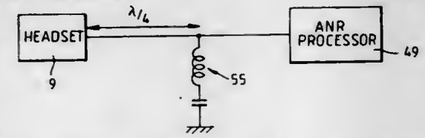
(c) means for determining a change in enthalpy of said object from the ice content.

5,602,478

REDUCTION OF RF FIELD DISTURBANCE IN MAGNETIC RESONANCE APPARATUS

Anthony J. Salloway, Northamptonshire, and David J. Gilderdale, South Devon, both of United Kingdom, assignors to GEC-Marconi Limited, United Kingdom

Filed Sep. 19, 1994, Ser. No. 308,738
Claims priority, application United Kingdom, Sep. 21, 1993, 9319498
Int. Cl.[6] G01R *33/28*
U.S. Cl. 324—318 **13 Claims**



1. A magnetic resonance apparatus for examining a subject, comprising:

a) a region in which the subject is positioned during examination;

b) radio frequency means for applying a radio frequency field having a frequency to the region for producing magnetic resonance in the subject; and

c) a transducer disposed in the region and having a lead which is grounded to signals having the frequency of said radio frequency field at a distance along the lead from the transducer which is equal to a quarter wavelength at said radio frequency field frequency or to an odd multiple thereof.

5,602,479

QUADRATURE RADIO FREQUENCY COIL FOR MAGNETIC RESONANCE IMAGING

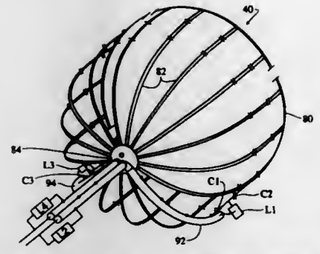
Ravi Srinivasan, Richmond Hts.; Haiying Liu, Euclid, and Robert A. Elek, Chardon, all of Ohio, assignors to Picker International, Inc., Highland Heights, Ohio

Filed Aug. 8, 1995, Ser. No. 512,388
Int. Cl.[6] G01R *33/20*
U.S. Cl. 324—318 **17 Claims**

11. A radio frequency coil for at least receiving magnetic resonance signals, the radio frequency coil comprising:

an annular electrically conductive ring;

a plurality of legs extending from the ring along inward extending paths and meeting at a symmetric mid-point at virtual ground, the mid-point being displaced from a plane of the ring such that the legs define a dome;



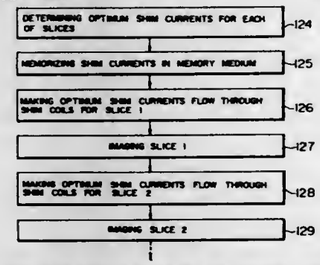
a plurality of capacitive electrical connections within at least one of (1) the annular ring and (2) the legs.

5,602,480

INSPECTION METHOD AND APPARATUS USING NUCLEAR MAGNETIC RESONANCE

Yukari Onodera, Asaka; Etsuji Yamamoto, Akishima; Hiroyuki Itagaki, Kokubunji, and Yo Taniguchi, Hachioji, all of Japan, assignors to Hitachi Medical Corporation, Tokyo, Japan

Filed Apr. 14, 1995, Ser. No. 422,234
Claims priority, application Japan, Apr. 19, 1994, 6-080175; Apr. 21, 1994, 6-083062
Int. Cl.[6] G01R *33/20*
U.S. Cl. 324—320 **21 Claims**



1. An inspection method using nuclear magnetic resonance by means of an apparatus having magnetic field generating means for generating a static magnetic field, gradient magnetic fields and an RF magnetic field; magnetic field generating means by means of additional shim coils, which vary homogeneity of said static magnetic field by varying current flowing therethrough; signal detecting means for detecting nuclear magnetic resonance signals from an object to be inspected; means for processing signals detected by said signal detecting means; and control means for controlling currents flowing through said shim coils; said inspecting method comprising the steps of:

(a) determining and storing in a memory optimum shim currents for each of a plurality of slices to be inspected, for improving homogeneity of said static magnetic field for each of said plurality of slices, said optimum shim currents being obtained based on measurements of the static magnetic field distribution within each of said plurality of slices, prior to measurements of said nuclear magnetic resonance signals from each of said plurality of slices; and

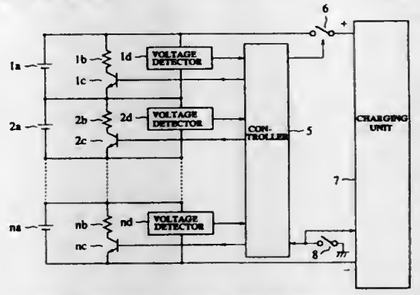
(b) making said optimum shim currents flow through said shim coils for a slice to be inspected, after reading out said optimum currents for said slice from said memory, prior to measurements of said nuclear magnetic resonance signals from said slice to be inspected.

5,602,481

SERIES CONNECTION CIRCUIT FOR SECONDARY BATTERY

Yuichi Fukuyama, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Kanagawa-ken, Japan

Filed Mar. 9, 1995, Ser. No. 401,608
Claims priority, application Japan, Mar. 11, 1994, 6-067888
Int. Cl.[6] G01N *27/416*
U.S. Cl. 324—434 **7 Claims**



1. A series connection circuit for builtup battery consisting of a plurality of secondary batteries which are connected in series with each other, each of said batteries having a terminal voltage changeable corresponding to a value of DOD (Depth of discharge: %), said circuit comprising:

voltage detecting means for detecting the terminal voltage of said secondary batteries thereby to calculate the respective values of DOD thereof;

discharge switching means for discharging said secondary batteries independently;

charging means connected with both ends of said builtup battery to charge said secondary batteries; and

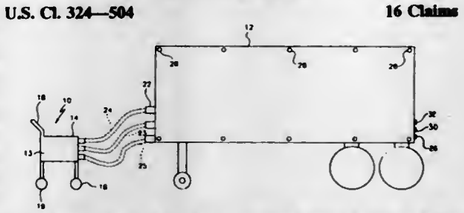
control means for controlling the independent discharging operation of said discharge switching means corresponding to the respective values of DOD obtained by said voltage detecting means.

5,602,482

TRAILER SYSTEMS TESTER

Alejandro Gutierrez, 201 S. 5th St., McAllen, Tex. 78501

Filed Sep. 7, 1995, Ser. No. 528,643
Int. Cl.[6] G01L *5/28*
U.S. Cl. 324—504 **16 Claims**



1. A trailer systems tester for performing safety checks on trailer having illumination and signal lighting circuits by a single operator, comprising:

a cart supporting a housing, wheels supporting said cart, and a handle attached to the rear of said cart for maneuvering said cart;

said housing containing an electrical circuitry connected to an electrical power supply, and connected to two pneumatic

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hoses connectable to a source of compressed air by a gladhands coupler;

said electrical circuitry connectable to and selectively energizing and annunciating illumination and signalling lighting circuits of the trailer;

said electrical circuitry having subcircuits, each serving a selected illumination and signalling lighting circuit;

each said subcircuit having a switch for selectively controlling its respective subcircuit

an annunciator selected from a lamp and an audible element responsive to successful energization of each said subcircuit; and

a plurality of dissimilar modular wiring connectors each having a plurality of conductors, each individual conductor corresponding to one illumination and signalling function of the trailer, individual conductors for each like illumination and signalling function of each said modular wiring connector being connected in parallel by said electrical circuitry to a predetermined said subcircuit, whereby like functions are energized and tested on trailers having different modular wiring connectors by a designated one said subcircuit.

5,602,483

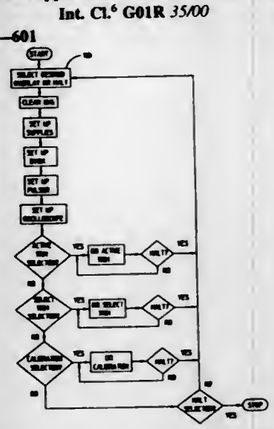
ACTIVE TRIM METHOD AND APPARATUS

Thomas F. Uhling, Monument; Philip J. Yearsley, Colorado Springs; Dale L. Pittock, Colorado Springs, and Mark E. Mathews, Colorado Springs, all of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 937,626, Aug. 28, 1992, Pat. No. 5,420,515. This application Feb. 27, 1995, Ser. No. 394,855

Int. Cl.[6] G01R *35/00*

U.S. Cl. 324—601 **12 Claims**



1. A method of trimming an electronic circuit having an electronic response over a wide bandwidth, said method comprising the steps of:

obtaining a calibration factor;

trimming a first response of a selected parameter of said electronic circuit to a first predetermined value of said selected parameter; and

further trimming a second response of said selected parameter of said electronic circuit to a second predetermined value of said selected parameter, said second predetermined value being determined from said calibration factor and said first response of said selected parameter of said electronic circuit.

5,602,484

DELAY-SPREAD SENSOR AND DETECTION SWITCHING CIRCUIT USING THE SAME

Hiroshi Suzuki, Yokosuka, and Kazuhiko Fukawa, Yokohama, both of Japan, assignors to NTT Mobile Communications Network Inc., Tokyo, Japan

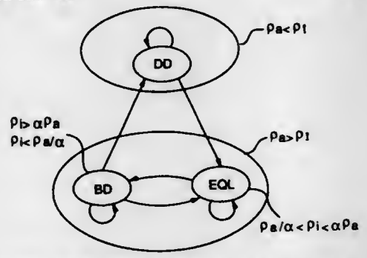
PCT No. PCT/JP94/01691, § 371 Date Jan. 18, 1995, § 102(e) Date Jan. 18, 1995, PCT Pub. No. WO95/10888, PCT Pub. Date Apr. 20, 1995

PCT Filed Oct. 11, 1994, Ser. No. 373,219

Claims priority, application Japan, Oct. 12, 1993, 5-254531

Int. Cl.[6] H03D *3/00*

U.S. Cl. 324—647 **8 Claims**



1. A delay spread sensor for measuring a delay spread between received signal components caused by multipaths in a received signal which has a predetermined training signal, comprising:

detecting means responsive to the received signal for producing a detection signal;

reference signal generating means for generating a reference signal corresponding to the training signal during a training signal period of the received signal;

multipath component detecting means for producing correlation between the detection signal and each of non-detayed and delayed reference signals as the levels of received signal components corresponding to respective propagation paths of said multipaths; and

component ratio calculating means for calculating the ratio of each of the levels of said received signal components to a total level of the received signal components.

5,602,485

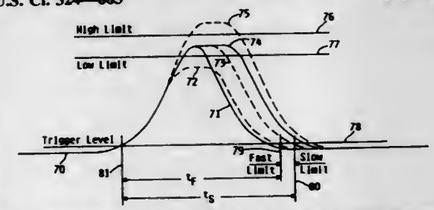
APPARATUS FOR SCREENING CAPSULES USING VELOCITY MEASUREMENTS

William N. Mayer, White Bear Lake; Daniel W. Mayer, St. Paul, both of Minn., and Roger C. Oestreich, River Falls, Wis., assignors to Modern Controls, Inc., Minneapolis, Minn.

Filed Jan. 16, 1996, Ser. No. 585,778

Int. Cl.[6] G01R *27/26;* **B07C** *5/28*

U.S. Cl. 324—663 **8 Claims**



1. An apparatus for detecting each capsule in a moving stream of capsules along a predetermined path of travel and for measuring

the weight of each capsule and for measuring the velocity of each capsule, comprising:

a) a capacitance sensor positioned adjacent said path of travel having means for developing an electrical signal representative of the capacitance of each capsule as it moves past said capacitance sensor;

b) a velocity sensor positioned adjacent said path of travel having means for developing an electrical signal representative of the velocity of each capsule as it moves past said velocity sensor;

c) means for developing preset values representative of an acceptable range of capacitance values for said capsules;

d) means for developing preset values representative of an acceptable range of velocity values for said capsules;

e) means for comparing said electrical signal representative of the capacitance of each capsule with said preset values representative of an acceptable range of capacitance values, and for developing a first reject signal when said electrical signal is outside said acceptable range;

f) means for comparing said electrical signal representative of the velocity of each capsule with said preset values representative of an acceptable range of velocity values and for developing a second reject signal when said electrical signal is outside said acceptable range; and

g) a movable flipper arm positioned adjacent said path of travel and having an actuable position interposed into said path of travel and means for actuating said flipper arm by the combined first and second reject signals.

5,602,486

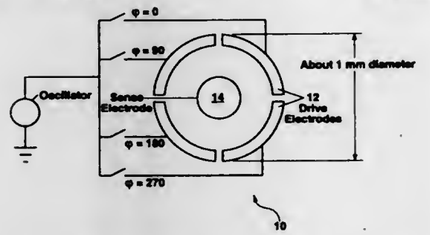
IMPEDANCE SENSING OF FLAWS IN NON-HOMOGENOUS MATERIALS

James L. Novak, Albuquerque, N.M., assignor to Sandia Corporation, Albuquerque, N.M.

Continuation-in-part of Ser. No. 213,438, Mar. 14, 1994, Pat. No. 5,537,048. This application Nov. 10, 1994, Ser. No. 336,999

Int. Cl.[6] G01N *27/02;* **G01R** *27/02*

U.S. Cl. 324—671 **39 Claims**



1. An impedance sensing apparatus comprising:

a plurality of drive electrodes in contact with a surface of a sample material;

one or more sense electrodes in contact with the surface of the sample material;

one or more signal sources connected to said drive electrodes such that each of said drive electrodes operates only at periodic intervals or with different electrical phases; and

means connected to said one or more sense electrodes for determining an impedance value between at least one of said sense electrodes and at least one of said drive electrodes.

5,602,487

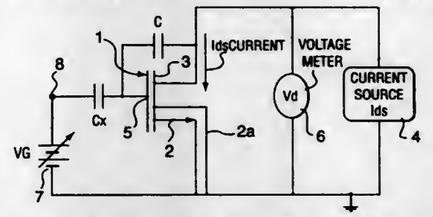
CAPACITANCE MEASURING DEVICE

Tajinder Manku, Nepean, Canada, assignor to Mitel Corporation, Kanata, Canada

Filed Aug. 22, 1994, Ser. No. 294,602

Int. Cl.[6] G01R *27/26*

U.S. Cl. 324—678 **10 Claims**



1. A capacitance measuring device comprising a MOS transistor having a source, drain, and gate; a first capacitor C_1 connected between said gate and said drain so that charge is coupled from said drain onto said gate; a second capacitor C_2 for connection to a source of gate voltage V_G and connected to said gate; one of said first and second capacitors having a known capacitance and the other of said first and second capacitors having an unknown capacitance; means for applying a variable known DC voltage between said source and drain to cause a saturation current to flow therebetween; and means for determining the ratio $\delta V_G/\delta V_d$ for said saturation current, where V_G is the applied gate voltage, and V_d is the drain voltage; said unknown capacitance thereby being derivable from the relationship $C_1/C_2=-\delta V_G/\delta V_d$.

5,602,488

METHOD AND APPARATUS FOR ADJUSTING SECTIONAL AREA RATIO OF METAL-COVERED ELECTRIC WIRE

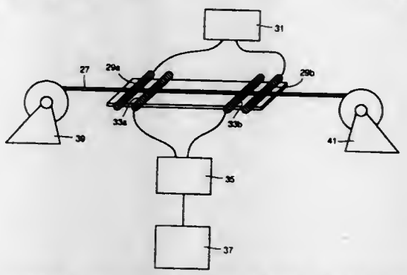
Akira Mikumo; Kenichi Takahashi, and Masanobu Koganeya, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan

Division of Ser. No. 189,404, Jan. 31, 1994, Pat. No. 5,507,924. This application Jan. 22, 1996, Ser. No. 599,454

Claims priority, application Japan, Feb. 1, 1993, 5-14734; Mar. 29, 1993, 5-69734; Jan. 19, 1994, 6-4147

Int. Cl.[6] G01R *27/14*

U.S. Cl. 324—716 **5 Claims**



1. A method of measuring a sectional area ratio in a nondestructive manner between a first material part and a second material part of a metal-covered electric wire having a core part including said first material and a metal covering layer formed of said second material covering said core part, said method comprising:

a step of previously storing electric resistance values of said first and second materials respectively;

a step of measuring electric resistance of said metal-covered electric wire over a prescribed length region;

a step of calculating a sectional area ratio between said first material part and said second material part in said prescribed

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length region on the basis of previously stored said electric resistance values of said first and second materials and actually measured said electric resistance of said metal-covered electric wire; and

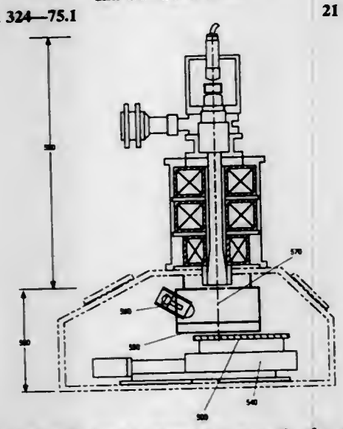
a step of moving said metal-covered electric wire continuously along its longitudinal direction for measuring distribution of said sectional area ratio along said longitudinal direction of said metal-covered electric wire.

5,602,489

SWITCH POTENTIAL ELECTRON BEAM SUBSTRATE TESTER

Auguste B. El-Kareh, Los Altos; Qing-Tang Jiang, and MingYang Li, both of Sunnyvale, all of Calif., assignors to Alcedo, Sunnyvale, Calif.

Filed Dec. 2, 1994, Ser. No. 349,508
Int. Cl.[6] G01R *31/02*
U.S. Cl. 324—75.1 **21 Claims**



1. A method to test an interconnect network of a multichip module for opens and shorts comprising the steps of:

maintaining an extract grid at a first grid potential;

defining a potential on a pad such that said pad and said extract grid reach a first state;

switching said extract grid to a second grid potential;

maintaining said extract grid at said second grid potential until said pad and said extract grid reach a second state; and

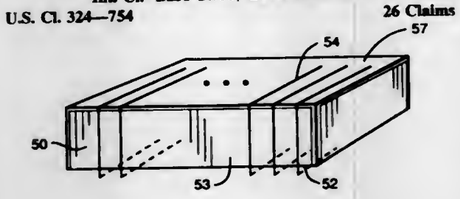
measuring a test time, in order to determine the capacitance of said interconnect network being tested.

5,602,490

CONNECTOR FOR AUTOMATIC TEST EQUIPMENT

Steven M. Blumenau, Royalston, Mass., assignor to GenRad, Inc., Concord, Mass.

Filed Mar. 14, 1995, Ser. No. 403,472
Int. Cl.[6] B23P *21/00*; **G01R** *1/06;31/02*
U.S. Cl. 324—754 **26 Claims**



1. An automatic test system for testing integrated circuit boards, the test system including:

A. a tester, for supplying test signals for the integrated circuit board and analyzing signals produced by the integrated circuit board;

B. a tester receiver for supplying the test signals to contacts arranged in a predetermined pattern and receiving signals from the contacts;

C. a fixture for receiving test signals from the tester receiver and supplying the signals to the integrated circuit board, the fixture also receiving signals from the circuit board and supplying the signals to the tester receiver;

D. a first connector for supplying signals between the tester receiver and the fixture, the connector consisting of

i. a non-conducting carrier with a top and a bottom, and

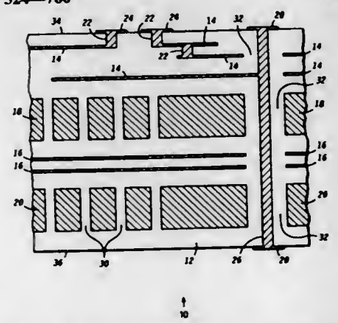
ii. a plurality of resilient electrically conductive contacts for electrically interconnecting selected contacts of the tester receiver that is proximate to the top of the carrier to selected contacts of the fixture that is proximate to the bottom of the carrier, the electrically conductive contacts being supported by the carrier and compressing as necessary to accommodate variations in the fixture, the carrier electrically isolating the electrically conductive contacts from one another.

5,602,491

INTEGRATED CIRCUIT TESTING BOARD HAVING CONSTRAINED THERMAL EXPANSION CHARACTERISTICS

Barbara Vasquez, Austin, Tex.; John W. Stafford, Phoenix, and William M. Williams, Gilbert, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 16, 1995, Ser. No. 405,317
Int. Cl.[6] G01R *31/02*
U.S. Cl. 324—760 **39 Claims**



1. An integrated circuit testing board comprising:

a plurality of conductive testing layers;

a dielectric material surrounding and electrically isolating said plurality of conductive testing layers from one another, wherein said dielectric material has a first coefficient of thermal expansion; and

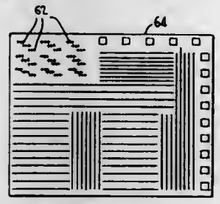
a constraint layer disposed in said dielectric material wherein said constraint layer has a second coefficient of thermal expansion substantially less than said first coefficient of thermal expansion and wherein a surface of said testing board comprises contacts for touching an integrated circuit on a semiconductor material and said surface is substantially thermally coexpansive with said material.

5,602,492

ELECTRICAL TEST STRUCTURE AND METHOD FOR MEASURING THE RELATIVE LOCATIONS OF CONDUCTING FEATURES ON AN INSULATING SUBSTRATE

Michael W. Cresswell, Frederick; Loren W. Linholm, Ijamsville; Richard A. Allen, Germantown; E. Clayton Teague, Gaithersburg, and William B. Penzes, New Carrollton, all of Md., assignors to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Continuation-in-part of Ser. No. 852,439, Mar. 13, 1992, Pat. No. 5,383,136. This application Apr. 28, 1994, Ser. No. 236,202
Int. Cl.[6] G01R *31/02;27/08*
U.S. Cl. 324—763 **3 Claims**



1. An improved test structure for providing a plurality of offset measurements of a first portion of a test structure formed in a first operation with respect to a second portion of said structure formed in a subsequent operation, said test structure comprising:

an elongated bridge conductor with taps at either end for forcing a current therethrough;

a first plurality of taps intersecting said bridge conductor at intervals, said taps being connected to pads for measurement of voltage drops along a first group of nonoverlapping contiguous segments of said bridge conductor defined by the intersection of said taps and said bridge conductor, said first plurality of taps being formed in the same operation as said bridge conductor,

a second plurality of taps formed in a second operation and intersecting said bridge conductor, said second plurality of taps also being connected to pads for measurement of voltage drops along a second group of nonoverlapping contiguous segments of said bridge conductor defined by said second set of taps,

said first and second groups of segments including common portions of said bridge conductor,

wherein in use the respective offsets of the second set of taps with respect to the first set of taps are measured by comparison of voltage drops along said bridge conductor with respect to a plurality of intersections of taps formed in said second processing operation, and whereby errors common to the positions of all of the taps of said second set of taps with respect to said first plurality of taps can be effectively distinguished from errors in the position of one or more of said taps formed in said second operation.

5,602,493

BIAS CIRCUIT FOR AN INPUT TERMINAL

Masayuki Konishi, and Mitsuo Kusakabe, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

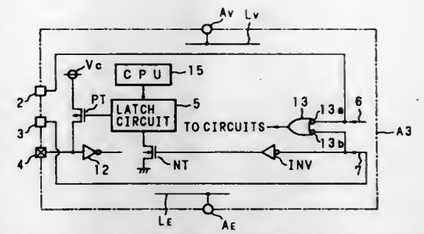
Filed Oct. 25, 1995, Ser. No. 548,060
Claims priority, application Japan, Dec. 15, 1994, 6-311728
Int. Cl.[6] H03K *17/22*
U.S. Cl. 326—33 **10 Claims**

1. A semiconductor device comprising:

a power supply terminal;

a signal input terminal;

a semiconductor switch connected between the power supply terminal and the signal input terminal;



a latch circuit for controlling the ON/OFF of the semiconductor switch in accordance with the content thereof;

a first reset terminal for receiving a first reset signal to reset the latch circuit; and

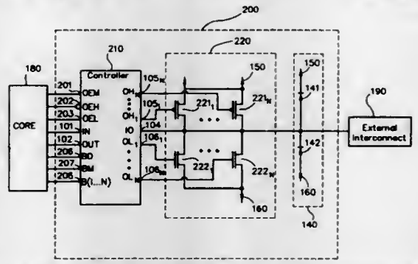
a second reset terminal for receiving a second reset signal to reset a circuit other than the latch circuit.

5,602,494

BI-DIRECTIONAL PROGRAMMABLE I/O CELL

Lance L. Sundstrom, Pinellas Park, Fla., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 9, 1995, Ser. No. 401,604
Int. Cl.[6] H03K *19/0175*
U.S. Cl. 326—39 **22 Claims**



1. A bi-directional programmable I/O cell connected between an interconnect and a core, comprising:

a drive block connected to said interconnect, having at least one operating mode selected from a group of operating modes consisting of a data transmission mode, a bias impedance value mode and an impedance direction mode, each operating mode having a plurality of submodes; and

a controller connected to said drive block, said interconnect, and said core in response to signals received from said core, activating a submode for each operating mode of said drive block.

5,602,495

APPARATUS FOR PROVIDING AN OUTPUT VOLTAGE WITH SUBSTANTIALLY IDENTICAL RISING AND FALLING CHARACTERISTICS

Perry W. Lou, Carlsbad, Calif., assignor to Brooktree Corporation, San Diego, Calif.

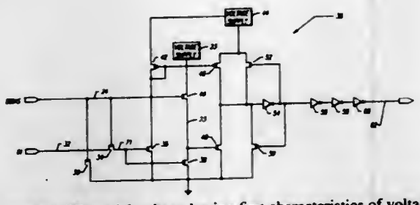
Continuation of Ser. No. 28,999, Mar. 10, 1993, Pat. No. 5,486,778. This application May 4, 1995, Ser. No. 434,973
Int. Cl.[6] H03K *19/0185;19/0948*
U.S. Cl. 326—71 **4 Claims**

1. In combination,

first means for providing an input voltage,

second means for providing a bias voltage,

third means responsive to the input voltage and the bias voltage for providing a first differential voltage,



the first differential voltage having first characteristics of voltage in relation to time,

fourth means responsive to the first differential voltage for providing a second differential voltage with an inverse relationship with time relative to the first differential voltage and with an intersection between the first differential voltage and the second differential voltage at a particular voltage, and

fifth means responsive to the first and second differential voltages for providing an output voltage with substantially identical rising and falling characteristics relative to the particular voltage with respect to time.

5,602,496

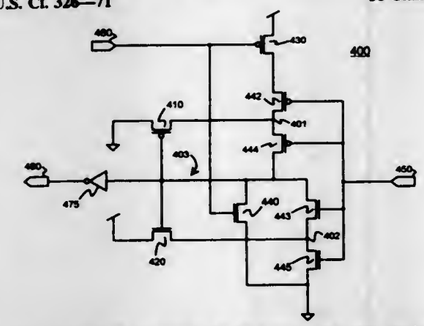
INPUT BUFFER CIRCUIT INCLUDING AN INPUT LEVEL TRANSLATOR WITH SLEEP FUNCTION

Qazi Mahmood, San Jose, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 396,850, Mar. 1, 1995, abandoned, which is a continuation-in-part of Ser. No. 78,795, Jun. 17, 1992, abandoned. This application May 23, 1996, Ser. No. 652,888

Int. Cl.[6] H03K *19/0185;3/295;19/0948*

U.S. Cl. 326—71 **16 Claims**



1. An input buffer circuit for an integrated circuit (IC), the input buffer circuit for receiving input signals and providing output signals to an input of the integrated circuit, the input buffer circuit comprising:

means for translating an input signal level to a logical signal, wherein the translating means comprises a first pair of pmos transistors and a second pair of nmos transistors;

Schmitt trigger means coupled to the translating means for providing the logical signal to the input of the IC and for providing a hysteresis transfer characteristic to the input signal such that a predetermined input signal must be above a first predetermined voltage or below a second predetermined voltage for the logical signal to be provided to the IC; and

single buffer means, coupled to the Schmitt trigger means and the IC for providing a necessary level translation of the logical signal to the IC, the single buffer means further comprising a ratioed pair of transistors, the ratioed pair of transistors comprising a pmos pull-up transistor and an nmos pull-down transistor and having beta values chosen to compensate for the Schmitt trigger means, wherein the pmos pull-up transistor has a higher beta value than the nmos pull-down transistor when the Schmitt trigger means outputs a high level signal closer to a high-level logical signal and wherein the nmos pull-down transistor has a higher beta value than the pmos pull-up transistor when the Schmitt trigger means outputs a low level signal closer to a low level logical Signal.

5,602,497

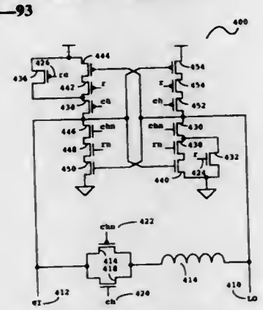
PRECHARGED ADIABATIC PIPELINED LOGIC

Steven D. Thomas, 3209 Conestoga Canyon Rd., Palmdale, Calif. 93550

Filed Dec. 20, 1995, Ser. No. 575,934

Int. Cl.[6] H03K *19/096*

U.S. Cl. 326—93 **12 Claims**



8. A clock circuit for providing power-pulse/clock signals to precharged adiabatic logic cells in a pipelined electronic system, said clock circuit comprising:

means to supply current to each stage in said pipelined system, said supply means limiting the amount of current available to adiabatically charge or discharge aggregate capacitive loads of said logic cells;

means to block the flow of current from said supply means to said logic cells;

means to generate separate control pulses, said control pulses controlling said current blocking means and being synchronized to allow each stage in said pipeline to operate in one of six predetermined phases of operation including a precharge phase, a precharge disable phase, an evaluate phase, a hold phase, a precharge enable phase and a guard phase; and

means to initialize or reset said clock circuit to a desired state.

5,602,498

CURRENT SWITCHING LOGIC TYPE CIRCUIT WITH SMALL CURRENT CONSUMPTION

Hisayasu Satoh; Kimio Ueda, and Nagisa Sasaki, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 6, 1995, Ser. No. 399,289

Claims priority, application Japan, Mar. 15, 1994, 6-043644; Dec. 16, 1994, 6-313008

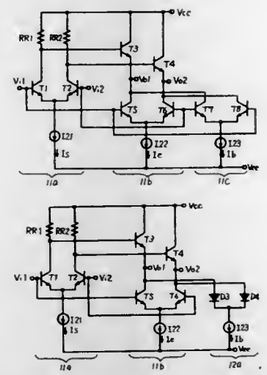
Int. Cl.[6] H03K *19/086;19/01*

U.S. Cl. 326—126 **7 Claims**

1. A current switching logic circuit including first and second power sources supplying one and another operation power supply voltages respectively, for outputting signals of complementary logics from first and second output nodes in accordance with a pair of input signals of complementary logics, said current switching logic circuit comprising:

a first current source coupled to said second power source;

a pair of differential transistors having one-side conduction nodes coupled to said first current source in common, control electrode nodes connected to receive said input signals



respectively, and another-side conduction nodes outputting internal signals of complementary logics corresponding to said input signals;

a first output drive transistor coupled between said first power source and said first output node, for driving said first output node to a first logical level in response to one of said internal signals from said pair of differential transistors;

a second output drive transistor coupled between said first power source and said second output node and conducting complementarily to said first output drive transistor in response to another of said internal signals for driving said second output node to said first logical level;

a second current source coupled to said second power source;

a third output drive transistor conducting complementarily with said first output drive transistor in response to said one of said input signals for coupling said second current source and said first output node with each other to drive said first output node to a second logical level;

a fourth output drive transistor conducting complementarily to said second and third output drive transistors in response to the other of said input signals for coupling said second current source and said second output node with each other to drive said second output node to said second logical level; and

output current control means coupled between said first and second output nodes and said second power source, said output current control means including a third current source having a current driving capability smaller than that of said second current source and coupled selectively to receive a current flow from said first and second output nodes in accordance with said input signals.

5,602,499

MULTISTAGE SWITCHING CIRCUIT

Guoliang Shou; Sunao Takatori, and Makoto Yamamoto, all of Tokyo, Japan, assignors to Yozan Inc., Tokyo, and Sharp Corporation, Osaka, both of Japan

Continuation of Ser. No. 308,456, Sep. 19, 1994. This application Mar. 21, 1996, Ser. No. 619,416

Claims priority, application Japan, Sep. 20, 1993, 5-256397; Sep. 20, 1993, 5-256540

Int. Cl.[6] H03K *17/693;5/24*

U.S. Cl. 327—75 **3 Claims**

1. A multistage switching circuit comprising:

a plurality of thresholding circuits, each of which comprises:

a capacitive coupling for receiving an input voltage and a reference voltage, and for adding said voltages with weighting, and

an inverter with a predetermined threshold for receiving an output generated by said capacitive coupling, and for generating a low level voltage when said output exceeds said threshold and a high level voltage when said output does not exceed said threshold; and

a plurality of pMOS type transistors, each of which having a gate connected to an output of one of said thresholding circuits, a drain connected to a drain voltage, and a source connected to an output terminal, wherein said drain voltages of said pMOS type transistors are different from one another, and

wherein each of said capacitive couplings has a different weight so that said voltage generated by said inverter changes in response to a change in said input voltage.

5,602,500

CIRCUIT FOR THE DETECTION OF VOLTAGE THRESHOLDS

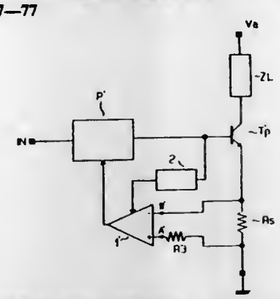
Richard P. Fournel, Trets, France, assignor to SGS-Thomson Microelectronics, S. A., Gentilly Cedex, France

Filed Apr. 28, 1993, Ser. No. 54,939

Claims priority, application France, Apr. 30, 1992, 92 05418

Int. Cl.[6] H03K *1/12*

U.S. Cl. 327—77 **29 Claims**



1. An integrated circuit, comprising:

connections for first and second power supply voltages wherein said first power supply voltage is positive, and said second power supply voltage is ground;

a first node connected to said first power supply voltage through a first constant-bias-potential element, and connected to said second power supply voltage through a first controlled current source;

a second node connected to said second power supply voltage through a second constant-bias-potential element, and connected to said first power supply voltage through a second controlled current source;

said first node being connected to control said second controlled current source, and said second node being connected to control said first controlled current source;

first and second logic gates, having different respective threshold voltages, and connected to be driven by said first and second nodes respectively;

whereby outputs of said first and second logic gates jointly indicate whether the difference between said first and second supply voltages is below, within, or above a predetermined range.

5,602,501

MIXER CIRCUIT USING A DUAL GATE FIELD EFFECT TRANSISTOR

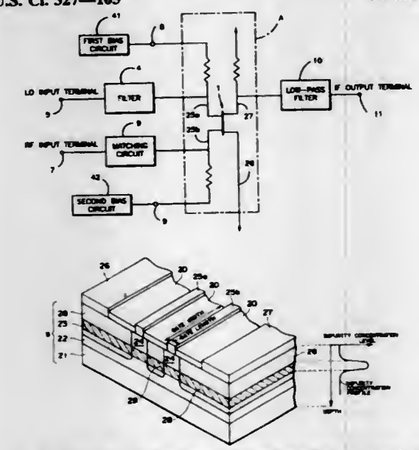
Nobuo Shiga, Yokohama, Japan, assignor to Sumitomo Electric Industries, Ltd., Japan

Continuation-in-part of Ser. No. 109,538, Aug. 20, 1993, Pat. No. 5,444,399, and Ser. No. 110,937, Aug. 24, 1993, Pat. No. 5,389,807. This application Dec. 5, 1994, Ser. No. 341,223

Claims priority, application Japan, Sep. 3, 1992, 4-235946; Sep. 11, 1993, 5-243229

Int. Cl.[6] H03K *3/353;* **H03B** *19/00*

U.S. Cl. 327—105 **54 Claims**



1. A mixer circuit for mixing a local oscillation signal and a radio frequency signal to supply an intermediate frequency signal, said mixer circuit comprising:

a first input terminal to be supplied with the local oscillation signal;

a second input terminal to be supplied with the radio frequency signal;

an output terminal for supplying the intermediate frequency signal; and

a dual gate FET for mixing the local oscillation signal from said first input terminal and the radio frequency signal from said second input terminal to generate the intermediate frequency signal, said dual gate FET having:

a semi-insulating semiconductor substrate;

a buffer layer formed on said substrate;

a thin first pulse-doped layer having a high impurity concentration and being formed on said buffer layer;

a cap layer structure formed on said thin first pulse-doped layer, said cap layer structure including a first undoped layer, a thin second pulse-doped layer having a high impurity concentration and formed in direct contact with said first undoped layers and a second undoped layer formed on said thin second pulse-doped layer;

source and drain regions having high impurity concentrations, each of said source and drain regions extending from an upper surface of said cap layer structure to said buffer layer;

a contact region having a high impurity concentration and extending from said upper surface of said cap layer structure to said buffer layer, said contact region located between and isolated from said source and drain regions;

a drain electrode formed on an upper surface of said drain region and connected to said output terminal;

a source electrode formed on an upper surface of said source region;

a first gate electrode located between said source and drain regions, said first gate electrode being connected to said first input terminal;

a second gate electrode located between said first gate electrode and said source electrode, said second gate electrode being connected to said second input terminal; and

an insulating layer located between said first and second gate electrodes and covering an upper surface of said contact region.

5,602,502

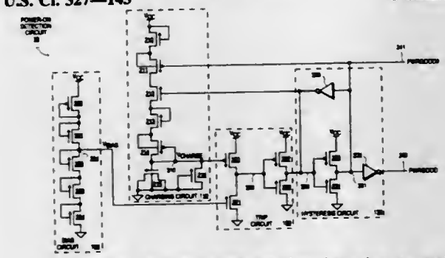
CIRCUIT FOR DETECTING WHEN A SUPPLY OUTPUT VOLTAGE EXCEEDS A PREDETERMINED LEVEL

Yong H. Jiang, Milpitas, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Sep. 29, 1995, Ser. No. 536,853

Int. Cl.[6] H03L *7/00*

U.S. Cl. 327—143 **6 Claims**



1. A power-on detection circuit for detecting when a supply output voltage exceeds a predetermined level comprising:

a pull-up transistor and a pull-down transistor commonly coupled to a node for biasing the node to a first voltage;

a bias circuit operative to output a bias voltage that rises with the supply output voltage for biasing the pull-down transistor;

a charging circuit operative to output a charging voltage for biasing the pull-up transistor;

an inverter coupled to the node for receiving the first voltage, the inverter indicating that the supply output voltage is less than the predetermined level when the first voltage is greater than a trip voltage of the inverter, the inverter indicating that the supply output voltage exceeds the predetermined level when the first voltage is less than the trip voltage of the inverter; and

a hysteresis circuit coupled to an output of the inverter and to the charge circuit, the hysteresis circuit providing positive feedback between the output and an input of the inverter, the hysteresis circuit for switching off the charging circuit when the inverter indicates that the supply output voltage is less than the predetermined level and for switching on the charging circuit when the inverter indicates that the supply output voltage exceeds the predetermined level.

5,602,503

ZERO LEVEL SETTING CIRCUIT FOR A/D CONVERTER IN A MAGNETIC DISK DRIVE

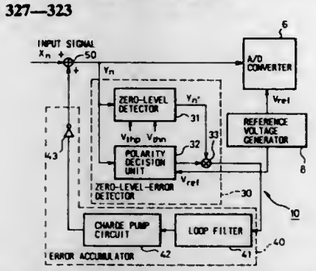
Hiroshi Muto, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 6, 1994, Ser. No. 267,208

Claims priority, application Japan, Sep. 24, 1993, 5-238203

Int. Cl.[6] H03K *5/08*

U.S. Cl. 327—323 **3 Claims**



1. The zero-level setting circuit for an A/D converter in a magnetic disk drive in which an analog signal having symmetrical positive and negative odd levels with respect to a zero-level is read out of a magnetic disk by a head, the read analog signal is processed by a signal read means, the processed analog signal is converted into a digital signal by an A/D converter, and the digital signal is demodulated by a demodulating means, comprising:

means for generating a reference voltage for the A/D converter;

means for detecting a zero-level error between the read signal and the reference voltage;

means for accumulating the zero-level error from the zero-level error detecting means; and

means for equalizing the zero-level of the read signal to the reference voltage in accordance with an output signal from the zero-level error accumulating means,

wherein the zero-level error detecting means has a zero-level detector for detecting the zero-level of the read signal when the read signal is within a predetermined range between positive and negative values, a polarity decision unit for determining a polarity of the read signal and detecting an error in the read signal in comparison with the reference voltage, and a multiplier for multiplying an output signal of the zero-level detector by an output signal of the polarity decision unit and providing the zero-level error,

wherein the error accumulating means has a loop filter and a charge pump circuit, and

wherein the zero-level equalizing means has an adder for adding the output signal of the error accumulating means to the read signal and providing an offset.

5,602,504

FOUR-QUADRANT THREE-INPUT MULTIPLIER

Shen-Iuan Liu, Keelung, Taiwan, assignor to National Science Council, Taiwan

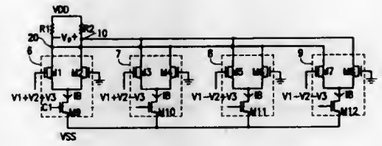
Filed Sep. 15, 1995, Ser. No. 528,558

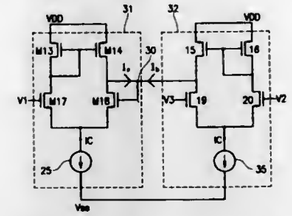
Int. Cl.[6] G06G *7/16*

U.S. Cl. 327—357 **10 Claims**

1. A four-quadrant three-input multiplier for determining the product of a first input signal, a second input signal, and a third input signal, then outputting results to a differential output terminal, which is coupled between a high-voltage source and a low-voltage source, said four-quadrant three-input multiplier comprising:

a first differential transconductance amplifier, wherein a first input terminal of said first differential transconductance





amplifier receives a first linear-combination signal which is substantially equal to said first input signal, plus said second input signal, plus said third input signal, a second input terminal of said first differential transconductance amplifier is grounded, and a first output terminal and a second output terminal of said first differential transconductance amplifier are coupled to a negative port and a positive port of said differential output terminal of said three-input multiplier, respectively;

a second differential transconductance amplifier, wherein a first input terminal of said second differential transconductance amplifier receives a second linear-combination signal which is substantially equal to said first input signal, plus said second input signal, minus said third input signal, a second input terminal of said second differential transconductance amplifier is grounded, and a first output terminal and a second output terminal of said second differential transconductance amplifier are coupled to said positive and negative ports of said differential output terminal of said three-input multiplier, respectively;

a third differential transconductance amplifier, wherein a first input terminal of said third differential transconductance amplifier receives a third linear-combination signal which is substantially equal to said first input signal, minus said second input signal, plus said third input signal, a second input terminal of said third differential transconductance amplifier is grounded, and a first output terminal and a second output terminal of said third differential transconductance amplifier are coupled to the positive and negative ports of said differential output terminal of said three-input multiplier, respectively;

a fourth differential transconductance amplifier, wherein a first input terminal of said fourth differential transconductance amplifier receives a fourth linear-combination signal which is substantially equal to said first input signal, minus said second input signal, minus said third input signal, a second input terminal of said fourth differential transconductance amplifier is grounded, and a first output terminal and a second output terminal of said fourth differential transconductance amplifier are coupled to the negative and positive ports of said differential output terminal of said three-input multiplier, respectively;

a first load coupled between said high-voltage source and the negative port of said differential output terminal of said three-input multiplier; and

a second load coupled between said high-voltage source and the positive port of said differential output terminal of said three-input multiplier, wherein the resistance value of said second load is equal to that of said first load.

VOL 11 95 ISS 2 FE 11 1997 UMI

5,602,505

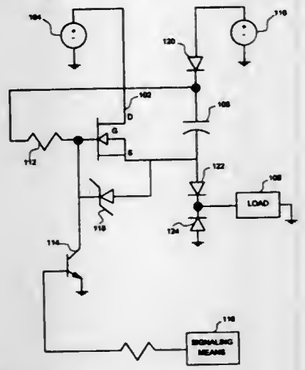
GATE DRIVE CIRCUIT

James A. Antone, Peoria, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Continuation of Ser. No. 330,455, Oct. 28, 1994, abandoned. This application Feb. 20, 1996, Ser. No. 603,702

Int. Cl.[6] H03K *17/687*

U.S. Cl. 327—434 **6 Claims**



1. A gate drive circuit, comprising:

a high voltage energy source;

a low voltage energy source;

an N-channel transistor having a drain connected to the high voltage energy source and a source connected to a load;

a switching transistor having a collector being connected to the N-channel transistor gate and an emitter being connected to ground:

a charging capacitor being connected between the low voltage energy source and the switching transistor collector to store energy from the low voltage energy source, the charging capacitor being additionally connected across the N-channel transistor gate and source to energize the gate at a predetermined voltage above the source with the stored energy;

signaling means being connected to the switching transistor for biasing the switching transistor OFF which causes the low voltage energy stored in the capacitor to bias the N-channel transistor ON to transfer high voltage energy to the load, and biasing the switching transistor ON which biases the N-Channel transistor OFF to block the transfer of high voltage energy; and

means being connected between the N-channel transistor gate and source for limiting the N-channel transistor voltage to a maximum voltage level in response to the N-channel transistor being biased ON.

5,602,506

BACK BIAS VOLTAGE GENERATOR

Tae-Hoon Kim, and Young-Hyun Jun, both of Seoul, Rep. of Korea, assignors to Goldstar Electron Co., Ltd., Cheongju, Rep. of Korea

Filed Dec. 22, 1994, Ser. No. 362,299

Claims priority, application Rep. of Korea, Apr. 13, 1994, 7758/1994

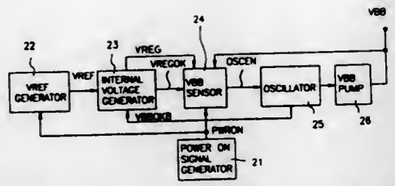
Int. Cl.[6] G05F *1/10*

U.S. Cl. 327—535 **7 Claims**

1. A back bias voltage generator comprising:

power-on signal generation means for generating a power-on signal when an external voltage remains at a constant level;

reference voltage generation means for generating a reference voltage in response to the power-on signal from said power-on signal generation means;



internal voltage generation means for generating an internal voltage and an internal/external voltage select signal in response to the reference voltage from said reference voltage generation means, said internal voltage being constant in level;

back bias voltage sensing means for generating an oscillation enable signal in response to the external voltage or the internal voltage from said internal voltage generation means under control of the internal/external voltage select signal from said internal voltage generation means;

oscillation means for generating an oscillating signal at a desired period and an enable signal in response to the oscillation enable signal from said back bias voltage sensing means and outputting the generated enable signal to said internal voltage generation means; and

back bias voltage pumping means for performing a voltage pumping operation in response to the oscillating signal from said oscillation means to generate a desired level of back bias voltage and outputting the generated back bias voltage to an external circuit and said back bias voltage sensing means.

5,602,507

ADAPTIVE DEMODULATING METHOD FOR GENERATING REPLICA AND DEMODULATOR THEREOF

Hiroshi Suzuki, Yokosuka, Japan, assignor to NTT Mobile Communications Network Inc., Tokyo, Japan

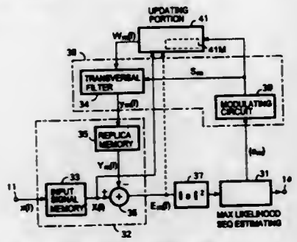
PCT No. PCT/JP94/01862, § 371 Date Apr. 3, 1995, § 102(e) Date Apr. 3, 1995, PCT Pub. No. WO95/12926, PCT Pub. Date May 11, 1995

PCT Filed Nov. 4, 1994, Ser. No. 411,748

Claims priority, application Japan, Nov. 5, 1993, 5-276723

Int. Cl.[6] H03D *3/00;* **H04L** *27/22*

U.S. Cl. 329—304 **22 Claims**



1. An adaptive demodulator, comprising:

maximum likelihood sequence estimating means for generating signal sequence candidates corresponding to respective state transitions at each state for an input signal at each of discrete time points at predetermined intervals, selecting a signal sequence candidate with a high likelihood state transition from all state transitions by using an error vector, and outputting the selected signal sequence candidate;

replica generating means for generating a modulated wave candidate vector from each said signal sequence candidate supplied from said maximum likelihood sequence estimating means, and calculating the inner product of the modulated wave candidate vector and a coefficient vector corresponding to each state of said maximum likelihood sequence estimating means to generate a replica;

error calculating means for calculating the difference between a replica vector with elements of a sequence of the generated replicas and an input signal vector with elements of a sequence of the input signals; and

updating means for updating the coefficient vector at the present time point i by using a generalized inverse matrix produced from a modulated wave candidate corresponding to the selected signal sequence candidate and a coefficient vector at a past time point (i−1).

5,602,508

GROUNDED-BASE TRANSISTOR AMPLIFIER

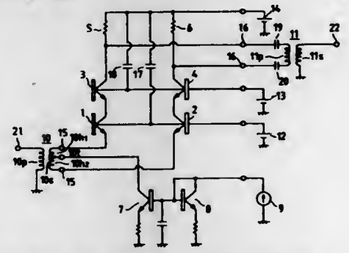
Takefumi Endou; Kazuo Watanabe, both of Gunma-ken, and Mitsunari Okazaki, Fukushima-ken, all of Japan, assignors to Alps Electric Co., Ltd., and Hitachi, Ltd., both of Tokyo, Japan

Filed Sep. 19, 1995, Ser. No. 530,561

Claims priority, application Japan, Sep. 19, 1994, 6-223425; Jun. 22, 1995, 7-156232

Int. Cl.[6] H03F *3/45*

U.S. Cl. 330—252 **9 Claims**



1. A grounded-base transistor amplifier comprising:

first and second transistors having bases connected to a common potential, emitters and collectors;

a first coil and a second coil connected in series between the emitters of the first and second transistors, the first and second coils having substantially identical inductance values; and

a constant-current circuit connected to a node located between the first and second coils, the constant-current circuit producing an operating bias current through the first and second transistors.

5,602,509

MOS OPERATIONAL TRANSCONDUCTANCE AMPLIFIER USING AN ADAPTIVELY-BIASED DIFFERENTIAL PAIR

Katsuji Kimura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 8, 1995, Ser. No. 488,779

Claims priority, application Japan, Jun. 9, 1994, 6-127887

Int. Cl.[6] H03F *3/45*

U.S. Cl. 330—253 **9 Claims**

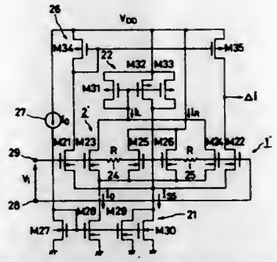
1. A MOS operational transconductance amplifier comprising:

(a) a differential pair of first and second MOSFETs whose sources are coupled together, said differential pair being driven by its tail current;

(b) a quadritail circuit whose output current has a square-law characteristic;

(c) a first current adjusting circuit for producing a first relationship between said tail current of said differential pair and said output current of said quadritail circuit;

(d) a constant current source or sink;



(e) said quadritail circuit comprising a first transistor pair of third and fourth MOSFETs, a second transistor pair of fifth and sixth MOSFETs, said quadritail circuit driven by a quadritail driving current;

sources of said third, fourth, fifth and sixth MOSFETs being coupled together to be driven by said quadritail driving current;

drains of said third and fourth MOSFETs of said first transistor pair being coupled together;

drains of said fifth and sixth MOSFETs of said second transistor pair being coupled together;

said output current of said quadritail circuit being derived from one of said coupled drains of said third and fourth MOSFETs and said coupled drains of said fifth and sixth MOSFETs;

gates of said third and fourth MOSFETs being applied with a differential input signal; and

gates of said fifth and sixth MOSFETs being coupled together and applied with a voltage divided component of said differential input signal;

(f) a second current adjusting circuit for producing a second relationship between the current produced by said constant current source or sink and said quadritail driving current; said second current adjusting circuit also producing a third relationship between said current produced by said constant current source or sink and said tail current of said differential pair;

(g) said differential input signal being applied across gates of said first and second MOSFETs;

(h) a differential output signal being derived from drains of said first and second MOSFETs; and

(i) a transconductance nonlinearity of said differential pair being compensated by said output signal of said quadritail circuit.

5,602,510

AUTOMATIC TRANSIMPEDANCE CONTROL AMPLIFIER HAVING A VARIABLE IMPEDANCE FEEDBACK

Robert J. Bayruns, Middlesex, and Timothy M. Laverick, Franklin Park, both of N.J., assignors to Analogics, Inc., Warren, N.J.

Continuation of Ser. No. 89,201, Jul. 8, 1993, Pat. No. 5,442,321. This application Jun. 8, 1995, Ser. No. 486,279

Int. Cl.[6] H03F *1/36;3/04;* **H03G** *3/20*

U.S. Cl. 330—282 **12 Claims**

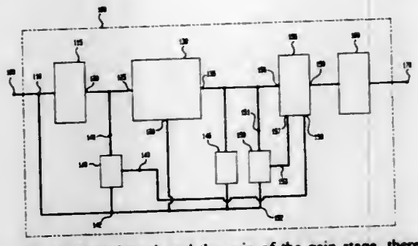
1. A wide dynamic range transimpedance amplifier comprising:

an amplifier including a signal input terminal for receiving input signal and a signal output terminal for providing output signal and at least one gain stage having a controllable gain;

a controllable variable impedance feedback branch coupled between said input and output terminals; and

a control circuit coupled to control the impedance of said variable impedance feedback branch and the gain of said gain stage to maintain the transimpedance amplifier within its stable operating regime,

said control circuit being operably responsive to an increase of the magnitude of said input signal to reduce the impedance of



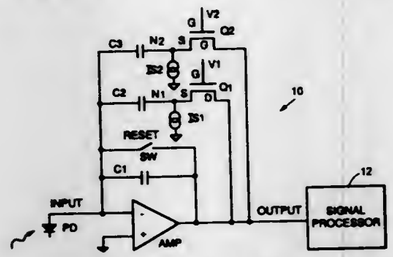
the feedback branch and the gain of the gain stage, thereby maintaining the stability of said transimpedance amplifier when the magnitude of said input signal is increased.

5,602,511

CAPACITIVE TRANSIMPEDANCE AMPLIFIER HAVING DYNAMIC COMPRESSION

James T. Woolaway, Goleta, Calif., assignor to Santa Barbara Research Center, Goleta, Calif.

Filed Jun. 7, 1995, Ser. No. 486,492
Int. Cl.[6] H03F 3/08
U.S. Cl. 330—282 **3 Claims**



1. A Compressing Capacitively Coupled Transimpedance Amplifier (CCTIA) circuit, comprising:

an amplifier having an input node for receiving a current signal and an output node for outputting a voltage signal;

a first feedback capacitance coupled between said input node and said output node, said first feedback capacitance having a value selected for setting a highest value of transimpedance for said CCTIA circuit;

first switch means coupled between said input node and said output node and in parallel with said first feedback capacitance, said first switch means being responsive to a reset signal being asserted for periodically connecting said input node to said output note, said output voltage of said amplifier assuming a first potential when said reset signal is asserted, said output voltage of said amplifier driving towards a second potential when said reset signal is not asserted; and

at least one additional feedback capacitance that is switchably coupled in parallel with said first feedback capacitance by second switch means that is connected in series with said at least one additional feedback capacitance between said output node and said input node, said second switch means being comprised of a Field effect transistor (FET) having a source terminal coupled to a first terminal of said at least one additional capacitance, a drain terminal coupled to said output node, and a gate terminal coupled to a predetermined voltage potential intermediate said first and

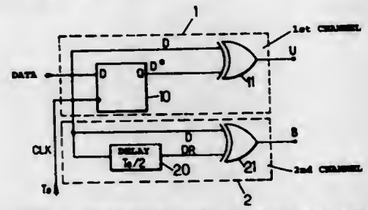
second potentials, wherein an open/closed state of said second switch means is a function of said voltage signal output from said output node.

5,602,512

COMPARATOR OF PHASE BETWEEN A DIGITAL SIGNAL AND A CLOCK SIGNAL, AND CORRESPONDING PHASE LOCKED LOOP

Christophe Neveu, Nantes, France, assignor to Matra MHS, Nantes, France

Filed Dec. 6, 1995, Ser. No. 568,341
Claims priority, application France, Dec. 8, 1994, 94 14780
Int. Cl.[6] H03D 13/00; H03L 7/085
U.S. Cl. 331—1 A **6 Claims**



1. Device for comparing the phase of a digital input data signal with that of a clock signal delivered by a reference oscillator, said device including:

a first channel formed by

a bistable flip-flop receiving said digital data signal on one input and said clock signal on a clock input and delivering a comparison signal,

a first exclusive OR logic gate receiving said digital data signal on a first input and said comparison signal on a second input, said first channel delivering a first detection signal of transition of the digital signal,

a second channel formed by

a second exclusive OR logic gate receiving the digital data signal on a first input,

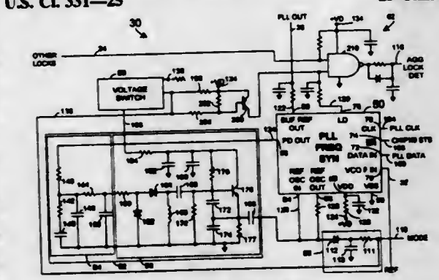
a delay circuit whose delay value is set and equal to half the period of said clock signal, said delay circuit receiving said digital data signal and delivering a delayed digital data signal to a second input of said second exclusive OR gate, said second channel delivering a second detection signal of transition of the digital input signal.

5,602,513

REVERSED PHASE-LOCKED LOOP

John P. De Lee, Jr., Decatur, Ga., assignor to Oki Telecom, Suwanee, Ga.

Continuation of Ser. No. 258,347, Jun. 10, 1994, Pat. No. 5,488,332. This application Jun. 6, 1995, Ser. No. 466,222
Int. Cl.[6] H03L 7/08; 7/085
U.S. Cl. 331—25 **25 Claims**



1. A phase-locked loop circuit comprising:

means responsive to a control signal for oscillating to produce a loop signal at a first frequency with a phase controlled by the control signal,

means coupled to said oscillating means responsive to the loop signal and a reference signal for both generating the control signal and buffering the loop signal to produce a controlled buffered output signal, and

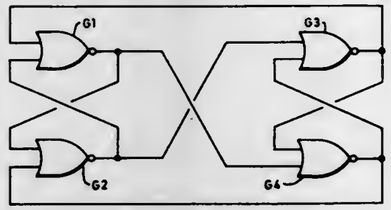
means for selectively reducing power consumption of said phase-locked loop circuit.

5,602,514

QUADRATURE OSCILLATOR HAVING A VARIABLE FREQUENCY

Trevor K. Monk, Chepstow, England, and Andrew M. Hall, Edinburgh, Scotland, assignors to SGS-Thomson Microelectronics, Ltd., Buckinghamshire, United Kingdom

Continuation of Ser. No. 360,697, May 4, 1995, abandoned. This application Apr. 23, 1996, Ser. No. 636,851
Claims priority, application United Kingdom, Apr. 30, 1993, 9308944
Int. Cl.[6] H03B 5/24; 27/00
U.S. Cl. 331—57 **11 Claims**



1. A quadrature oscillator comprising:

first and second stages, each stage comprising first and second NOR gates, wherein:

the output of the first NOR gate of the first stage is connected as an input to the second NOR gate of each of the first and second stages;

the output of the second NOR gate of the first stage is connected as an input to the first NOR gate of each of the first and second stages;

the output of the first NOR gate of the second stage is connected as an input to the first NOR gate of the first stage and the second NOR gate of the second stage;

the output of the second NOR gate of the second stage is connected as an input to the second NOR gate of the first stage and the first NOR gate of the second stage; and

each of the NOR gates comprises first and second input transistors that each have a control node for receiving an input signal and a controllable path connected between an output node and a reference voltage, a diode-connected transistor connected between the output node and the reference voltage, and a current source connected to the output node.

5,602,515

HIGH-FREQUENCY GENERATOR WITH HARMONIC-TUNED RESONANT CIRCUITS

Michael Held, and Jochen Stahl, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, München, Germany

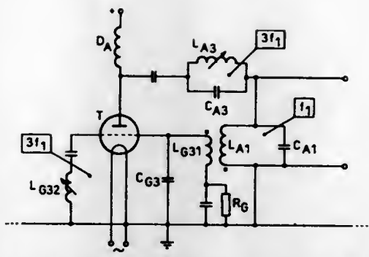
Filed Aug. 28, 1995, Ser. No. 520,278
Claims priority, application Germany, Aug. 26, 1994, 44 31 381.0
Int. Cl.[6] H03B 5/10
U.S. Cl. 331—170 **18 Claims**

1. A self-starting high-frequency generator comprising:

a) a grid-controlled electron tube having an anode circuit and a control-grid circuit;

b) a first resonant circuit in the anode circuit tuned to an operating frequency;

c) a second resonant circuit in the anode circuit tuned to a multiple of the operating frequency;



d) a feedback circuit for feedback of power from the anode circuit to the control-grid circuit; and

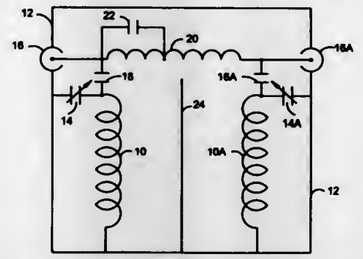
e) a resonant circuit in the control-grid circuit tuned to said multiple of the operating frequency, and including a component in common with the feedback circuit.

5,602,516

ASYMMETRICAL NOTCH FILTER

Dale R. Parfitt, 6869 Bayshore Dr., Lantana, Fla. 33462

Filed Oct. 16, 1995, Ser. No. 543,415
Int. Cl.[6] H03H 7/01
U.S. Cl. 333—176 **2 Claims**



1. An asymmetrical notch filter comprising: a helical transmission line whose bottom end is connected to a conductive housing that is at electrical ground; and top end of said helical transmission line connected to an input terminal through a fixed capacitive means; a variable capacitor is connected in parallel with said helical transmission line; a second helical transmission line whose bottom end is connected to said conductive housing and top end connected to an output terminal through second capacitive means; a second variable capacitor is connected in parallel with said second helical transmission line; first and second helical transmission lines electrically isolated from each other by a conductive partition and said conductive housing; said input and output terminals connected by an inductor.

5,602,517

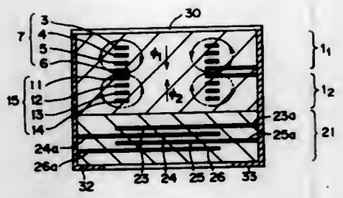
LAMINATE TYPE LC COMPOSITE DEVICE HAVING COILS WITH OPPOSING DIRECTIONS AND ADJACENT LEADS

Toshimi Kaneko, Sabae; Hiromichi Tokuda, Takefu, and Yasuhiro Nakata, Fukui, all of Japan, assignors to Murata Manufacturing Co., Ltd., Nagaokakyo, Japan

Filed Jul. 26, 1995, Ser. No. 507,713
Claims priority, application Japan, Jul. 29, 1994, 6-178174
Int. Cl.[6] H03H 7/01
U.S. Cl. 333—185 **2 Claims**

1. A laminate type LC device having first and second opposing main surfaces, first and second opposing side surfaces, and third

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and fourth opposing side surfaces, the laminate type LC composite device comprising:

a first coil section which has a first spiral coil;

a second coil section which has a second spiral coil, the second spiral coil having a coiling direction opposite to a coiling direction of the first spiral coil; and

a capacitor section;

wherein:

the first coil section, the second coil section and the capacitor section are laminated such that the second coil section is between the first coil section and the capacitor section;

a first leading portion of the first spiral coil and a first leading portion of the second spiral coil are led to the first side surface; and

a second leading portion of the first spiral coil is led to the third side surface and a second leading portion of the second spiral coil is led to the fourth side surface, said first leading portions of said first spiral coil and of said second spiral coil being arranged adjacent in a direction from the first main surface to the second main surface at a location along said direction which is between said second leading portions of said first and second spiral coils.

5,602,518

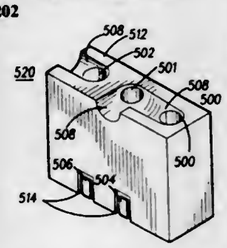
CERAMIC FILTER WITH CHANNELED FEATURES TO CONTROL MAGNETIC COUPLING

David G. Clifford, Jr., and Brian C. Walker, both of Albuquerque, N.M., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 24, 1995, Ser. No. 410,024

Int. Cl.[6] H01P *1/205*

U.S. Cl. 333—202 **20 Claims**



1. A ceramic filter with at least one transmission zero, comprising:

(a) a filter body comprising a block of dielectric material having top, bottom, and side surfaces, and having a plurality of metallized through-holes extending from the top to the bottom surfaces defining resonators, the surfaces being substantially covered with a conductive material defining a metallized layer, with the exception that the top surface is uncoated;

(b) first and second input-output pads comprising an area of conductive material on at least one of the side surfaces and at least immediately surrounded by an unmetallized area; and

(c) the bottom surface having at least one metallized channel that extends from one of the resonators to at least one of an adjacent resonator and an adjacent side surface.

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SYNCHRONOUS CABLE COUPLING DEVICE OF FLY BACK TRANSFORMER

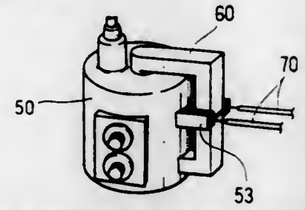
Myung H. Kim, Kyongki-Do, Rep. of Korea, assignor to Samsung Electro-Mechanics Co., Ltd., Kyongki-do, Rep. of Korea

Filed Dec. 29, 1995, Ser. No. 581,686

Claims priority, application Rep. of Korea, Dec. 30, 1994, 1994-38985; Dec. 18, 1995, 1995-51395

Int. Cl.[6] H01F *17/02;27/30*

U.S. Cl. 336—96 **7 Claims**



1. In a fly back transformer (PBT) in which an epoxy resin being an insulation resin is filled and molded between a high voltage bobbin and a low voltage bobbin, a FBT case **50** houses the high voltage and low voltage bobbins wound with coils, and a "C"-shaped ferrite core **60** is inserted and fixed to top and bottom portions of the FBT case **50** while maintaining a predetermined gap, a synchronous cable coupling device of the FBT comprising:

metal supporting means **53** extending to a wall surface of said FBT case and formed with a groove **52**;

a shield metal **51** disposed in the groove of said metal supporting means, wherein the ferrite core **60** is inserted in and supported by said metal supporting means **53**; and

a synchronous cable **70** connected to and grounded by said shield metal and provided so as to transmit an induced voltage of the FBT.

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ELECTRICAL RESISTANCE ELEMENT AND USE OF THIS RESISTANCE ELEMENT IN A CURRENT LIMITER

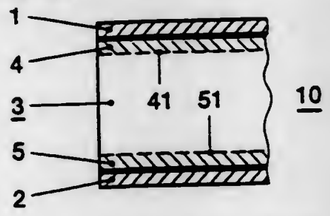
Tudor Baiatu, Brugg; Felix Greuter, Baden-Rüthof, and Ralf Strümpler, Baden, all of Switzerland, assignors to ABB Research Ltd., Zurich, Switzerland

Filed Aug. 18, 1994, Ser. No. 291,903

Claims priority, application European Pat. Off., Aug. 25, 1993, 93113545

Int. Cl.[6] H01C *7/10*

U.S. Cl. 338—22 R **25 Claims**



1. A current-limiting resistance element, comprising:

a resistance body;

two plane-parallel, pressurized electrodes, the resistance body being arranged between the two electrodes; and

the resistance body having PTC behavior and including at least one polymer matrix and at least one first filler component of electrically conducting particles embedded into the polymer matrix, the resistivity of the resistance body increasing, at least in a surface layer of the resistance body disposed adjacent a first electrode of the two electrodes, above a temperature limit value when a short-circuit current occurs, body including, at least in a zone extending parallel to the surface layer and taking up the greatest part of its volume, a second filler component, the second filler component being embedded into the polymer matrix and being selected such that a composite material containing at least the polymer matrix and the second filler component has PTC behavior and a changing behavior at a PTC transition of the composite material which is greater by at least one order of magnitude in comparison with a PTC transition of the surface layer, and a resistivity of the composite material is lower by at least one order of magnitude than a composite material formed by the polymer matrix and the first filler component.

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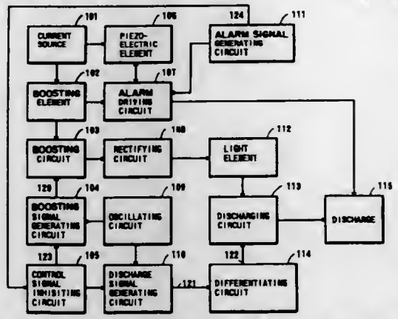
ELECTRONIC DEVICE WITH LIGHT

Tomohiro Takahashi, Chiba, Japan, assignor to Seiko Instruments Inc., Japan

Filed Oct. 19, 1994, Ser. No. 325,812

Int. Cl.[6] G08B *27/00*

U.S. Cl. 340—326 **20 Claims**



7. An electronic device with a display having a light source, comprising: light source driving means for driving a light source; sound generating means for generating an audible sound in accordance with an alarm signal; alarm signal generating means for generating an alarm signal for controlling the sound generating means; a power source for supplying a voltage for selectively driving one of the light source and the sound generating means; discharge means for discharging the light source to prevent the light source from becoming overcharged; and means for preventing operation of the light source driving means in accordance with a signal outputted from the alarm signal generating means, such that simultaneous operation of the light source and the sound generating means is prevented.

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VISUAL SIGNALING SYSTEM

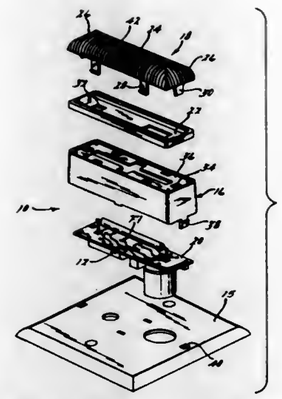
John R. Pacelli, Holland, Mich., assignor to Gentex Corporation, Zeeland, Mich.

Filed Jan. 28, 1994, Ser. No. 188,022

Int. Cl.[6] G08B *5/00*

U.S. Cl. 340—331 **6 Claims**

6. A visual signaling system for simultaneously flashing multiple strobe lights, said system comprising, in combination, a plurality of separate signaling units, means for providing dc electrical power to each of said units, each of said units incorporating a strobe light operable to emit flashes of light, capacitor means for storing power and electrically connected to said means for providing electrical power, means for achieving and maintaining a steady state voltage on said capacitor means, and means electrically connected to each of said strobe lights and electrically connected with said means for storing power for periodically electrically energizing each of said strobe lights whereby all of said strobe lights simultaneously emit flashes of light.



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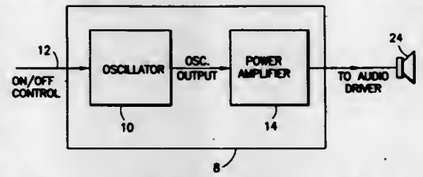
DEER REPELLENT SYSTEM

James Turchioe, West Air Plaza, 10 New King St., Ste. 200, White Plains, N.Y. 10604, and Thomas Turchioe, P.O. Box 1068, Danville, Calif. 94526

Filed Oct. 30, 1995, Ser. No. 550,381

Int. Cl.[6] G08B *3/00*

U.S. Cl. 340—384.2 **11 Claims**



1. An animal repelling apparatus operative in the ultrasonic frequency range comprising: a motion detector, a signal generation module including an oscillator, said oscillator having a power source and including a frequency switcher clock, a frequency switcher circuit and a wave generator, said wave generator outputting solely a square wave, said clock sending a clock signal to said frequency switcher circuit which determines how often said wave generator changes it's output frequency, a power amplifier receiving the square wave signal generated from said oscillator, and a piezo-electric audio driver for receiving said square wave signal which is projected in the form of ultrasonic sound waves of fundamental frequency plus harmonic frequencies, said audio driver being a horn-type device having a throat portion the depth of which is configured beyond that inherent in the square wave that is fed to the audio driver, said wave being dispersed in a pattern to repel animals entering the area who have been detected by said motion detector.

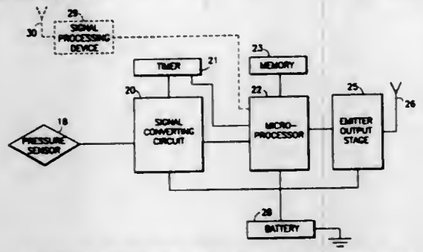
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5,602,524

DEVICE FOR MONITORING THE AIR-PRESSURE IN PNEUMATIC TIRES FITTED ON VEHICLE WHEELS

Markus Mock, Brunnwiesenstrasse 6, CH-8610 Uster, and Ernst Vollm, In Lätten 7, CH-8802 Kilchberg, both of Switzerland

PCT No. PCT/EP93/00452, § 371 Date Nov. 23, 1993, § 102(e) Date Nov. 23, 1993, PCT Pub. No. WO93/16891, PCT Pub. Date Sep. 2, 1993
PCT Filed Feb. 26, 1993, Ser. No. 137,155
Claims priority, application Germany, Feb. 26, 1992, 42 05 911.9
Int. Cl.[6] B60C *23/02*
U.S. Cl. 340—447 21 Claims



1. A device for monitoring the air pressure in the air chamber of pneumatic tires fitted on vehicle wheels comprising:

a pressure measuring device mounted on a vehicle wheel which measures the air pressure in the air chamber of the wheel end outputs an electrical pressure signal representative of the air pressure in the vehicle wheel;

a transmitter mounted to the vehicle wheel which receives the electrical pressure signal output from the pressure measuring device and sends out a pressure transmitting signal corresponding to said air pressure;

a receiver associated with the transmitter and mounted at a distance to the vehicle wheel which receives the pressure transmitting signal transmitted from the associated transmitters

a display device which is connected with the receiver and displays data as numbers or symbols which have been taken from the pressure transmitting signal received from the receiver;

wherein the transmitter comprises an emitter-control device which controls the emittance of the pressure transmitting signal and a signal-generating device which generates an identification signal which is unique for the transmitter and clearly identifies same;

the emitter-control device works such that the identification signal is transmitted at least once before or after the emittance of the pressure transmitting signal;

the receiver comprises at least a memory in which is stored an identification reference signal related to the associated transmitter in accordance with a predetermined relationship criteria;

the receiver comprises a comparison device which checks if an identification signal transmitted from a transmitter has the relationship criteria to identification reference signal stored in the receiver, and that further processing of the pressure transmission signal taken from the receiver only takes places if the identification signal received by the receiver and the identification reference signal stored in the receiver fulfill the relationship criteria;

the identification reference signal stored in the receiver is changeable in order that the identification signal from the associated transmitter matches the identification reference signal of the receiver; and

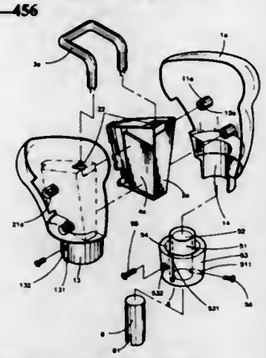
the receiver is connected with a switching device which enables the receiver to switch over from normal operating mode, in which the air pressure is monitored, to pairing mode, in which the receiver collects the identification signal of the transmitter and stores this as an identification signal.

5,602,525

SIGNAL LAMP ASSEMBLY FOR USE WITH THE GEAR LEVER

Chin-Yung Hsu, 4F, No. 7, Lane 10, Sec. 3, Hsin Sheng S. Rd., Taipei, Taiwan

Filed Feb. 1, 1995, Ser. No. 381,732
Claims priority, application China, Dec. 29, 1994, 94248612.9
Int. Cl.[6] B60Q *1/00*
U.S. Cl. 340—456 7 Claims



1. A signal lamp assembly comprising:

a socket for covering on the top end of the gear lever of a motor vehicle, said socket having a plurality of bottom notches;

a mount for mounting on said socket, said mount comprising an upright center post, a longitudinal bottom hole defined within said upright center post for receiving said socket, an annular outer wall defining an annular chamber around said upright center post, a plurality of locating holes radially made through said annular outer wall and said longitudinal grooves, and a screw hole made through said annular outer wall at an elevation below said locating holes for the insertion of a tightening-up screw into one bottom notch on said socket to fix said mount to said gear lever;

a transparent shell mounted on said mount, said transparent shell comprising a bottom coupling neck inserted into the annular chamber on said mount, a longitudinal bottom hole, which receives the upright center post of said mount, a plurality of locating holes respectively connected to the locating holes on said mount by screws, and a plurality of locating posts raised from an inside wall thereof, each locating post defining a respective pin hole;

a circuit board mounted inside an electric box;

said electric box mounted inside said shell, said electric box having a plurality of locating pins respectively fitted into the locating holes on said locating posts of said shell, two insertion holes on a top side thereof, and a control panel disposed outside said shell, said control panel having a switch and an electric socket connecting said circuit board through said switch; and

a neon tube disposed within said shell outside said electric box and having two opposite ends respectively inserted into the insertion holes on said electric box and electrically connected to said circuit board and controlled to operate by said switch.

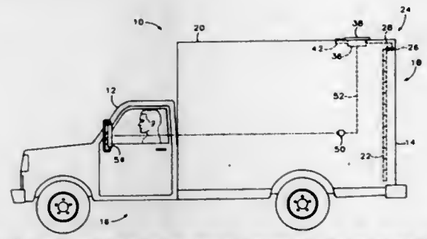
5,602,526

VEHICLE OPEN DOOR WARNING SYSTEM

Robert M. Read, 2716 NE. 160th Ave., Vancouver, Wash. 98684

Filed Nov. 21, 1994, Ser. No. 342,806
Int. Cl.[6] B60Q *1/00*
U.S. Cl. 340—457 16 Claims

1. A warning device for a vehicle having a cab portion and a trailer portion with a door mounted thereon, the warning device comprising:



an open door detector mountable proximate to the door that generates an open door signal responsive to the door being opened, the open door detector including:

a sensor mountable on the trailer portion;

an actuator mountable on the door; and

a power supply coupled to the sensor, the power supply including a power module and a solar cell mountable on a roof of the trailer portion and being coupled to the power module for supplying current thereto; and

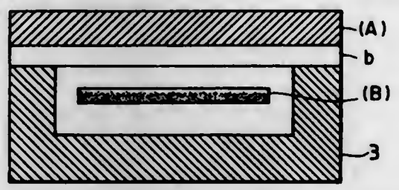
a light module mountable on a side of the trailer portion and operatively coupled to the open door detector to receive the open door signal, the light module emitting a warning light responsive to the open door signal, the warning light directed toward the cab portion so that the warning light is visible to a driver of the vehicle.

5,602,527

MAGNETIC MARKER FOR USE IN IDENTIFICATION SYSTEMS AND AN INDENTIFICATION SYSTEM USING SUCH MAGNETIC MARKER

Wataru Suenaga, Saitama, Japan, assignor to Dainippon Ink & Chemicals Incorporated, Tokyo, Japan

Filed Feb. 23, 1995, Ser. No. 393,319
Int. Cl.[6] G08B *13/24*
U.S. Cl. 340—551 20 Claims



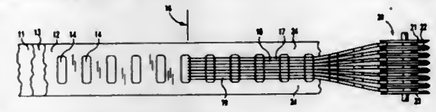
1. A magnetic marker for use with an object identification system that comprises an assembly of a dry coating that has a magnetic powder with a saturation flux density of at least 100 emu/g dispersed in a binder and a magnetostrictive metal which, when said coating is magnetized, resonates mechanically at at least one of predetermined frequencies in the range of varying frequencies generated from an applied alternating magnetic field, thereby experiencing changes in flux density and permeability and which, when said coating is not magnetized, does not resonate at said at least one of the predetermined frequencies, thus experiencing no changes in flux density or permeability, said dry coating and said metal being in a superposed relationship in such a way that the latter is capable of mechanical resonance, said marker being so adapted that when said coating is magnetized, said at least one of the predetermined frequencies at which the flux density or permeability will change is generated as a signal in response to said applied alternating magnetic field.

5,602,528

THEFT DETECTION MARKER AND METHOD

William J. Witchger, Indianapolis, Ind., assignor to Marian Rubber Products Company, Inc., Indianapolis, Ind.

Filed Jun. 20, 1995, Ser. No. 492,892
Int. Cl.[6] G08B *13/187*
U.S. Cl. 340—551 15 Claims



1. A method for producing a theft detection marker and comprising the steps of:

taking a first ribbon of a material having high magnetic permiability and a second ribbon of a material having high magnetic coercivity;

punching out areas of the second ribbon at spaced locations along its length to provide slots therein at spaced locations along its length;

moving the two ribbons toward take-up devices and adhesively connecting portions of the second ribbon to the first ribbon;

passing the connected ribbon portions through a slitting station to divide the connected ribbon portions into strips; and

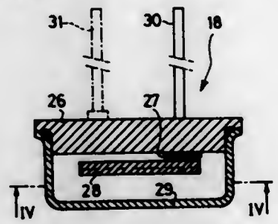
collecting the strips separately onto the take-up devices.

5,602,529

STRUCTURE-BORNE SOUND DETECTOR FOR AN INTRUDER ALARM SYSTEM

George Wegmann, Ebnat-Kappel; Cornel Studach, Hombrechtikon; Peter Märki, Stäfa; Peter Steiner, Jona, and Peter Ryser, Stäfa, all of Switzerland, assignors to Cerberus AG, Mannedorf, Switzerland

Filed Jan. 19, 1995, Ser. No. 375,580
Claims priority, application Switzerland, Jan. 20, 1994, 00172/94
Int. Cl.[6] G08B *13/00*
U.S. Cl. 340—566 12 Claims



1. A structure-borne sound detector for an intruder alarm system, with a structure-borne sound microphone, said microphone including a piezoelectric sensor for sensing structure-borne sound vibrations and for converting these vibrations into electrical signals, wherein said sensor is connected to an electronic evaluation unit, wherein the piezoelectric sensor contains a vibrating bar which is formed by a bimorph element and is attached by hybrid technology to a conductive spacer member carrier.

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5,602,530

ANTI-THEFT DEVICE FOR BOTTLES

Bertil Holmgren, Vellinge, Sweden, assignor to MW International Ltd., West Byfleet, United Kingdom

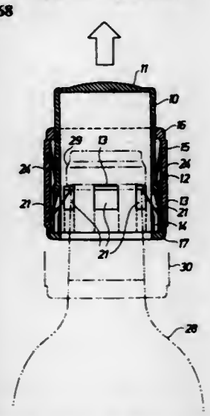
PCT No. PCT/SE94/00201, § 371 Date Dec. 21, 1995, § 102(e) Date Dec. 21, 1995, PCT Pub. No. WO94/20712, PCT Pub. Date Sep. 15, 1994

PCT Filed Mar. 11, 1994, Ser. No. 525,644

Claims priority, application Sweden, Mar. 12, 1993, 9300837

Int. Cl.[6] G08B *13/14*

U.S. Cl. 340—568 **11 Claims**



1. Anti-shop-lifting device, intended to be passed onto and locked to a bottle-neck having an external circumferential bead comprising an inner socket (**10**) to be passed onto the bottle-neck, an outer socket (**15**) mounted externally on the inner socket, which can be shifted in relation to the inner socket between two end positions, a number of retainers (**21**) distributed peripherally, which in an engaged position engage behind the bead on the bottle-neck in order to prevent the anti-shop-lifting device from being withdrawn from the bottle-neck, and latch means (**24**) for locking the outer socket in one end position with the retainers in the engaged position, which latch means is biased to latching position but can be actuated by means of an external element (**31**) to a disengaged position against the bias in order to allow movement of the retainers from the engaged position and thus withdrawal of the anti-shop-lifting device from the bottle-neck, characterized in that the retainers (**21**) distributed circumferentially on the inner surface of the outer socket, when the outer socket is in said one end position extend into the inner socket through openings (**13**) in the wall of said inner socket to the engaged position, the outer socket after actuation of the latch means to disengaged position being adjustable from said one end position towards the other end position under withdrawal of the retainers through the openings from said engaged position.

5,602,531

ELECTRONIC ARTICLE SURVEILLANCE SYSTEM WITH ADAPTIVE FILTERING AND DIGITAL DETECTION

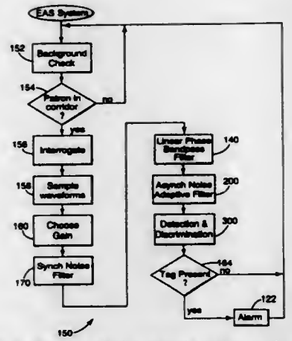
Michael J. Rude, St. Paul; Samuel H. Tao, and John E. Nelson, both of Woodbury, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 418,817, Apr. 7, 1995, abandoned. This application May 7, 1996, Ser. No. 646,005

Int. Cl.[6] G08B *13/181*

U.S. Cl. 340—572 **20 Claims**

1. An electronic article surveillance system in which a drive field signal is generated in an interrogation corridor to detect presence of a sensitized tag, comprising:



means for acquiring a passive snapshot of an environment in the corridor;

means for acquiring an interrogation snapshot of the environment in the corridor; and

an adaptive filter, connected to receive the passive snapshot and to receive the interrogation snapshot, and adapted to adaptively filter the passive snapshot and subtract the filtered passive snapshot from the interrogation snapshot to produce a recovered signal.

5,602,532

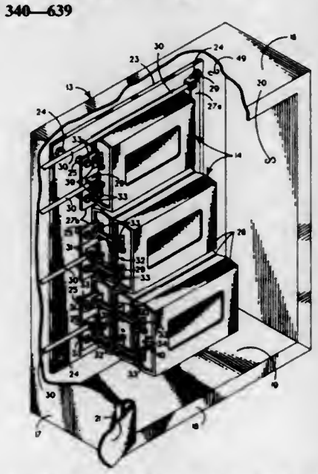
AUDIO COUPLED ANNUNCIATING SYSTEM FOR ELECTRICAL PANEL BOXES

Barry D. Ryan, Coeur d'Alene, Id., assignor to A.C. Data Systems of Idaho, Inc., Hayden Lake, Id.

Filed Dec. 20, 1994, Ser. No. 360,982

Int. Cl.[6] G08B *21/00*

U.S. Cl. 340—639 **12 Claims**



1. An acoustically coupled annunciating system, comprising:

an electrical panel box having a peripherally defined internal chamber accessible by a door for containment of multiple surge suppression boxes stacked toward said door, at least one of the surge suppression boxes including:

a surge suppressor;

an activating circuit, interconnected with the surge suppressor to determine an electrical condition which is to be annunciated, the activating circuit having

powering circuit for powering the activating circuit,

sensing circuit for sensing an electrical event of said electrical condition to be annunciated and responsively creating an electrical signal, and

sound transmitting circuit for generating sound waves responsive to the electrical signal created by the sensing circuit;

an annunciating circuit acoustically coupled to the activating circuit to annunciate the sensed electrical condition, having

sound receiving circuit for receiving sound waves from the sound transmitting circuit and responsively generating an electrical signal independently of where the sound receiving circuit is located in the electrical panel box in relation to the sound transmitting circuit;

switching circuit that responsively electrically powers at least one annunciating device to annunciate happening of the sensed electrical condition.

5,602,533

DEVICE FOR SENSING A STATE CHANGE IN A MECHANICAL SYSTEM, METHOD FOR MONITORING THE STATE OF A MECHANICAL SYSTEM AND USE OF SAID DEVICE

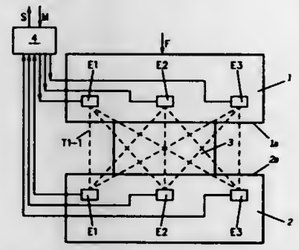
Antonello Boverio, 1445 Vuiteboeuf, Switzerland

Filed May 30, 1995, Ser. No. 453,644

Claims priority, application Switzerland, Oct. 4, 1993, 3076/93; WIPO, Sep. 30, 1994, PCT/CH94/00196

Int. Cl.[6] G08B *21/00*

U.S. Cl. 340—686 **10 Claims**



1. A device for sensing a state change of a mechanical system, said device comprising:

sensing means including a plurality of sound emitting elements and a plurality of sound receiving elements, either said sound emitting elements or said sound receiving elements being housed on a movable portion of said mechanical system, and the other of said sound emitting elements or said sound receiving elements being housed on a fixed portion of said mechanical system;

command means for controlling said sound emitting elements;

computation and comparison means operatively connected to said sound receiving elements, for comparing a received sound signal with a plurality of memorized values stored in a memorized means, said computation and comparison means producing an output signal corresponding to the distance between said sound emitting elements and said sound receiving elements indicative of various contacting and partial contacting states between said portions of said mechanical system.

5,602,534

ELECTRICALLY CONDUCTIVE HOUSING FOR AN ELECTRONIC COMPONENT, ESPECIALLY A DEFLECTION SENSOR AND A SECURITY FENCE ALARM SYSTEM FOR USE THEREWITH

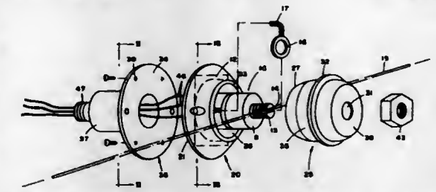
Baruch Granat, Rishon Le-Zion, Israel, assignor to Granat-The Israeli Security Center Ltd., Israel

Filed Jun. 30, 1995, Ser. No. 497,386

Claims priority, application Israel, Jul. 1, 1994, 110186

Int. Cl.[6] G08B *13/12*

U.S. Cl. 340—693 **27 Claims**



1. An electrically conductive housing for completely enveloping an electronic component so as to screen the electronic component from electromagnetic radiation whilst permitting spherical rolling movement of the electronic component relative to the housing when acted upon by an external force.

5,602,535

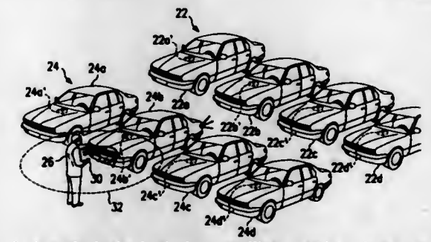
VEHICLE SECURITY SYSTEM BASED ON TWO STEP COMMUNICATION RANGE BETWEEN TRANSMITTER AND RECEIVER

William E. Boyles; Philip G. Burger, and David S. Chang, all of Houston, Tex., assignors to The Friedkin Corporation, Houston, Tex.

Filed Jul. 15, 1994, Ser. No. 275,592

Int. Cl.[6] H04Q *1/00*

U.S. Cl. 340—825.31 **11 Claims**



1. A method of selectively controlling a vehicle alarm system comprising a transmitter and a security module responsive to a control code from said transmitter, the method comprising the steps of:

adjusting a variable feature of said transmitter to define a first predetermined distante;

from a transmitter having a sufficient power source, transmitting a first control code within said first predetermined distance with said transmitter;

after said transmitting step, responding to said first control code with said security module only if said security module is within said first predetermined distance of said transmitter, wherein said first predetermined distance is a first short distance;

adjusting a variable feature of said transmitter to define a second predetermined distance;

programming said security module to respond to a second control code and not to respond to said first control code;

transmitting said second control code within said second predetermined distance with said transmitter; and

responding to said second control code from said transmitter with said security module only if said security module is within said second predetermined distance of said second transmitter, wherein said second predetermined distance is a second distance which exceeds said first short distance.

5,602,536

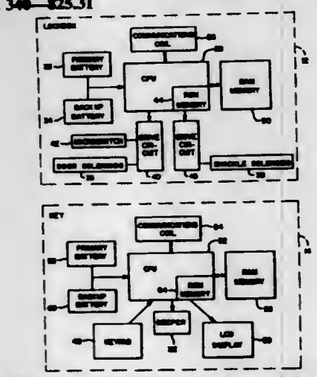
DATA SYNCHRONIZATION METHOD FOR USE WITH PORTABLE, MICROPROCESSOR-BASED DEVICE

Walter G. Henderson; Wayne F. Larson, and Philip D. Barrett, all of Salem, Oreg., assignors to Supra Products, Inc., Salem, Oreg.

Division of Ser. No. 138,555, Oct. 15, 1993, abandoned, which is a continuation of Ser. No. 864,958, Apr. 7, 1992, abandoned, which is a division of Ser. No. 806,801, Dec. 5, 1991, Pat. No. 5,245,652, which is a continuation of Ser. No. 640,255, Jan. 11, 1991, abandoned, which is a division of Ser. No. 303,711, Jan. 27, 1989, Pat. No. 4,988,987, which is a continuation-in-part of Ser. No. 192,853, May 11, 1988, abandoned, which is a division of Ser. No. 15,864, Feb. 17, 1987, Pat. No. 4,766,746, which is a continuation-in-part of Ser. No. 831,601, Feb. 21, 1986, Pat. No. 4,727,368, which is a continuation-in-part of Ser. No. 814,364, Dec. 30, 1985, abandoned, which is a continuation-in-part of Ser. No. 788,072, Oct. 16, 1985, abandoned. This application Jun. 7, 1995, Ser. No. 483,823

Int. Cl.[6] H04Q *1/00*

U.S. Cl. 340—825.31 **4 Claims**



1. A method of exchanging data between first and second devices, the first and second devices each including a microprocessor and associated data storage, the data storage in each device being allocated to a variety of different data, the data storage in both the first and second devices including a collection of data that is desired to be kept synchronized between the first and second devices, the collection of data in the first device being stored in association with first date data, and the collection of data in the second device being stored in association with second date data, the first and second date data indicating the relative freshness of the associated collection of data, the method comprising:

(a) establishing a data communication link between the devices;

(b) transferring the first date data from the first device to the second device, and providing the transferred first date data to the microprocessor of the second device;

(c) providing the second date data to the microprocessor of the second device from the data storage of the second device;

(d) using the microprocessor in the second device to compare the first and second date data to determine which associated collection of data is the freshest;

(e) if the collection of data in the first device is determined by the microprocessor comparison of date data to be fresher than that in the second device, copying the collection of data from the first device to the second device, and changing the second date data to match the first date data;

(f) if the collection of data in the second device is determined by the microprocessor comparison of date data to be fresher than that in the first device, copying the collection of data from the second device to the first device, and changing the first date data to match the second date data; and

(g) terminating the data communication link between the devices;

wherein the device with the fresher collection of data updates the collection of data in the other device so both contain the collection of data determined to be the freshest.

5,602,537

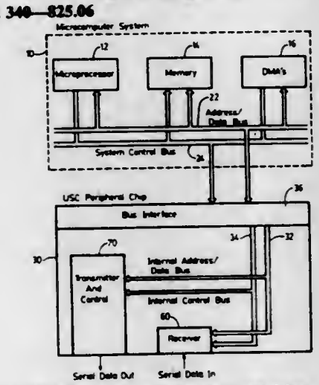
TECHNIQUE FOR ELIMINATING DATA TRANSMIT MEMORY UNDERRUNS

Monte J. Dalrymple, Fremont, Calif., assignor to Zilog, Inc., Campbell, Calif.

Continuation of Ser. No. 242,251, May 13, 1994, abandoned. This application Mar. 29, 1996, Ser. No. 626,163

Int. Cl.[6] G06F *13/38*

U.S. Cl. 340—825.06 **15 Claims**



1. An apparatus for transmitting data, comprising:

a transmit first-in, first-out buffer system including a memory that is adapted to receive data in parallel over a bus and a transmitter serially transmitting data out a single line from the memory; and

a monitoring device causing the transmitter to begin serially transmitting data from the memory when quantity of data in the memory exceeds a predetermined level so that data underruns are avoided near the start-up of data transmission if the placing of data into the memory over the bus is interrupted before the predetermined level of data is placed in the memory.

5,602,538

APPARATUS AND METHOD FOR IDENTIFYING MULTIPLE TRANSPONDERS

Kurt Orthmann, Munich, and Andreas Hagl, Dachau, both of Germany, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 27, 1994, Ser. No. 282,096

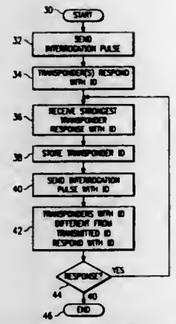
Int. Cl.[6] H04B *7/00*

U.S. Cl. 340—825.54 **9 Claims**

1. A method of identifying a plurality of transponders entering into an inquiry field of an interrogation unit, the method comprising the steps of:

assigning a unique identification code to each of said plurality of transponders;

generating and sending an interrogation pulse, said interrogation pulse including any identification code stored in an interrogation unit memory;



receiving said interrogation pulse and comparing said identification code therein with said unique identification code;

sending a response to said interrogation pulse if said identification codes are not equal, said response including said unique identification code;

receiving a recognizable response from said plurality of transponders and storing said identification code included therein, wherein said recognizable response is the response with the greatest field strength.

5,602,539

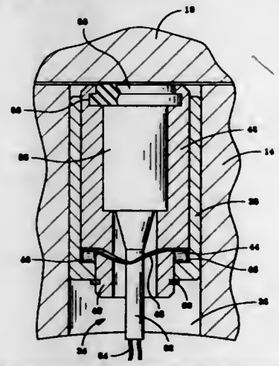
BEARING WITH AN ELECTRIC-ACOUSTIC TRANSDUCER FOR TRANSMITTING INFORMATION REGARDING VARIOUS PARAMETERS WITHIN THE BEARING

Richard L. Lemoine, Harwinton; Richard W. Browner, Waterbury; John K. Pearson, Avon, and Mark I. Jurras, III, Canton Center, all of Conn., assignors to The Torrington Company, Torrington, Conn.

Filed Aug. 22, 1995, Ser. No. 518,086

Int. Cl.[6] G08B *21/00*

U.S. Cl. 340—870.16 **6 Claims**



1. A bearing adapted to be mounted within a housing having an acoustic-electric transducer mounted on its outside comprising:

an annular rotatable race;

an annular stationary race having a greater inside diameter than the outside diameter of the annular rotatable race;

a plurality of rollers located in the annular space between said races;

at least one electric-acoustic transducer mounted on the annular stationary race, said electric-acoustic transducer having an elastic portion adapted to contact the housing to maximize the acoustic interface between the electric-acoustic transducer and the housing and means for pressing the elastic portion against the housing; and

means mounted on the annular stationary race for sensing a parameter within the bearing and feeding electric signals to the electric-acoustic transducer related to the value of the parameter sensed.

5,602,540

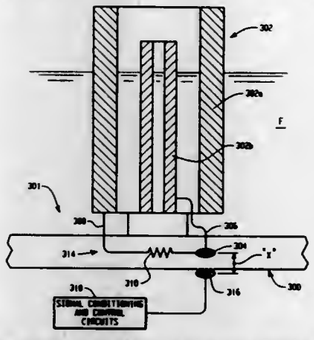
FLUID GAUGING APPARATUS WITH INDUCTIVE INTERROGATION

William B. Spillman, Jr., Charlotte, Vt., assignor to Simmonds Precision Products Inc., Akron, Ohio

Continuation-in-part of Ser. No. 76,322, Jun. 14, 1993, Ser. No. 76,514, Jun. 15, 1993, abandoned, and Ser. No. 76,512, Jun. 14, 1993, Pat. No. 5,433,115. This application May 19, 1994, Ser. No. 245,945

Int. Cl.[6] G08C *19/10*

U.S. Cl. 340—870.37 **28 Claims**



1. Gauging apparatus for fluid containers comprising: a capacitance disposed in the container that changes value based on the volume of fluid in the container; a first antenna disposed below an outer surface of the container and coupled to the capacitance to form a resonant circuit having a resonant frequency that is a function of the capacitance value; a second antenna magnetically coupled with the first antenna across a coreless gap; and a gauging circuit coupled to the second antenna and comprising an oscillator for applying an excitation signal at a number of different frequencies to the second antenna with the resonant circuit operating as a load for the gauging circuit with the load changing in relation to the capacitance value, and a signal processing circuit that detects said resonant frequency based on detecting current amplitude in the second antenna during application of said excitation signal and as a function of said load.

5,602,541

SYSTEM FOR DRILLING DEVIATED BOREHOLES

Laurier E. Comeau, Ledoc; Randal H. Pustanyk, Millet, both of Canada, and Nicholas P. Wallis, Barnwood, England, assignors to Baroid Technology, Inc., Houston, Tex.

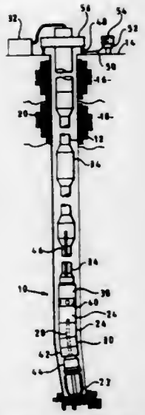
Continuation of Ser. No. 190,719, Feb. 1, 1994, Pat. No. 5,410,303, which is a continuation of Ser. No. 879,189, May 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 750,650, Aug. 27, 1991, Pat. No. 5,163,521. This application Apr. 24, 1995, Ser. No. 427,602

Claims priority, application United Kingdom, May 15, 1991, 9110516

Int. Cl.[6] G01V *1/40*

U.S. Cl. 340—853.3 **32 Claims**

1. A method of signalling within a borehole having therein a drill string with a drill bit at a lower end thereof, a downhole drilling motor being positioned within said drill string, said downhole drilling motor having a power assembly operable for rotating said drill bit, said method comprising:



rotating said drill bit with said downhole drilling motor at a bit rotation speed in revolutions per minute with respect to said borehole;

supporting at least one sensor at a location below said power assembly of said downhole drilling motor such that said at least one sensor does not rotate at said bit rotation speed; and

detecting a downhole parameter with said at least one sensor.

5,602,542

PARKING AID WITH A WHEEL SENSOR

Friedrich Widmann, Berlin, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

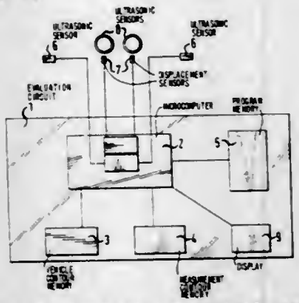
PCT No. PCT/DE94/01028, § 371 Date May 19, 1995, § 102(e) Date May 19, 1995, PCT Pub. No. WO95/09369, PCT Pub. Date Apr. 6, 1995

PCT Filed Sep. 8, 1994, Ser. No. 446,593

Claims priority, application Germany, Sep. 30, 1993, 43 33 357.5

Int. Cl.[6] G08G *1/16*

U.S. Cl. 340—903 **15 Claims**



1. A circuit arrangement for a motor vehicle comprising an ultrasonic sensor; an evaluation circuit; a warning display for an output of a distance of a vehicle from an obstacle; at least one displacement sensor producing signals; said evaluation circuit having distance determining means for determining a distance between a motor vehicle and an obstacle and formed so that in an immediate near range of the motor vehicle from the obstacle said distance determining means determine the distance from the signals of said displacement sensor while above a predetermined limited value said determining means determine the distance by an ultrasonic transit time measurement.

5,602,543

DETECTION SYSTEM FOR USE IN AN AIRCRAFT

Alfredo J. Prata, Eliza Heights, and Ian J. Barton, Blackrock, both of Australia, assignors to Commonwealth Scientific and Industrial Research Organisation, Australia

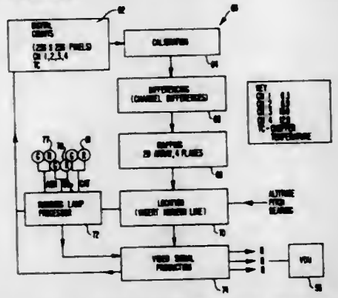
PCT No. PCT/AU91/00132, § 371 Date Nov. 3, 1992, § 102(e) Date Nov. 3, 1992, PCT Pub. No. WO91/15739, PCT Pub. Date Oct. 17, 1991

PCT Filed Apr. 9, 1991, Ser. No. 941,044

Claims priority, application Australia, Apr. 9, 1990, PJ 9518/90

Int. Cl.[6] G08B *23/00*

U.S. Cl. 340—968 **71 Claims**



1. A detection system for use in an aircraft, including:

means for monitoring infrared radiation ahead of and received by said aircraft;

means for generating signals representative of at least one predetermined wavelength of said radiation; and

processing means for comparing the signals with reference signals or signals representative of another wavelength of said radiation to determine if an adverse atmospheric condition, comprising at least the presence of a volcanic ash cloud exists ahead of said aircraft;

said processing means generating an adverse condition warning signal if the results of said comparison indicates said adverse atmospheric condition is present.

5,602,544

ABSOLUTE ENCODER AND METHOD OF GENERATING ITS CURRENT POSITION

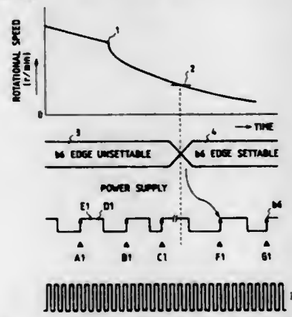
Akira Takahashi, and Seisuke Tsutsumi, both of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, and Mitsubishi Electric Engineering Co., Ltd., both of Tokyo, Japan

Filed Feb. 16, 1995, Ser. No. 389,660

Claims priority, application Japan, Feb. 18, 1994, 6-021187

Int. Cl.[6] H03M *1/22*

U.S. Cl. 341—6 **20 Claims**



1. A method of generating the current position of an absolute encoder after it is energized, the current position being restored at an arbitrary resolution, for application to the rotations of the absolute encoder after restoration of the current position thereof, comprising:

setting a maximum rotational speed limit;

detecting the rotational speed of said absolute encoder;

generating a plurality of signals, including a given signal, for identifying a restored current position for restoration;

modifying said restored current position by at least one increment pulse, said pulse being added to or subtracted from said restored current position, and outputting the resultant value as a resultant current position, said resultant current position being generated at a predetermined edge of said given signal,

setting said current position to be a predetermined value equivalent to said predetermined edge position under the following circumstances:

if the rotational speed of said absolute encoder when a given value is set at said predetermined edge of said given signal is equal to or more than said speed limit, prohibiting the setting of said predetermined value, and

if the rotational speed of said absolute encoder when a given value is set at said predetermined edge of said given signal is less than said speed limit, setting of said predetermined value.

5,602,545

PRIORITY ENCODER

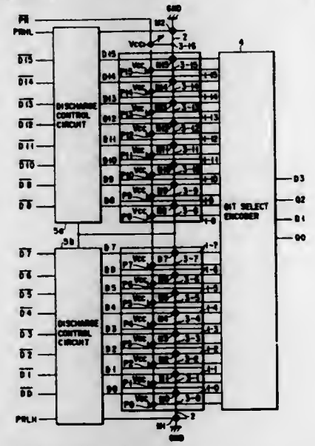
Yasuhiro Ishii, Kawasaki, and Shigeharu Nakata, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 5, 1995, Ser. No. 462,035

Claims priority, application Japan, Jul. 15, 1994, 6-164066

Int. Cl.[6] G06F *7/00*

U.S. Cl. 341—50 **65 Claims**



1. A priority encoder comprising:

a plurality of switches which are connected in series to one another, and whose on-off is controlled by input signals, one of outermost ones of said plurality of switches having a first end, the other of the outermost ones of said plurality of switches having a second end;

first discharge means connected to the first end of said one of the outermost ones of said plurality of switches, said first discharge means applying a first potential to the first end in a high-order bit priority designated mode;

second discharge means connected to the second end of said other of the outermost ones of said plurality of switches, said second discharge means applying the first potential to the second end in a low-order bit priority designated mode;

precharge means for precharging nodes between said plurality of switches to a second potential;

first discharge control means for discharging an intermediate node of said plurality of switches to the first potential when input signals are given for turning on all the switches located between the first end of said one of the outermost ones of said plurality of switches and the intermediate node of said plurality of switches in the high-order bit priority designated mode; and

second discharge control means for discharging the intermediate node of said plurality of switches to the first potential when input signals are given for turning on all of the switches between the second end of said other of the outermost ones of said plurality of switches and the intermediate node of said plurality of switches in the low-order bit priority designated mode.

5,602,546

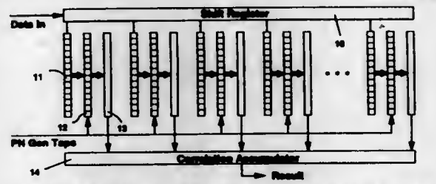
METHOD AND APPARATUS FOR THE RAPID TESTING AND ELIMINATION OF HYPOTHESIS CODE SEQUENCES

Ralph W. Andrea, Sunnyvale, Calif., assignor to GTE Government Systems Corporation, Mountain View, Calif.

Filed Dec. 15, 1994, Ser. No. 357,793

Int. Cl.[6] H03M *7/00*

U.S. Cl. 341—51 **14 Claims**



1. An apparatus for the rapid testing and elimination of hypothesis code sequences, comprising in combination:

input register means for providing storage of the input binary code sequence;

feedback tap means for providing input of the hypothesis code sequences;

a plurality of state correlator means coupled to the input register means, and to the feedback tap means, and each separately providing a discrepancy output indicating the successful or unsuccessful prediction of the next bit in the input binary code sequence; and

correlation accumulator means for the purpose of counting the plurality of discrepancy outputs from the plurality of state correlator means.

5,602,547

DATA CONVERSION APPARATUS AND ENCODING APPARATUS

Kenji Maeno; Kihei Ido, and Hideaki Kosaka, all of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 25, 1994, Ser. No. 328,919

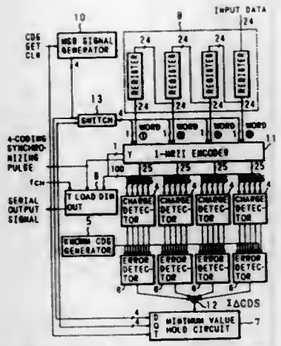
Claims priority, application Japan, Oct. 27, 1993, 5-268830; Mar. 22, 1994, 6-050537; Jul. 11, 1994, 6-159010

Int. Cl.[6] G11B *5/09*

U.S. Cl. 341—58 **53 Claims**

1. A data conversion apparatus which converts m-bit data into plural n-bit codes having different CDS (Codeword Digital Sum) values, thereby obtaining an intense spectrum at frequencies with a period of p bits, comprising:

means for generating data of a known CDS in codeword with one period which is the least common multiple (q) of n and p;



means for detecting differences between values of charge in codeword at intervals of (r) bits (where r is the greatest common divisor of n and p not equal to n) and the data of the known CDS;

means for detecting a sum of absolute values of an (n/r) number of the differences of each of the n-bit codes; and

means for selecting a code from the plural n-bit codes having different CDS values, the selected code having a smallest associated sum of absolute values.

5,602,548

DATA OUTPUT APPARATUS FOR VARIABLE LENGTH DECODER

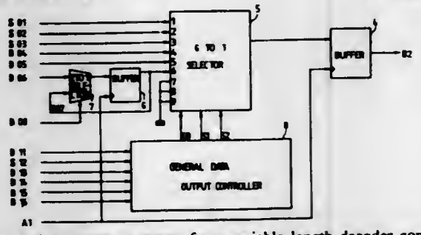
Sung M. Chun, and Geum O. Lee, both of Seoul, Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Kyoungki-do, Rep. of Korea

Filed Nov. 18, 1994, Ser. No. 341,126

Claims priority, application Rep. of Korea, Dec. 29, 1993, 93-30544

Int. Cl.[6] H04N *7/133*

U.S. Cl. 341—67 **8 Claims**



1. A data output apparatus for a variable length decoder comprising:

variable length decoding control means for outputting an address value, a general data enable signal and a video data enable signal in response to a variable length decoding control signal and a clock signal;

general data output means for rearranging variable length-decoded general data in response to the general data enable signal from said variable length decoding control means and for outputting the rearranged general data in response to the clock signal; and

video data output means for rearranging variable length-decoded video data in response to the video data enable signal from said variable length decoding control means and for outputting the rearranged video data in response to the clock signal;

wherein said general data output means includes:

a first selector for rearranging the variable length-decoded general data in response to a plurality of control signals and for outputting the rearranged general data, said variable length-decoded general data including a slice vertical position signal, a slice quantization signal, an X-axis motion vector signal, a Y-axis motion vector signal, a macro block number signal and a macro block type signal;

a first buffer for buffering one of the macro block type signal of the variable length-decoded general data and its output fed back thereto and for outputting the buffered macro block type signal to said first selector;

a second selector for selecting one of the macro block type signal of the variable length-decoded general data and the buffered macro block type signal from said first buffer in response to a macro block type active signal and for outputting the selected macro block type signal to said first buffer;

a general data output controller for generating said plurality of control signals in response to the general data enable signal from said variable length decoding control means and for outputting the generated control signals to said first selector; and

a second buffer for outputting the rearranged general data from said first selector in response to the clock signal.

5,602,549

SYSTEM FOR VARIABLE LENGTH DECODING DIGITAL TRANSMISSION DATA WHICH HAS BEEN COMPRESSED BY SELECTING A SCANNING PATTERN

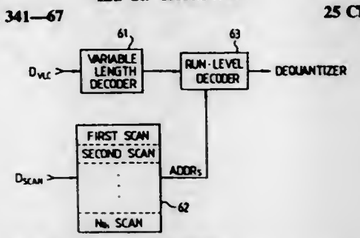
Jechang Jeong, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Continuation of Ser. No. 95,468, Jul. 23, 1993, Pat. No. 5,497,153. This application Sep. 22, 1995, Ser. No. 532,987

Claims priority, application Rep. of Korea, Jul. 23, 1992, 92-13171

Int. Cl.[6] H03M *7/40*

U.S. Cl. 341—67 **25 Claims**



1. A decoding apparatus, comprising:

means for converting variable-length-coded data into symbol data;

means for outputting a plurality of scan addresses according to a specific scanning pattern in response to scanning pattern data;

a run level decoder responsive to said means for converting and said means for outputting, whereby said run level decoder transforms said symbol data into quantization coefficients in response to said plurality of scan addresses.

5,602,550

APPARATUS AND METHOD FOR LOSSLESS WAVEFORM DATA COMPRESSION

Jay M. Stein, Vernon Hills, Ill., assignor to Bio-logic Systems Corp., Mundelein, Ill.

Filed Jun. 19, 1995, Ser. No. 492,369

Int. Cl.[6] H03M *7/00*

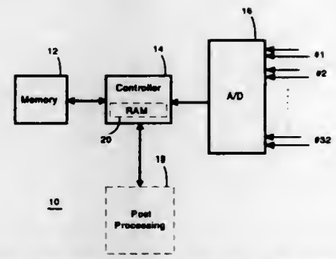
U.S. Cl. 341—76 **36 Claims**

1. Apparatus for compressing a data vector of a predetermined number of data points comprising:

a memory;

a first comparator for determining a largest and smallest data point of the data vector; and

a second comparator for determining if the largest and smallest data points are equal and when they are, causing a first data point of the data vector to be stored in the memory as the compressed data vector.



5,602,551

ANALOG-TO-DIGITAL CONVERTER WITH SILICON-ON-INSULATOR STRUCTURE

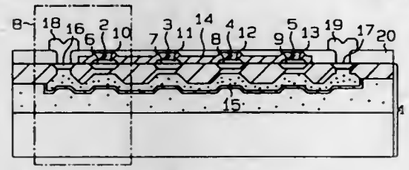
Harutsugu Fukumoto, Anjo, and Kohji Ichikawa, Obu, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Oct. 5, 1994, Ser. No. 318,541

Claims priority, application Japan, Oct. 6, 1993, 5-250746

Int. Cl.[6] H03M *1/36;* **H01L** *21/76;29/68*

U.S. Cl. 341—136 **14 Claims**



1. An analog-to-digital converter, comprising:

a plurality of semiconductor islands disposed on a substrate with an insulating film interposed therebetween, said semiconductor islands being isolated from each other;

a plurality of MOS transistors formed within respective ones of said semiconductor islands;

a conductive layer disposed to be positioned under said semiconductor islands and isolated from each of said semiconductor islands, said conductive layer having a potential distribution therewithin and thereby applying different potentials to said semiconductor islands, whereby thresbold voltages of said MOS transistors are differentiated from each other;

an analog signal input portion commonly connected to gates of said MOS transistors for inputting an analog signal to said gates of said MOS transistors; and

a coded signal output portion comprising output terminals of said MOS transistors.

5,602,552

D/A CONVERTER CAPABLE OF DISABLING THE OUTPUT

Shinichi Hirose, and Minoru Abe, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, and Mitsubishi Electric Semiconductor Software Co., Ltd., Hyogo, both of Japan

Filed Nov. 22, 1994, Ser. No. 345,754

Claims priority, application Japan, Dec. 27, 1993, 5-330705

Int. Cl.[6] H03M *1/78*

U.S. Cl. 341—154 **4 Claims**

1. A digital/analog converting circuit, comprising:

n number first switching elements each having an output resistance value r and an end to which a signal of each bit of a digital signal of n bits is inputted, each first switching element, in response to a control signal, outputting a positive or negative reference potential corresponding to the input signal from another end, or being in a state of not outputting;

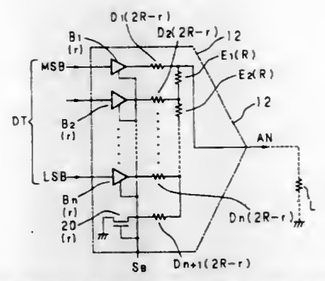
n number first resistances each having a resistance value 2R−r and one end to which the output of said first switching element is inputted;

n−1 number second resistances each having a resistance value R, and each connecting other ends of said n number first resistances in the form of a ladder and in the bit order of said digital signal;

a second switching element having an on-resistance value r and one end connected to a signal outputting means for outputting a reference potential, said second switching element, in response to the control signal, outputting the reference potential from another end or being in the state of not outputting; and

a resistance having a resistance value 2R−r, and connecting the other end of said second switching element and the other end of the first resistance corresponding to the lowest bit of said digital signal;

whereby, in response to said control signal, the other end of said first resistance outputs said digital signal converted into an analog signal.



5,602,553

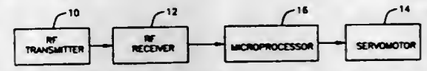
RADIO CONTROLLED SERVO EXTENDER METHOD AND SYSTEM

Walter S. Polan, 1146 N. Central Ave., Suite 231, Glendale, Calif. 91202

Filed Sep. 1, 1995, Ser. No. 523,079

Int. Cl.[6] G08C *19/12*

U.S. Cl. 341—173 **7 Claims**



1. A method for extending the range of a radio-controlled servomotor comprising the steps of:

a) transmitting a radio frequency signal defining desired servomotor rotation to the left and right of an initial quiescent condition, said signal being of a variable pulse width falling within a first range of available pulse widths, and including a predetermined pulse width in said first range which establishes said initial quiescent condition;

b) receiving said radio frequency signal;

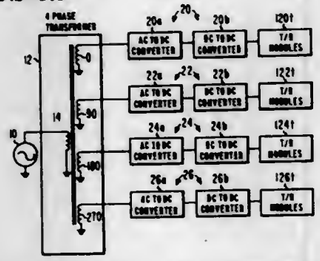
c) processing said received signal to provide an output signal of a variable pulse width falling within a second range of pulse widths, different from said first range of pulse widths, but maintaining said same predetermined pulse width to establish said same initial quiescent condition for said servomotor; and

d) inputting said output signal to said servomotor to control the rotation thereof.

5,602,554
ACTIVE ARRAY ANTENNA WITH MULTIPHASE POWER FOR ACTIVE MODULES

Bruce M. Cepas; Wilbur Lew, both of Mt. Laurel; Eric L. Holzman, Medford, all of N.J., and John G. Ferrante, Wilmington, Del., assignors to Martin Marietta Corp., Moorestown, N.J.

Filed Aug. 8, 1995, Ser. No. 512,425
Int. Cl.[6] H01Q 3/22
U.S. Cl. 342—368 **4 Claims**



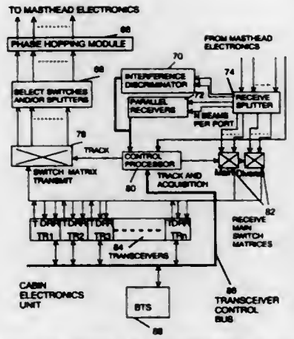
1. An array antenna adapted to be energized from a source of alternating current, said antenna comprising;
a plurality of antenna elements;
a plurality of active modules coupled to said antenna elements for the flow of RF signals therebetween, each of said active modules comprising active means for operating on said RF signals, said active modules being grouped into a plurality of energization sets so that each module is associated with only one of said energization sets;
a source of multiphase AC line power;
AC-to-DC conversion means coupled to said source of multiphase AC line power and to said active modules, for separately converting each phase of said multiphase AC line power into DC, to thereby form a plurality of DC sources, each derived from a different one of said phases, and for coupling each of said plurality of DC sources to a different one of said energization sets for energization thereof.

5,602,555
BASE STATION ANTENNA ARRANGEMENT

Jeffrey G. Searle, Galmpton, United Kingdom; Stuart J. Dean, Nepean, Canada; Peter J. Chrystie, Galmpton, United Kingdom; Keith R. Broome, Babbacombe, United Kingdom; Christopher R. Cox, Salcombe, United Kingdom, and Stephen J. Westlake, Brixham, United Kingdom, assignors to Northern Telecom Limited, Montreal, Canada

Division of Ser. No. 289,920, Aug. 12, 1994. This application May 16, 1995, Ser. No. 441,756
Claims priority, application United Kingdom, Aug. 12, 1993, 9316816
Int. Cl.[6] H01Q 3/02
U.S. Cl. 342—374 **10 Claims**

1. An antenna comprising:
a plurality of layered antenna arrays each capable of forming a multiplicity of separate overlapping narrow beams in azimuth, the arrays being positioned such that the beams provide a coverage in azimuth wider than each array;
azimuth beamforming means for each array;
a plurality of r.f. transceivers each for transmitting and receiving r.f. signals for one or more calls;
switching matrix means for connecting each transceiver with one or other of the arrays via the beamforming means;
and control means for controlling the switch matrix means whereby a particular transceiver is connected to a particular array, via the beamforming means, to exchange r.f. signals with a remote station located in the area covered by the antenna;
means for recognizing unique identifier signals incorporated in call signals passing through the antenna; and

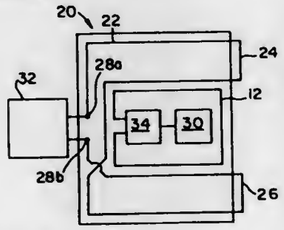


coherent detection means for discriminating between unwanted call signals and wanted call signals using said unique identifier signals.

5,602,556
TRANSMIT AND RECEIVE LOOP ANTENNA

John H. Bowers, Clarksburg, N.J., assignor to Check Point Systems, Inc., Thorofare, N.J.

Filed Jun. 7, 1995, Ser. No. 482,680
Int. Cl.[6] H01Q 11/12
U.S. Cl. 343—742 **19 Claims**



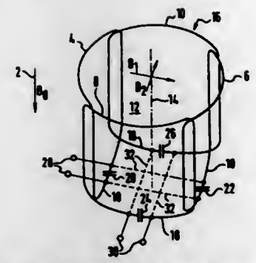
1. A far field cancelling antenna comprising:
an electrical circuit element; and
a first antenna structure, the first antenna structure comprising:
a first loop element electrically coupled to the circuit element for generating fields; and
a shunt loop element surrounding and generally coplanar with the first loop element such that voltages are induced in the shunt loop element from the fields generated by the first loop element, the shunt loop element comprising a continuous, conductive loop to maximize current from the voltages induced therein, wherein the current in the shunt loop element generates fields which largely cancel in the far field the fields generated by the first loop element.

5,602,557
MAMMOGRAPHY ANTENNA ARRANGEMENT FOR NMR EXAMINATIONS OF A FEMALE BREAST

Wilhelm Duerr, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Sep. 27, 1995, Ser. No. 534,882
Claims priority, application Germany, Sep. 29, 1994, 44 34 948.3
Int. Cl.[6] G01R 33/08
U.S. Cl. 343—742 **7 Claims**

1. A mammography antenna arrangement for magnetic resonance examination of a female breast, said antenna arrangement comprising:

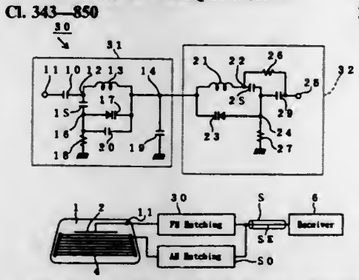


first and second saddle-shaped conductor loops disposed opposite each other and forming a first conductor loop pair;
third and fourth saddle-shaped conductor loops disposed opposite each other and forming a second conductor loop pair;
said first and second conductor loop pairs being disposed relative to each other rotationally offset by approximately 90° in a circumferential direction and forming a substantially cylindrical examination space having an upper receptacle opening adapted for receiving a female breast, and each of said first, second, third and fourth saddle-shaped conductor loops having a conductor loop portion facing away from said receptacle opening; and
a plurality of capacitive elements respectively disposed in said conductor loop portions of said first, second, third and fourth saddle-shaped conductor loops.

5,602,558
GLASS ANTENNA SYSTEM FOR AUTOMOBILES

Kanta Urakami, Himeji; Nobuya Nilzaki, Yokohama; Hirofumi Natsume, Chiba; Masato Arisawa, Tsuchiura; Harunori Murakami, and Yuji Baba, both of Toride, all of Japan, assignors to Sumitomo Chemical Company, Limited, and Nippon Sheet GLass Co., Ltd., both of Osaka, Japan

Continuation of Ser. No. 269,632, Jul. 1, 1994, abandoned, which is a continuation of Ser. No. 857,377, Mar. 25, 1992, abandoned. This application Jun. 2, 1995, Ser. No. 459,533
Claims priority, application Japan, Mar. 26, 1991, 3-086282; Mar. 26, 1991, 3-086284
Int. Cl.[6] H01Q 21/30;23/00
U.S. Cl. 343—850 **2 Claims**

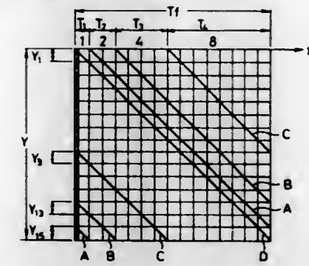


1. A glass antenna system for an automobile comprising:
a main matching circuit having an input connected to an antenna which is provided on a window glass of the automobile to receive an aerial signal through said antenna, said main matching circuit including a first coil and a first varactor diode connected thereto to provide a first resonance circuit, said main matching circuit having an output;
at least one auxiliary matching circuit connected to said output of said main matching circuit and including a second coil and a second varactor diode connected thereto to provide a second resonance circuit, said auxiliary matching circuit having an output terminal connected to said second resonance circuit through a coupling capacitor so that said aerial signal is provided to said output terminal;
another capacitor connected between said output of said main matching circuit and ground;
a transmission cable operatively connected to said auxiliary matching circuit through said output terminal; and
a resistor connected to said output terminal for applying a voltage from said transmission cable to said varactor diodes.

5,602,559
METHOD FOR DRIVING MATRIX TYPE FLAT PANEL DISPLAY DEVICE

Koichi Kimura, Shizuoka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 181,456, Jan. 14, 1994, abandoned, which is a continuation of Ser. No. 970,496, Nov. 2, 1992, abandoned. This application Feb. 15, 1995, Ser. No. 389,741
Claims priority, application Japan, Nov. 1, 1991, 3-313151
Int. Cl.[6] G09G 3/36
U.S. Cl. 345—89 **12 Claims**



1. A method for driving a matrix type flat panel display device comprising a matrix of scanning electrodes and signal electrodes intersecting with each other, so that a bistable display picture element is formed at each region of intersection between said scanning and signal electrodes, each said picture element being adapted to be set in either of bright or dark states so as to achieve a multi-graduation display, said method comprising the steps of:
defining a frame period T_f to include plural fields, with each field composed of one or more blocks so that at least one of said fields has a number of blocks different from the numbers of blocks of other fields,
dividing a plurality of scanning lines into groups so that the number of divided scanning line groups is at least equal to the total number of blocks included in said frame period T_f, and
setting writing time periods included in a first block of each field to have time periods that include selection time periods so that the selection time periods for each divided scanning line group do not overlap with the selection time periods for other groups even though the writing time periods overlap with writing time periods for at least one other group.

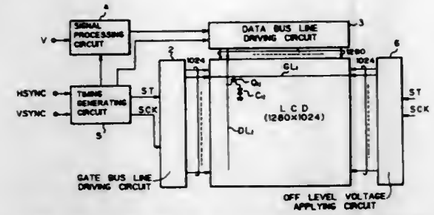
5,602,560
APPARATUS FOR DRIVING LIQUID CRYSTAL DISPLAY PANEL WITH SMALL DEVIATION OF FEEDTHROUGH VOLTAGE

Naoyasu Ikeda, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 30, 1995, Ser. No. 413,765
Claims priority, application Japan, Mar. 30, 1994, 6-060442
Int. Cl.[6] G09G 3/36
U.S. Cl. 345—94 **9 Claims**

1. An apparatus for driving a liquid crystal display panel having a plurality of gate bus lines, a plurality of data bus lines, and a plurality of pixels, each pixel including a liquid crystal cell and a first switching transistor connected between said liquid crystal cell and one of said data bus lines and having a gate connected to one of said gate bus lines, comprising:

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a gate bus line driving circuit, connected to first ends of said gate bus lines, for selecting one of said gate bus lines and applying a gate pulse to the one of said gate bus lines; and

an OFF level voltage applying circuit, connected to second ends of said gate bus lines opposite to the first ends thereof, for applying an OFF level voltage to the selected one of said gate bus lines from the second end thereof immediately after said gate pulse is turned OFF.

5,602,561

COLUMN ELECTRODE DRIVING CIRCUIT FOR A DISPLAY APPARATUS

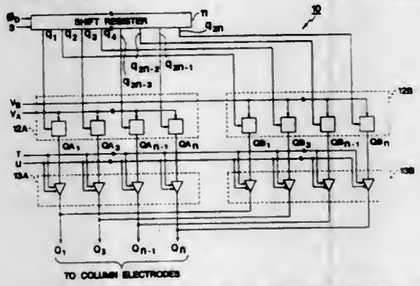
Takafumi Kawaguchi; Shiro Takeda, both of Tenri; Hiroshi Take, Ikoma, and Junji Kawanishi, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 714,706, Jun. 13, 1991, abandoned. This application Nov. 8, 1993, Ser. No. 148,408

Claims priority, application Japan, Jun. 14, 1990, 2-156263

Int. Cl.[6] G09G *3/36*

U.S. Cl. 345—99 **13 Claims**



1. A column electrode driving circuit for driving column electrodes of a display apparatus having pixel electrodes formed in a delta arrangement driven by said column electrodes, comprising:

a plurality of sample and hold means, each for receiving a video signal, for sampling said video signal, and for holding said sampled video signal, the sampling periods of each said sample and hold means being substantially the same, and the sampling timings of each said sample and hold means being different; and

output means for selecting a first one of said sample and hold means, and for driving said column electrodes on the basis of the sampled video signal held in said first selected sample and hold means to drive a first row of said pixel electrodes, and for selecting a second one of said sample and hold means, and for driving said column electrodes on the basis of the sampled video signal held in said second selected sample and hold means to drive a second row of said pixel electrodes, the output means being controlled by a selection signal,

the first selected sample and hold means being used to drive one of two adjacent pixel rows and the second selected sample and hold means being used to drive the other of said two adjacent pixel rows,

the sampling period of the first of said sample and hold means being overlapped with the sampling period of the second of said sample and hold means.

5,602,562

LIQUID CRYSTAL APPARATUS AND DRIVING METHOD

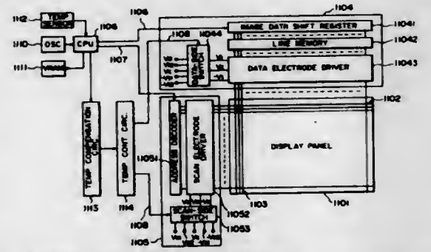
Yoshihiro Onitsuka; Hiroshi Inoue, both of Yokohama; Osamu Taniguchi, Chigasaki; Atsushi Mizutome, Fujisawa; Tadashi Mihara, Atsugi, and Akira Tsuboyama, Sagamihara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 708,067, May 30, 1991, abandoned, which is a division of Ser. No. 511,956, Apr. 17, 1990, Pat. No. 5,041,821, which is a continuation of Ser. No. 177,591, Apr. 4, 1988, abandoned. This application Nov. 24, 1993, Ser. No. 156,976

Claims priority, application Japan, Apr. 3, 1987, 083277/1987; Jun. 8, 1987, 143872/1987; Jun. 8, 1987, 143873/1987; Jun. 9, 1987, 144749/1987

Int. Cl.[6] G09G *3/34*

U.S. Cl. 345—101 **2 Claims**



1. A liquid crystal apparatus, comprising:

a liquid crystal device comprising scanning electrodes and data electrodes intersecting with the scanning electrodes, and a chiral smectic liquid crystal disposed between the scanning electrodes and the data electrodes, the chiral smectic liquid crystal having a first threshold voltage of one polarity for switching into a first optical state and a second threshold voltage of the other polarity for switching into a second optical state; and

voltage application means for:

applying a scanning selection signal and a scanning non-selection signal to the scanning electrodes, the scanning selection signal having a voltage of one polarity and a voltage of the other polarity with respect to a voltage level of a non-selected electrode, the scanning selection signal being periodically repetitively applied to the scanning electrodes, the polarity of the scanning selection signal applied to a particular scanning electrode being periodically inverted with respect to the voltage level of a non-selected scanning electrode so that an average with respect to time of the voltage applied to the particular scanning electrode is zero,

applying data signals to the data electrodes in phase with the scanning selection signal so as to apply an AC voltage to the intersections of the scanning electrodes and the data electrodes, said data signals having a voltage of one polarity and a voltage of the other polarity with respect to a voltage level of a non-selected scanning electrode,

superposing a DC offset voltage on the data signals, and

changing the DC offset voltage such that the DC offset voltage is decreased for an increase in operational temperature of the chiral smectic liquid crystal device and the DC offset voltage is increased for a decrease in the operational temperature in order to suppress temperature dependence of contrast in said apparatus.

5,602,563

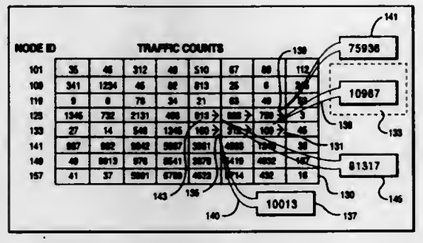
FLOAT TO SURFACE DISPLAY

David Y. Chang, and Shih-Gong Li, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 15, 1993, Ser. No. 168,545

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—115 **5 Claims**



1. A method for displaying data in a user interface of a computer system, comprising the steps of:

displaying a panel with data in a plurality of output fields, a first data displayed in a truncated manner in a first output field;

responsive to selection of the first output field, selecting a first location among a first plurality of possible locations on the display at which a first floating output field sufficiently long to display the first data will not overlap any significant feature of the panel;

responsive to selecting the first location, displaying the first floating output field at the first location;

displaying in the panel a second data displayed in a truncated manner in a second output field;

responsive to selection of the second output field, attempting to select a second location among a second plurality of possible locations on the display at which a second floating output field sufficiently long to display the second data will not overlap any significant panel feature or the first floating output field;

responsive to a failure to select the second location, relocating the first floating output field to a third location;

selecting a fourth location among the second plurality of possible locations on the display at which a second floating output field sufficiently long to display the second data will not overlap any other selected field or the first floating output field; and

responsive to selecting the fourth location, displaying the second floating output field at the fourth location.

5,602,564

GRAPHIC DATA PROCESSING SYSTEM

Kazuaki Iwamura, Kodaira; Takehiro Fujita, Kokubunji, and Tsuneya Kurihara, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 10, 1992, Ser. No. 974,128

Claims priority, application Japan, Nov. 14, 1991, 3-298777; Nov. 14, 1991, 3-298780

Int. Cl.[6] G09G *5/00;* **G06F** *15/00*

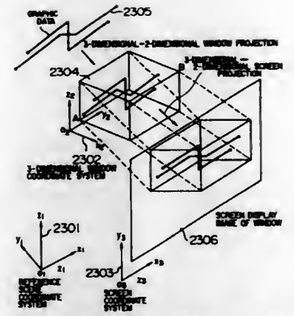
U.S. Cl. 345—119 **9 Claims**

1. A graphic data processing system comprising:

a display having a two-dimensional display surface;

means for displaying a three-dimensional window on said display, and displaying graphic data in three dimensions in said three dimensional window, the three-dimensional window being configured as a rectangular parallelepiped;

wherein the graphic data processing system includes a screen coordinate system for displaying the three-dimensional window, a reference scene coordinate system, and a characteristic window coordinate system which is defined separately from the reference scene coordinate system; and



wherein coordinate values of the characteristic window coordinate system are converted in order to be displayed in the screen coordinate system.

5,602,565

METHOD AND APPARATUS FOR DISPLAYING VIDEO IMAGE

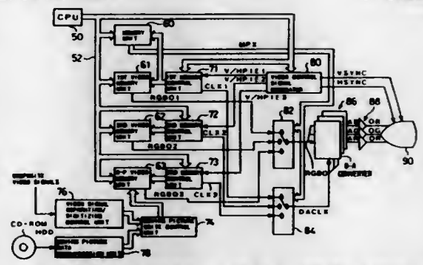
Kesatoshi Takeuchi, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Sep. 27, 1994, Ser. No. 312,615

Claims priority, application Japan, Sep. 27, 1993, 5-264251

Int. Cl.[6] G09G *5/14*

U.S. Cl. 345—119 **17 Claims**



1. A video display apparatus, for use in a computer system, for simultaneously displaying a plurality of video images on a display screen, the apparatus comprising:

a plurality of video memories for storing a plurality of video signals, respectively;

video control signal generation means for generating a plurality of read-permit signals indicating times for reading said plurality of video signals from said plurality of video memories, respectively;

memory control means for generating a plurality of read control signals from said plurality of read-permit signals and for supplying said plurality of read control signals to said plurality of video memories to allow said plurality of video signals to be read out of said plurality of video memories, said memory control means comprising means for generating a plurality of clock signals which are different from each other and respectively synchronous with said plurality of video signals read out of said plurality of video memories;

selection signal generating means for generating a video selection signal which indicates a change in selection of said plurality of video signals at a plurality of positions on the display screen;

first selection means for selecting one of said plurality of video signals in response to said video selection signal;

second selection means for selecting one of said plurality of clock signals corresponding to the one of said plurality of

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video signals selected by said first selection means in response to said video selection signal; and

display means including the display screen for displaying a video image as a function of the one of said plurality of video signals and the one of said plurality of clock signals selected by said first and second selection means, respectively.

5,602,566

SMALL-SIZED INFORMATION PROCESSOR CAPABLE OF SCROLLING SCREEN IN ACCORDANCE WITH TILT, AND SCROLLING METHOD THEREFOR

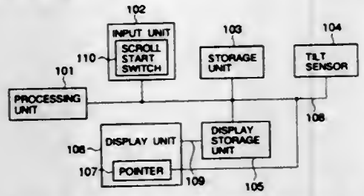
Hiroshi Motoyuku, and Hirobumi Yokosuka, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 23, 1994, Ser. No. 294,503

Claims priority, application Japan, Aug. 24, 1993, 5-209634

Int. Cl.[6] G09G *5/34*

U.S. Cl. 345—123 **14 Claims**



1. A small-sized information processor which has, at least, a display device provided with a display screen, and which is used while being held in one hand, comprising:

command input means for entering a command for scrolling said display screen, in the state in which said small-sized information processor is held in one hand;

tilt detection means for detecting a relative tilt of said small-sized information processor with respect to a reference tilt thereof assumed when the scroll command is entered; and

scroll means for scrolling said display screen on the basis of the relative tilt detected by said tilt detection means.

5,602,567

DISPLAY MONITOR

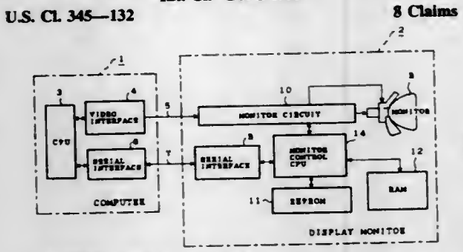
Masahiro Kaano, Nagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 30, 1994, Ser. No. 220,211

Claims priority, application Japan, Dec. 15, 1993, 5-315566

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—132 **8 Claims**



1. A display monitor, comprising:

an interface which receives a command issued from an external device and sends data to the external device;

a monitor circuit which drives a display monitor to produce an image on a screen of the monitor according to a video signal inputted to the display monitor;

a rewritable memory which temporarily stores adjustment data used by the monitor circuit for a currently displayed image;

means for transferring the adjustment data in the rewritable memory to the monitor circuit;

means for reading out the adjustment data from the rewritable memory and for sending the adjustment data to the external device via the interface;

means for recognizing a command inputted via the interface from the external device, said command identifying an adjustment parameter and specifying an adjustment amount; and

means, responsive to the command, for replacing data in said rewritable memory with data corresponding to said adjustment parameter and adjustment amount.

5,602,568

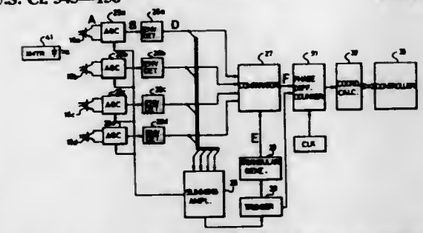
POINT TYPE REMOTE CONTROL APPARATUS AND THE METHOD THEREOF

Jung Y. Kim, Suwon, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 22, 1994, Ser. No. 361,822

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—158 **8 Claims**



1. A point type remote control apparatus, which is for selecting a point existing on a display screen, comprising:

a transmitting means for transmitting a specified pulse signal towards a target point on the display screen;

a receiving means which includes a plurality of signal receiving sensor positioned around the display screen;

a signal processing means for performing a phase conversion according to the intensities of the pulse signals received by said signal receiving sensors by using a triangular wave synchronized with the signals received by said signal receiving sensors, and counting phase differences of the respective phase-converted pulse signals;

a coordinate calculating means for calculating a positional coordinate on the display screen corresponding to the most intensive pulse signal from the respective phase differences counted at said signal processing means; and

a control means for recognizing the point on the display screen corresponding to the positional coordinate calculated by said coordinate calculating means, and displaying the fact of recognizing the point.

5,602,569

CONTROLLER FOR IMAGE PROCESSING APPARATUS

Shuhei Kato, Kyoto, Japan, assignor to Nintendo Co., Ltd., Kyoto, Japan

Filed Apr. 24, 1995, Ser. No. 427,036

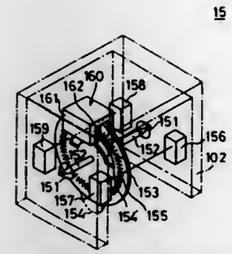
Claims priority, application Japan, Apr. 28, 1994, 6-114683

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—158 **16 Claims**

1. A controller utilized with being connected to an image processing apparatus which generates image data to be displayed on a display on the basis of a program, and for supplying a signal which determines a change of the image data generated by the image processing apparatus through an operation by an operator, comprising:

an operating portion which takes an arbitrary attitude according to an operation by the operator;



a bearing portion fixed to said operating portion;

a rotator having a shaft which is supported by said bearing portion with rotation free and has an eccentric center of gravity;

a lean angle detection means which detects a lean angle of the operating portion with respect to an eccentric direction of said rotator in non-contact with the rotator, and outputs data corresponding to the lean angle; and

a transfer means which transfers the data outputted by the lean angle detection means to said image processing apparatus.

5,602,570

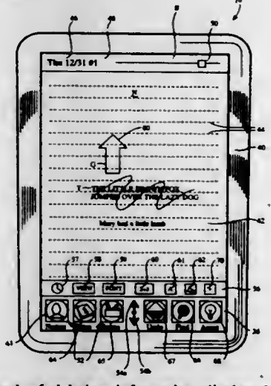
METHOD FOR DELETING OBJECTS ON A COMPUTER DISPLAY

Stephen P. Capps, 657 Knoll Dr., and Ernest H. Beernink, 147 Highland Ave., both of San Carlos, Calif. 94070

Continuation of Ser. No. 70,094, May 27, 1993, abandoned, which is a continuation-in-part of Ser. No. 888,741, May 26, 1992, abandoned. This application May 31, 1995, Ser. No. 456,242

Int. Cl.[6] G09G *3/00*

U.S. Cl. 345—173 **20 Claims**



1. A method of deleting information displayed on a screen associated with a computer system, the method comprising the steps of:

detecting a pointer created stroke input onto the display screen, the stroke being defined as a series of points;

processing the stroke for scrub gesture recognition, the stroke processing steps including substeps of defining a multiplicity of corners in the stroke, removing selected corners that have an associated turn angle that is less than a predetermined angle, and removing selected corners that are associated with segments that are shorter than a designed length;

determining whether the processed stroke meets path definition requirements of a scrub gesture based upon characteristics of the processed stroke itself and without comparing the processed stroke to stored stroke objects;

determining whether an object displayed on the screen is selected when the stroke is determined to meet the path definition requirements of a scrub gesture; and

deleting the selected object if the processed stroke meets the requirements of a scrub gesture and an object is selected for deletion.

5,602,571

SHEET FEEDING APPARATUS AND RECORDING SYSTEM WITH IT

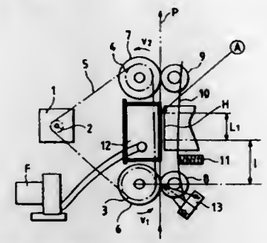
Masashi Suda, Iruma; Akio Takeda, and Sohei Tanaka, both of Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 356,796, Dec. 12, 1994, abandoned, which is a continuation of Ser. No. 203,601, Feb. 28, 1994, abandoned, which is a continuation of Ser. No. 669,184, Mar. 13, 1991, abandoned. This application Jul. 3, 1995, Ser. No. 497,910

Claims priority, application Japan, Mar. 14, 1990, 2-64975; Oct. 12, 1990, 2-272394

Int. Cl.[6] B41J *11/42;13/00;* **B65H** *5/06*

U.S. Cl. 346—134 **65 Claims**



1. A recording apparatus, comprising:

recording means for recording an image on a sheet of a predetermined length;

first feeding means disposed at an upstream side of said recording means for pinching and feeding the sheet at a first feeding speed;

second feeding means disposed at a downstream side of said recording means for pinching and feeding the sheet at a second feeding speed faster than said first feeding speed; and

control means for controlling said first and second feeding means so that said sheet of predetermined length is alternately fed and stopped, said control means also controlling said recording means so that recording is performed while the sheet is stopped, wherein said control means controls said second feeding means so that driving time periods of said second feeding means are different when the sheet is nipped and fed by a combination of said first and second feeding means from when the sheet is nipped and fed by only said second feeding means.

5,602,572

THINNED HALFTONE DOT PATTERNS FOR INKJET PRINTING

Richard L. Rylander, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 25, 1994, Ser. No. 295,603

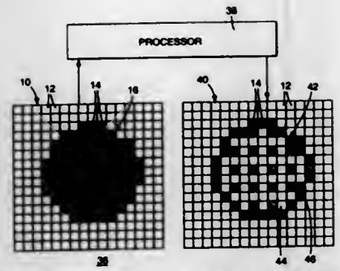
Int. Cl.[6] B41J *2/205*

U.S. Cl. 347—15 **26 Claims**

18. An inkjet printing system employing a set of thinned halftone dot patterns, the system comprising:

a memory storing a plurality of thinned halftone dot patterns;

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means for receiving image data representing a plurality of image dots, each of said image dots having one of a plurality of shade values;

means for matching each of said image dots with one of a plurality of said thinned halftone dot patterns stored in said memory based on the shade value of respective one of said image dots, wherein each of said thinned halftone dot patterns in said memory corresponds to a respective one of said shade values, wherein each of the thinned halftone dot patterns is formed by:

generating means for generating a halftone cell defined by a plurality of addressable points arranged in a matrix, at least some of said points being turned "on" to define a halftone dot pattern, wherein said halftone dot pattern corresponds to one of said shade values,

selecting means for selecting a plurality of said "on" points defining a core component of said halftone dot pattern, and

selective means for selectively turning "off" of at least some of said "on" points of said core component to produce one of said plurality of thinned halftone dot patterns; and

means for printing, for each of said dot images, a representation of one of said thinned halftone dot patterns matched with each of said image dots on a printing substrate.

5,602,573

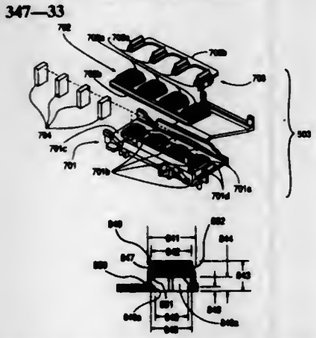
SERVICE STATION FOR INKJET PRINTER HAVING WIPERS WITH CONCAVE WIPING EDGES

Heinz H. Waschhauser, Escondido, and Michael H. Green, Pacific Beach, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 55,616, Apr. 30, 1993, abandoned. This application Sep. 8, 1995, Ser. No. 524,973

Int. Cl.[6] B41J *2/165*

U.S. Cl. 347—33 **7 Claims**



1. Structure for use with an inkjet printer, the printer including a chassis and a print carriage movably supported on the chassis, a print cartridge including a printhead through which ink is ejected being mounted in the print carriage, comprising:

a sled body having a longitudinal axis, a wiper mount extending in a direction transverse to the sled body longitudinal axis, formed on the sled body and being a protrusion from the sled body, said wiper mount having a pair of undercuts located at opposite ends of the wiper mount along the transverse direction;

an elastically deformable wiper, the wiper being mounted on and being substantially coextensive with the wiper mount, the wiper having a wiping edge extending distally from a surface of the sled body, the wiper being made of a material having a hardness between 60 and 85 durometer Shore A, the wiper being formed with a cavity, said wiper having end portions including a pair of inwardly extending wiper lips, the wiper being mounted on the wiper mount by a friction fit connection between said wiper lips and said undercuts of said mount such that the wiper mount is within the wiper cavity, said wiper edge extending transverse of the longitudinal axis of said sled body;

means for adjusting the position of the sled body relative to the printhead, the means for adjusting being capable of positioning the sled body relative to the printhead such that the wiping edge of the wiper contacts the printhead when the carriage is moved; and

wherein, when the friction fitted wiper is mounted on the wiper mount, the wiper is deformed around the wiper mount such that the wiping edge of the wiper is concave.

5,602,574

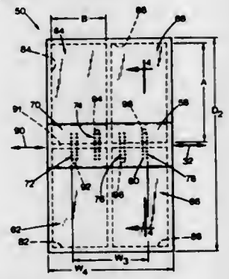
MATRIX PEN ARRANGEMENT FOR INKJET PRINTING

Kenneth R. Williams, Vancouver, Wash., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 31, 1994, Ser. No. 299,473

Int. Cl.[6] B41J *2/21;2/175*

U.S. Cl. 347—43 **16 Claims**



1. An inkjet printing mechanism, comprising:

a carriage system that reciprocates along a scanning axis in a printzone; and

an inkjet cartridge carried by the carriage system, with the cartridge comprising:

a body including four ink storage chambers each containing a supply of ink, with the body having a wall providing a plane which is substantially mutually parallel with the scanning axis, wherein the four ink storage chambers are arranged in a two-by-two matrix comprising a first pair of chambers and a second pair of chambers, with the wall separating the first pair of chambers from the second pair of chambers; and

a printhead portion comprising four sets of nozzles with each set of nozzles in fluid communication with an associated one of the four ink storage chambers, with each set of nozzles comprising at least one linear nozzle array, with the linear nozzle array of each of the four sets of nozzles being substantially mutually parallel and intersecting said plane, and with the four sets of nozzles arranged side-by-side in a one-by-four matrix.

5,602,575

INK JET WRITING HEAD

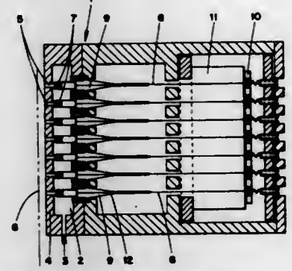
Manfred Pauly, Riedstadt, Germany, assignor to REA Elektronik GmbH, Darmstadt, Germany

Continuation of Ser. No. 678,355, Apr. 24, 1991, abandoned. This application Oct. 4, 1994, Ser. No. 322,719

Claims priority, application Germany, Nov. 5, 1988, 38 37 680.6

Int. Cl.[6] B41J *2/04*

U.S. Cl. 347—54 **12 Claims**



1. An ink jet writing head comprising:

a stationary housing forming an ink chamber and including a plurality of ink jet nozzles communicating with said ink chamber, said ink chamber communicating with a source of pressurized ink so that jets of ink are emitted from said nozzles;

closure elements each arranged to move along an axis to open and close a respective nozzle;

springs producing a closing force for biasing respective closure elements toward their respective nozzles;

rigid force-transmitting structures for transmitting said closing forces from said springs to respective closure elements, each force-transmitting structure including a tie rod connected to a respective closure element and projecting out of said chamber through an opening formed in a wall thereof;

driving devices operably connected to respective ones of said force-transmitting structures for moving said closure elements along their respective axes away from said nozzles; and

seals arranged to seal respective ones of said openings, each seal comprising a deformable element through which a respective tie rod extends, said deformable element comprising a body in the shape of a truncated cone which forms an acute angle with said axis when the respective nozzle is in a closed state, one end of the cone defining a wide end of said body, and an opposite end of the cone defining a truncated narrow end of said body, said wide end being fixedly connected to said housing in sealing relationship around a respective opening, said narrow end being fixedly connected to a respective tie rod in sealing relationship therewith, whereby said wide end is closer to said ink chamber than is said narrow end, each seal having a wall thickness substantially less than a thickness of the tie rod extending between a respective closure element and respective spring.

5,602,576

INK-JET TYPE RECORDING HEAD AND MONOLITHIC INTEGRATED CIRCUIT SUITABLE THERFOR

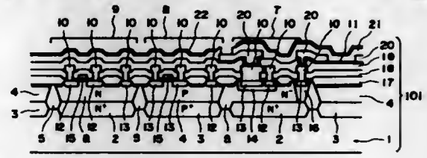
Fumio Murooka, Atsugi; Junji Shimoda, Chigasaki; Tatsuo Furukawa, Atsugi; Hiroyuki Ishinaga, Tokyo; Hiroyuki Maru, Atsugi; Masaaki Izumida, and Yoshinori Misumi, both of Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

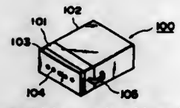
Continuation of Ser. No. 170,688, Dec. 21, 1993. This application Apr. 15, 1996, Ser. No. 632,727

Claims priority, application Japan, Dec. 28, 1992, 4-348483

Int. Cl.[6] B41J *2/05;* **H01L** *29/94;27/092*

U.S. Cl. 347—59 **4 Claims**





1. A recording head which records with an ink, comprising:

a plurality of ink orifices;

an orifice plate comprising a plurality of electrothermal converters each for generating thermal energy to heat the ink to emit the ink from an associated said ink orifice, said electrothermal convertors being disposed in an array;

said common substrate including said plurality of electrothermal converter elements and having a surface side and an array of a plurality of NPN transistors for conducting electrical currents to said electrothermal converters, and an array of a plurality of CMOS transistors for controlling operation of said NPN transistors, said substrate comprising:

a P-type semiconductor common substrate;

a first and a second N-type semiconductor buried layer each provided on the P-type common substrate;

a P-type semiconductor buried layer provided on the P-type common substrate;

an N-type semiconductor epitaxial layer provided on the first and the second N-type semiconductor buried layer and the P-type semiconductor buried layer;

a P-well of a P-type semiconductor material provided in the N-type semiconductor epitaxial layer;

an N-well of an N-type semiconductor material provided in the N-type semiconductor epitaxial layer;

a P-type semiconductor diffusion layer provided in the N-type semiconductor epitaxial layer and including a P-type semiconductor source and a drain region which are provided in the N-type well; and

an N-type semiconductor diffusion layer provided in the P-type semiconductor diffusion layer and including an N-type semiconductor source and a drain region which are provided in the P-type well,

wherein the buried layer of the first N-type semiconductor, the N-type semiconductor epitaxial layer, the P-type semiconductor diffusion layer provided in the N-type epitaxial layer, and the N-type semiconductor diffusion layer provided in the P-type semiconductor diffusion layer together comprises one said NPN transistors in said array of the NPN transistors,

wherein the N-type semiconductor source and drain region provided in the P-type well comprise an NMOS transistor, and the P-type semiconductor source and drain region comprise a PMOS transistor, and the NMOS transistor and the PMOS transistor comprise one said CMOS transistors in said array of the CMOS transistors; and

wherein the array of the electrothermal converters, the array of the NPN transistors for flowing current into the electrothermal converters, and the array of the CMOS transistors for control-

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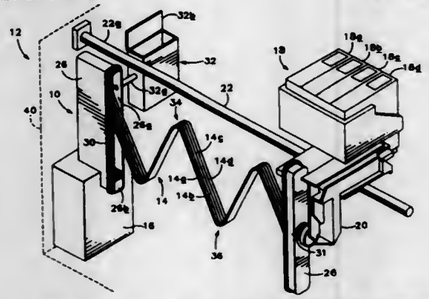
ling operation of the NPN transistors are each arranged at the surface side of the common substrate in parallel to one another, and integrally.

5,602,577

HUMIDIFIER APPARATUS FOR FLUID-CONTAINING TUBES AND AN IMPROVED INK-JET PRINTER UTILIZING THE APPARATUS

Alan Shibata, Camas, Wash., and Bruce Cowger, Corvallis, Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 21, 1994, Ser. No. 279,752
Int. Cl.[6] B41J 2/17
U.S. Cl. 347—84 **14 Claims**



1. A humidifier apparatus for use in a device having a stationary fluid reservoir and a mechanism movable by a carriage along an elongate track, said humidifier apparatus comprising:

one or more flexible tubes having sidewalls and extending between the fluid reservoir and the mechanism;

a chamber adjacent a one end of the track, said chamber defining an interior void and having an opening thereinto for receiving through said opening and within said void said one or more tubes, said chamber providing for fluid connection between the reservoir and said one or more tubes; and

a lid connected with the mechanism and movable therewith, said lid providing for selected sealing engagement with said chamber to sealably close said opening with said tubes therein when the mechanism is moved into predefined proximity with such one end of the track,

said chamber including a vapor atmosphere characterized by a humidity level that reduces fluid diffusion through sidewalls of said one or more tubes.

5,602,578

COLOR PRINTER WITH TRANSFER AND SUPERPOSITION OF DIFFERENT COLOR TONER IMAGES ONTO INTERMEDIATE TRANSCRIPTION MEMBER

Michio Sumiyoshi; Akira Sasaki; Hiroyuki Tadokoro; Takeshi Kato; Isamu Terashima, all of Hitachi; Junichi Matsuno, Tsuchiura, and Masaru Nakano, Tsukuba, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

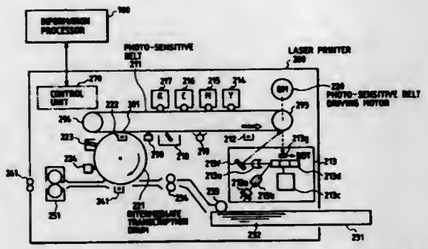
Filed Mar. 3, 1994, Ser. No. 205,153
Claims priority, application Japan, Mar. 5, 1993, 5-044848
Int. Cl.[6] B41J 2/47;2/435; G03G 21/00; H04N 1/46
U.S. Cl. 347—232 **3 Claims**

1. A color printer, comprising:

a photosensitive member rotatable in a rotating direction by a photosensitive member rotating means;

means for controlling laser beam flash by modulating a laser beam with video signals;

deflecting means for forming an electrostatic latent image on said photosensitive member by exposing said photosensitive member to said laser beam while scanning said laser beam perpendicular to the rotating direction of said photosensitive member using a polygon mirror;



beam detecting means for generating a printing synchronization signal by detecting said laser beam passing across a given position;

video signal generating means for generating said video signal in synchronism with said printing synchronization signal;

developing means for forming a toner image by developing an electrostatic latent image formed on said photosensitive member;

an intermediate transcription member rotating in contact with and synchronized in rotating speed with said photosensitive member to transfer a toner image formed on said photosensitive member to said intermediate transcription member;

intermediate transcription member supporting means for supporting said intermediate transcription member in such a manner that said intermediate transcription member may be driven to be rotated by said photosensitive member through the contact between said photosensitive member and said intermediate transcription member;

detecting means for detecting when a point on said intermediate transcription member passes across a predetermined position;

intermediate transcription member rotating speed measuring means for detecting the rotating speed of said intermediate transcription member; and

photosensitive member rotating speed adjusting means operative during a predetermined period of time when said deflecting means is not forming an electrostatic latent image on said photosensitive member and said developing means is not forming a toner image on said photosensitive member, for controlling the photosensitive member rotating speed caused by said photosensitive member rotating means such that the rotating speed of said intermediate transcription member is maintained at a given speed using an intermediate transcription member speed signal obtained from said intermediate transcription member rotating speed measuring means.

5,602,579

SYSTEM FOR CONVERTING GRAYSCALE RESOLUTION IN A PRINTING APPARATUS

Samuel D. Ambalavanar, Rochester; Anthony Frumusa, Penfield, and Kenneth D. Romano, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

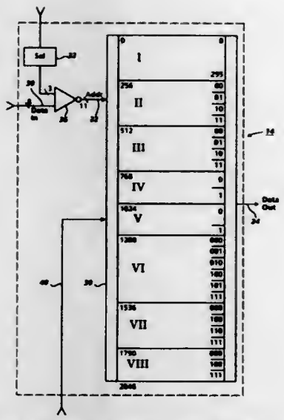
Filed Sep. 6, 1994, Ser. No. 301,105
Int. Cl.[6] B41J 2/47;29/38
U.S. Cl. 347—240 **11 Claims**

1. A system for converting grayscale resolution of image data having an original grayscale resolution associated therewith to be applied to an output device in a printing apparatus, comprising:

a memory, including a plurality of addresses, each address being numbered with a unique binary number and containing a selectable output value; and

a selector operatively associated with the memory, the selector appending a first subset of binary digits to each image datum in the image data to obtain a full image datum from each image datum, each full image datum obtained from the image data being identical to a unique binary number corresponding to one address in the memory;

wherein each full image datum obtained from the data comprises a second subset of binary digits corresponding to digital values of the original grayscale resolution, the second subset of digits being less significant than the first subset.

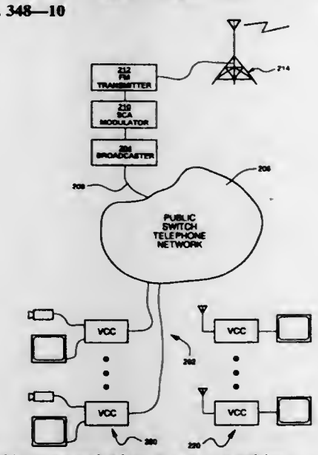


5,602,580

VIDEO COMMUNICATION CONTROLLER USING FM SIDEBAND TRANSMISSION

Ling-yuan Tseng, 13772 Calle Tacuba, Saratoga, Calif. 95070

Filed Sep. 17, 1993, Ser. No. 123,299
Int. Cl.[6] H04N 7/14
U.S. Cl. 348—10 **9 Claims**



1. A video communications system, comprising:

radio receiver circuitry operative to recover a digitally compressed video program from an FM sub-carrier signal including programs characterized in having a plurality of sequential frames representative of motion video;

decompression circuitry operative to receive said digitally compressed video program and output a decompressed version of said program;

means for outputting said decompressed program to a display device for viewing of said program in real time; and

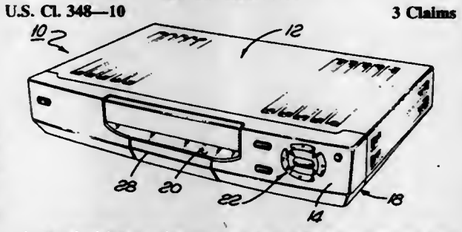
an interface in communication with said decompression circuitry, operative to send and receive a digitally compressed video program over a telephone line.

5,602,581

TELEVISION RECEIVER CONTROL BOX THAT CONTAINS A CARD READER MOUNTED DIRECTLY TO A MOTHERBOARD

Arthur H. Ozaki, Escondido, Calif., assignor to Sony Corporation, Tokyo, Japan, and Sony Electronics, Inc., Park Ridge, N.J.

Continuation of Ser. No. 363,653, Dec. 22, 1994, abandoned.
This application Jun. 14, 1996, Ser. No. 663,735
Int. Cl.[6] H04N 7/16
U.S. Cl. 348—10 **3 Claims**



1. A television receiver control box that accepts a machine readable card, comprising:

a base plate that has a U-shaped tab;

a motherboard that is supported by said U-shaped tab;

a cover that is attached to said base plate and encloses said motherboard;

a front panel that is attached to said base plate, said front panel having a slot which provides access to the card, said front panel further having a support bar which captures said motherboard to impede movement of said motherboard in a vertical direction and a lateral direction;

and,

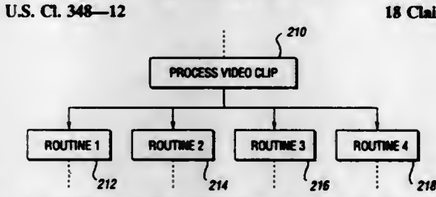
a card reader mechanically mounted directly to said motherboard.

5,602,582

METHOD AND SYSTEM FOR PROCESSING A REQUEST BASED ON INDEXED DIGITAL VIDEO DATA

Tammy M. Wanderscheid, Highland Ranch; Martin D. Siebring, and Kurt P. Haldeman, both of Aurora, all of Colo., assignors to U S West Marketing Resources Group, Inc., Engelwood, Colo.

Filed Nov. 22, 1994, Ser. No. 344,305
Int. Cl.[6] H04N 7/173
U.S. Cl. 348—12 **18 Claims**



1. In an interactive media network including a server and a client station, the client station including a processor, a memory and an input device, a method for processing an input signal from the input device relating to streamed digital video data, the method comprising:

initializing a timer;

transmitting streamed digital video data from the server to the client station, the streamed digital video data representing

multimedia information and having a plurality of execution control routines associated therewith;

displaying the multimedia information at the client station based on a first one of the plurality of execution control routines;

receiving the input signal from the input device of the client station, the input signal representing a user request;

determining an index based on the timer upon receipt of the input signal;

selecting a second one of the plurality of execution control routines based on the index; and

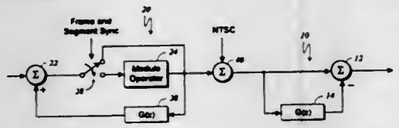
displaying the multimedia information at the client station based on the second one of the plurality of execution control routines.

5,602,583

NTSC REJECTION FILTER WITH SWITCHED TOMLINSON PRECODER FOR REDUCING NTSC CO-CHANNEL INTERFERENCE IN ATV RECEIVERS

Richard W. Citta, Oak Park, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Feb. 10, 1995, Ser. No. 386,589
Int. Cl.[6] H04N *5/38*
U.S. Cl. 348—21 **26 Claims**



1. Apparatus for precoding a digital signal comprising:

means for providing said digital signal in the form of a multiplexed stream of synchronization and data symbols; and

precoding means for linearly precoding only said synchronization symbols and non-linearly precoding only said data symbols.

5,602,584

APPARATUS FOR PRODUCING A PANORAMIC IMAGE USING A PLURALITY OF OPTICAL SYSTEMS

Hideaki Mitsutake, Tokyo; Jun Tokumitsu, Sagamihara; Shigeyuki Soda, Yokohama, and Tatsushi Katayama, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 139,425, Oct. 20, 1993, abandoned. This application Sep. 27, 1995, Ser. No. 534,744
Claims priority, application Japan, Oct. 22, 1992, 4-284343
Int. Cl.[6] H04N *13/02;15/00;5/225*
U.S. Cl. 348—47 **21 Claims**

1. A double-eye image pickup apparatus comprising:

a plurality of imaging optical systems;

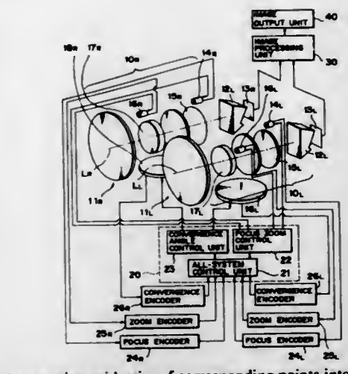
a plurality of image pickup elements,

wherein one of said plurality of image pickup elements changes an objective image formed by one of said plurality of imaging optical systems to an image signal and another one of said plurality of image pickup elements changes another objective image formed by another one of said plurality of imaging optical systems to another image signal; and

an image processing means for generating a combined image by using image signals from said plurality of image pickup elements, wherein said image processing means executes the following steps of:

(a) extracting a plurality of pairs of corresponding points in said objective image and said another objective image,

(b) obtaining information as to a distance from each corresponding point of said pairs of corresponding points to a point on an object located in each image signal,



(c) separating said pairs of corresponding points into at least two regions on the basis of said information as to the distance to the point from each of said corresponding points, and

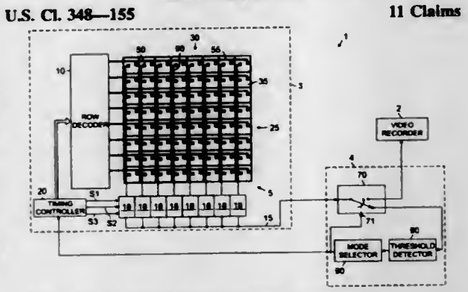
(d) regarding pairs of corresponding points in a region, using image data indicated by some of said corresponding points of said pairs of corresponding points for generation of a combined image and not using an image data indicated by other corresponding points of said pairs of corresponding points for generation of said combined image, a predetermined after-processing being applied to pixel portions of the image data which are not used for generation of said combined image.

5,602,585

METHOD AND SYSTEM FOR CAMERA WITH MOTION DETECTION

Alexander G. Dickinson, Neptune, and Jack E. Salata, Metuchen, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 22, 1994, Ser. No. 363,456
Int. Cl.[6] H04N *7/18*
U.S. Cl. 348—155 **11 Claims**



1. A motion detection camera system comprising:

an active pixel imaging system having an output and a mode select input, the imaging system being operable in a differential or video mode based on the signal at the mode select input, wherein the imaging system generates a video signal containing information for each detected image frame of a viewed area when in the video mode and a differential signal containing information of interframe differences when in the differential mode, the imaging system further comprising:

(i) a plurality of active pixel sensors arranged in an array of rows and columns, each active pixel sensor being operable to generate a voltage at a diffusion node corresponding to detected light intensity by the sensor, each active pixel sensor being further operable to buffer the voltage potential present on the diffusion node from other signals generated external to the sensor;

(ii) means for sequentially activating sensors in different portions of the array for a period of time to achieve a desired detected frame interval;

(iii) a plurality of output circuits, each output circuit being connected to the respective sensors in a corresponding portion of the array, each output circuit being operable to store first and second voltage signals received from the connected sensors and to selectively provide a sensor output signal to the imaging system output; and

(iv) a timing controller connected to the activating means and each differential output circuit, wherein the timing controller is operable to cause each sensor row to be sequentially activated, and when in a differential mode, to cause the activated sensors to provide a voltage signal corresponding to a previous detected frame to the output circuits and then to provide a voltage signal corresponding to a present detected frame to the output circuits, and when in a video mode, to cause the activated sensors to provide a voltage signal corresponding to a reference voltage to the output circuits and then to provide a voltage signal corresponding to a present detected frame to the output circuits, and wherein the timing controller is further operable to cause the output circuits to sequentially provide the output signals to a common output line to generate either of the imaging system output signals;

a switch having an input, first and second outputs and a control input, the input being connected to the imaging system output, the first output being operable to provide a video output signal to a monitoring device;

a threshold detector having an input and an output, the input being connected to the second switch output; and

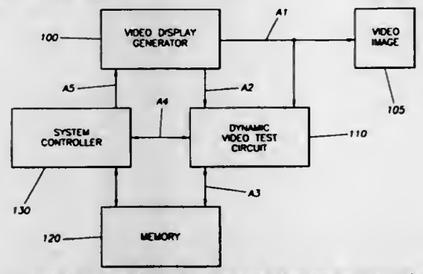
a mode selector having an input and an output, the input being connected to the detector output, the output being connected to the switch control input and the imaging system mode select input.

5,602,586

BUILT-IN TEST FOR DYNAMIC RASTER VIDEO OUTPUT

Steven A. Schauer, Bosque Farms, and Larry J. Thomas, Albuquerque, both of N.M., assignors to Honeywell Inc., Minneapolis, Minn.

Filed May 3, 1994, Ser. No. 237,519
Int. Cl.[6] H04N *17/02*
U.S. Cl. 348—189 **14 Claims**



1. A test apparatus for dynamic testing of an analog video signal having a plurality of analog signal components, comprising:

selection means for selecting one of said analog signal components from said analog video signal;

an A/D converter which converts the selected analog signal component into a converted video signal;

extracting means for extracting a characteristic value from said converted video signal;

a memory which stores predetermined characteristic value range data;

a comparator which compares said characteristic value to said stored characteristic value range data to produce a result; and

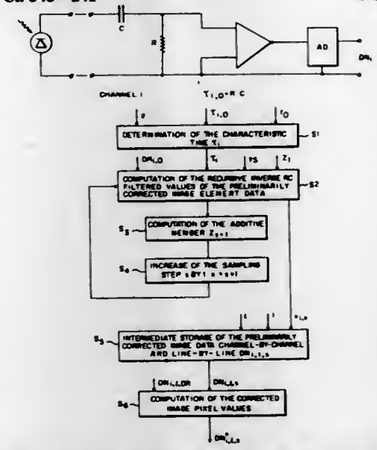
storage means for storing said result.

5,602,587

CORRECTION OF INFLUENCE OF ALTERNATING VOLTAGE COUPLING IN A SIGNAL CHAIN OF SCANNING OPTO-ELECTRONIC SENSORS

Dieter Oertel, Fürstenfeldbruck, Germany, and Boris Zhukov, Mytistschi, Russian Federation, assignors to Deutsche Forschungsanstalt für Luft-und Raumfahrt e.V., Köln, Germany

Filed Nov. 30, 1994, Ser. No. 351,112
Claims priority, application Germany, Dec. 1, 1993, 43 40 994.6
Int. Cl.[6] H04N *5/217*
U.S. Cl. 348—241 **4 Claims**



2. Method for correction of influence of the alternating voltage coupling in a signal chain of scanning opto-electronic sensors on radiometric image data obtained in the solar spectral range during aerocosmic remote sensing of the earth surface, comprising the steps of

a) determining and storing characteristic times (τ_i) of a time constant ($\tau_{i,0}$) of a RC-circuit of a respective spectral channel (i) of the alternating voltage coupled signal chain, a scanline frequency (f_0) and a number of pixels per scanline (p) (step S1),

b) carrying out, for each pixel of a channel (i) with its characteristic time (τ_i) of the signal chain and with knowledge of any constant off-set value of an analog-to-digital converter of the signal chain and any desired initial value of an additive term, a preliminary correction in the form of a recursive inverse RC-filtering of sampled pixels obtained at the output of the analog-to-digital converter (steps S1-S4),

c) intermediately storing the preliminarily corrected by an inverse RC-filtering image data channel-by-channel and line-by-line (step S5),

e) in the case of use of a dark reference source influenced by external radiation, computing corrected sampling values recursively on the basis of the preliminarily corrected and intermediately stored image data and with the aid of dark reference signals computed iteratively at the same time during the recursive computation for each channel (steps S8-S12),

f) using an experimentally determined mean reflectivity of the dark reference source and the first iteration of a dark reference signal used as reference values for the recursive computation of the corrected pixels for each channel, and

g) carrying out a running iteration of the dark reference signal line-by-line, during the recursive computation of the corrected pixels, by means of a line-by-line forward sliding formation of a mean scene signal from m image line segments which come into the field of view (FOV) of the dark reference source and with the use of a mean reflectivity,

wherein not more than four iterations are needed for a recursive computation of the pixels when the mean reflectivity (phd i) is at most equal to 0.02 in order to obtain accuracies of at most

equal to 0.2 percent in the solar spectral range, for example, for a dark pixel which is surrounded by pixels that are ten times as bright.

5,602,588

IMAGE PICKUP APPARATUS HAVING A HORIZONTAL LINE INTERPOLATION FUNCTION

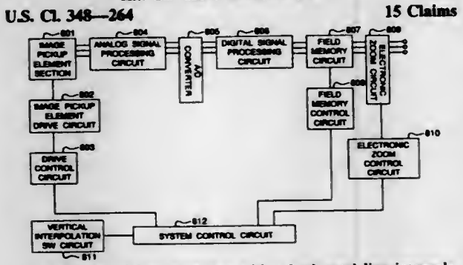
Hiroya Kusaka, Kawanishi; Takashi Sakaguchi, Yamatotakada, and Masaaki Nakayama, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 211,151, Mar. 22, 1994, Pat. No. 5,532,742. This application Jun. 7, 1995, Ser. No. 473,007

Claims priority, application Japan, Jul. 22, 1992, 4-195095; Jul. 22, 1992, 4-195096; Jul. 22, 1992, 4-195097; Jul. 22, 1992, 4-195099; Feb. 2, 1993, 5-015171

Int. Cl.[6] H04N *9/09;9/04;5/232*

U.S. Cl. 348—264 **15 Claims**



1. An image pickup apparatus with a horizontal line interpolation function comprising:

a plurality of solid state image pickup elements for obtaining three different chrominance signals C1, C2, and C3;

a plurality of image pickup element drive circuits for driving said plurality of solid state image pickup elements;

a drive control circuit for controlling said plurality of image pickup element drive circuits; and

an interpolation circuit for performing interpolation processing to obtain an interpolation horizontal line signal from the three chrominance signals C1, C2 and C3;

wherein said drive control circuit controls said image pickup element drive circuits so that the vertical phase of the chrominance signal C2 is shifted with respect to the chrominance signal C1 by a specified pitch p1 and that the vertical phase of the chrominance signal C3 is shifted by a specified pitch p2

and wherein said interpolation circuit performs interpolation processing on the chrominance signal C1 with an interpolation coefficient w (0<w<1), and performs interpolation processing on the chrominance signal C2 with interpolation coefficients determined depending on w and p1, and performs interpolation processing on C3 with an interpolation coefficient determined depending on w and p2.

5,602,589

VIDEO IMAGE COMPRESSION USING WEIGHTED WAVELET HIERARCHICAL VECTOR QUANTIZATION

Mohan Vishwanath, Mountain View, and Philip Chou, Menlo Park, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

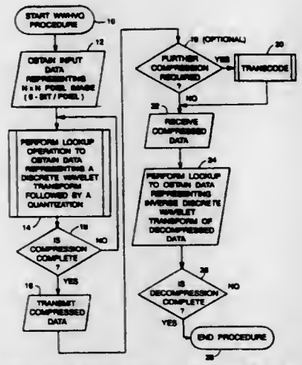
Filed Aug. 19, 1994, Ser. No. 293,612

Int. Cl.[6] H04N *7/28;7/30*

U.S. Cl. 348—398 **18 Claims**

1. A method for compressing and transmitting data, the method comprising the steps of:

receiving the data;



successively performing multiple stages of first lookup operations based on the data to obtain compressed data at each stage representing vector quantized discrete subband transform coefficients;

transmitting the compressed data to a receiver;

receiving the compressed data at the receiver;

successively performing multiple stages of second lookup operations to selectively obtain at each stage before a last stage partially decompressed data representing a partial inverse subband transform of the compressed data.

5,602,590

METHOD FOR RESTRICTING TOTAL CODE VOLUME IN DATA-COMPRESSION

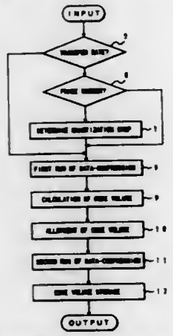
Kohji Numata, and Hiroyuki Ishikawa, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jun. 7, 1995, Ser. No. 475,299

Claims priority, application Japan, Jul. 28, 1994, 6-176363

Int. Cl.[6] H04N *7/133*

U.S. Cl. 348—405 **9 Claims**



1. A method for restricting total code volume in a data-compression, wherein a frame of a moving picture is divided into blocks of a same size, pixel data of a block is transformed by two-dimensional orthogonal transform, coefficients of frequency components obtained by said transform are quantized, and the quantized coefficients are coded in a variable length coding; said method comprising:

a step for determining a quantization step by a first frame or by several frames;

a step of first run of data-compression wherein a frame of a picture is data-compressed, using said determined quantization step, recording generated code volume of each block, and calculating code volume generated by the frame;

a step of allotment of code volume wherein code volume allotted to a block, VAB, is determined from a target code volume of a frame, VTF, which represents a code volume allowable for a frame in said data compression, code volume generated by the block, VGB, and code volume generated by the frame, VGF, by an equation, VAB= VGB×VTF/VGF;

a step of second run of data-compression wherein contents of quantized data memory of a block which has been prepared and stored at said first run of data-compression is called and coded by said variable length coding, code volume generated by said coding is examined, and when said code volume generated becomes equal to or larger than said allotted code volume of said block, said coding of said block is discontinued.

5,602,591

SYSTEM FOR GENERATING A WEIGHTING COEFFICIENT USING INTER-FRAME DIFFERENCE SIGNALS AT A CENTER PIXEL FOR DETECTING MOTION INFORMATION AND AT PIXELS SURROUNDING THE CENTER PIXEL AND QUANTIZING THE DIFFERENCE SIGNAL AT THE CENTER PIXEL

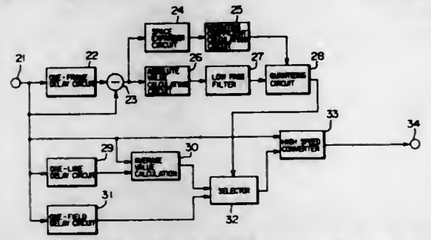
Masahiro Saiki, Chofu, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 31, 1994, Ser. No. 251,273

Claims priority, application Japan, Jun. 8, 1993, 5-137287

Int. Cl.[6] H04N *7/01*

U.S. Cl. 348—452 **15 Claims**



1. A motion signal detection method for detecting motion information of an input video signal, comprising the steps of:

(a) delaying said input video signal by one frame;

(b) obtaining a difference signal between said input video signal and said delayed video signal at a pixel of interest for detecting the motion information and at pixels in a space surrounding said pixel of interest;

(c) counting, in a group defined by said pixel of interest and said pixel in said space, a first number of pixels each having a difference signal between said input video signal and said delayed video signal that is greater than a first threshold value and a second number of pixels each having a difference signal between said input video signal and said delayed video signal that is smaller than a second threshold value;

(d) generating a weighting coefficient for the motion information at said pixel of interest on the basis of said first number and said second number; and

(e) controlling a quantizing parameter of the difference signal at said pixel of interest by using said weighting coefficient to detect the motion information o said input video signal at said pixel of interest.

5,602,592

MOVING PICTURE COMPRESSED SIGNAL CHANGEOVER APPARATUS

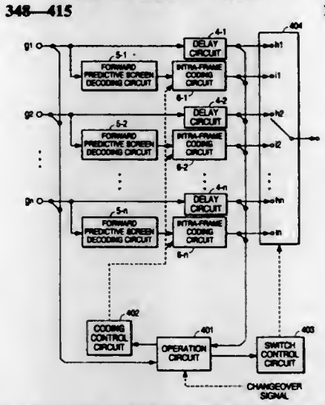
Toshiaki Mori, Minoo, and Toshihiko Kurosaki, Kobe, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 12, 1995, Ser. No. 371,870

Claims priority, application Japan, Jan. 18, 1994, 6-003460

Int. Cl.[6] H04N *7/50;5/268*

U.S. Cl. 348—415 **13 Claims**



1. A moving picture compressed signal changeover apparatus comprising:

a first input means for receiving a first moving picture compressed signal comprising a sequence of coded frames containing intra-frame coded frames, forward prediction coded frames and bidirectional prediction coded frames;

a second input means for receiving a second moving picture compressed signal comprising a sequence of coded frames containing intra-frame coded frames, forward prediction coded frames and bidirectional prediction coded frames; and

a changeover means coupled to said first and second input means for selectively outputting one of said first and second moving picture compressed signals, said changeover means being responsive to an externally given changeover signal for changing over from said first moving picture compressed signal to said second moving picture compressed signal by connecting a frame of said first moving picture compressed signal occurring just before an intra-frame coded frame or a forward prediction coded frame of said first moving picture compressed signal to an intra-frame coded frame of said second moving picture compressed signal.

5,602,593

OVERLAPPED MOTION COMPENSATION USING A WINDOW FUNCTION WHICH VARIES IN RESPONSE TO AN INPUT PICTURE

Jiro Katto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 22, 1995, Ser. No. 394,162

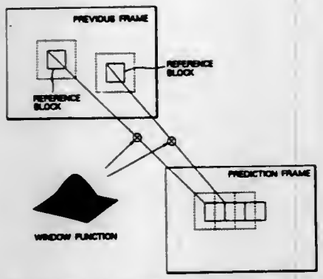
Claims priority, application Japan, Feb. 22, 1994, 6-023856

Int. Cl.[6] H04N *7/36;7/50*

U.S. Cl. 348—416 **12 Claims**

1. A motion compensation prediction picture producing device supplied with an digital picture signal representative of successive pictures for predictively producing a motion compensation prediction picture predictive of a current picture by using a previous picture which precedes said current picture among said successive pictures, each of said successive pictures comprising a predetermined number of blocks of pixels, said motion compensation prediction picture producing device comprising:

memorizing means for memorizing said previous picture as a reference picture;



vector detecting means connected to said memorizing means for detecting a motion vector representative of a movement of each block of said current picture between said current and said reference pictures, said vector detecting means delivering the motion vectors for the blocks of said current picture to said memorizing means to cause said memorizing means to produce, as reference blocks, the blocks of said reference picture that are determined by said motion vectors for the blocks of said current picture;

window function producing means for producing a window function in response to said current picture; and

prediction picture producing means connected to said memorizing means and said window function producing means for producing said motion compensation prediction picture given by multiplying each of said reference blocks by said window function and by adding said reference blocks multiplied by said window function to one another.

5,602,594

BUFFER CONTROL APPARATUS FOR COMPRESSION OF VIDEO INTRAFRAMES

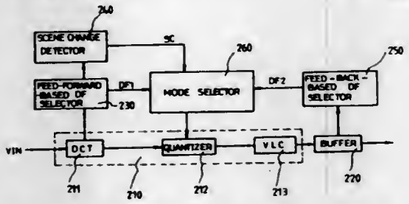
Sung K. Cho; Yong H. Lee, both of Daejon; Joon P. Chang, and Choon Lee, both of Seoul, all of Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Aug. 12, 1994, Ser. No. 289,566

Claims priority, application Rep. of Korea, Aug. 14, 1993, 15772/1993

Int. Cl.[6] H04N *7/30*

U.S. Cl. 348—419 **13 Claims**



1. A buffer control apparatus for compression of motion-involving video intraframes, comprising:

encoder means for encoding input video frame data to be compressed;

feed-forward-based division factor selector means for calculating a complexity of each frame based upon an output signal from the encoder means, estimating a quantity of data to be generated in units of a predetermined number of discrete cosine transform blocks by using a relation between the calculated complexity and a predetermined quantity of bits generated in test pictures, and sending a division factor corresponding to the estimated quantity of data to the encoder means;

buffer means for storing an output signal from the encoder means;

division factor generation means for generating a division factor based on an output from the buffer means;

detection means connected to the feed-forward-based division factor selector means, for detecting a scene change based on a bit rate difference between two successive video frames received from the feed-forward-based division factor selector means, and generating a scene change detection signal based on the detection; and

selection means for receiving the scene change detection signal generated from the detection means and selecting between the division factor from the feed-forward-based division factor selector means and the division factor from the division factor generation means, based on the scene change detection signal.

5,602,595

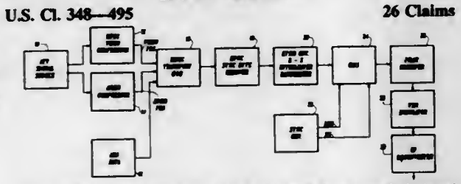
ATV/MPEG SYNC SYSTEM

Richard W. Citta, Oak Park; Mark Fimoff, Hoffman Estates, and Timothy G. Laud, Mundelein, all of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Continuation-in-part of Ser. No. 417,581, Apr. 6, 1995, which is a continuation-in-part of Ser. No. 175,061, Dec. 29, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 479,428

Int. Cl.[6] H04N *5/04*

U.S. Cl. 348—495 **26 Claims**



1. A method of transmitting a digital multilevel symbol signal comprising:

encoding elementary streams of data into a multilevel symbol signal comprising a plurality of multiplexed fixed length data packets without packet sync information;

arranging the data packets in fields of repetitive data segments, each of the data segments including a data segment sync and each of the fields including a field sync; and

transmitting the fields of data segments.

5,602,596

METHOD FOR NAVIGATING A COMPLEX MULTIMEDIA STRUCTURE AT AN INTERACTIVE USER STATION

Cameron Claussen, Denver; David Crayton, Littleton; George Engelbeck, Boulder; Don Hubbard, Nederland, and Larry Toby, Aurora, all of Colo., assignors to U S West Technologies, Inc., Boulder, Colo.

Filed Apr. 8, 1994, Ser. No. 225,124

Int. Cl.[6] H04N *5/445;9/74*

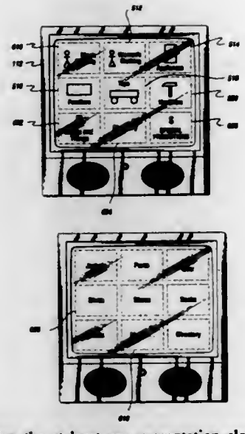
U.S. Cl. 348—564 **12 Claims**

1. A method for navigating a complex multimedia structure for providing product/service information at an interactive user station, the complex structure comprising a plurality of nodes, each node including at least one presentation element, the interactive user station including a processor in electrical communication with a memory and a presentation device, the presentation device including a display area having a plurality of presentation cells arrangeable in an array, the method comprising:

(a) presenting the at least one presentation element associated with a first node via at least one of the plurality of presentation cells in the array;

(b) receiving at the processor a signal indicating a user selection of one of the presentation cells;

(c) identifying a second node based on the selected presentation cell; and



(d) presenting the at least one presentation element associated with the second node via at least two of the plurality of presentation cells in the array, the at least one presentation element including motion picture and audio portions relating to product/service feature and sales information.

5,602,597

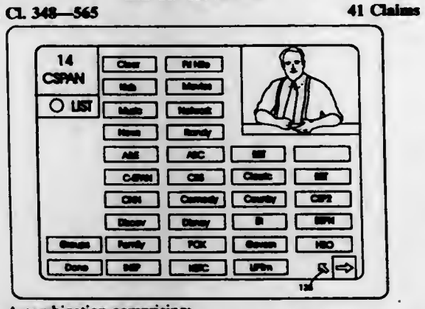
VIDEO RECEIVER DISPLAY OF VIDEO OVERLAYING MENU

Randal L. Bertram, Raleigh, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 31, 1995, Ser. No. 455,780

Int. Cl.[6] H04N *5/45*

U.S. Cl. 348—565 **41 Claims**



7. A combination comprising:

a remote control device usable at some distance of separation from a television receiver which has a video display device having a predetermined screen area, the remote control device having:

a housing sized to be held in the hand of the human observer;

a manually engageable input device mounted in said housing for manipulation by the human observer; and

control transmitter circuitry mounted in said housing and coupled to said input device for transmitting at a frequency which is outside direct sensing by the human observer command signals coordinated in a predetermined manner to manipulation of said input device by the human observer; and

a display controller for coupling to a television receiver video display device and for delivering to a coupled television receiver video display device image directing signals, said display controller having:

command receiver circuitry for receiving said command signals from said command transmitter circuitry and for deriving from said received command signals image directing signals directing modification of visual images displayed to a human observer by the television receiver video display device; and

command processor circuitry coupled to said command receiver circuitry and to the television receiver video display device

(a) for receiving said image directing signals,

(b) for generating a cursor image signal for overlay of a cursor image onto said visual images, and

(c) for modifying said visual images as directed by manipulation of said remote control device by the human observer,

said display controller cooperating with the television video display device for displaying full motion video visual images occupying a minor portion of said screen area and a menu display occupying a major portion of the screen area, said menu display having a plurality of displayed elements,

said display controller and said remote control device cooperating for moving said cursor image across the area of said visual images and said menu display to position the cursor image onto a displayed element and for directing modification of said visual images in response to selection of a displayed element overlain by the cursor image.

19. A method of displaying visual images to a human observer using a television video display device having a predetermined screen area for displaying visual images to a human observor comprising the steps of:

receiving signals transmitted at frequencies which are outside direct sensing by the human observer;

delivering, to said television video display device, video signals which drive the television video display device to display visual images;

generating, with a manually engageable input device remote from the television video display device and manipulable by the human observer, command signals indicative of desired modifications of the displayed visual images and delivering generated signals to a command transmitter;

transmitting, from the command transmitter and at a frequency which is outside direct sensing by the human observer, command signals coordinated in a predetermined manner to manipulation of the input device by the human observer;

receiving the command signals from the command transmitter and deriving from the received command signals image directing signals directing modification of the visual images;

generating a cursor image signal for overlay of a cursor image onto displayed visual images; and

(a) receiving the image directing signals and cursor image signal and;

(b) modifying the visual images as directed by manipulation of the remote control device by the human observer to overlay the cursor image onto selected portions of displayed visual images and facilitate modification of the visual images by the human observer through selection of commands while

(c) displaying full motion video visual images occupying a minor portion of said screen area and a menu display occupying the major portion of said screen area and having a plurality of menu elements representing a plurality of available visual image modifications.

5,602,598

TELEVISION RECEIVER WITH CAPTION DISPLAY

Peter Shintani, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 161,103, Dec. 2, 1993, abandoned. This application Oct. 25, 1995, Ser. No. 547,965

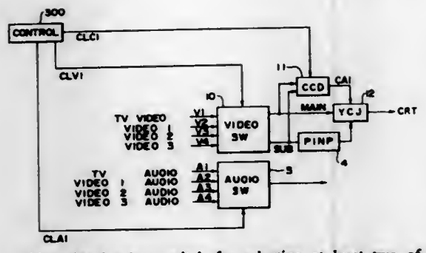
Claims priority, application Japan, Dec. 2, 1992, 4-349901

Int. Cl.[6] H04N *5/445;5/45*

U.S. Cl. 348—565 **6 Claims**

1. A television receiver, comprising:

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a video signal select switch for selecting at least two of a plurality of video signals and outputting said selected signals as a main video signal and a sub-video signal;

an audio signal select switch for selecting one of a plurality of audio signals respectively associated with one of said plurality of video signals, thereby providing a selected audio signal;

a closed caption selector for selecting a closed caption signal associated with at least said sub-video signal, thereby providing a selected caption signal;

a closed caption decoder for decoding said selected caption signal, thereby providing a decoded caption signal;

a control circuit for controlling said video signal select switch, said audio signal select switch and said closed caption selector in response to user entered commands;

a display for simultaneously displaying a main picture represented by said main video signal, a sub-picture represented by said sub-video signal and a caption represented by said decoded caption signal; and

means for producing sound corresponding to said selected audio signal.

5,602,599

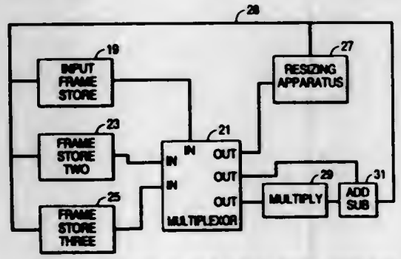
APPARATUS AND METHOD INCORPORATING DIGITAL VIDEO PROCESSING FOR REDUCTION/ MAGNIFICATION OF DIGITAL VIDEO IMAGES TO PRODUCE LOW-PASS FILTERED IMAGES

Lance Greggain, Woodbridge, Canada, assignor to Genesis Microchip Inc., Ontario, Canada

Continuation of Ser. No. 133,372, Oct. 8, 1993, Pat. No. 5,365,277. This application Aug. 24, 1994, Ser. No. 294,049

Int. Cl.[6] H04N *5/14;9/74;5/21;* **G06K** *9/42*

U.S. Cl. 348—581 **10 Claims**



1. A method of filtering an input digital image comprising the steps of:

a) storing said input digital image;

b) retrieving said input digital image and generating a first resized digital image of reduced spatial frequency relative to said input digital image and being of smaller size than said input digital image;

c) storing said first resized digital image;

d) retrieving said first resized digital image and generating a second resized digital image of equal size to said input digital image, wherein said second resized digital image is a low-pass filtered version of said input digital image due to said reduced spatial frequency of said first resized digital image; and

e) storing said second resized digital image.

5,602,600

DEVICE FOR TRANSPARENTLY DISPLAYING CHARACTERS IN A VIDEO SYSTEM BY FORMING A WEIGHTED AVERAGE OF A VIDEO SIGNAL AND THE VIDEO SIGNAL AFTER TEXT HAS BEEN INSERTED

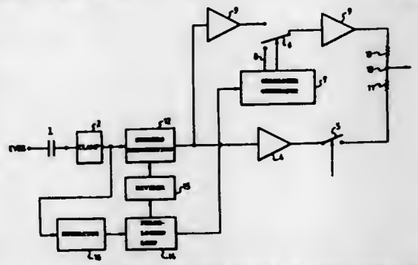
Olivier Quelanec, Grenoble, France, assignor to Thomson Consumer Electronics, Courbevoie, France

Continuation of Ser. No. 331,548, Nov. 14, 1994. This application May 6, 1996, Ser. No. 643,585

Claims priority, application France, Mar. 12, 1993, 93 02869

Int. Cl.[6] H04N *9/76;5/265*

U.S. Cl. 348—589 **7 Claims**



1. A device for displaying characters in a video system, said device comprising:

an input terminal for receiving an input video signal;

a clamping capacitor, connected to said input terminal, which receives said input video signal;

a clamping circuit which receives an output of said clamping capacitor and clamps said input video signal to a reference voltage;

a synchronization reinsertion circuit which receives the clamped input video signal from said clamping circuit an reinserts synchronization into the clamped input video signal;

a character generator for inserting text into said input video signal;

a selection device which receives said input video signal and selects whether or not to retransmit said video signal; and

means for generating and outputting a weighted average of the video signal into which said text has been inserted and an output of said selection device,.. said means comprising

a first resistor through which said output of said selection device passes;

a second resistor through which said video signal to which said text has been inserted passes, said first and second resistors being connected in series; and

an output terminal formed at a connection point between said first and second resistors.

5,602,601

PHASE ERROR CORRECTOR FOR HDTV RECEPTION SYSTEM

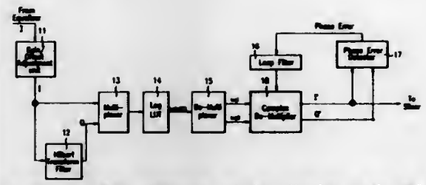
Jong G. Kim; Kyeong S. Kim, both of Seoul, and Su W. Jung, Kyungki-do, all of Rep. of Korea, assignors to L. G. Electronics Inc., Seoul, Rep. of Korea

Filed Apr. 21, 1995, Ser. No. 426,182

Int. Cl.[6] H04N *5/21*

U.S. Cl. 348—607 **21 Claims**

1. A phase error corrector for an HDTV reception system comprising:



a gain and offset adjustment unit for adjusting a gain and an offset of incoming I data;

a Hilbert transform filter for performing a Hilbert transform filtering of the I data received from the gain and offset adjustment unit for generating Q data;

a log LUT for producing logarithmic values of the I data and the Q data received from the gain and offset adjustment unit and the Hilbert transform filter into logI value and logQ value respectively;

a complex demultiplexer for generating a corrected I value and a corrected Q value having their errors corrected out of the logI value and the logQ value received from the log LUT;

a phase error detector for detecting phase errors from the corrected I value and the corrected Q value received from the complex demultiplexer; and,

a loop filter for accumulating phase errors received from the phase error detector and applying the accumulated phase errors to the complex demultiplexer.

5,602,602

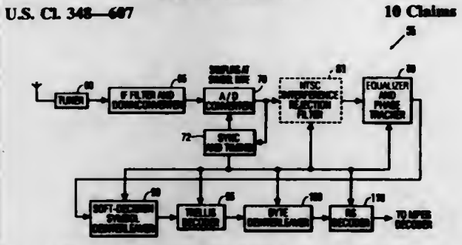
METHOD AND APPARATUS FOR COMBATING CO-CHANNEL NTSC INTERFERENCE FOR DIGITAL TV TRANSMISSION HAVING A SIMPLIFIED REJECTION FILTER

Samir N. Hulyalkar, Columbia, Md., assignor to Philips Electronics North America Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 230,360, Apr. 20, 1994, Pat. No. 5,512,957, which is a continuation-in-part of Ser. No. 197,773, Feb. 10, 1994, Pat. No. 5,452,015. This application Oct. 27, 1995, Ser. No. 550,128

Int. Cl.[6] H04N *5/44*

U.S. Cl. 348—607 **10 Claims**



1. A television receiver for reducing a co-channel interference comprising:

means for receiving a transmitted digital television signal, the transmitted digital television signal having an encoded digital television signal component, a co-channel interference component, and a noise component, wherein the encoded digital television signal component is partially characterized as an N-level vestigial sideband (VSB) signal of encoded symbols, said receiver means further providing a received output signal;

simplified rejection filter means for filtering the received output signal to reduce the co-channel interference component thereof, wherein said rejection filter means comprises a simplified prediction filter having a fixed number L of tap coefficients $z_1, \ldots, z_L$, further wherein the number L is less than a number N of tap coefficients for an optimal prediction filter, the optimal prediction filter corresponding to a prediction filter implemented at a television transmitter for precoding the digital television signal prior to being transmitted by the television transmitter, said rejection filter means further providing a filtered output signal;

means for equalizing and phase tracking the filtered output signal, wherein said equalizer and phase tracker means comprises (i) a forward equalizer having an input for receiving the filtered output signal, (ii) a modified slicer responsive to an output of the forward equalizer for providing first and second modified slicer output signals and further for providing an error signal, (iii) a feedback equalizer having an input for receiving the first modified slicer output signal, and (iv) an equalizer tap-adaptation means responsive to the error signal and the inputs of the forward equalizer and feedback equalizer, respectively, for producing modified tap coefficients, the equalizer tap-adaptation means further for providing the modified tap coefficients to the forward and the feedback equalizers for use by the forward and feedback equalizers, respectively, in minimizing a noise enhancement effect of the noise component of the received signal, wherein the noise enhancement effect is produced as a result of the filtering of the received signal by said rejection filter means, said equalizer and phase tracker means further providing an equalized and phased tracked output signal corresponding to the second modified slicer output signal;

means responsive to the equalized and phase tracked output signal for producing a decoded digital television signal.

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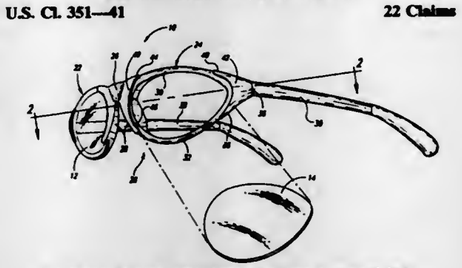
EYEGLASSES HAVING INTERCHANGEABLE LENSES AND ATTACHMENT CLIPS

Pierre N. Boudet, 6, Rue Anatole France, 01100 Oyonnax, France

Filed Dec. 22, 1995, Ser. No. 578,888

Int. Cl.[6] G02C *7/10;9/00;1/08;1/04*

U.S. Cl. 351—41 **22 Claims**



1. Eyeglasses having interchangeable lenses, comprising:

a pair of eyeglass lenses;

a frame having a bridge interconnecting a pair of frame sections, each frame section including upper and lower frame members extending from said bridge to respective attachment areas, each of said frame sections further including an inner lens attachment clip extending from said bridge part of the way toward said attachment area and an outer lens attachment clip extending from said attachment area part of the way toward said bridge so that said inner and outer lens attachment clips are separated from each other by a gap, the lens attachment clips of each frame section retaining respective lenses between said clips and at least one of said frame members, said frame or said lenses being fabricated from a resiliently compliant material so that said frame or lenses may be deformed to allow said lenses to be installed in and removed from respective fame sections; and

a securing device attached to the attachment areas of said frame sections to retain said frame on the face of a wearer.

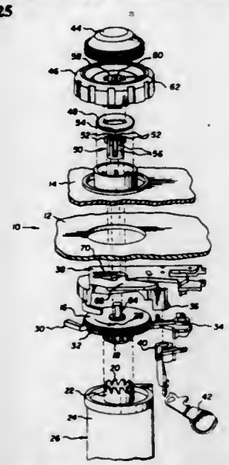
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5,602,604

UNDERWATER ONE-TIME-USE CAMERA WITH COMBINATION FILM WINDING CLUTCH AND SHUTTER RELEASE

Jude A. SanGregory, Spenceport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 7, 1996, Ser. No. 597,764
Int. Cl.[6] G03B *17/08;17/42;1/10*
U.S. Cl. 396—25 **9 Claims**



1. A camera comprising a film winding knob manually rotatable to rotate a spool to wind a filmstrip onto the spool, clutching means located between said film winding knob and the spool for allowing the film winding knob to be manually rotated without rotating the spool, and a shutter release button manually depressible to initiate picture-taking, is characterized in that:

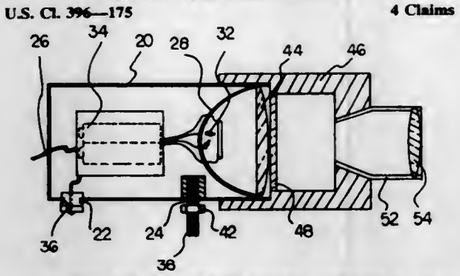
said clutching means includes a clutch component supported to be depressed to initiate picture-taking responsive to manual depression of said shutter release button.

5,602,605

FLASH ASSEMBLY

Kenneth N. Lierle, 2103 Flint Rd., Madison, Ind. 47250

Filed May 1, 1996, Ser. No. 640,482
Int. Cl.[6] G03B *15/03;15/02;11/00*
U.S. Cl. 396—175 **4 Claims**



1. A camera flash magnification assembly comprising in combination:

a cylindrical minor housing assembly having a opened forward end, a closed rearward end, and a hollow interior, the hollow interior having a lower surface, a rearward portion, a forward portion and an intermediate extent therebetween, an first aperture formed within the lower surface of the minor housing assembly at the rearward portion, a second aperture formed within the lower surface of the minor housing assembly at the forward portion, a third aperture formed within the closed rearward end;

a flash assembly including an apertured reflector positioned within the opened forward end of the minor housing, a flash lamp positioned within the aperture of the reflector, a power supply & electronics positioned within the rearward portion of the minor housing, an electrical contact positioned within the first aperture of the minor housing, electrical wiring interconnecting the electrical contact, the power supply and the flash lamp;

an adjustment assembly positioned within the second aperture of the minor housing, the adjustment assembly including a threaded bolt threadably secured within the second aperture, an angle adjusting nut threadably positioned upon the threaded bolt;

a condensing lens positioned within the opened forward end of the minor housing, the condensing lens function to condense light emitted by the flash lamp and directed by the reflector;

a major housing assembly having a apertured forward portion and an opened rearward portion, the opened rearward portion of the major housing adapted to be secured over the forward end of the minor housing, a diffusion lens positioned within the major housing intermediate the forward and rearward portions, the diffusion lens adapted to scatter light emitted by the flash lamp, directed by the reflector and concentrated by the condensing lens;

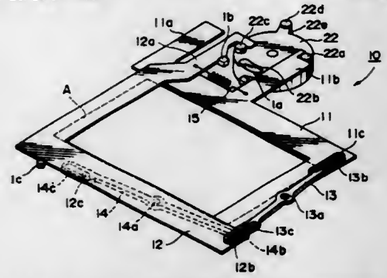
a focusing lens housing having a opened forward portion and an opened rearward portion, the rearward portion of the lens housing adapted to be inserted within the aperture of the forward portion of the major housing, a focusing lens positioned within the opened forward portion of the lens housing.

5,602,606

FRAME MASKING MECHANISM

Kazuki Yazawa, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 5, 1995, Ser. No. 523,638
Claims priority, application Japan, Sep. 2, 1994, 6-234308
Int. Cl.[6] G03B *17/02;37/00*
U.S. Cl. 396—435 **22 Claims**



1. A frame masking mechanism for a camera, comprising:

a rectangular frame opening formed in said camera for defining a largest image formed by light admitted to a film plane of said camera;

horizontal side masking means for masking said frame opening at horizontal sides of said frame opening by blocking light at said horizontal sides of said frame opening;

vertical side masking means for masking said frame opening at vertical sides of said frame opening by blocking light at said vertical sides of said frame opening;

first moving means for moving one of said horizontal side masking means to mask said frame opening at said horizontal sides and said vertical side masking means to mask said frame opening at said vertical sides;

second moving means for simultaneously moving said horizontal and said vertical side masking means to mask said frame opening at both of said horizontal sides and said vertical sides of said frame opening; and

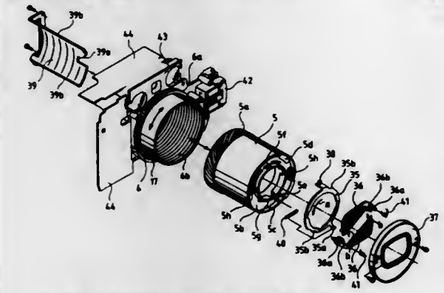
an operating member for selectively operating said first moving means and said second moving means.

5,602,607

CAMERA WITH LENS PROTECTION BARRIER MEMBER OPENED/CLOSED WITH UNIFORM FORCE

Minoru Kato, Kawasaki, and Yoshio Imura, Yokohama, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Division of Ser. No. 418,899, Apr. 7, 1995, abandoned, which is a continuation of Ser. No. 270,319, Jul. 5, 1994, abandoned, which is a continuation of Ser. No. 138,385, Oct. 20, 1993, abandoned, which is a continuation of Ser. No. 717,346, Jun. 18, 1991, abandoned, which is a continuation-in-part of Ser. No. 607,710, Nov. 1, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 473,904
Claims priority, application Japan, Nov. 6, 1989, 1-287603; Nov. 14, 1989, 1-131661 U; Nov. 20, 1989, 1-133980 U; Nov. 20, 1989, 1-299568; Jun. 22, 1990, 2-065494 U
Int. Cl.[6] G03B *17/04*
U.S. Cl. 396—349 **1 Claim**



1. A camera having a camera housing and comprising:

a lens protection barrier member for covering an imaging lens;

a cam lever, connected to said barrier member, movable along an optical axis of said imaging lens, and rotatable around said optical axis during opening/closing of said barrier member;

a variable force spring member, connected to said cam lever, urging said cam lever to rotate in a direction in which said barrier member opens; and

a cam fixed to said camera housing on a path on which said cam lever moves along said optical axis and having a cam surface engagable with said cam lever by movement of said cam lever along said optical axis;

said cam lever being urged against said cam surface by said spring force and moving along said cam surface while rotating during opening/closing of said barrier member, the shape of said cam surface being correlated with the force of said spring member so as to vary a load force exerted by said cam lever in order to maintain said load force substantially constant as said force of said spring member varies.

5,602,608

"CAMERA WITH MOTOR DRIVEN TRANSMISSION MECHANISM"

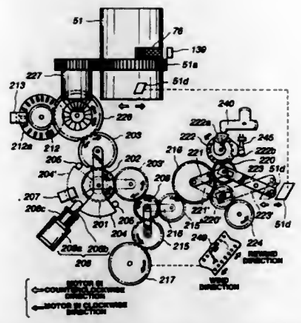
Yasuo Asakura, and Masatoshi Sato, both of Hachioji, Japan, assignors to Olympus Optical Co. Ltd., Tokyo, Japan

Filed Sep. 20, 1994, Ser. No. 309,424
Claims priority, application Japan, Sep. 21, 1993, 5-235184; Sep. 21, 1993, 5-235188
Int. Cl.[6] G03B *1/40;37/00;1/18*
U.S. Cl. 396—85 **40 Claims**

1. A camera comprising:

winding means for winding a film;

rewinding means for rewinding a film;



zooming means for moving a lens along an optical axis for zooming;

photographic image-plane size switching means for switching a photographic image-plane size;

a motor for generating a forward or backward driving force;

a first planetary gear mechanism for selecting whether the motor driving force is transmitted to said zooming means;

prohibiting means for prohibiting a rotation of the first planetary gear after the first planetary gear has completed a selection;

a second planetary gear mechanism for selecting whether an output from said first planetary gear mechanism, which was not transmitted to said zooming means, is transmitted to said winding means;

a third planetary gear mechanism for ordinarily transmitting a driving force to said photographic image-plane size switching means, which mechanism is disposed in such a way that an output from said second planetary gear mechanism which was not transmitted to said winding means can be transmitted to said rewinding means or said photographic image-plane size switching means; and

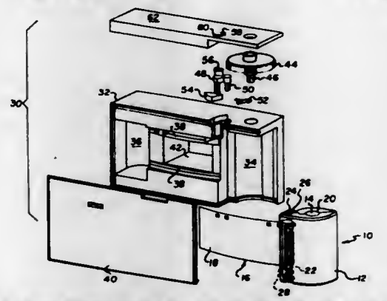
switching means for forcedly switching an output of said third planetary gear mechanism from said photographic image-plane size switching means to said rewinding means when the lens frame is moved to a predetermined position by said zooming means.

5,602,609

CAMERA WITH FILM SENSOR FOR CLOSING CASSETTE WHEN FILMSTRIP WOUND COMPLETELY INTO CASSETTE

Edward N. Balling, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 21, 1995, Ser. No. 407,992
Int. Cl.[6] G03B *1/00*
U.S. Cl. 396—284 **6 Claims**



1. A camera comprising a cassette-receiving chamber for holding a film cassette provided with a light lock which is to be closed

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when an exposed filmstrip is wound completely into the cassette, and closing means movable to close the light lock, is characterized in that:

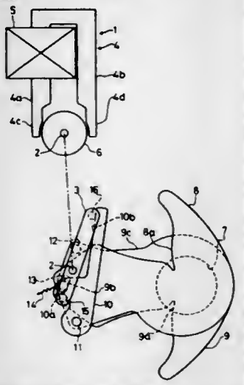
a film sensor, separate from the cassette, for sensing the presence of the filmstrip outside the cassette is located to determine the filmstrip is wound completely into the cassette, and is coordinated with said closing means to permit the closing means to be moved to close the light lock when said film sensor determines the filmstrip is wound completely into the cassette.

5,602,610

SHUTTER FOR CAMERA

Kazuo Akimoto; Miyoshi Tanikawa, and Nobuyuki Fukui, all of Yotsukaido, Japan, assignors to Seiko Precision Inc., Tokyo, Japan

Filed Dec. 28, 1994, Ser. No. 365,089
Claims priority, application Japan, Dec. 28, 1993, 5-336598
Int. Cl.[6] G03B *9/08; 9/10*
U.S. Cl. 396—449 **4 Claims**



1. A shutter for a camera, comprising:

a pair of sectors supported on a shutter base plate so as to open and close an opening formed in said shutter base plate in association with each other, said pair of sectors being biased in a closing direction by a biasing spring;

a single reversible motor;

a driving member rotationally displaced in both forward and backward directions in response to rotation of said motor; and

an operating lever pivoted in a direction for opening said sectors regardless of the direction of rotational displacement of said driving member;

one of said sectors being connected to said operating lever so as to pivot together with said operating lever as one unit;

said driving member having first and second driving pins respectively provided on both end portions thereof, said first driving pin being adapted to engage said operating lever when said motor is driven in one direction, thereby displacing said operating lever to a first position, and said second driving pin being adapted to engage said operating lever when said motor is driven in the other direction, thereby displacing said operating lever to a second position;

said operating lever operating such that when said operating lever is in said first position, said pair of sectors are in a full-open position where said sectors do not overlap said opening, whereas when said operating lever is in said second position, said pair of sectors are in a half-open position where an opening smaller than said opening is obtained; and

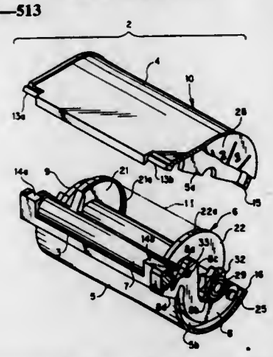
at least said second driving pin being adapted to abut on a part of one of said sectors when said driving member is driven to displace said operating lever to said second position, thereby restraining the displacement of said driving member.

5,602,611

PHOTOGRAPHIC FILM CASSETTE

Tetsuya Takatori, and Akimasa Kaya, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 1, 1993, Ser. No. 114,616
Claims priority, application Japan, Sep. 1, 1992, 4-276495
Int. Cl.[6] G03B *17/26*
U.S. Cl. 396—513 **37 Claims**



1. A photographic film cassette having a cassette shell provided with a roll chamber and a passage port for photographic film, and a spool on which said photographic film is wound and which is rotatably contained in a roll chamber, a leader of said photographic film being advanced outward through the passage port by rotation of said spool in an unwinding direction, comprising:

a shutter member movably arranged in said passage port to be displaced between closed and open positions, said shutter member, when assuming said closed position, blocks said passage port to prevent ambient light from entering into said roll chamber, and when assuming said open position, allowing said photographic film to pass through said passage port; and

locking means for regulating displacement of said shutter member, said locking means being resiliently moveable between a locking position, where said shutter member is locked in said closed position, and an unlocking position, where said shutter member is moveable.

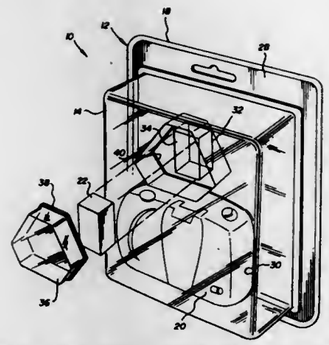
5,602,612

DISPLAY PACKAGE FOR CAMERA AND REPLACEABLE CONSUMABLE

Gerald J. Angell, Fairport, and Harland J. Hansen, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 18, 1996, Ser. No. 617,232
Int. Cl.[6] G03B *17/02;* **B65D** *85/38*
U.S. Cl. 396—535 **6 Claims**

1. A display package assembly comprising a main closed portion housing a camera, and another closed portion housing a consum-



able such as a film cartridge and/or one or more batteries, is characterized in that:

said main portion housing said camera is permanently sealed to prevent removal of the camera from the main portion without breaking open the main portion; and

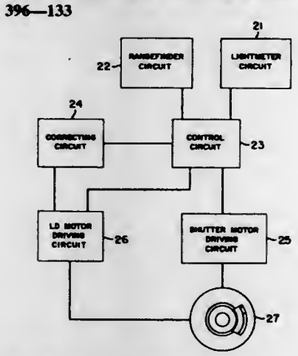
said other portion housing said consumable has a removable cover to permit the other portion to be opened and re-closed to replace said consumable without breaking open the other portion.

5,602,613

LENS DRIVING DEVICE

Kazuo Akimoto; Hiroto Tsuyuki, and Miyoshi Tanikawa, all of Yotsukaido, Japan, assignors to Seiko Precision Inc., Japan

Filed Sep. 13, 1995, Ser. No. 527,783
Claims priority, application Japan, Sep. 13, 1994, 6-218859
Int. Cl.[6] G03B *13/36;* **G02B** *7/28*
U.S. Cl. 396—133 **3 Claims**



1. A lens driving device comprising:

a lens barrel movable in an optical axis direction;

driving means for driving the lens barrel;

correcting means for correcting the distance through which the lens barrel is driven; and

control means for controlling the driving means, wherein

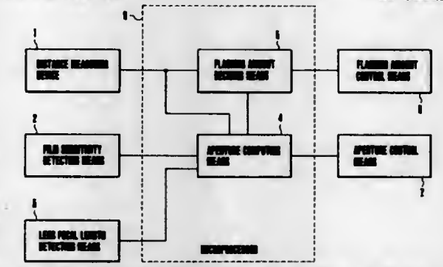
when the distance through which the lens barrel is driven exceeds a prescribed value, the driving means is controlled based on a correction value outputted by the correcting means.

5,602,614

CAMERA

Masanori Ohtsuka; Takanobu Tsunemiya, and Yuuichi Matsuda, all of Kanagawa-ken, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 9,866, Jan. 26, 1993, abandoned.
This application Jun. 7, 1995, Ser. No. 485,165
Claims priority, application Japan, Jan. 31, 1992, 4-040735
Int. Cl.[6] G03B *7/00; 15/03*
U.S. Cl. 396—61 **28 Claims**



1. A camera having a shutter which serves also as a diaphragm comprising:

a) distance detecting means arranged to detect a distance to an object and to output distance information;

b) flash amount deciding means for varying an amount of flash emission on the basis of the distance information from said distance detecting means;

c) aperture value deciding means for varying an aperture value of the shutter to be used at the time of starting flash emission, on the basis of said amount of flash emission; and

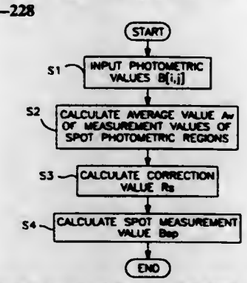
d) a light emission control circuit for controlling a quantity of light to be emitted by a flash, said control circuit being arranged to illuminate in the course of the moving operation for the shutter.

5,602,615

PHOTOMETRIC DEVICE TO DETERMINE A CORRECT PHOTOMETRIC VALUE OF A SPOT PHOTOMETRIC REGION

Masaru Muramatsu, Kawasaki, and Shinichi Tsukada, Toride, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Jul. 7, 1995, Ser. No. 499,709
Claims priority, application Japan, Nov. 16, 1994, 6-281906
Int. Cl.[6] G03B *7/08*
U.S. Cl. 396—228 **16 Claims**



1. A photometric device, of an optical system, which divides a subject field, corresponding to a photographic picture plane, into a plurality of photographic regions, said photometric device comprising:

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a photometric sensor having a plurality of photometric elements respectively corresponding to said plurality of photographic regions and measuring amounts of light incident upon said respective plurality of photographic regions, to determine photometric values for each photographic region; and

a calculating unit to determine an average photometric value of a specific region comprising at least one of said plurality of photographic regions, and to correct the average photometric value based upon the photometric values of the photographic regions outside of the specific region and predetermined correction coefficients respectively associated with said plurality of photographic regions.

5,602,616

EXPOSURE CONTROL APPARATUS OF CAMERA

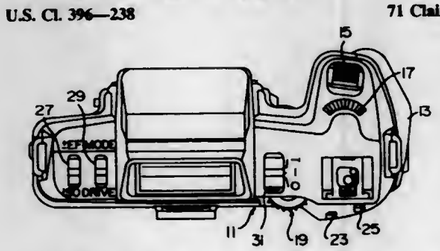
Osamu Sato; Satoshi Nakano; Isamu Hirai; Toshiyuki Kitazawa; Takayuki Sensui; Masato Yamamoto; Toshimasa Yamanaka; Takenao Shishikura; Akio Takahashi, and Nobuhiko Matsudo, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 167,634, Dec. 14, 1993, abandoned, which is a continuation of Ser. No. 868,833, Apr. 15, 1992, abandoned. This application Jan. 30, 1995, Ser. No. 380,314

Claims priority, application Japan, Apr. 15, 1991, 3-173491; Apr. 15, 1991, 3-173492; Apr. 15, 1991, 3-173493; Apr. 15, 1991, 3-173494; Nov. 28, 1991, 3-339656; Nov. 28, 1991, 3-361197; Nov. 28, 1991, 3-361200; Nov. 28, 1991, 3-361201; Nov. 28, 1991, 3-361202

Int. Cl.[6] G03B *7/08*

U.S. Cl. 396—238 **71 Claims**



1. An exposure control apparatus of a camera, comprising:

photometering means for metering a brightness of an object to be photographed;

means for manually setting a shutter speed;

means for manually setting an aperture value;

mode changing means for selecting an exposure mode from among a plurality of exposure modes, including a manual exposure mode in which a shutter speed and an aperture value are manually set by said manually setting shutter speed means and by said manually setting aperture value means, and an automatic exposure mode in which at least one of said shutter speed and said aperture value is automatically set in accordance with an other of said at least one of said shutter speed and said aperture value, and said object brightness;

exposure factor determining means for automatically determining at least one of said shutter speed and said diaphragm value, said exposure factor determining means being actuated when a presently selected mode is said automatic exposure mode; and

a manually actuable switch for replacing said manually set shutter speed and manually set aperture value with at least one automatically set shutter speed and aperture value when said manually actuable switch is actuated while the presently selected mode is said manual exposure mode.

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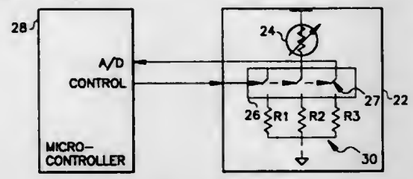
LIGHT METERING DEVICE WITH ADJUSTABLE OUTPUT

J. David Cocca, Pittsford, and Clay A. Dunsmore, Batavia, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 10, 1995, Ser. No. 401,842

Int. Cl.[6] G03B *7/08;7/083;* G01J *1/42*

U.S. Cl. 396—246 **14 Claims**



1. A light metering device comprising:

a light dependent resistor; a network including a plurality of circuit elements; selection means for selectively connecting the light dependent resistor to one of the plurality of circuit elements in the network; and control means for measuring a voltage at an output terminal of the light dependent resistor and controlling the operation of the selection means in response to said measured voltage to select one of the plurality of circuit elements in the network to set the voltage at the output terminal of the light dependent resistor within a predetermined threshold.

5,602,618

IMAGE PRINTER WITH OVERLAPPING PROJECTION AND IMAGE EXPOSURE UNITS

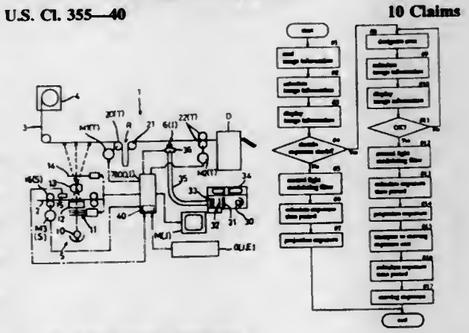
Toru Tanibata, Wakayama, Japan, assignor to Noritsu Koki Co., Ltd., Wakayama-ken, Japan

Filed May 26, 1994, Ser. No. 249,779

Claims priority, application Japan, Jun. 3, 1993, 5-133604

Int. Cl.[6] G03B *27/52*

U.S. Cl. 355—40 **10 Claims**



1. An image printer comprising:

a projection exposure unit for projecting and exposing an image of a film onto a photosensitive material;

an image exposure unit for exposing the photosensitive material based on exposure image information with setting an exposure amount for each of a number of areas of the photosensitive material;

transport means for transporting the photosensitive material through the projection exposure unit and the image exposure unit;

reader means for reading the image information of the film with dividing the image information into a number of areas;

correction information inputting means for inputting a correction-target portion of the image information read by the reader means and a correction content for the correction-target portion;

wherein, based on the image information read by the reader means and on correction information instructed by said correction information inputting means, said image exposure unit generates, as said exposure image information, image information concerning only said correction-target portion corrected in accordance with said correction content; and

said transport means being adapted to transport said photosensitive material in such a manner that the projection exposure by said projection exposure unit are and the exposure by said image exposure unit are effected in an overlapping manner onto the photosensitive material.

5,602,619

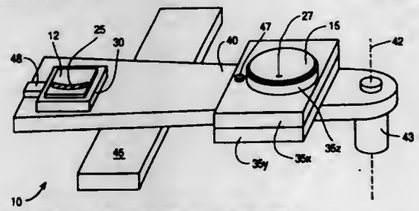
SCANNER FOR STEP AND SCAN LITHOGRAPHY SYSTEM

Michael R. Sogard, Menlo Park, Calif., assignor to Nikon Precision, Inc., Belmont, Calif.

Continuation of Ser. No. 125,601, Sep. 22, 1993, abandoned. This application Sep. 27, 1994, Ser. No. 313,383

Int. Cl.[6] G03B *27/54*

U.S. Cl. 355—53 **32 Claims**



1. Photolithography apparatus comprising:

an optical system characterized by an optical axis and first and second parallel conjugate planes such that each point within a predetermined object field in said first plane is imaged with a magnification different from unity at an optically conjugate point within a corresponding image field in said second plane;

a rigid element mounted for rotation over an angular range relative to said optical system about a rotation axis perpendicular to said first and second planes;

said rotation axis being located relative to said optical system so that a given point in said object field at a first radial distance from said rotation axis is imaged at a conjugate point in said image field at a second radial distance from said rotation axis, the ratio between said second and first radial distances being substantially equal to said magnification;

a mask stage, mounted to said rigid element, for holding a mask in said first plane at said object field;

a substrate stage, mounted to said rigid element, for holding an image-receiving object in said second plane at said image field; and

an illumination system having portions defining an aperture, means for forming an image of said aperture in said first plane, and at least one movable shutter to block selected portions of said aperture, said movable shutter having a position that changes as a function of an angular position of said rigid element relative to said optical system as said rigid element rotates relative to said optical system;

whereby illuminating at least a portion of said object field and rotating said rigid element relative to said optical system causes portions of the mask to be imaged on corresponding portions of the image-receiving object.

5,602,620

SCANNING EXPOSURE APPARATUS AND EXPOSURE METHOD

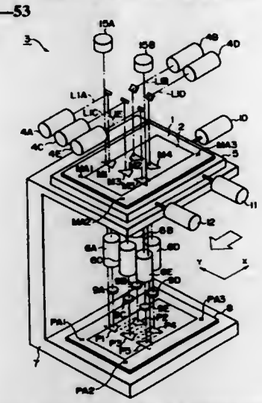
Seiji Miyazaki; Kei Nara, both of Yokohama; Masami Seki, Shiki, and Masamitsu Yanagihara, Yokohama, all of Japan, assignors to Nikon Corporation, Japan

Filed Jun. 14, 1995, Ser. No. 490,212

Claims priority, application Japan, Jun. 16, 1994, 6-158126

Int. Cl.[6] G03B *27/42;* G01B *11/00*

U.S. Cl. 355—53 **14 Claims**



1. A scanning exposure apparatus for transferring a pattern on a mask onto a photosensitive substrate, comprising:

a plurality of illumination optical systems for illuminating a plurality of regions on said mask, respectively;

a first optical system having a plurality of projection optical systems optical axes of which are arranged in parallel with one another, perpendicular to a first direction, and in a plane which is parallel with said first direction;

a second optical system having a plurality of projection optical systems optical axes of which are arranged in parallel with the optical axes of the projection optical systems of said first optical system and are arranged in a line a predetermined distance apart from the line along which optical axes of the projection optical systems of said first optical system are arranged, some of images of the plurality of regions on said mask and the rest of the images being simultaneously projected through said first optical system and said second optical system, respectively, onto said substrate;

a scanning mechanism for moving said mask and said substrate synchronously in a direction approximately perpendicular to said first direction and in the plane of said substrate, thereby said mask and said substrate being scanned;

a rotating mechanism for effecting relative rotation between said mask and said substrate in the plane of one of said mask and said substrate;

a position changing mechanism for changing relative positions of said mask and said substrate in said first direction in accordance with a position in a direction of the scanning of one of said mask and said substrate; and

an image position changing mechanism for relatively changing positions of the images projected through said first optical system and positions of the images projected through said second optical system in said first direction.

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5,602,621

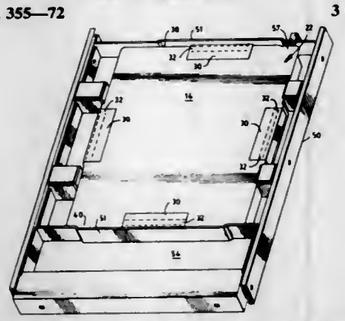
FILM PACKAGE AND METHOD

Walter C. Lamb, Jr., North Billerica; Margaret A. Obermiller, Ipswich, and Francis A. Ricci, Hyde Park, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 239,614, May 9, 1994, Pat. No. 5,477,310. This application Oct. 12, 1995, Ser. No. 542,316

Int. Cl.[6] B65D *81/20*

U.S. Cl. 355—72 **3 Claims**



1. A method of processing a film package including upper and lower sheet-like stiffeners, at least one sheet of film sandwiched between the stiffeners, and tabs projecting from the stiffeners and secured together; the steps comprising: placing the film package in a tray of a printer or the like, detaching the stiffeners from each other at the tabs, removing and discarding the upper stiffener, automatically unfolding one of the tabs of the lower stiffener downwardly to allow the film to be fed over the lower stiffener in use, and projecting a signal through a recess in the lower stiffener to determine whether the upper stiffener has been removed.

5,602,622

ALIGNABLE NEGATIVE STAGE FOR A PHOTOGRAPHIC ENLARGER

William R. Ziegler, 417 Shirley Way, Menlo Park, Calif. 94025

Continuation-in-part of Ser. No. 23,889, Feb. 26, 1993, Pat. No. 5,376,989. This application Dec. 21, 1994, Ser. No. 361,146

Int. Cl.[6] G03B *27/62*

U.S. Cl. 355—75 **5 Claims**



1. A negative stage for a photographic enlarger comprising:

a lower platform and an upper platform, each of said platforms having an aperture therein for allowing passage of light therethrough from a light source in the enlarger, and said upper platform arranged for supporting a photographic negative holder thereon;

said platforms aligned in a face-to-face relationship with said apertures therein generally in alignment, said platforms spaced apart by a fixed pivot-member and only two adjusting screws, said adjusting screws extending generally perpendicularly through said lower platform via mating threaded apertures therein, and extendable in a direction generally perpendicular to said platforms;

spring loading means for maintaining said platforms in contact with said pivot-member and said adjusting screws; and

said adjusting screws and said spring loading means arranged such that inclination of the platforms with respect to each other may be adjusted by turning said adjusting screws.

5,602,623

PHOTOSENSITIVE DRUM PROVIDED IN AN IMAGE FORMING APPARATUS INCLUDING GEARS DISPOSED AT AN END OF DRUM

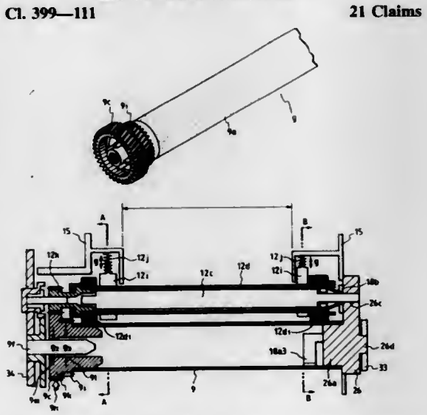
Atsushi Nishibata, Yokohama; Morikazu Mizutani, Kawasaki; Kazumi Sekine, Kawasaki; Tadayuki Tsuda, Kawasaki; Isao Ikemoto, Kawasaki; Kazushi Watanabe, Yokohama; Yoshikazu Sasago; Yasushi Shimizu, both of Tokyo; Shinya Noda, Yokohama, and Kazunori Kobayashi, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 10,071, Jan. 26, 1993, abandoned. This application May 31, 1995, Ser. No. 455,725

Claims priority, application Japan, Jun. 30, 1992, 4-194661; Jul. 24, 1992, 4-217421; Jan. 11, 1993, 5-017851

Int. Cl.[6] G03G *15/00;21/00*

U.S. Cl. 399—111 **21 Claims**



1. A photosensitive drum for use in an image forming apparatus including a motor for rotating said photosensitive drum and a transfer roller for transferring a toner image formed on said photosensitive drum onto a recording medium for forming the image thereon, said photosensitive drum comprising:

a cylindrical member having a photosensitive layer thereon;

a first gear provided at one end of said cylindrical member in an axial direction thereof; and

a helical gear as a second gear provided at said one end of said cylindrical member adjacent to and outside of said first gear in the axial direction of said cylindrical member, said helical gear having a diameter larger than a diameter of said first gear,

wherein said helical gear meshes with a drive gear provided in a main body of the image forming apparatus to receive the drive force of a motor provided in the main body for rotating said photosensitive drum when said photosensitive drum is used for the image forming apparatus, and said first gear meshes with a gear of the transfer roller provided in the main body to transmit the drive force of said photosensitive drum to the transfer roller, and

wherein said first gear and said helical gear are integrally formed as a gear portion, said integrally-formed gear portion comprising a through-bore portion having a first portion, and a second portion, said first portion being disposed outside of said second portion in the axial direction of said cylindrical member and having an inner diameter that is smaller than an inner diameter of said second portion, said first portion being fitted on a drum shaft when said photosensitive drum is mounted in the image forming apparatus.

5,602,624

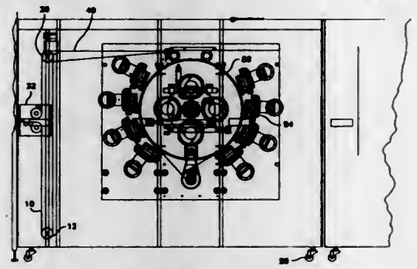
APPARATUS FOR ADDING COLOR INDICIA TO PRINTED DOCUMENTS

Richard J. Coburn, Bloomfield; Stefan G. Golicz, Essex, both of Conn., and Norman L. Milliard, Hampton, N.H., assignors to Accent Color Sciences, Inc., East Hartford, Conn.

Filed Nov. 4, 1994, Ser. No. 334,192

Int. Cl.[6] G03G *21/00*

U.S. Cl. 347—2 **16 Claims**



1. An accent color printer comprising:

first conveyor means for the reception of documents from a first print system;

drum means for the reception of documents from said first conveyor means and support of documents on a rotatable drum;

print means disposed around said drum means for the addition of accent color to documents on said drum means; and

second conveyor means for the reception of documents from said drum means.

5,602,625

OPERATION GUIDANCE DISPLAY APPARATUS OF IMAGE FORMING APPARATUS

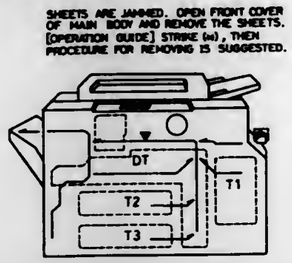
Yuji Okamoto, Nara; Yoshikado Yamada, Kitakatsuragi-gun, and Kaoru Ishikura, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 6, 1995, Ser. No. 466,642

Claims priority, application Japan, Aug. 31, 1994, 6-207198; Oct. 27, 1994, 6-264237

Int. Cl.[6] G03G *15/00*

U.S. Cl. 399—21 **36 Claims**



1. An operation guidance display apparatus of an image forming apparatus, comprising:

state detecting means for detecting that said image forming apparatus requires a prescribed operation by an operator;

dynamic image data storing means for storing dynamic image data which show a sequence of a procedure for the prescribed operation to be detected by said state detecting means;

display means for displaying operation guidance; and

display control means for when said state detecting means detects that said image forming apparatus requires the prescribed operation, displaying the dynamic image data of necessary operation on said display means as dynamic images.

5,602,626

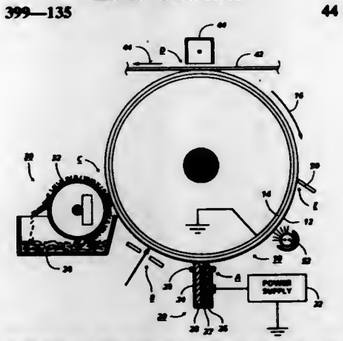
IONICALLY CONDUCTIVE LIQUID CHARGING APPARATUS

John S. Facci; Michael J. Levy, both of Webster; Joseph Mammino, Penfield; Richard B. Lewis, Williamson; Martin A. Abkowitz, Webster, and James M. Markovics, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 3, 1995, Ser. No. 497,987

Int. Cl.[6] G03G *15/02*

U.S. Cl. 399—135 **44 Claims**



1. An apparatus for applying an electrical charge to a member to be charged, comprising:

an ionically conductive liquid;

a donor member wetted with said ionically conductive liquid, said donor member being positioned in contact with the member to be charged;

a support blade situated in abutment with said donor member for urging said donor member against the member to be charged; and

means for applying an electrical bias to said wetted donor member, wherein the electrical bias transports ions through said ionically conductive liquid to the member to be charged for transferring ions thereto.

5,602,627

ELECTRIFYING ROLLER, ROLLER ELECTRIFYING APPARATUS USING THE SAME, AND IMAGE FORMING APPARATUS USING THE SAME

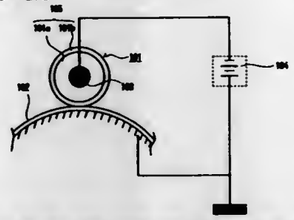
Junji Kurokawa, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 4, 1995, Ser. No. 539,214

Claims priority, application Japan, Oct. 5, 1994, 6-241630; Nov. 30, 1994, 6-297008; Dec. 13, 1994, 6-309281; Sep. 25, 1995, 7-245929

Int. Cl.[6] G03G *15/02*

U.S. Cl. 399—176 **14 Claims**



1. An electrifying roller comprising a metal core and a roller layer provided on a peripheral surface of the metal core, said roller

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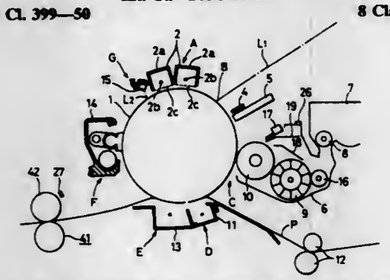
layer comprising at least an elastic layer and a surface layer covering a surface of said elastic layer, wherein a slope ($\Delta I/\Delta V$) of the V-I characteristic curve of said roller layer, when expressed on logarithmic paper, is 1 or less.

5,602,628

IMAGE FORMING APPARATUS WITH AUTOMATIC VOLTAGE CONTROL

Tsukasa Sugiyama, and Yoshiaki Tabata, both of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Mar. 1, 1996, Ser. No. 609,241
Claims priority, application Japan, Mar. 7, 1995, 7-046762
Int. Cl.[6] G03G *15/02*
U.S. Cl. 399—50 **8 Claims**



1. An image forming apparatus where a surface of a rotating photoreceptor is charged by a main charger, an electrostatic latent image is formed on the charged surface of the photoreceptor by use of an optical system, the electrostatic latent image is developed into a toner image with a toner, the toner image is transferred to a copy sheet at a transfer section, and an automatic voltage control is performed to control an output voltage of the main charger so that the surface of the photoreceptor is charged to a predetermined voltage at power-on,

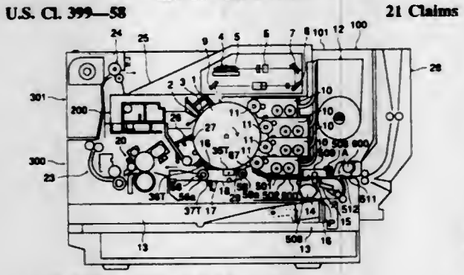
wherein the automatic voltage control is also performed when, after power-on, the number of image formations is greater than or equal to a predetermined number of times and an output of a temperature detecting means is higher than or equal to a predetermined temperature.

5,602,629

IMAGE FORMING APPARATUS WITH A PURGE CONTROL MEANS

Hisahiro Saito; Hajime Tanaka; Takayuki Miyamoto, and Takao Kurohata, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Sep. 7, 1995, Ser. No. 524,507
Claims priority, application Japan, Sep. 17, 1994, 6-248900
Int. Cl.[6] G03G *15/09*
U.S. Cl. 399—58 **21 Claims**



1. An image forming apparatus, comprising:

a photoreceptor for holding a latent image;

a charging device for charging said photoreceptor;

an exposure device for exposing said photoreceptor with light so as to form a latent image on said photoreceptor;

a developing unit, arranged in the vicinity of said photoreceptor, for developing said latent image with a developing agent so as to form a developing agent image on said photoreceptor, said developing unit including a developing agent holding device for holding said developing agent on a surface of said developing agent holding device;

a transfer device for transferring said developing agent image on said photoreceptor to a recording medium;

a cleaning device for cleaning residual developing agent on said photoreceptor after said developing agent image is transferred to said recording medium; and

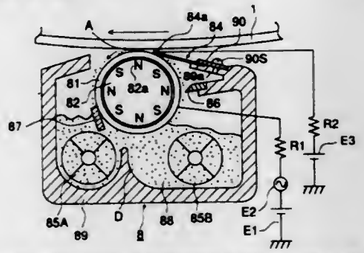
a purging device for purging foreign matter from said developing agent on said developing agent holding device, said purging device including an attraction device for attracting said foreign matter from said developing agent on said developing agent holding device by causing a difference between electric potentials of said attraction device and said developing agent holding device.

5,602,630

DEVELOPING DEVICE

Isao Endo; Toru Komatsu; Yotaro Sato; Kunio Shigeta, and Hiroyuki Nomori, all of Tokyo, Japan, assignors to Konica Corporation, Japan

Filed Sep. 15, 1995, Ser. No. 529,092
Claims priority, application Japan, Sep. 22, 1994, 6-228075; Sep. 28, 1994, 6-233438
Int. Cl.[6] G03G *15/09*
U.S. Cl. 399—271 **7 Claims**



1. A non-contact type of developing device for use in an image forming apparatus having an image forming body, said developing device comprising:

(a) a developer conveying body facing the image forming body in which a magnet body having a plurality of magnet poles are attached therein, for conveying two-component developer in the form of a developer layer onto a developing area; and

(b) a control electrode provided at the developing area or upstream of the developing area, said control electrode having an electrically insulating member which is in contact with or close to the developing layer, and an electrode attached to said insulating member, a voltage being applicable to said electrode,

wherein the following inequality is satisfied:

$$1.5 < D_T = \frac{3\sqrt{3} \cdot D_{WS} \cdot T_C \cdot vs}{10 \cdot \pi \cdot dt \cdot \rho t \cdot vp} < 9$$

where D_T represents a number of toner layers on the assumption that the toner particles passing through the developing area are filled most densely, D_{WS} represents a conveying amount (mg/cm^2) of the developer layer at the developing area on the developer conveying body, T_c represents a toner concentration (%) in the developer, dt represents an average sphere equivalent diameter

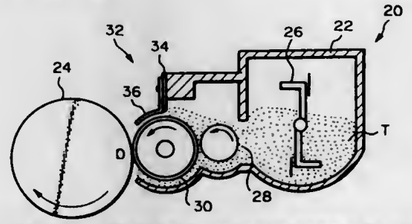
(μm) of toner in the developer, ρt represents a toner density (g/cm^3) in the developer, vs represents a circumferential speed (mm/s) of the developer conveying body at the developing area, and vp represents a circumferential speed (mm/s) of the image forming body at the developing area.

5,602,631

DEVELOPING DEVICE FOR AN IMAGE FORMING APPARATUS

Yoshikazu Sakaguchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 14, 1994, Ser. No. 340,311
Claims priority, application Japan, Nov. 12, 1993, 5-282883
Int. Cl.[6] G03G *15/08*
U.S. Cl. 399—284 **6 Claims**



1. A developing device and image forming apparatus for developing a latent image electrostatically formed on an image carrier by a nonmagnetic toner at a developing position, said device comprising:

an image carrier;

a rotating toner carrier with a rotating surface in contact with said image carrier at a developing position;

toner layer forming means for forming a thin toner layer on said toner carrier;

said toner layer forming means comprising:

a regulating member spaced a first distance from the rotating surface of said toner carrier for regulating a thickness of the toner layer; and

a leveling member spaced a second distance from the rotating surface of said toner carrier, which second distance is equal to or less than said first distance, said leveling member located downstream of said regulating member with respect to a direction of rotation of said toner carrier for guiding and leveling the toner layer before said toner layer reaches said developing position for said toner carrier.

5,602,632

BELT APPLICATOR FOR DEVELOPING INK OR TONER ON A PRINT MEMBER

Manfred R. Kuehnle, New London, N.H., assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany

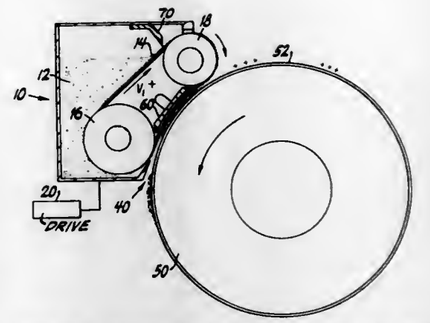
Filed Nov. 21, 1995, Ser. No. 560,772
Int. Cl.[6] G03G *15/08;15/10*
U.S. Cl. 399—265 **17 Claims**

1. An apparatus for developing ink on a surface of a prim member comprising:

an ink source;

an endless belt for receiving ink from the ink source; a portion of the belt interacting with the print member surface;

a belt drive connected to the belt; and



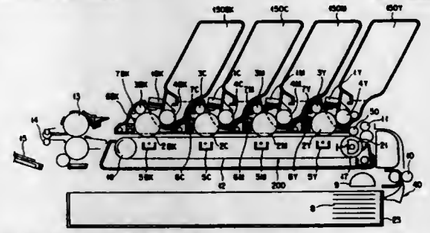
a geometric conformance device located near the belt to move the belt away from the print member surface.

5,602,633

IMAGE FORMING APPARATUS WITH LOW OZONE GENERATION AND IMPROVED IMAGE QUALITY

Minoru Yoshida, Tokyo; Toshihiro Kasai, and Masashi Takahashi, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 13, 1995, Ser. No. 527,722
Claims priority, application Japan, Sep. 19, 1994, 6-222826
Int. Cl.[6] G03G *15/14*
U.S. Cl. 399—244 **14 Claims**



1. An image forming apparatus comprising:

a plurality of image carriers sequentially arranged in parallel with each other;

a plurality of image forming means for respectively forming developer images on the image carriers;

supply means for supplying a transfer material onto which the developer images are transferred;

a conveyer belt provided so as to oppose the image carriers, for conveying the transfer material supplied from the supply means through the image carriers;

suction means provided on an upstream side of the image carriers in a conveying direction of the conveyer belt, for maintaining the supplied transfer material on the conveyer belt by a suction force; and

a plurality of transfer means arranged to oppose the image carriers, respectively, with the conveyer belt being interposed between the transfer means and the image carriers, for respectively transferring the developer images formed on the image carriers to the transfer material conveyed by the conveyer belt;

wherein a conveying speed V (mm/sec) of the conveyer belt, a running distance L1 (mm) of the conveyer belt from a peeling position, at which the transfer material passes through the image carrier situated in a rearmost position on a downstream side in the conveying direction of the transfer material, to a suctioning position at which the suction means is located, a

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volume resistance ρ (Ω·cm) of the conveyer belt, and a relative dielectric constant ε of the conveyer belt are set so as to satisfy a relation of

$$Lt/V \geq (\epsilon \cdot \epsilon_0 \cdot \rho) \times 7.$$

5,602,634

TRANSFER DEVICE OF IMAGE FORMING MACHINE

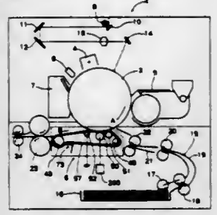
Michio Uchida; Ryuji Watsuki; Noritaka Okazaki; Shigeo Fujita, and Yuzuru Nanjo, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

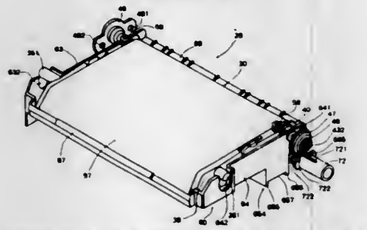
Filed Oct. 27, 1995, Ser. No. 548,949

Claims priority, application Japan, Nov. 10, 1994, 6-300131

Int. Cl.[6] G03G *15/16*

U.S. Cl. 399—313 **3 Claims**





1. A transfer device of an image forming machine, which has a belt unit comprising a pair of supporting plates disposed with a predetermined spacing, a driving roller journaled rotatably at one end portion of the pair of supporting plates, a driven roller journaled rotatably at the other end portion of the pair of supporting plates with a predetermined spacing from the driving roller, and a transfer belt looped between the driving roller and the driven roller and disposed opposite an image bearing member, and which transfers a toner image, formed on the image bearing member, to a transfer paper fed between the transfer belt and the image bearing member, and conveys the transfer paper with the toner image transferred onto it; wherein

the transfer belt of the belt unit is formed so as to have a width larger than the spacing between the pair of supporting plates, and is disposed such that its side end portions surround at least part of the pair of supporting plates.

5,602,635

RAPID WAKE UP FUSER

Gerald A. Domoto, Briarcliff Manor, and Richard B. Lewis, Williamson, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 11, 1996, Ser. No. 584,791

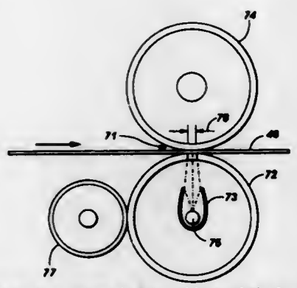
Int. Cl.[6] G03G *15/20*

U.S. Cl. 399—328 **12 Claims**

1. An apparatus for fusing images to a substrate, comprising:

a pressure member;

a heated transparent fusing member adjacent said pressure member and forming a nip therewith, said fusing member heated



so that the heat energy is focused in a relatively narrow area adjacent the nip; and

a heat leveling member in contact with said fusing member, said heat leveling member being adapted to transfer heat along a longitudinal axis of said fusing member so as to equalize the temperature therealong.

5,602,636

IMAGE FORMING APPARATUS

Kunihiko Matsuzawa, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 21, 1995, Ser. No. 407,684

Claims priority, application Japan, Mar. 24, 1994, 6-076370

Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—388 **26 Claims**



1. An image forming apparatus comprising:

a photosensitive member for carrying an image;

exposure means for exposing said photosensitive member to form a latent image on the same;

development means for developing the latent image on the photosensitive member to form a toner image;

a transfer member carrier for supporting and conveying a transfer member to a transfer position on said photosensitive member, the toner image on said phtosensitive member being transferred at said transfer position onto the transfer member supported on said transfer member carrier;

first conveyance means for conveying the transfer member to said transfer member carrier;

cancellation means for cancelling a transfer member conveying force of said first conveyance means after a leading end of the transfer member conveyed by said first conveyance means has been supported on said transfer member carrier; and

second conveyance means having a nip for conveying the transfer member and capable of conveying the transfer member to said first conveyance means, a trailing end of the transfer member passing through the nip of said second conveyance means during a period of time when the transfer member conveying force of said first conveyance means is canceled by said cancellation means and when said exposure means is not operating.

5,602,637

COLOR PRINTER

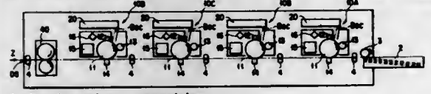
Kei Hara, Shizuoka-ken, and Hiroshi Yamaguchi, Numazu, both of Japan, assignors to Kabushiki Kaisha TEC, Tokyo, Japan

Filed Nov. 14, 1995, Ser. No. 557,465

Claims priority, application Japan, Nov. 17, 1994, 6-283091

Int. Cl.[6] G03G *15/01*

U.S. Cl. 399—223 **10 Claims**



1. A color printer comprising:

electrophotographic process means, having at least one photosensitive member, for selectively exposing said photosensitive member to form identical latent images thereon, developing the latent images as toner images by supplying toners of different colors, and transferring the toner images onto paper; and

control means for controlling amounts of exposure of the latent images to be formed by said electrophotographic process means;

wherein said control means includes a toner-save mode selecting section for selecting a toner-save mode, and toner-save processing means for lowering the exposure amounts of the latent images in the toner-save mode, while changing a rate of the exposure amounts to compensate for a difference between development properties of the toners.

5,602,638

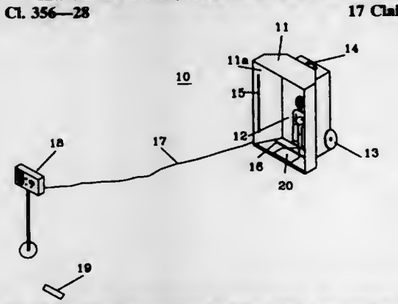
APPARATUS FOR ACCURATELY DETERMINING A MOVING BALL'S POSITION AND SPEED

Jim L. Boulware, 1960 W. Tarrant Rd., #1005, Grand Prairie, Tex. 75050

Filed Apr. 1, 1994, Ser. No. 221,668

Int. Cl.[6] G01P *3/36;* **A63B** *69/40;* **F41J** *5/02*

U.S. Cl. 356—28 **17 Claims**



1. An apparatus for determining, as a minimum, the position and speed of a spherical projectile passing through an emitter/sensor matrix constructed in a single plane, comprising of:

a plurality of emitter/sensor pairs, constructed as a matrix in a single plane for producing signals dependent on projectile speed and the vertical and horizontal positions of the projectile as it passes through the matrix of emitter/sensor pairs,

a cyclical clock circuit for intensity modulating light produced by said emitters, and sensor processing circuits, including a band-pass filter for separating the intensity modulated light signals from ambient light and interference,

a processor for receiving data signals representative of the intensity modulated light received by the light sensors for calculating a projectile speed value when a minimum of two sensors paths, in either array of said matrix, have been blocked as the projectile passes through the matrix and for processing the data signals to calculate projectile horizonal and vertical positions when a minimum of two sensor paths, in each array of said matrix, have been blocked as the projectile passes though the array; and

a display system remotely located from said collection box for displaying performance and statistical information about a single or collection of projectiles passing through the matrix.

5,602,639

SURFACE-CONDITION INSPECTION METHOD AND APPARATUS INCLUDING A PLURALITY OF DETECTING ELEMENTS LOCATED SUBSTANTIALLY AT A PUPIL PLANE OF A DETECTION OPTICAL SYSTEM

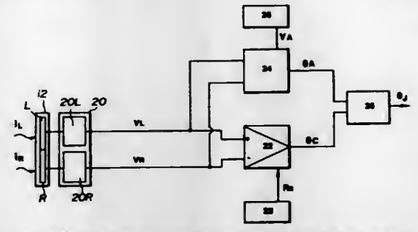
Michio Kohno, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 85,989, Jul. 6, 1993, abandoned. This application Jul. 21, 1995, Ser. No. 505,782

Claims priority, application Japan, Jul. 8, 1992, 4-204495

Int. Cl.[6] G01N *21/88*

U.S. Cl. 356—237 **15 Claims**



1. A method for inspecting surface conditions of an object, on which a pattern is formed, by detecting scattered light generated by the surface of the object using a detection optical system, said method comprising the steps of:

illuminating the surface of the object;

providing first and second photodetectors substantially on a pupil plane of the detection optical system for detecting scattered light from the surface of the object, the pupil plane of the detection optical system being positioned off an optical path of regularly reflected light and an optical path of directly advancing light generated when the object is illuminated in said illuminating step;

generating a first signal corresponding to the sum of outputs of the first and second photodetectors, and a second signal corresponding to the difference between the outputs of the first and second photodetectors; and

comparing the first signal with a first threshold value and the second signal with a second threshold value, and obtaining the logical product of the result of the comparisons for inspecting surface conditions of the object.

5,602,640

LENSMETER ACCESSORY

Christopher J. Percival, Williamsville, N.Y., assignor to Leica Inc., Depew, N.Y.

Filed Jun. 22, 1995, Ser. No. 493,559

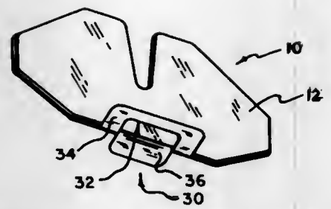
Int. Cl.[6] G01N *21/01*

U.S. Cl. 356—244 **11 Claims**

1. An accessory for supporting and positioning a corneal contact lens on a light path of a lensmeter for measurement of optical properties of said lens, said accessory comprising:

a generally planar body adapted for removable mounting on said lensmeter, said body having an inwardly extending tapered slot alignable with said light path when said body is mounted on said lensmeter, said slot having a wall defining a groove of

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a predetermined depth for removably holding said lens on said light path.

5,602,641

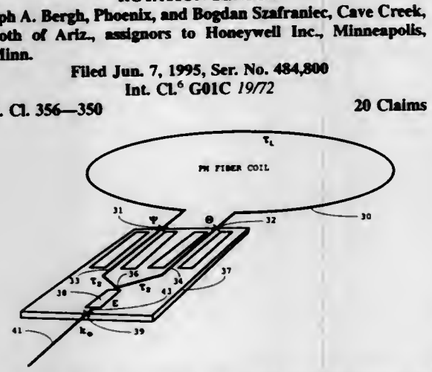
Patent Not Issued For This Number

5,602,642

MAGNETICALLY INSENSITIVE FIBER OPTIC ROTATION SENSOR

Ralph A. Bergh, Phoenix, and Bogdan Szafraniec, Cave Creek, both of Ariz., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 7, 1995, Ser. No. 484,800
Int. Cl.[6] G01C *19/72*
U.S. Cl. 356—350 **20 Claims**



1. An interferometric rotation sensor having a light source and a splitter/combiner having a first port connected to the light source and having second and third ports, comprising:
- a sensing loop made of polarization maintaining optical fiber having first and second ends connected to the second and third ports of said splitter/combiner, respectively;
- a first splice having an alignment, between 35 and 55 degrees, between a major axis of a state of polarization of light at the second port of said splitter/combiner and an axis of birefringence at the first end of said sensing loop; and
- a second splice having an alignment, between 35 and 55 degrees, between a major axis of a state of polarization of light at the third port of said splitter/combiner and an axis of birefringence at the second end of said sensing loop.

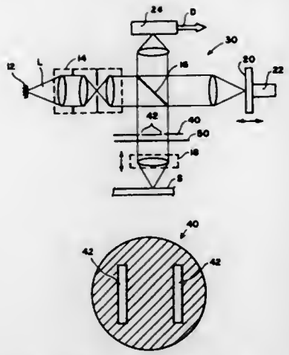
5,602,643

METHOD AND APPARATUS FOR CORRECTING SURFACE PROFILES DETERMINED BY PHASE-SHIFTING INTERFEROMETRY ACCORDING TO OPTICAL PARAMETERS OF TEST SURFACE

Harrison H. Barrett, Tucson, Ariz., assignor to Wyko Corporation, Tucson, Ariz.

Filed Feb. 7, 1996, Ser. No. 597,796
Int. Cl.[6] G01B *9/02*
U.S. Cl. 356—360 **24 Claims**

1. A phase-shifting interferometer that comprises:



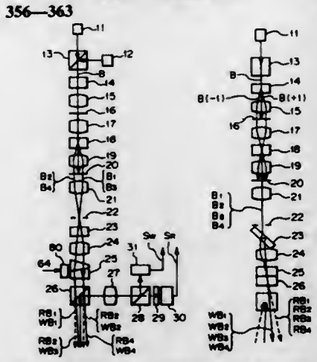
(a) light-source means for producing a light wavefront split between a sample surface and a reference surface;
(b) lens means disposed in an optical path to said sample surface for focusing said light wavefront on the sample surface;
(c) a light-intensity sensor adapted to detect a combination of wavefronts reflected form said reference surface and said sample surface;
(d) opaque mask means disposed within said optical path to the sample surface, said mask means comprising at least two spaced-apart slits adapted to cause said wavefront produced by the light-source means to arrive at the sample surface at a predetermined angle of incidence;
(e) linear polarizer means positioned within said optical path to the sample surface; and
(f) scanning means for effecting a relative translation between the sample surface and the reference surface to achieve multiple optical path differences at which light-intensity outputs are produced and used to calculate a surface-height output corresponding to the sample surface.

5,602,644

ALIGNMENT APPARATUS UTILIZING A PLURALITY OF WAVELENGTHS

Kazuya Ota, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Oct. 26, 1995, Ser. No. 548,626
Claims priority, application Japan, Oct. 27, 1994, 6-263354; Apr. 25, 1995, 7-99207
Int. Cl.[6] G01B *9/02*
U.S. Cl. 356—363 **15 Claims**



1. An alignment apparatus adapted to be provided on a projection exposure apparatus for projecting through a projection optical system a transferring pattern on a mask onto a photosensitive substrate rested on a two-dimensionally movable stage and for

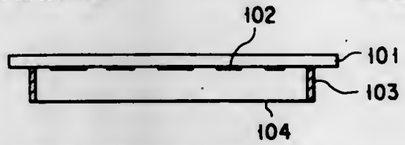
detecting a position of the substrate on the basis of a diffraction grating-shaped mark formed on the substrate comprising:
- a reference optical member;
- a first illumination optical system for illuminating said reference optical member with a first pair of light beams having different frequencies and a first wavelength;
- a first photoelectric detection device for photoelectrically transforming a first heterodyne beam generated by diffraction of the first light beams by said reference optical member into a first beat signal;
- a second illumination optical system for illuminating said diffraction grating-shaped mark through said projection optical system with a second pair of light beams having different frequencies and the first wavelength;
- a third illumination optical system for illuminating said diffraction grating-shaped mark through said projection optical system with a third pair of light beams having different frequencies and a second wavelength different from the first wavelength;
- a second photoelectric detection device for photoelectrically transforming second and third heterodyne beams respectively generated by diffraction of the second and third light beams by said diffraction grating-shaped mark into a second beat signal, said second heterodyne beam having the first wavelength, said third heterodyne beam having the second wavelength, said second and third heterodyne beams being returned through said projection optical system;
- a phase comparing device for detecting a phase difference between said first and second beat signals;
- a relative position adjusting device for adjusting a relative position in a diffraction grating-shaped mark measuring direction between a position on said diffraction grating-shaped mark illuminated by said second light beams and that thereon illuminated by said third light beams; and
- a control device for controlling said relative position adjusting device on the basis of a first phase difference detected by said phase comparing device when light intensity of said third light beams on said substrate is decreased below a predetermined level and a second phase difference detected by said phase comparing device when light intensity of said first light beams on said reference optical member is decreased within the range in which said second heterodyne beam can be detected.

5,602,645

PATTERN EVALUATION APPARATUS AND A METHOD OF PATTERN EVALUATION

Mitsuo Tabata, Yokohama; Toru Tojo, Kanagawa-ken; Kiminobu Akeno, Yokohama; Toshiyuki Watanabe, Yokohama; Tomohide Watanabe, Yokohama; Eiji Yamanaka, Yokohama; Chikara Itoh, Matsudo, and Makoto Taya, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, and Kabushiki Kaisha Topcon, Tokyo, both of Japan

Filed Sep. 13, 1995, Ser. No. 527,633
Claims priority, application Japan, Sep. 16, 1994, 6-221871
Int. Cl.[6] G01B *11/00*
U.S. Cl. 356—394 **13 Claims**



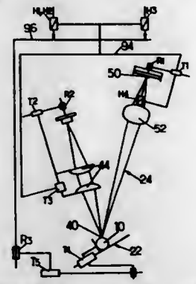
1. A pattern evaluating device comprising:
- light irradiating means for irradiating the rays of light from a light source upon an object carrying a pattern;
- an objective lens through which the light having penetrated through said object passes;
- an aperture member stopping the diameter of a light beam which has passed through said objective lens;
- a photo receiving element receiving the light beam which has had the diameter stopped by said aperture member; and
- judging means for evaluating said pattern, following the information received by said photo receiving element and which corresponds to said pattern; and
- wherein said aperture member is capable of changing a numerical aperture according to whether or not said object is provided with a pericle.

5,602,646

OPTICAL METHOD AND DEVICE FOR AUTOMATICALLY CLASSIFYING CYLINDRICAL NUCLEAR-FUEL PELLETS

Michel Bernardin, Claix; Paul Bouvet, Vinay, and Claude Wache, Romans, all of France, assignors to Societe Franco-Belge de Fabrication de Combustibles, Paris, France

Continuation of Ser. No. 174,300, Dec. 28, 1993, abandoned.
This application Oct. 12, 1995, Ser. No. 541,205
Claims priority, application France, Dec. 29, 1992, 92 15847
Int. Cl.[6] G01N *21/84*
U.S. Cl. 356—426 **11 Claims**



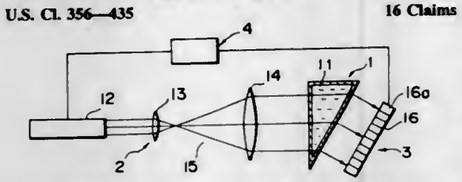
1. Method for automatically classifying cylindrical nuclear-fuel pellets, said method comprising the steps of:
- (a) rotating each pellet to be classified about its axis;
- (b) focusing a flat beam coming from a light source onto a nominal generatrix of each said pellet, while said pellet is rotated;
- (c) collecting returned light coming from an elongate zone which would be the zone illuminated on a defect-free pellet of nominal diameter;
- (d) detecting reflected light intensity, point by point, along said elongate zone; and
- (e) deriving defects from variations in said light intensity by:
  - (i) determining those of said points in each zone from which the intensity of returned light lies between an adjustable upper normality threshold and an adjustable lower normality threshold;
  - (ii) storing transitions between a normality region and an abnormality region and storing the intensity, in digital form, for only those of said points which are in the abnormality region;
  - (iii) determining limits of each said defect by neighborhood analysis of determining a nature of the defect among predetermined natures of defect, each nature being identified by geometrical criteria and average-light-intensity criteria of said defect; and
  - (iv) classifying the pellets by assigning each of said pellets to a class selected between at least one class of correct pellets and one class of rejected pellets, depending on a said nature of defect, steps (a) to (e) being carried out only once per pellet;
- wherein step (e) includes successively storing the intensities of all points of the abnormality region and performing a type-discrimination thresholding, having two additional threshold levels away from a normality zone defined by said upper normality threshold and lower normality threshold, on an average grey level of each defect detected.

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5,602,647
APPARATUS AND METHOD FOR OPTICALLY MEASURING CONCENTRATIONS OF COMPONENTS

Kexin Xu; Yutaka Yamasaki; Harumi Uenoyama, and Takeshi Sakura, all of Kyoto, Japan, assignors to Kyoto Daiichi Kagaku Co., Ltd., Kyoto-fu, Japan

Continuation of Ser. No. 272,564, Jul. 11, 1994, abandoned. This application Nov. 27, 1995, Ser. No. 562,785
Claims priority, application Japan, Jul. 14, 1993, 5-174156
Int. Cl.[6] G01N *21/00*
U.S. Cl. 356—435 **16 Claims**

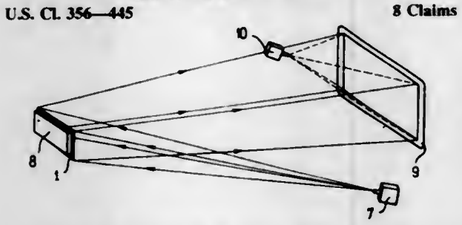


1. An apparatus for optically measuring concentrations of components, comprising:
a cell for containing a sample therein;
means for presenting different optical path lengths to light transmitted through said cell;
a light irradiator for emitting light of a selected wavelength to the cell:
means for changing the wavelength of light emitted by said light irradiator;
a photodetector for receiving light that has been transmitted through the cell to detect a quantity of transmitted light; and
an arithmetic unit for calculating and storing, for each wavelength, an optimum optical path length of said different optical path lengths at which a peak value of quantity-of-light measuring sensitivity with respect to the quantity of transmitted light detected by the photodetector occur, for calculating a concentration of a component contained in the sample based on values of the quantity of transmitted light at the optimum optical path length, the values having been stored for each wavelength emitted by said light irradiator, and for outputting calculation results.

5,602,648
PROCESS AND DEVICE FOR MEASURING OPTICAL QUALITY OF THE SURFACE OF A TRANSPARENT OBJECT BY CONTACT WITH A WETTED FLEXIBLE SURFACE

Paul H. Guering, Paris, and Patrick Gayout, Gagny, both of France, assignors to Saint Gobain Vitrage, Courbevoie, France

Filed Aug. 31, 1995, Ser. No. 414,598
Claims priority, application France, Mar. 31, 1994, 94 03831
Int. Cl.[6] G01N *21/55;21/00*
U.S. Cl. 356—445 **8 Claims**

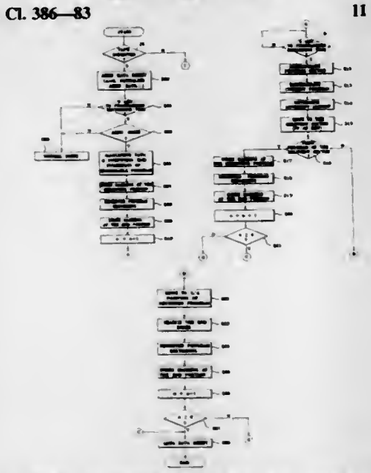


1. A process for measuring the optical quality of one surface of a transparent sheet which has another surface approximately parallel to said one surface, comprising the steps of:
causing light from a light source to reflect from said one surface;
using a measuring device to measure the reflected light; and
applying to the another surface, during said causing step, a flexible material wetted by an index liquid so as to substantially eliminate light reflections from the another surface.

5,602,649
METHOD OF AUTOMATICALLY EDITING PROGRAMMED RECORDINGS

Yun S. Shin, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Sep. 23, 1994, Ser. No. 309,503
Claims priority, application Rep. of Korea, Sep. 24, 1993, 93-19647
Int. Cl.[6] H04N *5/76;9/79*
U.S. Cl. 386—83 **11 Claims**



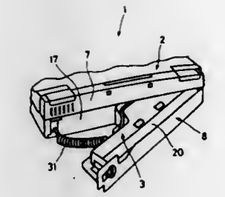
1. A method for automatically editing programmed recordings, wherein a plurality of programs are reserved to be recorded on a tape by a recording apparatus, comprising the steps of:
determining a residual amount of tape to be recorded;
determining a maximum number of recordable programs on the tape;
allocating program sectors on the tape based on said residual amount of tape and the reserved programs; and
determining which of said allocated program sectors each of the reserved programs is to be recorded, and recording said each of the reserved programs in said determined program sector such that related ones of the reserved programs are recorded in the same program sector.

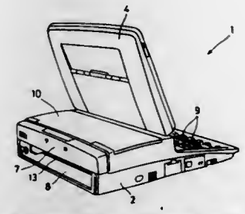
5,602,650
INFORMATION PROCESSING APPARATUS EQUIPPED WITH DETACHABLE IMAGE READER

Yoshimi Tamura; Masashi Hara, and Satoshi Yamada, all of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 30, 1995, Ser. No. 415,133
Claims priority, application Japan, May 16, 1994, 6-126965
Int. Cl.[6] H04N *1/024*
U.S. Cl. 358—400 **27 Claims**

1. An information processing apparatus comprising:
an image reader, having a first housing, for reading image data;



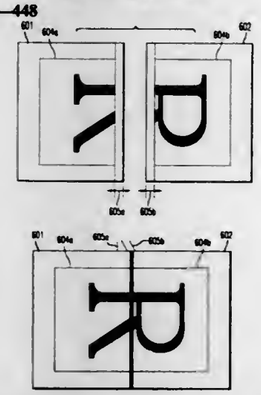


a body with a controller for processing the read image data together with document data; and
a receiving device, having a second housing different from the first housing, detachably mounted to the body for removably housing the image reader.

5,602,651
IMAGE RECORDING APPARATUS

Yasuhiro Tabata, Kawasaki; Koji Hikawa, Tokyo; Yoshimasa Honda, Sagamihara; Soukichi Araki, Yokohama; Hiroshi Hosaka; Yuichi Deguchi, both of Tokyo; Naoko Kudo, Yokohama; Takakazu Nomura, Tokyo, and Eiji Sawamura, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

PCT No. PCT/JP94/00425, § 371 Date Nov. 17, 1994, § 102(e) Date Nov. 17, 1994, PCT Pub. No. WO94/22264, PCT Pub. Date Sep. 29, 1994
PCT Filed Mar. 17, 1994, Ser. No. 335,702
Claims priority, application Japan, Mar. 17, 1993, 5-082577; Mar. 17, 1993, 5-082578; Jul. 23, 1993, 5-202577
Int. Cl.[6] H04N *1/40*
U.S. Cl. 358—448 **7 Claims**

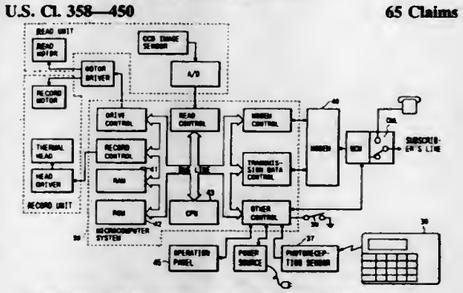


1. An image recording apparatus comprising an image size recognizing means for recognizing a size of an image to be recorded, an image reading means for reading and storing said image to be recorded, a paper feeding means for storing therein and feeding recording paper having a specified size, an image forming means for forming an image on recording paper fed from said paper feeding means, a recording paper inverting means for inverting recording paper with an image recorded thereon, an image processing means for dividing a read image based on a result of recognition by said image size recognizing means when a size of said image to be recorded is larger than that of recording paper having a specified size and executing image processing so that an edge section of each image will be aligned to an edge of a binding space of each discrete sheet of recording paper, an image output means for outputting the image processed by said image processing means to said image forming means, and a control means for inverting either one of a first sheet of recording paper and a second sheet of recording paper with said recording paper inverting means.

5,602,652
PORTABLE DEVICE SETTABLE IN A HOST APPARATUS AND COMBINED SYSTEM THEREFOR

Masumi Ishiwatari, and Tsuyoshi Kawanabe, both of c/o Canon Kabushiki Kaisha, 30-2, 3-chome, Shimomaruko, Ohta-ku, Tokyo , Japan

Continuation of Ser. No. 62,168, May 17, 1993, abandoned, which is a continuation of Ser. No. 866,279, Apr. 19, 1992, abandoned, which is a continuation of Ser. No. 538,971, Jun. 15, 1990, abandoned. This application Sep. 1, 1994, Ser. No. 299,804
Claims priority, application Japan, Jun. 16, 1989, 1-154164
Int. Cl.[6] H04N *1/387*
U.S. Cl. 358—450 **65 Claims**



1. An image data processing system comprising:
(A) a portable device which comprises:
(1) a first memory for storing therein first image data, and
(2) first light-emitting means for emitting light in accordance with first image data stored in said first memory, and
(B) an image data processing apparatus which comprises:
(1) first light-receiving means for receiving the light from said first light-emitting means,
(2) a second memory for storing therein second image data, and
(3) process means, including selecting means for selecting one of the first and second image data based on whether or not the light according to the first image data is received by said first light-receiving means, for selecting and processing the first image data, and not the second image data, if the light according to the first image data is received by said first light-receiving means,
wherein said process means selects and processes the second image data if the light according to the first image data is not received by said first light-receiving means.

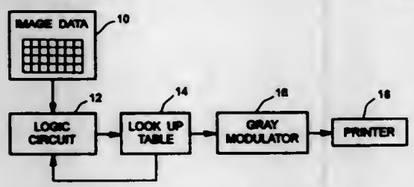
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5,602,653

PIXEL PAIR GRID HALFTONING FOR A HYPERACUITY PRINTER

Douglas N. Curry, Menlo Park, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 8, 1994, Ser. No. 335,622
Int. Cl.[6] H04N *1/40*
U.S. Cl. 358—454 **5 Claims**



1. An apparatus for processing image data and printing a corresponding image, the apparatus comprising:

a source of image data, said image data including a series of gray scale intensity values representing each pixel in a rectangular array of pixels, the image data having an inherent periodic function with a frequency which creates an unwanted Moiré pattern artifact of like frequency in said image data;

a logic circuit for combining gray scale density values of a group of at least two adjacent pixels to produce a combined pixel value, said adjacent pixels being adjacent along a scan line in a fast scan direction of the rectangular array;

a look-up table which is addressed by each of said combined pixel values to retrieve a corresponding data value for each group of pixels;

a printer which converts each data value to a mark of corresponding size such that the marks produce an image with local gray scale intensities which corresponds to the gray scale intensity values in corresponding areas of the image data;

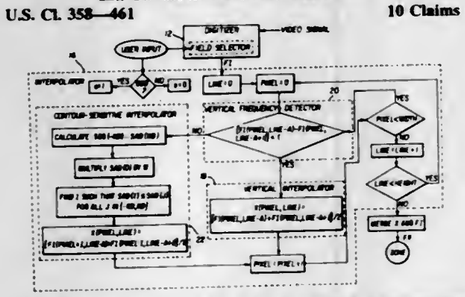
the groups of pixels being offset from each other in adjacent scan lines such that the marks are offset in adjacent scan lines increasing the frequency of the Moiré pattern to a range in which the Moiré pattern in the image is less visible to the human eye.

5,602,654

CONTOUR-SENSITIVE, SINGLE-FIELD DEINTERLACING METHOD

Andrew J. Patti; Jonathan K. Riek, and M. Ibrahim Sezan, all of Rochester, N.Y., assignors to National Science Council, Taipei, Taiwan

Filed Jan. 6, 1995, Ser. No. 369,847
Int. Cl.[6] H04N *1/40;7/01*; G06K *9/40*
U.S. Cl. 358—461 **10 Claims**



1. A contour-sensitive deinterlacing method for interpolating between lines of pixels representing a field of digital video to produce an interpolated field of digital video comprising the steps of:

b) determining the absolute difference between original pixel values above and below a missing pixel value, all of which the original pixel values and missing pixel value are in the same frame;

c) determining if the absolute difference is greater than an established threshold value based on a minimum visually detectable intensity variation in the original pixel values for determining if the absolute difference corresponds to an edge;

d) applying the average value of the above and below pixels as the missing pixel value if the absolute difference is less than the threshold;

e) if the absolute difference is greater than the threshold value then performing the steps of:

f) determining, for said missing pixel the extent of matching between two blocks of M1×M2 pixels of said field of digital video (where M1 is the number of lines and M2 is the number of pixels), said blocks being vertically offset from one another in opposite directions, and being horizontally offset from one another in opposite directions, with respect to the missing pixel position, said step of determining being carried out for a plurality of different horizontal offsets, including zero offset from the missing pixel's horizontal position and at least one fractional offset on each side of the missing pixel's horizontal position, so as to produce a respective value of the extent of matching for each of said horizontal offsets, where a fractional offset refers to a horizontal position that is between two existing pixel locations in a line of the field of digital video;

g) determining the horizontal offset which provides the greatest extent of matching;

h) interpolating the missing pixel value in the direction corresponding to said determined horizontal offset; and

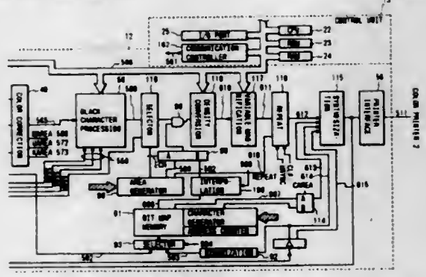
i) repeating steps b–h for each of the missing pixels in the field of digital video to form an interpolated field of digital video.

5,602,655

IMAGE FORMING SYSTEM FOR SINGLE BIT IMAGE DATA

Naoto Arakawa, Kawasaki; Masanori Sakai, Yokohama; Toshihiro Kadowaki, Kawasaki; Tetsuya Ohnishi, Yokohama, and Toshio Honma, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 216,072, Mar. 21, 1994, abandoned, which is a continuation of Ser. No. 71,354, Jun. 3, 1993, abandoned, which is a continuation of Ser. No. 521,676, May 10, 1990, abandoned. This application Jan. 12, 1995, Ser. No. 371,608
Claims priority, application Japan, May 10, 1989, 1-117049; May 10, 1989, 1-117051
Int. Cl.[6] H04N *1/50;1/56*
U.S. Cl. 358—501 **15 Claims**



1. An image forming apparatus comprising:

a) interface means for inputting single bit image data and a command from an external device, the single bit image data being image data in which a single bit corresponds to one pixel of an image;

b) first means for storing the single bit image data input from the external device by said interface means;

c) second means for receiving and storing color data for coloring the single bit image data input by said interface means; and

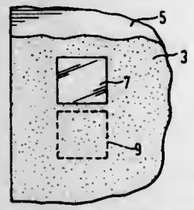
d) means for forming a color image on the basis of the single bit image data from said first means and the color data from said second means.

5,602,656

APPARATUS AND METHOD FOR MONITORING HOLOGRAPHIC LIGHT PROTECTION FILTERS

John E. Wreede, Azusa; Richard B. Upper, Sherman Oaks, both of Calif.; Darrell F. Hatch, Sedro Woolley, Wash.; Lane W. Cosner, Cave Junction, Oreg., and Stephen T. Babbitt, Redondo Beach, Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Filed Dec. 9, 1994, Ser. No. 353,576
Int. Cl.[6] G03H *1/02*
U.S. Cl. 359—3 **14 Claims**



1. Apparatus for monitoring holographic filters comprising:

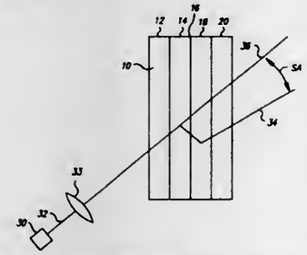
a hologram having first, second and third areas, said first area having extra moisture protection, said second area being recorded at a different wavelength than said first area and the remainder of the hologram, and said third area including a portion of the hologram outside of said first and second areas.

5,602,657

HOLOGRAM SYSTEM HAVING HOLOGRAM LAYERS WITH ROTATIONALLY OFFSET BRAGG PLANES

LeRoy D. Dickson, Morgan Hill, Calif., and Richard D. Rallison, Paradise, Utah, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 293,783, Aug. 22, 1994, abandoned, which is a continuation of Ser. No. 993,246, Dec. 17, 1992, abandoned. This application Oct. 20, 1995, Ser. No. 545,914
Int. Cl.[6] G02B *5/32;5/18*; G03H *1/28*; G11B *7/00*
U.S. Cl. 359—15 **32 Claims**



1. A hologram system comprising:

a first volume hologram having a plurality of Bragg planes, each Bragg plane set at an angle Φ_2 relative to an exterior planar surface of the first volume hologram, and each Bragg plane spaced a distance L_1 apart;

a second volume hologram having a plurality of Bragg planes, each Bragg plane set at an angle Φ_2 relative to an exterior planar surface of the second volume hologram, and each Bragg plane spaced a distance L_2 apart, Φ_2 being equal to Φ_1 and L_2 being equal to L_1, the second volume hologram oriented with its exterior planar surface substantially parallel to the exterior planar surface of the first volume hologram and with its Bragg planes offset at a rotational angle relative to the Bragg planes of the first volume hologram, the rotational angle being about an axis substantially perpendicular to the exterior planar surfaces of the first and second volume holograms, the Bragg planes of the second hologram being non-parallel to the Bragg planes of the first hologram; and

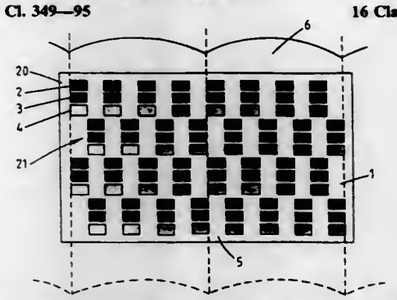
a coupling device for maintaining the first and second volume holograms in an optically coupled relationship.

5,602,658

SPATIAL LIGHT MODULATOR AND DIRECTIONAL DISPLAY HAVING CONTINUOUS PARALLAX AND AN INCREASED NUMBER OF 2D VIEWS

David Ezra, and Graham J. Woodgate, both of Oxfordshire, United Kingdom, assignors to Sharp Kabushiki Kaisha, Abeno-ku, Japan

Filed May 18, 1994, Ser. No. 245,584
Claims priority, application United Kingdom, May 21, 1993, 9310548
Int. Cl.[6] G02F *1/1335*
U.S. Cl. 349—95 **16 Claims**



1. A spatial light modulator comprising a plurality of picture elements arranged as rows extending in a first direction and columns extending in a second direction substantially perpendicular to the first direction, and having opaque regions masking conductors and/or drive devices within the spatial light modulator, the picture elements being arranged in groups of N, where N is an integer greater than one, wherein the picture elements of each group are substantially contiguous with each other in the first direction so that an edge of picture elements in a column lies on the same vertical line as an edge of picture elements of a horizontally adjacent column.

5,602,659

LIQUID CRYSTAL LIGHT VALVE WITH PHOTOCONDUCTOR INCLUDING LIGHT ABSORBING AND LIGHT BLOCKING LAYERS OF NON-ALLOY AMORPHOUS SILICON

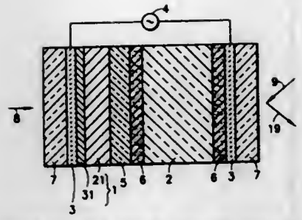
Katsumi Adachi, Nara-ken; Takashi Hayakawa, Soraku-gun, and Shiro Narikawa, Kashihara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 20,632, Feb. 22, 1993, abandoned. This application Feb. 2, 1995, Ser. No. 384,359
Claims priority, application Japan, Feb. 21, 1992, 4-035163
Int. Cl.[6] G02F *1/135*
U.S. Cl. 349—27 **3 Claims**

1. A photoconductor coupled liquid crystal light valve comprising at least

a pair of transparent electrodes,

a liquid crystal layer and



a photoconductor layer having blocking properties, both said layers being sandwiched between said transparent electrodes, wherein

said photoconductor layer includes a light-absorbing layer and a blocking layer, both formed of non-alloy amorphous silicon;

said blocking layer is doped with an impurity selected from the group consisting of boron and phosphorus and has a band gap exceeding 1.98 eV, wider than that of said light-absorbing layer, thereby inhibiting absorption, by said blocking layer, of writing light and enhancing contrast of any image formed by said light valve.

5,602,660

FERROELECTRIC LIQUID CRYSTAL APPARATUS HAVING NEGATIVE DIELECTRIC ANISOTROPY AND COLORED FILM AT NON-PIXEL PORTIONS

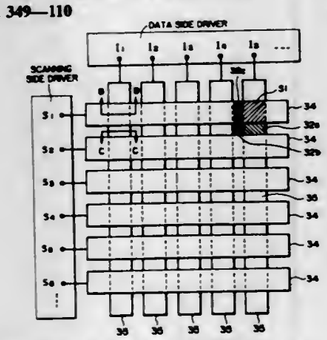
Nobuyuki Sekimura, Kawasaki; Akio Yoshida, Fujisawa, and Masaki Kuribayashi, Higashikurume, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 236,160, May 2, 1994, Pat. No. 5,461,494, which is a continuation of Ser. No. 866,111, Apr. 7, 1992, abandoned, which is a continuation of Ser. No. 513,039, Apr. 23, 1990, abandoned, which is a continuation of Ser. No. 38,720, Apr. 15, 1987, abandoned. This application Jun. 7, 1995, Ser. No. 478,679

Claims priority, application Japan, Apr. 17, 1986, 61-088605

Int. Cl.[6] G02F *1/1333;1/141*

U.S. Cl. 349—110 **4 Claims**



1. A liquid crystal apparatus, comprising:

a liquid crystal panel comprising scanning electrodes, data electrodes intersecting the scanning electrodes to form an electrode matrix disposed so as to form pixels at intersections of the scanning electrodes and the data electrodes, a colored film disposed on a substrate at spacings between adjacent scanning electrodes or between adjacent data electrodes, a dielectric film disposed on said colored film, and a chiral smectic liquid crystal having a negative dielectric anisotropy, said colored film comprising a resin containing a pigment dispersed therein; and

drive circuitry for applying a scanning signal to the scanning electrodes and applying data signals to the data electrodes, thereby applying a voltage signal for forming a display state at a selected pixel, and for applying an AC voltage to non-selected pixels.

5,602,661

OPTICAL COMPONENT

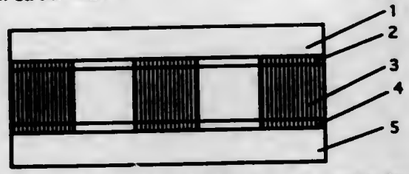
Martin Schadt, Seltisberg, Switzerland, and Klaus Schmitt, Lörrach, Germany, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Feb. 10, 1994, Ser. No. 194,234

Claims priority, application Switzerland, Feb. 17, 1993, 488/93

Int. Cl.[6] G02F *1/1337;1/137*

U.S. Cl. 349—124 **19 Claims**



1. An optical component comprising (a) an anisotropic film of cross-linked liquid crystal monomers with varying local orientation of the liquid crystal molecules and (b) an orientation layer comprising a photo-orientable polymer network (PPN), said orientation layer being in contact with said anisotropic liquid crystal film.

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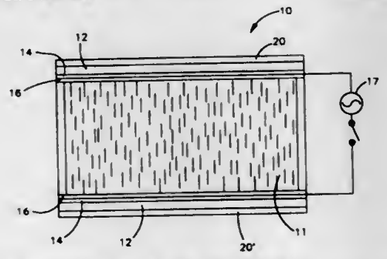
CHOLESTERIC LIQUID CRYSTAL DEVICES

Charles Rosenblatt, Beachwood; Michael R. Fisch, Lakewood; Karl A. Crandall, Cleveland, and Rolfe Petschek, Shaker Heights, all of Ohio, assignors to Case Western Reserve University, Cleveland, Ohio

Continuation of Ser. No. 81,009, Jun. 21, 1993, Pat. No. 5,477,358. This application Feb. 16, 1995, Ser. No. 389,316

Int. Cl.[6] G02F *1/1337*

U.S. Cl. 349—130 **14 Claims**



1. A liquid crystal display device comprising:

a) first and second polarizers, each of said polarizers having respective polarization orientations and being oriented to pass a polarization of light substantially perpendicular to the polarization of light passed by the other of said polarizers, and means for applying an electric field in said liquid crystal;

b) cell walls having respective opposing inner surfaces disposed between said first and second polarizers and a chiral nematic liquid crystal material disposed between said inner surfaces of said cell walls, said inner surfaces being unrubbed and at least one of said inner surfaces being treated to promote only homeotropic alignment of said liquid crystal material; and,

c) said chiral nematic liquid crystal having negative dielectric anisotropy and including a sufficiently low amount of chiral material to enable the liquid crystal director to homeotropically align in the absence of a field.

5,602,663

INFORMATION PROCESSING APPARATUS FOR MULTIPLEX TRANSMISSION OF SIGNAL FOR ARBITRATION AND SIGNAL FOR DATA TRANSFER

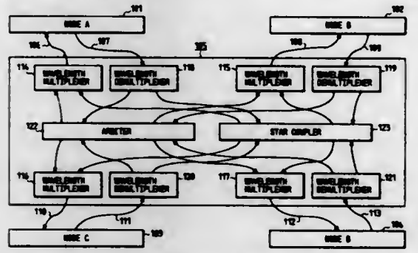
Kazumasa Hamaguchi, Yokohama; Atsushi Date, Tokyo; Masato Kosugi, Yokohama, and Toshiyuki Fukui, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 15, 1994, Ser. No. 341,877

Claims priority, application Japan, Nov. 16, 1993, 5-286876

Int. Cl.[6] H04J *14/02*

U.S. Cl. 359—125 **3 Claims**



1. An information processing apparatus having a plurality of computational nodes, comprising:

a plurality of computational nodes, each computational node being provided with at least one wavelength multiplexer for multiplexing signals of a plurality of wavelengths and simultaneously transmitting the multiplexed signals and at least one wavelength demultiplexer for demultiplexing the transmitted signals in the plurality of wavelengths; and

a concentrator connected through a transmission line medium with each of said plurality of computational nodes, said concentrator comprising,

a wavelength demultiplexer for demultiplexing the signals of the plurality of wavelengths transmitted through said wavelength multiplexer from each of said plurality of computational nodes;

a wavelength multiplexer for multiplexing signals of the plurality of wavelengths and simultaneously transmitting the multiplexed signals to each of said plurality of computational nodes;

connecting means for connection of a signal for data transfer between said plurality of computational nodes connected with each other; and

an arbiter for performing an arbitration operation for use of the transmission line in said data transfer;

wherein a signal for arbitration for use of the transmission line transmitted between said computational nodes and the arbiter and the signal for data transfer between the computational nodes are transmitted in a multiplexed manner on said transfer line medium.

5,602,664

INFRARED REPEATER

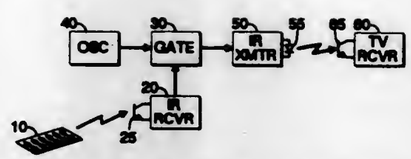
Albert L. Doyle, Plainfield, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Jun. 6, 1995, Ser. No. 467,121

Int. Cl.[6] H04B *10/00*

U.S. Cl. 359—142 **19 Claims**

1. An IR repeater comprising:



a receiver section, for receiving an IR light signal representing a coded signal modulated by a modulating signal;

a first IR detector coupled to said receiver section for detecting said IR light signal and generating a signal representing said coded signal;

a fixed-frequency oscillator, for generating a transmitter modulating signal, said fixed-frequency oscillator generating said transmitter modulating signal at a predetermined frequency independent of the frequency of the received modulating signal; and

a transmitter section, for generating an output IR light signal representing said detected coded signal modulated by said transmitter modulating signal.

5,602,665

OPTICAL TRANSMITTING/RECEIVING APPARATUS FOR BIDIRECTIONAL COMMUNICATION SYSTEMS

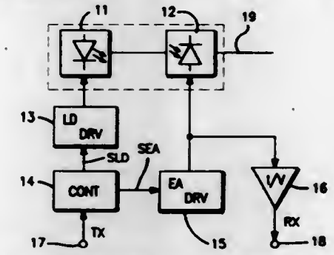
Katsuhiro Asako, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 7, 1995, Ser. No. 511,803

Claims priority, application Japan, Dec. 6, 1994, 6-301825

Int. Cl.[6] H04B *10/00*

U.S. Cl. 359—152 **25 Claims**



1. An optical transmitting/receiving apparatus for bidirectional communication systems, comprising:

an optical fiber transmission path;

light emitting means for emitting light including a semiconductor laser diode and a first driving circuit to send an injection current to said semiconductor laser diode;

second driving means for outputting driving signals in response to transmission signals;

modulating and detecting means for modulating said emitting light in response to said driving signals and radiating said modulated emitting light along said optical fiber transmission path and for detecting light received along said optical fiber transmission path and converting said received light signals into electric signals, said modulating and detecting means being an electro-absorption type semiconductor optical modulator whose light absorption coefficient varies in response to said voltage signals; and

monitoring means for monitoring said detected received light signals.

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OPTICAL DISPERSION COMPENSATION METHOD FOR SHIFTING A ZERO DISPERSION WAVELENGTH OF AN OPTICAL FIBER TO COMPENSATE FOR DISPERSION IN AN OPTICAL SYSTEM

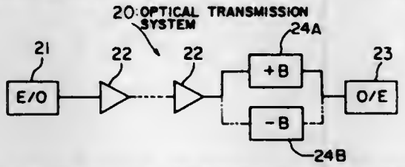
George Ishikawa; Hideyuki Miyata; Hiroshi Onaka; Motoyoshi Sekiya, and Kazue Otsuka, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 233,830, Apr. 26, 1994. This application Apr. 20, 1995, Ser. No. 425,573

Claims priority, application Japan, Aug. 10, 1993, 5-198674; Sep. 29, 1993, 5-242564

Int. Cl.[6] H04B *10/00*

U.S. Cl. 359—161 **19 Claims**



1. An optical dispersion compensation method for compensating for a dispersion amount of an optical transmission system which includes a transmitter, a repeater and a receiver and transmits, from said transmitter to said receiver by way of said repeater using an optical fiber, signal light which is arranged, taking a zero-dispersion wavelength λ_0 of said optical fiber and a zero-dispersion wavelength deviation range $\pm \Delta\lambda_0$ of said optical fiber in its longitudinal direction into consideration, within a transmissible band which is defined by an allowable dispersion value determined from a synergetic effect of self phase modulation and group velocity dispersion in said optical fiber and is set on a shorter wavelength side than a shorter wavelength end $\lambda_0-\Delta\lambda_0$ or on a longer wavelength side than a longer wavelength end $\lambda_0+\Delta\lambda_0$ of the zero-dispersion wavelength deviation range of said optical fiber, comprising the steps of:

preparing in advance two kinds of optical dispersion compensator units having dispersion amounts having different positive and negative signs;

inserting the two kinds of optical dispersion compensator units separately into said optical transmission system; and

selecting one of the two kinds of optical dispersion compensator units which provides a better transmission characteristic to said optical transmission system and incorporating the selected optical dispersion compensator unit into said optical transmission system;

wherein the zero dispersion wavelength λ_0 of said optical fiber is shifted to apparently arrange the signal light into the transmissible band to compensate for the dispersion amount of said optical transmission system.

5,602,667

EXTENDED DISTANCE FIBER OPTIC INTERFACE

Narottam N. Patel, New Brighton, Minn., assignor to Unisys Corporation, Blue Bell, Pa.

Continuation of Ser. No. 958,148, Oct. 7, 1992, abandoned. This application Sep. 13, 1995, Ser. No. 527,743

Int. Cl.[6] H04B *10/18*; **H04J** *14/08*

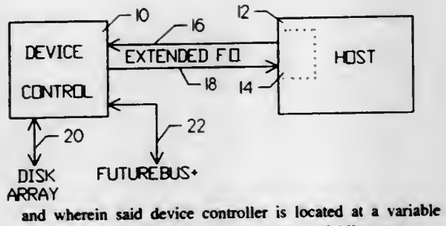
U.S. Cl. 359—161 **28 Claims**

1. An apparatus comprising:

a. a host computer, at least a portion of said host computer operating in accordance with a first predetermined parallel electrical communication protocol;

b. a peripheral device, at least a portion of said peripheral device operating in accordance with a second predetermined parallel electrical communication protocol;

c. a device controller coupled to said portion of said peripheral device that operates in accordance with said second predetermined parallel electrical communication protocol via a cable



and wherein said device controller is located at a variable distance from said host computer of up to 10 kilometers;

d. a fiber optic input/output link coupled to said portion of said host computer that operates in accordance with said first predetermined parallel electrical communication protocol and further coupled to said device controller, said fiber optic input/output link having a length that substantially matches said variable distance from said host computer to said device controller and operates in accordance with a predetermined serial optical communication protocol;

e. first interfacing means coupled to said host computer and further coupled to said fiber optic input/output link for interfacing between said first predetermined parallel electrical communication protocol and said serial optical communication protocol;

f. second interfacing means coupled to said device controller and further coupled to said fiber optic input/output link for interfacing between said second predetermined parallel electrical communication protocol and said serial optical communication protocol; and

g. at least one of said first and second interfacing means further including means for accommodating said variable distance such that said operation of said host computer is independent of said variable distance, said means for accommodating including a buffering means.

5,602,668

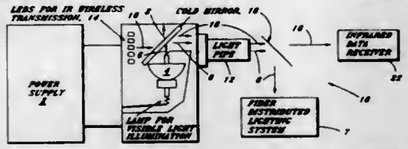
DATA COMMUNICATIONS AND ILLUMINATED LIGHT ON THE SAME OPTICAL FIBER

Daniel M. Kuchta, Cortlandt Manor, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 30, 1994, Ser. No. 346,644

Int. Cl.[6] H04B *10/12;10/00*

U.S. Cl. 359—173 **31 Claims**



1. An apparatus for providing both visible light and a data signal through a single light pipe, comprising:

a) an infrared source for providing an infrared data signal along a first line;

b) a visible light source including infrared shot noise for providing a visible light signal along a second line;

c) a cold bandpass mirror for transmitting infrared light including said infrared data signal and infrared shot noise and for reflecting said visible light signal; and

d) a light pipe for receiving said infrared data signal and visible light signal, but not said infrared shot noise, wherein said infrared data signal and visible light signal enter said light pipe at a first end.

5,602,669

DIGITAL SIGNAL TRANSMISSION APPARATUS, DIGITAL SIGNAL TRANSMISSION METHOD, AND DIGITAL SIGNAL TRANSMITTER-RECEIVER

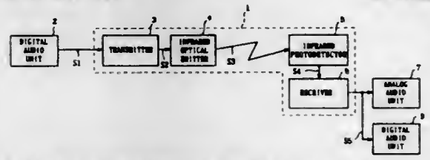
Yasuyuki Chaki, Chiba, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 26, 1995, Ser. No. 494,883

Claims priority, application Japan, Jun. 30, 1994, 6-173589

Int. Cl.[6] H04B *10/04*

U.S. Cl. 359—181 **29 Claims**



1. A digital signal transmission apparatus, comprising:

input means for receiving a digital signal at a predetermined transmission rate;

QPSK-modulation means including a means for generating an I-component signal and a Q-component signal through serial/parallel conversion of the digital signal received by said input means, a roll-off filter with a predetermined roll-off rate for narrowing a bandwidth through filtering of the I-component signal and the Q-component signal, and a means for two-phase-modulating the filtered I- and Q-component signals; and

infrared transmission means for transmitting said digital signal to external units by driving an infrared emitter based on a digital modulated signal supplied from said QPSK-modulation means and thereby generating infrared rays.

5,602,670

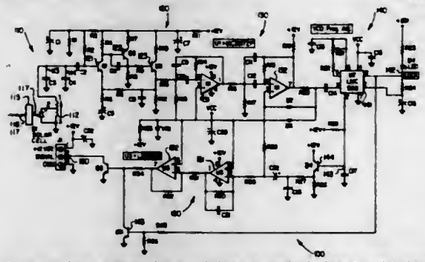
OPTICAL DATA RECEIVER EMPLOYING A SOLAR CELL RESONANT CIRCUIT AND METHOD FOR REMOTE OPTICAL DATA COMMUNICATION

Patrick J. Keegan, North Hollywood, Calif., assignor to Rheem Manufacturing Company, New York, N.Y.

Continuation of Ser. No. 329,308, Oct. 26, 1994, abandoned. This application Oct. 11, 1995, Ser. No. 540,745

Int. Cl.[6] H04B *10/06*

U.S. Cl. 359—193 **28 Claims**



1. A receiver system for receiving an optical signal, said signal originating at a location, the system comprising:

a solar cell having a selected capacitance;

a filter disposed between the location and said solar cell, said filter passing said signal while attenuating ambient light, said ambient light including sunlight; and

an inductive device having a selected inductance and coupled to said solar cell, said solar cell and said inductive device cooperating to form a resonant circuit having a selected resonant frequency associated therewith and being a function of said selected capacitance and said selected inductance, said resonant circuit resonating in response to a change in said signal,

whereby said filter attenuating said ambient light and passing said signal permits said resonant circuit to resonate at said resonant frequency in response to said signal.

5,602,671

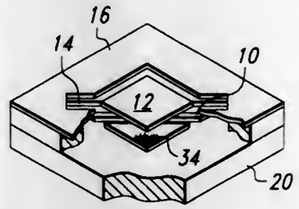
LOW SURFACE ENERGY PASSIVATION LAYER FOR MICROMECHANICAL DEVICES

Larry J. Hornbeck, Van Alstyne, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 823,580, Jan. 16, 1992, Pat. No. 5,331,454, which is a continuation of Ser. No. 612,946, Nov. 13, 1990, abandoned. This application Feb. 4, 1994, Ser. No. 193,689

Int. Cl.[6] G02B *26/08;26/02*

U.S. Cl. 359—224 **8 Claims**



2. An electronic device comprising:

a micromechanical DMD which includes a deflection element selectively electrostatically movable into contact with a landing electrode, and

an oriented monolayer formed on at least a region of the landing electrode which is contactable by the deflection element to reduce mutual attraction between contacted deflection element and landing electrode, wherein said oriented monolayer is comprised of a COOH terminal group attached to said landing electrode, a carbon chain connected to said COOH terminal group by a first end, and a CF_3 terminal group connected to a second end of said carbon chain.

5,602,672

LIGHT MODULATOR MODULE AND METHOD FOR FABRICATING LIGHT MODULATOR MODULE

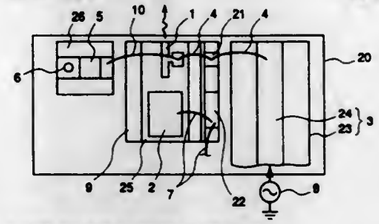
Eitaro Ishimura; Yasunori Miyazaki, and Minoru Kawano, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 12, 1996, Ser. No. 615,162

Claims priority, application Japan, Sep. 20, 1995, 7-242014

Int. Cl.[6] G02F *1/03*; **H04B** *10/04*; **G02B** *6/12*

U.S. Cl. 359—245 **20 Claims**



1. A light modulator module comprising:

a submount;

a semiconductor laser and a semiconductor light modulator having a signal input terminal integrated on the submount, the semiconductor laser outputting laser light and the semiconductor light modulator modulating the laser light in response to a high-frequency signal input to the signal input terminal;

a strip line for transmitting the high-frequency signal, the strip line having opposed first and second terminals, the second terminal receiving the high-frequency signal;

a terminating resistor terminating the strip line, the terminating resistor having opposed first and second ends, the second end being grounded;

a first wire connecting the signal input terminal of the semiconductor light modulator to the first terminal of the strip line; and

a second wire connecting the first end of the terminating resistor to the signal input terminal of the semiconductor light modulator.

5,602,673

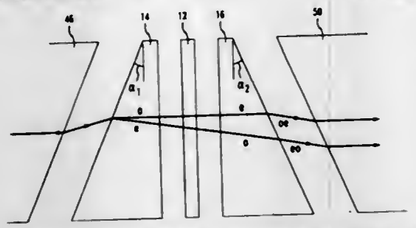
OPTICAL ISOLATOR WITHOUT POLARIZATION MODE DISPERSION

Clarence B. Swan, Lower Macungie Township, Lehigh County, Pa., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 29, 1993, Ser. No. 175,868

Int. Cl.[6] G02B *5/30*

U.S. Cl. 359—281 **10 Claims**



1. An optical isolator adapted for receiving an applied forward-directed optical signal, said optical isolator comprising:

a first birefringent wedge having a first optical C-axis oriented at a first optical axis angle, a first face, a second face and a width defined between said first and second faces and varying from a first width at a first end to a second width less than said first width at a second end, said first wedge being oriented so that said second end is oriented in a first direction and so that the applied forward-directed optical signal enters said first wedge through said first face and the forward-directed optical signal entering the first wedge through said first face is divided into a first polarization state and a second polarization state orthogonal to said first polarization state and said first and second polarization states exit said first wedge through said second face;

a Faraday rotator disposed proximate said first birefringent wedge for receiving said first and second polarization states exiting said first wedge and from which said first and second polarization states exit after passage through said Faraday rotator in which said first and second polarization states undergo a nonreciprocal 45° rotation; and

a second birefringent wedge having a first face, a second face, a width defined between said first and second faces of the second wedge and varying from a third width at a first end of the second wedge to a fourth width less than said third width at a second end of the second wedge, and a second optical C-axis oriented at a second optical axis angle, said first and said second optical C-axes being oriented relative to each other such that the difference between said first and said second optical axis angles equals 45° in a rotational direction opposite said nonreciprocal rotation of said Faraday rotator, said second wedge being oriented so that said second end of the second wedge is oriented in said first direction, and said second wedge being disposed proximate said Faraday rotator so that said first and second polarization states exiting said Faraday rotator enter said second wedge through said first face of said second wedge and exit said second wedge through said second face of said second wedge;

said Faraday rotator being disposed between said first and second birefringent wedges so that the first and second polarization states of the applied forward-directed optical signal undergo an exchange of identities in passing through the optical isolator in that said second polarization state exiting said second birefringent wedge is orthogonal to said second polarization state exiting said first birefringent wedge and said first polarization state exiting said second birefringent wedge is orthogonal to said first polarization state exiting said first birefringent wedge, and such that the first and second polarization states exit said second birefringent wedge in parallel relation, each having travelled through said optical isolator over respective optical paths of substantially equal length, with substantially no polarization mode dispersion.

5,602,674

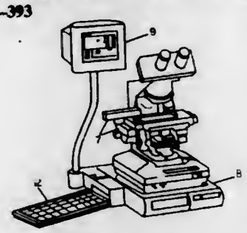
COMPUTERIZED SPECIMEN ENCODER

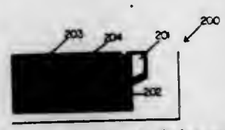
Mark Weissman, Wayland; Louis Kamentsky, Cambridge, and Lee D. Kamentsky, Arlington, all of Mass., assignors to Compucyte Corp., Cambridge, Mass.

Continuation-in-part of Ser. No. 89,243, Jul. 9, 1993. This application Jun. 16, 1995, Ser. No. 491,414

Int. Cl.[6] G02B *21/26;21/34;* G01J *1/20;* H04N *7/18*

U.S. Cl. 359—393 **11 Claims**





1. A specimen encoder device, for use during examination and subsequent review of the examination, of a specimen with one or more microscopes,

wherein during said examination and review of examination, said specimen is movably mounted relative to a viewing lens of one of the microscopes; whereby the specimen is movable in an x-y direction plane, during said examination and review of examination;

the encoder device comprising computer and a viewing screen, and:

a. correlation means for translating movement of the specimen, in the x-y direction plane, to retrievable corresponding computer pixel locations and cursor movement on said viewing screen within a computer generated framed area diagram which correlatively contains the specimen;

b. means for marking microscope viewing areas, which are viewed during said examination, as correlated to the computer pixel locations, on the viewing screen and within the computer generated framed area diagram, with computer generated marking indicia;

c. means for recognizably varying the computer generated marking indicia, corresponding to specifically viewed microscope viewing areas, as a function of the period of time which was spent viewing each of said viewing areas and/or as a function of the number of times each, or a portion of each, of said viewing areas has been viewed.

5,602,675

IMAGE BLUR PREVENTION APPARATUS

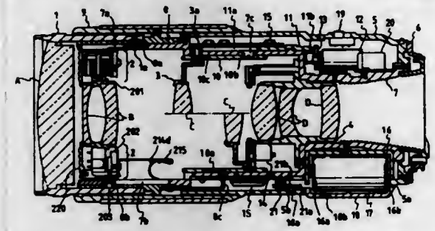
Tadanori Okada, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 30, 1994, Ser. No. 220,442

Claims priority, application Japan, Apr. 1, 1993, 5-096513

Int. Cl.[6] G02B *27/64;7/02;* G03B *7/08*

U.S. Cl. 359—554 **16 Claims**



1. An optical apparatus comprising:

an optical unit which is movable in at least two different directions;

a circuit base member; and

a connection member which electrically connects said optical unit and said circuit base member, and is plane-shaped, said connection member being deformable in at least two different directions so as not to disturb the movement of said optical unit to at least two different directions.

5,602,676

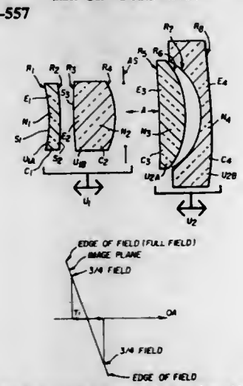
COMPACT ZOOM LENS WITH REDUCED ASPHERIC DECENTER SENSITIVITY

Lee R. Estelle, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 30, 1994, Ser. No. 347,612

Int. Cl.[6] G02B *27/64*

U.S. Cl. 359—557 **33 Claims**



1. A zoom lens comprising two optical units of lens components, said optical units including, from an object side, a first optical unit of positive power and a second optical unit of negative power and which zoom lens achieves zooming between a wide angle position and a narrow angle position by changing a distance between said first and said second optical units;

said first optical unit including (i) a first lens component positioned on the object side of said first optical unit, said first lens component having two aspheric surfaces, each of said aspheric surfaces is characterized by radius of curvature and by asphericity difference such that

$Ti \leqq 0.4$ mm,

where Ti is a total image tilt of said zoom lens, produced by decentering each of said aspheric surfaces by 0.01 mm and is measured at ¾ of the field, whereby said zoom lens has reduced aspheric decenter sensitivity and wherein $\Delta_2 > \Delta_1$, where Δ_1 is the asphericity difference of one surface of the first lens component and Δ_2 is the asphericity difference of the other surface of the first lens component;

(ii) and a second, positive power lens component positioned behind said first lens component; and

(iii) an aperture stop.

5,602,677

DISPERSIVE OPTICAL DELAY LINE AND USE THEREOF FOR THE COMPRESSION/EXPANSION OF LASER PULSES

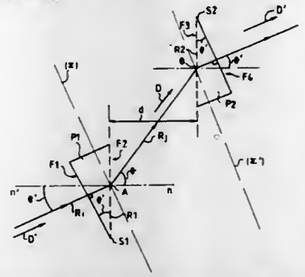
Pierre Tournois, Cagnes S/Mer, France, assignor to Thomson-CSF, Paris, France

Filed May 18, 1994, Ser. No. 245,538

Claims priority, application France, May 18, 1993, 93 05989

Int. Cl.[6] G02B *5/04*

U.S. Cl. 359—566 **2 Claims**



1. A dispersive, optical delay line for one of linear compression and linear expansion of linearly modulated laser wave pulses modulated about a center frequency f_o, comprising:

a first optical grating;

a second optical grating parallel to said first optical grating and spaced at a distance d therefrom;

said first optical grating and said second optical grating having a pitch a on a surface of a material having an index N which is transparent to light waves, the value of N determining the maximum value of refraction for light passing through said material;

wherein the first grating and second grating are arranged such that a wave of Σ, passing through the light transmission material, is incident at an angle Θ' with respect to the surface normal of the first grating and, upon further transmission through the material, is emergent from the second grating at an angle Θ' with respect to the surface normal of the second grating, where Θ' is greater than the limit angle of refraction for the material, and satisfies the relationship

$$\sin \Theta' < 1/N$$

wherein the gratings are arranged at a spacing d for light incidence and emergence at an angle Θ', to produce a predetermined variation of delay time Δt_R of a pulse, introduced by the double diffraction, which corresponds to a predetermined value of a modulation band width Δf about f_o, where the variation of delay time as a function of the frequency of the laser pulse does not diverge from a straight line segment except by a linearity error δ^*_m, Δf and T satisfying the relations:

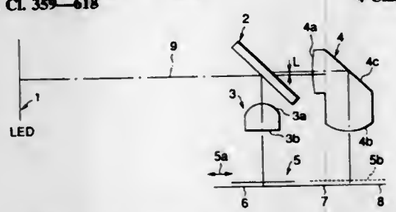
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$$\Delta f = 4fg^2\theta_0(\delta^*_m)^{\frac{1}{2}} \cdot \frac{pc}{a}$$

$$T = 4\cot g\theta_0(\delta^*_m)^{\frac{1}{2}} \cdot \frac{d}{c}$$

where c is the velocity of light and p is an integer; and
wherein the angle of diffraction on the first grating is Θ_0 for a pulse at the central frequency f_0.

5,602,678
DATA IMPRINTING APPARATUS
Hiroshi Sato, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 11, 1994, Ser. No. 273,322
Claims priority, application Japan, Jul. 12, 1993, 5-195129
Int. Cl.[6] G02B *27/10;27/14*
U.S. Cl. 359—618 **4 Claims**



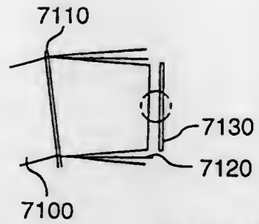
1. An apparatus for imprinting data onto a photosensitive surface, comprising:
light source means for forming data;
light splitting means for splitting light emitted from said light source means into a first light beam and a second light beam;
first optical means, including a first lens, for guiding the first light beam split by said light splitting means onto a first area of the photosensitive surface; and
second optical means, including a second lens, for guiding the second light beam split by said light splitting means onto a second area, different from the first area, of the photosensitive surface,
wherein when radii of curvature of lens surfaces, on the sides of said light source means and the photosensitive surface, of said first lens are respectively represented by R_{1f} and R_{1r}, and radii of curvature of lens surfaces, on the sides of said light source means and the photosensitive surface, of said second lens are respectively represented by R_{2f} and R_{2r}, the following conditions are satisfied:

$$|R_{1f}|<|R_{2f}|$$

$$|R_{2r}|<|R_{1r}|.$$

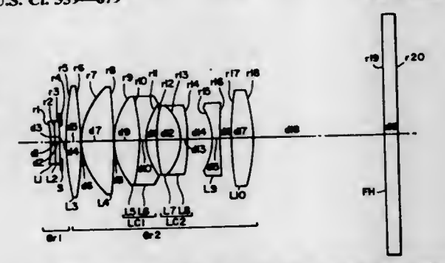
5,602,679
HIGH EFFICIENCY LIGHT VALVE PROJECTION SYSTEM
Eugene Dolgoff, Westbury, N.Y.; Malcolm J. MacFarlane, Brookfield, Conn., and Paul B. Christie, New York, N.Y., assignors to Projectavision, Inc., New York, N.Y.
Division of Ser. No. 223,479, Apr. 4, 1994, which is a continuation-in-part of Ser. No. 659,596, Feb. 21, 1991, Pat. No. 5,300,942, which is a continuation-in-part of Ser. No. 290,048, Dec. 23, 1988, Pat. No. 5,012,274, which is a continuation-in-part of Ser. No. 140,233, Dec. 31, 1987, abandoned. This application Feb. 6, 1995, Ser. No. 384,724
Int. Cl.[6] G02B *27/12;* **G09G** *3/00;* **H04N** *9/31*
U.S. Cl. 359—640 **14 Claims**

4. A display system, comprising:



an element wherein an image may be formed thereon, wherein said element comprises at least two different areas, each displaying data corresponding to differently colored information;
at least one lens array;
a light source; and
macro-prism means for breaking up light emanating from said light source into differently colored beams, said macroprism means comprising at least one prism structure which is much larger than a pitch of pixels on said element;
wherein a principal ray of at least one light beam from the source illuminates said element at an angle other than normal incidence, and wherein the display system comprises means for shifting a beam of a given color vertically by one pixel and horizontally by one and one-half pixels with respect to a pixel being illuminated by a correspondingly colored beam which illuminates said element at normal incidence.

5,602,680
FINITE CONJUGATE DISTANCE ZOOM LENS SYSTEM
Keijiro Sakamoto, Toyokawa, Japan, assignor to Minolta Co., Ltd., Osaka, Japan
Filed Jan. 18, 1995, Ser. No. 374,132
Claims priority, application Japan, Jan. 20, 1994, 6-004658
Int. Cl.[6] G02B *15/14*
U.S. Cl. 359—679 **30 Claims**



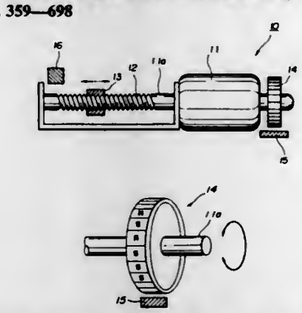
1. A finite conjugate distance zoom lens system comprising sequentially from the enlarging side a first lens group having a negative refracting power, and a second lens group having a positive refracting power,
wherein zooming from a maximum focal length state to a minimum focal length state is accomplished by individually shifting said first lens group from the enlarging side to the reducing side and then shifting from the reducing side to the enlarging side to reach the minimum focal length state, while shifting said second lens group from the enlarging side to the reducing side,
said second lens group comprises sequentially from the enlarging side at least two positive lens elements, first and second cemented lenses both of which consist of a cemented biconvex lens element and a negative lens element, a negative lens element having a concave surface on the enlarging side, and a positive lens element,
and wherein the following conditions are fulfilled:

$n_{2a}<n_{2b}$

$n_{2c}<n_{2d}$

where n_{2a} represents a refractive index of said biconvex lens element of said first cemented lens, n_{2b} represents a refractive index of said negative lens element of said first cemented lens, n_{2c} represents a refractive index of said biconvex lens element of said second cemented lens, and n_{2d} represents a refractive index of said negative lens element of said second cemented lens.

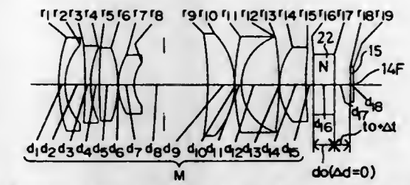
5,602,681
LENS BARREL FOR A VIDEO CAMERA, AND LINEAR FEEDING SYSTEM THEREOF
Akihito Nakayama; Satoshi Sakamoto, both of Tokyo; Eiji Ohshima, Kanagawa; Kazuhiro Tanaka, Chiba, and Shuji Moro, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Apr. 7, 1995, Ser. No. 418,687
Claims priority, application Japan, Apr. 11, 1994, 6-096971
Int. Cl.[6] G02B *15/14;7/02;* **G01B** *7/14;7/30*
U.S. Cl. 359—698 **4 Claims**



1. A linear feeding system including a driving source, a lead screw integrally formed with a rotational shaft of said driving source, and a nut member threadedly engaged with said lead screw, comprising:
a disc type magnet installed on the rotational shaft of said driving source and having a plurality of N-pole and S-pole alternately magnetized areas in the circumferential direction;
a magnetoresistive effect sensor fixedly arranged to face said magnet, having a patterned structure for generating an output formed by one cycle of pseudo-sine wave and pseudo-cosine wave and a midpoint potential in one N-pole or S-pole width;
a comparator for comparing the pseudo-sine and pseudo-cosine output of said magnetoresistive effect sensor to the midpoint potential; and
a controller for controlling a rotational direction and a rotational angle of said driving source in accordance with the output of said comparator.

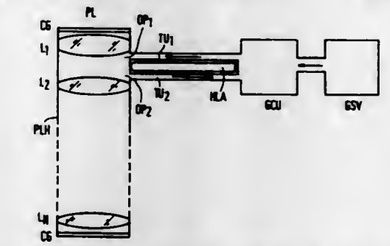
5,602,682
ABERRATION CORRECTING PLATE FOR INTERCHANGEABLE LENS
Takayuki Ito; Takayasu Shishido, and Hideto Machii, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, and Asahi Seimitsu Kabushiki Kaisha, both of Tokyo, Japan
Filed Jul. 26, 1994, Ser. No. 280,549
Claims priority, application Japan, Jul. 27, 1993, 5-184601
Int. Cl.[6] G02B *3/00*
U.S. Cl. 359—737 **12 Claims**

1. An aberration correcting plate for an interchangeable lens detachably attachable to a first camera body having a large result-



ant thickness of filters provided in front of an image pickup device of the first camera body and to a second camera body having a small resultant thickness of filters provided in front of an image pickup device of the second camera body
wherein said aberration correcting plate comprises a single parallel-plate with a uniform refractive index greater than 1.7 and further comprises means for correcting spherical aberration,
wherein said aberration correcting plate is mounted to a rear portion of the interchangeable lens when said rear portion is mounted to the second camera body, and
wherein the sum of the thicknesses of the aberration correcting plate and the filters provided in front of the image pickup device of the second camera body is substantially identical to the total thickness of the filters provided in front of the image pickup device of the first camera body.

5,602,683
LENS SYSTEM WITH LENS ELEMENTS ARRANGED IN A GAS-FILLED HOLDER AND PHOTOLITHOGRAPHIC APPARATUS INCLUDING SUCH A SYSTEM
Alexander Straaijer, Eindhoven, and Jan W. D. Martens, Veldhoven, both of Netherlands, assignors to ASM Lithography, La Veldhoven, Netherlands
Filed Dec. 21, 1994, Ser. No. 361,082
Claims priority, application Belgium, Dec. 24, 1993, 0931456
Int. Cl.[6] G02B *7/02*
U.S. Cl. 359—811 **4 Claims**

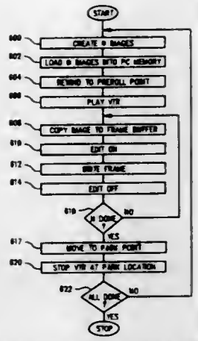


1. A lens system comprising a plurality of lens elements arranged in a lens holder which is connected to a device for maintaining the holder filled with a gas having a refractive index close to 1, wherein the gas contains ozone in a concentration of between several particles to a few hundred ozone particles per million gas particles.

5,602,684
INTERLEAVING VTR EDITING SYSTEM
Don Corbitt, and Karen Corbitt, both of 17813 NE 100th Ct., Redmond, Wash. 98052
Continuation of Ser. No. 919,774, Jul. 24, 1992, abandoned.
This application Nov. 17, 1993, Ser. No. 153,286
Int. Cl.[6] G11B *27/02*
U.S. Cl. 386—52 **12 Claims**

1. An editing system for coupling to a video recorder capable of recording at a recording rate and playing back a plurality of frames of video data in a time sequence, comprising:

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(a) a memory for retaining at one time a plurality of frames of video data,

(b) a transfer circuit for transferring a frame of video data from the memory to the video recorder which transfer circuit has a multiple frame transfer rate slower than the recording rate of the video recorder,

(c) a control circuit for causing the transfer circuit to transfer a first frame of video data from the memory to the video recorder for recording by the video recorder in a first frame location in the time sequence, then causing the transfer circuit to transfer no frame of video data for recording in the next frame location in the time sequence, then causing the transfer circuit to transfer a second frame of video data from the memory to the video recorder, which second frame is obtained from a location in the memory two or more frames away from the location of the first frame in the memory, which second frame is recorded by the video recorder in a location in the time sequence which is the same number of frames away from the first frame location in the time sequence as the number of frames between the first frame and the second frame in the memory.

5,602,685

METHOD AND APPARATUS FOR INTERLEAVING DATA IN A DIGITAL RECORDING SYSTEM

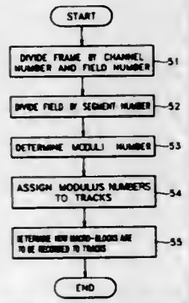
Sang-rak Lee, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Feb. 14, 1995, Ser. No. 388,306

Claims priority, application Rep. of Korea, Apr. 21, 1994, 94-8442

Int. Cl.[6] H04N *5/78*

U.S. Cl. 386—47 **6 Claims**



1. A data interleaving method for interleaving data to permit recording of a plurality of frame signals on each track on a recording medium in a digital recording system, wherein each said frame signal includes a predetermined number of channel signals, and wherein each said frame signal is divided into a predetermined number of fields, with each said field being divided into a predetermined number of segments, said method comprising the steps of:

determining a moduli number in accordance with said number of fields per frame and said number of segments per field;

assigning an integer, ranging from zero to the moduli number minus one, to each said track

determining for each of a plurality of macro-blocks, corresponding to each said frame signal and each having a macro-block number, which track said macro-block should be recorded on, said determining step further comprising the steps of:

dividing the corresponding macro-block number by the moduli number to obtain a remainder value;

pairing said remainder value with an integer assigned to at least one of said tracks during said assigning step; and

recording data of each macro-block on at least one of said plurality of tracks in accordance with the pairing in said determining step.

5,602,686

MAGNETIC TAPE RESIDENT VOLUME FORMAT TABLE FOR DATA RECORDING SYSTEM

Lionel C. Shih, San Jose, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Continuation of Ser. No. 222,486, Apr. 4, 1994, abandoned, which is a continuation of Ser. No. 843,532, Feb. 28, 1992, Pat. No. 5,355,259. This application Mar. 6, 1995, Ser. No. 400,000

Int. Cl.[6] G11B *05/09*

U.S. Cl. 360—48 **8 Claims**

BYTE NO.	BIT NUMBER	FIELD NAME	DEFINITION
0	7 THROUGH 0		RESERVED AND SHALL BE RECORDED WITH (00)h
1	7 THROUGH 0	SDPY2	STARTING DOUBLE FRAME NUMBER FOR THIS SECTION
2	7 THROUGH 0	SDPY1	
3	7 THROUGH 0	SDPY0	
4	7, 6, 5 & 4		PHYSICAL BLOCK DOUBLE FRAME TYPE
4	3, 2, 1 & 0	PHID1	PARTITION/SYSTEM ZONE IDENTIFIER
5	7 THROUGH 0	PHID0	(SEE 4.3.2 (a) FOR DEFINITION)
6	7, 6, 5 & 4		RESERVED AND SHALL BE RECORDED WITH (0)h
6	3, 2, 1 & 0	TETY	TABLE ENTRY TYPE TETY = "0000": SOVF (BEGINNING OF THE FIRST VFI ZONE) TETY = "0001": SOBZ (BEGINNING OF A SYSTEM ZONE) TETY = "0100": SOPT (BEGINNING OF A PARTITION) TETY = "0101": COPT (CONTINUATION OF THE PRECEDING PARTITION) TETY = "1000": A NOT-USED SECTION
7	7 THROUGH 0	PTRC	PARTITION TABLE ENTRY CHECK SUM

1. A system adapted to selectively record and reproduce digital data on a helical recording area of a magnetic tape, which has a plurality of partitions and sections defining a volume of said tape, said system comprising:

recording means for selectively recording and reproducing user data on said helical recording area of said tape; and

processing means for providing said user data to said recording means for recording thereby on said helical recording area of said tape, said processing means generating a volume format table of data for recording with said user data on said helical recording area by said recording means on said tape at least at one predetermined location, said volume format table comprising a plurality of table entries that enable apportionment of said volume into a plurality of nonoverlapping and contiguous partitions and sections, said entries including data identifying locations of said partitions and types of said sections along said tape.

5,602,687

APPARATUS FOR AUTOMATICALLY MUTING THE OUTPUT OF A RECORDING DEVICE DURING RECORDING

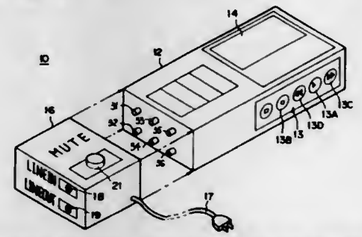
Masato Tanaka, Tokyo, and Kisuel Matsumoto, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 825,262, Jan. 24, 1992, abandoned. This application Jan. 3, 1994, Ser. No. 176,313

Claims priority, application Japan, Jan. 31, 1991, 3-032083

Int. Cl.[6] G11B *15/12*

U.S. Cl. 360—61 **1 Claim**



1. A digital audio tape recorder/player receiving recording signals supplied thereto from an external source, said digital audio tape recorder/player having a line input recording mode in which the recording signals are supplied by said digital audio tape recorder/player as an output signal for monitoring by a user, the external source having an input terminal connected to receive the output signal from said digital audio tape recorder/player for listening thereto by the user, comprising:

output interruption means for selectively interrupting a supply of the output signal from said digital audio tape recorder/player to the input terminal of the external source, said output interruption means including switch means for switching a path of the output signal from said digital audio tape recorder/player to ground and thereby causing interruption to the supply of the output signal to the external source;

a record key switch for producing a record key signal corresponding to a record mode of said digital audio tape recorder/player;

a muting switch for supplying a muting signal indicating a desired interruption of the supply of the output signal from said digital audio tape recorder/player to the external device; and

control means for receiving the record key signal and the muting signal, and producing a muting control signal for controlling said output interruption means to interrupt the supply of the output signal from said digital audio tape recorder/player to the external source in accordance with a presence of both the record key signal and the muting signal, the output signal not being interrupted if the muting signal indicates the desired interruption during playback.

5,602,688

METHOD AND APPARATUS FOR CONTROLLING SURFACE PRESSURE EXERTED ON A MOVABLE MAGNETIC HEAD BY A RECORDING MEDIUM

Eiji Yokoyama, and Masato Nagasawa, both of Kyoto, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Kyoto, Japan

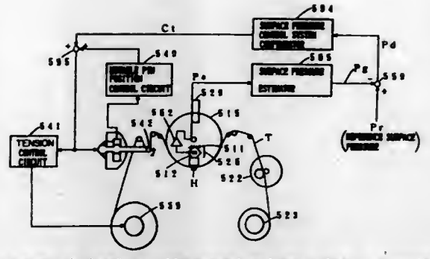
Division of Ser. No. 249,745, May 26, 1994, Pat. No. 5,481,417, which is a division of Ser. No. 882,016, May 13, 1992, Pat. No. 5,395,066. This application Sep. 11, 1995, Ser. No. 526,176

Claims priority, application Japan, May 13, 1991, 3-107581; May 24, 1991, 3-120514

Int. Cl.[6] G11B *15/43*

U.S. Cl. 360—69 **26 Claims**

1. A magnetic recording and reproducing apparatus comprising:



a magnetic head movable toward and away from a recording surface of a recording medium;

displacement detecting means for detecting a displacement of said magnetic head; and

surface pressure estimation means for estimating a surface pressure exerted on said magnetic head by the recording medium,

said surface pressure estimation means comprising a state estimator which electrically simulates characteristics of said magnetic head to determine the estimated surface pressure based on the detected displacement of said magnetic head,

the surface pressure exerted on said magnetic head being controlled by a surface pressure control signal which is generated according to a difference between the estimated surface pressure and an externally provided reference surface pressure.

5,602,689

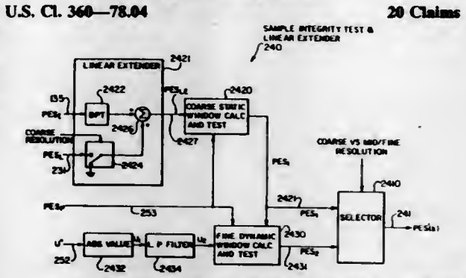
DIGITAL SERVO CONTROL SYSTEM FOR USE IN DISK DRIVES, INCLUDING SAMPLE INTEGRITY TESTER FOR REDUCING EFFECTS OF SPURIOUS SAMPLED POSITION VALUES

Ronald J. Kadlec, Colorado Springs, Colo.; Paul H. Kelley, Boca Raton, and Philip S. Wellbacher, Coconut Creek, both of Fla., assignors to Rodime PLC, Wayzata, Minn.

Division of Ser. No. 202,371, Feb. 25, 1994, which is a division of Ser. No. 856,954, Jul. 7, 1992, which is a continuation-in-part of Ser. No. 583,972, Sep. 18, 1990, abandoned. This application Jun. 1, 1995, Ser. No. 456,858

Int. Cl.[6] G11B *5/596*

U.S. Cl. 360—78.04 **20 Claims**



1. In an information storage apparatus having a recording medium, a reading device, and a position control system for controlling the position of the reading device relative to the recording medium, wherein the reading device provides sampled position values to the position control system, an arrangement for reducing effects of spurious sampled position values on the position control system, the arrangement comprising:

a) means for calculating a first window of allowable values, and for selecting either:

1) a first value derived from current position information sampled during a current time period, when the current sampled position information is within the first window; or

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2) a second value comprising a predicted position value derived from position information sampled before the current time period, when the current sampled position information is not within the first window;

b) means for calculating a second window of allowable values, and for selecting either:

1) a result of the selection of the means for calculating the first window, if it is within the second window; or

2) a value within the second window, if the result of the selection of the means for calculating the first window is not within the second window; and

c) means for determining an interim position-indicative signal as being based on either:

1) the result of the selection of the means for calculating the first window; or

2) a result of selection of the means for calculating the second window;

wherein the interim position-indicative signal reflects a reduction in the effects of the spurious sampled position values.

5,602,690

CLOCK SIGNAL GENERATING DEVICE AND CLOCK SIGNAL GENERATING METHOD

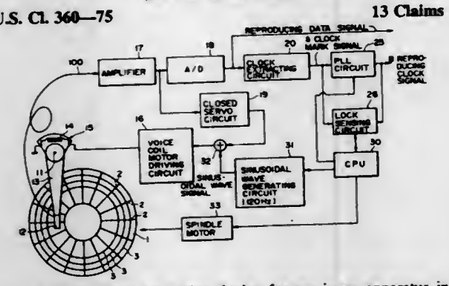
Itaru Tomisaki, Kanagawa, and Toru Takeda, Saitama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 19, 1995, Ser. No. 375,521

Claims priority, application Japan, Jan. 20, 1994, 6-004534

Int. Cl.[6] G11B *21/02*

U.S. Cl. 360—75 **13 Claims**



1. A clock signal generating device for use in an apparatus in which data recorded in tracks of a rotating disk is reproduced by a reproducing head from said disk, a clock information recorded in said disk at a plurality of equal angularly spaced apart intervals at different radial distances is extracted from an output of said reproducing head and the clock signal synchronized with said clock information comprising:

extracting means for extracting said clock information from an output of said reproducing head;

generating means supplied with the clock information extracted by the extracting means for generating a clock signal synchronous with said clock information extracted by said extracting means;

moving means for moving said reproducing head in a radial direction of said disk;

control means for controlling said moving means to move said reproducing head in a radial direction of said disk to a desired track and reproduce the data in said track; and

oscillating means for controlling said moving means while said generating means is unable to generate said clock signal in synchronism with said reproduced clock information and oscillating said reproducing head in a radial direction of said disk.

5,602,691

MAGNETIC DISK DRIVE APPARATUS USING CONTACT START/STOP MODE AND HEAD LOAD/UNLOAD MODE

Masanori Iwabuchi, Ibaragi, Japan, assignor to NEC Corporation, Tokyo, Japan

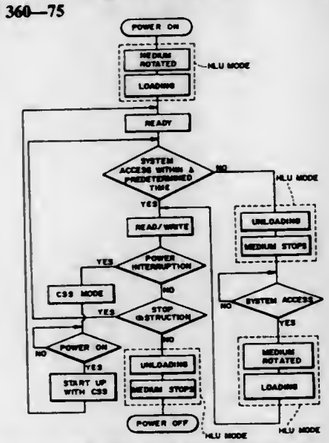
Continuation of Ser. No. 70,918, Jun. 4, 1993, abandoned.

This application Jun. 7, 1995, Ser. No. 486,230

Claims priority, application Japan, Jun. 4, 1992, 4-143857

Int. Cl.[6] G11B *21/02*

U.S. Cl. 360—75 **9 Claims**



1. A magnetic disk drive apparatus comprising:

a data storage medium which is rotated by a drive means;

a magnetic head which writes and reads information on and from said data storage medium;

a positioning means including an arm assembly which performs positioning of said magnetic head at target positions on said data storage medium; and

a magnetic head securing means comprising:

a first start/stop means for starting and stopping said data storage medium while said magnetic head is separated from said data storage medium;

a second start/stop means for starting and stopping said data storage medium while said magnetic head is in contact with said data storage medium; and

means for selecting and utilizing one of said first start/stop means and said second start/stop means based on a current state of said disk drive apparatus.

5,602,692

SAMPLED POSITION ERROR SIGNAL DEMODULATION SYSTEM FOR BANDED DATA DISK DRIVES

David A. Freitas, Morgan Hill, and Shih-Ming Shih, San Jose, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 7, 1994, Ser. No. 320,021

Int. Cl.[6] G11B *5/596*

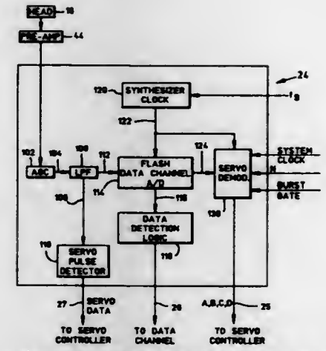
U.S. Cl. 360—77.08 **5 Claims**

1. A servo signal demodulation system comprising:

an analog-to-digital converter that sequentially receives samples of a readback signal generated by a disk read/write head positioned over a rotating disk storage medium according to a sampling clock frequency that changes as a function of a disk data band over which the read/write head is positioned;

an adder that receives rectified readback signal samples from the analog-to-digital converter and sums the rectified readback samples to produce an output comprising an integrated servo burst value;

a register that receives the summed integrated servo burst value from the adder; and



a servo signal demodulation circuit that determines a sample limit number according to the sampling clock frequency and latches the adder output integrated servo burst value to the register and resets the adder to an initial value when the sample limit number of readback signal samples have been received by the adder such that the time interval over which the readback signal samples were received is maintained constant regardless of the sampling clock signal frequency for use by a disk servo controller;

wherein the servo signal demodulation circuit determines the sample limit number to maintain the sampling time interval constant for a cyclic servo burst pattern by dividing the number of servo burst pattern cycles comprising a single quadrature burst by the frequency of the servo pattern bursts and multiplying by the sampling clock frequency.

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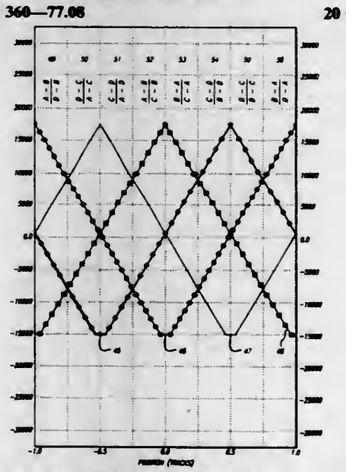
METHOD AND APPARATUS FOR SENSING POSITION IN A DISK DRIVE

Don Brunnett, Agoura, and Ashok K. Desai, West Lake Village, both of Calif., assignors to Micropolis (S) PTE Ltd., Singapore, Singapore

Filed Dec. 14, 1994, Ser. No. 355,649

Int. Cl.[6] G11B *5/596*

U.S. Cl. 360—77.08 **20 Claims**



1. A system for positioning a plurality of heads traversing a plurality of disks in a disk drive system, said positioning system including:

magnitude calculation means for computing a plurality of servo burst signal magnitudes based on head position relative to a plurality of transitions in each of a plurality of burst zones located on said disks, wherein said magnitude calculation means comprises:

detection means responsive to a head output signal received from the head for determining the magnitude of each burst read from said plurality of transitions; and

wherein said detection means includes means for sampling multiple transitions when said head is positioned within each track; and signal determination means for:

calculating a head offset based on relative differences between said plurality of servo burst signal magnitudes and radial displacement of each head in each track and

transmitting a signal equal to the ratio of the differences between the plurality of servo burst signal magnitudes, said ratio of magnitude differences based on radial displacement of the head, wherein said signal has a linear response for any head position on the disk.

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CAPSTANLESS HELICAL DRIVE SYSTEM

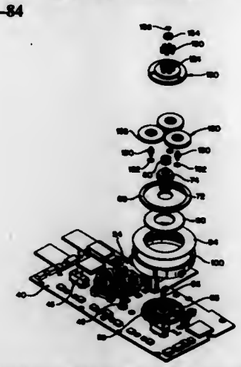
Robert J. Miles, Niwot, and James Zweighaft, Boulder, both of Colo., assignors to Exabyte Corporation, Boulder, Colo.

Continuation of Ser. No. 150,730, Nov. 12, 1993, abandoned.

This application Sep. 13, 1995, Ser. No. 527,702

Int. Cl.[6] G11B *15/46*

U.S. Cl. 360—84 **12 Claims**



1. A helical scan recording system which records information on storage media, the system comprising:

a supply reel;

a supply reel motor;

a take-up reel;

a take-up reel motor;

a media transport path extending from the supply reel to the take-up reel;

a drum positioned along the media transport path and upon which a read head and a write head are mounted for recording and reading information in helical stripes on the media;

wherein the take-up reel comprises:

a rotor assembly comprising a sun gear which rotates at a first rotational speed imparted by the take-up reel motor;

a rotating hub assembly comprising a planetary gear assembly which meshes with the sun gear and which rotates at a second rotational speed to impart a velocity to media transported in the media transport path; and

a non-rotatable internal gear which meshes with the planetary gear assembly to provide an overall fixed gear ratio between the sun gear and the non-rotatable internal gear and whereby the second rotational speed is less than the first rotational speed.

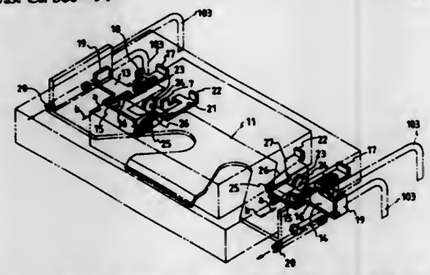
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5,602,695

CASSETTE LOADING MECHANISM FOR RECORDING AND PLAYBACK APPARATUS

Tatsumi Nishijima; Hidekazu Takeda, both of Hiratsuka; Kenmei Masuda, Yokohama; Hikaru Mizutani, Mitoo, and Yoshimi Machara, Ota, all of Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Maxell, Ltd., Osaka, both of Japan

Filed Jul. 5, 1994, Ser. No. 266,856
Claims priority, application Japan, Jul. 2, 1993, 5-164457
Int. Cl.[6] G11B *5/008;15/675*
U.S. Cl. 360—94 5 Claims



1. A cassette loading mechanism for loading cassettes into a recording/reproducing apparatus, comprising:
- a cassette holder for receiving, upon insertion, a first tape cassette or a second tape cassette, said second tape cassette having a case size and a thickness greater than a case size and thickness of said first tape cassette, and carrying the received cassette to a predetermined position;
- a lid unlocking member provided on said cassette holder for contacting a front lid locking member of said first tape cassette to unlock a front lid of said first tape cassette;
- an insertion limiting member provided on said cassette holder to limit insertion of said first tape cassette in said cassette holder;
- a first guide member for contacting opposite sides of said first tape cassette to guide said first tape cassette to said predetermined position;
- a moving device, responsive to insertion of said second tape cassette into said cassette holder, for moving said lid unlocking member, said insertion limiting member, and said first guide member to a non-interference position at which said lid unlocking member, said insertion limiting member, and said first guide member will not interfere with insertion of said second tape cassette in said cassette holder;

wherein said lid unlocking member, said insertion limiting member, and said first guide member are combined with said moving device.

5,602,696

REMOVABLE DISK DRIVE SYSTEM AUTOMATIC RETAINING MECHANISM

George E. Hansen, Cedar Rapids, Iowa, assignor to Norand Corporation, Cedar Rapids, Iowa

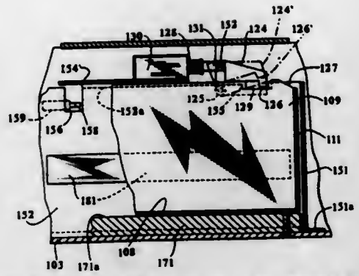
Continuation of Ser. No. 186,717, Jan. 25, 1994, which is a continuation of Ser. No. 22,789, Feb. 23, 1993, Pat. No. 5,327,308, which is a continuation of Ser. No. 846,462, Mar. 3, 1992, abandoned, which is a division of Ser. No. 499,861, Mar. 29, 1990, Pat. No. 5,122,914, which is a division of Ser. No. 947,707, Dec. 30, 1986, Pat. No. 4,912,580, which is a division of Ser. No. 707,154, Mar. 1, 1985, abandoned, which is a continuation-in-part of Ser. No. 571,389, Jan. 17, 1984, Pat. No. 4,633,358. This application Jun. 2, 1995, Ser. No. 459,358
Int. Cl.[6] G11B *5/012*
U.S. Cl. 360—97.01 4 Claims

1. A removable data storage system comprising:

a complete hard disk drive unit having

(i) rotary disk information storage media for storing information,

(ii) a disk rotary drive mechanism for effecting disk rotation, and



(iii) information transducer members for effecting disk scanning of information stored on the rotary disk information storage media;

a first plurality of conductors extending from the complete hard disk drive unit for carrying all power, control, and data signals necessary for operation of the complete hard disk drive unit;

a carrier receiving and secured with the complete hard disk drive unit to form a self-contained portable disk drive module;

a plurality of carrier connection contacts electrically connected to the first plurality of conductors, the plurality of carrier connection contacts being disposed in fixed alignment with the carrier, the plurality of carrier connection contacts numbering at least equal to the number of power, control, and data signals necessary for operation of the complete hard disk drive unit;

a receiving unit;

a plurality of receiving unit connection contacts disposed in a fixed position corresponding to the position of the plurality of carrier connection contacts when the self-contained portable disk drive module engages the receiving unit in a final assembled position, the plurality of receiving unit connection contacts numbering at least equal to the number of power, control, and data signals necessary for operation of the complete hard disk drive unit;

a second plurality of conductors carrying all of the power, control, and data signals necessary for operation of the complete hard disk drive unit from a computer system to the plurality of receiving unit connection contacts;

a solenoid operated latching mechanism responsive to a sensed signal for retaining the self-contained portable disk drive module in engagement with the receiving unit in the final assembled position when the solenoid operated latching mechanism is in a first state and for allowing release of the self-contained portable disk drive module from engagement with the receiving unit when the solenoid operated latching mechanism is in a second state;

whereby all power, data and control signal connections necessary for operation of the complete hard disk drive unit are established without the need for manual manipulation of any connecting cables by urging the self-contained portable disk drive module into engagement with the receiving unit and into the final assembled position in which the plurality of carrier connection contacts mate with the plurality of receiving unit connection contacts.

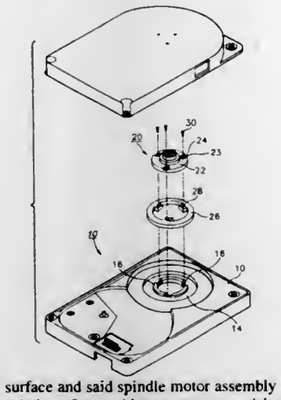
5,602,697

APPARATUS FOR FIXING A SPINDLE MOTOR TO A HARD DISK DRIVE BASE

Woo-Cheol Jeong, Seoul, and Jin-Tai Chung, Seongnam, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 30, 1994, Ser. No. 366,585
Claims priority, application Rep. of Korea, Dec. 30, 1993, 1993-31326
Int. Cl.[6] G11B *5/012;17/00;33/14;17/02*
U.S. Cl. 360—97.02 10 Claims

1. An apparatus for securing a spindle motor assembly to a base of a hard disk drive, said base having a round hole formed in a



bottom base surface and said spindle motor assembly having a hub with a bottom hub surface, said apparatus comprising:

supporting means positioned around a periphery of said round hole of said base, said supporting means having a strip-shaped protrusion which extends above said bottom base surface;

gasket means arranged adjacent said strip-shaped protrusion of said supporting means and over said base for resiliently sealing the space between said bottom hub surface and said base; and

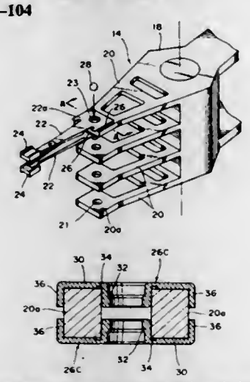
fixing means for securing said hub to said base to support said spindle motor assembly, said fixing means causing said bottom hub surface to directly contact said strip shaped protrusion.

5,602,698

APPARATUS FOR MOUNTING A MAGNETIC HEAD IN AN ACTUATOR ARM ASSEMBLY

Yukio Miyazaki, and Takuya Amemiya, both of Kawasaki, Japan, assignors to Fujitsu Limited, Japan

Filed Feb. 13, 1995, Ser. No. 387,223
Claims priority, application Japan, Mar. 17, 1994, 6-047164
Int. Cl.[6] G11B *21/16*
U.S. Cl. 360—104 1 Claim



1. An actuator arm assembly for a disk unit including a base, comprising:

an actuator arm having a first end, said actuator arm rotatably mounted on the base and defining a first hole at said first end;

a load beam having a first and second end, said load beam supporting a head at said first end and defining a second hole at said second end; and

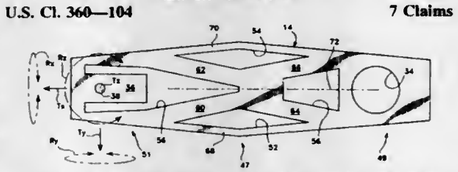
a spacer firmly secured to said second end of said load beam and fixedly caulked to said first end of said actuator arm, said spacer including a flat portion, a cylindrical portion integral with said flat portion, and an annular groove formed between said cylindrical portion and said flat portion, said spacer including a reinforcement rib integral to and having portions extending from at least two sides of a peripheral edge of said flat portion, so that said first end of said actuator arm is arranged between said portions of said rib extending from said at least two sides of said peripheral edge of said flat portion.

5,602,699

GIMBAL ASSEMBLY OF A MAGNETIC HEAD SUSPENSION

Amanullah Khan, Pleasanton, Calif., assignor to Read-Rite Corporation, Milpitas, Calif.

Filed Jun. 29, 1995, Ser. No. 496,581
Int. Cl.[6] G11B *5/60*
U.S. Cl. 360—104 7 Claims



1. A gimbal assembly of a magnetic head suspension comprising:

a polygon shaped flexure having a midsection, a proximate end section and a distal end section, said midsection decreasing in dimension toward said end sections, said flexure being symmetrical about a central axis passing from said proximate end section to said distal end section; and

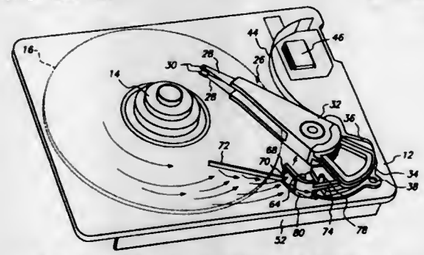
a pair of diamond-shaped cutouts formed in said midsection of said flexure, each of said cutouts being formed between an internal strut member and an external strut member, each of said strut members being elongated in shape, having a substantially uniform width, and angularly disposed with respect to said central axis.

5,602,700

AERODYNAMIC ACTUATOR-FILTER LATCH FOR HARD DISK DRIVE

Stephen Viskochil, Los Gatos, and Jonathan C. Hofland, San Jose, both of Calif., assignors to Quantum Corporation, Milpitas, Calif.

Filed Apr. 12, 1995, Ser. No. 421,593
Int. Cl.[6] G11B *5/54;21/22*
U.S. Cl. 360—105 11 Claims



1. An enclosed head and disk assembly of a hard disk drive including a base and a cover, at least one rotating data storage disk journalled to the base, a rotary voice coil actuator rotatably attached to the base for positioning a data transducer head at data storage locations defined on major surfaces of the rotating disk, an aerodynamic actuator filter-latch including a shaft and a rotating latch structure on the shaft, the latch structure including an airvane

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portion extending across the disk adjacent one of the major surfaces thereof, at least one portion of the actuator filter-latch structure including an air filter for removing minute particulate contaminants from air within the enclosed head and disk assembly, an actuator latch portion extending toward the rotary voice coil actuator, such that rotation of the data storage disk causes the latch structure to rotate to an actuator release position and results in airflow through the air filter, and a curved counter-balancing segment extending from the shaft and curving towards the actuator latch portion, the aerodynamic actuator filter-latch including a curved arm portion encapsulating a means for biasing the latch structure toward an actuator latch position in the absence of airflow.

5,602,701

HEAD ACTUATOR FOR MAGNETIC DISK DRIVE UNIT

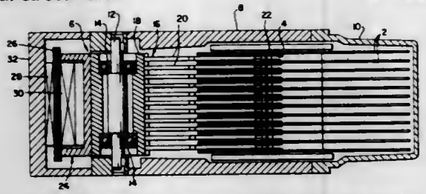
Yukihiro Komura; Yoshiaki Nagasawa; Katsuaki Ishida; Osamu Yamazaki, all of Kawasaki, and Tomoo Sukagawa, Higashine, all of Japan, assignors to Fujitsu Limited, Japan

Filed Feb. 24, 1995, Ser. No. 394,230

Claims priority, application Japan, Apr. 19, 1994, 6-080186

Int. Cl.[6] G11B *5/55;21/08*

U.S. Cl. 360—106 **6 Claims**



1. A head actuator for a magnetic disk drive unit having a housing, said head actuator comprising:

a carriage having a body, said body having a first and second side rotatably mounted to a shaft fixed to the housing, and an arm extending from said first side of said body substantially perpendicularly to said shaft, said arm being formed integrally with said body and having an end portion supporting a magnetic head, said carriage having a predetermined specific gravity;

a supporting member formed of a material selected from a group consisting of metal and metal alloy, said supporting member having a predetermined Specific gravity greater than said predetermined specific gravity of said carriage, said supporting member removably mounted to said body on said second side substantially opposite said arm with respect to said shaft, whereby the effect of an external mechanical force on rotation of the head actuator is reduced, thus improving track performance of said magnetic head; and

a coil fixed to said supporting member and receiving a driving force from a static magnetic field.

5,602,702

MAGNETIC RECORDING/REPRODUCING APPARATUS HAVING AN OFFSET HEAD CHIP

Takaaki Maegawa, Sakurai; Akio Kuroe; Taizou Hamada, both of Katano, and Hiroshi Kanchiku, Settsu, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Jul. 20, 1994, Ser. No. 277,841

Claims priority, application Japan, Jul. 22, 1993, 5-181131

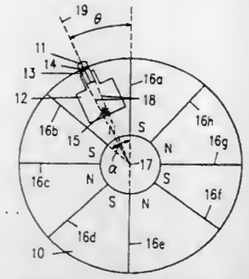
Int. Cl.[6] G11B *15/60;5/52;21/04;21/18*

U.S. Cl. 360—107 **7 Claims**

1. A magnetic recording/reproducing apparatus comprising:

a fixed cylinder;

a rotary cylinder rotatably supported by the fixed cylinder, the rotary cylinder including a disk-shaped magnet in which first areas having a first pole and second areas having a second pole opposite to the first pole are alternately arranged; and



a plurality of head chips attached to the rotary cylinder,

wherein the fixed cylinder has a stator coil for generating a magnetic force between the stator coil and the disk-shaped magnet, thereby rotating the rotary cylinder,

a first ahead chip among the plurality of head chips is placed on the rotary cylinder so that a first phase angle θ between a first virtual plane including a center of the head gap of the first head chip and a rotation axis of the rotary cylinder and one of the two polar boundary planes sandwiching an area the first areas and the second areas where which the virtual plane traverses satisfies $0.4\alpha \leqq \theta \leqq 0.6\alpha$, and

a second head chip among the plurality of head chips is placed on the rotary cylinder so that a second phase angle θ between a second virtual plane including a center of the head gap of the second head chip and a rotation axis of the rotary cylinder and one of the two polar boundary planes satisfies $\theta < 0.4\alpha$ or $\theta > 0.6\alpha$, where a central angle of the area is α.

5,602,703

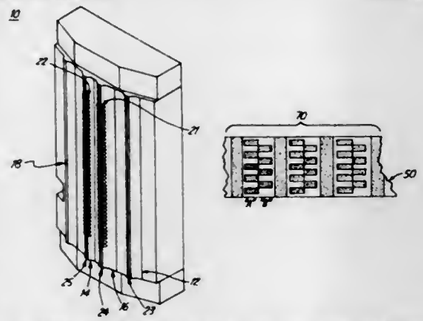
RECORDING HEAD FOR RECORDING TRACK-CENTERING SERVO SIGNALS ON A MULTI-TRACK RECORDING MEDIUM

John Moore, Mission Viejo, and Keith Larsen, Aliso Viejo, both of Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Dec. 27, 1994, Ser. No. 361,773

Int. Cl.[6] G11B *5/02;5/187;5/23*

U.S. Cl. 360—121 **39 Claims**



11. Apparatus for recording servo tracking signals on a multi-track recording medium, comprising:

a transducer having

a write head having a gap, the write head gap having a width across the full width of a plurality of tracks,

an erase head having an erase head gap, the erase head gap having a width approximately equal to the write head gap, the erase head having slots machined across the erase head gap to write an erase pattern, and

a read head responsive to a servo signal recorded on the medium; and

a controller operative to control the write head, the erase head and the read head to write a servo signal as a magnetic stripe across the full width of the plurality of tracks and write an erase pattern over the servo signal to form a servo burst pattern consisting of a plurality of servo bursts along the tracks formed solely of portions of the servo signal.

5,602,704

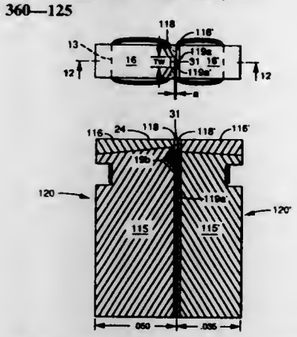
COMPOSITE METAL AND FERRITE HEAD TRANSDUCER AND MANUFACTURING METHOD THEREFOR

Beverly R. Gooch, Sunnyvale, and Rex Niedermeyer, Redwood City, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Continuation-in-part of Ser. No. 916,321, Jul. 17, 1992. This application Aug. 8, 1994, Ser. No. 287,459

Int. Cl.[6] G11B *5/245;5/255*

U.S. Cl. 360—125 **24 Claims**



9. A ring-type magnetic transducer for reproducing and/or recording high frequency magnetic signals via tracks in a magnetic medium and including a pair of abutting core sections each of said sections being formed of a magnetic substrate bonded to a non-magnetic cap and having core facing edges formed of abutting edges of said magnetic substrate and said non-magnetic caps; said core facing edges being parallel to and generally defining a magnetic gap, said non-magnetic caps including a medium bearing surface extending generally transverse to said core facing edges, each core section having a thin layer of high permeability magnetic material deposited over said facing edges to form a front magnetic transducing gap between generally the facing edges of the non-magnetic caps, at least one of said core facing edges including a winding window adjacent said medium bearing surface, and coil means extending through said window and about the magnetic substrate in generally parallel relation with said surface, the transducer comprising:

at least one of said core facing edges of a non-magnetic cap including a raised land formed thereon in confronting relation to the opposite core facing edge, said facing edges and the raised land of said cap generally defining said front magnetic transducing gap, wherein the width of the land on the non-magnetic cap defines generally the width of the tracks;

said thin layer of high permeability magnetic material being deposited over the raised land on the facing edge of the non-magnetic cap and the facing edge of the abutting core section to form said front magnetic transducing gap in the region of the thin film on the raised land of the non-magnetic cap and the facing edge of the abutting core section;

said caps having truncated wedge shapes which decrease in thickness from the outer ends thereof to define thinner ends towards the front gap, and wherein the depth of the facing edge of one non-magnetic cap is less than the depth of the facing edge of the other non-magnetic cap;

said facing edge and raised land of at least one non-magnetic cap having a minimized thickness of about 0.0002 to 0.003 inches which generally defines the front magnetic transducing gap depth at the start of head use; and

wherein the minimized thickness of the non-magnetic cap and the adjacent location of the winding window and of the thin film on the cap's raised land, and thus said depth of the front magnetic transducing gap, provides a short magnetic path and correspondingly decreased front magnetic transducing gap reluctance and an optimized efficiency for said ring-type magnetic transducer.

5,602,705

HEAD CLEANING DEVICE

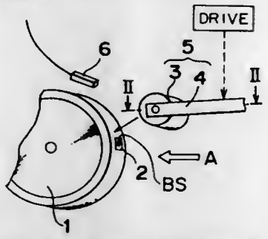
Norimoto Nouchi, Katano; Masaya Sakaguchi, Neyagawa; Hiroshi Yoda, Hirakata, and Yoshiaki Mizoh, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Continuation of Ser. No. 76,571, Jun. 14, 1993, Pat. No. 5,453,893. This application Apr. 5, 1995, Ser. No. 417,646

Claims priority, application Japan, Jun. 15, 1992, 4-154645; Dec. 22, 1992, 4-341915

Int. Cl.[6] G11B *5/41*

U.S. Cl. 360—128 **24 Claims**



1. A head cleaning device used for cleaning the circumference surface of a rotating magnetic head of a magnetic recording and reproducing apparatus to prevent and remove brown stain formed thereon, said device comprising:

cleaning roller means having a soft material, said soft material being impregnated with abrasive particles and a polymer resin such that the abrasive particles are distributed throughout the soft material and adhere to fibers on the surface and internal to the soft material by way of the polymer resin; and

support means for rotatably supporting said cleaning roller means along an axis thereof and pressing said cleaning roller means with a predetermined rotational resistance against the circumference surface of said magnetic head such that the circumference surface of the cleaning roller means cleans the surface of said magnetic head while said cleaning roller means is rotated by said magnetic head in rotation.

5,602,706

DOUBLE-CASSETTE-TYPE MAGNETIC RECORDING-REPRODUCTION APPARATUS

Hiroshi Kuranaga, and Hiroshi Furuhara, both of Higashihiroshima, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 28, 1995, Ser. No. 431,411

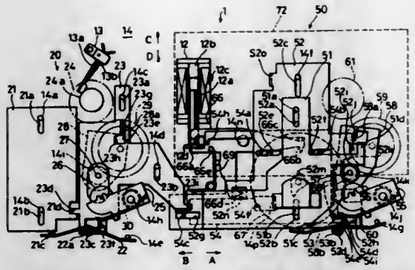
Claims priority, application Japan, Dec. 27, 1994, 6-326352

Int. Cl.[6] G11B *5/008;15/00;15/68;17/00*

U.S. Cl. 360—137 **15 Claims**

1. A double-cassette magnetic recording-reproduction apparatus comprising:

a first shifting member that engages a first-cassette-use magnetic head and that is shiftable in both an advancing and retracting manner to an operable position, so as to allow the first-cassette-use magnetic head to shift so that a magnetic tape in a first cassette is subject to at least a recording operation or a reproducing operation as well as to a retracted position so as



to allow the first-cassette-use magnetic head to shift in a reverse direction wherein the recording or reproducing operations are not available;

a second shifting member that engages a third shifting member and that is shiftable in both an advancing and retracting manner to an advanced position so as to place the third shifting member at an operable position so that a second-cassette-use magnetic head is shifted to effect at least a recording or reproducing operation with respect to a magnetic tape in a second cassette, as well as to a retracted position so as to place the third shifting member at an inoperable position so that the second-cassette-use magnetic head is shifted in a reverse direction to render the recording or reproducing operations inoperable, the second-cassette-use magnetic head being engaged by the third shifting member;

a shift-blocking member that is allowed to shift to a shift-blocking position so as to block the movement of the third shifting member toward the operable position by contacting the third shifting member, even when the second shifting member has shifted to an advanced position;

an operation-switching member that shifts in an advancing and retracting manner following the movement of the second shifting member, while engaging the second shifting member, and that is shiftable to a first position so as to allow the shift-blocking member to be shifted to the shift-blocking position, as well as allowing the first shifting member to be shifted to the operable position by contacting the first shifting member and by the resulting movement of the second shifting member to the advanced position, and to a second position so as to prohibit the shift-blocking member from being shifted to the shift-blocking position as well as prohibiting the first shifting member from being shifted to the operable position; and

driving means for shifting the second shifting member to the advanced position as well as to the retracted position and for shifting the operation-switching member to the first position as well as to the second position.

5,602,707

DETECTION OF TRANSFORMER HIGH SIDE FUSE OPERATIONS IN A POWER TRANSMISSION SYSTEM

Edmund O. Schweitzer, III, Pullman, Wash., and Jeffrey B. Roberts, Moscow, Id., assignors to Schweitzer Engineering Laboratories, Inc., Pullman, Wash.

Filed Oct. 20, 1995, Ser. No. 546,481

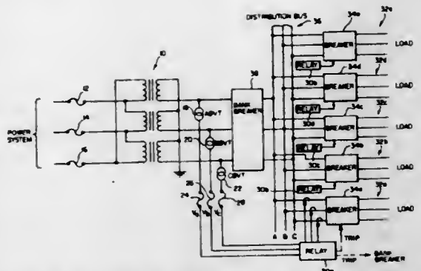
Int. Cl.[6] H02H *7/04*

U.S. Cl. 361—35 **4 Claims**

1. An apparatus for detecting the operation of a power voltage transformer high side fuse in a power transmission system, comprising:

means for monitoring the phase-phase voltages of the low side of the voltage transformer;

means for producing a signal for tripping a circuit breaker on the low side of the voltage transformer, if at least one phase-phase low side voltage approaches zero and other phase-phase low side voltages remain above a first threshold; and



means for preventing the tripping signal if all of the phase-phase low side voltages are above a second threshold, which is substantially less than the first threshold and also less than the expected value of said other phase-phase low side voltages when one high side fuse operates.

5,602,708

PROCESS AND DEVICE FOR ELECTRONICALLY MONITORING THE OVERLOAD ON ELECTRIC MOTOR DRIVES

Klaus Felgenhauer, Lahntal, Germany, assignor to Leica Mikroskopie und Systeme GmbH, Wetzlar, Germany

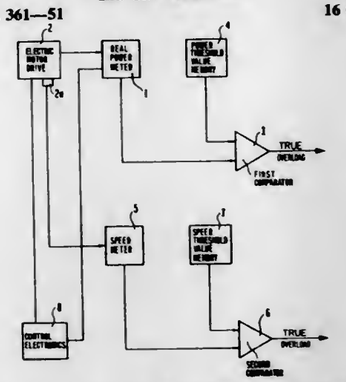
PCT No. PCT/DE93/00685, § 371 Date Mar. 14, 1995, § 102(e) Date Mar. 14, 1995, PCT Pub. No. WO94/07289, PCT Pub. Date Mar. 31, 1994

PCT Filed Aug. 5, 1993, Ser. No. 397,059

Claims priority, application Germany, Sep. 16, 1992, 42 30 873.9

Int. Cl.[6] H02H *3/00*

U.S. Cl. 361—51 **16 Claims**



1. A process for electronically monitoring an overload on an electric motor drive, comprising the steps of:

measuring an instantaneously consumed real power of the electric motor drive,

comparing the measured instantaneous real power consumption with a power threshold value which represents an overload state,

initiating a switching and/or warning signal if the power threshold value is exceeded,

measuring an instantaneous speed of the electric motor drive,

comparing the measured instantaneous speed of the electric motor drive with a speed threshold value which depends on a switching-on time of the electric motor drive and represents the overload state, and

producing an additional switching and/or warning signal, which is independent of the first switching and/or warning signal and has an identifier "overload", if the speed threshold value is greater than the measured instantaneous speed of the electric motor drive.

5,602,709

HIGH IMPEDANCE FAULT DETECTOR

Majid Al-Dabbagh, Wheelers Hill, Australia, assignor to Technisearch Limited, Australia

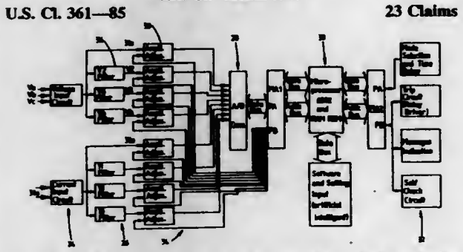
PCT No. PCT/AU93/00342, § 371 Date Mar. 16, 1995, § 102(e) Date Mar. 16, 1995, PCT Pub. No. WO94/01910, PCT Pub. Date Jan. 20, 1994

PCT Filed Jul. 9, 1993, Ser. No. 367,158

Claims priority, application Australia, Jul. 10, 1992, PL 3451

Int. Cl.[6] H02H *3/46*

U.S. Cl. 361—85 **23 Claims**



1. A method for detecting a high impedance fault or arcing phenomenon in an AC electrical distribution system having a fundamental frequency, comprising:

a. monitoring electrical signals in said electrical distribution system during a plurality of data acquisition periods;

b. isolating a plurality of predetermined frequency components from the monitored electrical signals within each data acquisition period, wherein each predetermined frequency component has a respective magnitude;

c. individually scaling the respective magnitudes of said predetermined frequency components according to selected scaling factors, wherein each predetermined frequency component is associated with a respective scaling factor;

d. comparing said scaled magnitudes of said predetermined frequency components from a first data acquisition period with the scaled magnitudes of said predetermined frequency components from a preceding data acquisition period; and

e. detecting the occurrence of a high impedance fault or arcing phenomenon on the basis of said comparison.

5,602,710

SURGE ARRESTER

Walter Schmidt, Bellikon, and Christoph Schüpbach, Dietikon, both of Switzerland, assignors to ABB Management AG, Baden, Switzerland

Continuation of Ser. No. 292,272, Aug. 18, 1994, abandoned. This application May 30, 1996, Ser. No. 656,853

Claims priority, application Switzerland, Sep. 6, 1993, 2640/93

Int. Cl.[6] H02H *9/04*; **H01C** *7/12;8/04*

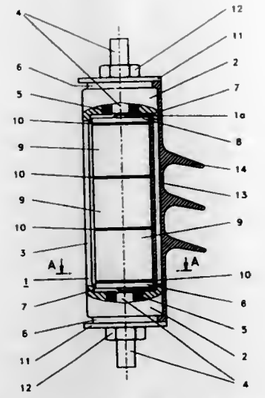
U.S. Cl. 361—127 **13 Claims**

1. A surge arrester comprising:

at least two connection fittings;

a one-piece frame, the frame having a top end piece, a bottom end piece, and at least two connecting pans extending transversely relative to the top end piece and the bottom end piece and connecting the top end piece and the bottom end piece, the top end piece, the bottom end piece, and the at least two connecting parts forming a closed loop, the connection fittings being beld in the top end piece and the bottom end piece of the frame, the frame being formed of an insulating material;

at least one block of varistor material clamped between the connection fittings;



an insulating material in which the frame, the at least one block of varistor material and at least part of the connection fittings are cast to form a monolithic body; and

means for maintaining a contact force between the connection fittings and the at least one block of varistor material.

5,602,711

APPARATUS FOR MONITORING INDUCTANCE

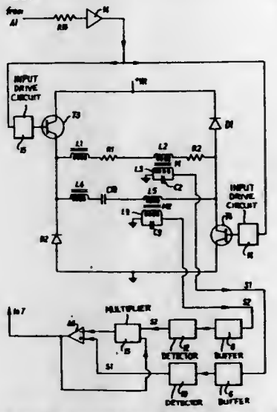
John F. Curtis, Brighton; Bhaichandra V. Jayawant, Kingston near Lewes, and Raymond J. Whorlow, Brighton, all of United Kingdom, assignors to British Nuclear Fuels plc, Warrington, United Kingdom

Continuation of Ser. No. 986,733, Dec. 8, 1992, abandoned. This application Nov. 23, 1994, Ser. No. 347,066

Claims priority, application United Kingdom, Jan. 3, 1992, 9200087; Oct. 20, 1992, 9222017

Int. Cl.[6] H02N *15/00*

U.S. Cl. 361—139 **20 Claims**



1. An apparatus for monitoring the inductance of a first coil which is not part of a resonant circuit including:

a second coil connected in series with the first coil;

a resonant circuit which is formed by connection of a capacitor to the second coil;

means for injecting into the circuit containing the first and second coils an a.c. signal of substantially constant peak voltage amplitude having a frequency within the resonance peak of the resonant circuit; and

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an amplitude detector for measuring the amplitude of the voltage across a component of the resonant circuit.

5,602,712

CONTACT CHARGING METHOD AND APPARATUS

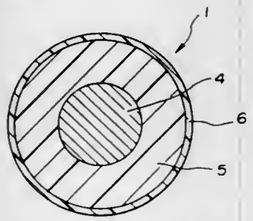
Hideharu Daifuku, Akishima; Yoshitomo Masuda, Hamura; Kinya Suzuki, Kodaira; Hiroshi Harashima, Kodaira; Hiroshi Kaneda, Kodaira; Yoshio Takizawa, Kodaira, and Takahiro Kawagoe, Tokorozawa, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Sep. 25, 1992, Ser. No. 951,117

Claims priority, application Japan, Sep. 27, 1991, 3-276704; Sep. 27, 1991, 3-276705; Sep. 27, 1991, 3-276706; Oct. 25, 1991, 3-306491; Aug. 5, 1992, 4-229168

Int. Cl.[6] G03G *13/05*

U.S. Cl. 361—225 **19 Claims**



8. A charger member for use in electrically charging an object by placing the charger member in abutment with the object to be charged and applying voltage therebetween,

wherein a conductive polymer is distributed at the abutment with the object, said conductive polymer being one of the group consisting of polyaniline, polypyrrole, polyfuran, polybenzene, and polyphenylene sulfide, and

wherein at least a portion of the charger member which is in abutment with the object to be charged predominantly comprises a polyurethane having a volume resistivity of 10^4 to 10^{12} Ω.cm, said conductive polymer being disposed on said polyurethane.

5,602,713

ELECTRONIC DELAY DETONATOR

Kazuhiro Kurogi, Nobeoka, and Tatsumi Arakawa, Yokohama, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

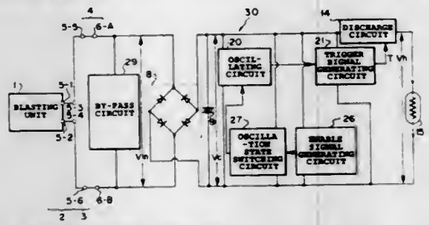
PCT No. PCT/JP95/00558, § 371 Date Mar. 28, 1996, § 102(e) Date Mar. 28, 1996, PCT Pub. No. WO95/33178, PCT Pub. Date Dec. 7, 1995

PCT Filed Mar. 27, 1995, Ser. No. 454,380

Claims priority, application Japan, May 31, 1994, 6-119281

Int. Cl.[6] F23Q *7/02*

U.S. Cl. 361—249 **13 Claims**



1. A delay detonator comprising:

first and second input terminals for receiving electrical energy supplied by a blasting unit;

a rectifying circuit having an input connected to at least one of said first and second input terminals;

an energy storing circuit connected to an output of said rectifying circuit;

an oscillating circuit for outputting oscillation pulses which operates based on storage energy stored in said energy storing circuit and which has a first transitory oscillation state in which the oscillation pulses are output immediately after said oscillating circuit starts to operate and a second steady oscillation state;

an enable signal generating circuit for detecting elapsed time relative to a time of starting the supply of electric energy by the blasting unit to generate an enable signal;

an oscillation state switching circuit for switching from said first oscillation state to said second oscillation state in response to the enable signal;

a trigger signal generating circuit for generating a trigger signal in response to a counted predetermined number of said oscillation pulses; and

a discharge circuit for discharging the stored electrical energy in response to the trigger signal.

5,602,714

IGNITION COIL FOR INTERNAL COMBUSTION ENGINE

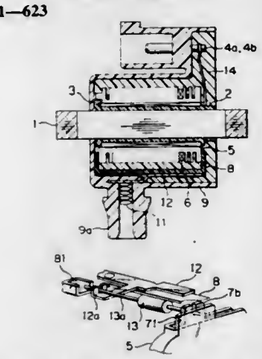
Takeshi Shimizu, and Takafumi Narishige, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 26, 1995, Ser. No. 451,161

Claims priority, application Japan, Jul. 19, 1994, 6-167072

Int. Cl.[6] F02P *3/02*

U.S. Cl. 361—623 **7 Claims**



1. An ignition coil for an internal combustion engine comprising:

a) a core;

b) a primary coil and a secondary coil arranged to create magnetic flux through said core;

c) a primary bobbin and a secondary bobbin mounting said coils to align said primary coil and said secondary coil;

d) an intermediate conductor fixed to said primary bobbin and said secondary bobbin;

e) a terminal fixed onto said primary bobbin or said secondary bobbin and connected to the coil of said primary coil or the secondary coil;

f) an electronic circuit element having a first lead connected electrically to said intermediate conductor and a second lead connected electrically to said terminal;

g) a case containing said respective components a–f; and

h) an insulating resin filled into said case, wherein the leads of said electronic circuit element is fixed to said intermediate conductor and said terminal by means of caulking or press fitting.

5,602,715

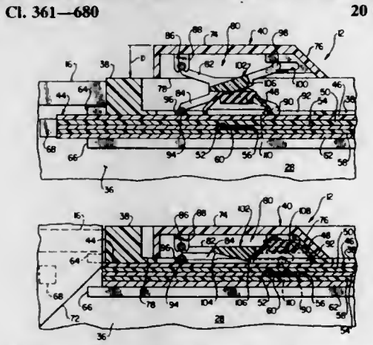
COLLAPSIBLE KEYBOARD STRUCTURE FOR A NOTEBOOK COMPUTER, RESPONSIVE TO OPENING AND CLOSING OF THE COMPUTER'S LID VIA RELATIVELY SHIFTABLE KEY SUPPORT MEMBER AND SHIFT MEMBER

Michael S. Lempicki, Cypress; Harold S. Merkel; Charles A. Sellers, both of Houston; Kevin F. Clancy, Spring, and Matthew L. Webb, Houston, all of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Continuation-in-part of Ser. No. 268,818, Jun. 30, 1994, Pat. No. 5,532,904. This application Mar. 4, 1996, Ser. No. 610,216

Int. Cl.[6] G06F *1/16;* **B41J** *11/56;* **H05K** *7/04;* **H01H** *13/02*

U.S. Cl. 361—680 **20 Claims**



1. A collapsible keyboard structure for a portable computer, comprising:

a key support structure having top and bottom sides;

a series of keys each carried on said top side of said key support structure for vertical movement relative thereto, through a vertical key stroke distance, between extended and retracted positions;

a base structure carried beneath said key support structure, having a top side facing said bottom side of said key support structure, and further having a sheet portion slidably disposed thereon, said base structure being attached to said key support structure; and

a spaced series of resilient key return members disposed on said sheet portion facing said top side of said base structure,

said key support structure and said sheet portion being horizontally shiftable relative to one another between a first position in which said key return members underlie and resiliently hold said keys in said extended positions thereof, each of said key return members being vertically compressed only when said key support structure and said sheet portion are in said first position and a corresponding one of said keys is moved between said extended and said retracted positions, and a second position in which said key return members permit said keys to be moved from said extended positions thereof to said retracted positions thereof without vertically compressing said resilient key return members.

5,602,716

Patent Not Issued For This Number

5,602,717

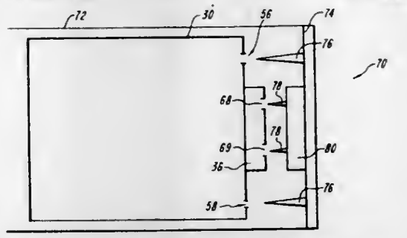
HOT-PLUGGABLE DATA STORAGE DEVICE HAVING VIBRATION ABSORBING AND MECHANICAL CONNECTOR ALIGNMENT

Eli Leshem, Brookline; Tuvia Leneman, Newton; Lee Specht, Billerica, and Ernest Sachs, Framingham, all of Mass., assignors to EMC Corporation, Hopkinton, Mass.

Filed Jul. 27, 1994, Ser. No. 281,308

Int. Cl.[6] G06F *1/16;* **H05K** *7/10*

U.S. Cl. 361—685 **22 Claims**



18. A mechanical connector alignment system, comprising:

a first removable device to be electrically connected to a second device, said first removable device including at least one electrical connector, said second device including at least one electrical connector disposed in mating relationship with at least one electrical connector on said first removable device;

one of said first and said second devices including at least one first alignment pin and the other one of said first and second devices including at least one first alignment pin aperture, said first alignment pin engaging with said first alignment pin aperture when said first removable device is electrically connected to said second device;

one of said first and said second devices including at least one second alignment pin, and the other one of said first and second devices including at least one second alignment pin aperture, said second alignment pin engaging with said second alignment pin aperture when said first removable device is electrically connected to said second device; and;

said first alignment pin engaging with said first alignment pin aperture prior to said second alignment pin engaging with said second alignment pin aperture and said second alignment pin engaging with said second alignment pin aperture prior to said at least one electrical connector on said first removable device engaging with said at least one electrical connector on said second device.

5,602,718

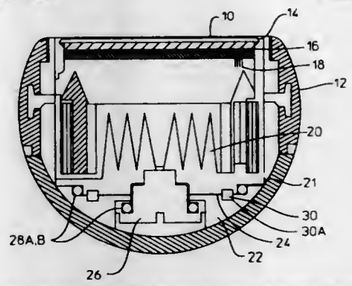
THERMAL SINK FOR A TRANSDUCER ASSEMBLY

Michael Peszynski, Newburyport, Mass., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 29, 1995, Ser. No. 536,412

Int. Cl.[6] H05K *7/20*

U.S. Cl. 361—704 **4 Claims**



1. A cooling system for cooling an ultrasound transducer assembly, the cooling system comprising:

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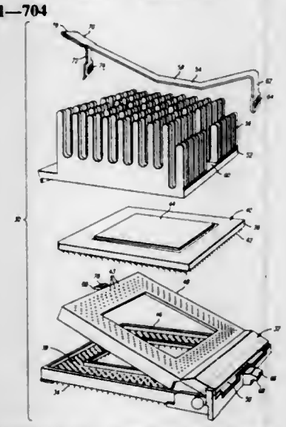
an ultrasound transducer assembly;
a housing enclosing the ultrasound transducer assembly;
a backing heat sink of thermally conductive material, having a first and a second surface, the first surface positioned adjacent the ultrasound transducer assembly, the backing heat sink being rotatable;
a fixed heat sink of thermally conductive material, having a first and a second surface, the first surface positioned proximate to the backing heat sink;
a thermal coupling media, positioned between the backing and the fixed heat sinks, being operative to promote heat transfer;
a ball bearing preload screw, being operative to fasten the backing heat sink, the fixed heat sink, and the transducer element as an assembly such that the thermal coupling media is between the backing and fixed heat sinks;
a first ball bearing, positioned proximate to the second surface of the backing heat sink and the first surface of the fixed heat sink; and
a second ball bearing, positioned proximate to the second surface of the fixed heat sink and the ball bearing preload screw.

5,602,719

NO HANDLE ZIP SOCKET

Michael Kinion, Hillsboro, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Nov. 13, 1995, Ser. No. 558,032
Int. Cl.[6] H05K *7/20*
U.S. Cl. 361—704 **10 Claims**



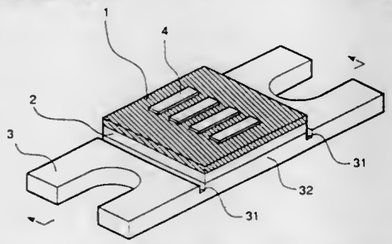
1. An electronic package asssembly, comprising:
a lower frame;
an upper frame pivotally connected to said lower frame;
a socket that is attached to said lower frame;
an electronic package that is attached to said upper frame and is coupled to said socket;
a heat sink that is located adjacent to said electronic package; and,
a clip that has a first end connected to said lower frame and a second opposite end connected to said upper frame, said clip extends across said heat sink to press said heat sink onto said electronic package, said second end of said heat sink has a handle portion that can be pulled to rotate said upper frame relative to said lower and decouple said electronic package from said socket.

5,602,720

MOUNTING STRUCTURE FOR SEMICONDUCTOR DEVICE HAVING LOW THERMAL RESISTANCE

Masuhiro Natsuhara, and Harutoshi Ukegawa, both of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jun. 23, 1994, Ser. No. 264,329
Claims priority, application Japan, Jun. 25, 1993, 5-179950
Int. Cl.[6] H05K *7/20*
U.S. Cl. 361—708 **11 Claims**



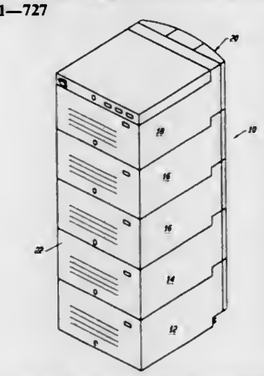
1. A structure for mounting a semiconductor device comprising:
a ceramic plate having a thermal conductivity equal to or higher than 120 W/mK, one surface of which is designed to mount the semiconductor device;
a heat sink joined to another surface of the ceramic plate, said heat sink formed of a copper or a copper based alloy plate having a thermal conductivity equal to or higher than 300 W/mK; and
a base member formed of a copper or a copper based alloy having a thermal conductivity equal to or higher than 100 W/mK on which the heat sink is mounted, wherein the heat sink has a thermal conductivity which is higher than the thermal conductivities of the ceramic plate and the base member.

5,602,721

EXPANDABLE MODULAR COMPUTER SYSTEM

Boyd Slade, Austin; Walter R. Carver, Round Rock; Brad D. Caramagno, and Henry S. Coleman, both of Austin, all of Tex., assignors to Tandem Computers, Cupertino, Calif.

Filed Dec. 22, 1995, Ser. No. 572,903
Int. Cl.[6] H05K *7/10;7/18;* **G06F** *1/16*
U.S. Cl. 361—727 **19 Claims**



1. An expandable computer system comprising a plurality of functional modules, each module having a housing with a top side, back side, front side, and bottom side, one of said top side and said bottom side having a first surface with at least one rail receptacle therein and the other of said top side and said bottom side having a first surface with at least one rail for sliding into a rail receptacle,

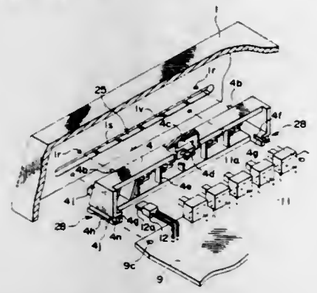
each of said top side and said bottom side having an electrical power receptacle, and a power cable within said housing for interconnecting the electrical power receptacles, whereby a plurality of functional modules can be stacked with a rail of one module engaging a receptacle in an abutting module, and electrical power transmitted between modules with each housing providing electromagnetic interference (EMI) shielding for the power cables.

5,602,722

ELECTRIC APPLIANCE, ITS ASSEMBLING METHOD, AND ITS HOUSING STRUCTURE

Kazuo Sanpei, and Tatsuo Yamauchi, both of Fukushima-ken, Japan, assignors to Hitachi Telecom Technologies, Ltd., Koriyama, Japan

Division of Ser. No. 127,568, Sep. 28, 1993, Pat. No. 5,461,543. This application Jun. 7, 1995, Ser. No. 479,640
Claims priority, application Japan, Sep. 28, 1992, 4-281094; Sep. 28, 1992, 4-281095; Sep. 28, 1992, 4-281096; May 18, 1993, 5-138922
Int. Cl.[6] H05K *5/00*
U.S. Cl. 361—730 **6 Claims**



1. An electric appliance comprising:
a case having a push button unit installation portion provided on a front face portion thereof;
a logic package including a plurality of electric keys and engagement hole portions; and
a push button unit including a main body, plurality of push buttons arranged in a left-to-right direction, push button connection pieces resiliently attaching the push buttons to the main body of the push button unit, and engagement portions for engaging with the engagement hole portions of the logic package,
wherein the push button unit engages the engaging hole portions of the logic package with the engagement portions such that front ends of the electric keys contacts the rear faces of the push buttons, and
wherein mounting the logic package within the case positions the push button unit adjacent to the push button unit installation portion of the case.

5,602,723

SUBRACK DEVICE

Tsutomu Takahashi; Hiroshi Yamaji; Hisao Hayashi; Shigeru Amagasa; Takashi Sato; Tomoyuki Hongoh; Tetsuya Takahashi, all of Kawasaki; Kouichi Namimatsu, Fukuoka; Kazuaki Kashiwada, Kawasaki; Kenji Joukou, Kawasaki, and Tetsuya Murayama, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Oct. 19, 1995, Ser. No. 545,460
Claims priority, application Japan, Mar. 6, 1995, 7-045907
Int. Cl.[6] H05K *7/14*
U.S. Cl. 361—800 **17 Claims**

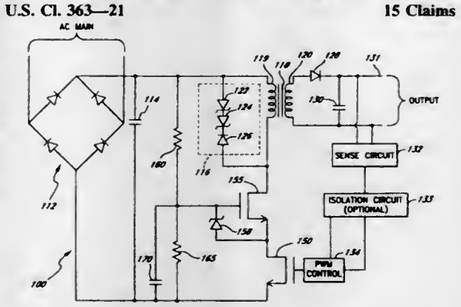
1. A subrack device comprising:
a subrack body comprising a chassis assembly and a back-wiring-board assembly, said subrack body having a circuit-board-unit housing portion in which a circuit-board-unit is accommodated and an outer-connecting-board mounting portion in which an outer-connecting-board is plugged, said outer-connecting-board mounting portion having a first connector; and
a circuit-board-unit which is accommodated in said circuit-board-unit housing portion of said subrack body, said circuit-board-unit being connected to said back-wiring-board assembly;
said outer-connecting-board having a second connector to be connected to said first connector, said outer-connecting-board being plugged in said outer-connecting-board mounting portion of said subrack body by connecting said second connector to said first connector;
said outer-connecting-board being selected from outer-connecting-boards having different functions and different outer connectors in response to said different functions.

5,602,724

LOW-COST, HIGH-VOLTAGE, FLYBACK POWER SUPPLY

Balu Balakrishnan, Saratoga, Calif., assignor to Power Integrations, Inc., Sunnyvale, Calif.

Filed Apr. 23, 1996, Ser. No. 636,312
Int. Cl.[6] H02M *3/335;3/24;5/42;* **H02H** *7/122*
U.S. Cl. 363—21 **15 Claims**



1. A power supply comprising:
a transformer comprising a primary winding, a core, and a secondary winding, said primary winding having a first terminal and a second terminal and said secondary winding having a first terminal and a second terminal;
a first transistor, said first transistor comprising a gate, a source and a drain, said first transistor having said drain connected to said first terminal of said primary winding;
a second transistor, said second transistor comprising a gate, a source and a drain, said second transistor having its drain connected to said source of said first transistor;

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a first Zener diode, said first Zener diode comprising an anode terminal and a cathode terminal, said anode terminal of said first Zener diode connected to said second terminal of said primary winding;

a second Zener diode, said second Zener diode comprising an anode terminal and a cathode terminal, said anode terminal of said second Zener diode connected to said cathode terminal of said first Zener diode;

a first diode, said first diode comprising an anode terminal and a cathode terminal, said cathode terminal of said first diode connected to said cathode terminal of said second Zener diode and said anode terminal of said first diode connected to said drain of said first transistor;

a first resistor, said first resistor comprising a first terminal and a second terminal, said first terminal of said first resistor connected to said anode terminal of said first Zener diode, said second terminal of said first resistor connected to said gate of said first transistor;

a second resistor, said second resistor comprising a first terminal and a second terminal, said first terminal connected to the gate of said first transistor and said second terminal connected to said source of second transistor;

a first capacitor, said capacitor comprising a first terminal and a second terminal, said first terminal of said first capacitor connected to said gate of said first transistor and said second terminal connected to said source of said second transistor;

a third Zener diode, said third Zener diode comprising an anode terminal and a cathode terminal, said anode terminal of said third Zener diode connected to said source of said first transistor and said cathode terminal of said third Zener diode connected to said gate of said first transistor;

a second diode, said second diode having an anode terminal and a cathode terminal, said anode terminal of said second diode connected to said first terminal of said secondary winding;

a second capacitor, said second capacitor having a first terminal and a second terminal, said first terminal of said second capacitor connected to said cathode terminal of said second diode and said second terminal of said second capacitor connected to said second terminal of said secondary winding;

a sense circuit having a first input from a said cathode of said second diode and a second input from said second terminal of said secondary winding; and

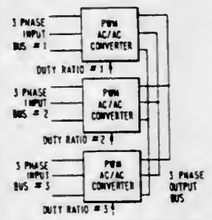
a pulse width modulation controller, said pulse width modulation controller receiving inputs from said sense circuit, said output of said pulse width modulation controller connected to said gate of said second transistor.

5,602,725

SPECIAL PURPOSE POWER CONTROL DEVICES USING 3-PHASE PWM CONVERTERS FOR THREE PHASE AC POWER

Giri Venkataramanan, Bozeman, Moot., assignor to The Research and Development Institute at Montana State University, Bozeman, Mont.

Filed Sep. 21, 1994, Ser. No. 309,355
Int. Cl.[6] H02M *5/45*
U.S. Cl. 363—37 **8 Claims**



1. Apparatus for providing custom power control for multi-phase AC power by transforming at least one characteristic of a multi-phase input AC voltage, comprising:

input terminals for receiving the multi-phase input AC voltage;

output terminals for outputting to a user an output AC voltage having at least one characteristic different from the multi-phase input AC Voltage;

a switching circuit with controllable duty ratio of operation connected to said input terminals for variably switching interconnections among said input terminals and said output terminals thereby to transform said at least one characteristic of the received multi-phase input AC voltage; and

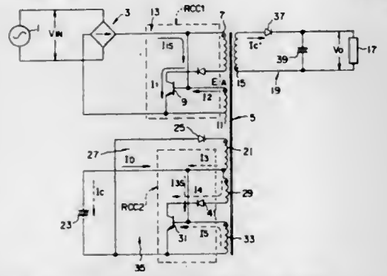
a control terminal supplying a control voltage to controllably change the duty-ratio of operation of said switching circuit thereby to transform said multi-phase input AC voltage to said output AC voltage outputted on said output terminals, wherein said switching circuit comprises pulse-width-modulated (PWM) gate-turn-off (GTO) devices for variably increasing and decreasing a magnitude of at least one phase of said multi-phase input AC voltage provided to said output terminals by varying duty ratios of operation thereof in response to said control voltage.

5,602,726

UNINTERRUPTIVE SWITCHING REGULATOR

Setuo Sakai, Suita, Japan, assignor to Nihon Protector Co., Ltd., Suita, Japan

Filed Feb. 14, 1996, Ser. No. 601,403
Claims priority, application Japan, Sep. 22, 1995, 7-244986
Int. Cl.[6] H02M *3/335*
U.S. Cl. 363—55 **1 Claim**



1. An uninterrupted switching regulator, comprising:

a rectifier circuit for rectifying an alternating current from an a.c. power supply;

a primary side circuit for developing a primary side high frequency pulse voltage through a primary side switching element in which a primary winding of a high-frequency transformer and the primary side switching element are connected in series to an output side of the rectifier circuit, and a switching primary winding for applying a switching control voltage to the primary side switching element is connected to the output side of the rectifier circuit;

a secondary side circuit for applying a d.c. output power to a load in which a rectifying and smoothing circuit is connected to a secondary winding of said high-frequency transformer;

a charge circuit connected in series to a first tertiary winding of the high-frequency transformer and including an electrical double layer capacitor or a secondary battery and a rectifying device; and

a discharge circuit in which a second tertiary winding connected in series to said first tertiary winding, a tertiary side switching element and said electrical double layer capacitor or secondary battery are connected in series to each other, and a switching tertiary winding for applying a switching control voltage to the tertiary side switching element is connected thereto, for developing a primary side high-frequency pulse discharge voltage from the discharge output of the electrical double layer capacitor or the secondary battery through said tertiary side switching element;

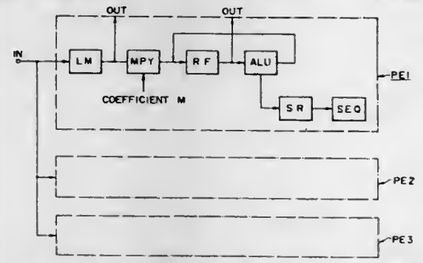
wherein an output is transmitted from the primary side and the tertiary side to the secondary side through, and said charge circuit operates when the output voltage of said rectifier circuit at the primary side exceeds a predetermined level, whereas said discharge circuit operates when it does not exceed the predetermined level.

5,602,727

IMAGE PROCESSOR

Noboru Kurokawa, and Tatsunobu Ando, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 13, 1994, Ser. No. 180,715
Claims priority, application Japan, Jan. 27, 1993, 5-011807
Int. Cl.[6] G05B *14/18;* **H04N** *1/40*
U.S. Cl. 364—131 **6 Claims**



1. An image processor including one or more general-purpose processor units, comprising:

a plurality of processor elements each having a product sum calculating function, each of said processor elements including a line memory for writing the data therein, a multiplier for multiplying the output data of said line memory, a register file for storing the multiplier output, and an accumulator for calculating the output of said register file;

connections for transferring data between said plurality of processor elements; and

input switching means disposed in respective preceding stages of the individual processing circuits so as to perform selection of data;

wherein the data in an arbitrary processing step of any one processor element can be transferred to an arbitrary processing step of any other processor element via said connections.

5,602,728

THREE BUTTON PROGRAMMABLE SPRINKLER CONTROLLER

Peter R. Madden, Cranleigh; Franciscus B. J. M. Beks, Crawley; Graham J. Nutt, Wallingford, all of United Kingdom, and Robert A. Caviar, Leawood, Kans., assignors to Watermation Group Ltd., Hants, England

Filed Sep. 7, 1994, Ser. No. 301,612
Int. Cl.[6] G05B *11/01*
U.S. Cl. 364—145 **10 Claims**

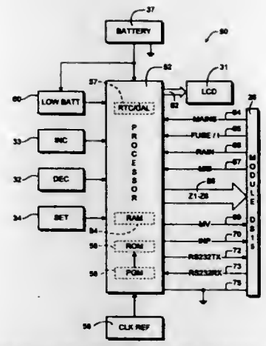
1. A programmable irrigation sprinkler controller module for controlling an irrigation sprinkler valve and comprising:

(a) a controller housing;

(b) an irrigation control processor mounted in said housing and including an input port, an output port, a display port, memory storing a menu based irrigation control program and irrigation control parameters, and a clock;

(c) a display device mounted in said housing and interfaced to said display port;

(d) a menu cycle switch operable to cycle among menus of said control program and to cycle among parameters within a current menu and a menu select switch operable to select a current menu and to select a parameter within a current menu,



said switches being mounted on said housing and interfaced to said input port of said processor;

(e) said output port being adapted for interfacing to an irrigation sprinkler valve for control of said valve by the presence of a selected logic state on said output port;

(f) said switches and said display cooperating with said control program to display menus enabling selection of irrigation control parameters to provide a timed sequence of logic states on said output port by execution of said control program in cooperation with said clock; and

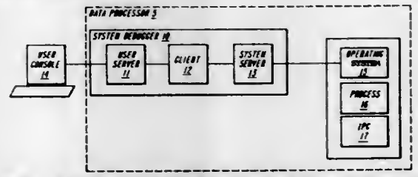
(g) a battery mounted in said housing, coupled to said processor, and providing a sole source of operating power for said processor and said display.

5,602,729

METHOD AND APPARATUS FOR MONITORING AND CONTROLLING MULTIPROCESSOR DIGITAL DATA PROCESSING SYSTEMS

Michael Krueger, Nashua, and Paul P. Pennell, Goffstown, both of N.H., assignors to Mercury Computer Systems, Inc., Chelmsford, Mass.

Filed Mar. 15, 1994, Ser. No. 213,982
Int. Cl.[6] G06F *11/30;11/00*
U.S. Cl. 395—704 **8 Claims**



1. In a multiprocessing digital data processor of the type having one or more functional units, each having at least one characteristic, each said functional unit being any of a processing element, an interconnect element, a process and an interprocess communication, wherein the characteristics of said functional units, together, comprise a first set of characteristics, the improvement for monitoring operation of said multiprocessing digital data processor, comprising

A. view planning means responsive to operator input for generating a view signal specifying a second set of said characteristics to be monitored during operation of said multiprocessing digital data processor, said second set of characteristics including one or more characteristics in said first set of characteristics,

B. bundle planning means responsive to operator input for generating a bundle signal specifying one or more of said functional units to be monitored during operation of said multiprocessing digital data processor,

C. runtime means, coupled to said functional units during operation of said multiprocessing digital data processor, for moni-

toring at least said specified functional units to generate an output signal representative of values of said second set characteristics,

D. said runtime means including

i. supervisor means for performing said monitoring of said specified functional units and for selectively generating said output signal to be representative of values of said second set characteristics for selected Ones of said specified functional units.

ii. user interface means, coupled to said Supervisor means, for responding to said output signal to generate a display of said second set characteristics for selected ones of said specified functional units,

iii. said supervisor means including delay means, responsive to delay in generation of said display by said user interface means, for decreasing an informational content of said output signal by at least one of

a. transmitting, in said output signal, fewer values of said second set of characteristics than the number of such values obtained by monitoring said specified functional units, and

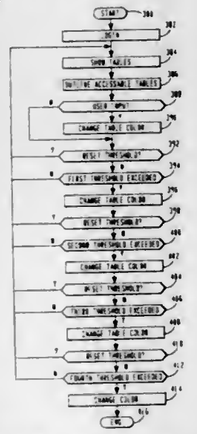
b. monitoring fewer ones of said specified functional units and generating said output signal to be representative of those fewer values.

5,602,730

RESTAURANT MANAGEMENT SYSTEM

James H. Coleman; Joe C. Davis, II, and Richard L. Morgan, all of Dallas, Tex., assignors to Altoc Corporation, Dallas, Tex.

Filed Dec. 7, 1994, Ser. No. 351,023
Int. Cl.[6] G06F *153/00*
U.S. Cl. 395—215 **10 Claims**



1. A restaurant management system, comprising:

an inventory system for containing restaurant items that can be delivered to a customer, each of said restaurant items having a unique preparation time associated therewith;

an order system for receiving an order from a customer and generated thereby to define desired ones of said restaurant items for supply to the customer, each of said orders defining a predetermined number of desired ones of said restaurant items for delivery to the ordering one of the customers;

a supply system for supplying said desired restaurant items to the one of said customers generating said order;

said order system operable to generate said orders, each with delivery time information associated with each of said associated desired restaurant items to define the relative time of delivery of each of said desired restaurant items relative to a given order to the ordering one of the customers;

a supply control system for controlling the time that said supply system retrieves said desired items from said inventory system for preparation thereof and the subsequent supply of the prepared restaurant items to each of said customers associated with a given one of said orders and in accordance with both said delivery time information associated with each of said given one of said orders and said preparation time for the associated restaurant items, wherein said supply control system determines the supply time; and

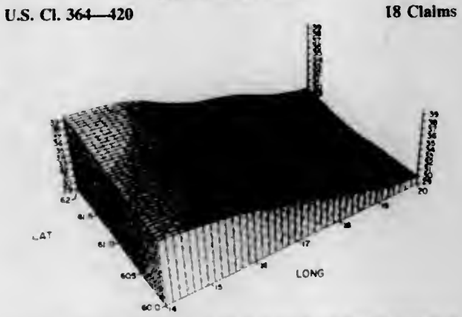
a remuneration system for collecting money for said desired items for a given one of said orders from the one of said customers associated with said given order.

5,602,731

METHOD FOR MAPPING SEA LEVEL UNDULATIONS WITH APPLICATIONS TO MINERAL AND HYDROCARBON PROSPECTING

Per-Gunnar Nordin, Lund, Sweden, assignor to Petroscan AB, Gothenburg, Sweden

Continuation of Ser. No. 622,553, Dec. 5, 1990, which is a continuation-in-part of Ser. No. 136,710, Dec. 22, 1987, Pat. No. 5,001,634, which is a continuation-in-part of Ser. No. 946,428, Dec. 23, 1986, abandoned. This application Mar. 26, 1996, Ser. No. 624,880
Int. Cl.[6] G06F *19/00*
U.S. Cl. 364—420 **18 Claims**



7. A method of making for an area a map or representation of regional variations in the position of the sea surface that are caused by variations in the force of gravity, said map or representation indicating density variations in the sea floor and being intended primarily for use in the determination of part areas of the sea floor with increased probabilities of deposits of natural resources, where upward bends in the sea surface from the sea floor indicating part areas where the force of gravity is stronger than that of the surroundings, and downward bends in the sea surface towards the sea floor indicating part areas where the force of gravity is somewhat less than that of the surroundings, said method comprising:

(a) obtaining height values which indicate the sea surface heights in relation to a reference level and which have been calculated by means of altimeter data measured from a satellite and from information about the orbits of the satellite during measurement of the altimetry data;

(b) sorting out incorrect and improbable height values;

(c) adjusting height values corresponding to different orbits of the satellite to one another;

(d) amplifying variations in the data obtained by step (c) which have a selected spread; and

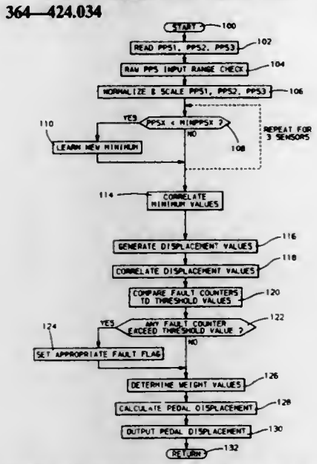
(e) correcting the data obtained by step (d) in respect of interference from water depth.

5,602,732

FAULT TOLERANT DISPLACEMENT DETERMINATION METHOD

Gary A. Nichols, Farmington Hills, and James D. Yegerlehner, South Lyon, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 21, 1994, Ser. No. 361,089
Int. Cl.[6] B60K *41/04*; G01M *15/00*
U.S. Cl. 364—424.034 **12 Claims**



1. A method for determining displacement of a movable part, comprising the steps of:

for each of a plurality of displacement transducers, (a) providing a displacement signal from the displacement transducer, (b) diagnosing fault conditions in the displacement transducer, (c) establishing a fault severity value indicating a degree of severity of any diagnosed fault condition, and (d) calculating an adjusted displacement signal as a predetermined function of the provided displacement signal and the fault severity value; and

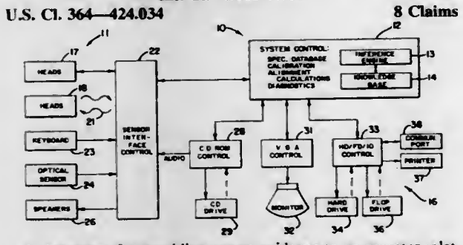
determining displacement of the movable part by combining the adjusted displacement signals for the plurality of displacement transducers.

5,602,733

AUTOMOTIVE SERVICE EQUIPMENT EXPERT SYSTEM

Steven W. Rogers; James L. Dale, Jr.; Alan D. Casby, all of Conway, and Jean O. W. de Bellefeuille, Maumelle, all of Ark., assignors to FMC Corporation, Chicago, Ill.

Continuation of Ser. No. 160,467, Dec. 1, 1993, abandoned, which is a continuation of Ser. No. 811,510, Dec. 20, 1991, abandoned. This application May 19, 1995, Ser. No. 444,447
Int. Cl.[6] G06F *19/00*
U.S. Cl. 364—424.034 **8 Claims**



1. Apparatus for providing expert guidance to an operator relating to adjustment of a wheel alignment condition existing in an automotive suspension through operation of an automotive service equipment wheel alignment system providing automotive suspension condition indicative outputs comprising:

knowledge base means for providing rules relating to procedures for adjustment of the wheel alignment condition;

inference engine means for operating on said knowledge base rules and said automotive suspension condition indicative outputs and for producing instruction signals for guidance of adjustment of the wheel alignment condition;

a system controller connected to receive said instruction signals;

means connected to said system controller for displaying expert guidance messages and operator prompts for guidance of adjustment in accordance with said instruction signals;

means for storing identity of and occurrence of system procedural errors committed by an operator of the automotive service equipment wheel alignment system;

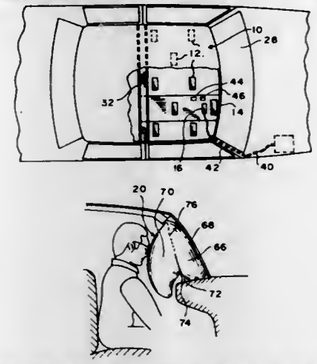
and means for identifying and for communicating to the operator corrective action and procedural changes to avoid said system procedural errors.

5,602,734

AUTOMOBILE AIR BAG SYSTEMS

Philip W. Kithil, Santa Fe, N.M., assignor to Advanced Safety Concepts, Inc., Santa Fe, N.M.

Filed Sep. 23, 1994, Ser. No. 311,576
Int. Cl.[6] B60R *21/32*
U.S. Cl. 364—424.055 **23 Claims**



1. Motor vehicle air bag system, for inflation and deployment of an air bag in front of a passenger in a motor vehicle during a collision, said motor vehicle having a passenger compartment for at least one passenger in said motor vehicle, said passenger compartment also having an interior roof, and having a windshield at the forward end of said passenger compartment, and having a passenger seat for said passenger, said air bag system comprising:

(a) an air bag;

(b) inflation means, connected to said air bag, for inflating said air bag with a gas;

(c) passenger sensor means, for continuously sensing position of said passenger, with respect to said passenger compartment, and for generating electrical output indicative of said position of said passenger;

(d) vehicle angular orientation sensor means, for sensing angular orientation of said vehicle, and for generating electrical output indicative of said angular orientation of said vehicle; and

(e) microprocessor means, electrically connected to said passenger sensor means, to said vehicle angular orientation sensor means, and to said inflation means, for comparing and performing an analysis of said electrical outputs from said passenger sensor means and said vehicle angular orientation sensor means, and for activating said inflation means to inflate and deploy said air bag, when said analysis indicates that said vehicle is involved in a collision and that deployment of said air bag would likely reduce a risk of serious injury to said passenger which would exist absent deployment of said air bag and likely would not present an increased risk of injury to said passenger resulting from deployment of said air bag.

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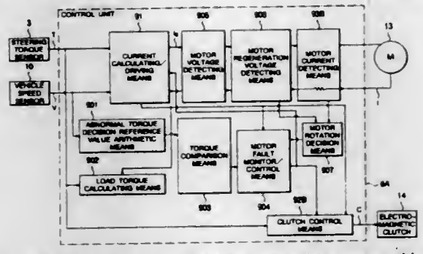
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5,602,735

CONTROL APPARATUS FOR MOTOR-DRIVEN POWER STEERING SYSTEM IN WHICH POWER SUPPY TO AN ELECTRIC CLUTCH IS REDUCED UPON DETECTION OF A MALFUNCTION

Shunichi Wada, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 13, 1994, Ser. No. 322,544
Claims priority, application Japan, Oct. 26, 1993, 5-267453
Int. Cl.[6] B62D *5/04*
U.S. Cl. 364—424.051 **48 Claims**



1. In a motor-driven power steering system for a motor vehicle which includes vehicle speed detecting means for detecting a vehicle speed of said motor vehicle, steering torque detecting means for detecting a steering torque applied to a steering mechanism of said motor vehicle, and an electric motor operatively coupled to said steering mechanism through the medium of coupling effort control means, wherein an assist torque is applied to said steering mechanism by driving said electric motor in dependence on said vehicle speed,

an apparatus for controlling said motor-driven power steering system, comprising:

abnormal torque decision reference value arithmetic means for determining an abnormal torque decision reference value which corresponds to the vehicle speed detected by said vehicle speed detecting means;

load torque arithmetic means for arithmetically determining a load torque on the basis of at least a steering torque detected by said steering torque detecting means;

torque comparison means for comparing said load torque with said abnormal torque decision reference value; and

motor fault monitor/control means for stopping operation of said electric motor when said load torque exceeds said abnormal torque decision reference value while decreasing the coupling effort of said coupling effort control means wherein said coupling effort control means comprises an electric clutch and wherein when the coupling effort of said coupling effort control means is decreased, said electric clutch assumes a semi-coupling state.

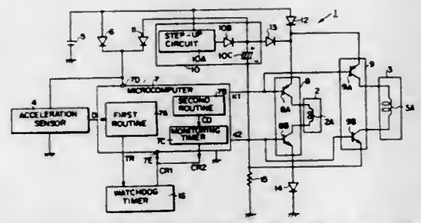
5,602,736

VEHICLE SAFETY SYSTEM EQUIPPED WITH MICROCOMPUTER

Takaaki Toya; Hideyuki Kaneko; Masaru Odashima; Akira Ogawa, all of Tomioka; Tetsuo Fujishima, Fujisawa; Shuzo Fukuzumi, and Junichi Ando, both of Zama, all of Japan, assignors to Airbag Systems Co., Ltd, Gumma, and Nissan Motor Company, Ltd., Yokohama, both of Japan

Filed Dec. 20, 1994, Ser. No. 359,993
Claims priority, application Japan, Dec. 27, 1993, 5-347021
Int. Cl.[6] B60R *21/00*
U.S. Cl. 364—424.055 **10 Claims**

1. A vehicle safety system having a sensor for detecting vehicle acceleration and a microcomputer for processing the sensor output and in which the microcomputer executes a collision discrimination program on an interrupt basis at prescribed regular time intervals based on the sensor output for discriminating whether or not a collision has occurred and repeatedly executes a background



program for processing prescribed background jobs, thereby controlling activation of the vehicle safety devices, the system further comprising:

first monitoring means for monitoring whether or not the collision discrimination program is being properly executed based on whether or not the time for executing one program cycle of the collision discrimination program is longer than a prescribed value,

a second monitoring means for monitoring whether or not the background program is being properly executed based on whether or not the time for executing one program cycle of the background program is longer than a prescribed value, and

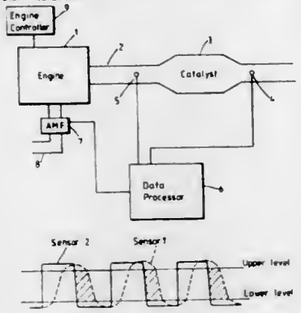
reset means for resetting the microcomputer when at least one of the first and second monitoring means detects an error in program execution.

5,602,737

METHOD OF AND APPARATUS FOR MONITORING OPERATION OF A CATALYST

Hector Sindano, Redditch, and Paul W. Birkett, Birmingham, both of England, assignors to Lucas Industries Public Limited Company, Solihull, England

Filed Aug. 1, 1994, Ser. No. 282,483
Claims priority, application United Kingdom, Jul. 31, 1993, 9315918
Int. Cl.[6] G06G *7/70;* **F01N** *3/00*
U.S. Cl. 364—431.61 **11 Claims**



1. A method of monitoring operation of a catalyst acting on an exhaust gas of an internal combustion engine, said method comprising the steps of:

(a) perturbing an oxygen concentration of the exhaust gas entering the catalyst between a first oxygen rich concentration and a second oxygen deficient concentration;

(b) forming an integral of the oxygen concentration of the exhaust gas leaving the catalyst during a period starting when the oxygen concentration of the exhaust gas entering the catalyst changes from the first oxygen rich concentration to the second oxygen deficient concentration and ending when the oxygen concentration of the exhaust gas leaving the catalyst falls below a third oxygen deficient concentration;

(c) forming a measure of flow of the exhaust gas through the catalyst during the period in which the integral is being formed; and

(d) correcting the integral for the measure of the exhaust gas flow so as to provide a measure of the performance of the catalyst;

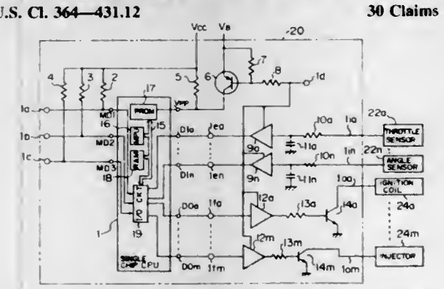
wherein the exhaust gas of the internal combustion engine is controlled by an engine management system such that the oxygen concentration of the exhaust gas entering the catalyst repeatedly alternates between the first and second oxygen concentrations.

5,602,738

CONTROL APPARATUS FOR AUTOMOBILE ENGINE INCLUDING MICROCOMPUTER WHICH MAY BE PROGRAMMED AFTER MOUNTING ON A CIRCUIT BOARD

Shoji Sasaki, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 647,564, Jan. 29, 1991, abandoned.
This application Oct. 27, 1993, Ser. No. 141,703
Claims priority, application Japan, Feb. 1, 1990, 2-020416
Int. Cl.[6] G06F *19/00;13/00;* **G11C** *17/18*
U.S. Cl. 364—431.12 **30 Claims**



1. A control apparatus for controlling an internal combustion engine of an automobile, said control apparatus comprising:

a circuit board having a plurality of input terminals and a plurality of output terminals;

a microcomputer mounted on said circuit board and having an input and an output, said input adapted for connection via a first one of said input terminals to a sensor, external to said circuit board, which senses an operating condition of the automobile, said output adapted for connection via one of said output terminals to an actuator, external to said circuit board, for controlling an operating condition of said internal combustion engine in accordance with the sensed operating condition;

program memory means in said microcomputer for storing a control program to control said microcomputer;

write control means mounted on said circuit board and responsive to a Write control signal from said microcomputer, for controlling said program memory means to permit writing of the control program into said program memory means;

input means mounted on said circuit board and connected to a second one of said input terminals for receiving from a source, external to said circuit board, the control program to be written into said program memory means when said program memory means is under control of said write control means; and

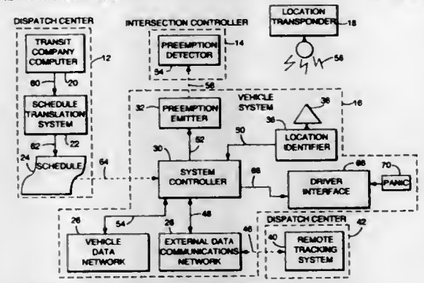
isolation means mounted on said circuit board, connected to said microcomputer, to said first one of said input terminals, and to said one of said output terminals, and responsive to the write control signal, for electrically isolating said microcomputer from the sensor and the actuator when said write control means is controlling said program memory means, to inhibit input of signals from the sensor and output of signals to the actuator during writing of the control program into said program memory means.

5,602,739

VEHICLE TRACKING SYSTEM INCORPORATING TRAFFIC SIGNAL PREEMPTION

Jeffrey D. Haagenstad, Roseville; Steven M. Hamer, Willernie; Ronald A. Hagen, Grant Township; Edmund J. Ring, Circle Pines; Kim K. Christopher, Woodbury, and Theodore B. Keyes, St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 73,880, Jun. 9, 1993, abandoned.
This application Nov. 22, 1995, Ser. No. 562,352
Int. Cl.[6] G08G *1/07*
U.S. Cl. 364—436 **12 Claims**



1. A vehicle tracking system comprising:

vehicle position identifying means for determining a position of a tracked vehicle and for producing therefrom vehicle position information;

vehicle schedule means for providing vehicle schedule information, wherein the vehicle schedule information includes a vehicle route comprised of a plurality of vehicle stops and a corresponding plurality of scheduled arrival times;

controller means for receiving the vehicle schedule information and for receiving the vehicle position information, and further for comparing the vehicle position information with the vehicle schedule information and for producing therefrom vehicle status information regarding whether the tracked vehicle is on schedule, whether the tracked vehicle is off the vehicle route, and whether the tracked vehicle skipped any of the vehicle stops; and

traffic signal preemption means, connected to receive the vehicle status information, for requesting preemption of traffic signals based on the vehicle status information.

5,602,740

OBJECTIVE POSITION INFORMATION SUPPLYING METHOD IN NAVIGATION SYSTEM, AND NAVIGATION SYSTEM

Sumio Nishiyama, Tokyo-to, Japan, assignor to Pioneer Electronic Corporation, Tokyo-to, Japan

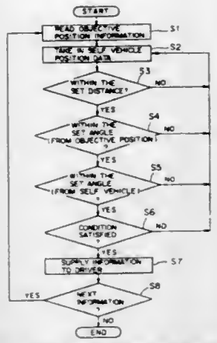
Filed May 4, 1995, Ser. No. 434,684
Claims priority, application Japan, May 13, 1994, 6-100285
Int. Cl.[6] G06F *15/50;* **G01C** *21/00*
U.S. Cl. 364—449.1 **14 Claims**

1. An objective position information supplying method in a navigation system of detecting a present position of a self vehicle, comprising the steps of:

judging whether or not a distance between the detected present position and an objective position is within a predetermined distance set for each of objections positions, which include a position scheduled to pass therethrough and a position scheduled to arrived thereat;

judging whether or not a direction to the detected present position from the objective position is within a first angle range, which is selected in advance for each of the objective positions, said first angle range being relative to a direction of the self vehicle entering each of the objective positions, said selected first angle range being stored in a memory device as first angle range data for each of the objective positions;

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judging whether or not a direction to the objective position from the detected present position is within a second angle range, which is set with respect to an advance direction of the self vehicle at the detected present position; and

supplying a predetermined kind of information as for the objective position to a driver if the judged distance is within the predetermined distance, if the judged direction to the detected present position is within the first angle range, and if the judged direction to the objective position is within the second angle range.

5,602,741

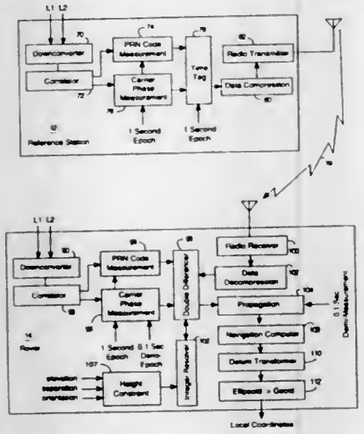
CENTIMETER ACCURATE GLOBAL POSITIONING SYSTEM RECEIVER FOR ON-THE-FLY REAL-TIME KINEMATIC MEASUREMENT AND CONTROL

Nicholas C. Talbot, Cupertino; Michael T. Allison, Santa Clara, and Mark E. Nichols, Sunnyvale, all of Calif., assignors to Trimble Navigation Limited, Sunnyvale, Calif.

Continuation of Ser. No. 199,387, Feb. 18, 1994, Pat. No. 5,579,620. This application May 10, 1996, Ser. No. 644,422

Int. Cl.° G01S *3/02;5/02;* **G06F** *165/00*

U.S. Cl. 364—449.7 **9 Claims**



1. A system, comprising:

a reference station (**12**, **126**) including a GPS satellite navigation receiver and measurement means (**70**, **72**, **74**, **76**) connected to output (**19**, **128**) single carrier frequency code and phase measurements from a fixed location;

a rover unit (**14**, **130**) including a GPS satellite navigation receiver and measurement means (**90**, **92**, **94**, **96**) connected to output (**132**) single carrier frequency code and phase measurements from a movable vehicle and including an output for position determinations;

double-differencing means (**98**) connected to receive phase and code measurement information transmitted from the reference station and rover unit and then difference said measurement information to subtract out satellite-common and receiver-common clock errors, wherein substantially unbiased phase and code measurement information is output;

integer ambiguity resolution means (**106**) connected to the double-differencing means and including integer search means for searching carrier frequency phase and code measurements using a search tree of integer candidates that provides for a list of the best candidates and that provides for the resolution of the correct integer candidate, wherein a unique solution for whole-cycle carrier phase ambiguity is provided for kinematic or static initialization;

a navigation computer (**108**) connected to receive said unbiased phase and code measurement information and to provide an output of near-continuous position estimates of the rover unit; and

robotic control means (**134**) connected to receive said near-continuous position estimates from the navigation computer in the rover unit for servo-controlling a remote-controlled vehicle according to a plurality of comparisons made between said near-continuous position estimates and a predetermined construction model of ideal positions for said remote-controlled vehicle.

5,602,742

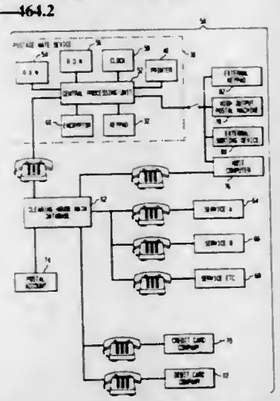
POSTAGE METERING SYSTEM

Leonard I. Solondz, 28 Fordham Rd., Livingston, N.J. 07039, and Roger C. Gore, 2156 Buttonwood Plain, Scotchplains, N.J. 07076

Filed Jan. 10, 1995, Ser. No. 370,845

Int. Cl.° G07B *17/00*

U.S. Cl. 364—464.2 **19 Claims**



1. A postage management system enabling the use of one of a plurality of carriers, said system for imprinting postage on postal and private courier parcels and envelopes, said system having a central processing unit (CPU), an operating system, and a user communications link, said postage management system comprising:

an embedded program in said CPU having a permanent portion and a configurable portion thereof, said configurable portion, in turn, comprising

a postage rate database in said configurable portion with postal costs for a plurality of parcel and envelope configurations for each said carrier;

a postage service database in said configurable portion with specifications for a plurality of parcel and envelope configurations for each said carrier;

a management program in said configurable portion enabling the selection of one of said plurality of carriers based on predetermined parameters;

communications interface enabling, in cooperative functional relationship with said management program, the purchasing of postage through a clearing house; and,

said permanent portion, in turn, further comprising:

a rate comparator program in functional cooperation with said management program, providing optimization of services.

5,602,743

METHOD FOR DATA INPUT INTO A POSTAGE METER MACHINE, ARRANGEMENT FOR FRANKING POSTAL MATTER AND FOR PRODUCING A FRANKING DESIGN RESPECTIVELY ALLOCATED TO A COST CENTER

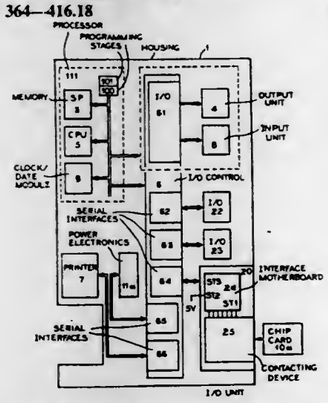
Claus Freytag, Berlin, Germany, assignor to Francotyp-Postalia AG & Co., Birkenwerder, Germany

Continuation of Ser. No. 181,408, Jan. 13, 1994, Pat. No. 5,490,077. This application May 18, 1995, Ser. No. 444,266

Claims priority, application Germany, Jan. 20, 1993, 43 02 097.6; Apr. 16, 1993, 43 12 894.7

Int. Cl.° G07B *17/00*

U.S. Cl. 364—416.18 **6 Claims**



1. A postage meter apparatus comprising:

a processor, a program memory accessible by said processor, a non-volatile memory accessible by said processor, and a printer controlled by said processor;

first means for entering data into first memory locations of said non-volatile memory including a keyboard which is manually actuatable for placing said postage meter apparatus either in an operating condition or a non-operating condition, and a clock module operable independently of whether said apparatus is in said operating or non-operating condition;

second means for entering data into second memory locations, different from said first memory locations, in said non-volatile memory including single means for reading data from an external memory, separate from said postage meter apparatus;

control means for automatically, selectively loading stored tabular data from said external memory, via said single means for reading data, into an automatically selected memory location of said non-volatile memory only in the presence of at least two of a plurality of conditions in said selected memory locations of said non-volatile memory;

said control means including means for retrieving said tabular data from selected locations of said external memory only upon the presence of said at least two conditions in said memory locations of said non-volatile memory; and

said control means including data means in communication with said first means for entering data and with said non-volatile memory for generating condition data, said condition data being fetched from each of said locations of said non-volatile memory and said clock module by said control means and said control means including means for analyzing said condition data in combination with said tabular data for determining if said at least two selected conditions are present.

5,602,744

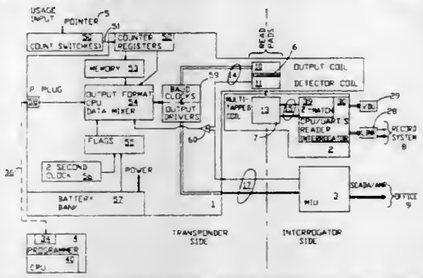
UNIVERSAL SEND/RECEIVE UTILITY USAGE DATA GATHERING SYSTEM

Jean L. Meek, 22871 County Rd. 448, Lindale, Tex. 75771, and J. Travis Sparks, 15708 Timberhill Dr., Flint, Tex. 75762

Filed Sep. 29, 1994, Ser. No. 315,142

Int. Cl.° G06F *17/00;* **G06G** *7/48*

U.S. Cl. 364—464.22 **17 Claims**



3. A method of operating a universal send/receive utility usage data gathering system having a foreign transponder unit and a universal reader/interrogator unit, capable of passing radiated electromagnetic signals between each other; the foreign transponder unit capable of generating internal software interrupts, responding to external usage pulse interrupts and interrogation signal interrupts, and providing transponder data streams; the universal interrogator unit capable of providing interrogation signals, responding to the transponder data streams, internally storing the transponder data streams, having a read trigger capable of providing a start read signal, and necessary communication ports or displays for transferring or reading stored transponder data streams; comprising the interrogator unit steps of:

a) waiting for the start read signal;

b) transmitting an interrogation signal to the foreign transponder;

c) waiting for the transponder data stream;

d) determining the type of transponder and the corresponding pattern of interrogator unit response;

e) generating the required emulation protocol;

f) transmitting the emulated interrogation signal;

g) waiting for the transponder data stream response;

h) permanently storing the transponder data stream for later retrieval or display; and

i) returning to step (a).

5,602,745

FUEL DISPENSER ELECTRONICS DESIGN

Hans B. Atchley, Greensboro, and John J. Ronchetti, Sr., Kernersville, both of N.C., assignors to Gilbarco Inc., Greensboro, N.C.

Filed Jan. 18, 1995, Ser. No. 374,127

Int. Cl.° B67D *5/08;5/06;5/22;* **B60S** *5/02*

U.S. Cl. 364—464.23 **48 Claims**

1. A fuel dispenser for installation in a service station equipped with a dispenser control console comprising

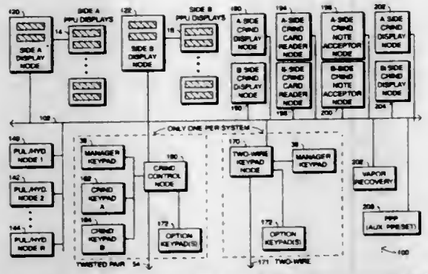
a housing,

a pump to pump fuel through said housing.

a fuel flow meter in said housing,

a switch actuable to indicate fuel is to be pumped through said housing,

a display on said housing to display the amount of fuel pumped through said housing, and



a plurality of microcontroller nodes for dispenser control and a communications bus each said microcontroller node connected to said communications bus and including a controller to control a dispenser function, a first node associated with said switch, pump and fuel flow meter, a second node associated with said display, and a third node associated with a data link to the dispenser control console,

said microcontroller nodes communicating with others of said microcontroller nodes through said communications bus,

whereby a user may indicate fuel is to be pumped by actuating said switch and generating a signal to said first node, with said first node activating said pump and communicating fuel amount data onto said communications bus, said second node responding to fuel amount data on said bus to display the amount of fuel pumped, and said third node generating a signal to communicate the fuel amount data to the dispenser control console.

5,602,746

METHOD OF DRYING PRINTING MATERIAL

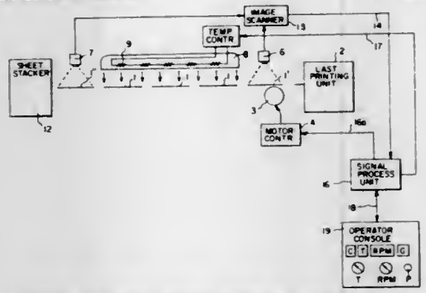
Gerhard Löffler, Walldorf, Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberger, Germany

Filed Jan. 27, 1995, Ser. No. 379,715

Claims priority, application Germany, Jan. 27, 1994, 44 02 338.3

Int. Cl.[6] B41F *5/06*

U.S. Cl. 364—469.01 **6 Claims**



1. Method for treating printing material, according to which the printing material is conveyed through a printing machine by conveying means, according to which, there is provided a device for treating the surface of the printing material, the surface-treating device being disposed in the transport path and effecting changes of the outer dimensions of the printing material, the method which comprises:

obtaining, by means of two image detecting arrangements, image signals in the transport path before and behind the surface-treating device for the surface of the printing material,

processing the image signals within a control unit controlling the operational processes influencing the printed image, and

determining quantitatively with the control unit the required changes of the outer dimensions on the basis of the image signals.

5,602,747

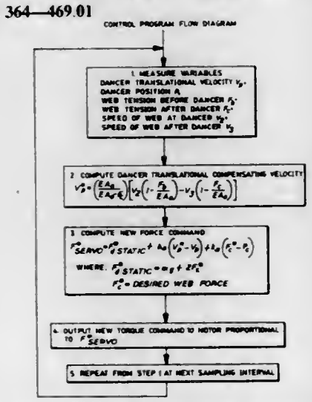
CONTROLLING WEB TENSION BY ACTIVELY CONTROLLING VELOCITY OF DANCER ROLL

Gregory J. Rajala, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Division of Ser. No. 382,110, Jan. 31, 1995. This application Jun. 2, 1995, Ser. No. 459,193

Int. Cl.[6] G06F *19/00;* **B65H** *59/38*

U.S. Cl. 364—469.01 **25 Claims**



1. Processing apparatus for advancing a continuous web of material through a processing step wherein the web experiences an average dynamic tension along a given section of the web, the processing apparatus comprising:

(a) a dancer roll operative for controlling tension on the respective section of web;

(b) actuating means (i) for applying a first static force component to the dancer roll, through the first static force component having a first value and direction, and balancing the dancer roll against the average dynamic tension in the respective section of the web, the dancer roll being passively responsive, through the first static force component, to thereby compensate for changes in web tension lasting greater than about 10 seconds in duration, and (ii) for applying a second variable force component to the dancer roll, the combination of the first static force component and the second variable force component comprising a net actuating force; and

(c) a computer controller, connected to the actuating means, the computer controller being adapted for controlling the net actuating force imparted to the dancer roll by the actuating means, and for adjusting the value and direction of the second variable force component at least 1 time per second, each such value and direction of the second variable force component replacing the previous such value and direction of the second variable force component, and acting in combination with the first static force component to impart a net translational velocity to the dancer roll, the second variable force component having a second value and direction, modifying the first static force component, such that net translational velocity of the dancer roll is controlled by the net actuating force.

5,602,748

AREA MACHINING METHOD

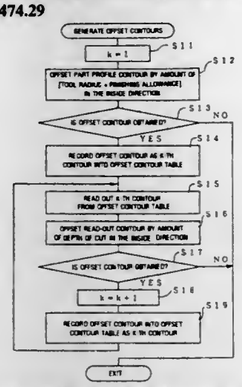
Masaki Seki, Tokyo; Takashi Takegahara, Hachioji; Shigetoshi Takagi, and Shinya Nakamura, both of Yamanashi, all of Japan, assignors to FANUC Ltd., Japan

Filed Jan. 24, 1995, Ser. No. 377,402

Claims priority, application Japan, Feb. 17, 1994, 6-020473

Int. Cl.[6] G06F *19/00;* **G06G** *7/64;7/66*

U.S. Cl. 364—474.29 **9 Claims**



1. An area machining method of removing portions within a specified optional area in a workpiece, using an automatic programming apparatus comprising the steps of:

setting a part profile contour and a plurality of machining conditions;

obtaining an outmost offset contour which is offset from said part profile contour by at least an amount of a tool radius in an inside direction, and obtaining a plurality of additional offset contours which are offset sequentially from said outmost offset contour by an amount of a depth of cut in the inside direction;

obtaining a plurality of insufficient cut portion contours each of which is produced between adjacent said plurality of offset contours and represents contours of uncut workpiece portions between said adjacent offset contours; and

outputting a plurality of tool paths each of which connects between corresponding said adjacent offset contours and between each of said offset contours and each of corresponding said insufficient cut portion contours with a shortest distance, thereby removing said uncut workpiece portions.

5,602,749

METHOD OF DATA COMPRESSION AND APPARATUS FOR ITS USE IN MONITORING MACHINERY

Frederick Vosburgh, Vienna, Va., assignor to MTC, Fairfax, Va.

Filed Jan. 12, 1995, Ser. No. 372,046

Int. Cl.[6] G06F *15/20*

U.S. Cl. 364—474.16 **24 Claims**

1. A method for monitoring machinery comprising the steps of:

a. collecting sensor signals from said machinery, said sensor signals each having a time stamp;

b. converting said sensor signals into digital time domain data;

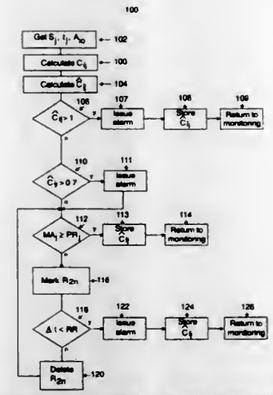
c. transforming said digital time domain data into frequency domain data, which both together comprise processed data;

d. comparing said processed data against alarm threshold values to determine an alarm condition;

e. forming data records of said processed data and said time stamps;

f. comparing said processed data to data retention rules which increase the density of data storable as said sensor signals approach said alarm threshold;

g. storing said data records in memory storage means; and



h. selectively removing certain of said stored data records in order to permit greater spacing between data records of lower level signals than that of higher level signals.

5,602,750

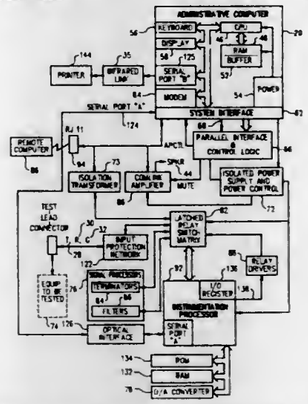
ADMINISTRATIVE COMPUTER AND TESTING APPARATUS

David Severt, Spokane, Wash.; George Siegner, Post Falls; Daren Upchurch, Coeur D'Alene, both of Id., and William Erler, Spokane, Wash., assignors to Itronix Corporation, Spokane, Wash.

Division of Ser. No. 709,033, May 31, 1991. This application Jan. 10, 1995, Ser. No. 370,327

Int. Cl.[6] G01R *31/302*

U.S. Cl. 364—481 **47 Claims**



1. Apparatus for providing results of electrical tests correlated with location information, comprising:

a central processing unit;

a memory, coupled to the central processing unit;

a display, coupled to the central processing unit, for displaying information relating to the location of equipment to be tested

a keyboard, coupled to the central processing unit, for receiving user commands to control the display;

a serial port, coupled to the central processing unit, for transmitting serial data signals;

an instrumentation processor, coupled to the serial port to permit communication via the serial data signals between the administrative computer and the instrumentation processor;

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a plurality of selectable signal processing devices having inputs and outputs;

a plurality of test lead connectors;

a plurality of controllable relay switches for selectably connecting the test lead connectors to the inputs of the signal processor devices and for selectably connecting the outputs of the signal processing devices to the serial port for transmitting the results of electrical tests obtained through the test lead connectors to the administrative computer;

the plurality of relay switches being coupled to the instrumentation processor to permit the instrumentation processor to control the controllable relay switches in response to serial data signals received over the serial port from the administrative computer.

5,602,751

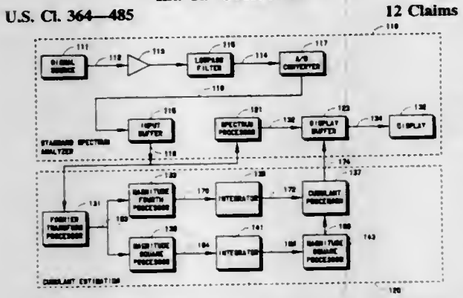
METHOD AND APPARATUS FOR SPECTRUM ANALYSIS BY COMPLEX CUMULANTS

David J. Edelblute, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 28, 1995, Ser. No. 395,549

Int. Cl.[6] G01R *23/00*

U.S. Cl. 364—485 **12 Claims**



11. An apparatus for measuring a frequency spectrum by complex cumulants comprising:

means for receiving an input signal having a frequency bandwidth and a power distribution from a signal source generating said input signal;

means for lowpass filtering said input signal;

means for digitizing said input signal at a sample rate appropriate to said frequency bandwidth of said input signal to form a series of digitized samples;

means for forming an input buffer from said series of digitized samples;

means for spectrum analyzing said input buffer to form a spectrum portion of a display buffer;

means for Fourier transforming said input buffer to form a series of complex frequency coefficients;

means for magnitude squaring said series of complex frequency coefficients to form a magnitude squared series;

means for integrating said magnitude squared series to form an integrated magnitude squared series;

means for squaring said integrated magnitude squared series to form a normalizing series;

means for computing a fourth power of said series of complex frequency coefficients to form a magnitude fourth power series;

means for integrating said magnitude fourth power series to form an integrated magnitude fourth power series;

means for forming complex cumulants from said integrated magnitude fourth power series and said normalizing series;

means for forming a cumulants portion of said display buffer from said complex cumulants; and

means for displaying said display buffer as a plot of said spectrum portion and a plot of said cumulants portion.

5,602,752

SELF-LEARNING METHOD AND APPARATUS FOR DYNAMIC SYSTEM CHARACTERISATION AND SIMULATION

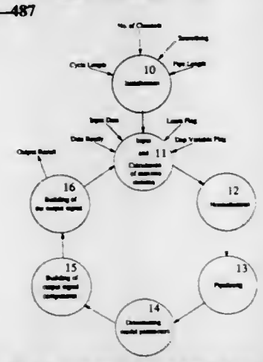
Ljubomir Jankovic, 81 Pershore Road, Kings Norton, Birmingham, B30 3EL, England

Filed Sep. 9, 1994, Ser. No. 303,382

Claims priority, application United Kingdom, Sep. 11, 1993, 9318875

Int. Cl.[6] G01R *19/04*

U.S. Cl. 364—487 **8 Claims**



1. A method for obtaining a characterisation of a dynamic process having a plurality (n) of independent input variables and a dependent output variable, such method including the step of deriving and storing in each of a plurality (m) of cycles of each of the independent input variables:

(a) mid-point values of the independent input variable during the corresponding cycles;

(b) values dependent on the maximum value of the dependent output variable during the corresponding cycles:

(c) values dependent on the value of each independent input variable for which the dependent output variable was at a maximum in the corresponding cycles;

(d) values dependent on the value of each independent input variable for which the dependent output variable was at a minimum in the corresponding cycles;

and also deriving and storing a plurality of values of a base level of the dependent output variable derived at the end of each cycle from the most recent mid-point value of the dependent output variable, the most recent mid-point value of each independent input variable and the averages of the stored mid-point values of each of the independent input variables over the preceding m cycles, and the step of applying all such stored values over the preceding m cycles to the values of the independent input variables to synthesise a signal representing said dependent output variable.

5,602,753

METHOD AND APPARATUS FOR ESTIMATING POWER DISSIPATION AND METHOD AND APPARATUS OF DETERMINING LAYOUT/ROUTING

Masahiro Fukui, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 18, 1995, Ser. No. 423,844

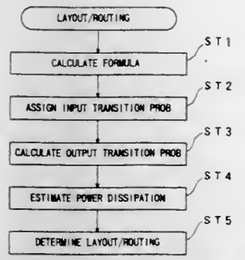
Claims priority, application Japan, Apr. 19, 1994, 6-080044

Int. Cl.[6] G06F *17/50*

U.S. Cl. 364—459 **10 Claims**

1. A method of estimating power dissipation in an electrical circuit comprising two or more elements connected together, an input line coupled to said element to receive input signals, and an output line coupled to said element to provide output signals, said power dissipation estimating method comprising:

a first step of finding, based on a product obtained by multiplying a probability that an input signal to a first element makes a transition by a probability that a corresponding output signal



from said first element makes a transition in response to a change in said input signal, a formula by which said output signal transition probability is expressed as a function of said input signal transition probability;

a second step of assigning a predetermined input signal transition probability to an input signal;

a third step of finding, when said input signal having said predetermined transition probability is applied to said electrical circuit, a probability that a corresponding output signal from said element makes a transition, by making use of said formula, wherein said formula is used to first find, from a probability that an input signal to a first element of said elements makes a transition, a probability that a corresponding output signal from said first element makes a transition, and then to find, from a probability that an input signal to a second element of said elements makes a transition, or from said output probability that a corresponding output signal from said second element makes a transition; and

a fourth step of estimating said power dissipation by multiplying said input signal transition probability by said input line's load and multiplying said output signal transition probability by said output line's load, and by summing together products found.

5,602,754

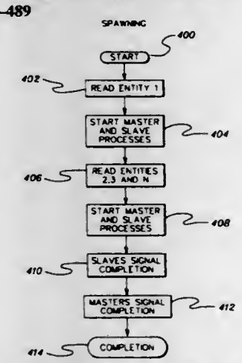
PARALLEL EXECUTION OF A COMPLEX TASK PARTITIONED INTO A PLURALITY OF ENTITIES

Harry J. Beatty, Clinton Corners; Peter C. Elmendorf, Kingston; Roland R. Gillis, Ulster Park, and Ira Pramanick, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 347,641, Nov. 30, 1994. This application May 30, 1995, Ser. No. 453,681

Int. Cl.[6] G06F *17/50;13/00*

U.S. Cl. 364—489 **10 Claims**



1. A system for performing static timing analysis on a logic design comprising a plurality of logic circuits, said system comprising:

means for partitioning said logic design into a first entity and means for partitioning the first entity into a second entity, said first entity comprising a first portion of logic circuits and said second entity comprising a second portion of logic circuits;

means for starting a first master process and a first slave process for said first entity and a second master process and a second slave process for said second entity, wherein the first and second master processes of the first and second entities together form a hierarchical arrangement of processes in said system, the hierarchical arrangement of processes having the second master process subservient to the first mast process therein;

means for establishing a communication path between said first slave process and said second slave process, wherein said first slave process and said second slave process directly communicate with one another independent of their respective master processes, the hierarchical arrangement of processes thereby having at least one pair of slave processes from different levels thereof in direct communication with each other; and

means for performing timing operations for said first portion of logic circuits using said first slave process and for said second portion of logic circuits using said second slave process, said timing operations indicating a performance of said logic design.

5,602,755

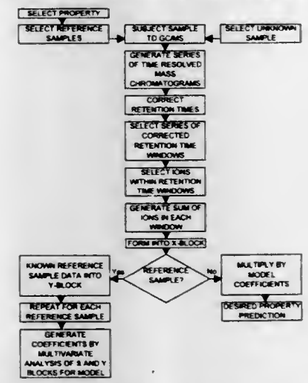
METHOD FOR PREDICTING CHEMICAL OR PHYSICAL PROPERTIES OF COMPLEX MIXTURES

Terrence R. Ashe, Point Edward; Jeffrey D. Kelly; Tian C. Lau, both of Scarborough, and Ronald T.-K. Pho, Richmond Hill, all of Canada, assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Jun. 23, 1995, Ser. No. 494,201

Int. Cl.[6] G06F *17/00*

U.S. Cl. 364—498 **10 Claims**



1. A method for predicting physical, perceptual, performance or chemical properties of a complex hydrocarbon mixture which comprises:

(a) selecting at least one property of the hydrocarbon mixture;

(b) selecting reference samples, said reference samples containing characteristic compound types present in the complex hydrocarbon mixture and which have known values of the property or properties selected in step (a);

(c) producing a training set by the steps of:

(1) injecting each reference sample into a gas chromatograph which is interfaced to a mass spectrometer thereby causing at least a partial separation of the hydrocarbon mixture into constituent chemical components;

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(2) introducing the constituent chemical components of each reference sample into the mass spectrometer, under dynamic flow conditions;
(3) obtaining for each reference sample a series of time resolved mass chromatograms;
(4) calibrating the mass chromatograms to correct retention times;
(5) selecting a series of corrected retention time windows;
(6) selecting within each retention time window a series of molecular and/or fragment ions, said ions being representative of characteristic compounds or molecular classes expected within the retention time window;
(7) recording the total amount of each characteristic compound or compound group selected in step c(6);
(8) forming the data from steps c(6) and c(7) into a X-block matrix;
(9) forming the data selected in (a) for reference samples selected in (b) into a Y-block matrix;
(10) analyzing the data from steps c(8) and c(9) by multivariate correlation techniques including Partial Least Squares, Principal Component Regression, or Ridge Regression to produce a series of coefficients;
(d) subjecting an unknown hydrocarbon mixture to steps c(1) to c(3) in the same manner as the reference sample to produce a series of time resolved mass chromatograms;
(e) repeating steps c(4) to c(8) for each mass chromatogram from step (d);
(f) multiplying the matrix from step (e) by the coefficients from step c(10) to produce a predicted value of the property or properties.

5,602,756

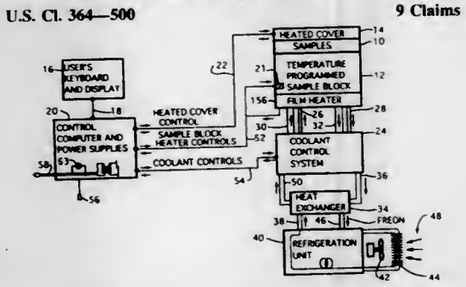
THERMAL CYCLER FOR AUTOMATIC PERFORMANCE OF THE POLYMERASE CHAIN REACTION WITH CLOSE TEMPERATURE CONTROL

John G. Atwood, West Redding; Albert C. Mossa, Trumbull; Lisa M. Goven, Bridgeport; Fenton Williams, Brookfield; Timothy M. Woudenberg, Bethel, all of Conn.; Marcel Margulies, Scarsdale, N.Y.; Robert P. Ragusa, Newton, Conn.; Richard Leath, Berkley, and Clive Miles, San Rafael, both of Calif., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Continuation of Ser. No. 871,264, Apr. 20, 1992, Pat. No. 5,475,610, which is a continuation-in-part of Ser. No. 620,606, Nov. 29, 1990, abandoned, and Ser. No. 670,545, Mar. 14, 1991, abandoned. This application Dec. 8, 1995, Ser. No. 569,606

Int. Cl.[6] G06G *7/58*

U.S. Cl. 364—500 **9 Claims**



1. A method for computer control of automated performance of polymerase chain reactions in at least one sample tube containing a known volume of liquid sample mixture by means of a computer-controlled thermocycler including a computing apparatus, a sample block having at least one well for said at least one sample tube, a block temperature sensor thermally coupled to said sample block, and heating and cooling means controlled by said computing apparatus for changing the temperature of said sample block, comprising the steps of

a. reading by said computing apparatus via said temperature sensor the block temperature at predetermined times,
b. determining by said computing apparatus the temperature of said liquid sample mixture as a function of the temperature of said sample block over time, and
c. controlling said heating and cooling means as a function of said sample temperature by said computing apparatus

wherein said step of determining the temperature of said liquid sample comprises the steps of

(i) determining a first thermal time constant for said at least one sample tube and said volume of liquid sample mixture,
(ii) determining a second thermal time constant for said block temperature sensor, and
(iii) determining the sample temperature in a sample interval at a current time n according to the formula

$$T_{samp_n}=T_{samp_{n-1}}+(T_{B_n}-T_{samp_{n-1}})*t_{interval}/\text{tau}$$

where t_{samp_n} is equal to the sample temperature at time n, the time at said current sample interval, $T_{samp_{n-1}}$ is equal to the sample temperature at an immediately preceding sample interval having occurred at time n−1, T_{B_n} is equal to the block temperature at time n, $t_{interval}$ is a time in seconds between sample intervals, and tau is said first thermal time constant minus said second thermal time constant.

5,602,757

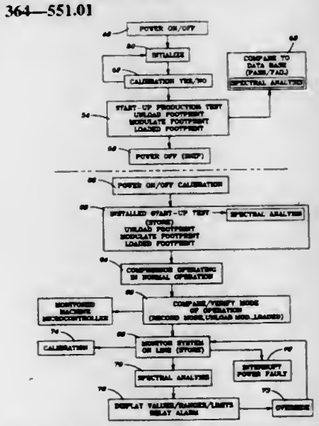
VIBRATION MONITORING SYSTEM

Robert K. Haseley, Mooresville, and Paul A. Kirkpatrick, Charlotte, both of N.C., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Oct. 20, 1994, Ser. No. 326,448

Int. Cl.[6] G06F *11/32;17/14*

U.S. Cl. 364—551.01 **21 Claims**



21. A predictive vibration monitoring system comprising:

a compressor to be monitored, the compressor having at least one operational state and at least one rotative element, each of the at least one rotative elements adapted to generate a benchmark vibration signature for each compressor operational state, and an operational vibration signature;
a microcontroller;
at least one sensor operatively connected to the compressor, the at least one sensor generating a signal corresponding to motion of the at least one rotative element, the at least one sensor inputting the signal to the microcontroller;

a signal filter means, which communicates with the at least one sensor, for preconditioning the signal, and for suppressing signals generated from outside the predictive vibration monitoring system;
communication means for enabling the microcontroller to correlate a predetermined operational state of the monitored compressor with a signal generated by the at least one sensor;
memory means, communicating with the microcontroller, for storing a predetermined logic routine, at least one signal, each of the benchmark signatures for each of the at least one rotative elements; and at least one predetermined key frequency of the at least one rotative element of the compressor to be monitored;
a means for inputting user selected data into the microcontroller;
the microcontroller utilizing the predetermined logic routine which executes a fast Fourier transform algorithm to process the signal into a corresponding operational vibration signature of the monitored compressor, the microcontroller comparing the corresponding operational vibration signature with both the benchmark vibration signature and at least one predetermined key frequency to determine the present, and to predict the future condition of the at least one rotative element, the microcontroller interacting with the microprocessor of the monitored compressor such that the microcontroller communicates predetermined operational commands to the monitored compressor in response to the determined present condition, and the predicted future condition, of the at least one rotative element; and
means for displaying the corresponding operational vibration signature.

5,602,758

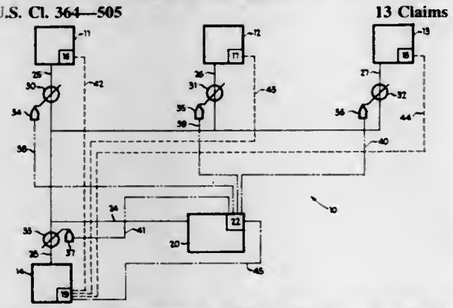
INSTALLATION LINK-UP PROCEDURE

Larry A. Lincoln, Milpitas; Robert M. Russ, Los Altos Hills, both of Calif.; William W. Bassett, Wheaton, Ill.; Nir Merry, Albany, and Thomas L. Webster, Piedmont, both of Calif., assignors to Gas Research Institute, Chicago, Ill.

Continuation-in-part of Ser. No. 7,203, Jan. 22, 1993, abandoned. This application Jan. 26, 1995, Ser. No. 378,514

Int. Cl.[6] F25B *29/00*

U.S. Cl. 364—505 **13 Claims**



1. A method for establishing the link-up of components in an indoor environmental conditioning system for spaces, the method comprising:

a. providing each space with a separately controllable indoor environmental conditioning input;
b. connecting each indoor environmental conditioning input to an indoor environmental conditioning source;
c. connecting a control apparatus to the indoor environmental conditioning source;
d. providing each space with an environmental status sensor;
e. operably connecting the control apparatus with each of the sensors;
f. communicating the identity of each of the sensors, one at a time, to the control apparatus;
g. assigning, in succession, a separate designation to each of the sensors;
i. communicating each separate designation to the control apparatus;
j. placing the indoor environmental conditioning system into an initial inactive condition;
k. actuating at least one of the indoor environmental conditioning inputs;
l. actuating the indoor environmental conditioning source;
m. monitoring the spaces to determine which of the spaces receives indoor environmental conditioning;
n. operably linking the indoor environmental conditioning sensor, in the space which received conditioning, with the respective means for actuating at least one of the respective indoor environmental conditioning inputs, which were actuated to cause environmental conditioning in the specific space; and
o. repeating steps j. through n. until a desired number of the indoor environmental conditioning sensors and respective ones of the indoor environmental conditioning inputs are operably linked.

5,602,759

MOTOR VEHICLE VIBRATING SYSTEM

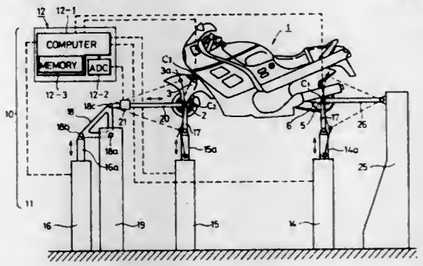
Shokichi Harashima; Hiroshi Takabashi; Kazuo Shinomiya; Masakazu Kadota, and Kazutoyo Yasuda, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 831,569, Feb. 5, 1992, abandoned. This application May 15, 1995, Ser. No. 440,711

Claims priority, application Japan, Feb. 6, 1991, 3-015568; Feb. 6, 1991, 3-015569; Sep. 20, 1991, 3-242002; Oct. 2, 1991, 3-255467

Int. Cl.[6] B65G *47/24*

U.S. Cl. 364—508 **7 Claims**



1. A vibrating system for vibrating a two-wheeled motor vehicle having front and rear axles rotatably supported on a motor vehicle frame, comprising:

a first vibrator including a first vertically disposed cylinder for vertically vibrating the rear axle;
a second vibrator including a second vertically disposed cylinder for vibrating the front axle;
a third vibrator including a third vertically disposed cylinder for vibrating one of the front and rear axles back and forth in a longitudinal direction of the motor vehicle, said third vibrator further including a vibrating rod connected through a swing linkage to a cylinder rod of said third vertically disposed cylinder, said vibrating rod disposed substantially transverse with respect to said cylinder rod; and
a base supporting said first, second and third vertically disposed cylinders, said first, second and third vertically disposed cylinders each being vertically and non-pivotally mounted on said base.

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5,602,760

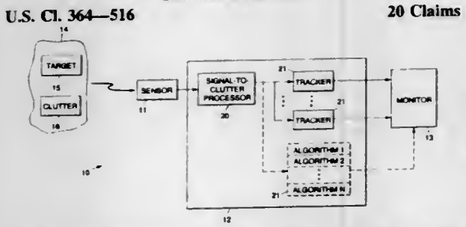
IMAGE-BASED DETECTION AND TRACKING SYSTEM AND PROCESSING METHOD EMPLOYING CLUTTER MEASUREMENTS AND SIGNAL-TO-CLUTTER RATIOS

Kim M. Chacon, Arcadia; Gillian K. Groves, Lawndale, and Kenneth E. Prager, Los Angeles, all of Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Filed Feb. 2, 1994, Ser. No. 190,827

Int. Cl.[6] G01S *7/00*

U.S. Cl. 364—516 **20 Claims**



1. A target detection and tracking system for tracking a target located in an image scene, said system comprising:

a sensor for generating video signals representative of the image scene;

a tracking computer that comprises

a wavelet-based signal-to-clutter processor for processing the video signals to compute a wavelet clutter number and a signal-to clutter ratio from the wavelet clutter number, and

tracker means for implementing at least one tracking algorithm to track the target in response to the computed signal-to clutter ratio; and

a display monitor coupled to an output of the tracking computer for viewing the tracked target and the image scene.

5,602,761

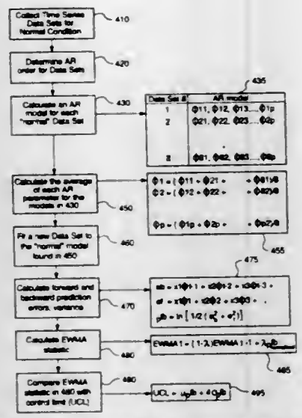
MACHINE PERFORMANCE MONITORING AND FAULT CLASSIFICATION USING AN EXPONENTIALLY WEIGHTED MOVING AVERAGE SCHEME

Julie K. Spoerre; Chang-Ching Lin, and Hsu-Pin Wang, all of Tallahassee, Fla., assignors to Caterpillar Inc., Peoria, Ill.

Filed Dec. 30, 1993, Ser. No. 176,456

Int. Cl.[6] G01B *21/00*

U.S. Cl. 364—554 **5 Claims**



1. A computer-based method for monitoring and diagnosing an abnormal machine condition, comprising the steps of:

(1) operating a machine under normal machine conditions;

(2) defining a parametric model for said machine operating under said normal machine condition;

(3) calculating an Exponentially Weighted Moving Average (EWMA) statistic based on prediction errors generated in fitting abnormal vibration signals to said parametric model; and

(4) comparing said EWMA statistic to a limit, wherein if said EWMA statistic is above said limit said machine is operating abnormally.

5,602,762

DIGITAL SAMPLE RATE CONVERSION

David Lyon, Farnham, England, assignor to Snell & Wilcox Limited, Waterlooville, England

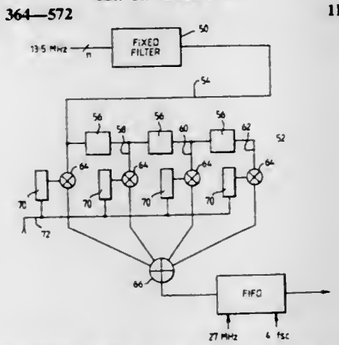
PCT No. PCT/GB92/01846, § 371 Date Aug. 26, 1994, § 102(e) Date Aug. 26, 1994, PCT Pub. No. WO93/07712, PCT Pub. Date Apr. 15, 1993

PCT Filed Oct. 9, 1992, Ser. No. 211,648

Claims priority, application United Kingdom, Oct. 10, 1991, 9121504

Int. Cl.[6] G06F *17/00*

U.S. Cl. 364—572 **11 Claims**



1. A process for digitally converting the sample rate of a signal, comprising a first digital filtering step having an input sample rate F and an output sample rate $F_{intermediate}$ which is higher than said input sample rate F, and a second digital filtering step having an input sample rate $F_{intermediate}$ and an output sample rate F' which is lower than said input sample rate $F_{intermediate}$; wherein one filtering step utilises a first digital filter of relatively high order serving to change frequency by an integral factor n, and the other filtering step utilises a second digital filter of relatively low order.

5,602,763

Patent Not Issued For This Number

5,602,764

COMPARING PRIORITIZING MEMORY FOR STRING SEARCHING IN A DATA COMPRESSION SYSTEM

Bijan Eskandari-Gharnin, Littleton, and Galen G. Kerber, Northglenn, both of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Filed Dec. 22, 1993, Ser. No. 171,705

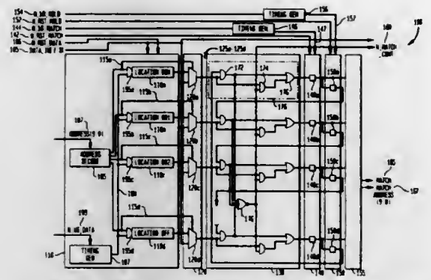
Int. Cl.[6] G06F *7/00*

U.S. Cl. 364—715.09 **15 Claims**

1. A comparing and prioritizing memory configured to accept an incoming string of data, comprising:

(a) data memory having a plurality of memory locations each for storing a unit of data from the incoming string of data;

(b) a plurality of comparators (1, 2, . . . n) each having an output, wherein each of said memory locations in said data memory is



coupled to a different comparator, wherein said output of each of said plurality of comparators indicates whether there is a match between said unit of data in said incoming string of data and data already stored in said data memory;

(c) match continue logic, connected to said plurality of comparators, to determine whether a match indicated at said output of each of said plurality of comparators is a single unit long or is part of a match that contains a continuous string of multiple units, wherein said match continue logic includes a plurality of match continue logic cells (1,2, . . . ,n), each match continue logic cell having a first input coupled to a corresponding one of said comparators;

(d) a match memory including a plurality of match memory cells (1, 2, . . . n), wherein said plurality of match memory cells store an indication of a match as determined by said match continue logic, each match memory cell having an input coupled to all output a corresponding match continue logic cell and an output coupled to a second input of a next succeeding match continue logic cell, wherein the output of the last match memory cell (n)is coupled to the second input of the first match continue logic cell (1); and

(e) a priority encoder, connected to said plurality of match memory cells, for prioritizing matches if said plurality of match memory cells indicate two or more matches, and for outputting a match signal.

5,602,765

ADAPTIVE TRANSFER FUNCTION ESTIMATING METHOD AND ESTIMATING DEVICE USING THE SAME

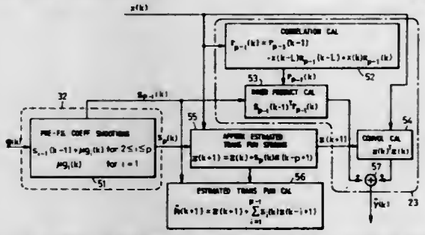
Masashi Tanaka; Yutaka Kaneda, both of Tokorozawa; Shoji Makino, Machida; Yoichi Haneda, and Junji Kojima, both of Tokyo, all of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Jul. 21, 1994, Ser. No. 278,503

Claims priority, application Japan, Jul. 27, 1993, 5-184742

Int. Cl.[6] G06F *17/10*

U.S. Cl. 364—724.19 **13 Claims**



1. A method for adaptive estimation of an acoustic transfer function of an unknown system, comprising the steps of:

(1) calculating an error signal e(k)=y(k)−ŷ(k) between an estimated output signal ŷ(k) of the unknown system and an output signal y(k) produced by the unknown system in response to an input signal x(k);

(2) computing a forward linear prediction coefficient vector a(k) of said input signal x(k), the sum of forward posteriori prediction error squares F(k) of said input signal x(k), a backward linear prediction coefficient vector b(k) of said input signal x(k) and the sum of backward posterior prediction error squares B(k);

(3) obtaining a pre-filter coefficient vector g(k) by a recursion formula expressed by the following first and second equations using a pre-filter deriving coefficient vector f(k):

$$g(k) = (1-\mu)\begin{bmatrix} 0 \\ f(k-1) \end{bmatrix} + \frac{a(k)^T e(k)}{F(k)}\, a(k)$$

$$\begin{bmatrix} f(k-1) \\ 0 \end{bmatrix} = g(k-1) - \frac{b(k-1)^T e(k-1)}{B(k-1)}\, b(k-1)$$

where e(k) and μ represent a vector of said error signal e(k) and a predetermined correcting step size, respectively; and

(4) repeatedly correcting an estimated transfer function ĥ(k) of the unknown system by the following equation

$$\hat{h}(k+1)=\hat{h}(k)+\mu\delta\hat{h}(k)$$

to cause said error signal e(k) to approach zero using an estimated transfer function correcting vector δĥ(k) expressed by the following equation

$$\delta\hat{h}(k)=[x(k),x(k-1), \ldots , x(k-p+1)]g(k)$$

where x(k) represents a vector of said input signal x(k).

5,602,766

METHOD OF AND DEVICE FOR FORMING THE SUM OF A CHAIN OF PRODUCTS

Harald Bauer, Nürnberg; Johannes Schuck, Röthenbach; Karl Hellwig, Nürnberg, and Dietmar Lorenz, Erlangen, all of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

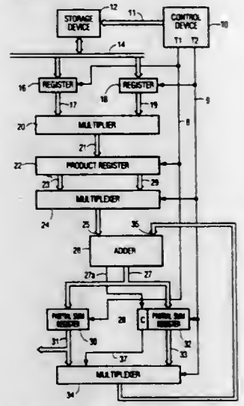
PCT No. PCT/NL93/00117, § 371 Date Feb. 1, 1994, § 102(e) Date Feb. 1, 1994, PCT Pub. No. WO93/25959, PCT Pub. Date Dec. 23, 1993

PCT Filed Jun. 4, 1993, Ser. No. 190,068

Claims priority, application Germany, Jun. 6, 1992, 42 18 769.9; WIPO, Jun. 4, 1993, PCT/NL93/00117

Int. Cl.[6] G06F *7/38;7/52*

U.S. Cl. 364—736 **14 Claims**



1. A method of forming the sum of a chain of products of each time two numbers which are successively supplied, each interme-

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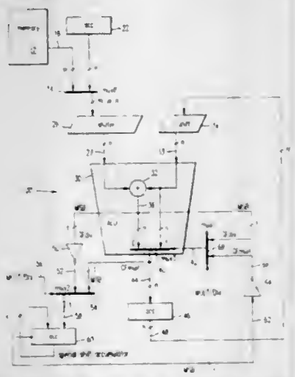
diate result of the summing operation being temporarily stored, characterized in that the product produced by each separate multiplication is added to the intermediate result in two steps, in that during the first step only the least-significant positions of the product are added by an adder to the corresponding positions of the intermediate result, the first partial sum and carry thus formed being temporarily stored in a first partial sum register, and a carry register, and during the second step the remaining, more-significant positions of the product are added by said adder to the corresponding remaining positions of the intermediate sum and carry of the first partial sum, the second partial sum thus formed being temporarily stored in a second partial sum register, during each step there being supplied another one of the numbers to be directly subsequently multiplied.

5,602,767

GALOIS FIELD POLYNOMIAL MULTIPLY/DIVIDE CIRCUIT AND A DIGITAL SIGNAL PROCESSOR INCORPORATING SAME

Gerhard P. Fettweis, Dresden, Germany, and Mihran Touriguian, Hercules, Calif., assignors to TCSI Corporation, Berkeley, Calif.

Filed Aug. 29, 1995, Ser. No. 521,112
Int. Cl.[6] G06F *7/00;15/00*
U.S. Cl. 364—746.1 **30 Claims**



1. A multiplier/divider circuit for receiving a first plurality of binary signals and a second plurality of binary signals and for performing a multiplication or a division thereof in response to a control signal, said apparatus comprising:

means for receiving said first and second plurality of binary signals and for generating a third plurality of binary signals in response thereto, said third plurality of binary signals being the exclusive OR of said first and second plurality of binary signals, said third plurality of binary signals having a Most Significant Bit (MSB);

first multiplexer means for receiving said third plurality of binary signals and said second plurality of binary signals and for generating a fourth plurality of binary signals in response to a first multiplex signal, said fourth plurality of binary signals having a MSB;

first accumulator means for receiving and storing said fourth plurality of binary signals;

first shifting means for receiving said fourth plurality of binary signals stored in said first accumulator means and for generating said second plurality of binary signals and for supplying said second plurality of binary signals to said receiving means; said second plurality of binary signals being said fourth plurality of binary signals shifted by one binary digit signal representing the multiplication of said fourth plurality of binary signals by two;

first inverting means for receiving said MSB of said third plurality of binary signals and for generating a first bit signal;

second multiplexer means for receiving said first bit signal and said MSB of said fourth plurality of binary signals, and said control signal, and for generating a second bit signal in response to said control signal;

second accumulator means for storing a plurality of bit signals and having a Least Significant Bit (LSB) and a MSB, and for receiving said second bit signal as said LSB, for shifting said stored second bit signal by one digit to said MSB;

second inverting means for receiving said MSB stored in said second accumulator means, and for generating a fourth bit signal in response thereto;

third multiplexer means for receiving said fourth bit signal and said MSB of said third plurality of binary signals and said control signal and for generating a fifth bit signal in response to said control signal; and

means for supplying said fifth bit signal to said first multiplexer means as said first multiplex signal;

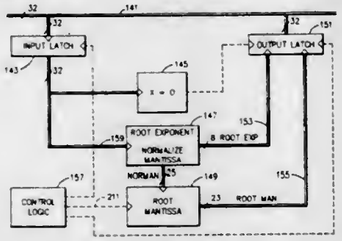
wherein the result of said multiplication operation is stored in said first accumulator means and the result of said division operation is stored in said first and second accumulator means.

5,602,768

METHOD AND APPARATUS FOR REDUCING THE PROCESSING TIME REQUIRED TO SOLVE SQUARE ROOT PROBLEMS

Walter B. Cunto, Estado Miranda, and Jorge H. Goncalves, San Antonio de los Altos, both of Venezuela, assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 286,918, Aug. 8, 1994, Pat. No. 5,481,748, which is a continuation of Ser. No. 808,320, Dec. 13, 1991, abandoned. This application Jun. 6, 1995, Ser. No. 465,992
Int. Cl.[6] G06F *7/552*
U.S. Cl. 364—748 **18 Claims**



1. An apparatus for reducing the processing time required to solve a square root of a floating point number, wherein said floating point number is represented in a given standard formed by at least two sub-sequences of bits defined as an exponent and a mantissa of the floating point number, comprising:

input means for receiving the bits that form said floating point number according to said given standard format;

comparator means connected to said input means for verifying if said floating point number is equal to zero;

means connected to said input means for calculating the exponent of the square root and for converting the mantissa of said floating point number to a sequence of bits corresponding to the square of the mantissa of the square root;

means connected to said calculating and converting means for calculating the mantissa of the square root;

output means coupled to said calculating and converting means and said calculating the mantissa means to output a sequence of bits corresponding to the square root of said floating point number represented according to said given standard format; and

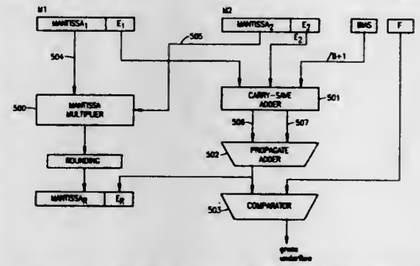
control means connected to said input means, to said output means, and to said means for calculating the mantissa of the square root, for controlling the operation of said apparatus.

5,602,769

METHOD AND APPARATUS FOR PARTIALLY SUPPORTING SUBNORMAL OPERANDS IN FLOATING POINT MULTIPLICATION

Robert K. Yu, Nework, and Grzegorz B. Zyner, San Jose, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Jul. 5, 1995, Ser. No. 498,144
Int. Cl.[6] G06F *7/38*
U.S. Cl. 364—748 **22 Claims**



1. A method of producing a result of a floating point multiplication having a first operand and a second operand using a hardware multiplier and a software routine, the method comprising the steps of:

predicting whether the floating point multiplication will cause gross underflow;

returning zero or a smallest subnormal number as the result if the predicting step predicts that the floating point multiplication will cause gross underflow;

detecting whether the first operand is subnormal;

supplying the first operand and the second operand to the hardware multiplier if the detecting step does not detect that the first operand is subnormal and if the predicting step does not predict that the floating point multiplication will cause gross underflow, wherein the hardware multiplier produces the result; and

trapping to the software routine if the detecting step detects that the first operand is subnormal and if the predicting step does not predict that the floating point multiplication will cause gross underflow, wherein the software routine produces the result.

5,602,770

ASSOCIATIVE MEMORY DEVICE

Tsuyoshi Ohira, Chiba, Japan, assignor to Kawasaki Steel Corporation, Hyogo, Japan

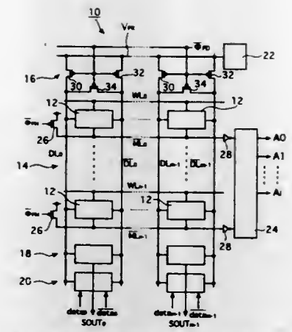
Filed Feb. 2, 1996, Ser. No. 594,673
Claims priority, application Japan, Feb. 3, 1995, 7-016969
Int. Cl.[6] G11C *15/00;7/00;8/00*
U.S. Cl. 365—49 **14 Claims**

1. An associative memory device comprising:

a memory array comprising a plurality of associative memory cells arranged in rows and columns, and pairs of a data line and an inverted data line, each pair for each column of the memory array;

precharge circuits each provided for each pair of the data line and the inverted data line to precharge the data lines and the inverted data lines to a precharge potential in a standby mode before at least a data retrieval mode; and

data line drivers each provided for the each pair of the data line and the inverted data line to drive the data lines and the inverted data lines to one of a HIGH logic level and a LOW logic level at least in the data retrieval mode;



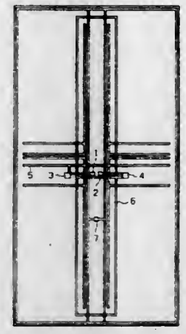
wherein the precharge potential is lower than a supply potential and higher than a ground potential.

5,602,771

SEMICONDUCTOR MEMORY DEVICE AND DEFECT REMEDYING METHOD THEREOF

Kazuhiko Kajigaya; Kazuyuki Miyazawa, both of Iruma; Manabu Tsunozaki, Ohme; Kazuyoshi Oshima, Ohme; Takashi Yamazaki, Ohme; Yuji Sakai, Machida; Jiro Sawada, Kokubunji; Yasunori Yamaguchi, Tokyo; Tetsurou Matsumoto, Higashiyamato; Shinji Udo; Hiroshi Yoshioka, both of Akishima; Hirokazu Saito; Mitsuhiro Takano, both of Tokorozawa; Makoto Morino, Akishima; Sinichi Miyatake, Tokyo; Eiji Miyamoto, Ohme; Yasuhiro Kasama, Tokyo; Akira Endo, Hachioji; Ryoichi Hori, Tokyo; Jun Etoh, Hachioji; Masashi Horiguchi, Kawasaki; Shinichi Ikenaga, Koganei, and Atsushi Kumata, Kodaira, all of Japan, assignors to Hitachi, Ltd., and Hitachi VLSI Engineering Corp., both of Tokyo, Japan

Division of Ser. No. 899,572, Jun. 18, 1992, abandoned, which is a continuation of Ser. No. 424,904, Oct. 18, 1989, abandoned. This application Dec. 1, 1993, Ser. No. 159,621
Claims priority, application Japan, Nov. 1, 1988, 63-277132; Nov. 7, 1988, 63-279239; Jan. 24, 1989, 1-14423; Mar. 20, 1989, 1-65840
Int. Cl.[6] G11C *5/02*
U.S. Cl. 365—51 **11 Claims**



2. A semiconductor memory device formed in a rectangle region on a semiconductor substrate, said rectangle region comprising:

a first region extending along a first center line which intersects a middle point of a short side of said rectangle region;

a second region extending along a second center line which intersects a middle point of a long side of said rectangle region;

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wherein said first and second regions intersect one another and divide the rectangle region to form a third region, a fourth region, a fifth region and a sixth region;

said semiconductor memory device comprising:

a first memory array, a second memory array, a third memory array and a fourth memory array, each of which is formed in a corresponding one of said third region, said fourth region, said fifth region and said sixth region, and each of which comprises a plurality of memory cells and a plurality of sense amplifiers;

a peripheral circuit formed in at least one of said first region and said second region, said peripheral circuit operating in connection with operations of said first memory array, said second memory array, said third memory array and said fourth memory array;

a first internal voltage generation circuit receiving a first supply voltage from outside of said semiconductor memory device and outputting a first internal voltage having an absolute value which is smaller than an absolute value of said first supply voltage, said first internal voltage generation circuit being formed in at least one of said first region and said second region; and

a second internal voltage generation circuit receiving said first supply voltage from outside of said semiconductor memory device and also outputting said first internal voltage, said second internal voltage generation circuit being formed in at least one of said first region and said second region,

wherein said first internal voltage generation circuit and said second internal voltage generation circuit are located separately from each other.

5,602,772

DYNAMIC SEMICONDUCTOR MEMORY DEVICE

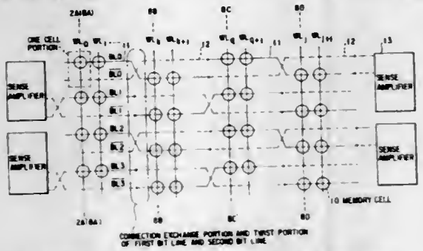
Hiroaki Nakano; Daisaburo Takashima, both of Kawasaki, and Tohru Ozaki, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 20, 1994, Ser. No. 308,926

Claims priority, application Japan, Sep. 21, 1993, 5-235016; Mar. 15, 1994, 6-043883

Int. Cl.[6] C11C *5/02*

U.S. Cl. 365—51 **13 Claims**



1. A dynamic semiconductor memory device comprising:

first bit line layer having a plurality of first bit lines;

a second bit line layer, which is laminated above said first bit line layer via an insulating layer, having a plurality of second bit lines to form bit-line pairs together with said first bit lines, to build a folded bit-line structure;

word lines arranged so as to cross said first bit lines and said second bit lines; and

at least one memory cell array in which memory cells connected to said first bit lines and said second bit lines are arranged in a matrix, wherein

said memory cell array includes first areas in which said memory cells are arranged, and second areas which are arranged so as to alternate with said first areas and contain no memory cell, and

said second areas include areas where connection of said first and second bit lines of a specified number of said bit-line pairs are exchanged.

5,602,773

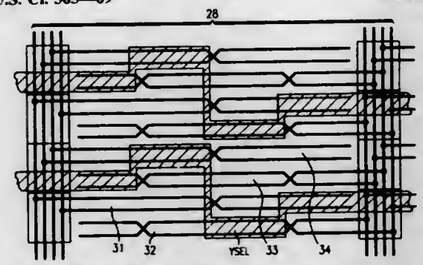
MEMORY DEVICE COLUMN ADDRESS SELECTION LEAD LAYOUT

John P. Campbell, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 247,914, May 23, 1994, Pat. No. 5,485,419. This application Jun. 7, 1995, Ser. No. 477,845

Int. Cl.[6] G11C *5/08*

U.S. Cl. 365—69 **4 Claims**



1. A semiconductor memory device having storage cells arranged in an array and addressable by row and column addresses, the device comprising:

a group of N bitlines addressable by a partially decoded column address, each of the bitlines is fabricated as a pair of leads with a pitch between bitlines in a first conductive layer and N is greater than two;

first and second column address selection leads fabricated in a second column layer wherein the first and second column address selection leads are separated by approximately the pitch of N−1 bitlines except at some bends in the first and second column address selection leads; and

an insulator separates the first conductive layer from the second conductive layer.

5,602,774

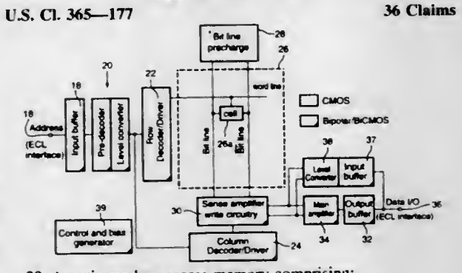
LOW-POWER BICMOS/ECL SRAM

Muhammad S. Elrabaa, Hillsboro, Oreg., and Mohamed I. Elmasry, Waterloo, Canada, assignors to University of Waterloo, Waterloo, Canada

Filed Nov. 16, 1995, Ser. No. 558,896

Int. Cl.[6] G11C *11/40*

U.S. Cl. 365—177 **36 Claims**



29. A static random access memory comprising:

a memory cell array for storing data;

an ECL input buffer receiving address values from an address bus representing memory cell locations in said memory cell array and outputting said address values and complements thereof;

a W-OR predecoder and level translator array connected to said ECL input buffer and receiving said address values and address value complements, said W-OR predecoder and level translator array generating logic OR output values in response to input from said ECL input buffer at MOS signal levels, each W-OR predecoder and level translator in said array including a W-OR predecoder receiving address inputs from said ECL input buffer and generating logic output in response thereto; and a level translator in the form of a single source follower responsive to said W-OR predecoder for level shifting the logic output of said W-OR predecoder;

self-resetting row decoder and driver circuits responsive to said logic OR output values for generating logic word line output pulses to said memory cell array to activate selected cells of said memory cell array corresponding to said address values received by said ECL input buffer;

an unclocked latched ECL sense amplifier array connected to bit lines extending to said memory cell array for sensing the data value of memory cells of said memory cell array activated by said word line output pulses;

column decoder and driver circuits responsive to said logic OR output values to activate the sense amplifiers connected to the selected memory cells; and

an output buffer, coupled to said ECL sense amplifier array, for storing the sensed data values of said selected memory cells.

5,602,775

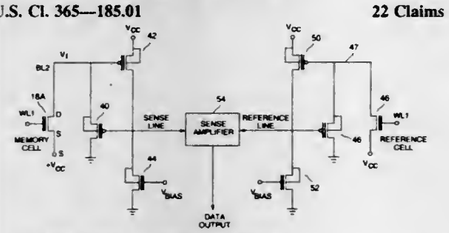
FLASH EEPROM MEMORY SYSTEM FOR LOW VOLTAGE OPERATION AND METHOD

Hai H. Vo, Gilroy, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Mar. 15, 1995, Ser. No. 404,510

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—185.01 **22 Claims**



1. A flash memory system comprising:

an array of N channel flash memory cells arranged into a multiplicity of rows and columns, with each of the memory cells including a source region, a drain region, a channel region intermediate the drain and source regions, a floating gate overlying and insulated from the channel region and a control gate overlying and insulated from the floating gate, with all of the memory cells of the array having the source regions connected together by a single common source line, with all of the cells located in one of the columns having the drain regions connected together by a common bit line and all of the cells located in one of the rows having the control gates connected together by a common word line; and

control means for controlling the operation of the memory system in response to input addresses, said control means including:

erase means for erasing the memory cells;

program means for programming the memory cells; and

read means for reading the memory cells, including means for applying a first read voltage to the common source line and a second read voltage to the bit line in which the cell to be read is located such that the source-to-drain voltage is positive.

5,602,776

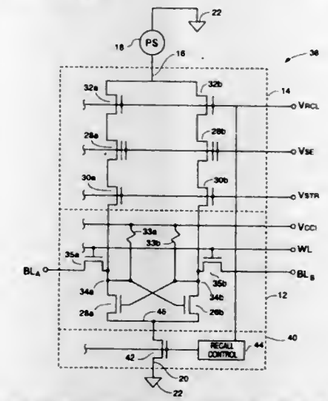
NON-VOLATILE, STATIC RANDOM ACCESS MEMORY WITH CURRENT LIMITING

Christian E. Herdt, Monument, and Albert S. Weiner, Colorado Springs, both of Colo., assignors to Simtek Corporation, Colorado Springs, Colo.

Continuation of Ser. No. 323,814, Oct. 17, 1994, abandoned. This application Oct. 27, 1995, Ser. No. 549,483

Int. Cl.[6] G11C *11/34*

U.S. Cl. 365—185.08 **18 Claims**



1. A non-volatile, static random access memory device with improved current limiting, comprising:

a memory cell comprised of a static random access memory for retaining a bit of data that, if power is removed therefrom, can be lost, and a non-volatile memory that is capable of retaining said bit of data even after power has been removed from said memory cell;

first means for use in transferring a bit of data between said memory cell and an exterior environment;

second means, extending from said static random access memory to said non-volatile memory, for use in transferring a bit of data from said static random access memory to said non-volatile memory and from said non-volatile memory to said static random access memory;

third means for operatively connecting said memory cell to a control means for controlling transfer of a bit of data between said static random access memory and said non-volatile memory;

means for operatively connecting said memory cell to a power supply;

means for operatively connecting said memory cell to a ground, wherein said means for operatively connecting said memory cell to the ground is different from said first, second and third means; and

means, located between said memory cell and said means for operatively connecting said memory cell to the ground, for limiting the current to be provided by the power supply to said memory cell.

5,602,777

SEMICONDUCTOR MEMORY DEVICE HAVING FLOATING GATE TRANSISTORS AND DATA HOLDING MEANS

Masaru Nawaki, Nara, and Shounosuke Ueno, Osaka, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 24, 1995, Ser. No. 449,022

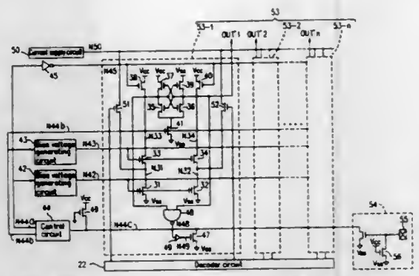
Claims priority, application Japan, Sep. 28, 1994, 6-233743

Int. Cl.[6] G11C *16/02*

U.S. Cl. 365—185.09 **5 Claims**

1. A semiconductor memory device comprising:

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a first floating gate transistor and a second floating gate transistor each storing charges, the amount of the charges stored in the first floating gate transistor being made different from that stored in the second floating gate transistor;

at least one control means for generating a voltage difference in accordance with respective threshold voltages of the first and second floating gate transistors, and for then turning off the first and second floating gate transistors; and

at least one data holding means for holding the voltage difference as a binary data

and wherein the control means detects completion of sensing operation of the data holding means, and turns off the first and second floating gate transistors after the detection.

5,602,778

NONVOLATILE SEMICONDUCTOR MEMORY DEVICE WITH A ROW REDUNDANCY CIRCUIT

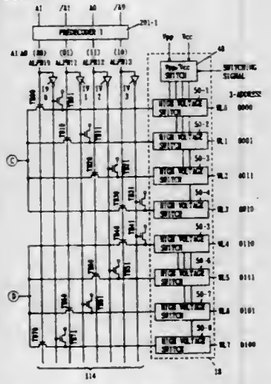
Tomoshi Futatsuya; Masaaki Mihara; Yasushi Terada; Takeshi Nakayama; Yoshikazu Miyawaki; Shinichi Kobayashi, and Minoru Ohkawa, all of Hyogo-ken, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 179,731, Jan. 11, 1994, Pat. No. 5,548,557. This application Jun. 6, 1995, Ser. No. 468,393

Claims priority, application Japan, Jan. 12, 1993, 5-3189; Jul. 16, 1993, 5-176502; Nov. 4, 1993, 5-275544

Int. Cl.[6] G11C *11/34*

U.S. Cl. 365—185.09 **3 Claims**



1. A nonvolatile semiconductor memory device comprising:

a plurality of word lines including normal word lines and redundant word lines for repairing a defective normal word line;

a plurality of bit lines arranged crossing with said plurality of word lines;

a plurality of memory cells provided at respective crossings of said word lines and said bit lines, each said memory cell including a memory transistor selectively operable, in a normal mode, in a first state in which the memory transistor is made conductive when a corresponding word line is brought into a selected state and in a second state in which the memory transistor maintains non-conductive state even when the corresponding word line is brought into the selected state;

word line selection means for simultaneously selecting at least two successively adjacent word lines in a predetermined mode of operation different from said normal mode;

bit line selection means for selecting at least one bit line; and

means for transferring at least to selected word lines and selected bit line voltages for bringing the memory transistor into the second state.

5,602,779

NONVOLATILE MULTIVALUE MEMORY

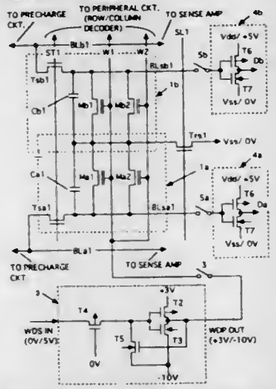
Hiroshi Gotou, Tokyo, Japan, assignor to NKK Corporation, Tokyo, Japan

Filed Nov. 8, 1995, Ser. No. 555,202

Claims priority, application Japan, Nov. 11, 1994, 6-278175

Int. Cl.[6] G11C *11/34*

U.S. Cl. 365—185.23 **21 Claims**



1. A nonvolatile multivalue memory comprising:

a memory cell array having a plurality of word lines, a plurality of bit lines, and memory cells each arranged at an intersection between each word line and each bit line;

a memory cell transistor having a floating gate for holding nonvolatile information, and a control gate, connected to the word line, for controlling writing, erasing, or reading of information held in the floating gate, said memory cell transistor constituting said memory cell;

drive signal means for supplying a drive signal to the control gate of said memory cell transistor, the drive signal alternately and repeatedly having a first potential and a second potential different from the first potential, said drive signal means includes:

a multivalue program level generator for generating a program signal having multivalue levels corresponding to program data to be stored in said memory cell transistor; and

a word line drive pulse generator for generating a pulse as the drive signal, the pulse alternately and repeatedly having the first potential corresponding to one of the multivalue levels of the program signal generated by said multivalue program level generator and a second potential different from the first potential.

5,602,780

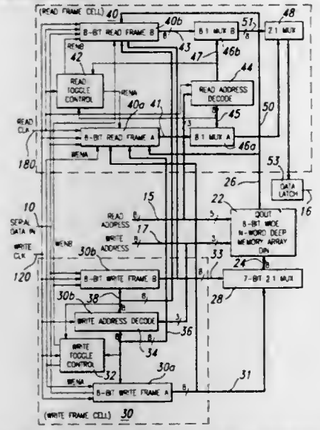
SERIAL TO PARALLEL AND PARALLEL TO SERIAL ARCHITECTURE FOR A RAM BASED FIFO MEMORY

Benjamin C. Diem, Sherman, and M. Dwayne Ward, Garland, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 20, 1993, Ser. No. 139,348

Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—189.01 **8 Claims**



4. A first-in, first-out (FIFO) memory device arranged for serial to parallel and parallel serial data conversion, comprising:

a memory array for storing data;

a write frame buffer for receiving serial data input and for writing, in parallel, the received serial data input to the memory array; and

a read frame buffer for receiving data output from the memory array in parallel and for outputting, serially, the received data output from the memory array, and, for receiving serial input data.

5,602,781

MEMORY DEVICE HAVING A PLURALITY OF SETS OF DATA BUFFERS

Tadaaki Isobe, Hadano, Japan, assignor to Hitachi, Inc., Tokyo, Japan

Filed Mar. 16, 1995, Ser. No. 405,126

Claims priority, application Japan, Mar. 17, 1994, 6-046733

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—189.05 **14 Claims**

1. A memory device comprising:

a memory cell accessed by a row address and a column address;

a plurality of data buffers for storing row data designated by an arbitrary row address and read out from said memory cell;

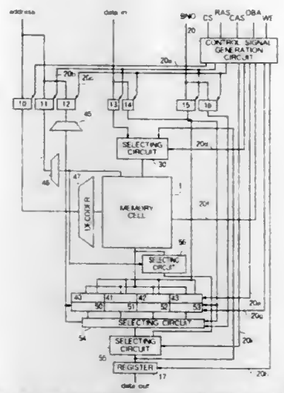
designation means for designating one of said data buffers;

a first address register for holding a first address used for accessing said memory cell;

a second address register for holding a second address used for accessing said data buffers;

a first path for reading out positional data designated by a row address and a column address; and

a second path for reading out positional data designated by a column address from row data stored in the one of said data buffers designated by said designation means,



wherein an access to said memory cell using said first address register and an access to said data buffers using said second address register are performed in parallel.

5,602,782

PIPELINE-OPERATING TYPE MEMORY SYSTEM CAPABLE OF READING DATA FROM A MEMORY ARRAY HAVING DATA WIDTH LARGER THAN THE OUTPUT DATA WIDTH

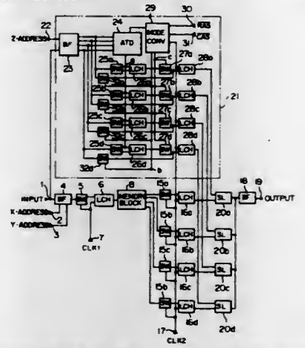
Noboru Akiyama, Katsuta; Yuji Yokoyama, Ome; Tatsuyuki Ohta, Niigata; Kunihiko Suzuki, Hitachi, and Yutaka Kobayashi, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 35,651, Mar. 23, 1993. This application Jun. 6, 1995, Ser. No. 467,276

Claims priority, application Japan, Mar. 23, 1992, 4-065039

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—189.05 **4 Claims**



1. A pipeline-operating type memory system, including latch means, for fixing at least an X address and alternately setting said latch means into a latching state and a through state in a manner to suit a pipeline operating cycle at a fast page mode for transferring data for any Y address according to an address strobe signal and to output at least one piece of data, said pipeline-operating type memory system comprising:

first input means for receiving a selector address signal for selecting data;

first means for latching said selector address signal output from said first input means by means of a first signal, controlling said latching state on control signals generated according to said address strobe signal, latching said selector address sig-

nal by means of a second signal, and outputting said selector address signal until said selector address signal is no longer in the latching state;

second input means for receiving at least said address strobe signals, an X address signal and a Y address signal, both of said X address signal and said Y address signal being used for selecting said data;

second means for latching said X and Y address signals by means of said first signal, and continuously feeding at least one piece of said data selected by at least said X address signal and Y address signal;

third means for latching said data from said second means by means of said second signal and continuously feeding at least said data until said data is no longer in the latching state; and

selector means for temporarily holding data from said third means, being selectively activated according to a pipeline operating cycle and a number of bits contained in said selector address signal output from said first means.

5,602,783

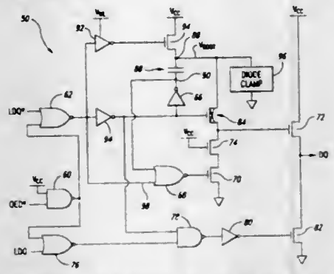
MEMORY DEVICE OUTPUT BUFFER

Adrian E. Ong, San Jose, Calif., assignor to Micron Technology, Inc., Boise, Id.

Filed Feb. 1, 1996, Ser. No. 595,370

Int. Cl.[6] G11C *11/40*

U.S. Cl. 365—189.05 **18 Claims**



1. An output buffer in a memory device for outputting a buffered signal corresponding to an input signal, the output buffer comprising:

a boot capacitor having first and second terminals;

a charging circuit coupling the boot capacitor's first terminal to a supply voltage when the input signal is inactive and isolating the first terminal from the supply voltage when the input signal is active;

a boot circuit coupling the boot capacitor's second terminal to a reference potential when the input signal is inactive and to a bias voltage when the input signal is active, the bias voltage being greater than the reference potential by at least a first threshold voltage, the boot and charging circuits thereby storing the supply voltage less the reference potential on the boot capacitor when the input signal is inactive and boosting a boot voltage at the boot capacitor's first terminal above the supply voltage by at least the first threshold voltage when the input signal is active;

a pass transistor having an input terminal coupled to the boot capacitor's first terminal to receive the boot voltage, a control terminal receiving a pass control voltage, and an output terminal, the pass transistor outputting the boot voltage at its output terminal when the boot voltage is greater than the pass control voltage by at least a second threshold voltage, the pass transistor otherwise isolating its output terminal from the boot voltage;

a pull-up transistor having a supply terminal receiving the supply voltage, a control terminal coupled to the pass transistor's output terminal, and an output terminal outputting the buffered signal at the supply voltage when the voltage applied to the control terminal is greater than the supply voltage by at least the first threshold voltage;

a pull-down transistor having a reference terminal coupled to the reference potential, a control terminal receiving a pull-down control voltage, and an output terminal coupled to the pull-up transistor's control terminal, the pull-down transistor coupling the pull-up transistor's control terminal to the reference potential when the pull-down control voltage is greater than the reference potential by at least a third threshold voltage, the pull-down transistor otherwise isolating the pull-up transistor's control terminal from the reference potential; and

a control circuit having a feedback terminal coupled to one of the boot capacitor's first and second terminals to receive a feedback voltage, a first output terminal coupled to the pass transistor's control terminal to provide the pass control voltage, and a second output terminal coupled to the pull-down transistor's control terminal to provide the pull-down control voltage, the control circuit outputting the pass control voltage less than the boot voltage by at least the second threshold voltage and the pull-down control voltage greater than the reference potential by less than the third threshold voltage when the input signal is active, thereby causing the pull-down transistor to isolate the pull-up transistor's control terminal from the reference potential and causing the pass transistor to supply the boot voltage to the pull-up transistor's control terminal so the pull-up transistor outputs the buffered signal at the supply voltage, the control circuit outputting the pass control voltage greater than the reference potential by the supply voltage when the input signal is inactive and outputting the pull-down control voltage greater than the reference potential by at least the third threshold voltage only when the input signal is inactive and the feedback voltage corresponds to the boot voltage being greater than the pass control voltage by less than the second threshold voltage, thereby preventing the boot capacitor from discharging its stored voltage through the pass and pull-down transistors to the reference potential when the input signal is inactive.

5,602,784

POWER CONSUMPTION REDUCING CIRCUIT HAVING WORD-LINE RESETTING ABILITY REGULATING TRANSISTORS

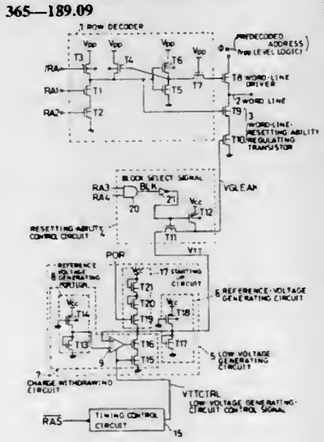
Makoto Kojima, and Yoshitaka Mano, both of Osaka, Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Filed Sep. 14, 1995, Ser. No. 528,052

Claims priority, application Japan, Sep. 16, 1994, 6-221579

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—189.09 **19 Claims**



1. A semiconductor memory device comprising:

a large number of word lines for individually activating a large number of memory cells arranged in a matrix;

a large number of bit lines onto which data is read from said individual memory cells;

row decoders, word-line drivers, and word-line-resetting-ability regulating transistors, each for controlling respective voltages of said word lines;

a first power source serving as a power source for said row decoders;

a second power source having a voltage lower than a voltage of said first power source; and

a low-voltage power source for generating a voltage lower than the respective voltages of said first and second power sources, wherein

said first power source, said second power source and said low-voltage power source generate respective voltages higher than ground level,

each of said word-line-resetting-ability regulating transistors is place between the corresponding word line and the ground,

said semiconductor memory device further comprising

a resetting-ability control circuit for controlling a gate voltage of each of said word-line-resetting-ability regulating transistors such that a resetting-ability control circuit is switched between the voltage of said second power source and a voltage of said low-voltage power source, said gate voltage determining a resetting ability of each of said word-line-resetting-ability regulating transistors to connect the corresponding word line to the ground.

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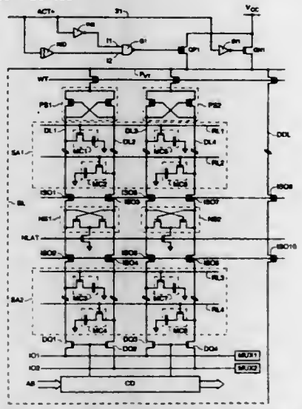
P-CHANNEL SENSE AMPLIFIER PULL-UP CIRCUIT WITH A TIMED PULSE FOR USE IN DRAM MEMORIES HAVING NON-BOOTSTRAPPED WORD LINES

Stephen L. Casper, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Dec. 13, 1995, Ser. No. 571,532

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—189.11 **19 Claims**



1. A pull-up circuit for a P-channel sense amplifier in a dynamic random access memory, said P-channel sense amplifier being coupled to digit lines within an array, said pull-up circuit comprising:

a pull-up node coupled to the P-channel sense amplifiers;

a power supply bus;

an NMOS transistor coupling said power supply bus to said pull-up node, said NMOS transistor having a gate, a source, and a drain, said NMOS transistor allowing current to be conducted from said drain to said source when an NMOS turn-on signal is applied to the gate of said NMOS transistor;

a PMOS transistor coupling said power supply bus to said pull-up node, said PMOS transistor having a gate, a source, and a drain when a PMOS transistor allowing current to be conducted from said source to said drain when a PMOS turn-on signal is applied to the gate of said PMOS transistor; and

a control circuit coupled to the respective gates of said NMOS and PMOS transistors, said control circuit receiving a pull-up control signal and, in response thereto, applying said PMOS turn-on signal to the gate of said PMOS transistor during the initial portion of said pull-up control signal and for a period that may be less than the duration of said pull-up control signal, said control circuit further responding to said pull-up control signal by applying said NMOS turn-on signal to the gate of said NMOS transistor at least for a period of time that said control circuit no longer applies said PMOS turn-on signal to the gate of said PMOS transistor whereby said PMOS transistor couples said power supply bus to said pull-up node during the initial portion of said pull-up control signal and said NMOS transistor thereafter couples said power supply pus to said pull-up node during the remaining portion of said pull-up control signal.

5,602,786

METHOD FOR PROGRAMMING REDUNDANCY REGISTERS IN A COLUMN REDUNDANCY INTEGRATED CIRCUITRY FOR A SEMICONDUCTOR MEMORY DEVICE, AND COLUMN REDUNDANCY INTEGRATED CIRCUITRY

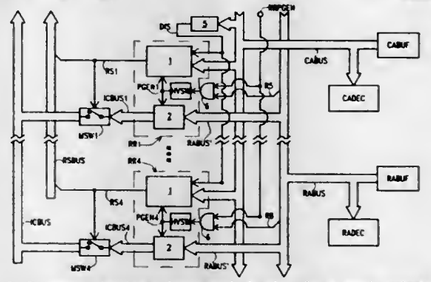
Luigi Pascucci, Giovanni, and Marco Olivo, Bergamo, both of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Filed Feb. 16, 1995, Ser. No. 389,599

Claims priority, application European Pat. Off., Feb. 17, 1994, 94830061

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—200 **17 Claims**



2. Column redundancy integrated circuitry for a semiconductor memory device with memory elements located at the intersection of rows and columns of at least one bi-dimensional array of memory elements, the columns being grouped together to form a plurality of portions of the bi-dimensional array, including at least one plurality of non-volatile memory registers with each non-volatile memory register being associated with a respective redundancy column of redundancy memory elements and each non-volatile memory register being programmable to store an address of a defective column and to store an identifying code for identifying the portion of the bi-dimensional array to which the defective column belongs, the circuitry comprising:

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first supply means for supplying each non-volatile memory register with column address signals carrying a defective column address;

second supply means for supplying each non-volatile memory reister with a first subset of a set of row address signals, the first subset of the set of row address signals carrying the identifying code that identifies which portion among the plurality of portions of the bi-dimensional array the defective column belongs; and

programming selection means, coupled to the non-volatile memory registers, adapted to receive a second subset of the set of row address signals, each signal of said second subset being associated with a respective non-volatile memory register of said at least one plurality of non-volatile memory registers, the programming selection means being responsive to the second subset of the set of row address signal to select one non-volatile memory register such that the defective column address and the identifying code supplied by the first and second supply means, respectively, are programmed into the selected non-volatile memory register.

5,602,787

DATA MEMORY WITH SENSE AMPLIFIER AND METHOD OF OPERATION

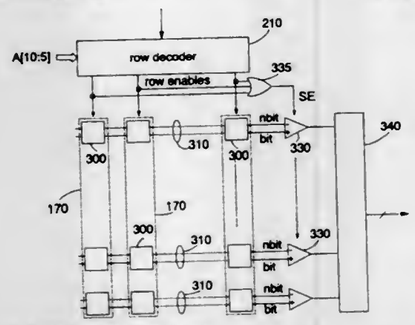
Harry E. Oldham, Swavesey, United Kingdom, assignor to Advanced Risc Machines Limited, Cambridge, United Kingdom

Filed Jan. 27, 1995, Ser. No. 379,013

Claims priority, application United Kingdom, Jan. 31, 1994, 9401802

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—205 **10 Claims**



1. A data memory comprising:

a plurality of memory cells, each said memory cell being selectively operable during a memory read operation to generate a data signal indicative of data stored in that memory cell;

one or more sense amplifiers, each said sense amplifier being connected to receive data signals from a plurality of said memory cells;

an address decoder, responsive to a memory address supplied to said data memory, for controlling one of said plurality of memory cells connected to each said sense amplifier to generate a respective data signal said address decoder being operable under the control of a first control signal;

said data memory also comprising means for delaying said first control signal, to generate a second control signal; and

means for energising said one or more sense amplifiers for operation in response to said second control signal.

5,602,788

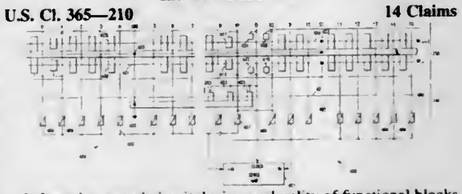
READ ONLY MEMORY HAVING LOCALIZED REFERENCE BIT LINES

Robert L. Barry, Essex Junction, and John D. Chickanosky, South Burlington, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 7, 1996, Ser. No. 660,264

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—210 **14 Claims**



1. In an integrated circuit device, a plurality of functional blocks interconnected to form a desired circuit function, at least one of said functional blocks including a read only memory (ROM), said ROM comprising:

a differential sense amplifier;

a memory array including a plurality of data bitlines and a plurality of wordlines, and a plurality of memory cells, each memory cell selected by selecting a corresponding data bitline of said plurality of data bitlines and a corresponding wordline of said plurality of wordlines;

a plurality of column select devices coupled to a first input of said differential sense amplifier, each column select device corresponding to a data bitline of said plurality of data bitlines;

a column decoder for selecting at least one column select device of said plurality of column select devices;

a row decoder for selecting a wordline of said plurality of wordlines; and

a reference bitline associated with said plurality of data bitlines, said reference bitline coupled to a second input of said differential sense amplifier, said reference bitline including a first column having a select device corresponding to each wordline, and further including a second column having a recessed oxide device corresponding to each wordline such that when a memory cell of said plurality of memory cell is selected according to the selected column select device and the selected wordline, the reference bitline will discharge from a precharged voltage at a first discharge rate.

5,602,789

ELECTRICALLY ERASABLE AND PROGRAMMABLE NON-VOLATILE AND MULTI-LEVEL MEMORY SYSTEMN WITH WRITE-VERIFY CONTROLLER

Tetsuo Endoh, Sendai; Riichiro Shirota, Kawasaki; Kazunori Ohuchi, Yokohama; Ryouhei Kirisawa, Kitakami; Seiichi Aritome, Kawasaki; Tomoharu Tanaka, Yokohama, and Yoshiyuki Tanaka, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation-in-part of Ser. No. 341,955, Nov. 6, 1994, Pat. No. 5,469,444, which is a continuation of Ser. No. 229,761, Apr. 19, 1994, Pat. No. 5,386,422, which is a continuation of Ser. No. 851,286, Mar. 12, 1992, Pat. No. 5,321,699. This application Aug. 22, 1995, Ser. No. 518,024

Claims priority, application Japan, Mar. 12, 1991, 3-072424; Mar. 7, 1995, 7-047571

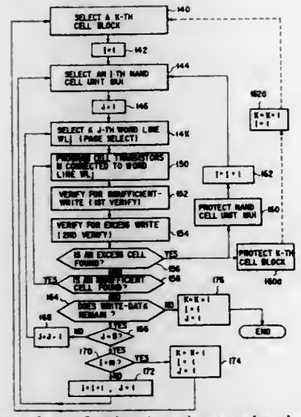
Int. Cl.[6] G01R *31/28*

U.S. Cl. 365—201 **25 Claims**

1. A semiconductor memory system comprising:

a memory cell array including memory cells arranged in matrix, each of the memory cells having at least three storage states which are electrically erasable and programmable;

a plurality of data circuits, corresponding to the memory cells, respectively, for temporarily storing data for controlling write operations of the memory cells of said memory cell array;



write means for performing the write operations in accordance with the data stored in said plurality of data circuits;

first write verify means for verifying an insufficient state of data written to each of the memory cells;

second write verify means for verifying an excess state of data written to each of the memory cells; and

update means for updating the data stored in said plurality of data circuits such that data is rewritten to an insufficient-written memory cell, based on the data stored in said data circuits and write conditions of the memory cells,

wherein said plurality of data circuits, said first write verify means, said second verify means, and said update means repeat a write operation, a first write verify operation, a second write verify operation, and an update operation, respectively, until predetermined data is written to the memory cells, thereby writing data to each of the memory cells in said at least three storage states.

5,602,790

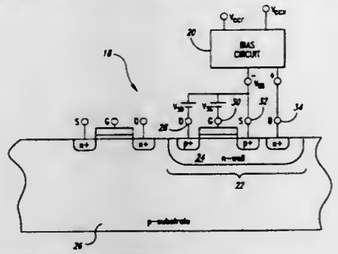
MEMORY DEVICE WITH MOS TRANSISTORS HAVING BODIES BIASED BY TEMPERATURE-COMPENSATED VOLTAGE

Patrick J. Mullarkey, Meridian, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Aug. 15, 1995, Ser. No. 515,126

Int. Cl.[6] H03K *19/0175*

U.S. Cl. 365—211 **18 Claims**



1. A memory device comprising:

at least one MOS transistor having a gate, a source region, a drain region, and a body containing the source and drain regions, the source and drain regions both being one of either p-type or n-type, the body being the other of either p-type or n-type, the transistor being characterized by a threshold voltage which is dependent on temperature and on a body-source bias voltage, the transistor also being characterized by a sub-threshold current which is dependent on the transistor's threshold voltage; and

a voltage regulator circuit operatively coupled to the body for providing the body-source bias voltage to the body, the voltage regulator circuit being constructed to temperature-compensate the body-source bias voltage to maintain the threshold voltage approximately constant despite changes in temperature.

5,602,791

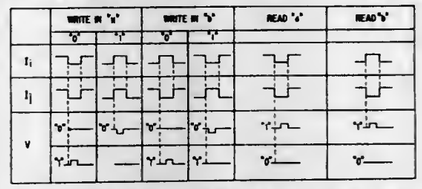
MEMORY MATERIAL AND METHOD OF ITS MANUFACTURE

Shimon Gendlin, Jerusalem, Israel, assignor to Kappa Numerics, Inc., Guilderland, N.Y.

Division of Ser. No. 384,972, Feb. 7, 1995, which is a division of Ser. No. 889,025, May 26, 1992, Pat. No. 5,390,142. This application Jun. 7, 1995, Ser. No. 486,790

Int. Cl.[6] H01L *43/08*

U.S. Cl. 365—225.5 **16 Claims**



1. A method of storing two independent bits of binary data in a single storage cell of a non-volatile, random accessible memory, each such cell being addressable by a first and a second address line comprising the steps of:

applying two electrical currents having the same polarities to the first and second address lines, respectively, for storing a first bit of binary data in the storage cell; and

applying two electrical currents having opposite polarities to the first and second address lines, respectively, for storing a second bit of data in the storage cell.

5,602,792

SEMICONDUCTOR DEVICE HAVING SUPPLY VOLTAGE CONVERTING CIRCUITS

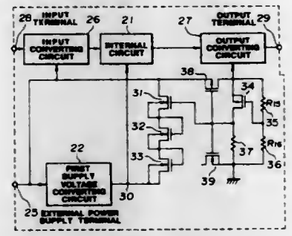
Yoshikazu Kanaishi, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 1, 1991, Ser. No. 678,146

Claims priority, application Japan, Mar. 30, 1990, 2-83789

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—226 **5 Claims**



1. A semiconductor device, comprising:

an internal circuit which is activated on being supplied with a voltage,

an external power supply terminal supplied with a power source voltage from outside,

a first supply voltage converting circuit which, when the power source voltage supplied to said external power supply termi-

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nal is an ordinary voltage, causes said power source voltage to be modified to supply the thus modified voltage to said internal circuit,

a control circuit for sensing the voltage at said external power source terminal and generating an output signal at an output terminal when a voltage higher than said ordinary voltage is supplied at said external power supply terminal, and

a second supply power converting circuit activated responsive to said output signal from said control circuit to supply a voltage pulled down from the voltage at said external power supply terminal to said internal circuit,

wherein said second supply voltage converting circuit includes a switch having one end connected to said external power supply terminal, and a level shifting circuit connected to the other end of said switch.

5,602,793

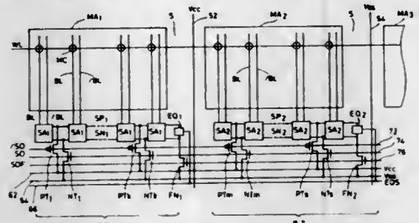
SEMICONDUCTOR MEMORY DEVICE HAVING POWER LINE ARRANGED IN A MESHED SHAPE

Shigeki Tomishima; Mikio Asakura; Kazutami Arimoto, and Hideto Hidaka, all of Hyogo-ken, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 224,461, Apr. 7, 1994, Pat. No. 5,426,615, which is a division of Ser. No. 942,320, Sep. 10, 1992, Pat. No. 5,325,336. This application Apr. 6, 1995, Ser. No. 417,527

Int. Cl.[6] G11C *5/14*

U.S. Cl. 365—226 **19 Claims**



1. A semiconductor memory device comprising:

a memory cell array including a plurality of memory cells arranged in rows and columns;

a plurality of word lines, each connecting one row of memory cells;

a plurality of pairs of bit lines, each pair connecting one column of memory cells;

a first power supply line arranged in parallel with said bit lines for transmitting a predetermined potential;

a sense amplifier band divided into a plurality of sense amplifier groups arranged in parallel with said word lines, each group including a plurality of sense amplifiers corresponding to a predetermined number of said bit line pairs for sensing and amplifying a potential of said corresponding bit line pairs;

a first and a second sense amp drive signal line for transmitting drive signals to said plurality of sense amplifiers, said first signal line being divided into multiple segments, each line segment being associated with at least one of said sense amplifier groups;

a second power supply line arranged in parallel with said sense amplifier groups and coupled to said first power supply line; and

a plurality of sense amp drivers coupled between said second sense amp drive signal line and said second power supply line, for receiving a sense amp activation signal and connecting said second power supply line with said second sense amp drive signal line in response to said received sense amp activation signal, for generating a drive signal on said second sense amp drive signal line in response to said sense amp activation signal.

5,602,794

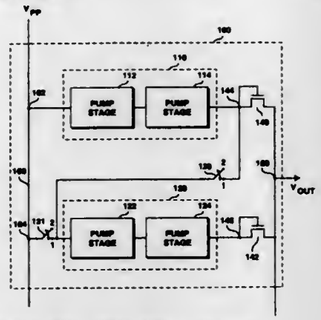
VARIABLE STAGE CHARGE PUMP

Jahanshir J. Javanifard, Sacramento; Kerry D. Tedrow, Orangevale; Jin-Lien Lin, Rancho Cordova; Jeffrey J. Evertt, Orangevale, and Gregory E. Atwood, San Jose, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Sep. 29, 1995, Ser. No. 537,233

Int. Cl.[6] H03L *7/089*

U.S. Cl. 365—226 **4 Claims**



1. A variable stage charge pump comprising:

a first charge pump;

a second charge pump;

a first switch coupling an output of the first charge pump to an input of the second charge pump;

a second switch coupling an input of the first charge pump to the input of the second charge pump;

wherein the first and second charge pumps are series-coupled to a common output node when the first switch is in a first position and the second switch is in a second position, wherein the first and second charge pumps are parallel-coupled to the common output node when the first switch is in the second position and the second switch is in the first position.

5,602,795

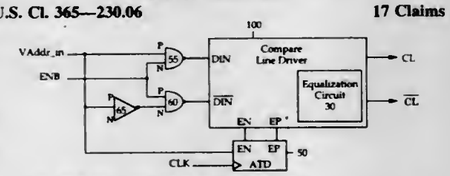
METHOD AND APPARATUS FOR IMPLEMENTING A HIGH-SPEED DYNAMIC LINE DRIVER

Bal S. Sandhu, Fremont, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Jan. 12, 1994, Ser. No. 180,577

Int. Cl.[6] G11C *8/00*

U.S. Cl. 365—230.06 **17 Claims**



1. An apparatus, said apparatus comprising:

a first driver circuit, said first driver circuit for driving a first output signal between a first potential and a second potential in response to an input signal;

an edge detection circuit coupled to said input signal, said edge detection circuit determining if said first driver circuit is in a reset state or a set state, said edge detection circuit temporarily entering said set state when detecting a voltage level change on said input signal;

an equalization circuit coupled to said first driver circuit, said equalization circuit for holding said first output signal at an intermediate potential between said first potential and said second potential during said reset state of said first driver circuit.

5,602,796

WORD LINE DRIVER IN A SEMICONDUCTOR MEMORY DEVICE

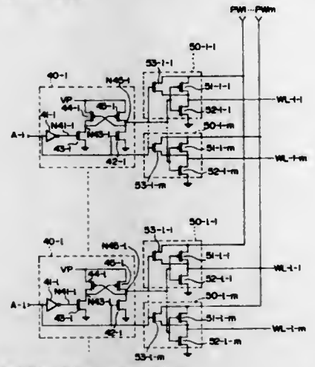
Kenichiro Sugio, Miyazaki, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Oct. 5, 1994, Ser. No. 318,175

Claims priority, application Japan, Oct. 13, 1993, 5-255424

Int. Cl.[6] G11C *8/00*

U.S. Cl. 365—230.06 **13 Claims**



8. A word line driver, comprising:

a driver circuit for outputting a plurality of word line activation signals, at least one of which has a pumped voltage level;

a plurality of groups of output circuits, each output circuit having a first conductivity-type transistor and a second conductivity-type transistor parallel-connected to the first conductivity-type transistor,

wherein the first conductivity-type transistors of each group are controlled based on a respective decode signal corresponding to the group, the decode signal having first and second logic levels both of which are lower than the pumped voltage level, the first conductivity-type transistors of one of the groups being activated in response to the decode signal so as to pass the word line activation signals output by the driver circuit to corresponding word lines, and

wherein the second conductivity-type transistors of each group are controlled based on a corresponding drive signal having first and second voltage levels which are opposite in phase to the decode signal that corresponds to the group, one of the first and second voltage levels being higher than the first and second logic levels, and the second conductivity-type transistors of one of the groups being activated so as to pass the word line activation signals output by the driver circuit to corresponding word lines.

5,602,797

WORD LINE DRIVING CIRCUIT FOR MEMORY

Chang M. Kang, Kyungki-Do, Rep. of Korea, assignor to LG Semicon Co., Ltd., Rep. of Korea

Filed Oct. 12, 1995, Ser. No. 542,456

Claims priority, application Rep. of Korea, Oct. 13, 1994, 26225/1994

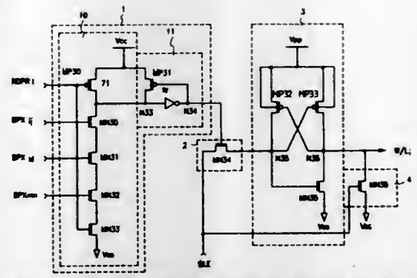
Int. Cl.[6] G11C *8/00*

U.S. Cl. 365—230.06 **7 Claims**

1. A word line driving circuit for a memory, comprising:

decoding means for decoding free-decoded first through third low address signals and an externally applied control signal and for outputting a decoding signal of a voltage level or a low level;

switching means for outputting a free-decoded word line enable signal of a power-up voltage level or a low level switched in accordance with a decoding signal outputted from said decoding means;



word line selecting means for outputting a word line selection signal of a power-up voltage and for selecting a word line in accordance with a word line enable signal outputted from said switching means; and

word line stabilization means for stabilizing the level of a word line selected by said word line selection means in accordance with a word line enable signal outputted from said switching means.

5,602,798

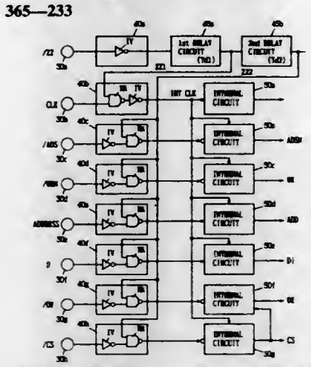
SYNCHRONOUS SEMICONDUCTOR MEMORY DEVICE OPERABLE IN A SNOOZE MODE

Hirotoshi Sato, and Shigeki Ohbayashi, both of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 21, 1995, Ser. No. 505,021

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—233 **10 Claims**



1. A synchronous semiconductor memory device taking in an external signal in synchronization with an externally applied clock signal, comprising:

a mode signal input circuit for receiving and delaying an externally applied specific operation mode designating signal by first and second delay times to produce first and second internal mode designating signals, respectively;

a clock input circuit for receiving said external clock signal to produce an internal clock signal, said clock input circuit including a first gate for inhibiting-generation of said internal clock signal in response to said first internal mode designating signal being active; and

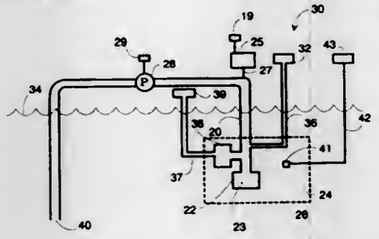
a signal input circuit for receiving said external signal and producing an internal signal, said signal input circuit including a second gate for inhibiting generation of said internal signal in response to said second internal mode designating signal being active.

5,602,799

UNDERWATER DETERRENT SYSTEM

George E. Hecker, 703 Kittering Way, Worcester, Mass. 01609; Philip S. Stacy, Nine Rigby Rd., Lancaster, Mass. 01523; Neal A. Brown, 216 Follen Rd., Lexington, Mass. 02173, and Michael W. Haberland, 41 Trapper Rd., Sewell, N.J. 08080

Filed Dec. 12, 1995, Ser. No. 571,063
Int. Cl.[6] A01M *29/02*
U.S. Cl. 367—139 **26 Claims**



1. An underwater deterrent system for repelling selected aquatic animals from a deterrence zone, comprising:

a fluid conduit having a fluid outlet at the deterrence zone; and

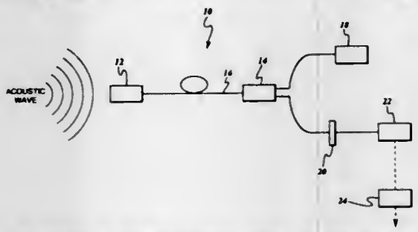
intermittent flow means for causing one-way fluid flow through the fluid outlet as pulses of fluid alternating with reduced flow, the pulses of fluid having (a) volume and flow rate sufficiently in excess of the reduced flow and (b) periodicity which are effective, in combination, to repel selected aquatic animals from the deterrence zone.

5,602,800

METHODS FOR ULTRASONIC/VIBRATION DETECTION USING POLARIZATION BEATING IN A MICROCHIP LASER

Anil R. Duggal, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 3, 1995, Ser. No. 415,967
Int. Cl.[6] H04R *23/00;* **G01B** *9/02*
U.S. Cl. 367—149 **9 Claims**



1. A method of detecting acoustic energy incident on a laser assembly comprising the step of:

oscillating a microchip laser at two different laser frequencies corresponding to two orthogonal polarizations wherein the frequency difference between the two laser frequencies is chosen to be within the bandwidth of an electrical signal processing system:

placing the microchip laser in an acoustic field, such that its cavity length is modulated which causes a frequency modulation of the frequency difference between the two laser frequencies: and

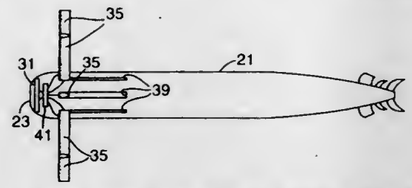
mixing the two laser output polarizations using a polarization scrambling device and then detecting the output with a photodiode such that the resulting electrical signal contains the FM modulated beat frequency between the two polarization frequencies.

5,602,801

UNDERWATER VEHICLE SONAR SYSTEM WITH EXTENDIBLE ARRAY

Fred Nussbaum, Middletown, and Charles H. Beauchamp, Jamestown, both of R.I., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 6, 1995, Ser. No. 530,462
Int. Cl.[6] H04R *17/00*
U.S. Cl. 367—165 **10 Claims**



1. A sonar system for an underwater vehicle defined by a forward nose portion and a generally cylindrical aft section comprising:

more than two arms movably connected to the vehicle, said arms being movable between a stowed position wherein said arms are generally parallel with the aft section and an extended position wherein said arms are generally perpendicular to said aft section;

at least one arm-mounted acoustic sensor mounted on each arm of said more than two arms, said at least one arm-mounted acoustic sensor generating an arm sensor signal in response to acoustic energy incident upon said at least one arm-mounted sensor;

a planar array of acoustic sensors, mounted in said nose portion, for generating an array sensor signal in response to acoustic energy incident upon said array of acoustic sensors; and

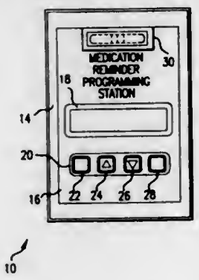
a sonar signal processor connected to receive said arm sensor signal from said at least one arm-mounted acoustic sensor and to receive said array sensor signal, for processing said arm sensor signal and said array sensor signal, wherein said sonar signal processor processes said arm sensor signal and said array sensor signal as a large diameter planar array when said more than two arms are in an extended position and wherein said sonar signal processor processes said arm sensor signal in a side viewing mode when said more than two arms are in a stowed position.

5,602,802

MEDICATION REMINDER SYSTEM AND APPARATUS

Peter Leigh-Spencer, and James Baker, both of Edmonton, Canada, assignors to Timely Devices Inc., Alberta, Canada

Filed Nov. 14, 1994, Ser. No. 338,859
Claims priority, application Canada, Sep. 9, 1994, 2131783
Int. Cl.[6] G04B *47/00;* **G04C** *21/16*
U.S. Cl. 368—10 **5 Claims**



1. A medication reminder system for reminding patients to take medications comprising:

a portable module, the portable module having

module microprocessor for receiving and storing alarm instructions from a programming station, the module microprocessor also for generating an alarm signal corresponding to the alarm instructions and for receiving an alarm silence signal;

light emitting diode (LED) alarm responsive to the alarm signal for generating a visual alarm, the LED also for communication with the programming station via a two-way optical serial data communication link;

piezo alarm responsive to the alarm signal for generating an auditory alarm;

push-button switch for signalling the module microprocessor to silence the LED and piezo alarms when the LED and piezo alarms are active;

a battery for powering the portable microprocessor wherein the portable microprocessor further monitors battery usage by a battery usage counter, the battery usage counter responsive to elapsed time of operation of the module in a timing mode and alarm mode;

the programming station having

programming station LED communication interface for communication with the module LED alarm wherein the portable module is received within the programming station to establish communication with the portable module;

programming station microprocessor for programming and downloading alarm instructions to the module microprocessor through the programming station communication interface and module communication interface;

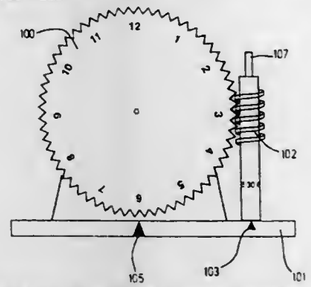
display and keypad for inputting alarm instructions to the programming station microprocessor.

5,602,803

CLOCKS WITH UNIQUE TIME DISPLAYS

Yaron Chaut, 31 Tel Hai, 52335 Ramat Gan, Israel

Filed Aug. 11, 1995, Ser. No. 514,375
Int. Cl.[6] G04B *19/00*
U.S. Cl. 368—223 **5 Claims**



1. An apparatus for the display of time, comprising:

(a) a support frame;

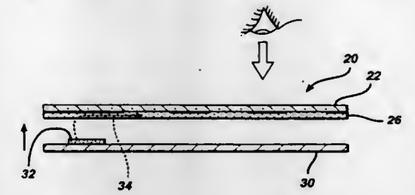
(b) a driven worm gear having external teeth, said worm gear being on a primary rotatable rod, said primary rod having a primary rod rotational axis, said rod being mounted on said support frame; and said worm gear rotating about said primary rod rotation axis; and (c) a rigid rotatable plate mounted on said support frame and rotatable about a plate rotational axis, said plate having external teeth about a periphery of said plate, said external teeth of said driven worm gear engaging said external teeth of said plate so as to rotate said plate about said plate rotation axis, said plate featuring markings representing the time, the position of said markings being the sole indication of the time, said primary rod rotational axis and said plate rotational axis being substantially non-parallel and wherein said primary rod features minute indications.

5,602,804

LONG TERM RAPID COLOR CHANGING TIME INDICATOR

David J. Haas, Suffern, N.Y., assignor to Temtec Inc, Suffern, N.Y.

Filed Aug. 3, 1995, Ser. No. 510,762
Int. Cl.[6] G04B *17/00*
U.S. Cl. 368—327 **10 Claims**



1. A time indicator comprising:

a display layer having a defined display region therein;

a migration layer overlying and attached to the display layer, the migration layer having a migration region therein, the migration region in contact with the display region at a display region contact area;

an activation layer having a defined activation region therein, wherein the activation region includes a migrating agent capable of migrating laterally through the migration region, wherein when the activation layer overlies the migration layer, the activation region overlies the migration region, the migration region connecting the activation region with the display region which is laterally distal from the activation region at the display region contact area;

adhesive means associated with the activation layer or migration layer for adhesively attaching the activation layer to the migration layer;

whereby when the activation layer is contacted with and overlies the migration layer, the adhesive means adhesively attaches the activation layer to the migration layer causing the activation region to contact the migration region, wherein the migrating agent is activated to migrate laterally from the activation region through the migrating region to the display region contact area in contact with the display region in a predetermined amount of time to cause an indication in the display region that the predetermined amount of time has elapsed.

5,602,805

DISK DRIVE APPARATUS AND METHOD INCLUDING POWER BACKUP

Kazuhiro Chigita, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jan. 13, 1995, Ser. No. 372,666
Claims priority, application Japan, Jan. 20, 1994, 6-018815
Int. Cl.[6] G11B *5/09*
U.S. Cl. 369—13 **12 Claims**

1. A magneto-optical disk drive apparatus having a function for reading or writing data into a magneto-optical disk comprising:

a magneto-optical disk drive;

a secondary battery consisting of a plurality of cells each storing power to be supplied to said magneto-optical disk drive from outside;

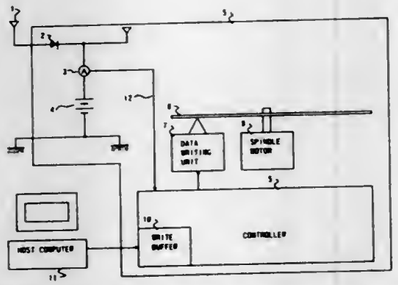
an electric charge volume detector for detecting a volume of electric charge stored in said secondary battery;

a write buffer for storing therein write data from a host computer;

a current switch for switching a current to said magneto-optical disk drive to that from said secondary battery when power supply is stopped;

a spindle motor for driving said magneto-optical disk; and

a controller for controlling said magneto-optical disk drive,



wherein said writing write data into said magneto-optical disk is inhibited when a volume of electric charge stored in said secondary battery has not reached a predetermined level.

5,602,806

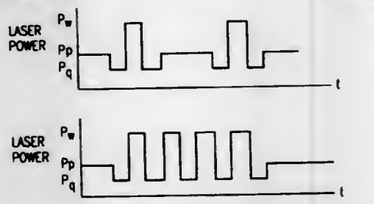
MAGNETO-OPTICAL RECORDING DEVICE CAPABLE OF REDUCING THERMAL INTERFERENCE BETWEEN RECORDING PITS

Patrick C. Arnett, Morgan Hill; David E. Call, Hollister, both of Calif.; Blair L. Finkelstein; Glen A. Jaquette, both of Tucson, Ariz., and Ernesto E. Marinero, Saratoga, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 28, 1995, Ser. No. 495,967

Int. Cl.[6] G11B *11/00*

U.S. Cl. 364—13 **25 Claims**



1. A magneto-optical storage system, comprising:

a loader for receiving a magneto-optical recording disk having at least a memory layer and a writing layer in an exchange-coupled relationship and deposited on a substrate;

a spindle motor for rotating the recording disk;

a laser source;

an optical head for focusing a beam spot from said laser source onto the recording disk;

an initializing magnet having a field with a first orientation relative to the recording disk;

a biasing magnet having field with a second orientation, opposite the first orientation; and

a laser driver for:

driving said laser source at a pedestal power level P_p until an information mark is to be recorded on the optical disk;

reducing the laser power level from the pedestal power level P_p to a quench power level P_q for a first time period t_1 beginning at time t_w, then increasing the laser power level from the quench power level P_q to a write power level P_w for a second time period t_2 beginning at time t_b to record the information mark, where $P_w > P_p > P_q$; and

a drive controller interconnected with said spindle motor, said laser source, said optical head, said biasing magnet and said laser driver, said drive controller comprising:

means for calculating a quality value of a readback signal reflected from the recording disk; and

means for determining from the quality value the first time period t_1, whereby thermal interference between closely spaced recording marks is substantially reduced.

5,602,807

MAGNETO-OPTICAL RECORDING HEAD HAVING A POT CORE

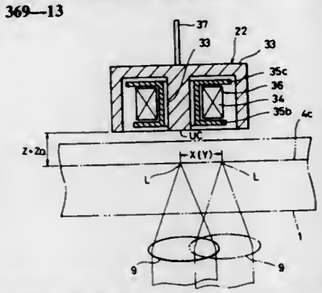
Keiichi Taguchi, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 28, 1994, Ser. No. 234,066

Claims priority, application Japan, Apr. 28, 1993, 5-103207

Int. Cl.[6] G11B *13/04*

U.S. Cl. 369—13 **3 Claims**



1. A magneto-optical recording apparatus for recording information signals on a magneto-optical recording medium, comprising:

optical pickup means for emitting a laser beam to a lower side of said magneto-optical recording medium;

a magnetic head including a pot core which has a center pillar;

a bobbin having a hollow cylindrical body adaptable to fit over the center pillar, and having a coil wound around said cylindrical body, said coil when energized providing a magnetic field to one side of said magneto-optical recording medium, wherein said bobbin has two pins and two end portions of said coil are respectively connected to said two pins and said two pins are led out to the outside of said magnetic head through said two recesses of said pot core; and

holding means for holding said magnetic head so as not to contact with said upper side of said magneto-optical recording medium when said information signals are recorded on said magneto-optical recording medium.

5,602,808

OBJECTIVE LENS DRIVING APPARATUS

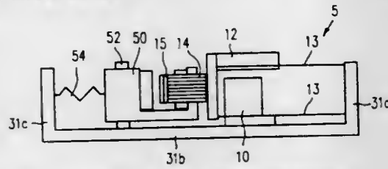
Masayasu Futagawa; Keiji Sakai, both of Nara, and Toshiyuki Tanaka, Moriguchi, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 30, 1994, Ser. No. 315,349

Claims priority, application Japan, Oct. 1, 1993, 5-247215

Int. Cl.[6] G11B *7/09*

U.S. Cl. 369—44.14 **1 Claim**



1. An objective lens driving apparatus comprising:

a base;

an objective lens for converging an optical beam onto an optical disc while the optical disc is rotating;

holding means for holding said objective lens;

first supporting means for elastically supporting said holding means on said base in such a manner as to allow said holding means to be translated in a focusing direction which is substantially perpendicular to a surface of the optical disc and in a tracking direction which is substantially perpendicular to the focusing direction and parallel to a radial direction of the optical disc;

moving means including a coil and a magnetic circuit for translating said holding means in the focusing direction and the tracking direction by a driving force generated by said coil and said magnetic circuit; and

second supporting means for visco-elastically supporting said magnetic circuit on said base in such a manner as to translate said magnetic circuit in the focusing direction, wherein said magnetic circuit is translated in an opposite direction to the translation direction of said holding means by a driving force acting oppositely to the driving force for translating said holding means in the focusing direction, said second supporting means including

an attachment member to which said magnetic circuit is attached and which has at least one hole,

at least one guide post extended through said at least one hole in a direction parallel to the focusing direction, and

an elastic member for supporting said attachment member on said base,

wherein said magnetic circuit is translated in the focusing direction by sliding movement of said attachment member along said at least one guide post.

5,602,809

OPTICAL SYSTEM IN A TRACK-FOLLOWING SERVO SYSTEM HAVING AN ELLIPTICAL BEAM SPOT

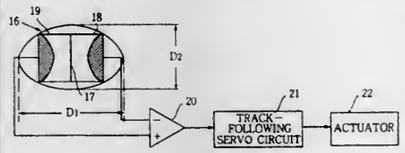
Yoshinori Shikano, Saitama-ken, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 238,336, May 4, 1994, abandoned, which is a continuation of Ser. No. 923,424, Aug. 3, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 466,724

Claims priority, application Japan, Feb. 28, 1992, 4-078486

Int. Cl.[6] G11B *7/09*

U.S. Cl. 369—44.23 **3 Claims**



1. An optical system, used in a pushpull method, in a track-following servo system for an optical disc, comprising:

photodetectors, one of which is provided for detecting a tracking error, said one of said photodetectors having a pair of detector elements disposed side by side to receive a laser beam reflected on said optical disc; and

a prism member for deforming a sectional shape of a reflected laser beam into an ellipse wherein a constant elliptic spot is formed on the one of the photodetectors,

the prism member being arranged such that a direction of a major axis of the elliptic spot is the same as a disposing direction of the detector elements and corresponds to a direction perpendicular to a tangential direction of the optical disc and the major axis of said elliptic spot has a length larger than a length of the disposing direction of the detector elements whereby a DC offset caused by a deformation of said elliptic spot is prevented.

5,602,810

TRACKING ERROR GENERATING METHOD USING SAMPLING OF SERVO PITS AND SWITCHING OF DIFFERENTIAL SIGNALS

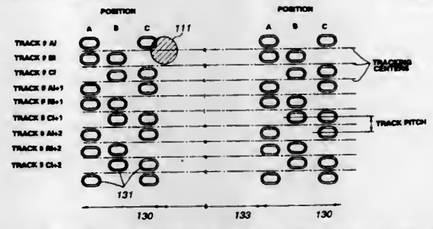
Hideyoshi Horimai, and Goro Fujita, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 386,196, Feb. 9, 1995, abandoned, which is a continuation of Ser. No. 291,981, Aug. 17, 1994, abandoned, which is a division of Ser. No. 133,113, Oct. 12, 1993, abandoned. This application Oct. 4, 1995, Ser. No. 538,840

Claims priority, application Japan, Feb. 19, 1992, 4-069736; May 25, 1992, 4-157434; Jun. 18, 1992, 4-182847

Int. Cl.[6] G11B *7/09*

U.S. Cl. 369—44.34 **3 Claims**



1. A method for generating a tracking error from an optical recording medium having first and second pits on an (n-1)th recording track in a recording region and a third pit on an n-th recording track succeeding said (n-1)th recording track, said an n-th recording track being formed at a distance from said (n-1)th recording track narrower than the diameter of a spot of a light beam radiated on said (n-1)th track, said third pit being used for detecting the tracking error in cooperation with one of said first and second pits, comprising

sample-holding a detection signal, obtained on scanning said first, second and third pits with said light beam, at timings of scanning said first, second and third pits with said light beam, taking differences between sample-beld detection signals for generating plural differential signals and detecting the signs of said differential signals for periodically switching said differential signals for generating the tracking error signal.

5,602,811

MUSICAL INFORMATION RECORDING AND REPRODUCING TECHNIQUE FOR USE WITH A RECORDING MEDIUM HAVING A UTOC AREA

Mikio Ogusu; Kazunobu Fujiwara, and Kei Tanaka, all of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Filed Aug. 2, 1995, Ser. No. 510,377

Claims priority, application Japan, Aug. 11, 1994, 6-210658; Sep. 8, 1994, 6-240519

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—47 **3 Claims**

1. A recording device for recording musical information of a music piece onto a recording medium having address information previously recorded thereon said device comprising:

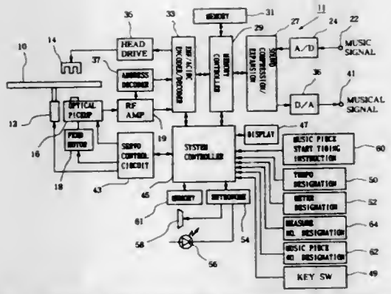
tempo designation means for designating a tempo of a music piece to be recorded;

meter designation means for designating meter of said music piece;

rhythm generation means for generating, in light or sound, a rhythm corresponding to the tempo and meter designated by said tempo and meter designation means;

start timing instruction means for instructing timing to start performance of said music piece;

input means for inputting musical information of said music piece;



music piece recording means for recording, onto the recording medium, the musical information of said music piece input by said input means;

start address retrieval means for retrieving, as a start address of said music piece, the address information read out from the recording medium when the timing to start performance of said music piece is instructed by said instruction means, and

tempo, meter and start address recording means for recording, onto a predetermined recording area of the recording medium, information indicative of the tempo and meter designated by said tempo and meter designation means and the start address retrieved by said retrieval means.

5,602,812

REPRODUCING RATE CONTROL APPARATUS FOR OPTICAL DISK

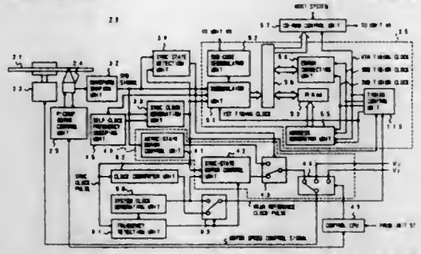
Tohru Miura, Chofu; Mitsumasa Kubo, Kodaira, and Akira Mashimo, Tokorozawa, all of Japan, assignors to TEAC Corporation, Japan

Filed Nov. 7, 1995, Ser. No. 554,736

Claims priority, application Japan, Nov. 24, 1994, 6-289839

Int. Cl.[6] G11B *5/09*

U.S. Cl. 369—48 **10 Claims**



1. A reproducing rate control apparatus for an optical disk in which data pieces and clock components for respective data pieces are recorded on the disk at a constant linear velocity, comprising:

digitizing means for generating a digital reproduction signal from a reproduction signal which is generated by an optical pickup from said disk;

synchronizing clock generating means, coupled to an output of said digitizing means, for generating a synchronizing clock pulse with a phase locked to a phase of the digital reproduction signal;

signal processing means, coupled to the output of the digitizing means and an output of the synchronizing clock generating means, for generating a demodulated data signal from the digital reproduction signal in accordance with the synchronizing clock pulse, wherein the demodulated data signal is written to a memory in accordance with the synchronizing clock pulse, the demodulated data signal is read from the memory in accordance with a read reference clock pulse, and the read demodulated data signal is processed through an error correction so that a processed demodulated data signal is output;

frequency detecting means, coupled to the output of the synchronizing clock generating means, for detecting whether the frequency of the synchronizing clock pulse is within a predetermined range of frequencies centered at a standard frequency;

first clock generating means for generating a first read-reference clock pulse having an initial frequency from an oscillator;

second clock generating means, coupled to the output of the synchronizing clock generating means, for generating a second read-reference clock pulse having a second frequency proportional to a frequency of the synchronizing clock pulse; and

switching means, coupled to an output of the first clock generating means and an output of the second clock generating means, for selectively outputting one of the first read-reference clock pulse and the second read-reference clock pulse to said signal processing means in accordance with a result of the detection by the frequency detecting means,

wherein, when the frequency of the synchronizing clock pulse is within the predetermined range, the first read-reference clock pulse is supplied from the switching means to the signal processing means, and, when the frequency of the synchronizing clock pulse is not within the predetermined range, the second read-reference clock pulse is supplied from the switching means to the signal processing means.

5,602,813

DISK, DISK RECORDING APPARATUS AND DISK REPRODUCING APPARATUS

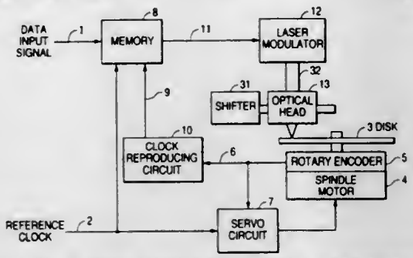
Shigeru Furumiya, Katano, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 96,440, Jul. 26, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 474,132

Claims priority, application Japan, Jul. 27, 1992, 4-199386

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—50 **3 Claims**



1. A disk recording apparatus for receiving a digital data input signal and a reference clock signal that is synchronized therewith to record said digital data input signal on a disk, said recording apparatus comprising:

a spindle motor for rotating said disk;

a rotary encoder for generating a synchronizing pulse synchronized with a rotation phase of said disk;

a servo circuit for controlling said spindle motor in response to said reference clock signal and said synchronizing pulse;

a clock reproducing circuit for generating a rotation synchronizing clock synchronized in phase with synchronizing pulse;

a memory for writing thereinto said digital data input signal at a timing in accordance with said reference clock and for reading therefrom the thus written signal at a timing in accordance with said rotation synchronizing clock to thereby obtain a recording signal;

a laser modulator for generating a modulated laser beam in response to said recording signal;

an optical head for focusing said modulating laser beam on a surface of said disk to record said recording signal; and

a shifting means for moving said optical head in a radial direction of said disk.

5,602,814

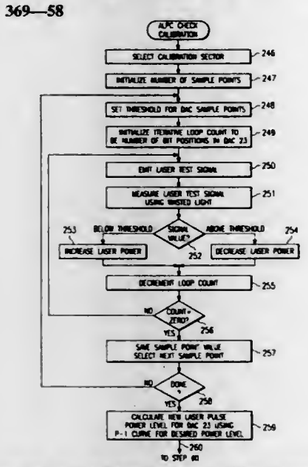
CALIBRATION OF WRITE-ONCE DISKS USING A SINGLE DISK SECTOR

Glen A. Jaquette, and Arturo A. Mojica, both of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 6, 1994, Ser. No. 319,179

Int. Cl.[6] G11B *3/90*

U.S. Cl. 369—58 **24 Claims**



1. A method for calibrating a laser writing system in a write-once disk recorder using a write-once disk, said write-once disk having a track consisting of a plurality of addressable sectors, each of the sectors having a leading end at which scanning of the sector begins and a trailing end at which scanning of the sector is completed:

including steps of:

selecting one of said sectors for multiple-parameter calibration of said laser writing system;

establishing first laser pulse writing criteria;

first writing a first calibration signal in a predetermined portion of said selected sector;

during said writing of said first set, monitoring the writing for generating a first measurement signal, said measurement signal indicating a first parameter of said first calibration signal;

combining said first parameter indication for setting laser power level to be emitted by the laser means;

second writing second calibration signals in a first intermediate portion of said selected sector;

reading back said written second calibration signals and comparing said readback signals with said first criterion;

selecting a write laser power level based upon a readback signal that most closely meets said second criterion;

generating an indication of said set power levels and said write power level;

writing said generated indication in an intermediate portion of said selected sector immediately adjacent said first intermediate portion.

5,602,815

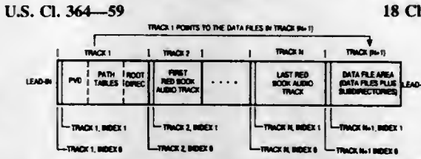
METHOD AND APPARATUS FOR COMBINING CD-ROM DATA AND DIGITAL AUDIO ON A SINGLE DISC

Walter R. Klappert, Topanga, Calif., and Robert T. Seidel, West Pittston, Pa., assignors to WEA Manufacturing, Inc., Del.

Filed Aug. 9, 1994, Ser. No. 287,770

Int. Cl.[6] G11B *5/09*

U.S. Cl. 364—59 **18 Claims**



1. A method for combining CD-DA audio data and CD-ROM digital data on a single compact disc comprising the steps of:

a) placing CD-ROM digital data boot blocks beginning at Track 1, Index 1 of the compact disc;

b) placing a first CD-DA audio data selection beginning at Track 2, Index 1 and placing N−2 subsequent CD-DA audio data selections at Track 3, Index 1 through Track N, Index 1 of the compact disc respectively;

c) placing CD-ROM digital in a data file area corresponding to said CD-ROM digital data boot blocks beginning at Track N+1, Index 1 of the compact disc.

5,602,816

RECORDING AND REPRODUCING SYSTEM AND EQUALIZING METHOD FOR USE IN IT

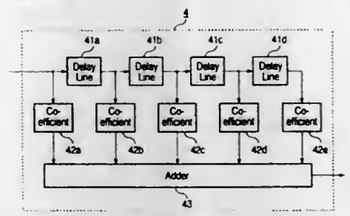
Nobutaka Amada; Toshifumi Takeuchi, and Takao Arai, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 22, 1995, Ser. No. 517,584

Claims priority, application Japan, Sep. 2, 1994, 6-210098

Int. Cl.[6] G11B *27/36*

U.S. Cl. 369—59 **12 Claims**



1. A recording and reproducing system, comprising a RLL (run length limited) coder for modulating a digital information signal to be recorded in a recording medium with use of a run length limited code, an equalizer for equalizing a signal reproduced from the recording medium, and a decoder for decoding a signal equalized by the equalizer to the original digital information signal, wherein

a frequency response of the equalizer is approximately set so that an overall transmission frequency characteristic H(f) of the RLL coder, the recording medium and the equalizer to an impulse becomes the one given by an equation below

$$H(f) = \cos\left(\frac{\pi}{2} \cdot \frac{f}{Fm}\right)$$

where Fm denotes a cut-off frequency of the recording medium.

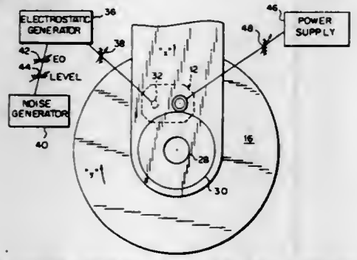
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5,602,817

APPARATUS AND METHOD FOR ENHANCING PLAYBACK FIDELITY OF COMPACT DISKS

Harry Kolbe, and Jerome J. Podwil, both of New York, N.Y., assignors to Kolbe-Podwil Sonics, Inc., New York, N.Y.

Filed Apr. 15, 1994, Ser. No. 228,506
Int. Cl.[6] G11B *3/58*
U.S. Cl. 369—72 **15 Claims**



6. In a playback apparatus for a compact disk, comprising a read head juxtaposed to and spaced from a surface of a disk when the disk is operatively disposed, the playback apparatus providing means for rotating the disk and the head having associated therewith a laser source providing a laser beam for scanning the disk as the disk moves relative to the read head, a device for improving the output fidelity of the playback apparatus, said device comprising

electrostatic field generating means coupled to the read head for generating an electrostatic field in the space between the read head and the disk in the vicinity of the laser beam so that said electrostatic field impinges on at least that area of the disk which is about to be scanned by the laser beam, said electrostatic field being so charged that it opposes an electrostatic field preexisting in the space between the read head and the disc in the vicinity of the laser beam;

means coupled to said read head for providing a magnetic field in the space between said read head and a disk to be read, in operative association with the laser beam; and

a noise generator operatively associated with said electrostatic field generating means for introducing random noise into the electrostatic field.

5,602,818

LOCK MECHANISM FOR A FLOATING UNIT IN A DISC PLAYER

Shingo Kage, Kobe; Takehisa Takamiya, Hirakata; Tetsuhiko Takeda, Neyagawa, and Yasunari Toyama, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Mar. 29, 1995, Ser. No. 413,864
Claims priority, application Japan, Mar. 30, 1994, 6-060787
Int. Cl.[6] G11B *17/028*
U.S. Cl. 369—75.2 **7 Claims**

1. A locking mechanism for a floating unit in a disc player comprising:

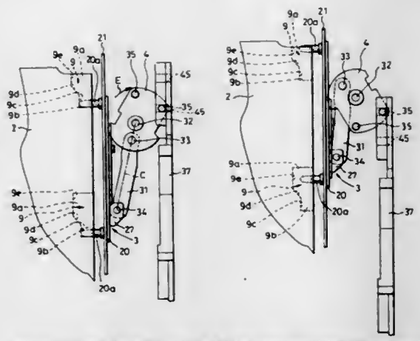
a chassis,

a floating unit including a turntable for rotating a disc, a pickup for reading data on said disc, and at least one lock-pin receiver at a side face thereof, said floating unit being connected to said chassis through vibration-damping units,

a lock unit having a lock plate supported slidably in a forward direction and a backward direction in a side portion of said chassis, said lock unit locks said floating unit at a forward position by inserting a lock pin of said lock plate into a narrow and shallow portion of said lock-pin receiver, and unlocks said floating unit at a backward position by removing said lock pin from said narrow and shallow portion,

a rotary plate connected to said lock unit through a connecting arm, said rotary plate being rotatably supported around a rotary shaft by said chassis so as to slide said lock plate in said forward direction and said backward direction by reversible rotations of said rotary plate, said rotary shaft being arranged on a virtual straight line established between a connecting point of said connecting arm to said lock plate and another connecting point of said connecting arm to said rotary plate when said lock plate is positioned at said forward position, and

a lock drive unit having a reversible motor for driving said rotary plate.

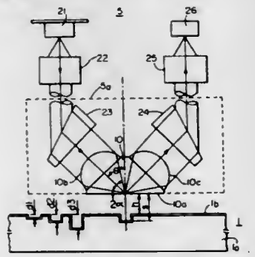


5,602,819

OPTICAL INFORMATION SYSTEM TO DETECT REFLECTION OF PIT DEPTH BY EVANESCENT WAVE

Tatsuhiko Inagaki, Takatsuki; Hiroshi Kohso, Fujiidera, and Makoto Kuwamoto, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Division of Ser. No. 139,573, Oct. 20, 1993, Pat. No. 5,463,609.
This application Jul. 18, 1995, Ser. No. 503,593
Claims priority, application Japan, Oct. 23, 1992, 4-285756
Int. Cl.[6] G11B *5/68*
U.S. Cl. 369—99 **7 Claims**



1. A recording medium to which laser light is emitted, comprising a plurality of concavo-convex pits having three or more different levels of height or depth, each of said different levels representing a different recorded data value, and

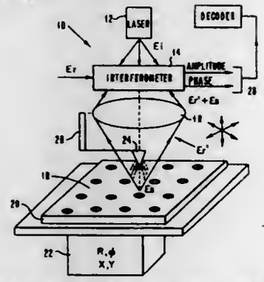
wherein a minimum value of the dimension of said concavo-convex pits measured along the direction normal to said recording medium is less than one eighth of the wavelength of said laser light.

5,602,820

METHOD AND APPARATUS FOR MASS DATA STORAGE

Hemantha K. Wickramasinghe, Chappaqua, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 24, 1995, Ser. No. 518,946
Int. Cl.[6] G11B *9/00*
U.S. Cl. 369—126 **15 Claims**



1. An apparatus for decoding high density data encoded in a digital recording media as a series of tags comprising an information bit pattern including a tracking bit pattern, the apparatus comprising:

1) a source of electromagnetic radiation for generating an incident wave;

2) means for directing at least a portion of the incident wave to the media;

3) a scatterer probe acting as an antenna and capable of re-radiating a signal wave, said signal wave developing as an interactive coupling between a tag and said scatterer probe;

4) means for creating an interference signal based on the signal wave and a reference wave;

5) a high-speed detector for interrogating at least one of the phase and amplitude of the interference signal as a read-out signal;

6) means for interpreting and reproducing the read-out signal; and

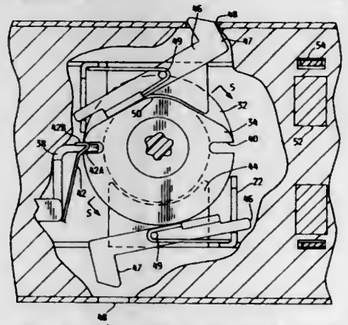
7) means for detecting the tracking bit pattern and for controlling the reproduction of the information bit pattern.

5,602,821

DOUBLE PICKER DRIVE MULTIPLEXING MECHANISM

Robert J. McPherson, Eden Prairie, and William R. Lynn, Minneapolis, both of Minn., assignors to International Data Engineering, Inc., Edina, Minn.

Filed Nov. 9, 1995, Ser. No. 552,468
Int. Cl.[6] G11B *17/22*
U.S. Cl. 369—178 **26 Claims**



25. A single-drive input, double gripper media transport element positionable for accessing storage media cartridges in a cartridge media store and simultaneously transporting multiple storage media cartridges, said media transport element comprising:

a housing having a front adjacent the media store and a rear opposite the media store,

at least two sliders mounted within said housing for moving the cartridge into and out of said housing from the media store, said sliders moving along respective parallel slider paths alternately toward and simultaneously away from the media store,

a cartridge gripper mounted on each of said sliders,

a driven slider lead screw mounted within said housing for positioning said sliders along their respective slider paths, and

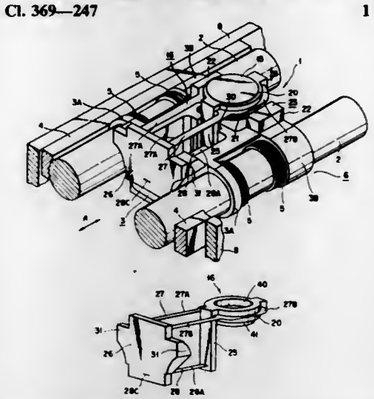
a lead screw nut on said lead screw for simultaneously or alternately engaging said slider lead screw with each of said sliders.

5,602,822

OPTICAL HEAD AND LENS ACTUATOR

Masaru Ishii, Kamakura, and Akihiro Kasahara, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Japan

Continuation of Ser. No. 326,747, Oct. 20, 1994, Pat. No. 5,483,516, which is a continuation of Ser. No. 35,247, Mar. 22, 1993, abandoned. This application Aug. 31, 1995, Ser. No. 522,120
Claims priority, application Japan, Apr. 20, 1992, 4-099809
Int. Cl.[6] G11B *17/00*
U.S. Cl. 369—247 **1 Claim**



1. An optical head comprising:

an objective lens for converging a light beam on an optical disk;

a movable-side support member, molded out of resin, for holding the objective lens;

carriage means for carrying the objective lens held by the movable-side support member, said carriage means being movable along a surface of the optical disk;

a stationary-side support member molded out of resin and fixed to the carriage means, with a certain distance maintained with reference to the movable-side support member;

first support means for movably supporting the movable-side support member in a direction of an optical axis of the objective lens, said first support means comprising first and second elastic members each of which has two ends, one of the two ends being embedded in the stationary-side support member, and the other end being embedded in the movable-side support member, such that the first and second elastic members are located in parallel to each other along a direction perpendicular to the optical axis of the objective lens in a first plane perpendicular to the optical axis of the objective lens; and

second support means, comprising a third elastic member having two ends, for supporting the movable-side support member in cooperation with the first and second elastic members of the first support means and the third elastic member of the second support means such that the movable-side support member is

movable relative to the carriage means in the direction of the optical axis of the objective lens, one of the two ends of the third elastic member being embedded in the stationary-side support member, and the other end of the two ends of the third elastic member being embedded in the movable-side support member, such that the third elastic member is located in a second plane different from the first plane and perpendicular to the optical axis of the objective lens, and between the first and second elastic members of the first means in the direction of the optical axis of the objective lens, is maintained parallel to the first and second elastic members of the first support means along the direction perpendicular to the optical axis of the objective lens, and is prevented from overlapping with each other in the optical axis direction of the objective lens.

5,602,823

OPTICAL RECORDING MEDIUM HAVING PRE-FORMATTED PATTERNS ARRANGE BY SHIFTING PHASES

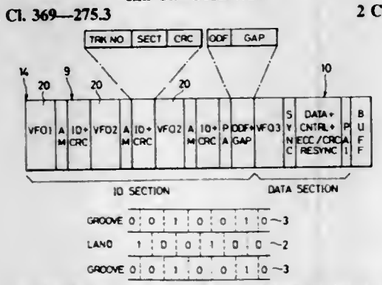
Ikuo Aoki; Yoshitaka Takahashi, and Hiroshi Maegawa, all of Yokohama, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 27, 1994, Ser. No. 281,472

Claims priority, application Japan, Jul. 30, 1993, 5-189761; Jul. 30, 1993, 5-189762

Int. Cl.[6] G11B *7/24*

U.S. Cl. 369—275.3 **2 Claims**



1. An optical information recording medium having a groove and a land region for recording information of a data format constructed by an ID section on which a pattern is formed as a preformat at a manufacturing time of said medium and a data section in one sector on both of said groove region and said land region;

wherein said pattern is arranged by shifting phases from each other in said land portion and said groove portion adjacent each other, wherein said ID section has VFO patterns arranged on center lines of said land portion and said groove portion and phases of said VFO patterns are shifted from each other by a predetermined angle in said land portion and said groove portion adjacent to each other.

5,602,824

OPTICAL DISK CAPABLE OF RECORDING INFORMATION ON BOTH LAND AND GROOVE TRACKS

Hirohsi Ooki, and Yuwa Ishii, both of Yokohama, Japan, assignors to Nikon Corporation, Japan

Filed Aug. 10, 1995, Ser. No. 513,652

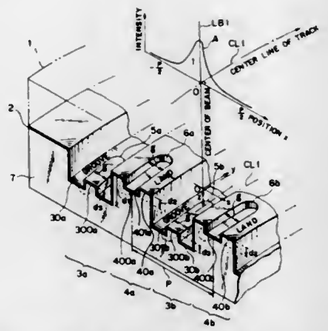
Claims priority, application Japan, Aug. 12, 1994, 6-190695; Sep. 9, 1994, 6-215137; Sep. 9, 1994, 6-215138

Int. Cl.[6] G11B *7/24*

U.S. Cl. 369—275.4 **14 Claims**

1. An optical disk from which recorded information is read out by irradiating a light beam onto said optical disk, comprising:

(a) neighboring land tracks, on which pits each having a predetermined depth are formed; and



(b) a groove track for separating said land tracks, islands each having a predetermined height being formed on said groove track, wherein the depth, D, of the pits and the height, H, of the islands satisfy:

$$D=H+m\lambda/2n$$

where,

m is an integer and λ is the wavelength of the light beam; and

n is the refractive index of the medium.

5,602,825

OPTICAL DISK AND OPTICAL DISK APPARATUS

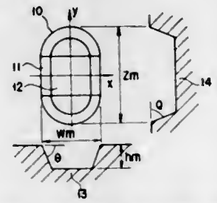
Toshihiro Sugaya, Ibaraki, and Yoshinori Honguh, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation-in-part of Ser. No. 475,494, Jun. 7, 1995, which is a continuation of Ser. No. 304,849, Sep. 13, 1994, Pat. No. 5,459,712. This application Oct. 10, 1995, Ser. No. 541,598

Claims priority, application Japan, Jan. 19, 1994, 6-004230; Mar. 29, 1994, 6-002934; Germany, Sep. 13, 1994, 9418355 U; European Pat. Off., Sep. 13, 1994, 94114369; Rep. of Korea, Sep. 14, 1994, 1994-23136

Int. Cl.[6] G11B *7/26*

U.S. Cl. 369—275.4 **24 Claims**



1. An optical disk with sectional trapezoidal pits comprising:

a substrate having information recorded by a plurality of pit trains formed thereon at a specified track pitch; and

a reflective layer formed on the substrate, wherein the information is reproduced by being irradiated with light beam via an objective lens, the track pitch is set within the range of (0.72 to 0.8) α×λ/NA/1.14 μm when a wavelength of the light beam is λ μm and a numerical aperture of the objective lens is NA, each of the pits is scaled by the multiplication ratio α used to secure allowable disk tilt angles, an upper width of each of the pits is within the range of (0.3 to 0.50) α×λ/NA/1.14 μm, a bottom width of the pits is within the range of (0.2 to 0.32) α×λ/NA/1.14 μm and a depth of the pits is within the range of (1/4.2×λ/n) to (1/5.2×λ/n) (n: refractive index of said substrate and λ: a wavelength of 0.65 μm) and α obtained by $2.623\times10^{-7}\times(d_s/\lambda)^2-1.706\times10^{-4}\,(d_s/\lambda)+0.934$ m (d_s: thickness of the substrate).

5,602,826

TEST SYSTEM IN AN ATM SYSTEM

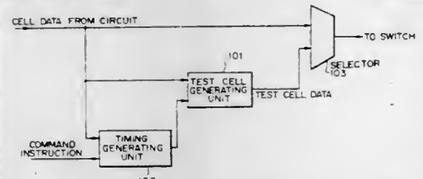
Shuji Yoshimura; Shiro Uriu, and Satoshi Kakuma, all of Kanagawa, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Continuation of Ser. No. 183,600, Jan. 19, 1994, abandoned. This application Nov. 30, 1995, Ser. No. 565,048

Claims priority, application Japan, Jan. 19, 1993, 5-006487; Mar. 19, 1993, 5-060740

Int. Cl.[6] H04J *3/14*

U.S. Cl. 370—248 **12 Claims**



1. A test system operated in an ATM system for transmitting data in an ATM cell in an M-bit parallel format, comprising:

test cell generating means for outputting to the ATM system a test cell of a predetermined test data pattern of the M-bit parallel format, said test cell generating means generating n test cells when N input cells are detected, N>n, and detecting timing of an idle cell, and outputting one of the n test cells at the timing for detected idle cells, said test cells being generated in various bonds; and

test cell confirming means for receiving the test cell from said ATM system, and confirming normal transmission of the test cell by detecting the predetermined test data pattern from the test cell.

5,602,827

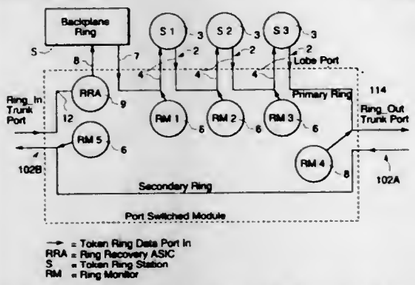
METHOD AND APPARATUS FOR CORRECTING A DEFECT IN A TOKEN RING NETWORK

Carl Lindeborg, Shrewsbury; Edward Carroll, Wrentham; James Moran, Methuen; David Bartolini, Charlton, all of Mass.; John Griesing, Santa Clara, Calif.; Liz Lindell, Sutton, Mass.; Anthony D. Walker, Rougemont, and Bradley S. Trubey, Cary, both of N.C., assignors to IBM, Armonk, N.Y., and 3COM Corporation, Santa Clara, Calif.

Filed Jul. 28, 1995, Ser. No. 508,794

Int. Cl.[6] H04J *3/14*

U.S. Cl. 370—223 **20 Claims**



1. A method for correcting a defect in a token ring network including a plurality of stations formed into a group, the method comprising the steps of:

monitoring an upstream end and a downstream end of the group for a beacon frame;

entering a port fault identification phase if said upstream end of the group receives a beacon frame and said downstream end of the group does not receive a beacon frame, said port fault identification phase including the steps of:

isolating the group from any other stations on the token ring network;

transmitting a beacon frame onto said upstream end of said group;

testing a portion of the token ring network adjacent each station in the group for a defect.

5,602,828

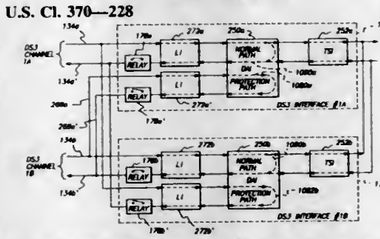
PROTECT PATH SWITCHING IN A PERFORMANCE MONITORING AND TEST SYSTEM

Thomas L. Engdahl; Paul R. Hartmann, both of Escondido; Kevin Pope, Poway, and Kevin Cadieux, Escondido, all of Calif., assignors to Applied Digital Access, San Diego, Calif.

Continuation of Ser. No. 118,443, Sep. 17, 1993, which is a continuation-in-part of Ser. No. 862,470, Apr. 2, 1992, abandoned. This application May 26, 1995, Ser. No. 451,686

Int. Cl.[6] H04J *3/14*

U.S. Cl. 370—228 **16 Claims**



1. In a telephone network, a method of switching an input digital signal between a plurality of processors, wherein each processor includes a normal path and a protect path, the method comprising the steps of:

comparing the input digital signal, received from the telephone network, bit-for-bit against a first output digital signal from a first processor;

comparing the input digital signal bit-for-bit against a second output digital signal from a second processor; and

switching the input digital signal from the normal path in the first processor to the protect path in the second processor.

5,602,829

METHOD AND APPARATUS FOR ADJUSTING THROUGHPUT OF TRANSMISSION DATA TO BE TRANSMITTED TO NETWORK

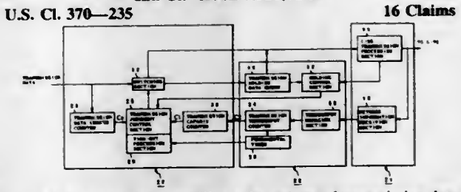
Hirokazu Nie; Tetsuo Chimoto; Shinji Shihara, and Masahiro Kurita, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 490,588, Jun. 15, 1995, abandoned. This application Mar. 21, 1996, Ser. No. 619,158

Claims priority, application Japan, Jun. 20, 1994, 6-136856

Int. Cl.[6] H04L *12/26; 12/54*

U.S. Cl. 370—235 **16 Claims**



1. An apparatus for controlling a throughput of transmission data which is transmitted to a network, comprising:

a transmission capable counter indicative of a data length which can be transmitted at the present time point;

a fundamental timer to which an updating period of said transmission capable counter is set and which times out every said updating period;

a transmission throughput counter indicative of a data length which can be transmitted by a communication network between the updating periods of said fundamental timer;

a transmission holding data queue for temporarily holding data which cannot be transmitted;

a line transmission processing section for outputting the transmission data to a physical line of said communication network;

a transmission judgment control section for checking said transmission capable counter when a transmission request is generated, for subtracting a data length of the transmission data to which the transmission request was generated from a count value of said transmission capable counter and starting a transmitting process by said line transmission processing section when said count value is positive, and for holding the transmission data in said transmission holding data queue when the value of said transmission capable counter is negative or is equal to 0; and

a time-out processing section for presetting a count value of said transmission throughput counter to said transmission capable counter when the value of said transmission capable counter is positive at the time of a timeout of said fundamental timer, for executing a counter updating to add the value of said transmission throughput counter to the value of said transmission capable counter when the value of said transmission capable counter is negative or is equal to 0, for taking out the transmission data of a highest priority among the transmission data held when the value of said transmission capable counter is positive as a result of said process and when the holding transmission data exists in said transmission holding data queue, for subtracting a data length of said extracted transmission data from the value of said transmission capable counter, and for starting a transmitting process by said line transmission processing section.

5,602,830

METHOD AND AN APPARATUS FOR SHAPING THE OUTPUT TRAFFIC IN A FIXED LENGTH CELL SWITCHING NETWORK NODE

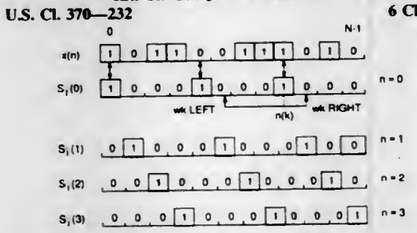
Aline Fichou, La Colle Sur Loup; Pierre-Andre Foriel, Saint Laurent du Var, and Claude Galand, Cagnes Sur Mer, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 11, 1995, Ser. No. 526,345

Claims priority, application European Pat. Off., Sep. 19, 1994, 94480087

Int. Cl.[6] H04J *3/14;* **H04L** *12/56*

U.S. Cl. 370—232 **6 Claims**



1. For use in a fixed length cell switching node in a telecommunication network supporting transfers of traffic between source units and destination units, each source unit sending traffic to the switching node at a peak cell rate R established at the time of connection of that source unit to the switching node, said node including output queues, means for maintaining a Time Division Multiplexing (TDM) table having N positions, each position containing a pointer to one of the output queues, and means for sequentially selecting the table positions on a regular basis to thereby select the output queue identified by the point in the selected table position, a method for controlling the TDM table contents to shape a cell stream delivered to an output of the switching node to include new traffic provided over a new connection to one of the source nodes, said method comprising the steps of:

determining the number S of positions to be reserved in the TDM table for queue pointers for the new traffic and the period T for the new traffic, the period T being the inverse of the peak cell rate R for the new traffic;

on an iterative basis, fitting new traffic queue pointers into the TDM table by writing tentative queue pointers into free positions in the TDM table with a nominal separation that would cause the new traffic queue to be accessed at the peak cell rate R and determining the actual Cell Delay Variation (CDV) for each possible fit, CDV being the deviation between the actual and ideal positions of new traffic queue pointers in the TDM table;

selecting the possible fit having the smallest CDV value; and

writing new traffic queue pointers into the TDM table positions already designated for that fit.

5,602,831

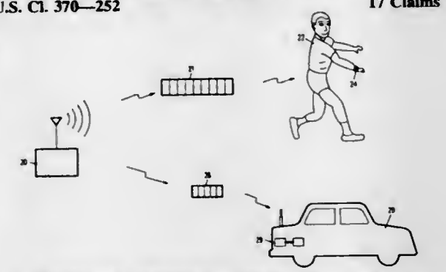
OPTIMIZING PACKET SIZE TO ELIMINATE EFFECTS OF RECEPTION NULLS

Garold B. Gaskill, Tualatin, Oreg., assignor to Seiko Communications Systems, Inc., Beaverton, Oreg.

Filed Mar. 31, 1995, Ser. No. 414,746

Int. Cl.[6] H04Q *7/34*

U.S. Cl. 370—252 **17 Claims**



1. A method for transmitting a message packet to a receiver, comprising:

identifying changes in signal drop-out characteristics each associated with the receiver;

encoding packets into packet blocks;

transmitting each packet block to the receiver; and

varying the number of packets encoded in the packet block according to the changes in the signal drop-out characteristics.

5,602,832

RECEIVER DEVICE FOR CODE DIVISION MULTIPLEX COMMUNICATION SYSTEM

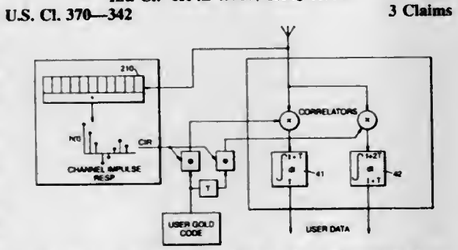
John E. Hudson, Stansted, United Kingdom, assignor to Northern Telecom Limited, Montreal, Canada

Filed Sep. 21, 1994, Ser. No. 310,258

Claims priority, application United Kingdom, Sep. 22, 1993, 9319550

Int. Cl.[6] H04B *1/707;* **H04J** *13/04*

U.S. Cl. 370—342 **3 Claims**



1. A receiver apparatus for a code division multiple access (CDMA) cellular communications system in which a plurality of

broadcast data signals on a common channel include a data portion and are provided each with a broadcast synchronisation sequence and a respective one of a set of mutually orthogonal binary spreading sequences or codes, each said spreading sequence being allocated to a respective channel user, the receiver apparatus comprising

a channel estimator having gating means for recovering the broadcast synchronisation sequence from a received broadcast signal and incorporating a matched filter having a channel impulse response to the synchronisation signal comprising a single peak with low side lobes; an adaptive matched filter to which said data portion of the received broadcast signal is fed and having an array of filter taps; means for storing a copy of the allocated spread sequence; digital filter means for convolving the allocated spreading sequence with the channel impulse response; the output of the digital filter means for convolving coupling the spreading sequence and the channel impulse response being coupled to the taps of the adaptive matched filter so as to despread the data portion of the received signal and recover the data.

5,602,833

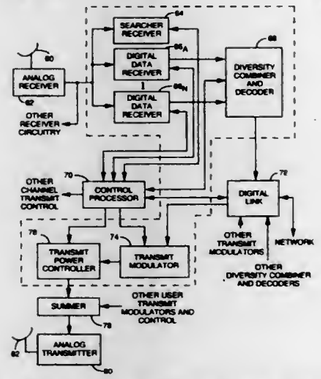
METHOD AND APPARATUS FOR USING WALSH SHIFT KEYING IN A SPREAD SPECTRUM COMMUNICATION SYSTEM

Ephraim Zehavi, Haifa, Israel, assignor to Qualcomm Incorporated, San Diego, Calif.

Filed Dec. 19, 1994, Ser. No. 358,425

Int. Cl.[6] H04B *7/216;* **H04J** *13/02;* **H04L** *27/28*

U.S. Cl. 370—209 **43 Claims**



39. A spread spectrum communication system, comprising:

a plurality of gateway type base stations each including at least one communication signal transmitter that transmits signals comprising data symbols to active system users, comprising:

a plurality of function generating means each for providing at least one of a plurality of orthogonal functions of a plurality of orthogonal functions of length n having a predefined recursive relationship among each other;

means for selecting N of said orthogonal functions for each active system user, N being a power of 2;

means for forming M mutually orthogonal modulation symbols of length Ln, for each active system user using said N selected orthogonal functions and respective inverses thereof, where M is the product of L and N;

means for mapping data symbols into said modulation symbols for each active system user, connected to receive data symbols and orthogonal modulation symbols for each active system user, and for selecting one of said modulation symbols according to binary values for every log M data symbols;

a plurality of spreading means each connected to said means for mapping for receiving modulation symbols for respective users and for producing a spread spectrum data signal; and

combination means for combining modulation symbols for substantially all active users receiving signals over a common carrier frequency into a communication signal;

a plurality of mobile communication units, each including a mobile receiver, comprising:

means for selecting and receiving a spread spectrum communication signal from at least one gateway; and

demodulation means connected to the means for selecting and receiving, for providing modulation symbols for respective users by demodulating the received spread spectrum communication signal.

5,602,834

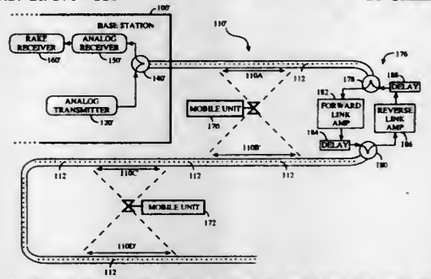
LINEAR COVERAGE AREA ANTENNA SYSTEM FOR A CDMA COMMUNICATION SYSTEM

Richard F. Dean, Boulder, Colo., and Franklin P. Antonio, Del Mar, Calif., assignors to QUALCOMM Incorporated, San Diego, Calif.

Continuation-in-part of Ser. No. 112,392, Aug. 27, 1993, Pat. No. 5,513,176, which is a continuation-in-part of Ser. No. 849,651, Mar. 9, 1992, Pat. No. 5,280,472, which is a continuation of Ser. No. 624,118, Dec. 7, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 483,111

Int. Cl.[6] H04B *7/26;* **H04Q** *7/36*

U.S. Cl. 370—335 **28 Claims**



1. In a digital communication system in which at least one remote terminal is in communication with a base station using digitally modulated communication signals, said base station having an antenna system comprising:

a first linear coverage area antenna structure;

a second linear coverage area antenna structure; and

antenna interface means for coupling said communication signals between said base station and said first and second linear coverage area antenna structures, said antenna interface means including means for splitting ones of said communication signals into first and second time-offset signal components for transmission by said first and second linear coverage area antenna structures, respectively.

5,602,835

OFDM SYNCHRONIZATION DEMODULATION CIRCUIT

Takashi Seki; Yasushi Sugita, and Tatsuya Ishikawa, all of Kanagawa-ken, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 16, 1994, Ser. No. 341,976

Claims priority, application Japan, Nov. 16, 1993, 5-287056

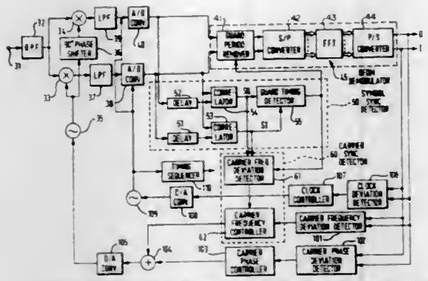
Int. Cl.[6] H04L *7/00*

U.S. Cl. 370—206 **8 Claims**

4. An OFDM synchronization demodulation circuit comprising:

receiving means for receiving an orthogonal frequency division multiplex (OFDM) modulated signal having an available

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symbol period and a guard period, the guard period of the received modulated signal being based on a part of the available symbol period;

orthogonal axes demodulation means for demodulating an in-phase axis detection signal and an orthogonal axis detection signal of the received OFDM modulated signal;

first delaying means for delaying the in-phase axis detection signal by the available symbol period such that a guard period of the delayed in-phase axis detection signal coincides with a part of the available symbol period of the in-phase axis detection signal;

second delaying means for delaying the orthogonal axis detection signal by the available symbol period such that a guard period of the delayed orthogonal axis detection signal coincides with a part of the available symbol period of the orthogonal axis detection signal;

correlation calculation means for calculating correlation coefficients based on correlations of at least one of the in-phase axis detection signal and the orthogonal axis detection signal both with an output of the first delaying means and with an output of the second delaying means, respectively;

OFDM signal demodulation means for demodulating the OFDM modulated signal by extracting only the available symbol period signal from the in-phase axis detection signal and the orthogonal axis detection signal;

frequency deviation detection means for detecting a frequency deviation of the orthogonal axes demodulating means based on the correlation coefficients calculated by the correlation calculation means; and

frequency control means for controlling a frequency of the orthogonal axes demodulating means based on the detected frequency deviation.

5,602,836

MULTIPLE ACCESS CELLULAR COMMUNICATION WITH CIRCULAR INTERLEAVING AND REDUCED DROPPED-PACKET RUNLENGTHS

Haralabos C. Papadopoulos, Cambridge, Mass., and Carl-Erik W. Sundberg, Chatham, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation-in-part of Ser. No. 157,778, Nov. 24, 1993, Pat. No. 5,420,851. This application Dec. 27, 1994, Ser. No. 364,367

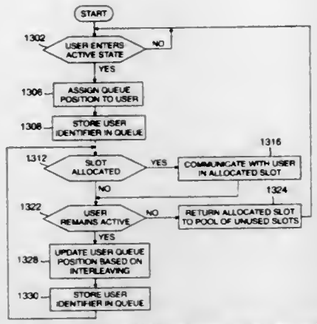
Int. Cl.[6] H04J *3/17*

U.S. Cl. 370—280 **26 Claims**

1. In a communication system in which active users communicate information in allocated slots of a frame, a method of allocating uplink and downlink slots to ensure that dropped packets are substantially distributed among all users over the frame in which drops occur, the method comprising the steps of:

allocating slots in a given frame to a first set of the active users;

identifying a second set of the active users which are not allocated a slot in the given frame; and



providing at least one of the active users in the second set which remains active in a subsequent frame with a priority in obtaining an allocated slot in the subsequent frame.

5,602,837

MULTIPLEX SYSTEM FOR A PERSONAL HANDY PHONE SYSTEM

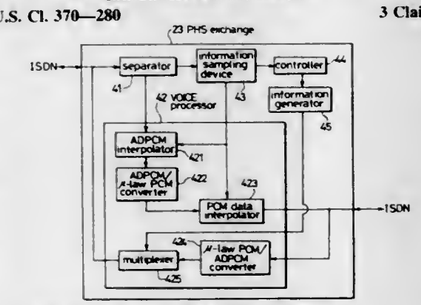
Hideaki Takahashi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 355,023, Dec. 13, 1994, abandoned. This application Apr. 8, 1996, Ser. No. 629,273

Claims priority, application Japan, Dec. 28, 1993, 5-336194

Int. Cl.[6] H04B *7/26;* **H04J** *3/12*

U.S. Cl. 370—280 **3 Claims**



3. A personal handy phone system comprising:

a portable phone terminal transmitting outgoina ADPCM voice data;

a base station for receiving said outgoing ADPCM voice data of said portable phone terminal;

an exchange communicatively linking said base station to a public phone network terminal via an ISDN,

wherein said base station comprises:

an informational generator for generating system data;

means for multiplexing said system data and said outgoing ADPCM voice data to form outgoing multiplexed data in a B channel of said ISDN, and wherein

said exchange comprises:

a separator for receiving said outgoing multiplexed data from said base station via said B channel of said ISDN, and separating said outgoing multiplexed data from said base station into said outgoing ADPCM voice data and said system data;

an ADPCM voice data interpolator coupled to an output of said separator for interpolating said outgoing ADPCM voice data;

a first converter coupled to an output of said ADPCM voice data interpolator for converting said ADPCM outgoing ADPCM voice data into outgoing PCM voice data;

a PCM data interpolator coupled to an output of said first converter for interpolating said PCM outgoing voice data;

a second converter for converting incoming PCM voice data into incoming ADPCM voice data in response to a call from said public network terminal;

a second informational generator for generating second system data; and

a multiplexer coupled to respective outputs of said second converter and said second informational generator for multiplexing said incoming ADPCM voice data and said second system data.

5,602,838

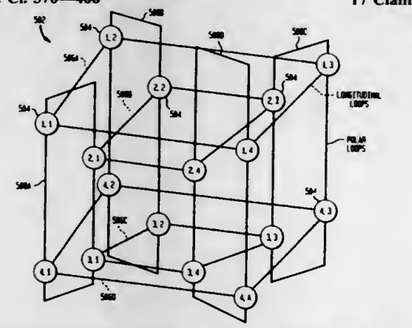
GLOBAL MULTI-SATELLITE NETWORK

Stamatios V. Kartalopoulos, Annandale, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 21, 1994, Ser. No. 360,518

Int. Cl.[6] H04B *7/185;* **H04J** *3/24*

U.S. Cl. 370—406 **17 Claims**



1. A global satellite communication network, comprising:

a polar communication loop comprising a plurality of nodes each bidirectionally communicating with adjacent nodes in said polar communication loop; and

a longitudinal communication loop comprising a plurality of nodes each bidirectionally communicating with adjacent nodes in said longitudinal communication loop, said longitudinal communication loop in communication with said polar communication loop via a node which is common to both said polar and longitudinal communication loops;

said polar and longitudinal communication loops formed in three dimensional space;

said common node comprising a switch to transfer packets received from said polar communication loop to said longitudinal communication loop, and vice versa, as a function of destination addresses contained in said packets,

wherein each of said nodes comprises,

a plurality of input ports for receiving signals from an associated earth station and from communicating adjacent nodes;

means for monitoring performance parameters of said input ports;

means for generating a performance parameter packet containing an identifier of said each node and said performance parameters; and

means for broadcasting said performance parameter packet to all other nodes in said global satellite communication network.

5,602,839

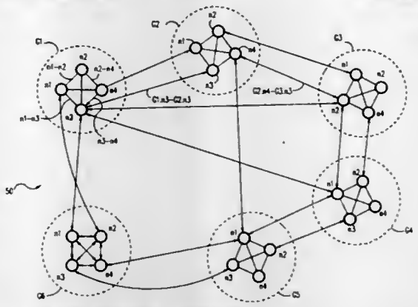
ADAPTIVE AND DYNAMIC MESSAGE ROUTING SYSTEM FOR MULTINODE WORMHOLE NETWORKS

Narasimhareddy Annapareddy, College Station, Tex.; James T. Brady, and Damon W. Finney, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 9, 1995, Ser. No. 555,539

Int. Cl.[6] H04L *12/56;12/66*

U.S. Cl. 370—405 **24 Claims**



1. A wormhole network, comprising:

a plurality of nodes interconnected by communication links, said nodes divided into groups where each of said groups includes a predetermined number of said nodes not included in the other groups, each node having a local node address and a group address and further having access to a processor and memory;

each node including a level-1 table, said level-1 table comprising message delivery directions for delivering a message from a node of a group to another group in the network; and

each node including a level-2 table, said level-2 table comprising message delivery directions for delivering said message from a node of a group to the other nodes within said group.

5,602,840

PROGRAM-CONTROLLED ISDN SWITCHING SYSTEM WITH A PROGRAM MODULE CONSTRUCTED IN ACCORDANCE WITH THE PRINCIPLES OF OBJECT-ORIENTED PROGRAMMING FOR THE HANDLING OF SWITCHED CONNECTIONS

Wolfgang Günther, München, and Gerhard Mägerl, Pliening, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

PCT No. PCT/DE93/00233, § 371 Date Sep. 26, 1994, § 102(e) Date Sep. 26, 1994, PCT Pub. No. WO93/20509, PCT Pub. Date Oct. 14, 1993

PCT Filed Mar. 15, 1993, Ser. No. 307,753

Claims priority, application Germany, Mar. 27, 1992, 42 10 137.9

Int. Cl.[6] H04J *3/02*

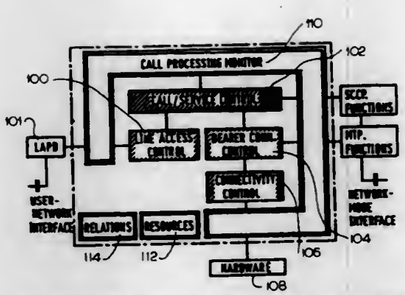
U.S. Cl. 370—385 **2 Claims**

1. A system program module for use in an ISDN switching system, the system program module constructed in accordance with object-oriented programming for handling switched connections, said system program module comprising:

object-oriented structural elements which are classes in object-oriented programming and of which objects are instantiatable for at least one of a connection and a call, and a signalling operation and which represent protocol modules used in protocol architectures for standardization of functional switching procedures;

a respective object-oriented structural element implies a data area of which a copy is in each case set up in a data memory area as a pattern for entering data, that is unique to said at least one of a connection and a call and a signalling, and said

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copy remaining in existence only for a duration of said at least one of a connection and a call and a signaling operation.

5,602,841

EFFICIENT POINT-TO-POINT AND MULTI-POINT ROUTING MECHANISM FOR PROGRAMMABLE PACKET SWITCHING NODES IN HIGH SPEED DATA TRANSMISSION NETWORKS

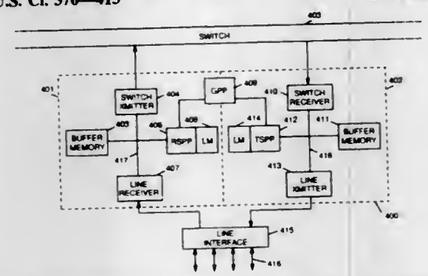
Gerald Lebizay, Vence; Jean M. Munier, Cagnes sur Mer; Andre Pauporte, La Colle sur Loup, and Victor Spagnol, Cagnes sur Mer, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 15, 1995, Ser. No. 404,800

Claims priority, application European Pat. Off., Apr. 14, 1994, 94480030

Int. Cl.[6] H04L *12/56*

U.S. Cl. 370—413 **19 Claims**



1. A line adapter for a packet switching node in a communication network, including a programmable processing means (SPP) for receiving and transmitting data packets of fixed or variable length to one or more outputs, said line adapters comprising:

a first storing means for buffering each data packet in one or more buffers;

means for identifying said buffers,

a second storing means including means for queuing said buffer identifiers in buffer lists, each buffer list identifying a data packet;

means for identifying said buffer lists;

means for queuing, in said second storing means, buffer list identifiers in packet lists, each packet list identifying a queue;

means for identifying said packet lists;

means for processing a routing header of each data packet;

means for associating with each output an output queue for stacking the packet list identifiers of the data packets to transmit on said outputs;

means for routing the data packets to one or a plurality of outputs;

means for processing said routing header further comprising means for determining and selecting the output queue corresponding to the destination of each data packet;

said means for routing further comprising:

means for copying the buffer list identifier of the data packet to transmit in the output queue corresponding to said selected output;

means for handling each data request for said outputs in real time;

means for releasing said buffers in said first storing means, and said buffer identifiers and said buffer list identifiers from said second storing means;

said means for handling data requests further comprising means for handling independently the output queues, which further includes:

means for dequeuing in parallel the packet identifiers requested by the outputs; and

means for dequeuing the buffer identifiers stacked in the buffer list identified by said packet identifiers.

5,602,842

Patent Not Issued For This Number

5,602,843

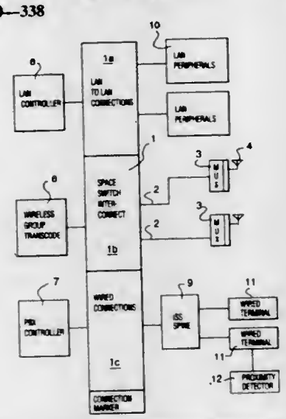
INTEGRATED WIRED AND WIRELESS TELECOMMUNICATIONS SYSTEM

Thomas Gray, Carp, Canada, assignor to Mitel Corporation, Konata, Canada

Continuation of Ser. No. 278,317, Jul. 21, 1994, abandoned. This application Apr. 1, 1996, Ser. No. 625,302

Int. Cl.[6] H04J *3/16*

U.S. Cl. 370—338 **8 Claims**



1. A PBX-based integrated telecommunications system comprising:

a) a wired subsystem comprising wired links for establishing communication with wired terminals connected thereto;

b) a wireless subsystem comprising a group of base stations for communicating over wireless links to mobile terminals;

c) a common central switch for establishing interconnections between selected communications channels and connected to said wired terminals and said base stations;

d) a switching controller connected to said central switch for controlling the establishment of interconnections between selected communications channels in said system;

e) a common group controller connected to said base stations through said central switch for exchanging control packets over a data link layer with said mobile terminals through said base stations to control said mobile terminals and thereby provide message-based mobility management of said wireless subsystem independently of said switching controller; and

f) said base stations acting as multiplexers and forming a transparent encapsulation bridge connecting said data link layer between the mobile terminals and said group controller to permit the exchange of said control messages therebetween, said group controller further comprising means for sending and receiving control packets over said wireless links, means for monitoring the operation of each channel in said wireless links responsive to received control packets, and means for generating said control packets for transmission over said wireless subsystem to control the operation thereof.

5,602,844

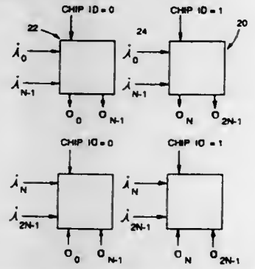
SELF ROUTING CROSSBAR SWITCH SUITABLE FOR USE AS A SWITCHING FABRIC IN AN ATM SWITCH

Joseph B. Lyles, Mountain View, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 15, 1994, Ser. No. 340,493

Int. Cl.[6] H04L *12/56*

U.S. Cl. 370—395 **7 Claims**

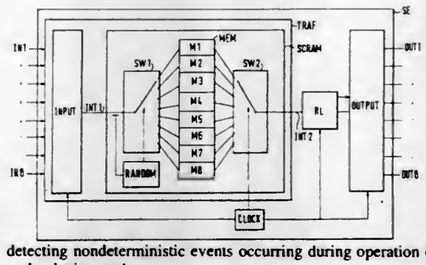


I. An expandable, self routing switching fabric for identifiably routing data packets in an ATM switch comprising:

a plurality of input ports and a plurality of output ports for routing a packet from an input source coupled to one of said input ports to an output destination coupled to one of said output ports on a selected circuit through the fabric specified by the packet; and,

a crosspoint array of state machines, each state machine disposed at an internal intersection of an input port and an output port, wherein each state machine has a predetermined identity representative of a singular one of the output ports and means for routing the packet to the singular one of the output ports and wherein each state machine futher includes a means for comparing the identity to an address header of each data packet and for setting each state machine active/connected when the comparing determines a match between the identity and the address header and for setting each state machine not active/disconnected when the comparing determines a non-match between the identity and the address header,

whereby the selected circuit through the fabric to a desired output port comprises an active/connected state machine defined by the address for connecting the one of the input ports to the one of said output ports.



detecting nondeterministic events occurring during operation of the device, and

mapping detected occurrences of the nondeterministic events to the random control signal by means of an assignment rule.

5,602,846

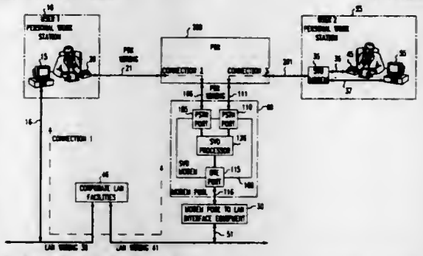
SIMULTANEOUS VOICE AND DATA CALL ESTABLISHMENT USING A SIMULTANEOUS VOICE AND DATA MODEM POOL AND PRIVATE BRANCH EXCHANGE FACILITIES

Kurt E. Holmquist, Largo, and Richard K. Smith, Seminole, both of Fla., assignors to Paradyne Corporation, Largo, Fla.

Filed Apr. 8, 1994, Ser. No. 225,295

Int. Cl.[6] H04J *3/12*

U.S. Cl. 370—384 **18 Claims**



1. A modem comprising:

a first port of the modem for coupling to a switching system;

a second port of the modem for coupling to the switching system; and

means for originating signaling to the switching system through each of the ports of the modem to establish telephone calls between each port and a respective called party wherein the means for originating bridges the respective called parties together;

wherein the means for originating receives a simultaneous voice and data signal from the second port, and further demodulates the received simultaneous voice and data signal to provide a voice signal to the first port.

5,602,845

METHOD OF GENERATING A RANDOM ELEMENT AS WELL AS A METHOD FOR TRAFFIC MIXING, RANDOM ELEMENT GENERATOR AND SYSTEM COMPONENT THEREWITH

Stefan Wahl, Schwieberdingen, Germany, assignor to Alcatel N.V., Rijswijk, Netherlands

Filed Nov. 17, 1995, Ser. No. 560,026

Claims priority, application Germany, Nov. 30, 1994, 44 42 532.5

Int. Cl.[6] H04L *12/56*

U.S. Cl. 370—395 **10 Claims**

1. A method of generating a random control signal in a device (SE), comprising the steps of:

5,602,847

SEGREGATED SPECTRUM RF DOWNCONVERTER FOR DIGITIZATION SYSTEMS

Carmine J. Pagano, Blairstown, and Jack C. Wen, Parsippany, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

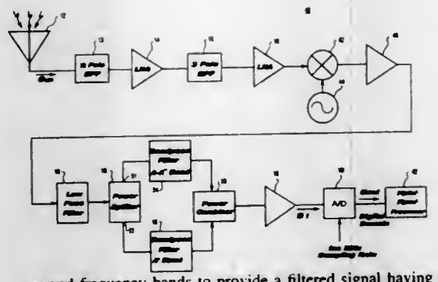
Filed Sep. 27, 1995, Ser. No. 534,773

Int. Cl.[6] H04J *1/05*

U.S. Cl. 370—484 **19 Claims**

1. An apparatus for digitizing an electromagnetic input signal having frequency components within at least first and second segregated frequency bands, comprising:

a filtering circuit arrangement for passing only frequency components of said input signal substantially within said first and



second frequency bands to provide a filtered signal having a spectrum with spectral components below a predetermined power level within a frequency gap between said first and second frequency bands; and

an analog to digital (A/D) converter for sampling said filtered signal at a sampling rate sufficient to provide a digitized output signal having a frequency spectrum including spectral components of said filtered signal at corresponding frequencies thereof, and with a replica of spectral components of one of said frequency bands appearing within said frequency gap.

5,602,848

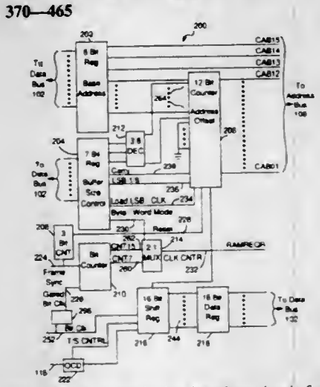
MULTI-MODE TDM INTERFACE CIRCUIT

Lawrence P. Andrews, Boca Raton, Fla.; Gordon T. Davis, Raleigh; Lee H. House, Durham, both of N.C.; Baiju D. Mandalia, Boca Raton, Fla.; Laurence V. Marks, Raleigh, N.C.; William R. Robinson, Jr., West Palm Beach, and John C. Sinibaldi, Pompano Beach, both of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 5, 1995, Ser. No. 460,951

Int. Cl.[6] H04J *3/12*

U.S. Cl. 370—465 **9 Claims**



1. A time division multiplexing interface circuit for interfacing between a serial data port and a data buffer, connected to a data bus and an address bus, said circuit comprising:

a first register having a first plurality of outputs, said first register for receiving a base address from said data bus and providing said base address at one or more of said first plurality of outputs, a plurality of most significant bits of said base address comprising a plurality of most significant bits of a first data buffer address;

a second register having a second plurality of outputs, said second register for receiving a control word on said data bus and providing a buffer size control word, a clock selection signal, a bit disable signal, an interleave signal and a modulo count signal at said second plurality of outputs;

a first N-bit counter for receiving a frame sync pulse and generating a reset signal once for every 2^N frames;

a clock timer for receiving a bit clock signal and generating a gated bit clock signal;

a bit counter for receiving said gated bit clock signal and generating a first clock signal and a second clock signal, said first clock signal toggling once per eight gated bit clock signals and, said second clock signal toggling once per sixteen gated bit clock signals;

a multiplexer for receiving said first and second clock signals and, said clock selection signal, said multiplexer selectively choosing between said first and second clock signals to provide a counter clock signal according to the state of said clock selection signal;

a second N-bit counter for generating a plurality of least significant bits of said first data buffer address, said second N-bit counter being clocked by said counter clock signal and receiving said bit disable signal, said modulo count signal, said interleave signal, and said reset signal, wherein said bit disable signal disables the least significant bit of said second N-bit counter when active, said modulo control signal selects modulo **24** or modulo **12** counting, said interleave signal determines whether odd or even addresses are used when interleaving buffers, and said reset signal resets said second N-bit counter when active; and

a decoder for receiving said buffer size control word and disabling one or more bits of said second N-bit counter by forcing a parallel load for said one or more bits from one or more outputs of said first register.

5,602,849

COMMUNICATION BUS SYSTEM AND STATION FOR USE IN SUCH SYSTEM

Jelle Hoekstra, Eindhoven, Netherlands, assignor to D2B Systems Company Limited, Redhill-Surrey, United Kingdom

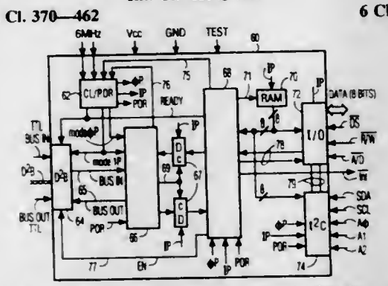
PCT No. PCT/IB94/00250, § 371 Date Apr. 17, 1995, § 102(e) Date Apr. 17, 1995, PCT Pub. No. WO95/05636, PCT Pub. Date Feb. 23, 1995

PCT Filed Aug. 15, 1995, Ser. No. 416,824

Claims priority, application United Kingdom, Aug. 16, 1993, 9316996

Int. Cl.[6] H04J *3/02*

U.S. Cl. 370—462 **6 Claims**



1. A multistation single-channel communication bus system accommodating master stations, any master station comprising arbitration means, arbitration outcome detection means, and formatting means for upon winning an arbitration formatting a frame comprising a slave address and slave control signalizations and accommodating a plurality of data byte periods for data transmission from a transmitter station to a receiver station up to a first maximum data byte length, and each period accommodating an acknowledge bit from said receiver station, said transmitter station being arranged for, upon absence of such acknowledge bit for a particular data byte, repeating that data byte, characterized in that said system is arranged for, with respect to intended transfer of a message whose data byte length would exceed said first maximum data byte length, dividing said message into partial messages each of an associated frame data byte count below said first maximum data byte length, and assigning each partial message to a respective bus frame, said system having counting means for counting in a particular frame data byte periods and received acknowledge bits, said transmitter station being arranged for, upon attaining said first maximum data byte length earlier by said data byte periods than said frame data byte count by said acknowledge bits, signalling a frame failure and ignoring any transfer in said particular frame for undertaking a repeat therefor.

5,602,850

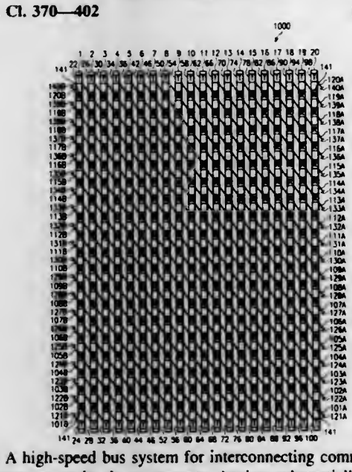
HIGH-SPEED PACKET BUS

Ian Charles K. Wilkinson, Newark; Kingston Duffie, Palo Alto, both of Calif., and Michel Laurence, Montreal, Canada, assignors to DSC Communications Corporation, Plano, Tex.

Continuation of Ser. No. 15,695, Feb. 9, 1993, abandoned. This application Oct. 17, 1994, Ser. No. 324,144

Int. Cl.[6] H04L *12/40*

U.S. Cl. 370—402 **10 Claims**



1. A high-speed bus system for interconnecting communicating elements at nodes in a computer having substantially straight, elongate slots in a backplane, said elongate slots having an orientation, a communicating element being disposed at each node, the bus system in said backplane comprising:

a plurality of bus pairs, each bus pair comprising a first bus and a second bus extending from a particular node, said first bus of each bus pair extending from the particular node in a first diagonal direction with respect to the orientation of the slots, said second bus of each bus pair extending from the particular node in a second diagonal direction opposite said first diagonal direction, said first and second buses of each bus pair extending to respective terminations, said first bus and said second bus each having parallel bit lines, said parallel bit lines of said first bus and said second bus being of equal length between each and every node connection of said first bus and said second bus; and

each node comprising:

a transmit agent means disposed at each node with said communicating element and associated with one of said plurality of bus pairs, said transmit agent means comprising a first transmit agent and a second transmit agent for communicating identical digital information from said communicating element to said first bus and said second bus, said first transmit agent being coupled to said first bus and said second transmit agent being coupled to said second bus of said associated one of said plurality of bus pairs; and

a plurality of receive agents, said plurality of receive agents comprising a receive agent for every other node, all of said plurality of receive agents being disposed with said communicating element, each one of said receive agents being coupled to one of said first bus and said second bus to receive said digital information via said first and second transmit agents, respectively;

such that said transmit agent means transmits digital data from said communicating element to all other communicating elements via said associated one of said plurality of bus pairs and controls only said associated one of said plurality of bus pairs.

5,602,851

MULTI-PORT BRIDGE

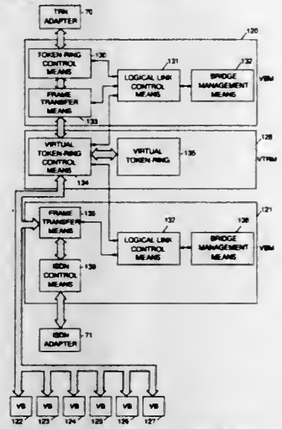
Yoshihiko Terashita, Yamato; Yoshikazu Sato, Yokohama, and Nobuyuki Ishikawa, Yamato, all of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 8, 1994, Ser. No. 336,152

Claims priority, application Japan, Dec. 22, 1993, 5-234489

Int. Cl.[6] H04L *12/66*

U.S. Cl. 370—403 **1 Claim**



1. A multi-port bridge for interconnecting a plurality of network segments comprising:

a plurality of virtual bridge modules, each bridge module emulating a bridge protocol to receive frames on an input port and to route the frame to an output port and including a logical link control means having a logical link control function, bridge management means for managing the virtual bridge module through said logical link control means, a media access control means having a media access control function and a frame transfer means for frame transfer; and

a virtual Token-Ring module connected to the output port of each one of the plurality of virtual bridge modules, said virtual Token-Ring module emulating a Token-Ring protocol to transport the frames among the plurality of virtual bridge modules wherein said virtual Token-Ring module includes a media access control means having a media access control function.

5,602,852

DATA COMMUNICATIONS SYSTEM USING A FIBER DISTRIBUTED DATA EXCHANGE INTERFACE

Yasuhisa Shiobara, Hoya, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 943,142, Sep. 10, 1992, abandoned, which is a continuation of Ser. No. 552,085, Jul. 13, 1990, abandoned. This application Jun. 10, 1994, Ser. No. 258,366

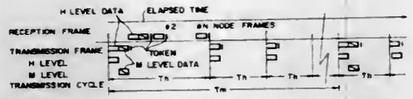
Claims priority, application Japan, Jul. 13, 1989, 1-181404

Int. Cl.[6] H04L *12/433*

U.S. Cl. 370—455 **7 Claims**

5. A data communication method in a data communication system having a plurality of nodes and a transmission path which connects said nodes in a token passing network in which each of said nodes has a data processing apparatus for transmitting data to and receiving data from said transmission path and for performing

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a plurality of transmission operations, said transmission operations having transmission periods, said each of said nodes transmitting data either synchronously with respect to reception of one of a plurality of tokens which are passed between said nodes in said token passing network when said tokens are passed between said nodes at a rate faster than a predetermined time, or asynchronously with respect to reception of any of said tokens when said tokens are passed between said nodes at a rate slower than the predetermined time, said data communication method comprising the steps of:

a) classifying data to be transmitted from each of said nodes as one of high priority data and low priority data;

b) setting a first data frame for which said high priority data is to be transmitted on said token passing network for each of said nodes, said first data frame being set to a value less than the predetermined time;

c) sending said high priority data at each of said nodes synchronously with respect to reception of any one of said tokens during said first data frame;

d) setting a second data frame for which said low priority data is to be transmitted on said token passing network for each of said nodes, said second data frame being set to a integer multiple of said first data frame, said integer multiple being greater than one; and

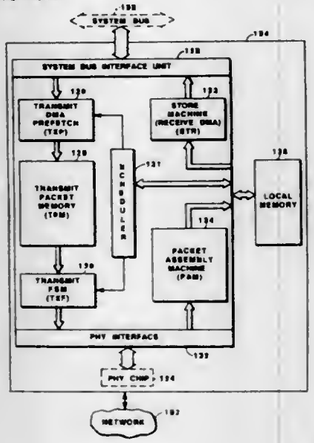
e) sending said low priority data at each of said nodes asynchronously with respect to said reception of said any one of said tokens during said second data frame only after all of said high priority data has been sent by said respective node.

5,602,853

METHOD AND APPARATUS FOR SEGMENTATION AND REASSEMBLY OF ATM PACKETS USING ONLY DYNAMIC RAM AS LOCAL MEMORY FOR THE REASSEMBLY PROCESS

Siman-Tov Ben-Michael, Givat Zeev, and Michael Ben-Nun, Jerusalem, both of Israel, assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Nov. 3, 1994, Ser. No. 333,914
Int. Cl.[6] H04J *3/24*
U.S. Cl. 370—474 **4 Claims**



1. An Asynchronous Transfer Mode (ATM) adapter for receiving a plurality of ATM cells from a physical interface unit comprising:

a packet assembly machine connected to the physical interface unit, the packet assembly machine assembling the plurality of ATM cells into a first packet in only a dynamic random access local memory;

a store machine;

means, in the packet assembly machine, for signaling the store machine that the first packet is assembled;

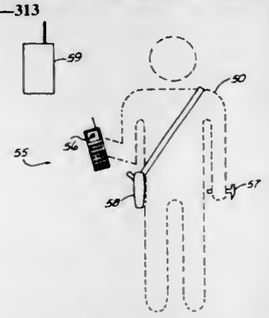
means, in the store machine, for reading the first packet from the dynamic random access local memory and sending the first packet to a host memory via a system bus interface unit.

5,602,854

WIRELESS PERSONAL LOCAL AREA NETWORK UTILIZING REMOVABLE RADIO FREQUENCY MODULES WITH DIGITAL INTERFACES AND IDLE SENSE COMMUNICATION PROTOCOL

Ronald E. Luse; Ronald L. Mahany; Guy J. West, and Charles D. Gollnick, all of Cedar Rapids, Iowa, assignors to Norand Corporation, Cedar Rapids, Iowa

Continuation-in-part of Ser. No. 997,693, Dec. 23, 1992, abandoned, which is a continuation-in-part of Ser. No. 982,292, Nov. 27, 1992, abandoned, which is a continuation-in-part of Ser. No. 700,704, May 14, 1991, abandoned, which is a continuation-in-part of Ser. No. 699,818, May 13, 1991, abandoned. This application Mar. 5, 1993, Ser. No. 27,140
Int. Cl.[6] H04J *3/16;* **H04B** *7/00;* **H04L** *12/28*
U.S. Cl. 370—313 **14 Claims**



1. A portable, personal local area network carried by a single user for capturing and processing data, comprising:

a first, a second and a third portable data device, each data device having a battery power supply;

at least one of said first, second and third portable data devices includes a display;

at least one of said first, second and third portable data devices includes means for collecting data;

a first, a second and a third radio frequency unit operably and respectively attached to said first, said second and said third portable data devices; and

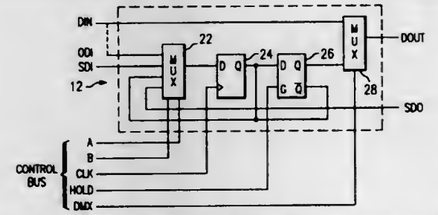
said first radio frequency unit managing communication among said first, second and third portable data devices.

5,602,855

INTEGRATED TEST CIRCUIT

Lee D. Whetsel, Jr., Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 271,384, Jul. 6, 1994, abandoned, which is a continuation of Ser. No. 186,486, Jan. 25, 1994, abandoned, which is a continuation of Ser. No. 87,020, Jul. 6, 1993, abandoned, which is a continuation of Ser. No. 970,529, Nov. 2, 1992, abandoned, which is a continuation of Ser. No. 876,694, Apr. 28, 1992, abandoned, which is a continuation of Ser. No. 609,124, Nov. 1, 1990, abandoned, which is a continuation of Ser. No. 241,520, Sep. 7, 1988, abandoned. This application Oct. 12, 1995, Ser. No. 542,236
Int. Cl.[6] G01R *31/28*
U.S. Cl. 371—22.3 **19 Claims**



1. A boundary scan test cell for use in conjunction with an integrated circuit containing application logic circuitry, comprising:

a data input terminal for receiving data from a pin of said integrated circuit;

a data output terminal for transmitting data to said application logic circuitry;

a serial data input terminal for receiving data from other test cells;

a serial data output terminal for transmitting data to other test cells;

a first memory for storing data; said first memory having an input for receiving data to be stored, and having an output coupled to said serial data output terminal for transmitting said stored data to other test cells;

a first multiplexer coupled to said first memory input, said first multiplexer being operable to selectively transmit to said first memory input one of at least said serial data input, said data input, and the output of said first memory, responsive to a first control signal;

a second memory having an input connected to said first memory output, and having an output; said second memory being selectively operable, responsive to a second control signal, to receive and store data from said first memory output, or, alternatively, to output said second memory received and stored data to said second memory output for use by the application logic circuitry while said first memory simultaneously receives and stores new data from said first multiplexer; and

circuitry coupling said second memory output to said data output terminal.

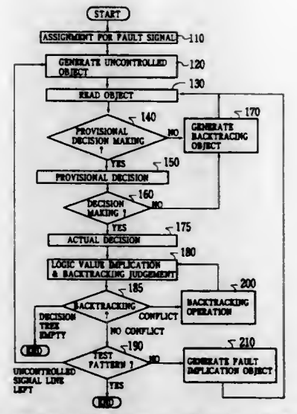
5,602,856

TEST PATTERN GENERATION FOR LOGIC CIRCUITS WITH REDUCED BACKTRACKING OPERATIONS

Mitsuo Teramoto, Kanagawaken, Japan, assignor to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Apr. 5, 1994, Ser. No. 223,173
Claims priority, application Japan, Apr. 6, 1993, 5-079424
Int. Cl.[6] G06F *11/00*
U.S. Cl. 371—27 **7 Claims**

1. A method for generating a test pattern for a logic circuit given by primary input logic values for setting a logic value of a specified signal line within the logic circuit at a specified level, comprising the steps of:



checking whether a fault can possibly be propagated to the specified signal line or not;

deriving other signal lines whose logic values are uniquely determinable from the specified level of the specified signal line, only when it is judged that the fault cannot possibly be propagated to the specified signal line at the checking step;

judging whether the primary inputs are contained among the other signal lines derived at the deriving step; and

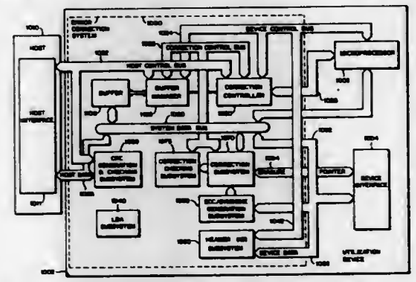
making an assignment of the specified level to the specified signal line, and setting the uniquely determinable logic values for those of the other signal lines which are judged as the primary inputs by the judging step as the primary input logic values giving the test pattern.

5,602,857

ERROR CORRECTION METHOD AND APPARATUS

Christopher P. Zook, Longmont; Neal Glover, Broomfield, and John J. Schadegg, Jr., Niwot, all of Colo., assignors to Cirrus Logic, Inc., Fremont, Calif.

Continuation-in-part of Ser. No. 147,865, Nov. 4, 1993, Pat. No. 5,465,260, and Ser. No. 147,650, Nov. 4, 1993, abandoned, and Ser. No. 147,758, Nov. 4, 1993, abandoned, and Ser. No. 148,068, Nov. 4, 1993, abandoned, and Ser. No. 310,973, Sep. 23, 1994, and Ser. No. 124,938, Sep. 21, 1993, Pat. No. 5,473,620. This application Oct. 18, 1994, Ser. No. 326,126
Int. Cl.[6] G11B *20/18*
U.S. Cl. 371—40.1 **48 Claims**



1. An error correction system for correcting multiple randomly located symbol errors recorded on a rotating magnetic disk medium, the disk medium having formatted sectors with data fields

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interdispersed therein, the system having a data field error correction function operable to correct multiple random errors on-the-fly within each data field of a formatted sector (data block), the system comprising:

a first interface coupled to a magnetic storage system;

a second interface coupled to a host;

a multi-purpose data buffer coupled between said first and second interfaces for storing a varying number of uncorrected and corrected data blocks;

hardware circuitry for read-modify-write operations performed on said data buffer;

each of said data blocks while transferred from said first interface to said second interface being affected by at least the steps of:

i) a first transfer of said uncorrected data blocks from said first interface to said data buffer,

ii) said uncorrected data blocks within the data buffer corrected to form corrected data blocks, and

iii) a second transfer of said corrected data blocks from the data buffer to said second interface;

wherein performance of the three steps of said first transfer of uncorrected data blocks and said correction of uncorrected data blocks and said second transfer of corrected data blocks is asynchronous in time relative to each other and at times executed simultaneously on different sectors in an asynchronously overlapped manner wherein the number of said steps being asynchronously overlapped at any point in time varies from zero to three.

5,602,858

DIGITAL SIGNAL DECODING APPARATUS HAVING A PLURALITY OF CORRELATION TABLES AND A METHOD THEREOF

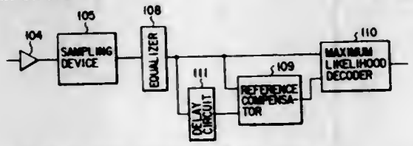
Shoji Kitaori, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation-in-part of Ser. No. 309,900, Sep. 20, 1994, Pat. No. 5,440,572. This application Apr. 21, 1995, Ser. No. 426,077

Claims priority, application Japan, Sep. 20, 1993, 5-232867; Sep. 14, 1994, 6-219657

Int. Cl.[6] H01S *3/18*

U.S. Cl. 371—43 **4 Claims**



1. A digital signal decoding apparatus comprising:

equalizing means for equalizing a digital signal and outputting a digital signal having effective values at a plurality of sensing points;

extracting means for extracting a plurality of amplitude information with narrower timing than the time interval of said digital signal outputted from said equalizing means;

decoding means for decoding said digital signal from said plurality of amplitude information extracted by said extracting means; and

control means for performing a predetermined operation on said plurality of amplitude information extracted by said extracting means and on the basis of the operation result, controlling the level of a reference value used in decoding by said decoding means.

5,602,859

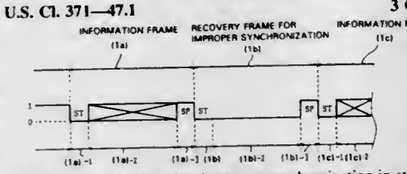
START-STOP SYNCHRONOUS COMMUNICATING METHOD CAPABLE OF CORRECTING IMPROPER SYNCHRONIZATION AND SYSTEM USING THE SAME

Seiji Kachi, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Dec. 19, 1994, Ser. No. 358,253

Int. Cl.[6] G06F *11/00*

U.S. Cl. 371—47.1 **3 Claims**



1. A method for detecting improper synchronization in start-stop synchronous communications, wherein a plurality of information frames are transferred bit-serially from a transmitting side to a receiving side, each of said information frames includes a start bit having a first logic level, information bits sent subsequent to the start bit and having a predetermined number of n bits, and a stop bit sent subsequent to the information bits and having a second logic level, and at the receiving side each information frame is reconstructed from the received signal by detecting a start bit whose logic level is the first logic level, the logic level at the first level having changed from a prior bit at the second logic level, by detecting said predetermined number of n bits as the information bits, and by detecting a bit of the second logic level as the stop bit, said method comprising the steps of:

transmitting said plurality of information frames from the transmitting side;

inserting a recovery frame between selected adjacent information frames, said recovery frame including all information bits having the first logic level;

receiving and reconstructing information frames and recovery frames from the received signal at the receiving side;

detecting improper synchronization in the received signal by detecting a bit at the stop bit position in a received frame as being a first logic level; and

establishing a proper synchronization immediately upon receiving a next information frame.

5,602,860

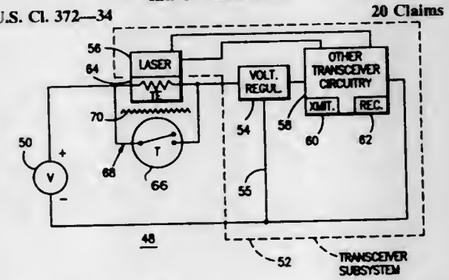
LASER THERMAL CONTROL USING THERMOELECTRIC COOLER

Raymond H. Masonson, Derwood, Md., assignor to Optelecom, Inc., Gaithersburg, Md.

Filed Apr. 19, 1995, Ser. No. 424,116

Int. Cl.[6] H01S *3/04*

U.S. Cl. 372—34 **20 Claims**



1. A system comprising:

a source of electricity operable to provide current and associated power and associated energy;

a thermoelectric cooler connected by electrical lines to receive power from said source;

a switch in parallel with said thermoelectric cooler to form a parallel switch/thermoelectric cooler subcircuit, said switch operable when closed to shunt current supplied from said source away from said thermoelectric cooler and operable when open to allow current supplied from said source to flow through said thermoelectric cooler, said switch opening and closing dependent on temperature; and

a subsystem receiving power from said source by electrical connections thereto, and wherein said subsystem includes a laser receiving power from said source and being in thermal contact with said thermoelectric cooler such that said thermoelectric cooler such said laser when said thermoelectric cooler is turned on.

5,602,861

LASER LIGHTING CONTROL DEVICE

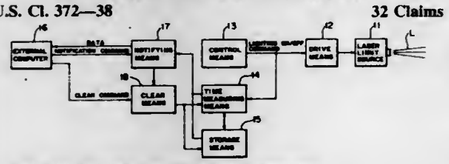
Hiroaki Kawai, and Shinichi Sato, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 16, 1994, Ser. No. 209,743

Claims priority, application Japan, Apr. 2, 1993, 5-076937

Int. Cl.[6] H01S *3/00;* **G06K** *7/10;* **H01J** *40/14*

U.S. Cl. 372—38 **32 Claims**



1. A laser lighting control device, comprising:

a laser light source;

drive means for driving said laser light source to alternately light on and off, thereby producing periods of lighting time of said laser light source;

control means for outputting laser light source on/off commands to said drive means such that said laser light source is controlled in a full lighting state in response to an object to be read coming into a field of vision of the laser scanner, said laser light source being intermittently controlled by gradually widening the lighting interval of said laser light source in response to a time that no object to be read within the field of vision of the laser scanner exceeds a first predetermined period of time, and said laser light source is automatically turned off when the time that no object to be read comes within the field of vision exceeds a second predetermined time longer than the first predetermined time; and

time measuring means for measuring and storing the periods of lighting time of said laser light source and integrating each of the periods of lighting time, to generate an integrated lighting time of the laser light source.

5,602,862

OPTICAL CLOCK EXTRACTION

Peter E. Barnsley; Michael J. Robertson, both of Suffolk, and Howard J. Wickes, Essex, all of England, assignors to British Telecommunications public limited company, London, England

PCT No. PCT/GB92/00826, § 371 Date Nov. 8, 1993, § 102(e) Date Nov. 8, 1993, PCT Pub. No. WO92/20128, PCT Pub. Date Nov. 12, 1992

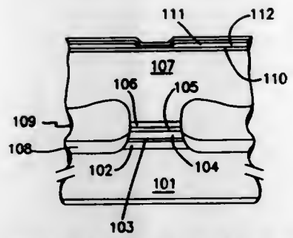
PCT Filed May 7, 1992, Ser. No. 146,029

Claims priority, application United Kingdom, May 7, 1991, 9109824; Jun. 10, 1991, 9112432; Feb. 28, 1992, 9204299

Int. Cl.[6] H01S *3/19*

U.S. Cl. 372—45 **24 Claims**

1. A semiconductor laser diode for use in an optical clock extraction system operating at high signal bit rates, the laser diode comprising a self-pulsating device having a region of saturable absorption coupling with a region of relatively high gain, wherein the carrier lifetime in the saturable absorption region is lower that in the gain region.



5,602,863

SURFACE-EMITTING LASER DIODE ARRAY AND DRIVING METHOD THEREOF, PHOTODETECTOR, PHOTODETECTOR ARRAY, OPTICAL INTERCONNECTION SYSTEM, AND MULTIWAVELENGTH OPTICAL COMMUNICATION SYSTEM

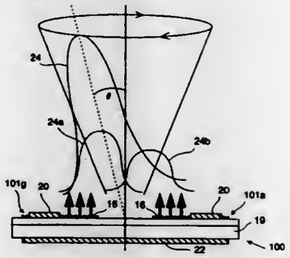
Takushi Itagaki, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 19, 1994, Ser. No. 276,655

Claims priority, application Japan, Jul. 20, 1993, 5-179314

Int. Cl.[6] H01S *3/19*

U.S. Cl. 372—50 **21 Claims**



1. A surface-emitting laser diode array including:

a substrate having a center point; and

a plurality of surface-emitting laser diodes respectively including secondary diffraction gratings having identical pitches and radially arranged on the substrate so that the secondary diffraction gratings face the center point of the substrate wherein the surface-emitting laser diodes are driven with different driving currents and to output respective laser light beams perpendicular to the substrate and having identical wavelengths and different phases that combine as a phase composite light beam steerable in three dimensions about the center point.

5,602,864

SEMICONDUCTOR LASER WITH INTEGRAL SPATIAL MODE FILTER

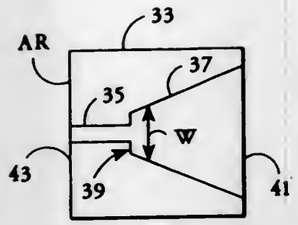
David F. Welch, Palo Alto; David G. Mehuys, Menlo Park, and Donald R. Scifres, San Jose, all of Calif., assignors to SDL, Inc., San Jose, Calif.

Division of Ser. No. 263,190, Jun. 21, 1994, which is a division of Ser. No. 1,735, Jan. 7, 1993, Pat. No. 5,392,308. This application Feb. 21, 1995, Ser. No. 393,136

Int. Cl.[6] H01S *3/19*

U.S. Cl. 372—50 **39 Claims**

1. A semiconductor laser comprising:



a multimode region having a gain portion, permitting therein propagation of light with a diverging phase front along the entire length of said multimode region toward an output surface,

optical feedback means for establishing a resonant optical cavity for the light propagating within said region, light propagating in said multimode region with said diverging phase front being fed back by said optical feedback means,

at least one single mode region at least partially within said cavity, and

a width of said multimode region at one end adjacent a corresponding end of said single mode region having a width greater than said single mode region one end, such that said single mode region is coupled through a step in width to said multimode region.

5,602,865

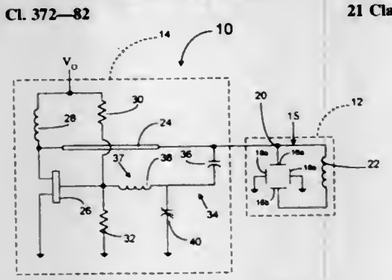
RF-EXCITED GAS LASER SYSTEM

Peter Laakmann, Bothell, Wash., assignor to Synrad, Inc., Mukilteo, Wash.

Filed Nov. 14, 1995, Ser. No. 557,839

Int. Cl.[6] H01S *3/097*

U.S. Cl. 372—82 **21 Claims**



1. An RF-excited gas laser system, comprising:

a plasma tube having an electrical input port and a discharge section, that together produce laser energy when supplied with RF energy, the input port having an impedance at an operating frequency;

an RF energy source having a source impedance lower than the plasma tube impedance at the operating frequency and producing RF energy; and

a microstrip transmission line having an input end and an output end, the input end being connected to the RF energy source and the output end being connected to the plasma tube input port, the microstrip transmission line including a dielectric substrate coupled between a strip conductor and a ground plane and having an impedance intermediate the source impedance and the plasma tube impedance, the microstrip transmission line transmitting power to the plasma tube at the operating frequency.

5,602,866

SEMICONDUCTOR LASER

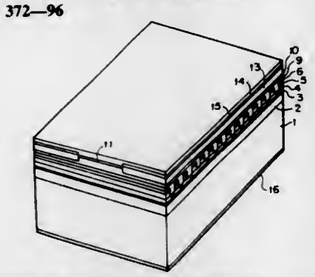
Toshiaki Fukunaga, Kanagawa-ken, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 19, 1994, Ser. No. 325,592

Claims priority, application Japan, Nov. 30, 1993, 5-299555

Int. Cl.[6] H01S *3/08*

U.S. Cl. 372—96 **3 Claims**



1. A semiconductor device laser, comprising:

a plurality of lower layers formed on a GaAs substrate by first stage of crystal growth;

a plurality of spaced, parallel diffraction gratings formed by etching a plurality of trenches in an upper side of the lower layers to a predetermined depth; and

a plurality of upper layers formed by regrowing crystals over the diffraction gratings,

wherein the lower layers subjected to etching are composed of five-element AlGaInAsP-based compound semiconductor materials having an aluminum content of more than 0% and less than 30% in the group III elements, and wherein the lower layers further comprise an optical waveguide layer.

5,602,867

METHOD OF AND DEVICE FOR OPERATING AN ARC FURNACE WITH TWO VESSELS

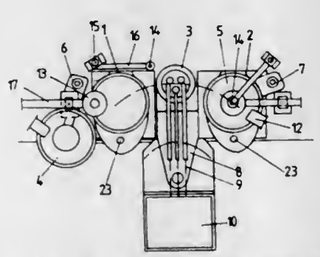
Andreas Hübers, Hattingen, and Karl-Josef Schneider, Schermbeck, both of Germany, assignors to Man Gutehoffsnungshütte Aktiengesellschaft, Oberhausen, Germany

Filed Dec. 7, 1995, Ser. No. 567,917

Claims priority, application Germany, Dec. 17, 1994, 44 45 209.8

Int. Cl.[6] F27D *23/00*

U.S. Cl. 373—78 **10 Claims**



2. A twin-shell arc furnace having a first furnace shell and a second furnace shell for making steel, comprising: electrodes arranged on a single swing gantry; a power supply and means for disconnecting completely one of said two furnace shells from said power supply and retaining the other furnace shell connected to the power supply; means for charging said one furnace shell with metallic charge materials and a covering furnace roof; carrying out metallurgical processing in said other furnace shell until tapping of the melt; means in said first furnace shell and comprising:

(a) means for charging liquid hot metal of an amount that is 70% of the total metallic charge of said first furnace shell;

(b) means for injecting by blowing oxygen through a blowing lance from above and through a furnace roof and means for adding simultaneously cooling agents elected from the group of ore, scrap, sponge iron and other metallic charge materials, as a function of a heat balance of the injection, and means for adding slag-forming agents as a function of an analysis of the metallic charge materials;

(c) means for removing continuously at least part of slag formed through a slag door and a preheater during said injection;

(d) means for retracting and swinging aside said blowing lance from said first furnace shell;

(e) means for swinging in said electrodes, said electrodes being connected to said power supply from a transformer to said first furnace shell;

(f) said power supply supplying said electrodes with electric current, and means for adding simultaneously the remaining metallic charge until a tapping weight is attained; and side-lances for adding lime and additional injection;

(g) means for removing continuously at least partially slag formed in said first furnace shell through said slag door and through said preheater when said electrodes are supplied with electric current and the remaining metallic charge are added simultaneously; and means for superheating the molten metal;

(h) means for tapping off the melt and into a steel casting crucible through a taphole and leaving a portion of said melting in said first furnace shell;

preceding (e) to (h) being carried out in said second furnace shell while preceding (a) to (d) are being carried out in said first furnace shell, and preceding (a) to (d) being carried out in said second furnace shell while preceding (e) to (h) are carried out in said first furnace shell; said single swing gantry being operable with said first furnace shell and said second furnace shell; each said furnace shell having a sealing roof; means for raising and lowering said blowing lance; a hearth in each said furnace shell with a recess; each said furnace shell having refractory-lined walls and bricks arranged circumferentially around the top of the furnace shell.

5,602,868

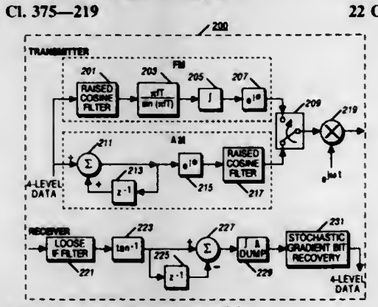
MULTIPLE-MODULATION COMMUNICATION SYSTEM

Alan L. Wilson, Hoffman Estates, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 18,589, Feb. 17, 1993, abandoned. This application May 22, 1995, Ser. No. 445,572

Int. Cl.[6] H04B *1/38*

U.S. Cl. 375—219 **22 Claims**



1. A communication system comprising:

a transmitter arranged and constructed to transmit communication signals modulated by a first modulation technique when low power consumption by the transmitter is desired and communication signals modulated by a second modulation technique when greater signal coverage by the transmitter is desired, wherein the first modulation technique and the second modulation technique are different; and

a receiver for receiving the communication signals modulated by the first modulation technique and the communication signals modulated by the second modulation technique and demodulating the communication signals using a single demodulator having a single demodulation path, wherein both the communication signals modulated by the first modulation technique and the communication signals modulated by the second modulation technique are demodulated using the single demodulation path.

5,602,869

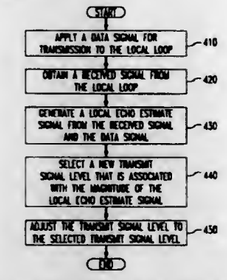
ADAPTIVE TRANSMIT LEVELS FOR MODEMS OPERATING OVER CELLULAR

Robert E. Scott, Indian Rocks Beach, Fla., assignor to Paradyne Corporation, Largo, Fla.

Continuation of Ser. No. 137,542, Oct. 18, 1993, abandoned. This application Mar. 21, 1996, Ser. No. 619,149

Int. Cl.[6] H04Q *7/32*

U.S. Cl. 375—222 **13 Claims**



1. A method for adjusting a power level of an output signal provided by a modem, the method comprising the steps of:

transmitting the output signal to a communications channel;

receiving an echo of the output signal from the communications channel; and

varying the power level of the output signal as a function of the received echo independent of signals received in an opposite modem endpoint during the transmission of said output signal.

5,602,870

DIGITAL SIGNAL PROCESSING

Keith R. Hailey, Amersham, and Jennifer C. Loveridge, North Harrow, both of England, assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 241,311, May 10, 1994, abandoned. This application May 2, 1996, Ser. No. 641,709

Claims priority, application United Kingdom, Jun. 9, 1993, 9311942

Int. Cl.[6] H03H *7/30*

U.S. Cl. 375—230 **8 Claims**

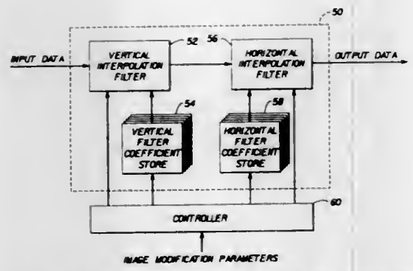
1. A method of implementing continuous zoom to a digital image, the method comprising the steps of:

a) receiving a digital image signal;

b) inputting a desired zoom ratio;

c) using the input zoom ratio to select at least one interpolation filter having a predetermined cut-off frequency from at least one set of interpolation filters to provide at least one interpolation filter, the cut-off frequencies of at least some of the interpolation filters in the set being logarithmically spaced;

d) applying said selected interpolation filter to the digital image signal to effect the desired zooming; and



e) providing an output digital signal to which the desired zooming has been applied.

5,602,871

SIGNAL REGENERATOR FOR BINARY SIGNALS

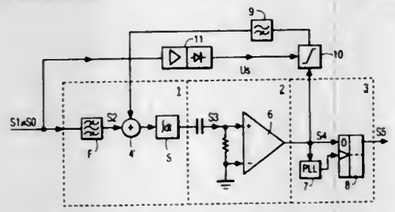
Werner Scholz, Gehrden, Germany, assignor to Deutsche Thomson Brandt GmbH, Villingen-Schwenningen, Germany

Filed Nov. 16, 1993, Ser. No. 152,642

Claims priority, application Germany, Nov. 24, 1992, 42 39 374.4

Int. Cl.[6] H03H *7/30*

U.S. Cl. 375—233 **4 Claims**



1. A signal regenerator for binary signals comprising:

a cascade connection including, in the order recited, of an input filter, an integrator, an amplitude detector having a first output terminal and a period detector having a second output terminal; and

high pass filter means for feeding the output signal, coupled between said first output terminal and a point in said cascade connection prior to said integrator for applying a portion of signal available at said first output terminal to said cascade connection, said output terminal being coupled to a summation circuit arranged between said input filter and said integrator.

5,602,872

METHOD AND SYSTEM FOR CONTROLLING AN ADAPTIVE, BLIND, FRACTIONALLY SPACED EQUALIZER

Michael S. Andrews, Escondido, Calif., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 19, 1994, Ser. No. 359,123

Int. Cl.[6] H03H *7/30*

U.S. Cl. 375—234 **7 Claims**

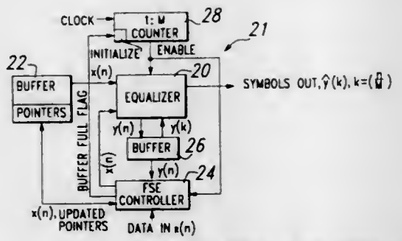
6. An apparatus for controlling an equalizer, said equalizer used to equalize a data channel, transmitted data from said data channel being oversampled at an oversampling rate M, comprising:

first means for generating a buffer full flag in response to storing a predetermined number of data samples into a first buffer;

second means responsive to said buffer full flag for generating an enable signal every M cycles;

said equalizer responsive to said enable signal for equalizing a portion of said pre-determined number of data samples, said portion of said pre-determined number of data samples determined using a plurality of data pointers into said first buffer;

third means responsive to said enable signal for adjusting said plurality of data pointers in response to filtered output data from said equalizer.



5,602,873

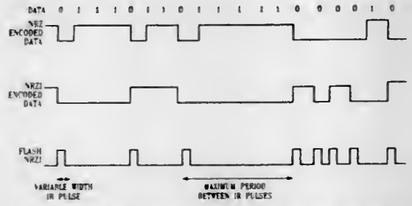
FLASH NRZI INFRARED MODEM

Peruvemba S. Balasubramanian, Chappaqua; Nathan J. Lee, New City, and Scott D. Lekuch, New York, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 14, 1994, Ser. No. 323,324

Int. Cl.[6] H04B *14/04*

U.S. Cl. 375—242 **23 Claims**



1. A system for modulating a digital data stream and producing a modulated output that is compatible with both the asynchronous mode and synchronous mode of communication, comprising:

means for inserting a zero-bit in a digital data stream whenever five consecutive 1-bits are detected therein;

means for encoding said zero-bit-containing digital data stream in NRZI format; and

means, responsive to said NRZI formatted data, for generating a Flash pulse whenever a transition is detected in said NRZI formatted data, whereby a synchronous and asynchronous mode compatible modulated output is produced.

5,602,874

METHOD AND APPARATUS FOR REDUCING QUANTIZATION NOISE

Yuda Y. Luz, Prairie View, and James F. Long, Glen Ellyn, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 366,283, Dec. 29, 1994. This application Feb. 14, 1995, Ser. No. 389,474

Int. Cl.[6] H04B *14/04*

U.S. Cl. 375—243 **14 Claims**

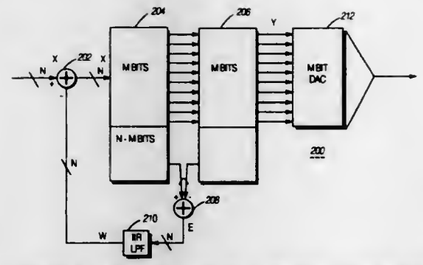
1. An apparatus for reducing quantization noise comprising:

a first adder having a first input coupled to receive a N bit input signal;

a N bit latch having an input coupled to receive an output of the first adder;

a M bit hard quantizer having an input coupled to receive an output of the N bit latch, where M is greater than one and less than N, and an M bit output;

a second adder having a first input coupled to receive a N bit sample from the N bit latch and a second input coupled to



receive a N bit sample from the M bit hard quantizer where the N bit sample from the M bit hard quantizer comprises M bits of the N bit sample and at least one N–M zero bit;

a filter having an input coupled to receive an output of the second adder and an output coupled to a second input of the first adder.

5,602,875

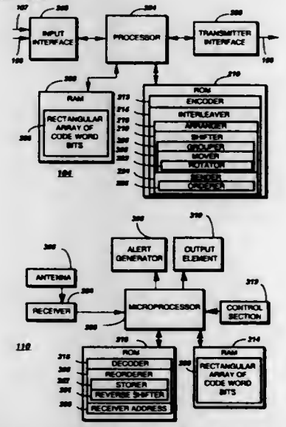
METHOD AND APPARATUS FOR ENCODING AND DECODING INFORMATION IN A DIGTIAL COMMUNICATION SYSTEM

G. David Mantel, Plantation; Gregory L. Cannon, Boynton Beach, and R. Louis Breeden, Boca Raton, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 13, 1995, Ser. No. 372,421

Int. Cl.[6] H04L *5/12;27/12;27/14*

U.S. Cl. 375—264 **19 Claims**



1. A method for encoding and decoding information in a digital communication system utilizing at least four modulation levels for transmitting said information as symbols, each symbol representing a plurality of symbol bits positioned in a plurality of symbol bit positions, at least one of which exhibits an error rate higher than that of another of the plurality of symbol bit positions, the method comprising the steps of:

encoding said information into an even-numbered plurality of code words comprising a plurality of code word bits positioned in a plurality of code word bit positions;

transmitting said even-numbered plurality of code words as an interleaved data stream, wherein a transmission order of said plurality of code word bits is rearranged in a predetermined way to form a modified transmission order such that said plurality of code word bits corresponding to each of said plurality of code words are transmitted with substantially equal distribution in each of said plurality of symbol bit positions;

receiving said interleaved data stream to derive said plurality of code word bits;

reordering said plurality of code word bits after reception to undo bit modifications resulting from the modified transmission order, thereby restoring said plurality of code words; and

decoding said plurality of code words after restoration to recover said information.

5,602,876

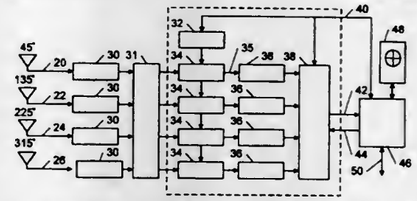
ADVANCED PARAMETER ENCODER WITH PULSE-ON-PULSE DETECTION AND PULSE FRAGMENT RECONSTRUCTION

Mark E. Noneman, Ramona; Donald A. Porter, and Donald L. Lochhead, both of San Diego, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Continuation of Ser. No. 154,908, Nov. 19, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 478,155

Int. Cl.[6] H03K *9/00*

U.S. Cl. 375—317 **20 Claims**



I. A system for identifying pulses having a stable amplitude comprising:

receiver means for receiving an electronic signal,

converter means for generating amplitude samples by converting said electronic signal to digital data at a periodic rate, said converter means being connected to said receiver means,

threshold means for establishing a threshold voltage,

hit window means, coupled to said converter means and said threshold means, for establishing a voltage hit window with an upper limit above the amplitude of said sample and a lower limit below the amplitude of said sample when the amplitude of said sample exceeds said threshold voltage, said voltage hit window being established every time the amplitude of a new sample occurs above said threshold voltage and outside of a previously established hit window,

miss window means, coupled to said converter means and said hit window means, for establishing a voltage miss window having an upper limit and a lower limit, said miss window being established when a first predetermined number of amplitude samples fall within a previously established hit window; and

stability identifying means, associated with said hit window means and said miss window means, for identifying that a pulse is stable when N consecutive pulses lie within the same hit window and for identifying that a pulse has lost stable when M consecutive pulses lie outside of the same miss window.

5,602,877

METHOD AND APPARATUS FOR INFORMATION RECOVERY IN A RADIO COMMUNICATION DEVICE

Joseph Boccuzzi, Brooklyn, N.Y., and Clinton C. Powell, II, Lake Worth, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 28, 1995, Ser. No. 520,322

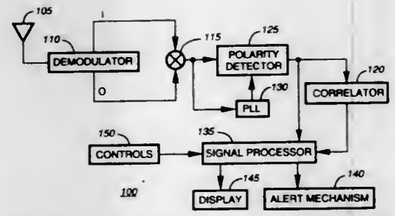
Int. Cl.[6] H03D *3/00;* **H04L** *27/22*

U.S. Cl. 375—336 **14 Claims**

1. A radio communication device for recovering information from a received signal, the radio communication device comprising:

a demodulator for demodulating the received signal into in-phase (I) and quadrature (Q) components;

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a multiplier coupled to the demodulator for multiplying the I and Q components together to generate a multiplied waveform;

a polarity detector coupled to the multiplier for determining from the multiplied waveform a polarity variable indicative of a data symbol;

a processor coupled to the polarity detector for recovering the information from the received signal in accordance with the data symbol; and

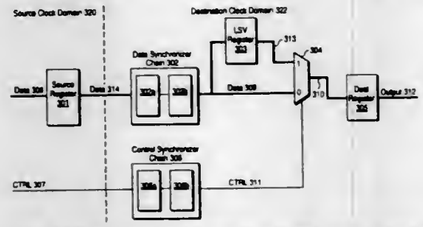
a correlator coupled to the polarity detector and the processor for providing an indicator of whether the multiplied waveform is inverted, wherein the processor utilizes the indicator along with the polarity variable to determine the data symbol.

5,602,878

METHOD OF DELIVERING STABLE DATA ACROSS AN ASYNCHRONOUS INTERFACE

Leonard W. Cross, Portland, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Sep. 23, 1994, Ser. No. 311,679
Int. Cl.[6] H04L *7/00*
U.S. Cl. 375—354 **8 Claims**



3. An apparatus providing stability of a data signal asynchronously transmitted between a first synchronous logic circuit and a second synchronous logic circuit, said synchronous logic circuits each deriving a clock signal from a separate clock source, said apparatus comprising:

a data bus coupled in communication between said first synchronous logic circuit and said second synchronous logic circuit;

a source register coupled to said data bus transmitting said data signal asynchronously to said second synchronous logic circuit;

a data synchronizer coupled to said data bus receiving and synchronizing said data signal asynchronously transmitted from said source register;

a control bus coupled in communication between said first synchronous logic circuit and said second synchronous logic circuit over which said first synchronous logic circuit asynchronously transmits a control signal;

a control synchronizer coupled to said control bus receiving and synchronizing said control signal asynchronously transmitted;

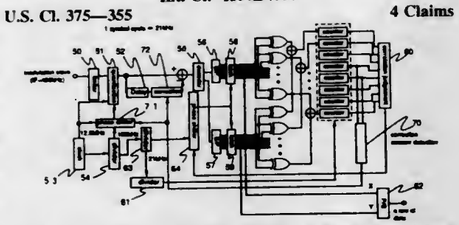
a destination register coupled to said data synchronizer and said control synchronizer forwarding said data signal synchronized by said data synchronizer on the basis of said control signal synchronized by said control synchronizer.

5,602,879

CLOCK RECOVERING CIRCUIT FOR DIGITAL DEMODULATOR

Yoshio Wada, Kanagawa, Japan, assignor to Toyo Communication Equipment Co., Ltd., Kanagawa, Japan

PCT No. PCT/JP94/00370, § 371 Date Jul. 26, 1994, § 102(e) Date Jul. 26, 1994, PCT Pub. No. WO94/21073, PCT Pub. Date Sep. 3, 1994
PCT Filed Mar. 9, 1994, Ser. No. 256,841
Claims priority, application Japan, Mar. 10, 1993, 5-76127
Int. Cl.[6] H04L *7/00*
U.S. Cl. 375—355 **4 Claims**



1. A clock recovering circuit used for a digital demodulator detecting a modulation wave using predetermined detection means based upon a timing clock signal comprising:

correlation detection means for sampling demodulated data at a plurality of sampling data fixed in advance for each unit data cycle and detecting correlations between each adjacent pair of sampling data; and

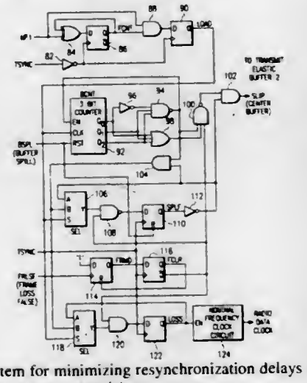
correlation judgment means for comparing the correlations detected by said correlation detection means of a first unit data cycle, for judging the pair of sampling data which maximize the correlation and another pair of sampling data providing the next largest correlation of a second unit data cycle, and for producing said timing clock signal based upon the sampling data which is a common sampling data with respect to said two pairs of sampling data providing said largest correlation and said next largest correlation.

5,602,880

METHOD AND SYSTEM FOR MINIMIZING RESYNCHRONIZATION DELAYS IN DIGITAL MICROWAVE RADIO SYSTEMS

Jerry K. Webster, Richardson, and Jeffrey L. Zwiebel, Dallas, both of Tex., assignors to Alcatel Network Systems, Richardson, Tex.

Filed Jun. 2, 1993, Ser. No. 71,468
Int. Cl.[6] H04L *7/00*
U.S. Cl. 375—371 **13 Claims**



1. A system for minimizing resynchronization delays in a digital microwave system, comprising:

a transmitter including a first elastic buffer;

a first circuit associated with said transmitter and operable to detect at least one of a loss of signal or an out-of-specification signal at said transmitter;

a second circuit connected to an output of said first circuit and operable to set an average condition in said first elastic buffer in response to a detection in said first circuit, said first elastic buffer providing a data signal to be transmitted from said transmitter;

a third circuit connected to said output of said first circuit and operable to cause said transmitter to transmit at a predetermined frequency in response to a detection in said first circuit;

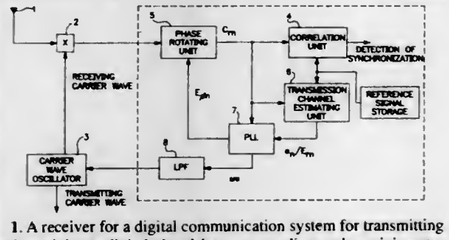
at least one receiver located successively downstream of said transmitter, said receiver operable to receive said transmitted signal and to control the frequency error of said receiver in response to said signal.

5,602,881

RECEIVER FOR A DIGITAL COMMUNICATION SYSTEM

Haruhiro Shiino; Norio Yamaguchi, and Toshimichi Naoi, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

PCT No. PCT/JP93/00510, § 371 Date Dec. 21, 1993, § 102(e) Date Dec. 21, 1993, PCT Pub. No. WO93/22861, PCT Pub. Date Nov. 11, 1993
PCT Filed Apr. 20, 1993, Ser. No. 167,967
Claims priority, application Japan, Apr. 24, 1992, 4-106501
Int. Cl.[6] H04L *7/02*
U.S. Cl. 375—371 **8 Claims**



1. A receiver for a digital communication system for transmitting and receiving a digital signal between sending and receiving stations, comprising:

a storing means for storing a reference signal;

a complex correlation means for performing complex correlation of the received digital signal against the reference signal upon reception of the received digital signal and the reference signal;

a transmission channel estimating means for estimating a transmission channel between the sending and receiving stations upon reception of the received digital signal and the reference signal;

a phase synchronizing means for estimating the phase of the received digital signal and obtaining a phase variation amount upon reception of the received digital signal and the result of estimation which is output from the transmission channel estimating means;

a phase rotating means for compensating for the phase of the received digital signal upon reception of the phase variation amount; and

a carrier generating means for generating a carrier upon reception of the output of the phase synchronizing means;

wherein the phase synchronizing means and the phase rotating means form a first loop while the phase synchronizing means and the carrier generating means form a second loop, thereby compensating for the phase of the received digital signal, and

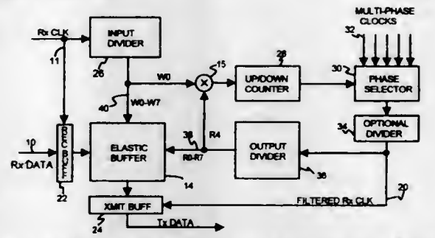
wherein the first loop is operated in a synchronization establishing process between the sending and receiving stations and wherein the first and second loops are operated in a synchronization supervising process after the synchronization is established.

5,602,882

DIGITAL JITTER ATTENUATOR USING SELECTION OF MULTI-PHASE CLOCKS AND AUTO-CENTERING ELASTIC BUFFER

Ramon S. Co, Trabuco Canyon, and Lance K. Lee, Milpitas, both of Calif., assignors to Pericom Semiconductor Corp., San Jose, Calif.

Continuation of Ser. No. 259,910, Jun. 15, 1994, Pat. No. 5,502,750. This application Jan. 19, 1996, Ser. No. 588,902
Int. Cl.[6] H04L *7/00*
U.S. Cl. 375—372 **13 Claims**



1. A method of attenuating jitter from a first clock by buffering and re-transmitting input data with a second clock, the second clock having less jitter than the first clock, the method comprising:

receiving the first clock and generating a plurality of write clocks by dividing the first clock, the write clocks having a lower frequency than the first clock, the first clock having a frequency that is a multiple of the frequency of the write clocks;

receiving into an elastic buffer the input data at the rate of the first clock and providing from the elastic buffer the input data for re-transmission at the rate of the second clock;

receiving the second clock and generating a plurality of read clocks by dividing the second clock, the read clocks having a lower frequency than the second clock; the second clock having a frequency that is a multiple of the frequency of the read clocks;

determining the difference in phase between at least one of the plurality of write clocks and at least one of the plurality of read clocks;

generating a plurality of multi-phase clocks for generating the second clock; and

receiving the plurality of multi-phase clocks and adjusting the phase of the second clock by selecting a clock in the plurality of multi-phase clocks for generating the second clock in response to the difference in phase between at least one of the plurality of write clocks and at least one of the plurality of read clocks,

whereby jitter in the first clock is attenuated in the second clock.

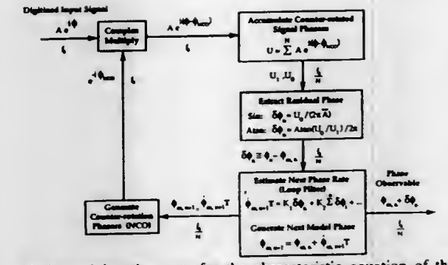
5,602,883

METHOD OF IMPLEMENTING DIGITAL PHASE-LOCKED LOOPS

Scott A. Stephens, South Pasadena, and J. Brooks Thomas, La Canada, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 13, 1993, Ser. No. 141,797
Int. Cl.[6] H03D *3/24*
U.S. Cl. 375—376 **8 Claims**

1. A method for implementing a digital phase-locked loop having discrete updates to loop parameters and a pre-selected loop order greater than 1 and characterized by preselected parameters for loop bandwidth, computation delay, update-interval damping and decay rate; the method comprising the steps of:



a) determining the roots for the characteristic equation of the loop from the preselected parameters;
b) determining the loop constants from the loop roots of step a); and
c) implementing a digital loop filter incorporating the loop constants of step b) thereby meeting the requirements imposed by said preselected loop parameters.

5,602,884

DIGITAL PHASE LOCKED LOOP

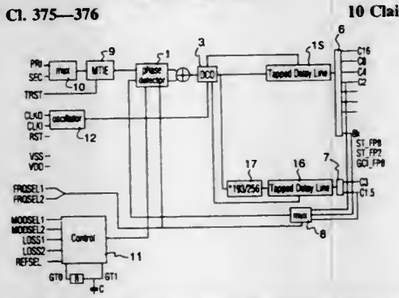
Jerzy Wieczorkiewicz; Krishna Shetty, both of Kanata; Terry Kenny, Nepean, all of Canada; Robert L. van der Valk, and Menno T. Spijker, both of Rotterdam, Netherlands, assignors to Mitel Corporation, Kanata, Canada

Filed May 15, 1995, Ser. No. 440,939

Claims priority, application United Kingdom, Jul. 21, 1994, 9414729

Int. Cl.[6] H03D *3/24*

U.S. Cl. 375—376 **10 Claims**



1. A digital phase locked loop for recovering a stable clock signal from at least one input signal subject to jitter, comprising:
a) a digital input circuit receiving said at least one input signal;
b) a digital controlled oscillator for generating an output signal at a desired frequency and a control signal representing the time error in said output signal;
c) a stable local oscillator for providing clock signals to said digital controlled oscillator;
d) tapped delay line means for receiving the output signal of said digital controlled oscillator, said tapped delay line means comprising a plurality of buffers each introducing a delay of less than one clock cycle of said digital controlled oscillator, said tapped delay line means producing an output signal from a tap determined by said control signal;
e) a digital phase comparator for receiving said at least one input signal from said input circuit and said output signal from said tapped delay line means to generate a digital input signal controlling said digital controlled oscillator; and
wherein said digital controlled oscillator is an adding type rate multiplier that generates said output signal when attaining an overflow condition, the remainder term upon attainment of said overflow condition generating said control signal.

5,602,885

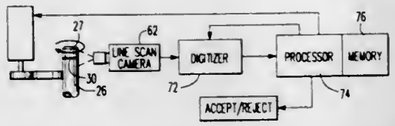
AUTOMATED GIRTH WELD INSPECTION OF NUCLEAR FUEL RODS

Hassan J. Ahmed, Ermo; Rhonda L. Pautler, Columbia, and Renny Lacy, Lexington, all of S.C., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 25, 1995, Ser. No. 519,212

Int. Cl.[6] G21C *17/00*

U.S. Cl. 376—248 **12 Claims**



1. A method for inspection of fuel rods, comprising a hollow tube and a plug welded to the hollow tube along a circumferential girth weld in a plane perpendicular to a longitudinal axis of the tube, the method comprising the steps of:
feeding the tube to an inspection station;
illuminating the tube at the inspection station;
rotating the tube about said axis for at least one full revolution;
collecting a matrix of reflectance data encompassing the girth weld during said rotating step, the matrix of reflectance data comprising numeric reflectance values of rows of pixels along a longitudinal length of the tube exceeding a longitudinal dimension of said girth weld, and columns of pixels around circumferences of the tube within said longitudinal length;
defining a minimum defect size of pixels in the girth weld, measured by a predetermined number of adjacent pixels in at least one of the rows and the columns;
determining an average of the reflectance values of at least a subset of the pixels;
comparing the average of the reflectance values of said pixels in the girth weld and respective adjacent pixels to at least one of a maximum and minimum reflectance standard; and
accepting and rejecting the fuel rod based on a result of said comparing step.

5,602,886

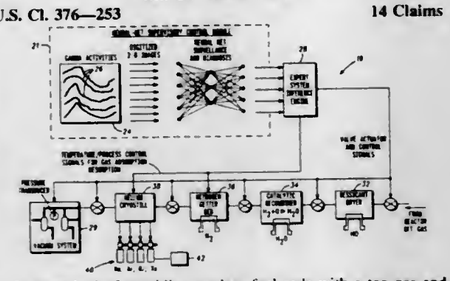
NEURAL NET CONTROLLED TAG GAS SAMPLING SYSTEM FOR NUCLEAR REACTORS

Kenneth C. Gross, Bolingbrook, Ill.; Matthew T. Laug, Idaho Fall, Id.; John D. B. Lambert, Wheaton, and James P. Herzog, Downers Grove, both of Ill., assignors to The University of Chicago, Chicago, Ill.

Filed Oct. 10, 1995, Ser. No. 541,866

Int. Cl.[6] G21C *17/04*

U.S. Cl. 376—253 **14 Claims**



1. A method of providing nuclear fuel rods with a tag gas and analyzing escaped tag gas to identify a failed nuclear fuel rod in a nuclear reactor, comprising the steps of:

(a) disposing a unique composition tag gas into a nuclear fuel rod;
(b) monitoring gamma ray activity associated with the nuclear reactor to generate monitor signals;
(c) analyzing the monitor signals to diagnose abnormal gamma ray activity associated with escaping tag gas arising from a failed nuclear fuel rod and generating analysis signals; and
(d) activating a tag gas analysis system by generating an activation signal upon detecting the abnormal gamma ray activity, said tag gas analysis system carrying out the steps comprised of:
(1) passing the escaping tag gas through a dryer to remove water vapor;
(2) passing the dried tag gas through a catalytic recombiner;
(3) passing the tag gas through a nitrogen getter;
(4) passing the tag gas through a helium cryostill to separate the tag gas into separate noble gas constituents;
(5) collecting the separated noble gas constituents in containers for analysis; and
(6) analyzing the noble gas constituents to enable identifying said failed nuclear fuel rod.

5,602,887

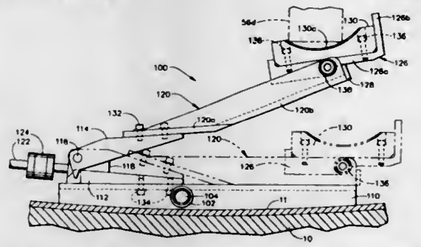
TOOL FOR PUSHING TIE ROD ASSEMBLY SUSPENDED IN DOWNCOMER ANNULUS OF BOILING WATER REACTOR

Grant C. Jensen, Morgan Hill, Calif., assignor to General Electric Company, San Jose, Calif.

Filed Sep. 22, 1995, Ser. No. 532,198

Int. Cl.[6] G21C *19/00*

U.S. Cl. 376—260 **20 Claims**



13. A tool for pushing a mass suspended inside a reactor pressure vessel, comprising:
a support structure;
a fluid-actuated spreader mounted on said support structure and having open and closed states, said fluid-actuated spreader comprising a stationary member fixed to said support structure, a fluid-actuated cylinder supported by said stationary member and a pivoting member which is pivotable about a first axis between a first angular position in said closed state and a second angular position in said open state;
an adaptor bracket attached to said pivoting member;
a rocker plate pivotably mounted on a distal end of said adaptor bracket, said rocker plate being pivotable about a second axis which is generally parallel to said first axis;
a roller pivotably mounted on said rocker plate, said roller being rotatable about a third axis which is generally perpendicular to said second axis; and
a pressurized fluid line for connecting said fluid-actuated spreader to a supply of pressurized fluid,
wherein said fluid-actuated spreader transitions from said closed state to said open state in response to the supply of pressurized fluid to said pressurized fluid line.

5,602,888

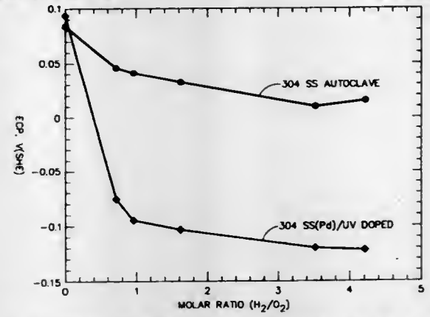
RADIATION-INDUCED PALLADIUM DOPING OF METALS TO PROTECT AGAINST STRESS CORROSION CRACKING

Samson Hettiarachchi, Menlo Park; Thomas P. Diaz, San Martin, and Gary P. Wozadlo, Los Gatos, all of Calif., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 209,572, Mar. 10, 1994, which is a continuation-in-part of Ser. No. 143,513, Oct. 29, 1993, and a continuation-in-part of Ser. No. 143,514, Oct. 29, 1993, Pat. No. 5,448,605. This application Apr. 5, 1995, Ser. No. 416,656

Int. Cl.[6] G21C *9/00*

U.S. Cl. 376—305 **20 Claims**



1. A method for mitigating stress corrosion cracking in an oxided metal component in a water-cooled nuclear reactor, comprising the steps of:
injecting a solution of a compound containing a noble metal into the coolant water during reactor shutdown or during heat-up with recirculation pump heat only; and
causing said noble metal compound to decompose under reactor radiation conditions to release atoms of said noble metal which incorporate in said oxided metal component.

5,602,889

DEVICE FOR FORMING X-RAY IMAGES

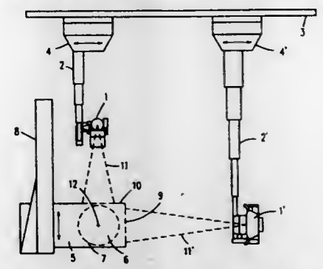
Frank Oldendorf; Heinz Haarmann; Anja Libera, all of Hamburg, and Gerd Spitzmann, Pinneberg, all of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 14, 1995, Ser. No. 514,522

Claims priority, application Germany, Aug. 13, 1994, 44 28 779.8

Int. Cl.[6] B41M *5/00;* **G03G** *13/05*

U.S. Cl. 378—29 **20 Claims**



1. A device for forming X-ray images, comprising an X-ray source for generating an X-ray beam, a photoconductor for converting X-rays into a charge pattern, which photoconductor is provided on a rotationally symmetrically constructed rotatable carrier, a charging device for uniformly charging the surface of the rotating photoconductor prior to the X-ray exposure, a reading unit

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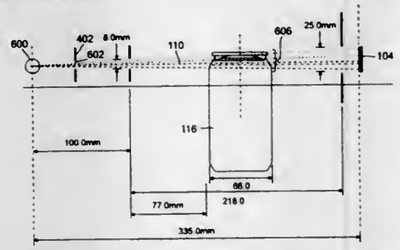
for converting the charge pattern on the surface of the rotating photoconductor into electric image values after an X-ray exposure, and a housing for the rotating parts which comprises an area transparent to X-rays, characterized in that the X-ray source can be positioned in different angular positions within an angular range about the axis of rotation and that the area which is transparent to X-rays extends across such a part of the housing that the photoconductor can be exposed from any angular position of the X-ray source that can be adjusted within said angular range.

5,602,890

CONTAINER FILL LEVEL AND PRESSURIZATION INSPECTION USING MULTI-DIMENSIONAL IMAGES

Glenn Gray, Waipshu, Hi.; Clayton Wood, Framingham, and Helmut W. Klotzsch, Groton, both of Mass., assignors to Thermedics Detection Inc., Chelmsford, Mass.

Filed Sep. 27, 1995, Ser. No. 534,846
Int. Cl.[6] G01N *23/10*
U.S. Cl. 378—57 **65 Claims**



1. A system for determining fill level or pressurization of a moving container, comprising:

a radiation source positioned to direct radiation at the moving container;

a radiation detector positioned to receive a portion of the radiation from the radiation source that is not absorbed or blocked by the moving container and to generate electrical signals in response thereto; and

processing circuitry operable to:

produce multi-dimensional image data for the moving container based on the electrical signals generated by the radiation detector,

compare at least a first portion of the multi-dimensional image data to a corresponding portion of the multi-dimensional image data for a standard container, and

determine, based on a result of the comparison, one or more characteristics of the container from the set of characteristics including the fill level of the container, whether the container is underfilled, whether the container is overfilled, whether the container is properly pressurized, and whether the container is sealed.

5,602,891

IMAGING APPARATUS AND METHOD WITH COMPENSATION FOR OBJECT MOTION

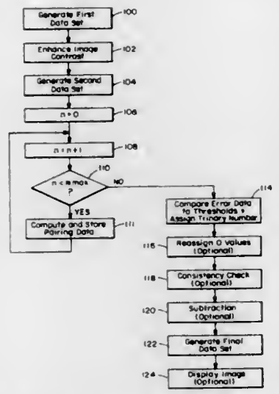
Justin D. Pearlman, Brookline, Mass., assignor to Beth Israel, Boston, Mass.

Filed Nov. 13, 1995, Ser. No. 558,019
Int. Cl.[6] G01N *23/02*
U.S. Cl. 378—62 **44 Claims**

1. A method of generating a representation of target tissue in a region of tissue comprising:

generating a first representation of the region of tissue;

generating a second representation of the region of tissue;



forming an association between each of a plurality of data values of the second representation and a corresponding neighborhood of data values of the first representation;

comparing data values of the second representation with data values of respective associated neighborhoods of the first representation to distinguish target tissue data values of the second representation from background tissue data values of the second representation; and

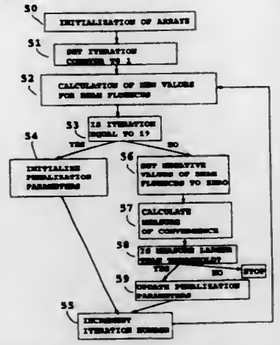
generating the representation of the target tissue using the target tissue data values of the second representation.

5,602,892

METHOD FOR OPTIMIZATION OF RADIATION THERAPY PLANNING

Jorge Llacer, 130 Foret Hill Dr., Los Gatos, Calif. 95032

Filed Mar. 21, 1996, Ser. No. 619,305
Int. Cl.[6] A61N *5/10*
U.S. Cl. 378—65 **16 Claims**



1. An improved method of inverse radiation treatment planning enabling the production and display of a desirable radiation dose distribution from a predetermined number and arrangement of active beams, said method comprising the steps of:

a. calculating optimum fluences for said active beams by the process of maximization of a target function which includes a plurality of likelihood terms and a plurality of penalty terms linked by a plurality of penalization parameters, and

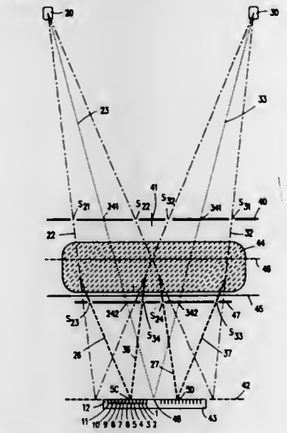
b. modifying said penalization parameters during said process of maximization according to a schedule whose characteristics change dynamically as said process of maximization proceeds.

5,602,893

ARRANGEMENT FOR MEASURING THE PULSE TRANSFER SPECTRUM OF ELASTICALLY SCATTERED X-RAY QUANTA

Geoffrey Harding, Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 21, 1995, Ser. No. 560,238
Claims priority, application Germany, Nov. 24, 1994, 44 41 843.4
Int. Cl.[6] G01N *23/201*
U.S. Cl. 378—86 **10 Claims**



1. An arrangement for measuring the pulse transfer spectrum of elastically scattered X-ray quanta from an examination zone, comprising

an X-ray source for generating polychromatic X-rays,

a detector which detects the scattered X-ray quanta and which comprises a plurality of annular detector elements which concentrically enclose a detector centre in a detector plane,

a primary diaphragm device which is arranged between the X-ray source and the examination zone irradiated by the X-rays and which comprises a primary slit aperture for forming a primary radiation beam,

a secondary diaphragm device which is arranged between the examination zone and the detector and which comprises at least one secondary slit aperture, the primary and secondary slit apertures having essentially a semi-annular shape and being arranged coaxially with respect to a beam axis connecting the X-ray source and the detector centre,

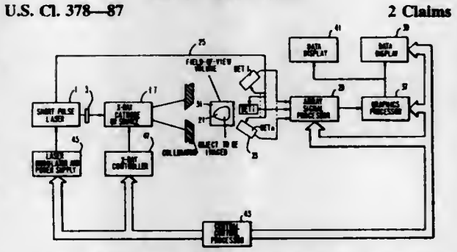
characterized in that there is provided a second X-ray source which is situated at substantially the same distance from the detector plane as the first X-ray source and is arranged in such a manner that a second beam axis which connects the second X-ray source and the detector centre intersects said first beam axis at an angle and constitutes a pair of beam axes in conjunction therewith, that with both beam axes there are associated primary and secondary slit apertures, and that all primary and secondary slit apertures extending around the first beam axis open towards the plane defined by the pair of beam axes in the opposite direction in comparison with the primary and secondary slit apertures extending around the second beam axis, both ends of each semi-annular slit aperture being situated approximately in the plane defined by the pair of beam axes.

5,602,894

THREE-DIMENSIONAL IMAGING SYSTEM USING LASER GENERATED ULTRASHORT X-RAY PULSES

Michael J. Bardash, 453 Fourth St., Apt. 1R, Brooklyn, N.Y. 11215

Filed Aug. 4, 1994, Ser. No. 285,821
Int. Cl.[6] G01N *23/201*
U.S. Cl. 378—87 **2 Claims**



1. A method for imaging the interior of an object located in a field of view volume, said interior comprising a plurality of x-ray scattering sites, said method comprising

scattering an ultra short collimated x-ray pulse from said scattering sites,

detecting the scattering of said ultra short collimated x-ray pulse at a plurality of x-ray detectors

determining for each x-ray detector an ellipsoidal surface passing through at least one of said scattering sites,

determining a plurality of points of intersection of said ellipsoidal surfaces,

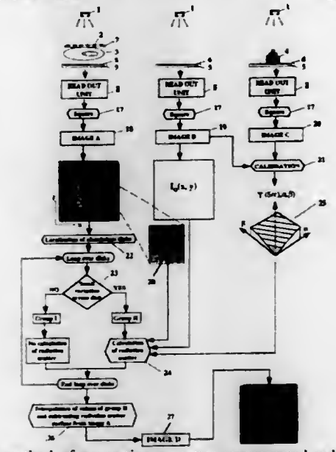
forming a visible image of said plurality of point of intersection.

5,602,895

PARTIALLY-TRANSPARENT-SHIELD-METHOD FOR SCATTERED RADIATION COMPENSATION IN X-RAY IMAGING

Christiaan Fivez, Antwerpen, and Pieter Vuylsteke, Mortsel, both of Belgium, assignors to AGFA-Gevaert, Mortsel, Belgium

Filed Nov. 30, 1994, Ser. No. 346,763
Claims priority, application European Pat. Off., Dec. 24, 1993, 93203671
Int. Cl.[6] H05G *1/64*
U.S. Cl. 378—98.4 **18 Claims**



1. A method of generating a scatter-compensated radiographic image of an object comprising the steps of:

1) exposing said object together with a shield placed between a source of radiation and said object to an amount of radiation emitted by said source so as to generate a radiation image, said shield comprising a number of bodies of a known material and of a known thickness that are partially transparent to irradiation,
2) detecting said radiation image by means of an area detector,
3) converting the detected radiation image into an electrical signal representation,
4) in a number of locations of said bodies within said radiation image deriving a signal proportional to the amount of scattered radiation,
5) composing a scatter image representing in each location of the radiation image of said object the amount of scatter present in the radiation image by interpolation between derived scatter signal values,
6) subtracting said scatter image from said electric signal representation of the detected radiation image so as to generate a scatter compensated radiographic image representation,
7) applying said scatter-compensated image representation to an output device for generating a visible scatter-compensated image.

5,602,896

COMPOSING AN IMAGE FROM SUB-IMAGES

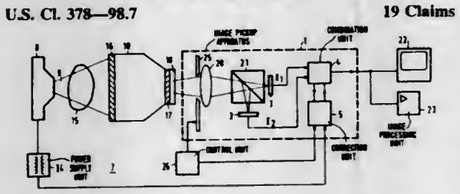
Leonardus J. M. Diepstraten, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 13, 1995, Ser. No. 571,483

Claims priority, application European Pat. Off., Dec. 22, 1994, 94203723

Int. Cl.[6] H05G *1/64*

U.S. Cl. 378—98.7 **19 Claims**



1. An image pick-up apparatus comprising

a first and a second image sensor (2, 3) for converting a first and a second sub image into a first and a second electronic sub-image signal, respectively, and

a combination unit for deriving an electronic image signal for a composite image from said first and second electronic sub-image signals,

characterized in that the image pick-up apparatus comprises

a correction unit for correcting brightness values, comprising a multiplier for multiplying

brightness values of an image column of the first sub-image by a column gain factor, and

brightness values of an image line of the second sub-image by a line gain factor.

5,602,897

HIGH-VOLTAGE POWER SUPPLY FOR X-RAY TUBES

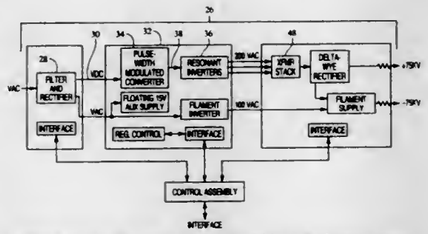
John Kociecki, Chagrin Falls, and Theodore A. Resnick, Beachwood, both of Ohio, assignors to Picker International, Inc., Highland Heights, Ohio

Filed Jun. 29, 1995, Ser. No. 496,571

Int. Cl.[6] H05G *1/10;1/20;1/32*

U.S. Cl. 378—101 **23 Claims**

1. A radiographic scanner comprising:



a patient receiving region defined within a stationary gantry;

an x-ray tube mounted on a rotating frame for rotation about the patient receiving region, the x-ray tube selectively transmitting x-rays across the patient receiving region;

radiation detectors for detecting radiation which has traversed the patient receiving region and generating signals indicative of the radiation detected; and

a high-frequency power source supplying power to the x-ray tube, the high-frequency power source having a plurality of straight-up transformers which receive an alternating current and which transform the alternating current into a high-frequency high-voltage output in at least a kilohertz range, the straight-up transformers having a plurality of secondary windings connected in a delta-wye configuration, the delta-wye configuration being connected by diodes with the x-ray tube.

5,602,898

ROTARY-ANODE X-RAY TUBE COMPRISING A SLEEVE BEARING

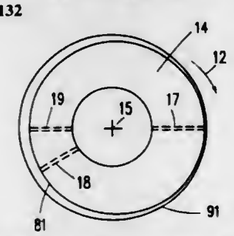
Axel Vetter, Hamburg, Germany, and Leo P. M. Tielemans, Eersel, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 23, 1996, Ser. No. 590,252

Claims priority, application Germany, Jan. 25, 1995, 195 02 207.6

Int. Cl.[6] H01J *35/24*

U.S. Cl. 378—132 **14 Claims**



1. A rotary-anode X-ray tube, comprising a sleeve bearing w serves to journal the rotary anode and which comprises a stationary bearing portion and a bearing portion which is rotatable about an axis of rotation, the two bearing portions cooperating with one another via a lubricant and comprising bearing surfaces which extend perpendicularly to the axis of rotation in order to take up axial bearing forces, said bearing surfaces changing over into external surfaces which form a lubricant gap between the bearing portions and one of which is provided with a groove pattern wherein, the external surface of the rotatable bearing portion which bounds the lubricant gap has a symmetrical cross-section relative to the axis of rotation, and the cross-section of the external surface of the stationary bearing portion which bounds the lubricant gap is non-symmetrical relative to the axis of rotation.

5,602,899

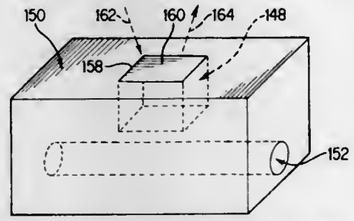
ANODE ASSEMBLY FOR GENERATING X-RAYS AND INSTRUMENT WITH SUCH ANODE ASSEMBLY

Paul E. Larson, Bloomington, Minn., assignor to Physical Electronics Inc., Eden Prairie, Minn.

Filed Jan. 31, 1996, Ser. No. 593,308

Int. Cl.[6] H01J *35/12*

U.S. Cl. 378—143 **22 Claims**



1. An anode assembly for generating x-rays, comprising:

a housing having a channel therein receptive of a fluid coolant, the housing further having an opening from the channel and comprising a mounting wall formed of a refractory metal with a low thermal expansion coefficient;

a diamond wafer mounted sealingly to the mounting wall across the opening so that an outer surface of the diamond wafer faces outwardly and an inner surface of the diamond wafer is in contact with the coolant; and

a metal anode film bonded to the outer surface, the anode film being receptive of an impinging electron beam to generate x-rays characteristic of the metal, whereby the diamond wafer provides cooling in compensation for the anode member being heated by the electron beam, and wherein the mounting wall has one slot or a pair of orthogonal slots therein for traversing the electron beam to determine width of the electron beam.

5,602,900

RADIO TELECOMMUNICATION APPARATUS

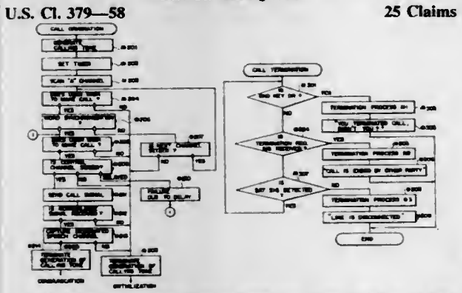
Kiyoshi Hattori, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 642,635, Sep. 17, 1991, abandoned. This application Aug. 29, 1994, Ser. No. 297,412

Claims priority, application Japan, Jan. 18, 1990, 2-8811

Int. Cl.[6] H04Q *7/20*

U.S. Cl. 379—58 **25 Claims**



1. A radio telecommunication apparatus connectable to a base station over a radio channel including a control channel and a speech channel, said radio telecommunication apparatus comprising:

first detecting means for detecting an origination of a call to another party, the originated call including a telephone number of the other party use by said base station in calling the other party;

means for establishing a speech channel between said base station and said radio telecommunication apparatus when said base station calls the other party;

second detecting means for detecting the establishment of the speech channel; and

first indicating means, connected to said first and second detecting means, for indicating that the origination of the call has been detected by said first detecting means and the establishment of the speech channel has not yet been detected by said second detecting means, wherein the first indicating means begins indicating after the origination of the call and stops indicating after the establishment of the speech channel.

5,602,901

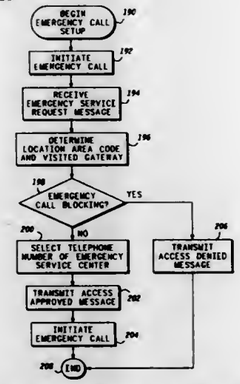
SPECIALIZED CALL ROUTING METHOD AND APPARATUS FOR A CELLULAR COMMUNICATION SYSTEM

James P. Redden, Mesa; Michael W. Krutz, Chandler, and Richard L. Astrom, Phoenix, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 22, 1994, Ser. No. 361,400

Int. Cl.[6] H04Q *7/38*

U.S. Cl. 379—59 **17 Claims**



1. A method for establishing a specialized call comprising the steps of:

a) receiving a specialized service request message from a remote communication unit, wherein the specialized service request message indicates that a user of the remote communication unit requires emergency services;

b) determining a location of the remote communication unit;

c) determining, based on the location, whether at least one service center exists which the remote communication unit may contact to obtain the emergency services; and

d) transmitting an access approved message to the remote communication unit containing a service center communication number which enables the remote communication unit to contact the at least one service center if the at least one service center exists.

5,602,902

FOUR WIRE MODEM SIGNAL SWITCHING FOR VOICE AND DATA APPLICATIONS

Nels E. Satteriund, Loomis, and Glenn M. Lewis, Fairoaks, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

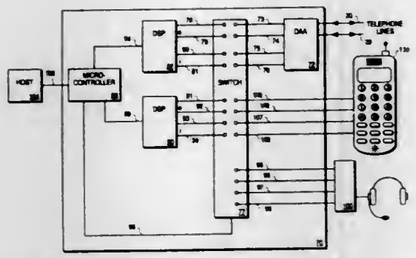
Filed Mar. 24, 1995, Ser. No. 410,212

Int. Cl.[6] H04Q *7/32*

U.S. Cl. 379—59 **12 Claims**

9. A switching multi-mode modem comprising:

a DAA having a two-wire side with an input and output and a four-wire side with an input and output, said input and output on said two-wire side being connected to a land based telephone network;



a first DSP having an input and output and capable of performing all modem digital signal processing functions;

a second DSP having an input and output and capable of performing conversion of analog voice signals to digital signals and compression of said digital voice signals;

a headset having an input and output;

a cellular telephone having an input and output;

a first switch having a base terminal connected to said input of said first digital signal processor and mutually exclusively connectable to three switchable terminals, said first switchable terminal being connected to said output of said cellular telephone, said second switchable terminal being connected to said output of said four wire side of said DAA, and said third switchable terminal being connected to said output of said headset;

a second switch having a base terminal connected to said input of said four wire side of said DAA and mutually exclusively connectable to three switchable terminals, said first switchable terminal being connected to said output of said first digital signal processor, said second switchable terminal being off for said second switch and said third switchable terminal being connected to said output of said headset;

a third switch having a base terminal connected to said input of said headset and mutually exclusively connectable to three switchable terminals, said first switchable terminal being connected to said output of said first digital signal processor, said second switchable terminal being connected to said output of said second digital signal processor, and said third switchable terminal being connected to said input of said vase terminal of said first switch;

a fourth switch having a base terminal connected to said input of said cellular telephone and mutually exclusively connectable to three switchable terminals, said first switchable terminal being connected to said output of said headset and said second terminal of said second switch, said second switchable terminal being off for said fourth switch and said third switchable terminal being connected to said output of said first digital signal processor, to said first terminal of said second switch and to said first terminal of said third switch; and

microprocessor means communicating with said first DSP and said second DSP and to said first, second, third and fourth switches, said microcontroller being adapted to separate audio signals from data signals and to cause said first, said second, said third, and said fourth switches to switch into states that configure said modem to operate in a Radish voice mode, or a Radish data mode, or a cellular telephone mode, or a business/audio mode or a digital simultaneous voice and data mode upon command from said microcontroller.

5,602,903

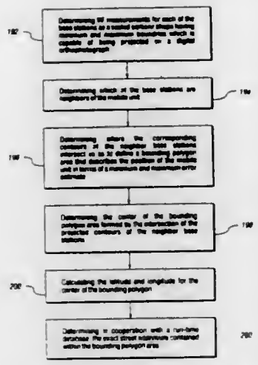
POSITIONING SYSTEM AND METHOD

Frederick W. LeBlanc, Arveda; Gregory E. Wilson, and Alparslan M. Uysal, both of Boulder, all of Colo., assignors to US West Technologies, Inc., Boulder, Colo.

Filed Sep. 28, 1994, Ser. No. 314,477

Int. Cl.[6] H04Q *7/22;* **G01S** *3/02*

U.S. Cl. 379—60 **19 Claims**



1. For use in a wireless communication system including a plurality of base stations each having a corresponding coverage area, a method for determining the position of a mobile unit, comprising:

for each of the base stations, determining in cooperation with a receiver, a plurality of RF measurements for the base station, for a predetermined plurality of distances and directions;

for each of the base stations, modeling its determined RF measurements as a scaled contour shape having minimum and maximum boundaries which is capable of being projected on a Graphical Information System (GIS);

determining RF measurements from neighboring base stations; and

determining where the corresponding contours of the RF measurements from neighboring base stations intersect so as to define a bounding polygon area that describes the position of the mobile unit in terms of a minimum and maximum error estimate.

5,602,904

SYSTEM FOR CONTROLLING A CALL TERMINATION ON THE BASIS OF CALLER DATA IN A PRIVATE SWITCHED TELEPHONE SYSTEM

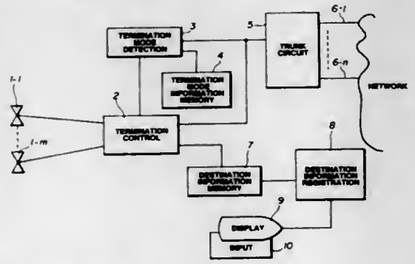
Katsuyuki Hanai, Tama, and Shogo Ayame, Fuchu, both of Japan, assignors to Toshiba Corporation, Kanagawa-ken, Japan

Filed Mar. 8, 1995, Ser. No. 401,042

Claims priority, application Japan, Mar. 9, 1994, 6-038342

Int. Cl.[6] H04M *3/42*

U.S. Cl. 379—88 **26 Claims**



1. A telephone system comprising:

destination information memory means for storing source addresses of calls and extension terminals to which call is to be connected in response to each of the source addresses;

terminating mode memory means for storing trunk identifiers and terminating modes associated with each trunk identifier:

terminating mode detecting means responsive to an incoming call for detecting a terminating mode from said terminating mode memory means;

termination control means, operative when the termination mode detecting means detects that termination should be done in a termination mode using said destination information memory means, for finding the extension terminal associated with a source address transmitted from a network and for connecting the incoming call to the found extension terminal;

timer means for timing the present time;

time differential memory means for storing a time differential with respect to different geographic areas; and

local time calculating means for calculating the local time for a source address from the present time and the time differential with respect to the geographic area of the source address, wherein

the local time of the source address is obtained.

5,602,905

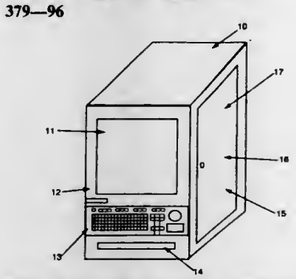
ON-LINE COMMUNICATION TERMINAL/APPARATUS

Richard P. Mettke, 620 Shannahan Dr., Weaver, Ala. 36277

Filed Jan. 23, 1995, Ser. No. 376,247

Int. Cl.[6] H04M *11/00*

U.S. Cl. 379—96 **5 Claims**



1. A public on-line, pay-as-you-use communications terminal comprising a housing, wherein said housing contain:

a central processing unit (CPU);

a telephone access node;

an internal modem coupled to the CPU and telephone access node;

a video display monitor coupled to the CPU;

a keyboard for providing user interface coupled to the CPU;

a credit card reader swipe device coupled to the CPU for accepting payment by a user for use of the terminal;

means for accessing commercial on-line services and allow for user interaction;

software installed into the CPU to allow interface with commercial on-line service providers and credit card service centers;

a printer coupled to the CPU.

5,602,906

TOLL FRAUD DETECTION SYSTEM

James W. Phelps, Roeland Park, Kans., assignor to Sprint Communications Company L.P., Kansas City, Mo.

Filed Apr. 30, 1993, Ser. No. 56,246

Int. Cl.[6] H04M *15/00;3/00*

U.S. Cl. 379—114 **15 Claims**

1. A method for detecting fraudulent calls in a telecommunications network wherein the network is operable for handling calls from origination telephone numbers to termination telephone numbers using billing numbers, the method comprising:

receiving call information into a computer system wherein the call information comprises at least an origination number, a termination number, and a billing number for a particular call;

storing history information in the computer system wherein the history information is related to previous fraudulent calls and comprises a least the origination numbers, the destination numbers, and the billing numbers for the previous fraudulent calls;

analyzing the call information and the history information in the computer system according to a set of rules to develop a priority indicating a likelihood that the billing number for the particular call has been fraudulently used, wherein the set of rules comprises comparing the origination number, the termination number, and the billing number for the particular call to the originating numbers, the terminating numbers, and the billing numbers of the previous fraudulent calls.

5,602,907

METHOD AND SYSTEM FOR ACCOUNTING COMMUNICATION CHARGES

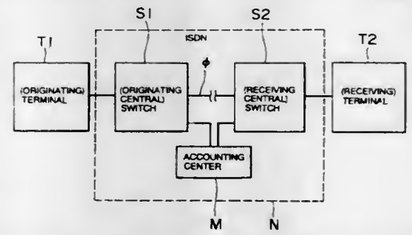
Emi Hata, and Kenji Nemoto, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Aug. 1, 1994, Ser. No. 284,002

Claims priority, application Japan, Jan. 21, 1994, 6-005457

Int. Cl.[6] H04M *15/00*

U.S. Cl. 379—114 **14 Claims**



1. An accounting method of communication charges for communications between a plurality of terminals connected to each other via a communications network, the accounting method comprising the steps of:

transmitting a first information indicating that an accounting sharing rate between respective terminals with respect to the communication charges is changed from a first sharing rate corresponding to an accounting sharing rate used for accounting the communication charges between the respective terminals prior to said transmitting step, to a second arbitrary sharing rate, from one terminal of said respective terminals to said communications network, at arbitrary timing in the middle of the communication;

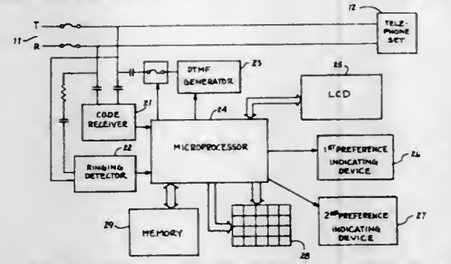
detecting the transmission of the first information; and

imposing the communication charges for a communication after detecting the transmission of the first information, on at least one of said one terminal and another terminal of said respective terminals in accordance with the second sharing rate.

5,602,908
CALLING PARTY IDENTIFYING APPARATUS AND METHOD THEREFOR

Yuan-Neng Fan, 15045 N. 49 St., Scottsdale, Ariz. 85254

Filed May 18, 1995, Ser. No. 444,823
Int. Cl.[6] H04M *15/06*
U.S. Cl. 379—199 **15 Claims**



1. A calling party identifying apparatus comprising, in combination:

ring detector means coupled to a pair of external telephone lines for detecting a call from a calling party;

code receiver means coupled to said pair of external telephone lines for detecting identification information from said calling party via said external telephone lines;

microprocessor means coupled to said ring detector means and said code receiver means for responding to detection of said call and receiving identification information of said calling party from said code receiver means;

memory means coupled to said microprocessor means for programmably storing different personal information each of which includes a name of a person, preference degree of said person, preferred hours for said person to call, and telephone number of said person;

key pad means including a plurality of key switches coupled to said microprocessor for inputting personal information of a potential calling party;

LCD means coupled to said microprocessor means for displaying said personal information of said calling party after said microprocessor means receives said identification information of said calling party; and

first preference indicating means, including a plurality of lights thereon, for representing said preference degree;

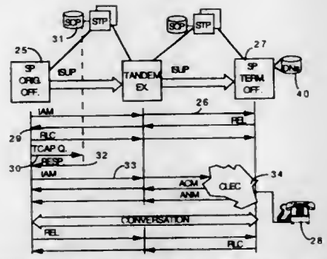
said microprocessor means responds to reception of said identification information of said calling party and searches for said telephone number of said calling party from said memory means and displays located personal information including the name of said calling party, preference degree of said calling party, and said telephone number of said calling party on said LCD means when said telephone number of said calling party is present in said memory means, otherwise said microprocessor means merely responds by displaying said telephone number on said LCD means.

5,602,909
NUMBER PORTABILITY USING DATABASE QUERY

R. William Carkner, and L. Lloyd Williams, both of Kanata, Canada, assignors to Stentor Resource Centre, Inc., Canada

Filed Dec. 27, 1995, Ser. No. 578,976
Claims priority, application Canada, Dec. 21, 1995, 2165856
Int. Cl.[6] H04M *3/42;7/00;* **H04J** *3/12*
U.S. Cl. 379—207 **10 Claims**

1. In a telephone network having a number of telephone switching offices equipped with SSPs (Service Switching Points) operating with IN (Intelligent Network) application software, and a remotely located SCP(Service Control Point) adapted to receive, when required, SS7 (Signalling System 7) messages from the SSPs to translate a dialled number to enable the routing of a call on the telephone network, a method of providing number portability for



the treatment of calls from a calling party to a specific number of a called party, comprising the steps of:

a) forwarding an Initial Address Message (IAM) from an originating office to a terminating office, said IAM containing the calling and called party's numbers to enable said call to reach said terminating office;

b) receiving said IAM at said terminating office and determining whether said call is directed to a portable number;

c) returning from said terminating office to said originating office, a modified Integrated Services Digital Network (ISDN) User Part (ISUP) message containing an indication that the called party number is a portable number, if said call is directed to a portable number;

d) receiving, at said originating office, said modified ISUP message;

e) triggering a Transaction Capabilities Application Part (TCAP) query from said originating office to said SCP if said modified ISUP message contains an indication that said called party number is a portable number;

f) launching a query to an intermediate office if the originating office is unable to service the call, to provide a routing option to enable said call to be routed to said called party;

g) receiving said routing option at said intermediate office which launched the query;

h) creating a new IAM to enable the call to reach the called party; and

i) forwarding a new IAM from said intermediate office to an alternate terminating office associated with said routing option.

5,602,910
CONTROL APPARATUS FOR SWITCHING STATION CONNECTIONS USING A HOLDING TONE

Yuichiro Tsutsui; Minoru Ogata, both of Yokohama; Shoji Suzuki, Atsugi; Shinji Tsuchida, Zama; Shunji Arai, Yokohama, and Shigeru Hiroki, Hiratsuka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 801,894, Dec. 3, 1991, abandoned.
This application Jul. 5, 1994, Ser. No. 270,311
Claims priority, application Japan, Dec. 4, 1990, 2-400382; Dec. 4, 1990, 2-400383; Dec. 4, 1990, 2-400388; Dec. 4, 1990, 2-400389
Int. Cl.[6] H04M *3/58*
U.S. Cl. 379—212 **17 Claims**

1. A connection switching apparatus comprising:

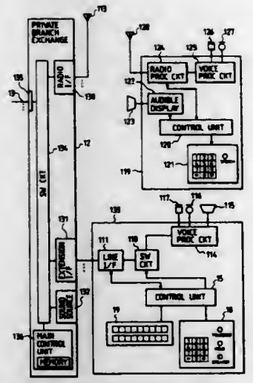
connecting means for selectively connecting a first station to one of a second station, a third station and a holding tone source;

detecting means for detecting a request from the second station;

calling means for calling the third station in response to the request from the second station when the first station and the second station are connected by said connecting means;

discriminating means for discriminating whether or not the third station which has been called by said calling means, can respond to a call by said calling means; and

control means for controlling said connecting means such that the first station which has been connected to the second station, is connected to the holding tone source when it is



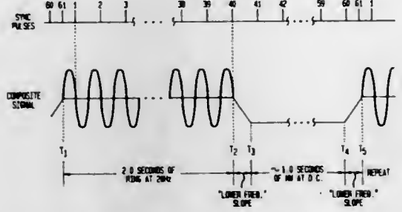
discriminated by said discriminating means that the third station can respond to the call,

wherein said connecting means connects the first station, which has been connected to the holding tone source, to the third station when the third station responds to the calling means.

5,602,911
SYSTEM AND METHOD FOR ELIMINATING BELL TAP ON ANALOG TELEPHONES

Edwin L. Ost, Sr., Lake Worth, Fla., assignor to Siemens Business Communication Systems, Inc., Santa Clara, Calif.

Filed May 10, 1993, Ser. No. 59,486
Int. Cl.[6] H04M *1/00;3/00;9/00*
U.S. Cl. 379—376 **5 Claims**



1. A device for generating a signal for use in a telephone system, the signal comprising one or more AC cycles and one or more DC cycles, being biased by a bias voltage, comprising:

a first means for generating an AC signal;

a second means for generating a DC signal; and

a third means, controlling said first and second means, for producing a composite ac/dc signal, comprising said AC signal and said DC signal alternately spaced in time, said third means comprising:

a fourth means for determining when one of the AC cycles is complete;

a fifth means, coupled to said fourth means, for determining when a voltage of said AC signal is equal to the bias voltage when said AC cycle is complete;

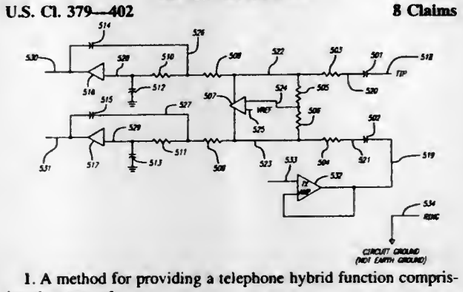
a sixth means, coupled to said fifth means, for generating a portion of said composite signal from the bias voltage level to a DC voltage level with a first overall slope, the absolute value of said first slope being less than the maximum absolute value of the slope of said AC signal; and

a seventh means, coupled to said sixth means, for generating a portion of said composite signal from said DC voltage level to the bias voltage level, with a second overall slope, the absolute value of said second slope being less than the maximum absolute value of the slope of said AC signal.

5,602,912
TELEPHONE HYBRID CIRCUIT

Russell A. Hershbarger, Nevada City, Calif., assignor to Silicon Systems, Inc., Tustin, Calif.

Continuation of Ser. No. 245,211, May 16, 1994, abandoned.
This application Jan. 17, 1996, Ser. No. 591,209
Int. Cl.[6] H04M *9/00*
U.S. Cl. 379—402 **8 Claims**



1. A method for providing a telephone hybrid function comprising the steps of:

connecting a first input of a telephone hybrid function means for providing a telephone hybrid function to a first telephone line conductor;

connecting ground of said telephone hybrid function means to a second telephone line conductor, isolating ground of said telephone hybrid function means from earth ground;

receiving a telephone line signal at said first input of said telephone hybrid function means, said telephone line signal comprising a first transmit signal and a receive signal;

receiving a second transmit signal at a second input of said telephone hybrid function means;

highpass filtering said telephone line signal;

highpass filtering said second transmit signal;

converting said receive signal to a differential receive signal, using a converting means;

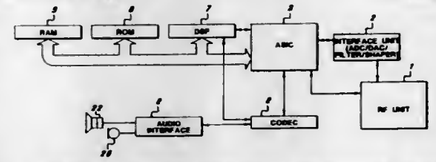
canceling said first and second transmit signals using a canceling means, to prevent said first and second transmit signals from being outputted;

outputting said differential receive signal, without outputting said first and second transmit signals.

5,602,913
ROBUST DOUBLE-TALK DETECTION

Ho Lee, and Budi Hardiman, both of San Diego, Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Filed Sep. 22, 1994, Ser. No. 310,614
Int. Cl.[6] H04M *1/58*
U.S. Cl. 379—406 **17 Claims**



1. A method of detecting double-talk within a cellular mobile unit including:

determining a receive slope of a receive signal in a receive signal path, and generating a receive slope signal in response thereto;

determining a transmit slope of a transmit signal in a transmit signal path, and generating a transmit slope signal in response thereto;

determining a difference slope of a difference signal, and generating a difference slope signal in response thereto, including generating the difference signal in response to evaluating differences between the receive signal and the transmit signal;

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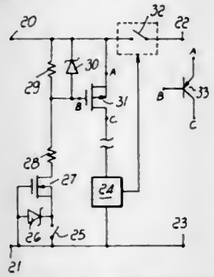
generating a double-talk flag signal in the event the transmit slope signal indicates an increasing transmit speech power, and the receive slope signal and the difference slope signal indicate a prescribed relationship in the receive speech power and the difference power.

5,602,914

DEVICE FOR LIMITING THE WORKING VOLTAGE FOR MECHANICAL SWITCHES IN TELEPHONY

Antonio Andreini; Pietro Consiglio; Pietro Erratico, all of Milan, and Enrico M. A. Ravanelli, Monza, all of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Continuation of Ser. No. 17,789, Feb. 16, 1993, Pat. No. 5,448,636. This application Aug. 1, 1995, Ser. No. 509,773
Claims priority, application Italy, Feb. 17, 1992, MI92A0339
Int. Cl.[6] H04M *1/00*
U.S. Cl. 379—422 **21 Claims**



1. A device for connection to a first telephone line and a second telephone line, the device comprising:

a mechanical switch having a first terminal coupled to the first telephone line and a second terminal, the mechanical switch being movable from a first position to a second position:

a first circuit including a zener diode and a second device:

the zener diode being coupled to the first and second terminals of the mechanical switch for setting a maximum working voltage across the mechanical switch and

the second device being coupled to the first and second terminals of the mechanical switch, the second device provides no current when the mechanical switch is in the first position and the second device further provides an output current when the switch is in the second position: and

a control circuit electrically coupled to the first circuit and responsive to the output current for providing an activation output signal to correct the first and second telephone lines to a talk circuit.

5,602,915

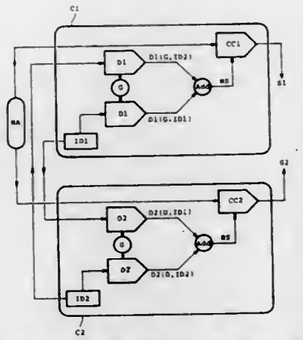
PROCESS FOR THE CONTROL OF SECRET KEYS BETWEEN TWO SMART CARDS

Mireille Campana, Clamart; Henri Gilbert, Bures sur Yvette, and David Arditti, Clamart, all of France, assignors to France Telecom Etablissement Autonome de Droit Public, France

Filed Feb. 25, 1994, Ser. No. 201,979
Claims priority, application France, Feb. 25, 1993, 93 02152
Int. Cl.[6] H04L *9/08;9/00*
U.S. Cl. 380—21 **7 Claims**

1. A process for controlling communication between a first and a second smart card using key-based cryptography, in which a first identify code is stored in the first smart card and a second identity code is stored in the second smart card, said process comprising the steps of:

customizing said smart cards by:



writing into each of the smart cards an identical group cryptographic secret key, and

writing into each of the smart cards respective algorithms for processing the identical group cryptographic secret key and the first and second identity codes stored in said first and second smart cards, respectively; and

using said smart cards by:

transmitting the first identity code to the second smart card,

transmitting the second identity code to the first smart card,

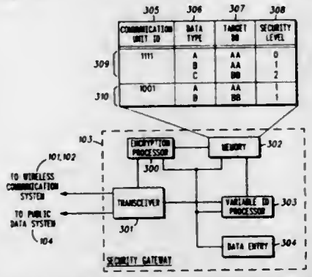
calculating, by using said respective processing algorithms stored in said smart cards, first and second session keys for said first and second smart cards, respectively.

5,602,916

METHOD AND APPARATUS FOR PREVENTING UNAUTHORIZED MONITORING OF WIRELESS DATA TRANSMISSIONS

Gary W. Grube, Palatine, Ill.; Timothy W. Markison, and Mathew A. Rybicki, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 5, 1994, Ser. No. 317,668
Int. Cl.[6] H04L *9/00*
U.S. Cl. 380—21 **32 Claims**



1. In a communication system envoronment that includes a wireless communication system operably coupled to a public data system, wherein the wireless communication system includes a plurality of communication units, a method for preventing unauthorized monitoring of wireless data transmissions to a communication unit of the plurality of communication units, the method comprising:

a) transmitting, by the communication unit, a request for data to the wireless communication system;

b) routing, by the wireless communication system, the request to a security gateway;

c) determining, by the security gateway, type of data requested, identity of the communication unit, and identity of a particular database of the public data system that contains the data requested;

d) determining, by the security gateway, a transmission security level;

e) determining, by the security gateway, a unique user key of the communication unit;

f) attempting, by the security gateway, to establish a secure communication with the communication unit based on the unique user key and the transmission security level; and

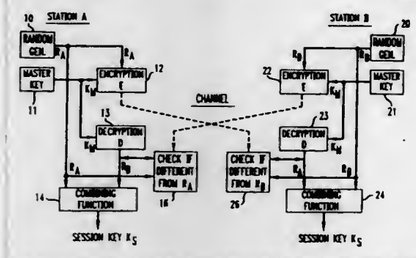
g) when the secure communication is established, routing, by the security gateway, the request to the particular database.

5,602,917

METHOD FOR SECURE SESSION KEY GENERATION

Kurt H. Mueller, Wallisellen, Switzerland, assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 30, 1994, Ser. No. 366,863
Int. Cl.[6] H04L *9/08;9/00*
U.S. Cl. 380—21 **15 Claims**



8. A method of generating a cryptographic session key for a first symmetric key cryptosystem based on a known master key signal available to at least first and second parties, the method comprising the steps of:

forming a first signal in a first decryption element by decrypting a first random number signal produced by a first random number generator element using a second symmetric key cryptosystem based on the master key signal;

receiving into a second decryption element a second random number signal from one of said parties;

decrypting the second random number signal in said second decryption element using a third symmetric key cryptosystem based on the master key signal;

receiving into a second decryption element a second random number signal from one of said parties;

decrypting the second random number signal in said second decryption element using a third symmetric key cryptosystem based on the master key signal to form a second signal; and

generating in a combining element said cryptographic session key by commutatively combining at least the first and second signals.

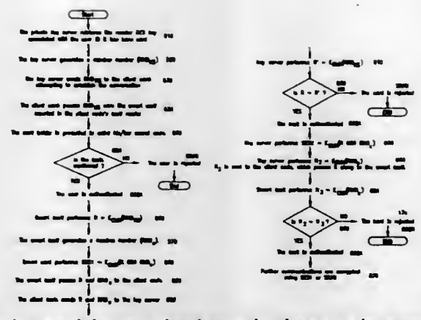
5,602,918

APPLICATION LEVEL SECURITY SYSTEM AND METHOD

James F. Chen, and Jieh-Shan Wang, both of Potomac, Md., assignors to Virtual Open Network Environment Corp., Rockville, Md.

Filed Dec. 22, 1995, Ser. No. 593,240
Int. Cl.[6] H04L *9/00;9/08*
U.S. Cl. 380—21 **7 Claims**

1. A system for establishing secured communications pathways across an open unsecured network between a secured party and a possibly unsecured party, without compromising the security of either of the parties, comprising: a smartcard reader and a smartcard located at a client node of the unsecured party, the smartcard



having stored thereon a shared secret key known to the secured party; a gateway processor which controls access from the open unsecured network to said secured party and having access to the shared secret key; means for authenticating communications between the respective parties based on said shared secret key and for generating session keys,

wherein the smartcard reader includes means for prompting a card holder to enter a secret code and for confirming the code in order to authenticate the card holder before permitting further communications, and

wherein the means for authenticating communication between the respective parties and for generating the session keys comprises:

means associated with the gateway processor for generating a first number and sending the first number to the smart card;

means on the smartcard for encrypting the first number by the shared secret key;

means on the smartcard for encrypting the first number by the shared secret key;

means on the smartcard for generating a second number and encrypting a combination of the encrypted first number and the second number;

means in the gateway processor for verifying whether the first number has been encrypted by the shared secret key, thereby authenticating the smartcard;

means in the gateway processor for generating a first session key by combining the encrypted first number with the second number and encrypting the combination;

means in the gateway processor for encrypting the second number by the shared secret key;

means in the smartcard for verifying whether the second random number has been encrypted by the shared secret key and thereby authenticating the gateway processor; and

means in the smartcard for combining the encrypted first number with the second number and encrypting same to generate a second session key corresponding to the first session key generated by the gateway processor; and

means for encrypting further communications between the respective parties using the first and second session keys.

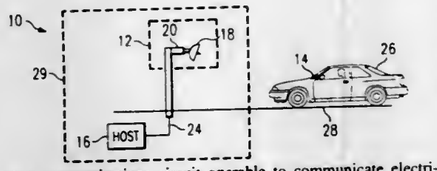
5,602,919

SPEEDUP FOR MONETARY TRANSACTIONS USING A TRANSPONDER IN CONJUNCTION WITH A SMARTCARD

Dwaine S. Hurta, Garland; Anne Tip, McKinney, both of Tex., and Peter Wolfart, Neu-Anspach, Germany, assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 420,849, Apr. 10, 1995, abandoned. This application Aug. 18, 1995, Ser. No. 516,670
Int. Cl.[6] H04K *1/00;* **G07B** *15/02;* **G08G** *1/00*
U.S. Cl. 380—24 **6 Claims**

1. A transponder operable to communicate with an interrogator, said transponder comprising:



a) a communications circuit operable to communicate electrically with said interrogator;

b) a smartcard interface operable to place a smartcard in electrical communication with said transponder; and

c) a transponder controller in electrical communication with said communications circuit and with said smartcard through said smartcard interface, said transponder controller being operable:

1) to receive a data value from said smartcard,

2) to hold said data value in transponder memory,

3) to re-compute a new data value in response to communications between said communications circuit and said interrogator, and

4) to transmit said new data value to said smartcard for storage therein.

5,602,920

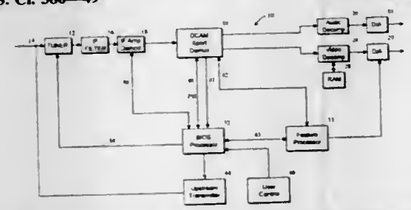
COMBINED DCAM AND TRANSPORT DEMULTIPLEXER

Caitlin B. Bestler, Lisle, and Khosro M. Rabii, Hawthorn Woods, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed May 31, 1995, Ser. No. 455,744

Int. Cl.[6] H04L *9/00*; **H04N** *7/167*

U.S. Cl. 380—49 **14 Claims**



1. A combined conditional access and transport demultiplexer circuit, comprising:

means for receiving a transport bitstream comprising a plurality of multiplexed conditional access and product packets, each of said conditional access packets being identified by a conditional access PID and each of said product packets being identified by a respective product PID;

decrypting means for decrypting said received packets;

conditional access means for selectively enabling said decrypting means;

one or more output ports;

means for storing a value corresponding to said conditional access PID and one or more values corresponding to selected ones of said product PID's;

means for comparing the PID of each of said received packets with said stored PID values; and

means responsive to said comparing means for routing said conditional access packets from said decrypting means to said conditional access means and said product packets from said decrypting means to a selected one of said output ports.

5,602,921

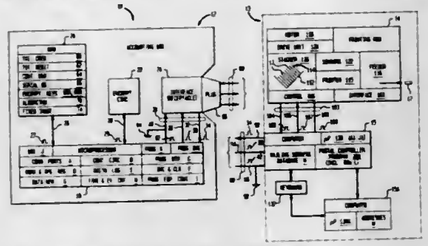
POSTAGE ACCOUNTING SYSTEM INCLUDING MEANS FOR TRANSMITTING ASCII ENCODED VARIABLE INFORMATION FOR DRIVING AN EXTERNAL PRINTER

Michael J. Ramadei, Trumbull, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 15, 1994, Ser. No. 356,749

Int. Cl.[6] G07B *17/04*

U.S. Cl. 380—51 **17 Claims**



1. A postage accounting system comprising:

(a) means for accounting for postage;

(b) printing means externally of the accounting means, the printing means including a printing module and computer means for controlling the printing module, the printing module including printing apparatus and means for sequentially feeding each item of a predetermined plurality thereof to the printing apparatus for printing thereon, the computer means including means programmed for sequentially transmitting variable information for each item to the accounting means, the variable information including at least a portion of a mailing address for each item;

(c) the postage accounting means including means for connecting the accounting module in communication with the printing means, the accounting means including means for sequentially encrypting the variable information received for each item, the accounting means including a microprocessor, the microprocessor including means programmed for transmitting to the printing means a bit-mapped image of fixed information for printing on each item, and the microprocessor including means programmed for separately sequentially transmitting to the printing means an ASCII encoded string of characters corresponding to the sequentially encrypted information for sequentially printing on the respective items.

5,602,922

METHOD AND APPARATUS FOR PROCESSING AN AUDIO SIGNAL BY SURROUND MODES

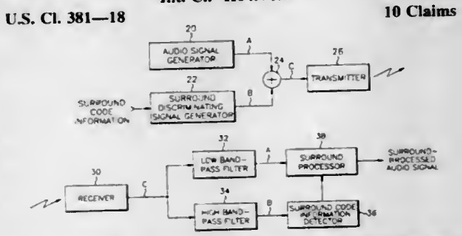
Young-Man Lee, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Aug. 18, 1994, Ser. No. 292,020

Claims priority, application Rep. of Korea, Aug. 19, 1993, 16139/1993

Int. Cl.[6] H04N *5/91*

U.S. Cl. 381—18 **10 Claims**



1. A method for processing an audio signal, in which the audio signal is transmitted by a transmitting side and the audio signal is surround-processed in a receiving side, said method comprising the steps of:

generating a single mixed signal by modifying said audio signal with surround-sound information indicating a surround-sound characteristic of an original sound timbre in the transmitting side, wherein said audio signal is modified by including said surround-sound information in said audio signal;

transmitting said single mixed signal in the transmitting side and receiving said single mixed signal in the receiving side;

separating said single mixed signal into one or more than one signal, said more than one signal including said audio signal and said surround-sound information; and

surround-processing said audio signal into an audio signal having the surround-sound characteristic indicated by said surround-sound information.

5,602,923

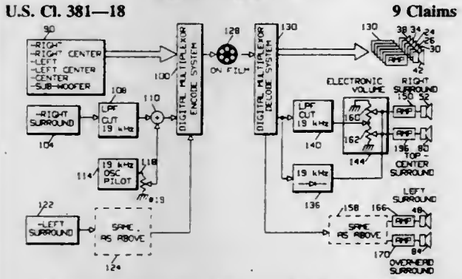
THEATER SOUND SYSTEM WITH UPPER SURROUND CHANNELS

Yoshio Ozaki, Tokyo, Japan, and Michael J. Kobut, Ojai, Calif., assignors to Sony Corporation, Tokyo, Japan, and Sony Cinema Products Corporation, Culver City, Calif.

Division of Ser. No. 207,006, Mar. 7, 1994. This application Aug. 23, 1995, Ser. No. 518,624

Int. Cl.[6] H04R *5/00*

U.S. Cl. 381—18 **9 Claims**



1. A method of audio recording, comprising the steps of:

providing a channel of audio information suitable for serving as a source of side surround audio and upper surround audio;

producing a pilot signal having a characteristic representative of a desired proportion of said channel which should be allotted to said side surround audio and said upper surround audio, wherein said pilot signal is a tone of predetermined frequency having an amplitude ranging from zero to a predetermined maximum value, wherein a zero level in said pilot signal represents a zero level of said upper surround audio and said predetermined minimum value of said pilot signal represents a zero level of said side surround audio and wherein a level of said pilot signal between zero and said predetermined maximum value represents a mixture of non-zero levels of both said side surround channel and said upper surround channel; and

recording said pilot tone and said channel of audio.

5,602,924

ELECTRONIC STETHESCOPE

Jocelyn Durand, Joliette; Louis-Gilles Durand, St-Jean-de-Matha, and Marie-Claude Grenier, Montreal, all of Canada, assignors to Theratechnologies Inc., Montreal, Canada

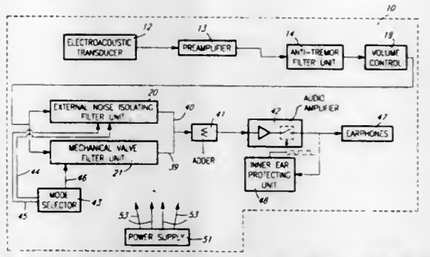
Continuation-in-part of Ser. No. 986,596, Dec. 7, 1992, abandoned. This application Dec. 9, 1993, Ser. No. 164,382

Int. Cl.[6] A61B *7/04*

U.S. Cl. 381—67 **6 Claims**

2. An electronic stethoscope comprising:

first means for sensing sounds of interest produced within a patient's body and for converting said sounds of interest to an electric signal;



second means for reproducing said sounds of interest in response to said electric signal from the first means to enable a user to hear and listen to said sounds of interest; and

third means for detecting an amplitude level of said electric signal for momentarily and repeatedly interrupting operation of the second means when the detected amplitude level of said electric signal is higher than a predetermined amplitude level threshold to prevent said second means from producing sounds of too high intensity susceptible to harm the inner ear of the user;

wherein said third means comprises a pulse generator for producing pulses, and an amplitude level detector for activating said pulse generator when the amplitude of the electric signal is higher than said predetermined amplitude level threshold, and wherein said second means comprises an electric signal audio amplifier supplied with the pulses from said pulse generator and switched on and off in response to said pulses in order to reduce the level of the reproduced sounds while giving to the user the impression that the stethoscope operates.

5,602,925

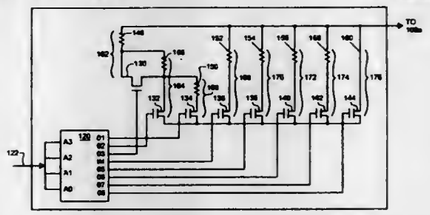
HEARING AID WITH PROGRAMMABLE RESISTABLE

Mead C. Killion, Elk Grove Village, Ill., assignor to Etymotic Research, Inc., Elk Grove Village, Ill.

Filed Jan. 31, 1995, Ser. No. 381,539

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—68.4 **20 Claims**



1. A programmable resistor connected between a first and a second terminal, the programmable resistor receiving a control word from an external programmer, the resistor having a series of programmable resistance steps, the resistor comprising:

a first series subcircuit comprising a resistor and a switch sharing a common node, the first subcircuit having one end connected to the first terminal;

second and third series subcircuits, each comprising a resistor and a switch sharing a common node, the second series subcircuit connected between the common node of the first subcircuit and the second terminal, the common node of the second subcircuit connected to the other end of the first subcircuit, the third subcircuit connected between the common node of the second subcircuit and the second terminal;

four parallel subcircuits, each comprising a resistor and a switch, each connected between the first and the second terminals; and

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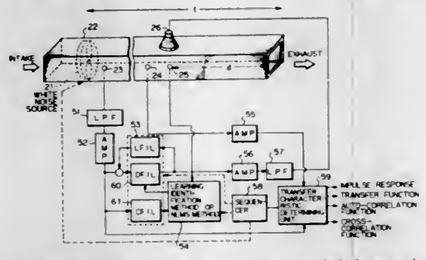
a decoder circuit for receiving the control word and for decoding the word into a set of control bits, each control bit connected to one of the switches, where each resistor corresponds to a difference in programmed resistance between two successive resistance steps.

5,602,926

METHOD AND APPARATUS OF DETERMINING THE SOUND TRANSFER CHARACTERISTIC OF AN ACTIVE NOISE CONTROL SYSTEM

Tadashi Ohashi; Kensaku Fujii, and Juro Ohga, all of Kawasaki, Japan, assignors to Fujitsu Llmited, Kawasaki, Japan

Filed Sep. 3, 1993, Ser. No. 115,872
Claims priority, application Japan, Mar. 9, 1993, 5-047095
Int. Cl.[6] G10K *11/16*
U.S. Cl. 381—71 **19 Claims**



1. A method of determining a transfer characteristic in an active-noise-control system, comprising the steps of:

arranging an error-detection means for detecting a noise-cancelling effect, a speaker for generating noise-cancelling sound, the detection means and a speaker being inwardly spaced by a given distance away from an end of a one-dimensional sound field that is defined by a linear ventilating system in which sound travels essentially parallel to the extended direction of the system, a noise detection means in the vicinity of a noise source in the one-dimensional sound field, and a transfer-characteristic-detection means between the noise-detection means and the error-detection means in the one-dimensional sound field;

supplying an output of the noise-detection means to an adaptive filter that causes the speaker to generate noise cancelling sound, the adaptive filter involving a filter for preventing feedback sound according to an output of the error-detection means, a filter for modeling a transfer system between the speaker and the error-detection means, and a noise-cancelling filter whose parameters are continuously adjusted; and

activating a transfer-characteristic determining means, through a sequencer when the noise detected by the error-detection means is minimized, to determine the transfer function of the one-dimensional sound field according to outputs of the noise-detection means and transfer-characteristic-detection means.

5,602,927

VEHICLE INTERNAL NOISE REDUCTION SYSTEM AND THE METHOD THEREOF

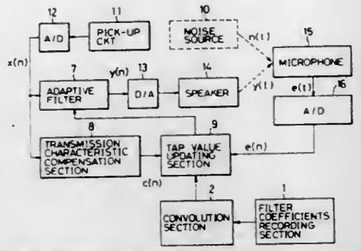
Manpei Tamamura, Ohta; Hiroshi Iidaka, Tokyo, and Eiji Shibata, Oura, all of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 19, 1994, Ser. No. 358,390
Claims priority, application Japan, Dec. 28, 1993, 5-334704
Int. Cl.[6] A61F *11/06;* **H03B** *29/00*
U.S. Cl. 381—71 **4 Claims**

1. A vehicle internal noise reduction system having, pick-up means for picking up a noise signal from a sound source and for producing a pick-up signal, an adaptive filter for forming a tap value and for generating a canceling signal, a speaker with predetermined frequency characteristics for generating a canceling sound in order to cancel an internal noise in a passenger compartment of a vehicle, a microphone provided in said passenger compartment for receiving said canceling sound and said internal noise and for outputting an error signal as a result of a difference between said canceling sound and said internal noise, transmission characteristics compensation means responsive to said pick-up signal for compensating transmission characteristics of a propagation path between said adaptive filter and said microphone and for producing a compensation signal, and tap value updating means for updating said tap value in accordance with said error signal and said compensation signal and for transmitting an updated tap value to said adaptive filter, comprising:

filter coefficient recording means for recording a filter coefficient with similar band pass characteristics to said predetermined frequency characteristics of said speaker and for generating a coefficient signal; and

convolution means responsive to said coefficient signal for convoluting said filter coefficient into said tap value by calculating a sum of convolution products in order to coincide said tap value to be calculated with a center value of said filter coefficients recorded in said filter coefficient recording means and to delete a frequency component existing in said predetermined frequency characteristics of said speaker from said canceling sound so as to perform a stable operation of said noise reduction system.

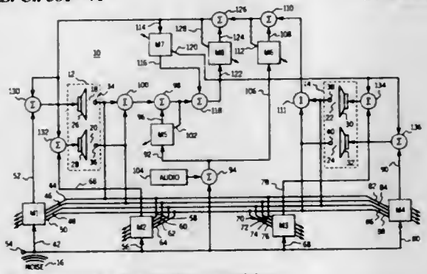


5,602,928

MULTI-CHANNEL COMMUNICATION SYSTEM

Larry J. Eriksson, and Cary D. Bremigan, both of Madison, Wis., assignors to Digisonix, Inc., Middleton, Wis.

Filed Jan. 5, 1995, Ser. No. 368,920
Int. Cl.[6] G10K *11/16*
U.S. Cl. 381—71 **24 Claims**



1. A communication system comprising:

a plurality of zones subject to noise from one or more noise sources;

one or more speaking locations in each zone such that a person at a speaking location is subject to noise from a noise source;

a plurality of speakers, each introducing sound into a respective zone at a respective speaking location:

a plurality of microphones each sensing noise and speech at a respective speaking location;

a plurality of adaptive filter models each canceling noise from a respective noise source, each model having a model input from a reference signal correlated to said noise from said respective noise source, each model having a plurality of error inputs, each model having an output outputting a correction signal to cancel noise from the respective noise source, such that the output of the microphone carries a speech signal from a person at the speaking location but not a noise signal from the noise source;

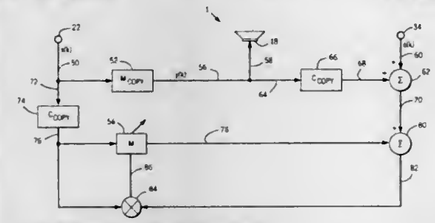
the output of at least one microphone carrying the speech of a first person at one speaking location being supplied to at least one speaker at another speaking location, such that a second person at said other speaking location can hear the speech of said first person at said one speaking location.

5,602,929

FAST ADAPTING CONTROL SYSTEM AND METHOD

Steven R. Popovich, Stoughton, Wis., assignor to Digisonix, Inc., Middleton, Wis.

Filed Jan. 30, 1995, Ser. No. 380,343
Int. Cl.[6] A61F *11/06;* **H03B** *29/00*
U.S. Cl. 381—71 **13 Claims**



1. An adaptive controller comprising:

an IIR adaptive filter model with an error input that depends on a model error signal which is a combination of an error signal from an error sensor, a filtered correction signal which is generated by filtering a correction signal used to create a secondary input that combines with a system input to yield a system output, and a model output signal from the adaptive IIR filter model.

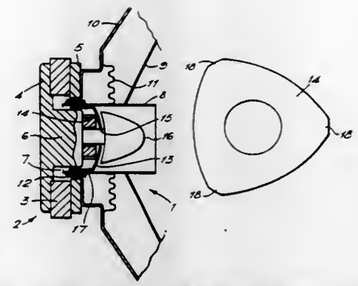
5,602,930

LOUDSPEAKER

Roger N. Walton, Nr. Barry, Great Britain, assignor to Harman-Motive Limited, Great Britain

PCT No. PCT/GB93/01509, § 371 Date Jan. 9, 1995, § 102(e) Date Jan. 9, 1995, PCT Pub. No. WO94/03024, PCT Pub. Date Feb. 3, 1994
PCT Filed Jul. 16, 1993, Ser. No. 367,199
Claims priority, application United Kingdom, Jul. 17, 1992, 9215222
Int. Cl.[6] H04R *25/00*
U.S. Cl. 381—192 **15 Claims**

1. A loudspeaker (1) comprising a pole (6), a surrounding magnet (3) defining an annular gap (7) with the pole, a tubular former (8), a voice coil (12) carried by the former (8) and disposed within the annular gap (7), a conductive skirted dome (13), an insulated support (14) between the dome (13) and the pole (6), the insulated support (14) supporting the dome on the pole, said skirt being disposed within the annular gap (7), whereby, when the voice coil is energized, the conductive skirted dome is inductively coupled with the voice coil, and the insulated support (14) comprising a plurality of discrete, separated and spaced apart positions of support (18) between the dome (13) and the pole (6).

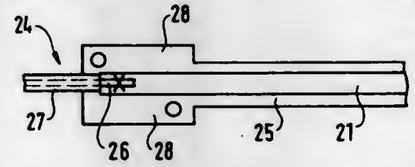


5,602,931

CONNECTION LINE

Stefan Geisenberger, Straubing, Germany, assignor to Nokia Technology GmbH, Pforzheim, Germany

Filed Oct. 2, 1995, Ser. No. 537,462
Claims priority, application Germany, Oct. 20, 1994, 44 37 476.3
Int. Cl.[6] H04R *25/00*
U.S. Cl. 381—194 **3 Claims**



1. A connection for loudspeaker contacts of a loudspeaker having a diaphragm (13) and a voice coil (14) between bare wire ends (24) of a voice coil (16) and stationary contacts (19) on a loudspeaker frame (12), said connection comprising connecting lines (21), each connecting line including an end area, each end area is conductively connected to the respective bare wire end (24) of the voice coil (16), wherein a high-temperature-resistant, band-shaped plastic foil (25) is equipped, at least on one side of the connecting line, wherein attachment straps (28) are provided on the plastic foil (25), said attachment straps are affixed to the diaphragm (13) by means of attachment means (23, 31, 33), wherein said each connecting line is formed of a conducting path (21) laminated to the plastic foil (25), and an end area of the conducting path (21) is connected to the respective bare wire end (24) of the voice coil (16) by means of electric arc welding.

5,602,932

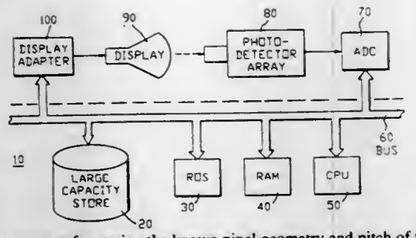
PHOTODETECTOR ARRAY BASED IMAGE ANALYSIS APPARATUS

Alan Macdonald, Glasgow, and Ian Miller, Lochwinnoch, both of Scotland, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 206,294, Mar. 4, 1994, abandoned.
This application Jul. 7, 1995, Ser. No. 499,712
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—100 **25 Claims**

1. A photodetector array based image analysis apparatus comprising:

a two dimensional array of photodetectors having a known spatial geometry for receiving light from pixels of a display screen having a known pixel geometry and pitch;



a memory for storing the known pixel geometry and pitch of the display screen, the known spatial geometry of the photodetectors, and intensity values generated by the photodetectors in response to incident light from the pixels;

apparatus calibration means for measuring distances in terms of the stored spatial geometry as a function of the stored pixel geometry and pitch, and the stored intensity values; and,

a processor for determining a performance parameter of the display screen as a function of the intensity values stored in the memory and a calibrated spatial geometry of the apparatus, responsive to said apparatus calibration means

wherein said apparatus calibration means comprises:

the photodetectors detecting one of a red, green, or blue color test pattern generated by the display screen:

an analog-to-digital converter coupled to the photodetectors for digitizing the intensity values associated with the color test pattern:

the processor adapted for storing digitized intensity values in the memory and determining a row of centroid photodetectors which correspond to centfolds of adjacent illuminated pixels along a pixel row of the display screen, and determining an actual distance between the illuminated pixels from the stored pixel geometry:

the processor being further adapted for calibrating the apparatus for measuring distances in terms of the photodetectors' stored spatial geometry as a function of the actual distance and a number of photodetectors between two centroid photodetectors.

5,602,933

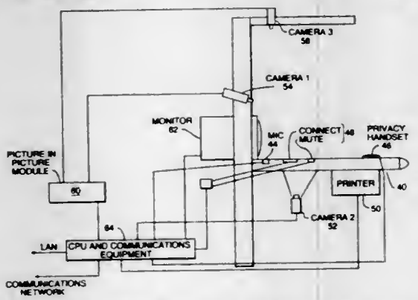
METHOD AND APPARATUS FOR VERIFICATION OF REMOTELY ACCESSED DATA

Richard A. Blackwell, and William Vestal, both of Atlanta, Ga., assignors to Scientific-Atlanta, Inc., Norcross, Ga.

Filed Mar. 15, 1995, Ser. No. 404,636

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—116 **37 Claims**



30. A remote terminal for use in a verification system comprising:

an imager for imaging a document to generate a document data file;

a transmitter for transmitting said document data file to a verification terminal via a communication link;

a receiver for receiving a verification data file from said verification terminal, said verification data file verifying an attribute of said document; and

means for merging said document data file and said verification data file to generate a verification record.

36. A verification terminal for use in a verification system, comprising:

a receiver for receiving a document data file from a remote terminal over a communication link, said document data file representing an image of a document;

means for generating a verification data file at said verification terminal, said verification data file verifying an attribute of said document and including a verification authority identification; and

a transmitter for transmitting said verification data file to said remote terminal via said communication link.

5,602,934

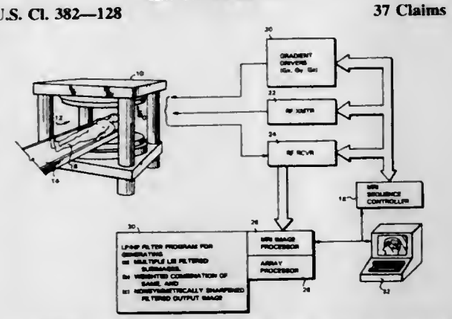
ADAPTIVE DIGITAL IMAGE SIGNAL FILTERING

Jianhua Li, San Francisco, and Haiguang Chen, Pacifica, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Sep. 8, 1993, Ser. No. 118,921

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—128 **37 Claims**



1. A method for filtering input digital image signals representing the arrayed pixels of a digitized image, said method comprising the steps of:

low-pass filtering said input digital image signals along each of a plurality of directions within said image to produce a respectively corresponding plurality of digitized subimage signal sets; and

generating a set of noise-smoothed digital image signals as a weighted combination of said plurality of subimage signal sets by combining subimage signal sets that have been modified by respective weighting factors.

5,602,935

BONE MORPHOMETRIC METHOD USING RADIATION PATTERNS ALONG MEASURING LINES RELATED TO A BONE AXIS AND APPARATUS FOR CARRYING OUT THE SAME

Makoto Yoshida, Kobe, and Dunhao Chen, Ibaraki, both of Japan, assignors to Teijin Limited, Osaka, Japan

PCT No. PCT/JP94/00688, § 371 Date Dec. 23, 1994, § 102(e) Date Dec. 23, 1994, PCT Pub. No. WO94/24938, PCT Pub. Date Nov. 10, 1994

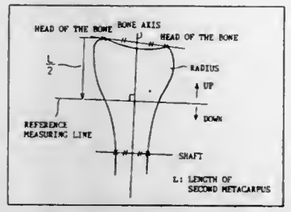
PCT Filed Apr. 25, 1994, Ser. No. 351,282

Claims priority, application Japan, Apr. 23, 1993, 5-097629; Apr. 26, 1993, 5-099411; Apr. 27, 1993, 5101080; Jun. 29, 1993, 5-158887; Dec. 17, 1993, 5-318132; Dec. 17, 1993, 5-318133; Dec. 17, 1993, 5-318134; Dec. 17, 1993, 5-318135

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—132 **23 Claims**

1. A bone morphometric method using a radiograph of a sample bond produced by radiography to measure the sample bone, said bone morphometric method comprising the steps of:



(i) determining a bone axis in a region of interest by specifying two points on the head of the sample bone and two points on the shaft of the sample bone, and interconnecting the middle point between the former two points and the middle point of the latter two points;

(ii) setting a reference measuring line perpendicular to the bone axis and intersecting the bone axis at a point at a given distance from any one of the two points on the head of the sample bone and the middle point between the same two points;

(iii) producing a pattern or patterns of the quantity of radiation transmitted through the radiograph of the sample bone along the reference measuring line, or one or a plurality of measuring lines extending near the reference measuring line; and

(iv) processing data representing the pattern or the patterns by arithmetic operations for the morphometric measurement of the sample bone.

5,602,936

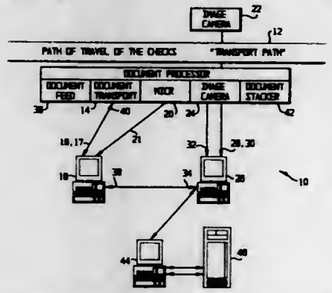
METHOD OF AND APPARATUS FOR DOCUMENT DATA RECAPTURE

W. Thomas Green, Carrollton, and R. Keith Lynn, Roswell, both of Ga., assignors to Greenway Corporation, Carrollton, Ga.

Continuation-in-part of Ser. No. 237,757, May 4, 1994, abandoned, which is a continuation-in-part of Ser. No. 6,543, Jan. 21, 1993, abandoned. This application Feb. 27, 1995, Ser. No. 394,570

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—140 **12 Claims**



1. A system for processing a plurality of individual documents, each having a front and a back with images thereon, comprising:

a document transport system for transporting the individual documents along a transport path for reading MICR data on each document, and said document transport system further including at least one camera for producing images of the front and back of the individual documents;

a first digital data processor connected to said document transport system for receiving said MICR data and a sequential document number for each document;

a second digital data processor, said second digital data processor being connected to said first digital data processor so that said first digital data processor communicates said MICR data and sequential document number to said second digital data processor, said second digital data processor also being connected to said document transport system for receiving said images of said front and back of each individual document, and for merging said MICR data and sequential document number with said images to form merged images, said second digital data processor further communicating speed control data to said first digital data processor for use by said first digital data processor to control said document transport system to a desired speed; and

a third digital data processor connected to said second digital data processor for receiving said merged images of each document and for indexing and permanently storing said merged images for later retrieval.

5,602,937

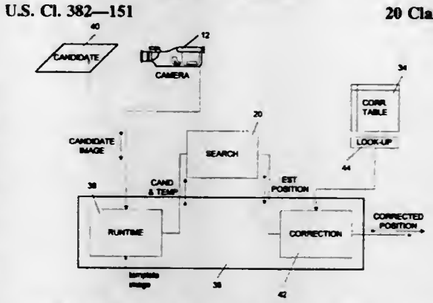
METHODS AND APPARATUS FOR MACHINE VISION HIGH ACCURACY SEARCHING

David P. Bedrosian, Franklin, and William M. Silver, Medfield, both of Mass., assignors to Cognex Corporation, Natick, Mass.

Filed Jun. 1, 1994, Ser. No. 252,845

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—151 **20 Claims**



1. In a machine vision apparatus of the type having

location finding means, responsive to an applied template image-representative signal and an applied candidate image-representative signal, for determining an approximate location, in the candidate image, of an object shown in the template image, and for generating an approximation signal representative of such location, the improvement for determining a more exact location in the candidate image of the object shown in the template image, comprising

A. means for inputting a signal representative of said template image and a signal representative of said candidate image,

B. runtime means for invoking said location finding means with said template image-representative signal and said candidate image-representative signal,

C. correction means, coupled to said location finding means, for generating a signal representative of a more exact location of said object in said candidate image as a function of an empirically-based relationship between an approximate location determined by said location finding means and a known location of said object, the empirically-based relationship determined from prior invocation of the location finding means with the template image-representative signal and one or more signals representative of a model candidate image at known locations.

5,602,938

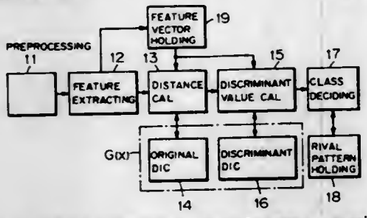
METHOD OF GENERATING DICTIONARY FOR PATTERN RECOGNITION AND PATTERN RECOGNITION METHOD USING THE SAME

Teruo Akiyama, Yokohama; Minako Sawaki, Tokyo, and Takahiko Kawatani, Yokohama, all of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed May 20, 1994, Ser. No. 246,520

Int. Cl.[6] G06K *9/62;9/48*

U.S. Cl. 382—155 **20 Claims**



1. A method of generating a dictionary for pattern recognition in which a feature vector of an input pattern is compared with a reference pattern vector of each class, read out of a pattern recognition dictionary, and a class of the reference pattern vector closest to said input pattern is output as the recognized result of said input pattern, said method comprising the steps of:

a) extracting features of each of a plurality of training patterns each belonging to one of a plurality of predetermined classes and expressing said features of each training pattern as a vector;

b) obtaining, as said reference pattern vector, the mean of said feature vectors of said training patterns of each class;

c) discriminating each of said training patterns of all classes through use of an original distance function using said reference pattern vectors corresponding to each class to obtain for each class, a rival pattern set containing patterns misclassified as belonging to said each class;

d) defining a discriminant function which contains, as first and second variables, the difference between respectively corresponding components of a feature vector of a training pattern and a reference pattern vector and the square of said difference and determining, for each class, parameters of said discriminant function so that a discrimination is made between patterns forming a training pattern set of said each class and patterns forming said rival pattern set for said each class; and

e) writing, for each class, parameter information into dictionary means, said parameter information corresponding to the parameters of said original distance function containing said reference pattern vector of said each class and parameters of said discriminant function determined for said each class.

5,602,939

SPECIFIC DOCUMENT DISCRIMINATING APPARATUS AND IMAGE READING APPARATUS USING IT THEREIN

Tadato Hashiguchi, and Takeshi Ukai, both of Yokohama, Japan, assignors to Richo Company, Ltd., Tokyo, Japan

PCT No. PCT/JP94/00100, § 371 Date Sep. 26, 1994, § 102(e) Date Sep. 26, 1994, PCT Pub. No. WO94/17623, PCT Pub. Date Aug. 4, 1994

PCT Filed Jan. 26, 1994, Ser. No. 307,576

Claims priority, application Japan, Jan. 28, 1993, 5-032703; Sep. 17, 1993, 5-254707

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—162 **8 Claims**

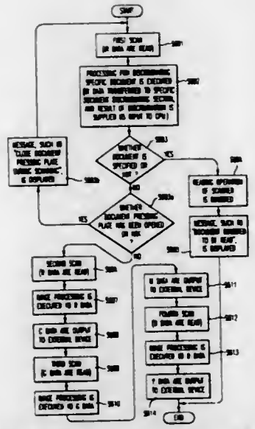
1. An image reading apparatus comprising:

a reading means for reading an image on a document;

an optical means for guiding said image on said document into a light path to said reading means;

a filter means includes a filter for invisible light and a plurality of filters for visible light for moving the filter for invisible light which transmits invisible light into said light path in said optical means and for moving said filters for visible light which transmit visible light into said light path in said optical means; and

a control means for providing controls so that, when determining whether a document is a specific one or not, said image on said document is read with said reading means by moving said filter for invisible light into the light path, and when reading said image on said document, said filter for invisible light is moved out of said light path and said plurality of filters for visible light are moved into said light path and said image on said document is read by said reading means.



5,602,940

METHOD OF LABELING IMAGE DATA AND DEVICE FOR THE SAME USING TEMPORARY LABELS HAVING A CONCENTRATION RELATIONSHIP

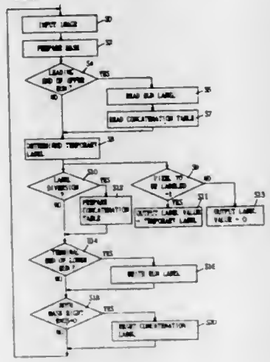
Yoshitsugu Inoue, and Hiroyuki Kawai, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 225,266, Apr. 8, 1994, abandoned. This application Sep. 29, 1995, Ser. No. 539,151

Claims priority, application Japan, Apr. 9, 1993, 5-083153; Jul. 22, 1993, 5-181526

Int. Cl.[6] G06K *9/36*

U.S. Cl. 382—180 **65 Claims**



1. A labeling method for labeling a run in a binary image through scanning of said binary image with a unit mask formed of a local image region consisting of binary image bilevel data of pixels continuously adjoining to each other on said binary image and arranged in P rows and Q columns, comprising the steps of:

carrying out a search in a row adjacent to a row containing a reference run including a reference pixel in said unit mask, so as to search an adjacent run adjoining to said reference run, provisionally assigning a run label to said reference run in accordance with a result of said search, and storing said provisionally assigned run label at a trailing end of said reference run in a memory;

when said unit mask region extracts said reference run as an adjacent run, referring to said provisionally assigned run label stored in said memory, propagating said provisionally assigned run label to a new reference run for provisionally assigning a run label to said new reference run and determining a label for said reference run which is detected as said adjacent run; and

if said run label propagated to said new reference run is different from a run label of a new adjacent run adjoining to said new reference run, storing at an address, which is equal to one of label values of the different two labels, in a concatenation table the other label value of the different two labels for storing a concatenation relationship between runs in said concatenation relationship; wherein

said step of determining a label for said reference run includes the steps of, referring to said concatenation table using a run label which is referred to upon detection of a leading end of said adjacent run, and determining both of said label of said adjacent run and the label of said reference run concatenated to said adjacent run in accordance with referred contents of said concatenation table and said referred run label.

5,602,941

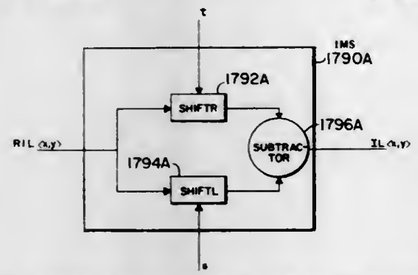
INPUT MODIFICATION SYSTEM FOR MULTILEVEL DITHERING

Patrick D. Charles, Maynard; Robert S. McNamara, Bolton, and Robert A. Ulichney, Stow, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed May 21, 1993, Ser. No. 65,956

Int. Cl.[6] G06K *9/42*

U.S. Cl. 382—25.1 **30 Claims**



1. An apparatus for processing a raw input level of an imaging system in order to produce a corresponding, scaled input level, said apparatus comprising:

a subtracter; and

means for bit shifting data, said shifting means including a first shifter for bit shifting a raw input level in a first direction and producing a first value and a second shifter for shifting said raw input level in a second, different direction, to produce a second value, and wherein said subtracter subtracts said second value from said first value to produce said scaled input level.

5,602,942

METHOD AND APPARATUS FOR EMPHASIZING SHARPNESS OF IMAGE BY DETECTING THE EDGE PORTIONS OF THE IMAGE

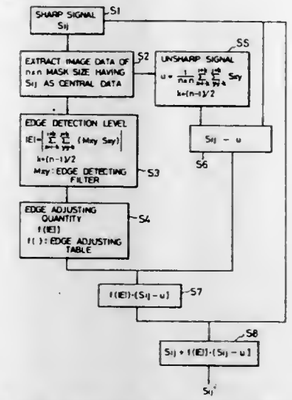
Fumito Takemoto, and Osamu Shimazaki, both of Kaisei-Machi, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 674,985, Mar. 26, 1991, abandoned. This application Apr. 6, 1992, Ser. No. 864,382

Claims priority, application Japan, Mar. 28, 1990, 2-79664

Int. Cl.[6] G06K *9/36*

U.S. Cl. 382—263 **4 Claims**



1. A method of emphasizing sharpness in a picture signal, said method comprising the steps of:

(a) generating a picture signal which represents an original image;

(b) storing said picture signal, and generating a matrix signal, having said picture signal as central data, and an unsharp signal, having peripheral data of said picture signal;

(c) detecting edge levels of said matrix signal;

(d) adjusting detected edges and generating an edge adjusting signal from a function stored in a look-up table, said edge adjusting signal being generated in accordance with said detected edge level; and

(e) emphasizing sharpness in said picture signal in accordance with said edge adjusted output signal and said unsharp signal.

5,602,943

DIGITAL HALFTONING SPACE FILLING CURVES

Luiz C. Velho, and Jonas M. Gomes, both of Instituto de Matematica, Puro e Aplicada, Estradea Dona Castorina 110 22, 460, Rio de Janiero, R. J., Brazil

Continuation-in-part of Ser. No. 875,272, Apr. 28, 1992, abandoned. This application Nov. 7, 1994, Ser. No. 335,549

Int. Cl.[6] H04N *1/40;1/41*

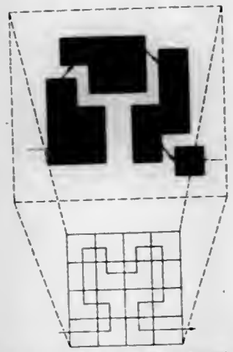
U.S. Cl. 382—266 **6 Claims**

1. A digital halftoning method for creating a gray-scale monochrome reproduction of a source image in electronic display and printing systems, said method comprising the steps of:

subdividing the source image into regions based on a trace of a space filling curve,

further subdividing each of said regions into equally sized pixels, the region defining a pixel cluster, each of said regions including at least one pixel,

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scanning said source image along the trace of said space filling curve to visit all pixels of said source image in a sequential order,

calculating an average image intensity for each region of said source image,

establishing a range of pixel cluster intensity levels based on a number of said pixels in said cluster, a particular intensity level of said pixel cluster being defined by the ratio of the number of pixels in said cluster being in an ON state and the total number of pixels in said cluster, the spatial configuration of said ON state pixels producing a dot pattern having an intensity level corresponding to the average image intensity for that region, and

generating said dot pattern for each of said pixel clusters by activating individual ones of said pixels to said ON state in an order corresponding with said sequential order along the trace of said space filling curve through each of said pixels of said region with the option of distributing said ON pixels around a point of highest intensity of the source image in the region.

5,602,944

OBJECT-DETECTING SYSTEM FOR OPTICAL INSTRUMENT

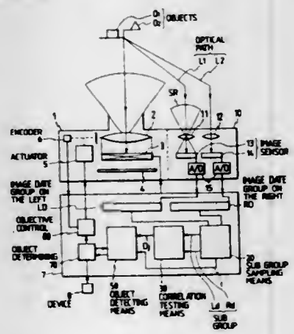
Shotaro Yokoyama, and Takashi Nishibe, both of Kanagawa, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 718,383, Jun. 20, 1991, abandoned. This application Oct. 31, 1994, Ser. No. 332,443

Claims priority, application Japan, Jun. 26, 1990, 2-167352

Int. Cl.[6] G06K *9/64*

U.S. Cl. 382—278 **16 Claims**



1. An object detecting system for an optical instrument having two image sensors that receive light from objects in a field of view through different optical paths, each image sensor producing a group of total image data representing images of the objects in the field of view, comprising:

subgroup sampling means for forming a plurality of paired subgroups of image data from each of said groups of total image data as an inclination angle of an associated portion of the field of view is changed as a variable, each of said plurality of paired subgroups of image data corresponding to a portion of the field of view, said paired subgroup of image data having different inclination angles with respect to an optical axis of said optical instrument;

correlation testing means for obtaining correlation data between both subgroups in each of said paired subgroups of image data as an amount of shifting of image data in the paired subgroups is changed as a variable; and

means for distinguishing clusters of local maximum correlation points on the basis of a predetermined set of criteria, each point is associated with said amount of shifting of image data which corresponds to a maximum correlation in its paired subgroup and also associated with said inclination angles of its paired subgroup.

5,602,945

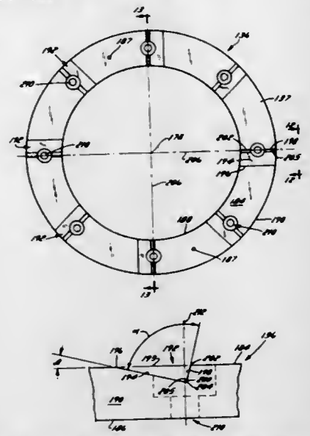
THRUST BEARING FOR USE IN A CONICAL CRUSHER

D. Carter Davis, New Berlin, Wis., assignor to Nordberg, Incorporated, Milwaukee, Wis.

Filed Mar. 21, 1996, Ser. No. 620,135

Int. Cl.[6] F16C *33/10*

U.S. Cl. 354—368 **23 Claims**



1. A thrust bearing system for use in a conical rock crusher, the thrust bearing system being located between a rotational eccentric mechanism and a stationary frame, the thrust bearing system comprising a first bearing and a second bearing, each bearing including an annular, generally flat plate centered about a bearing axis, the flat plate having a generally planar wearing surface and an opposite surface, the wearing surface of the first bearing configured for concentric, sliding engagement with the wearing surface of the second bearing, the wearing surface of the first bearing having a plurality of lubrication grooves, each groove having a length extending in a radial direction of the annular plate from an inner wall of the annular plate across the wearing surface to an outer wall of the annular plate, each groove having a generally triangular cross section throughout the entire length of the groove.

5,602,946

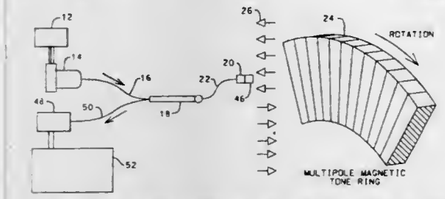
FIBER OPTIC SENSOR SYSTEM FOR DETECTING MOVEMENT OR POSITION OF A ROTATING WHEEL BEARING

Lynn R. Veeser, Los Alamos; Patrick J. Rodriguez, Santa Fe; Peter R. Forman, Los Alamos, all of N.M.; Russell E. Monahan, Ann Arbor, and Jonathan M. Adler, Ypsilanti, both of Mich., assignors to NTN Technical Center (USA), Ann Arbor, Mich.

Filed Dec. 22, 1995, Ser. No. 577,739

Int. Cl.[6] G02B *6/00;* **G01P** *3/36*

U.S. Cl. 385—12 **21 Claims**



1. A fiber optic sensor system for detecting movement or position of a rotating wheel bearing in a bearing assembly, said system comprising:

a source of light;

a magneto-optical material for modulating said light, said magneto-optical material having discrete magnetic domains each domain having an anisotropic optical property;

means for detecting an intensity of said modulating light;

means for carrying said light between said source of light, said magneto-optical material and said means for detecting;

a multi-pole magnetic tone ring for creating a varying magnetic field in the vicinity of said magneto-optical material indicative of movement and position of said rotating wheel bearing wherein said magnetic field causes said domains to align themselves to said magnetic field thus causing the optical property of said domains to become continuous when viewed from a single direction, wherein the amount of alignment of said domains is proportional to the speed of said rotating wheel bearing and the amount of light transmitted is a function of the amount of alignment of said domains.

5,602,947

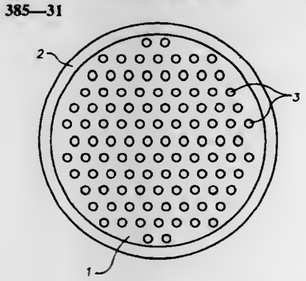
ANTI-REFLECTIVE MID-INFRARED OPTICAL FIBER AND MICRO OPTICAL COMPONENTS

Wolfgang Neuberger, F. T. Labuan, Malaysia, assignor to Ceram Optec Industries, Inc., East Long Meadow, Mass.

Continuation-in-part of Ser. No. 368,909, Jan. 5, 1995, abandoned. This application Mar. 4, 1996, Ser. No. 610,409

Int. Cl.[6] G02B *6/26*

U.S. Cl. 385—31 **16 Claims**



1. A micro optical component, whose surface being in contact with a medium is modified to reduce Fresnel reflective losses at an interface between said component surface and said medium, comprising:

an optical component material, with a first refractive index;

a surface of said optical component interfacing with an external medium having a second refractive index being lower than said first refractive index;

said surface having a plurality of depressions and an effective refractive index lower than said first refractive index; and

at least a substantial number of said plurality of depressions having a depth and a fractional volume of said surface effective for reducing Fresnel losses of radiation passing through said surface/medium interface at a predetermined wavelength by satisfying relationships

$$R=(n_m-N)^2/(n_m+N)^2$$

$$t=\lambda_o/(4N\cos\theta)$$

$$v_1=[n_2-(n_m n_2)^{1/2}]/(n_2-n_1)$$

where R is said Fresnel reflection loss, λ_o is said predetermined wavelength for total cancellation by interference, θ represents a ray's angle of incidence with said surface, t is said depth, v_1 is said fractional volume of said depressions within said surface, N is said effective refractive index of the material at the interface, n_m is said medium's refractive index, n_1 is the refractive index of material, including air, within said depression, n_2 is the refractive index of said optical component material, and where at least one dimension of said depression within said surface's plane is not greater than half said predetermined wavelength.

5,602,948

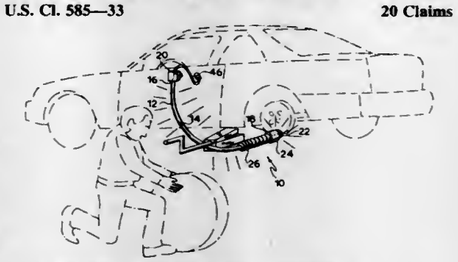
FIBER OPTIC ILLUMINATION DEVICE

Joseph E. Currie, 17 Lawrence Rd., Hudson, N.H. 03051

Filed Apr. 9, 1996, Ser. No. 629,443

Int. Cl.[6] G02B *6/32;* **F21V** *7/04*

U.S. Cl. 585—33 **20 Claims**



1. A fiber optic illumination device, comprising:

a single length of flexible and elongate fiber optic cable having a lateral surface, a light input end, and an opposite light output end, and further being adapted to emit light radially from said lateral surface thereof as well as axially from said light output end thereof, and;

said light input end of said cable being adapted for selectively removable attachment to a light source and said cable being adapted to provide both emergency warning light radiating omnidirectionally from said lateral surface and work light emanating axially from said light output end when said cable is connected to a light source.

VOL 11 95 ISS 2 FE 11 1997 UMI

5,602,949

CHIRPED DISTRIBUTED BRAGG GRATING OPTICAL FIBRE FILTERS

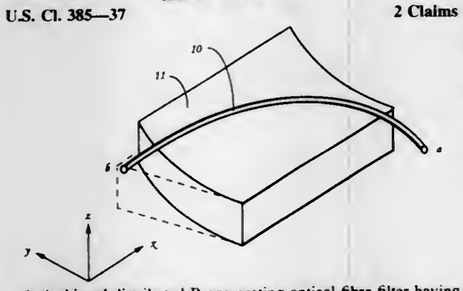
Richard E. Epworth, Herts, United Kingdom, assignor to Northern Telecom Limited, Montreal, Canada

Continuation of Ser. No. 372,031, Jan. 12, 1995, abandoned. This application Feb. 9, 1996, Ser. No. 599,120

Claims priority, application United Kingdom, Feb. 26, 1994, 9403739

Int. Cl.[6] G02B *6/34*

U.S. Cl. 385—37 **2 Claims**



1. A chirped distributed Bragg grating optical fibre filter having an optical fibre provided with a Bragg distributed grating therein, which grating has a uniform pitch when the fibre is unstrained, and which fibre is secured in an arcuate path to a flexible plate to a single major surface of said plate so as to be displaced from the neutral surface of bending of that plate, which path on said single major surface of the plate is arcuate when the plate is caused to be planar.

5,602,950

OPTICAL STAR COUPLER

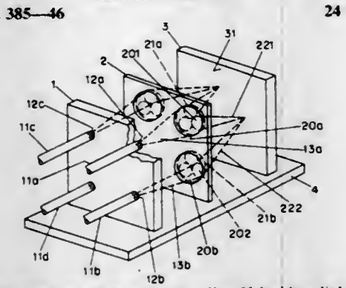
Tetsuya Saitob; Hideo Shimizu, and Takeshi Kobayashi, all of Tokyo, Japan, assignors to Fuji Electric Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 276,708, Jul. 18, 1994, abandoned. This application Jan. 29, 1996, Ser. No. 593,002

Claims priority, application Japan, Jul. 19, 1993, 5-118074; Jan. 27, 1995, 7-012064

Int. Cl.[6] G02B *6/26*

U.S. Cl. 385—46 **24 Claims**



1. An optical star coupler for coupling N incident light beams transmitted by N waveguides for N >2, each of the waveguides having an end with an end face for emitting one of the incident light beams, comprising:

(a) support means for supporting the ends of the waveguides;

(b) light-receiving means for receiving the incident light beams to thereby form N illuminated regions on the light-receiving means, the light-receiving means including, at each of the illuminated regions, N-1 deflector means for dividing and deflecting each one of the respective incident light beams into N-1 deflected light beams;

(c) reflector means for reflecting each one of the deflected light beams as a respective reflected light beam such that each one of the reflected light beams is optically coupled to one of the deflector means of one of the illuminated regions different from the illuminated region from which the respective deflected light beam originated.

5,602,951

FERRULE FOR OPTICAL CONNECTOR AND PROCESS FOR MAKING SAME

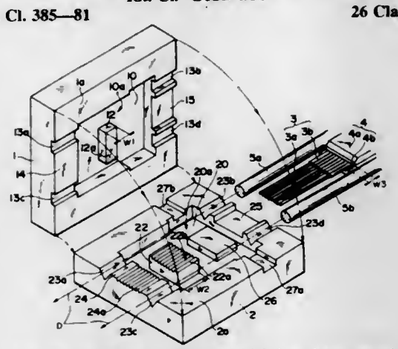
Tetsuo Shiota; Yoshikyo Tamekuni; Tomohiko Ueda; Ichiro Tsuchiya; Toshiaki Kakii, all of Yokohama, and Shinji Nagasawa, Mito, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, and Nippon Telegraph & Telephone Corporation, Tokyo, both of Japan

Filed Apr. 14, 1995, Ser. No. 421,882

Claims priority, application Japan, Apr. 14, 1994, 6-099156

Int. Cl.[6] G02B *6/36*

U.S. Cl. 385—81 **26 Claims**



1. A ferrule for optical connector, which is to be mounted to a distal end of an optical fiber, comprising:

a first grip portion having a first through hole for said optical fiber to be introduced therethrough and gripping a part of said optical fiber apart a determined distance from the distal end of said optical fiber;

a second grip portion located to constitute a front face of said ferrule along an insertion direction of said optical fiber and opposed to said first grip portion through a first space, said second grip portion having a second through hole for the optical fiber set through said first through hole to be further introduced therethrough and gripping the vicinity of the distal end of said optical fiber; and

a first pedestal portion projecting from a surface of said second grip portion, which is opposed to said first grip portion through said first space, toward said first grip portion, said first pedestal portion having a first face opposed to a portion of a predetermined length of said optical fiber along the insertion direction of said optical fiber and a second face apart a predetermined distance from said first grip portion through said first space.

25. A process for producing a ferrule for an optical connector, comprising the steps of:

preparing upper and lower dies, each having a recessed portion of predetermined shape so that a ferrule forming cavity is defined when main surfaces of the dies are brought together while pinching core pins for forming through holes for insertion of optical fibers,

wherein the upper die has a first upper grip portion for gripping the vicinity of distal ends of the core pins, the first grip portion being provided at a predetermined position in the main surface of the upper die, and a second upper grip portion for gripping a predetermined part of the core pins apart a predetermined distance from the distal ends of the core pins, the second upper grip portion having a grip face for pushing the predetermined part of the core pins and normally projecting from a bottom part of the recessed portion of the upper die surrounded by the main surface of the upper die,

wherein the lower die comprises a first lower grip portion for gripping the vicinity of the distal ends of the core pins together with the first upper grip portion, the first lower grip portion being provided at a position coincident with the position of the first upper grip portion when the upper die and the lower die are brought into close fit while pinching the core pins for forming the through holes for insertion of optical fibers, and a second lower grip portion for gripping a part of the core pins together with the second upper grip portion, the second lower grip portion normally projecting from a bottom part of the recess portion of the lower die and having a grip face opposed to the grip face of the second upper grip portion when the upper and lower dies are brought together while pinching the core pins for forming the through holes for insertion of optical fibers, and

wherein the length in the insertion direction of the core pins, of the grip face provided in the second lower grip portion is greater than a length in the insertion direction of the core pins, of the grip face provided in the second upper grip portion;

bringing the upper and lower dies together;

pouring a resin into the cavity formed by the recessed portions of the upper and lower dies through a gate defined by the upper and lower dies, thereby resin-molding the ferrule;

allowing the resin to solidify;

withdrawing the core pins; and

separating the upper and lower dies to obtain a ferrule for optical connector resin-molded in a same shape as the cavity.

5,602,952

PACKAGING FIBRE OPTIC COMPONENTS

Scott C. Rashleigh, Wanniassa; Robert Brunswick, Farrer, and Martin C. Elias, O'Connor, all of Australia, assignors to AOFR Pty. Limited, Australia

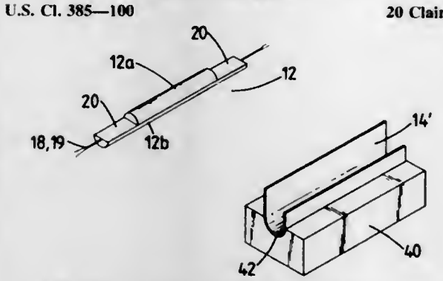
PCT No. PCT/AU92/00425, § 371 Date Jun. 30, 1994, § 102(e) Date Jun. 30, 1994, PCT Pub. No. WO93/04389, PCT Pub. Date Mar. 4, 1993

PCT Filed Aug. 13, 1992, Ser. No. 193,187

Claims priority, application Australia, Aug. 16, 1991, 7797/91

Int. Cl.[6] G02B *6/44*

U.S. Cl. 385—100 **20 Claims**



1. A fibre optic component package comprising:

one or more fibre optic components;

an inner housing supporting said fibre optic component(s), one or more optical fibres associated with the component(s) extending from said inner housing; and

an enclosure for said inner housing from which said optical fibre(s) extend, said enclosure comprising:

(i) a layer which is substantially impervious to moisture including water vapour and which encloses said inner housing, said layer including a sheet of substantially moisture impervious flexible material wrapped about the housing; and

(ii) a moisture impervious sealant adhesive which serves to bond said sheet of said flexible material and fills at least those regions at edges of said sheet of flexible material.

5,602,953

COMPOSITE COMMUNICATION CABLE

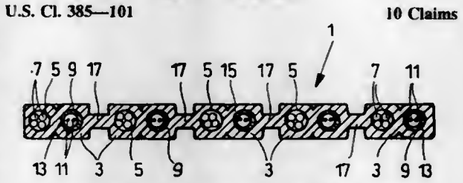
Peter Delage; Uwe Koch, both of Mönchengladbach; Peter Zamzow, Bochum, and Klaus Nothofer, Erkrath, all of Germany, assignors to Kabel Rheydt AG, Germany

Filed Feb. 22, 1994, Ser. No. 199,834

Claims priority, application Germany, Feb. 24, 1993, 43 05 635.0

Int. Cl.[6] G02B *6/44*

U.S. Cl. 385—101 **10 Claims**



1. A composite communication cable, said cable comprising:

a plurality of strands, each said strand having an outer jacket, said outer jackets being connected to adjacent outer jackets by a cross-piece, each one of said strands including at least one electrical communication line and an optical communication line.

5,602,954

ELECTROFIT FIBER OPTICS BUTT SPLICE

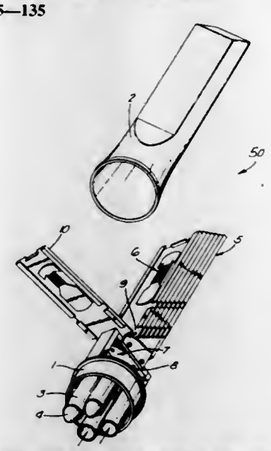
Jean-Marie E. Nolf, Korbeek-Lo; Joris R. I. Franckx, Bonheiden, and Jozef G. A. Doucet, Kessel-Lo, all of Belgium, assignors to Raychem SV, Belgium

Continuation of Ser. No. 128,389, Sep. 28, 1993, abandoned, which is a continuation of Ser. No. 959,195, Oct. 9, 1992, Pat. No. 5,249,253, which is a continuation of Ser. No. 639,379, Jan. 11, 1991, Pat. No. 5,155,794, which is a continuation of Ser. No. 475,498, Feb. 2, 1990, abandoned, which is a continuation of Ser. No. 262,067, Oct. 24, 1988, Pat. No. 4,913,522, which is a continuation of Ser. No. 110,051, Oct. 13, 1987, abandoned, which is a continuation of Ser. No. 721,527, Apr. 9, 1985, abandoned. This application Sep. 16, 1994, Ser. No. 307,085

Claims priority, application United Kingdom, Apr. 11, 1984, 8409368

Int. Cl.[6] G02B *6/36*

U.S. Cl. 385—135 **25 Claims**



1. An assembly capable of enclosing a butt splice between at least two optical fibre cables, which comprises:

a hollow article having at least one outlet including a flexible seal associated therewith and capable of receiving respective optical fiber cables, in which the hollow article comprises a base plate as a first part thereof and a hollow tubular cover as a second part thereof, said first part bearing said base plate including said at least one outlet, and said seal having a plurality of openings therein; and

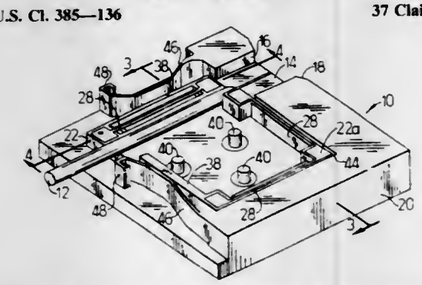
at least one optical fiber organizer comprising a plurality of optical fiber trays hinged to a carrier in a stair step configuration, said organizer connectedly associated with said base plate and capable of being housed within the article and of storing a plurality of optical fibers in a path from one of the openings in the seal in the at least one outlet to another of the openings, said path having a minimum radius of curvature no smaller than the minimum bend radius of said optical fiber, the plurality of optical fiber trays being hinged to the carrier in a stair step configuration and rotatable upwards towards the base plate and within the plane of the longitudinal axis of an optical fiber cable entering the assembly so as to expose underlying trays of the stair step configuration.

5,602,955

MICROACTUATOR FOR PRECISELY ALIGNING AN OPTICAL FIBER AND AN ASSOCIATED FABRICATION METHOD

John M. Haake, St. Charles, Mo., assignor to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Jun. 7, 1995, Ser. No. 473,106
Int. Cl.[6] G02B *6/42*
U.S. Cl. 385—136 **37 Claims**



12. A microactuator for precisely aligning an optical fiber with an optical device, the microactuator comprising:

an alignment support structure disposed in a fixed relation to the optical device; and

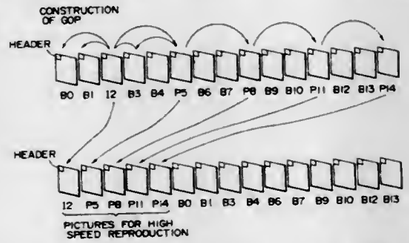
a carrier comprising a carrier body, movably mounted to said alignment support structure, for holding the optical fiber in a fixed relation thereto, said carrier including at least one bimorphic actuator comprising an elongate central portion extending between opposed end portions which are affixed to said carrier body, wherein the elongate central portion of said bimorphic actuator comprises first and second layers comprised of first and second materials, respectively, and wherein the first and second materials respond differently to electrical stimuli such that said bimorphic actuator is deflected by bending the elongate central portion in response to the electrical stimuli to thereby controllably position said carrier relative to said alignment support structure such that the optical fiber is precisely aligned with the optical device.

5,602,956

PICTURE SIGNAL CODING METHOD, DECODING METHOD AND PICTURE SIGNAL RECORDING MEDIUM

Terubiko Suzuki, Chiba; Yoichi Yagasaki, and Jun Yonemitsu, both of Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 6, 1994, Ser. No. 178,029
Claims priority, application Japan, Jan. 11, 1993, 5-019277; Jul. 21, 1993, 5-180122
Int. Cl.[6] H04N *5/917*
U.S. Cl. 386—68 **44 Claims**



1. A picture signal recording method, comprising the steps of:

coding an input picture signal to produce a coded picture signal, the coded picture signal including intra-frame coded picture signals, predictive coded picture signals, and bi-directional predictive coded picture signals;

dividing the coded picture signal into coded picture signals for high speed reproduction and other coded picture signals, the coded picture signals for high speed reproduction including the intra-frame coded picture signals and at least one of the predictive-coded picture signals;

arranging the coded picture signals for high speed reproduction and the other coded picture signals within each group-of-pictures so that the coded picture signals for high speed reproduction in the group-of-pictures are positioned at the beginning of the group-of-pictures to produce a recording signal; and

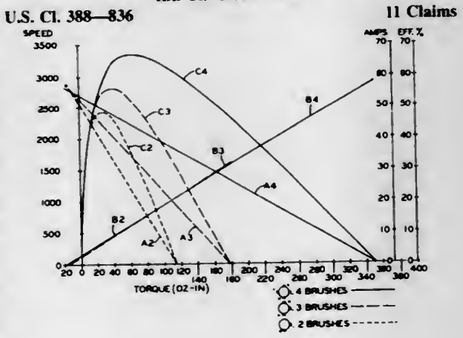
recording the recording signal onto a recording medium.

5,602,957

PERMANENT MAGNET DIRECT CURRENT MOTOR

Guillermo Wille, Hendersonville; Donald B. Pedigo, Gallatin, both of Tenn.; Harald E. Blaettner, Fort Wayne, Ind.; Bernd A. Wieland, Gaggenau, Germany, and Eldon R. Cunningham, Fort Wayne, Ind., assignors to General Electric Company, Fort Wayne, Ind.

Continuation-in-part of Ser. No. 72,579, Jun. 7, 1993, abandoned. This application Jun. 17, 1993, Ser. No. 77,513
Int. Cl.[6] H02K *13/00*
U.S. Cl. 388—836 **11 Claims**



1. A multiple pole, multiple brush permanent magnet direct current electric motor having multiple operating speeds, said motor comprising:

a rotor and commutator mounted for rotation, said rotor including a plurality of connected drive coils, each connection between drive coils connected to an element of said commutator;

2n brushes, where n is equal to a positive integer greater than one, in equally spaced alternating polarity around the commutator, for making electrical contact with said commutator elements; and

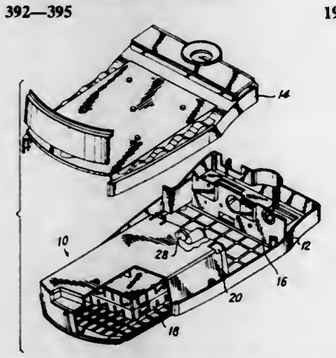
means for selectively connecting direct current power to all of said brushes for full speed operation and to less than all of said brushes for less than full speed operation.

5,602,958

RECHARGEABLE STEAM GENERATOR

Jean-Daniel Vergnes, Steinbach, France, assignor to Superba, Mulhouse, France

Filed Nov. 10, 1994, Ser. No. 337,998
Claims priority, application France, Nov. 19, 1993, 93 13840
Int. Cl.[6] F24F *6/00*
U.S. Cl. 392—395 **19 Claims**



1. A steam generator including an orifice for feeding water to a porous material, a heater element passing through said porous material, and an outlet orifice for the steam created by heating said water, wherein the porous material and its heater element are contained in a case disposed in a removable cassette that is connected in operation to a fixed portion of the generator containing water feed means, means for controlling the heater elements, and means for taking off the steam, said cassette comprising an outer housing member that provides means to connect said case to said water feed means, to said means for controlling the heater elements and to said means for taking off the steam.

5,602,959

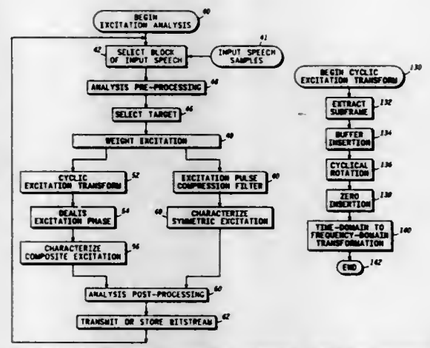
METHOD AND APPARATUS FOR CHARACTERIZATION AND RECONSTRUCTION OF SPEECH EXCITATION WAVEFORMS

Chad S. Bergstrom, Chandler; Bruce A. Fette, Mesa; Cynthia A. Jaskie, Scottsdale; Clifford Wood, Tempe, and Sean S. You, Chandler, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 5, 1994, Ser. No. 349,638
Int. Cl.[6] G10L *3/02;9/00*
U.S. Cl. 395—2.14 **9 Claims**

1. A method of encoding speech comprising the steps of:

a) performing linear predictive coding (LPC) on a plurality of digital speech samples to obtain an excitation waveform;



b) selecting a target excitation segment from the excitation waveform, wherein the target excitation segment is selected to be synchronous to a pitch of the excitation waveform;

c) performing a cyclic excitation transformation of the target excitation segment by placing the target excitation segment in a buffer, cyclically shifting the target excitation segment until a peak of the target excitation segment is positioned at a beginning of the buffer, and performing a time-domain to frequency-domain transformation of the target excitation segment, wherein a result of the cyclic excitation transformation is a transformed target excitation segment;

d) characterizing the transformed target excitation segment, resulting in a characterized excitation waveform;

e) generating characterized, encoded excitation by post-processing the characterized excitation waveform; and

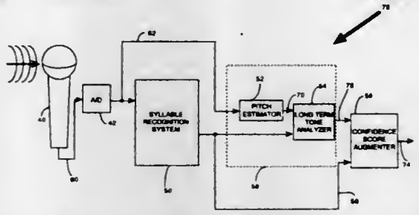
f) storing a bitstream that incorporates the characterized, encoded excitation.

5,602,960

CONTINUOUS MANDARIN CHINESE SPEECH RECOGNITION SYSTEM HAVING AN INTEGRATED TONE CLASSIFIER

Hsiao-Wuen Hon; Yen-Lu Chow, and Kai-Fu Lee, all of Saratoga, Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Sep. 30, 1994, Ser. No. 316,257
Int. Cl.[6] G10L *3/02*
U.S. Cl. 395—2.16 **20 Claims**



1. An integrated tone classifier for performing long-term tonal analysis of an input signal of continuous speech of a tonal language, the integrated tone classifier comprising:

a pitch estimator, having an input coupled to receive the input signal and an output, for estimating the pitch contour of the input signal; and

a long-term tone analyzer, having an input coupled to the output of the pitch estimator and an output forming an output of the integrated tone classifier, for segmenting an estimated pitch contour generated by the pitch estimator into units and for

performing long-term tonal analysis on the units of the segmented, estimated pitch.

5,602,961

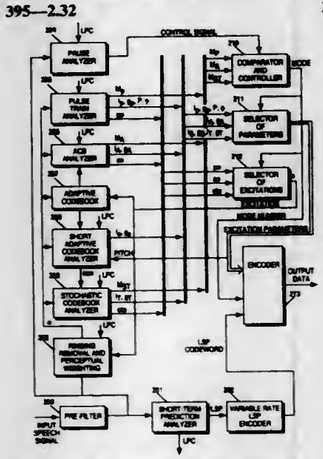
METHOD AND APPARATUS FOR SPEECH COMPRESSION USING MULTI-MODE CODE EXCITED LINEAR PREDICTIVE CODING

Victor D. Kolesnik; Andrey N. Trofimov; Irina E. Bocharova; Victor Y. Krachkovsky; Boris D. Kudryashov; Eugeny P. Ovsjannikov; Boris K. Trojanovsky, and Sergei L. Kovalov, all of St. Petersburg, Russian Federation, assignors to Alaris, Inc., Fremont, and GT Technology, Saratoga, both of Calif.

Filed May 31, 1994, Ser. No. 251,471

Int. Cl.[6] G10L *3/02*

U.S. Cl. 395—2.32 **26 Claims**



1. An apparatus for processing an input signal, said input signal including a frame, said apparatus comprising:

a first circuit coupled to receive a first signal, said first signal corresponding to said input signal, said first circuit for generating a first set of parameters corresponding to said frame;

a second circuit coupled to receive said first signal and said first set of parameters, said second circuit for generating a second signal;

a pulse train analyzer, coupled to said second circuit, said pulse train analyzer for generating a first match value, a second set of parameters, and a first excitation value;

a fourth circuit, coupled to said second circuit, said fourth circuit for generating a second match value, a third set of parameters, and a second excitation value, said fourth circuit including an adaptive codebook and an adaptive codebook analyzer, said adaptive codebook being coupled to said adaptive codebook analyzer;

a fifth circuit, coupled to said pulse train analyzer and said fourth circuit, for determining a set of admissible excitation search modes based upon a prior excitation search mode, and said fifth circuit further for selecting an excitation search mode from said set of admissible excitation search modes;

a sixth circuit, coupled to said fifth circuit, for selecting a selected set of parameters and a selected excitation corresponding to said excitation search mode, and

a seventh circuit, coupled to said first circuit and said sixth circuit, for generating an encoded signal responsive to said selected set of parameters and said excitation search mode.

5,602,962

MOBILE RADIO SET COMPRISING A SPEECH PROCESSING ARRANGEMENT

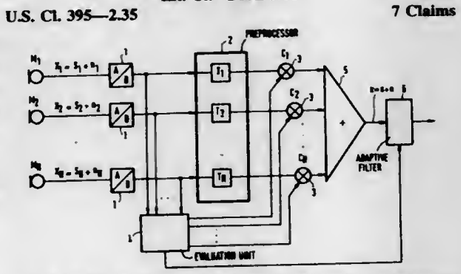
Walter Kellermann, Eckental, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 7, 1994, Ser. No. 302,139

Claims priority, application Germany, Sep. 7, 1993, 43 30 243.2

Int. Cl.[6] G10L *3/02*

U.S. Cl. 395—2.35 **7 Claims**



1. A radio set comprising a speech processing arrangement having at least two microphones ($M_1, \ldots, M_N$) for supplying microphone signals ($x_1, \ldots, x_N$) formed by speech components and noise components ($s_1, \ldots, S_N, n_1, \ldots, n_N$) to microphone signal branches that are coupled to inputs of an adder device used for forming which forms a sum signal (x), wherein delay means ($T_1, \ldots, T_N$) for delaying the microphone signals ($x_1, \ldots, x_N$) and weighting means for weighting the microphone signals ($x_1, \ldots, x_N$) with weight factors ($c_1, \ldots, c_N$) are included in the microphone signal branches, and an evaluation circuit, said evaluation circuit including:

means for receiving a representation of the microphone signals ($x_1, \ldots, x_N$),

means for estimating the noise components ($n_1, \ldots, n_N$),

means for estimating the speech components ($s_1, \ldots, s_N$) by forming the difference between a representation of one of the microphone signals (x_i) and the estimated noise component (n_i) for this microphone signal (x_i),

means for selecting one of the microphone signals (x_i) as a reference signal (x_r) which contains a reference noise component (n_r) and a reference speech component (s_r),

means for forming speech signal ratios ($a_1, \ldots, a_N$) by dividing the estimated speech components ($s_1, \ldots, s_N$) by the estimated reference speech component (s_r),

means for forming noise signal ratios ($b_1^2, \ldots, b_N^2$) by dividing powers ($\sigma_{n1}^2, \ldots, \sigma_{nN}^2$) of the estimated noise components ($n_1, \ldots, n_N$) by a power (σ_{nr}^2) of the estimated reference noise component (n_r), and

means for determining the weight factors ($c_1, \ldots, C_N$) by dividing each speech signal ratio ($a_1, \ldots, a_N$) by the associated noise signal ratio (b_i^2).

5,602,963

VOICE ACTIVATED PERSONAL ORGANIZER

W. Michael Bissonnette, North Hills; Douglas L. Turner, Thousand Oaks, and Mark P. Fortunato, Reseda, all of Calif., assignors to Voice Powered Technology International, Inc., Canoga Park, Calif.

Filed Oct. 12, 1993, Ser. No. 134,327

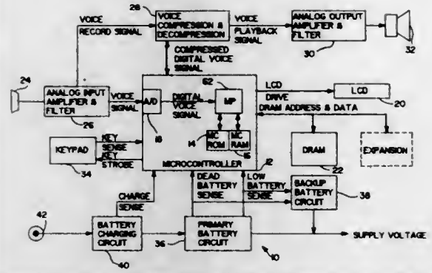
Int. Cl.[6] G10L *5/00*

U.S. Cl. 395—2.84 **6 Claims**

1. An electronic organizer comprising:

a first transducer for converting acoustic sound energy representing spoken words into an electrical speech signal;

a coupling circuit having an input for receiving the electrical speech signals and first and second outputs each for providing a respective output signal corresponding to the electrical speech signal;



recording means coupled to said first output for recording an output signal in a form to permit reproduction of the corresponding electrical speech signals;

word identifying means coupled to said second output for identifying a spoken word from among a selected plurality of spoken words;

data storage means coupled to said word identifying means for storing data corresponding to each identified spoken word;

function selection means including a plurality of manually operable function selection members; and

control means coupled to said recording means, said word identifying means, said data storage means and said function selecting means for causing an output signal at said first output to be recorded by said recording means in response to manual operation of a first one of said function selection members, and for causing said word identifying means to identify, and said data storage means to store data corresponding to, at least one spoken word which is spoken following manual operation of a second one of said function selection members, said control means being responsive to sequential operations of the first and second ones of said function selection members for associating an output signal recorded by said recording means in response to the operation of the first one of said function selection members with the stored data corresponding to the at least one word spoken following the operation of the second one of said function selection members, wherein said coupling circuit is operative for subjecting the received electrical speech signals to a first processing that modifies the received electrical speech signals for speech recording and supplying signals which have undergone the first processing to said first output, and for subjecting received electrical speech signals to a second processing, different from the first processing, that modifies the received electrical speech signals for identification by said word identifying means and supplying signals which have undergone the second processing to the second output.

5,602,964

AUTOMATA NETWORKS AND METHODS FOR OBTAINING OPTIMIZED DYNAMICALLY RECONFIGURABLE COMPUTATIONAL ARCHITECTURES AND CONTROLS

Terence W. Barrett, Vienna, Va., assignor to Autometric, Incorporated, Alexandria, Va.

Filed May 21, 1993, Ser. No. 65,159

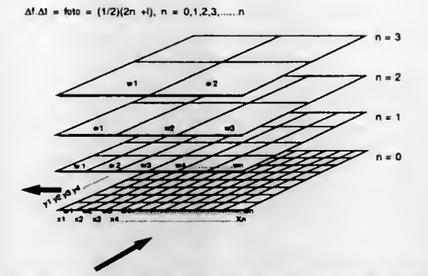
Int. Cl.[6] G06F *15/18*

U.S. Cl. 395—24 **8 Claims**

4. A method for obtaining optimum performance and optimum degradation from Lie algebra descriptions of a spectrum of reconfigurable network architectures, including, neural nets and cellular automata comprised of interconnected nodes having dynamic performance characteristics of a computational process, comprising:

monitoring the dynamic performance characteristic of the computational process by continued extraction of Liapounov exponent indicators,

reconfiguring said reconfigurable network architecture when said Liapounov exponent indicators predict non-optimum performance,



making compensatory adjustments of signal sampling performance and operating system performance of said reconfigurable network architecture, and

optimizing said reconfigurable network architecture to the computational process by reconfiguration of nodal capabilities and degree of interconnectedness between nodes to obtain a Lie algebra description architectural form between ideal neural net with maximum interconnectedness and ideal cellular automata with maximum nodal capability.

5,602,965

LASER PROGRAMMABLE INTEGRATED CURCUIT FOR FORMING SYNAPSES IN NEURAL NETWORKS

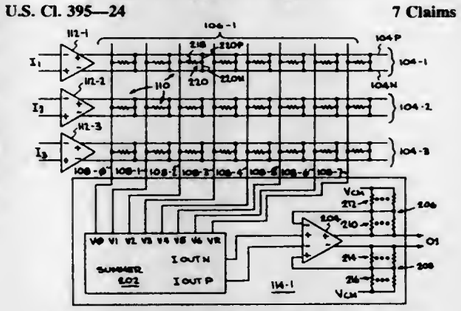
Chi Y. Fu, San Francisco, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Division of Ser. No. 894,391, Jun. 5, 1992, Pat. No. 5,538,915.

This application Sep. 14, 1995, Ser. No. 530,393

Int. Cl.[6] G06F *15/46*; G06G *7/02*

U.S. Cl. 395—24 **7 Claims**



1. A laser-programmable integrated circuit (IC), comprising:

a semiconductor substrate (**410**);

a plurality of pairs of array input lines (**104P** and **104N**) extending from a corresponding plurality of differential-output buffers (**112**) into an array (**102**) and fully-disposed on the semiconductor substrate (**410**);

a group (**106**) of array output lines (**108**) to cross over individual said pairs of array input lines (**104P** and **104N**) in said array (**102**) and fully-disposed on the semiconductor substrate (**410**);

a plurality of pairs of connective links (**220P** and **220N**), wherein said connective links (**220P** and **220N**) are connected in series to connect across each of said pairs of array input lines (**104P** and **104N**) at points corresponding to said crossovers of said array output lines (**108**) and fully-disposed on the semiconductor substrate (**410**); and

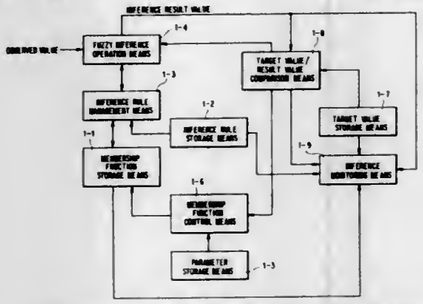
a plurality of equal value resistors (**218**) fully-disposed on the semiconductor substrate (**410**), wherein individual said resistors are located at said crossing over points and each connects an individual array output line (**108**) to an individual junction between two connective links (**220P** and **220N**).

5,602,966

MODELING DEVICE AND MODELING METHOD FOR DETERMINING MEMBERSHIP FUNCTIONS FOR FUZZY LOGIC PROCESSING

Naoki Kinoshita, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 917,379, Jul. 23, 1992, Pat. No. 5,479,580. This application Sep. 27, 1994, Ser. No. 312,721
Claims priority, application Japan, Jul. 25, 1991, 3-186338
Int. Cl.[6] G06F *17/00*
U.S. Cl. 395—51 **16 Claims**



1. A fuzzy membership function modeling method in a fuzzy inference method for making fuzzy inference of a control value of a controlled object and operating on an inference result using selected inference rules and membership functions, comprising the steps of:

1) setting a permissible range of a predetermined target inference result and parameters for altering said membership functions by a predetermined amount;

2) making fuzzy inference of a control value using said inference rules and membership functions and determining whether an inference result satisfies said permissible range of said predetermined target inference result;

3) altering said membership functions according to said parameters if the inference result does not satisfy the permissible range of said predetermined target inference result;

4) making fuzzy inference of said control value and operating on the inference result using said altered membership function and said inference rules to obtain a control variable that is used to control the controlled object, wherein said parameters comprise parameters to shift said membership function incrementally.

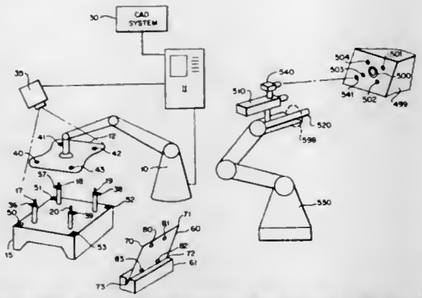
5,602,967

VISION TARGET BASED ASSEMBLY

Timothy R. Pryor, Tecumseh, Canada, assignor to Sensor Adaptive Machines, Inc., Windsor, Canada

Division of Ser. No. 875,282, Apr. 29, 1992, which is a continuation of Ser. No. 478,078, Feb. 9, 1990, Pat. No. 5,148,591, which is a continuation of Ser. No. 110,541, Oct. 20, 1987, abandoned, which is a continuation of Ser. No. 865,637, May 14, 1986, abandoned, which is a continuation of Ser. No. 660,280, Oct. 12, 1984, abandoned, which is a continuation-in-part of Ser. No. 348,803, Feb. 16, 1982, abandoned, Ser. No. 453,910, Dec. 28, 1982, abandoned, and Ser. No. 651,325, Sep. 17, 1984, Pat. No. 4,769,700, which is a continuation-in-part of Ser. No. 323,395, Nov. 20, 1981, Pat. No. 4,482,960, and Ser. No. 592,443, Mar. 22, 1984, Pat. No. 4,602,163, which is a continuation-in-part of Ser. No. 262,492, May 11, 1981, Pat. No. 4,453,085. This application Jun. 6, 1995, Ser. No. 471,222
Int. Cl.[6] G06F *15/46; H04N 7/18*
U.S. Cl. 395—94 **20 Claims**

1. A method of correcting robot position comprising the steps of:



providing a computer-programmed robot having a work area and programmed to execute predetermined working movements relative to an object to be worked by the robot,

providing at least one electro-optical sensor on said robot,

providing at least one reference point fixed in or near the work area of the robot,

sensing said reference point with said sensor,

determining relative position data between said robot and said reference point, and

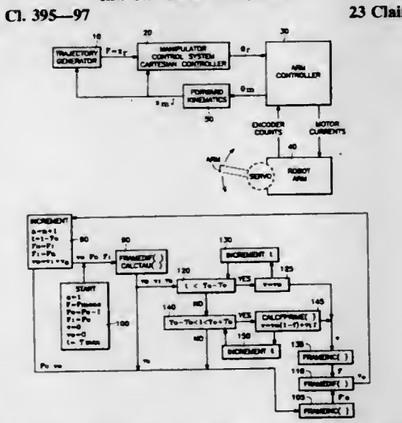
providing a correction signal to said robot based on said relative position data for correcting a predetermined working movement of said robot.

5,602,968

TASK SPACE ANGULAR VELOCITY BLENDING FOR REAL-TIME TRAJECTORY GENERATION

Richard A. Volpe, La Crescenta, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 2, 1994, Ser. No. 238,041
Int. Cl.[6] G05B *13/00; 19/42*
U.S. Cl. 395—97 **23 Claims**



1. A method of controlling a robot manipulator moving toward a target frame F_0 with a target velocity v_0 comprising a linear target velocity v with an angular target velocity ω_0 to smoothly and continuously divert said robot manipulator to a subsequent frame F_1, said target frame being associated with a target transition time T_0 and said subsequent frame being associated with a subsequent transition time T_1, said method comprising the steps of:

determining a global transition velocity v_1 necessary to move said manipulator from said target frame F_0 to said subsequent frame F_1 within said subsequent transition time T_1, said

global transition velocity comprising a linear transition velocity v_1 and an angular transition velocity ω_1;

defining a blend time interval $2\tau_0$ within which the global velocity of said robot manipulator is to be changed from a global target velocity v_0 to said global transition velocity v_1 and dividing said blend time interval $2\tau_0$ into discrete time segments δt;

during each one of said discrete time segments δt of said blend interval $2\tau_0$:

(a) computing a blended global velocity v of said manipulator as a blend of said global target velocity v_0 and said global transition velocity v_1, said blended global velocity v being at least approximately equal to said target global velocity v_0 at the beginning of said blend time interval and at least approximately equal to said global transition velocity v_1 at the end of said blend time interval, said blended global velocity v comprising a blended angular velocity ω and a blended linear velocity v, and

(b) rotating said manipulator by an incremental rotation corresponding to an integration of said blended angular velocity ω over one discrete time segment δt.

5,602,969

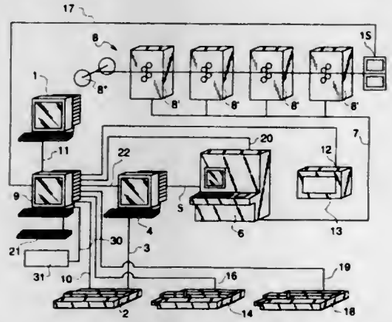
Patent Not Issued For This Number

5,602,970

PROCESS FOR SETTING THE HALFTONE DOT SIZES FOR A ROTARY OFFSET PRINTING MACHINE

Herbert Janser, Bolligen, Switzerland, assignor to Maschinenfabrik Wifag, Bern, Switzerland

Filed Mar. 23, 1992, Ser. No. 855,436
Claims priority, application Germany, Mar. 21, 1991, 41 09 307.0; Mar. 20, 1992, 42 09 165.9
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—109 **12 Claims**



1. A process for setting halftone dot sizes for a rotary offset printing machine, the process comprising the steps of:

determining average set values for the halftone dot sizes of a printing block based on past productions;

detecting printing characteristics of the rotary offset printing machine;

introducing compensation measures if said printing characteristics deviate from said set values;

adjusting the average set value of the halftone dot sizes in accordance with said deviations of said printing characteristics as evidenced by an inking system of the rotary offset printing machine, said adjusting being within predetermined tolerances of said standard desired values of said halftone dot sizes and based on reviewed said printing characteristics of said past productions in order to determine a tolerance sensitivity of the printed original;

controlling halftone dot sizes of the rotary offset printing machine in accordance with said tolerance sensitivity of said printed original;

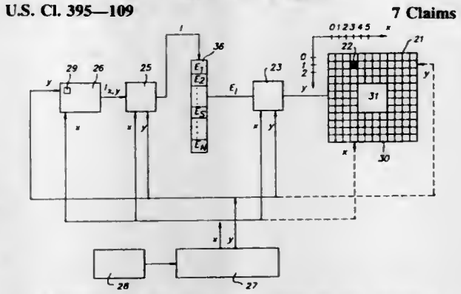
creating said printing block using said controlled halftone dot sizes, said detecting of said printing characteristics is obtained before said creating of said printing block, and said printing characteristics are determined from previously evidenced printing characteristics of said inking system.

5,602,971

MULTILEVEL HALFTONING USING A RANDOMISED BAYER MATRIX

Frank Deschuytere, Beveren, Belgium, assignor to Agfa-Gevaert, NV, Belgium

Filed May 8, 1995, Ser. No. 437,003
Claims priority, application European Pat. Off., May 11, 1994, 94201330
Int. Cl.[6] H04N *1/405; G06K 15/02*
U.S. Cl. 395—109 **7 Claims**



7. A method for conversion of a continuous tone image to a halftone reproduction on a recorder grid comprising microdots which may take a minimum density level, a maximum density level and at least one intermediate density level wherein:

for high image intensity levels a frequency modulation method is used until the modulation frequency approaches the recorder grid frequency, at which isolated microdots are rendered with maximum density level and other microdots are rendered with minimum density level;

for lower image intensities, for each microdot having a maximum density, one adjacent micro or is selected for getting a density higher than minimum density;

for the lowest image intensities, for each microdot having maximum density, two neighbouring microdots get equal densities or densities having a minimal density difference.

5,602,972

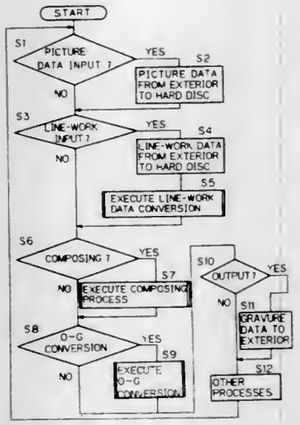
PIXEL AND DATA FORMAT CONVERSION PROCESSOR FOR GRAVURE

Kohji Hada, and Takumi Yoshida, both of Kyoto, Japan, assignors to Dainippon Screen Manufacturing Co., Ltd., Japan

Filed Feb. 15, 1994, Ser. No. 196,631
Claims priority, application Japan, Feb. 18, 1993, 5-028801; Mar. 11, 1993, 5-050420; Jun. 22, 1993, 5-150093
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—112 **20 Claims**

1. An image data conversion processor for use with a gravure electromechanical engraving system, comprising:

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a central processing unit to which an input device is connectable, said central processing unit having an internal memory;

at least one data storage device connected to said central processing unit, for storing image data scanned in a raster format of pixels from a subject image; wherein

said central processing unit in response to conditional data input via an input device defines a staggered format of virtual gravure cell positions corresponding to real gravure printing cells different from the raster format of pixels of the image data,

said central processing unit correlates the staggered format of virtual gravure cell positions with the raster format of pixels of the image data,

said central processing unit defines interpolation regions of the raster format of pixels of the image data for correlating each of the virtual gravure cell positions with the interpolation regions, and

said central processing unit determines pixel-weighting values of the interpolation regions and interpolates gravure printing cell data from the pixel-weighting values of the interpolation regions in correlation with each virtual gravure cell position, the gravure printing cell data determining actual volume of gravure printing cells engraved by a gravure engraving machine into a gravure printing medium in correspondence with the subject image; and

an input/output port connected to said central processing unit for receiving the scanned image data into storage by said data storage device, and for transmitting as an output to a gravure engraving machine the gravure printing cell data interpolated by said central processing unit.

5,602,973

PRINTER PROVIDING SECURITY FOR PRINTOUT

Hirofumi Nishiwaki, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 27, 1994, Ser. No. 312,814

Claims priority, application Japan, Sep. 30, 1993, 5-245678

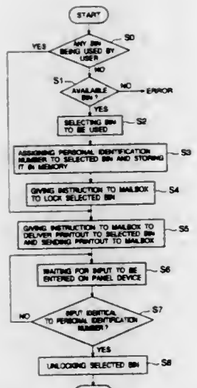
Int. Cl.[6] G06K *15/00*

U.S. Cl. 395—113 **10 Claims**

1. A printer accepting print requests from a plurality of users comprising:

lockable bins for storing printouts; and

locks each for locking a corresponding one of said bins, wherein said printer, in response to a user input, selectively leaves a selected lockable bin locked or unlocked and delivers the printouts to said selected lockable bin.



5,602,974

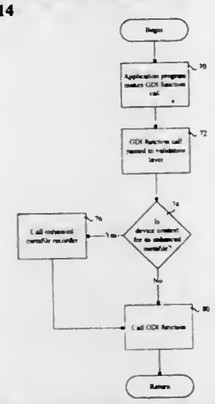
DEVICE INDEPENDENT SPOOLING IN A PRINT ARCHITECTURE

Lin F. Shaw; Chia-Chi Teng; Kenneth W. Sykes, and Raymond E. Endres, all of Redmond, Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Oct. 5, 1994, Ser. No. 318,069

Int. Cl.[6] G06K *15/00*

U.S. Cl. 395—114 **10 Claims**



1. In a computer system having a storage device, printers for printing documents and a processor running an operating system and at least one other program, said operating system including functions that the programs may call to print documents on the printers, a method comprising the steps of:

receiving a request from a selected one of the programs to print a document on a selected one of the printers;

receiving calls to the functions, that programs may call to print documents on the printers, from the selected program in order to print the document on the selected printer;

convening the received calls into information such that a separate enhanced metafile is provided for each page of the document to hold information for the page and storing the at least one enhanced metafile on the storage device in a device independent format that is independent of the formats for accepting documents for printing that are supported by the selected printer; and

retrieving and playing back the at least one enhanced metafile to print the document on the selected printer.

5,602,975

IMAGE PROCESSING APPARATUS

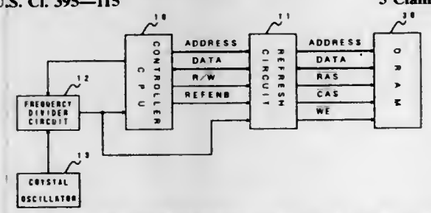
Hiromi Kataoka, Yokohama; Shunichi Masuda, Kawasaki; Tetsuo Saito, Tokyo, and Kazuma Yamamoto, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 15, 1993, Ser. No. 91,690

Claims priority, application Japan, Jul. 22, 1992, 4-195111; Mar. 3, 1993, 5-067502

Int. Cl.[6] G06K *15/00*

U.S. Cl. 395—115 **3 Claims**



1. An image processing apparatus connected to a host apparatus and having image processing means for processing an image in accordance with image data received from said host apparatus comprising:

communication control means for controlling communication of the image data with said host apparatus;

a first power source for supplying power to a print engine, said first power source being controllable to turn ON and to turn OFF;

a backup power source;

discriminating means for determining whether image data is being received from said host apparatus; and

power control means for supplying said communication means with power from said backup power source and for controlling said first power source to turn OFF when said discrimination means determines that image data is not being received from said host apparatus for a determined period and for controlling said first power source to turn ON when said discrimination means determines that image data is being received from said host apparatus.

5,602,976

METHOD AND APPARATUS FOR SAVING PRINTER MEMORY

Michael D. Cooper, San Jose; Michael L. Hodgson, Saratoga; Patrick S.-H. Ong, Palo Alto; James G. Sandman, Jr., Los Altos Hills; Paul D. Rovner, Palo Alto, and Edward R. Fiala, Sunnyvale, all of Calif., assignors to Adobe Systems Incorporated, Mountain View, Calif.

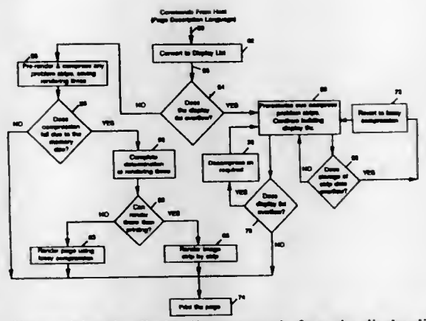
Filed Feb. 23, 1993, Ser. No. 21,190

Int. Cl.[6] G06K *1/00*

U.S. Cl. 395—116 **1 Claim**

1. A method of increasing throughput and reducing the memory requirements for a printer which has memory allocated for storing display list commands, uncompressed rasterized data, and compressed rasterized data, where said printer receives a page description language representation of a page, said page description language representation comprised of a sequence of page description language commands, which the printer converts into a raster data representation of that page for printing, comprising:

(1) converting the page description language representation of the page into display list commands and storing the display list commands in a display list memory allocation until the display list memory allocation is exhausted;



(2) rasterizing the display list commands from the display list memory allocation to form raster data which represents at least a portion of the page, and storing the raster data in a raster data memory allocation, thereby freeing up the display list memory allocation for further use;

(3) compressing said first raster data in the raster data memory allocation using a compression technique which minimizes compression and decompression times to form compressed raster data and storing the compressed raster data in a compressed raster data memory allocation, thus freeing up the raster data memory allocation for further use while maximizing throughput;

(4) continuing conversion of the page description language commands into second display list commands until either the display list memory allocation is again exhausted or the conversion is complete;

(5) decompressing the compressed raster data in the compressed raster data memory allocation and either sending it to the print engine for printing or storing it in the raster data memory, in either case freeing up the compressed raster data memory allocation for further use;

(6) rasterizing the second display list commands and combining it with the raster data in the raster data memory allocation;

(7) if the conversion in step (4) was not complete, carrying out steps (4) through (6) again; or

(8) if the conversion in step (4) converted the complete data for the page, printing the page from the raster data memory or compressed raster data memory, or both, thereby maximizing printer throughput without causing printer overruns.

5,602,977

FRANKING MACHINE

Daniel J. Lee, Warley, United Kingdom, assignor to Neopost Limited, Essex, United Kingdom

Filed Dec. 20, 1993, Ser. No. 169,359

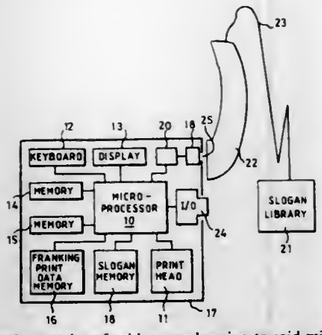
Claims priority, application United Kingdom, Dec. 23, 1992, 9226812

Int. Cl.[6] G07B *17/00*

U.S. Cl. 395—117 **4 Claims**

4. A franking machine system including a franking machine comprising electronic accounting and control circuits; input means operable to input a postage charge to said electronic accounting and control circuits; non-volatile memory means to store accounting records relating to usage of the franking machine in franking mail items; slogan memory means to store print data defining a slogan; printing means controlled by said electronic accounting and control circuits to print an impression on a mail item to be franked, said impression including said postage charge and said slogan defined by said print data; a secure housing containing said electronic accounting and control circuits, said non-volatile memory means and said slogan memory means; said secure housing being effective to prevent unauthorised tampering with said electronic accounting and control circuits and said non-volatile memory means contained therein; a microphone located within said secure housing; means operative to enable audio signals to

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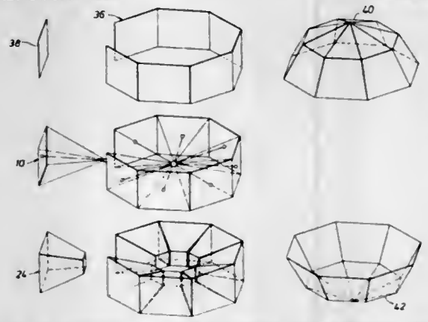
pass from the exterior of said secure housing to said microphone; said microphone being operative in response to said audio signals to output first electrical signals corresponding to said audio signals; means responsive to said first electrical signals output from said microphone to input second electrical signals corresponding to said first electrical signals to said electronic accounting and control circuits; and including a telephone handset located exterior to said secure housing and adjacent said franking machine in audio communication, via said means operative to enable said audio signals to pass from the exterior of said secure housing said microphone, with said microphone and remote means operable to transmit telephone signals representing print data signals defining said slogan via a telephone network to said telephone handset; said telephone handset being operative to convert said telephone signals to audio signals for reception by said microphone; said electronic accounting and control circuits being operable in response to input of second electrical signals resulting from receipt by said microphone of said transmitted telephone signals to store in said slogan memory the print data signals defining the slogan to be printed in said impression.

5,602,978

METHOD AND APPARATUS FOR A DEPTH SEAMED THREE-DIMENSIONAL VISUAL ENVIRONMENT

Carroll H. Lastinger, 21634 Westcliffe Falls Dr., Katy, Tex. 77450

Filed Sep. 1, 1993, Ser. No. 115,893
Int. Cl.[6] G06T *15/00*
U.S. Cl. 395—119 **16 Claims**



1. A computer controlled method for achieving three-dimensional imagery having the appearance of being located between the viewer and a screen, comprising:

(a) providing an array of screens on which images are displayed for visual observation, said array of screens defining a multiple screen array;

(b) establishing a dual camera three-dimensional spatial template for computerized graphical presentation having a pair of perspective origination points and field of view limits from said perspective origination points and having a rear virtual wall located at a common convergence focal point for both perspective origination points and a forward virtual wall located between said perspective origination points and said common convergence focal point;

(c) generating by computer processing a plurality of three-dimensional images of objects within said spatial template;

(d) optically aligning said three-dimensional images in depth by computer processing of adjacent images with a three-dimensional optical alignment algorithm;

(e) displaying said optically aligned three-dimensional images on said array of screens; and

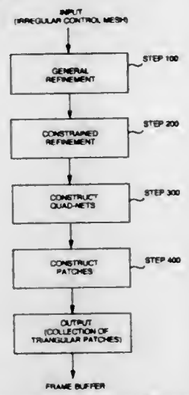
(f) achieving ocular separation of said three-dimensional images upon viewing of the same, permitting ocularly organized visual observation of respective images on said plurality of screens by each eye of a person viewing said images and thus providing the visual experience of physical presence of a three-dimensional object located between the viewer and said plurality of screens.

5,602,979

SYSTEM AND METHOD FOR GENERATING SMOOTH LOW DEGREE POLYNOMIAL SPLINE SURFACES OVER IRREGULAR MESHES

Charles Loop, Sunnyvale, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 113,617, Aug. 27, 1993, abandoned. This application Dec. 15, 1995, Ser. No. 573,583
Int. Cl.[6] G06T *17/00*
U.S. Cl. 395—123 **19 Claims**



1. A computer implemented process for generating smooth low degree polynomial spline surfaces over irregular meshes to display aesthetically pleasing images on a display monitor, the process comprising:

defining an irregular control mesh to represent a polygonal surface;

constructing a control mesh of predictable structure, such that vertices, faces and edges of said control mesh of predictable structure are generated using vertices, faces and edges of said irregular control mesh;

refining the control mesh of predictable structure to construct a refined mesh with vertices and at least one non-4-sided face according to a predetermined rule, said refined mesh vertices including a non-boundary vertex which is of order 4 with three incident 4-sided faces and an incident non-4-sided face which is planar;

breaking the refined mesh into a plurality of quad-nets corresponding to selected vertices of said refined mesh, at least one of said quad-nets corresponding to the non-boundary vertex; and

constructing four triangular patches using said quad-nets as a local geometry.

5,602,980

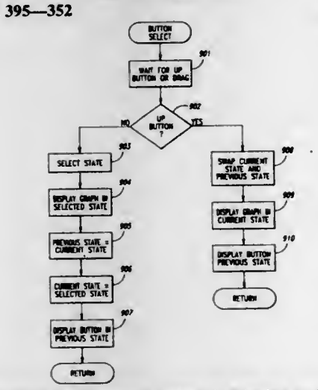
Patent Not Issued For This Number

5,602,981

QUICKSELECT ICON BUTTON ON A COMPUTER DISPLAY WHICH REDISPLAYS THE LAST VIEW STYLE ACTIVATED BY THE ICON BUTTON

Richard R. Hargrove, Fall City, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Filed Oct. 21, 1992, Ser. No. 964,153
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—352 **36 Claims**



2. A method in a computer system for altering a visual display on a display device, the computer system having at least three visual displays that can be selected between, a first of the visual displays designated as a previous visual display, a second of the visual displays designated as a current visual display, and having a view style button with a current state and a previous state, the current state corresponding to the current visual display, the previous state corresponding to the previous visual display, the method comprising the steps of:

displaying the view style button on the display device, such that the view style button is displayed according to the previous state when displaying the current visual display on the display device and such that the view style button is displayed according to the current state when displaying the previous visual display on the display device;

using the view style button, alternating between displaying the previous visual display and the current visual display;

using the view style button, designating a third visual display as the current visual display, such that the second visual display now becomes designated as the previous visual display, the previous state now corresponds to the second visual display, and the current state now corresponds to the third visual display; and

after designating the third visual display as the current visual display, using the view style button to alternate between displaying the second visual display and the third visual display.

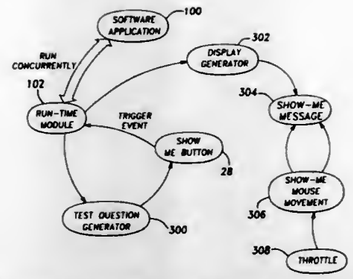
5,602,982

UNIVERSAL AUTOMATED TRAINING AND TESTING SOFTWARE SYSTEM

Wallace P. Judd, Nevada, and William L. Heinz, Oregon House, both of Calif., assignors to Kelly Properties, Inc., Troy, Mich.

Filed Sep. 23, 1994, Ser. No. 311,329
Int. Cl.[6] G06F *3/00;17/60*
U.S. Cl. 395—326 **35 Claims**

1. A universal automated training and testing system for training a user to use a software application program of the type that runs under a window operating system providing windows resources including a clipboard, menu resources and dialog box resources, employing a pointing device-directed screen cursor for testing the user's skills in the software application program comprising:



a run-time module adapted for running concurrently and interactively with the software application program;

a test question generator associated with the run-time module for generating a plurality of textually displayed questions to test the user's skills in using different aspects of the software application program;

said run-time module examines at least one of said windows resources, namely at least one of said clipboard, said menu resources and said dialog box resources, to evaluate the user's responses;

a Show-me button associated with said run-time module and with said test question generator, the Show-me button being actuable by the user to generate a trigger event within said run-time module;

said run-time module including a Show-me display generator responsive to said trigger event, said display generator producing at least one each of the following messages:

(a) a textually displayed instructional message, keyed to the question being displayed, for informing the user how to perform a task using the software application program; and

(b) a cursor movement message for causing the screen cursor to move to a predetermined location within the software application and for causing the software application program to execute at least one operating step associated with said task, thereby simulating the manner in which a user executes that cursor movement and operating step in actual use of the software application program.

5,602,983

IMAGE DISPLAY SYSTEM USING A COMMON VIDEO MEMORY FOR PHASED TERMINALS

Takashi Naba, Kawasaki, and Keishi Inoue, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Shimomaruko, Japan

Continuation of Ser. No. 488,734, Feb. 26, 1990, abandoned. This application Apr. 21, 1993, Ser. No. 49,667
Claims priority, application Japan, Feb. 28, 1989, 1-45276; Mar. 7, 1989, 1-54559
Int. Cl.[6] G06T *1/00*
U.S. Cl. 395—501 **17 Claims**

1. A display control system comprising:

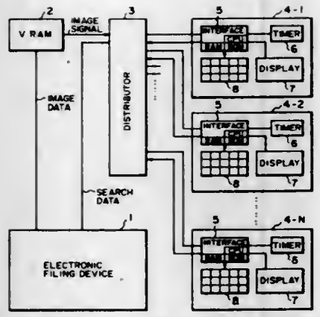
memory means for storing a plurality of pieces of information;

a plurality of display means each of which displays a different piece of the plurality of pieces of information at a given time;

bit pattern information memory means for storing in the same storage area, a different one of the plurality of pieces of information at a time, as successively read out of said memory means as bit pattern information; and

control means for controlling said bit pattern information memory means to transfer the bit pattern information stored in said bit pattern information memory means to any selected one of said plurality of display means.

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wherein said memory means has a capacity equal to or larger than a display capacity of one of said plurality of display means and smaller than the total display capacity of the plurality of display means.

5,602,984

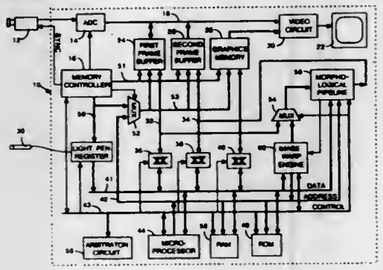
LOW THRASH CACHE WITH SELECTABLE TILE GEOMETRY

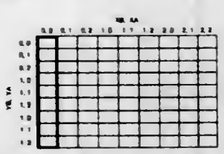
Herbert J. Mieras, Thiensville, Wis., assignor to Allen-Bradley Company, Inc., Milwaukee, Wis.

Continuation-in-part of Ser. No. 752,416, Aug. 30, 1991, abandoned. This application Aug. 2, 1994, Ser. No. 284,879

Int. Cl.[6] G06F *12/08*

U.S. Cl. 395—501 **6 Claims**





3. In an image processing system having a frame buffer that stores an image formed of a plurality of pixels in which each pixel is identified by an address having a plurality of bits, and having a pixel utilization circuit; the improvement being a cache memory for controlling the transmission of pixels from the frame buffer to the utilization circuit and comprising:

means for supplying a configuration control signal;

a tag memory having an address port, and a data input and output means;

a random access memory for storing pixels, and having an address port and a data input and output means;

means for generating addresses of pixels to be processed by the utilization circuit and applying each address to a plurality of bit conductors divided into four groups;

a multiplexer, coupled to said means for generating addresses, for selectively connecting two of the groups of bit conductors to the address ports of said tag memory and said random access memory and selectively connecting the other two groups of bit conductors to the data input and output means of said tag memory, the selective connecting being in response to said means for supplying a configuration control signal;

means for comparing a first set of bits carried by the other two bit conductor groups to a second set of bits read from said tag memory, and producing a signal indicative of results of that comparison; and

a controller which receives the signal from said means for comparing by reading a pixel from said random access memory when the signal indicates a match between the first and second sets of bits, or by reading a pixel from the frame buffer when the signal indicates that the first and second sets of bits do not match.

5,602,985

DATA PRESENTING DEVICE

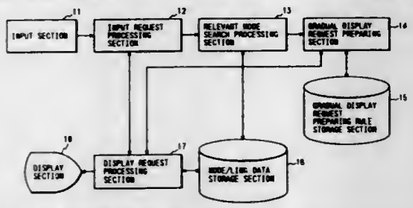
Eiji Ishida, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 149,825, Nov. 10, 1993, abandoned. This application Jun. 3, 1996, Ser. No. 657,429

Claims priority, application Japan, Nov. 13, 1992, 4-327518

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—501 **8 Claims**



1. A data presenting device comprising:

input means for receiving a virtual plane display request and a relevant node display request from a user;

input request processing means responsive to the receipt of said requests for interpreting said requests and for transmitting said requests;

relevant node search processing means responsive to said transmitted interpreted requests for searching for node data and link data;

node data and link data storage means responsive to said relevant node search processing means for storing node data on the virtual plane and storing link data for the relevant node;

incremental original node replacement preparing means responsive to results of said relevant node search and for preparing an incremental original node replacement request for said relevant node and transmitting said incremental original node replacement request;

incremental original node replacement request preparing rule storage means for storing incremental original node replacement request preparing rules utilized by said incremental original node replacement request preparing means in preparing said incremental original node replacement request wherein the incremental original node replacement request preparing rules stored in said original node replacement request preparing rule storage means include data for which a range on the virtual plane and a time interval for displaying data on said display means are defined by a plurality of display steps, and the incremental original node replacement request preparing rules define the display range on the virtual plane and the display time interval on a step basis so that when a node relevant to a currently presented node is to be presented, a position such as to allow the relevant node to be presented is displayed by incrementally moving the currently presented node in both an X-axis direction and in a Y-axis direction off of the virtual plane while simultaneously incrementally moving the relevant node onto the virtual plane so that the relevant node is finally displayed on the virtual plane

in full scale, thereby replacing the original node and allowing the user to maintain a sense of orientation;

display request processing means responsive to said incremental original node replacement requests and for searching concerned node data in accordance with said incremental original node replacement requests and performing processing for displaying said relevant node data; and

display means responsive to said display request processing means for displaying said incremental original node replacement requests on a virtual plane to the user.

5,602,986

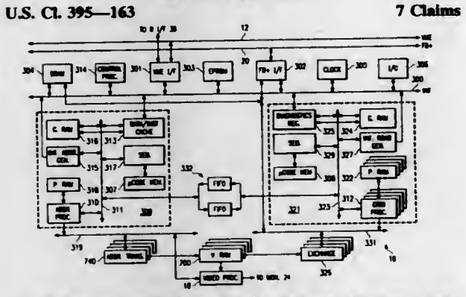
DATA PROCESSING AND MEMORY SYSTEMS WITH RETAINED BACKGROUND COLOR INFORMATION

Neil F. Trevett, Kingston-upon-Thames, United Kingdom, assignor to 3Dlabs Ltd., Egham, Great Britain

Continuation of Ser. No. 12,300, Feb. 1, 1993, abandoned. This application Jan. 23, 1995, Ser. No. 376,078

Int. Cl.[6] G06F *15/16*

U.S. Cl. 395—163 **7 Claims**



1. A demand-paged data processing and memory system comprising:

a first memory portion and at least one second memory portion each for storing an array of data-elements; and

processing means which is connected to said first and said second memory portions, and configured:

(a) to transfer said data-elements page-by-page between said memory portions;

(b) to modify said data-elements in said first memory portion;

(c) to memorize, when generating a new page, one or more background data-elements for each new page, said background data-elements being fewer in number than a total number of data-elements in a page; and

(d) to replicate said background data-elements, when a call is made to said new page, to form data-elements of said new page.

5,602,987

FLASH EEPROM SYSTEM

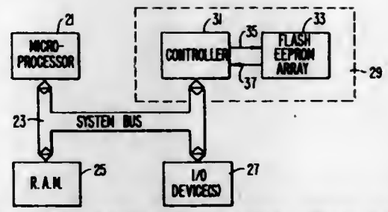
Eliyahou Harari, Los Gatos; Robert D. Norman, San Jose, and Sanjay Mehrotra, Milpitas, all of Calif., assignors to SanDisk Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 963,838, Oct. 20, 1992, Pat. No. 5,297,148, which is a division of Ser. No. 337,566, Apr. 13, 1989, abandoned. This application Dec. 29, 1993, Ser. No. 174,768

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—182.06 **50 Claims**

1. A method of operating a computer system including a processor and a memory system, wherein the memory system includes an array of non-volatile floating gate memory cells partitioned into a plurality of sectors that individually include a distinct group of said array of memory cells that are erasable together as a unit, comprising:



providing said memory array and a memory controller within a card that is removably connectable to the computer system, said controller being connectable to said processor for controlling operation of the array when the card is connected to the computer system,

partitioning the memory cells within the individual sectors into at least a user data portion and an overhead portion,

detecting a predefined condition when individual sectors become unusable and linking the addresses of such unusable sectors with addresses of other sectors that are useable,

causing the controller, in response to receipt from the processor of an address in a format designating at least one magnetic disk sector, to generate an address of a non-volatile memory sector that corresponds to said at least one magnetic disk sector,

accessing a usable sector of the memory system, if the sector with the generated address is unusable, by referring to the linked address of another sector that is usable and then accessing that other sector,

either writing data to, or reading data from, the user data portion of the accessed usable sector, and

either writing to, or reading from, said overhead portion of the accessed usable sector, information related to either the accessed usable sector or data stored in the user data portion of said accessed useful sector.

5,602,988

FAULT TOLERANT QUEUE SYSTEM

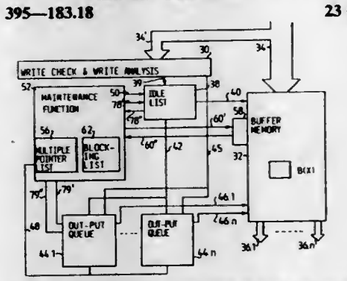
Tord L. Haulin, Uppsala, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Nov. 14, 1994, Ser. No. 339,672

Claims priority, application Sweden, Nov. 26, 1993, 93039329

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—183.18 **23 Claims**



14. In a queue system for buffering data in a packet switch with a common buffer memory for one or more output ports from the switch, said system using a number of pointers identifying storing positions in the buffer memory, and in which the pointers are moved between different logical lists for indicating the operation to be performed with the data in the buffer position pointed to,

a method for managing said pointers, comprising

continuously securing that the system includes one and only one pointer to each valid packet position in the buffer memory,

exposing all pointers to an initiation procedure by taking every pointer out of operation by filtering it out from the flow of pointers, which are returned to an idle list from output queue

lists for queued pointers in a queue to output ports, until the queue system has been emptied of every copy of the pointer in question, and comparing the number of returned copies of the pointer in question with the value in a multiple pointer list,

performing after said initiation procedure a first operational mode which activated by either the fact that more than a determined limit number of lost or multiple pointers have been found as a result of said initiation procedure, or

an external signal,

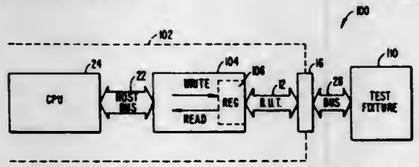
comprises the steps of returning a copy of each pointer to the idle list, and indicating in a blocking list no blocking of pointers.

5,602,989

BUS CONNECTIVITY VERIFICATION TECHNIQUE

Percy R. Aria, Newark, Calif., assignor to Advanced Micro Devices Inc., Sunnyvale, Calif.

Filed May 15, 1995, Ser. No. 441,561
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—183.19 **5 Claims**



1. A method for testing a connectivity of a bus between a semiconductor device affixed to a wiring board and a connector coupled to the wiring board, comprising the steps of:

attaching a test fixture to the connector, said test fixture including a memory responsive to an assertion of a first signal at an input of said memory to set a predetermined state at an output of said memory; thereafter

asserting said first signal to said memory using a first set of conductors of the bus coupled to said input; thereafter

accessing an output state of said memory using a second set of conductors of the bus coupled to said output; and thereafter

comparing said output state to said predetermined state, wherein said first and said second sets of conductors are not improperly connected when said output state matches said predetermined state.

5,602,990

COMPUTER SYSTEM DIAGNOSTIC TESTING USING HARDWARE ABSTRACTION

Brian A. Leete, Portland, Oreg., assignor to Pyramid Technology Corporation, San Jose, Calif.

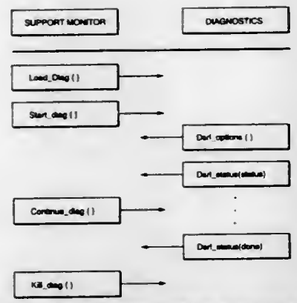
Continuation of Ser. No. 95,989, Jul. 23, 1993, abandoned. This application Aug. 7, 1995, Ser. No. 511,626
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—183.22 **5 Claims**

1. A diagnostic test system for performing off-line testing of a computer system, said diagnostic test comprising:

a graphical user interface;

a suite of diagnostic routines, each diagnostic routine being designed to run on a first specific hardware platform and to exercise specific hardware components within said first specific hardware platform; and

a software layer for hiding details of said first specific hardware platform from said graphical user interface, coupled to said graphical user interface through a first defined software interface, and coupled to said suite of diagnostic routines through a second defined software interface, said software layer comprising:



a library of diagnostic control routines including routines for loading a diagnostic, starting a diagnostic, continuing running of a diagnostic, and stopping a diagnostic; and

a library of diagnostic response routines including routines for passing messages to the graphical user interface including messages prompting a user to input optional parameters, messages informing the user of the status of the diagnostic while the diagnostic is running and messages informing the user of the completion status of the diagnostic after the diagnostic has finished running;

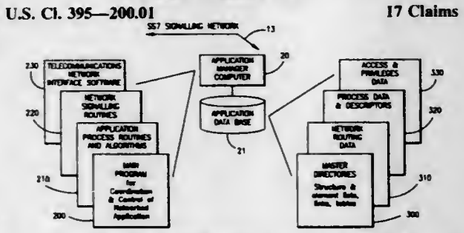
whereby said graphical user interface may be changed and said suite of diagnostic routines may be changed so as to run on a second specific hardware platform, without changing said first software interface and said second software interface.

5,602,991

SYSTEM FOR MANAGING SYSTEM FOR MANAGING NETWORKED COMPUTER APPLICATIONS

C. Donald Berteau, Sebastian, Fla., assignor to GeoNet Limited, L.P., Vero Beach, Fla.

Continuation of Ser. No. 205,090, Mar. 3, 1994, Pat. No. 5,423,003. This application May 25, 1995, Ser. No. 451,069
Int. Cl.[6] H04M *15/00*
U.S. Cl. 395—200.01 **17 Claims**



1. A system for managing networked computer applications comprising:

a) an intelligent telecommunications network including at least one service control point for selectively interconnecting selected ones of a plurality of switching nodes with selected ones of a plurality of transmission links;

b) a plurality of computer systems connected, one each, to different ones of said switching nodes, each said computer system containing information pertaining to an application to be managed; and

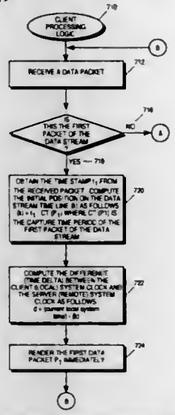
c) an application manager device for managing said application to be managed, said application manager device including means for instructing said service control point to interconnect selective ones of said plurality of computer systems by selected ones of said transmission links and switching nodes to facilitate efficient processing of said application to be managed.

5,602,992

SYSTEM FOR SYNCHRONIZING DATA STREAM TRANSFERRED FROM SERVER TO CLIENT BY INITIALIZING CLOCK WHEN FIRST PACKET IS RECEIVED AND COMPARING PACKET TIME INFORMATION WITH CLOCK

Gunner Danneels, Beaverton, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Nov. 29, 1993, Ser. No. 159,857
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—200.19 **23 Claims**



1. In a computer network having a plurality of computer systems coupled by a communication medium, one of said plurality of computer systems being a server system, a different one of said plurality of computer systems being a client system, a method for synchronizing a data stream transferred from said server system to said client system, said method comprising the steps of:

capturing information into a data packet, said capturing step being performed by said server system;

storing time information into said data packet, said time information indicating when said capturing step is complete;

transferring said data packet to said client system across said communication medium;

initializing a virtual server system clock if said data packet is a first data packet in said data stream, said initializing step including the step of computing a difference based on time information stamped on said first data packet and time information on a server system clock;

retrieving said time information from said data packet;

comparing said time information with said virtual server system clock; and

processing said information in said data packet if said time information indicates a time equal to a time indicated by said virtual server system clock.

5,602,993

METHOD AND SYSTEM FOR REVISING DATA IN A DISTRIBUTED DATA COMMUNICATION SYSTEM

Fredrik Strömberg, Bromma, Sweden, assignor to ICL Systems AB, Kista, Sweden

PCT No. PCT/SE92/00411, § 371 Date Feb. 7, 1994, § 102(e) Date Feb. 7, 1994, PCT Pub. No. WO92/22870, PCT Pub. Date Dec. 23, 1992
PCT Filed Jun. 12, 1992, Ser. No. 167,844
Claims priority, application Sweden, Jun. 12, 1991, 9101795.4; Jun. 12, 1991, 9101796.2; Feb. 28, 1992, 9200604.8
Int. Cl.[6] G06F *15/16;15/177;9/445*
U.S. Cl. 395—200.1 **15 Claims**

1. In a distributed network-connected data communications system having a plurality of working stations for users of the data communication system, a method to achieve unison revision of selected data, such as a data program or document, in a number of destination devices selected from a plurality of destination devices (AE1, AE11, LSE2, LSE3) by an administrator through an administration device in the data communication system and intended for the users, where each destination device includes at least one memory unit (ME, LSM2, LSM3) for individual storage of data, said revision being data revision and comprising, for instance, installing and/or removing and/or changing the selected data, the following method steps being carried out by the method:

(a) a list of the selected destination devices is established; and

(b) a data package is distributed internally in the data communication system to the selected destination devices;

characterised in that in order to be able to direct data packages individually to destination devices, which may be of different kinds and/or have different kinds of users, before distribution of the data package for the selected destination devices of each kind and/or each kind of user the following steps are carried out:

(c) an individual procedure for revision of the data on the selected destination devices is established by the administrator, and the procedure (L2:C2) stored as a special revision recipe comprising structured text indicating how the revision is to take place;

(d) at least the data to be revised and its revision recipe are combined to form the data package, and that after distribution of the data package,

(e) the selected destination devices interpret the information in the data package with the aid of a special interpreter program installed in each destination device, and the procedures are initiated on the basis of this interpretation.

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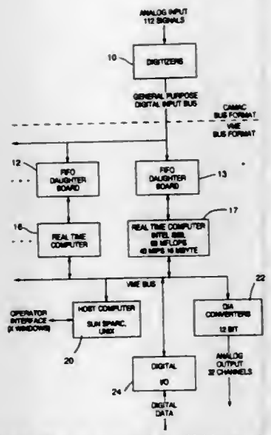
METHOD AND APPARATUS FOR HIGH SPEED DATA ACQUISITION AND PROCESSING

John R. Ferron, San Diego, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 25, 1992, Ser. No. 950,548
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—250 **22 Claims**

1. An apparatus for high speed transfer of X-bit words of digital data to storage locations of a memory in such a manner that a Y-bit word can be read from each of the storage locations, where X and Y are integers and Y is greater than X, including:

multiplexing means for receiving multiple channels of digital data at a low data rate and asserting at least one multiplexed data stream at a high data rate, wherein the digital data are said X-bit words, wherein the memory has a Y-bit storage



location for each of a set of the X-bit words, and wherein mask bits are prestored in each said Y-bit storage location; and

FIFO memory means for receiving the at least one multiplexed data stream from the multiplexing means and writing data comprising the at least one multiplexed data stream to the memory at said high data rate;

a bus connected to the FIFO memory means for transferring Z-bit parallel data from the FIFO memory means to the memory, where Z is an integer equal to not less than 2X; and

a means for controlling the FIFO memory means to assert pairs of the X-bit words in parallel to the bus, to write each of the X-bit words into a different Y-bit storage location of the memory in concatenation with the mask bits prestored therein, whereby each of the X-bit words concatenated with the mask bits in each said Y-bit storage location determines a valid Y-bit word.

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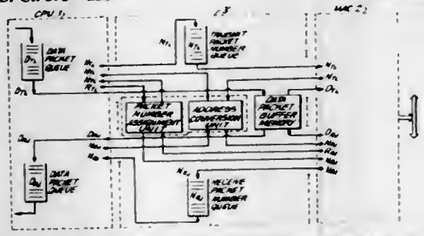
METHOD AND APPARATUS FOR BUFFERING DATA WITHIN STATIONS OF A COMMUNICATION NETWORK WITH MAPPING OF PACKET NUMBERS TO BUFFER'S PHYSICAL ADDRESSES

Ariel Hendel, Ronkonkoma, and Kenneth W. Brinkerhoff, Hauppauge, both of N.Y., assignors to Standard Microsystems Corporation, Hauppauge, N.Y.

Continuation of Ser. No. 693,637, Apr. 30, 1991, Pat. No. 5,313,582. This application May 13, 1994, Ser. No. 242,496

Int. Cl.[6] G06F *12/02*

U.S. Cl. 395—250 **42 Claims**



1. A method of buffering data elements between first and second processors, said method comprising the steps:

(a) using a memory management unit to operably connect said first and second processors to a buffer memory having plurality of data storage locations for storage of one or more data elements;

(b) said memory management unit assigning a unique number to a data element to be transferred from either said first processor or said second processor to said buffer memory, and stored in one or more of said data storage locations;

(c) said memory management unit storing said data element in one or more of said data element storage locations, by

(1) said first processor generating a first set of addresses ranging from a first minimum address value to a first maximum address value, and

(2) said memory management unit using the number assigned to said data element in step (b) and said first set of addresses to generate a corresponding set of physical addresses which define the physical location of said one or more data storage locations in said buffer memory;

(d) maintaining a first memory structure, for storing one or more of said numbers, each said number corresponding to one stored data element and said first memory structure being accessible to said first and second processors;

(e) said first processor or said second processor storing in said first memory structure, the number assigned to said stored data element in step (b);

(f) said first or second processor retrieving said stored number from said first memory structure; and

(g) said memory management unit retrieving said data element stored in said one or more data storage locations during step (c), by

(1) said first processor or said second processor generating a second set of addresses ranging from a second minimum address value to a second maximum address value, and

(2) said memory management unit using the number assigned to said data element in step (b) and said second set of addresses to generate the corresponding set of physical addresses which define the physical location of said one or more data storage locations in said buffer memory.

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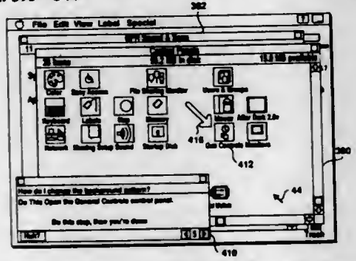
METHOD AND APPARATUS FOR DETERMINING WINDOW ORDER WHEN ONE OF MULTIPLE DISPLAYED WINDOWS IS SELECTED

John R. Powers, III, Monte Sereno; James E. Palmer, Redwood City; Patricia J. Coleman, Menlo Park; Jeffrey A. Herman, Palo Alto, and Eli Cochran, Menlo Park, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 10,064, Jan. 27, 1993, Pat. No. 5,469,540. This application Jun. 7, 1995, Ser. No. 483,994

Int. Cl.[6] G06F *3/00*

U.S. Cl. 395—344 **21 Claims**



1. In a computer display system having a central processing unit (CPU) coupled to a display such that data is displayed on said display in a plurality of windows, a method for displaying said windows and operating upon said windows and said data in said windows by a user, comprising the steps of:

generating and displaying each of said plurality of windows at a different window layer according to a window order, wherein any portion of a window at a higher window layer that overlaps with any portion of a window at a lower window layer is displayed such that the portion of the window at the higher window layer covers the portion of the window at the lower window layer, wherein said step of generating and displaying each of said plurality of windows comprises the steps of

generating and displaying a first window at a first window layer, wherein said first window layer is a highest window layer;

generating and displaying a second window at a second window layer, wherein said first window has a portion that does not overlap with said second window;

said user operating on both said first window and said second window without altering the window order of said plurality of windows;

wherein said step of generating and displaying each of said plurality of windows further includes the step of generating and displaying a third window at a third window layer;

wherein said second window layer is higher than said third window layer, said second window is active and said third window is inactive; and

in response to said user selecting said third window, performing the steps of

altering said window order to cause said third window to assume a higher window layer than said second window,

deactivating said second window, and

activating said third window.

(iii) a set of application launch screen buttons being displayed together within a third spatially-related region which is also integrated into said dashboard interface, each of said application launch screen buttons for launching in response to user input one of said application programs for execution by said system, said third spatially-related region having an orientation which is configurable by the user in conjunction with configuration of said orientation of said first spatially-related region, each said application launch screen button having at least one neighboring application launch screen button to which it maintains a constant proximity regardless of configuration of the orientation of said third spatially-related region by the user;

(b) receiving first and second user input for launching execution of a particular application, said first user input including generating a first signal for selecting a particular screen panel, whereupon said system displays a column of screen buttons projecting from said particular screen panel, said second user input including generating a second signal for selecting a particular one of said screen buttons projecting from said particular screen panel; and

(c) responsive to said first and second user signals, launching execution of an application program which corresponds to the particular screen button which is selected.

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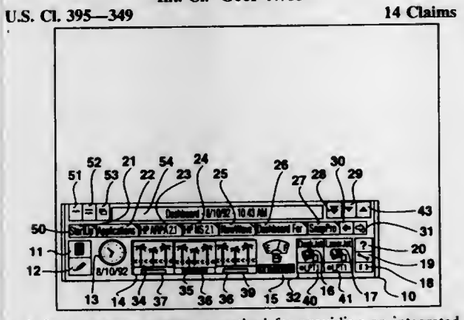
CUSTOMIZABLE PROGRAM CONTROL INTERFACE FOR A COMPUTER SYSTEM

Claudia Carpenter, Sunnyvale; George A. Hansen, Walnut Creek; Beatrice M. Y. Lam; Lawrence Lozares, both of Sunnyvale; Krisztina Makó, Santa Cruz; Paul A. Mernyk, Palo Alto, and Robert C. Robnett, San Jose, all of Calif., assignors to Starfish Software, Inc., Scotts Valley, Calif.

Continuation of Ser. No. 936,692, Aug. 27, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 478,890

Int. Cl.[6] G06F *17/60*

U.S. Cl. 395—349 **14 Claims**



1. In a computer system, a method for providing an integrated user interface for organizing access to application programs and peripheral devices of said computer system, the method comprising:

(a) displaying an integrated dashboard interface comprising:

(i) a row of screen panels being displayed together within a first spatially-related region which is integrated into said dashboard interface, said first spatially-related region having an orientation which is configurable by a user, each said screen panel having at least one neighboring screen panel to which it maintains a constant proximity regardless of configuration of the orientation of said first spatially-related region by the user, each screen panel displaying in response to user input a column of screen buttons projecting from the panel;

(ii) at least one peripheral device button being displayed within a second spatially-related region which is also integrated into said dashboard interface, each of said at least one peripheral device button for controlling and configuring a peripheral device in response to user input; and

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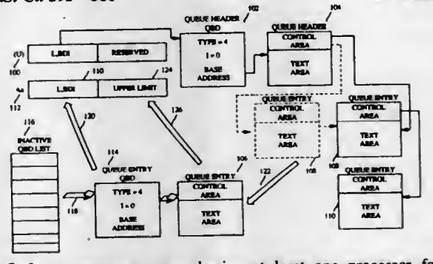
DEQUEUE INSTRUCTION IN A SYSTEM ARCHITECTURE FOR IMPROVED MESSAGE PASSING AND PROCESS SYNCHRONIZATION

Merwin H. Alferness, New Brighton; Charles R. Caldarale, Minneapolis; David C. Johnson, Roseville; David R. Johnson, Oakdale; James R. McBreen, Shoreview, and Wayne D. Ward, New Brighton, all of Minn., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Dec. 22, 1994, Ser. No. 362,638

Int. Cl.[6] G06F *9/46*

U.S. Cl. 395—566 **8 Claims**



5. In a computer system having at least one processor for executing instructions and a main storage unit having units of data storage called queue banks, each queue bank being capable of representing a queue header element or a queue entry element of a queue, each queue bank containing a control area for holding control information, and a text area for holding message data words, a queue being a linked list of one queue header and zero or more queue entries, the links of the queue being stored in the control area of the queue banks representing the queue header and queue entries, a queue bank being accessed via a queue bank descriptor data structure, queue bank descriptors not currently in use being saved in an inactive queue bank descriptor list, and a queue being accessed via the queue bank descriptor of its queue header, a queue header being used to store queue control information including queue links and an event indicator, a system for executing a dequeue instruction to receive and obtain access to message data words communicated from a sending process to a receiving process, comprising:

address calculation means for calculating the address of the queue bank descriptor of the queue header of a queue selected by the operands of the alequeue instruction;

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queue access means for accessing the queue header and queue entries of said selected queue by referencing the queue bank descriptor of the queue header of said selected queue;

means for suspending the process requesting execution of the dequeue instruction if said selected queue has no queue entries or if the event indicator in the queue header of said selected queue indicates that no event has occurred;

means for obtaining a new queue bank descriptor for a queue entry to be dequeued from the front of said queue from the inactive queue bank descriptor list;

queue updating means for updating the queue links in the control area of the queue header of said selected queue to point to the second queue entry in said selected queue, thereby removing said queue entry from said selected queue; and

mapping means for mapping said queue entry to said new queue bank descriptor, thereby providing visibility to the contents of said queue entry.

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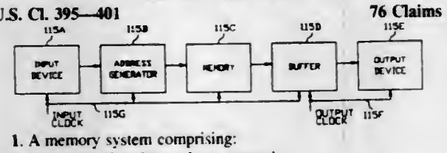
MEMORY SYSTEM HAVING A PLURALITY OF MEMORIES, A PLURALITY OF DETECTOR CIRCUITS, AND A DELAY CIRCUIT

Gilbert P. Hyatt, 7841 Jennifer Clr., La Palma, Calif. 90623

Continuation of Ser. No. 279,592, Dec. 2, 1988, Pat. No. 5,459,846, and a continuation-in-part of Ser. No. 661,649, Oct. 17, 1984, abandoned, Ser. No. 848,017, Apr. 3, 1986, and Ser. No. 849,243, Apr. 7, 1986, Pat. No. 5,410,621, which is a continuation-in-part of Ser. No. 849,733, Nov. 9, 1977, abandoned, and Ser. No. 425,731, Sep. 28, 1982, Pat. No. 4,581,715, which is a continuation-in-part of Ser. No. 160,872, Jun. 19, 1980, Pat. No. 4,491,930, Ser. No. 860,257, Dec. 14, 1977, Pat. No. 4,371,923, Ser. No. 101,881, Dec. 28, 1970, abandoned, Ser. No. 134,958, Apr. 19, 1971, Ser. No. 135,040, Apr. 19, 1971, Ser. No. 229,213, Apr. 13, 1972, Pat. No. 3,820,894, Ser. No. 230,872, Mar. 1, 1972, Pat. No. 4,531,182, Ser. No. 232,459, Mar. 7, 1972, Pat. No. 4,370,720, Ser. No. 246,867, Apr. 24, 1972, Pat. No. 4,310,878, Ser. No. 288,247, Sep. 11, 1972, Pat. No. 4,121,284, Ser. No. 291,394, Sep. 22, 1972, Pat. No. 4,396,976, Ser. No. 302,771, Nov. 1, 1972, Ser. No. 325,933, Jan. 22, 1973, Pat. No. 4,016,540, Ser. No. 325,941, Jan. 22, 1973, Pat. No. 4,060,848, Ser. No. 366,714, Jun. 4, 1973, Pat. No. 3,986,022, Ser. No. 339,817, Mar. 9, 1973, Pat. No. 4,034,276, Ser. No. 402,520, Oct. 1, 1973, Pat. No. 4,825,364, Ser. No. 490,816, Jul. 22, 1974, Pat. No. 4,029,853, Ser. No. 476,743, Jun. 5, 1974, Pat. No. 4,364,110, Ser. No. 522,559, Nov. 11, 1974, Pat. No. 4,209,852, Ser. No. 550,231, Feb. 14, 1975, Pat. No. 4,209,843, Ser. No. 727,330, Sep. 27, 1976, abandoned, Ser. No. 730,756, Oct. 7, 1976, abandoned, Ser. No. 754,660, Dec. 27, 1976, Pat. No. 4,486,850, Ser. No. 752,240, Dec. 20, 1976, abandoned, Ser. No. 801,879, May 13, 1977, Pat. No. 4,144,582, Ser. No. 812,285, Jul. 1, 1977, Pat. No. 4,371,953, Ser. No. 844,765, Oct. 25, 1977, Pat. No. 4,523,290, Ser. No. 849,812, Nov. 9, 1977, Ser. No. 860,278, Dec. 13, 1977, Pat. No. 4,471,385, and Ser. No. 889,301, Mar. 23, 1978, Pat. No. 4,322,819. This application Apr. 30, 1990, Ser. No. 517,005

Int. Cl.[6] G06F *12/00*

U.S. Cl. 395—401 **76 Claims**



1. A memory system comprising:

a memory storing data to be processed;

an address generator generating an address having less significant bits and having more significant bits;

a read accessing circuit coupled to the memory, coupled to the address generator, and read accessing data stored by the memory in response to the address generated by the address generator;

a processor coupled to the read accessing circuit and processing data read accessed by the read accessing circuit;

a first detector circuit coupled to the address generator and generating a first detector signal in response to detection of a change in the more significant bits of the address generated by the address generator;

a second detector circuit coupled to the address generator and generating a second detector signal in response to detection of a change in the less significant bits of the address generated by the address generator; and

a delay circuit coupled to the first detector circuit, coupled to the second detector circuit, and delaying generating of the address by the address generator in response to the first detector signal and in response to the second detector signal.

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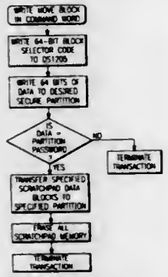
INTEGRATED CIRCUIT MEMORY WITH VERIFICATION UNIT WHICH RESETS AN ADDRESS TRANSLATION REGISTER UPON FAILURE TO DEFINE ONE-TO-ONE CORRESPONDENCES BETWEEN ADDRESSES AND MEMORY CELLS

Robert D. Lee, Denton, and Scott J. Curry, Coppell, both of Tex., assignors to Dallas Semiconductor Corporation, Dallas, Tex.

Continuation of Ser. No. 615,615, Nov. 19, 1990, abandoned, which is a continuation-in-part of Ser. No. 352,581, May 15, 1989, Pat. No. 5,210,846, and a continuation-in-part of Ser. No. 351,759, May 15, 1989, Pat. No. 4,982,371, and a continuation-in-part of Ser. No. 351,760, May 15, 1989, Pat. No. 5,091,771, and a continuation-in-part of Ser. No. 351,998, May 15, 1989, Pat. No. 4,972,377, and a continuation-in-part of Ser. No. 352,598, May 15, 1989, Pat. No. 4,945,217, and a continuation-in-part of Ser. No. 352,596, May 15, 1989, Pat. No. 4,948,954, and a continuation-in-part of Ser. No. 351,999, May 15, 1989, Pat. No. 5,045,675, and a continuation-in-part of Ser. No. 352,142, May 15, 1989, Pat. No. 4,995,004, and a continuation-in-part of Ser. No. 351,997, May 15, 1989, abandoned. This application Jun. 13, 1994, Ser. No. 259,290

Int. Cl.[6] G06F *12/00*

U.S. Cl. 395—421.11 **10 Claims**



9. An integrated circuit, comprising:

at least one memory array containing multiple low-power memory cells arranged in rows and columns;

a command decoder, which command decoder includes a translation register having modifiable contents, which translation register defines plural one-to-one correspondences between logical memory addresses and cells of said array, with each of said one-to-one correspondences associated with a corresponding bit pattern in said register; and

wherein said command decoder also includes verification means which monitors said translation register, and if the bit pattern in said translation register at any time ceases to define a one-to-one correspondence between said logical memory addresses and said cells said verification means forces a reset of said translation register.

5,603,001

SEMICONDUCTOR DISK SYSTEM HAVING A PLURALITY OF FLASH MEMORIES

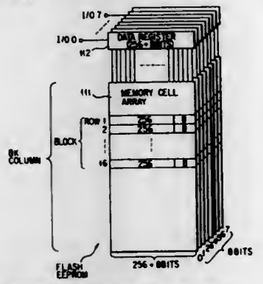
Hiroshi Sukegawa; Yasunori Maki, and Takashi Inagaki, all of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaka, Japan

Filed May 5, 1995, Ser. No. 435,854

Claims priority, application Japan, May 9, 1994, 6-095125; May 9, 1994, 6-095126

Int. Cl.[6] G06F *12/00;13/00*

U.S. Cl. 395—430 **35 Claims**



1. A semiconductor disk system comprising:

a plurality of flash memories each having a memory cell array constituted by a plurality of blocks, each consisting of a plurality of pages, each of said flash memories automatically executing page write processing for writing data of one of said pages into said memory cell array in response to a write command and generating a ready/busy signal indicating a busy state during the page write processing;

a memory for storing write data transferred from a host system;

setting means for setting, on the basis of the write data, block data to be written into individual said blocks of said flash memories designated by a write access request from said host system, said setting means including:

determining means for determining, for each said designated block, whether a write area requested to perform a data write access is smaller than an overall data write area in said designated block, and

block data setting means for setting the block data by using data to be stored in a non-write area of said designed block and the write data, if said determining means determines that the write area is smaller than the overall data write area,

data transfer means for transferring one said page of the block data set by said setting means to said flash memories designated by the write access request and issuing a write command;

detecting means for detecting completion of the page write access of each of said flash memories to which the data is transferred by said data transfer means, in accordance with the ready/busy signals generated from said flash memories; and

control means for controlling said data transfer means in accordance with the page write access completion detected by said detecting means, such that the set block data is entirely transferred.

5,603,002

HARD DISK DRIVE HAVING BUFFER MEMORY EMPLOYING DIRECTORY BASED CACHE CONTROLLER WITH DATA REPLACEMENT SCHEME

Yasuichi Hashimoto, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

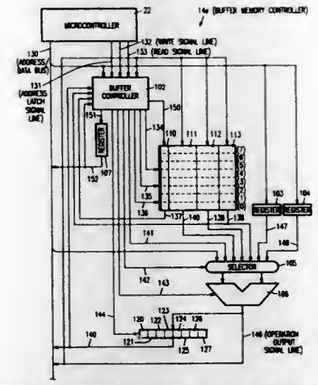
Filed Aug. 2, 1993, Ser. No. 101,494

Claims priority, application Japan, Aug. 7, 1992, 4-211639

Int. Cl.[6] G06F *12/08*

U.S. Cl. 395—440 **11 Claims**

1. A disk drive comprising:



a recording medium having plural blocks on tracks, each of the blocks being assigned a block address, data being recordable on and retrievable from each block;

a buffer memory divided into plural segments each with a capacity for storing at least one block of data;

means for recording and retrieving the data on and from the tracks;

data processing means for controlling the recording and retrieving means;

a buffer memory controller that is separate and apart from the data processing means for temporarily storing one of data read out of the recording medium and data from a host computer in the buffer memory under the control of the data processing means, the buffer memory controller including:

first storage means for storing data indicating if valid data are stored in each of the segments;

second storage means for storing block addresses of data stored in each of the segments;

third storage means for storing block numbers of data stored in each of the segments;

fourth storage means for storing information relating to a history of use of data stored in each of the segments;

fifth storage means for storing a target block address to be accessed;

sixth storage means for storing a block number of the target block to be accessed;

segment information selecting means for selecting the first through the fourth storage means corresponding to a specific segment;

seventh storage means for storing block hit information indicating that more than one target block specified by the fifth and the sixth storage means have the same block addresses as those of more than one block in the segment specified by the second and the third storage means;

means for comparing, under control of the data processing means, block addresses in the segments stored by the second and the third storage means for the segments of which contents are indicated to be valid by the first storage means with the target block addresses stored by the fifth and the sixth storage means and if more than one target block to be accessed as specified by the fifth and the sixth storage means have the same block addresses as those of more than one block in the segments specified by the second and the third storage means, to store the block hit information in the seventh storage means corresponding to this segment;

means for updating, under the control of the data processing means, the contents of the fourth storage means to indicate a specific segment most recently accessed for the segments of which contents are indicated to be valid by the first storage means;

means for selecting, under the control of the data processing means, the segment to be written based on the contents of

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the first and the fourth storage means when data are newly stored in any segment of the buffer memory;

means for setting, under the control of the data processing means, the contents of the first storage means corresponding to at least one specific segment so as to indicate that the contents of the corresponding segment are invalid; and

means for accessing, under the control of the data processing means, at least a predetermined portion of the buffer memory as the corresponding data stored in the recording medium.

5,603,003

HIGH SPEED FILE ACCESS CONTROL METHOD AND COMPUTER SYSTEM INCLUDING A PLURALITY OF STORAGE SUBSYSTEMS CONNECTED ON A BUS

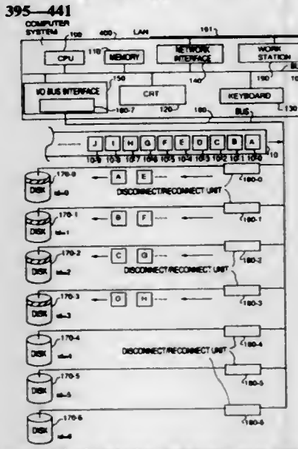
Mitsuru Akizawa, Hachioji; Kanji Kato, Tokorozawa; Hiroyoshi Suzuki, Yokohama; Toshiyuki Maki, Isehara; Hirofumi Yamashita, Kokubunji; Akira Kito, Ebina, and Hidenori Yamada, Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Computer Engineering Co., Ltd., Kanagawa, both of Japan

Filed Mar. 1, 1993, Ser. No. 24,462

Claims priority, application Japan, Mar. 4, 1992, 4-46685; Sep. 25, 1992, 4-256156

Int. Cl.[6] G06F *12/08;13/00*

U.S. Cl. 395—441 **50 Claims**



1. In a method of operating a storage array system comprising storage subsystems connected on a bus to a computer system through individual disconnect reconnect units, a method of conducting a read cycle, the method comprising the steps of:

issuing a plurality of read instructions respectively for a plurality of the storage subsystems, serially over the bus;

operating the disconnect reconnect units to serially connect the storage subsystems for receiving respective read instructions;

in response to receipt of the read instructions in the storage subsystems, respectively, operating the disconnect reconnect units for disconnecting the respective storage subsystems;

after disconnecting each of the storage subsystems, accessing data corresponding to the read instructions in the corresponding ones of the storage subsystems;

reconnecting the corresponding storage subsystem to the bus through the corresponding disconnect reconnect unit and thereafter transferring the data corresponding to the read instruction from the corresponding storage subsystem to the bus; and

controlling all of said steps so that said accessing data step for each storage subsystem is conducted in parallel with other operations of the storage subsystems.

5,603,004

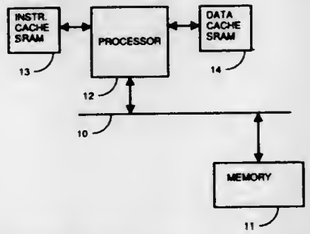
METHOD FOR DECREASING TIME PENALTY RESULTING FROM A CACHE MISS IN A MULTI-LEVEL CACHE SYSTEM

Gordon Kurpanek, Sunnyvale, Calif.; Eric Delano, Fort Collins; Michael A. Buckley, Windsor, both of Colo., and William R. Bryg, Saratoga, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 14, 1994, Ser. No. 196,042

Int. Cl.[6] G06F *12/00;12/12*

U.S. Cl. 395—445 **29 Claims**



1. In a computing system, a method for buffering data stored in a main memory and utilized by a processor, the method comprising the steps of:

(a) transferring data lines from the main memory to a first cache, including the substep of:

(a.1) storing with each data line in the first cache an indication which indicates a destination for the data line when the data line is moved out of the first cache, the indication indicating whether the data line will be forwarded to a second cache or whether the data line will be returned to the main memory;

(b) when a first data line is moved out of the first cache, and the indication indicates the first data line is to be forwarded to the second cache, moving the first data line to the second cache;

(c) when a second data line is moved out of the second cache and is dirty, returning the second data line to the main memory; and,

(d) when the processor requests access to a third data line, searching the first cache and the second cache in parallel for the third data line.

5,603,005

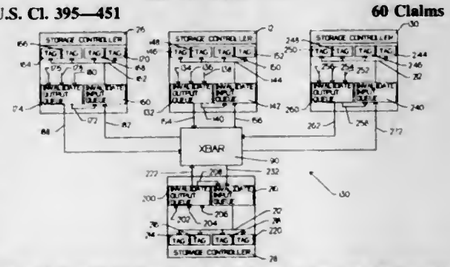
CACHE COHERENCY SCHEME FOR XBAR STORAGE STRUCTURE WITH DELAYED INVALIDATES UNTIL ASSOCIATED WRITE REQUEST IS EXECUTED

Mitchell Bauman, Circle Pines, and Michael Haupt, Roseville, both of Minn., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Dec. 27, 1994, Ser. No. 364,760

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—451 **60 Claims**



46. A method of ensuring data coherency in a data processing system having a first storage controller and at least one other storage controller(s) wherein the first storage controller has a first local memory element that may contain a first copy of a data block and wherein each of the at least one other storage controller(s) have a local memory element contained therein that may contain a second copy of the data block, the first storage controller being able to execute a local write instruction to the first local memory element and further having the capability to execute a remote write instruction to the local memory element(s) contained within the at least one other storage controller(s), comprising the steps of:

a. providing an XBAR interface block coupling the first storage controller to the at least one other storage controller(s), the XBAR interface block providing an interface between the first storage controller and the at least one other storage controller(s);

b. providing an invalidate request block coupled to the first storage controller for generating an invalidate request when the first storage controller executes a write instruction;

c. providing a write request block coupled to the first storage controller for generating a write request when the first storage controller executes a write instruction;

d. providing a write out queue, a write in queue, an invalidate out queue, and an invalidate in queue within the first storage controller and within each of the at least one other storage controller(s);

e. providing a remote write queue and a remote invalidate queue within the XBAR interface block;

f. providing an invalidate duplicate tag block within the first storage controller and the at least one other storage controller(s);

g. waiting for the write request block within the first storage controller to generate a write request;

h. capturing the write request in the write out queue within the first storage controller when step (g) detects the write request;

i. waiting for the write out queue to service the write request captured in step (h);

j. determining if the write request is to a memory within the first storage controller or to a memory within one of the at least one other storage controller(s) thereby determining if the write request is local or remote;

k. routing a corresponding write address and write data to the local memory element within the first storage controller and perform a write therein if step (j) determines that the write request is local;

l. placing an invalidate request into the invalidate out queue;

m. waiting for the invalidate out queue to service the invalidate request;

n. routing an invalidate address to the invalidate duplicate tag block within the first storage controller;

o. determining if there is a match between the invalidate address and the contents of the invalidate duplicate tag block;

p. invalidating the first copy of the data block if a match is found in step (o);

q. performing steps (r)→(zz) if the write request is to a remote storage controller;

r. sending the write request and the corresponding write address to the remote write queue within the XBAR interface block;

s. sending the invalidate request and the corresponding invalidate address to the remote invalidate queue within the XBAR interface block;

t. waiting for the remote write queue to service the write request;

u. allowing the invalidate request to enter the remote invalidate queue when the remote write queue services the write request;

v. routing the write request and the corresponding write address to the write in queue within a selected one of the at least one other storage controller(s);

w. waiting for the remote invalidate queue to service the invalidate request;

x. routing the invalidate request and the corresponding invalidate address to the invalidate in queue within the selected one of the at least one other storage controller(s);

y. waiting for the write in queue to service the write request, and once serviced, route the corresponding write address to the local memory within the selected one of the at least one other storage controller(s) and performing a write thereon;

z. routing the invalidate address to the invalidate duplicate tag block within the selected one of the at least one other storage controllers and determining of there is a match between the invalidate address and the contents of the invalidate duplicate tag block; and

zz. invalidating the second copy of the data block if a match is found in step (z).

5,603,006

CACHE CONTROL UNIT USING A PLURALITY OF REQUEST STACKS

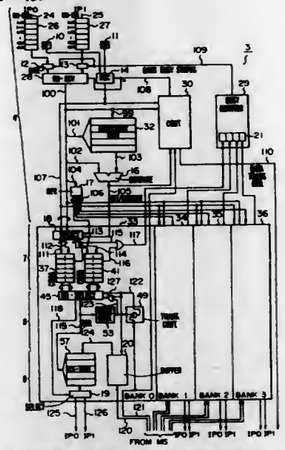
Joji Satake, and Atsushi Tanaka, both of Hadano, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 27, 1994, Ser. No. 313,389

Claims priority, application Japan, Sep. 27, 1993, 5-239356

Int. Cl.[6] G06F *12/08*

U.S. Cl. 395—459 **10 Claims**



9. A cache memory control unit having a capability of processing requests from plural instruction processors and accessing a cache memory based on a retrieved result of a director section, said cache memory control unit comprising:

a cache memory comprising plural banks, each of which includes a data array for holding part of data stored in a main storage,

wherein said director section stores a main storage address of data stored in said cache memory;

a request stack in each of said plural banks for holding plural requests from said directory section to a subject bank;

means for indicating whether or not a data array in said bank is busy being accessed; and

means for inhibiting giving a request from said request stack to said data array if said data array is busy,

wherein said request stack in each of said plural banks includes:

a first request queue for queuing said requests for data held in said data array of the bank based on the data requested by an instruction processor;

a second request queue for queuing requests for data not held in said data array of the bank based on data requested from an instruction processor; and

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means for giving a request from said first request queue to said data array of the bank when said data array is not busy and when no data is transferred from said main storage; and

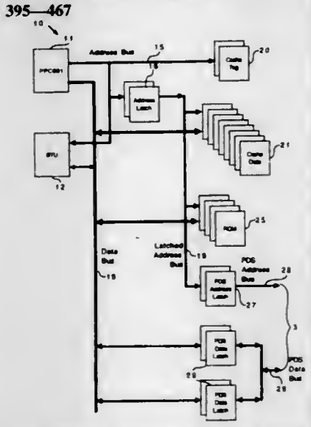
means for giving a request from said second request queue to said data array when said data array is not busy and data is transferred from said main storage.

5,603,007

METHODS AND APPARATUS FOR CONTROLLING BACK-TO-BACK BURST READS IN A CACHE SYSTEM

Farid A. Yazdy, San Mateo, and Michael J. Dhuey, Cupertino, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Mar. 14, 1994, Ser. No. 212,081
Int. Cl.[6] G06F *12/08*
U.S. Cl. 395—467 **5 Claims**



1. A cache memory arrangement for improving bus latency during burst read operations, comprising:

a uniprocessor single bus master;

an address bus coupled to said bus master;

a data bus coupled to said bus master;

a cache memory block, comprising a tag cache and a data cache, and being coupled to said address bus and to said data bus;

an address latch, coupled between said address bus and said data cache, for receiving a current cache address signal corresponding to a first burst read operation and maintaining said current signal after a second burst read operation is initiated and until the first burst read operation is completed; and

a bus translator unit coupled to the address bus and to the data bus; and

wherein

the bus master generates the current cache address signal; and

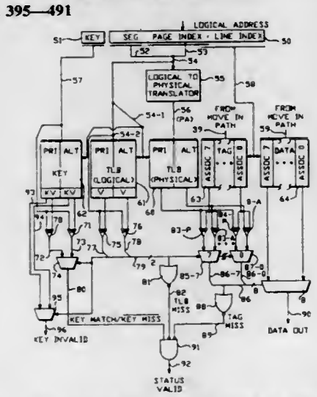
the bus translator unit generates an active latch control signal which causes said address latch to store the current cache address signal, then generates an inactive latch control signal which causes said address latch to maintain the current cache address signal, and then generates an address acknowledge signal which causes said bus master to release the current cache address signal and issue a subsequent cache address signal before the first burst read operation is completed.

5,603,008

COMPUTER SYSTEM HAVING CACHE MEMORIES WITH INDEPENDENTLY VALIDATED KEYS IN THE TLB

Ronald N. Hilton, Cupertino; Stephen C. Magee, San Jose, and Jeffrey L. Baker, Milpitas, all of Calif., assignors to Amdahl Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 954,297, Sep. 30, 1992, abandoned.
This application Nov. 10, 1994, Ser. No. 337,133
Int. Cl.[6] G06F *12/10;12/14*
U.S. Cl. 395—491 **2 Claims**



1. A key validation and data retrieval system in a data processing system for providing data in response to a request where said request contains a request key and a logical address, said key validation and data retrieval system comprising:

first storage for storing a plurality of storage keys;

second storage for storing data;

a data buffer for storing data retrieved from said second storage at addressed locations in said data buffer where said locations are addressed by a first portion of a logical address;

a translation look aside buffer having a plurality of locations for identifying data stored in said data buffer where each said location is addressed by a second portion of a logical address and contains a storage key, a storage key valid indicator, a value corresponding to said second potion of said logical address and a physical data address;

data confirmation means for generating a first signal if the data stored in said data buffer at a location addressed by a first portion of said logical address of said request is not the data to be retrieved in response to said request;

key validation means for generating a second signal when said key valid indicator indicates an invalid storage key at a location addressed by a second portion of said logical address of said request;

control means comprising:

data retrieval means in response to said first signal for transferring the requested data from said second storage to said location addressed by said first portion of said logical address of said request;

key retrieval means in response to said second signal for recovering a storage key from said first storage which is associated with said physical address stored at said location in said look aside buffer addressed by said second portion of said logical address of the request and for setting said key valid indicator at said location in said look aside buffer addressed by said second portion of said logical address of the request to valid;

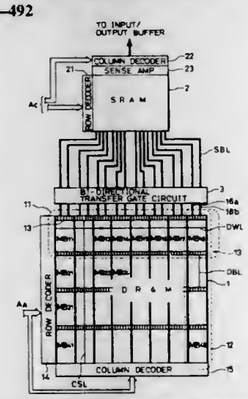
wherein said data retrieval means retrieval of data from said second storage operates separately from said key retrieval means retrieval of a storage key from said first storage for reducing the total amount of time necessary to retrieve said data and said storage key while still permitting data to be retrieved into said data buffer without requiring a storage key to be retrieved from said first storage.

5,603,009

SEMICONDUCTOR MEMORY DEVICE INCLUDING A DATA TRANSFER CIRCUIT FOR TRANSFERRING DATA BETWEEN A DRAM AND AN SRAM

Yasuhiro Konishi; Katsumi Dosaka; Kouji Hayano; Masaki Kumanoya; Akira Yamazaki, and Hisashi Iwamoto, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 783,028, Oct. 25, 1991, abandoned.
This application Dec. 14, 1994, Ser. No. 356,046
Claims priority, application Japan, Dec. 25, 1990, 2-406040; Feb. 8, 1991, 3-17677; Apr. 16, 1991, 3-84248
Int. Cl.[6] G06F *13/00;* **G11C** *11/34*
U.S. Cl. 395—492 **8 Claims**



1. A semiconductor device, comprising: a first memory cell array including a plurality of memory cells; a second memory cell array including a plurality of memory cells provided separate from said first memory cell array;

data transfer means, provided between said first memory cell array and said second memory cell array, for transferring data between a selected memory cell of said first memory cell array and a selected memory cell of said second memory cell array,

said data transfer means including:

(a) first circuitry for transferring data received from said first memory cell array to said second memory cell array, and

(b) second circuitry for transferring data received from said second memory cell array to said first memory cell array, said first and second circuitry provided in parallel with each other between said first and second memory cell arrays and having no common circuit elements; and

control means for generating a data transfer control signal activating said first circuitry and said second circuitry in response to a transfer instruction signal.

5,603,010

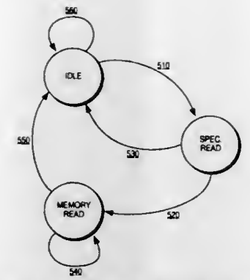
PERFORMING SPECULATIVE SYSTEM MEMORY READS PRIOR TO DECODING DEVICE CODE

James M. Dodd, Citrus Heights; Richard Malinowski, Placerville; Brian K. Langendorf, El Dorado Hills, and George R. Hayek, Cameron Park, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Dec. 28, 1995, Ser. No. 580,323
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—494 **18 Claims**

17. A memory controller, comprising:

(A) speculative read control means for receiving a read command from a host that includes an address and a device code, and speculatively initiating a fetch of data from a system memory device using said address of said read command immediately upon receiving said read command and before said device code has been decoded; and



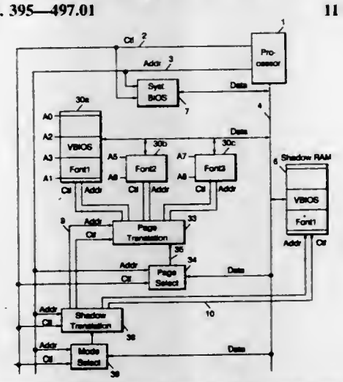
(B) decoding means for decoding said read command to identify a memory device that is associated with said device code.

5,603,011

SELECTIVE SHADOWING AND PAGING IN COMPUTER MEMORY SYSTEMS

William J. Piazza, Boca Raton, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 989,608, Dec. 11, 1992, abandoned.
This application Nov. 18, 1994, Ser. No. 342,402
Int. Cl.[6] G06F *12/10;12/02;9/445*
U.S. Cl. 395—497.01 **11 Claims**



9. A shadow memory arrangement for a computer system controlled by a system BIOS (Basic Input-Output System) program that interprets function calls issued by higher level programs including application programs, said arrangement comprising:

a nonvolatile first random access memory device having a predetermined first access delay attribute, and a volatile second random access memory device having a predetermined second access delay attribute shorter in duration than said first access delay attribute, said second memory device configured for use as a shadow RAM relative to said first memory device; said first memory device comprising discrete first and second storage sections each containing data subject to usage by programs runnning on said computer system; data in said first section representing data likely to be frequently accessed by said programs running on said computer system and data in said second section representing data likely to be infrequently accessed by said programs running on said computer system; said second memory device being dedicated during powered operation of said system for storing a copy of only said frequently accessed data stored in said first section of said first memory device and being conditioned at initialization of said system to receive addresses directed to either said first or second section of said first memory device so that said copy of said frequently accessed data stored in said second

device is quickly accessible to said higher level programs upon initialization of said computer system; and

means controlled by said system BIOS program, in response to predetermined function calls issued by said higher level programs, for modifying said initialized conditioning of said second memory device to permit said addresses directed to said first and second sections of said first memory device to be applied directly to respective sections of said first memory device, and thereby permit slow access to said infrequently accessed data stored in said second section of said first memory device as well as slow access to said frequently accessed data stored in said first section of said first memory device.

5,603,012

START CODE DETECTOR

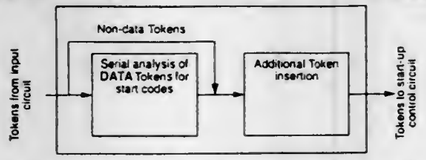
Martin W. Sotheran, Dursley, United Kingdom, assignor to Discovision Associates, Irvine, Calif.

Division of Ser. No. 400,397, Mar. 7, 1995, which is a continuation-in-part of Ser. No. 382,958, Feb. 2, 1995, which is a continuation of Ser. No. 82,291, Jun. 24, 1993, abandoned. This application Mar. 7, 1995, Ser. No. 400,201

Claims priority, application European Pat. Off., Jun. 30, 1992, 92306038; United Kingdom, Mar. 24, 1994, 9405914; Feb. 28, 1995, 9504019

Int. Cl.[6] G06F *13/37*

U.S. Cl. 395—500 **37 Claims**



1. In a system having an input and an output and a plurality of processing stages between the input and the output, the improvement comprising:

an interactive interfacing token, defining a universal adaptation unit for control and/or data functions among said processing stages; and

one of said stages receiving said input and adapted to generate and/or convert said tokens, and wherein said one of said stages detects overlaping start codes

whereby the first start code is ignored and the second start code is used to create start code tokens.

5,603,013

METHOD AND APPARATUS FOR NOISE REDUCTION OF CYCLIC SIGNAL BY SELECTING MAJORITY LOGIC STATE OF CORRESPONDING PORTIONS OF PLURAL CYCLES

Kazuhiro Ohara, Chiba, Japan, assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 156,544, Nov. 23, 1993, which is a continuation-in-part of Ser. No. 72,605, Jun. 3, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 474,216

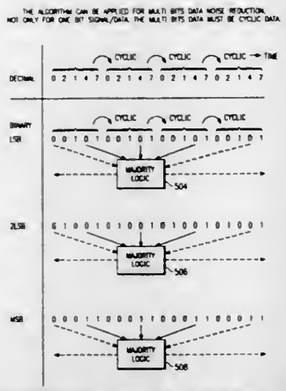
Int. Cl.[6] G06F *9/455;* **H04N** *5/217*

U.S. Cl. 395—500 **38 Claims**

1. A method for reconstructing a corrupted binary cyclic signal with digital logic circuitry, said binary cyclic signal regularly switching between a first logic state and a second logic state at a predetermined frequency, said method comprising the steps of:

dividing each cycle of the corrupted binary cyclic signal into portions according to the predetermined frequency;

comparing the logic states of each portion in each cycle to a corresponding portion in at least two other cycles in the



corrupted binary cyclic signal, said at least two other cycles having a predetermined temporal relationship to said cycle in each comparison;

determining the logic state of the majority of the compared portions; and

generating a reconstructed binary cyclic signal corresponding to the corrupted binary cyclic signal, wherein the logic state of each portion comprises the determined logic state in the step of determining.

5,603,014

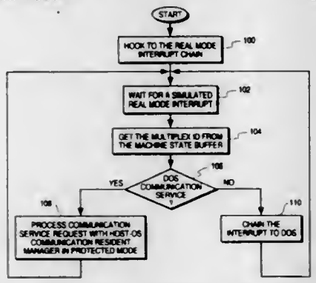
PROTECTED MODE SIMULATION OF A REAL MODE INTERUPT BASED PROGRAMMING INTERFACE IN A COMPUTER SYSTEM

Michael C. Woodring, and Paul D. Crutcher, both of Beaverton, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 163,366, Dec. 3, 1993, abandoned. This application Jul. 24, 1995, Ser. No. 506,323

Int. Cl.[6] G06F *9/455*

U.S. Cl. 395—500 **24 Claims**



1. In a computer system comprising a processor capable of operating in a real mode, wherein said real mode limits a usable memory address space for the processor, a method for simulating an application programming interface comprising the steps of:

trapping a shared software interrupt generated by an application program executing on said processor in the computer system, wherein the shared software interrupt is shared by a set of interrupt service routines that execute in said real mode of the processor;

if an identifier provided by the application program for the shared software interrupt specifies the application programming interface, then executing a routine that services the application programming interface in a protected mode of the

processor wherein the protected mode does not limit the usable memory address space and provides memory management functions.

5,603,015

LOGIC SIMULATION APPARATUS FOR EXECUTING SIMULATION OF A CIRCUIT

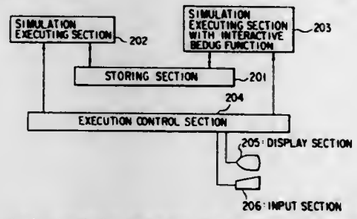
Yuuichi Kurosawa; Takahisa Kaihotsu, both of Tokyo, and Hiroshi Sakai, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 254,619, Jun. 6, 1994, abandoned. This application Nov. 30, 1995, Ser. No. 565,213

Claims priority, application Japan, Jun. 7, 1993, 5-136123

Int. Cl.[6] G06F *13/24*

U.S. Cl. 395—500 **14 Claims**



1. A logic simulation apparatus for executing simulation of a circuit function on the basis of information related to a circuit subjected to the simulation, using at least a first simulation program and a second simulation program executed at a speed higher than that of said first simulation program, the simulation apparatus comprising:

storing means for storing data shared by said first and second simulation programs;

simulation executing means for executing simulation using any one of said first and second simulation programs;

specifying means for specifying timing on simulation to be switched to simulation using said first simulation program executed by said simulation executing means;

start control means for starting simulation using said second simulation program;

stop control means for interrupting the simulation executed by said simulation executing means at the specified timing; and

restart control means for causing, in response to interruption of the simulation by said stop control means, said simulation executing means to restart the simulation using said first simulation program from the specific timing.

5,603,016

METHOD FOR SYNCHRONIZING PLAYBACK OF AN AUDIO TRACK TO A VIDEO TRACK

Robert L. Davies, Milpitas, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Aug. 3, 1994, Ser. No. 285,350

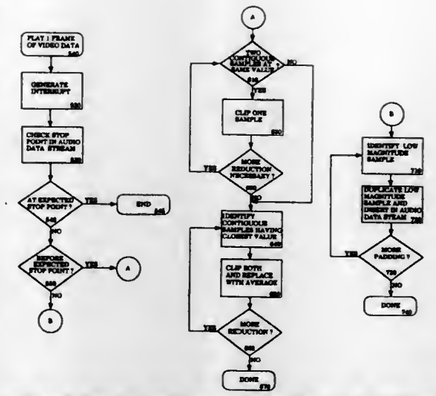
Int. Cl.[6] G06F *1/12*

U.S. Cl. 395—551 **21 Claims**

1. In a computer system having a video driver for processing a video track operating at a first clock frequency and an audio driver for processing an audio track operating at a second clock frequency, a method for synchronizing the audio track to the video track such that harmonic dissonance and pitch shift are reduced, the method comprising the steps of:

determining whether the first clock frequency is equal to, greater than, or less than the second clock frequency;

removing at least one audio sample from the audio track, if the first clock frequency is greater than the second clock frequency by comparing two contiguous audio samples and clipping one sample if the contiguous audio samples are identical; and



adding at least one audio sample to the audio track, if the first clock frequency is less than the second clock frequency.

5,603,017

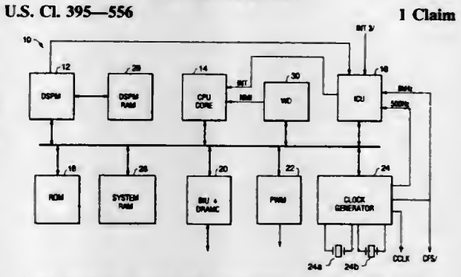
PARALLEL INTEGRATED CIRCUIT HAVING DSP MODULE AND CPU CORE OPERABLE FOR SWITCHING BETWEEN TWO INDEPENDENT ASYNCHRONOUS CLOCK SOURCES WHILE THE SYSTEM CONTINUES EXECUTING INSTRUCTIONS

Gideon Intrater, Tel-Aviv; Oved Oz, and Yachin Afek, both of Cfar Saba, all of Israel, assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 63,412, May 18, 1993, abandoned, which is a division of Ser. No. 806,082, Dec. 6, 1991, abandoned. This application Sep. 20, 1994, Ser. No. 309,546

Int. Cl.[6] G06F *1/04*

U.S. Cl. 395—556 **1 Claim**



1. An integrated circuit data processing system comprising:

a shared internal bus for transferring both data and instructions;

a shared bus interface unit connected to the shared internal bus and connectable via a shared external bus to a shared external memory array such that instructions and data held in the shared external memory array are transferrable to the shared internal bus via the shared bus interface unit;

a general purpose (GP) central processing unit (CPU) connected to the shared internal bus for retrieving GP instructions, the GP CPU including means for executing GP instructions to process data retrieved by the GP CPU from the shared internal bus;

a digital signal processor (DSP) module connected to the shared internal bus, the DSP module including means for processing an externally-provided digital signal received by the DSP module by executing DSP command-list instructions;

first and second independent clock sources that operate at different, asynchronous frequencies;

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means for switching from the first clock source to the second clock source while the data processing system continues to execute instructions; and

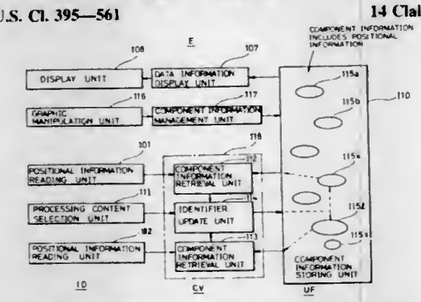
means for turning off the first clock source when switching to the second clock source is completed.

5,603,018

PROGRAM DEVELOPING SYSTEM ALLOWING A SPECIFICATION DEFINITION TO BE REPRESENTED BY A PLURALITY OF DIFFERENT GRAPHICAL, NON-PROCEDURAL REPRESENTATION FORMATS

Hiroaki Terada; Hiroaki Nishikawa, both of Osaka-fu; Tetsuo Yamasaki, Hyogo-ken; Yoshie Inaoka, Hyogo-ken; Kenji Shima, Hyogo-ken; Shin-ichi Yoshida, Nara-ken; Shunji Hine, Osaka-fu; Youichiro Nishikawa, Hyogo-ken, and Shuji Hara, Osaka-fu, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha; Sharp Kabushiki Kaisha; Matsushita Electric Industrial Co., Ltd., and Sanyo Electric Co., Ltd., all of Japan

Continuation of Ser. No. 729,731, Jul. 15, 1991, abandoned.
This application Mar. 30, 1994, Ser. No. 219,866
Int. Cl.[6] G06F *9/45*
U.S. Cl. 395—561 **14 Claims**



1. A program developing supporting system, comprising:

a plurality of specification definition representation means with which a user inputs data corresponding to specification definition information and describes the specification definition information, the specification definition information representing a specification denoting required functions of a desired software under development, said plurality of specification definition representation means provided in parallel and each including means representing specification definition information described by said user in a graphical non-procedural representation format, any one graphical non-procedural representation format being different from any other graphical non-procedural representation format;

structure extracting means coupled to receive the specification definition information described by said user for extracting a structure of an executable program from the specification definition information described by said user with specification definition representation means which are activated, said structure extracting means including storage means for storing the specification definition information described by said user; and

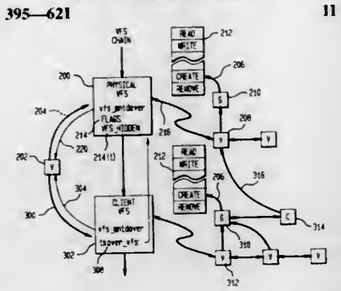
activation means coupled to receive said specification definition information described by said user with a specification definition representation means among said plurality of specification definition representation means, for making a determination as to whether representation by another specification definition representation means is possible and responsive to a determination that the representation by another representation means is possible for activating the other specification definition representation means to allow input of specification definition information by said other specification definition representation means, thereby allowing representation of a single piece of specification information in different graphical non-procedural representation formats, and otherwise waiting an inputting of another specification definition information.

5,603,019

TAKEOVER TECHNIQUE FOR NETWORKED VIRTUAL FILESYSTEMS

William A. Kish, Millerton, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 25, 1994, Ser. No. 280,049
Int. Cl.[6] G06F *12/08;17/30*
U.S. Cl. 395—621 **11 Claims**



1. A method for controlling access to a first networked virtual filesystem by local users of a node in a networked computing system, comprising the steps of:

(a) mounting the first networked virtual filesystem on the node,

(b) mounting a second networked virtual filesystem on the node;

(c) subsequent to step (a), preventing direct access to the first networked virtual filesystem by the local users;

(d) subsequent to step (b), routing all requests for access to the first networked virtual filesystem by the local users to the first networked virtual filesystem by way of the second networked virtual filesystem;

(e) providing the first networked virtual filesystem with a flag which depending on its state will alternatively cause the first networked virtual filesystem to be or not to be reported to certain processes; and,

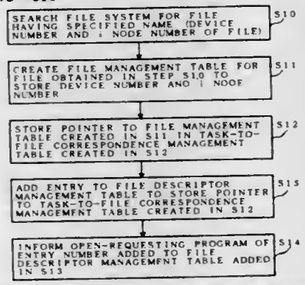
(f) setting the state of the flag to cause the first networked virtual filesystem not to be reported to the certain processes.

5,603,020

METHOD FOR DETECTING FILE NAMES BY INFORMING THE TASK OF THE IDENTIFICATION OF THE DIRECTORY ANTECEDENT TO THE FILE

Tsuyoshi Hashimoto; Takeshi Suzuki, and David Campbell, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 24, 1994, Ser. No. 294,960
Claims priority, application Japan, Oct. 8, 1993, 5-253495
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—616 **10 Claims**



1. A file name detecting method for use with an operating system for managing a file system having a hierarchical structure of files leading from a root node through intermediate nodes to each file serving as final nodes, said method comprising the steps of:

storing first information about an intermediate node antecedent to a file with related file identification information when opening said file;

detecting the intermediate node antecedent to said file having been opened based on the stored first information as requested by a task; and

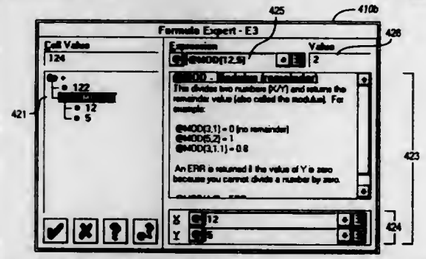
informing said task of said detected intermediate node antecedent to said file, such that said task detects a file name based on second information about said file, said second information being stored in said detected intermediate node antecedent to said file.

5,603,021

METHODS FOR COMPOSING FORMULAS IN AN ELECTRONIC SPREADSHEET SYSTEM

Percy L. Spencer, Scotts Valley; Steven R. Boye, Los Gatos; Max E. Montgomery, Santa Cruz, and Michael J. Watson, Scotts Valley, all of Calif., assignors to Borland International, Inc., Scotts Valley, Calif.

Filed Sep. 2, 1994, Ser. No. 300,813
Int. Cl.[6] G06F *17/30*
U.S. Cl. 345—604 **34 Claims**



1. In an electronic spreadsheet system for modeling user-specified information in a data model comprising a plurality of formulas entered by a user, each of said formulas evaluating to a result, a method for assisting the user with correctly entering formulas, the method comprising:

(a) storing syntax rules specifying valid syntax for formulas;

(b) receiving user input for entering a formula;

(c) parsing said user input, based on said syntax rules, into at least one formula node, said at least one node storing a subexpression of the formula;

(d) creating, based on said at least one formula node, an outline view of the formula; and

(e) displaying said outline view to the user.

5,603,022

DATA COMPRESSION SYSTEM AND METHOD REPRESENTING RECORDS AS DIFFERENCES BETWEEN SORTED DOMAIN ORDINALS REPRESENTING FIELD VALUES

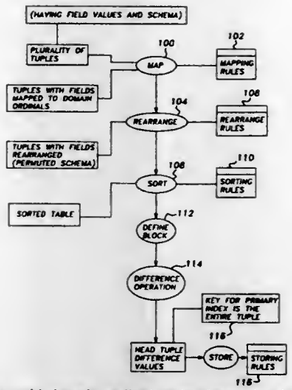
Wee-Keong Ng, and Chinya V. Ravishankar, both of Ann Arbor, Mich., assignors to The Regents of the University of Michigan, Ann Arbor, Mich.

Filed Sep. 23, 1994, Ser. No. 311,779
Int. Cl.[6] G06F *7/00*
U.S. Cl. 395—612 **8 Claims**

1. A method for compressing a database consisting of a plurality of tuples, each tuple having predetermined fields arranged according to a predetermined schema, the method comprising:

mapping said tuples according to predetermined mapping rules such that said fields are mapped to domain ordinals representing field values to thereby define a plurality of domain ordinal tuples;

sorting domain ordinal tuples according to predetermined sorting rules;



converting said domain ordinal tuples into a head tuple and a table of difference values by subtracting a domain ordinal from its succeeding neighbor;

defining a data block of a predetermined size and performing said converting step on groups of domain ordinal tuples to fit said defined data block size, wherein said predetermined size of said data block is determined to physically conform to the data block size of a storage system used to store said database;

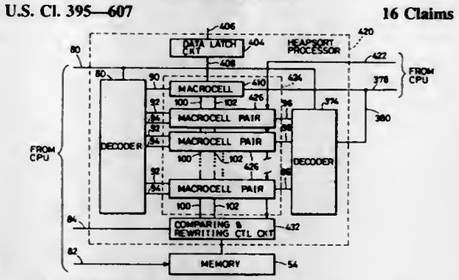
storing said head tuple and said table of difference values according to predetermined storing rules, the stored head tuple and the stored table of difference values being a compressed representation of said database.

5,603,023

PROCESSOR CIRCUIT FOR HEAPSORTING

Hirohisa Machida, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 327,828, Oct. 24, 1994, abandoned.
This application Nov. 14, 1995, Ser. No. 557,503
Claims priority, application Japan, Nov. 1, 1993, 5-273892
Int. Cl.[6] G06F *7/24*
U.S. Cl. 395—607 **16 Claims**



1. A heapsort processor circuit, comprising:

a memory cell array including a plurality of macro cells;

a plurality of bit lines, and a plurality of first and second selection lines intersecting the plurality of macro cells;

a first decoder connected to the plurality of first selection lines for selecting a first macro cell of said memory cell array in response to an address signal provided external to said heapsort processor circuit;

a memory provided external to said heapsort processor for inputting data to and receiving data from a macro cell via said plurality of bit lines at an address selected by said first decoder;

a second decoder connected to said plurality of second selection lines and responsive to said address signal at the same time as said first decoder responds to said address signal for providing a designating signal designating two macro cells of two addresses having a prescribed relation with the address of said first macro cell;

a plurality of selecting circuits each provided for two macro cells, a respective selecting circuit responsive to said designating signal for selecting, from the two macro cells corresponding to said respective selecting circuit, a second macro cell satisfying a predetermined condition; and

a comparing and rewriting control circuit for comparing data of said first macro cell and the data of said second macro cell, detecting the data of said first macro cell not satisfying said predetermined condition with respect to the data of said second macro cell, and exchanging the data of said first macro cell and said second macro cell in response to said detecting.

5,603,024

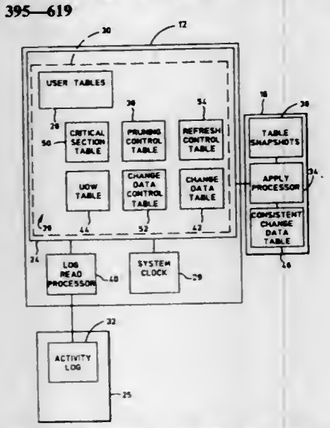
LOSSLESS DISTRIBUTION OF TIME SERIES DATA IN A RELATIONAL DATA BASE NETWORK

Robert D. Goldring, Morgan Hill, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 134,229, Oct. 8, 1993, abandoned. This application May 15, 1996, Ser. No. 647,533

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—619 **3 Claims**



1. A method of operating a computer processing system that receives transactional updates comprising sequences of data change operations to source data tables in a data base and records them into an activity log for later retrieval, the method comprising the steps of:

generating a consistent change data table from the retrieved activity log such that the consistent change data table contains a column for storing data change operations of a received transactional update and columns for a commit sequence number, an intent sequence number, and an indicator of the data change operation, such that the consistent change data table contains committed change operations retrieved from the activity log in the order in which they were committed, beginning with a time no earlier than a last prior refresh operation; and

performing multiple refresh operations and producing copies of source data tables through multiple generations of copies by applying the consistent change data table entries to the last prior refreshed copy.

5,603,025

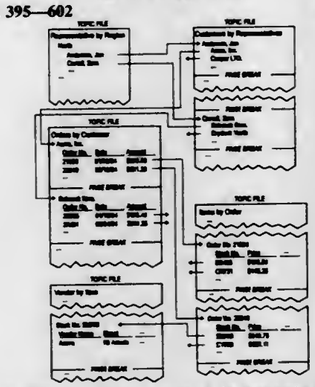
METHODS FOR HYPERTEXT REPORTING IN A RELATIONAL DATABASE MANAGEMENT SYSTEM

Lloyd Tabb, Santa Cruz, and Conrad Herrmann, Soquel, both of Calif., assignors to Borland International, Inc., Scotts Valley, Calif.

Filed Jul. 29, 1994, Ser. No. 283,127

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—602 **40 Claims**



1. In a computer system, a method for generating a hypertext report, the method comprising:

receiving input specifying a first report, said first report being based on information taken from a first subset of a set of relational database tables, said set of relational database tables including records that provide access to stored information; said first report being a design document separate from said set of relational database tables and specifying display of a plurality of information items associated with records in said first subset of tables, said information items being differentiated by being associated with records having different values of a particular field in said first subset of tables;

receiving input specifying a second report, said second report being based on information taken from a second subset of said set of relational database tables, said second report being a design document separate from said set of relational database tables and specifying display of information associated with records in said second subset of tables;

combing the information items from said first report and the information from said second report into the hypertext report; and

if information in said first report is relatable to information in said second report by virtue of at least one of said second subset of tables having the particular field, generating at least one hypertext link and placing said at least one hypertext link in the hypertext report for cross-referencing relatable information in the two reports, the hypertext report, when displayed to a user, allowing the user to navigate between related information at different locations in the hypertext report by invoking said at least one hypertext link.

5,603,026

APPLICATION-SPECIFIC CONFLICT RESOLUTION FOR WEAKLY CONSISTENT REPLICATED DATABASES

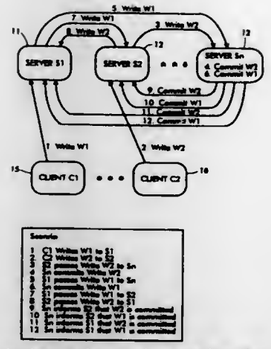
Alan J. Demers, Boulder Creek; Karin Petersen, Menlo Park; Michael J. Spreitzer, Tracy; Douglas B. Terry, San Carlos; Marvin M. Theimer, and Brent B. Welch, both of Mountain View, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 7, 1994, Ser. No. 352,014

Int. Cl.[6] G06F *7/20;17/30*

U.S. Cl. 395—608 **1 Claim**

1. For a distributed database system, an application-specific process for resolving conflicts that are found to exist between an



instance of a database and any write operations that are presented for updating said instance of said database, said process comprising

associating an arbitrary merge-procedure, specified by said application, with each of said write operations, where the effect of executing the merge-procedure is deterministic for any given state of said instance of said database at any time that said merge-procedure is executed; and

executing the merge-procedure associated with a given write operation whenever it is found that the given write operation conflicts with said instance of said database, said merge-procedure producing a deterministic set of updates that are applied to said database in lieu of any updates originally contemplated by the given write operation.

5,603,027

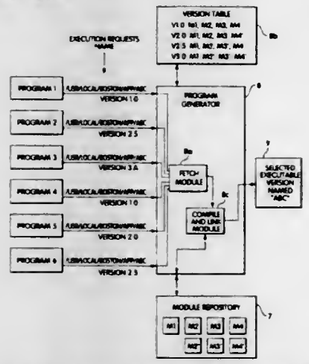
COMPUTER PROGRAM VERSION MANAGEMENT SYSTEM WITH REDUCED STORAGE SPACE AND ENABLING MULTIPLE PROGRAM VERSIONS TO HAVE THE SAME NAME

Takahide Ohkami, Newton, Mass., assignor to Mitsubishi Electric Information Technology Center America, Inc., Cambridge, Mass.

Continuation of Ser. No. 315,286, Sep. 29, 1994, abandoned. This application Nov. 21, 1995, Ser. No. 561,554

Int. Cl.[6] G06F *9/00*

U.S. Cl. 395—619 **2 Claims**



1. A system for constructing an executable version of a program having a plurality of versions, each of said versions being made up of compiled modular program portions constituting replaceable parts, with said parts including a set of data and procedures, comprising;

a configuration unit for storing a plurality of executable version entries, each entry representing an executable version of said program and specifying the ones of said replaceable parts required to construct the executable version of said program;

means for storing a plurality of said modular program portions in compiled form as module revisions;

a plurality of module revision units, each revision unit selecting a module revision from said plurality of module revisions;

a version identifier indicating the executable version of the program to be constructed; and,

a program generator for receiving said version identifier, for reading a version entry from said configuration unit corresponding to said version identifier, for activating each of said revision units to select module revisions corresponding to said version identifier, and for generating the complete executable form of said program from selected module revisions.

5,603,028

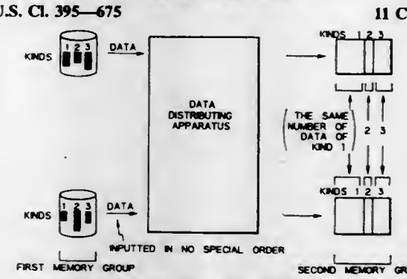
METHOD AND APPARATUS FOR DATA DISTRIBUTION

Masaru Kitsuregawa, Chiba-ken, and Shinya Fushimi, Kanagawa-ken, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 24,188, Feb. 26, 1993, Pat. No. 5,396,628. This application Jan. 31, 1995, Ser. No. 381,524 Claims priority, application Japan, Mar. 2, 1992, 4-44780

Int. Cl.[6] G06F *13/38*

U.S. Cl. 395—675 **11 Claims**



1. An apparatus for distributing processing load having a plurality of coupling units which are provided between a first group of devices and a second group of devices to distribute pieces of information of a plurality of different kinds received from said first group of devices to said second group of devices so that the processing load for each kind of information in said second group of devices is substantially equalized, wherein the pieces of information include descriptive indicators of data, wherein the processing load of at least some pieces of information of one kind is different from the processing load of other pieces of information of the same kind, wherein at least one of said coupling units comprises:

a data switch having a plurality of data input lines for receiving a plurality of pieces of information including descriptive indicators of data and a plurality of data output lines for outputting the plurality of pieces of information including the descriptive indicators of data;

memory means, coupled to the data switch, for accumulating and storing a cumulative value indicative of the processing load of the pieces of information of each kind of information outputted from said coupling unit, the cumulative value being determined based on characteristics of the descriptive indicators of the data; and

a control circuit, having a control output coupled to the data switch, for detecting a deviation of the distribution of the processing load of the memory means, and for changing a data connection pattern in said data switch to minimize the deviation of the distribution of the processing load.

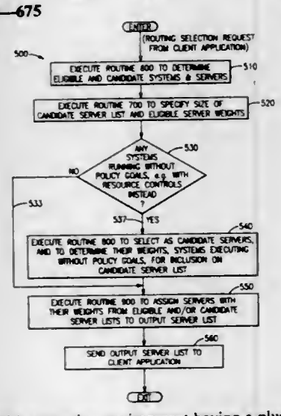
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5,603,029

SYSTEM OF ASSIGNING WORK REQUESTS BASED ON CLASSIFYING INTO AN ELIGIBLE CLASS WHERE THE CRITERIA IS GOAL ORIENTED AND CAPACITY INFORMATION IS AVAILABLE

Jeffrey D. Aman, Wappingers Falls, N.Y.; Curt L. Cotner, Gilroy, Calif.; Donna N. T. Dillenberger, Yorktown Heights, and David B. Emmes, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 7, 1995, Ser. No. 476,157
Int. Cl.[6] G06F *15/06*
U.S. Cl. 395—675 **44 Claims**



1. In a multi-processing environment having a plurality of computer systems, each of said systems having an operating system instance resident thereon and providing at least one application server, a method for assigning work requests among individual ones of the servers in order to meet business goals inherent in a policy governing the environment, the method comprising the steps of:

in response to an incoming request to route work,

classifying each active one of the systems either as an eligible system that then exhibits at least a minimum pre-defined capacity utilization, at a lowest one of a number of pre-defined business importance levels among all the systems, over a first pre-defined time interval, or as a candidate system so as to form first and second sets of eligible and candidate systems, respectively; each eligible system being one of the systems that is goal-oriented and runs under the policy for which current capacity information is available, and each candidate system being any remaining one of said plurality of systems other than all the eligible systems; and

forming, in conjunction with said classifying step, third and fourth sets of eligible and candidate servers, respectively, such that said third and fourth sets contain identifications of all active ones of the servers residing on each of the systems in said first and second sets, respectively;

assigning, in response to said classifying step, a system weight to each one of the systems in the first and second sets, the system weight representing an amount of total available capacity utilized at the lowest one of the business importance levels, by said each one system in the first and second sets;

determining, in conjunction with said system weight assigning step and for each different one of the systems in said first and second sets, a corresponding server weight for each different server residing on said each different one system;

forming, in response to said third and fourth sets, an output server set populated first by identifications of eligible servers, and their associated server weights, taken, successively and in order of descending server weights, from said third set followed, by identification of servers, and their associated server weights, taken successively from said fourth set; and

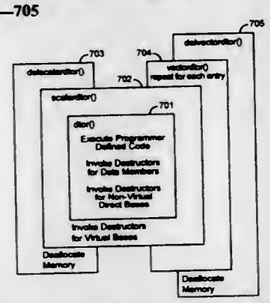
routing work requests to each one of the servers identified in the output server set wherein, of a total number of work requests to be routed to all of the identified servers, an amount of the total work requests is routed to each one identified server in the output server set in proportion to the server weight associated therewith.

5,603,030

METHOD AND SYSTEM FOR DESTRUCTION OF OBJECTS USING MULTIPLE DESTRUCTOR FUNCTIONS IN AN OBJECT-ORIENTED COMPUTER SYSTEM

Jan Gray, Redmond, Wash., and Martin O'Riordan, Maynooth, Ireland, assignors to Microsoft Corporation, Redmond, Wash.

Filed Jan. 7, 1993, Ser. No. 1,533
Int. Cl.[6] G06F *9/45*
U.S. Cl. 395—705 **83 Claims**



1. A method in a computer compiler for generating code to destroy an object, the object having a class, the class having a destructor to destroy objects of the class, the method comprising the steps of:

generating a plurality of destructor functions for the class wherein each destructor function executes a subset of the destruction process; and

generating code to invoke one of the plurality of destructor functions when an object of the class is to be destroyed.

5,603,031

SYSTEM AND METHOD FOR DISTRIBUTED COMPUTATION BASED UPON THE MOVEMENT, EXECUTION, AND INTERACTION OF PROCESSES IN A NETWORK

James E. White, San Carlos; Christopher S. Helgeson, and Douglas A. Steedman, both of Mountain View, all of Calif., assignors to General Magic, Inc., Sunnyvale, Calif.

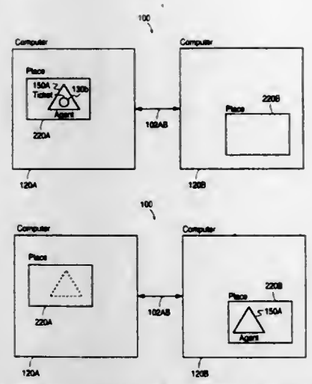
Filed Jul. 8, 1993, Ser. No. 90,521
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—683 **165 Claims**

1. A method for implementing remote programming in a computer network comprising:

defining a plurality of object-oriented classes including an agent class and a place class;

forming instructions for a computer process, said instructions including said object-oriented classes, subclasses of said object-oriented classes, and a go operation; and

interpreting said instructions on a processor in said computer network wherein, in response to said go operation, an agent process is transported to a place process and further wherein



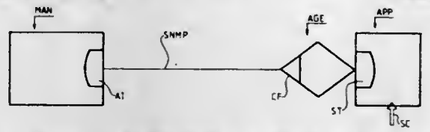
said agent process is a member of said agent class and said place process is a member of said place class.

5,603,032

METHOD FOR ADMINISTRATION OF APPLICATIONS BY STANDARD PROTOCOLS

Denis Attal, Chatillon, France, assignor to Bull, S.A., Paris, France

Filed Feb. 7, 1994, Ser. No. 192,812
Claims priority, application France, Feb. 10, 1993, 93 01446
Int. Cl.[6] G06F *12/00*
U.S. Cl. 395—704 **8 Claims**



1. A method of administration of an application by an object administration system in a network by an administrative protocol, where an executable program of the application contains a symbols table for the application, said method comprising the steps of administering said application by creating an information processing device called an agent in conformity with the administrative protocol, said agent being parametrizable by a configuration file of said agent, and by said symbols table of the application, enabling correspondence between a name of a variable and a location of said variable in memory and a call of a system function used in analysis processes, tracing and monitoring the execution of a processing operation of said application, causing said agent to directly access using said symbols table, a memory zone in said memory corresponding to said location of said variable, and running a proper processing operation relating to the application as a function of queries of the administration system.

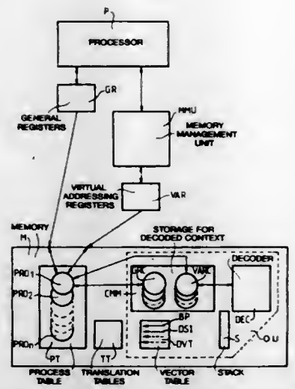
5,603,033

TOOL FOR DEBUGGING AN OPERATING SYSTEM

Jean-Pierre Joannin, Eybens, France, assignor to Bull, S.A., Paris, France

Filed Apr. 15, 1994, Ser. No. 228,429
Claims priority, application France, Apr. 22, 1993, 93 04774
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—704 **20 Claims**

1. A tool for debugging an operating system of an information processing machine, wherein the machine includes at least one processor, a memory for use by the processor, and a memory management unit, comprising means for performing debugging of a process having a given context in accordance with a predetermined method, means for enabling each operation of said debug-



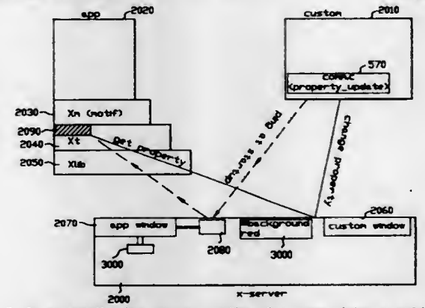
ging to be performed in a physical addressing mode, while working in a zone of the memory where a virtual addressing mode is equal to the physical addressing mode, wherein said tool operates independently of the memory management unit, and further including means for controlling operational phases necessary for initializing the machine, means for supporting at least two exception vectors, a stack capable of being initialized by said tool, a decoder for decoding said given context which uses an algorithm for generating a decoded context, and context storage means for storing said decoded context, said algorithm being operational regardless of the given context of the process being debugged and regardless of the type of context storage means used for storage of said decoded context.

5,603,034

GRAPHICAL RESOURCE EDITOR FOR SOFTWARE CUSTOMIZATION

Sara J. Swanson, Mountain View, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 941,579, Sep. 8, 1992, abandoned.
This application Jun. 7, 1995, Ser. No. 479,262
Int. Cl.[6] G06F *3/14*
U.S. Cl. 395—701 **3 Claims**



1. In an application resource editor for customizing graphical resources of a software application executing concurrently with the application resource editor in a data processing system, a method for dynamic customization of the software application comprising the steps of:

displaying a list of resources in said software application that are capable of modification;

determining from user input an application resource to be modified from said list of resources and a resource value representing an attribute of said resource to be modified;

searching a list of resources in a resource database maintained by said software application and identifying matching

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resources in said resource database corresponding to said resource to be modified; and

applying said resource value to each matching resource in said resource database in order to change the values of said matching resources and thereby customize said software application.

5,603,035

PROGRAMMABLE INTERRUPT CONTROLLER, INTERRUPT SYSTEM AND INTERRUPT CONTROL PROCESS

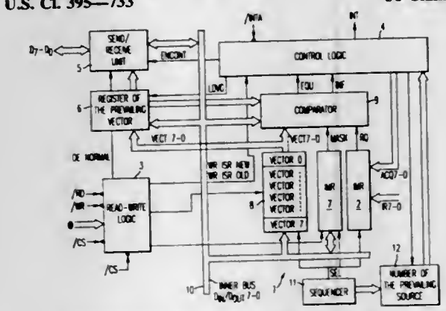
Dominique Erramoun, Mougins, and Jean-Francois Karcher, Valbonne, both of France, assignors to Telemecanique, Rueil Malmaison, France

Continuation of Ser. No. 933,712, Aug. 24, 1992, abandoned. This application May 27, 1994, Ser. No. 250,868

Claims priority, application France, Aug. 22, 1991, 91 10517

Int. Cl.[6] G06F *9/46; 13/24*

U.S. Cl. 395—733 **36 Claims**



1. A programmable interrupt controller for a microprocessor interrupt system, comprising:

interrupt request register means, connected to a plurality of interrupt sources through a plurality of interrupt lines and connected to an internal bus, for storing interrupt requests from the interrupt sources;

interrupt mask register means, connected to the internal bus, for programmably masking interrupt levels;

means for storing a highest priority vector in service, connected to the internal bus;

interface means, connected to the internal bus and an external bus, for transmitting the vector stored in the means for storing a highest priority vector in service to the external bus and for simultaneously receiving a signal which is present on the external bus having a priority; and

determining means, connected to the interface means, for determining if said highest priority vector in service has a higher priority than the priority of the received signal which is present on the external bus.

5,603,036

POWER MANAGEMENT SYSTEM FOR COMPONENTS USED IN BATTERY POWERED APPLICATIONS

Steven E. Wells, Citrus Heights; Virgil N. Kynett, El Dorado Hills; Terry L. Kendall, Placerville, and Richard Garner, Cameron Park, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Feb. 19, 1993, Ser. No. 19,617

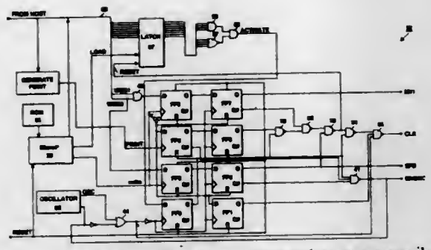
Int. Cl.[6] G06F *1/04*

U.S. Cl. 395—750 **10 Claims**

1. A control circuit for a computer component circuit, the control circuit comprising:

a microprocessor;

a series of gates controlled by the microprocessor;



an oscillator for providing square wave pulses at a prescribed frequency;

a clock signal generation circuit coupled to the oscillator and the gates for generating clock pulses from the square wave pulses for use by the computer component circuit;

a first process run by the microprocessor to control the gates to disable the oscillator and the clock signal generation circuit at the completion of any operation by the component circuit such that the clock pulses are disabled before the square wave pulses are disabled; and

a second process run by the microprocessor to control the gates to enable the oscillator and the clock signal generation circuit in response to any command to the component circuit from a host computer.

5,603,037

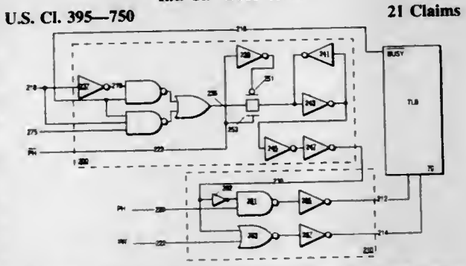
CLOCK DISABLE CIRCUIT FOR TRANSLATION BUFFER

Husnu G. Aybay, Santa Clara, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Apr. 23, 1993, Ser. No. 52,952

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—750 **21 Claims**



9. An apparatus for power conservation within a microprocessor, said apparatus comprising:

a translation lookaside buffer (TLB) unit for use in translating a linear address to a physical address;

means for generating a disable signal when:

a) said TLB is not performing an address translation and a paging mode is not enabled; or

b) said TLB is not performing an address translation, a paging mode is enabled, and an instruction signal is active;

means, coupled to said means for generating a disable signal, for generating a paging mode signal indicating whether said paging mode is enabled within a microprocessor means, and for providing said paging mode signal to said means for generating said disable signal;

means coupled to said means for generating a disable signal for generating said instruction signal indicating that no instructions within an instruction decoder of said microprocessor means require an external memory access; and

means for reducing power consumption of said TLB unit by selectively gating off said clock signals when said disable signal is generated and for gating on said clock signals when said disable signal is not generated.

5,603,038

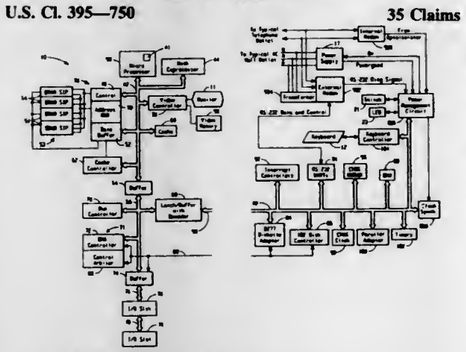
AUTOMATIC RESTORATION OF USER OPTIONS AFTER POWER LOSS

Dwayne T. Crump; Steven T. Pancoast; Paul H. Benson, IV, and Jeffrey S. Bartlett, all of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 7, 1994, Ser. No. 302,066

Int. Cl.[6] G06F *1/00*

U.S. Cl. 395—750 **35 Claims**



1. A computer system comprising:

(a) a CPU;

(b) a power management processor in circuit communication with said CPU and having a volatile configuration that is lost when power to said power management processor is interrupted;

(c) a power supply in circuit communication with said CPU and said power management processor comprising circuitry for selectively providing system power from an external source to said computer system responsive to said power management processor, characterized by having a first power supply state, a second power supply state, and a third power supply state and further characterized by having circuitry for providing auxiliary power to said power management processor;

wherein said first power supply state is characterized by said power supply providing system power to said computer system and auxiliary power to said power management processor from said external source; and

wherein said second power supply state is characterized by said power supply not providing system power to said computer system from said external source and said power supply providing auxiliary power to said power management processor from said external source;

wherein said third power supply state is characterized by said power supply not providing system power to said computer system from said external source and said power supply not providing auxiliary power to said power management processor from said external source;

(d) a non-volatile storage device in circuit communication with said CPU for storing data corresponding to the volatile configuration of said power management processor;

(e) interruption detection circuitry in circuit communication with said power supply, said interruption detection circuitry detecting an interruption of system power by said power supply; and

(f) a control unit in circuit communication with said power management processor, said control unit causing said computer system to transition to said first power supply state responsive to the occurrence of a predetermined external powerup event;

(1) wherein said power management processor is further characterized by causing said power supply to transition from said second power supply state to said first power supply state responsive to said power supply transitioning from said third power supply state to said second power supply state;

(2) wherein said CPU is further configured to restore the volatile configuration of said power management processor from said non-volatile storage device responsive to said power supply transitioning from said second power supply state to said first power supply state; and

(3) wherein said power supply automatically enters the second power supply state responsive to external power being supplied from said external power source.

5,603,039

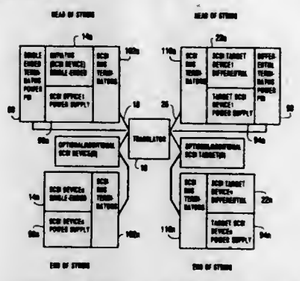
POWERING COMPONENTS OF A SCSI DEVICE

Daniel G. Strevey, Longmont, Colo., assignor to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 40,428, Mar. 31, 1993. This application May 2, 1995, Ser. No. 458,443

Int. Cl.[6] G06F *1/26*

U.S. Cl. 395—750 **11 Claims**



1. In a computer system a method for supplying terminator power provided on a small computer system interface (SCSI) bus, comprising:

connecting a first SCSI device having electronic components to at least a first SCSI bus in communication with at least a first device, said first device including first power supply means having first power;

supplying said first power to said first SCSI device to power at least a first set of said electronic components thereof;

providing first bus terminators with said first SCSI bus;

connecting a second SCSI device including second power supply means having second power to said first SCSI bus; and

supplying said second power to said bus terminators of said first SCSI bus.

5,603,040

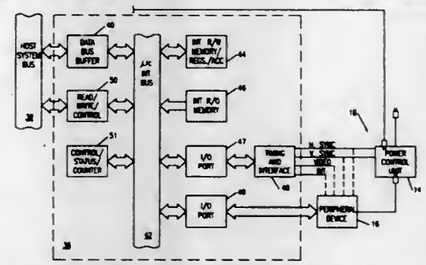
POWER MANAGEMENT CONTROL UNIT FOR A COMPUTER PERIPHERAL

David L. Frager, and Joseph W. Bell, Jr., both of Austin, Tex., assignors to Dell USA, L.P., Austin, Tex.

Continuation of Ser. No. 164,595, Dec. 9, 1993, abandoned. This application Jan. 2, 1996, Ser. No. 581,750

Int. Cl.[6] G06F *1/32*

U.S. Cl. 395—750 **11 Claims**



1. A power management control system for selecting ac power to a plurality of peripheral devices, comprising:

a single ac power supply;

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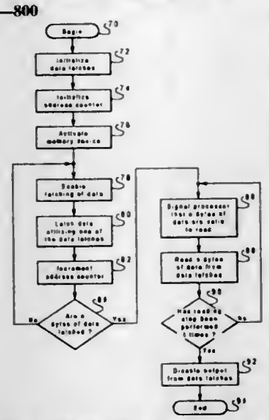
a plurality of peripheral devices;
a power control unit comprising:
a plurality of switches, each of which includes a control terminal and a pair of coupling terminals, wherein each said pair of coupling terminals is connected between the power supply and a respective one of said plurality of peripheral devices; and
a logic decode circuit having two inputs and a plurality of outputs, wherein each of said plurality of outputs is connected to a respective said control terminal;
a computer remotely coupled to said power control unit for forwarding a horizontal sync signal into one of said two inputs and a vertical sync signal into the other of said two inputs, wherein activation of a combination of said horizontal and vertical sync signals from said computer causes said power control unit to produce a corresponding combinative connection between said power supply and said peripheral devices.

5,603,041

METHOD AND SYSTEM FOR READING FROM A M-BYTE MEMORY UTILIZING A PROCESSOR HAVING A N-BYTE DATA BUS

Gary D. Carpenter, Pflugerville, and Mark E. Dean, Austin, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 13, 1994, Ser. No. 354,696
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—800 **21 Claims**



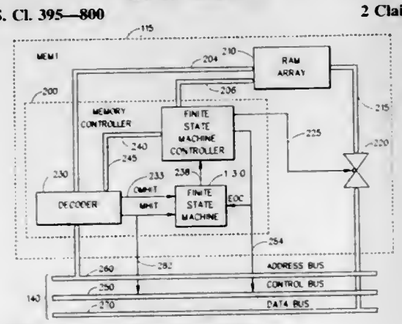
4. A method for reading instructions from an m-byte memory device utilizing an interface coupled between said m-byte memory device and a processor having an n-byte data bus and a cache for high speed data access, where m is less than or equal to n, said interface including a plurality of data latches, said method comprising:
initializing an address counter;
latching data from said m-byte memory device utilizing one of said plurality of data latches, said data associated with an address within said m-byte memory device indicated by said address counter;
incrementing said address counter;
repeating said latching and incrementing steps until n bytes of data are simultaneously latched;
signaling said processor that n bytes of data are valid to read; and
reading said n bytes of data from all of said plurality of data latches t times in t successive standard read cycles utilizing said processor, wherein t is characteristic of a burst transfer size required by said cache on initial program load.

5,603,042

PIPELINED DATA ORDERING SYSTEM UTILIZING STATE MACHINES TO DATA REQUESTS

Gregory V. Kabenjian, Duarte, Calif., assignor to AST Research, Inc., Irvine, Calif.

Continuation of Ser. No. 981,806, Nov. 25, 1992, abandoned.
This application Dec. 15, 1994, Ser. No. 357,132
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—800 **2 Claims**



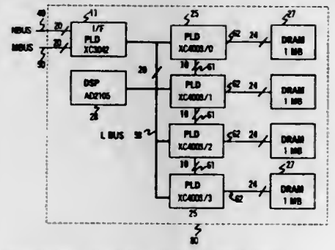
2. A pipelined data system comprising:
a first data generating device;
a second data generating device;
a first device that issues requests for data from said first and second data generating devices, said first device issuing a first request for data and issuing a second request for data without waiting for a response to said first request for data, said first device requiring a response to said first request for data prior to a response to said second request for data;
a first decoder coupled to said first device;
a second decoder coupled to said first device;
a first controller coupled to said first and second decoders and to said first data generating device; and
a second controller coupled to said first and second decoders and to said second data generating device.
wherein:
said first decoder determines when either of said first and second requests are intended for said first data generating device and generates a first active select signal for each request intended for said first data generating device;
said second decoder determines when either of said first and second requests are intended for said second data generating device and generates a second active select signal for each request intended for said second data generating device;
said first controller is connected to receive said active select signals from said first and second decoders, and said first controller causes said first data generating device to provide data to said pipelined data system when said first active select signal occurs before any second active select signal to which the second data generating device has not responded; and
said second controller is connected to receive said active select signals from said first and second decoders, and said second controller causes said second data generating device to provide data to said pipelined data system when said second active select signal occurs before any first active select signal to which the first data generating device has not responded.

5,603,043

SYSTEM FOR COMPILING ALGORITHMIC LANGUAGE SOURCE CODE FOR IMPLEMENTATION IN PROGRAMMABLE HARDWARE

Brad Taylor, Oakland, and Robert Dowling, Albany, both of Calif., assignors to Giga Operations Corporation, Berkeley, Calif.

Continuation of Ser. No. 972,933, Nov. 5, 1992, abandoned.
This application Apr. 3, 1995, Ser. No. 415,750
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—800 **19 Claims**



1. A configurable hardware module comprising:
a first and a second programmable logic device (PLD), each said PLD comprising a plurality of programmable pins for connection to one or more devices and also comprising internal programmable interconnect and configurable logic, at least one of said programmable pins connectible through said programmable interconnect to said configurable logic;
a configurable bus directly connecting said first PLD and said second PLD, said configurable bus comprising a plurality of configurable bus lines, each of said configurable bus lines comprising a connection between a programmable pin on said first PLD and a corresponding programmable pin on said second PLD;
a private hardware resource directly connectible to said second PLD but not to said first PLD; and
a means for configuring said first PLD and said second PLD,
whereby at least one of said configurable bus lines can be connected at a first time for communication between first configurable logic in said first PLD and first configurable logic in said second PLD to communicate a first signal and
connected at a second time for communication between second configurable logic in said first PLD and second configurable logic in said second PLD to communicate a second signal,
where at least one of said first signal and said second signal or said first and second configurable logic in said first PLD or said first and second configurable logic in said second PLD are not the same.

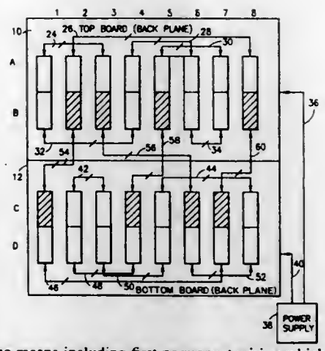
5,603,044

INTERCONNECTION NETWORK FOR A MULTI-NODAL DATA PROCESSING SYSTEM WHICH EXHIBITS INCREMENTAL SCALABILITY

Narasimhareddy L. Annapareddy; Damon W. Finney; Michael O. Jenkins; Larry B. Kessler, all of San Jose; Donald J. Lang, Cupertino; Song C. Liang; David N. Mora, both of San Jose; David A. Plomgren, San Carlos; Peter P. Urbisci, and Andrew D. Walls, both of San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 8, 1995, Ser. No. 385,761
Int. Cl.[6] G06F *9/02*
U.S. Cl. 395—800 **8 Claims**

I. An interconnection network comprising:
backplane means for receiving X pluggable node cards, and comprising X backplane connector groups, each backplane connector group adapted to receive mating connectors from a pluggable node card and including X/2 connectors, said backplane means including first permanent wiring which provides a first set of interconnections between a first subset of pairs of connectors in said backplane connector groups and second permanent wiring which provides a second set of interconnections between a second subset of pairs of connectors in said backplane connector groups, each pair of connectors comprising a connector in one backplane connector group and a connector in another backplane connector group, said first set of interconnections and second set of interconnections interconnecting complementary pairs of said connectors;
a plurality of node cards, each including a card connector group for pluggably mating with a backplane connector group, each node card further including at least an additional connector adapted to receive a cable interconnection;
processor means positioned on each node card;
switch means on each node card for simultaneously connecting said processor means to at least two or more connectors of a card connector group.

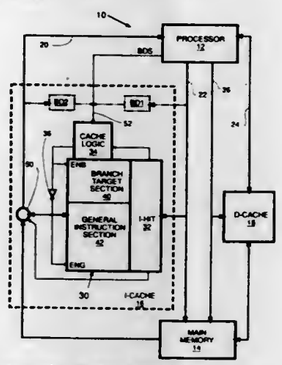


5,603,045

MICROPROCESSOR SYSTEM HAVING INSTRUCTION CACHE WITH RESERVED BRANCH TARGET SECTION

Kenneth A. Dockser, San Jose, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.

Filed Dec. 16, 1994, Ser. No. 357,632
Int. Cl.[6] G06F *9/00*
U.S. Cl. 395—800 **3 Claims**



1. A data processing system comprising:
a processor for executing programs constituted by sequential instructions, said instructions including branch instructions that call for branches to respective branch target instructions;
main memory for storing said instructions at respective memory addresses;

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bus means for conveying address requests from said microprocessor to said main memory and for conveying instructions from said main memory to said processor for processing;

cache memory for storing instruction lines along with respective tags indicating their respective addresses in said main memory, each instruction line including at least one instruction, said cache means including a branch target section and a second section, said cache memory being coupled to said bus means;

hit means for providing a hit indication indicating whether or not the instruction at a requested address is stored in said cache means, said hit means having a bus input coupled to said bus means and a tag input coupled to said cache memory, said hit means having a hit output for transmitting said hit indication;

routing means for causing an instruction stored at a main memory address to be conveyed to said processor from said cache means when said instruction is stored in said cache means and from said main memory when said instruction is not stored in said cache means, said routing means having a control input coupled to said hit output;

branch detection means for indicating an enable condition from the set of conditions consisting of an instruction-type condition that the current instruction is a branch instruction and an instruction-result condition that a branch is called for; and

cache logic for replacing a first instruction line stored in said cache means with a second instruction line including an instruction at a requested address, said second instruction line being conveyed from said main memory to said processor, said cache logic replacing said first instruction line when it is stored in said branch target section only when said enable condition is indicated, said cache logic replacing said first instruction line when it is stored in said second section only when said enable condition is not indicated.

5,603,046

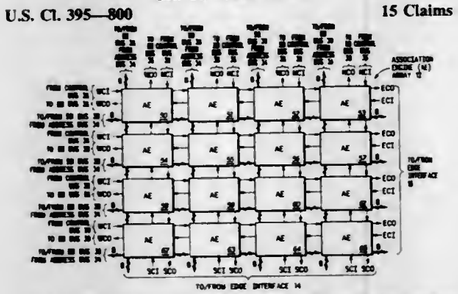
METHOD FOR COMPLEX DATA MOVEMENT IN A MULTI-PROCESSOR DATA PROCESSING SYSTEM

Michael F. Wiles, Round Rock; Meitin Bell, Austin; Michael G. Gallup, Austin; L. Rodney Goke, Austin; Jack R. Davis, Austin, and Erik L. Welty, Austin, all of Tex., assignors to Motorola Inc., Schaumburg, Ill.

Continuation of Ser. No. 144,380, Nov. 2, 1993, abandoned. This application Jul. 24, 1995, Ser. No. 506,257

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—800 **15 Claims**



1. A method for transferring data in a data processing system, the data processing system comprising a plurality of processors, interface circuitry external to the plurality of processors, and switch circuitry external to the plurality of processors, the plurality of processors being arranged in an array having a first row, an Nth row, a first column, and an Mth column, the interface circuitry being coupled to each processor in the Nth row of the array, and the switch circuitry being coupled to the interface circuitry and to each processor in the Mth column of the array, the method comprising the steps of:

storing a first data value in a first one of the plurality of processors, the first one of the plurality of processors being located in the Nth row of the array and in the first column of the array;

storing a second data value in a second one of the plurality of processors, the second one of the plurality of processors being located in the Nth row of the array and in the Mth column of the array;

transferring the first data value from the first one of the plurality of processors to the interface circuitry;

transferring the second data value from the second one of the plurality of processors to the interface circuitry;

transferring the first data value from the interface circuitry to the switch circuitry;

transferring the second data value from the interface circuitry to the switch circuitry;

transferring the first data value from the switch circuitry to a third one of the plurality of processors, the third one of the plurality of processors being located in the first row of the array and in the Mth column of the array; and

transferring the second data value from the switch circuitry to the second one of the plurality of processors,

wherein if the switch circuitry is used to transfer data to at least one of the plurality of processors located in the first column of the array, the data must be transferred to the at least one of the plurality of processors located in the first column of the array by passing through at least one of the plurality of processors located in the Mth column of the array.

5,603,047

SUPERSCALAR MIPS MICROPROCESSOR ARCHITECTURE

Robert L. Caulk, Jr., Livermore, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Filed Oct. 6, 1995, Ser. No. 540,336

Int. Cl.[6] G06F *9/00*

U.S. Cl. 395—800 **10 Claims**



1. A microprocessor comprising

a bus interface unit for interfacing with an external memory and other system components for the flow of instructions and data,

an instruction scheduling unit coupled to said bus interface unit for receiving and decoding program instructions, said instruction unit including a queuing stage for facilitating conditional branch operations;

a register file including a plurality of general purpose registers for receiving operands from said instruction scheduling unit and providing operands to execution units,

a data cache,

a write buffer,

a plurality of execution units including:

a load/store/add unit for managing loads and stores of data with said bus interface unit through said data cache and said write buffer,

an arithmetic logic unit for performing arithmetic and logic operations on data,

a multiplier/shift unit for performing multiply and divide operations on data,

a branch unit for managing the flow of instructions and data for branch and jump instructions, and

a coprocessor interface for the attachment of special purpose processing units,

all of said units operating in a dual pipeline configuration for concurrent fetching of two instructions including an instruction fetch stage, a conditional queuing stage, a decode/read stage, an execution stage, a cache read stage for load and store instructions, and a write back stage for writing execution results into said register file.

5,603,048

MICROPROCESSOR WITH BUS SIZING FUNCTION

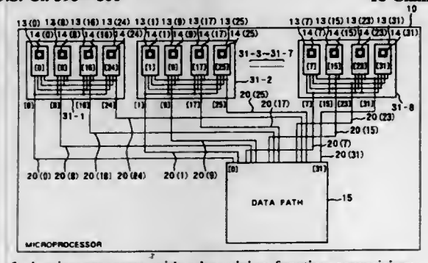
Keisuke Shindo, and Takashi Nakayama, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 180,918, Jan. 12, 1994, abandoned. This application Jan. 2, 1996, Ser. No. 582,022

Claims priority, application Japan, Jan. 13, 1993, 5-003716

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—800 **18 Claims**



1. A microprocessor with a bus sizing function comprising:

a data path for performing arithmetic operation of data;

an internal data bus and art external data bus each having a 2[n] bit width, in which n is a natural number, for inputting and outputting data to and from said data path;

2[n] interface circuits each having a bus sizing function for using said internal data bus and said external data bus as a bus having a width of 2[m] bits, in which m is a natural number smaller than n, each said interface circuit being connected to 2[n-m] of internal data buses per every 2[m] bits; and

2[n] pads for respectively connecting said internal data bus to the external data bus via respective ones of said interface circuits,

wherein, among said interface circuits and said pads, 2[n-m] of said interface circuits and said pads connected to common bit numbers of said internal data buses are aggregated as blocks for establishing 2[m] blocks, and the 2[m] blocks are arranged adjacent each other,

each said interface circuit including said bus sizing function therein to thereby reduce a number and length of said internal busses and being arranged outside of said data path and including switching means for selectively switching 2[n-m] of internal data buses connected thereto, to connect to respective ones of said pads.

5,603,049

BUS SYSTEM SERVICING PLURAL MODULE REQUESTORS WITH MODULE ACCESS IDENTIFICATION KNOWN TO SYSTEM USER

Keith Balmer, Bedfordshire, England, assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 626,245, Dec. 12, 1990, Pat. No. 5,504,911, which is a continuation of Ser. No. 294,075, Jan. 5, 1981, abandoned. This application Jan. 25, 1996, Ser. No. 590,378

Claims priority, application United Kingdom, Jan. 5, 1988, 8800097

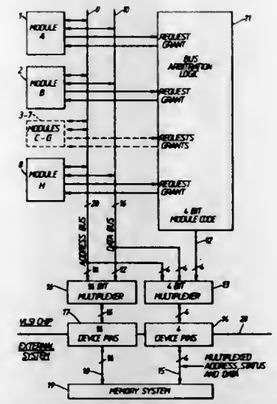
Int. Cl.[6] G06F *13/36*

U.S. Cl. 395—800 **19 Claims**

1. A circuit comprising:

a plurality of circuit modules;

an internal communication bus connected to said circuit modules;



said circuit modules including circuitry for generating requests for access to said communication bus and respective circuitry for receiving permission to access said communication bus;

an access controller responsive to bus access requests from said circuit modules for selectively generating an enabling signal which is directed to one of said receiving circuitry of one of said modules at a time to grant access to the receiving circuit module;

identifying circuitry for producing a plurality of different output indication signals respectively representing each one of said plurality of circuit modules, said identifying circuitry being conditioned upon the selective granting of access to a specific receiving circuit module by said access controller for producing a particular one of said plurality of different output indication signals and identifying which one of said circuit modules currently has access to said communication bus; and

said identifying circuitry including conductors on which the plurality of different output indication signals selectively occur as a signal state in producing the particular one of said plurality of different output indication signals;

the signal state of said conductors of said identifying circuitry being accessible to a user for recognition by the user of the signal state of said conductors, thereby identifying to the user which one of said circuit modules currently has access to said communication bus.

5,603,050

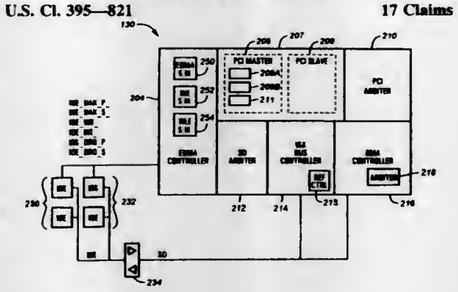
DIRECT MEMORY ACCESS CONTROLLER HAVING PROGRAMMABLE TIMING

Jeff W. Wolford, Spring, and Robert A. Lester, Houston, both of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Mar. 3, 1995, Ser. No. 398,358

Int. Cl.[6] G06F *13/00;13/28*

U.S. Cl. 395—821 **17 Claims**



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1. A controller for controlling data transfers between a memory device and an I/O device in a computer system, the memory device and I/O device coupled to a bus on which write cycles and read cycles are run, wherein each data transfer is performed in one data transfer cycle defined by an active period and an inactive period, the controller comprising:

a first storage device for storing a value representing the active period, said active period value capable of being any one of a number of different values;

a second storage device for storing a value representing the inactive period, said inactive period value capable of being any one of a number of different values;

a data transfer circuit coupled to the bus and transferring data from the I/O device to the memory device in a data transfer cycle if a write cycle and from the memory device to the I/O device in a data transfer cycle if a read cycle, said transfer of data occurring during the active period of the data transfer cycle; and

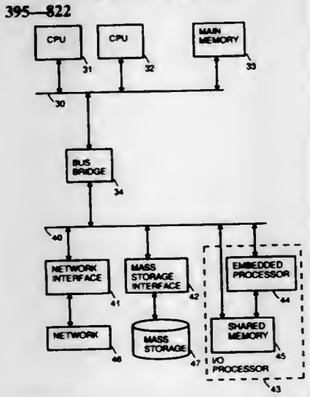
a timer coupled to said first and second storage devices and to said data transfer circuit for indicating when the end of the active period occurs and when the end of the inactive period occurs based on said active period and inactive period values stored in said first and second storage devices.

5,603,051

INPUT/OUTPUT PROCESSOR WITH A LOCAL MEMORY PROVIDING SHARED RESOURCES FOR A PLURALITY OF INPUT/OUTPUT INTERFACES ON AN I/O BUS

Ali Ezzet, Sunnyvale, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 6, 1995, Ser. No. 472,795
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—822 **17 Claims**



1. A computing system comprising:

a host bus;

a host processor, coupled to the host bus;

an input/output bus;

a bus bridge coupled between the input/output bus and the host bus, the bus bridge being used for transferring information between the host bus and the input/output bus;

a first input/output interface, connected to the input/output bus, which provides an interface between a first external input/output system and the input/output bus;

a second input/output interface, connected to the input/output bus, which provides an interface between a second external input/output system and the input/output bus; and,

an input/output processor, connected to the input/output bus, the input/output processor including:

a local bus,

an embedded processor connected to the local bus, and

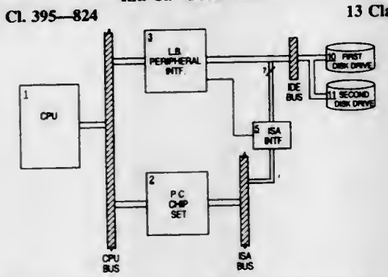
a local memory, connected to the local bus, the input/output processor controlling data transactions through the first input/output interface and the input/output processor controlling data transactions through the second input/output interface, the local memory providing temporary storage for data transactions through the first input/output interface and for data transactions through the second input/output interface.

5,603,052

INTERFACE CIRCUIT FOR TRANSFERRING DATA BETWEEN HOST AND MASS STORAGE BY ASSIGNING ADDRESS IN THE HOST MEMORY SPACE AND PLACING THE ADDRESS ON THE BUS

Edward J. Chejlava, Jr., San Bruno; Leslie E. Cline, Sunnyvale, and Kenneth C. Curt, Saratoga, all of Calif., assignors to Cirrus Logic, Inc., Calif.

Division of Ser. No. 329,557, Oct. 25, 1994, which is a continuation-in-part of Ser. No. 964,590, Oct. 20, 1992, abandoned. This application May 26, 1995, Ser. No. 451,877
Int. Cl.[6] G06F *15/02*
U.S. Cl. 395—824 **13 Claims**



1. A method for transferring data from a host device to a mass storage device via an interface circuit, the host device being coupled to the interface circuit via a first parallel bus, the interface circuit being coupled to the mass storage device via a second parallel bus, the host device comprising a processor and memory, the processor of the host device having an IO space and a memory space, the method comprising the steps of:

(a) assigning an address in the memory space of the processor as a data port for transferring data between the host device and the interface circuit;

(b) storing the assigned address in the interface circuit;

(c) the processor executing memory instructions to transfer data from the processor via the first parallel bus to the interface circuit, the data being transferred into the interface circuit in response to the assigned address in the memory space being placed on the first parallel bus; and

(d) transferring the data from the interface circuit to the mass storage device via the second parallel bus.

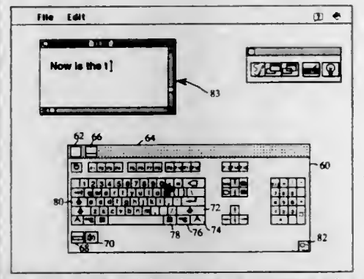
5,603,053

SYSTEM FOR ENTERING DATA INTO AN ACTIVE APPLICATION CURRENTLY RUNNING IN THE FOREGROUND BY SELECTING AN INPUT ICON IN A PALETTE REPRESENTING INPUT UTILITY

Michael L. Gough, Ben Lomond, and Bruce V. Holloway, Marina, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 60,438, May 10, 1993, abandoned. This application Mar. 5, 1996, Ser. No. 610,852
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—825 **26 Claims**

1. A method for launching an input utility for use in entering data into an active application, said active application being a foreground application currently in use by a user, said method comprising:



displaying an organizing image on a screen of a computer system wherein said organizing image includes a palette having a plurality of icons representing an input utility displayed on said palette;

engaging one of said icons with a pointer means and moving said pointer means to a desired location on said screen;

activating said input utility and displaying an input image created for said input utility at about said desired location, said input image dedicating a portion of said screen for data input into said input utility; and

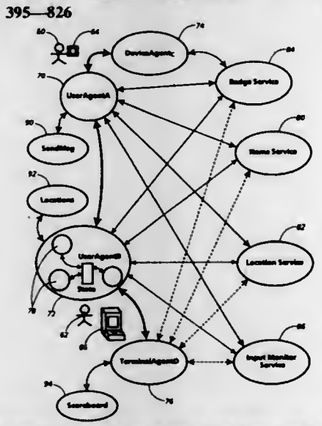
linking said input image to said active application such that data input into said input utility is communicated to said active application.

5,603,054

METHOD FOR TRIGGERING SELECTED MACHINE EVENT WHEN THE TRIGGERING PROPERTIES OF THE SYSTEM ARE MET AND THE TRIGGERING CONDITIONS OF AN IDENTIFIED USER ARE PERCEIVED

Marvin M. Theimer, Mountain View; Michael J. Spreitzer, Tracy; Mark D. Weiser, Palo Alto; Richard J. Goldstein, San Francisco; Scott A. Elrod, Redwood City; Daniel C. Swinehart; William N. Schilit, both of Palo Alto; Robert T. Krivacic, San Jose, and Roy Want, Mountain View, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 161,968, Dec. 3, 1993, Pat. No. 5,555,376. This application Jun. 7, 1995, Ser. No. 472,201
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—826 **8 Claims**



1. A method of triggering a selected machine event in a system including a multiplicity of computer controlled machines and a multiplicity of users, each computer controlled machine being capable of performing a one of the multiplicity of types of machine events, some of the computer controlled machines being stationary and others of the computer controlled machines being mobile, the method comprising the steps of:

selecting a type of machine event to be triggered;

selecting triggering properties of said system necessary for triggering said selected machine event;

selecting triggering conditions of an identified user necessary for triggering said selected machine event;

perceiving said triggering conditions;

determining whether said triggering properties are met; and

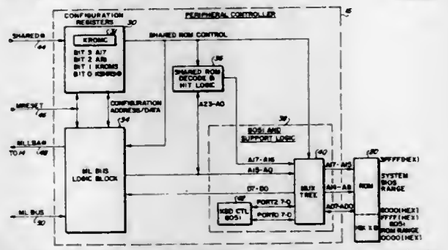
triggering said selected machine event when the triggering properties are met and the triggering conditions are perceived.

5,603,055

SINGLE SHARED ROM FOR STORING KEYBOARD MICROCONTROLLER CODE PORTION AND CPU CODE PORTION AND DISABLING ACCESS TO A PORTION WHILE ACCESSING TO THE OTHER

David R. Evoy, Tempe; Lawrence D. Gould, Mesa, both of Ariz.; James R. Edwards, Tomball, Tex.; Donald G. Scharnberg, Pasadena, Tex., and Doyne L. Metz, Cypress, Tex., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Jan. 27, 1994, Ser. No. 188,373
Int. Cl.[6] G06F *13/00;13/10*
U.S. Cl. 395—652 **5 Claims**



1. A method for operating a computer system using a single shared ROM memory for dissimilar processor types including a keyboard microcontroller and a host operating CPU comprising the steps of:

configuring a single ROM memory into two portions, the first portion dedicated to storing keyboard microcontroller code information and the second portion dedicated to storing operating CPU code (BIOS);

disabling access to the first portion of said ROM at initial boot-up of the computer, and enabling access to the second portion of said ROM at initial boot-up of the system;

transferring the operating system information in the second portion of said ROM to a system random access memory (RAM) for subsequent use by the computer system; and

upon completion of transfer of the operating system information from the second portion of the shared ROM to the system random access memory, disabling access to the second portion of said ROM and enabling access to the first portion of said ROM for subsequent execution and use by the keyboard microcontroller.

5,603,056

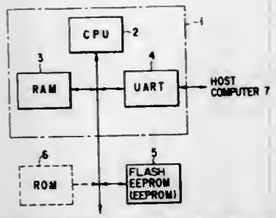
DISK DRIVE CONTROL COMPUTER AND METHOD FOR REWRITING CONTROL PROGRAM IN FLASH EEPROM WITH SERIAL COMMUNICATION USING UNASSIGNED PINS OF SCSI OR ATA CONNECTOR

Tokuyuki Totani, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 9, 1994, Ser. No. 302,014
Claims priority, application Japan, Sep. 13, 1993, 5-227425
Int. Cl.[6] G06F *9/06;9/24*
U.S. Cl. 395—828 **20 Claims**

1. A control computer, comprising:

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a nonvolatile and rewritable memory storing a control program for controlling a drive of a storage device and a rewrite program for rewriting the control program;

a volatile memory for temporarily storing the rewrite program and a new control program supplied from a host computer;

a central processing unit (CPU) performing the following operations of:

saving the rewrite program stored in the nonvolatile and rewritable memory in the volatile memory,

erasing the nonvolatile and rewritable memory, restoring the rewrite program stored in the volatile memory in the erased nonvolatile and rewritable memory,

receiving the new control program supplied from the host computer and storing it in the volatile memory,

loading the new control program stored in the volatile memory in the nonvolatile and rewritable memory, and

executing the new control program in the nonvolatile and rewritable memory;

an I/O interface for communicating with the host computer to receive the new control program from the host computer; and

an SCSI connected wherein the I/O interface performs a serial communication with the host computer by using unassigned pins of the SCSI connector.

5,603,057

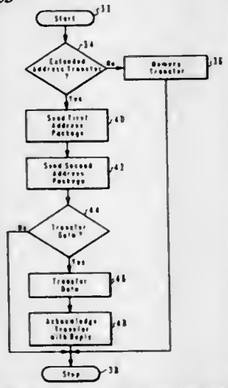
SYSTEM FOR INITIATING DATA TRANSFER BETWEEN INPUT/OUTPUT DEVICES HAVING SEPARATE ADDRESS SPACES IN ACCORDANCE WITH INITIALIZING INFORMATION IN TWO ADDRESS PACKAGES

Michael S. Allen; Yoanna Baumgartner; Michael J. Garcia; Charles R. Moore, and Robert J. Reese, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 10,969, Jan. 29, 1993, abandoned. This application Nov. 17, 1995, Ser. No. 560,504

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—853 **20 Claims**



1. A data processing system for transferring information between a first device and a second device, said first and second devices having a first and second separate address spaces, respectively, comprising:

a system bus having an address bus and a data bus;

means for transmitting a transfer information signal from said first device to identify information to be transferred with respect to an address in said second address space, said transfer information signal having a first address package containing a first identifier associated with said first device and a second identifier associated with said second device, and a second address package containing a value representing the amount of information to be transferred and an address for the information to be transferred;

means for transferring data between said first device and said second device on said data bus in accordance with information in said address package; and

means responsive to said transferred data for transmitting a reply signal acknowledging the data transmission on said address bus.

5,603,058

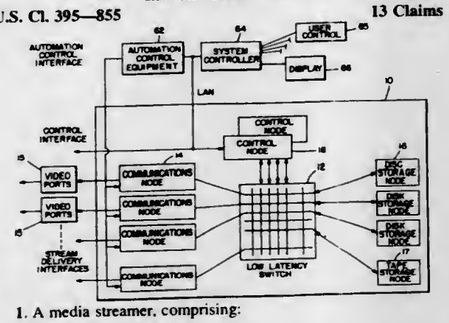
VIDEO OPTIMIZED MEDIA STREAMER HAVING COMMUNICATION NODES RECEIVED DIGITAL DATA FROM STORAGE NODE AND TRANSMITTED SAID DATA TO ADAPTERS FOR GENERATING ISOCHRONOUS DIGITAL DATA STREAMS

William R. Belknap, San Jose; Larry W. Fitchett, Morgan Hill, and Buddy F. Stansbury, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 8, 1994, Ser. No. 302,616

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—855 **13 Claims**



1. A media streamer, comprising:

at least one control node;

at least one storage node for storing a digital representation of video presentation;

a plurality of communication nodes, each having an input port that is switchably coupled under the direction of said at least one control node to an output of said at least one storage node for receiving a digital representation of a video presentation therefrom, each of said plurality of communication nodes further having at least one output port for coupling to a first end of a communications bus, individual ones of said communication nodes outputting a digital representation of a video presentation as a sequence of high peak rate digital data bursts to said first end of said communications bus; and

a plurality of adapters, each adapter coupled to said communications bus, for receiving said sequence of high peak rate digital data bursts and for converting said received sequence of high peak rate digital data bursts to a substantially isochronous digital data stream, said high peak rate digital data bursts enabling data feeds to be provided to said plurality of adapters So as to allow concurrent output feeds from each adapter of a substantially isochronous data stream representing a video presentation at a data rate that is less than said high peak rate, each said adapter comprising a data buffer having an input coupled to said said communications bus and an output for providing said substantially isochronous digital data stream, each said adapter further comprising a first converter having an input coupled to said output of said data buffer for converting said substantially digital isochronous data stream to a video compatible output signal.

5,603,059

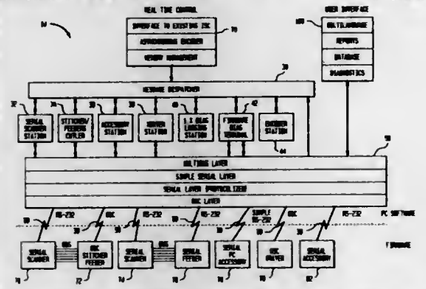
SOFTWARE ARCHITECTURE SYSTEM HAVING A VIRTUAL I/O CHANNEL INCLUDING MULTI-LAYERED COMMUNICATION INTERFACE IN BETWEEN VIRTUAL STATIONS AND PHYSICAL MODULES

Steven J. Churchill, Danbury; Edward P. Daniels, Jr., Trumbull, and Raymond J. Kerney, Brookfield, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Apr. 22, 1994, Ser. No. 232,542

Int. Cl.[6] G06F *13/00;13/14*

U.S. Cl. 395—856 **5 Claims**



1. A software architecture system for real-time control of an inserting system having a central processor coupled to a plurality of distributed processors that are associated with physical modules of the inserting system, the central processor being coupled to the distributed processors by at least one type of physical I/O channel, comprising:

real-time control routines resident in the central processor;

a plurality of virtual stations resident in the central processor, each of said virtual stations corresponding to one of the physical modules of the inserting system;

at least one virtual I/O channel corresponding to each type of the physical I/O channel, said virtual I/O channel being resident in the central processor and operatively coupled to the physical I/O channel; and

means resident in said central processor for dispatching messages from said virtual stations to the corresponding physical modules through said virtual I/O channel; wherein said virtual I/O channel includes a multi-layered communication interface between the physical modules and said virtual stations, said multi-layered communication interface including an application interface layer, a queue layer, a dispatch layer, a dynamic link protocol layer, and a physical network layer, wherein said application interface layer interfaces directly with said virtual stations and said physical network layer interfaces directly with the physical I/O channels.

5,603,060

METHOD OF CONTROLLING COPY MACHINES FROM A REMOTE LOCATION

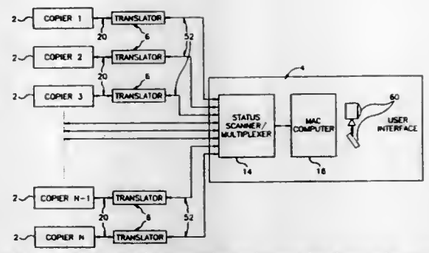
Joseph Weinberger, East Brunswick, N.J.; Gary Bricault, and James Laird, both of Rochester, N.Y., assignors to Joseph Weinberger, East Brunswick, N.J.

Continuation of Ser. No. 247,591, May 23, 1994, abandoned, which is a continuation of Ser. No. 978,278, Nov. 18, 1992, Pat. No. 5,333,286, which is a division of Ser. No. 567,388, Aug. 14, 1990, Pat. No. 5,214,772, which is a continuation-in-part of Ser. No. 450,605, Dec. 13, 1989, Pat. No. 5,084,875. This application Jun. 7, 1995, Ser. No. 478,357

Int. Cl.[6] G06F *3/00;11/00*

U.S. Cl. 399—8 **6 Claims**

1. A method of controlling copy machine keystrokes on a copy machine from a remote location, said copy machine comprising a copier control panel having operational keys thereon and a copier control computer, comprising the steps of



a. generating a copier control panel operation keystroke command from said remote location; and

b. transmitting a data pattern corresponding to said copier control panel operation keystroke command to the copier control computer.

5,603,061

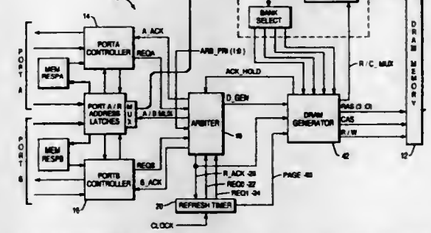
METHOD FOR PRIORITIZING MEMORY ACCESS REQUESTS USING A SELECTED PRIORITY CODE

Michael R. Hilley, Belton, and William J. Kass, Easley, both of S.C., assignors to NCR Corporation, Dayton, Ohio

Continuation of Ser. No. 98,770, Jul. 28, 1993, abandoned, which is a continuation of Ser. No. 734,418, Jul. 23, 1991, abandoned. This application Jan. 16, 1996, Ser. No. 587,132

Int. Cl.[6] G06F *13/18;13/364*

U.S. Cl. 395—864 **20 Claims**



1. In a computer having a memory, a memory controller and a storage device, a method for controlling access to the memory comprising the steps of:

defining a plurality of priority signal codes, each priority signal code of said plurality of priority signal codes representing an ordering scheme for granting requests to access memory during an occurrence of simultaneous requests to access memory;

selecting one priority signal code of said plurality of priority signal codes;

storing the one priority signal code in the storage device, wherein the contents of the storage device can be changed by a user of the computer from the one priority signal code to a second priority signal code of the of the plurality of priority signal codes;

transmitting the one priority signal code from the storage device to the memory controller;

causing the memory controller to grant a request to access memory according to the ordering scheme of the one priority signal code stored in the storage device;

selecting the second priority signal code;

storing the second priority signal code in the storage device,

transmitting the second priority signal code from the storage device to the memory controller; and

causing the memory controller to grant another request to access memory according to the ordering scheme of the second priority signal code stored in the storage device.

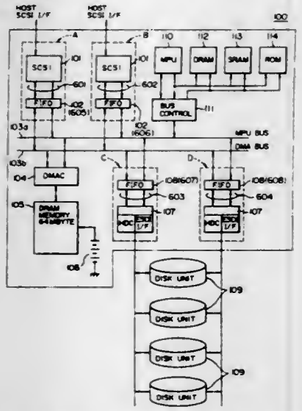
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5,603,062

SYSTEM FOR CONTROLLING DATA FLOW BETWEEN PLURALITY OF HOST INTERFACES AND DRIVE INTERFACES USING CONTROLLER FOR SELECT UNOCCUPIED INTERFACES AFTER PREPARATION OF READ/WRITE OPERATION IS COMPLETE

Masahiko Sato; Kazuo Nakagoshi; Naoya Takahashi, all of Odawara; Akira Chuma, and Yoshio Yukawa, both of Kanagawa-ken, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 8, 1993, Ser. No. 148,484
Claims priority, application Japan, Nov. 11, 1992, 4-301367
Int. Cl.[6] G06F *13/00;13/36*
U.S. Cl. 395—872 **2 Claims**



1. An external storage system connected to at least one host system for performing data transfer with said host system, comprising:

at least one storage unit having a non-volatile first storing medium; and

an input/output control unit including,

a plurality of host interfaces,

a plurality of drive interfaces,

a bus connected to said host interfaces and said drive interfaces, and

a controller controlling data flow on said bus;

wherein said controller sets said host interfaces and said drive interfaces free until preparation for data read/write operation in response to a read/write command issued from said host system has been completed, and, upon completion of the preparation for the read/write operation, said controller selects an unoccupied one of said host interfaces and an unoccupied one of said drive interfaces to perform data transfer,

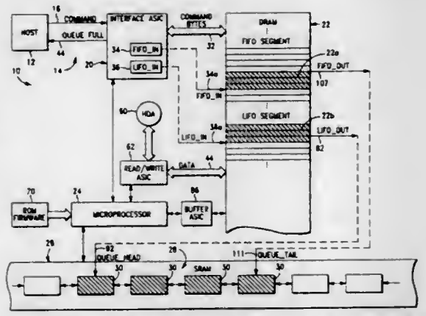
wherein the bus of said input/output control unit has a data transfer capability not smaller than a sum of data transfer capabilities of said host and said drive interfaces.

5,603,063

DISK DRIVE COMMAND QUEUING METHOD USING TWO MEMORY DEVICES FOR STORING TWO TYPES OF COMMANDS SEPARATELY FIRST BEFORE QUEUING COMMANDS IN THE SECOND MEMORY DEVICE

Wing Y. Au, San Jose, Calif., assignor to Quantum Corporation, Milpitas, Calif.

Filed Jun. 27, 1994, Ser. No. 267,143
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—872 **16 Claims**



1. In a disk drive receiving commands from a host device via an interface, the disk drive having a head-disk assembly including a rotating disk data storage medium for non-volatile storage and retrieval of user data in accordance with commands received from the host device, a method of disk drive command queue management carried out entirely within the disk drive and comprising the steps:

receiving commands from the host device, by an interface disk drive process carried out by an interface device within the disk drive having access to the host device and to a first volatile memory device within the disk drive and wherein the interface disk drive process distinguishes between commands of first and second command types and stores separately commands of said first and second command types in said first volatile memory device;

withdrawing each received command from the first volatile memory device and queuing, by a queuing process independent of said interface process, received commands, said queuing process being carried out by a programmable digital processor device within the disk drive having access to a second volatile memory device within the disk drive, and said queuing process including the step of storing commands in queued order in said second volatile memory device;

reading and executing commands from said second volatile memory device by the programmable digital processor device within the disk drive in order to provide said non-volatile storage and retrieval of user data to and from the rotating disk data storage medium; and

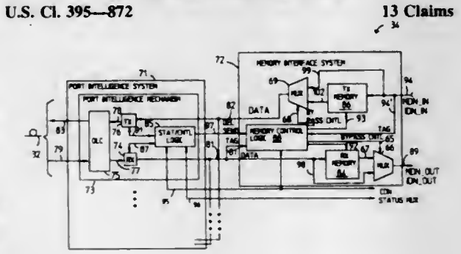
wherein said first volatile memory device is of first access speed and fist size and said second volatile memory device is of second access speed and second size, said first size being greater than said first access speed.

5,603,064

CHANNEL MODULE FOR A FIBER OPTIC SWITCH WITH BIT SLICED MEMORY ARCHITECTURE FOR DATA FRAME STORAGE

Dwayne R. Bennett, Scarborough, Canada, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 27, 1994, Ser. No. 330,279
Int. Cl.[6] G06F *13/00;* **H04J** *14/08*
U.S. Cl. 395—872 **13 Claims**



1. A memory interface system for providing a memory to accommodate frame switching in a fiber optic switch, while simplifying the memory input/output interface and minimizing hardware, comprising:

port intelligence means for receiving source data to be routed through said switch from a port to be connected to a fiber optic channel;

slicing means for slicing first and second sets of bits from said source data;

first and second receive memory components for receiving said first and second sets, respectively, from said slicing means; and

memory output means for receiving said first and second sets from said first and second receive memory components, respectively, and for recombining said first and second sets to reconstruct said source data, a receiver associated with said port intelligence means, said receiver for receiving a header associated with said source data and for generating a tag indicative of when said source data is to be transferred through said memory interface system via frame switching and via circuit switching;

first and second receive bypass paths configured to receive said first and second sets of bits;

first and second multiplexers configured to receive said first and second sets of bits from said first and second memory components and from said first and second receive bypass paths and configured to provide said first and second sets to said memory output means;

first and second receive tag control means associated with said first and second multiplexers, said first and second receive tag control means for receiving said tag and for generating first and second bypass control signals for said first and second multiplexers; and

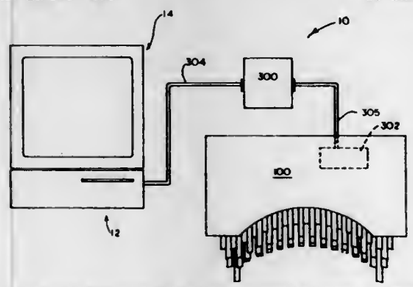
whereby when said source data corresponds to said circuit switching; said multiplexers are controlled by said receive tag control means to bypass said receive memory, components so that said sets are communicated to said memory output means without memory, storage and when said source data corresponds to frame switching, said sets are communicated from said memory components to said memory output means.

5,603,065

HANDS-FREE INPUT DEVICE FOR OPERATING A COMPUTER HAVING MOUTHPIECE WITH PLURALITY OF CELLS AND A TRANSDUCER FOR CONVERTING SOUND INTO ELECTRICAL CONTROL SIGNALS

Robin C. Baneth, 523 Pace St., Raleigh, N.C. 27604-1957

Filed Feb. 28, 1994, Ser. No. 202,994
Int. Cl.[6] G06F *13/00;3/16*
U.S. Cl. 395—893 **18 Claims**



1. A hands-free input device for operating a computer or other electronic device by aspiration, comprising:

(a) a mouthpiece having a housing that includes a sound chamber;

(b) a plurality of cells which produce sounds when a user aspirates through the cells, wherein each cell is designed to produce a sound distinct from the sound produced by any other cell, each of said plurality of cells communicating with said sound chamber;

(c) a sound transducer mounted within said sound chamber for converting the sounds produced by each cell into electrical control signals; and

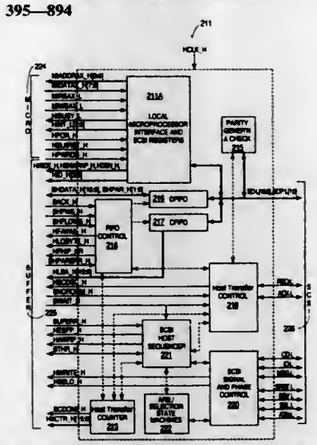
(d) communications media connecting the sound transducer to the computer or electronic device for transmitting the control signals to the computer or electronic device to control the same.

5,603,066

METHOD OF FLAGGING THE COMPLETION OF A SECOND COMMAND BEFORE THE COMPLETION OF A FIRST COMMAND FROM THE SAME INITIATOR IN A SCSI CONTROLLER

Shahe H. Krakirian, Milpitas, Calif., assignor to Adaptec, Inc., Milpitas, Calif.

Division of Ser. No. 205,002, Mar. 1, 1994. This application Jun. 5, 1995, Ser. No. 463,649
Int. Cl.[6] G06F *13/00;13/20*
U.S. Cl. 395—894 **5 Claims**



1. A method of transferring data from a SCSI bus to a target device, the target device comprising a processor and a disk controller integrated circuit, comprising the steps of:

(a) receiving a SCSI write command into a memory of the disk controller integrated circuit, said SCSI write command comprising transfer length information indicative of a number of blocks of data;

(b) said disk controller integrated circuit transferring said number of blocks of data from said SCSI bus to a buffer memory of said target device, said disk controller integrated circuit proceeding from said receiving step (a) to said transferring said number of blocks of data of step (b) without waiting for a communication from said processor;

(c) receiving a queue tag of said SCSI write command into said disk controller integrated circuit;

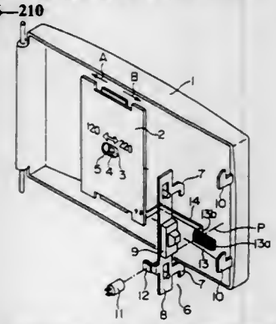
(d) setting a first flag in said disk controller integrated circuit when a first SCSI command is received from an initiator;

(e) setting a second flag in said disk controller integrated circuit when a second SCSI command is received from the same initiator if said first flag is set; and

(f) if said second flag is cleared at a point in time after said transferring of said number of blocks of data has started but before said transferring of said number of blocks is completed, outputting a status byte and a command complete message byte from said disk controller integrated circuit following said transferring of said number of blocks of data.

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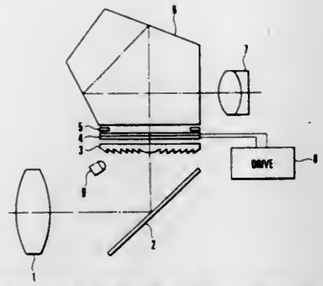
5,603,067
CAMERA
Shigenori Goto; Tatsuo Saito, and Shiro Hashimoto, all of Oomiya, Japan, assignors to Fuji Photo Optical Co. Ltd, Oomiya, Japan
Filed Dec. 13, 1994, Ser. No. 355,050
Claims priority, application Japan, Dec. 16, 1993, 5-316823
Int. Cl.[6] G03B *7/00;17/02;17/26*
U.S. Cl. 396—210 **5 Claims**



1. A camera using either one of a 120 size of roll film and a 220 size of roll film, comprising:
a pressure plate mounted to a back lid so that a height thereof to the back lid can be changed depending upon a type of a roll film used;
a lock mechanism provided in a camera body, for locking said back lid in a closed state;
a reflection-type photosensor provided in said camera body;
a first reflective plate provided on a movable portion of said lock mechanism, said first reflective plate being arranged so that when said lock mechanism is in an unlock state, said first reflective plate reflects light emitted from a light-emitting portion of said photosensor, toward a light-receiving portion of said photosensor and so that when said lock mechanism is in a lock state, the first reflective plate lets the light emitted from the light-emitting portion of said photosensor travel straight;
a second reflective plate having first and second reflective portions having respective reflectivities different from each other and from a reflectivity of said first reflective plate, said second reflective plate being mounted to said pressure plate so that when said back lid is closed and said lock mechanism is in the lock state, the second reflective plate reflects the light emitted from the light-emitting portion of said photosensor, toward the light-receiving portion of said photosensor and said second reflective plate being arranged so that a portion reflecting the light from said photosensor is changed over between said first and second reflective portions in synchronization with changeover of the height of said pressure plate;
detecting means for detecting the height of said pressure plate and an open or close state of said back lid in accordance with an output from said photosensor; and
determining means for determining the type of the roll film used, from a result of detection by said detecting means.

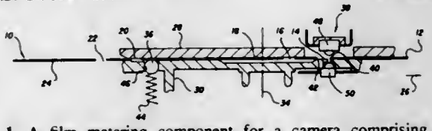
5,603,068
DISPLAY DEVICE
Yoshihiko Aihara, Kanagawa-ken, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 8, 1995, Ser. No. 569,458
Claims priority, application Japan, Dec. 13, 1994, 6-332177
Int. Cl.[6] G03B *17/20;* **G02B** *27/34;* **G08B** *5/36*
U.S. Cl. 396—287 **22 Claims**

1. A display device comprising:
a display element having a plurality of electrode areas and arranged to selectively take a transmitting state and a diffusing state by controlling an electric field; and



a light emitting source disposed in such a position as to make an illumination color thereof visually confirmable only in an electrode area of said display element which is made into the diffusing state.

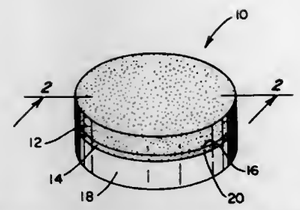
5,603,069
METERED FILM HOLDING DEVICE TO PREVENT FILM MOVEMENT IN CAMERA
Wayne E. Stiehler, Spencerport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 4, 1996, Ser. No. 608,026
Int. Cl.[6] G03B *1/00*
U.S. Cl. 396—397 **2 Claims**



1. A film metering component for a camera comprising a metered film holding element supported to enter respective film perforations in a metered filmstrip to prevent unintended movement of the filmstrip, and a film sensor for sensing the film perforations when the filmstrip is advanced in the camera to locate the respective perforations opposite said film sensor, is characterized in that:
said metered film holding element is a ball supported to roll in place continuously in contact with the filmstrip whenever the filmstrip is advanced in the camera, and having a diameter greater than a maximum dimension of the film perforation in order to be able to roll only partly into the film perforation; and
said film sensor is a fixed optical sensor positioned relative to said ball to only allow the ball to enter one of the film perforations when none of the respective perforations are opposite the optical sensor.

5,603,070
SUPPORTED POLYCRYSTALLINE DIAMOND COMPACT HAVING A CUBIC BORON NITRIDE INTERLAYER FOR IMPROVED PHYSICAL PROPERTIES
David B. Cerutti, and Henry S. Marek, both of Worthington, Ohio, assignors to General Electric Company, Worthington, Ohio
Division of Ser. No. 322,841, Oct. 13, 1994, Pat. No. 5,510,193.
This application Feb. 2, 1996, Ser. No. 595,715
Int. Cl.[6] B22F *7/00*
U.S. Cl. 419—6 **7 Claims**

1. A high pressure/high temperature (HP/HT) method for making a metal carbide supported polycrystalline diamond (PCD) compact comprising the steps of:
(a) providing a reaction cell assembly comprising:
(i) a mass of PCD particles;



(ii) an interlayer mass of cubic boron nitride (CBN) particles disposed adjacent said mass of PCD particles; and
(iii) a cemented metal carbide support layer disposed adjacent said mass of CBN particles, said cemented metal carbide support layer comprising particles of a metal carbide and a binder metal; and
(b) subjecting said reaction cell assembly to HT/HP conditions selected as being effective to sinter said mass of PCD particles and said interlayer mass of CBN particles into, respectively, a PCD compact layer and a polycrystalline CBN (PCBN) compact interlayer, and to bond said PCBN compact interlayer to said PCD compact layer and to said cemented metal carbide support layer by effecting a substantially uniform sweep of said binder metal from said cemented metal carbide support layer through said mass of PCD particles and said interlayer mass of CBN particles.

5,603,071
METHOD OF PREPARING CEMENTED CARBIDE OR CERMET ALLOY
Nobuyuki Kitagawa, and Toshio Nomura, both of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
Continuation of Ser. No. 689,889, May 10, 1991, abandoned.
This application Apr. 4, 1995, Ser. No. 416,485
Claims priority, application Japan, Sep. 14, 1989, 1-238849
Int. Cl.[6] B22F *3/10*
U.S. Cl. 419—15 **2 Claims**

1. A method for producing a cemented carbide or a cermet alloy, comprising the following steps:
(a) mixing and kneading a cemented carbide powder or cermet alloy powder with an organic binder to provide a powder binder mixture sufficiently viscous for injection molding, wherein said organic binder contains a first binder component having a first lower removal temperature and a second binder component having a second higher removal temperature, said first binder component comprising a first plurality i of first different types a1, a2, . . . , ai of binders, wherein a1, a2, . . . , ai represent ratios of respective first binder types of said low-temperature removal binder component, said second binder component comprising a second plurality j of second different types b1, b2, . . . , ji of binders, wherein b1, b2, . . . , bj represent ratios of respective second binder types of said high temperature removal binder component so that $\Sigma ai+\Sigma bj=1$; wherein xT1, xT2, . . . , xTi represent loss rates of a single respective low-temperature removal binder type at a certain transition temperature T in inert gas atmospheric pressure heating loss tests (TG); wherein yT1, yT2, . . . , yTj represent loss rates of a single respective high temperature removal binder type at said certain transition temperature T in said inert gas atmospheric pressure heating loss tests (TG); and wherein compositions of respective binder types contained in said organic binder are selected to satisfy the following conditions:

$$\Sigma(i\ bj<yTj)\geq 0.05$$

and

$$\Sigma bj\geq 0.1$$

at said transition temperature T for which

$$\Sigma(ai<xTi)=0.3,$$

wherein said transition temperature T for transition from said first removal step to said second removal step is selected to satisfy the following conditions:

$$\Sigma(ai<xTi)>0.3$$

and

$$\Sigma\{bj\times(1-yTj)\}>0.05,$$

(b) injection molding said powder binder mixture to form a green compact having an injection molded configuration,
(c) removing said organic binder from said compact in a first and in a second binder removal step,
(d) said first binder removal step comprising heating said green compact in a furnace to said first lower removal temperature in an atmosphere of one of N_2 and Ar maintained at a sufficient flow rate within the range of 0.1 liter/min to 3 liter/min and at a pressure within the range of at least 600 Torr to atmospheric pressure of 760 Torr for preventing cracking and blistering of said green compact while removing at least a portion of said organic binder,
(e) establishing said first lower removal temperature by raising a temperature in said furnace at a rate within the range of 4° C./hour to 10° C./hour until said first lower removal temperature is reached within the range of 350° C. to 450° C.,
(f) said second binder removal step comprising exposing said compact to a vacuum of 0.2 Torr to 0.5 Torr in said furnace and raising said first lower removal temperature to said second higher removal temperature at a rate of about 50° C./hour until 700° C. is reached as said second higher removal temperature for substantially removing any remainder of said organic binder,
(g) maintaining said second removal temperature of 700° C. for about one hour, so that said first binder removal step continues into said second binder removal step, and whereby powder particles in said green compact are deoxidized for an initial bonding of said powder particles to each other to maintain a dimensional stability of said green compact prior to sintering, and
(h) sintering said compact by evacuating said furnace to a vacuum of 0.05 Torr, raising said second higher removal temperature in said furnace at a rate of 200° C./hour to a sintering temperature within the range of 1350° C. to 1400° C., maintaining said sintering temperature for at least one hour, and cooling to room temperature.

5,603,072
METHOD FOR PRODUCING FE-BASED SINTERED BODY WITH HIGH-CORROSION RESISTANCE
Tomio Kouno, Nagoya, and Mitsuaki Asano, Toyota, both of Japan, assignors to Daido Tokushuko Kabushiki Kaisha, Nagoyo, Japan
Filed Nov. 14, 1994, Ser. No. 340,291
Claims priority, application Japan, Nov. 15, 1993, 5-309775
Int. Cl.[6] B22F *3/16*
U.S. Cl. 419—25 **4 Claims**

3. A method for producing a high corrosion-resisting sintered body comprising steps of:
compacting Fe-based alloy powder consisting of homogeneous metal powder or a mixture of heterogeneous metal powders to form green compact, said Fe-based alloy powder consisting by weight percentage of: not more than 0.03% of C; not more than 2% of Si; not more than 0.5% of Mn; from 8 to 28% of Ni; from 15 to 25% of Cr; from 3 to 8% of Mo; and the balance being Fe and incidental impurities;

sintering the green compact in an atmosphere of N_2 with pressure of higher than 10 torr and not higher than 200 torr; and cooling the sintered compact from 1000° C. to 500° C. at cooling rate of not lower than 50° C./min.

5,603,073

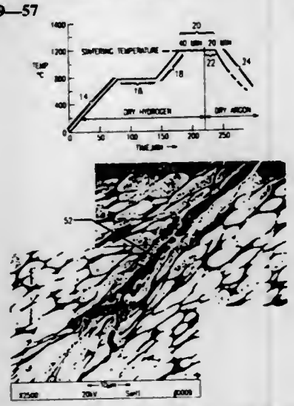
HEAVY ALLOY BASED ON TUNGSTEN-NICKEL-MANGANESE

Animesh Bose, Petaluma, Calif., assignor to Southwest Research Institute, San Antonio, Tex.

Division of Ser. No. 686,130, Apr. 16, 1991. This application Sep. 1, 1992, Ser. No. 938,821

Int. Cl.[6] B22F 3/16

U.S. Cl. 419—57 **18 Claims**



1. A process for producing a heavy alloy, said alloy having high density, high strength and high compressive strains, said process comprising the step of:

mixing a composition of elemental powders, said composition consisting essentially of W in the amount of at least 80% by weight and the remaining amount of Mn and Ni in an amount sufficient to lower the sintering temperature of said alloy to between 1100° and 1400° C.

5,603,074

PREPARATION AND USE OF TETRA-ALKYL COBALT DICARBOLLIDE FOR EXTRACTION OF CESIUM AND STRONTIUM INTO HYDROCARBON SOLVENTS

Rebecca L. Miller, Los Alamos; Anthony B. Pinkerton, Santa Fe; Kent D. Abney, and Scott A. Kinkead, both of Los Alamos, all of N.M., assignors to The Regents of the University of California, Los Alamos, N.M.

Filed Mar. 28, 1995, Ser. No. 412,384

Int. Cl.[6] C01F 11/00

U.S. Cl. 423—2 **7 Claims**

1. A method for recovering strontium and cesium from aqueous solution, which comprises the steps of:

a. contacting the aqueous solution with a solution of tetra-C-alkyl cobalt dicarbollide in an organic solvent, thereby permitting Sr and Cs present to be extracted into the organic solution by the cobalt dicarbollide derivative; and

b. separating the organic solution from the aqueous solution.

5,603,075

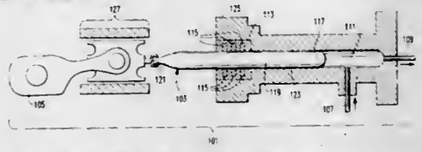
CORROSION RESISTANT CERMET WEAR PARTS

William M. Stoll, Ligonier; James P. Materkowski, and Ted R. Massa, both of Latrobe, all of Pa., assignors to Kennametal Inc., Latrobe, Pa.

Filed Mar. 3, 1995, Ser. No. 398,039

Int. Cl.[6] B22F 5/00

U.S. Cl. 428—552 **34 Claims**



1. A corrosion and wear resistant cermet composition comprising:

(a) at least one ceramic component comprised of at least one of boride(s), carbide(s), nitride(s), oxide(s), silicide(s), their mixtures, their solutions, and combinations thereof; and

(b) between about 6–19% by weight binder alloy comprised of a major component comprising one or more of iron, nickel, cobalt, their mixtures, and their alloys and an additive component comprising between about 26–65% by weight of the binder alloy and at least one of ruthenium, rhodium, palladium, osmium, iridium, platinum, their alloy, and mixtures thereof,

wherein the additive component imparts corrosion resistance against at least one of acids, bases, salts, lubricants, gasses, silicates, or any combination of the preceding to the corrosion and wear resistant cermet composition.

5,603,076

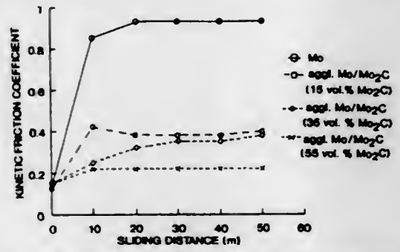
COATING CONTAINING DIMOLYBDENUM CARBIDE PRECIPITATES AND A SELF-FLUXING NICRFEBSI ALLOY

Sanjay Sampath, Setauket, N.Y., assignor to Osram Sylvania Inc., Danvers, Mass.

Division of Ser. No. 390,732, Feb. 17, 1995, Pat. No. 5,529,601, which is a continuation-in-part of Ser. No. 304,110, Sep. 9, 1994, abandoned. This application Apr. 4, 1996, Ser. No. 628,222

Int. Cl.[6] B32B 15/04

U.S. Cl. 428—564 **1 Claim**



1. A coating comprising lamellae of molybdenum containing dimolybdenum carbide precipitates and lamellae of a self-fluxing NiCrFeBSi alloy, said lamellae being bonded together, said coating having a hardness of about 900 and containing less than about 10 vol. % dimolybdenum carbide.

5,603,077

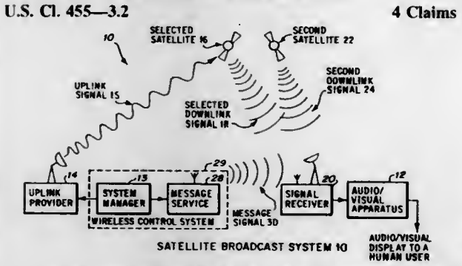
SATELLITE SYSTEM AND METHOD FOR REMOTE CONTROL OF A SATELLITE SIGNAL RECEIVER

Thomas A. Muckle, Fremont; Gregory D. Gudorf, Pleasanton, and John O. Bumgarner, Morgan Hill, all of Calif., assignors to Chaparral Communications, Inc., San Jose, Calif.

Filed Dec. 19, 1994, Ser. No. 358,720

Int. Cl.[6] H04B 1/16; H04H 1/00

U.S. Cl. 455—3.2 **4 Claims**



1. An improved satellite broadcast system including a program source that uplinks programs to a plurality of orbiting satellites, which, in turn, downlink the programs to a plurality of earth receiving stations, wherein each earth receiving station includes a satellite receiving antenna dish for receiving said downlink programs and having position controls for azimuth and elevation that provide for the selection of a particular orbiting satellite and a feedhorn able to receive control signals to select the phase of the antenna feedhorn for their selected polarity channel of a particular downlink signal, and each receiving station further includes a satellite program downlink receiver connected to the dish and the feedhorn for tuning particular programs according to channel and time of day, the improvement comprising at each earth receiving station:

a message broadcast receiver connected to control said dish, said feedhorn, and said satellite program downlink receiver and tuned to receive a plurality of broadcast control messages for a group of more than one earth receiving station, wherein said control messages each comprise instructions for the positioning of the dish, the setup of said feedhorn, the selection of said program channel, and the selection of a time-of-day for execution of said instructions by the dish, said feedhorn, and the satellite program downlink receiver.

5,603,078

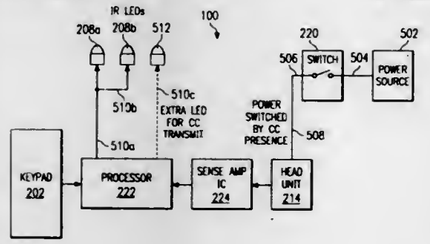
REMOTE CONTROL DEVICE WITH CREDIT CARD READING AND TRANSMISSION CAPABILITIES HAVING MULTIPLE IR LEDS

Andre D. Henderson, Rowlett; William H. Fuller, Plano, and James M. Rotenberry, Richardson, all of Tex., assignors to Spectravision, Inc., Richardson, Tex.

Filed Sep. 15, 1995, Ser. No. 528,690

Int. Cl.[6] H04N 5/44

U.S. Cl. 455—5.1 **20 Claims**



11. A method for purchasing products or services offered via a television monitor using a remote control unit that transfers data to a receiver connected to said television monitor, said receiver connected via at least one modem to a control computer for purchase authorization, said method comprising:

reading said data encoded on a magnetic stripe of a card;

receiving and reformatting said encoded data; and

transmitting said reformatted data to said receiver for said purchase using two LEDs, wherein one of said two LEDs is activated solely for effecting said transmitting.

5,603,079

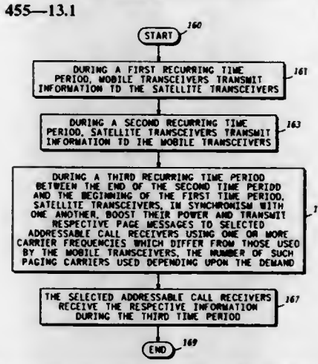
SATELLITE-BASED MESSAGING SYSTEM TRANSMITTING DURING GUARD BAND OF SATELLITE-BASED TELEPHONE SYSTEM AND METHOD OF OPERATION THEREOF

Keith A. Olds; Gregory B. Vatt, both of Mesa, Ariz., and Christopher N. Kurby, Elmhurst, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 3, 1994, Ser. No. 317,090

Int. Cl.[6] H04B 7/185;7/19;7/195

U.S. Cl. 455—13.1 **16 Claims**



1. In a system comprising a plurality of addressable call receivers, a plurality of mobile transceivers, said receivers and mobile transceivers being on or near the surface of the earth, and a plurality of satellite transceivers in orbits about the earth, a method of operating said system comprising the steps of:

(a) said mobile transceivers transmitting first voice information to said satellite transceivers during a first recurring time period;

(b) said satellite transceivers transmitting second voice information to said mobile transceivers during a second recurring time period;

(c) providing a third recurring time period between the end of said second time period and the beginning of said first time period in which said satellite transceivers transmit paging information to said addressable call receivers, the duration of said third time period being sufficient to allow for said paging information transmitted by said satellite transceivers during said third period to propagate past all satellites which are visible to the transmitting satellite transceivers to avoid interference between said paging information transmitted by said satellite transceivers during said third period and the first voice information previously transmitted by said mobile transceivers; and

(d) said satellite transceivers transmitting in synchronism with one another their respective paging information to said addressable call receivers during said third time period.

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5,603,080

RADIO COVERAGE IN CLOSED ENVIRONMENTS

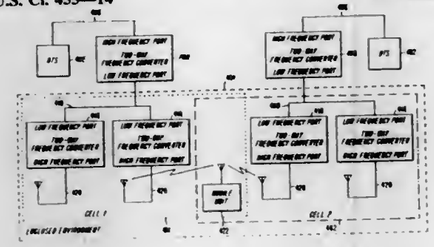
Stefan E. P. Källander, Lidingö , Sweden, and Philippe Charas, Amsterdam, Netherlands, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

PCT No. PCT/SE93/00992, § 371 Date Oct. 13, 1994, § 102(e) Date Oct. 13, 1994, PCT Pub. No. WO94/13067, PCT Pub. Date Jun. 9, 1994

Continuation-in-part of Ser. No. 979,909, Nov. 23, 1992, Pat. No. 5,404,570. This PCT application Nov. 19, 1993, Ser. No. 256,728

Int. Cl.[6] H04B *7/26;7/15*

U.S. Cl. 455—14 17 Claims



1. In a communication system including at least one base station and at least one mobile unit, both operating at a high radio frequency, a repeater system for providing a communications link between the base station and the mobile unit when the mobile unit is located in an environment that is substantially closed off to high radio frequency communication between the base station and the mobile unit, the repeater system comprising:

a first linear two-way frequency converter including:

a high frequency port for two-way coupling to a base station; and

a low frequency port for two-way coupling to a low frequency signal for radiating radio frequency power through the closed environment;

cable transmission means connected to the low frequency port of the first linear two-way frequency converter, and located within the closed environment for radiating and receiving the low frequency signal within the closed environment;

a first antenna for wireless coupling to the cable transmission means;

a second linear two-way frequency converter including:

a low frequency port connected to the first antenna for two-way coupling to a low frequency signal;

a high frequency port for two-way coupling to a signal that is compatible with the high radio frequency signal used by the communications system; and

a second antenna connected to the high frequency port of the second linear two-way frequency converter; and

a third linear two-way frequency converter, located within the closed environment, including:

a low frequency port connected to the cable transmission means for two-way coupling to the low frequency signal; and

a high frequency port for two-way coupling to the signal that is compatible with the high radio frequency signal used by the communication system; and

a third antenna connected to the high frequency port of the third linear two-way frequency converter.

5,603,081

METHOD FOR COMMUNICATING IN A WIRELESS COMMUNICATION SYSTEM

Alex K. Raith, Durham, N.C.; Bengt Persson, Djursholm, Sweden; Anthony J. Sammarco, Garner, N.C.; Anders C. E. Hoff, Hägersten, Sweden; John W. Diachina, Garner, N.C.; Joseph E. Turcotte, Montreal, Canada; Håkan C. Andersson, Ekerö, Sweden; Francois Sawyer, St-Hubert; Patrice Marsolais, Montreal, both of Canada, and Roland S. Bodin, Spånga, Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Nov. 1, 1993, Ser. No. 147,254

Int. Cl.[6] H04Q *7/32*

U.S. Cl. 455—33.1 2 Claims



1. A method of registration of a remote station with a communications system comprising the steps of:

sending from said system to said station a message containing a list of communication channels in neighboring cells, an indication of whether registration is required in each of the neighboring cells and an indication of signal strength hysteresis for each neighboring cell; and

using said signal strength hysteresis for selecting one of said communication channels if registration is required in the neighboring cell.

5,603,082

CHANNEL ALLOCATION SYSTEM FOR COMMUNICATION SYSTEMS AND AN APPARATUS THEREOF

Kojiro Hamabe, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Dec. 27, 1994, Ser. No. 364,082

Claims priority, application Japan, Dec. 27, 1993, 5-330209

Int. Cl.[6] H04M *11/00*

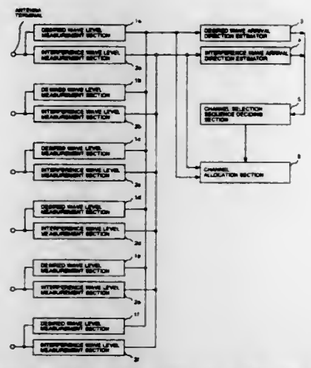
U.S. Cl. 455—33.1 13 Claims

1. A channel allocation system for communication systems, by which a proper communication channel between a wireless terminal and a base station is allocated when a communication request has arisen between said wireless terminal and said base station to which said wireless terminal belongs, said channel allocation system for communication systems comprising:

(a) step of measuring a received level of a desired wave from said wireless terminal in each sector cell of said base station and estimating an arrival direction of said desired wave, in said base station;

(b) step of measuring a received level of an interference wave from a channel that is used by other base stations and other wireless terminals in each sector cell of said base station and estimating an arrival direction of said interference wave, in said base station; and

(c) step of allocating a communication channel of which angle difference in a horizontal plane between said arrival direction of said desired wave and said arrival direction of said interference wave is closest to 180° for communication between said wireless terminal and said base station, in said base station.



5,603,083

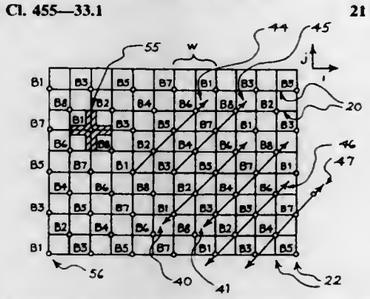
MICROCELL BASE STATION ANTENNA PATTERN FOR DENSE URBAN AREAS

Lin-Nan Lee, Potomac, Md., assignor to Hughes Electronics, Los Angeles, Calif.

Filed Feb. 24, 1995, Ser. No. 393,641

Int. Cl.[6] H04Q *7/36*

U.S. Cl. 455—33.1 21 Claims



1. A pattern of cellular base station antennae comprising:

a first repeating sequence of antennae B1, B2, B5, B6, each of said antennae positioned at an intersection on a grid of intersecting streets, said antennae evenly spaced at a uniform interval forming a first diagonal line of antennae on said grid;

a second repeating sequence of antennae B3, B4, B7, B8, each of said second sequential antennae positioned at an intersection on said grid, said second sequential antennae evenly spaced at said uniform interval forming a second diagonal line of antennae parallel to said first diagonal line, said second sequence beginning with antenna B3 positioned on the same street as any of said antennae B1; wherein a different set of frequencies is allocated to each antenna B1, B2, B3, B4, B5, B6, B7, and B8.

5,603,084

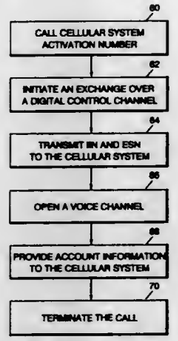
METHOD AND APPARATUS FOR REMOTELY PROGRAMMING A CELLULAR RADIOTELEPHONE

Raymond C. Henry, Jr., Raleigh, N.C.; Alan E. Sicher, Garland, Tex.; Anthony J. Sammarco, Garner, N.C.; Michael Parker, and William R. Osborn, both of Cary, N.C., assignors to Ericsson Inc., Research Triangle Park, N.C.

Filed Mar. 2, 1995, Ser. No. 397,583

Int. Cl.[6] H04Q *7/00;9/00*

U.S. Cl. 455—33.1 30 Claims



1. A method for remotely programming a cellular radiotelephone which includes a programmable memory location which is programmed with a unique initial identification number, said remotely programming method comprising the steps of:

providing said initial identification number to a cellular system;

establishing a page from said cellular system to said radiotelephone using said initial identification number to identify said radiotelephone;

transmitting data to said radiotelephone during said page, wherein said data comprises a mobile identification number; and

reprogramming said programmable memory location so that said programmable memory location is programmed with said mobile identification number.

5,603,085

METHOD OF ALLOCATING COMMUNICATION RESOURCES IN A COMMUNICATION SYSTEM

Allan Shedlo, New York, N.Y., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 322,046, Oct. 12, 1994, abandoned. This application Mar. 4, 1996, Ser. No. 611,435

Int. Cl.[6] H04B *15/00*

U.S. Cl. 455—33.1 7 Claims

1. In a cellular communication system operating in real time, a method of allocating communication resources, the method comprising the steps of:

a) retrieving from a base station controller associated with the communication system a communication system resource allocation;

b) identifying within a first cell of the communication system an allocated communication resource which does not satisfy an allocation criteria;

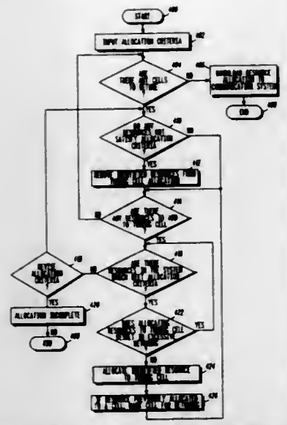
c) removing the allocated communication resource from the first cell;

d) identifying a candidate communication resource within the communication system which satisfies the allocation criteria;

e) determining whether allocating the candidate communication resource results in excessive retuning of a second cell;

f) based on the determination, allocating the candidate communication resource to the first cell; and

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g) automatically and reiteratively downloading the communication system resource allocation to the communication system during operation of the communication system.

5,603,086

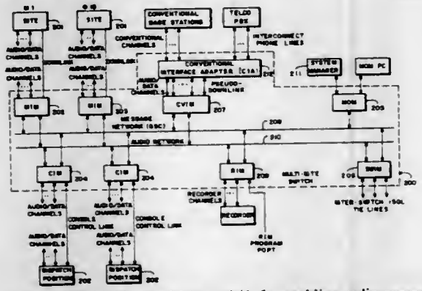
DYNAMIC ADDRESS ALLOCATION WITHIN RF TRUNKING MULTISITE SWITCH

Timothy F. Cree; Charles P. Brame, and Win A. Imron, all of Forest, Va., assignors to Ericsson Inc., Research Triangle Park, N.C.

Continuation of Ser. No. 658,843, Feb. 22, 1991, Pat. No. 5,276,442. This application May 12, 1993, Ser. No. 59,670

Int. Cl.[6] H04Q *7/28*

U.S. Cl. 455—34.1 **13 Claims**



3. In an RF thinking multisite switch for enabling radio communications between plural site transceiver stations located in different geographical site areas which control RF communications between plural RF mobile/portable radios located in those different geographical site areas so that one radio in one geographical site area may communicate with another radio in another geographical site area, each site transceiver station having plural transceivers and a site controller and said switch having a distributed architecture of nodes operatively coupled to a message bus and a time division multiplex bus, a method comprising the steps of:

assigning a node to each of the site transceiver stations, each node controlling communications between said switch and its site transceiver station; and

each node automatically selecting a node address from one of a plurality of possible node addresses and broadcasting a requested address message including the selected node address to the other nodes over the message bus, wherein upon receiving the requested address message broadcast by another node, each node compares the broadcast address to its own address, and broadcasts an address denial message over the message bus to the another node when the compared addresses are the same.

5,603,087

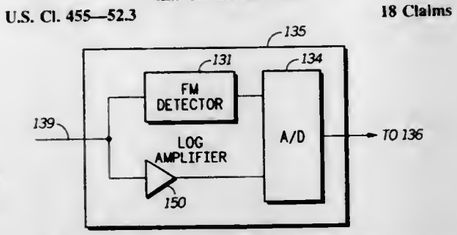
INTERFERENCE DETECTION TECHNIQUE

Edward C. Shultz, Buffalo Grove, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 693,186, Apr. 29, 1991, abandoned. This application Sep. 6, 1994, Ser. No. 302,003

Int. Cl.[6] H04B *17/00*

U.S. Cl. 455—52.3 **18 Claims**



1. A circuit for detecting and indicating interference of a received signal having a high frequency angular modulated component and a low frequency amplitude modulated fading component having a fading frequency, the circuit comprising:

a logarithmic amplifier having an input for receiving the received signal and an output for providing a logarithmic amplifier output;

means, coupled to the logarithmic amplifier, for sampling the logarithmic amplifier's output at a sampling rate based on the high frequency angular modulated component within a sampling window having a duration less than the period associated with the fading frequency of the low frequency amplitude modulated fading component; and

means, in communication with said sampling means, for detecting and indicating interference of the received signal as a function of amplitude modulations detected at the logarithmic amplifier output.

5,603,088

METHOD AND APPARATUS FOR DETERMINING A QUALITY LEVEL OF AN ANALOG SIGNAL IN A RADIO COMMUNICATION SYSTEM

Paul E. Gorday, Boynton Beach, and Satyamurti Sunil, Delray, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 28, 1995, Ser. No. 397,322

Int. Cl.[6] H04B *1/04;1/16;17/00*

U.S. Cl. 455—53.1 **20 Claims**

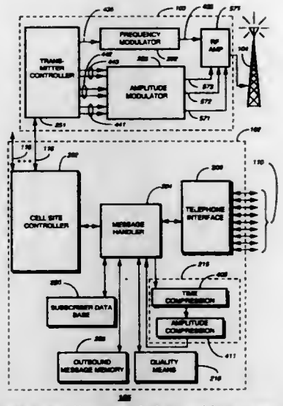
1. A fixed site used in a radio communication system, wherein the fixed site is for generating an outbound radio signal which includes periodic synchronous cycles, wherein a cycle includes an analog portion within which a signal quality level of a first information signal is determined by a selective call radio, the fixed site comprising:

a system controller, comprising:

analog information means, for generating the first information signal;

quality signal means, for generating a quality assessment signal;

a message handler, coupled to said analog information means and quality signal means, for determining a selective call radio address of the selective call radio and assembling cycle information including the selective call radio address, the first information signal, and the quality assessment signal; and



a cell site controller, coupled to said message handler, for sending the cycle information to a transmitter over a communication link;

a radio transmitter, coupled to said cell site controller, comprising;

a transmitter controller for receiving the cycle information;

a frequency modulator for transmitting a control frame generated by frequency modulating a radio carrier with the selective call radio address; and

an amplitude modulator for transmitting the analog portion of an analog frame, wherein the analog portion is generated by amplitude modulating the radio carrier with the first information signal and the quality assessment signal.

5,603,089

BASE STATION ANTENNA ARRANGEMENT

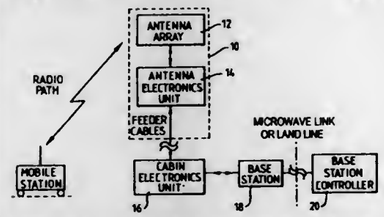
Jeffrey G. Searle, 5 Langdon Lane, Galmpton, Brixham, Devon TQ5 OPQ; Stuart J. Dean, 20 Southfield Road, Paignton, Devon TQ3 2SU; Keith R. Broome, 8 Seaton Close, Babbacombe, Torquay, Devon TQ1 3UH; Peter J. Chrystie, 32 Stoke Gabriel Road, Galmpton, Brixham, Devon TQ5 ONQ, and Christopher R. Cox, "Channel View" , Rickham, East Portlemouth, Salcombe, Devon TQ8 PJ, all of United Kingdom

Continuation of Ser. No. 137,834, Oct. 15, 1993, abandoned. This application Sep. 21, 1995, Ser. No. 531,599

Claims priority, application European Pat. Off., Oct. 19, 1992, 92309520

Int. Cl.[6] H04B *1/00;7/00*

U.S. Cl. 455—53.1 **10 Claims**



1. A non-sectorized base station arrangement comprising:

a plurality of antenna arrays, wherein each antenna array is capable of forming separate overlapping narrow beams in azimuth,

a plurality of r.f. transceivers each for transmitting and receiving r.f. signals for one or more calls,

switching matrix means, and

control means;

wherein the control means is operable to switch a particular transceiver through the switching matrix means to any array whereby r.f. call signals can be exchanged with a mobile station located in any area covered by the narrow beams with the same transceiver.

5,603,090

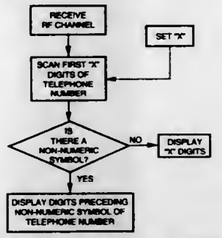
AUTOMATIC CHANNEL IDENTIFICATION

Tuan K. Nguyen; Haruo Yamada; Kazuyuki Mori, all of Tokyo; Hiroshi Takahashi, Kawagoe, and Asao Hirano, Hatogaya, all of Japan, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 5, 1994, Ser. No. 270,287

Int. Cl.[6] H04B *1/16*

U.S. Cl. 455—54.1 **2 Claims**



1. A method for tracking, in a roaming receiver, RF channels in a multi-area system where each area has a unique RF channel and each unique RF channel has a unique address for each user, the method comprising the steps of:

storing a plurality of telephone numbers into a memory of the receiver, each of the telephone numbers corresponding to a different RF channel within the multi-area system;

receiving an address from one of the RF channels which said address is unique to the receiver for that specific RF channel, each said address unique to the receiver corresponding to one of the stored plurality of telephone numbers;

retrieving from the receiver memory one of the telephone numbers corresponding to the address;

scanning a plurality of digits of the one of the telephone numbers;

checking for a non-numeric digit within the scanned plurality of digits; and

displaying in a display all digits of the plurality of digits previous in sequence to the non-numeric digit if the non-numeric digit is found to allow a user to quickly recognize which area of the multi-area system the receiver is located within.

5,603,091

PAGING SYSTEM WITH SEPARATE TRANSMISSION PATHS FOR CONTROL AND DATA

Roger D. Linquist, and Malcolm M. Lorang, both of Dallas, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 236,247, May 2, 1994, Pat. No. 5,423,056, which is a continuation of Ser. No. 661,078, Feb. 26, 1991, abandoned. This application Oct. 17, 1994, Ser. No. 324,240

Int. Cl.[6] H04B *7/25;* **H04Q** *7/08*

U.S. Cl. 455—56.1 **7 Claims**

1. A paging system, comprising:

a primary paging system for generating paging information and control information, said control information utilized in conjunction with said paging information;

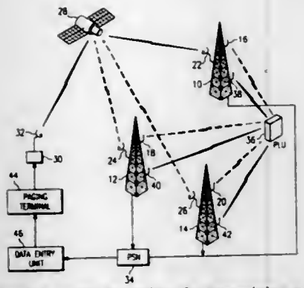
a primary transmission link;

a secondary transmission link;

said paging system having:

a first paging system transmitter for transmitting at least said control information over said primary transmission link, and

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a second paging system transmitter for transmitting at least said paging information through said secondary transmission link;

a plurality of remote paging sites, each disposed at one of said remote paging sites such that both said primary transmission link and said secondary transmission link are connected thereto at the other end thereof, each of said paging sites having:

a primary paging receiver for receiving from said primary paging link the transmission from said first paging system transmitter including at least said control information,

a secondary paging receiver for receiving from said second transmission link the transmission from said second paging transmitter including at least said paging information,

a memory for storing the information received by said secondary paging receiver including at least said paging information, and

a remote paging transmitter for transmitting at least said paging information stored in said memory to a plurality of portable receivers disposed proximate to said remote paging transmitter, said paging

transmitter transmitting at least said paging information stored in said

memory in response to information contained in said control information

received by said primary paging receiver.

5,603,092

METHOD FOR ESTIMATING C/I DENSITY AND INTERFERENCE PROBABILITY IN THE UPLINK

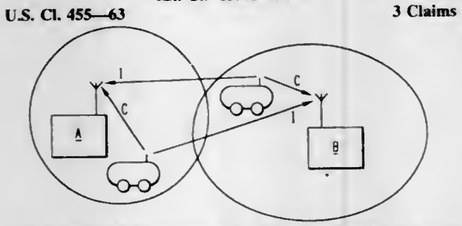
Paul Stjernholm, Stockholm, Sweden, assignor to Televerket, Farsta, Sweden

Continuation of Ser. No. 185,972, Feb. 10, 1994, abandoned. This application Jul. 31, 1995, Ser. No. 509,652

Claims priority, application Sweden, Aug. 18, 1992, 9202367

Int. Cl.[6] H04B *15/00*

U.S. Cl. 455—63 **3 Claims**



1. A method of determining carrier (C) to interference (I) density and interference probability at base stations in a multiple base station cellular telephone system during uplink transmission to the base stations from plural mobile stations, wherein each base station serves a respective service area, comprising the steps of:

(a) transmitting from first and second mobile stations radio signals to a first base station serving the first mobile station in a first service area and simultaneously to a second base station serving the second mobile station in a second service area, respectively;

(b) synchronously measuring at said first and second base stations respective carrier signals (C) and respective interference signals (I);

(c) normalizing data indicative of the carrier signal (C) and the interference signal (I) at each base station;

(d) repeating steps (a), (b) and (c) for transmissions of said radio signal in plural service areas of respective base stations by plural mobile stations and for synchronous measuring and normalizing of the data indicative of carrier signal (C) and interference signal (I) at each base station;

(e) determining a density function of carrier signals (C) produced from radio signals originating from transmissions within the service area of each base station;

(f) determining a density function of interference signals (I) produced from radio signals originating from transmissions outside the service area of each base station; and,

(g) determining a probability of interference being caused by reception in a base station of the interfering signals originating out of the service area of the respective base stations based on a ratio (C/I) of the density function determined in step (e) to the density function determined in step (f).

5,603,093

METHOD FOR MONITORING THE STATE OF INTERFERENCE BY A BASE STATION OF A MOBILE RADIO COMMUNICATION SYSTEM

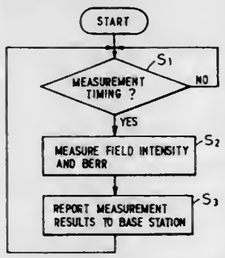
Masaaki Yoshimi, Fujisawa; Kiyohito Nagata; Kazuhiko Kakinuma, both of Yokohama, and Tatsuaki Wakabayashi, Yokosuka, all of Japan, assignors to NTT Mobile Communications Network, Inc., Tokyo, Japan

Filed Dec. 13, 1995, Ser. No. 571,649

Claims priority, application Japan, Dec. 28, 1994, 6-327795

Int. Cl.[6] H04B *15/00*

U.S. Cl. 455—63 **5 Claims**



1. A method for monitoring the state of interference in each zone of a mobile radio communication system wherein a mobile station in each zone performs communication via a base station of said each zone, said method comprising the steps of:

(a) periodically measuring, by said mobile station, the field intensity and quality of a downlink radio wave from said base station;

(b) reporting measured results from said mobile station to said base station;

(c) collecting, by said base station for a predetermined period of time, said measured results reported from said mobile station and statistically processing said collected measured results into data about the state of interference by comparing said measured results with a predetermined reference characteristic to judge whether said measured results are abnormal or not, said reference characteristic being a characteristic predetermined on the basis of a characteristic representing an ideal relationship between field intensity and bit error rate; and

(d) evaluating said data about said state of interference, thereby judging the state of interference between the radio wave from said base station and other radio waves of the same frequency as that of said radio wave from said base station, it being judged whether said measured results are abnormal by comparing said measured results with said bit error rate defined by said reference characteristic, the ratio of the number of measured results judged as abnormal to the number of measured results collected for said predetermined period of time being used as an index indicating said state of interference.

5,603,094

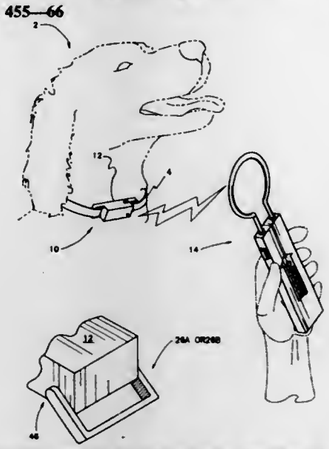
ANIMAL TRACKING SYSTEM WITH TRANSMITTER ATTACHABLE TO AN ANIMAL'S COLLAR

Willie J. Greear, Jr., 38317 S. Williams Cir., Westland, Mich. 48185

Filed Jul. 28, 1994, Ser. No. 281,595

Int. Cl.[6] H04B *7/00*

U.S. Cl. 455—66 **1 Claim**



1. A tracking system for indicating the direction of an animal fitted with a collar with respect to a person seeking the animal, comprising:

a radio frequency transmitting unit having means for attachment to the animal's collar, having a housing containing a miniature radio frequency transmitter transmitting a constant signal of predetermined transmission characteristics, a battery cell power source connected to said transmitter, an external battery power level indicator operably connected to said battery cell power source, and a externally accessible power switch controlling power to said transmitter and to said power level indicator, said means for attachment to the animal's collar including means defining an inlet located at one end of said housing and defining an outlet located at an opposite end of said housing with respect to said outlet, each of said inlet and said outlet comprising a rigid U-shaped loop having means for pivotally mounting the ends of said rigid U-shaped loops to the sides of said housing, wherein said means for pivotally mounting rotates said inlet and said outlet longitudinally thereby adjusting for collars of different thickness dimensions; and

a radio receiving unit including a receiver having means for tuning to the frequency of said constant signal, a signal strength indicator responsive to reception of said constant signal and also responsive to the strength of said constant signal, said signal strength indicator comprising a plurality of LED lamps and means for individually illuminating said LED lamps, said signal strength indicator arranged to indicate signal strength by illuminating a relatively great number of said LED lamps by a relatively strong signal, and illuminating progressively fewer said LED lamps by progressively weaker signals, said receiving unit comprising a second battery cell power source operably connected to said receiver and to said signal strength indicator, and a second externally accessible power switch controlling power to said receiver and to said signal strength indicator, said receiving unit further including indicia indicating the direction resulting in reception of the strongest signal, and hence the direction of said transmitting unit.

5,603,095

RADIO SYSTEM AND A SUBSCRIBER TERMINAL FOR A RADIO SYSTEM

Risto Uola, Oulu, Finland, assignor to Nokia Telecommunications Oy, Espoo, Finland

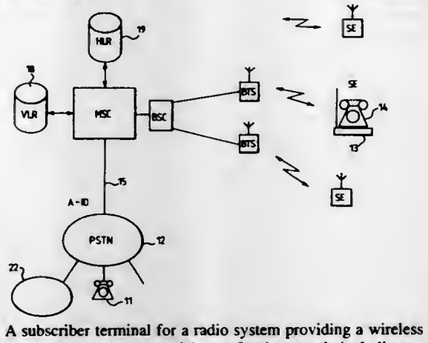
PCT No. PCT/FI94/00436, § 371 Date May 26, 1995, § 102(e) Date May 26, 1995, PCT Pub. No. WO95/09512, PCT Pub. Date Apr. 6, 1995

PCT Filed Sep. 27, 1994, Ser. No. 436,468

Claims priority, application Finland, Sep. 27, 1993, 934232

Int. Cl.[6] H04B *7/26;17/00*

U.S. Cl. 455—67.1 **14 Claims**



9. A subscriber terminal for a radio system providing a wireless local loop, the system comprising a fixed network including at least one exchange, at least one subscriber database and base stations, said subscriber terminal communicating via a radio path with the fixed network and comprising:

a radio transceiver,

a power source connected to an external power supply,

a battery backup unit for said power source,

means for measuring the signal level and signal quality on the radio path between a respective one of said base stations and said subscriber terminal, and means for measuring the charge level of said battery backup unit,

the subscriber terminal being arranged to transmit test results concerning at least one of said battery backup unit and said external power supply, to said fixed network, in a predetermined report message at predetermined intervals, or in response to a predetermined test result.

5,603,096

REVERSE LINK, CLOSED LOOP POWER CONTROL IN A CODE DIVISION MULTIPLE ACCESS SYSTEM

Klein S. Gilhousen, Bozeman, Mont.; Charles E. Wheatley, III, Del Mar, and Jeffrey A. Levin, San Diego, both of Calif., assignors to Qualcomm Incorporated, San Diego, Calif.

Filed Jul. 11, 1994, Ser. No. 272,484

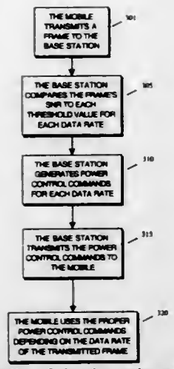
Int. Cl.[6] H04B *7/00*

U.S. Cl. 455—69 **8 Claims**

1. A method for controlling power of a transmitter in a communications device having a plurality of data transmission rates, the transmitter communicating over a channel between the communications device and a base station, the method comprising the steps of:

the communications device transmitting a signal to the base station at a predetermined data rate of the plurality of data rates;

the base station comparing a signal to noise ratio for a received signal to each of a plurality of signal to noise ratio thresholds,



each of the plurality of signal to noise ratio thresholds corresponding to one of said plurality of data transmission rates;

the base station generating at least one power control command in response to the step of comparing;

the base station transmitting the at least one power control command to the communications device; and

the communications device implementing a first power control command of the at least one power control command.

5,603,097

DIGITAL RADIO SYSTEM CAPABLE OF HIGH-SPEED FREQUENCY CHANGING AT LOW POWER CONSUMPTION

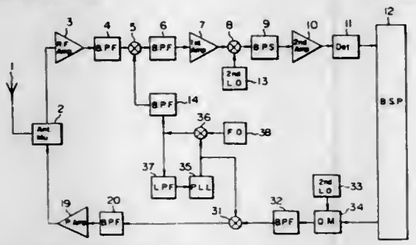
Hideto Kanou, Tokyo, Japan, assignor to Kyocera Corporation, Kyoto, Japan

Continuation of Ser. No. 181,614, Jan. 13, 1994, abandoned. This application Aug. 21, 1995, Ser. No. 517,196

Claims priority, application Japan, Jan. 13, 1993, 5-020528

Int. Cl.[6] H04B *1/50*

U.S. Cl. 455—76 **2 Claims**



1. A radio system comprising:

fixed frequency oscillator means for oscillating a fixed frequency signal and for generating at least a first output frequency,

a PLL frequency synthesizer for generating at least a second output frequency,

means for supplying the output frequency of the PLL frequency synthesizer to a transmitter side mixer as a transmitter local frequency,

means for mixing the first output frequency and the second output frequency and for producing local frequencies including at least a sum frequency and a difference frequency,

means for supplying the sum frequency to a receiver side mixer as a receiving first local frequency, and

means for feeding back the difference frequency to the PLL frequency synthesizer,

whereby the oscillator is used in common, thereby achieving a reduction in the size of the circuit, and whereby the output frequencies of the PLL frequency synthesizer and the fixed frequency oscillator means are lowered, thereby reducing power consumption, and whereby the input frequencies of the PLL frequency synthesizer means are lower than the output frequencies, thereby increasing frequency changing speed.

5,603,098

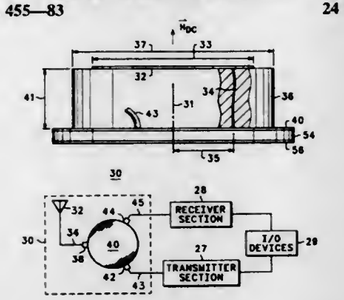
INTEGRATED RADIATING AND COUPLING DEVICE FOR DUPLEX COMMUNICATIONS

Philip P.-L. Kwan, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 21, 1995, Ser. No. 426,379

Int. Cl.[6] H04B *1/56*; **H01Q** *1/00*

U.S. Cl. 455—83 **24 Claims**



24. A duplex communication device, comprising:

a circulator having a magnetic field applied thereto and including:

a ferrite body having a first face and having a second face; and

a multi-port conductor formed on the ferrite body proximate the first face and having a transmitter port, a receiver port, and a further port for coupling to a radiator;

an electromagnetic radiator coupled to the ferrite body proximate the second face;

an electrical interconnection coupling the electromagnetic radiator to the further port, wherein the electrical interconnection lies at least in part within the ferrite body;

a transmitter section coupled to the transmitter port;

a receiver section coupled to the receiver port; and

an input-output device coupled to the transmitter section and the receiver section.

5,603,099

TRANSCEIVER FOR PREVENTING THE DEGRADATION OF RECEPTION SENSITIVITY AND MODULATION ACCURACY OF A TRANSMITTED SIGNAL WHEN AN EXTERNAL REFERENCE SIGNAL INCORPORATES NOISE

Nozomu Watanabe, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 27, 1994, Ser. No. 265,755

Claims priority, application Japan, Jun. 25, 1993, 5-155351

Int. Cl.[6] H04B *1/40*

U.S. Cl. 455—84 **3 Claims**

1. A transmitter/receiver comprising:

a superheterodyne receiver including a first and a second intermediate frequency (IF) amplifying stage;

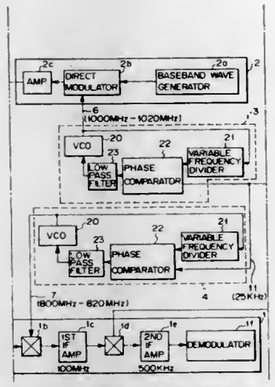
a transmitter;

a transmission local oscillation signal generator for feeding a transmission local oscillation signal to said transmitter;

a first reception local oscillation signal generator for feeding a first reception local oscillation signal to the first intermediate frequency (IF) amplifying stage;

a second reception local oscillation signal generator for feeding a second reception local oscillation signal which is synchronized to an external reference signal, and which is provided to the second IF amplifying stage, said external reference signal being provided from outside of said transmitter/receiver, said second local reception local oscillation signal generator having a low-loop gain; and

a fixed frequency divider for receiving said second reception local oscillation signal which branches off from said second reception local oscillation signal generator, an output of said fixed frequency divider being applied to said transmission local signal generator and said first reception local signal generator as a reference signal.



5,603,100

PORTABLE TELEPHONE WITH SPEAKER PROJECTED IN FRONT UPPER OBLIQUE DIRECTION

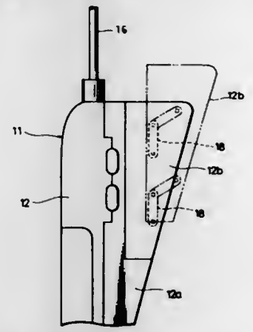
Hiroshi Yasuda, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 21, 1994, Ser. No. 326,936

Claims priority, application Japan, Oct. 29, 1993, 5-272794

Int. Cl.[6] H04B *1/38*

U.S. Cl. 455—89 **11 Claims**



1. A portable telephone comprising:

a telephone body having an upper portion and a lower portion;

a microphone attached to said lower portion of said telephone body;

an antenna attached to said upper portion of said telephone body;

a speaker; and

a supporting mechanism mounted on said upper portion of said telephone body, for supporting said speaker attached thereto at a first position and a second position relative to said telephone body, said speaker being movable between said first position and said second position, movement of said speaker from said first position to said second position following a linear path and resulting in the speaker being in a front upper oblique direction relative to said telephone body, wherein at said second position said speaker is projected from said telephone body and wherein said supporting mechanism includes an arm pivotally attached to a side of said telephone body and said speaker is projected from said telephone body by pivoting said arm to an obtuse angle relative to a front surface of said telephone body.

5,603,101

METHOD OF AND APPARATUS FOR DISPLAYING TEMPERATURE ON A RADIO TELEPHONE

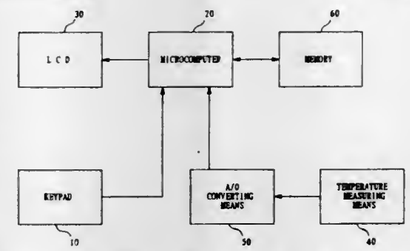
Jin-Gyu Choi, Seoul, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyonggi-Do, Rep. of Korea

Filed Dec. 22, 1994, Ser. No. 361,983

Claims priority, application Rep. of Korea, Dec. 30, 1993, 93-31191

Int. Cl.[6] H04B *1/38*

U.S. Cl. 455—89 **3 Claims**



1. A method of displaying temperature on a radio telephone, the radio telephone comprising a key pad for selecting temperature, speech mode, or other various functions, means for measuring current environment or room temperature for producing an electrical signal corresponding to said environment or room temperature and an liquid crystal display for displaying said current environment or room temperature, the method including the steps of:

a) using said key pad for determining whether a temperature mode is selected:

b) when said temperature mode has been selected in step (a), reading said current environment or room temperature through said temperature measuring means, and displaying said measured current temperature on said liquid crystal display for a predetermined time; and

c) after said predetermined time has lapsed, stopping said temperature mode, and converting said temperature mode into a speech mode.

5,603,102

HOUSING AND PORTABLE INTEGRATED SATELLITE COMMUNICATIONS SYSTEM

Mihailo V. Rebec, and Mohammed S. Rebec, both of Bristol, Ind., assignors to Trans Video Electronics Inc., Bristol, Ind.

Continuation-in-part of Ser. No. 85,329, Jul. 2, 1993, which is a continuation-in-part of Ser. No. 47,089, Apr. 16, 1993. This application Apr. 12, 1994, Ser. No. 226,484

Int. Cl.[6] H04N *7/20*

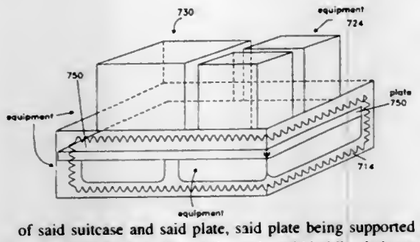
U.S. Cl. 455—90 **18 Claims**

1. A housing for a portable integrated communications system, comprising:

a suitcase for housing said portable integrated communications system having a lid and a bottom portion, said bottom portion having a bottom and sides, said sides having a holding ledge attached thereto;

a plate having a top and a bottom and being capable of fitting within said bottom portion with a spacing between said sides

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of said suitcase and said plate, said plate being supported in said bottom portion of said suitcase by said holding ledge; and

a basket frame attached to said plate for attaching said portable integrated communications system to said plate such that said portable integrated communications system does not contact said suitcase.

5,603,103

RADIO TELEPHONE WITH COMPLIANT SHIELD AND METHOD

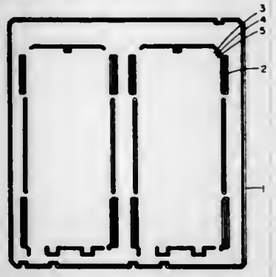
Mikko Halttunen, Oulu, and Pertti Korhonen, Salo, both of Finland, assignors to Nokia Mobile Phones Ltd., Salo, Finland

Filed Nov. 21, 1994, Ser. No. 343,083

Claims priority, application Finland, Nov. 26, 1993, 935269

Int. Cl.[6] H04B *1/38*

U.S. Cl. 455—90 **15 Claims**



15. A method of assembling a housing for a radio telephone, comprising:

disposing a first shielding member to a first major surface of a substantially planar support member;

disposing a second shielding member to a second major surface of the substantially planar support member;

coupling the first and second shielding members together thereby sandwiching the support member between said first and second shielding member;

urging the first and second shielding members against respective first and second major surfaces of the support members; and

providing the support member with an electrically conductive track for electrically coupling a component supported by the circuit board and shielded by the shielding members with test apparatus disposed outside the shielding to allow testing at any stage in the assembling process, including testing performed after coupling the first and second shielding members together and should the testing reveal any faulty component, the first and second shielding members may be de-coupled to permit access to said component for repair or replacement thereof, said support member including a shoulder which is cut off after testing.

5,603,104

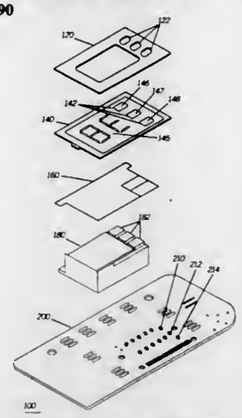
LCD SYSTEM WITH INTEGRATED ANNUNCIATOR

William C. Phelps, III, Plantation; Dwayne A. Daggs, Sunrise; Armando Gonzalez, Miami, and Masaru Tokiyama, Coral Springs, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 33,927, Mar. 18, 1993, abandoned. This application Mar. 21, 1995, Ser. No. 518,475

Int. Cl.[6] H04B *1/40*

U.S. Cl. 455—90 **7 Claims**



1. A liquid crystal display system responsive to a plurality of control signals, comprising:

a liquid crystal display including a negative image display annunciator area having a controllable aperture that prevents light from passing through said annunciator area when the controllable aperture is closed, said aperture being responsive to a control signal selected from said plurality of control signals to selectively open and close said aperture; and

an illuminator positioned behind the annunciator area, the illuminator being responsive to a control signal selected from said plurality of control signals for turning the illuminator on and off;

wherein the control signal for the controllable aperture is synchronized with the control signal for the illuminator to turn the illuminator on and off when the controllable aperture is opened and closed respectively, such that there is no illumination behind the annunciator area when the controllable aperture is closed.

5,603,105

BASEBAND SIGNAL PROCESSING CIRCUIT FOR A RADIO COMMUNICATION APPARATUS

Koji Iwahashi, Tokyo, Japan, assignor to NEC Corporation, Japan

Continuation of Ser. No. 816,399, Dec. 27, 1991, abandoned. This application Dec. 29, 1993, Ser. No. 175,685

Claims priority, application Japan, Dec. 29, 1990, 2-418503

Int. Cl.[6] H04B *1/04*

U.S. Cl. 455—110 **8 Claims**

1. A baseband processing circuit for a radio communication apparatus, comprising:

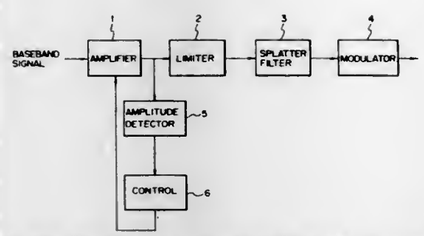
an amplifier for amplifying an amplitude of an input baseband signal to thereby produce an amplified baseband signal;

a limiter for limiting the amplitude of said amplified baseband signal to a limiter level;

a splatter filter for receiving and filtering the output of said limiter;

a modulator for receiving the output of said splatter filter;

an amplitude detector for detecting the amplitude of said amplified baseband signal to thereby output a detection signal; and



a control unit responsive to said detection signal for controlling the gain of said amplifier to cause the amplified signal output from said amplifier to remain at or lower than a predetermined level, said predetermined level being higher than the limiter level, when the amplitude detector detects that the amplified signal output from said amplifier has an amplitude greater than the predetermined level, thereby substantially preventing the output amplitude of the splatter filter from exceeding the input amplitude of the splatter filter.

5,603,106

ADJUSTABLE TRANSMISSION POWER CONTROL CIRCUIT

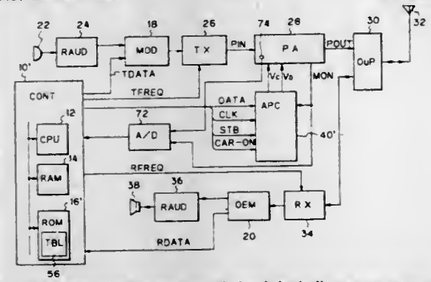
Yoshifumi Toda, Tokyo, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 38,064, Mar. 29, 1993, abandoned, which is a continuation of Ser. No. 578,231, Sep. 6, 1990, abandoned. This application Jul. 11, 1995, Ser. No. 500,526

Claims priority, application Japan, Sep. 6, 1989, 1-231059

Int. Cl.[6] H04B *1/04*

U.S. Cl. 455—126 **8 Claims**



1. A transmission power control circuit including a power amplifier, comprising:

an A/D converter;

temperature sensing means for sensing an operating temperature of the power amplifier and producing a sensed temperature analog output signal which is input to said A/D converter and which in turn outputs a corresponding sensed temperature digital signal;

control data table means for storing digital values of corresponding, plural and different analog levels of a monitor voltage output from the power amplifier and representative of respective, plural and different selectable transmission power output levels of transmission signal outputs of the power amplifier, for respective, different transmission frequencies and at each of plural, different operating temperatures of the power amplifier;

control means for selecting one of said digital values stored in said control data table means in accordance with a specified transmission frequency and a specified transmission power output level and at a sensed, current operating temperature as represented by a digital temperature signal output of the temperature sensing means, and for outputting the selected digital value;

D/A conversion means for converting said selected digital value to a reference voltage of the corresponding analog level; and

power amplification controlling means for controlling an amplification factor of the power amplifier so that the analog level of the monitor voltage which is output from the power amplifier in monitoring a current transmission signal output becomes equal to the analog level of said reference voltage.

5,603,107

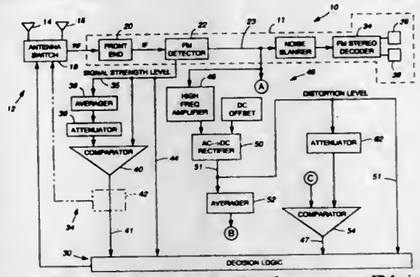
SWITCHING SYSTEM FOR DIVERSITY ANTENNA FM RECEIVER

Gordon E. Gottfried, Dearborn; Latha Ravi, Farmington Hills, and Mark C. Burek, Livonia, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jun. 9, 1995, Ser. No. 489,190

Int. Cl.[6] H04B *17/02*

U.S. Cl. 455—133 **14 Claims**



1. An FM receiver having a plurality of antennas, an FM signal detector generating a strength signal indicating a level of radio-wave voltage, and a noise detector generating a noise signal indicating the level of noise, and a switching circuit including a logic control for selecting one of said plurality of antennas in response to the strength signal or the noise signal reaching a threshold level;

wherein said logic control further comprises an adapter for revising said threshold level, said adapter comprising at least one of a first interrupt generator and a second interrupt generator, said first interrupt generator being responsive to a significant short duration drop in signal level, and said second interrupt generator being responsive to a significant short duration increase in noise.

5,603,108

CONTROL SECTION FOR AN RDS-TMC RADIO RECEIVER

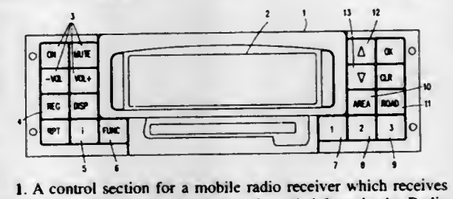
Martin Thoone, Braunfels, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 20, 1994, Ser. No. 359,368

Claims priority, application Germany, Dec. 23, 1993, 43 44 173.4

Int. Cl.[6] H04B *1/18*

U.S. Cl. 455—186.1 **12 Claims**



1. A control section for a mobile radio receiver which receives and decodes information transmitted in coded form in the Radio Data System (RDS) in its Traffic Message Channel (TMC), wherein the control section comprises an information key which, when actuated for the duration of a first time interval, causes received, decoded and previously stored information to be repro-

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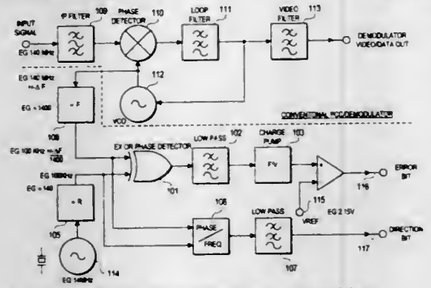
duced, and which, when actuated for the duration of a second time interval, searches for other RDS-TMC stations than the currently received ROS-TMC station.

5,603,109

AUTOMATIC FREQUENCY CONTROL WHICH MONITORS THE FREQUENCY OF A VOLTAGE CONTROLLED OSCILLATOR IN A PLL DEMODULATOR

Stuart M. Feeney, Cupertino, Calif., assignor to P-Com, Inc., Santa Clara County, Calif.

Filed Mar. 29, 1994, Ser. No. 220,065
Int. Cl.[6] H04B *1/16*
U.S. Cl. 455—192.2 **9 Claims**



1. An automatic frequency control circuit comprising:

a source of a reference signal having a constant frequency;

an EX-OR gate coupled to receive the reference signal and an input signal, the input signal having a frequency that is proportional to a frequency to be controlled; and

a control circuit which analyzes an output signal from the EX-OR gate and changes the frequency to be controlled according to the analysis, wherein the control circuit comprises:

a filter coupled to separate a component signal from the output signal of the EX-OR gate, the component signal having a frequency equal to the absolute difference between the frequency of the reference signal and the frequency of the input signal;

a charge pump coupled to the filter, the charge pump generating a voltage that indicates the frequency of the component signal;

a comparator coupled to the charge pump, wherein the comparator generates a first bit which indicates whether the voltage is greater than a threshold; and

control logic which in response to the first bit indicating the voltage is greater than the threshold, changes the frequency to be controlled.

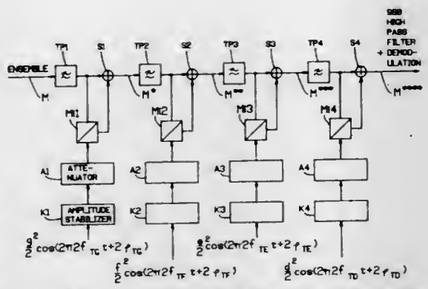
5,603,110

PROCESS AND ARRANGEMENT FOR COMPENSATING ADJACENT-CHANNEL INTERFERENCE IN A DOUBLE-SIDEBAND AMPLITUDE MODULATION SYSTEM

Gustav Heinzmann, Zeulackerstr. 20, 6000 Frankfurt 60, Germany

PCT No. PCT/DE91/00929, § 371 Date Jun. 1, 1993, § 102(e) Date Jun. 1, 1993, PCT Pub. No. WO92/10039, PCT Pub. Date Jun. 11, 1992
PCT Filed Nov. 28, 1991, Ser. No. 70,435
Claims priority, application Germany, Dec. 1, 1990, 40 38 405.5
Int. Cl.[6] H04B *1/06*
U.S. Cl. 455—203 **16 Claims**

1. In an ensemble comprising a mixture of several double-sideband modulated signals including (a) an upper signal at the upper end of the ensemble, such upper signal having an



interference-free upper sideband (b) a lower signal at the lower end of the ensemble, such lower signal having an interference-free lower sideband, and (c) an intermediate signal to be received between the upper and lower ends of the ensemble, and wherein:

each modulated signal has a different carrier frequency;

each of the sidebands of the intermediate signal is overlapped and being interfered with by a sideband of another signal; and

it is desired, in order to receive by single-sideband reception the upper sideband of the intermediate signal, a method to eliminate interference with the upper sideband of the intermediate signal including the step of:

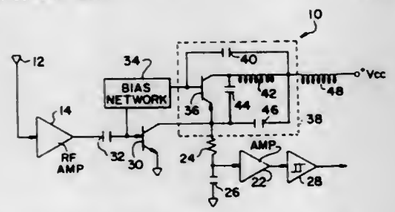
applying an anti-interference compensation to the sideband interfering with the upper sideband of the intermediate signal, whereby the upper sideband of the intermediate signal is made substantially interference-free.

5,603,111

SYNCHRONOUS TRACKING AM RECEIVER

Michael A. Wyatt, Clearwater, Fla., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 334,896, Nov. 4, 1994, abandoned, which is a continuation of Ser. No. 905,802, Jun. 29, 1992, abandoned. This application Jun. 29, 1995, Ser. No. 496,548
Int. Cl.[6] H04B *1/16*; **H03D** *1/00*
U.S. Cl. 455—215 **9 Claims**



1. A synchronous tracking AM receiver, comprising:

injection means for generating an injection signal in response to an RF input signal;

oscillator means including an oscillator connected to said injection means for generating a continuous oscillating signal and for providing a tracking bandwidth at a center frequency of the synchronous tracking AM receiver which is directly proportional to said injection signal over which the synchronous tracking AM receiver will track said RF input signal, said oscillator means including bias means for continuously operating said oscillator to exhibit non-linearity for demodulation so as to generate a tracking oscillating signal in response to said injection signal; and

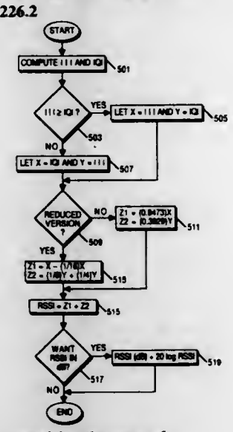
means for filtering said tracking oscillating signal to generate a demodulated AM output signal.

5,603,112

RECEIVED SIGNAL STRENGTH INDICATOR UTILIZING APPROXIMATION FACTORS AND THE I AND Q SIGNAL COMPONENTS

Manuel P. Gabato, Schaumburg, and Mark A. Gannon, Carpentersville, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 691,899, Apr. 26, 1991, abandoned. This application Jan. 20, 1995, Ser. No. 376,483
Int. Cl.[6] H04B *17/00*
U.S. Cl. 455—226.2 **17 Claims**



1. A method comprising the steps of:

receiving a signal having a magnitude;

demodulating the signal, producing therefrom a first signal component and a second signal component;

computing the magnitude of the first signal component and the second signal component;

when the magnitude of the first signal component is greater than or equal to the magnitude of the second signal component, scaling the first signal component by a first factor, thereby yielding a first scaled component, and scaling the second signal component by a second factor, thereby yielding a second scaled component;

when the magnitude of the second signal component is greater than the magnitude of the first signal component, scaling the first signal component by the second factor, thereby yielding the first scaled component, and scaling the second

signal component by the first factor, thereby yielding the second scaled component;

adding the first scaled component to the second scaled component, the result yielding a received signal strength indication, wherein the first factor is 0.9473 or 0.9375 and the second factor is 0.3929 or 0.3750.

5,603,113

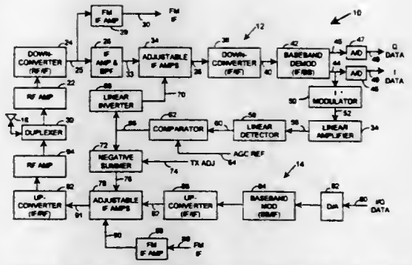
AUTOMATIC GAIN CONTROL CIRCUIT FOR BOTH RECEIVER AND TRANSMITTER ADJUSTABLE AMPLIFIERS INCLUDING A LINEAR SIGNAL LEVEL DETECTOR WITH DC BLOCKING, DC ADDING, AND AC REMOVING COMPONENTS

John P. De Loe, Jr., Decatur, Ga., assignor to Oki telecom, Suwanee, Ga.

Continuation of Ser. No. 78,983, Jun. 16, 1993, abandoned. This application Feb. 9, 1995, Ser. No. 386,080
Int. Cl.[6] H04B *7/005*
U.S. Cl. 455—234.1 **10 Claims**

1. A code division multiple access (CDMA) automatic gain control circuit for a CDMA cellular telephone, said circuit comprising:

a CDMA adjustable receiver amplifier including a gain control input, a signal input, and a signal output;



a CDMA linear feedback control system including

a linear, non-logarithmic signal level detector including an input and an output, wherein said input of said linear, non-logarithmic signal level detector is coupled to said signal output of said CDMA adjustable receiver amplifier, wherein said linear, non-logarithmic signal level detector includes

means for, upon receiving an input signal with an alternating current (AC) component and a direct current (DC) component, blocking the DC component of the input signal to leave only the AC component of the input signal,

means connected to said blocking means for adding to said input signal a second DC component linearly proportionate to said AC component to produce a shifted signal having the second DC component and an AC component similar to the AC component of the input signal, and

means connected to said adding means for receiving said shifted signal and for removing said AC component of the shifted signal to produce a detector output signal including substantially only the second DC component; and

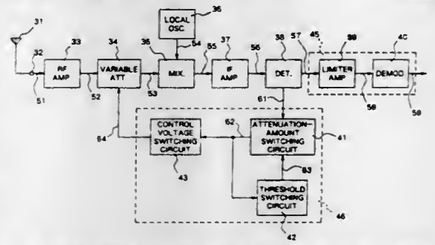
a comparator including a detection input, a reference input for receiving a reference signal, and an output, wherein said detection input of said comparator is coupled to said output of said linear signal level detector, and wherein said output of said comparator is coupled to said gain control input of said CDMA adjustable receiver amplifier and said gain control input of said CDMA adjustable transmitter amplifier.

5,603,114

DISTORTIONLESS RECEIVING CIRCUIT

Hiroki Tomita, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 1, 1994, Ser. No. 332,042
Claims priority, application Japan, Dec. 3, 1993, 5-304203
Int. Cl.[6] H04B *1/10*; *1/16*
U.S. Cl. 455—249.1 **4 Claims**



3. A distortionless receiving circuit for radio receivers, comprising:

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radio frequency amplification means for amplifying a radio frequency reception signal and outputting it as a first signal;

variable attenuation means for receiving as input said first signal, providing said first signal with a certain amount of attenuation corresponding to a control voltage and outputting it as an output signal thereof;

frequency conversion means for converting said output signal of said variable attenuation means into a second signal of intermediate frequency and outputting it as an output thereof;

intermediate frequency amplification means for amplifying said second signal and outputting it as a third signal;

wave detection means for detecting said third signal, outputting a detected signal, and also outputting a level detection signal corresponding to an intensity of said third signal; and

control means for generating said control voltage in accordance with said level detection signal;

wherein said control means comprises:

threshold switching means for receiving, as input, an attenuation amount switching signal, switching the threshold according to said attenuation-amount switching signal, and outputting a threshold signal;

attenuation-amount switching control means for comparing said level detection signal with said threshold signal and outputting said attenuation-amount switching signal; and

a control voltage switching means for switching said control voltage according to said attenuation-amount switching signal and outputting said control voltage as the output thereof.

5,603,115

DIRECT BROADCASTING SATELLITE TUNER WITH AN AUTO THRESHOLD CONTROL DEMODULATOR

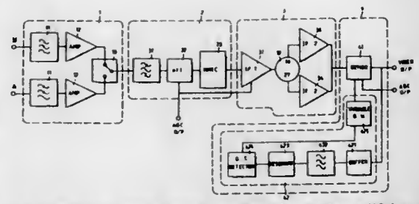
Hsi-Yung Ku, Taipei, Taiwan, assignor to Hwa Lin Electronics Co., Ltd., Taipei, Taiwan

Filed Apr. 5, 1995, Ser. No. 417,191

Int. Cl.[6] H04B *1/06;7/00*

U.S. Cl. 455—254 **7 Claims**

1. A direct broadcasting satellite tuner comprising:



radio frequency input means for receiving and amplifying the radio frequency signal transmitted from a satellite antenna;

frequency converting means for converting the signal outputted from said radio frequency input device into an intermediate frequency signal;

intermediate frequency amplification means for amplifying the output intermediate frequency signal from said frequency converting means, then filtrating the amplified intermediate frequency signal by bandwidth of 16 MHz or 27 MHz, and then amplifying the filtrated signal; and

auto threshold control demodulating means comprising of a demodulator circuit and an auto threshold control circuit; wherein:

said demodulator circuit receives and demodulates the output signal from said intermediate frequency amplification means so as to obtain a satisfactory baseband signal by means of the control of an automatic gain control circuit;

said auto threshold control circuit receives the output signal from said demodulator circuit and then changes the signal into a corresponding DC signal through filtration, resonance and amplification processing procedures for controlling the amount of electric current passing through and its equivalent impedance, so as to keep said demodulator circuit maintained effective within bandwidth 8–27 MHz to fit different weather conditions and antenna specifications and to automatically regulate the receiving threshold of the tuner.

DESIGNS

FEBRUARY 11, 1997

377,857

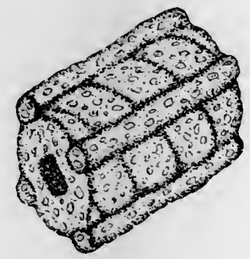
FOOD PRODUCT

James R. Borek, Burnsville, and James N. Weinstein, Maple Grove, both of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Filed Feb. 6, 1996, Ser. No. 49,979

Term of patent 14 years

U.S. Cl. D1—125



377,858

SPORTS SHOE

Peter Edauw, Camalo' di Povegliano, and Francesco Caeran, Montebelluna, both of Italy, assignors to Nordica S.p.A., Italy, and Rollerblade, Inc., Minnetonka, Minn.

Filed Sep. 25, 1995, Ser. No. 44,458

Claims priority, application WIPO, Mar. 28, 1995, DM/032 626

Term of patent 14 years

U.S. Cl. D2—904



377,859

COMBINED TREAD SURFACE AND PERIPHERY OF A SHOE SOLE

Marco Bramani, Milan, Italy, assignor to Vibram S.p.A., Albizzate, Italy

Filed Nov. 30, 1995, Ser. No. 47,314

Claims priority, application WIPO, May 31, 1995, DMA/002955

Term of patent 14 years

U.S. Cl. D2—953



377,860

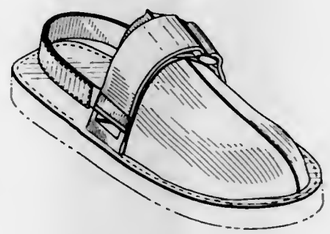
SANDAL UPPER

Gregory O. Renault, P.O. Box 832, La Jolla, Calif. 92037

Filed Jan. 17, 1996, Ser. No. 49,002

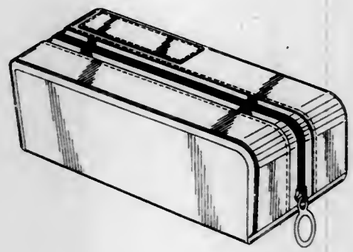
Term of patent 14 years

U.S. Cl. D2—969

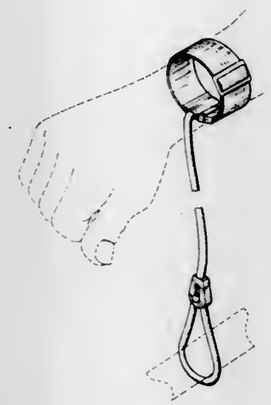


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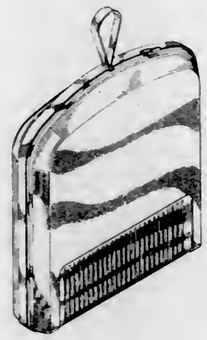
377,861
INHALER CARRYING CASE
Jeffrey M. Jacober, Providence, R.I., assignor to MEDport, Inc., Providence, R.I.
Filed Feb. 21, 1996, Ser. No. 50,666
Term of patent 14 years
U.S. Cl. D3—203



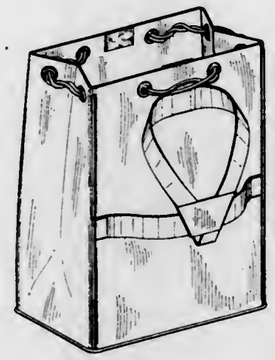
377,862
TOOL HOLDER
Brian J. Moore, 533 Shoup West, Twin Falls, Id. 83301
Filed Jul. 7, 1995, Ser. No. 41,128
Term of patent 14 years
U.S. Cl. D3—228



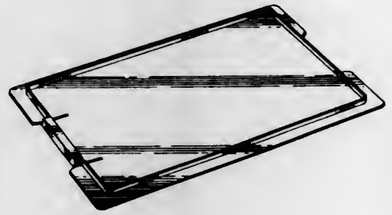
377,863
HANGING STORAGE CASE
Ralph Van Skiver, Arlington, Tex., assignor to Doskocil Manufacturing Company, Inc., Arlington, Tex.
Filed Jan. 18, 1995, Ser. No. 33,675
Term of patent 14 years
U.S. Cl. D3—278



377,864
TOTE BAG
Judith A. Miller, and Christopher J. Miller, both of 619 Kitlou Ct., Holland, Ohio 43528
Filed Mar. 22, 1996, Ser. No. 52,078
Term of patent 14 years
U.S. Cl. D3—303



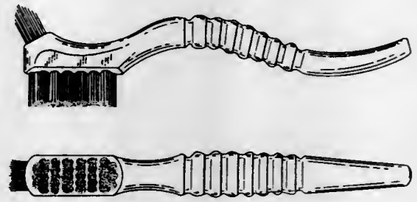
377,865
LID FOR TRANSPORT CONTAINER
Karl-Gustaf Kristoffersson, Örkelljunga, Sweden, assignor to Perstorp AB, Perstorp, Sweden
Filed Jun. 7, 1995, Ser. No. 39,893
Claims priority, application Sweden, Dec. 7, 1994, 942470
Term of patent 14 years
U.S. Cl. D3—326



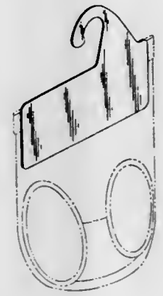
377,866
PURSE HANGER
Estela B. Samples, 2200 Maplewood, Colleyville, Tex. 76034
Filed Jan. 22, 1996, Ser. No. 50,565
Term of patent 14 years
U.S. Cl. D3—328



377,867
DENTURE BRUSH
Robert D. Berghash, Williamsville; Daniel A. Jachimowicz, Elba, and Christopher Pearson, Bergen, all of N.Y., assignors to Brimms Inc., Tonawanda, N.N.Y.
Filed Oct. 21, 1994, Ser. No. 30,051
Term of patent 14 years
U.S. Cl. D4—105



377,868
GARMENT HANGER
Sandra K. Charlet, Lenoir, N.C., assignor to Alba-Waldensian, Inc., Valdese, N.C.
Division of Ser. No. 28,797, Sep. 22, 1994, Pat. No. Des. 368,590. This application Jul. 24, 1995, Ser. No. 41,763
Term of patent 14 years
U.S. Cl. D6—315



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377,869

COLLAPSIBLE COAT HANGER

Josef Huser, Wattwil, Switzeriand, assignor to Hedworth Ltd., Kowloon, Hong Kong

Filed Sep. 12, 1995, Ser. No. 43,799

Term of patent 14 years

U.S. Cl. D6—318



377,870

CHAIR

Giu Jiang, No. 21, Lane 160, Ho Tso St., Feng Yuan City, Taichung Hsien, Taiwan

Filed Aug. 8, 1995, Ser. No. 42,399

The portion of the term of this patent subsequent to Feb. 21, 2009, has been disclaimed.

Term of patent 14 years

U.S. Cl. D6—380



377,871

CRIB

Patrick L. Pollard, Columbus, Ga., assignor to Baby's Dream Furniture, Inc., Buena Vista, Ga.

Filed May 9, 1996, Ser. No. 54,297

Term of patent 14 years

U.S. Cl. D6—390



377,872

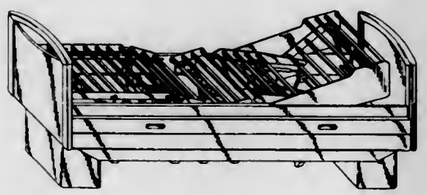
BED

Henri Biefnot, Grand Route 22, Mons, Belgium; Marius Boonants, rue du Vallon 21, Eugies, Belgium, and Marcel Hubert, rue des Francs 69, Marcinelle, Belgium

Filed Jun. 2, 1995, Ser. No. 39,691

Term of patent 14 years

U.S. Cl. D6—392



377,873

OFFICE DESK

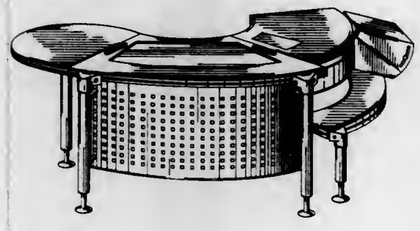
Reinhard Flötotto, Gütersloh, Germany, assignor to Flötotto Einrichtungssysteme GmbH & Co. KG, Germany

Filed Apr. 19, 1995, Ser. No. 37,722

Claims priority, application Germany, Oct. 19, 1994, M9408020.8

Term of patent 14 years

U.S. Cl. D6—427



377,874

ADJUSTABLE STAND

James H. Wright, Sausalito, Calif., assignor to Richmond Engineering, Inc., Sausalito, Calif.

Filed Sep. 6, 1995, Ser. No. 43,518

Term of patent 14 years

U.S. Cl. D6—461



377,875

LEG SUPPORT

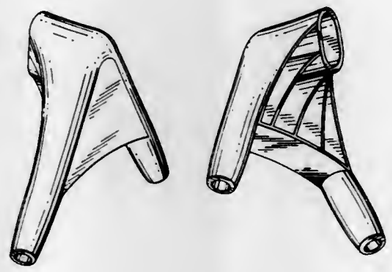
Ian Drinkwater, Bury St. Edmonds, United Kingdom, assignor to President Office Furniture Ltd., United Kingdom

Filed Apr. 20, 1995, Ser. No. 37,771

Claims priority, application United Kingdom, Oct. 20, 1994, 2042727; Oct. 20, 1994, 2042728

Term of patent 14 years

U.S. Cl. D6—491



377,876

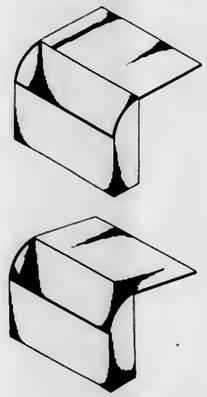
REMOTE CONTROL HOLDER

John P. Hatala, 236 St. Patrick Street, Ottawa, Ontario, Canada, and Andrew A. Hatala, 2180 Rebecca Street, Oakville, Ontario, Canada

Filed Mar. 31, 1995, Ser. No. 36,962

Term of patent 14 years

U.S. Cl. D6—513



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LIQUID SOAP AND SHAMPOO DISPENSER

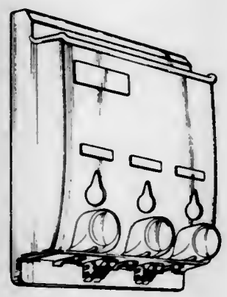
Leonard C. Andrus, Plymouth, and Larry G. Turner, Fenton, both of Mich., assignors to Brass-Craft Manufacturing Company, Novi, Mich.

Continuation-in-part of Ser. No. 26,757, Aug. 4, 1994, Pat. No. Des. 360,094. This application Jun. 14, 1995, Ser. No. 40,257

The portion of the term of this patent subsequent to Jul. 11, 2009, has been disclaimed.

Term of patent 14 years

U.S. Cl. D6—544



377,878

Patent Not Issued For This Number

377,879

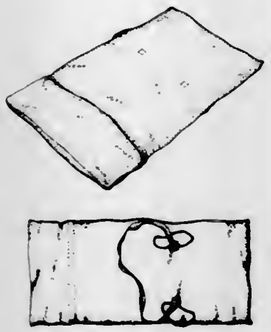
COMBINED LOUNGING MAT AND COMPARTMENTED PILLOW WITH CARRYING HANDLE AND ROLL-UP STRAPS

Nancy C. Walden, Rte. 4, Box 346A, Lillington, N.C. 27546

Filed Jan. 31, 1994, Ser. No. 18,089

Term of patent 14 years

U.S. Cl. D6—596



377,880

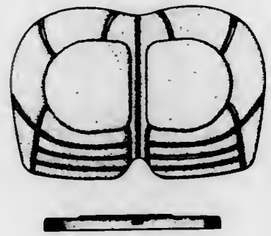
BENCH CUSHION

George C. Oyama, Jr., 6322 B Ferris Sq., San Diego, Calif. 92121

Filed Sep. 29, 1995, Ser. No. 44,785

Term of patent 14 years

U.S. Cl. D6—601



377,881

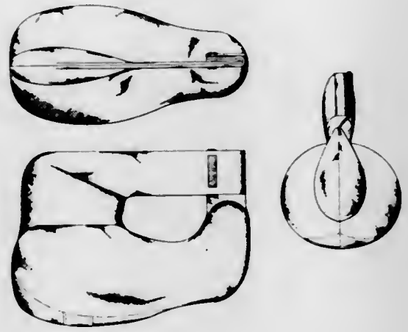
CHILD'S PILLOW

Karen L. Watt, 905 Bill Wright Rd., Jefferson, Ga. 30549

Filed Oct. 20, 1995, Ser. No. 46,646

Term of patent 14 years

U.S. Cl. D6—601



377,882

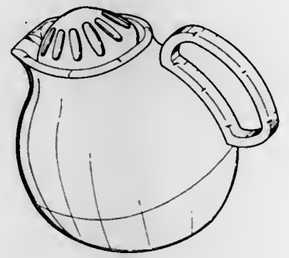
VACUUM FLASK

Frank T. Huang, Suite 804, 8 Fl., No. 128, Sec. 3, Ming-Sheng E. Rd., Taipei, Taiwan

Filed Mar. 5, 1996, Ser. No. 51,347

Term of patent 14 years

U.S. Cl. D7—317



377,883

FRYING-PAN

Florence Candianides, Annecy, France, assignor to Tefal S.A., Rumilly, France

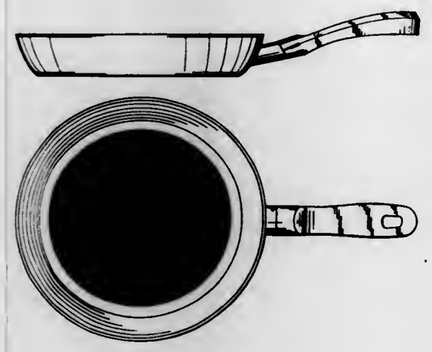
Filed Apr. 5, 1994, Ser. No. 20,895

Claims priority, application France, Oct. 20, 1993, 93 5392

The portion of the term of this patent subsequent to Jan. 21, 2013, has been disclaimed.

Term of patent 14 years

U.S. Cl. D7—361



377,884

TABLE PLATE

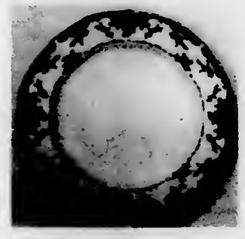
Fumihiko Ogino, Konan, Japan, assignor to Noritake Co., Ltd., Japan

Filed Sep. 18, 1995, Ser. No. 44,729

Claims priority, application Japan, Apr. 6, 1995, 7-9779

Term of patent 14 years

U.S. Cl. D7—588



377,885

BOTTLE SUPPORT WITH OBLONG BASE

Elizabeth A. Knapton, P.O. Box 15234, Fritz Creek, Ak. 99603

Filed Apr. 15, 1996, Ser. No. 53,172

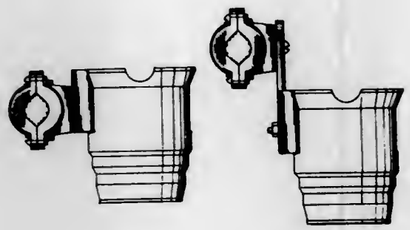
Term of patent 14 years

U.S. Cl. D7—619

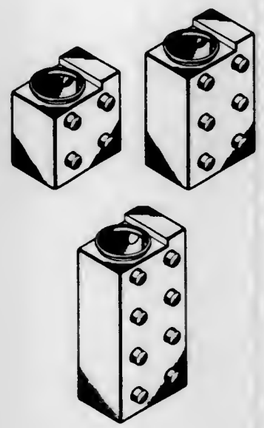


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377,886
BEVERAGE CONTAINER HOLDER
Raymond Colton, Tonica, Ill., assignor to RACO USA Incorporated, Tonica, Ill.
Continuation-in-part of Ser. No. 34,056, Jan. 26, 1995, Pat. No. Des. 369,526. This application Jan. 29, 1996, Ser. No. 49,697
Claims priority, application Canada, Aug. 12, 1994, 1994 1580
Term of patent 14 years
U.S. Cl. D7—620



377,887
BUILDING BLOCK DRINK CONTAINER
William S. Credle, Jr., Stone Mountain, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.
Division of Ser. No. 27,425, Aug. 22, 1994. This application Apr. 4, 1996, Ser. No. 52,591
Term of patent 14 years
U.S. Cl. D7—625



377,888
HAND HELD ROTISSERIE FOR HOT DOGS AND MARSHMALLOWS
Elizabeth L. Griffin, 81 Timberland Dr., Greenwood, Ark. 72936
Filed May 6, 1996, Ser. No. 54,083
Term of patent 14 years
U.S. Cl. D7—683



377,889
PUMPKIN SCOOP
Ian T. Allison, P.O. Box 1705, Santa Rosa, Calif. 95402
Filed Apr. 17, 1995, Ser. No. 37,533
Term of patent 14 years
U.S. Cl. D7—688



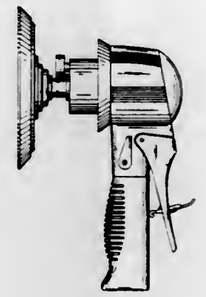
377,890
NUT HOLDING CUP FOR OPEN END WRENCH
Mike M. Kurachi, 1323-A Canal, Modesto, Calif. 95354
Filed Oct. 4, 1993, Ser. No. 13,829
Term of patent 14 years
U.S. Cl. D8—14



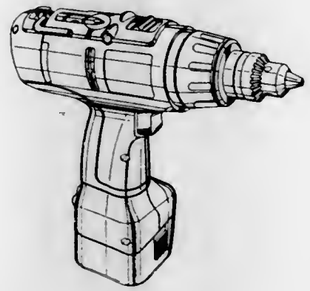
377,891
CAULKING GUN NOZZLE
David Bencich, 26 Arthur Phillip Way, Mill Park Victoria, 3082, Australia
Filed Dec. 2, 1994, Ser. No. 31,704
Term of patent 14 years
U.S. Cl. D8—14.1



377,892
SANDER
Eric Sung, Ta-Li, Taiwan, assignor to K.K.U. Limited, Tokyo, Japan
Filed Sep. 11, 1995, Ser. No. 43,682
Term of patent 14 years
U.S. Cl. D8—62



377,893
ELECTRIC DRILL
Tat N. Lui, Aberdeen, Hong Kong, assignor to Choon Nang Electrical Appliance Mfty., Ltd., Hong Kong
Filed Sep. 6, 1995, Ser. No. 43,525
Claims priority, application United Kingdom, Mar. 8, 1995, 2045937
Term of patent 14 years
U.S. Cl. D8—68



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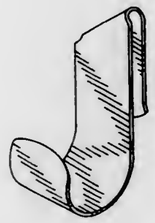
377,894
IMPACT WRENCH
Eric Sung, Ta-Li, Taiwan, assignor to K. K. U. Limited, Japan
Filed Sep. 11, 1995, Ser. No. 43,731
Term of patent 14 years
U.S. Cl. D8—68



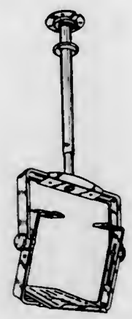
377,895
ERGONOMIC HANDLE
Randall R. Theken, 1115 Robinson Ave., Barberton, Ohio 44203
Filed Oct. 24, 1994, Ser. No. 30,233
Term of patent 14 years
U.S. Cl. D8—303



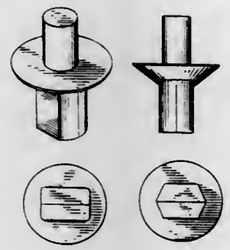
377,896
FENCE HOOK
Larry D. Mesna, 32118 Hunsacker Way; Gregory C. Mesna, and Wendy L. Mesna, both of P.O. Box 2344, all of Running Springs, Calif. 92382
Division of Ser. No. 12,392, Aug. 30, 1993, Pat. No. Des. 364,335. This application Apr. 10, 1995, Ser. No. 37,277
Term of patent 14 years
U.S. Cl. D8—367



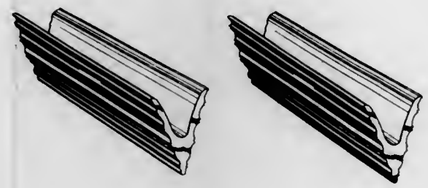
377,897
TV CEILING SUPPORT
Henricus H. Vogels, Eiodhoven, Netherlands, assignor to Vogel's Holding B.V., Eindhoven, Netherlands
Filed Dec. 13, 1995, Ser. No. 47,841
Claims priority, application WIPO, Jun. 15, 1995, DMA/002971
Term of patent 14 years
U.S. Cl. D8—373



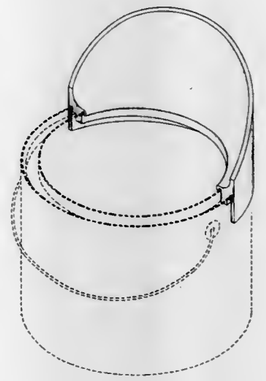
377,898
DRIVE RIVET
William R. Frame, Brookhaven, Pa., assignor to Southco, Inc., Concordville, Pa.
Filed Apr. 4, 1995, Ser. No. 37,122
Term of patent 14 years
U.S. Cl. D8—386



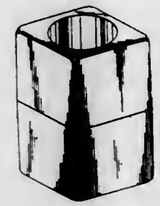
377,899
STABILIZING DEVICE
Paula Riley, New York, and Kenneth V. Stevens, Brooklyn, both of N.Y., assignors to Prescient Partners, L.P., New York, N.Y.
Filed May 17, 1995, Ser. No. 39,100
Term of patent 14 years
U.S. Cl. D8—499



377,900
PAINT CAN SPOUT
David R. Ford, 301 Feather Glen, Ridgeland, Miss. 39157
Filed Mar. 22, 1996, Ser. No. 52,086
Term of patent 14 years
U.S. Cl. D9—435



377,901
PACKAGING INSERT
John B. Payne, West Des Moines, Iowa; David R. Jones, West Palm Beach, Fla., and Carl A. Ahrens, Grinnell, Iowa, assignors to Bayer Corporation, Pittsburgh, Pa.
Filed May 19, 1988, Ser. No. 196,114
Term of patent 14 years
U.S. Cl. D9—456



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377,902
WET WIPE CONTAINER
Dominic N. Marucci, Philadelphia, Pa., assignor to Kimberly-Clark Tissue Company, Neenah, Wis.
Filed Feb. 17, 1994, Ser. No. 18,885
Term of patent 14 years
U.S. Cl. D9—534



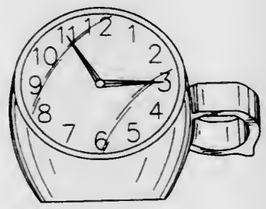
377,903
COMBINED BOTTLE AND STOPPER
Robert du Grenier, and David Horner, both of New York, N.Y., assignors to Chesebrough-Pond's USA Co., Division of Conopco Inc., Greenwich, Conn.
Filed Mar. 19, 1996, Ser. No. 51,932
Term of patent 14 years
U.S. Cl. D9—546



377,904
CYLINDRICAL CONTAINER
Borge Hestehave, Alta Loma, and Kield Hestehave, Upland, both of Calif., assignors to Bomatic, Inc., Ontario, Calif.
Filed Nov. 2, 1994, Ser. No. 30,120
Term of patent 14 years
U.S. Cl. D9—552



377,905
CLOCK
David P. Lage, St. Louis County, Mo., assignor to Quick Point, Inc., Fenton, Mo.
Filed Sep. 8, 1995, Ser. No. 43,641
Term of patent 14 years
U.S. Cl. D10—6



377,906
WRISTWATCH
Eddy Burgener, Le Landeron, Switzerland, assignor to Sportime Watches AG, Bienne, Switzerland
Filed Nov. 1, 1995, Ser. No. 45,890
Claims priority, application Hague Agreement, May 3, 1995, DMA/002927
Term of patent 14 years
U.S. Cl. D10—32



377,907
WATCH
Eddy Burgener, Le Landeron, Switzerland, assignor to Sportime Watches AG, Bienne, Switzerland
Filed Nov. 1, 1995, Ser. No. 45,889
Claims priority, application Hague Agreement, May 3, 1995, DMA/002927
Term of patent 14 years
U.S. Cl. D10—39



377,908
METAL DETECTOR
Gilbert Y. Yue, Kowloon, Hong Kong, assignor to Alert Enterprises, Inc., San Diego, Calif.
Filed Nov. 20, 1995, Ser. No. 46,889
Term of patent 14 years
U.S. Cl. D10—47

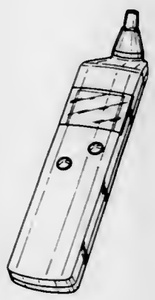


377,909
THERMOSTATIC REMOTE CONTROL
Anders Smith, Copenhagen, Denmark, assignor to Danfoss A/S, Denmark
Filed Feb. 20, 1996, Ser. No. 50,449
Claims priority, application Germany, Sep. 15, 1995, 95 07391.4
Term of patent 14 years
U.S. Cl. D10—50



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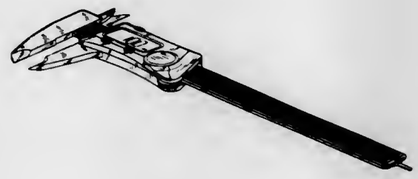
377,910
THERMOMETER
Peter Hartwein, Kronberg, Germany, assignor to Braun Aktiengesellschaft, Kronberg, Germany
Filed Jan. 30, 1996, Ser. No. 49,730
Claims priority, application Germany, Jul. 31, 1995, M 95 06 024.3
Term of patent 14 years
U.S. Cl. D10—57



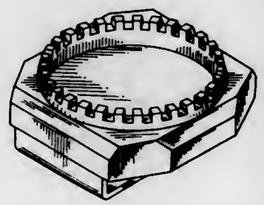
377,911
TAPE MEASURE FRAME
Takeo Ogasawara, Tokyo, Japan, assignor to Yamayo Measuring Tools Co., Ltd.
Filed Jan. 17, 1996, Ser. No. 49,004
Term of patent 14 years
U.S. Cl. D10—72



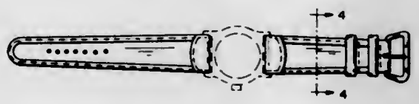
377,912
DIGITAL SLIDING CALIPER
Werner Walser, Grabs, Switzerland, assignor to Kunststoffwerk AG Buchs, Buchs, Switzerland
Filed Aug. 28, 1995, Ser. No. 43,188
Claims priority, application WIPO, Feb. 28, 1995, DM/032243
Term of patent 14 years
U.S. Cl. D10—73



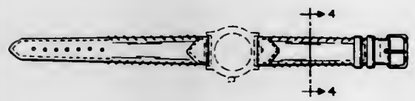
377,913
SLIP-ON WRIST CASE FOR CAPSULE COMPONENTS SUCH AS COMPASSES OR THERMOMETERS
Gregory L. Cross, Arvada, Colo., assignor to Sun Company, Inc., Arvada, Colo.
Filed Feb. 2, 1996, Ser. No. 49,895
Term of patent 14 years
U.S. Cl. D10—74



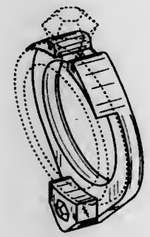
377,914
WRISTWATCH STRAP
Judith R. Riley, Goshen, Conn., assignor to Timex Corporation, Middlebury, Conn.
Filed Sep. 25, 1995, Ser. No. 44,435
Term of patent 14 years
U.S. Cl. D11—3



377,915
WRISTWATCH STRAP
Judith R. Riley, Goshen, Conn., assignor to Timex Corporation, Middlebury, Conn.
Filed Sep. 25, 1995, Ser. No. 44,445
Term of patent 14 years
U.S. Cl. D11—3



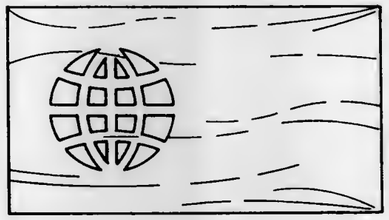
377,916
FINGER RING WRAP
Thomas B. Roemer, 1163 First Capitol Dr., St. Charles, Mo. 63301
Filed Dec. 21, 1995, Ser. No. 48,126
Term of patent 14 years
U.S. Cl. D11—26



377,917
INCENSE HOLDER
Mario D. Bishop, 5953 Trinity St., Philadelphia, Pa. 19143
Filed Oct. 11, 1995, Ser. No. 46,597
Term of patent 14 years
U.S. Cl. D11—131.1



377,918
WORLD'S FLAG
Lawrence J. McGarvey, 227 E. 14th St. Apt. #2E, New York, N.Y. 10003
Filed Sep. 28, 1995, Ser. No. 44,669
Term of patent 14 years
U.S. Cl. D11—176



377,919
CUFF LINK
Lon Singer, New York, N.Y.; Jenni Singer, 420 E. 55th St., New York, N.Y. 10022, and George Pappas, Merrick, N.Y., assignors to Lou Singer, and Jenni Singer, both of New York, N.Y.
Filed Jun. 21, 1995, Ser. No. 42,707
Term of patent 14 years
U.S. Cl. D11—226



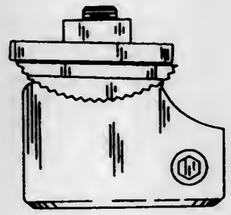
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377,920

BICYCLE SEATPOST CONNECTOR

Mark von Giese, Morgan Hill, Calif., assignor to VG Components, Morgan Hill, Calif.

Filed Aug. 25, 1994, Ser. No. 27,631
Term of patent 14 years
U.S. Cl. D12—119



377,921

AUTOMOBILE TIRE

Yasuo Himuro; Hiroshi Imai, and Yoshihiko Ichikawa, all of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed May 5, 1995, Ser. No. 38,512
Claims priority, application Japan, Nov. 7, 1994, 6-33661
Term of patent 14 years
U.S. Cl. D12—147

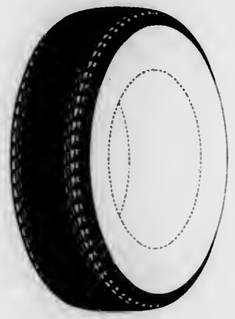


377,922

TIRE TREAD

Alex van der Meer, Schieren, Luxembourg, and Paul B. Maxwell, Munroe Falls, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Dec. 12, 1995, Ser. No. 47,774
Term of patent 14 years
U.S. Cl. D12—147

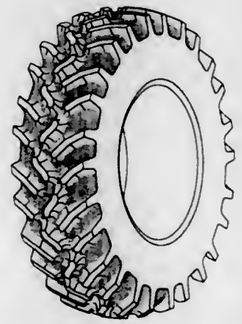


377,923

TRACTOR TIRE

Mark L. Bonko, Uniontown, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 22, 1996, Ser. No. 52,099
Term of patent 14 years
U.S. Cl. D12—147

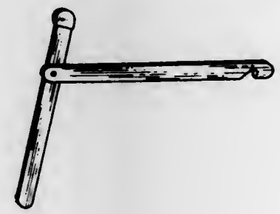


377,924

FIFTH WHEEL RELEASE BAR

Greg A. Christensen, 6041 Clark Mountain Rd., Lotus, Calif. 95651

Filed Nov. 28, 1994, Ser. No. 31,425
Term of patent 14 years
U.S. Cl. D12—161

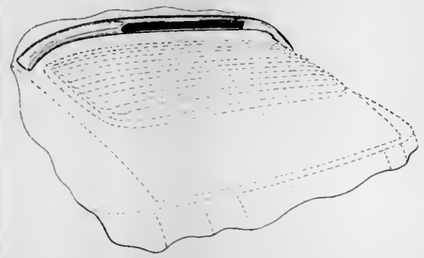


377,925

VEHICLE BODY MEMBER WITH RECEPTACLE FOR BRAKE LIGHTS

Anthony-Robert Hatter, Rutesheim, Germany, assignor to Dr. Ing. h.c.F. Porsche AG, Weissach, Germany

Filed May 24, 1994, Ser. No. 23,417
Claims priority, application Germany, Nov. 24, 1993, M 93 09 087.0
Term of patent 14 years
U.S. Cl. D12—181

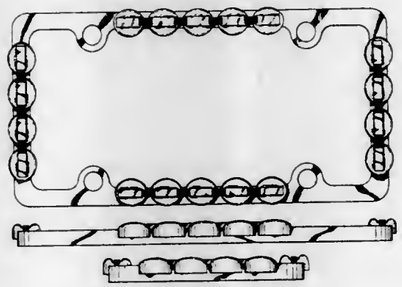


377,926

LICENSE PLATE FRAME

Linda Kheyfets, Miami Beach, Fla., assignor to Rally Accessories, Inc., Miami, Fla.

Filed Apr. 12, 1996, Ser. No. 52,970
Term of patent 14 years
U.S. Cl. D12—193

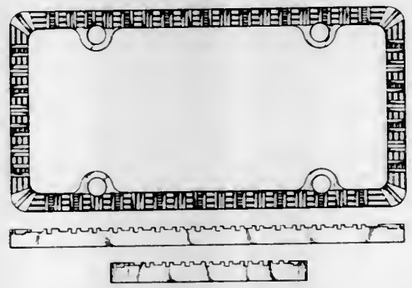


377,927

LICENSE PLATE FRAME

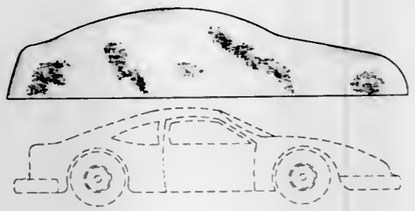
Donna Kreidt, Hollywood, Fla., assignor to Rally Accessories, Inc., Miami, Fla.

Filed Apr. 12, 1996, Ser. No. 52,971
Term of patent 14 years
U.S. Cl. D12—193

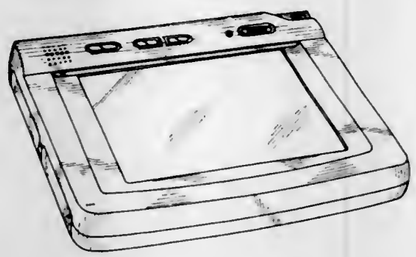


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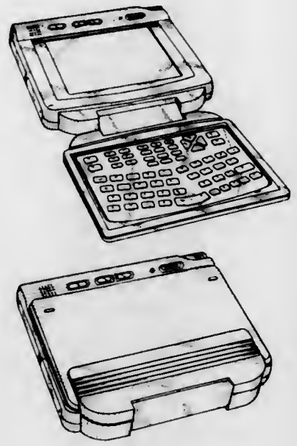
377,928
PROTECTIVE HAIL COVER FOR VEHICLES
Jeffrey D. Tillery, 2032 Hocotake, Knoxville, Tenn. 37912
Filed Nov. 8, 1995, Ser. No. 46,168
Term of patent 14 years
U.S. Cl. D12—401



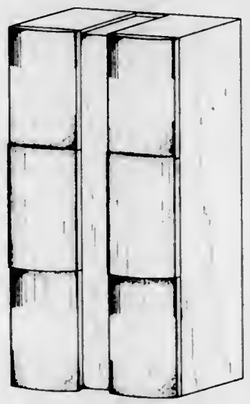
377,929
COMPUTER
Hajime Sekino; Hirofumi Sako, and Ryu Wakui, all of Tottori-Ken, Japan, assignors to Sanyo Electric Co., Ltd., Osaka-Fu, and Tottori Sanyo Electronic Co., Ltd., Tottori-ken, both of Japan
Filed Jan. 17, 1996, Ser. No. 49,643
Claims priority, application Japan, Jul. 19, 1995, 7-21055
Term of patent 14 years
U.S. Cl. D14—100



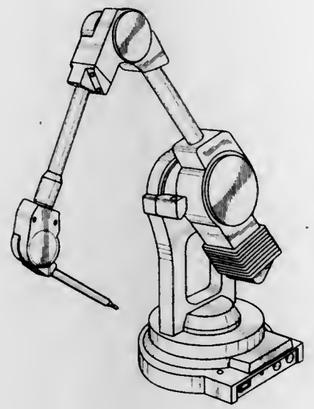
377,930
COMPUTER
Hajime Sekino; Hirofumi Sako, and Ryu Wakui, all of Tottori-ken, Japan, assignors to Sanyo Electric Co., Ltd., Osaka-fu, and Tottori Sanyo Electric Co., Ltd., Tottori-ken, both of Japan
Filed Jan. 17, 1996, Ser. No. 49,642
Claims priority, application Japan, Jul. 19, 1995, 7-21052
Term of patent 14 years
U.S. Cl. D14—106



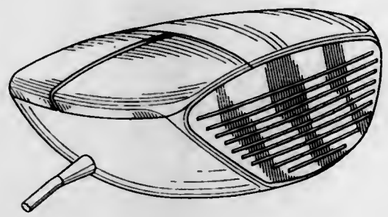
377,931
COMPUTER PERIPHERAL DEVICE
James C. Dow, and Modest Khovaylo, both of Fort Collins, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Jan. 16, 1996, Ser. No. 48,932
Term of patent 14 years
U.S. Cl. D14—107



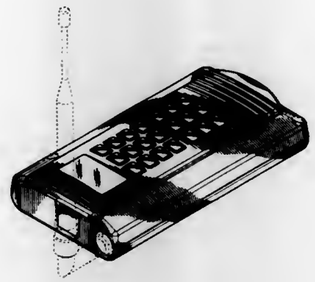
377,932
MECHANICAL DIGITIZING ARM USED TO INPUT THREE DIMENSIONAL DATA INTO A COMPUTER
Bruce M. Schena, Menlo Park, and Louis B. Rosenberg, Pleasanton, both of Calif., assignors to Immersion Human Interface Corporation, San Jose, Calif.
Filed Oct. 31, 1995, Ser. No. 45,857
Term of patent 14 years
U.S. Cl. D14—114



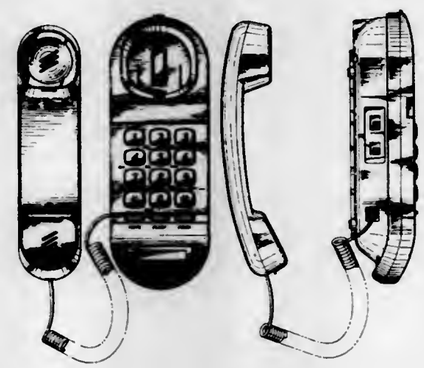
377,933
COMPUTER MOUSE
Kyle G. Harrison, 4406 Normandy Ave., Dallas, Tex. 75205-2044, and Edwin L. McClung, 1341 Meadowcreek Dr. #380, Irving, Tex. 75038
Filed Nov. 13, 1995, Ser. No. 46,272
Term of patent 14 years
U.S. Cl. D14—114



377,934
HOUSING FOR A TELEPHONE
Thomas F. Vondrak, Libertyville, and Daniel L. Williams, Vernon Hills, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jan. 5, 1995, Ser. No. 33,170
Term of patent 14 years
U.S. Cl. D14—138

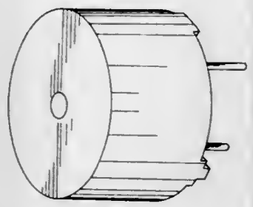


377,935
TELEPHONE
David Fink, Dix Hills, N.Y., assignor to Windsor Industries, Inc., Farmingdale, N.Y.
Filed Mar. 17, 1995, Ser. No. 36,312
Term of patent 14 years
U.S. Cl. D14—150

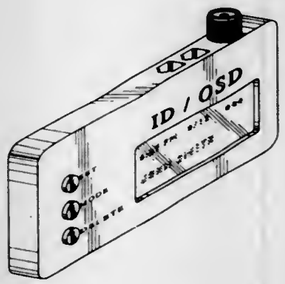


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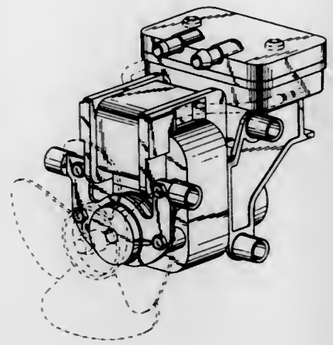
377,936
ELECTROACOUSTIC TRANSDUCER
Yoshio Imahori, Shizuoka, Japan, assignor to Star Micronics Co., Ltd., Shizuoka, Japan
Filed Mar. 7, 1996, Ser. No. 51,264
Claims priority, application Japan, Sep. 8, 1995, 7-26528
Term of patent 14 years
U.S. Cl. D14—222



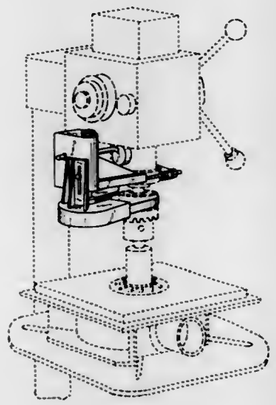
377,937
CALLER ID
Kenny Tucker, Rte. 5, Box 408, Cochran, Ga. 31014
Filed Jan. 16, 1996, Ser. No. 48,945
Term of patent 14 years
U.S. Cl. D14—240



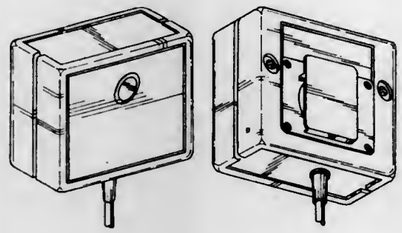
377,938
AIR COMPRESSOR
Roy J. Rozek, Plymouth, Wis., assignor to Thomas Industries Inc., Sheboygan, Wis.
Filed Nov. 13, 1995, Ser. No. 46,291
Term of patent 14 years
U.S. Cl. D15—9



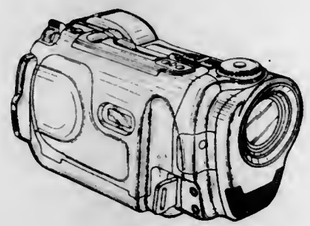
377,939
APPARATUS FOR LINEARLY DISPLACING A ROTATABLE SPINDLE
Waldo E. Bair, Panama City Beach, Fla., and Raymond L. Wilson, Pittsburgh, Pa., assignors to Delta International Machinery Corp., Pittsburgh, Pa.
Filed Aug. 19, 1994, Ser. No. 27,191
Term of patent 14 years
U.S. Cl. D15—125



377,940
VIDEO CAMERA HOUSING
John W. Totsch, R.R. #1, Box 905, Fairfield, Vt. 05455
Filed Feb. 21, 1995, Ser. No. 35,118
Term of patent 14 years
U.S. Cl. D16—202



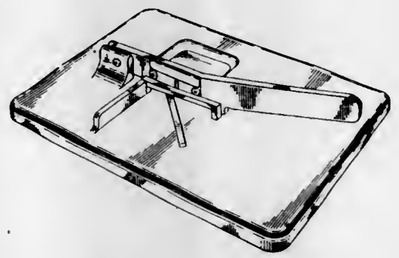
377,941
VIDEO CAMERA WITH VIDEO TAPE RECORDER
Chifuyu Tanaka, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 19, 1996, Ser. No. 49,198
Claims priority, application Japan, Jul. 25, 1995, 7-21518
Term of patent 14 years
U.S. Cl. D16—202



377,942
MULTI-LAYER ROTARY HOLDING PATTERN ENTRY CALCULATOR
John K. McCloy, 4832 N. Willow Crest Ave., N. Hollywood, Calif. 91601
Filed Aug. 14, 1995, Ser. No. 42,584
Term of patent 14 years
U.S. Cl. D18—10



377,943
CUTTER
Roland Quinton, St-Ferdinand, Canada, assignor to Gestion Quinton Inc., St-Ferdinand, Canada
Filed Mar. 19, 1996, Ser. No. 51,925
Term of patent 14 years
U.S. Cl. D18—34



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COPYING MACHINE

Hiroo Seki, Yokohama, Japan; Mark S. Penke, West Henrietta, and Jacob W. Patla, Fairport, both of N.Y., assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 10, 1995, Ser. No. 45,115

Claims priority, application Japan, Apr. 25, 1995, 7-11492

Term of patent 14 years

U.S. Cl. D18—39



377,945

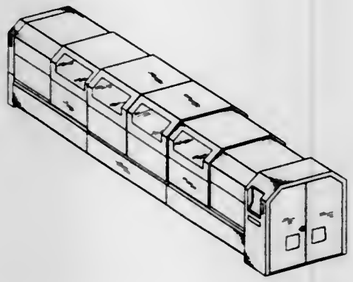
HOUSING FOR AN ENGRAVER

Kenneth F. Bornhorst, Jr., Centerville; Pierre L. Crease, Dayton; Kim E. Izor, Miamisburg; Larry D. Lucous, and Larry L. Uptegraph, both of Dayton, all of Ohio, assignors to Ohio Electronic Engravers, Inc., Dayton, Ohio

Continuation-in-part of Ser. No. 16,023, Dec. 3, 1993, Pat. No. Des. 366,061. This application Aug. 25, 1995, Ser. No. 43,080

Term of patent 14 years

U.S. Cl. D18—57



377,946

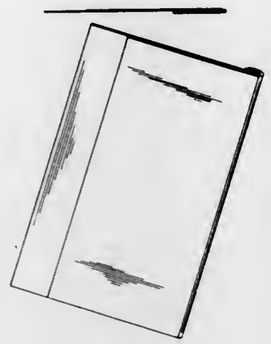
NOTEBOOK POUCH

Diana J. French, and Charlotte M. Odau, both of 2009 Linden Lake Rd., Fort Collins, Colo. 80524

Filed Nov. 12, 1993, Ser. No. 15,358

Term of patent 14 years

U.S. Cl. D19—3



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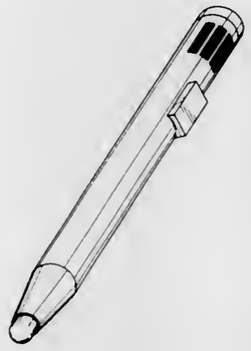
VOICE ACTIVATED WRITING UTENSIL

Sooya M. Ladner, 5901 Blackley La., Indianapolis, Ind. 46254

Filed Oct. 30, 1995, Ser. No. 45,794

Term of patent 14 years

U.S. Cl. D19—36



377,948
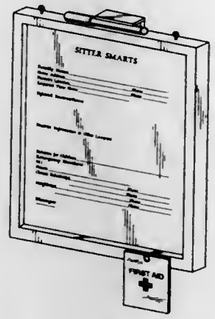
DRY ERASE BOARD

Tonya L. Pruhs, 757 N. 200 West, Logan, Utah 84321

Filed Dec. 12, 1995, Ser. No. 47,757

Term of patent 14 years

U.S. Cl. D19—52



377,949

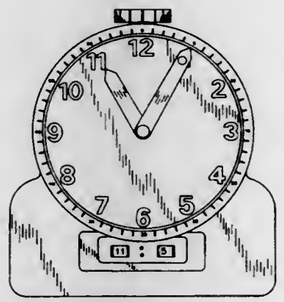
DIGITAL/ANALOG TEACHING CLOCK

Richard Woldenberg, 176 Hastings; Jane Woldenberg, 788 Kimballwood La.; Tirza Ernst, 1776 Berkeley Rd., all of Highland Park, Ill. 60035, and Barbara Plain, 1615 E. Lincoln Ave., Des Plaines, Ill. 60018

Filed Sep. 14, 1995, Ser. No. 43,958

Term of patent 14 years

U.S. Cl. D19—64



377,950

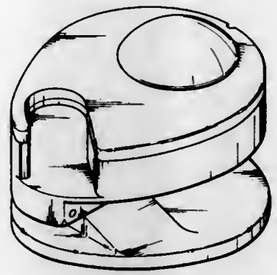
COMBINATION OF TAPE DISPENSER AND STAPLER

Dick Shen, No. 1-3, Shan wei, Kung Hsi Tsun, Kuei Shan Hsiang, Taoyuan Hsien, Taiwan, and Janey Lee, 4F., No. 24, Alley 23, Lane 85, Sec. 3, Mu Cha Rd., Taipei, both of Taiwan

Filed Dec. 5, 1995, Ser. No. 47,476

Term of patent 14 years

U.S. Cl. D19—69



377,951

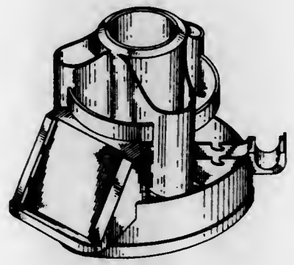
DESK ORGANIZER

Ronald D. McDiarmid, La Habra, Calif., assignor to Gruga, U.S.A., City of Industry, Calif.

Filed Oct. 30, 1995, Ser. No. 46,727

Term of patent 14 years

U.S. Cl. D19—78



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ANIMAL DOLL FOR USE AS A STATIONERY HOLDER

Chi F. Tsui, Chai Wan, Hong Kong, assignor to Fixtron Ltd., Virgin Islands (Br.)

Filed Feb. 7, 1996, Ser. No. 50,048

Claims priority, application United Kingdom, Aug. 8, 1995, 2049446

Term of patent 14 years

U.S. Cl. D19—82



377,953

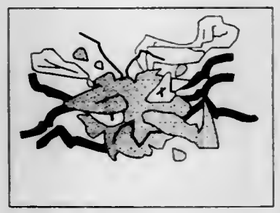
WINDOW DECAL

Robert C. Kraus, Jr., 1203 Geneva St., Menasha, Wis. 54952

Filed Jun. 13, 1994, Ser. No. 24,463

Term of patent 14 years

U.S. Cl. D20—11



377,954

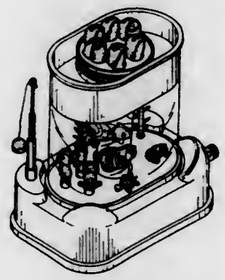
FISHING GAME TOY

Chuan-Tien Chuang, No. 40, Lane 174, Da-Shing Street, Tainan, Taiwan

Filed Mar. 11, 1996, Ser. No. 51,469

Term of patent 14 years

U.S. Cl. D21—12



377,955

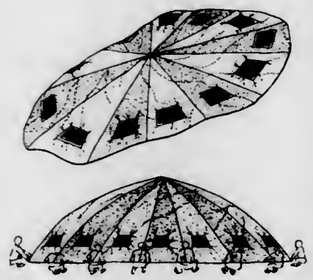
PORTHOLE PARACHUTE PLAYTHING FOR GROUP ACTIVITY

Christine Davis, Angola, N.Y., assignor to Select Service & Supply Co., Inc., Atlanta, Ga.

Filed Apr. 17, 1996, Ser. No. 53,196

Term of patent 14 years

U.S. Cl. D21—59



377,956

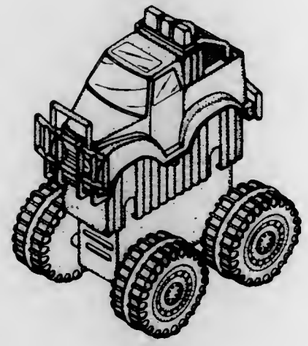
TOY CAR

Chuan-Tien Chuang, No. 40, Lane 174, Da-Shing Street, Tainan, Taiwan

Filed Mar. 12, 1996, Ser. No. 51,517

Term of patent 14 years

U.S. Cl. D21—137



377,957

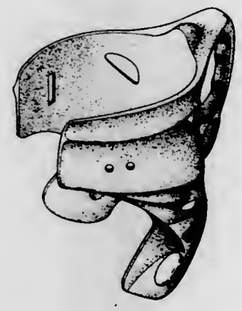
GAITER FOR A SKATE BOOT

Ting-Hsing Chen, Tainan, Taiwan, assignor to Far Great Plastics Industrial Co., Ltd., Tainan, Taiwan

Filed Feb. 21, 1996, Ser. No. 50,506

Term of patent 14 years

U.S. Cl. D21—226



377,958

GAITER FOR SKATE BOOT

Ting-Hsing Chen, Tainan, Taiwan, assignor to Far Great Plastics Industrial Co., Ltd., Tainan, Taiwan

Filed Feb. 21, 1996, Ser. No. 50,508

Term of patent 14 years

U.S. Cl. D21—226



377,959

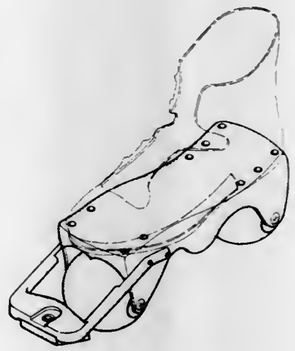
ROLLER SKATE

Wang-Chuan Chen, No. 37, Lane 278, Hai Wei Road, Lung Ching Hsiang, Taichung Hsien, Taiwan

Filed Mar. 4, 1996, Ser. No. 51,123

Term of patent 14 years

U.S. Cl. D21—226

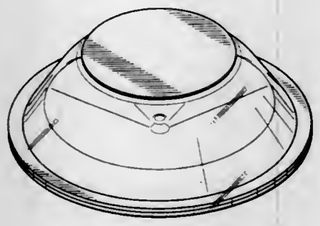


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377,960
TWIN TUBE BIRD SCARER
Colin Wood, New Milton, England, assignor to Haddenham Limited, Hong Kong
Filed Sep. 9, 1994, Ser. No. 28,220
Term of patent 14 years
U.S. Cl. D22—120



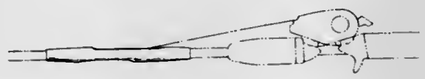
377,961
INSECT BAIT STATION
Dane Dickson, Pleasanton; Frank Knafelc, Lafayette; Ronald E. Heiskell, Tracy; Ezra A. Theys, San Mateo, and David E. Kolarich, Walnut Creek, all of Calif., assignors to The Clorox Company, Del.
Filed May 4, 1995, Ser. No. 38,349
Term of patent 14 years
U.S. Cl. D22—122



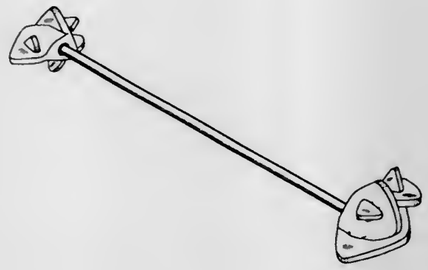
377,962
FISHING LURE RETRIEVER
Derrel G. Blain, 1110 E. Ikard, Henrietta, Tex. 76365
Filed Mar. 29, 1996, Ser. No. 52,676
Term of patent 14 years
U.S. Cl. D22—134



377,963
FISHLINE GUIDE PIPE
Seiji Myojo; Yasunori Hosoya, and Hiroshi Hashimoto, all of Osaka, Japan, assignors to Shimano Inc., Osaka, Japan
Filed Oct. 4, 1994, Ser. No. 29,355
Claims priority, application Japan, Jun. 17, 1994, 6-17884; Jun. 17, 1994, 6-17885; Jun. 17, 1994, 6-17886
Term of patent 14 years
U.S. Cl. D22—142



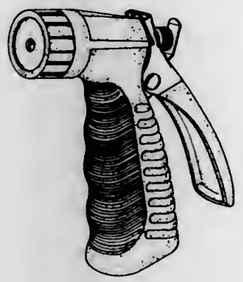
377,964
JUGGLING STICK
William E. Vestal, Lot 8, Block 19, #8 Carbonate Ave., Crestone, Colo. 81131
Filed Feb. 2, 1996, Ser. No. 49,906
Term of patent 14 years
U.S. Cl. D21—241



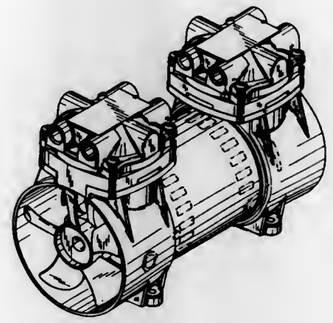
377,965
SHOWER HEAD
Leonard C. Andrus, Plymouth, Mich., assignor to Brass-Craft Manufacturing Company, Novi, Mich.
Division of Ser. No. 27,251, Aug. 9, 1994. This application Apr. 2, 1996, Ser. No. 52,308
Term of patent 14 years
U.S. Cl. D23—213



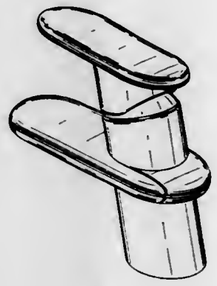
377,966
SPRAY GUN
King-Yuan Wang, Changhua Hsien, Taiwan, assignor to Yuan Mei Corp., Taiwan
Filed Feb. 9, 1996, Ser. No. 50,177
Term of patent 14 years
U.S. Cl. D23—226



377,967
AIR COMPRESSOR
Roy J. Rozek, Plymouth, and Ross Christiansen, Kiel, both of Wis., assignors to Thomas Industries Inc., Sheboygan, Wis.
Filed Nov. 13, 1995, Ser. No. 46,284
Term of patent 14 years
U.S. Cl. D23—235



377,968
FAUCET
Franco Bertoli, Milan, Italy, assignor to American Standard Inc., Piscataway, N.J.
Filed Jun. 23, 1995, Ser. No. 40,675
Claims priority, application Italy, Jan. 24, 1995, RE950000001
Term of patent 14 years
U.S. Cl. D23—238



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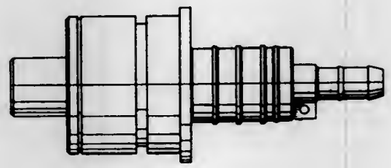
COAXIAL HOSE FITTING

Rodger P. Grantham, Springfield, Mo., assignor to Vapor Systems Technologies, Inc., Dayton, Ohio

Filed Aug. 14, 1995, Ser. No. 42,661

Term of patent 14 years

U.S. Cl. D23—262



377,970

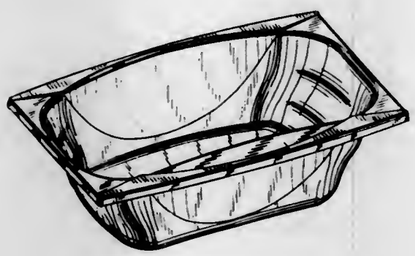
TUB FOR BATHING

Todd D. Dannenberg, Roseau, Minn., assignor to Kohler Co., Kohler, Wis.

Filed May 1, 1996, Ser. No. 53,882

Term of patent 14 years

U.S. Cl. D23—277



377,971

PORTABLE COMMODE

John Vanakkeren, Chicago, Ill., and Shivaprasad Dhanapal, Statesville, N.C., assignors to Rubbermaid Health Care Products Inc., Statesville, N.C.

Filed Nov. 13, 1995, Ser. No. 46,332

Term of patent 14 years

U.S. Cl. D23—296



377,972

TOILET

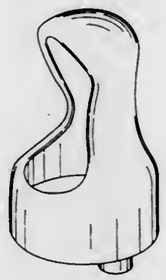
Sumiyo Kanai, 935-12 Midori-cho, Hachioji-shi, Tokyo, Japan

Filed Nov. 29, 1994, Ser. No. 31,590

Claims priority, application Rep. of Korea, Jun. 8, 1994, 94-12367

Term of patent 14 years

U.S. Cl. D23—302



377,973

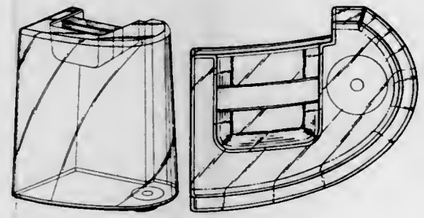
HUMIDIFIER TANK

Rodney Jané, Westboro, Mass.; Jui-Shang Wang, Taipei, Taiwan; Stanley Gresens, Homewood; Gregory Holderfield, Palatine, both of Ill., and John Longan, Shrewbury, Mass., assignors to Duracraft Corp., Southborough, Mass.

Filed Oct. 30, 1995, Ser. No. 45,795

Term of patent 14 years

U.S. Cl. D23—358



377,974

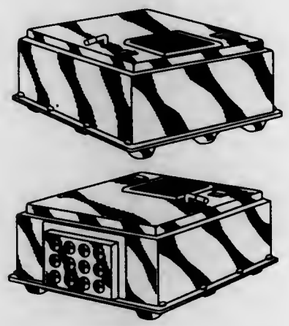
AIR PURIFIER

Robert E. Wasser, 4569 Samuel St., Sarasota, Fla. 34233

Filed Feb. 22, 1995, Ser. No. 35,209

Term of patent 14 years

U.S. Cl. D23—364



377,975

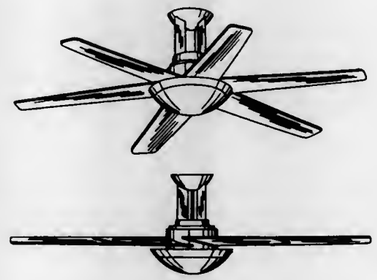
COMBINED CEILING FAN AND LIGHT

Stanfield K. Young, Cypress, Calif., assignor to Hunter Fan Company, Memphis, Tenn.

Filed Dec. 3, 1993, Ser. No. 15,968

Term of patent 14 years

U.S. Cl. D23—377



377,976

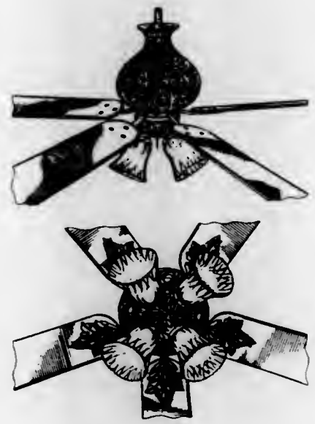
COMBINED CEILING FAN AND LIGHT FIXTURE ASSEMBLY

Jan Jaspers-Fayer, Idyllwild, Calif., assignor to Minka Lighting, Inc., Corona, Calif.

Filed Mar. 8, 1995, Ser. No. 35,893

Term of patent 14 years

U.S. Cl. D23—377



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DEPRESSION FOR A TABLET

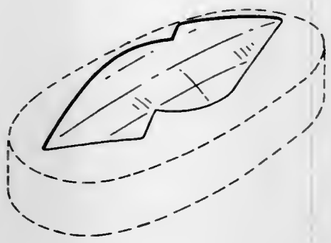
Philip T. Price; Michael B. Davies, both of Ware; Paul K. Rand, Letchworth; Yogendra Dandiker, Ware; Colin R. Heppenstall, Bishop's Stortford, and Paul D. Huckle, Royston, all of United Kingdom, assignors to Glaxo Group Limited, Middlesex, United Kingdom

Filed Jul. 9, 1994, Ser. No. 25,203

Claims priority, application United Kingdom, Jan. 19, 1994, 2036446

Term of patent 14 years

U.S. Cl. D24—101



377,978

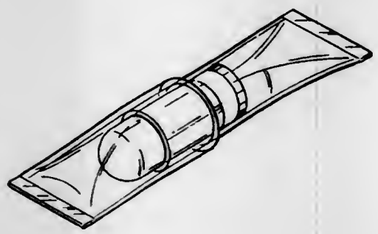
TOPICAL ASTRINGENT DISINFECTANT APPLICATOR WITH COVER

Terry M. Haber, El Toro; William H. Smedley, Lake Elsinore, and Clark B. Foster, Laguna Niguel, all of Calif., assignors to Habley Medical Technology Corporation, Lake Forrest, Calif.

Filed Dec. 12, 1994, Ser. No. 31,981

Term of patent 14 years

U.S. Cl. D24—119



377,979

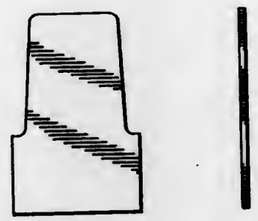
DIAPER FASTENING TAB CLOSURE

Donald L. Plaschko, Woodbury, and Douglas A. Swenson, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 5,967, Mar. 19, 1993, abandoned. This application May 23, 1995, Ser. No. 39,208

Term of patent 14 years

U.S. Cl. D24—126



377,980

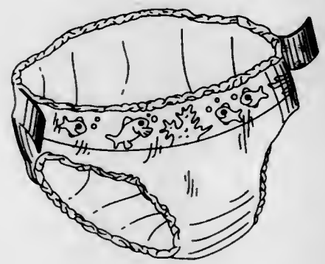
DISPOSABLE SWIM DIAPER

Linda J. Slingland, 185 High Crest Dr., West Milford, N.J. 07480

Filed May 4, 1995, Ser. No. 41,144

Term of patent 14 years

U.S. Cl. D24—126



377,981

DEPILATOR

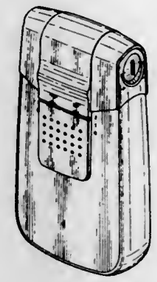
Peter Schneider, Königstein, Germany, assignor to Braun Aktiengesellschaft, Kronberg, Germany

Filed Oct. 5, 1995, Ser. No. 45,011

Claims priority, application WIPO, May 26, 1995, DM/033 087

Term of patent 14 years

U.S. Cl. D24—133



377,982

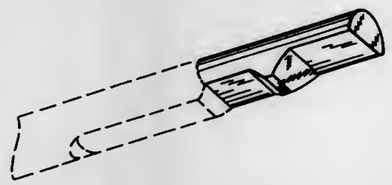
SURGICAL INSTRUMENT SHANK

James G. Walen, Kalamazoo, Mich., assignor to Stryker Corporation, Kalamazoo, Mich.

Filed Jul. 29, 1994, Ser. No. 26,497

Term of patent 14 years

U.S. Cl. D24—147



377,983

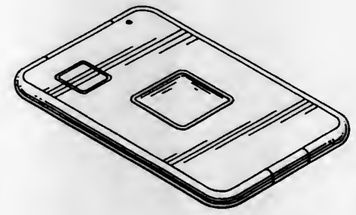
CARDIAC MONITOR

Mohamed Sabri, 14916 SW. Opal Dr., Beaverton, Oreg. 97006; Colin M. Portnuff, 19552 SW. 57th St., Tualatin, Oreg. 97062; John R. Rae, 17 Partridge La., Lake Oswego, Oreg. 97035; Habib Homayoun, 21053 SW. Charlene, Aloha, Oreg. 97006; Shirley L. Semler, and Herbert J. Semler, both of 6215 SW. Hamilton St., Portland, Oreg. 97221

Filed Sep. 13, 1995, Ser. No. 43,816

Term of patent 14 years

U.S. Cl. D24—167



377,984

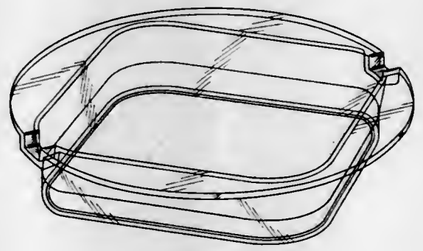
CELL INSERT

William Lahm, Sumter, S.C., and Timothy A. Stevens, Madison, N.J., assignors to Bectop, Dickinson and Company, Franklin Lakes, N.J.

Filed Sep. 29, 1995, Ser. No. 44,625

Term of patent 14 years

U.S. Cl. D24—224



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PATIO PRIVACY SCREEN

Carlos P. Frausto, 5747 Sprinter La., Bonita, Calif. 91902

Filed Aug. 31, 1995, Ser. No. 43,303

Term of patent 14 years

U.S. Cl. D25—53



377,986

WINDOW SASH

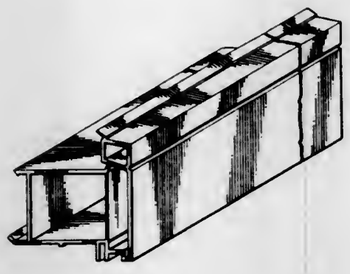
Reginald N. Pollard, Ancaster, Canada, assignor to Pollard Windows Inc., Burlington, Canada

Filed May 26, 1995, Ser. No. 39,374

Claims priority, application Canada, May 1, 1995, 1995-0929

Term of patent 14 years

U.S. Cl. D25—124



377,987

ANGULAR PROFILE FOR STEELWORK

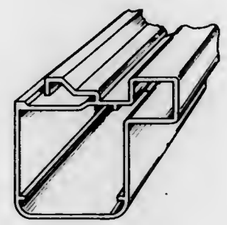
Ramon V. Enfedaque, Ctra. N-340. Km. 1.193'400, 43719 Bellvei (Tarragona), Spain

Filed Dec. 21, 1994, Ser. No. 32,573

Claims priority, application Spain, Jun. 21, 1994, 132896

Term of patent 14 years

U.S. Cl. D25—126



377,988

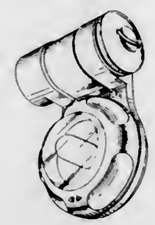
SAFETY LIGHT

John E. Brain, Pierrefond; Timothy D. F. Ford, Beaconsfield, and Michel S. Côté, Laval, all of Canada, assignors to NOV-LAB International Electronics Company, Laval, Canada

Filed Feb. 20, 1996, Ser. No. 50,459

Term of patent 14 years

U.S. Cl. D26—37



377,989

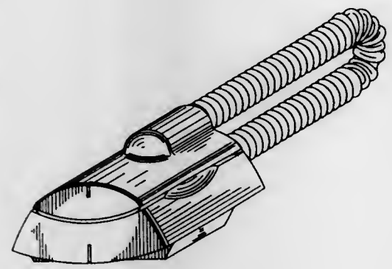
FLEXIBLE FLASHLIGHT

Robert Marvin, Farmington, and David Kaiser, North Haven, both of Conn., assignors to Black & Decker Inc., Newark, Del.

Filed Feb. 21, 1995, Ser. No. 35,082

Term of patent 14 years

U.S. Cl. D26—43



377,990

LIGHTING APPARATUS FOR PICTURE

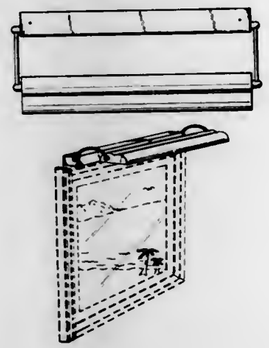
Kazuo Nakano, Nagoya, Japan, assignor to Timely Elegance Co. Ltd., Nagoya, Japan

Filed Jan. 19, 1996, Ser. No. 49,185

Claims priority, application Japan, Nov. 6, 1995, 7-33389

Term of patent 14 years

U.S. Cl. D26—65



377,991

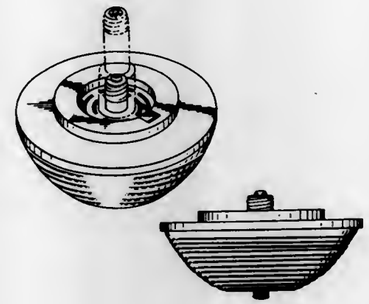
LIGHTING FIXTURE

Usman Vakil, Walnut, Calif., assignor to Lights of America, Inc., Walnut, Calif.

Division of Ser. No. 12,068, Aug. 20, 1993. This application Mar. 5, 1996, Ser. No. 51,452

Term of patent 14 years

U.S. Cl. D26—85



377,992

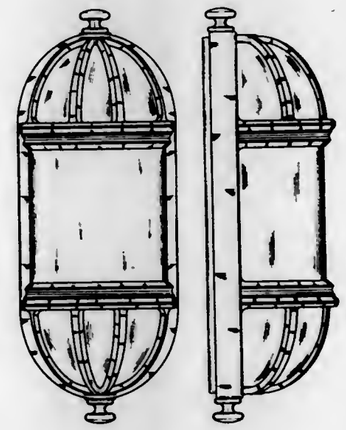
OUTDOOR LAMP

Kjell Pettersen, Gressvik, Norway, assignor to Garden Light, S.R.L., Brescia, Italy

Filed Dec. 16, 1994, Ser. No. 32,342

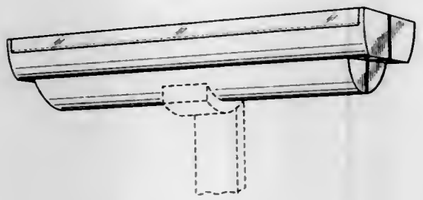
Term of patent 14 years

U.S. Cl. D26—91

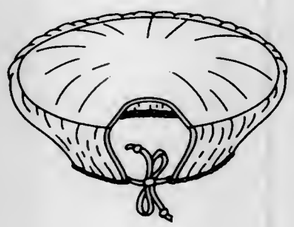


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377,993
INDIRECT LIGHTING FIXTURE
Douglas J. Herst, Ross, and Utkan Salman, Oakland, both of Calif., assignors to Peerless Lighting Corporation, Berkeley, Calif.
Filed Sep. 14, 1995, Ser. No. 43,952
Term of patent 14 years
U.S. Cl. D26—107



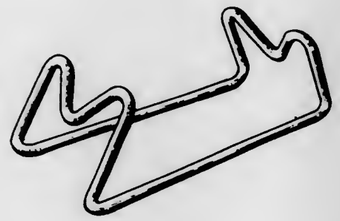
377,994
PROTECTIVE COVER FOR USE WITH A MAGNIFYING LAMP
Cindy M. Morrill, 7525 E. 55th Pl., Tulsa, Okla. 74145
Filed Jul. 24, 1995, Ser. No. 41,754
Term of patent 14 years
U.S. Cl. D26—119



377,995
CIGARETTE LIGHTER
Chang S. Yoo, Inchon, Rep. of Korea, assignor to Colibri Corporation, Providence, R.I.
Filed May 8, 1996, Ser. No. 54,201
Term of patent 14 years
U.S. Cl. D27—154



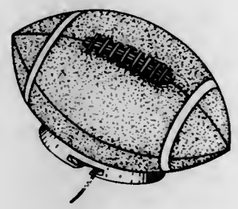
377,996
CURLING IRON STAND
Scaria B. Gilbert, 1228 Portabello Ct., Oxon Hill, Md. 20745
Filed Oct. 25, 1995, Ser. No. 45,624
Term of patent 14 years
U.S. Cl. D28—38



377,997
ELECTRIC SHAVER
Hironobu Nagano; Hisanori Akashi, both of Fukoka-ken; Takanori Nishiyama, and Toshiyuki Moriya, both of Kokubunji, all of Japan, assignors to Kyushu Hitachi Maxell, Ltd., Fukouka-ken, Japan
Filed Apr. 27, 1995, Ser. No. 38,066
Claims priority, application Japan, Nov. 11, 1994, 6-34518
Term of patent 14 years
U.S. Cl. D28—51



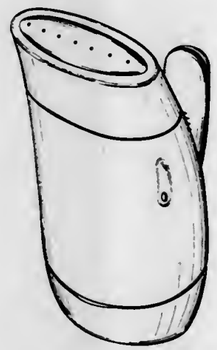
377,998
DENTAL FLOSS DISPENSER
Steven B. Dunn, Beverly Hills, Calif., assignor to Munchkin Bottling, Inc., Van Nuys, Calif.
Filed Jun. 16, 1994, Ser. No. 24,196
The portion of the term of this patent subsequent to Feb. 20, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D28—64



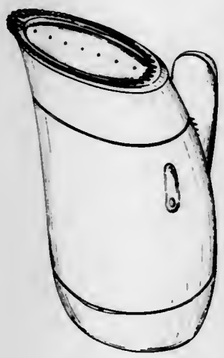
377,999
PET SUNGLASSES
Douglas Grice, 23 Cobbity Crescent, Arana Hills, Queensland 4054, Australia
Filed Dec. 7, 1995, Ser. No. 47,587
Term of patent 14 years
U.S. Cl. D30—145



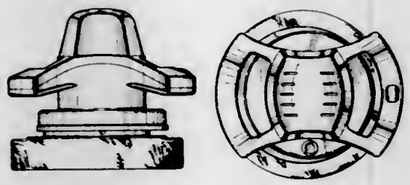
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Ronald L. Muller, Norwalk, and Duane D. Adams, Deep River, both of Conn., assignors to Philips Electronics North America Corporation, New York, N.Y.
Filed Jul. 3, 1995, Ser. No. 41,015
Term of patent 14 years
U.S. Cl. D32—17



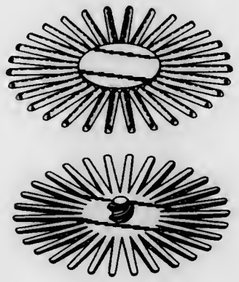
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Ronald L. Muller, Norwalk, and Duane D. Adams, Deep River, both of Conn., assignors to Philips Electronics North America Corporation, New York, N.Y.
Filed Jul. 3, 1995, Ser. No. 41,018
Term of patent 14 years
U.S. Cl. D32—17



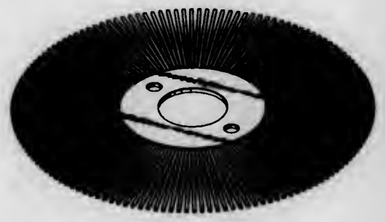
378,002
COMBINED HAND-HELD POLISHING AND BUFFING APPARATUS
Michael Hung, 10939 N. Pamona Ave., Kansas City, Mo. 64153
Filed Nov. 17, 1995, Ser. No. 46,533
Term of patent 14 years
U.S. Cl. D32—19



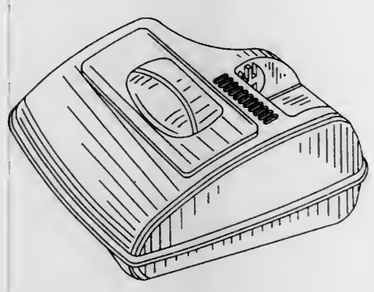
378,003
MOLDED RADIAL BRUSH
Marcus L. Eichinger, Fridley, and David E. Johnson, Maplewood, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.
Filed Nov. 16, 1995, Ser. No. 46,484
Term of patent 14 years
U.S. Cl. D32—25



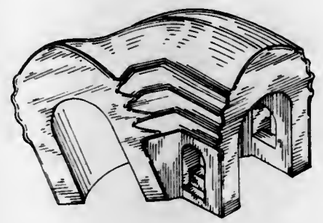
378,004
RADIAL BRUSH SEGMENT
Dennis W. Wilson, Burnsville, and David E. Johnson, Maplewood, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.
Filed Nov. 16, 1995, Ser. No. 46,485
Term of patent 14 years
U.S. Cl. D32—25



378,005
FLOOR TRAVELING HEAD FOR A VACUUM CLEANER
Anthony B. Rorke, Guilford, and Robert Osit, Shelton, both of Conn., assignors to Black & Decker Inc., Newark, Del.
Filed Dec. 28, 1995, Ser. No. 48,417
Term of patent 14 years
U.S. Cl. D32—33



378,006
CORNER LIP SHROUD
Charles Clendenning, Broken Arrow, Okla., assignor to H & L Tooth Company, Tulsa, Okla.
Filed Jul. 5, 1995, Ser. No. 41,095
Term of patent 14 years
U.S. Cl. D32—54



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Advanced Safety Concepts, Inc.: *See—*
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Zaiger, Chris F.; Gardner, Leith M.; Zaiger, Gary N.; and Zaiger, Grant G., 9,800, Cl. Plt.-43.100.
Zaiger, Grant G.: *See*—
Zaiger, Chris F.; Gardner, Leith M.; Zaiger, Gary N.; and Zaiger, Grant G., 9,800, Cl. Plt.-43.100.

CLASSIFICATION OF PATENTS

ISSUED FEBRUARY 11, 1997

NOTE—First number, class; second number, subclass; third number, patent number

CLASS 2
16 5,600,849
69 5,600,850
144 5,600,851
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161.1 5,600,853
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209.13 5,600,855

CLASS 4
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CLASS 5
81.1 R 5,600,857
601 5,600,858

CLASS 8
405 5,601,620
676 5,601,622

CLASS 14
71.1 5,600,859
73.1 5,600,860

CLASS 15
88.2 5,600,861
104.04 5,600,862
104.061 5,600,863
118 5,600,864
169 5,600,865
322 5,600,866

CLASS 16
45 5,600,867
277 5,600,868
342 5,600,869
5,600,870

CLASS 18
493 5,601,621

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CLASS 24
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883 5,600,885
889.3 5,600,886

CLASS 30
41.5 5,600,887
41.7 5,600,888
142 5,600,889
223 5,600,890
226 5,600,891
292 5,600,892

CLASS 33
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789 5,600,895

CLASS 34
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115 5,600,897
116 5,600,898
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519 5,600,900

CLASS 36
7.1 R 5,600,901
135 5,600,902

CLASS 37
105 5,600,903
302 5,600,904
394 5,600,905

CLASS 38
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CLASS 40
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558 5,600,909
605 5,600,910
611 5,600,911

CLASS 42
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CLASS 43
6 5,600,914
22 5,600,915
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44.82 5,600,917

CLASS 44
347 5,601,624

CLASS 47
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CLASS 49
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CLASS 52
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770.3 5,600,931

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263 5,600,936
397 5,600,937
417 5,600,938
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CLASS 54
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CLASS 55
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CLASS 56
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14.7 5,600,944

CLASS 57
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CLASS 60
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284 5,600,949
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454 5,600,954
469 5,600,955
602 5,600,956

CLASS 62
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84 5,600,959
99 5,600,960
175 5,600,961
204 5,600,962
262 5,600,963
373 5,600,964
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484 5,600,968
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CLASS 63
15.1 5,600,972

CLASS 65
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529 5,601,629

CLASS 66
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192 5,600,974

CLASS 68
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12.26 5,600,976

CLASS 70
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176 5,600,985
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864.85 5,602,349

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122 5,600,999
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574 5,601,002

CLASS 75
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743 5,601,632

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489 5,601,003

CLASS 82
54 5,601,004

CLASS 83
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CLASS 84
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410 5,602,354
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634 5,602,357
662 5,602,358

CLASS 91
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CLASS 92
71 5,601,009
222 5,601,010

CLASS 95
81 5,601,633
114 5,601,634
248 5,601,635

CLASS 96
63 5,601,636

CLASS 99
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258 R 5,601,017

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220 5,602,360
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357 5,602,362

CLASS 104
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284 5,601,029

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153 5,601,041

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723 HC 5,601,654

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62 5,601,102

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156 5,601,106

CLASS 136
253 5,601,661

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588 5,601,114
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625.27 5,601,116
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856 5,601,118

CLASS 138
133 5,601,119

CLASS 139
383 AA 5,601,120
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CLASS 140
106 5,601,122
147 5,601,123

CLASS 141
19 5,601,124
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59 5,601,126
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98 5,601,128

CLASS 148
100 5,601,662
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649 5,601,667

CLASS 156
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644.1 5,601,687

CLASS 159
44 5,601,688

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207 5,601,131
236 5,601,132
265 5,601,133
271 5,601,134

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358.2 5,601,691

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312 5,601,136
418 5,601,137
452 5,601,138
463 5,601,139
503 5,601,140

CLASS 165

42 5,601,142
263 5,601,141

CLASS 166

263 5,601,144

CLASS 172

4.5 5,601,145
439 5,601,146
624.5 5,601,147

CLASS 173

21 5,601,148
93.5 5,601,149

CLASS 174

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68.3 5,602,364
71 C 5,602,365

CLASS 175

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246 5,601,152
340 5,601,153

CLASS 181

144 5,602,366
156 5,602,367
255 5,602,368

CLASS 182

45 5,601,154

CLASS 184

11.2 5,601,155

CLASS 187

249 5,601,156
351 5,601,157

CLASS 188

31 5,601,158
67 5,601,159
71 5 5,601,160
83 5,601,161
170 5,601,162
5,601,163
274 5,601,164
296 5,601,165

CLASS 192

45 5,601,166
45.1 5,601,167
55.6 5,601,168
56.33 5,601,169
58.681 5,601,170
70.13 5,601,171
85 R 5,601,172
107 C 5,601,173
107 M 5,601,174
113.32 5,601,175
200 5,601,176

CLASS 194

348 5,601,177

CLASS 198

323 5,601,178
335 5,601,179
502.1 5,601,180
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692 5,601,182

CLASS 200

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61.43 5,602,370
61.47 5,602,371
81.9 R 5,602,372
82 E 5,602,373
553 5,601,183

CLASS 201

9 5,601,692

CLASS 204

157.15 5,601,184
400 5,601,693
415 5,601,694

CLASS 205

213 5,601,695
263 5,601,696

CLASS 206

63.3 5,601,185
141 5,601,186
214 5,601,187
308.2 5,601,188
363 5,601,189
389 5,601,190
532 Re.35,445
569 5,601,191

CLASS 208

64 5,601,698
114 5,601,699
208 R 5,601,700
251 H 5,601,701
308 5,601,702
945 5,601,697

CLASS 209

164 5,601,703
273 5,601,192

CLASS 210

86 5,601,704
104 5,601,705
172 5,601,706
198.2 5,601,707
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297 5,601,712
426 5,601,713
436 5,601,714
469 5,601,715
490 5,601,716
493.1 5,601,717
495 5,601,718
605 5,601,719
612 5,601,720
670 5,601,721
673 5,601,722
701 5,601,723
722 5,601,724
727 5,601,725
5,601,726
767 5,601,727
768 5,601,728
783 5,601,729
806 5,601,730

CLASS 211

11 5,601,193
13 5,601,194
41 5,601,195
65 5,601,196
117 5,601,197
183 5,601,198

CLASS 215

11.1 5,601,199
348 5,601,200

CLASS 216

2 5,601,731
36 5,601,732

CLASS 219

121.52 5,601,734
121.63 5,601,735
121.64 5,601,736
121.66 5,601,737
121.7 5,601,733
121.76 Re.35,446
121.84 5,601,738
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635 5,601,743
689 5,601,744
710 5,601,745

CLASS 220

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6 5,601,202
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527 5,601,206
562 5,601,205
703 5,601,207

CLASS 221

256 5,601,208
266 5,601,209

CLASS 222

129.1 5,601,210
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456 5,601,213
481.5 5,601,217
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529 5,601,215
538 5,601,216
641 5,601,218

CLASS 223

85 5,601,219
112 5,601,220

CLASS 224

148.2 5,601,221
165 5,601,222

CLASS 226

172 5,601,223

CLASS 227

175.1 5,601,224

CLASS 228

9 5,601,225
123.1 5,601,226
180.1 5,601,227
180.21 5,601,228

CLASS 229

103 5,601,230
110 5,601,231
117.05 5,601,232
216 5,601,233

CLASS 235

375 5,602,374
384 5,602,375
462 5,602,376
5,602,377
5,602,378
472 5,602,379
5,602,380
493 5,602,381
494 5,602,382

CLASS 239

1 5,601,234
4 5,601,235
63 5,601,236
166 5,601,237
403 5,601,238

CLASS 241

29 5,601,239
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101.76 5,601,241
230 5,601,242

CLASS 242

160.2 5,601,243
232 5,601,244
260 5,601,245
261 5,601,246
346 5,601,248
355.1 5,601,249
364.1 5,601,250
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559.1 5,601,252
595.1 5,601,253

CLASS 244

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17.25 5,601,257
52 5,601,256
158 R 5,601,258

CLASS 246

203 C 5,601,259

CLASS 248

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74.4 5,601,262
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177.1 5,601,265
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231.9 5,601,266
311.2 5,601,268
5,601,269
454 5,601,270
503 5,601,271
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551 5,601,273
594 5,601,274

CLASS 250

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226 5,602,385
227.11 5,602,386
227.17 5,602,387
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252.1 5,602,389
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332 5,602,391
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363.03 5,602,395
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CLASS 251

129.15 5,601,275
214 5,601,276

CLASS 252

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589 5,601,756

CLASS 254

131 5,601,277

CLASS 256

66 5,601,278
5,601,279

CLASS 257

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112 5,602,404
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738 5,602,422
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771 5,602,424

CLASS 261

122.1 5,601,757

CLASS 264

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101 5,601,767
131 5,601,768
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523 5,601,780

CLASS 266

202 5,601,781

CLASS 267

140.14 5,601,280

CLASS 271

10.04 5,601,281
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228 5,601,283

CLASS 273

138.2 5,601,287
271 5,601,288
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376 5,601,290

CLASS 277

9.5 5,601,291
180 5,601,292
235 A 5,601,293
235 B 5,601,294

CLASS 279

46.5 5,601,295

CLASS 280

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87.042 5,601,299
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737 5,601,309
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801.1 5,601,311

CLASS 281

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CLASS 283

81 5,601,313
5,601,314

CLASS 285

21.2 5,601,315
226 5,601,316
242 5,601,317

CLASS 287

207 5,602,406

CLASS 288

246 5,601,229

CLASS 289

17 5,601,318

CLASS 292

139 5,601,319
343 5,601,320

CLASS 294

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7 5,601,323
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49 5,601,325
82.1 5,601,326
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CLASS 296

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146.14 5,601,329
217 5,601,330

CLASS 297

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CLASS 299

43 5,601,341

CLASS 301

5.3 5,601,342
35.63 5,601,343

CLASS 303

115.4 5,601,344
116.4 5,601,345
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191 5,601,347

CLASS 307

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121 5,602,429

CLASS 310

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68 E 5,602,436
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CLASS 312

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CLASS 313

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489 5,602,444
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CLASS 315

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411 5,602,447

CLASS 318

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CLASS 320

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CLASS 323

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313 5,602,466

CLASS 324

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126 5,602,498

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CLASS 329

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CLASS 330

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CLASS 331

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170 5,602,515

CLASS 333

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185 5,602,517
202 5,602,518

CLASS 336

96 5,602,519

CLASS 338

22 R 5,602,520

CLASS 340

326 5,602,521
331 5,602,522
384.2 5,602,523
447 5,602,524
456 5,602,525
457 5,602,526
551 5,602,527
5,602,528
566 5,602,529
568 5,602,530
572 5,602,531
639 5,602,532
686 5,602,533
693 5,602,534
825.06 5,602,537
825.31 5,602,535
5,602,536
825.54 5,602,538
853.3 5,602,541
870.16 5,602,539
870.37 5,602,540
903 5,602,542
968 5,602,543

CLASS 341

6 5,602,544
50 5,602,545
51 5,602,546
58 5,602,547
67 5,602,548
5,602,549
76 5,602,550
136 5,602,551
154 5,602,552
173 5,602,553

CLASS 342

368 5,602,554
374 5,602,555

CLASS 343

742 5,602,556
5,602,557
850 5,602,558

CLASS 345

89 5,602,559
94 5,602,560
99 5,602,561
101 5,602,562
115 5,602,563
119 5,602,564
5,602,565
123 5,602,566
132 5,602,567
158 5,602,568
5,602,569
173 5,602,570
604 5,603,021

CLASS 346

134 5,602,571

CLASS 347

2 5,602,624
15 5,602,572
33 5,602,573
43 5,602,574
54 5,602,575
59 5,602,576
84 5,602,577
232 5,602,578
240 5,602,579

CLASS 348

10 5,602,580
5,602,581
12 5,602,582
21 5,602,583
47 5,602,584
155 5,602,585
189 5,602,586
241 5,602,587
264 5,602,588
398 5,602,589
405 5,602,590
415 5,602,592
416 5,602,593
419 5,602,594
452 5,602,591
495 5,602,595
564 5,602,596
565 5,602,597
5,602,598
581 5,602,599
589 5,602,600
607 5,602,601
5,602,602

CLASS 349

27 5,602,659
95 5,602,658
110 5,602,660
124 5,602,661
130 5,602,662

CLASS 351

41 5,602,603

CLASS 353

20 5,601,351
31 5,601,352
122 5,601,353

CLASS 354

368 5,602,945

CLASS 355

40 5,602,618
53 5,602,619
5,602,620
72 5,602,621
75 5,602,622

CLASS 356

28 5,602,638
237 5,602,639
244 5,602,640
350 5,602,642
360 5,602,643
363 5,602,644
394 5,602,645
426 5,602,646
435 5,602,647
445 5,602,648

CLASS 358

400 5,602,650
448 5,602,651
450 5,602,652
454 5,602,653
461 5,602,654
501 5,602,655

CLASS 359

3 5,602,656
15 5,602,657
125 5,602,663
142 5,602,664
152 5,602,665
161 5,602,666
5,602,667
173 5,602,668
181 5,602,669
193 5,602,670
224 5,602,671
245 5,602,672
281 5,602,673
393 5,602,674
554 5,602,675
557 5,602,676
566 5,602,677
618 5,602,678
640 5,602,679
679 5,602,680
698 5,602,681
737 5,602,682
811 5,602,683

CLASS 360

48 5,602,686
61 5,602,687
69 5,602,688
75 5,602,690
5,602,691
77.08 5,602,692
5,602,693
78.04 5,602,689
84 5,602,694
94 5,602,695
97.01 5,602,696
97.02 5,602,697
104 5,602,698
5,602,699
105 5,602,700
106 5,602,701
107 5,602,702
121 5,602,703
125 5,602,704
126 5,602,274
128 5,602,705
137 5,602,706

CLASS 361

35 5,602,707
51 5,602,708
85 5,602,709
127 5,602,710
139 5,602,711
225 5,602,712
249 5,602,713
623 5,602,714
680 5,602,715
685 5,602,717
704 5,602,718
5,602,719
708 5,602,720
727 5,602,721
730 5,602,722
800 5,602,723

CLASS 362

32 5,601,354
35 5,601,355
103 5,601,356
179 5,601,357
190 5,601,358
204 5,601,359
226 5,601,360
238 5,601,361

CLASS 363

21 5,602,724
37 5,602,725
55 5,602,726

CLASS 364

13 5,602,806
59 5,602,815
131 5,602,727
145 5,602,728
408 B1 4,734,858
416.18 5,602,743
420 5,602,731
424.034 5,602,732
5,602,733
424.051 5,602,735
424.055 5,602,734
5,602,736
431.12 5,602,738
431.61 5,602,737
436 5,602,739
449.1 5,602,740
449.7 5,602,741
459 5,602,753
464.2 5,602,742
464.22 5,602,744
464.23 5,602,745
469.01 5,602,746
5,602,747
474.16 5,602,749
474.29 5,602,748
481 5,602,750
485 5,602,751
487 5,602,752
489 5,602,754
498 5,602,755
500 5,602,756
505 5,602,758
508 5,602,759
516 5,602,760
551.01 5,602,757
554 5,602,761
566 B1 4,745,564
572 5,602,762
715.09 5,602,764
724.19 5,602,765
736 5,602,766
746.1 5,602,767
748 5,602,768
5,602,769

CLASS 365

49 5,602,770
51 5,602,771
5,602,772
69 5,602,773
177 5,602,774
185.01 5,602,775
185.08 5,602,776
185.09 5,602,777
5,602,778
185.23 5,602,779
189.01 5,602,780
189.05 5,602,781
5,602,782
5,602,783
189.09 5,602,784
189.11 5,602,785
200 5,602,786
201 5,602,789
205 5,602,787
210 5,602,788
211 5,602,790
225.5 5,602,791
226 5,602,792
5,602,793
5,602,794
230.06 5,602,795
5,602,796
5,602,797
233 5,602,798

CLASS 366

309 5,601,362

CLASS 367

139 5,602,799
149 5,602,800
165 5,602,801

CLASS 368

10 5,602,802
223 5,602,803
327 5,602,804

CLASS 369

13 5,602,805
5,602,807
44.14 5,602,808
44.23 5,602,809
44.34 5,602,810
47 5,602,811
48 5,602,812
50 5,602,813
58 5,602,814
59 5,602,816
72 5,602,817
75.2 5,602,818
99 5,602,819
126 5,602,820
178 5,602,821
247 5,602,822
275.3 5,602,823
275.4 5,602,824
5,602,825

CLASS 370

206 5,602,835
209 5,602,833
223 5,602,827
228 5,602,828
232 5,602,830
235 5,602,829
248 5,602,826
252 5,602,831
280 5,602,836
5,602,837
5,602,854
313 5,602,854
335 5,602,834
338 5,602,843
342 5,602,832
384 5,602,846
385 5,602,840
395 5,602,844
5,602,845
402 5,602,850
403 5,602,851
405 5,602,839
406 5,602,838
413 5,602,841
455 5,602,852
462 5,602,849
465 5,602,848
474 5,602,853
484 5,602,847

CLASS 371

22.3 5,602,855
27 5,602,856
40.1 5,602,857
43 5,602,858
47.1 5,602,859

CLASS 372

34 5,602,860
38 5,602,861
45 5,602,862
50 5,602,863
5,602,864
82 5,602,865
96 5,602,866

CLASS 373

78 5,602,867

CLASS 374

45 5,601,363
57 5,601,364
121 5,601,365
126 5,601,366
183 5,601,367

CLASS 375

219 5,602,868
222 5,602,869
230 5,602,870
233 5,602,871
234 5,602,872
242 5,602,873
243 5,602,874
264 5,602,875
317 5,602,876
336 5,602,877
354 5,602,878
355 5,602,879
371 5,602,880
5,602,881
372 5,602,882
376 5,602,883
5,602,884

CLASS 376

248 5,602,885
253 5,602,886
260 5,602,887
305 5,602,888

CLASS 378

29 5,602,889
57 5,602,890
62 5,602,891
65 5,602,892
86 5,602,893
87 5,602,894
98.4 5,602,895
98.7 5,602,896
101 5,602,897
132 5,602,898
143 5,602,899

CLASS 379

58 5,602,900
59 5,602,901
5,602,902
60 5,602,903
88 5,602,904
96 5,602,905
114 5,602,906
5,602,907
199 5,602,908
207 5,602,909
212 5,602,910
376 5,602,911
402 5,602,912
406 5,602,913
422 5,602,914

CLASS 380

21 5,602,915
5,602,916
5,602,917
5,602,918
24 5,602,919
49 5,602,920
51 5,602,921

CLASS 381

18 5,602,922
5,602,923
67 5,602,924
68.4 5,602,925
71 5,602,926
5,602,927
5,602,928
5,602,929
192 5,602,930
194 5,602,931

CLASS 382

25.1 5,602,941
100 5,602,932
116 5,602,933
128 5,602,934
132 5,602,935
140 5,602,936
151 5,602,937
155 5,602,938
162 5,602,939
180 5,602,940
263 5,602,942
266 5,602,943
278 5,602,944

CLASS 383

5 5,601,368
209 5,601,369

CLASS 384

215 5,601,370
276 5,601,371
278 5,601,372

CLASS 385

12 5,602,946
31 5,602,947
37 5,602,949
46 5,602,950
81 5,602,951
100 5,602,952
101 5,602,953
135 5,602,954
136 5,602,955

CLASS 386

47 5,602,685
52 5,602,684
68 5,602,956
83 5,602,649

CLASS 388

836 5,602,957

CLASS 392

395 5,602,958

CLASS 395

2.14 5,602,959
2.16 5,602,960
2.32 5,602,961
2.35 5,602,962
2.84 5,602,963
24 5,602,964
5,602,965
51 5,602,966
94 5,602,967
97 5,602,968
109 5,602,970
5,602,971
112 5,602,972
113 5,602,973
114 5,602,974
115 5,602,975
116 5,602,976
117 5,602,977
119 5,602,978
123 5,602,979
163 5,602,986
182.06 5,602,987
183.18 5,602,988
183.19 5,602,989
183.22 5,602,990
200.01 5,602,991
200.1 5,602,993
200.19 5,602,992
215 5,602,730
250 5,602,994
5,602,995
326 5,602,982
344 5,602,996
349 5,602,997
352 5,602,981
401 5,602,999
421.11 5,603,000
430 5,603,001
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492 5,603,009
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500 Re.35,448
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501 5,602,983
5,602,984
5,602,985
551 5,603,016
556 5,603,017
561 5,603,018
566 5,602,998
602 5,603,025
607 5,603,023
608 5,603,026
612 5,603,022
616 5,603,020
619 5,603,024
5,603,027
5,603,019
621 5,603,055
652 5,603,028
675 5,603,029
5,603,031
701 5,603,034
704 5,602,729
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853 5,603,057
855 5,603,058
856 5,603,059
864 5,603,061
872 5,603,062
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893 5,603,065
894 5,603,066

CLASS 396

25 5,602,604
61 5,602,614
85 5,602,608
133 5,602,613
175 5,602,605
210 5,603,067
228 5,602,615
238 5,602,616
246 5,602,617
284 5,602,609
287 5,603,068
349 5,602,607
397 5,603,069
435 5,602,606
449 5,602,610
513 5,602,611
535 5,602,612

CLASS 399

8 5,603,060
21 5,602,625
50 5,602,628
58 5,602,629
111 5,602,623
135 5,602,626
176 5,602,627
223 5,602,637
244 5,602,633
265 5,602,632
271 5,602,630
284 5,602,631
313 5,602,634
328 5,602,635
388 5,602,636

CLASS 400

191 5,601,373
247 5,601,374
708 5,601,375

CLASS 401

104 5,601,376

CLASS 403

58 5,601,377
140 5,601,378
269 5,601,379
359 5,601,380

CLASS 405

43 5,601,381
128 5,601,382
154 5,601,383
284 5,601,384

CLASS 408

3 5,601,385
57 5,601,386
113 5,601,387
239 R 5,601,388

CLASS 412

14 5,601,389

CLASS 414

251 5,601,390
280 5,601,391
408 5,601,392
498 5,601,394
786 5,601,395
5,601,396
790.7 5,601,397

CLASS 415

55.1 5,601,398
115 5,601,399
119 5,601,400
160 5,601,401
173.2 5,601,402
173.6 5,601,403
173.7 5,601,404
202 5,601,405
206 5,601,406
209.2 5,601,407

CLASS 416

134 A 5,601,408
229 R 5,601,409
241 A 5,601,410
241 R 5,601,411
247 R 5,601,412

CLASS 417

12 5,601,413
44.2 5,601,414
187 5,601,415
269 5,601,416
271 5,601,417
420 5,601,418
423.14 5,601,419
474 5,601,420
492 5,601,421

CLASS 418

15 5,601,422
131 5,601,423

CLASS 419

6 5,603,070
15 5,603,071
25 5,603,072
57 5,603,073

CLASS 420

74 5,601,782

CLASS 422

65 5,601,783
70 5,601,784
103 5,601,785
108 5,601,786
144 5,601,787
147 5,601,788
168 5,601,789
5,601,790
169 5,601,791
5,601,792
202 5,601,793

CLASS 423

2 5,603,074
447.2 5,601,794
491 5,601,795
599 5,601,796
659 5,601,797
700 5,601,798

CLASS 424

1.73 5,601,799
1.77 5,601,800
1.85 5,601,801
9.363 5,601,802
49 5,601,804
55 5,601,805
59 5,601,806
5,601,807
61 5,601,808
65 5,601,809
70.15 5,601,812
70.51 5,601,813
70.7 5,601,810
85.2 5,601,814
5,601,815
93.2 5,601,816
93.21 5,601,818
93.5 5,601,817
136.1 5,601,819
138.1 5,601,820
139.1 5,601,821
144.1 5,601,822
167.1 5,601,823
179.1 5,601,824
183.1 5,601,825
190.1 5,601,826
5,601,827
193.1 5,601,828
195.1 5,601,829
237.1 5,601,830
256.1 5,601,831
401 5,601,833
424 5,601,835
438 5,601,836
439 5,601,837
443 5,601,838
448 5,601,839
464 5,601,842
475 5,601,843
489 5,601,844
495 5,601,845
499 5,601,846
633 5,601,847
653 5,601,848
660 5,601,849
709 5,601,811

CLASS 425

48 5,601,850
72.2 5,601,851
112 5,601,852
174.8 E 5,601,853
192 S 5,601,854
294 5,601,855
378.2 5,601,856
381 5,601,857

CLASS 426

3 5,601,858
5 5,601,859
72 5,601,860
303 5,601,861
502 5,601,862
548 5,601,863
643 5,601,864
650 5,601,865
660 5,601,866

CLASS 427

1 5,601,867
8 5,601,868
126.3 5,601,869
133 5,601,870
212 5,601,873
215 5,601,874
221 5,601,875
257 5,601,876
288 5,601,871
373 5,601,877
386 5,601,878
391 5,601,879
407.1 5,601,880
425 5,601,881
513 5,601,882
577 5,601,883

CLASS 428

1 5,601,884
12 5,601,885
17 5,601,886
29 5,601,887
34 5,601,888
34.3 5,601,889
35.1 5,601,890
35.7 5,601,891
35.8 5,601,892
35.9 5,601,893
5,601,894
66.6 5,601,895
68 5,601,896
69 5,601,897
99 5,601,899
149 5,601,900
209 5,601,902
212 5,601,903
5,601,904
215 5,601,905
304.4 5,601,911
318.6 5,601,912
323 5,601,913
5,601,915
329 5,601,916
356 5,601,917
364 5,601,918
375 5,601,919
5,601,920
389 5,601,921
402 5,601,923
403 5,601,924
413 5,601,925
447 5,601,926
448 5,601,927
500 5,601,928
518 5,601,929
535 5,601,930
537.5 5,601,931
552 5,603,075
564 5,603,076
610 5,601,932
660 5,601,933
688 5,601,934
692 5,601,935

CLASS 429

13 5,601,936
17 5,601,937
40 5,601,938
98 5,601,939
100 5,601,940
121 5,601,941
159 5,601,942
163 5,601,943
174 5,601,944
204 5,601,945
206 5,601,946
213 5,601,947
218 5,601,948
5,601,949
5,601,950
5,601,951
5,601,952
224 5,601,953
241

CLASS 430

5 5,601,954
5,601,955
21 5,601,956
22 5,601,957
49 5,601,958
126 5,601,959
137 5,601,960
192 5,601,961
200 5,601,962
217 5,601,963
264 5,601,964
281.1 5,601,965
313 5,601,966
505 5,601,967
551 5,601,968
569 5,601,969
610 5,601,970
621 5,601,971

CLASS 431

4 5,601,424
8 5,601,425
170 5,601,426

CLASS 432

77 5,601,427
241 5,601,428

CLASS 433

174 5,601,429
215 5,601,430

CLASS 434

79 5,601,431
118 5,601,432
130 5,601,433
253 5,601,434
307 R 5,601,435
5,601,436

CLASS 435

2 5,601,972
5 5,601,973
5,601,974
5,601,975
6 5,601,976
5,601,977
5,601,978
5,601,979
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7.1 5,601,985
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7.22 5,601,987
7.23 5,601,988
5,601,989
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7.4 5,601,986
7.91 5,601,991
7.93 5,601,993
5,601,994
13 5,601,995
29 5,601,997
34 5,601,998
68.1 5,602,001
5,602,002
69.1 5,602,003
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5,602,025
69.3 5,602,005
69.4 5,602,006
69.5 5,602,007
5,602,008
69.51 5,602,010
69.7 5,602,009
72 5,601,999
91.1 5,602,000
91.2 5,602,011
117 5,602,012
125 5,602,013
129 5,602,014
188.5 5,602,015
189 5,602,016
190 5,602,017
5,602,018
196 5,602,019
209 5,602,020
219 5,602,021
236 5,602,022
5,602,023
252.3 5,602,030
5,602,031
252.31 5,602,032
252.33 5,602,033
254.11 5,602,034
262 5,602,035
5,602,036
325 5,602,024
344 5,602,027
395 5,602,026
5,602,029
401 5,602,028

CLASS 436

69 5,602,037
98 5,602,038
164 5,602,039
514 5,602,040
518 5,602,041
526 5,602,042

CLASS 437

3 5,602,043
8 5,602,044
24 5,602,045
41 5,602,046
5,602,047
43 5,602,048
52 5,602,049
5,602,050
5,602,051
5,602,052
60 5,602,053
5,602,054
62 5,602,055
192 5,602,056
195 5,602,057
203 5,602,058
209 5,602,059
5,602,060
238 5,602,061
239

CLASS 439

15 5,601,437
64 5,601,438
134 5,601,440
188 5,601,441
5,601,442
263 5,601,443
299 5,601,444
341 5,601,445
357 5,601,446
404 5,601,447
419 5,601,448
447 5,601,449
489 5,601,450
490 5,601,451
504 5,601,452
567 5,601,453
595 5,601,454
650 5,601,455
821 5,601,456
843 5,601,457
852 5,601,458
876 5,601,459
936 5,601,460

CLASS 440

6 5,601,461
5,601,462
61 5,601,463
75 5,601,464

CLASS 442

1 5,601,906
5,601,907
5,601,908
79 5,601,910
417 5,601,909

CLASS 445

6 5,601,465
24 5,601,466
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178 5,601,481
246 5,601,482
359 5,601,483

CLASS 454

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277 5,601,485

CLASS 455

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5.1 5,603,078
13.1 5,603,079
14 5,603,080
33.1 5,603,081
5,603,082
5,603,083
5,603,084
5,603,085
34.1 5,603,086
52.3 5,603,087
53.1 5,603,088
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54.1 5,603,090
56.1 5,603,091
63 5,603,092
5,603,093
66 5,603,094
67.1 5,603,095
69 5,603,096
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234.1 5,603,113
249.1 5,603,114
254 5,603,115

CLASS 460

119 5,601,486

CLASS 463

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44 5,601,489
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CLASS 464

37 5,601,491
68 5,601,492
181 5,601,493
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314 5,601,500
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458 5,601,285
483 5,601,284

CLASS 474

49 5,601,803
91 5,601,504
110 5,601,505

CLASS 475

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231 5,601,508

CLASS 476

53 5,601,509

CLASS 477

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CLASS 493

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CLASS 494

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29 5,601,523
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CLASS 501

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134 5,602,064
141 5,602,065

CLASS 502

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104 5,602,067
172 5,602,068
182 5,602,069
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401 5,602,071
5,602,072

CLASS 503

227 5,602,072
5,602,073

CLASS 504

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235 5,602,075
239 5,602,076
243 5,602,077
283 5,602,078

CLASS 505

310 5,602,079
451 5,602,080
5,602,081

CLASS 507

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200 5,602,083

CLASS 508

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396 5,601,747
579 5,602,085
591 5,602,086

CLASS 510

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144 5,602,088
171 5,602,089
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372 5,602,090
406 5,602,091
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5,602,096
17 5,602,097
18 5,602,098
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19 5,602,102
25 5,602,103
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26 5,602,105
30 5,602,106
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45 5,602,109
47 5,602,110
54 5,602,111
58 5,602,112
81 5,602,113
105 5,602,115
167 5,602,116
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210 5,602,118
5,602,119
211 5,602,120
5,602,121
214 5,602,122
218 5,602,123
220 5,602,124
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222.2 5,602,126
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227.8 5,602,128
241 5,602,129
247 5,602,130
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253 5,602,134
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301 5,602,144
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312 5,602,146
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327 5,602,150
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362 5,602,157
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5,602,159
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382 5,602,163
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409 5,602,166
412 5,602,167
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403 5,602,193

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326.2 5,602,207
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454 5,602,213
478 5,602,214

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64 5,602,216
129 5,602,217
159 5,602,218
160 5,602,219
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307.7 5,602,221
342 5,602,222
348.1 5,602,223

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181 5,602,226
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327 5,602,230
334 5,602,231
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766 5,602,238

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23.72 5,602,242
24.3 5,602,243
25.6 5,602,244
55.3 5,602,245
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57 5,602,247
127 5,602,241

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144 5,602,249
310 5,602,250

CLASS 541

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CLASS 544

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115 5,602,252
330 5,602,253

CLASS 546

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147 5,602,255
180 5,602,256
193 5,602,257

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235 5,602,258

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45 5,602,267
57 5,602,268
170 5,602,269

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45 5,601,528
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74 5,601,531
110 5,601,532
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195 5,601,534
198 5,601,535
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264 5,601,537
280 5,601,538
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385.2 5,601,544
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61 5,601,552
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139 5,601,571
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148 5,601,576
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151 5,601,579
159 5,601,580
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170 5,601,582
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172 5,601,584
180 5,601,585
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953 377,859
969 377,860
D3— 203 377,861
228 377,862
278 377,863
303 377,864
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D4— 105 377,867
D6— 315 377,868
318 377,869
380 377,870
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392 377,872
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491 377,875
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596 377,879
601 377,880
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625 377,887
683 377,888
688 377,889
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386 377,898
499 377,899
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181 377,925
193 377,926
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150 377,935
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D16— 202 377,940
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57 377,945
D19— 3 377,946
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D23— 213 377,965
52 377,948
64 377,949
69 377,950
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D22— 120 377,960
122 377,961
134 377,962
142 377,963

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	235	377,967		364	377,974		133	377,981	D26—	37	377,988	D27—	154	377,995		19	378,002
	238	377,968		377	377,975		147	377,982		43	377,989	D28—	38	377,996		25	378,003
	262	377,969			377,976		167	377,983		65	377,990		51	377,997			378,004
	277	377,970	D24—	101	377,977		224	377,984		85	377,991		64	377,998		33	378,005
	296	377,971		119	377,978	D25—	53	377,985		91	377,992	D30—	145	377,999		54	378,006
	302	377,972		126	377,979		124	377,986		107	377,993	D32—	17	378,000			

CLASSIFICATION OF PLANTS

P—	7.1	9,798		43.1	9,800		9,802		90.1	9,804		
	10	9,799		87.12	9,801		9,803					

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	5,601,221	5,600,967	5,601,598	5,602,130	5,602,686	5,603,004
	5,601,561	5,601,079	5,601,600	5,602,135	5,602,692	5,603,007
	5,601,690	5,601,088	5,601,601	5,602,143	5,602,693	5,603,008
	5,602,277	5,601,093	5,601,604	5,602,171	5,602,699	5,603,010
	5,602,306	5,601,105	5,601,608	5,602,207	5,602,700	5,603,016
	5,602,905	5,601,107	5,601,611	5,602,226	5,602,703	5,603,021
02 :	5,601,153	5,601,108	5,601,613	5,602,228	5,602,704	5,603,024
	5,601,472	5,601,113	5,601,617	5,602,233	5,602,724	5,603,025
	5,601,864	5,601,125	5,601,668	5,602,240	5,602,741	5,603,026
04 :	5,601,035	5,601,128	5,601,669	5,602,246	5,602,751	5,603,031
	5,601,052	5,601,201	5,601,673	5,602,252	5,602,758	5,603,034
	5,601,094	5,601,204	5,601,687	5,602,258	5,602,760	5,603,036
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	5,601,659	5,601,266	5,601,760	5,602,367	5,602,806	5,603,051
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	5,602,330	5,601,271	5,601,785	5,602,393	5,602,828	5,603,053
	5,602,642	5,601,314	5,601,788	5,602,394	5,602,844	5,603,054
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	5,600,857	5,601,532	5,601,986	5,602,553	5,602,963	5,601,812
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	5,600,932	5,601,581	5,602,046	5,602,653	5,602,994	5,602,582
	5,600,943	5,601,584	5,602,053	5,602,656	5,602,996	5,602,596
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5,601,652 | Re.35,446 | 5,602,397 | 5,601,288 | 33 : 5,600,852 | 5,601,455
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For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1194 O.G. 618, on January 21, 1997.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on September 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective July 1, 1996, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1187 O.G. 73, on June 25, 1996.

International fees were changed, effective on February 1, 1997, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1194 O.G. 617, on January 21, 1997.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective October 1, 1996, and were announced in the *Official Gazette* at 1189 O.G. 62, on August 20, 1996.

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Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
— No corresponding prior U.S. national application filed	680.00
— Corresponding prior U.S. national application filed	440.00
— Supplemental search fee, per additional invention (payable only upon invitation)	200.00
European Patent Office as ISA	1585.00
International fees	
Basic fee	590.00
Basic supplemental fee (for each page over 30)	12.00
Designation fee per country or region	
— For the first 11 national or regional offices designated	143.00
— For each designation in excess of 11 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
— Designation fee	143.00
— Confirmation fee	71.50
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	180.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
— USPTO was ISA in PCT Chapter I	480.00
— Additional examination fee, per additional invention (payable only upon invitation)	140.00
— USPTO was not ISA in PCT Chapter I	730.00
— Additional examination fee, per additional invention (payable only upon invitation)	260.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
— All claims presented satisfied provisions of PCT Article 33(2) to (4)	48.00	96.00
— All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	350.00	700.00
USPTO was ISA but not IPEA	385.00	770.00
USPTO was neither ISA nor IPEA		
— Search report has not been prepared by the European Patent Office or the Japanese Patent Office	520.00	1040.00
— Search report has been prepared by the European Patent Office or the Japanese Patent Office	455.00	910.00
Other National fees		
— For each independent claim in excess of 3	40.00	80.00
— For each claim in excess of 20	11.00	22.00
— For each application containing a multiple dependent claim	130.00	260.00
— Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
— Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

Dec. 26, 1996

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on February 15, 1997 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,285,529 through 5,287,558

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Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on February 13, 1990 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,889,395 through 4,901,369
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on February 11, 1986 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,569,086 through 4,570,265
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1996, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $510.00
By other than a small entity $1,020.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,025.00
By other than a small entity $2,050.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,540.00
By other than a small entity $3,080.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:
(1) unavoidable $680.00
(2) unintentional $1,600.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED December 11, 1996
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 32,559	06/933,009	12/15/87
(4,487,468)	(06/453,653)	(12/11/84)
Re. 32,735	06/886,518	08/23/88
(4,488,042)	(06/368,494)	(12/11/84)
Re. 33,999	07/624,586	07/21/92
(4,789,461)	(06/892,380)	(12/06/88)
4,486,901	06/478,681	12/11/84
4,486,903	06/575,479	12/11/84
4,486,905	06/337,075	12/11/84
4,486,906	06/502,692	12/11/84
4,486,912	06/503,058	12/11/84
4,486,917	06/348,608	12/11/84
4,486,927	06/494,627	12/11/84
4,486,936	06/308,122	12/11/84
4,486,939	06/430,229	12/11/84
4,486,946	06/513,208	12/11/84
4,486,947	06/417,414	12/11/84
4,486,968	06/450,069	12/11/84
4,486,978	06/407,256	12/11/84
4,486,981	06/486,950	12/11/84
4,486,982	06/451,446	12/11/84
4,486,990	06/370,525	12/11/84
4,486,997	06/546,638	12/11/84
4,486,998	06/376,169	12/11/84
4,487,004	06/500,896	12/11/84
4,487,005	06/405,337	12/11/84
4,487,007	06/507,926	12/11/84
4,487,011	06/367,168	12/11/84
4,487,014	06/374,383	12/11/84
4,487,015	06/470,546	12/11/84
4,487,019	06/580,786	12/11/84
4,487,020	06/516,323	12/11/84
4,487,023	06/414,213	12/11/84
4,487,031	06/540,268	12/11/84
4,487,035	06/487,816	12/11/84
4,487,037	06/512,147	12/11/84
4,487,041	06/246,092	12/11/84
4,487,042	06/352,091	12/11/84
4,487,044	06/509,599	12/11/84
4,487,054	06/502,092	12/11/84
4,487,058	06/463,646	12/11/84
4,487,070	06/410,946	12/11/84
4,487,073	06/460,941	12/11/84
4,487,074	06/468,396	12/11/84
4,487,077	06/494,792	12/11/84
4,487,081	06/412,384	12/11/84
4,487,082	06/453,010	12/11/84
4,487,090	06/412,760	12/11/84
4,487,093	06/310,678	12/11/84
4,487,098	06/510,231	12/11/84
4,487,105	06/492,322	12/11/84
4,487,111	06/294,130	12/11/84
4,487,112	06/432,906	12/11/84
4,487,119	06/293,687	12/11/84
4,487,120	06/485,235	12/11/84
4,487,123	06/521,654	12/11/84
4,487,124	06/521,655	12/11/84
4,487,131	06/303,075	12/11/84
4,487,133	06/425,034	12/11/84

Patent Number	Serial Number	Issue Date
4,487,138	06/449,796	12/11/84
4,487,151	06/378,174	12/11/84
4,487,153	06/429,237	12/11/84
4,487,154	06/434,574	12/11/84
4,487,158	06/502,871	12/11/84
4,487,159	06/448,567	12/11/84
4,487,168	06/403,130	12/11/84
4,487,188	06/443,679	12/11/84
4,487,192	06/485,985	12/11/84
4,487,193	06/543,472	12/11/84
4,487,197	06/371,476	12/11/84
4,487,219	06/492,941	12/11/84
4,487,228	06/562,548	12/11/84
4,487,235	06/497,524	12/11/84
4,487,236	06/450,680	12/11/84
4,487,238	06/416,299	12/11/84
4,487,244	06/300,165	12/11/84
4,487,245	06/291,949	12/11/84
4,487,246	06/367,270	12/11/84
4,487,258	06/523,376	12/11/84
4,487,267	06/461,259	12/11/84
4,487,272	06/424,986	12/11/84
4,487,282	06/370,532	12/11/84
4,487,288	06/392,521	12/11/84
4,487,292	06/386,993	12/11/84
4,487,296	06/445,264	12/11/84
4,487,315	06/469,450	12/11/84
4,487,318	06/329,825	12/11/84
4,487,322	06/424,687	12/11/84
4,487,334	06/369,023	12/11/84
4,487,335	06/465,797	12/11/84
4,487,337	06/311,201	12/11/84
4,487,341	06/307,546	12/11/84
4,487,344	06/288,104	12/11/84
4,487,351	06/492,610	12/11/84
4,487,353	06/322,569	12/11/84
4,487,354	06/316,713	12/11/84
4,487,357	06/381,334	12/11/84
4,487,367	06/434,279	12/11/84
4,487,372	06/369,069	12/11/84
4,487,373	06/474,159	12/11/84
4,487,375	06/466,950	12/11/84
4,487,380	06/422,908	12/11/84
4,487,392	06/417,565	12/11/84
4,487,393	06/387,007	12/11/84
4,487,405	06/472,725	12/11/84
4,487,406	06/459,911	12/11/84
4,487,409	06/403,358	12/11/84
4,487,426	06/378,992	12/11/84
4,487,432	06/312,703	12/11/84
4,487,436	06/346,936	12/11/84
4,487,438	06/233,802	12/11/84
4,487,442	06/428,253	12/11/84
4,487,460	06/535,494	12/11/84
4,487,469	06/401,292	12/11/84
4,487,471	06/456,533	12/11/84
4,487,472	06/394,831	12/11/84
4,487,486	06/396,407	12/11/84
4,487,495	06/454,713	12/11/84
4,487,496	06/375,457	12/11/84
4,487,499	06/525,614	12/11/84
4,487,509	06/458,560	12/11/84
4,487,510	06/589,864	12/11/84
4,487,518	06/372,908	12/11/84
4,487,522	06/379,303	12/11/84
4,487,525	06/524,217	12/11/84
4,487,527	06/409,369	12/11/84
4,487,528	06/439,557	12/11/84
4,487,529	06/337,567	12/11/84
4,487,530	06/419,388	12/11/84
4,487,531	06/433,807	12/11/84
4,487,539	06/460,533	12/11/84
4,487,548	06/495,987	12/11/84
4,487,566	06/512,482	12/11/84
4,487,574	06/451,505	12/11/84
4,487,575	06/471,703	12/11/84
4,487,576	06/461,185	12/11/84
4,487,583	06/273,774	12/11/84
4,487,595	06/449,045	12/11/84
4,487,596	06/337,632	12/11/84
4,487,604	06/421,546	12/11/84
4,487,607	06/371,131	12/11/84
4,487,609	06/520,655	12/11/84
4,487,632	06/522,133	12/11/84
4,487,633	06/507,544	12/11/84
4,487,636	06/442,332	12/11/84
4,487,639	06/456,209	12/11/84
4,487,644	06/423,458	12/11/84
4,487,650	06/586,904	12/11/84
4,487,656	06/537,876	12/11/84
4,487,661	06/530,449	12/11/84
4,487,665	06/217,319	12/11/84
4,487,672	06/438,130	12/11/84
4,487,685	06/507,585	12/11/84
4,487,689	06/585,084	12/11/84
4,487,693	06/554,795	12/11/84
4,487,710	06/353,756	12/11/84
4,487,714	06/571,898	12/11/84
4,487,718	06/580,807	12/11/84
4,487,721	06/502,042	12/11/84
4,487,725	06/495,510	12/11/84
4,487,727	06/264,975	12/11/84
4,487,730	06/408,996	12/11/84
4,487,731	06/537,832	12/11/84
4,487,732	06/513,891	12/11/84
4,487,733	06/514,074	12/11/84
4,487,737	06/342,535	12/11/84
4,487,738	06/477,459	12/11/84
4,487,746	06/467,276	12/11/84
4,487,752	06/521,232	12/11/84
4,487,759	06/240,990	12/11/84
4,487,760	06/340,764	12/11/84
4,487,765	06/542,774	12/11/84
4,487,768	06/452,301	12/11/84
4,487,769	06/492,903	12/11/84
4,487,773	06/509,266	12/11/84
4,487,787	06/436,294	12/11/84
4,487,792	06/390,538	12/11/84
4,487,793	06/546,325	12/11/84
4,487,794	06/597,026	12/11/84
4,487,798	06/498,502	12/11/84
4,487,799	06/576,774	12/11/84
4,487,803	06/516,835	12/11/84
4,487,811	06/461,809	12/11/84
4,487,821	06/276,887	12/11/84
4,487,823	06/437,553	12/11/84
4,487,826	06/458,717	12/11/84
4,487,833	06/353,089	12/11/84
4,487,858	06/540,079	12/11/84
4,487,866	06/506,580	12/11/84
4,487,867	06/506,759	12/11/84
4,487,870	06/453,399	12/11/84
4,487,872	06/511,708	12/11/84
4,487,876	06/596,251	12/11/84
4,487,877	06/430,050	12/11/84
4,487,878	06/591,969	12/11/84
4,487,881	06/538,301	12/11/84
4,487,883	06/534,845	12/11/84
4,487,886	06/544,730	12/11/84
4,487,895	06/615,687	12/11/84
4,487,896	06/528,932	12/11/84
4,487,898	06/384,936	12/11/84
4,487,902	06/507,082	12/11/84
4,487,907	06/560,705	12/11/84
4,487,908	06/579,231	12/11/84
4,487,912	06/579,236	12/11/84
4,487,913	06/588,598	12/11/84
4,487,914	06/580,704	12/11/84
4,487,915	06/576,304	12/11/84
4,487,921	06/550,971	12/11/84
4,487,925	06/461,817	12/11/84
4,487,926	06/570,205	12/11/84
4,487,933	06/491,680	12/11/84
4,487,935	06/468,283	12/11/84
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4,487,948	06/477,993	12/11/84
4,487,955	06/511,506	12/11/84
4,487,958	06/428,816	12/11/84
4,487,961	06/349,145	12/11/84
4,487,967	06/565,097	12/11/84
4,487,969	06/429,762	12/11/84
4,487,974	06/469,183	12/11/84
4,487,975	06/407,059	12/11/84
4,487,976	06/412,711	12/11/84
4,487,983	06/536,672	12/11/84
4,487,984	06/584,375	12/11/84
4,487,985	06/526,852	12/11/84
4,487,994	06/319,429	12/11/84
4,487,996	06/446,193	12/11/84
4,488,000	06/429,785	12/11/84
4,488,007	06/450,252	12/11/84
4,488,015	06/401,365	12/11/84
4,488,020	06/468,925	12/11/84
4,488,022	06/438,691	12/11/84
4,488,032	06/619,432	12/11/84
4,488,034	06/398,116	12/11/84
4,488,045	06/412,215	12/11/84
4,488,047	06/324,964	12/11/84
4,488,049	06/319,444	12/11/84
4,488,054	06/484,274	12/11/84
4,488,063	06/310,381	12/11/84
4,488,074	06/425,070	12/11/84
4,488,077	06/327,170	12/11/84
4,488,078	06/409,234	12/11/84
4,488,080	06/492,980	12/11/84
4,488,085	06/360,436	12/11/84
4,488,091	06/440,907	12/11/84
4,488,092	06/390,078	12/11/84
4,488,103	06/459,874	12/11/84
4,488,104	06/441,743	12/11/84
4,488,107	06/374,246	12/11/84
4,488,109	06/456,503	12/11/84
4,488,112	06/412,758	12/11/84
4,488,114	06/360,901	12/11/84
4,488,118	06/304,483	12/11/84
4,488,119	06/345,863	12/11/84
4,488,125	06/395,368	12/11/84
4,488,132	06/448,970	12/11/84
4,488,136	06/526,205	12/11/84
4,488,137	06/527,003	12/11/84
4,488,146	06/358,159	12/11/84
4,488,157	06/350,739	12/11/84
4,488,158	06/547,855	12/11/84
4,488,177	06/442,938	12/11/84
4,488,179	06/304,982	12/11/84
4,488,194	06/351,342	12/11/84
4,488,197	06/381,960	12/11/84
4,488,198	06/378,644	12/11/84
4,488,210	06/482,979	12/11/84
4,488,211	06/408,890	12/11/84
4,488,214	06/441,660	12/11/84
4,488,216	06/490,079	12/11/84
4,488,220	06/359,829	12/11/84
4,488,236	06/369,302	12/11/84
4,488,240	06/344,561	12/11/84
4,488,255	06/313,916	12/11/84
4,488,261	06/353,356	12/11/84
4,488,277	06/347,608	12/11/84
4,488,292	06/328,954	12/11/84
4,488,298	06/388,834	12/11/84
4,488,301	06/383,447	12/11/84
4,788,722	07/164,953	12/06/88
4,788,723	07/107,055	12/06/88
4,788,732	06/824,200	12/06/88
4,788,740	07/078,559	12/06/88
4,788,742	07/134,377	12/06/88
4,788,744	07/138,579	12/06/88
4,788,745	07/059,500	12/06/88
4,788,759	06/935,229	12/06/88
4,788,760	07/054,266	12/06/88
4,788,761	07/066,840	12/06/88
4,788,762	07/088,764	12/06/88
4,788,766	07/051,797	12/06/88
4,788,768	07/024,776	12/06/88
4,788,773	06/805,845	12/06/88
4,788,774	07/136,787	12/06/88
4,788,781	07/051,766	12/06/88
4,788,782	07/055,956	12/06/88
4,788,787	07/100,933	12/06/88
4,788,788	07/176,236	12/06/88
4,788,790	06/871,326	12/06/88
4,788,791	06/947,697	12/06/88
4,788,792	07/039,386	12/06/88
4,788,793	06/472,449	12/06/88
4,788,796	07/086,778	12/06/88
4,788,800	07/067,543	12/06/88
4,788,804	07/047,322	12/06/88
4,788,806	06/841,593	12/06/88
4,788,809	07/028,166	12/06/88
4,788,814	07/089,743	12/06/88
4,788,819	07/108,734	12/06/88
4,788,820	07/050,025	12/06/88
4,788,825	07/162,837	12/06/88
4,788,838	07/019,518	12/06/88
4,788,839	06/466,975	12/06/88
4,788,842	06/938,238	12/06/88
4,788,851	07/091,670	12/06/88
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5,169,047	07/785,085	12/08/92
5,169,050	07/709,618	12/08/92
5,169,051	07/810,206	12/08/92
5,169,057	07/767,744	12/08/92
5,169,059	07/865,834	12/08/92
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5,169,065	07/539,079	12/08/92
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5,169,068	07/657,686	12/08/92
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5,169,076	07/706,930	12/08/92
5,169,088	07/598,961	12/08/92
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5,169,093	07/604,468	12/08/92
5,169,103	07/757,540	12/08/92
5,169,104	07/771,307	12/08/92
5,169,115	07/755,849	12/08/92
5,169,120	07/486,055	12/08/92
5,169,122	07/801,279	12/08/92
5,169,127	07/713,296	12/08/92
5,169,135	07/876,138	12/08/92
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5,169,175	07/598,998	12/08/92
5,169,197	07/645,959	12/08/92
5,169,200	07/875,261	12/08/92
5,169,202	07/813,817	12/08/92
5,169,204	07/865,298	12/08/92
5,169,206	07/723,612	12/08/92
5,169,216	07/649,627	12/08/92
5,169,217	07/683,331	12/08/92
5,169,218	07/785,587	12/08/92
5,169,228	07/867,757	12/08/92
5,169,230	07/721,856	12/08/92
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5,170,097	07/672,572	12/08/92
5,170,106	07/780,947	12/08/92
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5,170,137	07/656,340	12/08/92
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5,170,144	07/388,059	12/08/92
5,170,146	07/739,073	12/08/92
5,170,163	07/652,622	12/08/92
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5,170,174	07/603,455	12/08/92
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5,170,209	07/658,647	12/08/92
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5,170,222	07/598,557	12/08/92
5,170,224	07/604,635	12/08/92
5,170,240	07/769,173	12/08/92
5,170,250	07/651,672	12/08/92
5,170,252	07/506,399	12/08/92
5,170,260	07/713,202	12/08/92
5,170,266	07/482,270	12/08/92
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5,170,302	07/693,794	12/08/92
5,170,305	07/729,543	12/08/92
5,170,309	07/669,370	12/08/92
5,170,314	07/470,861	12/08/92
5,170,315	07/712,435	12/08/92
5,170,327	07/742,180	12/08/92
5,170,330	07/799,009	12/08/92
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5,170,337	07/827,310	12/08/92
5,170,352	07/744,634	12/08/92
5,170,355	07/534,778	12/08/92
5,170,361	07/465,369	12/08/92
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5,170,367	07/514,088	12/08/92
5,170,376	07/573,205	12/08/92
5,170,378	07/864,143	12/08/92
5,170,379	07/731,106	12/08/92
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5,170,398	07/554,316	12/08/92
5,170,423	07/847,611	12/08/92
5,170,437	07/599,295	12/08/92
5,170,457	07/774,872	12/08/92
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Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

D. 366,946, Reexam. No. 90/004,509, Jan. 7, 1997, Cl. D26/007, WAX ROSE CANDLE ON A STICK, James W. & Marsha Hoak, Kalkaska, Mich., Owner of Record: *Mountain View Marketing, Inc., Orem, Utah*, Attorney or Agent: Brooks & Kushman, Southfield, Mich., Ex. Gp.: 2901, Requester: Inventors

4,639,301, Reexam. No. 90/004,510, Jan. 7, 1997, Cl. 204/192.31, FOCUSED ION BEAM PROCESSING, John A. Doherty, et. al., Owner of Record: *Micrion Corp., Peabody, Mass.*, Attorney or Agent: W. Hugo Liepmann, Lahive & Ackfield, Boston, Mass., Ex. Gp.: 1109, Requester: Owner

5,045,940, Reexam. No. 90/004,520, Jan. 10, 1997, Cl. 348/472, VIDEO/AUDIO TRANSMISSION SYSTEM AND METHOD, Eric C. Peters, et. al., Owner of Record: *Avid Technology, Burlington, Mass.*, Attorney or Agent: Sam Pasternack, Choate Hall & Stewart, Boston, Mass., Ex. Gp.: 2602, Requester: Media 100 Inc., c/o Walter E. Hanley, Jr., Kenyon & Kenyon, New York, N.Y.

5,262,468, Reexam. No. 90/004,513, Jan. 10, 1997, Cl. 524/476, THERMOPLASTIC ELASTOMER GELATINOUS COMPOSITIONS, John Y. Chen, Owner of Record: *John Y. Chen, Applied Elastomerics, Inc., Pacifica, Calif.*, Attorney or Agent: John Y. Chen, Ex. Gp.: 1505, Requester: Derek P. Freyberg, Heller, Ehrman, White & McAuliffe, Palo Alto, Calif.

5,310,424, Reexam. No. 90/004,515, Jan. 13, 1997, Cl. 008/190, PROCESS FOR REDUCING THE FIBRILLATION TENDENCY OF SOLVENT-SPUN CELLULOSE FIBRE, James M. Taylor, Owner of Record: *Courtaulds PLC, London, United Kingdon*, Attorney or Agent: Mary E. Bak, Howson & Howson, Spring House, Pa., Ex. Gp.: 1105, Requester: Owner

5,334,646, Reexam. No. 90/004,514, Jan. 10, 1997, Cl. 524/474, THERMOPLASTIC ELASTOMER GELATINOUS ARTICLES, John Y. Chen, Owner of Record: *John Y. Chen, Applied Elastomerics, Inc., Pacifica, Calif.*, Attorney or Agent: John Y. Chen, Ex. Gp.: 1505, Requester: Derek P. Freyberg, Heller, Ehrman, White & McAuliffe, Palo Alto, Calif.

5,425,806, Reexam. No. 90/004,521, Jan. 15, 1997, Cl. 106/203.1, POURABLE WATER DISPERSABLE THICKENING COMPOSITION FOR AQUEOUS SYSTEMS AND A METHOD OF THICKENING SAID AQUEOUS SYSTEMS, Joseph G. Doolan, et. al., Owner of Record: *Rheox, Inc., Hightstown, N.J.*, Attorney or Agent: Michael J. Cronin, Hightstown, N.J., Ex. Gp.: 1108, Requester: Owner

5,427,831, Reexam. No. 90/004,511, Jan. 9, 1997, Cl. 428/036.2, FLUOROPOLYMER LAMINATES, Ronald D. Stevens, Owner of Record: *E. I. Du Pont de Nemours and Co., Wilmington, Del.*, Attorney or Agent: Edwin Tocker, E. I. Du Pont de Nemours & Co., Wilmington, Del., Ex. Gp.: 1314, Requester: Owner

5,496,866, Reexam. No. 90/004,519, Jan. 9, 1997, Cl. 521/131, C3 TO C5 POLYFLUORO ALKANES PROPELLANTS, Claus-Dieter Sommerfeld, et. al., Owner of Record: *Bayer Aktiengesellschaft, Leverkusen, Germany*, Attorney or Agent: Joseph C. Gill, Bayer Corp., Pittsburgh, Pa., Ex. Gp.: 1207, Requester: Richard J. Hammond, LaRoche Industries, Inc., Baton Rogue, La.

5,520,724, Reexam. No. 90/004,512, Jan. 9, 1997, Cl. 095/169, PROCESS FOR THE RECOVERY OF LOW MOLECULAR WEIGHT C2 + HYDROCARBONS FROM A CRACKING GAS, Heinz Bauer, et. al., Owner of Record: *Linde Aktiengesellschaft, Weisbaden, Germany*, Attorney or Agent: I. William Millen, Millen, White, Zelano & Branigan, Arlington, Va., Ex. Gp.: 1305, Requester: Advanced Extraction Technologies, Inc., c/o Arnold White & Durkee, Houston, Tex.

5,571,100, Reexam. No. 90/004,517, Jan. 14, 1997, Cl. 606/041, ELECTRO- SURGICAL APPARATUS, Nigel M. Goble, et. al., Owner of Record: *Gyrus Medical Limited, Cardiff, Wales*, Attorney or Agent: Gary A. Walpert, Fish & Richardson, Ex. Gp.: 3309, Requester: Arthrocare Corp., Sunnyvale, Calif., c/o John T. Raffle, Townsend and Townsend and Crew, San Francisco, Calif.

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED NOVEMBER 04, 1996
DUE TO FAILURE TO RENEW

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331,947	71/351,289	01/28/1936
331,966	71/369,351	01/28/1936
331,978	71/369,787	01/28/1936
332,003	71/369,229	01/28/1936
332,009	71/369,957	01/28/1936
332,021	71/369,816	01/28/1936
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620,182	71/683,819	01/31/1956
620,184	71/684,386	01/31/1956
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620,208	71/690,739	01/31/1956
620,211	71/659,738	01/31/1956
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620,571	71/647,898	01/31/1956
1,001,839	72/399,209	01/14/1975
1,009,305	72/399,213	04/22/1975
1,014,751	73/030,218	07/01/1975
1,031,104	73/039,439	01/27/1976
1,031,109	73/048,820	01/27/1976
1,031,110	73/049,185	01/27/1976
1,031,111	73/049,186	01/27/1976
1,031,114	73/054,349	01/27/1976
1,031,116	73/054,504	01/27/1976
1,031,121	73/035,257	01/27/1976
1,031,123	73/041,380	01/27/1976
1,031,124	73/041,381	01/27/1976
1,031,126	73/041,424	01/27/1976
1,031,127	73/041,473	01/27/1976
1,031,129	73/044,895	01/27/1976
1,031,131	73/045,034	01/27/1976
1,031,140	73/020,571	01/27/1976
1,031,145	73/058,121	01/27/1976
1,031,146	73/050,802	01/27/1976
1,031,147	73/053,445	01/27/1976
1,031,153	73/057,531	01/27/1976
1,031,154	73/057,881	01/27/1976
1,031,156	73/029,992	01/27/1976
1,031,160	73/036,156	01/27/1976
1,031,161	73/037,019	01/27/1976
1,031,166	73/054,728	01/27/1976
1,031,168	73/054,964	01/27/1976
1,031,169	73/055,086	01/27/1976
1,031,171	73/055,407	01/27/1976
1,031,178	73/056,021	01/27/1976
1,031,179	73/056,194	01/27/1976
1,031,180	73/056,254	01/27/1976
1,031,181	73/056,255	01/27/1976
1,031,183	73/056,663	01/27/1976
1,031,186	73/006,187	01/27/1976
1,031,187	73/010,052	01/27/1976
1,031,191	73/038,549	01/27/1976
1,031,192	73/039,539	01/27/1976
1,031,196	73/041,541	01/27/1976
1,031,197	73/041,586	01/27/1976
1,031,200	73/045,563	01/27/1976
1,031,201	73/046,583	01/27/1976
1,031,206	73/012,099	01/27/1976
1,031,223	73/029,017	01/27/1976
1,031,225	73/029,773	01/27/1976
1,031,228	73/037,912	01/27/1976
1,031,231	73/039,327	01/27/1976
1,031,232	73/039,376	01/27/1976
1,031,235	73/042,004	01/27/1976
1,031,237	73/044,479	01/27/1976
1,031,241	73/048,885	01/27/1976
1,031,243	73/049,884	01/27/1976
1,031,244	73/049,961	01/27/1976
1,031,246	73/054,454	01/27/1976
1,031,249	73/057,098	01/27/1976
1,031,250	73/057,179	01/27/1976
1,031,251	73/057,469	01/27/1976
1,031,258	73/001,543	01/27/1976
1,031,259	73/005,207	01/27/1976
1,031,264	73/013,714	01/27/1976
1,031,266	73/033,782	01/27/1976
1,031,273	73/024,783	01/27/1976
1,031,275	73/026,326	01/27/1976
1,031,278	73/028,730	01/27/1976
1,031,282	73/030,585	01/27/1976
1,031,283	73/031,522	01/27/1976
1,031,290	73/038,540	01/27/1976
1,031,294	73/040,300	01/27/1976
1,031,299	73/043,247	01/27/1976
1,031,305	73/044,232	01/27/1976
1,031,307	73/046,640	01/27/1976
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1,031,309	73/048,211	01/27/1976
1,031,310	73/048,573	01/27/1976
1,031,313	73/049,389	01/27/1976
1,031,314	73/050,126	01/27/1976
1,031,317	73/051,643	01/27/1976
1,031,318	73/052,460	01/27/1976
1,031,321	73/053,314	01/27/1976
1,031,324	73/054,128	01/27/1976
1,031,330	73/054,900	01/27/1976
1,031,335	73/055,180	01/27/1976
1,031,338	73/055,654	01/27/1976
1,031,341	73/056,293	01/27/1976
1,031,345	73/056,889	01/27/1976
1,031,349	73/028,109	01/27/1976
1,031,354	73/046,078	01/27/1976
1,031,363	73/056,707	01/27/1976
1,031,364	73/003,659	01/27/1976
1,031,370	73/022,127	01/27/1976
1,031,373	73/030,647	01/27/1976
1,031,375	73/040,095	01/27/1976
1,031,376	73/040,098	01/27/1976
1,031,378	73/042,842	01/27/1976
1,031,380	73/043,826	01/27/1976
1,031,381	73/045,104	01/27/1976
1,031,383	73/046,706	01/27/1976
1,031,385	73/051,790	01/27/1976
1,031,386	73/052,464	01/27/1976
1,031,395	73/054,565	01/27/1976
1,031,396	73/054,616	01/27/1976
1,031,408	73/054,459	01/27/1976
1,031,419	73/018,212	01/27/1976
1,031,420	73/018,615	01/27/1976
1,031,422	73/023,536	01/27/1976
1,031,439	73/040,677	01/27/1976
1,031,441	73/042,209	01/27/1976
1,031,443	73/043,068	01/27/1976
1,031,447	73/046,052	01/27/1976
1,031,449	73/048,370	01/27/1976
1,031,451	73/049,192	01/27/1976
1,031,456	73/043,182	01/27/1976
1,031,457	73/051,833	01/27/1976
1,031,458	73/029,340	01/27/1976
1,031,462	73/003,888	01/27/1976
1,031,463	73/008,179	01/27/1976
1,031,464	73/028,265	01/27/1976
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1,031,470	73/043,278	01/27/1976
1,031,471	73/043,452	01/27/1976
1,031,474	73/012,839	01/27/1976
1,031,475	73/026,060	01/27/1976
1,031,476	73/052,363	01/27/1976
1,031,478	73/029,925	01/27/1976
1,031,483	73/002,327	01/27/1976
1,031,484	73/022,145	01/27/1976
1,031,487	73/041,469	01/27/1976
1,031,500	73/028,223	01/27/1976

Reg. Number	Serial Number	Reg. Date
1,031,504	73/035,793	01/27/1976
1,031,506	73/039,427	01/27/1976
1,031,507	73/040,276	01/27/1976
1,031,515	73/045,781	01/27/1976
1,031,516	73/046,978	01/27/1976
1,031,519	73/048,237	01/27/1976
1,031,524	73/049,664	01/27/1976
1,031,527	73/015,087	01/27/1976
1,031,530	73/052,018	01/27/1976
1,031,532	73/043,776	01/27/1976
1,031,533	73/044,203	01/27/1976
1,031,535	73/011,519	01/27/1976
1,031,537	73/019,024	01/27/1976
1,031,540	73/028,449	01/27/1976
1,031,542	73/030,208	01/27/1976
1,031,544	73/032,541	01/27/1976
1,031,545	73/032,581	01/27/1976
1,031,548	73/035,313	01/27/1976
1,031,563	73/046,967	01/27/1976
1,031,570	73/047,967	01/27/1976
1,031,572	73/048,032	01/27/1976
1,031,573	73/048,644	01/27/1976
1,031,574	73/048,646	01/27/1976
1,031,575	73/049,626	01/27/1976
1,031,577	73/051,307	01/27/1976
1,031,578	73/051,317	01/27/1976
1,031,587	73/006,086	01/27/1976
1,031,589	73/010,504	01/27/1976
1,031,592	73/026,276	01/27/1976
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1,031,595	73/033,602	01/27/1976
1,031,598	73/041,321	01/27/1976
1,031,600	73/045,992	01/27/1976
1,031,605	73/050,432	01/27/1976
1,031,609	73/053,350	01/27/1976
1,031,611	73/053,371	01/27/1976
1,031,613	73/053,985	01/27/1976
1,031,614	73/054,038	01/27/1976
1,031,624	73/026,579	01/27/1976
1,031,625	73/042,795	01/27/1976
1,031,627	73/043,816	01/27/1976
1,031,628	73/050,159	01/27/1976
1,031,630	73/051,901	01/27/1976
1,031,635	73/053,246	01/27/1976
1,031,643	73/049,862	01/27/1976
1,031,646	73/013,553	01/27/1976
1,031,647	73/025,596	01/27/1976
1,031,648	73/045,566	01/27/1976
1,031,653	73/041,678	01/27/1976
1,031,656	73/056,618	01/27/1976
1,031,658	73/056,374	01/27/1976
1,031,660	73/056,553	01/27/1976
1,031,664	73/057,411	01/27/1976
1,031,666	73/044,928	01/27/1976
1,031,668	73/049,340	01/27/1976
1,031,669	73/049,618	01/27/1976
1,031,671	73/050,394	01/27/1976
1,031,682	73/035,178	01/27/1976
1,031,683	73/036,136	01/27/1976
1,031,685	73/041,388	01/27/1976
1,031,688	73/049,913	01/27/1976
1,031,690	73/052,327	01/27/1976
1,031,691	73/052,328	01/27/1976
1,031,697	73/022,596	01/27/1976
1,031,698	73/023,760	01/27/1976
1,031,701	73/024,525	01/27/1976
1,031,702	73/027,448	01/27/1976
1,031,707	73/040,563	01/27/1976
1,031,708	73/040,564	01/27/1976
1,031,710	73/045,427	01/27/1976
1,031,713	73/056,725	01/27/1976
1,031,714	73/010,913	01/27/1976
1,031,716	73/036,174	01/27/1976
1,031,719	73/048,187	01/27/1976
1,031,729	73/019,298	01/27/1976
1,031,738	73/039,481	01/27/1976
1,031,742	73/044,174	01/27/1976
1,031,744	73/010,695	01/27/1976
1,031,746	73/019,346	01/27/1976
1,031,756	73/030,694	01/27/1976
1,031,757	73/030,765	01/27/1976
1,031,762	73/036,468	01/27/1976
1,031,767	73/039,674	01/27/1976
1,031,768	73/039,675	01/27/1976
1,031,769	73/040,188	01/27/1976
1,031,771	73/040,658	01/27/1976
1,031,772	73/040,667	01/27/1976
1,031,773	73/040,668	01/27/1976
1,031,774	73/040,984	01/27/1976
1,031,778	73/042,677	01/27/1976
1,031,781	73/044,099	01/27/1976
1,031,782	73/044,231	01/27/1976
1,031,785	73/045,476	01/27/1976
1,031,788	73/047,857	01/27/1976
1,031,789	73/048,170	01/27/1976
1,031,790	73/049,895	01/27/1976
1,031,791	73/050,246	01/27/1976
1,031,794	73/052,544	01/27/1976
1,031,796	73/056,340	01/27/1976
1,031,798	72/467,012	01/27/1976
1,031,801	72/449,720	01/27/1976
1,031,807	72/466,212	01/27/1976
1,031,815	72/439,722	01/27/1976
1,031,816	72/463,308	01/27/1976
1,031,817	72/443,800	01/27/1976
1,031,821	72/457,855	01/27/1976
1,031,825	72/427,853	01/27/1976
1,031,829	72/443,361	01/27/1976
1,031,830	72/443,717	01/27/1976
1,031,835	72/463,061	01/27/1976
1,031,837	72/452,468	01/27/1976
1,031,838	72/466,184	01/27/1976
1,031,850	72/439,803	01/27/1976

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office who have been given provisional recognition pursuant to 37 CFR 10.9(a) to prepare and prosecute patent applications before the Office until their registration certificates are mailed to them. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before March 28, 1997.

Hamilton, Thomas, III, 11801 Chase Wellesley Dr., #1214, Richmond, Va. 23233

Limanek, Robert P., 1155 Marine St., #314, Boulder, Colo. 80302

May, Timothy J., 1900 S. Eads St., #804, Arlington, Va. 22202

January 15, 1997 KAREN L. BOVARD, *Director*
Office of Enrollment and Discipline

Service by Publication

A petition to cancel the registrations identified below having been filed, and the notice of such proceedings sent by certified mail to registrants at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will proceed as in the case of default.

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Overseas Activity, Seattle, Wash., Reg. No. 1,706,884, for the mark "HIP SPORTSWEAR", Canc. No. 25,590.

Fantasy Diamond Corp., Chicago, Ill., Reg. No. 688,292, for the mark "MASTERPIECE", Canc. No. 25,402.

JEAN BROWN
Technical Program Manager,
Trademark Trial
and Appeal Board, for
ROBERT M. ANDERSON
Deputy Assistant Commissioner
for Trademarks

Certificates of Correction
For the Week of February 18, 1997

Re. 35,311	5,474,475	5,528,889	5,545,969
Re. 35,348	5,474,984	5,530,120	5,546,369
Re. 35,365	5,475,573	5,531,047	5,546,541
Re. 35,406	5,476,002	5,531,559	5,547,293
D. 358,870	5,476,730	5,531,794	5,547,439
D. 374,339	5,477,947	5,531,913	5,547,724
D. 374,875	5,481,009	5,532,261	5,547,851
D. 375,298	5,482,248	5,534,531	5,547,880
D. 376,731	5,486,036	5,534,607	5,548,303
4,932,763	5,487,845	5,534,788	5,548,342
5,091,102	5,488,053	5,534,827	5,548,423
5,143,638	5,488,639	5,535,057	5,548,519
5,149,533	5,491,217	5,535,243	5,548,721
5,154,247	5,491,283	5,535,678	5,549,125
5,159,055	5,493,465	5,536,397	5,549,383
5,164,820	5,498,628	5,536,468	5,549,834
5,200,998	5,498,795	5,536,545	5,549,855
5,255,124	5,502,274	5,536,570	5,549,903
5,255,810	5,505,851	5,536,730	5,549,994
5,270,514	5,506,407	5,537,210	5,550,046
5,279,496	5,506,829	5,537,298	5,550,283
5,279,894	5,506,956	5,537,353	5,550,393
5,298,201	5,507,754	5,537,517	5,550,635
5,309,919	5,507,987	5,537,550	5,551,092
5,315,506	5,508,932	5,537,663	5,551,501
5,317,168	5,509,382	5,537,811	5,552,297
5,345,165	5,509,521	5,538,179	5,552,582
5,350,866	5,512,097	5,538,525	5,552,903
5,364,026	5,512,239	5,538,959	5,553,265
5,370,763	5,512,492	5,539,662	5,553,886
5,374,100	5,512,816	5,539,696	5,554,033
5,382,823	5,513,285	5,539,983	5,554,394
5,390,436	5,513,418	5,540,456	5,554,767
5,398,310	5,513,682	5,541,125	5,555,068
5,401,463	5,514,299	5,541,384	5,555,926
5,405,483	5,514,706	5,541,394	5,556,453
5,409,714	5,515,695	5,541,792	5,556,805
5,411,677	5,515,720	5,541,837	5,557,128
5,414,281	5,515,910	5,541,897	5,558,089
5,428,792	5,516,277	5,541,900	5,558,091
5,430,044	5,516,283	5,541,937	5,558,138
5,430,292	5,517,317	5,542,017	5,558,189
5,436,402	5,518,124	5,542,193	5,558,333
5,436,471	5,519,345	5,542,283	5,558,340
5,438,578	5,519,826	5,542,655	5,558,561
5,445,013	5,521,590	5,542,724	5,558,856
5,445,275	5,521,636	5,543,100	5,559,197
5,457,571	5,521,961	5,543,203	5,559,220
5,461,133	5,522,080	5,543,650	5,559,309
5,462,142	5,523,043	5,543,788	5,559,824
5,464,727	5,523,532	5,543,965	5,560,456
5,465,131	5,525,166	5,544,023	5,561,003
5,465,316	5,525,325	5,544,283	5,561,100
5,466,078	5,526,175	5,544,501	5,561,278
5,469,670	5,527,530	5,544,550	5,561,684
5,469,968	5,527,559	5,544,725	5,561,780
5,470,293	5,527,599	5,544,787	5,562,152
5,470,837	5,528,352	5,545,396	5,562,726
5,470,943	5,528,356	5,545,964	5,563,147
5,563,427	5,570,237	5,572,196	5,576,943
5,563,759	5,570,517	5,572,476	5,576,957
5,564,301	5,570,584	5,572,602	5,578,174
5,564,506	5,570,592	5,572,696	5,578,330
5,564,629	5,570,696	5,573,358	5,578,374
5,564,815	5,570,726	5,573,480	5,578,678
5,565,151	5,570,939	5,573,709	5,579,439
5,565,427	5,570,941	5,573,745	5,579,890
5,566,329	5,570,996	5,573,799	5,580,322
5,566,419	5,571,293	5,573,944	5,580,428
5,567,072	5,571,334	5,574,178	5,580,496
5,567,078	5,571,372	5,574,475	5,581,066
5,567,405	5,571,404	5,574,630	5,581,482
5,567,570	5,571,513	5,574,647	5,581,714
5,568,467	5,571,530	5,575,830	5,582,674
5,568,601	5,571,547	5,575,921	5,582,718
5,568,817	5,571,797	5,576,048	5,583,821
5,569,213	5,571,891	5,576,335	5,590,704
5,569,387	5,571,901	5,576,482	
5,569,844	5,572,183	5,576,483	

Summary of Final Decisions
Issued by the
Trademark Trial and Appeal Board
December 23-27, 1996

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
12-24	EX	74/517,451	Creative Enterprises, Inc.	2(d)	Refusal Affirmed		"OUTER BOUNDS" (and design) [t-shirts, hats, jackets and sweatshirts]	"OUTERBOUND BY H.M.S." [outerwear, namely, sweaters, stadium coats, sweater-jackets and jackets]	NO
12-24	EX	74/101,177	EBSCO Industries, Inc.	whether the configuration of applicant's goods, which configuration applicant claims as its trademark, is dejure functional and, if not, whether the configuration is inherently distinctive	Refusal Affirmed (on both grounds)		configuration of a fishing lure [fishing lures]		Yes

(1)EX = EX PARTE APPEAL; OPP = OPPOSITION; CANC = CANCELLATION; CU = CONCURRENT USE; (SJ) = SUMMARY JUDGMENT; (R) = REQ. FOR RECONSIDERATION

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Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
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Box Comments Patents	Public comments regarding patent related regulations and procedures.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or materials related to the Disclosure Document Program.
Box Design	The filing of all design patent applications and any communications relating thereto.
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Box Missing Parts	Response to the Notice to File Missing Parts of Application and associated papers and fees.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box PATENT APPLICATION	New patent applications and associated papers and fees.
Box Patent Ext.	Applications for patent term extension and any communications relating thereto.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Provisional Patent Application	The filing of all provisional patent applications and any communications relating thereto.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return post card or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

SPECIAL BOXES FOR TRADEMARK MAIL

Special box designations should be used to allow forwarding of particular types of trademark mail to the appropriate areas as quickly as possible. In addition to these box designations, filers are encouraged to indicate whether the contents of the envelope contain a fee. Envelopes containing a fee should be marked "FEE;" envelopes not containing a fee should be marked "NO FEE." Box designations and "FEE/NO FEE" indicators should appear on the envelope as well as on the cover sheet or first page of any document.

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Arlington, Virginia 22202-3513

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Box ITU FEE	Statements of Use (SOUs) and extension requests.
Box TTAB FEE	Oppositions, cancellation petitions, and ex parte appeals.
Box TTAB NO FEE	Interferences, motions, and extension requests.
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Box 4	Mail for the Deputy Assistant Secretary of Commerce and Deputy Commissioner of Patents and Trademarks; Office of Legislative and International Affairs.
Box 6	Mail for the Office of Procurement.
Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending litigation and disciplinary proceedings*; papers relating to pending litigation in court cases shall be mailed only to Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215 and papers relating to pending disciplinary proceedings before the Administrative Law Judge or the Commissioner shall be mailed only to the Office of the Solicitor, P.O. Box 16116, Arlington, Virginia 22215.
Box 9	Coupon orders for U.S. patent and trademark copies.
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Box 14	Mail directed to the APS Contracts Office.
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Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
Box M Fee	Correspondence regarding patent maintenance fees and related matter.
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All information is available for use by the public free of charge.

In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

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Alaska	Anchorage: Z.J. Loussac Public Library	(907) 562-7323
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Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	(415) 557-4500
	Sunnyvale Center for Innovation, Invention and Ideas	(408) 730-7290
Colorado	Denver Public Library	(303) 640-6249
Connecticut	New Haven: Science Park Library	(203) 786-5447
Delaware	Newark: University of Delaware Library	(302) 831-2965
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New Jersey	Newark Public Library	(201) 733-7782
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	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
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Oregon	Portland: Paul L. Boley Law Library, Lewis & Clark College	(503) 768-6786
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	Milwaukee Public Library	(414) 286-3051
Wyoming	Casper: Natrona County Public Library	(307) 237-4935

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PATENT EXAMINING CORPS

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PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, ENGINEERING AND DESIGNS, GROUP 1100—JOHN E. KITTLE, Director	308-0661	06/30/95
ORGANIC CHEMISTRY, DRUG, BIO-AFFECTING AND BODY TREATING COMPOSITION, GROUP 1200—RICHARD V. FISHER, Director	308-1235	09/06/95
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—JOHN F. TERAPANE, Director	308-0651	09/14/95
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	10/13/95
BIOTECHNOLOGY, GROUP 1800—JOHN J. DOLL, Director	308-0196	02/27/95
ELECTRICAL EXAMINING GROUPS		
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SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	07/06/95
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—JOSEPH J. ROLLA, Director	305-9600	03/29/95
SPECIAL COMPUTER APPLICATIONS: COMPUTER GRAPHICS, BUSINESS PRACTICES, & DIAGNOSTIC TESTING, GROUP 2400—GERALD GOLDBERG, Director	305-3800	04/07/95
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	06/12/95
TELECOMMUNICATIONS, GROUP 2600—NICHOLAS P. GODICI, Director	305-4700	04/14/95
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	308-0661	04/21/95
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—MARGARET FOCARINO, Director	308-1113	08/14/95
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—ETHEL CROSS, Director	308-1148	07/27/95
MEDICAL INSTRUMENTS, DIAGNOSTIC EQUIPMENT AND TREATMENT DEVICES; SURGERY AND SURGICAL SUPPLIES; AMUSEMENT AND EXERCISING DEVICES; ANIMAL HUSBANDRY; SPORTING GOODS; TOBACCO PRODUCTS AND MANUFACTURING EQUIPMENT; AND PRINTING, GROUP 3300—J.J. LOVE, Director	308-0858	09/26/95
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	08/04/95
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	10/16/95

*A communication from the examiner should have been received in most applications filed prior to this date.

Patents will Expire as Follows:
(1) The term of any utility or plant patent that is in force on or results from an application filed before June 8, 1995 is the greater of the 20 year term provided in 35 U.S.C. 154(a)(2) or 17 years from grant subject to any terminal disclaimers. 35 U.S.C. 154(c)(1).
(2) All utility and plant patents granted on applications having an actual United States filing date on or after June 8, 1995 are granted for a term which begins on the date on which the patent is granted and ends 20 years from the date on which the application was filed in the United States. If the application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term ends twenty years from that date on which the earliest application was filed. 35 U.S.C. 154(a)(2).
(3) All design patents are granted for a term of 14 years from the date of the grant.
However, the term of any patent may have been curtailed by disclaimer under the provisions of 35 U.S.C. 153, have lapsed due to failure to pay maintenance fees, or have been extended under the provisions of 35 U.S.C. 154, 155, or 156. Thus, if more reliable information is needed with respect to a particular patent, then the specific patent file should be reviewed to determine the actual date of patent expiration.

TRADEMARK OPERATION

Bruce A. Lehman, Commissioner
Philip G. Hampton, II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Office
Condition of Trademark Applications as of January 1, 1997

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 101—Ron Williams, Managing Attorney, (703) 308–9101—4th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/10/96	10/11/96
Law Office 102—Myra Kurzbard, Managing Attorney, (703) 308–9102—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/07/96	08/02/96
Law Office 103—Kathryn Erskine, Managing Attorney, (703) 308–9103—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/12/96	12/12/96
Law Office 104—Sidney Moskowitz, Managing Attorney, (703) 308–9104—6th Floor Unwrought metals, Industrial Equipment, Tools; Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/08/96	10/14/96
Law Office 105—Thomas Howell, Managing Attorney, (703) 308–9105—6th Floor Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/22/96	08/13/96
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308–9106—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/12/96	10/18/96
Law Office 107—Thomas Lamone, Managing Attorney, (703) 308–9107—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/29/96	11/12/96
Law Office 108—David Shallant, Managing Attorney, (703) 308–9108—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/08/96	10/15/96
Law Office 109—Deborah Cohn, Managing Attorney, (703) 308–9109—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/23/96	11/14/96
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Terron Simms, Director, (703) 308-9100 Trademark Assistance Center—(703) 308-9000 Pre-Examination—Alan Lambert, Supervisor, (703) 308-9401 ext. 188 Intent-To-Use—(ITU)—(703) 308-9500 Post Registration Section—Mary Bowman, Supervisor, (703) 308-9500 ext. 126		
Affidavits Under Sections 8 & 15 (All Classes)	10/31/96	—0—
Renewals (All Classes)	10/21/96	—0—
Section 12(c) Publications (All Classes)	07/01/96	—0—

1. ** Assigned to all Law Office

2. Applicants with inquiries concerning the status of their applications and a touch telephone should call (703) 305–8747 from 6:30 a.m. to Midnight EST, Monday through Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquiries concerning the status of their applications. See SECTION 411 of the TRADEMARK MANUAL OF EXAMINING PROCEDURE.

3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

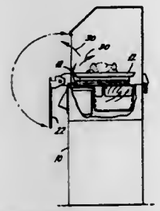
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REEXAMINATIONS

FEBRUARY 18, 1997

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,361,137 (3132nd)
INCUBATOR HAVING WARM AIR CURTAIN ACROSS ACCESS OPENING
James R. Grosholz, Solebury, Pa., assignor to Air-Shields, Inc., Hatboro, Pa.
Reexamination Request No. 90/003,339, Feb. 23, 1994.
Reexamination Certificate for Patent 4,361,137, issued Nov. 30, 1982, Ser. No. 225,261, Jan. 15, 1981.
Continuation-in-part of Ser. No. 112,008, Jan. 14, 1980, abandoned.
Int. Cl.[6] A61G *11/00*
U.S. Cl. 600—22



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–19** is confirmed.

1. An incubator comprising:

a base having an infant support and three air flow passage means for permitting air flow between the space beneath said infant support and the space above said infant support, the first and second air flow passage means opening at opposite ends of said infant support and the third air flow passage means opening at the front side of said infant support;

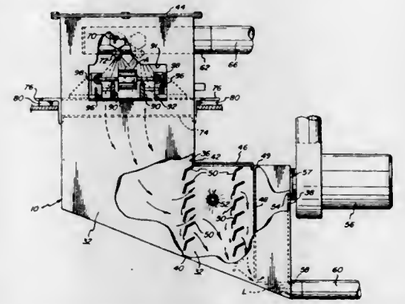
a hood surmounting said base and adapted to enclose said infant support and said air flow passage means, the front wall of said hood having an access door movable between a closed position and an open position;

a source of conditioned air within said base and below said infant support;

means for circulating said conditioned air from below said infant support into said hood through said first and third air flow passage means and back to below said infant support through said second air flow passage means;

and sealing means responsive to movements of said door for sealing said third air flow passage means when said door is in said closed position and for uncovering said third air flow passage means when said door is in said open position.

B1 5,052,332 (3133rd)
APPARATUS AND SYSTEM FOR STEAM CLEANING AND COATING OF LAMINATED ARTICLES
Bedrich Hajek, New Haven, and Donald J. Gillette, Guilford, both of Conn., assignors to Electrostatic Technology, Inc., Branford, Conn.
Reexamination Request No. 90/004,073, Dec. 20, 1995.
Reexamination Certificate for Patent 5,052,332, issued Oct. 1, 1991, Ser. No. 493,791, Mar. 15, 1990.
Int. Cl.[6] B05C *5/00*
U.S. Cl. 118—72



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–8** is confirmed.

New claim **9** is added and determined to be patentable.

1. Apparatus for cleaning a workpiece transported therethrough, comprising:

an enclosure defining a chamber with entrance and exit openings thereinto and therefrom;

means for transporting a workpiece along a travel path having a section extending through said chamber and between said openings of said enclosure, said travel path section lying substantially entirely in a single horizontal plane and demarcating within said chamber a spray compartment thereabove and a collection compartment therebelow;

spray means, disposed within said spray compartment, for discharging steam upon a workpiece transported along said travel path section;

condenser means in said collection compartment for effecting condensation of vaporous substances entering thereinto;

drain means for withdrawing liquids condensed in said collection compartment; and

supply means operatively connected to said spray means for supplying steam thereto.

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REISSUES

FEBRUARY 18, 1997

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 35,452

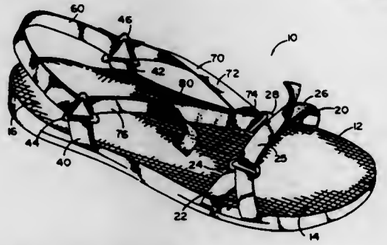
SINGLE POINT TRIANGULAR ADJUSTMENT SYSTEM FOR SANDALS

Lawrence B. Sargeant, Little Falls, N.Y., assignor to Wolverine World Wide, Inc., Rockford, Mich.

Original No. 5,228,216, dated Jul. 20, 1993, Ser. No. 848,834, Mar. 10, 1992. Application for reissue Jul. 20, 1995, Ser. No. 504,518

Int. Cl.[6] **A43B** *3/12*

U.S. Cl. 36—11.5 **14 Claims**



6. A sport sandal comprising:

a sole member having a forefoot portion and a heel portion, said forefoot portion including a metatarsal span, and said heel portion including an ankle span;

a forefoot strap anchored to said sole member on opposite sides of said metatarsal span to extend over the metatarsal portion of a foot, and having a ring centrally thereof;

a pair of upstanding anchor straps mounted to said sole member on opposite sides of said ankle span, a first of said anchor straps having a slide fit means at the upper end thereof for receiving a control strap with a slide fit;

a heel strap attached at its opposite ends to said anchor straps to extend around the heel of a foot;

a control strap attached to and extending from a second of said anchor straps, forwardly with a slide fit through said forefoot strap ring, and with a portion extending rearwardly from said forefoot strap ring to said slide fit means with a slide fit, and then having a doubled back portion overlapping said rearwardly extending portion; and

said doubled back portion having variable fastening means to said rearewardly extending portion for length adjustment of said control strap, whereby adjustment of the length of said control strap causes said forefoot strap, said heel strap and said control strap to all simultaneously be adjusted to a particular foot on said sole member.

Re. 35,453

SPRING UNIT ASSEMBLY

Paul Rodgers, Manchester, Great Britain, assignor to Slumberland PLC, Oldham, England

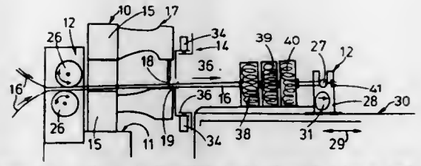
Original No. 5,303,530, dated Apr. 19, 1994, Ser. No. 870,628, Apr. 17, 1992. Application for reissue Mar. 29, 1995, Ser. No. 412,701

Claims priority, application United Kingdom, Oct. 18, 1989, 8923528

Int. Cl.[6] **B65B** *9/02;61/24*

U.S. Cl. 53—114 **6 Claims**

1. Apparatus for encapsulating spring units between a pair of webs, comprising means for moving said webs in a first longitudinal direction through intermittent steps, an insertion device for holding said spring unit therein and for inserting a spring unit between said pair of webs, by linear movement in a second transverse direction normal to said first longitudinal direction, means for moving said insertion device through a linear path in said second transverse direction between a withdrawn spring unit receiving position spaced from said webs to receive a spring unit within said insertion device and an inserted position in which said insertion device is disposed between said webs, means for tightening or tensioning said webs around said spring insertion device, compression means outside of the webs for compressing said inserted spring unit within said webs into a compressed spring unit, means for withdrawing said insertion device from said inserted position to said withdrawn position as said webs are tightened around said compressed spring unit to retain said spring unit between said webs, and securing means also movable in said second direction for securing said webs together in close proximity to said spring unit to encapsulate said spring unit.



Re. 35,454

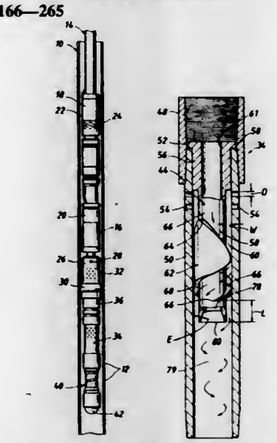
APPARATUS AND METHOD FOR SEPARATING SOLID PARTICLES FROM LIQUIDS

Delwin E. Cobb, 13312 Trail Hollow Dr., Houston, Tex. 77079

Original No. 5,314,018, dated May 24, 1994, Ser. No. 921,715, Jul. 30, 1992. Application for reissue Jun. 8, 1995, Ser. No. 488,579

Int. Cl.[6] **E21B** *43/38*

U.S. Cl. 166—265 **17 Claims**



11. In a downhole tool string positioned within a well bore and having a tubular body for removing fluids from the well; a separation device [connected to] *supported from* said tubular body adjacent the lower end thereof for separating solid particles from liquids so that the separated solid particles are not removed from the well; said separation device comprising:

an outer tubular member and a concentric inner tubular member defining an annulus between said inner and outer members;

a fluid inlet passage in said outer tubular member extending to said annulus;

means blocking fluid flow upwardly from said annulus; and

guide means in said annulus between said tubular members and below said fluid inlet passage for directing solid particles received from said fluid inlet passage downwardly in a helical motion for settling of said solid particles below said inner tubular member with the separated liquid flowing upwardly from the lower end of said inner tubular member through said inner tubular member to a surface location, the cross sectional area of the helical path along the [spiral] *guide* means as measured at right angles to the helical flow path decreasing between the upper end and the lower end of said guide means.

Re. 35,455
CHECKOUT APPARATUS

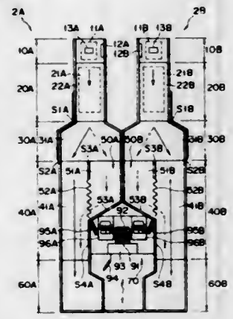
Haruo Sakurai; Kazuo Yamamoto; Mitunori Kono, all of Shizuoka, and Hideo Tanaka, Numazu, all of Japan, assignors to Kabushiki Kaisha TEC, Tokyo, Japan

Original No. 5,178,234, dated Jan. 12, 1993, Ser. No. 668,768, Mar. 13, 1991. Continuation of Ser. No. 146,215, Nov. 1, 1993, abandoned. Application for reissue Apr. 27, 1995, Ser. No. 430,184

Claims priority, application Japan, Mar. 15, 1990, 2-65456; Apr. 20, 1990, 2-104684

Int. Cl.[6] **A47F** *9/04*

U.S. Cl. 186—61 **32 Claims**



30. A checkout apparatus comprising:

first and second checkout lanes each having reading means for reading article codes of articles, and feeding means for feeding articles the respective article codes of which have been read by said reading means;

a single settlement means disposed between said first and second checkout lanes and spaced from said reading means in a downstream direction of said feeding means, for commonly performing a first settlement process on the article codes read by the reading means of said first checkout lane and a second settlement process on the article codes read by the reading means of said second checkout lane;

a space sized to accommodate an operator therein, and defined between said first and second checkout lanes adjacent said single settlement means, such that the reading means in said first and second checkout lanes are both simultaneously observable from said space and such that an operator can perform a settlement operation on articles transported thereto by the feeding means in both of said first and second checkout lanes without moving from said space.

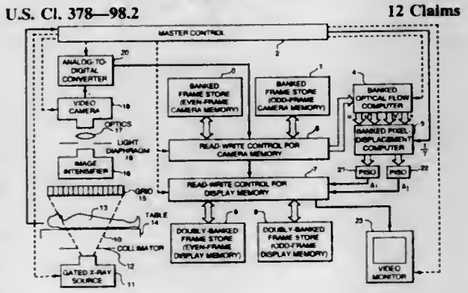
Re. 35,456
FLUOROSCOPIC METHOD WITH REDUCED X-RAY DOSAGE

Fathy F. Yassa, Tencin, France; Alman A. Abdel-Malek, Schenectady, N.Y.; John J. Bloomer, Schenectady, N.Y., and Chukka Srinivas, Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Original No. 5,224,141, dated Jun. 29, 1993, Ser. No. 810,341, Dec. 9, 1991. Continuation-in-part of Ser. No. 651,074, Feb. 6, 1991, abandoned. Application for reissue Jul. 8, 1994, Ser. No. 272,067

Int. Cl.[6] **H05G** *1/64*

U.S. Cl. 378—98.2 **12 Claims**



14. A method for fluoroscopically observing a living creature with reduced x-ray dosage; said method usable with a video monitor for displaying frames of image samples received during respective ones of frame scan intervals that regularly and successively occur at a display frame rate sufficiently high that brightness flicker is acceptably low to a human observer, an x-ray source that can be gated on for intervals not as long as a display frame, a fluoroscopic camera including a raster-scanning video camera and x-ray-to-light conversion apparatus with persistence not appreciably longer than a display frame; and frame filling apparatus for grabbing frames of image samples and interpolating between successively grabbed frames of image samples when necessary to generate frames of image samples at said display frame rate; said method comprising the steps of:

during selected ones of said successive frame scan intervals interspersed among others of said successive frame scan intervals, directing x-ray radiation from said gated x-ray source through said living creature, the frequency of said selected ones of said successive frame scan intervals in which to direct x-*ray radiation from said gated x-ray source through said living creature being selected in accordance with the speeds of motion to be expected in the portion of said living creature subject to fluoroscopic observation, to be as low as possible consistent with clinical value being preserved and with motion flicker in the fluoroscopic observation being satisfactorily low;*

during at least said selected ones of said successive frame scan intervals, viewing with said fluoroscopic camera the x-ray shadow of at least a portion of said living creature;

arranging that said frame filling apparatus grabs frames of image samples from said raster-scanning video camera during said selected frame scan intervals; and

continuously supplying to said video monitor the frames of image samples generated at said display frame rate by said frame filling apparatus.

Re. 35,457
RADIOLABELING ANTIBODIES AND OTHER PROTEINS WITH TECHNETIUM OR RHENIUM BY REGULATED REDUCTION

Buck A. Rhodes, Albuquerque, N.M., assignor to Aberlyn Capital Management Limited Partnership, Waltham, Mass.

Original No. 5,078,985, dated Jan. 7, 1992, Ser. No. 391,474, Aug. 9, 1989. Application for reissue Feb. 16, 1995, Ser. No. 389,267

Int. Cl.[6] **A61K** *39/395*

U.S. Cl. 424—1.49 **17 Claims**

19. A method of direct radiolabeling of a protein containing disulfide bonds with a radionuclide selected from the group consisting of technetium and rhenium to obtain stable labeling, comprising the steps of:

a) incubating the protein containing disulfide bonds with a first stannous ion reducing agent, the period of incubation being sufficient to reduce available disulfide bonds to sulfhydryl groups while preventing excessive fragmentation of the protein;

b) purifying the reduced protein to substantially remove the first reducing agent and any impurities;

c) adding a source of stannous ion agent to the reduced protein in a sufficient amount to reduce the radionuclide, the radionuclide to be added in a subsequent step; and

d) radiolabeling the purified reduced protein by adding the radionuclide, whereby the source of stannous ion agent reduces the radionuclide and the reduced radionuclide and reduced protein forms radionuclide-containing and sulfur-containing complexes.

Re. 35,458
PROCESS TO OBTAIN NEW MIXED COPPER AMINOACIDATE COMPLEXES FROM PHENYLATE PHENATHROLINES TO BE USED AS ANTICANCERIGENIC AGENTS

Lena R. Azuara, Villa de Cortes, Mexico, assignor to Universidad Nacional Autonoma De Mexica (UNAM), Mexico

Original No. 5,107,005, dated Apr. 21, 1992, Ser. No. 628,843, Dec. 11, 1990. Application for reissue Apr. 21, 1994, Ser. No. 230,816

Claims priority, application Mexico, Dec. 20, 1989, 18802

Int. Cl.[6] **C07F** *1/08*

U.S. Cl. 556—116 **7 Claims**

6. A copper amino acidate diimine nitrate compound selected from the group consisting of:

[Cu (4,7diphenyl-1,10-phenanthroline) (alaninate)]NO_3;
[Cu (4,7diphenyl-1,10-phenanthroline) (glycinate)]NO_3;
[Cu (4,7diphenyl-1,10-phenanthroline) (isoleucinate)]NO_3;
[Cu (4,7diphenyl-1,10-phenanthroline) (leucinate)]NO_3;
[Cu (4,7diphenyl-1,10-phenanthroline) (serinate)]NO_3; and
[Cu (4,7diphenyl-1,10-phenanthroline) (valinate)]NO_3.

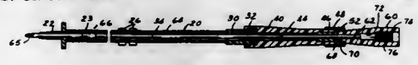
Re. 35,459
AORTIC ROOT CANNULA

Kenneth R. Jonkman, Grand Rapids, Mich., assignor to Medtronic, Inc., Minneapolis, Minn.

Original No. 5,151,087, dated Sep. 29, 1992, Ser. No. 753,038, Aug. 30, 1991. Application for reissue Sep. 29, 1994, Ser. No. 315,146

Int. Cl.[6] **A61M** *5/178*

U.S. Cl. 604—164 **15 Claims**



11. An introducer cannula for use with the human body which comprises:

(a) a cannula body having an insertable tip at a distal end and a connector end at a proximal end,

(b) an introducer needle slidable in said body,

(c) a removable fitting at the proximal end of said cannula,

(d) a gas-pass-water occluding plug at a distal end of said fitting surrounding said introducer needle, and

(e) a stop means adjacent the distal end of said introducer needle to contact said fitting upon the withdrawal of said introducer needle within said cannula body.

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PLANT PATENTS

GRANTED FEBRUARY 18, 1997

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

9,805

HYBRID TEA ROSE PLANT NAMED 'SELTANTALIUM'

Peter J. A. van der Meer, Withcorn, Netherlands, assignor to Terra Nigra Holding B.V., De Kwakel, Netherlands

Filed Jan. 25, 1996, Ser. No. 591,387
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—11 **1 Claim**

1. A new and distinct variety of rose plant of the Hybrid Tea class, substantially as herein shown and described characterized particularly as to novelty by its large red/purple flowers, borne singly on strong, upright stems especially suitable for growing in Latin America.

9,806

HYBRID TEA ROSE PLANT NAMED 'SELBARIUM'

Peter J. A. van der Meer, Uithoorn, Netherlands, assignor to Terra Nigra Holding B.V., De Kwakel, Netherlands

Filed Jan. 25, 1996, Ser. No. 591,389
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—11 **1 Claim**

1. A new and distinct variety of rose plant of the Hybrid Tea class, substantially as herein shown and described characterized particularly as to novelty by its large soft pink with an orange blend flowers, borne singly on strong, upright stems with rapid growing cycles and especially suitable for growing in Latin America.

9,807

HYBRID TEA ROSE PLANT NAMED 'SELANTIMOON'

Peter J. A. van der Meer, Uithoorn, Netherlands, assignor to Terra Nigra Holding B.V., De Kwakel, Netherlands

Filed Jan. 25, 1996, Ser. No. 591,386
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—18 **1 Claim**

1. A new and distinct variety of rose plant of the Hybrid Tea class, substantially as herein shown and described characterized particularly as to novelty by its large pink flowers, borne singly on strong, upright stems with glossy foliage and its mild honey-like fragrance.

9,808

HYBRID TEA ROSE PLANT NAMED 'SELGALLIA'

Peter J. A. van der Meer, Oceanside, Calif., assignor to Terra Nigra Holding B.V., PA De Kwakel, Netherlands

Filed Jan. 25, 1996, Ser. No. 591,388
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—18 **1 Claim**

1. A new and distinct variety of rose plant of the Hybrid Tea class, substantially as herein shown and described characterized particularly as to novelty by its large apricot flowers, borne singly on uprigh stems with good bud size in relation to its stem size, especially suitable for growing in Latin America.

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PATENTS

GRANTED February 18, 1997

ERRATA

For CLASS	See PATENT NO.
473–447	5,603,495
473–487	5,603,496
473–609	5,603,497
473–563	5,603,498
473–585	5,603,506
473–029	5,603,507
442–338	5,604,022
442–340	5,604,023
442–006	5,604,024
442–394	5,604,025
540–218	5,604,222
326–017	5,604,417
399–039	5,604,567
399–215	5,604,568
399–232	5,604,569
399–116	5,604,570
399–162	5,604,571
399–119	5,604,572
399–055	5,604,573
399–350	5,604,574
399–359	5,604,575
399–255	5,604,576
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399–178	5,604,578
386–033	5,604,602
386–100	5,604,603
386–125	5,604,604
349–086	5,604,612
349–147	5,604,613
349–037	5,604,614
349–124	5,604,615
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356–121	5,604,695

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5,603,116

TIGHT-FITTING GARMENT, NOTABLY FOR SPORTSWEAR SUCH AS DIVING SUITS

Nicolas Tronc, 46 Rue des Frances Bourgeois, 75003 Paris, France

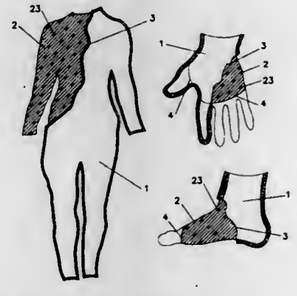
PCT No. PCT/FR92/01206, § 371 Date Aug. 18, 1994, § 102(e) Date Aug. 18, 1994, PCT Pub. No. WO93/12677, PCT Pub. Date Jul. 8, 1993

PCT Filed Dec. 18, 1992, Ser. No. 244,963

Claims priority, application France, Dec. 20, 1991, 91 16150

Int. Cl.[6] A41D *13/00*

U.S. Cl. 2—2.15 **21 Claims**



1. A tight-fitting garment comprising:

an external layer made of stretchable material allowing perspiration and arranged to cling closely to a wearer's body, and an internal layer applied internally to said external layer;

said internal layer comprising at least one first portion extending in surface contact with a first area of the body, said first area of the body being an area of increased friction with said tight-fitting garment when putting on or removing said tight-fitting garment, said first portion being made of a film of slippery non-porous material and comprising a plurality of holes or gaps for allowing at least partial perspiration of said first area.

5,603,117

PROTECTIVE HELMET ASSEMBLY

Philip B. Hudner, Jr., Franklin, and Mathew M. Correa, Ashland, both of Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 13, 1995, Ser. No. 528,630

Int. Cl.[6] A42B *3/00*

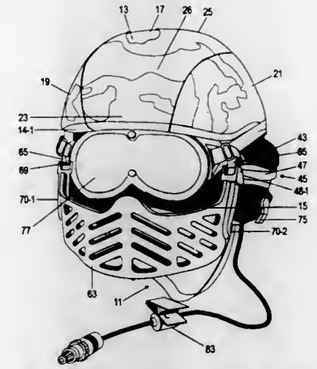
U.S. Cl. 2—6.6 **5 Claims**

1. A protective helmet assembly to be worn on a person's head, comprising:

a protective shell having an inner surface, an outer surface, a left side, a right side, a front and a rear;

adjustable suspension means mounted on the inner surface of said shell for accommodating said helmet assembly to conform to a broad range of head sizes, said adjustable suspension means having an impact liner mounted on the inner surface of said protective shell,

a plurality of sizing pads mounted on said impact liner, and a plurality of spare sizing pads of varying thickness, said plurality of spare sizing pads which can be utilized in accordance with said plurality of sizing pads to adjust the shape of the inner surface of said helmet assembly thereby enabling said helmet assembly to accommodate a multiplicity of different sized heads;



a pair of earcups, one earcup being pivotally mounted on the left side of said shell, and one earcup being mounted on the right side of said shell;

means for pivotally adjusting the position of each of said earcups relative to the person's head, said pivotally adjusting means having a pair of ratchet buckles mounted on the rear, outer surface of said protective shell, and a pair of retainer straps, one strap being attached to each of said earcups and to each of said ratchet buckles, wherein when each of said retainer straps are tightened by stepwise adjusting the strap through one of each of said ratchet buckles, the straps causing each of said earcups to be pivotally displaced inward creating a pressure seal around the ears of the person's head;

a pair of vertical struts, one strut being mounted on the front, left side of said protective shell and the other strut being mounted on the front, right side of said protective shell;

a facemask having a left and a right end; and

means for mounting the left and right ends of said facemask to said vertical struts.

5,603,118

INFLATABLE PADDED GLOVE

Todd Solomon, 1458 Maryland Ave., Havertown, Pa. 19083

Filed May 30, 1995, Ser. No. 452,839

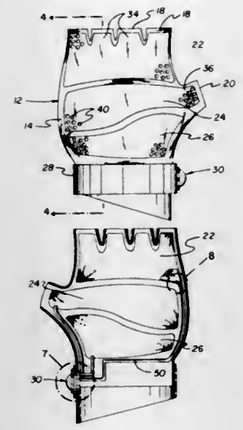
Int. Cl.[6] A41D *19/00*

U.S. Cl. 2—20 **4 Claims**

1. An inflatable padded glove comprising:

a glove member for positioning over a human hand, the glove member including a palm web coextensively positionable over a palm surface of the human hand, and a back web spaced from and coupled to the palm web so as to be coextensively positionable over a back of a human hand, the palm web cooperating with the back web so as to define a plurality of finger tubes and a thumb tube extending therefrom for individually receiving respective fingers and a thumb of a human hand when positioned within the glove member;

a plurality of independent, non-communicating pneumatic chambers secured to the palm web only of the glove member, the pneumatic chambers comprising a first pneumatic chamber secured to the palm web only of the glove member proximal to the finger tubes; a second pneumatic chamber extending transversely across and secured to the palm web proximal to the thumb tube; and a third pneumatic chamber extending along and secured to the palm web and spaced from the first pneumatic chamber such that the second pneumatic chamber resides between the first and third pneumatic chambers, said plurality of pneumatic chambers being independent one from the others;

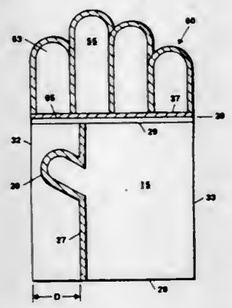


a wrist strap being coupled to the palm web and configured for circumferential positioning about a wrist of an individual; and

a pump means mounted to the wrist strap and positionable in selective fluid communication with an individual one of the pneumatic chambers for effecting pressurization of the respective chamber, the finger tubes and the thumb tube being truncated and open at free distal ends thereof such that human fingers and a thumb of a human hand can project therethrough and beyond the tubes, the first pneumatic chamber being shaped so as to define a plurality of finger tube chambers each extending onto an individual one of the finger tubes, the second pneumatic chamber being shaped so as to define a thumb tube chamber extending onto the thumb tube of the glove member;

a plurality of gripping pads secured to the palm web of the glove member, each of the gripping pads being coextensively positioned over an individual one of the pneumatic chambers.

5,603,119
GLOVE OR INSERT AND METHOD FOR PRODUCING THE SAME
Dixie Rinehart, Montrose, Colo., assignor to Arthur D. Little Enterprises, Inc., Cambridge, Mass.
Filed Jun. 28, 1994, Ser. No. 267,688
Int. Cl.[6] A41D *19/02*
U.S. Cl. 2—169 **2 Claims**



1. A method of manufacturing a hand covering having a one piece lower hand portion and a finger portion comprising the steps of:

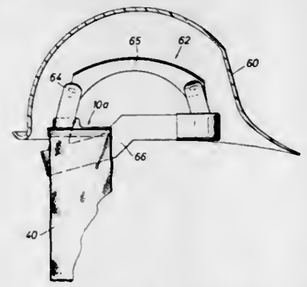
(a) folding said one piece lower hand portion having a first thumb extension on a first edge and a second thumb extension on a second edge over onto itself such that said first and second edges and said first and second thumb extensions are superimposed on each other;

(b) seaming said superimposed edges and superimposed thumb extensions together to form a tube-like structure having first and second open opposing edges located about a longitudinal axis and first and second sides located radially spaced from said longitudinal axis;

(c) rotating said tube-like structure about said longitudinal axis until said seamed edges are located between and spaced apart from said first and second sides; and

(d) seaming said first open opposing edge to said finger portion such that said thumb extension is located in opposition to said finger portion.

5,603,120
HEADGEAR DISPLAY ATTACHMENT AND METHOD OF MANUFACTURE
Mark Gifford, 817 Oak Glen Dr., Houston, Tex. 77076
Filed Aug. 30, 1995, Ser. No. 521,270
Int. Cl.[6] A42B *1/06*
U.S. Cl. 2—172 **29 Claims**



1. A headgear attachment for attaching to a headgear having an arcuate hatband at least substantially encircling the inside periphery of the headgear, the hatband being attached at its lower edge to at least a substantial portion of the periphery of the headgear to form a top-opening arcuate pocket inside the headgear, the headgear attachment comprising

a flat, linear and pliable strip that is biased toward its normally linear condition when put into an arcuate condition, said strip for laying against a substantial portion of the hatband inside the headgear,

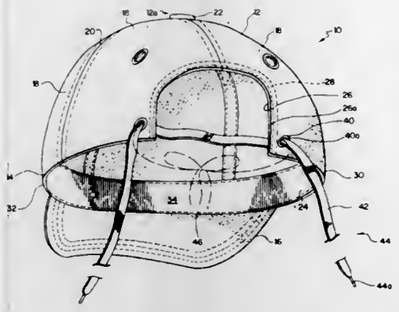
tabs projecting upward from said strip at least approximately near the opposite ends thereof, each of said tabs having a U-shaped slit forming a downwardly directed tongue, each of said tongues for fitting over the hatband into the pocket therebehind, and

a flap attached to said strip and depending downwardly therefrom to cover a portion of the head of the wearer of the headgear not covered by the headgear itself.

5,603,121
INFINITELY ADJUSTABLE BASEBALL-TYPE CAP
Michael A. Borkovic; Cameron N. Borkovic, and George M. Borkovic, all of P.O. Box 281, Philomont, Va. 22131
Filed Feb. 29, 1996, Ser. No. 608,613
Int. Cl.[6] A42B *1/22*
U.S. Cl. 2—195.2 **4 Claims**

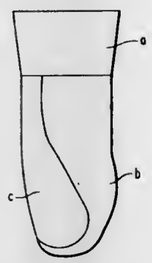
1. A baseball-type cap comprising:

an open bottom hemispherical shell having a front, a rear, a top, a bottom and a peripheral bottom edge, a crescent-shaped



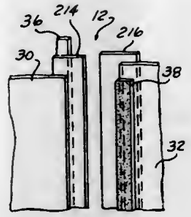
visor attached to said shell along said peripheral edge at the front of said shell and extending from one side of said shell to another opposite side and projecting perpendicular to said shell, an inwardly and upwardly tapered inverted U-shaped opening in said shell at said rear, said inverted U-shaped opening extending from the bottom of said shell towards the top, diametrically opposite from said visor, grommets in said shell located adjacent opposite sides of said inverted U-shaped opening proximate to said peripheral bottom edge, said grommets having axial holes therein and a lace looped through said grommets and having opposite free ends tied together by a knot to permit an infinite circumferential size adjustment of said shell to conform the shell to the head of a wearer.

5,603,122
FORM-FIT SOCK
Bruce Kania, 717 S. Fourteenth St., Bozeman, Mont. 59715
Filed Mar. 20, 1995, Ser. No. 406,145
Int. Cl.[6] A61F *2/78*
U.S. Cl. 2—239 **19 Claims**



7. A sleeve member for enclosing an amputation stump, said sleeve member having a form fitting tubular shape with an open end into which an amputation stump is introduced, a closed end opposite said open end, an interior and an exterior, said member being constructed of sewn-together pieces of textile fabric, said pieces of textile fabric being sewn together at edges thereof and having the shape of a reflected pattern consisting of bell-shaped and bactrian-shaped pieces or of an asymmetric pattern consisting of paraboloid-shaped, penduloid-shaped and, optionally, trapezoidal-shaped pieces.

5,603,123
INVALID GARMENT AND METHOD FOR MAKING THE SAME
Barbara A. Chupa, 36743 Winterset, Clinton Township, Mich. 48035
Filed May 26, 1995, Ser. No. 452,144
Int. Cl.[6] A41D *10/00;27/00;27/24;* **A41B** *1/08*
U.S. Cl. 2—275 **13 Claims**



1. A garment comprising:

at least one seam defined by first and second overlapping portions of material extending along an entire longitudinal length of the garment;

attaching means, disposed in said at least one seam, for selectively closing and opening said at least one seam, said attaching means extending along said entire longitudinal length of said at least one seam, wherein said attaching means includes hook and loop material connected to opposing surfaces of said at least one seam for selectively closing said seam by pressing opposing surfaces of said hook and loop material to one another;

first material strip means connected to said at least one seam for protecting a wearer of the garment against abrasion and scratching due to contact between skin and said attaching means, said first material strip means extending substantially along the entire longitudinal length of the garment and extending transversely beyond a longitudinally extending edge of said seam to overlay interposed between said wearer and said attaching means when said seam is in a closed position, said first material strip means including a first strip of material connected to said at least one seam for protecting a wearer of the garment against abrasion and scratching due to contact between skin and the attaching means, the first strip of material connected to said first portion of material extending substantially along the entire longitudinal length of the seam and the first strip of material further extending laterally beyond the longitudinally extending edge of said first portion of material defining the seam to overlap laterally with respect to said second portion of material defining the seam thereby protecting the wearer from contact with said attaching means by transversely overlapping the seam; and

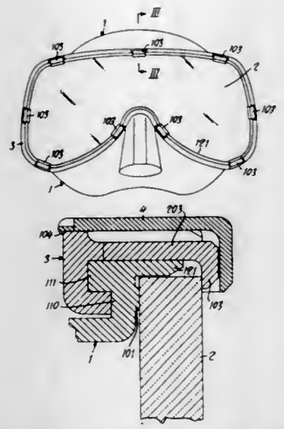
a second strip of material connected to said at least one seam for hiding said attaching means from view externally of the garment, the second strip of material connected to said second portion of material extending substantially along the entire longitudinal length of the seam and further extending laterally beyond a longitudinally extending edge of the second portion of material defining the seam to overlap the first portion of material defining the seam thereby hiding said attaching means from view externally of the garment.

5,603,124
MODULAR DIVING MASK
Giovanni Garofalo, Rapallo, Italy, assignor to HTM Sport S.p.A., Italy
Filed Sep. 7, 1995, Ser. No. 524,460
Claims priority, application Italy, Sep. 14, 1994, GE94A0102
Int. Cl.[6] A61F *9/02*
U.S. Cl. 2—428 **12 Claims**

1. Diving mask comprising:

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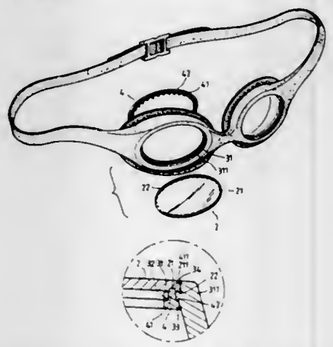


a body comprising a material selected from the group consisting of rubber and rubber-like materials, the body including an ocular opening and a peripheral edge extending parallel to a plane of the ocular opening;

a lens comprising a material selected from the group consisting of tempered glass and transparent plastic, the lens being shaped to match a shape of the ocular opening, a front side of the peripheral edge of the body having a watertight protrusion projecting toward the lens of the mask; and

a main frame including several spaced apart attachment teeth formed as an integral part of said frame for holding the lens in place and pressing it elastically and leaktightly against the peripheral edge of the body.

5,603,125
SWIMMING GOGGLES AND MANUFACTURING METHOD THEREFOR
Terry Chou, No. 12, Hsin Ho Heng Rd., Tainan City, Taiwan
Filed Apr. 16, 1996, Ser. No. 633,165
Int. Cl.[6] A61F *9/02*
U.S. Cl. 2—428 **16 Claims**



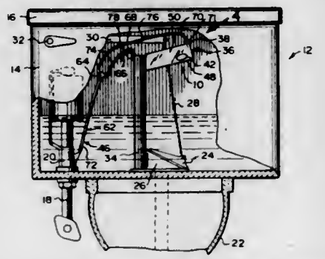
1. A method for manufacturing a pair of swimming goggles comprising the steps of:

(a) respectively forming a pair of lenses of a transparent first rigid material and a frame of plastic material, the frame comprising a pair of rims each defining an engaging groove therein, each of the rims comprising an annular member extending inwardly from an inner periphery which defines the engaging groove and thus separating the engaging groove into an outer portion for receiving the lens and an inner portion, each of the lenses having a first engaging member formed on a first side thereof;

(b) forming a pair of engaging rings of rigid material, each of the engaging rings having a second engaging member on a first side thereof and being mounted in the inner portion of the associated rim, wherein one of each of the first engaging members and the second engaging members extends through the associated annular member to engage with one another; and

(c) fusing the lenses, the frame, and the engaging rings together by ultrasonic waves, thereby forming an integral pair of swimming goggles.

5,603,126
TOILET DISINFECTANT DISPENSER
Thomas E. Scoggins, 319 S. Dixie Hwy., Horse Cave, Ky. 42749
Filed Apr. 3, 1995, Ser. No. 415,605
Int. Cl.[6] F03D *9/02*
U.S. Cl. 4—225.1 **1 Claim**



1. A toilet disinfectant dispenser for use with a toilet of the type having a tank with tank lid, a water supply connected to the tank by a water inlet pipe controlled by a float valve assembly, a toilet bowl operatively connected to the tank by a ball valve on a tank drain, the ball valve connected to a lift chain on a trip lever of a flush handle on the tank and an overflow pipe extending upwardly into the tank and connected to the toilet bowl, said dispenser comprising:

a) a generally rectangular container of transparent plastic material having an inlet port and an outlet port, said container having side walls, end walls, a bottom wall, and a top wall, said inlet port being located in said top wall adjacent one end wall, and said outlet port located in said top wall adjacent the opposite end wall to promote water circulation within said container;

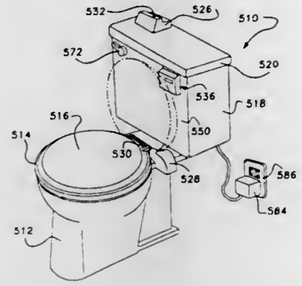
b) a soluble disinfectant tablet carried within said container;

c) means at said outlet port, for detachably securing said container to a top end of the overflow pipe; and

d) means for feeding some of the water from the float valve assembly into a top end of the overflow pipe and some of the water into said inlet port of said container, so that the water within said container will dissolve a predetermined amount of the soluble disinfectant tablet and exit said outlet port into the overflow pipe and then enter the toilet bowl, said outlet port being in the form of a spout to permit water within said container to spill over into said overflow pipe, said water feeding means comprising a first flexible conduit having a first end adapted to be connected to the float valve assembly, a T-connector having a first stem connected to a second end of said first conduit, a second flexible conduit having a first end connected to a second stem of said T-connector, clip means for connecting a second end of said second conduit to the top end of the overflow pipe, and a third flexible conduit located above the top wall of said container having a first end connected to a third stem of said T-connector and a second end connected to said inlet port; and

e) means comprising a variable flow unit with a rotatable offset dial for conveniently adjusting the flow rate of water into said container mounted in said third conduit outside of and above the top wall of said container.

5,603,127
AUTO FLUSH FOR TANK TOILET
Bennie N. Veat, 6621 Park Valley Dr., Clarkston, Mich. 48348
Continuation of Ser. No. 55,212, Apr. 29, 1993, Pat. No. 5,307,524, which is a continuation-in-part of Ser. No. 857,462, Mar. 25, 1992, abandoned. This application Oct. 30, 1995, Ser. No. 550,509
Int. Cl.[6] A47K *13/10;* **E03D** *5/10*
U.S. Cl. 4—246.1 **21 Claims**



1. A system for automatically flushing a toilet of the tank type, said system comprising:

at least one radiation beam transmitter, said radiation beam transmitter emitting a radiation beam to a target area in front of the toilet;

a radiation beam detector, said radiation beam detector being responsive to a reflected radiation beam emitted from the radiation beam transmitter and reflected off of a user in the target area;

a controller responsive to a signal from the radiation beam detector indicative of the intensity of the reflected beam;

a flush motor responsive to a signal from the controller; and

a lift arm actuatable by activation of the motor, said lift arm engaging a flush arm within a toilet tank of the toilet so as to cause the flush arm to flush the toilet; and,

a lift arm adjustment switch, said lift arm adjustment switch operable to set the travel of the lift arm so as to be calibrated to the flush arm.

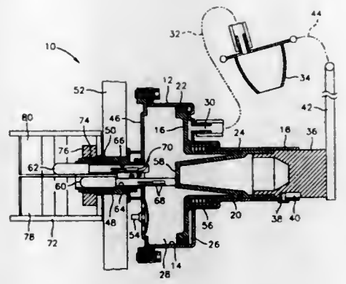
5,603,128
DUAL-FLUSH CONTROL APPARATUS
David Nichols-Roy, Escondido, Calif., assignor to Hunter Plumbing Products, San Marcos, Calif.
Filed Jun. 7, 1995, Ser. No. 477,932
Int. Cl.[6] E03D *1/14*
U.S. Cl. 4—325 **20 Claims**

1. A multiple volume flush control apparatus for controlling a flush valve in a bottom of a flush tank, comprising:

a flush valve having a ventable buoyancy air chamber;

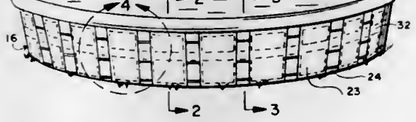
a vent control assembly having a venting chamber communicating with said air chamber;

first valve means for selectively activating said venting chamber for venting said air chamber at a first rate; and



second valve means for selectively activating said venting chamber for venting said air chamber at a second rate.

5,603,129
PANEL WALL POOL
Lin L. Chou, Taipei Hsien, Taiwan, assignor to Intex Recreation Corp., Long Beach, Calif.
Continuation-in-part of Ser. No. 894,019, Jun. 5, 1992, abandoned. This application Aug. 25, 1992, Ser. No. 934,944
Int. Cl.[6] E04H *4/00*
U.S. Cl. 4—506 **7 Claims**



1. A panel wall pool, comprising:

a bottom wall having an outer edge;

a peripheral upright wall connected to the outer edge of the bottom wall, said peripheral upright wall being formed of at least two layers of heat sealable material and containing a plurality of spaced apart, vertically oriented pockets sealed at the bottom and top edges of said upright wall;

a plurality of rigid, generally rectangular planar panels disposed within said peripheral upright wall, with each of said panels being sealed in one of said pockets;

a plurality of heat seal regions each positioned between two of said plurality of spaced apart pockets, with each heat seal region including a plurality of vertical heat seals and a plurality of horizontal heat seals extending between each of said vertical heat seals for providing support to said upright wall, each of said vertical heat seals being common with a corresponding vertical seal of an adjacent pocket;

a reinforcing band positioned between said two layers of material for encircling said planar panels; and

an inflatable top ring connected to the top edge of the upright wall.

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SANITARY SEAT

Christiaan J. Snijders, Wassenaar; Alphonsus M. L. D. Hoenderdos, Haarlem; Willem G. L. de Jong, Pijnacker, and Adrianus P. de Jong, Delft, all of Netherlands, assignors to B.V. Optische Industrie De Oude Delft, Delft, Netherlands

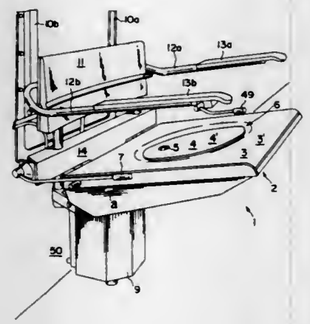
PCT No. PCT/NL90/00212, § 371 Date Apr. 22, 1993, § 102(e) Date Aug. 20, 1993, PCT Pub. No. WO92/07498, PCT Pub. Date May 14, 1992

PCT Filed Oct. 24, 1991, Ser. No. 39,353

Claims priority, application Netherlands, Oct. 25, 1990, 9002334

Int. Cl.[6] A47K *13/10*

U.S. Cl. 4—667 **5 Claims**



1. A sanitary seat assembly for providing a sitting place for a human body to facilitate washing of lower parts, which comprises:

a first seat part;

a second seat part cooperating with said first seat part;

movement means for moving in a vertical direction one of said seat parts from a first position to a second position, said second seat part being positioned above said first seat part in said first position and below said first seat part in said second position;

a backrest; and

armrests mounted to said backrest.

5,603,131

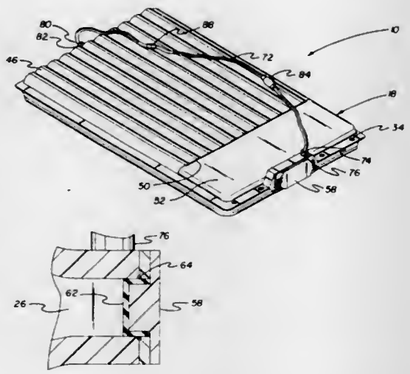
WATER FILLED MATTRESS WITH WATER CIRCULATING PUMP

Prescott L. DeJean, Jr., 1501 Loop 165, Dripping Springs, Tex. 76820

Filed Dec. 22, 1995, Ser. No. 577,694

Int. Cl.[6] A47C *27/08*

U.S. Cl. 5—672 **5 Claims**



1. A water fillable mattress comprised of a top sheet of flexible material sealed at its periphery to a bottom sheet of flexible material to define a generally rectangular waterproof enclosure having a front end and a rear end,

a plurality of generally parallel heat welds joining said top sheet to said bottom sheet, extending from the rear end towards the front end, approximately 70% of the length of the enclosure, defining a plurality of generally parallel tubular rows, with the front area of the enclosure lacking the welds defining a generally rectangular headest area,

a fill valve proximate the front end of the enclosure, and a drain valve proximate the rear end of the enclosure, and

an elongated tubular hose, having a first end connected to the fill valve, a second end connected to the drain valve, a bulb pump located between the first and second end of the hose, whereby upon the repeated squeezing of the bulb pump, the water contained in the enclosure is circulated between the front and rear portions of the enclosure.

5,603,132

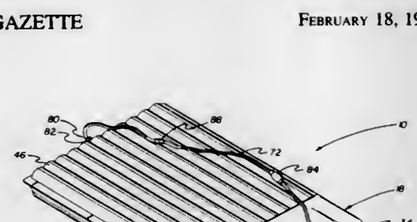
MATTRESS COVER WITH ELASTIC FITTED SKIRT

Dimitri P. Zafiroglu, Wilmington, Del., assignor to E.I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 22, 1996, Ser. No. 605,562

Int. Cl.[6] A47G *9/04*; D04B *21/18*

U.S. Cl. 5—497 **3 Claims**



1. An improved fitted mattress cover which comprises a top panel and a stitchbonded fabric skirt having a top edge and bottom edge, the top edge being attached to the periphery of the top panel and the skirt extending therefrom, the stitchbonded fabric skirt having a longitudinal direction parallel to the periphery of the top panel, a direction transverse thereto, and rows of tricot stitches formed with conventional inelastic yarn extending in the longitudinal direction of the skirt, and the bottom edge and/or the top edge of the stitchbonded fabric skirt optionally having elastic yarns stitched therein, the improvement comprising

the stitchbonded fabric skirt being a two-bar fabric, one bar being of the tricot stitches and a second bar of stitches formed with elastic yarns, and the fabric having a percent stretch in the longitudinal direction of at least 50% and a percent stretch in the transverse direction of at least 100%, with at least 80% recoverable stretch in the longitudinal direction and at least 30% recoverable stretch in the transverse direction being recoverable.

5,603,133

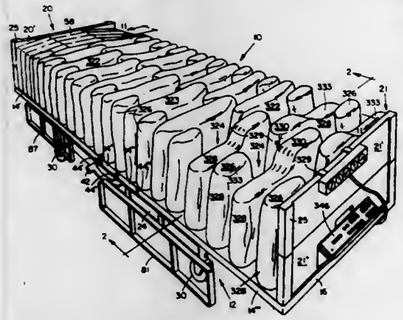
APPARATUS FOR ALTERNATING PRESSURE OF A LOW AIR LOSS PATIENT SUPPORT SYSTEM

John H. Vrzalik, San Antonio, Tex., assignor to Kinetic Concepts, Inc., San Antonio, Tex.

Continuation of Ser. No. 26,252, Mar. 3, 1993, abandoned, which is a continuation of Ser. No. 671,672, Mar. 18, 1991, abandoned, which is a continuation of Ser. No. 493,141, Mar. 12, 1990, abandoned, which is a continuation of Ser. No. 249,880, Aug. 27, 1988, abandoned, which is a continuation of Ser. No. 905,553, Sep. 9, 1986, abandoned. This application Feb. 17, 1995, Ser. No. 390,233

Int. Cl.[6] A61C *7/00*

U.S. Cl. 5—609 **57 Claims**



1. A low air loss bed, comprising

a frame means having first and second sides;

a first set of air bags for supporting a patient thereon, the first set of airbags having a top surface and being mounted transversely on the frame means;

a second set of air bags for supporting a patient thereon, the second set of air bags having a top surface and being mounted transversely on the frame means between the air bags of the first set;

means for separately connecting each of the air bags of the first and second sets to a gas source;

first means for rolling a patient formed in the top surface of each of the air bags of the first set, wherein when the air bags of the first set are inflated and/or the air bags of the second set are deflated one side of a patient supported thereon is rolled toward the first side of the frame means;

second means for rolling a patient formed in the top surface of each of the air bags of the second set, wherein when the air bags of the second set are inflated and/or the air bags of tile first set are deflated the other side of the patient supported thereon is rolled toward the second side of the frame means; and

means for retaining the patient supported on the first or second set of air bags when the patient is rolled toward the first or second side of the frame means.

5,603,134

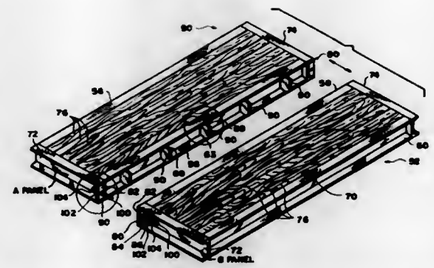
PORTABLE BRIDGE SYSTEM

Craig R. Whipkey, S. Connellsville; Peter L. Bloomer, Chalk Hill; Kirk Wright, Masontown, all of Pa., and Michael P. Wolcott, Bruceton Mills, W. Va., assignors to Coastal Lumber Company, Uniontown, Pa.

Filed Jun. 27, 1995, Ser. No. 495,167

Int. Cl.[6] E01D *15/12;19/12*

U.S. Cl. 14—2.4 **11 Claims**



8. In a substantially rectangular bridge platform for forming a portable bridge, the bridge platform comprising a plurality of laminates compressively sandwiched between two side channel members and including two end plate channel members at opposite ends of the bridge platform, said side channel members substantially perpendicular to said end plate channel members, and wherein said laminates form a substantially planar bridge platform top surface, wherein the improvement comprises:

at least a pair of substantially flat locking plates, each locking plate having opposed plate faces with an opening extending through the plate faces, each said locking plate affixed to said bridge platform at opposite end corners of the bridge platform with the plate faces lying substantially parallel to said side channel members;

a plurality of substantially planar shear plates each of which are integral with at least one of said two side channel members and spaced along the length of said at least one of said two side channel members, each shear plate having an outer periphery substantially complementary to a cross-sectional periphery of the side channel members and including a peripheral planar surface lying in a plane substantially parallel to a side channel member; and

a bolt sized for insertion through the opening of each said locking plate.

5,603,135

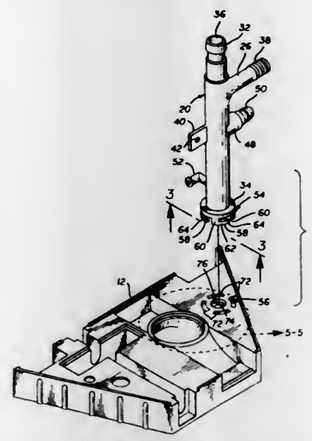
POOL CLEANER WITH REPLACEABLE MAST

Robert E. Jones, and Sanford F. Campbell, both of Redding, Calif., assignors to Letro Products, Inc., Redding, Calif.

Filed Oct. 31, 1995, Ser. No. 550,949

Int. Cl.[6] E04H *4/16*

U.S. Cl. 15—1.7 **23 Claims**



1. In an automatic pool cleaner having a frame and a supply mast fastened thereto at a lower end, the improvement comprising

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a first fastener portion adjacent to the lower end of the supply mast and

a second fastener portion on the frame,

the first fastener portion removably engageable with the second fastener portion for removably attaching the supply mast to the frame,

wherein the first fastener portion comprises a projection extending from the lower end of the supply mast,

and the second fastener portion defines an opening located on the frame sized to removably engage the projection to removably attach the lower end of the supply mast to the frame.

5,603,136

PIPE CLEANING MACHINE FOR DRIVING SPIRAL WIRE RODS

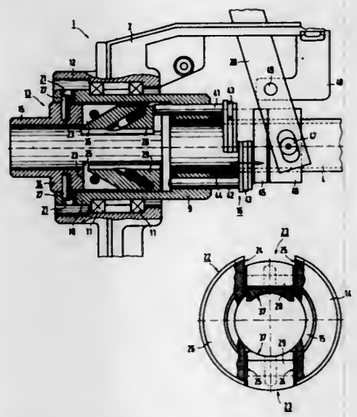
Jürgen Trüschler, Grossalmerode, Germany, assignor to Rothenberger Werkzeuge-Maschinen GmbH, Kelkheim/Ts, Germany

Filed Feb. 2, 1996, Ser. No. 595,830

Claims priority, application Germany, Feb. 2, 1995, 195 03 276.4

Int. Cl.[6] B08B *9/02*

U.S. Cl. 15—104.33 **6 Claims**



1. Pipe cleaning apparatus for driving a spiral wire rod, said apparatus comprising

a machine housing,

a hollow rotatable shaft supported in said housing, said shaft having an outside diameter and a central axis,

drive means for driving said shaft,

a coupling housing having an inside diameter which is larger than said outside diameter of said hollow shaft, said coupling housing being mounted coaxially and non-rotatably with respect to said hollow shaft,

a jaw holder mounted non-rotatably with respect to said coupling housing, said jaw holder being axially removable from said coupling housing, said jaw holder having a plurality of recesses arranged radially with respect to said central axis, each recess having a pair of parallel surfaces,

a plurality of coupling jaws supported for radial and axial movement in respective said recesses, and

control means for moving said coupling jaws radially to press the jaws against a spiral wire rod.

5,603,137

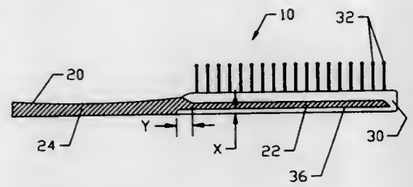
BRUSH WITH CLEANING ATTACHMENT

Tariq Hasan, 84-11 150th St., Briarwood, N.Y. 11435

Filed Jul. 20, 1995, Ser. No. 504,833

Int. Cl.[6] A46B *17/06*

U.S. Cl. 15—176.1 **15 Claims**



1. A brush comprising:

a) a head portion including a receiving part having a number of substantially parallel passages extending through the head portion, the passages being at least partially enclosed, and an array of bristles extending away from a surface of the head portion; and

b) a removable handle portion having a projecting part that interfaces with the receiving part of the head portion, the parallel passages of the receiving part being configured to receive the projecting part, the projecting part extendable through the array of bristles substantially adjacent the surface from which the bristles project and movable away from the surface in the direction of projection of the bristles;

wherein the movement of the projecting part away from the surface along the bristles removes material collected adjacent the surface and the bristles.

5,603,138

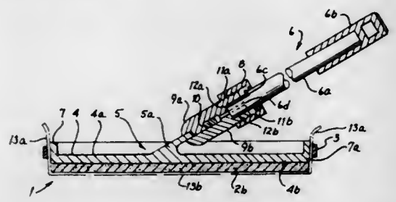
GLASS CLEANING DEVICE

Jacquelynn A. Bonis, 9849 E. Windrose Dr., Scottsdale, Ariz. 85260

Filed Feb. 7, 1995, Ser. No. 384,752

Int. Cl.[6] A47L *13/20*

U.S. Cl. 15—220.1 **16 Claims**



1. A glass cleaning device for cleaning automobile windows, said device comprising:

a flexible glass cleaning sheet;

a first backing element, said first backing element being of substantially rigid, one-piece construction and including a planar central section having opposing first and second substantially flat surfaces, said backing element further including a peripheral annular rim connected with and surrounding said first surface and an elongated, planar connecting tongue extending from said first surface at an acute angle thereto, said tongue defining opposed substantially flat sides and having an opening therein extending perpendicularly therethrough, said opening extending at an acute angle to said first surface;

a second backing element, said second backing element is substantially flat and comprised of deformable material;

gripping means discrete from said backing elements releasably holding said glass cleaning sheet flatly and tautly about and to the entire periphery of the annular rim, wherein said second backing element is captured between the cleaning sheet and the first backing element;

a handle, said handle comprising an elongated shaft having at one end thereof first and second elongated connecting members, said connecting members together defining, at first ends thereof, a threaded outer surface and, at second ends thereof, opposed substantially flat faces, said flat face of said first connecting member having a projection extending perpendicularly therefrom, wherein the opposed flat faces engage, respectively, the opposed flat sides of said tongue, with the projection extending through the opening, a locknut engages said threaded outer surface to both secure said connecting members together, thereby locking said members with said tongue, and to secure said connecting members to said shaft thereby securing the handle to the first backing element.

5,603,139

APPARATUS FOR CLEANING BY SPREADING CLEANING LIQUID AND BY SUCTION OF THE USED LIQUID

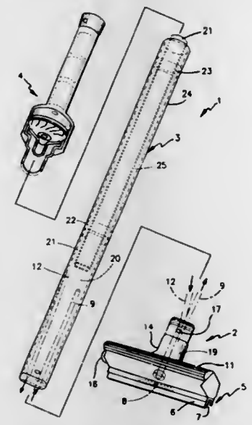
Jean Alazet, Paris, France, assignor to Famulus, Paris, France

Filed Dec. 28, 1994, Ser. No. 365,235

Claims priority, application France, Jan. 14, 1994, 94 00348

Int. Cl.[6] A47L *11/03*

U.S. Cl. 15—320 **8 Claims**



1. Apparatus for cleaning smooth surfaces by spreading cleaning liquid and by sucking up used liquid, comprising in combination: an upper gripping handle; a lower working head comprising supply means for supplying cleaning liquid, means for distributing said cleaning liquid from said supply means over the surface to be cleaned and a cleaning squeegee having an aspiration orifice; and a tubular chamber connected to and intermediate of the gripping handle and the working head, said tubular chamber being in the form of a hollow sleeve containing a first reservoir for storing cleaning liquid, said first reservoir having an open top which is closed by said gripping handle, and being fluidly connected to said supply means, a second reservoir for storing used liquid, said second reservoir being disposed at least partially in said tubular chamber, and being fluidly connected to the aspiration orifice via a suction pipe, and means for placing under vacuum said second reservoir so as to draw the used liquid through the aspiration orifice and through the suction pipe.

5,603,140

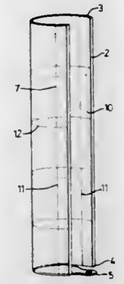
FURNITURE PROTECTING DEVICE

Stephen Pryce, 453 Parliament St., Suite #3, Toronto, Ontario, Canada

Filed Jan. 5, 1996, Ser. No. 583,631

Int. Cl.[6] B60B *33/00*

U.S. Cl. 16—18 CG **8 Claims**



1. A device for protecting the leg or corner of a piece of furniture from damage, the device comprising:

(i) an elongate shield member having an upper end and a lower end for encompassing at least a lower front proportion of said leg or corner of said piece of furniture,

(ii) a foot member for positioning under said leg or corner of said piece of said furniture, said foot member attached to said lower end of said elongate shield member and forming a generally right angle therewith, said foot member, when positioned under the bottom surface of said leg or corner of said piece of furniture, securing said elongate shield member in close proximity to at least the lower front portion of said leg or corner of said piece of furniture,

said elongate shield member having a series of breakaway lines comprising linear zones of structural weakness in said shield member such that portions of said shield member can be readily broken off along said breakaway lines to enable the shape of said shield member to be altered to accommodate the shape of said front portion of said leg or corner of said piece of furniture.

5,603,141

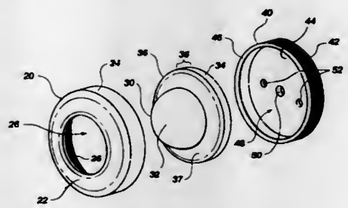
INTERCHANGEABLE DOORSTOP

Dale C. Gledhill, Salt Lake City, Utah, assignor to Dynatec International, Inc., Salt Lake City, Utah

Filed Jul. 28, 1995, Ser. No. 508,590

Int. Cl.[6] E05F *5/06*

U.S. Cl. 16—86 A **10 Claims**



1. A decorative doorstop comprising:

a receiving member comprising:

a substantially flat base member and a sidewall, the sidewall projecting substantially perpendicularly from the base member and is located substantially at or near the perimeter of the base member and circumferentially circumscribes the base member forming a recess therewith resulting in an

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inner wall surface of the sidewall and an outer wall surface of the sidewall being formed, the outer wall surface of the sidewall being provided with a first element of a dual-element fastening means, the sidewall having a depth measured from the base member to a periphery of the sidewall substantially equal to a first depth;

a cushioning bumper comprising:

an impact portion and a base portion, the base portion being compatibly configured so as to be receivable within the recess of the base member; and

a retaining shield comprising:

a face portion, the face portion having an aperture therein, and a circumferential sidewall extending from the perimeter of the face portion forming a recess therewith resulting in an inner wall surface of the circumferential sidewall and an outer wall surface of the circumferential sidewall being formed, the depth of the sidewall being at least as great as the first depth, the inner wall surface of the circumferential sidewall being provided with a second element of the dual-element fastening means, the second element of the dual-element fastening means being operably compatible with the first element of the dual-element fastening means, the aperture configured to permit the impact portion of the cushioning bumper to protrude through the aperture of the face portion;

the base portion of the cushioning bumper nested in the recess of the receiving member, and the retaining shield removably attached to the receiving member by the fastening means such that the impact portion of the cushioning bumper protrudes through the aperture of the face portion of the retaining shield, the fastening means being readily reversible such that the retaining shield is selectively and readily removable from and attachable to the receiving member and such that the cushioning bumper can be removed from the retaining shield.

5,603,142

FRAME HINGE

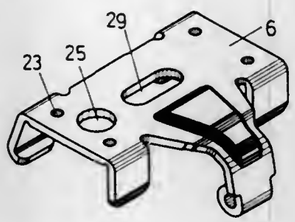
Fredi Dubach, Adetswil, Switzerland, and Erich Röck, Höchst, Austria, assignors to Julius Blum Gesellschaft m.b.H., Hochst, Austria

Filed Nov. 16, 1995, Ser. No. 558,479

Claims priority, application Austria, Nov. 17, 1994, 2128/94

Int. Cl.[6] E05D *7/04*

U.S. Cl. 16—247 **23 Claims**



1. A frame hinge comprising:

a hinge pot to be mounted on a door leaf;

a hinge arm to be mounted on a furniture frame and connected to said hinge pot by at least one articulation pin;

first and second wedge plates each having at least one wedge surface, said first and second wedge plates being positionable at a location between said hinge arm and the furniture frame with respective said wedge surfaces directed in opposite directions and confronting each other; and

one of said wedge plates having a receiver configured to receive an adjusting tool, and the other of said wedge plates having latching means configured to be engaged by the adjusting tool such that, when the adjusting tool is received in said receiver and engaged with said latching means, the adjusting tool may be manipulated to move said other wedge plate relative to said one wedge plate along said confronting wedge surfaces thereof.

5,603,143

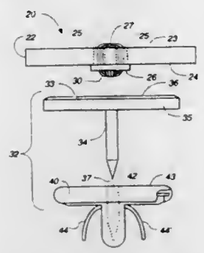
TEMPORARY REPLACEABLE GARMENT FASTENING BUTTON ON A TEAR-A-WAY BACKING AND METHOD

Robert L. Rucker, 4930 Fulton St., #201, San Francisco, Calif. 94121

Filed Jul. 29, 1994, Ser. No. 282,625

Int. Cl.[6] A44B *1/00*

U.S. Cl. 24—90.1 **12 Claims**



1. A temporary garment fastening button apparatus for fastening to a garment, said button apparatus comprising:

a garment button having a frontside and a backside, and defining a plurality of holes extending therethrough from said frontside to said backside;

a tear-a-way backing patch juxtaposed at the button backside;

a plurality of side-by-side securing strands each looping through at least two holes of said plurality of holes and each end thereof extending through said backing patch to anchor said garment button to said backing patch, said backing patch being formed from a unitary sheet material sufficiently rigid to permit mounting of said button thereto by said strands and sufficiently frangible to permit manual tearing and release of said button from said sheet material without severing said strands; and

a clasp device formed for coupling to a garment fabric and including a securing surface having an adhesive for securing the button backside and said strands to the clasp device.

5,603,144

AUTOMATIC LOCK SLIDER FOR SLIDE FASTENER

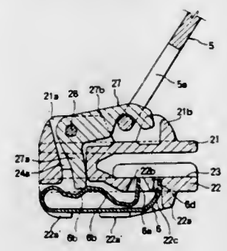
Shunji Akashi, Toyama-ken, Japan, assignor to YKK Corporation, Tolyo, Japan

Filed Mar. 30, 1995, Ser. No. 413,950

Claims priority, application Japan, Apr. 5, 1994, 6-066999

Int. Cl.[6] A44B *19/30*

U.S. Cl. 24—421 **9 Claims**



1. An automatic lock slider for a slide fastener, comprising:

a slider body having an element guide channel for slidably guiding opposed element rows and an element guide post situated centrally at one end of said element guide channel, said element guide post having a longitudinal through hole;

a pivotal bar having a general L shape composed of an insertion portion inserted in said through hole, an attachment portion to be normally located against an upper surface of said slider body, and a connection portion connecting said insertion portion and said attachment portion and pivotally attach to upper portion of said element guide post;

a resilient member captured in a bottom cavity of said slider body;

said pivotal bar inserted in said through hole for selectively releasing said resilient member to engage said element rows in said guide channel in a locking position or actuating said resilient member to disengage from said element rows in an unlocked position;

said resilient member being in the form of a small-width metallic leaf spring, and bent in a predetermined shape having one end constituting a locking pawl for projecting into said element guide channel through an aperture thereof when said resilient member is released from said pivotal bar; and

said through hole receiving said insertion portion of said pivotal bar in such a manner that said insertion portion is pivotally movable in said through hole forwardly and backwardly of said slider body; and

a pull tab rotatably attached to said pivotal bar.

5,603,145

SHEET-FORM HOOK AND FASTENING SYSTEM USING IT

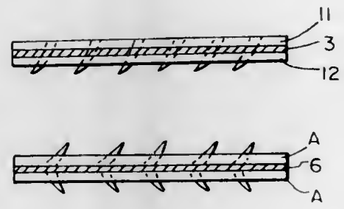
Masaaki Arakawa; Kenitirou Arakawa, and Masayuki Mizohata, all of Osaka, Japan, assignors to Nitto Denko Corporation, Osaka, Japan

Filed Sep. 29, 1995, Ser. No. 536,203

Claims priority, application Japan, Sep. 30, 1994, 6-237319

Int. Cl.[6] A44B *17/00;21/00*

U.S. Cl. 24—442 **7 Claims**



1. A sheet-form hook capable of hooking to a material to be hooked, said hook comprising a sheet-form substrate having thereon at least one projected portion formed by bending at least one piece notched in the substrate to at least one surface side thereof, said projected portion having a height from the surface of the substrate of at least 0.3 mm and a shape that is tapered from a base portion thereof to its tip, and wherein said substrate is a monolayer film comprising a thermoplastic resin.

5,603,146

ARRANGEMENT AND PROCESS FOR THE PRODUCTION OF SHORT WARPS

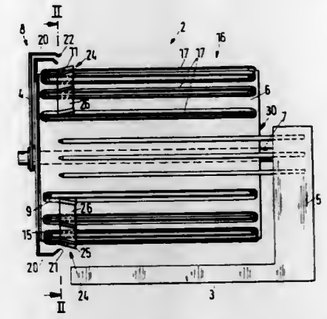
Josef Heuermann, Billerbeck; Herbert Wisniewski, Coesfeld-Lette, and Josef Lenzen, Dulmen, all of Germany, assignors to Karl Mayer Textilmaschinenfabrik GmbH, Germany

Filed Dec. 21, 1995, Ser. No. 576,290

Claims priority, application Germany, Dec. 23, 1994, 44 46 279.4

Int. Cl.[6] D02H *9/02*

U.S. Cl. 28—191 **16 Claims**



1. Process for forming short warps for patterns, including weave patterns, in which individual threads of different or similar color are wound sequentially, lying next to each other in individual layers corresponding to a desired warp length, on a wind surface of a winding arrangement including (a) a forwarding arrangement having a protruding support surface, and (b) an end face having a thread guide device, comprising the steps of:

relatively moving the thread guide device around the circumference of the winding arrangement in a wind plane;

winding a first individual thread on the support surface, which is spaced from the wind surface, with initial and subsequent windings of individual threads orthogonally displaceable with respect to the wind plane;

advancing at each wind of the thread guide device, using the forwarding arrangement, side-by-side, warp thread windings by a distance corresponding to thread thickness, wherein during warping the support surface is moved relative to the direction of the end face;

completing the short warp with the thread warp produced as an endless thread warp band; and

cutting the endless thread warp in a direction transverse to threads lying next to each other after completion of the short warp.

5,603,147

METHOD OF MAKING A HIGH ENERGY MULTILAYER CERAMIC CAPACITOR

William P. Bischoff, San Marcos, Calif., and Michael G. Bischoff, Richwood, Tex., assignors to Microelectronic Packaging, Inc., San Diego, Calif.

Filed Jun. 7, 1995, Ser. No. 475,967

Int. Cl.[6] H01G *4/12*

U.S. Cl. 29—25.42 **10 Claims**

1. A process of manufacturing high energy, multi-layer ceramic capacitor comprising the steps of:

combining a lead magnesium niobate ($PbMg_{1/3}Nb_{2/3}O_3$) dielectric composition powder with the following organic materials in percentages based on the weight of the dielectric composition:

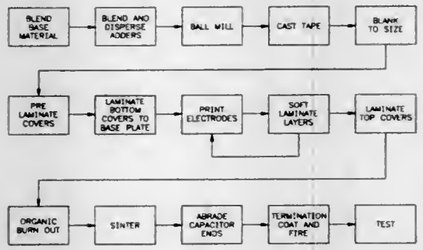
about 25–40% ethanol;

about 5–15% deionized water;

about 0.5–2.0% butyl benzyl phthalate;

about 0–12% nonylphenol polyethylene glycol ether; and

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about 6–12% polyvinyl butyral resin,

and the following dopants in percentages based on the weight of the dielectric composition:

about 0.7–1.3% lithium niobate ($LiNbO_3$);

about 0.015 to 0.025% copper oxide (CuO);

about 0.7 to 1.3% magnesium titanate ($MgTiO_3$);

about 1.7 to 2.3% manganese niobate ($MnNbO_3$); and

about 0.04 to 0.05% zirconium oxide (ZrO_2) in a sol/gel solution;

ball milling the combination to form a slip and for a sufficient time to reduce the size of the particles therein to about 0.04 μM in diameter;

casting the slip on a sheet of polyester film in tape form at a thickness ranging between 0.0005 to 0.005 inch and at an elevated temperature to drive off about 90% of the organics added to the dielectric composition powder, thereby forming a green tape;

forming a multilayer green capacitor body of alternate layers of green tape and electrodes by lamination under pressure;

completing removal of the organics by subjecting the green capacitor body to elevated temperatures for predetermined periods of time to form a partially cured capacitor;

sintering the partially cured capacitor at further predetermined elevated temperatures for predetermined periods of time; and

adding terminations to make selective electrical connection with the electrodes in the ceramic capacitor.

5,603,148

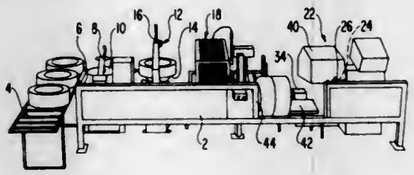
TIRE AND WHEEL SERVICING SYSTEM

Arne Hjorth-Hansen, Helgasvej 25, DK-8660 Skanderborg, Denmark

Filed Nov. 25, 1994, Ser. No. 348,105

Int. Cl.[6] B23P *21/00;* **B60C** *25/00*

U.S. Cl. 29—33 R **21 Claims**



1. Apparatus for servicing tires and wheels, comprising:

an infeed conveyor for receiving and conveying wheel-mounted tires;

a bead breaking station adjacent said infeed conveyor to permit transfer of wheel-mounted tires from said infeed conveyor onto said bead breaking station by pushing of each tire manually from said transfer conveyor onto said bead breaking station for breaking of a bead of the tire;

a tire changing station adjacent said bead breaking station to permit transfer of the wheel-mounted tires from said bead breaking station onto said tire changing station by sliding of each tire manually from said bead breaking station to said tire changing station for changing of the tire on the wheel;

a tire inflating station adjacent said tire changing station to permit transfer of the wheel-mounted tires from said tire changing station to said tire inflating station by sliding of each tire manually from said tire changing station to said tire inflating station for inflation of the wheel-mounted tire;

a wheel balancing station adjacent said tire inflating station to permit transfer of the inflated tires from said tire inflating station to said wheel balancing station by sliding or tilting each tire manually from said tire inflating station to said wheel balancing station for balancing of the wheel with the inflated tire mounted thereon; and

a discharge station adjacent said wheel balancing station to permit discharge of the tires from said apparatus following transfer of the tires from said wheel balancing station to said discharge station.

5,603,149

TABLE REPLACEMENT APPARATUS IN A NUMERICAL CONTROL ROUTER

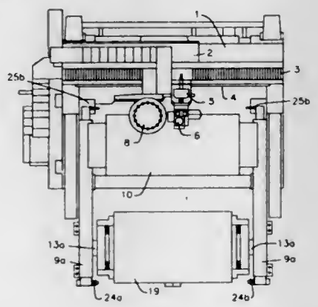
Yoshiyuki Yamauchi, Shizuoka-Ken, Japan, assignor to Heian Corporation, Shizuoka-ken, Japan

Filed Nov. 15, 1994, Ser. No. 339,767

Claims priority, application Japan, May 14, 1994, 6-124512

Int. Cl.[6] B23Q *7/00;* **B65G** *37/00*

U.S. Cl. 29—33 P **3 Claims**



1. A table replacement apparatus in a numerical control router comprising at least one head structure having a main motor with a rotary shaft for fixing a tool of a drill or cutter, the at least one head structure being moved on head rails attached to a side of a rail member provided with an upper part of a bed, a first table movably mounted on table frames, two table supporting members movably supported by respective insides of the table frames, a second table supported on the sides of the table supporting members and adapted to be raised and lowered, chains respectively connected to the ends of the first and second tables, chain supporting gears for supporting the chains which are provided at the ends of the table frames, table moving means for moving the first and second tables in opposite directions, and cylinders for raising and lowering the second table, whereby the second table is movable into the original position of the first table, when processing of a process board on the first table is completed.

5,603,150

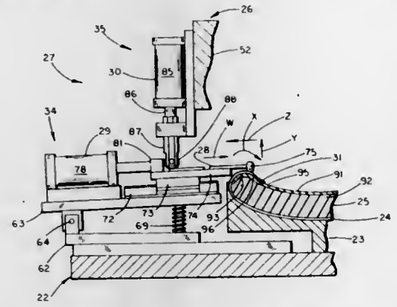
UPHOLSTERING APPARATUS

Kenneth Assink, Holland, and Mark J. Feenstra, Grand Haven, both of Mich., assignors to J. R. Automation Technologies, Inc., Holland, Mich.

Filed Jan. 26, 1995, Ser. No. 378,664

Int. Cl.[6] B68G *15/00;7/00;* **B29C** *65/18*

U.S. Cl. 29—91.8 **13 Claims**



1. An upholstering apparatus comprising:

a support for supporting a polymeric structural member;

a clamp configured to hold the polymeric structural member on the support;

a heater configured to rapidly heat a surface of the polymeric structural member to a fluid state to form a film of fluidized material on the surface, one of said support and said heater being movably supported for movement between a heating position wherein the heater is located at least partially over the support and a polymeric structural member supported on the support, and a retracted position;

an edge fold blade for pressing portions of sheet material against the surface of the polymeric structural member so that the fluidized material of the polymeric structural member adheres to the sheet material as fluidized material on the surface solidifies from the fluid state; and

said heater including a forced air dispenser for focusing heated air onto a particular portion of the surface of the polymeric structural member, said forced air dispenser including a generally triangularly-shaped shroud having a wide end positioned proximate a perimeter of said support when in said heating position.

5,603,151

BLIND FASTENER SETTING DEVICE

Lothar Wille, Mörfelden-Walldorf, Germany, assignor to GESIPA Blindniettechnik GmbH, Frankfurt am Main, Germany

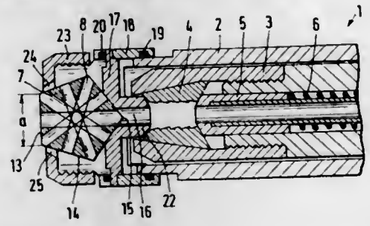
Filed Jun. 23, 1995, Ser. No. 494,281

Claims priority, application Germany, Jun. 30, 1994, 44 22 877.5

Int. Cl.[6] B21J *15/32*

U.S. Cl. 29—243.528 **16 Claims**

1. A blind fastener setting device comprising:



a housing;

a drawing mechanism disposed within said housing; and

an adjustably supported tip piece connected to said housing, said tip piece having a plurality of mandrel guide channels, each of which can be aligned with respect to the drawing mechanism, said tip piece having a polygonal cross-sectional shape which has an uneven number of sides, each of said mandrel guide channels extending from one of said sides, said tip piece being rotatable about a substantially fixed axis, said axis being perpendicular to a drawing direction of the drawing mechanism.

5,603,152

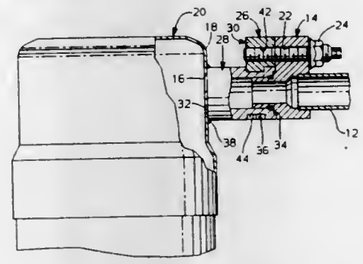
METHOD FOR MANUFACTURING A TWO BLOCK LINE CONNECTOR

Anh Le; Richard L. Marker, both of Lockport, N.Y., and Richard J. Raterman, Kettering, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 19, 1994, Ser. No. 358,495

Int. Cl.[6] B23P *11/02;* **F16L** *35/00*

U.S. Cl. 29—506 **2 Claims**



1. A method for fluidly connecting a line concentrically to a port through a thin wall by use of a primary connector block fixed to the end of said line that has a bolt hole located to the side of and parallel to a common axis of said line and port, comprising the steps of,

providing a generally cylindrical base having a first end insertable into said port and a second end into which the end of said line is insertable, said base having a concentric groove with a width in its outer surface between said first and second ends,

providing a fork shaped side lobe including a bolt hole to accommodate said bolt and a pair of bendable, parallel legs having a separation substantially equal to the diameter of said base groove, a width substantially equal to the width of said groove, and a total effective length greater than half, but less the entire, circumference of said groove.

inserting said base first end into said port and securing it to said wall with a continuous bead of material at the interface between said base and wall while said interface is unobstructed by said side lobe,

inserting said side lobe legs into said base groove and turning said side lobe about said common axis until said side lobe bolt hole is aligned with said primary connector block bolt hole,

bending said legs around and into said groove to retain said side lobe permanently to said base, thereby forming a secondary connector block,

and bolting said primary connector block to said secondary connector block.

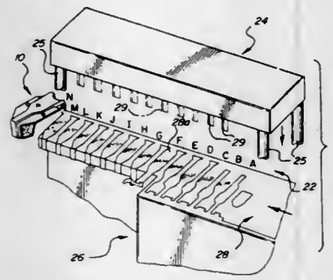
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5,603,153

METHODOLOGY FOR FORMING STAMPED SHEET METAL PARTS OF COMPLEX CONFIGURATION

Mark Zmyslowski, Grosse Pointe Shores, Mich., assignor to Radar Industries, Inc., Roseville, Mich.

Filed Apr. 28, 1995, Ser. No. 430,337
Int. Cl.[6] B23P *11/00*
U.S. Cl. 29—509 **5 Claims**



1. A method for forming sheet metal parts comprising:
feeding a sheet of metal material continuously and longitudinally through a stamping press including a ram and a plurality of successive stations at which operations are performed in response to ram movement;
at a plurality of longitudinally successive stations, striking the sheet with successive hits in response to ram movement to form a plurality of parts joined together by and extending laterally from a common strip and each including a main body portion joined to the strip and an outer end region having an extreme free end portion;
at a further successive station, folding the outer end region of each part back upon the main body portion to form a loop having an open configuration and position the extreme free end portion proximate the main body portion to close the entry to the loop and form a doubled-over portion including upper and lower layers;
at a yet further successive station, following the station at which the doubled-over portion is formed, clinching the upper and lower layers of the doubled-over portions together in response to ram movement to form at least one clinched joint mechanically joining the upper and lower layers to fixedly close the entry to the loop while retaining the open configuration of the loop; and
thereafter, at a still further successive station, severing the individual parts to form a successive plurality of separate parts each having a loop and a doubled-over portion closing the entry to the loop and including upper and lower layers mechanically joined by at least one clinched joint.

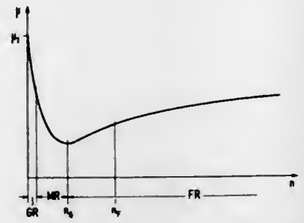
5,603,154

PROCESS FOR IMPROVING THE RUN-IN CHARACTERISTICS OF DRIVES HAVING SINTERED BEARINGS

Horst Steegmueller, Wuerzburg, and Alfred Kuemmel, Kitzingen, both of Germany, assignors to Siemens Aktiengesellschaft, Germany

Continuation of Ser. No. 278,306, Jul. 21, 1994, abandoned. This application Aug. 1, 1996, Ser. No. 690,952
Claims priority, application European Pat. Off., Sep. 30, 1993, 93115807
Int. Cl.[6] H02K *15/00*; B23P *9/00*
U.S. Cl. 29—596 **8 Claims**

1. A process for running-in sintered metal bearings of an induction motor drive prior to its placement in service, comprising:
coupling the induction motor drive to an apparatus having a selectively variable torque load, prior placement of the motor in operational service;



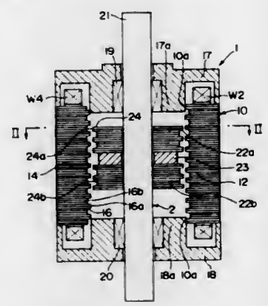
driving the selectively variable torque load with the drive through a predetermined loading cycle which includes repetitive respective steps of:
setting the variable load torque to a first level which causes the bearings to be operated within a mixed friction lubrication mode, without consistent hydrodynamic lubrication;
increasing the variable torque load to a second level which causes the bearings to be operated within a boundary friction lubrication mode; and
intentionally terminating the loading cycle driving and removing the drive from the apparatus, so that the drive may be placed in service.

5,603,155

METHOD OF MANUFACTURING AN IRON CORE OF A MULTI-PHASE LINEAR MOTOR

Hirobumi Satomi, and Takao Iwasa, both of Kashiwa, Japan, assignors to Oriental Motor Co., Ltd., Tokyo, Japan

Filed Oct. 19, 1994, Ser. No. 325,603
Claims priority, application Japan, Oct. 22, 1993, 5-264516
Int. Cl.[6] H02K *15/02*
U.S. Cl. 29—598 **6 Claims**



1. A method of manufacturing iron cores of a multi-phase linear motor comprising a stator and a mover which are disposed facing each other with an air gap therebetween and each of which comprises at least one iron core, either of said stator or mover having a plurality of salient poles which are disposed along the air gap and which extend in a direction perpendicular to a moving direction of said mover, the salient poles on the iron core having a multiplicity of teeth disposed at equal pitches along the moving direction of the mover, using a punching apparatus which comprises a punching controller and a punching mold having a plurality of movable punches which are controlled independently of each other by the punching controller,
said method comprising the steps of:
selectively controlling the movable punches in the punching mold so that selectively chosen ones of said movable punches are pushed out while other ones of said movable punches remain withdrawn in correspondence with a desired shape of an iron plate forming said iron core by means of the punching controller,

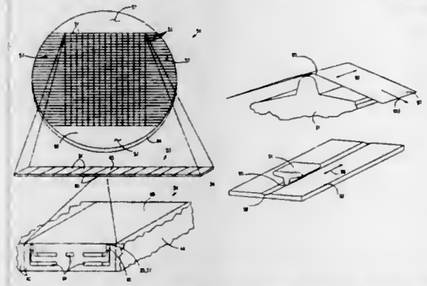
punching an iron plate using a configuration of movable punches as controlled in said step of selectively controlling the movable punches, so that said selectively chosen ones of said movables punches generate bottoms of said teeth, while said other ones of said movable punches permit creation of tops of said teeth during said step of punching,
repeating the step of selectively controlling the movable punches so as to selectively vary or maintain the configuration of the movable punches and the step of punching an iron plate, and
laminating punched iron plates successively to form said iron core.

5,603,156

LAPPING PROCESS FOR MINIMIZING SHORTS AND ELEMENT RECESSION AT MAGNETIC HEAD AIR BEARING SURFACE

Robert G. Biskeborn, Hollister; Carol Y. Inouye, San Jose; David J. Seagle; Albert J. Wallash, both of Morgan Hill; Robert O. Barr, San Jose; Glen A. Garfunkel, and Sanford J. Lewis, both of Palo Alto, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 16, 1994, Ser. No. 358,124
Int. Cl.[6] G11B *5/127*; B24B *37/00*
U.S. Cl. 29—603.16 **3 Claims**



1. In a process for fabricating magnetic transducers wherein said magnetic transducers have a contoured air bearing surface and a plurality of transducer elements exposed thereat, a method for lapping said air bearing surface to provide a desired dimension for said transducer elements, comprising the steps of:
supporting at least one said magnetic transducer such that said air bearing surface is in contact with a stationary lapping surface, said lapping surface having a groove formed therein, said groove being contoured to match the contour of said air bearing surface, said air bearing surface disposed in said groove; and
moving said magnetic transducer in an oscillatory path across said stationary lapping surface, said oscillatory motion being along said groove parallel to a longitudinal axis of said transducer elements exposed at said air bearing surface.

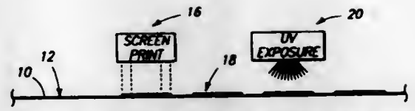
5,603,157

METHODS OF PRODUCING BUTTON-TYPE BATTERIES AND A PLURALITY OF BATTERY TERMINAL HOUSING MEMBERS

Rickie Lake, and Peter M. Blonsky, both of Boise, Id., assignors to Micron Communications, Inc., Boise, Id.

Filed Mar. 2, 1994, Ser. No. 205,590
Int. Cl.[6] H01M *2/08*
U.S. Cl. 29—623.4 **17 Claims**

1. A method of forming a button-type battery comprising the following steps:
providing an electrically conductive sheet having an exposed surface, the exposed surface being divisible into a plurality of sheet areas;



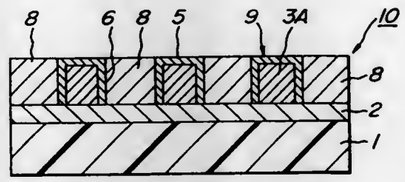
depositing an uncured electrically insulative gasket material which comprises ultraviolet light curable epoxy onto the conductive sheet into a plurality of the sheet areas, the gasket material being deposited to define at least one discrete pattern within each respective sheet area in which electrically insulative material is deposited, wherein each respective discrete pattern covers less than a total of each respective sheet area;
curing the deposited gasket material by exposing the gasket material to ultraviolet light;
cutting and forming a plurality of discrete first terminal housing members from the areas of the conductive sheet, the respective first terminal housing members comprising at least a portion of one of the discrete patterns of gasket material;
providing a discrete electrically conductive second terminal housing member in facing juxtaposition to one of the first terminal housing members;
providing an anode and a cathode having a separator and electrolyte positioned therebetween; the anode, cathode, separator and electrolyte being positioned intermediate the juxtaposed first and second terminal housing members; the anode being positioned to electrically connect with one of the first or second terminal housing members and the cathode being positioned to electrically connect with the other of the first or second terminal housing members; and
crimping the first and second terminal housing members together into an enclosed battery housing with the gasket material being interposed between the first and second terminal housing members to provide a fluid-tight seal and to provide electrical insulation therebetween.

5,603,158

METHOD FOR PRODUCING FLEXIBLE CIRCUIT BOARDS

Katsuhiro Murata, Ohtsu; Mitsumasa Shibata; Toru Hatakeyama, both of Kusatsu, and Tadaaki Isono, Ohtsu, all of Japan, assignors to Nippon Graphite Industries Ltd., Ohtsu, Japan

Division of Ser. No. 264,781, Jun. 23, 1994, Pat. No. 5,493,074. This application Nov. 7, 1995, Ser. No. 554,484
Claims priority, application Japan, Sep. 3, 1993, 5-220043
Int. Cl.[6] H05K *3/02*
U.S. Cl. 29—846 **7 Claims**

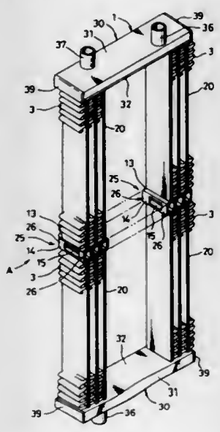


1. A process for producing a flexible circuit board comprising the steps of:
(A) applying an adhesive onto a flexible resistive film and drying the adhesive to form an adhesive layer;
(B) contacting a metal foil onto said adhesive layer, which is subjected to a heat and pressing treatment so that said flexible resistive film and said metal foil are adhered to each other;
(C) polishing a surface of said metal foil to obtain a polished surface, onto which an ultraviolet light curable ink is applied and dried to form a first layer composed of said ultraviolet light curable ink;

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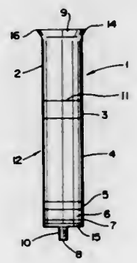
(D) placing a negative film with a predetermined pattern on or over said first layer and irradiating ultraviolet light to said first layer through said negative film so that said first layer is cured according to said predetermined pattern;
(E) removing uncured portions of said first layer in the stage (D) so that cured portions of said first layer remains according to said predetermined pattern and said metal foil is exposed between said remaining cured portions;
(F) subjecting said metal foil to an etching treatment to remove the exposed portions of said metal foil between said cured portions so that unexposed portions of said metal foil under said cured portions remain to form conductors;
(G) removing said cured portions of said first layer from said conductors of metal foil;
(H) forming a metal plating film on each conductor to form each electrical conductive circuit comprising said conductor and said metal plating film covering a surface of said conductor;
(I) applying an ultraviolet light curable ink on said adhesive layer and drying said ink to form a second layer composed of said ink;
(J) irradiating ultraviolet light to said second layer through said flexible resistive film so that said second layer is cured by the ultraviolet light in gaps between said electrical conductive circuits;
(K) removing uncured portions of said second layer so that said electrical conductive circuits are exposed and cured portions of said second layer remains in said gaps;
(L) subjecting said cured portions of said second layer to a heat treatment.

5,603,159
METHOD OF PRODUCING HEAT EXCHANGERS
Toshio Tsubakida; Yoshihisa Eto; Takashi Sugita, and Shoji Kuwabara, all of Konan, Japan, assignors to Zexel Corporation, Tokyo, Japan
Filed Sep. 27, 1995, Ser. No. 534,559
Claims priority, application Japan, Sep. 29, 1994, 6-259531; Jan. 17, 1995, 7-022271
Int. Cl.[6] B23P *15/26*
U.S. Cl. 29—890.039 **15 Claims**



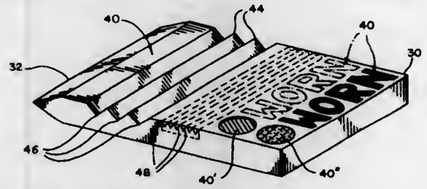
1. A method of producing heat exchangers that each comprise a tank having an end plate with a plurality of connecting holes in the end plate arranged in parallel in a laminating direction, tube elements each having a pair of intake and outlet portions located in the connecting holes and a U-shaped heat exchanging medium passage connecting the intake and outlet portions, and fins located between the tube elements, said method comprising the steps of:
(a) forming a plurality of form plates so that each form plate extends in a longitudinal direction, has a middle portion, has a pair of first bulging portions formed on both ends thereof in the longitudinal direction, each pair of first bulging portions forming intake and outlet formations for forming the intake and outlet portions, has projections extending from between the first bulging portions toward the middle portion, has second bulging portions formed around each of the projections for the formation of a passage, and has a cutting unit having a cutting portion formed in said middle portion;
(b) bonding flush pairs of the form plates to form tube element units that each comprises a pair of the tube elements, the pair of the tube elements being joined at the cutting unit having the cutting portion, and the intake and outlet portions being formed on the tube elements thereby;
(c) forming a provisional assembly of two heat exchangers by inserting the intake and outlet portions formed on both ends of the tube element units into connecting holes of tanks disposed at both ends of the tube element units and putting corrugated fins between the tube elements of the tube element units;
(d) brazing the provisional assembly in a furnace; and
(e) cutting the cutting portion so as to separate the assembly and form two separate heat exchangers.

5,603,160
METHOD FOR MAKING AN EXTRACTION CARTRIDGE
Denis Lessard, Vaudreuil, and John H. Burrows, Pierrefonds, both of Canada, assignors to Phoenix International Life Sciences Inc., Montreal, Canada
Division of Ser. No. 235,713, Apr. 29, 1994. This application Apr. 10, 1995, Ser. No. 419,403
Int. Cl.[6] B23P *15/16*
U.S. Cl. 29—896.62 **1 Claim**



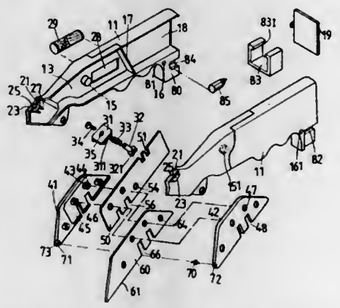
1. A method for making an extraction cartridge comprising:
heating an inert support at a temperature of about 500° C. for about 3 hours;
mixing the heated inert support with a buffer;
heating diatomaceous earth at a temperature of about 500° C. for about 3 hours;
heating an adsorbent at a temperature of about 500° C. for about 3 hours;
positioning a first filter at the bottom of a cartridge;
adding the heated adsorbent to the cartridge;
adding the heated diatomaceous earth to the cartridge;
adding the mixture of heated support and buffer to the cartridge; and
positioning a second filter in the cartridge.

5,603,161
WEAR INDICATING SHAVING STRIP AND BLADE ASSEMBLY FOR A SHAVER
Christopher A. Welsh, 1104 Park Ave., Balboa Island, Calif. 92662
Filed Jun. 7, 1995, Ser. No. 479,184
Int. Cl.[6] B26B *21/54*
U.S. Cl. 30—41.7 **18 Claims**



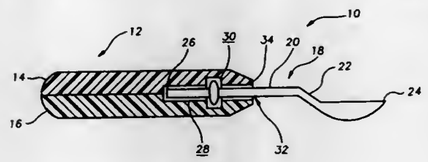
1. A shaving apparatus, comprising:
(a) a blade having a shaving edge;
(b) a blade support; and
(c) a visual wear indicator exhibiting a first color visible in an initial use of the shaving apparatus and a second different color in a subsequent use of the shaving apparatus during a useful life of the shaving apparatus, the second color indicative of wear of the shaving apparatus, wherein the visual wear indicator includes an oxidation indicator spaced apart from the shaving edge and having substantially the same oxidation resistance as the shaving edge, the oxidation indicator exhibiting a different color than an adjacent portion of the blade upon oxidation of the oxidation indicator.

5,603,162
UTILITY KNIFE COMBINATION
Chun C. Chen, No. 45, Lane 25, Kuo Chung 1st Road, Da Li City, Taichung Hsien, Taiwan
Filed May 31, 1996, Ser. No. 655,944
Int. Cl.[6] B26B *1/08*
U.S. Cl. 30—162 **8 Claims**



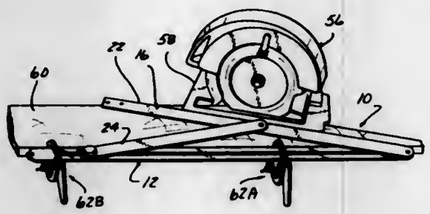
1. A utility knife combination comprising:
a handle including a front portion having a bulge formed thereon and having an orifice formed in said bulge, said bulge including two side portion each having a depression formed therein,
a rod slidably engaged in said orifice of said bulge, said rod including at least one protrusion extended inward of said handle,
a knob engaged on said bulge and secured to said rod so as to be moved in concert with said rod, said knob including two juts extended downward therefrom for engaging with said bulge so as to separate said knob from said bulge and for engaging with said depressions so as to allow said knob to be engaged with said bulge,
means for biasing rod inward of said handle and for biasing said knob to engage with said bulge,
a first board including a front portion slightly extended outward of said handle and including a rear portion, said first board including at least two studs extended therefrom,
a plate including a front portion having at least two holes formed therein for engaging with said studs and for engaging with said rear portion of said first board so as to be secured to said first board, said plate including a rear portion having at least one impression formed therein for engaging with said protrusion of said rod so as to be secured to said handle,
a knife blade including a rear portion having at least two holes formed therein for engaging with said studs so as to be secured to said studs, and
a second board including at least two holes for engaging with said studs so as to be secured to said studs, said second board including a front portion slightly extended outward of said handle, for allowing the user to grasp said boards so as to disengage said knife blade from said handle,
said protrusion being allowed to be engaged with said impressions of said plate when said juts of said knob are engaged with said depressions of said bulge, and said protrusion being disengaged from said plate when said knob is moved away from said bulge and when said juts are engaged with said bulge.

5,603,163
SWIVEL SPOON
John W. Ikner, Jr., 11235 Co. Rd., 54 West, Daphne, Ala. 36526
Filed Aug. 22, 1995, Ser. No. 517,923
Int. Cl.[6] A47G *21/04*
U.S. Cl. 30—324 **6 Claims**



1. A swivel spoon comprising:
a handle having a front face;
said handle forming a pathway along its longitudinal axis, said pathway having a first portion and a second portion having a larger inside diameter than that of said first portion;
said front face defining an opening to said pathway;
a stem having an elongated section, an angled section, a spoon bowl end, and a first end;
said angled section extending at an angle between twenty-five and sixty degrees from the longitudinal axis of said elongated section;
said spoon bowl end extending from said angled section parallel to said elongated section of said stem;
said elongated section of said stem forming a recess defined by shoulders; and
a ball bearing assembly having a housing containing ball bearings, said housing being retained within said recess by said shoulders, said ball bearings contacting said stem within said recess;
said ball bearing assembly being entrapped within said second pathway portion, said elongated section having a portion thereof rotatably disposed in said first pathway portion in a manner such that said spoon bowl end rotates in relation to the longitudinal axis of said handle.

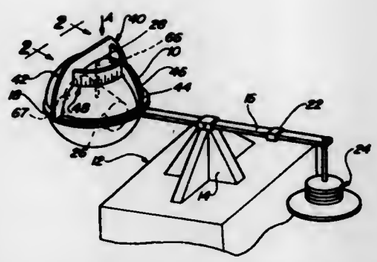
5,603,164
ADJUSTABLE ANGLE GUIDE AND ANGLE FINDER
Paul A. Haddix, 107 Vine St., Cynthiana, Ky. 41031
Filed Feb. 27, 1995, Ser. No. 376,204
Int. Cl.[6] B43L 7/10
U.S. Cl. 33—456 **8 Claims**



1. An adjustable angle guide device comprising:
an elongated blade-shaped base member having a slot extending along the length thereof, said base member having a top face and an opposite bottom face;
an elongated blade angle guide member having a bottom face on one side lying against said top face at one end of said base member, said one end of said base member pivotally attached to said one end of said angle guide member with a pivotal attachment, said angle guide member having a guide edge extending along one side thereof remote from said base member;
each of said one ends of said base member and angle guide member radiused so that a line extending from an outside edge of said angle guide member does not intersect any projecting feature on said ends throughout an entire range of pivoting motion of said base and angle guide members about said pivotal attachment;
an elongated, blade-shaped adjustment member pivotally attached at one end to said angle guide member with a pivotal attachment located at an intermediate point along the length of said angle guide member;
said adjustment member having a bottom surface lying against said top face of said base member and against a top face of said angle guide member opposite said bottom face;
a slider element pivoted to the other end of said adjustment member and slidably engaged in said slot formed in said base member;
a series of numeric indicia markings on said one face of said base member arranged along said slot, each respective marking corresponding to the angle between said base and angle guide members when said slider element is adjacent said respective marking; and
locking means selectively allowing locking of said slider element in said slot in said base member at any adjusted position therein, whereby said angle guide may be locked at each angular position relative said base member corresponding to each numeric indicia marking.

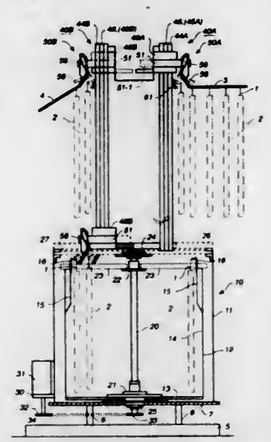
5,603,165
BOWLING BALL MEASURING TEMPLATE
David A. Bernhardt, 4921 Deer Creek Cir. South, Washington Township, Mich. 48094, and Thomas A. Laskow, 354 Dover Milton Rd., Oak Ridge, N.J. 07438
Filed Jun. 9, 1995, Ser. No. 488,517
Int. Cl.[6] B43L 13/20; G01B 3/14
U.S. Cl. 33—509 **12 Claims**

1. A template for weighting and finger hole placement of bowling balls comprising:
an element defining a meridian plane on a bowling ball;
first scale means for enabling distance determination between placement of holes in the bowling ball, said first scale means coupled with said element defining said meridian plane;



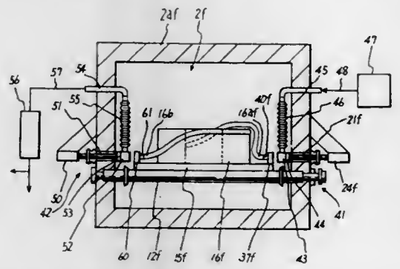
second scale means for determining angular displacement with respect to a bowling ball pin, said second scale means being positioned in a lateral parallel plane with respect to said meridian plane, said second scale means coupled with said element.

5,603,166
EXTRACTOR FOR REMOVING WATER FROM WASHED ARTICLES
Masaru Shimazaki, and Fumikata Maeda, both of Tokyo, Japan, assignors to Y.A.C. Corporation, Tokyo, Japan
Continuation of Ser. No. 340,978, Nov. 17, 1994, abandoned. This application Apr. 23, 1996, Ser. No. 637,332
Claims priority, application Japan, Nov. 25, 1993, 5-319051
Int. Cl.[6] F26B 17/24
U.S. Cl. 34—58 **11 Claims**



1. An extractor for washed articles, comprising:
a hollow outer structure with open top;
a hollow inner structure inside said outer structure, said inner structure having open top and perforated side walls;
driving means for rotating said inner structure;
a plurality of supporting means inside and on said side walls of said inner structure for supporting washed articles;
supply means for delivering washed articles thereon downward into said hollow inner structure and causing said washed articles to become supported by said supporting means; and
discharge means for removing said washed articles upwards from said supporting means and out of said inner structure;
wherein said washed articles are each hung from a hanger, said plurality of supporting means are each capable of allowing an article-carrying hanger to hang therefrom, said supply means is capable of delivering an article-carrying hanger downward into said hollow inner structure and causing said hanger to become supported by said supporting means, and said discharge means is capable of removing an article-carrying hanger upwards from said supporting means and out of said inner structure.

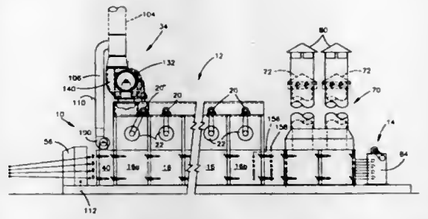
5,603,167
OIL REMOVING APPARATUS AND OIL REMOVING METHOD FOR A PIPE COIL
Katsumasa Toyoda, Ohgaki; Takashi Miyajima, Gifu-ken, and Yoshihiro Umeda, Nagoya, all of Japan, assignors to Daidot-okushuko Kabushikikaisha, Japan
Filed Apr. 15, 1994, Ser. No. 228,523
Claims priority, application Japan, Nov. 11, 1993, 5-307478; Nov. 25, 1993, 5-321268
Int. Cl.[6] F26B 25/00
U.S. Cl. 34—104 **14 Claims**



6. A pipe connecting device comprising:
a body having a peripheral wall and an insert hole therein for insertion of an objective pipe, said insert hole having an inner diameter corresponding to the outer diameter of said objective pipe,
the peripheral wall of said body having a through hole for inserting a fixing member extending from the exterior of said body to an end of said objective pipe, said objective pipe inserted into said insert hole, and with a fitting member for rotatably securing a retainer,
one end of said retainer on said fitting member retaining a fixing member whereby the other end of the retainer can approach or leave the body,
said fixing member having a tip, said fixing member being attached in the direction so that said tip extends substantially at right angles to the end of the objective pipe inserted into said insert hole,
said retainer having a catching surface for a wire member,
said catching surface being a surface for catching said wire member for tying said retainer to said body, and provided on an opposite surface to the body in the state that the retainer is positioned close to the body.

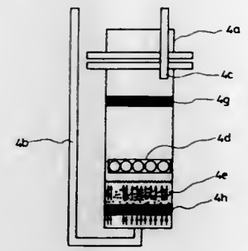
5,603,168
METHOD AND APPARATUS FOR CONTROLLING A DRYER
Irven J. McMahon, Jr., Painesville, Ohio, assignor to The Coe Manufacturing Company, Painesville, Ohio
Filed Nov. 30, 1994, Ser. No. 346,861
Int. Cl.[6] F26B 3/00
U.S. Cl. 34—471 **19 Claims**

1. A veneer dyer, comprising:
a) an elongate drying chamber having an input end and an output end and defining a path of movement between said ends;
b) a conveyor for conveying product to be dried along said path of movement through said chamber;



c) said chamber including a plurality of juxtaposed heating units, each heating unit defining a circulation path for heated air, said path being substantially transverse to said path of movement of said product to be dried;
d) nozzles forming part of each of said heating units for directing heated air into an impinging relationship with said path of movement;
e) input seal chamber at said input end of said chamber, including an air seal system for restricting the out flow of gases from said drying chamber, said seal system including an exhausting passage for extracting a sample of gases that are inputted to said seal section;
f) an exhaust system adjacent said seal section including an exhaust fan for extracting gases from an adjacent heating zone;
g) temperature sensor for sensing an ambient temperature input to said sampling exhaust flow;
h) a second temperature sensor for sensing a temperature of said sampling chamber exhaust flow;
i) flow controller for adjusting the rate of said exhaust flow as a function of the difference in temperature sensed by said first and second temperature sensors.

5,603,169
BUBBLER FOR SOLID METAL-ORGANIC PERCURSORS
Dae-sig Kim, Kyungki-do, Rep. of Korea, assignor to Samsung Electronics Co. Ltd., Suwon, Rep. of Korea
Filed Sep. 29, 1995, Ser. No. 536,819
Claims priority, application Rep. of Korea, Sep. 30, 1994, 94-25196
Int. Cl.[6] F26B 17/00
U.S. Cl. 34—587 **17 Claims**

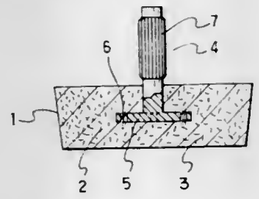


1. A bubbler containing solid precursors for use in a deposition process, comprising:
a bubbler body containing a feed hole at the bubbler body bottom through which a carrier gas enters the bubbler,
an exhaust hole at the upper part of said bubbler body through which said career gas exits the bubbler body, which exhaust hole is located above the precursors; and
a means for passing said carrier gas through the precursors evenly to transfer said precursors through the bubbler at constant rate wherein

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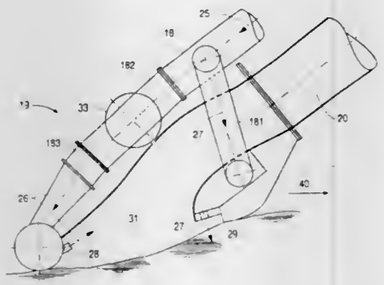
said means for passing the carrier gas is located under the precursors and spaced from said bubbler body bottom.

5,603,170
FIBER REINFORCED RESIN LIFT FOR SHOES
Giichi Hirai, Chiba, Japan, assignor to Hiro International Co., Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 114,367, Sep. 1, 1993, abandoned. This application Sep. 11, 1995, Ser. No. 526,174
Claims priority, application Japan, Sep. 3, 1992, 4-260705
Int. Cl.[6] A43B *21/00*
U.S. Cl. 36—34 R **9 Claims**



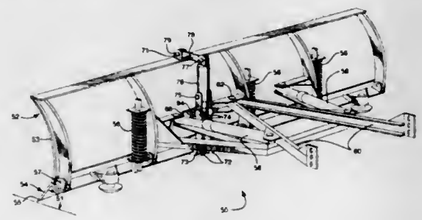
1. A lift for shoes comprising a thermoplastic polyurethane resin containing carbon fiber in linear pieces cut to a predetermined length in the range of 0.1–10.0 mm,
said thermoplastic polyurethane resin containing said carbon fiber in the range of 1.0–10.0 wt. %,
said lift having been formed by injection molding of said thermoplastic polyurethane containing said carbon fiber.

5,603,171
PROCESS AND APPARATUS FOR SUCTIONING OFF THE SOLID MATERIAL FROM WATERBEDS
Siegfried Steinkühler, Schwartau, Germany, assignor to Krupp Fördertechnik GmbH, Duisburg, Germany
Filed Feb. 17, 1995, Ser. No. 389,876
Claims priority, application Germany, Feb. 21, 1994, 44 05 451.3
Int. Cl.[6] E02F *1/00*
U.S. Cl. 37—195 **25 Claims**



1. A process for suctioning solid material from a waterbed and for conveying a resulting solids-water suspension into a hopper, comprising:
supplying a flow of water to a towed suction basket, the basket having a suction region connected to a suction tube, at least one pressure nozzle and at least one motive nozzle;
dividing the flow of water supplied to the towed suction a basket into a motive water flow and a pressure water flow;
directing the pressure water flow through the at least one water pressure nozzle onto the waterbed for dislodging the solid material on the waterbed and creating the solids-water suspension in the suction region of the towed suction basket; and
directing the motive water flow through the at least one motive water nozzle through the suction region of the towed suction basket and into the suction tube for accelerating the solids-water suspension into the suction tube.

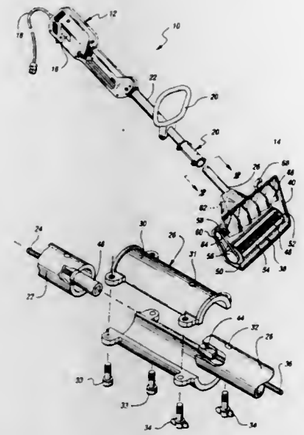
5,603,172
SELECTIVELY REVERSIBLE RESILIENT PLOW BLADE AND KIT
Richard J. Maher, 103 Park St., Tilton, N.H. 03276
Filed Nov. 14, 1994, Ser. No. 337,764
Int. Cl.[6] E01H *5/04*
U.S. Cl. 37—233 **16 Claims**

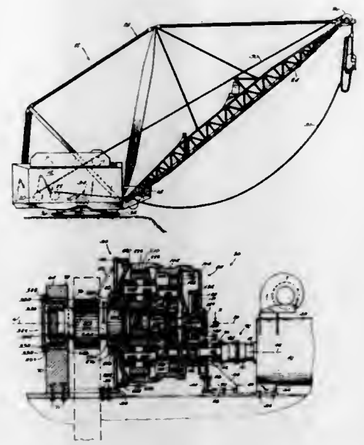


15. A plow blade assembly, comprising:
a main blade having a major dimension extending laterally parallel to a surface to which the plow is applied;
a secondary blade disposed between the main blade and said surface, and being pivotally mounted on said main blade along an edge of said major dimension, said secondary blade having a first position associated with a forward motion of said main blade along a direction perpendicular to said major dimension and along said surface, and having a second position associated with a reverse motion of said main blade along a direction perpendicular to said major dimension and along said surface opposite said forward direction;
resilient means for urging said secondary blade into said first position; and
means for selectively moving said secondary blade into said second position, including
an actuator means having a first element pivotally connected to said main blade by a first rigid link and movable away from said secondary blade along a path and a second element selectably movable relative to said first element along said path, said second element being connected to said secondary blade by a second rigid link and imparting a unidirectional force thereon to move said secondary blade into said second position, wherein
said first rigid link aligns said actuator to receive a load corresponding to said force substantially along said path.

5,603,173
SNOW THROWER
Kenneth M. Brazell, Phoenix, Ariz., assignor to Ryobi Outdoor Products Inc., Chandler, Ariz.
Continuation of Ser. No. 188,960, Jan. 28, 1994, abandoned. This application Nov. 2, 1995, Ser. No. 556,825
Int. Cl.[6] F01H *5/00*
U.S. Cl. 37—244 **5 Claims**

1. A snow thrower comprising:
a power unit; and



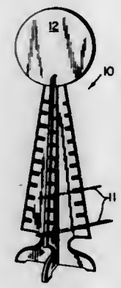


an attachment removably securable to the power unit, the attachment including:
a housing;
an impeller pivotably mounted to the housing for rotation about a horizontal axis, the impeller having a first pulley, and
a flexible drive shaft having first and second ends, the first end being adapted for connection to the power unit, and the second end being drivably connected to second pulley rotatable about an axis spaced from and parallel the horizontal axis, the second pulley lying substantially in a plane with the first pulley, the second pulley being operably connected to the first pulley by a drive belt to provide a gear ratio therebetween resulting in a desired rotational speed of the impeller, wherein the flexible drive shaft is bent substantially 90 degrees so that a power unit having a rotary output perpendicular to the horizontal axis can be coupled to the impeller without using a right angle coupling.

5,603,174
DRAGLINE INCLUDING IMPROVED WALKING MECHANISM
Harvey J. Kallenberger, Wind Lake, and Joseph L. Huffman, Mukwonago, both of Wis., assignors to Harnischfeger Corporation, Brookfield, Wis.
Filed Feb. 3, 1995, Ser. No. 384,704
Int. Cl.[6] E02F *3/48*
U.S. Cl. 37—394 **20 Claims**

1. A dragline comprising
a main housing having a generally horizontal, upwardly facing surface,
a bucket hoist mechanism mounted on said housing,
a bucket drag mechanism mounted on said main housing,
a walking mechanism for moving said main housing over the ground, said walking mechanism including
a motor mounted on said main housing,
a planetary transmission which is mounted on said main housing and which is driven by said motor,
a transmission output shaft driven by said transmission,
a walk leg housing connected to said output shaft such that rotation of said output shaft causes walking movement of said walk leg housing, and
a shoe fixed to said walk leg housing for engaging the ground during walking movement of said walk leg housing,
a boom extending from said main housing,
a bucket,
a hoist rope extending between said bucket and said bucket hoist mechanism and over said sheave for causing vertical movement of said bucket,
a drag rope extending between said bucket and said bucket drag mechanism for causing horizontal movement of said bucket,
a pedestal fixed to said main housing floor, said pedestal including a leg extending upwardly, said leg having therein a circular bore, and
a pilot member including an annular projection housed in said bore, said pilot member being fixed to said transmission.

5,603,175
GREETING TREE WITH GREETER
Margaret A. B. Brenner, 1917 Rookwood Rd., Silver Spring, Md. 20910
Filed Feb. 17, 1995, Ser. No. 390,027
Int. Cl.[6] G09F *1/10*
U.S. Cl. 40—124.4 **5 Claims**



1. A greeting card support structure with greeting disk assembly, comprising:
(a) a first tree shaped flat piece of the card support structure and a second tree shaped flat piece of the card support structure, said first tree shaped flat piece and said second tree shaped flat piece being positionable with respect to one another to form a three-dimensional card holder, said first tree shaped flat piece and said second tree shaped flat piece comprising:
(i) a first slot in a top half of the first tree shaped flat piece, and a second slot in a bottom half of said second tree shaped flat piece;

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(ii) a double raised bead running from an end of said first slot and said second slot to an end of each of said tree shaped flat pieces, said beads forming a groove in which said first tree shaped flat piece and said second tree shaped flat piece fit together;

(iii) a plurality of cuts perpendicular to two sides of said first tree shaped flat piece and said second tree shaped flat piece, said plurality of said cuts being equidistant from the bottoms of said first tree shaped flat piece and said second tree shaped flat piece, such that the cuts are parallel to each other when said pieces are assembled and longer and wider at the bottom of said first and said second piece and shorter and narrower at the top of said first tree shaped flat piece and said second tree shaped flat piece;

(iv) a vertical cut at the top of the second tree shaped flat piece;

(v) an additional raised bead around the edge of said first tree shaped flat piece and said second tree shaped flat piece, including around each said cut; and

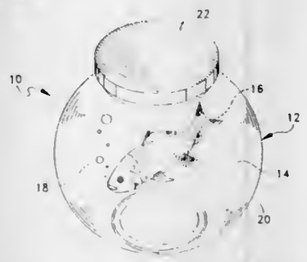
(b) a flat disk with a t-shape cut in an edge thereof, mounted onto the top of the card support structure, such that the top of the t-shaped cut fits around the bead of the first tree shaped piece with the stem of the t-shaped cut fitting onto and around the flat part of said first tree shaped piece, placement of the disk on said structure being accomplished prior to sliding the first tree shaped flat piece and the second tree shaped flat piece of the structure together, wherein two said disks are capable of being placed n the structure, one on either side of the first slot.

5,603,176

SIMULATED SUSPENDED ANIMATION BIOSPHERE

Fred D. Eddins, Mapleville, and Linwood E. Doane, Jr., Cumberland, both of R.I., assignors to Hasbro, Inc., Pawtucket, R.I.

Filed Feb. 27, 1995, Ser. No. 395,226
Int. Cl.[6] G09F *19/00*
U.S. Cl. 40—409 **7 Claims**



1. A simulated confined suspended animation biosphere assembly comprising:

an outer housing defining a confined interior area therein which is suitable for containing a liquid and including a transparent sidewall portion for viewing said interior area;

a transparent liquid gel in said interior area for simulating an environmental medium therein said gel comprising a nontoxic inorganic clay colloidal dispersion in water; and

at least one suspendable artificial action component suspended in said gel so that said action component is movable therein, said suspendable action component being adapted to simulate an actual action element which is capable of voluntary, controlled, independent, action movement and which is movably suspendable in a natural environmental medium;

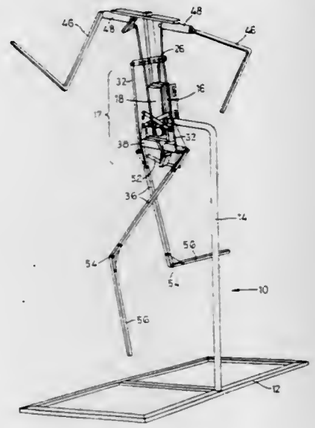
said gel and said suspendable component being adapted to permit said gel to be safely handled and to permit said suspendable component to be safely movably suspended in a stationary disposition in said gel without floating upwardly or gravitating downwardly therein.

5,603,177

ANIMATED DISPLAY

Darren G. Saunders, Ravenswood Park, Bonvilston, Cardiff, United Kingdom

PCT No. PCT/GB93/01468, § 371 Date Jan. 17, 1995, § 102(e) Date Jan. 17, 1995, PCT Pub. No. WO94/01188, PCT Pub. Date Jan. 20, 1994
PCT Filed Jul. 13, 1993, Ser. No. 374,628
Claims priority, application United Kingdom, Jul. 14, 1992, 9214927; Nov. 28, 1992, 9224982
Int. Cl.[6] G09F *19/08*
U.S. Cl. 40—418 **16 Claims**



16. An animated display, comprising:

a body frame means;

left and right arm members pivotally mounted in an upper end region of said body frame means;

left and right leg members pivotally mounted in a lower end region of said body frame means for respective movement about a common generally pivotal axis;

drive means disposed generally within said body frame means and comprising a rotary drive means connected to a rocking drive member pivotally connected to said frame means;

left arm link means coupling said left arm member to said rocking member;

right arm link means coupling said right arm member to said rocking member;

left leg link means coupling said left leg member to said rocking member;

right leg link means coupling said right leg member to said rocking member,

whereby in use said left and right arm members and said left and right leg members are moved reciprocally in synchronism on operation of said drive means.

5,603,178

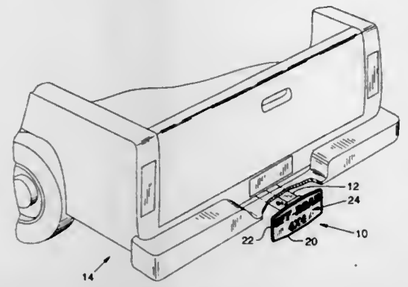
ORNAMENTAL COVER FOR TRAILER HITCH SOCKET

Arthur M. Morrison, Puyallup, Wash., assignor to Motorsport Accessories, Inc., Tacoma, Wash.

Filed Dec. 27, 1994, Ser. No. 365,027
Int. Cl.[6] B60D *7/00*
U.S. Cl. 40—591 **15 Claims**

1. An ornamental cover for use with a hitch socket of a vehicle, wherein the hitch socket includes an opening configured to receive a tongue therein and a wall with a hole therethrough, the ornamental cover comprising:

a decorative body configured for affixation to the hitch socket, wherein the decorative body includes:



a plate with a first surface and an insert connected to the plate and fittable into the opening of the hitch socket so that the plate's first surface faces away from the hitch socket when the insert is fitted into the opening of the hitch socket, and

an elongate ear extending from the insert and being insertable within the hitch socket, the ear having a bore therethrough configured to receive an external, removable fastener to affix the ear within the hitch socket and against the wall when the insert is fitted into the hitch socket, and

an internally threaded nutsert fitted within the bore, wherein the fastener may be threaded through the nutsert.

5,603,179

SAFETY TRIGGER

Heiko B. Adams, 111 W. Main St., apt. 2, Morehead, Ky. 40351

Filed Oct. 11, 1995, Ser. No. 540,779
Int. Cl.[6] F41A *17/26*
U.S. Cl. 42—70.08 **5 Claims**



1. A safety trigger device for a hand-held firearm, said firearm having a hammer, a firing pin, and a pistol grip having a front surface, a rear surface, and two side surfaces, said surfaces defining a cavity within the pistol grip, said pistol grip further having an outer access door for accessing the cavity within said pistol grip, said device comprising:

(a) a sensor trigger having a front surface and two side surfaces, and a rear surface, said sensor trigger having a fingerprint recognition sensor on the front surface thereof;

(b) a scanner optically connected to said front surface of said sensor trigger, and activated by pressure on said sensor trigger;

(c) an internal safety mechanism mechanically connected to the scanner and engagingly coupled to the hammer of said firearm;

(d) a central processing unit within said cavity within said pistol grip electrically connected to said scanner, said central processing unit holding a fingerprint recognition program;

(e) a program card with fingerprint information contained thereon,

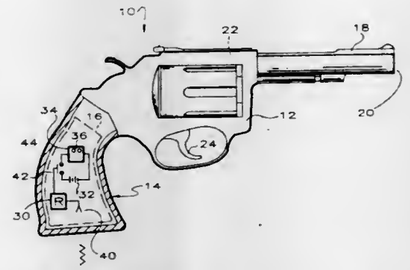
(f) a program port electrically connected to said central processing unit for the reception of said program card.

5,603,180

HAND GUN WITH REMOTELY CONTROLLED SAFETY SYSTEM

Wade L. Houze, 2327 Timberleaf, Ingleside, Tex. 78362

Filed Sep. 11, 1995, Ser. No. 526,439
Int. Cl.[6] F41A *17/00*
U.S. Cl. 42—70.11 **11 Claims**



1. A hand gun comprising

a handle, a barrel having a muzzle and a breech, means for delivering bullets to the breech and a trigger;

an electrode exposed through the handle;

a high voltage source inside the hand gun;

a receiver, inside the hand gun, for receiving a signal from a transmitter and providing an output; and

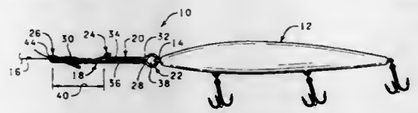
means for connecting the high voltage source in circuit with the electrode in response to the output from the receiver.

5,603,181

DEVICE FOR CONNECTED A FISHING LINE TO FISHING ACCESSORIES

Qaiyim Abdul-Raheem, Newalla, Okla., assignor to H.A.L.A.Q., Inc., Newalla, Okla.

Continuation-in-part of Ser. No. 229,259, Apr. 18, 1994, abandoned. This application May 10, 1995, Ser. No. 438,462
Int. Cl.[6] A01K *91/03;91/04*
U.S. Cl. 43—44.92 **9 Claims**



1. A device for connecting a line to a fishing accessory without requiring formation of a knot in the line, the device comprising:

a first shank having a first end and a second end;

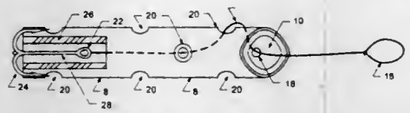
a second shank having a first end and a second end;

connecting means for connecting the first end of the first shank to the first end of the second shank so that the second shank is disposed at an angular relationship to the first shank whereby the second shank is biased away from the first shank when the second shank is drawn toward a parallel position with the first shank;

a line engaging hook formed on the second end of the second shank so as to extend in a direction away from the first shank; and

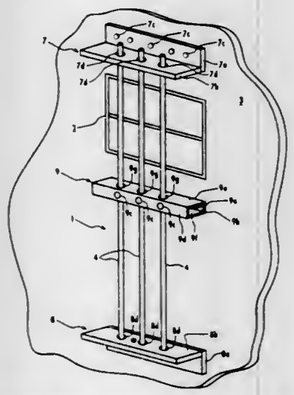
a line retaining loop formed on the second end of the first shank so as to be disposed a distance from the line engaging hook on the second shank.

5,603,182
DIP BAIT WORM
Richard Wilson, 610 Division, Dixon, Ill. 61021
Filed Mar. 20, 1995, Ser. No. 406,494
Int. Cl.[6] A01K *85/01;97/02*
U.S. Cl. 43—44.99 **6 Claims**



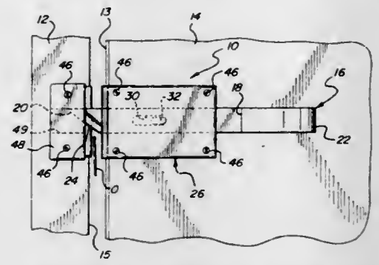
1. An easy loading dip bait worm lure comprising;
a cylindrical, constant diameter, flexible linear tube defining a main body and a scoop, said main body having a plurality of holes in a wall thereof sized for dispensing bait, said tube having an straight cut angled forward end forming said scoop, said scoop having a leader line hole in a wall thereof sized for receiving a leader line;
a leader line having a connecting loop at one end thereof, said leader line threaded through said scoop from inside said scoop to outside said tube through said leader line hole, said leader line threaded back inside said tube through one of said plurality of holes in said main body and said leader line threaded out an open back end of said tube opposite said scoop, said leader line attached to a hook.

5,603,183
WINDOW SECURITY DEVICE
Thomas Giovinazzi, 1131 Hancebridge Rd., Millville, N.J. 08332
Filed Mar. 26, 1996, Ser. No. 621,639
Int. Cl.[6] E06B *3/68;9/02*
U.S. Cl. 49—56 **6 Claims**



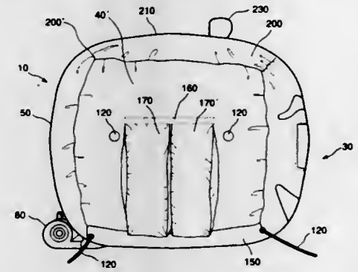
1. A window security device comprising, a plurality of spaced, parallel, vertically extending bars, a pair of spaced, parallel, transversely extending plate members integrally connected to the bars for holding said bars in said spaced, parallel, vertically extending relationship, a wall, a window mounted in said wall, a first frame member, fastening means securing said first frame member to said wall above said window, a second frame member, fastening means securing said second frame member to said wall below said window, apertures provided in said first and second frame members, a upper end portion of the bars being slidably mounted in the apertures in said first frame member, a lower end portion of said bars being slidably mounted in the apertures in the second frame member, and releasable fastening means connected between one of said transversely extending plate members and the second frame member for holding the bars in an operative position across said window and when released allowing said bars to slide downwardly through said frame members to an inoperative position away from said window, said bars extending over said fastening means for said first and second frame member when the bars are in the operative position, to thereby prevent access to said fastening means, the bars and associated transverse plate members providing a ladder when the bars are in the inoperative position, to thereby facilitate an exit through the window in case of an emergency.

5,603,184
SLIDING DOOR LATCH HAVING SANITARY HOOK
Frank J. Campbell, St. Clair Shores, Mich., and Sheila R. Campbell, 22843 Sunnyside, St. Clair Shores, Mich. 48084, assignors to Sheila R. Campbell, St. Clair Shores, Mich.
Continuation-in-part of Ser. No. 261,836, Jun. 17, 1994, abandoned. This application Jul. 17, 1995, Ser. No. 503,103
Int. Cl.[6] E05B *65/06*
U.S. Cl. 49—394 **5 Claims**



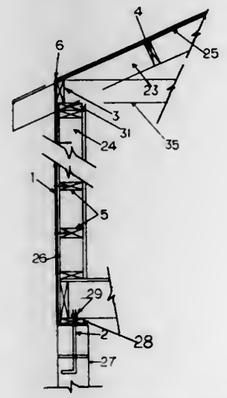
1. A partition door and a sanitary door opener assembly (**10**) for opening said partition door comprising:
a door frame (**12**) defining a door space for receiving said partition door;
said partition door (**14**) having an inner edge hinged to said frame (**12**) and an outer free swinging edge (**13**) spaced across a gap (**15**) from said frame (**12**), said partition door (**14**) further including a front face (**34**) and a back face (**36**);
a latch keeper (**48**) disposed in said frame (**12**) adjacent said gap (**15**);
a latch member (**16**) having an engagement tip (**20**) at one end and a U-shaped hook (**18**) at the other end presenting a concave pocket facing said outer swinging edge (**13**) of said partition door (**14**), said U-shaped hook (**18**) having an inner leg extending to said engagement tip (**20**) and an outer leg spaced from said inner leg to present an open pocket facing toward said engagement tip (**20**) with the outer leg being sufficiently co-extensive with a portion of the inner leg for a human forearm to exert a door opening force against the inside of said outer leg of Said U-shaped hook (**18**) to swing the partition door (**14**) open;
said engagement tip (**20**) of said latch member (**16**) including a ramp surface (**24**) extending from said engagement tip (**20**) toward said hook (**18**);
a surface mounting support bracket (**26**) for slidably retaining said latch member (**16**) on said back face (**36**) of said partition door (**14**) for allowing sliding movement of said latch member (**16**) between an unlatched position and a latched position in which said sliding movement of said latch member (**16**) is limited in said latched position to limit the extension of said ramp (**24**) from said support bracket (**16**) so that said engagement tip (**20**) may be moved to said latched position to overlap said latch keeper (**48**) supported on the door frame (**12**) with said ramp surface extending substantially across said gap(**15**) so that a force may be applied to said ramp surface by an object (O) inserted within said gap (**15**) in a direction along the length of the gap (**15**) to move the latch member (**16**) toward the unlatched position.

5,603,185
INFLATABLE ENCLOSURE
John K. Murphy, 27 Gowan Lane, Aurora, Ontario, Canada
Continuation-in-part of Ser. No. 220,511, Mar. 31, 1994, Pat. No. 5,471,797. This application Sep. 14, 1995, Ser. No. 528,533
Int. Cl.[6] E04B *1/34*
U.S. Cl. 52—2.17 **27 Claims**



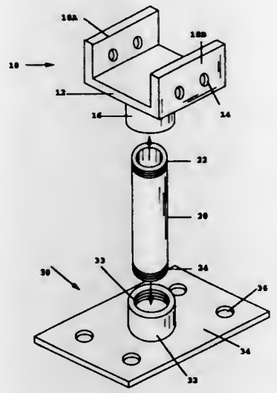
1. An inflatable enclosure for amusement purposes and promoting physical activity comprising:
inflatable means forming a chamber when inflated,
blower means supplying air at a predetermined rate and at a predetermined pressure to inflate said inflatable means, to form a chamber,
amusement floating means located in said chamber, such that when said inflatable means is inflated by said blower means, said air supplied at a predetermined rate causes said floating means to float around in said chamber, and air actuated entrance/exit means located at a predetermined position of said chamber.

5,603,186
ROOF STABILIZATION SYSTEM
Saverio Zaffino, Box 5603 R.D. #5, Moscow, Pa. 18444
Continuation of Ser. No. 89,451, Sep. 10, 1993, abandoned. This application May 30, 1995, Ser. No. 453,493
Int. Cl.[6] E04B *7/00*
U.S. Cl. 52—23 **10 Claims**



1. A structure having a roof stabilization system comprising:
a foundation;
a wall supported by said foundation;
a roof supported by said wall;
a plurality of anchor bolts embedded in and extending from said foundation, said anchor bolts being positioned in pairs, one of each pair being positioned on each side of the structure; and
a plurality of bands extending between said pairs of anchor bolts over said roof of the structure, the bands being attached to said anchor bolts between said foundation and said wall.

5,603,187
WATERTIGHT SYSTEM FOR MOUNTING EQUIPMENT ON ROOF
William R. Merrin, 277 N. Creek Dr., San Jose, Calif. 95139, and Michael R. Steele, 974 Nevada Ave., San Jose, Calif. 95125
Filed Jul. 5, 1995, Ser. No. 498,152
Int. Cl.[6] F04D *29/08*
U.S. Cl. 52—58 **4 Claims**



1. A watertight mounting system for mounting objects above a roof-deck, said watertight mounting system comprising:
a) a deck mount having a flat plate for fastening said deck mount to the roof deck, and a coupling joint with an insertion opening pointing away from the roof deck;
b) an elongate joining member having a top end and a bottom end, said bottom end being fitted into said insertion opening, thereby orienting said elongate joining member away from the roof deck;
c) a top U-channel for grasping an object framework, said object framework upholding the object above said roof deck, said top U-channel having a coupling member for attaching said top U-channel on said top end of said elongate joining member;
d) a bottom U-channel, said bottom U-channel and said top U-channel being joined by their bases with an elevator bolt; and
e) a flashing for tightly enveloping the lower portion of said elongate joining member to produce a watertight seal around said elongate joining member, said flashing extending downward to cover said deck mount and being fastened to said roof deck, thereby providing a watertight seal to said roof deck.

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5,603,188

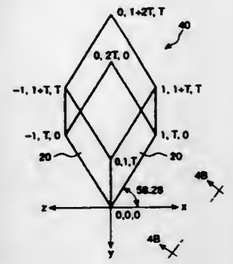
ARCHITECTURAL BODY HAVING A QUASICRYSTAL STRUCTURE

Anthony S. Robbin, 423 Broome St., New York, N.Y. 10013

Continuation of Ser. No. 877,972, May 4, 1992, abandoned, which is a continuation of Ser. No. 429,933, Oct. 31, 1989, abandoned. This application Jul. 8, 1993, Ser. No. 95,371

Int. Cl.[6] E04B 7/08

U.S. Cl. 52—81.1 **15 Claims**



1. An architectural body having a structure with an outer surface in the form of one of a dome, space frame, vault and sphere supported above an underlying surface with an intervening space defined between the body and the underlying surface:

i) said body having the properties a) of icosahedral symmetry, b) of non-periodicity c) of a load imposed on part of the structure of the body being diffused in all directions throughout the structure of the body as opposed to being translated directly through the structure of the body, d) of passing light throughout the structure of the body, e) of casting shadows on the underlying surface when light is passed through the structure of the body and said intervening space, f) of flexibility, and g) of having several geometrical shapes in the same place and the same time as revealed by rotation;

ii) said body being composed solely of a set of two groups of six-sided three dimensional cells having six sides and vertices with all of the sides of all of the cells being geometrically in the form of a single rhombus having opposed corner angles of 63.44 degrees and 116.56 degrees;

iii) the cells of the two groups differing only as to their dihedral angles with the cells of one group having dihedral angles of 36 degrees and 144 degrees and the cells of the other group having dihedral angles of 72 degrees and 108 degrees;

iv) said set of two groups of six-sided three dimensional cells being physically joined together selectively in a spatial arrangement to form a non-triangulated internal reaction structure at least one cell deep in a manner to achieve the above enumerated properties a) through g) of the body;

v) said body having a spatial arrangement of the cells such that the vertices of the cells register with some of the vertices of all the vertices that would be generated by an algorithm implementing the deBruijn dual method within a space including the architectural body;

vi) and the spatial arrangement of the cells of the body being such that all of the cells are located a distance greater than a predetermined minimum distance from a preselected spatial origin.

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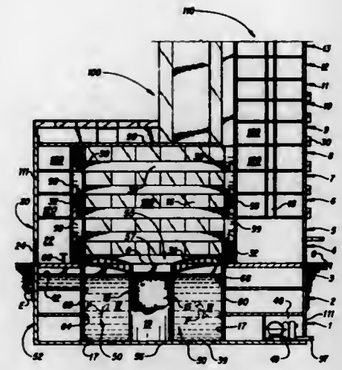
COMBINED DWELLING, MARINE HABITAT, AND EDUCATIONAL BUILDING COMPLEX

Jacques S. Levy, Avenida Galaverry 2650, San Isidro, Lima 27, Peru

Filed Feb. 1, 1996, Ser. No. 595,389

Int. Cl.[6] E02D 27/00; B63B 35/00

U.S. Cl. 52—169.1 **2 Claims**



1. An on-shore educational building complex for the co-habitation of humans and marine life and exhibition of scientific and cultural information, comprising:

a first division for residential dwelling, further comprising

a housing assembly including a plurality of vertically or horizontally stacked levels having an inside wall and an outside wall,

each said level provided with a plurality of adjacently connected individual units at least some of which comprise independent living quarters,

one or more said levels defining lowermost levels and disposed within an excavation below ground level,

one or more other ones of said levels defining uppermost levels disposed above ground level,

a plurality of walkways exteriorly disposed of said housing assembly inside walls,

doors in said housing assembly walls providing communication between said units and said walkways;

access means for movement of humans connecting to all said walkways above and below ground level and accessible from ground level;

at least one passage disposed between adjacent ones of said units and extending between said access means and said inside walls;

a second division for display of informational exhibits, further comprising

at least one level of a plurality of display halls, said level having an inside wall and an outside wall,

each of said plurality of display halls confined within said inside wall and said outside wall and adjacently connected by a passageway to at least one other of said plurality of halls,

one or more said at least one level defining a lowermost level disposed within an excavation below ground level,

one or more other ones of said at least one level each defining an uppermost level disposed above ground level,

a first accessway disposed in said outside wall for use by public visitors,

a partition wall, separating said first division from said second division;

a second accessway disposed in said partition wall for use by occupants of said first division, said second accessway being controlled by a control means for exclusive entry and exit by occupants of said first division and connecting said second division to at least one of said access means of said first division;

access means for movement of humans connecting to all said second division levels above and below ground level and accessible from ground level; and,

a water containment structure juxtaposed with said first division and said second division, wherein

said water containment structure is juxtaposed with said housing assembly inside wall laterally adjacent at least one of said levels disposed below ground level and further juxtaposed with said second division inside wall laterally adjacent at least one of said display halls disposed below ground level;

windows in said housing assembly inside wall adapted to allow occupants within said units in at least one of said levels below ground level to view at their level into water within said containment, and

said access means permitting occupants of the housing assembly to have direct entry into water within said containment;

whereby a building complex having a substantially residential component and an exhibition component intended for public display of regional or local scientific and cultural information is provided, both being juxtaposed with a single water containment structure.

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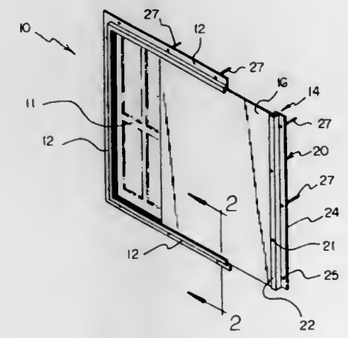
STORM PANEL AND ATTACHMENT APPARATUS

Elizabeth A. Sanford, 1009 Talbury Ct., Brittany Woods, Wilmington, N.C. 28405

Filed Jan. 26, 1995, Ser. No. 378,581

Int. Cl.[6] E06B 9/02

U.S. Cl. 52—202 **3 Claims**



1. A storm panel and attachment apparatus for protecting an exterior window in a structure, comprising:

at least two frame members attached to the structure peripheral to the window, wherein said frame members include U-shaped channels adapted to receive edges of said panel member when said panel member is slid onto said frame members, wherein said frame members include flange portions which include apertures adapted for receiving fasteners for attaching said frame members to the structure, and

a panel assembly which includes a panel member and a one-piece panel-mounted connector assembly, connected to said panel member, for connecting said panel assembly to the structure, wherein said one-piece panel-mounted connector assembly includes a panel-attached frame member which includes a first frame portion connected to said panel member and a second frame portion adapted for connection to the structure, wherein said second frame portion of said panel-attached frame member includes apertures adapted for receiving fasteners for attaching said panel-attached frame member to the structure whereby said frame members and said panel-mounted connector assembly support said storm panel about the periphery of the window when the panel is slid onto said frame members.

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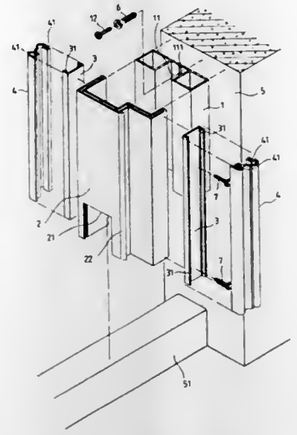
PLASTIC DOOR FRAME AND METHOD OF MOUNTING THE SAME

Ming-Hsin Wu, 20, Lane 92, Shing Ell Street, Tao Yuan City, Tao Yuan County, Taiwan

Filed Jul. 18, 1995, Ser. No. 503,495

Int. Cl.[6] E06B 1/04

U.S. Cl. 52—204.1 **4 Claims**



1. A plastic door frame assembly comprising:

a) a plurality of packing rails, each packing rail being of a hollow rail configuration for attachment onto an inner wall of a door opening;

b) a plurality of outer rails, each outer rail being of a hollow rail configuration with a stepped outer surface and includes a pair of lateral side walls, a baffle strip on the outer surface, an internal dimension substantially equivalent to the external dimension of the packing rail for fitting onto the packing rail and permitting adjusting the position of the outer rail with respect to the packing rail to create a clearance between each lateral side of the outer rail and the inner wall of the door opening, and each of two outer rails including an opening for fitting onto a threshold;

c) a plurality of elongate link rails, each link rail having a U-shaped transverse cross-section defined by a base wall for attachment to a lateral side wall of the outer rail and abut the inner wall to conceal the clearance formed between the lateral side wall of the outer rail and inner wall of the door opening, and a pair of side walls, each side wall terminating in a hook strip; and

d) a plurality of elongate seal strips, each seal strip including a pair of lateral sides, each lateral side having a retaining groove for engaging a hook strip of a link rail to secure the seal strip to and conceal the link rail.

5,603,192

OPERABLE WALL PANEL MOUNTING APPARATUS

Wesley B. Dickson, Port Townsend, Wash., assignor to Advanced Equipment Corporation, Fullerton, Calif.

Filed Apr. 3, 1995, Ser. No. 415,647

Int. Cl.[6] E04H 1/00

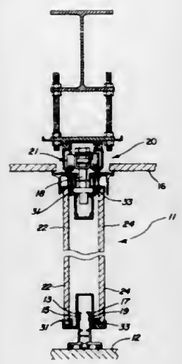
U.S. Cl. 52—238.1 **14 Claims**

1. Operable wall apparatus comprising:

first and second wall panels;

first and second clamp means for mounting adjacent a respective edge of an outer surface of said first and second wall panels;

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first and second flexible seal means for mounting adjacent a respective inner surface of said first and second wall panels; and

bracket means for fixing said panels in position with respect to one another to form an operable wall and for holding each of said first and second clamp means in clamping relation with its respective outer surface edges of the wall panels and for holding each of said first and second seal means in sealing relation with respective inner surfaces of the wall panels surface.

5,603,193

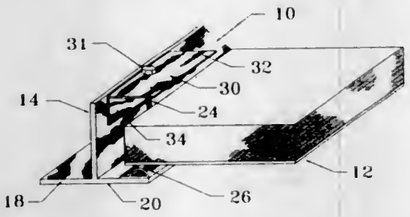
SEALING SYSTEM FOR MULTI-PANEL CEILING

Richard J. Koertge, and Eric D. Koertge, both of 60 Meander Pk., Chatham, Ill. 62629

Filed Oct. 11, 1995, Ser. No. 540,986

Int. Cl.[6] E04B *5/52*

U.S. Cl. 52—506.07 **11 Claims**



1. A multi-panel ceiling system having a support grid comprised of upstanding T-bars having oppositely disposed laterally extending arms at the bottom of an upstanding leg, panels supported at a peripheral edge upon said legs and sealing means for sealing said edges upon said arms, said sealing means comprising operating means for locking and unlocking said sealing means, said operating means comprising an elongated operating rod extending through an arm of said T-bar and having a lower end accessible from underneath the T-bar and an upper portion engageable with a locking member, said locking member being engageable with an edge portion of a panel to provide a downward thrust against a peripheral edge of said panel to seal said edge against said arm and said locking member being disengageable by operation of said operating rod to disengage said locking member from said panel in order that the panel may be removed from the T-bar.

5,603,194

APPARATUS FOR RETROFITTING AN EXISTING DOOR TO PROVIDE A FIRE RATING TO THE UNRATED EXISTING DOOR

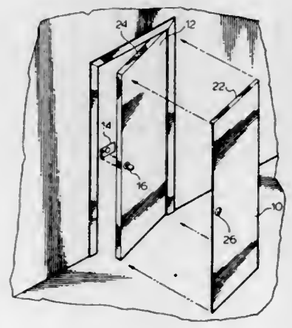
Semyon Fridlyand, Willowdale, and George Perlin, North York, both of Canada, assignors to Eveready Exact Closures Inc., Concord, Canada

Filed Sep. 25, 1995, Ser. No. 533,063

Claims priority, application Canada, Dec. 7, 1994, 2137499

Int. Cl.[6] E04B *1/62;* **E06B** *3/30*

U.S. Cl. 52—515 **14 Claims**



8. A method for increasing the fire rating of an existing door having opposing surfaces, the method comprising attaching to a first surface of an existing door, a door cover steel sheet having a non-combustible insulating coating on an interior surface to cover the entire first surface of the door and attaching to a second surface of the door, a lock set reinforcement bracket having a non-combustible insulating coating on an interior surface to surround at least a lock set opening in the second surface of the door, the modified door having at least a twenty minute fire rating.

5,603,195

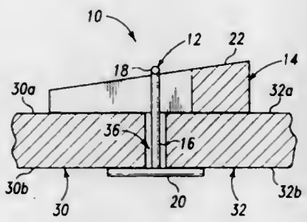
METHOD AND APPARATUS FOR LAYING TILE

Edward Cosentino, 527 Third Ave., No. 287, New York, N.Y. 10016

Filed Apr. 26, 1996, Ser. No. 638,354

Int. Cl.[6] E04F *21/18;21/20*

U.S. Cl. 52—149.11 **11 Claims**



1. A tile mounting system for aligning the front faces of tiles being mounted in a fixed position relative to a supporting body, the system comprising:

a tile engaging member including three elongated mutually orthogonal portions; and

an aligning member, the aligning member engaging the tile engaging member and the front faces of the tiles.

5,603,196

SHIELD WALL STRUCTURE OF A MAGNETICALLY-SHIELDED ROOM AND PROCESS FOR PRODUCING A MAGNETICALLY-SHIELDED ROOM

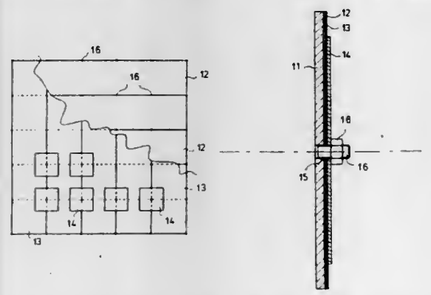
Lasse Sohlström, Eura, Finland, assignor to Euroshield Oy, Eura, Finland

Filed Dec. 26, 1995, Ser. No. 577,970

Claims priority, application Finland, Dec. 27, 1994, 946101

Int. Cl.[6] H05K *9/00*

U.S. Cl. 52—796.1 **10 Claims**



1. A shield wall structure for a magnetically-shielded room, comprising

a first aluminum layer having holes therein at a set distance from each other,

support members positioned in respective ones of said holes,

first and second μ metal sheet layers, said first and second metal sheet layers comprising a plurality of elongate sheets of μ metal, the set distance between said holes in said first aluminum layer being substantially equal to a width of said metal sheets, said metal sheets in said first metal sheet layer being supported by said support members adjacent said first aluminum layer, said metal sheets in said second metal sheet layer being supported by said support members adjacent said first metal sheet layer and such that the longitudinal direction of said metal sheets in said second metal sheet layer is different than the longitudinal direction of said metal sheets in said first metal sheet layer,

aluminum base sheets supported by said support members adjacent said second metal sheet layer, and

tightening means cooperating with said support members for pressing said aluminum base sheets against said second metal sheet layer to compress said first and second metal sheet layers between said first aluminum layer and said aluminum base sheets.

5,603,197

BASKET LINING MATERIAL HAVING AN ADHESIVE OR COHESIVE THEREON AND METHOD

Donald E. Weder, Highland, Ill., assignor to Southpac Trust International, Inc., Okla. City, Okla.

Continuation of Ser. No. 121,967, Sep. 14, 1993, Pat. No. 5,411,167, which is a continuation of Ser. No. 781,040, Oct. 21, 1991, abandoned, which is a continuation-in-part of Ser. No. 649,349, Jan. 31, 1991, Pat. No. 5,111,638, said Ser. No. 781,040is a continuation-in-part of Ser. No. 502,358, Mar. 29, 1990, abandoned. This application Mar. 29, 1995, Ser. No. 413,142

Int. Cl.[6] B65B *1/00;61/00*

U.S. Cl. 53—397 **28 Claims**

1. A method for lining a basket with a basket lining material and placing items in the lined basket, comprising:

providing a basket having an upper end, a lower end, and an outer surface, a basket opening being formed in the basket with a portion of the basket opening intersecting the upper end of the basket forming an inner surface having contours, the basket opening being sized and shaped for receiving items and the items being retained in the basket opening by the basket, an adhesive on the inner surface of the basket;

providing an unpreformed sheet of material having an upper surface, a lower surface and an outer periphery;

disposing the sheet of material in the basket opening without first preforming the sheet of material to conform to the inner surface of the basket, the sheet of material disposed adjacent to at least a portion of the adhesive on the inner surface of the basket;

crushing and flattening the sheet of material against the inner surface of the basket thereby forming a liner, the liner contacting and adhesively connected to the inner surface of the basket, the liner thereby substantially conforming to the shape of the inner surface of the basket, the sheet of material bonding to the adhesive on the inner surface of the basket and holding the liner in place against the inner surface of the basket;

providing items to be disposed into the lined basket; and

disposing the items in the lined basket, wherein items placed in the basket are received upon the liner, and wherein the liner remains firmly and unmovingly connected to the inner surface of the basket when items are both disposed and retained on the liner.

5,603,198

PROCESS AND APPARATUS FOR WRAPPING ARTICLES WITH STRETCHABLE FILM

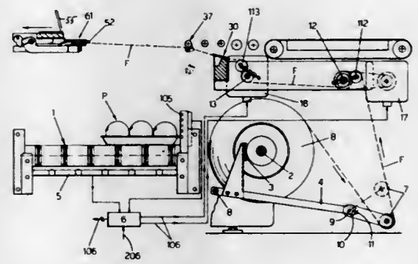
Renato Rimondi, Bazzano, and Angelo Cappi, Vignola, both of Italy, assignors to A.W.A.X. Progettazione e Ricerca S.r.l., Italy

Filed Oct. 18, 1994, Ser. No. 323,692

Claims priority, application Italy, Oct. 19, 1993, BO93A0410

Int. Cl.[6] B65B *53/00*

U.S. Cl. 53—441 **8 Claims**



1. A process for successively wrapping individual articles having different dimensions using a stretchable film comprising the steps of:

determining a largest width dimension of all of the articles to be wrapped;

measuring dimensions of a next article to be wrapped;

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adapting at a pre-stretching station a width of the film proportionally to a measured width dimension of the next article having a smaller width than said largest width dimension by pre-stretching said film in a longitudinal direction which is parallel to a length of the film, in order to decrease the width of the film in a lateral direction; and

feeding said longitudinally pre-stretched film from said pre-stretching station to a wrapping station where said film is folded onto the article, wherein the wrapping station is separately located from said pre-stretching station and the pre-stretching step precedes the feeding step and these steps are independent of each other.

5,603,199

SYSTEM FOR FEEDING AND DISTRIBUTING ARTICLES

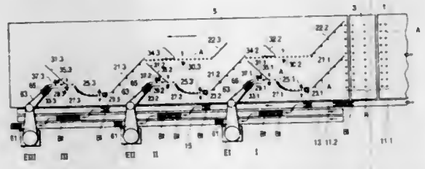
Heinz-Peter Hammacher, Bamberg, Germany, assignor to PVT Piepenbrock Verpackungstechnik GmbH, Osnabruck, Germany

Filed May 1, 1995, Ser. No. 431,762

Claims priority, application Germany, May 3, 1994, 44 15 561.1

Int. Cl.[6] B65B *35/30*

U.S. Cl. 53—443 **17 Claims**



1. A method of feeding, arranging and distributing articles on a conveyor and of inserting the articles in receptacles characterized by

feeding said articles on said conveyor,

gathering and apportioning said incoming articles into partial quantities roughly corresponding to the capacity of downstream removal and transfer steps in individual lanes located juxtaposed in the direction of conveyance,

counting and distributing said articles from each individual lane to form regular groups having the same number of articles, at different locations on said conveyor for each individual lane

halting said groups of articles from each individual lane on said continuously running conveyor at different locations,

diverting articles that are in excess of the number of articles in said groups from one lane into a neighboring lane at the position for counting and distributing said articles in the lanes,

removing said groups of articles from said conveyor,

transferring each group of articles in a regular formation into a receptacle.

5,603,200

METHOD FOR THE MANUFACTURING OF AN AIRTIGHT, RECYCLABLE AND BIODEGRADABLE PACKAGE

Ferrucchio C. Calvano, Estomba 150, C.P. 1427, Capital Federal, Argentina

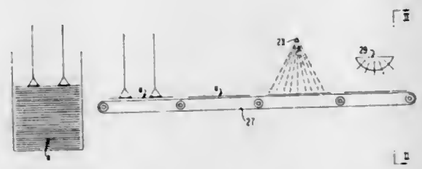
Filed Oct. 28, 1994, Ser. No. 330,702

Claims priority, application Argentina, Oct. 28, 1993, 326.421

Int. Cl.[6] B65B *43/10;55/10*

U.S. Cl. 53—452 **11 Claims**

1. A method for the manufacturing of an airtight, recyclable and biodegradable package, wherein each package is made from a sheet and has: lateral walls which are glued in order to shape a tube; bottom folding walls, stamped with folding lines which close a first end of said tube making a container for a product, that is the load of the package; as well as top walls, with their corresponding folding lines and lugs, which shape a second end of the tube, in such a way that the product loaded therein is occluded; characterized in that: a cardboard sheet which is stamped so that the folding lines form lateral walls, a top wall, and a bottom of the package as well as adhesive bands; a fast-drying reactivating substance is applied on the adhesive bands; the cardboard sheet is folded along the adhesive bands thereof, making said adhesive bands overlap in pairs until the lateral walls of the package are tube-shaped, the adhesive substance is activated in order to secure the walls in question; the first one of said ends of said tube is formed by folding the bottom walls and activating the fast drying reactivating substance at said first end in order to shape a flat base, and after filling the package with the corresponding load, the second one of said ends of said tube is formed by folding the top walls, and the adhesive substance is activated to define the airtight closure once the adhesive in the overlapping bands has been activated.



5,603,201

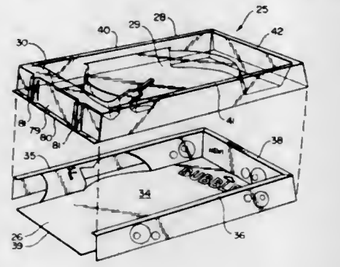
PACKAGING SYSTEM

John E. LaFata, 2129 Ocean Dr., Oxnard, Calif. 93035; Brett D. Ritter, 844 San Pedro, #1, Ventura, Calif. 93001, and Rodney L. Cameron, 124 Fillmore Ave., Oxnard, Calif. 93035

Filed Feb. 4, 1994, Ser. No. 192,180

Int. Cl.[6] B65B *47/00*

U.S. Cl. 53—453 **21 Claims**



1. The method of forming a blister package containing product(s) to be packaged for delivery to consumers, the method comprising the steps of:

a) forming a thin planar backing sheet of fibrous material having at least one (1) die-cut edge;

b) folding the backing sheet along the at least one (1) die-cut edge out of the plane of the sheet about at least one (1) score line located adjacent the at least one (1) die-cut edge of the sheet so as to form at least one projection extending upwardly out of the plane of the backing sheet;

c) forming a vacuum-formed blister pack cover from a sheet of clear plastic material with the cover having a planar region, at least one (1) downwardly facing vacuum-formed pocket or compartment suitable for reception and containment of the product(s) to be packaged, and at least one (1) vacuum-formed projection complemental in shape, number and location to the at least one (1) folded projection on the backing sheet;

d) inverting the blister pack cover and placing the inverted cover in a complementally shaped female fixture of a press with the pocket(s) or compartment(s) formed therein facing upwardly;

e) positioning the product(s) to be packaged in the upwardly facing pocket(s) or compartment(s) in the inverted blister pack cover;

f) inverting the folded backing sheet formed in steps (a) and (b) and placing the inverted backing sheet on the inverted blister pack cover with the at least one (1) folded projection formed on the backing sheet disposed in face-to-face contact with a corresponding one of the at least one (1) complementally shaped vacuum-formed projection on the vacuum-formed blister pack cover and with the planar region of the blister pack cover surrounding the pocket(s) or compartment(s) formed therein being in face-to-face contact with the planar region of the backing sheet;

g) shifting a male fixture of the press which is complemental to the inverted backing sheet into intimate pressure contact with the backing sheet; and,

h) applying heat and pressure to the regions of the backing sheet and the blister pack cover which are in face-to-face contact at discrete spaced points so as to cause discrete spaced heated spot bonds between the backing sheet and the blister pack cover in multiple planes where the backing sheet and blister pack cover are in face-to-face contact.

5,603,202

MACHINE FOR WRAPPING ARTICLES WITH A BELT-LIKE FILM OR THE LIKE

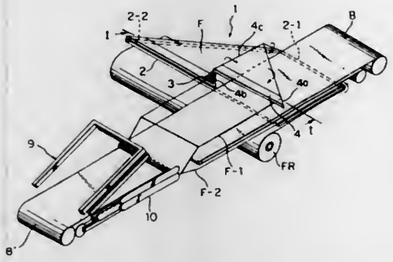
Toshiyuki Hanagata, Toyama-ken, Japan, assignor to Hanagata Corporation, Toyama-ken, Japan

Filed Mar. 10, 1995, Ser. No. 402,013

Claims priority, application Japan, May 27, 1994, 6-114831

Int. Cl.[6] B65B *9/06*

U.S. Cl. 53—550 **15 Claims**



1. A machine for wrapping an article with wrapping material, from a roll of continuous-length wrapping material, comprising:

a folding and opening unit for inverting the continuous-length wrapping material, which is drawn out horizontally from said roll, folding the drawn-out wrapping material longitudinally about its center line and, at the same time, holding the folded wrapping material open in a generally horizontal U-shape cross section;

means facing toward the inside of U-shape cross section for supplying an article to be wrapped to a position within said U-shape cross section; and

means for fusing the longitudinal edge of the U-shape cross section, and for fusing and cutting a transverse edge across the U-shape cross section of the folded wrapping material supplied from said folding and opening unit.

5,603,203

PROCESS AND APPARATUS FOR HANDLING FOOD, CHEMICAL OR PHARMACEUTICAL PRODUCTS, AND CORRESPONDING HANDLING TRAYS

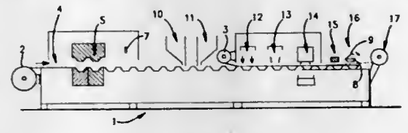
Patrick Robache, Paris, France, assignor to Mecaplastic, Bagnolet, France

Filed Nov. 7, 1994, Ser. No. 337,421

Claims priority, application France, Nov. 10, 1993, 93 13412

Int. Cl.[6] B65B *7/26;47/02;59/00*

U.S. Cl. 53—559 **4 Claims**



1. Apparatus for handling food, chemical or pharmaceutical products, comprising in combination:

means to advance a first strip of thermal plastic or thermoformable material;

means to shape by thermoforming the first strip to form both a recess and a cover connected together; said means to shape by thermoforming the first strip comprising a modular assembly of shapes corresponding respectively to a cover and a recess;

means to load said recess with food, chemical or pharmaceutical products;

means to close said recess by welding a second strip of thermoplastic or thermoweldable material in a manner to isolate said food, chemical or pharmaceutical products; and

means to cut out contours of the recess and of the cover so as to form a hinge permitting closure of the cover over the recess, wherein said second strip has, so as to isolate said food, chemical or pharmaceutical products, a width corresponding to that of the recess, without however, covering the associated cover, and the means to advance said first strip comprise horizontal chains carrying spring clamps driving the first strip stepwise discontinuously corresponding to the advance of the first strip in successive cycles of preheating, thermoshaping, closing with a diaphragm by thermowelding and cutting out.

5,603,204

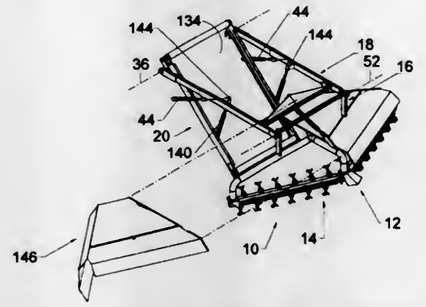
AQUATIC PLANT HARVESTER

Conrad Harvey-Rioux, 154 Dearborn Avenue, London, Ontario, Canada, and Douglas Lyke, P.O. Box 427, Wolseley, Saskatchewan, Canada

Filed Sep. 5, 1995, Ser. No. 524,131

Int. Cl.[6] A01D *44/00*

U.S. Cl. 56—9 **16 Claims**



1. A method for harvesting floating aquatic vegetation at the surface of a body of water, said method comprising:

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rending the vegetation when floating in situ on the body of water; and

removing the rent vegetation from the surface of the body of water.

5,603,205

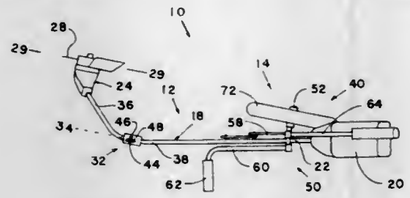
TRIMMER AND EDGER APPARATUS

Thomas E. Foster, 1800 Loop 360 South, Austin, Tex. 78746

Filed Sep. 13, 1995, Ser. No. 527,404

Int. Cl.[6] A01D *67/00*

U.S. Cl. 56—16.7 **17 Claims**



1. A trimmer apparatus comprising a trimmer device for use in trimming and edging operations, a carriage to which the trimmer device is mounted to support the trimmer device during use, and a handle for use in guiding the apparatus during use;

the trimmer device comprising an elongated support shaft, a power unit mounted at a trailing end of the shaft, a trimmer head mounted at a leading end of the shaft, and a drive connection for connecting the power unit to the trimmer head;

the trimmer head having a trimmer blade to operate in a blade plane;

the trimmer device having a swivel connection to allow the trimmer head to be swiveled between a trimming position where the blade plane is generally parallel to a support surface supporting material to be trimmed during use, and an edging position where the blade plane is generally at right angles to such a support surface during use;

the carriage comprising a frame, and a single support wheel rotatably mounted on the frame to support the frame during use;

the trimmer device being mounted to the carriage such that the trimmer apparatus will be supported proximate its center of gravity on the support wheel during use;

the handle being positioned for an operator grasping the handle for guiding the apparatus during use, to be positioned to one side of the support wheel and at least partially in line with part of an axial projection of the support wheel during normal use;

the blade plane in its edging position being substantially parallel to and generally in line with the plane of the support wheel; and

the swivel connection being provided in the support shaft to define a swivel axis about which a leading portion of the shaft can be swiveled relatively to a trailing portion of the shaft for swivelling the trimmer head between its trimming and edging positions, the swivel axis being generally parallel to both the blade plane and the plane of the support wheel.

5,603,206

ROUND BALER PICKUP SHAFT BEARING PROTECTION APPARATUS

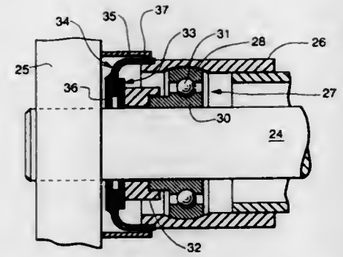
Fred M. Horchler, Jr., Lancaster, Pa., assignor to New Holland North America, Inc., New Holland, Pa.

Filed Jun. 12, 1995, Ser. No. 489,667

Int. Cl.[6] A01F *15/07*

U.S. Cl. 56—341 **4 Claims**

1. In a round baler having a frame,



a baling chamber for forming cylindrical packages of crop material mounted on said frame,

means for feeding crop material into the chamber including a tubular rotatable shaft extending transverse of said frame and concentric with a stationary shaft also extending transverse of said frame, and

journal means having a bearing assembly for mounting said tubular shaft, said bearing assembly includes a generally cylindrical stationary first race and a concentrically disposed generally cylindrical rotatable second race between which races a bearing cavity is formed for seating a series of bearings housed between said first and second races, said first race affixed to said stationary shaft, said second race being rotatable relative to said first race and affixed to said tubular shaft for rotating in concert therewith relative to said first race, the improvement comprising

an annular shaped cover enclosing said cavity and having a first edge adjacent said stationary shaft,

holding means for preventing said bearing assembly from shifting axially, said holding means comprising a locking collar affixed to said stationary shaft between said inner race and said first edge of said annular cover,

said annular cover having an integral cylindrical portion continuous with said rotatable tubular shaft, and

a generally ring shaped sleeve extending adjacent to the outer surface of said integral cylindrical portion to maintain integrity of the bearing cavity against unwanted debris by being spaced a sufficient distance to permit relative friction free motion therebetween.

5,603,207

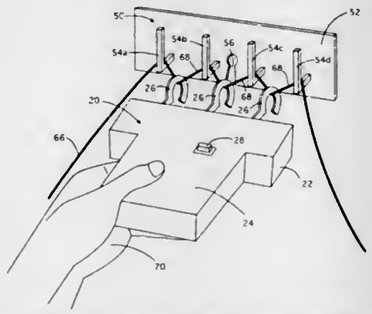
CRAFTS ROPE MAKER

Richard B. Hartman, 7516 201st Ave. SE., Issaquah, Wash. 98027

Filed Feb. 6, 1996, Ser. No. 597,142

Int. Cl.[6] D01H *9/02*; **D07B** *3/02*

U.S. Cl. 57—59 **9 Claims**



1. In an apparatus for making decorative crafts ropes, a hand-supported or hand-held strand twisting unit comprising:

(a) a frame or housing, said frame or housing including a handle or supporting means for supporting and stabilizing said strand twisting unit with one hand;

(b) a plurality of twisting hooks rotatably mounted on or within said frame, said twisting hooks providing capturing means for simultaneously capturing or snagging a strand at a plurality of predetermined strand segments or points along said strand with the same hand;

(c) rotating means for imparting a rotary motion upon said twisting hooks to twist the individual strand segments, said rotating means including controlling means for controlling said rotary motion with one hand while said hand-held strand twisting unit is held by the same hand.

5,603,208

COMPOSITE RUBBER BODIES USING STEEL CORDS FOR THE REINFORCEMENT OF RUBBER ARTICLES

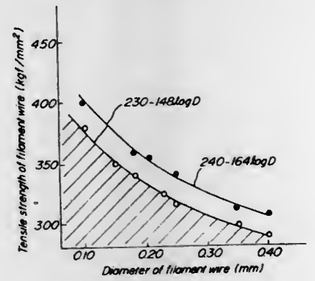
Masuhiro Fujita; Hironori Sakaguchi, and Akihiro Kaneda, all of Kuroiso, Japan, assignors to Bridgestone Bekaert Steel Cord Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 163,697, Dec. 9, 1993, abandoned. This application Feb. 15, 1995, Ser. No. 388,846

Claims priority, application Japan, Dec. 10, 1992, 4-330708

Int. Cl.[6] D02G *3/02*; *3/36*

U.S. Cl. 57—200 **7 Claims**



1. A composite rubber body formed by embedding steel cords in rubber and vulcanization-building them, each of the cords comprises plural twisted steel filament wires obtained by dry-drawing a wire rod of high carbon steel comprising C: 0.78 wt %, Si: 0.10–0.30 wt %, Mn: 0.30–0.55 wt % and the remainder being iron and inevitable impurities, subjecting the drawn filament to a patenting treatment and wet-drawing to a given diameter, in which all of the filament wires satisfy relationships of the following equations (1) and (2):

$$T_1 \geq 230\text{-}148\log D \quad (1)$$

$$T_2 \geq 235\text{-}148\log D \quad (2)$$

wherein D is a diameter (mm) of the filament wire and T_1 is a tensile strength (kgf/mm^2) before the vulcanization and T_2 is a tensile strength (kgf/mm^2) after the vulcanization, and have a retention of loop strength of not less than 55%.

5,603,209

BEARING ARRANGEMENT FOR AN OPEN-END SPINNING ROTOR

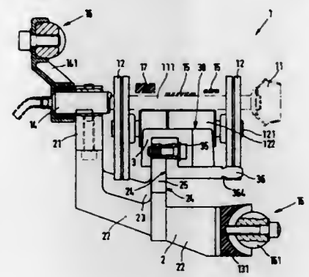
Manfred Knabel, Ingolstadt, Germany, assignor to Rieter Ingolstadt Spinnereimaschinenbau AG, Ingolstadt, Germany

Filed May 25, 1995, Ser. No. 450,547

Claims priority, application Germany, Sep. 17, 1994, 44 33 240.8

Int. Cl.[6] D01H *4/00*

U.S. Cl. 57—406 **16 Claims**



1. A bearing arrangement for an open-end spinning machine having a machine frame wherein a spinning rotor with a shaft is supported in the nip of rearward and forward supporting rings which are mounted on shafts and supported by supporting ring bearings, the spinning rotor being driven by drive means in the area between the supporting rings, said bearing arrangement comprising:

a bearing block attached to bearing supports defined on a machine frame of the open-end spinning machine, said bearing block comprising spaced apart braces which extend axially relative to said supporting ring bearings, said braces defining an open space therebetween;

a seat defined in said bearing block for receipt of an axial bearing for said spinning rotor;

an intermediate support structure member removably attached to said bearing block, said intermediate support structure supporting said supporting ring bearings, said intermediate support structure disposed above said open space between said braces; and

wherein said intermediate support structure is removable from said bearing block with said supporting ring bearings while said bearing block remains attached to said machine frame through said bearing supports by lowering said intermediate support structure into said open space between said braces.

5,603,210

DEVICE TO CONVEY FIBERS TO THE FIBER COLLECTION GROOVE OF AN OPEN-END SPINNING ROTOR

Stanislav Didek, Usti Nad Orlici; Petr Blazek, Chocen, and Alois Stejskal, Usti Nad Orlici, all of Czechoslovakia, assignors to Rieter Ingolstadt Spinnereimaschinenbau AG, Ingolstadt, Germany

PCT No. PCT/DE93/00484, § 371 Date May 3, 1995, § 102(e) Date May 3, 1995, PCT Pub. No. WO93/25737, PCT Pub. Date Dec. 23, 1993

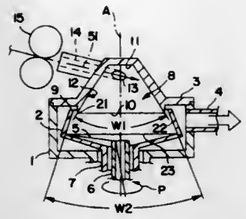
PCT Filed Jun. 5, 1993, Ser. No. 185,874

Claims priority, application Czechoslovakia, Nov. 6, 1992, 1770-92

Int. Cl.[6] D01H *4/00*

U.S. Cl. 57—408 **15 Claims**

1. A device for feeding fibers from a fiber feeding channel to a fiber collection groove of an open-end spinning rotor having an open side which is covered by a rotor cover, said device comprising a fiber guiding element disposed opposite said open side of



said rotor, said fiber guiding element comprising an inner circumferential surface defining a fiber guiding surface, said fiber guiding surface diverging towards said rotor and forming an opening angle in the direction of said rotor, said fiber guiding element further comprising a tangential opening defined in said fiber guiding surface, said opening tangential with respect to a spinning axis of said spinning rotor in a direction corresponding to a rotational direction of said spinning rotor, said fiber feeding channel in communication with said opening so that an air stream is produced and introduced tangentially into the fiber guiding element in the direction of rotation of said spinning rotor, the tangential air stream carrying fibers tangentially to said fiber guiding surface.

5,603,211

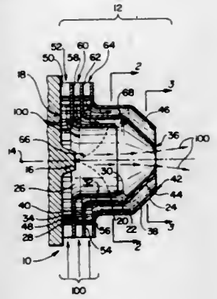
OUTER SHEAR LAYER SWIRL MIXER FOR A COMBUSTOR

Charles B. Graves, Jupiter, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 99,785, Jul. 30, 1993, abandoned. This application Aug. 31, 1994, Ser. No. 298,801

Int. Cl.[6] F02C *7/00*

U.S. Cl. 60—39.06 **18 Claims**



14. A method of combusting fuel and air in a combustor to yield minimal smoke production and high flame stability, said method comprising:

providing a first duct having a circular cross-section and defining a first passage, a second duct coaxial with said first duct and a third duct coaxial with said second duct, said second duct spaced radially outward from said first duct defining an annular second passage therebetween, and said third duct spaced radially outward from said second duct defining a third passage therebetween;

spraying fuel into the first duct while swirling a first portion of air into contact therewith at a first swirl angle of at least 50 °, thereby mixing the fuel and the first portion of air;

mixing said fuel and first portion of air with a second portion of air at a second swirl angle to produce a confluence of first and second portions, said confluence having a swirl angle of less than 60°;

combining a third portion of air having a mass of no greater than 30% of the sum of the masses of the first, second and third portions to the first and second portions, said third portion co-rotational with said confluence and having a swirl angle of approximately 70 °; and,

igniting the mixture of said fuel, first and second portions of air.

5,603,212

FUEL INJECTOR FOR A SELF-IGNITING COMBUSTION CHAMBER

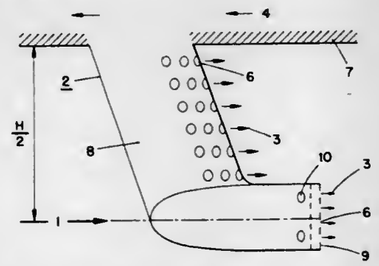
Burkhard Schulte-Werning, Basel, Switzerland, assignor to ABB Management AG, Baden, Switzerland

Filed Aug. 3, 1995, Ser. No. 510,658

Claims priority, application European Pat. Off., Sep. 21, 1994, 94114893

Int. Cl.[6] F02C *1/06*

U.S. Cl. 60—39.17 **3 Claims**



1. In a combustion chamber of a gas-turbine group which is arranged downstream of a first combustion chamber and turbine and upstream of a second turbine, the combustion chamber defining a mixing space upstream of a combustion space for self-ignition of a fuel, the combustion chamber extending between an outflow plane of the first turbine and an oncoming-flow plane of the second turbine, and

a lance-shaped fuel injector which comprises a fuel-nozzle holder extending into the mixing space transversely to a main flow direction approximately to a center axis of the mixing space, and a fuel nozzle arranged in the main flow direction in the center axis and connected to the fuel-nozzle holder,

wherein the combustion chamber operates with premixing combustion and without film cooling air, and wherein an inlet temperature of exhaust gas of the first turbine flowing into the combustion chamber is above a self-ignition temperature of a fuel delivered to the fuel injector, the invention comprising:

means in the fuel injector for simultaneously evening out a velocity profile and for lowering a temperature of the main flow in a wake region immediately downstream of the fuel injector and for reducing recirculation in the wake region such that premixing occurs prior to self-ignition of the fuel in the combustion space.

5,603,213

INJECTION SYSTEM WITH CONCENTRIC SLITS AND THE ASSOCIATED INJECTION ELEMENTS

Martin Slon, Mantes-la-Jolie; André Beaurain, Chambly, and Pierre Desclos, Vernon, all of France, assignors to Societe Europeenne de Propulsion, Suresnes, France

PCT No. PCT/FR94/00529, § 371 Date Jan. 5, 1995, § 102(e) Date Jan. 5, 1995, PCT Pub. No. WO94/27038, PCT Pub. Date Nov. 24, 1994

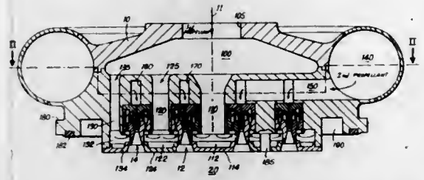
PCT Filed May 6, 1994, Ser. No. 362,531

Claims priority, application France, May 11, 1993, 93 05626

Int. Cl.[6] F02K *9/00*

U.S. Cl. 60—258 **18 Claims**

1. A parallel-sheet injector of a combustion chamber comprising an injector body having an axis, an injector plate connected to said



injector body, and at least one annular injection element for injection concentric sheets of a first propellant and a second propellant in the combustion chamber through said injector plate, said annular injection element having a top surface and a base surface and comprising a central annular injection slit which is fed with the second propellant from the top surface of said annular injection element, and two other annular injection slits surrounding said central slit and which are fed with the first propellant from the base surface of said annular injection element through an annular homogenization cavity of said annular injection element, said slits emerging into an annular confinement zone in which said first and second propellants are mixed and ejected through said injector plate into the combustion chamber.

5,603,214

EXHAUST SYSTEM FOR AN INTERNAL COMBUSTION ENGINE AND METHOD OF OPERATION THEREOF

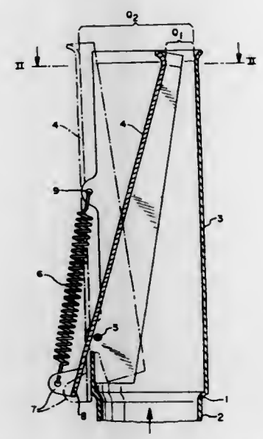
Theodor Abels, Aschaffenburg, and Siegfried Iwanowski, Haibach, both of Germany, assignors to Linde Aktiengesellschaft, Hollriegelskreuth, Germany

Continuation of Ser. No. 188,028, Jan. 28, 1994. This application May 1, 1995, Ser. No. 431,621

Claims priority, application Germany, Jan. 29, 1993, 43 02 519.6

Int. Cl.[6] F01N *7/00*; B05B *1/00*

U.S. Cl. 60—273 **18 Claims**



14. A method of operating an exhaust system having a variable discharge outlet for exhaust gases created by an internal combustion engine, said method including constantly adjusting the cross section area of said variable discharge outlet in accordance with the flow rate of the exhaust gases from the internal combustion engine to obtain a relatively high discharge velocity of exhaust gases from said variable discharge outlet independently of the operating speed of the internal combustion engine providing the exhaust gases.

5,603,215

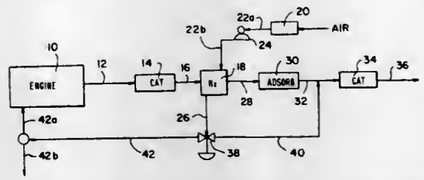
METHOD AND APPARATUS FOR TREATMENT OF EXHAUST STREAMS

Shiang Sung, New York, N.Y., and Patrick L. Burk, Freehold, N.J., assignors to Engelhard Corporation, Iselin, N.J.

Filed Mar. 23, 1995, Ser. No. 409,111

Int. Cl.[6] F01N *3/10*

U.S. Cl. 60—274 **24 Claims**



1. A method for treating an exhaust stream containing pollutants which comprise hydrocarbons, comprising the steps of:

(a) contacting the exhaust stream with a first catalyst in a first catalyst zone during a cold-start period in which the first catalyst is at a temperature at or below its light-off temperature;

(b) contacting the exhaust stream with the first catalyst in the first catalyst zone under conditions to convert at least some of the pollutants to innocuous materials at least during an operating period subsequent to the cold-start period;

(c) withdrawing a first catalyst zone effluent from the first catalyst zone;

(d) cooling the first catalyst zone effluent within a heat exchange zone by heat exchange with a cooling fluid and withdrawing the resultant cooled, first catalyst zone effluent and the resultant heated coolant fluid from the heat exchanger zone;

(e) introducing the cooled first catalyst zone effluent into a hydrocarbon adsorption zone containing an adsorbent material and therein contacting the cooled first catalyst zone effluent with the adsorbent material to adsorb hydrocarbons from the cooled effluent;

(f) retaining adsorbed hydrocarbons within the adsorption zone at least during the cold-start period;

(g) desorbing the adsorbed hydrocarbons from the adsorbent material during the operating period;

(h) discharging the exhaust stream from the adsorbent zone to provide an adsorption zone effluent which, at least during the operating period, contains desorbed hydrocarbons;

(i) passing the adsorption zone effluent to a second, oxidation catalyst zone and contacting it therein with a second oxidation catalyst under oxidizing conditions so as to catalyze at least during the operating period, the oxidation of desorbed hydrocarbons in the adsorption zone effluent and other exhaust stream hydrocarbons; and

(j) withdrawing the thus-treated exhaust stream from the second, oxidation catalyst zone.

5,603,216

BY-PASS ADSORBER SYSTEM

Donald L. Guile, Horseheads, and Thomas D. Ketcham, Big Flats, both of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Continuation-in-part of Ser. No. 284,356, Aug. 2, 1994, abandoned. This application Jan. 19, 1995, Ser. No. 375,699

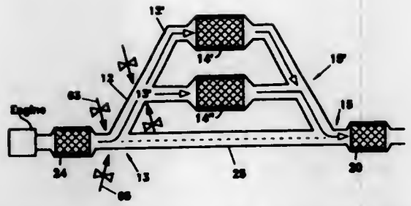
Int. Cl.[6] F01N *3/28*

U.S. Cl. 60—288 **22 Claims**

1. An engine exhaust system for a hydrocarbon-containing engine exhaust stream comprising:

a housing having disposed therein at least two molecular sieve structures connected in parallel each having a desorption temperature, the molecular sieve structures and the housing both having an inlet and an outlet end;

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a burn-off catalyst having a light-off temperature, disposed downstream from the molecular sieve structure;

an exhaust pipe connecting an engine to the burn-off catalyst, the exhaust pipe being connected to the inlet end of the housing at an upstream junction and to the outlet end of the housing at a downstream junction; and

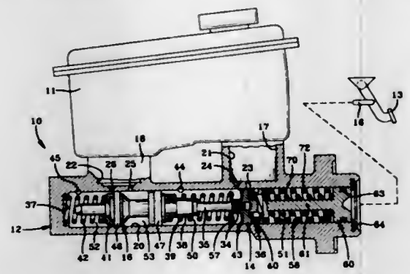
a flow diverter disposed in the upstream junction for diverting exhaust gases from the engine to the housing and an additional flow diverter for directing exhaust stream between the two molecular sieve structures.

5,603,217

COMPLIANT MASTER CYLINDER

Loren E. Majersik, Oakwood, and Abraham S. Farag, Dayton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 13, 1996, Ser. No. 615,656
Int. Cl.[6] B60T *11/20*
U.S. Cl. 60—562 **7 Claims**



1. A master cylinder comprising:

a body having a longitudinal bore and having a transverse bore extending into the body;

a reservoir carried on the body and communicating with the transverse bore with a compensation port extending through the body between the transverse bore and the longitudinal bore;

a primary piston slidably carried in the longitudinal bore having a first side and a second side wherein a compliant chamber is defined in the longitudinal bore on the first side of the primary piston;

wherein a flow path is defined between the reservoir and the compliant chamber, the flow path including the transverse bore and the compensation port with a flow restrictive orifice defined in the flow path;

a seal providing a one way bypass around the flow restrictive orifice providing free flow from the reservoir to the compliant chamber and preventing flow from the compliant chamber to the reservoir;

a push rod piston slidably carried in the longitudinal bore on the first side of the piston wherein the compliant chamber is defined between the primary piston and the push rod piston, the push rod piston having a post extending into the compliant chamber toward the primary piston, the push rod piston being movable between an at-rest position and a plurality of apply positions while the primary piston remains substantially unmoved wherein the compliant chamber is contractible and expansible;

a spring extending between and engaging both the primary piston and the push rod piston biasing the primary piston and the push rod piston apart;

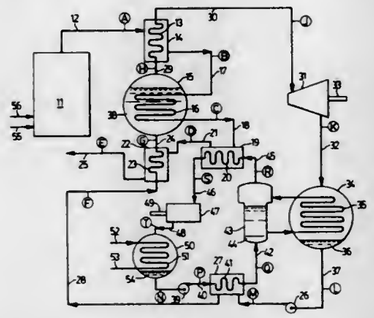
wherein the compensation port of the transverse bore communicates with the compliant chamber through the flow path so that when the push rod piston is moved from the at-rest position fluid in the compliant chamber is forced through the compensation port and the flow restrictive orifice to the reservoir.

5,603,218

CONVERSION OF WASTE HEAT TO POWER

Frank C. Hooper, 5 King's College Road, Toronto, Ontario, Canada

Filed Apr. 24, 1996, Ser. No. 636,933
Int. Cl.[6] F01K *23/10*
U.S. Cl. 60—655 **21 Claims**



1. A process for the conversion of heat from high-temperature off-gases into useful work, said process comprising first and second stages and heat input, in which:

the first stage comprises

i) passing feed water through a feed water preheater which is heated by off-gas, to form preheated feed water

ii) converting said preheated feed water into steam in a steam boiler which is heated by off-gas;

iii) superheating said steam in a steam superheater which is heated by off-gas;

iv) passing said superheated steam into a steam expander which allows expansion of said superheated steam, thus producing shaft work, released as a result of such expansion, to operate a first machine, and exhausting low pressure steam;

v) feeding said low pressure steam through a steam condenser to form condensed feed water; and

vi) passing the feed water through the first stage again starting at step i);

the second stage comprises

a) passing liquid fluorocarbon working fluid into a separator, from where liquid fluorocarbon working fluid passes through a heat exchanger in said steam condenser thus converting some of the liquid fluorocarbon into gaseous fluorocarbon, whence the mixed liquid and gas is returned to the separator in which the gas is separated from the liquid fluorocarbon;

b) superheating the gaseous fluorocarbon working fluid in a gaseous fluorocarbon superheater which is heated by off-gas;

c) passing said superheated gaseous fluorocarbon working fluid through a fluorocarbon expander which allows expansion of said superheated gaseous fluorocarbon working fluid, thus producing low pressure gaseous fluorocarbon working fluid and producing shaft work, released as a result of such expansion, to drive a second machine;

d) feeding said low pressure gaseous fluorocarbon working fluid through a fluorocarbon condenser to give up its latent heat and form liquid fluorocarbon working fluid;

e) pumping the liquid fluorocarbon working fluid through the second stage again, starting at step a); and

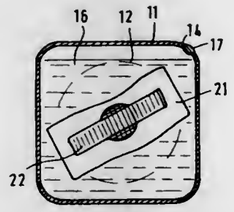
the heat input comprises providing heat to the process by passing high temperature off-gas in sequence through the steam superheater, the water boiler, the fluorocarbon superheater and the feed water heater.

5,603,219

ICE CELL FOR THE COOLING OF DRINKS

Anke Kolb, Conventstrasse 8-10, 22089 Hamburg, Germany

Filed Jun. 15, 1995, Ser. No. 490,582
Claims priority, application Germany, Feb. 7, 1995, 295 01 916.6
Int. Cl.[6] F25C *1/00*
U.S. Cl. 62—1 **5 Claims**



1. An ice cell for the cooling of drinks comprising a closed hollow body filled with a freezable liquid, said the hollow body being made at least partially of a transparent material, at least one insert freely movable in said hollow body, said insert being made from a floatable, flexible film of synthetic material, and said hollow body having an opening sized for insertion therethrough of the flexible film as a rolled insert and for filling the hollow body therethrough with the freezable liquid.

5,603,220

ELECTRONICALLY CONTROLLED CONTAINER FOR STORING TEMPERATURE SENSITIVE MATERIAL

William E. Seaman, Medford, Oreg., assignor to Cool Med L.L.C., Reno, Nev.

Filed Sep. 11, 1995, Ser. No. 526,442
Int. Cl.[6] F25B *21/02*
U.S. Cl. 62—3.7 **17 Claims**

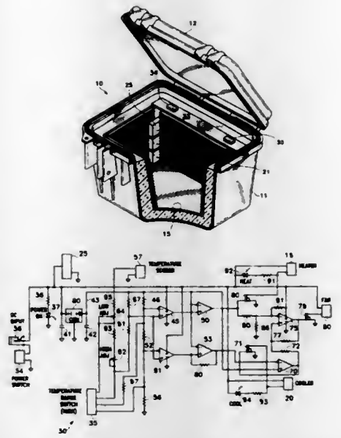
1. A container for temperature sensitive material comprising:

(a) a chamber for storing temperature sensitive material;

(b) a temperature sensor responsive to the temperature in said chamber;

(c) a cooling device for cooling said chamber;

(d) a first operational amplifier, which operates as a waveform shaper for controlling the operation of said cooling device; and



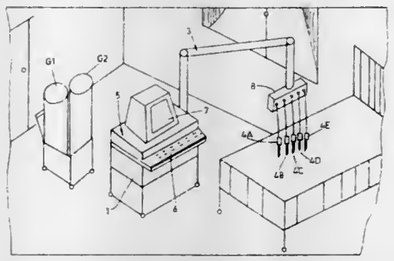
(e) a second operational amplifier responsive to said temperature sensor to control the operation of said first operational amplifier for controlling the temperature in said chamber.

5,603,221

MULTIPROBE SURGICAL CRYOGENIC APPARATUS

Ben-Zion Maytal, Atlit, Israel, assignor to State of Israel, Ministry of Defense, Rafael-Armaments Development Authority, Haifa, Israel

Filed Jun. 29, 1995, Ser. No. 496,685
Claims priority, application Israel, Jun. 30, 1994, 110176
Int. Cl.[6] F25B *19/02*; **A61B** *17/36*
U.S. Cl. 62—51.2 **16 Claims**



1. Cryogenic surgical apparatus comprising:

a) a plurality of probes, each having a contact surface, each of which probes is suitable for creating fast temperature changes at the contact surface, each of said probes comprising:

1) heating exchanging means coupled to an orifice, the orifice opening into conduit means;

2) conduit means in contact with the surface to be heated and cooled, the conduit means being suitable to allow a flow of a fluid in contact with the surface to be heated and cooled;

3) two independent connections for pressurized gas sources, connected to the heat exchanger;

b) two independent pressurized gas sources, connected to the probe through the two independent connections;

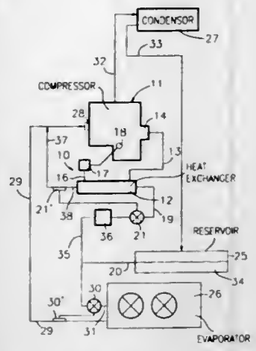
c) controllable gas flow valves to permit or preclude a flow of each of the gases from the independent pressurized gas sources into the probe;

d) control means, to control the controllable gas flow rate valves according to desired probe temperatures;

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e) temperature generation means, coupled to each of the probes, being capable of creating cryogenic and above 0° C. temperatures at the contact surface of the probe; and
f) temperature control means, to control the temperature generation means.

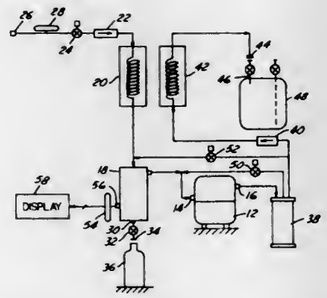
5,603,222
COOLING METHOD AND SYSTEM FOR A COMPRESSOR OF A REFRIGERATING SYSTEM
Serge Dubé , 2595 Bourgogne, St. Lazare, Quebec, Canada
Filed Jun. 14, 1995, Ser. No. 490,422
Int. Cl.[6] F25B *43/02*
U.S. Cl. 62—84 **13 Claims**



1. A system for cooling and controlling the temperature of a compressor to permit said compressor to operate with a Freon 22 refrigerant gas that would normally cause the compressor to overheat and eventually break down, said system comprising a heat exchanger connected in the cool side of a refrigeration system employing said compressor and connecting same in heat exchange relationship with a controlled amount of the oil circulated in said compressor to cool said oil to lower the compressor temperature whereby said compressor may operate effectively with said refrigerant gas without overheating, said compressor having an internal oil pump, an external oil line connected to said internal oil pump to recirculate a portion of the oil in said compressor to cool said oil in said heat exchanger, a pressure valve connected to said external oil line at an output side of said heat exchanger to reduce the pressure of the oil in said external oil line to slow down the flow of oil through said heat exchanger for cooling said oil, said pressure valve reducing said oil pressure from about 40 psi to 20 psi.

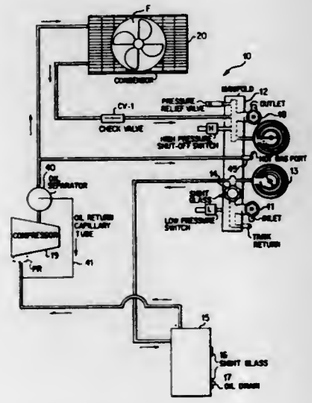
5,603,223
REFRIGERANT HANDLING WITH LUBRICANT SEPARATION AND DRAINING
Walter D. Murray, Pioneer; Gary P. Murray, Montpelier, and Kenneth W. Manz, Paulding, all of Ohio, assignors to SPX Corporation, Muskegon, Mich.
Filed Jan. 2, 1996, Ser. No. 582,147
Int. Cl.[6] F25B *43/02*
U.S. Cl. 62—84 **20 Claims**

14. A method of separating lubricant from refrigerant comprising the steps of:
(a) providing a compressor for pumping refrigerant from an inlet to an outlet during operation of said compressor,
(b) connecting a lubricant separator either upstream or downstream of said compressor for separating lubricant from refrigerant during operation of said compressor either prior to or following passage of the refrigerant through said compressor respectively,



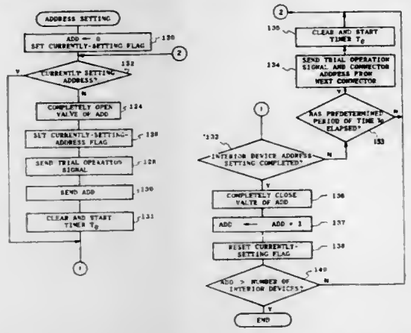
(c) equalizing pressure between said inlet and said outlet during non-operation of said compressor,
(d) monitoring pressure at said lubricant separator during non-operation of said compressor, and
(e) draining lubricant from said separator during non-operation of said compressor when pressure monitored in said step (d) reaches a preselected level.

5,603,224
PORTABLE REFRIGERANT RECOVERY SYSTEM
Robert P. Scaringe; Fulin Gui, both of Rockledge, and Steven D. Gann, Merritt Island, all of Fla., assignors to Mainstream Engineering Corporation, Rockledge, Fla.
Division of Ser. No. 405,681, Mar. 17, 1995. This application Oct. 27, 1995, Ser. No. 549,065
Int. Cl.[6] F25B *49/00*
U.S. Cl. 62—125 **2 Claims**



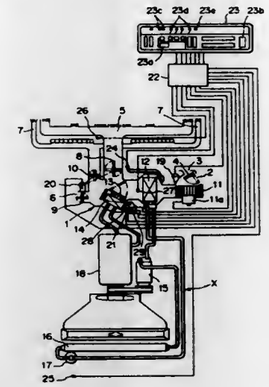
1. A refrigerant system servicing manifold for use in a refrigerant recovery system, comprising
an inlet port with an associated shut-off valve;
a low pressure switch operatively associated with the inlet port;
an outlet port with an associated shut-off valve;
a high pressure switch operatively associated with the outlet port; and
a sight glass arranged at the inlet port;
wherein the foregoing components are assembled and incorporated into the manifold.

5,603,225
MULTI-TYPE AIR CONDITIONER ADDRESS SETTING METHOD AND ADDRESS SETTING DEVICE
Yukio Tobi, Ohta; Kouichi Saruhashi, Gunma-ken, and Kouichi Matumoto, Kumagaya, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan
Filed Apr. 18, 1995, Ser. No. 423,507
Claims priority, application Japan, Apr. 19, 1994, 6-080767
Int. Cl.[6] F25B *49/02*
U.S. Cl. 62—175 **19 Claims**



1. A multi-type air conditioner address setting method for a multi-type air conditioner in which a single first unit and a plurality of second units are connected by coolant pipes and signal wires such that a cooling cycle for air conditioning operation is formed by the single first unit and the plurality of second units, the first unit having a plurality of coolant pipe connecting portions for connection with the coolant pipes connected to the respective second units and a plurality of signal wire connecting portions for connection with the signal wires connected to the respective second units, said address setting method comprising:
an operating step in which coolant is supplied from the first unit, via a coolant pipe connected to one of the plurality of coolant pipe connecting portions, to a second unit connected to the coolant pipe so that the second unit is operated in a predetermined state;
a dummy address sending step in which a dummy address is sent from the first unit, via a signal wire connected to one of the plurality of signal wire connecting portions, to a second unit connected to said signal wire;
a personal address storing step in which the second unit which receives the dummy address from the first unit via said signal wire determines whether the second unit is operating in the predetermined state, and in a case in which it is determined that the second unit is operating in the predetermined state, the second unit stores the dummy address sent from the first unit as the personal address of the second unit;
an address storing repeating step in which said operating step, said dummy address sending step, and said personal address storing step are repeated for second units which are connected to coolant pipes connected to coolant pipe connecting portions other than said one coolant pipe connecting portion, so that all of the second units store respective personal addresses; and
an address sending-back step in which the first unit sends an address request signal from the plurality of signal wire connecting portions to the respective second units to cause the respective second units to send back the personal addresses stored in the respective second units to the first unit,
wherein said first unit determines the addresses of the second units connected to the signal wire connecting portions on the basis of which of the signal wire connecting portions the personal addresses of the respective second units sent back in said address sending-back step were sent back through.

5,603,226
METHOD AND APPARATUS FOR CONTROLLING VEHICLE AIR CONDITIONER
Toshikazu Ishikawa, Hiroshima; Shigetoshi Doi, Iwakuni; Shinshi Kajimoto, Hiroshima-ken; Eiji Ukita, Higashihiroshima; Yoshiaki Nagayama; Hiroshi Asou, both of Hiroshima; Yasuhiro Enno, Higashihiroshima, and Takashi Tsuchida, Hiroshima, all of Japan, assignors to Naldec Corporation, and Mazda Motor Corporation, both of Hiroshima, Japan
Division of Ser. No. 135,621, Oct. 14, 1993, Pat. No. 5,400,963, which is a continuation-in-part of Ser. No. 911,743, Jul. 10, 1992, abandoned. This application Dec. 28, 1994, Ser. No. 365,400
Claims priority, application Japan, Jul. 10, 1991, 3-170015; Mar. 31, 1992, 4-105700; Mar. 31, 1992, 4-105701; Apr. 2, 1992, 4-109240; Apr. 8, 1992, 4-115417; Apr. 8, 1992, 4-115418
Int. Cl.[6] F25D *17/08*
U.S. Cl. 62—182 **13 Claims**

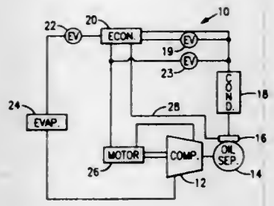


1. A method of controlling a vehicle air conditioner, wherein a discomfort level felt by a passenger before a temperature of an evaporator is decreased at the beginning of a cooling operation, and a comfort level which will be felt by the passenger under an assumption that air-conditioning air is output after the temperature of said evaporator begins to fall at the beginning of the cooling operation are compared with each other, and when the comfort level represents a state more comfortable than that represented by the discomfort level, an outlet operation of air-conditioning air is started.

5,603,227
BACK PRESSURE CONTROL FOR IMPROVED SYSTEM OPERATIVE EFFICIENCY
Steven J. Holden, Manlius, N.Y., and John A. Schwoerer, Boston, Mass., assignors to Carrier Corporation, Syracuse, N.Y.
Filed Nov. 13, 1995, Ser. No. 557,390
Int. Cl.[6] F25B *43/00*
U.S. Cl. 62—193 **3 Claims**

1. In a closed refrigeration system having an operating envelope and serially including a compressor, an oil separator, a normally closed valve, a condenser, an economizer means and an evaporator means, valve control means comprising:
said normally closed valve being fluidly connected to said economizer means whereby economizer pressure tends to bias said valve closed;
compressor discharge pressure acting on said normally closed valve so as to provide an opening bias thereto, whereby said valve provides a throttling of flow through said valve over a

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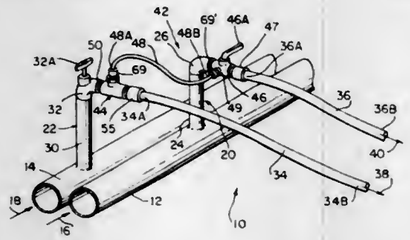
limited portion of said operating envelope and is fully open over the remainder of said operating envelope.

5,603,228

AUTOMATIC BLOW-OUT SYSTEM FOR SNOWMAKING MACHINE WATER HOSES

Scott Barthold, R.R. #2, Box 250, Lyme, N.H. 03768, and Martin G. Midura, 340 N. Main St., W. Lebanon, N.H. 03784

Filed Oct. 13, 1995, Ser. No. 542,703
Int. Cl.[6] F28G 9/00
U.S. Cl. 62—303 **7 Claims**



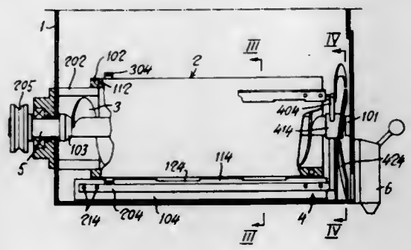
7. In a snowmaking system comprising:
a snowmaking machine,
a first hose for carrying compressed air under pressure and being adapted to be coupled at one end to a source of compressed air,
a water manifold pipe for carrying water under pressure and being adapted to be coupled at one end to a source of water under pressure, .
a shut-off valve opening to an air hose outlet connected to said air hose remote from said source of compressed air,
at least one water hydrant connected to said water manifold pipe remote from said source of water and including a first shut-off valve opening to a hydrant outlet,
a water hose coupled at one end to said hydrant outlet and having a second end adapted to be connected via a second shut-off valve to a water inlet of said snowmaking machine, the improvement wherein:
a first three-way ball-type valve is coupled between an inlet end of said water hose and said water hydrant, a second three-way ball-type valve is coupled to the outlet end of said water hose and between the outlet end of the water hose and said water inlet to said snowmaking machine, each three-way ball-type valve including a valve body having an internal spherical valve body cavity, first and second diametrically opposite inlet and outlet ports within said valve body opening to said cavity, a blow-out port within said valve body intermediate of said inlet and outlet ports and opening to the valve cavity, a rotatable valve member mounted within said spherical valve body cavity and including a through bore for axial alignment with said inlet and outlet ports for selective axial alignment with said inlet and outlet ports in a first position and for rotation to a second position at right angles thereto for closing off at least said inlet port, and said ball valve member including a flat face within the periphery thereof spaced from said through bore and carried thereby so as to form with said valve cavity, when said ball valve member is in a third position, a limited fluid connection between said inlet port and said blow-out port, and means for controlling rotation of said rotatable ball valve member between said first, second and third positions, such that with both three-way ball-type valves having rotatable valve members thereof at said first position, water flows freely from said water manifold pipe to said snow machine, and with said rotatable ball valve members rotated to said third position within each of said three-way ball valves, respectively, compressed air under high pressure flows from said source through said three-way ball type valve proximate to said snowmaking machine at the end of the water hose remote from said water manifold pipe to blow out the water completely through the water hose, while permitting water to escape through the three-way ball-type valve proximate to said water hydrant at said blow-out port.

5,603,229

MACHINE FOR MAKING CRUSHED ICE DRINKS

Gino Cocchi, Bologna, and Giancarlo Pietra, Casalecchio di Reno, both of Italy, assignors to Carpigiani Group-Ali S.p.A., Italy

Filed Oct. 10, 1995, Ser. No. 541,584
Claims priority, application Italy, Nov. 3, 1994, GE94A0122
Int. Cl.[6] A23G 9/12
U.S. Cl. 62—343 **10 Claims**



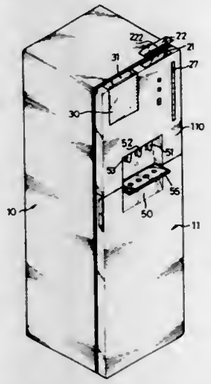
1. Machine for making crushed ice drinks comprising a tank with horizontal axis provided at one end with means for dispensing the iced product, and housing internally a refrigerating element consisting of a hollow metal cylinder with double-walled shell housing the evaporator of a refrigerator unit in the gap between the two walls, a transporter screw being housed in the axial cavity of the said cylinder, characterized in which the outer shell of the said cylinder is surrounded by a stirrer element consisting of one or more radial ribs or fins parallel to the directrices of the cylinder which are made to rotate right around the said cylinder, a series of blades able to exert a positive axial thrust on the product to be delivered towards the said dispensing means also being provided at that end of the said stirrer element facing the dispensing means of the said tank.

5,603,230

WATER SUPPLY DEVICE FOR A REFRIGERATOR DOOR

Te-wan Tsai, No. 493, Szute Rd., Wufeng Hsiang, Taichung Hsien, Taiwan

Filed Apr. 18, 1996, Ser. No. 634,236
Int. Cl.[6] B67D 5/62; F25D 23/12
U.S. Cl. 62—390 **1 Claim**



1. A water supply device disposed in a refrigerator door, said refrigerator comprising a body and a door, said body comprising a freezer compartment and a refrigerator compartment, said door having an outer layer and an inner insulating layer which is disposed corresponding to said freezer compartment, said device comprising:
a first tank disposed in said door and located between said outer layer and said inner insulating layer and having a first open top communicating with a top of said door for a cap mounted thereon and covering up said first open top, a first pipe having one end thereof extending from said first tank, said first pipe communicates with an interior of said first tank and the other end of said first pipe having a first outlet disposed thereto, said first outlet extending from said outer layer of said door, a heating means disposed in said first tank;
a second tank disposed in said door and located between said outer layer and said inner insulating layer, a first connecting pipe connected between said first tank and said second tank, a first one-way valve disposed in said first connecting pipe, a second pipe having one end thereof communicating with an interior of said second tank and the other end of said second pipe having a second outlet disposed thereto, said second outlet extending from said outer layer of said door;
a third tank disposed in said door wherein an inner side of said third tank is not covered by said inner insulating layer, a second connecting pipe connected between said second tank and said third tank, a second one-way valve disposed in said second connecting pipe, a third pipe having one end thereof communicating with an interior of said third tank and the other end of said third pipe having a third outlet disposed thereto, said third outlet extending from said outer layer of said door.

5,603,231

SELF-LOCKING ADJUSTABLE BRACELET

Carl J. Abraham, 3 Baker Hill Rd., Great Neck, N.Y. 11023

Filed Oct. 6, 1995, Ser. No. 556,291
Int. Cl.[6] A44C 5/00
U.S. Cl. 63—3 **5 Claims**

1. A bracelet comprising
an elongated web of a light weight flexible material having a first end and a second end, an intermediate portion between said first end and second end, and a longitudinal axis extending from said first end to said second end along a centerline of said bracelet;



said first end comprising stub means wider than said intermediate portion, said stub means having an aperture with a dimension transverse to said longitudinal axis which is at least as long as a dimension of said intermediate portion transverse to said Longitudinal axis for enabling said intermediate portion to be slidable within said stub aperture;
said second end comprising barb means and neck means connected to said barb means and to said intermediate portion, said neck means having a dimension transverse to said longitudinal axis which is less than a dimension of said intermediate portion transverse to said longitudinal axis and less than a dimension of said barb means transverse to said longitudinal axis;
said intermediate portion having a plurality of locking apertures spaced in the direction of said longitudinal axis, each of said apertures having a dimension parallel to said longitudinal axis which is greater than the maximum dimension of said barb means transverse to said longitudinal axis, and each of said apertures having a dimension transverse to said longitudinal axis which is less than the maximum dimension of said barb means transverse to said longitudinal axis and greater than a dimension of said neck means transverse to said longitudinal axis, whereby said barb means can be inserted through said stub means aperture and said intermediate portion can thereafter be slid through said stub means aperture to form said bracelet into a loop of desired size, and whereby said barb means can then be inserted into and captured within one of said locking apertures.

5,603,232

FOOT PROTECTOR FOR USE IN COMBINATION WITH HOSIERY AND METHOD OF MAKING AND USING SAME

James L. Throneburg, 625 W. Bell St., Statesville, N.C. 28687

Filed Nov. 22, 1995, Ser. No. 562,163
Int. Cl.[6] A41B 11/02; D04B 9/46
U.S. Cl. 66—185 **22 Claims**



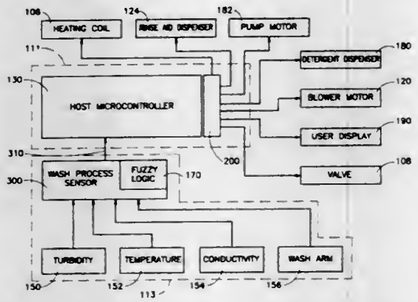
1. A footlet type foot protector comprising:
a foot portion including toe, ball, arch, heel and instep portions for covering the respective portions of a wearer's foot,
a top portion extending upwardly from said heel and instep portions of said foot portion for encircling a wearer's foot adjacent his ankle, said top portion having a first upwardly extending length proximate the instep portion of the foot portion and a second upwardly extending length proximate the heel portion of said foot portion, said second length being greater than said first length, and
padding positioned only on said foot portion, said top portion being substantially unpadded.

5,603,233

APPARATUS FOR MONITORING AND CONTROLLING THE OPERATION OF A MACHINE FOR WASHING ARTICLES

Timothy K. Erickson, Lena; Gary R. O'Brien, Freeport, and Ian F. Reeve, Rockford, all of Ill., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 12, 1995, Ser. No. 501,354
Int. Cl.[6] D06F *33/02*
U.S. Cl. 68—12.02 **20 Claims**



1. An apparatus for monitoring and controlling the operation of a machine for washing articles, comprising:

means for measuring a plurality of physical parameters that relate to the progress of washing said articles;

means, connected in signal communication with said measuring means, for monitoring changes in the magnitude of said plurality of physical parameters over time to determine said progress of washing said articles;

means, connected in signal communication with said monitoring means, for calculating a value as a function of said changes and of said physical parameters which is representative of the state of cleanliness of said articles;

a sensor housing structure, said measuring, monitoring and calculating means being contained within said sensor housing structure; and

means, connected in signal communication with said calculating means, for controlling a plurality of devices that affect the operation of said machine for washing articles.

5,603,234

MULTIPLE LOCK ASSEMBLY

Benjamin F. Lozier, Louisville; Karl A. Hermann, Canton, and Custodio M. Fabella, Jr., North Canton, all of Ohio, assignors to Diebold, Incorporated, Canton, Ohio

Filed May 13, 1994, Ser. No. 242,909
Int. Cl.[6] E05B *63/14*
U.S. Cl. 70—119 **8 Claims**

1. A lock assembly for use on a security door for locking and unlocking said security door, said lock assembly comprising:

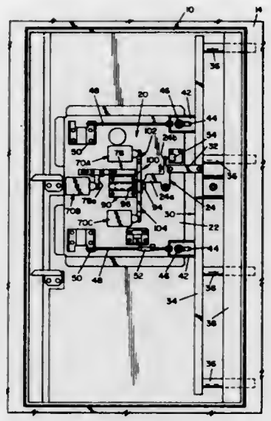
a lock bar movable a predetermined distance between a first position locking said door and a second position unlocking said door;

three spaced-apart locks, each of said locks having a lock arm movable a set distance between a locked position and an unlocked position;

a first link connected at one end to the lock arm of a first of said locks and connected at the other end to the lock arm of a second of said locks;

a second link connected at one end to said first link and connected at the other end to the lock arm of a third of said locks; and

connection means for connecting said second link to said lock bar at a first location, said first and second links being dimensioned such that movement of the lock arms of any two of said three locks from said locked position to said unlocked position causes said lock bar to move from said first position to said second position when said connection means is at said first location.



5,603,235

FORGING PROCESS FOR TITANIUM ALLOYS

Bong Y. Um, Ulsan, Rep. of Korea, assignor to Hyundai Motor Company, Seoul, Rep. of Korea

Filed Dec. 13, 1995, Ser. No. 571,716
Claims priority, application Rep. of Korea, Dec. 16, 1994, 94-34681
Int. Cl.[6] B21J *1/06*
U.S. Cl. 72—46 **11 Claims**



1. A process for forging a titanium alloy comprising the steps of:

dipping a titanium alloy in a water glass solution to form a water glass layer on the titanium alloy;

drying the water glass layer; and

forging the titanium alloy.

5,603,236

SHEET MATERIAL BENDING ANGLE DETECTOR, AND OPERATION METHOD OF PRESS MACHINE USING THE DETECTOR

Toshio Hongo, 7-11, Kounodai 5-chome, Ichikawa-shi, Chiba-ken, Japan

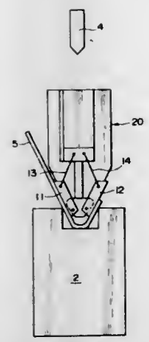
Filed Oct. 19, 1993, Ser. No. 139,361
Claims priority, application Japan, Nov. 6, 1992, 4-337753
Int. Cl.[6] B21D *5/02*
U.S. Cl. 72—319 **2 Claims**

1. A device for measuring a bending angle of a bent sheet material bending of which is effected with die means which is supported in a press and has a lower die supported on a press bed and having an angular groove corresponding to a predetermined bending angle of the bent sheet material, and an upper die fixedly attached to a press ram vertically displaceable relative to the press bed, said device comprising:

a bending angle detector including first and second links arranged symmetrically relative to each other and pivotally connected with each other at one end thereof;

means for supporting said angle detector directly on the displaceable ram and for displacing said angle detector into an angular space defined by the bending angle of the bent sheet material; and

means for biasing said first and second links into a surface contact with side surfaces of the bent sheet material defining the bending angle.

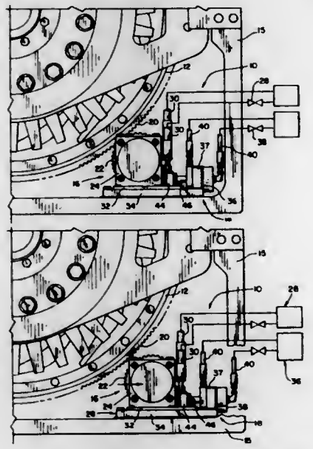


5,603,237

INCHING DRIVE SYSTEM FOR A MECHANICAL PUNCH PRESS

Kurt A. Bohman, and W. Craig Brewer, both of Minster, Ohio, assignors to The Minster Machine Company, Minster, Ohio

Filed Apr. 19, 1995, Ser. No. 424,796
Int. Cl.[6] B21J *7/32;9/18*
U.S. Cl. 72—444 **9 Claims**



1. A mechanical press of the type having a bed, a slide, and drive means that converts rotary-oscillatory motion to a linear reciprocating motion of said slide along a defined operating path toward and away from said bed, said drive means having a rotating member, the press comprising:

a drive motor assembly selectively engaging said rotating member for causing incremental rotation of said rotating member; and

an engagement mechanism including: a slider mount assembly slidably securing said drive motor assembly to said press;

an engagement cylinder connected to said slider mount assembly to cause said drive motor assembly to slide in a forward and reverse direction; and

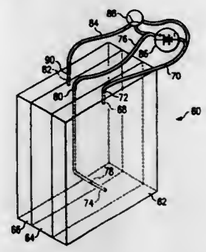
engagement control means controlling said engagement cylinder to cause said sliding motion, said engagement mechanism connected to said drive motor assembly causing said selective engagement of said drive motor assembly with said rotating member.

5,603,238

FLOATLESS GAUGE WITH RESISTIVE/CONDUCTIVE POLYMER

Cecil M. Williamson, Carrollton, Tex., assignor to Rochester Gauges, Inc., Dallas, Tex.

Division of Ser. No. 158,036, Nov. 24, 1993, Pat. No. 5,501,102. This application Aug. 1, 1995, Ser. No. 509,833
Int. Cl.[6] G01F *23/24*
U.S. Cl. 73—304 R **7 Claims**



1. A floatless gauge assembly to be used in conjunction with a voltage source and a voltage indicator for measuring the fluid level in a tank, comprising:

a first elongate insulating member dimensioned to extend into the fluid having first and second sides;

a first elongate electrically resistive/conductive polymeric member dimensioned to extend into the fluid having first and second ends, said first end thereof connected to a first conductor for electrical connection to the positive terminal of a voltage source and said second end thereof connected to a second conductor for connection to the negative terminal end of a voltage source, and said first elongate member connected to said first side of said insulating member; and

a second elongate electrically resistive/conductive polymeric member dimensioned to extend into the fluid having first and second ends, said first end thereof connected to a third conductor for connection to a voltage indicator, and said second elongate member connected to said second side of said insulating member.

5,603,239

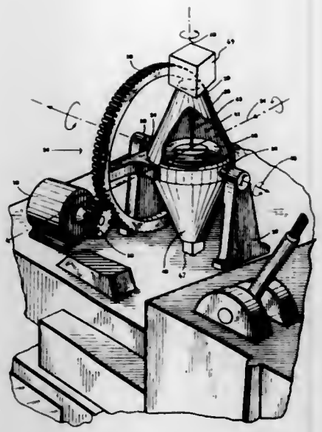
GYROSCOPIC VIRTUAL COUNTERWEIGHT FOR CRANES

Kerwin D. W. Chong, 98-1230 Pakalana St., Aiea, Hi. 96701

Filed Sep. 5, 1995, Ser. No. 523,343
Int. Cl.[6] G01C *19/02;* **B66C** *23/72*
U.S. Cl. 74—5.22 **16 Claims**

1. A gyroscopic virtual counterweight device for mounting on the upper carbody of a crane having a center of gravity, said crane

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having a loaded state and an unloaded state, said upper carbody having a load end and a rear end, said crane having a central axis running from the rear end and through the load end, said gyroscopic virtual counterweight device comprising:

a) a plurality of mounts aligned with the central axis of the crane and fixedly mounted on the upper carbody of a crane;

b) a load axle rotatably mounted between the mounts;

c) a gyroscope housing having a top section and a bottom section, said gyroscope housing being fixedly mounted on the load axle;

d) a gyroscope having a spin axis, a torque axis, and a precession axis, said axes being orthogonal to each other, said gyroscope having a spinning state wherein it spins with a predetermined spin velocity and a despun state, said gyroscope having a mass of predetermined weight mounted within the gyroscope housing, such that the spin axis of the gyroscope in its despun state is vertical and the torque axis of the gyroscope is aligned with the central axis of the crane;

e) a precession gear fixedly mounted on the load axle and fixedly attached to the gyroscope housing; and

f) a precession gear drive motor for driving the precession gear at a predetermined precession velocity;

whereby when the gyroscope is in its spinning state and the precession gear drive motor drives the precession gear thus causing the gyroscope within the gyroscope housing to precess, a torque is exerted on the load axis, thus exerting a stabilizing force on the crane as it lifts a heavy load.

5,603,240

MECHANICAL TRANSMISSION CONTINUOUSLY VARIABLE FROM FORWARD TO REVERSE

John W. Klovstad, 140 Reservoir Rd., Whitefish, Mont. 59937, and James A. Fortune, 5648 Van Dyke, Almont, Mich. 48003

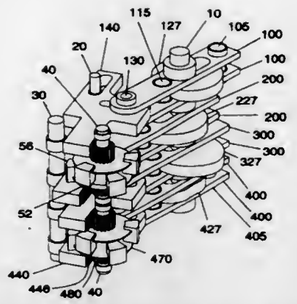
Filed Mar. 4, 1994, Ser. No. 206,651

Int. Cl.[6] F16H *29/20;29/16*

U.S. Cl. 74—120 **15 Claims**

1. A mechanical transmission between a cam shaft driven by a prime mover and an output shaft comprising:

N (where N is an integer greater than one) identical cams affixed to the cam shaft with a relative rotation from each other of 360° divided by N, each of said cams with a special surface and an associated following means responsive to said special surface for producing one of N first oscillatory linear motions, said special surface is such that said first linear motions are directly proportional to the rotation angle of said cam over a significant portion of a cycle of rotation of the cam shaft, said portion to be called the linear portion;



variable scaling means associated with each of said first oscillatory linear motions for producing second oscillatory linear motions that are a multiple of the size of said first oscillatory linear motions, whereby N of said second oscillatory linear motions are produced;

converting means associated with each of said second oscillatory linear motions for transforming said second oscillatory linear motions into oscillatory rotational motions of an object, whereby N of said objects are produced; and

gripping means for locking each said object to the output shaft only while said shaft is rotated in the same desired direction as the output shaft and while the associated said cam is in its linear portion, whereby N such gripping means are produced and wherein said gripping means includes calipers.

5,603,241

VEHICLE TRANSMISSION SYSTEM CAPABLE OF SIMULTANEOUS SLIPPING OF FRICTIONAL COUPLING DEVICES DISPOSED IN DIFFERENT GEAR TRAINS BETWEEN INPUT AND OUTPUT SHAFTS

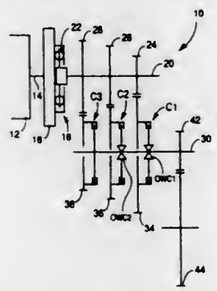
Mitsuhiro Umeyama, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed May 30, 1995, Ser. No. 453,212

Claims priority, application Japan, Jun. 24, 1994, 6-142747

Int. Cl.[6] F16H *59/00*

U.S. Cl. 74—325 **12 Claims**



1. A transmission system of a motor vehicle having a transmission including an input shaft which receives power from a power source, an output shaft and a plurality of gear trains which have respective different gear ratios and which are disposed so as to connect said input and output shafts for transmitting the power from said input shaft to said output shaft, said transmission system comprising:

said plurality of gear trains including a first gear train, a second gear train and a third gear train whose gear ratios decrease in the order of description,

a plurality of frictional coupling devices including a first, a second and a third frictional coupling device which are disposed in series connection with said first, second and third gear trains, respectively;

a first and a second one-way clutch which are disposed in series connection with corresponding at least one of said first and second gear trains, said first and second one-way clutches being engaged to transmit the power from said input shaft to said output shaft, and released to inhibit the power from being transmitted from said output shaft to said input shaft; and

shift control means, operable during a forward running of said motor vehicle, for controlling said plurality of frictional coupling devices for simultaneous slipping engagement of said first, second and third frictional coupling devices such that all of said first, second and third frictional coupling devices are simultaneously placed in partially engaged states thereof for an initial period of time upon starting of said motor vehicle, for simultaneous transmission of the power from said input shaft to said output shaft through said first, second and third gear trains.

5,603,242

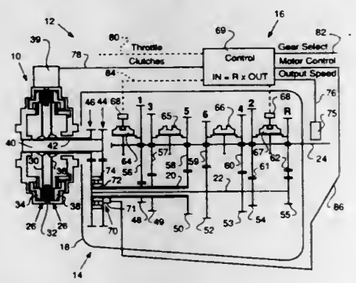
DIRECT DRIVE TRANSMISSION APPARATUS AND METHOD FOR CONTROLLING SHIFT

Jeffrey J. Krieger, Peoria, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Jul. 11, 1995, Ser. No. 499,884

Int. Cl.[6] F16H *61/00*

U.S. Cl. 74—335 **6 Claims**



1. A direct drive transmission and control arrangement adapted to be drivingly connected to an engine, comprising:

a first clutch selectively connected to the engine;

a second clutch selectively connected to the engine;

a first countershaft selectively connected to the engine by the first clutch for providing an input, the first countershaft includes at least one gear mounted thereon;

a second countershaft selectively connected to the engine by the second clutch for providing an input, the second countershaft includes at least one gear mounted thereon;

a layshaft positioned parallel to the first and second countershafts provides an output, the layshaft includes at least two gears mounted thereto one of the gears being enmeshable with the gear on the first countershaft and the other gear being enmeshable with the gear on the second countershaft;

a shift collar moveable into engagement with one of the gears for conveying torque in the countershafts into the layshaft; and

means for controlling the speed of the countershaft not connected to the engine so that the speed of the shift collar matches the speed of the respective gear.

5,603,243

IMPROVEMENTS IN OR RELATING TO ALIGNMENT APPARATUS

Patrick A. Finley, Beaconsfield, United Kingdom, assignor to Armstrong Projects Limited, United Kingdom

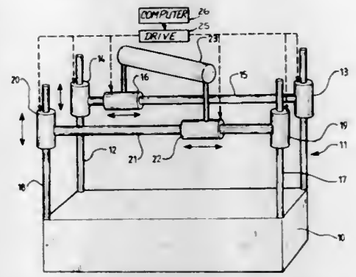
PCT No. PCT/GB94/02477, § 371 Date Jul. 11, 1995, § 102(e) Date Jul. 11, 1995, PCT Pub. No. WO95/13018, PCT Pub. Date May 18, 1995

PCT Filed Nov. 11, 1994, Ser. No. 481,490

Claims priority, application United Kingdom, Nov. 11, 1993, 9323259

Int. Cl.[6] B25J *9/10;* **G05G** *11/00*

U.S. Cl. 74—490.07 **4 Claims**



1. An apparatus for aligning an end effector or guide for an end effector with a predetermined point in space at a predetermined orientation, said apparatus comprising a first guide frame and a second guide frame, the first guide frame comprising two substantially vertically extending guide members, a respective carriage present for sliding movement along each of the guide members and a substantially horizontal cross-member inter-connecting the carriages, there being a further carriage mounted for horizontal movement on said horizontal cross-member and a second guide frame of similar design spaced from the first guide frame but being in a plane parallel thereto, the second guide frame comprising two substantially vertical members each provided with a respective carriage for vertical sliding movement on the respective vertical member, the two carriages being inter-connected by a second horizontal cross-member having thereon a second carriage for horizontal sliding movement on said second horizontal cross-member, the two carriages mounted for horizontal movement supporting guide means or an end effector.

5,603,244

ACTUATING DEVICE FOR THE THROTTLE VALVE OF A CARBURETOR FOR USE WITH AN AUTOMATIC TRANSMISSION OF A MOTORIZED VEHICLE

Dieter Tischer, Wendlingen, Germany, assignor to Hydraulik-Ring Antriebs-und Steuerungstechnik GmbH, Nurtingen, Germany

Filed Jul. 29, 1994, Ser. No. 282,734

Claims priority, application Germany, Jul. 29, 1993, 43 25 417.9

Int. Cl.[6] F16C *1/10*

U.S. Cl. 74—500.5 **12 Claims**

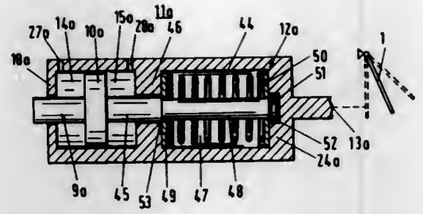
1. An actuating device for a throttle valve of a carburetor used in connection with an automatic transmission, wherein the throttle valve is connected to a throttle shaft and a position of the throttle shaft is adjustable by an accelerator pedal of a vehicle; said actuating device comprising:

a linkage comprising a first part and a second part;

said first part connected to the throttle shaft and said second part connected to the accelerator pedal;

said first part being displaced relative to said second part with a pressure medium for performing an automatic gear shifting operation;

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said first part being a piston with a piston rod, said piston being loaded by said pressure medium;

said second part comprising a housing in which housing said piston is displaceably positioned, said housing having two pressure chambers separated from one another by said piston;

a single compression spring with free ends for biasing said piston into a middle position within said housing, wherein said piston remains in said middle position as long as an automatic gear shifting operation does not take place;

two spring plates, wherein each one of said free ends abuts one of said spring plates.

5,603,245

METHOD FOR A TRANSLATORY MOTION OF COMPONENTS

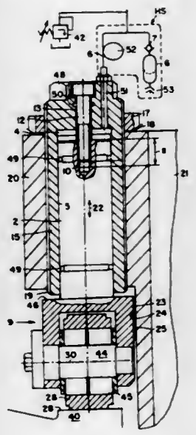
Bruno Walczak, Aachen, Germany, and Johann Mostert, Eupen, Belgium, assignors to Schumag Aktiengesellschaft, Aachen, Germany

Division of Ser. No. 189,886, Feb. 1, 1994, abandoned. This application Nov. 21, 1995, Ser. No. 560,198

Claims priority, application Germany, Feb. 2, 1993, 43 02 788.1

Int. Cl.[6] F16H *25/12;53/00*

U.S. Cl. 74—569 **6 Claims**



1. A method for controlling the contact force between a driving closed cam track (**40A**) and at least one cam follower roller of a pair of cam follower rollers (**27** or **27**) contacting said closed cam track (**40A**) on opposite track surfaces (**28, 29**), with a spring force for urging said at least one cam follower roller against a respective cam surface (**28**) of said closed cam track (**40A**) having a thickness (D) between said cam follower rollers (**26, 27**), wherein one full revolution of said closed cam track (**40A**) drives said cam follower rollers (**26, 27**) axially relative to a rotational axis of said closed cam track (**40A**) at least once back and forth between two reversing points (O.T.; U.T.), comprising the following steps:

(a) producing said spring force by a Belleville spring (**39**) having a spring characteristic which is responsive to a change in said thickness (D) of said closed cam track (**40A**) in a limited angular range (**41**) of said closed cam track,

(b) increasing said spring force of said Belleville spring (**39**) by an increasing cam thickness (D1) in said limited angular range (**41**) next to and toward at least one reversing point (O. T.) of said two reversing points (O. T.; U. T.) to such an extent that an increased contact force corresponds at least to the inertia force of a component (**21**) to be moved back and forth by said cam follower rollers (**26, 27**) to maintain said cam follower rollers (**26, 27**) in contact with their respective cam surface (**28, 29**) within said limited angular range (**41**),

(c) decreasing said spring force of said Belleville spring (**39**) by a decreasing cam thickness (D2) next to and away from said at least one reversing point (O. T.), in said limited angular range (**41**), down to a minimal contact force outside said limited angular range (**41**), said minimal contact force being sufficient to maintain said cam follower rollers (**26, 27**) in contact with said cam surfaces (**28, 29**) at all times outside said limited angular range (**41**) during said one full revolution of said closed cam track (**40A**), and

(d) limiting said spring force of said Belleville spring (**39**) to an upper limit in said limited angular range (**41**).

5,603,246

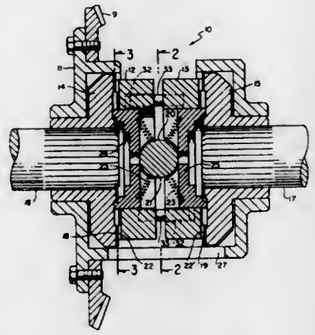
LOCKING DIFFERENTIAL WITH RADIAL DAMPENING

John Zentmyer, 245 Fischer Ave., B-4, Costa Mesa, Calif. 92626

Filed Oct. 24, 1995, Ser. No. 547,591

Int. Cl.[6] F16H *48/12*

U.S. Cl. 74—650 **12 Claims**



1. A differential mechanism comprising:

output means;

driving means

driven means operably responsive to said driving means for powering said output means;

said driving means having a pair of clutch driving members coaxially disposed with respect to each other and having opposing spaced-apart surface faces;

said driving means further including a drive shaft disposed between said pair of clutch driving members;

biasing means interposed between said driving members and said drive shaft providing both axial and radial forces to dampen relative movement between said clutch driving members and said drive shaft; and

said biasing means comprising multiple elongated compression springs having central axes off-set from said opposing spaced-apart surface faces of said pair of clutch members.

5,603,247

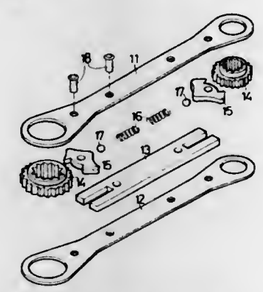
RATCHET WRENCH

Hung-Yin Wei, No. 21, Lane 225, Tai-Ping Road, Tai-Ping Hsiang, Taichung Hsien, Taiwan

Filed Oct. 6, 1995, Ser. No. 540,020

Int. Cl.[6] B25B *13/46*

U.S. Cl. 81—63.2 **1 Claim**



1. An improved ratchet wrench comprising:

a pair of ratchets;

a pair of identical plate members disposed in spaced parallel relationship, each of said pair of plate members having opposing ends thereof bent in opposite directions through a predetermined angle to form first and second bent portions and having a flat middle portion extending between said first and second bent portions, said flat middle portion being devoid of apertures, each of said first and second bent portions having a round hole formed therethrough for accommodating a respective one of said pair of said ratchets therein and an aperture formed adjacent said round hole, said first and second bent portions of one of said pair of plate members each having a respective length dimension identical to respective length dimensions of said other of said pair of plate members, said flat middle portions of said pair of plate members having an identical length dimension and being spaced by a dimension that is less than a dimension defining a distance between said first and second bent portions of said pair of plate members, said spacing dimension of said flat middle portion being defined by said dimension defining a distance between said first and second bent portions of said pair of plate members multiplied by a cosine of said predetermined angle;

a pair of trigger blocks disposed respectively between said first and second bent portions of said pair of plate members, each of said trigger blocks having a pair of spaced teeth formed on a front end portion thereof for engagement with a respective one of said pair of ratchets, each of said trigger blocks having a through opening formed therein and disposed in aligned relationship with a respective one of said apertures of each of said pair of plate members;

a base disposed between said flat middle portions of said pair of plate members, said base having a pair of elongated slots respectively formed in opposing ends thereof;

a continuous protective flange extending from opposing ends of said base and extending along opposing side edges of said base to circumscribe a perimeter edge of said pair of plate members, said protective flange having opposing edge portions disposed in contiguous relationship with respective outer surfaces of said pair of plate members, said protective flange having pairs of slotted openings formed therethrough adjacent said opposing ends of said base for passage therethrough of portions of said trigger blocks;

a pair of springs, each of said pair of springs being disposed in a respective one of said slots of said base;

a pair of baffle elements, each of said pair of baffle elements being biased by a respective one of said springs into contact with a rear end portion of a respective trigger block; and,

means for securing said pair of plate members together defined by a single pair of rivets, each of said pair of rivets passing through said respective aperture in one of said first and second bent portions of both said pair of plate members and said through opening of a respective one of said pair of trigger blocks.

5,603,248

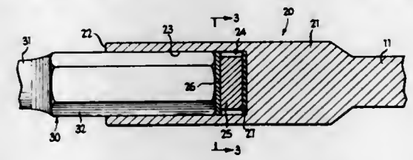
MAGNETIC BIT HOLDER AND HAND TOOL INCORPORATED SAME

Daniel M. Eggert, and Frank Mikic, both of Kenosha, Wis., assignors to Snap-on Technologies, Inc., Crystal Lake, Ill.

Division of Ser. No. 335,992, Nov. 8, 1994. This application Jan. 29, 1996, Ser. No. 593,396

Int. Cl.[6] B25B *13/02*

U.S. Cl. 81—438 **16 Claims**



1. A bit holder comprising: a cylindrical body having a distal end surface and an axis, said body having formed in said end surface an axial bore terminating at an inner end surface, a permanent magnet received in said bore and having an outer surface, and retaining structure in contact with the outer surface of said magnet and interference fitted in said bore to retain said magnet in said bore, said bore having a portion of non-circular transverse cross section outboard of said retaining structure defining a bit-receiving socket, said retaining structure including a discrete, flat, imperforate retaining member friction fitted in said bore outboard of said magnet, said retaining member and said inner end surface cooperating to retain said magnet therebetween.

5,603,249

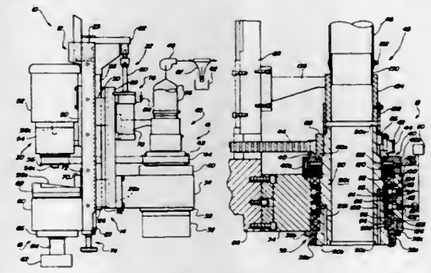
TRIM CUTTER APPARATUS FOR BLOW MOLDED ARTICLES

Lawrence H. Weber, Ypsilanti, Mich., and James M. Sheely, Toledo, Ohio, assignors to R & B Machine Tool Company, Saline, Mich.

Filed Apr. 19, 1995, Ser. No. 425,104

Int. Cl.[6] B23B *5/16;15/00*

U.S. Cl. 82—52 **8 Claims**



1. An apparatus for cutting excess material from a cylindrical end of a blow-molded article, comprising:

a fixture;

a cylindrical spindle rotatably mounted to said fixture for rotation about an axis, said spindle having first and second axial ends and a central bore extending through said spindle from openings at said first and second ends;

a cutting head having proximal and distal axial ends with said proximal end-rigidly connected to said second end of said

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spindle whereby said cutting head rotates with said spindle about said axis, said cutting head having a central passage open to said central bore of said spindle at said proximal end and terminating in a distal opening at said distal end;

a cutter mounted on said cutting head and supported for movement between a retracted position and an extended position in which said cutter extends into said central passage; and

a low pressure source coupled to said first end of said spindle to draw air through said central passage of said cutting head and said central bore of said spindle.

5,603,250

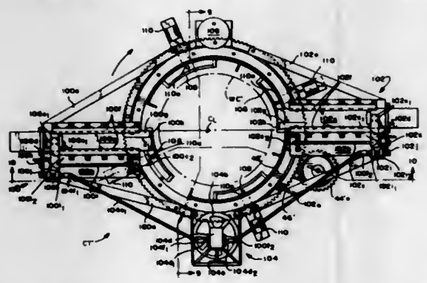
RADIAL CUTTING TOOL HAVING INDEXED PAIR OF BIT-SUBASSEMBLIES WITH SIMULTANEOUS FEED FOR CUTTING THICK-WALLED TUBES

Jerry H. Robinson, Mobile, Ala., assignor to Wellcutter, Inc., Brewton, Ala.

Continuation-in-part of Ser. No. 045,411, Apr. 13, 1993, Pat. No. 5,394,776. This application Dec. 22, 1994, Ser. No. 361,826

Int. Cl.[6] B23B *5/14*

U.S. Cl. 82—56 **4 Claims**



1. A cutting tool for cutting a tubular member having a longitudinal axis comprising:

an annular frame assembly which is concentrically positionable about the tubular member to be cut such that said cutting tool is disposed in a cutting plane which is normal to the tubular member's longitudinal axis;

a pair of radial cutting assemblies coupled at generally opposed locations to said annular frame for orbital movement as a unit about said tubular member within said cutting plane, wherein each of said radial cutting assemblies includes a bit Subassembly having (i) a bit support block which is radially movable within said cutting plane toward said tubular member, and (ii) a bit held by said bit support block at a forward end thereof; and

an indexing assembly coupled operatively to each of said radial cutting assemblies for responsively moving each said bit support block radially towards said tubular member simultaneously during orbital movement thereof about said tubular member, wherein

said indexing assembly includes:

(i) a stationary indexing gear concentrically associated with said annular frame assembly;

(ii) an indexing pinion gear intermeshed with said stationary indexing gear and coupled to said annular frame assembly at a circumferential location between said pair of radial cutting assemblies;

(iii) a gear box having a pair of output Shafts, said gear box being Coupled operatively to said indexing pinion gear to translate rotation of said indexing pinion gear during orbital movement thereof into rotation of each of said output shafts; and

(iv) a pair of linkage shafts operatively interconnecting respective ones of said output shafts and said bit support blocks for causing each of said bit support blocks to be radially simultaneously moved towards said tubular member in response to rotation of said output shafts.

5,603,251

SHEET MATERIAL CUTTING DEVICE

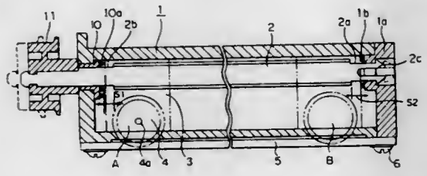
Takamasa Onishi, Gumma, Japan, assignor to Onishilite Industry Co., Ltd., Gumma, Japan

Filed Sep. 23, 1994, Ser. No. 311,109

Claims priority, application Japan, Oct. 8, 1993, 5-252876

Int. Cl.[6] B26D *1/20*

U.S. Cl. 83—487 **6 Claims**



1. A sheet material cutting device comprising: a screw shaft bearing-supported on a main frame; a supporting member connected to said screw shaft by a screw; a rotary cutting blade rotatably mounted on said supporting member; a fixed blade fitted on said main frame; and a driving mechanism to rotate said screw shaft wherein each end of said screw shaft is fitted to said main frame rotatably as well as slidably in an axial direction so as to allow absorbance of elongation of the screw shaft due to heat.

5,603,252

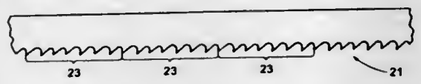
SAW BLADE

Robert C. Hayden, Sr., Branford, Conn., assignor to Sandvik AB, Sandviken, Sweden

Filed Aug. 28, 1995, Ser. No. 519,942

Int. Cl.[6] B27B *33/02*

U.S. Cl. 83—851 **18 Claims**



1. A saw blade, comprising:

a plurality of recurring groups of teeth, each tooth having a point; each group comprising

one high straight tooth without set,

an even number of high set teeth with points at a first level, half of the high set teeth being set to the right and half to the left,

an even number, greater than the number of high set teeth, of low set teeth with points at a second level lower than the first level, half of the low set teeth being set to the right and half to the left,

points of each tooth in the group being at a different distance from a point of a corresponding, immediately preceding tooth than a distance between a point of any other tooth in the group and a point of a corresponding, immediately preceding tooth,

all set teeth in the group having the same amount of set, and

no high tooth being immediately preceded by another high tooth, there being an odd number of low teeth between a high straight tooth and a high set tooth, and there being an even number of low teeth between two set high teeth, distances from a point of any tooth in the group to a point of a preceding tooth of the same height being different for all teeth in the group, distances from a point of any set tooth in the group to a point of a preceding set tooth of the same set being different for all set teeth in the group.

5,603,253

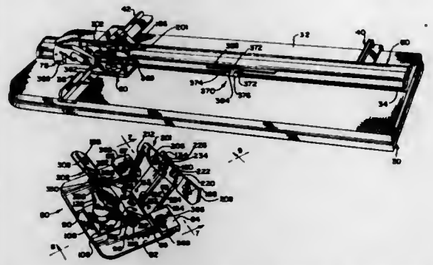
METHOD FOR CUTTING A GROOVE IN A MATBOARD

Malcolm Logan, 555 Signal Hill Rd., Barrington, Ill. 60010

Filed Feb. 4, 1994, Ser. No. 192,232

Int. Cl.[6] B26D *3/06;1/11*

U.S. Cl. 83—875 **9 Claims**



7. A method for providing a matboard with two cuts through a face of the matboard from between which a portion of the matboard can be removed to expose a decorative, linear groove having an angular transverse cross-section, said method comprising the steps of:

(A) positioning said matboard adjacent a linear guide;

(B) positioning a carrier for guided movement along said guide while said carrier carries two blades oriented in separate planes which intersect each other and which lie at an oblique angle relative to the matboard face;

(C) inserting one of said blades into said matboard to a selected depth with said carrier at a selected first location along said linear guide and then moving said carrier along said guide in a first of two opposite directions for a predetermined length of travel to make a first cut in said matboard defining a first side of said groove;

(D) retracting said one blade out of said matboard;

(E) with said carrier at a second location along said linear guide, inserting the other of said blades into said matboard to a selected depth at least intersecting said first cut and then moving said carrier in the second of two opposite directions to make a second cut in said matboard defining a second side of said groove; and

(F) retracting said other blade out of said matboard.

5,603,254

APPARATUS FOR EXTRACTING SUBSTANCES CONTAINED IN SEALED PLIANT BAGS

Olivier Fond, Kobe, Japan, and Petr Masek, Granges, Switzerland, assignors to Nestec S.A., Vevey, Switzerland

PCT No. PCT/CH94/00099, § 371 Date Mar. 16, 1995, § 102(e) Date Mar. 16, 1995, PCT Pub. No. WO94/27482, PCT Pub. Date Dec. 8, 1994

PCT Filed Mar. 27, 1994, Ser. No. 362,597

Claims priority, application Switzerland, Jun. 2, 1993, 1624/93; Jun. 2, 1993, 1625/93

Int. Cl.[6] A47J *31/24;31/14*

U.S. Cl. 99—295 **13 Claims**

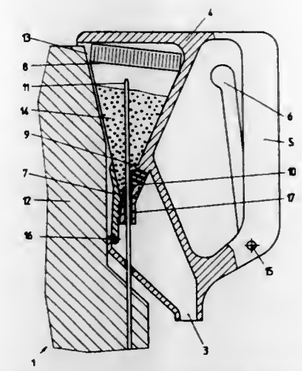
1. Apparatus for holding a bag containing a substance for preparation of a beverage for extraction of the substance comprising:

a housing member which comprises first and second portions wherein the housing member second portion extends from the housing member first portion and has a wall surface which defines a cavity for containing a bag, wherein the bag has a linear edge weld portion and contains a substance for preparation of a beverage, wherein the housing member second portion is configured for containing the bag so that when the bag is contained by the housing member second portion, the linear edge weld portion is positioned adjacent the housing member first portion and wherein the housing member first portion contains a bore which passes therethrough so that the bore communicates with the cavity;

means positioned for, upon containment of a bag by the housing member second portion, securing the linear edge weld portion against the housing member first portion;

raised members which extend from the housing member second portion wall surface into the cavity at a position adjacent the housing member first portion for defining a grid area of raised and indented portions for tearing a bag contained by the housing member second portion and flow holes positioned in the grid area which pass through the housing member second portion for, upon tearing of a bag by the raised members, passing extract from the cavity through the housing member; and

a handle which extends from the housing member second portion.



5,603,255

COOKING APPLIANCE OF THE GAS GRILL TYPE

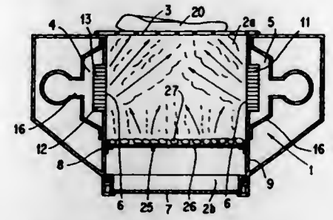
David Nouvelot, and Jean-Jacques Thibault, both of Lyons, France, assignors to Application Des Gaz, Paris, France

Filed Nov. 15, 1995, Ser. No. 556,454

Claims priority, application France, Nov. 18, 1994, 94 14051

Int. Cl.[6] A47J *37/00*

U.S. Cl. 99—400 **11 Claims**



1. A cooking appliance comprising:

a cooking structure having at least one side wall surrounding a cooking pit, an upper periphery and a lower periphery;

at least one radiant gas burner within the at least one side wall of the cooking structure;

at least one radiating surface emitting infrared radiation and being permeable to combustion smoke, the at least one radiating surface being positioned substantially vertically between the at least one burner and the cooking pit;

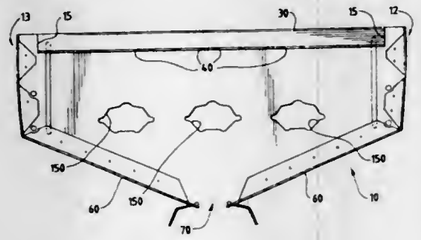
a collecting receptacle removably mounted on the cooking structure along the lower periphery of the cooking structure;

a cooking grid removably positioned along the upper periphery of the cooking structure; and

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a bottom assembly located between the at least one radiating surface and the collecting receptacle, the bottom assembly and cooking grid being positioned within the cooking structure so as to allow unobstructed heat exchange therebetween.

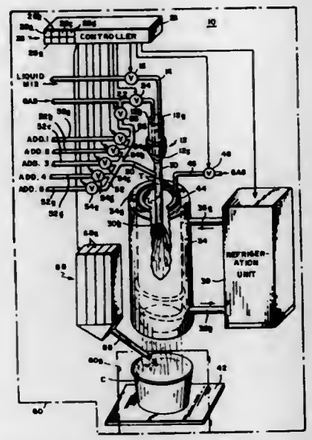
5,603,256
BARBECUE GRILL
James L. Charlson, Freeport; Frederick A. Mather, Pearl City; Dale M. Peacock, Freeport, and Algerd Churas, deceased, late of Pearl City, all of Ill., assignors to The Thermos Company, Freeport, Ill.
Continuation-in-part of Ser. No. 106,232, Aug. 13, 1993, abandoned. This application Apr. 18, 1995, Ser. No. 423,311
Int. Cl.[6] A47J *37/04;37/00*
U.S. Cl. 99—445 **11 Claims**



1. A barbecue grill for cooking food comprising:
a firebox, the firebox including angled lower walls for draining liquids coming from the food, wherein the firebox is made of heavy gauge steel to reduce energy loss through heat transfer;
a grease channel, connected to the lower portion of the firebox, for directing grease away from the firebox;
a cover pivotally attached to the firebox, wherein the cover is made of heavy gauge steel to reduce energy loss through heat transfer;
a cooking surface removably placed at the top of the firebox and securely held therein;
the cooking surface further comprising a generally sheetlike metal formed to define a plurality of inverted U-shaped crests for supporting food and V-shaped troughs being defined between the crests, wherein the cooking surface contains one or more holes in the troughs to permit grease to drip away from the cooking surface; and
at least one gas burner for providing cooking heat;
the gas burner further providing a plurality of gas port perforations and wings, the grill being free of any structure or shielding apparatus between the gas burner and cooking surface.

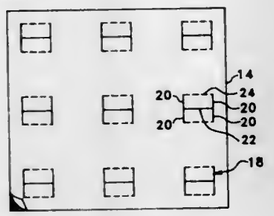
5,603,257
APPARATUS FOR PRODUCING AND DISPENSING AERATED OR BLENDED FLUID PRODUCTS
Paul Kateman, Cambridge; Matthew K. Haggerty, Milton, and Clay A. Burns, Medford, all of Mass., assignors to Turbo Dynamix Limited Partnership, Cambridge, Mass.
Division of Ser. No. 154,747, Nov. 18, 1993, Pat. No. 5,433,967, which is a continuation-in-part of Ser. No. 740,725, Aug. 6, 1991, Pat. No. 5,292,030, which is a continuation-in-part of Ser. No. 564,719, Aug. 6, 1990, abandoned. This application Sep. 19, 1994, Ser. No. 308,665
Int. Cl.[6] A23C *3/04;* **F25C** *1/18*
U.S. Cl. 99—455 **17 Claims**

1. Apparatus for producing and dispensing an aerated food product comprising
mixing means for mixing a liquid and a gas to produce an atomized fluid stream comprised of liquid particles;



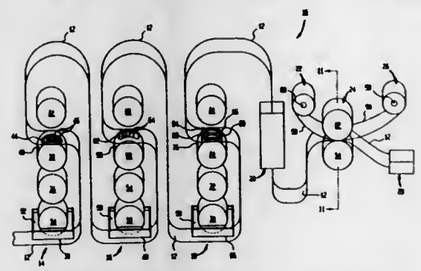
means defining a flow-through passage having an entrance end positioned to receive the fluid stream from the mixing means and an exit end spaced from the entrance end, said passage confining the flow of the fluid so that the liquid particles coalesce and become aerated before the fluid leaves the passage through said exit end thereof;
cooling means located adjacent to said passage defining means for at least partially freezing the aerated fluid exiting said passage to form said food product;
source means for providing a liquid to said mixing means in response to fluid pressure;
a source of pressurized gas, and
means for conducting said gas to said mixing means and to said source means so that said gas propels said liquid to said mixing means, atomizes the liquid in the mixing means and forces said atomized fluid stream through said passage so that a uniformly aerated fluid exits said passage.

5,603,258
CORRUGATED PALLET
Larry G. Besaw, Jasper, Ind., assignor to The Servant's Inc., Jasper, Ind.
Continuation-in-part of Ser. No. 169,317, Dec. 17, 1993, Pat. No. 5,535,668. This application Mar. 25, 1994, Ser. No. 218,111
Int. Cl.[6] B65D *19/00*
U.S. Cl. 108—51.3 **27 Claims**



1. A leg-wrap support member, comprising:
a sheet of corrugated material having a plurality of spaced apart parallel score lines formed therein, said sheet being folded inwardly forming creases along said score lines and at least five panel sections thereinbetween forming a generally rectangular shaped conduit having at least two of said panel sections overlapping and secured together with a holding means defining a top panel, bottom panel, and side panels, said generally rectangular shaped conduit including at least one corrugated support member disposed therein comprising a strip of corrugated material bent into a generally square configuration having flutes oriented normal to the surface of said top panel and said bottom panel defining a top fluted edge and a bottom fluted edge.

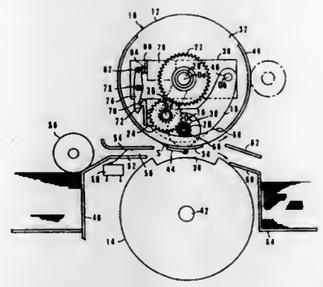
5,603,259
IN-LINE COLD FOIL TRANSFER PROCESS AND APPARATUS
Leonard B. Gross, Teaneck, and Manuel S. Cueli, Clifton, both of N.J., assignors to Crown Roll Leaf, Inc., and Adhesion Systems, Inc., both of Paterson, N.J.
Division of Ser. No. 114,764, Aug. 31, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 481,847
Int. Cl.[6] B41D *7/00*
U.S. Cl. 101—33 **14 Claims**



1. In a printing apparatus which normally includes a plurality of printing stations for applying ink to a continuous web and a plurality of heating stations for generating enough heat to substantially dry ink applied to the web, the improvement wherein at least one of said printing stations applies a water-based, self-cross-linking co-polymer adhesive to the web that cures in ambient conditions and does not exhibit cold flow, wherein at least one of said heating stations applies heat sufficient only to initiate curing of the adhesive which has been applied to the web; said improvement also comprising a roll leaf disposed downstream of said one printing station, unheated pinch rollers arranged in-line with said printing stations and said heating stations, for pressing the roll leaf against the web with a pressure sufficient to transfer colored material from the roll leaf to the adhesive which has been applied to the web and which is undergoing curing, the transfer of the colored material being carried out continuously without the application of heat at a constant speed between 150–300 feet/minute.

5,603,260
ROTARY STENCIL PRINTER HAVING GEAR TRAIN FOR SYNCHRONIZING INNER PRESS ROLLER WITH PRINTING DRUM AND INCLUDING CLUTCH FOR PRESS BIAS CONTROL
Yoshiharu Ohinata; Yasuhiro Takahashi, and Yoshihiro Noguchi, all of Tokyo, Japan, assignors to Riso Kagaku Corporation, Tokyo, Japan
Filed Dec. 5, 1995, Ser. No. 567,164
Claims priority, application Japan, Dec. 8, 1994, 6-331072; Mar. 28, 1995, 7-094326
Int. Cl.[6] B41M *1/12*
U.S. Cl. 101—129 **6 Claims**

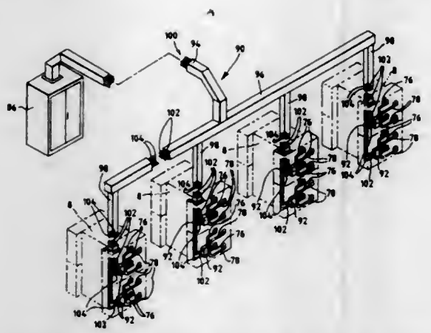
1. A method of using a rotary stencil printer that includes:
a frame body;
a printing drum having a circumferential wall made of an ink permeable flexible sheet material and supported by the frame body to be rotatable on a central axis thereof;
a back press roller having a cylindrical outer surface and supported by the frame body to be rotatable on a central axis thereof parallel with the central axis of the printing drum so as to define a nip region between the cylindrical outer surface thereof and a cylindrical outer surface of the printing drum for nipping and transferring a print sheet therethrough;



a first arm means supported by the frame body to swing about a pivot axis thereof parallel with and distant from the central axis of the printing drum;
an inner press roller supported by said first arm means to be rotatable on a central axis thereof parallel with and distant from the pivot axis of said first arm means to contact a part of the circumferential wall of the printing drum at a radially inside surface thereof so as to selectively press said part radially outward of the printing drum toward the back press roller when biased in a radially outward direction of the printing drum;
a first gear wheel adapted to rotate on the central axis of the printing drum in synchronization with the printing drum;
a second arm means adapted to swing about the central axis of the printing drum;
a second gear wheel supported by said second arm means to be rotatable on a central axis thereof and meshing with said first gear wheel, the central axis of said second gear wheel being located on a first side of a phantom plane extended between the central axis of the printing drum and the inner press roller opposite to a second side thereof at which the pivot axis of said first arm means is located;
a third gear wheel adapted to rotate on the central axis of the inner press roller together therewith and meshing with said second gear wheel so that the inner press roller is rotated in synchronization with the printing drum through a gear train of said first, second and third gear wheels when the printing drum is driven to rotate on the central axis thereof; and
an arm biasing means for biasing said second arm means to swing about the central axis of the printing drum in a direction same as rotation of the printing drum; comprising the steps of:
controlling the actuation of the arm biasing means for controlling the biasing of the inner press roller in said radially outward direction of the printing drum such that the arm biasing means is temporarily more strongly actuated during a starting up of printing operation of the printer than in normal operating condition thereof.

5,603,261
WATER DISTRIBUTION SYSTEM IN AN INK FLOW TEMPERATURE CONTROL SYSTEM OF A PRINTING PRESS ARRANGEMENT
Robert J. Buenz, Winfield, Ill., assignor to Tri Service, Inc., Melrose Park, Ill.
Filed Mar. 8, 1996, Ser. No. 613,164
Int. Cl.[6] B41F *5/00*
U.S. Cl. 101—216 **6 Claims**

1. A water distribution system in an ink flow temperature control system of a plurality of printing presses such as multi-color offset perfecting and nonperfecting web and sheet fed presses, comprising:



a plurality of printing presses each having at least one printing head whereat water is used to control the temperature of ink distributed through the head;

a multiple zone control unit for controlling the temperature of water distributed to the printing heads of the plurality of printing presses;

an enlarged rigid conduit means between the multiple zone control unit and each printing press; and

a plurality of flexible non-metallic distribution hoses within said enlarged rigid conduit means for distributing water between the multiple zone control unit and the printing heads of the plurality of printing presses.

5,603,262

INK-FURNISHING APPARATUS

Yoshinori Uera; Taiichi Ichizawa; Kohji Yoshizawa, all of Kawasaki, and Takashi Iijima, Yokosuka, all of Japan, assignors to Kabushiki Kaisha Tokyo Kikai Seisakusho, Minato-Ku, Japan

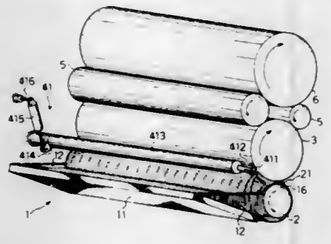
Filed Dec. 14, 1995, Ser. No. 572,535

Claims priority, applicatinn Japan, Jun. 30, 1995, 7-188340

Int. Cl.[6] B41F *31/04;31/06*

U.S. Cl. 101—350 **18 Claims**

1. An ink furnishing apparatus for a printing press for performing printing by furnishing an ink to a printing plate on a plate cylinder, comprising:



a form roller rotating in contact with a peripheral surface of the printing plate;

a rotatable metering roller having a peripheral surface contacting the upstream side of the peripheral surface of said form roller in the ink furnishing, and having a uniformly distributed plurality of fine recesses on a peripheral surface thereof for receiving the ink;

doctor means for removing an extra mount of ink from the peripheral surface of said metering roller at a position upstream of the contacting position of said form roller, said doctor means having switching means for switching the position between a contacting position where said doctor means is in contact with said metering roller for effecting removal of the extra amount of the ink and a released position where said doctor means is shifted away from the metering roller;

an ink fountain opposing to the upper portion of said doctor means and opened at the front side and the upper side, and constituted of both side plates and tilted base;

a fountain roller having a peripheral surface located at a position for blocking the opened front side of said ink fountain, and positioned adjacent to a front edge of said ink fountain via a first gap, and positioned adjacent to the peripheral surface of said metering roller at an upstream position from the contacting position of said doctor means via a second gap which is smaller than said first gap, and the peripheral surface of said fountain roller blocking the front side of said ink fountain and rotatable downwardly at a peripheral speed lower than the peripheral speed of said metering roller; and

first gap adjusting means separately provided in said ink fountain for respective adjustment of divided zones defined along an axial direction of said fountain roller for adjusting said first gap,

said apparatus having means selectively operable in:

an entire surface ink furnishing mode, in which said first gap is held fully opened, said doctor means is placed in contact with said metering roller, ink drawn through said fully opened first gap in a thickness corresponding to said first gap by rotation of said fountain roller, is furnished in an excess amount of ink onto the peripheral surface of said metering roller, with compression by passing through the second gap, the extra amount of ink on the peripheral surface is scraped off by means of said doctor means contacting with the peripheral surface of said metering roller to return to said ink fountain, and the ink is furnished onto a printing plate on the plate cylinder via the peripheral surface of said form roller in substantially uniform amount over the entire position along the axis of said metering roller, and

a local ink furnishing mode, in which said first gap is adjusted to be narrower with respect to the divided zones by the adjusting means, said doctor means is released away from the peripheral surface of said metering roller, the ink drawn from said ink fountain by rotation of said fountain roller per each divided zone in the desired thickness is furnished on the peripheral surface of said metering roller in the amount corresponding to the thickness of the ink at each zone passed through said second gap, and the ink furnished on the peripheral surface of said metering roller is transferred to the printing plate on said plate cylinder via the peripheral surface of said form roller.

5,603,263

SCRAPER BLADE AND INK SCAVENGER FOR PRINTING PRESSES

Charles H. Dufour, Durham, and David C. Pollock, Somersworth, both of N.H., assignors to Heidelberger Druckmaschinen AG, Heidelberg, Germany, and Heidelberg Harris, Inc., Dover, N.H.

Filed Sep. 8, 1995, Ser. No. 525,105

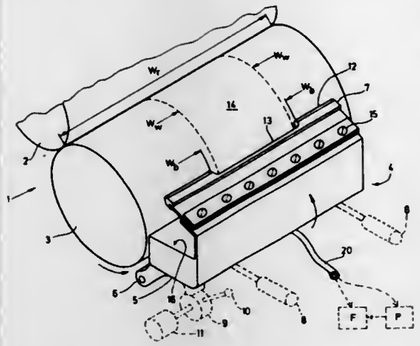
Int. Cl.[6] B41F *35/00*

U.S. Cl. 101—423 **22 Claims**

1. An apparatus for removing excess fluid material from an ink roller in a printing press unit, the ink roller comprising a printing area, the apparatus comprising:

an ink scraper blade, the ink scraper blade comprising at least one portion which does not contact the ink roller, the at least one portion which does not contact the ink roller being aligned with and having a width slighly greater than a width of the printing area, the scraper blade further comprising at least one portion which does contact the ink roller;

at least one actuator for moving the at least one portion which does contact the ink roller into engagement with the ink roller; and



a receptacle for receiving fluid material scraped from the ink roller by contact between the ink roller and the at least one portion which does contact the ink roller.

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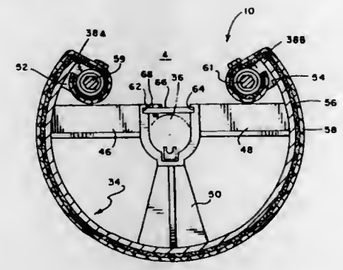
METHOD AND APPARATUS FOR HANDLING PRINTED SHEET MATERIAL

Howard W. DeMoore, 10954 Shady Trail, Dallas, Tex. 75220, and John A. Branson, Coppell, Tex., assignors to Howard W. DeMoore, Dallas, Tex.

Division of Ser. No. 259,634, Jun. 14, 1994. This application Sep. 15, 1995, Ser. No. 528,701

Int. Cl.[6] B41F *5/00*

U.S. Cl. 101—483 **10 Claims**



1. A transfer cylinder for supporting a freshly printed sheet as it is transferred from one printing unit to another comprising, in combination:

a rotatable support member having a sheet transfer surface formed by a porous metal surface region;

an infusion of resin material disposed within the porous metal surface region, said resin having a frictional coefficient that is less than the frictional coefficient of the porous metal surface region; and,

a flexible jacket covering movably disposed over at least a portion of the resin infused porous metal surface region for engaging one side of a freshly printed sheet during the transfer thereof.

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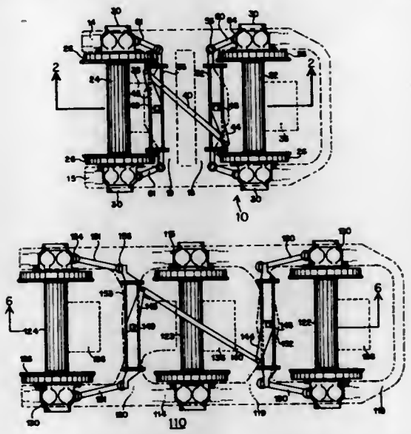
ANGLED TRACTION RODS

Philip A. Jones, Boise, Id., assignor to M-K Rail Corporation, Boise, Id.

Filed Mar. 6, 1995, Ser. No. 399,944

Int. Cl.[6] B61F *5/00*

U.S. Cl. 105—167 **4 Claims**



1. A self-steering wheel truck for use with a railway locomotive or powered transit car, said self-steering wheel truck including first and second longitudinally spaced wheel and axle assemblies each having a pair of opposing wheels interconnected by an axle, a truck frame including a pair of parallel side frames, defining a longitudinal axis, interconnected by at least two transverse frame members, defining a transverse axis, means for resiliently carrying said truck frame on said first and second axle and wheel assemblies and permitting axle yaw for both the first and second axles, tractive force motors drivedly connected to the axles for driving the wheels, an improvement which comprises;

linkage means for transferring traction forces to the truck frame;

an angled traction rod associated with each wheel interconnecting the means for rotatably carrying the truck frame on the first and second axle and wheel assemblies to the linkage means, in an orientation such that when each axle and wheel assembly is in a parallel, straight running position, each traction rod is at an angle relative to said longitudinal axis defined by the parallel side frames, wherein each said traction rod angles inwardly toward the longitudinal axis from the point where said traction rod pivotally connects to the means for rotatably carrying the truck frame on the first and second axle and wheel assemblies.

5,603,266

MODULAR PALLETS AND COMPONENTS THEREFOR

Abbey Nash, Toronto, Canada, assignor to Palletronix Corporation, Toronto, Canada

Filed Nov. 24, 1995, Ser. No. 562,561

Int. Cl.[6] B65D *19/12*

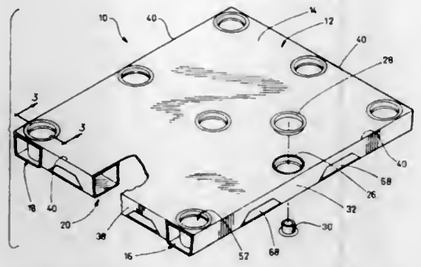
U.S. Cl. 108—56.3 **23 Claims**

1. A post adapted for attachment to a pallet deck that has a pair of opposing faces and a clearance hole extending between the faces, the post comprising:

a male part shaped to abut one of the faces of the deck and to extend through the clearance hole;

a female part shaped to abut the other of the faces of the deck and to receive the extended male part along a predetermined axis of the female part and to allow relative rotation of the male pan about the axis;

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locking means for locking the male part to the female part to resist relative axial separation when the male pan is received within the female part in various relative axial positions, the locking means comprising complementary pairs of locking structures, each of the pairs comprising a locking structure mounted externally on the male pan and another locking structure mounted internally within the female part and shaped to interlock with the locking structure on the male part, the locking structures of each of the pairs being shaped for relative rotation about the axis between an unlocking orientation in which the locking structures peat axial separation of the parts and a locked orientation in which the locking structures are interlocked to resist axial separation of the parts, and,

detent means for resisting relative rotation of the pairs of locking structures from their locked orientation toward their unlocked orientation, the detent means comprising a detent structure mounted externally on the male part and a complementary detent structure mounted internally on the female part.

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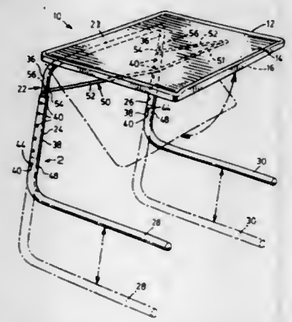
FOLDING TABLE

Douglas B. Soper, North York, Canada, assignor to Ino-Products Inc., North York, Canada

Continuation of Ser. No. 409,572, Mar. 24, 1995, Pat. No. 5,573,590, which is a continuation of Ser. No. 136,186, Oct. 15, 1993, Pat. No. 5,417,168. This application May 16, 1996, Ser. No. 649,042

Int. Cl.[6] A47B *3/00*

U.S. Cl. 108—124 **9 Claims**



1. A folding table comprising:

a table top having an upper working surface and an underside, said underside having at least one rearwardly located leg retainer and at least one forwardly located strut retainer,

a leg assembly comprising an elongated connecting member and a pair of legs extending from opposite ends of the connecting member, each straight leg having a foot member extending from a lower end thereof remote from the connecting member, whereby in use the straight legs are vertical and the foot members extend forwardly therefrom, and

an angularly movable strut pivotally secured at the rear to at least one of the legs and releasably engageable at the front with the strut retainer,

said strut being angularly moveable between a working position in releasable engagement with the strut retainer to maintain the tabletop in a working position and a retracted position between the legs when released from the strut retainer,

each leg retainer retaining the connecting member in engagement therewith while permitting angular movement of the table top between a working position and a folding position in which the table top is substantially parallel to the legs,

said legs each having upper and lower portions in telescoping engagement, the lower leg portions being securable at different longitudinal positions relative to the upper portions to vary the length of the legs,

the lower leg portion being angularly movable relative to the upper leg portions about the longitudinal axes of the legs to enable the lower leg portions to be securable in working positions in which the foot members are parallel to one another and folded positions in which the foot members extend in opposite directions side-by-side one another.

5,603,268

COAL PULVERIZER ASSOCIATED WITH A ROTARY CLASSIFIER AND METHOD FOR OPERATING THE SAME

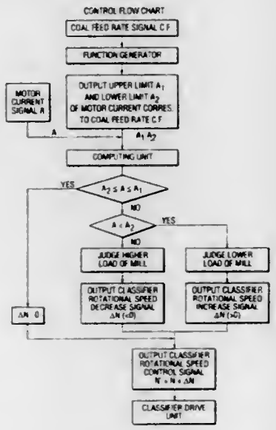
Masaaki Kinoshita, and Yutaka Iida, both of Nagasaki, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Toyko, Japan

Filed Jul. 26, 1994, Ser. No. 280,502

Claims priority, application Japan, Jul. 26, 1993, 5-183886

Int. Cl.[6] F23B *7/00*

U.S. Cl. 110—342 **2 Claims**



1. A method for operating a coal pulverizer associated with a rotary classifier having a rotary speed, said method comprising: detecting a range at which coal is fed to the pulverizer and generating a respective allowable range of a current flowing to a motor of the coal pulverizer as a function of each detected rate at which coal is fed to the pulverizer, and controlling the rotary speed of the rotary classifier so that the current flowing to the motor of the coal pulverizer falls within the respective allowable generated preset range for the detected coal feed rate.

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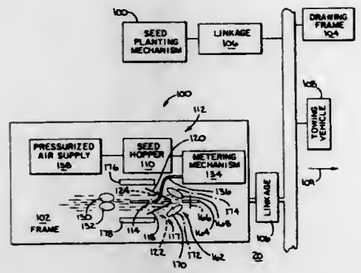
MECHANISM FOR PLANTING AGRICULTURAL SEED

James H. Bassett, Sycamore, Ill., assignor to Dawn Equipment Company, Sycamore, Ill.

Continuation of Ser. No. 189,840, Feb. 1, 1994, Pat. No. 5,476,051. This application Sep. 29, 1995, Ser. No. 536,676

Int. Cl.[6] A01B *5/00;49/04;* **A01C** *5/00*

U.S. Cl. 111—52 **33 Claims**



1. A mechanism for continuously planting agricultural seed, said mechanism comprising:

a first frame to be drawn by a towing vehicle forwardly in a travel line, said first frame having an upstream end, a downstream end, and laterally spaced sides;

means on the first frame for directing seed from a bulk seed supply forcibly to a first delivery point adjacent to a surface on underlying soil into which seed is to be planted;

means on the first frame for pressing seed from said seed directing means into underlying soil adjacent to said first delivery point as said first frame moves forwardly; and

first soil parting means comprising at least one rotatable disc on the first frame for defining a receptacle for seed at said delivery point, said at least one rotatable disc having an axis of rotation that is non-perpendicular to the travel line.

wherein said seed pressing means includes a pressing wheel situated downstream of and adjacent to the first delivery point and having a peripheral surface to engage underlying soil at a location that is laterally aligned with the first delivery point,

there further being means on the first frame for driving the pressing wheel in rotation independently of the direct engagement between the pressing wheel and the underlying soil as the first frame advances in a forward direction.

5,603,270

QUILTING MATERIAL HANDLING AND FEEDING METHOD AND APPARATUS

M. Burl White, Coral Springs; John Keys, Hallandale; Roland Bulnes, Margate, and James T. Frazer, Coral Springs, all of Fla., assignors to L&P Property Management Company, Chicago, Ill.

Filed May 15, 1995, Ser. No. 441,607

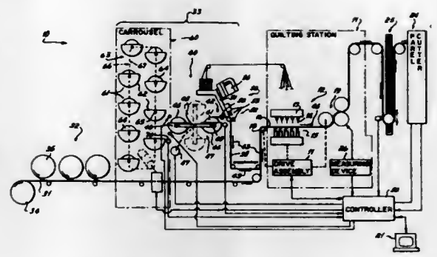
Int. Cl.[6] D05B *11/00*

U.S. Cl. 112—117 **33 Claims**

1. A quilting machine comprising:

a quilting station including a stitching mechanism operative to quilt a web of fabric extending through the quilting station; and

a facing material supply including a storage unit having a plurality of supports each configured to hold a web of facing material, an infeed station positioned upstream of the quilting station such that a web of facing material is extendable therefrom along a path to the quilting station, and a retrieval mechanism operable to direct a selected web of facing material from the storage unit to the infeed station.



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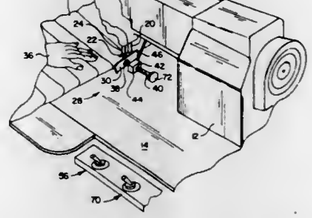
RETRACTABLE SEAM GAUGE FOR SEWING MACHINE AND PNEUMATIC SPACING ADJUSTMENT

Terry L. Reinhart, Findlay, and Vaughn J. Piper, Elida, both of Ohio, assignors to Findlay Industries, Inc., Fostoria, Ohio

Filed Apr. 10, 1995, Ser. No. 419,242

Int. Cl.[6] D05B *35/10*

U.S. Cl. 112—153 **15 Claims**



1. In combination, a sewing machine and a seam gauge, comprising,

a sewing machine having a bed plate supporting a standard, said standard having a transversely extending arm terminating in a head, said head supporting a presser foot on a presser foot bar and a needle on a needle bar,

said machine having a front side to receive fabric for sewing by said needle and a back side for the exit of sewn fabric, said fabric having a side edge between said needle and said standard,

a first piston and cylinder combination mounted on said back side, a piston rod projecting from said cylinder toward said plate at a location between said standard and said presser foot,

a seam gauge for engaging said edge of said fabric, said gauge being mounted on said rod to reciprocate between (1) a position adjacent said needle near said plate and (2) a position retracted vertically from said plate and toward said sewing machine back side to provide a space between said standard and said needle which is unobstructed by said seam gauge.

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TWO-NEEDLE TYPE SEWING MACHINE

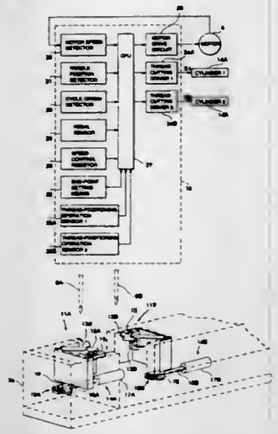
Yoshimi Takahashi, and Yasushi Kakizaki, both of Tokyo, Japan, assignors to Juki Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 451,770, May 26, 1995, abandoned. This application Jun. 7, 1995, Ser. No. 487,099

Claims priority, application Japan, May 27, 1994, 6-115658; Jan. 26, 1995, 7-010738

Int. Cl.[6] **D05B** *1/08;65/00*

U.S. Cl. 112—163 **9 Claims**



1. A two-needle sewing machine comprising:

first and second sewing needles for performing two stitching operations at the same time;

a motor for driving said first and second sewing needles;

first and second thread cutting mechanisms provided for said first and second sewing needles, respectively, for cutting threads at the ends of said stitching operations;

a first actuator and a second actuator for driving respective ones of said first and second thread cutting mechanisms; and

a thread cutting control circuit which stores data corresponding to the timing of a first thread cutting drive signal to said first actuator and the timing of a second thread cutting drive signal to said second actuator, both signals corresponding to rotational speeds of said motor, and which, according to said data and the rotational speeds of said motor, applies the first and second thread cutting drive signals to said first and second actuators at different times defined by said data.

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UNDER THREAD SUPPLY APPARATUS AND METHOD OF SUPPLYING UNDER THREAD

Masao Nakamura; Sumio Goto; Hiroyuki Tomioka; Takayoshi Mori, and Nozomi Iwasaki, all of Tokyo, Japan, assignors to Juki Corporation, Tokyo, Japan

Division of Ser. No. 279,866, Jul. 26, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 474,909

Claims priority, application Japan, Aug. 31, 1993, 5-239194; Dec. 28, 1993, 5-353244; Mar. 7, 1994, 6-62066

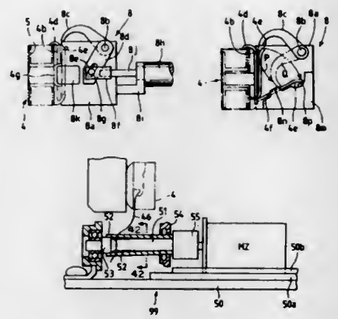
Int. Cl.[6] **D05B** *59/04*

U.S. Cl. 112—186 **8 Claims**

1. A bobbin exchanging device for a sewing machine comprising:

at least two bobbin cases, each accommodating a bobbin and each having a lock lever releasable from and firmly setting in the respective bobbin case;

grasping means supported for traversing movement between a shuttle position and other work positions and for reciprocating movement at the shuttle position for grasping a first of the at



least two bobbin case accommodating the bobbin with an under thread wound therearound, so that said bobbin grasping means grasps the first of the at least two bobbin case set in the shuttle and takes it out of the shuttle, and grasps another of the at least two bobbin cases prepared at another work position and sets it in the shuttle, said bobbin grasping means including,

a pulling mechanism for releasing said lock lever of said at least two bobbin cases by pulling said lock lever from a closed position, and

a lock mechanism for keeping said lock lever of one of said at least two bobbin cases at a released position while said one of the at least two bobbin cases is grasped by the grasping means; and

operation means for operating said lock mechanism of said bobbin grasping means and said pull-up mechanism, said operation means being mounted on a body of said bobbin exchanging device.

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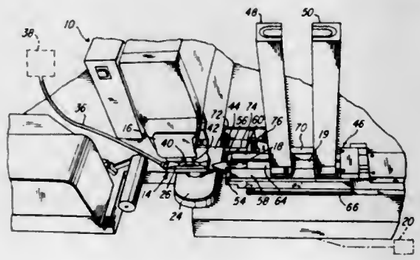
CLAMPING DEVICE FOR A SEWING MACHINE

Ralph F. Conley, Jr., and Ricky J. Frye, both of Miamisburg, Ohio, assignors to MIM Industries, Inc., Miamisburg, Ohio

Filed Feb. 15, 1994, Ser. No. 196,585

Int. Cl.[6] **D05B** *21/00;3/22*

U.S. Cl. 112—470.14 **21 Claims**



1. A clamping device for use in a sewing machine, said clamping device comprising:

a clamping member having a clamping area for clamping a first workpiece under a sewing head of said sewing machine; and

holding means associated with said clamping member for creating a negative pressure at said clamping area,

wherein said clamping area faces downwardly from said clamping member and said holding means is operable to retain a second workpiece on said clamping area,

wherein said clamping area is defined by a clamping surface for engaging said first workpiece and an indented portion recessed from said clamping surface for engaging said second, workpiece.

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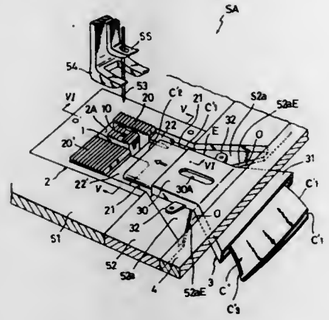
DEVICE FOR FORMING A LOOP-LIKE ANCHOR MEMBER ON A TRIM COVER ASSEMBLY

Kiyoshi Kawasaki, Akishima, Japan, assignor to Tachi-S Co., Ltd., Tokyo, Japan

Filed Mar. 21, 1996, Ser. No. 619,082

Int. Cl.[6] **D05B** *27/10;35/06;73/04*

U.S. Cl. 112—470.27 **18 Claims**



1. A device for automatically forming a loop-like anchor member on a trim cover assembly, which includes a supplying/folding mechanism disposed below a table of a sewing machine, said supplying/folding mechanism being operable to supply and fold an original tape of anchor member along the central longitudinal line thereof into a folded-over form of anchor member, and a slit which is formed in said table in vicinity of a sewing area on said table where the sewing machine and a feeding means associated with said sewing machine are provided, wherein, through said slit, said folded-over form of anchor member is fed from below said table by operation of said supplying/folding mechanism towards said sewing area and then sewn to said trim cover assembly by said sewing machine and feeding means so as to form the loop-like anchor member dependent from said trim cover assembly,

said device comprising:

a recessed groove means which is arranged on said table such as to be disposed between said slit and said feeding means of said sewing machine;

a guide means provided between said recessed groove means and said supplying/folding mechanism, said guide means having one end portion extending through said slit towards said recessed groove; and

a feed control means provided in said supplying/folding mechanism, said feed control means being operable and controllable to feed and stop said folded-over form of anchor member, such that a forward end of said folded-over form of anchor member is positioned within an operative feeding range of said feeding means associated with said sewing machine,

wherein when said trim cover assembly is placed on said table such as to overlie said guide means, said forward end of said doubled-over form of anchor member is fed through said guide means and stopped in said operative feeding range of said feeding means by operation of said feed control means, and said doubled-over form of anchor member is sewn to said trim cover assembly, thereby forming the loop-like anchor member on said trim cover assembly.

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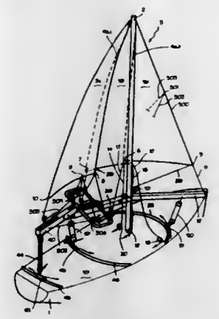
DEVICE COMPRISING AT LEAST ONE ELEMENT OF AERODYNAMIC SHAPE WITH MODIFIABLE GEOMETRY INTEGRATING A SYSTEM FOR CONTROLLING THE BOUNDARY LAYER

Pierre Julien, 83830 Callas, Quartier Peypin, France

Continuation of Ser. No. 137,085, Oct. 18, 1993, Pat. No. 5,485,799. This application Sep. 13, 1995, Ser. No. 527,524

Int. Cl.[6] **B03B** *9/04*

U.S. Cl. 114—39.001 **28 Claims**





1. A device for a nautical and/or earth craft comprising:

(a) at least one element of aerodynamic shape comprising at least one sail part, and having a pressure face side and a suction face side, for propulsion and/or lift of the craft using the effect of relative wind;

(b) said at least one element defining at least one opening therein for providing a passage of air from the pressure face side to the suction face side of said at least one element, so that said element includes at least two leading edges, wherein said device includes a mast which is connected to said element and passes along one of said leading edges of said element;

(c) guide means for guiding the air emerging from said at least one opening on the suction face side of said at least one element in a direction tangential to said at least one element, wherein said guide means comprise zones of the pressure and/or the suction face side of said element which are located upstream and downstream from said opening;

(d) positioning means for adjusting both the position and the geometry of at least one part of said at least one element; for adjusting the geometry and the opening/closing of said at least one opening and said guide means of the air passage; for adjusting the curvature of said at least one element in terms of hollow and in terms of shape; for giving at least one of said leading edges its own mobility, wherein such mobility participates in the adjustment of the curvature of said at least one element; for reducing partially and/or completely the surface area of said at least one element; and for varying the orientation of said at least one element relative to the craft, wherein said positioning means comprise a plurality of control members, at least some of which are operatively connected to said at least one element, and at least one framework assembly cooperating with said control members.

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TACK ABACK SAILBOAT

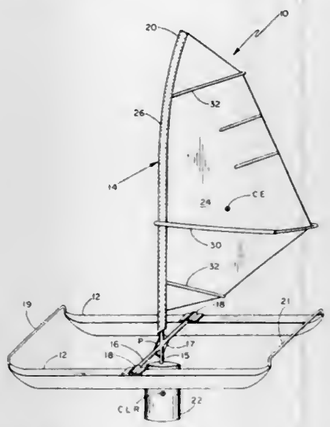
William B. Webb, 313 Park St., Lake City, Minn. 55041

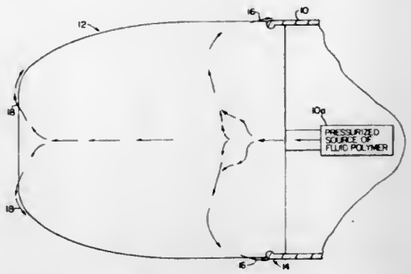
Continuation-in-part of Ser. No. 403,214, Mar. 13, 1995, abandoned, which is a continuation-in-part of Ser. No. 225,466, Apr. 8, 1994, Pat. No. 5,410,977. This application Oct. 10, 1995, Ser. No. 540,500

The portion of the term of this patent subsequent to Apr. 8, 2014, has been disclaimed.

Int. Cl.[6] B63B *15/00*

U.S. Cl. 114—61 **18 Claims**





1. A sailboat, comprising:

(a) hull means having spaced apart bow and stern ends, with longitudinal and transverse axes extending therebetween, and with said hull means being substantially symmetrical about said transverse axis;

(b) an upwardly extending mast means having an upper end and a lower end, said lower end adjustably coupled to said hull means at a pivot point such that said mast means can rotate fore or aft toward said bow and said stern, respectively;

(c) a sail coupled to said mast means;

(d) keel means having a vertical axis extending through the depth thereof, and wherein said keel means is coupled to said mast lower end and movably and positionably rotatable either fore and aft as said mast means is rotated about said pivot point;

(e) and wherein said keel means is symmetrical about said vertical axis; and

(f) the arrangement being such that said symmetrical bow and stern ends are interchangeable, one with the other, whereby said sailboat is reversible and can sail in either direction without rotating said bow and stern ends.

5,603,278

BUOYANT TEST VEHICLE POLYMER EJECTION NOSE ASSEMBLY

William H. Nedderman, Middletown, and Robert Meunier, Portsmouth, both of R.I., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 16, 1996, Ser. No. 591,184

Int. Cl.[6] B63B *1/34*

U.S. Cl. 114—67 R **17 Claims**

1. In a vehicle traveling through a fluid, the vehicle having a generally cylindrical portion with a boundary layer fluid storage and pressurizing means and a nose portion, the nose portion comprising:

an annular assembly secured to a forward end of said cylindrical portion, the annular assembly having passageway defining means with an inlet end communicating with the boundary layer fluid storage and pressurizing means of the cylindrical portion, channel defining segments communicating with said passageway defining means and boundary layer fluid ejector port defining means communicating with said channel defining segments for directing boundary layer fluid rearwardly along the outside of said vehicle;

a nose ogive segment adjacent to said annular assembly; and

a nose cap assembly having nose ejector ports for directing boundary layer fluid along the outside of said nose ogive segment, said nose ogive segment being between said nose assembly and said annular assembly, said passageway defining means including a removable plug for isolating said nose ejector ports from said passageway defining means.

5,603,279

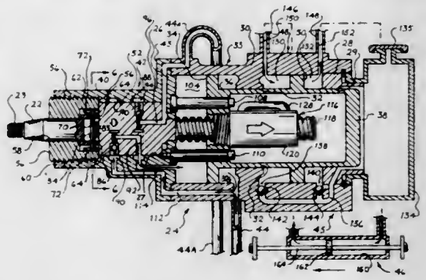
POWER STEERING ASSIST

James M. Hundertmark, Fond du Lac County, and Timothy W. Merten, Winnebago County, both of Wis., assignors to Performance 1 Marine, Inc., Overland Park, Kans.

Filed Apr. 17, 1995, Ser. No. 422,893

Int. Cl.[6] B63H *25/22*

U.S. Cl. 114—150 **26 Claims**



1. A power steering assist system comprising:

(a) a rotatable input member;

(b) a hydraulic cylinder having a reciprocally mounted piston and fluid passageways longitudially spaced to each side of said piston to form a first chamber and a second chamber in said cylinder, the effective areas of each side of said piston being unequal;

(c) fluid source means for supplying pressurized hydraulic fluid to said cylinder;

(d) valve control means operably connected to said input member and having a rotatable valve body, said valve control means adapted to selectively control the flow of hydraulic fluid to said cylinder whereby the resulting reciprocal movement of said piston is determined by the flow of pressurized fluid supplied to or exhausted from the chamber having the piston side of greater effective area; and

(f) output means operably connected to said piston.

5,603,280

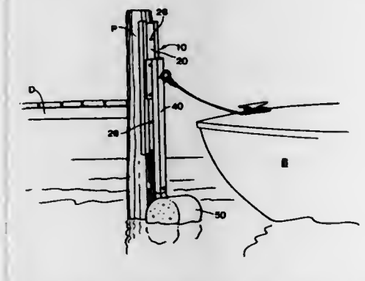
BOAT MOORING APPARATUS

Francis H. Shackelford, Jr., Hwy. 123 South, Hookerton, N.C. 28538

Filed Dec. 16, 1994, Ser. No. 357,427

Int. Cl.[6] B63B *21/00*

U.S. Cl. 114—230 **16 Claims**



1. A boat mooring apparatus for connecting a boat to a mooring location having a high water mark and a low water mark and comprising:

an elongate member adapted to be mounted substantially vertically on the mooring location above the high water mark, said elongate member including a longitudinal slot defining a channel extending along at least a portion of it's length;

a carriage means mounted for sliding movement within said slot, said carriage means comprising a pair of flat plates with rollers being mounted therebetween in sandwich fashion such that said rollers engage the respective opposite sides of said slot, said carriage means being movable along the length of said slot;

an elongate float support means having an upper end and a lower end, said lower end mounting a float means and said upper end being mounted to said carriage means in substantial parallel relation to said elongate member, said float support means being positioned so as to overlie substantially the entire carriage means, and further, wherein said float support means is constructed and arranged to transmit the tide forces acting on said float means to said carriage means in order adjust the position of the carriage in response thereto, said carriage means being adapted to receive a mooring line from a boat;

boat mooring means operatively associated with said carriage means; and

wherein said float means is movable between the high water mark and the low water mark and further wherein the ,movement of the float means is limited to being below the lower end of the elongate member;

whereby the relative position of the boat and the mooring location remains the same independent of the tide.

5,603,281

WATERCRAFT SEAT SUSPENSION

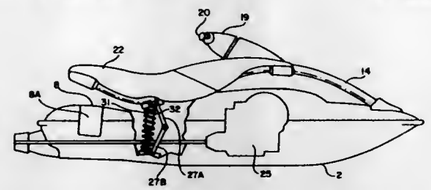
John A. Harvey, Sebastian, Fla.; Benoit Renaud, Magog, Canada; Claude Gagnon, Magog, Canada; Pierre Rondeau, Bromont, Canada, and Denys Lapointe, Mount Sbefford, Canada, assignors to Bombardier Inc., Montreal, Canada

Divislon of Ser. No. 235,635, Apr. 29, 1994, Pat. No. 5,542,371. This application May 30, 1995, Ser. No. 443,881

Claims priority, application Canada, May 4, 1993, 2095515

Int. Cl.[6] B63B *17/00*

U.S. Cl. 114—363 **16 Claims**



1. A watercraft with a suspended operator's seat comprising:

a resilient spring and damping means and a support arm means, said spring and damping means being adapted to absorb shock, and said support arm means being adapted to resist lateral and torsional movement of said seat when in operation;

each of said spring and damping means and said support arm means being pivotally mounted at their first ends to a hull or deck of said watercraft and at opposite ends to said seat, said seat being fixedly connected to a frame means;

said frame means being pivotally connected to a fore portion of said watercraft;

said fore portion of said watercraft being fixedly connected to said hull;

wherein in operation when said watercraft navigates rough water or sharp turns, said operator's seat is permitted to move upwardly or downwardly, absorbing shock.

5,603,282

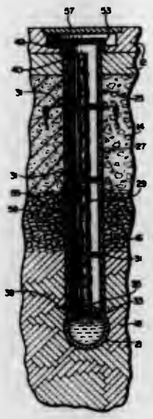
UTILITY PIPE DISPLACEMENT SENSOR

Pavel Tsipris, Chicago, Ill., assignor to STS Consultants Ltd., Deerfield, Ill.

Filed Apr. 19, 1996, Ser. No. 634,790

Int. Cl.[6] G08B *5/00*

U.S. Cl. 116—209 **20 Claims**



1. A utility pipe displacement sensor for use with a buried utility pipe comprising:

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a protective housing buried in the ground and having an upper and a lower end,

an indicating means disposed in a vertical position within the housing and capable of displacement within the housing, the indicating means having an upper and a lower end, the upper end of the indicating means originally being located adjacent to the upper end of the housing; and

centralizing means associated with the indicating means for maintaining the indicating means in its vertical position within the housing,

both the lower end of the housing and the lower end of the indicating means originally abutting an outer surface of a utility pipe, so that any displacement of the utility pipe relative to the lower end of the housing is translated into a visually perceptible displacement of the indicating means within the housing, the housing not being displaced due to its interaction with the surrounding ground.

5,603,283

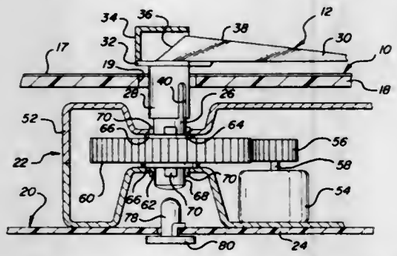
ILLUMINATED SNAP-ON GAUGE POINTER ASSEMBLY

Marvin L. Owen, Grand Blanc, Mich., assignor to Delco Electronics Corporation, Kokomo, Ind.

Filed Dec. 15, 1994, Ser. No. 356,754

Int. Cl.[6] G12B *11/04*

U.S. Cl. 116—284 **14 Claims**



1. In an instrument panel indicator having a pointer movable about an axis for arcuate travel across an outer face of an apertured panel, a gauge comprising:

a stepper motor including an output gear, the output gear being driven by the stepper motor;

support means behind the panel for supporting the stepper motor;

the output gear being mounted on the support means for rotation about the axis and having a gear hub extending toward the panel;

the pointer having a hub on the axis extending through an aperture in the panel and coupling with the gear hub; and

the pointer hub and the gear hub together forming a snap connection.

5,603,284

METHOD OF PACKAGING A FOAM ARTICLE, AND A FOAM ARTICLE AS SO PACKAGED

Clive A. H. Freedman, Pinehurst, 22 Sheldon Grove, Gosforth, Newcastle upon Tyne, NE3 4JP, England

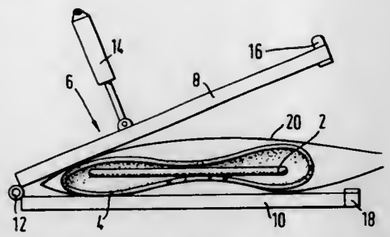
Continuation of Ser. No. 257,283, Jun. 9, 1994, abandoned. This application Sep. 12, 1995, Ser. No. 527,246

Claims priority, application United Kingdom, Jun. 12, 1993, 9312155

Int. Cl.[6] A01K *1/035*

U.S. Cl. 119—28.5 **12 Claims**

4. A method of packaging a foam pet bed comprising locating a foam pet bed in a bag of a flexible, airtight material, one end of said bag being open, compressing the foam pet bed in such a manner that air is expelled from the foam pet bed and from the bag through the open end of the bag, and sealing the open end of the bag to retain the compressed foam pet bed therein, said pet bed including a foam cushion surrounded by a separate, upstanding foam sidewall, the method further comprising the steps of, prior to locating the foam pet bed in the bag, flattening the opposed halves of the sidewall against one another; and laying the foam cushion on the flattened sidewall.



5,603,285

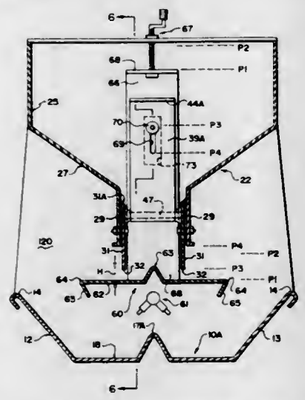
ADJUSTABLE SHELF FEEDER FOR ANIMALS TO ACCOMMODATE GROWTH

Jonathan Kleinsasser, Ste. Agathe, Canada, assignor to Crystal Spring Colony Farms Ltd., Ste. Agathe

Continuation-in-part of Ser. No. 379,306, Jan. 27, 1995. This application Jun. 8, 1995, Ser. No. 488,663

Int. Cl.[6] A01K *7/06*

U.S. Cl. 119—53 **19 Claims**



1. A feeder for feeding animals while the animals grow from a first smaller size to a second larger size comprising:

a trough having a base and a side wall over which the animals can reach for taking feed from the trough;

a shelf mounted above the base of the trough and arranged at a height such that the animals can take feed from the shelf while reaching over the side wall and such that feed falling from the shelf is collected in the trough;

a feed hopper positioned above the shelf for depositing feed onto the shelf, the hopper having a lowermost edge arranged at a distance from the shelf which distance acts to control an amount of feed discharged from the hopper onto the shelf, and which distance together with the relative locations of the shelf and the lowermost edge acts to maintain the feed discharged on the shelf unless moved from the shelf by the animal;

and adjustment means including a first adjustment portion for raising and lowering the shelf whereby the height of the shelf from the base of the trough can be adjusted to at least two different heights including a first lower height to accommodate said animals at the first smaller size and including a second higher height to accommodate said animals at the second larger size;

said adjustment means including a second adjustment portion for raising and lowering the lowermost edge;

at least one of the first and second adjustment portions being arranged such that, with the shelf at each of said first lower height and said second higher height, said distance between the lowermost edge and the shelf can be adjusted.

5,603,286

ANIMAL ALIGNMENT GUIDE FOR A NIPPLE VALVE WATERER

Michael R. Gerbo, Conrad, Iowa, assignor to Ritchie Industries, Inc., Conrad, Iowa

Filed May 18, 1995, Ser. No. 444,034

Int. Cl.[6] A01K *7/00*

U.S. Cl. 119—72.5 **24 Claims**



1. In an animal waterer having a water supply line including a vertically suspended swingable and rotatable terminal conduit having a discharge opening and a nipple valve having a body portion and an activation trigger, the body portion being operably attached to the terminal conduit at the discharge opening, the improvement comprising:

an animal alignment guide attached to the water supply line near the juncture of the terminal conduit and the nipple valve, the alignment guide including an interior portion attached to the water supply line and a pair of spaced wings extending out from the interior portion and disposed on opposite lateral sides of the nipple valve; and,

quick release means operatively associated with said terminal conduit for changing the elevation of the nipple valve.

5,603,287

ANIMAL SENSING AND REPELLING SYSTEM

George B. Houck, 5821 Woodboro Dr., Huntington Beach, Calif. 92649

Filed Apr. 12, 1993, Ser. No. 44,743

Int. Cl.[6] A01K *29/00*

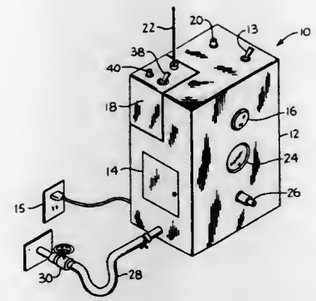
U.S. Cl. 119—719 **16 Claims**

1. A system for sensing and repelling animals comprising:

means for sensing the presence of an animal in the vicinity of said system;

a radio frequency transmitter having an omni directional antenna to transmit an R.F. pulse signal;

means to be worn on said animal for receiving said R.F. pulse signal within said system;



means for activating an R.F. pulse response signal triggered from said R.F. pulse signal,

means for transmitting said R.F. pulse response signal to within said system;

means in said system for receiving R.F. pulse response signal from said means for transmitting said R.F. pulse response signal.

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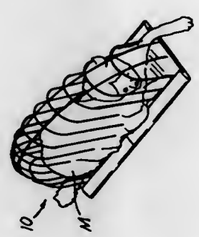
RESTRAINT DEVICE

Dennis A. Ferber, San Clemente, Calif., assignor to Prima International LLC, City of Industry, Calif.

Filed Apr. 28, 1995, Ser. No. 430,975

Int. Cl.[6] A01K *15/04;1/00*

U.S. Cl. 119—751 **20 Claims**



1. An apparatus for restraining an animal comprising:

an elongated plate for supporting a restrained animal;

an elongated cage member, said cage member including a plurality of rib members, each one of said plurality of rib members having one end fixed adjacent one of the sides of said elongated cage member and having another end fixed adjacent the opposite side of said elongated cage member, said plurality of rib members including tall members, short members, and members having a height intermediate between that of said tall members and that of said short members, said rib members being fixed to said elongated cage member in spaced apart relationship so that the tall members are fixed adjacent the middle of said elongated cage member, the short members are fixed adjacent the ends of said elongated cage member, and the intermediate height members are fixed between the tall members and the short members; and

means for attaching said elongated cage member to said elongated plate for restraining an animal supported by said plate.

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TEMPERATURE RESPONSIVE PUMP AND FAN FOR AN ENGINE

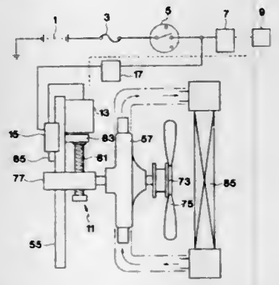
Young-Hae Kwan, Kyungsangnam-do, Rep. of Korea, assignor to Hyundai Motor Company, Ltd., Seoul, Rep. of Korea

Filed Jun. 22, 1995, Ser. No. 493,696

Claims priority, application Rep. of Korea, Jun. 22, 1994, 94-14221

Int. Cl.[6] F01P *5/10*

U.S. Cl. 123—41.46 **11 Claims**



1. A temperature responsive warm-up device for a vehicle engine having an engine coolant, cooling fans, and an ignition switch, said device comprising:

first means, connected to said ignition switch, for sensing a temperature of the engine coolant;

second means, connected to said ignition switch and said first means for sensing, for sensing a temperature of the engine coolant;

a driving motor operatively connected to said cooling fans;

a water pump interposed between said driving motor and said cooling fans;

an operation controlling switch electrically connected to said second means for sensing and said driving motor;

a bidirectionally movable member connected to said water pump for bidirectionally moving said water pump in association with movement of said member;

a water pump pulley interposed between said water pump and said cooling fans, said water pump pulley selectively engaging said cooling fans in response to movement of said water pump; and

means, responsive to a sensed condition of said coolant by said first and second means for sensing, for selectively actuating said movable member thereby correspondingly bidirectionally moving said water pump, whereby when the sensed temperature of the engine coolant is below a predetermined temperature, the water pump moves in a first direction to disengage the water pump pulley and thereby deactivate the cooling fans and when the engine coolant is over the predetermined temperature, the water pump moves in a second direction to engage the water pump pulley and thereby actuate the cooling fans.

5,603,290

HYDROGEN ENGINE AND COMBUSTION CONTROL PROCESS

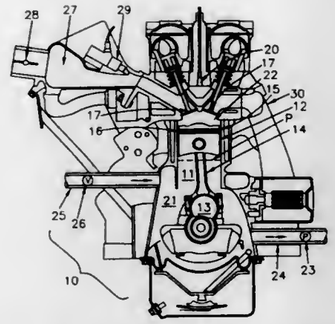
Michael R. Swain, Coral Gables, and Matthew N. Swain, Miami, both of Fla., assignors to The University of Miami, Miami, Fla.

Filed Sep. 15, 1995, Ser. No. 528,814

Int. Cl.[6] F02M *25/06*

U.S. Cl. 123—41.86 **13 Claims**

1. In a hydrogen engine, said engine having inlet means for hydrogen and air, a cylinder connected to said inlet means, a piston connected to said cylinder for moving up and down between upper and lower limits within said cylinder, said piston having rings with



piston crevice volume between them, valves, a combustion chamber, and a crankcase shielded from said combustion chamber by said piston rings, the combination which comprises:

sealing means substantially shielding said crankcase against ingress of air whereby said crankcase is capable of sustaining sub-atmospheric pressure therein,

suction means connected to said crankcase for reducing ambient pressure in said crankcase at a location substantially completely isolated from said combustion chamber,

said suction means being connected at a location below said lower limit of descent of said piston rings into said crankcase,

thereby reducing ambient pressure in said crankcase and reducing or precluding flow of oil or gases from said piston ring crevice volume into said combustion chamber.

5,603,291

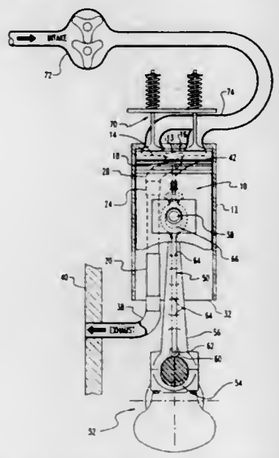
INTERNAL COMBUSTION ENGINE WITH VALVE BUILT INTO PISTON HEAD

Ismail A. Al-Kaheli, 1945 N. College Ave., Apt. #3, Bloomington, Ind. 47404

Filed Nov. 14, 1995, Ser. No. 557,467

Int. Cl.[6] F01L *11/00*

U.S. Cl. 123—47 R **9 Claims**



1. An internal combustion engine having a piston with a built-in valve, comprising:

a cylinder;

a piston reciprocatingly mounted in said cylinder, said piston having an upper surface;

a crankshaft connected to said piston; and

a valve formed in said upper surface of said piston, wherein said valve is driven by a valve stem connected to the crankshaft,

further comprising an exhaust tube mounted in said cylinder and extending into said piston, wherein said piston defines an exhaust chamber below said valve and extending to the open upper end of said tube, said tube sliding relative to said piston during operation of said engine.

5,603,292

VALVE MECHANISM FOR AN INTERNAL COMBUSTION ENGINE

Nils-Olof Håkansson, Stenkullen, Sweden, assignor to AB Volvo, Stenkullen, Sweden

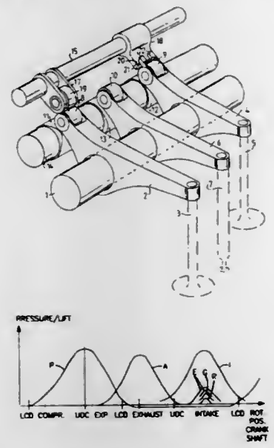
PCT No. PCT/SE94/00616, § 371 Date Dec. 22, 1995, § 102(e) Date Dec. 22, 1995, PCT Pub. No. WO95/00751, PCT Pub. Date Jan. 5, 1995

PCT Filed Jun. 21, 1994, Ser. No. 569,157

Claims priority, application Sweden, Jun. 22, 1993, 9302159

Int. Cl.[6] F01L *13/00;* **F02M** *25/07*

U.S. Cl. 123—90.16 **9 Claims**



1. Valve mechanism in an internal combustion engine, comprising at least one intake valve and at least one exhaust valve in each cylinder, and for each cylinder at least two rocker arms journalled on a rocker arm shaft for operating a respective one of said valves, characterized by transmission means (**15,17,18**), which is arranged to selectively move the exhaust valve (**5**) from a closed position toward an open position during the engine intake stroke to draw exhaust into the cylinder (**30**) during the intake stroke.

5,603,293

TAPPET FOR A SWITCHABLE VALVE OF AN INTERNAL COMBUSTION ENGINE

Dietmar Schwarzenthal, Bergisch Gladbach, and Joachim Grünberger, Sachsenheim, both of Germany, assignors to Dr. Ing. h.c.F. Porsche AG, Weissach, Germany

Filed Dec. 6, 1995, Ser. No. 568,291

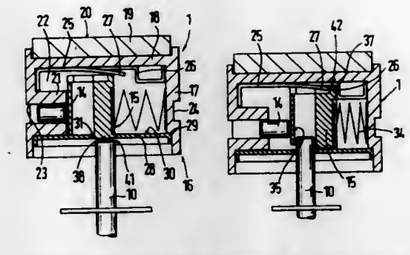
Claims priority, application Germany, Dec. 15, 1994, 44 44 699.3

Int. Cl.[6] F01L *1/12*

U.S. Cl. 123—90.16 **26 Claims**

1. Tappet for an internal combustion engine valve comprising:

a tappet member which in use is moved by a cam of an engine camshaft,



a clutch member movable between a first switching position transmitting tappet member movements to an engine valve and a second switching position without transmitting tappet member movements to the engine valve, whereby an associated engine valve can be switched between operating and non operating conditions,

a selectively movable piston operable to move said clutch member between said first and second switching positions,

and first and second locking devices operable to lock the clutch member in respective end positions assigned to the first and second switching positions, said first and second locking devices being operably acted on during use by a valve stem of the engine valve to effect unlocking of said locking devices.

5,603,294

VARIABLE VALVE LIFT DEVICE

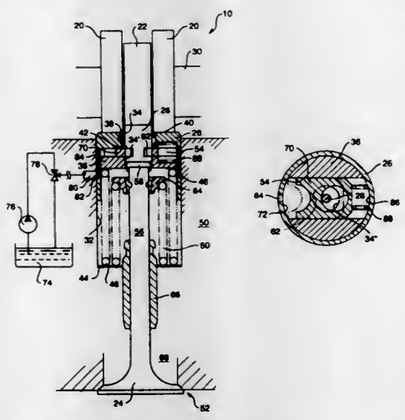
Yoshiyuki Kawai, Nagoya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Aichi-pref., Japan

Filed Dec. 21, 1995, Ser. No. 576,037

Claims priority, application Japan, Dec. 28, 1994, 6-339198

Int. Cl.[6] F01L *13/00*

U.S. Cl. 123—90.16 **3 Claims**



1. A variable valve lift device comprising:

an outer cam having a base circle and a nose;

an inner cam having a base circle and a nose smaller than the base circle and the nose of said outer cam;

at least one of an intake and exhaust valve opened and closed by being moved in the axial direction thereof, said valve being biased in the closing direction;

an outer lifter biased in a direction which brings it into contact with said outer cam, said outer lifter being provided in a cylinder head of an engine;

an inner lifter in abutting contact with an upper end face of said valve and having a groove in an outer periphery thereof;

a plate slidable in a direction which perpendicularly intersects the axis of said valve, said plate moving together with said outer lifter; and

control means for moving said plate in the direction which perpendicularly intersects the axis of said valve;

said control means being capable of selecting a high-lift mode in which said plate is moved to a position at which it engages with said groove to thereby open/close said valve in a state of high lift, and a low-lift mode in which said plate is moved to a position at which it does not engage with said groove to thereby open/close said valve in a state of low lift.

5,603,295

INTERNAL-COMBUSTION ENGINE COMPRISING AN INTAKE SYSTEM

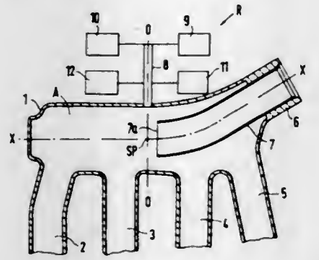
Walter Töpfer, Iptingen; Franz Eberle, Stuttgart; Dietmar Krüger, Friolzheim; Norbert Kleinehakenkamp, Weissach, all of Germany; Michail I. Fesina, Togliatti, Russian Federation; Rudolf N. Starobinskij, Togliatti, Russian Federation; Jurij P. Lasarev, Togliatti, Russian Federation, and Evgenij V. Lysenko, Togliatti, Russian Federation, assignors to Ing. h.c.F. Porsche AG, Weissach, Germany

PCT No. PCT/EP92/01929, § 371 Date Jul. 6, 1995, § 102(e) Date Jul. 6, 1995, PCT Pub. No. WO94/04815, PCT Pub. Date Mar. 3, 1994

PCT Filed Aug. 22, 1992, Ser. No. 387,872

Int. Cl.[6] F02M *35/10*

U.S. Cl. 123—184.42 **12 Claims**



1. Intake system for an internal combustion engine of the type having a plurality of individual cylinders, comprising:

an intake chamber,

a plurality of individual suction pipes connecting the intake chamber with respective engine cylinders,

an intake connection connecting an air supply system to the intake chamber,

a pollutant reducing system including at least one of a housing ventilating system, an auxiliary air feeding system, a fuel vapor catch system, and an exhaust gas return system,

an air intake guiding pipe connected with the intake connection and projecting into the intake chamber, said air intake guiding pipe having a mouth opening disposed in a plane between two centrally disposed ones of the suction pipes,

and a pollution control pipe connection leading from the pollution reducing system into the intake chamber.

5,603,296

INTAKE APPARATUS OF AN ENGINE

Byungyol Park, Kyunggi-Do, Rep. of Korea, assignor to Daewoo Motor Co., Ltd., Incheon, Rep. of Korea

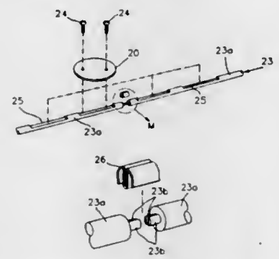
PCT No. PCT/KR95/00067, § 371 Date Jan. 22, 1996, § 102(e) Date Jan. 22, 1996, PCT Pub. No. WO95/33129, PCT Pub. Date Dec. 7, 1995

PCT Filed May 30, 1995, Ser. No. 586,799

Claims priority, application Rep. of Korea, May 31, 1994, 94-12545 U; Jul. 30, 1994, 94-19322 U

Int. Cl.[6] F02B *27/02*

U.S. Cl. 123—184.55 **5 Claims**



1. An intake apparatus of an engine(13) having an intake manifold(11) wherein either a short intake passage or a long intake passage is selected in accordance with the revolutions of the engine(13), characterized in that an intake section(12) into which air flows from air cleaner is provided within the intake manifold(11), a partition wall(16) is installed concentrically with a circular intake manifold casing(15) surrounding the intake section(12) with respect to the intake section(12), between the intake manifold casing(15) and the intake section(12), an intake control valve(20) is switchably arranged between an upper end(16*a*) of the partition wall(16) and a bent portion(14*a*) of the intake manifold(11), characterized in that at least two unit shafts(23*a*) are spaced apart from and connected with each other to form a shaft(23) to which the intake control valve(20) is fixed, thereby to absorb axial thermal expansion of the shaft(23) due to high temperature of the engine(13), and characterized in that a driving mechanism(31) for driving the intake control valve(20) comprises an actuator(32) energized by a solenoid valve(41), a rod(33) connected to the actuator(32) so as to move axially and a lever(35) rotatably connected at its one end to the rod(33) by means of a pin(34) and secured at its other end to the shaft(23).

5,603,297

HEAT SHIELD

Jerry M. Wolf, Westerville, and Hiten T. Shah, Delaware, both of Ohio, assignors to Acoust-A-Fiber Research and Development, Inc., Delaware, Ohio

Filed Jan. 18, 1996, Ser. No. 588,523

Int. Cl.[6] F02B *77/00*

U.S. Cl. 123—195 C **20 Claims**

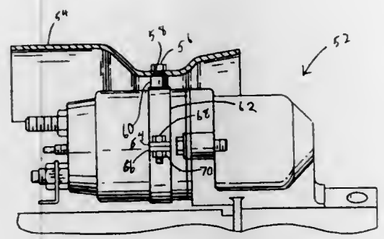
1. A heat shield for mounting in an engine compartment between a hot body and operating apparatus comprising,

said shield being mounted between said apparatus and said hot body by a strap encircling said apparatus,

said shield being comprised of a plurality of layers of materials and shaped to partially surround said apparatus,

said shield being attached to said strap and spaced from said apparatus to provide a cooling air space between said apparatus and said shield,

said shield including a layer of metallic heat reflective material facing toward said hot body, said metallic material being bonded to a layer of fibers by a thermosetting resin, said fibers having a lower thermal conductivity than said resin to provide a large heat gradient between the surface of said metallic layer facing said hot body and the surface of said fiber layer closest to said apparatus.



5,603,298

HIGH COMPRESSION RATIO INTERNAL-COMBUSTION ENGINE

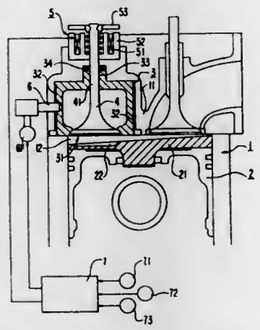
Hideo Kawamura, Samukawa-machi, Japan, assignor to Isuzu Ceramics Research Institute Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 304,808, Sep. 12, 1994, abandoned, Continuation-in-part of Ser. No. 120,349, Sep. 14, 1993, abandoned. This application Oct. 25, 1995, Ser. No. 548,254

Claims priority, application Japan, Sep. 14, 1992, 4-271071; Sep. 29, 1992, 4-283741; Nov. 11, 1992, 4-326055

Int. Cl.[6] F02B *19/02*

U.S. Cl. 123—254 **12 Claims**



1. A high compression ratio internal combustion engine for burning vaporized hydrocarbon fuels including gasoline and methanol comprising:

a pre-chamber;

a main chamber;

a barrier between said pre-chamber and said main chamber defining a passage hole therebetween;

a control valve located in said passage hole having an opened and a closed state for opening and closing said passage hole;

a driver for changing said control valve between the opened and closed state;

an injection nozzle for injecting a fuel to said pre-chamber;

means for controlling said control valve to close during the exhaust stroke and intake stroke and to open during the last stage of the compression stroke; and

means for controlling said injection nozzle for injection of a fuel to said pre-chamber from the end of said exhaust stroke to the beginning of said intake stroke.

5,603,299

INTAKE PORT STRUCTURE AND METHOD OF DETERMINING DETAILS THEREOF

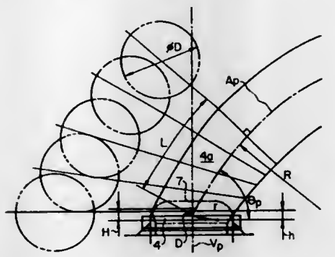
Yasuhiro Yuzuriha, and Manabu Shibakawa, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima-ken, Japan

Filed Jun. 12, 1995, Ser. No. 489,507

Claims priority, application Japan, Jun. 10, 1994, 6-152857

Int. Cl.[6] F02B *31/00*

U.S. Cl. 123—308 **19 Claims**



1. An intake port structure for a cylinder head, in which an intake port is directed so as to introduce intake air flow into a combustion chamber in a desired direction through a valve port at an end thereof, comprising a throat portion, extending upstream from said valve port, which is configured (1) so that a line, tangential to a center line of said throat portion at an intersection point between an extension of said center line of said throat portion and a center line of said valve port perpendicular to a plane in which said valve port opens into said combustion chamber, intersects said plane at a given angle and (2) so as to have approximately the same cross-sectional area in reference planes gradually shifted between an upper reference plane, perpendicular to said center line of said throat portion at a given distance from said intersection point, and a bottom reference plane, perpendicular to said center line of said valve port;

the throat portion, between said intersection point and a point at said given distance upstream from the intersection, having reference cross-sections with a substantially fixed cross-sectional area between an upstream end of the throat portion and a downstream end of the throat portion;

the reference cross-sections, at the upstream end of the throat portion, being perpendicular to the center line of the throat portion and, at the downstream end of the throat portion, being perpendicular to the center line of the valve port;

intersecting angles at which the reference cross-sections intersect the center line of the throat portion gradually increasing from the upstream end to the downstream end of the throat portion; and

a cross-section of the throat portion, intersecting the center line of the valve port at 90° gradually decreasing from an upstream end to a downstream end.

5,603,300

WIRING ARRANGEMENT FOR AN ENGINE BRAKING CONTROL

Dennis D. Feucht, and Scott G. Sinn, both of Morton, Ill., assignors to Caterpillar Inc., Peoria, Ill.

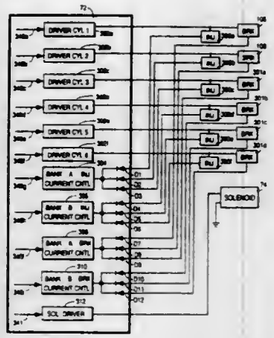
Division of Ser. No. 468,937, Jun. 6, 1995, Pat. No. 5,540,201, which is a continuation of Ser. No. 282,573, Jul. 29, 1994, abandoned. This application Oct. 30, 1995, Ser. No. 550,133

Int. Cl.[6] F02D *13/04*

U.S. Cl. 123—322 **14 Claims**

1. A braking control for an engine having a combustion chamber, an exhaust valve movable between open and closed positions, and an electronically controlled fuel injector for injecting fuel into the combustion chamber, comprising:

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an actuator for engaging the exhaust valve; and

control means for timing movement of the exhaust valve to the open position wherein the control means has an output terminal connected to first terminals of the actuator and the fuel injector and a pair of return terminals connected to second terminals of the actuator and fuel injector.

5,603,301

FUEL-INJECTED ENGINE

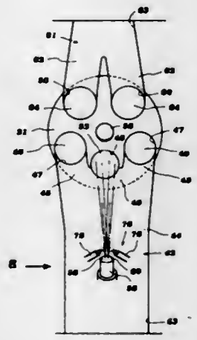
Kenichi Sakurai, and Makoto Kawamura, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Jun. 7, 1995, Ser. No. 479,674

Claims priority, application Japan, Jul. 7, 1994, 6-179393

Int. Cl.[6] F02B *17/00*

U.S. Cl. 123—430 **16 Claims**



1. A fuel injected internal combustion engine comprised of a combustion chamber, intake passage means for delivering an air charge to said combustion chamber, a spark plug positioned in said combustion chamber for firing a charge therein, a fuel injector for spraying fuel into said intake passage means in a direction toward said combustion chamber, said fuel injection means having a spray pattern for directing the fuel charge toward said combustion chamber in a direction to provide a substantially uniform homogeneous mixture therein, and control means for controlling the spray of fuel from said fuel injection means so as to concentrate the spray in the area of said spark plug under certain engine load and speed conditions.

5,603,302

FUEL SUPPLY SYSTEM FOR INTERNAL COMBUSTION ENGINE

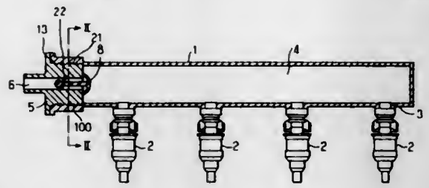
Kazuji Minagawa, Tokoname; Takashi Akiba, Kariya, and Yoshitaka Wakamatsu, Anjo, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Aug. 7, 1995, Ser. No. 511,622

Claims priority, application Japan, Aug. 25, 1994, 6-200605; Jun. 7, 1995, 7-140465

Int. Cl.[6] F02M *37/20;41/00*

U.S. Cl. 123—456 **19 Claims**



1. A fuel supply system for an internal combustion engine comprising:

a fuel tank;

a fuel pump for supplying fuel from said fuel tank;

a fuel passage connected to said fuel pump that supplies fuel from said fuel tank to said internal combustion engine;

an injector for supplying fuel to said internal combustion engine;

a fuel-return-pipe-less delivery pipe connected to said fuel passage for delivering fuel from said fuel passage to said injector, said fuel-return-pipe-less delivery pipe having a hollowing member to which said injector is directly connected; and

a check valve disposed at one end of said hollow member of said fuel-return-pipe-less delivery pipe and connected between said fuel passage and said fuel-return-pipe-less delivery pipe for interrupting fuel flow from said fuel-return-pipe-less delivery pipe to said fuel passage.

5,603,303

HIGH PRESSURE FUEL SUPPLY PUMP

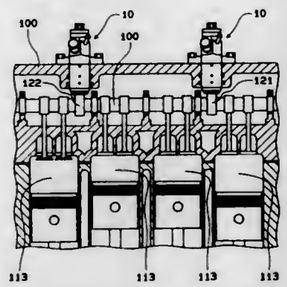
Masahiro Okajima, Anjo; Kazuo Yamamoto, Nagoya; Hiroshi Inoue, Chiryu; Masaaki Katou, Kariya, and Hiroyuki Kano, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Continuation of Ser. No. 429,564, Apr. 27, 1995, abandoned. This application Sep. 26, 1995, Ser. No. 533,913

Claims priority, application Japan, Apr. 28, 1994, 6-91106; Mar. 1, 1995, 7-41545

Int. Cl.[6] F02M *37/04*

U.S. Cl. 123—508 **16 Claims**



1. An internal combustion engine with a high pressure fuel supply pump, said engine comprising:

a housing of said engine, said housing having an accommodation hole; and

an injector disposed on said housing for feeding fuel into a combustion chamber;

said engine having a camshaft; and a common rail for feeding high pressure fuel to said injector; said common rail located adjacent to said injector; said fuel pump being disposed in said accommodation hole and comprising

a plunger movable reciprocally;

a first supporting member having an intake passage and a discharge passage for fuel, and having an inner wall forming a slide hole in which said plunger is reciprocally and slidably supported, said discharge passage communicating with said common rail and said fuel pump;

a pump cam for driving said plunger to enable reciprocal movement;

an urging means for urging said plunger to enable reciprocal movement;

a solenoid valve provided at one end of said slide hole for determining discharge timing of the fuel pressurized by the reciprocating movement of the said plunger,

wherein said common rail is disposed to be adjacent to said fuel pump and said discharge passage for feeding the high pressure fuel to said injector so that the length of said discharge passage is shortened and pulsation of the high pressure fuel discharged from said fuel pump is previously damped.

5,603,304

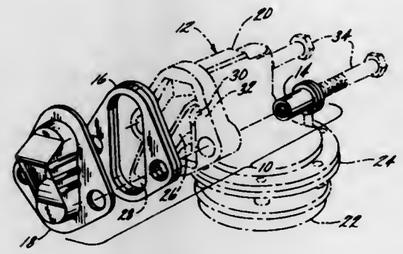
FUEL PUMP SEAL AND INSULATOR ASSEMBLY

Stanley E. Matczak, Ellington, Conn., assignor to Seals-It, East Hartford, Conn.

Filed Jan. 31, 1996, Ser. No. 594,993

Int. Cl.[6] F02M *37/04*

U.S. Cl. 123—509 **18 Claims**



8. An assembly for thermally insulating a fuel pump from an engine, the fuel pump having a mounting flange and a fuel pump arm, the assembly comprising:

a thermal insulating gasket having a gasket opening therethrough; and

a seal disposed on said insulating gasket, said seal and said insulating gasket for mounting between the mounting flange of the fuel pump and the engine, said seal having a seal opening therethrough, said seal opening being in general alignment with said gasket opening, said seal opening receptive to the fuel pump arm and for sealingly engaging the fuel pump arm.

5,603,305

EXHAUST GAS RECIRCULATION VALVE

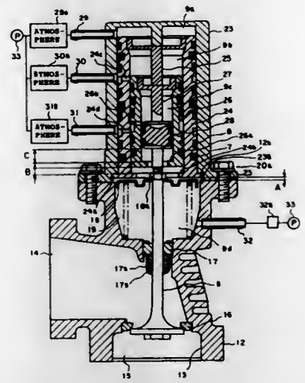
Toshihiko Miyake; Katsuyuki Nitta; Hiroki Yamasaki, and Mutsuo Sekiya, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 14, 1995, Ser. No. 572,671

Claims priority, application Japan, May 22, 1995, 7-122278; Jul. 10, 1995, 7-173508

Int. Cl.[6] F02M *25/07;* **F16K** *11/18*

U.S. Cl. 123—568 **22 Claims**



1. An exhaust gas recirculation valve comprising:

a housing which constructs a part of an exhaust gas path for receiving exhaust gas from an exhaust pipe of an internal combustion engine, said housing accommodating a valve means for controlling the amount of flow of the exhaust gas passing therethrough;

a fixed cylinder disposed in said housing;

a movable cylinder assembly composed of at least one movable cylinder disposed in said fixed cylinder;

a piston movably disposed in said movable cylinder assembly for controlling an opening of said valve means; and

a pressure applying means for respectively applying pressure to said movable cylinder and said piston so as to move them through respective predetermined strokes.

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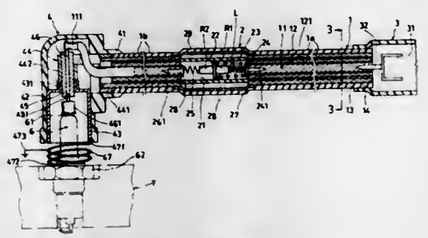
IGNITION CABLE MEANS FOR ELIMINATING INERFERENCE

Tsai-Ting Tai, C/O Hung Hsing Patent Service Center P.O. Box 55-1670, Taipei, Taiwan

Filed Feb. 3, 1995, Ser. No. 382,857

Int. Cl.[6] H04B *15/02;* **H01R** *13/46*

U.S. Cl. 123—633 **9 Claims**



1. An ignition cable means comprising:

a coaxial cable (1) having a central conductor (11) connectable between a car distributor (5) and an engine plug (6), and at

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least a braided layer (12, 13) surrounding said central conductor (11) and grounded to the earth for shielding and grounding an interference emitted from a high voltage in the central conductor (11); and

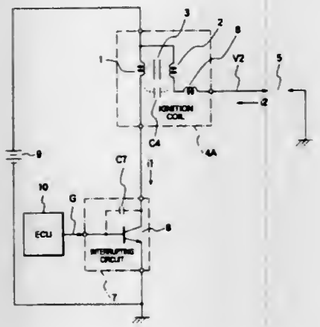
an interference eliminating means (2) inserted in between two cable sections (1*a*, 1*b*) of said coaxial cable (1), and including an inductor (1) parallelly connected with at least a resistor (R1) having impedance for limiting an ignition current in said cable, and connected in between said two cable sections (1*a*, 1*b*) for alternatively conducting a current in said resistor (R1) and said inductor (L) for making a smooth waveform of a high voltage pulse in said cable (1) for eliminating an interference caused from said cable (1).

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IGNITION COIL FOR INTERNAL COMBUSTION ENGINE

Shingo Morita, and Mitsuru Koiwa, both of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 3, 1996, Ser. No. 582,437
Claims priority, application Japan, Apr. 3, 1995, 7-077931
Int. Cl.[6] F02P *3/04;15/00;* **H01F** *38/12*
U.S. Cl. 123—633 **7 Claims**



1. An ignition coil for an internal combustion engine, comprising:

first and second non-magnetic bobbins into which a magnetic core is inserted;

a primary coil composed of a wire wound around said first bobbin;

a secondary coil composed of a wire wound around said second bobbin;

an interrupting circuit connected to one end of said primary coil for interrupting a primary current flowing to said primary coil;

an ignition plug connected to one end of said secondary coil for generating a discharge spark by a secondary voltage output from said secondary coil; and

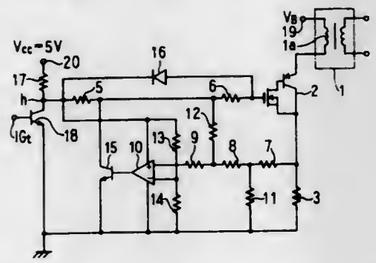
means for suppressing the superposition of a capacitive discharge noise signal generated by the ignition plug on the ignition coil, and the attendant adverse influence of said noise signal on the interrupting circuit, said suppressing means comprising a buffer coil connected in series with said secondary coil and having an inductance smaller than that of said secondary coil.

5,603,308

IGBT DRIVING CIRCUIT AND IGNITION DEVICE

Shinji Ooyabu, Anjo, and Mitsuyasu Enomoto, Kariya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Nov. 1, 1995, Ser. No. 551,342
Claims priority, application Japan, Nov. 4, 1994, 6-271490
Int. Cl.[6] F02P *3/05;* **G05F** *1/575*
U.S. Cl. 123—644 **6 Claims**



1. A driving circuit for a semiconductor switching element having a stray capacitance and connected to an electric load, the driving circuit comprising:

a gate voltage input terminal connected to a gate terminal of the semiconductor switching element for applying a predetermined voltage as a gate voltage;

a current detecting resistor connected in series with the semiconductor switching element;

a comparator for comparing a detection voltage with a comparison voltage, the detection voltage being applied to a detection terminal side of the comparator and corresponding to a voltage produced across the current detecting resistor;

a constant current control switching element connected to the gate terminal of the semiconductor switching element for turning on and off in response to comparison results of the comparator to adjust the gate voltage of the gate terminal of the semiconductor switching element so that an electric current flowing to the semiconductor switching element element is kept constant;

a charge/discharge control resistor connected between the gate terminal of the semiconductor switching element and the constant current control switching element,

wherein the semiconductor switching element is an IGBT, and

an oscillation suppressing resistor connected between the charge/discharge control resistor and the detection terminal side of the comparator for feeding back the gate voltage of the IGBT to the detection terminal side of the comparator for suppressing an oscillation of an electric current flowing to the IGBT.

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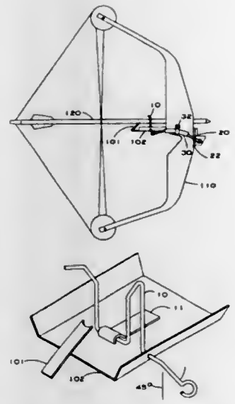
MANUALLY OPERATED ARROW HOLDER AND REPLACER

Douglas J. Sheliga, 10216 Kile Rd., Chardon, Ohio 44024

Filed Sep. 18, 1995, Ser. No. 529,628
Int. Cl.[6] F41A *9/00*
U.S. Cl. 124—44.5 **3 Claims**

1. For use with an archery bow which includes an arrow rest with means on an upper surface thereof to support an arrow extending along an axis, said bow further including a handle, limbs, and a bow string defining a bow plane, a manually operable device to hold said arrow in place on said upper surface of said rest, and to replace said arrow onto said upper surface if said arrow relocates to a laterally displaced position from said rest, said device comprising:

a holder and replacer member, comprising a U-shaped portion and a V-shaped portion both perpendicular to said bow plane when in a horizontal position, whereas said V-shaped portion



is above said U-shaped portion when said holder and replacer member is raised to a vertical position;

whereby said U-shaped portion, while in said vertical position will guide said arrow from said laterally displaced position to said arrow rest and constrain said arrow to said arrow rest, and whereby said V-shaped portion will contain said arrow and guide said arrow to said U-shaped portion as said holder and replacer member is being raised to said vertical position;

said arrow rest being located in alignment with said U-shaped portion along said arrow axis;

said holder and replacer member being pivotally mounted to said archery bow about a horizontal axis perpendicular to said arrow axis and positioned under said arrow and in a location near a tip of said arrow when said arrow is in a drawn position, and said holder and replacer member including an arm rigidly attached thereto, and rotatable to pivot said holder and replacer member;

means to selectively position said holder and replacer between said vertical position where said holder and replacer member restrains said arrow from lateral movement to hold said arrow onto said rest, and said horizontal position where said holder and replacer member has no influence on said arrow after said arrow has been released but can cradle and hold said arrow if said arrow relocates to said laterally displaced position from said rest;

said means to selectively position said holder and replacer member comprising a hand operable actuator attached to said bow handle, a connecting means attached between said hand operable actuator and said arm to rotate said arm and thereby selectively position said holder and replacer member.

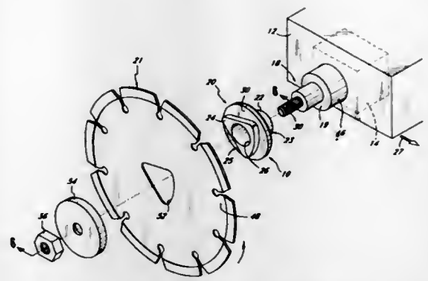
5,603,310

MOUNTING ARBOR FOR SAW CUTTING BLADES

Edward R. Chiuminatta, 16405 Everett, and Alan R. Chiuminatta, 16862 Mariposa Ave., both of Riverside, Calif. 92504

Continuation of Ser. No. 340,614, Nov. 16, 1994, which is a division of Ser. No. 186,030, Jan. 25, 1994, Pat. No. 5,373,834, which is a continuation of Ser. No. 863,708, Apr. 3, 1992, Pat. No. 5,303,688. This application Jun. 7, 1995, Ser. No. 477,849
Int. Cl.[6] B28D *1//12*
U.S. Cl. 125—15 **9 Claims**

1. A rotating concrete cutting blade having a mounting hole in said blade comprising three sides joined at three corners, the hole encompassing the rotational axis of the cutting blade, the location of the first corner being defined by a first arc subtended between about 20° and 160° from a point lying on the plane of the blade about 12 mm from said axis, said first arc having a radius of about 3 to 4 mm, the location of the second corner being defined by a second arc subtended between about 20° and 160° from a point



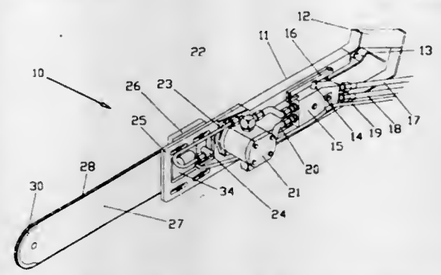
lying on the plane of the blade about 11 mm from said axis and about 126° clockwise from said first point, said second arc having a radius of about 4 mm, the location of the third corner being defined by a third arc subtended between about 20° and 160° from a point lying on the plane of the blade about 11 mm from said axis and about 119° clockwise from said second point, said third arc having a rad/ius of about 3 to 4 mm.

5,603,311

BELT BASED CUTTING SYSTEM

Steven W. Hoerner, East Aurora, N.Y., and Gene A. Fisher, Largo, Fla., assignors to Reimann & Georger, Buffalo, N.Y.

Filed Aug. 17, 1995, Ser. No. 516,313
Int. Cl.[6] B28D *1/08;1/12*
U.S. Cl. 125—21 **10 Claims**



1. A belt based cutting system for cutting various aggregate and non-aggregate, natural stone, and composite building materials with steel or non-steel reinforced materials, said cutting system comprising:

a power head, said power head having a frame, an auto tensioning system, a hydraulic flow control with an on-off trigger, a pressurized water inlet, a hydraulic motor having a drive shaft with a drive sheave frictionally mounted thereon, and pressurized oil lines providing hydraulic power to said flow control, said tensioning system and said hydraulic motor, said hydraulic power being controlled by said trigger,

a guide bar having a top edge, a bottom edge and a front edge, said guide bar mounted on said frame, said guide bar having 90° "V" shaped grooves formed on said top edge and said bottom edge, dual water reservoirs formed within said guide bar, and a plurality of water outlets vormed in said top and bottom edges and communicating with said water reservoir,

a bar nose shaped to fit over said guide bar front edge, said bar nose having an inner edge and an outer edge, a pair of bar nose tangs formed along said inner edge and a 90° "V" shaped groove formed on said outer edge, said bar nose tangs being inserted within said water reservoirs and thereby remaining in mating relationship with said guide bar, and

a cutting belt mounted on said guide bar, said drive sheave and said bar nose within said 90° "V" shaped groove, said cutting

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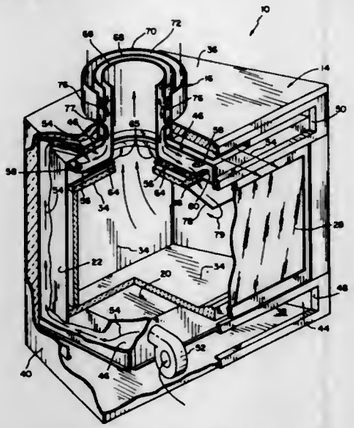
belt having a continuous tensile member with equally spaced matrix cutting segments affixed thereto embedded in molded plastic.

5,603,312

DIRECT VENT WOOD BURNING FIREPLACE

Mark R. Champion, Huntington, Ind., and Frank H. Broome, Columbia, Tenn., assignors to The Majestic Products Company, Huntington, Ind.

Filed Aug. 12, 1994, Ser. No. 289,927
Int. Cl.[6] F24C *1/14*
U.S. Cl. 126—77 **54 Claims**



1. A direct vented, solid fuel burning fireplace operable at energy input levels greater than 75,000 BTU/hour, said fireplace installed in a building, and comprising:

an enclosure including a top wall, bottom wall and four side walls defining a combustion chamber, at least one of said side walls including an openable, sealed, transparent access door;

a seal disposed between said access door and the combustion chamber;

a flue connected to said enclosure and disposed in fluid communication with said combustion chamber and an outside ambient environment external to the building; and

a combustion air duct connected to said enclosure and disposed in fluid communication with said combustion chamber and the outside ambient environment external to the building, wherein said seal causes substantially all combustion air supplied to said combustion chamber to flow through said combustion air duct when said access door is in a closed position.

5,603,313

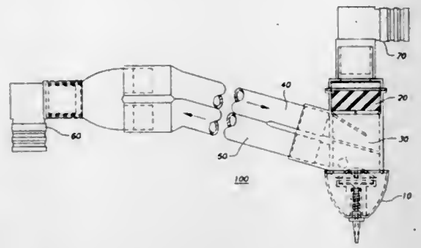
Patent Not Issued For This Number

5,603,314

AEROSOL FILTRATION DEVICE AND INHALATION APPARATUS CONTAINING SAME

Michael Bono, 882 Black Rd., Collegeville, Pa. 19426

Continuation-in-part of Ser. No. 409,259, Mar. 22, 1995. This application Mar. 22, 1995, Ser. No. 409,190
Int. Cl.[6] A61M *16/00*
U.S. Cl. 128—200.21 **20 Claims**



1. An aerosol inhalation device for delivering an aerosol mist to a patient, comprising:

a nebulizer for generating an aerosol containing droplets of a first liquid;

a first conduit connected to said nebulizer for providing passage of said aerosol to said patient;

a second conduit for providing passage of a gaseous medium exhaled from said patient, said gaseous medium containing exhaled droplets of said first liquid;

an exhaust port located proximally from said second conduit; and

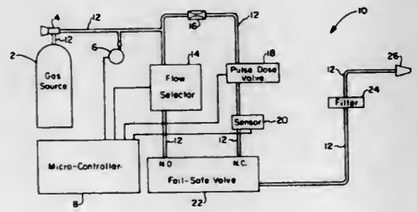
filtration means located between said second conduit and said exhaust port for capturing a portion of said exhaled droplets and recycling said portion back to said nebulizer upon inhalation by said patient while permitting a gas contained within said gaseous medium to pass through to said exhaust port.

5,603,315

MULTIPLE MODE OXYGEN DELIVERY SYSTEM

Richard E. Sasso, Jr., South Russell, Ohio, assignor to Reliable Engineering, S. Russell, Ohio

Filed Aug. 14, 1995, Ser. No. 514,675
Int. Cl.[6] A61M *16/00*
U.S. Cl. 128—204.18 **34 Claims**



1. A gas delivery apparatus consisting essentially of

a gas pressure regulator, having an input and an output, with said input selectively coupled to a gas supply source;

a pressure sensor coupled to said output of said gas pressure regulator for sensing fluidic supply pressure emitted from said output of said pressure regulator;

at least one gas valve, having an input and an output, with said input of said at least one gas valve fluidically coupled to said output of said pressure regulator downstream of said pressure sensor;

a control system for controlling said at least one gas valve and communicating with said pressure sensor; and

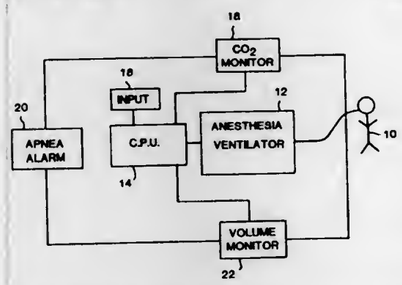
an output port coupled to said output of said at least one gas valve.

5,603,316

DISABLING APNEA VOLUME SOFTWARE

Delwin T. Coufal, and Karl N. Knauf, both of Madison, Wis., assignors to Ohmeda Inc., Liberty Corner, N.J.

Continuation of Ser. No. 126,953, Sep. 27, 1993, abandoned. This application Mar. 22, 1995, Ser. No. 408,450
Int. Cl.[6] A61M *16/00*; A62B *9/00;27/00*; G08B *3/00*
U.S. Cl. 128—204.23 **7 Claims**



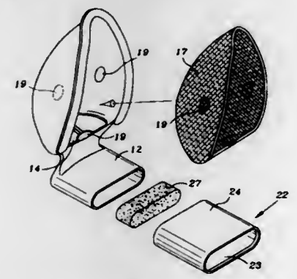
1. In an anesthesia system for providing an anesthetizing gas to a patient through a patient circuit, and including an anesthesia ventilator having a mechanical ventilation mode, a CO_2 monitor for monitoring the level of CO_2 in the patient circuit, a volume monitor for monitoring the volume of exhalation from the patient into the breathing circuit and an apnea alarm responsive to a predetermined fault condition in the CO_2 level detected by the CO_2 monitor and a predetermined fault condition in the exhaled breath of the patient detected by the volume monitor, the improvement comprising a system to allow the disablement of the apnea alarm from responding to the volume monitor, said system comprising means to determine when the CO_2 monitor is capable and incapable of communicating the predetermined fault condition to trigger the apnea alarm, means to selectively disable the apnea alarm from responding to the fault condition detected by the volume monitor when said system has determined CO_2 monitor is capable of triggering the apnea alarm, and said system further including means to reactivate said volume monitor to trigger said apnea alarm whenever said system determines said CO_2 monitor is no longer capable of triggering said apnea alarm.

5,603,317

ENVIRONMENTAL MASK

Charlene C. Farmer, 4947 N. Flamingo Ave., Odessa, Tex. 79764-9381

Filed Mar. 25, 1996, Ser. No. 621,525
Int. Cl.[6] A62B *7/10*
U.S. Cl. 128—205.27 **8 Claims**



1. An environmental mask including a nose cover and mouthpiece comprising:

an intergral nose cover, support bracket and hollow mouthpiece;

an airway formed in the nose cover to permit free passage of air through the airway into a nasal passage of an individual wearer;

a nose filter retained within the nose cover;

a sanitary cover removably attached to the hollow mouthpiece to avoid contact between a user's mouth and the mouthpiece; and

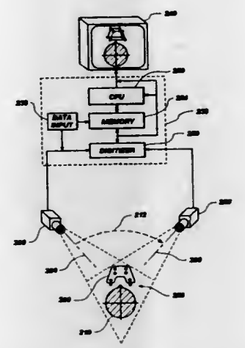
a mouth filter for preventing particulate matter from entering a wearer's mouth.

5,603,318

APPARATUS AND METHOD FOR PHOTOGRAMMETRIC SURGICAL LOCALIZATION

Mark P. Heilbrun; Paul McDonald; J. Clayton Wiker; Spencer Koehler, and William Peters, all of Salt Lake City, Utah, assignors to University of Utah Research Foundation, Salt Lake City, Utah

Continuation-in-part of Ser. No. 871,382, Apr. 21, 1992, Pat. No. 5,389,101. This application Oct. 29, 1993, Ser. No. 145,777
The portion of the term of this patent subsequent to Feb. 14, 2012, has been disclaimed.
Int. Cl.[6] A61B *6/00*
U.S. Cl. 128—630 **24 Claims**



1. Apparatus for defining a location of a medical instrument relative to features of a medical workspace including a patient's body region, comprising:

workspace imaging means positionable for producing a plurality of pairs of images of a medical workspace, each of said image pairs comprising two images made along one of each of a different one of two sightlines, said sightlines intersecting at an angle;

digitizing means operably disposed for digitizing each of said images of said image pairs to produce sets of image signals, one said set of image signals corresponding to each of said images;

fiducial means removably positionable in said workspace for providing a series of fiducial points held in fixed spatial relation to one another; and

computing means connected to said digitizing means to receive said image signals therefrom, and including memory structure having pattern recognition data and instrument structure data Stored therein, said pattern recognition data and said instrument structure data both being correlated to individual ones of a plurality of different medical instruments; said computing means being operable to:

establish a workspace coordinate framework in three dimensions from one of said pairs of images made when said fiducial means is positioned within said workspace,

determine workspace coordinates in said workspace framework of any selected point which can be identified from both images of said pair,

use said pattern recognition data to recognize a selected one of said medical instruments when it is visible in both images of one of said pairs, and

compute workspace coordinates of an operative portion of said selected medical instrument.

5,603,319

MAGNETIC RESONANCE IMAGING APPARATUS

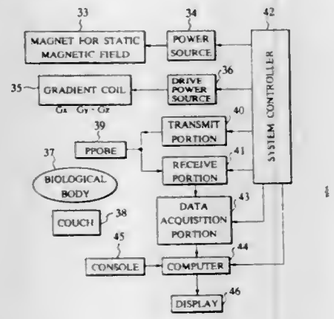
Shigehide Kuhara, Kanagawa-ken, and Shoichi Kanayama, Saitama-ken, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 14, 1994, Ser. No. 305,589

Claims priority, application Japan, Sep. 14, 1993, 5-252321; Dec. 27, 1993, 5-347047

Int. Cl.[6] A61B *5/055*

U.S. Cl. 128—653.2 **9 Claims**



1. A magnetic resonance imaging apparatus in which a uniform static magnetic field is applied to a biological body, and a radio-frequency magnetic field and a gradient magnetic field are applied thereto in accordance with a predetermined pulse sequence, so that a nuclear magnetic resonance signal from the biological body is detected for imaging, the apparatus comprising:

a first means for acquiring at least one of data emphasizing a signal from a blood portion in a region of interest in the biological body to be examined and data least affected by inhomogeneity of the static magnetic field;

a second means for acquiring data in which a change of magnetic field inhomogeneity (t_2*) in the region of interest is emphasized; and

a control means for executing simultaneously the first acquiring means and the second acquiring means during a predetermined pulse sequence after the radio-frequency magnetic field is applied to the biological body,

wherein the first and second means acquires data responsive to at least two echo signals among more than two gradient magnetic field echo signals, the at least two echo signals being generated by the gradient magnetic field when electric currents having the same direction are applied to a gradient coil.

5,603,320

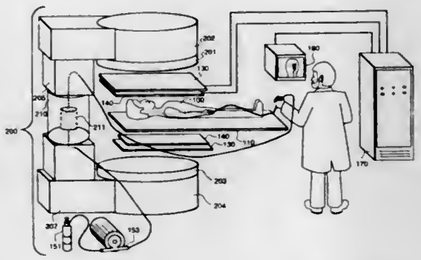
MAGNETIC RESONANCE (MR) ANGIOGRAPHY USING AN INTEGRATED POLARIZING AND IMAGING MAGNET

Charles L. Dumoulin, Ballston Lake, N.Y., and Steven P. Souza, Williamstown, Mass., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 2, 1995, Ser. No. 537,573

Int. Cl.[6] A61B *5/055*

U.S. Cl. 128—653.2 **4 Claims**



1. A magnetic resonance (MR) imaging system for obtaining vessel-selective MR angiographic images from a subject comprising:

a) a high-field polarizing magnet having a polarizing chamber for receiving and polarizing a contrast fluid and for creating magnetic field flux ;

b) at least two pole structures spaced apart from each other defining a subject receiving region;

c) connection structures each connected to the polarizing magnet and a pole structure for guiding the magnetic field flux of the polarizing magnet through the pole structures of the subject receiving region;

d) a catheter for routing the polarized contrast fluid from the high-field polarizing magnet into said subject;

e) an RF transmitter means for transmitting RF energy into said subject of a selected duration, amplitude and frequency to cause nutation of the contrast fluid and other tissue within said subject;

f) a gradient means for varying the amplitude of the magnetic field in at least one spatial dimension over time;

g) an RF receive coil for detecting a set of MR response signals from the contrast fluid and other tissue within said subject;

h) a receiver means coupled to the RF receive coil for receiving the detected MR response signals;

i) a calculation means for calculating an image from the detected MR response signals;

j) a controller means connected to the RF transmitter means, the receiver means, the calculation means and the gradient means, for activating the RF transmitter means, the receiver means, the calculation means and the gradient means each according to a predetermined MR pulse sequence; and

k) a display means connected to the calculation means for displaying the calculated image to an operator.

5,603,321

ARTIFACT REMOVAL FROM PHYSIOLOGICAL SIGNALS

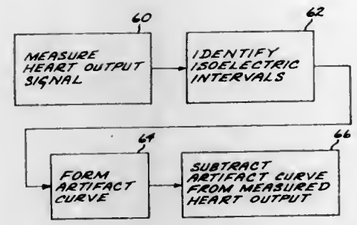
David B. Kynor; Christopher Haupt, both of San Diego, and Steven Wilson, Del Mar, all of Calif., assignors to Biomagnetic Technologies, Inc., San Diego, Calif.

Filed Aug. 7, 1995, Ser. No. 511,992

Int. Cl.[6] A61B *5/05*

U.S. Cl. 128—653.1 **12 Claims**

10. A method for obtaining a time-series heart signal, comprising the steps of



measuring a time-series of measured heart output amplitude signals having a noise component mixed therewith; and

receiving the time-series of measured heart output amplitude signals and producing a time-series heart amplitude signal having a reduced noise content, the step of receiving including the steps of

identify the times of occurrence of a time-series of corresponding isoelectric intervals in the time-series of measured heart output amplitude signals,

forming a corresponding time-series of isoelectric artifact amplitudes at the times of occurrence of the corresponding isoelectric intervals and a time-series of non-isoelectric artifact amplitudes at other times, and

subtracting the corresponding time-series of isoelectric and non-isoelectric artifact amplitudes from the time-series of measured heart output amplitude signals to yield a time-series heart signal having reduced noise content.

5,603,322

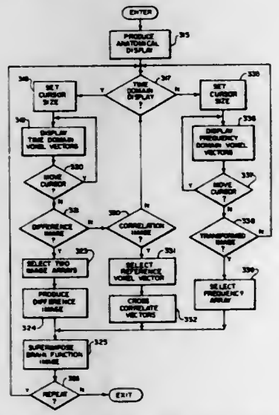
TIME COURSE MRI IMAGING OF BRAIN FUNCTIONS

Andrzej Jesmanowicz, Wauwatosa; Peter A. Bandettini, Whitefish Bay; James S. Hyde, Dousman, and Eric C. Wong, Wauwatosa, all of Wis., assignors to MCW Research Foundation, Milwaukee, Wis.

Division of Ser. No. 5,723, Jan. 19, 1994. This application Dec. 27, 1994, Ser. No. 365,371

Int. Cl.[6] A61B *5/055*

U.S. Cl. 128—653.2 **9 Claims**



1. A method for producing an NMR brain function image, the steps comprising:

acquiring a series of NMR image data arrays over a period of time during which the subject's brain is caused to function in a preselected temporal pattern to form a time course NMR image data set, the time course NMR image data set forming a set of time domain voxel vectors in which each time domain voxel vector indicates the NMR signal from a different region of the brain during said period of time;

establishing a reference time domain voxel vector which is representative of the NMR data produced by an active region of the brain during the acquisition of the time course NMR image data set;

producing a correlation image by calculating the dot product of the reference time domain voxel vector with respective time domain voxel vectors in the time course NMR image data set; and

displaying the correlation image as a brain function image.

5,603,323

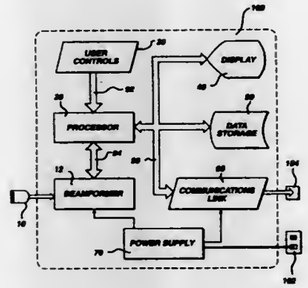
MEDICAL ULTRASONIC DIAGNOSTIC SYSTEM WITH UPGRADEABLE TRANSDUCER PROBES AND OTHER FEATURES

Lauren S. Pflugrath, Seattle, and Jacques Souquet, Issaquah, both of Wash., assignors to Advanced Technology Laboratories, Inc., Bothell, Wash.

Filed Feb. 27, 1996, Ser. No. 607,894

Int. Cl.[6] A61B *8/00*

U.S. Cl. 128—660.01 **37 Claims**



1. A process for providing scanhead upgrades to a remotely upgradeable medical diagnostic ultrasound system which includes a communications link for establishing a data link over a common carrier communications network between said ultrasound system and a remote factory location comprising the steps of:

receiving an order from a customer for a scanhead upgrade;

checking the configuration of the ultrasound system which is to receive the scanhead upgrade;

dispatching a scanhead by air to the location of the ultrasound system;

establishing a data communications link over a common carrier communications network between a program data server at the factory and the ultrasound system;

transmitting upgrade program data from the program data server to the ultrasound system over the data communications link;

receiving the upgrade program data by the ultrasound system;

installing the upgrade program data in the ultrasound system; and

reporting by the ultrasound system to the program data server that the upgrade program data has been successfully received or installed.

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5,603,324
DUPLEXER INCLUDING A FIELD-EFFECT TRANSISTOR FOR USE IN AN ULTRASOUND IMAGING SYSTEM

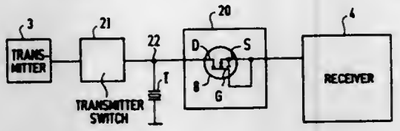
Ralph Oppelt, Uttenreuth, and Markus Vester, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Apr. 21, 1995, Ser. No. 426,341

Claims priority, application Germany, May 19, 1994, 44 17 606.6

Int. Cl.[6] A61B 8/00

U.S. Cl. 128—660.01 **7 Claims**



I. An ultrasound imaging system including at least one transducer element, a transmitter for exciting the transducer element with transmit pulses during a transmit mode, a receiver for evaluating echo signals received by the transducer element during a receive mode, and a duplexer for each transducer element, said duplexer comprising:

a first switch adapted to electrically couple the transducer element to the receiver during the receive mode, and to electrically decouple both the transducer element and the transmitter from the receiver during the transmit mode, said first switch comprising a field-effect transistor having a source-drain path connected between the transducer element and the receiver; and

a second switch adapted to electrically couple the transducer element to the transmitter during the transmit mode, and to electrically decouple both the transducer element and the receiver from the transmitter during the receive mode;

wherein said first and second switches are electrically coupled to one another at a common connection point, and

wherein said field-effect transistor is a normally-off field-effect transistor including a gate and a source that are short-circuited.

5,603,325
ULTRASONIC DENSITOMETER WITH WIDTH COMPENSATION

Richard B. Mazess, Madison, and Scott A. Wiener, Mount Horeb, both of Wis., assignors to Lunar Corporation, Madison, Wis.

Continuation-in-part of Ser. No. 397,027, Mar. 1, 1995, Pat. No. 5,483,965, which is a continuation of Ser. No. 72,799, Jun. 4, 1993, abandoned, which is a continuation-in-part of Ser. No. 895,494, Jun. 8, 1992, Pat. No. 5,343,863, which is a continuation-in-part of Ser. No. 772,982, Oct. 7, 1991, Pat. No. 5,119,820, which is a continuation of Ser. No. 343,170, Apr. 25, 1989, Pat. No. 5,054,490, which is a continuation-in-part of Ser. No. 193,295, May 11, 1988, Pat. No. 4,930,511. This application Jun. 6, 1995, Ser. No. 466,495

Int. Cl.[6] A61B 8/00

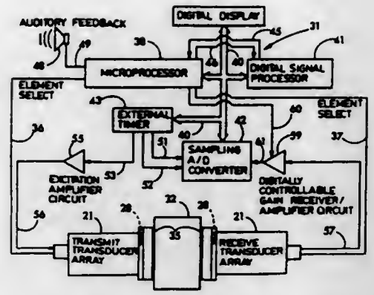
U.S. Cl. 128—660.06 **14 Claims**

1. A method of evaluating bone quality of a patient in vivo comprising the steps of:

(a) positioning the patient's heel along a path of predetermined length greater than the width of the heel;

(b) determining a measure of transit time of an ultrasonic pulse for the predetermined path length through a standard coupling medium and the heel, the coupling medium conducting sound at a predetermined first sound speed;

(c) determining a measure of attenuation of the ultrasonic pulse for the predetermined path length through the coupling medium and the heel, the coupling medium attenuating sound at a predetermined first attenuation rate; and



(d) evaluating the functional relationship between the measure of attenuation and bone quality and heel width for the predetermined length and the coupling medium, and the functional relationship between the measure of transit time and bone quality and bone heel, for the predetermined length and the coupling medium, to identify a single pair of common bone quality and heel width values related to both of the measures of attenuation and transit time, the common bone quality value being substantially independent of the width of the heel.

5,603,326
METHOD AND APPARATUS FOR DISPLAYING AN IMAGE OBTAINED BY ECHO SIGNALS

Kari Richter, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

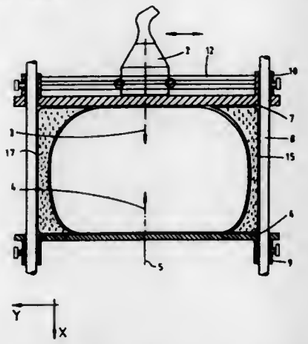
PCT No. PCT/DE94/00303, § 371 Date Sep. 20, 1995, § 102(e) Date Sep. 20, 1995, PCT Pub. No. WO94/22374, PCT Pub. Date Oct. 13, 1994

PCT Filed Mar. 18, 1994, Ser. No. 525,774

Claims priority, application Germany, Mar. 22, 1993, 43 09 596.8

Int. Cl.[6] A61B 8/00

U.S. Cl. 128—660.07 **22 Claims**



1. A method for examining a body portion of a human subject, said body portion having a first ultrasound reflectivity associated therewith, said method comprising the steps of:

clamping and spatially fixing said body portion between a plate element and a reference surface parallel to said plate element, said reference surface having a second ultrasound reflectivity associated therewith which is higher than said first ultrasound reflectivity and said plate element being ultrasound transparent;

emitting ultrasound signals into said body portion along an axis perpendicular to said reference surface, said ultrasound signals proceeding through said plate element and said body portion to said reference surface and said body portion and said reference surface thereby producing respective ultrasound echo signals, each of said ultrasound echo signals having echo signal parameters associated therewith comprising a transit time along said axis and an amplitude;

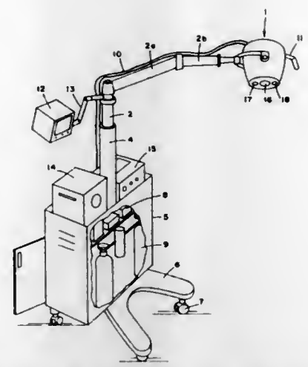
receiving said echo signals;

identifying at least one reference parameter comprising at least one of said echo signal parameters for a reference echo signal passing through said body portion and reflected from said reference surface;

identifying at least one of said echo signal parameters for each echo signal upon reception of the respective echo signals;

identifying a deviation from said at least one reference parameter of the at least one echo signal parameter identified for each signal upon reception of the echo signal; and

identifying a probability of the presence of a tumor in said body portion dependent on said deviation.



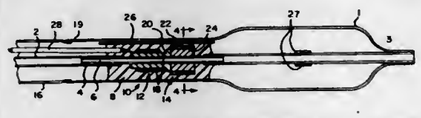
5,603,327
ULTRASOUND CATHETER PROBE

Michael J. Eberle, Fair Oaks; Gary P. Rizzuti, Shingle Springs, and Horst F. Kiepen, Georgetown, all of Calif., assignors to Endosonics Corporation, Rancho Cordova, Calif.

Continuation of Ser. No. 234,848, Apr. 28, 1994, Pat. No. 5,453,575, which is a continuation-in-part of Ser. No. 12,251, Feb. 1, 1993, Pat. No. 5,368,037. This application Aug. 18, 1995, Ser. No. 516,538

Int. Cl.[6] A61B 8/12

U.S. Cl. 128—662.06 **19 Claims**



1. An ultrasound catheter probe for insertion into a vasculature and emitting ultrasonic acoustic waves and providing transduced electrical signals arising from ultrasonic echoes of the ultrasonic acoustic waves, said ultrasound catheter probe comprising:

a multi-sectioned body having distinct sections for independently supporting a transducer array and integrated electronic circuitry, the multi-sectioned body comprising:

a first section, comprising a first material, serving as a transducer backing and having a relatively high acoustic energy absorption in comparison to a second section, comprising a second material, for supporting integrated electronic circuitry;

a transducer assembly, supported by the first section of the multi-sectioned body, including the transducer array for transmitting the ultrasonic acoustic waves into the vasculature and generating electrical signals in accordance with the ultrasonic echoes of the ultrasonic acoustic waves; and

integrated electronic circuitry, supported by the second section of the multi-sectioned body, for receiving the electrical signals generated by the transducer assembly and, in response to the electrical signals, transmitting information to an environment external of the vasculature.

5,603,328
INFRA-RED VASCULAR ANGIOGRAPHY SYSTEM

Menachem S. Zucker, Kiryat Motzkin, and Gabriel J. Iddan, Haifa, both of Israel, assignors to The State of Israel, Ministry of Defence, Tel-Aviv, Israel

Filed Jan. 18, 1994, Ser. No. 183,072

Claims priority, application Israel, Jan. 18, 1993, 104423

Int. Cl.[6] A61B 6/00

U.S. Cl. 128—664 **53 Claims**

1. An infra-red vascular angiography system comprising a readily displaceable camera including infra-red and visible range optical assemblies and infra-red and visible range detectors; the infra-red optical assembly being of high sensitivity for receiving and transmitting with minimal distortion an infra-red image of an object within an angular range of substantially ±45° with respect to a line perpendicular to the object; the infra-red range detector detecting the infra-red image transmitted from said optical assembly, in an infra-red wavelength range substantially between 8 to 12 micrometers, and converting it into a first set of successive electric output signals; a first video imaging device coupled to said infra-red range detector for digitizing said first set of output signals and converting them into a first set of successive digitized video image frames or successive portions thereof; the visible range optical assembly receiving and transmitting a visible image in coordination with said infra-red optical assembly and having a field of view with respect to said object which covers at least that of said infra-red assembly; the visible range detector converting the transmitted visible image into a second set of successive electric output signals; a second video imaging device coupled to said visible range detector for digitizing said second set of successive electric output signals into a second set of successive digitized video image frames or successive portions thereof; an image processor coupled to said first and second imaging devices adapted to receive said first and second successive video frames or successive portions of video frames to process them and form first and second sets of enhanced video images; and a switching device coupled to said image processor, for routing either or both of said sets of enhanced video images to a display device coupled to said image processor, for enabling an operator to readily correlate the infra-red image with the visible image of said object.

5,603,329
MULTI-FUNCTIONAL BLOOD PRESSURE MONITOR

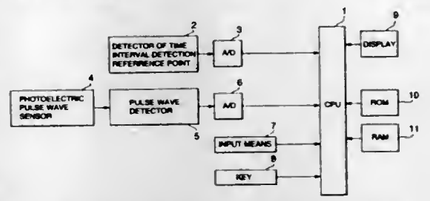
Hidehiro Hosaka; Takashi Nakaya; Yoshihiro Sugo; Hiromitsu Kasuya, and Rie Tanaka, all of Tokyo, Japan, assignors to Nihon Kohden Corporation, Tokyo, Japan

Filed Jun. 21, 1995, Ser. No. 492,938

Claims priority, application Japan, Jun. 21, 1994, 6-138460

Int. Cl.[6] A61B 05/00

U.S. Cl. 128—680 **2 Claims**



1. A multi-functional blood pressure monitor, comprising:

input means for entering a value of blood pressure for calibration;

means for detecting a time interval detection reference point on an aortic pulse wave from a subject;

means for detecting a peripheral blood pulse wave as it appears later than said aortic pulse wave;

means for measuring a pulse wave propagation time on the basis of detection outputs from said means for detecting a time interval detection reference point and said means for detecting a peripheral blood pulse wave;

first computing means for computing values of two parameters α and β which are characteristic of the subject, α being a parameter by which the pulse wave propagation time is to be multiplied when computing blood pressure from said pulse wave propagation time, and β being a parameter to be added when computing blood pressure from the pulse wave propagation time, using two values of blood pressure for calibration and two pulse wave propagation times for calibration, each being obtained by subjecting the same subject to different measurement conditions;

second computing means for computing blood pressure from an actually measured pulse wave propagation time and said two parameters α and β; and

output means for outputting the computed blood pressure and the value of said parameter α which is an index for arteriosclerosis.

5,603,330

PULSE COUNTING APPARATUS

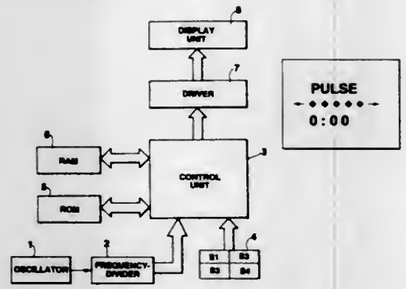
Fusao Suga, Ome, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Nov. 28, 1994, Ser. No. 345,132

Claims priority, application Japan, Dec. 2, 1993, 5-303020

Int. Cl.[6] G04B *47/00;* **A61B** *5/04*

U.S. Cl. 128—687 **9 Claims**



1. A pulse counting apparatus comprising:

time measuring means for measuring a period of time in which pulses of a person amount to a predetermined number, and producing time data;

pulse means for obtaining pulse data representing pulses per unit time based on the time data produced by the time measuring means; and

time measurement stopping means for automatically stopping measurement of a period of time in the time measuring means, when the time data produced by the time measuring means is at least a predetermined value.

5,603,331

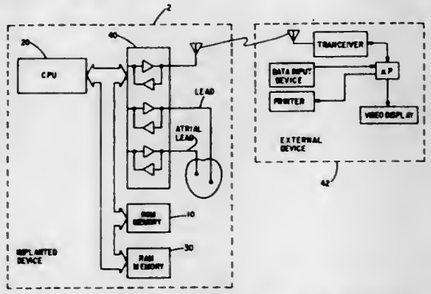
DATA LOGGING SYSTEM FOR IMPLANTABLE CARDIAC DEVICE

Jan P. Heemels, Minneapolis; Gerrard M. Carlson, Champlin, and Julio C. Spinelli, Shoreview, all of Minn., assignors to Cardiac Pacemakers, Inc., St. Paul, Minn.

Filed Feb. 12, 1996, Ser. No. 600,133

Int. Cl.[6] A61B *5/0452*

U.S. Cl. 128—696 **23 Claims**



10. A cardiac assessment device including a microcontroller having memory means for storing a program and data at addressable locations therein, said microcontroller being responsive to ventricular depolarization events for measuring a RR interval between successive ones of naturally occurring ventricular depolarization events, comprising:

(a) means for generating a time domain log based upon the RR intervals occurring during a predetermined period of time, said generating means including computing means for calculating data comprising a mean value of the RR intervals and a square of a standard deviation of the RR intervals occurring during said predetermined period of time;

(b) an external device: and

(c) means for telemetering the mean value of the RR interval and the standard deviation data to the external device.

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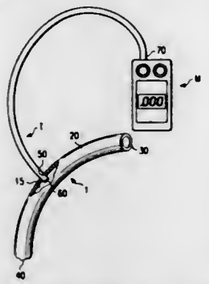
METHOD AND APPARATUS FOR MONITORING THE SYSTEMIC ABSORPTION OF IRRIGATION FLUID DURING OPERATIVE HYSTEROSCOPY

Terence M. O'Connor, Dallas, Tex., assignor to Technological Services, Inc., Dallas, Tex.

Filed Jan. 27, 1995, Ser. No. 378,803

Int. Cl.[6] A61M *15/08;* **G01N** *31/00*

U.S. Cl. 128—716 **11 Claims**



1. An apparatus for determining if irrigation fluid is being systemically absorbed by a patient undergoing operative hysteroscopy comprising a tubular connector having a flow passage therethrough and a first opening connected to a second opening by means of said flow passage, said first opening connected in flow registration with a cuffed endotracheal tube, said second opening connected in flow registration with a flexible gas delivery hose of an anesthesia gas mixing and metering device, said tubular connector having a port intermediate said first opening and said second opening providing fluid passage between interior and exterior of said tubular connector, a flexible tube with a fluid bore extending the length of said flexible tube with a first opening in flow registration with said fluid bore located at a first end of said tube, said first end being retained by retaining means so that said first opening is retained in fluid communication with said port in said tubular connector, and a second opening in flow registration with said fluid bore located at a second end of said tube, said second end being attached to a sampling inlet of a manually activated alcohol vapor concentration measuring device so that the second opening is in fluid communication with said sampling inlet, said retaining means comprising a port in said connector with a diameter slightly smaller than outside diameter of said flexible tube such that the first end of said tube is retained within said port in said tubular connector by means of a friction fit.

5,603,333

IMPEDANCE CATHETER AND CATHETERIZATION SYSTEM IN WHICH IT IS USED FOR MEASURING THE ELECTRICAL IMPEDANCE IN BLOOD VESSELS

Maurits K. Konings, Utrecht, Netherlands, assignor to Academisch Ziekenhuis Utrecht, Utrecht, Netherlands

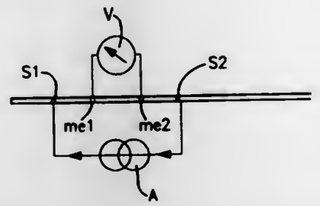
PCT No. PCT/EP94/00019, § 371 Date Sep. 6, 1995, § 102(e) Date Sep. 6, 1995, PCT Pub. No. WO94/15529, PCT Pub. Date Jul. 21, 1994

PCT Filed Jan. 5, 1994, Ser. No. 481,423

Claims priority, application Netherlands, Jan. 7, 1993, 9300028

Int. Cl.[6] G06F *15/42*

U.S. Cl. 128—734 **8 Claims**



1. Impedance catheter for measuring electrical impedances in blood vessels within an annular region around the catheter, containing excitation electrodes, connected to an alternating current source and with measuring electrodes between which a potential difference can be measured, characterised in that it contains at least four excitation electrodes that are connected to at least two alternating current sources of which at least two are in counterphase, whose amplitudes can be controlled independently from each other and that it is provided with one or more groups of measuring electrodes, containing per group at least three equidistant measuring electrodes, which as compared to the positioning of the electrodes according to the standard method for measuring the kind of impedance under consideration are positioned very closely together, such that the distance from one arbitrary measuring electrode in a group, to a nearest other measuring electrode in the same group, for all measuring electrodes is the same and smaller than the radius of the blood vessel to be measured, and that no excitation electrode is present between two measuring electrodes.

5,603,334

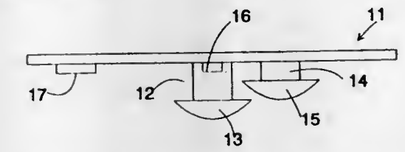
APPARATUS FOR MEASURING AND DEVELOPING PROPRIOCEPTIVE ABILITY

Gregory M. Sharp, P.O.Box 922, Summerland, Calif. 93067

Filed Jul. 25, 1994, Ser. No. 280,472

Int. Cl.[6] A61B *5/10*

U.S. Cl. 128—779 **3 Claims**



1. An apparatus for measuring and developing proprioceptive ability comprising:

a) a rocker assembly comprising a rigid hemispherical member having a flat upper surface and a radius of curvature and an inelastic support post having a free end and a fixed end rigidly affixed to said flat surface;

b) a platform comprising a circular planar sheet having a lower surface and a top surface dimensioned to accommodate the feet of a user; said platform having an inelastic support integral therewith and mounted axially thereon to project from said lower surface, said inelastic support having a free end adapted to releasably engage said free end of said support post;

c) an inclination sensing means affixed to said platform, said sensing means being operable for measuring the pitch and yaw of the plane of said platform with respect to a horizontal plane and generating a signal responsive to the inclination of said platform when the angle of inclination of said platform moves into or out of a pre-set angular range;

d) a computer means in communication with said inclination sensing means, said computer means being operable for receiving a signal from said sensing means;

e) a session timer in communication with said computer means said session timer being operable for measuring the time elapsed during a session of use;

f) a balance timer in communication with said computer means; and wherein said computer means is operable for controlling said balance timer to indicate the portion of said elapsed time during a session of use said platform is horizontal within a pre-set range and wherein said portion of the elapsed time provides a measure of proprioceptive ability.

5,603,335

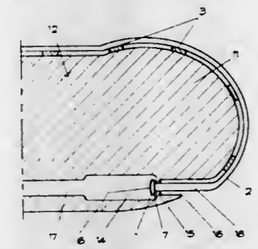
INTRAURETHRAL CONTRACEPTIVE DEVICE

R. William McClenahan, 450 Cola Ballena, Apt. G, Alameda, Calif. 94501

Filed Sep. 27, 1995, Ser. No. 534,553

Int. Cl.[6] A61F *6/04;5/44*

U.S. Cl. 128—844 **1 Claim**



1. A male intraurethral contraceptive device comprising:

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(a) a urethral sealing member selected from the group consisting of rounds and oblong rings, adapted to be received in a urethra in a perpendicular axis as defined by the urethra, said ring having a central bore permitting the passage of semen, and

(b) a flexible, elongated hollow container means attached to said ring and emanating from the bore of said ring and extending outside the urethra, said container means having sufficient length to allow affixation to a penis shaft whereby said ring, being brought into a coincident axis with the urethra bore, the sealing member along with said container means serve to hold said ring in a position within a fossa navicularis to effect a sealing relationship between said ring and the orificium externum, wherein the container means further comprises,

an adhesive means applied to a portion of one outside surface of said container means to engage the penis shaft in a holding relationship, or

an elastic loop attached to a distal end of said container means to engage the penis shaft in a holding relationship.

5,603,336

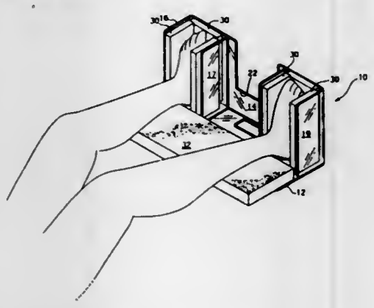
BED FOOTBOX FOR MEDICAL PATIENT'S

Frank G. Shepich, 2627 Dryden Rd., El Cajon, Calif. 92020

Filed Sep. 11, 1995, Ser. No. 526,824

Int. Cl.[6] A61F *5/37*; **A47C** *20/02*

U.S. Cl. 128—882 **10 Claims**



1. A bed footbox for medical patient's comprising:

a horizontally oriented base having a top surface, a bottom surface, a front edge, a rear edge, a left edge, a right edge, a longitudinal x-axis, a width W1 and a length L1;

an upright oriented rigid rear wall having a top edge, a bottom edge, a left edge, a right edge, an upright y-axis, a front surface and a rear surface; the bottom edge of said rear wall being rigidly connected to the top surface of said base and it extends laterally across the width of said base;

a first pair of laterally spaced upright walls each having an inner surface, a top edge, a bottom edge, a front edge, a rear edge; said rear edges being secured to the front surface of said rear wall to form a left foot receptacle; said upright walls being spaced apart a preselected distance W3; the bottom edges of said upright walls being rigidly connected to the top surface of said base;

a second pair of laterally spaced upright walls each having an inner surface, a top edge, a bottom edge, a front edge and a rear edge; said rear edges being secured to the front surface of said rear wall to form a right foot receptacle, said upright walls being spaced apart a preselected distance W3; the bottom edges of said upright walls being rigidly connected to the top surface of said base;

said left foot receptacle and said right foot receptacle being spaced apart a preselected distance W4;

means for cushioning the inner upright wall surfaces of said left and right foot receptacles; and

cushioning means on the top surface of said base and it extends across the front ends of said respective left and right foot receptacles; it has a preselected height H2 that prevents a person's heel from contacting the top surface of said base when their feet are inserted into said left and right foot receptacles.

5,603,337

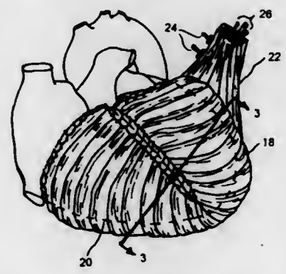
TWO-STAGE CARDIOMYOPLASTY

Robert Jarvik, 124 W. 60 St., New York, N.Y. 10023

Filed Dec. 5, 1994, Ser. No. 350,272

Int. Cl.[6] A61B *19/00*

U.S. Cl. 128—898 **5 Claims**



1. The method of two-stage surgical treatment of dilated congestive heart failure comprised of:

a. First, in the initial stage of said treatment, performing a first operation in which a cardiac assist device including a mechanical circulatory assist pump is applied to the patient to hemodynamically support the patient's left ventricle and cause it to become reduced from its dilated, enlarged size to a generally normal size, and then,

b. Second, in the subsequent stage of said treatment, after the patient's heart has become reduced in size as a result of said mechanical assist, performing a second operation in which a skeletal muscle graft is applied to the heart and stimulated electrically such that its contraction assists the function of the heart.

5,603,338

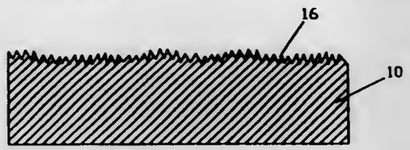
IMPLANT SURFACE PREPARATION UTILIZING ACID TREATMENT

Keith D. Beaty, Palm Beach Gardens, Fla., assignor to Innovative Implants, Inc., West Palm Beach, Fla.

Continuation of Ser. No. 351,214, Nov. 30, 1994, abandoned. This application May 20, 1996, Ser. No. 650,594

Int. Cl.[6] A61B *19/00*

U.S. Cl. 128—898 **15 Claims**



1. A method of preparing the surface of a device that is surgically implantable in living bone and that is made of titanium having a native oxide layer on the surface thereof, said method comprising the steps of

grit blasting the surface of said device to roughen the surface,

etching the grit blasted surface with hydrofluoric acid to remove the native oxide layer, and

etching the resulting surface with a mixture of sulfuric and hydrochloric acids to produce a uniformly roughened surface.

5,603,339

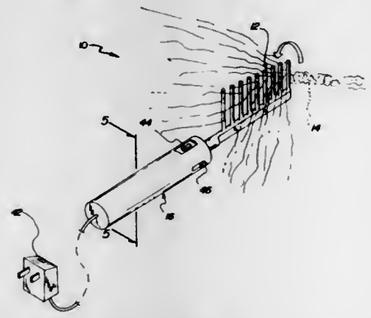
ROTATING COMB DEVICE

Sharon Brazeal, 79 Camp St., Middletown, Conn. 06457; Paul Berman, 1133 N. Clark St. #203, Los Angeles, Calif. 90069, and Darrell Greenland, 934 Fourth St. #21, Santa Monica, Calif. 90403

Filed Mar. 16, 1995, Ser. No. 405,075

Int. Cl.[6] A45D *24/00*

U.S. Cl. 132—119.1 **1 Claim**



1. A rotating comb device comprising:

a comb means for engaging a plurality of hair strands, the comb means having an elongated shaft with a plurality of tines projecting therefrom, the comb shaft having a first end being shaped so as to define a bit, the comb shaft terminating at a second end, the tines tapering from a first length proximal to the first end of the comb shaft to a second length proximal to the second end of the comb shaft, wherein the first length is substantially greater than the second length, with the intermediate tines therebetween becoming progressively shorter towards the second end of the comb shaft; and

a rotating means coupled to the bit of the comb means for rotating the comb means about an axis to effect twisting of the lock of hair into an elongated bundle configuration, the rotating means having a cylindrical main body, a reversible motor mounted within the body, a gear reducer mechanically coupled to a motor shaft of the motor, and a chuck rotatably mounted through an aperture in the cylindrical main body and mechanically coupled with an output shaft of the gear reducer, the chuck being in receipt of the bit the motor further having a reversible switch and a speed control means with each being in electrical communication therewith, whereby when the rotating means being coupled to the comb means for rotation of the comb means about an axis for effecting twisting of the plurality of hair strands into a dred-lock and continually gathering hair strands for creating a plurality of dred locks.

5,603,340

POWDERED PRODUCT PACKAGING AND DISPENSING UNIT

Jean-Louis Gueret, Paris, France, assignor to L'Oreal, France

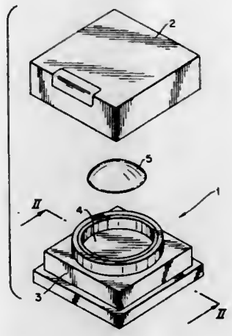
Filed Apr. 26, 1995, Ser. No. 427,956

Claims priority, application France, Apr. 27, 1994, 94-05088

Int. Cl.[6] A45D *33/00*

U.S. Cl. 132—293 **28 Claims**

1. A packaging and dispensing unit for a loose powder product, the unit comprising:



a case having a lid and a receptacle including a receptacle portion for receiving the powder product, the receptacle having a base and a wall extending from the base to an opening in the receptacle;

a screen secured to the wall of the receptacle, the screen being configured for being deformed when the powder product is dispensed and for contacting the powder product when the powder product is received in the receptacle portion; and

elastically deformable impact damping and/or aerating means situated in the receptacle between the base and the receptacle portion, the elastically deformable impact dampening and/or aerating means being capable of deforming when the powder product is dispensed.

5,603,341

STAND FOR TREATMENT OF FOOTWEAR

Gisle E. Johnson, Oslo, Norway, assignor to Trosterud Mek. Verksted A/S, Oslo, Norway

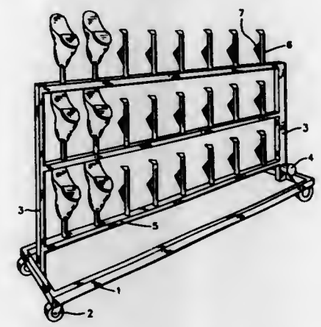
PCT No. PCT/NO93/00175, § 371 Date May 30, 1995, § 102(e) Date May 30, 1995, PCT Pub. No. WO94/12068, PCT Pub. Date Jun. 9, 1994

PCT Filed Nov. 22, 1993, Ser. No. 446,795

Claims priority, application Norway, Nov. 30, 1992, 924604

Int. Cl.[6] B08B *3/02;9/00*

U.S. Cl. 134—62 **5 Claims**



1. A stand for suspension of several pairs of footwear during treatment, said stand comprising a frame of pipes comprising vertical pipes between which plural superposed horizontal pipes extend and with one of which said horizontal pipes are in internal communication, a plurality of vertical nozzle pipes spaced apart along each of the horizontal pipes, and means to supply a liquid to said one of said vertical pipes for transport through said one

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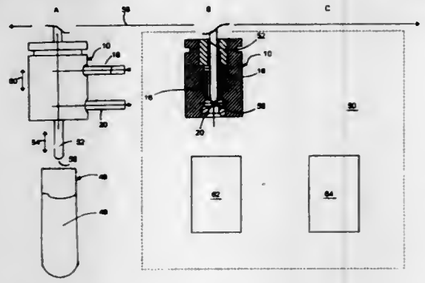
vertical pipe and through said horizontal pipes and out through said vertical nozzle pipes into footwear held by said vertical nozzle pipes.

5,603,342

APPARATUS FOR CLEANING A FLUID SAMPLE PROBE

Charles R. Shambaugh, Coral Gables, Fla., assignor to Coulter Corporation, Miami, Fla.

Filed Jun. 29, 1995, Ser. No. 496,583
Int. Cl.[6] G01N *1/14*
U.S. Cl. 134—154 **5 Claims**



1. In an apparatus for cleaning an exterior surface of a fluid sample probe, said apparatus comprising a probe-cleaning body having (i) an endless wall defining an elongated passageway having a predetermined diameter adapted to receive an elongated, cylindrically-shaped fluid sample probe, said endless wall having a screw-threaded channel formed therein for entraining a cleaning fluid about the exterior surface of the probe located Within the passageway, such entrained cleaning fluid being adapted to wash the exterior surface of the probe when relative movement is produced between the probe and probe-cleaning body, the improvement comprising: means defining a first endless annular chamber in said endless wall at one end of said passageway, said first endless annular chamber having a diameter greater than said predetermined of said predetermined of said passageway and being in fluid communication with said screw-threaded channel and encircling the probe located within said passageway; means for introducing cleaning fluid into said first endless annular chamber and means for removing said cleaning fluid at an opposite end of said one end of said passageway.

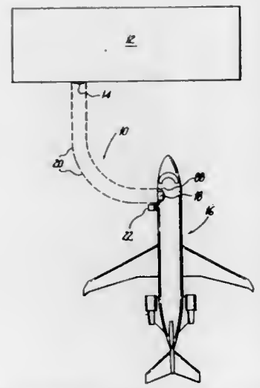
5,603,343

PASSAGEWAY FOR LOADING AND UNLOADING AIRCRAFT

James Larson, 28 Forrest Dr., Lloyd Harbor, N.Y. 11743, assignor to James Larson, Lloyd Harbor, N.Y.

Filed Feb. 3, 1995, Ser. No. 383,060
Int. Cl.[6] F04H *15/32*; **F01D** *1/00*
U.S. Cl. 135—131 **13 Claims**

1. A passageway through which passengers may move for unloading and loading aircraft comprising a plurality of independent frame sections having a leading frame section and a trailing frame section arranged in longitudinal end to end series, each section having means enabling movement on the ground, said frame sections being articulately connected to form an elongated flexible corridor, each frame section being independently extendable in the longitudinal end to end series in the formation of said elongated flexible corridor and independently collapsible in the longitudinal direction selectively to reduce the elongation of the corridor, thereby selectively enabling extended deployment of said passageway or stowing of said passageway in retracted collapsed condition, each of said sections being connected to its adjacent



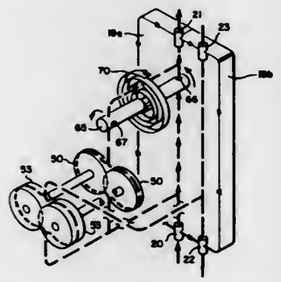
section in the longitudinal series by pivotal latch means enabling said passageway to flex laterally and assume an arcuate disposition.

5,603,344

APPARATUS FOR RECOVERING AND SAVING CHILLED WATER IN HOT WATER LINES HAVING ADJUSTABLE THERMOSTATIC CONTROL

John E. Hall, Jr., P.O. Box 1445, Ruidoso, N.M. 88345

Filed Apr. 18, 1996, Ser. No. 634,291
Int. Cl.[6] F24H *1/00*
U.S. Cl. 137—2 **19 Claims**



1. A method of conserving water by pumping cold water in a hot water line into a cold water line when hot water is desired from a hot water tap, comprising:
- connecting a water pump which is operated by a hydraulic motor between a hot water line and a cold water line near a hot water tap where hot water is desired;
- directing water from the hot water line through the hydraulic motor to operate the water pump when the hot water tap is opened to obtain hot water, the water pump thereby pumping a portion of the water that would normally flow from the open tap into the cold water line so that only a portion of the normal flow flows from the hot water tap;
- sensing when the water in the hot water line near the tap reaches a predetermined temperature; and
- stopping the pump and allowing normal flow of water from the hot water tap when the sensed temperature of the water near the tap reaches the predetermined temperature.

2. Apparatus for pumping cold water in a hot water line into cold water line, comprising:
- a hot water inlet;
- a hot water outlet;
- at least one cold water connection;

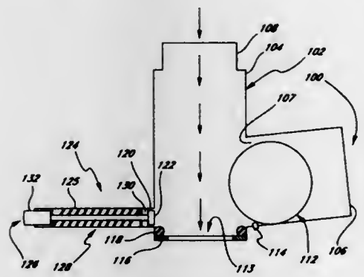
- a hydraulic motor;
- a water pump actuated by the hydraulic motor, wherein the pump is connected to pump water from the hot water inlet to the cold water connection;
- a valve having one position wherein water is directed from the hot water inlet to the hydraulic motor and water pump, and another position wherein the water is allowed to flow from the hot water inlet to the hot water outlet bypassing the hydraulic motor and pump; and
- a temperature sensing element for sensing the temperature of water flowing into the apparatus from the hot water inlet and for controlling the valve, whereby the valve directs water to the hydraulic motor and pump when the temperature of the water flowing into the apparatus from the hot water inlet is below the preset temperature, and allows flow of the water from the hot water inlet to the hot water outlet bypassing the hydraulic motor and pump when the water flowing into the apparatus from the hot water inlet is above the preset temperature.

5,603,345

RETROFFITABLE SAFETY SHUT-OFF VALVE FOR GAS OR LIQUID METER

Richard Franklin, Manhattan Beach; Robert Salazar, Rowland Heights, and William Osburn, La Canada, all of Calif., assignors to Pacific Enterprises, Los Angeles, Calif.

Filed Dec. 4, 1995, Ser. No. 566,548
Int. Cl.[6] F16K *17/36*
U.S. Cl. 137—15 **8 Claims**



1. A valve for retrofitting within a meter, comprising:
- a flow portion in communication with a receptacle when the valve is open;
- a storage portion coupled to the flow portion via an opening, the storage portion being angled downwardly along its entire length;
- a set screw detent mounted into a floor of the storage portion and adjustably protruding from the floor to vary the amount of protrusion;
- a trip ball removably housed within the storage portion and adjacent to the detent when the valve is open, whereby the detent is positioned between the center of the trip ball and the receptacle when the valve is open;
- the receptacle coupled to the floor portion to receive the trip ball when the valve is closed; and
- a plunger which is movably coupled to the flow portion and which may be advanced to return the trip ball to the storage portion.

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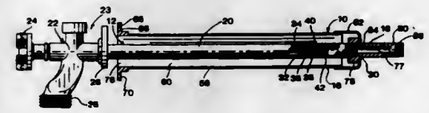
Patent Not Issued For This Number

5,603,347

SILLCOCK RUPTURE CONTROL ASSEMBLY

Rodger D. Eaton, 1436 S. Washington, Wichita, Kans. 67211

Filed Jun. 5, 1995, Ser. No. 464,573
Int. Cl.[6] F16L *5/00*
U.S. Cl. 137—360 **27 Claims**



1. For use with a sillcock that controls the flow of water from a supply line associated with a building, a leak guard that prevents damage to the building when the sillcock ruptures, said sillcock including a tube, a valve within the tube, and a control knob at one end of the tube operably coupled with the valve, said guard comprising:
- a tubular connector connectable between said tube of the sillcock and the supply line for establishing fluid communication therebetween when the guard is installed; and
- a housing sealingly secured to said connector and having an internal chamber for receiving the tube of the sillcock when the sillcock is connected to the connector,

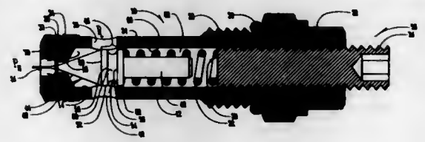
said housing having an outlet disposed to be located outside the building when the guard is installed for directing leaking water from the sillcock to a point outside the building.

5,603,348

DAMPED POPPET VALVE

Kerry G. Geringer, Ames, Iowa, assignor to Sauer Inc., Ames, Iowa

Filed May 1, 1995, Ser. No. 432,513
Int. Cl.[6] F16K *21/10*
U.S. Cl. 137—514.7 **16 Claims**



1. A valve, comprising:
- a body member having spaced apart first and second fluid passages and an elongated bore in communication with the passages, the body member further having a valve seat interposed at one end of the bore between the first and second fluid passages;
- the bore having a discharge chamber disposed between the valve seat and the second fluid passage, and further having a dampening chamber coextensive with a valve spring cavity disposed at the end of the bore distal from the valve seat;
- a poppet having forward and rearward ends disposed in the discharge chamber and dampening chamber of the bore respectively, the poppet including a seating portion at the forward end thereof for engaging the seat, a stem portion at the rearward end, and a raised central portion interposed between the stem portion and the seating portion so as to delimit the discharge chamber and the dampening chamber, the raised central portion being smaller in diameter than the bore and thereby forming a gap therebetween; and
- a spring means disposed in the valve spring cavity for engaging the poppet and yieldingly urging the seating portion into sealing engagement with the seat;
- whereby fluid is permitted to flow from the first fluid passage to the second fluid passage when fluid pressure in the first fluid passage overcomes the force of the spring means and thereby dislodges the seating portion of the poppet from the seat; and

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whereby fluid also flows through the gap and into the dampening chamber to dampen and stabilize the poppet when the poppet is unseated.

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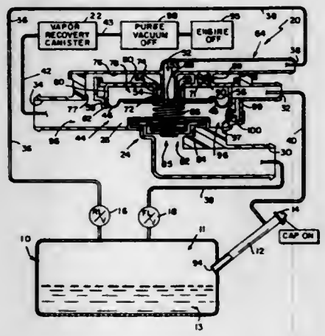
TANK VENTING SYSTEM

Robert S. Harris, Connersville, Ind., assignor to Stant Manufacturing Inc., Connersville, Ind.

Continuation-in-part of Ser. No. 209,717, Mar. 14, 1994, Pat. No. 5,388,611, which is a division of Ser. No. 822,616, Jan. 17, 1992, Pat. No. 5,318,069. This application Feb. 8, 1995, Ser. No. 385,670

Int. Cl.[6] F16K *24/00*

U.S. Cl. 137—588 **35 Claims**



1. An apparatus for controlling venting of fuel vapors from a vehicle fuel tank having a filler neck, the apparatus comprising

a housing defining an interior region and being formed to include a first inlet port connecting the interior region in fluid communication with the fuel tank, a signal port connecting the interior region in fluid communication with the filler neck, and an outlet port,

a first valve assembly disposed in the interior region and movable between a blocking position and a venting position, the first valve assembly including a central portion, an intermediate annular portion concentric with the central portion, and an outer circumferential portion,

a flow tube connecting the first inlet port with the central portion to expose the central portion to fuel vapor from the fuel tank,

an annular partition lying in spaced-apart relationship with the flow tube and cooperating therewith to define an intermediate annular chamber open to the outlet port to expose the intermediate portion to atmospheric pressure, the annular partition further cooperating with the housing to define an outer circumferential chamber open to the signal port to expose the outer circumferential portion to fuel vapor from the filler neck so that the first valve assembly is moved away from its blocking position toward its venting position in response to fuel vapor pressure received from the first inlet port and the signal port allowing flow of fuel vapor from the flow tube and the outer circumferential chamber to the intermediate annular chamber during vehicle operation, and

vent means for defining a bleed passageway connecting the flow tube in fluid communication with the outer circumferential chamber so that pressurized fuel vapor accumulating in the flow tube is dissipated through the bleed passageway and discharged into the outer circumferential chamber and conducted through the signal port toward the filler neck.

5,603,350

VALVE STATION

Kurt Stoll, and Manfred Rüdle, both of Esslingen, Germany, assignors to Festo KG, Esslingen, Germany

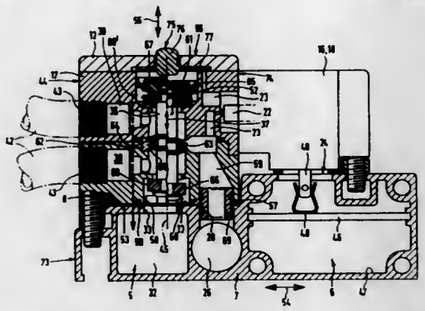
PCT No. PCT/EP94/02172, § 371 Date Nov. 16, 1995, § 102(e) Date Nov. 16, 1995, PCT Pub. No. WO95/02770, PCT Pub. Date Jan. 26, 1995

PCT Filed Jul. 2, 1994, Ser. No. 522,353

Claims priority, application Germany, Jul. 13, 1993, 93 10 438.3 U

Int. Cl.[6] F15B *13/08*

U.S. Cl. 137—596.16 **13 Claims**



1. Valve station for use in conjunction with the control of fluid actuable devices (35) having a panel (8) being subdivided into a plurality of successive valve equipment locations (13) each being equipable with one multi-way valve (12), having an obturator (36) drivable for a switch movement and at least a consumption connecting opening (43) on the outer face of the valve housing (17) which is not facing the panel (8), for connection with a fluid line (42) leading to a fluid actuable device (35), whereby in the longitudinal direction of the fluid distribution device (5) at least one feeding conduit (26) extends communicating, on the one hand, with a fluid source and, on the other hand, through orifices (28) with a plurality of the valve equipment locations (13) and thereby with the multi-way valves (12), and a signal distribution device (6) having signal conductors extending along a row of valve equipment locations (13) being used to transmit valve actuating signals from an electronic control device through the signal conductors to an electrically actuable valve drive (16) which is equipped with one multi-way valve (12) and having a movable control member (22), whereby at least one multi-way valve (12) of the valve station (1) is arranged on the panel (8) of the fluid distribution device (5) in such a manner that the direction (37) of the switch movement of the given obturator (36) is aligned at a right angle with respect to the panel (8) and that the fluidic connection is performed through the internal feeding conduit (26) of the fluid distribution device (5) and through an orifice (57) of a valve conduit (59) of the given multi-way valve (12) on a front face (53), facing the panel (8), and said orifice (57) positioned opposite orifice (28) of feeding conduit (26), characterized in that a ventilation conduit (32) is formed in said fluid distribution device (5) extending in a longitudinal direction thereof which communicates through orifices (33) with said valve equipment locations (13), whereby each of said orifices (33) with a front face (53) facing the panel (8) of said associated multi-way valve (12) is connected with an orifice (58) of a ventilating conduit (60) opposite said associated multi-way valve (12), that said control member (22) of said valve drive (16) controls a control conduit (23) which serves to supply said obturator (36) of said multi-way valve (12) with the required fluid control signals for generating a linear switch movement (37), that said signal distribution device (6) is provided with a series of valve drive equipment locations (24) having an alignment direction (25) that is parallel to the alignment direction (14) of valve equipment locations (13), and that the individual valve drives (16) are mounted on one of the lateral housing faces (74) of the given multi-way valve (12), on the one hand, extending from said valve equipment location parallel in the direction (37) of the switch movement of said obturator (36) away from valve equipment location (13) and, on the other hand, being mounted on the valve drive equipment locations (24) of said signal distribution device (6).

5,603,351

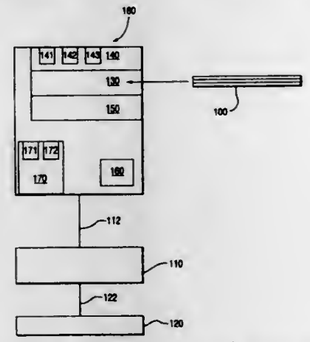
METHOD AND SYSTEM FOR INHIBITING CROSS-CONTAMINATION IN FLUIDS OF COMBINATORIAL CHEMISTRY DEVICE

Satyam C. Cherukuri; Robert R. Demers, both of Cranbury; Zhong H. Fan, Middlesex; Aaron W. Levine, Lawrenceville; Sterling E. McBride, Lawrence Township, Mercer County, and Peter J. Zanzucchi, West Windsor Township, Mercer, County, all of N.J., assignors to David Sarnoff Research Center, Inc., Princeton, N.J.

Filed Jun. 7, 1995, Ser. No. 483,331

Int. Cl.[6] F17D *1/14;1/20;* **C25B** *15/08*

U.S. Cl. 137—597 **34 Claims**



1. An array for accomplishing various chemical processes through the use of fluids, the array comprising:

a plurality of reservoirs, microchannels and reaction cells disposed on a dielectric substrate, where fluids are selectively channeled from the plurality of reservoirs to the plurality of reaction cells through the plurality of microchannels;

a plurality of micropumps located in the array for pumping fluid through the microchannels; and

a plurality of dams located in the array, each for inhibiting the flow of fluid in one of the microchannels.

5,603,352

FLUID FLOW CONTROL DEVICE INCLUDING MULTIPLE VALVE UNITS

Elhanan Tavor, Carmiel, Israel, assignor to C. Valves Ltd., Hazor Haglilit, Israel

Filed Nov. 21, 1994, Ser. No. 345,434

Int. Cl.[6] F16K *27/00*

U.S. Cl. 137—599.1 **20 Claims**

1. A fluid flow control device, comprising:

a casing;

an inlet flange secured to one end of said casing and including an inlet port;

an outlet flange secured to the opposite end of said casing and including an outlet port;

a valve-seat plate secured between said inlet flange and said casing and formed with a plurality of valve seats each defining a valve opening leading into the interior of said casing;

a plurality of partition members within said casing and engageable with inner surfaces thereof to divide the interior of said casing into a plurality of separate compartments including one compartment communicating with each of said valve openings;

and a valve within each of said compartments communicating with a said valve opening, each valve including a valve member movable towards and away from the valve seat of the respective compartment to control the flow of fluid therethrough.

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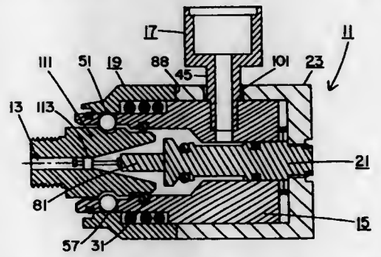
QUICK DISCONNECT COUPLING

Eddie J. Clark, Fort Worth, and Russell Paxton, Azle, both of Tex., assignors to Essman Screw Products, Inc., Bryan, Ohio

Filed Nov. 17, 1995, Ser. No. 560,103

Int. Cl.[6] F16L *37/28*

U.S. Cl. 137—614.01 **6 Claims**



1. A quick disconnect coupling for attachment to a charging port, comprising:

a) a valve body having first and second ends, the valve body having a cavity located at the first end, the cavity having a seal, the cavity being structured and arranged for receiving the charging port therein;

b) the first end of the valve body having means for quickly connecting and disconnecting the coupling onto the charging port, the means for quickly connecting and disconnecting having a quick disconnect sleeve located around the first end of the valve body, the quick disconnect sleeve sliding on the valve body between a secure position and a release position, wherein when the quick disconnect sleeve is in the secure position, portions of valve detent balls are forced into the valve body cavity, and when the quick disconnect sleeve is in the release position, the valve detent balls can exit the valve body cavity;

c) the valve body having a bore therein that communicates with the cavity;

d) the valve body having a fluid port therein that communicates with the bore;

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e) a conduit coupled to the valve body and extending radially therefrom, the conduit being in communication with the fluid port;

f) a valve stem located in the bore, the valve stem being moveable along a longitudinal axis of the bore, the valve stem having a first end that is located in the cavity and a second end that exits the valve body second end;

g) an actuator sleeve located around the second end of the valve body and being coupled to the second end of the valve stem, the actuator sleeve being slidable along the valve body from the valve body second end, where the actuator sleeve is in a closed position, toward the first end, where the actuator sleeve is an open position, wherein when the actuator sleeve is in the closed position, the valve stem prevents communication between the fluid port and the cavity through the bore, and when the actuator sleeve moves to the open position, the valve stem moves toward the cavity and allows communication between the fluid port and the cavity through the bore;

h) the actuator sleeve having a slot therethrough, the slot receiving a portion of the conduit, the slot having stop surfaces that prevent nonrotational movement of the actuator sleeve between the open and closed positions, the slot extending between the stop surfaces so as to allow the actuator sleeve to be rotated about the valve body and moved between the open and closed positions;

i) a first stop located on the quick disconnect sleeve, which first stop contacts the actuator sleeve when the quick disconnect sleeve is in the release position and the actuator sleeve is moved from the closed position toward the open position, thereby preventing the movement of the actuator sleeve to the open position;

j) a second stop located on the actuator sleeve, which second stop contacts the quick disconnect sleeve when the actuator sleeve is in the open position and the quick disconnect sleeve is moved from the secure position toward the release position, thereby preventing the movement of the quick disconnect sleeve to its release position.

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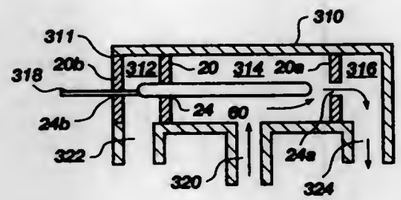
VOLUMETRIC PUMP/VALVE

Stephen C. Jacobsen, and Clark C. Davis, both of Salt Lake City, Utah, assignors to Sarcos Group, Salt Lake City, Utah

Division of Ser. No. 157,693, Nov. 23, 1993. This application Jun. 6, 1995, Ser. No. 467,713

Int. Cl.[6] F16K *11/065; 1/44*

U.S. Cl. 137—625.48 **2 Claims**



1. A fluid control valve comprising:

a housing having a cavity with interior walls, a fluid inlet, a first fluid outlet, and an opening on one side,

first and second resilient sheets of material disposed in the cavity of the housing, the sheets having perimeters attached to the interior walls of the cavity, the sheets extending inwardly from the interior walls of the cavity to divide the cavity into first and second compartments, one of said compartments being disposed between the first and second resilient sheets, with the fluid inlet positioned to allow the flow of fluid into the first compartment, and the fluid outlet positioned to allow the flow of fluid out of the second compartment, said first sheet of material having a control opening therein to allow fluid to flow therethrough from the first compartment to the second compartment when the control opening is not plugged,

said second resilient sheet of material disposed over the opening in the housing and having a shaft receiving opening therein,

a control shaft fitted to move in the shaft receiving opening between a stop position, in which the shaft is moved into the control opening of the first sheet of material to prevent the flow of fluid therethrough, and an open position, in which the shaft is moved out of the control opening to allow the flow of fluid therethrough, and

control means for selectively moving the control shaft between the stop position and the open position.

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PILOT TYPE ELECTROMAGNETIC VALVE

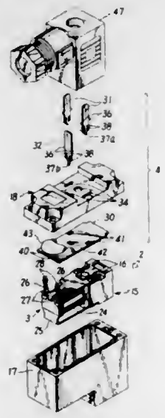
Shinji Miyazoe, and Makoto Ishikawa, both of Yawara-mura, Japan, assignors to SMC Corporation, Tokyo, Japan

Filed May 3, 1995, Ser. No. 433,024

Claims priority, application Japan, Jun. 17, 1994, 6-159259

Int. Cl.[6] F15B *13/043*

U.S. Cl. 137—625.64 **2 Claims**



1. A pilot type electromagnetic valve, which comprises:

a main valve section incorporating a main valve body switching the flow direction of a main fluid, an electromagnetically operated pilot valve section switching the position of main valve body by the action of a pilot fluid pressure, and a power supply supplying current to said pilot valve section, wherein:

said pilot valve section comprises a pair of pin shaped coil terminals connected to a solenoid coil and accommodated in a projected state within a pilot valve case mounted on said main valve section, and conducting springs respectively fitted on and surrounding said coil terminals as resilient contacts; and

said power supply comprises current receiving terminals mounted on a terminal plate which comprises a closure lid for said pilot valve case, and a printed wiring board supporting thereon an electrical power supply circuit and mounted on said terminal plate with said current receiving terminal and said power supply circuit in conductive state; said power supply circuit and coil terminals being electrically connected with each other through said conducting springs upon mounting said terminal plate on said pilot valve case.

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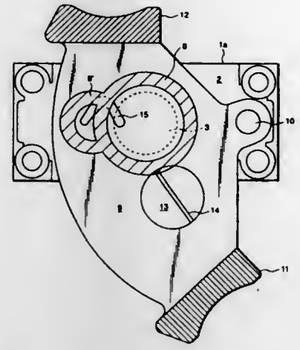
FLUID FLOW CONTROL VALVES

Martyn J. Harrold, Lower Quinton, England, assignor to IMI Norgren Limited, Staffordshire, England

Filed Jun. 2, 1995, Ser. No. 459,778

Int. Cl.[6] E03B *1/00*

U.S. Cl. 137—625.21 **5 Claims**



1. A fluid flow control valve comprising:

first and second body parts secured together and defining, respectively, first and second substantially central fluid flow passageways, said body parts further defining a cavity into which said first and second fluid flow passageways open in register with one another,

a vane mounted in said cavity and having opposed ends that project from the cavity beyond confines of said body parts, said vane having an orifice therethrough and being slidable, by the application of manual force to at least one of said ends, within said cavity and thus laterally with respect to said fluid flow passageways between (1) a valve-open position in which said orifice in the vane is in register with said fluid flow passageways thereby permitting fluid to flow between said passageways and (2) a valve-closed position in which said orifice is wholly out of register with said fluid flow passageways thereby preventing the flow of fluid between said fluid flow passageways, said first body part having a fluid exhaust passageway formed therein having first and second ends, said first end of said fluid exhaust passageway opening into said cavity adjacent to said first fluid flow passageway and said second end of said fluid exhaust passageway opening to atmosphere,

substantially annular elastomer sealing elements between said first body part and the vane and having a common section located between the first fluid flow passageway and the fluid exhaust passageway, and

a third, substantially annular elastomeric sealing element between said second body part and the vane at a location where said second fluid flow passageway opens into said cavity, said vane having formed in the surface thereof facing said first body part an exhaust channel which, in the valve-open position, is inoperative but which, in the valve-closed position, bridges said common section of said first and second sealing means and connects said first fluid flow passageway to said fluid exhaust passageway whereby fluid can exhaust to atmosphere from said first fluid flow passageway via said exhaust channel and said fluid exhaust passageway.

5,603,357

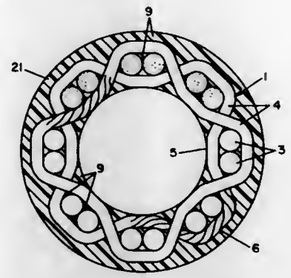
DOUBLE JACKETED FIRE HOSE AND A METHOD FOR MAKING A DOUBLE JACKETED FIRE HOSE

Josef B. Schomaker, Edinboro; Michael Kirik, Jr., Union City, and Donald A. Ruffcorn, Erie, all of Pa., assignors to Snap-Tite, Inc., Union City, Pa.

Continuation of Ser. No. 100,048, Jul. 30, 1993, abandoned. This application Dec. 8, 1995, Ser. No. 569,306

Int. Cl.[6] F16L *11/08*

U.S. Cl. 138—125 **6 Claims**



1. A double jacketed fire hose which includes an inner fiber jacket and an outer fiber jacket, said inner and outer fiber jackets include an exterior surface, an interior surface and a jacket length, said inner and outer fiber jackets include warp fibers and weft fibers, said weft fibers of said inner and outer fiber jackets being oriented helically along said length of said inner and outer fiber jackets during the weaving process, said warp fibers of said inner and outer fiber jackets running longitudinally with respect to said length of said jackets, said helical orientation of said weft fibers imparting rotational twists to said inner and outer fiber jackets, said rotational twist of said inner jacket being oppositely oriented with respect to said rotational twist of said outer jacket, said inner fiber jacket residing within said outer fiber jacket, the improvement comprising said inner fiber jacket being partially untwisted, said inner fiber jacket includes a first end and a second end, said inner fiber jacket being fully enclosed in polyurethane excluding said first and second ends thereof, said interior of said inner jacket includes a smooth layer of polyurethane therein to facilitate the flow of fluid therethrough, and, said inner fiber jacket substantially engages said outer fiber jacket such that said double jacketed fire hose acts as a single unified hose.

5,603,358

FLEXIBLE CYLINDRICAL TUBE FOR CONDUCTING GAS

Edmond P. J. Lepoutre, Curitiba, Brazil, assignor to Westaflex Tubos Flexiveis Ltda, Brazil

Filed Jan. 27, 1995, Ser. No. 379,253

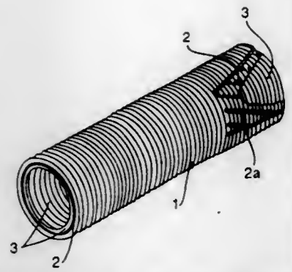
Claims priority, application Brazil, Jan. 28, 1994, 7400072 U

Int. Cl.[6] F16L *9/14*

U.S. Cl. 138—149 **13 Claims**

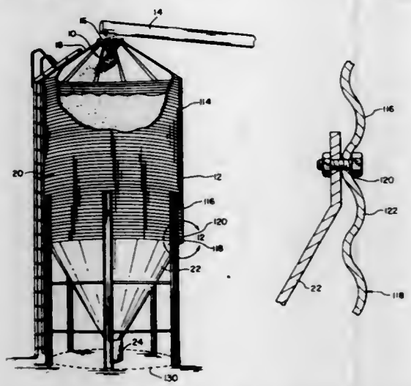
13. A flexible cylindrical tube for conducting air or other gases, employed in particular in the automobile industry where its purpose is to, among other things, conduct the air to the internal combustion engines, comprising an apertured support-tape, an exterior covering placed against said support-tape and having a larger diameter than that of said support-tape, an interior covering placed against said support-tape and having a diameter smaller than that of said support-tape, said coverings being made of a soft

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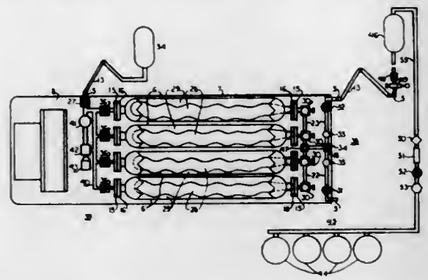
and noise-absorbent material, said exterior covering being itself covered externally, for example, by adhered bitumen.

5,603,359
METHOD AND APPARATUS FOR STORING MATERIAL WITHIN A CONTAINER WHICH IS EXPOSED TO RAIN
Richard L. Geiser, Goshen, Ind., assignor to CTB, Inc., Milford, Ind.
Continuation-in-part of Ser. No. 126,270, Sep. 24, 1993, Pat. No. 5,421,379. This application Jan. 17, 1995, Ser. No. 373,787
Int. Cl.[6] B65B *1/04; 3/04*
U.S. Cl. 141—1 **14 Claims**



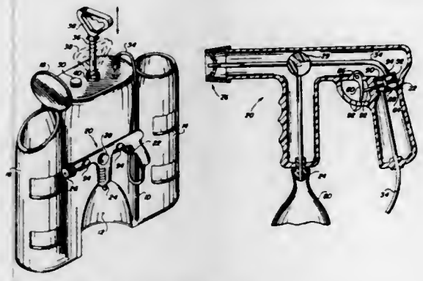
1. A container for storing material, said container being exposed to weather conditions including rain, said container comprising:
a cover portion operable to substantially cover said material stored in said container;
an outlet portion operable to deliver said material from said container;
a sidewall member having an upper portion and a lower portion, said upper portion of said sidewall member being attached to said cover portion, said sidewall member operable to confine said material stored in said container;
a converging portion having an upper peripheral edge portion attached to said lower portion of said sidewall member, said converging portion extending below the lower portion of said sidewall member being operable to guide said material in said container to said outlet portion; and
a rain shielding member being an internal extension of said sidewall member, said rain shielding member extending downwardly from said upper peripheral edge portion of said converging portion having a generally tubular shape extending from said lower portion of said sidewall member which is positioned adjacent to and away from said converging portion, said rain shielding member being operable to substantially inhibit the flow of rain from along said sidewall member to along said converging portion to maintain said converging portion in a substantially dry condition during a rainfall.

5,603,360
METHOD AND SYSTEM FOR TRANSPORTING NATURAL GAS FROM A PIPELINE TO A COMPRESSED NATURAL GAS AUTOMOTIVE RE-FUELING STATION
James R. Teel, P.O. Box 208, Bull Shoals, Ark. 72619
Filed May 30, 1995, Ser. No. 454,531
Int. Cl.[6] B65B *1/04*
U.S. Cl. 141—21 **6 Claims**



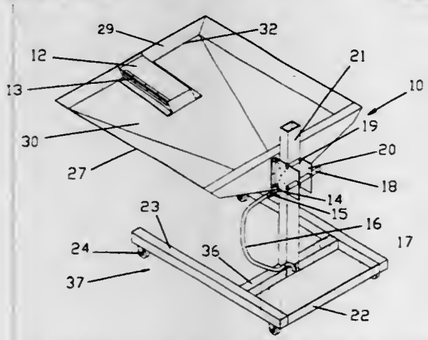
1. A system for transporting natural gas from a natural gas pipeline exit location to an end-user location comprising:
a pressure vessel means having at least one pressure vessel mounted to a transport vehicle, a vehicle manifold means and a vehicle coupling means in fluid communication with said vehicle manifold means, wherein said at least one pressure vessel comprises a steel vessel with an internal bladder adapted to contain natural gas;
a first terminal located at said natural gas pipeline exit location having a means for receiving natural from a natural gas pipeline and a loading manifold means fluidically connected to a loading coupling means being releasably connectable to said vehicle coupling means;
a second terminal located at said end-user location having a natural gas off-loading manifold means for supplying natural gas to a natural gas storage vessel located at said end-user location, a natural gas off-loading conduit means fluidically connected to a natural gas off-loading coupling means being releasably connectable to said vehicle coupling means for off-loading natural gas from said at least one pressure vessel and a heater means disposed in fluid communication with said natural gas off-loading manifold means to prevent, if necessary, the formation of hydrates therein; and
a hydraulic fluid off-loading assistance means connected in fluid communication with said pressure vessel means being adapted to be connected to a source of hydraulic fluid remotely disposed from said transport vehicle and being arranged to pump said hydraulic fluid into an annulus formed between said steel vessel and said internal bladder, wherein after pressure equalization between said at least one pressure vessel and said natural gas storage vessel, the hydraulic fluid off-loading assistance means collapses the internal bladder and thereby squeezes natural gas from a containment space formed by the internal bladder.

5,603,361
PORTABLE WATER BALLOON AND CONTAINER FILLER
Jarret P. Cuisinier, 4132 E. Grandview Clr., Mesa, Ariz. 85205
Filed Oct. 18, 1994, Ser. No. 324,886
Int. Cl.[6] A63H *33/00*
U.S. Cl. 141—26 **16 Claims**



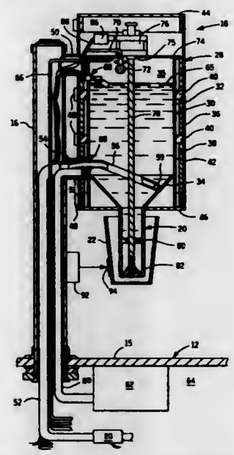
1. A portable dispenser comprising:
a reservoir for storing liquid;
a first nozzle adapted to dispense liquid into a balloon;
pumping means for causing liquid to flow under pressure from said reservoir to said first nozzle;
control means for regulating the flow of liquid;
a first tube coupled between said reservoir and said control means;
a second tube coupled between said control means and said first nozzle; and
a water pistol, wherein said water pistol contains said control means and said first nozzle and wherein said water pistol further includes
a second nozzle, said second nozzle adapted for issuing a stream of liquid;
a selection valve having an inlet, a first outlet, and a second outlet, wherein said inlet is coupled to said control means, said first outlet is coupled to said first nozzle, and said second outlet is coupled to said second nozzle.

5,603,362
PRO SUPER OIL CHANGER
Patrick Telder, 2821 Estey Ave., D-4, Naples, Fla. 33942
Filed Mar. 18, 1996, Ser. No. 618,254
Int. Cl.[6] B65B *1/04; 3/04;* **B67C** *3/02*
U.S. Cl. 141—98 **3 Claims**



1. An apparatus for collecting oil and other fluids and solvents for re-use or for recycling, said apparatus comprising:
base support means for supporting a waste oil and solvent collecting first tray in a limited space, two horizontal wheel arms, each of said wheel arms having a front end and a tail end, each of said ends having a caster mounted thereon, said wheel arms being spaced apart by a support brace, and a second tray, said support brace and said second tray being affixed to said wheel arms near said tail end, said front end having an open space between said wheel arms at said front end,
a rectangular shaped, vertical support affixed to said support brace, said vertical support having a plurality of equally spaced adjusting holes formed along its length,
a liquid collecting first tray, adjustably mounted on said vertical support, said first tray having a front wall, side walls, a bottom wall, and a mounting wall, said mounting wall having mounting plates affixed vertically thereto and spaced apart by spacers and a handle at a sufficient distance to fit said vertical support, said mounting plates having locking pin holes for engagement with locking means inserted through said locking pin holes and said adjusting holes for locking said first tray in a selected vertical position, said mounting wall having a drain elbow mounted therein and a drain cock and tube attached to said elbow for draining said fluids, and
fluid containers supported on said second tray, said tube being inserted into one of said containers for filling with said drained fluids.

5,603,363
APPARATUS FOR DISPENSING A CARBONATED BEVERAGE WITH MINIMAL FOAMING
Patrick L. Nelson, Sun Prarie, Wis., assignor to Exel Nelson Engineering LLC, Madison, Wis.
Filed Jun. 20, 1995, Ser. No. 492,880
Int. Cl.[6] B65B *1/04*
U.S. Cl. 141—351 **20 Claims**



1. A carbonated beverage dispenser comprising:
a tank which has a chamber for holding a carbonated beverage to be dispensed wherein the chamber is maintained at atmospheric pressure;
an inlet through which the carbonated beverage is introduced into said tank;
a nozzle projecting from said tank, and having an outlet through which the carbonated beverage held in the tank is dispensed;
a conical member having a first end extending into the outlet of said nozzle and having a larger end outside the outlet nozzle, wherein the shape of said conical member in association with said nozzle disperses the carbonated beverage in a 360 degree pattern around the outlet; and

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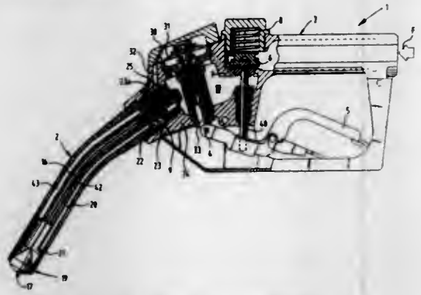
a mechanism which selectively permits and inhibits flow of beverage through said nozzle from said tank.

5,603,364

SPOUT FOR A FUEL DISPENSING NOZZLE

Geert Kerssies, Vianen, Netherlands, assignor to OPW Fueling Components Europe B.V., Netherlands

Filed Jul. 7, 1995, Ser. No. 499,783
Int. Cl.[6] B65B *1/04*
U.S. Cl. 141—392 **17 Claims**



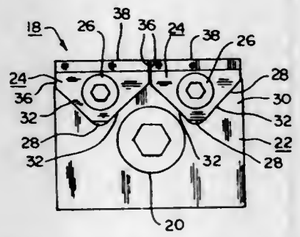
1. A pipe piece for a filling nozzle comprising:
a main channel defined within said pipe piece for supplying fuel to an outflow end of said pipe piece from an inflow end of said pipe piece;
a medium channel defined within said pipe piece and separated from said main channel to ensure separation of a medium and the fuel, said medium channel being adapted for supplying the medium to a fuel stop mechanism positioned in the filling nozzle;
a cap member for closing said outflow end against an edge thereof;
a main closing means which detachably seals said inflow end of said pipe piece; and
connecting means which extend internally in said pipe piece to provide coupling between said cap member and said main closing means of said pipe piece.

5,603,365

REMOVABLE CUTTING BLADES FOR A HELICAL CUTTERHEAD

John S. Stewart, 6921 Charnel La., Climax, N.C. 27233

Filed Nov. 16, 1995, Ser. No. 559,024
Int. Cl.[6] B27C *1/00*; **B26D** *1/00*
U.S. Cl. 144—230 **22 Claims**



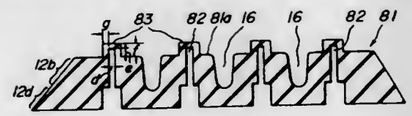
1. A removable cutterhead insert for use in a cutterhead for an industrial woodworking machine, the cutterhead including a generally cylindrical portion, a plurality of circumferential, spaced grooves extending into the cutterhead body from the periphery of the cylindrical portion and adapted to receive the removable cutterhead inserts, and means for removably securing the cutterhead insert in the grooves, the cutterhead insert comprising:
an insert body and two blade units,
said insert body having
a hole to receive the means for removably securing the cutterhead insert in the grooves,
at least one flat raised portion and
two blade unit securements to secure said two blade units,
said blade units each including at least one blade edge and configured so as not to occlude said hole to receive means for removably securing said cutterhead insert in said grooves and to have said blade edges disposed to align with blade edges of other blade units in other insert bodies to form a substantially helical blade when said blade units are secured to said blade unit securements in a cutterhead, said blade units each include a flat side that abuts one of said flat raised portions of said cutterhead insert body.

5,603,366

PRECURE TREAD FOR RETREAD TIRE

Shohachiro Nakayama, Tachikawa; Toyomi Iwata, Sayama; Masahiro Kuroda, Higashimurayama; Naoyuki Goto; Hiroshi Ueda, both of Kodaira, and Michio Ishii, Higashimurayama, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Division of Ser. No. 120,544, Sep. 14, 1993, Pat. No. 5,445,691, which is a division of Ser. No. 329,476, Mar. 28, 1989, Pat. No. 5,275,218. This application Mar. 21, 1995, Ser. No. 407,704
Claims priority, application Japan, Mar. 29, 1988, 63-77548; Feb. 9, 1989, 1-28678
Int. Cl.[6] B60C *11/00*
U.S. Cl. 152—209 R **3 Claims**



1. A precure tread strip for a tire to be bonded to a crown portion of a base tire comprising; a ground contacting tread portion and a rear portion located opposite thereto, plural surface grooves formed in the ground contacting tread portion, plural rear grooves formed in the rear portion, said rear grooves each aligned and communicating with a rear opening portion and having a volume larger than a volume of an aligned rear opening portion, and the end of each rear opening portion terminating in protrusion disposing on said ground contacting tread portion and isolating said rear groove from communication with said ground contacting tread portion.

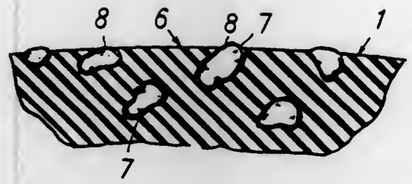
5,603,367

SLIPPAGE PREVENTING TIRE, METHOD FOR PRODUCING A TREAD SURFACE OF A SLIPPAGE PREVENTING TIRE AND METHOD FOR PRODUCING A SLIPPAGE PREVENTING TIRE

Seichi Watanabe, 2-5, Teramachi 3-chome, Itoigawa-shi, Niigata-ken, Japan

Continuation of Ser. No. 277,997, Jul. 20, 1994, abandoned. This application Nov. 8, 1995, Ser. No. 555,504
Claims priority, application Japan, Mar. 31, 1994, 6-063476
Int. Cl.[6] B60C *11/14*; **B29D** *30/06*
U.S. Cl. 152—209 R **11 Claims**

1. A slippage preventing tire, comprising:
a plurality of hard fine members coated with adhesives, a silicone system resin, and a rubber material;



wherein said adhesive-coated hard fine members are distributed throughout said silicone system resin and said rubber material and include at least one member selected from the group consisting of sand, ceramic particles, and fiber reinforced resin particles; and
wherein said hard fine members, adhesive, silicone systems resin, and rubber material comprise at least a tread portion of said slippage preventing tire.

5,603,368

ROLL UP ROMAN SHADE

Wendell B. Colson, Boulder, and Raymond N. Auger, Aspen, both of Colo., assignors to Hunter Douglas Inc., Upper Saddle River, N.J.

Continuation-in-part of Ser. No. 320,116, Oct. 7, 1994, Pat. No. 5,425,408, which is a continuation of Ser. No. 85,677, Jun. 30, 1993, abandoned, which is a continuation of Ser. No. 825,591, Jan. 24, 1992, abandoned, which is a division of Ser. No. 520,932, May 9, 1990, Pat. No. 5,104,469. This application Jun. 7, 1995, Ser. No. 475,593
Int. Cl.[6] E06B *9/24*
U.S. Cl. 160—84.05 **5 Claims**



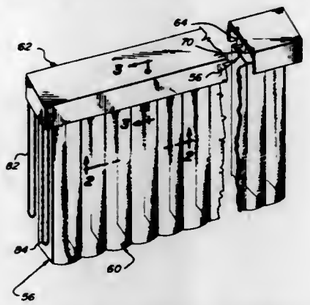
1. A cellular shade for covering an architectural opening comprising in combination a first sheet of planar, unpleated, flexible material having a width and a length, said first sheet defining a set of joint lines extending across the width thereof and spaced apart along the length thereof, a second sheet of flexible material having a width and a length, the width of said second sheet being substantially equal to the width of said first sheet, and the length of said second sheet being longer than the length of said first sheet, said second sheet having a set of joint lines extending across the width thereof and spaced apart along the length thereof, the spacing between said joint lines on said second sheet being substantially greater than the spacing between said joint lines on said first sheet, a connector fixedly joining said first sheet at said joint lines thereon to said second sheet at corresponding joint lines thereon to form a plurality of parallel cells extending across the width of said sheet, said first sheet defining a planar, unpleated rear wall of each of said cells and said second sheet defining the front wall of each of said cells, which said front wall forms a curved drooping surface projecting outwardly and away from the back wall of each cell, a roll bar about which the connected first and second sheets can be wrapped, and a connection system for operatively connecting the first and second sheets to said roll bar.

5,603,369

FABRIC WINDOW COVERING WITH VERTICAL RIGIDIFIED VANES

Wendell B. Colson, Boulder, Colo.; Richard N. Anderson, Whitesville, Ky.; Paul G. Swiszcz, Boulder, and Jason T. Throne, Broomfield, both of Colo., assignors to Hunter Douglas Inc., Upper Saddle River, N.J.

Division of Ser. No. 149,315, Nov. 9, 1993, Pat. No. 5,490,553. This application Dec. 1, 1995, Ser. No. 564,677
Int. Cl.[6] E06B *9/06*
U.S. Cl. 160—84.06 **29 Claims**



1. A window covering comprising in combination, a flexible sheet of fabric material having a front face and a rear face, a plurality of parallel vertically extending elongated fabric vanes having a longitudinal axis and forming variably directed flexible extensions from said rear face of said sheet, said fabric vanes having a stiffening compound impregnated into the fabric whereby said vanes retain a predetermined form, and control means for operably supporting said vanes and said sheet such that said sheet is suspended substantially vertically and for pivoting said vanes about said longitudinal axes so as to shift said window covering between an open condition wherein said vanes extend substantially perpendicularly to said sheet and a closed position wherein said vanes extend substantially parallel to said sheet.

5,603,370

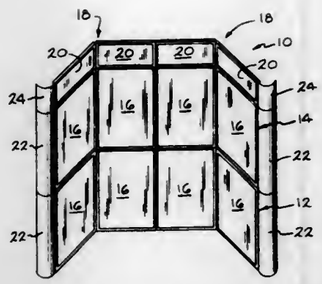
VERSATILE AND USER FRIENDLY HINGED DISPLAY SYSTEM

Edmond J. Boer, P.O. Box 292, Flesherton, Ontario N0C 1E0, Canada

Filed Jun. 27, 1994, Ser. No. 266,761
Int. Cl.[6] A47G *5/00*
U.S. Cl. 160—135 **16 Claims**

1. Display apparatus comprising at least two panel frames each having a plurality of elongate segments connected together, each of said segments having a front edge and a rear edge, means for hingedly connecting one of said elongate segments of one of said frames to one of said elongate segments of another of said frames together for rotation of one of said frames relative to another of said frames through a maximum arc of substantially 360 degrees, said hinge means comprising at least one pair of straps composed of flexible material, means for attaching one of said straps to said front edge of said one elongate segment and said rear edge of said other elongate segment, means for attaching another of said straps to said rear edge of said one elongate segment and said front edge

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of said other elongate segment whereby the attachment of said straps to said front edges defines a hinge axis about which the frames are rotatable through a first arc and the attachment of said straps to said rear edges defines a hinge axis about which the frames are rotatable through a second arc, wherein at least one of said attaching means comprises means defining a cut-out in each of said elongate segments, means comprising an insert in said cut-out means, and means for tightly securing said insert in said cut-out means with an end portion of said respective strap pinchingly attached between said insert and said respective cut-out means, wherein said elongate segments have outer surfaces, said cut-out means extends across said respective outer surface between said front edge and said rear edge, and said insert has a surface which conforms to and replaces a portion of said respective outer surface removed for said cut-out means.

5,603,371

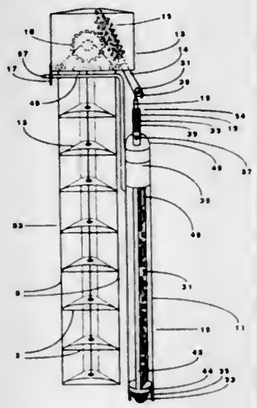
ELECTRONIC POWER ANGLING ROD FOR A WINDOW BLIND

Richard D. Gregg, P.O. Box 185, Oroville, Calif. 95965

Filed Jun. 5, 1995, Ser. No. 461,633

Int. Cl.[6] E06B *9/26*

U.S. Cl. 160—176.1 **8 Claims**



1. An electrically powered control rod for controlling positional tilt angle of slats of a Venetian window blind, said control rod comprising,

an elongated tubular housing structured to be supported lengthwise vertically oriented in close proximity and perpendicular to horizontally disposed slats of a Venetian window blind and laying over a front surface of the slats;

an electric motor attached to said tubular housing;

at least one battery within said tubular housing and connected to circuitry and switching means for controlling electrical current flow from said at least one battery to said motor for activating and deactivating said motor, said circuitry and switching means generally contained within said tubular housing;

a shaft coupled to said motor and rotatable with activation of said motor,

coupling means for connecting said shaft to a slat angle rotary drive means of the Venetian window blind for altering positional tilt angle of the slats, said coupling means for at least in part supporting said tubular housing in position relative to the Venetian window blind, said coupling means being rotatable with rotation of said shaft via activation of said motor so as to power the slat angle rotary drive means of the Venetian window blind and to alter the position of the slats;

torque brace means in spaced relationship from said coupling means for preventing rotation of said tubular housing while allowing rotation of said shaft by said motor;

means for adjusting the spacing between said coupling means and said torque brace means.

5,603,372

SOLAR PROTECTION DEVICE, ESPECIALLY FOR TRANSPARENT SUN ROOFS OF AUTOMOBILES

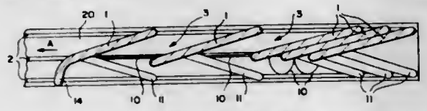
Rolf Farmont, Düsseldorf; Michael Lenders, Meerbusch, and Johannes Sutor, Düsseldorf, all of Germany, assignors to Westmont Technik GmbH & Co. KG, Germany

Filed Aug. 7, 1995, Ser. No. 512,193

Claims priority, application Germany, Aug. 9, 1994, 9412811 U

Int. Cl.[6] B60J *1/20*

U.S. Cl. 160—370.21 **17 Claims**



1. A solar protection device for sun roofs of motor vehicles, particularly for transparent sun roofs of motor vehicles, with at least a first lamella and a second lamella, which are moved along two guides and between an opened position and a closed position, said two guides arranged between two guiding profiles, which are generally parallel, the invention comprising at least a portion of each lamella arranged in a slanted position with respect to the guides, means for stacking the slanted portions of each lamella upon each other in said opened position, said means for stacking including at least one link block for moving along said guides, each said lamella having a front edge and a rear edge extending along the width between said guides, said link blocks extending a relatively short width relative to the front edge of said lamella, said slanted portions being arranged to form ventilation gaps between the adjacent front edge of said second lamella and the rear edge of said first lamella in said closed position.

5,603,373

PROCESS FOR TREATING MOLTEN METAL DURING A CASTING OPERATION USING A FILTER AND FILTER FOR IMPLEMENTING THE PROCESS

Jean-Charles Daussan, Metz; Gérard Daussan, and André Daussan, both of Longeville-Les-Metz, all of France, assignors to Daussan et Compagnie, Woippy, France

Continuation of Ser. No. 69,837, Jun. 1, 1993, abandoned.

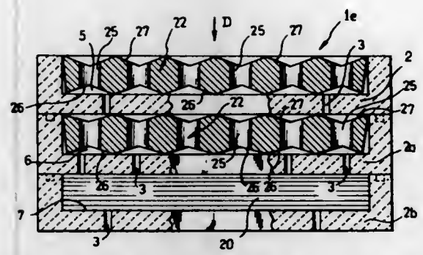
This application Apr. 25, 1995, Ser. No. 428,843

Claims priority, application Luxembourg, May 29, 1992, 88124; France, Oct. 30, 1992, 92 13039; Jan. 6, 1993, 93 00062

Int. Cl.[6] B22D *27/20*

U.S. Cl. 164—358 **13 Claims**

1. Apparatus for filtering and treating molten metal adapted to implement a process for simultaneously filtering and treating a



molten metal during an operation to cast said molten metal into a mold, said apparatus comprising a series of at least two refractory mineral material filtering plates in contact with each other at their periphery and defining between them at least one cavity, said filtering plates each having a series of filtering holes through which said molten metal flows and by which said molten metal is filtered, the dimensions of the filtering holes and the number of the filtering plates being selected so as to eliminate from the molten metal solid inclusions likely to affect the quality of the cast metal, said apparatus containing within said at least one cavity an inorganic treatment material for treating said molten metal flowing through the cavity, said treating material being in the form of one of solid compressed or molded or sintered treating plate positioned in said at least one cavity and extending over substantially the length and the width of said at least one cavity, said treating plate having when viewed in the direction of metal flow, a shape such that one or more passage holes are arranged in said treating plate for said molten metal to pass through said passage holes and through said apparatus.

5,603,374

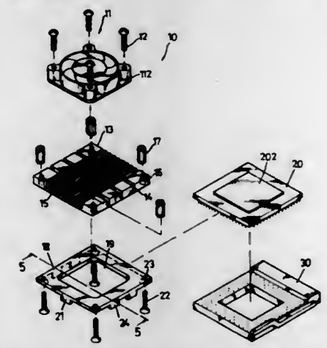
HEAT SINK ASSEMBLY FOR AN INTEGRATED CIRCUIT

Chia-fu Wu, Chungli City, Taiwan, assignor to Malico Inc., Taiwan

Filed Apr. 5, 1996, Ser. No. 628,883

Int. Cl.[6] F28F *7/00;* **H01L** *23/02*

U.S. Cl. 165—80.3 **6 Claims**



1. A heat sink assembly for an integrated circuit, comprising:

a substantially square base plate defining an opening and formed with a plurality of downwardly extending integrated circuit fastening members on three sides thereof, said integrated circuit fastening members and a top portion of the base plate cooperatively defining an integrated circuit receiving slot;

a fin plate formed with a downwardly extending protrusion, said downwardly extending protrusion extending through the opening of the base plate and having a substantially square configuration and a size slightly smaller than the opening of the base plate; and

means for threadedly connecting the fin plate and the base plate together.

5,603,375

HEAT TRANSFER DEVICE

Harry Salt, North Caulfield, Australia, assignor to Commonwealth Scientific and Industrial Research Organisation, Campbell, and The Commonwealth of Australia Dept. of Defense, Canberra, both of Australia

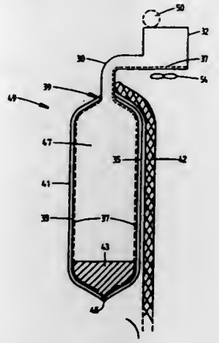
Continuation of Ser. No. 94,135, Oct. 22, 1993, abandoned.

This application Jun. 6, 1995, Ser. No. 466,751

Claims priority, application Australia, Feb. 1, 1991, PK 4402/91

Int. Cl.[6] F28D *15/00*

U.S. Cl. 165—104.26 **18 Claims**



10. A heat transfer device adapted to conform to a surface of an object, said device comprising a collapsible envelope adapted to house a liquid and a vapor and capable of being substantially flattened and which, in use, is effective to transfer heat from one part of the envelope to another part of said envelope by evaporation of the liquid at said one part and condensation of the evaporated liquid at said another part, the evaporated liquid, once condensed, being returned to the one part of the envelope,

the envelope further including two opposed, generally parallel and flexible walls which are substantially impermeable,

the device collapsing into a storage state wherein the walls of the envelope are substantially adjacent relative to each other when disposed in at least a non-use position, and expanding into an expanded state to form a cavity for retaining the liquid and the vapor by relative movement of the walls away from each other in a direction transverse to the walls when disposed in at least a use position, and

wherein the walls of the envelope are adapted to conform to the surface of the object when disposed adjacent thereto.

5,603,376

HEAT EXCHANGER FOR ELECTRONICS CABINET

Walter M. Hendrix, Richardson, Tex., assignor to Fujitsu Network Communications, Inc., Richardson, Tex.

Filed Aug. 31, 1994, Ser. No. 297,913

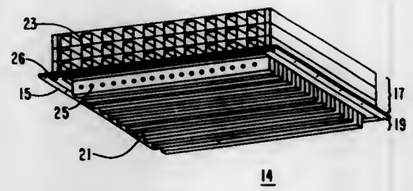
Int. Cl.[6] F28D *15/00*

U.S. Cl. 165—104.34 **11 Claims**

1. A heat exchanger for cooling electronics equipment stored in a cabinet having isolated air in an interior chamber, comprising:

a separating plate having a heat generating side and an external air side, the separating plate defining a separating plane such that substantially none of the isolated air in the interior chamber is found on the external air side of the separating plate;

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at least one layer of heat exchanger fins running in a first direction, on the heat generating side of the separating plate;

a plurality of layers of heat exchanger fins running in a second direction, generally perpendicular to the first direction, on the external air side of the separating plate: and

a fan positioned to move air in the second direction through the plurality of layers of heat exchanger fins on the external air side of the separating plate.

5,603,377

HEAT PIPE AND GAS-LIQUID CONTACTING APPARATUS CAPABLE OF HEAT EXCHANGE USING THE HEAT PIPES AND HEAT EXCHANGER OF GAS-LIQUID CONTACTING PLATE TYPE

Masumi Fujii; Taiichiro Suda; Yoshitsugu Hotta; Koichi Kitamura; Yukihiro Jinno; Tomio Mimura; Shigeru Shimojo, all of Osaka; Masaki Iijima, Tokyo, and Shigeaki Mitsuoka, Hiroshima, all of Japan, assignors to The Kansai Electric Power Co., Inc., Osaka, and Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, both of Japan

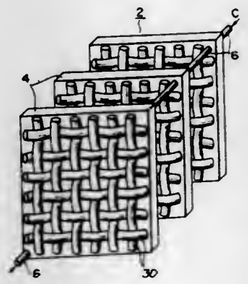
Continuation of Ser. No. 319,049, Oct. 6, 1994, abandoned.

This application Jun. 21, 1996, Ser. No. 670,719

Claims priority, application Japan, Oct. 6, 1993, 5-250418; Oct. 6, 1993, 5-250419

Int. Cl.[6] F28D *3/02*

U.S. Cl. 165—117 **4 Claims**



1. A heat pipe comprising:

a pipe barrel; and

at least one fin disposed on the peripheral surface of said pipe barrel at least on either a heat collecting section side or a radiating section side, each of said fins being attached to said pipe barrel on a plane perpendicular to the axis of said pipe barrel,

being characterized in that said at least one fin is composed of a metal plate and net-like material adhered to both surfaces of said metal plate, said net-like material being defined by a single-core wire mesh or single-core plastic net.

5,603,378

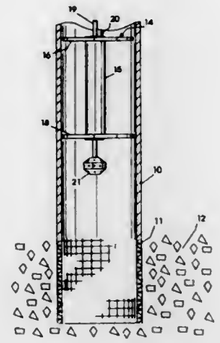
WELL CLEANING TOOL

George Alford, 1954 Old Daytona Rd., Daytona Beach, Fla. 32014

Filed Nov. 2, 1995, Ser. No. 556,743

Int. Cl.[6] E21B *37/00*

U.S. Cl. 166—222 **2 Claims**



1. A well cleaning tool, for use in a well comprising a well casing, and a well screen at the lower end of said well casing, said well cleaning tool comprising a surge block receivable within said well casing and having an upper end and a lower end, said surge block defining a fluid passageway therethrough extending from said upper end to said lower end, conduit means communicating with said fluid passageway at said upper end of said surge block, and jetting means carried by said surge block and communicating with said fluid passageway, said surge block comprising a central body defining said fluid passageway, an upper disk fixed with respect to said central body adjacent to said upper end of said surge block, and a lower disk fixed with respect to said central body adjacent to said lower end of said surge block, said disks having a diameter slightly less than the diameter of said well casing, said disks being formed of a rubber selected from the group consisting of natural rubbers, synthetic rubbers and thermoplastic elastomers, and wherein said upper disk is fixed to said central body, and further including an upper plate received against said upper disk, and a plurality of fastening means extending through said upper plate, said upper disk, and into said central body for fixing said upper disk to said central body.

5,603,379

BI-DIRECTIONAL EXPLOSIVE TRANSFER APPARATUS AND METHOD

Joseph A. Henke, Lewisville, and Flint R. George, Flower Mound, both of Tex., assignors to Halliburton Company, Dallas, Tex.

Continuation of Ser. No. 299,708, Aug. 31, 1994, abandoned.

This application Jan. 22, 1996, Ser. No. 589,835

Int. Cl.[6] E21B *43/1185*

U.S. Cl. 166—297 **24 Claims**

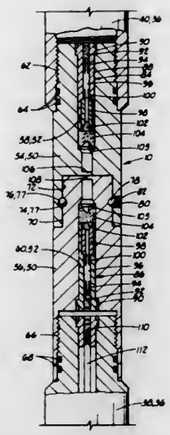
16. A well perforating apparatus comprising:

a first perforating gun;

a second perforating gun spaced from said first perforating gun; and

a bi-directional explosive transfer device interconnecting said first and second perforating guns, said explosive transfer device comprising:

a pair of shaped charges directed toward one another such that firing of one of said first and second perforating guns will ignite one of said shaped charges, such that an explosive jet is directed from said one of said shaped charges to the other of said shaped charges, thereby igniting said other of said shaped charges and thereby firing the other of said first and second perforating guns.



5,603,380

ROW FOLLOWING SYSTEM FOR A ROW CULTIVATOR

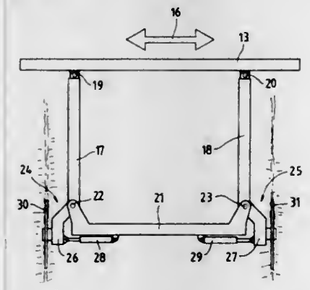
Peter L. Mansur, "Florida North" , Moree, New South Wales, 2400, Australia

Filed Dec. 21, 1994, Ser. No. 361,053

Claims priority, application Australia, Dec. 22, 1993, PM3104

Int. Cl.[6] A01B *69/00*

U.S. Cl. 172—26 **13 Claims**



1. A row following system for a row cultivator of the type employing a transverse tool bar carrying cultivating tools behind a prime mover, the row following system being adapted to inhibit deviation of the tool bar from a desired position, the row following system comprising means for biasing the tool bar to the desired position, the improvement comprising a pair of parallel spaced frame members trailing behind and pivotally coupled to the tool bar at transversely spaced apart locations to pivot in concert about spaced vertical axes, a cross member bridging between the frame members and having opposite ends pivotally coupled to the frame members to pivot about respective vertical pivot axes, a coulter wheel attached to each frame member, each coulter wheel rotating about a fixed horizontal axis and providing anchors relative to which the tool bar can be moved and there being provided frame member drive means biasing the tool bar to the desired position by being adapted to push the frame members relative to the cross member against the coulter wheels whenever the tool bar drifts from the desired position so that the tool bar position is thereby corrected.

5,603,381

MULTI-SHARE PLOUGH

Tor Torgrimsen, Stavanger, Norway, assignor to Kverneland Klepp AS, Kverneland, Norway

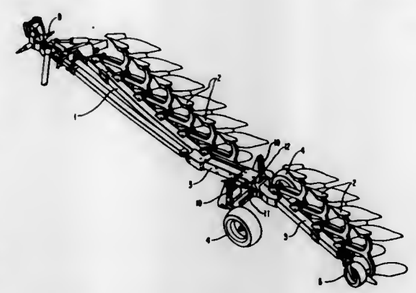
PCT No. PCT/GB94/00945, § 371 Date Feb. 16, 1995, § 102(e) Date Feb. 16, 1995, PCT Pub. No. WO94/24842, PCT Pub. Date Nov. 10, 1994

PCT Filed May 3, 1994, Ser. No. 362,540

Claims priority, application United Kingdom, May 4, 1993, 9309166

Int. Cl.[6] A01B *3/46;15/14*

U.S. Cl. 172—219 **20 Claims**



1. A multi-share reversible plough comprising:

a. an elongate plough frame, said plough frame comprising:

(i) a forward frame section having a rear end and being capable of being connected at a leading end thereof to the rear of a towing vehicle; and

(ii) a rear frame section having a forward end pivotally connected to said rear end of said forward frame section so as to be capable of engaging in pivoting movement upwardly and downwardly relative to said forward frame section about a transverse pivot axis, thereby to follow unevenness in the surface of the ground being ploughed;

b. a plurality of plough bodies mounted on each of said forward frame section and said rear frame section;

c. means for reversing said forward frame section and said rear frame section, thereby causing rotation of said plough bodies to take up either a first ploughing position or a second ploughing position;

d. a hydraulically operated actuator operatively coupled to said rear frame section, said actuator being capable of urging said rear frame section pivotally downward about said pivot axis, thereby to maintain said plough bodies mounted on said rear frame section at a required ploughing depth, said actuator comprising two cylinders, each of said cylinders being capable of alternating between a position above said pivot axis and a position below said pivot axis; and

e. a hydraulic control circuit connected to said actuator, said control circuit comprising:

(i) a control valve to control the actuation of said cylinders of said actuator, said control valve being mounted on a movable part of said frame;

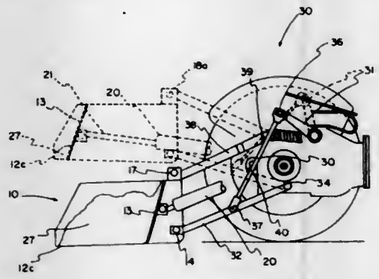
(ii) a toggle linkage which operates said control valve only when the plough has been fully adjusted to either said first ploughing position or said second ploughing position; and

(iii) a pressure regulator to control the hydraulic pressure supplied to said actuator, thereby applying a controlled biasing force to said rear frame section sufficient to maintain said plough bodies mounted on said rear frame section at said required ploughing depth, said biasing force being

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able to be overcome to allow said pivoting movement of said rear frame section, thereby causing said plough bodies mounted thereon to follow the contour of the ground being ploughed.

5,603,382
SHOVEL ATTACHMENT WITH EJECTOR BLADE FOR TRACTORS
Robert J. McIver, 2217 Buckhorn Rd., Sanford, N.C. 27330
Filed Jun. 7, 1995, Ser. No. 472,419
Int. Cl.[6] E02F *3/76*
U.S. Cl. 172—445.1 **8 Claims**



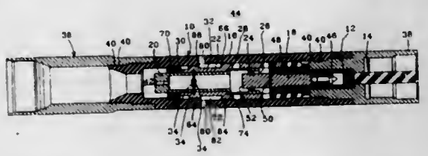
1. A shovel attachment adapted for use with a tractor having a conventional three-point hitch, said shovel attachment comprising:
a carrying bowl means defined by a pair of generally parallel side walls and a floor affixed relative to said side walls and extending therebetween to receive and contain earth fill materials therein;
means for releasably attaching said bowl means to said three-point hitch of said tractor enabling said shovel attachment to be raised and lowered by said three-point hitch;
an ejectment means positioned in an operative relationship with said carrying bowl means permitting a load of earth fill materials contained within said bowl means to be positively ejected; and
means for reciprocally transporting said ejectment means over said floor enabling said carrying bowl means to be alternately loaded and unloaded at any position within limits of travel of said shovel attachment.

5,603,383
REVERSIBLE PNEUMATIC GROUND PIERCING TOOL
Steven W. Wentworth, Brookfield; Robert Crane, Oconomowoc, and Mark Randa, Muskego, all of Wis., assignors to Earth Tool Corporation, Oconomowoc, Wis.
Filed Sep. 25, 1995, Ser. No. 533,323
Int. Cl.[6] E21B *4/14*
U.S. Cl. 173—91 **10 Claims**



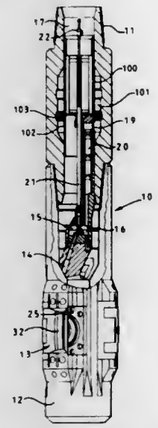
1. A reversible pneumatic ground piercing tool, comprising:
an elongated body including a tubular housing and an anvil disposed at a front end of the housing;
a striker disposed for reciprocation within an internal chamber of the housing to impart impacts to a rear impact surface of the anvil for driving the tool forwardly through the ground;
an air distributing mechanism for effecting reciprocation of the striker, including a stepped air inlet conduit slidably disposed in a rearwardly opening recess in the striker, and a radial hole extending through a wall in the striker from the rearwardly opening recess;
a tail assembly mounted in a rear end opening of the housing that secures the striker and air distributing mechanism in the housing; and
a reversing mechanism incorporated into the air distributing mechanism, in which the stepped conduit comprises:
a substantially rigid air supply tube rotatably mounted in the tail assembly, which tube supplies compressed air to the rearwardly opening recess in the striker;
a bushing slidably disposed on a forward end of the tube on its inside and the rearwardly opening recess of the striker on its outside;
a stop mechanism that limits sliding movement of the bushing relative to the air supply tube;
a reversing valve that can be opened and closed by rotating the air supply tube to supply compressed air to a first port located along a midportion of the bushing;
means for biasing the bushing to a forward position relative to the tube when the rearwardly opening recess in the striker is depressurized, and which biasing means is overcome by compressed air pressure when compressed air is supplied through the conduit to the rearwardly opening recess in the striker so that the bushing slides to a rearward position relative to the air supply tube; and
a detent mechanism that secures the bushing from rotation relative to the air supply tube while the rearwardly opening recess in the striker is pressurized, and releases when the bushing slides forward under the force of the biasing means, permitting rotation of the inner tube relative to the bushing while the rearwardly opening recess in the striker is depressurized.

5,603,384
UNIVERSAL PERFORATING GUN FIRING HEAD
Robert K. Bethel, Houston; David G. Hosie, Sugar Land, and Michael B. Grayson, Houston, all of Tex., assignors to Western Atlas International, Inc., Houston, Tex.
Filed Oct. 11, 1995, Ser. No. 540,799
Int. Cl.[6] E21B *43/117*
U.S. Cl. 175—4.54 **20 Claims**



1. An improved firing head for actuating an explosive charge in a perforating gun positioned downhole in a well, comprising:
a hollow housing having a port for communicating pressure between the well and an interior space within said housing;
a firing pin for impacting the explosive charge;
a release pin for securing said firing pin, wherein movement of said release pin actuates said firing pin to contact the explosive charge;
a piston releasingly engaged with said release pin, wherein said piston is moveable in response to pressure changes within said hollow housing to selectively move said release pin to actuate said firing pin, and wherein said release pin is mechanically releasable from engagement with said piston to selectively move said release pin to actuate said firing pin.

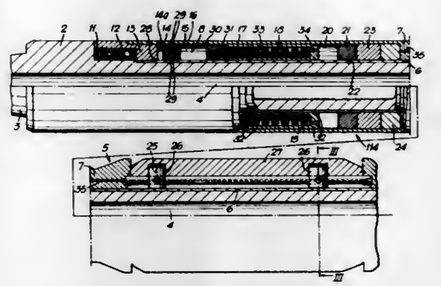
5,603,385
ROTATABLE PRESSURE SEAL
Mark A. Colebrook, Cheltenham, England, assignor to Camco Drilling Group Limited, Stonehouse, England
Filed May 31, 1995, Ser. No. 454,992
Claims priority, application United Kingdom, Jun. 4, 1994, 9411228
Int. Cl.[6] E21B *47/02*
U.S. Cl. 175—45 **17 Claims**



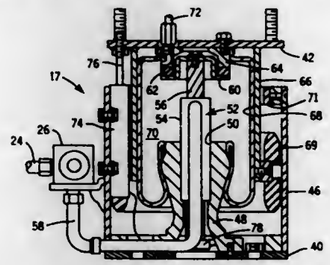
1. A modulated bias unit, for controlling the direction of drilling of a rotary drill bit when drilling boreholes in subsurface formations, comprising at least one hydraulic actuator having a movable thrust member which is hydraulically displaceable outwardly for engagement with formation surrounding the borehole being drilled, valve means which modulate fluid pressure supplied to the actuator in synchronism with rotation of the drill bit, and in selected phase relation thereto so that, as the drill bit rotates, the movable thrust member is displaced outwardly at the same selected rotational position so as to bias the drill bit laterally and thus control the direction of drilling, said valve means being located within a cavity in the body structure and operated by a shaft which is rotatable relatively to the body structure and extends into said cavity through a rotatable pressure seal, said pressure seal comprising two annular sealing members concentric with the shaft, one member being mounted on the body structure and the other member being carried on the shaft, the members having engaging sealing faces formed of superhard material.

5,603,386
DOWNHOLE TOOL FOR CONTROLLING THE DRILLING COURSE OF A BOREHOLE
David W. Webster, Aylburton, Great Britain, assignor to Ledge 101 Limited, Aberdeen, Scotland
Continuation of Ser. No. 140,026, Oct. 27, 1993, abandoned. This application Sep. 8, 1995, Ser. No. 524,953
Claims priority, application United Kingdom, Mar. 5, 1992, 9204910
Int. Cl.[6] E21B *7/06;47/08*
U.S. Cl. 175—76 **21 Claims**

1. A downhole tool adapted to be connected to a drill string by a connection atop the tool, the tool comprising: a mandrel for connection with the drill string; a body, the mandrel being rotatable within the body; a plurality of blades individually extendible radially from the body to engage the wall of a well bore, the radial position of the blades being adjustable between a first retracted position and a second extended position, to position a centreline of the mandrel at a desired position relative to a longitudinal axis of the well bore; a positioning system for holding each of the blades at the retracted position, at the extended position or at any intermediate position between the retracted and extended positions; a control unit for controlling the positioning system, the control unit being operable to maintain the blades in engagement with the wall of the well bore and the centreline of the mandrel at a desired position relative to the centreline of the well bore as the drill string advances during a drilling operation regardless of variations in the well bore diameter; and an energizing source; wherein at least two of the blades are locked at a given extension, with the remaining blades communicably connected to the energizing source, thus allowing those energized blades to remain in contact with the well bore when compensating for variations in the nominal diameter of the well bore.



5,603,387
ACTIVE VEHICLE SUSPENSION SYSTEM
Andrew M. Beard, Winchester, Mass., and Andreas H. von Flotow, Hood River, Oreg., assignors to Applied Power, Inc., Butler, Wis.
Filed Sep. 6, 1995, Ser. No. 525,432
Int. Cl.[6] B62D *24/04;33/10*
U.S. Cl. 180—89.12 **26 Claims**



15. A vibration isolator for an active suspension system which supports a cab of a vehicle on a chassis, said vibration isolator comprising:
a first mount for securement to the chassis;
a second mount for securement to the cab;
a first spring extending between said first and second mounts to maintain a spaced relationship therebetween;
a linear hydraulic actuator with a piston moveable relative to a cylinder;
a passive, elastomeric vibration isolator coupled in series with said linear hydraulic actuator between said first and second mounts;
a sensor which produces a first signal indicative of movement at a point between said passive, elastomeric vibration isolator and said hydraulic actuator; and
a valve which selectively supplies a flow of pressurized fluid from an external source to said hydraulic actuator and selectively relieves pressurized fluid from said hydraulic actuator.

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5,603,388

ELECTRIC POWERED BICYCLE

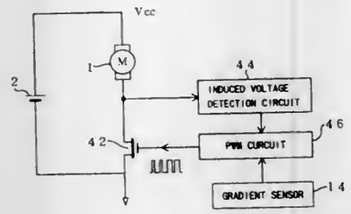
Osamu Yaguchi, Kashiwazaki, Japan, assignor to Kabushiki Kaisha Riken, Tokyo, Japan

Continuation of Ser. No. 304,706, Sep. 12, 1994, abandoned. This application Sep. 22, 1995, Ser. No. 532,529

Claims priority, application Japan, Sep. 14, 1993, 5-252535; Dec. 29, 1993, 5-353791

Int. Cl.[6] B62M *7/00*

U.S. Cl. 180—206 **3 Claims**



1. An electric powered bicycle comprising:

front and rear wheels rotatably supported by a frame of the bicycle;

a chain for transferring a manual power to one of said wheels via a pedal;

a DC motor for driving said rear wheel to provide an auxiliary power source;

a power supply capable of supplying voltage to said DC motor;

gradient means mounted on said frame and activated when said frame is inclined relative to a horizontal line; and

a control circuit for controlling the voltage supplied to said DC motor from said power supply based on a signal from said gradient means, said control circuit comprising:

a power transistor for controlling the voltage supplied to said DC motor;

a detection transistor for detecting an induced voltage generated between brushes of said DC motor upon the rotation of said bicycle to turn on said power transistor; and

a pulse generator for periodically turning off said detection transistor, said gradient sensor being activated to turn off said detection transistor when the gradient of said frame exceeds a predetermined level.

5,603,389

POLE TOP SAFETY DEVICE

David A. Zemon, Parma Hts., Ohio, assignor to Centerior Energy, Cleveland, Ohio

Filed Jun. 15, 1995, Ser. No. 491,019

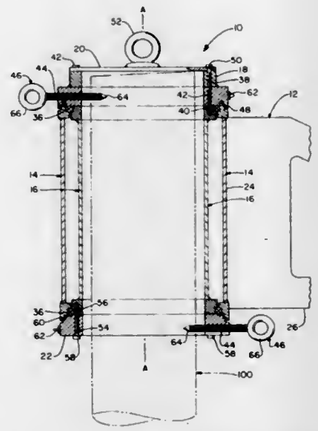
Int. Cl.[6] E06C *9/04*

U.S. Cl. 182—133 **15 Claims**

1. A safety device for securing a fall arrest system at an overhead location atop a pole, comprising,

a housing including an inner sleeve member dimensioned to fit over the top of the pole, and an outer sleeve member rotatably supported on said inner sleeve member, wherein said outer sleeve member carries a beam member extending outward from said outer sleeve member with said beam member including attachment means to which the fall arrest system is selectively attachable, and

said inner sleeve member being a cylindrical member with an open lower end and a top cap member closing the upper end thereof, wherein said top cap member is supported against the top of said pole when said device is positioned on said pole, said inner sleeve member including means to secure said inner sleeve member to said pole such that said beam member extends outwardly from a point adjacent the top of said pole.



5,603,390

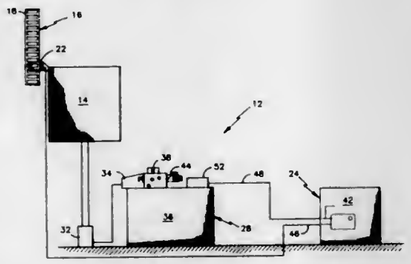
CONTROL SYSTEM FOR AN ELEVATOR

Gianluca Foschini, Cervia, and Renzo Toschi, Bologna, both of Italy, assignors to Otis Elevator Company, Farmington, Conn.

Filed Apr. 28, 1995, Ser. No. 430,950

Int. Cl.[6] B66B *9/04*

U.S. Cl. 187—275 **19 Claims**



1. A control system for controlling the motion of a hydraulic elevator traveling to a landing, the motion of the elevator including a deceleration phase occurring prior to stopping at the landing, the control system including:

a hydraulic valve, wherein actuation of the hydraulic valve begins the deceleration phase of the elevator motion;

means to measure the velocity of the elevator;

means to determine the position of the elevator relative to the landing;

means to calculate a deceleration distance based upon the measured velocity and a predetermined time period for the deceleration phase; and

means to actuate the hydraulic valve upon the elevator reaching the calculated distance from the landing.

5,603,391

DAMPER VALVE FOR POWER STEERING COUPLER

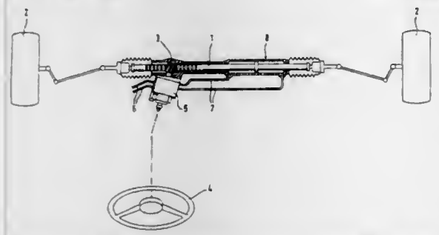
Jürgen Class, Illinngen, and Ulrich Asbrand, Remmshalden, both of Germany, assignors to Mercedes-Benz AG, Germany

Filed Jul. 6, 1995, Ser. No. 498,753

Claims priority, application Germany, Jul. 6, 1994, 44 23 658.1

Int. Cl.[6] B62D *5/06;* **F16K** *47/00*

U.S. Cl. 188—266 **14 Claims**



1. Apparatus for connecting hydraulic components in a vehicle power steering system, comprising:

a hydraulic line;

a coupler connected to said hydraulic line, said coupler having a path for flow of hydraulic medium therethrough, and a threaded portion for connecting said coupler in hydraulic communication between said hydraulic line and a hydraulic component;

a valve carrier having apertures through which hydraulic medium flows and a valve closure arrangement for damping a flow of hydraulic medium through said apertures, said valve carrier being integrated captively into said coupler and mounted in a fixed position relative thereto, whereby correct assembly of said hydraulic components is assured.

5,603,392

HYDRAULIC, ADJUSTABLE SHOCK ABSORBER, IN PARTICULAR FOR MOTOR VEHICLES

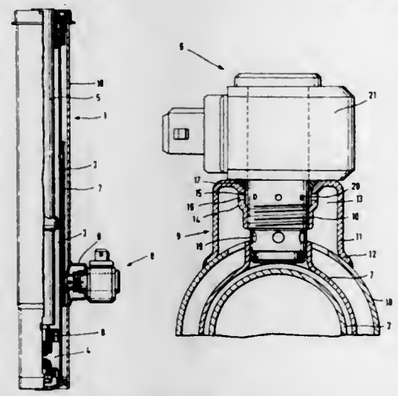
Hubert Beck, Eitorf-Keuenhof, Germany, assignor to Fichtel & Sachs AG, Eitorf, Germany

Filed Jul. 19, 1994, Ser. No. 277,156

Claims priority, application Germany, Jul. 20, 1993, 43 24 284.7; Oct. 29, 1993, 43 37 018.7

Int. Cl.[6] B60G *17/08;* **F16F** *9/46*

U.S. Cl. 188—299 **10 Claims**



1. A shock absorber comprising:

a cylinder defining a chamber therein, said cylinder containing a damping fluid;

a piston rod sealingly projecting into said cylinder and being axially displaceable with respect to said cylinder;

a piston being attached to said piston rod, said piston being slidably disposed within said cylinder to sealingly divide said chamber into first and second chambers;

an outer tube disposed about said chamber, said piston and said piston rod;

means for permitting fluid communication between said first and second chambers;

said means for permitting fluid communication comprising damping valve means mounted at said outer tube;

said damping valve means comprising:

a valve arrangement, said valve arrangement having means for adjusting fluid communication between said first and second chambers;

means for mounting said valve arrangement with respect to said outer tube;

said mounting means comprising:

a first wall portion for fixedly holding at least a portion of said valve arrangement with respect to said outer tube;

a second wall portion being connected with said outer tube; and

means for connecting said first wall portion and said second wall portion with one another, to fixedly retain said first wall portion with respect to said second wall portion;

said first wall portion and said second wall portion being spaced apart from one another; and

said connecting means being positioned to provide at least one uninterrupted and hollow space between said first wall portion and said second wall portion;

said shock absorber having a longitudinal axis defined therethrough;

said valve arrangement having a longitudinal axis defined therethrough;

said second wall portion being spaced from said first wall portion by a substantial radial distance with respect to said longitudinal axis of said valve arrangement;

said first wall portion comprising:

an inner surface facing generally towards said second wall portion; and

an outer surface facing generally away from said second wall portion;

said second wall portion comprising:

an inner surface facing generally towards said first wall portion; and

an outer surface facing generally away from said first wall portion;

said inner surface of said first wall portion and said inner surface of said second wall portion being spaced apart from one another, to form said at least one uninterrupted and hollow space between said inner surface of said first wall portion and said inner surface of said second wall portion;

said first wall portion and said second wall portion are substantially concentric with respect to one another and to the longitudinal axis of said valve arrangement;

said second wall portion having a portion being snugly and sealingly interfaced with said outer tube of said shock absorber;

said outer tube defining an outer contour;

said portion of said second wall portion being interfaced with said outer tube comprising a flange portion; and

said flange portion being configured to match the outer contour of said outer tube, to snugly and sealingly interface with said outer tube;

said flange portion of said second wall portion being welded to said outer tube;

said mounting means comprising a deep-drawn component;

said deep-drawn component comprising said first wall portion, said second wall portion and said connecting means;

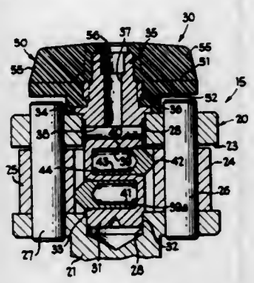
said deep-drawn component, comprising said first wall portion, said second wall portion and said connecting means, being a single, integral component;

said flange portion of said second wall portion having been formed by stamping;

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said outer tube being disposed external to, and coaxially with respect to, said cylinder;
said outer tube and said cylinder defining at least one major annular passage therebetween;
said at least one uninterrupted and hollow space between said first wall portion and said second wall portion comprising a minor passage; and
said outer tube having means for connecting said minor passage with said at least one major annular passage.

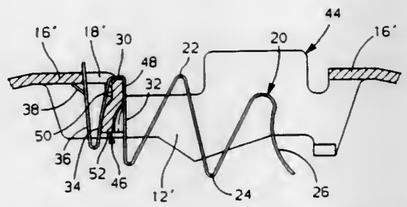
5,603,393
RATCHET HEAD ASSEMBLY AND REVERSING KNOB THEREFOR
Anil P. Ghode, Mundelein, Ill., and Martin S. Scolaro, Racine, Wis., assignors to Snap-on Technologies, Inc., Crystal Lake, Ill.
Filed Oct. 12, 1993, Ser. No. 134,631
Int. Cl.[6] F16D *41/16*
U.S. Cl. 192—43.2 **6 Claims**



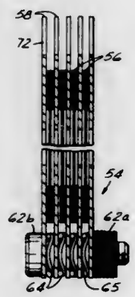
1. A reversible ratchet head assembly comprising: a body, ratchet mechanism mounted in said body and including a pawl assembly and an output shaft engageable with said pawl assembly and rotatable relative to said body, and a reversing member coupled to said pawl assembly and selectively rotatable about an axis of rotation between forward and reverse positions for actuating said pawl assembly to control the direction of rotation of said output shaft, said reversing member including an elongated metal shank portion having an inner end disposed within said body for coupling to said pawl assembly and an outer end projecting from said body, said reversing member including an enlarged head portion integral with said shank portion and formed of a non-metallic material having a density substantially less than that of said shank portion, said outer end of said shank portion being embedded in said head portion, said shank portion being substantially circularly cylindrical in shape and said head portion being circular in shape, said head portion being coaxial with said shank portion and having an outer diameter substantially greater than an outer diameter of said shank portion, the ratio of the density of said shank portion to the density of said head portion being between 5 and 10, whereby said reversing member has a rotational inertia substantially less than an all-metal reversing member of the same size and shape.

5,603,394
ROLLER CLUTCH WITH SECURE SPRING TO CAGE MOUNT
Dwayne P. Joppeck, Canton, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Jun. 12, 1995, Ser. No. 489,345
Int. Cl.[6] F16D *41/067*
U.S. Cl. 192—45 **2 Claims**

1. In a one way roller clutch of the type having a cage defining roller pockets and a plurality of accordion type roller energizing springs with radially opening folds, each spring having at least one active fold and an inactive mounting fold, said mounting fold having a flat front leaf shared with an adjacent active fold and a flat rear leaf, said front and rear mounting fold leaves having a predetermined free state separation, an improved structure for joining said spring to said cage, comprising,
a generally radially extending cage cross bar having a flat front face facing into a cage roller pocket and an oppositely facing rear face, said cross bar also having a ramp on its rear face that slopes continuously, in a radial direction, from a least thickness to a greatest thickness substantially greater than said mounting fold free state separation, whereby said spring may be mounted to said cage by pushing said spring mounting fold radially over said cross bar, thereby sliding said rear leaf continuously along said ramp and spreading said mounting field leaves resiliently apart from said free state position and continually tensioning said front leaf into the front face of said cross bar, whereby said spring is more solidly mounted to said cage and said spring active folds are more securely retained within said pocket.



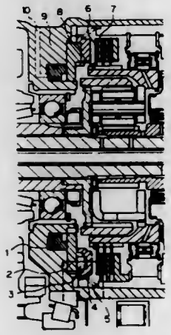
5,603,395
ELECTRICALLY ACTUATED DISC STACK HAVING LOW RESPONSE TIME DUE TO REDUCED RESIDUAL MAGNETISM FOR USE IN DRIVES, BRAKES AND COMBINATIONS THEREOF
Brian D. Mabee, Shelby Township, Mich., assignor to Easom Engineering & Mfg. Corp., Clinton Township, Mich.
Continuation-in-part of Ser. No. 340,220, Nov. 16, 1994, Pat. No. 5,533,425, which is a continuation-in-part of Ser. No. 993,307, Dec. 18, 1992, Pat. No. 5,389,049, which is a continuation-in-part of Ser. No. 846,546, Mar. 5, 1992, Pat. No. 5,242,039. This application Jul. 7, 1995, Ser. No. 499,301
Int. Cl.[6] F16D *65/34*
U.S. Cl. 192—70.13 **10 Claims**



10. A pre-assembled disc stack for use in drives, brakes and combinations thereof, comprising:
a disc stack comprising:
a first set of annular discs; and
a second set of annular discs, said second set of annular discs being interleaved with said first set of annular discs in a prearranged order;

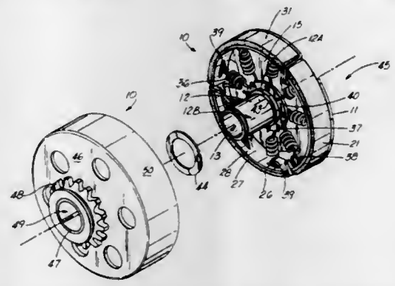
wherein each annular disc of said first set of annular discs has a first inner substantially circular periphery and a first outer substantially circular periphery, wherein further each annular disc of said second set of annular discs has a second inner substantially circular periphery and a second outer substantially circular periphery, said first inner periphery defining a first diameter, said second inner periphery defining a second diameter, said first diameter being less than said second diameter, said first outer periphery defining a third diameter, said second outer periphery defining a fourth diameter, said third diameter being less than said fourth diameter; and
a plurality of alignment pins, each alignment pin of said plurality of alignment pins having a first end and an opposite second end, abutment means being located at said first end and said second end of each said alignment pin for providing an abutment at each of said first and second end thereof, said second end of said alignment pins being threaded along a predetermined length thereof, said abutment means comprising:
a head located at said first end of each said alignment pin; and
a threaded washer threadably engaged with respect to said threads of said second end of each said alignment pin, wherein said threaded washer occupies a length less than said predetermined length for providing threading connection of said threaded second end to a preselected component of at least one of a drive, a brake and a combination thereof;
wherein each annular disc of said second set of annular discs is provided with a plurality of circumferentially disposed alignment holes, an alignment pin of said plurality of alignment pins extending through each alignment hole of said plurality of alignment holes, said first and second sets of annular discs being captured on said plurality of alignment pins by said abutment means.

5,603,396
CLUTCH DEVICE FOR AN AUTOMATIC TRANSMISSION
Kiyohito Murata, Susono, and Yoshio Shindo, Numazu, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
Filed Mar. 17, 1995, Ser. No. 405,892
Claims priority, application Japan, Mar. 18, 1994, 6-048806
Int. Cl.[6] F16D *25/063*
U.S. Cl. 192—85 AA **15 Claims**



1. A clutch device for engaging a pair of relatively rotating members spaced on a common axis having a first frictional engaging element fitted unrotatably and axially movably to one of said relatively rotating members, and a second frictional engaging element fitted unrotatably and axially movably to the other of said relatively rotating members, said clutch device comprising:
a variable length coupling means disposed on said common axis between said relatively rotating members which includes an axially movable first cam member and an axially movable second cam member and a cam roller disposed therebetween; and
a piston means which selectively pushes said first cam member and said second cam member therewith to cause a frictional engagement between said second cam member and said second frictional engaging element;
wherein:
said first cam member is arranged to be rotated with said one of said pair of relatively rotating members;
said second cam member is arranged to be rotationally dragged by said other of said pair of rotating members with said frictional engagement between said second cam member and said second frictional engaging element caused by said piston means; and
said first cam member and said second cam member respectively have opposing parallel slanted cam surfaces, of which a cam angle θ is chosen to satisfy tan θ<μ, where μ is a coefficient of friction between said second cam member and said second frictional engaging element, so that said cam roller is positioned between said slanted cam surfaces so as to increase a distance between said first cam member and said second cam member and thereby said first frictional engaging element and said second frictional engaging element are engaged with each other with a force which is proportional to a transmitting torque when said second cam member is rotationally dragged.

5,603,397
CENTRIFUGAL CLUTCH
Frederick C. Meyers, 7 W. Ayres St., Hinsdale, Ill. 60521
Filed May 1, 1995, Ser. No. 432,602
Int. Cl.[6] F16D *13/10;43/18*
U.S. Cl. 192—105 BA **22 Claims**



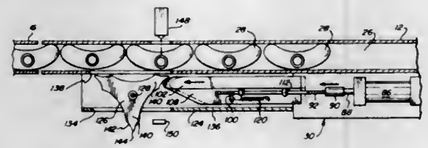
1. A centrifugal clutch apparatus for use with small motorized wheeled carts that are powered with an internal combustion engine having a horizontal drive shaft, comprising:
a) a clutch drive assembly having a central hub with a sleeve having a bore for mounting the sleeve on the drive shaft of the internal combustion engine;
b) the hub having a hub drive plate that extends radially and circumferentially from the sleeve and connected to the sleeve so that the sleeve and the hub drive plate rotate together with the engine drive shaft, the hub drive plate having a peripheral portion;
c) a plurality of radially extending struts mounted on the peripheral portion of the hub drive plate;
d) a plurality of wear pads, each arcuate in shape and each tracking the peripheral portion of the hub drive plate, each of the wear pads having a wear pad plate with a pair of end portions that are supported respectively by a pair of the struts;
e) a spring holder that extends about the sleeve, and that is spaced radially from the sleeve;

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f) a plurality of circumferentially spaced, radially extending springs that extend from the spring holder to the pad plate, each spring defining a tension member that holds the wear pad plate of each pad to the struts;

g) a clutch housing member with a bore that fits the sleeve and an annular shoulder that is positioned to engage the wear side of the wear pads, the clutch housing member having a sprocket for forming a connection between a cart wheel and clutch housing member with an endless chain.

5,603,398
REGULATING ASSEMBLY AND CONVEYOR
G. William Crouch, Colchester, Conn., assignor to B&B Equipment, Inc., Middletown, Conn.
Division of Ser. No. 150,688, Nov. 10, 1993, Pat. No. 5,411,129. This application Feb. 6, 1995, Ser. No. 383,951
Int. Cl.[6] B65G *47/26*
U.S. Cl. 198—459.2 **3 Claims**

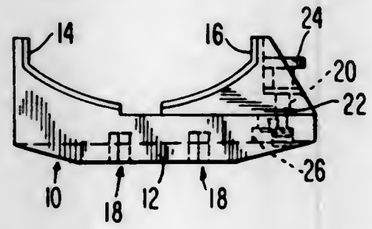


1. A regulating assembly for an intake lane of a conveyor belt system for carrying articles, said assembly comprising:

(a) a star wheel rotatably mounted adjacent a point along said intake lane and having not less than two nor more than three arms configured and dimensioned to be spaced from said intake lane and movable into said intake lane in the path of an associated article in said lane to restrain said associated article and create spacing between adjacent associated articles; and

(b) a slidable nose member positioned adjacent a first one of said arms of said star wheel to slidably engage said arm and rotate said star wheel, thereby to cause said arm to move into said intake lane, a second one of said arms of said star wheel being engageable with said nose member to prevent said first arm from rotating in to the intake lane after engagement of said first arm with an associated article.

5,603,399
ADJUSTABLE BUCKET
Dean J. Mannlein, Joppa, Md., assignor to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.
Continuation of Ser. No. 174,599, Dec. 28, 1993, abandoned. This application May 22, 1995, Ser. No. 445,841
Int. Cl.[6] B65G *17/12*
U.S. Cl. 198—803.11 **5 Claims**



1. An adjustable bucket suitable for containing a soap bar comprising:

a. a first bucket wall having a first upright portion and a first portion positioned partially to underlie a soap bar contained in said bucket,

b. a second bucket wall having a second upright portion and a second portion positioned partially to underlie said soap bar in a first position such that said second upright portion extends generally parallel to said first bucket wall upright portion, said second bucket wall being supported by a base and moveable to one or more further positions wherein said second upright portion is generally parallel to said first bucket wall upright portion but spaced from said first position,

c. said base comprising an aperture,

d. said second bucket wall comprising an aperture,

e. means yieldingly urging said second bucket wall against said base,

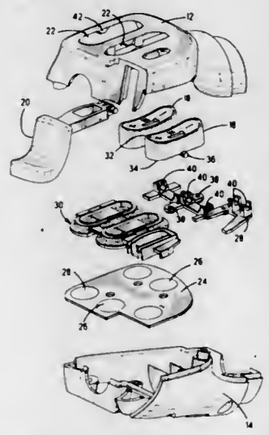
f. one of said base or second bucket wall apertures being elongated relative to the other of said base or second bucket wall apertures in a direction perpendicular to said second bucket wall,

g. a pin extending from one of said base or said second bucket wall,

h. at least two pin-receiving apertures in the other of said base or second bucket wall,

i. one of said pin-receiving apertures being dimensioned to receive said pin at a first position and the other of said pin-receiving apertures dimensioned to receive said pin at a position spaced from said first pin-receiving aperture in a direction generally perpendicular to the second bucket wall.

5,603,400
ROCKER SWITCH
Kazuhiro Goto, Markham, and Andrew M. Wilson, Alliston, both of Canada, assignors to The Whitaker Corporation, Wilmington, Del.
Filed Jan. 24, 1996, Ser. No. 590,983
Int. Cl.[6] H01H *19/06*
U.S. Cl. 200—302.3 **20 Claims**



1. A rocker switch, comprising:

a rocker member having an actuating surface, a bottom surface, and a pivot member;

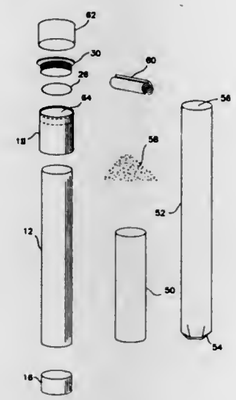
a circuit board having a dome switch mounted thereon, the dome switch comprises a dome mounted onto the circuit board, the circuit board and the dome being covered by a protective membrane;

a bracket being secured to the circuit board having a pivot guide to receive the pivot member;

an elastomeric member being received between the bottom surface of the rocker member and the dome switch;

whereby actuation of the rocker member presses the bottom surface of the rocker member against the elastomeric member which presses against the dome switch thereby activating the switch.

5,603,401
STORAGE APPARATUS
Martin C. Brunner, 704 E. Pearl, Batesville, Ind. 47006
Filed Sep. 29, 1995, Ser. No. 537,130
Int. Cl.[6] B65D *85/00*
U.S. Cl. 206—204 **20 Claims**



1. A storage apparatus comprising:

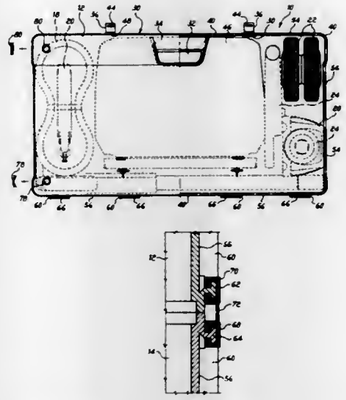
a container having an interior region for storing items, a first closed end, and a second open end;

a slide liner located within the interior region of the container;

a shield having a lower closed end and an upper open end, the shield being positioned inside the slide liner to permit withdrawal of the shield once items are loaded into the shield;

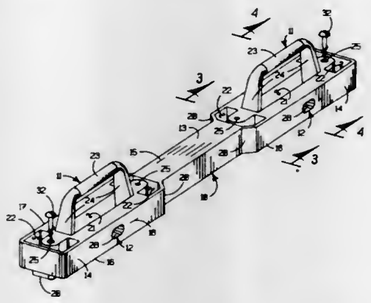
a desiccant material configured to be positioned inside the shield surrounding the items; and

a removable end cap for closing the second open end of the container.



64) arranged parallel to said edge (40), each pair of extensions being associated with a protruding bead (60).

5,603,403
FIXTURE TO STACK DOORS
Greg A. Sather, P.O. Box 2225, Bigfork, Mo. 59911
Filed Feb. 5, 1996, Ser. No. 596,673
Int. Cl.[6] B65D *85/62*
U.S. Cl. 206—325 **3 Claims**



1. A fixture, to be fastened on the top and bottom edges of a door to allow a plurality of horizontally orientated doors of similar length carrying the fixtures to be manipulated thereby and stacked in vertically spaced relationship, comprising in combination:

an elongate body having an inner face for placement in adjacency to the edge of a door and an outer face distal therefrom joined by an upper side edge and a lower side edge extending between the inner and outer surfaces, said body having a medial portion interconnecting two similar end portions each having means for fastening to the edge of a door, and a width between the upper and lower edges greater than the thickness of a door to which the fixture is to be attached;

handle means carried by each end portion of the body to extend outwardly from the outer surface thereof; and

aligning fasteners having cooperating mortises and tenons carried by each end portion of the body, with the tenons on each end portion on one body edge and the mortises on the end portion of the opposed body edge to allow vertical stacking of a plurality of fixtures for positional maintenance relative to each other.

5,603,402
CONTAINER FOR HYDROCLEANING APPARATUSES
Carlo A. Cuneo, Crema, Italy, assignor to Faip S.r.l. Officini Meccaniche, Vaiano Cremasco, Italy
Filed Sep. 27, 1995, Ser. No. 534,475
Claims priority, application Italy, May 3, 1995, MI9500299 U
Int. Cl.[6] B65D *25/28;43/16*
U.S. Cl. 206—320 **9 Claims**

1. A container formed of plastic material for a compact hydrocleaning apparatus, said container comprising two opposed and identical half-shells (12,19) hingedly connected to one another on a first side (56), a centrally disposed recess (30') circumscribing a through opening (32) on a second side (30) opposite said first side (56), said opening (32) being surmounted on said second side (30) by an edge (40) of said container which forms a sector (34) in said recess (30') which together with said opening (32) defines a handle for said container, said recess (30') being formed to be complimentary to a sinking formed on an upper front of said compact hydrocleaning apparatus, said container further including on said first side (56) a plurality of parallel, transversely extending protruding beads (60), and pairs of T-shaped integral extensions (62,

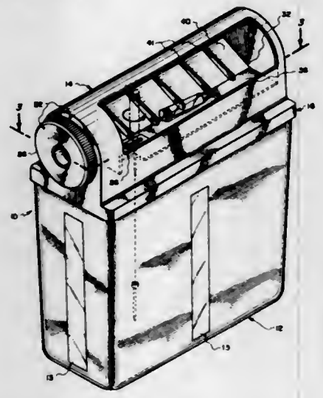
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5,603,404

SHARPS CONTAINER

Raymond Nazare; Donna M. Nazare, both of 22647 Ventura Blvd. #126, Woodland Hills, Calif. 91364, and William L. Gottsegen, 16337 Celinda Pl., Encino, Calif. 91436

Filed Sep. 29, 1995, Ser. No. 535,971
Int. Cl.[6] B65F *1/16*
U.S. Cl. 206—366 **9 Claims**



1. A sharps container comprising:
a receptacle for receiving sharps,
a cover connected to said receptacle in such a manner as to define an inner space between said receptacle and said cover, said cover further having a dial recess and an opening for receiving sharps into said receptacle;
a dial partially disposed within said dial recess, moveably and rotatably mounted to said cover;
an elongated tray disposed in said cover, said tray rotatable about a horizontal axis between receiving, partially closed and locking positions, said receiving position for receiving sharps through said opening while closing access to said receptacle interior is closed, said partially closed position for displacement of sharps into said receptacle interior, while partially obstructing said opening to said container, and said locking position for engagement of a locking means for permanently closing said container, said tray biased into said receiving position, said tray overcoming said bias and rotate to a partially closed position when an object is placed onto said tray, said tray rotates in a direction opposite of said bias until said object falls by force of gravity into said interior, whereupon said bias rotates said tray back to said receiving position, said tray further rotatable to said locking position in response to manual rotation of said dial, said container being completely closed when said tray is in said locking position; and
said locking means including a locking pin aperture located in said cover, a locking pin which extends from said dial and which is movable between a first position wherein said locking pin is removed from said locking pin aperture and said dial is partially removed from said dial recess and a second position wherein said dial is manually moveable into locking engagement with said dial recess thereby moving said locking pin into said locking pin aperture when said dial has been rotated into said locking position.

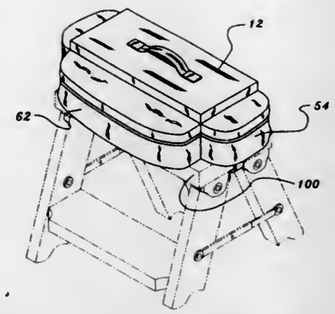
5,603,405

LADDER TOP STORAGE RACK

William H. Smith, 1545 San Andreas Rd. #2, La-Selva Beach, Calif. 95076

Filed Nov. 30, 1995, Ser. No. 565,813
Int. Cl.[6] B65D *85/20*; E06C *7/14*
U.S. Cl. 206—373 **2 Claims**

1. A ladder top storage rack for securing to a top of a ladder to keep tools and fasteners in reach comprising, in combination:



a rigid tool box having a generally rectangular configuration, the tool box having an open top, a closed bottom, a front wall, a rear wall, and two side walls, the open top having a lid hingedly secured thereto, the lid having a carrying handle secured thereto, a front edge of the lid having a securement clasp secured thereon cooperating with a pivotal securement hook on the front wall for locking of the lid over the open top of the tool box;
a pair of adjustable longitudinal securement straps each having end portions secured to opposing ends of the closed bottom of the tool box, free ends of the securement straps extending lengthwise beneath a ladder top for coupling together;
a pair of adjustable latitudinal securement straps each having end portions secured to opposing sides of the closed bottom of the tool box, free ends of the latitudinal securement straps extending widthwise beneath a ladder top for coupling together;
a pair of side pouches secured to the two side walls of the tool box, each of the side pouches having a zippered opening;
a rear pouch secured to the rear wall of the tool box, the rear pouch having a zippered opening.

5,603,406

PLANT PACKAGE WRAPPED WITH A WAXY MATERIAL

Donald E. Weder, Highland, Ill., assignor to Southpac Trust International, Inc., Oklahoma City, Okla.

Continuation-in-part of Ser. No. 923,202, Oct. 13, 1992, and a continuation-in-part of Ser. No. 313,675, Sep. 27, 1994, abandoned, which is a continuation of Ser. No. 188,183, Jan. 28, 1994, Pat. No. 5,388,386, which is a continuation of Ser. No. 968,798, Oct. 30, 1992, Pat. No. 5,369,934, which is a continuation of Ser. No. 865,563, Apr. 9, 1992, Pat. No. 5,245,814, which is a continuation of Ser. No. 649,379, Jan. 31, 1991, Pat. No. 5,111,638, which is a continuation of Ser. No. 249,761, Sep. 26, 1988, abandoned, which is a continuation-in-part of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a continuation of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned, and a continuation-in-part of Ser. No. 264,866, Jun. 23, 1994, Pat. No. 5,448,875, which is a continuation of Ser. No. 965,585, Oct. 23, 1992, abandoned, which is a continuation of Ser. No. 893,586, Jun. 2, 1992, Pat. No. 5,181,364, which is a continuation of Ser. No. 707,417, May 28, 1991, abandoned, which is a continuation of Ser. No. 502,358, Mar. 29, 1990, abandoned. This application May 11, 1995, Ser. No. 439,073
Int. Cl.[6] B65D *85/50*
U.S. Cl. 206—423 **20 Claims**

1. A plant package, comprising:
a floral grouping having a bloom portion;
a quantity of a shredded material, the shredded material comprising shreds having a first waxy layer, a support layer, and a second waxy layer, the support layer sandwiched between the first waxy layer and the second waxy layer, the first waxy layer and the second waxy layer comprising a waxed paper,



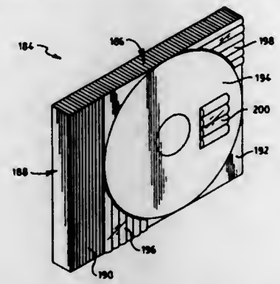
and the first waxy layer and the second waxy layer connected to alternate sides of the support layer; and
a flexible wrapper having an upper end and a lower end and substantially encompassing the bloom portion of the floral grouping and the quantity of shredded material, and the shredded material disposed within the wrapper and generally about the bloom portion of the floral grouping for cushioning the bloom portion.

5,603,407

FLAT BOX SYSTEM WITH MULTIPLE VIEW OPTICS

Stephen D. Fantone, Lynnfield, Mass., assignor to Insight, Inc., Lynnfield, Mass.

Filed Apr. 1, 1994, Ser. No. 222,632
The portion of the term of this patent subsequent to Nov. 14, 2014, has been disclaimed.
Int. Cl.[6] B65D *85/00*
U.S. Cl. 206—459.1 **16 Claims**



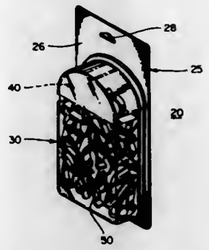
1. A box system for containing at least one flat object and providing visual information about the flat object, said box system comprising:
a multisided flat box comprising a pair of opposed flat walls having interior and exterior surfaces and interconnected by a plurality of shallow side walls to provide an interior chamber for the flat object, said pair of opposed flat walls and said plurality of shallow side walls being joined to releasably receive the flat object, at least one of said pair of opposed flat walls having a transparent lenticulated section comprising a plurality of parallel lenticules having a focal plane optically associated therewith;
at least one removable printed insert bearing at least two interlaced printed images, said removable printed insert being insertable into said interior chamber and located in a plane substantially parallel to and in optical registration with said transparent lenticulated section, said removable printed insert being further located substantially in said focal plane of said transparent lenticulated section to provide different information to an observer looking at said transparent lenticulated section from different angular perspectives.

5,603,408

INSERT FOR BLISTER PACKAGE

William F. Protz, Jr., Lake Forest, Ill., assignor to Santa's Best, Northfield, Ill.

Filed Aug. 28, 1995, Ser. No. 519,926
Int. Cl.[6] B65D *73/00*
U.S. Cl. 206—461 **8 Claims**



1. A blister package displaying loose product, comprising a backing sheet, a transparent plastic cover extending outwardly from said backing sheet defining a storage space for the loose product and having a flange extending substantially around said plastic cover parallel to said backing sheet for connection to said backing sheet, and an insert having a shape at least in part complimentary to a portion of said plastic cover positioned inside and adjacent said plastic cover, said insert having a plurality of spaced apart leg members extending perpendicularly to said backing sheet for maintaining said insert adjacent said plastic cover and away from said backing sheet, said plastic cover having locating members extending interiorly thereof cooperating with said spaced apart leg members to locate and maintain said insert with respect to said plastic cover, said plastic cover being a predetermined distance away from said backing sheet defining a storage space, and loose product in the storage space visible through said plastic cover.

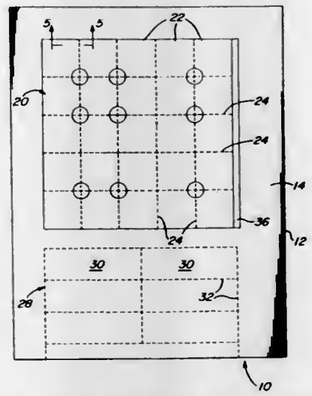
5,603,409

LABEL SYSTEM FOR USE WITH MEDICINAL DISPENSING DEVICE

Robert Braverman, 1671 Loretta Ave., Feasterville, Pa. 19053-7393

Filed Apr. 12, 1995, Ser. No. 421,596
Int. Cl.[6] B65D *83/04*
U.S. Cl. 206—534 **1 Claim**

1. In a medicinal dispensing system comprising in combination,



(1) a sheet and (2) a medicinal dispensing device having a plurality of individual units, each unit including:

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(i) flanges having corners and being detachably connected along certain lines so that each flange may be separated from the remaining flanges, and

(ii) a chamber depending from each flange, the chamber having an outer opening, with the chamber being adapted to hold an article,

said sheet comprising a plurality of closure members, each closure member adapted to cover one of the chamber openings, the sheet having an interior surface which is adapted to be in contact with the flanges of the medicinal device, the interior surface of the sheet carrying a tacky adhesive temporarily covered by a protective cover which will contact the flanges of the medicinal device when the protective cover is removed from the interior surface of the sheet and attached so that the interior surface above each respective chamber in each unit will be protected from adherence to an article within each chamber by the interior surface above each chamber being covered with a portion of the protective cover, the closure members of said sheet being defined by perforated lines closely corresponding to the flange lines, at least one corner of each flange being removed in a cut-away area to facilitate separation of a closure member from the chamber by removing the closure member from the corresponding chamber, the flanges being detachably connected along first and second groupings of weakened lines, generally perpendicular to each other, the weakened lines meeting in intersections and there being a punched opening at some of the intersections, the improvement comprising the closure members for the units of the medicinal dispensing device being located adjacent one another on an upper section of the sheet which is approximately 8.5 inches by 11 inches in dimension, the sheet having an outer surface for printing indicia thereon, the interior surface of the sheet including the tacky adhesive and the protective cover sheet releasably secured thereto to prevent the adherence of the closure members to an undesired object, the sheet further comprising:

(a) an upper portion comprising the closure members constituting individual unit labels of a first size, each of the unit labels having corners and being detachably connected along certain perforated lines so that each unit label may be separated from remaining unit labels to act as the closure member for each respective chamber associated therewith, and

(b) a lower portion comprising a plurality of secondary labels, the secondary labels and underlying associated protective cover sheet being perforated along certain lines, the secondary labels being detachably connected along certain perforated lines so that at least one of the secondary labels may be separated from the remaining secondary labels while each secondary label still maintains its protective cover.

5,603,410

MEMORABILIA DISPLAY CASE

Salim G. Kara, Houston, Tex., assignor to E-Stamp Corporation, Houston, Tex.

Filed Jul. 21, 1995, Ser. No. 505,701
Int. Cl.[6] B65D *5/52*
U.S. Cl. 206—769 **9 Claims**

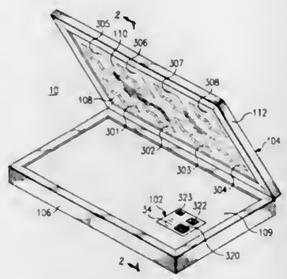
1. A display case in combination with memorabilia selected from the group consisting of stamps, post cards, envelopes and said display case comprising:

a box having a bottom;

a lid sized to movably mate with said bottom, said lid having a first transparent panel in a top surface and a second transparent panel;

a liner lining said bottom of said box, said liner adapted to hold memorabilia; and

a mat disposed between said first transparent panel and said second transparent panel, said mat having at least one cutout



shaped to reveal a selected portion of said memorabilia through said first transparent panel when said lid is fit on said bottom.

5,603,411

METHOD FOR SEPARATING MIXTURE OF FINELY DIVIDED MINERALS

Danny L. Williams, Macon; George E. Gantt, Milledgeville; Sanjay Behl, and Mitchell J. Willis, both of Macon, all of Ga., assignors to Engelhard Corporation, Iselin, N.J.

Continuation-in-part of Ser. No. 350,913, Dec. 7, 1994, Pat. No. 5,535,890. This application Feb. 5, 1996, Ser. No. 596,850
Int. Cl.[6] B03B *1/04*
U.S. Cl. 209—5 **18 Claims**

1. A method for the selective separation of finely divided mineral particles in a mixture of mineral particles which comprises:

a) forming said mixture into a dispersed aqueous pulp, using sodium silicate and sodium polyacrylate as dispersants;

b) adding to said dispersed aqueous pulp a fatty acid and a source of polyvalent cations, unless at least one of the minerals in the pulp provides a source of polyvalent cations, without flocculating said pulp;

c) without adding a frothing agent to said pulp, incorporating a high molecular weight organic anionic polymer, thereby forming flocs which settle as a dense lower layer;

d) and separating said settled layer from the remainder of the pulp, the improvement which comprises adding soda ash as a dispersant after step (a) and before step (c).

5,603,412

APPARATUS AND SEMICONDUCTOR COMPONENT FOR ASSURING TEST FLOW COMPLIANCE

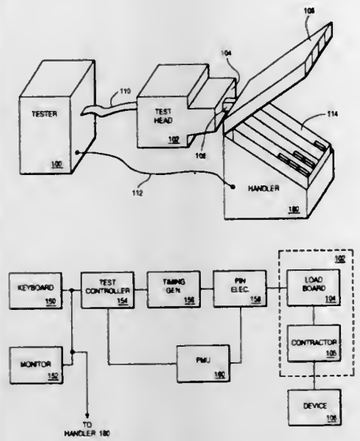
William Gross, Jr., Chandler, and Gregory D. Sabin, Phoenix, both of Ariz., assignors to INTEL Corporation, Santa Clara, Calif.

Division of Ser. No. 312,831, Sep. 27, 1994, Pat. No. 5,538,141. This application Feb. 2, 1996, Ser. No. 595,796
Int. Cl.[6] B07C *5/344*
U.S. Cl. 209—571 **9 Claims**

1. Apparatus for assuring test flow compliance in testing components that include a test status field, the test flow comprising a series of tests, the apparatus comprising:

a test head that provides connection to a component;

a tester that performs at least a present test of the test flow on the component, the tester being coupled to the test head and including a test control circuit that reads the test status field of the component, wherein the test status field indicates whether the component has already been tested according to the present test; if so, the test control circuitry providing an



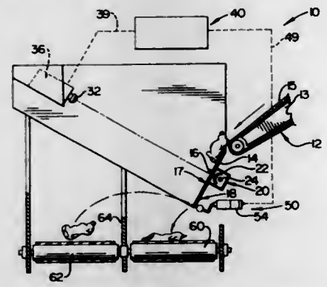
indication that the component should be binned out; otherwise, the test control circuitry continuing with the present test.

5,603,413

SORTATION METHOD FOR TRANSPARENT OPTICALLY ACTIVE ARTICLES

Samuel T. Mitchum, Jr., Columbia, S.C., assignor to Wellman, Inc., Johnsonville, S.C.

Filed Sep. 1, 1994, Ser. No. 299,550
Int. Cl.[6] B07C *5/342*
U.S. Cl. 209—580 **40 Claims**



1. A method of separating individual plastic items from a mixture of individual transparent plastic items, each of the individual items being formed predominantly of a single type of plastic, but with the items being present in at least two different colors of that plastic, the method comprising:

transmitting white light from a source through each individual item;

detecting the quantity of light of a first color passing through each individual item with a detector opposed to the source as a stream of the items is successively directed past the source and the detector;

detecting the quantity of light of a second color passing through each individual item with the detector, wherein the second color is different from the first color; and

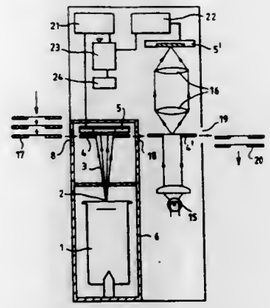
selectively removing individual items from the stream based upon a comparison of the quantity of light of the first color detected to the quantity of light of the second color detected.

5,603,414

DETECTING DIAMONDS IN A ROCK SAMPLE

Marie-Line Rooney, Maidenhead; James G. C. Smith, HIgh Wycombe; Martin P. Smith, Wargrave, and Martin Cooper, Marlow, all of England, assignors to Gersan Establishment, Vaduz, Liechtenstein

PCT No. PCT/GB93/01127, § 371 Date Jan. 25, 1995, § 102(e) Date Jan. 25, 1995, PCT Pub. No. WO93/24833, PCT Pub. Date Dec. 9, 1993
PCT Filed May 28, 1993, Ser. No. 343,525
Claims priority, application United Kingdom, Jun. 3, 1992, 9211734
Int. Cl.[6] B07C *5/00*
U.S. Cl. 209—588 **30 Claims**



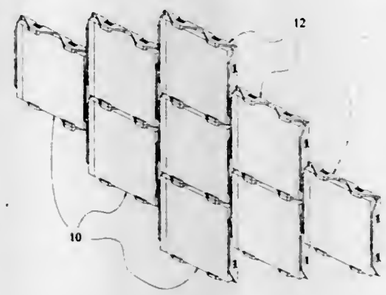
1. A method of detecting diamonds in a rock sample, comprising reducing the rock sample to small particles, placing a layer of the particles on a substrate, irradiating the particles with X-radiation, sensing X-radiation transmitted through the layer of particles, and detecting diamonds by their greater transparency to X-radiation than the remainder of the particles.

5,603,415

MODULAR COMPACT DISC STORAGE AND DISPLAY DEVICE

Arthur J. Balnis, Jr., 311 Circle Rd., Manchester, N.H. 03103-3182

Filed Aug. 11, 1995, Ser. No. 514,447
Int. Cl.[6] A47F *7/00*
U.S. Cl. 211—40 **19 Claims**



1. In a device for storing and displaying one or more compact disc jewel cases comprising:,

a. one or more modular units each having a back portion defined by at least one or more vertically adjacent flat panel elements, a top portion defined by at least two identical upper dog

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elements, a base portion defined by at least two identical lower dog elements, a left sidewall rib element, a right sidewall rib element;

b. means for releasably retaining said jewel case within said modular unit, said means defined by an upper stop element descending from the front lower surface of each said upper dog element, and a lower stop element ascending from the front upper surface of each said lower dog element;

c. means formed integral with each said modular unit for releasable coupling with the vertically, horizontally, or diagonally next adjacent modular unit to form a generally mosaic picture wall of said modular units, said means including at least one recess element of dovetail cross-section defined into each said left rib element, at least one recess element of dovetail cross-section defined into each said right rib element, at least one recess element of dovetail cross-section defined into each said upper dog element, at least one recess element of dovetail cross-section defined into each said lower dog element and a key element for engaging the corresponding recess element defined at the respective rib element or dog element of the vertically, horizontally, or diagonally next adjacent modular unit;

d. means formed integral with each said key element and each said modular unit for a releasable locking mechanism, said means including a fillet element defined onto each said key element for engaging a corresponding mortise element defined into edge of each said back panel element of each said modular unit;

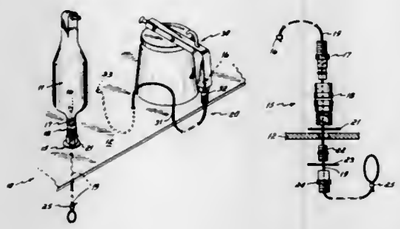
e. means for mounting said device against a vertical flat surface.

5,603,416

SECURE PNEUMATIC TOOL DISPLAY

Brian Richardson, West Harrison, and Daniel Sanchez, Forest Park, both of Ohio, assignors to Campbell Hausfeld/Scott Fetzer Co., Westlake, Ohio

Filed Sep. 21, 1995, Ser. No. 531,523
Int. Cl.[6] A47F *5/00*
U.S. Cl. 211—70.6 **5 Claims**



1. A secure pneumatic tool display apparatus for displaying pneumatic tools and comprising:

a first connector component for attachment to a pneumatic tool;

a second connector component for receiving said first connector component;

said first and second components being removably attachable to and disconnectable from each other;

said second connector component being mountable to a display structure;

a cable extending through said components; and

a stop on the cable for preventing the cable from pulling out from the first connector component; and

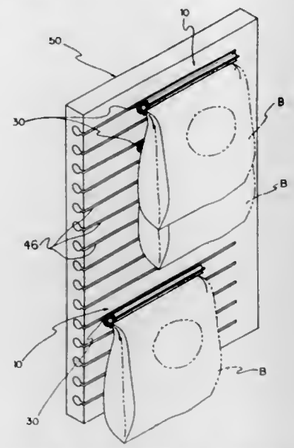
said cable being attachable to a display structure to prevent removal of the tool from the display structure, when said components are disconnected beyond a distance of the cable length.

5,603,417

BAG SEALING APPARATUS

Norman T. Blair, 2100 Devils Knob Rd., P.O. Box 85, Tiller, Oreg. 97484-0085

Filed Mar. 13, 1995, Ser. No. 402,833
Int. Cl.[6] A47G *29/00*
U.S. Cl. 211—71 **4 Claims**



1. A bag sealing and storing apparatus comprising:

an elongated C-shaped clamping member having an inner receiving surface defining a receiving area, and an outer surface, said clamping member including an opening running along the length thereof and further including an inner surface apex running along the length thereof, said inner surface apex being located distal to said opening means,

an elongated tubular locking member adapted to be fit into said receiving area of said clamping member and be held therein by said inner receiving surface, and

a protruding spine located on said outer surface, said protruding spine extending substantially completely along the length of said elongated clamping member, and said protruding spine being located proximate said inner surface apex, wherein said protruding spine includes a thickened end, said thickened end located distal from said outer surface of said clamping member to form a gripping and manipulation aid for the device.

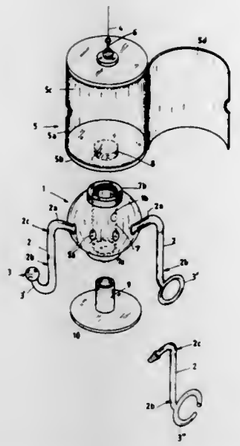
5,603,418

HANGER FOR BABY CARE PRODUCTS

Pia Tellefsen, Adventveien 15, N-0281, Oslo, Norway

PCT No. PCT/NO94/00004, § 371 Date Jun. 30, 1995, § 102(e) Date Jun. 30, 1995, PCT Pub. No. WO94/15517, PCT Pub. Date Jul. 21, 1994
PCT Filed Jan. 6, 1994, Ser. No. 492,029
Claims priority, application Norway, Jan. 6, 1993, 930024
Int. Cl.[6] A47F *5/08*
U.S. Cl. 211—113 **18 Claims**

1. A hanging device for baby care articles and products comprising, a base member, hanger arms arranged on the base member and projecting outwardly and downwardly from the base member, said hanger arms having outer depending ends formed with hanger means including hooks, open and closed loops and gripper fingers, said hanger arms having an outer longitudinal section, said outer longitudinal section of selected said hanger arms being fabricated of a flexible material, manually reformable, to adapt the hanger means of the selected hanger arms to the shape and nature of selected baby care articles and products, a container with a substantially vertical main axis and having a closable opening for insertion of a paper roll and, attachment means for a suspension



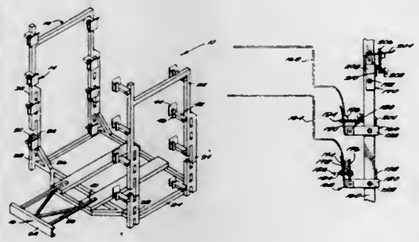
cord on an upper side of said container, and engagement means on an opposite lower side of said container for engagement with said base member.

5,603,419

SHIPPING RACK

Thomas W. Peterson, 402 Old Chester Rd., Winnsboro, S.C. 29180

Filed Jul. 5, 1995, Ser. No. 498,324
Int. Cl.[6] A47F *5/00*
U.S. Cl. 211—195 **20 Claims**



1. A rack for shipping objects, said rack comprising:

a frame having

a first side,

a second side,

a base, said first side and said second sides being pivotally attached to said base so that said first and second sides can pivot between an operating position and a storage position; and

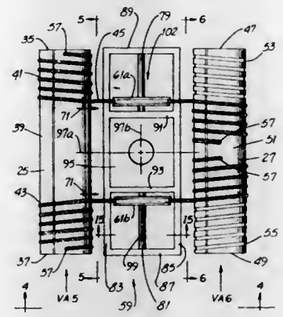
a plurality of clamps carried by said frame, each clamp of said plurality of clamps being pivotable between an operative position and a storage position, said clamps being in said operative position for holding said objects for shipping and being pivotable to said storage position when said object has been removed from said rack.

5,603,420

METHOD FOR USING A TWO-DRUM CRANE FOR RAISING OR LOWERING A LOAD

Richard N. Swanson, South Milwaukee, Wis., assignor to Harnischfeger Corporation, Brookfield, Wis.

Division of Ser. No. 119,645, Sep. 13, 1993, Pat. No. 5,423,438.
This application Feb. 6, 1995, Ser. No. 384,139
Int. Cl.[6] B66C *1/26*
U.S. Cl. 212—274 **6 Claims**



1. In a crane having (a) a first hoist drum, (b) a second hoist drum spaced substantially horizontally from the first hoist drum, and (c) a load block below the drums and having a load suspended therefrom, and wherein:

a pair of cables extends from the drums substantially vertically downward to the block for raising and lowering the load;

the load block is interposed between the pair of cables and the load;

the load is at an elevated position;

the drums are independently powered;

each hoist drum is capable of independently raising and lowering the load without load tilting; and

the pair of cables contact the second hoist drum at two points of tangency;

a method for moving the load including the steps of:

maintaining the first drum in a non-rotating mode; and,

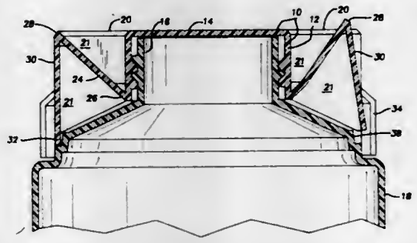
rotating the second drum to move the load to a lower elevation, thereby moving the points of tangency toward one another.

5,603,421

TWO-FINGER CHILD RESISTANT CLOSURE

Ovidiu Opresco, New York, N.Y., assignor to Weatherchem Corporation, Twinsburg, Ohio

Filed Aug. 10, 1995, Ser. No. 513,453
Int. Cl.[6] B65D *50/04*
U.S. Cl. 215—217 **5 Claims**



1. A child resistant closure cap comprising a cap body having a skirt adapted to threadedly engage the neck of a container and a top

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wall adapted to close the mouth of said container, a faux cap portion surrounding the cap body and being formed integrally therewith, said faux cap portion being annularly interrupted at two diametrically opposed locations to form a pair of recesses, a pair of fingerpieces each positioned in one of said recesses and each comprising a lever member integral with said cap body and hinged at a substantially horizontal hinge to said cap body skirt at a location thereon spaced down from said top wall, each said lever member having a portion extending upward to an elevation adjacent said top wall from said hinge line and a portion extending downward from said elevation to a distal end which is normally disposed at a first position which is a given radial distance from the center of the cap, each of said fingerpieces further comprising a latch member connected to its associated lever member and depending downwardly therefrom, said distal ends of said lever members being squeezable toward each other to cause said lever members to pivot and said distal ends to move radially inwardly to thereby draw said latch members upwardly along the axial direction to release said latch members.

5,603,422

PLASTIC SAFETY CLOSURE FOR BOTTLES SIMULATING THE APPEARANCE OF A TRADITIONAL CORK-TYPE WINE BOTTLE CLOSURE

Ernst Herrmann, CH-9428 Walzenhausen, Switzerland

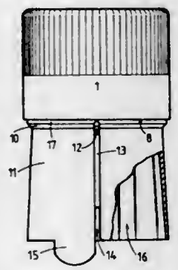
PCT No. PCT/CH93/00051, § 371 Date Apr. 20, 1994, § 102(e) Date Apr. 20, 1994, PCT Pub. No. WO93/17926, PCT Pub. Date Sep. 16, 1993

PCT Filed Mar. 1, 1993, Ser. No. 140,133

Claims priority, application Switzerland, Mar. 6, 1992, 726/92; Oct. 19, 1992, 3238/92; Feb. 23, 1993, 551/93

Int. Cl.[6] B65D *41/34*

U.S. Cl. 215—256 **22 Claims**



1. A safety closure of molded synthetic material, comprising a rigid head having interior screw threading, a separable portion connected to the rigid head by a circular tear-off safety zone, said separable portion comprising an upper ring and a lower skirt, the skirt having a truncated conical shape narrowing in the direction of the ring, the separable portion comprising opening means for breaking said portion in a substantially longitudinal direction, wherein said opening means comprises an opening formed through said upper ring below said circular tear-off safety zone, and a longitudinally extending portion of reduced thickness extending from said opening, and a slot connecting said portion of reduced thickness to a lower edge of said lower skirt, said opening and said longitudinally extending portion and said slot being in alignment along a single straight line.

5,603,423

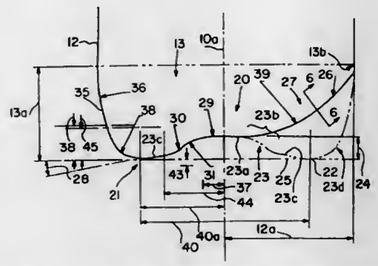
PLASTIC CONTAINER FOR CARBONATED BEVERAGES

Stephen R. Lynn, Douglasville, and William J. Peek, Lithonia, both of Ga., assignors to Ball Corporation, Muncie, Ind.

Filed May 1, 1995, Ser. No. 431,532

Int. Cl.[6] B05D *1/42*

U.S. Cl. 215—375 **23 Claims**



1. A blow molded plastic container for carbonated beverages, comprising an upper mouth-forming portion, a cylindrical sidewall and a lower bottom-forming portion, all about a central longitudinal axis, including a plurality of circumferentially spaced, spherically shaped segments and a plurality of intervening and circumferentially spaced, totally convex, hollow foot-forming portions extending radially from the longitudinal axis of the container and downwardly from the circumferentially spaced, spherically shaped segments, each said foot-forming portion including a bottom clearance-forming portion, each bottom clearance-forming portion including a compound curved offset of a substantial fraction of an inch formed between the longitudinal axis and the container sidewall by opposing equal radii of curvature of a substantial fraction of an inch, said compound curved offset first curving downwardly about a center of curvature below the bottom-forming portion before curving about a center of curvature above the bottom-forming portion.

5,603,424

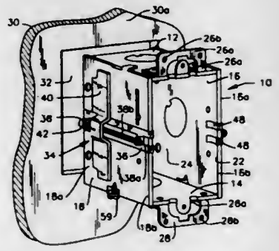
WALL MOUNTING ASSEMBLY ATTACHABLE TO AN ELECTRICAL BOX

Mark A. Bordwell, Memphis, Tenn., and Oliver Sims, Garland, Tex., assignors to Thomas & Betts Corporation, Memphis, Tenn.

Filed Aug. 1, 1995, Ser. No. 509,907

Int. Cl.[6] H02G *3/12*

U.S. Cl. 220—3.5 **20 Claims**



1. A mounting assembly attachable to a pre-manufactured electrical box having opposed side walls, top and bottom walls, and a pair of mounting flanges disposed adjacent to a front face of said box and extending outwardly from said top and bottom wall, said mounting assembly comprising:

a pair of securement members, each securement member being mountable onto one of said opposed side walls in a snap-fit manner, each of said securement members further including;

a bracket;

a brace supported by said bracket; and

actuatable brace securement means for movably securing said brace to said bracket, said brace securing means being actuatable to cause progressive movement of said brace toward said front face of said box to a position of engagement with a wall surface;

whereby said wall surface is clamped between said braces of each of said securement members and said mounting flanges of said box.

5,603,425

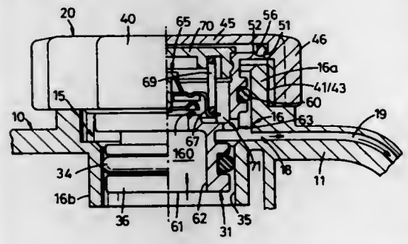
RADIATOR CAP

Anthony P. Breeden, Wokingham, England, assignor to Western Thomson Controls Limited, Woodley, England

Filed Mar. 17, 1995, Ser. No. 406,046

Int. Cl.[6] B65D *51/16*

U.S. Cl. 220—203.06 **8 Claims**



1. A vessel for a fluid, the vessel having a filling opening and a cap removably mounted on the vessel for closing the filling opening, the filling opening being defined by a tubular conduit having a vent port located in its wall, the cap including an elongate sealing member which is axially insertable into the conduit, the cap further including a cap member rotatably mounted on the elongate sealing member so as to permit relative rotation therebetween about the axis of rotation of the cap member, the cap member and vessel having cooperating screw threads such that relative rotation between the cap member and vessel causes axial movement of the sealing member relative to the tubular conduit, the sealing member carrying a circumferentially extending main seal for providing sealing engagement between axially extending opposed faces of the conduit wall and the sealing member, the sealing member being axially movably mounted on the vessel for axial movement between a first axially static position whereat the main seal resides at an inner location relative to the vent port to sealingly isolate the vent port from the interior of the vessel and to a second axially static position whereat the main seal resides at an outer location relative to the vent port to permit direct fluid communication between the vent port and the interior of the vessel.

5,603,426

STIRRER LID FOR COLOR CANS ON PAINT STIRRING MACHINES AND METHOD OF MANUFACTURING THESE LIDS

Alain Krzywdziak, Orleans, and Daniel Parmenon, Orleans La Source, both of France, assignors to F.A.S., Orleans Cedex 2, France

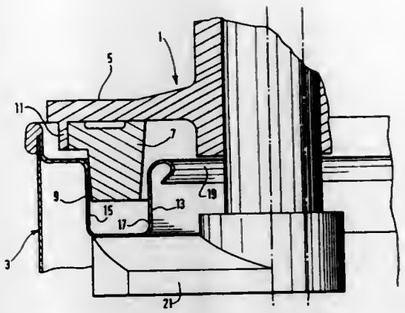
Filed Oct. 25, 1994, Ser. No. 328,457

Claims priority, application France, Oct. 25, 1993, 93 12687

Int. Cl.[6] B65D *45/16*

U.S. Cl. 220—324 **4 Claims**

1. A stirrer lid for a color can arrangeable on stirring machines, said stirrer lid having a base surface possessing a depending frustoconical closure edge shaped to conform with a corresponding opening edge of the can, said stirrer lid comprising a main body (5); an annular ring (7) permanently fastened to the base surface of the body, said annular ring having a downward tapering frustoconical cross-section to provide said closure edge for wedgingly sealing said lid to said can upon mounting thereof on the can, said ring (7) being made of metal alloy and having a mechanical hardness and strength for providing said wedging seal on an opening edge (13) of the can, and fastening cams (21) connected to the body of the lid and being engageable beneath the opening edge (13) of the cans for imparting a closure pressure between said lid and said can.



5,603,427

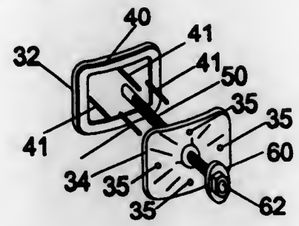
ACCESS DOOR CONSTRUCTION FOR A HOT WATER TANK ASSEMBLY

Michael Truchon, Rte. 1, Box 123, Chancellor, Ala. 36316, and B. Wayne Folsom, 3304 Sharer Rd., Tallahassee, Fla. 32312

Continuation-in-part of Ser. No. 172,541, Dec. 23, 1993, Pat. No. 5,443,041. This application Nov. 21, 1994, Ser. No. 342,916

Int. Cl.[6] B65D *90/66*

U.S. Cl. 220—465 **12 Claims**



1. An access door construction for a hot water tank assembly comprising in combination:

a first clamp is internally located in an inner tank and is used to cover and seal a first opening of said hot water tank assembly when said access door construction is attached thereto;

a second clamp is exteriorly located in an outer tank and is used to cover and seal a second opening in said outer tank of said hot water tank assembly when said access door construction is attached thereto;

a rod having a first end is attached to said first clamp and a second end extends through said second clamp;

said first clamp is pivotally secured to said first end of said rod via a pivot means and said pivot means includes a ball and a groove, said ball is located on said first end of said rod, said groove is located in an inner surface of said first clamp, and said ball is located in said groove;

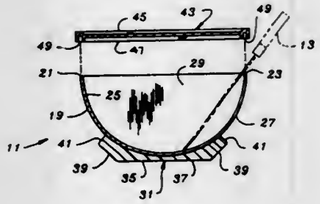
a handle is located on said second end of said rod for activating a releasing and securing means; and

said releasing and securing means simultaneously provides for said first clamp to be interiorly and releasably secured to said inner tank and for said second clamp to be exteriorly and

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releasably secured to said outer tank for enabling removal and securement of said first clamp and said second clamp to occur exteriorly.

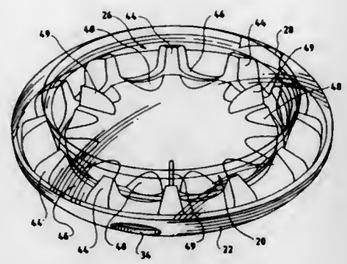
5,603,428
JOINT COMPOUND CONTAINER
Claude K. Breckwoldt, 12913 Sarala, St. Louis, Mo. 63131
Filed Jan. 6, 1994, Ser. No. 177,915
Int. Cl.[6] B65D *41/16*
U.S. Cl. 220—755 **8 Claims**



1. A container for holding a material which is applied from the container, the the container comprising an open top, a generally semi-cylindrical first wall having a first longitudinal upper edge and a second longitudinal upper edge generally laterally opposite the first longitudinal upper edge, and second walls located generally at longitudinally opposite ends of the first wall, the first and second walls defining a volume for holding material therein, the smooth curvature off the first wall permitting material to be withdrawn from the container by a scooping motion of an applicator along a generally smooth curve from the first longitudinal upper edge of the first wall laterally to the second longitudinal edge of the first wall, the container being sized for continuously maintaining contact with the first wall throughout the scooping motion, the container further including a grip mounted on the outer surface of the first wall of the container, said grip extending along the length of the first wall, said grip having an upper surface contoured for mounting on the outer surface of the first wall of the container and a lower surface contoured for being easily gripped by one of the thumb and fingers of the person's hand when holding the container, the lower surface of the grip has a flat bottom portion and two laterally spaced-apart angled portions along opposite long sides of the flat bottom portions said gripping surfaces being located outboard with respect to the angled portions and extending therefrom in a plane generally perpendicular to the plane of their respective angled portion.

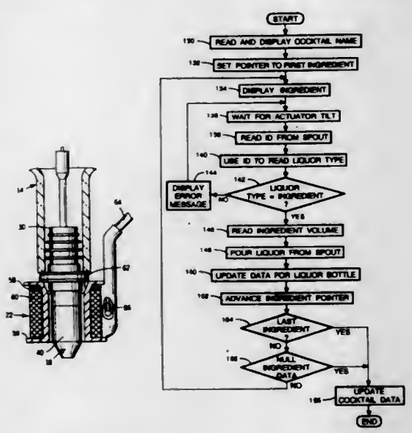
5,603,429
MOTORIZED HAND-HELD TRANSPORTABLE DISPENSER FOR DISPENSING DISC-SHAPED OBJECTS ONE AT A TIME
Paul Mulhauser; Karl D. Kirk, III, both of New York, and Diego Fontayne, Montebello, all of N.Y., assignors to Cap Toys, Inc., Bedford Heights, Ohio
Filed Oct. 31, 1995, Ser. No. 550,661
Int. Cl.[6] B65D *83/00*
U.S. Cl. 221—171 **14 Claims**

1. A hand-held transportable motorized dispenser for repeatedly dispensing objects comprising:
- a housing including a generally circular shell means having a circular transport zone defining an annular recess positioned radially outwardly of the center of the shell means,
- a circular turntable mounted in said housing for rotation therein and defining a series of circumferentially spaced adjacent compartments, each compartment being adapted to receive and contain one object, said compartments being



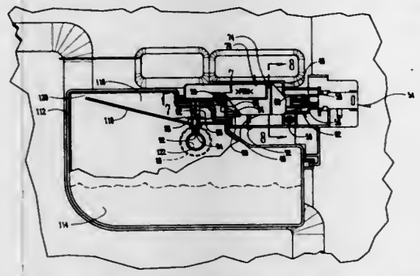
disposed within and embraced by said recess for transporting said objects as said turntable is rotated,
- said turntable further defining a central platform for receiving and supporting a supply of said objects,
- said shell means defining an entry slot for permitting said objects, one at a time, to transfer in a predetermined orientation from said platform into a said compartment, and
- battery operated motor means in said housing for rotating said turntable relative to said housing and said shell means, and a discharge slot defined by said housing for allowing an object in a compartment to be discharged to the exterior of said housing as said compartment rotates past said discharge slot.

5,603,430
BEVERAGE DISPENSING SYSTEM WITH BOTTLE IDENTIFICATION MECHANISM
John M. Loehrke, Windsor, and Thomas L. Heidebrecht, Cambridge, both of Wis., assignors to DEC International, Inc., Madison, Wis.
Filed Feb. 10, 1995, Ser. No. 386,900
Int. Cl.[6] B67D *5/24*
U.S. Cl. 222—1 **19 Claims**



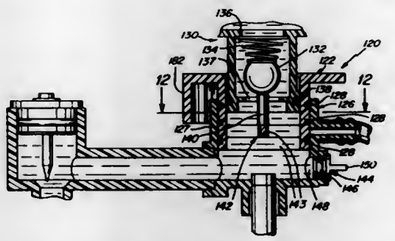
13. A method for dispensing liquid from a bottle having a spout with a magnetically operated valve and a transponder, said method comprising steps of:
- placing an actuator in proximity to the spout;
- interrogating the transponder to obtain an identification code that is unique to the spout;
- energizing the actuator for a predetermined period of time to produce a magnetic field that causes the valve to open;
- storing in a memory information which indicates a quantity of liquid that was dispensed from the bottle while the valve was opened; and
- calculating from the information a monetary value for the quantity of liquid that was dispensed from the bottle.

5,603,431
CONTROL MECHANISM FOR DISPENSING FLUENT MATERIALS
Barry E. Tuller, Newton, Iowa, assignor to Maytag Corporation, Newton, Iowa
Filed Apr. 14, 1995, Ser. No. 422,040
Int. Cl.[6] B67D *5/14*
U.S. Cl. 222—63 **10 Claims**



1. A control mechanism for dispensing first and second fluent materials comprising:
- a support;
- a first dispenser on said support and having a first dispenser chamber for holding said first fluent material and having a first release mechanism movable from a holding position for preventing said first fluent material from exiting said first dispenser chamber to a release position for causing at least a portion of said first fluent material to exit from said first dispenser chamber, said first release mechanism including a spring-biased latch mounted on said support;
- a second dispenser on said support having a second dispenser chamber for holding said second fluent material and having a second release mechanism movable from a holding position for preventing said second fluent material from exiting said second dispenser chamber to a release position for causing at least a portion of said second fluent material to exit said second dispenser chamber;
- a power means having a movable power member, said power means being energizable to move said power member to an actuated position and being deenergizable to move said power member to a deactuated position;
- a linkage mechanism connected to said power member of said power means and comprising a movable drive link driven by said power member for movement into engagement with said first release mechanism in response to movement of said power member to said actuated position whenever said first release mechanism is in said bolding position, said drive link being selectively coupled to a driven link by a connecting link pivotally connected to said drive link, said drive link and said connecting link being operatively connected to said first release mechanism by said spring-biased latch, said connecting link being movable between an uncoupled position wherein said drive link and said driven link are disconnected from one another and a coupled position wherein said drive link and said driven link are coupled with one another, said driven link operatively engaging said second release mechanism;
- said spring-biased latch engaging said connecting link such that only when said first release mechanism is in said release position is said connecting link yieldably urged to couple said drive link and said driven link;
- said linkage mechanism being responsive to movement of said power member to said actuated position for engaging and moving only said first release mechanism to said release position whenever said first release mechanism is in said holding position and for engaging and moving only said second release mechanism to said release position whenever said first release mechanism is not in said holding position.

5,603,432
DISPENSER VALVE
Gary F. Sardynski, Medford; Paul E. Cox, Brighton, and Gilbert R. Pacheco, Plymouth, all of Mass., assignors to Jet Spray Corp., Norwood, Mass.
Continuation-in-part of Ser. No. 309,043, Sep. 20, 1994, abandoned, which is a continuation of Ser. No. 60,604, May 12, 1993, Pat. No. 5,348,192. This application Mar. 20, 1995, Ser. No. 408,146
Int. Cl.[6] B67D *5/56*
U.S. Cl. 222—129.1 **32 Claims**

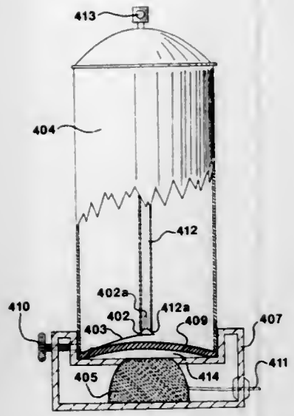


1. A beverage dispenser for use with a container for holding concentrated juice, the container having an adapter with a ball valve which is at the bottom of the container when the container is inserted in the dispenser, the dispenser comprising:
- a housing having a chamber for holding a container in a stationary position when inserted;
- a dispenser valve mounted in the housing, the dispensor valve including:
  - a pin which is vertically actuatable to a first position in which the pin is spaced from the ball valve so that the juice is contained and a second position in which the pin engages the ball valve to allow the concentrated juice to flow from the container, and
  - a switch for moving the pin between the first and second positions;
- a conduit for providing water from a water supply;
- means for combining the water and the concentrated juice; and
- a tap for providing the combined water and concentrated juice; and
- a removable cleaning plug to allow cleaning of the dispenser valve.

5,603,433
ANTI-GRAFFITI SECURITY DEVICE FOR AEROSOL DISPENSER CANS
Albert Rene, 40 Austin Ave., Amityville, N.Y. 11701
Filed Apr. 26, 1995, Ser. No. 429,127
Int. Cl.[6] B67D *5/33*
U.S. Cl. 222—153.11 **20 Claims**

1. A spray can with an activation base for selectively interrupting and/or controlling the dispensing of can contents comprising:
- an activation base having an electromagnet operated by electric current and a recess for receiving the spray can; and where,
- said spray can has a liquid delivery tube for conducting liquid to be dispensed to an outlet; and further where,

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said spray can has a bottom member, said bottom member being made of a suitable non-magnetic material,

said spray can having an interruption means for selectively impeding liquid flow through said liquid delivery tube of said spray can.

5,603,434

TRIGGER SPRAYER

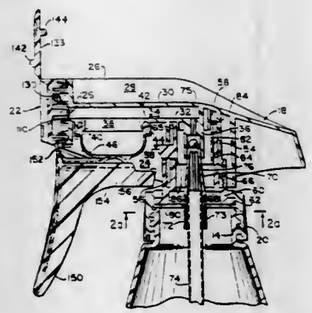
Alfred von Schuckmann, Kevelaer, Germany, assignor to Owens-Illinois Closure Inc., Toledo, Ohio

Filed Dec. 1, 1994, Ser. No. 352,146

Claims priority, application Germany, Dec. 11, 1993, 43 42 304.3

Int. Cl.[6] B67D *5/32*

U.S. Cl. 222—153.14 **20 Claims**



1. A dispensing pump for attachment to a supply container having a mouth comprising:

a. a pump housing having a discharge end and a mounting end, the mounting end having a downward tubular support body adapted to communicate with and be sealingly secured to the mouth of the container, the support body being formed with a vent opening facing the discharge end,

b. tubular seal means disposed about the inside of the tubular support body and normally sealing the vent opening, the seal means being formed with a projection extending through the opening, the projection extending toward the discharge end,

c. passage means in the housing extending from an outlet in the discharge end toward the mounting end and into the body and terminating in a downward dip tube inlet means adapted to extend into the container,

d. pump means in the housing and connected in the passage means,

e. discharge means attached to the pump housing at the discharge end and including an operating lever pivotable toward the support body from an extended position to a retracted position and having a rigid leg adapted to engage and operate the pump means when the lever is pivoted, the leg adapted when the lever is pivoted to the retracted position to laterally engage the projection on the seal means to depress it and break the seal between the seal means and the inside of the tubular body to permit the venting of air into such container.

20. The method of venting a trigger sprayer container having a discharge housing and a tubular support for the housing, the support communicating with the head space of the container and a pivoted lever on the housing, the lever having a leg extending toward the support, the leg adapted to work a bellows-type pump in the housing when the lever is pivoted, the method including:

a. providing a vent opening in the tubular support normally sealed by a tubular seal about the inside of the support and covering the vent, the seal having an integral actuator extending through the opening in a direction toward the lever, and

b. extending the lever toward the tubular support so that when the lever is pivoted toward the end of its path closer to the tubular support, the distal end of the leg brushes against the actuator and opens the seal to vent the container.

5,603,435

REPAINTING GUN

Crispian A. Fenwick, 530 Falmer Road, Woodingdean Brighton, East Sussex, BN2 6ND, England

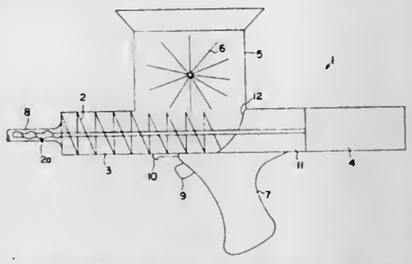
PCT No. PCT/GB93/01668, § 371 Date Apr. 10, 1995, § 102(e) Date Apr. 10, 1995, PCT Pub. No. WO94/03279, PCT Pub. Date Feb. 17, 1994

PCT Filed Aug. 6, 1993, Ser. No. 381,850

Claims priority, application United Kingdom, Aug. 7, 1992, 9216763; Mar. 26, 1993, 9306300

Int. Cl.[6] G01F *11/20*

U.S. Cl. 222—240 **24 Claims**



1. In an apparatus for applying plaster, cement, mortar or grouting material to a surface, the apparatus having a hand-grip portion which defines a first axis, a feed chamber for receiving said material, an applicator nozzle in fluid communication with said feed chamber, and a feed screw having a shaft disposed within said chamber and defining a second axis, said feed screw being arranged to convey said material from said feed chamber through said applicator nozzle, said apparatus further having motor means for driving said feed screw, said motor means including a source of direct current, the improvement comprising said hand-grip portion, feed, chamber, feed screw and applicator nozzle being oriented with respect to one another such that, when said apparatus is held in the hand by said hand-grip with said first axis oriented substantially vertical during application of said material, said feed chamber and said feed screw shaft axis are inclined with respect to the horizontal to provide a gravity feed of said material to said applicator nozzle, said nozzle defining a third axis which is oriented substantially transverse to said first axis such that, in use, material conveyed from said feed chamber to said nozzle by said feed screw is ejected from said nozzle horizontally onto the surface which is to receive said material.

5,603,436

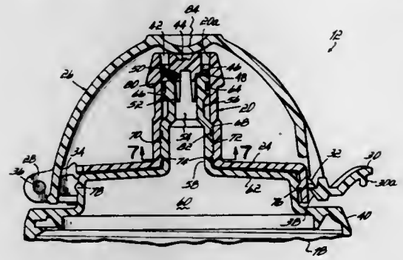
SQUEEZE BOTTLE AND LEAKPROOF CLOSURE DEVICE

Richard A. Leoncavallo, Pittsford; Peter K. Baird, Honeoye Falls; Mark Giverc, Canandaigua, and Ravi Mehra, Fairport, all of N.Y., assignors to Nalge Company, Rochester, N.Y.

Filed Jan. 12, 1995, Ser. No. 372,063

Int. Cl.[6] B67D *3/00*

U.S. Cl. 222—525 **41 Claims**



1. A dispensing container comprising:

a) a receptacle;

b) a closure device for closing an upper opening of said receptacle, said closure device including,

i) a cap;

ii) a tubular closure element connected to said cap and including a bore defining a portion of a flow path through said cap, a generally upwardly facing sealing surface disposed about said bore, and a resilient dynamic sealing element disposed about an outer surface of said tubular closure element; and,

iii) a spout having an outlet opening defining another portion of said flow path and being connected to said tubular closure element for sliding movement against said dynamic sealing element and along an axis between open and closed positions, said spout including a plug member disposed in said outlet opening and having an annular resilient static sealing element disposed thereon, wherein at least a portion of said plug member is receivable in said bore and said static sealing element is placed in axial compression against said sealing surface when said spout is in said closed position.

5,603,437

GARMENT HANGER, SIZE INDICATOR AND COMBINATION THEREOF

Andrew M. Zuckerman, Forest Hills, N.Y., assignor to Different Dimensions Inc., Rego Park, N.Y.

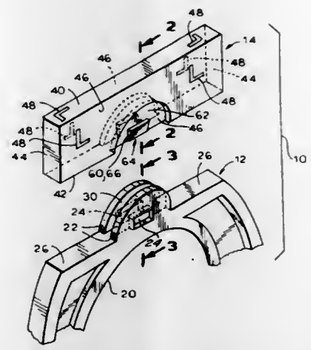
Filed Aug. 7, 1995, Ser. No. 511,831

Int. Cl.[6] A47G *25/14*

U.S. Cl. 223—85 **30 Claims**

1. A molded plastic indicator suitable for attachment to a hook of a molded plastic garment hanger, wherein the hook has a transversely spaced pair of outwardly projecting webs, at least one of said webs having an aperture therethrough, said indicator comprising:

a solid plastic body adapted to display indicia relating to a garment on a hanger, said body defining a rectangular profile with parallel sidewalls, a bottom wall and a top wall, and a pair of end walls connecting said parallel sidewalls and said top and bottom walls, at least one of said body sidewalls defining under said body top wall an outwardly extending lateral projection, a portion of said body being configured and dimensioned to be snugly received intermediate the webs with said lateral projection thereof extending outwardly through the web aperture.



5,603,438

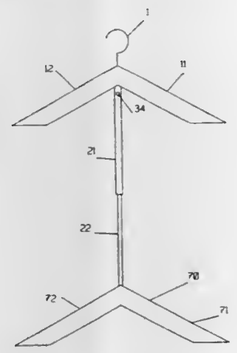
GARMENT HANGER

Bruce M. Jugan, 699 S. Grand Ave., Pasadena, Calif. 91105

Continuation-in-part of Ser. No. 319,556, Oct. 6, 1994, abandoned. This application May 13, 1996, Ser. No. 647,693

Int. Cl.[6] A47G *25/40;25/44;25/18*

U.S. Cl. 223—89 **13 Claims**



1. An improved garment hanger for multiple garments having first garment support means arranged in a plane, with said first garment support means depending directly from retaining means adapted to be suspended on a supporting member, said hanger further comprising a second garment support means adapted to support a second garment, wherein the improvement comprises:

extension means which connects the first garment support means with said second garment support means positioned by the extension means to extend away from the plane of the first garment support means.

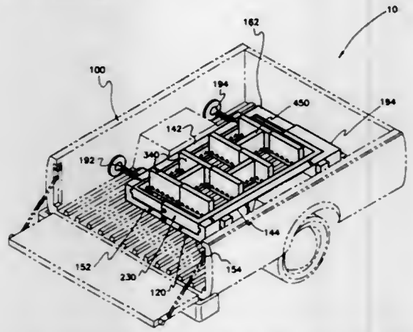
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5,603,439

TRUCK CARGO ORGANIZER

Adrian R. Pineda, 1703 Quenon Ct., Jarrettsville, Md. 21084

Filed Apr. 17, 1995, Ser. No. 422,922
Int. Cl.[6] B60R *11/00*
U.S. Cl. 224—403 **5 Claims**



1. An organizer for use in a vehicle load cargo area, having a length, a width, and two side walls, said organizer comprising:

an outer frame having means for adjusting to fit between the side walls of the cargo area and comprising two longitudinal rails and two cross ties rigidly attached at right angles to said longitudinal rails, each said cross tie further comprising two telescopically interfitting halves, whereby said cross ties are adjustable in length, and a threaded fastener for uniting said halves of said cross tie into a single, rigid unit, said outer frame further having at least four screws projecting laterally from said outer frame toward the side walls of the cargo area, for engaging the side walls to secure said outer frame within the cargo area;

an inner drawer frame, having means for adjusting to slide inside of said outer frame,

a plurality of main separators dimensioned and configured to fit inside said inner drawer frame, and

a plurality of small sub-separators dimensioned and configured to fit within the spaces available between said main separators.

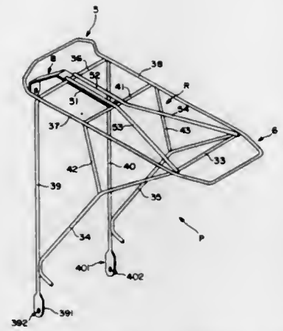
5,603,440

STRUCTURE FOR THE PARCEL CARRIER OF A BICYCLE

Marino Barro, Treviso, Italy, assignor to F.LLi Barro Giovanni & Luigi S.r.l., Treviso, Italy

Filed Sep. 16, 1994, Ser. No. 307,074
Claims priority, application Italy, Sep. 17, 1993, PN93A0060
Int. Cl.[6] B62J *9/00*
U.S. Cl. 224—452 **11 Claims**

1. A framework of a parcel carrier for a bicycle having a bicycle frame including rear struts defining slots at bottom ends thereof and lugs adjacent the slots, respectively, a rear wheel having an axle received in the slots, and a saddle mounted to the frame, and the carrier being attachable to a rear end of the bicycle at a top anchorage afforded by the bicycle frame under the saddle, and at two bottom anchorages consisting of the lugs located at the lower ends of the rear struts of the bicycle frame near to the rear wheel axle slots, the framework comprising: a substantially rectangular top frame consisting of two mutually parallel side lateral members each having first and second opposite ends, and a forward transverse member and a rear transverse member disposed mutually parallel to one another and extending at right angles to said side lateral members, said forward transverse member connecting said side lateral members at the first ends thereof, and said rear transverse member connecting said side lateral members at the second ends thereof, each of said front and said rear transverse member



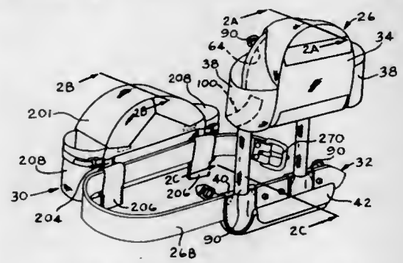
having opposite ends; a first pair of substantially parallel lateral forward members each having an upper end extending downwards, respectively directly from the opposite ends, of the forward transverse member and intersecting said first end of said side lateral member at an acute angle, each of said forward lateral members having a bottom end including means for attaching the carrier to a respective one of the bottom anchorages; a second pair of substantially parallel lateral rear members each having an upper end extending downwards, respectively, directly from the opposite ends of the rear transverse member and intersecting said second end of said side lateral member at an acute angle, said lateral rear members converging toward and connecting with bottom ends of the lateral forward members; and two lateral inner members disposed within the rectangular top frame, said lateral inner members having forwardmost ends at which the lateral inner members are secured to the forward transverse member at a central portion of the forward transverse member, and said lateral inner members diverging while extending in a direction rearwards from said front transverse member and terminating at the opposite ends of the rear transverse member from which said lateral rear members directly extend downwards, said members being secured to form non-deformable triangular lattice structures ensuring a non-deformability of the framework of the parcel carrier and thereby inhibiting both lateral oscillation of the framework and roll.

5,603,441

MULTI-PURPOSE FRONT/BACK PACK APPARATUS

Michael D. Easter, 840 J St., Penrose, Colo. 81240

Filed Oct. 24, 1994, Ser. No. 328,156
Int. Cl.[6] A45F *4/02*
U.S. Cl. 224—582 **22 Claims**



1. A multi-purpose pack apparatus adapted to be supported on a person, comprising:

a) a front back pack having a pivotal pocket member connected thereto;

b) connector means releasably and adjustably connected to said front back pack, and said connector means operable to be supported about a shoulder portion of the person;

c) said front back pack includes an expandable main pack bag selectively foldable from a collapsed position with a minimum distance from a bag closure member to a bottom wall of a bottom container housing of said main pack bag to an expanded position with a maximum distance from said bag closure member to said bottom wall of said main pack bag to selectively increase carrying capacity thereof; and

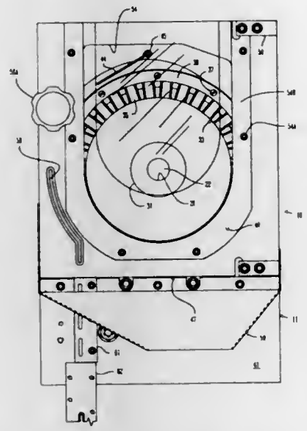
d) said pivotal pocket member movable from a first position under said expandable main pack bag when in the collapsed position to a second position laterally of said expandable main pack bag when in the expanded position in an area previously occupied by said pivotal pocket member.

5,603,442

ROTARY HOPPER FOR AN ATTACHING APPARATUS

Volker Schmidt, 4638 Todds Rd., and Erich A. Schmidt, 2415 Liberty Rd., both of Lexington, Ky. 40509

Filed Sep. 1, 1995, Ser. No. 522,764
Int. Cl.[6] B65G *29/02*
U.S. Cl. 227—119 **20 Claims**



1. A rotary hopper for fastener elements including:

a cone;

support means for rotatably supporting said cone;

a gauging ring fixed to said cone for rotation therewith;

said gauging ring having a plurality of gauging grooves therein, said gauging grooves being equally angularly spaced around said gauging ring;

a cover ring rotatable with said gauging ring so that there is no relative movement therebetween, said cover ring overlying each of said gauging grooves adjacent at least its outlet to form a separate passage for each of said gauging grooves through which a fastener element in each of said gauging grooves can fall therefrom by gravity;

receiving means at a fixed position for receiving a fastener element from each of said gauging grooves having a fastener element therein during rotation of said gauging ring by movement of each of said gauging grooves past said receiving means so that a fastener element in each of said gauging grooves may fall by gravity into said receiving means;

preventing means for preventing a fastener element in said passage for each of said gauging grooves from falling therefrom by gravity except when said gauging groove is disposed so that the fastener element therein may fall by gravity into said receiving means;

movable means for providing access to the interior of said rotary hopper;

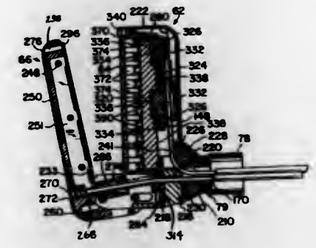
and said movable means including viewing means for viewing the interior of said rotary hopper, said viewing means being capable of holding fastener elements for supply to each of said gauging grooves.

5,603,443

SURGICAL STAPLING INSTRUMENT WITH ARTICULATED STAPLING HEAD ASSEMBLY ON ROTATABLE AND FLEXIBLE SUPPORT SHAFT

George A. Clark, East Windsor; Malcolm C. Burwell, Princeton; John A. Gola, Bordentown; Christopher Robinson, Lawrenceville, and Fred E. Snyder, Princeton Junction, all of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Division of Ser. No. 162,737, Dec. 6, 1993, Pat. No. 5,465,894.
This application May 4, 1995, Ser. No. 435,102
Int. Cl.[6] A61B *17/072*
U.S. Cl. 227—178.1 **2 Claims**



1. A surgical stapling instrument for applying one or more surgical staples to tissue, comprising:

a stapling head assembly including a first jaw which supports a staple holder for receiving one or more surgical staples, a second jaw which supports an anvil for clamping the tissue against said staple holder when said jaws are closed, and a staple driver for driving the staples from said staple holder into the tissue and against said anvil;

an actuator handle assembly including a jaw closure lever for closing said jaws to clamp the tissue between said anvil and said staple holder and a staple firing trigger for actuating said staple driver;

a shaft assembly for mounting said stapling head assembly on said actuator handle assembly;

a tissue retaining pin mounted inside one of said jaws and movable from a retracted position within said one jaw when said jaws are open to an extended position engaging the other jaw when said jaws are closed; and

actuator means on said other jaw for moving said tissue retaining pin between the retracted and extended positions; and wherein;

said tissue retaining pin is mounted on a cantilever spring arm inside said one jaw which supports said retaining pin for movement between the retracted and extended positions, and including a pin placement arm pivotally mounted inside said one jaw for engaging said cantilever spring arm and moving said tissue retaining pin from the retracted position to the extended position.

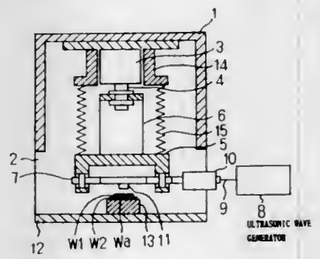
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5,603,444

ULTRASONIC BONDING MACHINE AND RESONATOR THEREOF

Shigeru Sato, Fukuoka-ken, Japan, assignor to Ultex Corporation, Fukuoka-ken, Japan

Filed Feb. 12, 1996, Ser. No. 599,803
Claims priority, application Japan, Aug. 22, 1995, 7-213439; Aug. 22, 1995, 7-213489
Int. Cl.[6] B23K *20/10;* **H01L** *21/607*
U.S. Cl. 228—1.1 **3 Claims**



1. An ultrasonic bonding machine for bonding an overlapped interface between a plurality of members to be bonded together with vibration of a vertical ultrasonic wave, the ultrasonic bonding machine comprising:

a main body in which a working space open in forward, right and left directions is formed;

a mount, located in a lower portion of the working space, for mounting the interface;

a transducer for generating the ultrasonic vibration;

a resonator, connected to the output end of the transducer, which resonates with ultrasonic vibration from the transducer and a predetermined resonance frequency and has bonding working portions projecting from the outside surface thereof and support portions projecting from the outside surface thereof at positions apart from the bonding working portions and on both sides of the bonding working portions;

a pressure mechanism which is installed inside a portion of the main body for defining an upper portion of the working space so as to form a space for taking in and out the interface between the mount and the bonding working portion by moving up the resonator connected to the transducer a predetermined distance in a direction perpendicular to the transmission direction of ultrasonic vibration from the transducer to the resonator so that the resonator parts from the mount and to pressure-hold the interface between the mount and the bonding working portion by moving down the resonator connected to the transducer a predetermined distance in a direction perpendicular to the transmission direction of ultrasonic vibration from the transducer to the resonator so that the resonator approaches the mount; and

a support member, connected to the output end of the pressure mechanism, for supporting the resonator at both ends through support portions thereof in such a manner that it is arranged horizontally in the working space above the mount.

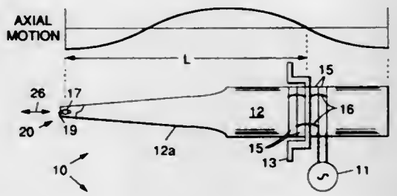
5,603,445

ULTRASONIC WIRE BONDER AND TRANSDUCER IMPROVEMENTS

William H. Hill, 36211 Pala del Norte Rd., Pala, Calif. 92059, and Joseph E. Donner, 308 Encino Dr., Vista, Calif. 92083

Filed Feb. 24, 1994, Ser. No. 201,303
Int. Cl.[6] B23K *1/06*
U.S. Cl. 228—4.5 **21 Claims**

18. In an ultrasonic wire bonder that comprises a voltage source, a wire bonding transducer including a mounting bracket and a plurality of piezoelectric discs that are electrically coupled to the voltage source and that are excited by the voltage source to



produce axial motion of the transducer, and a bonding tool secured in the wire bonding transducer adjacent an end thereof distal from the mounting bracket, wherein the improvement comprises:

an ultrasonic wire bonding transducer wherein the mounting bracket and the bonding tool are separated by a predetermined distance that is equal to ¾ of the predetermined wavelength and

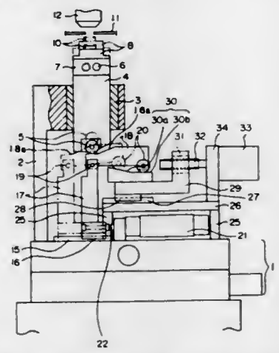
an axially disposed set screw disposed in an axial screw hole adjacent the distal end of the transducer for securing the bonding tool in the wire bonding transducer and which provides for three-point mounting of the bonding tool and wherein clamping force exerted on the bonding tool is in line with the ultrasonic motion imparted to the bonding tool.

5,603,446

BONDING APPARATUS

Eiji Kikuchi, Musashi Murayama, and Tsunebaru Arai, Fussa, both of Japan, assignors to Kabushiki Kaisha Shinkawa, Tokyo, Japan

Filed Jul. 10, 1996, Ser. No. 679,904
Claims priority, application Japan, Jul. 13, 1995, 7-199310
Int. Cl.[6] H01L *21/603*
U.S. Cl. 228—6.2 **2 Claims**



1. A bonding apparatus which has a bonding stage that carries semiconductor pellets and is installed so as to be raised and lowered and causes a pressure bonding of leads of lead frames or leads of a film carrier to bumps of a semiconductor pellet, said bonding apparatus being characterized in that said apparatus further comprises:

a standard stroke cam which raises and lowers said bonding stage;

a cam holder which supports one end of said standard stroke cam so that said cam is free to rotate, said cam holder being movable in a horizontal direction;

a standard stroke driving means which drives said cam holder in a horizontal direction;

a roller which is installed on another end of said standard stroke cam;

a linear cam used for upper limit variation, which is contacted by said roller; and

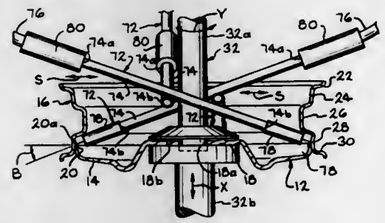
a motor used for upper limit variation which moves said linear cam used for upper limit variation so that a position of contact with said roller is altered when a raised position of the bonding stage is adjusted.

5,603,447

VEHICLE WHEEL WELDING STATION WITH CROSSED STRAIGHT WELDING TORCHES

Matthew D. Shalosky, Canton, Mich., assignor to Hayes Wheels International, Inc., Romulus, Mich.

Filed Oct. 3, 1995, Ser. No. 538,373
Int. Cl.[6] B23K *31/02*
U.S. Cl. 228—48 **9 Claims**



1. A vehicle wheel welding station comprising:

an wheel support fixture for supporting a vehicle wheel;

at least three welding torches supported relative to said wheel support fixture and movable with respect to said fixture in a generally radial direction between a retracted non-working position and an extended working position, each of said welding torches including a generally straight body defining an upper end portion and an opposite lower end portion, said upper end portion operatively connected to a conduit assembly adapted to contain and feed a weld wire into said body, and said lower end portion operatively connected to a nozzle assembly adapted to produce a weld along a selected arcuate portion of a wheel assembly;

means for rotating one of said wheel support fixture and said at least three welding torches relative to the other one of said wheel support fixture and said at least three welding torches;

said welding torches oriented in a crossing relationship relative to one another wherein said upper end portion of said body of a first one of said welding torches is located above said lower end portion of said body of an adjacent second one of said welding torches, and said lower end portion of said body of said one of said three welding torches is located below said upper end portion of said body of an adjacent third one of said welding torches.

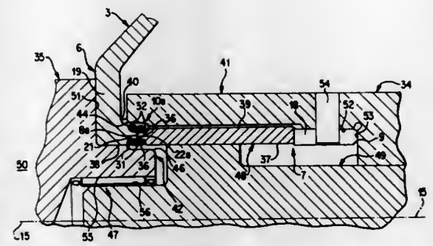
5,603,448

PROCESS AND APPARATUS FOR CYLINDRICAL JOINT FRICTION WELDING

Otto Woerner, Reutlingen; Rudolf Reinhardt, Esslingen, and Heinz Schultz, Hochdorf, all of Germany, assignors to Mercedes-Benz AG, Germany

Filed Dec. 23, 1994, Ser. No. 362,935
Claims priority, application Germany, Dec. 24, 1993, 43 44 561.6
Int. Cl.[6] B23K *20/12*
U.S. Cl. 228—114.5 **6 Claims**

1. A process for friction welding of end faces of joint parts comprising a central bearing sleeve and a coaxial single-part connecting branch having a one-piece radially extending inner hub and outer shell of a pump impeller of a hydrodynamic torque converter using respective receiving fixtures for holding the joint parts and a form tool for confining a weld bead during a weld upsetting procedure, comprising the steps of mutually displacing



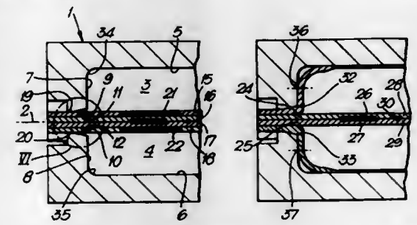
the receiving fixtures, one of which is rotatably driven about a rotational axis, along a direction of the rotational axis, and rotating during an upsetting procedure, the rotatable driven receiving fixture, pressing together narrowed axial end parts of the joint parts with the application of axial compression forces, thereby friction welding the joint parts in the region of a bonding zone situated at adjacent end faces thereof, and defining a geometric end shape of the weld bead following completion of the upsetting procedure by the form tool which is fixed relative to the one receiving fixture such that, the plastic material forced out of the bonding zone during the upsetting procedure is brought into the end shape, without cutting, by a form face of the form tool, no later than completion of the upsetting procedure.

5,603,449

FORMING OF DIFFUSION BONDED JOINTS IN SUPERPLASTICALLY FORMED METAL STRUCTURES

Martin H. Mansbridge, and David J. Irwin, both of Bristol, Great Britain, assignors to British Aerospace Public Limited Company, Farnborough, England

Continuation of Ser. No. 163,800, Dec. 9, 1993, abandoned.
This application Mar. 28, 1995, Ser. No. 411,930
Claims priority, application United Kingdom, Dec. 9, 1992, 92 25 702.1
Int. Cl.[6] B23K *20/00;31/00*
U.S. Cl. 228—157 **7 Claims**



1. A method of forming a diffusion bonded joint during superplastic forming of a hollow metal structure from sheet material using a two piece die having opposed clenching faces disposed along a split line thereof, the structure being formed with a joint at the split line, the method including the steps of:

placing at least two metal sheets between the faces;

clenching the sheets with a pressure sufficient to locate the sheets during superplastic forming thereof but insufficient to deform the metal sheets so as to significantly restrict superplastic flow in the sheets between the clenching faces;

heating the sheets to a temperature to allow superplastic forming and diffusion bonding to take place;

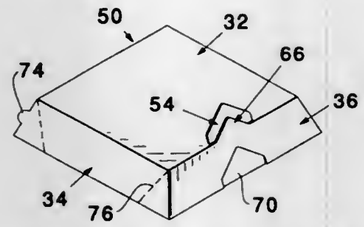
applying a gas pressure between the sheets whereby to commence superplastic forming thereof to the shape of the die;

upon substantial cessation of superplastic metal flow between the clenching faces, increasing the pressure on the sheets via the clenching faces to upset forge metal from between the faces in a direction toward the interior of the die and create a greater thickness of metal at the split line;

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in which the increase in pressure on the sheets is applied when sheets which come into direct contact with the internal die surfaces have first contacted the internal die surfaces in the region of the split line, before superplastic forming is complete.

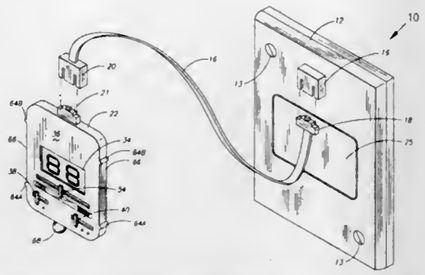
5,603,450
COVERED CARTON
Simon Whitnell, Exton, Pa., assignor to Dopaco, Inc., Downingtown, Pa.
Filed Nov. 8, 1995, Ser. No. 555,049
Int. Cl.[6] B65D *5/20*
U.S. Cl. 229—148 **16 Claims**



1. A folded paperboard fast food carton comprising a tray and a lid integral therewith; said tray including a bottom panel having a periphery, adjacent peripheral walls encircling said periphery with each wall having an inner edge integral with said bottom panel at said periphery, and an outer edge, said peripheral walls comprising a rear wall with an integral hinge-forming fold line defined along the inner edge thereof, a forward wall and at least one intermediate wall, said forward and intermediate walls being foldable relative to said bottom panel along the inner edges thereof, said forward and intermediate walls each having opposed ends free of corresponding ends of adjacent ones of the walls; said lid including a top panel having a periphery generally coextensive with the periphery of the bottom panel, the outer edge of said rear wall being integral with the periphery of said top panel, said lid including adjacent forward and intermediate walls substantially coextensive with the corresponding forward and intermediate walls of said tray, said rear wall and said forward and intermediate walls of said lid each having opposed ends immediately adjoining and joined to corresponding ends of adjacent ones of the lid walls to define a fixed peripheral wall structure on said lid, said lid having a first open position pivotally removed from said tray, and a second closed position overlying said tray and enclosing said tray forward and intermediate walls, said tray forward and intermediate walls being outwardly biased relative to said tray bottom panel and engagable respectfully against the forward and intermediate walls of said lid in said second position for inward retention by said lid walls.

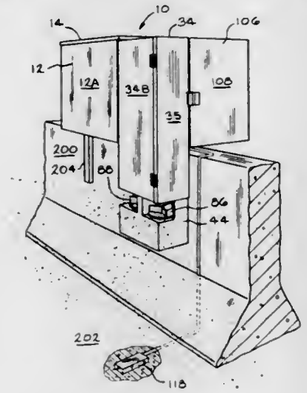
5,603,451
AESTHETIC THERMOSTAT
John W. Helander, 8703 S. Winston Ave., Tulsa, Okla. 74137; David Baumann; Chean F. Fong, both of Tulsa, Okla., and Mark Szewczul, Windsor, Canada, assignors to John W. Helander, Tulsa, Okla.
Filed Mar. 31, 1995, Ser. No. 414,286
Int. Cl.[6] G05D *23/00*
U.S. Cl. 236—51 **7 Claims**

1. A thermostat for use inside a building comprising:
a wall-mounted unit,
a remote unit comprised of a base portion and a movable portion; a connecting cable flexibly connecting said remote unit to said wall-mounted unit and means for movably attaching said remote unit to a room furnishing,



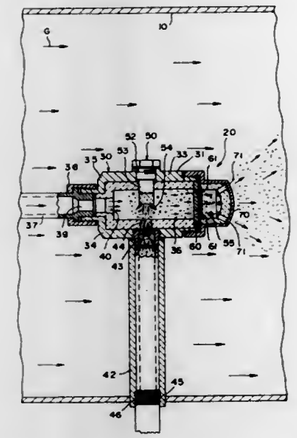
said base portion provided with said means for movably attaching said remote unit to a room furnishing,
said a movable portion being removably received by said base portion, said connecting cable being attached to said movable unit in order to flexibly connect said remote unit to said wall-mounted unit,
said base portion being provided with "U" shaped sides which form a track for movably receiving said movable portion, and
a knob being provided on said movable portion for gripping said movable portion.

5,603,452
STATIONARY SPREADER
Harvey L. Hester, 1920 W. Hillsdale, Lansing, Mich. 48915
Filed Aug. 31, 1995, Ser. No. 521,919
Int. Cl.[6] A01C *17/00*
U.S. Cl. 239—1 **66 Claims**

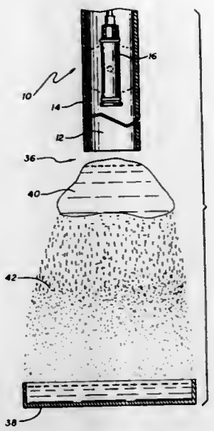


1. A stationary spreader apparatus to be located adjacent a ground surface for spreading a material on the ground surface to treat the ground surface, which comprises:
(a) a storage container having at least one opening for dispensing the material;
(b) a vertically movable spreader means having an inlet connected to the opening in the storage container and having an outlet for spreading the material including;
(i) a movement means connected to the spreader means for moving the spreader means in a vertical direction toward and away from the ground surface;
(ii) a dispensing means mounted between the inlet and the outlet of the spreader means for moving the material through the outlet; and
(c) a control means connected to the movement means and the dispensing means for activating the movement means to move the spreader means in a vertical direction toward the ground surface and for activating the dispensing means to dispense the material on the ground surface.

5,603,453
DUAL FLUID SPRAY NOZZLE
Edwin H. Weaver, Lafayette, N.J., and Jean-Francois Vicard, Lyon, France, assignors to LAB S.A., Lyon, France
Filed Dec. 30, 1994, Ser. No. 366,600
Int. Cl.[6] B05B *7/04*
U.S. Cl. 239—8 **31 Claims**



1. A dual fluid spray nozzle, comprising:
a body defining a first atomization chamber, and inlet means in said body for introducing an atomizing fluid and a liquid into said first atomization chamber;
initial atomization means disposed in said first atomization chamber to initially atomize liquid introduced therein via said inlet means;
a second atomization chamber downstream of said first atomization chamber, a plate having a plurality of spaced passages therethrough through which an initially atomized liquid must pass before entering into said second atomization chamber and thereby further atomized;
and a nozzle tip mounted to said body downstream of said second atomization chamber, said nozzle tip defining a plurality of discharge openings through which the further atomized liquid from said second atomization chamber is discharged.

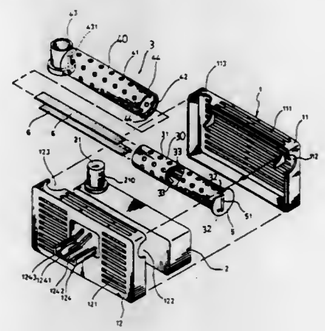


a control valve that provides fluid communication between said inflatable valve and the source of pressurized working fluid to inflate said inflatable valve when said control valve is in a first state, and vents and deflates said inflatable valve when said control valve is in a second state, wherein said inflatable valve rapidly deflates and inflates to create a slug of fluid that is released from said pipe; and,
a pool located below said pipe.

5,603,454
WATER DISPLAY PENDANT WATER DROPPER
William Knapp, Menlo Park, and Mark Fuller, Studio City, both of Calif., assignors to Wet Design, Universal City, Calif.
Filed Aug. 2, 1994, Ser. No. 285,621
Int. Cl.[6] F16K *31/12*; **B05B** *17/08*
U.S. Cl. 239—17 **6 Claims**

1. A water display that is connected to a source of pressurized working fluid, comprising:
a pipe with an inner channel that can transport a display fluid, said water pipe being suspended from a structure;
an inflatable valve that can be inflated with a working fluid to close said inner channel and prevent fluid from flowing through said pipe, and deflated to allow the display fluid to flow through said pipe;

5,603,455
DEODORIZER CONTAINER
Shi Huang Lin, P.O. Box 82-144, Taipei, Taiwan
Filed Oct. 24, 1995, Ser. No. 547,130
Int. Cl.[6] A24F *25/00*
U.S. Cl. 239—44 **6 Claims**



1. A deodorizer container comprising:
a casing;
an inner container fitted into said casing and designed for receiving liquid deodorizer, said inner container being provided with a spray nozzle at a top thereof; and
an evaporation controller including an outer tube and an inner tube rotatably fitted into the outer tube, said outer tube being formed with a plurality of perforations, said outer tube being provided at an end with a cylindrical portion communicated with said outer tube through a slot, said cylindrical portion being adapted to receive the spray nozzle of said inner container, said inner tube being formed with a plurality of perforations aligned with the perforations of said outer tube.

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5,603,456

LIQUID FUEL BURNER

Takamasa Akimoto; Masaki Fujiwara, both of Shiga; Hiroshi Sanui, Kanagawa; Kimio Iino, and Hiroshi Igarashi, both of Yamanashi, all of Japan, assignors to Nippon Sanso Corporation, Tokyo, Japan

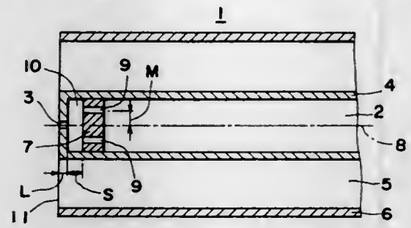
PCT No. PCT/JP94/00334, § 371 Date Feb. 7, 1995, § 102(e) Date Feb. 7, 1995, PCT Pub. No. WO94/29645, PCT Pub. Date Jan. 22, 1994

PCT Filed Mar. 2, 1994, Ser. No. 381,862

Claims priority, application Japan, Jun. 10, 1993, 5-138636

Int. Cl.[6] B05B *7/06;7/10*

U.S. Cl. 239—406 **9 Claims**



1. A liquid fuel burner composed of a fuel feed pipe having a fuel spray nozzle at a distal end, a combustion-assisting gas feed pipe disposed concentrically about said fuel feed pipe to cooperate therewith to form a combustion-assisting gas passage, and a member containing an orifice disposed within said fuel feed pipe in spaced relation from said fuel spray nozzle wherein the center line of said orifice of said member and the center line of said fuel spray nozzle of said fuel feed pipe are mutually parallel and eccentric.

5,603,457

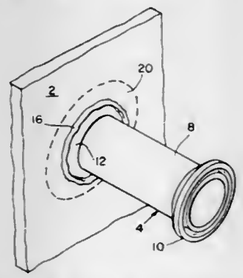
TRANSFER PANEL NOZZLE

Philip W. Sidmore, 5 Cedar Point Rd., Durham, N.H. 03824; Randolph A. Cotter, 2 Carol Ann Rd., Lynnfield, Mass. 01940, and Harry H. Durgin, 35 Ruby Rd., Portsmouth, N.H. 03801

Filed Sep. 16, 1994, Ser. No. 307,143

Int. Cl.[6] B05B *1/00*

U.S. Cl. 239—600 **9 Claims**



1. A transfer device for liquids such as pharmaceuticals comprising:

a two-sided panel structure;

a circular transfer nozzle projecting through the panel structure;

the nozzle having inner and outer surfaces and one end adapted for connection to a transfer tube;

a ring surrounding an intermediate portion of the nozzle and spaced from said one end for securing the nozzle to the panel structure,

the ring having two parallel faces and an outer periphery which is larger than the outer surface of the circular nozzle;

a circular weldment joining the outer periphery of the ring to the panel structure, such that the weldment is spaced from the nozzle;

a flat, polished surface on the panel structure on the side which faces the said one end of the nozzle including the circular weldment and a circular area of the panel structure surrounding the weldment; and

the distance between the two parallel faces of the ring is essentially the same as the distance between the two sides of the panel structure.

5,603,458

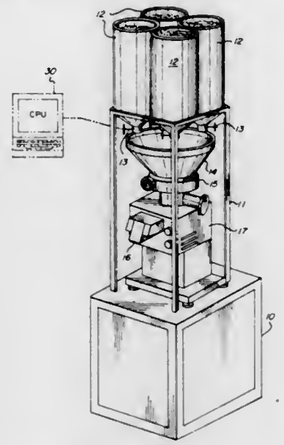
COFFEE BLENDING APPARATUS

Raffael Sandolo, 226 Thayer Pond Rd., Wilton, Conn. 06897

Filed May 8, 1995, Ser. No. 437,176

Int. Cl.[6] B02C *19/12*

U.S. Cl. 241—34 **7 Claims**



1. An apparatus for personalizing and custom blending a mixture of several different types of coffees comprising:

a plurality of supply hoppers, each of said suppiy hoppers defining a supply source for each of the different coffees from which a selection can be made,

each of said hoppers having a discharge opening,

a hopper discharge valve for valving the discharge opening of the respective hoppers between an opened and closed position,

a scale disposed adjacent the discharge openings of the respective hoppers for receiving the contents of the respective hoppers when said hopper discharge valves are actuated,

said scale having a discharge opening,

and a scale valve for valving said scale discharge opening,

a bagging station connected in communication with said scale opening so that upon actuation of said scale valve, the contents being weighed by the scale are directed to said bagging station,

and a central processing unit,

said central processing unit being programmed to sequence the actuation of said valve means for controlling the amount and type of coffee discharged from the respective hoppers to be mixed in accordance with a predetermined selection.

5,603,459

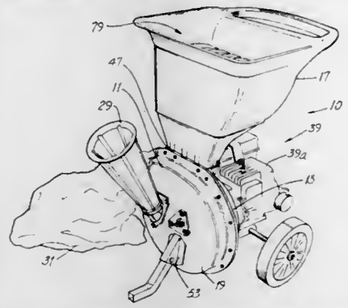
CHIPPER-SHREDDER WITH ENHANCED USER FEATURES

Thomas W. Gearing, Wauwatosa, and Andrew W. Haver, West Bend, both of Wis., assignors to The Patriot Company, Milwaukee, Wis.

Filed Aug. 15, 1994, Ser. No. 290,547

Int. Cl.[6] B02C *13/02*

U.S. Cl. 241—56 **5 Claims**



4. In a chipper-shredder machine having (a) a fan chamber, (b) a fan rotating in the chamber about an axis of rotation and (c) a fan discharge port, the improvement wherein:

the chamber is bounded in part by a divider plate;

a fan discharge path extends between the chamber and the port;

the discharge path has a first dimension measured from the divider plate generally parallel to the axis of rotation;

the first dimension progressively increases from the chamber to the port;

the discharge path has an externally-exposed path wall angled with respect to the divider plate; and

the discharge path is bounded by an externally-exposed edge of demarcation separating the path from the fan chamber.

5,603,460

SPLIT CONE THREAD PACKAGES

Alexander Reid, Leicester, Great Britain, assignor to Donisthorpe & Company Limited, Leicester, Great Britain

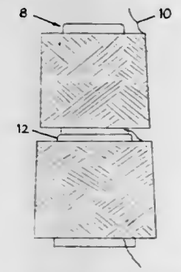
PCT No. PCT/GB93/01501, § 371 Date Jan. 27, 1995, § 102(e) Date Jan. 27, 1995, PCT Pub. No. WO94/03387, PCT Pub. Date Feb. 17, 1994

PCT Filed Jul. 16, 1993, Ser. No. 374,781

Claims priority, application United Kingdom, Aug. 5, 1992, 9216617

Int. Cl.[6] B65H *54/00;75/10;75/28*

U.S. Cl. 242—18 A **7 Claims**



1. A hollow cone on which a thread is wound, said cone having a generally cylindrical configuration disposed about a vertical axis, comprising:

an upper and head end of the cone of a first diameter, said head end having an annular rim that defines an outwardly facing bead;

a lower and tail end of the cone of a second and larger diameter than said first diameter, said tail end having an inward facing annular protrusion;

a central frangible section of the cone located between the head end and the tail end of the cone which maintains a vertical spacing between said ends, said frangible section comprised of a thin membrane integrally connecting said head and tail ends, said membrane being easily broken such that said cone ends can be pushed axially together, wherein said outwardly facing bead is urged over said inwardly facing protrusion and into releasable engagement, thereby forming a shortened cone with a reduced space between said cone ends.

5,603,461

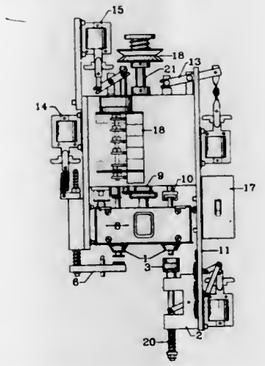
FULLY AUTOMATIC BOBBIN WINDING MACHINE

Louise Galbreath, 6499 Hwy 137, Valley Head, Ala. 35989

Filed Apr. 3, 1995, Ser. No. 415,933

Int. Cl.[6] B65H *54/00;67/044*

U.S. Cl. 242—18 A **2 Claims**



1. A fully automatic bobbin winding machine for continuously ejecting a full bobbin from a spindle and loading a new bobbin onto the spindle while continuously winding a bobbin on another spindle at very high speed comprising:

a bobbin feed device for feeding bobbins to the spindles;

an ejector device with an ejector shaft for ejecting the full bobbins from the spindles;

a rotatable turret with the spindles secured onto the turret;

a main shaft rotated by energy means for providing continuous speed-power and wherein the main shaft is both controllably coupled to the turret for controlling the rotation of the turret and continuously rotationally driving the spindles;

a control device for controlling the rotation of the turret for positioning the spindles, controlling the ejector shaft for ejecting the full bobbins and controlling turret pen shaft for engaging the turret in a desired position;

a device for programming the control device for the rotation of the turret turn at the preprogrammed interval and controlling the movement of ejector device and bobbin feed device as preprogrammed, also controlling the preprogramming of the number of bobbins wound per minute according to the yards desired on each bobbin.

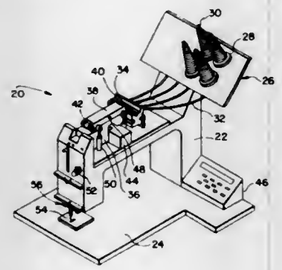
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5,603,462

CHANGING THREADS IN A SEWING MACHINE

Daniel J. Conrad; Luther Stoddard, both of Longmont; Michael G. Weir, Golden; Samuel Padgett, Denver; Dean Pearson, Arvada; Karl Kott, Como, all of Colo., and Kurt L. Beldorf, Kaiserslautern, Germany, assignors to Melco Industries, Inc., Denver, Colo.

Filed Sep. 9, 1993, Ser. No. 118,922
Int. Cl.[6] B65H *69/04;57/00;20/24;* D05B *47/00*
U.S. Cl. 242—35.6 R 42 Claims



1. An apparatus for splicing a first thread with a second thread, comprising:

a thread tree having a number of spools with each having a thread and including at least a first spool having a first thread and a second spool having a second thread;

a thread clamp assembly for releasably holding at least one of the first thread and the second thread; a splicing device for splicing the first and second threads together;

a carriage assembly for locating the second thread selected from the number of threads in a desired position relative to said splicing device;

means for moving at least one of the first and second threads relative to said splicing device, said means for moving including a rocker having at least a first roller connected thereto with said rocker being pivotal among a first rocker position, a second rocker position and a neutral position; and

a thread trimming device for cutting the first thread;

wherein said thread clamp assembly, said means for moving and said thread trimming device are operatively interconnected to facilitate thread clamping, moving and trimming.

18. A method for splicing a first thread with a second thread, comprising:

providing a first thread;

locating a second thread in desired positions relative to a splicing device;

trimming said first thread to provide a end;

causing said second thread to be positioned in a passageway of said splicing device; and

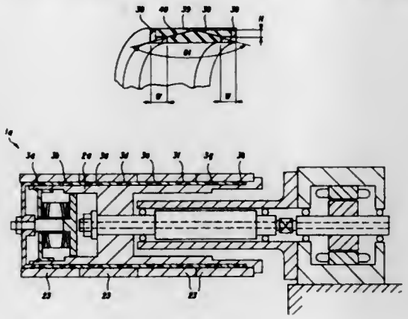
splicing said first and second threads together using said splicing device after said trimming step and by supplying air to said splicing device to create a turbulent air flow over said first and second threads, with both of said first and second threads moving in a first direction along lengths of said first and second threads and then moving in a second direction along length of said first and second threads during the time-said first thread and said second-thread are being spliced together.

5,603,463

BOBBIN HOLDER AND TAKE-UP DEVICE EQUIPPED WITH THE BOBBIN HOLDER

Ichiro Kumo, Shiga-ken; Kozo Okumura, Kyoto; Takao Sano, and Tosihiro Hayasi, both of Shiga-ken, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

PCT No. PCT/JP94/01154, § 371 Date Mar. 7, 1995, § 102(e) Date Mar. 7, 1995, PCT Pub. No. WO95/02551, PCT Pub. Date Jan. 26, 1995
PCT Filed Jul. 14, 1994, Ser. No. 392,742
Claims priority, application Japan, Jul. 14, 1993, 5-174233
Int. Cl.[6] B65H *75/30;75/24*
U.S. Cl. 242—46.4 16 Claims



1. A bobbin holder comprising a driving shaft, a rotary cylinder which is rotated by said driving shaft and over an outer peripheral surface of which a plurality of bobbins are fitted, flexible rings loosely fitted between said bobbins and said rotary cylinder, means for imparting a compressive force to said flexible rings from a side surface direction and means for imparting a release force to said flexible rings against said compressive force, said flexible ring comprising:

(A) a spring member exhibiting substantially a ring-like shape, a cross section shape thereof in the direction of said driving shaft being convex in a radial direction toward an outer diameter of said spring member;

(B) rigid rings encompass said spring member,

wherein said flexible ring is capable of being deformed by said compressive force to increase a diameter thereof and grip said bobbin from an inner peripheral surface side.

5,603,464

LOW ABRASION RESISTANCE FIBER CAKE AND METHOD OF MANUFACTURING THE SAME

Kenzo Watabe; Takehiro Matsumoto, both of Koriyama; Mitsuo Tanji, Fukushima; Keizo Yamashita, and Tadashi Endo, both of Koriyama, all of Japan, assignors to Nitto Glass Fiber Mfg. Co., Ltd., Koriyama, Japan

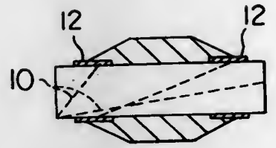
Continuation of Ser. No. 99,094, Jul. 28, 1993, abandoned.
This application Nov. 17, 1995, Ser. No. 559,803
Claims priority, application Japan, Aug. 6, 1992, 4-210085
Int. Cl.[6] B65H *18/28;54/00*
U.S. Cl. 242—165 12 Claims

1. A method of producing a low abrasion resistance fiber cake comprising:

temporarily winding a strand comprising low resistance fibers on a front end portion of a collet;

moving the strand to a position which causes the strand to engage with a traversing device to form an end yarn extending along a winding tube fitted on the collet from a distal end of the winding robe to a first predetermined axial position between a midpoint and the distal end of the winding tube;

traversing the strand that is continuous from the end yarn by the traversing device to form a waste yarn wound on the winding



robe between said first predetermined axial position and a second predetermined axial position which is adjacent to said distal end of the winding tube to cover at least a part of said end yam; and

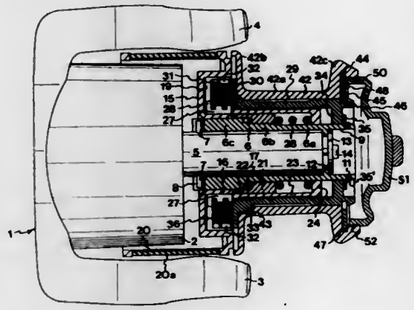
winding the strand that is continuous from said waste yam on the winding tube while axially reciprocating said traversing device to form a cake such that an innermost strand layer of said cake in at least one end portion of said cake, on the side of said distal end, is in contact with said waste yam and is spaced from said end yarn.

5,603,465

FISHING REEL DRAG WITH ADJUSTING KNOB BEHIND THE SPOOL

Bengt-Åke Henriksson, Svängsta, Sweden, assignor to ABU AB, Svängsta, Sweden

Filed Jul. 27, 1995, Ser. No. 508,073
Int. Cl.[6] A01K *89/02*
U.S. Cl. 242—246 8 Claims



1. A line spool assembly for mounting on a spindle of an open-face fishing reel of the fixed-spool type, the spindle having a front free end, the line spool assembly comprising:

a hollow shaft non-rotatably mountable on said spindle and having a front portion, a rear portion and an externally threaded intermediate portion;

a line spool rotatably mounted on said shaft,

a line spool drag for adjustable braking of the rotation of said line spool around the shaft, said line spool drag having at least two drag washers, one of which is non-rotatably connected to said shaft and the other is non-rotatably connected to the line spool and which are in rotation-impeding frictional engagement with each other;

an adjusting knob for adjusting the braking effect of said line spool drag, said knob being rotatably mounted on the rear portion of said shaft behind the line spool; and

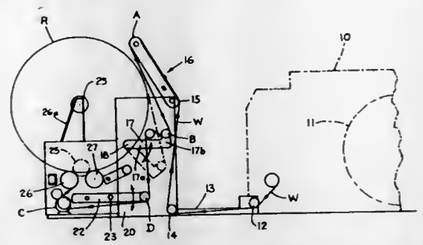
an adjusting nut which is non-rotatably connected to said adjusting knob and which is in threaded engagement with the threaded intermediate portion of said shaft in order to press, via a resilient member, the drag washers towards each other by a force adjustable by rotation of said adjusting knob.

5,603,466

ACCUMULATOR APPARATUS AND METHOD FOR USE WITH A WEB PRODUCING MACHINE

William J. Alexander, III, P.O. Box 848, Mauldin, S.C. 29662

Filed Jun. 8, 1995, Ser. No. 489,020
Int. Cl.[6] B65H *23/18*
U.S. Cl. 242—413.5 5 Claims



1. Accumulator apparatus for use in a takeup driving a web roll for winding a web from a producing machine comprising:

means guiding said web proceeding from said producing machine on a downward path preparatory to being wound on said web roll;

said means guiding said web including

a stationary upper guide member over which said web passes downwardly;

an oscillator roll engaging said web proceeding from said producing machine on said downward path and being movable responsive to variations in tension in said web to vary the length of said downward path;

means driving said web roll for taking up said web thereon; and

tension sensing means at a lower end in said path engaging said web moving downwardly from said oscillator roll controlling said takeup driving said web roll;

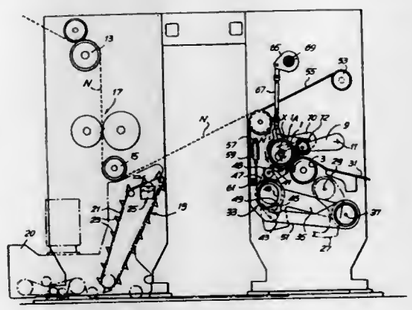
whereby varying the length of said path permits said takeup to vary its speed or discontinue operation without necessitating a change in the operation of the producing machine.

5,603,467

REWINDER FOR PRODUCING LOGS OF WEB MATERIAL, SELECTIVELY WITH OR WITHOUT A WINDING CORE

Eva Perini, S. Michele a Moriano, and Guglielmo Biagiotti, Capannori, both of Italy, assignors to Fabio Perini S.p.A., Lucca, Italy

Continuation of Ser. No. 381,857, Feb. 7, 1995, abandoned.
This application Feb. 8, 1996, Ser. No. 598,466
Claims priority, application Italy, Jun. 9, 1993, FI93A0109
Int. Cl.[6] B65H *18/20;19/30*
U.S. Cl. 242—521 16 Claims



1. An automatic surface rewinder for winding web material (N) in logs or rolls (R), including: a first winder roller (1; 101); a second winder roller (3; 103) which defines with the first winder roller a nip (5; 105) through which the web material (N) is fed; feeding means (19, 21; 119, 121) to feed cores (A) on which the web material is to be wound for the formation of rolls or logs; and insertion means (27; 127) for inserting the cores into said nip characterized in that:

the core feeding means (19, 21; 119, 121) and the core insertion means (27; 127) being movable to an inoperative position;

and coreless winding means (33; 133) are included selectively to start the winding of coreless logs of web material, said winding means being operable alternately when the core feeding means and the core insertion means are in an inoperative position.

5,603,468

TUBE COUPLING SYSTEM FOR SPINDLES OF SPINNING OR TWISTING MACHINES

Hans Stahlecker, Süssen, and Gerd Stahlecker, Eislingen/Fils, both of Germany, assignors to Novibra GmbH, Suessen, Germany

Filed May 10, 1995, Ser. No. 438,552

Claims priority, application Germany, Aug. 30, 1994, 44 30 709.8

Int. Cl.[6] B65H *16/02;18/02*

U.S. Cl. 242—571.6 **27 Claims**



1. A tube coupling system for coupling a tube to a spindle of a textile spinning or twisting machine, comprising:

a radially extending bore hole in an upper spindle part,

a centrifugal body slidably disposed in the bore hole, said centrifugal body having a radially outward facing coupling surface for clampingly engaging with an inside surface of a tube placed over the spindle in response to rotation of the spindle,

and a reduced cross section radial outer end of the bore hole adjacent a circumferential surface of the spindle providing an abutment surface for preventing the centrifugal body from falling out during rotation of the spindle without a tube,

wherein the centrifugal bodies limit the inward radial motion of one another.

5,603,469

ANCHORING DEVICE FOR SECURING AN END PIECE OF A CORD WOUND UP ONTO A STORAGE REEL

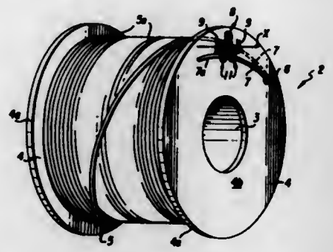
Vasco Stocchi, Montevarchi (AR), Italy, assignor to Pirelli Coordinamento Pneumatici S.P.A., Milan, Italy

Filed Nov. 16, 1994, Ser. No. 341,144

Claims priority, application Italy, Nov. 16, 1993, MI93A02433

Int. Cl.[6] B65H *19/29;75/28;* **A41F** *1/00*

U.S. Cl. 242—580 **8 Claims**



7. A clip for clamping an elongated element against a rest surface, comprising;

an elongated spring element having end portions which are disposed at opposite ends of said spring element along a pivot axis parallel to said rest surface, for being rotatably engaged into corresponding holding means which are formed on said rest surface at mutually facing positions, said spring element being bent in consecutively opposite portions lying in a common plane disposed close by and parallel to said rest surface in order to form a leaf spring having at least two retaining loops extending substantially perpendicular to the pivot axis and arranged to operatively engage said elongated element against said rest surface;

at least one counter-loop projecting perpendicular to the pivot axis on the opposite side from the retaining loops and resting against said surface for elastically counteracting moving apart of the retaining loops from said rest surface, following the insertion of said elongated element between the rest surface and retaining loops; said spring element having a substantially "W" shape, said retaining loops and said at least one counter-loop forming respective bent portions of said "W" shape, said at least one counter-loop being disposed at a substantially centered position in said "W" shape and relative to said retaining loops.

5,603,470

AIRBORNE TOWED AEROBODY EMPLOYING AN EXPENDABLE TOWING/DEPLOYMENT MECHANISM

Patrick J. Fitzgerald, Northridge; Joseph A. Wysocki, Malibu; John Fialko, Long Beach, all of Calif., and Ronald B. Chesler, Tucson, Ariz., assignors to Hughes Electronics, Los Angeles, Calif.

Filed Jan. 11, 1995, Ser. No. 371,259

Int. Cl.[6] B64D *3/00;* **B64F** *1/04;* **B63B** *21/60;* **F41F** *5/00*

U.S. Cl. 244—1 TD **13 Claims**

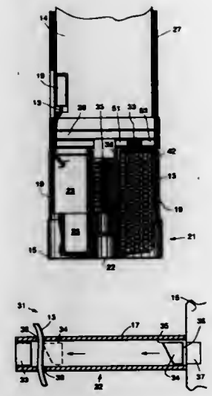
1. A mechanical launching and regulation system that provides for launching of a towed aerobody and controlling tow line payout between the towed aerobody and a towing vehicle, said system comprising:

a housing;

a nonrotating member disposed in the housing;

a tow line wound around the nonrotating member and coupled between the towed aerobody and the towing vehicle;

regulation mechanism adapted to regulate unwinding of the tow line from the nonrotating member during payout of the tow line;



a plurality of impulse cartridges disposed in the housing for deploying the aerobody and severing the tow line at a predetermined time; a wedge-shaped tube disposed in the housing and

a spring piston disposed inside the wedge-shaped tube that is adapted to confine expanding gasses within the tube that are generated by a selected one of the impulse cartridges and that is adapted to move the spring piston and launch the towed aerobody.

5,603,471

DUCTED FAN TURBINE ENGINE NOZZLE ASSEMBLY

Norman Armstrong, Newtownards, Northern Ireland, assignor to Short Brothers PLC, Belfast, Northern Ireland

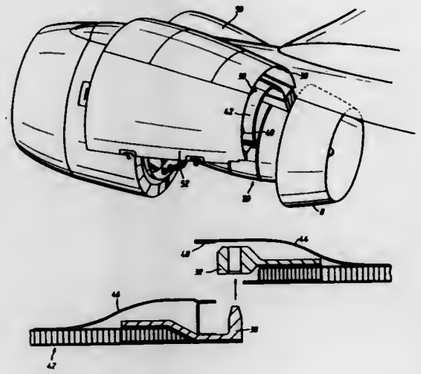
PCT No. PCT/GB92/01747, § 371 Date Mar. 23, 1994, § 102(e) Date Mar. 23, 1994, PCT Pub. No. WO93/06006, PCT Pub. Date Apr. 1, 1993

PCT Filed Sep. 23, 1992, Ser. No. 211,213

Claims priority, application United Kingdom, Sep. 27, 1991, 9120658

Int. Cl.[6] B64C *7/02*

U.S. Cl. 244—53 R **8 Claims**



1. A ducted fan turbine engine nozzle assembly comprising an inner assembly including an inner discharge nozzle and an outer assembly having a nacelle and an outer discharge nozzle characterized by mounting means whereby the outer discharge nozzle is detachably mounted on the nacelle for transmission of substantially all flight loads through the nacelle.

5,603,472

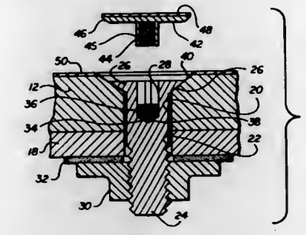
FLUSH MOUNTED PANEL FASTENER

Charles G. Hutter, III, Carson City, Nev., assignor to Physical Systems, Inc., Carson City, Nev.

Filed Jun. 7, 1995, Ser. No. 475,179

Int. Cl.[6] B64C *1/12;* **F16B** *19/02;41/00*

U.S. Cl. 244—132 **15 Claims**



1. A panel fastener, comprising:

a fastener element having a shank and an enlarged head at one end of said shank, said head having a driving recess formed therein;

a first magnetic element mounted within said driving recess; and

a fastener cap including a plate having a size and shape to substantially overlie and cover said head, and a second magnetic element carried by said plate for slide-fit reception into said driving recess in magnetically coupled relation with said first magnetic element for magnetically retaining said fastener cap on said fastener element.

5,603,473

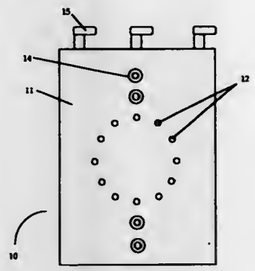
COVER PLATE FOR TUBE CONNECTIONS

Michael Shotey, 7272 E. Gainey Ranch Rd., #29, Scottsdale, Ariz. 85258

Filed May 19, 1995, Ser. No. 445,264

Int. Cl.[6] F16L *3/22*

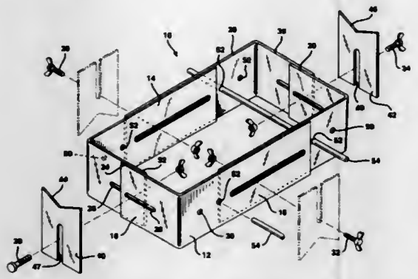
U.S. Cl. 248—68.1 **3 Claims**



1. A cover plate for use with a pesticide distributing system having a plurality of tubes disposed within the structures of a building, the cover plate comprising: a front surface and a back surface; and a plurality of apertures extending through the cover plate from the back surface to said front surface, each said aperture including chamfer means therein for connecting the tubes to respective ones of the apertures; and the apertures providing fluid communication of the pesticide from the front surface of the cover plate to the tubes.

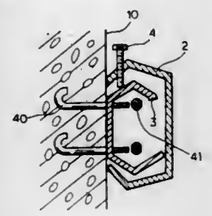
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5,603,474
ADJUSTABLE SUPPORT FOR HOBBYIST
George E. Weber, 65 Brewster Cir., Hanover, Pa. 17331
Filed May 16, 1995, Ser. No. 441,753
Int. Cl.[6] A45D *19/04*
U.S. Cl. 248—127 8 Claims



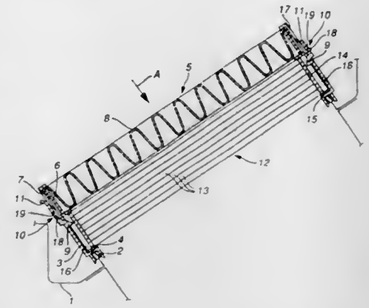
1. An adjustable support for holding a model in a working position for a hobbyist, including a quadrilateral frame formed by respective L-shaped members having portions overlapping one another, said frame having opposing side walls and opposing end walls, said side walls each having respective portions of the L-shaped members overlapping one another and having elongate slots aligned with one another for receiving a pin and said end walls each having respective portions of the L-shaped members overlapping one another and having longitudinal slots aligned with one another for receiving another pin, each of the overlapping portions of the end walls and sidewalls are slidably and pivotally connected such that the length of said side walls or said end walls can be varied while the pitch of the overlapping portions can be adjusted to enable models of various designs to be held securely in position for the hobbyist.

5,603,475
RACK STRUCTURE
Yang-mook Lim, 805, Jinheung Apt. 3-dong, Dunchon 2-dong, Kangdong-ku, Seoul, Rep. of Korea
Filed Jan. 3, 1994, Ser. No. 176,711
Claims priority, application Rep. of Korea, Jan. 11, 1993, 93-276
Int. Cl.[6] A47B *96/06*
U.S. Cl. 248—222.14 2 Claims



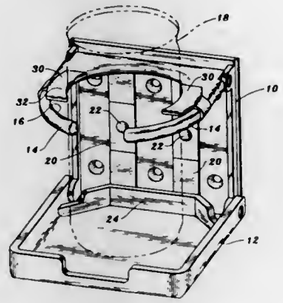
1. A rack structure for hanging an object on a wall, said rack structure comprising:
an installing part having a flat mounting panel with opposed top and bottom ends, an outer surface for mounting the object to be hung on the wall and an opposed inner surface, top and bottom outer supports projecting from the respective top and bottom ends of the mounting panel and having wall mounting edges for engagement on the wall, said outer top support including a threaded bolt hole passing therethrough;
a fixing part disposed between the top and bottom supports of the installing part, said fixing part including a planar base for engaging the wall, said base having opposed top and bottom ends and top and bottom holes formed through said base, a top inner support projecting unitarily from said top end of said base and having a portion projecting angularly toward said top outer support, a bottom inner support extending from said bottom end of said base and into contact with portions of the inner surface of the mounting panel of the installing part in proximity to the bottom outer support;
a bolt threadedly engaged in the bolt hole of the top outer support and having an end engaging the angularly projecting portion of the top inner support; and
top and bottom screws passing through the holes of the base of the fixing part and into the wall, for securing the fixing part to the wall;
whereby moments generated by gravitational forces on the object are resisted by the bolt to hold the top outer support adjacent the wall; and
whereby the bottom inner support and the bottom outer support resist inward movement of the bottom end of the mounting panel toward the wall in response to moments generated by gravitational forces acting on the object.

5,603,476
FILTER HOLDER IN A MOTOR VEHICLE
Helmut Merk, Herrenberg; Alfred Jeckel, Rottenberg, and Thomas Dietterle, Simmozheim, all of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany
Filed Jul. 14, 1995, Ser. No. 502,973
Claims priority, application Germany, Jul. 14, 1994, 44 24 805.9
Int. Cl.[6] A47F *5/00*; B60H *3/06*
U.S. Cl. 248—309.1 12 Claims



1. A filter holder assembly for holding a dust filter and an optionally provided absorption filter in a motor vehicle air duct, said filter holder assembly comprising:
a frame lower part having dust filter latching hooks engageable over an edge of a dust filter to hold the dust filter in position when used without an absorption filter, and
a frame upper part selectively connectable with the frame lower part by holders such that the frame lower part supports an absorption filter with the latching hooks inactively disposed in grooves in the absorption filter while the frame upper part supports the dust filters.
wherein the latching hooks and holders are resiliently supported at the frame lower part to be manually movable to accommodate exchange of said filters.

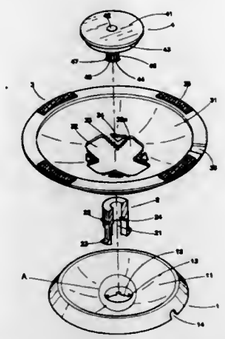
5,603,477
APPARATUS FOR SUPPORTING A BEVERAGE CONTAINER
Peter K. Deutsch, Novato, Calif., assignor to Marinco, Napa, Calif.
Filed Sep. 20, 1995, Ser. No. 531,044
Int. Cl.[6] A47K *1/08*
U.S. Cl. 248—311.2 11 Claims



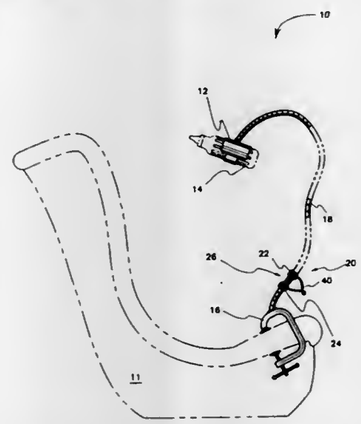
1. Apparatus for supporting a beverage container, said apparatus comprising, in combination:
a back member;
a base member attached to said back member for supporting said back member in an upright condition;
beverage container holder means including a pair of holder arms projecting outwardly from said back member over said base member and defining an opening for receiving a beverage container; and
beverage container engagement means connected to said holder arms and movable relative thereto for selectively constricting the size of the opening defined by said holder arms, said beverage container engagement means comprising a beverage container engagement member pivotally attached to each of said holder arms and pivotally movable between a first position wherein said opening is constricted thereby and a second position wherein said opening is generally unconstricted thereby, said beverage container engagement members being in opposition to one anther and separately and independently pivotally movable upon application of manual force thereto.

5,603,478
KEYBOARD SUPPORT
Daniel Wang, 10F, No.15, Sec.2, Chilung Rd., Taipei, Taiwan
Filed Aug. 14, 1995, Ser. No. 515,046
Int. Cl.[6] A47G *29/00*
U.S. Cl. 248—371 6 Claims

1. A keyboard support for supporting a keyboard, comprising:
a base having a concave top surface, a coupling hole through said concave top surface at the center, a plurality of retaining notches spaced around the periphery of said coupling hole, and a wire hole at the border of said base;
a locating shaft fastened to the coupling hole of said base, said locating shaft comprising a stepped axle hole through the longitudinal central axis, a locating groove around the periphery of said stepped axle hole, a locating means spaced around the periphery, and a plurality of downward hooks respectively hooked on the retaining notches of said base;
a supporting cup mounted on said base around said locating shaft to support the keyboard, said supporting cup comprising a bowl-shaped cup body fitting the concave top surface of said base, a longitudinal slot and a transverse slot across the center of said bowl-shaped cup body, a plurality of serrated portions symmetrically disposed along the periphery of said longitudinal slot and said transverse slot for engagement with the locating means of said locating shaft, a plurality of openings around said longitudinal slot and said transverse slot, loop and hook materials at a top side thereof around the border for fastening to respective loop and hook materials on the keyboard, and a radial wire groove at the border for the passing of a cable of the keyboard; and
a cap fastened to said locating shaft to retain said supporting cup to said base, said cap comprising a flat cap body, a center through hole through the center of said flat cap body, a rounded bottom flange raised from said flat cap body at a bottom side and fitting the concave cup body of said supporting cup, and a split retainer rod downwardly extended from the center of said rounded bottom flange and inserted into the stepped axle hole and hooked on the locating groove of said locating shaft.



5,603,479
BOTTLE HOLDER WITH FRANGIBLE JOINT
Andrew W. Kristy, 381 Quill Dr., NW., Cleveland, Tenn. 37311-8148
Filed Jul. 25, 1995, Ser. No. 506,854
Int. Cl.[6] F16M *13/00*
U.S. Cl. 248—548 7 Claims

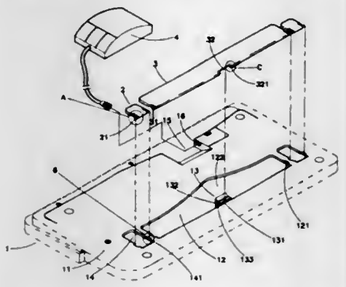


1. A bottle holder for maintaining a bottle in place proximate and accessible to a feeding child, said bottle holder comprising:
a cradle and means for engaging a bottle and securing the bottle within said cradle;
a clamp for releasably engaging an environmental surface; and

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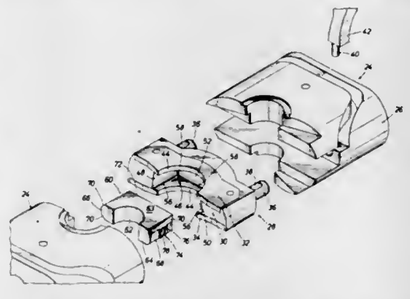
a partially rigid neck connecting said clamp to said cradle, said partially rigid neck including a frangible joint and a remaining length, said frangible joint being of predetermined strength of less magnitude of the strength of said remaining length of said partially rigid neck, whereby a shearing force applied to said partially rigid neck will cause said partially rigid neck to break at said frangible joint, said frangible joint comprising a tube having first threads and second threads, said partially rigid neck including third threads cooperating with said first threads of said frangible joint and fourth threads cooperating with said second threads of said frangible joint, whereby said frangible joint is disposed serially within said partially rigid neck and is connected to said partially rigid neck by mutual threading.

5,603,480
KEYBOARD STAND MOUNTING STRUCTURE
Frank Chen, Taipei, Taiwan, assignor to Silitek Corporation, Taipei, Taiwan
Filed May 3, 1995, Ser. No. 434,186
Int. Cl.[6] F16F *15/00*
U.S. Cl. 248—688 **1 Claim**



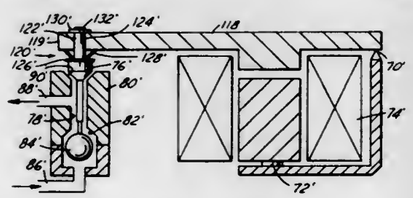
1. A keyboard stand mounting structure comprising a keyboard shell, two small stands pivoted to a bottom side of said keyboard shell for supporting said keyboard shell in a first tilted position, and a big stand pivoted to the bottom side of said keyboard shell for supporting said keyboard shell in a second tilted position, wherein:
the bottom side of said keyboard shell comprises a big recessed hole longitudinally disposed near a first long side of said keyboard shell for receiving said big stand, two pivot holes respectively located at two opposite ends of said elongated recessed hole, a sloping recess extending away from and upwardly from one side of said big recessed hole, a retainer at one side of said big recessed hole opposite to said sloping recess, two small recessed holes symmetrically disposed adjacent to the two opposite ends of said big recessed hole, two pairs of pivot holes respectively and horizontally disposed in two opposite sides of said two small recessed holes, a front recessed hole near a second long side of said keyboard shell, and a mouse connector within said front recessed hole at one side for mounting an optical mouse;
said small stands each having two pivot pins longitudinally aligned at the two opposite ends of one side thereof and respectively inserted into the pivot holes in each of said two small recessed holes, said small stands being turned between a first position respectively received within said two small recessed holes in a flush manner and a second position to support said keyboard shell in said first tilted position;
said big stand having two first pivot pins respectively inserted into the two pivot holes in said big recessed hole, an opening in a middle of a side of said recessed hole corresponding to said retainer, and two second pivot pins bilaterally projecting into said opening, each of said two pivot pins respectively and turnably retained in a retaining hole on said retainer, said big stand being turned between a first position received within said big recessed hole in a flush manner and a second position to support said keyboard shell in said second tilted position.

5,603,481
FRONT PACKER FOR RAM-TYPE BLOWOUT PREVENTER
Bruce G. Parker, and Eric G. Childs, both of Katy, Tex., assignors to Cooper Cameron Corporation, Houston, Tex.
Filed Jan. 24, 1996, Ser. No. 590,922
Int. Cl.[6] E21B *33/06*
U.S. Cl. 251—1.3 **16 Claims**



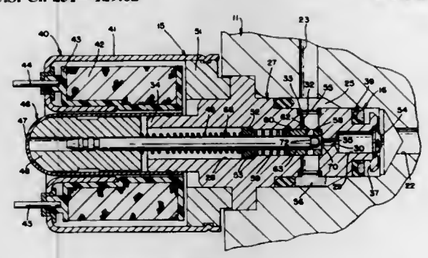
1. A packer assembly for a ram-type blowout preventer comprising:
an elastomeric packer member having a recess therein; and
an insert positioned within said recess and having an outer peripheral surface with a contacting portion thereof fitting against said elastomeric member, said insert having at least one retaining member projecting outwardly from said contacting portion of said outer peripheral surface and pressing into said elastomeric member to deform said elastomeric member for securing said insert within said recess.

5,603,482
SOLENOID-OPERATED VALVE ASSEMBLY
Philip J. Mott; Mark E. Patton, both of Dryden, N.Y., and John R. Connolly, Rock Falls, Ill., assignors to Borg-Warner Automotive, Inc., Sterling Heights, Mich.
Continuation-in-part of Ser. No. 249,105, May 26, 1994, abandoned, which is a continuation-in-part of Ser. No. 173,442, Dec. 20, 1993, abandoned. This application Dec. 9, 1994, Ser. No. 350,502
Int. Cl.[6] F16K *31/06*
U.S. Cl. 251—129.2 **7 Claims**



1. A solenoid valve assembly comprising a core member, a coil surrounding said core, a valve mechanism and an armature member having two ends, a first end positioned adjacent said core and a second end in operational relationship with said valve mechanism, said second end having a Belleville spring resilient member positioned thereon for reducing the impact force on said valve mechanism.

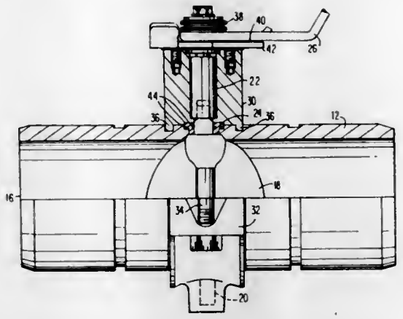
5,603,483
SOLENOID VALVE
David F. Reuter; William D. Cornwell, both of Beavercreek, and Viswanath Seetharaman, Fairborn, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed Dec. 11, 1995, Ser. No. 570,025
Int. Cl.[6] F16K *1/44;31/06*
U.S. Cl. 251—129.02 **6 Claims**



1. A solenoid valve comprising:
a housing having a longitudinal bore including a step and a valve seat formed by a localized narrowing of the longitudinal bore at an orifice and having a cross bore intersecting the longitudinal bore near the valve seat, the housing including an annular end;
an actuator carried on the annular end of the housing including an armature and an actuator sleeve with a closed end guideably carrying the armature with a rod extending from the armature substantially through the longitudinal bore including a parti-spherical end engageable with the valve seat;
an annular spring support disposed around the rod and against the step of the longitudinal bore;
a spring disposed about the rod and extending between the armature and the spring support biasing the armature toward the closed end of the actuator sleeve normally maintaining the spherical end spaced away from the valve seat; and
a valve sleeve positioned in the longitudinal bore near the valve seat having a longitudinal hole communicating with the longitudinal bore, a cross hole communicating with the cross bore, an external end groove communicating with the longitudinal hole and an external longitudinal groove communicating with the end groove;
wherein the rod extends into the longitudinal hole and includes an annular edge with a segment of reduced diameter between the annular edge and the parti-spherical end, the annular edge being disposable at various locations across the cross hole.

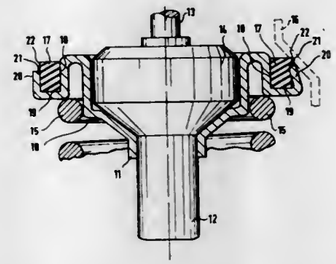
5,603,484
PLASTIC SLEEVED ROTARY VALVE
Douglas R. Dole, Whitehouse Station, N.J., and Scott D. Madara, Easton, Pa., assignors to Victaulic Company of America, Easton, Pa.
Filed Apr. 25, 1995, Ser. No. 428,866
Int. Cl.[6] F16K *51/00*
U.S. Cl. 251—148 **8 Claims**

1. In combination, a pipe, a valve disc positioned within said pipe, and means for supporting said valve disc for rotation about an axis extending transversely of said pipe, said valve disc being positioned intermediate opposite ends of said pipe, and extending transversely of a longitudinal axis of said pipe, and, means journalling said valve disc for rotation about a diameter of said valve disc, and permitting angular adjustment of said valve disc about said diameter;



further including:
said pipe being a single length of pipe having opposite ends;
said valve disc being in direct engagement with an inner periphery of said single length of pipe, whereby, said single length of pipe provides a valve seat for said valve disc;
journals for said valve disc extending diametrically of said pipe, and extending through diametrically opposed apertures in said pipe; and,
a segmented pipe coupling secured to an outer periphery of said single length of pipe, said segmented pipe coupling providing a support for said journals of said valve disc.

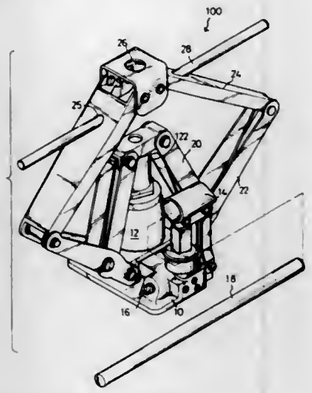
5,603,485
VALVE PLATE FOR A THERMOSTATIC VALVE
Wilhelm Schwarz, Marbach, Germany, assignor to Behr-Thomson-Dehnstoffregler GmbH & Co., Kornwestheim, Germany
Filed Mar. 30, 1995, Ser. No. 413,880
Claims priority, application Germany, Mar. 23, 1995, 295 04 952.9
Int. Cl.[6] F16K *1/46*
U.S. Cl. 251—332 **10 Claims**



1. Valve plate for a thermostatic valve comprising a sheet metal preform having an edge with a surrounding ring groove in which a sealing ring having a substantially rectangular cross-section is provided which is engageable with a valve seat,
wherein the ring groove has an interior boundary wall, a bottom and an exterior boundary wall,
wherein the exterior boundary wall of the ring groove is bent radially toward the inside and, together with the bottom of the ring groove, encloses an angle of less than 90°,
wherein said exterior wall penetrates into the sealing ring, and
wherein the sealing ring protrudes in the axial direction beyond the exterior boundary wall of the ring groove and, by means of a surrounding edge, is situated opposite the valve seat.

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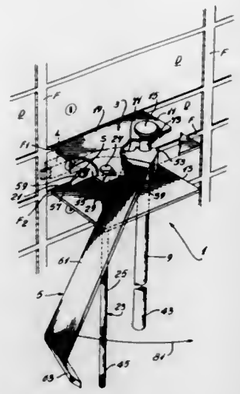
5,603,486
FRAME-TYPE CAR JACK
Yang-chou Liu, 5 Fl., No. 110, Sec. 2, Changan E. Rd., Taipei, Taiwan
Filed Sep. 15, 1995, Ser. No. 528,688
Int. Cl.[6] B60P *1/48*
U.S. Cl. 254—8 B 6 Claims



1. A frame-type car jack, comprising:
a base;
means mounted on the base for generating a lifting force in a direction substantially vertical to the base when said lifting force generating means receives an external force;
a pair of pulling bars pivotally connected to said lifting force generating means;
a pair of links pivotally connected to the pulling bars and to the base;
a pair of pushing bars pivotally connected to the links and defining a pair of aligned holes thereon;
a load-engaging head pivotally connected to the pair of pushing bars and adapted to contact with a heavy load intended to be lifted; and
a locking rod to be inserted into and extended through the pair of aligned holes defined in the pair of pushing bars and having a cross-sectional dimension substantially equal to the size of the pair of aligned holes, for fixedly engaging the pair of pushing bars when an unintentional lowering of the car jack occurs, whereby when the heavy load is lifted by the car jack to a desired level, the locking rod can fixedly lock the car jack with the lifted heavy load substantially at the desired level.

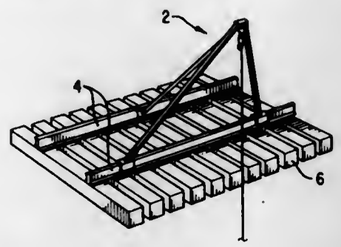
5,603,487
LOCK PULLER
Jean-Guy Couillard, 871 Des Peupliers, Amos, Quebec, Canada
Filed Dec. 27, 1994, Ser. No. 363,932
Int. Cl.[6] B66F *15/00*
U.S. Cl. 254—27 5 Claims

1. A tool for use in forcefully opening a locked door framed by framing members, comprising: fulcrum means having means adapted to bear against the framing members; a lever having a base and cooperating means thereon for rotatably cooperating with the fulcrum means; the lever having a shoret arm and a long arm extending from the base; the short arm having means at its free end for used in connectin it to the door while the cooperating means cooperates with the fulcrum means so as to be able to apply a pulling force on the locked door to pull it open from the frame when when a turning force is applied on the free end of the long arm to try to turn it about the fulcrum means, the turning force applying a reactive force through the cooperating means and the fulcrum means against the frame, wherein the fulcrum means



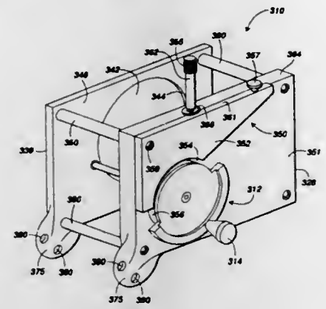
comprises a pair of parallel, space-apart plate members having edges adapted between the plate members for receiving the cooperating means on the lever, further including adjustment means for adjusting the distance between the plate members.

5,603,488
RAIL ATTACHABLE RESCUE FRAME FOR RAIL BRIDGES
Michael J. O'Rourke, Beaumont, and David McCashin, Edmonton, both of Canada, assignors to Surety Manufacturing & Testing Ltd., Alberta, Canada
Filed Oct. 21, 1994, Ser. No. 326,939
Int. Cl.[6] B66D *1/36*
U.S. Cl. 254—334 13 Claims



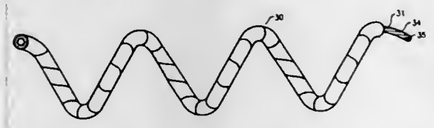
1. A rail bridge rescue frame comprising three elongated legs having upper and lower ends, the upper ends secured to a head assembly so as to universally pivot with respect thereto, two of the legs being forward legs of shorter and similar length and the third being a rear leg of longer length, rail bearing means secured to the lower end of each of the forward legs and adapted to conform to a side portion of a railway rail to bear against a first rail and a rail attachment means attached to the lower end of the rear leg and adapted to circumscribe at least a portion of a railway rail for securing the rear leg to a portion of a second rail adjacent said first rail, the frame constructed so that when the rear leg is secured to said second rail and the lower ends of the forward legs are bearing against outer side portions of said adjacent first rail, the head assembly will be positioned clear of the railway to one side to provide support for lifting a line to lift a person or object below the railway up to the railway.

5,603,489
TREE STAND WINCH APPARATUS AND METHOD
Everet B. Regal, 313 Culvert St., Phoenix, N.Y. 13135
Continuation-in-part of Ser. No. 368,557, Jan. 4, 1995. This application Oct. 10, 1995, Ser. No. 541,436
Int. Cl.[6] B66D *1/00*
U.S. Cl. 254—378 5 Claims



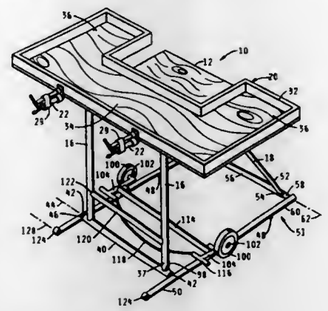
1. An improved tree stand winch for mounting in a tree and for lifting and lowering a hunter's gear, comprising:
a spool having a line wound thereon;
support means for rotatably supporting said spool;
crank means mechanically connected to said spool for rotating said spool and for paying out and reeling in said line;
braking means for braking the movement of said spool and for adjusting the amount of braking force applied by depressing a thumb pad of said braking means; and
said support means including attachment means integrated therein for straddling engagement with the tree, so that when the hunter rotates the crank means and the spool and the line of the spool lifts or lowers the hunter's gear, the attachment means maintains the spool and crank means in a stabilized relationship with respect to the tree.

5,603,490
FIBER-REINFORCED PLASTIC SPRINGS WITH HELICAL FIBER WIND
Mark F. Folsom, 25747 Carmel Knolls Dr., Carmel, Calif. 93923
Continuation-in-part of Ser. No. 335,060, Nov. 7, 1994, Pat. No. 5,549,370. This application Jun. 7, 1995, Ser. No. 485,969
Int. Cl.[6] F16F *1/02*
U.S. Cl. 267—149 12 Claims



1. A fiber-reinforced composite spring comprising:
a fiber-reinforced core having moderate working shear strain and stiff elastic response to bulk compression, wherein the core-reinforcing fibers are twisted about the longitudinal axis of said core;
a fiber-reinforced composite cladding, the cladding fibers being substantially helically and unidirectionally wound concentrically about the section of said core at a prescribed winding angle, said cladding compressing said core when said spring is subjected to one of any and all of compression, tension or torsion; and
a resin matrix for intimately bonding said cladding together and to said core.

5,603,491
PORTABLE WORKSTAND MODULE
Anthony S. Murrell, P.O. Box 166, Elwood, Ind. 46036
Filed Jun. 16, 1995, Ser. No. 491,473
Int. Cl.[6] B25B *1/10*
U.S. Cl. 269—15 4 Claims

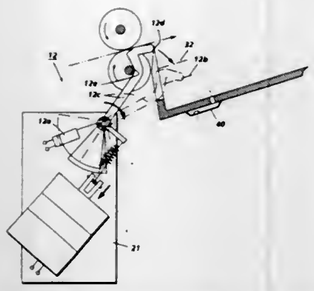


1. A workstand module comprising:
a mounting table,
sets of leg means supporting the mounting table at an elevation above the supporting floor, and
a pair of extenders releasably connectable respectively to opposed edge portions of the mounting table, the extenders providing support for an auxiliary article carried adjacent the mounting table,
in which the sets of leg means include a set of front leg means and a set of rear leg means, and a set of base means to which both sets of leg means are supportively connected, and which maintain a stably-spaced position of the set of front leg means and the set of rear leg means,
in which the set of front leg means and the set of rear leg means are rotationally connected to respective portions of the base means, and rotational movement of the set of front leg means and of the set of rear leg means, with respect to the base means, provides optionally a module-erect and a module-collapsed condition of the module,
in a combination in which upper portions of the set of front leg means and the set of rear leg means are provided respectively with cooperating abutment means which are engageable, merely by rotation of those sets of leg means from module-collapsed position toward module-erect position, to provide connection means for releasably interconnecting upper portions of the set of front leg means and the set of rear leg means in the module-erect condition of the module.

5,603,492
SHEET STACKING BIN FULLNESS CONTROL SYSTEM
Barry P. Mandel, Fairport; John W. Daughton; Charles D. Rizzolo, both of Rochester; John D. Hower, Jr., Fairport, and Don S. Walker, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Jan. 11, 1996, Ser. No. 585,079
Int. Cl.[6] B42B *1/02;2/02*
U.S. Cl. 270—58.09 10 Claims

1. In a shared users plural bins mailboxing system adapted to receive and stack plural print jobs of plural sheets for plural different recipients in plural print job storage mailbox bins, with at least most of said mailbox bins having a preset maximum sheet stacking capacity, said mailboxing system having a sheet distribution system controlled by a control system for automatically variably directing and stacking into different individual said mailbox bins the respective print jobs of different recipients, said control system providing for respective said mailbox bins to be electronically assignable to different respective recipients, and further including a bin stacking level indicator system for indicating to

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said control system that the number or height of the stack of sheets stacked in a said mailbox bin has reached a preset stacking level, the improvement comprising:

a dual mode bin stacking level indicator system operatively connected to said control system to control said sheet distribution system for said bins,

said control system providing a selection between the exclusive said assignment of only one recipient to one or more mailbox bins and the shared said assignment of plural recipients to one or more mailbox bins for receiving said print jobs to be stacked therein,

and said dual mode bin stacking level indicator system having two different bin stacking level estimation systems, selectable by said control system,

a first bin stacking level estimation system selected by said control system in accordance with said selection of said exclusive assignment of only one recipient to one or more mailbox bins,

and a second bin stacking level estimation system selectable by said control system in accordance with said selection of said shared assignment of plural recipients to one or more mailbox bins.

5,603,493

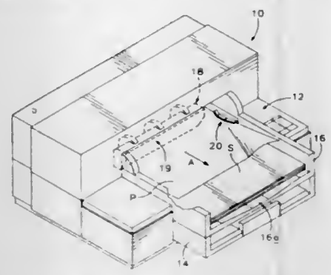
SYSTEM FOR USE IN HANDLING MEDIA

Kieran B. Kelly, Vancouver, Wash., assignor to Hewlett Packard Company, Palo Alto, Calif.

Filed Dec. 3, 1994, Ser. No. 348,624

Int. Cl.[6] B65H *29/70*

U.S. Cl. 271—188 **16 Claims**



1. A media handling system for use in supporting media during advancement along a predetermined flow axis, said system comprising:

a pair of narrowly spaced guide surfaces which extend along the flow axis to define an elongate slot whereby advancing media is directed downstream, said slot including a first segment which extends in a first plane, and a second segment which extends angularly from said first segment in a second plane so as to establish a sheet-stiffening bow in the advancing media; and

an elongate side wall which extends across said slot to direct a predetermined side edge of the advancing media downstream, said side wall having a first section which extends substantially parallel to a nominal media side edge flow path, and a second section which turns inwardly from said nominal media side edge flow path toward the media's opposite side edge.

5,603,494

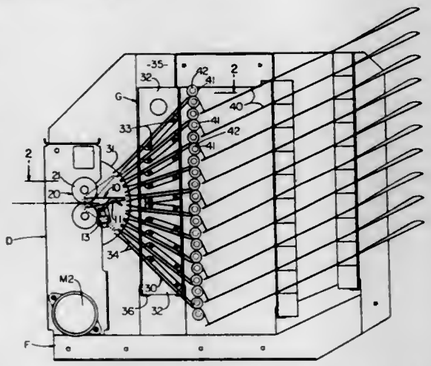
SHEET MAILBOX HAVING A ROTATABLE SHEET DISTRIBUTOR

William D. Baker; George M. Cross; Louis A. Rossi; Mark Spitler, all of Irvine, and Frederick J. Lawrence, Tustin, all of Calif., assignors to Gradco Ltd., Japan

Filed Nov. 13, 1995, Ser. No. 557,399

Int. Cl.[6] B65H *39/10*

U.S. Cl. 271—296 **4 Claims**



1. A sheet receiver for printed sheets comprising: a frame structure supporting sheet distributor means, driven sheet infeed means for feeding sheets into said sheet distributor means, sheet guide means for receiving sheets supplied from said distributor means, and tray means for receiving sheets supplied from said guide means, said distributor means having an angularly movable sheet receiving distributor with a sheet inlet end located at said sheet infeed means for receiving sheets and an outlet end for passage of sheets fed into said distributor, drive means for positioning said distributor at selected angular positions of said sheet outlet end, said guide means having a plurality of fixed and angularly fanned sheet guides including plates radiating substantially from the center of angular movement of said sheet distributor with sheet inlet ends closely spaced for receiving sheets from said distributor and sheet outlet ends of increased angular space for delivery of sheets to said tray means, said sheet outlet ends of said guides terminating on a substantially vertical plane, said tray means including a set of sheet receiving trays spaced apart and having inlet ends located along said vertical plane to receive sheets from said sheet outlet ends of said guides, and driven sheet feeding roll means interposed between the outlet ends of said guides and the inlet ends of said trays.

5,603,495

BASKETBALL SHOOTING PRACTICE DEVICE AND METHOD OF TRAINING BASKETBALL SHOOTING

Ira Noveck, CREA, 1, rue Descartes, 75005 Paris, France

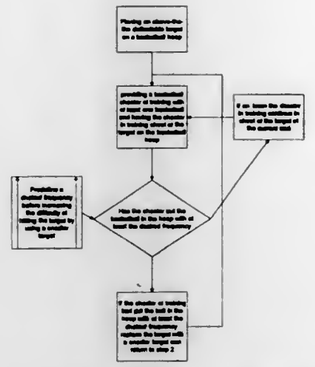
Filed Nov. 6, 1995, Ser. No. 553,865

Int. Cl.[6] A63B *69/00*

U.S. Cl. 473—447 **4 Claims**

1. A method of training a basketball shooter comprising:

a) providing said shooter with an above-the-rim target that deflects when the shooter hits the target; and



b) when said shooter hits said target with a preselected frequency, replacing said target with a smaller target.

5,603,496

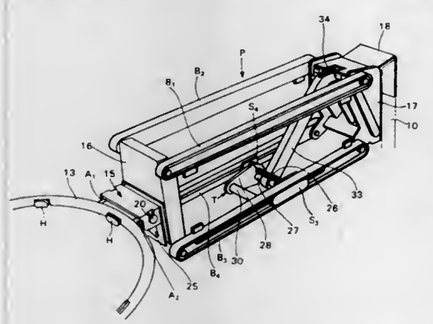
BASKETBALL GOAL OF ADJUSTABLE HEIGHT

Mark Rappaport, 4999 Smith Canyon Ct., San Diego, Calif. 92130

Filed Feb. 21, 1995, Ser. No. 391,454

Int. Cl.[6] A63B *63/08*

U.S. Cl. 473—487 **7 Claims**



1. A basketball goal for indoor play in an area bounded by a wall having a door set therein, said goal comprising:

A. a hoop from which a net is suspended;

B. a fixture supporting the hoop in a horizontal plane; and

C. a pantograph having a front section to which said fixture is secured and a rear section parallel to the front section to which is attached a bracket that is hitchable onto the upper edge of the door, said pantograph including angle adjusting means to raise the front section to a level above or below the rear section whereby the hoop may be set to an elevation in line with the upper edge of the door or to a higher or lower elevation suitable for play, the front and rear sections of the pantograph being generally rectangular and being bridged by a pair of parallel upper beams whose ends are pivotally connected to the upper corners of the sections and a pair of parallel lower beams whose ends are pivotally connected to the lower corners of the sections, whereby in a neutral position the pantograph has the geometry of a parallelpiped, the pantograph including a trolley that rides on the lower beams and a push rod, one end of which is hinged to the trolley and the other to said rear section, the position of the trolley on the lower beams depending on the angle of adjustment.

5,603,497

THREE PIECE BALL TEMPLATE

Nigel R. Louez, Suite 1, 192B Kurraba Road, Neutral Bay, Australia

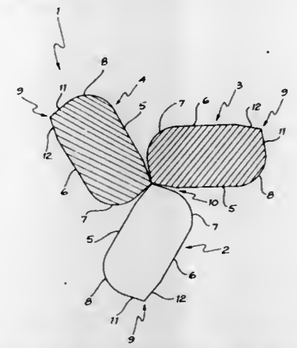
PCT No. PCT/AU93/00523, § 371 Date Aug. 26, 1994, § 102(e) Date Aug. 26, 1994, PCT Pub. No. WO94/08665, PCT Pub. Date Apr. 28, 1994

PCT Filed Oct. 12, 1993, Ser. No. 244,654

Claims priority, application Australia, Oct. 12, 1992, PL5200

Int. Cl.[6] A63B *41/08*

U.S. Cl. 473—609 **5 Claims**



1. A ball comprising three substantially identically shaped panels joined together to form a substantially spherical surface, wherein each said panel, if laid flat prior to joining, is substantially rectangular in shape and comprises a pair of substantially straight and substantially parallel elongate edges, two diagonally opposed curved corner sections, and two diagonally opposed obtuse corner sections.

5,603,498

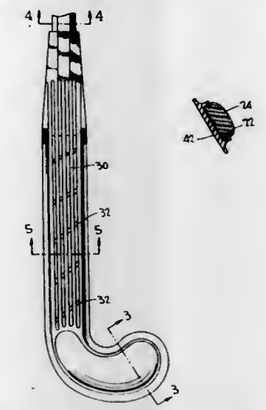
LIGHTWEIGHT FIELD HOCKEY STICK

William C. Crawford, Baltimore, and Jackie L. Davis, Aberdeen, both of Md., assignors to STX, Incorporated, Baltimore, Md.

Continuation-in-part of Ser. No. 135,969, Oct. 14, 1993, abandoned. This application Jul. 13, 1994, Ser. No. 274,334

Int. Cl.[6] A63B *59/12*

U.S. Cl. 473—563 **8 Claims**



1. A multi-component field hockey stick comprising a plastic head section and an aluminum handle elliptical in shape fitted into

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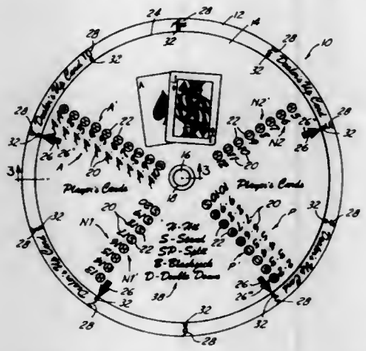
grooves within said head section and fixedly secured thereto with indented screw means, said head section comprising a first flat surface including a ball-striking surface; ball receiving surface and a surface opposite said ball receiving surface so configured to decrease weight and provide increased structural strength and comprising a plurality of longitudinal grooves having horizontal ribs in said grooves for reducing weight and imparting increased structural strength, the surface area opposite said ball-striking surface having a recess for receiving a pad of a soft resilient material which is adhesively secured within said recess.

5,603,499

BLACKJACK PLAY OPTION RESPONSE INDICATOR

Gerald J. Jagosz, Cedar, Mich., assignor to Doris G. Jagosz, Cedar, Mich.

Filed Jul. 26, 1995, Ser. No. 507,704
Int. Cl.[6] A63F *1/06*; G06C *3/00*
U.S. Cl. 273—148 R **18 Claims**



1. A blackjack play option response indicator, comprising:

a front disk having a front disk face, a front disk center and a front disk periphery, said front disk having a plurality of player's cards value indicia placed in a predetermined arrangement and a predetermined sequence on said front disk face, said front disk being provided with a plurality of view ports wherein a respective view port is located adjacent each player's cards value indicia, said front disk having alignment indicia on said front disk face, said alignment indicia being selectively associated with said player's cards value indicia;

a rear disk having a rear disk face, a rear disk center and a rear disk periphery, said rear disk being superposed said front disk wherein said rear disk face faces toward said front disk and said front disk face faces away from said rear disk, said rear disk having a plurality of play option response indicia arranged in a predetermined arrangement and a predetermined sequence on said rear disk face for selectively appearing in said view ports in said front disk, said rear disk having dealer's up card value indicia arranged in a predetermined pattern on said rear disk face adjacent the rear disk periphery; and

means for rotatably interconnecting said front disk center with said rear disk center;

wherein a user who is playing a game of blackjack locates a player's cards value indicia corresponding to cards values of a hand held by the user, rotates a selected alignment indicia associated therewith into alignment with a dealer's up card value indicia corresponding to an up card value held by a dealer who is dealing the game of blackjack, then reads the play option response indicia through a view port adjacent the selected player's cards value indicia to thereby ascertain what appropriate play option is to be played by the user;

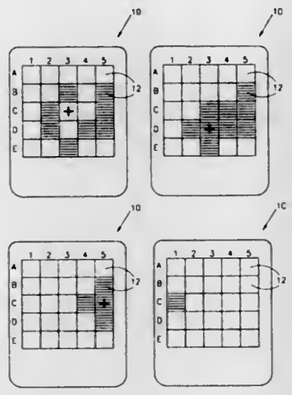
wherein said front disk periphery defines a first cross-section of said front disk, wherein said back disk periphery defines a second cross-section of said back disk, wherein said second cross-section is greater than said first cross-section so that all of said dealer's up card value indicia are simultaneously visible.

5,603,500

PUZZLE DEVICE

Avraham Y. Olti, 2/35 Misgav, 20100 Karmiel; Gyoray M. P. Benedek, 43 Weizmann, Kiryat Bialik; Zvi Herman, 4/1 Hakim, 35430 Halfa; Revital Blumberg, 13 Haprachim, 20100 Karmiel; Michael Ganor, 27 Shocken, 66532 Tel Aviv, and Avish J. Weiner, 12 Boyer, 69127 Tel Aviv, all of Israel

Continuation of Ser. No. 437,076, May 5, 1995, which is a continuation-in-part of Ser. No. 225,291, Apr. 8, 1994, Pat. No. 5,417,425. This application Jan. 18, 1996, Ser. No. 588,474
Int. Cl.[6] A63F *9/00*
U.S. Cl. 273—153 R **11 Claims**



1. A device, comprising:

(a) an array of indicators, each of said indicators capable of alternately indicating a first state or a second state, said array of indicators being formed into a puzzle device having a three-dimensional shape;

(b) means for selecting any one of said array of indicators; and

(c) means for changing, upon the selection of said one of said array of indicators, the state of at least one of the others of said indicators based on a predetermined geometric pattern.

5,603,501

MATHEMATICAL BOARD GAME

Mark G. Hayes, 4142 N. Castleridge Dr., Grand Rapids, Mich. 49508

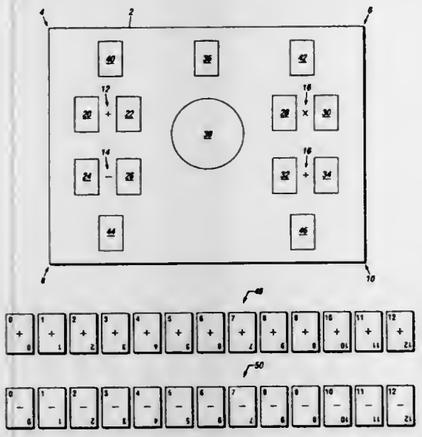
Filed Oct. 30, 1995, Ser. No. 550,295
Int. Cl.[6] A63F *3/00*
U.S. Cl. 273—272 **14 Claims**

1. A game system comprising

a generally rectangularly shaped board having, a center, a first corner, a second corner, a third corner and a fourth corner,

said board having indicia imprinted thereon to indicate addition, subtraction, multiplication, and division.

said board having indicia imprinted thereon for indicating a first playing area, a second playing area, a third playing area, a fourth playing area, fifth playing area, a sixth playing area, a seventh playing area, and an eighth playing area,



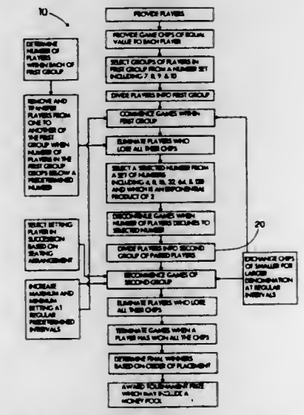
a plurality of cards, wherein each card being inscribed with only one integer n, wherein n is an integer from 0 to 12 and only one mathematical symbol selected from the group consisting of +, −, ×, and ÷.

5,603,502

POKER TOURNAMENT METHOD

George Nakagawa, 15404 S. Catalina, Gardena, Calif. 90247

Filed Nov. 20, 1995, Ser. No. 559,599
Int. Cl.[6] A63F *1/00*
U.S. Cl. 273—292 **20 Claims**



1. A card game tournament method, comprising:

providing players for the tournament;

dividing the players into first groups, members of each of said first groups playing individual card games of a desired type of card game with each other and declaring winners and losers, each of said first groups having a total number comprising a multiplicity of player members;

eliminating a player from one or more of said first groups if declared a loser leaving a new total number of players;

discontinuing the individual card games when the total number of players of said first groups declines to a selected number greater than two due to losers of said individual card games dropping out of the tournament, the selected number also being a product of two;

dividing remaining players of the first groups into second groups for playing individual card games of the same desired type of card game between player members of each of said second groups, each of said second groups consisting of solely a pair of player members;

recommencing the individual card games of the same desired type of card game with the player members of each of said second groups playing the individual card games with each other;

eliminating a player from one or more of said second groups if declared a loser leaving a new total number of players;

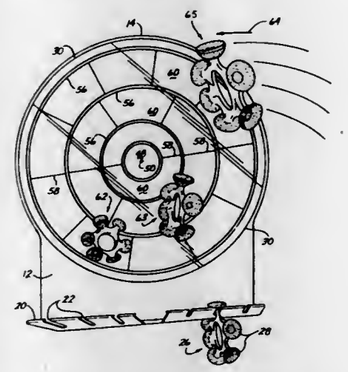
terminating the tournament games when there is at least one winner of the individual card games.

5,603,503

DYNAMIC TARGET AND GAME ASSEMBLY

Paul Lapidus, 9882 Cow Creek Dr., Palo Cedro, Calif. 96073

Filed Feb. 9, 1994, Ser. No. 195,620
Int. Cl.[6] F41J *3/02*
U.S. Cl. 273—348.2 **4 Claims**



1. A target assembly comprising in combination:

a. a target surface having indicia formed thereon and having a bearing therethrough for receiving an axle;

b. a generally circular, rotatable clear transparent disk comprising a front surface, a center of rotation with a bearing on said disk at said center of rotation, and further comprising means for receiving and holding objects thrown onto said disk front surface;

c. axle means connected to said target surface and rotatably connected to said disk at said bearing, for rotatably connecting said disk in relation to said target surface; and,

d. a plurality of darts, each of which being capable of being held by said disk front surface when said each dart is caused to come into contact with said front surface of said disk.

5,603,504

WORD GAME

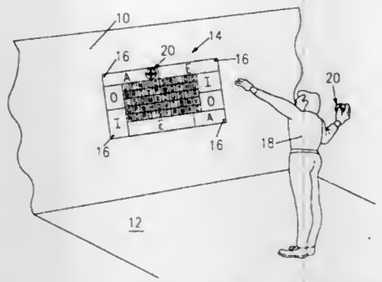
Michael A. Powell, 1277 Norman Pl., Los Angeles, Calif. 90049

Filed Feb. 26, 1996, Ser. No. 605,846
Int. Cl.[6] A63F *9/00*
U.S. Cl. 273—348.4 **8 Claims**

1. A word game to be played by any number of persons where the object is to make a recognized word in the least possible time, said game comprising:

a game board having marginal edges adapted to be vertically mounted on a wall, said board including letter areas with a consonant or vowel of a language positioned individually

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within each of said letter areas, said letter areas at least for some of said vowels being larger than said letter areas for consonants;

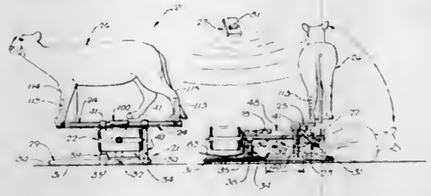
a plurality of markers adapted to be thrown by a person at said board from a predetermined distance and of a construction to releasably stick to said board, the prime purpose being to land at random in enough letter areas to spell a recognized word from the letters within the areas.

5,603,505

PORTABLE REMOTELY CONTROLLED POP-UP TARGET APPARATUS

Joseph B. Acock, 250 S. Sprague Rd., Coldwater, Mich. 49036

Filed Nov. 18, 1994, Ser. No. 342,383
Int. Cl.[6] F41J *7/06*
U.S. Cl. 273—391 **5 Claims**



1. A self-contained, power operated, portable, mechanized, pop-up target apparatus, comprising:

a ground engaging base,

power actuated drive means mounted on said base for pivotal movement about a horizontal axis;

said drive means rotatably driving elongated means selectively coupled to a carriage actuator for linearly reciprocating the latter along said elongated means;

said drive means comprising a reversible electric motor, limit switch means engageable with said actuator for deenergizing said motor, and control means for selectively energizing said motor and determining the direction of rotation thereof;

elongated shaft means rotatably supported in elevated position over said base at right angles to said elongated mean;

said shaft means composed of plural, telescopingly interfitted, coaxial, tubular members, including a linear tubular mid section, having mating polygonal cross sections;

means for interlocking said tubular members in selected axial positions;

means for rotatably supporting said shaft means comprising a pair of laterally spaced, coaxially aligned, plastic bearing bushings supporting said mid section, and means for axially interlocking said bushings and mid section with stationary support posts;

vertically oriented crank means pivotally coupled to said actuator and affixed to said shaft means for partially rotating said shaft means in reaction to limited reciprocating movements of said actuator; and

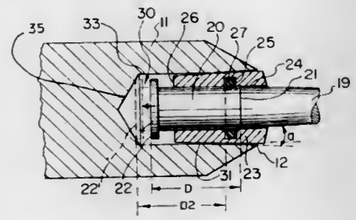
target means comprising at least one three-dimensional, replica of a live target mounted for arcuate movements between substantially horizontal hidden and vertical display positions in response to rotational movement of said shaft means.

5,603,506

REMOVABLE AND RETRACTABLE POINT SYSTEM FOR A DART

Jeffrey Pickup, 145 Rembrandt Place., London, Ontario, Canada

Filed Apr. 12, 1996, Ser. No. 631,182
Int. Cl.[6] A63B *65/02*
U.S. Cl. 473—585 **12 Claims**



1. A dart comprising:

(a) a cylindrical-like body defining, at one end, an aperture communicating into a tapered portion of an internal body bore, the other end of the body carrying a flight;

(b) a tapered furrel adapted to extend into the aperture and to matingly engage with the tapered portion, the furrel defining a dart point accommodating axially oriented internal furrel bore therethrough, the furrel defining an inner annular race communicating with the internal furrel bore;

(c) a dart point having a tapered shaft portion that terminates as a forward point, the tapered shaft at its opposite end stepping through an annular shoulder into a cylindrical segment defining an outer cylindrical diameter which extends to terminate at a disc plate with integral rear face whose diameter is larger than the outer cylindrical diameter;

(d) the furrel also defines an inner annular race accommodating a resilient O-ring therein whose inner diameter is less than the cylindrical diameter to frictionally engage the outer cylindrical diameter thereby holding the dart point firmly in the body but allowing the dart point to travel to and fro within the internal body bore.

5,603,507

METHOD OF INPUT SELECTION IN AN ELECTRONIC GAME SYSTEM

Steve E. Tice, Sherman Oaks, Calif., assignor to Hasbro, Inc., Pawtucket, R.I.

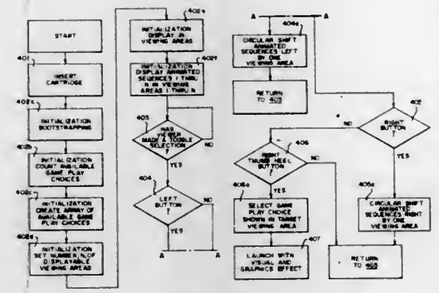
Filed Apr. 22, 1994, Ser. No. 231,271
Int. Cl.[6] A63F *9/22*
U.S. Cl. 463—29 **13 Claims**

1. In an electronic game system comprising a game console, a visual display, means for inputting a command to change a selection and means for inputting a command to make a selection, a method of effecting a user selection from among one or more game play choices, comprising:

displaying in one or more viewing areas of said visual display animated sequences each corresponding to one of said game play choices;

designating one of said viewing areas as a target viewing area;

upon the user inputting a command to change selections, shifting a different animated sequence into each viewing area, including the target viewing area; and



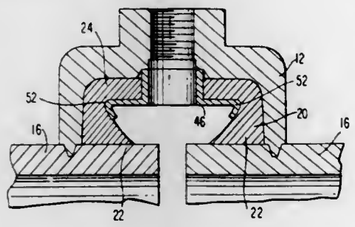
upon the user inputting a command to make a selection, initiating said game play choice corresponding to said animated sequence then in said target viewing area.

5,603,508

GASKET FOR LATERAL OUTLET SEGMENTED PIPE COUPLING

Douglas R. Dole, Whitehouse Station, N.J., and Vance W. Henry, Easton, Pa., assignors to Victaulic Company of America, Easton, Pa.

Filed May 20, 1996, Ser. No. 650,193
Int. Cl.[6] F16J *15/12*
U.S. Cl. 277—1 **10 Claims**



1. A sealing gasket for a segmented pipe coupling, said sealing gasket being of the type including radially extending and axially spaced sealing lips interconnected at an outer periphery of said sealing lips by an axially extended bridge member, further including:

an elongate arcuate plate of an incompressible material positioned between said sealing lips and positioned in engagement with a radially inner surface of said bridge member;

said elongate arcuate plate being supported in that position by the engagement of respective longitudinal edges of said elongate arcuate plate with a juxtaposed one of said sealing lips;

said elongate arcuate plate having an aperture extending between a radially inner and radially outer surface of said plate; and,

a tubular collar surrounding said aperture in said plate, and extending radially outwardly of said radially outer surface of said plate;

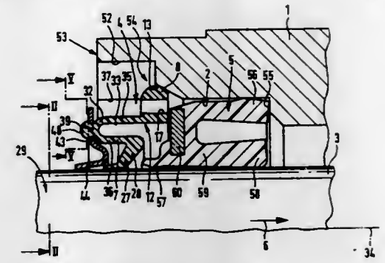
said collar being received within said aperture provided in said bridge member.

5,603,509

STRIPPING DEVICE

Kurt Stoll, Esslingen; Herbert Köngeter, Reichenbach, and Eugen Schlötzer, Schwabach, all of Germany, assignors to Festo KG, Esslingen, Germany

Filed Mar. 10, 1995, Ser. No. 401,862
Claims priority, application Germany, Mar. 12, 1994, 44 08 408.0
Int. Cl.[6] F16J *15/16*
U.S. Cl. 277—24 **18 Claims**



1. A stripping device comprising:

a stripping ring, which in a fitted position is secured to a holder and surrounds a component able to move axially in relation to the stripping ring;

a resiliently elastic locating ring fitting in an annular groove in the holder for axially locating the stripping ring on the holder, the locating ring having two mutually adjacent ring ends, which during fitting of the locating ring are able to be moved in relation to one another so as to reduce or increase their distance apart in order to produce a change in diameter of the locating ring, wherein the stripping ring and the locating ring are attached together with the formation of a subassembly; and

an intermediate space disposed between the two ends of the locating ring, a flexible shield wall being integrally connected with the two ring ends and with an adjacent portion of the stripping ring.

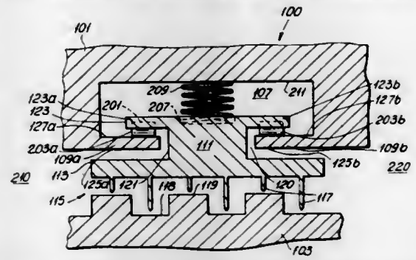
5,603,510

VARIABLE CLEARANCE SEAL ASSEMBLY

William P. Sanders, 188 Howland Ave., Toronto, Ontario, Canada

Continuation of Ser. No. 255,104, Jun. 7, 1994, abandoned, which is a continuation of Ser. No. 118,141, Sep. 8, 1993, abandoned, which is a continuation of Ser. No. 985,747, Dec. 4, 1992, abandoned, which is a continuation of Ser. No. 714,488, Jun. 13, 1991, abandoned. This application Apr. 18, 1995, Ser. No. 425,676
Int. Cl.[6] F16J *15/48;* **F01D** *5/20*
U.S. Cl. 277—53 **1 Claim**

1. A seal assembly for preventing fluid flow between stationary



and moving members in a fluid dynamic system, the assembly comprising:

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a sealing assembly between said stationary and moving members;

a first means for biasing said sealing element away from said stationary member, said first means including a single, constant force helical spring located centrally to the sealing element;

a second means for biasing said sealing element toward said moving member to the extent that said sealing element is suspended between said stationary and moving members but not in contact with said moving member, said second means including a leaf spring having a design tension greater than that of the helical spring so that, during start-up or shut-down operations, the biasing forces of said leaf spring overcomes those of said helical spring and operating pressure so as to keep a maximum radial clearance between the sealing element and shaft; and

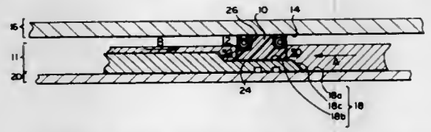
an outer flange having inner and outer surfaces, said outer surface having a groove for receiving said helical spring so as to constrain the seal element, and said inner surface having a slot for receiving said leaf spring such that upon engagement of said slot with said leaf spring, shifting of the left spring and locking of the assembly in an open position during operation is prevented.

5,603,511

EXPANDABLE SEAL ASSEMBLY WITH ANTI-EXTRUSION BACKUP

William F. Keyser, Jr., Willis; Merle L. Bell, New Waverly; Ronney P. Edwards, Richardson, and Weston W. Woods, Houston, all of Tex., assignors to Greene, Tweed of Delaware, Inc., Wilmington, Del.

Filed Aug. 11, 1995, Ser. No. 514,161
Int. Cl.[6] F16J *15/00*
U.S. Cl. 277—115 **13 Claims**



1. A generally annular expandable seal assembly for being set into a generally cylindrical space defined by an inner cylindrical wall and an outer cylindrical wall, the seal assembly comprising:

a generally annular expandable seal element formed from an elastomeric material and having opposing inner and outer generally axial surfaces and opposing first and second generally radial surfaces, the seal element further having a first annular recessed surface extending between the first radial surface and the outer surface, the first recessed surface recessed toward the inner surface and the second radial surface and including a first arcual portion and a second arcual portion more recessed than the first arcual portion;

a first generally annular anti-extrusion element formed from a non-elastomeric material and generally coaxial with the seal element, the first anti-extrusion element having a toroidal gap, the first anti-extrusion element being positioned at the first radial surface adjacent the outer surface of the seal element such that a radially outermost portion of the first anti-extrusion element is substantially co-extensive with the outer surface; and

a first generally arcual anti-extrusion bridge element formed from a non-elastomeric material and having a radially outermost portion substantially co-extensive with the outer surface of the seal element, the first bridge element further having a first principal surface substantially completely contacting the second arcual portion and a second opposing principal surface substantially co-extensive with the first arcual portion, the first anti-extrusion element further having an exterior surface and an interior surface defining a generally annular chamber, at least a first portion of the exterior surface substantially completely contacting the second principal surface of the first bridge element and the first arcual portion of the seal element, the first bridge element being positioned between the seal element and the first anti-extrusion element generally in alignment with the toroidal gap;

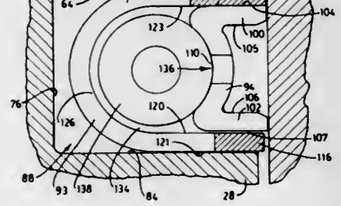
wherein the seal assembly is set by being expanded so that the inner surface sealingly contacts the inner wall and the outer surface sealingly contacts the outer wall, the toroidal gap in the first anti-extrusion element expands, and the first anti-extrusion element and the first bridge element contact the outer wall such that when pressure is applied to the set seal assembly adjacent the second radial surface, the first anti-extrusion element and the first bridge element together function as a backup to prevent extrusion of the seal element at the outer wall.

5,603,512

SIDE AND GAP SEALED OIL RING

Keith E. Lawrence, Peoria; Tsu P. Shyu, Dunlap; Donald J. Waldman, Brimfield, and Ross P. Wiethorn, Peoria, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Continuation of Ser. No. 388,967, Feb. 15, 1995, abandoned.
This application Jul. 1, 1996, Ser. No. 674,298
Int. Cl.[6] F16J *9/16;15/32*
U.S. Cl. 277—140 **8 Claims**



1. A piston and ring assembly for an internal combustion engine having a cylinder block defining a cylinder bore, a cylinder wall, and an axis, comprising:

a piston having an annular groove defined by an upper surface, a lower surface and an inner wall, said piston being disposed in and reciprocally movable in the cylinder bore;

a ring assembly having a sealing ring, a scraping ring and being disposed in the annular groove, said sealing and scraping rings each having first and second spaced apart end portions, said sealing and scraping rings being connected together at said first end portions and being free from connection and relatively movable at said second end portions, said sealing ring overlying said scraping ring and defining an annular spring cavity between said sealing and scraping rings;

means for forcibly urging said first and second end portions of the sealing ring into engagement with the upper and lower surfaces of the annular groove;

a coil spring disposed in said cavity and forcibly engaged with said scraping ring, said coil spring urging the first and second end portions of the scraping ring towards the cylinder wall, said coil spring being free from engagement with the inner wall of the annular groove.

5,603,513

COMPRESSED NON-ASBESTOS GASKETING FOR STEAM

Laura E. Shekleton, Fairport; Richard Dibble, Williamson, both of N.Y., and Agnes Potepan, Reedsville, Pa., assignors to Garlock, Inc., New York, N.Y.

Continuation of Ser. No. 84,645, Jun. 28, 1993, abandoned.
This application Aug. 14, 1995, Ser. No. 514,714
Int. Cl.[6] F16J *15/10*
U.S. Cl. 277—227 **14 Claims**

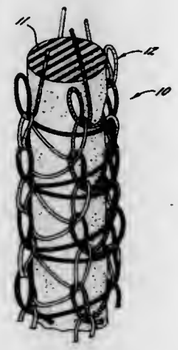
1. A non-asbestos gasket sheet material having an inorganic fiber content greater than 50% weight of said material and having a weight loss after 16 days at 650° F. of less than 20% and a weight loss after 24 hours at 900° F. of less than 20% said gasket material being substantially free of organic fiber and made by the compressed sheet method.

5,603,514

CIRCULAR WARP-KNIT ELECTROMAGNETIC EMISSION-SHIELDING GASKET

Andrew D. Jencks, 540 Prospect St., Seekonk, Mass. 02771; Vladimir Akopian, 65-B New Rd., East Providence, R.I. 02916, and John DiGioia, 780 Oak Hill Rd., North Kingstown, R.I. 02852

Division of Ser. No. 203,464, Feb. 28, 1994, abandoned. This application Aug. 23, 1994, Ser. No. 294,737
Int. Cl.[6] F16J *15/12*
U.S. Cl. 277—230 **23 Claims**



1. A gasket for shielding from electromagnetic emissions (EMI), and exhibiting excellent characteristics of recovery, bending, and tangential compression, said gasket comprising:

a core formed of a compressible resilient material;

a circular warp knitted sheath over said compressible core material, said sheath being knit from base yarns, at least some of which are electrically conductive such that said sheath is sufficiently conductive to provide shielding from electromagnetic interference over a wide range of frequencies; and

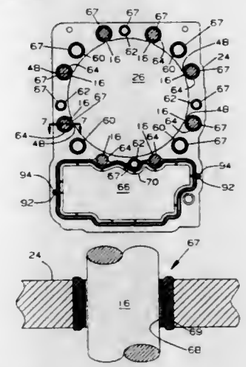
a yarn longitudinally interlaced in said sheath for stabilizing said sheath and said gasket.

5,603,515

CYLINDER HEAD SEALING SYSTEM WITH CARRIER PLATE AND REMOVABLE ENGINE SEALING GASKETS

Allyn P. Bock, West Lafayette, Ind., assignor to Caterpillar Inc., Peoria, Ill.

Continuation of Ser. No. 97,823, Jul. 27, 1993, abandoned.
This application Aug. 23, 1995, Ser. No. 518,571
Int. Cl.[6] F16J *15/12*
U.S. Cl. 277—235 B **4 Claims**



1. A sealing system for a cylinder head joint of an internal combustion engine, the cylinder head joint including a cylinder head having a cylinder head mounting surface and a cylinder block having a cylinder block mounting surface, the sealing system comprising:

a spacer plate having a top mounting surface and a bottom mounting surface, said spacer plate including a plurality of engine fluid through holes for communicating engine fluids thereacross, said plurality of engine fluid through holes includes an irregular shaped crankcase through hole adapted for receiving a reciprocating pushrod therethrough and a plurality of coolant ports adapted for receiving engine coolant therethrough;

means for clamping said spacer plate between the cylinder head and the cylinder block, said clamping means forcibly urging said top mounting surface into direct contacting engagement with the cylinder head mounting surface and said bottom mounting surface into direct contacting engagement with the cylinder block mounting surface, said means for clamping includes a plurality of cylinder head bolts extending between the cylinder head and the cylinder block;

said spacer plate having a plurality of cylinder head bolt through holes for receiving said plurality of cylinder head bolts therethrough;

a first plurality of discrete engine fluid gaskets each having a gasket hole disposed therethrough, said first gaskets each being removably positioned in a different one of said plurality of engine fluid through holes, said clamping means forcibly urging said first plurality of discrete engine fluid gaskets into direct sealing engagement with the cylinder head and cylinder block mounting surfaces and maintaining the passing of fluid flow between the cylinder head and cylinder block by way of the gasket hole, said first plurality of engine fluid gaskets includes a removable crankcase gasket corresponding to said crankcase through hole and a plurality of coolant ferrules corresponding to said plurality of coolant ports, said crankcase gasket corresponding in shape to the crankcase through hole; and

a second plurality of discrete engine sealing gaskets clamped between the cylinder block and the cylinder head, said second plurality of engine sealing gaskets each being disposed about a different one of said plurality of cylinder head bolts, each being removably disposed in a different one of said plurality of cylinder head bolt through holes, and clamped in direct sealing engagement with the cylinder block and the cylinder

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head, said second plurality of engine sealing gaskets includes a second plurality of removable coolant ferrules corresponding to said plurality of cylinder head bolt through holes.

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DRILLING AND/OR CHIPPING TOOL

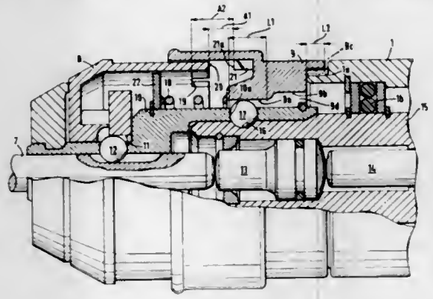
Anton Neumaier, Fürstenfeldbruck, Germany, assignor to Hilti Aktiengesellschaft, Furstentum, Liechtenstein

Filed May 22, 1995, Ser. No. 446,350

Claims priority, application Germany, May 24, 1994, 44 18 103.5

Int. Cl.[6] B23B *31/107*

U.S. Cl. 279—19.5 **10 Claims**



1. A drilling and/or chipping tool comprising a housing (**1**) having a front end, a rear end and an axis extending in the front end-rear end direction, a tool bit holder (**10**) located at the front end of and extending in the axial direction of said housing, a piston guide (**15**) located in and extending in the axial direction of said housing and projecting from the front end of said housing into said tool bit holder, a cap (**8**) laterally enclosing said tool bit holder and at least partially rotatable relative to said tool bit holder, a locking sleeve (**9**) located at the front end of said housing and extending towards said cap and displaceable in the axial direction of said housing against a biasing force of a spring (**18**), a radially displaceable locking element (**17**) positioned in a through opening (**10***a*) in said tool bit holder (**10**), said locking element being engageable in at least one recess (**16**) in said piston guide for connecting said piston guide and tool bit holder together, said locking element (**17**) is radially displaceable by axially displacing said locking sleeve (**9**), wherein the improvement comprises a first set of teeth on said locking sleeve (**9**) and a second set of teeth on said housing (**1**) with said first and second sets of teeth arranged to be placed in meshed engagement, and said sleeve has an axially extending interior section of variable diameters for contacting said locking element (**17**).

5,603,517

WALKERS

Shmil Lorman, Petah-Tikva, Israel, assignor to Siudon Ltd., Haifa, Israel

Continuation-in-part of Ser. No. 246,455, May 20, 1994, abandoned. This application Oct. 20, 1995, Ser. No. 546,327

Int. Cl.[6] A61H *3/04*

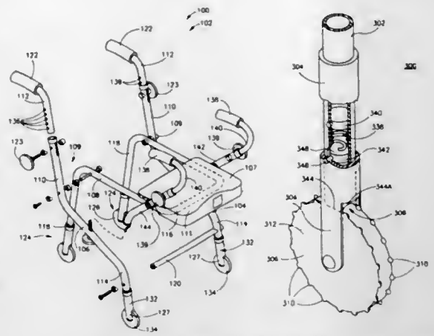
U.S. Cl. 280—5.2 **12 Claims**

1. A rollable walker for traversing stairs and substantially level surfaces, comprising:

(a) a frame including:

(i) a left and a right upright member, each of said left and a right upright members including a front leg and an upper segment; and

(ii) a crossbar being pivotally connected to said left and right upright members, said crossbar including a generally



U-shaped transverse element and two segments being rear legs, said crossbar being supported by supporting means, said supporting means being formed connective with said left and fight upright members;

(b) a pair of rear wheel mounts engaging a pair of rear wheels, each of said rear wheels having two substantially circular planar surfaces, each having a periphery, said rear wheels being connected to said rear legs, said planar surfaces of said rear wheels featuring protrusions proximate said peripheries;

(c) a pair of front wheel mounts engaging a pair of front wheels, each of said front wheels having two substantially circular planar surfaces, each having a periphery, said front wheels being connected to said front legs, said planar surfaces of said front wheels featuring protrusions proximate said peripheries; and

(d) two pairs of braking devices connected to said rear and front legs, each of said braking devices being slidably supported over one of said wheels in such a way that the application on said frame of a downward force of a magnitude greater than a pre-determined value urges said braking devices against said wheels and said protrusions to brake the walker.

5,603,518

Patent Not Issued For This Number

5,603,519

DEVICE FOR VARYING THE ALIGNMENT OF WHEELS, PARTICULARLY FOR IN-LINE SKATES

Gino Conte, Caerano San Marco, Italy, assignor to Roces S.R.L., Montebelluna, Italy

Filed Mar. 13, 1995, Ser. No. 402,841

Claims priority, application Italy, Apr. 12, 1994, M194A0675

Int. Cl.[6] A63C *17/00*

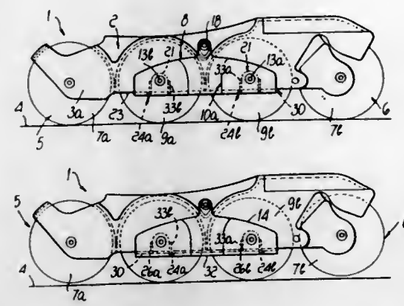
U.S. Cl. 280—11.22 **10 Claims**

1. A wheel supporting device for supporting wheels for in-line skates, comprising:

a main frame having a pair of wings, wherein said main frame has a front end and a rear end and a longitudinal extension extending between said front and rear ends;

first support elements for rotatably supporting a pair of main wheels between said pair of wings of said main frame such that said pair of main wheels are mutually spaced apart along said longitudinal extension of said main frame, and such that a first support plane extends essentially tangentially to respective supporting surfaces of said pair of main wheels;

an alignment-adjustable support frame couplable to said main frame in a selected one of two positions, wherein said support-frame has a first end and a second end and an extension extending between said first and second ends, and wherein in a first position of said two positions said first end



of said support frame is arranged towards said front end of said main frame while said second end of said support frame is arranged towards said rear end of said main frame, and wherein in a second position of said two positions said first end of said support frame is arranged towards said rear end of said main frame while said second end of said support frame is arranged towards said front end of said main frame;

second support elements for rotatably supporting at least one further wheel to said support frame such that said at least one further wheel is arranged between said pair of main wheels when said pair of main wheels are rotatably supported by said main frame and when said support frame is coupled to said main frame, and such that a second support plane extends essentially tangentially to a support surface of each said at least one further wheel; and

a connecting structure for selectively coupling said support frame to said main frame selectively in either of said two positions such that in said first position said first and second support planes are substantially mutually aligned and such that in said second position said first and second support planes are mutually relatively staggered.

said support frame comprising a pair of sides, said second elements being adapted for rotatably supporting said at least one further wheel between said pair of sides of sides support frame, said pair of wings being arranged between said pair of side when said support frame is coupled to said main frame.

5,603,520

LIGHT-WEIGHT WHEEL ASSEMBLY FOR WHEELCHAIRS

Tony M. Pearce, Alpine, Utah, assignor to TekSource, LC, Sandy, Utah

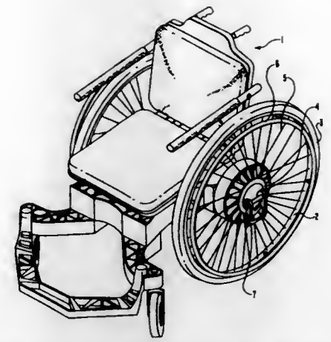
Continuation-in-part of Ser. No. 94,718, Jul. 20, 1993, Pat. No. 5,379,866. This application Jan. 12, 1995, Ser. No. 371,701

Int. Cl.[6] B60T *1/06*

U.S. Cl. 280—250.1 **23 Claims**

1. A push ring for use in a wheelchair wheel assembly comprising:

a generally circular ring portion having a cross section comprising a body portion and two protruding side portions attached to said body portion to form a gap between said side portions, the cross section being at a 90 degree angle to a tangent at a point on said circular ring; and



a plurality of fastening apparatuses for attaching said ring portion to a wheel of a wheelchair wheel assembly.

5,603,521

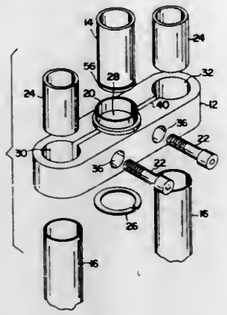
MECHANICALLY JOINED STEERING ASSEMBLY

Keith D. Bontrager, Santa Cruz, Calif., assignor to Bontrager Cycles, Inc., Santa Cruz, Calif.

Continuation of Ser. No. 516,689, Aug. 18, 1995, abandoned, which is a continuation of Ser. No. 135,668, Oct. 12, 1993, abandoned, which is a continuation of Ser. No. 765,846, Sep. 26, 1991, Pat. No. 5,290,052, which is a division of Ser. No. 445,083, Nov. 30, 1989, Pat. No. 5,060,961, which is a continuation of Ser. No. 122,033, Nov. 18, 1987, abandoned. This application Jun. 11, 1996, Ser. No. 662,296

Int. Cl.[6] B62K *19/32*

U.S. Cl. 280—279 **13 Claims**



1. A steering assembly for the front wheel of a bicycle comprising:

a crown;

a steerer, including a tubular portion adapted for engagement to said crown;

a first blade, including a tubular portion adapted for engagement to said crown;

a second blade, including a tubular portion adapted for engagement to said crown;

said crown including a single unitary piece of material having an upper surface and a lower surface, said crown having a thickness of said material disposed between said upper surface and said lower surface;

a steerer bore being formed through said material from said upper surface to said lower surface, said steerer bore being adapted to releasably engage said steerer therewithin;

first and second blade bores being formed through said material from said lower surface to said upper surface, said first and

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second blade bores each having a bore depth being defined as the distance between said upper surface and said lower surface, each said blade bore being adapted to releasably, frictionally engage one of said blades therewithin;

said frictional engagement of said first blade and said second blade within said first blade bore and second blade bore, respectively, being created only by a physical contact of each said first blade bore and second blade bore with each of a length of said first blade and a length of said second blade, respectively, said frictional engagement extending throughout said bore depth of said first blade bore and second blade bore;

said crown comprising the sole mechanical connection between said first blade and said second blade; and

wherein said length of said first blade that is in frictional engagement within said first blade bore comprises a hollow tubular portion being defined by a cylindrical wall having a wall thickness that is greater than a wall thickness of said tubular first blade at portions of said first blade disposed away from said length that is in frictional engagement within said first blade bore;

wherein said length of said second blade that is in frictional engagement within said second blade bore comprises a hollow tubular portion being defined by a cylindrical wall having a wall thickness that is greater than a wall thickness of said tubular second blade at portions of said second blade disposed away from said length that is in frictional engagement within said second blade bore.

5,603,522

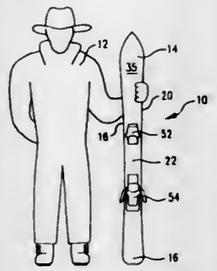
WIDE SHORT SKI

Paul N. Nelson, 21203 Poplar Way, Brier, Wash. 98036

Continuation-in-part of Ser. No. 41,900, Apr. 2, 1993, abandoned, which is a continuation of Ser. No. 924,311, Aug. 3, 1992, abandoned, which is a continuation-in-part of Ser. No. 751,784, Aug. 29, 1991, abandoned. This application Sep. 23, 1994, Ser. No. 311,515

Int. Cl.[6] A63C *5/04*

U.S. Cl. 280—609 **3 Claims**



1. A wide short snow ski, for use in a pair, comprising:

a forward shovel portion having a maximum transverse width in the range of approximately 110 to 120 millimeters, and a rearward, tail portion having a maximum transverse width in the range of approximately 105 to 115 millimeters, and wherein

said shovel portion has a rearwardly tapering region and said tail portion has a forwardly tapering region, said rearwardly and forwardly tapering regions coming together to define a waist portion of said ski, said waist portion having a transverse width that is less than the maximum transverse width of said shovel and tail portions, respectively, and further,

said shovel, waist and tail portions defining the total length of said ski, said ski length being within the range of about 148 and 173 centimeters, and further,

said shovel portion includes a tip curving upwardly from a forward location on said shovel portion, and said tail portion has an end curving upwardly from a rearward location on said tail portion, and further, said ski has an upward camber substantially between said forward and rearward locations, and still further, said rearwardly and forwardly tapering regions of said shovel and tail portions, respectively, are geometrically defined by symmetric, concave arcs, wherein the arc of curvature of each one of said arcs is defined by a sidecut radius within the range of approximately 14 meters to 28 meters, said arcs defining the transverse width of said waist portion, said ski further including reinforcing at said waist portion for purpose of mounting bindings, whereby

within said width and length ranges, in combination with said range of sidecut radii, and the flotation provided by the area bounded by said ranges of said widths, said lengths and said sidecut radii, less physical force is required in overcoming the torsional resistance associated with making turns.

5,603,523

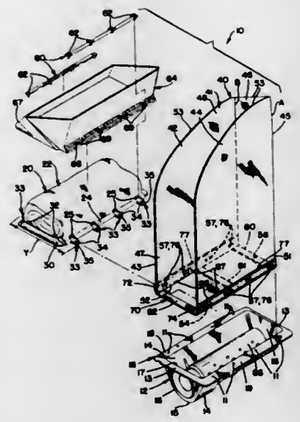
BIAS FLAP FOR AIR BAG MODULE

Daniel A. Rhule, Miamisburg; Troy A. Augustine, Kettering; Tobias J. Mosler, Troy; Dean M. Pepperine, Tipp City, and Vince Otto, Dayton, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 24, 1995, Ser. No. 518,913

Int. Cl.[6] B60R *21/20;21/22*

U.S. Cl. 280—728.2 **12 Claims**



1. An air bag module comprising:

an air bag;

a bias flap for guiding deployment of the air bag including

a generally U-shaped flap member including opposing side walls interconnected by an end wall, and

a brace member including opposing side portions interconnected by at least one tether extending therebetween, the side portions of the brace member being upwardly extending and connected to the respective side walls of the flap member; and

the air bag being located between the side walls of the bias flap and the side walls being partially folded atop the air bag.

5,603,524

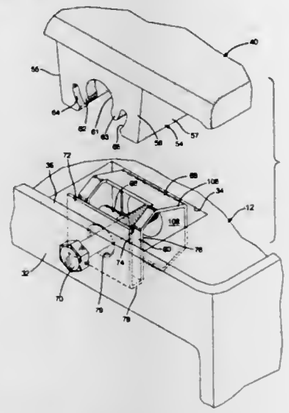
RELEASABLE FASTENER FOR AIR BAG DEPLOYMENT COVER

William J. Barnes, Waterford, and Joseph L. Grabowski, Shelby Township, Macomb County, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 1, 1995, Ser. No. 566,288

Int. Cl.[6] B60R *21/16*

U.S. Cl. 280—728.2 **6 Claims**



1. In combination:

a vehicle panel having an opening through which an air bag inflates;

a cover panel for closing the opening and mounted for movement away from the vehicle panel to permit inflation of the air bag through the opening;

a fastener clip adapted for mounting on one of the panels and having an intergrally formed extruded boss therethrough defining an outer surface of a tubular boss which extends on an axis generally parallel with the panel and normal to the direction of opening movement of the cover panel; and

the other panel having a pair of opposing flex fingers which reach part way around the tubular boss and grip the outer surface of the tubular boss to retain the cover panel in the normal closed position, and said flex fingers flexing away from one another to release from the outer surface of the tubular boss upon opening movement of the cover panel.

5,603,525

AIR BAG INFLATOR INITIATOR HOUSING WITH STORED FLUID PRESSURE RELIEF

Mitchell P. Zakula, Tempe, Ariz., assignor to TRW Inc., Lyndhurst, Ohio

Filed Jun. 22, 1995, Ser. No. 493,689

Int. Cl.[6] B60R *21/26*

U.S. Cl. 280—737 **28 Claims**

1. An air bag inflator comprising:

a container defining a first chamber for storing inflation fluid under pressure, said container having an opening through which the inflation fluid from the first chamber flows to inflate an air bag;

a housing including a closure portion fixed to said container to block flow through the opening, said housing defining a second chamber;

actuatable means in the second chamber in said housing for, when actuated, producing pressure within the second chamber in said housing; and

said closure portion of said housing rupturing in response to a pressure increase within the second chamber of said housing due to actuation of said actuatable means and rupturing in response to pressure in the first chamber reaching a predetermined pressure when said actuatable means is unactuated;

wherein said housing comprises a first area which ruptures in response to actuation of said actuatable means and a second area which ruptures in response to the pressure in the chamber reaching a predetermined pressure when said actuatable means is unactuated; and

wherein said housing further includes a tubular portion having a longitudinal central axis and being connected to said closure portion, said first area being located radially inside of said tubular portion and said second area being located radially outside of said tubular portion.

5,603,526

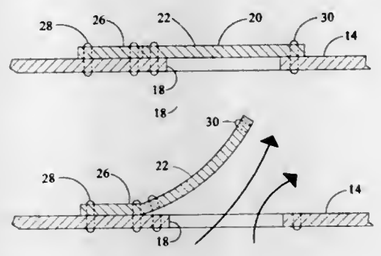
PRESSURE VENT FOR AIR BAG CUSHION

Eric S. Buchanan, North Ogden, Utah, assignor to Morton International, Inc., Chicago, Ill.

Filed Jan. 16, 1996, Ser. No. 586,079

Int. Cl.[6] B60R *21/30*

U.S. Cl. 280—739 **20 Claims**

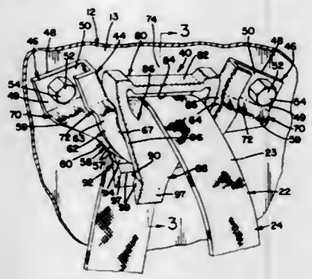


1. In an air bag cushion having a flexible fabric enclosure and at least one vent opening extending through said enclosure to expel gas inflating said cushion, the improvement comprising:

a frangible covering selectively restricting flow of said gas from said cushion, said covering including a main body covering said vent opening and having a peripheral edge portion overlying said enclosure, said edge portion being frangibly secured to said confine to secure said main body to said confine while said cushion is inflated to a predetermined pressure to thus restrict flow of said gas through said vent opening, and to fail above said predetermined pressure to permit gas to be expelled from said vent opening, said covering further including a tab extending from said main body, said tab being permanently secured to said enclosure to retain said covering to said cushion after failure.

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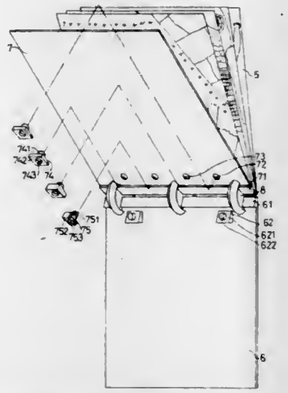
5,603,527
SHOULDER BELT MOUNTING ASSEMBLY
Anthony H. Bee, Royal Oak, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed May 15, 1995, Ser. No. 441,265
Int. Cl.[6] B60R 22/00
U.S. Cl. 280—808 **5 Claims**



1. A method of assembling a mounting assembly for mounting a shoulder belt webbing relative a vehicle, the assembly including a mounting bracket and a pivot clip through which the shoulder belt webbing is routed, the pivot clip having downwardly projecting flexible portions, the method comprising the steps of:
attaching the mounting bracket to the vehicle to define a passageway between the vehicle and the mounting bracket;
threading the shoulder belt webbing and pivot clip up through the passageway and over the mounting bracket; and
snapping the projecting portions of the pivot clip over the mounting bracket to seat the pivot clip atop the mounting bracket.

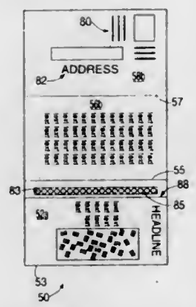
2. A mounting assembly for mounting a shoulder belt webbing relative to a vehicle, the assembly comprising:
a mounting bracket attached to the vehicle and including a transversely extending arcuate bearing surface, the mounting bracket including bent portions for spacing the arcuate bearing surface apart from the vehicle to define a passageway between the arcuate bearing surface of the mounting bracket and the vehicle, the passageway being sized for closely receiving the pivot clip therethrough; and
a pivot clip having a belt-receiving portion through which the shoulder belt webbing is routed and having a mounting portion adapted for snap-fitted engagement onto the mounting bracket, the mounting portion of the pivot clip including a transversely extending arcuate pivot surface seated atop and slidably engaging the arcuate bearing surface of the mounting bracket when the pivot clip is mounted on the mounting bracket such that the pivot clip freely transversely slides relative to the mounting bracket, the pivot clip including spaced apart, opposing, downwardly projecting flexible portions depending from the arcuate pivot surface for snap-fittedly engaging with the mounting bracket to mount the pivot clip on the mounting bracket, at least one of the projecting portions extending through the passageway when the pivot clip is mounted on the mounting bracket;
whereby facile pivotal movement of the shoulder belt webbing relative to the vehicle is permitted by the transverse sliding movement of the pivot clip relative to the arcuate bearing surface of the mounting bracket.

5,603,528
PHOTO ALBUM USABLE AS A PICTURE STAND
Cheng-Sung Chen, No. 380, Chung-Hua Rd., Tou-Liu City, Yun-Lin Hsien, Taiwan
Filed Nov. 13, 1995, Ser. No. 554,970
Int. Cl.[6] A47B 23/00
U.S. Cl. 281—33 **8 Claims**



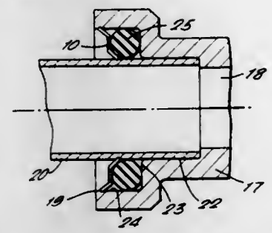
1. A photo album comprising:
rigid front and rear cover pages, a plurality of picture holding sheets sandwiched between said front and rear cover pages, a binder for hinging together connecting edge portions of said front and rear cover pages and said picture holding sheets, at least one male fastener secured on an outer surface of one of said front and rear cover pages adjacent to said connecting edge portion, and at least one first female fastener secured on an outer surface of the other one of said front and rear cover pages adjacent to said connecting edge portion for engaging releasably a corresponding said male fastener when said front cover page is turned so as to be disposed adjacent to said rear cover page, whereby said photo album can be used as a picture stand when said first female fastener engages the corresponding said male fastener.
wherein said outer surface of each of said front and rear cover pages is formed with a horizontally extending wedge-shaped projection at said connecting edge portion of said front and rear cover pages, said wedge-shaped projections of said front and rear cover pages tapering gradually in a direction toward said connecting edge portions of said front and rear cover pages and abutting against each other when said first female fastener engages the corresponding said male fastener.

5,603,529
COLOR BROCHURE WITH INTEGRAL RETURN MAILER AND METHOD OF MAKING IT
Harold Breindel, 75 Albertson Ave., Albertson, N.Y. 11507
Filed Aug. 10, 1995, Ser. No. 513,216
Int. Cl.[6] B42D 15/00
U.S. Cl. 283—56 **18 Claims**



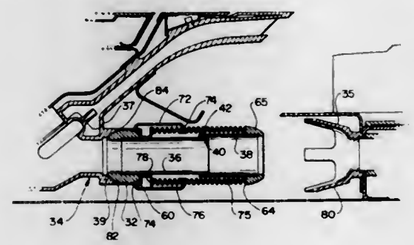
1. A color brochure with an integral return mailer, comprising:
a single sheet of paper having a first side and a second side;
said first side being printed in color and said second side being printed in black and white only;
said sheet being folded along three fold lines to define a first end panel, a second end panel, a first interior panel adjacent to said first end panel, and a second interior panel adjacent to said second end panel;
said first end panel of said sheet being printed on said second side with a return address; and
said second end panel being folded onto said second interior panel on said second side of said sheet and being glued onto said second side to form an envelope pocket.

5,603,530
GRAB RINGS
John D. Guest, Bray, Maidenhead, Berkshire, SL6 2EX, United Kingdom
Filed Sep. 14, 1995, Ser. No. 528,203
Claims priority, application European Pat. Off., Sep. 14, 1994, 94306729
Int. Cl.[6] F16L 17/025
U.S. Cl. 285—105 **9 Claims**



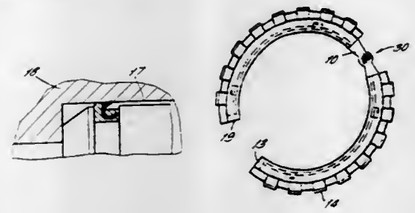
1. A grab ring comprising a substantially flat annular element having one set of teeth projecting outwardly from an outer periphery of the element at an inclined angle to the annular element to one side thereof and a second set of teeth projecting inwardly from an inner periphery of the element at an inclined angle to the plane of the annular element to the other side thereof to engage a pair of inner and outer concentric cylindrical surfaces to permit relative movement between the surfaces in one direction and to prevent relative movement between the surfaces in the opposite direction, the first and second sets of teeth substantially arranged directly opposite to one another and being radially spaced apart a distance equal to the width of the flat annular element.

5,603,531
BLIND ASSEMBLY-SWIVEL CROSSOVER TUBE
Mark S. Maier, West Palm Beach, Fla., assignor to United Technologies Corporation, Hartford, Conn.
Filed Dec. 6, 1994, Ser. No. 349,847
Int. Cl.[6] F61L 27/04
U.S. Cl. 285—165 **15 Claims**



1. A deployable crossover tube for conducting fluid from one location to another location, said deployable crossover tube having a tubular telescopic member having a fore end and an aft end defining a straight through passageway, a first fitting means affixed to the fore end of said tubular telescopic member and a second fitting means affixed to the aft end of said tubular telescopic member, a first receiving means affixed to said first fitting means and a second receiving means adapted to receive said second fitting means, said first fitting means with respect to said first receiving means and said second fitting means with respect to said second receiving means permitting swiveling movement of said tubular telescopic member, flexible and resilient means surrounding said tubular telescopic member affixed to said first receiving means for supporting said tubular telescopic member in a predetermined position for being aligned with said second receiving means when said second fitting means is deployed to fit into said second receiving means.

5,603,532
GRAB RINGS
John D. Guest, 'Iona' Cannon Hill Way, Bray, Maidenhead, Berkshire, United Kingdom
Filed Jan. 18, 1995, Ser. No. 374,258
Claims priority, application United Kingdom, Jan. 19, 1994, 9400912
Int. Cl.[6] F16L 37/088
U.S. Cl. 285—305 **8 Claims**

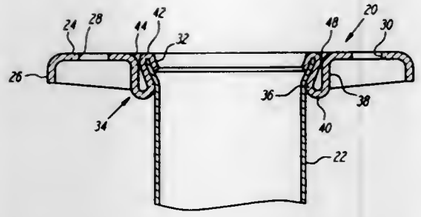


1. A grab ring for locking a cylindrical component in a bore in another component, in which the ring is formed from spring metal and includes a means for mounting the ring in a groove in one of the components and a means for gripping a surface of the other component, the ring including a radial slot and a hinge to facilitate opening from a closed position of the ring for assembly in said groove in one of the components and to bias the ring into its closed position, the ring having an L-shaped cross-section and including two limbs, one limb being part-cylindrical and the other limb extending radially to the part-cylindrical limb, said part-cylindrical limb and radially extending limb each having a free edge, said mounting means extending along said free edge of said part-cylindrical limb to hold the ring in said groove in said one component and the gripping means extending along said free edge of said radial limb.

5,603,533
TUBE FLANGE ASSEMBLY
Toshiomi Hayashi, 2-18-7 Omachi Nishi, Asaminami-ku, Hiroshima-shi, Hiroshima-ken, Japan
Filed Nov. 7, 1995, Ser. No. 554,812
Claims priority, application Japan, Nov. 8, 1994, 6-300322
Int. Cl.[6] F16L 25/00
U.S. Cl. 285—334.2 **7 Claims**

1. A tube flange assembly comprising
an attachment flange having an attachment plate, an annulus inwardly of the attachment plate and an annular corrugation forming an open annular channel having an inner annular wall and an outer annular wall between the annulus and the attach-

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ment plate, the inner annular wall being attached to the annulus and the outer annular wall being attached to the attachment plate;

a tube having a tube end interengaged with the attachment flange between the annulus and the annular corrugation, the annulus, the inner annular wall and the interengaged tube end being deformed outwardly toward the attachment plate to interlock the tube end with the flange, the inner annular wall and the outer annular wall defining a small annular gap to retain the corrugation as an open annular channel, the tube being outwardly tapered approaching the tube end.

5,603,534

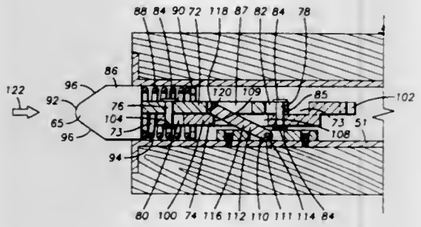
LOCK MECHANISM

Mark W. Fuller, 2806 Michaux, Houston, Tex. 77009

Continuation-in-part of Ser. No. 969,771, Oct. 30, 1992, abandoned. This application Sep. 20, 1994, Ser. No. 309,843

Int. Cl.[6] E05C *19/00*

U.S. Cl. 292—2 **32 Claims**



1. A mechanism to secure a portion of the cover of an opening to a portion of the opening, comprising:

a guide member having an extended position and a retracted position;

a multiple piece bolt member disposed adjacent said guide member and interconnected to one end of said guide member;

said multiple piece bolt member having a first plate and a second plate, said first plate and said second plate selectively moveable with respect to one another;

said first plate including a slot therein;

said second plate including a lock bar alignment member therein;

a lock bar extending through said lock bar alignment member and into said slot in said first plate;

said first plate having an extended position and a retracted position, said lock bar, when said first plate is located in said extended position, interferingly engaging said slot in said first plate to prevent movement of said first plate from said extended position to said retracted position without independent movement of said guide member to retract said first plate.

5,603,535

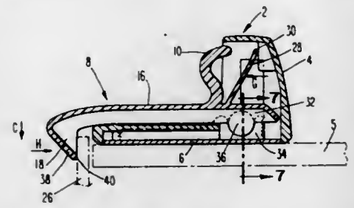
SLAM LATCH

Jeffrey L. Antonucci, King of Prussia, Pa.; Richard E. Schlack, Rising Sun, Md., and Paul Krape, Summerfield, N.C., assignors to Southco, Inc., Concordville, Pa.

Continuation-in-part of Ser. No. 978,900, Nov. 19, 1992, abandoned. This application Aug. 21, 1995, Ser. No. 517,410

Int. Cl.[6] E05C *19/10*

U.S. Cl. 292—128 **27 Claims**



1. A slam latch adapted for being mounted on a glass panel of a slidable glass window or door for latching with a keeper on a corresponding frame, the slam latch comprising:

a base plate;

a housing connected with said base plate;

a one-piece catch disposed within said housing adapted for latching with said keeper;

wherein said housing includes a generally elongated bottom wall substantially parallel with a longitudinal axis of the base plate, said catch defining first and second ends along a longitudinal axis and includes a tongue generally elongated along said longitudinal axis, said tongue including a lower tongue surface substantially parallel to and seated against said bottom wall of said housing in a closed position of said latch, said tongue further including a lip proximate the second end of said catch for latching with said keeper.

5,603,536

LINEAR PRELOAD FLUID POWER OPERATED LATCH

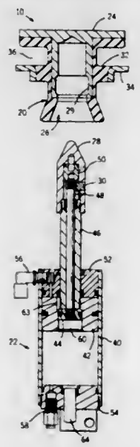
David R. Bauer, Delafield, and Michael P. Jahn, Greendale, both of Wis., assignors to Applied Power Inc., Butler, Wis.

Filed Sep. 26, 1995, Ser. No. 534,229

Int. Cl.[6] E05B *47/00*

U.S. Cl. 292—144 **11 Claims**

1. A fluid power operated latch, comprising:



a fluid pressure operated cylinder;

a fluid pressure operated annular piston having an inner diameter and an outer diameter, said outer diameter being slidable relative to an internal wall of said cylinder and sealed thereto;

a quill shaft secured to said annular piston and extending axially therefrom beyond an end of said cylinder to an extending end, said quill shaft being extendable and retractable relative to said cylinder and having a hollow nose at said extending end;

a second fluid pressure operated piston slidably sealed to said inner diameter of said annular piston;

a post secured to said second piston and extending axially therefrom inside a lumen of said quill shaft, said post being slidable inside said lumen so as to be extendable and retractable relative to said quill shaft and extending beyond said cylinder to an extending end inside said nose and having a linear cam at said extending end;

at least one dog slidable radially in and beyond a slot in said nose, said dog being slidable in said slot by camming on said cam when said cam is moved axially relative to said quill shaft; and

a cup for receiving said nose and having an undercut for engaging said dog when said dog extends radially beyond said nose to resist retraction of said nose from said cup.

5,603,537

DOOR-LOCK DRIVING SYSTEM

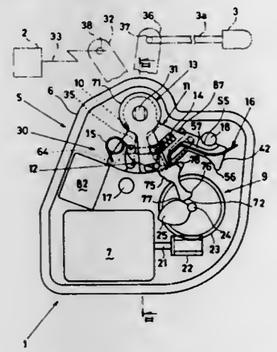
Hitoshi Amano, and Takashi Kobayashi, both of Okazaki, Japan, assignors to Nippondenso co., Ltd., Kariya, Japan

Filed Apr. 24, 1995, Ser. No. 426,844

Claims priority, application Japan, May 13, 1994, 6-100189; Mar. 13, 1995, 7-52503

Int. Cl.[6] E05C *3/06*

U.S. Cl. 292—201 **14 Claims**



1. A door-lock driving system including a door-lock unit to unlock and lock a door, a manual member manually operating said door-lock unit and an actuator controlling said door-lock unit for establishing a door-unlocking state, an ordinary door locking state or a super-locking state; wherein said actuator comprises:

a case;

a common pivot secured to said case;

an electric motor disposed in said case;

a torque transmitting means disposed in said case and connected to said electric motor for transmitting driving torque of said electric motor;

a first lever connected to said manual member and disposed in said case to be rotatable around said pivot;

a second lever disposed on said first lever to be rotatable relative to said first lever on an axis of said pivot and connected to said door-lock unit and, said second lever having a first torque receiving portion which is engaged with said torque transmitting means when said torque transmitting means rotates in a direction to establish said ordinary locking state and a locking-side portion which engages said first lever when said unlocking state or said ordinary locking state is established;

a clutch arm pivotally supported by said second lever and engages said first lever when the unlocking state or said ordinary locking state is established;

a clutch lever disposed to be rotatable relative to said second lever and said clutch arm on said axis of said pivot and having a second torque receiving portion which is engaged with said torque transmitting means when said torque transmitting means rotate in the direction to establish said unlocking state and when said torque transmitting means rotates in the direction to establish said super-locking state, and a driving member which drives said clutch arm to disengage from said first lever only when said torque transmitting means engages said second torque receiving portion to rotate in the direction to establish said locking state relative to said second lever and said clutch arm.

5,603,538

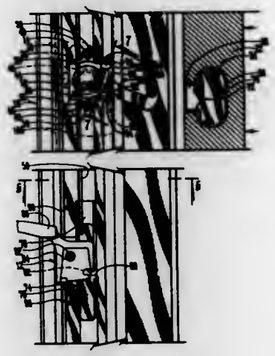
CASEMENT WINDOW SASH LOCKING SYSTEM

Robert S. Evers, Pella, Iowa, assignor to Pella Corporation, Pella, Iowa

Filed Jan. 12, 1995, Ser. No. 371,753

Int. Cl.[6] E05C *3/06*

U.S. Cl. 292—215 **21 Claims**



1. A locking assembly comprising,

a housing having an outwardly extending channel defined by oppositely disposed guide surfaces,

a cam rotatably mounted about an axis of rotation in said housing and including top and bottom faces, and an outer peripheral edge, an upwardly extending pin on said top face, and a slot extending from said periphery inwardly and defined by oppositely disposed guide edges,

an elongated catch having a longitudinal axis and inner and outer ends, top and bottom sides and a longitudinally extending flange having opposite sides being perpendicular to said top and bottom sides, said outer end having a hook means and said inner end having a slot extending transversely to said longitudinal axis, and

said catch having said flange positioned in said channel with said pin being received in said catch slot, said catch flange being positioned to engage the outer peripheral edge of said cam and extend into said cam slot at times during rotation of said cam.

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5,603,539

MOTOR-VEHICLE DOOR LATCH WITH EXCHANGEABLE LOCK LINKAGE

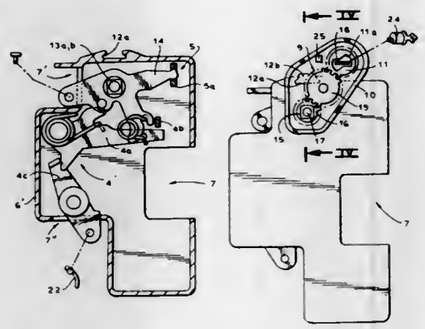
Klaus Gruhn, Mönchengladbach; Frank Kleefeldt, Heiligenhaus, and Johannes-Theodor Menke, Velbert, all of Germany, assignors to Kiekert Aktiengesellschaft, Heiligenhaus, Germany

Filed Jul. 28, 1995, Ser. No. 509,003

Claims priority, application Germany, Sep. 1, 1994, 44 31 144.3; Dec. 10, 1994, 44 44 048.0

Int. Cl.[6] E05C *3/16*

U.S. Cl. 292—216 **11 Claims**



1. A motor-vehicle door latch comprising:

a main housing;

a lock fork on the main housing engageable with a door bolt and pivotable between a holding position engaged around the bolt and retaining it on the main housing and a freeing position permitting the door bolt to move into and out of the main housing;

a release pawl engageable on the main housing with the fork and displaceable between a latched position retaining the fork in the holding position and an unlatched position unengageable with the fork and permitting the fork to move into the freeing position;

a manual actuating mechanism movable in the main housing between an actuated position and an unactuated position;

means including a coupling part displaceable on the main housing between a coupling position connecting the actuating mechanism to the release pawl for displacement of the release pawl into the unlatched position on displacement of the actuating mechanism into the actuated position and a decoupling position for disconnecting the actuating mechanism from the release pawl, whereby in the decoupling position actuation of the actuating mechanism does not affect the release pawl;

a central locking element on the main housing movable between a locked and an unlocked position;

means including a locking mechanism jointly movable with the locking element and connected between the central locking element and the coupling part for displacing the coupling part into the decoupling position on displacement of the central locking element into the locked position and for displacing the coupling part into the coupling position on displacement of the central locking element into the unlocked position, one of the mechanisms being provided with an externally accessible actuation formation;

an auxiliary housing independent of the main housing;

a linkage in the auxiliary housing having a pair of ends, one of which is formed by a rotatable nut; and

means for securing the auxiliary housing on the main housing with one end of the linkage fitted to the actuation formation for operation of the one mechanism via the actuation formation and with the other end of the linkage positioned for connection to an actuating part constituted as a lock cylinder.

5,603,540

SWING LID LOCKING MECHANISM

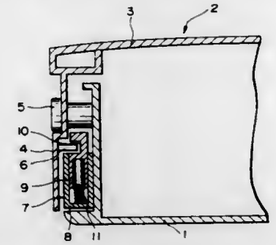
Masaharu Shibao, Sagamihara, Japan, assignor to Nifco, Inc., Kanagawa, Japan

Filed Dec. 14, 1995, Ser. No. 572,043

Claims priority, application Japan, Dec. 28, 1994, 6-340012

Int. Cl.[6] B05B *15/02*

U.S. Cl. 292—341.15 **4 Claims**



1. A swing lid locking mechanism comprising a swing lid having a body which is swingably supported at an open end by swingably connecting support legs projecting from the lid body thereof to the container; stopping projections formed on the support legs of the swing lid; a locking weight slidably supported on the container at a position near the support leg; and a biasing means for biasing the locking weight in one sliding direction;

characterized in that the locking weight slides by inertia against the biasing force of the biasing means when shocked and comes into engagement with the stopping projection to stop the swing motion of the support leg to prevent the swing lid from turning in order that the swing lid is prevented from opening or closing when shocked.

5,603,541

BUMPER BEAM

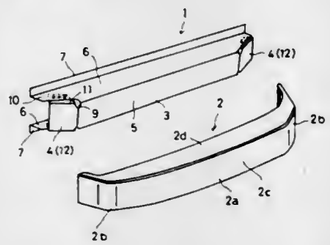
Tsuneyuki Wada, and Hideki Akiyama, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 22, 1995, Ser. No. 531,591

Claims priority, application Japan, Sep. 30, 1994, 6-259582

Int. Cl.[6] B60R *19/04*

U.S. Cl. 293—102 **2 Claims**



1. A bumper beam formed by bending a metal plate into a U-shaped section with a vertical wall and upper and lower horizontal walls connected to the vertical wall, in which each lengthwise end portion of said metal plate is formed with upper and lower tapering horizontal wall extension parts and an intermediate part separated from said horizontal wall extension parts by cut-out spaces, said intermediate part comprising upper and lower horizontal wall remaining parts separated from said horizontal wall extension parts by said cut-out spaces and a vertical wall extension part, and said intermediate part is bent toward an opening side of said U-shaped section with said horizontal wall remaining parts stacked and welded to said horizontal wall extension parts.

2. A method of forming a bumper beam having a U-shaped section with a vertical wall and upper and lower horizontal walls connected to the vertical wall by bending a metal plate, comprising the steps of:

forming at each end portion of portions of said metal plate corresponding to said upper and lower horizontal walls a tapering horizontal wall extension part and a horizontal wall remaining part separated from said horizontal wall extension part by a cut-out space, whereby an intermediate part composed of upper and lower said horizontal wall remaining parts and a vertical wall extension part is formed between upper and lower said horizontal wall extension parts;

bending said portions corresponding to said upper and lower horizontal walls with respect to a portion corresponding to said vertical wall to form said U-shaped section;

bending said intermediate part toward an opening side of said U-shaped section; and

welding said horizontal wall remaining parts to said horizontal wall extension parts.

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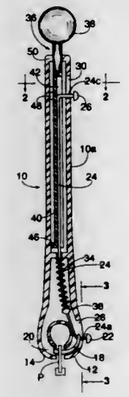
MANIPULATOR FOR ZIPPERS

Lorna Walker, 13 Iris Cir., Glen Rock, N.J. 07452

Filed Jul. 27, 1995, Ser. No. 507,612

Int. Cl.[6] A44B *19/24*

U.S. Cl. 294—3.6 **3 Claims**



1. A zipper manipulating device including an elongated handle having a bifurcated end including first and second portions separated by a gap for receiving an operating element of a zipper, a prong operable from a retracted position sheathed in said first portion of the handle to a projecting position wherein a portion of the prong projects across said gap, said prong in said projecting position extending through a hole in an operating element of the zipper when in retentive engagement therewith, said handle containing a spring for operating said prong into said projecting position, and a manual actuator for said prong having a connection to said prong and projecting outside the handle for manipulating the prong into its retracted position wherein the prong is disengaged from the operating element in said gap, said manual actuator being disposed near said bifurcated end of the elongated handle, further including a second manual actuator projecting outside of the handle remote from the bifurcated end of the handle and having a connection inside the handle to said prong for manipulating the prong into its retracted position and thereby releasing the prong's retentive engagement with any element of a zipper that may be disposed in said gap and freeing the gap for insertion of an operating element of a zipper.

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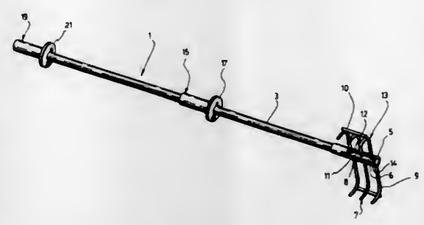
HANDLING DEVICE

Jean-Claude Ratte, 3270 Duval, Quebec, Province of Quebec, Canada

Filed Jan. 17, 1996, Ser. No. 586,325

Int. Cl.[6] F24B *15/00*

U.S. Cl. 294—11 **1 Claim**



1. A handling device comprising in combination:

a longitudinal axis;

an elongated sleeve provided with opposite ends and coaxial with the longitudinal axis, said opposite ends respectively defining a first end and a second end;

an elongated member having opposite ends, coaxial with the longitudinal axis and pivotally mounted inside the elongated sleeve member, said opposite ends respectively defining a first end and a second end;

one pair of grasps, each grasp of said pair being respectively firmly attached to the first end of the elongated sleeve member and to the first end of the rod, each of said grasps comprising of set of three "J"-shaped teeth connected together by a transversal member;

a first prehension means firmly attached to the second end of the rod and comprising a rubber handle and a disk-shaped stopper; and

a second prehension means firmly attached to an intermediate portion of the elongated sleeve member and comprising a rubber handle and a disk-shaped stopper;

the elongated sleeve member and the rod being adapted to pivot one with respect to the other and move said one pair of grasps between two extreme positions, that is a closed position where the grasps are close to each other and an open position where the grasps are distant from each other; and

a portion of the first end of the elongated sleeve member being provided with an opening having opposite edges substantially parallel to the longitudinal axis of the device, the grasp firmly attached to the elongated sleeve member being firmly attached to one of said edges, while the other edge of the opening provided at the portion of the first end of the elongated sleeve member defining a stopper for the grasp is firmly attached to the rod.

5,603,544

COMPRESSION CAP ASSEMBLY FOR SPREADER PIPE

David J. Bishop, and James R. Plair, both of Houston, Tex., assignors to Maxibar, L.P., Houston, Tex.

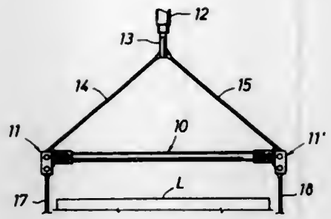
Filed Jun. 7, 1995, Ser. No. 487,894

Int. Cl.[6] B66C *1/12*

U.S. Cl. 294—81.1 **8 Claims**

1. Apparatus adapted to be fixed to the end of spreader means in a cable rigging that is used to lift a load, comprising; a compression plate having inner and outer sides; means on said outer side of said compression plate for attaching the ends of cables included in said rigging; and coupling means on said inner side of said compression plate for securing an end portion of the spreader means thereto, said coupling means including opposed, elongated members sized and arranged to fit over said end portion and having

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clearance between the adjacent edges thereof, and selectively operable means for reducing the width of said clearance to bring said coupling members into gripping engagement with said end portion.

5,603,545
UNIVERSAL STRAP

Michael Benson, and Kristine Benson, both of 56 Quaker St., Marlton, N.J. 08053

Filed Jun. 7, 1995, Ser. No. 480,338
Int. Cl.[6] A45F *5/00*
U.S. Cl. 294—150 **3 Claims**



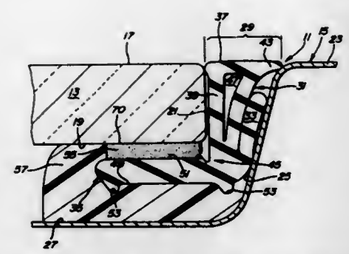
1. A universal carrying strap, comprising:
an elongated strap member having a first end and a second end, and having a first major loop formed at said first end and a second major loop formed at said second end;
a first freely slideable male clip member connected to and freely slidable along said first major loop;
a first freely slideable female clip member connected to and freely slidable along said first major loop;
a second freely slideable male clip member connected to and freely slidable along said second major loop; and
a second freely slideable female clip member connected to and freely slidable along said second major loop, wherein said first major loop is formable into a first closed minor loop and first openable minor loop, said first minor openable loop being opened when said first freely slideable male clip member and said first freely slideable female clip member are disengaged from each other and closed when said first freely slidable male clip member and said first freely slidable female clip member are engaged with each other, and wherein said second major loop is formable into a second closed minor loop and a second openable minor loop, said second minor openable loop being opened when said second freely slideable male clip member and said second freely slideable female clip member are disengaged from each other and closed when said second freely slideable male clip member and said second freely slideable female clip member are engaged with each other.

5,603,546
FLUSH GLASS WINDOW MOLDING

Julio Desir, Sr., Redford, Mich., assignor to The Standard Products Company, Cleveland, Ohio

Filed Feb. 6, 1996, Ser. No. 598,643
Int. Cl.[6] B60J *10/02*
U.S. Cl. 296—93 **4 Claims**

1. A window molding for an automotive vehicle located between a substantially transparent window panel and an adjacent vehicle



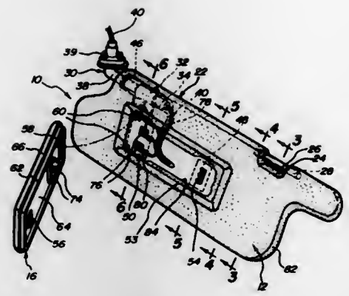
body panel, said window panel having an outside surface and an inside surface, both of which are peripherally bordered by an edge therearound, said adjacent vehicle body panel having an appearance surface with an offset portion formed therefrom, ending with an inwardly turned flange being substantially parallel to said adjacent vehicle body panel, said window molding being comprised of an elongated flexible member with a typical cross sectional shape having a triangular shaped portion defined by a short visible triangular leg being substantially parallel to and flush with said outside surface of said window panel and said appearance surface of said vehicle body panel, said triangular-shaped portion being further defined by a window-side triangular leg extending generally perpendicularly from one end of a non-appearance side of said visible triangular leg, said triangular-shaped portion also being defined by a body-side triangular leg extending from a second end of said non-appearance side of said visible triangular leg and mating with said window-side triangular leg thereby forming an apex of said triangular-shaped portion, said visible triangular leg, said window-side triangular leg and said body-side triangular leg forming a triangular-shaped hollow therebetween, said window molding having a flexible finger located adjacent to said body-side triangular leg and being joined thereto at said apex of said triangular-shaped portion, said window molding having a base extending inward from said window-side triangular leg at a generally right angle and being joined thereto at said apex of said triangular-shaped portion, said base having an inside surface and an outside surface thereupon, said outside surface of said base being affixed to said inside surface of said window panel and said inside surface of said base being affixed to said flange of said vehicle body panel, whereby said triangular-shaped portion and said flexible finger substantially fill a gap created between said edge of said window panel and said offset portion of said vehicle body panel.

5,603,547
PIVOT ROD WITH PROTECTIVE MOLDING SLEEVE

Joseph R. Finn, 2661 Bayberry, Waterford, Mich. 48329; James R. Jones, 3777 Dryden Rd., Dryden, Mich. 48428, and Kirk Jensen, 21871 Worchester Dr., Novi, Mich. 48374

Division of Ser. No. 191,267, Feb. 3, 1994, abandoned. This application Nov. 13, 1995, Ser. No. 557,411
Int. Cl.[6] B60J *3/02*
U.S. Cl. 296—97.1 **11 Claims**

1. A sun visor or other accessory for a motor vehicle, said sun visor or other accessory being movable between a stored position and a deployed position and comprising:
a body made of molded rigid foam, said body having an upper edge and a lower edge, when said sun visor or other accessory is in said deployed position said upper edge being located generally adjacent to a portion of the vehicle and said body extending generally downward and away therefrom;
a pivot arm having first and second ends, said first end having mounting means for mounting said pivot arm and said sun visor or other accessory to the vehicle, said second end molded-in-place at least partially within said body;
detent means engaging said pivot arm for maintaining said sun visor or other accessory in the stored position, the deployed

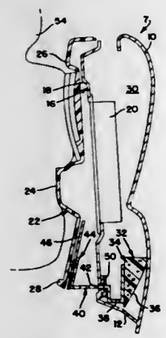


position, or an intermediate position between the stored and deployed positions, said detent means being molded-in-place at least partially within said body; and
a casing encapsulating said detent means and at least partially encapsulating said pivot arm, said casing preventing said foam from contacting said detent means during and after molding and thereby preventing said foam from interfering with the operation of said detent means.

5,603,548
PUSH-OUT VEHICLE SIDE DOOR

Umesh N. Gandhi, Grand Blanc; Douglas J. Osmak, Clarkston; Mark E. Farmer, Waterford, and Patricia L. Harmon, Rochester Hills, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 16, 1995, Ser. No. 543,775
Int. Cl.[6] B60J *5/04;* **B60R** *21/02*
U.S. Cl. 296—146.7 **9 Claims**

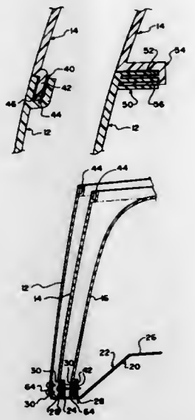


1. An automotive vehicle door structure comprising:
a first generally rigid outer structure;
a second generally rigid inner structure spaced from the outer structure, the second inner structure having a guide opening;
an interior trim panel connected to the second generally rigid inner structure; and
a target having a first section generally adjacent the outer structure, a second section substantially smaller than the first section extending from the first section having a cross-sectional area small enough for passage through the guide opening and the target has a third section connected with the second section and the third section being juxtaposed between the trim panel and the rigid inner structure, and whereupon an impact on the rigid outer structure causes the target second section to protrude inwardly through the rigid inner structure opening, causing the trim panel to protrude inwardly.

5,603,549
NESTABLE MULTIPIECE TRUCK CAB ROOF FAIRING ASSEMBLY

David E. Chen, Fort Wayne, and David F. Lewis, Leo, both of Ind., assignors to Navistar International Transportation Corp., Chicago, Ill.

Filed Apr. 12, 1995, Ser. No. 420,920
Int. Cl.[6] B62D *35/00*
U.S. Cl. 296—180.1 **17 Claims**



1. A multipiece truck roof fairing assembly comprising at least two horizontally divided sections configured for vertically stacked engagement to provide an operative fairing configuration having an aerodynamically efficient exterior surface, said sections further being configured to provide a transport configuration of said fairing assembly in which an upper of said horizontally divided sections is nestable within a lower of said horizontally divided sections, the nested sections being separated in said transport configuration, and a plurality of mounting brackets having first mounting means providing attachment of said lower of said horizontally divided sections thereto and configured to engage a truck cab roof for mounting of said lower section thereon, said brackets having second mounting means separate from said first mounting means providing attachment of said upper of said horizontally divided sections thereto independently of and within said lower section in said transport configuration.

11. A multipiece fairing assembly comprising at least two fairing sections divided along a parting line configured for mutual attachment to provide an operative fairing configuration for attachment to a truck roof having an aerodynamically efficient exterior surface, one of said fairing sections having a groove disposed along said parting line on an interior surface of said fairing section, said groove being parallel to and offset inwardly of said interior surface and opening toward said parting line, the other of said sections having a tongue disposed along said parting line and extending parallel to and offset inwardly of an interior surface thereof and configured to matingly engage said groove.

14. A multipiece fairing assembly comprising at least two sections divided along a parting line configured for mutual attachment to provide an operative fairing configuration for attachment to a truck roof, said fairing having an aerodynamically efficient exterior surface including substantially level exterior surface across said parting line, one of said fairing sections having a U-shaped groove disposed along said parting line on an interior surface of said fairing section, said groove being substantially perpendicular to said interior surface and opening parallel to said parting line, the other of said sections having a flange disposed along said parting line and having a tongue extending from said flange substantially perpendicular to said interior surface and configured to matingly engage within said groove.

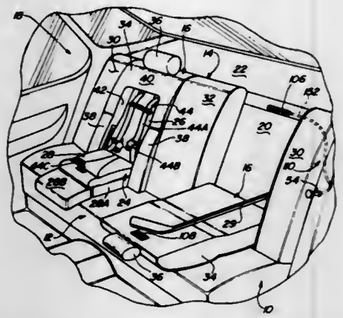
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5,603,550

VEHICLE SEAT INTERLOCK SYSTEM

Carl J. Holdampf, and Radesh Vangipuram, both of Farmington Hills, Mich., assignors to Douglas & Lomason Company, Farmington Hills, Mich.

Filed Oct. 18, 1995, Ser. No. 543,257
Int. Cl.[6] A47C *15/00*
U.S. Cl. 297—238 **17 Claims**



1. An interlock system for a vehicular seat adapted to be secured to mounting structure in the motor vehicle and having a seat cushion, a fold-down seatback panel supported for movement between an upright position and a folded position, and an integral child seat built into the seatback panel for movement between a stowed position and a deployed position, said interlock system comprising:

a first latching mechanism operable in a locked mode for releasably locking the seatback panel in the upright position and in an unlocked mode for permitting movement of the seatback panel from the upright position to the folded position, said first latching mechanism including a first striker member secured to one of the seatback panel and the mounting structure and a first latch member supported on the other of the seatback panel and mounting structure for movement between a first position whereat said first striker member is lockingly retained by said first latch member for establishing said locked mode and a second position whereat said first striker member is released from locked engagement with said first latch member for establishing said unlocked mode;

a second latching mechanism operable in a latched mode for locking the integral child seat in the stowed position and in a released mode for permitting movement of the integral child seat from the stowed position to the deployed position, said second latching mechanism including a second striker member secured to the integral child seat and a second latch member supported on the seatback panel for movement between a third position displaced from said second striker member for establishing said released mode and a fourth position engaging said second striker bar for establishing said latched mode;

an interlock mechanism operably interconnecting said first and second latching mechanisms for shifting said second latching mechanism from its latched mode into its released mode in response to said first latching mechanism being shifted from its unlocked mode into its locked mode, and said interlock mechanism further causing said second latching mechanism to be shifted from its released mode to its latched mode in response to said first latching mechanism being shifted from its locked mode to its unlocked mode, said interlock mechanism including a first interlock member that is selectively engageable with said first latch member, a second interlock member connected to said second latch member, and a coupling device interconnecting said first interlock member to said second interlock member for coordinating movement therebetween, whereby movement of said first latch member from said second position to said first position causes said second latch member to move from said fourth position to said third position so as to secure the seatback panel in its upright position and permit deployment of the integral child seat, and movement of said first latch member from said first position to said second position causes said second latch member to move from said third position to said fourth position so as to release the seatback panel for movement toward its folded position with the integral child seat secured in its stowed position; and

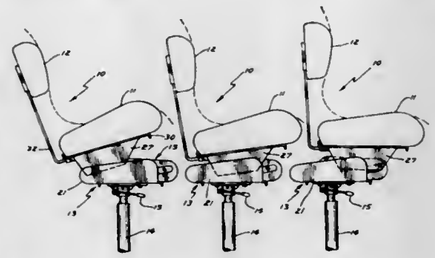
a third latching mechanism operable for releasably locking the integral child seat in the stowed position when the vehicular seat is subjected to a deceleration force in excess of a predetermined threshold value.

5,603,551

GRAVITATIONAL RESISTANT POSITIONAL CHAIR

Kelly Sheehan, 2951 Washata Bay Rd., Excelsior, Minn. 55337

Filed Jan. 16, 1996, Ser. No. 586,579
Int. Cl.[6] A47C *1/023;1/024;* **B60N** *2/12*
U.S. Cl. 297—329 **3 Claims**



1. A desk chair structure, comprising

a back rest integral with a seat,

a pair of laterally spaced slide members supporting said seat,

said slide members each being disposed between a pair of closely spaced apart guide members,

each pair of said guide members having an arcuate groove in each of the facing sides thereof, said grooves being longitudinally staggered, non-coextensive, non-conforming manner and having laterally spaced overlapping inward end portions,

said slide members having means engaged in said grooves and being relatively movable therein,

whereby seat movement provides a correct posture position for each body movement of a seated person.

5,603,552

HIGH STRENGTH, HIGH TEMPERATURE AND HIGH STRAIN RATE APPLICATIONS OF A ZINC-BASE ALLOY

Michael D. Hanna, Royal Oak, and Moinuddin S. Rashid, Bloomfield Hills, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 14, 1994, Ser. No. 356,015
Int. Cl.[6] A47C *31/00*
U.S. Cl. 297—473 **4 Claims**

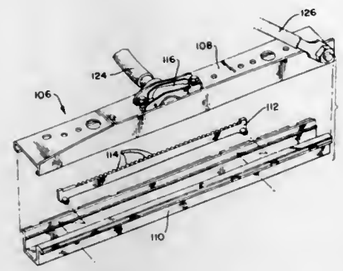
1. An adjustable vehicle seat comprising:

a seat comprising a bottom rest and a pivotally connected backrest;

A seat adjustment mechanism including an upper slidable member, a stationary lower member, a rack secured to the lower member and wherein said rack has engagement surfaces;

said seat being connected to the upper slidable member;

said seat adjustment mechanism further comprising a lock for engaging the engagement surfaces of the rack and locking the seat in a stationary position with respect to the stationary lower member,



a seat belt secured to the upper slidable member and not to a frame of the vehicle and so that the seat belt moves with the seat when the seat is moved;

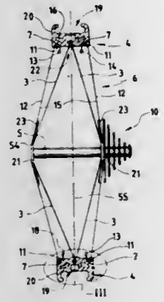
and wherein the rack comprises a die casting of an alloy consisting essentially of, by weight, between 4 and 12 percent copper, 2 and 4 percent aluminum and the balance zinc and impurities, and having fine epsilon and eta grains dispersed in a ternary eutectic material.

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BICYCLE WHEEL WITH DISK COVER

Jochen Klieber, Tacherting, and Reinhold Wuttke, Arnsberg, both of Germany, assignors to F. W. Brokelmann Aluminiumwerk GmbH & Co., Ense-Hoingen, Germany

PCT No. PCT/EP92/02824, § 371 Date Jul. 28, 1994, § 102(e) Date Jul. 28, 1994, PCT Pub. No. WO93/11950, PCT Pub. Date Jun. 24, 1993
PCT Filed Dec. 7, 1992, Ser. No. 244,696
Claims priority, application Germany, Dec. 7, 1991, 9115199 U; Jan. 24, 1992, 42 01 953.2; Sep. 21, 1992, 42 31 539.5
Int. Cl.[6] B60B *7/00*
U.S. Cl. 301—37.41 **18 Claims**



1. A wheel (1) for a bicycle (2) having a plurality of spokes (3) arranged between a circumferential rim (4) and a hub (5), having a first and a second disk cover (6) removably mounted thereto to cover the wheel laterally, said rim (4) being laterally provided with first and second circumferential catch grooves (7;7') for the respective disk cover (6) to be inserted in said groove;

said wheel further including a rim side wall (20), an inclined rim side wall (20'), and a spoke hole side (22), said first catch groove (7) being circumferentially located in the section between said rim side wall (20) and said spoke hole side (22), and said second catch groove (7') being circumferentially located in the section between said inclined rim side wall (20') and said spoke hole side (22);

said catch grooves (7,7') holding in place said respective disk cover (6) with an edge means (11) inserted under tension therein; and

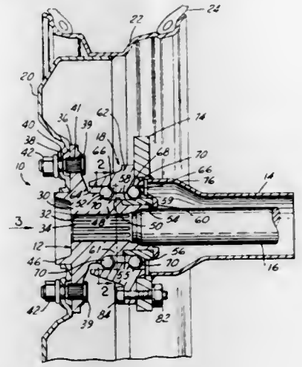
said catch groove (7') assigned to said inclined rim side wall (20'), is inclined outward at an angle (63) in relation to said catch groove (7) of said rim side wall (20).

5,603,554

REAR AXLE ASSEMBLY

David A. Monroe, Bloomfield Hills, and John G. Thomas, Troy, both of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Feb. 21, 1996, Ser. No. 604,624
Int. Cl.[6] B60B *27/02;35/16*
U.S. Cl. 301—105.1 **5 Claims**



1. A rear axle assembly comprising

an elongated rear axle tube,

a rotatable rear axle extending lengthwise within said rear axle tube,

a wheel hub sleeved on said rear axle for rotation as a unit therewith,

a bearing supporting said wheel hub for rotation,

said bearing having an inner race and an outer race with rotatable bearing members between said races,

said inner race being rigidly connected to said wheel hub, and means rigidly securing said outer race to said rear axle tube.

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WHEEL AXLE-BEARING ASSEMBLY

Gary D. Dickey, Flower Mound, and Michael W. Freitas, North Richland Hills, both of Tex., assignors to Gismo's Inc., Flower Mound, Tex.

Filed Oct. 6, 1995, Ser. No. 539,822
Int. Cl.[6] B60B *27/00*
U.S. Cl. 301—111 **18 Claims**

1. A wheel assembly for a free-wheeling device, comprising:

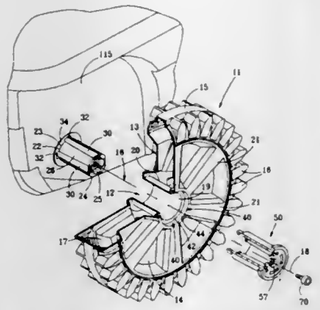
an axial centerline;

a wheel having an outward facing surface, an inward facing surface, and a central bore extending axially through said outward and inward facing surfaces defining an inner cylindrical bearing surface; wherein said outward surface has a recessed annulus radially disposed around said axial centerline and central bore;

an axle having a cylindrical outer surface, an outward end and an inward end, said inward end attached to said free-wheeling device; wherein said cylindrical outer surface has a channel extending axially along the length of the cylindrical surface, terminating at a slot in the free-wheeling device circumferentially disposed around said inward end; and

an annular bearing having a central bore extending axially therethrough, defining an inner cylindrical surface and an

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outer bearing surface and having an outward end with a flange and an inward end with a locking projection, wherein said inner cylindrical surface of said annular bearing has a rib raised radially inward toward said axial centerline and extending longitudinally along the length of said central bore between said flange and said locking projection;

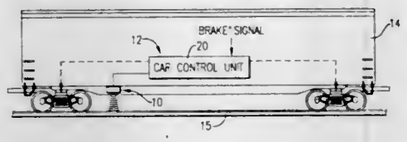
wherein said annual bearing is inserted within said cylindrical bore of said wheel and over said axle spindle such that said locking rib slidably engages within said locking channel along the longitudinal axial length of said spindle and bearing such that said bearing flange rotatably rests within said wheel flange recess and said locking projection fixably engages said circumferentially spaced retaining slot.

5,603,556

RAIL CAR LOAD SENSOR

Douglas D. Klink, Weatherby Lake, Mo., assignor to Technical Services and Marketing, Inc., Kansas City, Mo.

Filed Nov. 20, 1995, Ser. No. 559,630
Int. Cl.[6] B60T *13/74*
U.S. Cl. 303—22.6 **22 Claims**



1. In a rail car brake controller operable for controlling the brakes of a rail car traveling on a rail, a rail car load sensor for adjusting the operation of the rail car brake controller in accordance with the amount of load in the rail car, said rail car load sensor comprising:

sensor means for sensing the distance between the rail car and the rail; and

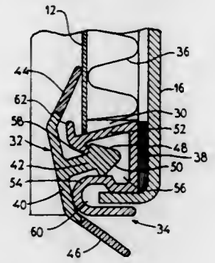
control means coupled with the rail car brake controller and responsive to said sensor means for generating and transmitting distance signals representative of the distance between the rail car and the rail to said rail car brake controller for adjusting the braking force of the rail car in accordance with said distance signals.

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APPLIANCE FRONT PANEL RETAINER

Larry D. Marks, St. Joseph Township, and Raymond W. Spiegel, Lincoln Township, both of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jul. 1, 1994, Ser. No. 266,345
Int. Cl.[6] E06B *1/00;* **E04B** *1/684*
U.S. Cl. 312—265.6 **20 Claims**



1. An appliance comprising:

a frame having grooves;

a removable panel having edges;

a channel member secured to said frame disposed adjacent to said panel; and

an elongated retainer strip having at least one projection that extends substantially a length of said retainer strip;

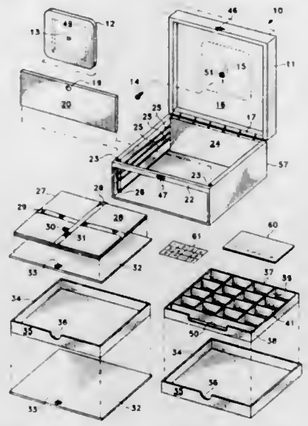
wherein said at least one projection fits into said channel member so that said retainer strip can retain an edge of said panel and a remainder of said edges are retained in said grooves.

5,603,558

TREASURE BOX

Linda L. Zimmer, 42 Skyline Dr., Highland Mills, N.Y. 10930

Filed Nov. 10, 1994, Ser. No. 338,643
Int. Cl.[6] A47B *81/00*
U.S. Cl. 312—290 **17 Claims**



1. A storage case having a variable arrangement of interior components for storage of articles exhibiting a wide range of sizes and shapes, said storage case comprising:

a box having a bottom, two side walls, a back wall and a front wall, each having an interior face and an exterior face, said front wall being in the form of a rectangular frame;

a reversible panel situated in back of said front wall:

vertical groove means at the front edges of the interior faces of said side walls and adjacent said front wall into which said reversible panel is slidably disposed such that it may be easily raised, removed, reversed and replaced;

at least one tray member for receiving the articles to be stored therein;

at least one removable shelf member capable of supporting said tray member whereby a series of opposed horizontal support means on the interior faces of said side walls slidably accommodate said shelf member at varying elevations, and said horizontal support means being accessible when said reversible panel is raised;

means within said box for the storage of said shelf member when not in use;

a top member pivotally attached to the upper edge of said back wall, said top member having an interior and an exterior surface; and

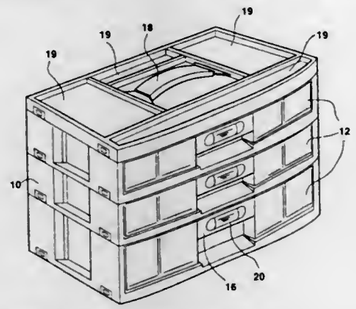
a picture frame demountably attached to the exterior surface of the top member.

5,603,559

STORAGE ORGANIZER

Zvi Yemini, Tel Aviv, Israel, assignor to ZAG Ltd., Tel Aviv, Israel

Filed Aug. 11, 1995, Ser. No. 514,370
Int. Cl.[6] A47B *88/20;95/02*
U.S. Cl. 312—333 **11 Claims**



1. A storage organizer, comprising:

(a) a housing; and

(b) at least one drawer slidably accommodated within said housing, said drawer having a floor, a back wall and a front wall, said drawer featuring a locking mechanism connected to said front wall for immobilizing said drawer in said housing, said locking mechanism including an outwardly biased locking bolt for engaging said housing when said drawer is fully inserted within said housing, said locking bolt including at least one integral biasing spring in the form of a pair of extended flexible arms having a free end and an end which is connected to said bolt, said free end being slidable along a ledge, said ledge forming a part of said front wall, so as to allow said bolt to move.

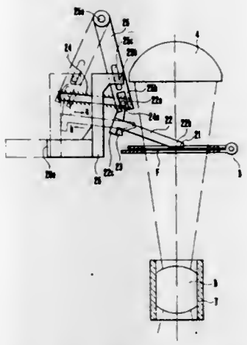
5,603,560

PROJECTION APPARATUS

Yasutsugu Saijo, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 895,644, Jun. 9, 1992, abandoned.
This application Aug. 22, 1994, Ser. No. 293,597
Claims priority, application Japan, Jun. 14, 1991, 3-143271; Sep. 30, 1991, 3-276330
Int. Cl.[6] G03B *21/14*
U.S. Cl. 353—101 **15 Claims**

1. A projection apparatus or film projection system, comprising:



a) illumination means for emitting onto a film a projection light for projecting an image on the film;

b) an index member for focus adjustment;

c) moving means for moving said index member to a focus adjusting position where said index member is in contact with a surface of the film within an optical path of the projection light, wherein said moving means is arranged to cause said index member to enter the optical path of the projection light while being out of contact with the film and to bring said index member into contact with the surface of the film by moving said index member approximately perpendicularly to the surface of the film; and

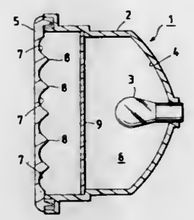
d) focus adjusting means to be operated for focus adjustment of an image of said index member.

5,603,561

VEHICULAR LAMP HAVING APPEARANCE OF DEPTH

Kazutami Ohishi, Shizuoka, Japan, assignor to Koito Manufacturing Co., Ltd., Tokyo, Japan

Filed Dec. 21, 1994, Ser. No. 360,611
Claims priority, application Japan, Dec. 21, 1993, 5-072915 U
Int. Cl.[6] B60Q *1/26*
U.S. Cl. 362—80 **25 Claims**



1. A vehicular lamp comprising:

a lamp body having a front opening;

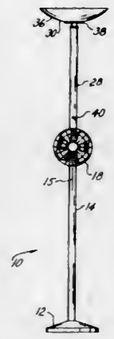
a reflector disposed at an inner-rear surface of said lamp body;

a light source mounted at a central part of said lamp body for emitting a light beam; and

an outer lens covering said front opening said lamp body, said outer lens comprising at least one of a convex and a concave structure defining linearly extending steps and retroreflection steps, said linearly extending steps and said retroreflection steps being alternatingly arrayed, and said linearly extending steps and said retroreflection steps permitting a reflection of light at different distances, thereby providing an appearance of depth.

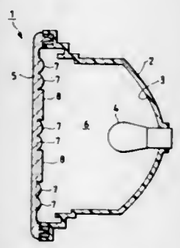
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5,603,562
COMBINATION FAN/LAMP
Thomas M. Huang, 5649 N. Peck Rd., Arcadia, Calif. 91006
Continuation-in-part of Ser. No. 387,239, Feb. 10, 1995. This application Feb. 23, 1995, Ser. No. 392,519
Int. Cl.[6] F21V *33/00*
U.S. Cl. 362—96 **29 Claims**



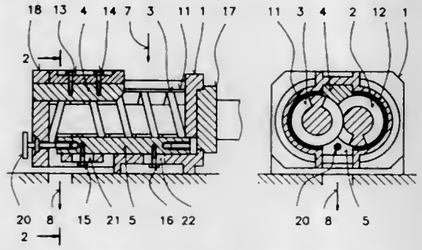
1. A free standing combination fan lamp comprising:
(a) a base;
(b) an upstanding base column fixably connected to the base and having a column axis extending from an upper extremity of the column;
(c) a frame mounted in a fixed position relative to the base and having an upwardly extending conduit member;
(d) a main lamp fixture supported above the conduit member;
(e) a fan assembly mounted to the frame, the fan assembly including a motor, the motor being spaced from the conduit, an opening being formed between opposite sides of the frame for the passage of air through the fan between the motor and the conduit, electrical conductors for powering at least one of the main lamp fixture and the fan assembly passing within the conduit member, the fan assembly being oriented for drawing and feeding air along a main air path extending generally perpendicular to the column axis; and
(f) means for moving the fan assembly relative to the frame.

5,603,563
VEHICULAR LAMP HAVING GLITTERING APPEARANCE
Kazunori Natsume, Shizuoka, Japan, assignor to Koito Manufacturing Co., Ltd., Tokyo, Japan
Filed Dec. 21, 1994, Ser. No. 360,956
Claims priority, application Japan, Dec. 21, 1993, 5-072916 U; Jul. 22, 1994, 6-170670
Int. Cl.[6] F21V *7/00*
U.S. Cl. 362—309 **7 Claims**



1. A marker vehicular lamp comprising:
a cup-shaped lamp body having a reflector and a front opening;
a light source mounted at a center portion of said lamp body; and
an outer lens covering said front opening of said lamp body, said outer lens having a plurality of sectional areas on a common surface each area having formed thereon one of first cylindrical steps oriented in a first direction and second cylindrical steps oriented in a second direction, said first direction and said second direction being orthogonal to each other.

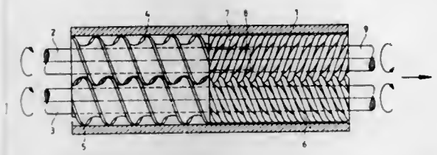
5,603,564
HOUSING FOR TWIN WORM-GEAR PRESS WITH INTERNAL INSERT TO REDUCE WEAR OF HOUSING
Anton Zimmermann, Mühledorf, Switzerland, assignor to Antogi AG, Mauren, Liechtenstein
Continuation of Ser. No. 295,724, Aug. 19, 1994, abandoned. This application Mar. 29, 1996, Ser. No. 625,045
Claims priority, application Switzerland, Dec. 31, 1992, 3999/92
Int. Cl.[6] B29B *7/48;7/58*
U.S. Cl. 366—77 **14 Claims**



1. A retruder for processing a medium comprising:
a housing having an inner wall, said housing also having a longitudinal axis with an inlet opening for receiving the medium and a discharge opening said inlet opening and said discharge opening each positioned generally transverse to the housing longitudinal axis;
a pair of worm gears within the housing each with a thread thereon aligned opposing each other along the housing axis with the threads in meshing relationship; and
an insert within said housing extending along a portion of the length of said gears and having an outer surface adjacent the housing inner wall and an inner surface facing the threads of said pair of worm gears, said gears rotating in opposite directions to process the medium admitted into the housing through said inlet opening and move the medium long the housing interior between the threads of said gears and the inner surface of said insert out of the housing through said discharge opening.

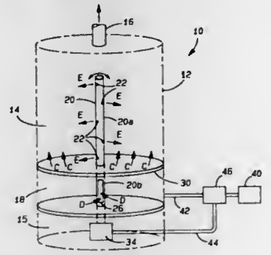
5,603,565
MULTI-SHAFT WORM MACHINE HAVING UNIFORMLY TWISTING AND COUNTERTWISTING WORM ELEMENTS
Klemens Kohlgrüber, Kürten, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Aug. 2, 1995, Ser. No. 510,152
Claims priority, application Germany, Aug. 9, 1994, 44 28 105.6
Int. Cl.[6] B29B *7/48;1/10*
U.S. Cl. 366—85 **6 Claims**

1. A multi-shaft worm machine comprising a housing (1) and a motor for rotating a plurality of worm shafts (2, 3) which are equipped with helical, meshed worm fittings for conveying products, at least one worm fitting (6) being positively connected to the associated shaft (3) in such a manner that the worm fitting may be



slipped or mounted onto the shaft but is locked against rotation, while a countertwisting element (7) is supported in a freely rotatable manner on an opposing worm shaft portion and is driven in the opposite direction of rotation by the worm shaft (3) having the positively connected worm fitting (6).

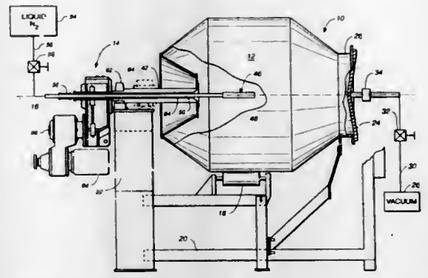
5,603,566
POWDER HOPPER WITH INTERNAL AIR ASSIST
David E. O'Ryan, Clarkston, Mich., and Richard D. Burke, Amherst, Ohio, assignors to ABB Flexible Automation Inc., New Berlin, Wis.
Filed Nov. 21, 1995, Ser. No. 561,016
Int. Cl.[6] B01F *13/02*
U.S. Cl. 366—107 **24 Claims**



1. A powder hopper with internal air assist, comprising:
a powder chamber;
air supply means for supplying compressed air to said powder chamber;
an elongated tube rotatably disposed within said powder chamber, said elongated tube having a hollow cavity in communication with said air supply means and having a plurality of air outlet ports disposed along said elongated tube in communication with said hollow cavity; and
driving means for rotating said elongated tube.

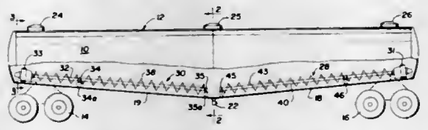
5,603,567
COAXIAL CRYOGENIC INJECTION SYSTEM
Richard Peacock, Healdshurg, Calif., assignor to Blentech Corporation, Santa Rosa, Calif.
Continuation of Ser. No. 390,622, Feb. 17, 1995, abandoned. This application Jun. 17, 1996, Ser. No. 670,239
Int. Cl.[6] B01F *13/06;15/06;5/04;9/02*
U.S. Cl. 366—139 **14 Claims**

1. A tumble mixer comprising:
a sealable rotatable drum having a horizontal axis, a cylindrical mid-section and an entry and discharge end section affixed to said rotatable drum at one end thereof, said entry and discharge end section having an axial opening,
said rotatable drum further having a service access end section affixed to said rotatable drum at the end opposite said entry and discharge end section, said service access end section aligned axially with said rotatable drum axis,
drive means drivingly connected to said service access end for rotating said drum,



material communication means for providing material to said rotatable drum,
said service access end section defining axially-aligned sealable entry means for removably positioning said material communication means within said cylindrical mid-section, whereby material can be communicated to the interior of said rotatable drum while said drum is rotating,
said material communication means comprising a removable elongated probe having a first and a second end and a nozzle means,
a material source,
said nozzle means affixed to said first end of said elongated probe for directing material communicated thereto from said material source to predetermined areas of the interior of said rotatable drum,
a sanitary rotary joint for detachably connecting said material source to said second end of said elongated probe,
a frame
said rotatable drum mounted on said frame at its service access end, said drive means including an axle defining a bore therethrough, said bore communicating with the interior of said rotatable drum and having a first end interior of said rotatable drum and a second end exterior of said rotatable drum, whereby said material communication means can be removably inserted in said bore so that said nozzle means is within said drum and said second end of the removable elongated probe extends out the second end of said bore.

5,603,568
SLUDGE DISPOSITION SYSTEM
Joseph E. Mobley, Rowlett, and William O. Brown, Cleburn, both of Tex., assignors to Texas Industries, Inc., Dallas, Tex.
Filed Feb. 16, 1996, Ser. No. 601,300
Int. Cl.[6] B01F *15/02*
U.S. Cl. 366—196 **41 Claims**

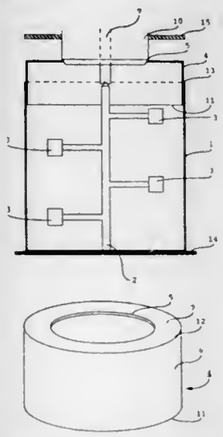


1. In a system for the disposition of sludge material, the combination comprising:
a. an elongated tank having a bottom portion extending longitudinally thereof and adapted to contain a sludge material comprising a mixture of solid particulates in a liquid medium;
b. an elongated conveyor system disposed longitudinally in said tank along the major axis of said tank near the bottom portion thereof and comprising an inner auger flight and an outer auger flight both disposed for concentric rotation about an axis extending longitudinally of said tank, said outer auger flight having a pitch slope in an opposed direction with respect to the pitch slope of said inner auger flight;

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c. at least a portion of said tank having a bottom inclined surface oriented at an angle from the horizontal; and
d. a withdrawal port located in the bottom of said tank at a lower portion of said inclined surface.

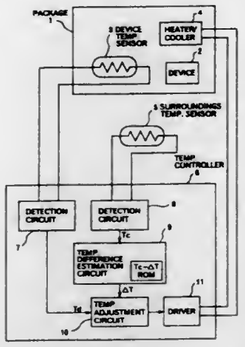
5,603,569
METHOD AND DEVICE FOR MORE EFFICIENTLY UTILIZING THE VOLUME OF A CONTAINER
Heinz Salomon, and Börje Torstenfelt, both of Västerås, Sweden, assignors to ABB Atom AB, Västerås, Sweden
PCT No. PCT/SE94/01078, § 371 Date Nov. 22, 1994, § 102(e) Date Nov. 22, 1994, PCT Pub. No. WO95/14998, PCT Pub. Date Jun. 1, 1995
PCT Filed Nov. 16, 1994, Ser. No. 347,434
Claims priority, application Sweden, Nov. 25, 1993, 9303904
Int. Cl.[6] B01F *15/00;* **G21F** *5/005;5/12;9/16*
U.S. Cl. 366—347 **6 Claims**



1. A method for more efficiently utilizing the volume of a container having a given length and an edge defining an opening at an upper end thereof, a stirrer located in the container along the length thereof for stirring a mixture of first and second compounds, the method comprising the steps of increasing the volume of the container available for the mixture during stirring by temporarily extending the length of the container by providing an adapter telescoped within said container at said edge, a side wall of said adapter extending outwardly of said edge such that a wave of the mixture generated during the stirring is prevented from overflowing the edge of the container, and after the stirring is completed moving the adapter down into the container for thereby disposing of the adapter.

5,603,570
CONSTANT-TEMPERATURE CONTROL USING SURROUNDINGS TEMPERATURE OF A DEVICE
Haruhito Shimizu, Tokyo, Japan, assignor to NEC Corporation, Japan
Filed Nov. 7, 1994, Ser. No. 335,075
Claims priority, application Japan, Nov. 5, 1993, 5-276492
Int. Cl.[6] G02F *1/015;* **G01K** *1/20*
U.S. Cl. 374—100 **15 Claims**

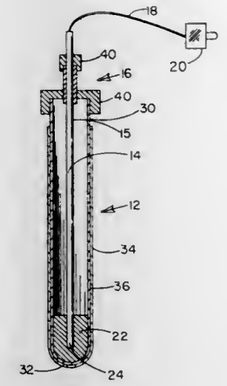
1. A temperature control method of a device incorporated in a module, comprising the steps of:
detecting a device temperature when the device is operated, the device temperature being detected by a first sensor provided near the device;



detecting a surroundings temperature of the device when the device is operated, the surroundings temperature being detected by a second sensor provided to the module;
estimating a temperature difference between the device temperature and a predetermined control target temperature, based on the surroundings temperature and a predetermined correlation between the surroundings temperature and the device temperature detected when desired characteristics of the device are obtained;
compensating the device temperature detected when the device is operated with the temperature difference; and
adjusting the temperature of the device on the predetermined control target temperature based on the compensated device temperature;
the predetermined correlation is obtained by the steps of:
assembling the module including the device, the first sensor, the second sensor, and a temperature adjustment element for adjusting the temperature of the device at a predetermined arrangement;
driving the temperature adjustment element so that the characteristics of the device become consistent with the desired characteristics under a plurality of surroundings temperatures;
detecting the device temperature using the first sensor each time the characteristics of the device are consistent with the desired characteristics at each surroundings temperature; and
determining the correlation between the surroundings temperature and the device temperature.

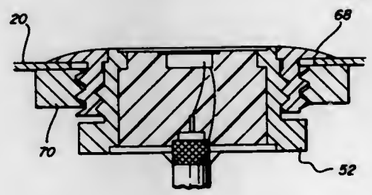
5,603,571
THERMOCOUPLE ASSEMBLY INCLUDING AN OUTER SLEEVE MADE IN PART OF A TITANIUM ALLOY
C. Edward Eckert, 260 Lynn Ann Dr., New Kensington, Pa. 15068
Continuation of Ser. No. 108,474, Aug. 18, 1993, abandoned. This application Oct. 5, 1995, Ser. No. 539,653
Int. Cl.[6] G01K *1/12;1/10;7/04*
U.S. Cl. 374—140 **42 Claims**

1. An improved thermocouple assembly suitable for measuring the temperature of molten metal, the thermocouple assembly comprised of:
(a) a sleeve having a closed end suitable for immersing in said molten metal, the sleeve fabricated from a composite material comprised of titanium alloy and having an outside surface to be exposed to said molten metal coated with a refractory resistant to attack by said molten metal, the titanium alloy having a thermal coefficient of expansion of less than 15×10^{-6} in/in/°F., said refractory and said titanium alloy having a ratio of coefficient of thermal expansion in the range of 5:1 to 1:5; and



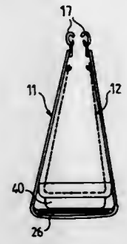
(b) a thermocouple located in said sleeve in heat transfer relationship therewith.

5,603,572
TEMPERATURE SENSOR FOR A MICROWAVE ENVIRONMENT
Jacob M. Shmois, Rochester; Fugui He, Penfield; Francisco Chiarilli, Spencerport; David E. Foeller, Batavia, and Kenneth D. Corby, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Dec. 15, 1994, Ser. No. 357,846
Int. Cl.[6] G01K *7/16;13/00*
U.S. Cl. 374—185 **8 Claims**



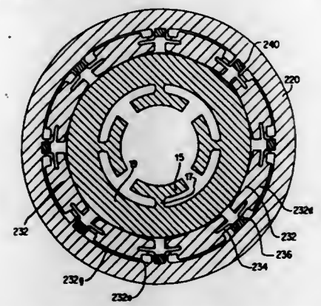
1. A temperature sensor for use in a microwave oven comprising:
a metallic housing comprising a sleeve having first and second open ends;
a metallic top plate coupled to the metallic housing to close off the first open end of the sleeve;
a temperature dependent resistor sensor element located within the sleeve and adjacent to the metallic top plate, wherein the temperature dependent resistor sensor element is thermally coupled with the metallic top plate;
a bottom plate coupled to the metallic housing to close off the second open end of the sleeve;
a signal transmission cable coupled to the temperature dependent resistor sensor element that passes through an opening in the bottom plate; and
a tapered collar having a central opening for receiving said metallic housing.

5,603,573
MULTI-USE BAG
Marie-Madeleine Mercier, and Christian Ragonot, both of 29, rue Delabordère, 92200 Neuilly sur Seine, France
Filed Sep. 25, 1995, Ser. No. 533,285
Claims priority, application France, Sep. 23, 1994, 94 11363
Int. Cl.[6] B65D *30/06*
U.S. Cl. 383—117 **9 Claims**



1. In a multi-use bag comprising a support (**11**) constituted by three panels: a bottom panel (**14**) and two lateral panels (**15**), said panels being interconnected to form an assembly of substantially U shape, open at two ends and moreover comprising at least one container (**12**) adapted to fit in said support; the improvement wherein said container (**12**) comprises at least one openwork bottom, and a tray (**40**) interposed between said bottom panel (**14**) of said support and said openwork bottom.

5,603,574
FLUID DAMPENED SUPPORT HAVING VARIABLE STIFFNESS AND DAMPING
Russell D. Ide, Exeter, and Fouad Y. Zeidan, Warwick, both of R.I., assignors to KMC, Inc., W. Greenwich, R.I.
Continuation of Ser. No. 385,550, Feb. 8, 1995, abandoned, which is a division of Ser. No. 47,000, Apr. 16, 1993, Pat. No. 5,421,655, which is a continuation-in-part of Ser. No. 322,364, Oct. 13, 1994, Pat. No. 5,531,522, which is a continuation of Ser. No. 945,694, Sep. 16, 1992, abandoned, which is a continuation-in-part of Ser. No. 876,718, Apr. 24, 1992, abandoned, which is a continuation-in-part of Ser. No. 309,081, Feb. 8, 1989, Pat. No. 5,137,373, which is a continuation-in-part of Ser. No. 283,529, Oct. 25, 1988, Pat. No. 5,112,143, which is a continuation-in-part of Ser. No. 55,340, May 29, 1987, abandoned, said Ser. No. 385,550is a continuation-in-part of Ser. No. 878,601, May 5, 1992, Pat. No. 5,489,155, which is a continuation-in-part of Ser. No. 685,148, Apr. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 309,081. This application May 28, 1996, Ser. No. 654,015
Int. Cl.[6] F16C *17/03*
U.S. Cl. 384—117 **12 Claims**



1. A fluid dampened bearing assembly comprising:

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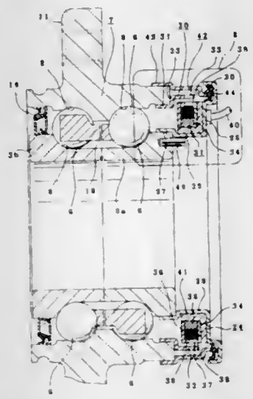
a bearing portion for supporting a rotating shaft and a support structure for supporting the bearing portion of the bearing assembly, the support structure comprising a plurality of circumferentially spaced pads for supporting the bearing portion, each of the pads being concavely curved and supported by two structural springs, each of the structural springs comprising at least one integral beam that is integrally formed as a single piece with the pad that it supports.

5,603,575

ROLLING BEARING UNIT WITH ROTATING SPEED DETECTOR

Hideo Ouchi, Fujisawa, Japan, assignor to NSK Ltd., Tokyo, Japan

Filed Oct. 19, 1995, Ser. No. 545,503
Claims priority, application Japan, Oct. 20, 1994, 6-254931
Int. Cl.[6] F16C *17/24*
U.S. Cl. 384—446 **9 Claims**



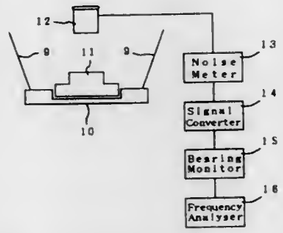
1. A rolling bearing unit with rotating speed detector comprising an inner ring member which has an axial end and an outer peripheral face formed with an inner ring raceway and is securely fitted over a stationary shaft, a rotatable outer ring member having an axial end and an inner peripheral face formed with an outer ring raceway, a plurality of rolling bodies provided between the inner ring raceway and outer ring raceway, an annular, magnetic tone wheel securely fitted to the axial end of the outer ring member, a support ring securely fitted to the axial end of the inner ring member, an annular sensor supported by the support ring so as to be faced to the tone wheel generally in a circumferential direction, the tone wheel having a cut-out section in which cut-outs are formed with a uniform pitch in a circumferential direction, so that the cut-out section is faced across a clearance to a portion of the sensor where the magnetic property changes in a circumferential direction with the same pitch to that of the cut-outs, the sensor comprising at least one annular magnetic pole piece, an annular permanent magnet and an annular coil, the at least one magnetic pole piece having end portions, the permanent magnet having first and second ends in magnetic orientation, so that the first end in magnetic orientation is placed adjacent to one of the end portions of the at least one pole piece, while the second end in magnetic orientation is placed magnetically adjacent to the tone wheel, the coil provided adjacent to the at least one pole piece, an annular member fitted to the outer ring member in a mating relationship with the support ring, and an annular, elastic member having a base portion and a tip portion such that the base portion is connected to the annular member while the tip portion is placed generally circumferentially in sliding contact with the support ring.

5,603,576

METHOD FOR MANUFACTURING BALLS FOR BEARING AND PRODUCTS THEREBY

Kiyoshi Hirakawa, Hiratsuka; Akira Suzuki, Kawasaki; Jiami Pu; Katsunori Yanase, both of Tokyo; Minoru Kohari, Ebina; Eiichi Takahashi, Hiratsuka, and Yasushi Mutoh, Fujisawa, all of Japan, assignors to NSK, Ltd., Tokyo, Japan

Filed Mar. 7, 1994, Ser. No. 207,030
Claims priority, application Japan, Mar. 8, 1993, 5-070753; Mar. 9, 1993, 5-072870
Int. Cl.[6] F16C *33/32*
U.S. Cl. 384—491 **2 Claims**



1. Steel balls for a ball-bearing produced through subjecting the balls to a preliminary tempering process, then to a rough polishing process, then to a surface hardening process and a tempering process performed after the surface hardening process and before a final polishing process, so as to be incorporated in a ball bearing comprising an inner steel race or shaft with an inner raceway formed around its peripheral outer surface, an outer steel race with an outer raceway formed around its inner peripheral surface, and the steel balls freely rotatably disposed between said inner raceway and outer raceway.

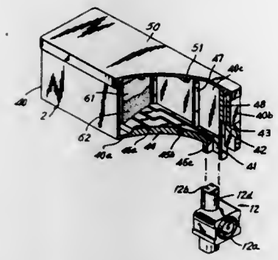
5,603,577

INK SUPPLY TANK FOR A PRINTER

Takashi Suzuki; Masanao Matsuzawa, and Yoshinori Miyazawa, all of Shiojiri, Japan, assignors to Seiko Epson Corporation, Nagano, Japan

Continuation of Ser. No. 150,676, Nov. 10, 1993, Pat. No. 5,421,658, which is a continuation of Ser. No. 962,959, Oct. 16, 1992, Pat. No. 5,328,279, which is a continuation of Ser. No. 612,010, Nov. 9, 1990, Pat. No. 5,156,471, which is a continuation of Ser. No. 401,539, Aug. 31, 1989, Pat. No. 4,969,759, which is a continuation of Ser. No. 161,216, Feb. 17, 1988, abandoned, which is a continuation of Ser. No. 35,251, Mar. 23, 1987, abandoned, which is a continuation of Ser. No. 873,871, Jun. 12, 1986, abandoned, which is a continuation of Ser. No. 659,816, Oct. 11, 1984, abandoned. This application Jun. 5, 1995, Ser. No. 465,074
Claims priority, application Japan, May 22, 1984, 59-102841; May 22, 1984, 59-102842; May 22, 1984, 59-102843
Int. Cl.[6] B41J *2/17;2/19;2/305*
U.S. Cl. 400—124.1 **87 Claims**

1. A printer comprising:
a printing apparatus;
an ink supply system mounted in said printing apparatus; and
an ink supply tank mounted in said printing apparatus, said ink supply tank operatively engaging with said printing apparatus through said ink supply system, said ink supply tank dimensioned to accommodate ink therein to be delivered to said ink supply system, said ink supply tank comprising:
a tank housing having an interior space defined at least in part from inner wall surfaces;
an ink supply delivery port formed in an inner wall surface of said tank housing, said ink supply delivery port having an opening for the passage of ink from said interior space to the exterior of said tank housing; and



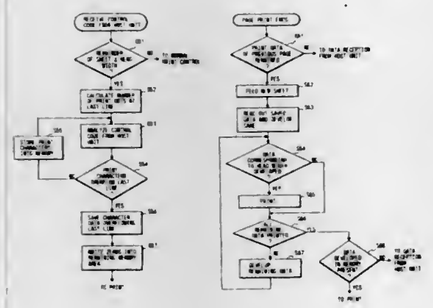
an ink absorbing member comprising at least two contiguous porous portions of different pore size, one of said porous portions having a region facing said opening of said ink supply delivery port, the total height of said ink absorbing member before insertion in said tank housing being substantially larger than the height of said interior space of said tank housing, as viewed in the direction faced by the interior wall surface in which said opening is formed.

5,603,578

SERIAL PRINTER AND PRINTING METHOD THEREFOR

Masami Furuya, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 136,948, Oct. 18, 1993, abandoned. This application Mar. 28, 1996, Ser. No. 623,179
Claims priority, application Japan, Oct. 21, 1992, 4-307523
Int. Cl.[6] B41J *19/76*
U.S. Cl. 400—279 **11 Claims**



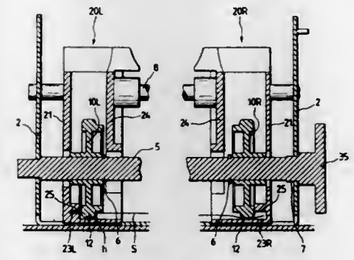
1. A serial printer comprising:
print means for printing data;
first drive means for relatively moving said print means and a printing medium in a fast scan direction;
second drive means for relatively moving said print means and said printing medium at a fixed pitch in a slow scan direction;
primary storing means for storing print data containing line pitch data of a predetermined print line; and
print control means for controlling during operations of said first drive means, second drive means and print means, said print control means including means for converting the line pitch data to dot data, adding the converted dot data and the print data to obtain corrected row-directional data, and storing said row-directional data in said primary storing means as developed dot data and means for driving said print means according to the developed dot data.

5,603,579

PAPER TRANSFER APPARATUS AND PRINTER USING THE SAME

Hiroshi Narita; Hiroaki Hosomi; Tsutomu Momose, and Masahiko Yamada, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Jan. 27, 1995, Ser. No. 379,743
Claims priority, application Japan, Jan. 31, 1994, 6-028802
Int. Cl.[6] B41J *15/04*
U.S. Cl. 400—616.3 **18 Claims**



1. A paper transfer apparatus for transferring a recording paper by rotating first and second sprocket wheels having a plurality of pins to be engaged with sprocket holes disposed on both sides of the recording paper comprising:
a first paper guide means for forming a first paper transfer path extending in a paper transfer direction, said first transfer path having a first intersection with a rotational locus of the tip of the pins mounted on said first sprocket wheel, and
a second paper guide means for forming a second paper transfer path extending in said paper transfer direction, said second transfer path having a second intersection with a rotational locus of the tip of the pins mounted on said second sprocket wheel,
said first intersection being placed upstream in said paper transfer direction from said second intersection.

5,603,580

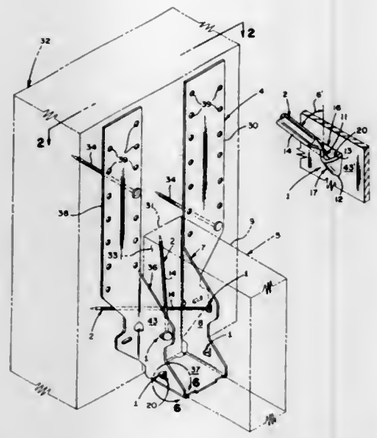
POSITIVE ANGLE FASTENER DEVICE

William F. Leek, Anaheim, and Alfred D. Commins, Danville, both of Calif., assignors to Simpson Strong-Tie Company, Inc., Pleasanton, Calif.

Filed May 30, 1995, Ser. No. 452,992
Int. Cl.[6] B25G *3/00*
U.S. Cl. 403—232.1 **8 Claims**

1. In a positive fastener-angling connection comprising:
a. a wood holding member;
b. a wood held member having a generally planar portion;
c. a sheet metal connector attached to said wood held member and to said wood holding member;
d. said sheet metal connector includes
1.) a side member having a generally planar side face portion for close registration with said generally planar portion of said wood held member;
2.) a generally straight line slit- cut in said generally planar side face portion of said side member having an edge;
3.) guideway means die-formed in said side member in the general shape of one half of a cone having a curved wall, an apex and a base and said guideway means forming a pre-selected angle with said planar side face portion of said side member which is substantially less than 90°;
4.) said generally straight line slit-cut and said guideway means form a fastener opening and guide;
e. an elongated fastener having a shank, a portion of which has a constant cross section dimensioned for insertion through said generally straight line slit-cut and guideway means and into said wood held member;

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f. said guideway means in said side member of said sheet metal connector is formed with a wall having a length and strength sufficient to unyieldingly hold said shank of said fastener in combination with said edge of said generally straight line slit-cut at said preselected angle during the driving of said fastener into said wood held member;

g. said fastener opening in said side member of said sheet metal connector has the general shape of a triangle having an arcuate apex, two generally equilateral arcuate sides and a generally straight base;

h. said fastener opening is dimensioned to receive said fastener and is dimensioned generally equal to or slightly less than the diameter of said fastener shank portion;

i. said fastener shank when inserted through said fastener opening is engaged by said wall of said guideway means at least at two longitudinally spaced points and at least one point on said edge of said generally straight line slit-cut at a location radially spaced from said two longitudinally spaced points on said guideway means and at a location longitudinally between said two longitudinally spaced points on said wall of said guideway means, and

j. said shank of said fastener is held at said preselected angle of said guideway means only by said generally straight line slit-cut and said guideway means in said generally planar side face portion of said side member.

5,603,581

STRUCTURE AND METHOD FOR JOINING EXTRUDATE MEMBER AND MATING MEMBER

Shigeo Fujita; Suguru Yoshida, and Masakazu Sato, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 1, 1994, Ser. Nn. 268,614

Claims priority, application Japan, Jul. 2, 1993, 16479593

Int. Cl.[6] B62D *27/02;* **F16B** *7/00*

U.S. Cl. 403—272 **9 Claims**

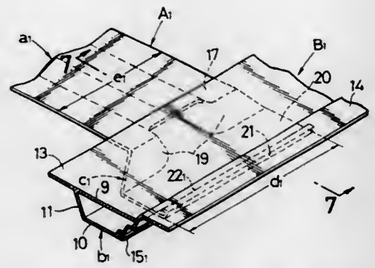
1. A joint structure, comprising:

an extrudate member having a closed sectional structure portion and at an end thereof in the extruding direction, an integral joining end; and

an elongated mating member having a longitudinal axis

wherein said joining end of said extrudate member is joinable with said elongated member, such that a longitudinal axis of said extrudate member intersects the longitudinal axis of said elongated mating member, and

further wherein said extrudate member includes, at said joining end thereof, a joint portion extending in said extruding direction and having a shape conformed to a shape of an



outer surface of said elongated mating member so as to encircle at least a portion of said mating member in the extruding direction of the extrudate member, said joint portion being joined to the outer surface of said mating member.

5,603,582

LINEAR CONNECTOR OF PLASTIC MATERIAL FOR JOINING TWO PARALLEL HOLLOW SPACING PROFILES OF MULTIPLE INSULATING GLASS UNITS

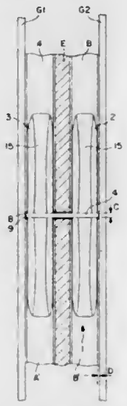
Walter Loh, Kaufbeuren-Neugablonz, Germany, assignor to CERA Handelsgesellschaft mbH, Ebenhofen, Germany

Filed Mar. 29, 1995, Ser. No. 412,904

Claims priority, application Germany, Mar. 30, 1994, 9405422 U

Int. Cl.[6] E06B *3/66*

U.S. Cl. 403—298 **9 Claims**



1. Linear connector of plastic material for joining two parallel hollow spacing profile tracks or hollow bar profile tracks of multiple insulating glass units used for windows to reduce heat loss from building interiors and forming the frame between two glass panes of such a multiple insulating glass unit and surrounding such glass unit, which frame having two ends which are to be connected to one another by said linear connector, characterized in that the linear connector comprises two pairs of two distantly separated parallel legs extending in longitudinal direction of said spacing profile tracks of the frame which are to be connected to one another and being adjacent to an abutment rib extending across these longitudinally extended legs, which abutment rib is provided with front faces being engaged by the front faces of the hollow profile spacing tracks if the linear connector is in mounted condition, wherein the legs are hollow profile bodies provided with a continuous hollow space which is not interrupted by the abutment

rib and let hygroscopic material freely run through said legs from one spacing profile track to the connected other spacing profile track.

5,603,583

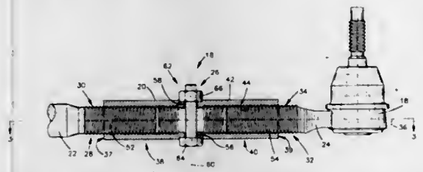
TIE ROD ASSEMBLY FOR VEHICLE STEERING LINKAGES

Raymond Jackson, Ontario, Canada, assignor to TRW Inc., Lyndhurst, Ohio

Filed Nov. 6, 1995, Ser. No. 554,300

Int. Cl.[6] F16B *7/06;* **B62D** *7/16*

U.S. Cl. 403—320 **10 Claims**



10. An apparatus for use in an adjustable tie rod assembly having a first and second tie rod members, said apparatus comprising:

a sleeve means including a first end portion having left hand threads for threadably receiving the first tie rod member, a second end portion having right hand threads for threadably receiving the second tie rod member, and a center portion having first and second radially aligned apertures; and

a fastener means extending through said radially aligned apertures in said sleeve means;

said sleeve means further including a longitudinal slot having terminal ends terminating said slot short of the distal ends of said sleeve means.

5,603,584

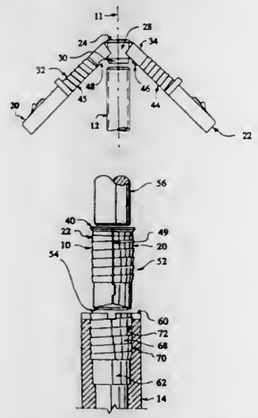
INTERCHANGEABLE LOCKING IMPLEMENT HANDLE

Otto Schuele, 42 Maplecrest Ct., R.R. #1, Barrie, Ontario, Canada

Filed Feb. 21, 1995, Ser. No. 391,561

Int. Cl.[6] B25G *3/20*

U.S. Cl. 403—371 **15 Claims**



1. A connector comprising: a clamshell member including a central cap having a top peripheral edge portion, and a plurality of opposed wings hingeably attached to said top peripheral edge portion; said wings being in the form of hollow partial cylinders, such that as the wings are folded inwardly toward the cap, the partial cylinders come together to form a generally full cylinder; and the wings defining fastening means which are in registration to form full fastening means when the wings are folded inwardly, said fastening means for fastening said connector to a socket, and said central cap being received into said socket.

5,603,585

JOINT STRUCTURE AND METHOD OF MANUFACTURE

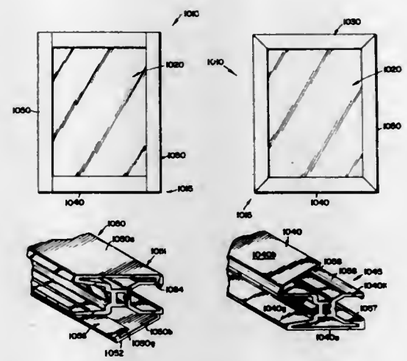
Todd W. Bruchu, Lake Elmo, and Scott R. Beske, Stillwater, both of Minn., assignors to Andersen Corporation, Bayport, Minn.

Continuation-in-part of Ser. No. 243,981, May 17, 1994, abandoned. This application Oct. 19, 1994, Ser. No. 325,696

Int. Cl.[6] E06B *3/00;1/26;* **E04B** *1/38*

U.S. Cl. 403—382 **42 Claims**

1. A window, comprising:



(a) a window glass assembly having interior and exterior sides;

(b) first, second, third and fourth members coupled to form a frame, each member having a substantially identical cross-sectional profile, wherein each member includes a glass receiving channel formed between interior and exterior sides of the member, the glass receiving channel for supporting the interior and exterior sides of the window glass assembly; and

(c) a joint structure interconnecting adjacent ends of the first and second members, the joint structure including:

(i) a flange disposed at the end of the first member on the interior side thereof, the flange having a first squared end surface extending substantially orthogonal to the longitudinal axis of the first member;

(ii) a first mitered portion disposed at the end of the first member, the first mitered portion spanning from the flange to the exterior side of the first member and having a first mating surface defined thereon, wherein the first mitered portion has a width defined along a direction extending between the interior and exterior sides of the first member;

(iii) a second mitered portion disposed at the end of the second member, the second mitered portion having a width substantially the same as the width of the first mitered portion, and the second mitered portion spanning from the exterior side of the second member toward the interior side thereof, wherein the second mitered portion has a second mating surface defined thereon for abutting the first mating surface on the first mitered portion, and wherein the second mitered portion defines a recessed surface proximate the interior side of the second member;

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(iv) a second squared end surface extending substantially orthogonal to the longitudinal axis of the second member between the interior side of the second member and the recessed surface of the second mitered portion, wherein a recess is defined by the recessed surface and the second squared end surface; and

(v) connecting means for connecting the first and second members through the first and second mating surfaces, with the flange on the first member received in the recess defined on the second member; whereby the flange and the second squared end surface define a squared edge on the interior side of the members, the squared edge giving the appearance of a mortise and tenon joint structure between the members.

5,603,586

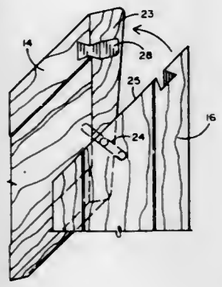
TWIST-LOCK MITER

John L. Wetsel, 6601 Monitor Rd., El Dorado, Calif. 95623, and Stacy R. Wicks, 7622 Hardy La., Granite Bay, Calif. 95746

Filed Aug. 30, 1995, Ser. No. 521,183

Int. Cl.[6] E06B *3/96*; **F16B** *12/26*;*7/22*

U.S. Cl. 403—401 **6 Claims**



1. A toolless assembly and locking system for a miter joint, comprising:

a) first and second substantially planar parts to be joined at mitered faces;

b) pivot means removably interconnecting said faces for relative rotational movement about the pivot axis of said pivot means, said pivot axis being perpendicular to said faces;

c) a key and a recess formed in said face of said second part arranged to so engage said key as to lock said faces against relative transverse movement when said first and second parts are rotated about said pivot axis from a non-coplanar position to a coplanar position while said faces are substantially in contact with each other.

5,603,587

DRAINAGE WATER PUMPING STATION AND METHOD FOR OPERATING THE SAME

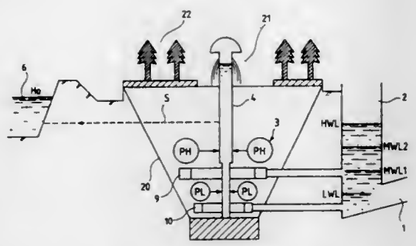
Kunio Takada, Iwama-machi; Kenji Otani, Tsuchiura, and Sadashi Tanaka, Chiyoda-machi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 332,089, Nov. 1, 1994, Pat. No. 5,498,105, which is a continuation of Ser. No. 900,418, Jun. 8, 1992, Pat. No. 5,360,289. This application Nov. 7, 1995, Ser. No. 554,832

Int. Cl.[6] E02F *1/00*; **E02B** *11/00*

U.S. Cl. 405—36 **4 Claims**

1. A drainage water pumping station comprising:



a pump well into which drainage water can flow through an underground inflow main pipe line;

a delivery pipe line extending substantially transversely to the surface of the ground for connecting said underground inflow main pipe line to a discharge outlet at the surface of the ground;

at least one drainage pump within said pump well for discharging drainage water in said pump well through said delivery pipe line to the discharge outlet; and

utilizing means above the ground and connected to said discharge outlet for utilizing water discharged from said discharge outlet.

5,603,588

PIPELINE WEIGHT AND METHOD OF INSTALLING THE SAME

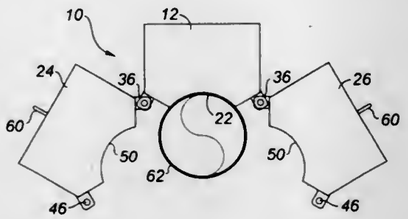
Grant D. Herbert, Cold Lake, Canada, assignor to Ried's Welding (1981) Inc., and Key-May Industries Ltd., both of Grand Centre, Canada

Filed Oct. 12, 1995, Ser. No. 542,166

Claims priority, application Canada, Sep. 21, 1995, 2158801

Int. Cl.[6] F16L *1/20*

U.S. Cl. 405—172 **16 Claims**



1. A pipeline weight, comprising:

a primary body;

a pair of secondary bodies pivotally connected by a hinge assembly in opposed wing-like fashion to the primary body; and

means for securing the secondary bodies together in a closed position.

5,603,589

METHOD FOR MANUFACTURING AN ANCHOR ELEMENT FOR A SOIL ANCHOR FOR A ROCK ANCHOR, ROCK BOLT OR THE LIKE, FROM A STRAND OF TWISTED STEEL WIRE

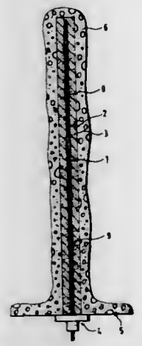
Hans-Peter von Allmen, Bäretswil, Switzerland; Reinhard Klöckner; Engelbert Gött, both of Munich, Germany, and Otmar Langwadt, Markt Schwaben, Germany, assignors to Dyckerhoff & Widmann Aktiengesellschaft, Munich, Germany

Filed Sep. 8, 1995, Ser. No. 525,460

Claims priority, application Germany, Sep. 9, 1994, 44 32 128.7

Int. Cl.[6] E21D *20/02*

U.S. Cl. 405—302.2 **18 Claims**



16. A rock bolt comprising an anchor element composed of a steel wire strand having a central wire and a plurality of outer wires arranged radially around the central wire, the steel wire strand having an axis and a plurality of expanded sections obtained by spreading apart the wires of the strand and inserting a spacer element for fixing the wires in a spread-apart position, wherein the central wire is deflected transversely from the axis of the strand and wherein at least one outer wire is secured by the spacer element in an out of center position together with the central wire, the expanded sections being spaced apart from each other at equal spacings, the anchor element being placed in a bore hole having an opening, the bore hole being filled with a hardening material, further comprising a profiled steel rod connected in the area of the opening of the bore hole to the anchor element, the steel rod having an end protruding out of the bore hole, the steel rod having on its end protruding out of the bore hole a thread for screwing on an anchoring member.

5,603,590

MULTISPINDLE THREAD CUTTER APPARATUS

Joachim-Andreas Wozar, Weidenweg 2, 73733 Esslingen, Germany

Filed Dec. 19, 1994, Ser. No. 358,472

Claims priority, application Germany, Dec. 23, 1993, 43 44 037.1

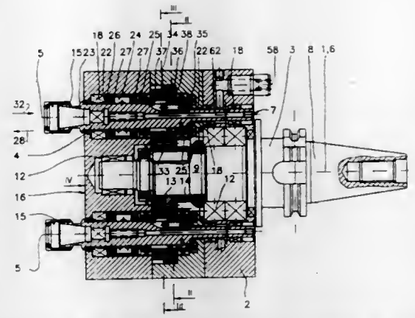
Int. Cl.[6] B23G *1/08*

U.S. Cl. 408—31 **17 Claims**

1. A multispindle thread cutter apparatus, comprising:

a drive shaft including means to be driven by motor;

a plurality of work spindles disposed side by side, each one of the work spindles including means for the one of the work spindles to be equipped with a thread cutting tool; and



a distributor and reversing gear interposed between the drive shaft and the work spindles, including

two gear wheels, driven to rotate in opposite directions by the drive shaft,

means for the work spindles to be driven to rotate by the drive shaft, and

an indexable reversing coupling device, the reversing coupling device including means for the directions of rotation of the work spindles to be reversed while the drive shaft continues to rotate uninterruptedly in a same direction,

the two gear wheels, driven to rotate in opposite directions by the drive shaft, being coupled in alternation to the work spindles; wherein

the reversing coupling device comprises a plurality of single reversing couplings (**34**), each of which includes a respective single switchover device (**35**), and

each of the plurality of work spindles (**4**) includes a respective single reversing coupling (**34**) of the plurality of single reversing couplings (**34**).

5,603,591

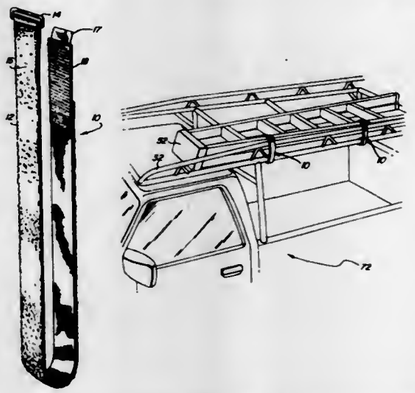
SAFETY STRAPPING SYSTEM

Stephanie McLellan, 1750 Sugar Pine Dr., Corona, Calif. 91720

Filed Jul. 21, 1995, Ser. No. 505,616

Int. Cl.[6] B60P *7/00*

U.S. Cl. 410—97 **18 Claims**



1. A strapping system for removably attaching objects to a rack of a vehicle, the system comprising:

an elongate strap member;

a ring attached to a first end of the strap member, the ring sized so that the strap member can freely pass through an opening

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of the ring; loop fabric of substantially the same width and length as the strap member attached to a first surface of the strap member with the loop fabric facing away the first surface;

hook material of substantially the same width as the strap member attached to a second surface of the strap member with the hook material facing away from the second surface; and

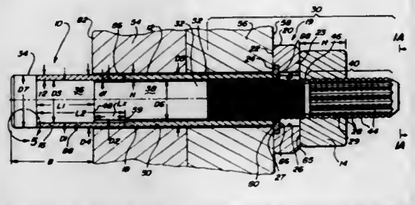
a brightly colored tab of a different color than the elongate strap member and attached at an extreme end of a second end of the strap member for locating and peeling away the second end to release the system when the system is engaged.

5,603,592

HIGH STRENGTH BLIND BOLT WITH UNIFORM HIGH CLAMP OVER AN EXTENDED GRIP RANGE

Shahriar M. Sadri, San Clemente; Mark R. Plunkett, Irvine, and Marvin R. Hicks, Riverside, all of Calif., assignors to Huck International, Inc., Irvine, Calif.

Filed Oct. 3, 1994, Ser. No. 317,293
Int. Cl.[6] F16B *13/04*
U.S. Cl. 411—34 **30 Claims**



1. A blind bolt for securing a plurality of workpieces at a desired clamp load with the workpieces having aligned openings therein and having an accessible side surface and a blind side surface and adapted to be installed by a relative axial force applied by an installation tool from the accessible side surface of the workpieces, said blind bolt comprising:

a pin member having an elongated pin shank terminating at one end in an enlarged pin head;

said pin shank having a securing portion comprising a plurality of securing grooves,

sleeve means comprising a generally elongated tubular sleeve structure adapted to receive said pin shank, said tubular sleeve structure including a first sleeve shank portion adapted to be located in the aligned openings in the workpieces and a second sleeve shank portion being located on said pin shank between said pin head and said first sleeve shank portion and being operatively connected with said first sleeve shank portion,

engaging means operatively connected with said sleeve means and including an engaging structure adapted to be engaged by the installation tool whereby the relative axial force can be applied by the installation tool between said pin member and said engaging means to clamp the workpieces together at a relative axial force of a first magnitude,

said second sleeve shank portion being radially deformable at a location between said pin head and the blind side surface of the workpieces in response to the relative axial force of a second magnitude less than said first magnitude to form an enlarged blind head for reacting against the blind side surface,

said sleeve means including load bearing means for transmitting the relative axial force of said second magnitude to said second sleeve shank portion through said first sleeve shank portion and responsive to a third magnitude of relative axial force less than said first magnitude and greater than said second magnitude with said first sleeve shank portion moving out of an axial load bearing relationship with said pin head whereby said blind head will engage the blind side surface such that said first magnitude of relative axial force and the final clamp load applied to the workpieces will be substantially between said pin, said blind head and said engaging means,

said load bearing means adapted to be located generally externally of the aligned openings at the accessible side surface of the workpieces,

securing means on said pin shank,

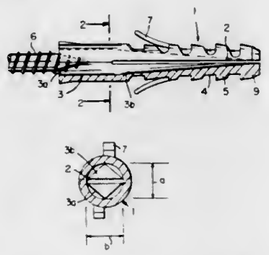
said engaging means including an engaging structure operable with said securing means for connecting said pin member and said engaging structure together.

5,603,593

EXPANSIBLE FIXING PLUG OF PLASTIC MATERIAL

Artur Fischer, and Wolfgang Nehl, both of Waldachtal, Germany, assignors to fischerwerke, Artur Fischer GmbH & Co. KG

Filed Aug. 10, 1995, Ser. No. 513,533
Claims priority, application Germany, Aug. 19, 1994, 94 13 434 U
Int. Cl.[6] F16B *13/06*
U.S. Cl. 411—55 **5 Claims**



1. An expansible fixing plug, comprising a body part composed of a plastic material and having a leading end and a rear end, said body part having a longitudinal channel extending from said rear end for insertion of a fixing screw, said longitudinal channel having a cylindrical portion, and a narrowing portion adjoining said cylindrical portion, said body part also having a slot of a substantially constant width extending from said leading end over a part of a length of said body part, said narrowing portion of said longitudinal channel having a cross-section starting from said cylindrical portion and of a lozenge shape, said narrowing portion of said longitudinal channel in a plane of said slot having a corner to corner width which remains the same for an entire length of said narrowing portion and substantially corresponds to a diameter of said cylindrical portion, said narrowing portion at right angles to said plane of said slot having a corner to corner width which decreases toward said leading end of said body part.

5,603,594

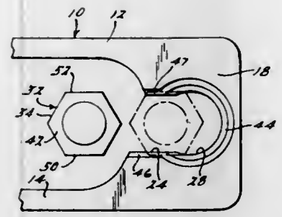
FASTENER RETENTION SYSTEM

Thomas C. Lincoln, Arcadia, Calif., assignor to Uni Star Industries, Inc., South Pasadena, Calif.

Filed Mar. 31, 1995, Ser. No. 414,435
Int. Cl.[6] F16B *27/00*
U.S. Cl. 411—84 **3 Claims**

1. A fastener retention system for a connector component comprising:

an elongated generally cylindrical fastener comprising a threaded portion and an enlarged head portion, the head portion of said fastener comprising a pair of parallel radially and longitudinally extending flat surfaces spaced apart a dimension greater than the diameter of the threaded portion of said fastener, said flat surfaces extending laterally to points lying in a circle having a diameter greater than the spacing of



the flat surfaces, the head portion of said fastener having a cylindrical recess intermediate longitudinally spaced ends thereof having a diameter less than the spacing of the flat surfaces thereon so as to define a plurality of axially spaced, radially extending, axially facing shoulders, and

a connector component having a circular fastener accepting aperture therein of a diameter greater than the diameter of the cylindrical recess in the head portion of said fastener, the aperture in said component having first and second counterbores extending from opposite ends thereof, respectively, for the acceptance of the shoulders on said fastener, and a first channel in said component extending radially of the longitudinal axis of the aperture therein and of a width slightly greater than the diameter of the recess in the head portion of said fastener for the acceptance thereof in translation, said component having a second pair of channels on opposite sides of said first channel, respectively, of a width greater than the spacing of the flat surfaces on the head portion of said fastener but less than the diameter of the circle to which the shoulders on the head portion of said fastener extend, whereby said fastener is movable in translation into the aperture of said component when the flat surfaces on the head of the fastener are aligned with the second channels in said component but movement of said fastener out of said channels is inhibited when flat surfaces on the head portion of said fastener are rotated out of alignment with the second channels in said component.

5,603,595

FLYWHEEL NUT SEPARABLE CONNECTOR AND METHOD

William D. Nygren, Jr., Denver, Colo., assignor to Martin Marietta Corp., Bethesda, Md.

Filed Apr. 12, 1995, Ser. No. 420,424
Int. Cl.[6] F16B *31/00;33/04;35/00*
U.S. Cl. 411—366 **23 Claims**

1. A separable connector comprising:

a connecting member including a threaded end having a selected thread geometry including a selected thread pitch diameter, thread lead, thread angle, and helix angle;

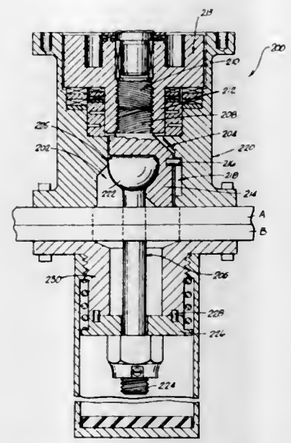
a rotatably supported body threadably engagable with said threaded end connecting to said member;

means for releasably restraining said rotatably supported body preventing said body from rotating until released;

means for restraining said threaded end from rotating; and

means for applying a selected tensile load to said member,

wherein, with the member and the rotatably supported body engaged to form a connection, and with a tensile load applied to the member causing the connection to be strained, the selected thread geometry causes the tensile load to be resolved as a torque applied to the rotatably supported body sufficient to cause the body to rotate when released allowing the threaded end to translate out engagement with the rotatably supported body allowing the connection to separate.

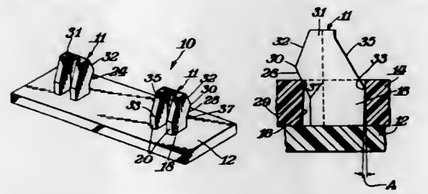


5,603,596

LOCKING ASSEMBLY

Peter A. Peroni, Pottstown, Pa., assignor to Lafrance Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 104,321, Aug. 9, 1993, Pat. No. 5,362,186, which is a continuation-in-part of Ser. No. 882,671, May 14, 1992, Pat. No. 5,233,870. This application Sep. 6, 1994, Ser. No. 300,744
Int. Cl.[6] F16B *19/08*
U.S. Cl. 411—508 **33 Claims**



1. A locking assembly for securement through a hole in a support member comprising an abutment member, a locking stud having a post connected to and disposed outwardly from said abutment member, said post having a tip remote from said abutment member, said post having a longitudinal locking blade connected to and disposed outwardly from said abutment member, said locking blade including an outwardly disposed inclined surface terminating in a crest edge, said outwardly disposed inclined surface comprising a wedge lock for being disposed against an edge of the hole in the support member, an inwardly disposed inclined surface extending from said crest edge, said blade being laterally movable as said blade passes through the hole, said inwardly disposed inclined surface comprising a cam whereby insertion of said blade into the hole causes an edge of the hole to press against said blade permit said crest edge to pass longitudinally and laterally beyond the hole with said wedge lock preventing removal of said stud from the hole, said post including a longitudinally outwardly extending base portion transversely opposite said locking blade, said base portion terminating in an outer edge, said outer edge being spaced from said abutment member by a distance less than the distance said crest edge is spaced from said abutment member, an inwardly sloping surface extending out-

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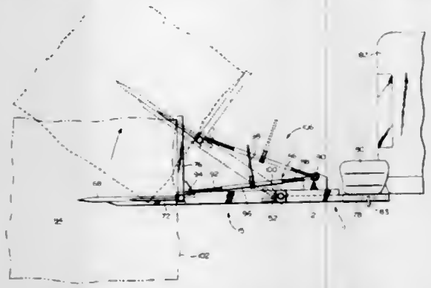
wardly from said outer edge toward said tip of said post, said stud being open in the space opposite said locking blade and outwardly of said inwardly sloping surface, and an indexing member secured to said abutment member on the same side of said abutment member as said locking stud securing said abutment member to said support member at a location remote from said locking stud.

5,603,597

ROUND HAY BALE LIFTER AND TRANSPORT DEVICE

Carl R. Clay, Sr., Charleston, W. Va., assignor to Sandra K. Clay, Charleston, W. Va.

Filed May 15, 1996, Ser. No. 647,626
Int. Cl.[6] B60P *3/00*
U.S. Cl. 414—24.5 **18 Claims**



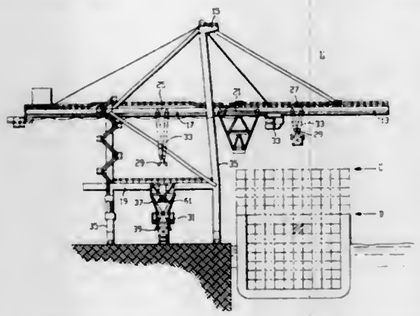
1. A hay bale lifter and transport device comprising:
an anchoring structure including a projection for quick connect and disconnect fitting to a trailer hitch secured to a truck,
a hay bale lifting structure pivotally mounted on said anchoring structure, and
a ratchet binder pivotally mounted between said anchoring structure and said lifting structure for elevating or lowering said lifting structure upon appropriate manual rotation of a threaded sleeve of said ratchet binder.

5,603,598

GUIDE CHUTE FOR CARGO CONTAINER HANDLING CRANES

Shuji Hasegawa, and Masamitsu Enoki, both of San Mateo, Calif., assignors to Paceco Corp., San Mateo, Calif.

Filed Apr. 11, 1994, Ser. No. 225,543
Int. Cl.[6] B66C *5/02*
U.S. Cl. 414—140.3 **7 Claims**



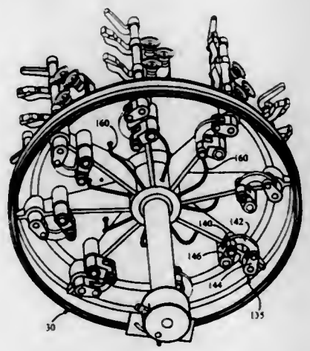
1. A lifting spreader guide chute for a cargo container handling crane having an elevated gantry mounted near the top of a supporting structure of said crane and a trolley mounted on said gantry for suspending cargo container lifting spreaders therebelow, said guide chute comprising
support rails mounted on said supporting structure below said gantry and parallel thereto, said rails extending over cargo pickup and deposition areas at one end of said crane,
a framework suspended from said support rails and formed for movement therealong, said cargo container lifting spreaders being formed for lowering cargo containers through said framework when depositioning said containers, said framework including sloped side walls terminating proximate their lower ends in a restricted clearance pass-through opening for said chute for arresting the sway of lifting spreaders being lowered therethrough by restricting the pendulum sway of a lifting spreader between the converging sloped side guide walls until the sway of the descending spreader is restricted within said pass-through opening.

5,603,599

VACUUM SYSTEM

Per-Olof Wesslèn, Buffalo Grove, and Steven Kostrova, Lindenhurst, both of Ill., assignors to Tetra Laval Holdings & Finance S.A., Pully, Switzerland

Filed Sep. 28, 1994, Ser. No. 315,413
Int. Cl.[6] B31B *1/80*
U.S. Cl. 414—411 **51 Claims**



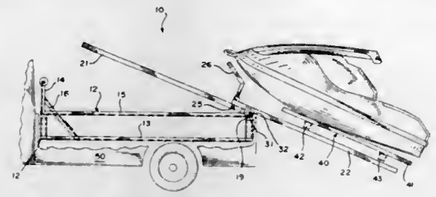
1. An apparatus for transferring a workpiece, the apparatus comprising:
(a) plurality of picking assemblies that are movable along a closed transfer path, each of the picking assemblies comprising
i. a vacuum manifold assembly, the vacuum manifold assembly including an input for receiving compressed gas;
ii. vacuum generating means disposed in the vacuum manifold assembly for generating a vacuum from compressed gas received at the input of the vacuum manifold assembly;
iii. at least on suction cup in fluid communication with the vacuum generated by the vacuum generating means; and
(b) valve means for controlling the flow of the compressed gas to the plurality of picking assemblies, the valve means controlling the flow of the compressed gas in synchronism with movement of the plurality of picking assemblies so that each of the picking assemblies is cyclically supplied with compressed gas along only a portion of the closed transfer path.

5,603,600

TELESCOPING PERSONAL WATERCRAFT JET TRACK

Gordon Egan, P.O. Box 2830, Idaho Falls, Id. 83403-2830, and Bob Harris, Jr., P.O. Box 605, Ririe, Id. 83443

Filed Jan. 6, 1995, Ser. No. 369,694
Int. Cl.[6] B60P *9/00*
U.S. Cl. 414—462 **9 Claims**



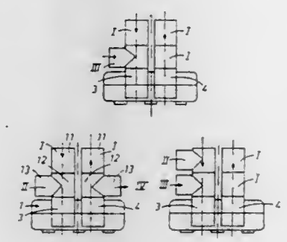
1. A device for loading and unloading objects, comprising:
a support frame including a front end and a rear end;
a ramp including a first ramp member having a rear end pivotally attached to said support frame at said rear end of said support frame and extending forward toward said front end of said support frame and a second ramp member telescopically secured to said first ramp member permitting said second ramp member to travel the length of said first ramp member and to pivot therewith, said second ramp member including a bow stop projecting upwardly at a forward end of said second ramp member to limit movement of an object on said second ramp member;
a sled rigidly mounted to and spaced above said second ramp member for receiving the object thereon; and
a winch system mounted approximate said front end of said support frame, said winch system including a cable for attachment to the object, wherein said cable passes over at least one roller on said bow stop of said second ramp member permitting the second ramp member to be moved relative said first ramp member to facilitate loading and unloading of the object.

5,603,601

COMPRESSOR WITH ATTACHMENTS MOUNTED ON STUBS OF A HOUSING OF THE COMPRESSOR

Walter Winkelströter, Wuppertal, Germany, assignor to Gebr. Becker GmbH & Co., Wuppertal, Germany

Filed Dec. 2, 1994, Ser. No. 353,246
Claims priority, applicatinn Germany, Dec. 3, 1993, 43 41 266.1
Int. Cl.[6] F04D *29/60*
U.S. Cl. 415—55.1 **25 Claims**



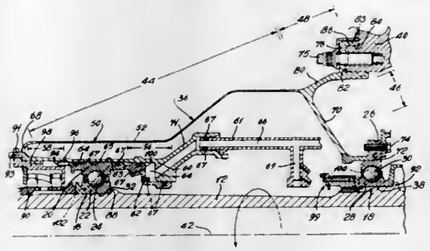
1. A lateral channel compressor comprising:
an annular housing which defines a plane;
an air intake stub and an air outlet stub attached to the housing with at least one of the stubs being perpendicular to the plane;
a plurality of attachments mounted on the stubs, and comprising a kit of elements, the attachments being connectable to each other in an axial direction of the attachments and each having a tubular housing; and wherein
the tubular housing of each attachment is flush for mounting with another tubular housing such that each of the tubular housings have substantially matching external dimensions.

5,603,602

PRESSURIZED BALL BEARING ASSEMBLIES

Giuseppe Romani, Mississauga, Canada, assignor to Pratt & Whitney Canada Inc., Longueuil, Canada

Filed Aug. 8, 1994, Ser. No. 287,393
Int. Cl.[6] F01D *3/04*
U.S. Cl. 415—105 **4 Claims**



1. In a turbomachine having an axis of rotation, the turbomachine comprising a lubrication management system that generates an oil pressure, and further comprising a shaft supported by upstream and downstream axially spaced apart bearing assemblies within an engine case and a bearing housing fixed to the engine case, wherein each of the bearing assemblies is comprised of a pair of radially spaced apart bearing races and a plurality of ball bearings therebetween, the turbomachine constructed and arranged such that the radially inner bearing race of each pair of bearing assemblies is fixed to the shaft, and the radially outer bearing race of the upstream bearing assembly is axially moveable with respect to the housing, and the radially outer bearing race of the downstream bearing assembly is fixed to the housing; a method for axially loading each of the bearing assemblies, comprising the steps of:
utilizing said oil pressure to apply a force in an axial direction to the outer race of the upstream bearing assembly, thereby moving the outer race of the upstream bearing assembly in the axial direction into contact with the balls of the upstream bearing assembly, wherein the force application step moves the balls of the upstream bearing assembly into contact with the inner race of the upstream bearing assembly, whereby the force is transmitted from the outer race of the upstream bearing assembly to the inner race of the upstream bearing assembly; and
applying the transmitted force from the inner race of the upstream bearing assembly to the shaft such that the shaft moves in axial direction, wherein the force transmission step moves the inner race of the downstream bearing assembly into contact with the balls of the downstream bearing assembly, thereby moving the balls of the downstream bearing assembly into contact with the outer race of the downstream bearing assembly, whereby the force is transmitted from the shaft to the inner race of the downstream bearing assembly, and from the inner race of the downstream bearing assembly to the outer race of the downstream bearing assembly.

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5,603,603

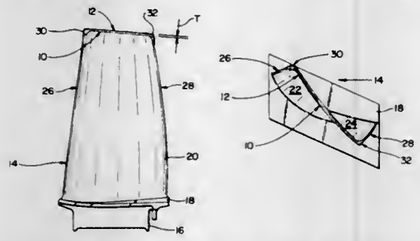
ABRASIVE BLADE TIP

Roland Benoit, Lake Park; Eugene M. Beverly, Palm Beach Gardens; Charles M. Love, Jupiter, and Gregory J. Mack, Palm Beach Gardens, all of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 164,048, Dec. 8, 1993, abandoned. This application May 31, 1995, Ser. No. 455,786

Int. Cl.[6] **F01D** *5/14*

U.S. Cl. 415—173.4 **8 Claims**



1. A sealing means for a gas turbine engine, said means comprising a plasma sprayed hard, smooth, non-porous abradable seal, and a gas turbine engine blade having a convex surface, a concave surface, a leading edge, a trailing edge and a tip surface, wherein an abrasive blade tip coating encompasses portions of the convex surface and concave surface of the blade at corners where the tip surface intersects the leading edge and the trailing edge of the blade.

5,603,604

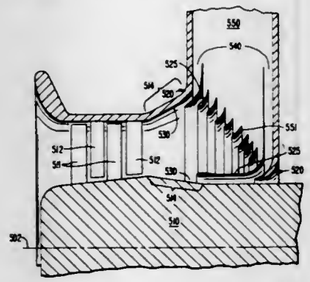
METHOD AND APPARATUS FOR ENHANCING GAS TURBO MACHINERY FLOW

Thomas R. Norris, Orinda; Hanford N. Lockwood, San Mateo, both of Calif., and J. Alan Watts, Wakefield, R.I., assignors to Norlock Technologies, Inc., San Francisco, Calif.

Division of Ser. No. 23,816, Feb. 22, 1993, Pat. No. 5,340,276, which is a continuation-in-part of Ser. No. 616,027, Nov. 21, 1990, Pat. No. 5,188,510. This application Aug. 4, 1994, Ser. No. 286,123

Int. Cl.[6] **F01D** *9/04*

U.S. Cl. 415—208.1 **14 Claims**



1. A flow enhancement system for exhaust in the combination of:

a generally tubular sectioned diffuser duct for discharging gas along an axis having a smaller forward end for receiving gas flow and a larger discharge end for discharging the gas flow, the tubular sectioned diffuser duct having a divergence exceeding 7° with respect to the axis of the generally tubular sectioned diffuser duct;

a central gas flow path having an inside flow boundary adjacent the axis, an outside flow boundary remote from the axis, and the central gas flow path defined between the inside flow boundary and the outside flow boundary,

at least one of the flow boundaries comprising a turning duct wall constituting a turn from the discharge of the generally tubular sectioned diffuser duct, the turning duct wall constituting a turn of at least 30° to the axis of the generally tubular sectioned diffuser duct;

the improvement in the gas flow path constituting a turning duct wall comprising in combination:

first and second and continuous inner walls defining stall gas flow paths on either side of the central gas flow path, the stall gas flow paths having an inlet penetrating to the larger discharge end of the generally tubular sectioned diffuser and having an outlet through the turn discharging to a portion of the gas flow path beyond the turn;

the first and second continuous inner walls in the turn defining between the turning duct wall and the central gas flow path the stall gas flow paths with an isolated flow path to enable stall gas to be vented around the turn in a path isolated from the main gas flow with eductive discharge to the main gas flow beyond the turn.

5,603,605

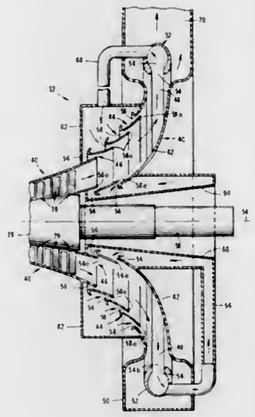
DIFFUSER

G. Fonda-Bonardi, 2075 Lida Flora Dr., Los Angeles, Calif. 90077

Filed Apr. 1, 1996, Ser. No. 625,194

Int. Cl.[6] **F01D** *25/30*

U.S. Cl. 415—211.2 **12 Claims**



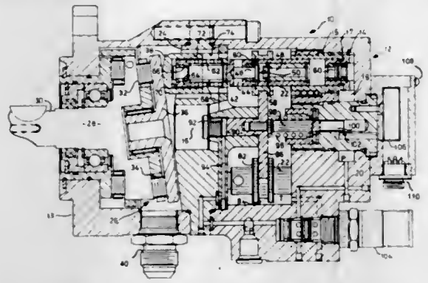
VOL 1195 ISS 3 FEB 18 1997 UMI

5,603,609

VARIABLE DELIVERY SWASH PLATE PUMP HAVING A PISTON LOCATED SPILL PORT

George Kadlicko, Mississauga, Canada, assignor to Microhydraulics, Inc., Canada

Filed Aug. 17, 1995, Ser. No. 516,294
Claims priority, application United Kingdom, Aug. 19, 1994, 9416783
Int. Cl.[6] F04B 7/04
U.S. Cl. 417—63 8 Claims



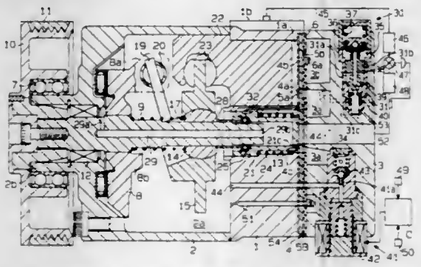
1. A variable capacity hydraulic pump having a plurality of pistons reciprocal within a respective one of a plurality of cylinders, each cylinder having associated therewith an inlet to supply fluid to said cylinder and an outlet to deliver fluid from said cylinder to a consumer, said inlet including a check valve located within each piston between a supply of fluid and said cylinder and operable to inhibit flow of fluid from said cylinder; a spill port in each of said pistons operable to vent fluid from respective ones of said cylinders during reciprocation of said pistons, and a sleeve slidably mounted on each of said pistons, to co-operate with a respective one of said spill ports to control venting of fluid from said cylinders, said sleeves being conjointly adjustable relative to respective ones of said cylinders, to vary the portion of the stroke of the pistons during which said spill ports are covered by said sleeves and thereby vary the volume of fluid delivered to respective ones of said outlets.

5,603,610

CLUTCHLESS PISTON TYPE VARIABLE DISPLACEMENT COMPRESSOR

Masahiro Kawaguchi; Masanori Sonobe; Ken Suitou, and Tomohiko Yokono, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Continuation-in-part of Ser. No. 255,043, Jun. 7, 1994. This application Dec. 21, 1994, Ser. No. 361,111
Claims priority, application Japan, Dec. 27, 1993, 5-332145
Int. Cl.[6] F04B 1/29
U.S. Cl. 417—222.2 19 Claims



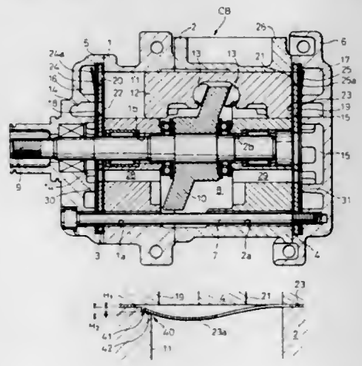
1. A compressor having an internal refrigerant gas passage selectively connected to and disconnected from an external refrigerant circuit separately provided from the compressor, said compressor having a plurality of reciprocable pistons for compressing gas supplied from the external refrigerant circuit to the internal refrigerant gas passage, said compressor comprising:
a housing having a discharge chamber and a suction chamber;
a crank chamber defined in the housing;
a plurality of cylinder bores formed in the housing, each cylinder bore communicating with the discharge chamber and the suction chamber and accommodating each piston respectively;
a drive shaft rotatably supported by the housing;
a swash plate supported on the drive shaft for integral rotation with the drive shaft and inclining motion with respect to the drive shaft, said swash plate being movable between a maximum inclined angle and a minimum inclined angle;
disconnecting means for disconnecting the internal refrigerant gas passage from the external refrigerant circuit when the swash plate is at the minimum inclined angle;
said internal refrigerant gas passage including a first passage for connecting the crank chamber and the suction chamber to deliver the refrigerant gas from the crank chamber to the suction chamber; and
a control means for detecting a pressure in the first passage to control the inclined angle of the swash plate.

5,603,611

PISTON TYPE COMPRESSOR WITH SIMPLE BUT VIBRATION-REDUCING SUCTION REED VALVE MECHANISM

Tomoji Tarutani, and Noriyuki Shintoku, both of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi-ken, Japan

Filed Mar. 18, 1996, Ser. No. 617,291
Claims priority, application Japan, Mar. 22, 1995, 7-062934
Int. Cl.[6] F04B 1/12
U.S. Cl. 417—269 4 Claims



1. A piston type refrigerant compressor comprising:
a cylinder block provided with a plurality of cylinder bores circumferentially arranged around a central axis thereof, said cylinder bores receiving a plurality of reciprocating pistons;
at least one valve plate adjacent to an axial end of said cylinder block, and provided with a plurality of pairs of suction and discharge ports bored therethrough at positions in registration with said respective cylinder bores;
a suction valve element in contact with one face of said valve plate, and including a plurality of suction reed valves for openably closing said suction sports of said valve plate;
a discharge valve element in contact with said other face of said valve plate for openably closing said discharge ports of said valve plate;

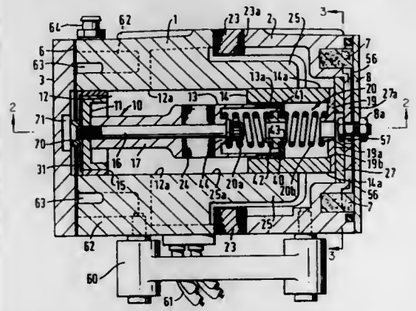
at least one housing closing said axial end of said cylinder block via said valve plate, and defining therein a suction chamber for refrigerant gas before compression and a discharge chamber for said refrigerant gas after compression;
a suction valve stop means at end portions of said respective cylinder bores engaged by free ends of said respective suction reed valves during continuous operation of said suction valve element; and
said suction valve stop means comprising:
a first predetermined engaging face having a first predetermined depth with respect to said axial end of said cylinder block and being engaged by a frontmost portion of said free end of each suction reed valve to thereby provide each said suction reed valve with a preliminary step of stopping motion; and,
a second predetermined engaging face having a second predetermined depth larger than that of said first predetermined engaging face with respect to said axial end of said cylinder block, said second predetermined engaging face being engaged with said free end of each suction reed valve at a portion contiguous to said frontmost portion thereof to thereby provide said each suction reed valve with a final step of stopping motion.

5,603,612

ELECTROMAGNETIC RECIPROCATING COMPRESSOR

Michael A. McGrath, Hayling Island, United Kingdom, assignor to Pegasus Airwave Limited, Waterlooville, Great Britain

PCT No. PCT/GB94/01195, § 371 Date Nov. 29, 1995, § 102(e) Date Nov. 29, 1995, PCT Pub. No. WO94/28308, PCT Pub. Date Dec. 8, 1994
PCT Filed Jun. 2, 1994, Ser. No. 556,903
Claims priority, application United Kingdom, Jun. 2, 1993, 9311385
Int. Cl.[6] F04B 35/04
U.S. Cl. 417—417 9 Claims



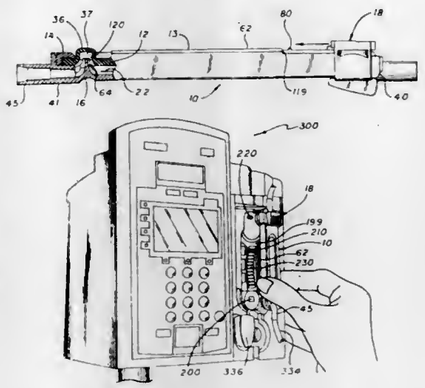
1. An electromagnetic linear compressor comprising:
a body having at least one body part;
a cylinder provided inside said at least one body part, said cylinder having a longitudinal axis and being defined by an internal cylinder surface of said at least one body part;
at least one fluid inlet path to said cylinder including a fluid inlet valve in said inlet path;
at least one fluid outlet path from said cylinder including a fluid outlet valve in said outlet path;
a compression piston reciprocatable in said cylinder;
an electromagnetic drive means for reciprocating said compression piston in said cylinder to move a fluid from said inlet path to said outlet path;
a registration surface provided inside of said at least one body part and spaced axially from said internal cylinder surface, said internal cylinder surface and said registration surface being formed to respective final diameters in a common machining operation by reference to a common axis;
a piston guide inserted and sized to be positioned radially against said registration surface, said piston guide having a guide surface therein; and
a piston guide member which is axially spaced from said compression piston, which reciprocates with said compression piston, and which slidably engages said guide surface of said piston guide so that movement of said compression piston is guided by continuous contacting movement of said piston guide member in said piston guide.

5,603,613

FLUID DELIVERY SYSTEM HAVING AN AIR BUBBLE EJECTOR

Robert D. Butterfield, 13980 Poway Valley Rd., Poway, Calif. 92064, and Gus G. Tseo, 12810 Corbett Ct., San Diego, Calif. 92130

Filed Sep. 12, 1994, Ser. No. 304,734
Int. Cl.[6] F04B 43/08
U.S. Cl. 417—474 29 Claims



1. A fluid delivery system comprising:
a fluid conduit having a flow path through which fluid flows;
a vessel in fluid communication with the fluid conduit having a shape selected for sensing a noncompositional characteristic of the fluid conducted by the fluid conduit; and
a vane disposed in the flow path of the fluid conduit and positioned and shaped to redirect at least some of the fluid flow from that flow path into the vessel.

5,603,614

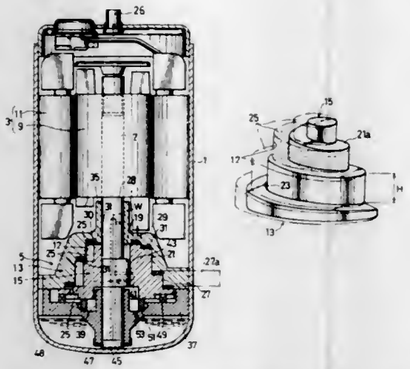
FLUID COMPRESSING DEVICE HAVING COAXIAL SPIRAL MEMBERS

Hirotsugu Sakata, and Masayuki Okuda, both of Kanagawa-ken, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 20, 1995, Ser. No. 530,604
Claims priority, application Japan, Sep. 30, 1994, 6-261000
Int. Cl.[6] F01C 1/04
U.S. Cl. 418—55.2 27 Claims

1. A fluid machine for transferring working fluid, comprising:
a first spiral member having a stepped spiral inner engagement surface spirally rising up from an outer circumference toward a center;
a second spiral member having a stepped spiral outer engagement surface, wherein one of the first and second spiral members is rotatable relative to the other of the first and second spiral members, and wherein the outer engagement

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surface of the second spiral member is received in a space defined by the inner engagement surface of the first spiral member; and

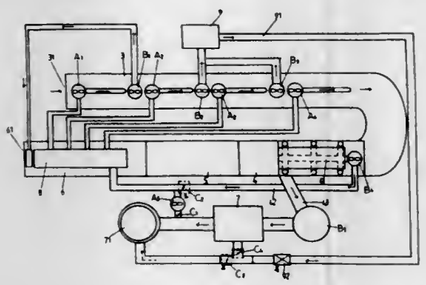
a sealed working space formed between the inner engagement surface of the first spiral member and the outer engagement surface of the second spiral member, wherein a capacity of the sealed working space gradually decreases toward the center from the outer circumference.

5,603,615

SMOKE POLLUTION DEVICE FOR TUNNEL KILN

Wei-Wau Liaw, No. 22-16, Yung Chun Road, Nan Tun Dist., Taichung, Taiwan

Filed Jan. 12, 1995, Ser. No. 371,967
Int. Cl.[6] F27B *9/02*
U.S. Cl. 432—128 **1 Claim**



1. A smoke pollution device for a tunnel kiln, comprising: dry zone, preheating zone, sintering zone, cooling zone, heat energy adjusting zone and gas treatment system wherein: the dry zone for preheating and setting brick blanks, has a plurality of air blowers for sending heat to the heat energy adjusting zone, said dry zone having a plurality of exhaust fans for drafting gases from the dry zone into a gas collector;

the preheating zone for slow heating and setting brick blanks, has a plurality of air ducts, heat absorbed from the preheating zone is delivered, by means of exhaust fans and airducts to the heat energy adjusting zone, said preheating zone also having an exhaust fan for delivering smoke containing incompletely burned coal ashes to the gas treatment system by means of exhaust fans, one end of said gas treatment system connected to a chimney, the other end connected to an air blower, the inlet of said air blower having a gate, and an outlet of said air blower connected to an air duct leading to the heat energy adjusting zone, the front end of joint having a gate;

the sintering zone having torches using coal ashes as fuel to produce 950° C. heat in the sintering zone;

the cooling zone located at a terminal end of the brick kiln for cooling the bricks, wherein the temperature decreases close to an outlet of the cooling zone;

a gas collector connected to each exhaust fan in the dry zone, an outlet connected to an air duct, another end of air duct connected to a chimney and having a gate, an air duct in front of the gate leading to the gas treatment system having a gate, the two gates connected to an electrical controller, said air duct having an anti-pollution switch also connected to the electrical controller;

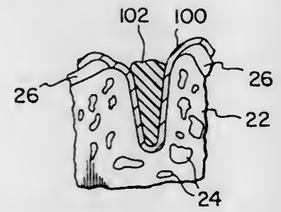
whereby coal ashes and smoke collected in the gas collector enter the gas treatment system for filtering or to be discharged to the air through the control of the gates subject to a signal to the electrical controller from the anti-pollution switch, and gases enter into the gas treatment system for recycling in the heat energy adjusting zone or emission to the chimney subject to the control of the air blower and gate by the electrical controller; and gases enter the outlet of the cooling zone by means of exhaust fans in the dry zone for increasing the cooling speed of the bricks from the sintering zone, and stirring up incompletely burned coal powder accumulated on a brick conveyor for absorbing by the heat energy adjusting zone and for delivering to the kiln for recycling.

5,603,616

DENTISTRY IMPLANT METHOD

Americo Fernandes, 2055 McPhillips St., Winnipeg, Manitoba, Canada

Division of Ser. No. 165,984, Dec. 13, 1993, Pat. No. 5,427,526. This application Mar. 17, 1995, Ser. No. 405,715
Int. Cl.[6] A61C *8/00*
U.S. Cl. 433—175 **5 Claims**



1. A method of preparing a custom dental implant, comprising the following steps in the order recited:

(a) extracting a tooth to leave a recess for later reception of the dental implant;

(b) lining the recess with a thin flexible impermeable sheathing;

(c) moulding an impression material into the recess lined with the thin flexible impermeable sheathing to obtain an impression of at least a major portion of the recess; and

(d) preparing the custom dental implant from the impression obtained from step (c).

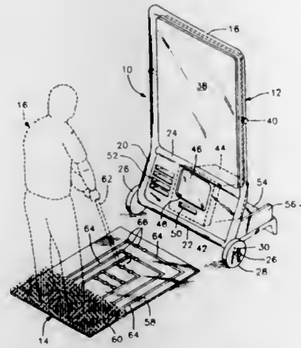
5,603,617

SPORTS TRAINER

James H. Light, 319 Somerset Ave., Sarasota, Fla. 34243

Filed Jul. 24, 1992, Ser. No. 918,003
Int. Cl.[6] A63B *69/36*
U.S. Cl. 434—252 **3 Claims**

1. A sports trainer to enable a student player to practice and become more proficient in performing various sports activities comprising a supporting stand including a generally upright frame, a reflective mirror supported in said frame, a mat supported in front of the mirror, said mat including a delineated area on which a



student player assumes a position for observing the reflected image of the student player in the mirror to enable the student player to review and analyze position, techniques and movements when performing a particular sports activity and means displaying optimum position, techniques and movements of a player performing the same sports activity and displaying the optimum position, techniques and movement as a reflected image thereby enabling the student player to observe the displayed optimum reflected image in the mirror and the reflected image for comparison purposes thereby enabling the student player to attain the same position, techniques and movements as displayed in the optimum reflected image, said means displaying optimum reflected images including a television monitor with screen, a video cassette player to play a video cassette tape, and means supporting the television monitor screen in a position adjacent said mirror, said TV monitor screen being positioned on said stand immediately below a center portion of a bottom edge of the mirror to enable the student player to easily observe and compare the reflected image in the mirror and the optimum reflected image on the television monitor screen, said frame including a substantially vertical portion and a lower portion inclined toward said mat, said TV monitor screen being mounted in the inclined portion of the frame in an upwardly, inclined facing relation to facilitate observation by the student player, and supporting wheels and laterally extending, spaced supporting legs on a lower end of the stand to support the stand, frame, mirror and TV monitor in a stable upright manner and enabling these components to be easily moved to a site of use, said mirror being mounted in said frame for pivotal movement about a transverse, generally centrally disposed horizontal axis to enable the mirror to be tilted to provide the student player with a substantially full length reflected image.

5,603,618

MOUNTING BOARD UNIT ATTACHING/DETACHING DEVICE

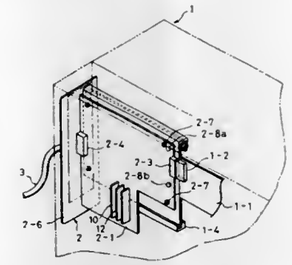
Yasuyoshi Hayakawa, Yokohama; Naoki Asano; Tomio Noguchi, both of Kawasaki, and Kazunori Takashima, Kamakura, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 24, 1994, Ser. No. 265,136
Claims priority, application Japan, Jun. 25, 1993, 5-155318
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—64 **11 Claims**

1. A mounting board unit for vertically attaching/detaching a mounting board within a device having a guide rail and a guide member, said unit comprising:

a holding member for vertically holding the mounting board;

an engagement portion having an inverted U-shaped cross-section for engaging the guide rail provided on the device, said engagement portion integrally formed with said holding member and suspending said holding member from the guide rail; and



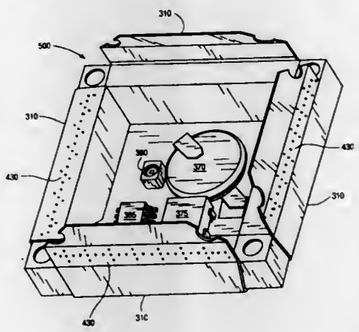
securing means for securing the mounting board to said holding member.

5,603,619

SCALABLE TEST INTERFACE PORT

Leonard O. Turner, Beaverton; Gerald A. Budelman, and Mark B. Trobough, both of Aloha, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jul. 20, 1995, Ser. No. 504,842
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—69 **20 Claims**



1. An apparatus for electrically connecting electrical contact pads on a first circuit board to electrical contact pads on a second circuit board comprising:

a support element;

a plurality of signal wires coupled to said support element;

a plurality of conductive bumps coupled to said signal wires, arranged on said support element for providing electrical contact between said signal wires and said electrical contact pads on said first circuit board and for providing electrical contact between said signal wires and said electrical contact pads on said second circuit board;

a plurality of alignment post and holes in said support element for aligning said electrical contact pads on said first circuit board and said second circuit board with said plurality of conductive bumps; and

alignment circuitry coupled to said support element for indicating whether said support element is properly aligned with said first circuit board.

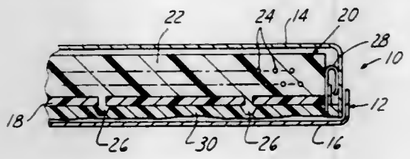
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5,603,620

INTEGRATED PRINTED CIRCUIT CONNECTOR AND GROUND CLIP ASSEMBLY

Lee R. Hinze, and Eric J. Thomas, both of Kokomo, Ind., assignors to Delco Electronics Corp., Kokomo, Ind.

Filed Aug. 4, 1995, Ser. No. 511,423
Int. Cl.[6] H01R *4/66*
U.S. Cl. 439—95 **3 Claims**



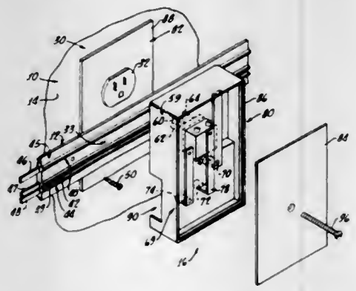
1. A circuit assembly comprising:
a printed circuit board having conductive signal and ground traces printed thereon;
a conductive housing encasing said printed circuit board; and
a connector captured in an opening formed in a side face of said housing, said connector including
a non-conductive body portion extending through said side face and attached to said printed circuit board at a point adjacent to the housing by mounting posts protruding from said body portion,
connector pins passing through the body portion and connected at one end to said conductive signal traces on said circuit board, and
a conductive ground clip for electrically coupling said conductive housing to said conductive ground trace, said clip having a stem which is received in a recess formed on a peripheral face of said body portion in the plane of said side face, a terminal portion of said stem attached to said conductive ground trace so as to electrically couple said ground clip to said ground trace, and a resilient contact portion extending from said body portion toward said side face of said housing, said contact portion being compressed between said side face and said body portion to electrically couple said housing to said ground clip.

5,603,621

CORDLESS EXTENSION SYSTEM

Daniel Elmouchi, 1555 Mesa Verde Dr. East, Suite 43 C, Costa Mesa, Calif. 92626

Filed Jan. 31, 1995, Ser. No. 381,357
Int. Cl.[6] H01R *25/00*
U.S. Cl. 439—120 **1 Claim**



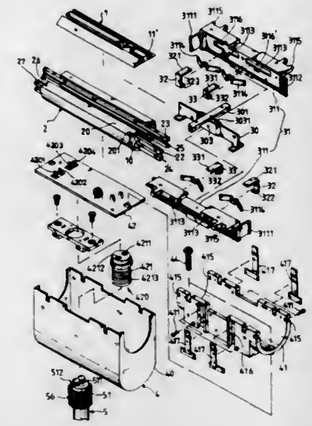
1. A method for providing electrical contact between a conventional electrical outlet receptacle and a strip having a plurality of continuous conductive tracks, said method comprising the steps of:
mounting the strip to a wall such that the strip substantially covers a receptacle of a conventional electrical outlet and without causing electrical contact between the strip and the receptacle; and
plugging an adaptor simultaneously into both the strip and an exposed receptacle of the conventional electrical outlet in order to cause electrical contact between the continuous conductive tracks and the exposed receptacle.

5,603,622

TRACK LIGHT MOUNTING ARRANGEMENT

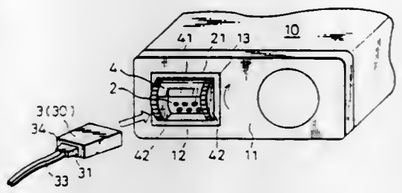
Acer Lin, Taipei, Taiwan, assignor to Taiwan King Prince Co., Ltd., Taipei, Taiwan

Filed Mar. 17, 1995, Ser. No. 405,867
Int. Cl.[6] H01R *25/00*
U.S. Cl. 439—121 **2 Claims**



1. A track light comprising a locating frame, a track, a sliding switch, an electric box, a lamp assembly, and a coupler, wherein:
said electric box comprises a transformer, metal contact plates, and other electric parts for providing power supply to the track light for operation;
said locating frame comprises two opposite retaining grooves, which receive two opposite projecting strips of the coupler; when the projecting strips are respectively fastened to the retaining grooves, the locating frame can then be coupled to the track by the coupler;
said track is shaped like a U-channel having two longitudinal partition boards with a respective upward rib bilaterally disposed inside thereof, two downward ribs respectively raised from two opposite top walls of the U-shaped panels at the bottom thereof; by means of the upward ribs and the downward ribs, an insulator is fastened to the track on the inside to hold two vertically spaced pairs of conductors; the conductors are respectively partially extended out of the insulator along the length of the track; a slide way is defined between conductors for mounting sliding switch permitting the bottoms of the two opposite pairs of metal contact springs of the sliding switch to be disposed in contact with the conductors respectively; the track further comprises two opposite coupling portions for mounting mounting blocks of wire holders of the connecting device;
said sliding switch comprises a sliding base, a switching unit, and two pairs of metal contact springs; the sliding base comprises a transverse top rod moved above the track, and a bottom contact block connected to the transverse top rod and moved in the slide way to bias the metal contact springs causing the bottoms of the metal contact springs to be constantly disposed in contact with the conductors, respectively; a bottom contact block has an open chamber in the middle;

said metal contact springs of the switching unit of the sliding switch have a respective top section respectively disposed in contact with the two opposite pairs of metal contact plates; the swtiching unit of the sliding swtich consists of two symmetrical halves; the symmetraicl halves are connected together by fastening a hooked portion on one half to a retaining hole on the other; each half of the switching unit comprises two slots and two locating grooves; two spring plates are respectively mounted on the locating grooves of each half to hold one pair of the metal contact springs; each half of the switching unit further comprises a plurality of projecting rods horizontally disposed at the top for fastening to respective mounting holes on the connecting block of the electric box;
said electric box comprises a casing, a connecting block, and a circuit board; the connecting block and the circuit board are fastened to the casing on the inside by screws; the connecting block comprises a plurality of mounting holes; by fitting the projecting rods of the switching unit into the mounting holes of the connecting block, the electric box is coupled to the sliding switch and can be moved with the sliding switch on the track; the connecting block further comprises two pairs of spring chambers, which receive a respective metal contact plate; the metal contact plates are respectively connected to four power terminals on the circuit board by metal screws; the casing comprises a connector holder at the bottom to hold an electric connector; the electric connector comprises an outer thread threaded into an internally threaded socket of the lamp assembly, two contact rods respectively connected to positive and negative poles of the circuit board and disposed in contact with the contact rods of the electric connector of the lamp assembly;
said lamp assembly comprises an internally threaded socket fastened to the electric connector of the electric box, and an electric connector received inside the internally threaded socket and having two contact rods respectively disposed in contact with the contact rods of the electric connector of the electric box;
said coupler comprises a plurality of mounting holes for fastening to the ceiling by screws, two opposite projecting strips respectively fitted into the retaining grooves on the locating frame, two opposite chambers, two pairs of wire holders fastened at two opposite ends thereof to hold two pairs of spring plates in the chambers; the wire holders comprise mounting blocks respectively fastened to the track and wire grooves for passing the conductors of the track, and are covered with cover plates; the coupler further comprises two longitudinal slide way on the inside, two locating plates mounted in the slide ways, two pairs of metal contact spring plates respectively mounted on the locating plates at a top thereof, and two adjusting blocks respectively mounted on the locating plates at a bottom thereof; by means of the adjusting block, the locating plates can be reciprocated in holes on the bottom of the coupler along the slide ways to control the connection between the metal contact spring plates and the conductors.



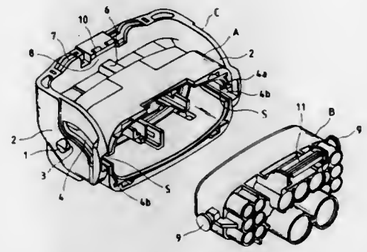
connector, an opening being formed for receiving said plug between said front portion of said connector and said shutter;
at least one notch formed in said shutter, wherein said plug is locked into said connector when a rear portion of said plug is engaged in said notch formed in said shutter; and
a pair of parallel components attached to said shutter by an axle and supported inside said panel, such that said shutter is capable of rotating about said axle to retract into said open portion of said panel;
said shutter forming an arc such that the entire arc is on the same side of said axle as said open portion of said panel, such that said shutter will close under its own weight.

5,603,624

CONNECTOR WITH FITTING OPERATION LEVER

Naoto Taguchi, and Hiroki Takahashi, both of Shizuoka, Japan, assignors to Yazki Corporation, Tokyo, Japan

Filed Dec. 20, 1994, Ser. No. 360,074
Claims priority, application Japan, Dec. 20, 1993, 5-319930
Int. Cl.[6] H01R *13/62*
U.S. Cl. 439—157 **8 Claims**



1. A connector comprising:
a connector housing having guide notches formed on side surfaces of said connector housing for receiving driven pins of a mating connector;
a fitting operation lever pivotally disposed on the connector housing, and having drive cam grooves corresponding to the driven pins disposed on operation plate portions of the fitting operation lever;
an initial position setting lock portion disposed on an upper surface of the connector housing, said upper surface of said connector housing extending between said side surfaces;
an engagement portion arranged on an operation portion of the fitting operation lever for engaging with the initial position setting lock portion, wherein said operation portion extends between said operation plate portions when the fitting operation lever is in an initial position set condition,
entrance portions of the drive cam grooves coincide with the guide notches and the engagement portion is engaged with the initial position setting lock portion.

5,603,623

LOCK MECHANISM FOR A CONNECTOR

Kazuo Nishikawa, Uji, and Kenji Nakamura, Tokyo, both of Japan, assignors to Nellcor Puritan Bennett Incorporated, Pleasanton, Calif.

PCT No. PCT/JP92/01736, § 371 Date Dec. 1, 1994, § 102(e) Date Dec. 1, 1994, PCT Pub. No. WO93/13573, PCT Pub. Date Jul. 8, 1993
PCT Filed Dec. 28, 1992, Ser. No. 256,203
Claims priority, application Japan, Dec. 27, 1991, 3-113513 U
Int. Cl.[6] H01R *13/44*
U.S. Cl. 439—144 **3 Claims**

1. A locking mechanism for a built-in electrical connector, said connector being fixed inside an open portion of a panel in a casing, said connector being a type of connector which engages a plug connected to an electrical cord, said lock mechanism comprising:
a curved shutter for closing said open portion of said panel, said shutter being arranged in a front portion of said built-in

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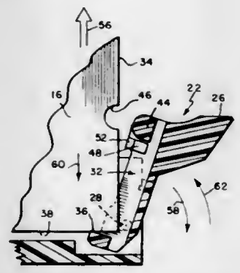
5,603,625
ELECTRICAL CONNECTOR SOCKET WITH DAUGHTERCARD EJECTOR

Robert J. Tondreault, Louisville, Ky., assignor to Robinson Nugent, Inc., New Albany, Ind.

Continuation of Ser. No. 298,118, Aug. 30, 1994, abandoned, which is a continuation of Ser. No. 107,274, Aug. 16, 1993, Pat. No. 5,364,282. This application Jan. 24, 1996, Ser. No. 590,772

Int. Cl.[6] H01R *13/629*

U.S. Cl. 439—157 **20 Claims**



1. An ejector apparatus for an electrical connector socket which is formed to include an elongated slot for receiving a daughtercard, the socket having a plurality of electrical terminals configured to engage a plurality of conductive surfaces formed on the daughtercard for electrically coupling the daughtercard to the socket, the daughtercard having an end edge formed to include a notch therein, the ejector apparatus comprising a body including a head configured to engage the notch formed in the end edge of the daughtercard and provide a first retention force on the daughtercard, at least one card retention surface for engaging at least one side surface of the daughtercard upon insertion of the daughtercard into the socket to provide a second retention force on the daughtercard, and a surface configured to eject an end of the daughtercard adjacent the ejector body out of the elongated slot upon movement of the ejector body relative to the socket.

5,603,626
INTERMEDIATE TERMINAL FOR AN ELECTRICAL CONNECTION BOX

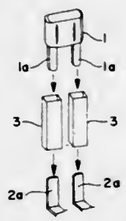
Yoshito Oka, and Hideki Goto, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Filed Aug. 30, 1995, Ser. No. 520,885

Claims priority, application Japan, Oct. 26, 1994, 6-262725

Int. Cl.[6] H01R *27/00*

U.S. Cl. 439—224 **10 Claims**



1. An intermediate terminal for electrical connection with a generally planar tab, said intermediate terminal having a column with hollow end portions dimensioned for receiving said tab, a plurality of connecting spring portions (*5g–5j*; *3b*, *3c*) projecting inwardly into the hollow end portions so as to allow insertion and fitting of a tab (*1a*, *2a*) in each end portion, said connecting spring portions being disposed such that a plurality of said connecting spring portions resiliently engage said tab in a first rotational orientation of said tab relative to said column and such that a plurality of said connecting spring portions resiliently engage said tab in a second rotational orientation of said tab, said second rotational orientation being rotated from said first rotational orientation by less than 180°, wherein the connecting spring portions (*5g–5j*; *3b*, *3c*) at at least one end portion are provided such that a tab (*1a*, *2a*) can be inserted and fitted in at least two different rotational orientations with respect to the longitudinal axis of the column.

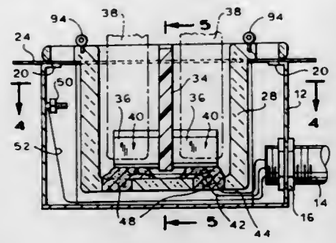
5,603,627
COLD CATHODE LAMP LAMPHOLDER

Jim Evanisko, Hasbrouck Heights, N.J., assignor to National Cathode Corp., New York, N.Y.

Filed Aug. 22, 1995, Ser. No. 517,913

Int. Cl.[6] H01R *33/02*

U.S. Cl. 439—235 **6 Claims**



1. A cold cathode bulb lampholder for use in low-voltage parallel configuration lighting circuits, comprising:

a conductive housing having an internal grounding lug positioned therein;

an insulating receptacle mounted in said conductive housing, said receptacle having a bulb-accepting aperture dimensioned to accept electrode ends of two cold cathode bulbs and a bottom wall having at least one wire passage aperture therein;

an insulating divider plate mounted in said receptacle aperture partitioning said aperture into a pair of adjacent single bulb end receiving portions;

conductive electrode clip means mounted in each of said receiving portions;

lead means connected to said electrode clip means and passing through said at least one wire passage aperture in said receptacle into a space between said receptacle and said housing for interconnection with bulb wiring components;

and adhesive compound sealing means positioned within said at least one wire passage aperture and about said lead means passing therethrough and between said receptacle bottom wall and said conductive electrode clip means to provide a moisture-resistant wiring chamber between said receptacle and said housing and to assist in the support of said conductive electrode clip means.

5,603,628
COMPUTER CARD RETAINER

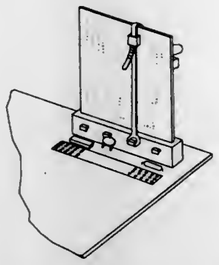
Peter N. Schapiro, Jr., 3156 Hudson Ave., Walnut Creek, Calif. 94596

Filed Jul. 31, 1995, Ser. No. 509,537

Int. Cl.[6] H01R *13/639*

U.S. Cl. 439—327 **12 Claims**

1. In a computer having connectors with card slots and replaceable computer cards mountable in the card slots of the connectors;



a retainer device for securing computer cards mounted in the slots of the connectors comprising:

an anchor mounted on the connectors; and,

a tie extendable around a computer card mounted in a card slot, the tie having connector ends engageable with the anchor to secure the card in the slot, wherein the connectors have opposite longitudinal sides and the anchor mounted on the connectors comprises a clip with means for fastening the clip to the connectors, the clip having prongs, the prongs being engageable with the longitudinal sides of a connector and the anchor having at least one pair of anchor hooks, each of the hooks of the pair being located on opposite longitudinal sides of the connector and engageable with one of the connector ends of the tie.

5,603,629
BOARD CONNECTOR, IN PARTICULAR FOR ELECTRONIC BOARD

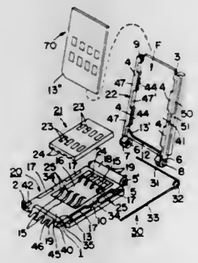
Andre DeFrasne, Pontarlier, and Michel Pernet, Doubs, both of France, assignors to Framatome Connectors International, Paris, France

Filed Jul. 6, 1994, Ser. No. 267,217

Claims priority, application France, Jul. 8, 1993, 93 08397

Int. Cl.[6] H01R *13/62*

U.S. Cl. 439—331 **9 Claims**



1. An IC card connector comprising:

(a) a generally planar base comprising electrical contact elements having first ends which extend beyond front and rear edges of said base and second ends which projects above an upper surface of said base, and a first hinge means located beyond said rear edge of said base;

(b) a cover attached to said first hinge means for housing an IC card and comprising insertion slide-tracks formed integrally with said cover and located adjacent opposite edges of a lower surface of said cover, as well as second hinge means thereon engaging in said first hinge means, said first and second hinge means forming a hinge around an axis of rotation of said cover;

(c) said base and said cover comprising first and second corresponding latching elements respectively located opposite said first and second hinge means so as to keep said base and said cover in a closed card-connection position, said first and second latching elements being disconnected by application of pressure on an edge of said cover substantially parallel to said axis of rotation of said cover, said cover being this displaceable to allow disconnection of said first and second latching elements.

5,603,630
ADAPTOR SYSTEM BETWEEN AN ANTENNA PLUG AND A RADIOTELEPHONE SOCKET

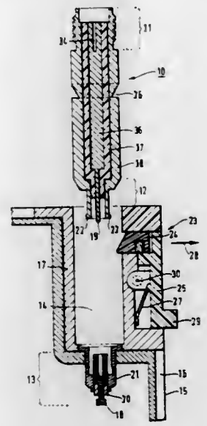
Jean-Christophe Villain, Ermont, France, assignor to Alcatel Radiotelephone, Paris, France

Continuation of Ser. No. 311,899, Sep. 26, 1994, abandoned, which is a continuation of Ser. No. 94,429, Jul. 21, 1993, abandoned. This application Nov. 13, 1995, Ser. No. 558,976

Claims priority, application France, Jul. 24, 1992, 92 09171

Int. Cl.[6] H01R *13/627*

U.S. Cl. 439—347 **9 Claims**



1. An adaptor system for releasably coupling an antenna (**35**), having an antenna plug (**31**), to a portable radio transmitter/receiver unit (**15**) enclosed in a shell (**16**) and having an antenna socket (**13**), said system comprising:

an axially extending adaptor member (**10**) having, at a first end thereof, a first electrical connector (**12**), and, at an opposite second end thereof, a second electrical connector and mechanical coupler assembly (**11**) for receiving said antenna plug (**31**);

in said shell (**16**), a hollow housing (**14**) for receiving, through an open first end thereof, said adaptor member (**10**) axially inserted in said hollow housing, said hollow housing (**14**) having an opposite closed second end containing said antenna socket (**13**) into which said first electrical connector (**12**) is plugged; and

also in said hollow housing (**14**), holding means (**23**), cooperating with a complementary part of said adaptor member (**10**), for automatically locking the fully inserted adaptor member (**10**),

said holding means (**23**) comprising manually operated releasing means (**24**, **25**, **27**) operable from an exterior side of said housing (**14**), for releasing the locked adaptor member (**10**).

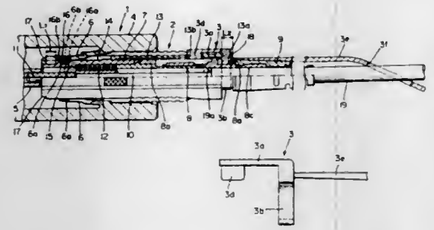
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5,603,631

MECHANISM FOR PREVENTING DETACHMENT OF A PLUG

Akira Kawahara; Tatuhito Shinozaki, both of Tokyo; Shin'ichi Iwano, Ibaraki-ken; Kazunori Kanayama; Yasuhiro Ando, both of Tokyo; Kuniharu Katou, Ibaraki-ken; Tateomi Matumoto; Takashi Nishiyama, both of Tokyo; Toshiaki Nakano, Kanagawa-ken, and Hiromasa Okamura, Tokyo, all of Japan, assignors to Hirose Electric Co., Ltd.; Honda Tsushin Kogyo Co., Ltd.; Sanwa Denki Kogyo Co., Ltd., and Nippon Telegraph Corporation, all of Tokyo, Japan

Filed Apr. 17, 1995, Ser. No. 423,664
Claims priority, application Japan, Apr. 15, 1994, 6-101800
Int. Cl.[6] G02B *6/36*
U.S. Cl. 439—352 **17 Claims**



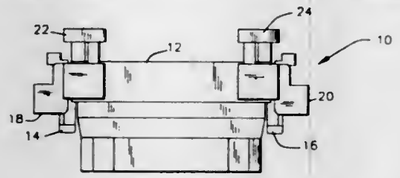
1. A plug including a plug frame having two front faces, detent recess portions in both front faces for engaging detent projection portions of a pair of spring-like detent pieces which are opposingly provided on inner surfaces of an adapter, an opening portion arranged in said plug frame so that said detent recess portions of said plug frame are located in both side faces, said plug frame having a ring in a rear edge thereof, a lug including inclined guide portions for said spring-like detent pieces, said lug being slidably mounted to right and left inner edges of said opening, said spring-like detent pieces engaged with said detent recess portions of said plug frame being positioned to be elastically deformed outwardly while being guided into said inclined guide portions when said lug is moved rearwardly with respect to said plug frame by a predetermined stroke, thereby releasing the engagement between said spring-like detent pieces and said detent recess portions, and a stopper for blocking slide of said lug being positioned between said lug and one of said ring or plug frame, by insertion in said lug.

5,603,632

ELECTRICAL CONNECTOR AND CONNECTOR ASSEMBLY

Richard A. Johannes, Greer, S.C., and Kevin G. Henderson, Gastonia, N.C., assignors to Thomas & Betts Corporation, Memphis, Tenn.

Filed Feb. 9, 1995, Ser. No. 386,022
Int. Cl.[6] H01R *13/627*
U.S. Cl. 439—357 **25 Claims**



1. An electrical connector assembly, comprising:

(a) a first housing supporting an array of first contacts and defining a passage for receipt of a CPA component;

(b) a second housing matable with said first housing by movement along a connection access and having an array of second contacts for mating engagement with said array of first contacts;

(c) a CPA member having a first and second portion, said first portion being movable in said first housing passage; and

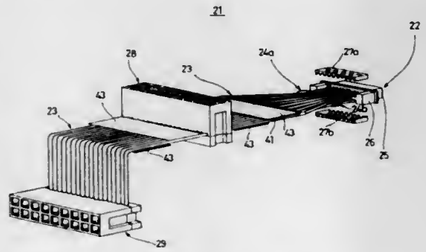
(d) first and second latch means respectively with said first and second housings and engageable in the course of mating thereof, said first latch means being disposed in a path of movement of said CPA member second portion and wherein said first housing and said first latch means define mutually engageable means for retaining said first latch means with said first housing.

5,603,633

FLAT CABLE AND A CONNECTOR COOPERATING THEREWITH

Youichi Satoh, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 278,226, Jul. 21, 1994. This application Feb. 9, 1995, Ser. No. 385,921
Claims priority, application Japan, Sep. 22, 1993, 5-236797
Int. Cl.[6] H01R *4/24*
U.S. Cl. 439—404 **2 Claims**



1. A flat cable connector assembly, comprising:

a connector including: a contact part for contact engagement with another connector; and a cable interface part; and

a flat cable assembly in connection to said cable interface part of said connector;

said contact part including: conductive contact elements provided in two rows for contact engagement with said other connector; and terminals aligned in two rows in correspondence to and in electrical connection to said contact elements;

said flat cable assembly comprising first and second flat cables each including:

a plurality of cables each including a conductive core and an insulating cover for insulating said conductive core, said plurality of cables being disposed substantially parallel with each other and aligned in a single row when viewed from an elongating direction of said cables, with a mutual separation such that gaps are formed between said plurality of cables; and

fixture means for holding said plurality of cables forming said first and second flat cables substantially in a row when viewed from an elongating direction of said cables to form a single flat cable, such that said plurality of cables forming said second flat cable are held in respective gaps formed between said cables of said first flat cable and such that said plurality of cables forming said first flat cable are held in respective gaps of said cables forming said second flat cable;

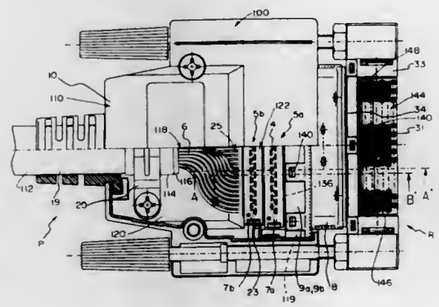
wherein each of said cables forming said first and second flat cables have a triangular cross section, said fixture means comprises a first fixture member carrying thereon said cables of said first flat cable by bonding to an apex of said triangular cross section, and a second fixture member carrying thereon said cables of said second flat cable by bonding to an apex of said triangular cross section, wherein said cables of said first flat cable and said cables of said second flat cable establish a mechanical engagement.

5,603,634

SMALL PITCH DUAL ROW LEAF CONNECTOR

Shozou Ichikawa, Kawasaki, and Naoya Matsuura, Yokohama, both of Japan, assignors to Molex Incorporated, Lisle, Ill.

Filed Oct. 23, 1995, Ser. No. 546,654
Claims priority, application Japan, Nov. 21, 1994, 6-311085
Int. Cl.[6] H01R *4/24*
U.S. Cl. 439—404 **24 Claims**



14. A connector assembly for establishing an electrical connection between electronic devices, one of said devices having a receptacle which engages said connector, comprising:

a housing having an endwall which opposes said receptacle said endwall having at least one connector blade portion which extends outwardly from said endwall and engages a portion of said receptacle;

a terminal block assembly disposed within said housing, said terminal block assembly including a terminal support block, a plurality of elongated terminals extending lengthwise on said terminal support block, said terminals being disposed on said terminal support block in two distinct sets of terminals, one terminal set extending along one surface of said terminal block and the other terminal set extending along an opposite surface of said terminal block, said terminals including elongated contact portions extending along said terminal block one and opposite surfaces, said terminals further including wire engaging rearwardly of said terminal contact blade portions, said wire engaging portions extending upwardly from said terminal block opposite surface, said wire engaging portions being arranged on said terminal block opposite surface in first and second distinct arrays such that said first wire engaging portion array corresponds to said one terminal set and said second of said wire engaging portion array corresponds to said other terminal set, said first and second wire engaging portion arrays being spaced apart from each other longitudinally on said terminal block opposite surface, said terminal wire engaging portions being staggered with respect to each other on said terminal block opposite surface within each of said first and second arrays, whereby said staggered and spaced-apart arrangement of said first and second arrays of said wire engaging portions permits the pitch of said terminals to be reduced; and

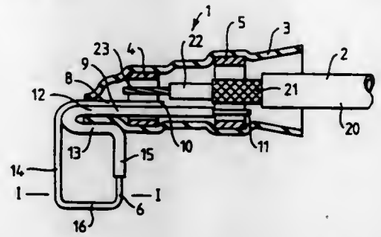
a cable having a plurality of wires extending therein, said cable having an open end disposed within said housing, said wires having free ends extending out of said cable open end and into said housing into contact with said terminal wire engagement portions.

5,603,635

ELECTRICAL CONNECTOR

Jean-Christian Delamotte, Henonville, and Jacqueline Damene, Pierrelaye, both of France, assignors to Raychem S.A., France

PCT No. PCT/GB93/00733, § 371 Date Oct. 31, 1994, § 102(e) Date Oct. 31, 1994, PCT Pub. No. WO93/21669, PCT Pub. Date Oct. 28, 1993
PCT Filed Apr. 7, 1993, Ser. No. 313,314
Claims priority, application United Kingdom, Apr. 9, 1992, 9207868
Int. Cl.[6] H01R *9/05*
U.S. Cl. 439—581 **7 Claims**



1. A device arranged to electrically connect a coaxial cable to an electrical component,

said device comprising a sleeve arranged to receive an end of the coaxial cable, the sleeve having an interior and:

(a) a pair of elongate conductive members that extend out of the sleeve from the interior thereof, and being arranged to form a connection with said electrical component; and

(b) two quantities of solder arranged to connect each said conductive member to a conductor of said coaxial cable;

wherein said sleeve is a unitary sleeve and said conductive members both extend out of a first end of the sleeve; and

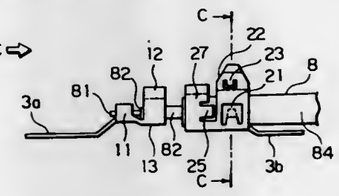
wherein at least one of said elongate conductive member is electrically insulated in order, in use, to prevent a short circuit between said conductive members.

5,603,636

ATTACHMENT OF TERMINAL CONTACTS TO COAXIAL CABLE END AND CABLE CONNECTOR HAVING TERMINAL CONTACTS

Tatsuo Kanou, and Takashi Miyashita, both of Tokyo, Japan, assignors to Japan Aviation Electronics Industry, Limited, Tokyo, Japan

Filed Sep. 29, 1995, Ser. No. 536,665
Int. Cl.[6] H01R *17/04*
U.S. Cl. 439—585 **10 Claims**



1. A method for attaching terminal contacts to a cable end of a coaxial cable comprising a first conductor centered inside, a second conductor extending coaxial with said first conductor, a first insulating cover covering and insulating said first conductor from said second conductor, and a second insulating cover covering said

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second conductor, said terminal contacts comprising an electroconductive first contact element to be electrically connected to an end of said first conductor at the cable end and an electroconductive second contact element to be electrically connected to said second conductor, said method comprising steps of;

preparing a contact frame by punching an electroconductive plate material, said contact frame comprising said first contact element, said second contact element, a first frame portion carrying said first contact element, a second frame portion carrying said second contact element, and a bridge portion connecting said first and said second frame portions with a first distance left therebetween to thereby maintain a first predetermined positional relation between said first and said second contact elements;

processing the cable end of said coaxial cable to thereby expose said first conductor end, said first insulating cover at the cable end, and said second conductor end, said first conductor end and said second conductor end being separated said first distance from each other by said first insulating cover along said coaxial cable to thereby have a second predetermined positional relation therebetween which matches to said first predetermined positional relation;

attaching said contact frame to said cable end so that said first contact element and said second contact element are secured to said first conductor end and said second conductor end, respectively; and

separating said first contact element and said second contact element from said first frame portion and said second frame portion, respectively.

5,603,637

WATERPROOF PLUG STRUCTURE

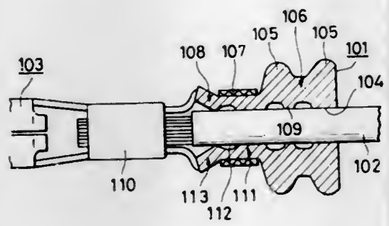
Hiroyuki Matsuoka; Eiji Saljo; Shinichi Yamada, and Takatoshi Katsuma, all of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Filed Jul. 31, 1995, Ser. No. 509,062

Claims priority, application Japan, Aug. 4, 1994, 6-204434; Aug. 8, 1994, 6-207967; Sep. 26, 1994, 6-257513

Int. Cl.[6] H01R *13/40*

U.S. Cl. 439—587 **6 Claims**



1. A waterproof plug comprising:

a wire insertion hole formed through said waterproof plug along an axis thereof for passing a sheathed wire therethrough;

annular seal lips formed on an outer peripheral surface of said waterproof plug;

a clamping region to be clamped by an insulation barrel of a metal terminal;

a withdrawal prevention region disposed outwardly of said clamping region for engagement with said insulation barrel to thereby prevent withdrawal of said waterproof plug; and

an annular thinned portion formed at an inner surface of said wire insertion hole at a position corresponding to a boundary portion between said clamping region and said withdrawal prevention region, said thinned portion allowing said withdrawal prevention region to be forcibly deformed in a flared manner in accordance with the clamping of said insulation barrel.

5,603,638

HOUSING FOR FEMALE RECEPTACLES IN A MOLDED PLUG

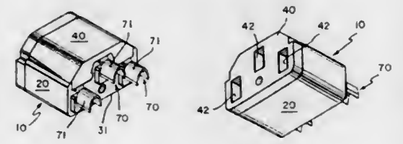
Donald C. Brown, Freehold; Suzanne V. Hickey, Brick; Yook K. Chan, South Amboy; Henry F. Skoczylas, Brick, and Michael Shulman, Toms River, all of N.J., assignors to Heyco Stamped Products, Inc., Toms River, N.J.

Filed Jul. 20, 1995, Ser. No. 504,683

Int. Cl.[6] H01R *13/405*

U.S. Cl. 439—606 **27 Claims**

1. An overmoldable insulative plastic housing for female electric



contact receptacles in a plastic molded multi-opening female receptacle plug and said housing substantially impervious to plug molding plastic flashing and said housing including an interengagable body and cover to receive three female electric contact receptables, each female electric contact receptacle having a male electric contact blade receiving portion, a neck and a crimp end, said body, said cover, three cavities, said cavities defined within said housing by said body and said cover, said body and said cover including three cavity portions, said body including a front portion; a rear portion; and interengagable grasping means to interactively grasp said cover, said cover including a top portion; a flange portion; one inner facing portion for each said cavity; a rear portion; and interengagable grasping means to interactively grasp said cover, said cover including a top portion; a flange portion; one inner facing portion for each said said flange portion of said cover extending substantially perpendicular with regard to said top portion; and including three male electric contact blade openings, said three cavities in a triangular configuration, one said blade opening addressable to one said cavity open front part, one said inner facing portion of said cover to form a top with one said cavity open top part, said body and said cover including means at each said cavity rear part through said respective body and cover rear portions to accept therethrough a female receptacle extending neck portion including a crimp end, and when said respective body and cover grasping means are interengaged said body and said cover and said extending neck are substantially impervious to plug molding plastic flowing therebetween.

5,603,639

SHIELDED ELECTRICAL CONNECTOR

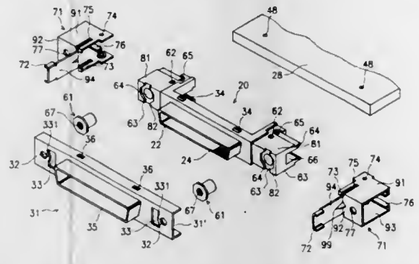
Chin-Te Lai, Taipei Hsien, Taiwan, and Tim S. L. Chang, Chino Hills, Calif., assignors to Genrife Company Limited, Queensway, Hong Kong

Filed Aug. 30, 1995, Ser. No. 520,775

Int. Cl.[6] H01R *13/648*

U.S. Cl. 439—607 **5 Claims**

1. A shielded electrical connector for providing external connec-



tion to electrical signals of electronic circuits on a circuit board, said shielded electronic connector comprising:

a connector body having a substantially longitudinally-shaped body and having formed on a central portion thereof a connector head assembly, said connector head assembly having a plurality of signal connecting elements aligned within a confinement thereof, said connector body having formed on each of both ends of said longitudinal body a clamp piece receiving section, each of said sections having a first, second, third and fourth receiving surfaces, said second receiving surface being parallel to a surface of said connector body from which said connector head assembly extends forward, said first and third receiving surfaces being vertical to said second receiving surface and opposing each other, said second receiving surface having formed therein an opening, and said fourth receiving surface opposing said second receiving surface and having formed therein a recessed slot for receiving said printed circuit board when said shielded electrical connector is installed;

a pair of screw nuts each comprising a cylindrical body and having a threaded hole formed in a hollow space inside said cylindrical body;

a pair of clamp pieces each comprising a three-panel square column, and a clamp hook plate extending vertically from an edge of a second one of said panels, the first and third panels being opposed to and parallel with each other, each being connected at one edge thereof to one corresponding edge of said second panel, said second panel having formed thereon a screw opening; and

a shielding cover having a generally longitudinal-shaped body and having formed on a center thereof a shielding wall, a pair of clamp hook openings each located at one exterior side of said shielding wall, and a pair of screw holes respectively located beside said clamp hook openings;

each of said pair of screw nuts being installed between said connector body and said shielding cover at the corresponding end, each of said clamp pieces surrounding the corresponding one of said clamp piece receiving sections, said shielding cover being aligned and joined with said connector body; wherein each of said first and third panels of one of said clamp pieces has a clamping edge formed by bending back over edges of said first and third panels for clamping an end of the corresponding receiving surface of the printed circuit board.

5,603,640

PLANAR FILTER FOR A MULTI-POLE PLUG CONNECTOR AND PLUG CONNECTOR USING THE PLANAR FILTER

Bob Mouissie, Berlicum, Netherlands, assignor to Filtec, Filtertechnologie fuer die Elektronikindustrie GmbH, Lippstadt, Germany

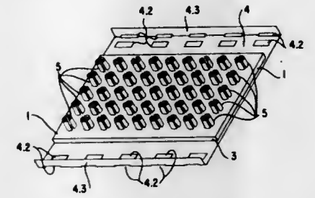
Filed Dec. 12, 1994, Ser. No. 353,613

Claims priority, application Germany, Dec. 11, 1993, 43 42 326.4

Int. Cl.[6] H01R *13/66*

U.S. Cl. 439—620 **14 Claims**

1. In a plug connector having a conducting metal housing and a



plurality of signal lines in the form of connection pins disposed in rows and columns, a planar filter assembly comprising: a planar filter having a ground electrode and two opposed edges constructed as conductive side regions being connected to said ground electrode and being connected to ground through the housing;

a substrate having openings formed therein each receiving a respective one of the connection pins;

capacitors each being disposed in the vicinity of a respective one of said openings for a respective one of the connection pins, each of said capacitors having a first coating being connected to a respective one of the connection pins and being extended into a respective one of said openings, a second coating connected through said housing to ground, and a layer-like dielectric disposed between said first and second coatings;

contact inserts each being soldered in a respective one of said openings for retaining a respective one of the connection pins and each having at least one contact prong electrically connecting a respective one of the connection pins to said first coating of a respective one of said capacitors;

wherein said openings are leadthrough openings having metallizings disposed therein, said first coatings of said capacitors are associated with signal electrodes on said substrate in the form of double structures with a preferential axis in the shape of a dumbbell or a diabolo, a middle and connecting arms, said preferential axes of said double structures of said coatings of adjacent capacitors cross one another, and said connecting arms of said two partial structures encompass said leadthrough openings for the connection pins in said middle and are connected to said metallizings.

5,603,641

ELECTRICAL CONNECTOR ASSEMBLY ALIGNMENT STRUCTURE

Brent A. Kuhn, Novi; Lawrence M. Suwinski, Sr., Clinton Township, Macomb County, both of Mich., and Chong H. Yi, Middletown, Pa., assignors to United Technologies Automotive Inc., Dearborn, Mich.

Filed Mar. 23, 1995, Ser. No. 410,123

Int. Cl.[6] H01K *13/64*

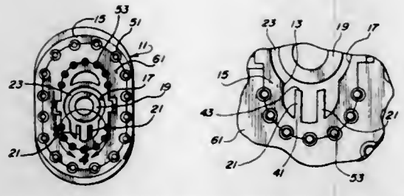
U.S. Cl. 439—680 **21 Claims**

1. An electrical connector assembly including a first connector comprising:

a body;

an electrical terminal at least partially disposed within said body;

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a cavity at least partially disposed within said body and being elongated along a mating axis;

a pair of walls each having substantially parallel sides and a distal edge accessible to said cavity, said sides and distal edge longitudinally running substantially parallel to said mating axis, a majority of said pair of walls being attached to said body, said pair of walls defining a slotted keyway therebetween open to said cavity;

said distal edges of said pair of walls, defined as those closest to a center of said cavity, and said sides of said pair of walls being freely movable independent from said body along portions thereof, thereby allowing a segment of each of said pair of walls to flex away from each other; and

said pair of walls and said body being molded as a single integrated unit.

5,603,642

REAR HOLDER HAVING A RELEASING HOLE WHICH EXTENDS BEYOND A REAR END OF A CONNECTOR HOUSING

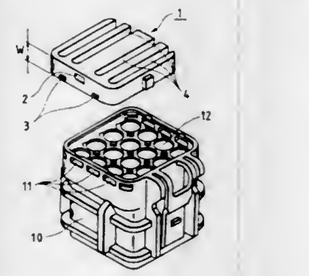
Yasuhisa Shinji, and Kazuhiro Morishita, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Mar. 1, 1995, Ser. No. 396,782

Claims priority, application Japan, Mar. 3, 1994, 6-033666

Int. Cl.[6] H01R *13/514*

U.S. Cl. 439—752 **8 Claims**



1. A connector comprising:

a connector housing provided with a retaining hole;

a rear holder including:

a wire inserting part;

a retaining projection on a side surface of the rear holder for engaging the rear holder with the connector housing, wherein the retaining projection is retained by the retaining hole provided on the connector housing, so that the rear holder prevents a connection terminal inserted into the connector housing from coming off a rear end of the connector housing; and

a releasing hole for allowing an operation part of a releasing jig to be inserted thereinto, the releasing hole being provided on the side surface of the rear holder and extending into an interior portion of the rear holder and having an exposed part which extends beyond the rear end of the connector housing when the rear holder is retained by the connector housing.

5,603,643

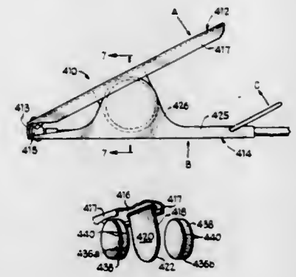
BOOSTER CLAMP WITH ELASTOMERIC JOINT ELEMENT

Bert Krivec, Waukesha, Wis., assignor to Snap-on Technologies, Inc., Crystal Lake, Ill.

Filed May 17, 1995, Ser. No. 442,687

Int. Cl.[6] H01R *11/24*

U.S. Cl. 439—822 **18 Claims**



1. A booster clamp comprising:

a first lever having a first planar surface and a first jaw portion;

a second lever having a second planar surface and a second jaw portion mateable with the first jaw portion, the booster clamp having a closed position wherein the first and second jaw portions contact each other and an open position wherein the first and second Saw portions do not contact each other; and

a substantially cylindrical joint pivotally interconnecting the first and second levers, the joint including a substantially cylindrical elastomeric element and first and second substantially planar surfaces substantially parallel to each other, wherein the first planar surface of the joint is connected to the first planar surface of the first lever and the second planar surface of the joint is connected to the second planar surface of the second lever.

5,603,644

JET PROPULSION BOAT

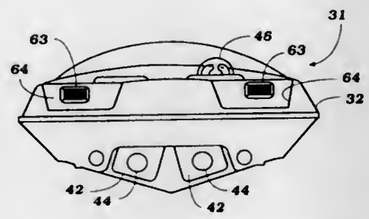
Noboru Kobayashi, and Yoshiki Futaki, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Oct. 11, 1991, Ser. No. 775,740

Claims priority, application Japan, Oct. 12, 1990, 2-274016; Oct. 12, 1990, 2-274017; Oct. 19, 1990, 2-283027

Int. Cl.[6] B60K *41/00*

U.S. Cl. 440—86 **31 Claims**



1. A marine vessel comprising a hull, means carried by said hull for propelling said hull and for braking the forward speed of said hull, operator controlled operating means for operating said means for braking the forward speed of said hull, an indicator means remotely positioned from said operating means and operated in response to operation of said operating means for providing an indication of when the speed of said hull is being braked, said indicator means being positioned to be seen from a following marine vessel.

5,603,645

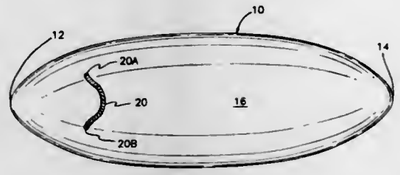
PRONE SURF BOARD CONSTRUCTION

Tom F. Saccomanno, 41 Kimo Pl., Hilo, Hi. 96720

Filed Jul. 1, 1994, Ser. No. 266,333

Int. Cl.[6] B63B *1/00*

U.S. Cl. 441—65 **3 Claims**



1. A surfing device for riding on a wave by a rider in prone stomach-down position comprising:

relatively flat board member with an outer surface of smooth fiberglass and having smooth upper and lower surfaces, a length dimension defining a longitudinal axis, and a width dimension, said flat board member also having a rounded nose, a rounded tail, and lateral sides providing a gently curved transition between said rounded nose and said rounded tail such that said gently curved transition lacks a discernible corner;

a rope steering handle member for enabling manual steering of said surfing device, said handle member attached to said board member at two points along the top surface of said board member, said two points located on a line normal to said longitudinal axis, and said two points located inside said lateral sides such that a margin having a dimension of at least fifteen percent of the maximum width dimension of said board member exists between each one of said two points of attachment and the nearest said lateral side, and said line located behind said rounded nose by a margin of less than fifteen percent of said length dimension wherein said rope handle member is a stiff rope with two ends integrally secured to said board member by molding both ends of said rope into said fiberglass, and said smooth upper surface is interrupted only by said stiff rope extending above said board member;

a plurality of fins permanently attached to and projecting downwardly from the smooth lower side of said board member at an end proximate said rounded tail wherein said smooth lower side of said board member is interrupted only by said fins.

5,603,646

EXPEDITION JACKET

Charles S. Tobias, Main Street, Road Town, Tortola, Virgin Islands (Br.)

Filed Mar. 19, 1996, Ser. No. 617,588

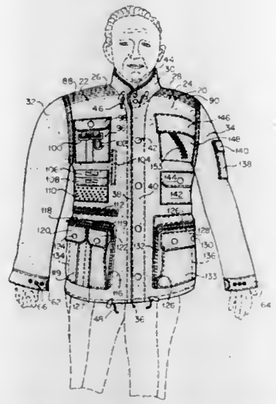
Int. Cl.[6] B63C *9/08*

U.S. Cl. 441—94 **2 Claims**

1. An inflatable and protective expedition jacket comprising:

a. a vest having a body portion adapted for the human torso and including a back and a front, said back extending laterally to a left side and a right side of said front and extending vertically via a shoulder portion to said left side and right side of said front, so as to define a central vertically extending front opening, as well as neck and arm apertures, said front further including:

i. side entry hand warming pockets defined in the left side and the right side of said front;



ii. a plurality of utility pockets defined upon the exterior of said front and including at least one pocket having a mesh ventilating cover, at least one waterproof zippered pocket having a water impervious lining and at least one bellows pocket configured in said front and having an access zipper defined at one side and on top of said bellows pocket, and

iii. horizontal reinforcing stitching defined at the left and right side of said jacket front, as well as horizontal reinforcing stitching extending across the top back of said jacket;

b. detachable sleeves attached to said body portion around each of said arm apertures;

c. a full length bib and releasable closure secured to said left front and right front inwardly of said front opening;

d. a storm collar secured around the neck aperture as an extension of said full length bib;

e. an inflatable flotation bladder supported within said back and extending through said shoulder portion to said left side and right side of said front with an inflation valve extending outwardly of said front and a detachable exterior tear-away cover positioned upon said front, so as to protect said inflation valve; and an emergency pocket supporting a manual inflation tube and valve extending outwardly of said flotation bladder and an inflation cartridge and emergency actuating valve supported so as to extend outwardly of said flotation bladder beneath said tear-away cover;

f. an outer storm-flap with complementary fastening secured to each side of said front opening, so as to overlie said full length bib and closure and further including a storm collar positioned adjacent said outer storm flap adjacent said neck opening and a hood secured within an encircling pocket defined in said storm collar;

g. a sleeveless liner with vertical front closure detachably secured to the interior of said back and said front;

h. an extra protective layer secured by said reinforcing stitching at the top and extending to a game pocket defined in a lower portion of said back, and

i. at least one utility shackle secured to said front of said jacket.

5,603,647

INFLATABLE LIFE PRESERVING FLOATATION DEVICE FORMED FROM DOUBLE WOVEN TEXTILE FABRICS

Aad Van Adrichem, Prestbury, and Chris P. Kavanagh, Mossley, both of United Kingdom, assignors to Reeves Brothers, Inc., Spartanburg, S.C.

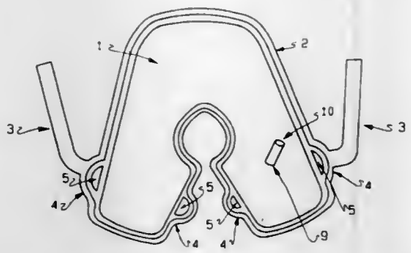
Filed Feb. 28, 1995, Ser. No. 395,773

Int. Cl.[6] B63C *9/08*

U.S. Cl. 441—106 **21 Claims**

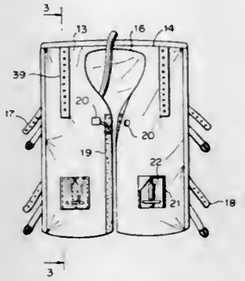
1. An inflatable floatation device comprising a double cloth woven fabric having separable, opposed first and second fabric

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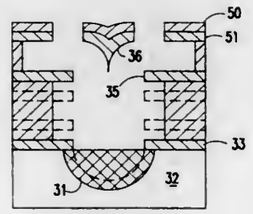
layers having outer and inner surfaces which are woven together at an outer margin to define a chamber for accepting an inflation medium, and a coating on the outer surface of the fabric layers and the outer margin in an amount sufficient to prevent air from passing therethrough to thus retain the inflation medium in the chamber; wherein said fabric includes an aperture and the chamber is inverted through the aperture to place the coating in contact with the inflation medium.

5,603,648
OUTDOOR SURVIVAL GARMENT
Miriam Kea, 114 Barksdale Rd., Hampton, Va. 23669
Filed May 19, 1995, Ser. No. 445,104
Int. Cl.[6] B63C *9/08*
U.S. Cl. 441—106 **10 Claims**



1. An outdoor survival garment to protect a wearer from sustained exposure to cold weather on land or at sea, that enables the wearer to communicate distress signals from a lighting system utilizing solar collectors to provide electricity to heating elements and light emitting diode leads disposed at the ends of fiber optical leads, comprising: a garment having front and back portions and an integral connection therebetween; said integral connection includes a pair of shoulder connectors adapted to extend across the shoulders of the wearer to define a neck opening therebetween; at least one separate, releasable connecting strap disposed on and adapted to connect said front and said back portions over each side of the wearer; a first flotation means disposed within said front and back portions to floatingly support a wearer of the jacket in a body of water; a second flotation means disposed within said front and said back portions to supplement said first flotation means, said second flotation means including at least one inflatable bladder disposed within said garment and extending from said front to said back portions; inflation means carried within said garment to selectively inflate said inflatable bladder; an outermost compartment disposed in a front portion of said garment that houses a fiber optic lead immediately in the inside of the outermost compartment, and which houses an LED lighting means underneath a fiber optic lead to collectively provide lighting means; at least one battery in a lowermost section of said back portion of said garment to supply power to said fiber optic and said LED lighting means; an array of photovoltaic solar cells contained within a fiber optic container disposed at a top most section of said back portion of said garment in electrical connection with and serving to repower said fiber optic and said LED lighting means; at least one electrical heating element contained within a layer within a lining next removed from an inner most compartment that extends from said front and said back portions of said garment and includes heating coil wires; and, wherein said battery is in electrical connection with said electrical heater element to supply said electrical heater element with power.

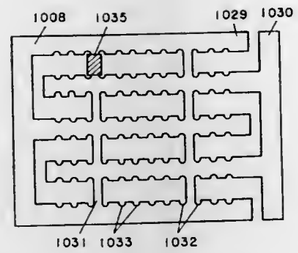
5,603,649
STRUCTURE AND METHOD OF MAKING FIELD EMISSION DISPLAYS
Steven M. Zimmerman, Durham, N.C., assignor to International Business Machines, Corporation, Armonk, N.Y.
Division of Ser. No. 28,047, Mar. 8, 1993. This application May 24, 1995, Ser. No. 448,956
Int. Cl.[6] H01J *1/30;9/18;9/227*
U.S. Cl. 445—24 **4 Claims**



1. A process of fabricating a monolithic field emission display (FED) device comprising the steps of:
depositing a phosphor layer on a face plate;
depositing an anode conductor over the phosphor layer on the face plate;
depositing one or more insulator layers over said anode layer to serve as a spacer;
depositing a grid conductor layer to serve as an extraction grid;
etching vacuum space holes extending through said grid conductor layer, said one or more insulator layers and said anode conductor to said phosphor layer;
depositing a conformal layer of a material that can be selectively etched, said conformal layer filling in and forming cusps over said vacuum space holes;
depositing an emitter conductor layer;
etching access holes through the emitter conductor layer; and
then selectively etching said conformal layer to open said vacuum space holes.

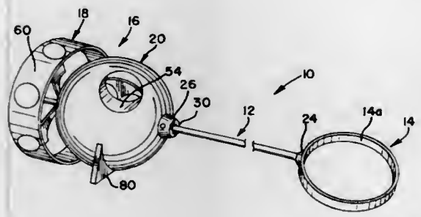
5,603,650
IMAGE DISPLAY APPARATUS AND METHOD OF MAKING THE SAME
Mitsunori Yokomakura, Takatsuki; Kyouichi Uematsu, Nagaokakyou; Kanji Imai, Takatsuki; Tomohiro Sekiguchi, Kobe, and Toshifumi Nakatani, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Division of Ser. No. 266,217, Jun. 27, 1994, Pat. No. 5,446,337. This application Jun. 1, 1995, Ser. No. 457,864
Claims priority, application Japan, Jul. 28, 1993, 5-186009; Jul. 28, 1993, 5-186050
Int. Cl.[6] H01J *9/14;9/18*
U.S. Cl. 445—33 **6 Claims**

1. A method for making a vertical deflection electrode for an image display apparatus, said method comprising the steps of:



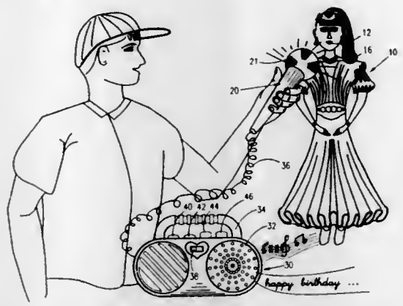
interdigitating a first comb-shaped conductive sheet and a second comb-shaped conductive sheet so that the first conductive sheet, and the second conductive sheet are intermittently connected to each other by a connecting part, said first and second conductive sheets having a plurality of notches at a regular interval,
bonding said first conductive sheet and said second conductive sheet to a separate electrode using an insulating material, and
removing said connecting part to form the vertical deflection electrode.

5,603,651
BUBBLE-PRODUCING SKIPPING TOY
Thomas S. Shure, Chicago; Tai H. Matlin, both of Chicago, and James A. Waring, Glenview, all of Ill., assignors to Shure Products Inc., Chicago, Ill.
Filed Jan. 19, 1995, Ser. No. 375,111
Int. Cl.[6] A63H *33/28*
U.S. Cl. 446—16 **12 Claims**



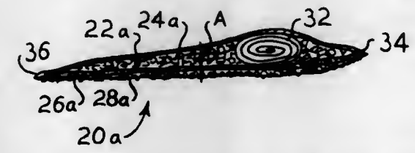
1. A buhble-producing toy comprising, in combination, an elongated member, a generally circular ring member secured to an end of said member and adapted to encircle a user's lower leg or ankle, and a bubble-producing mechanism secured to an opposite end of said member and movable in a generally circular path when the elongated member is twirled about the user's lower leg or ankle, said bubble-producing mechanism including a housing adapted to contain a bubble-producing solution and defining an air passage therethrough, a dipper plate carried internally of said housing and having at least one opening therethrough, a power wheel carried by said housing and adapted for rotation in response to engagement with a ground or floor surface during movement in said circular path, said power wheel comprising a circular wheel having an axle extending into said housing in substantially parallel relation to said elongated member, said axle being interconnected to said dipper plate in a manner to effect rotation of said dipper plate and pass said opening through the bubble-producing solution to form a bubble-producing film across said opening which is moved into registry with said air passage to produce bubbles in response to rotation of said power wheel about an axis of rotation defined by said axle.

5,603,652
DOLL ASSEMBLY
Omri Rothschild, 16 Barak Street, Zahala, Tel Aviv 69933, Israel, and Roni Raviv, 7 Maccabi Street, Nesa Ziona 74046, Israel
Filed Jun. 22, 1995, Ser. No. 493,518
Int. Cl.[6] A63H *5/00*
U.S. Cl. 446—130 **21 Claims**



1. A synchronized audio output toy assembly comprising:
a toy figure; and
an audio output generator operative to produce an audio output;
said audio output generator including:
at least first and second audio channels, said first audio channel being operative, when actuated, to provide a predetermined background audio output which is useful for time base synchronization, said second audio channel being operative, when actuated, to provide a predetermined foreground audio output in time base synchronization with said predetermined background audio output; and
a user operative control including a propinquity switch operative to provide said predetermined foreground audio output in response to propinquity of a predetermined article to said toy figure.

5,603,653
PERSPIRATION ABSORBENT PADS FOR FEMALE BREASTS
Kathie F. Hartman, 4640 DeLeon St., Apt. #144, Ft. Myers, Fla. 33907
Filed Jun. 7, 1995, Ser. No. 474,319
Int. Cl.[6] A41C *3/12;3/14;* **A41D** *27/26*
U.S. Cl. 450—56 **7 Claims**



1. A perspiration absorbent pad for the female breast, comprising:
a flexible, substantially flat pad having a first layer comprising a moisture permeable cover sheet, a second layer comprising a thin sheet of moisture absorbent material, a third layer of thin moisture impermeable material, and a fourth layer of slip resistant material;
said pad further having a generally elliptical planform with an upper edge, a lower edge, and a major axis, and containing a generally cylindrical component of moisture absorbent material therein disposed between said cover sheet first layer and said moisture impermeable third layer, with said cylindrical

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component further being disposed generally parallel to said major axis and being offset toward said upper edge within said pad;

said pad having a size and shape adapted for placement beneath the underside of the female breast with said first layer directly in contact therewith, and with said upper edge and said cylindrical component adapted for positioning between the breast and the underlying surface of the chest, and further adapted for capture and retention between the breast and the underlying chest and precluding substantial contact therebetween, whereby;

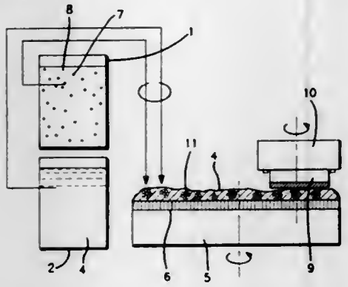
said upper edge of said pad and said cylindrical component are placed between the breast and the underlying surface of the chest of the wearer of said pad and are captured and retained therebetween, thereby providing for the absorption of perspiration emanating from the underside of the breast by means of said moisture absorbent material therein, and further providing uplift to the breast by means of said cylindrical component within said pad.

5,603,654

METHOD FOR SUPPLYING A POLISHING LIQUID AND POLISHING METHOD USING THE SAME

Yoshihiro Hayashi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 13, 1995, Ser. No. 387,167
Claims priority, application Japan, Feb. 14, 1994, 6-017089
Int. Cl.[6] B24B *1/00*
U.S. Cl. 451—36 **22 Claims**



1. A method of supplying a polishing liquid onto a surface of a polishing pad with which a surface of a film is to be polished, comprising separately supplying to a polishing pad surface a solution including an aggregation agent and a slurry into which fine polishing particles were already dispersed so that the slurry is mixed with the solution to thereby cause an aggregation of the fine polishing particles to form aggregated particles to be used for polishing.

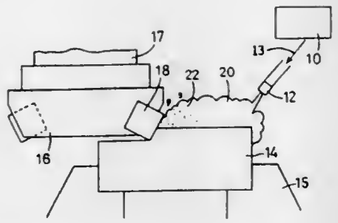
5,603,655

METHOD AND APPARATUS FOR WORKING ON A WORKPIECE, USING FOAMED WORKING LIQUID IN AREA OF CONTACT BETWEEN THE WORKPIECE AND WORKING TOOL

Shinobu Kaneko; Minoru Haga; Hisatoshi Yoshida, and Katsuhiro Mori, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Division of Ser. No. 957,554, Oct. 8, 1992. This application Dec. 6, 1994, Ser. No. 354,096
Int. Cl.[6] B24B *55/02*
U.S. Cl. 451—450 **18 Claims**

1. An apparatus for physically processing a workpiece by contact of a working tool with said workpiece, said apparatus comprising:



a tool holder for holding said working tool;

a work holder for holding said workpiece;

a gas passage;

a gas supply device for providing a flow of a gas through said gas passage;

a porous member disposed such that a portion of said gas passage is filled with said porous member; and

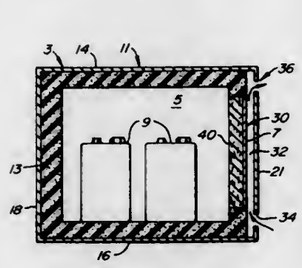
a soaking device for soaking said porous member with a working liquid, said soaking device cooperating with said gas supply device and said porous member, to produce a mass of bubbles of said working liquid on one side of said porous member remote from said gas supply device.

5,603,656

PASSIVE VENTILATION DEVICE AND METHOD

Stephen C. Baer, and David C. Harrison, both of Albuquerque, N.M., assignors to Zomeworks Corporation, Albuquerque, N.M.

Filed Sep. 11, 1995, Ser. No. 526,479
Int. Cl.[6] H01M *2/12*
U.S. Cl. 454—339 **22 Claims**



1. A passive ventilation system comprising:

an enclosure having outer walls defining an inner chamber for housing a battery therein;

a thermally insulating, gas permeable panel disposed adjacent one of the outer walls of the enclosure and having a first surface facing into the inner chamber and a second surface opposite the first surface, the second surface defining a ventilation space between the panel and said one of the outer walls for diffusing a low density gas within the inner chamber through the gas permeable panel into the ventilation space; and

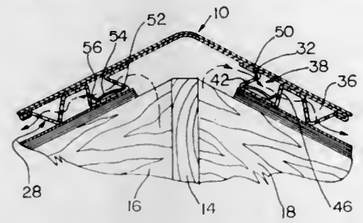
an exhaust opening in one of the outer walls in communication with the ventilation space for discharging the low density gas from the ventilation space.

5,603,657

VENTILATING DEVICE

Gary L. Sells, Mishawaka, Ind., assignor to Cor-A-Vent, Mishawaka, Ind.

Continuation-in-part of Ser. No. 269,916, Jun. 30, 1994. This application May 19, 1995, Ser. No. 446,561
Int. Cl.[6] F24F *7/02*
U.S. Cl. 454—359 **11 Claims**



1. A ventilating device for a structure having a vent opening, said ventilating device including a cover for said vent opening, said cover including means for defining longitudinally extending compartments, each of said compartments having longitudinally extending side walls, at least some of said side walls having perforations defining vent passages communicating said vent opening with ambient atmosphere, and a deflectable baffle in one of said compartments movable from an inactive position permitting communication through said passages to an active position closing said passages to prevent entry of wind driven moisture into said passages, said baffle including a pressure responsive surface responsive to atmospheric wind to move said baffle from said inactive position opening said passages to said active position closing said passages in response to wind in excess of a predetermined ambient with speed, said baffle being an elongated strip of imperforate material restrained by the walls of said compartment and being unattached to the walls of said compartment.

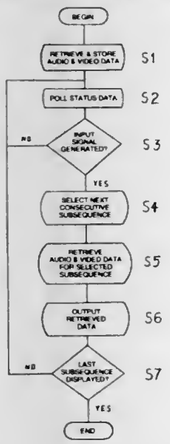
5,603,658

COMPUTER PLAY TOY FOR INFANTS AND VERY YOUNG CHILDREN

Justin R. Cohen, 10010 Walsh Ct., Richmond, Va. 23233

Filed Jun. 27, 1995, Ser. No. 495,311
Int. Cl.[6] A63F *9/24*
U.S. Cl. 463—1 **13 Claims**

1. A computer toy for infants and very young children, utilizing a computer with an audio output, a display screen, and an input device, the object of which toy is to allow the user to engage in interactive play with the computer, the computer toy comprising:



(a) a library means for storing video and audio data associated with a group of consecutively arranged audiovisual subsequences, said subsequences comprising sequential portions of an audiovisual simulation of a predetermined animated activity;

(b) a detection means for detecting input signals which are generated and sent to the computer by the input device whenever the input device is activated by the user whereby the user is able to control the pace of said simulation;

(c) a selection means for selecting from the group of consecutively arranged audiovisual subsequences the subsequence which consecutively follows the last selected subsequence;

(d) an audio means for retrieving the audio data associated with a selected audiovisual subsequence and sending said audio data to the computer audio output whereby sound is generated;

(e) a video means for retrieving the video data associated with a selected audiovisual subsequence and sending said video data to the display screen whereby video is generated; and

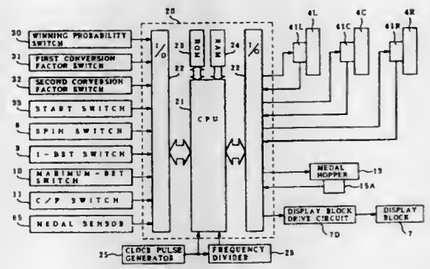
(f) a control means for enabling, whenever an input signal is detected by said detection means, said selection means to select an audiovisual subsequence and said audio and video means to respectively retrieve and output audio and video data corresponding to said selected subsequence, whereby an audiovisual simulation of said predetermined animated activity automatically progresses.

5,603,659

GAMING MACHINE

Kazuo Okada, Tokyo, Japan, assignor to Universal Sales Co., Ltd., Tokyo, Japan

Filed Aug. 8, 1994, Ser. No. 286,963
Claims priority, application Japan, Mar. 11, 1994, 6-066548
Int. Cl.[6] A63F *9/00*
U.S. Cl. 463—25 **21 Claims**



1. A gaming machine for the playing of a game by a player against a gaming establishment, the game being played with the use of gaming media, the number of which being increased or decreased in response to the results of the playing of the game, the gaming machine comprising:

first conversion factor setting means for setting a first conversion factor that is used for converting a first gaming defined by a value of the gaming media given to the player into a second gaming value defined by rights of the player for playing the game; and

second conversion factor setting means for setting a second conversion factor that is used for converting the second gaming value into the first gaming value separately from the first conversion factor;

wherein a winning value won as a prize by the player in response to the playing of the game is obtained from the gaming establishment.

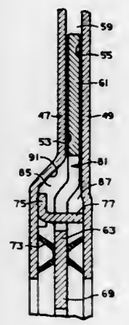
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5,603,660

VISCOUS DAMPER AND SHEAR PLATE FOR IMPROVED FLUID FLOW

Robert J. Kyle, Battle Creek, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed May 31, 1995, Ser. No. 456,883
Int. Cl.[6] F16D *3/80;3/66*
U.S. Cl. 464—68 **5 Claims**



1. A torsion damping mechanism adapted for connection between input and output drives of a torque transmitting driveline; said mechanism comprising resilient means for drivingly interconnecting the drives, and a viscous damper including annular housing and clutch assemblies adapted for rotation about a rotational axis of one of the drives; said housing assembly including first and second radially extending sidewalls having mutually facing first and second sidewall surfaces, respectively, defining an annular, radially extending compartment having an open, radially inner extent and a radially outer extent, said housing assembly adapted to be driven by one of the drives; said clutch assembly including a radially outer portion and a radially inner portion adapted for driving connection to the other of the drives, said radially outer portion having oppositely facing, radially extending first and second surfaces, disposed in close, axially spaced relation to said first and second sidewall surfaces, respectively, to define first and second viscous shear chambers, respectively, dynamic seal means cooperating between said clutch inner portion and said first and second sidewalls; said radially inner portion of said clutch assembly cooperating: (i) with said first sidewall and said seal means to define a first reservoir portion; and (ii) with said second sidewall and said seal means to define a second reservoir portion, said first reservoir portion having a greater fluid volume than said second reservoir portion; said first sidewall including a ramp surface disposed adjacent a radially outer portion of said first reservoir portion; characterized by:

(a) said radially outer portion and said radially inner portion of said clutch assembly cooperating to define a plurality N of circumferentially-extending openings disposed generally axially adjacent said annular ramp surface each of said openings extending radially outwardly beyond said ramp surface; whereby

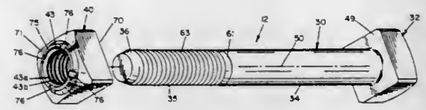
(b) at least a portion of the fluid in said first reservoir portion, under the influence of centrifugal force, flows radially outward, impinges said ramp surface, and is deflected from said ramp surface and flows through one of said circumferentially-extending openings and into said second viscous shear chamber.

5,603,661

BOLT-NUT ASSEMBLY FOR RAILROAD CROSSING FROGS

John J. Grey, Berea, Ohio, assignor to Barnes Group, Inc., Bristol, Conn.

Division of Ser. No. 124,708, Sep. 21, 1993, Pat. No. 5,413,442. This application Mar. 20, 1995, Ser. No. 406,490
Int. Cl.[6] B21K *1/46*
U.S. Cl. 470—3 **42 Claims**



1. A method of manufacturing a railroad frog crossing bolt and nut assembly for clamping railroad sections together, said method comprising:

a) selecting an unthreaded bolt having an elongated cylindrical shank body of at least 8.0 inches, said shank body having a first body portion with a given diameter of at least about 1.0 inch and a second body portion with a given diameter of less than the given diameter of said first body portion, and an integral square head having an orthogonal bearing surface and positioned adjacent to said first body portion;

b) forming threads on said second body portion by a rolling action to provide increased physical strength to the threads to about the diameter of said first body portion;

c) machining said orthoganal bearing surface to a preselected mechanical tolerance with said surface and said first body portion being mutually perpendicular;

d) selecting a lock nut adapted to be threaded onto said threads on said second body portion after said shank body has been passed through at least two of said rail sections;

e) forming internal, continuous threads in said nut to adapt said nut to be screwed onto said second body portion; and

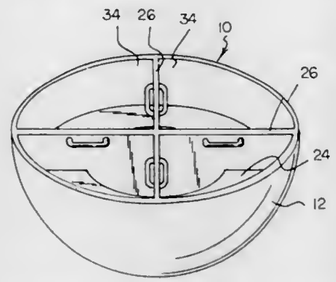
f) forming at least one mechanically deformed indentation on said nut and intersecting said threads whereby said threads are deformed to provide an interference fit when said nut is screwed onto said second body portion.

5,603,662

HEMISPHERICAL ROCKING TOY

Janet E. Kreaman-Stern, 316 Viewridge Dr., Port Angeles, Wash. 98362

Filed Jun. 26, 1995, Ser. No. 494,401
Int. Cl.[6] A63G *1/12*
U.S. Cl. 472—25 **3 Claims**



1. A new and improved hemispherical rocking toy for children comprising, in combination:

a hemispherical shell fabricated of a rigid plastic material, the hemispherical shell including an interior surface and an exterior surface with an open top for the receipt of children therein, the shell being of a greater thickness in its lower extent than its upper extent to provide an annular seating surface in a horizontal plane;

a pair of planar sheets fabricated of a plastic material each having an upper linear edge and a lower semi-circular edge and a horizontal planar edge therebetween, the lower circular edge received in contact with the interior surface of the shell, the plates dividing the interior of the shell into four equal sized and configured areas each for the receipt of a child;

a pair of handles in a U-shaped configuration located on each plate at locations in proximity to the upper edge of the planar plates, each for being held by a child while sitting on the planar surface of the shell to facilitate rocking thereof; and

bolts extending through adjacent handles to couple handles together on opposite sides of each plate.

5,603,663

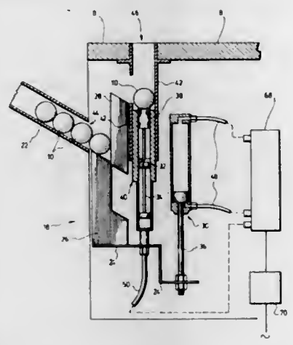
Patent Not Issued For This Number

5,603,664

AUTOMATIC GOLF BALL TEEING UP APPARATUS

Serge Provost, 135, rue Principale, St-Benoit, Lâbre, Beauce-Sud, Province of Quebec, Canada, assignor to Serge Provost, and Martin Binet, both of St-Benoit, Canada

Filed Nov. 24, 1995, Ser. No. 628,034
Int. Cl.[6] A63B *57/00*
U.S. Cl. 473—134 **18 Claims**



1. An apparatus for automatically teeing up golf balls comprising:

a hopper for storing golf balls, said hopper having a bottom part;

a teeing up device operatively connected to the bottom part of the hopper, said device comprising:

a ball inlet for receiving golf balls from the hopper;

an upper horizontal tee off surface provided with a hole sized to let one of the golf balls pass therethrough;

a guide cylinder vertically mounted under the upper tee off surface, said cylinder having an open upper end in alignment with the hole of the upper tee off surface, a bottom part and a cylindrical wall having an inner diameter sized to receive and guide one of said golf balls, said wall having a lateral upper opening sized to let one of the golf balls get into the cylinder;

a first block adjacent to the guide cylinder, the block having an upper inclined surface for holding and leading one of the golf balls into the lateral upper opening of the guide cylinder, and a side surface opposite to the guide cylinder and in front of the inlet at such a distance thereof as to leave room for one of said golf balls between the ball inlet and the side surface;

a piston slidingly mounted inside the guide cylinder, the piston having a bottom part and being provided with an upwardly projecting flexible tee for holding one of the golf balls, the piston being movable between a lowermost position where one of the golf balls standing on the first block gets inside the guide cylinder via the lateral upper opening thereof and then rests over the tee, and an uppermost position where the tee juts out of the tee off surface through the hole provided therein, the piston having a lateral surface which extends in front of the lateral upper opening and thus blocks access to the guide cylinder when the piston is in the uppermost position;

a support fixed on the bottom part of the piston and moves in unison therewith between the lowermost position and the uppermost position;

a second block slidably mounted between the ball inlet and the side of the first block, the second block being fixed on the support and thus being solid with the piston, the second block having an upper, inclined surface for receiving one of the golf balls supplied by the hopper to the ball inlet when the piston is in the lowermost position and lifting this golf ball up to the upper surface of the first block when the piston is in the uppermost position so that the golf ball rolls thereover thanks to the inclined upper surfaces of both the first and second blocks, the second block having a side surface facing and blocking the ball inlet when the piston is in the uppermost position;

detector means for producing a ball detect signal when one of the golf balls rests over the tee; and

drive means for moving the support between the lowermost and uppermost position in response to an electric signal; and

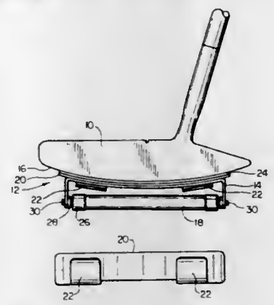
control means for controlling operation of the drive means, the control means having an input for receiving the ball detect signal, and an output for producing the electrical signal to cause the drive means to move the piston in the uppermost position when the ball detect signal is produced and to move the piston in the lowermost position otherwise.

5,603,665

GOLF PUTTER TRAINING DEVICE

Judy Bryant, 16 Maple St., Arlington, Mass. 02174

Continuation-in-part of Ser. No. 508,925, Jul. 28, 1995, Pat. No. 5,544,887. This application Apr. 8, 1996, Ser. No. 629,987
Int. Cl.[6] A63B *69/36*
U.S. Cl. 473—230 **9 Claims**



1. A golf putter, comprising:

a putter head having a bottom surface;

a clip attachable to said bottom surface of said putter head, said clip including at least one finger forming an expandable opening;

a generally U-shaped resilient bracket comprising a cylindrical roller mounted between downwardly extending arms of said U-shaped bracket, said bracket removably insertable within said expandable opening of said clip;

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wherein said cylindrical roller mounted in said bracket provides directional feedback to a user to indicate a misaligned putt during a putting stroke.

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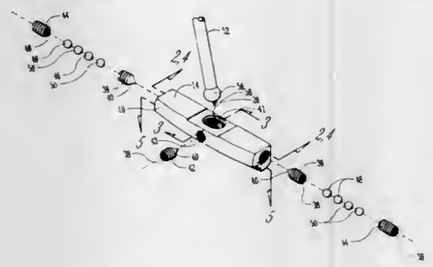
GOLF PUTTER

James E. Bowe, 25862 Valley Dr., Bettendorf, Iowa 52722

Filed Sep. 8, 1995, Ser. No. 525,172

Int. Cl.[6] A63B *53/02;53/04*

U.S. Cl. 473—307 **12 Claims**



1. A golf putter, comprising,

a putter head having forward, rearward, top and bottom surfaces, and opposite ends,

a centrally located cavity in said top surface,

an elongated shaft having a longitudinal axis and upper and lower ends with the lower end of said shaft extending into said cavity,

locking means in said putter head rigidly locking said shaft in an angular position in said cavity,

opposite elongated bores extending inwardly from the ends of said putter head towards the position of said cavity,

said locking means comprising two first screws threaded into said bores and mechanically gripping the lower end of said shaft, and a second screw threaded in an aperture in said putter head and mechanically gripping the lower end of said shaft,

said cavity having a volume greater than the lower end of said shaft positioned therein whereby the position of said lower end in said cavity can be adjusted by adjusting said first and second screws to thereby adjust the angular position of said shaft with respect to said putter head.

5,603,667

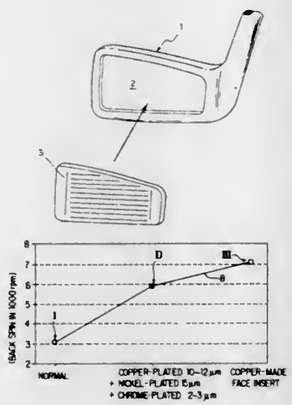
GOLF CLUB HEAD

Hiroshi Ezaki, Tokyo; Hidekimi Inoue, Kanagawa-ken; Ryohei Uji, Tokyo; Hirato Shimasaki, Tokyo; Masaomi Hiruta, Tokyo, and Hideyuki Ishii, Tokyo, all of Japan, assignors to Bridgestone Sports Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 174,600, Dec. 28, 1993, abandoned. This application Jun. 12, 1995, Ser. No. 490,436

Int. Cl.[6] A63B *53/04*

U.S. Cl. 473—324 **3 Claims**



3. A golf club head having a striking face, made of any material other than copper or a copper alloy, plated with copper or a copper alloy to a thickness of 10 to 12 μm, plated with nickel on the copper or copper alloy plate to a thickness of about 15 μm and plated with chromium on the nickel plate to a thickness of 2 to 3 μm, said striking face having a hardness not greater than 60 on the Rockwell B scale.

5,603,668

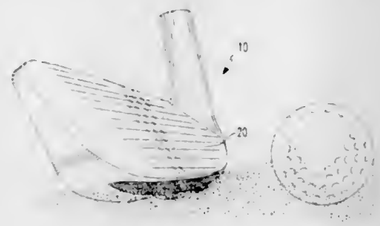
IRON TYPE GOLF CLUB HEAD WITH IMPROVED SOLE CONFIGURATION

Anthony J. Antonious, 7738 Calle Facil, Sarasota, Fla. 34238

Filed Apr. 13, 1995, Ser. No. 420,877

Int. Cl.[6] A63B *53/04*

U.S. Cl. 473—328 **41 Claims**



1. An iron-type golf club head for hitting a golf ball comprising:

golf club head body having a heel, toe, top ridge, sole, rear club face having a trailing edge at the intersection of the sole and the rear club face, and a lofted ball striking face having a loft of at least 12° with a forwardmost progression forming a leading edge at the intersection of the sole and the ball striking face;

control means altering the surface of the sole of the club head for contacting ground surfaces and providing greater control and stability during the execution of golf shots, the control means extending between the heel and the toe and having at least one substantially vertical wall, the at least one substantially vertical wall facing the leading edge of the club head and being spaced behind the leading edge of the club head.

5,603,669

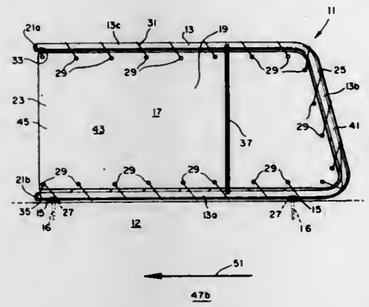
GOLF TEE DIVIDER

Ralph M. Scott, 3901 Chadbury Rd., Mount Laurel, N.J. 08054, and John C. Scarperia, 81 N. Church St., Beverly, N.J. 08010

Division of Ser. No. 370,864, Jan. 10, 1995, Pat. No. 5,482,269. This application Sep. 20, 1995, Ser. No. 531,122

Int. Cl.[6] A63B *57/00;69/36*

U.S. Cl. 473—405 **7 Claims**



1. A tee divider for blocking golf balls laterally protected from the tee area of a golf driving range or a tee area of a hole of a golf course and for dividing a tee area of a golf driving range into subsections for blocking golf balls errantly hit by a first golfer from hitting a second golfer practicing next to the first golfer and for preventing a golf ball from ricocheting from the tee divider and hitting the first golfer, comprising

a frame having an upper end portion and a lower end portion joined together by a back end portion and spaced from each other at a front end portion,

said front end portion being an open front end portion,

mounting means mounted on the lower end portion of the frame for securing the tee divider on the tee area and for supporting the tee divider in an upright position substantially perpendicular to the ground,

anchor means for attaching the mounting means to the ground so that the frame remains upright even when the tee divider is struck by the force of an errantly hit golf ball,

a deflector sheet comprising an impact-absorbing material adapted to absorb the force of a golf ball and deflect the golf ball away from the golfer,

said deflector sheet extending between the upper end portion of the frame and the lower end portion of the frame for blocking golf balls hit by a first golfer from hitting a spectator or hitting a second golfer practicing next to the first golfer,

attachment means for attaching the deflector sheet to the frame,

the frame defining a geometrically-shaped area, and

the deflector sheet extending substantially across the entire geometrically-shaped area formed by the frame,

said frame being longer than it is high and low enough that a golfer can see over it, and

said tee divider being essentially contained in essentially one plane,

whereby the front end portion of the tee divider is frameless so that there is no rigid support along the front end portion of the tee divider against which a golf ball struck by a first golfer may ricochet back at the first golfer off such a support.

5,603,670

MOVABLE DISK GUIDING ARRANGEMENT

Herbert Mozer, Friedrichshafen, Germany, assignor to ZF Friedrichshafen AG, Friedrichshafen, Germany

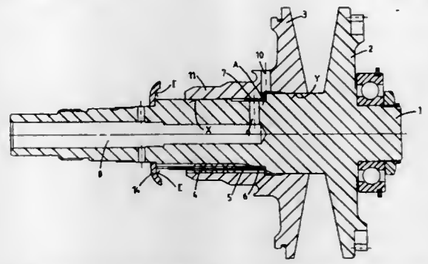
PCT No. PCT/EP94/00424, § 371 Date Aug. 10, 1995, § 102(e) Date Aug. 10, 1995, PCT Pub. No. WO94/19627, PCT Pub. Date Sep. 1, 1994

PCT Filed Feb. 15, 1994, Ser. No. 492,127

Claims priority, application Germany, Feb. 19, 1993, 43 05 102.2

Int. Cl.[6] F16H *55/56*

U.S. Cl. 474—43 **10 Claims**



1. An arrangement for guiding a movable disk (3) in a continuously variable belt-drive transmission having one pair of conic disks on input and output shafts, respectively, each pair of conic disks consisting of a first conic disk (2) stationary in an axial direction, and a second conic disk (3) which is movable in an axial direction on free balls guided on several ball races, wherein said balls (4) coordinated with the respective ball race are embedded in a mounting element (5), said mounting elements are designed so as not to impair the guiding function of said centering diameter (X) between disk (3) and shaft (1), and said mounting elements (5) are interconnected mostly in a narrow area by means of a connecting element.

5,603,671

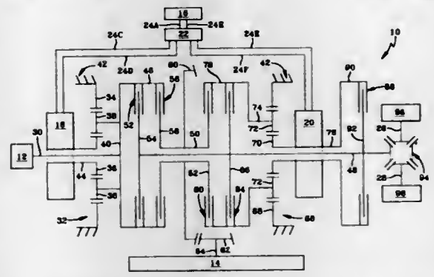
THREE PRIME MOVER BUS TRANSMISSION

Michael R. Schmidt, Carmel, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 8, 1995, Ser. No. 512,498

Int. Cl.[6] F16H *3/72*

U.S. Cl. 475—5 **26 Claims**



13. A regenerative transmission having three prime mover input modes, said transmission comprising:

output shaft means;

first and second planetary gear sets;

each planetary gear set having an inner gear means, an outer gear means and a plurality of planet gear means meshingly engaging said inner and outer gear means;

said planet gear means operatively mounted on a carrier in each said planetary gear set;

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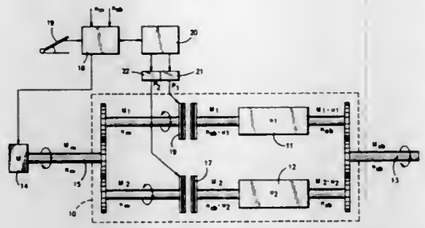
said outer gear means in each planetary gear set being grounded;
said inner gear means in each planetary gear set being connected to a respective motor/generator;
means selectively to connect said carrier in each said planetary gear set to said output shaft means; and,
a plurality of torque transfer means for selectively connecting the prime mover input modes to said output shaft means.

5,603,672

METHOD FOR CONTROLLING THE OUTPUT TORQUE OF AN AUTOMATIC TRANSMISSION

Hong Zhang, Schwieberdingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE94/01138, § 371 Date Jun. 5, 1995, § 102(e) Date Jun. 5, 1995, PCT Pub. No. WO95/09741, PCT Pub. Date Apr. 13, 1995
PCT Filed Sep. 28, 1994, Ser. No. 446,864
Claims priority, application Germany, Oct. 5, 1993, 43 33 899.2
Int. Cl.[6] B60K *41/06;26/00*
U.S. Cl. 477—110 **14 Claims**



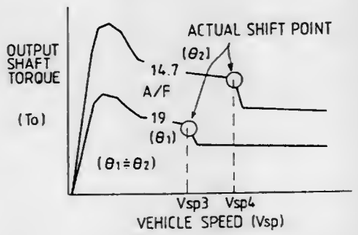
1. A method for controlling the output torque (M_{ab}) of an automatic transmission during the course of a gear-shifting operation in a motor-operated vehicle equipped with drive wheels and a transmission having at least two gears which can be engaged alternatively by at least two clutches, the method comprising the steps of:
determining, as a first gear-shifting condition under which a shift of gears is to take place, whether the motor vehicle is in a first operating state defined by a positive clutch torque wherein the motor drives the drive wheels (motor traction operation) or in a second operating state defined by a negative clutch torque wherein the drive wheels drive the motor (motor overrun operation);
determining, as a second gear-shifting condition, whether the gear-shifting operation to be controlled is a shift-up operation from a first transmission ratio (u_1) to a second transmission ratio (u_2) or a shift-down operation from a second transmission ratio (u_2) to a first transmission ratio (u_1);
selecting at least two control sequences (SH1 to SH3, SR1 to SR3 or ZH, ZR) in dependence upon the first and second gear-shifting conditions;
configuring said control sequences (SH1 to SH3, SR1 to SR3 or ZH, ZR) so that said output torque (M_{ab}) during a gear-shifting operation is controlled continuously from the value thereof present in advance of the gear-shifting operation to a value desired after the gear-shifting operation; and,
controlling the clutches and the torque (M_m) of the vehicle motor in accordance with said at least two control sequences (SH1 to SH3, SR1 to SR3 or ZH, ZR).

5,603,673

CHANGE GEAR CONTROL DEVICE USING ACCELERATION AND GEAR RATIO AS PARAMETERS FOR AUTOMATIC TRANSMISSION IN A MOTOR VEHICLE AND THE METHOD THEREFOR

Toshimichi Minowa, Toukai-mura; Hiroshi Kimura, Hitachi; Yoshiyuki Yoshida, Yokohama; Yoshishige Ohyama, and Yutaka Nishimura, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 107,018, Aug. 17, 1993, Pat. No. 5,470,290, which is a continuation-in-part of Ser. No. 840,816, Feb. 25, 1992, Pat. No. 5,235,876. This application Nov. 7, 1995, Ser. No. 554,804
Claims priority, application Japan, Feb. 25, 1991, 3-50148
Int. Cl.[6] F02D *43/00;* **B60K** *41/04*
U.S. Cl. 477—110 **16 Claims**



1. A change transmission speed ratio control device for an automatic transmission in a motor vehicle comprising:
a first detector for detecting an engine torque of the motor vehicle;
a second detector for detecting a vehicle speed of the motor vehicle; and
a processor for processing transmission speed ratios for the automatic transmission, wherein said processor reads the detected engine torque from said first detector and the detected vehicle speed from said second detector, determines a new transmission speed ratio based upon the engine torque and the vehicle speed, and outputs a signal representing the new transmission speed ratio to the automatic transmission.

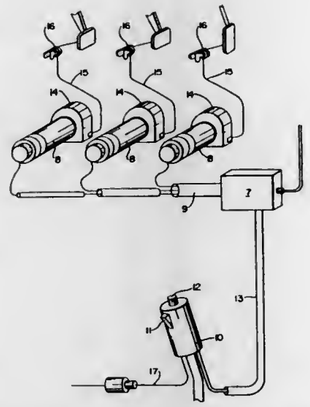
5,603,674

SET OF MOTOR VEHICLE CONTROLS FOR THE ASSISTANCE OF INVALID DRIVERS

Francisco Rivas, 9 Imp. de la Résistance, Bruguières, F31150, France, and Michel Santa-Lucia, Chemin de Borde-Blanche, Brax, F-31490, France

PCT No. PCT/FR93/00342, § 371 Date Sep. 29, 1994, § 102(e) Date Sep. 29, 1994, PCT Pub. No. WO93/19948, PCT Pub. Date Oct. 14, 1993
PCT Filed Apr. 5, 1993, Ser. No. 307,785
Claims priority, application France, Apr. 7, 1992, 92 04333; Apr. 2, 1993, 93 04086
Int. Cl.[6] B60K *41/20;41/24;* **G05G** *11/00*
U.S. Cl. 477—170 **15 Claims**

1. An apparatus including a set of motor vehicle controls for assisting drivers handicapped in the lower limbs, comprising:
a first set of controls on a steering wheel for controlling an accelerator and a brake,
a second set of controls, independent of the steering wheel, for controlling a clutch and the brake,
a plurality of motors, each motor controlling a one of a pedal of a pedal assembly and a control element of a plurality of control elements,
at least one of a wired member and a wire-free member transmitting commands provided by the first set controls on the steering wheel controls,



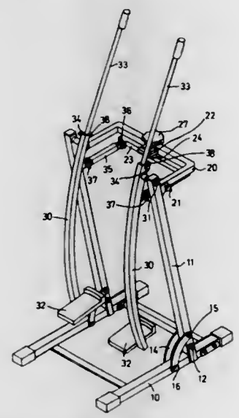
at least one of a wired transmission and a wire-free transmission of commands given by the second set of controls independent of the steering wheel,
at least one member for receiving said commands coupled to an electronic unit controlling at least one motor, and
transmitting members from each of said at least one motor to a corresponding pedal of the brake, clutch and accelerator.

5,603,675

FOLDABLE STRIDING EXERCISER

Tien L. Wu, No. 34-8, Lane 2, Yu Der Road, North Dist., Taichung, Taiwan

Filed May 31, 1996, Ser. No. 656,686
Int. Cl.[6] A63B *22/00*
U.S. Cl. 482—52 **2 Claims**



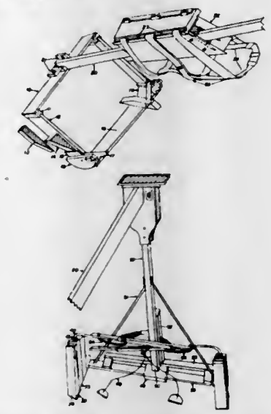
1. A striding exerciser comprising:
a base,
a pair of posts each including a lower portion pivotally coupled to said base at a first pivot shaft so as to allow said posts to be folded relative to said base about said first pivot shaft, said posts each including an upper portion,
a pair of bars each including a first end secured to said posts and each includes a second end secured to said base by a first fastening member so as to support said posts in a vertical position relative to said base and so as to allow said posts to be folded relative to said base about said first pivot shaft when said first fastening member is disengaged from said base,
a frame secured to said upper portion of said posts by a second fastening member and maintained in a perpendicular positions relative to said posts by said second fastening member, said frame being allowed to be folded toward said posts when said second fastening member is disengaged from said frame and said posts, said frame including a middle portion,
a lever including a middle portion pivotally coupled to said middle portion of said frame at a second pivot shaft so as to allow said lever to be rotated about said second pivot shaft, said lever including two end portions,
a pair of beams each including an upper portion pivotally coupled to said upper ends of said posts by a third pivot shaft and each including a bottom portion having a foot support provided thereon for supporting a foot of a user,
a pair of handles each including a lower end secured to said upper portions of said beams, and
a pair of links each including a first end pivotally coupled to said end portions of said lever at a first pivot pin and each including a second end pivotally coupled to said beams by a third fastening member so as to allow said lever to be rotated about said second pivot shaft by said beams when said beams are rotated about said third pivot shafts in a reciprocating action by the user, said links being allowed to be folded to engage with said lever when said third fastening members are disengaged from said beams.

5,603,676

CRAWL SWIM EXERCISER

Kenneth J. Cymbalisty, Menlo Park Branch US Hwy No. 1 & Parsonage Rd., Menlo Park, N.J. 08837

Filed Mar. 22, 1996, Ser. No. 622,453
Int. Cl.[6] A63B *69/10*
U.S. Cl. 482—56 **8 Claims**



1. A swimming simulative exercise machine comprising:
a) a beam having a head end and a foot end;
b) a beam support means for supporting the beam in an elevated position such that the beam is inclined upwardly in a direction extending from its foot end toward its head end;
c) a roller mechanism which rolls on top of the beam;
d) a user-support means for supporting the user in a substantially horizontal posture, suspended below the beam, the user-support means being secured to the roller mechanism;
e) a first pair of separate arms rotatably mounted to the beam support, each of the first pair being separately rotatable in its separate area transversely about respectively, generally separate vertical axes of the first pair, spaced-apart laterally on opposite sides of the head end of the beam;

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f) a second pair of separate handles each thereof being connected to different one of the separate arms by different ones of said third pair of said separate flexible lines; and

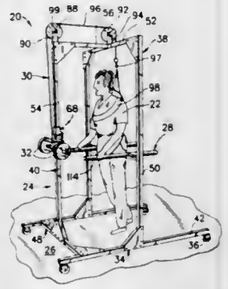
g) a means for resisting rotation of the arms toward the foot end of the beam and returning the arms toward the head end of the beam.

5,603,677

WEIGHT ASSISTED REHABILITATION SYSTEM

Robert E. Sollo, 1132 Ocean Ave., New London, Conn. 06320

Filed Mar. 28, 1995, Ser. No. 412,146
Int. Cl.[6] A61H *3/04*
U.S. Cl. 482—69 **20 Claims**



1. A physical rehabilitation system for improving the capability of a user to support the weight of the user's body on the user's limbs, said system comprising:

a walker frame including a base including a pair of generally parallel spaced apart support beams extending longitudinally between forward and rearward ends and a cross support beam extending transversely of said parallel support beams and attached at its opposite ends, respectively, to said parallel support beams intermediate said forward and rearward ends, wheel members supporting the base for rolling movement across a surface, a coronal frame mounted on said base and upstanding therefrom and being generally coplanar with the coronal plane of the user when using said system and generally encompassing the user When the user assumes an upright position, said coronal frame being of generally inverted U-shape including a pair of generally parallel spaced apart upright posts having bases mounted, respectively, to said support beams intermediate said forward and rearward ends and an upper cross beam integral with and extending between said upright posts at locations distant from said support beams, and a medial frame mounted on said base and upstanding therefrom and being generally coplanar with the medial plane of the user when the user assumes an upright position, said media frame being integral with both said base and said coronal frame, said medial frame being of a generally inverted L-shape including an erect member having a plurality of longitudinally spaced apertures therein attached at its lower end to said cross support beam intermediate said parallel support beams and a strut member joining said erect member at a location distant from said cross support beam with said upper cross beam;

upper limb holding members on said walker frame adapted for engagement by the hands or arms of the user; and

counterbalance means slidably movable on said walker frame between spaced apart limit means and releasably attachable to the user's body for assistance in lifting the user's body to an upright position, said counterbalance means including weight members which are selectively weight adjustable according to the need of the user, a support bar for removably receiving said weight members thereon, a first pulley rotatably mounted on said strut member, a second pulley rotatably mounted on said upper cross beam, said first and second pulleys being coplanar with said medial frame, an elongate cable member extending between and attached, respectively, to said support bar and to the user's body and engageably guided over and around said first and second pulleys, and a trolley block slidably engaged with said erect member for movement along the length thereof, said support bar being fixed thereto and projecting transversely of the plane of said medial frame in opposite directions therefrom thereby defining left hand and right hand weight receiving portions, respectively, said weight members being slidably receivable on said left hand portion and on said right hand portion, respectively; and

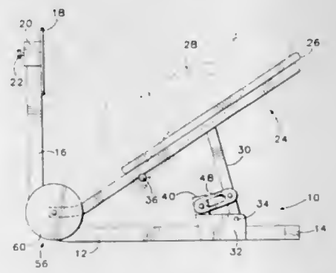
a stop mechanism for limiting upward movement of said trolley block being selectively engageable with any one of the longitudinally spaced apertures to thereby define a stop location beyond which said trolley block cannot slide, said stop mechanism including a slider slidably engaged with said erect member for movement along the length thereof, said slider having a lateral throughbore aligned with the longitudinally spaced apertures in said erect member, a cup-shaped housing mounted on said slider and having a sidewall projecting away from said erect member and a centrally apertured base, a plunger having a handle external of said cup-shaped housing and a rod integral with said handle projecting through the aperture in said base and through the lateral throughbore in said erect member aligned with the longitudinally spaced apertures, a tension spring within said cup-shaped housing coaxially positioned with respect to said plunger, one end thereof being engaged with said rod, the other end thereof being engaged with said base for urging said rod toward said erect member, whereby said rod is engageable with any one of the longitudinally spaced apertures in said erect member whenever said slider is positioned such that said rod is aligned therewith.

5,603,678

EXERCISE APPARATUS FOR SIMULATING FREE-WEIGHT SQUAT REPETITIONS

Jerry L. Wilson, 570 NE. 53rd Ave., Hillsboro, Oreg. 97124

Continuation of Ser. No. 438,987, May 11, 1995, abandoned, which is a continuation of Ser. No. 239,723, May 9, 1994, abandoned, which is a continuation-in-part of Ser. No. 183,471, Jan. 18, 1994, abandoned. This applicatinn Sep. 28, 1995, Ser. No. 535,781
Int. Cl.[6] A63B *23/04*
U.S. Cl. 482—97 **10 Claims**



1. An exercise apparatus for simulating free-weight squat repetitions, said apparatus comprising:

(a) a frame which sits on a floor and supports the remaining elements of the apparatus;

(b) a platform which is arranged to completely support a user in a supine position, said platform having a head end and a foot end, and an elongate axis which extends between said head end and foot end;

(c) an elongate pivot arm having a first end that is rotatably attached to said frame and a second end that is fixedly attached to said platform; said pivot arm having an elongate axis which is oriented generally normal to the elongate axis of said platform;

(d) said pivot arm allowing rotation of said platform between a first position where said platform is angled with respect to the horizontal with said foot end being lower than said head end, and a second position where said platform is generally horizontal;

(e) a horizontal foot support which is fixedly attached to said frame and is located adjacent to the foot end of said platform immediately above an upper surface thereof, when said platform is in its second position; and

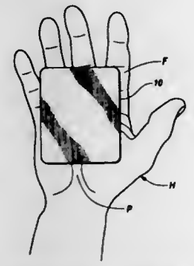
(f) a resistance device which extends between said pivot arm and said frame to resist movement of said platform from its first position to its second position.

5,603,679

GRIPPING DEVICE

Pedro Reis, 4005 Nelson Ave., Sarasota, Fla. 34231

Filed May 4, 1995, Ser. No. 434,546
Int. Cl.[6] A63B *21/00*
U.S. Cl. 482—106 **1 Claim**



1. A method of enhancing and cushioning hand gripping of an elongated cylindrical exercise bar by a user during exercising comprising the steps of:

A. providing a gripping device for each hand of the user consisting of:

a single resilient, flexible pad formed of a flat sheet of elastomeric material having smooth, continuous surfaces;

said pad sized in length and width to only cover a substantial portion of a palm area and fingers up to the first joints of a user;

B. positioning one said gripping device against each hand of the user ready for bar engagement;

C. grasping the bar with said gripping device being resiliently flexibly wrapped around the bar by the hand, said pad being held in an in-use position partially encircling an elongated cylindrical exercise bar only by hand gripping action of the bar by the user with said pad positioned therebetween.

5,603,680

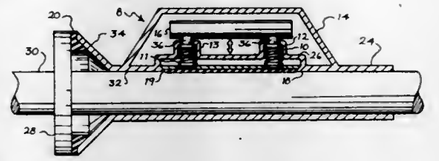
LOCKING COLLAR FOR A BARBELL OR DUMBBELL

Laird L. Larsen, 3826 N. Kenneth Ave., Chicago, Ill. 60641

Filed Sep. 27, 1994, Ser. No. 313,422
Int. Cl.[6] A63B *21/075*
U.S. Cl. 482—107 **2 Claims**

1. A collar for securing weights on a barbell, the collar comprising:

a cylindrical housing having a first and a second end, an opening running longitudinally through the housing adapted to receive the barbell, and a raised central portion forming a dome, said dome raising in at least one location to form a cylindrical tubular casing, said cylindrical tubular casing having a partially closed top surface;



a handle having a first end and a second end, said handle being attached to the cylindrical housing;

a pad support disposed under the dome, said pad support having a grip pad made of a compressible material disposed on the surface of the pad support;

at least one spring biased against the pad support at one end and biased against the partially closed top surface of the cylindrical tubular casing at the other end; and

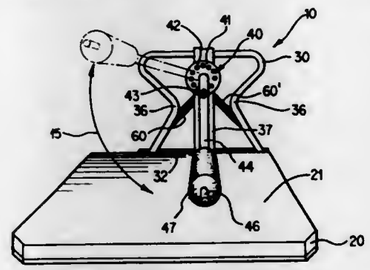
a grip bar having at least one radially extending leg, said leg extending through the cylindrical tubular casing and connecting to the pad support such that when the grip bar is moved, the spring is compressed and the grip pad no longer makes full contact with the barbell thereby defining a non-locking state; whereby said grip pad, biased by said spring, is adapted to contact a sufficient area of a barbell surface with sufficient force and sufficient friction to secure the weights on a barbell.

5,603,681

PORTABLE MULTI-EXERCISE SYSTEM

Brad Olschansky, and Scott Olschansky, both of 2003 Lake Park Dr., Apt. H, Smyrna, Ga. 30080

Filed Oct. 23, 1995, Ser. No. 546,986
Int. Cl.[6] A63B *21/02*
U.S. Cl. 482—129 **11 Claims**



1. A portable multi-exercise system for providing a resistive force responsive to a force applied by a user, comprising:

a. a base frame member having a substantially planar bottom frame portion and a back frame portion;

b. rotation actuation means coupled to said back frame portion of said base frame member adjacent an upper end thereof, said rotation actuation means having a rotational axis, said rotation actuation means reversibly imparting a torque about said rotational axis responsive to a user applied force;

c. a rotation transfer member fixedly coupled to said rotation actuation means, said rotation transfer member having first and second portions, said first portion being disposed adjacent said rotational axis of said rotation actuation means and coaxially secured thereto, said second portion being disposed distal from said first portion, said second portion having a ring-shaped section; and,

d. first and second flexible tension members coupled to said base frame member adjacent said bottom frame portion and said second portion of said rotation transfer member for providing said resistive force in either of two opposing directions in opposition to said torque reversibly imparted by said rotation actuation means, said first and second tension members each having an end portion slidingly coupled to said ring-shaped

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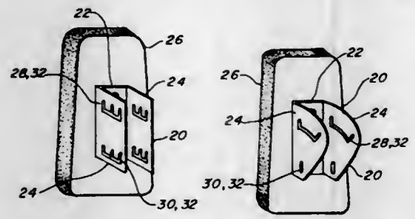
section of said rotation transfer member, said first tension member imparting at least one component of force opposing a component of force imparted by said second tension member.

5,603,682

BACK-PAD CUSHION ADJUSTING DEVICE FOR USE ON A MULTI-STATION GYM

Sherman P. Grider, 14829 E. Salt Lake Ave., City of Industry, Calif. 91746

Filed Feb. 6, 1995, Ser. No. 383,869
Int. Cl.[6] A47C *1/026*; A63B *103/00*
U.S. Cl. 482—142 **2 Claims**



1. A back-pad cushion adjusting device for use on a multi-station gym said device comprising:
a) a back pad cushion flat mounting face, having a matching rear surface permitting a contiguous mating to a gym frame,
b) a pair of parallel outwardly extending arms angularly contiguous with the mounting face unitedly forming a channel shaped bracket,
c) each of the arms having opposed plural positioning upper slot means therewithin,
d) each of the arms having opposed lower slot means therewithin, both opposed plural positioning upper slot means and lower slot means are congeneric, each form an inverted "E" slot with each partition of the slot wide enough to clear threaded fasteners and slide unobstructally throughout the entire shape of the "E", said slots positioned equal distance from the front of the arms, the "E" shaped slots permitting three separate spaced positions a distance apart from a gym frame upright with fasteners in adjoining slots, and two additional positions at a tilted angle using upper ends of dissimilar slots,
e) a hex bolt and spacer threaded fastener spaceably disposed through each of the slot means and for connecting to the frame upright such that when the bracket is lifted upwardly and shifted, the fasteners may be relocated into alternate positions within the slot means, and
f) back pad cushion fastening means in the form of hex bolts for attaching a cushion to the mounting face of the channel shaped bracket.

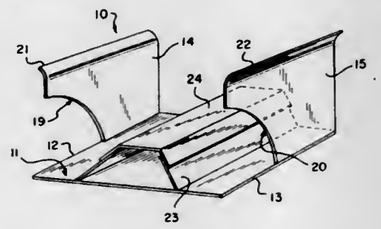
2. A back-pad cushion adjusting device for use on a multi-station gym, said device comprising:
a) a back pad cushion flat mounting face, having a matching rear surface permitting a contiguous mating to a gym frame,
b) a pair of parallel outwardly extending radiused arms angularly contiguous with the mounting face unitedly forming a channel shaped bracket,
c) each of the arms having opposed plural positioning upper slot means therewithin, further the upper slot means defines an arc shaped slot with a vertical riser on each end wide enough to clear threaded fasteners, the arc shaped slot permitting two spaced tilted angularly disposed positions using a fastener in one or the other slot riser,
d) each of the arms having opposed lower slot means therewithin, defining a vertical slot wide enough to clear threaded fasteners,
e) a hex bolt and spacer threaded fastener spaceably disposed through each of the slot means and for connecting to a gym frame upright such that when the bracket is lifted upwardly and shifted, the fasteners may be relocated into alternative positions within the upper slot means and rotate within the lower slot means, and
f) back pad cushion fastening means in the form of hex bolts for attaching cushion to the mounting face of the channel shaped bracket.

5,603,683

PAPER STACKER DEVICE FOR RECEIVING FANFOLD PAPER WITHOUT ASSISTANCE

Ho C. Lee, Endicott; Larry T. Sehringer, and Jack L. Zable, both of Vestal, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 14, 1994, Ser. No. 308,360
Int. Cl.[6] B31B *1/10*
U.S. Cl. 493—412 **10 Claims**



1. A paper stacker device for receiving continuous fanfold paper permitting the paper to stack itself in a neat, orderly and unassisted manner, comprising:
paper receiver means having bottom means with first and second opposite edges, said bottom means being formed to support fanfold paper as it is received in a continuous manner;
said paper receiver means also having two side means extending away from each other in an arcuate configuration over a substantial portion of their height from said first opposite edges of said bottom means;
said paper receiver means formed by said bottom means and said two side means being substantially open along said second opposite edges; and
said two side means having ends furthermost from said bottom means flared away from each other;
whereby said continuous fanfold paper is received between said two side means without obstruction and permitted to settle on said bottom means neatly, orderly and without assistance.

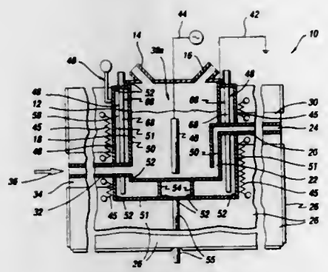
5,603,684

METHOD FOR VITRIFICATION OF HAZARDOUS WASTE

Kenneth H. Wetmore, Perrysburg; Kenneth R. Kormanyos, Sylvania, and Stephen F. Cox, Perrysburg, all of Ohio, assignors to Stir-Melter, Inc., Perrysburg, Ohio

Division of Ser. No. 246,412, May 20, 1994, Pat. No. 5,536,114. This application Apr. 29, 1996, Ser. No. 639,513
Int. Cl.[6] B09B *3/00*
U.S. Cl. 588—252 **9 Claims**

1. A method for vitrifying hazardous waste comprising:
introducing the hazardous waste and any other necessary components for forming a glassy material upon heating into a metallic melting vessel;
heating material within the melting vessel;



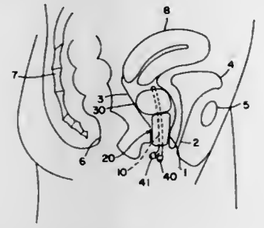
locating the melting vessel within a metallic containment vessel so as to contain any melted material that exits the melting vessel upon failure of the melting vessel; and
sensing for a failure of the melting vessel.

5,603,685

INFLATABLE VAGINAL PESSARY

Donald F. Tutrone, Jr., 3 Wendover Rd., Baltimore, Md. 21218

Continuation of Ser. No. 273,391, Jul. 1, 1994, abandoned. This application May 5, 1995, Ser. No. 434,362
Int. Cl.[6] A61F *2/00*
U.S. Cl. 600—29 **19 Claims**



1. A pessary device comprising:
(a) an inflatable, anterior chamber adapted to fit in a vestibule of a vaginal cavity of a human when inflated, wherein said inflatable anterior chamber compresses a urethra of the human when inflated,
(b) a first inflation tube having a first end fluidly connected to said inflatable, anterior chamber and a second end having a first inflation valve that permits inflation and deflation of said inflatable anterior chamber,
(c) an anchor member comprising an inflatable, posterior chamber adapted to snugly fit in a posterior region of the vaginal cavity when inflated, said inflatable posterior member being posteriorly connected to said inflatable anterior chamber when said pessary device is in its normal operating position, and
(d) a second inflation tube having a first end fluidly connected to said inflatable posterior chamber and a second end having a second inflation valve that permits inflation and deflation of said inflatable posterior chamber;
wherein inflation and deflation of said inflatable posterior and anterior chambers are separately controlled.

5,603,686

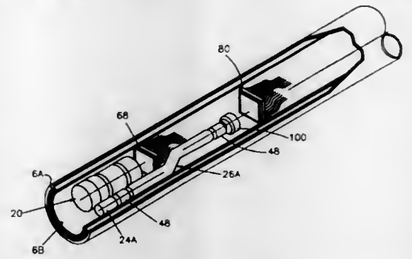
Patent Not Issued For This Number

5,603,687

ASYMMETRIC STEREO-OPTIC ENDOSCOPE

Koichiro Hori, Framingham, Mass., and John R. Lyon, Escondido, Calif., assignors to Oktas General Partnership, Westborough, Mass.

Continuation-in-part of Ser. No. 400,503, Mar. 7, 1995, which is a continuation of Ser. No. 967,996, Oct. 28, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 475,364
Int. Cl.[6] A61B *1/04*
U.S. Cl. 600—166 **40 Claims**



1. A stereo endoscope comprising:
first and second solid state image sensors;
an elongate tube having a front end and a rear end;
first and second discrete optical channels and light transmitting means disposed within said tube;
said first optical channel comprising a first objective lens system disposed adjacent the front end of said tube and first image-relaying means for receiving the image presented by said first objective lens system and transmitting same to said first image sensor;
said second optical channel comprising a second objective lens system disposed adjacent the front end of said tube and second image-relaying means for receiving the image presented by said second objective lens system and transmitting same to said second image sensor;
said second objective lens system having a smaller diameter than said first objective lens system.

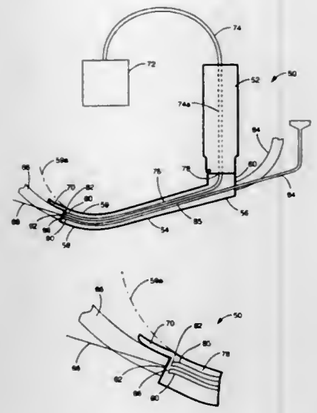
5,603,688

LARYNGOSCOPE INCLUDING AN UPWARDLY CURVED BLADE HAVING A DOWNWARDLY DIRECTED TIP PORTION

Michael S. Upsher, Menlo Park, Calif., assignor to Upsher Laryngoscope Corporation, Foster City, Calif.

Filed Apr. 24, 1995, Ser. No. 427,416
Int. Cl.[6] A61B *1/26*
U.S. Cl. 600—190 **16 Claims**

1. A laryngoscope for intubating a patient with a flexible endotracheal tube, said laryngoscope comprising:
a) a handle; and
b) a blade disengagably connectable with said handle, said blade including
i. a tube guiding portion having a proximate end adjacent said handle when the blade is connected therewith and a distal end further from the handle when the blade is connected therewith, at least a segment of said tube guiding portion including said distal end defining an upwardly curved path, when the blade and handle are disposed in their normal, downwardly directed operating positions, said tube guiding portion being configured to receive and route said flexible tube from its proximate end to said distal end along said curved path such that, upon emerging from the tube guiding portion at the distal end, the tube at least initially follows a given path relative to said curved path, and
ii. a tip portion extending forward from the distal end of said tube guiding portion and directed angularly downward relative to said curved path such that the tip portion is posi-



tioned immediately adjacent the initial given path of said tube as it emerges from said tube guiding portion, said tip portion serving to elevate the patient's epiglottis as the blade is inserted into the patient's throat.

5,603,689

ELEVATOR DEVICE FOR AN ABDOMINAL WALL, IN VIDEOLAPAROSCOPIC SURGICAL OPERATIONS

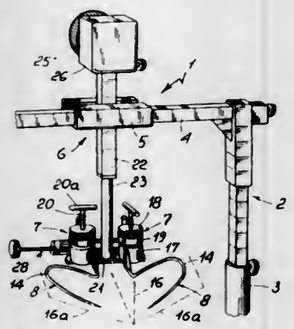
Flavio Lucini, Ospiate Di Bollate, Italy, assignor to L & T S.n.c. di Ermanno Lucini & C., Milan, Italy

Filed Apr. 24, 1995, Ser. No. 426,864

Claims priority, application Italy, Aug. 5, 1994, M194A1705; Mar. 22, 1995, M1950196 U

Int. Cl.[6] A61B *1/22;17/02*

U.S. Cl. 600—201 **14 Claims**



1. An elevator device for an abdominal wall, in videolaparoscopic surgical operations, comprising mechanical elements for tensioning an abdominal wall (**10**) and movement means (**2**) for said mechanical tensioning elements, wherein said mechanical tensioning elements are shaped needles (**8**) having sharpened ends (**14***a*) and being adapted to be introduced into a subcutaneous tissue (**9**) of said abdominal wall (**10**), and wherein said movement means (**2**) comprises raising members (**6**) for said shaped needles (**8**) and spacing members (**28**) designed to move said shaped needles (**8**) away from each other, said raising members (**6**) and spacing members (**28**) being adapted to carry out raising of said abdominal wall (**10**) and tensioning of the same wall transversally of said raising.

5,603,690

INFLATABLE SUPPORTS

Thomas Barry, Cardiff, United Kingdom, assignor to South Glamorgan Health Authority, Cardiff, United Kingdom

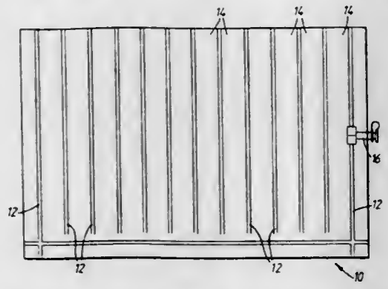
PCT No. PCT/GB90/01861, § 371 Date May 29, 1992, § 102(e) Date May 29, 1992, PCT Pub. No. WO91/07937, PCT Pub. Date Jun. 13, 1991

PCT Filed Nov. 29, 1990, Ser. No. 859,459

Claims priority, application United Kingdom, Nov. 29, 1989, 8926920

Int. Cl.[6] A61F *5/00;* **A61H** *7/00*

U.S. Cl. 601—148 **6 Claims**



1. An inflatable support means for being inflated and sealed in use to support at least part of the body of a user, said support means including envelope means comprising a sheet of material that is permeable to water vapor but substantially impermeable to air to the extent of sustaining an inflated state by virtue of air pressure alone, said sheet having a water vapor transmission rate from 50 to 400 g/m^2 d, an inlet for inflation medium and means for sealing said inlet.

5,603,691

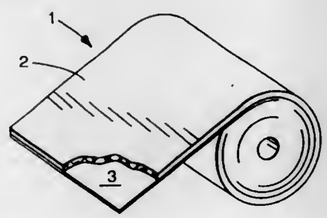
METHOD OF USING WATER SOLUBLE FILMS IN CURABLE CASTING TAPES

Matthew T. Scholz, Woodbury; Mark A. Berman, St. Paul; Dennis C. Bartizal, Lakeland, and Michael D. Delmore, Mounds View, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 16, 1993, Ser. No. 48,738

Int. Cl.[6] A61F *5/04*

U.S. Cl. 602—8 **19 Claims**



1. A method of enclosing a body member, with an orthopedic casting material comprising the steps of:

providing an orthopedic casting tape comprising a fabric sheet, a curable resin coated on said sheet, and a water soluble liner, wherein said curable resin-coated sheet is in the form of a wound roll configuration and said water soluble liner contacts said resin-coated sheet and separates the adjacent layers of the sheet when the sheet is in its wound configuration, said casting tape being pliable and formable prior to being cured and at least semi-rigid and strong after being cured;

initiating curing of said orthopedic casting tape and effectively dissolving said water soluble liner by contacting said casting tape with water wrapping the casting tape about the body member; and

molding the wrapped casting tape about the body member.

5,603,692

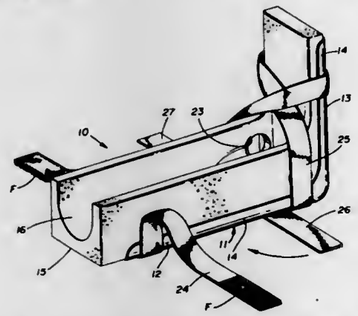
DROP FOOT SPLINT

Richard H. Maxwell, 301 N. Broad St., Grove City, Pa. 16127

Filed Apr. 19, 1996, Ser. No. 634,837

Int. Cl.[6] A61F *5/00*

U.S. Cl. 602—28 **4 Claims**



1. A therapeutic leg and foot device comprising an L-shaped rigid support base having a leg engagement portion and a foot engagement portion, a contoured resilient synthetic insert within said support base, a pair of rotational restraints pivotally secured adjacent their distal ends to said leg engagement portion of said support base, said rotational restraints movable from a first position on said support base to a second position extending outwardly from said support base at right angles thereto, restraint straps removably positioned about said support base and said resilient synthetic insert, means for selectively securing said rotation restraints in said first position and said second position on said base, and means for interengaging said rotational restraints to one another in said first position and in said second position on said support base.

5,603,693

THREE PART DEVICE FOR THE TRANSDERMIC ADMINISTRATION OF DRUGS BY ELECTROPHORESIS OR IONTOPHORESIS

Erik J. Frenkel, Neuchâtel; Jean-Jacques Born, Morges, and Konrad Schafroth, Bern, all of Switzerland, assignors to Asulab S.A., Bienne, Switzerland

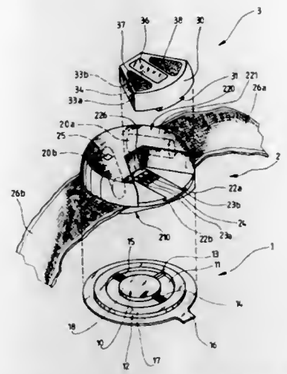
Filed Sep. 6, 1994, Ser. No. 300,859

Claims priority, application France, Sep. 10, 1993, 93 10897

Int. Cl.[6] A61N *1/00*

U.S. Cl. 604—20 **16 Claims**

1. A device for ambulatory treatment by transdermic administration of drugs by electrophoresis or iontophoresis, said device comprising an assembly of three detachable modules including a first active module having at least one system of electrodes and one drug reservoir, a second power module having a power supply and a third electronic module having an electronic circuit and a display screen, wherein when the three modules are assembled together the power module is situated between the first and third modules, said power module power supply including one or more batteries and said power module having mechanical assembly means and electrical contacts, said mechanical assembly means interlocking with corresponding mechanical assembly means on the first and third modules and said electrical contacts contact contacts provided on the first and third modules to detachably mechanically and electrically interconnect the power module to the first and third modules whereby said first and third modules may be individually detached and reattached to said power module, and attachment means for attaching the device to the body of a patient.



5,603,694

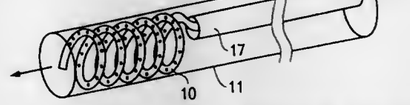
INFUSION COIL APPARATUS AND METHOD FOR DELIVERING FLUID-BASED AGENTS INTRAVASCULARLY

Joe E. Brown, 1900 Glenn Club Dr., #1106, Stone Mountain, Ga. 30087, and Matt D. Pursley, 430 Cameron Woods Ct., Alpharetta, Ga. 30202

Filed Feb. 16, 1996, Ser. No. 602,424

Int. Cl.[6] A61M *31/00*

U.S. Cl. 604—49 **52 Claims**



1. An infusion coil apparatus for delivering fluid-based agents intravascularly, comprising:

a resilient fiber core having a linear portion and a coiled portion; and

a polymer tubing encasing the resilient fiber core and adapting to the shape of the resilient fiber core, said polymer tubing comprising a first portion encasing the linear portion of the resilient fiber core and a second portion encasing the coiled portion of the resilient fiber core.

5,603,695

DEVICE FOR ALKALIZING LOCAL ANESTHETIC INJECTION MEDICATION

Kim Erickson, 7310 Oliver Woods, Grand Rapids, Mich. 49546

Filed Jun. 7, 1995, Ser. No. 475,641

Int. Cl.[6] A61M *37/00*

U.S. Cl. 604—89 **14 Claims**

1. A device for alkalizing a local anesthetic injection comprising in combination a local anesthetic carrier being substantially cylindrical and having opposite ends and a bottom, a disposable cartridge having opposite ends and containing a buffering solution having means at one end of the cartridge for removably securing said cartridge to said anesthetic carrier, hollow needle means on said end of the cartridge communicating with said buffering solution for transferring said buffering solution from said cartridge

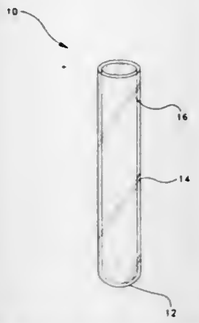
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through one end of said carrier, a movable stopper in the bottom of said carrier spaced adjacent to the opposite end of said carrier whereby when said buffering solution enters said carrier said stopper moves toward said opposite end in order to enlarge the interior space of said carrier to accommodate the buffering solution that is transferred therein from said cartridge.

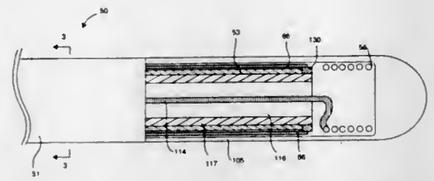
5,603,696
MOLDED TUBULAR MEDICAL ARTICLES OF BLENDED SYNDIOTACTIC AND ISOTACTIC POLYPROPYLENE
Joel L. Williams, Cary, N.C.; Yong-Jian Qui, Myrtle Beach, S.C., and Shel McGuire, Durham, N.C., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.
Continuation of Ser. No. 54,476, Apr. 30, 1993, abandoned.
This application Jan. 5, 1995, Ser. No. 369,971
Int. Cl.[6] A61L *17/00*
U.S. Cl. 604—93 **5 Claims**



1. In a medical article of high clarity comprising a molded tubular wall of polypropylene, the improvement comprising molding said article from a blend of syndiotactic polypropylene having a syndiotactic index of at least 80 percent and about 0.1 to 15% by weight of an isotactic polypropylene having a peak melting point of 163° C. or higher, said blend having a molding cycle time which is at least two fold lower than the molding cycle time of the syndiotactic polypropylene component of the blend.

5,603,697
STEERING MECHANISM FOR CATHETERS AND METHODS FOR MAKING SAME
David A. Grundy, Fremont, Calif.; Brian M. Packard, Monticello, Minn., and Glen G. Warner, Morgan Hill, Calif., assignors to Fidus Medical Technology Corporation, Fremont, Calif.
Filed Feb. 14, 1995, Ser. No. 388,373
Int. Cl.[6] A61M *37/00*
U.S. Cl. 604—95 **16 Claims**

1. A medical catheter comprising:



a flexible tubular member having a distal end, the tubular member being adapted to be inserted into a vessel in the body of a patient, a first portion of the tubular member having a stiffness that is significantly less than the stiffness of the majority of the tubular member, the first portion of the tubular member being located near the distal end of the tubular member,

an anchor ring secured to said tubular member near the distal end, of the tubular member, the anchor ring being located near the first portion of the tubular member, the anchor ring near the distal end of the catheter being formed from a material that is electrically conductive;

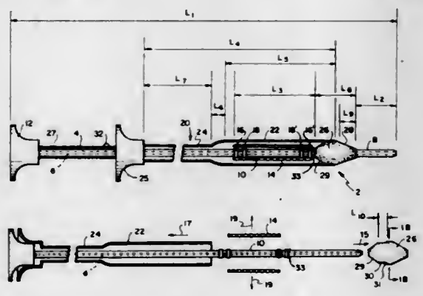
a working member disposed distally of the anchor ring;

an elongated transmission line received within the flexible tubular member for transmitting energy to the working member, the transmission line being electrically coupled to the anchor ring and arranged to pass through said anchor ring; and

at least one steering wire that extends through said tubular member and is anchored to the anchor ring;

whereby when the catheter is inserted into the vessel of a patient, the distal end of the catheter may be steered by pulling on the steering wire.

5,603,698
PROSTHESIS DELIVERY SYSTEM
George T. Roberts, Weston; Darin Wilson, Wellesley, both of Mass.; Erik Andersen, Jyllinge, Denmark, and Hans-Peter Strohband, Erkrath, Germany, assignors to Boston Scientific Corporation, Watertown, Mass.
Continuation of Ser. No. 46,237, Apr. 13, 1993, abandoned.
This application Aug. 23, 1995, Ser. No. 538,175
Int. Cl.[6] A61M *29/00*
U.S. Cl. 604—104 **21 Claims**



1. A system for delivering a prosthesis into the body of a patient, comprising:

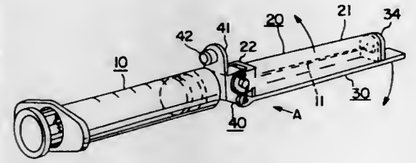
a prosthesis, expandable from a radially compact form,

an elongated catheter having a proximal end that remains outside the body, a distal end, and a supporting portion supporting said prosthesis in said radially compact form for delivery of the prosthesis to a desired location inside the body, and

a dislodgeable atraumatic entry tip dislodgeably mounted on said catheter distal of said supporting portion, said tip having a diameter about equal to or greater than the prosthesis in said radially compact form,

said atraumatic dislodgeable tip being selectively slidably dislodgeable off the catheter when said catheter is in the body in a manner that said catheter can be removed from the body leaving said tip inside the body.

5,603,699
NEEDLE GUARD ASSEMBLY
Jerry P. Shine, 10451 Isleworth Ave., San Diego, Calif. 92126
Filed Feb. 7, 1996, Ser. No. 597,947
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—110 **17 Claims**



1. A needle guard assembly comprising:

a mounting base having a bore extending therethrough, said bore having an upper end for receiving a needle base and a lower end for removable connection to a syringe hub, said upper and lower ends being shaped and oriented to have a continuous passage therethrough designed permit flow of a fluid from a needle through the upper end and out through the lower end into a syringe, and from a syringe through the lower end into a needle through the upper end:

a jacket assembly pivotally mounted on said mounting base comprising:

i.) a shield member having an open end positioned opposite a closed end, said open end terminating in a U-shaped clevis portion adapted to enable pivotal movement of said shield, and having a substantially U-shaped channel extending longitudinally between said open end and said closed end; and

ii.) a lever member positioned on said base parallel to said shield member having at one end a U-shaped clevis portion adapted to enable pivotal movement of said lever positioned opposite a free end and a laterally extending tab proximal to said free end thereof, wherein said tab is shaped and oriented to provide leverage for initiating pivotal movement of said lever from a retracted position and to align with and engage said closed end of said shield when said needle guard assembly is in a closed position around a needle;

activating means adapted for movement of the jacket assembly from a retracted position to a closed position; and

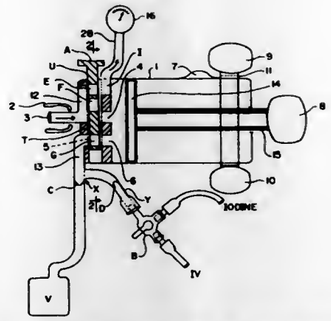
biasing means adapted to drive movement of the activating means.

5,603,700
SUCTION AND INJECTION SYSTEM
Yousef Daneshvar, 21459 Woodfarm, Northville, Mich. 48167
Filed Dec. 27, 1993, Ser. No. 172,754
Int. Cl.[6] A61M *1/00;5/00*
U.S. Cl. 604—122 **20 Claims**

1. A suctioning and injecting system for use with a catheter during a catheterization procedure, said system comprising:

1) a syringe having a barrel and a plunger for suctioning fluid into the barrel during a suction stroke of the plunger and for injecting fluid from the barrel during an injecting stroke of the plunger;

2) first port means for placing the system in fluid communication with such a catheter;



3) a fluid source means that provides one or more fluids during the course of such a procedure;

4) a fluid waste disposal means for receiving waste fluid during the course of such a procedure;

5) second port means for placing the system in fluid communication both with said fluid source means and with said fluid waste disposal means; and

6) means, including slide valve means that is interposed between said first and second port means and said barrel and that is selectively positionable to first and second selected positions, for selectively respectively communicating said first and second port means with said barrel such that in the second selected position, said slide valve means communicates said second port means to said barrel while blocking communication of said first port means with said barrel to allow fluid from said fluid source means to be suctioned into said barrel during a suction stroke of said plunger and waste fluid previously suctioned into said barrel from such a catheter through said first port means during a suction stroke of said plunger while said slide valve means was in the first selected position, to be injected from said barrel into said fluid waste disposal means during an injecting stroke of said plunger, and such that in the first selected position, said slide valve means blocks communication of said second port means with said barrel while communicating said first port means with said barrel to allow waste fluid from such a catheter to be suctioned through said first port means into said barrel during a suction stroke of said plunger and fluid previously suctioned into said barrel from said fluid source means through said second port means during a suction stroke of said plunger while said slide valve means was in the second selected position, to be injected from said barrel through said first port means into such a catheter during an injecting stroke of said plunger.

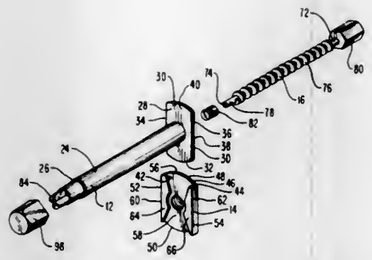
5,603,701
SYRINGE APPARATUS WITH THREADED PLUNGER FOR DELIVERING TOOTH COMPOSITES AND OTHER SOLID YET PLIABLE MATERIALS
David V. Fischer, West Jordan, Utah, assignor to Ultradent Products, Inc., South Jordan, Utah
Continuation of Ser. No. 411,090, Mar. 27, 1995, abandoned.
This application May 15, 1996, Ser. No. 647,653
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—211 **19 Claims**

1. A syringe apparatus that is convertible from a standard push-type syringe into a type of syringe apparatus adapted for using a threaded plunger for delivery of a material of a type that is essentially solid, yet pliable, comprising:

unthreaded barrel means for containing the material, the barrel means comprising an inlet end, an outlet end, and an enlarged finger grip at the inlet end;

separate plug means for insertion into the barrel means at the inlet end thereof;

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engaging means for slidable attachment over the separate plug means inserted into the barrel means and for slidable attachment to the finger grip of the barrel means so as to non-rotatably engage the finger grip and so as to enclose and hold the separate plug means within the barrel means, the engaging means having a threaded throughbore; and

separate plunger means for contacting the separate plug means through the engaging means, and for movement of the plug means through the barrel means, the plunger means having a threaded portion that is complementary to the threaded throughbore of the engaging means such that the plunger means may be advanced into the barrel means at the inlet end by rotating the plunger means through the threaded throughbore of the engaging means, thereby effecting delivery of the material at the outlet end.

5,603,702

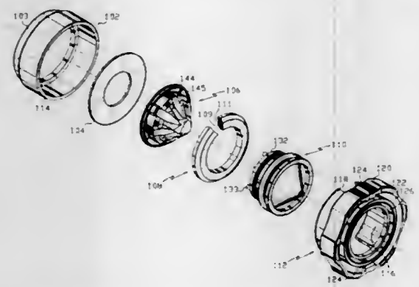
VALVE SYSTEM FOR CANNULA ASSEMBLY

Robert C. Smith, Danbury; Peter W. J. Hinchliffe, New Haven; James Correia, Shelton; Martin J. Nohilly, Trumbull; Kurt Azarbarzin, Ridgefield, and Richard D. Gresham, Monroe, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Aug. 8, 1994, Ser. No. 287,395

Int. Cl.[6] A61M *5/00;5/14*

U.S. Cl. 604—256 **17 Claims**



1. Valve assembly for sealed reception of an elongated object, which comprises:

a) valve body having at least one opening configured and dimensioned to permit entry of an elongated object and defining a central longitudinal axis;

b) an elongated seal member formed of a resilient material and defining an aperture in general alignment with the opening of the valve body, the aperture being configured and dimensioned such that insertion of the object into the aperture causes the resilient material defining the aperture to resiliently engage the outer surface of the object in a substantially fluid tight manner; and

c) a plurality of elongated guard members disposed within the seal member in contact with the inner surface thereof, the guard members positioned to engage the elongated object upon at least partial insertion of the elongated object into the valve body, each of the guard members including at least a first substantially rigid portion and a second portion having less rigidity than the first portion, each guard member adapted to be displaced relative to the longitudinal axis to facilitate expansion of the aperture of the seal member upon entry of the object therein.

5,603,703

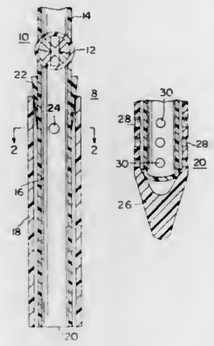
SELECTIVELY ASPIRATING STYLET

Dennis D. Elsberry, New Hope, and Jane L. Kohnen, Minneapolis, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Apr. 28, 1995, Ser. No. 430,964

Int. Cl.[6] A61M *25/00*

U.S. Cl. 604—268 **70 Claims**



1. A selectively aspirating stylet for use in placing a generally tubular member in a patient's body, said generally tubular member having an inside diameter surface and an upper end, said stylet comprising:

a stylet body having a lower hollow portion configured to be placed within said generally tubular member and an upper hollow portion configured to extend outside said generally tubular member, said lower hollow portion having a first end and a second end and an outside diameter surface;

a valve assembly coupled to said upper and lower portions of said stylet body to provide selective fluid communication from said upper portion through said valve to said lower portion, said valve assembly coupled to said lower portion of said stylet body at said first end of said stylet body; and

sealing means placed between said inside diameter surface of said generally tubular member and said stylet body to prevent unwanted escape of fluid between said stylet body and said generally tubular member when said stylet body is placed within said generally tubular member.

5,603,704

MULTI-PURPOSE CURVE

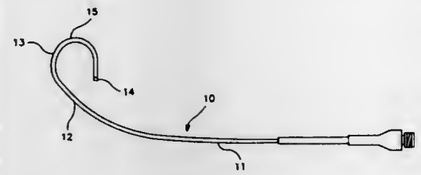
David S. Brin, and John B. Horrigan, both of West Newbury, Mass., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Jun. 30, 1995, Ser. No. 496,943

Int. Cl.[6] A61M *25/00*

U.S. Cl. 604—281 **8 Claims**

1. A catheter adapted for placement within a living anatomy, such as in the human coronary arterial system, the catheter comprising:



a proximal portion, a first arcuate portion, a second arcuate portion, and a distal tip;

the proximal portion being substantially straight;

the first arcuate portion being connected to the proximal portion; the first arcuate portion having a convex curvature, the first arcuate portion having a radius of curvature of 3 to 4 inches adjacent to the proximal portion and 1 to 3 inches distally;

the second arcuate portion being connected between the first arcuate portion and the distal tip, the second arcuate portion blending with the first arcuate portion, the second arcuate portion defining two semiaxes, a first semiaxis being adjacent to the distal tip and having a dimension of 1 to 2 cm; a second semiaxis being adjacent to the first arcuate portion and having a dimension of 1 to 3.5 cm, the second arcuate portion defining a segment of a generally ellipsoidal shape, the segment being between 135° and 225°, the segment having an apex;

the distal tip pointing generally toward the proximal portion; and

whereby with the catheter inserted into the vasculature, the proximal portion extends from the femoral access site to adjacent the aortic arch of the patient, the first arcuate portion being disposed along the contralateral wall of the ascending aorta, the second arcuate portion spanning the aortic root, the distal tip being engaged in the coronary ostium, the apex being in contact with the contralateral wall of the aorta, the line of action of force tending to displace the distal tip from the ostium being generally coaxial with the second semiaxis, the catheter thus resisting forces tending to displace the distal tip from the ostium.

5,603,705

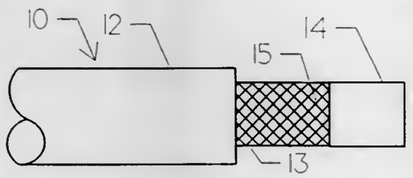
CATHETER JOINT WITH RESTRAINING DEVICE

Todd A. Berg, Lino Lakes, Minn., assignor to SciMed Life Systems, Inc., Maple Grove, Minn.

Continuation of Ser. No. 171,925, Dec. 22, 1993, abandoned. This application May 15, 1995, Ser. No. 441,260

Int. Cl.[6] A61M *25/00*

U.S. Cl. 604—282 **9 Claims**



1. Catheter apparatus having at least outer and inner congruent tubular structures and a support structure mounted between said tubular structures, said support structure comprising a metal braid, the improvement comprising:

a. a step in the catheter apparatus for reducing the diameter of the catheter apparatus for a predetermined stepped region between the step and one end of the catheter apparatus; and

b. restraining apparatus having an outer diameter less than the outer diameter of said outer congruent tubular structure mounted on at least a portion of the stepped region, said restraining apparatus and said stepped region defining a male portion wherein said male portion is adapted to be selectively joined in a lap-joint type connection to a further apparatus, wherein said further apparatus covers said restraining apparatus when connected thereto.

5,603,706

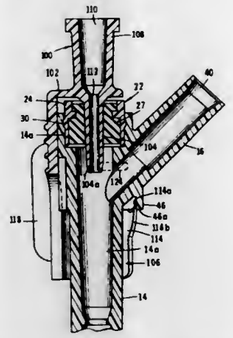
INFUSION APPARATUS

Philip Wyatt, 1018 Marengo Dr., Glendale, Calif. 91206, and Gary Schaeffer, 50 E. Alice St. #E, Arcadia, Calif. 91006

Continuation-in-part of Ser. No. 954,528, Sep. 29, 1992, Pat. No. 5,356,396. This application Apr. 19, 1994, Ser. No. 229,627

Int. Cl.[6] A61M *25/00*

U.S. Cl. 604—283 **25 Claims**



1. An entry port structure usable with a cannula, comprising:

(a) a tubular body having a centrally disposed fluid passageway and first and second ports in communication with said passageway; and

(b) closure means for closing said first port of said tubular body, said closure means comprising:

(i) septum holding means for holding a septum, including a generally ring shaped member telescopically received within said first port, said member having an inner wall defining a chamber and including septum retaining means for retaining a septum in said chamber said retaining means comprising a segment extending inwardly from said inner wall into said chamber; and

(ii) a septum disposed within said chamber, said septum being penetrable by the cannula, and having a groove for receiving said segment of said ring shaped member.

5,603,707

ABSORBENT ARTICLE HAVING A REWET BARRIER

Liberatore A. Trombetta, Hamilton; Dhanraj S. Patel, Mississauga; Dennis A. Darby, Hamilton, and Jayne S. Huhtanen, Toronto, all of Canada, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 28, 1995, Ser. No. 563,711

Int. Cl.[6] A61F *13/15;13/20*

U.S. Cl. 604—383 **16 Claims**

1. An absorbent article comprising:

(a) a liquid pervious topsheet;

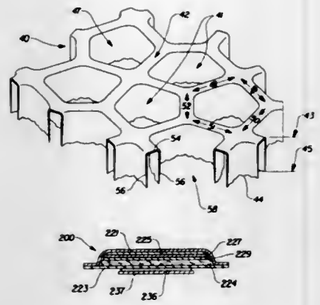
(b) a liquid impervious backsheet joined to said topsheet;

(c) an absorbent core positioned between said topsheet and said backsheet;

(d) a first fibrous acquisition layer positioned between said topsheet and said absorbent core;

(e) a rewet barrier positioned between said fibrous acquisition layer and said absorbent core, said rewet barrier comprising

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an apertured, macroscopically expanded, three-dimensional, polymeric web having a body facing surface and a garment facing surface; and

(f) a second fibrous acquisition layer positioned between said rewet barrier and said absorbent core.

5,603,708

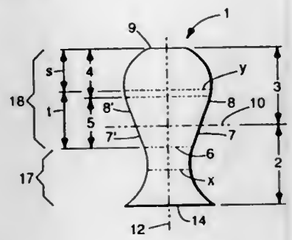
ROUNDED CORNER FASTENING TAB DIAPER CLOSURE

Jayshree Seth, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 5, 1994, Ser. No. 286,272

Int. Cl.[6] A61F *13/15*

U.S. Cl. 604—389 **16 Claims**



1. A diaper fastening tab consisting essentially of a top edge, a bottom edge and two side edges between the top edge and the bottom edge, the fastening tab between the top edge and the bottom edge consisting of a first half and a second half, the second half having a user's bond region formed of a fastening surface, for releasably attaching to a diaper attachment surface, having a maximum width y, the first half having a manufacturer's bond region formed of a second fastening surface, for permanently attaching to a diaper having a minimum width x, where y is greater than x, the second half having a shape such that, at a transverse line separating the second half from the first half, the second half side edge is an inverted mirror image of the directly adjacent first half side edge wherein the side edges of the fastening tab have curvilinear side edge portions with no sharp corners, said side edge portions extending between the top edge and the bottom edge or between the top edge or the bottom edge and a terminal fingerlift portion or between two terminal fingerlift portion(s) where the terminal fingerlift portions are located adjacent the top and/or bottom edges, said side edge portions having a minimum radius of curvature of 0.5 mm.

5,603,709

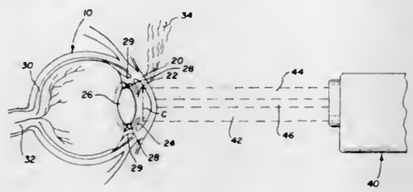
OPTICAL REFRACTION CORRECTION METHODS

Donald G. Johnson, 12101 Sullivan Street, Surrey, British Columbia, Canada

Filed Jan. 11, 1996, Ser. No. 584,888

Int. Cl.[6] A61B *17/00;* **A61N** *5/06*

U.S. Cl. 606—5 **7 Claims**



1. A method of removing the epithelium from a defined area of the corneal surface of an eye comprising:

(a) applying a beam of laser energy to a defined area of corneal surface with sufficient energy intensity to vaporize said surface;

(b) monitoring the vapor produced with time to determine variations in color of vapor produced;

(c) monitoring the vapor produced with time to determine variations in density of vapor produced; and

(d) removing said beam from said surface when disappearance of vapor is observed.

5,603,710

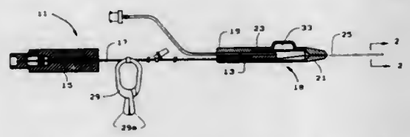
LASER DELIVERY SYSTEM WITH SOFT TIP

James C. Easley, St. Charles, Mo., and Stanley Chang, Scarsdale, N.Y., assignors to Infinitech, Inc., St. Louis, Mo.

Continuation of Ser. No. 48,149, Apr. 15, 1993, Pat. No. 5,441,496. This application Aug. 14, 1995, Ser. No. 514,663

Int. Cl.[6] A61B *17/36;* **A61F** *9/00*

U.S. Cl. 606—15 **8 Claims**



1. A laser delivery system for ophthalmic surgery and the like comprising:

a handpiece having a handpiece body and a hollow probe of a size suitable for insertion into a human eye, said hollow probe extending distally from the handpiece body and including a metal tube forming the proximal portion of the probe;

a laser connector for connection to a laser source;

an optical fiber terminating at one end in the laser connector and terminating at another end in the handpiece for transmitting laser light from a laser course to an eye to be treated; and

a soft tip forming the distal end of said probe.

5,603,711

ENDOSCOPIC BIPOLAR BIOPSY FORCEPS

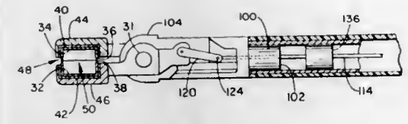
David J. Parins, Corcoran, and Richard K. Poppe, Minneapolis, both of Minn., assignors to Everest Medical Corp., Minneapolis, Minn.

Filed Jan. 20, 1995, Ser. No. 375,953

Int. Cl.[6] A61B *17/39;10/00*

U.S. Cl. 606—51 **18 Claims**

1. A bipolar biopsy device comprising:



(a) a bipolar biopsy jaw arrangement having a first and second jaw members, said first jaw member is pivotable in relation to the second jaw member, a first tissue specimen collecting receptacle on a distal end of said first jaw member and a second tissue specimen collecting receptacle on a distal end of said second jaw member and, a cutting edge on said first tissue specimen collecting receptacle;

(b) an electrode on each said first and second tissue specimen collecting receptacles;

(c) a spacing means for electrically isolating said electrodes from said first and second tissue specimen collecting receptacles; and

(d) means to supply a voltage across said electrodes.

5,603,712

BIPOLA SUCTION TONSILLAR DISSECTOR

Frank C. Koranda, 4341 Homestead Cir., Prairie Village, Kans. 66208, and Charles L. Poynter, Kansas City, Mo., assignors to Frank C. Koranda

Filed Jun. 5, 1995, Ser. No. 464,289

Int. Cl.[6] A61B *17/39*

U.S. Cl. 606—51 **13 Claims**



1. Apparatus for surgically dissecting tissue comprising:

a first elongated arm presenting a proximate end and a remote end, said remote end of said first arm including structure defining an opening proximate thereto, said first arm including a tubular channel for the passage of fluid therethrough connected to and extending from said opening to a suction connector;

a second elongated arm presenting a proximate end and a remote end, said remote end of said second arm presenting a sharpened dissecting blade;

means for coupling said proximate end of said first arm proximate to but not in direct contact with said proximate end of said second arm in substantially parallel orientation, for permitting limited movement of said first and second arms toward and away from one another, and for electrically insulating the first arm from the second arm; and

means for providing electrical bipolar current to said remote ends, whereby tissue held between said blade and said opening defining structure may be cauterized.

5,603,713

ANTERIOR LUMBAR/CERVICAL BICORTICAL COMPRESSION PLATE

Gilbert M. Aust, 14 Asbury La., Huntsville, Ala. 35802, and Timothy E. Taylor, 1859 Shellbrook Dr., Huntsville, Ala. 35806

Continuation of Ser. No. 987,140, Dec. 8, 1992, abandoned, which is a continuation-in-part of Ser. No. 765,014, Sep. 24, 1991, Pat. No. 5,180,381. This application Sep. 29, 1994, Ser. No. 315,190

Int. Cl.[6] A61B *17/56;17/58*

U.S. Cl. 606—61 **5 Claims**

4. A method for maintaining vertebrae in a desired spatial relationship, said method comprising:



positioning a structural means adjacent a vertebra; and

installing a threaded fastener to extend through the structural means, through the anterior cortical surface area of the vertebra, through the vertebra, and through the facet cortical surface area of the vertebra, said step of installing a threaded fastener including the step of engaging a threaded surface portion of the threaded fastener with the facet cortical surface area.

5,603,714

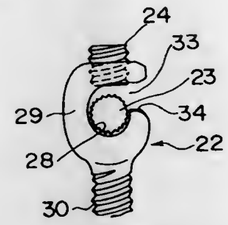
INSTRUMENT FOR ANTERIOR CORRECTION OF SCOLIOSIS OR THE LIKE

Kiyoshi Kaneda, Sapporo; Shoichi Takahashi, Tokyo-to; Yoshiharu Asai, Gosen, and Takao Shimizu, Tokorozawa, all of Japan, assignors to Mizuho Ika Kogyo Kabushiki Kaisha, Tokyo-To, Japan

Filed Dec. 12, 1994, Ser. No. 353,886

Int. Cl.[6] A61B *17/56*

U.S. Cl. 606—61 **15 Claims**



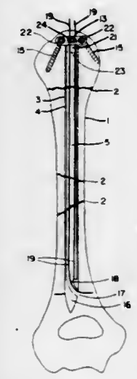
1. A vertebra screw device comprising:

a vertebra screw having a threaded part and a head, the threaded part being adapted for screwing into a vertebra, the threaded part having a central longitudinal axis, the head having a rod passage hole extending across the central longitudinal axis of the threaded part, a rod passing through the rod passage hole and having a central longitudinal axis, the head being generally C-shaped to define said rod passage hole therein and having four portions, the four portions being a top portion, a rear-center portion, a bottom portion, and a jaw portion, the top portion being opposite the bottom portion, the rear-center portion being connected to the top and bottom portions, the jaw portion being connected to the bottom portion, the jaw portion being separated from the top portion by an opening, the jaw portion being closer than the bottom portion to the top portion, the rear-center portion being opposite the opening, the opening being adapted to allow insertion of the rod through the opening and into the rod passage hole, the vertebra screw having a holding means for fixedly holding the rod in the rod-passage hole where the rod is in contact with substantially the entire jaw portion, the head and the rod-

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passage hole being configured to substantially snugly receive the rod in the rod-passage hole such that the central longitudinal axis of the rod does not intersect with, and is offset toward and contacting substantially the entire jaw portion relative to the central longitudinal axis of the threaded part.

5,603,715
MEDULLARY PIN
Sigurd Kessler, Am Mühlanger 70, Puchheim, Germany
Filed Sep. 16, 1994, Ser. No. 308,095
Int. Cl.[6] A61B *17/72*
U.S. Cl. 606—63 **15 Claims**



10. A medullary pin for intermedullary use in the healing of a fractured tubular bone having a medullary cavity and an outer side, said pin having an inner space, a first end and an open second end, said pin being insertable into the medullary cavity of the bone, the first end of said medullary pin including a fastening part fixable to the outer side of the bone, a terminal cap at the open second end of said medullary pin located remote from said fastening part, said terminal cap having at least one exit opening which is lateral relative to a longitudinal axis of said medullary pin and communicates via a channel with the inner space of said medullary pin, and wherein the first end of the medullary pin adjacent said fastening part is wider than a remaining part of said medullary pin.

5,603,716
METHOD OF LIGAMENT RECONSTRUCTION USING DOUBLE SOCKET GRAFT PLACEMENT AND FIXATION
Craig D. Morgan, Greenville, Del., and Reinhold Schmieding, Naples, Fla., assignors to Arthrex Inc., Naples, Fla.
Filed Feb. 16, 1995, Ser. No. 389,492
Int. Cl.[6] A61B *17/58*
U.S. Cl. 606—88 **19 Claims**

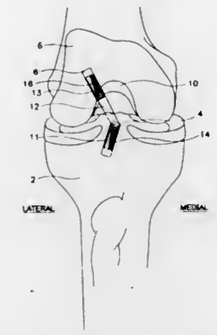
1. A surgical method of arthroscopic knee reconstruction for attaching a ligament graft in a patient's knee between a tibia and a femur, comprising the steps of:

(a) forming a closed-ended socket in the tibia;

(b) forming a closed-ended socket in the femur;

(c) inserting a first end of the graft into the femoral socket;

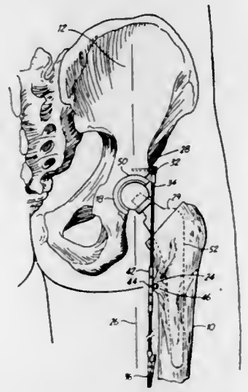
(d) inserting a second end of the graft into the tibial socket;



(e) securing the second end of the graft in the tibial socket; and

(f) securing the first end of the graft in the femoral socket.

5,603,717
METHOD AND APPARATUS FOR SIMPLIFYING TOTAL HIP ARTHROPLASTY
Gail M. Benson, Sioux Falls, S. Dak., assignor to Bentwood Place, Inc., Sioux Falls, S. Dak.
Division of Ser. No. 882,938, May 14, 1992, Pat. No. 5,318,571. This application May 27, 1994, Ser. No. 250,164
Int. Cl.[6] A61B *17/56*
U.S. Cl. 606—102 **11 Claims**



6. Apparatus for aiding reconstructive hip joint surgery involving the replacement of a dysfunctional hip joint with an artificial orthopedic prosthesis comprising:

a length of flexible cable having first and second ends;

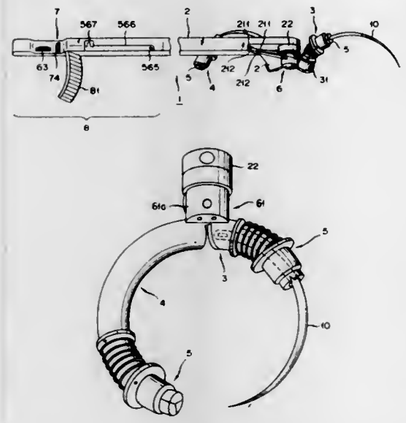
means for affixing said first end of said length of flexible cable to a patient's hip bone at a first reference point such that said length of flexible cable may be extended in a straight line alongside the dysfunctional hip joint and generally in alignment with a weight supporting axis of the leg bones;

means for marking a second reference point on the patient's femur such that a line drawn between said first and second reference points is generally parallel with said weight supporting axis;

distance indicating means for attachment to said length of flexible cable at a distance along the length thereof in alignment with said marking means when said length of flexible cable is extended in said line; and

attaching means affixed to said second end of said length of flexible cable adapted to enable the fixation of said length of flexible cable and the attached indicating means in a second position out of alignment with said line.

5,603,718
SUTURING DEVICE
Zhongren Xu, Kanagawa, Japan, assignor to Terumo Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 30, 1995, Ser. No. 413,614
Claims priority, application Japan, Mar. 31, 1994, 6-085830
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—145 **8 Claims**



1. A suturing device comprising:

an elongate insertion lever to be inserted into a communicating tube for establishing communication between the interior and the exterior of the body cavity, said insertion lever having a leading end part and a basal end part,

a first needle retaining member disposed at the leading end part of said insertion lever and provided in the leading end part thereof with attach-detach means detachably holding a basal end part of an arcuately curved needle,

a second needle retaining member disposed in the leading end part of said insertion lever and provided in the leading end part thereof with attach-detach means capable of detachably holding the basal end part of said needle,

revolving means for revolving each of said needle retaining members at an angle within a stated range relative to said insertion lever,

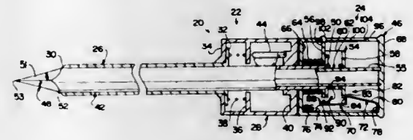
open-close means for switching a posture of each of said first needle retaining member and said second needle retaining member between an "open" posture permitting the respective needle retaining member to be inserted into said communicating tube and a "close" posture permitting a leading end of said needle held by said first needle retaining member to be positioned near the leading end of said second needle retaining member, and

a manipulating part disposed in the basal end part of said insertion lever and adapted to manipulate said needle retaining members, said revolving means, and said open-close means by remote controls,

said attach-detach means of said second needle retaining member being adapted to hold in place the leading end of the needle held in place by said attach-detach means of said first needle retaining member while said second needle retaining member is in said "close" posture,

said needle retaining members each being formed in an arcuate shape and assuming a practically circular shape while they are in the "close" posture for holding in place the needle.

5,603,719
RETRACTABLE SAFETY TROCAR WITH MULTIPLE TRIGGERING AND/OR MOVING COMPONENTS
InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131
Continuation-in-part of Ser. No. 247,205, May 20, 1994, and Ser. No. 254,007, Jun. 3, 1994, Pat. No. 5,478,317, said Ser. No. 247,205is a division of Ser. No. 800,507, Nov. 27, 1991, abandoned, said Ser. No. 254,007is a continuation of Ser. No. 800,507, Nov. 27, 1991. This application Jan. 18, 1995, Ser. No. 374,380
Int. Cl.[6] A61M *5/20*
U.S. Cl. 606—185 **11 Claims**



1. A safety penetrating instrument for establishing a portal in the wall of an anatomical cavity comprising

a housing;

an elongate portal sleeve for introducing medical instruments into the anatomical cavity, said portal sleeve having a proximal end mounted by said housing and a distal end for introduction in the anatomical cavity, said portal sleeve being movable proximally relative to said housing during penetration of the anatomical cavity wall from an extended rest position to a retracted position;

portal sleeve bias means for biasing said portal sleeve distally toward said rest position;

a penetrating member disposed within said portal sleeve and having a distal end for penetrating the anatomical cavity wall, said penetrating member being movable relative to said portal sleeve between an extended position where said penetrating member distal end protrudes from said portal sleeve distal end and a retracted position where said penetrating member distal end is proximally spaced from said portal sleeve distal end, said penetrating member being removable from said housing and said portal sleeve;.

retracting means for moving said penetrating member from said penetrating member extended position to said penetrating member retracted position;

means for manually moving said penetrating member from said penetrating member retracted position to said penetrating member extended position;

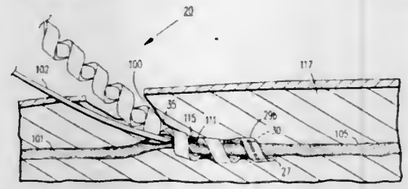
locking means for locking said penetrating member in said penetrating member extended position while permitting a predetermined amount of proximal movement of said penetrating member during penetration of the anatomical cavity wall;

penetrating member bias means for biasing said penetrating member distally in said penetrating member extended position while permitting proximal movement of said penetrating member during penetration of the anatomical cavity wall; and

releasing means responsive to penetration of said safety penetrating instrument into the anatomical cavity for triggering release of said locking means to permit said retracting means to move said penetrating member proximally from said penetrating member extended position to said penetrating member retracted position.

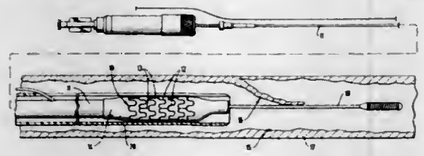
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5,603,720
SURGICAL METHOD FOR USE WITH TRANSLUMINAL DILATION CATHETER
Maciej J. Kieturakis, 372 Beverly Dr., San Carlos, Calif. 94070
Filed Jan. 27, 1995, Ser. No. 380,674
Int. Cl.[6] A61B *17/32*
U.S. Cl. 606—191 **9 Claims**



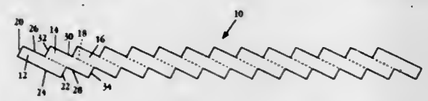
1. A method of intraluminally treating an anatomic vessel, comprising the steps of:
introducing a helically shaped vessel-constraining structure into an interior of a body to a position proximate to an exterior of a vessel wall around a diseased portion of said anatomic vessel;
positioning said vessel-constraining structure substantially around said diseased portion thereby constraining a transverse dimension of said diseased portion;
advancing a working end of a transluminal catheter to said diseased portion; and
treating said diseased portion intraluminally with said working end of said transluminal catheter.

5,603,721
EXPANDABLE STENTS AND METHOD FOR MAKING SAME
Lilip Lau, Sunnyvale; William M. Hartigan, Fremont, and John J. Frantzen, Copperopolis, all of Calif., assignors to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.
Division of Ser. No. 281,790, Jul. 28, 1994, Pat. No. 5,514,154, which is a continuation-in-part of Ser. No. 164,986, Dec. 9, 1993, abandoned, which is a continuation of Ser. No. 783,558, Oct. 28, 1991, abandoned. This application Nov. 13, 1995, Ser. No. 556,516
Int. Cl.[6] A61M *29/00*
U.S. Cl. 606—195 **7 Claims**



1. A method for implanting a stent in a body lumen, the stent having a plurality of cylindrical elements which are expandable in the radial direction and which are interconnected so as to be generally aligned on a common longitudinal axis, the cylindrical elements forming an outer wall surface, the stent being adapted for mounting on a catheter for intraluminal delivery, the method comprising the steps of:
mounting the stent on a distal end of the catheter for intraluminal delivery through a body lumen;
advancing the catheter and stent through the body lumen;
implanting the stent in the body lumen by expanding the stent from a first delivery diameter, which is smaller than the inside diameter of the body lumen, to a second implanted diameter in which the stent embeds in the body lumen;
forming a plurality of outwardly projecting edges on the outer wall surface of the cylindrical elements of the stent as the stent expands from the first delivery diameter to the second implanted diameter;
embedding the outwardly projecting edges in the body lumen to firmly attach the stent; and
withdrawing the catheter from the body lumen leaving the stent firmly implanted in the body lumen.

5,603,722
INTRAVASCULAR STENT
Loc Phan, San Jose; Michael Froix, Mountain View, and Simon Stertzer, Woodside, all of Calif., assignors to Quanam Medical Corporation, Mountain View, Calif.
Filed Jun. 6, 1995, Ser. No. 486,271
Int. Cl.[6] A61M *29/00*
U.S. Cl. 606—198 **30 Claims**



1. A stent designed to be carried on the balloon of a balloon catheter to a target site in a vessel, comprising
a series of expandable, strip-like segments, each adapted for movement, in a substantially radial direction, between a closed, high-curvature condition and an expanded, low-curvature condition, upon exposure to a selected stimulus,
said segments being joined along offsetting side regions, such that with the segments in their high-curvature condition, the stent is adapted to form a flexible, cylindrical sleeve on such balloon, and upon exposure to such stimulus, the segments in the stent expand toward their low-curvature condition until such movement is constrained by the walls of such vessel.

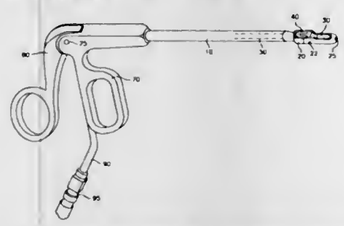
5,603,723
SURGICAL INSTRUMENT CONFIGURED TO BE DISASSEMBLED FOR CLEANING
Ernie Aranyi, Easton, and Douglas J. Cuny, Bethel, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Filed Jan. 11, 1995, Ser. No. 371,251
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—205 **22 Claims**



1. A surgical apparatus configured to be disassembled for cleaning and reassembled for utilization comprising:
a) a handle assembly including a barrel portion and an actuation handle pivotally associated with the barrel portion;
b) an elongate body assembly having opposed proximal and distal end portions and an interior bore extending therethrough, a proximal end portion of the elongate body releasably engaged within the barrel portion of the handle assembly;
c) an elongate control shaft dimensioned to extend through the interior bore of the body assembly and having opposed proximal and distal end portions, a jaw housing attached to the distal end portion of the control shaft, and a pair of jaw members supported in the housing and actuable by the control shaft, the jaw housing releasably engaged to the body assembly within the interior bore thereof; and
d) an engaging mechanism associated with the barrel portion of the handle assembly, the engaging mechanism releasably engaging the control shaft adjacent the proximal end thereof,

whereby pivotal movement of the actuation handle effectuates cooperative movement of the jaw members between open and closed positions.

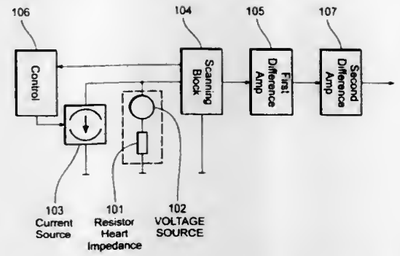
5,603,724
SUCTION PUNCH
Paul D. O'Connor, East Bridgewater, Mass., assignor to TNCO, Inc., Whitman, Mass.
Filed Feb. 13, 1995, Ser. No. 387,312
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—207 **14 Claims**



1. A miniature articulated tip tool assembly comprising:
(a) an elongated housing defining a channel therein and having at a distal end thereof a pivotal mounting for at least one jaw member;
(b) an elongated drive member positioned within said channel terminating substantially at its distal end with at least one linking means;
(c) a first jaw member (i) mounted for rotation on said pivotal mounting; (ii) engaging said drive member linking means for rotating said jaw member reciprocally towards or away from a second jaw member; and (iii) provided with a fluid channel axially therethrough;
(d) said second jaw member (i) attached to said elongated housing; and (ii) provided with a fluid channel axially therethrough;
such that when said first jaw member is rotated toward said second jaw member into axial alignment with said second jaw member, each of said fluid channels are axially aligned and a sealed path is provided through the fluid channels of said jaw members to the distal tip of said tool assembly.

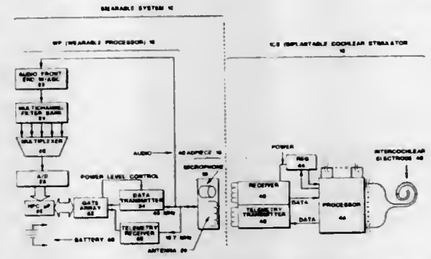
5,603,725
CIRCUIT FOR MEASURING IMPREDANCE IN THE HEART
Max Schaldach, Erlangen, Germany, assignor to Biotronik Mess- und Therapiegeraete GmbH Ingenieurbuero Berlin, Berlin, Germany
PCT No. PCT/DE93/00888, § 371 Date Mar. 17, 1995, § 102(e) Date Mar. 17, 1995, PCT Pub. No. WO94/06512, PCT Pub. Date Mar. 31, 1994
PCT Filed Sep. 16, 1993, Ser. No. 403,699
Claims priority, application Germany, Sep. 17, 1992, 42 31 602.2
Int. Cl.[6] A61N *1/362*
U.S. Cl. 607—11 **8 Claims**

1. A circuit for determining the impedance in a heart, a pacemaker electrode to which voltages are applied being disposed in the ventricle chamber of the heart, the circuit using the pacemaker electrode, the circuit comprising:
a current source operatively connected to the pacemaker electrode to apply current thereto, the current source having a current direction which can be switched;
switching means for switching the current direction of the current source;
measuring means for measuring the voltage applied to the pacemaker electrode at different measuring times; and
determining means for determining a value representative of the impedance in the heart by determining a difference between



the voltages applied to the pacemaker electrode at two of the different measuring times measured by the measuring means;
wherein currents having an identical magnitude but having opposite directions are applied to the pacemaker electrode by the current source which is switched by the switching means so that at the two respective measuring times the respective currents applied have opposite directions.

5,603,726
MULTICHANNEL COCHLEAR IMPLANT SYSTEM INCLUDING WEARABLE SPEECH PROCESSOR
Joseph H. Schulman, Santa Clarita; David I. Whitmoyer, Los Angeles; John C. Gord, Venice, and Primoz Strojnik, Granada Hills, all of Calif., assignors to Alfred E. Mann Foundation For Scientific Research, Sylmar, Calif.
Continuation of Ser. No. 752,069, Aug. 29, 1991, abandoned, which is a continuation-in-part of Ser. No. 411,563, Sep. 22, 1989, abandoned. This application Feb. 26, 1993, Ser. No. 23,584
Int. Cl.[6] A61N *1/34*
U.S. Cl. 607—57 **21 Claims**



1. A system for electrically stimulating sensory nerves in the cochlea via electrically powered stimulating electrodes, said system including:
a wearable speech processor comprising:
means for generating a plurality of channels of electrical information in response to an external audio stimulus,
means for generating a power signal,
means for transmitting said plurality of channels of electrical information and said power signal across the skin of a patient to an implantable device, and power means for providing operating power to said wearable speech processor; and
an implantable cochlear stimulator (ICS), said ICS comprising:
power receiving means for receiving said power signal from said power signal generating means of said wearable speech processor,
feedback means for controlling the amount of power received by said ICS through said power signal,
a plurality of storage means for storing an electrical charge from power received through said power receiving means,
signal receiving means for receiving the plurality of channels of electrical information and converting the electrical infor-

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mation in each channel to a corresponding data signal, thereby providing a plurality of data channels, each containing data signals,

an intracochlear electrode array comprising a plurality of cochlea-stimulating electrodes, and

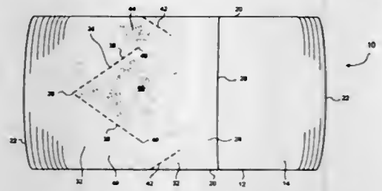
coupling means for selectively coupling each cochlea-stimulating electrode of said electrode array to a respective one of said plurality of storage means and for sourcing an amount of current therefrom that varies as a function of the data signals present within a corresponding one of the plurality of data channels.

5,603,727

THERMAL PACK WITH INTERRELATED COMPARTMENTS

Donald W. Clark, and Jill Clark, both of 1512 W. Ileso Cir., Mesa, Ariz. 85202

Filed Dec. 5, 1995, Ser. No. 567,194
Int. Cl.[6] A61F *7/00*
U.S. Cl. 607—108 **6 Claims**



1. A thermal pack for application to the body comprising:

a pliable container having a top surface and a bottom surface, said top and bottom surfaces being connected to each other about their periphery thereby forming opposing side walls and opposing end walls, said container enclosing an interior space;

heat retaining particles loosely confined for movement within the container;

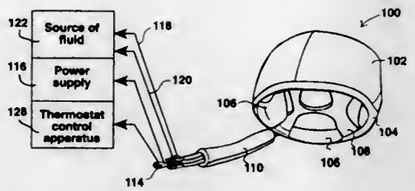
a barrier within the container forming a pocket in said container into which particles may be directed, said barrier also forming at least one narrowing sleeve-like area between the barrier and one of the walls whereby said pocket and said sleeve are adjacent to each other, said barrier having one side which facilitates the passage of the particles into the sleeve for movement past the barrier and a second side which forms a catch for retaining particles within the pocket whereby lifting one end wall above its opposing end wall will cause particles to flow through the sleeve area and congregate opposite the pocket opening, and then lifting the opposing wall will cause a plurality of particles to flow into the pocket, said barrier being chevron shaped, having a point located centrally between the side walls and toward one of the end walls, and wings angling backward from said point, the space between the wings forming the pocket, said wings angling toward the sidewalls forming said narrowing sleeve whereby said chevron directs particles into said sleeve, and a second barrier extending outwardly from a sidewall in the same general direction as the wings, said sidewall at least partially blocking the straight line flow of particles back through the narrowest part of the sleeve and to the end of the container toward the point.

5,603,728

SCALP COOLING/HEATING APPARATUS

Freddy Pachys, P.O. Box 18368, Jerusalem 91181, Israel

Filed Jun. 20, 1994, Ser. No. 262,284
Int. Cl.[6] A61F *7/00*
U.S. Cl. 607—110 **16 Claims**



1. Scalp apparatus for regulating the temperature of the scalp of a wearer, said scalp apparatus comprising:

(a) a cap member, including:

(i) a helmet member fabricated from thermal conductive material for covering at least a portion of the scalp of a wearer;

(ii) thermally insulating layers for covering said helmet member;

(iii) spacing means to provide an air space between said helmet member and the scalp of the wearer, said spacing means including a headpiece member for spacing said helmet member from the scalp of the wearer, said headpiece member having apertures for allowing direct communication of the air within said air space and the wearer's scalp; and

(iv) a band member for embracing the hairline of the wearer, said band member connecting said thermally insulating layers, said helmet member and said headpiece member, said band member isolating the air within said air space from the surrounding atmosphere;

(b) at least one thermoelectric element connected to and in thermal communication with said helmet member for controllably heating and cooling said helmet member, including:

(i) a first thermal surface disposed toward and in thermal communication with said helmet member and a second thermal surface disposed away from said helmet member;

(ii) a positive and negative terminals electrically connectable to a power supply element; and

(c) a power supply element for providing electrical power to said at least one thermoelectric element, said power supply element having terminals,

said first thermal surface alternately functionable as a heating element and a cooling element according to the manner of electrical connection between said terminals of said at least one thermoelectric element and said terminals of said power supply element, thereby respectively heating and cooling said helmet member.

5,603,729

PORTABLE REUSABLE THERMAL THERAPEUTIC DEVICE

Blake B. Brown; Charles R. Mason, both of Moberly; Daniel J. Kohout, Columbia, all of Mo., and Joel C. Parrott, Gurnee, Ill., assignors to Baxter International Inc., Deerfield, Ill.

Filed Sep. 21, 1995, Ser. No. 531,428
Int. Cl.[6] A61F *7/00*
U.S. Cl. 607—114 **17 Claims**

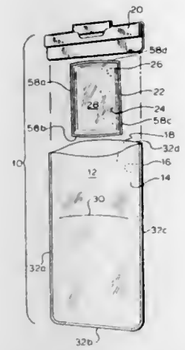
1. A thermal therapeutic device comprising an outer container and an inner container disposed within said outer container:

said outer container comprising at least one wall defining an interior chamber, said interior chamber being adapted for receiving a selected amount of water, said outer container having a resealable opening;

said inner container comprising at least one wall defining an interior chamber and a predetermined amount of a substance disposed within said interior chamber, said substance adapted to react with water to change the temperature thereof;

whereby at least a portion of said inner container wall comprises a material that at least partially dissolves upon contact with water to allow said substance disposed within said inner container to mix with water added to said outer container to produce a temperature change; and

whereby said water and said substance can be discharged from said outer container through said opening and a fresh supply



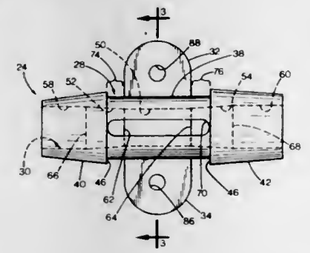
of water and a new inner container can be introduced through said opening and said opening resealed for repeated use.

5,603,730

SUTURE SLEEVE FOR IMPLANTABLE LEAD

D. Scott Romkee, Santa Clara, Calif., assignor to Ventritex, Inc., Sunnyvale, Calif.

Filed Jul. 19, 1995, Ser. No. 504,281
Int. Cl.[6] A61N *1/00*
U.S. Cl. 607—116 **23 Claims**



1. A suture sleeve comprising:

an elongated body having opposed ends and defining a bore extending from end to end of the body;

the body defining an aperture at a first intermediate position on the body and communicating with the bore and spaced from said opposed ends;

a pair of actuator tabs connected to a second intermediate position on the body and extending therefrom; and

at least a portion of the aperture being positioned between the tabs such that actuation of the tabs causes enlargement of the aperture.

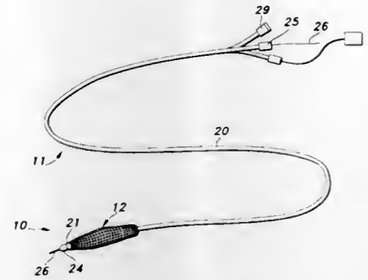
5,603,731

METHOD AND APPARATUS FOR THWARTING THROMBOSIS

Douglass G. Whitney, 11200 Bowen Rd., Roswell, Ga. 30075

Continuation of Ser. No. 342,717, Nov. 21, 1994, abandoned. This application Nov. 3, 1995, Ser. No. 553,011
Int. Cl.[6] A61M *29/00*; A61B *17/36*
U.S. Cl. 607—121 **11 Claims**

5. A thrombosis thwarting stent for buttressing an injured section of an artery of a patient and preventing congregation of blood platelets at the injured section of the artery, the artery having an artery wall, said stent comprising:



a substantially tubular electrically conductive body sized to be received within and bear against the artery for buttressing the artery against collapse;

a remotely actuatable electrical potential generator for generating an electronegative charge and an electropositive charge, said generator being incorporated into said tubular body so as not to restrict flow of blood through the artery when the tubular body is positioned therein;

first coupling means for coupling said generator to said conductive body to impart, upon activation of said generator, an electronegative charge to said conductive body; and

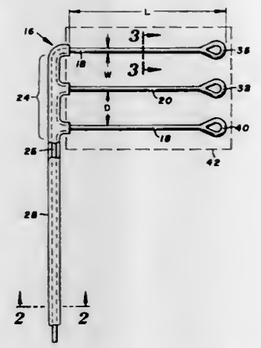
second coupling means for coupling said generator to a selected location of the artery wall to impart, upon activation of said generator, an electropositive charge to the artery wall.

5,603,732

SUBCUTANEOUS DEFIBRILLATION ELECTRODES

Roger W. Dahl, Andover; David K. Swanson; Stephen J. Hahn, both of Roseville; Douglas J. Lang, Arden Hills, and John E. Heil, St. Paul, all of Minn., assignors to Cardiac Pacemakers, Inc., St. Paul, Minn.

Continuation of Ser. No. 285,802, Aug. 4, 1994, Pat. No. 5,545,202, which is a continuation of Ser. No. 967,361, Jan. 4, 1993, Pat. No. 5,360,442, which is a continuation of Ser. No. 533,886, Jun. 6, 1990, Pat. No. 5,203,348. This application Nov. 6, 1995, Ser. No. 554,577
The portion of the term of this patent subsequent to Jun. 6, 2020, has been disclaimed.
Int. Cl.[6] A61N *1/05*
U.S. Cl. 607—129 **11 Claims**



1. A body implantable tissue stimulating electrode assembly, including:

an elongate, electrically conductive lead having a proximal end region and a distal end region; and

an electrode including a plurality of compliant, electrically conductive electrode segments, each of said segments having a nominal width and a length exceeding the nominal width, said

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electrode segments having respective and opposite first and second ends and being coupled to the distal end region of the lead for substantially simultaneous reception of tissue stimulating electrical pulses from a pulse generating means at the proximal end region of the lead, said electrode segments being arranged in spaced apart and side-by-side relation such that each of the electrode segments, over most of its length, is spaced apart from each one of the other electrode segments by a distance of at least 1.5 cm, each of the electrode segments being free of electrically insulative material at and along its periphery substantially over its entire length to provide an exposed reactive surface over substantially the entire length and periphery of the electrode segment, said electrode segments when receiving the tissue stimulating pulses cooperating to define an effective electrode area incorporating all of the electrode segments.

5,603,733

LEATHER SOFTENING

Adrian S. Allen, North Yorkshire, and Finlay D. Aiston, West Yorkshire, both of United Kingdom, assignors to Allied Colloids Limited, West Yorkshire, United Kingdom

PCT No. PCT/GB95/00842, § 371 Date Dec. 12, 1995, § 102(e) Date Dec. 12, 1995, PCT Pub. No. WO95/27800, PCT Pub. Date Oct. 19, 1995

PCT Filed Apr. 10, 1995, Ser. No. 564,033

Claims priority, application United Kingdom, Apr. 12, 1994, 9407226

Int. Cl.[6] C14C *9/00*

U.S. Cl. 8—94.21 **8 Claims**

1. A process of rendering leather flexible and water repellant by applying to the leather an aqueous solution comprising an amphoteric surfactant, which has the formula

$$R-Z-[NA-]_n-NQ_2$$
$$\quad\quad\quad

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winding the electrode structure into an oval shape by
providing a circular cylindrical mandrel having a selected diameter and winding the electrode structure around the mandrel,
removing the mandrel after winding the electrode structure, and
compressing the electrode structure into an oval shape;
wherein the diameter of the mandrel is selected to yield a wound electrode structure, following compression, having an overall length and width matching the predetermined length and width of the interior of the housing.

5,603,738
PROCESS AND DEVICE FOR PREPARING AN ABRASIVE

Hans Zeiringer, Kappel am Krappfeld, and Peter Janz, Klagenfurt, both of Germany, assignors to Treibacher Schleifmittel AG, Villach-Landskron, Austria

Filed Nov. 14, 1994, Ser. No. 339,081
Claims priority, application Germany, Nov. 15, 1993, 43 39 031.5
Int. Cl.[6] C09C *1/08*
U.S. Cl. 51—293 **10 Claims**

1. Process for preparing an abrasive based on corundum, said process comprising the following steps:
1.1 an Al_2O_3-containing starting component with an Al_2O_3 content of >98 wt. % is charged continuously or batchwise into a melting unit in an amount per unit of time whereby a melt sump formed in the melting unit will never exceed a maximum height of 200 mm during the entire furnace campaign,
1.2 the melt sump is allowed to solidify to form a corundum ingot,
1.3 the corundum ingot is subsequently removed and sized to form an abrasive grain having a grain shape factor exceeding 0.6.

5,603,739
ABRASIVE SUSPENSION SYSTEM

Edward J. Neuland, Houston, Tex., assignor to Diamond Scientific, Inc., Houston, Tex.

Filed Jun. 9, 1995, Ser. No. 488,513
Int. Cl.[6] B24D *3/34*
U.S. Cl. 51—298 **15 Claims**

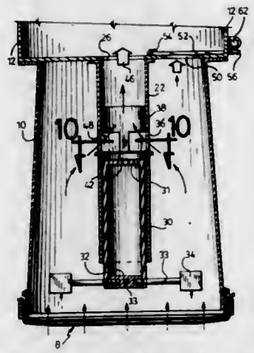
1. An abrasive composition consisting essentially of:
from about 5% to about 94% deionized water;
from about 5% to about 94% polyhydric alcohol;
from about 0.00075% to about 0.5% of surfactant;
from about 0.0015% to about 1% polymer; and
from about 0.001% to about 50% abrasives.

5,603,740
SUCTION ACTIVATED RECIPROCATING SYSTEM

Michel Roy, 1301, rue Jean Guy, Prévost, Québec, Canada

Filed Mar. 27, 1995, Ser. No. 411,182
Int. Cl.[6] B01D *41/00*
U.S. Cl. 55—283 **13 Claims**

1. In combination, a central vacuum cleaning apparatus and a suction activated reciprocating system, said suction activated reciprocating system comprising a generally upright auction tube, a suction source communicating with the upper end of said suction tube, a plug slidable within said tube for upward movement to an upward limit position under the action of said suction source and for downward movement under gravity to a downward limit position when suction is not exerted on said plug through said tube, said tube having a bypass port located above said plug while in its upward limit position, and a valve member located in said tube above said plug and operable by said plug to take a valve position

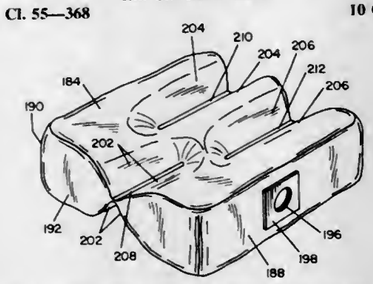


opening said bypass port during upward movement of said plug and operable by gravity to take a valve position closing said bypass port during downward movement of said plug whereby said plug continuously reciprocates up by suction and down by gravity upon sequential closing and opening of said bypass port;
said central vacuum cleaning apparatus comprising a dust collecting tank having a circular side wall, a closure plate closing the upper end of said tank, a dust transporting suction line extending though said closure plate and opening within said tank tangentially of its side wall, a chamber depending from said closure plate, said suction source including a motor operated air suction blower mounted on said closure plate and communicating with said chamber, said suction tube secured to said chamber and extending centrally and downward within said dust collecting tank, a skirt depending from said chamber, surrounding said suction tube and located within said dust collecting tank, said skirt having an open area, a filter extending across said open area whereby air and dust is discharged from said transporting suction line tangentially within said tank to cause a cyclonic effect and lighter weight dust particles collect on said filter and further including dust dislodging means acting on said filter and driven by said plug.

5,603,741
VACUUM CLEANER AND FILTER BAG WITH AIR MANAGEMENT

Robert A. Frey, Westlake, Ohio, assignor to HMI Industries, Inc., Cleveland, Ohio

Continuation of Ser. No. 239,583, May 9, 1994, abandoned.
This application Dec. 26, 1995, Ser. No. 578,372
Int. Cl.[6] B01D *46/00*
U.S. Cl. 55—368 **10 Claims**



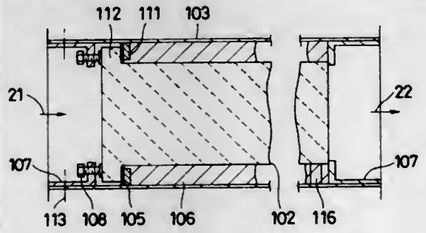
1. In a vacuum cleaner including housing means having air inlet means and air outlet means, motor driven fan means for generating an airstream through said housing means in the direction from said air inlet means toward said outlet means, and filter means in said housing means for removing particulate material from said airstream, the improvement comprising: said filter means including filter bag means of air permeable material having opening means

therein for the flow of said airstream into said filter bag means, weir means in said filter bag means intersecting said airstream downstream from said opening means, said weir means having upstream and downstream sides with respect to said direction of said airstream and edge means between said sides, said airstream having a transverse dimension, and said edge means intersecting said airstream about midway of said transverse dimension, whereby air flowing across said edge means creates a pressure drop across said weir means and a low pressure area adjacent said downstream side into which particulate material in said airstream is drawn by said pressure drop, said filter bag including a pair of opposed walls and said weir means including opposed portions of said opposed walls joined together along a line of juncture transverse to said direction of air flow.

5,603,742
DUST REMOVING APPARATUS

Kiyoshi Nagashima; Tetsuya Ueda; Hisataka Urakata; Tetsuya Fujino; Yuichiro Kitagawa, all of Nagasaki; Satoshi Uchida, Tokyo; Yasuo Akitu, Handa, and Yoslaki Hori, Nagoya, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, and NGK Insulators, Ltd., Nagoya, both of Japan

PCT No. PCT/JP94/01032, § 371 Date Jan. 27, 1995, § 102(e) Date Jan. 27, 1995, PCT Pub. No. WO95/00233, PCT Pub. Date May 1, 1995
PCT Filed Jun. 27, 1994, Ser. No. 374,723
Claims priority, application Japan, Jun. 28, 1993, 5-156910; May 26, 1994, 6-112603
Int. Cl.[6] B01D *46/00*
U.S. Cl. 55—502 **2 Claims**

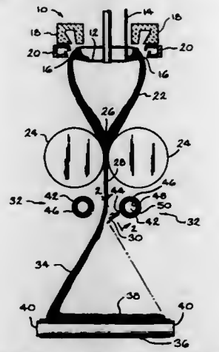


1. A dust removing apparatus for converting dirty gas into clean gas, the apparatus comprising:
a plurality of filter elements each of which is formed of a porous ceramic material and has a honeycomb structure, the plurality of filter elements being assembled into a substantially single honeycomb pack unit, and each filter element having a gas-receiving end through which dirty gas enters the filter element and a gas-emitting end via which clean gas exits the filter element;
a plurality of mounting frames each of which holds one of the filter elements and permits movement of the filter element with respect to the mounting frame in the direction which dirty gas enters the filter element; and
a honeycomb pack frame holding the plurality of mounting frames in the single honeycomb pack unit;
wherein each filter element includes a flange at the gas-receiving end thereof, the flange having a first side disposed at the gas-receiving end of the filter element and a second side disposed away from the gas-receiving end in a direction toward the gas-emitting end of the filter element, and wherein the corresponding mounting frame for each filter element includes a flange with a surface located adjacent the second side of the filter element flange, wherein a seal is maintained between the respective flanges by pressure exerted by the dirty gas on the gas-receiving end of the filter element which forces the flange of the filter element toward the surface of the flange of the mounting frame; and
wherein each mounting frame includes fittings disposed adjacent the gas-receiving and gas-emitting ends of the filter element, and wherein the fitting located at the gas-receiving end is provided with a pressing bolt which engages the flange of the filter element, a holding piece is disposed between the filter element near the gas-emitting end thereof and the mounting frame, and wherein fiber fills a space between the filter element and the mounting frame.

5,603,743
HIGH FREQUENCY AIR LAPPER FOR FIBROUS MATERIAL

David P. Aschenbeck, Newark; William A. Watton, Pickerington, and James G. Snyder, Newark, all of Ohio, assignors to Owens-Corning Fiberglas Technology Inc., Summit, Ill.

Filed Mar. 31, 1995, Ser. No. 414,694
Int. Cl.[6] C03B *37/06*
U.S. Cl. 65—458 **17 Claims**



1. A method for distributing fibrous material comprising: establishing a flow of fibrous material; positioning a pair of flow distributors on opposite sides of the flow of fibrous material to direct gaseous flows into contact with the flow of fibrous material, each flow distributor comprising a first surface having a set of one or more openings for the emission of gas, a second surface having a set of one or more orifices for the emission of gas, and a pressurized source of gas in contact with the second surface, one of the first and second surfaces being moveable with respect to the other of the first and second surfaces to intermittently align some of the openings with some of the orifices, thereby enabling gas from the pressurized source of gas to be emitted through the first and second surfaces and into contact with the flow of fibrous material to distribute the fibrous material; and moving one of the first and second surfaces relative to the other of the first and second surfaces to control the emission of gas from the flow distributor.

5,603,744
PROCESS FOR ESTABLISHING OPTIMUM SOIL CONDITIONS BY NATURALLY FORMING TILTH

Rudolf Körner, Hessigheimer Strasse 22, D-70437 Stuttgart, Germany

PCT No. PCT/EP92/02356, § 371 Date Nov. 15, 1994, § 102(e) Date Nov. 15, 1994, PCT Pub. No. WO93/08143, PCT Pub. Date Apr. 29, 1993
PCT Filed Oct. 13, 1992, Ser. No. 211,801
Claims priority, application Germany, Oct. 14, 1991, 41 33 984.3
Int. Cl.[6] C05F *3/00;5/00;9/04;11/02*
U.S. Cl. 71—9 **17 Claims**

1. A process for producing the crumbly component, mineral humus, through the biological disintegration of minerals in the presence of Ca compounds, clay and protein- and lignocellulose-containing plant and protein-containing animal organic wastes, said process comprising the following steps:

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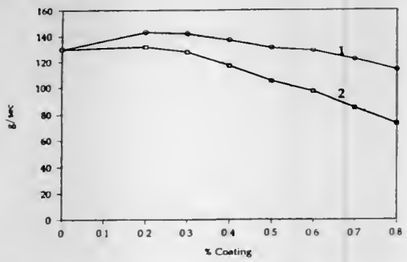
(a) pulverizing a mineral mixture, comprising at least potassium, magnesium, phosphate and silicate, all in insoluble form;
(b) pre-grinding the plant and animal organic wastes;
(c) micronizing the organic waste, with homogeneous admixture of the mineral mixture; and
(d) fermenting the mixture of micronized organic waste and pulverized mineral mixture under microbe-friendly conditions in the presence of a pulverized Ca compound and clay.

5,603,745

AGRICULTURAL COMPOSITION AND CONDITIONING AGENT FOR REDUCING HYGROSCOPICITY AND DUST FORMATION OF FERTILIZERS

Jarl M. Pettersen, Larvik; Torstein Obrestad, Ulefoss, and Susanne G. Snartland, Skien, all of Norway, assignors to Norsk Hydro a.s, Oslo, Norway

Filed Jun. 23, 1995, Ser. No. 494,084
Claims priority, application Norway, Jun. 24, 1994, 942419
Int. Cl.[6] C05C *5/00*; C05G *3/00*
U.S. Cl. 71—58 **10 Claims**



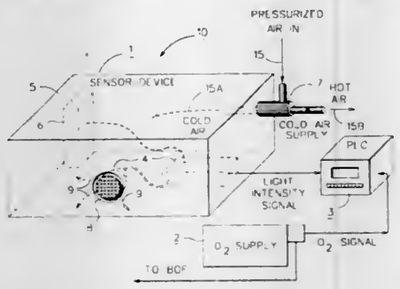
1. An agricultural composition comprising a substrate being a nitrate-containing fertilizer, and 0.1–2 weight % of a coating comprising 10–50 weight % wax, 90–40 weight % oil and 1–30 weight % resin being oil-soluble and miscible with the wax.

5,603,746

METHOD AND APPARATUS TO DETERMINE AND CONTROL THE CARBON CONTENT OF STEEL IN A BOF VESSEL

Alok Sharan, Allentown, Pa., assignor to Bethlehem Steel Corporation

Filed Oct. 31, 1995, Ser. No. 550,590
Int. Cl.[6] C21C *5/30*
U.S. Cl. 75—375 **28 Claims**



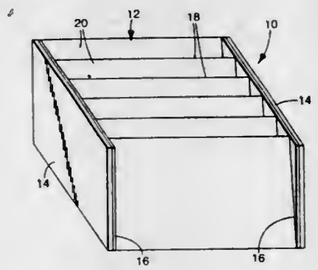
1. A method of determining carbon content of a heat during an oxygen blow into a BOF vessel, comprising:
a) measuring light intensity emitted from the BOF vessel including;
i) measuring an (ILI) value indicative of an increase in light intensity emitted from the BOF vessel,
ii) measuring a (DLI) value indicative of a decrease in light intensity emitted from the BOF vessel, and
iii) calculating a DLI/ILI ratio;
b) measuring an amount of oxygen blown into the BOF vessel;
c) calculating in-blow % carbon content of the heat using said DLI/ILI ratio and said amount of oxygen blown;
d) discontinuing the oxygen blow into the BOF vessel when an in-blow % carbon content equal to an aim carbon for the heat is calculated; and
e) tapping the heat having said in-blown % carbon content calculated equal to said aim carbon for further processing into a finished steel product.

5,603,747

AIR FILTER AND METHOD OF PRODUCING THE SAME

Yoshiya Matuda; Masahiro Nawa, and Tadayoshi Takiguchi, all of Tokyo, Japan, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

PCT No. PCT/US94/01088, § 371 Date Jun. 19, 1995, § 102(e) Date Jun. 19, 1995, PCT Pub. No. WO94/17897, PCT Pub. Date Aug. 18, 1994
PCT Filed Jan. 31, 1994, Ser. No. 454,392
Claims priority, application Japan, Feb. 2, 1993, 5-15296
Int. Cl.[6] B01D *46/52*; B31F *5/00*
U.S. Cl. 55—497 **9 Claims**



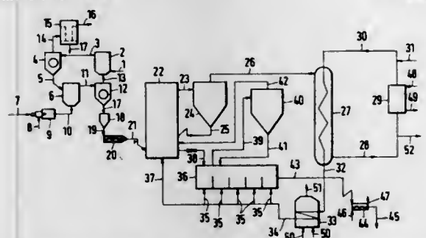
1. An air filter comprising:
a filter member formed by folding a sheet of porous material into a pleated form, the material being capable of filtering contaminated air, and having a plurality of filter portions connected through bent portions;
holding members resistant to stretching forces fixed to edge portions of said filter member for holding said filter member in said pleated form wherein adjacent filter portions are spaced with a predetermined gap forming the pleated form of the filter member, and
non-woven fabric members made of a thermoplastic polymeric fiber material said non-woven fabric members arranged between the edge portions of said filter member and said holding members, which non-woven fabric members are at least partially melted by being heated to a predetermined temperature said non-woven fabric members mutually fixing said filter member edge portions to said holding members.

5,603,748

PROCESS AND APPARATUS FOR A DIRECT REDUCTION OF IRON OXIDE CONTAINING MATERIALS TO FORM FE_3C

Martin Hirsch, Friedrichsdorf; Reza Husain, Friedberg; Alpaydin Saatci, Frankfurt a.M., and Wolfgang Bresser, Grossostheim, all of Germany, assignors to Lurgi Metallurgie GmbH, Frankfurt am Main, Germany

Division of Ser. No. 261,257, Jun. 17, 1994, Pat. No. 5,527,379. This application Apr. 18, 1996, Ser. No. 634,737
Claims priority, application Germany, Jun. 19, 1993, 43 20 359.0; Mar. 24, 1994, 44 10 093.0
Int. Cl.[6] C21B *13/14*
U.S. Cl. 75—436 **9 Claims**



1. A method of reducing a fine-grain iron oxide comprising the steps of:
(a) feeding a fine-grain iron oxide to a preheater and directly preheating said fine-grain iron oxide in said preheater by contact with a combustion gas in a suspension therein, and recovering a preheated fine-grain iron oxide from said suspension in a cyclone;
(b) introducing said preheated fine-grain iron oxide into a circulating fluidized bed reactor connected to a recycling cyclone for recirculating particles withdrawn from an upper portion of said circulating fluidized bed reactor and returning said particles to a lower portion of said circulating fluidized bed reactor whereby a partially reduced particulate product is formed in said circulating fluidized bed reactor;
(c) feeding said partially reduced particulate product to a horizontally elongated fluidized bed reactor fluidized from below and having a length-to-width ratio of at least 2:1 and provided with a plurality of transverse overflow weirs over which solids flow, thereby producing a finally reduced product;
(d) recovering from said recycle cyclone an exhaust gas and cooling said exhaust gas in indirect heat exchange with a reducing gas consisting predominantly of H_2;
(e) producing said reduced reducing gas from at least part of the exhaust gas cooled in step (d) by adding hydrogen thereto; and
(f) heating the reducing gas following step (d) by passing the reducing gas through a fuel-fired reducing gas reheater and supplying hot reducing gas as fluidizing gas to said horizontally elongated fluidized bed reactor and to said circulating bed reactor.

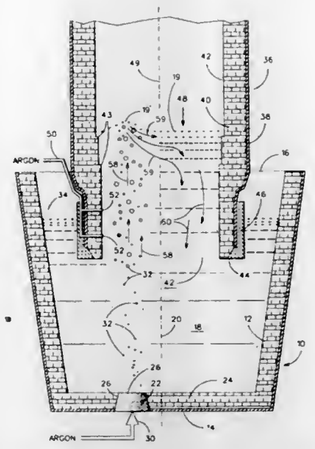
5,603,749

APPARATUS AND METHOD FOR VACUUM TREATING MOLTEN STEEL

Philip D. Stelts, Center Valley, Pa., assignor to Bethlehem Steel Corporation, Del.

Filed Mar. 7, 1995, Ser. No. 399,685
Int. Cl.[6] C21C *7/10*
U.S. Cl. 75—511 **46 Claims**

33. Method of vacuum treating molten steel, comprising the steps of:
a) providing a ladle containing a supply of molten steel;
b) immersing into the ladle and into the steel a barrel degasser having a shell with a substantially continuous opening therethrough defining a treatment space and causing some of the molten steel to be received in the treatment space;
c) bubbling a supply of an inert gas in the steel within the ladle so that the gas causes molten steel to be lifted into the treatment space;
d) radially directing at least a first stream of inert gas within the treatment space so that the stream intersects the steel being lifted and thereby causes some of the molten steel to be moved within the degasser; and
e) applying a vacuum to the degasser.

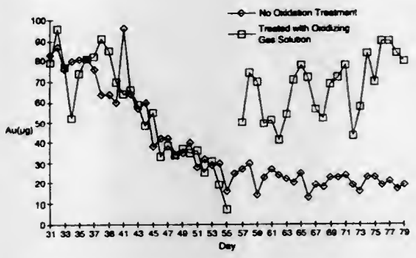


5,603,750

FLUOROCARBON FLUIDS AS GAS CARRIERS TO AID IN PRECIOUS AND BASE METAL HEAP LEACHING OPERATIONS

Michael J. Sierakowski, Grant Township, Washington County, and Jennifer E. Waddell, Burnsville, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 14, 1995, Ser. No. 514,808
Int. Cl.[6] C22B *11/00*
U.S. Cl. 75—743 **15 Claims**



1. A method of leaching precious and base metal values from metal bearing ore and ore concentrates comprising the steps of:
treating a metal bearing ore or ore concentrate by contacting said metal-bearing ore or ore concentrate with an oxidizing gas solution comprising a solution of an oxidizing gas dissolved in a perfluorinated liquid; and
extracting the precious or base metal values from the treated metal-bearing ore or ore concentrate.

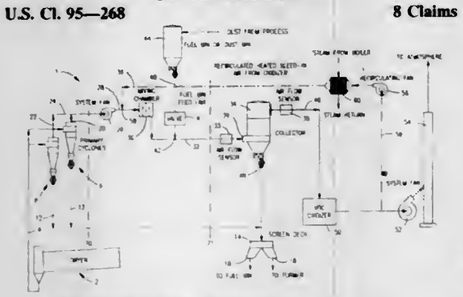
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5,603,751

METHOD AND APPARATUS FOR REMOVING PARTICULATE MATERIAL FROM A WOOD DRYING SYSTEM

Ross A. Ackerson, Lee's Summit, Mo., assignor to Mac Equipment, Inc., Sabetha, Kans.

Filed Jun. 2, 1995, Ser. No. 458,972
Int. Cl.[6] B01D *50/00*
U.S. Cl. 95—268 **8 Claims**



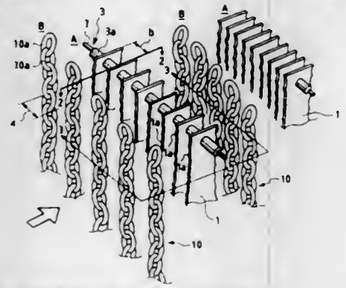
1. A gas filtration system comprising:
a primary separator for removing a majority of a primary particulate material from a gas stream and for discharging a filtered gas stream into a primary outlet line which retains an unfiltered portion of said primary particulate material;
a secondary particulate source, communicating with said primary outlet line of said primary separator, for introducing secondary particulate material into said filtered gas stream to produce a conditioned gas stream containing said unfiltered portion of said primary particulate material and said secondary particulate material;
a secondary filter, communicating with said primary outlet line downstream of said secondary particulate source, for removing said unfiltered portion of said primary particulate material and said secondary particulate material from said conditioned gas stream to output a resultant gas stream; and a heat source, located between the primary separator and the secondary filter, for heating the conditioned gas stream at a point along said primary outlet line upstream of said secondary filter.

5,603,752

ELECTROSTATIC PRECIPITATOR

Keiichi Hara, Tokyo, Japan, assignor to Filtration Japan Co., Ltd., Yamagata-ken, Japan

Filed May 31, 1995, Ser. No. 455,033
Claims priority, application Japan, Jun. 7, 1994, 6-148670
Int. Cl.[6] B03C *3/45*
U.S. Cl. 96—39 **20 Claims**



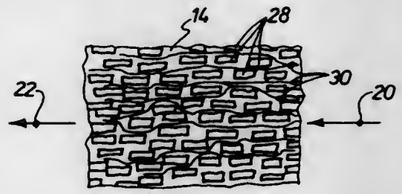
13. An electrostatic precipitator, comprising:
a frame;
at least one dust-collecting electrode group mounted on the frame, each dust-collecting electrode group comprising a plurality of freely movably mounted deformable dust-collecting electrodes arranged in a plane and spaced at a uniform spacing from one another; and
at least one discharge electrode group mounted on the frame, each discharge electrode group comprising a plurality of flat elongated discharge electrodes arranged in a plane substantially parallel to the plane of the at least one dust-collecting electrode group, the plurality of discharge electrodes of each discharge electrode group being spaced at a uniform spacing from one another and arranged parallel to one another and substantially parallel to a gas flow direction of a gas flowing through the electrostatic precipitator, wherein movement of a gas through the electrostatic precipitator causes deformation of the dust-collecting electrodes, the deformation causing collected dust to fall off the dust-collecting electrodes.

5,603,753

FILTER DEVICE HAVING ELONGATE ABSORBER PARTICLES FIXED TO A FLAT CARRIER

Manfred Krull, Eckersdorf, and Gerald Rosenberg, Höchstädt, both of Germany, assignors to Helsa-Werke Helmut Sandler GmbH & Co. KG, Gefrees, Germany

Filed Sep. 6, 1995, Ser. No. 524,370
Claims priority, application Germany, Sep. 10, 1994, 44 32 339.5
Int. Cl.[6] B01D *53/04*
U.S. Cl. 96—121 **8 Claims**



1. A filter device comprising: a filter housing having an inlet for a gaseous medium to be filtered and an outlet for the filtered gaseous medium; a flat carrier in the filter housing and constituting a plurality of mutually adjacent carrier layers of a flat-surfaced configuration and assembled to form a stack of at least substantially rectangular parallelepipedic shape fixed in the filter housing, the carrier layers being disposed in relation to the inlet and the outlet of the filter housing in such a way that the gaseous medium to be filtered does not pass through the carrier layers but only flows along the carrier layers; and adsorber particles of an elongate configuration differing from a spherical shape and fixed to the carrier layers in an orientation at least approximately in the flow direction of the gaseous medium to be filtered.

5,603,754

COMPOSITION AND PROCESS FOR TREATING TINPLATE AND ALUMINUM

Tomoyuki Aoki, Chigasaki; Akio Shimizu, Isehara, and Masayuki Yoshida, Yokohama, all of Japan, assignors to Henkel Corporation, Plymouth Meeting, Pa.

PCT No. PCT/US94/07298, § 371 Date Jan. 5, 1996, § 102(e) Date Jan. 5, 1996, PCT Pub. No. WO95/02077, PCT Pub. Date Jan. 19, 1995
PCT Filed Jul. 5, 1994, Ser. No. 571,951
Claims priority, application Japan, Jul. 5, 1993, 5-165601
Int. Cl.[6] C09D *5/00*; **C23C** *22/05*
U.S. Cl. 106—14.12 **20 Claims**

1. An aqueous liquid composition suitable for treating both aluminum and tinplate surfaces to form a protective coating thereon, said aqueous liquid composition having a pH of 2.0 to 4.0 and consisting essentially of water and:

(A) at least one dissolved zirconium or titanium compound in an amount stoichiometrically equivalent to at least 10 ppm of the total of zirconium and titanium;
(B) an amount of dissolved oxidizing agent that has oxidizing power equivalent to that of a concentration of from 20 to 500 ppm of hydrogen peroxide;
(C) from 10 to 2000 ppm stoichiometric equivalent as F^- of a dissolved component selected from the group consisting of fluorine-containing anions and their corresponding acids; and
(D) at least 10 ppm of dissolved phosphate anions; and, optionally, one of more of:
(E) a component of organic acid that can form complex ions with dissolved tin or aluminum ions or both;
(F) dissolved aluminum ions; and
(G) dissolved tin ions.

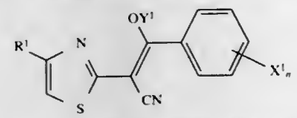
5,603,755

PREVENTIVE AGENT FOR FOULING ORGANISMS

Hideo Okada; Atsuya Mochizuki, and Hideo Ohi, all of Shizuoka-ken, Japan, assignors to Ihara Chemical Industry Co., Ltd., Tokyo, Japan

PCT No. PCT/JP95/00852, § 371 Date Dec. 28, 1995, § 102(e) Date Dec. 28, 1995, PCT Pub. No. WO95/29591, PCT Pub. Date Nov. 9, 1995
PCT Filed Apr. 28, 1995, Ser. No. 564,270
Claims priority, application Japan, Apr. 28, 1994, 6-114617
Int. Cl.[6] A01N *43/78*
U.S. Cl. 106—18.33 **13 Claims**

5. A composition for inhibiting growth of fouling organisms on structures in contact with water, which comprises:
a) one or more compounds having the formula:



(1)

wherein R^1 is lower alkyl, or phenyl which is unsubstituted or substituted by halogen or lower alkyl or both; each X^1 is a halogen atom; n is an integer of 1 to 5, with the proviso that when n is 2 or more, each X^1 is the same or different; and Y^1 is a group of the formula —Z—Y^2, wherein Z is sulfonyl and Y^2 is unsubstituted aryl or aryl substituted by a lower alkyl group, or a salt thereof; and
b) a suitable carrier agent.

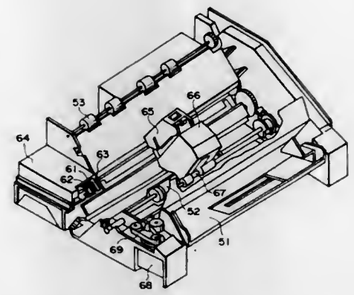
5,603,756

INK-JET TEXTILE PRINTING INK, INK-JET PRINTING PROCESS AND INSTRUMENT MAKING USE OF THE SAME, AND PROCESSED ARTICLE OBTAINED

Mariko Suzuki, Kawasaki; Masahiro Haruta, Tokyo; Shoji Koike, Yokohama; Koromo Shirota, Inagi, and Tomoya Yamamoto, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 226,331, Apr. 12, 1994, abandoned. This application May 23, 1995, Ser. No. 443,633
Claims priority, application Japan, Apr. 14, 1993, 5-087238
Int. Cl.[6] C09D *11/02*
U.S. Cl. 106—22 R **19 Claims**

1. An ink-jet textile printing ink comprising at least a reactive dye and water, wherein the ink further contains a hydrolyzate of the reactive dye in an amount of 1% to 50% by weight based on the weight of the reactive dye.



5,603,757

PHOTOCHROMIC BRIGHTENING PIGMENT

Katsumi Mizuguchi, Neyagawa; Naoya Yabuuchi, Toyonaka, and Keizou Ishii, Ashiya, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Mar. 14, 1995, Ser. No. 412,081
Claims priority, application Japan, Mar. 18, 1994, 6-049344
Int. Cl.[6] C09C *1/62*
U.S. Cl. 106—404 **13 Claims**

1. A photochromic brightening pigment comprising:
a brightening pigment; and
a photochromic material being encapsulated so as to adhere it to the surface of said brightening pigment.

5,603,758

COMPOSITION USEFUL FOR LIGHTWEIGHT ROOF TILES AND METHOD OF PRODUCING SAID COMPOSITION

Walter A. Schreifels, Jr., Carlsbad; Alfonso V. Alvarez, San Bernadino; Luciano Lopez, Moreno Valley, and Joseph E. Smith, Rancho Mirage, all of Calif., assignors to Boral Concrete Products, Inc., Newport Beach, Calif.

Filed Oct. 6, 1995, Ser. No. 540,293
Int. Cl.[6] C04B *24/00*
U.S. Cl. 106—677 **24 Claims**

1. A composition useful for fabricating lightweight roof tiles consisting essentially of, in weight percent:
between about 2.0 to 4.1 latex on solids basis,
between about 20.0 to 28.0 cement,
between about 28.0 to 55.0 lightweight aggregate,
between about 9.0 to 15.0 water;
between about 5.0 to 35.0 standard weight aggregate, and
between about 0.0 to 8.0 filler.

5,603,759

STABLE, CEMENT-BONDED, OVERHEAD SPRAYED INSULATING MIXES AND RESULTANT LININGS

Andrew M. Burkhart, Pittsburgh, Pa., assignor to Indresco Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 16,391, Feb. 11, 1993. This application May 30, 1995, Ser. No. 454,481
Int. Cl.[6] C04B *7/32*
U.S. Cl. 106—692 **11 Claims**

1. A pulverulent mix, sprayable overhead when mixed with a liquid, for forming a stable, non-slumping cement-bonded insulating refractory consisting essentially of for each 100 wt. % thereof,

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a dense refractory aggregate or a mixture of a dense and a lightweight refractory aggregate, a calcium aluminate cement, a plasticizer, and 2 to 15 wt. % −10 micron superfine refractory, wherein from about 40 to 60 wt. % of the total mix is −325 mesh.

5,603,760

CEMENT ADMIXTURE CAPABLE OF INHIBITING DRYING SHRINKAGE AND METHOD OF USING SAME

Neal S. Berke, Chelmsford, Mass.; Michael P. Dallaire, Dover, and Angel Abelleira, Nashua, both of N.H., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Sep. 18, 1995, Ser. No. 529,392
Int. Cl.[6] C04B *24/02;24/08*
U.S. Cl. 106—802 **11 Claims**

1. A cement admixture capable of inhibiting drying shrinkage while maintaining air void content of a treated cement composition containing said cement admixture comprising a mixture of:

A. at least one oxyalkylene compound selected from:

i) oxyalkylene glycols represented by the formula $HO(AO)_nH$ wherein A represents a C_2–C_4 alkylene group, O represents an oxygen atom, and n represents an integer of from 1 to about 30;

ii) oxyalkylene adducts of monoalcohols represented by the formula $RO(AO)_mH$ wherein R represents a C_1–C_7 alkyl or a C_5–C_6 cycloaklyl group, A represents a C_2–C_4 alkylene group, O represents an oxygen atom and m represents an integer of from 1 to about 10;

iii) oxyalkylene adducts of polyols represented y the formula $Q[(OA)_pOR']_x$ wherein Q represents a C_3–C_{12} aliphatic hydrocarbon residual group of a polyhydroxyalkane, each R' independently represents a C_1–C_{14} alkyl or cycloalkyl group or hydrogen atom provided at least one R' of said adduct represents a C_1–C_{14} alkyl or cycloalkyl group; A represents a C_2–C_4 alkylene group; O represents an oxygen atom; p represents an integer of from 0 to about 10; and x represents an integer of from 3 to 5; or

iv) mixtures of said oxyalkylene compounds; and

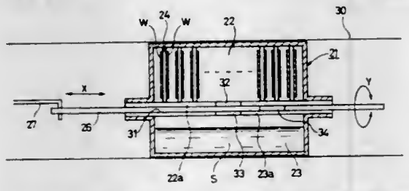
B. at least one ammonium salt of tall oil fatty acid wherein the weight ratio of component B to component A is at least about 0.0002 to 1.

5,603,761

LIQUID PHASE EPITAXIAL GROWTH METHOD FOR CARRYING OUT THE SAME

Munehisa Yanagisawa, Takasaki; Susumu Higuchi, Annaka; Yuji Yoshida, Takasaki, and Masahiko Saito, Annaka, all of Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Filed Aug. 3, 1995, Ser. No. 510,861
Claims priority, application Japan, Aug. 30, 1994, 6-205300
Int. Cl.[6] C30B *19/06*
U.S. Cl. 117—54 **8 Claims**



1. A liquid phase epitaxial growth method, comprising the steps of:

(a) placing a plurality of substrates in a deposition chamber having at least one first vent hole;

(b) holding a solution for liquid phase epitaxial growth in a solution chamber having at least two sub-chambers separated by a partition plate and communicated with each other via communicating portion, said solution chamber further having at least one second vent hole; and

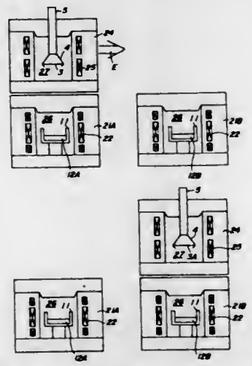
(c) before said substrates and said solution are brought into contact with each other, revolving said deposition chamber and said solution chamber for causing said solution to move through said communicating portion so as to increase and decrease the volume of space portions in said respective sub-chambers, and thereby introducing and forcing out a heat-treatment gas via first and second vent holes in said deposition chamber and said solution chamber to achieve heat treatment.

5,603,762

PROCESS AND APPARATUS FOR THE PRODUCTION OF FILMS OF OXIDE TYPE SINGLE CRYSTAL

Nobuyuki Kokune; Kazuaki Yamaguchi, both of Nagoya; Shoji Sogo, Komaki; Ryuichi Obuchi, Nagoya; Tatsuo Kawaguchi, Nagoya, and Minoru Imaeda, Nagoya, all of Japan, assignors to NGK Insulators, Ltd., Japan

Filed May 16, 1995, Ser. No. 441,920
Claims priority, application Japan, May 31, 1994, 6-118093
Int. Cl.[6] C30B *19/06*
U.S. Cl. 117—60 **20 Claims**



1. A process for forming a plurality of successively laminated single crystal oxide films on a single crystal oxide substrate, comprising the steps of:

providing a plurality of first furnaces each holding a respective supercooled melt, and a second furnace separated from the first furnaces;

holding the substrate in the second furnace, wherein the temperature of the substrate is adjusted; and

successively contacting the substrate with the melts in the first furnaces, thereby successively laminating single crystal oxide films on the substrate by epitaxial growth.

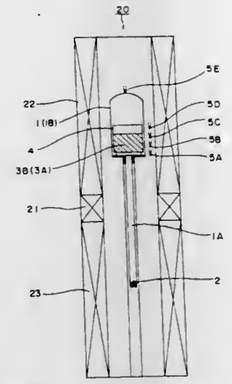
5,603,763

METHOD FOR GROWING SINGLE CRYSTAL

Yoshiteru Taniguchi, and Toshiaki Asahi, both of Toda, Japan, assignors to Japan Energy Corporation, Tokyo, Japan

PCT No. PCT/JP94/02089, § 371 Date Oct. 18, 1995, § 102(e) Date Oct. 18, 1995, PCT Pub. No. WO95/22643, PCT Pub. Date Aug. 24, 1995
PCT Filed Dec. 14, 1994, Ser. No. 535,098
Claims priority, application Japan, Feb. 21, 1994, 6-022659; Jul. 13, 1994, 6-161539
Int. Cl.[6] C30B *7/10*
U.S. Cl. 117—83 **6 Claims**

1. A method for growing a single crystal, comprising the steps of:



putting a semiconductor compound having at least one volatile element into a reservoir portion of a quartz ampule provided therewith;

placing a crucible made of pBN, which contains a raw material of the semiconductor compound, in the quartz ampule and vacuum sealing the quartz ampule;

heating the quartz ampule in a heating furnace to thereby melt the raw material;

heating the reservoir portion to a predetermined temperature to vaporize the volatile element of the semiconductor compound in the reservoir portion thereby creating a vapor pressure and controlling the vapor pressure by applying the vapor pressure of the volatile element in the reservoir portion, to the inside of the quartz ampule;

controlling a temperature distribution of the heating furnace such that a vertical first temperature gradient in a vicinity of the outside wall of the quartz ampule corresponding to the raw material is smaller than a vertical second temperature gradient in a vicinity above the top end of the crucible, and simultaneously gradually lowering the temperature of the heating furnace so as to grow a single crystal of the semiconductor compound downwardly from the surface of the raw material such that the first temperature gradient ranges from $51/D^2$ to $102/D^2$ ° C./cm, where D denotes the diameter of the single crystal to be grown, and the second temperature gradient ranges from 1.06X to 1.72X ° C./cm, where X is given by the following equation:

$$X = \sqrt{(R\rho/\lambda nL)}$$

wherein R represents a cooling rate of the furnace temperature, λ represents a coefficient of thermal conductivity, ρ represents a specific gravity, L represents a latent heat of fusion and n represents a formula weight of the crystal.

5,603,764

PROCESS FOR CRYSTAL GROWTH OF III-V GROUP COMPOUND SEMICONDUCTOR

Yoshinobu Matsuda, Tsukuba; Masahiko Hata, Tsuchiura; Noboru Fukuhara, and Toshio Ishihara, both of Tsukuba, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jan. 5, 1995, Ser. No. 368,872
Claims priority, application Japan, Jan. 7, 1994, 6-000461
Int. Cl.[6] C30B *29/40*
U.S. Cl. 117—89 **15 Claims**

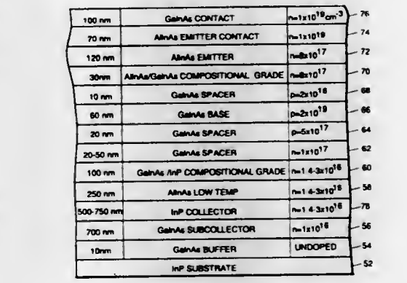
1. A process for crystal growth of III–V group compound semiconductor, which comprises pyrolyzing, in a gas phase, at least one material selected from the group consisting of an organometallic compound containing a III group element, a hydride containing a III group element, an organometallic compound containing a V group element and a hydride containing a V group element, said at least one material containing, as a whole, a III group element, a V group element and at least aluminum, in the presence of an organic compound having an oxygen atom-carbon atom direct bond, used as a dopant to grow a III–V group compound semiconductor crystal layer.

5,603,765

METHOD OF GROWING HIGH BREAKDOWN VOLTAGE ALLNAS LAYERS IN INP DEVICES BY LOW TEMPERATURE MOLECULAR BEAM EPITAXY

Mehran Matloubian, Encino; Linda M. Jelloian, Northridge; Mark Lui, Thousand Oaks, and Takyiu Liu, Newbury Park, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 166,396, Dec. 1, 1993, abandoned. This application Apr. 21, 1995, Ser. No. 507,744
Int. Cl.[6] H01L *21/20*
U.S. Cl. 117—94 **20 Claims**



1. A method of growing a device on an InP substrate with a high voltage breakdown layer of AlInAs, comprising:

growing said AlInAs layer by molecular beam epitaxy (MBE) at a temperature that is greater than 450° C. but less than 470° C.,

growing remaining portions of said device by MBE at a substantially higher temperature than said AlInAs layer growth temperature, said substantially higher temperature being below the 2×4 reconstruction temperature for said substrate by more than 20° C., and

selecting said AlInAs layer growth temperature so that said AlInAs layer has a higher breakdown voltage than if it were grown at either said substantially higher temperature or at a temperature less than 450° C.

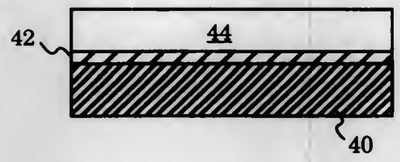
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5,603,766

METHOD FOR PRODUCING UNIAXIAL TETRAGONAL THIN FILMS OF TERNARY INTERMETALLIC COMPOUNDS

Mark R. Visokay, Stanford, Calif.; Bruce M. Lairson, Houston, Tex., and Robert Sinclair, Palo Alto, Calif., assignors to Board of Trustees of the Stanford Leland Junior University, Stanford, Calif.

Filed Feb. 23, 1995, Ser. No. 393,560
Int. Cl.[6] C30B *29/10*
U.S. Cl. 117—105 **25 Claims**



1. A method for making oriented thin films of a ternary intermetallic compound having a tetragonal structure and generally uniaxial magnetic, optical, electronic, and mechanical properties, said method comprising the steps of:

a) selecting a substrate material having an alignment suitable for biasing the orientation of said ternary intermetallic compound and exhibiting no chemical reactiveness to said ternary intermetallic compound;

b) heating said substrate material to a temperature above 450° C.;

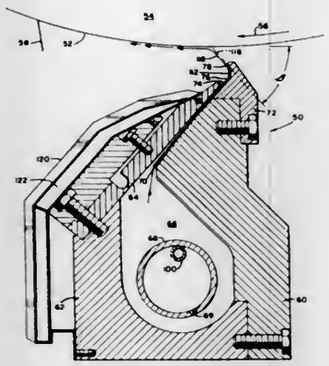
c) depositing simultaneously a first metal, a second metal, and a third metal on said substrate material to directly produce said thin film of said ternary intermetallic compound, whereby said thin film adopts the $L1_0$ crystal structure.

5,603,767

APPARATUS FOR DECREASING SKIP COATING ON A PAPER WEB

Wayne A. Damrau, Wisconsin Rapids, Wis., assignor to Consolidated Papers, Inc., Wisconsin Rapids, Wis.

Division of Ser. No. 241,475, May 12, 1994, Pat. No. 5,436,030, which is a continuation-in-part of Ser. No. 943,919, Sep. 11, 1992, abandoned. This application Apr. 27, 1995, Ser. No. 432,431
Int. Cl.[6] B05C *5/00*
U.S. Cl. 118—410 **37 Claims**



1. Apparatus for applying a coating liquid onto a surface of a moving web, comprising:

a coating liquid applicator having an elongate coating liquid deflector that is positioned proximate to, spaced from and transversely of the web and that has an elongate concave curved surface;

means in communication with said applicator for pressure delivery of a sheet of coating liquid in which air is entrained at velocity to said elongate deflector for flow along said curved surface in an elongate sheet of coating liquid that, after flowing along said curved surface, is projected in a free standing sheet of coating liquid toward, across and against the surface of the web to provide an excess layer of coating liquid on the web surface,

the coating liquid sheet being delivered by said means for pressure delivery for flow along said deflector curved surface at a velocity that is sufficient, when taken together with a radius of curvature of said curved surface, to subject the coating liquid sheet to centrifugal force of a magnitude that causes air entrained in the coating liquid to move away from one side of the coating liquid sheet that is toward said curved surface and toward the opposite side of the coating liquid sheet, so that the one side of the coating liquid sheet is relatively free of entrained air, and said deflector being oriented relative to the web so that the web surface is contacted primarily by the one side of the sheet of coating liquid that is relatively free of entrained air to decrease the occurrence of skip coating on the web surface as compared to coating liquid applied without use of said curved surface and centrifugal force; and

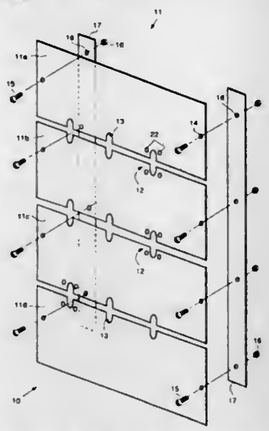
means disposed downstream from said applicator for doctoring the excess layer of coating liquid on the web surface.

5,603,768

FLOW-INDUCING PANELS FOR ELECTROLESS COPPER PLATING OF COMPLEX ASSEMBLIES

Sunghee Yoon, Lakewood, and Mark R. Forsyth, El Segundo, both of Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Continuation of Ser. No. 750,137, Aug. 26, 1991, abandoned. This application Jul. 21, 1994, Ser. No. 278,682
Int. Cl.[6] B05C *13/00*
U.S. Cl. 118—500 **9 Claims**



1. A flow inducing panel in combination with an electroless copper plating tank for electroless copper plating complex microwave assemblies, said panel comprising:

a rigid baffle having a plurality of openings therein structured and arranged to secure a plurality of microwave assemblies therein, the rigid baffle having a size relative to the electoless copper plating tank that is structured and arranged to cause sufficient plating solution flow through channels disposed in the microwave assemblies disposed therein by minimizing solution flow bypassing of the channels thereof to achieve complete copper plating of inner surfaces in the channels, wherein the rigid baffle is comprised of a plurality of substantially coplanar panels that are joined to form a single panel and which are secured together using cover members and securing means for mating the cover members to each of the panels; and

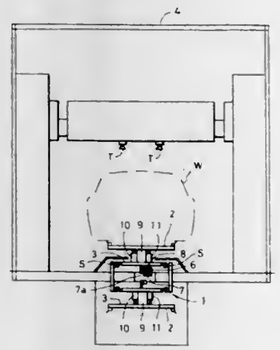
means for securing each of the plurality of complex microwave assemblies in respective ones of the plurality of openings of the rigid baffle.

5,603,769

CONVEYOR DEVICE

Masaru Okubo; Shinichi Nakane; Hitoshi Yano; Noriyuki Achiwa, and Sigeki Fujiwara, all of Toyota, Japan, assignors to Trinity Industrial Corporation, Tokyo, Japan

Filed Oct. 27, 1994, Ser. No. 329,853
Claims priority, application Japan, Apr. 1, 1994, 6-064261
Int. Cl.[6] B05C *5/02*
U.S. Cl. 118—621 **6 Claims**



1. A conveyor device for applying a high voltage to a work transported along a predetermined track during transportation in a high voltage application zone formed in a coating booth, wherein

a conveyor device main body comprises a running base running along a predetermined track formed in the coating booth and an electrode attachment attached to said running base in an insulated state for carrying a work and applying a high voltage thereto,

an electromagnetic wave transmission means is disposed in said coating booth for transmitting electromagnetic waves to said running base during running of said running base in the high voltage application zone in which electrostatic coating is carried out by applying a high voltage to said work, and

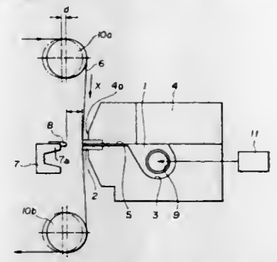
said running base has, provided therewith, a low voltage generation means for receiving electromagnetic waves transmitted from said electromagnetic transmission means in a contactless fashion and outputting a low voltage, and has, provided therewith, a high voltage generation means for stepping up a low voltage outputted from said low voltage generation means to a predetermined voltage and supplying a high voltage to said electrode attachment.

5,603,770

COATING DEVICE

Shogo Sato, Miyagi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 14, 1995, Ser. No. 421,782
Claims priority, application Japan, Apr. 15, 1994, 6-077539
Int. Cl.[6] B05C *5/02*
U.S. Cl. 118—623 **4 Claims**



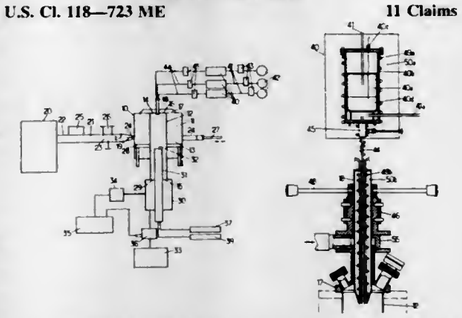
1. In an extrusion coating device for applying a coating on a continuous support, said device comprising a die having a paint sink fed with a paint, a slit extending from the paint sink to a distal end of the die, and a smoothing plate provided in the vicinity of the distal end of the die, means mounting a magnet opposite the slit of the die with a gap of a pre-set distance from the smoothing plate to aid in applying the paint on the support, and means for moving the continuous support along a path between the magnet and the smoothing plate of the die with the path having the support traveling along an end surface of the smoothing plate, the improvements comprising means for concentrating the magnetic flux on the smoothing plate to constrain the paint on the support traveling along the end face of the smoothing plate, said means having the smoothing plate being magnetized to a polarity opposite to the polarity of said magnet.

5,603,771

CHEMICAL VAPOR DEPOSITION APPARATUS ACTIVATED BY A MICROWAVE PLASMA

Ghislaine Seiberras, Fontenay Aux Roses; Claude Indrigo, Maisons Alfort; Remy Mevrel, Le Plessis Robinson; Philippe LePrince, Gif Sur Yvette; Michel Bejet, Les Ulis, and Claude Le Pennec, Vincennes, all of France, assignors to Office National d'Etudes et de Recherches Aerospatiales, Chatillon Sous Bagneux, France

PCT No. PCT/FR93/00926, § 371 Date Mar. 23, 1995, § 102(e) Date Mar. 23, 1995, PCT Pub. No. WO94/06950, PCT Pub. Date Mar. 31, 1994
PCT Filed Sep. 23, 1993, Ser. No. 403,780
Claims priority, application France, Sep. 24, 1992, 92 11391
Int. Cl.[6] C23C *16/00*
U.S. Cl. 118—723 ME **11 Claims**



1. Apparatus for plasma activated chemical vapor deposition, the apparatus comprising:

a plurality of transformation means, each for transforming the state of a respective precursor of a deposition material to cause each of said respective precursors to pass from an initial state of matter to a gaseous state to provide a plurality of gaseous precursors;

a plurality of charging means, each for charging respective vector gas with a respective one of said plurality of gaseous precursors to form a plurality of precursor-charged gaseous mixtures;

a plurality of transfer means, each for transferring a respective one of said predetermined plurality of gaseous mixtures from a respective charging means to a plasma reactor having microwave excitation comprising a reaction enclosure, a microwave generator, and at least one waveguide interposed between said generator and the enclosure and providing non-resonant coupling; and

injection means for injecting said plurality of gaseous mixtures into said reaction enclosure in the form of a jet of ionized gas;

each of said plurality of transfer means for transferring a respective one of said plurality of gaseous mixtures being independent of other of said plurality of transfer means, said injection means including a nozzle of frustoconical external profile, said nozzle having an inlet for receiving said plurality of gaseous mixtures from said plurality of transfer means and having at least one injection orifice outlet for injecting said jet of ionized gas into said reaction enclosure, said nozzle being shaped as a function of a desired configuration of said jet of ionized gas, said nozzle being fitted with heating means and with thermal insulation means.

5,603,772

FURNACE EQUIPPED WITH INDEPENDENTLY CONTROLLABLE HEATER ELEMENTS FOR UNIFORMLY HEATING SEMICONDUCTOR WAFERS

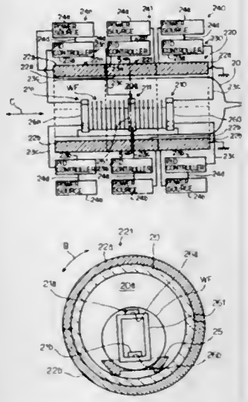
Shigeaki Ide, Kumamoto, Japan, assignor to NEC Corporation, Japan

Filed Aug. 11, 1995, Ser. No. 514,242

Claims priority, application Japan, Aug. 16, 1994, 6-192609

Int. Cl.[6] C23C *11/00*

U.S. Cl. 118—724 **7 Claims**



1. A furnace comprising:

a furnace tube encircling an inner space in a first direction and accommodating a plurality of semiconductor wafers moved into and out of said inner space in a second direction, said plurality of semiconductor wafers being substantially aligned with one another in said second direction so as to occupy a generally cylindrical sub-space in said inner space;

a plurality of temperature sensor groups provided in said generally cylindrical sub-space and spaced apart from one another in said second direction, each of said temperature sensor groups having a plurality of temperature sensors angularly spaced from one another in said first direction adjacent outer peripheral portions of said plurality of semiconductor wafers for generating detecting signals indicative of actual temperatures in said generally cylindrical sub-space occupied by said plurality of semiconductor wafers;

a plurality of heater groups provided outside of said furnace tube and spaced from one another in said second direction, each of said plurality of heater groups having a plurality of heater elements angularly spaced from one another in said first direction around said furnace tube for supplying heat through said furnace tube to said inner space; and

a plurality of current controlling means associated with said respective plurality of heater groups and said respective plurality of temperature sensor groups, each of said plurality of current controller means having a plurality of current controlling sub-means respectively responsive to said detecting signals supplied from said plurality of temperature sensors of the associated temperature sensor groups so as to regulate electric currents respectively supplied to said plurality of heater elements of the associated heater group, thereby matching said actual temperatures to a target temperature for creating a uniform temperature distribution around said plurality of semiconductor wafers.

5,603,773

METHOD OF CLEANING CHANDELIERS

Keith S. Campbell, 13432 Third Ave. N.E., Bradenton, Fla. 34202

Division of Ser. No. 153,294, Nov. 16, 1993, Pat. No. 5,472,005. This application Aug. 28, 1995, Ser. No. 520,093

Int. Cl.[6] B08B *3/12*

U.S. Cl. 134—1 **13 Claims**

1. A method for the cleaning of a chandelier comprising a plurality of elongated pendants each being defined by a top end and a bottom end, the pendants each being suspended by the top end vertically downwardly from a horizontally disposed member and being located in predetermined spaced-apart locations in a pattern of parallel rows and columns of pendants comprising the following steps:

(a) preselecting a said chandelier for cleaning comprising a predetermined number of vertically disposed, elongated pendants, each of said pendants being defined by a top end and a bottom end and being located in predetermined spaced-apart locations from a next adjacent pendant, the pendants each being suspended by the top end thereof from a horizontally disposed member located in an area in which the chandelier is located;

(b) preselecting from said predetermined number of pendants a predetermined lesser number of next adjacent pendants for cleaning;

(c) providing ultrasonic cleaning apparatus for the cleaning of the predetermined number of pendants of the chandelier, a cavity being provided in the ultrasonic cleaning apparatus for the holding of cleaning liquid;

(d) positioning the ultrasonic cleaning apparatus below the predetermined lesser number of pendants selected;

(e) providing cleaning liquid in the cavity of the ultrasonic cleaning apparatus;

(f) raising the ultrasonic cleaning apparatus upwardly a distance whereby to immerse the top ends of each of the predetermined lesser number of pendants in the cleaning liquid;

(g) causing the preselected lesser number of pendants immersed in the cleaning liquid to be cleaned in situ by ultrasonic cleaning;

(h) preselecting a second lesser predetermined number of pendants from said predetermined number of pendants for cleaning;

(i) causing the second lesser predetermined number of pendants selected to be cleaned by ultrasonic energy; and

(j) repeating steps (b)–(i) until all of the predetermined number of pendants have been ultrasonically cleaned.

5,603,774

METHOD FOR REDUCING TACKINESS OF SOFT ACRYLIC POLYMERS

Albert R. LeBoeuf, Fort Worth, Tex.; George Green, St. Louis, Mo., and Barbara A. Piper, W. Palm Beach, Fla., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

Continuation of Ser. No. 358,042, Dec. 15, 1994, abandoned, which is a continuation of Ser. No. 127,224, Sep. 27, 1993, abandoned. This application Dec. 11, 1995, Ser. No. 570,370

Int. Cl.[6] B08B *3/12;7/02*

U.S. Cl. 134—1 **14 Claims**

1. A method for reducing surface tackiness of a soft acrylic article which has an inherent tackiness in air or fluid medium, said method comprising the steps of:

placing said soft acrylic article to be treated into a radio frequency plasma reactor chamber,

closing said reactor chamber and reducing pressure within said reactor chamber to substantially zero;

introducing an inert plasma gas into said reactor chamber, and adjusting the pressure therein;

creating a plasma within said reactor chamber using a radio-frequency power generator; and

treating said soft acrylic article for a time sufficient to reduce the surface tackiness of said soft acrylic article.

5,603,775

UTILIZATION OF A SUCTION NOZZLE AND JET NOZZLE FOR CLEANING MOVING OBJECTS

Staffan Sjöberg, Sulfitvägen 4, S-666 00 Bengtsfors, Sweden

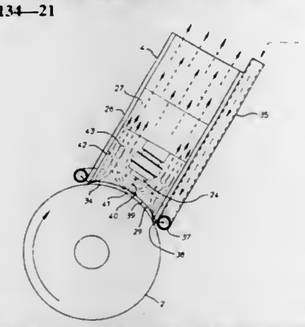
PCT No. PCT/SE93/01012, § 371 Date May 17, 1995, § 102(e) Date May 17, 1995, PCT Pub. No. WO94/12349, PCT Pub. Date Jun. 9, 1994

PCT Filed Nov. 24, 1993, Ser. No. 436,229

Claims priority, application Sweden, Nov. 25, 1992, 9203538

Int. Cl.[6] B08B *3/02;5/04;* **A47L** *5/14*

U.S. Cl. 134—21 **20 Claims**



1. Apparatus for cleaning a surface of an object moving in a first direction, said apparatus comprising:

at least one nozzle head, comprising a housing forming an elongated suction nozzle, including a center, that terminates at a first end thereof in an orifice edge, which orifice edge surrounds and defines an opening; a chamber including said opening; and at least one jet nozzle disposed in said chamber spaced from said opening and capable of emitting a jet of treatment liquid;

said nozzle head positioned with respect to the surface of an object to be cleaned so that a circumferential gap is formed between the surface to be cleaned and said orifice edge, and so that said jet of treatment liquid impacts a treatment area of the surface to be cleaned;

an evacuation pipe connected to said chamber of said suction nozzle;

a supply pipe connected to said jet nozzle for supplying treatment liquid under superatmospheric pressure thereto;

a vacuum source connected to said chamber by said evacuation pipe for maintaining a sub-pressure in said chamber so that said vacuum source, along with air flowing through the gap between said nozzle head and the surface to be cleaned, evacuates liquid and material released from the surface from said chamber;

an actuator for moving said nozzle head in a second direction substantially perpendicular to the first direction, said nozzle head guided during movement by said actuator so as to maintain the gap between said nozzle head and the surface to be cleaned;

said jet nozzle disposed within said suction nozzle at a position at or near the center of said suction nozzle to define an open circumferential passage between an interior wall portion of said jet nozzle and said suction nozzle, said open circumferential passage connected to said evacuation pipe; and

means for supplying compressed air into said suction nozzle chamber through the gap between said nozzle head and the surface of the object to be cleaned so that the compressed air encounters and carries with it treatment liquid deflected from the surface of the object to be cleaned, and material released from the surface of the object to be cleaned, into and through said open circumferential passage and under the influence of said vacuum source.

5,603,776

METHOD FOR CLEANING PLASTICWARE

Steven E. Lentsch, St. Paul; Victor F. Man, and Matthew J. Sopha, both of Minneapolis, all of Minn., assignors to Ecolab Inc., St. Paul, Minn.

Filed Sep. 12, 1994, Ser. No. 304,571

Int. Cl.[6] B08B *3/00;3/04;3/08*

U.S. Cl. 134—25.2 **10 Claims**

1. A method of cleaning plasticware which comprises:

(a) contacting the plasticware with an alkaline aqueous cleaning agent in a warewashing machine at 100°–180° F. to produce cleaned plasticware; and

(b) contacting the cleaned plasticware with an aqueous rinse comprising a major proportion of an aqueous diluent containing about 2 to 100 parts per million of nonionic surfactants about 0.01 to 10 parts per million of a fluorinated hydrocarbon surfactant and about 0.01 to 10 parts per million of a polyalkylene oxide-modified polydimethylsiloxane.

5,603,777

SUBSTRATE SURFACE TREATING APPARATUS AND SUBSTRATE SURFACE TREATING METHOD

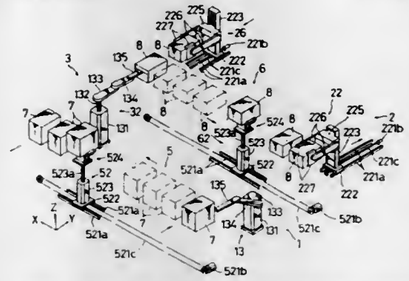
Yasuhiko Ohashi, Shiga, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Japan

Filed Jun. 6, 1995, Ser. No. 467,571

Claims priority, application Japan, Jun. 27, 1994, 6-168714

Int. Cl.[6] B08B *15/02*

U.S. Cl. 134—25.4 **28 Claims**



1. A surface treating apparatus for providing surface treatment to a plurality of substrates stored in a cassette, said apparatus comprising:

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a transport cassette transfer station to support a transport cassette adapted to store the plurality of substrates arranged with a first storage spacing;

a processing cassette transfer station to support a processing cassette adapted to store the plurality of substrates arranged with a second storage spacing which is different from the first storage spacing;

substrate transfer means for transferring the plurality of substrates between said transport cassette at said transport cassette transfer station and said processing cassette at said processing cassette transfer station, such that said substrates are stored in said transport cassette and said processing cassette with said first storage spacing and said second storage spacing, respectively;

a surface treating section to provide surface treatment for the plurality of substrates stored in said processing cassette; and

surface treatment transport means for transporting said processing cassette storing the plurality of substrates to be treated, after a substrate transfer by said substrate transfer means from said transport cassette to said processing cassette, from said processing cassette transfer station through said surface treating section to said processing cassette transfer station.

12. A surface treating method for providing surface treatment to a plurality of substrates stored in a cassette, said method comprising the steps of:

transferring the plurality of substrates to be treated, which are stored in a transport cassette with a first storage spacing, from said transport cassette to an empty processing cassette to be stored therein with a second storage spacing which is different from the first storage spacing;

transporting said processing cassette, after transfer of said substrates to be treated, to a surface treating section for providing surface treatment of the plurality of substrates in said processing cassette; and

transferring the plurality of treated substrates from said processing cassette to an empty transport cassette to be stored therein with said first storage spacing.

13. A photoelectric conversion device according to claim 6, wherein said first transparent conductive layer is adjacent to a reflecting layer.

5,603,778

METHOD OF FORMING TRANSPARENT CONDUCTIVE LAYER, PHOTOELECTRIC CONVERSION DEVICE USING THE TRANSPARENT CONDUCTIVE LAYER, AND MANUFACTURING METHOD FOR THE PHOTOELECTRIC CONVERSION DEVICE

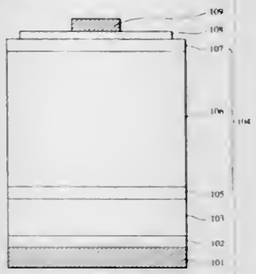
Yuichi Sonoda, Tsuzuki-gun, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 19, 1995, Ser. No. 424,172

Claims priority, application Japan, Apr. 27, 1994, 6-089056

Int. Cl.[6] H01L *31/075;31/20;* **C23C** *14/34*

U.S. Cl. 136—259 **32 Claims**



6. A photoelectric conversion device comprising a first transparent conductive layer, a semiconductor layer, and a second transparent conductive layer, wherein said first and/or second transparent conductive layer is formed by a sputtering process under discharge of a mixture of Ar gas with 0.1 to 10% added oxygen gas by using a metal oxide target which has a specific resistance not larger than 5.0 Ωcm and a crystal particle size not larger than 15 microns.

5,603,779

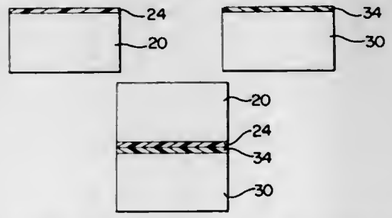
BONDED WAFER AND METHOD OF FABRICATION THEREOF

Jack H. Linn; George Bajor, both of Melbourne, and George V. Rouse, Indialantic, all of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed May 17, 1995, Ser. No. 443,242

Int. Cl.[6] H01L *21/20*

U.S. Cl. 148—33 **28 Claims**



1. A method for bonding a first wafer and a second wafer, comprising the steps of:

exposing at least a portion of the first and second wafers to plasma that removes oxides;

forming polymer seals on the portion of each of the first and second wafers that was exposed to said plasma;

juxtaposing the first and second wafers so that said seal on the first wafer abuts said seal on the second wafer; and

annealing the first and second wafers in a nonoxidizing ambient atmosphere.

5,603,780

LIGHT WEIGHT, HIGH STRENGTH BERYLLIUM-ALUMINUM ALLOY

William T. Nachtrab, Maynard; Nancy F. Levoy, Acton, and Kevin R. Raftery, Boxborough, all of Mass., assignors to Nuclear Metals, Inc., Concord, Mass.

Continuation-in-part of Ser. No. 117,218, Sep. 3, 1993, Pat. No. 5,421,916. This application Mar. 10, 1995, Ser. No. 402,515

Int. Cl.[6] C22C *25/00*

U.S. Cl. 148—400 **9 Claims**



1. A cast beryllium-aluminum alloy, comprising:

a beryllium phase and an aluminum phase, silver for refining the microstructure of the alloy, and silicon for improving the compatibility between the beryllium phase and the aluminum phase and aiding in castability, the alloy including approximately 60 to 70% by weight beryllium, from approximately 0.5 to 4% by weight silicon and from approximately 0.2 to 4.25% by weight silver, and the balance aluminum; the aluminum phase containing a silicon rich phase and an aluminum-silver phase, the aluminum phase surrounding the beryllium phase.

5,603,781

METHOD FOR INHIBITING THE OXIDATION OF HARD METAL POWDER

Jong-Ku Park, Namyangji, and Sona Kim, Seoul, both of Rep. of Korea, assignors to Korea Institute of Science and Technology, Seoul, Rep. of Korea

Filed Aug. 28, 1995, Ser. No. 520,270

Claims priority, application Rep. of Korea, Apr. 27, 1995, 95-10063

Int. Cl.[6] B22F *1/00*

U.S. Cl. 148—513 **6 Claims**

1. A method for inhibiting the oxidation of powdered material comprising carbide particulates in a metal matrix, comprising heat-treating a milled powder of said material for at least one hour in a vacuum at a temperature between 300° and 500° C.

5,603,782

BATTERY CAN, SHEET FOR FORMING BATTERY CAN, AND METHOD FOR MANUFACTURING SHEET

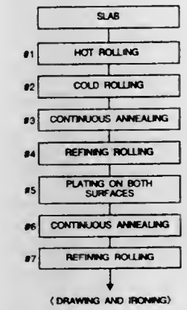
Hirofumi Sugikawa; Sachio Michibata, and Keiichi Hayashi, all of Osaka, Japan, assignors to Katayama Special Industries, Ltd., Osaka-fu, Japan

Division of Ser. No. 187,000, Jan. 27, 1994. This application Apr. 18, 1995, Ser. No. 423,721

Claims priority, application Japan, Jun. 4, 1993, 5-134987; Jun. 4, 1993, 5-134988; Jun. 4, 1993, 5-134989; Jun. 4, 1993, 5-134990

Int. Cl.[6] C21D *8/04*

U.S. Cl. 148—518 **11 Claims**



1. A method for manufacturing a sheet to be formed into a cylindrical battery can which is open in one end thereof and formed by drawing and ironing, comprising the following steps in the recited order:

hot-rolling a slab to form a steel plate;

cold-rolling the steel plate, thereby producing a uniform elongation coefficient in a lengthwise, widthwise and oblique direction thereof, and roughening upper and lower surfaces of the steel plate at the cold-rolling so that a roughness (Ra) of the surfaces thereof is 0.5 μm–1.2 μm;

annealing the steel plate; and

forming plated layers on the upper and lower surfaces of the steel plate in a uniform thickness so that the roughness of the surface of the plated layers is equal to that of the surfaces of the steel plate.

5,603,783

STEERING WHEEL

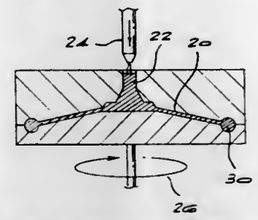
Cornelius J. T. Ferreira, Eskom, South Africa, assignor to M. J. Grootes Investments CC, Johannesburg, South Africa

Filed Jun. 21, 1994, Ser. No. 263,182

Claims priority, application South Africa, Jun. 22, 1993, 93/4470

Int. Cl.[6] C22F *1/04*

U.S. Cl. 148—549 **11 Claims**



5. A process for the manufacture of a one-piece steering wheel that is deformable under load and comprises a hub, spokes, and rim, integrally formed as a unitary alloy casting, said alloy casting exhibiting bead-like particles composed of ferro-silicon that promote resiliency in said steering wheel, said process comprising the steps of:

a) preparing a rotatable mold in which said steering wheel is to be cast;

b) introducing into said mold a molten alloy having constituents including 11.5% to 14% by weight of silicon and 350 to 450 parts per million of strontium;

c) rotating said mold; and

d) after allowing said alloy to cool; removing the manufactured said steering wheel from said mold.

5,603,784

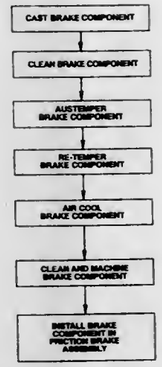
METHOD FOR PRODUCING A ROTATABLE GRAY IRON BRAKE COMPONENT

Stephen M. Bay, Fremont, Ind., assignor to Daytnn Walther Corporation, Dayton, Ohio

Filed Mar. 20, 1995, Ser. No. 407,732

Int. Cl.[6] C21D *5/02*

U.S. Cl. 148—612 **20 Claims**



1. A method for producing a brake component comprising the steps of:

(a) providing a cast gray iron rotatable brake component wherein the gray iron has a carbon content between about 3.4% and about 4.0%; then

(b) subjecting the cast gray iron rotatable brake component to an austempering heat treatment process which comprises heating

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the cast gray iron brake component to a temperature between about 1500° F. (816° C.) and about 1700° F. (927° C.) and maintaining this temperature for a time between about one hour and about three hours, and then quenching the cast gray iron rotatable brake component in a liquid bath at a temperature between about 300° F. (149° C.) and about 700° F. (371° C.) for a time between about two hours and about four hours; and then

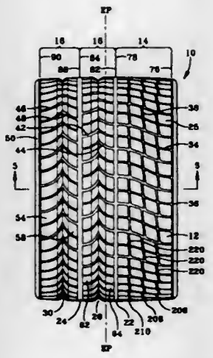
(c) subjecting the cast gray iron rotatable brake component to a re-tempering process to provide a microstructure which consists of spheroidized pearlite in a matrix of bainitc and austenite.

5,603,785

TIRE INCLUDING TWO AQUACHANNELS ON ONE SIDE

Michael J. Weber, Mogadore, and John G. Stucker, Stow, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed May 6, 1994, Ser. No. 239,104
Int. Cl.[6] B60C *111/00*
U.S. Cl. 152—209 A **2 Claims**



1. A pneumatic tire comprising a pair of annular beads, at least one carcass ply wrapped around said beads, tread disposed radially over said carcass ply in a crown area of said tire, and sidewalls disposed between said tread and beads wherein said tread has aquachannels on only one side of the equatorial plane of the tire and comprises,

(a) a first zone comprising 35–50% of the width of said tire tread and containing lateral grooves longer than the width of said first zone wherein said first zone comprises block elements which are staggered axially such that circumferential grooves between said blocks are not continuous around the tire,

(b) a second zone in a center portion of said tire and comprising 25–35% of the width of said tire tread and having a first aquachannel of the aquachannels therein, said first aquachannel comprising 7–13% of the width of said tire tread, in which said second zone has arcuate lateral grooves that enter said first aquachannel from each side thereof to form a substantially V-shape, and

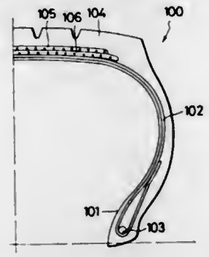
(c) a third zone comprising 25–35% of the width of said tire tread and having a second aquachannel of the aquachannels therein, said second aquachannel comprising 5–11% of the width of said tire tread, in which said third zone has arcuate lateral grooves that enter said second aquachannel from each side thereof to form a substantially V-shape, and wherein each said zone is separated from the adjacent zone by a continuous circumferential groove.

5,603,786

PNEUMATIC TIRE WITH 1×2 STEEL BELT CORDS

Yukio Tozawa; Susumu Imamiya, both of Hiratsuka; Hiroyuki Kaido, Yokohama; Hisao Kato, and Issei Nakakita, both of Hiratsuka, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 376,309, Jan. 23, 1995, abandoned, which is a continuation of Ser. No. 101,290, Aug. 3, 1993, abandoned, which is a continuation of Ser. No. 707,760, May 30, 1991, abandoned. This application Jun. 5, 1995, Ser. No. 460,833
Claims priority, application Japan, Jun. 13, 1990, 2-152647
Int. Cl.[6] B60C *9/18;9/20*
U.S. Cl. 152—527 **2 Claims**



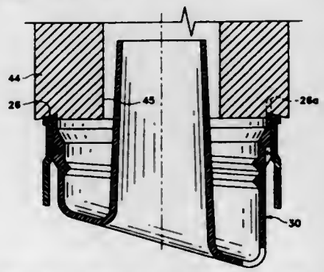
1. A pneumatic automobile tire comprising a tread portion extending in a circumferential direction and at least two superimposed rubber belt layers extending circumferentially adjacent to and beneath said tread portion, each belt layer comprising a row of a plurality of steel cords embedded in a coating rubber, each steel cord having a diameter d in mm and consisting of two intertwisted steel filaments each of which contains 0.80–0.92 weight percent of carbon, said rows of steel cords in adjoining belt layers being spaced apart from each other a distance t of from 0.6 to 0.9 mm and said coat rubber having a 100% elastic modulus of 35 to 55 kg/cm^2, the mean cross-sectional area Sa of the cords in 1 mm unit of cross-sectional width of a belt layer being from 0.10 to 0.15 mm^2 and the mean cross-sectional area Sb of the coat rubber in 1 mm unit of cross-sectional width of a belt layer having a thickness equal to d+t being from 1.00 to 1.45 mm^2.

5,603,787

DRAIN BACK CONTAINER ASSEMBLY

Grahame W. Reid, Novato, Calif., assignor to Innovative Molding, Inc., Sebastopol, Calif.

Division of Ser. No. 176,951, Dec. 31, 1993, Pat. No. 5,431,306. This application Jun. 6, 1995, Ser. No. 470,920
Int. Cl.[6] B67D *1//16*
U.S. Cl. 156—73.1 **3 Claims**



1. A method for assembling a blow-molded plastic container body to a separately formed pour spout component having a drain back feature and having an internal thread for receiving an externally threaded cap, comprising:

blow-molding the plastic container body to have an open upper end, terminating in a finish,

separately forming a pour spout component, to have an outer periphery with a collar sized to fit closely within the finish of the container body, including forming a wall on the pour spout component which includes said collar and extends down from the collar so as to extend into the container body upon assembly, the wall turning inwardly and upwardly to form a pour spout, the upper end of which is above the collar and the wall thus forming an annular trough around the spout at a base of the spout, the trough being inclined so as to have a deeper side and a shallower side, with a liquid drain back opening through the trough at a deepest point on the deeper side of the trough, and including forming an internal thread on the inner surface of the wall of the pour spout component, positioned to receive external threads of an externally threaded cap,

assembling the pour spout component into the plastic container body such that the collar of the pour spout component contacts the inside surface of the container body finish,

the pour spout component having a radial lip at the top of the collar which upon assembly rests on an annular ledge at the upper end of the container body finish, and

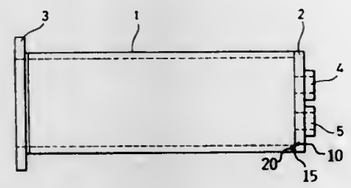
bonding the pour spout component to the container body finish in a liquid-tight seal, by ultrasonically welding the radial lip of the pour spout component downwardly against the annular ledge so as to partially melt the radial lip and the annular ledge and to fuse them together.

5,603,788

METHOD OF MANUFACTURING A CERAMICS-TYPE VACUUM VESSEL

Tetsuya Abe; Yoshio Murakami, both of Ibaraki-ken; Hisao Takeuchi, Hyogo; Akira Yamakawa, Hyogo, and Masaya Miyake, Hyogo, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, and Japan Atomic Energy Institute, Tokyo, both of Japan

Division of Ser. No. 937,981, Aug. 28, 1992, abandoned. This application Jun. 1, 1995, Ser. No. 457,013
Claims priority, application Japan, Aug. 28, 1991, 3-242551
Int. Cl.[6] B32B *31/12;31/26*
U.S. Cl. 156—89 **20 Claims**



1. A method of manufacturing a vacuum vessel for maintaining a vacuum in an interior space thereof, comprising the following steps:

preparing a plurality of wall members formed essentially of ceramic material;

preparing on each said wall member at least one bonding face having a surface flatness of not more than 1 μm;

positioning respective mating ones of said bonding faces adjacent one another;

interposing a ceramic powder as a bonding substance between said mating bonding faces, wherein said ceramic powder has an average particle diameter of not more than 1 μm; and

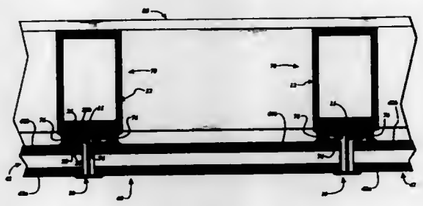
carrying out a heating process to bond together said wall members through said bonding substance to form a wall of said vacuum vessel around said interior space.

5,603,789

LAST LITE RETAINER AND WEATHER SEAL FOR STRUCTURALLY BONDED GLAZING

Wayne E. Whitmyer, Lilburn, Ga., assignor to Kawneer Company, Inc., Norcross, Ga.

Continuation of Ser. No. 350,732, Dec. 7, 1994, abandoned, which is a continuation of Ser. No. 71,771, Jun. 4, 1993, abandoned, which is a division of Ser. No. 730,543, Jul. 16, 1991, abandoned. This application Oct. 4, 1995, Ser. No. 538,841
Int. Cl.[6] E04B *2/96;* **E06B** *3/64*
U.S. Cl. 156—108 **10 Claims**



1. A method for glazing a last lite having interior and exterior faces into a window opening between two previously installed lites, comprising the steps of:

installing a retainer onto the adjacent vertical edge of at least one of said two previously installed lites;

setting said last lite such that a vertical periphery of said exterior face of said last lite is disposed against said retainer;

subsequent to said step of setting said last lite, mounting a vertical frame member having a face to said retainer so as to capture a vertical edge of said last lite between said retainer and said face of said vertical frame member; and

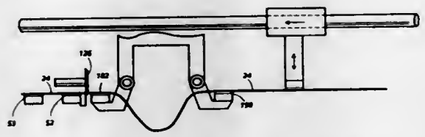
structurally bonding said last lite and said adjacent lite to said face of said vertical frame member.

5,603,790

PROCESS FOR FABRICATING BELTS

Christopher J. Rhodes, Oklahoma City, Okla., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 21, 1994, Ser. No. 327,532
Int. Cl.[6] B29C *53/40*
U.S. Cl. 156—137 **7 Claims**



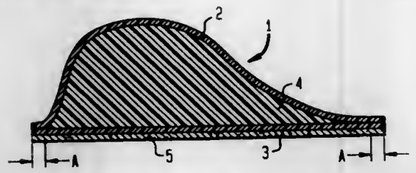
1. A process for fabricating a flexible belt from a flexible web having a leading edge, said process comprising conveying said leading edge from a web supply roll for a predetermined distance downstream from a slitting station while maintaining said web under tension, gripping said web at a first predetermined location upstream of said slitting station, relieving said tension in said web to form slack in said web between said leading edge and said first predetermined location, gripping said web at a second predetermined location between said first predetermined location and said slitting station, slitting said web at said slitting station while maintaining said slack in said web to form a web segment having a trailing edge opposite said leading edge, overlapping said leading edge and said trailing edge to form a loop of said web segment loosely suspended from a joint formed by the overlapped leading edge and trailing edge, and welding said overlapped leading edge and trailing edge together to form a welded seam.

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5,603,791
METHOD OF MAKING BREAST PROSTHESIS

Georg Weber-Unger, Kufstein, Austria, and Stephan Volk, Miesbach, Germany, assignors to Dr. Helbig GmbH & Co. Orthopädische Produkte, Brannenburg, Germany

Division of Ser. No. 299,755, Sep. 1, 1994, abandoned. This application May 16, 1995, Ser. No. 442,357
Claims priority, application Germany, Jun. 20, 1994, 44 21 516.9
Int. Cl.[6] A61F *2/52*; **B32B** *31/04;31/06;31/26*
U.S. Cl. 156—145 **2 Claims**

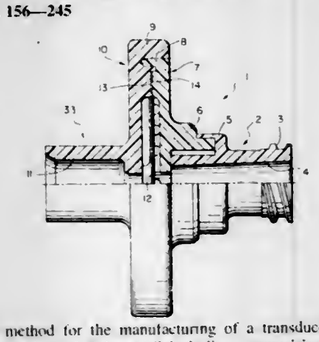


1. A method of making a breast prosthesis to be worn on the body of a person who has had a mastectomy, comprising the steps of:
forming a bag with an inlet opening by suitably welding two plastic sheets to each other along a common weld which later defines the perimeter of the prosthesis and welding a fabric member of thermoplastic material to one side of the bag only along the common weld, which fabric member later defines the rear side of the prosthesis;
placing the bag in a mold having a cavity of a configuration corresponding to the front side of the prosthesis resembling the person's natural breast;
introducing a non-vulcanized silicone rubber through the inlet opening of the bag; and
applying heat to the bag to cross-link the silicone rubber.

5,603,792
METHOD OF MAKING A TRANSDUCER-PROTECTOR DEVICE FOR BIOMEDICAL HAEMODIALYSIS LINES

Ernesto Guala, and Gianni Guala, both of Turin, Italy, assignors to Industrie Borla S.p.A., Turin, Italy

Division of Ser. No. 338,093, Nov. 9, 1994, Pat. No. 5,500,003. This application Jun. 7, 1995, Ser. No. 482,562
Claims priority, application Italy, Nov. 9, 1993, TO93A0844
Int. Cl.[6] B29C *45/16*
U.S. Cl. 156—245 **3 Claims**

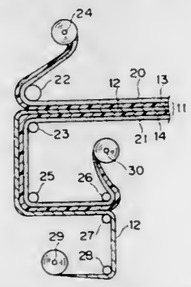


1. A method for the manufacturing of a transducer-protector device for biomedical haemodialysis lines, comprising a body of moulded plastic material having a first tubular connector of the Luer Lock female type said first connection having a conical inner surface, an outer threading, and a radial-axial attachment element, and a second tubular connector coaxial to said first tubular connector, said first and second connectors being provided with respective first and second radial annular flanges for their mutual permanent sealed connection, and a filtering membrane made of a permeable material and defining an anti-contamination sterile barrier transversally interposed between said first and second tubular connectors and said membrane having a peripheral edge clamped between said radial flanges, said method comprising the following steps:
forming said first radial flange and a first tubular axial appendage integral therewith by moulding of a first relatively rigid plastic material,
forming said second tubular connector and the respective second radial flange integral therewith by moulding of the same first relatively rigid plastic material,
inserting said first radial flange with said first tubular axial appendage integral therewith into a mould,
forming said first tubular connector with the outer threading thereof and said radial-axial attachment element integral therewith by moulding a second relatively soft plastic material over said first axial appendage,
permanently welding said first and second flanges to each other after interposing said membrane therebetween.

5,603,793
METHOD OF FABRICATING CERAMIC GREEN SHEETS WITH SUPPORTING FILMS

Kazuhiro Yoshida; Hiromasa Fujii, and Mitsugu Suyama, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Dec. 22, 1994, Ser. No. 362,123
Claims priority, application Japan, Dec. 27, 1993, 5-332371
Int. Cl.[6] B32B *31/08;31/12*
U.S. Cl. 156—247 **12 Claims**



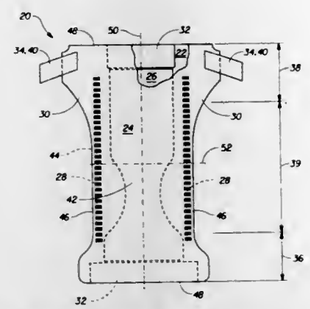
1. A method of fabricating ceramic green sheets with supporting films, comprising the steps of:
preparing a supporting member constructed by affixing supporting films to both surfaces of a longitudinal adhesive tape at least both surfaces of which have adhesive properties;
forming ceramic green sheets on said supporting films on both surfaces of said supporting member; and
stripping the ceramic green sheet supported by one of the supporting films, along with said one supporting film, from said adhesive tape, thereby to obtain a separated pair of ceramic green sheets supported by the corresponding supporting films.

5,603,794
METHOD FOR MANUFACTURING ANGLED TAPE TABS FOR USE WITH DISPOSABLE ABSORBENT ARTICLES

Suzanne M. Thomas, Fairfield, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 22, 1996, Ser. No. 605,413
Int. Cl.[6] A61F *13/15;13/58*
U.S. Cl. 156—256 **21 Claims**

1. A method for manufacturing an angled tape tab for a disposable absorbent article, comprising the steps of:
providing an adhesive coated substrate having a first centerline and a second centerline perpendicular to said first centerline;

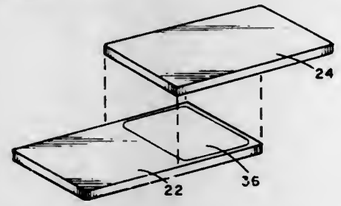


contacting a release substrate having a release surface and an adhesive surface with said adhesive coated substrate such that said release substrate partially covers said adhesive coated substrate to form a laminate;
cutting said laminate at an angle to the first centerline to form individual angled tape tabs, each angled tape tab having a fixed end and a refastenable end; and
securing said fixed end of said angled tape tab to an absorbent article comprising a topsheet and a backsheet.

5,603,795
JOINING OF THERMOPLASTIC SUBSTRATES BY MICROWAVES

Felix L. Paulauskas, Oak Ridge, and Thomas T. Meek, Knoxville, both of Tenn., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Filed Sep. 1, 1994, Ser. No. 299,559
Int. Cl.[6] B32B *31/28*
U.S. Cl. 156—272.4 **12 Claims**



1. A method for joining two items having surfaces of thermoplastic material, the method comprising the steps:
depositing an electrically-conductive material upon the thermoplastic surface of at least one of the items;
placing the other of the two items adjacent the one item so that the deposited material contacts the surfaces of both the one and the other items;
exposing the deposited material to microwave radiation so that the energy of the radiation heats the deposited material which, in turn, melts the thermoplastic surfaces in contact with the deposited material;
applying pressure to the two items while the thermoplastic surfaces are in the melted condition so that the surfaces fuse together; and
permitting the thermoplastic surfaces to cool from the melted condition so that the two items are joined together by the fused thermoplastic surfaces; and
wherein the electrically-conductive material deposited during the depositing step has a thickness, and the thickness of the deposited electrically-conductive material is no greater than the skin depth, δ_s, defined in accordance with the equation:

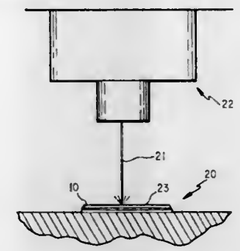
$$\delta_s = 1/[\pi f \sigma \mu]^{1/2}$$

wherein f is the frequency of the microwave radiation to which the deposited material and the thermoplastic surfaces are exposed during the exposing step, σ is the electrical conductivity of the electrically-conductive material, and μ is the magnetic permeability of the electrically-conductive material.

5,603,796
LASER CUTTING METHOD FOR MARKING TIRE APPLIQUES

Mary E. Baker, Shelbyville, Ind., assignor to Tattoo Incorporated, Shelbyville, Ind.

Filed Jun. 15, 1992, Ser. No. 898,143
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—272.8 **5 Claims**



1. A method for marking a tire, comprising the steps of:
a. providing an applique comprised of a laminate material including at least two layers, the first layer comprising an elastomeric material adapted for securement to a tire surface and the second layer comprising a substantially elastomeric material to be cut;
b. marking the applique by cutting at least the second layer of the lamninate material with a laser beam so that the cut margins of the second layer form the configuration of the identifying indicia; and
c. affixing the applique to the surface or the tire at a desired location.

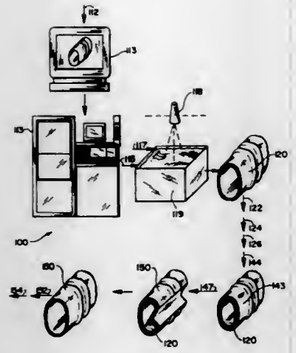
5,603,797
FLEXIBLE REINFORCED RUBBER PART MANUFACTURING PROCESS UTILIZING STEREOLITHOGRAPHY TOOLING

Stan W. Thomas, Garland; Willie K. Jackson, Greenville; Roger D. Key, Greenville; Gary L. White, Greenville; Keith D. Elwell, Greenville, and Kyle G. Fluegel, Greenville, all of Tex., assignors to E-Systems, Inc., Dallas, Tex.

Continuation of Ser. No. 226,023, Apr. 11, 1994, abandoned, which is a division of Ser. No. 977,017, Nov. 16, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 462,802
Int. Cl.[6] B32B *5/10*
U.S. Cl. 156—272.8 **2 Claims**

1. A process for the manufacture of a flexible rubber part comprising the steps of:
designing a part on a computer-aided design system;
creating from the computer-aided design imaginary cross-sections of the designed part;
selecting a liquid photopolymer having sufficiently brittle properties upon solidification and curing to be shatterable;
stereolithographically solidifying the liquid photopolymer by laser beam energy in accordance with a created cross-section of the part;
repeating the previous step for each cross-section to form a complete stereolithographic tool;
curing the solidified liquid photopolymer of the resulting stereolithographic tool;

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cleaning the solidified liquid photopolymer of the cured stereolithographic tool;

preparing the surface of the stereolithographic tool with a sealant;

preparing the surface of the stereolithographic tool with a parting agent;

applying successive layers of glass fabric and silicone resin to the prepared stereolithographic tool to produce a flexible reinforced rubber part;

curing the successive layers of glass fabric and silicone resin of the reinforced rubber part; and

deforming the reinforced rubber part to shatter and remove the stereolithographic tool.

5,603,798

TWO-PART MOISTURE CURABLE POLYURETHANE ADHESIVE

Shailesh S. Bhat, Troy, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 582,828, Jan. 4, 1996, abandoned, which is a division of Ser. No. 373,146, Jan. 13, 1995, abandoned. This application May 8, 1996, Ser. No. 646,562

Int. Cl.[6] **C09J** *4/00;101/00;201/00;* **B31B** *1/60*

U.S. Cl. 156—331.4 **8 Claims**

1. A process for binding two substrates together which comprises:

1 contacting a portion of part A with a portion of part B of the adhesive comprising:

A. as a first part a polyurethane prepolymer having reactive isocyanate moieties;

B. as a second part a curative composition comprising:

i. a polyurea comprising the reaction product of a polyamine and a polyisocyanate dispersed in a polyether polyol-based polyurethane prepolymer having reactive hydroxyl moieties, and optionally, containing a plasticizer;

ii. a compound having at least one oxazolidine moiety capable of reacting with an isocyanate under curing conditions; and

iii. a catalyst capable of catalyzing the reaction of isocyanate and hydroxyl moieties in the presence of moisture.

2 applying the mixture of part A and part B to a first substrate; and

3 contacting a second substrate with the mixture of part A and part B previously applied to the first substrate under conditions such that the mixture cures and binds the first substrate to the second substrate.

5,603,799

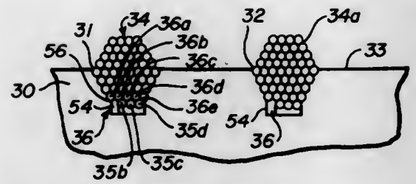
INSERT FOR USE WITH A TIRE BEAD FORMING APPARATUS

Robert W. Kolb, and Kenneth B. Turvey, both of Clinton, N.Y., assignors to Bartell Machinery Systems Corp., Rome, N.Y.

Continuation of Ser. No. 106,081, Aug. 13, 1993, abandoned. This application Jan. 30, 1995, Ser. No. 380,712

Int. Cl.[6] **B29D** *30/48*

U.S. Cl. 156—422 **16 Claims**



1. Tire bead forming apparatus comprising:

a) a rotatable bead former having at least one forming cavity for receiving a plurality of convolutions of the tire bead wire; and

b) an insert comprising a generally ramp-shaped member having a leading edge, a trailing edge, including an outer surface which is inclined upwardly from said leading edge to said trailing edge, and a sidewall portion adjacent to one side of said inclined surface and extending upwardly therefrom, said member being mounted on said bead former in a position such that, upon rotation of the bead former, the tire bead forming wire wound on said bead former is wound on said member and said sidewall portion, with said sidewall portion defining a void in the inside surface of a formed tire bead for receiving the inner termination end portion of the wire after the wound bead has been removed from the bead former to provide a tire bead having a substantially uniform inside surface.

5,603,800

APPARATUS FOR MANUFACTURING LAMPSHADES

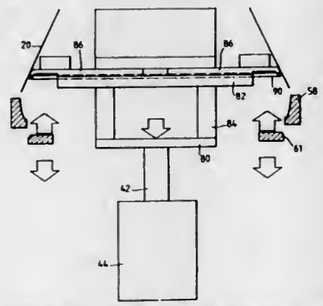
Jeremy D. Wheatley, St. Albans, and Andrew C. Diamond, Welwyn Garden City, both of United Kingdom, assignors to Welwyn Lighting Designs Limited, Hertfordshire, United Kingdom

Filed Feb. 22, 1995, Ser. No. 392,092

Claims priority, application United Kingdom, Feb. 23, 1994, 9403432

Int. Cl.[6] **B32B** *31/04*

U.S. Cl. 156—479 **9 Claims**



1. An apparatus for manufacturing a lampshade from a heat-deformable sheet material, said apparatus comprising: supporting means for supporting a hollow body formed from the sheet material with the hollow body having upper and lower peripheral edges, said supposing means including upper forming means centred on an axis for location within the hollow body adjacent the upper peripheral edge of the hollow body; ring support means for supporting a stiffening ring within the hollow body adjacent the lower peripheral edge of the hollow body said ring support means comprising a plurality of radially movable arms extending radially with respect to the axis with each arm including a magnet and terminating on a radially outer end in a concave pole piece configured to contact said stiffening ring; means for releasably supporting said stiffening ring with said ring in peripheral engagement with an interior surface of the hollow body adjacent a peripheral edge thereof, so that the lower marginal edge portion of the body projects beyond said stiffening ring; means for heating the lower marginal edge portion; means for engaging the lower marginal edge portion after such heating and at least one of folding and rolling the lower marginal edge portion around said stiffening ring; and means for holding the formed edge portion in place until the material has cooled.

5,603,801

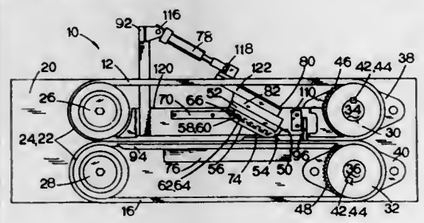
INFINITE UNIVERSAL SEALING ASSEMBLY

John M. DeFriese, and David Gassel, both of 4523 Riverview Blvd., St. Louis, Mo. 63120

Division of Ser. No. 56,060, Apr. 30, 1993. This application Dec. 5, 1994, Ser. No. 349,742

Int. Cl.[6] **B32B** *31/00*

U.S. Cl. 156—515 **17 Claims**



1. An infinite sealing assembly for cutting and sealing a film, comprising:

means for conveying a film through a sealing assembly, the film having at least two free edges abutting one another;

means for tracking the film in a generally desired path through the sealing assembly and maintaining the free edges in an abutting relationship;

means for trimming an excess portion of the film as the film is conveyed through the assembly the trimming means comprising a generally internally heated blade and an associated source of heat to raise the temperature of the blade as required to trim the film;

a heat source receiving means defined by the heated blade and the heat source located generally within the heat source receiving means;

reciprocating means associated with the heated blade, the reciprocating means allowing movement of the heated blade into contact with the film and out of contact with the film;

means for actuating the blade in response to the reciprocating means, the actuating means actuating the blade for maintaining operative contact between the blade and the film during operation of the sealing assembly, and further allowing the angle of the blade relative to the film to be adjusted, the actuating means and the conveying means operating relatively independent of one another;

ramp means for effecting elevation of the film during operation of the sealing assembly, the ramp means located substantially below the blade and in a generally supporting relationship relative to the film so as to provide support for the film while the film is in operative contact with the blade; and

the trimming means heated blade and the associated source of heat to raise the temperature of the blade as required to seal together the free edges of the film further providing means for sealing the free edges of the film as the film is conveyed through the assembly.

5,603,802

METHOD AND APPARATUS FOR WELDING BAGS TO RINGS

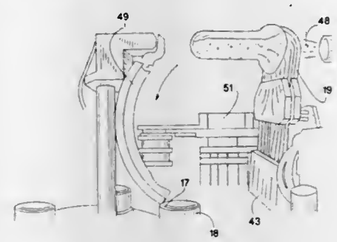
Adam Kruczynski, and Anne Miller, both of Cambridge, United Kingdom, assignors to Chartex International PLC, London, United Kingdom

Filed Jul. 27, 1993, Ser. No. 96,977

Claims priority, application United Kingdom, Apr. 23, 1993, 9308453

Int. Cl.[6] **B29C** *65/02*

U.S. Cl. 156—556 **6 Claims**



1. An apparatus for welding a reinforcing member to a bag means, comprising:

at least one hollow mandrel, said hollow mandrel having a means for holding said reinforcing member;

means for applying a closed end of said bag means into said hollow mandrel and an open end of said bag means over said hollow mandrel at said means for holding said reinforcing member, said means for applying comprising gripper fingers which are adapted to be placed just inside the mouth of the bag means, said means for applying further comprising means for extending the gripper fingers from a first position, at which the gripper fingers are grouped together, to a second position, at which the gripper fingers are arranged in a circle, so that the bag means is gripped by the gripper fingers at a plurality of sites on a circumference of the open end of the bag means and so that the mouth of the bag means is stretched by the gripper fingers; and

means for welding said reinforcing member to said bag means.

5,603,803

METHOD AND APPARATUS FOR RECOVERING HEAT IN A SPENT LIQUOR RECOVERY BOILER

Keijo Raak, Varkaus, Finland, assignor to Ahlstrom Machinery Corporation, Noormarkku, Finland

PCT No. PCT/FI93/00427, § 371 Date Apr. 13, 1995, § 102(e) Date Apr. 13, 1995, PCT Pub. No. WO94/09206, PCT Pub. Date Apr. 28, 1994

PCT Filed Oct. 18, 1993, Ser. No. 416,752

Claims priority, application Finland, Oct. 19, 1992, 924719

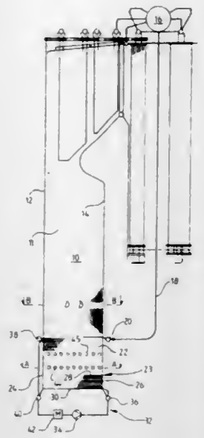
Int. Cl.[6] **D21C** *11/12*

U.S. Cl. 162—31 **20 Claims**

1. A method for recovering heat in a spent liquor recovery boiler in the pulp and paper industry, the boiler having walls formed of first water cooled tubes connected to a water/steam circulation system of the boiler, using second water cooled tubes in a lower section of the boiler, said method comprising the steps of:

(a) circulating water in a first circulation, at a first pressure, in the first water cooled tubes and the water/steam circulation system to recover heat from the boiler; and

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(b) circulating water in a second circulation, at a second pressure less than the first pressure, in the second water cooled tubes to recover heat from the boiler, and wherein the second circulation is not in communication with the water/steam circulation system.

5,603,804

PROCESS FOR PRODUCTION OF LINERBOARD AND CORRUGATED MEDIUM

Tomas T. Hansen, Alleroed; Hans C. Holm, Gentofte, both of Denmark, and Neal E. Franks, Newtown, Conn., assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

Continuation of Ser. No. 130,959, Oct. 4, 1993, abandoned. This application Feb. 9, 1996, Ser. No. 599,285

Int. Cl.[6] D21H *21/18*

U.S. Cl. 162—158 **17 Claims**

1. A process for producing linerboard or corrugated medium, comprising:

(a) preparing a suspension of unbleached chemical or semi-chemical pulp or pulp from recycled fibers,

(b) treating the diluted pulp with oxygen and a laccase in an amount of 10–50,000 units per gram of dry matter, and

(c) dewatering the treated pulp in a paper making machine to remove process water and produce the linerboard or corrugated medium,

wherein no beating or refining of the pulp occurs during or after step (b).

5,603,805

SILICA SOLS AND USE OF THE SOLS

Kjell Andersson, Göteborg; Bo Larsson, Partille, and Erik Lindgren, Bohus, all of Sweden, assignors to Eka Nobel, AB, Bohus, Sweden

PCT No. PCT/SE93/00663, § 371 Date Feb. 3, 1995, § 102(e) Date Feb. 3, 1995, PCT Pub. No. WO94/05596, PCT Pub. Date Mar. 17, 1994

PCT Filed Aug. 11, 1993, Ser. No. 379,630

Claims priority, application Sweden, Aug. 31, 1992, 9202502

Int. Cl.[6] D21H *21/10*

U.S. Cl. 162—168.3 **17 Claims**

1. Silica sols having an S-value within the range from 15 to 40 percent comprising anionic silica particles, said silica particles being non-aluminum modified, and having a specific surface area within the range of from 300 to 700 m^2/g.

5,603,806

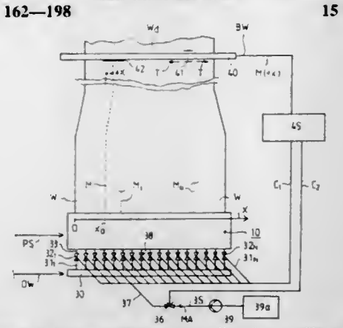
METHOD AND APPARATUS FOR LATERAL ALIGNMENT OF THE CROSS-DIRECTION QUALITY PROFILE OF A WEB IN A PAPER MACHINE

Reima Kerttula, Muurame, Finland, assignor to Valmet Corporation, Helsinki, Finland

Filed Jun. 1, 1995, Ser. No. 456,800

Int. Cl.[6] D21F *1/08*

U.S. Cl. 162—198 **15 Claims**



1. A method for controlling a cross-direction profile of a web characteristic in a paper machine in which a stock flow is discharged from a headbox to form a web which is then dried in the paper machine, the web having at least one marker line at its discharge from the headbox, comprising the steps of:

measuring the cross-direction profile of the web characteristic of the dried web at a measurement location and generating a profile measurement signal based thereon,

inputting the profile measurement signal to a control system and generating an output control signal based thereon,

detecting a lateral shift of the at least one marker line at or in the vicinity of the measurement location from its position at the headbox discharge and generating a measurement signal based thereon,

adjusting the consistency of the stock flow in the headbox in the cross-direction based on the control signal in conjunction with the measurement signal of the detected lateral shift to control the cross-direction profile of the web characteristic, said headbox stock flow consistency adjusting step comprising the steps of providing a control valve set having a plurality of valves, directing an outlet line of each of said valves to a respective one of a plurality of locations in the cross-direction of the stock flow in the headbox, and controlling the flow of a control medium having a consistency different than the consistency of the stock flow through said valves into the stock flow in the headbox to affect the consistency of the stock flow in the headbox in the cross-direction, and

injecting a marker agent through a flow line coupled to at least one of said valves such that the marker agent flows with control medium into the stock flow in the headbox at a respective one of said plurality of locations to form the at least one marker line.

5,603,807

PAPER MACHINE HEADBOX WITH LONGITUDINALLY SHIFTABLE CONTOURED WALL

Helmut Heinzmann, Böhmenkirch, Germany, assignor to J. M. Voith GmbH, Heidenheim, Germany

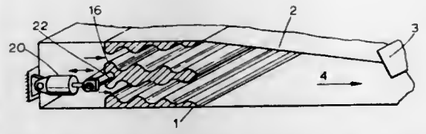
Continuation of Ser. No. 157,717, Nov. 24, 1993, abandoned. This application Jul. 5, 1995, Ser. No. 498,501

Claims priority, application Germany, Nov. 26, 1992, 42 39 644.1

Int. Cl.[6] D21F *1/06*

U.S. Cl. 162—343 **14 Claims**

1. A headbox of a machine for producing a fiber web from a pulp suspension which travels in a flow direction through said headbox, said headbox comprising:



a first chamber into which a pulp suspension is introduced;

a second chamber in fluid communication with said first chamber, said second chamber being provided downstream of said first chamber;

two walls provided in a region between said first chamber and said second chamber so that said pulp suspension flows between said two walls, one of said two walls having a non-planar, contoured surface to generate turbulence in the pulp suspension flowing between said two walls, said one of said walls having a cross-section with a plurality of maximum-width portions including a first maximum-width portion and a second maximum-width portion and a plurality of minimum-width portions including a first minimum-width portion and a second minimum-width portion, said maximum-width portions alternating with said minimum-width portions, said first maximum-width portion being disposed upstream of said second maximum-width portion, said first maximum-width portion having a first width and said second maximum-width portion having a second width, said first width being greater than said second width, said first minimum-width portion being disposed upstream of said second minimum-width portion, said first minimum-width portion having a third width and said second minimum-width portion having a fourth width, said third width being greater than said fourth width, each of said minimum-width portions having a concavely curved surface and each of said maximum-width portions having a convexly curved surface; and

means for longitudinally shifting said one of said two walls with respect to the other of said two walls to control the turbulence generated in the pulp suspension between said two walls.

5,603,808

MOLD FOR FORMING PULP MOLDINGS

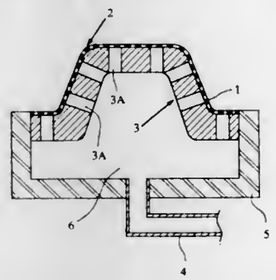
Kazuyuki Nishikawa, Toyohashi, Japan, assignor to Sintokogio, Ltd., Nagoya, Japan

Filed Dec. 22, 1995, Ser. No. 576,951

Claims priority, application Japan, Dec. 27, 1994, 6-339783

Int. Cl.[6] D21J *3/00*; **B28B** *7/40*

U.S. Cl. 162—382 **6 Claims**



1. A mold for producing a pulp molding, comprising a reticulate resin mold part (1) mounted on a support member (3), said resin mold part having a three-dimensional shape, said resin mold part having openings (1A, 1A) of 0.1 mm–2.0 mm, all surfaces of said resin mold part being metallized with a coating 5–500 μm thick, said support member having openings therein that allow water from said resin mold part openings to flow through said support member.

5,603,809

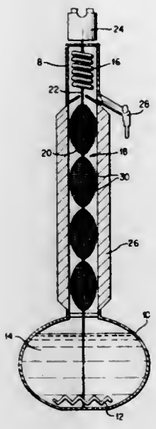
SPINNING BAND

Roger R. Roark, Sr., 9119 Centerville Rd., Easton, Md. 21601

Continuation-in-part of Ser. No. 87,448, Jul. 9, 1993, Pat. No. 5,472,574. This application Feb. 3, 1995, Ser. No. 383,371

Int. Cl.[6] B01D *3/14*

U.S. Cl. 202—153 **5 Claims**



1. A spinning device for fractionating a mixture, comprising:

a means including a central spinable shaft;

at least two elongated strips torqued about their longitudinal center and affixed to said central spinable shaft at said longitudinal center so that each of said elongated strips results in two symmetric substantially helicoidally shaped blades;

said elongated strips being finely meshed and having frayed longitudinal edges for creating turbulences within a mixture and for scraping an inner wall of a fractionating column;

said finely meshed elongated strips having a plurality of apertures evenly and sequentially spaced along said longitudinal center, and said plurality of apertures having diameters ranging from 10% to 50% of the width of said finely meshed elongated strips;

wherein said plurality of apertures throughout said finely meshed elongated strips, said frayed longitudinal edges of said elongated strips, and a plurality of said blades created by at least two of said finely meshed elongated strips are integrally combined so that fractionating efficiency is maximized.

4. A spinning device for fractionating a mixture, comprising:

means including a central spinable element;

at least two non-metallic elongated strips torqued about their longitudinal center and affixed to said central spinable element at said longitudinal center so that each of said non-metallic elongated strips results in two symmetric substantially helicoidally shaped blades;

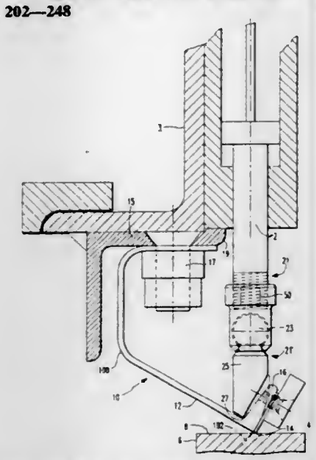
said non-metallic elongated strips being jagged on both longitudinal edges for creating turbulences within a mixture and for scraping an inner wall of a fractionating column;

said non-metallic elongated stripe having a plurality of apertures staggered on an outer portion of a face of said non-metallic strips, said plurality of apertures being circular end having diameters ranging from 10% to 50% of the width of said non-metallic elongated strips;

where in said plurality of apertures throughout said non-metallic elongated strips, said jagged edges of said non-metallic elongated strips, and a plurality of said blades created by at least two of said non-metallic elongated strips are integrally combined so that fractionating efficiency is maximized.

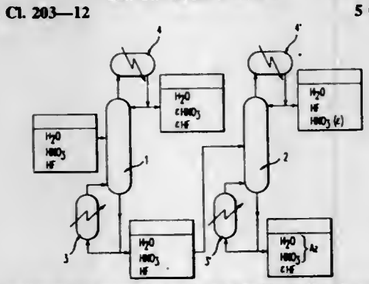
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5,603,810
COKE-OVEN DOOR SEAL
August E. Michler, Pittsburgh, Pa., assignor to Minnotte Corporations, Pittsburgh, Pa.
Filed Mar. 7, 1995, Ser. No. 399,920
Int. Cl.[6] C10B *25/00;* **F23M** *7/00*
U.S. Cl. 202—248 **9 Claims**



1. A coke-oven door seal comprising a sealing arm in angular relation with a door jamb surface; said sealing arm engageable with said door jamb surface at a knife edge; said sealing arm protruding beyond said knife edge and away from said door jamb surface; said knife edge movable along said door jamb surface.

5,603,811
PROCESS FOR THE TREATMENT OF AN AQUEOUS SOLUTION MAINLY CONTAINING NITRIC ACID AND HYDROFLUORIC ACID
Philippe Lucas, Paris; Jean-Paul Moulin, Bois d'Arcy; Olivier Haina du Fretay, Pont Saint Esprit; Joseph Roussel, Beaumes de Venise; Jany Petit, Sérignan Du-Comtat; Claude Saintouil, Suze La Rousse, and Claude Toussaint, Orange, all of France, assignors to Cogema -Compagnie Generale Des Matieres Nucleaires, Velizy Villancoublay, France
Continuation of Ser. No. 924,046, Sep. 21, 1992, abandoned. This application Mar. 18, 1994, Ser. No. 210,412
Claims priority, application France, Mar. 21, 1990, 90 03639
Int. Cl.[6] B01D *3/10;3/36*
U.S. Cl. 203—12 **5 Claims**



1. A process for separating nitric acid and hydrofluoric acid from an effluent aqueous solution, comprising nitric acid and hydrofluoric acid, which process comprises:
a) distilling said effluent aqueous solution comprising nitric acid and hydrofluoric acid to obtain residual water containing less than 100 mg/l hydrofluoric acid and less than 3 g/l nitric acid as a distillate, and a concentrate which consists of a mixture of nitric acid-water azeotrope and hydrofluoric acid-water azeotrope; and
b) distilling said concentrate, thereby obtaining a hydrofluoric acid-rich solution distillate consisting of hydrofluoric acid-water azeotrope containing more than 25 mol % of hydrofluoric acid and less than 5 mol % of nitric acid and a nitric acid-rich distillation residue containing more than 55% by wt. of nitric acid and less than 25 mol % of hydrofluoric acid.

5,603,812
PROCESS FOR THE RECOVERY OF A STRONG ACID FROM AN AQUEOUS SOLUTION
Sven I. Hommeltoft, Hillerod, Denmark, assignor to Haldor Topsøe A/S, Copenhagen, Denmark
Filed Sep. 7, 1994, Ser. No. 301,842
Claims priority, application Denmark, Jun. 17, 1994, 0707/94
Int. Cl.[6] B01D *3/34*
U.S. Cl. 203—29 **9 Claims**

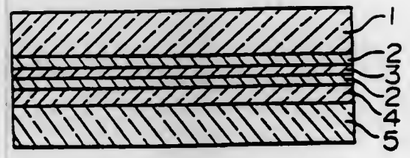
1. A process for the recovery of an acid in its anhydrous form, the process comprising the steps of:
providing an aqueous solution containing the acid in its hydrated form;
adding to the solution a weak base in the form of a soluble salt of the acid;
concentrating the solution containing the acid hydrate and the salt of the acid to a substantially water free acid-salt mixture; and
distilling off the acid in its anhydrous form from the acid-salt mixture.

5,603,813
PURIFYING DISTILLATION OF VINYL FORMATE
Thomas Rühl, Frankenthal; Marc Heider, Neustadt; Jochem Henkelmann; Ralf-Thomas Rahn, both of Mannheim, and Harald Rust, Neustadt, all of Germany, assignors to BASF Aktiengeselschaft, Ludwigshafen, Germany
Filed Aug. 2, 1995, Ser. No. 510,568
Claims priority, application Germany, Aug. 10, 1994, 44 28 303.2
Int. Cl.[6] B01D *3/00;* **C07C** *51/44*
U.S. Cl. 203—74 **3 Claims**

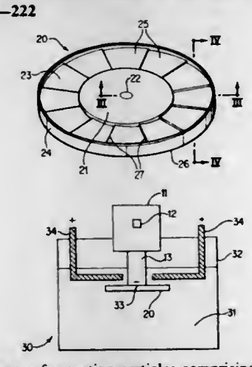
1. A process for separating vinyl formate from a synthesis mixture containing vinyl formate, formic acid, acetaldehyde and water, which process comprises: distilling the synthesis mixture in a first column to remove an acetaldehyde and vinyl formate fraction from the formic acid and water, passing the acetaldehyde and vinyl formate fraction to a second distillation column, and distilling off the acetaldehyde from the thus purified vinyl formate.

5,603,814
MAGNETO-OPTICAL DISK
Kazuhiko Tsutsumi; Motohisa Taguchi, and Hiroshi Sugahara, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 095,342, Jul. 23, 1993, abandoned, which is a continuation of Ser. No. 905,237, Jun. 29, 1992, Pat. No. 5,283,133, which is a continuation of Ser. No. 734,115, Jul. 25, 1991, abandoned, which is a continuation of Ser. No. 350,691, May 9, 1989, abandoned. This application Nov. 9, 1993, Ser. No. 149,531
Claims priority, application Japan, Jul. 27, 1988, 63-188806
Int. Cl.[6] G11B *5/66;* **C23C** *14/00*
U.S. Cl. 204—192.22 **2 Claims**

1. A method of making a magneto-optical disk comprising the steps of:
formation by reactive sputtering on a substrate a first AlGeN dielectric film by use of an aluminum-germanium alloy target in a mixed atmosphere wherein said mixed atmosphere comprises at least a nitrogen gas:
forming a magnetic film on top of said first formed AlGeN dielectric film;
forming a second dielectric film, by the same process as said first dielectric film on top of said magnetic film; and
forming an adhesive film on said second dielectric film for adhering said second dielectric film to a second substrate.

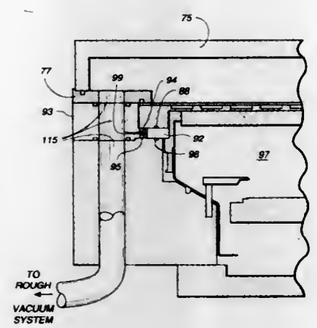


5,603,815
ELECTROCHEMICAL FLUIDIZED BED COATING OF POWDERS
David S. Lashmore, 60 Farr Rd., Lebanon, N.H. 03766; Glenn L. Beane, RFD 3 Perch Pond Rd., Box 134, Plymouth, N.H. 03264; David R. Kelley, 2009 Tuscarora Creek Rd., Martinsburg, W. Va. 25401, and Christian E. Johnson, 34 Boileau Ct., Middletown, Md. 21769
Filed Oct. 4, 1994, Ser. No. 317,532
Int. Cl.[6] C25D *17/00;5/00;7/00;* **B05C** *3/00*
U.S. Cl. 204—222 **4 Claims**



1. An apparatus for coating particles comprising:
(a) an imperforate circular container for receiving particles to be coated and an electrolyte;
(b) a device for generating a fluidized bed in said container, said device being operatively associated with said container, said device including a means for agitating said container; and
(c) a device for passing a current through the electrolyte, said device comprising an electrochemical deposition cell including an anode, wherein said container is a cathode in said electrochemical deposition cell;
(d) wherein said circular container includes a particle pathway comprising a recessed annular portion, wherein said recessed annular portion contains a series of sloped, stepped segments, said sloped, stepped segments having a surface and a top edge, said container including a base, said container having a center, said container terminating at an outside rim;
(e) wherein the sloped, stepped segments are declined at an angle of declination of between about 0° and about 10° towards the center of the circular container, the angle of declination defined by a plane passing through the base of the container and a line formed by the top edge of the sloped segment drawn from the outside rim of the container to the center of the container, said angle of inclination being greater than 0.

5,603,816
SPUTTERING DEVICE AND TARGET WITH COVER TO HOLD COOLING FLUID
Richard E. Demaray, Portola Valley; Manuel Herrera, San Mateo, and David E. Berkstresser, Los Gatos, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.
Division of Ser. No. 157,763, Nov. 24, 1993, Pat. No. 5,433,835. This application Jun. 5, 1995, Ser. No. 461,822
Int. Cl.[6] C23C *14/34*
U.S. Cl. 204—298.07 **2 Claims**

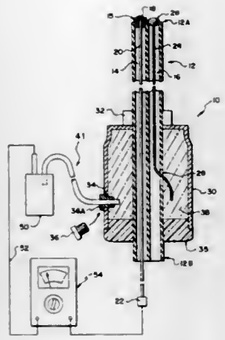


1. A sputtering device comprising:
a substrate processing chamber having a target assembly covering and sealing the top opening of the processing chamber;
a top vacuum chamber having a lower opening similar in size to said top opening of said processing chamber, said lower opening generally being covered and sealed with said target assembly;
processing chamber vacuum means to create a vacuum in the processing chamber;
top vacuum chamber vacuum means for creating a vacuum in said top vacuum chamber; and
an electrical connection to said target assembly, said connection including a safety device providing an open circuit, between a power source and said target assembly when a predetermined vacuum pressure is not provided to said top vacuum chamber and a closed circuit when a vacuum pressure equal to or greater than said predetermined vacuum pressure is provided.

5,603,817
PH MEASURING SYSTEM
Bert Settler, 723 Queenston Street, Winnipeg Manitoba, Canada, and Morris Settler, 590 Niagara Street, Winnipeg Manitoba, Canada
Filed Jun. 12, 1995, Ser. No. 489,512
Claims priority, application United Kingdom, Jul. 10, 1994, 9411701
Int. Cl.[6] G01N *27/26*
U.S. Cl. 204—433 **18 Claims**

1. A pH measuring electrode comprising:
probe means for defining a first lumen and a second lumen with adjacent first ends;
a sensor electrode secured to the first end of the first lumen and exposed at the first end of the first lumen;
an electric conductor leading from the sensor electrode through the first lumen including means for electrical connection to an electrical meter for measuring an electrical value indicative of the pH to be measured;
a fibrous thread material extending along the second lumen;
means for electrically connecting the thread material to the electrical meter; and

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porous means closing the first end of the second lumen and electrically connected to the thread material.

5,603,818

TREATMENT OF METAL PARTS TO PROVIDE RUST-INHIBITING COATINGS

Randall J. Brent, North Royalton, and David A. Blaha, Parma, both of Ohio, assignors to Man-Gill Chemical Company, Cleveland, Ohio

Continuation of Ser. No. 325,786, Oct. 19, 1994, abandoned, which is a continuation of Ser. No. 156,308, Nov. 23, 1993, Pat. No. 5,385,655, which is a continuation of Ser. No. 969,128, Oct. 30, 1992, abandoned. This application Dec. 8, 1995, Ser. No. 569,324

Int. Cl.[6] C25D *13/04*

U.S. Cl. 204—488 **28 Claims**

11. A method of producing an adherent and rust-inhibiting multi-layer finish on small metal parts wherein the metal is selected from the group consisting of ferrous metal, zinc, aluminum, and alloys thereof comprising the steps of

(A) immersing the parts in an aqueous acidic zinc, lead, iron or manganese phosphating solution for a period of time and at a temperature sufficient to deposit an adherent phosphate coating on said metal parts;

(B) rinsing the phosphate-coated parts with an aqueous acidic solution containing an under-paint corrosion inhibitor;

(C) immersing the phosphate-coated metal parts contained on a rack or in a rotatable porous barrel in an aqueous dispersion, emulsion or solution of a cathodic or anodic thermosetting resin and passing through said parts, an electric current to electrodeposit resin particles on the phosphate-coated parts by electrophoresis to form a first resin film;

(D) contacting the parts having the first resin film with an aqueous composition prior to curing of the first resin film to form a second film of the aqueous composition over the first film as a seal coat, said aqueous composition comprising water and at least one water-dispersible or emulsifying anodic or cathodic film-forming resin provided: that the compositions of second film is a cathodic composition when the composition of the first film is anodic; and the composition of the second film is anodic when the composition of the first film is cathodic; and

(E) curing the films on the metal parts by subjecting the parts to an elevated temperature for a time sufficient to cure the films; wherein the small metal parts comprise nuts, bolts, fasteners, screws, small sub-assemblies, and mixtures thereof.

5,603,819

VARIATION OF THE SHAPE AND MORPHOLOGICAL PROPERTIES OF SILICA AND METAL OXIDE POWDERS BY ELECTRO HOMOGENEOUS PRECIPITATION

Michael T. Harris, Knoxville; Osman A. Basaran; Warren G. Sisson, both of Oak Ridge, and Ronald R. Brunson, Lenoir City, all of Tenn., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Continuation-in-part of Ser. No. 35,441, Mar. 24, 1993, abandoned. This application Jun. 9, 1994, Ser. No. 257,423

Int. Cl.[6] C25B *1/24*

U.S. Cl. 205—341 **19 Claims**



12. A method of preparing irreversible linear aggregates of metal oxide powders comprising the steps of:

(a) preparing a relatively non-conducting homogeneous liquid comprising an organic solvent liquid having a dielectric constant (ε) of less than 10 and a boiling point of from about 50° to about 100° C., containing water in a concentration of from about 0.1 mol/L to about 6.0 mol/L, and ammonia in a concentration of from about 0.1 mol/L to about 0.7 mol/L, and at least one compound selected from the group comprising silicon alkoxides and organometal compounds;

(b) producing a pulsed electrical field having a desired frequency;

(c) applying said pulsed electrical field across said relatively non-conducting liquid, thereby inducing the formation of linear aggregates of silicon hydroxide or metal hydroxide;

(d) converting said desired silicon hydroxide or metal hydroxide linear aggregates to silicon oxide or metal oxide linear aggregates.

5,603,820

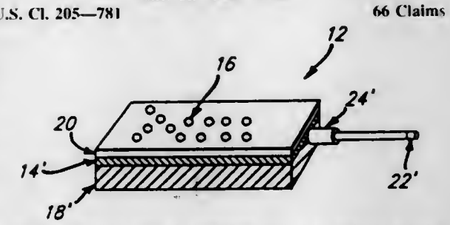
NITRIC OXIDE SENSOR

Tadeusz Malinski, Oakland Township, Mich.; David A. Wink, Hagerstown, Md.; Janet Younathan, Rochester, N.Y.; Royce W. Murray, Chapel Hill, N.C.; Melani Sullivan, Rüfenach, Switzerland; Thomas J. Meyer, Chapel Hill, N.C., and Danae D. Christodoulou, Frederick, Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C., and The University of North Carolina at Chapel Hill, Chapel Hill, N.C.

Continuation-in-part of Ser. No. 871,463, Apr. 21, 1992, abandoned, and Ser. No. 918,661, Jul. 22, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 477,620

Int. Cl.[6] G01N *27/26*

U.S. Cl. 205—781 **66 Claims**



56. A method of directly measuring NO in an analytic solution generally comprising the steps of:

a) providing an electrode sensor comprising a conductive support having a layer of catalytic material disposed thereon with a layer of a cationic exchanger disposed on the catalytic material;

b) providing a counterelectrode;

c) providing an instrument for measuring an electrical signal developed between the electrode sensor and the counterelectrode;

d) placing the electrode sensor in the analytic solution;

e) placing the counterelectrode in the analytic solution; and

f) measuring the electrical signal developed between the electrode sensor and the counterelectrode.

5,603,821

LOW-ALUMINUM BORON BETA ZEOLITE

Lawrence W. Jossens, Albany; Donald S. Santilli, Larkspur, and James N. Ziemer, Hercules, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 905,720, Jun. 26, 1992, Pat. No. 5,393,407, which is a division of Ser. No. 594,574, Oct. 9, 1990, Pat. No. 5,166,111, which is a continuation of Ser. No. 377,359, Jul. 7, 1989, abandoned. This application Sep. 28, 1994, Ser. No. 314,182

Int. Cl.[6] C10G *47/16;11/05*

U.S. Cl. 208—111 **7 Claims**

1. A hydrocracking process comprising contacting a hydrocarbonaceous feedstock under hydrocracking conditions with hydrogen and a hydrocracking catalyst composition comprising a zeolite having a mole ratio of an oxide selected from silicon oxide, germanium oxide, and mixtures thereof to an oxide selected from boron oxide, or mixtures of boron oxide with aluminum oxide, gallium oxide or iron oxide, greater than 10:1 and wherein the amount of aluminum is less than 0.10% by weight and having the x-ray diffraction lines of Table 1(b), and an effective amount of a hydrogenation catalyst comprising a Group VIB metal, Group VIII metal or mixtures thereof.

5,603,822

CATALYTIC DEWAXING OF LUBE BASESTOCK RAFFINATES IN CONTACT WITH POUR POINT DEPRESSANTS

Thomas R. Forbus, Jr., Newtown, Pa., and David S. Shihabi, Pennington, N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Nov. 3, 1995, Ser. No. 551,972

Int. Cl.[6] C10G *73/44*

U.S. Cl. 208—111 **13 Claims**

1. A process for the catalytic dewaxing of raffinate to provide an improved lubricant basestock of superior viscometrics in higher yield, comprising:

providing a mixture of said raffinate containing between 0.01 and 10 weight percent of pour point depressants comprising the copolymer residue of a mixture of 1-alkene comonomers selected from the group consisting of C_3–C_{28} 1-alkenes, wherein said copolymer contains at least 10 weight percent of bimodal recurring monomeric units selected from C_{14}–C_{24} 1-alkenes;

contacting said mixture with hydrogen and shape selective metallosilicate catalyst particles in a catalytic hydrodewaxing zone under mild hydrodewaxing conditions sufficient to dewax said raffinate to yield conventionally dewaxed basestock having a pour point greater than 0° F.; and

recovering an increased yield of said improved lubricant basestock having said superior viscometrics comprising a pour point below 0° F. and an enhanced viscosity index greater than 100.

5,603,823

LA/ND-SPINEL COMPOSITIONS FOR METALS PASSIVATION IN FCC PROCESSES

Gwan Kim, Columbia, Md., assignor to W. R. Grace & Co.-Conn., New York, N.Y.

Filed May 12, 1995, Ser. No. 440,281

Int. Cl.[6] C10G *11/02*

U.S. Cl. 208—113 **14 Claims**

1. A process for fluid catalytic cracking a hydrocarbon feedstock containing at least 2 ppm vanadium wherein (a) an inventory of catalyst particles is repeatedly circulated between a hydrocarbon cracking zone and a catalyst regeneration zone, (b) said feedstock is contacted with said catalyst particles in said hydrocarbon cracking zone whereby said feedstock is cracked, and (c) said catalyst particles are regenerated in said regeneration zone, wherein the improvement comprises adding particles to said catalyst inventory, which added particles contain a metals passivation component containing:

15–60 parts by weight MgO,

30–60 parts by weight Al_2O_3, and

10–30 parts by weight rare earth compound selected from the group consisting of La oxide, Nd oxide, and mixtures thereof,

wherein at least a portion of said MgO and Al_2O_3 in said added particles is present as an Mg—Al oxide spinel phase prior to said addition.

5,603,824

HYDROCARBON UPGRADING PROCESS

Chwan P. Kyan, Mantua, and Paul J. Oswald, Voorhees, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Aug. 3, 1994, Ser. No. 285,476

Int. Cl.[6] C10G *23/02*

U.S. Cl. 208—208 R **21 Claims**

1. A process of upgrading a waxy hydrocarbon feed mixture containing sulfur compounds, which boils in the distillate range, in order to reduce sulfur content and 85% point while preserving octane of naphtha by-products and increasing distillate yield, wherein the process employs a single, downflow, reactor having at least two catalyst beds, vertically aligned, and an inter-bed redistributor between the beds, the top bed containing a hydrocracking catalyst and a bottom bed containing a dewaxing catalyst, the process comprising the following steps:

(a) separating the hydrocarbon feed mixture into a lighter, lower boiling stream and a heavier, higher boiling stream at a cut point which ranges from 550° to 800° F.;

(b) passing the lighter, lower boiling to the inter-bed redistributor, where it is used as a means of temperature regulation;

(c) hydrocracking the heavier, higher boiling stream in the top bed of the reactor at conditions sufficient to remove at least a portion of the sulfur compounds from the feedstock and effect a boiling range conversion;

(d) passing the effluent of the top bed to the interbed redistributor, where it is mixed with the lighter, lower boiling stream to form a recombined feed stream;

(e) subjecting the recombined feed stream of step (d) to catalytic dewaxing in the bottom bed by contacting the recombined feed stream with a dewaxing catalyst;

(f) recovering a product comprising a distillate having an increased yield and a naphtha having a high research octane number, as compared with a feedstock in which the entire stream was subjected to hydrocracking rather than only the heavier, higher boiling portion.

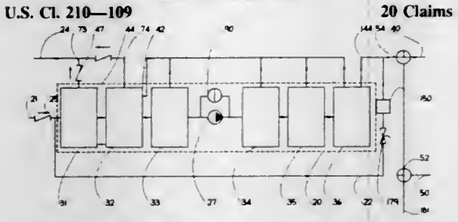
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5,603,825

MULTI-STAGE APPARATUS FOR SEPARATING IMMISCIBLE FLUIDS

Paul Costinel, #40 - 5500 - 48B Avenue, Delta, British Columbia, Canada

Filed Jul. 18, 1994, Ser. No. 277,433
Int. Cl.[6] C02F 9/00
U.S. Cl. 210—109 20 Claims



1. A separator for removing an immiscible fluid from a fluid denser than the immiscible fluid, said separator comprising:

a. a fluid inlet upstream from an outlet, said separator providing a path for flow of said fluid through said separator from said inlet to said outlet;

b. a toroidal separation chamber in said path downstream from said inlet said separation chamber having a tangentially disposed inlet for causing said fluid to swirl within said separation chamber;

c. a pump in said path, said pump having a suction port and a discharge port, said suction port in fluid communication with and downstream from said separation chamber; and

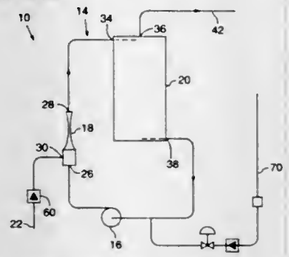
d. a bed of buoyant oleophilic plastic beads in said path and downstream from said separation chamber.

5,603,826

RETURN PUMP SYSTEM FOR USE WITH CLEAN-IN-PLACE SYSTEM FOR USE WITH VESSELS

Elmer S. Welch, Silver Lake, Wis., assignor to V Q Corporation, Silver Lake, Wis.

Filed Feb. 15, 1996, Ser. No. 601,792
Int. Cl.[6] B08B 9/08
U.S. Cl. 210—195.1 8 Claims



1. A self-cleaning return pump system for use with a clean-in-place system for cleaning vessels, the vessel having a bottom wall, a supply line and a return line and being supplied with a liquid through the supply line, the system comprising:

a recirculation loop for providing flow communication including a return pump, an eductor, and a separator, the return pump being arranged to discharge a liquid through the eductor into the separator and being supplied with a substantially continuous flow of liquid from the separator, the return line providing flow communication between the vessel to be cleaned and the eductor, the separator having an upper discharge port and a lower discharge port, the upper discharge port being positioned above the lower discharge port and being configured to discharge one of a liquid and a liquid-air mixture therefrom,

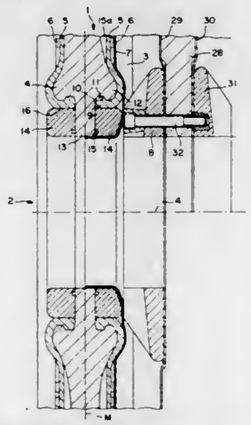
wherein the return pump causes liquid flowing through the recirculation loop at the eductor to have sufficient dynamic head to draw one of the liquid and a mixture of the liquid and air from the vessel through the return line, into the eductor and into the separator, wherein the lower discharge port of the separator provides the substantially continuous flow of liquid to the return pump and wherein substantially all of the air and a portion of the liquid is discharged from the separator upper discharge port at a flow rate sufficiently high to maintain a flow of liquid across the bottom wall of the vessel to maintain the liquid therein in a state of substantially continuous flow, and wherein the liquid is discharged from the separator upper discharge port at a rate of flow about equal to the rate of flow of liquid supplied to the vessel through the supply line.

5,603,827

MEMBRANE FILTER PLATE

Manfred P. Hermann, and Heinz Bonn, both of Numberg, Germany, assignors to JV Kunststoffwerk GmbH, Georgensgmund, Germany

Filed May 1, 1995, Ser. No. 432,972
Claims priority, application Germany, Apr. 30, 1994, 44 15 274.4
Int. Cl.[6] B01D 25/00
U.S. Cl. 210—230 18 Claims



1. A filter element comprising:

a rigid base plate, said plate defining a midplane and having a pair of oppositely disposed side surfaces, said plate having at least a first aperture therethrough, said aperture being defined by an edge region of said plate which extends between said side surfaces, said aperture having an axis which is substantially perpendicular to said midplane, said plate edge region including at least a first groove which generally opens in the direction of said axis;

at least a first flexible membrane, said membrane having an opening extending therethrough, said opening being coaxial with said aperture in said plate, a first portion of said membrane which extends about said opening being provided with a thickened bead area, said bead area at least in part being complementary in shape to said first groove, said complementary shaped bead area part being disposed in said first groove, a space being defined between at least another portion of said membrane and a side surface of said plate;

a filter cloth, said filter cloth being disposed at a side of said membrane which faces away from said plate side surface, said filter cloth being provided with an opening which is coaxial with said plate aperture; and

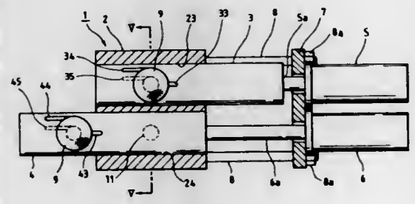
clamping ring means for engaging said membrane first portion and retaining said complementary shaped membrane bead area part in said first groove, said clamping ring means having a bearing surface which contacts a surface of said membrane, said bearing surface having an angle of inclination with respect to a line perpendicular to said midplane which results in the point of contact between said bearing surface and said membrane which is spaced the furthest from said midplane coinciding with the point of closest approach of said bearing surface to said axis, said angle of inclination not exceeding ten degrees whereby the majority of the forces produced by pressure induced distortion of said membrane another portion will be transmitted to said clamping ring means in directions which are generally radial to said aperture axis.

5,603,828

FILTER SCREEN CHANGER FOR RESIN EXTRUDER

Yasuhiko Ishida, Hiroshima, and Tomomi Kato, Mie, both of Japan, assignors to The Japan Steel Works, Ltd., Tokyo, Japan

Filed Sep. 20, 1995, Ser. No. 531,080
Claims priority, application Japan, Sep. 20, 1994, 6-225238
Int. Cl.[6] B01D 29/62
U.S. Cl. 210—239 1 Claim



1. A screen changer comprising:

a housing having a through-channel and through-holes crossing said through-channel;

a plurality of columnar slide bars, each having a filter portion communicable with said through-channel and insertable into one of said through-holes in said housing in a liquid-tight and reciprocating manner, said filter portion having an upstream compartment and a downstream compartment, such that when a molten material enters said housing via an inflow channel to said through-channel, said molten material passes through said filter portion to come out of said housing via an outflow channel from said through-channel;

material injection channels communicating the upstream compartments in said filter portions with said inflow channel;

first air withdrawing channels, disposed along outer surfaces of said slide bars, for communicating the topmost parts of said upstream compartments of said filter portions with the outside of said housing when said filter portions of said slide bars are sealed and isolated within said through-holes in said housing as a result of a movement of said slide bars;

second air withdrawing channels penetrating the topmost parts of said downstream compartments of said filter portions of said slide bars, communicating with the outer surfaces of said slide bars and extending along the outer surfaces of said slide bars to communicate with the outside of said housing when said filter portions are sealed and isolated within said through-holes in said housing as a result of said movement of said slide bars; and

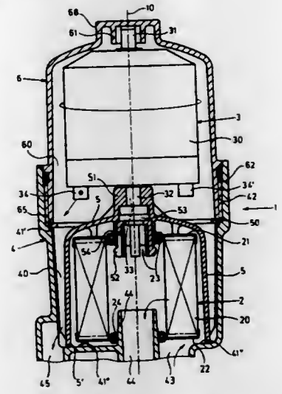
material withdrawing channels in said housing, for communicating the downstream compartments in said filter portions of said slide bars with the outside of said housing when said filter portions are sealed and isolated within said through-holes in said housing as a result of said movement of said slide bars.

5,603,829

DEVICE FOR CENTRIFUGALLY AND MECHANICALLY SEPARATING PARTICULATE CONTAMINANTS FROM LUBE OIL

Dieter Baumann, Greven, Germany, assignor to Ing. Walter Hengst GmbH & Co. KG, Muenster, Germany

Filed Mar. 2, 1994, Ser. No. 205,261
Claims priority, application Germany, Mar. 2, 1993, 43 06 431.0
Int. Cl.[6] B01D 36/00
U.S. Cl. 210—275 13 Claims



1. A device for separating contaminants out of lube oil of an internal combustion engine with the device comprising a housing having an open top end and a closed bottom wall a cover for closing said open top end, an intermediate wall positioned within the housing between said open top end and said closed bottom wall for forming a filter chamber adjacent said closed bottom wall, said housing including supply passage for directing lube oil to be cleaned into said filter chamber, said housing including a first oil drain passage in said closed bottom end for directing cleaned lube oil from said filter chamber, a filter element positioned within said filter chamber, said filter element having an exterior inlet side in fluid communication with the supply passage and an interior outlet side in communication with the first drain passage, and a centrifuge positioned between said cover and said intermediate wall, said centrifuge including an inlet communicating with the supply passage and an outlet arranged to cause rotation of the centrifuge about an axis by means of the lube oil flowing through the outlet, wherein said housing includes a second oil drain passage for receiving oil from the outlet of said centrifuge, whereby the filter element and the centrifuge are arranged in said housing and with the filter element and the centrifuge removable from the housing when the cover is removed from the housing, wherein the filter element and the centrifuge are arranged in the housing coaxially about and axially spaced apart along said axis.

5,603,830

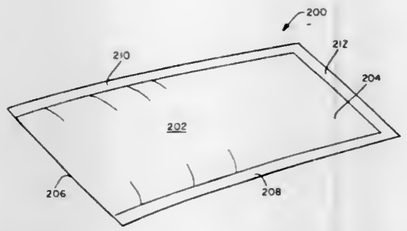
CAFFEINE ADSORBENT LIQUID FILTER WITH INTEGRATED ADSORBENT

Dennis S. Everhart, Alpharetta; Rosann M. Kaylor, Cumming, and Kenneth R. Smith, Atlanta, all of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed May 24, 1995, Ser. No. 448,801
Int. Cl.[6] B01D 39/00
U.S. Cl. 210—502.1 22 Claims

1. A caffeine adsorbent liquid filter comprising:

a matrix of fibrous material, the matrix of fibrous material selected from woven fabrics, knit fabrics and nonwoven fabrics; and



adsorbent particulate material integrated within the matrix of fibrous material,

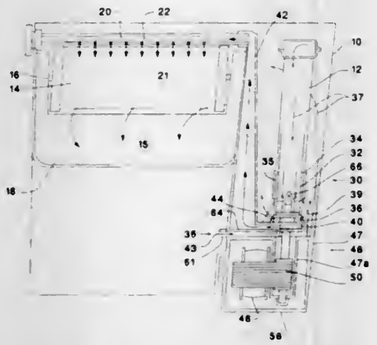
wherein passage of an aqueous liquid having a caffeine concentration ranging from about 20 to about 100 mg per 100 mL of liquid through the matrix for a contact time of less than about 2 minutes results in at least a 40 percent reduction in the caffeine concentration of the liquid.

5,603,831

DUAL IMPELLER PUMP

Roy S. Hicknk, Moorpark, Calif., assignor to Aquaria, Inc., Moorpark, Calif.

Filed May 24, 1994, Ser. No. 248,110
Int. Cl.[6] C02F *3/00*; A01K *63/04*
U.S. Cl. 210—601 **38 Claims**



18. A method of filtering aquarium water, comprising:

driving a first impeller with a rotor to impel unfiltered water at a first flow rate from the aquarium through a filter box and past a biological filter to filter the water;

discharging a portion of the filtered water back into the aquarium;

driving a second impeller with the same rotor, to impel a portion of the water from the filter box at a second and lower flow rate to a spray bar; and

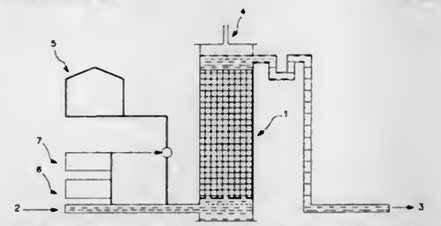
spraying water from the spray bar at the biological filter to rotate the biological filter.

5,603,832

METHOD FOR REMOVING HYDROGEN SULPHIDE FROM OIL-CONTAINING WATER AND EQUIPMENT THEREFOR

Henrik Høyvik, Skien; Jan P. Eskilt, Eidanger, and Jon Hovland, Skien, all of Norway, assignors to Norsk Hydro a.s., Oslo, Norway

PCT No. PCT/NO93/00158, § 371 Date Aug. 4, 1995, § 102(e) Date Aug. 4, 1995, PCT Pub. No. WO94/15878, PCT Pub. Date Jul. 21, 1994
PCT Filed Oct. 27, 1993, Ser. No. 464,892
Claims priority, application Norway, Dec. 30, 1992, 925061
Int. Cl.[6] C02F *1/72*
U.S. Cl. 210—610 **3 Claims**



1. Method for removing hydrogen sulphide in oil-containing water, wherein

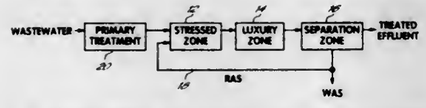
sulphide-containing water and nitrate in a weight ratio of 1:10 to 1:40 (sulphide:nitrate), are supplied to a bioreactor comprising a reactor tank filled with a carrying material containing denitrifying bacteria, wherein the water and nitrate is evenly distributed over the carrying material and an active sulphide oxidising biofilm is formed, and where the retention time in the tank is 10–60 minutes.

5,603,833

BIOLOGICAL REMOVAL OF PHOSPHORUS AND NITROGEN FROM WASTEWATER USING A STRESSED CONTACT ZONE AND A LUXURY CONTACT ZONE

Stanley D. Miller, Rte. 4, Box 127, Joplin, Mo. 64804

Filed Jan. 13, 1995, Ser. No. 372,562
Int. Cl.[6] C02F *3/02;3/12*
U.S. Cl. 210—624 **16 Claims**



1. An activated sludge treatment process for removing phosphorus from wastewater, comprising the steps of:

providing wastewater influent and activated sludge in a stressed contact zone to form a mixed liquor and detaining said mixed liquor in said stressed zone for a period of from about 12 to about 72 hours, said stressed zone having a dissolved oxygen concentration of from about 0.1 to about 0.4 ppm and an alkalinity of from about 170 to about 450 ppm, said activated sludge including microorganisms;

mixing and aerating said mixed liquor in a luxury contact zone and detaining said mixed liquor in said luxury zone for a period of from about 12 to about 72 hours during mixing and aerating, said luxury zone having a dissolved oxygen concentration of from about 0.8 to about 4 ppm and an alkalinity of from about 125 to about 220 ppm, said luxury contact zone further having a mixed liquor entry region, said entry region having a dissolved oxygen concentration of from about 2.5 ppm to about 3 ppm, at least a portion of said microorganisms in said activated sludge taking up at least a portion of said phosphorus;

separating said activated sludge from said mixed liquor in a separation zone; and

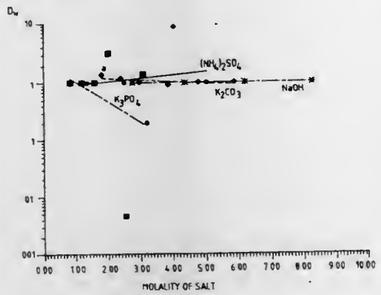
returning at least a portion of said activated sludge directly from said separation zone to said stressed contact zone.

5,603,834

PROCESS FOR RECOVERING PERTECHNETATE IONS FROM AN AQUEOUS SOLUTION ALSO CONTAINING OTHER IONS

Robin Rogers, DeKalb; E. Philip Horwitz, Naperville, both of Ill., and Andrew H. Bond, Tallahassee, Fla., assignors to Arch Development Corp., Chicago, and The Board of Regents for Northern Illinois University, DeKalb, both of Ill.

Filed Jun. 7, 1995, Ser. No. 477,330
Int. Cl.[6] B01D *11/00*
U.S. Cl. 210—638 **31 Claims**



17. A process for recovering TcO_4^{-1} ions from an aqueous solution containing both TcO_4^{-1} and radioactive MoO_4^{-2} ions that comprises the steps of:

(a) contacting separation particles with an aqueous solution containing (i) TcO_4^{-1} ions, (ii) radioactive MoO_4^{-2} ions and-(iii) a poly(ethylene glycol) liquid/liquid biphase-forming amount of a dissolved salt whose on ions can include MoO_4^{-2} ions to form a solid/liquid phase admixture, said separation particles comprising particles having a plurality of covalently bonded —X—$(CH_2CH_2O)_n$—CH_2CH_2R groups wherein X is S, O, NH or N—$(CH_2CH_2O)_m$—R^3 wherein m is a number having an average value of zero to about 225, n is a number having an average value of about 40 to about 130, R^3 is hydrogen, C_1–C_2 alkyl, 2-hydroxyethyl or CH_2CH_2R, and R is selected from the group consisting of —OH, C_1–C_{10} hydrocarbyl ether having a molecular weight up to about one-tenth that of said $(CH_2CH_2O)_n$-portion, carboxylate, sulfonate, phosphonate and —NR^1R^2 is independently hydrogen, C_1–C_6 alkyl, or C_2–C_3 hydroxyalkyl, or —NR^1R^2 groups where each of R^1 and R^2 together form a 5- or 6 -membered cyclic amine having zero or one oxygen atom or zero or one additional nitrogen atom in the ring, said separation particles having a percent CH_2O/mm^2 of particle surface area of greater than about 9,000 and less than about 20,000;

(b) maintaining said contact for a time period sufficient to form TcO_4^{-1} ion-bound separation particles and an aqueous solution substantially free of TcO_4^{-1} ions;

(c) separating said TcO_4^{-1} ion-bound separation particles from the aqueous solution of step (b) in the presence of an aqueous solution of a poly(ethylene glycol) liquid/liquid biphase-forming amount of salt free of MoO_4^{-2} ions to form a second solid/liquid phase admixture containing TcO_4^{-1} ion-bound separation particles;

(d) contacting said TcO_4^{-1} ion-bound separation particles of step (c) with a second aqueous solution that does not contain a poly(ethylene glycol) liquid/liquid biphase-forming amount of dissolved salt to free the TcO_4^{-1} ions from the separation particles and form an aqueous solution containing free radioactive TcO_4^{-1} ions; and

(e) recovering the TcO_4^{-1} ion-containing aqueous solution.

5,603,835

TRIMETHYLOLPROPANE COLOR IMPROVEMENT

Hung-Cheun Cheung; Rodolfo W. Laurel, and George C. Seaman, all of Corpus Christi, Tex., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Continuation-in-part of Ser. No. 184,797, Jan. 19, 1994, abandoned. This application Jul. 21, 1994, Ser. No. 278,352
Int. Cl.[6] B01D *11/04*
U.S. Cl. 210—639 **14 Claims**

1. In a process for the recovery of trimethylolpropane (TMP) from the aqueous base solution in which it is prepared comprising neutralizing the base, extracting the TMP into an organic solvent phase, and separating the TMP from the organic solvent the improvement which comprises further extracting an aqueous solution of the TMP with an ester or ether selected from the group comprising ethyl tert. butyl ether, diethyl ether, dipropyl ether, methyl tert. butyl ether, diglyme, esters containing from 2 to about 9 carbon atoms, methyl formate, methyl acetate, ethyl formate, ethyl acetate, butyl propionate, ethylene glycol, propylene glycol, C_1–C_4 acids, or mixtures thereof to obtain an aqueous solution of TMP which is purified in known manner to obtain TMP in greater than about 60% yield and having improved color as characterized by an acid wash color of 3 Gardner units or less and phthalic anhydride color of 100 or less APHA units.

5,603,836

METHOD OF USING A DIATOMACEOUS EARTH CONTAINING ADSORBENT

Gary W. Wollrich, 4048 Beck Ave., Studio City, Calif. 91604

Division of Ser. No. 994,686, Dec. 22, 1992, Pat. No. 5,266,547, which is a division of Ser. No. 767,879, Sep. 30, 1991, Pat. No. 5,213,690. This application Nov. 29, 1993, Ser. No. 158,277
Int. Cl.[6] B01D *15/00*
U.S. Cl. 210—660 **2 Claims**

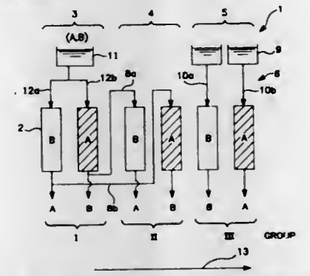
2. A method for adsorbing chemicals used in transformers which comprise contacting an area contaminated with chemicals used in transformers with an effective amount of an adsorbent comprising sugar, vinegar and diatomaceous earth wherein the sugar, vinegar, and diatomaceous earth are combined in relative amounts which result in a composition with adsorptive capacity.

5,603,837

SEPARATION OF A MULTICOMPONENT MIXTURE INTO COMPONENTS THEREOF

Masaru Ishida, Yokohama, and Takeshi Hatanaka, Kawasaki, all of Japan, assignors to Soken Kagaku Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 127,192, Sep. 27, 1993, abandoned. This application Aug. 28, 1995, Ser. No. 520,001
Claims priority, application Japan, Sep. 28, 1992, 4-258546
Int. Cl.[6] C02F *1/42*
U.S. Cl. 210—662 **9 Claims**



1. In a process for separation of a multicomponent mixture into its components comprising subjecting a mixture containing com-

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ponents to be separated in a number of n which is at least two to adsorption thereof onto a solid adsorbent packed in a plurality of columns wherein the difference in the degree of being adsorbed of the components is utilized for the separation and the components adsorbed will then be separately desorbed into respective components, the improvement which comprises the steps of:

introducing the multicomponent mixture containing components to be separated in a number of n which is at least two to a separation means to flow therein which comprises a plurality of the columns divided in at least 3 zones which are (i) a fractionation zone which is for fractionation of the mixture into the respective components adsorbed in the respective columns due to the difference in the degree of being adsorbed of the components, wherein each component adsorbed in a given column is still contaminated with other components staying in said given column, (ii) a purification zone which is for purifying each of the contaminated components respectively adsorbed in the respective columns by introducing into the respective columns a medium for purification which sweeps the contaminant components off in each column while the component to be purified remains adsorbed, and (iii) a desorption zone which is for desorbing the component adsorbed in each column by introducing a desorbent to each column thereby to obtain each component purified out of each respective column;

each zone comprising a unit of columns, the number of columns in the unit being n, which is at least two and is the same as the number of components to be separated in the multicomponent mixture, where each of the columns in each of the zones has an adsorbent packed therein which selectively adsorbs one of the components and wherein each of the columns adsorbs the component selectively adsorbed by the adsorbent packed therein;

the unit of columns assigned to the fractionation being such that the fractionation zone comprises a unit of columns, the number of columns in the unit corresponding to the number of the components to be separated minus unity, n−1 wherein n is at least two and the number of the columns in the unit being n as set forth hereinabove, and the unit of columns at the most upstream position in the plurality of the units receives the multicomponent mixture so that every column in said unit receives the multicomponent mixture so that the respective column has the respective component selectively adsorbed therein and the remaining unit or units of columns is or are connected so that an effluent from each column of an upstream unit of columns is sent separately to a corresponding column a subsequent unit and eventually to the unit of columns at the most downstream position in said zone, the downstream column having an adsorbent packed therein which is different from that used in the upstream column from which the effluent has come, thereby to have the respective columns in the given unit substantially solely one component adsorbed therein and to produce effluents each containing substantially solely one component different from each other of the components in the multicomponent mixture, the remaining components having been adsorbed in the column or columns in the unit or units of columns in said zone through which the multicomponent mixture has been passed;

the unit of columns assigned to the purification being such that the columns are connected with those in the most downstream unit of columns assigned to the fractionation so that an effluent from each column of the most downstream unit of columns in the fractionation zone, which effluent contains substantially solely one of the components, is sent to the column which has an adsorbent packed therein which selectively adsorbs the particular component in the effluent sent thereto whereby the particular component in said effluent is adsorbed in the particular column and said effluent also functions as a purifying fluid for said column in the purification zone so that components in the multicomponent mixture other than that adsorbed in said column are swept thereby and said column in the purification zone has the component selectively adsorbed therein;

the unit of columns assigned to the desorption being such that the columns respectively receive a desorbent specific to an adsorbate in the given column to desorb the adsorbate which is the particular component;

the unit of columns used in the fractionation at the most upstream position in the fractionation zone being assigned, upon substantial fractionation having taken place, to the purification and then, upon substantial purification having taken place, to the desorption while the units of columns used in the purification and in the desorption being sent, upon substantial purification and substantial desorption respectively having taken place, to the desorption and the fractionation at the most downstream position in the fractionation zone, respectively, and then, upon substantial desorption and substantial fractionation respectively having taken place, to the fractionation at the most downstream position in the fractionation zone and purification, respectively;

the change of assignment being carried out either by moving each unit of columns for the fractionation, for purification and for desorption from zone to zone so that each unit of columns receives the assignment in sequence or by switching flow of fluids between columns so that the columns receives the assignment in sequence, whereby a total amount of the units of columns is distributed in the separation means so that (n−1) units are comprised in the fractionation zone and the remaining of the units of columns is comprised in the purification zone;

subjecting the multicomponent mixture introduced in the most upstream unit of columns in the fractionation zone to fractionation wherein the components in the multicomponent mixture are respectively adsorbed in each of the columns and then to subsequent fractionation in each of the columns in a subsequent unit or units of columns in the fractionation zone so that effluents are obtained each of which contains substantially solely one component of components to be separated in the multicomponent mixture, while an effluent from a given column of the most downstream unit of columns for the fractionation is introduced to a column in the purification zone so that said effluent which contains a particular component is introduced to said column in the purification zone which has an adsorbent that selectively adsorbs said particular component so that selective adsorption of said particular component and sweeping contaminant components which remain in said column take place whereby purification of the particular component adsorbed takes place;

assigning the most upstream unit of columns used in the fractionation to the purification; and

assigning the unit of columns used in the purification, wherein each of said columns has a respective component adsorbed therein and thus purified, to the desorption wherein a desorbent is introduced to the columns so as to desorb the respective component adsorbed in the columns thereby to obtain said respective component from the columns of the unit of columns used in the desorption.

5,603,838

PROCESS FOR REMOVAL OF SELENIUM AND ARSENIC FROM AQUEOUS STREAMS

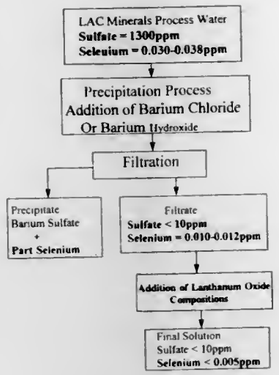
Manoranjan Misra, Reno, Nev., and Deba C. Nayak, Minneapolis, Minn., assignors to Board of Regents of the University and Community College Systems of Nevada, Reno, Nev.

Filed May 26, 1995, Ser. No. 452,034

Int. Cl.[6] C02F *1/28;9/00*

U.S. Cl. 210—665 **18 Claims**

1. A process for removing at least one oxyanion selected from the group consisting of selenite, selenate, arsenite and arsenate from solution comprising:



a) contacting said solution with a composition comprising lanthanum oxide whereby said oxyanion is adsorbed onto said composition to form an insoluble complex comprising lanthanum oxide and said oxyanion;

b) separating said solution from said complex.

5,603,839

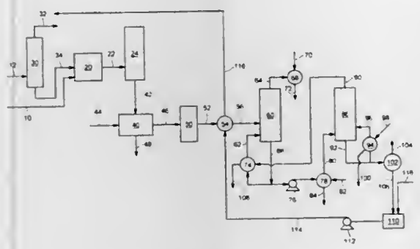
PROCESS FOR THE RECOVERY OF WASTE SULPHURIC ACID

Gordon M. Cameron, Willowdale, Canada, assignor to Cecebe Technologies Inc., Willowdale, Canada

Filed Sep. 18, 1995, Ser. No. 529,771

Int. Cl.[6] C02F *1/42*

U.S. Cl. 210—665 **21 Claims**



1. In a process for concentrating a waste sulphuric acid stream from a plant, said stream containing metal sulphates including iron sulphate, the concentration of said sulphates in said waste sulphuric acid stream being less than the solubility limit of said sulphates, the steps of:

(i) subjecting said stream to an ion exchange operation to produce an acid-rich stream and a salt-rich stream, said operation being conducted to produce an acid-rich stream having an acid concentration above the concentration at which iron sulphate precipitates out as iron sulphate heptahydrate; and,

(ii) concentrating said acid-rich stream to produce a concentrated sulphuric acid-rich stream

whereby, during said steps, iron sulphate which precipitates out is in its monohydrate form.

5,603,840

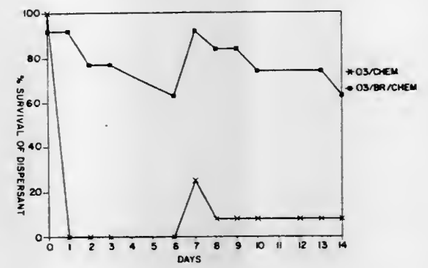
METHOD OF ACHIEVING MICROBIOLOGICAL CONTROL IN OPEN RECIRCULATING COOLING WATER

Richard J. Strittmatter, Batavia, and Narasimha M. Rao, Naperville, both of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Filed May 15, 1995, Ser. No. 440,790

Int. Cl.[6] C02F *1/76*

U.S. Cl. 210—698 **6 Claims**



1. A method of reducing microbiological growth in open recirculating cooling water systems containing organic water treatment chemicals selected from the group consisting of sulfomethylated acrylate acrylamide co-polymers and aromatic triazoles, wherein degradation of the organic water treatment chemicals is minimized, the method comprising:

adding a bromide salt in an amount greater than 40 parts per million to an open recirculating cooling water system;

drawing off a side stream from the open recirculating cooling water system;

ozonating the side stream, wherein the step of ozonating oxidizes the bromide to bromine;

returning the side stream to the open recirculating cooling water system; and

reducing the microbiological growth in the cooling water system.

5,603,841

HYDROPHOBICALLY-MODIFIED POLYMERS FOR DEWATERING IN MINING PROCESSES

E. Michael Kerr, Aurora, Ill., assignor to Nalco Chemical Company, Naperville, Ill.

Filed Oct. 31, 1995, Ser. No. 558,573

Int. Cl.[6] C02F *11/14*

U.S. Cl. 210—727 **8 Claims**

1. A process for dewatering solids in underflow slurries generated in mineral processing operations on a filter with at least one flocculant and at least one coagulant which comprises applying to the solids prior to or simultaneously with the application of the solids to the filter an effective amount of an anionic water-soluble flocculant having a molecular weight in excess of one million to flocculate the solids followed by a coagulating amount of a diallyldimethylammonium chloride-containing polymer wherein the diallyldimethylammonium chloride-containing polymer is selected from the group consisting of poly(diallyldimethylammonium chloride/dimethylaninoethylacrylate benzyl chloride quaternary), poly(diallyldimethylammonium chloride/dimethylaminoethylacrylate cetyl chloride quaternary), poly(diallyldimethylammonium chloride/dimethylaminoethylmethacrylate benzyl chloride quaternary, poly(diallyldimethylammonium chloride/ethyl hexylacrylate) and poly(diallyldimethylammonium chloride/dimethylaminoethylmethacrylate cetyl chloride quaternary) to coagulate the flocculated solids and then dewatering the solids on the filter.

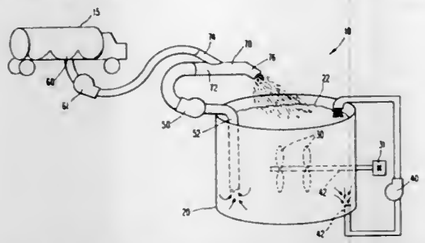
VOL 11 95 ISS 3 FE 18 1997 UMI

5,603,842

PROCESS FOR TREATMENT OF SLUDGE

Roy L. Whitaker, Advance, and Randall S. Tuttle, Winston-Salem, both of N.C., assignors to Amsco, Incorporated, Clemmons, N.C.

Filed Apr. 18, 1995, Ser. No. 423,971
Int. Cl.[6] C02F *11/14*
U.S. Cl. 210—743 **7 Claims**



1. A method for treating substantially liquid sludge comprising:
(a) providing sludge of less than 10% solids content to a basin;
(b) providing an alkaline additive in sufficient quantity to the sludge in the basin to increase the ph of the sludge in the basin to a level above approximately 12;
(c) providing a sludge/alkaline blender having a sludge arm conduit, an alkaline arm conduit, and an exit conduit;
(d) delivering alkaline additive to the alkaline arm conduit;
(e) delivering recirculated sludge/alkaline mixture drawn from the basin to the sludge arm conduit;
(f) thoroughly intermingling within the sludge/alkaline blender newly added alkaline additive with the sludge/alkaline mixture drawn from the basin;
(g) delivering sludge/alkaline mixture containing newly added alkaline additive thoroughly intermingled with the recirculated sludge/alkaline mixture through the exit conduit of the blender;
(h) mixing the sludge and alkaline mixture in the basin to ensure substantially all particles of the sludge alkaline mixture have a pH level of at least approximately 12;
(i) maintaining the pH of the sludge/alkaline mixture in the basin at a level above approximately 12 for at least approximately 2 hours; and
(j) maintaining the pH of the sludge/alkaline mixture in the basin at a level above approximately 11.5 for at least approximately 22 hours;
whereby pathogens and vector attractiveness of the resulting sludge/alkaline mixture are substantially reduced.

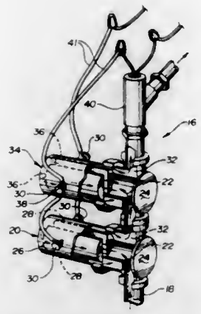
5,603,843

ELECTRICAL WATER PURIFICATION DEVICES AND METHODS

Thomas M. Snee, 1561 Rustic Hills Dr., Eagan, Minn. 55121

Filed Nov. 16, 1994, Ser. No. 340,743
Int. Cl.[6] C02F *1/48*
U.S. Cl. 210—748 **5 Claims**

1. A method of water treatment, comprising:
passing water through an ionization chamber containing two spaced apart ion-producing electrodes, wherein one electrode acts as an original anode and the second electrode acts as an original cathode, the electrodes also being positioned in the same chamber so that the untreated water is passed over each of the electrodes, either in sequence or substantially simultaneously, and wherein at least one of said ion-producing electrodes of said ionization chamber comprises plasma fused iridium coated titanium; and
periodically reversing the direction of the current to the electrodes and changing the polarity of the electrodes during the water treatment process so that the original anode becomes a cathode and the original cathode becomes an anode, wherein



contaminants that accumulate on the electrodes is effectively flushed off, thus cleaning the electrodes.

5,603,844

INSTANT, CHEMICAL-FREE DECHLORINATION OF WATER SUPPLIES

Andrew P. Murphy, Littleton, and Lisa H. Rowley, Evergreen, both of Colo., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Division of Ser. No. 124,879, Sep. 22, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 468,403
Int. Cl.[6] C02F *1/70*
U.S. Cl. 210—757 **5 Claims**

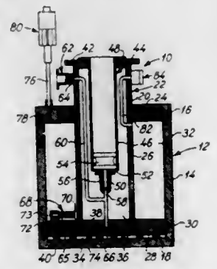
1. A water filtering process, said process comprising:
contacting chlorine containing water, having a pH value between 3 to 14, with a catalyst bed operated at substantially room temperature and without hydrogen gas being present and comprising a decomposition catalyst consisting of Raney metals with a surface area per mass value of between 125 and 249 m^2/gm, so as to cause substantially instantaneous decomposition of chlorine species in the water to chloride ions and oxygen gas.

5,603,845

LIQUID SEPARATION APPARATUS AND METHOD

Niels E. Holm, Birkeroed, Denmark, assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 155,984, Nov. 19, 1993, abandoned. This application Apr. 12, 1995, Ser. No. 421,599
Int. Cl.[6] B01D *21/26*
U.S. Cl. 210—782 **27 Claims**



1. An apparatus for separating a liquid sample having phase portions of different densities into said phase portions by centrifugal separation, comprising:
a phase separation container, comprising:

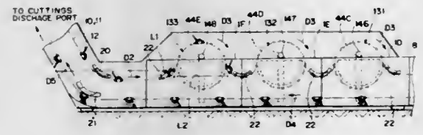
a housing having concentric inner and outer cylindrical walls defining a longitudinal axis, a bottom wall, and a top wall, said outer cylindrical wall, said inner cylindrical wall, said bottom wall and said top wall defining together an annular chamber for receiving said liquid sample,
a piston body constituting said bottom wall or top wall of said housing and being displaceable within said outer cylindrical wall from a first position in which a maximum interior volume is defined within said annular chamber to a second position in which a minimum interior volume is defined within said annular chamber, and
a drain conduit means communicating with said annular chamber,
a liquid supply means for supplying said liquid sample to said annular chamber of said phase separation chamber as said piston body is in said first position,
a motor means for rotating said phase separation container round said longitudinal axis at a rotational speed causing a separation of said liquid sample into said phase portions, and
an actuator means for displacing said piston body within said annular chamber from said first position towards said second position while said phase separation container is rotated at said rotational speed so as to expel one of said phase portions from said annular chamber through said drain conduit means.

5,603,846

FRACTIONAL FILTRATION METHOD AND FRACTIONAL FILTRATION APPARATUS

Tadao Uchiyama, Funabashi, and Koji Tomizama, Asaka, both of Japan, assignors to Kabushiki Kaisha SYST, Japan

Filed Mar. 3, 1995, Ser. No. 398,124
Claims priority, application Japan, Mar. 3, 1994, 6-033952; Jan. 13, 1995, 7-004006
Int. Cl.[6] B01D *33/06*
U.S. Cl. 210—784 **16 Claims**



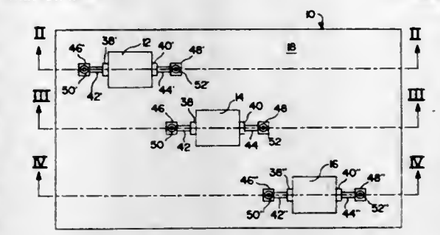
1. A fractional filtration method of fractionally filtering a solid, in accordance with a shape or particle size of the solid, from a turbid liquid, in which the solid and a liquid are mixed after the liquid is used by industrial machines, thereby enabling re-use of the liquid, said method comprising:
preparing a fractional filtration apparatus including a plurality of liquid tanks for storing fractionally filtered liquids,
a storage tank for temporarily storing the turbid liquid,
rotatably driven filtration drums rotatably supported and partially submerged in said storage tank, each drum having a side-surface opening in at least one surface thereof in order to let fractionally filtered liquid flow into a corresponding one of said liquid tanks, each drum being provided with filtering means of a different mesh size on an outer circumferential surface, and said filtration drums at least corresponding in number to said liquid tanks,
injecting means for washing said filtering means, and
dip-up means for continuously conveying the solid from said storage tank;
preparing supply means, arranged between said liquid tanks and said industrial machines, for supplying the fractionally filtered liquid to said industrial machines; and
preparing conveying means, disposed between said fractional filtration apparatus and said industrial machines, for conveying the turbid liquid to said fractional filtration apparatus.

5,603,847

ANNULAR CIRCUIT COMPONENTS COUPLED WITH PRINTED CIRCUIT BOARD THROUGH-HOLE

James R. Howard, Santa Clara; Gregory L. Lucas, Newark; Scott K. Bryan; Jio S. Choe, both of San Jose, and Nicholas Biunno, Santa Clara, all of Calif., assignors to Zycon Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 44,301, Apr. 7, 1993, Pat. No. 5,347,258. This application Apr. 5, 1994, Ser. No. 220,540
Int. Cl.[6] B44C *1/22*
U.S. Cl. 216—17 **17 Claims**



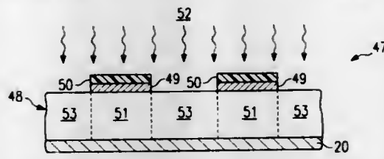
1. A method of forming a circuit component assembly in a conductive layer of a printed circuit board (PCB), comprising the steps of:
forming an annular recess in the conductive layer about a conductive element comprising one of (a) a through-hole and (b) a central conductor in the PCB;
forming a circuit component assembly in the annular recess, the circuit component assembly including at least one circuit component body and having an outer perimeter interconnected with the conductive layer; and
operatively interconnecting the conductive element with an inner perimeter of the circuit component assembly.

5,603,848

METHOD FOR ETCHING THROUGH A SUBSTRATE TO AN ATTACHED COATING

Howard R. Beratan, Richardson; James F. Belcher, Plano, and Scott R. Summerfelt, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 3, 1995, Ser. No. 367,641
Int. Cl.[6] B44C *1/22*; C03C *19/00;25/06*; C23F *1/00*
U.S. Cl. 216—17 **30 Claims**



1. A method for etching through unmasked regions on one side of a substrate having both masked and unmasked regions to a coating disposed on the opposite side of said substrate comprising the steps of:
forming a number of contacts on said one side of said substrate to shield said masked regions of said substrate during irradiation of said unmasked regions;
forming a mask layer over a portion of each of said contacts to define in part said masked region;
exposing said substrate to an etchant; and
irradiating said substrate while exposed to said etchant with ultraviolet electromagnetic radiation to substantially increase reactivity between said unmasked regions and said etchant such that said etchant removes said unmasked regions substantially faster than said masked regions shielded by said contacts.

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5,603,849

METHODS AND COMPOSITIONS FOR CLEANING SILICON WAFERS WITH A DYNAMIC TWO PHASE LIQUID SYSTEM WITH HYDROFLUORIC ACID

Li Li, Meridian, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Nov. 15, 1995, Ser. No. 559,723
Int. Cl.[6] C23G *1/00*
U.S. Cl. 216—99 **20 Claims**

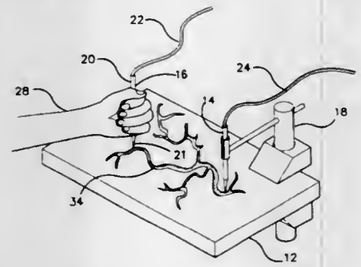
1. A method of cleaning a silicon wafer, the method comprising the steps of:
preparing a two layer liquid system having a layer of a nonpolar organic liquid and a layer of a polar liquid, the nonpolar organic liquid and the polar liquid being substantially immiscible, wherein a wet etchant comprising a fluorine containing oxide etchant is soluble and is within both the nonpolar organic liquid and the polar liquid; and
placing the silicon wafer in the nonpolar organic liquid to clean oxides and metals from surfaces on the silicon wafer.

5,603,850

WOOD IMPRINTING METHOD AND APPARATUS

Craig S. Holt, 60 Casa Delrey Court, Chico, Calif. 95926

Filed May 23, 1995, Ser. No. 447,732
Int. Cl.[6] B23K *11/22*
U.S. Cl. 219—68 **15 Claims**



1. An apparatus for imprinting wood comprises:
a stationary electrode;
a movable electrode dimensioned and configured to be held in a human hand;
an electrically conductive preparation applied on a piece of wood between said stationary electrode and said movable electrode, said stationary electrode and said movable electrode each contacting the piece of wood and said electrically conductive preparation; and
an electrical source, said stationary electrode and said movable electrode being connected by wiring to said electrical source, whereby current flows through the wood.

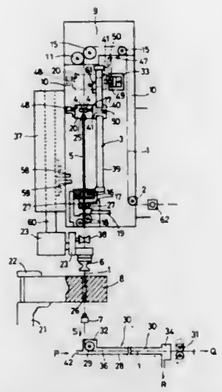
5,603,851

WIRE CUTTING ELECTRICAL DISCHARGE MACHINE WITH WIRE ANNEALING FOR THREADING

Masanori Noda, Fukuma-machi; Tatsuji Komatsu, Koga-machi, and Takashi Mitsuyasu, Munakata, all of Japan, assignors to Seibu Electric & Machinery Co., Ltd., Fukuoka-ken, Japan

Filed Apr. 23, 1996, Ser. No. 636,474
Claims priority, application Japan, Aug. 14, 1995, 7-226980
Int. Cl.[6] B23H *1/00;7/10*
U.S. Cl. 219—69.12 **10 Claims**

1. A wire electrical discharge machine comprising:
an upper wire head mounted to a head so that it is vertically movable;



a lower wire head installed below a work arranged below the upper wire head;
an automatic wire feeder to feed a wire electrode paid out from a wire electrode supply source through rollers disposed above the head to a machining area of the work;
a cylinder device extending from the top of the head to its bottom and having a cylinder secured to the head and a piston reciprocatingly moving in the cylinder;
a holder secured to a slider moving vertically along the cylinder in response to the motion of the piston of the cylinder device;
a feed pipe through which the wire electrode is passed and which is secured to the holder so that it extends vertically down, the feed pipe being adapted to insert the wire electrode supplied from the wire electrode supply source through the upper wire head, the holes formed in the work and the lower wire head;
a pair of anneal rollers provided to the holder which are driven to clamp and feed the wire electrode and through which an electric current can be passed to anneal the wire electrode;
a cutter installed on the head to cut the wire electrode;
a pair of clamping members provided to the head at a location below the cutter, the clamping members being adapted to be opened and closed to clamp the wire electrode for annealing;
a waste wire clamp to remove the cut wire electrode that was cut by the cutter;
a wire electrode recovery device to pull out and recover the worn wire electrode discharged from the lower wire head; and
a controller to control the vertical movement of the holder, the feeding of the wire electrode by the anneal rollers, and the annealing of the wire electrode by clamping the wire electrode with the clamping members, driving the anneal rollers in the reverse direction to tense the wire electrode and, in this tensed state, annealing a portion of the wire electrode between the anneal rollers and the clamping members.

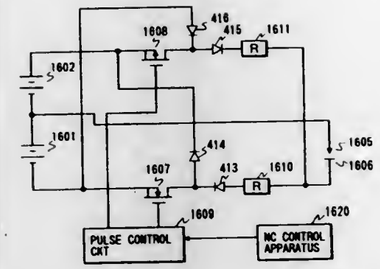
5,603,852

ELECTRICAL DISCHARGE MACHINE WITH AN OPPOSITE POLARITY VOLTAGE APPLIED DURING AN ELECTRODE JUMP OPERATION

Akihiro Goto; Mitsuyoshi Wada, and Yoshio Ozaki, all of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 267,233, Jun. 29, 1994. This application Sep. 27, 1995, Ser. No. 534,310
Claims priority, application Japan, Jun. 30, 1993, 5-162725
Int. Cl.[6] B23H *1/02*
U.S. Cl. 219—69.13 **33 Claims**

4. A method for controlling the application of a pulsed voltage to a machining gap formed between an electrode and a workpiece disposed opposite thereto in an insulating dielectric fluid medium



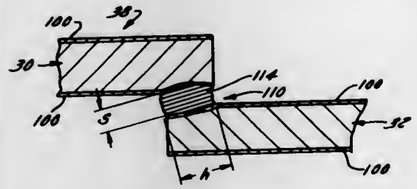
in order to generate a discharge operative to machine the workpiece with the energy of the discharge, comprising:
applying a first polarity pulsed voltage during a machining operation, and
applying a second polarity voltage during a jump operation of said electrode.

5,603,853

METHOD OF HIGH ENERGY DENSITY RADIATION BEAM LAP WELDING

Jean C. Mombo-Caristan, Troy, Mich., assignor to The Twenty-first Century Corporation, Troy, Mich.

Filed Feb. 28, 1995, Ser. No. 395,478
Int. Cl.[6] B23K *26/00;15/00*
U.S. Cl. 219—121.64 **67 Claims**



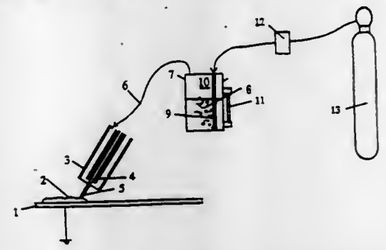
1. A method of welding using a high energy density radiation beam comprising the steps of:
(a) providing a sheet having a sheet edge and another sheet having a sheet edge;
(b) overlapping one of the sheets with the other sheet such that the edge of one sheet underlies the other sheet and the edge of the other sheet overlies the one sheet forming a lap joint having a plane of overlap where the sheets overlap with the overlap forming an overlap interface and defining a weld line;
(c) training a high energy density radiation beam on at least one of the sheets for a period of time and with sufficient energy density to weld the sheets together where overlapped such that the sheets are substantially completely fused together across the cross sectional width of overlap of the sheets; and
(d) forming or shaping the sheets after the high energy density radiation beam has been trained on at least one of the sheets with the sheets being formed such that at least one of the sheets and a portion of the weld line are bent or three dimensionally contoured during forming.

5,603,854

SPATTER REDUCTION TECHNIQUE

Alan Parry, Lobethal, Australia, assignor to Otavius Pty Ltd., Adelaide, Australia

PCT No. PCT/AU93/00596, § 371 Date Jul. 13, 1995, § 102(e) Date Jul. 13, 1995, PCT Pub. No. WO94/12312, PCT Pub. Date Jun. 9, 1994
PCT Filed Nov. 24, 1993, Ser. No. 446,649
Claims priority, application Australia, Nov. 24, 1992, PL6007
Int. Cl.[6] B23K *9/00*
U.S. Cl. 219—137 R **16 Claims**



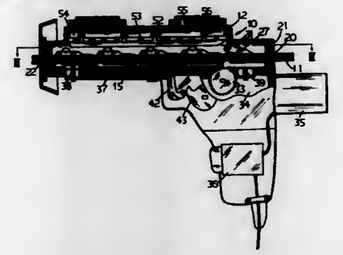
10. A method of metal-inert gas welding comprising the steps of:
introducing inert gas into a reservoir of spatter retardant liquid to form a dispersion of the spatter retardant liquid in the inert gas;
directing the inert gas with dispersion spatter retardant liquid through a cowl around a nozzle to a workpiece; and
feeding a welding rod through the nozzle to form a weld on the workpiece.

5,603,855

CONTINUOUS WELDING DEVICE WITH LINEAR DRIVE

Chong Y. Ni, 75 Springbrook Dr., Richmond Hill, Ontario, Canada

Filed Jan. 16, 1996, Ser. No. 585,701
Int. Cl.[6] B23K *9/133*
U.S. Cl. 219—137.31 **9 Claims**



1. A welding device comprising
a housing having an elongated advance channel located therein adapted to receive an elongated welding electrode to pass therethrough from all inlet opening located at the rear end of said housing to an outlet opening located at the front end of said housing, said welding electrode having a plurality of substantially equal length sections of welding flux coated thereon and slots being provided between said sections of welding flux to expose predetermined portions of a metal core in said welding electrode,
an elongated return channel located in said housing, and said return channel being generally parallel to said advance channel,
a plurality of contact carrier members located in said advance channel and return channel, each contact carrier member

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having a longitudinal gap therein operative to receive said welding electrode from extending through said housing,

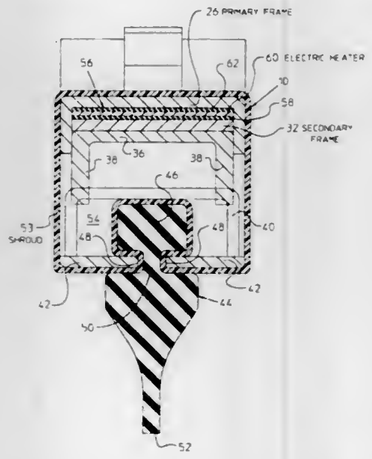
said contact carrier members having a length substantially equal to the length of said sections of welding flux coated on said welding electrode, and said advance channel and return channel each having a space provided therein substantially equal to the longitudinal length of one contact carrier member, said space being operative to receive a contact carrier member to move sideways in said housing from one channel to the other between said advance channel and return channel.

5,603,856

ELECTRICALLY HEATED WINDSHIELD WIPER WITH ENCLOSING FLEXIBLE SHROUD

George Bischoff, Harrisburg, N.C., assignor to Lon Baker, Marble, Pa.

Filed Nov. 4, 1994, Ser. No. 334,681
Int. Cl.[6] B60S *1/04*; H05B *3/02*
U.S. Cl. 219—202 **6 Claims**



1. A heated windshield wiper supported by a wiper arm for use in a vehicle having a curved glass surface, said heated windshield wiper including the combination of:

an elongated squeegee having a bead portion generally coextensive on one side with a flexible wiping edge on a side opposite thereto;

a primary pressure frame including means for support by said wiper arm;

secondary pressure frames pivotally supported by said primary pressure frame for conforming to said curved glass surface;

a mounting strip engagable with said squeegee while supported by said secondary pressure frames for allowing flexing of the squeegee relative to said primary pressure frame;

an elongated electrically powered heater means adhered to and supported by said secondary pressure frames remotely from said bead of the squeegee; and

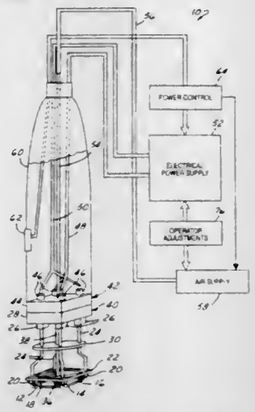
a shroud of resilient flexible material enveloping said primary pressure frame and said secondary pressure frames and extending substantially coextensive with the extended length of said elongated electrically powered heater means, said shroud maintaining an environment containing said primary and secondary pressure frames enclosed thereby at a temperature which is elevated above ambient temperature in response to operation of said electrically powered heater means to prevent adherence of ice and snow.

5,603,857

HANDHELD ELECTRIC HEATER FOR REMOVING OR REPLACING SURFACE-MOUNTED INTEGRATED CIRCUITS FROM A CIRCUIT BOARD

Joseph H. Mickle, Detroit, Mich., assignor to Assembly Technologies International, Inc., New York, N.Y.

Filed Feb. 24, 1995, Ser. No. 394,142
Int. Cl.[6] H05B *1/00*; B23K *3/02*
U.S. Cl. 219—228 **10 Claims**



1. Apparatus for removing and/or replacing a surface-mounted integrated circuit from a circuit board, the integrated circuit having a rectangular body with a top surface and four side edges of predetermined size and geometry, and a plurality of legs extending from the side edges for removable solder mounting to a circuit board, said apparatus comprising:

a handle,

a head detachably connected to said handle,

said head having an electrical heating unit,

said heating unit comprising four elongated heating wires spaced from one another and each having opposite ends, said heating wires being mounted on a support frame in a fixed planar array of predetermined size and geometry such that, when said heating unit is placed over said integrated circuit, said heating wires are adapted to extend along and contact all of the legs on all four side edges of the integrated circuit sufficiently tightly as to transfer heat efficiently to said legs, but not so tightly as to clamp said body of the integrated circuit, and

means for transmitting electrical energy through said handle to each end of each heating wire to heat said heating wires and the integrated circuit legs in contact therewith when said head is manipulated by said handle to place said heating unit over the integrated circuit.

5,603,858

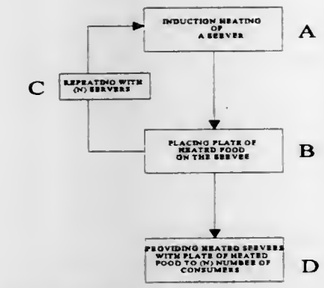
HEAT RETENTIVE SERVER FOR INDUCTION HEATING

W. Burk Wyatt, Brentwood, and Ray R. Fox, Nashville, both of Tenn., assignors to Aladdin Synergetics, Inc., Nashville, Tenn.

Filed Jun. 2, 1995, Ser. No. 458,296
Int. Cl.[6] H05B *6/12*
U.S. Cl. 219—620 **24 Claims**

1. A method of mass serving food to a given number of consumers to be served a meal, the method comprising:

A. subjecting a single heat retentive server comprising a heat storage member susceptible to electrical induction heating, and an outer peripheral member, to an electromagnetic field sufficient to inductively heat said heat storage member to a temperature sufficient to maintain hot food, placed in the heated heat retentive server, hot;



B. placing a quantity of heated food on the heated heat retentive server of A;

C. repeating A and B a number of times to provide a plurality of heated servers, said number of times substantially relating to said number of consumers to be served a meal;

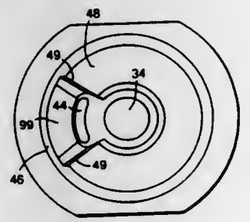
D. serving said heated heat retentive servers to said consumers from said plurality of heated servers.

5,603,859

VESSEL OUTLET

Roger Wallis, Sheffield, England, assignor to Foseco International Limited, Birmingham, England

PCT No. PCT/GB92/00080, § 371 Date Jul. 6, 1993, § 102(e) Date Jul. 6, 1993, PCT Pub. No. WO92/12815, PCT Pub. Date Aug. 6, 1992
PCT Filed Jan. 14, 1992, Ser. No. 84,209
Claims priority, application United Kingdom, Jan. 18, 1991, 9101172; Dec. 3, 1991, 9125698
Int. Cl.[6] B22D *41/08*
U.S. Cl. 222—598 **9 Claims**



1. A method of releasing molten metal from a vessel in a controlled manner, the vessel including a sidewall and a floor having a hole therein, and an outlet in the hole, the outlet including a rotary valve member rotatable about an axis of rotation, and a seating member for seating the valve member; the valve member and seating member having opposite mating surfaces, one of the opposite mating surfaces being convex in a plane including the axis of rotation, and the other being concave so as to minimize sticking between the surfaces; the valve member having a passage for conducting molten solid from inside of the vessel to outside the vessel including an inlet end having at least one inlet therein; the seating member having a wall which seals the passage inlet when aligned with the wall, the wall having a first section sufficiently high so that when the valve member is rotated so that the passage inlet is aligned therewith the inlet is sealed closed by the first section, and a second section having a lesser height than the first section and dimensioned so that when the valve member is rotated into alignment therewith the passage inlet is open to allow molten solid to pass into the passage from the vessel; and the second section providing the base of a generally open channel cross-sectional shape which allows molten solid from the vessel to move freely in the region of the second section when the passage inlet is closed, and the first section forming upstanding sidewalls which define opposite sides of the channel; said method comprising the steps of;

(a) placing molten metal into the vessel so that it covers the floor;

(b) rotating the valve member relative to the seating member to adjust the rate of flow of metal out of the vessel through the passage inlet, and then to close off the flow without causing sticking of the valve member to the seating member; and

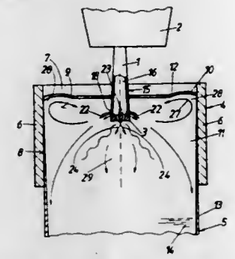
(c) directing the flow of molten metal in the passage to provide a flow stream having substantially parallel sides.

5,603,860

IMMERSED CASTING TUBE

Gerald Hohenbichler, Enns, Austria, assignor to Voest-Alpine Industrieanlagenbau GmbH, Linz, Austria

Filed Jul. 25, 1995, Ser. No. 506,863
Claims priority, application Austria, Jul. 25, 1994, 1470/94
Int. Cl.[6] B22D *11/10*; *41/50*
U.S. Cl. 222—607 **21 Claims**



1. In an immersed casting tube provided for a continuous casting mold having wide side walls and narrow side walls and adapted to form a strand, having broad sides and narrow sides, said strand including a thin slab, said immersed casting tube intended to introduce a metal melt into the continuous casting mold, said immersed casting tube including a tube section having a tube section interior and provided with lateral openings for said metal melt, said lateral openings having central axes oriented substantially towards the narrow sides of the strand, and a bottom portion provided with a bottom opening means for said metal melt, the improvement comprising the bottom opening means provided in said bottom portion having at least two bottom openings oriented obliquely towards the narrow sides of the strand and configured to form at least two casting jets having flow directions crossing each other in a viewing direction taken perpendicular to the wide sides of the strand.

5,603,861

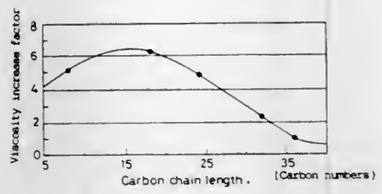
ELECTROVISCOUS FLUID MIXED WITH ESTERIFIED SILICA FINE PARTICLES AND POLYHYDRIC ALCOHOL

Nobuharu Umamori; Tetsuo Miyamoto; Makoto Kanbara, and Hirotaka Tomizawa, all of Ohigmachi, Japan, assignors to Tonen Corporation, Tokyo, Japan

PCT No. PCT/JP94/01592, § 371 Date May 26, 1995, § 102(e) Date May 26, 1995, PCT Pub. No. WO95/09221, PCT Pub. Date Apr. 6, 1995
PCT Filed Sep. 28, 1994, Ser. No. 424,522
Claims priority, application Japan, Sep. 28, 1993, 5-240780
Int. Cl.[6] C10M *171/00*; *169/04*
U.S. Cl. 252—78.3 **12 Claims**

1. A non-aqueous electroviscous fluid characterized in that an electrically insulating fluid is mixed with silica fine particles each having a surface esterified with a monohydric alcohol having an alkyl group with 8 or more carbon atoms as a main chain, said electrically insulating fluid being, said electroviscous fluid contain-

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ing said silica fine particles in an amount of 0.1 to 50 weight % and containing said polyhydric alcohol in an amount of 2 to 80 weight % with respect to said silica fine particles.

5,603,862

BOILER WATER TREATMENT COMPOSITION

Shiro Taya, Hachioji; Takayasu Ueda, Sagamihara, and Moriyasu Itoh, Ebina, all of Japan, assignors to Kurita Water Industries Ltd., Tokyo, Japan

Continuation of Ser. No. 172,305, Dec. 23, 1993, abandoned. This application May 4, 1995, Ser. No. 433,952

Claims priority, application Japan, Dec. 25, 1992, 4-359035; May 17, 1993, 5-139068

Int. Cl.[6] **C02F** *5/02*

U.S. Cl. 252—181 **16 Claims**

1. A liquid boiler water treatment composition which comprises (A) an anticorrosion effective amount of at least one member selected from the group consisting of metabisulfurous acid and metabisulfites; and (B) an amount from 10 to 150%, based on the amount of (A), of at least one member selected from the group consisting of succinic acid, adipic acid and sodium, potassium or ammonium salts thereof, effective to stabilize the composition and enhance the sulfite ion concentration imparted by (A) to boiler water to which the composition is added.

5,603,863

WATER-IN-OIL EMULSIONS

Gerd H. Dahms, Velbert, Germany, assignor to Tioxide Specialties Limited, United Kingdom

Division of Ser. No. 24,310, Mar. 1, 1993. This application May 30, 1995, Ser. No. 453,192

Int. Cl.[6] **B01J** *13/00;* **A61K** *7/42*

U.S. Cl. 252—302 **3 Claims**

1. A water-in-oil emulsion comprising 0.5 per cent to 30 per cent by weight with respect to total weight of emulsion of particles of a metallic oxide having an average primary particle size of less than 0.2 micron, said emulsion containing one or more emulsifiers, said one or more emulsifiers being present in a total amount of less than 1 per cent by weight with respect to total weight of emulsion, from 10 to 60 per cent by weight with respect to total weight of emulsion of an oil phase and at least 40 per cent by weight with respect to total weight of emulsion of an aqueous phase.

5,603,864

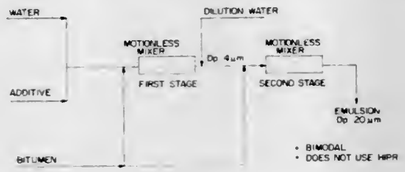
METHOD FOR THE PREPARATION OF VISCOUS HYDROCARBON IN AQUEOUS BUFFER SOLUTION EMULSIONS

Felix Silva, Edo Miranda; Hercilio Rivas; Gustavo Nunez, both of Caracas, and Dolores Pazos, Edo Miranda, all of Venezuela, assignors to Intevep, S.A., Caracas, Venezuela

Continuation-in-part of Ser. No. 413, Jan. 4, 1993, Pat. No. 5,480,583, which is a continuation-in-part of Ser. No. 801,472, Dec. 2, 1991, Pat. No. 5,419,852. This application Dec. 13, 1994, Ser. No. 355,440

Int. Cl.[6] **B01J** *13/00;* **C10L** *1/32;* **F17D** *1/17*

U.S. Cl. 252—311.5 **19 Claims**



1. A method for forming stable bimodal emulsions of viscous hydrocarbons in aqueous buffer solutions comprising the steps of:
(a) providing a viscous hydrocarbon containing an inactive natural surfactant;
(b) forming an aqueous buffer solution comprising water, an alkali additive in an amount of greater than or equal to about 30 ppm and a water soluble amine buffer additive in an amount of greater than or equal to about 4,000 ppm wherein the pH of the aqueous buffer solution is greater than or equal to about 11;
(c) mixing the viscous hydrocarbon with the aqueous buffer in a ratio of between about 50:50 to 80:20 at a first mixing energy between about 60,000 and 200,000 J/m^3 so as to form a mono-modal emulsion of viscous hydrocarbon in aqueous buffer solution having an average hydrocarbon droplet size of less than or equal to about 5 microns whereby the buffer additive extracts the inactive natural surfactant from the viscous hydrocarbon so as to stabilize the emulsion;
(d) adding water to the mono-modal emulsion so as to form a dilute mono-modal emulsion; and
(e) mixing additional viscous hydrocarbon with the dilute mono-modal emulsion at a second miming energy between about 80,000 and 1,000,000 J/m^3 sufficient to form a stable bi-modal emulsion of viscous hydrocarbon in aqueous buffer solution having the following physical and chemical properties: a hydrocarbon to aqueous buffer solution ratio of between about 60:40 to 80:20; an average small hydrocarbon droplet size (D_S) of less than or equal to about 5 microns; and an average large hydrocarbon droplet size (D_L) wherein (D_L) is greater than (D_S) and less than or equal to about 30 microns.

5,603,865

COPOLYMER DISPERSANT COMPOSITION FOR INORGANIC PIGMENTS

Jeffrey S. DePue, Canton; Zenon P. Czornij, Warren; Clint G. Carpenter, Royal Oak, and Lynne G. Bemer, Northville, all of Mich., assignors to BASF Corporation, Southfield, Mich.

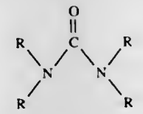
Continuation of Ser. No. 982,355, Nov. 27, 1992, abandoned. This application Aug. 17, 1995, Ser. No. 516,511

Int. Cl.[6] **B01J** *13/00;* **C09K** *1/62;* **C04B** *14/00;* **C09C** *1/34*

U.S. Cl. 252—313.1 **17 Claims**

1. A pigment dispersion comprising inorganic pigment and a polymeric pigment dispersent comprising the reaction product of
(i) an ethylenically unsaturated monomer having a reactive functionality which is selected from the group consisting of isocyanates, anhydrides, and epoxy functionalities,

(ii) at least one ethylenically unsaturated monomer having no reactive functionality to react with the reactive functionality of monomer (i),
(iii) a polyalkylene glycol compound selected from the group consisting of polyalkylene glycol monoalkyl ethers and mixtures thereof, and
(iv) a compound having polar functionality selected from the group consisting of silane-containing compounds having hydroxyl, amino, mercapto, isocyanato or oxirane functional groups; phosphorus containing compounds having hydroxyl, amino, or mercapto functionalities; and urea-containing compounds having the formula



wherein each R is independently selected from the group consisting of H, alkyl, alkylene, and R'OH where R' is an alkylene group having from 1 to 4 carbon atoms, and the reaction product of (i)–(iv) is reacted with a metal salt selected from the group consisting of transition metal and rare earth metal salts, wherein the metal salt is present to enhance pigment concentration in the dispersion, in an amount between 0.01 and 3.0 percent based on total weight of the polymeric pigment dispersent and metal salt.

5,603,866

STABILIZED ISOTHIAZOLINONE FORMULATIONS

Jeane Segall, and Leonard M. Shorr, both of Haifa, Israel, assignors to Bromine Compounds, Ltd., Beer-Sheva, Israel

Division of Ser. No. 73,969, Jun. 8, 1993. This application May 17, 1995, Ser. No. 442,990

Claims priority, application Israel, Dec. 28, 1990, 96820

Int. Cl.[6] **A01N** *43/36;* **C09K** *15/24;* **C07D** *275/02*

U.S. Cl. 252—404 **8 Claims**

1. A method for stabilizing a composition comprising less than 8 wt % of one or more 3-isothiazolinones, wherein said composition is stabilized by high concentrations of metal nitrates which comprises adding to the composition to be stabilized a stabilizing effective amount of a compound selected from the group consisting of hydroquinone, quinone, and quinhydrone, and mixtures thereof.

5,603,867

METHOD OF PRODUCTION FOR ACTIVE CARBON ELECTRODE FOR USE AS ELECTRICAL DOUBLE LAYER CONDENSER AND ACTIVE CARBON ELECTRODE OBTAINED THEREBY

Takushi Ohsaki; Akira Wakaizumi; Mitsuo Kigure; Akihiro Nakamura; Shinichi Marumo, and Toshiya Miyagawa, all of Kitakoma-gun, Japan, assignors to Nippon Sanso Corporation, Tokyo, Japan

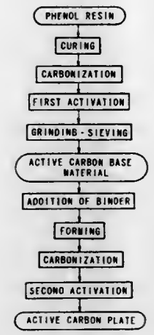
Filed Sep. 5, 1995, Ser. No. 523,622

Claims priority, application Japan, Sep. 9, 1994, 6-216446; Sep. 14, 1994, 6-220697; Oct. 13, 1994, 6-248186

Int. Cl.[6] **H01B** *1/04;* **C01B** *31/08;31/10;31/12*

U.S. Cl. 252—502 **10 Claims**

1. A method of production for an active carbon electrode for use as an electrical double layer condenser, comprising the steps of:
a) producing a carbon base material by carrying out a first activation treatment to a carbon material obtained by carbonization of a carbon compound;
b) producing a formed body by adding a binder to the carbon base material;
c) carbonizing the formed body; and
d) producing an active carbon electrode by carrying out a second activation treatment to the carbonized formed body, wherein



the first activation treatment is heating a carbon material in at lest one of a carbon dioxide atmosphere, a steam atmosphere, and an atmosphere of carbon dioxide and steam, wherein the second activation treatment is heating the carbonized formed body in at least one of a carbon dioxide atmosphere, a steam atmosphere, and an atmosphere of carbon dioxide and steam; and
wherein the total activation yield, which is obtained by the following formula (ii):

$$\text{total activation yield (\%)} = \frac{\text{activation yield from first activation} \times \text{activation yield from second activation}}{100}$$

is approximately 70% to 95%.

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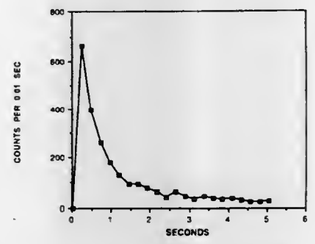
CHEMILUMINESCENT ELECTRON-RICH ARYL-SUBSTITUTED 1,2-DIOXETANES

Nai-Yi Wang, Mundelein, and Roger C. Hu, Libertyville, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

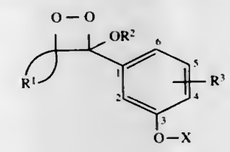
Filed Oct. 30, 1992, Ser. No. 968,911

Int. Cl.[6] **C09K** *3/00;* **C07F** *9/06*

U.S. Cl. 252—700 **3 Claims**



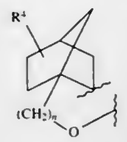
3. A chemiluminescent compound of formula (II):



(II)

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wherein R^1 when taken with OR^2 is a compound of formula:



wherein R^4 is from zero to nine groups independently selected from the group consisting of hydrogen, C_1–C_{10}-alkyl, C_1–C_{10}-alkoxy, halo-C_1–C_{10}-alkyl and halogen, and n is from one to three;

R^3 is selected from the group consisting of C_1–C_{10}-alkyl, C_1–C_{10}-alkoxy, C_1–C_{10}-alkylthio, halo-C_1–C_{10}-alkyl, C_1–C_{10}-alkylamino, di-(C_1–C_{10}-alkyl)amino, aryl-C_1–C_{10}-alkyl and halogen; and

OX is a chemically labile group wherein the removal of X by an activating agent results in the formation of an aryl oxide intermediate.

5,603,869

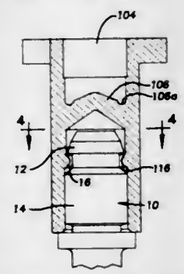
FUEL MIXTURE LIMITATION DEVICE

James E. McNew, Texarkana, Ark.; Paul Ross, Shreveport, La., and Lamont Lackman, Georgetown, Tex., assignors to WCI Outdoor Products, Inc., Cleveland, Ohio

Filed Oct. 19, 1994, Ser. No. 325,781

Int. Cl.[6] F02M *3/08*

U.S. Cl. 261—71 **11 Claims**



1. A fuel mixture limitation device for use in a carburetor having an adjustment screw, said limitation device comprising:

(a) a limiter cap removably attached to an exposed portion of the adjustment screw, wherein said limiter cap provides a rotational stop, said limiter cap having a generally cylindrical body defining a central cavity, and compressible expansion means integral with the cylindrical body; and

(b) a limiter stop removably attached to the carburetor, wherein said limiter stop provides a stop which cooperates with the rotational stop of the limiter cap to limit rotational adjustment of the adjustment screw.

5,603,870

OPTICAL FIBER CONNECTOR TECHNIQUES

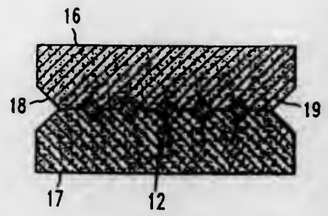
Richard A. Roll, West Trenton; Muhammed A. Shahid, Ewing Township, Mercer County, and George J. Shevchuk, Old Bridge, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 186,935, Jan. 27, 1994, Pat. No. 5,388,174, which is a continuation-in-part of Ser. No. 20,931, Feb. 22, 1993, Pat. No. 5,287,426. This application Aug. 10, 1994, Ser. No. 288,111

Int. Cl.[6] B29D *11/00*

U.S. Cl. 264—1.25 **7 Claims**

1. A method for making an optical fiber connector comprising:



making an array of first V-grooves in monocrystalline material by photolithographic masking and etching;

depositing metal on the array of first V-grooves;

removing the monocrystalline material, thereby to form a metal member having therein an array of second V-grooves;

and using the metal member as a mold portion for making, by injection molding, a support member of plastic having an array of third V-grooves on one surface thereof, each V-groove being adapted to support therein an optical fiber and the array of third V-grooves being smaller than the array of first V-grooves by a predetermined amount depending upon the shrinkage characteristics of the material of the support member.

5,603,871

METHOD FOR MANUFACTURING MOLDED RESIN PRODUCT AND PLASTIC MIRROR

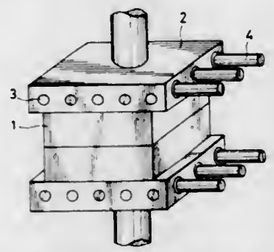
Hisaaki Koseko, Atsugi; Wataru Ohtani, Sagamihara; Hidenori Ito; Toshihiro Kanematsu, both of Atsugi; Akio Hirano, Yokohama; Shinya Senoo, Atsugi; Jun Watanabe, Yokohama, and Kiyotaka Sawada, Atsugi, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 138,966, Oct. 21, 1993, abandoned. This application Sep. 26, 1995, Ser. No. 533,714

Claims priority, application Japan, Oct. 23, 1992, 4-285837; Dec. 8, 1992, 4-327104; Dec. 11, 1992, 4-331427; Dec. 24, 1992, 4-343784; Jan. 8, 1993, 5-001537

Int. Cl.[6] B29D *11/00*

U.S. Cl. 264—1.9 **6 Claims**



1. A method for manufacturing a molded product of resin, comprising a blank molding process and an aging process separated from each other;

said blank molding process including the step of:

preprocessing a plastic base material approximately in a final shape in advance by injection molding,

said aging process including the steps of:

inserting said preprocessed plastic base material and a plastic film having a metallic reflecting film into a cavity of an aging die having a plurality of cavities and having at least one mirror face for each of said cavities, in such a manner that the metallic reflecting film of the plastic film comes in contact with the mirror face in the cavity and the plastic base material is located on a rear face side of the plastic film opposite to the metallic reflecting film;

heating the aging die to a temperature equal to or higher than the glass transition temperature of the plastic material and keeping the cavity of the aging die under a vacuum to eliminate air bubbles during the heating;

holding the aging die for a predetermined time at the temperature equal to or higher than the glass transition temperature so that an internal resin pressure is generated within the cavity by expansion of the plastic material, thereby to form an integral molded product by melting and joining the plastic base material and the plastic film with each other; and

gradually cooling the aging die to a temperature equal to or lower than a thermal deforming temperature of the plastic material by a cooling means having a plurality of heat pipes arranged in a die plate of a press machine, said die plate being of high thermal conductivity material, and transferring the mirror face to the metallic reflecting film of the plastic film.

5,603,872

METHOD OF BINDING RECOGNIZING SUBSTANCES TO LIPOSOMES

Rimona Margalit, Givataim, Israel, assignor to Baxter International Inc., Deerfield, Ill.

Continuation-in-part of Ser. No. 58,442, May 7, 1993, abandoned, Ser. No. 951,351, Sep. 25, 1992, abandoned, Ser. No. 960,196, Oct. 9, 1992, Pat. No. 5,401,511, and Ser. No. 978,985, Nov. 19, 1992, abandoned, which is a continuation-in-part of Ser. No. 655,013, Feb. 14, 1991, abandoned, said Ser. No. 58,442is a continuation of Ser. No. 655,576, Feb. 14, 1991, abandoned, said Ser. No. 951,351is a continuation of Ser. No. 655,879, Feb. 14, 1991, abandoned, said Ser. No. 960,196is a continuation of Ser. No. 655,878, Feb. 14, 1991, abandoned. This application Oct. 3, 1994, Ser. No. 316,793

Int. Cl.[6] A61K *9/127*; **B01J** *13/20*

U.S. Cl. 264—4.3 **2 Claims**

1. A process for covalently bonding a recognizing substance which is hyaluronic acid to a liposome creating a bioadhesive liposome comprising the steps of:

(a) providing a reaction vessel containing a liposome having phosphatidylethanolamine;

(b) activating the hyaluronic acid by pre-incubation in acidic pH with a crosslinker;

(c) admixing the activated hyaluronic acid to the reaction vessel;

(d) buffering the reaction mixture of the liposome and the activated hyaluronic acid to a basic pH;

(e) incubating the buffered reaction mixture for a period of time sufficient for the bioadhesive liposome to form.

5,603,873

METHOD OF MAKING COMPRESSION MOLDED PRODUCTS

Keith W. Ingram, Portage, and Timothy W. Miller, Sturgis, both of Mich., assignors to Owens-Illinois Closure Inc., Toledo, Ohio

Division of Ser. No. 773,167, Oct. 8, 1991, Pat. No. 5,328,650. This application May 12, 1994, Ser. No. 241,902

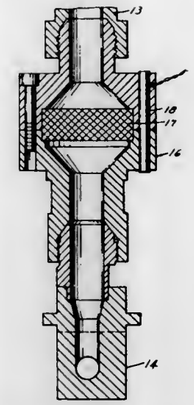
Int. Cl.[6] B29C *43/00*

U.S. Cl. 264—45.3 **14 Claims**

1. In a method of compression molding a closure wherein a thermoplastic resin is mixed with additives including a particle pigment additive extruded through a nozzle, cut into individual pellets, each pellet is deposited into the cavity of a mold which is then closed to compression mold an article, the improvement comprising

adding a blowing agent to the resin prior to extrusion in a quantity sufficient to randomize the particles in the pigment additive,

positioning a heated mixer device in the path of the resin immediately prior to the nozzle for heating the melt to an



activation temperature such that the blowing agent is activated just prior to extrusion of the melt from the nozzle such that gaseous bubbles are provided in the extruded melt and such that the gaseous bubbles are substantially dissipated before the compression molding is completed to form an article.

5,603,874

METHOD FOR MOLDING POLYURETHANE SEAT PADS

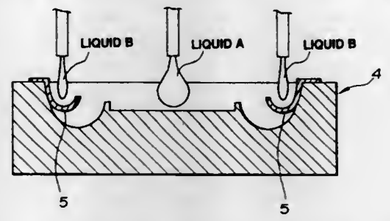
Seiji Ishii, Yokohama, and Toshio Iwasawa, Kanagawa-ken, both of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Continuation of Ser. No. 134,615, Oct. 12, 1993, abandoned. This application Aug. 22, 1995, Ser. No. 517,662

Claims priority, application Japan, Oct. 15, 1992, 4-303028

Int. Cl.[6] B29C *44/06*; *44/12*

U.S. Cl. 264—46.5 **12 Claims**



1. A method for molding a polyurethane seat pad having a center seat portion and bank portions on opposite sides thereof or along the periphery thereof using a mold defining a cavity having a center region corresponding to the center seat portion and side regions corresponding to the bank portions, comprising the steps of:

placing collecting vessels of expanded polyolefin in the side regions of the mold cavity,

pouring a foamable polyurethane liquid for producing a low hardness foam into the cavity between said collecting vessels,

pouring a foamable polyurethane liquid for producing a high hardness foam into said collecting vessels, and

causing the foamable liquids to expand thereby producing a polyurethane seat pad having the collecting vessels embedded therein,

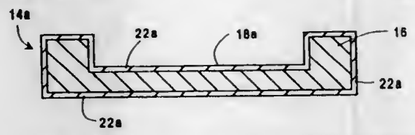
wherein said expanded polyolefin is a crosslinked polyolefin foam having an index of surface wetting of at least 36 dyne/cm, a gel-fraction of 20 to 50% and density of 0.025 to 0.10.

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5,603,875
METHOD FOR PRODUCING CERAMIC-BASED COMPONENTS

Russell S. Giller, Berlin, and James D. Horrigan, Cheshire, both of Conn., assignors to Aerospace Coating Systems, Inc., Berlin, Conn.

Continuation-in-part of Ser. No. 75,683, Jun. 11, 1993, Pat. No. 5,336,453. This application Jun. 6, 1994, Ser. No. 251,531
Int. Cl.[6] F27B *9/14;21/00;* **F27D** *5/00*
U.S. Cl. 264—57 **17 Claims**



1. A method of heat treating ceramic-based components selected from the group consisting of titanates, ferrites, nickel manganate, zirconia, yttria, lead-containing compounds and beryllium-containing compounds, said method comprising the steps of:

a) providing a furnace fixture adapted to support said ceramic-based components comprising a substrate selected from the group consisting of silicon carbide (SiC), cordierite ($2MgO.2Al_2O_3.5SiO_2$), mullite ($3Al_2O_3.2SiO_2$), stabilized zirconia, magnesium oxide (MgO) and alumina containing a glassy bond phase, said substrate having deposited on at least a portion of a surface thereof a top cladding layer of plasma-deposited zirconia or magnesia, said cladding layer being substantially inert to said ceramic-based components to prevent contamination thereof;

b) providing said ceramic-based component;

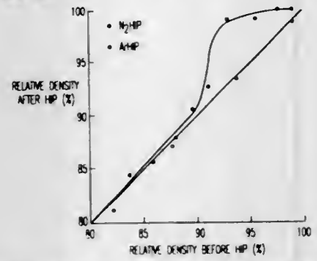
c) placing said ceramic-based component on the zirconia- or magnesia-coated portion of said substrate; and

d) firing said ceramic-based component and zirconia-or magnesia-clad substrate to a desired temperature to heat treat said ceramic-based component.

5,603,876
METHOD FOR PRODUCING HIGH DENSITY SINTERED SILICON NITRIDE (Si_3N_4)

Katuhiko Honma, Akashi; Tsuneo Tatsuno, Kobe; Hiroshi Okada, Amagasaki; Masato Moritoki, Miki, and Takao Fujikawa, Kobe, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Continuation of Ser. No. 312,727, Oct. 19, 1981, abandoned. This application Sep. 26, 1988, Ser. No. 251,052
Claims priority, application Japan, Oct. 20, 1980, 55-146581; Dec. 2, 1980, 55-170155; Jan. 27, 1981, 56-11180; Jun. 17, 1981, 56-94385
Int. Cl.[6] C04B *35/584*
U.S. Cl. 264—65 **21 Claims**



1. A method for producing high density sintered silicon nitride (Si_3N_4) having a relative density of at least 98%, said method comprising:

forming silicon nitride powder into a desired shape to obtain a silicon nitride green compact;

presintering said green compact under a nitrogen gas atmosphere ranging in pressure from 1 to 30 atmospheres in a presintering furnace at an elevated temperature into a presintered body having a relative density of at least 92%;

discharging said presintered body at a temperature of at least 500° C. from said presintering furnace;

immediately charging said presintered body at a temperature of 500° C. or higher into a hot isostatic pressing furnace which has been preheated to 500° C. or higher in advance and subjecting said presintered body to hot isostatic pressing without the body being confined by a capsule in an inert gas atmosphere of a temperature in the range of 1500°–2100° C. and of a nitrogen gas partial pressure of at least 500 atm until the former relative density is reached;

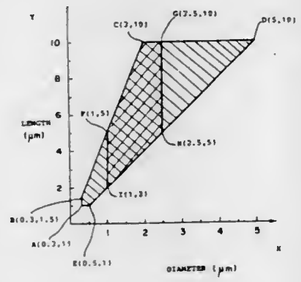
discharging the sintered body at a temperature of at least 500° C. from the hot isostatic pressing furnace; and then

charging said sintered body at a temperature of 500° C. or higher into a heat treatment furnace, which has been maintained at 500° C. or higher, to conduct a heat treatment in a non-oxidizing gas atmosphere.

5,603,877
METHOD FOR PREPARING SILICON NITRIDE BASED CERAMICS

Hideki Kato, Ichinomiya, and Junichiro Suzuki, Gifu-ken, both of Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

Continuation of Ser. No. 173,950, Dec. 28, 1993, abandoned, which is a continuation of Ser. No. 827,110, Jan. 30, 1992, abandoned. This application May 1, 1995, Ser. No. 432,003
Claims priority, application Japan, Jan. 30, 1991, 3-027641
Int. Cl.[6] C04B *35/584*
U.S. Cl. 264—65 **7 Claims**



1. A method for producing silicon nitride based ceramics comprising:

providing a powder mixture having a composition of 5 to 30 wt % of columnar-shaped silicon nitride particles having a mean diameter of 0.3 to 5 μm and a mean length of 1 to less than 10 μm and having a mean aspect ratio of 2 to 5, 1 to 10 wt % of a sintering aid and the balance being equiaxed silicon nitride particles,

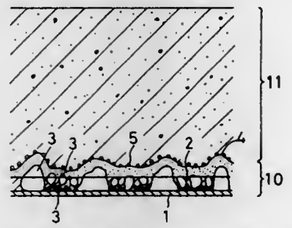
molding said powder mixture, and

sintering in a non-oxidizing atmosphere at 1600° to 1900° C. under the condition that said columnar-shaped silicon nitride particles substantially grow in length until coarse columnar-shaped grains having lengths of 10 μm to 50 μm are contained in an amount of 5 to 40% in the resulting sintered product to form a sintered ceramic body having improved resistance to wear and fracture, wherein the mean lengths of the resulting grains are at least twice the mean lengths of the columnar-shaped silicon nitride particles of the powder mixture.

5,603,878
PROCESS FOR PREPARING A DECORATIVE TRANSFER SHEET WITH FOAM LAYER

Chitoshi Jinno, Chigasaki; Hiroyuki Toyohara, Tokyo; Hikaru Mimura, Hadano, and Takashi Murohashi, Yokohama, all of Japan, assignors to Sekisui Kaseihin Kogyo Kabushiki Kaisha, Nara; Nippon Preston Kabushiki Kaisha, Yokohama, and Eslen Chemical Co., Ltd., Tokyo, all of Japan

Division of Ser. No. 265,964, Jun. 27, 1994, abandoned. This application May 17, 1995, Ser. No. 442,972
Claims priority, application Japan, Jun. 30, 1993, 5-161555
Int. Cl.[6] B28B *1/16*
U.S. Cl. 264—71 **8 Claims**



1. A process for preparing a decorative sheet for construction, said process comprising the steps of:

(a) applying an adhesive medium onto a thermoplastic polyester resin foam selected from the group consisting of polyethylene terephthalate, polybutylene terephthalate, polyethylene naphthalate, polybutylene terephthalate elastomer and polycyclohexane terephthalate or combinations thereof,

(b) scattering a large number of inorganic aggregates scattered over the adhesive-applied foam in advance of setting of the adhesive to form a decorative face layer, said inorganic aggregates having different sizes if desired,

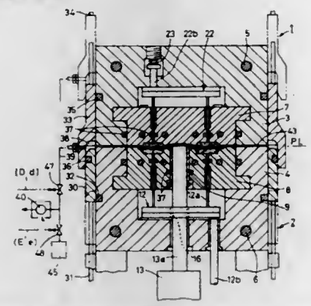
(c) applying a backing layer onto the decorative face layer, and

(d) drying the backing layer-coated resultant.

5,603,879
METHOD OF MOLDING RESIN TO SEAL ELECTRONIC PARTS USING TWO EVACUATION STEPS

Michio Osada; Yoshihisa Kawamoto; Makoto Matsuo, and Koichi Araki, all of Kyoto, Japan, assignors to Towa Corporation, Uji, Japan

Filed Apr. 18, 1994, Ser. No. 229,232
Claims priority, application Japan, Apr. 22, 1993, 5-120745
Int. Cl.[6] B29C *45/14;45/63*
U.S. Cl. 264—102 **17 Claims**



1. A method of molding resin to seal electronic parts, comprising:

(a) supplying resin tablets into respective ones of a plurality of pots arranged in a die for resin molding including an upper mold section and a lower mold section;

(b) supplying and setting electronic parts mounted on lead frames in prescribed positions of cavities arranged in said die to sides of said pots;

(c) heating and expanding said resin tablets in said pots of said die;

(d) closing said upper mold section and said lower mold section for engaging said electronic parts mounted on said lead frames in prescribed positions of said cavities;

(e) cutting off from the exterior an internal die space defined in said step (d) by at least said pots, said cavities and resin passages communicating said pots with said cavities;

(f) a first evacuation step of forcibly sucking out and discharging air and moisture remaining in said internal die space, air and moisture flowing out from said resin tablets in said resin tablet heating step into said internal die space, and gas being generated by said heating, to the exterior of said internal die space in said step (e);

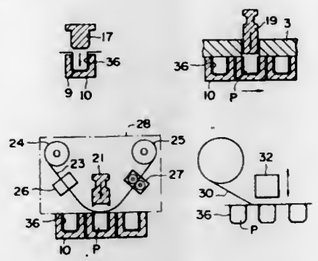
(g) a second evacuation step of forcibly sucking out and discharging said air and moisture remaining in said internal die space, said air and moisture flowing out from said resin tablets in said resin tablet heating step into said internal die space, and said gas being generated by said heating, to the exterior of said internal die space in a time shorter than that required for said first evacuation step in said step (e), thereby increasing the degree of vacuum in said internal die space more quickly than does said first evacuation step; and

(h) pressurizing said resin tablets in said pots of said die for injecting melted resin materials from said pots into said cavities through said resin passages, thereby sealing said electronic parts engaged in said cavities, with resin.

5,603,880
METHOD AND APPARATUS FOR MANUFACTURING TABLETS

Heizaburo Kato, Shizuoka-ken; Yuki Tsushima, Honjo; Takayuki Ohwaki, Inuyama; Masaharu Nakajima, Saitama-ken, and Yutaka Morita, Honjo, all of Japan, assignors to Sankyo Seisakusho Co., Tokyo, Japan

Filed Jun. 26, 1995, Ser. No. 494,922
Claims priority, application Japan, Jul. 7, 1994, 6-155900
Int. Cl.[6] B29C *43/06*
U.S. Cl. 264—112 **29 Claims**



1. A tablet manufacturing method comprising the steps of:

forming receptacles by pressing plastic polymer film;

filling a predetermined amount of moist powder in said receptacles under a pressurized condition; and

leveling the surface of said pressurizingly filled moist powder by removing the excessive powder.

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5,603,881

ALKALI METAL SALTS AS SURFACE TREATMENTS FOR FIBERBOARD

Timothy D. Hanna, Willits, Calif., assignor to Masonite Corporation, Chicago, Ill.

Continuation of Ser. No. 83,087, Jun. 25, 1993, abandoned. This application Dec. 19, 1994, Ser. No. 359,020

Int. Cl.[6] B29C *43/22*

U.S. Cl. 264—123 **28 Claims**

1. A method for the preparation of a wood composite by a dry process, comprising the steps of:

(a) combining a cellulosic filler and a binder resin to form a mat having a face surface and a back surface and a moisture content of less than about 30 weight percent;

(b) consolidating said mat under heat and pressure, said mat having a moisture content of less than about 30 weight percent at the beginning of the heat and pressure consoiidation step; and

(c) providing, on at least one substantially entire face surface or back surface of said mat, an alkali metal carbonate salt prior to step (b).

5,603,882

PIERCING METHOD AND APPARATUS

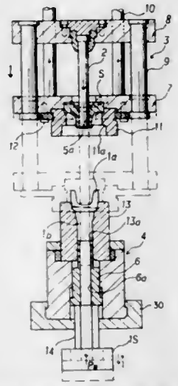
Yoshio Takano; Hiroki Fujitani, both of Miyagi, and Takehiro Koga, Osaka-Hu, all of Japan, assignors to TDF Corporation, Tokyo-to, and Kurimoto Ltd., Osaka-hu, both of Japan

Continuation of Ser. No. 183,880, Jan. 21, 1994, abandoned. This application Aug. 23, 1995, Ser. No. 518,451

Claims priority, application Japan, Jan. 26, 1993, 5-10702; Sep. 20, 1993, 5-233641

Int. Cl.[6] B26D *7/01;* **B26F** *1/14*

U.S. Cl. 264—155 **9 Claims**



1. In a method for forward extrusion and piercing a hot blank positioned on a lower die assembly by downward movement of a piercing punch attached to an upper die assembly, said hot blank forged as having a determined outer shape with a shaft at one end thereof such that a slenderness determined by a ratio of pierced length to pierced hole diameter is greater than four, said method comprising the steps of:

lowering a holding guide disposed on the upper die assembly onto said lower die assembly just before the forward extrusion and piercing,

forward extrusion and piercing said hot blank by downward movement of said punch which passes through a through-hole of said holding guide, in the forward extrusion piercing stroke, said through-hole of the holding guide serving to guide said piercing punch to thereby prevent transverse displacement of the punch,

applying backup pressure on the blank at the lower end thereof only in the time interval during the forward extrusion portion of the piercing stroke whereby cooperation of the forward extrusion piercing action and the applied backup pressure effects the forward extrusion of said blank having the slenderness of greater than four,

said application of the backup pressure being done through a receiver die which receives said blank, the tip portion of the punch being adapted to enter a through-hole of said receiver die when said punch moves down to one of the lower stroke end and a position adjacent thereto.

5,603,883

PROCESS OF AND APPARATUS FOR MAKING CELLUOSE PRODUCTS

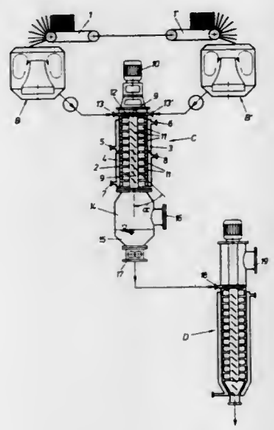
Stefan Zikeli, Regau, Austria, assignor to Lenzing Aktiengesellschaft, Austria

Filed Jun. 5, 1995, Ser. No. 465,321

Claims priority, application Austria, Apr. 19, 1995, 674/95

Int. Cl.[6] B29C *47/00;* **D01F** *2/02*

U.S. Cl. 264—187 **28 Claims**



1. A plant for the production of cellulose films, fibres and other moulded bodies according to an amine-oxide process, said plant comprising:

a pulper for the production of a first suspension of pulp in an aqueous amine-oxide solution, said first pulp suspension having a dry substance density of not more than 10% by mass of dry pulp;

a first thin-film treatment apparatus for receiving said first pulp suspension, the thin film treatment apparatus including an evacuatable vessel having a heated internal surface, means for spreading pulp on the heated internal surface, and means for transporting pulp across the heated surface, the pulp suspension being mechanically spread like a layer on a heating surface, heated and transported across said heating surface while being intensively mixed and evaporating water, until a predetermined amount of water has evaporated, thereby producing a concentrated pulp suspension;

a second thin-film treatment apparatus wherein the concentrated pulp suspension from said first device is transformed into a mouldable solution of cellulose; and

means for moulding cellulose solutions connected to receive the output from said second device, in which the mouldable cellulose solution is processed to form cellulose films, fibres and other moulded bodies.

5,603,884

REINFORCED CELLULOSIC FILM

Paul E. DuCharme, Jr., Tinley Park; Norman A. Protnoy, Clarendon Hills; John Markulin, Oak Lawn, and Myron D. Nicholson, Lemont, all of Ill., assignors to Viskase Corporation, Chicago, Ill.

Filed Nov. 18, 1994, Ser. No. 342,287

Int. Cl.[6] D01D *5/00*

U.S. Cl. 264—203 **12 Claims**

1. A method of preparing an extruded film using an extrudable film forming thermoplastic fibrous dope composition comprising the steps of:

a) warming an aqueous amine oxide cellulose solvent and mixing into the warmed aqueous amine oxide a fibrous material to form a slurry;

b) providing a molten dope composition comprising a thermoplastic solution of amine oxide cellulose solvent, water and cellulose;

c) mixing the slurry with the molten dope composition such that the fibrous material of the slurry is uniformly dispersed in said molten dope composition and is partly solubilized by the amine oxide cellulose solvent to form an extrudable thermoplastic fibrous dope composition comprising from about 60 to about 85 wt. % amine oxide, from about 5 to about 30 wt. % water, from about 1 to about 16 wt. % cellulose, all based on the total weight of the fibrous dope composition and from about 1.5 to about 1000 wt. % of the partly solubilized fibrous material based on the weight of the cellulose in the fibrous dope composition: and

d) extruding said fibrous dope composition to form a film.

5,603,885

PROCESS FOR THE PREPARATION OF NONWOVEN FIBROUS SHEETS

David J. McGinty, Midlothian, Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 6, 1995, Ser. No. 502,423

Int. Cl.[6] D01F *6/00*

U.S. Cl. 264—205 **2 Claims**

1. A process for the production of plexifilamentary strands of polyethylene which comprises (a) forming a solution of polyethylene, an antioxidant, and an ultra-violet light stabilizer, in pentane, and while the solution is under high pressure, (b) extruding said solution into a zone of lower pressure where the solution forms a two-phase mixture of pentane dispersed in a polymer-rich phase, (c) then passing the two-phase mixture into a zone of still lower pressure where the pentane vaporizes and plexifilamentary strands of polyethylene are formed, said ultra-violet light stabilizer being a high molecular weight hindered amine having a narrow molecular weight distribution, a high solubility in the polymer-rich phase, a high resistance to hydrolysis under the condition of the process, and being selected from the group consisting of (a) N,N'"-[1,2-ethanediylbis [[[4.6 -bis [butyl(1,2,2,6,6 -pentamethyl-4-piperidinyl)amino] -1,3,5 -triazin-2-yl]-3,1-propanediyl]]bis [N',N"-dibutyl-N'N"-bis(1,2,2,6,6-pentamethyl-4-piperidinyl)] -1,3,5-triazine-2,4,6-triamine, (b) poly((6-((1,1,3,3-tetramethylbutyl) amino)-s-triazine-2,4-diyl)((2,2,6,6-tetramethyl-4 -piperidyl)imino)hexamethylene((2,2,6,6-tetramethyl-4-piperidyl) imino)), and (c) poly[[6-(morpholino)-s-triazine-2,4-diyl] [2,2,6,6-tetramethyl-4-piperidyl imino]].

5,603,886

PROCESS OF MAKING A PANEL UNIT

Toshikazu Ito, and Yoshihiro Suita, both of Obu, Japan, assignors to Tokai Kogyo KK, Obu, Japan

Continuation of Ser. No. 88,520, Jul. 1, 1993, Pat. No. 5,411,696, Continuation-in-part of Ser. No. 727,945, Jul. 10, 1991, abandoned. This application Jan. 13, 1995, Ser. No. 372,362

Claims priority, application Japan, Dec. 27, 1990, 2-415994

Int. Cl.[6] B29C *47/02*

U.S. Cl. 264—252 **4 Claims**

1. A method of manufacturing a panel unit including a window glass panel, and a frame mounted on a peripheral edge of said window glass panel, said method comprising the steps of:

providing a window glass panel having upper, lower and end surfaces;

preparing molding die means comprising an extrusion port for extruding a molding material forming said frame, said extrusion port having an inner circumferential surface configured to a cross section of a frame to be mounted on the peripheral edge of said window glass panel, and an open side surface shaped to externally receive the peripheral edge of said window glass panel;

inserting a part of the peripheral edge of said window glass panel into said open side surface of said extrusion port to form a molding space defined by the peripheral edge of said window glass panel and the inner circumferential surface of said extrusion port, said molding space corresponding to the cross section of said frame;

extruding said molding material from said extrusion port of said molding die means into said molding space;

providing continuous movement of said window glass panel relative to said molding die means so that the extrusion port of said molding die means is virtually moved around the peripheral edge of said window glass panel, forming said frame covering the end surface and a part of the upper and lower surfaces of said window glass panel and extending along the peripheral edge of said window glass panel wherein said movement of said window glass panel is controlled so that the extrusion port is virtually moved along a predetermined orbital path around the peripheral edge of said window glass panel, thereby forming a panel unit of predetermined external dimensions.

5,603,887

PROCESS OF MAKING REFRACTORY FIBER STRUCTURES

Axel Eschner, Wiesbaden, Germany, assignor to Didier-Werke AG, Wiesbaden, Germany

Division of Ser. No. 366,446, Dec. 30, 1994, which is a continuation of Ser. No. 73,064, Jun. 8, 1993, abandoned. This application Dec. 6, 1995, Ser. No. 568,431

Claims priority, application Germany, Aug. 26, 1992, 42 28 355.8

Int. Cl.[6] B28B *3/00*

U.S. Cl. 264—333 **3 Claims**

1. A process for producing a refractory molding, which process comprises:

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providing a mixture containing water and inorganic fibers, wherein at least 90% by weight of each inorganic fiber consists of CaO and Al_2O_3 in a weight ratio of 1:1 to 1:4 and wherein each inorganic fiber contains no more than 1.5% by weight of SiO_2, said inorganic fibers having a maximum diameter of 10 μm such that the fibers hydrate and decompose upon contact with water,

molding the mixture by compression molding, and

storing the resultant molding at room temperature until the mixture has hardened

wherein the water comprises at least 5% by weight of the mixture based on the total weight of the mixture.

5,603,888

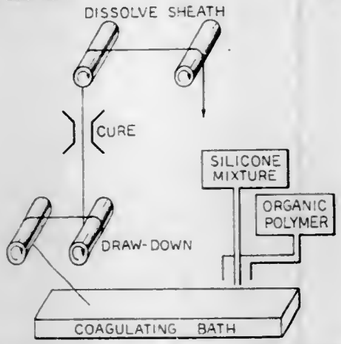
METHOD OF MAKING FIBERS

John D. Blizzard, Bay City, Mich.; Steven E. Cray, Sully, Wales; Jenny L. Gilles, Bay City, Mich.; Daniel Graiver, Midland, Mich.; Arnold W. Lomas, Rhodes, Mich., and James McVie, Barry, Wales, assignors to Dow Corning Corporation, Midland, Mich.

Filed Jul. 13, 1995, Ser. No. 502,040

Int. Cl.[6] D01D *5/06;5/12;* **D01F** *6/96*

U.S. Cl. 264—477 **10 Claims**



1. A process for producing filaments comprising coextruding an extrudable and curable ≡SiO— containing material and an aqueous organic polymer solution through a spinneret into a continuous filament, the filament having curable ≡SiO— containing material formed as an inner sheath surrounded by an outer sheath of organic polymer, passing the coextruded filament into a bath to coagulate the organic polymer as a solid elastomeric sheath around the inner sheath of curable ≡SiO— containing material, stretching the resulting filament and elongating the filament to a predetermined diameter, curing the inner sheath of ≡SiO— containing material, removing the outer sheath of organic polymer, and winding and collecting a cured filament of ≡SiO— containing material.

5,603,889

METHOD FOR FORMING PATTERN ONTO ARTICLE DURING INJECTION MOLDING THEREOF

Shinpei Ohno, Tokyo, Japan, assignor to Dai Nippon Printing Co., Ltd., Japan

Division of Ser. No. 51,365, Apr. 23, 1993, Pat. No. 5,415,536. This application Jan. 6, 1995, Ser. No. 369,491

Claims priority, application Japan, Apr. 28, 1992, 4-108271

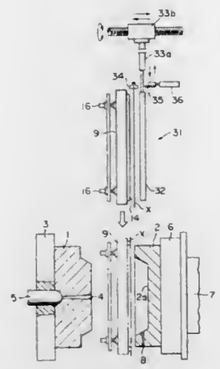
Int. Cl.[6] B29C *33/02;33/12;45/14*

U.S. Cl. 264—510 **12 Claims**

1. A method for forming a pattern onto an article during an injection molding thereof, comprising the steps of:

moving a pattern-bearing film to a molding position where a male mold and a female mold are opposed;

moving a heating board to said molding position;



holding only an outer peripheral portion of said pattern-bearing film in a set-apart but sealed relation to a heating surface of said heating board to form a closed space between said heating surface and said pattern-bearing film;

supplying air to said space to maintain the pattern-bearing film in a spaced parallel relation with said heating board;

heating and softening said pattern-bearing film by the heating board while said spaced parallel relation is being maintained;

transferring said heated pattern-bearing film onto an internal surface of said female mold to contact said pattern-bearing film with said internal surface;

then retracting said heating board from said molding position;

clamping said male mold and said female mold while said heated pattern-bearing film is in contact with said internal surface; and

injecting a molten resin into a cavity defined by said male mold and said female mold to form a molded article and to adhere said pattern-bearing film to a surface of said article.

5,603,890

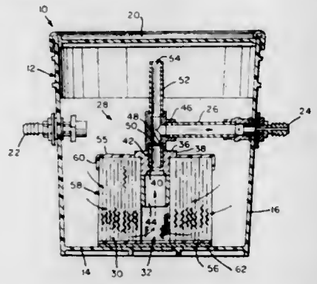
SILVER RECOVERY UNIT

Cecil J. Fuller, 9921 Petersburg Rd., Evansville, Ind. 47711

Filed Aug. 7, 1995, Ser. No. 511,616

Int. Cl.[6] C22B *13/08*

U.S. Cl. 266—101 **12 Claims**



1. A unit for the recovery of silver as a free metal from silver bearing liquid, comprising:

a container having an inlet and an outlet; and,

a silver reduction assembly positioned within said container, said silver reduction assembly including:

a hollow coil of screen material formed of metal that is above silver in electromotive force series, said hollow coil having top and bottom surfaces and an axial flow passage connecting said top and bottom surfaces;

a tubular insert extending from said axial flow passage to an open end at an elevation adjacent the top of said container, said tubular insert further being in fluid communication with said outlet; and

a plate having an orifice secured within said tubular insert for controlling the flow of silver bearing liquid, introduced into said container through said inlet, through said silver reduction assembly and discharged from said outlet.

5,603,891

HEAT RESISTANT HOT FORMABLE AUSTENITIC NICKEL ALLOY

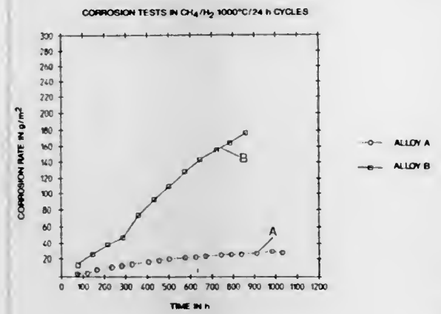
Ulrich Brill, Dinslaken, Germany, assignor to Krupp VDM GmbH, Werdohl, Germany

Continuation of Ser. No. 935,531, Aug. 25, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 477,862

Claims priority, application Germany, Nov. 9, 1991, 41 30 139.0

Int. Cl.[6] C22C *19/07;30/00*

U.S. Cl. 420—443 **6 Claims**



1. A heat resistant hat formable austenitic nickel alloy consisting of

carbon	0.05 to 0.15
silicon	2.5 to 3.0
manganese	0.2 to 0.5
phosphorus	max 0.015
sulphur	max 0.005
chromium	25 to 30
iron	20 to 27
aluminum	0.05 to 0.15
calcium	0.001 to 0.005
rare earths	0.05 to 0.15
nitrogen	0.05 to 0.20

balance nickel and residual impurities.

5,603,892

SYSTEM FOR MAINTAINING A CONTROLLED ATMOSPHERE IN AN ELECTRONIC CIRCUIT PACKAGE

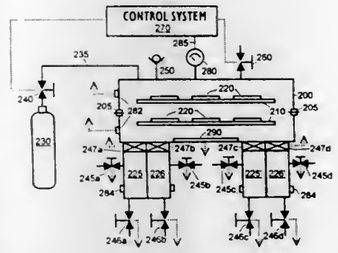
Carlo Grilletto, San Carlos, and David A. Horine, Los Altos, both of Calif., assignors to Fujitsu Limited, Japan

Filed Jun. 9, 1994, Ser. No. 257,068

Int. Cl.[6] G05B *13/00;15/00;* **G05D** *16/00;* **A62B** *7/08*

U.S. Cl. 422—3 **33 Claims**

1. A method for maintaining micro-electronic components in a controlled atmosphere, comprising the steps of:



enclosing micro-electronic components in a substantially sealed housing;

coupling said housing to a source of inert gas;

flushing said housing with said inert gas, wherein substantially all of the contaminant gases within said housing when it is enclosed are exhausted from said housing;

automatically maintaining a predetermined positive pressure of said inert gas within said housing; and

placing a getter material in fluid communication with said enclosed housing wherein contaminant gases within said housing are eliminated from said housing by said getter material.

5,603,893

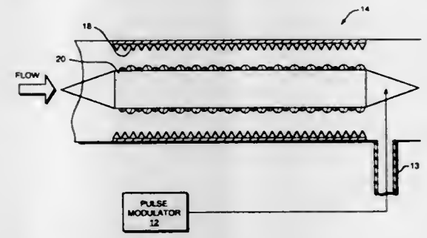
POLLUTION TREATMENT CELLS ENERGIZED BY SHORT PULSES

Martin A. Gundersen, San Gabriel; Victor Puchkarev, Los Angeles, and Iosef Yampolsky, Torrance, all of Calif., assignors to University of Southern California, University Park, Calif.

Filed Aug. 8, 1995, Ser. No. 512,463

Int. Cl.[6] A61L *2/00;* **B01J** *19/08*

U.S. Cl. 422—22 **6 Claims**



1. The method of treating pollutants in gases which comprises the steps of causing said gases to flow through a reactor chamber having sawtooth electrodes disposed therein, generating high-voltage pulses of short width, high repetition rate, and rapid rise time, and introducing said pulses to said reactor chamber, whereby pulsed streamer plasma discharges are initiated at said electrodes within said reactor chamber to increase the effective plasma volume and enhance pollutant reduction in said gases.

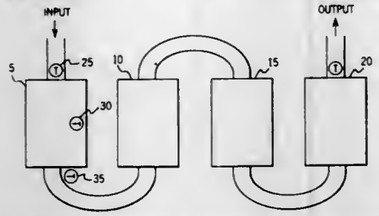
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5,603,894

METHOD OF STERILIZING A PHARMACEUTICAL COMPOSITION

Albert J. Aikus, Lake Villa, and Joaquin Mayoral, Downers Grove, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Oct. 31, 1994, Ser. No. 332,191
Int. Cl.[6] A61L *2/04; A23L 3/005*
U.S. Cl. 422—23 **8 Claims**



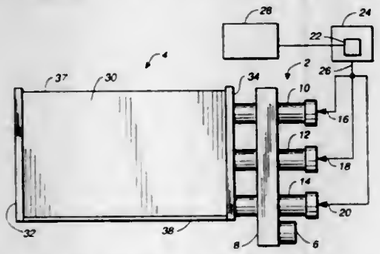
1. A method of sterilizing a pharmaceutical composition, the method comprising:
providing a sterilization system including a heat exchanger means for elevating a temperature of a fluid passing therethrough;
providing an adjustable means for flowing a fluid through said sterilization system at a plurality of flow rates;
flowing a fluid through said heat exchanger means of said sterilization system at a fluid flow rate using said adjustable means for flowing;
measuring a first temperature of said fluid at an input of said heat exchanger means, measuring a second temperature of said fluid at an output of said heat exchanger means and measuring a third temperature of said fluid at a point in said heat exchanger means intermediate said input and output of said heat exchanger means, said third temperature being a center tube temperature of said heat exchanger means;
calculating a cumulative degree of sterilization ($F_{cumulative}$) of said fluid using said first, second, and third temperatures of said fluid and said fluid flow rate; and
adjusting said heat exchanger means and said adjustable means for flowing responsive to said calculation of said cumulative degree of sterilization ($F_{cumulative}$) to adjust said cumulative degree of sterilization ($F_{cumulative}$) to a predetermined level at which degradation of said fluid in said heat exchanger means of said sterilization system is minimized and at which a predetermined level of sterilization of said fluid is achieved.

5,603,895

PLASMA WATER VAPOR STERILIZER AND METHOD

Phillip A. Martens, Fremont, Calif., and David L. Rainwater, Madison, Wis., assignors to Abtox, Inc., Mundelein, Ill.

Filed Jun. 6, 1995, Ser. No. 491,170
Int. Cl.[6] A61L *2/00*
U.S. Cl. 422—23 **7 Claims**



1. A method for plasma sterilization comprising:
generating a plasma in a plasma generating chamber, the plasma being generated from a gas consisting essentially of water vapor;
passing the plasma from the plasma generating chamber to a sterilizing chamber; and,
exposing an article to be sterilized in the sterilizing chamber to neutral active species of the plasma generated in the plasma generating chamber for a period of time effective to sterilize the article.

5,603,896

METHOD AND MEANS TO BRING ABOUT AND MAINTAIN A MICROBIOLOGICALLY CLEAN ENVIRONMENT IN ROOMS

Jarl-Erik Rollén, Magnebergskroken 5, S-122 31, Enskede, Sweden

Continuation of Ser. No. 244,259, May 20, 1994, abandoned. This application May 9, 1996, Ser. No. 647,202
Claims priority, application Sweden, Nov. 21, 1991, 9103418
Int. Cl.[6] A61L *2/16; A01N 25/24; C09D 5/00*
U.S. Cl. 422—28 **4 Claims**

1. A method for establishing and maintaining a microbiologically clean environment in a room defined by wall and ceiling surfaces, said method comprising the steps of (a) painting wall and ceiling surfaces defining a room with a porous layer of a combination of first and second constituents, said first constituent being a porous material selected from the group consisting of perlite, zeolite, bentonite, micronized silicon dioxide and christobalite, and said second constituent being at least one fungicide or bactericide selected from the group consisting of N-arylamide, alkylarylsulphone acid, chloromethylisothiazolinone, methylisothiazolinone, iodinated alkyne-alkyl-carbamate, and 1,2-benzisothiazol-3(2H)-one, (b) spreading an aqueous liquid mixture containing a sanitizer over said porous layer at repeated intervals, and (c) evaporating the water from each application of the aqueous liquid mixture, leaving said sanitizer in pores of the porous layer.

5,603,897

METHOD FOR INDICATING NEUTRALIZATION OF CONTACT LENS DISINFECTING SOLUTIONS

David J. Heller, Avon; Matthew S. Jonasse, Sodus; David A. Marsh, Rochester, and Jill S. Rogalskyj, Livonia, all of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Jun. 30, 1994, Ser. No. 268,473
Int. Cl.[6] A61L *2/16; 2/18*
U.S. Cl. 422—30 **22 Claims**

1. In a method of treating a contact lens which comprises contacting the lens with an oxidative disinfectant and neutralizing the disinfectant with a reducing solution, the improvement which comprises using a water soluble iodine-chromophore to indicate when neutralization is complete.

5,603,898

DRY-TYPE ANALYTICAL ELEMENT FOR IMMUNOASSAY

Yoshihiro Ashihara, Tokyo; Yukio Sudo, Saitama; Isao Nishizono, Tokyo; Toshikage Hiraoka, Saitama; Tetsuji Tanimoto, Tokyo, and Shigeki Kageyama, Saitama, all of Japan, assignors to Fujirejiro Inc., Tokyo, and Fuji Photo Film Co., Ltd., Kanagawa, both of Japan

Continuation of Ser. No. 742,453, Aug. 15, 1991, abandoned, which is a continuation of Ser. No. 251,109, Sep. 29, 1988, abandoned. This application Dec. 17, 1992, Ser. No. 993,964
Claims priority, application Japan, Sep. 30, 1987, 62-243849; Oct. 26, 1987, 62-268228
The portion of the term of this patent subsequent to Mar. 3, 2009, has been disclaimed.
Int. Cl.[6] G01N *21/00; 33/53;* **C12M** *1/14;* **C07K** *16/00*
U.S. Cl. 422—57 **16 Claims**

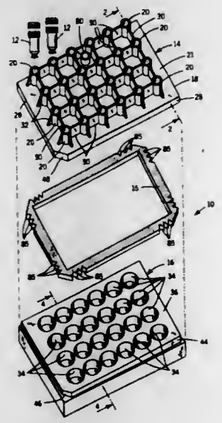
1. A dry-type analytical element for immunoassay comprising at least two water-permeable layers for measuring a ligand in a sample of bodily fluids according to enzyme immunoassay, said ligand having a molecular weight of more than 20,000, at least one of said water-permeable layers being a porous layer containing an immunoassay reagent composition consisting essentially of
(a) a water-soluble macromolecular substrate, and
(b) an enzyme-antibody conjugate wherein said enzyme is a hydrolase selected from amylase and glucoamylase capable of hydrolyzing the water-soluble macromolecular substrate with an antibody reacting with the ligand in the sample.

5,603,899

MULTIPLE COLUMN CHROMATOGRAPHY ASSEMBLY

Phillip P. Franciskovich, Brown Deer; David W. Walker, Milwaukee; Cynthia A. Mielke, Wauwatosa, and David R. Boyer, West Allis, all of Wis., assignors to Pharmacia Biotech, Inc., Milwaukee, Wis.

Filed Apr. 12, 1995, Ser. No. 421,633
Int. Cl.[6] G01N *30/02*
U.S. Cl. 422—100 **18 Claims**



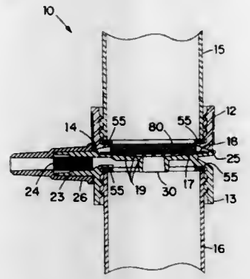
1. An assembly for separating a sample into constituents, said assembly comprising:
a single piece column manifold having a plate with first and second surfaces, a plurality of support tubes connected in a two dimensional array to the first surface of the plate, a plurality of walls each of which is connected to the first surface of the plate and to the plurality of support tubes wherein each support tube is connected to at least two walls,
a fitting attached to the first surface of the plate for connecting a vacuum source to the column manifold;
a plurality of tubular separation columns, wherein each one of the plurality of tubular separation columns is removably received in a different one of the plurality of support tubes; and
a single piece collection plate with a plurality of wells arranged in a pattern wherein each support tube is aligned with a different well when said column manifold is placed against said collection plate to collect material expelled from at least one separation column received in a support tube.

5,603,900

VACUUM FILTER DEVICE

Phillip Clark, Wakefield; Brian D. Foley, Westford, and Aldo M. Pitt, Wayland, all of Mass., assignors to Millipore Investment Holdings Limited, Wilmington, Del.

Filed May 19, 1995, Ser. No. 444,493
Int. Cl.[6] B01D *63/00;* **B01L** *11/00*
U.S. Cl. 422—101 **17 Claims**



1. A vacuum filter device comprising:
a single filter body having two holders disposed from one another, each of said holders adapted to receive respective feed and filtrate containers;
each of said holders including sealing means for creating a liquid and air tight seal when said containers are coupled to said filter body, said feed container for housing a liquid to be filtered and said filtrate container for receiving the filtered liquid, each of said containers forming liquid tight receptacles when coupled to said filter body;
a filter sealed within said filter body between said holders so that liquid in said feed container must pass through said filter prior to entering said filtrate container;
a vacuum port extending through said filter body and being in fluid communication with said filtrate container at a downstream side of said filter, said vacuum port adapted to be connected to a vacuum source for drawing said liquid from said feed container through said filter and into said filtrate container; and
a vent passageway in said filter body configured to permit gas in the atmosphere surrounding said vacuum filter device to be in direct fluid communication with said feed container on an upstream side of said filter and not to be in direct fluid communication with said filtrate container.

5,603,901

Patent Not Issued For This Number

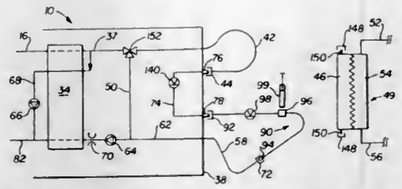
5,603,902

METHOD AND APPARATUS FOR CLEANING A DIALYSATE CIRCUIT DOWNSTREAM OF A DIALYZER

Jo-Ann B. Maltais, Morrison, Colo.; Archie T. Wood, Toronto, Ohio, and Roy S. Hovland, Denver, Colo., assignors to COBE Laboratories, Inc., Lakewood, Colo.

Continuation of Ser. No. 372,112, Jan. 13, 1995, which is a continuation-in-part of Ser. No. 92,705, Jul. 16, 1993, Pat. No. 5,409,612. This application May 31, 1995, Ser. No. 454,951
Int. Cl.[6] A61L *2/26;* **B08B** *9/06*
U.S. Cl. 422—103 **19 Claims**

1. An apparatus for reducing deposits in a portion of a dialysate circuit located downstream of a membrane fluid treatment device in a dialysis machine while not contaminating a portion of the dialysate circuit located upstream of the membrane fluid treatment device, said apparatus comprising:



a first tubing connector selectively connectable and disconnectable with a bypass block connector of the dialysate circuit;

a backflow prevention valve in fluid communication with the first tubing connector;

an injection connector in fluid communication with the backflow prevention valve and adapted for fluid communication with a source of fluid; and

a second tubing connector selectively connectable and disconnectable with the dialysate circuit in fluid communication with the injection connector;

wherein said backflow prevention valve is oriented to allow flow only in a direction from the first connector to the second connector.

5,603,903

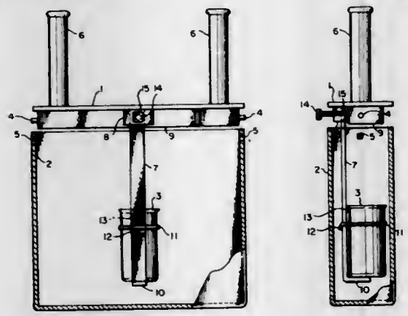
SPECIMEN-CONTAINER HOLDER APPARATUS TO PREVENT CROSS CONTAMINATION

Herbert W. Copelan, 8706 Via Reale, Boca Raton, Fla. 33496

Filed Dec. 18, 1995, Ser. No. 574,271

Int. Cl.[6] B01L *9/00*

U.S. Cl. 422—104 **1 Claim**



1. An improved specimen-container holder apparatus for restricting the hands of a person using said apparatus to donate a specimen into a specimen container; said apparatus comprising an upper section and a lower section, which two sections latch together to form an enclosure for said specimen container, said upper section having a portion exposed to said enclosure; said upper section comprising locking latch means for securing said upper section to said lower section; two hand holds for operating said locking latch means, said locking latch means for preventing closing said enclosure when said enclosure is open, said enclosure can be opened and closed only by simultaneously and continuously grasping said two hand holds; and said improved specimen-container holder apparatus comprises:

a. a detachable element for supporting and positioning said specimen container,

b. a permanent element structurally integrated in said upper section of said apparatus at said portion, and

c. connecting means for releasably mounting said detachable element to said permanent element; whereby said detachable element can be discarded after use, thereby preventing said detachable element from contaminating a specimen subsequently donated when said apparatus is used.

5,603,904

APPARATUS FOR CATALYST REPLACEMENT

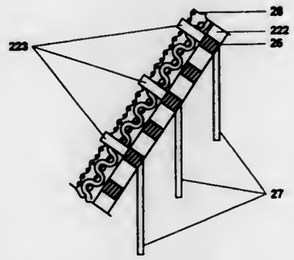
Robert W. Bachtel, El Cerrito, Calif.; Yoshitomo Ohara; Toshio Ishizuka, both of Tokyo, Japan; Tsunehiko Hiraga. Hokkaido, Japan; Krishniah Parimi, Concord, Calif., and David E. Earls, Pinole, Calif., assignors to Chevron U.S.A. Inc., San Francisco, Calif.

Continuation of Ser. No. 357,969, Dec. 16, 1994, abandoned, which is a continuation-in-part of Ser. No. 261,594, Jun. 17, 1994, Pat. No. 5,527,512. This application Mar. 28, 1996, Ser. No. 624,195

Claims priority, application Japan, Jun. 18, 1993, 5-172510

Int. Cl.[6] B01J *8/18*

U.S. Cl. 422—143 **21 Claims**



1. A catalyst support structure for use in a substantially cylindrically-shaped reactor containing a catalyst bed comprising:

a. a perforated conical support member diverging upwardly and having a truncated conical shape truncated by a bottom plate; and

b. at least one upper flow guide abutting an upper surface of said conical support member and extending upwardly and having a height above the conical support member sufficient to direct fluid flow upwardly into a catalyst bed, said upper flow guide forming a continuous, generally circular structure concentric with the bottom plate for reducing the migration of a fluid charge along the upper surface of the conical support member.

5,603,905

APPARATUS FOR COMBUSTIVE DESTRUCTION OF TROUBLESOME SUBSTANCES

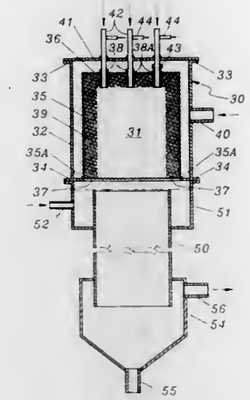
David Bartz, Santa Clara; Robert M. Kendall, Sunnyvale, and Frederick E. Moreno, Los Altos, all of Calif., assignors to Alzeta Corporation, Santa Clara, Calif.

Division of Ser. No. 280,072, Jul. 25, 1994, Pat. No. 5,510,093. This application Dec. 6, 1995, Ser. No. 567,931

Int. Cl.[6] F01N *3/10*

U.S. Cl. 422—173 **12 Claims**

1. An apparatus for the combustive destruction of particulate-forming hydrides and/or halogenated compounds, which comprises a combustion chamber laterally surrounded by an exit surface of a foraminous gas burner, and having a ceiling and an open bottom, means for injecting a stream containing at least one of said particulate-forming hydrides and/or halogenated compounds directly into the top of said combustion chamber, a cooling column below and in direct flow-communication with said combustion chamber through said open bottom, means for maintaining a flow



of water down the inner surface of said column, and a gas-liquid separator connected to the bottom of said column.

5,603,906

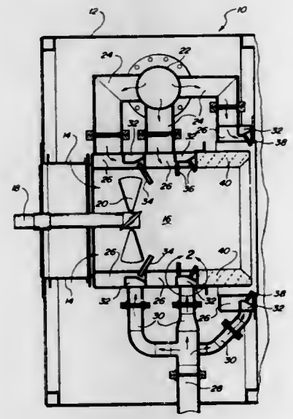
LOW NO_x BURNER

Jerry M. Lang, Lindale, and David W. Scott, Garland, both of Tex., assignors to Holman Boiler Works, Inc., Dallas, Tex.

Continuation of Ser. No. 395,164, Feb. 27, 1995, abandoned, which is a continuation of Ser. No. 34,327, Mar. 22, 1993, abandoned, which is a continuation-in-part of Ser. No. 786,869, Nov. 1, 1991, Pat. No. 5,257,927. This application Nov. 20, 1995, Ser. No. 560,941

Int. Cl.[6] B01D *53/92*

U.S. Cl. 422—182 **6 Claims**



1. In a burner adapted to reduce emission of noxious gases upon combustion of a fuel and air, the burner including a source of combustion fuel, at least a portion of the combustion air flowing through a central air passage into which the combustion fuel is supplied for combustion within a combustion zone of the burner creating combustion gases, the improvement comprising:

an annular combustion fuel passageway radially surrounding said central air passage;

an annular combustion gases passageway radially surrounding said central air passage and being in fluid communication with said combustion fuel passageway;

a plurality of eductor nozzles radially spaced about the central air passage for combining combustion fuel with combustion gases recirculated from the combustion zone, said eductor nozzles having an outlet in fluid communication with said central air passage and an inlet which extends into the combustion fuel passageway, said inlet being in fluid communication with both said combustion fuel passageway and said combustion gases passageway for mixing said combustion fuel with said recirculated combustion gases within said eductor nozzles and directing said mixture into said central air passage for combustion, said combustion fuel and combustion gases being combined prior to mixture with the combustion air and introduction into the combustion zone for optimum combustion and reduction of noxious emissions; and

a plurality of staged combustion zones axially spaced along said central air passage, each of said combustion zones having a set of radially spaced eductor nozzles in fluid communication with both said combustion fuel passageway and said recirculated combustion gases passageway for introduction of a mixture of combustion fuel and combustion gases into said staged combustion zones.

5,603,907

PROCESS AND DEVICE FOR TREATING FLUIDS BY MEANS OF A POURABLE SOLID BY THE COUNTERCURRENT METHOD

Horst Grochowski, Hafenstrabe 25 D-4200, Oberhausen, Germany

Continuation of Ser. No. 920,481, Oct. 16, 1992, abandoned. This application May 24, 1995, Ser. No. 449,286

Claims priority, application Germany, Feb. 16, 1990, 40 04 911/6

Int. Cl.[6] B01D *47/00*

U.S. Cl. 423—210 **9 Claims**

1. In a process for the treatment of a fluid in a reactor which comprises one reaction chamber and at least two other reaction chambers parallel to each other and parallel to said one reaction chamber, by means of a pourable solid in the form of a fixed bulk material layer in each reaction chamber, wherein said fluid is simultaneously introduced into each said reaction chamber and caused to flow through each bulk material layer in each reaction chamber, the improvement comprising the steps of:

a) interrupting the flow of fluid into said one reaction chamber and then into each of the other of said reaction chambers in sequence for a brief period of time;

b) during the interruption of step a), in each reaction chamber, distributing the fluid flow which is interrupted into all other said reaction chambers increasing the flow rate of the fluid in said other reaction chambers for said brief period of time, said brief period of time being that necessary to avoid a significant change in operating conditions in said other reaction chambers;

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c) removing a partial amount of bulk material from said one reaction chamber and then from each of the other of said reaction chambers in the same sequence with the interruption of fluid flow in said one reaction chamber and in each other of said reaction chambers and for said brief period of time, said removal causing the bulk material layers to move incrementally through said reaction chambers;

d) introducing additional bulk material into said one reaction chamber and then into each other of said reaction chambers in the same sequence with the removal of step c) and in amount equal to said partial amount of step c); and

e) repeating steps a), b), c) and d) at a frequency by which said partial amount of bulk material in step c) is bulk material which is more or less exhausted.

5,603,908

PROCESS FOR REMOVING CARBON DIOXIDE FROM COMBUSTION GASES

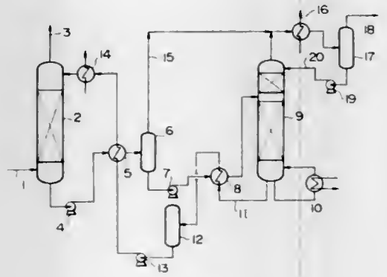
Kunihiko Yoshida; Tomio Mimura; Shigeru Shimojo, all of Osaka; Mutsunori Karasaki; Masaki Iijima, both of Tokyo; Touru Seto, and Shigeaki Mitsuoka, both of Hiroshima-ken, all of Japan, assignors to The Kansai Electric Power Co., Inc., Osaka, and Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, both of Japan

Continuation of Ser. No. 358,541, Dec. 14, 1994, abandoned, which is a continuation-in-part of Ser. No. 120,759, Sep. 15, 1993, abandoned. This application May 22, 1996, Ser. No. 651,501

Claims priority, application Japan, Sep. 16, 1992, 4-246394

Int. Cl.[6] B01D *53/62*

U.S. Cl. 423—220 **6 Claims**



1. A process for removing CO_2 from a combustion gas which comprises the steps of removing CO_2 from the combustion gas through contact of an aqueous hindered amine solution used as a CO_2 absorbent solution with the combustion gas at atmospheric pressure and then, in a regeneration column, liberating CO_2 from the absorbent solution that has absorbed CO_2 and thereby regenerating the absorbent solution, the process further comprising an absorbent solution partial regeneration step in at least one stage, carried out at atmospheric pressure, wherein the absorbent solution that has absorbed CO_2 is heated indirectly through heat exchange with a high-temperature regenerated absorbent solution and is forwarded to a carbon dioxide separation step where part of the CO_2 is liberated from the absorbent solution, after which the partially regenerated absorbent solution thus obtained is heated and fed to a regeneration column further to liberate CO_2 from the partially regenerated absorbent solution and regenerate the absorbent solution.

5,603,909

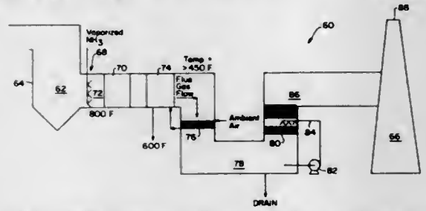
SELECTIVE CATALYTIC REDUCTION REACTOR INTEGRATED WITH CONDENSING HEAT EXCHANGER FOR MULTIPLE POLLUTANT CAPTURE/REMOVAL

Michael G. Varner, Canton; Dennis W. Johnson, Barberton, and Robert B. Myers, Norton, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Aug. 3, 1995, Ser. No. 510,807

Int. Cl.[6] B01J *8/02*

U.S. Cl. 423—239.1 **6 Claims**



1. A combined system for recovering heat and removing pollutants from the flue gases of a boiler comprising:

a selective catalytic reduction reactor located in an exhaust flue of a boiler;

an ammonia injection station located in the exhaust flue upstream of said selective catalytic reduction reactor for supplying ammonia laden flue gas to said selective catalytic reduction reactor for NO_x removal therein with slip ammonia and ammonium salts passing therefrom;

an air preheater located downstream of said selective catalytic reduction reactor for reducing a temperature of the flue gas to a temperature which prevents precipitation of the ammonium salts; and

a condensing heat exchanger having a first and a second stage located in the exhaust flue downstream of said air preheater, said first stage of said condensing heat exchanger further removing heat from the flue gas passed therethrough to remove sensible heat from the flue gas and to drop the temperature thereof below a precipitation temperature of the ammonium salts, said condensing heat exchanger further having between the first and second stages an interstage transition section comprising tank means for collecting the ammonium salts, said second stage of said condensing heat exchanger further lowering the flue gas temperature for condensing remaining constituents in the flue gas and collecting slip ammonia into said interstage transition section.

5,603,910

METHOD FOR POLLUTION EMISSION REDUCTION FROM GLASS MELTING FURNACES

Jeffery C. Alexander, Newbury, Mass., assignor to Edmeston AB, Västra Frölunda, Sweden

Continuation of Ser. No. 998,035, Dec. 29, 1992, abandoned, which is a continuation-in-part of Ser. No. 945,721, Sep. 21, 1992, abandoned. This application Feb. 23, 1995, Ser. No. 393,280

Int. Cl.[6] C01B *17/56*

U.S. Cl. 423—244.07 **8 Claims**

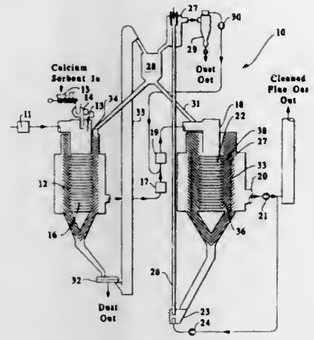
1. A method for reducing pollution emission from a glass melting furnace exhaust stream which includes a gaseous sulfur oxide constituent, dust, and alkali metal salt particulates, comprising the steps of:

(a) electrostatically ionizing dust and alkali metal salt particulates in the exhaust gas stream;

(b) providing an electrostatic granular bed filter comprising groups, wherein the granules are solid alkaline earth metal material;

(c) electrically polarizing the granular solid alkaline earth metal material with a high voltage electrode;

(d) passing the exhaust stream over the granular bed, thereby reacting the granules with the sulfur-containing gases and



forming alkaline earth metal sulfates and sulfites on the surfaces of the granules;

(e) simultaneously depositing dust and alkali metal salt particulates from the exhaust stream onto the granules;

(f) removing the granular alkaline earth metal material from the bed;

(g) mechanically agitating the granules removed from the bed in step (f), thereby dislodging collected dust, alkali metal salt particulates and alkaline earth metal sulfates and sulfites from the granules and exposing a fresh surface of alkaline earth metal on the granules;

(h) separating the granules from the collected dust, alkali metal salt particulates, and alkaline earth metal sulfates and sulfites; and

(i) recycling the separated granules to the bed.

5,603,911

PREPARING A CRYSTALLINE, STABLE SODIUM PERCARBONATE

Timo Korvela, Oulu; Jonni Ahlgren, Mustasaari, both of Finland; Bo Hedenäs, Helsingborg, Sweden, and Ilkka Renwall, Espoo, Finland, assignors to Kemira OY, Espoo, Finland

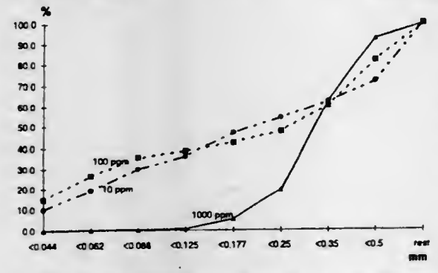
PCT No. PCT/FI93/00356, § 371 Date Apr. 26, 1995, § 102(e) Date Apr. 26, 1995, PCT Pub. No. WO94/05594, PCT Pub. Date Mar. 17, 1994

PCT Filed Sep. 7, 1993, Ser. No. 397,171

Claims priority, application Finland, Sep. 7, 1992, 923995

Int. Cl.[6] C01B *31/24*

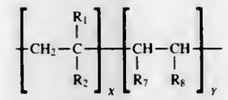
U.S. Cl. 423—266 **14 Claims**



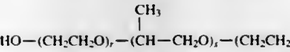
1. A process for preparing a crystal form of sodium percarbonate, said process comprising the steps of:

contacting hydrogen peroxide and sodium carbonate in an aqueous solution to form dissolved sodium percarbonate;

adding to said solution during said contacting step at least one polymer for controlling said crystal form of said sodium percarbonate and for providing a protective coating for said sodium percarbonate, said polymer having one of the following formulae:



(I)



(II)

or a salt of said formula (I), a salt of said formula (II) or a mixture thereof wherein X <100% and Y>0%, wherein R_1 is —H or —CH_3, wherein R_2 is —COOM, wherein M is H^+ or a cation selected from the group consisting of Na^+, K^+ and NH_4^+, wherein R_7 and R_8 are the same or different and R_7 and R_8 are each selected from the group consisting of-COOM, -COOL and mixtures thereof, wherein M is H^+ or a cation selected from the group consisting of Na^+, K^+ and NH_4^+, wherein L is —(—CH_2—CH_2—O)$_r$—(CHCH_3—CH_2—O)$_s$—(—CH_2CH_2—O)$_t$H, wherein each of r, s and t are in a range from 0 to 100% and have a sum of said r, said s and said t of 100% and wherein said polymer has a molecular weight of between 500 to 1,000,000 grams; and

precipitating and recovering said sodium percarbonate from said solution in said crystal form.

5,603,912

BASIC ALUMINUM HYDROXYCHLOROSULFATE PROCESS AND PRODUCT THEREFROM

Rocco Giovanniello, Port Jervis, and Anton Treuting, Cuddebackville, both of N.Y., assignors to Westwood Chemical Corporation, Middletown, N.Y.

Continuation-in-part of Ser. No. 148,777, Nov. 16, 1993, abandoned, which is a continuation-in-part of Ser. No. 954,115, Sep. 30, 1992, abandoned. This application Mar. 17, 1995, Ser. No. 404,492

Int. Cl.[6] C01B *17/45*

U.S. Cl. 423—467 **32 Claims**

1. A process for preparing a solution of a basic aluminum hydroxychlorosulfate which comprises heating a solution comprising an aluminum containing compound, wherein the aluminum containing compound is a basic aluminum chloride, wherein the concentration of Al^{+3} is about 4.0 to about 12.5 wt. %, to a temperature of about 75° to about 95° C.; the Al/Cl atomic ratio being about 1.2/1 to about 0.70/1, adding a sulfate anion containing compound selected from the group consisting of sulfuric acid, aluminum sulfate and mixtures thereof, to the basic aluminum chloride solution at a rate, such that (1) the addition rate does not result in temperature excursions of greater than 5° C., and (2) the addition rate does not result in precipitate formation, in an amount such that the molar ratio of sulfate ion to aluminum in the reaction mixture is about 0.05 to about 0.20, the sulfate ion addition being carried out over a time interval of at least one half hour, the temperature of the reaction being maintained at a temperature of about 75° to about 98° C. for about two hours to about 24 hours after the completion of the addition of sulfate anion; adding a calcium containing composition selected from the group consisting of (1) calcium carbonate, (2) calcium sulfate dihydrate, (3) calcium hydroxide (4) calcium sulfate dihydrate in combination with a second calcium compound wherein the second calcium compound is calcium carbonate or calcium chloride, and (5) mixtures thereof, at a rate, such that precipitation does not occur, with mixing, in an amount such that the concentration of calcium ion is about 0.1 to about 0.4 wt. percent; the calcium ion addition being carried out over at least a one hour interval; continuing the mixing until all of the calcium salt has been solublized, and recovering the basic aluminum hydroxychlorosulfate solution product, said product being substantially free of precipitate.

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5,603,913

CATALYSTS AND PROCESS FOR SELECTIVE OXIDATION OF HYDROGEN SULFIDE TO ELEMENTAL SULFUR

Tofik G. O. Alkhazov, Baku, U.S.S.R., and Roland E. Meissner, III, La Canada, Calif., assignors to Azerbaidzhanskaya Gosudarstvennaya Neftianaya Academiya, Baku, U.S.S.R.

Filed May 17, 1995, Ser. No. 443,252
Int. Cl.[6] C01B 17/16
U.S. Cl. 423—576.8 12 Claims

I. A process for the selective oxidation of hydrogen sulfide to sulfur comprising passing a gas stream comprising hydrogen sulfide and oxygen at a temperature above the dew point of sulfur up to about 300° C. over a solid porous catalyst formed of oxides of iron and magnesium, and optionally a metal selected from the group consisting of zinc, chromium, and mixtures thereof, the catalyst having the atomic proportions covered by the formula $Fe_AMg_BZn_CCr_D$ wherein A has a value of 0.5 to 10, B has a value of 0.1 to 1, C has a value of 0 to 1, and D has a value of 0 to 1, where B+C=1.

5,603,914

SYNTHESIS OF NOVEL MOLECULAR SIEVES USING A METAL COMPLEX AS A TEMPLATE

Kenneth J. Balkus, Jr., The Colony, and Alexi G. Gabrielov, Plano, both of Tex., assignors to Board of Regents, The Univ. of Texas System, Austin, Tex.

Division of Ser. No. 296,488, Aug. 24, 1994, Pat. No. 5,489,425. This application May 11, 1995, Ser. No. 439,416
Int. Cl.[6] C01B 37/08
U.S. Cl. 423—702 2 Claims

1. A process for the synthesis of a cobalticinium enclosed metal microcrystalline molecular sieve having a nonfinal pore size of at least 7.2 Å comprising admixing a bis(pentamethylcyclopentadienyl) cobalt (III) salt with components consisting essentially of an aluminum salt, a silicon oxide, a phosphorous oxide and optionally an ammonium salt in amounts sufficient to form a cobalticinium enclosed molecular sieve consisting essentially of a molecular sieve having the structure of UTD-2, UTD-5 or UTD-6.

5,603,915

PROCESS FOR MANUFACTURING HOMEOPATHIC MEDICINES

William Nelson, 6968 Buckskin Dr., Littleton, Colo. 80127, and Carmel Kiely, 17 Russell Place, Dooradnyla, Limerick, Ireland

Filed Mar. 22, 1994, Ser. No. 215,720
Int. Cl.[6] A61K 51/00; C07C 1/00; H05F 3/00
U.S. Cl. 424—1.11 7 Claims

1. A method for preparing a homeopathic carrier solution for increasing the efficacy of a homeopathic medicine comprising the carrier solution, the method comprising the steps of sequentially subjecting the homeopathic carrier solution to an alternating current electrical treatment and a direct current electrical treatment, the alternating current electrical treatment comprising the steps of subjecting the homeopathic carrier solution to an alternating current in the range of 1 milliamp to 100 milliamps at a potential in the range of 5 volts to 30 volts and at a frequency in the range of 1 KHz to 1,000 KHz for a duration in the range of 20 seconds to 60 seconds, the direct current electrical treatment comprising the steps of subjecting the homeopathic carrier solution to a direct current in the range of 1 milliamp to 50 milliamps at a potential of 500 volts to 10,000 volts for a duration not exceeding 5 minutes.

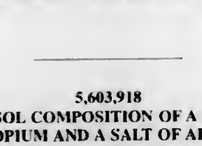
5,603,916

3 5-BIS ALKANOYL AMINO-2 4 6-TRIIODOBENZYL ESTERS

Baldev Singh, Collegeville, Pa., assignor to Nano Systems L.L.C., Collegeville, Pa.

Filed May 22, 1995, Ser. No. 447,132
Int. Cl.[6] A61K 49/04; C07C 229/00;69/76
U.S. Cl. 424—9.45 11 Claims

1. A compound having the structure:



wherein:

n is 2;

R^1 is H or alkyl containing from 1 to 4 carbon atoms;

R^2 is H, alkyl containing from 1 to 4 carbon atoms, aryl or heteroaryl wherein aryl is phenyl, tolyl or anthracene and heteroaryl is thiophene or benzofuran; and

R^3 is alkyl containing from 1 to 18 carbon atoms.

5,603,917

METHODS FOR THE IN VIVO MEASUREMENT OF THE CONCENTRATION OF NMR-DETECTABLE XENOBIOTIC COMPOUNDS

Michael F. Tweedle, Princeton; Harry W. Strauss, Skillman, and Adrian D. Nunn, Ringoes, all of N.J., assignors to Bracco International B. V., Amsterdam, Netherlands

Division of Ser. No. 52,959, Apr. 23, 1993, Pat. No. 5,468,467. This application Dec. 28, 1994, Ser. No. 365,013
Int. Cl.[6] A61B 5/55
U.S. Cl. 424—9.3 19 Claims

1. A method for the non-spectroscopic, non-imaging determination in vivo of the concentration of an NMR-detectable, non-paramagnetic xenobiotic compound, comprising the steps of:

(a) recording one or more in vivo measurements of the intensity of a magnetic resonance (NMR) signal from said xenobiotic compound, without substantially varying the magnetic field strength or radiation energy frequency over time to obtain a spectrum and without substantially varying the magnetic field strength spatially to obtain an image, at a measurement site of a living subject by employing an NMR detection system which is capable of measuring the intensity of said signal and which is located at said measurement site; and

(b) determining the concentration of said xenobiotic compound by a comparison of the signal intensity of said one or more measurements obtained in step (a) with the signal intensity of a standard.

5,603,918

AEROSOL COMPOSITION OF A SALT OF IPRATROPIUM AND A SALT OF ALBUTEROL

Daniel McNamara, Waterbury, Conn., assignor to Boehringer Ingelheim Pharmaceuticals, Inc., Ridgefield, Conn.

Filed Jun. 9, 1995, Ser. No. 489,201
Int. Cl.[6] A61K 9/12; C09K 3/30
U.S. Cl. 424—46 14 Claims

1. An aerosol formulation which comprises an effective amount of a micronized pharmaceutically acceptable salt of ipratropium and an effective amount of a micronized pharmaceutically acceptable salt of albuterol with an effective amount of soya lecithin as a suspending agent and a propellant.

5,603,919

LOW VOC HAIR SPRAY FIXATIVE COMPOSITIONS CONTAINING A TETRAMER

Kou-Chang Liu, Wayne, and Colleen M. Rocafort, Lake Hiawatha, both of N.J., assignors to ISP Investments Inc., Wilmington, Del.

Filed Jan. 5, 1995, Ser. No. 369,013
Int. Cl.[6] A61K 7/11
U.S. Cl. 424—47 6 Claims

1. A 55% or less, by wt., VOC pump hair spray composition consisting essentially of (i) about 1–10 wt. % of a hair spray fixative tetramer which forms clear, solutions in ethanol, water or ethanol-water mixtures consisting of the following monomers:

(a) vinyl pyrrolidone,

(b) vinyl caprolactam,

(c) 3-(N-dimethylaminopropyl) methacrylamide and

(d) C_8-C_{18} alkyl acrylamide in a compositional range of 1–10% of (a), 60–95% of (b), 1–10% of (c), and 1–10% of (d), by weight, having a weight average molecular weight of 20,000 to 100,000; (ii) 55 wt. % or less of ethanol; (iii) 0–5wt % adjuvants; and (iv) the rest water.

5,603,920

DENTIFRICE COMPOSITIONS

David E. Rice, Cincinnati, Ohio, assignor to The Proctor & Gamble Company, Mason, Ohio

Filed Sep. 26, 1994, Ser. No. 312,353
Int. Cl.[6] A61K 7/16;7/18
U.S. Cl. 424—49 18 Claims

1. A dentifrice composition comprising:

a. a precipitated silica, said precipitated silica being a low structure precipitated silica having a narrow particle size range distribution of soft particles and having a mean value (MV) particle size ranging from 8 to 14 microns, an oil absorption ranging from 60 to 120 cc/100 g, and a mercury intrusion (HGI) void volume of 1.0 to 4.0 cc/g; said precipitated silica, when formulated into a-dentifrice, having a Pellicle Cleaning Ratio (PCR) of from 70 140 and a Radioactive Dentin Abrasion (RDA) value of from 60 to 130; and wherein the ratio of said PCR to said RDA is at least 1.1; and wherein, as the particle size in microns increases in said silica, the RDA value remains substantially constant; and

b. from about 0.1% to about 99% of an orally-acceptable dentifrice carrier.

5,603,921

MEDICATED DENTAL FLOSS AND METHOD OF PREPARATION

Mark A. Bowen, Stowe, Mass., assignor to Whalen Biomedical Incorporated, Somerville, Mass.

Filed Mar. 13, 1995, Ser. No. 403,182
Int. Cl.[6] A61K 7/16
U.S. Cl. 424—49 4 Claims

1. A method of fabricating a dental floss comprising the steps of dissolving a predetermined amount of chlorhexidine gluconate in a polyethylene glycol base, where said polyethylene glycol base is comprised of two parts polyethylene glycol of a molecular weight of 3350 and one part of polyethylene glycol of a molecular weight of 1000.

5,603,922

PROCESSES AND COMPOSITIONS FOR THE REMINERALIZATION OF TEETH

Anthony E. Winston, East Brunswick, and Norman Useu, Marlboro, both of N.J., assignors to Enamelon Inc., East Brunswick, N.J.

Filed Aug. 8, 1995, Ser. No. 512,473
Int. Cl.[6] A61K 7/16
U.S. Cl. 424—49 18 Claims

1. A product for remineralizing one or more lesions formed in a subsurface of at least one tooth disposed in an oral cavity, comprising:

(i) a first discrete component comprising from about 0.05% to 15.0% of at least one water-soluble calcium salt together with from about 0.001% to 2.0% of at least one water-soluble, non-toxic divalent metal salt wherein the divalent metal is other than calcium;

(ii) a second discrete component comprising from about 0.05% to 15.0% of at least one water-soluble phosphate salt; and

(iii) a dispensing means for allowing said first and second components to be simultaneously dispensed from said product so as to permit said dispensed first and second components to simultaneously and directly contact said at least one tooth;

wherein said first component and said second component each have a pH such that when the two dispensed components are mixed together to form an aqueous mixture, said aqueous mixture has a pH of from greater than about 4.0 to about 7.0, further wherein said aqueous mixture has a stability such that upon introduction of said mixture into said oral cavity, calcium ions released by said at least one water-soluble calcium salt and phosphate ions released by said at least one water-soluble phosphate salt diffuse through a surface of at least one tooth to at least one demineralized subsurface of said at least one tooth to form hydroxyapatite and thereby remineralize said at least one demineralized subsurface.

5,603,923

ARTIFICIAL TANNING COMPOSITIONS HAVING IMPROVED COLOR DEVELOPMENT

Larry R. Robinson, Lebanon, and Paul R. Tanner, Maineville, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 219,061, Mar. 29, 1994. This application Sep. 25, 1995, Ser. No. 533,023
Int. Cl.[6] A61K 7/44;7/42
U.S. Cl. 424—60 29 Claims

1. An artificial tanning composition having improved color development comprising a mixture of:

(a) from about 0.1% to about 20% dihydroxyacetone.

(b) from about 0.1% to about 10% of an amino acid or pharmaceutically acceptable salt thereof selected from the group consisting of alanine, valine, leucine, isoleucine, proline, methionine, phenylalanine, tryptophan, glycine, serine, threonine, cysteine, tyrosine, asparagine, glutamine, lysine, arginine, histidine, and mixtures thereof, and

(c) a topical carrier, wherein said composition has a pH below about 4.

5,603,924

NON-YELLOWING ARTIFICIAL FINGERNAIL COMPOSITION

Robert E. Montgomery, Los Angeles, Calif., assignor to OPI Products, Inc.

Continuation of Ser. No. 841,429, Feb. 26, 1992. This application Aug. 4, 1995, Ser. No. 511,282
Int. Cl.[6] A61K 7/043
U.S. Cl. 424—61 7 Claims

1. A non-yellowing artificial fingernail composition consisting essentially of:

(i) a liquid binder, by total weight:

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(a) from about 10 percent to about 95 percent of ethyl methacrylate;

(b) from about 1 percent to about 50 percent of an unsaturated or saturated alcohol compound selected from the group consisting of hydroxyethyl methacrylate, hydroxypropyl methacrylate, isopropyl alcohol, and combinations thereof, and;

(c) from about 0.1 percent to about 5.0 percent of a tertiary amine polymerization accelerator, selected from the group consisting of N,N-dimethyl-p-toluidine, N,N-dihydroxyethyl-p-toluidine, N,N-dimethyl aniline; and

(ii) a polymeric filler portion, by dry weight of filler:

(a) from about 95 percent to about 99.9 percent of a finely divided polymer selected from the group consisting of, poly(ethyl methacrylate), poly(methyl methacrylate), poly(ethyl-co-methyl methacrylate) and mixtures thereof,

(b) from about 0.1 percent to about 5.0 percent of benzoyl peroxide,

wherein said ratio of said binder and said filler portion are of a ratio of about one to three and give a composition that polymerizes in about 120 seconds to 360 seconds at ambient temperatures.

5,603,925

CLEAR OR TRANSLUCENT TACK-FREE ANTIPERSPIRANT STICK OR GEL COMPOSITION AND MANUFACTURING METHOD

Lloyd Ross, Hampton, and Paul J. Fessock, South Plainfield, both of N.J., assignors to The Mennen Company, Morristown, N.J.

Filed Apr. 21, 1995, Ser. No. 426,672

Int. Cl.[6] A61K *7/32;7/38*

U.S. Cl. 424—65 **34 Claims**

1. A composition for reducing body malodor, comprising:

(1) an antiperspirant active material, in an amount effective to reduce body malodor;

(2) a polyamide as a gelling agent for the composition, the gelling agent being included in a sufficient amount such that the composition can be solidified; and

(3) a solvent system for the antiperspirant active material and for the polyamide, the solvent system being glycol-free and including a non-ionic surfactant and a polar solvent, the polar solvent including water, the solvent system being provided in an amount such that the polyamide can be dissolved therein and the polyamide can be gelled therefrom.

5,603,926

COSMETIC COMPOSITION COMPRISING CATIONIC POLYMER THICKENER

Junichi Matsumoto, Kashiwara; Yujiro Uchiyama, Osaka; Tetsuya Kambe; Tomiyuki Nanba, both of Yokohama, and Yoshihiro Okuda, Higashiosaka, all of Japan, assignors to Osaka Yuki Kagaku Kogyo Kabushiki Kaisha, Osaka, and Shiseido Company, Limited, Tokyo, both of Japan

Continuation-in-part of Ser. No. 158,284, Nov. 29, 1993, abandoned. This application Dec. 8, 1994, Ser. No. 354,833

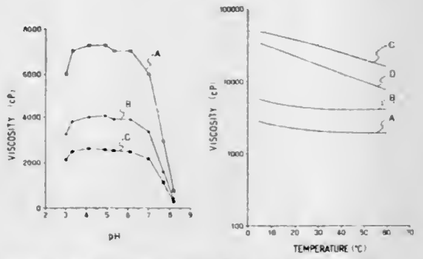
Claims priority, application Japan, Dec. 1, 1992, 4-321872

Int. Cl.[6] A61K *7/075*

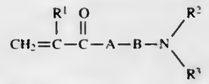
U.S. Cl. 424—70.15 **3 Claims**

1. A cosmetic composition comprising a cationic thickener having a viscosity of 500 to 30000 cP at 20° C. when the viscosity is measured by using a BH-type Brookfield viscometer at 20 rpm after the cationic thickener is dispersed into water so that the concentration of the cationic thickener is 1% by weight, said cationic thickener prepared in a nonaqueous solvent system in the absence of water and a surface active agent by polymerizing a monomer composition containing:

(A) 15 to 90% by weight of at least one of an acrylic monomer having an amino group and a methacrylic monomer having an



amino group, represented by the general formula (I):

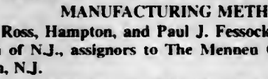


(I)

wherein R^1 is a hydrogen atom or methyl group, each of R^2 and R^3 is independently a hydrogen atom, methyl group, ethyl group or t-butyl group, A is oxygen atom or —NH— group, and B is a linear or branched alkylene group having 1 to 4 carbon atoms,

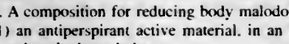
(B) 5 to 80% by weight of N-vinylpyrrolidone,

(C) 2 to 60% by weight of a monomer having at least one of acryloyl group and methacryloyl group represented by the general formula (III):



(III)

wherein R^1 and A are as defined above, R^5 is a linear or branched alkylene group having 8 to 20 carbon atoms, or a group represented by the general formula (IV):



(IV)

wherein n is an integer of 1 to 4, q is an integer of 1 to 25 and R^6 is a hydrogen atom or methyl group, and

(D) 0.1 to 25% by weight of a crosslinkable vinyl monomer having at least two carbon-carbon unsaturated bonds.

5,603,927

MATERIAL FOR REMOVING OFFENSIVE ODOR

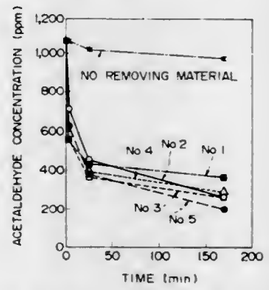
Kazuhiro Fukumoto; Seiji Onoda; Masahiro Sugiura; Mitsumasa Horii, and Hiroaki Hayashi, all of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi-ken, Japan

Filed Dec. 8, 1993, Ser. No. 162,891

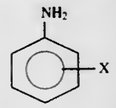
Claims priority, application Japan, Dec. 8, 1992, 4-352080

Int. Cl.[6] A61L *9/01;2/16*

U.S. Cl. 424—76.1 **18 Claims**



1. An active compound supported by an inert solid porous carrier for removing offensive odors from an acetaldehyde-containing gas, consisting essentially of at least one acid salt of an aminobenzene compound having the formula:



wherein X is halogen; —COOR, wherein R is an alkyl group; —SO_2NHR, wherein R is hydrogen; —$NHCOCH_3$ or $COCH_3$.

5,603,928

AIR PURIFICATION AGENT AND PROCESS FOR PRODUCTION OF SAME

Tamio Noda, Tokai, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan

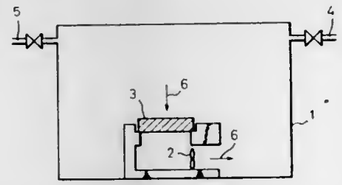
PCT No. PCT/JP93/00902, § 371 Date Aug. 26, 1994, § 102(e) Date Aug. 26, 1994, PCT Pub. No. WO94/14481, PCT Pub. Date Jul. 7, 1994

PCT Filed Jun. 30, 1993, Ser. No. 295,652

Claims priority, application Japan, Dec. 28, 1992, 4-358644

Int. Cl.[6] A61L *9/04*

U.S. Cl. 424—76.2 **3 Claims**



1. An air purification composition comprising a shaped body of chain magnesium silicate as a carrier, said carrier having disposed thereon a salt consisting essentially of hydrazine and a metal salt of at least one metal selected from a group consisting of nickel, aluminum, zinc, and titanium.

5,603,929

PRESERVED OPHTHALMIC DRUG COMPOSITIONS CONTAINING POLYMERIC QUATERNARY AMMONIUM COMPOUNDS

Suketu D. Desai, and Diane S. Nelms, both of Fort Worth, Tex., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

Filed Nov. 16, 1994, Ser. No. 340,763

Int. Cl.[6] A61K *6/00;31/74;47/00*

U.S. Cl. 424—78.04 **20 Claims**

1. A storage stable ophthalmic composition comprising a therapeutically effective amount of one or more acidic ophthalmic agents, a combination of an antimicrobial polymeric quaternary ammonium compound and boric acid in an amount effective to meet at least the minimum United States Pharmacopeia XXII and European Pharmacopeia (1994) preservative effectiveness requirements, and an ophthalmically acceptable vehicle; wherein the acidic ophthalmic agent is selected from the group consisting of anti-glaucoma and non-steroidal anti-inflammatory agents; provided that the composition does not contain a viscosity-enhancing amount of polyvinyl alcohol.

5,603,930

LACTOBACILLUS JOHNSONII CNCM I-1225

Dominique Brassart, Bussigny; Anne Donnet, Saint-Legier; Harriet Link, Vevey; Olivier Mignot, Blonay; Jean-Richard Neeser, Savigny; Florence Rochat, Montreux; Eduardo Schiffrin, Crissier, all of Switzerland, and Alain Servin, Chatenay-Malabry, France, assignors to Nestec S.A., Vevey, Switzerland

Continuation of Ser. No. 430,264, Apr. 28, 1995, Pat. No. 5,494,664, which is a continuation of Ser. No. 84,525, Jun. 29, 1993, abandoned. This application May 31, 1995, Ser. No. 455,562

Claims priority, application European Pat. Off., Jul. 6, 1992, 92810516

Int. Cl.[6] C12N *1/20;* **A01N** *63/08*

U.S. Cl. 424—93.45 **10 Claims**

1. A biologically pure culture of *Lactobacillus johnsonii* strain CNCM I-1225.

5,603,931

METHOD FOR DELIVERING A BIOACTIVE MOLECULE TO A CELLULAR TARGET

Victor A. Raso, Brookline, Mass., assignor to Boston Biomedical Research Institute, Boston, Mass.

Division of Ser. No. 998,754, Dec. 28, 1992, Pat. No. 5,501,854, which is a continuation of Ser. No. 482,001, Feb. 16, 1990, abandoned. This application Aug. 12, 1994, Ser. No. 289,881

Int. Cl.[6] C07K *16/24;* **A61K** *39/395*

U.S. Cl. 424—136.1 **12 Claims**

1. A method for delivering a bioactive molecule having an antibody binding site that is sensitive to pH to a cellular target within cells of a host, comprising:

a) providing a first portion of a hybrid reagent which, upon administration to said cells at physiologic pH, binds to the surface of said cells with the subsequent pinching off of the surface of said cells to form endosomes having a second and lower pH and containing said hybrid reagent whereby the hybrid reagent is transported to the interior of said cells by endocytosis, said first portion comprising an antibody or antigen binding fragment thereof; and,

b) screening antibodies or antigen binding fragments thereof which bind the bioactive molecule to determine which of said antibodies or antigen binding fragments bind the bioactive molecule at physiologic pH and release it at said second and lower pH found within the endosome;

c) selecting an antibody or antigen binding fragment thereof to provide a second portion of said hybrid reagent which binds said bioactive molecule at physiologic pH and releases it at said second and lower pH; and

d) constructing a hybrid reagent containing said first portion and said second portion;

e) administering said hybrid reagent to said host

whereby said constructed hybrid reagent binds to the surface of said cells, is endocytosed into said cells and releases the bioactive molecule to the cellular target with in said cells.

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5,603,932

RECEPTOR OF THE MINOR HUMAN RHINOVIRUS RECEPTOR GROUP

Dieter Blaas; Ernst Kuechler, both of Vienna; Harald Mischak, Poelten, and Christoph Neubauer, Vienna, all of Austria, assignors to Boehringer Ingelheim International GmbH, Ingelheim am Rhein, Germany

Division of Ser. No. 450,684, May 25, 1995, which is a division of Ser. No. 182,824, Jan. 19, 1994, Pat. No. 5,447,840, which is a division of Ser. No. 95,246, Jul. 22, 1993, Pat. No. 5,304,636, which is a continuation of Ser. No. 294,512, Feb. 14, 1989, abandoned. This application Apr. 23, 1996, Ser. No. 636,722

Claims priority, application Germany, Apr. 14, 1987, 37 12 678.4

Int. Cl.[6] A61K *39/00*

U.S. Cl. 424—184.1 **3 Claims**

1. A method of treating or preventing a rhinovirus infection in a subject, said method comprising administering to a subject in need of such treatment or prevention a receptor with binding affinity for the rhinoviruses of the minor human rhinovirus receptor group in an amount effective to treat or prevent said infection, wherein said receptor has the following characteristics:

(i) a molecular weight of 120 kD on a polyacrylamide gel in the presence of SDS;

(ii) a sedimentation constant, determined by sucrose gradient centrifugation in the presence of detergents, corresponding to about 28.4 S;

(iii) is bound by *Lens culinaris* lectin;

(iv) is not bound by heparin-sepharose;

(v) binds irreversibly to an anion exchanger;

(vi) has binding activity which is insensitive to neuraminidase;

(vii) consists of sub-units connected by intermolecular disulfide bridges; and

(viii) shows no binding activity to rhinoviruses in the presence of EDTA.

5,603,933

CD4 PEPTIDES FOR BINDING TO VIRAL ENVELOPE PROTEINS

Victor A. Dwyer, IV; Jagannada K. Sastry, both of Houston; Ralph B. Arlinghaus, Bellaire, and Pramod N. Nehete, Houston, all of Tex., assignors to Board of Regents, The University of Texas, Austin, Tex.

Filed Aug. 31, 1993, Ser. No. 115,171

Int. Cl.[6] A61K *39/00;38/07;38/08;* **C07K** *5/11;17/00*

U.S. Cl. 424—185.1 **10 Claims**

1. A composition comprising a CD4 peptide of from 4 to 10 amino acids in length including within its sequence the amino acid sequence Ser Arg Arg Ser (seq id no:1), the peptide capable of binding to HIV gp120.

5,603,934

ANTIGEN RECOGNIZED BY PATIENTS WITH ANTIBODY ASSOCIATED PARANEOPLASTIC SENSORY NEURONOPATHY

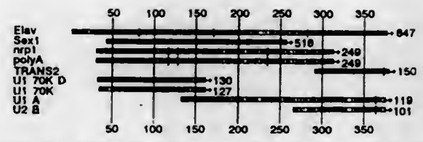
Jerome B. Posner, and Henry M. Furneaux, both of New York, N.Y., assignors to Sloan-Kettering Institute for Cancer Research, New York, N.Y.

Continuation of Ser. No. 665,959, Mar. 4, 1991, abandoned. This application Mar. 18, 1994, Ser. No. 210,732

Int. Cl.[6] A61K *39/00;39/385;* **C07K** *14/705*

U.S. Cl. 424—185.1 **3 Claims**

1. A recombinant human Hu antigenic polypeptide which comprises an antigenic epitope that is recognized by autoantibodies from patients with paraneoplastic sensory neuronopathy, said



polypeptide having been expressed in *Escherichia coli* by the plasmid pHB1.5 (ATCC Accession Number 40986).

5,603,935

COMPOSITION FOR THE TREATMENT OF SNORING AND METHODS OF USE THEREOF

Weng W. Jian, Beijing, China, and David S. Riley, Santa Fe, N.M., assignors to Eastern Europe, Inc., New York, N.Y.

Filed Jul. 29, 1995, Ser. No. 282,961

Int. Cl.[6] A61K *35/78*

U.S. Cl. 424—195.1 **27 Claims**

1. A composition for the treatment of snoring comprising a combination of approximately equal proportions of attenuations of discorea villosa and zingiber officinale, the combination representing approximately 10% by volume of the total volume of the composition.

5,603,936

PROCESS FOR REMOVING LIGHT ABSORBING COMPOUNDS FROM EPIDERMAL PLANT CELLS

Woodrow C. Monte, Tempe, Ariz., assignor to Richard A. Ratcliff, Scottsdale, Ariz.

Filed Feb. 15, 1995, Ser. No. 389,023

Int. Cl.[6] A61K *35/78;38/46;38/47;38/48*

U.S. Cl. 424—195.1 **20 Claims**

1. A process for harvesting a plant compound which is stored in the living epidermal cells of a plant and which absorbs light having a wavelength in the range of 260 to 400 nm, comprising the steps of

(a) subjecting at least a portion of the living epidermal cells of the plant for a selected period of time to artificial light having a selected illuminance to increase the concentration of the plant compound in the living epidermal cells, the artificial light having at least one wavelength in the range of 260 nm to 400 nm;

(b) grinding the plant to form a slurry including the epidermal cells from step (a);

(c) mixing an enzyme in the slurry to produce an enzyme reaction slurry, said enzyme promoting the breaching of the outer walls of the epidermal cells to release the plant compound from the epidermal cells in the slurry;

(d) adding a solvent to said enzyme reaction slurry to form a solvent-enzyme reaction slurry, said solvent extracting the plant compound from said enzyme reaction slurry; and,

(e) separating said solvent and the plant compound carried in said solvent from said solvent-enzyme reaction slurry.

5,603,937

IMMUNE-ENHANCING FOOD COMPRISING ISARIA TYPE INSECT RAISED FUNGUS (CORDYCEPS JAPONENSIS) AS A MAIN INGREDIENT

Yoshikazu Kondoh, Miyagi, and Nobuo Yahagi, Yamagata, both of Japan, assignors to Kondoh et al., Kyoto, Japan

Filed Feb. 21, 1995, Ser. No. 390,960

Claims priority, application Japan, Feb. 23, 1994, 6-025280

Int. Cl.[6] A61K *35/78;* **A01N** *63/00*

U.S. Cl. 424—195.1 **7 Claims**

1. An immune-enhancing food comprising a fruit body, mycelium and metabolite fluid of Isaria-type insect-raised fungus (*Cordyceps japonensis*) as a main ingredient.

5,603,938

HIGH MOLECULAR WEIGHT SURFACE PROTEINS OF NON-TYPEABLE HAEMOPHILUS

Stephen J. Barenkamp, Webster Grove, Mo., assignor to St. Louis University, and Washington University, both of St. Louis, Mo.

PCT No. PCT/US93/02166, § 371 Date Oct. 5, 1994, § 102(e) Date Oct. 5, 1994, PCT Pub. No. WO93/19090, PCT Pub. Date Sep. 30, 1993

PCT Filed Mar. 16, 1993, Ser. No. 302,832

Claims priority, application United Kingdom, Mar. 16, 1992, 9205704

Int. Cl.[6] A61K *39/102;* **C07H** *19/00;21/00;21/02*

U.S. Cl. 424—256.1 **3 Claims**

1. An isolated and purified gene which encodes a high molecular weight protein having the amino acid sequence of SEQ ID: 2.

5,603,939

FILM-FORMING COSMETIC COMPOSITION BASED ON A CHLORINATED GRAFT COPOLYMER RESULTING FROM THE GRAFTING OF A CHLORINATED POLYOLEFIN AND ACRYLIC, STYRENE AND/OR VINYL TYPE UNSATURATED MONOMERS

Jean-Claude Ser, Chevilly Larue, France, assignor to L'Oreal, Paris, France

PCT No. PCT/FR93/01110, § 371 Date Aug. 19, 1994, § 102(e) Date Aug. 19, 1994, PCT Pub. No. WO94/10966, PCT Pub. Date May 26, 1994

PCT Filed Nov. 12, 1993, Ser. No. 256,290

Claims priority, application France, Nov. 12, 1992, 92 13600

Int. Cl.[6] A61K *6/00*

U.S. Cl. 424—401 **15 Claims**

1. A film forming cosmetic composition comprising, in a suitable cosmetic vehicle, an effective amount of a film forming chlorinated graft copolymer, said chlorinated graft copolymer consisting of 5 to 20% of a chlorinated polyolefin grafted with 80 to 95% of at least one member selected from the group consisting of an oleophilic monomer, a hydrophilic monomer and a mixture thereof; said oleophilic monomer being selected from the group consisting of styrene, alkyl acrylates, and alkyl methacrylates and said hydrophilic monomer being selected from the group consisting of acrylic acid, methacrylic acid, 2-hydroxyethyl acrylate, 2-hydroxyethyl methacrylate, 2-hydroxypropyl acrylate and 2-hydroxy-propyl methacrylate.

5,603,940

OIL-IN-WATER EMULSION WHICH MAY BE USED FOR OBTAINING A CREAM

Didier Candau, Bievres, and Pascal Simon, Vitry sur Seine, both of France, assignors to L'Oreal, Paris, France

Filed Sep. 27, 1994, Ser. No. 312,641

Claims priority, application France, Oct. 8, 1993, 93 11995

Int. Cl.[6] A61K *7/00;* **B01J** *13/00*

U.S. Cl. 424—401 **18 Claims**

1. Oil-in-water emulsion comprising an oily phase dispersed in an aqueous phase and an emulsifying system, wherein the emulsifying system comprises at least one first fatty acid ester selected from the group consisting of fatty acid esters of glucose and the fatty acid esters of alkylglucose, wherein said first fatty acid ester contains a mixture of mono-, di-, tri- and tetraester derivatives with a proportion of at least 50% by weight of mono- and diesters derivatives not exceeding 73% by weight of monoester relative to the total weight of the mixture, and at least one second fatty acid ester of sucrose.

5,603,941

MULTIFUNCTIONAL BIODISPERSANT/BIOCIDAL COMPOSITIONS

Thomas E. Farina, Flemington, N.J.; Frank J. Himpler, Easton, Pa., and J. Steven Colby, New Providence, N.J., assignors to Lonza, Inc., Annandale, N.J.

Filed May 3, 1994, Ser. No. 237,032

Int. Cl.[6] A01N *25/34*

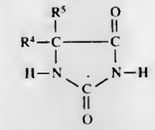
U.S. Cl. 424—405 **39 Claims**

1. A stable, solid composition comprising

(a) a biodispersing effective amount of at least one biodispersant selected from the group consisting of sulfosuccinate surfactants, sulfoacetate surfactants, or any combination thereof;

(b) a biocidal effective amount of at least one halogenated biocide compound; and

(c) a stabilizing effective amount of at least one halogen scavenger selected from the group consisting of a compound having the formula RR^3NH wherein R and R^3 are independently carbonyl, sulfone, alkyl, aryl, or halogen and a compound having the formula



where R^4 and R^5 independently are methyl or ethyl.

5,603,942

STABLE, SINGLE PHASE W/O MICROEMULSION MATRIX FORMULATION FOR FORMING SPRAYABLE, AEROSOL AGRICULTURALLY ACTIVE COMPOSITIONS

Kolazi S. Narayanan; Milla Kaminsky, both of Wayne, and Robert M. Ianniello, Oak Ridge, all of N.J., assignors to ISP Investments Inc., Wilmington, Del.

Filed May 19, 1995, Ser. No. 444,600

Int. Cl.[6] A01N *25/30*

U.S. Cl. 424—405 **14 Claims**

1. A stable single phase w/o aerosol microemulsion matrix for making a sprayable agriculturally active composition, consisting essentially of, by weight,

(a) 2–20% of a C_9-C_{15} hydrocarbon,

(b) 25–50% of water,

(c) 20–45% of a propellant,

(d) 10–20% of an emulsifier, and

(e) 15–35% of a cosolvent/coemulsifier which is a C_8-C_{18} alkyl pyrrolidone or pentanol, or mixtures thereof.

5,603,943

NASALLY ADMINISTRABLE COMPOSITIONS

Akira Yanagawa, Yokohama, Japan, assignor to Dott Research Laboratory, Yokohama, Japan

Filed Apr. 26, 1995, Ser. No. 429,501

Claims priority, application Japan, May 11, 1994, 6-120778; Mar. 2, 1995, 7-066640

Int. Cl.[6] A61K *9/14;9/50*

U.S. Cl. 424—434 **26 Claims**

1. A nasally administrable composition comprising a physiologically active substance having a molecular weight of not more than 40,000 and a physiologically acceptable powdery or crystalline polyvalence metal carrier, wherein a physiologically effective

amount of said physiologically active substance is dispersed homogeneously in and adsorbed homogeneously onto said polyvalence metal carrier, and a mean particle size of said polyvalence metal carrier is not more than 250 μm.

5,603,944

Patent Not Issued For This Number

5,603,945

THERAPEUTIC/PROPHYLACTIC AGENTS AND METHOD OF TREATING FOR URINARY CALCULOSIS IN PETS

Yoshio Isobe, Suginami-ku; Toshio Ito, Suita; Norio Kogure, Bunkyo-ku; Hideaki Narita, Suginami-ku; Norio Hanazawa, Minato-ku, and Kiichi Kanayama, Ebina, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Feb. 17, 1994, Ser. No. 197,591

Claims priority, application Japan, Feb. 19, 1993, 5-054944

Int. Cl.[6] A23K *1/165; 1/17*

U.S. Cl. 424—442 **15 Claims**

1. A food as a therapeutic or prophylactic treatment for urinary calculosis in an animal consisting essentially of

fumaric acid; having a mean particle size of not finer than 300 mesh and

a base component selected from the group consisting of a feed of animal origin, a cereal, a starch, an oil meal, a bran, a cellulosic material, an excipient, a binder, a disintegrator, sodium chloride, sugar, an amino acid, and mixtures thereof,

wherein said food includes not more than 1% vitamins and minerals based on the weight of the food.

5,603,946

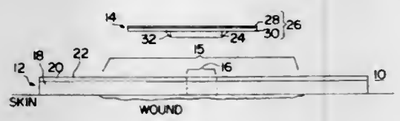
WOUND DRESSING

Barry Constantine, Island Heights, N.J., assignor to Bristol-Myers Squibb Company, Skillman, N.J.

Filed Oct. 8, 1993, Ser. No. 134,152

Int. Cl.[5] A61F *13/00*

U.S. Cl. 424—445 **13 Claims**



1. In a two piece wound dressing comprising an adhesive containing baseplate and means for absorbing excess wound exudate, the improvement wherein said baseplate includes:

at least one slit defining a flap which when lifted defines a first aperture suitable for first aperture and access and visualization; and,

a second aperture substantially smaller than the dimensions of the wound adapted to provide direct exudate flow to said absorbing means.

5,603,947

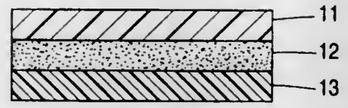
METHOD AND DEVICE FOR PROVIDING NICOTINE REPLACEMENT THERAPY TRANSDERMALLY/TRANSBUCCALLY

Ooi Wong, Fremont; Kathleen C. Farinas, San Francisco; Gary W. Cleary, Menlo Park; Chia-Ming Chiang, Foster City, and Jun Xia, Redwood City, all of Calif., assignors to Cygnus Terapeutic Systems, Redwood City, Calif.

Continuation-in-part of Ser. No. 247,520, May 23, 1994, abandoned, which is a continuation of Ser. No. 89,971, Jul. 9, 1993, abandoned. This application Jul. 21, 1994, Ser. No. 278,277

Int. Cl.[6] A61F *13/00*

U.S. Cl. 424—448 **9 Claims**



1. A laminated composite for providing transdermal/transbuccal nicotine replacement therapy to a person over a predetermined time period, t, comprising in combination:

(a) a nicotine-impermeable backing layer; and

(b) a matrix layer having a thickness l and comprising a mixture of a sufficient amount of nicotine to provide said therapy and a polymer, the nicotine having a diffusion coefficient, D, in the matrix layer, wherein the ratio

$$\frac{Dt}{l^2}$$

is in the range of about 0.5 to 20 and wherein the composite controls the rate at which nicotine is administered across said skin or mucosa over at least 50% of t and the ratio of the average flux of nicotine from the matrix layer over the last ⅓ of time period t to the average flux of nicotine from the matrix over the entire time period t is less than about 0.4.

5,603,948

ACTIVE INGREDIENT PATCH FOR LOW-MELTING AND/OR VOLATILE ACTIVE INGREDIENTS

Hans P. Merkle, Zurich, Switzerland; Klaus Nagels, Bonn, Germany; Dietrich Schacht, Cologne, Germany, and Hans-Michael Wolff, Monheim, Germany, assignors to Schwarz Pharma AG, Monheim, Germany

Division of Ser. No. 367,262, Feb. 27, 1995, Pat. No. 5,527,536. This application Jun. 7, 1995, Ser. No. 483,312

Claims priority, application Germany, Jul. 23, 1992, 42 24 325.4; WIPO, Jul. 17, 1993, PCT/DE93/00638

Int. Cl.[6] A61F *13/02*

U.S. Cl. 424—448 **5 Claims**

1. A method of preparing an active ingredient patch for the controlled release of active ingredients to the skin, said patch having no water-swellable polymers added thereto, and consisting of a backing layer, and, bonded to the backing layer, an adhesive film layer consisting of an active-ingredient-containing contact hot-melt adhesive, and a removable layer covering the adhesive film, wherein the adhesive film layer is a contact hot-melt adhesive which is a chemically saturated three-block copolymer of polystyrene-block-copoly(ethylenebutylene)-block-polystyrene, in a concentration of 10 to 80 weight %, and an active ingredient which is low-melting or volatile and is liquid at the processing temperature of the contact hot-melt adhesive, at a concentration of 2.5 to 25 weight %, comprising mixing the components of the contact hot-melt adhesive that forms the matrix layer under heating to 100° to 200° C. in an inert gas atmosphere until a homogeneous melt is obtained, before adding the active ingredient, and then dissolving the active ingredient in the contact adhesive melt under an inert gas at a processing temperature of 100° to 200° C. and applying the homogeneous mixture onto the covering layer, which is impermeable to the active ingredient.

5,603,949

USE OF A TOCOPHEROL PHOSPHATE OR ONE OF ITS DERIVATIVES, FOR THE PREPARATION OF COSMETIC OR PHARMACEUTICAL COMPOSITIONS AND COMPOSITIONS SO OBTAINED

Alain Meybeck, Courbevoie; Marc Dumas, Colombes; Frédéric Bonte, Courbevole, and Christian Marechal, Paris, all of France, assignors to LVMH Recherche, Colombes Cedex, France

Continuation of Ser. No. 190,075, Feb. 1, 1994, abandoned. This application Jun. 5, 1995, Ser. No. 465,610

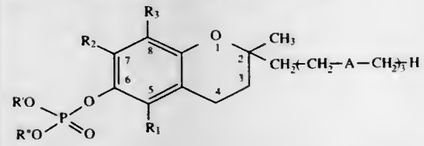
Claims priority, application France, Aug. 1, 1991, 91 09825

Int. Cl.[6] A61K *9/127*

U.S. Cl. 424—450 **34 Claims**

1. A cosmetic or pharmaceutical composition consisting essentially of (I) 0.001 to 10% concentration by weight of a tocopherol phosphate selected from the group consisting of:

(a) a tocopherol phosphate of general formula:

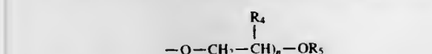


(I)

in which:

R' is selected from the group consisting of a hydrogen atom, an alkyl radical having 1 to 4 carbon atoms and a tocopherol radical when R' is in the form of R'O;

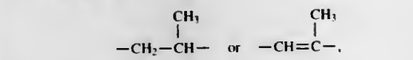
R" is selected from the group consisting of a hydrogen atom, an alkyl radical having 1 to 4 carbon atoms and, when R" is in the form of R"O, an oxyethylenated chain of the formula:



in which R_4 and R_5 independently are selected from the group consisting of a hydrogen atom and a methyl radical, and n is an integer greater than or equal to 1;

R_1, R_2 and R_3 independently are selected from the group consisting of a hydrogen atom and a methyl radical, with the proviso that R_1, R_2 and R_3 cannot simultaneously be a methyl radical; and

A is the group:



(b) zeta-1-tocopherol phosphate;

(c) an ester of the tocopherol phosphate of part (a),

(d) an ester of the zeta-1-tocopherol phosphate of part (b);

(e) a cosmetically or pharmaceutically acceptable salt of the tocopherol phosphate of part (a); and

(f) a cosmetically or pharmaceutically acceptable salt of the zeta-1-tocopherol phosphate of part (b);

and (II) a cosmetically, dermatologically or pharmaceutically acceptable excipient, vehicle or carrier.

5,603,950

AGENT FOR ORAL INTAKE

Werner Ratjen, Freeweid 12-14, D-2302 Flintbek, and Hans R. Willmen, Nachtigallenstasse 22, D-4048 Grevenbroich, both of Germany

Continuation-in-part of Ser. No. 20,665, Feb. 22, 1993, abandoned, which is a continuation-in-part of Ser. No. 744,985, Aug. 14, 1991, abandoned. This application Nov. 7, 1994, Ser. No. 336,330

Claims priority, application Germany, Aug. 14, 1990, 40 25 912.41

Int. Cl.[6] A61K *9/48*

U.S. Cl. 424—451 **8 Claims**



1. An orally ingestible product comprising a soluble capsule and an expandable, digestible cohesive sponge material comprised of a grain milling product of wheat fiber of substantially negligible caloric and nutritional content and disposable in a compressed form in said soluble capsule, said digestible sponge material of wheat fiber being expandable to a multiple of the capsule volume upon dissolution of the soluble capsule in a stomach of an ingestor, wherein said expanded sponge material of wheat fiber does not immediately pass from the stomach into a digestive tract, but remains in the stomach to promote a temporary sensation of fullness.

5,603,951

CYCLOSPORIN-CONTAINING SOFT CAPSULE COMPOSITIONS

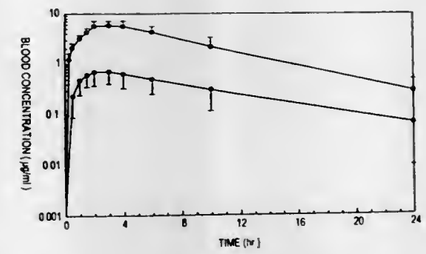
Jong S. Woo, Kyunggi-do, Rep. of Korea, assignor to Hanmi Pharm. Ind. Co., Ltd., Kyunggi-do, Rep. of Korea

Filed Apr. 21, 1995, Ser. No. 427,190

Claims priority, application Rep. of Korea, Nov. 9, 1994, 94-29208

Int. Cl.[6] A61K *9/48*

U.S. Cl. 424—455 **19 Claims**



1. A cyclosporin soft capsule composition comprising cyclosporin as an active ingredient, dimethylisosorbide as a cosurfactant, one or more components selected from the group consisting of an esterified compound of fatty acid and primary alcohol, medium chain fatty acid triglyceride and fatty acid monoglyceride as an oil component, and a surfactant having an HLB (Hydrophilic-lipophilic balance) value of 10 to 17.

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5,603,952

METHOD OF ENCAPSULATING FOOD OR FLAVOR PARTICLES USING WARM WATER FISH GELATIN, AND CAPSULES PRODUCED THEREFROM

Jon C. Soper, Huber Heights, Ohio, assignor to Tastemaker, Cincinnati, Ohio

Filed Dec. 30, 1994, Ser. No. 367,072
Int. Cl.[6] A61K 9/64
U.S. Cl. 424—456 12 Claims

1. A process of microencapsulating food or flavor particles comprising the steps of:

providing food or flavor particles to be encapsulated;

forming a mixture of a warm water fish gelatin and said food or flavor particles in aqueous media; and

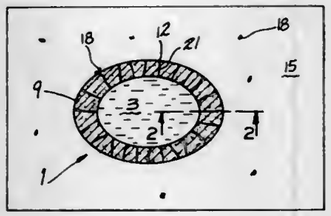
microencapsulating said particles with said gelatin at a temperature greater than 27° C. by complex coacervation with at least two different colloidal materials to form microencapsulated capsules.

5,603,953

SUPPORTED LIQUID MEMBRANE DELIVERY DEVICES

Scott M. Herbig; Kelly L. Smith, both of Bend, Oreg.; Paul Van Eikeren, Carlisle, Mass., and James B. West, Bend, Oreg., assignors to Pfizer Inc., New York, N.Y.

Continuation of Ser. No. 982,815, Nov. 30, 1992, abandoned.
This application May 23, 1995, Ser. No. 424,511
Int. Cl.[6] A61K 9/30;9/32;9/36;9/22
U.S. Cl. 424—473 21 Claims



1.) A device for dispensing a beneficial agent to an aqueous environment comprising:

a.) a hydrophilic formulation comprising a beneficial agent;

b.) a wall that surrounds said hydrophilic formulation, said wall formed at least in part of a microporous hydrophobic support membrane; and

c.) a hydrophobic liquid entrained within said pores of said microporous support membrane, the permeability of the hydrophobic liquid to water is less than 9×10^{-6}cc STP-cm/cm^2-sec-cmHg and said hydrophobic liquid being capable of change such that the permeability to water changes at least an order of magnitude.

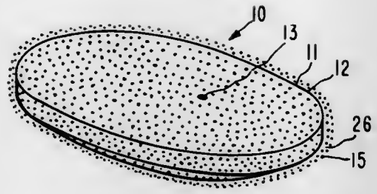
5,603,954

PENTOXIFYLLINE THERAPY AND METHOD OF USE

Patrick S. L. Wong, Palo Alto; George V. Guittard, Cupertino, and Atul D. Ayer, Palo Alto, all of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Division of Ser. No. 183,007, Jan. 18, 1994, Pat. No. 5,532,003.
This application May 24, 1995, Ser. No. 449,621
Int. Cl.[6] A61K 9/22
U.S. Cl. 424—473 7 Claims

1. A dosage form for delivering pentoxifylline to a patient, the dosage form comprising:



(a) a wall comprising a semipermeable composition permeable to the passage of fluid and substantially impermeable to the passage of pentoxifylline;

(b) a compartment defined by the wall;

(c) 10 ng to 750 mg of pentoxifylline in the compartment;

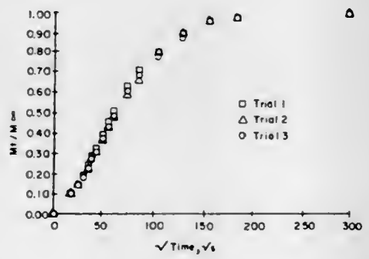
(d) an exit in the dosage form for the continuous release of pentoxifylline at a rate of 1 ng/hr to 30 mg/hr over an extended time of 24 hrs.

5,603,955

ENHANCED LOADING OF SOLUTES INTO POLYMER GELS

Stevin H. Gehrke, Cincinnati, Ohio; E. C. Lupton, Boston; Matthew E. Schiller, Waltham, both of Mass.; Lorelle Uhden, Cincinnati, Ohio, and Nitin Vaid, Kanpur, Ind., assignors to University of Cincinnati, Cincinnati, Ohio

Filed Jul. 18, 1994, Ser. No. 276,462
Int. Cl.[6] A61K 9/10;47/32;47/34;47/36
U.S. Cl. 424—484 15 Claims



1. A method of loading a solute into a crosslinked polymer gel network, comprising:

providing the crosslinked polymer gel network, including a solvent;

selecting a loading polymer that is soluble in the solvent and is capable of facilitating selective partitioning of the solute into the gel network; and

contacting the solvent-including crosslinked polymer gel network with a solution containing:

the solute; and

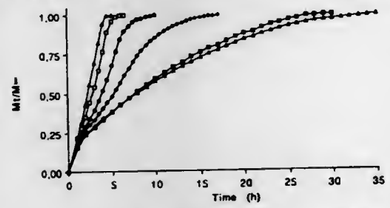
the loading polymer the contacting being performed under conditions sufficient for the solute and the loading polymer to selectively partition into the gel network and for the solute to retain activity while in the gel network.

5,603,956

CROSS-LINKED ENZYMATICALLY CONTROLLED DRUG RELEASE

Mircea A. Mateescu, Verdun; Yves Dumoulin, Ste-Julie; Louis Cartilier, Beaconsfield, and Vincent Lenaerts, Argenteuil, all of Canada, assignors to Labopharm Inc., Ste-Therese, Canada

Continuation of Ser. No. 919,762, Jul. 24, 1992, abandoned, which is a continuation-in-part of Ser. No. 787,721, Oct. 31, 1991, abandoned, which is a continuation of Ser. No. 618,650, Nov. 27, 1990, abandoned. This application Jun. 16, 1994, Ser. No. 261,228
Int. Cl.[6] A61K 47/36
U.S. Cl. 424—488 10 Claims



1. A solid controlled release pharmaceutical dosage unit in the form of a compressed mixture consisting essentially of:

up to 60% by weight of a therapeutically effective product;

at least 40% by weight of amylose cross-linked with a cross-linking agent selected from the group consisting of epichlorohydrin and 2,3-dibromopropanol, wherein said cross-linked amylose is prepared by cross-linking amylose with from 1 to 20 grams of said cross-linking agent per 100 grams of amylose, and wherein said cross-linking provides sustained release of said therapeutically effective product; and

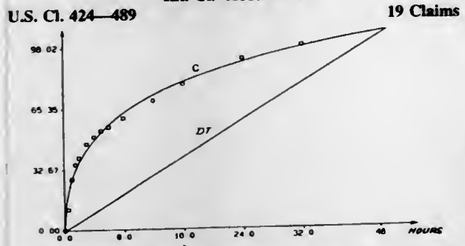
an enzyme for modulating the release of the pharmaceutical product, said enzyme being an α-amylase present in an amount corresponding to an enzyme activity of 100 EU or less per dosage unit.

5,603,957

MICROCAPSULES FOR THE CONTROLLED RELEASE OF ACETYLSALICYCLIC ACID IN THE GASTROINTESTINAL ENVIRONMENT

Olga Burguiere, Castelnau le Lez; Ahmad Yassine, Borj-Barajne, and Jean-Philippe Selles, Montpellier, all of France, assignors to Flamel Technologies, France

Filed Apr. 13, 1994, Ser. No. 227,122
Claims priority, application France, Apr. 19, 1993, 93 04560
Int. Cl.[6] A61K 9/14
U.S. Cl. 424—489 19 Claims



1. Microcapsules for the controlled release of acetylsalicylic acid (ASA) in the gastrointestinal environment, said microcapsules being orally ingestible in a dose D and comprising particles of acetylsalicylic acid with a size of between 100 and 1000 μm which are coated and designed so that, when ingested orally in a single administration of a dose D of between 75 and 320 mg of ASA, they induce moderate ASA absorption kinetics in vivo in man, extending over at least 24 hours, said ASA absorption being:

less than or equal to 10% by weight of the absorbed fraction of D at a time t after ingestion of 0.4 hour,

less than or equal to 50% by weight of the absorbed fraction of D at t=3.9 hours, and

less than or equal to 90% by weight of the absorbed fraction of D at t=23 hours,

t being given to within ±10%.

5,603,958

PHARMACEUTICAL CARRIER

Bror Morein, and Karin Lövgren, both of Uppsala, Sweden, assignors to British Technology Group Limited, London, England

Continuation of Ser. No. 142,377, Mar. 30, 1994, abandoned.
This application May 31, 1995, Ser. No. 455,403
Claims priority, application Sweden, May 31, 1991, 9101665
Int. Cl.[6] A61K 9/16
U.S. Cl. 424—489 19 Claims



1. A method of administering of a pharmaceutically active substance which does not elicit an immunogenic response to a patient in need thereof, said method comprising the step of administering the pharmaceutically active substance in a carrier, said carrier comprising a deadjuvanted matrix which is a complex of a sterol and one or more saponins which lack adjuvant effect, said matrix comprising spherical nanoparticles formed from annular subunits, each annular subunit being formed from said sterol and said one or more saponins lacking adjuvant effect.

5,603,959

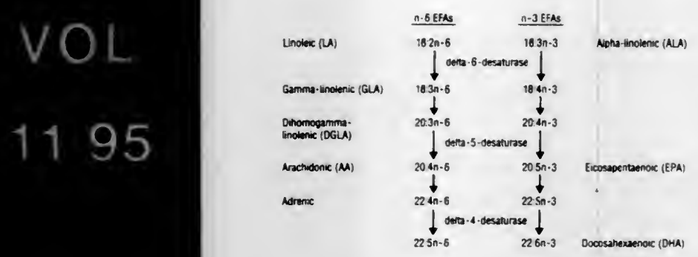
FATTY ACID DERIVATIVES

David F. Horrobin, Guildford, and Philip Knowles, Carlisle, both of England, assignors to Scotia Holdings Plc, England

Filed Feb. 22, 1995, Ser. No. 392,628
Claims priority, application United Kingdom, Mar. 1, 1994, 9403857
Int. Cl.[6] A61K 9/14
U.S. Cl. 424—490 15 Claims

1. An NSAID in the form of a compound in which the NSAID is chemically linked to an n-6 or n-3 essential fatty acid selected from the group consisting of linolenic acid, gamma-linolenic acid, dihomo-gamma-linolenic acid, arachidonic acid, adrenic acid, docosapentaenoic n-6 acid, alpha-linolenic acid, stearidonic acid, the 20:4n-3 acid, eicosapentaenoic acid, docosapentaenoic n-3 acid, docosahexaenoic acid, and the corresponding fatty alcohols,

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wherein said NSAID is selected from the group consisting of a salicylate, a pyrazolone, a para-aminophenol, indomethacin, sulindac, a fenamate, a propionic acid, an oxicam, a phenylacetic acid, tolmetin, etodolac and nabumetone.

5,603,960

PREPARATION OF MICROPARTICLES AND METHOD OF IMMUNIZATION

Derek T. O'Hagan, 16 Middlesex Rd., Bootle, Merseyside L20 9BW, United Kingdom; John P. McGee, Tanjong Kilmarnack Rd., Kilmaurs, Strathelyde KA3 2RB, Scotland, and Stanley S. Davis, 19 Cavendish Crescent North, Nottingham NG7 1BA, United Kingdom

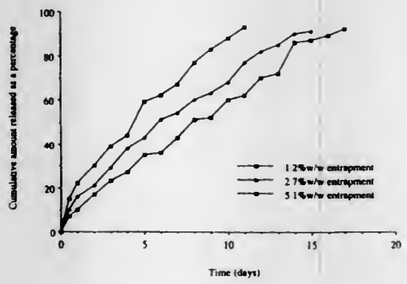
PCT No. PCT/US94/05834, § 371 Date Jun. 2, 1995, § 102(e) Date Jun. 2, 1995, PCT Pub. No. WO94/27718, PCT Pub. Date Dec. 8, 1994

PCT Filed May 24, 1994, Ser. No. 374,751

Claims priority, application United Kingdom, May 25, 1993, 9310781

Int. Cl.[6] **A61K** *9/50;9/48;9/14;* **B01J** *13/02*

U.S. Cl. 424—501 **29 Claims**



1. A method for producing microparticles which comprises:

dispersing a bioactive material in a first medium selected from the group consisting of silicone oils, mineral oils, petroleum oils, sesame oil, peanut oil, soybean oil, corn oil, cotton seed oil, coconut oil and linseed oil, a non-solvent for a pharmacologically acceptable polymer,

adding a second medium selected from the group consisting of chloroform, methylene chloride, ethylene chloride, ethylene dichloride, ethyl acetate, methylchloroform, and tetrahydrofuran containing said polymer to said first medium,

mixing the first and second media so that phase separation occurs on admixture of the two media with formation of the microparticles.

5,603,961

SUSTAINED RELEASE MULTI-CORE MICROSPHERE PREPARATION AND METHOD FOR PRODUCING THE SAME

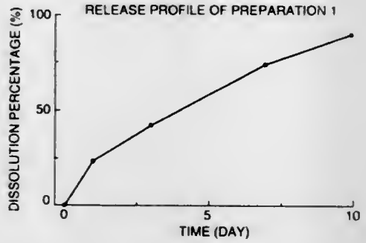
Takehiko Suzuki, Osaka-fu; Yukiko Nishioka, Toyonaka; Yasuhisa Matsukawa, Osaka; Akihiro Matsumoto, Hirakata, and Masao Kobayashi, Kyoto, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Filed Sep. 30, 1993, Ser. No. 128,692

Claims priority, application Japan, Oct. 1, 1992, 4-263460

Int. Cl.[6] **A61K** *9/50;9/14;9/16;* **B01J** *13/02*

U.S. Cl. 424—502 **14 Claims**



1. A sustained release multi-core microsphere preparation, which comprises

(1) microregions comprising a first biodegradable polymer,

(2) a continuous region comprising a second biodegradable polymer, in which the microregions are distributed, and

(3) a therapeutically effective amount of at least one pharmaceutically active ingredient selectively retained in the microregions of said first biodegradable polymer;

said microsphere preparation being obtained by

(i) preparing an oil-in-oil emulsion comprising water immiscible organic solvent, the first biodegradable polymer, the second biodegradable polymer and the pharmaceutically active ingredient having higher affinity for the first biodegradable polymer than for the second biodegradable polymer, the biodegradable polymers being selected from the group consisting of polylactic acid and a copolymer of lactic acid and glycolic acid, and the oil-in-oil emulsion having microdroplets of the first biodegradable polymer dispersed in a continuous oil phase of the second biodegradable polymer,

(ii) dispersing the oil-in-oil emulsion in an aqueous solution to give an oil-in-oil-in-water emulsion, and

(iii) removing the water-immiscible organic solvent from the oil phases of the resulting oil-in-oil-in-water emulsion.

5,603,962

USE OF AQUEOUS SOLUTIONS CONTAINING PEROXOBISULPHATE IONS FOR THE TREATMENT OF MALIGNANT CELLS

Aloys Renschler, Neusser Strasse 201, 50733 Koln, and Dieter Schuster, Wuppertal, both of Germany, assignors to Aloys Renschler, Cologne, Germany

PCT No. PCT/EP92/02244, § 371 Date Oct. 20, 1994, § 102(e) Date Oct. 20, 1994, PCT Pub. No. WO93/14774, PCT Pub. Date Aug. 5, 1993

PCT Filed Sep. 29, 1992, Ser. No. 256,370

Claims priority, application Germany, Jan. 24, 1992, 42 01 858.7

Int. Cl.[6] **A61K** *33/40;41/00;* **A61N** *5/06*

U.S. Cl. 424—613 **32 Claims**

1. A method for treating malignant cells in a human or animal, comprising administering to the human or animal an effective amount of an aqueous solution containing peroxodisulfate ions in an amount of from 10^{-5} to 10^{-11} g/l.

5,603,963

METHOD FOR THE TREATMENT OF RETROVIRAL DISEASES SUCH AS ACQUIRED IMMUNE DEFICIENCY SYNDROME UTILIZING (PSEUDO)HALOGEN COMPLEXES OF GOLD(1)

Richard C. Elder, and Katherine T. Elder, both of Cincinnati, Ohio, assignors to University of Cincinnati, Cincinnati, Ohio

Filed Jul. 28, 1994, Ser. No. 281,951

Int. Cl.[6] **A61K** *33/24;33/42;33/04*

U.S. Cl. 424—649 **15 Claims**

1. A method of treating HIV intracellularly in an infected host comprising the step of administering a therapeutically effective amount of at least one (pseudo)halogen complex of gold(I) in a pharmaceutically acceptable carrier, wherein said (pseudo)halogen complex of gold(I) is chosen from the group consisting of:

R—Au—CN, R—Au—[SCN], and R—Au—[SeCN]

wherein R is chosen from the group consisting of: phosphines, halogens, and (pseudo)halogens.

5,603,964

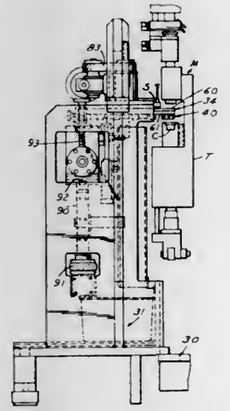
APPARATUS FOR CUTTING AND DELIVERING PLASTIC GOBS

B. Jack Rote, Sturgis, Mich., and Frank W. Mahr, Jr., Sylvania, Ohio, assignors to Owens-Illinois Closure Inc., Toledo, Ohio

Filed Oct. 7, 1994, Ser. No. 320,083

Int. Cl.[6] **B29C** *31/00;43/34;* **B29D** *31/00*

U.S. Cl. 425—110 **71 Claims**



1. An apparatus for severing gobs from a melt extrudate, transporting the gobs, and delivering the gobs comprising

a base,

a disk having an axis of rotation,

means for supporting said disk on said base for rotation about said axis,

a plurality of transfer nests mounted on said disk in circumferentially spaced relation,

each transfer nest having a generally semi-cylindrical inner surface extending about 180° and having an opening,

each cylindrical surface of said nest having an axis,

extrusion nozzle means having an outlet nozzle for extruding hot melt extrudate into the path of each transfer nest such that the extrudate enters a cavity of the transfer nest and the movement of the transfer nest severs a plastic gob from the extrudate,

means on the base operable to apply a force to the plastic gob at a point circumferentially spaced from the extrusion nozzle means to discharge the gob,

said means for applying a force for discharging said plastic gob comprising means for applying fluid pressure to the gob to cause it to move through the open end of the transfer nest,

means for supporting said extrusion nozzle means for movement toward and away from said disk.

5,603,965

APPARATUS FOR CO-DISTRIBUTING CONFECTION PRODUCTS

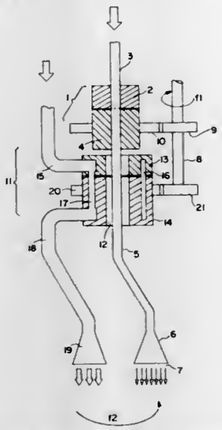
Alain Daouse, Noailles, France, assignor to Nestec S.A., Vevey, Switzerland

Filed Nov. 3, 1993, Ser. No. 146,937

Claims priority, application European Pat. Off., Nov. 28, 1992, 92120369.1

Int. Cl.[6] **B29C** *47/06*

U.S. Cl. 425—130 **16 Claims**



1. An apparatus for preparing an article of ice confectionery comprising:

a first assembly comprising (i) a rotatable mobile portion which is rotatable about an axis, (ii) a tubular member which defines a channel and (iii) a nozzle configured in a fishtail shape, wherein the tubular member is fixed to and extends from the mobile portion and the nozzle extends from the tubular member for distributing a material from the tubular member channel so that upon rotation of the mobile portion about the axis, the tubular member and nozzle are rotated about the axis;

a second assembly comprising (i) a rotatable mobile portion which is positioned for rotation about the axis, (ii) a tubular member which defines a channel and (iii) a nozzle configured in a fishtail shape, wherein the second assembly tubular member is fixed to and extends from the second assembly mobile portion, wherein the second assembly nozzle extends from the second assembly tubular member for distributing a material from the second assembly tubular member channel, and wherein the second assembly mobile portion, tubular member and nozzle are positioned (i) so that the second assembly tubular member is disposed laterally from the first assembly tubular member and so that at least a portion of the second assembly tubular member is separated from the first assembly tubular member for thermally isolating the first and second assembly tubular member channels one from the other and (ii) so that the second assembly nozzle is disposed laterally from the first assembly nozzle and (iii) so that upon rotation of the first and second assembly mobile portions about the axis in a same direction, material distributed from the second assembly nozzle is integrated with material distributed from the first assembly nozzle; and

means connected with the first and second assembly mobile portions for rotating the first and second assembly mobile

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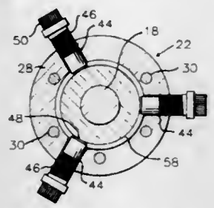
portions so that the first and second assembly mobile portions are rotated about the axis in the same direction.

5,603,966

BLOW PIN ADJUSTING ADAPTER

Terry L. Morris, and Bryan K. Street, both of Jackson, Mich., assignors to Allied Tool, Inc., Michigan Center, Mich.

Filed Nov. 29, 1995, Ser. No. 564,733
Int. Cl.[6] B29C *49/58*
U.S. Cl. 425—168 **9 Claims**



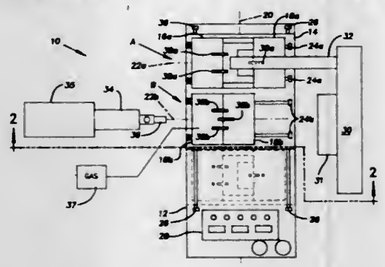
1. In a blow molding machine having an elongated tubular blow pin having an axis capable of lateral and axial adjustment including an outer end and an expansible chamber motor having a movable piston, the improvement comprising, an adapter interposed between and interconnecting the expansible chamber motor piston and the blow pin outer end, and radial adjustment means defined on said adapter whereby the blow pin outer end is radially adjustable with respect to the piston, comprising a collar fixed upon the expansible chamber motor piston, a housing mounted upon the blow pin outer end, a chamber defined in said housing having an axis and receiving said collar, and radially positionable actuators interposed between said housing and said collar radially positioning the adapter housing and blow pin outer end with respect to said collar.

5,603,967

MOLDING APPARATUS WITH SHUTTLE AND LOCK MECHANISMS

Jerry W. Ferguson, Pink Hill, N.C., assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Jan. 18, 1995, Ser. No. 374,181
Int. Cl.[6] B29C *45/66*
U.S. Cl. 425—556 **10 Claims**



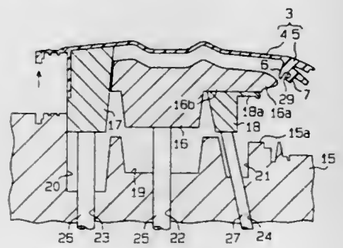
1. A molding apparatus, comprising a movable bed, two molds mounted for movement with the bed, an extrusion head located adjacent the bed, said bed being adapted for providing movement of one of said molds between a filling position adjacent the extrusion head and a first unloading position, said bed also being adapted for providing movement of said other mold between a second unloading position and the filling position, a part extractor located adjacent the bed and adapted to remove a part from the mold in the corresponding unloading position of the mold, wherein the molds comprise separable mold sections adapted to open and close at a parting line, latches disposed on each of the mold sections and adapted to lock the mold sections of one of said molds in a closed position when in said filling position, a movable toggle adapted to engage the latches, thereby locking said mold sections, wherein the toggle comprises a pair of leaves mounted for relative pivoting on an axis, edges of said leaves being adapted to engage the latches of said one of said molds.

5,603,968

APPARATUS FOR MANUFACTURING A STEERING WHEEL PAD

Kazunari Tajiri, and Soji Nimura, both of Aichi-ken, Japan, assignors to Toyoda Gosei Co., Ltd., Aichi-ken, Japan

Filed Mar. 16, 1995, Ser. No. 405,022
Claims priority, application Japan, Apr. 28, 1994, 6-092520
Int. Cl.[6] B29C *45/44*
U.S. Cl. 425—556 **7 Claims**



1. An apparatus for manufacturing an injection molded steering wheel pad having a cover and a pocket portion defined between a first projection and a second hook-shaped projection that cooperate to hold an arm of an air bag device, said apparatus comprising:

a fixed mold portion;

a movable mold portion opposed to said fixed mold portion, said movable mold portion being movable along a first moving path so as to selectively contact and separate from said fixed mold portion; and

a plurality of core members, each core member being movable between respective retracted and extended positions with respect to one of said movable and fixed mold portions, said plurality of core members being arranged when in said retracted position, to define a cavity along with said movable and fixed mold portions, wherein said plurality of core members includes

a first core member for forming the first projection in the pad, said first core member being movable along said moving path of said movable mold portion,

at least one second core member adjacent to said first core member; and

at least one inclined third core member adjacent to said first core member for forming the second projection in the pad, said inclined third core member being movable along a direction obliquely intersecting said moving path,

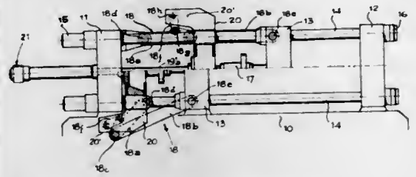
wherein one of said mold portions is provided with a plurality of recesses, each receiving a corresponding one of said plurality of core members when said one of said plurality of core members is in a respective retracted position.

5,603,969

PRESS FOR THE INJECTION MOULDING OF PLASTIC MATERIALS WITH A DOUBLE-TOGGLE CLOSING UNIT

Sergio Guindani; Mario Spotti, both of Brescia; Mario Busi, Rezzato, and Mario Fantoni, Brescia, all of Italy, assignors to Maicopresse S.p.A., Brescia, Italy

Filed Apr. 24, 1995, Ser. No. 426,709
Claims priority, application Italy, Apr. 26, 1994, BS94A0040
Int. Cl.[6] B29C *45/68*
U.S. Cl. 425—593 **7 Claims**



1. A press for injection moulding, comprising:

a closing plate;

a stationary mould-holder plate;

a mobile mould-holder plate spaced from said stationary mould-holder plate and disposed parallel to said stationary mould-holder plate, on a support base, said mobile mould-holder plate being positioned between said stationary mould-holder plate and said closing plate;

four horizontal columns arranged according to vertices of a quadrilateral to define a region inside a space defined by said columns, said horizontal columns connecting said closing plate with said stationary mould-holder plate and forming sliding guides for movement of said mobile mould-holder plate;

an additional plate;

two toggle mechanisms connecting said closing plate with said mobile mould-holder plate through said additional plate whereby movement of said additional plate corresponds to an extension and a folding back of said toggle mechanisms and respectively movements of said mobile mould-holder plate to close and open the press, said additional plate being guided on said columns and being movable between said closing plate and said mobile mould-holder plate;

a hydraulic power cylinder placed on a longitudinal axis of the press, said hydraulic power cylinder being fixed to said closing plate and being connected to said additional plate for moving said additional plate, said hydraulic power cylinder having a rod fixed to a center of said additional plate, said additional plate having two opposing wings disposed outside said region, said wings being turned towards said closing plate whereby said wings are positioned outside said closing plate when said additional plate is moved towards said closing plate to open the press, each of said toggle mechanisms being connected to one of said wings whereby said toggle mechanisms turn folding themselves back towards an outside of said region and towards the closing plate when said additional plate moves from a press closing position to a press opening position.

5,603,970

CHEWING GUM PELLET COATED WITH A HARD COATING CONTAINING ERYTHRITOL

Henry T. Tyrpin, Midlothian; Kevin B. Broderick, Berwyn; Marc A. Meyers, Naperville, and Robert J. Yatka, Orland Park, all of Ill., assignors to Wm. Wrigley Jr. Company, Chicago, Ill.

Continuation of Ser. No. 238,905, May 6, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 482,427
Int. Cl.[6] A23G *3/30*
U.S. Cl. 426—5 **20 Claims**

1. A chewing gum product comprising:

a) a gum pellet comprising chewable gum base, a bulk portion and one or more flavoring agents; and

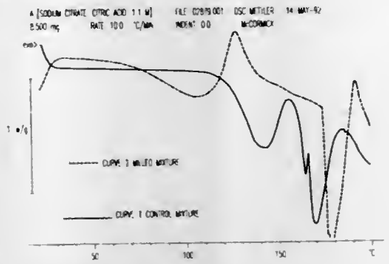
b) a hard coating covering said pellet, said coating comprising erythritol.

5,603,971

ENCAPSULATION COMPOSITIONS

Michael A. Porzio, Monkton, and Lewis M. Popplewell, Cockeysville, both of Md., assignors to McCormick & Company, Inc., Sparks, Md.

Continuation of Ser. No. 98,885, Jul. 29, 1993, abandoned, which is a continuation-in-part of Ser. No. 47,196, Apr. 16, 1993, abandoned. This application Apr. 17, 1995, Ser. No. 424,572
Int. Cl.[6] A23L *1/48*
U.S. Cl. 426—96 **13 Claims**



1. An encapsulation composition, comprising:

(A) an encapsulate encapsulated in:

(B) a glassy matrix consisting essentially of:

(a) 60 to 90 wt. % of a modified starch;

(b) 10 to 40 wt. % of a mono- or disaccharide;

(c) 0 to 2.5 wt. % of a food emulsifier; and

(d) a plasticizer.

wherein said composition is prepared by a process comprising:

(i) mixing 60 to 90 wt. % of a modified starch, 10 to 40 wt. % of a mono- or disaccharide, and 0 to 2.5 wt. % of a food emulsifier, with a liquid plasticizer and an encapsulate in an extruder to obtain a melted matrix; and

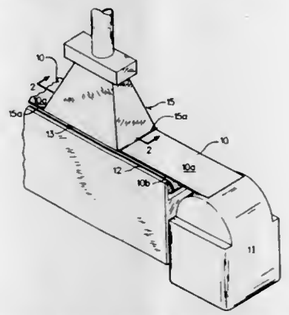
(ii) extruding said melted matrix.

5,603,972

IRRADIATION METHOD AND APPARATUS

Archie R. McFarland, 84 High Country Rd., Herriman, Utah 84065

Filed May 8, 1995, Ser. No. 436,742
Int. Cl.[6] A23L *3/00*; A61L *2/00*
U.S. Cl. 426—240 **12 Claims**



1. A method of utilizing ionizing electron beam radiation from one or more ionizing electron beam diode accelerators having

anode and cathode terminals for treating a material, comprising passing the material between the cathode and anode terminals of the one or more electron beam applicators in thin sheet formation and substantially in contact with the anode terminal, the thickness of the sheet being no more than about one-half an inch; and limiting the dosage of the radiation to substantially only that necessary to penetrate the thickness of the sheet and sterilize the material therein.

5,603,973

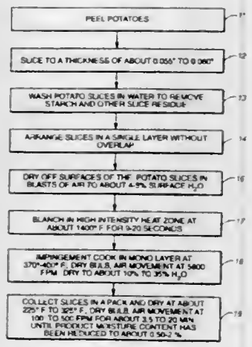
PROCESS FOR PREPARING A BAKED, NON-OIL CONTAINING SNACK FOOD PRODUCT

Clark K. Benson, Millbrae; Andrew A. Caridis, San Carlos; Donald B. Giles, Castro Valley; Daniel E. Brown, San Mateo; James A. Padilla, Pacifica; Thomas F. Leary, Sebastopol, and Leonardo P. Murgel, San Francisco, all of Calif., assignors to Heat and Control, Inc., South San Francisco, Calif.

Filed Jun. 7, 1995, Ser. No. 475,485

Int. Cl.[6] A23L *1/217;3/005;3/18*

U.S. Cl. 426—243 **9 Claims**



1. A process for preparing crisp, chip type snack food products from whole potatoes without the use of oil, consisting essentially of the steps,

providing whole potatoes,

cutting the potatoes into discrete slices,

removing from the potato slices starch constituents and juices by washing the slices in

water,

arranging the washed slices substantially in a single layer and removing moisture from the slice surfaces by subjecting the slices to a rapidly moving stream of air, thereafter

presenting the slices substantially without overlapping contact in a single layer upon a conveyor belt permeable to radiant energy and blanching the slices on such conveyor belt through exposure to infrared energy at a temperature in the range of about 1200 F. to 1600 F. until the slices reach a translucent state,

the infrared energy exposure being sufficient to extinguish the enzyme action in the potato slices without blemishing the slices by charring and burning,

subjecting the translucent slices in an air drying step to a fast moving, hot air stream for a time sufficient to reduce the moisture content to about 10% to 14%, and then in a subsequent air drying step subjecting the slices to a stream of dry air at a temperature lower than about 300 F. for a period of time sufficient to reduce the slice moisture content to about 0.5% to 2%.

5,603,974

BARRIER MATERIAL COMPRISING A THERMOPLASTIC AND A COMPATIBLE CYCLODEXTRIN DERIVATIVE

Willard E. Wood, Arden Hills, and Nell J. Beaverson, Hugo, both of Minn., assignors to Aspen Research Corporation, New Brighton, Minn.

Division of Ser. No. 264,771, Jun. 23, 1994, Pat. No. 5,492,947. This application Dec. 11, 1995, Ser. No. 570,599

Int. Cl.[6] B65B *55/00;* **C08L** *3/04;5/16*

U.S. Cl. 426—415 **36 Claims**

1. A method to prevent moisture vapor transmission to an item which method comprises separating the item from a source of moisture by imposing a thermoplastic film barrier between the source of moisture and the item, the film barrier comprising:

(a) a thermoplastic polymer; and

(b) uniformly dispersed in the polymer, an effective permeant absorbing amount of a modified cyclodextrin having pendent moieties or substituents that render the cyclodextrin compatible with the thermoplastic polymer;

wherein the cyclodextrin is substantially free of an inclusion complex compound.

5,603,975

EXTRUDED CRUNCH AND METHOD OF MAKING

John A. Fontana, 6404 N. London Dr., Kansas City, Mo. 64151

Continuation of Ser. No. 414,280, Mar. 31, 1995, abandoned. This application May 1, 1996, Ser. No. 641,680

Int. Cl.[6] A23L *1/105*

U.S. Cl. 426—506 **18 Claims**

1. A process for making a mixture of homogeneous texturizing and flavoring particles that include fiber and protein, and that retain flavor and texture when added to a food, from a mixture of heterogeneous particles, comprising:

providing a mixture of heterogeneous particles that comprises particles of a starch-bearing cereal grain having a fiber concentration of at least about 25% by weight wherein the starch is enzymatically converted to a caramel-sugar mixture that includes maltose, particles of flour and particles of sugar in a concentration of at least about 25% by weight of the mixture;

mixing a flavoring with the mixture of heterogeneous particles;

moistening the particles with water in a concentration not more than 10% by weight of the mixture and fat that is not more than 3% by weight to form a dough;

extruding the dough without additional heating at a temperature effective to form a homogeneous mixture substantially within a range of 75°–250° Fahrenheit; and

cutting the homogeneous mixture without further heating to form homogeneous texturing and flavoring particles.

5,603,976

METHOD OF REDUCING THE ANIMAL FAT CONTENT OF MEAT PRODUCTS

Richard A. Share, Long Grove, and Richard T. Broz, Hawthorn Woods, both of Ill., assignors to Lifewise Ingredients, Inc., Buffalo Grove, Ill.

Continuation-in-part of Ser. No. 163,983, Dec. 7, 1993, abandoned. This application Apr. 7, 1995, Ser. No. 418,784

Int. Cl.[6] A23L *1/314*

U.S. Cl. 426—574 **18 Claims**

1. A method of reducing the animal fat content of a meat product comprising replacing at least a portion of the animal fat with a triglyceride- and ester-free animal fat replacement product consisting essentially of an aqueous gel of at least one maltodextrin having a dextrose equivalent between about 1 and about 20 entrained in a matrix formed by at least one matrix structure forming agent selected from the group consisting of an alginate, gum tragacanth, pectin, and konjac flour, said animal fat replacement product containing from about 10 to about 30 weight percent maltodextrins and from about 0.1 up to about 5 weight percent of matrix structure forming agent based on the animal fat replacement product.

5,603,977

GUMMY STARCH AND METHOD FOR PREPARATION OF THE SAME

Shoichi Kobayashi; Wakako Tsuzuki; Koji Sakurai, all of Ibaraki, and Yoshio Itoh, Tokyo, all of Japan, assignors to Director of National Food Research Institute, Ministry of Agriculture, Forestry and Fisheries, Ibaraki, and Lotte Central Laboratory Co., Ltd., Tokyo, both of Japan

Filed Mar. 31, 1995, Ser. No. 414,171

Claims priority, application Japan, Mar. 31, 1994, 6-083774

Int. Cl.[6] A23L *1/0522*

U.S. Cl. 426—578 **8 Claims**

1. A gummy starch prepared by heating a mixture of raw starch and a saccharide other than starch, in the absence of added water and under temperature and time conditions effective to cause said saccharide to caramelize.

5,603,978

ESTERIFIED PROPYLENE OXIDE-EXTENDED GLYCEROLS USEFUL AS FAT SUBSTITUTES

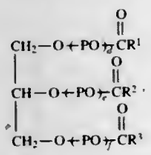
John F. White, Summit, N.J., and Michael R. Pollard, Dublin, Calif., assignors to Arco Chemical Technology, L.P., Greenville, Del.

Continuation of Ser. No. 944,708, Sep. 10, 1992, abandoned, which is a continuation of Ser. No. 827,478, Jan. 27, 1992, abandoned, which is a continuation of Ser. No. 173,849, Mar. 28, 1988, abandoned, which is a division of Ser. No. 889,552, Jul. 25, 1986, Pat. No. 4,861,613. This application Jun. 7, 1995, Ser. No. 476,815

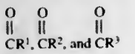
Int. Cl.[6] A23D *3/00;5/00*

U.S. Cl. 426—611 **14 Claims**

1. An esterified propylene oxide-extended glycerol suitable for use as a fat substitute having the formula



wherein d+e+f is at least 2, PO is oxypropylene, greater than 95% of the ester linkages are secondary alcohol ester linkages, and



are the same or different and are C_8–C_{24} fatty acid acyl moieties with at least one fatty acid acyl moiety selected from the group consisting of C_8–C_{24} unsaturated fatty acids.

5,603,979

LOW FAT PEANUT BUTTER-LIKE PRODUCT BEING SHELF STABLE AT ROOM TEMPERATURES AND METHOD FOR MAKING THE SAME

Lloyd Lasdon, New York, and Stuart Lasdon, Baiting Hollow, both of N.Y., assignors to Peanut Wonder Corp., New York, N.Y.

Continuation-in-part of Ser. No. 196,746, Feb. 15, 1994, abandoned. This application Jun. 30, 1995, Ser. No. 496,892

Int. Cl.[6] A23L *1/38*

U.S. Cl. 426—633 **1 Claim**

1. A method for making a water based, low fat peanut butter-like product having a water activity of from about 0.80 to about 0.85 and from about 70% to about 95% less fat than conventional peanut butter comprising the steps of:

(a) providing the following ingredients: water in an amount of from about 15% to about 40% by weight, at least one of a modified food starch, a maltodextrin or a tapiocadextrin in an amount of from about 0.5% to about 1.5% by weight, a soluble salt in an amount of from about 1.2 to about 2.0% by weight, at least one pigment selected from a group consisting of $CaCO_3$ and TiO_2 in an amount of about 0.01% to 1.1% by weight, and at least one natural gum selected from the group consisting of Carrageenan, Locust Bean and Guar in an amount of from about 0.5% to about 1.5% by weight;

(b) combining the ingredients of step (a) with vigorous agitation at a temperature of over 180° F. to 195° F. for a time necessary to hydrate said natural gum;

(c) providing and admixing defatted peanut flour in an amount from about 5.0% to about 20% by weight, at least one syrup selected from the group consisting of corn syrup, malt syrup, rice syrup and potato syrup in an amount of from about 20 to about 35% by weight, molasses in an amount of from about 6.0 to about 12% by weight, a humectant in an amount of from about 5.0 to about 13% by weight at a temperature sufficient to form a fluid mixture of the same;

(d) admixing the mixture of step (c) with the mixture of step (b);

(e) feeding the mixture of step (d) into a particle reduction device for a sufficient time to obtain a product that has a particle size of no larger than approximately 200 mesh;

(f) providing and admixing conventional peanut butter in an amount from about 5.0% to about 30% by weight and lecithin in an amount of from about 0.2% to about 1.0% by weight, and

(g) aggressively blending the mixture of step (f) with the product of step (e) at a temperature of about 180° F. to 190° F. for about 1 to 10 minutes in order to obtain said low fat peanut butter-like product.

5,603,980

HETEROGENEOUS COMPOSITION FOR FEEDING ANIMALS

Michel Bussiere, Salouel, France; Gaston Fournet, Blonay, Switzerland, and Pascal Vanacker, Villers Bretonneux, France, assignors to Nestec S.A., Vevey, Switzerland

Filed Jun. 24, 1994, Ser. No. 265,436

Claims priority, application European Pat. Off., Jul. 3, 1993, 93110636

Int. Cl.[6] A23K *1/00;1/10;* **A23L** *1/05;1/052*

U.S. Cl. 426—641 **23 Claims**

1. A heterogeneous meat-based or fish-based composition comprising (i) from 5% to 15% by weight solid pieces of a gel comprising K-carragheenin or gellane or admixture thereof and having a water content of above 95% by weight and a size of from 2 mm to 10 mm and (ii) a meat base or a fish base, the solid pieces and the base being in amounts so that the composition has a water content of at least 82% by weight.

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5,603,981

ELECTRICAL CONNECTING DEVICE AND METHOD FOR MAKING SAME

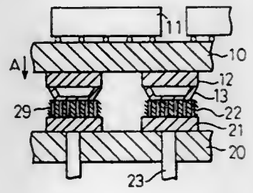
Kaoru Hashimoto; Tatsuo Chiynnobu; Kyoichiro Kawano, and Kouji Watanabe, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 277,992, Jul. 20, 1994, Pat. No. 5,440,454. This application Apr. 10, 1995, Ser. No. 419,543

Claims priority, application Japan, Oct. 14, 1993, 5-257004

Int. Cl.[6] B05D *5/12*; **H01R** *43/02*; **B23K** *31/02*

U.S. Cl. 427—96 **8 Claims**



1. A method of making an electrical connecting device comprising a first circuit board provided thereon with input/output terminals, each of said input/output terminals having a tip surface coated with a first metal layer; a second circuit board provided thereon with contact terminals, each of said contact terminals having a tip surface coated with a second metal layer; and a low-melting point alloy layer being formed by a mutual action of metals in the respective first and second metal layers, when said input/output terminals of the first circuit board are in contact with the respective contact terminals of the second circuit board and electrically connected to each other through said low-melting point alloy;

said second metal layer is formed by the following steps of:

coating a resist on said tip surface of the respective contact terminals of said second circuit board;

forming a plurality of apertures in said resist so as to extend to the tip surface of said contact terminal;

plating on said resist with a third metal, so that said plated third metal is grown in said respective apertures;

removing said resist so that said plated third metal remain as a plurality of wire metal supports which extend substantially perpendicular to said tip surface of the contact terminal; and

depositing and retaining a low-melting point metal in said wire metal supports.

5,603,982

THIN FILM SOLID ELECTROLYTE PRODUCTION METHOD

Luying Sun, Stoughton, Mass., assignor to Battery Engineering, Inc., Hyde Park, Mass.

Filed Sep. 19, 1995, Ser. No. 531,198

Int. Cl.[6] H07M *10/40*

U.S. Cl. 427—121 **20 Claims**

1. The method of producing a thin film solid polymer electrolyte in the range of from 1 mil to 5 mils thick for use in electrochemical devices comprising forming a liquid precursor solution of consisting of monomers having a molecular weight of less than 300 and an electrolyte salt, spreading said solution in a film having a thickness within said range on a support, and then polymerizing said solution to produce a thin solid polymer electrolyte film.

5,603,983

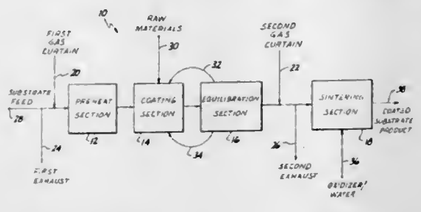
PROCESS FOR THE PRODUCTION OF CONDUCTIVE AND MAGNETIC TRANSITIN METAL OXIDE COATED THREE DIMENSIONAL SUBSTRATES

Thomas J. Clough, Santa Monica; Victor L. Grosvenor, Topanga, and Naum Pinsky, Thousand Oaks, all of Calif., assignors to Ensci Inc, Pismo Beach, Calif.

Continuation of Ser. No. 210,075, Mar. 17, 1994, abandoned, which is a continuation of Ser. No. 105,468, Mar. 17, 1993, abandoned, which is a continuation of Ser. No. 839,786, Feb. 21, 1992, abandoned, which is a continuation of Ser. No. 770,557, Oct. 3, 1991, abandoned, Ser. No. 743,719, Aug. 12, 1991, Pat. No. 5,279,852, Ser. No. 743,738, Aug. 12, 1991, Pat. No. 5,306,522, and Ser. No. 743,827, Aug. 12, 1991, Pat. No. 5,290,589, each which is a continuation-in-part of Ser. No. 348,789, May 8, 1989, Pat. No. 5,167,820, Ser. No. 348,788, May 8, 1989, Pat. No. 5,039,845, Ser. No. 348,787, May 8, 1989, abandoned, and Ser. No. 348,786, May 8, 1989, Pat. No. 5,182,165, each which is a continuation-in-part of Ser. No. 82,277, Aug. 6, 1987, Pat. No. 4,787,125, which is a division of Ser. No. 843,047, Mar. 24, 1986, Pat. No. 4,713,306. This application Mar. 2, 1995, Ser. No. 400,283

Int. Cl.[6] B05D *5/12*

U.S. Cl. 427—126.3 **20 Claims**



1. A process for producing at least one or both of an electrically conductive or magnetic coated inorganic three dimensional substrate comprising:

Contacting an inorganic three dimensional substrate which includes external surfaces and shielded surfaces which are at least partially shielded by other portions of said substrate with a composition comprising a transition metal oxide forming compound having a melting point of from about 100° C. to about 650° C. and an atomic number of from 21-to-31, 39-to-49 and 71-to-81 inclusive at conditions effective to form a transition metal oxide forming compound containing coating on at least a portion of said three dimensional substrate; including at least a portion of shielded surfaces of said substrate;

forming a liquidous coating from said transition metal oxide forming compound on at least a portion of three dimensions of said substrate including the shielded surfaces of said substrate under substantially non deleterious oxidizing and/or hydrolyzing conditions effective to do at least one of the following: (1) coat a larger portion of said substrate with the said transition metal oxide forming compound coating; (2) distribute said transition metal oxide forming compound coating over said substrate; and (3) make transition metal oxide forming compound coating more uniform in thickness,

contacting said substrate having said liquidous transition metal oxide forming compound coating thereon with an oxidizing agent at conditions effective to convert the transition metal oxide forming compound to a transition metal oxide and form a transition metal oxide coated substrate including the shielded surfaces and recovering at least one or both of an electrically conductive or magnetic transition metal oxide coated three dimensional substrate.

5,603,984

SPRAY ELEMENT ESPECIALLY FOR MOLD SPRAYERS

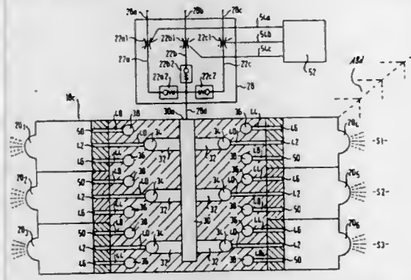
Karl-Heinz Keim, Neu-Ulm; Rudi Kober, Stüssen, and Hans-Dieter Renkl, Berghülen, all of Germany, assignors to Acheson Industries, Inc., Port Huron, Mich.

Continuation of Ser. No. 302,362, Sep. 7, 1994, abandoned. This application Nov. 27, 1995, Ser. No. 562,852

Claims priority, application Germany, Sep. 9, 1993, 43 30 587.3; Jun. 14, 1994, 44 20 679.8

Int. Cl.[6] B05D *7/22*

U.S. Cl. 427—133 **12 Claims**



1. Process for the application of a liquid die wall treatment agent to areas of the die walls of a molding device by means of at least one spray element with metering of the flow rate of the die wall treatment agent by a metering valve, having a metering cross section for the liquid die wall treatment agent, and which can be influenced by a secondary fluid, characterized by the features:

(a) a metering valve with a valve membrane of variable shape, kept essentially free of guide friction is used;

(b) one side of the valve membrane is acted on by the die wall treatment agent, while the other side is acted on by the secondary fluid;

(c) the pressure on at least one side of the membrane is influenced by flow rate-adjusting means, which results in variable flow rates; and

(d) the flow rates are determined by different positions of the membrane.

5,603,985

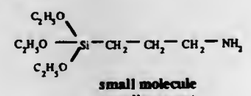
BLOCK COPOLYMER ADHESION PROMOTERS VIA RING-OPENING METATHESIS POLYMERIZATION

Michael S. Kent, 12320 Pine Ridge, NE, Albuquerque, N.M. 87112, and Randall Saunders, 13201 Fruit Ave., NE, Albuquerque, N.M. 87123

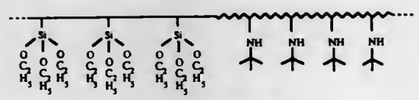
Filed Nov. 29, 1995, Ser. No. 564,753

Int. Cl.[6] B05D *5/10*

U.S. Cl. 427—207.1 **17 Claims**



small molecule coupling agent



block copolymer

1. A method for bonding solids to thermoset resins comprising:

selecting a functionalized block copolymer synthesisod by living ring-opening metathesis polymerization and having two types of functional pendant groups in roehomers distributed in blocks;

reacting one functional pendant group of said block copolymer to the solid and other functional pendant group of said block copolymer to the thermoset resin.

5,603,986

METHOD OF PREPARING MICROCAPSULES

Naoya Yabuuchi, Toyonaka; Tsuyoshi Imamura, Katano; Takahiro Mukae, Yawata, and Keizou Ishii, Ashiya, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Mar. 6, 1995, Ser. No. 398,802

Claims priority, application Japan, Mar. 9, 1994, 6-038142

Int. Cl.[6] B01J *13/16*

U.S. Cl. 427—213.34 **10 Claims**

1. A method of preparing microcapsules, comprising the steps of:

preparing a block polymer having a block of a hydrophobic repeating unit and a block of a hydrophilic repeating unit; and

polymerizing a compound having at least two amino groups and/or hydroxyl groups with a compound having at least two functional groups which are reactive with said amino groups and/or hydroxyl groups in a nonaqueous medium in the presence of core material by interfacial polymerization employing said block polymer as a protective colloid, to prepare microcapsules in said nonaqueous medium;

wherein said block of said hydrophobic repeating unit in said block polymer is polysiloxane, and said block of said hydrophilic repeating unit in said block polymer is polyalkylene oxide.

5,603,987

COMPOSITE PARTICULATE MATERIAL AND PROCESS FOR PREPARING SAME

Robert Lisenko, 151 Sandquist Clr., Hamden, Conn. 06514

Division of Ser. No. 493,348, Jun. 21, 1995. This application Jul. 30, 1996, Ser. No. 688,472

Int. Cl.[6] B05D *7/00*

U.S. Cl. 427—221 **22 Claims**



1. A process for preparing a composite particulate material, comprising the steps of:

providing a particulate primary material having a primary softening temperature;

providing a particulate support material having a support softening temperature;

providing a particulate binder material having a softening temperature which is less than the primary softening temperature and the support softening temperature;

mixing the primary material, the support material and the binder material so as to provide a substantially uniform mixture; and

heating the mixture to a temperature greater than or equal to the softening temperature of the binder material and less than the primary softening temperature and the support softening tem-

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perature, whereby the binder material binds the primary material to the support material so as to provide a composite particulate material.

5,603,988

METHOD FOR DEPOSITING A TITANIUM OR TANTALUM NITRIDE OR NITRIDE SILICIDE

Michael Shapiro, Beacon, N.Y.; Ravi Kanjolia, Andover; Ben C. Hui, Peabody, both of Mass.; Paul F. Seidler, Ridgefield, Conn.; Karen Holloway, Poughkeepsie; Richard Conti, Mount Kisco, both of N.Y., and Jonathan Chapple-Sokol, Essex Junction, Vt., assignors to Morton International, Inc., Chicago, Ill., and International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 2, 1995, Ser. No. 459,500
Int. Cl.[6] C23C *16/34;16/42*
U.S. Cl. 427—248.1 **22 Claims**

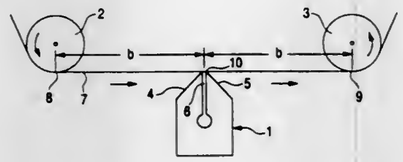
1. A chemical vapor deposition method for forming on a substrate a material selected from the group consisting of titanium nitride silicide, tantalum nitride silicide and mixtures thereof, which comprises exposing said substrate to a silylamido complex selected from the group consisting of titanium silylamido complex, tantalum silylamido complex and mixtures thereof, wherein said silylamido complex is in vapor form, and said substrate is at a temperature sufficient to cause cleavage of Si—N bonds of said silylamido complex along with retention of some silyl groups of said silylamido complex to form said material.

5,603,989

EXTRUSION COATING METHOD INCLUDING ADJUSTING THE DISTANCE BETWEEN COATING HEAD SLOT AND THE POINTS OF TANGENCY WHERE A FLEXIBLE SUPPORT CONTACTS RESPECTIVE SUPPORT ROLLS

Mikio Tomaru; Norio Shibata, and Shinsuke Takahashi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 20, 1995, Ser. No. 575,521
Claims priority, application Japan, Dec. 26, 1994, 6-336740
Int. Cl.[6] B05D *1/26*
U.S. Cl. 427—356 **6 Claims**



1. A coating method including continuously running a surface of a flexible support, supported by a pair of rotational support rolls, along a back edge surface and a doctor edge surface; and coating the surface of said support with a coating composition in a region between said pair of support rolls by an extrusion coating apparatus which extrudes said coating composition continuously from a top end portion of a slot onto the surface of said support, said pair of support rolls including an upstream roll and a downstream roll, said upstream roll defining a point of tangency which is where said support last contacts said upstream roll before extending toward said slot, and said downstream roll defining a point of tangency which is where said support first contacts said downstream roll, the improvement comprising:

performing said coating under a condition wherein a distance b (mm) from the top end portion of said slot to each of the points of tangency on which said support contacts said respective support rolls is adjusted so as to satisfy the expression:

$$b < 1.3 \times 10^3 \times \left(\frac{\pi^2 E t T}{12(1-\nu^2)} \right)^{\frac{1}{2}}$$

where t (mm) is a thickness of said support, E (kgf/mm^2) is the Young's modulus of said support, v is the Poisson's ratio of said support, and T (kgf/mm) is a carrying tension per unit width of said support.

5,603,990

THERMALLY-PROTECTIVE INTUMESCENT COATING METHOD

Vincent D. McGinniss, Sunbury; Richard J. Dick, Columbus; Robert E. Russell, III, Newark, all of Ohio, and Stephen D. Rodgers, Bowie, Md., assignors to Battelle Memorial Institute, Columbus, Ohio

Continuation-in-part of Ser. No. 284,362, Aug. 2, 1994, Pat. No. 5,487,946. This application Sep. 29, 1995, Ser. No. 535,993
Int. Cl.[6] B05D *1/36;3/00*
U.S. Cl. 427—393.3 **17 Claims**

1. A method for thermally protecting a substrate having a surface exposed to fire conditions comprising the steps of:

(a) coating said surface of said substrate with a first coating layer;

(b) curing said first coating layer on said surface of said substrate to form a first film layer which layer is thermally decomposable upon exposure to said fire conditions to form a first carbonific char which char intumesces to form a first rigid carbonific char foam;

(c) coating a second coating layer on said first film layer; and

(d) curing said second coating layer on said first coating layer to form a second film layer which layer is thermally decomposable upon exposure to said fire conditions to form a second carbonific char which char intumesces to form an insulative carbonific char foam having a density about half the density height of said first rigid carbonific char foam, said first rigid carbonific char foam forming where said insulative carbonific char foam has broken through to expose said first film layer to said fire conditions; and

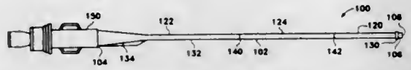
wherein said coating layers have a total thickness of 50 mils or less.

5,603,991

METHOD FOR COATING CATHETER LUMENS

David Kupiecki, Cupertino, and Thuzar K. Han, Fremont, both of Calif., assignors to Target Therapeutics, Inc., Fremont, Calif.

Filed Sep. 29, 1995, Ser. No. 539,902
Int. Cl.[6] C08F *2/48*
U.S. Cl. 427—508 **11 Claims**



1. A method for producing a thin coating of a covalently bonded polymer coating on the interior of an elongated tubular member, which process comprises the steps of:

a.) supplying an elongated tubular member having an outer surface and an inner lumen which elongated tubular member is composed of a polymeric material sufficiently uv-transparent to allow cross-linking of a uv-cross-linkable polymer or oligomer on said inner lumen,

b.) applying a dilute solution or suspension of a solvent and a uv-cross-linkable polymer or oligomer to the inner lumen of said elongated tubular member to form a sheet comprising said solvent and polymer or oligomer,

c.) removing at least a substantial portion of the solvent from the sheet, and

d.) curing said polymer or oligomer by ultraviolet radiation passing from the outer surface of said elongated tubular member to said inner lumen so to covalently bond said polymer to the lumen of said elongated tubular member.

5,603,992

COMPOSITIONS AND METHODS FOR THE TEMPORARY PROTECTION OF ACTIVATED SURFACES

Edward W. Woodhall, Los Altos, and Ronald Swidler, Palo Alto, both of Calif., assignors to Cal West Equipment Company, Inc., Sunnyvale, Calif.

Filed Apr. 18, 1995, Ser. No. 423,401
Int. Cl.[6] B05D *3/06*
U.S. Cl. 427—534 **21 Claims**

1. A method of temporarily protecting an activated plastic surface, said method comprising the steps of:

applying to said surface a surface protective coating composition, said coating composition comprising:

a film former selected from the group consisting of a dextrin, a cellulose, and a cellulose derivative;

a plasticizer; and

water;

said step of applying resulting in a substantially continuous film of said composition; and

removing said substantially continuous film by washing when protection is no longer desired.

5,603,993

DISPOSABLE PAPER FORTUNE ORNAMENT

Tammy Ampomah, 147 W. Como Ave., Columbus, Ohio 43202

Filed Aug. 17, 1995, Ser. No. 516,503
Int. Cl.[6] B42D *15/02;* **G09F** *3/14*
U.S. Cl. 428—7 **6 Claims**



1. A hangable ornament, comprising:

(a) a first substantially continuous planar panel having a peripheral surface;

(b) a second substantially continuous planar panel, disposed generally parallel to the first panel, and having a peripheral surface connected to the peripheral surface of the first panel, forming an enclosed internal chamber;

(c) at least one article of amusement housed in the internal chamber, concealed from view; and

(d) a hanger, mounted to at least one of the panels, for hanging the ornament.

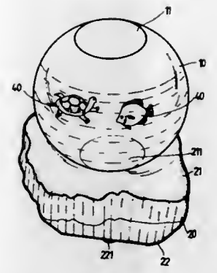
5,603,994

MOVABLE DECORATION ASSEMBLY

Chung S. Su, No. 76, Kai Shan Road, Tainan, Talwan

Filed Sep. 14, 1995, Ser. No. 528,234
Claims priority, application China, Oct. 22, 1994, 94 2 43251.7
Int. Cl.[6] H01F *1/00*
U.S. Cl. 428—11 **8 Claims**

1. A movable decoration assembly comprising:



a) a hollow globe including an upper opening, a flat bottom, a transparent peripheral wall, and a hollow interior for containing a liquid and at least one movable article carrying a magnetic body for producing a magnetic field;

b) a seat including an upper casing and a lower casing, the upper and lower casings being joined together and defining a hollow chamber therebetween, and the flat bottom of the hollow globe being engageable on the upper casing for supporting the hollow globe on the seat;

c) a driving device disposed within the hollow chamber of the seat, the driving device including a motor, a power supply for operating the motor, a switch for connecting and disconnecting the power supply with the motor, a pair of spaced shafts, and a gear assembly driven by the motor for rotating the spaced shafts in opposite directions and at different speeds; and

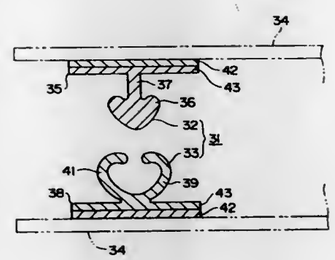
d) a magnet carried and rotated by each shaft to create a fluctuating magnetic field for influencing the magnetic field produced by the magnetic body of the article and cause the article to move about the liquid.

5,603,995

SNAP ZIPPER AND BAG WITH THE SAME

Toyokazu Takubo, and Ken-Ichi Tanaka, both of Himeji, Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 147,876, Nov. 4, 1993, abandoned. This application Oct. 10, 1995, Ser. No. 541,822
Claims priority, application Japan, Nov. 9, 1992, 4-298624; Nov. 9, 1992, 4-298625
Int. Cl.[6] B31B *1/90*
U.S. Cl. 428—34.1 **19 Claims**



1. A bag with a snap zipper comprising a bag body produced to cause the snap zipper to fuse via a portion for fusion to the bag body to a layer composing of a polyester resin on the bag body.

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5,603,996

COATED SHEET MATERIAL AND METHOD

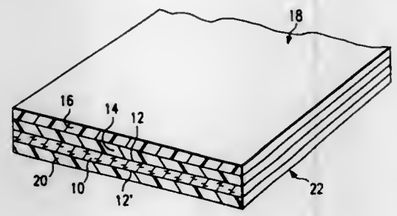
Derric Overcash, and Ronald L. Elsenbaumer, both of Arlington, Tex., assignors to A•ware Technologies, L.C., Dallas, Tex.

PCT No. PCT/US93/01161, § 371 Date Sep. 20, 1993, § 102(e) Date Sep. 20, 1993

Continuation-in-part of Ser. No. 823,877, Jan. 22, 1992, abandoned. This PCT application Jan. 22, 1993, Ser. No. 119,143

Int. Cl.[6] B65D *5/56;5/62;* **B32B** *29/06*

U.S. Cl. 428—34.2 **52 Claims**



1. A coated sheet material comprised of:

(a) a porous substrate sheet material comprised of cellulose material having at least two oppositely disposed surfaces;

(b) a barrier coating on at least one surface of said substrate sheet material wherein said barrier coating is a blend comprised of: (i) a cross-linkable polymer that is resistant to penetration by water moisture when cured, and (ii) a water-dispersible, film-forming polymer that is resistant to penetration by grease and oil when cured to form a barrier layer on said substrate sheet material; and

(c) a release coating on said barrier layer wherein said release coating comprises a fatty acid complex of a metal ion in an oxidation state equal to or greater than 3, wherein said fatty acid complex of a metal ion is crosslinked to said water-dispersible, film-forming polymer in said barrier layer.

5,603,997

PACKAGING MATERIAL PROCESS FOR PRODUCING SAME AND USE THEREOF

Erik Lindgren, Bohus; Kenneth Larsson, Göteborg; Signar Sundstrand, Stenungsund, and Anna Andersson, Göteborg, all of Sweden, assignors to Nobel AB, Bohus, Sweden

Continuation of Ser. No. 967,452, Oct. 28, 1992, abandoned. This application Sep. 30, 1994, Ser. No. 312,971

Claims priority, application Sweden, Oct. 28, 1991, 9103139

Int. Cl.[6] B65D *30/00*

U.S. Cl. 428—34.2 **14 Claims**

1. A packaging material for forming a package having reduced transfer to the package contents of at least one of substances causing undesirable taste or hazardous substances, wherein said packaging material includes a hydrophobic zeolite having a particle size of less than about 20 μm and a hydrophobicity of below about 0.6 percent by weight residual butanol determined by the Residual Butanol Test.

5,603,998

CPVC COMPOUNDS AND ARTICLES MADE THEREFROM FOR DESIGN STRESS RATING ABOVE 180° C.

Joachim E. Hartitz, Avon Lake, Ohio, assignor to The B.F. Goodrich Company, Akron, Ohio

Continuation of Ser. No. 470,549, Jun. 6, 1995, abandoned, which is a division of Ser. No. 314,573, Sep. 28, 1994, abandoned. This application Jan. 11, 1996, Ser. No. 585,381

Int. Cl.[6] B29D *22/00*

U.S. Cl. 428—36.6 **12 Claims**

1. A plastic pipe, comprising CPVC having 69–74% by weight chlorine, an acrylic polymeric impact modifier, a first chlorinated polyolefin containg from about 32 to 37% chlorine and having a Mooney ML 1+4 viscosity of from about 25 to 45, a second chlorinated polyolefin containing from about 36 to about 42% chlorine and having a Mooney ML 1+4 viscosity of from about 60 to 100, at least one lubricant and a stabilizer.

5,603,999

TETRAFLUOROETHYLENE/FLUOROALKOXY TRIFLUOROETHYLENE COPOLYMER COMPOSITION

Shinichi Namura, and Takao Nishio, both of Shimizu, Japan, assignors to Du Pont - Mitsui Fluorochemicals, Tokyo, Japan

Division of Ser. No. 264,122, Jun. 22, 1994, Pat. No. 5,473,018. This application Sep. 21, 1995, Ser. No. 531,683

Claims priority, application Japan, Jun. 30, 1993, 5-183485; Mar. 28, 1994, 6-079215

Int. Cl.[6] B29D *23/22;22/00;* **B65D** *1/02;* **C08L** *27/18*

U.S. Cl. 428—36.92 **3 Claims**

1. An article melt-formed from crystalline tetrafluoroethylene/fluoroalkoxy trifluoroethylene copolymer which contains polytetrafluoroethylene having a crystallization temperature of at least 305° C. and heat of crystallization of at least 50 J/g, wherein the resultant composition has recrystallized average spherulite diameter of not more than 15 micrometers, said article being a bottle.

5,604,000

HEAT-SEALABLE PEELABLE COMPOSITION

Timothy J. May, Greenville, Wis., assignor to Reynolds Consumer Products Inc., Appleton, Wis.

Continuation-in-part of Ser. No. 374,361, Jan. 18, 1995, Pat. No. 5,492,411. This application Apr. 10, 1995, Ser. No. 419,221

Int. Cl.[6] A61F *13/02;* **B32B** *7/12*

U.S. Cl. 428—40.1 **19 Claims**

1. A closure arrangement for a polymeric bag, comprising:

a first film having inner and outer surfaces;

a second film having inner and outer surfaces, said second film being generally parallel to and opposing said first film; and a heat-sealable, peelable strip attached to said inner surface of said first film and disposed between said first and second films, said heat-sealable peelable strip comprising about 20% to about 80% ethylene vinyl acetate copolymer, about 5% to about 60% polyethylene based wax, and about 5% to about 60% polypropylene, wherein the peel seal strength of said heat-sealable peelable strip is from about 0.5 to about 10 pounds per lineal inch of seal width.

5,604,001

DRYWALL FINISHING TAPE WITH ADHESIVE LAYER FOR EXPOSED DRYWALL CORNERS

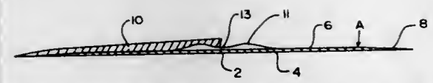
Carl Schold, 9714 Anderson Village Dr., Austin, Tex. 78729-2702

Filed Sep. 21, 1995, Ser. No. 531,641

Int. Cl.[6] B32B *3/08*

U.S. Cl. 428—41.8 **5 Claims**

1. A drywall finishing tape comprising: a base member of drywall paper having a pair of edges and a middle portion, an inner



surface, an outer surface and a centerline, a bead of plastic of about 2" in width in connection with said inner surface, said bead overlying said centerline and said plastic bead having a pair of raised surfaces at each side of said centerline, a layer of adhesive on said inner surface and overlying said plastic bead, said edges of said paper of thinner section than said middle portion.

5,604,002

OPTICAL RECORDING MEDIUM AND REPRODUCING METHOD THEREFOR

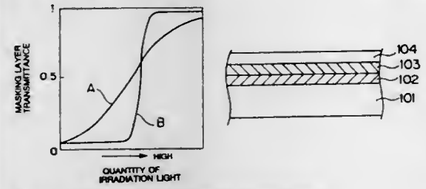
Tsuyoshi Tsujioka, Osaka; Toshio Harada, Gunma; Kazuhiko Kuroki, Kyoto, and Fumio Tatezono, Osaka, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Mar. 21, 1995, Ser. No. 407,857

Claims priority, application Japan, Mar. 24, 1994, 6-054164; Oct. 28, 1994, 6-265687

Int. Cl.[6] B32B *3/00*

U.S. Cl. 428—641 **12 Claims**



1. An optical recording medium comprising:

a recording layer; and

a masking layer which has the capacity to:

be converted to a state having low absorption of light having the wavelength of a reproducing beam through a photon mode photochromic reaction facilitated by temperature rise upon irradiation with said reproducing beam; and

not be substantially converted to said state through a thermal reaction in the absence of said photon mode photochromic reaction.

5,604,003

OPTICAL INFORMATION CARRIER

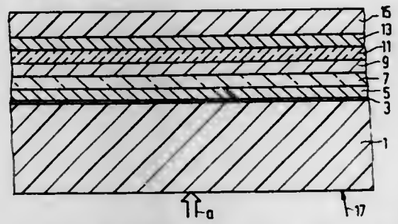
James H. Coombs; Wilma van Es-Spiekman; Bernardus A. J. Jacobs, and Adrianus P. J. M. Jongenelis, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 15, 1995, Ser. No. 491,012

Claims priority, application European Pat. Off., Jun. 23, 1994, 94201800

Int. Cl.[6] B32B *3/00*

U.S. Cl. 428—64.1 **9 Claims**



1. An optical information carrier for inscribing, reading and erasing information by means of a laser-light beam, said optical information carrier comprising a substrate carrying a stack of layers, which stack compises, in succession, a first reflective layer, a first dielectric layer, a recording layer of a phase-change material of an alloy comprising germanium and tellurium, a second dielectric layer and a second reflective layer, characterized in that the recording layer comprises an alloy of the composition, in atom %, $Ge_xTe_ySe_z$, wherein

$47 \leqq x \leqq 53$

$17 \leqq y \leqq 41$

$12 \leqq z \leqq 30$

and

$x+y+z \geqq 96$.

5,604,004

OPTICAL RECORDING MEDIUM USING FORMAZAN METAL COMPLEX DYE AND PHOTO-STABILIZING METHOD

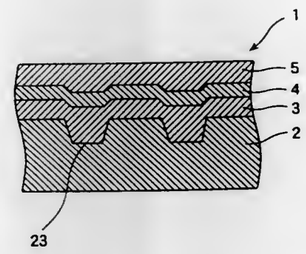
Takahiko Suzuki; Masahiro Shinkai, both of Chiba, and Kenryo Namba, Tokyo, all of Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Oct. 3, 1995, Ser. No. 538,353

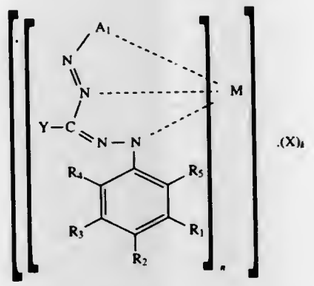
Claims priority, application Japan, Feb. 27, 1995, 7-63352; Apr. 5, 1995, 7-104806

Int. Cl.[6] B32B *3/00*

U.S. Cl. 428—641 **10 Claims**

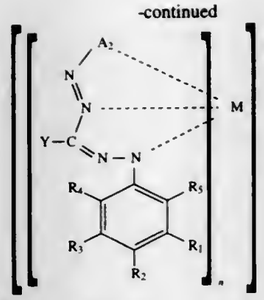


1. An optical recording medium having a recording layer comprising at least one dye selected from formazan metal complex dyes of the following general formulae (I) and (II):



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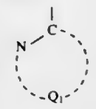
-continued



wherein

M is a divalent metal atom.

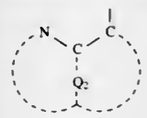
A_1 is a group represented by



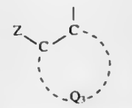
wherein

Q_1 is a group of atoms necessary to form with C and N a five or six-membered heteroaromatic ring which may have a fused ring.

A_2 is a group represented by A_{21} or A_{22}:



A_{21}



A_{22}

wherein

Q_2 is a group of atoms necessary to form with C and N a nine or ten-membered heteroaromatic ring which may have a fused ring.

Q_3 is a group of atoms necessary to form with C a five or six-membered heteroaromatic ring or benzene ring which may have a fused ring.

Z is selected from the group consisting of an oxy (—O—), thio (—S—), imino (—NH—), oxycarbonyl (—O—CO—), iminocarbonyl (—NH—CO—), and iminosulfonyl (—NH—SO_2—) group.

each of A_1, A_{21} and A_{22} at its C is attached to N in the formazan skeleton, each of A_1 and A_{21} at its N coordinates to M, and A_{22} at its Z coordinates to M.

Y is selected from the group consisting of an aromatic, alkyl, acyl, alkoxycarbonyl, cyano, nitro, alkoxy and alkylthio group.

R_1, R_2, R_3, R_4, and R_5 are independently selected from the group consisting of a hydrogen atom, alkyl group, alkoxy group, nitro group, cyano group, halogen atom, aryl group, aryloxy group, acyl group, alkoxycarbonyl group, carbamoyl group, and amino group, at least one of R_4 and R_5 is a hydrogen atom.

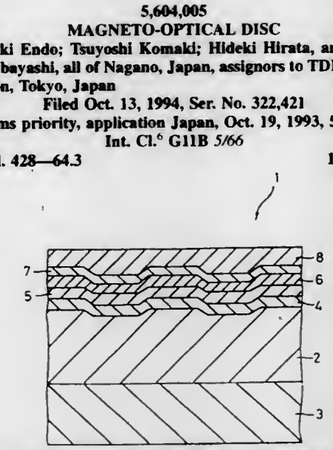
n representing the number of formazan ligands coordinating to M is equal to 1 or 2.

X is a counter ion to the formazan metal complex.

k is a number necessary to provide a balance of electric charge, and

the broken lines in formulae (I) and (II) represent coordinate bonds to M.

(II)



5,604,005

MAGNETO-OPTICAL DISC

Hiroyuki Endo; Tsuyoshi Komaki; Hideki Hirata, and Isamu Kuribayashi, all of Nagano, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Oct. 13, 1994, Ser. No. 322,421

Claims priority, application Japan, Oct. 19, 1993, 5-284269

Int. Cl.[6] G11B *5/66*

U.S. Cl. 428—64.3 **17 Claims**

1. A magneto-optical disc comprising a recording layer on a substrate and a protective coating on the recording layer wherein the disc is operated for magneto-optical recording in a magnetic field modulation mode such that the protective coating on the outer surface is in sliding contact with a magnetic head,

said protective coating is obtained by curing a polymerizable composition with radiation,

said polymerizable composition containing a fatty acid ester and a radiation-curable compound mixture which includes a monofunctional (meth)acrylic monomer which homeogenously mixes with said fatty acid ester and a polyfunctional (meth)acrylic monomer,

said fatty ester is of the following formula:

$$R^1—COO—R^2$$

wherein R^1 is a normal chain or branched saturated aliphatic hydrocarbon residue having at least 10 carbon atoms or an unsaturated aliphatic hydrocarbon residue having at least 10 carbon atoms, and R^2 is a branched saturated aliphatic hydrocarbon residue having at least 10 carbon atoms or an unsaturated aliphatic hydrocarbon residue having at least 10 carbon atoms,

said polymerizable composition containing 10 to 50 parts by weight of the monofunctional (meth)acrylic monomer and 90 to 50 parts by weight of the polyfunctional (meth)acrylic monomer, provided that the total weight of the monofunctional and polyfunctional (meth)acrylic monomers is 100 parts by weight, and 0.1 to 20% by weight of the fatty acid ester based on the total weight of the monofunctional and polyfunctional (meth)acrylic monomers.

5,604,006

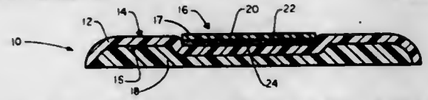
LABEL INMOLDING PROCESS AND ARTICLE OF MANUFACTURE PRODUCED THEREFROM

James A. Ponchaud, Lowell, and Kenneth C. Bogard, Wayland, both of Mich., assignors to Cascade Engineering, Grand Rapids, Mich.

Filed Jan. 24, 1992, Ser. No. 825,021

Int. Cl.[6] B32B *3/26;31/04;* **B44C** *1/26;1/28*

U.S. Cl. 428—67 **13 Claims**



1. A process for producing a label-bearing article having an exposed surface comprising the steps of:

adhesively mounting a label to a first side of a thin thermoplastic substrate, the label being substantially smaller in length and width than the substrate so that the first side of the thermoplastic substrate substantially surrounds the label;

placing the thermoplastic substrate and the affixed label into a mold cavity of an injection molding apparatus with the label-bearing first side against a wall of the mold cavity;

injecting a molten thermoplastic resin under heat and pressure into the mold cavity so that the resin contacts a second side of the thermoplastic substrate to thereby firmly press the first side of the thermoplastic substrate and the affixed label against the wall of the mold cavity, thereby forming the article having an exposed surface comprising the label and said exposed portion of the first side of the thermoplastic substrate, the heat and pressure within the mold cavity being sufficient to at least partially recess the label into the first side of the thermoplastic substrate and integrally mold the thermoplastic substrate to the label;

cooling the thermoplastic resin to solid form; and

removing the composite article from the mold cavity.

5,604,007

METHOD FOR PRODUCING POLYAMIDE CARPET FIBERS WITH IMPROVED FLAME RETARDANCY

Gary W. Shore, Asbeville, N.C., assignor to BASF Corporation, Mt. Olive, N.J.

Continuation of Ser. No. 846,510, Mar. 6, 1992, abandoned. This application Aug. 19, 1993, Ser. No. 109,413

Int. Cl.[6] B32B *3/02;* **C08C** *83/05*

U.S. Cl. 428—92 **14 Claims**

1. A method for producing a flame-retardant thermoplastic polymer carpet or textile fiber comprising the steps of:

(a) forming a polyamide mixture having (i) at least about 80% by weight of a polyamide, wherein at least 90% of the polyamide is at least one nylon selected from the group consisting of nylon 6, nylon 6/6, copolymers thereof, and combinations thereof, and (ii) a vulcanizable additive containing (1) a thermoplastic matrix polymer, (2) silicones in an amount between about 5% to about 20% based on the total weight of the vulcanizable additive, and (3) a platinum complex catalyst, said additive being present in the polyamide mixture in an amount between about 0.05% to about 20% by weight of the polyamide mixture to obtain less than about 1.0% by weight of said silicones in the polyamide mixture sufficient to render the polyamide more flame retardant than the polyamide is without the additive;

(b) melt blending the polyamide mixture at a temperature of from about 250° C. to about 300° C. to form a melt-blend of the polyamide and the additive;

(c) melt spinning the melt-blend from step (b) into fibers having a denier per filament from about 6 to about 35;

(d) drawing the fibers; and

(e) treating the drawn fibers in a crimping device to impart texture and bulk thereto.

5,604,008

Patent Not Issued For This Number

5,604,009

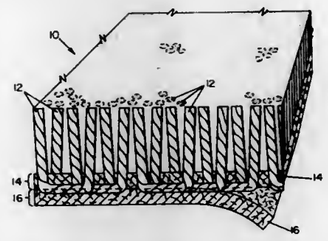
NON-ADHESIVE BONDED TUFTED CARPET AND METHOD FOR MAKING THE SAME

John M. Long, Ringgold, and Kent A. Snyder, Dalton, both of Ga., assignors to Synthetic Industries, Inc., Chickamauga, Ga.

Filed Dec. 2, 1994, Ser. No. 348,341

Int. Cl.[6] B32B *3/02;* **D03D** *27/00;* **D04H** *1/04*

U.S. Cl. 428—95 **21 Claims**



1. A tufted carpet comprising:

face yarns;

a primary backing fabric, said face yarns being tufted into said primary backing fabric; and

a secondary backing fabric attached to said primary backing fabric without the use of an adhesive binder, wherein said face yarns, said primary backing fabric and said secondary backing fabric consist essentially of polypropylene fibers having essentially the same melt temperature such that substantially all adjacent fibers of said primary backing fabric and said secondary backing fabric are thermally bonded together thereby locking substantially all of said face yarns within said primary backing fabric.

5,604,010

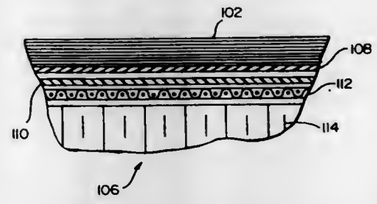
COMPOSITE HONEYCOMB SANDWICH STRUCTURE

Dale E. Hartz; David G. Erickson; William B. Hopkins, and Christopher L. Pederson, all of The Boeing Company P. O. Box 3707, M/S 13-08, Seattle, Wash. 98124-2207

Filed Jan. 11, 1996, Ser. No. 587,160

Int. Cl.[6] B32B *3/12*

U.S. Cl. 428—118 **6 Claims**



1. Composite honeycomb sandwich structure, comprising:

(a) a honeycomb core, having core cells;

(b) at least one composite laminate having plies of fiber-reinforced matrix resin adhered to the core;

(c) a film barrier layer between the laminate and the core to bond the laminate and core and to eliminate resin flow from the laminate into the core cells; and

(d) a film adhesive with supporting scrim between the barrier layer and the core to eliminate resin flow to or sagging of the barrier layer into the core cells.

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5,604,011

EDGE PROTECTOR AND FITTED ARTICLE

Timothy C. Morley, Birmingham, Great Britain, assignor to Aston Packaging Limited, Birmingham, United Kingdom

PCT No. PCT/GB93/01813, § 371 Date Apr. 10, 1995, § 102(e) Date Apr. 10, 1995, PCT Pub. No. WO94/04430, PCT Pub. Date Mar. 3, 1994

PCT Filed Aug. 25, 1993, Ser. No. 392,762

Claims priority, application United Kingdom, Aug. 26, 1992, 9218124

Int. Cl.[6] B32B *3/04*; **B65D** *85/48*

U.S. Cl. 428—122 **11 Claims**



1. An edge protector comprising a first base element between and contiguous with two opposed sides thereby defining a U-section shape, wherein the sides of the edge protector are thinner in width than the base, the sides and the first base element are formed from a single layer of semi-rigid paper, said edge protector includes at least one auxiliary base element comprised of a piece of semi-rigid paper located between the sides, said semi-rigid paper is corrugated paper and a fluting of the corrugations of the single layer runs laterally around the edge protector, and a fluting of the corrugations of the piece of semi-rigid paper runs parallel to the first base element and substantially perpendicular to the sides.

5,604,012

HOLLOW FIBER FABRIC AND PROCESS FOR PRODUCING THE SAME

Ichiro Okamoto; Tsuguo Fujiwara, both of Matsuyama; Hiroya Murase, and Shigenobu Kobayashi, both of Ibaraki, all of Japan, assignors to Teijin Limited, Osaka, Japan

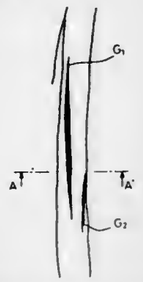
PCT No. PCT/JP95/00009, § 371 Date Aug. 30, 1995, § 102(e) Date Aug. 30, 1995, PCT Pub. No. WO95/19461, PCT Pub. Date Jul. 20, 1995

PCT Filed Jan. 9, 1995, Ser. No. 505,356

Claims priority, application Japan, Jan. 13, 1994, 6-002099; Apr. 18, 1994, 6-078604; Jun. 30, 1994, 6-149436

Int. Cl.[6] B32B *3/10*

U.S. Cl. 428—136 **9 Claims**



1. A hollow fiber fabric comprising hollow fibers which have an approximately uniform thickness,

a high hollowness ratio of at least 20% and are composed of a polymer of a single composition, the hollow fibers having slits as traces of removed low orientation and/or deformation strain concentrated portions, along the longitudinal direction of the hollow fibers, said slits being 0.2 to 10 μm in width and 5 to 200 μm in length and in such a state that the slits communicate to the hollow portions.

5,604,013

MAGNETIC RECORDING MEDIUM AND RECORDING/REPRODUCING METHOD

Yushi Yamaguchi, Joetsu, and Toshiya Naruto, Machida, both of Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

Filed Jun. 10, 1994, Ser. No. 258,207

Int. Cl.[6] G11B *3/70;5/66;5/70*

U.S. Cl. 428—141 **8 Claims**



1. A magnetic recording medium having a light transmittance of 20% or higher to light having wavelengths of from 700 to 900 nm, comprising a non-magnetic transparent support, a magnetic layer comprising a binder resin and a magnetic powder, and an electrically conductive intermediate layer formed between the non-magnetic transparent support and the magnetic layer, the electrically conductive intermediate layer comprising a powder of an electrically conductive metal or metal compound and a binder resin, and an optical pattern formed on said magnetic layer capable of generating a tracking servo signal distinguishable from the remaining magnetic layer by its difference in optical characteristics, the light transmittance of the electrically conductive intermediate layer to light having a wavelength of 830 nm being 50% or more, wherein:

the binder resin of the intermediate layer contains from 10 to 200 μg of a functional group selected from the group consisting of —COOM group, $—PO_3M_2$ group, and $—NH_3^+X^-$ group, where M is a hydrogen atom, an alkali metal atom, or an alkaline earth metal atom, and X is a monovalent anion, and

the ratio, by weight, of the content of the powder of the electrically conductive metal or metal compound to that of the binder resin present in the conductive intermediate layer is from 8 to 13.

5,604,014

MAGNETIC RECORDING MEDIUM AND MANUFACTURING METHOD FOR THE SAME

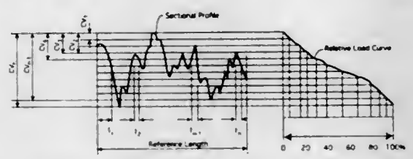
Katsumi Onodera, Nagano, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Jun. 15, 1995, Ser. No. 490,581

Claims priority, application Japan, Jun. 15, 1994, 6-132331

Int. Cl.[6] G11B *5/704*

U.S. Cl. 428—141 **5 Claims**



1. A magnetic recording medium comprising:

a nonmagnetic base plate having at least one texturing trench formed thereon;

said nonmagnetic base plate having a mean line depth Rv, of no more than 500 Å; and

said nonmagnetic base plate having a relative load length tp(90–99), of no more than 120 Å.

5,604,015

NON-MAGNETIC UNDERCOAT LAYER FOR MAGNETIC RECORDING MEDIUM, MAGNETIC RECORDING MEDIUM AND NON-MAGNETIC PARTICLES

Kazuyuki Hayashi; Keisuke Iwasaki; Yasuyuki Tanaka; Minoru Ohsugi; Hiroko Morii; Mineko Sakoda; Norio Sugita, and Masaaki Maekawa, all of Hiroshima, Japan, assignors to Toda Kogyo Corporation, Japan

Filed May 10, 1994, Ser. No. 240,512

Claims priority, application Japan, Dec. 27, 1993, 5-353555; Dec. 27, 1993, 5-353556

Int. Cl.[6] B32B *33/00*; **G11B** *5/66;5/70*

U.S. Cl. 428—144 **12 Claims**



1. A non-magnetic substrate for a magnetic recording medium, comprising a substrate and a non-magnetic undercoating layer consisting essentially of non-magnetic particles and a binder resin, coated on a surface of the substrate,

said non-magnetic particles selected from the group consisting of:

(1) coated acicular or spindle-shaped α-Fe_2O_3 particles which have an average major axial diameter of 0.05 to 0.25 μm, an average minor axial diameter of 0.010 to 0.035 μm, an aspect ratio of 2 to 20 with a particle size distribution in geometrical standard deviation of not more than 1.40, said coated α-Fe_2O_3 particles produced by adhering not less than 0.01 to 20 wt %, calculated as Al, SiO_2 or Al and SiO_2, and based on the weight of the acicular or spindle-shaped α-Fe_2O_3 particles as a core, of an oxide or a hydroxide containing Al, Si or both Al and Si to the surfaces of acicular or spindle-shaped α-Fe_2O_3 particles, said coated α-Fe_2O_3 particles having a molecular weight-dependent parameter α which has a value not less than 0.5 and is represented by the following formula:

$$As=K1 \cdot M^{\alpha}$$

wherein M represents the number-average molecular weight of a binder resin, As represents the saturation adsorption of said binder resin, and K1 represents a constant used for measuring As and dependent on the binder resin and a solvent, and

(2) $BaO.4.5Fe_2O_3$ particles having an average particle diameter of not more than 0.1 μm

wherein said non-magnetic undercoating layer has dry thickness of 1 to 10 um in dry thickness; and

said non-magnetic undercoating layer containing coated acicular or spindle-shaped α-Fe_2O_3 particles has a gloss at 45° of not less than 170% and a center-line average surface roughness of not more than 16 nm, or

said non-magnetic undercoating layer containing $BaO.4.5Fe_2O_3$ particles has a gloss at 45° of not less than 138%, and a center-line average surface roughness of not more than 1.9 nm.

5,604,016

INFORMATION-MEDIUM SLEEVE AND PROCESS FOR MANUFACTURING IT

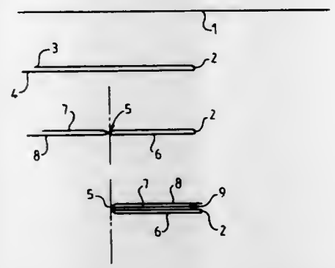
Jean-Luc Allegre, Villefontaine, France, assignor to Decomatic S.A., societe anonyme, La Verpilliere, France

Filed Mar. 24, 1995, Ser. No. 409,982

Claims priority, application France, Mar. 29, 1994, 94 03677

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—192 **13 Claims**



1. A sleeve which is placed around a container having a perimeter in order to constitute an information medium comprising:

a sleeve body made of a single plastic sheet, said sleeve body being tubular shaped to encompass the perimeter of the container and being capable of taking printing thereon;

first and second flap-forming parts, each said flap-forming part having a first edge and at least one face capable of taking or displaying printing; and a fixing means for fixing said first edges of said first and second flap-forming parts to said sleeve body such that said first edges are parallel to a generatrix of said sleeve body and such that said first and second flap-forming parts extend along said sleeve body and hence cover at least a portion of said sleeve body.

5,604,017

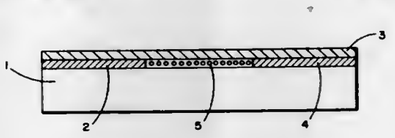
MULTI-DIELECTRIC LAMINATES

John C. Frankosky, Wilmington, Del., assignor to Arlon, Inc., Maitland, Fla.

Continuation of Ser. No. 508,803, Apr. 11, 1990, abandoned. This application Oct. 24, 1994, Ser. No. 328,234

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—209 **30 Claims**



1. A multi-dielectric laminate, comprising:

a ground plane;

a plurality of dielectric materials bonded on said ground plane wherein at least two of said materials possess different dielectric constants; and

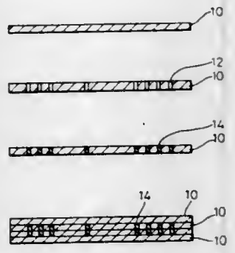
a common conductor bonded over said two dielectric materials.

5,604,018

CERAMIC OXIDE CIRCUIT BOARD

Michio Horiuchi, and Yoichi Harayama, both of Nagano, Japan, assignors to Shinko Electric Industries, Co., Ltd., Nagano, Japan

Filed Jun. 24, 1994, Ser. No. 265,028
Claims priority, application Japan, Jun. 25, 1993, 5-155176
Int. Cl.[6] B32B *9/00*
U.S. Cl. 428—210 **14 Claims**



1. An oxide ceramic circuit board having an insulating base board made of a ceramic oxide, said board being produced by a process comprising the steps of:

providing via wiring in a first green sheet made of ceramic oxide powder, wherein a metallic material containing copper and 0.1 to 5 percent by weight of titanium is used for the wiring;

laminating said first green sheet with a second green sheet made of ceramic oxide powder, and integrating said green sheets into a single body so that said wiring is not exposed on an outer surface of the single body;

firing the single body at a temperature higher than the melting point of copper to obtain a sintered body having a high density layer of titanium at a boundary between the copper of the metallic material and the ceramic oxide of the first green sheet; and

polishing or grinding said sintered body so that a portion of the metallic material of the wiring in said sintered body is exposed.

5,604,019

TEAR RESISTANT MULTILAYER FILMS AND ARTICLES INCORPORATING SUCH FILMS

Ralph H. Bland, St. Paul, Minn.; James M. Jonza, Round Rock, Tex.; James D. Smith, St. Paul, Minn.; Richard C. Allen, Mendota Heights, Minn.; Jeffrey F. Bradley, Woodbury, Minn.; Kenneth B. Smith, Shoreview, Minn., and Bruce D. Stambaugh, Anaheim, Calif., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 250,645, May 27, 1994, Pat. No. 5,427,842, which is a continuation of Ser. No. 955,357, Oct. 1, 1992, abandoned. This application Apr. 20, 1995, Ser. No. 425,911
Int. Cl.[6] B32B *7/02;17/10;27/08;27/36*
U.S. Cl. 428—212 **40 Claims**

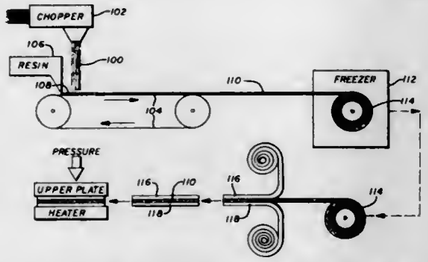
1. A tear resistant film comprising a total of more than five stiff and ductile layers situated one on the other in a parallel array, the layers occurring essentially randomly in the array, wherein (a) at least two of the layers are a stiff polyester or copolyester that has a tensile modulus greater than 200 kpsi, the layers of stiff polyester or copolyester having an average nominal thickness greater than about 1 μm, and (b) at least two other layers are a ductile polymeric material that has been oriented in at least one direction, has a tensile modulus less than 200 kpsi, and has a tensile elongation greater than 50%.

5,604,020

THERMOPLASTIC THERMOFORMABLE COMPOSITE MATERIAL AND METHOD OF FORMING SUCH MATERIAL

Douglas R. Fitchmun, Woodland Hills, Calif., assignor to ThermoComp Corporation, Spring Valley, Nev.

Filed Feb. 16, 1995, Ser. No. 390,533
Int. Cl.[6] B32B *5/18;5/28*
U.S. Cl. 428—213 **19 Claims**



1. A thermoplastic thermoformable composite material for shaping and stretching into a desired form without voids and holes, including

a core including at least one layer of chopped fibers enveloped and impregnated by thermoplastic material to form a fiber layer core,

layers of thermoplastic material respectively positioned on opposite sides of the fiber layer core, and

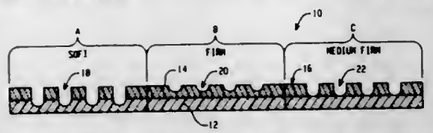
the layers of thermoplastic material being provided with a sufficient thickness to flow into and fill any voids or holes formed in the core as the composite material is shaped and stretched into a desired form.

5,604,021

MULTI-LAYER SUPPORT PAD HAVING REGIONS OF DIFFERING FIRMNESS

Robert F. Wagner, Medina, Ohio, assignor to Ohio Mattress Company Licensing and Components Group, Cleveland, Ohio

Filed Dec. 23, 1994, Ser. No. 363,260
Int. Cl.[6] A47C *27/14;* **B32B** *7/02*
U.S. Cl. 428—218 **18 Claims**



1. A foam support pad having a plurality of regions wherein the support characteristics of one region are different from the support characteristics of another region, the support pad comprising:

a first foam layer,

a second foam layer laminated to the first foam layer so that a top surface of the second foam layer serves as a top surface of the support pad,

a plurality of voids formed in one area of the pad to extend from the top surface of the pad through a partial cross-section of the second foam layer to define a firm region of the pad,

a plurality of voids formed in a different area of the pad to extend from the top surface of the pad through an entire cross-section of the second foam layer to define a moderately firm region of the pad, and

a plurality of voids formed in another area of the pad to extend from the top surface of the pad through an entire cross-section of the second foam layer and through at least a partial cross-section of the first foam layer to define a soft region of the pad;

wherein the density of the material of the first foam layer differs from the density of the material of the second foam layer.

5,604,022

ANTITRAUMA PACKET

Fernando H. Andujar, Buenos Aires, Argentina, assignor to Niltar Trading S.A., Montevideo, Uruguay

Filed Feb. 28, 1995, Ser. No. 396,213
Claims priority, application Argentina, Feb. 28, 1994, 327533
Int. Cl.[6] B32B *9/00;27/00*
U.S. Cl. 442—338 **10 Claims**

1. An antitrauma packet for supplementing the resistance to mechanical impact and to ballistic penetration of structures comprising:

at least one panel of polymeric fibers, said fibers selected from the group consisting of aramid fibers and polyamids; and

at least one layer, having a plurality of polymeric fibers with a plurality of hollow microspheres scattered therein and adhesively connected to said plurality of polymeric fibers, being attached to said at least one panel.

5,604,023

Patent Not Issued For This Number

5,604,024

PRODUCTS OF REACTION OF AN ALUMINUM COMPOUND, A BORON-CONTAINING ACID, A PHOSPHORUS-CONTAINING ACID AND AN AMINE

Wulf von Bonin, Odenthal, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 14, 1994, Ser. No. 337,791
Claims priority, application Germany, Nov. 19, 1993, 43 39 474.4
Int. Cl.[6] B32B *33/00;* **C09K** *21/04;21/12*
U.S. Cl. 442—6 **11 Claims**

1. The product of a reaction of an aluminium compound (A), a boron-containing acid (B), a phosphorus-containing acid (P) and an amine (N), in which reaction

1 mol of (A) has been reacted in aqueous medium with from 0.8 to 1.19 mol of B, (from 1.8 to 2.19)+x mol of P and (from 0.3 to 3.69)+y mol of N,

where

x=from −1.5 to +1.5 and y=from 0 to 12.

5,604,025

FLOOR COVERING BASED UPON THERMOPLASTIC SYNTHETIC MATERIAL

Gunter Tesch, Ave. Jean-Marie Musy 15, CH-1700 Fribourg, Switzerland

PCT No. PCT/EP93/01317, § 371 Date Jan. 25, 1994, § 102(e) Date Jan. 25, 1994, PCT Pub. No. WO93/24296, PCT Pub. Date Dec. 9, 1993
PCT Filed May 25, 1993, Ser. No. 182,167
Claims priority, application Germany, May 26, 1992, 42 17 438.4; Oct. 21, 1992, 42 35 530.3
Int. Cl.[6] B32B *15/00;27/36*
U.S. Cl. 442—394 **22 Claims**

1. A floor covering including thermoplastic synthetic material with a decorative, visible side and an underside, said floor covering being formed from several layers of foil pieces (6, 7) made of thermoplastic synthetic material compressed and bonded together at least in part by pressure and temperature, and wherein at least a region near a surface is more highly compressed than a region distant from the surface.

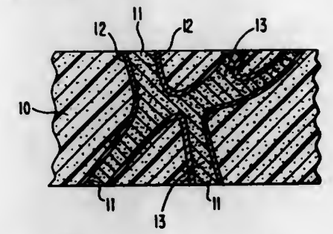


5,604,026

ELECTRICALLY CONDUCTIVE ADHESIVES

David R. King, Elkton, Md., assignor to W. L. Gore & Associates, Inc., Newark, Del.

Continuation-in-part of Ser. No. 147,196, Nov. 3, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 465,021
Int. Cl.[6] B32B *3/26;7/12*
U.S. Cl. 428—317.1 **8 Claims**



1. An electrically conductive film comprising:

a planar substrate having numerous passageways through the substrate from one side to the other in which the passageways are defined by a plurality of walls of the material making up the substrate;

said walls being covered with a continuous layer of conductive metal;

said layer covering said walls but leaving the passageways open from said one side to the other;

said open passageways being filled with an adhesive resin, thereby forming an electrically conductive film which permits electrical current to flow from a first surface of the planar substrate, through the planar substrate, to a second surface thereof.

5,604,027

SOME USES OF MICROENCAPSULATION FOR ELECTRIC PAPER

Nicholas K. Sheridon, Los Altos, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 3, 1995, Ser. No. 368,120
Int. Cl.[6] B32B *3/00*
U.S. Cl. 428—323 **9 Claims**



1. A display medium comprising:

a plurality of bichromal balls, each having two hemispheric surfaces, one surface differing from the other in both color and electrical characteristics

a layer of liquid surrounding each ball,

a skin of a first compound surrounding the layer of liquid to form a microcapsule, and

a substrate of a second compound within which all of said microcapsules are encapsulated.

5,604,028

MAGNETIC RECORDING MEDIA HAVING A MAGNETIC LAYER INCLUDING ACICULAR MAGNETIC METAL POWDER AND ALUMINA POWDER

Makoto Hirama, Ibaraki-ken, and Shigeru Ishikawa, Yokohama, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Aug. 8, 1995, Ser. No. 512,543
Claims priority, application Japan, Aug. 10, 1994, 6-210598
Int. Cl.[6] G11B *5/708*
U.S. Cl. 428—323 **6 Claims**



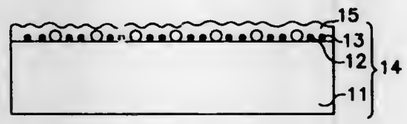
1. A magnetic recording medium comprising:
a base film; and
a magnetic layer provided on the base film, the magnetic layer including metal magnetic powder of acicular particles having an average long axis length of not more than 0.13 μm, alumina powder of particles which have an average diameter of not more than 0.13 μm, an α-rate of not more than 30% and pH of not more than 7.0, and a binder resin, wherein the weight rate of the alumina powder to the metal magnetic powder is 1.0 to 15.0 weight %.

5,604,029

MAGNETIC RECORDING MEDIA AND MANUFACTURING METHOD THEREOF

Yoshiharu Maezawa, Shiga-gun, and Kazuyoshi Honda, Takatsuki, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 22, 1993, Ser. No. 172,560
Claims priority, application Japan, Dec. 25, 1992, 4-357982
Int. Cl.[6] G11B *5/66;5/70;5/16*
U.S. Cl. 428—327 **9 Claims**



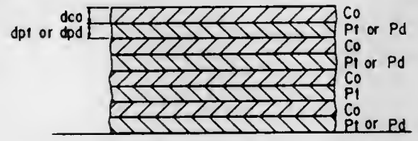
1. Magnetic recording media comprising:
a composite polymer film including:
a. a polymer film having a flat surface, and
b. inorganic particles and organic particles attached to said flat surface of said polymer film, wherein the average diameter of the organic particles is smaller than the average diameter of the inorganic particles with said inorganic particles and said organic particles uniformly dispersed on said polymer film, the number of said organic particles per unit area being larger than the number of said inorganic particles per unit area, and
a metal thin film magnetic layer disposed over and attached to said inorganic particles and said organic particles attached to said polymer film.

5,604,030

MAGNETIC RECORDING MEDIUM METHOD AND APPARATUS FOR FABRICATING SAME

Haruki Yamane; Masanobu Kobayashi; Yoshinori Maeno, and Kayoko Sato, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Division of Ser. No. 706,997, May 29, 1991, abandoned. This application Nov. 10, 1993, Ser. No. 150,283
Claims priority, application Japan, May 29, 1990, 2-137136; Jul. 31, 1990, 2-201177; Aug. 20, 1990, 2-216971
Int. Cl.[6] G11B *5/66;* **B32B** *5/16;* **B05D** *5/12;* **C23C** *14/00*
U.S. Cl. 428—332 **8 Claims**



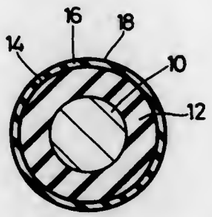
1. A magnetic recording medium having a substrate, comprising an artificial superlattice deposited on said substrate as a vertical magnetization film, said artificial superlattice being a Co/Pt artificial superlattice which is composed of alternate Co and Pt layers deposited on said substrate, whereas said Co layer has a thickness in the range of 1 angstrom to 15 angstroms inclusive, and said Pt layer has a thickness in the range of 2 angstroms to 30 angstroms inclusive and wherein said artificial superlattice has been heat treated at a temperature of 200° C. to 450° C., inclusive, at least for one minute.

5,604,031

ELECTRICALLY CONDUCTIVE ROLL WHOSE BASE LAYER IS FORMED OF ION-CONDUCTIVE ELASTIC MATERIAL

Takafumi Yamamoto, Kasugai; Sumio Oinuma, Tajimi; Kazutoshi Soumiya, Komaki; Saburou Hayashi, Kasugai, and Hiroyasu Kato, Bisai, all of Japan, assignors to Tokai Rubber Industries, Ltd., Japan

Filed Jun. 17, 1994, Ser. No. 261,922
Claims priority, applicatiou Japan, Jun. 24, 1993, 5-180619
Int. Cl.[6] B32B *15/08;27/00;27/08*
U.S. Cl. 428—335 **15 Claims**



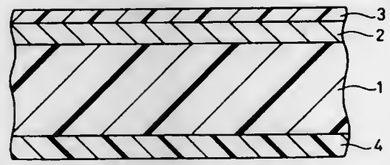
1. An electrically conductive roll comprising:
a center shaft having an outer circumferential surface;
a base layer formed on said outer circumferential surface of said center shaft and including an elastic material and an ion-conductive material, said base layer having a volume resistivity of 10^6–10^9 Ωcm;
an electrode layer formed on an outer surface of said base layer and including a synthetic resin material and an electron-conductive material, said electrode layer having a volume resistivity of not more than 10^3 Ωcm;
a resistance adjusting layer formed on an outer surface of said electrode layer; and
a protective layer formed on an outer surface of said resistance adjusting layer.

5,604,032

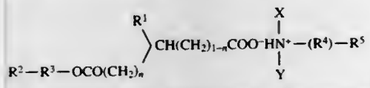
FLUORINE-CONTAINING CARBOXYLIC ACID AMINE SALT AND A MAGNETIC RECORDING MEDIUM WITH THE SAME THEREON

Yoshiaki Kai, Neyagawa, and Yukikazu Obchi, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 13, 1994, Ser. No. 322,551
Claims priority, application Japan, Oct. 19, 1993, 5-260757
Int. Cl.[6] G11B *5/71*
U.S. Cl. 428—336 **13 Claims**



3. A magnetic recording medium comprising a base material film disposed thereon with a ferromagnetic film and a lubricant layer disposed either directly or via a protection film on top of said ferromagnetic film, wherein said lubricant layer comprises one or more fluorine-containing carboxylic acid amine salt of Formula 4,



(Formula 4)

wherein R^1 denotes an aliphatic alkyl group with 6 to 30 carbons or an aliphatic alkenyl group with 6 to 30 carbons; R^2 denotes a group selected from the group consisting of a fluoroalkyl group with 3 to 30 carbons, a fluoroalkenyl group with 3 to 30 carbons, a fluorophenyl group with 6 to 18 carbons, and a fluoroalkylether group with 5 to 50 carbons; R^3 and R^4 each denotes a saturated or unsaturated hydrocarbon chain with 1 to 20 carbons; R^5 denotes either a fluoroalkyl group with 3 to 30 carbons or a fluoroalkenyl group with 3 to 30 carbons; n denotes 0 or 1; X denotes hydrogen or -(R^6)-R^7; and Y denotes hydrogen or -(R^8)-R^9, where R^6 and R^8 each denotes a saturated or unsaturated hydrocarbon chain with 1 to 20 carbons, and R^7 and R^9 each denotes a fluoroalkyl group with 3 to 30 carbons or a fluoroalkenyl group with 3 to 30 carbons.

5,604,033

CROSS-LINKABLE ADHESIVE POLYMERS

Trevor C. Arthurs, Nova Scotia; Peter Y. Kelly, Ontario; John R. B. Boocock, Ontario, and Wayne F. Bryce, Ontario, all of Canada, assignors to Du Pont Canada Inc., Mississauga, Canada

Division of Ser. No. 237,803, May 4, 1994, Pat. No. 5,461,110. This application Jul. 20, 1995, Ser. No. 504,863
Int. Cl.[6] B32B *7/12;9/04*
U.S. Cl. 428—350 **3 Claims**

1. A bonded structure formed from two substrates and an interposed layer of an adhesive composition formed by admixing under melt conditions:
(a) 50–95% by weight of a moisture cross-linkable silane-grafted polyolefin having a melt viscosity of less than 100,000 cps, and
(b) 5–50% by weight of a polyolefin grafted with at least one ethylenically-unsaturated carboxylic acid or anhydride, or salt, amide, imide, or ester derivative thereof, said grafted polyolefin having a melt viscosity of less than 100,000 cps, said grafted polyolefin containing a catalyst for moisture cross-linking of the silane-grafted polyolefin of (a), said interposed layer having been exposed to moisture to effect said cross-linking after application of the adhesive between the two substrates.

5,604,034

VINYL MARKING FILM HAVING PLASTICIZER RESISTANT PRESSURE SENSITIVE ADHESIVE

Hiroshi Matsuda, Yamagata, Japan, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

PCT No. PCT/US93/03882, § 371 Date Sep. 19, 1994, § 102(e) Date Sep. 19, 1994, PCT Pub. No. WO93/22391, PCT Pub. Date Nov. 11, 1993
PCT Filed Apr. 27, 1993, Ser. No. 39,338
Claims priority, application Japan, Apr. 28, 1992, 4-109375
Int. Cl.[6] C09J *7/02*
U.S. Cl. 428—355 **3 Claims**

1. An adhesive for decorative film consisting of: 100 parts by weight of a copolymer having a weight average molecular weight of 700,000– 1,200,000 obtained by copolymerization of 64–75% by weight of a (meth)acrylate having a C_4–C_8 alkyl group, 20–26% by weight of methyl methacrylate and 5–10% by weight of acrylic acid, and 0.005 to 0.1 parts by weight based on 100 parts by weight of the copolymer of a bisamide crosslinker.

5,604,035

PRESSURE-SENSITIVE ADHESIVE COMPOSITION AND PRESSURE-SENSITIVE ADHESIVE SHEETS USING THE COMPOSITION

Makoto Kojima; Masayuki Satake; Katsuhide Kojima; Tetsuo Omata, and Eiichiro Fukusaki, all of Osaka, Japan, assignors to Nitto Denko Corporation, Osaka, Japan

Filed Sep. 29, 1995, Ser. No. 536,741
Claims priority, application Japan, Sep. 30, 1994, 6-237316
Int. Cl.[6] C09J *133/06;133/14;7/02;* **C08F** *220/28*
U.S. Cl. 428—355 AC **6 Claims**

1. A pressure-sensitive adhesive composition comprising a copolymer of the following monomer (a) and monomer (b) as the essential components:
(a) from 20 to 99.95% by weight of a (meth)acrylic acid alkyl ester having an alkyl group having from 2 to 14 total carbon atoms as the ester side chain, and
(b) from 0.05 to 80% by weight of a (meth)acrylic acid alkyl ester having an alkyl group having from 3 to 14 total carbon atoms as the ester side chain and having a carboxyl group or a hydroxyl group at the terminal end of said side chain, and wherein the alkyl group of the monomer (a) and the alkyl group of the monomer (b) are each a straight chain alkyl group, with a carbon atom number of the alkyl group of the monomer (b) equal to less by one than, or not less than, a carbon atom number of the alkyl group of the monomer (a), or, wherein at least one of the alkyl group of the monomer (a) and the alkyl group of the monomer (b) is a branched chain alkyl group, with a carbon atom number of an alkyl straight chain having a functional group of the monomer (b) equal to less by one than, or not less than, a carbon atom number of a longest alkyl straight chain of the monomer (a).

5,604,036

HOLLOW NYLON FILAMENTS

David A. Price, Smyrna, Del.; James P. Bennett, Hixson, Tenn.; Benjamin H. Knox, Wilmington, Del., and Dennis R. Schafluetzel, Hixson, Tenn., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

which is a continuation-in-part of Ser. No. 213,307, Mar. 14, 1994, Pat. No. 5,439,626. This application Jun. 7, 1995, Ser. No. 473,823
Int. Cl.[6] D02G *3/00*
U.S. Cl. 428—376 **14 Claims**

1. Hollow filaments comprised of nylon polymer with a relative viscosity (RV) of at least 50 and a melting point (T_M) between 210° C. and 310° C., said filaments having a denier per filament (dpf) such that the denier per filament at 25% elongation $(dpf)_{25}$ is about 0.5 to about denier 20 and having at least one longitudinal



void such that the fractional void content (VC) is at least [(7.5Log_{10}(dpf)+10)/100], said filaments having a residual draw ratio (RDR) of about 1.2 to about 2.25 and a small-angle x-ray scattering intensity (I_{max}) of at least 175 pulses normalized for one hour collection time.

5,604,037

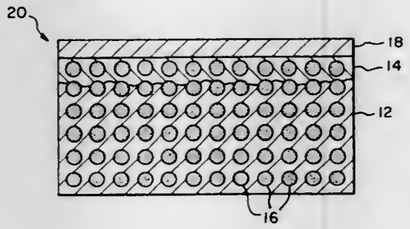
DIAMOND/CARBON/CARBON COMPOSITE USEFUL AS AN INTEGRAL DIELECTRIC HEAT SINK

Jyh-Ming Ting, Fairborn, and Max L. Lake, Yellow Springs, both of Ohio, assignors to Applied Sciences, Inc., Cedarville, Ohio

Division of Ser. No. 044,223, Apr. 7, 1993, Pat. No. 5,389,400. This application Nov. 1, 1994, Ser. No. 332,903

Int. Cl.[6] C23C *16/26*

U.S. Cl. 428—408 **5 Claims**



1. A diamond/carbon/carbon composite comprising:

a carbon/carbon composite comprising a preform of interwoven vapor grown carbon fibers having interstices therein and having pyrolytic carbon deposited into interstices of said preform; and

a polycrystalline diamond coating directly on said carbon/carbon composite forming a polycrystalline diamond film, whereby said polycrystalline diamond coating partially infiltrates the surface of said carbon/carbon composite.

5,604,038

POLYMERIC THIN LAYER MATERIALS

Ferencz S. Denes; Raymond A. Young; Abdolmajid Sarmadi, and J. Leon Shohet, all of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Nov. 18, 1994, Ser. No. 341,790

Int. Cl.[6] B32B *17/10;15/08*

U.S. Cl. 428—429 **14 Claims**

1. A composition of matter comprising a substrate and a coating adhered to the substrate, the coating comprising polymer chains of form



where A is silicon, phosphorus, sulfur, boron or carbon, B is oxygen, carbon, or nitrogen, X and Y are selected from the group consisting of hydrogen, an aliphatic group, an aromatic group, and a halogen, and n is 5 or more, the polymer chains being cross-linked, each cross-linked polymer chain having a linear backbone (-A-B-) repeated n times, wherein the cross-linked polymer chains have a backbone structure substantially identical in length to the polymer chain backbone, the coating being solvent-free and substantially free of fractured polymer chain backbones.

5,604,039

THERMALLY STABLE RELEASE AGENTS

Tsang J. Chen, Rochester; Paul L. Nielsen, Lima, and Jiann-Hsing Chen, Fairport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 22, 1996, Ser. No. 589,666

Int. Cl.[6] B32B *9/04*

U.S. Cl. 428—447 **17 Claims**

1. A release agent comprising a blend of 90 to 99.9999 percent by weight of a non-phenol functionalized, non-reactive and non-functionalized poly(organosiloxane) fluid and 0.0001 to 10 percent by weight of a phenol functionalized poly(organosiloxane) fluid wherein the organo groups are selected from the group consisting of alkyl, aryl, alkylaryl and mixtures thereof, weight percents being based on the total weight of release agent.

5,604,040

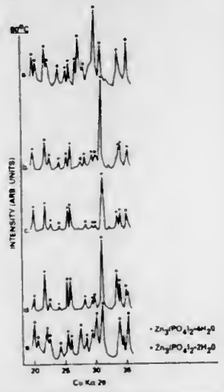
ZINC PHOSPHATE CONVERSION COATINGS

Toshifumi Sugama, Wading River, N.Y., assignor to Associated Universities, Inc., Washington, D.C.

Continuation of Ser. No. 160,230, Dec. 2, 1993, abandoned, which is a continuation-in-part of Ser. No. 944,230, Sep. 14, 1992, abandoned, which is a continuation-in-part of Ser. No. 743,278, Aug. 9, 1991, abandoned. This application Dec. 1, 1995, Ser. No. 565,902

Int. Cl.[6] C23C *22/12*

U.S. Cl. 428—472.3 **26 Claims**



1. A method of coating an electrogalvanized steel base, which comprises contacting the base with a composition containing (i) aqueous zinc phosphate, (ii) a transition-metal compound promoter selected from the group consisting of a manganese, iron, cobalt, nickel or copper compound, (iii) a polyelectrolyte selected from the group consisting of polyacrylic acid, polymethacrylic acid, polyitaconic acid and poly-L-glutamic acid, said polyelectrolyte being present from about 0.5 to 5.0% by weight of the total composition, and (iv) a source of Fe ions.

5,604,041

METHOD OF MAKING FREE-STANDING POLYIMIDE FILM

Jin-o Choi, 253 Wyeth Dr., Getzville, N.Y. 14068

Filed Nov. 14, 1995, Ser. No. 557,583

Int. Cl.[6] B32B *27/00;27/06*

U.S. Cl. 428—473.5 **20 Claims**

1. A method of making a free-standing polyimide adhesive film comprising

(A) preparing a solution which comprises a polyamic acid dissolved in a solvent;

(B) imidizing about 20 to about 98% of the amic acid groups in said polyamic acid by heating or chemically;

(C) forming a coating of said solution on a non-sticking substrate;

(D) heating said coating at a temperature sufficient to remove 80 to 99 wt % of said solvent and form a film that can be removed from said substrate and handled;

(E) removing said film from said substrate; and

(F) heating said free-standing film at a temperature sufficient to reduce the amount of solvent therein to less than 1000 ppm.

5,604,042

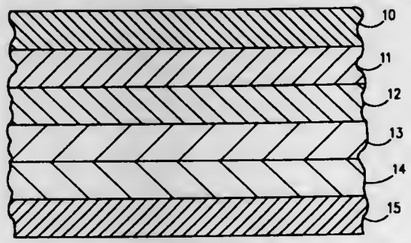
CELLULOSE MATERIAL CONTAINING BARRIER FILM STRUCTURES

Eber C. Bianchini, Rochester, N.Y.; Anthony R. Knoerzer, Plano, Tex.; Larry A. Parr, Canandaigua, and Leland W. Reid, Palmyra, both of N.Y., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation of Ser. No. 272,056, Jul. 8, 1994, abandoned, which is a continuation-in-part of Ser. No. 80,602, Jun. 24, 1993, Pat. No. 5,380,586, which is a continuation-in-part of Ser. No. 812,493, Dec. 23, 1991, abandoned. This application Dec. 19, 1995, Ser. No. 574,981

Int. Cl.[6] B32B *27/00;27/16;27/26*

U.S. Cl. 428—507 **20 Claims**



1. A cellulose containing packaging film structure which comprises:

I. a polymeric substrate having at least one treated surface, said treated surface having a primer layer thereon;

II. an oxygen and enhanced moisture barrier water-soluble coating onto said primed treated surface of said polymeric substrate, said coating comprising polyvinyl alcohol cross-linked with an aldehyde containing cross-linking agent in the presence of a catalytic amount of sulfuric acid on said one primed surface of said polymeric substrate;

III. a cellulose material laminated to an outer surface of said oxygen and enhanced moisture barrier coating whereby said cellulose containing polymeric film structure has enhanced oxygen, flavor/odor, grease/oil and moisture barrier properties.

5,604,043

HEAT SHRINKABLE FILMS CONTAINING SINGLE SITE CATALYZED COPOLYMERS HAVING LONG CHAIN BRANCHING

Kelly R. Ahlgren, Greenville, S.C., assignor to W.R. Grace & Co.-Conn., Duncan, S.C.

Filed Sep. 20, 1993, Ser. No. 124,179

Int. Cl.[6] B32B *27/08*

U.S. Cl. 428—518 **33 Claims**

1. A heat shrinkable multilayer film comprising at least one inner core layer comprising a homogeneous single site catalyzed copolymer of ethylene and an alpha-olefin having from four to ten carbon atoms and having at least some long chain branching said copolymer having a density of from about 0.89 g/cc to about 0.91 g/cc.

5,604,044

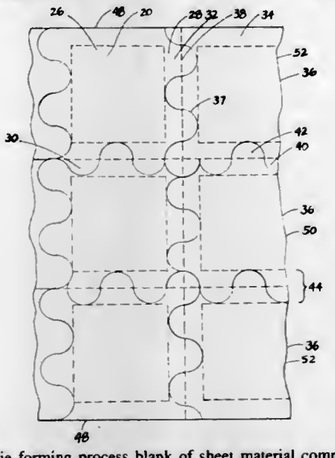
BLANKS FOR SHEET MATERIAL FORMING PROCESS

Charles J. McCabe, 10725 Indigo Ct., Fishers, Ind. 46038, and Ronald W. Stevens, R.R. No. 5, Box 123, Frankfort, Ind. 46041

Contiouation of Ser. No. 998,267, Dec. 28, 1992, abandoned. This application Feb. 2, 1995, Ser. No. 384,443

Int. Cl.[6] B21C *1/00*

U.S. Cl. 428—577 **51 Claims**



1. A die forming process blank of sheet material comprising a part portion and a peripheral portion, said peripheral portion being provided for both holding said blank in a die and furnishing material to said part portion during the die forming process as required, said peripheral portion having an undulating real boundary and a discontinuous effective boundary, said peripheral portions of adjacent part portions prior to being cut from said sheet material consisting of all of the material between said adjacent part portions, whereby scrap is shared by said adjacent part portions.

5,604,045

MAGNETIC HEAD

Shunsaku Muraoka, Hirakata; Akinaga Natsui, Neyagawa, and Yasuhiro Nakatani, Kawachinagano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Continuation of Ser. No. 135,449, Oct. 13, 1993, abandoned. This application Oct. 30, 1995, Ser. No. 550,282

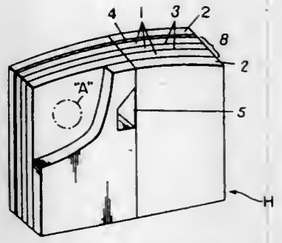
Claims priority, application Japan, Oct. 13, 1992, 4-274000

Int. Cl.[6] G11B *5/66;5/147;* **B32B** *9/00*

U.S. Cl. 428—692 **6 Claims**

1. A ring-type magnetic head comprising:

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a metallic magnetic film having first and second surfaces opposite to each other; and

first and second substrates bonded to the first and second surfaces of said metallic magnetic film, respectively,

wherein said metallic magnetic film has a saturation magnetic field not less than 50 A/m in all directions parallel to a film plane thereof and wherein a direction of lamination of a sandwich formed by said metallic magnetic film and said first and second substrates is generally perpendicular to a gap-forming surface of the head.

5,604,046

MAGNETO-OPTICAL RECORDING MEDIUM AND A METHOD USING THE SAME

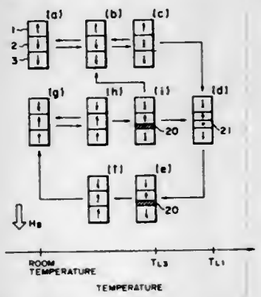
Yoichi Osato, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 659,279, Feb. 22, 1991, abandoned. This application Feb. 14, 1994, Ser. No. 195,061

Claims priority, application Japan, Feb. 23, 1990, 2-41323; Mar. 13, 1990, 2-59901

Int. Cl.[6] G11B *5/66*

U.S. Cl. 428—694 ML **20 Claims**



1. A magneto-optical recording medium on which information is recorded by applying a light beam thereto, said medium comprising:

a second magnetic layer having a first surface, a second surface opposite the first surface, a Curie temperature and a coercive force, and a first magnetic layer and a third magnetic layer laminated on the opposite surfaces of said second magnetic layer and each having a higher Curie temperature and a lower coercive force than said second magnetic layer, the first surface of said second magnetic layer being next to said first magnetic layer, and the second surface of said second magnetic layer being next to said third magnetic layer;

said second magnetic layer having a Curie temperature T_{L1} near its first surface and a Curie temperature T_{L3} near its second surface, the Curie temperature increasing in the direction of film thickness throughout substantially the entire second magnetic layer from the second surface toward the first surface, such that T_{L1} is greater than T_{L3}; and

said first magnetic layer, said second magnetic layer and said third magnetic layer being coupled together at room temperature by exchange interaction therebetween so as to be in a stable state in which the direction of magnetization of said first magnetic layer and the direction of magnetization of said third magnetic layer are anti-parallel to each other,

wherein, when a light beam incident on the first magnetic layer heats the second magnetic layer to a temperature near T_{L1} and the second magnetic layer is thereafter cooled, the directions of magnetization of the first and second magnetic layers are oriented in a direction that is stable with respect to the direction of magnetization of the third magnetic layer, and when a light beam incident on the first magnetic layer heats the second magnetic layer to a temperature near T_{L3} and the second magnetic layer is thereafter cooled, the direction of magnetization of the third magnetic layer is oriented in a direction that is stable with respect to the directions of magnetization of the first and second magnetic layers.

5,604,047

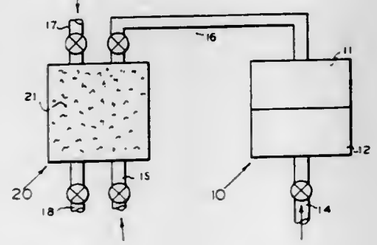
CARBON MONOXIDE REMOVAL METHOD BASED ON ADSORPTION/STEAM DESORPTION CYCLE

Richard J. Bellows, Hampton, and John L. Robbins, Stockton, both of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Jun. 23, 1995, Ser. No. 494,206

Int. Cl.[6] H01M *8/18;8/04;* **B01D** *53/02*

U.S. Cl. 429—19 **4 Claims**



1. A fuel cell system comprising:

a fuel cell having an anode compartment and a cathode compartment;

at least a first separator containing an adsorbent selected from the group consisting of platinum, palladium, ruthenium, rhenium, iridium, the carbides and nitrides of tungsten, molybdenum, vanadium, chromium, tantalum and mixtures thereof, having a surface area in the range of from about 0.5 to about 200 m^2/gm, and wherein the adsorbent selectively adsorbs CO in a CO containing hydrogen gas stream to produce a substantially CO free, hydrogen rich gas stream;

a conduit for feeding a CO containing, hydrogen feed gas stream to the separator;

a conduit operably connecting the separator to the anode compartment of the fuel cell for delivering the substantially CO free, hydrogen rich gas stream thereto;

a conduit for feeding a sweep gas to the separator to desorb adsorbed CO; and

a conduit for feeding an oxidant to the cathode compartment.

5,604,048

ELECTRICALLY CONDUCTING CERAMIC AND FUEL CELL USING THE SAME

Masato Nishihara; Masahide Akiyama, and Shoji Yamashita, all of Kokubu, Japan, assignors to Kyocera Corporation, Kyoto, Japan

Continuation-in-part of Ser. No. 201,568, Feb. 25, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 484,763

Claims priority, application Japan, Feb. 26, 1993, 5-38690; Mar. 23, 1993, 5-63722; Mar. 29, 1993, 5-70248; Apr. 9, 1993, 5-83370; Apr. 9, 1993, 5-83371; Apr. 14, 1993, 5-87406

Int. Cl.[6] H01M *4/86*

U.S. Cl. 429—44 **12 Claims**

5. A solid oxide fuel cell in which an air electrode is provided on one surface of a solid electrolyte and a fuel electrode is provided on the other surface thereof, wherein said air electrode comprises a perovskite-type composite oxide of a composition represented by the following formula

$$(La_{1-x-y}A_xB_y)_z(Mn_{1-u}C_u)_vO_\delta$$

wherein A represents at least one type of atom selected from the group consisting of Sc, Y, Nd, Yb, Er, Gd, Sm and Dy, B represents at least one type of atom selected from the group consisting of Ba, Sr and Ca, and C represents at least one type of atom selected from the group consisting of Co, Fe, Ni, Ce, Zr and Cr, and x, y, z, u, v and δ are the numbers that satisfy the following formulas:

$0.02 \leqq x \leqq 0.4$,

$0.25 \leqq y \leqq 0.5$,

$0.90 \leqq z \leqq 1.05$,

$0 \leqq u \leqq 0.5$,

$v = 1.0$,

and at a temperature of 1000° C. in the open air,

$2.97 \leqq \delta \leqq 3.04$.

5,604,049

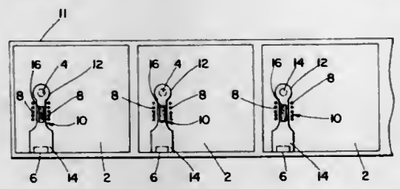
BATTERY WITH TESTER LABEL AND METHOD FOR PRODUCING IT

Victor H. Weiss, Plantation, Fla., and Jeffrey L. Anderson, Excelsior, Minn., assignors to Morgan Adhesive Company, Stow, Ohio

Continuation of Ser. No. 56,158, May 3, 1993, Pat. No. 5,389,458. This application Jan. 24, 1995, Ser. No. 377,352

Int. Cl.[6] H01M *2/02*

U.S. Cl. 429—93 **20 Claims**



1. A battery having a first terminal and a second terminal of opposite polarity; said battery at least partially encased with a nonconductive film having a top surface and bottom surface and said film defining a first opening exposing a segment of the first terminal and a spaced apart second opening exposing a segment of the second terminal; an expanded insulating material disposed between said first opening and said second opening; a conductive circuit layer disposed over the first opening, the second opening, and at least a portion of the expanded insulating material so that a first segment of conductive circuit layer can be deflected through the first opening to contact the first terminal, a second segment of the conductive circuit layer can be deflected through the second opening to contact the second terminal with the remaining segment of the conductive circuit layer being electrically and thermally insulated from the terminals of the battery by the expanded insulating material; a thermally sensitive material disposed in responsive contact with the conductive circuit layer such that when the first segment and second segment of the conductive circuit layer contact the first terminal and second terminal, respectively, a current will flow through the conductive circuit layer and heat the thermally sensitive material which will indicate the capacity of the battery.

5,604,050

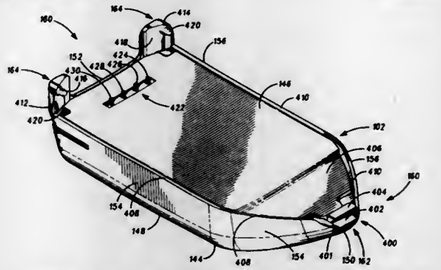
LATCHING MECHANISM AND METHOD OF LATCHING THEREBY

James R. Brunette, Wheeling; Scott D. Beutler, Barrington; Stephen J. Gaynes, Wonder Lake; James D. Domoleczny, Sr., Lindenhurst, and Albert L. Nagele, Wilmette, all of Ill., assignors to Motorola Inc., Schaumburg, Ill.

Filed Jun. 13, 1995, Ser. No. 489,872

Int. Cl.[6] H01M *2/10*

U.S. Cl. 429—97 **33 Claims**



1. An accessory for use with a portable electronic device, the accessory including a housing having a first end, a second end, and a front surface extending between the first end and the second end, the accessory including a latching mechanism for removably attaching the accessory to the portable electronic device, the latching mechanism comprising:

a support extending from the first end of the housing; and

a latch movably disposed within the housing and extending outward, the latch having a hooked end that extends back towards the first end of the housing and substantially parallel to the front surface for engaging a notch disposed in the portable electronic device, the latch exerting a predetermined force in a direction that is parallel to the front surface of the housing to draw the portable electronic device and the support into abutment with one another.

5,604,051

HIGH TEMPERATURE RECHARGEABLE CELL DESIGN

Christopher J. Pulley, 3726 Avalon Rd., Shaker Hts., Ohio 44120; Steven J. Specht, 711 Industrial Blvd., Valdosta, Ga. 31601, and Geoffrey Barlow, 29 Daisy La., Chagrin Falls, Ohio 44022

Filed Oct. 17, 1994, Ser. No. 324,047

Int. Cl.[6] H01M *2/10*

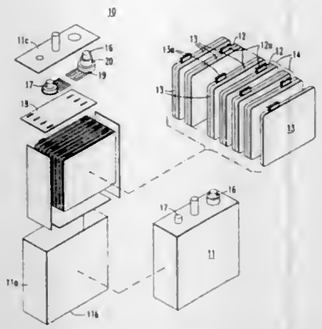
U.S. Cl. 429—99 **13 Claims**

1. A lithium-alloy/molten salt/metal sulfide electrochemical cell comprises the combination of:

a. a cell can formed from low carbon steel;

b. at least one plate provided within said cell can, said at least one plate being positive, said positive plate including at least one positive electrode, said positive electrode being insulated

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from said can by a high melting point salt, said positive electrode being electrically connected to a positive terminal;

c. at least one negative electrode connected separately to a terminal on said can, said negative electrode and said positive electrode being electrically insulated from each other by a ceramic separator;

d. said positive terminal having a flexible insulating seal electrically insulated on its exterior surface sandwiching a ceramic bushing and compressively sealed together, said seal being formed from flexible graphite having an exterior surface, said flexible graphite having a layer of electrically insulative material provided on said exterior surface;

e. a generally planar positive current collector operably connecting to said positive electrode;

f. said negative electrode being an integral part of said cell; and

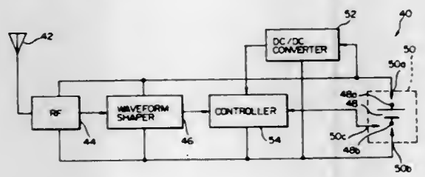
g. an intercell connector formed from low carbon steel, said intercell connector electrically joining adjacent cells.

5,604,052

STRUCTURE OF A BATTERY HOLDING SECTION INCLUDED IN A PORTABLE ELECTRONIC APPARATUS

Masahiro Ikka, Shizuoka, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 12, 1996, Ser. No. 614,208
Claims priority, application Japan, Mar. 15, 1995, 7-054850
Int. Cl.[6] H02M *2/10*
U.S. Cl. 429—100 **6 Claims**



1. A structure of a battery holding section included in a portable electronic apparatus, comprising:

an opening for allowing a battery to be partly inserted into said battery holding section only in a predetermined direction;

a first connection terminal for contacting a first electrode of said battery when said battery is being inserted through said opening;

a second connection terminal for contacting a second electrode of said battery first; and

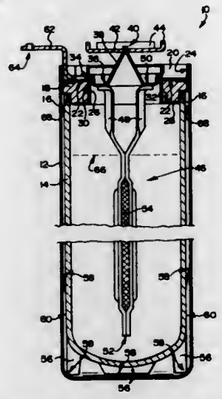
a third connection terminal for contacting said second electrode last when said battery is fully received in a preselected position in said battery holding section.

5,604,053

ELECTROCHEMICAL CELL

Johan Coetzer, Pretoria, and Isak L. Vlok, Verwoerdburg, both of South Africa, assignors to Electro Chemical Holdings Societe Anonyme, Luxembourg

Filed Jun. 7, 1995, Ser. No. 480,252
Claims priority, application South Africa, Jun. 8, 1994, 94/4028; Oct. 25, 1994, 94/8384
Int. Cl.[6] H01M *4/58*
U.S. Cl. 429—103 **7 Claims**



1. An improved electrochemical cell having a housing divided by a separator which is a solid electrolyte conductor of sodium ions into an anode compartment and a cathode compartment, the anode compartment containing sodium forming an active anode material for the cell and the cell having an operating temperature at which the sodium is molten, the cathode compartment containing an alkali metal aluminum halide molten salt electrolyte comprising sodium cations and chloride anions, and having an Al:alkali metal atomic ratio of at most 1:1, which molten salt electrolyte is also molten at the operating temperature of the cell, and the cathode compartment also containing an electronically conductive electrolyte-permeable porous matrix, impregnated by the molten salt electrolyte and having nickel/nickel chloride ($Ni/NiCl_2$) active cathode material dispersed in its porous interior, in divided particle- and/or layer form, in contact with the molten salt electrolyte and matrix, the sodium and molten salt electrolyte being in contact with and separated by the separator, to couple the $Ni/NiCl_2$ electrochemically with the sodium, wherein the improvement comprises antimony contained in the porous interior of the matrix of the cathode, said porous interior containing the antimony (Sb) mixed with and dispersed in divided solid form in the $Ni/NiCl_2$ active cathode material in the matrix, the cell having a fully charged state in which it has an open circuit voltage corresponding to the $Na/NiCl_2$ couple at the cell operating temperature and the Sb:Ni mass ratio between the Sb and the Ni in the $NiCl_2$ active cathode material in said fully charged state being 2:100–130:100.

5,604,054

REDUCED ENVIRONMENTAL HAZARD LECLANCHE CELL HAVING IMPROVED PERFORMANCE IONICALLY PERMEABLE SEPARATOR

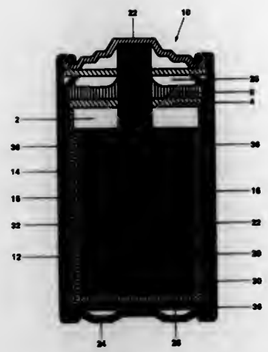
Ronald J. Ekern, Verona; Miguel E. Armacanqui, and Janna L. Rose, both of Madison, all of Wis., assignors to Rayovac Corporation, Madison, Wis.

Continuation-in-part of Ser. No. 275,019, Jul. 19, 1994. This application Sep. 11, 1995, Ser. No. 526,762
Int. Cl.[6] H01M *2/16*
U.S. Cl. 429—166 **18 Claims**

1. A Heavy Duty LeClanche electrochemical cell, comprising:

(a) a zinc anode;

(b) a manganese dioxide cathode;



(c) an ionically permeable separator interposed between the anode and the cathode, the separator comprising a Kraft paper substrate and a coating on the substrate, the coating being selected for an ability to inhibit corrosion of the zinc anode, the coating comprising an organic inhibitor, an inorganic inhibitor, a binding agent, and a starch;

(d) an electrolyte comprising zinc chloride as a primary component, the electrolyte at least partially wetting the anode, the cathode, and the separator; and

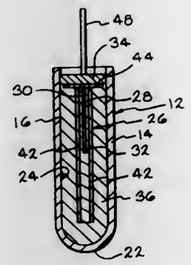
(e) a current collector electrically connected to the cathode.

5,604,055

OXIDIZED ALKALI METAL-HALOGEN CELL CASE

W. Richard Brown, Clarence Center; Sally A. Smesko, North Tonawanda, and Esther S. Takeuchi, East Amherst, all of N.Y., assignors to Wilson Greatbatch Ltd., Clarence, N.Y.

Filed Feb. 16, 1996, Ser. No. 602,279
Int. Cl.[6] H01M *2/02*
U.S. Cl. 429—176 **9 Claims**



1. An alkali metal-halogen electrochemical cell comprising: a casing of an electrically conductive material; an alkali metal anode positioned within the casing; an anode conductor means operatively connected to the anode and extending through the casing wherein a sealing means provides for sealing the anode conductor means from the remainder of the cell; and cathode means comprising halogen-containing material within the casing and in operative contact with an exposed surface of the anode and with a major portion of an inner surface of the casing in a manner such that the casing serves as a cathode current collector, the improvement comprising:

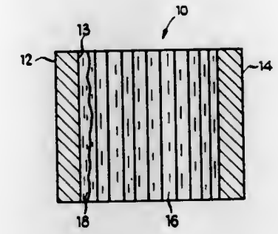
the electrically conductive casing having at least the inner surface comprised of a layer of an oxide characterized as formed by subjecting the casing to oxidation at an elevated temperature in an oxygen-containing environment.

5,604,056

ELECTROLYTIC CELL AND PROCESS FOR TREATING AN ALKALI METAL ELECTRODE

Denis G. Fauteux, 359 Arlington St., Acton, Mass. 01720; Martin Van Buren, 1 Jonathan La., Chelmsford, Mass. 01824, and Jie Shi, 385 Mass Ave. #49, Arlington, Mass. 02174

Filed May 9, 1995, Ser. No. 438,242
Int. Cl.[6] H01M *4/62;4/60*
U.S. Cl. 429—218 **21 Claims**



1. An electrolytic cell comprising:

a first electrode constructed with an alkali metal ion source, a second electrode and an electrolyte, wherein the first electrode includes a surface adjacent the electrolyte; and

a surfactant applied to at least a portion of the surface of the first electrode so as to result in a predominantly surfactant interface between the surface of the first electrode and the electrolyte, wherein the surfactant interface is: ionically conductive relative to the particular ions associated with the alkali metal ion source of the first electrode; non-ionic; and is inert when in contact with the alkali metal ion source of the first electrode.

5,604,057

SECONDARY CELL HAVING A LITHIUM INTERCOLATING MANGANESE OXIDE

Gholam-Abbas Nazri, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 27, 1995, Ser. No. 562,862
Int. Cl.[6] H01M *2/02*
U.S. Cl. 429—224 **6 Claims**



1. In a secondary lithium-ion cell comprising an anode, a cathode and a non-aqueous, lithium-ion conducting electrolyte between said anode and cathode, the improvement wherein said cathode comprises submicron-size, amorphous, microporous, lithium-intercalateable, quatravalent, manganese oxide particles supported on an electrical conductor, said particles having an internal surface area greater than about 100 m^2/g.

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5,604,058

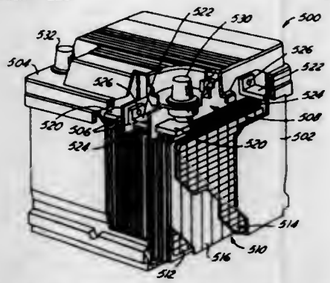
BATTERY GRIDS, METHOD AND APPARATUS

John O. Wirtz, Port Huron, Mich., assignor to Wirtz Manufacturing Co., Inc., Port Huron, Mich.

Division of Ser. No. 430,224, Apr. 28, 1995. This application Nov. 16, 1995, Ser. No. 558,784

Int. Cl.[6] H01M *4/73*

U.S. Cl. 429—225 **35 Claims**



20. A lead-acid battery comprising, a casing, a plurality of separate cells within said casing, each cell comprising a book of positive plates and negative plates, insulating separators disposed between adjacent plates of different polarity, an active paste applied to said plates, positive connectors joining each of said positive plates together and being connected to a positive battery terminal, and negative connectors joining each of said negative plates together and being connected to a negative battery terminal, said positive plates comprising a positive grid continuous cast of molten lead as part of a web and having a substantially uniform thickness and a plurality of interconnected wires with interstices between them, and the grid being cold worked to reduce the thickness of the grid as cast by at least 3:1 to provide a continuous cast positive grid having substantially increased corrosion resistance and increased ultimate tensile strength after full age hardening.

5,604,059

MASK STRUCTURE HAVING PHASE SHIFTING PATTERN SUITABLE FOR FORMING FINE PATTERN ON PHOTOSENSITIVE FILM AND METHOD OF MANUFACTURING SOLID-STATE DEVICES USING SUCH MASK STRUCTURE

Ryo Imura, Tokorozawa; Yoshinori Hoshina, Fuchu; Kengo Asai; Mitsutaka Hikita, both of Hachioji; Atsushi Isobe, Kodaira; Ryo Suzuki, Hachioji; Kohji Oda, Yokohama, and Kazuyuki Sakiyama, Chigasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

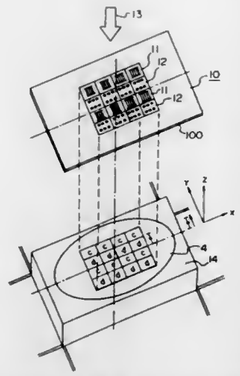
Continuation of Ser. No. 685,845, Apr. 16, 1991, abandoned. This application Aug. 15, 1994, Ser. No. 290,603

Claims priority, application Japan, Apr. 27, 1990, 2-109997

Int. Cl.[6] G03F *7/12;7/20*

U.S. Cl. 430—5 **13 Claims**

1. A method of manufacturing a device comprising the steps of:
preparing a preliminary pattern corresponding to said device which includes a combination of patterns transparent to exposure light and a background area opaque to the exposure light;
dividing at least one of said patterns into first and second area portions;
forming a first device pattern which includes a plurality of transparent pattern segments, wherein adjacent transparent pattern segments are separated by opaque material, at least one of said transparent pattern segments in said first device pattern is geometrically identical to the first area portion and another transparent pattern segment is geometrically identical to a first pattern not subjected to division;
forming a second device pattern which includes a plurality of transparent pattern segments, wherein adjacent transparent pattern segments are separated by opaque material, at least



one of said transparent pattern segments in said second device pattern is geometrically identical to the second area portion and another transparent pattern segment is geometrically identical to a second pattern not subjected to division;
providing a phase shifter layer for causing a phase shift in said exposure light to one of said adjacent transparent pattern segments in each of said first and second device patterns;
preparing a substrate in which to form said device;
exposing said substrate to exposure light through one of said first and second device patterns; and
exposing said substrate to exposure light through an other of said first and second device patterns.

5,604,060

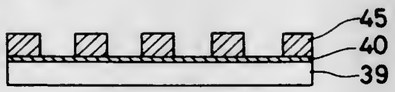
HALFTONE PHASE SHIFT PHOTOMASK COMPRISING A SINGLE LAYER OF HALFTONE LIGHT BLOCKING AND PHASE SHIFTING

Hiroyuki Miyashita; Sachiko Ishikita, and Koichi Mikami, all of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 113,765, Aug. 31, 1993, abandoned. This application Dec. 16, 1994, Ser. No. 357,350

Int. Cl.[6] G03F *9/00*

U.S. Cl. 430—5 **9 Claims**



1. A halftone phase shift photomask comprising:
a transparent substrate having a substantially flat surface, and
a single halftone light-blocking and phase shift layer, produced by varying the content of at least one of oxygen, nitrogen and carbon with respect to chromium, and having a homogeneous composition, said single halftone light-blocking and phase shift layer being formed on said surface of said transparent substrate according to a predetermined pattern, said single halftone light-blocking and phase shift layer being the only phase shift layer of said halftone phase shift photomask,
said single halftone light-blocking and phase shift layer having a film thickness d that is virtually equal to one of a value defined by

$$d=l/\{2(n-1)\}$$

where l is the wavelength at which the halftone phase shift photomask is used, and n is the index of refraction of the single layer, and an odd-numbered multiple of said value, and wherein

said single halftone light-blocking and phase shift layer has a transmittance lying substantially in the range of 5 to 30%.

5,604,061

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER, PROCESS CARTRIDGE INCLUDING SAME AND ELECTROPHOTOGRAPHIC APPARATUS

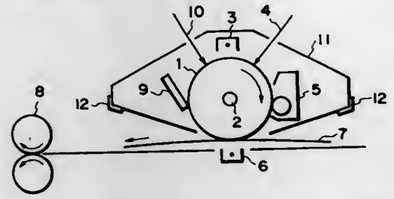
Kunihiko Sekido; Hajime Miyazaki; Yoshio Kashizaki, all of Yokohama, and Akihiro Senoo, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 22, 1995, Ser. No. 577,817

Claims priority, application Japan, Dec. 28, 1994, 6-327932

Int. Cl.[6] G03G *5/14;15/22*

U.S. Cl. 430—58 **8 Claims**



1. An electrophotographic photosensitive member, comprising: an electroconductive support, an intermediate layer disposed on the electroconductive support and a photosensitive layer disposed on the intermediate layer, wherein
the intermediate layer comprises a copolymer having at least two species of a recurring unit having an amide acid structure or an amide acid ester structure.

3. A member according to claim 1, wherein said photosensitive layer comprises a charge generation layer and a charge transport layer.

5,604,062

ORGANIC PHOTOCONDUCTOR WITH CROSSLINKED POLYPHENYLENE SULFIDE SUPPORT FOR ELECTROPHOTOGRAPHY

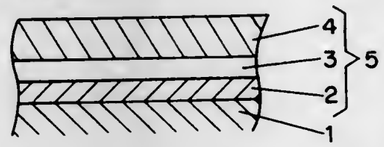
Tatsuro Okazaki, Nagano, and Noriaki Kawata, Saitama, both of Japan, assignors to Fuji Electric Co., Ltd., Tokyo, Japan

Filed Mar. 8, 1996, Ser. No. 613,073

Claims priority, application Japan, Mar. 10, 1995, 7-050671

Int. Cl.[6] G03G *5/10*

U.S. Cl. 430—58 **11 Claims**



1. An organic photoconductor for electrophotography comprising:
a cylindrical conductive substrate comprising a crosslinked polyphenylene sulfide resin, electrically conductive powder and inorganic fiber and having a thermal expansion coefficient A, and
an organic photoconductive layer coated on the conductive substrate and having a thermal expansion coefficient B,
wherein ½≧A/B≧¼.

6. The organic photoconductor of claim 1, wherein the photoconductive layer comprises an undercoating layer, a charge generation layer and a charge transport layer.

5,604,063

COMPOSITION FOR CHARGE TRANSPORT LAYER AND ELECTROPHOTOGRAPHIC MEMBER USING SAME

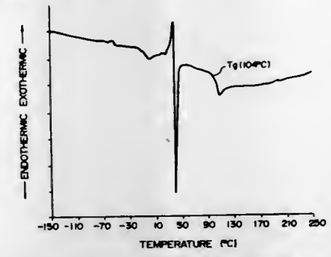
Kelichi Endo; Seiji Miyaoka; Kouji Ohkoshi; Susumu Kaneko; Yasuo Katsuya; Akira Kageyama, all of Hitachi, and Yoshii Morishita, Tochigi-ken, all of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Nov. 16, 1992, Ser. No. 977,182

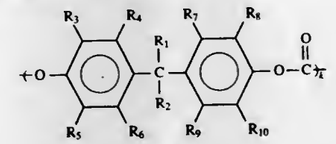
Claims priority, application Japan, Nov. 14, 1991, 3-297540; Jul. 6, 1992, 4-178194

Int. Cl.[6] G03G *15/02*

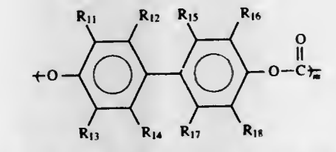
U.S. Cl. 430—59 **8 Claims**



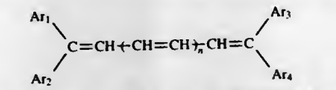
1. A composition for a charge transport layer in an electrophotographic member, said composition comprising
(a) at least one polycarbonate resin having recurring structural units represented by the formulae:



and

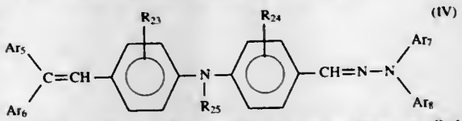


wherein R_1 and R_2 each represents a hydrogen atom, an alkyl group or an aryl group; R_3, R_4, R_5, R_6, R_7, R_8, R_9, R_{10}, R_{11}, R_{12}, R_{13}, R_{14}, R_{15}, R_{16}, R_{17} and R_{18} each represents a hydrogen atom, a halogen atom, an alkyl group or an aryl group; and k and m are positive integers and selected so that k/m is in the range of 1 to 10;
(b) a charge transporting substance selected from the group consisting of a styryl compound represented by the formula:



(II)

wherein Ar_1, Ar_2, Ar_3 and Ar_4 each represents a substituted or unsubstituted aryl group, and n represents 0 or 1,
a hydrazone compound represented by the formula:



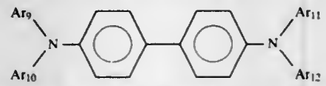
(IV)

wherein R_{23} and R_{24} each represents a hydrogen atom, an alkyl group, an alkoxy group or a halogen atom; R_{25} represents a

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hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted aralkyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted condensed polycyclic group or a substituted or unsubstituted heterocyclic group; Ar_5 and Ar_6 each represents a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted condensed polycyclic group or a substituted or unsubstituted heterocyclic group; Ar_7 and Ar_8 each represents a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted condensed polycyclic group or a substituted or unsubstituted heterocyclic group, with a proviso that Ar_5 and Ar_6 cannot be simultaneously hydrogen atoms and Ar_5 and Ar_6 and/or Ar_7 and Ar_8 may form a ring or rings together, and

a benzidine compound represented by the formula:



(V)

wherein Ar_9, Ar_{10}, Ar_{11} and Ar_{12} each represents a substituted or unsubstituted aryl group, substituents in the substituted groups in Formulae (II), (IV) and (V) being selected from the group consisting of halogen atoms, alkyl groups containing 1 to 4 carbon atoms, alkoxy groups containing 1 to 4 carbon atoms, aryl groups selected from the group consisting of phenyl, biphenyl, naphthyl and terphenyl, fluoroalkyl groups containing 1 to 3 carbon atoms and fluoroalkoxy groups containing 1, 2 and 4 carbon atoms; and

(c) a solvent.

5,604,064

CHARGE-TRANSPORTING POLYMER AND ORGANIC ELECTRONIC DEVICE USING THE SAME

Katsumi Nukada; Akira Imai; Masahiro Iwasaki, and Ryosaku Igarashi, all of Minami Ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

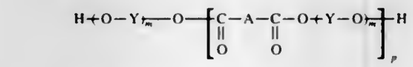
Continuation-in-part of Ser. No. 409,517, Mar. 24, 1995, abandoned. This application Jun. 5, 1995, Ser. No. 461,432

Claims priority, application Japan, Jun. 10, 1994, 6-151776; Aug. 23, 1994, 6-219599; Jan. 20, 1995, 7-24484; May 19, 1995, 7-144240

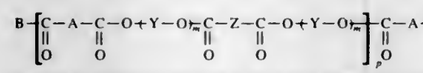
Int. Cl.[6] G03G *5/087*; H01L *31/08*

U.S. Cl. 430—59 **7 Claims**

1. A charge-transporting polymer represented by formula (I-1) or (I-2)

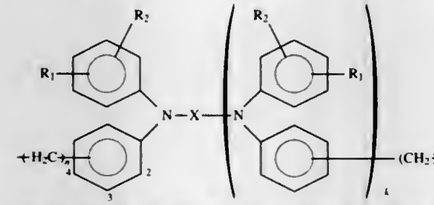


(I-1)



(I-2)

wherein Y represents a divalent hydrocarbon group; Z represents a divalent hydrocarbon group; A represents a group represented by formula (II)



(II)

(wherein R_1 and R_2 each represents a hydrogen atom, an alkyl group, an alkoxy group, a substituted or unsubstituted aryl group, a substituted amino group, or a halogen atom, X represents a substituted or unsubstituted divalent aryl group, n represents an integer of 1 to 5, and k is 0 or 1); B represents a group represented by —O—(Y—O)$_m$—H or —O—(Y—O)$_m$—CO—Z—CO—OR' (wherein R' represents a hydrogen atom, an alkyl group, a substituted or unsubstituted aryl group, or a substituted or unsubstituted aralkyl group); m represents an integer of 1 to 5; and p represents an integer of 5 to 5,000, and wherein the plurality of each of Y, Z, A, B, R', X, R_1, R_2, m and n in formula (I-1) or (I-2) may be the same as or different from each other.

5,604,065

ELECTROPHOTOGRAPHIC PHOTOCONDUCTOR AND TRIPHENYLAMINE COMPOUND FOR USE THEREIN

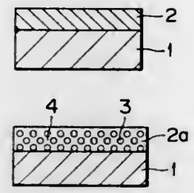
Tomoyuki Shimada, Shizuoka-ken; Masaomi Sasaki, Susono; Tamotsu Aruga, Mishima; Masafumi Ohta, Susono; Mitsutoshi Anzai, and Akihiro Imai, both of Kawasaki, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, and Hodogaya Chemical Co., Ltd., Kawasaki, both of Japan

Filed Sep. 14, 1995, Ser. No. 528,093

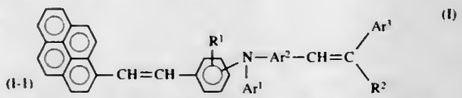
Claims priority, application Japan, Sep. 14, 1994, 6-247261; Sep. 14, 1994, 6-247262; Sep. 11, 1995, 7-258173; Sep. 11, 1995, 7-258174

Int. Cl.[6] G03G *5/06*; *5/09*

U.S. Cl. 430—83 **11 Claims**



1. An electrophotographic photoconductor comprising an electroconductive substrate, and a photoconductive layer formed thereon comprising at least one tertiary amine compound of formula (I) as an effective component:



(I)

wherein Ar^1 and Ar^3 each is an aryl group which may have a substituent; Ar^2 is a bivalent group of a carbocyclic aromatic compound or a bivalent group of a heterocyclic compound; R^1 is a hydrogen atom, an alkyl group which may have a substituent, or an alkoxyl group which may have a substituent; and R^2 is a hydrogen atom, an alkyl group which may have a substituent, or an aryl group which may have a substituent, and a sensitizer in a binder.

5,604,066

TONER COMPOSITIONS WITH ORGANOMETALLIC POLYMERS

Daniel A. Foucher, Toronto; Guerino G. Sacripante, Oakville; Richard P. N. Veregin, Mississauga, and Maria N. V. McDougall, Burlington, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 29, 1996, Ser. No. 609,258

Int. Cl.[6] G03G *9/087*

U.S. Cl. 430—106 **28 Claims**

1. A toner composition comprised of a pigment, and a metallocene polymer, wherein said polymer is a metallocene containing polyester, a metallocene containing polyimide, a metallocene containing imide, a metallocene containing polyimide imine, a metallocene containing polyamic acid, a metallocene containing polystyrene, a metallocene containing polystyrene-acrylate, a metallocene containing polystyrene-methacrylate, or a metallocene containing a polystyrene butadiene.

15. A toner composition in accordance with claim 1 wherein the pigment is carbon black.

5,604,067

TONER FOR ELECTROSTATIC LATENT IMAGE DEVELOPING AND MANUFACTURING METHOD OF SAME

Yasuki Nagai, Amagasaki; Hideaki Ueda, Kishiwada; Ichiro Demizu, Toyonaka; Mitsutoshi Nakamura, Ibaraki, and Yukio Tanigami, Amagasaki, all of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed May 26, 1995, Ser. No. 451,861

Claims priority, application Japan, May 27, 1994, 6-115325; Aug. 9, 1994, 6-186947

Int. Cl.[6] G03G *9/087*

U.S. Cl. 430—106.6 **46 Claims**

1. A resin-formed toner for electrostatic latent image developing, which is prepared by a wet process and has an electroconductivity of 1 to 100 μS/cm, said electroconductivity being measured for a solution prepared by dispersing the toner of 10 parts by weight into a deionized water of 100 parts by weight.

5,604,068

ELECTRONOGRAPH DEVELOPING AGENT AND METHOD OF MANUFACTURING THE SAME

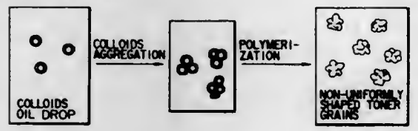
Etsuko Miyamoto, Yamato; Hiroshi Murata, and Eiichi Kaga, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 24, 1993, Ser. No. 111,062

Claims priority, application Japan, Aug. 24, 1992, 4-224128; Feb. 23, 1993, 5-056406; Mar. 25, 1993, 5-067106; Aug. 24, 1993, 5-229641

Int. Cl.[6] G03G *9/00*; *5/00*

U.S. Cl. 430—109 **7 Claims**



1. A developing agent comprising:

a non-uniformly-shaped polymerized particle obtained by polymerizing a plurality of aggregated colloidal oil drops whereby said drops are chemically bonded together, wherein each of said oil drops comprises:

a developing agent core comprising a polymerized spherical resin and a coloring agent adhered to said resin by electrostatic force, and

a mixture of monomers swelling said developing agent core.

5,604,069

TONERS AND DEVELOPERS CONTAINING AMMONIUM TRIHALOZINCATES AS CHARGE-CONTROL AGENTS

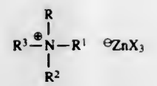
John C. Wilson, Rochester, and Dinesh Tyagi, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 7, 1994, Ser. No. 350,772

Int. Cl.[6] G03G *9/08*

U.S. Cl. 430—110 **6 Claims**

1. A dry, particulate electrostatographic toner composition comprising a polymeric binder and a charge-control agent comprising an ammonium trihalozincate salt having the structure:



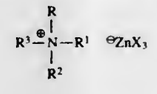
wherein

R, R^1, R^2 and R^3 represent hydrogen; an unsubstituted alkyl group having from 1 to 24 carbon atoms; a substituted alkyl group having from 1 to 24 carbon atoms substituted with one or more hydroxy-, carboxy-, alkoxy-, carboalkoxy-, acyloxy-, nitro-, cyano-, keto- or halo-groups; a cycloalkyl group having from 3 to 7 carbon atoms; an unsubstituted aryl group having from 6 to 14 carbon atoms; a substituted aryl group having from 6 to 14 carbon atoms substituted with one or more hydroxy-, carboxy-, alkoxy-, carboalkoxy-, acyloxy-, amino-, nitro-, cyano-, keto- or halo-groups; an alkaryl group having from 1 to 20 carbon atoms in the alkyl group and 6 to 14 carbon atoms in the aryl group; an aralkyl group having from 1 to 4 carbon atoms in the alkyl group and 6 to 14 carbon atoms in the aryl group wherein the aryl group is unsubstuted or substituted with one or more alkyl-, hydroxy-, carboxy-, alkoxy-, carboalkoxy-, acyloxy-, amino-, nitro-, cyano-, keto- or halo-groups; or wherein any two or more of R, R^1, R^2 or R^3 are interconnected to one another to form a 5 to 14 membered saturated or unsaturated ring system, and

X represent selected from fluorine, chlorine, bromine or iodine.

5. An electrostatographic developer comprising:

a. a dry, particulate electrostatographic toner composition comprising a polymeric binder and a charge-control agent comprising an ammonium trihalozincate salt having the structure:



wherein

R, R^1, R^2 and R^3 represent an unsubstituted alkyl group having from 1 to 24 carbon atoms; a substituted alkyl group having from 1 to 24 carbon atoms substituted with one or more hydroxy-, carboxy-, alkoxy-, carboalkoxy-, acyloxy-, nitro-, cyano-, ketoor halo-groups; a cycloalkyl group having from 3 to 7 carbon atoms; an unsubstituted aryl group having from 6 to 14 carbon atoms; a substituted aryl group having from 6 to 14 carbon atoms substituted with one or more hydroxy-, carboxy-, alkoxy-, carboalkoxy-, acyloxy-, amino-, nitro-, cyano-, keto- or halo-groups; an alkaryl group having from 1 to 20 carbon atoms in the alkyl group and 6 to 14 carbon atoms in the aryl group; an aralkyl group having from 1 to 4 carbon atoms in the alkyl group and 6 to 14 carbon atoms in the aryl group wherein the aryl group is unsubstituted or substituted with one or more alkyl-, hydroxy-, carboxy-alkoxy-, carboalkoxy-, acyloxy-, amino-, nitro-, cyano-, keto- or halo-groups; or wherein any two or more of R, R^1, R^2 or R^3 are interconnected to one another to form a 5 to 14 membered saturated or unsaturated ring system, and

X represents fluorine, chlorine, bromine or iodine; and

b. carrier particles.

5,604,070

LIQUID TONERS WITH HYDROCARBON SOLVENTS

Prabhakara S. Rao, Maplewood, and Valdis Mikelsons, Mendota Heights, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 17, 1995, Ser. No. 390,692

Int. Cl.[6] G03G *9/087*; *9/097*; *9/13*; *9/135*

U.S. Cl. 430—110 **21 Claims**

1. A toner particle comprising a pigment, a resin, and a charge director wherein the resin comprises

A) a polymer formed from ethylenically unsaturated monomers,

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B) macromeric moieties grafted to the polymer wherein the macromeric moieties render the resin dispersible in hydrocarbon solvents,

C) surface-release promoting moieties wherein the surface-release promoting moieties comprise silicon atoms or fluorine atoms, the surface-release promoting moieties are grafted to the macromeric moieties and comprise less than 10% by weight of the macromeric moiety, and

D) charge directing chelating moieties, wherein the charge directing chelating moieties are either grafted to the polymer formed from ethylenically unsaturated monomers or to the macromeric moieties.

20. A composition comprising a dispersion of the toner particles of claim 1 in a carrier liquid.

5,604,071

TONER FOR DEVELOPING ELECTROSTATIC IMAGE

Kenji Okado, Yokohama; Ryoichi Fujita, and Tsuyoshi Takiguchi, both of Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 913,018, Jul. 14, 1992, abandoned. This application Feb. 23, 1995, Ser. No. 393,041

Claims priority, application Japan, Jul. 16, 1991, 3-199903; Jul. 30, 1991, 3-211340; Jul. 31, 1991, 3-213053; Jun. 26, 1992, 4-191415

Int. Cl.[6] G03G *9/08*

U.S. Cl. 430—110 **22 Claims**

1. A toner for developing an electrostatic image, comprising colorant-containing resin particles and a hydrophobic fine titanium oxide powder, said hydrophobic fine titanium oxide powder having an average particle diameter of from 0.001 μm to 0.2 μm, a hydrophobicity of from 20% to 80% and a light transmittance of not less than 40% to light with a wavelength of 400 nm when said hydrophobic fine titanium oxide powder is dispersed in an ethanol solvent in a concentration of 1% by weight,

wherein said colorant-containing resin particles contain a binder resin, a colorant and a negative charge control agent, and said hydrophobic fine titanium oxide powder having been obtained by dispersing hydrophilic fine titanium oxide powder in an aqueous medium comprised mainly of water to provide primary particles and then adding a coupling agent to said aqueous medium to make said dispersed particles hydrophobic in said aqueous medium and prevent coalescence.

5,604,072

TONER FOR DEVELOPING ELECTROSTATIC IMAGES, IMAGE FORMING METHOD AND PROCESS CARTRIDGE

Makoto Unno, Tokyo; Takaaki Kotaki, Yokohama; Yushi Mikuriya, and Tadashi Dojyo, both of Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 19, 1995, Ser. No. 530,057

Claims priority, application Japan, Sep. 21, 1994, 6-251574

Int. Cl.[6] G03G *9/107*

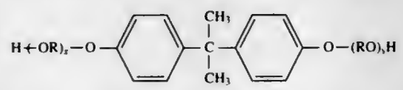
U.S. Cl. 430—110 **41 Claims**

1. A toner for developing electrostatic images, comprising:

(i) a binder resin;

(ii) a colorant; and

(iii) a compound made by a reaction of a monohydroxylic compound having a long-chain alkyl group having an alkylene group with 40 or more carbon atoms and a hydroxyl group with a carboxylic acid having a molecular weight of 1,000 or less, said carboxylic acid being selected from the group consisting of formic acid, acetic acid, propionic acid, lactic acid, isolactic acid, valeric acid, pivalic acid, lauric acid, myristic acid, palmitic acid, stearic acid, acrylic acid, propionic acid, methacrylic acid, crotonic acid, oleic acid, furoic acid, nicotinic acid, isonicotinic acid, fumaric acid, maleic acid, citraconic acid, itaconic acid, succinic acid, adipic acid, sebacic acid, azelaic acid, benzoic acid, toluic acid, naphthoic acid, cinnamic acid, phthalic acid, terephthalic acid, trimellitic acid, pyromellitic acid, and acid anhydrides thereof, or a compound made by a reaction of a monocarboxylic compound having a long-chain alkyl group having an alkylene group with 40 or more carbon atoms and a carboxyl group with an alcohol having a molecular weight of 1,000 or less, said alcohol being selected from the group consisting of methyl alcohol, ethyl alcohol, propyl alcohol, isopropyl alcohol, butyl alcohol, isobutyl alcohol, sec-butyl alcohol, tert-butyl alcohol, n-amyl alcohol, isoamyl alcohol, hexyl alcohol, heptyl alcohol, octyl alcohol, capryl alcohol, allyl alcohol, crotyl alcohol, propargyl alcohol, cyclopentanol, cyclohexanol, benzyl alcohol, cinnamyl alcohol, furfuryl alcohol, ethylene glycol, propylene glycol, 1, 3-butanediol, 1,4-butanediol, 2,3-butanediol, diethylene glycol, dipropylene glycol, triethylene glycol, 1,5-pentanediol, 1,6-hexanediol, neopentyl glycol, pentaerythritol diallyl ether, trimethylene glycol, 2-ethyl-1, 3-hexanediol, hydrogenated bisphenol A and a bisphenol derivative represented by the formula:



wherein R is an ethylene group or a propylene group and x and y are each an integer of 1 or more, and total 2 to 10.

5,604,073

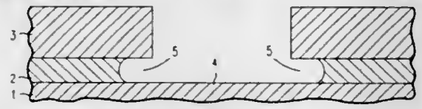
AZO DYES AS ADHESION PROMOTION ADDITIVE IN POLYDIMETHYLGLUTARIMIDE

Mohamad T. Krounbi; Alfred F. Renaldo, both of San Jose, and Douglas J. Werner, Fremont, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 180,588, Jan. 12, 1994, abandoned. This application May 30, 1995, Ser. No. 453,027

Int. Cl.[6] G03F *7/00*

U.S. Cl. 430—14 **7 Claims**



1. A bi-layer lift-off structure comprising:

a release layer disposed on a substrate, said release layer of a material comprising a solution of polydimethylglutarimide and a predetermined amount of an azo dye added to said polydimethylglutarimide, said azo dye promoting adhesion between said polydimethylglutarimide release layer and said substrate, and a top imaging layer of photoresist material disposed on said release layer.

5,604,074

METHOD OF DEVELOPMENT OF NONMAGNETIC ONE-COMPONENT TONER AND METHOD FOR FORMING FIXED IMAGES USING THE DEVELOPMENT

Shin-ichiro Yasuda, Osaka; Kuniyasu Kawabe; Koji Akiyama, both of Wakayama; Mitsuhiro Sasaki, Ichikawa, and Koji Kameyama, Wakayama-ken, all of Japan, assignors to KAO Corporation, Tokyo, Japan

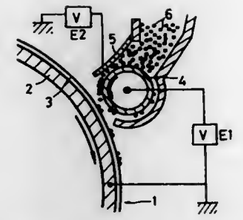
Continuation of Ser. No. 208,581, Mar. 11, 1994, abandoned. This application May 1, 1995, Ser. No. 432,931

Claims priority, application Japan, Mar. 15, 1993, 5-081434

Int. Cl.[6] G03G *13/06;9/093*

U.S. Cl. 430—120 **9 Claims**

1. A developing method using a developer device comprising a developer carrying sleeve arranged in contact with or near an electrostatic latent image forming member and a developer blade



arranged opposite to the developer carrying sleeve, the method comprising the steps of:

forming a layer of nonmagnetic one-component toner particles on said developer carrying sleeve;

regulating the thickness of said layer to form a uniform layer of said toner particles on said developer carrying sleeve with said developer blade at a nip pressure between said developer carrying sleeve and said developer blade of 0.1 to 3.0 gram-force/millimeter;

rotating said electrostatic latent image forming member and said developer carrying sleeve; and

applying the toner particles on said developer carrying sleeve onto an electrostatic latent image formed on said electrostatic latent image forming member to visualize the electrostatic latent image,

wherein the toner particles are encapsulated toner particles comprising a heat-fusible core material comprising at least a thermoplastic resin and a coloring agent, and a shell formed thereon so as to cover the surface of the core material, the glass transition temperature ascribed to the thermoplastic resin of the core material being 10° C. to 50° C., and wherein said toner particles have the following properties: (a) the minimum load required for 5% compression of the particle size is 5 to 80 milligram-force; and (b) the minimum load required for 10% compression of the particle size is 10 to 160 milligram-force,

wherein said properties of one toner particle are measured by using a micro compression testing machine comprising a flat upper pressurizing element made of diamond baving a diameter of 50 μm and a flat lower pressurizing element made of SKS (Special Steel) at a temperature of 25° C. and a humidity of 50%, and the load is applied at a speed of 9.1 milligram-force/second.

5,604,075

LIQUID DEVELOPER COMPOSITIONS AND PROCESSES

James R. Larson; John F. Knapp, both of Fairport, and Frank J. Bonsignore, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 6, 1995, Ser. No. 554,021

Int. Cl.[6] G03G *9/12*

U.S. Cl. 430—137 **31 Claims**

1. A process for the preparation of liquid developers with reduced fines consisting essentially of heating a liquid developer comprised of thermoplastic resin, pigment, charge adjuvant, liquid hydrocarbon, and optional charge director, wherein said heating is accomplished at about 5° C. below the melting point of said thermoplastic resin, which heating enables said fines comprised of said developer components, and of a size diameter of from about 0.1 to about 0.4 micron to be reduced.

5,604,076

TONER COMPOSITIONS AND PROCESSES THEREOF

Raj D. Patel; Guerino G. Sacripante, both of Oakville; Grazyna E. Kmiecik-Lawrynowicz, Burlington; Michael A. Hopper, Toronto, and Francisco E. Torres, Mississauga, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 1, 1996, Ser. No. 595,143

Int. Cl.[6] G03G *9/087;9/097*

U.S. Cl. 430—137 **18 Claims**

1. A process for the preparation of toner compositions comprising:

(i) preparing a latex or emulsion resin comprised of a polyester core encapsulated within a styrene based resin shell by heating said polyester emulsion containing an anionic surfactant with a mixture of monomers of styrene and acrylic acid, and with potassium persulfate, ammonium persulfate, sodium bisulfite, or mixtures thereof;

(ii) adding a pigment dispersion, which dispersion is comprised of a pigment, a cationic surfactant, and optionally a charge control agent, followed by the sharing of the resulting blend;

(iii) heating the above sheared blend below about the glass transition temperature (Tg) of the resin to form electrostatically bound toner size aggregates with a narrow particle size distribution; and

(iv) heating said electrostatically bound aggregates above about the Tg of the resin.

5,604,077

POSITIVE-WORKING PHOTORESIST COMPOSITION COMPRISING A NOVOLAC RESIN MADE IN BUTYROLACTONE AS A SOLVENT

Shinichi Kono; Hayato Ohno; Hidekatsu Kohara, and Toshimasa Nakayama, all of Kanagawa-ken, Japan, assignors to Tokyo Ohka Kogyo Co., Ltd., Japan

Filed Feb. 21, 1996, Ser. No. 603,601

Claims priority, application Japan, Feb. 24, 1995, 7-037308

Int. Cl.[6] G03F *7/023*

U.S. Cl. 430—192 **5 Claims**

1. A positive-working photoresist composition which comprises, as a uniform blend:

(a) an alkali-soluble novolac resin having a weight-average molecular weight in the range from 2,000 to 15,000; and

(b) from 10 to 40 parts by weight of a quinone diazide group-containing compound per 100 parts by weight of the alkali-soluble novolac resin,

the alkali-soluble novolac resin being a product by a condensation reaction between a phenolic compound and an aldehyde compound with an acid as the catalyst undertaken in a solvent system comprising γ-butyrolactone or a combination of γ-butyrolactone and a propyleneglycol monoalkyl ether.

5,604,078

RECEIVING ELEMENT FOR USE IN THERMAL DYE TRANSFER

Bruce C. Campbell, Rochester, and Daniel J. Harrison, Pittsford, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 7, 1995, Ser. No. 568,913

Int. Cl.[6] B41M *5/035*

U.S. Cl. 430—201 **17 Claims**

14. A thermal dye transfer assemblage comprising:

a) a dye-donor element comprising a support having thereon a dye layer comprising a dye dispersed in a binder, and

b) a dye-receiving element comprising a support having thereon a dye image-receiving layer, said dye-receiving element being in a superposed relationship with said dye-donor element so that said dye layer is in contact with said dye image-receiving layer,

wherein said dye-receiving element comprises a support having thereon in order, a composite film laminated thereto, and a dye

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image-receiving layer, said composite film comprising a microvoided thermoplastic core layer and at least one substantially void-free thermoplastic surface layer having a thickness of about 3 to about 6 μm, and wherein said support comprises a latex-impregnated paper containing about 18 to 40 parts impregnated latex per 100 parts fiber by weight.

5,604,079

PHOTOGRAPHIC SYSTEM

Michael P. Filosa, Medfield; Edward D. Kingsley, Acton, and Kenneth C. Waterman, Concord, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed May 14, 1996, Ser. No. 648,203

Int. Cl.[6] G03C *8/36;8/32;5/305;8/18*

U.S. Cl. 430—218 **21 Claims**

1. A diffusion transfer photographic film unit comprising:

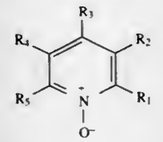
a photosensitive element comprising a support carrying at least one silver halide emulsion layer;

a second sheet-like element which is superposed or superposable on said photosensitive element;

an image-receiving layer positioned in one of said photosensitive or second sheet-like elements;

means providing an aqueous alkaline processing composition for initiating development of said silver halide emulsion after photoexposure to form an image on said image-receiving layer; and

an acylpyridine-N-oxide compound represented by the formula (1):



wherein:

R_1, R_2, R_3, R_4 and R_5 are each independently:

(a) hydrogen;

(b) linear or branched alkyl (C_nH_{2n+1}) wherein: n is an integer from 1 to 22;

(c) alkyl substituted with a photographically-acceptable substituent;

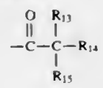
(d) aryl;

(e) aryl substituted with a photographically-acceptable substituent;

(f) R_1 and R_2, R_2 and R_3, R_3 and R_4 or R_4 and R_5, taken together, can represent a saturated or an unsaturated, 5- or 6-member carbocyclic or heterocyclic ring wherein the heteroatom is nitrogen, sulfur, or oxygen; or

(g) halogen;

provided that at least one of R_1, R_2, R_3, R_4 and R_5 is an acyl group, represented by the formula below



wherein:

R_{13}, R_{14} and R_{15} are each independently:

hydrogen;

linear or branched alkyl (C_nH_{2n+1});

alkyl substituted with a photographically-acceptable substituent;

alkoxy having from 1 to 22 carbon atoms; or

halogen;

provided that at least one of R_{13}, R_{14} or R_{15} is hydrogen.

5,604,080

ORGANIC ACID SALT OF MELAMINE, AND THERMOSETTING OR PHOTOCURABLE THERMOSETTING COATING COMPOSITION USING THE SAME

Nobuyuki Suzuki, Tsurugashima; Kazunobu Fukushima, Saitama-ken; Kyo Ichikawa, Niiza; Teruo Saito, Iwatsuki, and Hitoshi Inagaki, Saitama-ken, all of Japan, assignors to Taiyo Ink Manufacturing Co., Ltd., Tokyo, Japan

Filed Feb. 27, 1995, Ser. No. 394,812

Claims priority, application Japan, Jan. 13, 1995, 7-019903

Int. Cl.[6] G03C *1/725;* **C08F** *2/46*

U.S. Cl. 430—280.1 **16 Claims**

1. A photocurable and thermosetting coating composition, comprising:

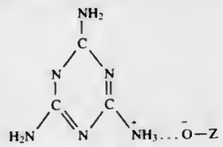
(a) a photocurable resin having in combination at least two ethylenically unsaturated bonds and a carboxyl group or an aprotic ammonium-containing group in the molecular unit thereof,

(b) a photopolymerization initiator,

(c) a diluent,

(d) an epoxy compound containing at least two epoxy groups in the molecular unit thereof, and

(e) an organic acid salt of melamine having a decomposition temperature in the range of from about 120° C. about 150° C. and represented by the formula (1):



wherein Z represents

wherein R^1 represents a hydrogen atom or an alkyl group, alkylene group, alicyclic hydrocarbon, or aromatic hydrocarbon severally having from 1 to 18 carbon atoms, or any of said groups or hydrocarbons whose hydrogen atom is substituted by carboxyl group, hydroxyl group, or a halogen atom, R^2 represents a hydrogen atom or an alkyl group or an alkylene group severally having from 1 to 9 carbon atoms, or any of said groups whose hydrogen atom is substituted by acryloyl group or methacryloyl group, R^3 represents an alkyl group or alkylene group severally having from 1 to 9 carbon atoms, or any of said groups whose hydrogen atom is substituted by acryloyl group or methacryloyl group, and R^4 represents an alkyl group or aromatic hydrocarbon severally having from 1 to 18 carbon atoms, or any of said group or hydrocarbon whose hydrogen atom is substituted by acryloyl group or methacryloyl group.

5,604,081

METHOD FOR PRODUCING A SURFACE STRUCTURE WITH RELIEFS

Lothar Stoll, Munich, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

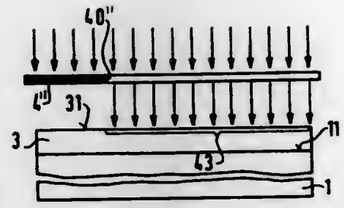
Filed Jul. 28, 1993, Ser. No. 98,101

Claims priority, application Germany, Aug. 14, 1992, 42 27 044.8

Int. Cl.[6] G03C *5/00*

U.S. Cl. 430—322 **7 Claims**

1. A method for producing a surface relief structure on a substrate, said relief structure being selected from a group of structures on the substrate including a waveguide on the substrate,



optical layer thickness tapers on the substrate, a geodetic lens on the substrate, an integrated microlens on the substrate, a Fresnel lens, and a relief surface structure for micromechanics, said method comprising the steps of providing a substrate having a photoresist layer of a uniform thickness, exposing a first field of the photoresist layer with a uniform first exposure dose to form a first exposed field and a first unexposed area, then exposing a second field, which includes the first exposed field and a portion of the first unexposed area, with a uniform second exposure dose to form a second exposed field and a second unexposed area, developing the photoresist to form a developed photoresist layer having at least two areas of different thicknesses to form a relief surface structure corresponding to the surface relief structure to be produced, then forming the surface relief structure by etching with a reactive ion beam etching process to remove the photoresist layer and any surface of the substrate free of the photoresist layer and becoming free of said photoresist layer so that the surface of the substrate has a relief structure in the surface with different depths due to the different thicknesses of the developed photoresist layer.

5,604,082

METHOD FOR PROCESSING AN EXPOSED PHOTOGRAPHIC SILVER HALIDE MATERIAL

Freddy Henderickx, Olen; Hieronymus Andriessen, Beerse, and Ann Verbeeck, Begijnendijk, all of Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

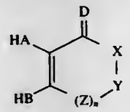
Filed Jan. 31, 1996, Ser. No. 594,722

Claims priority, application European Pat. Off., Feb. 21, 1995, 95200418

Int. Cl.[6] G03C *5/29*

U.S. Cl. 430—481 **15 Claims**

1. Method of processing an exposed silver halide photographic material comprising at least one coated hydrophilic silver halide emulsion layer comprising tabular grains rich in chloride, bounded by [100] or [111] major faces, characterized by the steps of developing, followed by fixing, rinsing and drying the said material, wherein developing proceeds in a developer comprising hydroquinone in an amount from 0 to 30 g per liter, an auxiliary developer, as silver halide complexing agents alkali metal sulphite salts in an amount from 1 to 50 g per liter, at least 1 g of a compound corresponding to the formula (I), a precursor thereof, a derivative thereof and/or a metal salt thereof



wherein

each of A, B and D independently represents an oxygen atom or NR^1;

X represents an oxygen atom, a sulphur atom, NR^2; CR^3R^4; C=O; C=NR^5 or C=S;

Y represents an oxygen atom, a sulphur atom, NR'^2; $CR'^3R'^4$; C=O; C=NR'^5 or C=S;

Z represents an oxygen atom, a sulphur atom, NR''^2; $CR''^3R''^4$; C=O; C=NR''^5 or C=S;

n equals 0, 1 or 2;

each of R^1 to R^5, R'^1 to R'^5, and R''^1 to R''^5, independently represents hydrogen, alkyl, aralkyl, hydroxyalkyl, carboxyalkyl; alkenyl, alkynyl, cycloalkyl, cycloalkenyl, aryl or heterocyclyl;

and wherein

R^3 and R^4, R'^3 and R'^4, R''^3 and R''^4, may further form together a ring;

and

wherein in the case that X=CR^3R^4 and Y=$CR'^3R'^4$, R^3 and R'^3 and/or R^4 and R'^4 may form a ring and wherein in the case that Y=$CR'^3R'^4$ and Z=$CR''^3R''^4$ with n=1 or 2, R'^3 and R''^3 and/or R'^4 and R''^4 may form a ring.

5,604,083

ANTISTATIC FILM BASES AND PHOTOGRAPHIC ELEMENTS COMPRISING SAID ANTISTATIC FILM BASES

Alberto Valsecchi, Vado Ligure; Giorgio Spazzapan, Savona; Renzo Torterolo, Cairo Montenotte, all of Italy, and Soonkun Kang, Lake Elmo, Mich., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 5, 1995, Ser. No. 568,732

Claims priority, application European Pat. Off., Jan. 12, 1995, 95100346

Int. Cl.[6] G03C *1/89*

U.S. Cl. 430—528 **10 Claims**

3. A photographic film comprising a silver halide emulsion layer coated on at least one side of a polymeric film base, said polymeric film base having coated on at least one side thereof an antistatic layer, characterized in that said antistatic layer comprises the reaction product of (1) a water-soluble, electrically conductive polymer from ethylenically unsaturated monomers containing carboxylic groups and (2) a water-soluble polymer from ethylenically unsaturated monomers containing oxazoline groups, wherein said polymer (1) comprises:

(a) a —SO_3M substituted ethylenically unsaturated monomer, wherein M is H^+, NH_4^+, metal cation or $N(R)_4^+$, wherein R is an alkyl group having 1–4 carbon atoms, and

(b) an ethylenically unsaturated comonomer containing carboxylic groups, the molar ratio of (a) to (b) being 1:1 to 5:1, and optionally

(c) another ethylenically unsaturated monomer containing no free carboxylic groups.

5,604,084

CHEMICAL SENSITISATION OF SILVER HALIDE EMULSIONS

Nicholas E. Grzeskowiak; Rachel J. Hobson, both of Harlow, and Andrew W. Mott, Bishop's Stortford, all of Great Britain, assignors to Imation Corp., Woodbury, Minn.

Filed Oct. 19, 1995, Ser. No. 545,552

Claims priority, application United Kingdom, Nov. 18, 1994, 9423266

Int. Cl.[6] G03C *1/04;1/09*

U.S. Cl. 430—567 **20 Claims**

1. A method of chemical sensitisation which comprises providing a silver halide emulsion containing negative-acting silver halide grains, and adding to said silver halide emulsion a sulphur releasing organic polymer having multiple sulphur releasing groups per polymer molecule.

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5,604,085

HIGH BROMIDE ULTRATHIN EMULSIONS IMPROVED BY PEPTIZER SELECTION

Joe E. Maskasky, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 19, 1995, Ser. No. 574,833

Int. Cl.[6] G03C *1/035;1/06*

U.S. Cl. 430—567 **15 Claims**

1. A radiation-sensitive emulsion comprised of silver halide grains including tabular grains

(a) having {111} major faces,

(b) containing greater than 50 mole percent bromide, based on silver,

(c) accounting for greater than 70 percent of total grain projected area,

(d) exhibiting an average equivalent circular diameter of at least 0.7 μm, and

(e) exhibiting an average thickness of less than 0.07 μm, and

a dispersing medium including a peptizer adsorbed to the silver halide grains,

wherein the peptizer is a water dispersible cationic starch.

5,604,086

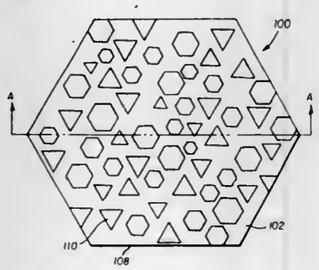
TABULAR GRAIN EMULSIONS CONTAINING A RESTRICTED HIGH IODIDE SURFACE PHASE

Kenneth J. Reed, Rochester, and Jeffrey C. Hansen, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 412,811, Mar. 29, 1995, abandoned. This application Mar. 22, 1996, Ser. No. 620,773

Int. Cl.[6] G03C *1/035*

U.S. Cl. 430—567 **20 Claims**



1. A photographic emulsion comprised of a dispersing medium and radiation-sensitive silver halide grains with greater than 50 percent of total grain projected area being accounted for by grains containing a host portion of a face centered cubic rock salt crystal lattice structure and a first epitaxial phase containing greater than 90 mole percent iodide,

wherein

the host portion is tabular, being bounded by an exterior having first and second parallel major faces joined by a peripheral edge,

the first epitaxial phase accounts for less than 60 percent of total silver, and

the first epitaxial phase is restricted to a portion of the exterior of the host portion that includes at least 15 percent of the major faces.

5,604,087

PROCESS FOR THE PRODUCTION OF SILVER HALIDE EMULSIONS

Otto Lapp; Lothar Endres, and Klaus Wagner, all of Bergisch Gladbach, Germany, assignors to AGFA-Gevaert AG, Germany

Filed Nov. 21, 1995, Ser. No. 561,172

Claims priority, application Germany, Dec. 2, 1994, 44 42 909.6

Int. Cl.[6] G03C *1/015*

U.S. Cl. 430—569 **16 Claims**

1. Process for the formation of a light-sensitive silver halide emulsion which contains emulsion grains comprising precipitating by reacting solutions of halides and a silver salt in the presence of a protective colloid or peptising agent, the emulsion grains consisting of at least two halides of different atomic numbers, wherein a portion or all of the halide of the highest atomic number is dissolved in an aqueous silver salt solution forming an aqueous resulting solution and the resulting solution is introduced at any stage into the formulation of the light-sensitive silver halide emulsion process.

5,604,088

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Masahiro Asami, and Ken Kawata, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

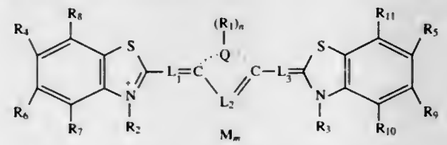
Continuation of Ser. No. 205,738, Mar. 4, 1994, abandoned. This application Jul. 20, 1995, Ser. No. 504,543

Claims priority, application Japan, Mar. 4, 1993, 5-067352

Int. Cl.[6] G03L *1/20*

U.S. Cl. 430—584 **16 Claims**

1. A silver halide photographic material comprising a support having thereon a photographic constituting layer containing at least one light-sensitive silver halide emulsion layer, wherein the silver halide emulsion layer contains a silver halide emulsion sensitized by a methine dye represented by following formula (I) and wherein a total content of calcium contained in the photographic constituting layer is not more than 10 mg/m^2;



wherein Q represents a non-metallic atomic group necessary for forming a 5-membered to 6-membered ring; R_1, R_2, R_3, R_4, R_5, R_6, R_7, R_8, R_9, R_{10} and R_{11} each independently represents a hydrogen atom or a substituent, provided that R_1 represents a group containing an aromatic carbon ring and R_2 and R_3 represents a hydrogen atom or a substituent, or R_1 and R_3 (or R_2) each represents a hydrogen atom or a substituent and R_2 (or R_3) represents a group selected from the group consisting of phenoxyethyl, 1-naphthoxyethyl, 2-naphthoxyethyl and 4-phenylphenoxyethyl, and R_4 and R_5 each does not represent a hydrogen atom; L_1, L_2 and L_3 each represents a methine group; n represents an integer of from 0 to 6; M represents a counter ion for neutralizing an electrostatic charge; and m represents 0 or 1;

wherein said silver halide emulsion contains silver chloride grains or silver chlorobromide grains having at least 90 mol % silver chloride.

5,604,089

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Akihiko Ikegawa, and Yuji Mihara, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

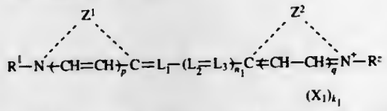
Continuation of Ser. No. 306,444, Sep. 19, 1994, which is a continuation of Ser. No. 91,566, Jul. 15, 1993. This application Nov. 14, 1995, Ser. No. 557,901

Claims priority, application Japan, Jul. 21, 1992, 4-193839

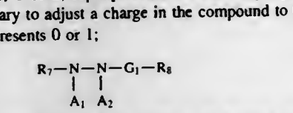
Int. Cl.[6] G03C *1/14;1/16;1/18;1/20*

U.S. Cl. 430—584 **13 Claims**

1. A silver halide photographic material comprising a support having provided thereon at least one silver halide emulsion layer containing at least one methine compound represented by the following Formula (I) and at least one compound represented by the following Formula (II):



wherein R^1 represents $-(CH_2)_r-CONHSO_2-R^3$, $-(CH^2)_s-SO_2NHCO-R^4$, $-(CH_2)_t-CONHCO-R^5$, or $-(CH_2)_u-SO_2NHSO_2-R^6$, in which R^3 R^4, R^5 and R^6 each represents an alkyl group, an alkoxy group, or an amino group and r, s, t and u each represents an integer of 1 to 5; R^2 is selected from the group consisting of a 2-sulfoethyl group, a 3-sulfopropyl group, a 4-sulfobutyl group and a 3-sulfobutyl group; Z^1 and Z^2 may be the same or different and each represents a group of non-metallic atoms necessary to form a benzothiazole, benzoselenazole or quinoline nucleus; L_1, L_2 and L_3 each represents a methine group; n_1 represents 0, 1 or 2; X_1 represents an anion; k_1 represents a number necessary to adjust a charge in the compound to 0; and p and q each represents 0 or 1;



wherein R_7 represents an aliphatic group or an aromatic group; R_8 represents a hydrogen atom, an alkyl group, an aryl group, an alkoxy group, an aryloxy group, an amino group, or a hydrazino group; G_1 represents —CO—, $-SO_2-$, —SO—, $-P(O)R_9-$, —CO—CO—, a thiocarbonyl group, or an iminomethylene group; both A_1 and A_2 represent a hydrogen atom, or either of them represents a hydrogen atom and the other represents an alkylsulfonyl group, an arylsulfonyl group, or an acyl group; and R_9 is defined in the same manner as R_8 and may be the same as or different from R_8.

5,604,090

METHOD FOR INCREASING TRANSDUCTION OF CELLS BY ADENO-ASSOCIATED VIRUS VECTORS

Ian E. Alexander, Brier; David W. Russell, and A. Dusty Miller, both of Seattle, all of Wash., assignors to Fred Hutchinson Cancer Research Center, Seattle, Wash.

Filed Jun. 6, 1994, Ser. No. 254,312

Int. Cl.[6] C12N *15/87;5/00;15/86;* **C12Q** *1/70*

U.S. Cl. 435—5 **30 Claims**

1. A method of increasing AAV transduction of a cell comprising the steps of:

a. providing an agent that alters DNA metabolism in a cell;

b. treating the cell with an effective level of the agent;

c. providing a recombinant AAV vector capable of integrating into DNA within the cell; and

d. incubating the AAV vector with the cell to allow transduction of the cell by the AAV vector.

5,604,091

METHODS FOR PROTEIN BINDING ENZYME COMPLEMENTATION

Daniel R. Henderson, Benicia, Calif., assignor to Microgenics Corporation, Concord, Calif.

Continuation of Ser. No. 841,125, Feb. 25, 1992, abandoned, which is a continuation of Ser. No. 788,370, Oct. 22, 1985, Pat. No. 5,120,653, which is a continuation-in-part of Ser. No. 721,267, Apr. 8, 1985, Pat. No. 4,708,929, which is a continuation-in-part of Ser. No. 666,080, Oct. 29, 1984, abandoned, which is a continuation-in-part of Ser. No. 585,356, Mar. 1, 1984, abandoned. This application Jun. 30, 1994, Ser. No. 268,711

Int. Cl.[6] G01N *33/535;33/542;33/569*

U.S. Cl. 435—5 **12 Claims**

1. An enzyme donor (ED) polypeptide having an amino acid sequence:

Met	(−5) Asp	Pro	Ser	Gly	Asp	(0) Pro	(+1) Arg	Ala	Ser
Ser	(5) Asn	Ser	Leu	Ala	Val	(10) Val	Leu	Gln	Arg
Arg	(15) Asp	Trp	Glu	Asn	Pro	(20) Gly	Val	Thr	Gln
Leu	(25) Asn	Arg	Leu	Ala	Ala	(30) His	Pro	Pro	Phe
Ala	(35) Ser	Trp	Arg	Asn	Ser	(40) Glu	Glu	Ala	Arg
Thr	(45) Asp	Cys	Pro	Ser	Gln	(50) Gln	Leu	Arg	Ser
Leu	(55) Asn	Gly	Leu	Glu	Ser	(60) Arg	Ser	Ala	Gly
Met	(65) Pro	Leu	Glu						

wherein one amino acid, at position 3, 20 or 39 above, is replaced with either cysteine or lysine.

5,604,092

METHOD FOR THE DETECTION OF HIV-1 USING A CYCLOSPORINE-SPECIFIC MONOCLONAL ANTIBODY THAT REACTS WITH THE P24 GAG PROTEIN

Bernard F. Erlanger, Whitestone, and Bi-Xing Chen, New York, both of N.Y., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y.

Continuation-in-part of Ser. No. 6,169, Jan. 15, 1993, Pat. No. 5,405,785, which is a continuation of Ser. No. 869,219, Apr. 13, 1992, abandoned, which is a continuation of Ser. No. 280,009, Dec. 5, 1988, abandoned. This application Feb. 17, 1995, Ser. No. 390,133

Int. Cl.[6] C12Q *1/70;* **G01N** *33/53;* **C07K** *16/00;* **C12P** *21/08*

U.S. Cl. 435—5 **2 Claims**

1. A method for detecting HIV-1 in a subject comprising the steps of:

(a) obtaining a serum sample from a subject;

(b) contacting the serum sample with the detectably labeled monoclonal antibody B-11 1.4 produced by the hybridoma cell line having the ATCC Accession No. HB-11835 under conditions permitting the detectably labeled antibody to bind to and form a complex with an HIV Gag protein in the serum sample;

(c) removing any antibodies which are not part of the complex of (b); and,

(d) detecting the presence of the complex of (b) in the serum sample, thereby detecting the presence of HIV in the subject.

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5,604,093

HUMAN HERPESVIRUS-6(HHV-6)ISOLUTION AND PRODUCTS

Syed Z. Salahuddin, Rockville; Dharam V. Ablashi, Olney; Steven F. Josephs, Rockville; Carl W. Saxinger, Bethesda; Flossie Wong-Staal, Rockyville, and Robert C. Gallo, Bethesda, all of Md., assignors to The Government of the United States of America, as represented by the Secretary of the Department of Health and Human Services, Bethesda, Md.

Continuation of Ser. No. 754,220, Aug. 27, 1991, abandoned, which is a continuation of Ser. No. 255,712, Oct. 11, 1988, abandoned, which is a continuation-in-part of Ser. No. 228,550, Aug. 4, 1988, abandoned, which is a continuation-in-part of Ser. No. 901,602, Aug. 29, 1986, abandoned, which is a continuation-in-part of Ser. No. 892,423, Aug. 4, 1986, abandoned, and a continuation-in-part of Ser. No. 895,857, Aug. 12, 1986, abandoned, and a continuation-in-part of Ser. No. 895,463, Aug. 11, 1986, abandoned. This application Feb. 22, 1995, Ser. No. 392,674

Int. Cl.[6] **C12Q** *1/70;1/68;* **C12P** *19/34;* **C07H** *21/04*

U.S. Cl. 435—5 **8 Claims**



1. An isolated human herpes virus wherein said isolated human herpes virus comprises a virus with:

(a) the morphology of a human herpes virus; and

(b) a double-stranded DNA genome of about 170 Kb; and wherein genomic DNA from said isolated human herpes virus hybridizes under stringent conditions with nucleic acid of molecular clone ZVH14 (ATCC accession No. 40,247).

5,604,094

RECEPTOR-TYPE PHOSPHOTYROSINE PHOSPHATASE-β

Joseph Schlessinger, New York, N.Y., assignor to New York University, New York, N.Y.

Continuation-in-part of Ser. No. 654,188, Feb. 26, 1991, abandoned, which is a continuation-in-part of Ser. No. 551,270, Jul. 11, 1990, abandoned. This application Feb. 10, 1993, Ser. No. 15,973

Int. Cl.[6] **C12N** *15/55;9/16;5/10;1/21*

U.S. Cl. 435—6 **12 Claims**

1. An isolated nucleic acid molecule comprising a nucleotide sequence that encodes (a) a polypeptide having the amino acid sequence SEQ ID NO: 1; or (b) the complement of the nucleotide sequence of (a).

5,604,095

UNSYMMETRICALLY LINKED BISNAPHTHALIMIDES AS ANTITUMOR AGENTS

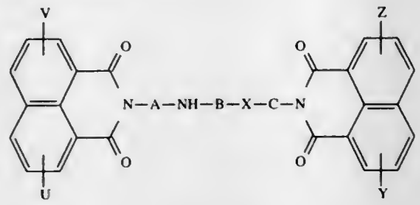
Alexander L. Weis; Shih-Fong Chen; Peech S. Reedy; Mallaiah Mittakanti, all of San Antonio, Tex., and Daniel L. Dexter, Holcombe, Wis., assignors to Cancer Therapy & Research Center, San Antonio, Tex.

Filed Jul. 22, 1994, Ser. No. 279,173

Int. Cl.[6] **C12Q** *1/68;* **A61K** *31/44*

U.S. Cl. 435—6 **18 Claims**

1. A compound, or a pharmaceutically acceptable salt thereof, having the formula



wherein:

X is O, S, SO, SO_2, NR_1NR_2, NHCONH, NHC(NH)NH, or NHCSNH;

R_1 and R_2 are separately and independently hydrogen, lower alkyl, and aryl;

A, B, and C are independently straight chain $—(CH_2)—$ with n being 2–4, wherein one or more of the hydrogen atoms may be substituted by a heteroatom, an alkyl or an alkenyl group having up to about 7 carbon atoms; and

U, V, Y, and Z are separately and independently hydrogen, nitro, amine, hydroxyl, alkoxy, halogen, trihalomethyl, alkyl, aryl, formyl, alkylcarbonyl, ureyl, alkylureyl or alkylcarbonylamino.

5,604,096

FLUOROMETRIC QUANTITATION OF MYCOPLASMAS

Warren I. Schaeffer, 24 Southwind Dr., and Robert Melamede, 49 Peru St., both of Burlington, Vt. 05401

Continuation of Ser. No. 26,565, Mar. 4, 1993, abandoned. This application Sep. 8, 1994, Ser. No. 302,250

Int. Cl.[6] **C12Q** *1/68;1/18*

U.S. Cl. 435—6 **13 Claims**

3. A method of monitoring the growth of mycoplasma in a culture, comprising:

contacting a sample of a pure culture of mycoplasma with a fluorescent DNA intercalating agent under alkaline conditions sufficient to degrade RNA, but not DNA, and maintaining said alkaline conditions, wherein the DNA intercalating agent is in an amount sufficient to be detected when bound to mycoplasmal DNA; and

determining the amount of fluorescence emitted by the fluorescent nucleic acid-binding agent associated with the mycoplasmal DNA as indicative of the number of mycoplasmal cells in the culture.

5,604,097

METHODS FOR SORTING POLYNUCLEOTIDES USING OLIGONUCLEOTIDE TAGS

Sydney Brenner, Cambridge, England, assignor to Spectragen, Inc., Hayward, Calif.

Continuation-in-part of Ser. No. 322,348, Oct. 13, 1994, abandoned. This application Dec. 19, 1994, Ser. No. 358,810

Int. Cl.[6] **C12Q** *1/68;* **C12N** *15/10;* **C07H** *21/00*

U.S. Cl. 435—6 **31 Claims**

1. A method of sorting polynucleotides from a population of polynucleotides onto one or more solid phase supports, the method comprising the steps of:

(a) attaching an oligonucleotide tag from a repertoire of tags to each polynucleotide in a population of polynucleotides (i) such that substantially all different polynucleotides in the population have different oligonucleotide tags attached and (ii) such that each oligonucleotide tag from the repertoire comprises a plurality of subunits and each subunit of the plurality consists of an oligonucleotide having a length from three to six nucleotides or from three to six basepairs, the subunits being selected from a minimally cross-hybridizing set, wherein a subunit of the set and a complement of any other subunit of the set would have at least two mismatches and

(b) sorting the polynucleotides from the population by specifically hybridizing the oligonucleotide tags with their respective complements, the respective complements being attached as uniform populations of substantially identical complements in spacially discrete regions on the one or more solid phase supports.

5,604,098

METHODS AND MATERIALS FOR RESTRICTION ENDONUCLEASE APPLICATIONS

David Mead, and Neela Swaminathan, both of Madison, Wis., assignors to Molecular Biology Resources, Inc., Milwaukee, Wis.

Continuation of Ser. No. 36,481, Mar. 24, 1993, abandoned. This application Dec. 22, 1994, Ser. No. 362,741

Int. Cl.[6] **C12Q** *1/68;* **C12P** *19/34;* **C07H** *21/04;* **C12N** *15/00*

U.S. Cl. 435—6 **29 Claims**

1. A method for labeling DNA, the method comprising the steps

a) digesting an aliquot of template DNA with a restriction endonuclease reagent that is CviJ I or Taq I and Hpa II in combination, under conditions that generate sequence-specific DNA fragments from about 20 to about 200 base pairs in length and having an average length of about 20 to about 60 base pairs;

b) mixing an aliquot of undigested template DNA with said sequence-specific DNA fragments, denaturing said mixture of template DNA and sequence-specific DNA fragments thereby generating denatured template DNA and oligonucleotide primers;

c) annealing said primers to said denatured undigested template DNA to form a DNA-primer complex;

d) performing an extension reaction from said primers in said DNA-primer complex using a DNA polymerase in the presence of one or more nucleotide triphosphates that comprise at least one labeled nucleotide triphosphate.

5,604,099

PROCESS FOR DETECTING SPECIFIC NUCLEOTIDE VARIATIONS AND GENETIC POLYMORPHISMS PRESENT IN NUCLEIC ACIDS

Henry A. Erlich, Oakland; Glenn Horn, Emeryville; Randall K. Saiki, Richmond, and Kary B. Mullis, Kensington, all of Calif., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 491,210, Mar. 9, 1990, Pat. No. 5,468,613, which is a continuation-in-part of Ser. No. 839,331, Mar. 13, 1986, abandoned. This application Jun. 1, 1995, Ser. No. 457,647

Int. Cl.[6] **C12Q** *1/68;* **C12P** *19/34;* **C12N** *9/12;15/11*

U.S. Cl. 435—6 **32 Claims**

1. A process for detecting the presence of a nucleotide variation in sequence in a nucleic acid contained in a sample, which process comprises:

(a) treating the sample, together or sequentially, with four different nucleoside triphosphates, an agent for polymerization of the nucleoside triphosphates, and two oligonucleotide primers for said nucleic acid containing said variation under hybridizing conditions, such that a primer hybridizes to said nucleic acid and an extension product of the primer is synthesized which is complementary to said nucleotide variation in sequence, wherein said primers are selected such that the extension product synthesized from one primer, when separated from its complement, can serve as a template for synthesis of the extension product of the other primer;

(b) treating the sample under denaturing conditions to separate the primer extension products from their templates;

(c) treating the sample, together or sequentially, with said four nucleoside triphosphates, an agent for polymerization of the nucleoside triphosphates, and oligonucleotide primers such that a primer extension product is synthesized using each of the single strands produced in step (b) as a template, wherein steps (b) and (c) are repeated a sufficient number of times to result in detectable amplification of the nucleic acid containing the sequence variation;

(d) directly transferring, without gel fractionation, the product of step (c) to a membrane;

(e) treating the membrane under hybridization conditions with a labeled sequence-specific oligonucleotide probe between about 15 and about 25 nucleotides in length capable of hybridizing with the amplified nucleic acid sequence only if a sequence of the probe is complementary to a region of the amplified sequence; and

(f) detecting whether the probe has hybridized to an amplified sequence in the nucleic acid sample.

5,604,100

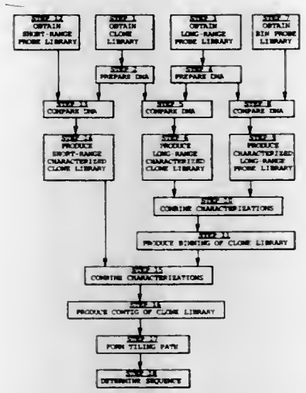
METHOD AND SYSTEM FOR SEQUENCING GENOMES

Mark W. Perlin, 5904 Beacon St., Pittsburgh, Pa. 15217

Filed Jul. 19, 1995, Ser. No. 504,400

Int. Cl.[6] **C12Q** *1/68;* **C12P** *19/34*

U.S. Cl. 435—6 **22 Claims**



15. A method of genome mapping comprised of the steps:

(a) obtaining nucleic acid material from a genome;

(b) constructing a clone library and a long-range probe library from said nucleic acid material;

(c) hybridizing long-range probes to the clone library to form comparisons;

(d) detecting the comparisons of the long-range probes to the clone library to form detections;

(e) recording the detections to form a first set of data;

(f) binning the long-range probes relative to bin probes to form a second set of data different from the first set of data;

(g) performing short-range probings using a short-range probe library on the clone library to form a third set of data different form the first and second sets of data; and

(f) combining said first set of data, said second set of data and said third set of data to construct a map of the clones relative to said genome.

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5,604,101

METHOD OF MINIMIZING CONTAMINATION IN AMPLIFICATION REACTIONS USING A REACTION TUBE WITH A PENETRABLE MEMBRANE

Kathleen A. Hanley, Gurnee, Ill.; A. David Hofferbert, Grafton, Wis.; Helen H. Lee, Lake Forest, Ill.; Curtis J. Pepe, McHenry, Ill., and Thomas F. Zurek, River Forest, Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation of Ser. No. 140,632, Oct. 22, 1993, abandoned. This application Nov. 17, 1995, Ser. No. 559,932

Int. Cl.[6] C12Q *1/68;* **C12P** *19/34*

U.S. Cl. 435—6 **12 Claims**

1. In a method for amplifying and detecting nucleic acid materials comprising the steps of:

a) adding a sample suspected to contain a target nucleic acid material to an amplification vessel along with oligonucleotide probes or primers, at least one of which bears a detectable reporter group, for amplification of said suspected target nucleic acid to form a reaction mixture;

b) sealing the reaction mixture inside said vessel by closing a tightly sealing cap;

c) amplifying the target nucleic acid material within said vessel; and

d) detecting the presence of amplified target nucleic acid by detection of said detectable reporter group:

wherein the improvement comprises

i) providing said sealing cap with a membrane that is penetrable by a pipettor probe;

ii) removing a portion of the reaction mixture from said vessel for detection wherein said removing is effected by piercing said cap membrane with a pipettor probe aspirating said portion of the reaction mixture into said pipettor; and

iii) dispensing said portion in a distinct detection compartment without uncapping said vessel, thereby avoiding drops or aerosols of the amplified material which might contaminate the environment, unreacted samples or reagents.

5,604,102

METHODS OF SCREENING FOR β-AMYLOID PEPTIDE PRODUCTION INHIBITORS

Lisa C. McConlogue, San Francisco; Dale B. Schenk, Pacifica; Peter A. Seubert, South San Francisco; Sukanto Sinha, San Francisco, and Jun Zhao, La Jolla, all of Calif., assignors to Athena Neurosciences, Inc., South San Francisco, Calif.

Continuation-in-part of Ser. No. 965,971, Oct. 26, 1992, Pat. No. 5,441,870, which is a continuation-in-part of Ser. No. 868,949, Apr. 15, 1992, abandoned. This application Oct. 27, 1993, Ser. No. 143,697

Int. Cl.[6] C12N *15/00;* **G01N** *33/53;33/567;* **A61K** *49/00*

U.S. Cl. 435—7.1 **19 Claims**

1. A method for monitoring β-amyloid precursor protein (βAPP) processing in vivo, said method comprising specifically detecting the presence of Swedish variant amino terminal fragment of βAPP (ATF-βAPP) in a specimen from rodent transformed to express the Swedish mutation of human βAPP, wherein the amino terminal fragment has been cleaved between Leu^{596} and Asp^{597}.

5,604,103

KIT FOR DETECTION OF CLINICAL MARKER IN KIDNEY STONE DISEASE

William C. Thomas, Jr.; Christopher D. Batich, and Daniel L. Purich, all of Gainesville, Fla., assignors to University of Florida, Gainesville, Fla.

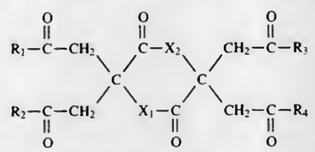
Continuation-in-part of Ser. No. 80,017, Jun. 18, 1993, Pat. No. 5,376,553. This application Jun. 17, 1994, Ser. No. 261,581

Int. Cl.[6] G01N *33/53;33/52*

U.S. Cl. 435—7.1 **4 Claims**

1. A kit for the detection of dicitrate cyclic diester in a biological sample, said kit comprising:

a separately packaged, substantially pure dicitrate cyclic diester as a standard, said dicitrate cyclic diester having the formula



wherein R_1=R_2=R_3=R_4=OH and X_1=X_2=O,

and a label means for detection of dicitrate cyclic diester, said label means selected from the group consisting of a colorimetric label means comprising hydroxylamine and ferric chloride and an immunoassay label means comprising an antibody labelled with a detectable marker.

5,604,104

RELEASE TAG COMPOUNDS PRODUCING KETONE SIGNAL GROUPS

Roger W. Giese, Quincy, Mass.; Samy Abdel-Baky, Cary, N.C., and Linxiao Xu, Cambridge, Mass., assignors to Northeastern University, Boston, Mass.

Division of Ser. No. 53,608, Apr. 22, 1993, Pat. No. 5,516,931, and a continuation-in-part of Ser. No. 710,318, Mar. 11, 1985, Pat. No. 5,360,819, which is a continuation-in-part of Ser. No. 344,394, Feb. 1, 1982, Pat. No. 4,709,016. This application Feb. 8, 1996, Ser. No. 598,691

Int. Cl.[6] G01N *33/566*

U.S. Cl. 435—7.1 **13 Claims**

1. A molecular conjugate comprising: a release tag compound covalently bound to an analyte to be analytically determined, to an analyte analog, or to a primary or secondary specific binding partner thereof, said release tag compound comprising:

a signal group S, a release group Re, and a reactivity group Rx, group S being covalently linked to group Re, and group Re being further covalently linked to group Rx to define structure S-Re-Rx for said compound;

Rx further comprising a functional group capable of forming a covalent bond with another molecule;

Re further comprising a functionality selected from the group consisting of α-hydroxyketos and β-hydroxyketos; and

S further comprising a halogenated electron-absorbing organic group; and

groups S and Re being mutually selected such that upon cleavage of said release tag at release group Re, signal group S is released in a volatile form suitable for electron capture determination in the gas phase.

5,604,105

METHOD AND DEVICE FOR DIAGNOSING AND DISTINGUISHING CHEST PAIN IN EARLY ONSET THEREOF

George Jackowski, Inglewood, Canada, assignor to Spectral Diagnostics Inc., Toronto, Canada

Continuation-in-part of Ser. No. 26,453, Mar. 3, 1993, abandoned, which is a continuation-in-part of Ser. No. 695,381, May 3, 1991, Pat. No. 5,290,678. This application Apr. 11, 1995, Ser. No. 420,298

Claims priority, application Canada, Oct. 12, 1990, 2027434

The portion of the term of this patent subsequent to May 3, 2011, has been disclaimed.

Int. Cl.[6] G01N *33/573;33/558*

U.S. Cl. 435—7.4 **23 Claims**

1. A method for determining if a patient presenting with chest pain is undergoing a cardiac event and, if so, if the cardiac event is an unstable angina or a myocardial infarction, comprising:

A. detecting the presence of increased levels of three different markers of cardiac damage present in a blood, serum, or plasma sample from a patient after onset of chest pain, wherein:

a. a first marker is an ischemic marker;

b. a second marker is released from cardiac tissue only as a result of myocardial infarction; and

c. a third marker is a cardiac-specific ischemic marker; by contacting the sample with three antibody pairs, of which one pair is specific for each of the markers and one of which antibodies from each pair is a capture antibody and the other of which is a detector antibody, whereby the presence of increased levels of a marker in the sample is indicated by binding of the marker with the respective antibody pair; and

B. correlating the presence or absence of increased levels of each of the three markers with the presence or absence of unstable angina or myocardial infarction.

5,604,106

METHOD FOR DETECTING CARCINOMA

Lance A. Liotta, 9027 Mistwood Dr., Potomac, Md. 20854, and Elliott Schiffmann, 3207 Pickwick La., Chevy Chase, Md. 20815

Continuation of Ser. No. 336,557, Apr. 10, 1989, abandoned, which is a continuation-in-part of Ser. No. 58,381, Jun. 5, 1987, abandoned. This application May 18, 1993, Ser. No. 62,717

Int. Cl.[6] G01N *33/574;* **C07K** *16/24*

U.S. Cl. 435—7.23 **12 Claims**

1. A method for detecting the presence of carcinoma in humans comprising reacting human body sample from a patient suspected of having carcinoma with anti-AMF antibody, a positive immunological reaction being indicative of the presence of carcinoma in said patient.

5,604,107

DETECTION OF NEU P185 IN CELL LYSATES

Walter P. Carney, North Andover; Sara J. McKenzie, Lynn, and Robert A. Weinberg, Brookline, all of Mass., assignors to Oncogene Science, Inc., Uniondale, N.Y.

Continuation of Ser. No. 2,994, Jan. 11, 1993, abandoned, which is a continuation of Ser. No. 806,112, Dec. 12, 1991, Pat. No. 5,401,638, which is a continuation of Ser. No. 412,668, Sep. 29, 1989, abandoned, which is a continuation-in-part of Ser. No. 297,188, Jan. 13, 1989, abandoned, which is a continuation-in-part of Ser. No. 182,501, Apr. 18, 1988, abandoned, which is a continuation-in-part of Ser. No. 871,102, Jun. 4, 1986, Pat. No. 4,935,341. This application Mar. 30, 1994, Ser. No. 220,962

Int. Cl.[6] G01N *33/574;33/53*

U.S. Cl. 435—7.23 **38 Claims**

1. An immunoassay for detecting the overexpression of human neu gene encoded p185 protein in a sample of cells comprising:

(a) obtaining a lysate of the sample of cells;

(b) contacting the lysate with an antibody specific for the extracellular domain of the human neu gene encoded p185 protein under conditions suitable for binding; and

(c) comparing the level of binding with the level of binding in a lysate of normal cells, wherein a higher level of binding is indicative of the overexpression of the human neu gene encoded p185 protein in the sample of cells.

5,604,108

TEST FOR DETERMINING THE DOSE RESPONSE OF A CONJUGATED VACCINE

Robert S. Becker, Henryville; Karen Biscardi, South Sterling; Patrick McVerry, and Robert Ryall, both of Stroudsburg, all of Pa., assignors to Connaught Laboratories, Inc., Swiftwater, Pa.

Continuation of Ser. No. 943,171, Sep. 14, 1992, abandoned. This application Jun. 2, 1994, Ser. No. 253,251

Int. Cl.[6] G01N *33/554;* **A61K** *49/00*

U.S. Cl. 435—7.32 **2 Claims**

1. A method of testing the dose-related immune response of a human to conjugate vaccine comprising diphtheria toxoid and a capsular polysaccharide of *Haemophilus influenzae* type b of pneumococcal polysaccharide, which comprises:

administering to an animal unconjugated diphtheria toxoid in an amount corresponding on a weight-scaled basis to a human dose thereof,

simultaneously administering to said animal a dose amount of said conjugate vaccine,

subsequently administering to said animal a second dose amount of said conjugate vaccine; and

determining the immune response of said animal to said capsular polysaccharide of *Haemophilus influenzae* type b or pneumococcal polysaccharide relative to the immune response of a human, to whom a human dose of said diphtheria toxoid has been previously administered, to said dose amount of said conjugate vaccine.

5,604,109

METHOD FOR EXPOSING GROUP A STREPTOCOCCAL ANTIGENS AND AN IMPROVED DIAGNOSTIC TEST FOR THE IDENTIFICATION OF GROUP A STREPTOCOCCI

Vincent A. Fischetti, West Hempstead, N.Y., and David Bernstein, Sykesville, Md., assignors to New Horizons Diagnostics Corporation, Columbia, Md.

Continuation of Ser. No. 919,616, Jul. 29, 1992, abandoned, which is a continuation of Ser. No. 916,800, Oct. 8, 1986, abandoned. This application Sep. 13, 1994, Ser. No. 305,800

Int. Cl.[6] G01N *33/569*

U.S. Cl. 435—7.34 **23 Claims**

1. A method for detecting Group A streptococcal antigens, comprising:

treating a clinical specimen suspected of containing Group A streptococci with an extraction reagent comprising Group C streptococcal phage associated lysin enzyme without first culturing said clinical specimen thereby releasing Group A streptococcal antigens into the extraction reagent and detecting said antigens using an immunological ligand receptor assay,

wherein the contact time between the clinical specimen and said extraction reagent is less than six minutes and wherein all procedures of the assay are performed at room temperature from 21° C. to 29° C., and

wherein said lysin enzyme lacks proteolytic activity with respect to antibody specific to Group A streptococcal antigen.

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5,604,110

BINDING ASSAY DEVICE

Terence S. Baker, Staines; Martin J. Perry, New Malton, and Ian M. Fleming, Merseyside, all of England, assignors to Celltech Therapeutics Ltd., Berkshire, England

Continuation of Ser. No. 235,261, Apr. 29, 1994, Pat. No. 5,500,350, which is a continuation of Ser. No. 83,329, Jun. 29, 1993, abandoned, which is a continuation of Ser. No. 702,128, May 16, 1991, abandoned, which is a continuation of Ser. No. 347,725, May 5, 1989, abandoned, which is a continuation of Ser. No. 80,565, Jun. 29, 1987, abandoned. This application Jun. 7, 1995, Ser. No. 488,080

Claims priority, application United Kingdom, Oct. 30, 1985, 8526741

Int. Cl.[6] G01N *33/53*

U.S. Cl. 435—7.92 **6 Claims**

1. A test system for performing a binding assay for determining the presence or absence of analyte in a sample or the relative concentrations of two analytes in a sample, comprising:

a) an absorbent material in the form of an elongate strip having a sample application zone upstream of a plurality of transverse reagent zones, wherein said reagent zones of said absorbent material comprise, at least an enzyme-labelled reagent zone which includes an enzyme-labelled species comprising an enzyme-labelled analyte or an enzyme-labelled reagent that binds to said analyte, such that in use, said enzyme-labelled species is caused to migrate through the strip by passage of a developing solution through the strip, and an indicator reagent zone which includes an immobilized reagent that, directly or indirectly, binds and thereby immobilizes said enzyme-labelled species in an amount dependent on the quantity of said analyte present in said sample; and

b) a developing solution, wherein said developing solution comprises a signal-producing substrate for the enzyme that generates signal only in or downstream from said indicator reagent zone, wherein the signal-producing substrate is a single color-producing compound or a compound acting as a cofactor with a further compound or compounds to produce a signal in the presence of enzyme, wherein said any further compound or compounds are present in the developing solution;

wherein said developing solution is initially in contact only with that portion of said absorbent material upstream from said indicator zone but in which ultimately, by capillary action, sequentially contacts all reagent zones of said absorbent material;

wherein said enzyme-labelled species is mobilized in said developing solution but does not react with said signal producing substrate to produce color except at or downstream form said indicator reagent zone; and wherein said signal-producing substrate is transported by the developing solution slower than, said enzyme-labelled species.

5,604,111

METHOD AND KIT FOR DETECTION OF OXALATE

Ammon B. Peck, Gainesville, Fla., assignor to University of Florida Research Foundation, Gainesville, Fla.

Filed Jun. 20, 1994, Ser. No. 262,424

Int. Cl.[6] C12Q *1/48;* **G01N** *33/53*

U.S. Cl. 435—15 **6 Claims**

1. A method for detecting a presence of oxalate in a fluid sample, comprising the steps of:

(a) contacting said fluid sample with oxalyl-CoA decarboxylase formyl-CoA transferase to form an admixture, wherein any oxalate present in said admixture is converted into carbon dioxide and formate; and

(b) detecting any said formate produced in said admixture

(c) correlating detecting any said formate with the presence of oxalate in the fluid sample.

5,604,112

METHOD FOR DETECTING THE CARDIOTOXICITY OF COMPOUNDS

Paul D. Crane, Sudbury, and Cesare Orlandi, Burlington, both of Mass., assignors to The Dupont Merck Pharmaceutical Company, Wilmington, Del.

Filed Feb. 26, 1993, Ser. No. 23,396

Int. Cl.[6] C12Q *1/02*

U.S. Cl. 435—29 **28 Claims**

1. A method of testing for cardiotoxicity of a compound comprising the steps of:

labeling cells having a negative membrane potential with a labeled lipophilic cationic agent;

homogenizing the labeled cells to provide a cell homogenate;

incubating the cell homogenate with the compound to be tested;

obtaining a mitochondrial fraction from the cell homogenate;

measuring the amount of labeled lipophilic cationic agent in the mitochondrial fraction.

5,604,113

CELLS HAVING ONCOGENE-SUPPRESSED P53-MEDIATED APOPTOSIS AND METHODS OF USE TO IDENTIFY ANTI-ONCOGENIC COMPOUNDS

Eileen White, Belle Mead, N.J.; Shuin-Kwei Chiou, N. Potomac, Md., and Huey-Jen L. Lin, Princeton, N.J., assignors to Rutgers University, Piscataway, N.J.

Filed Apr. 7, 1994, Ser. No. 224,209

Int. Cl.[6] C12Q *1/02;* **C12N** *5/06*

U.S. Cl. 435—29 **10 Claims**

4. A genetically engineered cell line that expresses adenovirus E1A protein, an externally regulatable p53 gene product and an oncogene selected from the group consisting of bcl-2, ras and adenovirus E1B(19K).

5,604,114

CIS-ACTING REPRESSION SEQUENCES, CIS-ACTING ANTIREPRESSION SEQUENCES, VECTORS, METHODS OF PREPARATION AND USE

William A. Haseltine, Cambridge, Mass.; Craig A. Rosen, Glen Ridge, N.J.; Joseph G. Sodroski, Cambridge; Ernest Terwilliger, Boston, both of Mass., and Wei C. Goh, Stanford, Calif., assignors to Dana-Farber Cancer Institute, Boston, Mass.

Continuation of Ser. No. 847,854, Mar. 9, 1992, abandoned, which is a continuation of Ser. No. 591,667, Sep. 27, 1990, abandoned, which is a continuation of Ser. No. 56,620, May 29, 1987, abandoned, which is a continuation-in-part of Ser. No. 865,151, May 20, 1986, Pat. No. 4,935,372. This application Apr. 2, 1993, Ser. No. 41,887

Int. Cl.[6] C12N *15/11;15/49;15/63;15/85*

U.S. Cl. 435—69.1 **27 Claims**

1. A nucleotide region which contains both cis-acting repression sequences (CRS) and a cis-acting anti-repression sequence (RRE), said region consisting of the intron located between a major splice donor site in the env gene and a major splice acceptor site in the env gene, said env gene selected from the group consisting of HIV-1, HIV-2, HTLV-IV, STLV-3, and a sufficient fragment of said nucleotide region to suppress expression of a heterologous gene when said region is inserted downstream of said heterologous gene in said gene's untranslated message.

5,604,115

LIVER ENRICHED TRANSCRIPTION FACTOR

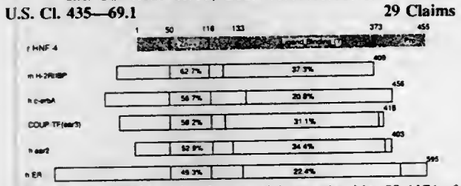
Frances M. Sladek, Riverside, Calif.; Weimin Zhong, New York, and James E. Darnell, Jr., Larchmont, both of N.Y., assignors to The Rockefeller University, New York, N.Y.

PCT No. PCT/US91/09733, § 371 Date Oct. 28, 1993, § 102(e) Date Oct. 28, 1993, PCT Pub. No. WO92/11365, PCT Pub. Date Sep. 7, 1992

PCT Filed Dec. 23, 1991, Ser. No. 78,222

Int. Cl.[6] C12P *21/06;* **C12N** *15/09;15/12;15/63*

U.S. Cl. 435—69.1 **29 Claims**



1. An isolated DNA molecule comprising nucleotides 59-1171 of the cDNA sequence of FIG. 3B (SEQ ID NO:1).

5,604,116

INTERLEUKIN-3 (IL-3) MULTIPLE MUTATION POLYPEPTIDES, RECOMBINANT PRODUCTION OF THE SAME, AND CORRESPONDING THERAPEUTIC METHODS

S. Christopher Bauer, New Haven; Mark A. Abrams; Sarah R. Braford-Goldberg, both of St. Louis; Maire H. Caparon, Chesterfield; Alan M. Easton, Maryland Heights; Barbara K. Klein, Town & Country; John P. McKearn; Peter Olins, both of Glencoe; Kumnan Paik, Ballwin, and John W. Thomas, Town & Country, all of Mo., assignors to G. D. Searle & Co., Chicago, Ill.

PCT No. PCT/US93/11197, § 371 Date Apr. 6, 1995, § 102(e) Date Apr. 6, 1995, PCT Pub. No. WO94/12638, PCT Pub. Date Jun. 9, 1994

Continuation-in-part of Ser. No. 981,044, Nov. 24, 1992, abandoned. This PCT application Nov. 22, 1993, Ser. No. 411,795

Int. Cl.[6] C12N *15/24;15/27;* **C07K** *14/54;* **A61K** *38/20*

U.S. Cl. 435—69.52 **31 Claims**

1. A mutant human interleukin-3 (hIL-3) polypeptide comprising a modified (15–125)hIL-3 amino acid sequence selected from the group consisting of:

(18I, 25H, 29R, 32A, 37P, 42A, 45V, 51R, 55L, 60S, 62V, 67N, 69E, 73G, 76A, 79R, 82Q, 87S, 93S, 98I, 101A, 105Q, 109E, 116V, 120Q and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 88];

(18I, 25H, 29R, 32N, 37P, 42S, 45M, 51R, 55T, 59L, 62V, 67H, 69E, 73G, 76A, 79R, 82Q, 87S, 93S, 98I, 101A, 105Q, 109E, 116V, 120Q and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 89];

(18I, 25H, 29V, 32A, 37S, 42S, 45M, 51R, 55L, 59L, 62V, 67N, 69E, 73G, 76A, 79R, 82Q, 87S, 93S, 98I, 101A, 105Q, 109E, 116V, 120Q and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 90];

(18I, 25H, 29R, 32A, 37P, 42A, 45V, 51R, 55L, 60S, 62V, 67N, 69E, 73G, 76A, 79R, 82V, 87S, 93S, 98T, 101A, 105Q, 109E, 116V, 120Q and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 91];

(18I, 25H, 29V, 32A, 37S, 42S, 45M, 51R, 55L, 59L, 62V, 67N, 69E, 73G, 76A, 79R, 82V, 87S, 93S, 98T, 101A, 105Q, 109E, 116V, 120Q and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 92];

(18I, 25H, 29R, 32N, 37P, 42S, 45M, 51R, 55T, 59L, 62V, 67H, 69E, 73G, 76A, 79R, 82V, 87S, 93S, 98T, 101A, 105Q, 109E, 116V, 117S, 120H and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 93];

(18I, 25H, 29V, 32A, 37S, 42S, 45M, 51R, 55L, 59L, 62V, 67N, 69E, 73G, 76A, 79R, 82V, 87S, 93S, 98T, 101A, 105Q, 109E, 116V, 117S, 120H and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 94];

(18I, 25H, 29R, 32N, 37P, 42S, 45M, 51R, 55T, 59L, 62V, 67H, 69E, 73G, 76A, 79R, 82V, 87S, 93S, 98I, 101A, 105Q, 109E, 116V, 120Q and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 95];

(18I, 25H, 29R, 32A, 37P, 42A, 45V, 51R, 55L, 60S, 62V, 67N, 69E, 73G, 76A, 79R, 82V, 87S, 93S, 98T, 101A, 105Q, 109E, 116V, 117S, 120H and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 96];

(18I, 19A, 25H, 29R, 32N, 37P, 42S, 45M, 51R, 55T, 59L, 62V, 67H, 69E, 73G, 76A, 79R, 82Q, 87S, 93S, 98I, 101A, 105Q, 109E, 116V, 120Q and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 264];

(18I, 19I, 25H, 29R, 32N, 37P, 42S, 45M, 51R, 55T, 59L, 62V, 67H, 69E, 73G, 76A, 79R, 82Q, 87S, 93S, 98I, 101A, 105Q, 109E, 116V, 120Q and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 265];

(18I, 25H, 29R, 32N, 37P, 42S, 45V, 51R, 55T, 59L, 62V, 67H, 69E, 73G, 76A, 79R, 82Q, 87S, 93S, 98I, 101A, 105Q, 109E, 116V, 120Q and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 266];

(18I, 19A, 25H, 29R, 32N, 37P, 42S, 45V, 51R, 55T, 59L, 62V, 67H, 69E, 73G, 76A, 79R, 82Q, 87S, 93S, 98I, 101A, 105Q, 109E, 116V, 120Q and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 267];

(18I, 19I, 25H, 29R, 32N, 37P, 42S, 45V, 51R, 55T, 59L, 62V, 67H, 69E, 73G, 76A, 79R, 82Q, 87S, 93S, 98I, 101A, 105Q, 109E, 116V, 120Q and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 268];

(18I, 25H, 29R, 32N, 37P, 42S, 45M, 49I, 51R, 55T, 59L, 62V, 67H, 69E, 73G, 76A, 79R, 82Q, 87S, 93S, 98I, 101A, 105Q, 109E, 116V, 120Q and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 269];

(18I, 25H, 29R, 32N, 37P, 42S, 45M, 49L, 51R, 55T, 59L, 62V, 67H, 69E, 73G, 76A, 79R, 82Q, 87S, 93S, 98I, 101A, 105Q, 109E, 116V, 120Q and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 270];

(18I, 25H, 29R, 32N, 37P, 42S, 45M, 49D, 51R, 55T, 59L, 62V, 67H, 69E, 73G, 76A, 79R, 82Q, 87S, 93S, 98I, 101A, 105Q, 109E, 116V, 120Q and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 271];

(18I, 19A, 25H, 29R, 32N, 37P, 42S, 45V, 49I, 51R, 55T, 59L, 62V, 67H, 69E, 73G, 76A, 79R, 82Q, 87S, 93S, 98I, 101A, 105Q, 109E, 116V, 120Q and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 272];

(18I, 19I, 25H, 29R, 32N, 37P, 42S, 45V, 49I, 51R, 55T, 59L, 62V, 67H, 69E, 73G, 76A, 79R, 82Q, 87S, 93S, 98I, 101A, 105Q, 109E, 116V, 120Q and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 273];

(18I, 19A, 25H, 29R, 32N, 37P, 42S, 45V, 49L, 51R, 55T, 59L, 62V, 67H, 69E, 73G, 76A, 79R, 82Q, 87S, 93S, 98I, 101A, 105Q, 109E, 116V, 120Q and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 274];

(18I, 19I, 25H, 29R, 32N, 37P, 42S, 45V, 49L, 51R, 55T, 59L, 62V, 67H, 69E, 73G, 76A, 79R, 82Q, 87S, 93S, 98I, 101A, 105Q, 109E, 116V, 120Q and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 275];

(18I, 23A, 25H, 29R, 32A, 37P, 42D, 45V, 46S, 50D, 51R, 55L, 60S, 62V, 67N, 69E, 73G, 76A, 79R, 82Q, 87S, 93S, 98I, 101A, 105Q, 109E, 116V, 120Q and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 280];

(18I, 25H, 29R, 32A, 37P, 42N, 45V, 46S, 50D, 51R, 55L, 60S, 62V, 67N, 69E, 73G, 76A, 79R, 82Q, 87S, 93S, 98I, 101A, 105Q, 109E, 116V, 120Q and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 281];

(18I, 25H, 29R, 32A, 37P, 42A, 45V, 46S, 50D, 51R, 55L, 60S, 62V, 67N, 69E, 73G, 76A, 79R, 82Q, 87S, 93S, 98I, 101A, 105Q, 109E, 116V, 120Q and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 282];

(18I, 25H, 29R, 32A, 37P, 42D, 45V, 46S, 50D, 51R, 55L, 60S, 62V, 67N, 69E, 73G, 76A, 79R, 82Q, 87S, 93S, 98I, 101A, 105Q, 109E, 116V, 120Q and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 283];

(18I, 25H, 29R, 32A, 37P, 42A, 45M, 46S, 50D, 51R, 55L, 60S, 62V, 67N, 69E, 73G, 76A, 79R, 82Q, 87S, 93S, 98I, 101A,

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105Q, 109E, 116V, 120Q and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 284];
(18I, 25H, 29R, 32A, 37P, 42D, 45M, 46S, 50D, 51R, 55L, 60S, 62V, 67N, 69E, 73G, 76A, 79R, 82Q, 87S, 93S, 98I, 101A, 105Q, 109E, 116V, 120Q and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 285];
(18I, 25H, 29R, 32A, 37P, 42S, 45M, 46S, 50D, 51R, 55L, 60S, 62V, 67N, 69E, 73G, 76A, 79R, 82Q, 87S, 93S, 98I, 101A, 105Q, 109E, 116V, 120Q and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 286];
(18I, 25H, 29R, 32A, 37P, 42A, 45V, 46S, 50D, 51R, 55L, 60S, 62V, 67N, 69E, 73G, 76A, 79R, 82Q, 87S, 93S, 98I, 101A, 105Q, 109E, 112Q, 116V, 120Q and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 291];
(18I, 25H, 29V, 32R, 34S, 37P, 42A, 45V, 51R, 55L, 60S, 62V, 67N, 69E, 73G, 76A, 79R, 82Q, 87S, 93S, 98I, 101A, 105Q, 109E, 116V, 120Q and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 292];
(18I, 25H, 29R, 32A, 37P, 42A, 45V, 51R, 55L, 60S, 62V, 67N, 69E, 73G, 76A, 79R, 82W, 87S, 93S, 98I, 101A, 105Q, 109E, 116V, 120Q and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 293];
(18I, 23A, 25H, 29R, 32A, 37P, 42D, 45V, 46S, 50D, 51R, 55L, 60S, 62V, 67N, 69E, 73G, 76A, 79R, 82Q, 87S, 93S, 98I, 101A, 105Q, 109E, 112Q, 116V, 120Q and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 294];
(18I, 25H, 29R, 32A, 37P, 42A, 45V, 51R, 55L, 60S, 62V, 67N, 69E, 73G, 76A, 79R, 82Q, 87S, 93S, 98I, 101A, 105Q, 109E, 112Q, 116V, 120Q and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 295];
(18I, 25H, 29R, 32A, 37P, 42A, 45V, 50D, 51R, 55L, 56S, 60S, 62V, 67N, 69E, 73G, 76A, 79R, 82Q, 87S, 93S, 98I, 101A, 105Q, 109E, 116V, 120Q and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 296];
(18I, 25H, 29R, 32A, 37P, 42D, 45M, 51R, 55L, 60S, 62V, 67N, 69E, 73G, 76A, 79R, 82Q, 87S, 93S, 98I, 101A, 105Q, 109E, 116V, 120Q and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 297];
(18I, 25H, 29R, 32A, 34S, 37P, 42A, 45V, 51R, 55L, 60S, 62V, 67N, 69E, 73G, 76A, 79R, 82Q, 87S, 93S, 98I, 101A, 105Q, 109E, 116V, 120Q and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 298];
(18I, 25H, 29R, 32A, 37P, 42D, 45V, 51R, 55L, 60S, 62V, 67N, 69E, 73G, 76A, 79R, 82Q, 87S, 93S, 98I, 101A, 105Q, 109E, 116V, 120Q and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 299];
(18I, 23A, 25H, 29R, 32A, 34S, 37P, 42D, 45M, 46S, 51R, 55L, 60S, 62V, 67N, 69E, 73G, 76A, 79R, 82Q, 87S, 93S, 98I, 101A, 105Q, 109E, 116V, 120Q and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 300];
(18I, 25H, 29R, 32A, 37P, 42D, 45M, 46S, 51R, 55L, 60S, 62V, 67N, 69E, 73G, 76A, 79R, 82Q, 87S, 93S, 98I, 101A, 105Q, 109E, 116V, 120Q and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 301];
(18I, 23A, 25H, 29V, 32R, 34S, 37P, 42D, 45V, 46S, 51R, 55L, 60S, 62V, 67N, 69E, 73G, 76A, 79R, 82Q, 87S, 93S, 98I, 101A, 105Q, 109E, 116V, 120Q and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 302];
(18I, 25H, 29R, 32A, 37P, 42A, 45V, 51R, 55L, 60S, 62V, 67N, 69E, 73G, 76A, 79R, 82Q, 87S, 93S, 98I, 101A, 105Q, 109E, 100R, 101M, 116V, 120Q and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 303];
(18I, 25H, 29R, 32A, 37P, 42A, 45V, 51R, 55L, 60S, 62V, 67N, 69E, 73G, 76A, 79R, 82W, 87S, 93S, 98I, 101A, 105Q, 109E, 100R, 101M, 116V, 120Q and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 304];
(18I, 25H, 29R, 32A, 37P, 42D, 45V, 46S, 51R, 55L, 60S, 62V, 67N, 69E, 73G, 76A, 79R, 82Q, 87S, 93S, 98I, 101A, 105Q, 109E, 116V, 120Q and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 305];
(18I, 23A, 25H, 29V, 32R, 34S, 37P, 42D, 45V, 46S, 51R, 55L, 60S, 62V, 67N, 69E, 73G, 76A, 79R, 82Q, 87S, 93S, 98I, 101A, 105Q, 109E, 116V, 120Q and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 306];
(18I, 25H, 29R, 32A, 37P, 42A, 45V, 50D, 51R, 55L, 60S, 62V, 67N, 69E, 73G, 76A, 79R, 82Q, 87S, 93S, 98I, 101A, 105Q, 109E, 116V, 120Q and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 308];
(18I, 25H, 29R, 32A, 37P, 42D, 45V, 46S, 50D, 51R, 55L, 60S, 62V, 67N, 69E, 73G, 76A, 79R, 82Q, 87S, 93S, 98I, 101A, 105Q, 109E, 116V, 120Q and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 309];
(18I, 25H, 29R, 32A, 37P, 42D, 45M, 46S, 50D, 51R, 55L, 60S, 62V, 67N, 69E, 73G, 76A, 79R, 82Q, 87S, 93S, 98I, 101A, 105Q, 109E, 116V, 120Q and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 310];
(18I, 23A, 25H, 29R, 32A, 34S, 37P, 42D, 45V, 46S, 50D, 51R, 55L, 56S 60S, 62V, 67N, 69E, 73G, 76A, 79R, 82Q, 87S, 93S, 98I, 101A, 105Q, 109E, 116V, 120Q and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 311];
(18I, 23A, 25H, 29R, 32A, 34S, 37P, 42D, 45M, 46S, 50D, 51R, 55L, 56S, 60S, 62V, 67N, 69E, 73G, 76A, 79R, 82Q, 87S, 93S, 98I, 101A, 105Q, 109E, 116V, 120Q and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 331];
(18I, 23A, 25H, 29R, 32A, 34S, 37P, 42D, 45M, 46S, 50D, 51R, 55L, 60S, 62V, 67N, 69E, 73G, 76A, 79R, 82Q, 87S, 93S, 98I, 101A, 105Q, 109E, 116V, 120Q and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 312]; and
(18I, 25H, 29R, 32A, 37P, 42A, 45V, 51R, 55L, 60S, 62V, 67N, 69E, 73G, 76A, 79R, 82Q, 87S, 93S, 98I, 101A, 105Q, 109E, 112Q, 116W, 120Q and 123E)-(15–125)hIL-3, [residues 3–113 of SEQ ID NO: 313].

5,604,117

ANTIBODIES TO *PLASMODIUM FALCIPARUM*

S. Melissa Maret, Laytonsville; Hans H. Feindt, Parkton; Gerald D. Hahn, Severn, and Keith Uithoven, West Friendship, all of Md., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Division of Ser. No. 250,309, May 27, 1994, Pat. No. 5,478,741, which is a continuation of Ser. No. 945,287, Sep. 11, 1992, abandoned. This application Mar. 21, 1995, Ser. No. 408,092

Int. Cl.[6] C12N *5/12;15/02;* C07K *16/46*

U.S. Cl. 435—70.21 **8 Claims**

1. A method of making an antibody comprising:
a) immunizing an animal with a peptide consisting of SEQ ID NO:1 coupled to an immunogenic carrier;
b) preparing a hybridoma which produces a monoclonal antibody having the specificity and sensitivity of monoclonal antibodies produced by ATCC Accession No. HB 11111 or ATCC Accession No. HB 11112, and;
c) isolating the monoclonal antibody produced by the hybridoma.

5,604,118

EUKARYOTIC EXPRESSION VECTOR SYSTEM

Chandrakant P. Giri, Rockville, Md.; Hiroyasu Ogawa, Osaka, Japan, and Curtis C. Harris, Bethesda, Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation of Ser. No. 34,652, Mar. 22, 1993, abandoned, which is a continuation of Ser. No. 539,812, Jun. 18, 1990, abandoned. This application Nov. 24, 1993, Ser. No. 158,087

Int. Cl.[6] C12P *19/34*

U.S. Cl. 435—91.1 **2 Claims**

1. A method of constructing a subtracted cDNA library for use in phenotypic selection of genes, comprising the steps of:
a) constructing a first cDNA library from a first population of cells;
b) cloning a cDNA fragment from said first cDNA library into an eukaryotic expression vector characterized by having functional properties of in vitro and in vivo synthesis of sense RNA and of in vitro and in vivo synthesis of antisense RNA for cDNA subtraction based on DNA:RNA hybridization and in vivo synthesis of antisense RNA for phenotypic selection of genes, said eukaryotic expression vector having functional properties corresponding to those exhibited by an expression vector generated from a first source plasmid PLHC2-HO2 (FIG. 1) and a second source plasmid PLHC2-CG6 (FIG. 7);
c) constructing a second cDNA library from a second population of cells from the same organism as said first population of cells but having a differential gene expression relative to said first population of cells;
d) cloning a cDNA fragment from said second cDNA library into said eukaryotic expression vector of step (b);
e) generating single-stranded DNA from said first cDNA library by use of a phage replication origin in said eukaryotic expression vector of step (b);
f) treating the second cDNA library with a polymerase specific to a bacteriophage polymerase promoter of said eukaryotic expression vector of step (b), said bacteria phage polymerase promoter being in the opposite orientation as that of said phage replication origin to generate a group of RNA molecules;
g) forming DNA:RNA hybrids of said single-stranded DNA and said group of RNA molecules;
h) separating said DNA:RNA hybrids of step (g) from unhybridized single stranded DNA, thereby isolating a subtracted group of single-stranded DNA; and
i) converting the isolated single-stranded cDNA to double stranded DNA by use of a DNA polymerase to form a subtracted library; and
j) using said subtracted library for phenotypic selection of genes.

5,604,119

PROCESS FOR PRODUCING TRIGLYCERIDES FROM GLYCEROL AND LONG-CHAIN POLYUNSATURATED FATTY ACIDS USING LIPASE FROM CANDIDA ANTARCTICA

Gudmundur G. Haraldsson, Reykjavik, Iceland; Hanne Svanholm, Soeborg, Denmark, and Baldur Hjaltason, Reykjavik, Iceland, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark, and LYSI HF, Reykjavik, Iceland

Continuation of Ser. No. 927,405, Sep. 25, 1992, abandoned. This application Jan. 23, 1995, Ser. No. 376,692

Claims priority, application Denmark, Apr. 18, 1990, 954/90

Int. Cl.[6] C12P *7/64*

U.S. Cl. 435—134 **14 Claims**

1. A process for preparing a triglyceride, comprising:
(a) reacting glycerol with a polyunsaturated fatty acid having at least 20 carbon atoms and at least three double bonds or a C_{1-4} alkyl ester thereof, for a reaction time in the range of 24–48 hours at a temperature between 40° and 80° C. in the presence of a mixture of lipase A and lipase B obtained from *Candida antarctica* which is immobilized, to form (i) the triglyceride and (ii) water or a C_{1-4} alcohol, while removing the water or the C_{1-4} alcohol during the reaction, wherein the reaction converts at least 90% of the glycerol into the triglyceride, and
(b) recovering the triglyceride.

5,604,120

METHOD FOR PRODUCING OPTICALLY ACTIVE ENDO-2-NORBORNEOLS

Hitoshi Yano; Teruyo Sugiura; Yasuyuki Koizumi, and Naoyuki Yoshida, all of Ichihara, Japan, assignors to Chisso Corporation, Tokyo, Japan

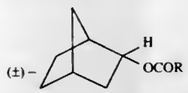
Filed Aug. 22, 1995, Ser. No. 517,792

Claims priority, application Japan, Aug. 22, 1994, 6-218324

Int. Cl.[6] C12P *7/62;7/02*

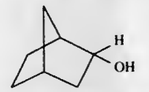
U.S. Cl. 435—135 **12 Claims**

1. A method for producing optically active endo-2-norborneols comprising asymmetrically hydrolysing racemic endo-2-acyloxynorbornane represented by formula (1):



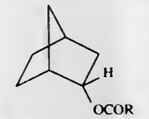
(1)

wherein R is straight or branched alkyl of 1–22 carbon atoms, alkenyl of 1–22 carbon atoms, cycloalkyl, aralkyl or aryl group with lipase derived from *Candida antartica*, obtaining a mixture of (R)-endo-2-norborneol represented by formula (2):



(2)

and (S)-endo-2-acyloxynorbornane represented by formula (3):



(3)

and isolating these compounds.

5,604,121

PROTEINS WITH INSECTICIDAL PROPERTIES AGAINST HOMOPTERAN INSECTS AND THEIR USE IN PLANT PROTECTION

Vaughan A. Hilder; Angharad M. R. Gatehouse; Kevin Powell, all of Durham, and Donald Boulter, Durham City, all of Great Britain, assignors to Agricultural Genetics Company Limited, Cambridge, Great Britain

PCT No. PCT/GB92/01565, § 371 Date Apr. 21, 1994, § 102(e) Date Apr. 21, 1994, PCT Pub. No. WO93/04177, PCT Pub. Date Mar. 4, 1993

PCT Filed Aug. 26, 1992, Ser. No. 199,152

Claims priority, application United Kingdom, Aug. 27, 1991, 9118365; Oct. 4, 1991, 9121195

Int. Cl.[6] C12N *15/09;15/29;* A01H *1/00:5/00;* C07H *21/04*

U.S. Cl. 435—172.3 **8 Claims**

1. A method of controlling Homopteran insect pests, which comprises administering enterally to the pests a protein which has toxic or antimetabolic effects on them, the protein being expressed in the phloem of a transgenic plant comprising a gene coding for the protein, the gene being associated with a phloem specific promoter which causes the gene to express the protein in the phloem of the plant.

5,604,122

IMPROVEMENTS IN OR RELATING TO DNA CLONING TECHNIQUES AND PRODUCTS FOR USE THEREWITH

Philip N. Taylor, Nr Dartford, United Kingdom, assignor to The University of Hull, Hull, United Kingdom

PCT No. PCT/GB93/00584, § 371 Date Nov. 14, 1994, § 102(e) Date Nov. 14, 1994, PCT Pub. No. WO93/19186, PCT Pub. Date Sep. 30, 1993

PCT Filed Mar. 22, 1993, Ser. No. 307,713

Claims priority, application United Kingdom, Mar. 21, 1992, 9206210

Int. Cl.[6] C12N *15/00;* C07H *21/04*

U.S. Cl. 435—172.3 **17 Claims**

1. A method of cloning foreign DNA into a DNA vector comprising: ligating respective ones of linker molecules to respective ends of a linear piece of foreign DNA and treating the foreign DNA thus formed so as to produce a single stranded overhang at each end thereof, said single stranded overhangs being formed

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from nucleotides derived from the ligated linkers; and ligating said foreign DNA with a single stranded overhang at each end to a DNA vector having a single stranded DNA overhang at each end, said vector overhangs being mutually incompatible so as to prevent self-religation; wherein each foreign DNA overhang is complementary to but at least one base shorter than each of the vector overhangs and is capable of base pairing along its entire length with either one of the vector overhangs to produce a double stranded DNA having a gap therein; and sealing the gap by either transforming the double stranded DNA having the gap therein into a suitable bacterium or transfecting it into a suitable bacterium after packaging it into a suitable bacteriophage.

5,604,123

LUCIFERASE, GENE ENCODING THE SAME AND PRODUCTION PROCESS OF THE SAME

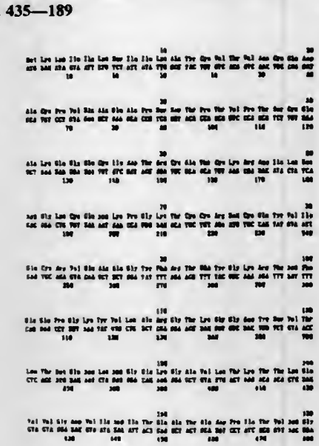
Jun Kazami; Haruji Nakamura, both of Shiga, and Toshio Goto, deceased, late of Nagoya, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 930,486, Aug. 14, 1992, abandoned, which is a continuation of Ser. No. 469,479, Jun. 1, 1990, abandoned. This application Jun. 15, 1994, Ser. No. 260,042

Claims priority, application Japan, Aug. 9, 1988, 63-199295; Aug. 17, 1988, 63-204173

Int. Cl.[6] C12N *15/35;15/63;15/70;15/79*

U.S. Cl. 435—189 **6 Claims**



1. An isolated DNA fragment comprising a sequence encoding a luciferase of Cypridina hilgendorfii having an amino acid sequence set forth in FIG. 1 selected from the group consisting of positions 1 through 555, positions 29 through 555, positions 30 through 555, positions 31 through 555, and positions 32 through 555.

5,604,124

Patent Not Issued For This Number

5,604,125

FORMULATIONS OF PLANT CULTURE MEDIA AND APPLICATIONS THEREFOR

Robert D. Teasdale, Robina, Australia, assignor to FB Investments Pty Ltd., Queensland, Australia

Continuation of Ser. No. 50,353, May 3, 1993, abandoned. This application Mar. 7, 1995, Ser. No. 400,451

Claims priority, application Australia, Nov. 2, 1990, PK3157

Int. Cl.[6] C12N *5/04;5/00*

U.S. Cl. 435—422 **3 Claims**

1. A method of culturing coniferous plant tissue which comprises the step of propagating coniferous plant tissue in the presence of a medium comprised of

reduced nitrogen comprising from 1.0 mM to 5.0 mM arginine and from 0.5 mM to 1.5 mM NH_4^+;

phosphate at a concentration of from 2.5 mM to 5.0 mM;

potassium ions at a concentration of from 5.0 mM to 14 mM;

a chelating agent present in an amount equivalent in chelating potential to EDTA in the range of 70 μM to 130 μM by addition; and

an iron compound present at a concentration of between 120 μm and 180 μm and at least 20 μm over the concentration of the chelating agent.

5,604,126

MURINE HYBRIDOMA 4A11 AND DIAGNOSTIC ANTIBODY PRODUCED THEREBY

Alisa E. Koch, River Forest, Ill., assignor to Northwestern University, Evanston, Ill.

Continuation of Ser. No. 167,328, Dec. 14, 1993, abandoned, which is a continuation of Ser. No. 864,441, Apr. 6, 1992, abandoned. This application May 26, 1995, Ser. No. 453,582

Int. Cl.[6] C12N *5/12;* **C07K** *16/28*

U.S. Cl. 435—332 **2 Claims**

1. The hybridoma cell line deposited under ATCC Accession No. HB11274.

5,604,127

PROBIOTIC FOR CONTROL OF SALMONELLA IN FOWL PRODUCED BY CONTINUOUS CULTURE OF FECAL/CECAL MATERIAL

David J. Nisbet; Donald E. Corrier, and John R. DeLoach, all of College Station, Tex., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation of Ser. No. 122,949, Sep. 20, 1993, abandoned, which is a division of Ser. No. 921,173, Jul. 29, 1992, Pat. No. 5,340,577. This application Nov. 23, 1994, Ser. No. 345,010

Int. Cl.[6] C12N *1/20;* **A01N** *63/00*

U.S. Cl. 435—252.4 **12 Claims**

1. A method for the isolation of a composition of bacteria effective for inhibiting Salmonella colonization of fowl comprising:

(a) inoculating a culture medium with fecal droppings or cecal contents of adult fowl which possess a protective microflora effective to inhibit Salmonella colonization, and incubating the inoculated medium in a batch culture under anaerobic conditions to provide an intermediate culture;

(b) incubating said intermediate culture in a continuous-flow culture at a turnover rate between about 0.029 to about 0.10 hr^{-1}, a pH between about 4.7 to 6.5, and under anaerobic conditions for a sufficient time to establish a steady state; and

(c) recovering the steady state culture from step (b) as a composition of bacteria effective for inhibiting Salmonella colonization of fowl.

5,604,128

ISOLATED CULTURES OF *PESTALOTIOPSIS FUNEREA* IFO 5427 AND *PESTALOTIOPSIS NEGLETA* FERM BP-3501

Atsushi Hattori; Masami Miura; Mitsuyo Takahashi; Noriyoshi Uchida, all of Tokyo; Kouhei Furuya, and Tsuyoshi Hosoya, both of Isukuba, all of Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

Division of Ser. No. 410,931, Mar. 27, 1995, which is a division of Ser. No. 363,580, Dec. 22, 1994, which is a continuation of Ser. No. 123,588, Sep. 17, 1993, abandoned, which is a continuation of Ser. No. 928,879, Aug. 11, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 461,421

Claims priority, application Japan, Aug. 13, 1991, 3-202771

Int. Cl.[6] C12N *1/14;1/16;9/34*

U.S. Cl. 435—254.1 **2 Claims**

1. A biologically pure culture of *Pestalotiopsis funerea* IFO 5427.

5,604,129

THERMOPHILIC FUNGAL EXPRESSION SYSTEM

Ejner B. Jensen, and Karuppan C. Boominathan, both of Davis, Calif., assignors to Novo Nordisk Biotech, Inc., Davis, Calif.

Division of Ser. No. 278,473, Jul. 20, 1994. This application Jun. 1, 1995, Ser. No. 457,201

Int. Cl.[6] C12N *1/15*

U.S. Cl. 435—254.11 **5 Claims**

1. A recombinant Myceliophthora host strain which produces, in tank fermentation, about 80% or less of the viscosity produced by *Aspergillus oryzae* cultured under identical conditions.

5,604,130

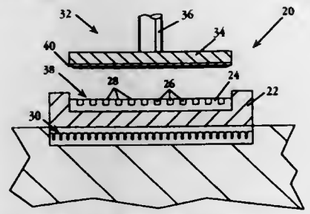
RELEASABLE MULTIWELL PLATE COVER

Brian D. Warner, Martinez; Benjamin T. Nordell, Belmont; Bruce J. Richardson, Los Gatos, and Amer El-Hage, Menlo Park, all of Calif., assignors to Chiron Corporation, Emeryville, and LJL Biosystems, Inc., Sunnyvale, both of Calif.

Filed May 31, 1995, Ser. No. 451,025

Int. Cl.[6] C12M *1/02;1/38*

U.S. Cl. 435—286.7 **21 Claims**



1. A pad for use in sealing wells having openings in the upper surface of a multi-well plate, comprising

a flexible polymer sheet defining a planar expanse adapted to cover the wells in the plate, and

formed on said expanse, a plurality of resiliently compressible ridges adapted to seat over the openings of said wells, with the pad placed operatively over the plate,

said ridges being deformable, with application of a substantially uniform pressure applied to the side of the sheet opposite said expanse, to form a substantially fluid-tight seal between said expanse and such well openings, and

said ridges extending from said expanse sufficiently to break said seal upon release of said pressure.

11. In an automated plate handling apparatus of the type having a tray for receiving a multiwell plate having a plurality of wells with upper planar openings, sample-handling means for heating or shaking the wells, and a sealing assembly including a cover and means for moving said cover from a retracted position toward a sealing position, a pad attached to said cover for use in sealing the wells of said plate, with the cover moved toward its sealing position, at which the pad is pressed against the surface of the plate, where in the improvement comprises, said pad comprising

a flexible polymer sheet defining a planar expanse dimensioned to cover the wells in the plate, and

formed on said expanse, a plurality of resiliently compressible ridges adapted to seat over the openings of said wells,

said ridges being deformable, as the cover is moved toward its sealing position, to form a substantially fluid-tight seal between said expanse and such well openings,

said ridges extending from said expanse sufficiently to break said seal upon movement of the cover toward its retracted position.

5,604,131

CDNA-GENOMIC DNA HYBRID SEQUENCE ENCODING APP770 CONTAINING A GENOMIC DNA INSERT OF THE KI AND OX-2 REGIONS

Samuel Wadsworth, Shrewsbury; Benjamin Snyder, Worcester; Vermuri B. Reddy, and Chamer Wei, both of Westborough, all of Mass., assignors to Athena Neurosciences, Inc., South San Francisco, Calif.

Continuation of Ser. No. 817,584, Jan. 7, 1992, abandoned. This application Sep. 17, 1993, Ser. No. 123,702

Int. Cl.[6] C07H *21/04;* **C12N** *15/12;15/63*

U.S. Cl. 435—320.1 **3 Claims**

1. A nucleic acid construct comprising a mammalian promoter operatively linked to a cDNA-genomic DNA hybrid sequence,

wherein said hybrid sequence contains a cDNA sequence encoding APP770 or a cDNA sequence encoding APP770 with a naturally occurring mutation,

wherein a genomic APP DNA sequence consisting of exon 6 and an amount of the adjacent downstream intron sufficient for splicing, the K1 and OX-2 coding region and an amount of each of their upstream and downstream introns sufficient for splicing, and exon 9 and an amount of the adjacent upstream intron sufficient for splicing is substituted into the corresponding region of the cDNA sequence encoding APP770, or the cDNA encoding APP770 with a naturally occurring mutation, and

wherein the construct is transcribed and differentially spliced in mammalian cells to form mRNA molecules which encode and are translated into APP695, APP751 and APP770.

5,604,132

PROCESS FLOW INJECTION ANALYZER AND METHOD

Italo A. Capuano, Orange; William T. Lefebvre, Rocky Hill, and Kenneth E. Creasy, Wallingford, all of Conn., assignors to Olin Corporation, Cheshire, Conn.

Filed Jan. 23, 1995, Ser. No. 376,711

Int. Cl.[6] G01N *35/08*

U.S. Cl. 436—52 **2 Claims**

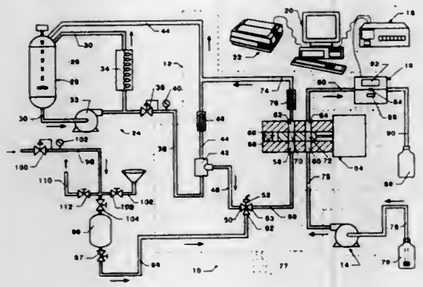
1. A method for monitoring a chemical reaction in a chemical process comprising:

a. gathering a fixed predetermined volume of sample of a reaction mixture of the chemical process;

b. injecting the gathered sample into a flow stream of a dry organic liquid carrier;

c. passing said flow stream of said dry organic liquid carrier containing the sample through an infrared detector to detect an amount of a species in the sample which is indicative of the progress of the chemical reaction in the chemical process; and

d. repeating said steps of gathering, injecting and passing at periodic intervals during the course of the chemical reaction in the chemical process.

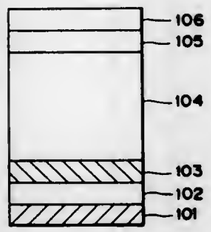


wherein said organic liquid carrier contains a quenching agent for quenching the reaction of the reaction mixture of the sample.

5,604,133
METHOD OF MAKING PHOTOVOLTAIC DEVICE

Tatsuyuki Aoike, Nagahama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 274,331, Jul. 13, 1994, abandoned, which is a division of Ser. No. 878,478, May 5, 1992, Pat. No. 5,338,370. This application Feb. 8, 1996, Ser. No. 597,381
Claims priority, application Japan, May 7, 1991, 3-130242
Int. Cl.[6] H01L *31/20*
U.S. Cl. 437—4 **42 Claims**



1. A method of producing a photovoltaic device, comprising the steps of

(a) forming a transparent conductive layer containing a metal oxide or nitride of at least one metal selected from the group consisting of Sn, In, Zn, Cd, and Ti;

(b) forming over the transparent conductive layer by glow discharge decomposition a non-monocrystalline Si layer of a first conductivity type of a thickness of 1 nm to 50 nm, said non-monocrystalline Si layer of said first conductivity type containing from 0.1 atomic ppm to 10,000 atomic ppm of the at least one metal element constituting the transparent conductive layer in a nonuniform distribution;

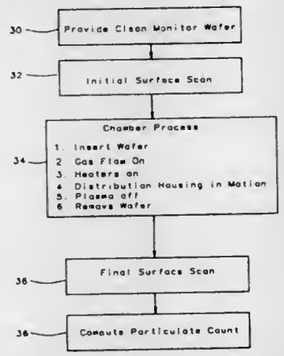
(c) forming by microwave glow discharge decomposition over the non-monocrystalline Si layer of the first conductivity type, a non-monocrystalline i-type Si layer; and

(d) forming over the non-monocrystalline i-type Si layer by glow discharge decomposition a non-monocrystalline Si layer of a second conductivity type different from the first conductivity type.

5,604,134
PARTICLE MONITORING METHOD FOR PLASMA REACTORS WITH MOVING GAS DISTRIBUTION HOUSINGS

Kuan-Hui Chang, Hsiu-chu; Tzu-Min Peng, Hsin-chu; Po-Tao Chu, Hsin-chu, and Shin-Kuei Yen, Hsin-pu, all of Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Ltd., Hsinchu, Taiwan

Filed Feb. 2, 1996, Ser. No. 597,493
Int. Cl.[6] G01R *31/26;* **H01L** *21/66*
U.S. Cl. 437—8 **14 Claims**



1. A method for measuring particulate density and distribution in a plasma etching tool which has an oscillating gas distribution housing comprising:

providing a clean, particulate free semiconductor wafer;

performing an initial optical scan of said semiconductor wafer utilizing oblique light; recording the particulate count on the surface of said semiconductor wafer and the location of particulates within a grid pattern;

affixing said semiconductor wafer onto the substrate holder of said plasma etching tool;

evacuating the reaction chamber of said plasma etching tool;

flowing a mixture of reactive and carrier gases through said reaction chamber;

causing said gas distribution housing to oscillate in the manner specified for a conventional etching operation;

allowing the flow and motion of said gases to continue for a length of time;

ceasing said motion of the gas distribution housing;

ceasing said flow of gases;

returning said semiconductor wafer to atmospheric pressure;

removing said semiconductor wafer from said plasma etching tool;

performing a final optical scan of said semiconductor wafer utilizing oblique light;

recording the particulate count on the surface of said semiconductor wafer;

recording the location of said particulates within a grid pattern; and

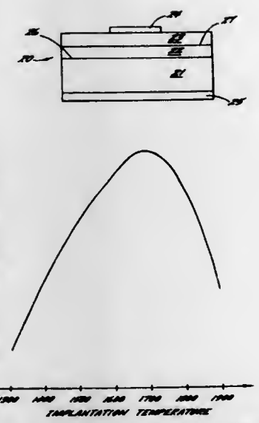
computing and recording the difference between the initial and final data.

5,604,135
METHOD OF FORMING GREEN LIGHT EMITTING DIODE IN SILICON CARBIDE

John A. Edmond, Cary, and Alexander V. Suvorov, Durham, both of N.C., assignors to Cree Research, Inc., Durham, N.C.

Filed Aug. 12, 1994, Ser. No. 290,020
Int. Cl.[6] H01L *21/24;21/329*
U.S. Cl. 437—22 **17 Claims**

1. A method of producing a true green light emitting diode in silicon carbide, the method comprising:



depositing a first epitaxial layer of 6H silicon carbide having a first conductivity type on a prepared planar surface of a 6H silicon carbide substrate in which the planar surface is inclined more than one degree off axis with respect to a basal plane thereof substantially towards one of the <11$\bar{2}$0> directions;

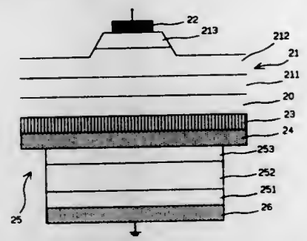
directing an ion implantation beam of dopant ions onto the first epitaxial layer while maintaining the layer at a temperature high enough to position dopant atoms at substitutional lattice sites in the epitaxial layer but less than the temperature at which excessive graphitization of the silicon carbide would occur to produce an implanted layer on said first epitaxial layer having the opposite conductivity type from said first layer, and to thereby produce a p-n junction between said first layer and said implanted layer; and

removing graphite from the surface of the implanted layer without affecting the electronic characteristics of the implanted layer or the junction.

5,604,136
METHOD OF MANUFACTURING LIGHT CONVERTER WITH AMORPHOUS-SILICON PIN HETEROJUNCTION DIODE

Yean-Kuen Fang, Tainan City; Kuen-Hsien Lee, Taichung City; Yaw-Jou Yang, Nantu Hsien, and Lee-Ching Kuo, Hsinchu City, all of Taiwan, assignors to National Science Council, Taipei, Taiwan

Filed May 26, 1995, Ser. No. 452,313
Int. Cl.[6] H01L *21/208*
U.S. Cl. 437—23 **19 Claims**



1. A method of manufacturing a light converter with an LED and an amorphous-silicon pin heterojunction diode comprising the steps of:

a) preparing a structure of said LED on one side of a substrate as a light-emitting unit;

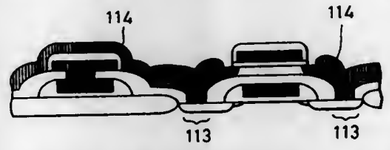
b) forming a buffer layer having a metal layer on the other side of said substrate and an indium-tin-oxide layer on said metal layer; and

c) depositing said amorphous-silicon pin (positive type/intrinsic type/negative type) heterojunction diode on said buffer layer as a light-absorbing unit.

5,604,137
METHOD FOR FORMING A MULTILAYER INTEGRATED CIRCUIT

Shunpei Yamazaki, Tokyo; Yasuhiko Takemura, Kanagawa; Akira Mase, Aichi, and Hideki Uochi, Kanagawa, all of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan

Division of Ser. No. 293,427, Aug. 22, 1994, which is a continuation of Ser. No. 948,426, Sep. 22, 1992, abandoned. This application Jun. 2, 1995, Ser. No. 460,632
Claims priority, application Japan, Sep. 25, 1991, 3-273376
Int. Cl.[6] H01L *21/8238;21/84*
U.S. Cl. 437—40 **11 Claims**



1. A method for forming a semiconductor device comprising the steps of:

forming a first MOS transistor of one conductivity type on a semiconductor substrate;

forming an insulating film on said first MOS transistor;

selectively forming a semiconductor film on said insulating film;

forming an opening in said insulating film;

forming a gate electrode on said semiconductor film;

oxidizing a material of said gate electrode;

introducing an impurity into said semiconductor film to form a doped region therein; and

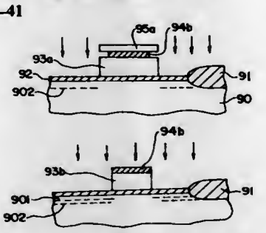
forming an electrode connecting said doped region with one of source and drain of said first MOS transistor,

wherein said electrode is in contact with top and side surfaces of said doped region.

5,604,138
PROCESS FOR MAKING A SEMICONDUCTOR MOS TRANSISTOR

Chang-Jae Lee, and Young-Jin Song, both of Chungcheongbuk-do, Rep. of Korea, assignors to Goldstar Electron Co., Ltd., Cheongju, Rep. of Korea

Filed Dec. 15, 1994, Ser. No. 357,961
Claims priority, application Rep. of Korea, Dec. 16, 1993, 93-28013
Int. Cl.[6] H01L *21/8234*
U.S. Cl. 437—41 **21 Claims**



1. A process for forming a MOSFET having an LDD structure, comprising the steps of:

(1) forming a first insulating layer on a semiconductor substrate;
(2) forming a conductive layer on the first insulating layer;
(3) forming a second insulating layer on the conductive layer;
(4) forming a third insulating layer on the second insulating layer;
(5) selectively removing portions of the third insulating layer, the second insulating layer and the conductive layer to form a stacked over-sized gate pattern;
(6) forming a first impurity region in the semiconductor substrate utilizing the stacked over-sized gate pattern as a mask;
(7) selectively removing an edge portion of the second insulating layer with a wet etch from the stacked over-sized gate pattern to form an undercut with respect to the third insulating layer;
(8) removing the third insulating layer;
(9) etching the conductive layer using the second insulating layer as a mask to form a gate; and
(10) forming a second impurity region in the semiconductor substrate.

5,604,139

METHOD FOR MANUFACTURING A SEMICONDUCTOR DEVICE

Mitsufumi Codama; Ichiro Takayama, both of Kanagawa, and Michio Arai, Tokyo, all of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan

Filed Feb. 9, 1995, Ser. No. 385,822
Claims priority, application Japan, Feb. 10, 1994, 6-037959; Feb. 10, 1994, 6-037960
Int. Cl.[6] H01L *21/86;21/8232*
U.S. Cl. 437—41 **9 Claims**

1. A method for forming a semiconductor device comprising:
forming on a gate electrode a blocking material having a lower etching rate than that of the gate electrode;
overhanging the gate electrode with the blocking material;
removing the blocking material overhanging in a source region side, to remain the blocking material overhanging in only drain region side; and
implanting an impurity using the remaining blocking material as a mask.

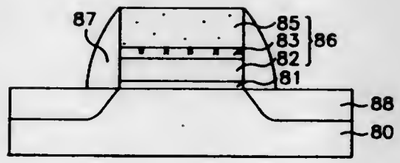
5,604,140

METHOD FOR FORMING FINE TITANIUM NITRIDE FILM AND METHOD FOR FABRICATING SEMICONDUCTOR ELEMENT USING THE SAME

Jeong S. Byun, Chungcheongbuk-do, Rep. of Korea, assignor to LG Semicon, Co. Ltd., Cheongju, Rep. of Korea

Filed May 22, 1995, Ser. No. 443,570
Int. Cl.[6] H01L *21/283;21/336*
U.S. Cl. 437—41 **17 Claims**

12. A method for fabricating a semiconductor element comprising the steps of:
forming a gate oxide film on a semiconductor substrate of a first conductivity type;
forming a polysilicon film on the gate oxide film;



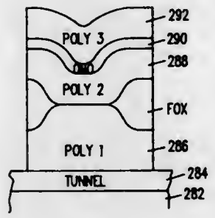
forming a first titanium nitride film having grain boundaries on the polysilicon film;
introducing oxygen into the grain boundaries of the first titanium nitride film, wherein the oxygen is introduced into the grain boundaries by exposing the first titanium nitride film to atmosphere;
forming a titanium film on the first titanium nitride film;
converting the titanium film into a second titanium nitride film;
forming a gate by patterning the first titanium nitride film and the second titanium nitride film; and
forming impurity regions in the substrate by injecting second conductivity type impurities into the substrate with the gate used as a mask.

5,604,141

METHOD FOR FORMING VIRTUAL-GROUND FLASH EPROM ARRAY WITH REDUCED CELL PITCH IN THE X DIRECTION

Albert M. Bergemont, Santa Clara, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Division of Ser. No. 213,215, Mar. 15, 1994, abandoned. This application Aug. 19, 1994, Ser. No. 293,135
Int. Cl.[6] H01L *21/8247*
U.S. Cl. 437—43 **17 Claims**



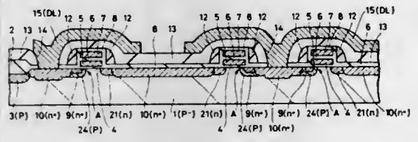
16. A method of fabricating a flash electrically programmable read-only-memory (EPROM) in a semiconductor material of a first conductivity type, the method comprising the steps off
forming a layer of first insulation material on the substrate;
forming a floating gate having a first polysilicon layer, the first polysilicon layer having sidewalls, on the layer of first insulation material, having second and third insulation layers on and at opposite ends of said first polysilicon layer, and having a second polysilicon layer formed on the second and third insulation material layers and contacting the first polysilicon layer between the second and third insulation material layers;
forming a layer of fourth insulation material over the floating gate; and
forming a control gate over the layer of fourth insulation material.

5,604,142

METHOD OF MAKING AN EPROM WITH PERIPHERAL TRANSISTOR

Kazuhiro Komori, Kodaira; Satoshi Meguro; Takaaki Hagiwara, both of Hinode-machi; Hitoshi Kume; Toshihisa Tsukada, both of Musashino, and Hideaki Yamamoto, Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 260,229, Jun. 14, 1994, Pat. No. 5,472,891, which is a continuation of Ser. No. 992,473, Dec. 15, 1992, Pat. No. 5,340,760, which is a division of Ser. No. 765,065, Sep. 24, 1991, Pat. No. 5,189,497, which is a continuation of Ser. No. 517,386, Apr. 30, 1990, Pat. No. 5,079,603, which is a continuation of Ser. No. 440,475, Nov. 21, 1989, abandoned, which is a continuation of Ser. No. 310,014, Feb. 13, 1989, abandoned, which is a continuation of Ser. No. 53,730, May 26, 1987, abandoned. This application Apr. 10, 1995, Ser. No. 419,232
Claims priority, application Japan, May 26, 1986, 61-119215
Int. Cl.[6] H01L *21/8247*
U.S. Cl. 437—43 **26 Claims**



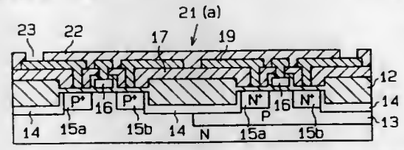
1. A method of manufacturing a semiconductor memory device, said semiconductor memory device comprising a memory cell and a MISFET for a peripheral circuit, said method comprising steps of:
providing a semiconductor substrate of a first conductivity type having a memory cell forming region and a peripheral circuit forming region, with a first gate insulating film formed on said memory cell forming region, a floating gate electrode formed on said first gate insulating film, a second gate insulating film formed on said floating gate electrode, and a control gate electrode formed on said second gate insulating film, and with a third gate insulating film formed on said peripheral circuit forming region, and a first gate electrode of said MISFET formed on said third gate insulating film;
introducing in said memory cell forming region an impurity substantially in self-alignment with one end portion of said control gate electrode to form a first semiconductor region of a second conductivity type in said memory cell forming region;
introducing in said memory cell forming region an impurity substantially in self-alignment with another end portion of said control gate electrode to form a second semiconductor region of said second conductivity type in said memory cell forming region;
introducing in said memory cell forming region an impurity substantially in self-alignment with said another end portion of said control gate electrode to form a third semiconductor region, of said first conductivity type, in said memory cell forming region, wherein a junction depth of said third semiconductor region is greater than a junction depth of said second semiconductor region, and wherein an impurity concentration of said third semiconductor region is higher than an impurity concentration of said semiconductor substrate;
introducing in said peripheral circuit forming region an impurity in self-alignment with said first gate electrode to form a fourth semiconductor region, of said second conductivity type, in said peripheral circuit forming region, wherein an impurity concentration of said first semiconductor region is higher than an impurity concentration of said fourth semiconductor region;
after the steps of introducing the impurities to form first, second, third, and fourth semiconductor regions, forming first side wall spacers on both side surfaces of said control and floating gate electrodes in self-alignment with said control and floating gate electrodes, and forming second side wall spacers on both side surfaces of said first gate electrode in self-alignment with said first gate electrode; and
introducing in said peripheral circuit forming region an impurity in self-alignment with said second side wall spacer to form a fifth semiconductor region, of said second conductivity type, in said peripheral circuit forming region, wherein an impurity concentration of said fifth semiconductor region is higher than an impurity concentration of said fourth semiconductor region, and wherein said fourth and fifth semiconductor regions serve as a drain region of said MISFET, and
wherein carriers stored in said floating gate electrode are transferred from said floating gate electrode to said first semiconductor region by tunneling through said first gate insulating film.

5,604,143

METHOD FOR PRODUCING NONVOLATILE MEMORY USED AS READ-ONLY STORAGE MEDIA

Shoji Ishida, Okazaki; Kenji Nakano, Toyota; Motofumi Kashiwaya, Toyota, and Masataka Inoue, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Nov. 2, 1995, Ser. No. 552,112
Claims priority, application Japan, Nov. 4, 1994, 6-271487
Int. Cl.[6] H01L *21/8246*
U.S. Cl. 437—48 **11 Claims**



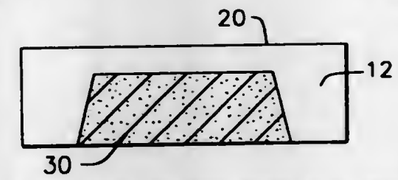
1. A method for fabricating read only memory, said method comprises:
(a) providing a substrate having wells of first doping type and channel stoppers;
(b) forming active regions in the substrate;
(c) placing an insulator layer over the active regions;
(d) forming contact halls through the insulator layer;
(e) forming metal traces on the insulator layer and in the contact halls;
(f) removing a disconnection pattern in the metal traces to encode one or more binary codes into the read only memory during fabrication; and
(g) placing a passivation layer over the metal traces.

5,604,144

METHOD FOR FABRICATING ACTIVE DEVICES ON A THIN MEMBRANE STRUCTURE USING POROUS SILICON OR POROUS SILICON CARBIDE

Anthony D. Kurtz, Teaneck, N.J., assignor to Kulite Semiconductor Products, Inc., Leonia, N.J.

Filed May 19, 1995, Ser. No. 444,962
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—51 **22 Claims**



1. A method for fabricating a semiconductor device, comprising the steps of:

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providing a substrate formed from a semiconductor material of a first conductivity type;

forming supporting means in a selected area of said substrate located under an area of said substrate which is designed to become a substantially thin membrane structure, said forming resulting in the partial formation of said membrane structure;

fabricating sensor elements on said partially formed membrane structure, whereby said selected portion supports said membrane structure during the fabrication of said sensor elements; and

fabricating integrated circuit elements on said substrate not within said membrane area.

5,604,145

METHOD OF MANUFACTURING DRAM CAPABLE OF RANDOMLY INPUTTING/OUTPUTTING MEMORY INFORMATION AT RANDOM

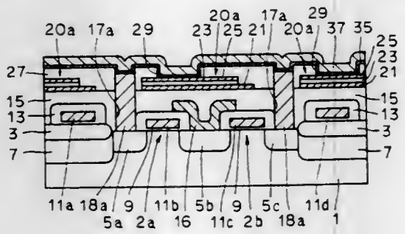
Yasushi Hashizume, and Hiroki Shinkawata, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 262,116, Jun. 17, 1994, Pat. No. 5,436,477. This application Jun. 6, 1995, Ser. No. 468,391

Claims priority, application Japan, Jun. 24, 1993, 5-153706; May 13, 1994, 6-099807

Int. Cl.[6] H01L *21/70;27/00*

U.S. Cl. 437—52 **2 Claims**



1. A method of manufacturing a semiconductor memory device, comprising:

a step of forming an impurity region of a second conductivity type in a main surface of a semiconductor substrate of a first conductivity type;

a step of forming a first interlayer insulating film having first and second portions on said main surface of said semiconductor substrate;

a step of forming a stacked structure of a first electrode, a high dielectric film consisting of a material having a high dielectric constant, and a second electrode on the first portion of said first interlayer insulating film;

a step of forming a second interlayer insulating film on the first and second portions of said first interlayer insulating film covering said stacked structure disposed on the first portion of said first interlayer insulating film;

a step of forming a first contact hole penetrating through said first and second interlayer insulating films to reach said impurity region and forming a plug electrode therein;

a step of forming a second contact hole in said second interlayer insulating film to reach a surface of said second electrode; and

a step of forming a conductor part on said plug electrode and in said second contact hole for electrically connecting said second electrode and said impurity region with each other.

5,604,146

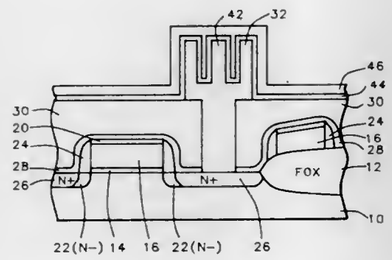
METHOD TO FABRICATE A SEMICONDUCTOR MEMORY DEVICE HAVING AN E-SHAPED STORAGE NODE

Horng-Huei Tseng, Hsinchu, Taiwan, assignor to Vanguard International Semiconductor Corporation, Hsin-Chu, Taiwan

Filed Jun. 10, 1996, Ser. No. 661,245

Int. Cl.[6] H01L *21/70;27/00*

U.S. Cl. 437—52 **35 Claims**



19. A method for fabricating a dynamic random access memory (DRAM) having a capacitor comprising:

selectively forming field oxide areas on the surface of a semiconductor substrate while leaving device areas for fabrication of semiconductor devices;

forming device structures within said device areas of said semiconductor substrate wherein said device structures include a capacitor node contact region within said semiconductor substrate; and

forming said capacitors by:

depositing a dielectric layer overlying said semiconductor device structures;

depositing an insulating layer overlying said dielectric layer and planarizing said insulating layer;

opening a contact through said insulating layer and said dielectric layer to said capacitor node contact region;

depositing a first layer of polysilicon overlying said insulating layer and filling said contact opening;

etching away a portion of said first polysilicon layer wherein a well opening is formed above said contact opening;

depositing a layer of silicon oxide overlying said first polysilicon layer and conformally within said well opening;

etching back said silicon oxide layer to leave spacers on the sidewalls of said well opening;

depositing a second layer of polysilicon overlying said first polysilicon layer and within said well opening;

removing said second polysilicon layer except where said second polysilicon layer forms a plug within said well opening;

removing said spacers on the walls of said well opening wherein gaps are left on either side of said plug;

patterning said first polysilicon layer so that an E-shaped structure having three prongs is formed wherein the prongs of said E-shaped structure point upward and wherein said plug forms the central prong and wherein the outer two prongs are formed by said patterned first polysilicon layer;

depositing a capacitor dielectric layer over all surfaces of said substrate wherein said capacitor dielectric layer covers the surfaces of said E-shaped structure; and

depositing a third polysilicon layer overlying said capacitor dielectric layer wherein said third polysilicon layer covers and fills the gaps of said E-shaped structure to complete formation of said DRAM with capacitor.

5,604,147

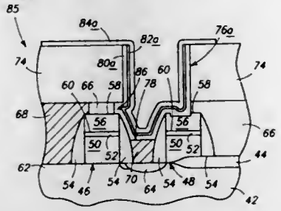
METHOD OF FORMING A CYLINDRICAL CONTAINER STACKED CAPACITOR

Mark Fischer; Mark Jost, and Kunal Parekh, all of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed May 12, 1995, Ser. No. 440,212

Int. Cl.[6] H01L *21/8242*

U.S. Cl. 437—60 **20 Claims**



1. A semiconductor processing method of forming a stacked container capacitor comprising the following steps:

providing a node on a substrate to which electrical connection to a capacitor is to be made;

providing an electrically conductive pillar in electrical connection with the node, the pillar projecting outwardly relative to the node and having a first outer surface;

providing an insulating dielectric layer over the conductive pillar;

etching a container opening through the insulating dielectric layer to outwardly expose the conductive pillar first outer surface;

etching the exposed conductive pillar to define a pillar second outer surface which is closer to the node than the pillar first outer surface and to deepen the container opening;

providing an electrically conductive storage node container layer within the container opening over the second outer conductive pillar surface;

providing a capacitor dielectric layer over the capacitor storage node layer; and

providing an electrically conductive outer capacitor plate over the capacitor dielectric layer.

5,604,148

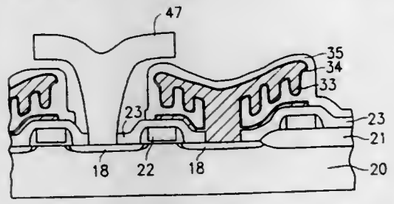
PROCESS OF FABRICATING STACKED CAPACITOR CONFIGURATION FOR DYNAMIC RANDOM ACCESS MEMORY

Water Lur, Taipei, Taiwan, assignor to United Microelectronics Corporation, Hsinchu, Taiwan

Filed Mar. 8, 1996, Ser. No. 612,700

Int. Cl.[6] H01L *21/8242*

U.S. Cl. 437—60 **16 Claims**



1. A process of fabricating a capacitor configuration for a dynamic random access memory device over a semiconductor substrate comprising the steps of:

(a) forming a field oxide layer, transistor component and a first insulating layer on said substrate, said transistor component including a gate and source/drain regions;

(b) sequentially forming at least a first electrically conducting layer and a second insulating layer on said first insulating layer, said second insulating layer including an upper insulating layer and a lower insulating layer;

(c) forming a contact opening at a designated location through said first insulating layer, said first electrically conducting layer and said second insulating layer so that said contact opening exposes a surface of said substrate;

(d) forming a second electrically conducting layer inside said contact opening, and removing said upper insulating layer of said second insulating layer;

(e) forming a spacing layer configuration over said lower insulating layer of said second insulating layer and surrounding said second electrically conducting layer, said spacing layer configuration including a combination of at least an insulating spacing layer and an electrically conducting layer from the second electrically conducting layer;

(f) etching back said insulating layers of said spacing layer configuration to thereby form a multiple ring-shaped wall configuration having at least one recess therein;

(g) forming a third electrically conducting layer over a top surface of said ring-shaped wall configuration having at least one recess;

(h) etching into said ring-shaped wall configuration and said lower insulating layer of said second insulating layer for defining a pattern of said capacitor configuration by removing said lower insulating layer of said second insulating layer and said insulating layers in said spacing layer configuration;

(i) an-isotropically etching into said first electrically conducting layer;

(j) constructing a lower electrode for said capacitor configuration utilizing said first, second and third electrically conducting layers and said electrically conducting layer of said spacing layer configuration;

(k) forming a dielectric layer over said lower electrode; and

(l) forming a fourth electrically conducting layer over said dielectric layer as an upper electrode for said capacitor configuration.

5,604,149

METHOD OF AND DEVICE FOR ISOLATING ACTIVE AREAS OF A SEMICONDUCOR SUBSTRATE BY QUASI-PLANE SHALLOW TRENCHES

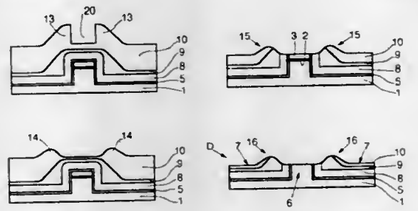
Maryse Paoli, Villard-Bonot; Pierre Brouquet, Crolles, and Michel Haond, Meylan, all of France, assignors to France Telecom, Paris, France

Filed Mar. 13, 1995, Ser. No. 403,142

Claims priority, application France, Mar. 11, 1994, 94 02871

Int. Cl.[6] H01L *21/76*

U.S. Cl. 437—67 **9 Claims**



1. Method of isolating active areas of a semiconductor substrate with lateral trenches characterised in that:

a) trenches (7) are formed in the semiconductor substrate (1) laterally of predetermined regions (6) of the substrate intended subsequently to form said active areas (6),

b) at least one layer (8) of an insulative conformal oxide is deposited in the trenches (7) and on said predetermined regions (6) of the substrate,

c) the semiconductor block obtained in step b) is annealed, and

d) the annealed semiconductor block is partially and selectively etched to leave on either side of each predetermined region

(6) of the substrate or on either side of groups of neighbouring predetermined regions (106) of the substrate projecting areas of conformal oxide (13, 113),

e) the conformal oxide layer (10, 110) of the semiconductor block formed in step d) is partially mechanical/chemical polished to reduce the height of the projecting conformal oxide areas below a chosen residual relief height,

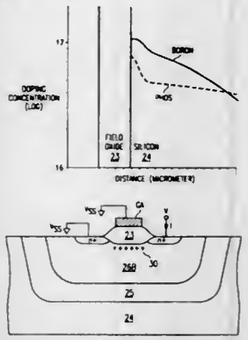
f) the predetermined regions (6, 106) of the substrate are uncovered by chemical etching with detection of end of attack on the semiconductor block formed in step e).

5,604,150

CHANNEL-STOP PROCESS FOR USE WITH THICK-FIELD ISOLATION REGIONS IN TRIPLE-WELL STRUCTURES

Freidoon Mehrad, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 25, 1995, Ser. No. 547,852
Int. Cl.[6] H01L *21/76*
U.S. Cl. 437—70 **20 Claims**



1. A method for electrically insulating at least one pair of source/drain diffusions of first conductivity-type formed in a first well of second conductivity-type opposite said first conductivity-type, said first well formed in a second well of said first conductivity-type, said method comprising:

forming a thick-field isolation region on said first well, said thick-field isolation region between said pair of source/drain diffusions;

selectively implanting at a first energy level a first dose of an impurity of said second conductivity-type through said thick-field isolation region into said first well;

selectively implanting at a second energy level a second dose of said impurity of said second conductivity-type through said thick-field isolation region into said first well.

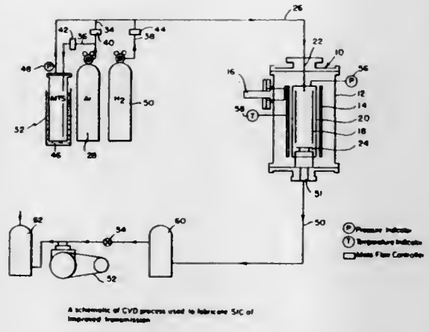
5,604,151

CHEMICAL VAPOR DEPOSITION-PRODUCED SILICON CARBIDE HAVING IMPROVED PROPERTIES

Jitendra S. Goela, Andover; Lee E. Burns, Woburn, and Raymond L. Taylor, Saugus, all of Mass., assignors to CVD, Incorporated, Woburn, Mass.

Division of Ser. No. 389,780, Feb. 16, 1995, which is a continuation of Ser. No. 159,915, Nov. 29, 1993, abandoned, which is a continuation of Ser. No. 979,965, Nov. 23, 1992, abandoned. This application May 11, 1995, Ser. No. 439,034
Int. Cl.[6] H01L *21/20*
U.S. Cl. 437—100 **12 Claims**

1. In a method of producing optically transmitting, free-standing, polycrystalline, β-SiC wherein a chemical vapor deposition having a deposition chamber and a mandrel surface therein for deposition of SiC are provided, introducing methyltrichlorosilane



A schematic of CVD process used to fabricate SiC of improved transmission

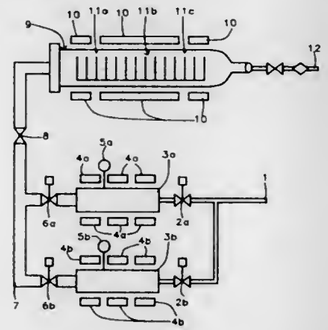
and H_2 gas into said deposition chamber under conditions which pyrolytically deposit silicon carbide on said surface, the improvement wherein said conditions comprise a deposition chamber temperature of between about 1400° C. and about 1500° C. a deposition chamber pressure of about 50 torr or less, a H_2/methyltrichlorosilane molar ratio of between about 4 and about 30, a deposition rate of about 1 micron per minute or less, and HCl also being introduced into said deposition chamber in a HCl/methyltrichlorosilane ratio of at least about 0.15.

5,604,152

CVD PROCESS FOR DEPOSITION OF AMORPHOUS SILICON

Chao-Yang Chén, and Fu-Yang Yu, both of Hsin-chu, Taiwan, assignors to United Microelectronics Corporation, Hsin-chu, Taiwan

Filed Nov. 23, 1994, Ser. No. 344,011
Int. Cl.[6] H01L *21/20*
U.S. Cl. 437—101 **20 Claims**



1. A method of depositing amorphous silicon on semiconductor substrates comprising the steps

providing said semiconductor substrates, placed sequentially in a deposition chamber;

injecting silane gas into an autoclave apparatus;

heating said silane gas in said autoclave apparatus;

decomposition of said silane gas to silylene gas and hydrogen in said autoclave apparatus at a pressure of greater than one atmosphere;

injection of said silylene and said hydrogen in said deposition chamber; and

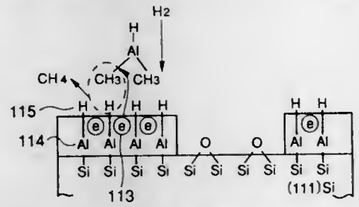
deposition of said amorphous silicon on said semiconductor substrates in said deposition chamber.

5,604,153

PROCESS FOR THIN FILM FORMATION

Kazuo Tsubouchi, 30-38, Hitokita 2-chome, and Kazuya Masu, 3-1-106, Mikamine 1-chome, both of Taihaku-ku, Sendai-shi, Miyagi-ken, Japan

Continuation of Ser. No. 257,948, Jun. 10, 1994, abandoned, which is a continuation of Ser. No. 51,781, Apr. 26, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 487,580
Claims priority, application Japan, Apr. 28, 1992, 4-136042
Int. Cl.[6] H01L *21/285*
U.S. Cl. 437—173 **8 Claims**



1. A process for forming a thin film on a substrate, which comprises the steps:

(a) treating a surface of the substrate to provide hydrogen atoms thereon;

(b) selectively irradiating the surface with an energy beam to form an irradiated region and a non-irradiated region on the surface;

(c) subjecting the surface to an oxidizing atmosphere to oxidize the irradiated region; and

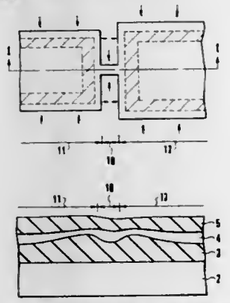
(d) selectively forming a thin film on the non-irradiated region by chemical vapor deposition, wherein the chemical vapor deposition is conducted with alkylaluminumhydride and hydrogen.

5,604,154

METHOD OF MANUFACTURING COULAMB BLOCKADE ELEMENT USING THERMAL OXIDATION

Yasuo Takahashi; Masao Nagase, and Akira Fujiwara, all of Kanagawa, Japan, assignors to Nippon Telegraph and Telephone Corporation, Japan

Filed Oct. 20, 1995, Ser. No. 546,529
Claims priority, application Japan, Oct. 27, 1994, 6-263809; Sep. 6, 1995, 7-228872
Int. Cl.[6] H01L *21/28*
U.S. Cl. 437—186 **8 Claims**



1. A method of manufacturing a Coulomb-blockade element comprising:

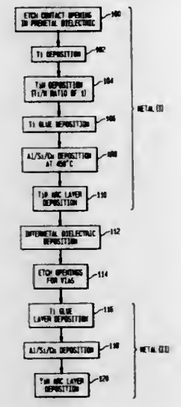
the step of processing a silicon layer formed on a substrate through an insulating film into a shape including a narrow wire portion serving as a conductive island for confining a charge, and first and second electrode portions at two ends of said narrow wire portion, each of said first and second electrode portions being wider than said narrow wire portion; and the thermal oxidation step of thermally oxidizing said silicon layer, said first and second electrode portions being formed to be thinner than said narrow wire portion at positions near said narrow wire portion.

5,604,155

AL-BASED CONTACT FORMATION PROCESS USING TI GLUE LAYER TO PREVENT NODULE-INDUCED BRIDGING

Kuang-Chih Wang, Taichung Hsien, Taiwan, assignor to Winbond Electronics Corp., Hsinchu, Taiwan

Filed Jul. 17, 1995, Ser. No. 503,286
Int. Cl.[6] H01L *21/283*
U.S. Cl. 437—190 **3 Claims**



1. A method for forming a planarized aluminum contact metallization in a MOS structure on a silicon substrate, the method comprising the steps of:

(a) forming a contact opening in a pre-metal dielectric which has previously been formed on said substrate;

(b) depositing a Ti metal layer in said contact opening and in contact with said substrate by sputtering in a first chamber;

(c) depositing a TiN barrier metal layer on said first Ti metal layer by sputtering in said first chamber;

(d) depositing a Ti glue layer over said TiN barrier metal layer by sputtering in said first chamber;

(e) depositing a first aluminum based layer on said Ti glue layer by sputtering in a second chamber, said steps (b), (c), (d) and (e) taking place sequentially without breaking a vacuum maintained in said first and second chambers, said first aluminum based layer being formed at a sufficiently elevated temperature so that said aluminum layer substantially fills said contact opening and is planarized, said TiN barrier layer resisting the diffusion of aluminum into said substrate while said aluminum based layer is being deposited at said elevated temperature, and said Ti glue layer being sufficient to prevent formation of precipitates in and on said first aluminum based layer by reacting with said first aluminum based layer to form $TiAl_3$ which dissolves said precipitates;

(f) forming a first TiN antireflection coating layer on said first aluminum based layer;

(g) depositing an intermetal dielectric layer over said antireflection coating layer;

(h) etching an opening for a via in said intermetal dielectric layer;

(i) depositing a second Ti glue layer in said via opening;

(j) depositing a second aluminum based layer over said second Ti glue layer in said via, said second aluminum based layer being deposited at a sufficiently elevated temperature so that said via opening is filled and said second aluminum based layer is planarized; and

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(k) forming a second TiN antireflection coating layer on said second aluminum based layer.

5,604,156

WIRE FORMING METHOD FOR SEMICONDUCTOR DEVICE

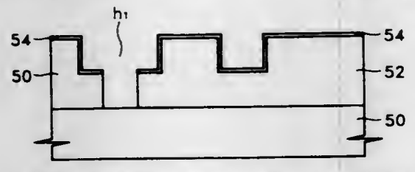
U-in Chung, Suwon; Jae-duk Kim, Kyungki-do, and Chang-ki Hong, Suwon, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Nov. 20, 1995, Ser. No. 560,913

Claims priority, application Rep. of Korea, Nov. 30, 1994, 94-32134

Int. Cl.[6] H01L *21/44*

U.S. Cl. 437—195 **22 Claims**



1. A wire forming method for a semiconductor device including the steps of:

forming a first insulation layer on a semiconductor substrate;

forming recessed portions on the surface of the first insulation layer by etching the first insulation layer to a preferred thickness;

forming a lower capping layer over the first insulation layer after the step of forming recessed portions;

etching the lower capping layer and one of the recessed portions of the first insulation layer to form a first contact hole exposing a first portion of the semiconductor substrate;

forming a barrier layer over the lower capping layer and the first part of the semiconductor substrate;

forming a wire layer over the barrier layer;

performing a chemical and mechanical polishing (CMP) process on the wire layer, the barrier layer, and the lower capping layer to expose the first insulation layer;

forming a second insulation layer over the wire layer and the first insulation layer; and

etching the first and second insulation layers to form a second contact hole that exposes a second part of the substrate.

5,604,157

REDUCED NOTCHING OF POLYCIDE GATES USING SILICON ANTI REFLECTION LAYER

Chang-Ming Dai; Jau-Hwang Ho, and Lou G. Chine, all of Hsinchu, Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed May 25, 1995, Ser. No. 450,301

Int. Cl.[6] H01L *21/28*

U.S. Cl. 437—200 **17 Claims**

1. A method of fabricating a MOSFET device on a semiconductor substrate, using an anti-reflective layer, as part of a photolithographic mask, to create a pattern of gate polycide lines and spaces, comprising the steps of:

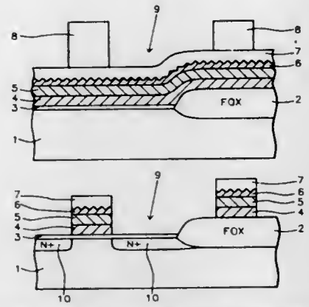
forming a field oxide region on specific portions of said substrate, while leaving bare silicon on remaining portions of said substrate;

growing a gate oxide on said bare silicon;

depositing a polysilicon layer on said gate oxide, and on said field oxide regions;

forming a metal silicide layer on said polysilicon layer;

depositing said anti-reflective layer, comprised of a hemispherical grain, silicon layer, on said metal silicide layer, at a temperature between about 550° and 580° C., to a thickness between about 300 and 1000 Angstroms;



depositing an oxide layer on said hemi-spherical grain, silicon layer;

patterning, to form polycide gate structure on said field oxide region and on said gate oxide; and

ion implanting a first conductivity imparting dopant into regions not covered by said polycide gate structure.

5,604,158

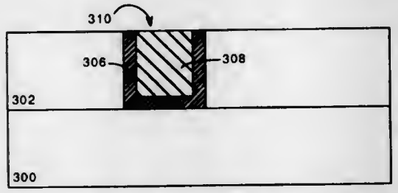
INTEGRATED TUNGSTEN/TUNGSTEN SILICIDE PLUG PROCESS

Kenneth C. Cadien, Portland, Oreg., and Srinivasam Sivaram, San Jose, Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 40,657, Mar. 31, 1993, abandoned. This application Apr. 16, 1996, Ser. No. 632,751

Int. Cl.[6] H01L *21/44*

U.S. Cl. 437—200 **18 Claims**



1. A process for filling an opening in an insulating layer of an integrated circuit formed over a substrate comprising the steps of:

forming a tungsten silicide layer in said opening and over said insulating layer;

forming a tungsten layer on said tungsten-silicide layer in said opening and over said insulating layer such that said opening is substantially filled with tungsten; and

polishing said tungsten and said tungsten-silicide layers until said insulating layer is substantially revealed.

5,604,159

METHOD OF MAKING A CONTACT STRUCTURE

Kent J. Cooper, and Scott S. Roth, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 31, 1994, Ser. No. 188,986

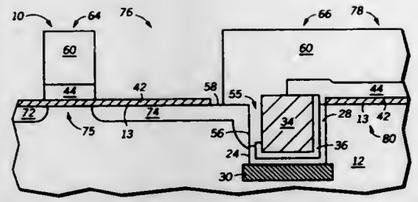
Int. Cl.[6] H01L *21/44;21/48*

U.S. Cl. 437—203 **63 Claims**

1. A method for forming a contact structure in an integrated circuit comprising the steps of:

providing a semiconductor substrate;

forming a trench isolation region within a first portion of the semiconductor substrate, the trench isolation region comprising a trench and a trench plug lying within the trench, the trench having a trench sidewall;



forming a source/drain region for a first transistor, the source/drain region lying within a second portion of the semiconductor substrate;

wherein as a result of forming the trench isolation region and the source/drain region, the source/drain region abuts the trench sidewall;

forming a recess within a portion of the trench isolation region; and

forming a gate electrode for a second transistor overlying the trench plug, wherein a portion of the gate electrode for the second transistor lies within the recess and is electrically shorted to the source/drain region abutting the trench sidewall.

5,604,160

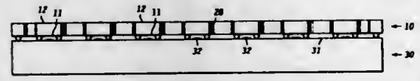
METHOD FOR PACKAGING SEMICONDUCTOR DEVICES

Timothy J. Warfield, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 29, 1996, Ser. No. 687,904

Int. Cl.[6] H01L *21/60*

U.S. Cl. 437—209 **20 Claims**



1. A method for packaging semiconductor devices, comprising the steps of:

providing a device wafer having a major surface and a plurality of semiconductor devices formed thereon;

providing a cap wafer of a first thickness, the cap wafer having a front surface and a back surface;

forming a plurality of cavities in a first portion of the cap wafer, the plurality of cavities extending from the front surface into the cap wafer to a depth less than the first thickness of the cap wafer;

bonding the cap wafer to the device wafer while positioning the front surface of the cap wafer toward the major surface of the device wafer; and

removing portions of the cap wafer between the plurality of cavities and the back surface of the cap wafer.

5,604,161

SEMICONDUCTOR DEVICE ASSEMBLY WITH MINIMIZED BOND FINGER CONNECTIONS

Ivor Barber, San Jose, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

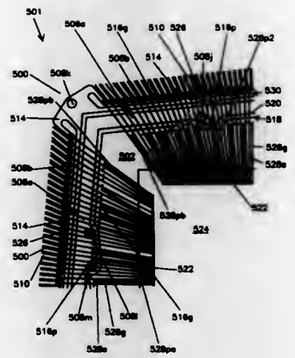
Continuation of Ser. No. 396,084, Feb. 28, 1995, Pat. No. 5,545,923, which is a continuation of Ser. No. 142,251, Oct. 22, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 466,810

Int. Cl.[6] H01L *21/60*

U.S. Cl. 437—216 **18 Claims**

1. A method of making a semiconductor device assembly, comprising:

(a) providing a printed wiring board substrate;



(b) centrally locating a planar conductive layer on a surface of the substrate, the planar conductive layer including one or more conductive segments electrically insulated from one another, each conductive segment adapted for connection thereto, and each conductive segment having portions substantially the same distance from a perimeter of an area adapted to receive a semiconductor die;

(c) disposing a plurality of bond fingers around the periphery of the planar conductive layer, each of the plurality of bond fingers adapted for connection thereto;

(d) disposing a semiconductor die above the planar conductive layer and within the perimeter of the area adapted to receive the semiconductor die, the semiconductor die having a first and second plurality of bond pads thereon; and

(e) connecting the portions of the one or more conductive segments to the first plurality of bond pads with substantially the same length connections, and connecting the plurality of bond fingers to the second plurality of bond pads.

5,604,162

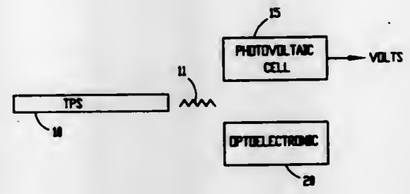
PROCESS OF PREPARING TRITIATED POROUS SILICON

Shiu-Wing Tam, Downers Grove, Ill., assignor to The University of Chicago, Chicago, Ill.

Division of Ser. No. 517,001, Aug. 18, 1995. This application Jun. 27, 1996, Ser. No. 671,325

Int. Cl.[6] H01L *21/302*

U.S. Cl. 437—225 **4 Claims**



1. A process of preparing tritiated porous silicon comprising equilibrating porous silicon with a vapor containing HT/T_2 gas in a diluent for a time sufficient for tritium in the gas phase to replace hydrogen present in the pore surfaces of the porous silicon.

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5,604,163

SYNTHETIC SILICA GLASS POWDER

Hozumi Endo; Kazumi Kimura, and Akira Utsunomiya, all of Kitakyushu, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

Filed Jul. 10, 1995, Ser. No. 500,202
Claims priority, application Japan, Jul. 11, 1994, 6-158755
Int. Cl.[6] C03C *3/06*
U.S. Cl. 501—12 **7 Claims**

1. A synthetic silica glass powder obtained by calcining a silica gel powder obtained by hydrolysis of a tetraalkoxysilane, said synthetic silica glass powder consisting essentially of silica glass and from 1×10^{-1} to 1×10^{-4} ppm of boron and having an internal silanol group concentration of at most 150 ppm and an isolated silanol group concentration of at most 5 ppm.

5,604,164

REFRACTORY BOAT AND METHOD OF MANUFACTURE

Lionel C. Montgomery, Westlake, and Ajoy Zutshi, Avon Lake, both of Ohio, assignors to Advanced Ceramics Corporation, Lakewood, Ohio

Filed Sep. 6, 1995, Ser. No. 524,242
Int. Cl.[6] C04B *35/583*
U.S. Cl. 501—96 **11 Claims**

1. A refractory boat suitable for evaporating metals such as aluminum consisting essentially of an intermetallic composition of either titanium diboride and boron nitride or titanium diboride, boron nitride and aluminum nitride formed by the process of hot pressing said composition with a metal selected from the group consisting of Mo, Ta, W, and Nb, and an oxide selected from the group consisting of CaO and Y_2O_3 in a minimum oxide concentration of from 0.7 wt. %, and with the maximum combined concentration of metal and oxide in the intermetallic composition not exceeding 20 wt. %.

5,604,165

CRB_2-NBB_2/AL_20_3 AND CRB_2-NBB_2/SIC CERAMIC COMPOSITE MATERIALS

Inna G. Talmy, Silver Spring; Eric J. Wuchina, Wheaton; James A. Zaykoski, Beltsville, and Mark M. Opeka, Laurel, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 551,253, Oct. 31, 1995, Pat. No. 5,571,759. This application Jun. 13, 1996, Ser. No. 664,042
The portion of the term of this patent subsequent to Nov. 5, 2013, has been disclaimed.
Int. Cl.[6] C04B *35/58*
U.S. Cl. 501—96 **25 Claims**

1. A composite comprising

A. from more than zero to about 40 volume percent of a reinforcement material that is Al_2O_3, SiC, or mixtures thereof; and

B. the remainder of the composite being a matrix of a ceramic material based on a solid solution comprising from more than zero to less than 100 mole percent CrB_2 with NbB_2 being the remainder in solid solution.

5,604,166

DIELECTRIC CERAMIC COMPOSITION

Norio Sasaki; Yoshiharu Watanabe, and Kouji Takahashi, all of Tokyo, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Feb. 7, 1996, Ser. No. 598,261
Claims priority, application Japan, Feb. 14, 1995, 7-025695
Int. Cl.[6] C04B *35/468*
U.S. Cl. 501—137 **3 Claims**

1. A dielectric ceramic composition having the composition represented by formula (1):

$$(BaTiO_3)_e+(BaZrO_3)_f+(CaTiO_3)_g+(MgTiO_3)_h+(R1+R2+R3+R4) \quad (1)$$

wherein e is from 60.3 to 67.5 mol %, f is from 11.9 to 15.6 mol %, g is from 15.8 to 23.0 mol %, and h is from 2.6 to 5.8 mol %; provided that the total of e, f, g, and h is 100% mol; and R1 is from 0.05 to 0.4 wt % of NiO, R2 is from 0.05 to 0.3 wt % of CeO_2, R3 is from 0.03 to 0.2 wt % of MnO, and R4 is from 0.0 to 0.25 wt % of SiO_2, all based on 100 mol % in total of $BaTiO_3$, $BaZrO_3$, $CaTiO_3$, and $MgTiO_3$, wherein said composition has a dielectric constant of 4,000 or more and an alternating breakdown voltage of 4 kV/mm or more.

5,604,167

Y5V DIELECTRIC COMPOSITION

James M. Wilson, and Thallam T. Srinivasan, both of Victor, N.Y., assignors to Ferro Corporation, Cleveland, Ohio

Filed Oct. 16, 1995, Ser. No. 543,273
Int. Cl.[6] C04B *35/46*
U.S. Cl. 501—138 **5 Claims**

1. A dielectric ceramic composition in powder form capable of producing low fired multilayer capacitors meeting the Y5V standards of the EIA requiring that the temperature coefficient of capacitance must not change by more than +22% to −82% in the temperature range of −30° C. to +85° C., and consisting essentially of a non-stoichiometric host material produced in accordance with the formula (Ba_xCa_y), (Ti_zSn_w) O_3 +t % PbO, where t is in the range of greater than zero to approximately 2.0 wt. % and the molar ratio of (Ba_x+Ca_y) to (Ti_z+Sn_w) is greater than 1.0, wherein the mole fraction of x is in the approximate range of 0.90 to 0.92 of x+y and the mole fraction of z is in the approximate range of 0.86 to 0.89 of z+w, and doped with dopants consisting of a glass frit and one or more of boric acid and the oxides of La, Zn, Cu, Nb, Mn and Y.

5,604,168

CLAY-CONTAINING MIXTURE AND BLEND CAPABLE OF FORMING A MOISTURE RESISTANT GEL, AND USE OF THAT MIXTURE AND BLEND

Oszkár Libor, Budapest, Hungary, assignor to Aannemingsbedrijf Van Der Biggelaar Limburg B.V., Wessem, Netherlands

PCT No. PCT/NL94/00017, § 371 Date Nov. 17, 1995, § 102(e) Date Nov. 17, 1995, PCT Pub. No. WO94/18284, PCT Pub. Date Aug. 18, 1994
PCT Filed Jan. 25, 1994, Ser. No. 495,511
Claims priority, application Hungary, Feb. 3, 1993, 2960/93; Jul. 16, 1993, 20361/93
Int. Cl.[6] C04B *33/00;* **C09K** *17/00*
U.S. Cl. 501—141 **7 Claims**

1. A clay-containing mixture which comprises (a) a powdered or ground smectite and/or a smectite-containing natural rock and (b) 1–10% by weight of a water-soluble polymer, or a blend which additionally comprises a diluting agent, both the mixture and the blend capable of forming a moisture-resistant gel, characterized in that both the mixture and the blend are dry solids, the blend comprises as diluting agent more than 0.5% by weight of one or more solid inert filler(s) with an average particle size higher than 0.05 mm, and both the mixture and the blend additionally comprise

(c) 0.8–6.0% by weight of a powdered solid activating agent comprising a water soluble sodium or lithium salt, all the weight percentages being calculated on the weight of the smectite, which smectite is present in an inactive state.

5,604,169

PROCESS FOR PRODUCING MIXED-CATION ZEOLITES

Frederick W. Leavitt, Amherst, N.Y., assignor to Praxair Technology, Inc., Danbury, Conn.

Filed Mar. 4, 1996, Ser. No. 610,017
Int. Cl.[6] B01J *29/04*
U.S. Cl. 502—60 **10 Claims**

1. A process for producing mixed-cation zeolites comprising:

(a) passing a concentrated solution of a salt containing a first cation having a lesser affinity than a second cation for a zeolite adsorbent through a bed of said zeolite adsorbent so as to establish a mass transfer zone at the feed end of the bed, wherein said first cation displaces undesired cations present in the zeolite adsorbent therefrom, and to move said mass transfer zone through said bed from the feed end to the discharge end thereof, thereby saturating said bed with said first cation;

(b) recirculating a brine rich in said first cation through said bed and injecting a pulse of said second cation having a greater affinity than said first cation for said zeolite adsorbent into the recirculating brine so as to distribute the second cation through the bed of zeolite adsorbent, said second cation displacing the first cation from the outer surface of the zeolite adsorbent particles throughout the bed, the quantity of the second cation in the pulse being sufficient to provide the desired concentration of the second cation in the mixed-cation zeolite adsorbent;

(c) terminating the recirculation of the brine rich in said first cation through said bed for an equilibration period, thereby enabling the zeolite adsorbent particles to equilibrate in the presence of the first cation-rich brine present in the bed, the presence of a high concentration of the first cation enabling said first cation to exchange with and mobilize the second cation initially present on the surface of the zeolite adsorbent particles, said equilibration period being of sufficient duration to enable a uniform distribution of said first cation and said second cation to occur;

(d) washing the bed of zeolite adsorbent to remove dissolved salts therefrom; and

(e) drying the bed of zeolite adsorbent, whereby an essentially uniform mixed-cation product is produced at a concentration of the second cation.

5,604,170

SOLID CATALYST COMPONENTS FOR OLEFIN POLEMERIZATION AND USE THEREOF

Akira Sano; Kunimichi Kubo, both of Tokyo; Kazuo Matsuura, and Yoshio Tajima, both of Yokohama, all of Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan

Filed Feb. 22, 1994, Ser. No. 199,561
Claims priority, application Japan, Feb. 23, 1993, 5-072730; Feb. 23, 1993, 5-072733; Feb. 23, 1993, 5-072734
Int. Cl.[6] C08F *4/64*
U.S. Cl. 502—115 **7 Claims**

1. A solid catalyst component for olefin polymerization, comprising

a transition metal component comprising at least magnesium; titanium and/or vanadium; and halogen,

and the particles of at least one oxide selected from silicon oxides and aluminum oxides, said silicon oxides and aluminum oxides satisfying the following characteristics (A) to (E):

(A) an average particle diameter as measured by the sieving method in the range of 20 to 150 μm;

(B) a specific surface area as measured by the BET method in the range of 150 to 600 m^2/g;

(C) the volume of pores ranging in pore radius from 18 to 1,000 Angstroms as measured by the mercury penetration method in the range of 0.3 to 2.0 cm^3/g;

(D) an apparent specific gravity as measured according to JIS K6220-6.8 is not lower than 0.32; and

(E) after the particles classified in the range of between 53 μm and 75 μm by the sieving method have been subjected to an ultrasonic disintegration treatment at 40 KHz, 35 W, for 20 minutes, the proportion of 50 μm or smaller particles, is not more than 30%.

5,604,171

CATALYTIC SYSTEM WHICH MAY BE USED FOR THE POLYMERIZATION OF ALPHA-OLEFINS AND PROCESS FOR THIS POLYMERIZATION

Hervé Collette, Namur, and Sabine Pamart, Mons, both of Belgium, assignors to Solvay (Société Anonyme), Brussels, Belgium

Filed Nov. 4, 1994, Ser. No. 336,652
Claims priority, application Belgium, Nov. 4, 1993, 09301213
Int. Cl.[6] B01J *31/00;37/00;* **C08F** *4/02;4/60*
U.S. Cl. 502—120 **3 Claims**

1. A catalytic composition which may be used for polymerization of alpha-olefins, comprising:

(a) a solid catalyst comprising titanium trichloride ($TiCl_3$);

(b) a non-halogen-containing cocatalyst comprising at least one non-halogen-containing organoaluminium compound selected from the group consisting of trialkylaluminiums possessing identical or different alkyl radicals containing from 1 to 12 carbon atoms, wherein the non-halogen-containing cocatalyst additionally contains at least one aminoalane containing no active hydrogen selected from the group consisting of organoaluminium compounds containing at least one aluminum/nitrogen bond which do not release ethane when they are placed in the presence of triethylaluminium at a temperature of between 80° and 120° C. approximately; and

(c) at least one oxygenated organosilicon compound.

5,604,172

SHAPE-SHIFTED MAGNESIUM ALKOXIDE COMPONENT FOR POLYMERIZING OLEFINS

Burkhard E. Wagner, Highland Park, N.J.; Daniel P. Zilker, Jr., Charleston, W. Va., and Robert J. Jorgensen, Belle Mead, N.J., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Division of Ser. No. 447,921, May 23, 1995, Pat. No. 5,567,665, which is a continuation of Ser. No. 221,684, Mar. 31, 1984, abandoned. This application Feb. 2, 1996, Ser. No. 595,777
Int. Cl.[6] C08F *4/656*
U.S. Cl. 502—120 **7 Claims**

1. A catalyst system comprising:

(a) an organoaluminum compound,

(b) a selectivity control agent,

(c) a catalyst component prepared by:

(1) contacting dihydrocarbyloxide magnesium with carbon dioxide in the presence of a slurrying agent to form a magnesium hydrocarbyl carbonate;

(2) adding a filler having an average particle size of no greater than 1 μm, either before or after the dihydrocarbyloxide magnesium is contacted with carbon dioxide;

(3) spray drying the slurry of step (2) to evaporate the slurrying agent and to produce solid particles of magnesium hydrocarbyl carbonate incorporating the filler;

(4) heating the solid particles to remove carbon dioxide to produce a dihydrocarbyloxide magnesium catalyst component having an average particle size from about 5 μm to 200 μm; and

(5) treating the catalyst component of (4) with a halogenated tetravalent titanium compound in the presence of an electron donor.

5,604,173

DESULFURIZATION OF SULFUR COMPOUND-CONTAINING GASES WITH VANADIUM CATALYSTS

Roman A. Bouyanov, Novossibirsk; Albert M. Tsyboulesky, Moscou; Boris P. Zolotovsky; Dimitri P. Klevtsov, both of Novossibirsk, and Vladimir L. Mourine, Moscou, all of Russian Federation, assignors to Institut De Catalyse Du Department Siberien De L'Academie Des Sciences De Russie, Novossibirik, and Vnligaz, Razvilka, both of Russian Federation

Division of Ser. No. 288,750, Aug. 16, 1994, Pat. No. 5,512,258, which is a division of Ser. No. 899,912, Jun. 17, 1992, Pat. No. 5,369,076. This application Jun. 5, 1995, Ser. No. 463,763

Claims priority, application U.S.S.R., Jun. 17, 1991, 4941760

Int. Cl.[6] B01J *23/22*

U.S. Cl. 502—354 **2 Claims**

1. A process for the preparation of a catalyst having an active catalytic phase deposited on a support substrate, said active catalytic phase comprising an electroneutral solid solution having an average composition:

$$A_{4\pm y}V_{2\pm x}O_9$$

in which A is a metal other than vanadium, $0 \leqq x \leqq 0.2$ and $0 \leqq y \leqq 0.5$, comprising impregnating said support substrate with a solution of a salt of said metal A and a vanadyl salt to thereby produce said catalyst.

5,604,174

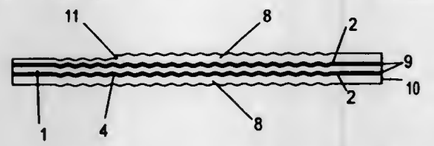
METAL FOIL CATALYST MEMBERS BY AQUEOUS ELECTROPHORETIC DEPOSITION

Semyon D. Friedman, Baltimore; Awdhoot V. Kerkar, Columbia, both of Md.; Ernest W. Hughes, Erie, Pa.; Rasto Brezny, Catonsville, Md.; John W. Lau, Gaithersburg, Md., and Jacob Block, Rockville, Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Continuation of Ser. No. 276,126, Jul. 15, 1994, which is a continuation of Ser. No. 247,436, May 23, 1994, abandoned. This application Aug. 30, 1995, Ser. No. 460,783

Int. Cl.[6] B01J *21/04*

U.S. Cl. 502—439 **18 Claims**



1. A method for forming a catalyst member, said member comprising (1) a metal foil having first and second primary surfaces and an edge surface, at least a portion of said first and second primary surfaces being corrugated and (2) a porous ceramic oxide catalyst support layer on said first primary surface and on the corrugated portion thereof, said method comprising:

(a) contacting at least said portion of a metal foil which is corrugated with an aqueous slurry comprised of particles of a porous ceramic oxide whereby at least a portion of said first primary surface is in contact with said slurry,

(b) placing an electrode in contact with said slurry,

(c) applying an electric field between said foil and said electrode whereby an electrical potential is created on the foil which potential is opposite to an electrical potential on the particles in the slurry,

(d) maintaining said electric field for a time sufficient to cause deposition of at least some of said particles on at least said first primary surface, including at least a portion of said primary surface which is corrugated, thereby coating the foil and forming a catalyst support layer thereon;

(e) removing said coated foil from said electric field and from contact with said slurry,

(f) contacting the coated foil with a pressurized air flow to remove excess slurry,

(g) drying said coated foil to form a catalyst support layer on the foil,

(h) optionally impregnating said catalyst support layer with a catalytic species, and

(i) optionally calcining said impregnated foil, thereby forming a catalyst member.

5,604,175

REVERSIBLE HEAT-SENSITIVE RECORDING MEDIUM

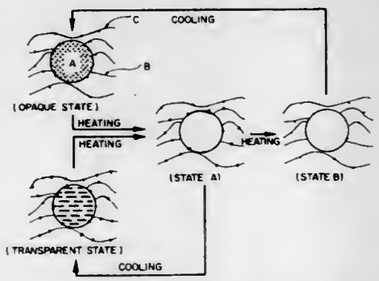
Yutaka Nakabayashi; Yoshihiro Hieda, and Seiji Kondo, all of Osaka, Japan, assignors to Nitto Denko Corporation, Osaka, Japan

Filed May 10, 1994, Ser. No. 240,528

Claims priority, application Japan, May 11, 1993, 5-133897

Int. Cl.[6] B41M *5/26*

U.S. Cl. 503—201 **9 Claims**



1. A reversible heat-sensitive recording medium comprising a support and having thereon a recording layer comprising:

(i) a resin matrix,

(ii) at least one organic low molecular weight material (A) which is at least partially insoluble in the resin matrix, exists in the resin matrix by phase separation, and is dispersed as particles in the resin matrix, and

(iii) an organic low molecular weight material (B) soluble in the resin matrix,

wherein the organic low molecular weight material (B) can impart an orientation to the melt of the organic low molecular weight material (A) at a temperature from T_1 to T_2,

wherein T_1 is the melting point of the organic low molecular weight material (A) in the resin matrix, and T_2 is the melting point of the organic low molecular weight material (B) in the resin matrix,

wherein said organic low molecular weight material (A) is an aliphatic ketone compound having a melting point of 50° C. or more, and said organic low molecular weight material (B) is at least one member selected from the group consisting of sulfides, aliphatic dicarboxylic acids, saturated or unsaturated fatty acid bisamides, aromatic bisamides, saturated and unsaturated aliphatic ureas or bisureas, and aromatic ureas.

5,604,176

HEAT-SENSITIVE RECORDING MATERIAL

Yoshihiro Shimizu, Nishinomiya; Masato Kawai, Takarazuka; Yasuyoshi Morita, Urawa; Kohei Michikawa, Amagasaki, and Takehiro Minami, Osaka, all of Japan, assignors to New Oji Paper Co., Ltd., Tokyo, Japan

Filed Apr. 26, 1995, Ser. No. 429,352

Claims priority, application Japan, Apr. 27, 1994, 6-090295; Jun. 30, 1994, 6-149281

Int. Cl.[6] B41M *5/30*

U.S. Cl. 503—207 **6 Claims**

1. A heat sensitive recording material which comprises a recording layer containing a colorless or light-colored basic dye and a developing agent on a support, the recording layer containing a polyethylene having a melting point not lower than 60° C. and aluminum hydroxide, the polyethylene being obtained as a emulsion not comprising a surfactant.

5,604,177

METHOD FOR STIMULATING PLANT GROWTH USING GABA AND SUCCINIC ACID

Alan Kinnersley, East Lansing; Robert Coleman, and Edward Tolbert, both of Okemos, all of Mich., assignors to Computational Systems, Inc., Knoxville, Tenn.

Continuation of Ser. No. 200,218, Feb. 23, 1994, Pat. No. 5,439,873. This application Jul. 10, 1995, Ser. No. 500,391

Int. Cl.[6] A01N *37/44;37/04*

U.S. Cl. 504—147 **19 Claims**

1. A process for increasing growth of a plant comprising treating the plant with γ-aminobutyric acid and succinic acid.

5,604,178

N-(SUBSTITUTED AMINO)PYRROLE DERIVATIVES, AND HERBICIDAL COMPOSITIONS

Yoichi Kanda; Hideo Arabori; Masato Arahira, and Tsutomu Sato, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo K.K., Tokyo, Japan

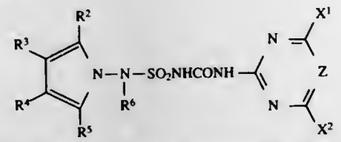
Filed Oct. 14, 1994, Ser. No. 323,413

Claims priority, application Japan, Oct. 15, 1993, 5-281889

Int. Cl.[6] A01N *43/66;* **C07D** *251/42*

U.S. Cl. 504—213 **7 Claims**

1. An N-(substituted amino)pyrrole derivative represented by the formula (I):



(I)

wherein R^2, R^3, R^4 and R^5 is independently hydrogen atom, halogen atom, C_1–C_4 alkyl group, C_1–C_5 haloalkyl group, C_2–C_5 alkoxyalkyl group, C_3–C_5 alkenyl group, C_3–C_5 haloalkenyl group, C_3–C_5 alkinyl group, phenyl group which may be substituted with 1–3 halogen atoms and/or C_1–C_4 alkyl groups, C_7–C_9 aralkyl group which may be substituted with 1–3 halogen atoms and/or C_1–C_4 alkyl groups, (C_1–C_4 alkyl)carbonyl group, (C_2–C_5 alkoxyalkyl)carbonyl group, (C_3–C_6 cycloalkyl)carbonyl group, (C_1–C_4 haloalkyl)carbonyl group, (C_3–C_5 alkenyl)carbonyl group, benzoyl group which may be substituted with 1–3 halogen atoms and/or C_1–C_4 alkyl groups, (C_7–C_9 aralkyl)carbonyl group which may be substituted with 1–3 halogen atoms and/or C_1–C_4 alkyl groups, carbamoyl group, N-(C_1–C_4 alkyl)aminocarbonyl group, N,N-[(di-C_1–C_4 alkyl)amino]carbonyl group, carboxyl group, (C_1–C_4 alkoxy)carbonyl group, (C_1–C_4 haloalkoxy)carbonyl group, (C_2–C_5 alkoxyalkoxy)carbonyl group, (C_3–C_5 alkenyloxy)carbonyl group, (C_3–C_5 haloalkenyloxy)carbonyl group or (C_3–C_5 alkynyloxy)carbonyl group;

R^6 is hydrogen atom, C_1–C_5 alkyl group, C_1–C_5 haloalkyl group, C_2–C_5 alkoxyalkyl group, C_3–C_5 alkenyl group, C_3–C_5 haloalkenyl group, C_3–C_5 alkynyl group or C_7–C_9 aralkyl group which may be substituted with 1–3 halogen atoms and/or C_1–C_4 alkyl groups;

X^1 and X^2 are independently hydrogen atom, halogen atom, C_1–C_4 alkyl group, C_1–C_4 alkoxy group, C_1–C_4 alkylthio group, C_1–C_4 haloalkyl group, C_1–C_4 haloalkoxy group, C_1–C_4 haloalkylthio group, C_2–C_4 alkoxyalkyl group, C_2–C_4 thioalkoxyalkyl group or NR^7R^8 wherein R^7 and R^8 are independently hydrogen atom, C_1–C_4 alkyl group or C_1–C_4 alkoxy group; and

Z is nitrogen atom.

5,604,179

IMINOSULFONYLUREA DERIVATIVES AND HERBICIDES

Kenzi Makino; Shigeaki Akiyama; Hideaki Suzuki; Takeshi Nagaoka; Toshio Niki, all of Funabashi; Koichi Suzuki, Shiraoka-machi; Tsutomu Nawamaki, Shiraoka-machi; Shigeomi Watanabe, Shiraoka-machi, and Kimihiro Ishikawa, Shiraoka-machi, all of Japan, assignors to Nissan Chemical Industries Ltd., Tokyo, Japan

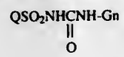
Continuation of Ser. No. 170,222, Apr. 15, 1994, Pat. No. 5,500,406. This application Jun. 7, 1995, Ser. No. 472,921

Claims priority, application Japan, Jun. 28, 1991, 3-158106; Aug. 14, 1991, 3-204294; Sep. 25, 1991, 3-245876; Dec. 3, 1991, 3-319422; Jan. 20, 1992, 4-7397; Mar. 24, 1992, 4-66277; Apr. 30, 1992, 4-111494

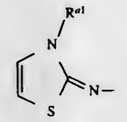
Int. Cl.[6] C07D *251/42;* **A01N** *43/66*

U.S. Cl. 504—213 **5 Claims**

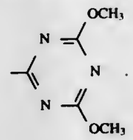
1. A compound of the formula:



where Q is



where R^{a1} is $CH_2CH_2CH_2F$, and Gn is



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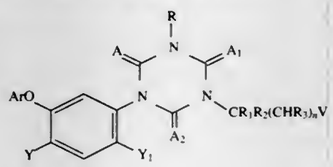
5,604,180

3-(3-ARYLOXYPHENYL)-1 (SUBSTITUTED METHYL)-S-TRIAZINE-2,4,6-OXO OR THIOTRIONE HERBICIDAL AGENTS

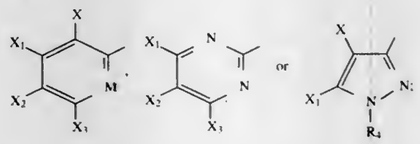
Alvin D. Crews, Jr., 41 Brookstone Dr., Voorhees, N.J. 08043; Philip M. Harrington, 302 Windsor Commons, Cranbury, N.J. 08512; Gary M. Karp, 37 Cartwright Dr.,, Princeton Jct., Mercer, N.J. 08550; Simon D. Gill, 21 Langstone Walk, Fareham, and Petra Dieterich, 70 Locks Road, Locks Heath, both of England

Filed Jun. 2, 1995, Ser. No. 458,635
Int. Cl.[6] C07D *251/32;* **A01N** *43/66*
U.S. Cl. 504—227 **21 Claims**

1. A compound having the structural formula



wherein
Ar is



M is CX_4 or N;
X, X_1, X_2, X_3, X_4 and Y_1 are each independently hydrogen, halogen, nitro, cyano, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy, C_1–C_4haloalkoxy or $S(O)_mR_5$;
m is an integer of 0, 1 or 2;
R_5 is C_1–C_4alkyl or C_1–C_4haloalkyl;
R_4 is C_1–C_4alkyl;
Y is hydrogen or halogen;
A, A_1 and A_2 are each independently O or S;
R is hydrogen, C_1–C_4alkyl, C_2–C_6alkoxyalkyl, C_2–C_6alkylcarbonylalkyl, C_2–C_6haloalkylcarbonylalkyl, C_2–C_6alkoxycarbonylalkyl, C_2–C_6haloalkoxycarbonylalkyl, C_3–C_6alkenyl, C_3–C_6alkynyl, an alkali metal or phenyl optionally substituted with one to three
halogen, C_1–C_4alkyl, C_1–C_4alkoxy or C_1–C_4haloalkoxy groups;
R_1 is hydrogen, C_1–C_4alkyl or phenyl optionally substituted with one to three halogen, C_1–C_4alkyl, C_1–C_4alkoxy or C_1–C_4haloalkoxy groups, and when taken together with R_2, R_1R_2 may represent the structure: $—(CH_2)_p—$ where p is an integer of 2, 3, 4 or 5, and when n is 0, R_1 may be taken together with R_{10} to form a ring in which R_1R_{10} is represented by the structure: $—(CH_2)_q—$ where q is an integer of 2 or 3;
R_2 is hydrogen or C_1–C_4alkyl, and when taken together with R_1, R_2R_1 may represent the structure: $—(CH_2)_p—$ where p is an integer of 2, 3, 4 or 5;
R_3 is hydrogen or C_1–C_4alkyl;
n is an integer of 0, 1 or 2;
V is $C(O)R_6$, $C(W)R_7$, $CH_2OC(O)R_8$ or $CH(OR_9)_2$;
R_6 is OH, OR_{10}, SR_{10} or $NR_{11}R_{12}$;
W is O, NOR_{11}, $NCOR_{11}$ or $NNHCONH_2$;
R_7 and R_8 are each independently hydrogen or C_1–C_4alkyl;
R_9 is C_1–C_4alkyl;
R_{10} is C_1–C_6alkyl optionally substituted with C_1–C_4alkoxy, C_1–C_4alkylthio, C_2–C_6alkoxycarbonylalkyl, halogen, hydroxy, C_3–C_6cycloalkyl, tetrahydrofuryl, furyl or phenyl optionally substituted with one or more halogen, cyano, nitro, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy or C_1–C_4haloalkoxy groups,
C_3–C_6alkenyl optionally substituted with C_1–C_4alkoxy, halogen, C_3–C_6cycloalkyl or phenyl optionally substituted with one or more halogen, cyano, nitro, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy or C_1–C_4haloalkoxy groups,
C_3–C_6alkynyl optionally substituted with C_1–C_4alkoxy or halogen,
C_3–C_6cycloalkyl,
$N{=}C(R_7R_8)$, or
an alkali metal, alkaline earth metal, manganese, copper, zinc, cobalt, silver, nickel, ammonium or organic ammonium cation, and when n is 0, R_{10} may be taken together with R_1 to form a ring in which $R_{10}R_1$ is represented by the structure: $—(CH_2)_q—$ where q is an integer of 2 or 3; and
R_{11} and R_{12} are each independently hydrogen, C_1–C_6alkyl, C_2–C_6alkoxycarbonylalkyl,
benzyl optionally substituted with one or more halogen, cyano, nitro, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy or C_1–C_4haloalkoxy groups, or
phenyl optionally substituted with one or more halogen, cyano, nitro, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy or C_1–C_4haloalkoxy groups.

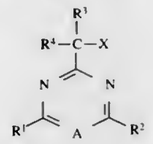
5,604,181

PYRIMIDINE DERIVATIVES HERBICIDES

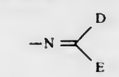
Thomas L. Hough, and Peter S. Gates, both of Cambridge, England, assignors to Agrevo UK Limited, England

PCT No. PCT/EP93/02339, § 371 Date Mar. 8, 1995, § 102(e) Date Mar. 8, 1995, PCT Pub. No. WO94/05644, PCT Pub. Date Mar. 17, 1994
PCT Filed Aug. 27, 1993, Ser. No. 397,123
Claims priority, application United Kingdom, Sep. 9, 1992, 9219115
Int. Cl.[6] C07D *239/32;239/52;* **A01N** *43/54*
U.S. Cl. 504—242 **21 Claims**

1. A compound of the formula:



or salts thereof, where:
A is —CH=;
X is —OH, $—OR^{10}$, —SH $—SR^{10}$, —SCN, NH_2, or —NHacyl;
R^1 and R^2, which may be the same or different, each represent alkyl, alkoxy, haloalkyl, haloalkoxy, halo, alkylamino or dialkylamino;
R^3 is —CN, $—COOR^5$, $—CONR^6R^7$, $—CSNH_2$, —CHO, —CH=Z, $—COSR^{4a}$, $—CS_2R^{4a}$, or a substituted or unsubstituted pyridyl or thiophenyl group;
R^4 and R^{4a}, which may be the same or different, are each H, or a substituted or unsubstituted alkyl, alkenyl, alkynyl, cycloalkyl, phenyl, phenylalkyl, pyridyl or thiophenyl group;
R^5 is H, or a substituted or unsubstituted alkyl, alkenyl, alkynyl, cycloalkyl, phenyl, phenylalkyl, pyridyl or thiophenyl group, or a group of the formula:



where D and E are each alkyl, or together with the carbon atom to which they are attached form a 5-, 6- or 7-membered carbocyclic ring;
R^6 is a group as defined for R^{4a}, and R^7 is a group as defined for R^{4a} or is $—SO_2R^8$, —OH, —CN, $—OR^{10}$, $—NH_2$ or $—NHR^{10}$; or R^6 and R^7 together with the nitrogen atom to which they are attached form a morpholino group;
R^8 is a substituted or unsubstituted alkyl, alkenyl, alkynyl, cycloalkyl, aralkyl, phenyl, pyridyl or thiophenyl group, or a group $—NR^{4b}R^{4c}$ where R^{4b} and R^{4c}, which may be the same or different, are each a group as defined for R^{4a}, or are linked together to complete a ring;
R^{10} is a substituted or unsubstituted alkyl, alkenyl, alkynyl, cycloalkyl, phenyl, phenylalkyl, pyridyl, thiophenyl or acyl group;
Z is $=NOR^{4a}$ or $=N—NR^{4d}R^{12}$, where R^{4d} is a group as defined for R^{4a}, and R^{12} is a group as defined for R^{4a} or is a substituted or unsubstituted acyl group, or said R^{4a} and R^{12} groups are linked together to complete a ring;
any alkyl group present in the molecule, unless otherwise defined, is of 1 to 8 carbon atoms and, if substituted, is substituted by one or more halogen atoms, alkoxy groups of 1 to 4 carbon atoms, hydroxy, nitro, mercapto, amino, substituted amino, cyano, acyl, phenyl, pyridyl or thiophenyl groups, or groups of the formula $—SR^8$ or $—SOR^8$, where R^8 represents a substituted or unsubstituted alkyl, alkenyl, alkynyl, cycloalkyl, aralkyl, acyl or amino group;
any alkenyl or alkynyl group present in the molecule is of 2 to 6 carbon atoms and, if substituted, is substituted by halogen;
any cycloalkyl group present in the molecule is of 3 to 7 carbon atoms;
any phenyl group present in the molecule, if substituted, is substituted by one or more halogen atoms, optionally substituted alkyl or alkoxy groups of 1 to 4 carbon atoms, hydroxy, nitro, mercapto, amino, alkyl or dialkyl or phenyl substituted amino, cyano, acyl, optionally substituted phenyl, pyridyl or thiophenyl groups, or groups of the formula $—SR^8$ or $—SOR^8$;
any pyridyl or thiophenyl group present in the molecule, if substituted, is substituted by one or more halogen atoms, nitro groups, amino, alkylamino, dialkylamino or acylamino groups, cyano groups, or alkyl or alkoxy groups of 1 to 4 carbon atoms; and
any acyl group present in the molecule is a residue of a carboxylic, sulfonic or phosphorus-containing acid;
and with the proviso that, when R4 is ortho-substituted phenyl, any ortho-substituent thereon is halogen, $—NO_2$, —OH, $—OR^{10}$, —SH, $—SR^8$, $—SOR^8$, $—SO_2R^8$, $—NH_2$, $—NR^6R^{10}$, substituted or unsubstituted phenyl, pyridyl or thiophenyl.

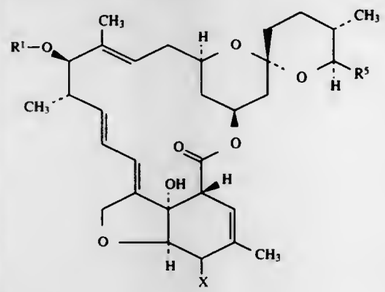
5,604,182

MILBEMYCIN ETHER DERIVATIVES, THEIR PREPARATION AND THEIR THERAPEUTIC AND AGROCHEMICAL USES

Yasuhiro Morisawa; Akio Saito; Toshimitsu Toyama, and Susumu Kaneko, all of Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Division of Ser. No. 661,833, Feb. 27, 1991, Pat. No. 5,346,918. This application Jul. 11, 1994, Ser. No. 273,240
Claims priority, application Japan, Mar. 1, 1990, 2-50760
Int. Cl.[6] A01N *43/04;* **A61K** *31/335;* **C07D** *315/00*
U.S. Cl. 504—291 **23 Claims**

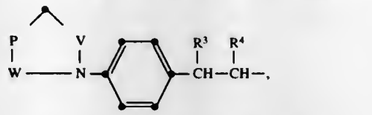
1. A compound of formula (I):

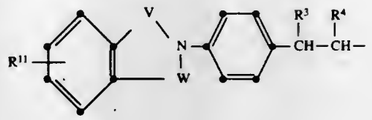


(I)

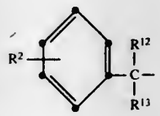
in which:

R^1 represents: a group having one of the following formulae:





or



wherein:
R^2 represents: a hydrogen atom; a halogen atom; a cyano group; a nitro group; an alkyl group having from 1 to 4 carbon atoms; a substituted alkyl group which has from 1 to 4 carbon atoms and which has at least one substituent selected from the group consisting of substituents (a); an alkoxy group having from 1 to 4 carbon atoms; an alkoxyalkoxy group having a total of from 2 to 6 carbon atoms; or a group having one of the following formulae:
$—(CH_2)_nNHR^9$
$—(CH_2)_nNR^9COR^6$
$—(CH_2)_nNR^9COCOR^6$
$—(CH_2)_nNR^9COCOOR^7$
$—(CH_2)_nNR^9CHR^6NHCOR^6$
$—(CH_2)_nNR^9CHR^6NHCONHR^6$
$—(CH_2)_nNR^9CHR^6NHCOOR^7$
$—(CH_2)_nNR^9C(=Y)YR^6$
$—(CH_2)_nNR^9C(=Y)NR^6R^6$
$—(CH_2)_nNR^9C(=Y)NR^6NR^6R^6$
$—(CH_2)_nNR^9C(=Y)NR^6NHZ$
$—(CH_2)_nNR^9C(=NR^{10})NHR^{10}$
$—(CH_2)_nNR^9C(=NR^{10})R^6$ or
$—(CH_2)_nNR^9SO_mR^6$
wherein:
m is 1 or 2;
n is 0, 1 or 2;
R^6 represents a hydrogen atom; an alkyl group having from 1 to 8 carbon atoms; a substituted alkyl group having from 1 to 8 carbon atoms and having at least one substituent selected from the group consisting of substituents (b); an aliphatic hydrocarbon group having from 2 to 8 carbon atoms and having one or two carbon-carbon double or triple bonds; a cycloalkyl group having from 3 to 8 carbon atoms; a substituted cycloalkyl group having from 3 to 8 carbon atoms and having at least one substituent selected from the group consisting of substituents (c); an aryl group which has from 6 to 14 ring carbon atoms and which is unsubstituted or which has at least one substituent selected from the group consisting of substituents (c); an aryloxy group which has from 6 to 14 ring carbon atoms and which is unsubstituted or which has an least one substituent selected from the group consisting of substituents (c); an arylthio group which has from 6 to 14 ring carbon atoms and which is unsubstituted or which has at least one substituent selected from the group consisting of substituents (c);
R^7 represents an alkyl group having from 1 to 4 carbon atoms, a cycloalkyl group having from 3 to 7 carbon atoms, or an aralkyl group in which an alkyl group having from 1 to 4 carbon atoms is substituted by from 1 to 3 aryl groups

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which have from 6 to 10 ring carbon atoms and which have at least one substituent selected from the group consisting of substituents (c);

R^9 represents a hydrogen atom or an alkyl group having from 1 to 4 carbon atoms;

R^{10} represents any of the groups or atoms defined above for R^6, or it represents a cyano group, a nitro group, a group of formula —$COOR^7$, wherein R^7 is as defined above, or a group of formula —COR^6 wherein R^6 is as defined above;

Y represents an oxygen atom or a sulfur atom; and, where there are two or more groups represented by Y, these are the same or different from each other;

Z represents a group of formula —$COOR^7$, wherein R^7 is as defined above, a group of formula —COR^6, wherein R^6 is as defined above or a group of formula —SO_2R^6, wherein R^6 is as defined above;

P represents a methylene group, an ethylene group, an oxygen atom or a direct carbon-carbon single bond between the group represented by W and the methylene group to which P is shown as attached;

V and W are the same or different from each other and each represents a methylene group, a carbonyl group or a thiocarbonyl group;

R^3 and R^4 are independently selected from the group consisting of hydrogen atoms, alkyl groups having from 1 to 4 carbon atoms and alkoxy groups having from 1 to 4 carbon atoms;

R^{11} represents an alkyl group having from 1 to 4 carbon atoms, an alkoxy group having from 1 to 4 carbon atoms, an alkylthio group having from 1 to 4 carbon atoms, an alkanoyloxy group having from 1 to 5 carbon atoms, an alkoxycarbonyl group having from 2 to 5 carbon atoms, a halogen atom, a cyano group, a nitro group, an amino group, an alkylamino group in which the alkyl part has from 1 to 4 carbon atoms, a dialkylamino group in which each alkyl part has from 1 to 4 carbon atoms, a carbamoyl group, an alkylcarbamoyl group in which the alkyl part has from 1 to 4 carbon atoms, a dialkylcarbamoyl group in which each alkyl part has from 1 to 4 carbon atoms, or an alkanoylamino group having from 1 to 5 carbon atoms;

R^{12} represents a hydrogen atom or an alkyl group having from 1 to 4 carbon atoms;

R^{13} represents an alkyl group having from 1 to 4 carbon atoms;

R^5 represents a methyl group, an ethyl group, an isopropyl group or a sec-butyl group; and

X represents: a hydroxy group; an alkanoyloxy group which has from 1 to 5 carbon atoms, and which is unsubstituted or has at least one substituent selected from the group consisting of substituents (d); or a hydroxyimino group;

substituents (a)

halogen atoms, alkoxy groups having from 1 to 4 carbon atoms, alkylthio groups having from 1 to 4 carbon atoms, and alkanoyloxy groups having from 1 to 5 carbon atoms;

substituents (b)

cycloalkyl groups having from 3 to 8 carbon atoms; alkoxy groups having from 1 to 4 carbon atoms; alkylthio groups having from 1 to 4 carbon atoms; cyanoalkylthio groups having from 2 to 5 carbon atoms; alkoxycarbonyl groups having from 2 to 5 carbon atoms; halogen atoms; cyano groups; nitro groups; amino groups; aryl groups which have from 6 to 14 ring carbon atoms and which are unsubstituted or have at least one substituent selected from the group consisting of substituents (c);

aryloxy groups which have from 6 to 14 ring carbon atoms and which are unsubstituted or have at least one substituent selected from the group consisting of substituents (c); and arylthio groups which have from 6 to 14 ring carbon atoms and which are unsubstituted or have at least one substituent selected from the group consisting of substituents (c);

substituents (c)

alkyl groups having from 1 to 4 carbon atoms, alkoxy groups having from 1 to 4 carbon atoms, alkylthio groups having from 1 to 4 carbon atoms, alkanoyloxy groups having from 1 to 5 carbon atoms, alkoxycarbonyl groups having from 2 to 5 carbon atoms, halogen atoms, cyano groups, nitro groups, amino groups, alkylamino groups in which the alkyl part has from 1 to 4 carbon atoms, dialkylamino groups in which each alkyl part is independently selected from the group consisting of alkyl groups having from 1 to 4 carbon atoms, carbamoyl groups, alkylcarbamoyl groups in which the alkyl part has from 1 to 4 carbon atoms, dialkyl carbamoyl groups in which each alkyl part is independently selected from the group consisting of alkyl groups having from 1 to 4 carbon atoms, and alkanoylamino groups having from 1 to 5 carbon atoms;

substituents (d)

halogen atoms, alkoxy groups having from 1 to 4 carbon atoms, alkoxycarbonyl groups having from 2 to 5 carbon atoms, and carboxy groups;

and pharmaceutically acceptable salts and esters thereof.

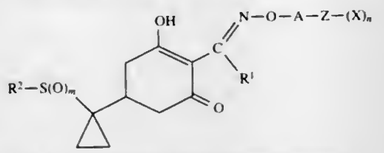
5,604,183

CYCLOHEXENONE OXIME ETHERS

Ulf Misslitz, Neustadt; Norbert Meyer, Ladenburg; Juergen Kast, Boehl-Iggelheim; Matthias Bratz, Speyer; Albrecht Harreus, Ludwigshafen; Helmut Walter, Obrigheim; Karl-Otto Westphalen, Speyer, and Matthias Gerber, Mutterstadt, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Continuation of Ser. No. 190,157, Feb. 4, 1994, abandoned.
This application Sep. 5, 1995, Ser. No. 523,682
Claims priority, application Germany, Aug. 9, 1991, 41 26 479.7
Int. Cl.[6] C07C *251/50;251/52;* **A01N** *35/10*
U.S. Cl. 504—344 **4 Claims**

1. Cyclohexenone oxime ether of the formula I



in which the substituents have the following meanings:

n is from 0 to 5;

m is from 0 to 2;

R^1 is C_1–C_6-alkyl;

R^2 is C_1–C_4-alkyl or benzyl;

A is C_1–C_6-alkylene or C_3–C_6-alkenylene where these groups may carry from one to three C_1–C_3-alkyl groups and/or halogen atoms, or a C_3–C_6-alkylene or C_4–C_6-alkenylene group which, is unsubstituted or is substituted hy from one to three C_1–C_3-alkyl groups and in which one methylene group is replaced with an oxygen or sulfur atom, a sulfoxyl or sulfonyl group or a group —$N(R^a)$—, where

R^a is hydrogen, C_1–C_4-alkyl, C_3–C_6-alkenyl or C_3–C_6-alkynyl;

Z is phenyl, a 5-membered heteroaromatic radical having from one to three nitrogen atoms and/or one oxygen or sulfur atom or a 6-membered heteroaromatic radical having from one to four nitrogen atoms, and

X is nitro, cyano, halogen, C_1–C_4-alkyl, partially or completely halogenated C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, partially or completely halogenated C_1–C_4-alkoxy, carboxyl, C_1–C_4-alkoxycarbonyl, benzyloxycarbonyl, phenyl or pyridyl, where the aromatic radicals may be unsubstituted or carry from one to three of the following substituents: nitro, cyano, halogen, C_1–C_3-alkyl, partially or completely halogenated C_1–C_3-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, partially or completely halogenated C_1–C_4-alkoxy, carboxyl, C_1–C_4-alkoxycarbonyl, benzyloxycarbonyl or an amino group —NR^bR^c, where

R^b is hydrogen, C_1–C_4-alkyl, C_3–C_6-alkenyl or C_3–C_6-alkynyl and

R^c is hydrogen, C_1–C_4-alkyl, C_3–C_6-alkenyl, C_3–C_6-alkynyl, C_1–C_6-acyl or benzoyl which my be unsubstituted or in its turn carry from one to three of the following radicals: nitro, cyano, halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkyl, C_1–C_4-haloalkoxy and/or C_1–C_4-alkoxycarbonyl, and

its agriculturally useful salts and esters of C_1–C_{10}-carboxylic acids and inorganic acids.

5,604,184

CHEMICALLY INERT RESIN COATED PROPPANT SYSTEM FOR CONTROL OF PROPPANT FLOWBACK IN HYDRAULICALLY FRACTURED WELLS

Patrick D. Ellis, Kingwood, and Billy W. Surles, Houston, both of Tex., assignors to Texaco, Inc., White Plains, N.Y.

Filed Apr. 10, 1995, Ser. No. 419,498
Int. Cl.[6] E21B *43/267*
U.S. Cl. 507—117 **18 Claims**

1. In a method for consolidating proppant injected into a hydraulic fracture adjacent a wellbore for increasing permeability and producing to the earth's surface hydrocarbon fluids comprising the steps of:

a) fracturing about the well penetrating into the subterranean formation to form fractures for increased production of the hydrocarbon fluids;

b) injecting a proppant coated with resin in a fracturing fluid into said fractures for holding open said fractures for increased production of said hydrocarbon fluids; and

c) employing a consolidating fluid for consolidating said proppant downhole;

the improvement which comprises:

d) injecting proppant coated with an oligomer of furfuryl alcohol, an oil soluble, slightly water soluble organic acid selected from the group consisting of nitrobenzoic acid, toluene sulfonic acid, oxalic acid and benzoic acid, and an alkyl alkanoate to consume water produced by the polymerization of the resin, wherein said furfuryl alcohol oligomer forms a sticky coating on said proppant;

e) suspending said coated proppant, acid catalyst and alkyl alkanoate in a carrier fluid comprising water which is from 70% to 100% saturated with sodium chloride;

f) forming a fluid mixture of furfuryl alcohol oligomer coated proppant, acid catalyst, alkyl alkanoate, and carrier fluid;

g) introducing the fluid mixture comprising the oligomer coated proppant, acid catalyst, and alkyl alkanoate suspended in the carrier fluid into fracture and forming the cured consolidated proppant particles in the fracture to prop the fracture open.

5,604,185

INHIBITION OF SCALE FROM OIL WELL BRINES UTILIZING A SLOW RELEASE COMPOSITION AND A PREFLUSH AND/OR AFTER FLUSH

John Hen, Skillman, N.J., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Mar. 27, 1995, Ser. No. 411,172
Int. Cl.[6] E21B *43/25;* **C23F** *11/12;11/14;11/167*
U.S. Cl. 507—119 **20 Claims**

1. In a method for the inhibition of scale deposition on the surfaces of a well coproducing oil and scale forming brines comprising injecting into the well reservoir an acidic aqueous inhibitor solution at a first pH containing dissolved therein a scale inhibitor, multivalent metal cations in the form of a water-soluble salt in the presence of which said scale inhibitor is soluble at said first pH but with which it forms sparingly soluble salts at a higher pH, and a heat-sensitive pH-increasing substance which decomposes at elevated temperatures liberating an alkaline compound, such that the solution is inherently heated by the higher ambient reservoir temperature to a temperature at which the alkaline compound is liberated from the heat-sensitive substance thus raising the pH of the solution to said higher pH at which a sparingly soluble multivalent metal salt of the scale inhibitor is phase separated from the solution on the porous surfaces of the reservoir rock formation, providing for a slow release of inhibitor into the produced brines when the well is in its production phase, the improvement comprising injecting as a preflush before said injection of inhibitor solution and/or as an afterflush after said injection of inhibitor solution, a solution of a heat sensitive pH-increasing substance and multivalent metal cations which are members of the same categories of these substances as those in said inhibitor solution, the specific identities of said heat sensitive substance and multivalent metal cations in said preflush and/or afterflush solution being the same or different from such substances present in said inhibitor solution.

5,604,186

ENCAPSULATED ENZYME BREAKER AND METHOD FOR USE IN TREATING SUBTERRANEAN FORMATIONS

Charles V. Hunt; Ronald J. Powell; Michael L. Carter, all of Duncan; Samuel D. Pelley, Rush Springs, and Lewis R. Norman, Duncan, all of Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Feb. 15, 1995, Ser. No. 388,861
Int. Cl.[6] C09K *3/00;* **E21B** *43/26;43/267*
U.S. Cl. 507—204 **10 Claims**

1. A method of breaking an aqueous fracturing fluid comprising introducing said aqueous fracturing fluid into contact with an encapsulated enzyme breaker comprising a particulate cellulose substrate having a particle size in the range of from about 10 to 50 mesh, an enzyme solution coated upon said substrate, said enzyme solution including a first micron-sized insert particulate having a particle size below about 15 microns and present in an amount of from about 1 to about 15 percent by weight of the enzyme solution and a membrane encapsulating said enzyme solution and substrate, said membrane comprising a partially hydrolyzed acrylic crosslinked with either an aziridine prepolymer or a carbodiimide and having imperfections through which an aqueous fluid can diffuse to contact said enzyme and subsequently diffuse outward from said breaker with said enzyme to contact and break the fracturing fluid in contact therewith.

5,604,187

GREASE COMPOSITION FOR CONSTANT VELOCITY JOINTS

Kiyoshi Takeuchi; Tsuyoshi Sasaki, both of Fujisawa; Tomio Hanawa, Mohka; Yoshimi Usui, Mohka, and Takahiro Ogura, Mohka, all of Japan, assignors to Kyodo Yushi Co., Ltd., and Honda Giken Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Filed Apr. 16, 1996, Ser. No. 633,081
Claims priority, application Japan, Mar. 22, 1996, 8-065809
Int. Cl.[6] C10M *141/06;141/08*
U.S. Cl. 508—168 **10 Claims**

1. A grease composition for constant velocity joints consisting essentially of:

(a) a base oil;

(b) a diurea compound represented by the following general formula:

$$R^1NH—CO—NH—p—O_6H_4—CH_2—p—C_6H_4—NH—CO—NHR^2$$

wherein R^1 and R^3 may be the same or different and each represents an aryl or cyclohexyl group;

(c) melamine cyanurate;

(d) molybdenum disulfide; and

(e) a phosphorus-free sulfur extreme pressure agent.

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5,604,188

ZINC ADDITIVES OF ENHANCED PERFORMANCE CAPABILITIES

Helen T. Ryan, London, England, assignor to Ethyl Petroleum Additives Limited, Bracknell, England

Filed Sep. 18, 1995, Ser. No. 529,937

Claims priority, application United Kingdom, Sep. 26, 1994, 9419333

Int. Cl.[6] C10M *141/00;141/12*

U.S. Cl. 508—371 19 Claims

1. A zinc-containing additive formed by admixing (i) at least one zinc dialkyldithiophosphate wherein each alkyl group contains 6 to 12 carbon atoms and is branched on its beta-carbon atom, and (ii) at least one zinc alkanoate wherein each alkanoate group is branched on its beta-carbon atom, in a ratio of 6.0 to 8.0 equivalents of (i) per equivalent of (ii), said additive having a total base number of at least 10 milligrams of KOH per gram and a characteristic NMR peak in the range of 103 to 105 ppm.

5,604,189

COMPOSITION FOR CLEANING AND WETTING CONTACT LENSES

Hong J. Zhang, B2 Colonial Dr. #3, Andover, Mass. 01810; Edward J. Ellis, 9 Hampton Ct., Lynnfield, Mass. 01940; Stanley J. Wrobel, 8 Eastman Rd., Andover, Mass. 01810, and Chimpiramma Potini, 29 Copley Dr., Methuen, Mass. 01844

Division of Ser. No. 350,749, Dec. 7, 1994, abandoned, which is a continuation of Ser. No. 80,425, Jun. 18, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 468,603

Int. Cl.[6] C11D *3/48;1/00*

U.S. Cl. 510—112 7 Claims

1. A method of cleaning and wetting a contact lens comprising exposing said contact lens to an aqueous composition comprising (i) a non-amine polyethyleneoxy-containing compound having an HLB value of at least about 18; (ii) a surface active agent having cleaning activity for contact lens deposits; other than the compound of (i) and (iii) a wetting agent.

5. A method of cleaning and wetting a contact lens comprising:

(a) exposing said contact lens to an aqueous composition comprising (i) a non-amine polyethyleneoxy-containing compound having an HLB value of at least about 18; and (ii) a surface active agent having cleaning activity for contact lens deposits, other than the compound to remove contaminants thereof; and subsequently,

(b) treating the contact lens with said composition to wet the surface of the contact lens for insertion in the eye.

5,604,190

STABLE LIQUID ENZYME COMPOSITIONS AND METHODS OF USE IN CONTACT LENS CLEANING AND DISINFECTING SYSTEMS

Masood A. Chowhan; Ronald P. Quintana; Bahram Asgharian; Bor-Shyue Hong, all of Arlington, Tex.; Thierry Bilbault, Morris Township, N.J., and Ruth A. Rosenthal, Alvarado, Tex., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

Filed Jun. 7, 1995, Ser. No. 477,001

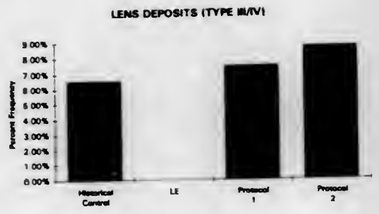
Int. Cl.[6] C11D *3/386;3/43*

U.S. Cl. 510—114 22 Claims

1. A liquid enzyme composition for cleaning contact lenses comprising:

an enzyme in an amount effective to clean the lens;

50–70% v/v of propylene glycol;



4–8% w/v of a borate compound; and water,

said composition having a pH of 6–7.

5,604,191

COMPOSITION FOR REMOVAL OF IONIC SALT DEPOSITS

Greg R. Unruh, Amarillo, Tex., assignor to Tech Spray, Inc., Amarillo, Tex.

Continuation-in-part of Ser. No. 21,797, Feb. 24, 1993. This application Mar. 28, 1994, Ser. No. 218,903

Int. Cl.[6] C07D *215/14;* C23C *18/30*

U.S. Cl. 510—175 7 Claims

1. A system for removal of ionic salt deposits on a circuit board surface by bonding with an alkali metal or alkaline earth metal cation comprising:

(a) a circuit board surface having deposited thereon an ionic salt residue containing at least one salt of an alkali metal or an alkaline earth metal cation, and

(b) a liquid composition in contact with said substrate surface comprising:

(i) an organic solvent selected from the group consisting of an alkyl halide, a paraffinic monohydric alcohol, a non-halogenated paraffin, an aromatic compound and mixtures thereof; and

(ii) a complexing agent in a concentration within the range of about 0.001 weight percent and 5 weight percent, said complexing agent being a crown ether formed of a monocyclic oligo ether ligand exclusively containing oxygen as donor atoms and being in a guest/host relationship with an alkali metal or an alkaline earth metal cation corresponding to the alkali metal or alkaline earth metal salt in said residue on said circuit board surface.

5,604,192

HARD SURFACE DETERGENT COMPOSITIONS

Daniel W. Michael, and Thomas A. Borcher, Sr., both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 263,588, Jun. 22, 1994, abandoned. This application Dec. 21, 1994, Ser. No. 360,542

Int. Cl.[6] C11D *9/00;15/00;1/12;* C09D *9/00*

U.S. Cl. 510—180 21 Claims

1. A hard surface detergent composition comprising: (a) nonionic detergent surfactant; (b) unsaturated soap of fatty acids having a titer of less than about 10° C. and a water soluble cation, the ratio of said nonionic detergent surfactant to said unsaturated soap being more than about 1:3; and (c) the balance being an aqueous solvent system and minor ingredients, the pH of said composition being from about 8 to about 12.5, and said composition being essentially free of boramide.

5,604,193

ADHESIVE AND ENAMEL REMOVER, AND METHOD OF USE WITH D-LIMONENE, DIBASIC ESTER, AN N-METHYL PYRROLIDONE

Jack T. Vlasblom, Dunedin, Fla., assignor to Dotolo Research Corporation, Largo, Fla.

Filed Dec. 8, 1994, Ser. No. 351,620

Int. Cl.[6] C11D *7/24;7/26;7/32;* B08B *3/08*

U.S. Cl. 510—212 12 Claims

1. A composition for removing adhesives and enamels, consisting of:

about 10 to about 70 weight percent d-limonene;

about 10 to about 75 weight percent dibasic acid ester selected from the group consisting of dimethyl adipate, dimethyl succinate, dimethyl glutarate, and mixtures thereof; and

about 10 to about 80 weight percent N-methyl pyrrolidone.

5,604,194

STABLE LIQUID DETERGENT COMPOSITIONS COMPRISING SPECIFIC BRIGHTENER AND PVP TO INHIBIT DYE TRANSFER

Serge G. P. R. Cauwberghs, Nieuwkerken, and Karel M. J. Depoot, Waregem, both of Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

PCT No. PCT/US93/11141, § 371 Date Apr. 26, 1995, § 102(e) Date Apr. 26, 1995, PCT Pub. No. WO94/11480, PCT Pub. Date May 26, 1994

PCT Filed Nov. 16, 1993, Ser. No. 424,313

Claims priority, application Switzerland, Nov. 17, 1992, 3528/92

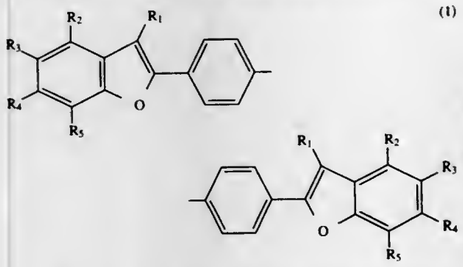
Int. Cl.[6] C11D *3/28;3/34;3/37;3/42*

U.S. Cl. 510—325 16 Claims

1. A liquid detergent composition comprising:

(a) from 0.01% to 5% of a polyvinylpyrrolidone;

(b) from 0.01% to 1% of a brightener having formula (1)



wherein R_1, R_2, R_3, R_4 and R_5 independently are selected from the group consisting of sulfonic acid radical, hydrogen, C1–C4 alkyl, C1–C4 alkoxy, halogen, -CN, phenoxy and benzyloxy, and only one substituent R_1 to R_5 is sulfonic acid radical; and

(c) water in an amount of less than 20% by weight of the detergent composition.

5,604,195

LIQUID CLEANING COMPOSITIONS WITH POLYETHYLENE GLYCOL GREASE RELEASE AGENT

Anne-Marie Misselyn, Villers-l'eveque; Rita Erilli, Liege, and Guy Broze, Grace-Hollogne, all of Belgium, assignors to Colgate-Palmolive Co., Piscataway, N.J.

Continuation-in-part of Ser. No. 336,933, Nov. 15, 1994, abandoned, which is a continuation-in-part of Ser. No. 155,377, Nov. 23, 1993, abandoned. This application Jul. 20, 1995, Ser. No. 504,972

Int. Cl.[6] C11D *3/20;3/37;1/83;1/02*

U.S. Cl. 510—400 15 Claims

1. A stable microemulsion composition having a pH of 7±1.5 consists essentially of approximately by weight: 1.0% to 20% of an anionic surfactant, 0.1% to 50% of a water soluble glycol ether cosurfactant, 0.1% to 10% of a grease release agent which is a polyethylene glycol which is complexed with said anionic surfactant, 0.1% to 10% of a water insoluble hydrocarbon or a perfume and the balance being water wherein said composition does not contain any anionic polymer, cationic polymer, cationic disinfectant or benzalkonium chloride.

5,604,196

NONFLAMMABLE MILD ODOR SOLVENT CLEANER WITH (M)ETHYL LACTATE AND PROPYLENE GLYCOL PROPYL ETHER

Henry J. Weltman, and Tony L. Phillips, both of Fort Worth, Tex., assignors to Lockheed Corporation, Del.

Continuation-in-part of Ser. No. 92,209, Jul. 15, 1993, Pat. No. 5,437,808, which is a continuation-in-part of Ser. No. 927,921, Aug. 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 743,258, Aug. 9, 1991, Pat. No. 5,188,754, which is a continuation-in-part of Ser. No. 686,180, Apr. 16, 1991, abandoned, which is a continuation-in-part of Ser. No. 614,228, Nov. 15, 1990, abandoned. This application Jun. 1, 1995, Ser. No. 456,778

Int. Cl.[6] C11D *7/26;7/50;7/60;* B08B *3/08*

U.S. Cl. 510—407 18 Claims

1. An organic cleaning formulation comprising:

a first ingredient selected from the group consisting of methyl lactate and ethyl lactate in a concentration range of about 20–24% by volume and a second ingredient comprising propylene glycol propyl ether in a concentration range of about 76–80% by volume, wherein the flash point of said formulation in degrees Fahrenheit is at least about 116, the toxicity, defined as the exposure limit, of said formulation in parts per million is at least about 175, and the evaporation rate of said formulation is not greater than about 21 compared to the evaporation rate of butyl acetate equal 100.

5,604,197

SOFTENING THROUGH THE WASH COMPOSITIONS

Alfred Busch, Londerzeel, and Andre C. Convents, Diegem, both of Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

PCT No. PCT/US94/07069, § 371 Date Jan. 19, 1996, § 102(e) Date Jan. 19, 1996, PCT Pub. No. WO95/03387, PCT Pub. Date Feb. 2, 1995

PCT Filed Jun. 22, 1994, Ser. No. 583,012

Claims priority, application European Pat. Off., Jul. 22, 1993, 93870150

Int. Cl.[6] D06M *15/19;* C11D *3/12;3/37*

U.S. Cl. 510—516 3 Claims

1. A dye transfer inhibiting fabric softening composition comprising

a) 0.0001% to 10% by weight of poly(4-vinylpyridine-N-oxide) having a ratio of amine to amine N-oxide of from about 2:3 to about 1:1,000,000; and

b) 0.5% to 30% by weight of a fabric softening clay.

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5,604,198

METHOD TO ENHANCE PERMEABILITY OF THE BLOOD/BRAIN BLOOD/NERVE BARRIERS TO THERAPEUTIC AGENTS

Joseph F. Poduslo, 5719 St. Mary's Dr. NW., Rochester, Minn. 55901, and Geoffrey L. Curran, 629 23rd St. NE., Rochester, Minn. 55906

Filed May 12, 1994, Ser. No. 241,621.
Int. Cl.[6] A61K *38/16*
U.S. Cl. 514—6 **19 Claims**

1. A method to enhance the ability of a neurologically active compound to penetrate the blood nerve barrier (BNB) or blood brain barrier (BBB) comprising parenterally administering to a mammal in need of treatment with said neurologically active compound, a conjugate consisting of an effective amount of said neurologically active compound conjugated to a carrier molecule with a substantial permeability coefficient across the BNB or BBB selected from the group consisting of hemoglobin, lysozyme, cytochrome c, ceruloplasmin, calmodulin, ubiquitin and substance P.

5,604,199

METHOD OF TREATING FIBROSIS IN SKELETAL MUSCLE TISSUE

Vicky L. Funanage, Wilmington, Del., assignor to The Nemours Foundation, Wilmington, Del.

Continuation-in-part of Ser. No. 219,210, Mar. 29, 1994, abandoned. This application Oct. 16, 1995, Ser. No. 543,812
Int. Cl.[6] A61K *38/16;31/295*
U.S. Cl. 514—6 **23 Claims**

1. A method of treating skeletal muscle fibrosis in mammals comprising the steps of

(A.) identifying an individual suspected of suffering from a disorder targeting skeletal muscle tissue, and

(B.) administering to such individual an effective amount of pharmaceutical composition that includes at least one metalloporphyrin compound to reduce the rate of skeletal muscle fibrotic tissue growth.

5,604,200

WOUND THERAPEUTIC MIXTURE CONTAINING MEDICAL GRADE HYALURONIC ACID AND TISSUE CULTURE GRADE PLASMA-FIBRONECTIN IN A DELIVERY SYSTEM THAT CREATES A MOIST ENVIRONMENT WHICH SIMULATES IN UTERO HEALING

Darlene Taylor-McCord, 24666 Morningstar La., Dana Point, Calif. 92629

Filed May 2, 1994, Ser. No. 236,176
Int. Cl.[6] A61K *38/36;35/14;* C08B *37/08;* C07K *14/75*
U.S. Cl. 514—8 **15 Claims**

1. A substantially collagen-free composition for the treatment of chronic burns, open sores, incisions and wounds in human skin, said composition comprising:

medical grade hyaluronic acid;

tissue culture grade plasma fibronectin;

a topical solution comprising a mixture of four or more constituents selected from the group consisting of calcium, phosphate, uric acid, urea, sodium, potassium, chloride and magnesium, wherein said medical grade hyaluronic acid and said tissue culture grade plasma fibronectin are carried by said topical solution to the site of said burns, open sores, incisions and wounds to create a moist environment for optimum healing.

5,604,201

METHODS AND REAGENTS FOR INHIBITING FURIN ENDOPROTEASE

Gary Thomas, Tualatin; Eric D. Anderson, Portland; Laurel Thomas, Tualatin, all of Oreg., and Joel S. Hayflick, Seattle, Wash., assignors to State of Oregon, Acting by and through the Oregon State Board of Higher Education on Behalf of the Oregon Health Sciences University, a non-profit organization, Portland, Oreg.

Filed Jan. 8, 1993, Ser. No. 2,202
Int. Cl.[6] C07K *14/81;* C07H *21/04;* A61K *38/55;* C12N *1/21;1/15;15/63*
U.S. Cl. 514—12 **14 Claims**

1. A furin endoprotease inhibitor that is an α_1-antitrypsin variant having an amino acid sequence comprising the amino acids -Arg-Xaa-Xaa-Arg-, wherein Xaa is any amino acid, at positions 355–358 of the native α_1-antitrypsin amino acid sequence (SEQ ID No.:6).

5,604,202

USE OF NGF GROWTH FACTORS TO TREAT DRUG-INDUCED NEUROPATHY

John A. Kessler, New Canaan, Conn., and Stuart C. Apfel, West Hempstead, N.Y., assignors to Albert Einstein College of Medicine of Yeshiva University, a Division of Yeshiva University

Continuation of Ser. No. 17,349, Feb. 10, 1993, abandoned, which is a continuation of Ser. No. 612,847, Nov. 13, 1990.
This application Nov. 17, 1993, Ser. No. 153,796
Int. Cl.[6] A61K *38/00;51/00*
U.S. Cl. 514—12 **6 Claims**

1. A method for treating taxol-induced toxic sensory neuropathy in a mammal undergoing treatment with taxol comprising administering prior to or in combination with said taxol treatment an amount of nerve growth factor (NGF) effective to treat said taxol-induced toxic sensory neuropathy.

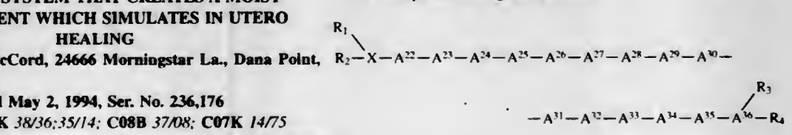
5,604,203

ANALOGS OF PEPTIDE YY AND USES THEREOF

Ambikaipakan Balasubramaniam, Cincinnati, Ohio, assignor to University of Cincinnati, Cincinnati, Ohio

Continuation-in-part of Ser. No. 109,326, Aug. 19, 1993, abandoned, which is a continuation-in-part of Ser. No. 38,534, Mar. 29, 1993, abandoned. This application Oct. 24, 1994, Ser. No. 329,151
Int. Cl.[6] A61K *38/00;* C07K *5/00;7/00;17/00*
U.S. Cl. 514—12 **29 Claims**

1. A compound having the formula:



wherein

X is Cys or is deleted;

each of R^1 and R^2 is bonded to the nitrogen atom of the α-amino group of the N-terminal amino acid;

R_1 is H, C_1–C_{12} alkyl, C_6–C_{18} aryl, C_1–C_{12} acyl, C_7–C_{18} aralkyl, or C_7–C_{18} alkaryl;

R_2 is H, C_1–C_{12} alkyl, C_6–C_{18} aryl, C_1–C_{12} acyl, C_7–C_{18} aralkyl, or C_7–C_{18} alkaryl;

A^{22} is an aromatic amino acid, Ala, Aib, Anb, N-Me-Ala, or is deleted;

A^{23} is Ser, Thr, Ala, Aib, N-Me-Ser, N-Me-Thr, N-Me-Ala, D-Trp, or is deleted;

A^{24} is Leu, Gly, Ile, Val, Trp, Nle, Nva, Aib, Anb, N-Me-Leu, or is deleted;

A^{25} is Arg, Lys, homo-Arg, diethyl-homo-Arg, Lys-ε-NH—R (where R is H, a branched or straight chain C_1–C_{10} alkyl group, or an aryl group), Orn, or is deleted;

A^{26} is Ala, His, Thr, 3-Me-His, 1-Me-His, β-pyrozolylalanine, N-Me-His, Arg, Lys, homo-Arg, diethyl-homo-Arg, Lys-ε-NH—R (where R is H, a branched or straight chain C_1–C_{10} alkyl group, or an aryl group), Orn, or is deleted;

A^{27} is Nal, Bip, Pcp, Tic, Trp, Bth, Thi, or Dip;

A^{28} is Leu, Val, Trp, Nle, Nva, Aib, Anb, or N-Me-Leu;

A^{29} is Asn, Ala, Gln, Gly, Trp, or N-Me-Asn;

A^{30} is Leu, Ile, Val, Trp, Nle, Nva, Aib, Anb, or N-Me-Leu;

A^{31} is Val, Leu, Ile, Trp, Nle, Nva, Aib, Anb, or N-Me-Val;

A^{32} is Thr, Ser, N-Me-Ser, N-Me-Thr, or D-Trp;

A^{33} is Cys, Arg, Lys, homo-Arg, diethyl-homo-Arg, Lys-ε-NH—R (where R is H, a branched or straight chain C_1–C_{10} alkyl group, or C_6–C_{18} aryl group), or Orn;

A^{34} is Cys, Gln, Asn, Ala, Gly, N-Me-Gin, Aib, or Anb;

A^{35} is Cys, Arg, Lys, homo-Arg, diethyl-homo-Arg, Lys-ε-NH—R (where R is H, a branched or straight chain C_1–C_{10} alkyl group, or C_6–C_{18} aryl group), or Orn;

A^{36} is an aromatic amino acid, or Cys;

R_3 is H, C_1–C_{12} alkyl, C_6–C_{18} aryl, C_1–C_{12} acyl, C_7–C_{18} aralkyl, or C_7–C_{18} alkaryl;

R_4 is H, C_1–C_{12} alkyl, C_6–C_{18} aryl, C_1–C_{12} acyl, C_7–C_{18} aralkyl, or C_7–C_{18} alkaryl, or a pharmaceutically acceptable salt thereof.

5,604,204

METHOD OF INDUCING BONE GROWTH USING TGF-β

Arthur J. Ammann, San Rafael, and Christopher G. Rudman, San Francisco, both of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Division of Ser. No. 132,405, Nov. 12, 1993, Pat. No. 5,409,896, which is a continuation of Ser. No. 63,841, May 18, 1993, abandoned, which is a continuation of Ser. No. 790,856, Nov. 12, 1991, abandoned, which is a division of Ser. No. 401,906, Sep. 1, 1989, Pat. No. 5,158,934. This application Feb. 27, 1995, Ser. No. 395,939
Int. Cl.[6] A61K *38/00;* C12N *15/00;* C07K *14/00*
U.S. Cl. 514—12 **7 Claims**

1. A device for implantation into a site of an animal where skeletal tissue is deficient comprising a device treated with an effective amount of a composition comprising TGF-β and an osteogenic cell source in a pharmaceutically acceptable carrier excluding a bone morphogenetic cofactor.

5,604,205

BIOPREPARATION RIAL AND METHOD FOR FEEDING VARIOUS GROUPS OF ANIMALS, POULTRY AND BEES

Nikolai V. Makarov; Galina J. Zharkova, and Ljubov J. Ryabinina, all of Moscow, Russian Federation, assignors to Aktsionernoe Obschestvo Zakrytogo Tipa "Biotekhinvest", Russian Federation

PCT No. PCT/RU94/00099, § 371 Date Jan. 5, 1995, § 102(e) Date Jan. 5, 1995, PCT Pub. No. WO94/24885, PCT Pub. Date Nov. 10, 1994
PCT Filed May 5, 1994, Ser. No. 362,532
Claims priority, application Russian Federation, May 5, 1993, 93025986.15
Int. Cl.[6] A23J *3/32;* A23K *1/04;1/10;* A61K *38/01*
U.S. Cl. 514—21 **9 Claims**

1. A biopreparation comprising the following in terms of weight percent:

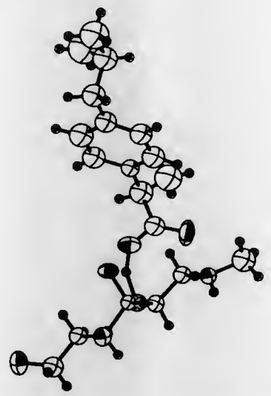
Amino Acids	
Free	30–40
Fixed	30–55
-continued	
Lipids	0.01–2
Macronutrients	
Fe, Ca, Na, K, P, Mg, S, Cl	2–6
Microelements	
Mn, Zn, Cu, Sb, As, Sn, Mo, Bi	0.5–1.5
Compounds of non-metals, excluding monosugar	8–12
Carbohydrates	0.001–0.1
Moisture	4–10.

5,604,206

COMPLEXES CONTAINING S(+) PHENYL ALKANE ACIDS AND AMINO SUGARS

Henrich H. Paradies, Iserlohn, Germany, assignor to Medice Chem.-Pharm. Fabrik Putter GmbH & Co. KG, Iserlohn/Westfalen, Germany

Continuation of Ser. No. 792,479, Nov. 15, 1991, abandoned.
This application Feb. 18, 1994, Ser. No. 328,722
Claims priority, application Germany, Nov. 15, 1990, 40 36 460.7
Int. Cl.[6] A61K *31/70;* C07H *5/04;5/06*
U.S. Cl. 514—23 **14 Claims**



13. A method for the preparation of a complex of an S(+)-phenyl alkanoic acid and amino sugar, said method comprising:

(a) combining said S(+)-phenyl alkanoic acid with an aqueous buffer solution having a pH range of 5.5 to 7.5 at 20° C.;

(b) heating the combined acid and buffer solution of step (a) to 40° C. with constant stirring until a clear transparent solution is obtained and all of said S(+)-phenyl alkanoic acid is dissolved;

(c) adjusting the pH of the solution resulting from step (b) to 5.5–6.0 by the addition of diluted phosphoric acid, then adding said amino sugar in an equimolar mount relative to said S(+)-phenyl alkanoic acid to form a reaction mixture; and

(d) after complex formation is complete, cooling said reaction mixture to precipitate therefrom said complex in crystalline form, and recovering said precipitated complex from said reaction mixture.

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5,604,207

SIALYL LE^X ANALOGUES AS INHIBITORS OF CELLULAR ADHESION

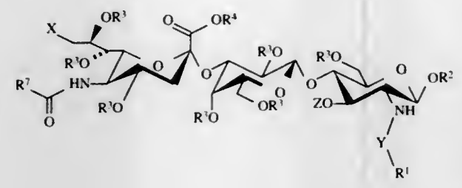
Shawn A. DeFrees, San Marcos; Federico C. A. Gaeta, Olivenhain; John J. Gaudino, Westlake Village, all of Calif.; Zhongli Zheng, Lexington, Mass., and Masaji Hayashi, Kobe, Japan, assignors to Cytel Corporation, San Diego, Calif.

Continuation-in-part of Ser. No. 241,645, May 12, 1994, which is a continuation-in-part of Ser. No. 62,120, May 14, 1993, abandoned. This application Nov. 28, 1994, Ser. No. 345,072

Int. Cl.^{6} A61K *31/715;31/73;* **C07H** *3/06*

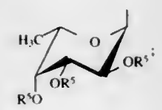
U.S. Cl. 514—25 **44 Claims**

1. A compound of the formula



wherein

Z is hydrogen, C_1–C_6 acyl or



Y is selected from the group consisting of C(O), SO_2, HNC(O), OC(O) and SC(O);

R^1 is selected from the group consisting of an aryl, a substituted aryl and a phenyl C_1–C_3 alkylene group, wherein said aryl substituent is selected from the group consisting of a halo, trifluoromethyl, nitro, C_1–C_{18} alkyl, C_1–C_{18} alkoxy, amino mono-C_1–C_{18} alkylamino, di-C_1–C_{18} alkylamino, benzylamino, C_1–C_{18} alkylbenzylamino, C_1– C_{18} thioalkyl and C_1–C_{18} alkyl carboxamido groups, or

R^1Y is allyloxycarbonyl or chloroacetyl;

R^2 is selected from the group consisting of monosaccharide, disaccharide, hydrogen, C_1–C_{18} straight chain, branched chain or cyclic hydrocarbyl, C_1–C_6 alkyl C_1–C_5 alkylene ω-carboxylate, ω-trisubstituted silyl C_2–C_4 alkylene wherein said ω-trisubstituted silyl is a silyl group having three substituents independently selected from the group consisting of C_1–C_4 alkyl and phenyl,

or OR^2 together form a C_1–C_{18} straight chain, branched chain or cyclic hydrocarbyl carbamate;

R^3 is hydrogen or C_1–C_6 acyl;

R^4 is hydrogen, C_1–C_6 alkyl or benzyl;

R^5 is selected from the group consisting of hydrogen, benzyl, methoxybenzyl, dimethoxybenzyl and C_1–C_6 acyl;

R^7 is methyl or hydroxymethyl; and

X is selected from the group consisting of C_1–C_6 acyloxy, C_2–C_6 hydroxylacyloxy, hydroxy, halo and azido.

5,604,208

ANTIBIOTIC PREPARATION AND USE OF THE SAME IN PLANTS

Miguel E. Alvarado-Llcon, Chihuahua, Mexico, assignor to Quimica Agronomica de Mexica, S.de.R.L.MI., Chihuahua, Mexico

Continuation of Ser. No. 868,842, Apr. 16, 1992, abandoned. This application Jan. 30, 1995, Ser. No. 380,442

Int. Cl.^{6} A61K *31/70*

U.S. Cl. 514—40 **25 Claims**

10. A method of treating plants comprising exposing plants suspected of being infected with a pathogenic microorganism to a composition comprising a bacteriostatically or bacteriocidally effective amount of gentamicin, or salt thereof, and an inert, agriculturally acceptable particulate carrier which suspends in an agriculturally acceptable liquid diluent, wherein said gentamicin adheres to the surface of said inert, particulate carrier.

5,604,209

SYNERGISTIC ANTIVIRAL COMPOSITIONS

Masaru Ubasawa, and Satoshi Yuasa, both of Yokohama, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

Filed Jun. 2, 1994, Ser. No. 253,274

Claims priority, application Japan, Jun. 3, 1993, 5-133368

Int. Cl.^{6} A61K *31/505;31/52;31/70*

U.S. Cl. 514—45 **8 Claims**

1. A composition comprising an antiretroviral synergistic amount of 2',3'-dideoxyinosine and 6-benzyl-1-ethoxymethyl-5-isopropyluracil.

5,604,210

INHIBITOR OF VASCULAR PERMEABILITY ENHANCER

Akinobu Nagaoka, Kawanishi; Tetsuji Imamoto, Kitakatsuragi-gun; Tsuneo Asano, Kawanishi; Yoshihiro Sugiura, Tsurumai-nishimachi, and Giichi Goto, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Jun. 1, 1995, Ser. No. 456,723

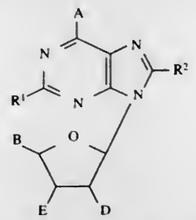
Claims priority, application Japan, Jun. 2, 1994, 6-120947

Int. Cl.^{6} A61K *31/70*

U.S. Cl. 514—46 **28 Claims**

1. A method for treating or preventing cerebrovascular disease by inhibiting a vascular permeability enhancer, which comprises administering a pharmaceutically effective amount of a compound of the formula:

(I)



wherein

A is (i) a halogen atom, (ii) —X—R^3 in which —X— is —O—, —S—, —NH— or —NHNH— and R^3 is a hydrogen atom, an acyl group, an optionally substituted hydrocarbon group or an optionally substituted aromatic heterocyclic group, or (iii) —Y=R^4 in which —Y= is —N= or —NHN= and R^4 is an optionally substituted divalent hydrocarbon group;

R^1 is (i) a hydrogen atom, (ii) a halogen atom, (iii) an optionally substituted hydrocarbon group, (iv) an optionally substituted heterocyclic group or (v) —Z—R^5 in which —Z— is —O—, —S— or —NH— and R^5 is a hydrogen atom, an optionally substituted hydrocarbon group or an optionally substituted aromatic heterocyclic group;

R^2 is a hydrogen atom, a halogen atom, or an optionally substituted heterocyclic group;

B is —W—R^6 in which —W— is —CH_2—, >C=O or >C=S and R^6 is hydroxyl, or an optionally substituted alkoxy, acyloxy, alkylsulfinyl, alkylsulfonyl, O-phosphono or amino group, or B together with E may optionally form a cyclic phosphoric ester; and

D and E are independently a hydrogen atom, an optionally substituted amino group, an azido group, a halogen atom or an optionally protected hydroxyl group, or a pharmaceutically acceptable salt thereof.

5,604,211

SACCHARIDE FOR SUPPLEMENTING ENERGY TO LIVING BODY, AND USES

Takashi Shibuya; Hiroto Chaen; Shuzo Sakai, and Toshio Miyake, all of Okayama, Japan, assignors to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan

Continuation of Ser. No. 86,456, Jul. 6, 1993, abandoned, which is a continuation of Ser. No. 791,683, Nov. 14, 1991, abandoned. This application Nov. 23, 1994, Ser. No. 347,222

Claims priority, application Japan, Sep. 20, 1991, 3-268683; Sep. 20, 1991, 3-268684

Int. Cl.^{6} A61K *31/715;* **A23G** *3/00*

U.S. Cl. 514—53 **13 Claims**

1. A pharmaceutical composition which is comprised of a saccharide composition which contains at least 10% neotrehalose by weight and a pharmaceutically effective parenteral carrier and is characterized by:

(a) being readily metabolized and utilized in a normal mammal;

(b) being able to slightly increase the blood sugar level of said normal mammal but does not substantially increase the insulin level in said normal mammal when said composition is administered parenterally; and

(c) being pharmaceutically more stable than a corresponding composition lacking neotrehalose.

5,604,212

SALICYLIC ACID FOR REGULATING SKIN WRINKLES AND/OR SKIN ATROPHY

Roy L. Blank, Spring Valley, N.Y., assignor to Richardson-Vicks, Inc., Shelton, Conn.

Division of Ser. No. 434,250, May 3, 1995, abandoned, which is a continuation of Ser. No. 28,756, Mar. 9, 1993, abandoned, which is a continuation of Ser. No. 796,750, Nov. 25, 1991, abandoned. This application Jun. 5, 1995, Ser. No. 465,503

Int. Cl.^{6} A61K *31/60;7/42*

U.S. Cl. 514—159 **2 Claims**

1. A method for preventing, retarding, arresting, or reversing wrinkles or atrophy in mammalian skin comprising treating the skin with a safe and effective amount of a composition comprising:

(a) a safe and effective amount of salicylic acid;

(b) a safe and effective amount of a sunscreening agent; and

(c) a pharmaceutically-acceptable carrier.

5,604,213

17-SUBSTITUTED STEROIDS USEFUL IN CANCER TREATMENT

Susan E. Barrie, Kent; Michael Jarman, London; Gerard A. Potter, Cheshire, and Ian R. Hardcastle, Sutton, all of Great Britain, assignors to British Technology Group Limited, London, England

Filed Sep. 30, 1994, Ser. No. 315,882

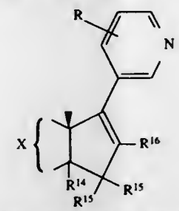
Claims priority, application United Kingdom, Mar. 31, 1992, 9207057; Nov. 27, 1992, 9224880; Sep. 30, 1993, 9320132; Jul. 14, 1994, 9414192

Int. Cl.^{6} A61K *31/58;* **C07J** *43/00*

U.S. Cl. 514—176 **22 Claims**

1. A compound of the formula (I)

(I)



wherein X represents the residue of the A, B and C rings of a steroid selected from the group consisting of

androstan-3α- or 3β-ol,

androst-5-en-3α- or 3β-ol,

androst-4-en-3-one,

androst-2-ene,

androst-4-ene,

androst-5-ene,

androsta-5,7-dien-3α or 3β-ol,

androsta-1,4-dien-3-one,

estra-1,3,5[10]-trien-3-ol,

5α-androstan-3-one,

androst-4-ene-3,11-dione,

6-fluoroandrost-4-ene-3-one,

androstan-4-ene-3,6-dione,

each of which, where structurally permissible, can be further derivatised in one or more of the following ways:

to form 3-esters

to have one or more carbon to carbon ring double bonds in any of the 5,6-, 6,7-, 7,8-, 9,11- and 11,12-positions

as 3-oximes

as 3-methylenes

as 3-carboxylates

as 3-nitriles

as 3-nitros

as 3-desoxy derivatives

to have one or more hydroxy, halo, C_{1-4}-alkyl, trifluoro-methyl, C_{1-4}-alkoxy, C_{1-4}-alkanoyloxy, benzoyloxy, oxo, methylene or alkenyl substituents in the A, B, or C-ring

to be 19-nor;

R represents a hydrogen atom or an alkyl group of 1–4 carbon atoms;

androsta-3,5-diene,

androsta-3,5-diene-3-ol,

estra-1,3,5[10]-triene and

estra-1,3,5[10]-trien-3-ol,

5α-androstan-3-one:

androst-4-ene-3,11-dione,

6-fluoroandrost-4-ene-3-one,

androstan-4-ene-3,6-dione,

each of which, where structurally permissible, can be further derivatised in one or more of the following ways:

to form 3-esters

to have one or more carbon or carbon ring double bonds in any of the 5,6-, 6,7-, 7,8-, 9,11- and 11,12-positions

as 3-oximes

as 3-methylenes

as 3-carboxylates

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as 3-nitriles
as 3-nitros
as 3-desoxy derivatives
to have one or more hydroxy, halo, C_{1-4}-alkyl, trifluoro-methyl, C_{1-4}-alkoxy, C_{1-4}-alkanoyloxy, benzoyloxy, oxo, methylene or alkenyl substituents in the A, B, or C-ring
to be 19-nor;
R represents a hydrogen atom or an alkyl group of 1–4 carbon atoms;
R^{14} represents a hydrogen atom, a halogen atom or an alkyl group of 1 to 4 carbon atoms;
each of the R^{15} substituents independently represents a hydrogen atom or an alkyl or alkoxy group of 1–4 carbon atoms, a hydroxy group or an alkylcarbonyloxy group of 2 to 5 carbon atoms or together represent an oxo or methylene group or R^{14} and one of the R^{15} groups together represent a double bond and the other R^{15} group represents a hydrogen atom or an alkyl group of 1 to 4 carbon atoms; and
R^{16} represents a hydrogen atom, halogen atom, or an alkyl group of 1 to 4 carbon atoms, in the form of the free bases or pharmaceutically acceptable acid addition salts, but excluding 3β-acetoxy-17-(3-pyridyl)androsta-5,14,16-triene, 3β,15α- and 3β,15β-diacetoxy-17-(3-pyridyl)androsta-5,16-diene and 3β-methoxy-17-(3-pyridyl-5α-androst-16-ene.

5,604,214

REDUCTION OF BOAR ODOR IN MEAT

Hector W. Alila, The Woodlands, Tex.; Michael T. Clark, Downingtown, Pa.; Richard D. Hedde, West Chester, Pa.; Mark A. Levy, Wayne, Pa., and Thomas O. Lindsey, Coatesville, Pa., assignors to Pfizer Inc., New York, N.Y.

PCT No. PCT/US94/02600, § 371 Date Oct. 20, 1995, § 102(e) Date Oct. 20, 1995, PCT Pub. No. WO94/20112, PCT Pub. Date Sep. 15, 1994

PCT Filed Mar. 10, 1994, Ser. No. 513,952

Claims priority, application United Kingdom, Mar. 10, 1993, 9304909

Int. Cl.[6] A61K *31/56;31/33;* **A23L** *1/31*

U.S. Cl. 514—177 **17 Claims**

1. A method for eliminating or lessening the incidence of "boar odor" in meat from reared male pigs which comprises administering to such male pigs an effective amount of a boar 4-ene-5-α-reductase inhibiting compound.

5,604,215

STEROID SULPHATASE INHIBITORS

Michael J. Reed, London, and Barry V. L. Potter, Bath, both of United Kingdom, assignors to Imperial College of Science, Technology and Medicine, England

PCT No. PCT/GB92/01586, § 371 Date Dec. 27, 1994, § 102(e) Date Dec. 27, 1994, PCT Pub. No. WO93/05063, PCT Pub. Date Mar. 18, 1993

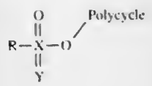
PCT Filed Aug. 28, 1992, Ser. No. 196,191

Claims priority, application United Kingdom, Aug. 29, 1991, 9118465

Int. Cl.[6] C07J *31/00;51/00;* **A61K** *31/565*

U.S. Cl. 514—178 **12 Claims**

1. A pharmaceutical composition comprising in admixture with a pharmaceutically acceptable diluent or carrier a compound of the formula



where
R is H or alkenyl;
X is S;
Y is O;
the group —O— polycycle represents the residue of a sterol;
the sulfate of which is hydrolyzable by an enzyme having steroid sulphatase (E.C. 3.1.6.2)activity; or a pharmaceutically acceptable salt thereof.

5,604,216

COMPOSITIONS CONTAINING ESTERS OF UNSATURATED FATTY ACIDS

David F. Horrobin, Guildford, England, assignor to Scotia Holdings PLC, England

Filed Jan. 6, 1994, Ser. No. 178,553

Claims priority, application United Kingdom, Jan. 6, 1993, 9300125

Int. Cl.[6] A61K *31/56;* **C07J** *9/00*

U.S. Cl. 514—182 **13 Claims**

1. A pharmaceutical or nutritional composition comprising at least 10% by weight of a cholesterol fatty acid ester, wherein the fatty acid is selected from the group consisting of gamma-linolenic acid, dihomo-gamma-linolenic acid, adrenic acid, the 22:5 n-6 acid, stearidonic acid, the 20:4 n-3 acid, eicosapentaenoic acid, docosahexaenoic acid, the 22:5 n-3 acid and columbinic acid, in association with a suitable diluent or carrier.

5,604,217

7-ACYL-3-(SUBSTITUTED CARBAMOYLOXY) CEPHEM COMPOUNDS AND PROCESS FOR THEIR PREPARATION

Shigeto Negi, Ibaraki; Motosuke Yamanaka, Chiba; Kanemasa Katsu, Ibaraki; Isao Suglyama, Ibaraki; Yuuki Komatu, Ibaraki; Atsushi Kamata, Ibaraki; Akihiko Tsuruoka, Ibaraki, and Yoshimasa Machida, Ibaraki, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

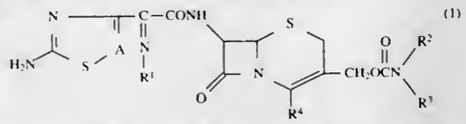
Division of Ser. No. 393,074, Feb. 23, 1995, which is a continuation of Ser. No. 209,484, Mar. 14, 1994, which is a continuation of Ser. No. 789,669, Nov. 8, 1991, abandoned. This application Jun. 5, 1995, Ser. No. 463,353

Claims priority, application Japan, Nov. 9, 1990, 2-302783; Feb. 14, 1991, 3-40747; Mar. 8, 1991, 3-67709; Apr. 12, 1991, 3-169512

Int. Cl.[6] C07D *501/26;* **A61K** *31/545*

U.S. Cl. 514—202 **1 Claim**

1. An antibacterial composition comprising an antibacterially effective amount of 7-acyl-3-substituted carbamoyloxy cephem compound represented by the following formula (1):

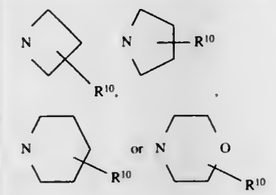


(1)

wherein A means a -CH= or -N= group; R^1 denotes a hydroxyl group, a lower alkoxyl group, a fluorine-substituted lower alkoxyl group or a hydroxyl group protected by a protecting group; R^2 and R^3 are the same or different and individually represent a lower alkyl group, a hydroxyl-substituted lower alkyl group, a carbamoyl-substituted lower alkyl group or a cyano-substituted lower alkyl group, R^2 is a hydrogen atom and R^3 is a lower alkoxyl group or a lower alkyl group which may optionally be substituted by one or more halogen atoms, or the group represented by the formula



means a 4–6 membered heterocyclic group of the formula



wherein R^{10} represents a hydrogen atom or a lower alkyl, hydroxyl or hydroxyl-substituted lower alkyl group; and R^4 denotes a carboxyl group or a carboxyl group protected by a protecting group; or a pharmaceutically acceptable salt thereof and a pharmaceutically acceptable carrier therefor.

5,604,218

CEPHALOSPORIN ANTIBIOTICS

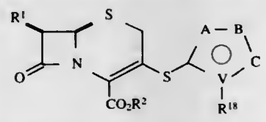
Scott Hecker, Los Gatos; In-Seop Cho, Mountainview, both of Calif.; Burton Christensen, Lebanon, N.J.; Tomasz Glinka, Sunnyvale, and Ving J. Lee, Los Altos, both of Calif., assignors to Microcide Pharmaceuticals, Inc., Mountain View, Calif.

Continuation-in-part of Ser. No. 369,798, Jan. 6, 1995, which is a continuation-in-part of Ser. No. 222,262, Apr. 1, 1994, abandoned. This application Mar. 30, 1995, Ser. No. 413,712

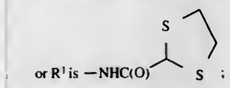
Int. Cl.[6] C07D *501/60;* **A61K** *31/545*

U.S. Cl. 514—205 **13 Claims**

1. A compound active against methicillin resistant bacteria, as demonstrated by a lower minimum inhibitory concentration against methicillin resistant strains than cefotaxime, having the formula:



and its pharmaceutically acceptable salts wherein
R^1 is —NHC(O)ZR^3 or —NR^4R^5, where Z is —$CH_2(X)_m$—, —C(NOR^6)—, —CH(OR^7)—, —C(CHCO$_2R^8$)— or —CH(NR^9R^{10})—, wherein X is 0 or S and m is 0 or 1;



or R^1 is —NHC(O)

R^2 is hydrogen, alkyl, alkenyl, aryl, heterocycle, aralkyl, heteroaralkyl, or trialkylsilyl;
R^3 may be cyano, alkyl, aryl, heterocycle or heteroaralkyl;
R^{4-7} may be independently hydrogen, alkyl, aryl or aryl;
R^8 may be selected from the group of hydrogen, alkyl and aryl;
R^9 and R^{10} are selected independently from the group consisting of hydrogen, alkyl, acyl, and heterocyclecarbonyl;
R^{18} is optionally substituted phenyl or heteroaryl, or cyano;
V=C or N;
A–C are CR^{19}, N or S, where R^{19} is hydrogen, alkyl, hydroxyl, amino, cyano, hydroxymethyl, or mono- dialkylaminomethyl; and
the specific juxtaposition of groups A–C is limited to examples of heterocyclic groups known in the chemistry arts.

5,604,219

INDOLOCARBAZOLE DERIVATIVES THAT STIMULATE PLATELET PRODUCTION

Chikara Murakata, Hachioji; Junichi Watanabe, Sunto-gun; Yutaka Saitoh, Machida; Yukimasa Shiotsu, Tokyo; Takako Shiraki, Machida; Fumibiko Kanai, Machida; Tatsuya Tamaoki, Machida; Shiro Akinaga, Sunto-gun, and Masami Okabe, Mishima, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

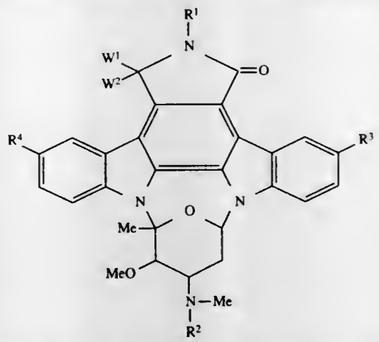
Filed Mar. 16, 1995, Ser. No. 404,961

Claims priority, application Japan, Mar. 18, 1994, 6-049578

Int. Cl.[6] A61K *31/55;* **C07D** *498/22*

U.S. Cl. 514—211 **11 Claims**

1. An indolocarbazole derivative represented by the formula (I):



(I)

{wherein R^1 represents substituted or unsubstituted lower alkyl, R^2 represents hydrogen, substituted or unsubstituted lower alkyl, R^3 and R^4 are the same or different, and represent hydrogen, nitro, NR^5R^6 (wherein R^5 and R6 are the same or different and represent hydrogen, lower alkyl, an amino acid residue in which the hydroxy group is removed from the carboxylic acid, alkanoyl or $CO(CH_2)_mNR^7R^8$ wherein m is an integer of 0 to 3, R^7 and R^8 are the same or different and represent hydrogen or lower alkyl, or R^7 and R^8 are combined together with nitrogen atom to form a heterocyclic ring, OR^9 (wherein R^9 represents long-chain alkyl, alkanoyl, $COCH_2(OCH_2CH_2)_kOCH_3$ wherein k is an integer of 1 to 6, or $CONR^7R^8$, substituted or unsubstituted lower alkyl, substituted or unsubstituted lower alkenyl, or CH=N$NR^{10}R^{11}$ wherein R^{10} and R^{11} are the same or different and represent hydrogen, lower alkyl or a member selected from the group consisting of pyrrolyl, imidazolyl, thienyl, furyl, triazolyl, tetrazolyl, thiazolyl, oxazolyl, pyridyl, pyrimidinyl, indolyl and quinolyl, W^1 and W^2 are both hydrogen or are combined together to represent oxygen, and Me represents methyl, provided that when R^1 is unsubstituted lower alkyl, R^3 and R^4 are not simultaneously hydrogen}, or a pharmaceutically acceptable salt thereof.

5,604,220

TARTARIC ACID DERIVATIVES OF SUBSTITUTED DIBENZOXAZEPINE COMPOUNDS, PHARMACEUTICAL COMPOSITIONS AND METHODS OF USE

Nizal S. Chandrakumar, Vernon Hills, and Richard A. Mueller, Glencoe, both of Ill., assignors to G. D. Searle & Company, Chicago, Ill.

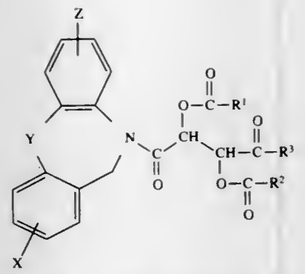
Division of Ser. No. 134,345, Oct. 7, 1993, Pat. No. 5,424,424. This application Mar. 14, 1995, Ser. No. 407,512

Int. Cl.[6] A61K *31/55*

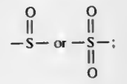
U.S. Cl. 514—211 **4 Claims**

1. A method for treating pain in an animal comprising administering to said animal a therapeutically-effective amount of a compound having a structure:

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or a pharmaceutically-acceptable salt thereof, wherein:
X is hydrogen or halogen;
Y is oxygen, sulfur,



Z is hydrogen, halogen or $-CF_3$;
R^1, R^2 and R^4 may be the same or different, and are hydrogen or alkyl;
R^3 is —OH, —O-alkyl or $—NR^4$-alkylene-R^5; and
R^5 is $—NR^1R^2$ or aryl.

5,604,221

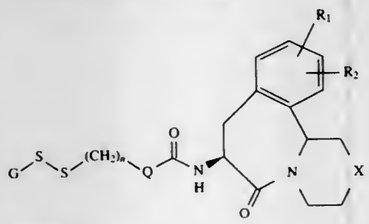
INDANE-2-MERCAPTOACETYLAMIDE DISULFIDE DERIVATIVES USEFUL AS INHIBITORS OF ENKEPHALINASE

Gary A. Flynn; Douglas W. Beight; Alan M. Warshawsky; Shujaath Mehdi, and John H. Kehne, all of Cincinnati, Ohio, assignors to Merrell Pharmaceuticals Inc., Cincinnati, Ohio

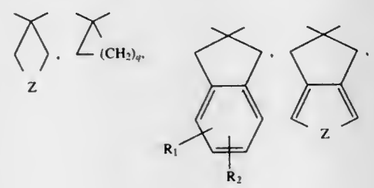
Continuation of Ser. No. 511,716, Jul. 28, 1995, abandoned, which is a continuation of Ser. No. 195,722, Feb. 14, 1994, abandoned. This application Dec. 12, 1995, Ser. No. 571,022
Int. Cl.[6] C07D *471/04;498/04;513/04;* **A61K** *31/55*
U.S. Cl. 514—214 **22 Claims**

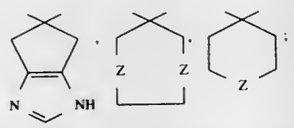
1. A compound of the formula

Formula (I)

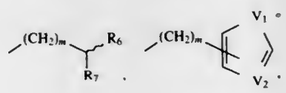


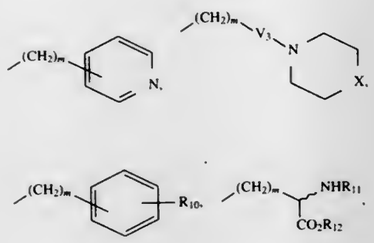
wherein
n is an integer from 0 to 3;
R_1 and R_2 are each time taken independently chosen from the group consisting of: hydrogen, hydroxy, or $—OR_3$ wherein R_3 is a C_1–C_4 alkyl or an Ar—Y— group wherein Ar is phenyl or naphthyl group unsubstituted or substituted with from one to three substituents selected from the group consisting of methylenedioxy, hydroxy, C_1–C_4 alkoxy, fluoro and chloro; and Y is a C_0–C_4 alkyl; or, where R_1 and R_2 are attached to adjacent carbon atoms, R_1 and R_2 can be taken together with said adjacent carbons to form a benzene ring or methylenedioxy;
X is $—(CH_2)_p—$, O, S, NR_4, or $NC(O)R_5$ wherein p is an integer 0 or 1, R_4 is hydrogen, a C_1–C_4 alkyl, or an Ar—Y— group, and R_5 is $—CF_3$, C_1–C_{10} alkyl, or an Ar—Y— group;
Q is a alkylene radical selected from the group consisting of:





wherein q is an integer from 1 to 5 and Z is O, S, or NH;
G is a radical selected from the group consisting of:





wherein
m is an integer from 1 to 3;
R_6 is hydrogen, C_1–C_6 alkyl, $—CH_2CH_2S(O)_kCH_3$, or Ar—Y— wherein k is an integer form 0 to 2;
R_7 is hydrogen, hydroxy, amino, C_1–C_6 alkyl, N-methylamino, N,N-dimethylamino, $—CO_2R_8$ wherein R_8 is hydrogen, $—CH_2O—C(O)C(CH_3)_3$, or C_1–C_4 alkyl; or $—OC(O)R_9$ wherein R_9 is hydrogen, C_1–C_6 alkyl, or phenyl;
R_{10} is 1 or 2 substituents independently chosen from the group consisting of: hydrogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, or halogen;
R_{11} is hydrogen, C_1–C_6 alkyl, or Ar—Y— group;
R_{12} is hydrogen or C_1–C_4 alkyl;
V_1 is O, S, or NH;
V_2 is N or CH;
V_3 is a direct bond or —C(O)—;
or stereoisomers or pharmaceutically acceptable salts thereof.

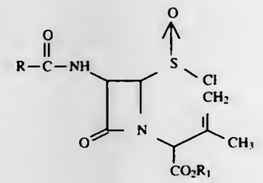
5,604,222

METHOD FOR THE PREPARATION OF 2-CHLORO SULFINYL AZETIDINONES

Niranjan L. Gupta; Ramanathan Sankaran, and Sakina Sitabkhan, all of Bhopal, Ind., assignors to Lupin Laboratories, Ltd., Bombay, Ind.

Filed Dec. 27, 1993, Ser. No. 173,757
Int. Cl.[6] C07D *499/04*
U.S. Cl. 540—218 **23 Claims**

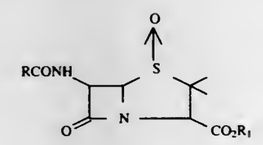
1. A method for the preparation of 2-chloro sulfinyl azetidin-4-one of the formula:



wherein R is
hydrogen; C_1–C_3 alkyl; halomethyl; cyanomethyl;
phenyl; substituted phenyl wherein the substituent is selected from halo, alkyl, alkoxy, protected hydroxy, nitro, cyano or trifluoromethyl; phenoxy, benzyloxy or substituted benzyl wherein the substituent is selected from halo, alkyl, alkoxy, protected hydroxy, nitro, cyano or trifluoromethyl;
a group of the formula $R_2—O—$ where R_2 is t-butyl, 2,2,2-trichloroethyl, benzyl or substituted benzyl wherein the substituent is selected from methoxy or nitro;
a group of the formula $R_3—(O)_n—CH_2$ wherein R_3 is phenyl or substituted phenyl with the substituent selected from halo, alkyl, alkoxy, protected hydroxy, nitro, cyano, trifluoromethyl, 2-thienyl, 3-thienyl, 2-furyl, 3-furyl or 1,4-cyclohexadienyl, and n is 0 or 1; or a substituted aryl alkyl group of formul



wherein R_4 has the same meaning as R_3 defined above and W is a protected hydroxy or protected amino group; and
R_1 is a carboxylic acid protecting group selected from the group consisting of C_1–C_4 alkyl; 2,2,2-trihalo alkyl, wherein the alkyl is not methyl; benzyl; phenacyl; halo substituted phenacyl; substituted benzyl wherein the substituted benzyl is selected from p-nitrobenzyl or benzhydryl,
which comprises reacting a penicillin sulfoxide ester of the general formula



wherein R and R_1 have the meanings defined herein with an N-chloro-halogenating agent in an inert organic solvent at a temperature of from 70° C. to 150° C., the reaction being conducted in the presence of an acid scavenging agent selected from phosphate or hydrogen phosphate bound to an alkali metal, alkaline earth metal, ammonium ion, or quaternary ammonium ion or mixtures of phosphate or hydrogen phosphate bound to an alkali metal, alkaline earth metal, ammonium ion or quaternary ammonium ion.

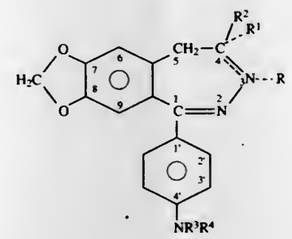
5,604,223

N ACYL 2 3 BENZODIAZEPINE DERIVATIVES PHARMACEUTICAL COMPOSITIONS CONTAINING THEM AND PROCESS FOR PREPARING SAME

Ferenc Andrási; Pál Berzsenyi; Péter Botka; Sándor Farkas; Katalin Goldschmidt; Tamás Hámori; Jenó Kórösi; Imre Moravcsik, and István Tarnawa, all of Budapest, Hungary, assignors to Gyogyszerkutato Intezet Kft., Budapest, Hungary

Division of Ser. No. 080,604, Jun. 21, 1993, Pat. No. 5,459,137, which is a continuation-in-part of Ser. No. 048,347, Apr. 15, 1993, abandoned, which is a continuation-in-part of Ser. No. 809,361, Dec. 17, 1991, abandoned. This application Mar. 21, 1995, Ser. No. 423,032
Claims priority, application Hungary, Dec. 21, 1990, 8398/90
Int. Cl.[6] A61K *31/55*
U.S. Cl. 514—220 **3 Claims**

1. A method of treating epilepsy in mammals, which comprises administering to a mammal in need of such treatment an antiepileptic amount of a compound of formula (I)



wherein
R is a C_{1-6}alkanoyl group optionally substituted by a methoxy, cyano, carboxyl, amino, C_{1-4}alkylamino, di (C_{1-4}alkyl) amino, pyrrolidino, phthalimido or phenyl group, or by one or more halogen(s); or R is a benzoyl, cyclopropanecarbonyl, C_{1-5}alkylcarbamoyl or phenylcarbamoyl group; or R is absent when a double bond exists between the N(3) and C(4) atoms;
R^1 is hydrogen, or R^1 is absent when a double bond exists between the N(3) and C(4) atoms;
R^2 is a C_{1-3}alkyl group; or
R^1 and R^2 together form a methylene group;
R^3 is hydrogen or a C_{1-4}aliphatic acyl group;
R^4 is hydrogen; a C_{1-6}-alkanoyl group optionally substituted by a methoxy, cyano, carboxyl, amino, C_{1-4}alkylamino, di(C_{1-4}alkyl)amino, pyrrolidino, phthalimido or phenyl group or by one or more halogen(s); as well as a benzoyl, palmitoyl, cyclopropanecarbonyl, C_{1-5}alkylcarbamoyl or phenylcarbamoyl group;
the dotted lines represent valence bonds optionally being present, with the proviso that no double bond exists between the N(3) and C(4) atoms when both R^3 and R^4 stand for hydrogen; and stereoisomers and pharmaceutically acceptable acid-addition salts of said compound.

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5,604,224

SUBSTITUTED HETEROCYCLYLISOQUINOLINIUM SALTS AND COMPOSITIONS AND METHODS OF USE THEREOF

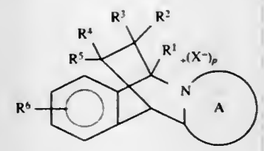
John A. Dority, Jr., Upper Providence Township; William G. Earley, East Vincent Township; Virendra Kumar, Tredyffrin Township; John P. Mallamo, Uwchlan Township; Matthew S. Miller, Lower Makefield Township, and Chakrapani Subramanyam, Towamencin Township, all of Pa., assignors to Sterling Winthrop Inc., New York, N.Y.

Division of Ser. No. 283,319, Jul. 29, 1994, which is a continuation-in-part of Ser. No. 121,389, Sep. 14, 1993, abandoned. This application May 30, 1995, Ser. No. 452,941

Int. Cl.[6] **A61K** *31/54;* **A01N** *43/66;43/78;43/40*

U.S. Cl. 514—726.8 **21 Claims**

1. A method for the treatment or prevention of neurotoxic injuries which comprises administering to a patient in need of such treatment an effective amount of a compound of the formula:



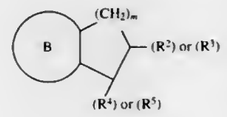
wherein:

R^1 is hydrogen, or lower-alkyl;

R^2 and R^3 are independently hydrogen, or lower-alkyl; or R^2 and R^3 together form a cycloalkyl ring, or a lower-alkylidene group;

R^4 and R^5 are independently lower-alkynyl, lower-alkoxy, phenyl (or phenyl substituted by lower-alkoxy, halogen, lower-alkyl, polyfluorolower-alkyl, polychlorolower-alkyl, or hydroxy), a 5- or 6-membered monocyclic aromatic heterocyclic ring system containing from one to three, the same or different, heteroatoms selected from the group consisting of nitrogen, oxygen and sulfur (or said 5- or 6-membered monocyclic aromatic heterocyclic ring system substituted on any available carbon atom thereof by hydroxy, lower-alkyl, oxo, nitro, halogen, or lower-alkoxy; or on any available nitrogen atom thereof by lower-alkyl, tri-lower-alkylsilyl, trilower-alkylsilyl-lower-alkoxy-lower-alkyl, or phenyl-lower-alkyl (or said phenyl-lower-alkyl group substituted on the phenyl group by lower-alkoxy, lower-alkyl or halogen)); a 9- or 10-membered bicyclic aromatic heterocyclic ring system containing from one to two, the same or different, heteroatoms selected from the group consisting of oxygen, nitrogen and sulfur (or said 9- or 10-membered bicyclic aromatic heterocyclic ring system substituted at any available carbon atom thereof by hydroxy, lower-alkyl, oxo, nitro, halogen, or lower-alkoxy; or on any available nitrogen atom thereof by lower-alkyl, trilower-alkylsilyl, trilower-alkylsilyl-lower-alkoxy-lower-alkyl, or phenyl-lower-alkyl (or said phenyl-lower-alkyl group substituted on the phenyl group by lower-alkoxy, lower-alkyl, or halogen)); or a 5- or 6-membered monocyclic nonaromatic heterocyclic ring system containing from one to two, the same or different, heteroatoms selected from the group consisting of nitrogen, oxygen and sulfur (or said 5- or 6-membered nonaromatic heterocyclic ring system substituted on any available carbon atom thereof by hydroxy, lower-alkyl, oxo, nitro, halogen, or lower-alkoxy, or on any available nitrogen atom thereof by lower-alkyl, trilower-alkylsilyl, trilower-alkylsilyl-lower-alkoxy-lower-alkyl, or phenyl-lower-alkyl (or said pheny-lower-alkyl group substituted on the phenyl group by lower-alkoxy, lower-alkyl or halogen));

or R^2 and R^4 and/or R^3 and R^5 taken together with the carbon atoms to which they are attached form a bicyclic ring system of the formula



wherein B is:

phenyl, or a 5- or 6-membered monocyclic aromatic heterocyclic ring system containing from one to three, the same or different, heteroatoms selected from the group consisting of nitrogen, oxygen and sulfur, (or said B ring substituted on any available carbon atom thereof by lower-alkoxy, or lower-alkyl), and n is an integer from one to three;

R^6 is hydrogen, or from one to four, the same or different, substituents in any of the 7-, 8-, 9-, or 10-positions (if A is a six-membered ring), or in any of the 6-, 7-, 8-, or 9- position (if A is a five-membered ring) selected from the group consisting of lower-alkyl, lower-alkanoyloxy, halogen, nitro, hydroxy, lower-alkoxy, methylenedioxy, polychlorolower-alkyl, $OCO(CH_2)m$, C(O)O alkyl, OC(O)alkyl, C(O)Oalkyl, CO_2^-, carboxy, sulfo, SO_3^-, PO_3H, PO_3^-, cyano, polyfluorolower-alkyl, OC(O) alkyl-CH=CH-alkyl, OC(O)-lower-alkenyl-C(O)alkyl, alkoxy, OC(O)alkylC(O)Oalkyl, amino, and lower-alkylsulfonylamino, wherein m is an integer from one to four;

A together with the carbon and nitrogen atoms to which it is attached forms a 5- or 6-membered monocyclic aromatic heterocycle containing from two to three, the same or different, heteroatoms selected from the group consisting of nitrogen, oxygen and sulfur (or said 5- or 6-membered monocyclic aromatic heterocycle substituted on any available carbon atom thereof by hydroxy, OC(O)alkyl-CH=CH-alkyl, OC(O)alkyl, OC(O)lower-alkenyl-C(O)Oalkyl, alkoxy, OC(O)alkyl-C(O)Oalkyl, nitro, amino, lower-alkylsulfonylamino, lower-alkyl, lower-alkoxy, or halogen; or on any available nitrogen atom thereof by phenyl (or said phenyl group substituted by lower-alkoxy, lower-alkyl or halogen), diphenylmethyl, naphthyl-lower-alkyl (or said naphthyl-lower-alkyl group substituted on the naphthyl group by lower-alkoxy, lower-alkyl or halogen), lower-alkyl, or phenyl-lower-alkyl (or said phenyl-lower-alkyl group substituted on the phenyl group by lower-alkoxy, lower-alkyl or halogen));

X^- is an anion; and p is zero when R^6 is a negatively charged radical, and p is one when R^6 is other than a negatively charged radical;

or a pharmaceutically acceptable acid-addition salt of basic members thereof; or a hydrate thereof; or a stereoisomer thereof.

5,604,225

SUBSTITUTED THIAZOLES AND OXAZOLES AND 2-HYDROXY-MORPHOLINES

Manfred Reiffen; Rudolf Hurnaus, both of Biberach; Robert Sauter, Laupheim; Wolfgang Grell, Biberach, and Eckhard Rupprecht, Aulendorf-Tannhausen, all of Germany, assignors to Dr. Karl Thomae GmbH, Biberach an der Riss, Germany

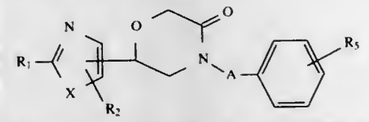
Division of Ser. No. 30,744, Mar. 12, 1993, Pat. No. 5,457,205, which is a division of Ser. No. 629,509, Dec. 18, 1990, Pat. No. 5,219,852, which is a continuation of Ser. No. 413,358, Nov. 20, 1989, abandoned, which is a division of Ser. No. 93,415, Sep. 4, 1987, Pat. No. 4,886,814, which is a continuation of Ser. No. 24,934, Mar. 12, 1987, abandoned. This application May 24, 1995, Ser. No. 449,174

Claims priority, application Germany, Mar. 13, 1986, 36 08 290.2; Jun. 28, 1986, 36 21 775.1; May 25, 1987, 37 17 560.2

Int. Cl.[6] **A61K** *31/535;* **C07D** *413/06*

U.S. Cl. 514—230.8 **10 Claims**

I. A compound of the formula



(XIX)

A is n-alkylene of 2 to 3 carbons, optionally mono- or di-substituted with methyl or ethyl,

X is oxygen or sulphur,

R_1 is selected from the group consisting of hydrogen, fluoro, chloro, bromo, trifluoromethyl, alkyl, phenyl, piperidino, amino, alkylamino, dialkylamino, alkanoylamino and benzoylamino,

R_2 is hydrogen or alkyl, and

R_5 is selected from the group consisting of hydroxyl, alkoxy, carboxyl, alkoxycarbonyl, aminocarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl, alkoxy having 1 to 6 carbons and substituted by a terminal member selected from the group consisting of carboxyl, alkoxycarbonyl, aminocarbonyl, alkylaminocarbonyl and dialkylaminocarbonyl, alkoxy having 2 to 7 carbons and substituted by a terminal member selected from the group consisting of hydroxy, alkoxy, phenylalkoxy, amino, alkylamino, dialkylamino, pyrrolidino, piperidino and hexamethyleneiminio and ethylene optionally substituted by alkyl and substituted by a terminal member selected from the group consisting of carboxyl, alkoxycarbonyl, aminocarbonyl, alkylaminocarbonyl and dialkylaminocarbonyl,

wherein said alkyl, alkoxy and alkanoyl each contain, unless indicated otherwise, 1 to 3 carbons, and the optical isomers and diastereomers thereof.

5,604,226

PYRIDAZINONE DERIVATIVES, PROCESSES FOR PRODUCTION THEREOF AND USE THEREOF

Takashi Kagawa, Hashimoto; Takuya Motokawa, Sakai; Masanori Yoshida, Hashimoto; Yoshitami Oshita, Kawachinagano, and Kazuo Kanai, Sakai, all of Japan, assignors to Nihon Nohyaku Co., Ltd., Tokyo, Japan

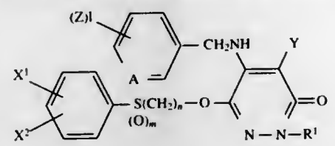
Filed Dec. 15, 1994, Ser. No. 356,510

Claims priority, application Japan, Dec. 16, 1993, 5-343405

Int. Cl.[6] **C07D** *237/16*

U.S. Cl. 514—247 **6 Claims**

1. A pyridazinone compound represented by formula (I):



(I)

wherein R^1 represents a hydrogen atom; each of X^1 and X^2 independently represents a hydrogen atom, a halogen atom, an alkyl group having 1 to 6 carbon atoms, an alkoxy group having 1 to 6 carbon atoms, a cyano group, a nitro group or a group shown by —CO—NR^2R^3 (wherein each of R^2 and R^3 independently represents an alkyl group having 1 to 6 carbon atoms); Y represents a halogen atom; Z represents an alkoxy group having 1 to 6 carbon atoms; l represents 0 or an integer of 1 to 3; A represents CH; m represents 0 or an integer of 1 or 2; and n represents an integer of 1 to 8.

5,604,227

PYRIDAZINEDIONE COMPOUNDS USEFUL IN TREATING NEUROLOGICAL DISORDERS

Thomas M. Bare, West Chester, and Richard B. Sparks, Linwood, both of Pa., assignors to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 156,659, Nov. 22, 1993, abandoned, which is a continuation of Ser. No. 880,965, May 8, 1992, abandoned. This application Apr. 13, 1995, Ser. No. 421,133

Claims priority, application United Kingdom, May 9, 1991, 9109973; Feb. 13, 1992, 9202991

Int. Cl.[6] **A61K** *31/50;* **C07D** *471/04;471/14*

U.S. Cl. 514—248 **17 Claims**

1. A pharmaceutical composition suitable for the treatment of stroke, hypoglycemia, ischemic attack, anoxia and epilepsy, comprising an effective amount of a compound obtained by mono- di-, or tri-acylating at a ring amino, hydrazino, hydroxy, thiohydroxy, or oxo-oxygen substituent or a ring nitrogen a compound of formula I with an acylating agent having the formula R^8COX', or a pharmaceutically acceptable salt thereof, wherein X' is a conventional leaving group and wherein R^8 is selected from

(1) hydrogen,

(2) (1–12C)alkyl which may contain a double or triple bond, and which may bear a group selected from

(a) CN, OR^r, and CO_2R^r, wherein R^r is selected from hydrogen, (1–4C)alkyl, and phenyl and phenyl(1–4C)alkyl the phenyl rings of which can be substituted with from 0–3 substituents selected from halo, amino, hydroxy, cyano, nitro, (1–4C)alkyl, and (1–4C)alkoxy;

(b) NR'_2 and $CONR'_2$ wherein each R' is independently selected from (1) from R^h, COR^h, and $COOR^h$ when said group is NR'_2 and (2) from the values of R^h when the said group is $CONR'_2$, wherein R^h can have any of the values stated above for R^r, or wherein, for either of the said groups, the two R' values, together with the nitrogen to which they are attached, form with carbon a saturated 4- to 7-membered ring selected from piperidinyl, pyrrolidinyl and azetidinyl,

(3) NR_2 wherein each R^e can independently have any of the values stated above for R^r, or wherein the two R^e groups together with the nitrogen to which they are attached form with carbon a saturated 4- to 7-membered ring selected from piperidinyl, pyrrolidinyl and azetidinyl,

(4) pyridyl, pyridyl(1–12C)alkyl,

(5) phenyl, and phenyl(1–4C)alkyl wherein the phenyl rings can be substituted with from 0–3 substituents selected from halo, amino, hydroxy, cyano, nitro, (1–4C)alkyl, and (1–4C)alkoxy;

or a product obtained by mono-, di-, or tri-alkylating at a ring amino, hydrazino, hydroxy, thiohydroxy, or oxo-oxygen substituent or a ring nitrogen a compound of formula I with an alkylating agent having the formula $R^{12}X$, or a pharmaceutically acceptable salt thereof, wherein X is a conventional leaving group and wherein R^{12} is selected from

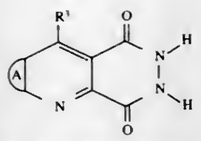
(1–4C)alkyl which may contain a double or triple bond provided that, if a double or triple bond is present on a C3 or C4 carbon chain, a methylene group intervenes between said double or triple bond and the leaving group X to which said alkyl is attached,

phenyl(1–4C)alkyl wherein the phenyl ring can be substituted with from 0–3 substituents selected from halo, amino, hydroxy, cyano, nitro, (1–4C)alkyl, and (1–4C)alkoxy, and

$(CH_2)_mCOOR^a$ wherein R^a is hydrogen or (1–4C)alkyl and m is 1–6; wherein,

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Formula I is:

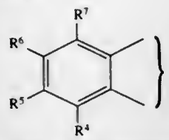


I

or a pharmaceutically acceptable salt thereof, wherein:

R^3 is selected from hydrogen, amino, hydrazino, hydroxy and thiohydroxy;

ring A is formula Ia,



Ia

wherein R^4, R^5, R^6, and R^7 are independently selected from the group consisting of hydrogen, halo, (1–4C)alkyl which may contain a double or triple bond if said (1–4C)alkyl is a (2–4C)alkyl, (1–3C) perfluoroalkyl, (1–3C)alkyl substituted with trifluoromethyl, nitro, OR^d, $COR^d{}_2$, CN, $NR^d{}_2$ and cyclopropyl, wherein each R^d is independently selected from hydrogen and (1–4C)alkyl; but excluding compounds wherein:

(a) said compound is of formula I, ring A has formula Ia, and R^3–R^7 are each hydrogen;

(b) said compound is a product made by monoacetylating, diacetylating, or diethylating a compound of formula I wherein ring A has formula Ia and R^3–R^7 are each hydrogen; and

(c) said compound is of formula I, ring A has formula Ia, R^4 and R^5 are each OCH_3, R^3 is hydrogen and R^6–R^7 are hydrogen; and a pharmaceutically acceptable diluent or carrier.

8. A compound obtained by mono-, di-, or tri-acylating at a ring amino, hydrazino, hydroxy, thiohydroxy, or oxo-oxygen substituent or a ring nitrogen a compound of formula I with an acylating agent having the formula R^8COX', or a pharmaceutically acceptable salt thereof, wherein X' is a conventional leaving group and wherein R^8 is selected from

(1) hydrogen,

(2) (1–12C)alkyl which may contain a double or triple bond, and which may bear a group selected from

(a) CN, OR^r, and CO_2R^r, wherein R^r is selected from hydrogen, (1–4C)alkyl, and phenyl and phenyl(1–4C)alkyl the phenyl rings of which can be substituted with from 0–3 substituents selected from halo, amino, hydroxy, cyano, nitro, (1–4C)alkyl, and (1–4C)alkoxy;

(b) NR'_2 and $CONR'_2$, wherein each R' is independently selected from (1) from R^h, COR^h, and $COOR^h$ when said group is $NR'2$ and (2) from the values of R^h when the said group is $CONR'_2$, wherein R^h can have any of the values stated above for R^r, or wherein, for either of the said groups, the two R' values, together with the nitrogen to which they are attached, form with carbon a saturated 4- to 7-membered ring selected from piperidinyl, pyrrolidinyl and azetidinyl,

(3) $NR^e{}_2$ wherein each R^e can independently have any of the values stated above for R^r, or wherein the two R^e groups together with the nitrogen to which they are attached form with carbon a saturated 4- to 7-membered ring selected from piperidinyl, pyrrolidinyl and azetidinyl,

(4) pyridyl, pyridyl(1–12C)alkyl,

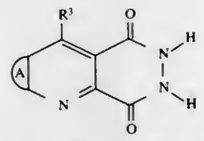
(5) phenyl, and phenyl(1–4C)alkyl wherein the phenyl rings can be substituted with from 0–3 substituents selected from halo, amino, hydroxy, cyano, nitro, (1–4C)alkyl, and (1–4C)alkoxy;

or a product obtained by mono-, di-, or tri-alkylating at a ring amino, hydrazino, hydroxy, thiohydroxy, or oxo-oxygen substituent or a ring nitrogen a compound of formula I with an alkylating agent having the formula $R^{12}X$, or a pharmaceutically acceptable salt thereof, wherein X is a conventional leaving group and wherein R^{12} is selected from

(1–4C)alkyl which may contain a double or triple bond provided that, if a double or triple bond is present on a C3 or C4 carbon chain, a methylene group intervenes between said double or triple bond and the leaving group X to which said alkyl is attached,

phenyl(1–4C)alkyl wherein the phenyl ring can be substituted with from 0–3 substituents selected from halo, amino, hydroxy, cyano, nitro, (1–4C)alkyl, and (1–4C)alkoxy, and $(CH_2)_mCOOR^a$ wherein R^a is hydrogen or (1–4C)alkyl and m is 1–6; wherein,

Formula I is:

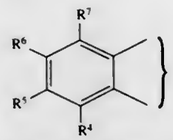


I

or a pharmaceutically acceptable salt thereof, wherein:

R^3 is selected from hydrogen, amino, hydrazino, hydroxy and thiohydroxy;

ring A is formula Ia



Ia

wherein R^4, R^5, R^6, and R^7 are independently selected from the group consisting of hydrogen, halo, (1–4C)alkyl which may contain a double or triple bond if said (1–4C)alkyl is a (2–4C)alkyl, (1–3C) perfluoroalkyl, (1–3C)alkyl substituted with trifluoromethyl nitro OR^d, $CO_2R^d{}_2$, $NR^d{}_2$ and cyclopropyl, wherein each R^d is independently selected from hydrogen and (1–4C)alkyl; but excluding compounds wherein:

(a) said compound is of formula I, ring A has formula Ia, and R^3–R^7 are each hydrogen;

(b) said compound is a product made by monoacetylating, diacetylating, or diethylating a compound of formula I wherein ring A has formula Ia and R^3–R^7 are each hydrogen; and

(c) said compound is of formula I, ring A has formula Ia, R4 and R^5 are each OCH_3, R^3 is hydrogen and R^6–R^7 are hydrogen.

5,604,228

SUBSTITUTED GUANIDINES HAVING HIGH BINDING TO THE SIGMA RECEPTOR AND THE USE THEREOF

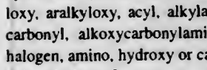
John F. W. Keana, Eugene, Oreg., and Eckard Weber, Laguna Beach, Calif., assignors to State of Oregon, acting by and through the Oregon State Board of Higher Education, acting for and on behalf of the Oregon Health Sciences University, and University of Oregon, both of Portland, Oreg.

Division of Ser. No. 23,880, Feb. 25, 1993, Pat. No. 5,312,840, which is a continuation of Ser. No. 528,216, May 25, 1990, abandoned, which is a continuation-in-part of Ser. No. 254,068, Oct. 6, 1988, abandoned, which is a continuation-in-part of Ser. No. 884,150, Jul. 10, 1986, Pat. No. 4,709,094, and a continuation-in-part of Ser. No. 346,494, May 2, 1989, abandoned. This application Apr. 12, 1994, Ser. No. 226,770

Int. Cl.[6] **A61K** *31/495;31/505;31/44;31/41, 31/42;31/415;31/40;31/38;31/34*

U.S. Cl. 514—255 **17 Claims**

1. A method of treating a human being suffering from a psychotic disease comprising administering to the human being an effective amount of a compound of the following formula:



wherein X and Y are independently a branched or straight chain C_1–C_{12} alkylene or a branched or straight chain C_2–C_{12} unsaturated alkylene or wherein one of X and Y is a single bond;

R and R' are independently hydrogen, a cycloalkyl of at least 3 carbon atoms, a carbocyclic aryl of at least 6 carbon atoms, aralkyl of at least 6 carbon atoms and containing 1–3 separate or fused rings or a heterocyclic ring,

with at least one of R and R' being selected from the group consisting of pyridyl, pyrrolyl, furyl, pyrolyl, thienyl, thiazolyl, thiophenyl, benzofuranyl, pyrazinyl, oxazolyl, imidazolyl, indolyl and benzothiazolyl,

and wherein R and R' may be substituted in 1–3 positions.

5,604,229

2-AMINO-1,3-PROPANEDIOL COMPOUND AND IMMUNOSUPPRESSANT

Tetsuro Fujita, Muko; Shigeo Sasaki; Masahiko Yoneta, both of Kobe; Tadashi Mishina, Iruma; Kunitomo Adachi, Iruma, and Kenji Chiba, Iruma, all of Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, and Taito Co., Ltd., Tokyo, both of Japan

PCT No. PCT/JP93/01515, § 371 Date Jun. 17, 1994, § 102(e) Date Jun. 17, 1994, PCT Pub. No. WO94/08943, PCT Pub. Date Apr. 28, 1994

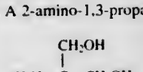
PCT Filed Oct. 18, 1993, Ser. No. 244,942

Claims priority, application Japan, Oct. 21, 1992, 4-283281; Jul. 20, 1993, 5-179427

Int. Cl.[6] **C07C** *211/00;* **C07D** *333/20;* **A01N** *43/40;33/02*

U.S. Cl. 514—255 **52 Claims**

1. A 2-amino-1,3-propanediol, having the formula



(I-8)

wherein

Re is a phenylalkyl wherein the alkyl moiety is a straight- or branched chain having 6 to 20 carbon atoms; a phenylalkyl which may be substituted by a straight- or branched chain C6–C20 alkyl optionally substituted by halogen, a straight- or branched chain C6–C20 alkoxy optionally substituted by halogen, a straight- or branched chain C6–C20 alkenyloxy, phenylalkoxy, halophenylalkoxy, phenylalkoxyalkyl, phenoxyalkoxy or phenoxyalkyl; a cycloalkylalkyl wherein the alkyl moiety is a straight- or branched chain having 6 to 20 carbon atoms; a cycloalkylalkyl substituted by a straight- or branched chain alkyl having 6 to 20 carbon atoms; a heteroarylalkyl wherein the alkyl moiety is a straight- or branched chain having 6 to 20 carbon atoms; a heteroarylalkyl substituted by a straight- or branched chain alkyl having 6 to 20 carbon atoms; a heterocyclic alkyl wherein the alkyl moiety is a straight- or branched chain having 6 to 20 carbon atoms, or a heterocyclic alkyl substituted by a straight- or branched chain alkyl having 6 to 20 carbon atoms;

wherein the alkyl moiety may have, in the carbon chain, a bond or a hereto atom selected from the group consisting of a double bond, a triple bond, oxygen, sulfur, sulfinyl, sulfonyl, —N(R^6)— where R^6 is hydrogen, alkyl, aralkyl, acyl or alkoxycarbonyl, and carbonyl, and may have, as a substituent, alkoxy, alkenyloxy, alkynyloxy, aralkyloxy, acyl, alkylamino, alkylthio, acylamino, alkoxycarbonyl, alkoxycarbonylamino, acyloxy, alkylcarbamoyl, nitro, halogen, amino, hydroxy or carboxy; or a pharmaceutically acceptable salt thereof.

5,604,230

HETEROCYCLE-SUBSTITUTED BENZENEMETHANAMINE DERIVATIVES

Marcel A. C. Janssen, Vosselaar; Georges H. P. Van Daele, Turnhout; Jean-Paul R. M. A. Bosmans, Edegem; Marc G. C. Verdonck, Gierle, and Paul A. J. Janssen, Vosselaar, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

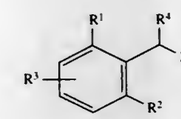
Division of Ser. No. 240,737, May 12, 1994, Pat. No. 5,480,997. This application May 2, 1995, Ser. No. 432,750

Claims priority, application European Pat. Off., Dec. 30, 1991, 91203431

Int. Cl.[6] **A61K** *31/495;* **C07D** *487/02*

U.S. Cl. 514—255 **10 Claims**

1. A compound of the formula:



(I)

a pharmaceutically acceptable acid addition salt form or a stereochemically isomeric form thereof, wherein:

R^1 and R^2 each independently are halo or methyl;

R^3 is hydrogen, halo, nitro or trifluoromethyl;

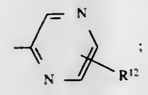
R^4 is

trifluoromethyl or methyl carbonyl; or

a radical —C(=X)—NR^5R^6 wherein X is O or S, and R^5 and R^6 each independently are hydrogen or C_{1-4}alkyl; or

a radical —Alk—R^7, wherein Alk is C_{1-4}alkanediyl; and R^7 is hydrogen or hydroxy; and

Het is a heterocyclic radical of the formula:



(c)

;

wherein:

R^{12} is hydrogen, C_{1-4}alkyl or C_{1-4}alkylcarbonyl,

wherein in the heterocyclic radical (c), a nitrogen atom can optionally be oxidized.

5,604,231

PHARMACEUTICAL COMPOSITIONS FOR PREVENTION AND TREATMENT OF ULCERATIVE COLITIS

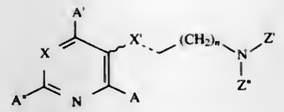
Carr J. Smith, 5548 Moravian Heights La., Clemmons, N.C. 27012; Patrick M. Lippiello, 1233 Arboretum Dr., Lewisville, N.C. 27023; Merouane Bencherif, 5437-B Countryside Dr., Winston-Salem, N.C. 27105; William S. Caldwell, 1270 Yorkshire Rd., Winston-Salem, N.C. 27106, and Gary M. Dull, 1175 Sequoia Dr., Lewisville, N.C. 27023

Filed Jan. 6, 1995, Ser. No. 364,980

Int. Cl.[6] **A01N** *43/54;* **A61K** *31/44*

U.S. Cl. 514—256 **21 Claims**

1. A method for providing prevention or treatment of an inflammatory bowel disease, the method comprising administering to a subject an effective amount of a compound having the formula:



where X is nitrogen or carbon bonded to a substituent species characterized as having a sigma m value between about −0.3 and about 0.75; n is an integer which ranges from 1 to 5; Z' and Z" individually represent hydrogen or alkyl containing one to five carbon atoms; A, A' and A" individually represent hydrogen, alkyl containing one to seven carbon atoms, or halo; the dashed line in the structure represents a C—C single bond, a C—C double bond or a C—C triple bond; the wavy line in the structure represents a cis (Z) or trans (E) form of the compound when the dashed line is a C—C double bond; and X' represents CH_2 when the dashed line is a C—C single bond, CH when the dashed line is a C—C double bond, and C when the dashed line is a C—C triple bond.

5,604,232

Patent Not Issued For This Number

5,604,233

LACTONE STABLE FORMULATION OF 7-ETHYL CAMPTOTHECIN AND METHODS FOR USES THEREOF

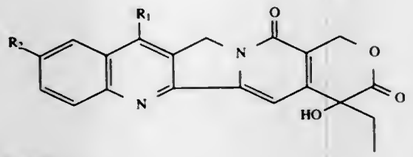
Frederick H. Hausheer, San Antonio, and Kochat Haridas, Houston, both of Tex., assignors to BioNumerik Pharmaceuticals, Inc., San Antonio, Tex.

Filed Apr. 28, 1994, Ser. No. 234,131

Int. Cl.[6] A61K *31/44*

U.S. Cl. 514—283 **39 Claims**

1. A method for administration of a compound 7-ethyl camptothecin having the formula



R1 = ethyl
R2 = hydrogen

wherein said compound further comprises an effective amount of dimethylacetamide or an effective amount of dimethylisosorbide and an effective amount of a pharmaceutically acceptable acid selected from the group consisting of hydrochloric acid, tartaric acid, citric acid, succinic acid, fumaric acid, maleic acid, gluconic acid, ascorbic acid, taurocholic acid or a pharmaceutically acceptable salt thereof, and an effective amount of taurocholic acid in an admixture with an effective amount of citric acid and wherein said method of administration to a patient with cancer comprises infusing from about 2.0 mg/m^2 to about 33.0 mg/m^2 of said compound over a duration of approximately 120 minutes every 21 to 28 days.

5,604,234

SUBSTITUTED THIOL MACROLACTAM IMMUNOMODULATORS

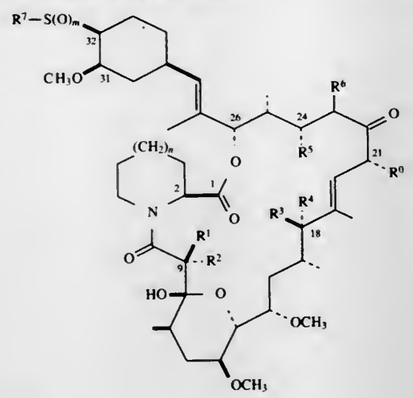
Yat S. Or, and Jay R. Luly, both of Libertyville, Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation-in-part of Ser. No. 149,416, Nov. 9, 1993, Pat. No. 5,457,111, which is a continuation-in-part of Ser. No. 32,958, Mar. 17, 1993, abandoned, which is a continuation-in-part of Ser. No. 755,208, Sep. 5, 1991, abandoned. This application Sep. 18, 1995, Ser. No. 529,862

Int. Cl.[6] A61K *31/395;31/695;* **C07D** *191/16*

U.S. Cl. 514—291 **26 Claims**

1. A compound having the formula:



wherein
n is zero or one;
m is zero, one or two;
R^0 is hydrogen, methyl, ethyl, allyl, propyl, 2-hydroxyethyl, cyclopropylmethyl, 2-oxopropyl or 2-ethanal;
R^1 and R^2 are independently hydrogen or hydroxy, subject to the proviso that when one of R^1 or R^2 is hydroxy, the other of R^1 and R^2 is hydrogen; or, alternatively, R^1 and R^2 taken together are oxo;
R^3 and R^4 are independently hydrogen, halogen, or hydroxy, subject to the proviso that when one of R^3 or R^4 is halogen or hydroxy, the other of R^3 and R^4 is hydrogen; or, alternatively, R^3 and R^4 taken together are oxo;
R^5 is hydrogen, hydroxy, or protected hydroxy, and R^6 is hydrogen; or alternatively, R^5 and R^6 taken together form a C-23/C-24 bond; and
R^7 is selected from the group consisting of
(a) $—L_1—OH$ wherein L_1 is alkylene;
(b) $—L_3—C(O)R^8$ wherein L_3 is alkylene and R^8 is
(i) $—O—R^9$ wherein R^9 is hydrogen, loweralkyl, haloalkyl, alkoxyalkyl, aminoalkyl, alkylaminoalkyl, dialkylaminoalkyl, hydroxyalkyl, arylalkyl, aryl, arylalkoxyalkyl, cycloalkyl, cycloalkylalkyl or sulfonic acid-substituted alkyl;
(ii) $—N(OH)R^{10}$ wherein R^{10} is hydrogen or loweralkyl; or
(iii) $—NR^{11}R^{12}$ wherein R^{11} and R^{12} are independently selected from hydrogen, loweralkyl, and cycloalkyl or R^{11} and R^{12} taken together with the nitrogen to which they are bonded from a heterocyclic ring selected from aziridinyl, azetidinyl, pyrrolidinyl, piperidinyl, piperazinyl, morpholinyl and thiomorpholinyl;
(c) $—C(O)R^{13}$ wherein R^{13} is
(i) heterocyclic,
(ii) hydroxyalkyl,
(iii) alkoxycarbonyl,
(iv) $—L_4—NR^{14}R^{15}$ wherein L_4 is alkylene or hydroxy-substituted alkylene, R^{14} is hydrogen or lower alkyl and R^{15} is $—C(O)—R^{16}$ wherein R^{16} is loweralkyl or $—NH_2$ or R^{14} and R^{15} taken together with the nitrogen atom to which they are bonded form a heterocyclic ring selected from aziridinyl, azetidinyl, pyrrolidinyl, piperidinyl, piperazinyl, morpholinyl and thiomorpholinyl;
(v) $—NR^{17}R^{18}$ wherein R^{17} is hydrogen or loweralkyl and R^{18} is loweralkyl, aryl, arylalkyl, dialkoxyalkyl or $—L_5—C(O)R^{19}$ wherein L_5 is alkylene and R^{19} is hydrogen, loweralkyl, cycloalkyl, aryl, arylalkyl, aziridinyl, azetidinyl, pyrrolidinyl, piperidinyl, piperazinyl, morpholinyl, thiomorpholinyl, —OH or $(R^{20})_3—Si—(CH_2)_2-$ wherein R^{20} is loweralkyl;
(vi) $—OR^{21}$ wherein R^{21} is loweralkyl, aryl or arylalkyl; or
(vii) $—N(OR^{17})R^{18}$ wherein R^{17} and R^{18} are as defined above;
with the proviso that when R^7 is $—C(O)—R^{13}$, m is 0;
(d) $—C(=NH)NH_2$ wherein m is 0;
(e) loweralkyl wherein m is 1 or 2;
(f) cycloalkyl;
(g) loweralkenyl;
(h) alkoxyalkyl;
(i) thioalkoxyalkyl;
(j) aryl wherein m is 1 or 2;
(k) arylalkyl wherein m is 1 or 2;
(l) $—L_6—C(R^{22})—R^{23}$ wherein L_6 is alkylene, R^{22} is $=O$ or $=N—R^{24}$ wherein R^{24} is —OH, alkoxy, or $—NHC(O)NH_2$, and R^{23} is loweralkyl; and
(m) hydroxy with the proviso that when R^7 is hydroxy, m is 2;
or a pharmaceutically acceptable salt, ester, amide or prodrug thereof.

21. A pharmaceutical composition for immunomodulatory treatment comprising a therapeutically effective amount of a compound according to claim 1 and a pharmaceutically acceptable carrier.

5,604,235

CERTAIN PYRROLOQUINOLINONES; A NEW CLASS OF GABA BRAIN RECEPTOR LIGANDS

Kenneth Shaw, Weston, and Jun Yuan, Clinton, both of Conn., assignors to Neurogen Corporation, Branford, Conn.

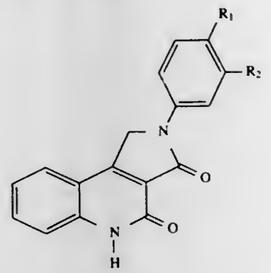
PCT No. PCT/US93/04096, § 371 Date Feb. 27, 1995, § 102(e) Date Feb. 27, 1995, PCT Pub. No. WO94/26741, PCT Pub. Date Nov. 24, 1994

Continuation-in-part of Ser. No. 823,845, Jan. 22, 1992, Pat. No. 5,243,049. This PCT application May 6, 1993, Ser. No. 367,242

Int. Cl.[6] A61K *31/395;* **C07D** *487/06*

U.S. Cl. 514—292 **7 Claims**

1. A compound of the formula:



or the pharmaceutically acceptable salts thereof wherein:
R_1 and R_2 independently represent hydrogen or alkoxy provided that not both R_1 and R_2 are hydrogen.

5,604,236

BETA-CARBOLINE THROMBOXANE SYNTHASE INHIBITORS

Joseph A. Jakubowski, Indianapolis, and Alan D. Palkowitz, Carmel, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

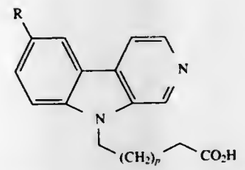
Division of Ser. No. 185,634, Jan. 24, 1994, abandoned. This application May 5, 1995, Ser. No. 436,052

Int. Cl.[6] C07D *471/04;* **A61K** *31/44*

U.S. Cl. 514—292 **2 Claims**

1. A beta-carboline compound which inactivates TXA_2 synthase in mammalian blood platelets, said compound or a pharmacologically acceptable salt, solvate, or prodrug thereof represented by the formula (III):

(III)



wherein;
R is a radical selected from halo, C_1–C_{12} alkyl, C_1–C_{12} alkoxy, nitro, cyano; and
p is an integer 3 or 4.

5,604,237

ACRIDINE DERIVATIVES

Bernard A. Dumaitre, and Nerina Dodic, both of Les Ulis, France, assignors to Laboratoires Glaxo SA, Paris, France

Continuation of Ser. No. 348,946, Nov. 25, 1994, which is a continuation of Ser. No. 84,258, Jul. 26, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 468,620

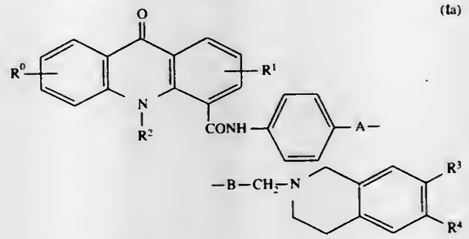
Claims priority, application United Kingdom, Jan. 11, 1991, 9100628; Jan. 11, 1991, 9100637; Jul. 24, 1991, 9115956; Jul. 24, 1991, 9115981

Int. Cl.[6] C07D *219/06;401/12;* **A61K** *31/435;31/47*

U.S. Cl. 514—297 **15 Claims**

1. A compound of formula (1a):

(1a)



wherein R^0 represents a hydrogen or halogen atom, or a C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} alkylthio or nitro group;
R^1 represents a hydrogen or halogen atom, or a C_{1-4} alkyl, C_{1-4} alkoxy or C_{1-4} alkylthio group;
R^2 represents a hydrogen atom or a C_{1-4} alkyl group;

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A represents an oxygen or a sulphur atom or a bond;
B represents an unsubstituted C_{1-4} alkylene chain;
R^4 and R^5 each independently represents a C_{1-4} alkoxy group; or physiologically acceptable salts or solvates thereof.

5,604,238

Z-BENZYLIDENE-TETRAHYDROQUINOLINES AND ANALOGUES THEREOF

Roger Crossley, Woodley, and Albert Opalko, Maidenhead, both of England, assignors to John Wyeth & Brothers Limited, United Kingdom

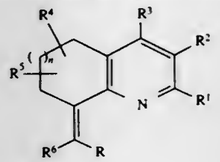
Division of Ser. No. 347,758, Dec. 1, 1994, Pat. No. 5,597,834. This application Apr. 18, 1995, Ser. No. 424,690

Claims priority, application United Kingdom, Dec. 1, 1993, 9324653

Int. Cl.[6] A61K *31/47;* **C07D** *215/16*

U.S. Cl. 514—299 **3 Claims**

1. A compound having the Z-configuration of formula:



or a salt thereof,
wherein n is 2;
R is selected from furyl, thienyl, pyrrolyl, pyridinyl, pyrimidinyl, quinolyl, isoquinolyl, benzimidazolyl, thiazolyl and imidazolyl, optionally substituted by one or more substituents selected from halogen, C_1–C_6 alkyl, C_1–C_6 alkoxy, halo(C_1–C_6)alkyl, halo(C_1–C_6)alkoxy, NO_2, NH_2, CN, C_1–C_6 alkylamino, carboxy(C_1–C_6 alkoxy)carbonyl, (C_1–C_6 alkyl-)carbonyl, arylcarbonyl, (C_1–C_6 alkyl)CONH, phenyl or amino(C_1–C_6)alkyl;
R^1, R^2, and R^3 each independently represent hydrogen, C_1–C_6 alkyl, C_1–C_6 alkoxy, (C_1–C_6 alkoxy)carbonyl, carboxy, hydroxy(C_1–C_6)alkyl, halogen, halo(C_1–C_6)alkyl, carboxy(C_1–C_6)alkyl, optionally substituted aryl or heteroaryl or optionally substituted aralkyl or heteroarylalkyl;
R^4 and R^5 each independently represent hydrogen or a substitutent selected from C_1–C_6 alkyl, optionally substituted aryl and optionally substituted aralkyl or R^4 and R^5 are geminal (C_1–C_6)alkyl substituents; and
R^6 is hydrogen or C_1–C_6 alkyl.

5,604,239

IMIDAZOPYRIDINES AS SEROTONERGIC 5-HT$_3$ ANTAGONISTS

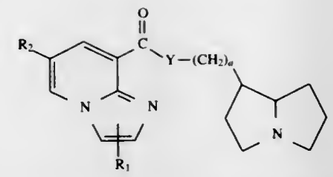
Daniel P. Becker, Glenview; Daniel L. Flynn, Mundelein; Alan E. Moormann, Skokie; Roger Nosal, Buffalo, and Clara I. Villamil, Glenview, all of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Division of Ser. No. 973,126, Nov. 6, 1992, Pat. No. 5,434,161, which is a continuation-in-part of Ser. No. 666,113, Mar. 7, 1991, Pat. No. 5,260,303. This application Apr. 18, 1995, Ser. No. 424,732

Int. Cl.[6] A61K *31/44;* **C07D** *471/04*

U.S. Cl. 514—300 **4 Claims**

1. A compound of the formula



the stereoisomers and pharmaceutically acceptable salts thereof wherein R_1 is selected from the group consisting of H and C_{1-6} alkyl; R_2 is selected from the group consisting of H and halogen;
Y is selected from the group consisting of NH and O; and
a is 0 or 1.

5,604,240

PYRROLO-PYRIDINE DERIVATIVES

Mark S. Chambers, Puckeridge, England, and Victor G. Matassa, Velletri, Italy, assignors to Merck, Sharp & Dohme, Ltd., Hoddesdon, England

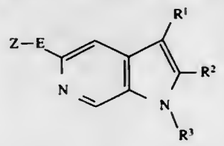
Filed Nov. 16, 1995, Ser. No. 559,320

Claims priority, application United Kingdom, Nov. 21, 1994, 9423460

Int. Cl.[6] A61K *31/435;* **C07D** *471/04*

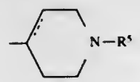
U.S. Cl. 514—300 **5 Claims**

1. A compound of formula I, or a salt or prodrug thereof:

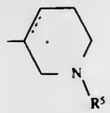


(I)

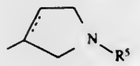
wherein
Z represents an optionally substituted five-membered heteroaromatic ring selected from furan, thiophene, pyrrole, oxazole, thiazole, isoxazole, isothiazole, imidazole, pyrazole, oxadiazole, thiadiazole, triazole and tetrazole;
E represents a chemical bond or a straight or branched alkylene chain containing front 1 to 4 carbon atoms;
R^1 represents-CH_2·CHR^4·NR^6R^7, or a group of formula (a), (b), (c), (d), (e), (f) or (g):



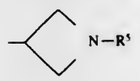
(a)



(b)

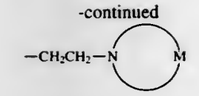


(c)

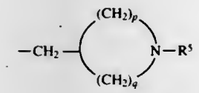


(d)

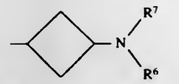
-continued



(e)



(f)



(g)

in which the broken line represents an optional chemical bond;
M represents the residue of an azetidine, pyrrolidine or piperidine ring;
p is zero or 1 and q is an integer from 1 to 4, provided that the sum of p+q is 2, 3 or 4; and
R^2, R^3, R^4, R^5, R^6 and R^7 independently represent hydrogen or C_{1-6} alkyl.

5,604,241

SUBSTITUTED BENZYLAMINOQUINUCLIDINES AS SUBSTANCE P ANTAGONISTS

Fumitaka Ito, Chita-gun; Kunio Satake, Handa, and Kaoru Shimada, Kariya, all of Japan, assignors to Pfizer Inc., New York, N.Y.

PCT No. PCT/US93/09168, § 371 Date Apr. 20, 1995, § 102(e) Date Apr. 20, 1995, PCT Pub. No. WO94/08997, PCT Pub. Date Apr. 28, 1994

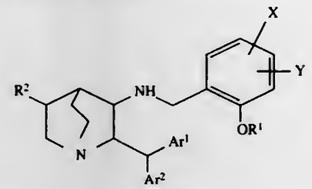
PCT Filed Sep. 30, 1993, Ser. No. 416,913

Claims priority, application Japan, Oct. 21, 1992, 4-283135

Int. Cl.[6] A61K *31/445;* **C07D** *453/02*

U.S. Cl. 514—305 **11 Claims**

1. A compound of the following chemical formula or a pharmaceutically acceptable salt thereof:



wherein Ar^1 and Ar^2 are each independently aryl or substituted aryl;
R^1 is alkyl having from 1 to 6 carbon atoms;
R^2 is hydrogen or alkyl having from 1 to 6 carbon
and either X and Y are taken separately and they are each, independently, hydrogen, dialkylphosphoryl having 2 to 12 carbon atoms, alkyl having from 1 to 6 carbon atoms, alkenyl having from 2 to 6 carbon atoms; or X and Y are taken together and they represent a hydrocarbon chain having 3, 4, or 5 carbon atoms, optionally containing up to 2 double bonds and optionally having 1 to 2 substituents selected from oxo, hydroxy and alkyl having from 1 to 6 carbon atoms; or Y is methoxy when X is ethyl and Y is at the 4-position and X is at the 5-position and Ar^1 Ar^2 are both phenyl and R^1 is methyl and R^2 hydrogen;
provided that when X and Y are taken together they are attached to adjacent carbon atoms; and
provided that if either X or Y is hydrogen, then the other one must be alkenyl or alkynyl.

5,604,242

HETEROCYCLIC CHEMISTRY

Hans Petersen, Vanløse; Knud E. Andersen, Smørum; Per O. Sørensen, Frederiksberg; Jesper Lau, Farum, and Behrend F. Lundt, Kokkedal, all of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

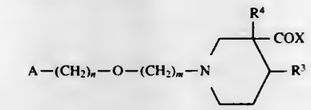
Filed Jun. 22, 1994, Ser. No. 263,641

Claims priority, application Denmark, Jun. 23, 1993, 0746/93

Int. Cl.[6] C07D *211/60;211/68;211/80*

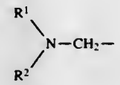
U.S. Cl. 514—316 **32 Claims**

1. A compound of formula I



(I)

wherein
R^3 and R^4 each represents hydrogen or may together represent a bond;
X is hydroxy or C_{1-4}-alkoxy;
n is 0, 1 or 2;
m is 2, 3 or 4; and
A is



wherein
R^1 is a saturated or unsaturated five or six-membered carbocyclic ring optionally substituted with one or two halogen(s), straight or branched C_{1-4}-alkyl, phenyl, C_{1-4}-alkyl substituted with phenyl or C_{2-4}-alkenyl substituted with phenyl wherein the phenyl groups may be optionally substituted with halogen, C_{1-4}-alkyl, C_{1-4}-alkoxy or trifluoromethyl, and wherein the saturated or unsaturated five or six-membered carbocyclic ring is optionally fused with a benzo ring; and R^2 is hydrogen, straight or branched C_{1-8}-alkyl, or straight or branched C_{2-8}-alkenyl; or
a pharmaceutically acceptable salt thereof.

5,604,243

Patent Not Issued For This Number

5,604,244

INTRAOCULAR IRRIGATING SOLUTION CONTAINING A POLYAMINE ANTAGONIST

Louis DeSantis, Jr., Fort Worth, and Michael A. Kapin, Arlington, both of Tex., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

Filed Jun. 7, 1995, Ser. No. 486,841

Int. Cl.[6] A61K *31/445*

U.S. Cl. 514—317 **10 Claims**

1. An improved method of irrigating opbthalmic tissue during surgical procedures which comprises applying to the affected ocular tissue an irrigating solution comprising:
a pharmaceutically effective amount of a polyamine antagonist;
electrolytes in an amount effective to maintain tissue stability; and
a buffer in an amount sufficient to maintain the pH of the composition in the range of 6.8 to 8.0.

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5,604,245

USE OF 4-AMINO-1-(2-PYRIDYL)PIPERIDINES FOR THE PREPARATION OF A MEDICAMENT FOR THE TREATMENT OF CONDITIONS DERIVING FROM DISORDERS OF THE SEROTONINERGIC SYSTEMS MEDIATED BY 5-HT$_3$ RECEPTORS

Gérard Le Fur, Montmorency, France; Alberto Bianchetti, Milan, Italy; Antonina Gludice, Milan, Italy; Tiziano Croci, Milan, Italy, and Philippe Soubrie, Saint Mathieu de Treviers, France, assignors to Elf Sanofi, France

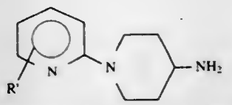
Filed Mar. 27, 1992, Ser. No. 858,483

Claims priority, application France, Mar. 27, 1991, 91 03735; Mar. 27, 1991, 91 10890; European Pat. Off., Oct. 15, 1991, 91402753

Int. Cl.^{6} A61K *31/445*

U.S. Cl. 514—318 **8 Claims**

1. A method of inducing serotoninergic agonist action on 5-HT$_3$ receptors of a mammal which comprises administering to said mammal an effective amount of at least one compound of formula (I')



(I')

wherein R' represents hydrogen, a halogen atom, a methyl, methylthio, trifluoromethyl, trifluoromethylthio, (C_1–C_3)alkoxy, trifluoromethoxy, 2,2,2-trifluoroethoxy, or phenoxy group optionally substituted with a halogen atom, a trifluoromethyl, (C_1–C_3)alkyl, (C_1–C_3)alkoxy, (C_1–C_3)alkylthio, or cyano group, or of a pharmaceutically acceptable salt thereof.

5,604,246

2-AMINOALKYL-5-AMINOALKYLAMINO SUBSTITUTED-ISOQUINOINDAZOLE-6(2H)-ONES

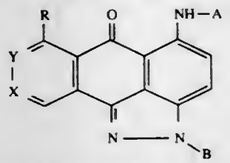
A. Paul Krapcho, Shelburne, Vt.; Ernesto Menta, Milan, Italy; Ambrogio Oliva, Verese, Italy, and Silvano Spinelli, Milan, Italy, assignors to Boehringer Mannheim Italia SpA, Monza, Italy, and Univ. of Vermont, Burlington, Vt.

Division of Ser. No. 103,641, Aug. 11, 1993, Pat. No. 5,519,029. This application Dec. 7, 1994, Ser. No. 350,843

Int. Cl.^{6} A61K *31/445;* **C07D** *239/02*

U.S. Cl. 514—318 **6 Claims**

1. A compound according to the formula (I):



(I)

wherein R is hydrogen, X is carbon and Y is nitrogen;

A and B are the same or different and are selected from the group consisting of C_1-C_{10} alkyl or phenylalkyl; C_2–C_{10} alkyl having one or two substituents selected from the group consisting of OR_1 and NR_2R_3; C_2–C_{10} alkyl interrupted by one or two oxygen atoms or by one —NR_4— group, said C_2–C_{10} alkyl optionally substituted by one or two hydroxy or NR_2R_3 groups;

R_1 is selected from the group consisting of hydrogen, C_1–C_6 alkyl, phenyl, phenylalkyl, —$S(O_2)R_5$, C_2–C_6 alkyl optionally substituted by NR_2R_3;

R_2 and R_3 may be the same or different and are selected from the group consisting of hydrogen, C_1–C_{10} alkyl, phenylalkyl, phenyl, C_2–C_{10} alkyl substituted with one or two hydroxy groups, or R_2 and R_3 taken together with the nitrogen atom to which they are attached form an ethyleneimine ring or a 5- or 6-member aromatic or non-aromatic heterocyclic ring which optionally contains another heteroatom such as sulfur, oxygen or nitrogen;

R_4 is selected from the group consisting of hydrogen, C_1–C_{10} alkyl, C_2–C_{10} hydroxyalkyl, C_2–C_{10} alkyl substituted by NR_2R_3, phenylalkyl, phenyl;

R_5 is selected from the group consisting of C_1–C_{10} alkyl, phenylalkyl;

as free bases and their salts with pharmaceutically acceptable acids.

5,604,247

CHROMONE DERIVATIVES

Andreas Von Sprecher, Oberwil; Marc Gerspacher, Brugg; Robert Mah, Allschwil; Silvio Roggo, Muttenz; Walter Schilling, Himmelried; Silvio Ofner, Münchenstein, and Siem J. Veenstra, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

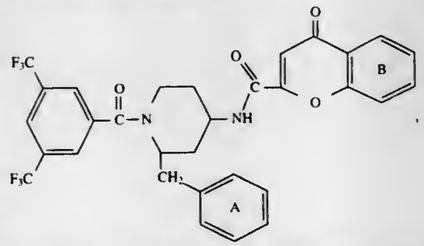
Filed Apr. 16, 1996, Ser. No. 632,971

Claims priority, application Switzerland, Apr. 24, 1995, 1157/95

Int. Cl.^{6} A61K *31/445;* **G07D** *405/12*

U.S. Cl. 514—320 **10 Claims**

1. A compound of formula I



(I)

wherein ring A is unsubstituted or monosubstituted by lower alkyl, lower alkoxy, halogen, nitro or trifluoromethyl and ring B is unsubstituted or substituted by 1–4 substituents selected from the group consisting of lower alkyl, hydroxy, lower alkoxy, lower alkylthio, halogen, nitro, cyano and trifluoromethyl, or a salt thereof.

5,604,248

METHOD FOR MINIMIZING THE UTEROTROPHIC EFFECT OF TAMOXIFEN AND TAMOXIFEN ANALOGS

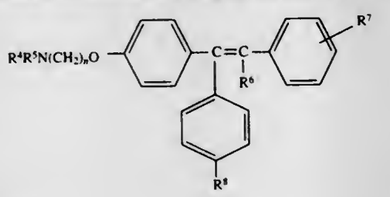
Henry U. Bryant, Indianapolis, and Robin S. Fuchs-Young, Trafalgar, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed May 5, 1994, Ser. No. 239,093

Int. Cl.^{6} A61K *31/445;31/135*

U.S. Cl. 514—324 **10 Claims**

1. A method of minimizing the uterotrophic effect in a human due to the administration of a compound of formula II



II

wherein

either R^4 is H or a lower alkyl radical and R^5 is a lower alkyl radical, or R^4 and R^5 are joined together with the adjacent nitrogen atom to form a heterocyclic radical;

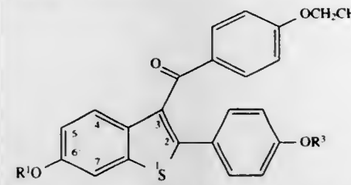
R^6 is H or a lower alkyl radical;

R^7 is H, halo, OH, a lower alkyl radical, or is a buta- 1,3-dienyl radical which together with the adjacent benzene ring forms a naphthyl radical;

R^8 is H or OH; and

n is 2;

or a pharmaceutically acceptable salt thereof, comprising concurrently or sequentially administering thereto an effective amount a compound of formula I



I

wherein R^1 and R^3 are each independently hydrogen;

and R^2 is piperidino; or a pharmaceutically acceptable salt or solvate thereof.

5,604,249

THIANGAZOLE, ITS PREPARATION, COMPOSITIONS AND USE THEREOF

Gerhard Höfle, Braunschweig; Norbert Bedorf, Königslutter; Edgar Forche; Klaus Gerth, both of Braunschweig; Herbert Irschik, Wolfenbüttel; Rolf Jansen; Brigitte Kunze, both of Braunschweig; Hans Reichenbach, Wolfenbüttel; Florenz Sasse, Braunschweig; Heinrich Steinmetz, Hildensheim-Sorsum; Wolfram Trowitzsch-Kienast, Braunschweig, and Johannes P. Pachlatko, Seltisberg, all of Germany, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y., and Gesellschaft fur Biotechnologische Forschung mbH, Braunschweig, Germany

Division of Ser. No. 286,309, Aug. 5, 1994, abandoned, which is a division of Ser. No. 78,159, Sep. 17, 1993, abandoned.

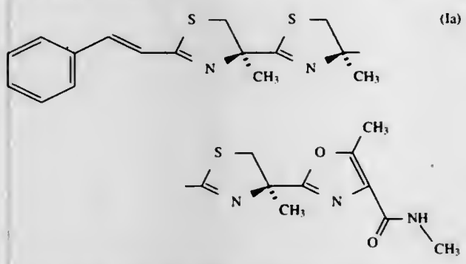
This application Jun. 7, 1995, Ser. No. 487,382

Claims priority, application Germany, Dec. 24, 1990, 40 41 685.2

Int. Cl.^{6} A01N *43/78;* **G07D** *417/14*

U.S. Cl. 514—365 **6 Claims**

1. A compound represented by having the absolute configuration given under formula Ia



(Ia)

or a pharmaceutically acceptable acid addition salt thereof.

5,604,250

SYNERGISTIC ANTIMICROBIAL COMPOSITIONS CONTAINING 2-(THIOCYANOMETHYLTHIO) BENZOTHIAZOLE AND AN ORGANIC ACID

David Oppong, Memphis, and C. George Hollis, Germantown, both of Tenn., assignors to Buckman Laboratories International, Inc., Memphis, Tenn.

Division of Ser. No. 125,849, Sep. 24, 1993, Pat. No. 5,494,904. This application Dec. 12, 1995, Ser. No. 571,192

Int. Cl.^{6} A01N *37/00;43/78*

U.S. Cl. 514—367 **33 Claims**

1. A composition comprising (a) 2-(thiocyanomethylthio)benzothiazole and (b) at least one organic acid selected from the group consisting of propionic acid, a salt thereof, sodium propionate, octanoic acid, a salt thereof, nonanoic acid, a salt thereof, formic acid, a salt thereof, acetic acid, a salt thereof, lauric acid, a salt thereof, and mixtures thereof, wherein said components (a) and (b) are present in synergistic microbicidal effective amounts to control the growth of at least one microorganism selected from the group consisting of bacteria, fungi, and mixtures thereof.

5,604,251

IMIDAZOLE DERIVATIVES WITH A BIPHENYLSULFONYLUREA OR BIPHENYLSULFONYLURETHANE SIDE CHAIN AND THEIR USE AS ANGITENSIN II RECEPTORS

Holger Heitsch, Hofheim am Taunus; Rainer Henning; Adalbert Wagner, both of Hattersheim am Main; Hermann Gerhards, Hofheim am Main; Reinhard Becker, Wiesbaden, and Bernward Schölkens, Kelkheim, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

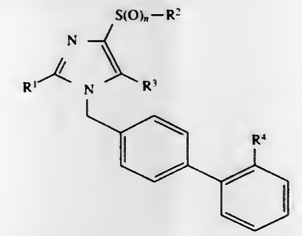
Continuation of Ser. No. 26,030, Mar. 4, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 479,561

Claims priority, application Germany, Mar. 7, 1992, 42 07 241.7

Int. Cl.^{6} A61K *31/505;31/415;31/42;* **C07D** *403/12;403/14*

U.S. Cl. 514—396 **12 Claims**

1. A compound of the formula (I):



(I)

wherein:

a) R^1 is (C_1–C_3)-alkyl;

b) R^2 is

1. (C_1–C_6)-alkyl,
2. (C_3–C_7)-cycloalkyl,
3. phenyl, or
4. benzyl;

c) R^3 is

1. hydrogen,
2. CH_2OR^5,
3. CO—R^6, or
4. O—R^7;

d) R^4 is

1. $SO_2NR^7R^8$,
2. SO_2—NR^8—CO—NR^7R^9,
3. SO_2—NH—COO—R^7,
4. SO_2—NH—SO_2—NR^7R^9,
5. SO_2—NH—CO—R^7,
6. SO_2—NH—SO_2—R^7, or

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7. $SO_2N{=}CH{-}N(CH_3)_2$;
e) R^5 is
1. hydrogen or
2. $(C_1{-}C_6)$-alkyl;
f) R^6 is
1. hydrogen or
2. OR^7;
g) R^7 and R^9 are identical or different and are
1. hydrogen,
2. $(C_1{-}C_6)$-alkyl,
3. $(C_3{-}C_8)$-cycloalkyl,
4. $(C_3{-}C_6)$-cycloalkyl-$(C_1{-}C_3)$-alkyl,
5. $(C_6{-}C_{12})$-aryl,
6. $(C_6{-}C_{10})$-aryl-$(C_1{-}C_4)$-alkyl,
7. $(C_1{-}C_9)$-heteroaryl, which is unhydrogenated, partially hydrogenated, or completely hydrogenated,
8. $(C_1{-}C_9)$-heteroaryl-$(C_1{-}C_3)$-alkyl, where the heteroaryl moiety is unhydrogenated, partially hydrogenated, or completely hydrogenated,
9. a radical defined as above in g) 5.–8., substituted by 1 or 2 identical or different radicals selected from halogen, hydroxyl, $(C_1{-}C_4)$-alkyl, methoxy, nitro and cyano,
10. $(C_2{-}C_6)$-alkenyl or $(C_3{-}C_6)$-alkenoyl,
11. $(C_3{-}C_8)$-cycloalkenyl,
12. $(C_3{-}C_8)$-cycloalkenyl-$(C_1{-}C_3)$-alkyl,
13. $(C_6{-}C_{10})$-aryl-$(C_3{-}C_6)$-alkenyl,
14. $(C_1{-}C_9)$-heteroaryl-$(C_3{-}C_6)$-alkenyl and
15. $(C_3{-}C_6)$-alkynyl;
h) R^8 is hydrogen;
i) n is 0, 1 or 2;
a physiologically tolerable salts thereof.

10. A method for the treatment of high blood pressure comprising the step administering to a host in need thereof an effective amount of a compound or salt thereof of claim **1**.

5,604,252

AZANORBORNANE DERIVATIVES

Brian T. O'Neill, Westbrook, Conn., assignor to Pfizer Inc., New York, N.Y.

PCT No. PCT/US92/04697, § 371 Date Dec. 14, 1993, § 102(e) Date Dec. 14, 1993, PCT Pub. No. WO93/00330, PCT Pub. Date Jan. 7, 1993

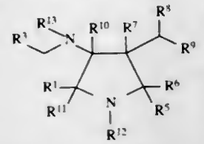
Continuation-in-part of Ser. No. 719,889, Jun. 21, 1991, abandoned. This PCT application Jun. 11, 1992, Ser. No. 167,851

Int. Cl.[6] C07D *487/04;207/14;* **A61K** *31/40*

U.S. Cl. 514—413 **12 Claims**

1. A compound of the formula:

(I)



or a pharmaceutically acceptable salt thereof, wherein

R^1 is phenyl or benzhydryl which is diphenylmethyl;

R^3 is 2-methoxyphenyl, 2-trifluoromethoxyphenyl, 2-methoxy-5-trifluoromethoxyphenyl, 2-methoxy-5-chlorophenyl, 2-methoxy-5-(1-methylethyl)phenyl, 2-methoxy-5-(1-methyl-n-propyl)phenyl, 2-methoxy-5-(1,1-dimethylethyl)phenyl, 2-methoxy-4,5-dimethyl-phenyl or 2-methyl-5-(1,1-dimethylethyl)phenyl;

R^5, R^6, R^7, R^8, R^{10}, R^{11}, $R^{12}$and R^{13} are each hydrogen;

R^9, when separately, is carboxy, hydroxymethyl, methoxymethyl or N,N-dimethylaminocarbamoyl, and

R^9, when taken together with the carbon atom to which it is attached, the nitrogen atom of the pyrrolidine ring, the carbon atom to which R^7 is attached and the carbon atom to which R^5 and R^6 are each attached, completes a second pyrrolidine ring, thereby forming a bicyclic ring structure containing a bridgehead nitrogen atom in the ring, with the proviso that R12 is always absent.

5,604,253

N-BENZYLINDOL-3-YL PROPANOIC ACID DERIVATIVES AS CYCLOOXYGENASE INHIBITORS

Cheuk K. Lau, Ile Bizard; Cameron Black, Pointe Claire; Daniel Guay, Ile Perrot; Jacques Y. Gauthier, Laval; Yves LeBlanc, Kirkland; Patrick Roy, Dollard des Ormeaux; Yves Ducharme, Montreal, and Pierre Hamel, Laval, all of Canada, assignors to Merck Frosst Canada, Inc., Kirkland, Canada

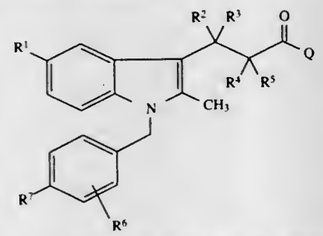
Filed May 22, 1995, Ser. No. 445,624

Int. Cl.[6] A61K *31/405;* **C07D** *209/04;209/10*

U.S. Cl. 514—415 **16 Claims**

1. A compound of formula I

I



or a pharmaceutically acceptable salt thereof, wherein:

Q is
(a) —OR or
(b) $-NR^9R^{10}$;

R is
(a) —H or
(b) $-C_{1-4}$ alkyl:

R^1 is
(a) $-OCH_3$,
(b) $-OCH_2F$,
(c) $-OCHF_2$,
(d) F, Cl, Br or I, or
(e) methyl or ethyl;

R^2, R^3, R^4 and R^5 are independently
(a) —H,
(b) —F,
(c) methyl or ethyl,
(d) $-CF_3$, CF_2H, or CFH_2,
(e) —OH, OR^8, SR^8, $S(O)R^8$, or $S(O)_2R^8$,
(f) mono- or di-substituted benzyl, wherein the substituent is selected from
(1) hydrogen,
(1) CF_3,
(3) CN,
(4) F, Cl, Br or I,
(5) C_{1-6}alkyl,
(6) SR^8, $S(O)R^8$, or $S(O)_2R^8$,
(g) naphthylmethyl,
or R^2 together with R^3 form an oxo group;
or R^4 together with R^5 form an oxo group;
or R^2 and R^3 are joined so that together with the carbon atom to which they are attached there is formed a saturated monocyclic hydrocarbon ring of 3, 4, 5, 6 or 7 members;
or R^2 and R^4 are joined so that together with the carbon atoms to which they are attached there is formed a saturated monocyclic hydrocarbon ring of 3, 4, 5, 6 or 7 members;
or R^2 and R^5 are joined so that together with the carbon atoms to which they are attached there is formed a saturated monocyclic hydrocarbon ring of 3, 4, 5, 6 or 7 members;
or R^3 and R^4 are joined so that together with the carbon atoms to which they are attached there is formed a saturated monocyclic hydrocarbon ring of 3, 4, 5, 6 or 7 members;

or R^3 and R^5 are joined so that together with the carbon atoms to which they are attached there is formed a saturated monocyclic hydrocarbon ring of 3, 4, 5, 6 or 7 members;
or R^4 and R^5 are joined so that together with the carbon atom to which they are attached there is formed a saturated monocyclic hydrocarbon ring of 3, 4, 5, 6 or 7 members;
R^6 is H or F;
R^7 is
(a) Br, Cl or I,
(b) SMe, SEt, or SCF_2H;
R^8 is methyl, ethyl or mono- or di-substituted benzyl, wherein the substituent is selected from
(1) hydrogen,
(2) CF_3,
(3) CN,
(4) F, Cl, Br or I,
(5) C_{1-6}alkyl;
R^9 and R^{10} are independently
(a) —H,
(b) $-C_{1-3}$ alkyl,
(c) —OR,
(d) $-C(O)R^{11}$,
(e) $-S(O)_2R^{12}$,
(f) mono-substituted C_{2-4} alkyl wherein the substituent is selected from
(1) hydroxy,
(2) amino,
(3) methylamino, and
(4) dimethylamino,
provided that said substituent is located on a carbon of C_{2-4} alkyl other than the one attached to the nitrogen of $-NR^9R^{10}$,
(g) phenyl, benzyl or pyridyl optionally mono- or di-substituted, the substituents being selected from the group consisting of
(1) hydrogen,
(2) CF_3,
(3) CN,
(4) F, Cl, Br or I,
(5) C_{1-6}alkyl;
or R^9 and R^{10} are joined so that together with the nitrogen atom to which they are attached there is formed a saturated or unsaturated monocyclic ring of 3, 4, 5, 6, or 7 members, optionally containing one or two additional heteroatoms, said heteroatoms independently selected from N, O and S, said ring optionally containing one or two carbonyl or sulfonyl groups;
R^{11} is
(a) H,
(b) $-C_{1-4}$ alkyl,
(c) $-CF_3$,
(d) phenyl or benzyl optionally mono- or di-substituted, the substituents being selected from the group consisting of
(1) hydrogen,
(2) CF_3,
(3) CN,
(4) F, Cl, Br or I,
(5) C_{1-6}alkyl;
R^{12} is
(a) $-C_{1-4}$ alkyl,
(b) $-CF_3$,
(c) phenyl or benzyl optionally mono- or di-substituted, the substituents being selected from the group consisting of
(1) hydrogen,
(2) CF_3,
(3) CN,
(4) F, Cl, Br or I,
(5) C_{1-6}alkyl;
with the proviso that when Q is OR and R^1 is OMe and R^2, R^3, R^4, R^5 and R^6 are simultaneously hydrogen, R^7 is other than Cl.

5,604,254

INDOLE DERIVATIVE HAVING PROLONGED IMMUNOSTIMULATING ACTIVITY AND PHARMACEUTICAL COMPOSITIONS THEREFROM

Giuseppe Quadro, deceased, late of Novara, Italy, assignor to Yason S.r.l., Novara, Italy

PCT No. PCT/EP92/02737, § 371 Date Dec. 1, 1995, § 102(e) Date Dec. 1, 1995, PCT Pub. No. WO94/12475, PCT Pub. Date Jun. 9, 1994

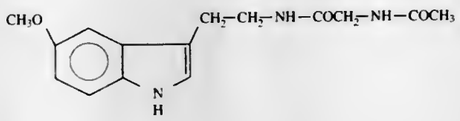
PCT Filed Nov. 27, 1992, Ser. No. 448,511

Int. Cl.[6] A61K *31/40;* **C07D** *209/04*

U.S. Cl. 514—419 **5 Claims**

1. N-[N'-acetyl(glycinyl)]-5-methoxytryptamine, of formula (I)

(I)



5,604,255

N-(1-THIENYLCYCLOALKYL)ALKENYLAMINES FOR TREATMENT OF NEUROTOXIC INJURY

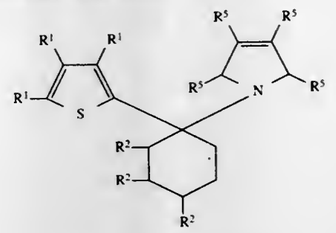
Kenner C. Rice, Rockville; Arthur E. Jacobson, Potomac; Andrew Thurkauf, Laurel; Mariena V. Mattson, Rockville, all of Md.; Thomas L. O'Donohue, Chesterfield, Mo.; Patricia C. Contreras, Ballwin, Mo., and Nancy M. Gray, Ellisville, Mo., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C., and G. D. Searle & Co., Skokie, Ill.

Continuation-in-part of Ser. No. 774,003, Oct. 8, 1991, Pat. No. 5,401,755, which is a continuation of Ser. No. 125,025, Nov. 24, 1987, abandoned. This application Nov. 23, 1994, Ser. No. 344,433

Int. Cl.[6] C07D *409/04;* **A61K** *31/40*

U.S. Cl. 514—422 **8 Claims**

1. A compound of the formula:



wherein:

R^1 is selected from the group consisting of hydrido, $C_1{-}C_5$ alkyl, $C_3{-}C_8$ cycloalkyl, $C_2{-}C_5$ alkenyl, —OH, and $C_1{-}C_5$—O— with the proviso that at least two of R^1 must be hydrido;

R^2 is selected from the group consisting of hydrido, $C_1{-}C_5$ alkyl, $C_3{-}C_8$ cycloalkyl, $C_2{-}C_5$ alkenyl, —OH, $C_1{-}C_5$—O—, and =O with the proviso that at least two of R^2 must be hydrido; and

R^5 is selected from the group consisting of hydrido, $C_1{-}C_5$ alkyl, $C_3{-}C_8$ cycloalkyl, $C_2{-}C_5$ alkenyl, —OH, and $C_1{-}C_5$—O— with the proviso that at least two of R^5 must be hydrido; or a pharmaceutically acceptable salt thereof.

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5,604,256

OCTAHYDRONAPHTHALENE OXIME DERIVATIVES FOR CHOLESTEROL BIOSYNTHESIS INHIBITION

Hiroshi Kogen; Masaaki Kurabayashi; Telichiro Koga; Toru Komai, and Haruo Iwabuchi, all of Tokyo, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

Continuation of Ser. No. 61,911, May 14, 1993, abandoned. This application Dec. 14, 1994, Ser. No. 357,062

Claims priority, application Japan, May 15, 1992, 4-122476

Int. Cl.[6] A61K *31/335;* C07D *319/06*

U.S. Cl. 514—452 9 Claims

1. A pharmaceutically acceptable salt of 7-[5-(1,3-dioxan-5-yl)methoxyimino-2-methyl-8-(2-methylbutyryloxy)-3-oxo-1,2,3,5,6,7,8,8a-octahydro-1-naphthyl]-3-hydroxy-5-oxoheptanoic acid.

5,604,257

LACTONE COMPOUND AND PROCESS OF PRODUCTION THEREOF

Masayasu Tabe; Kenji Manabe, both of Hino; Koji Tomimori, Hachioji; Atsuo Hazato, Hino; Osami Takenouchi, Hino, and Yoshiaki Azuma, Hino, all of Japan, assignors to Teijin Limited, Osaka, Japan

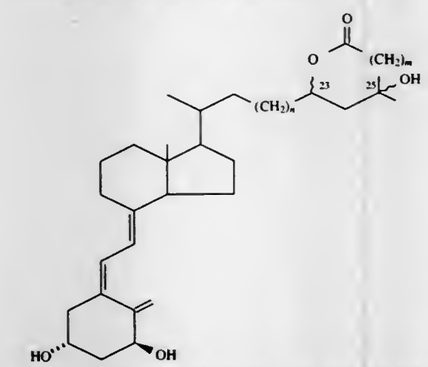
Filed Feb. 4, 1994, Ser. No. 191,593

Claims priority, application Japan, Feb. 5, 1993, 5-18703; Mar. 26, 1993, 5-68434

Int. Cl.[6] A61K *31/35;31/34*

U.S. Cl. 514—460 10 Claims

1. A lactone compound having the formula (I):



(I)

wherein n is zero or 1 and m is zero or 1, provided that both n and m are not zero at the same time, or a stereoisomer thereof at the 23- and/or 25-positions or any mixture thereof.

5,604,258

METHODS FOR TREATING MALARIA AND OTHER DISEASES

Antonio Ferrante, Mt. Osmond; Alfred Poulos, Kensington Gardens; Lakshmi M. Kumaratilake, Piccadilly, and Brenton S. Robinson, Kingswood, all of Australia, assignors to Women's and Children's Hospital Adelaide, North Adelaide, Australia

PCT No. PCT/AU92/00313, § 371 Date Mar. 14, 1994, § 102(e) Date Mar. 14, 1994, PCT Pub. No. WO93/00084, PCT Pub. Date Jan. 7, 1993

PCT Filed Jun. 24, 1992, Ser. No. 170,176

Claims priority, application Australia, Jun. 24, 1991, PK6830

Int. Cl.[6] A61K *31/20*

U.S. Cl. 514—560 26 Claims

1. A method of preventing or treating *Plasmodium falciparum* infection, trypanosomiasis, leishmaniasis, amoebiasis, trichomoniasis, primary amoebic meningitis, chronic acanthamoebic encephalitis and keratitis, babesiosis, or a disease caused by a nematode, trematode or cestode in a subject, comprising administering to the subject a fatty acid having a chain length of up 30 carbon atoms, and two or more double and/or triple bonds, an alcohol or amide derivative thereof or oxidation product.

5,604,259

TREATMENT OF BONE LOSS WITH IBUPROFEN OR FLURBIPROFEN

Webster S. S. Jee, Salt Lake City, Utah, assignor to University of Utah Research Foundation, Salt Lake City, Utah

Continuation of Ser. No. 298,232, Aug. 30, 1994, abandoned, which is a continuation of Ser. No. 140,691, Oct. 21, 1993, abandoned, which is a continuation of Ser. No. 995,305, Dec. 22, 1992, abandoned, which is a continuation of Ser. No. 890,349, May 22, 1992, abandoned, which is a continuation of Ser. No. 733,366, Jul. 19, 1991, abandoned, which is a continuation of Ser. No. 644,871, Jan. 23, 1991, abandoned, which is a continuation of Ser. No. 541,456, Jun. 22, 1990, abandoned, which is a continuation of Ser. No. 372,220, Jun. 23, 1989, abandoned, which is a continuation of Ser. No. 223,575, Jul. 25, 1988, abandoned, which is a continuation of Ser. No. 872,045, Jun. 6, 1986, abandoned, which is a continuation-in-part of Ser. No. 824,072, Jan. 30, 1986, abandoned. This application Jan. 24, 1996, Ser. No. 590,723

Int. Cl.[6] A61K *31/19*

U.S. Cl. 514—570 6 Claims

1. A method of increasing bone mass, excepting alveolar bone mass, in a patient in need thereof which comprises administering to said patient an effective amount of flurbiprofen or ibuprofen or a pharmaceutically acceptable salt or lower alkyl ester thereof.

5,604,260

5-METHANESULFONAMIDO-1-INDANONES AS AN INHIBITOR OF CYCLOOXYGENASE-2

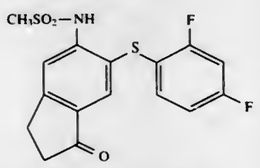
Daniel Guay, Ile Perrot, and Chun-Sing Li, Dollard des Ormeaux, both of Canada, assignors to Merck Frosst Canada Inc., Kirland, Canada

Continuation-in-part of Ser. No. 989,286, Dec. 11, 1992, abandoned, and a continuation-in-part of Ser. No. 33,397, Mar. 19, 1993, abandoned. This application Nov. 4, 1993, Ser. No. 147,804

Int. Cl.[6] A61K *31/165;* C07C *311/12*

U.S. Cl. 514—605 4 Claims

1. A compound of the formula I



I

or a pharmaceutically acceptable salt thereof.

5,604,261

ARYLALKYL (THIO)AMIDES

Michel Langlois, Sceaux; Pierre Renard, Versailles, and Gérard Adam, Le Mesnil le Roi, all of France, assignors to Adir Et Compagnie, Courbevoie, France

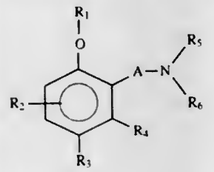
Division of Ser. No. 375,503, Jan. 18, 1995, Pat. No. 5,464,872, which is a continuation of Ser. No. 131,207, Oct. 1, 1993, abandoned. This application May 22, 1995, Ser. No. 446,323

Claims priority, application France, Oct. 2, 1992, 92 11671

Int. Cl.[6] A61K *31/16;* C07C *233/05*

U.S. Cl. 514—630 6 Claims

1. A compound which is selected from those of formula (I):



(I)

in which:

A represents a —CH_2—CH_2— chain, unsubstituted or substituted with lower alkyl,

R_1 represents hydrogen or lower alkyl,

R_2 represents hydrogen, halogen, or lower alkyl,

one of R_3 and R_4 is hydrogen, the other being lower alkyl,

R_5 represents hydrogen or lower alkyl,

R_6 represents a group



in which X represents oxygen and R_7 represents a radical chosen from:

lower alkyl, unsubstituted or substituted with one or more radicals chosen from halogen, hydroxyl, and lower alkoxy,

linear or branched alkenyl having 2 to 7 carbon atoms, inclusive, unsubstituted or substituted with one or more radicals chosen from halogen, hydroxyl, and lower alkoxy,

and —$(CH_2)_m$—E_4 in which m represents 0 or 1 to 4, inclusive, and E_4 represents a mono- or bicyclic cycloalkyl having 3 to 12 carbon atoms, inclusive, unsubstituted or substituted with one or more radicals chosen from halogen, and lower alkyl,

with the proviso that R_7 can represent lower alkyl, unsubstituted or substituted with one or more radicals chosen from halogen, hydroxyl, and lower alkoxy, only if one of the substituents R_3 and R_4 represents lower alkyl and the other substituent R_3 or R_4 represents hydrogen,

optical isomers, and addition salts thereof with a pharmaceutically-acceptable acid or base when R_3 or R_4 represents a salifiable group, on the understanding that the terms "lower alkyl" and "lower alkoxy" denote linear or branched groups having 1 to 6 carbon atoms, inclusive, and that the terms "cycloalkenyl" and "alkenyl" denote hydrocarbon groups containing one or more double bonds.

5,604,262

TOPICAL ANTIMICROBIAL AGENTS

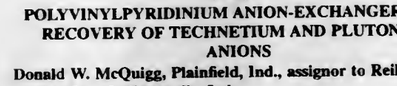
William F. Wood, McKinleyville, Calif., assignor to Research Corporation Technologies, Inc., Tucson, Ariz.

Filed Mar. 22, 1995, Ser. No. 408,913

Int. Cl.[6] A61K *31/12*

U.S. Cl. 514—675 20 Claims

1. A composition adapted for topical application to the skin, comprising an effective antimicrobial amount of a compound of the formula (I):



(I)

wherein n is 6–16 and X and Y are both H or together are a covalent bond, in combination with a dermatologically acceptable carrier.

5,604,263

TREATING OSTEOPOROSIS WITH HUMULONES

Hiroyasu Tobe, Kanagawa, and Kazuyuki Kitamura, Saitama, both of Japan, assignors to Hoechst Japan Limited, Tokyo, Japan

Filed Apr. 10, 1995, Ser. No. 420,728

Claims priority, application Japan, Apr. 12, 1994, 6-073230

Int. Cl.[6] A61K *31/12*

U.S. Cl. 514—690 4 Claims

1. A method for treating osteoporosis, which comprises administering to a human a pharmaceutical composition containing, as an active ingredient, an effective amount of one or more of the compounds selected from the group consisting of humulone, cohumulone, adhumulone, isohumulone, isocohumulone, and isoadhumulone.

5,604,264

POLYVINYLPYRIDINIUM ANION-EXCHANGERS FOR RECOVERY OF TECHNETIUM AND PLUTONIUM ANIONS

Donald W. McQuigg, Plainfield, Ind., assignor to Reilly Industries, Inc., Indianapolis, Ind.

Filed Apr. 3, 1995, Ser. No. 415,622

Int. Cl.[6] B01J *39/18*

U.S. Cl. 521—38 18 Claims

1. An anion-exchange resin exhibiting high affinity for anions of technetium and plutonium, said resin comprising:

a bead-form macroreticular polyvinylpyridine resin crosslinked at least about 15% with divinylbenzene, said resin having pendant pyridinyl groups of which at least 20% are 1-alkylpyridinium groups, wherein alkyl groups of said 1-alkylpyridinyl groups have from 4 to 8 carbon atoms.

5,604,265

PROCESS FOR RIGID POLYURETHANE FOAMS

Rik De Vos, Rotselaar, and Anthony Cunningham, Bertem, both of Belgium, assignors to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 206,561, Mar. 3, 1994. This application Nov. 6, 1995, Ser. No. 554,535

Claims priority, application United Kingdom, Nov. 30, 1993, 9324510

Int. Cl.[6] C08G *18/00*

U.S. Cl. 521—99 8 Claims

1. Process for the preparation of a fine celled closed celled rigid polyurethane or urethane-modified polyisocyanurate foam, wherein the cells of said foam have an average diameter of less than 150 micron, comprising the step of reacting a polyfunctional isocyanate-reactive composition with a polyisocyanate composition to provide a foam-forming composition, characterized in that the foam-forming composition comprises carbon black and wherein an inert, insoluble substantially, fluorinated compound having at least 50% of the hydrogen atoms of the unfluorinated compound replaced by fluorine is incorporated into the foam-forming composition.

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5,604,266

CURED UNSATURATED POLYEST-POLYURETHANE HIGHLY FILLED RESIN MATERIALS AND PROCESS FOR PREPARING THEM

John N. Mushovic, Salt Point, N.Y., assignor to Ecomat, Inc., Poughkeepsie, N.Y.

Continuation-in-part of Ser. No. 348,973, Nov. 28, 1994, Pat. No. 5,508,315, which is a continuation of Ser. No. 224,775, Apr. 8, 1994, Pat. No. 5,369,147, which is a continuation-in-part of Ser. No. 961,332, Oct. 15, 1992, Pat. No. 5,302,634. This application Apr. 15, 1996, Ser. No. 632,573

Int. Cl.[6] C08J *9/32;* **C08G** *18/34*

U.S. Cl. 521—122 **61 Claims**

1. A rigid or semirigid filled resin material, comprising:

(A) a continuous phase comprising a matrix comprising a complex crosslinked network comprising an unsaturated polyester-polyurethane containing resin, wherein said unsaturated polyester-polyurethane containing resin is the reaction product of reaction components comprising an unsaturated polyester polyol, a saturated polyol, a poly- or diisocyanate, and a reactive monomer, and wherein said matrix optionally further comprises:

(1) polyurethane modified hybrid networks;

(2) networks of polymerization products of reactive monomers;

(3) networks of polymerization products of saturated polyester polyol and poly- or diisocyanates;

(4) other networks that may form before, during, or after the formation of the polyester-polyurethane containing resin; or

(5) mixtures of the above networks; and

(B) a dispersed phase comprising:

(1) fine multisize reinforcing particles dispersed in said matrix of said continuous phase; and

(2) dispersed filler particles different from said fine multisize reinforcing particles, and having a surface region bonded to said matrix.

5,604,267

PROCESS FOR PRODUCING FROTH POLYURETHANE FOAM

Robert D. Duffy, West Chester, Pa., assignor to ARCO Chemical Technology, L.P., Greenville, Del.

Filed Aug. 30, 1995, Ser. No. 521,005

Int. Cl.[6] C08G *18/00*

U.S. Cl. 521—133 **10 Claims**

1. A process for the preparation of polyurethane froth foam, comprising:

(a) delivering polyurethane reactive components comprising an isocyanate component and a polyol component to a high pressure mix head;

(b) delivering compressed gas to said high pressure mix head to form a frothable polyurethane reactive mixture;

(c) delivering said frothable polyurethane reactive mixture to a froth foaming head;

(d) frothing said frothable polyurethane reactive mixture to form a frothed polyurethane reactive mixture; and

(e) recovering a froth foamed polyurethane product.

5,604,268

GLUE CRAYONS

Neil A. Randen; John W. Frank, and Patrick J. Hager, all of Washington, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 22, 1995, Ser. No. 394,653

Int. Cl.[6] C09D *13/00;* **C08L** *33/06;67/07*

U.S. Cl. 523—164 **10 Claims**

9. A glue crayon comprising the mixture of:

(a) 50–100 pans by weight of an acrylate-based adhesive polymer wherein the polymer an inherent viscosity in toluene between 0.05–0.40 deciliters per gram and comprises:

i. 10 to 96 pans by weight of at least one crystalline monomeric unit having an alkyl carbon length of 18–22 carbon atoms;

ii. 0–70 parts by weight of at least one waxy, soft monomeric unit having an average alkyl carbon length of 14–17.5 carbon atoms;

iii. 90–4 parts by weight of at least one tackifiying monomeric unit, whose homopolymer has a T_m in the range of 80°–110° C.;

iv. 0–10 parts by weight of a monomeric unit having acid functionality;

v. 0 or 0.5–20 parts by weight of a macromeric unit having an average carbon length of 18–22; and

vi. 0 or 2.5–20 parts by weight of at least one higher alkyl chain length acrylate monomeric unit having a carbon length in the range of 30 to 50 carbon atoms;

(b) 0–50 parts by weight of at least one tackifier;

(c) 0–35 pans by weight at least one crystalline additive; and

(d) 0–50 parts by weight of at least one filler.

5,604,269

SELF-DISPERSING CURABLE EPOXY RESINS, DISPERSIONS MADE THEREWITH, AND COATING COMPOSITIONS MADE THEREFROM

John G. Papalos, Ledgewood, N.J.; Shailesh Shah, Dresher, Pa.; Reuben H. Grinstein, Blue Bell, Pa.; Joseph L. Mulvey, Lansdale, Pa., and Brian G. Jewell, North Wales, Pa., assignors to Henkel Corporation, Plymouth Meeting, Pa.

Continuation-in-part of Ser. No. 173,847, Dec. 27, 1993, abandoned. This application Aug. 25, 1994, Ser. No. 296,281

Int. Cl.[6] C08K *3/20;* **C08L** *63/02*

U.S. Cl. 523—404 **13 Claims**

1. A self-dispersing curable epoxy resin composition comprising the addition product of reactants comprising (a) 1.0 reactive equivalents of an epoxy resin and (b) from about 0.005 to 0.5 reactive equivalents of an amine-epoxy adduct comprising the addition product of reactants comprising 1.0 reactive equivalent of an aliphatic polyepoxide and greater than 1.0, but no more than about 2.5, reactive equivalents of a polyoxyalkyleneamine.

5,604,270

CHEMICAL TREATING COMPOSITION FOR GLASS FIBERS HAVING EMULSIFIED EPOXY WITH GOOD STABILITY AND THE TREATED GLASS FIBERS

Michael W. Klett, Allison Park, and Kenneth D. Beer, Vandergrift, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 729,255, Jul. 12, 1991, Pat. No. 5,242,958. This application Sep. 7, 1993, Ser. No. 117,471

Int. Cl.[6] C08K *3/20;* **C08L** *63/02*

U.S. Cl. 523—421 **16 Claims**

1. An aqueous chemical treating composition for glass fibers comprising:

(a) an aqueous emulsifiable or dispersible epoxy resin;

(b) a film forming polymer selected from the group consisting of:(1) at least one water soluble, dispersible or emulsifiable bisphenol A polyester film forming polymer which is formed from bisphenol A, butene diol, maleic anhydride, maleic acid and adipic acid; (2) polymer that is formed with internal emulsification through ethoxylation; (3) polyurethane; and (4) poly (urea urethane), wherein said film forming polymer is present within a range of 1 to 20 weight percent of the aqueous chemical treating composition;

(c) at least one epoxidized polyol polymer, copolymer or terpolymer wherein the oxyalkylene is a combination of ethyleneoxide and propyleneoxide moieties present to give the polyoxyalkylene an HLB within the range of around 20 to around 30 and wherein the polyoxyalkylene is at least capped with at least one epoxy moiety and wherein the epoxidized polyoxyalkylene is present in an amount in the range of around 1 to around 30 parts per 100 parts of said epoxy resin;

(d) at least one vinyl functional silane coupling agent in an effective coupling agent amount;

(e) at least one amino functional silane coupling agent in an effective coupling agent amount;

(f) at least one fiber lubricant; and

(g) water in a sufficient amount to allow the fibers to be treated during their formation.

5,604,271

UNIVERSAL ADHESION PROMOTING COMPOSITION FOR PLASTIC REPAIR KIT INCLUDING SAME, AND METHOD OF USE

Richard H. Lundeen, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 326,735, Oct. 20, 1994, abandoned, which is a continuation of Ser. No. 74,962, Jun. 10, 1993, abandoned. This application Dec. 21, 1995, Ser. No. 576,841

Int. Cl.[6] C08K *5/05;5/07;5/10;* **C08L** *63/02*

U.S. Cl. 523—454 **9 Claims**

1. A priming composition suitable for use in priming a first plastic surface for adhesion of a second plastic material thereto, the composition comprising an epoxy resin and a priming solvent, the composition derived from the combination of:

A. a first composition comprising a first organic material having a plurality of epoxy-functional groups, said first organic material combined with a first organic solvent in a sufficient amount of the first organic solvent to dissolve or disperse the first organic material in the first organic solvent, the first organic solvent comprising a combination of:

a. a hydrocarbon having from 4 to 10 carbon atoms;

b. an alcohol having from 3 to 10 carbon atoms; and

c. an ester having from 3 to 10 carbon atoms,

with the proviso that the first organic material is soluble in the combination of a, b and c; and

B. a second composition comprising a second organic material comprising a major portion of a mercaptan-terminated polymer having a plurality of mercaptan-functional groups and a minor portion of an amine-functional material having a plurality of amine-functional groups, said second organic material combined with a second organic solvent in a sufficient amount of the second organic solvent to dissolve or disperse the second organic material in the second organic solvent, the second organic solvent comprising a combination of:

a'. a hydrocarbon having from 4 to 10 carbon atoms;

b'. an alcohol having from 3 to 10 carbon atoms; and

c'. a ketone having from 3 to 10 carbon atoms,

with a proviso that the second organic material is soluble in the combination of a', b' and c', the second organic material and the first organic material present in an equivalent weight ratio ranging from about 4:1 to about 1:6, wherein the mixture of the first and second organic solvents comprise the priming solvent and the epoxy resin comprises a reaction product of said first and said second organic materials, the priming solvent present in an amount sufficient to wet and penetrate, but not be substantially retained in the first plastic surface where applied thereto.

5,604,272

UNSATURATED SULFONIC ACID POLYMERS AS SPRAY DRYING ASSISTANTS

Erich Penzel, Ludwigshafen; Gernot Franzmann, Bobenheim; Maximilian Angel, Schifferstadt; Joachim Pakusch, Ludwigshafen, and Bernhard Schuler, Mannheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

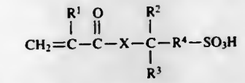
Continuation of Ser. No. 254,767, Jun. 6, 1994, Pat. No. 5,462,978. This application May 25, 1995, Ser. No. 450,717

Claims priority, application Germany, Jun. 18, 1993, 43 20 220.9

Int. Cl.[6] C08L *41/00*

U.S. Cl. 524—3 **14 Claims**

1. A polymer powder comprising spray dried aqueous dispersion of a mixture of polymers, said powder containing at least one polymer I which is comprised of (i) from 15–80% by weight of at least one monomer (a) of formula I or salts thereof:



(I)

wherein R^1, R^2 and R^3 independently of one another are each hydrogen or C_{1-3} alkyl, R^4 is C_{1-5} alkylene and X is O or NH, and (ii) from 20–85% by weight of at least one monomer (b) capable of undergoing free radical copolymerization, with the proviso that the average molar solubility of the components of the mixture of all the monomers (b) polymerized at 25° C. in water is lower than the correspondingly defined average molar solubility of the components of the mixture of all the monomers (a) polymerized and at least one polymer II said powder being capable of forming an aqueous resin dispersion upon redispersion in an aqueous medium.

5,604,273

DRYING SHRINKAGE CEMENT ADMIXTURE

Awdhoot V. Kerkar, and Brian S. Gilbert, both of Columbia, Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Sep. 18, 1995, Ser. No. 529,390

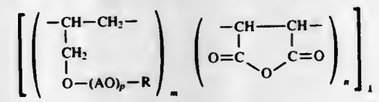
Int. Cl.[6] C04B *24/02;* **C08K** *5/05;* **C08F** *122/04*

U.S. Cl. 524—4 **16 Claims**

1. A cement admixture capable of controlling drying shrinkage of concrete compositions and enhancing the compressire strength of the resultant treated formation formed with said composition, comprising a mixture of

A. at least one C_3–C_{12} alkylenediol, wherein each hydroxyl group of said alkylenediol is independently selected from secondary hydroxyl or tertiary hydroxyl groups; and

B. at least one copolymer represented by the formula



(III)

wherein

R represents C_1–C_{40} hydrocarbon group;

AO represents a C_2–C_{18} oxyalkylene group or mixtures thereof;

p represents an average molar number of the said oxyalkylene group and is an integer of at least 25;

m and n are each independently an integer of from 1 to 3;

k is an integer of from 1 to 100 or the hydrolyzed product of said copolymer and salts of said hydrolyzed product;

wherein said mixture has component A to component B in a weight ratio of from about 1 to 100.

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5,604,274

THERMOSETTING ASPHALT HAVING CONTINUOUS PHASE POLYMER

Kevin P. Gallagher, Pataskala, and Donn R. Vermilion, Newark, both of Ohio, assignors to Owens-Corning Fiberglas Technology, Inc., Summit, Ill.

Continuation-in-part of Ser. No. 363,154, Dec. 23, 1994, Pat. No. 5,576,363. This application Oct. 6, 1995, Ser. No. 540,102

Int. Cl.[6] C08L *63/00;95/00*

U.S. Cl. 524—69 **20 Claims**

1. A thermosetting asphalt product comprising a mixture of:

a. a blend of an asphalt and an epoxy-functionalized polymer; and,

b. a second asphalt which is chemically modified by the incorporation of one or more members selected from the group consisting of amines, anhydrides, alcohols, carboxylic acids, and thiols, where the blend of asphalt and epoxy-functionalized polymer is present in an amount within the range of from about 80 to about 95 weight percent of the thermosetting asphalt product, and the chemically modified asphalt is present in an amount within the range of from about 5 to about 20 weight percent of the thermosetting asphalt product, and the epoxy-functionalized polymer forms a continuous phase within the asphalt product.

5,604,275

COLOR STABILIZED AQUEOUS N-VINYL HETEROCYCLIC COPOLYMER SOLUTIONS

Yuanzhen Zhong, Wayne, and Philip F. Wolf, Bridgewater, both of N.J., assignors to ISP Investments Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 355,370, Dec. 13, 1994, abandoned. This application Sep. 27, 1995, Ser. No. 534,753

Int. Cl.[6] C08K *5/35*

U.S. Cl. 524—96 **14 Claims**

1. A clear, stable aqueous or alcohol solution of (a) between about 10 and about 70 wt. % based on total composition of a copolymer derived from about 40 to about 80 wt. % of a N-vinyl heterocyclic monomer having from 3 to 6 ring carbon atoms and from about 60 to about 20 wt. % of a vinyl comonomer and (b) between about 0.02 and about 2 wt. %, based on copolymer of a nitrogen containing, trivalent boron complexed compound.

5,604,276

RECORDING LIQUID AND METHOD FOR INK JET RECORDING USING SAME

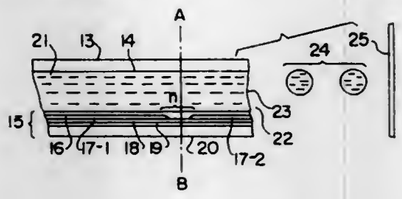
Yuko Suga, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 40,584, Mar. 31, 1993, abandoned, which is a continuation of Ser. No. 652,216, Feb. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 459,267, Dec. 29, 1989, abandoned. This application Dec. 6, 1994, Ser. No. 353,992

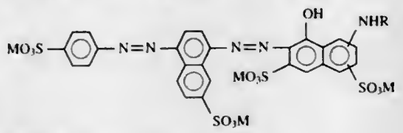
Claims priority, application Japan, Jan. 7, 1989, 1-001532; Jan. 7, 1989, 1-001533; Jan. 7, 1989, 1-001534; Nov. 27, 1989, 1-308329; Nov. 27, 1989, 1-308330; Nov. 27, 1989, 1-308331

Int. Cl.[6] C08K *5/3492*

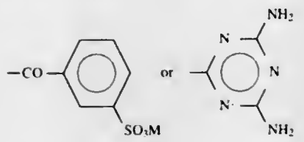
U.S. Cl. 524—100 **35 Claims**



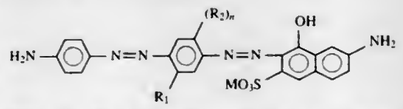
1. A recording liquid which comprises carbon black, a water-soluble resin, a water-soluble organic solvent including polyhydric alcohol and/or its alkyl ether and an aliphatic monohydric alcohol, and water, wherein the amount of the dissolved water-soluble resin which is in a liquid medium without being adsorbed on a pigment in said recording liquid is not more than 2% by weight and the recording liquid further contains at least one of the dyes represented by the following general formulae (A) to (C):



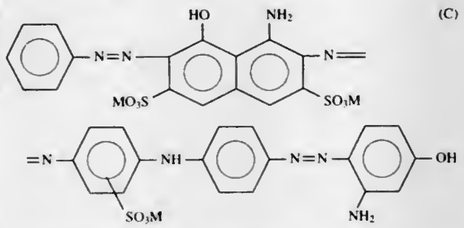
wherein R is —H, —$COCH_3$,



and M is Na, Li, K or ammonium;



wherein R_1 and R_2 are independently selected from —OCH_3, —CH_3, —NH_2 and —$NHCOCH_3$, n is 0 or 1 and M is Na, Li, K, or ammonium; and



wherein M is Na, K, Li or ammonium.

5,604,277

RUBBER AND PLASTIC BONDING

John D. Osborn, Wortham, Tex., assignor to Encore Technologies, Inc., Houston, Tex.

Continuation of Ser. No. 886,338, May 20, 1992, abandoned. This application Feb. 21, 1995, Ser. No. 391,386

Int. Cl.[6] C08J *5/10;11/24;* **C08L** *23/00*

U.S. Cl. 524—270 **24 Claims**

1. A dry liquid concentrate mixture for use with organic compounds in nonvulcanized curing systems for plastics, recycled plastics, thermoplastics, thermoplastic elastomers, polyacrylics, polyurethanes, urethanes, asphalt, and emulsions thereof, including latex, comprising a mixture of:

a. crumb rubber including cured and shaped rubber particles;

b. one or more liquid agent consisting of compounds chosen from the group of fatty acids and tall oil and pitches within the following ranges of characteristics:

Viscosity, (centistokes at 99° C.)	10 -- to -- 1,000
Acid Number (Total)	15 -- to -- 330
Saponification Number	10 -- to -- 350
Fatty Acids, %	5% -- to -- 100%
Rosin Acids, %	0% -- to -- 70%
Unsaponifiables	5% -- to -- 80%;

wherein the moisture content of said rubber particles and liquid agent is not more than 0.5%.

5,604,278

CPVC COMPOUNDS AND ARTICLES MADE THEREFROM FOR DESIGN STRESS RATING ABOVE 180° F.

Joachim E. Hartitz, Avon Lake, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Continuation of Ser. No. 314,573, Sep. 28, 1994, abandoned, which is a continuation of Ser. No. 995,723, Dec. 23, 1992, abandoned. This application Feb. 20, 1996, Ser. No. 603,572

Int. Cl.[6] C08K *5/04*

U.S. Cl. 524—399 **11 Claims**

1. A compound intended for extrusion of pipe comprising;

100 parts by weight of a chlorinated polyvinyl chloride (CPVC) having 69–74 % by weight chlorine;

from about 3 to about 7 parts by weight based on the weight of the CPVC of an acrylic polymeric impact modifier;

a first chlorinated polyolefin containing from about 32 to 37% chlorine and having a Mooney ML 1+4 viscosity of from about 25 to 45;

a second chlorinated polyolefin containing from about 36 to about 42% chlorine and having a Mooney ML 1+4 viscosity of from about 60 to 100;

at least one lubricant; and

a heat stabilizer,

wherein the acrylic polymeric impact modifier is selected from the group consisting of;

(a) an acrylate homo-polymer or co-polymer second stage graft copolymerized with methyl methacrylate;

(b) polybutyl acrylate jointly graft copolymerized with methyl methacrylate and styrene;

(c) poly(ethylhexyl acrylate-co-butyl acrylate) graft polymerized with styrene and/or acrylonitrile and/or methylmethacrylate and;

(d) polybutyl acrylate graft polymerized with acrylonitrile and styrene.

5,604,279

COLORANT PREPARATION FOR PRODUCING MASTERBATCHES

Uwe Bernhardt, Bad Ems, and Rainer Bott, Koblenz, both of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Filed Mar. 13, 1995, Ser. No. 402,631

Claims priority, application Germany, Mar. 15, 1994, 44 08 682.2; Dec. 6, 1994, 44 43 316.6

Int. Cl.[6] C08J *3/00;* **C08K** *3/26;9/00;* **C08L** *57/02*

U.S. Cl. 524—427 **16 Claims**

1. A colorant composition consisting essentially of to 60 to 90% by weight of an organic or inorganic pigment finely dispersed in an amorphous poly-α-olefin which is composed of at least two different monomers having a butene-1 content of at least 25% by weight and having a softening point value of between 70° and 150° C., and a free-flow agent selected from the group consisting of silica, chalk, a silicate and polyol ester of a long-chain fatty acid, oleamide or a partial fatty acid glyceride.

5,604,280

RING SPIRO [FLUORENE-[2H]-BENZOPYRANES] AND THEIR USE IN OPHTHALMIC OPTICS

Jean L. Pozzo; Robert Guglielmetti; André Samat; Vladimir Lokshin, and Guenaëlle Harie, all of Marseille, France, assignors to Essilor International Compagnie Generale D'Optique, Cedex, France

Filed Apr. 5, 1995, Ser. No. 417,321

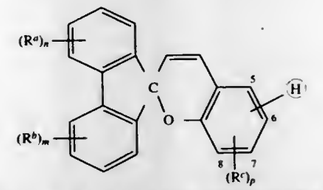
Claims priority, application France, Apr. 6, 1994, 94 04028

Int. Cl.[6] C07D *311/96;311/92;* **C08K** *5/3495;5/15*

U.S. Cl. 524—110 **18 Claims**

1. A photochromic compound with the following general formula (I):

(I)



where R^a, R^b and R^c independently represent a hydrogen atom, an alkyl group, an aryl group, or an OR, SR, COR or COOR group, where R represents a hydrogen atom, an alkyl group or an aryl group, an amino group with formula NR_1R_2, where R_1 and R_2 independently represent a hydrogen atom, an alkyl group, a cycloalkyl group, or an aryl group, R_1 and R_2 can form a heterocycle containing four to seven members with the nitrogen atom and may also contain one intracyclic heteróatom selected from nitrogen, oxygen and sulphur, a halogen atom, a mono- or polyhaloalkyl group; an NO2, CN or SCN group; n and m represent whole numbers from 1 to 4 depending on the number of substitutions in the nucleus; and p is 1 or 2 depending on the number of substitutions in the nucleus; groups R^a, R^b and R^c can have different meanings when m, n and p are greater than 1 and depending on the position in the nuclei; H is an aromatic heterocycle containing five or six members, condensed at the 5,6 or 6,7 positions, containing one or more heteroatoms selected from oxygen, selenium, sulphur and nitrogen or an aromatic carbocycle containing five or six members, condensed at the 7,8 positions; said carbocycle or heterocycle H being able to be substituted by one or more alkyl, alkoxy, amino, aryl, or aralkyl groups or condensed with a further cycle containing five to ten members.

12. A composition for application to or introduction into a transparent organic polymeric material characterised in that it is constituted by a colourless or transparent solution based on transparent polymers, copolymers or a mixture of polymers in an appropriate organic solvent, containing at least one photochromic compound as defined in claim 1 in sufficient quantities to cause the material to change colour on exposure to ultraviolet radiation.

5,604,281

ULTRAVIOLET-AND INFRARED-RAY ABSORBING POLYMER COMPOSITION

Teruaki Kamei; Takao Koya; Masaaki Tamura; Emiko Iwata, and Syuko Shindo, all of Gunma-ken, Japan, assignors to The Japan Carlit Co., Ltd., Tokyo, Japan

Filed May 2, 1995, Ser. No. 433,202

Claims priority, application Japan, May 9, 1994, 6-117367; Apr. 21, 1995, 7-118989

Int. Cl.[6] C08K *5/16;5/3477;5/132;5/3467*

U.S. Cl. 524—204 **4 Claims**

1. The ultraviolet- and infrared-ray absorbing polymer composition composed of an organic ultraviolet-ray absorbent, an organic infrared-ray absorbent and a polycarbonate resin, said organic infrared-ray absorbent being N,N,N',N'-tetrakis- (P-di--n-butylaminophenyl) -p-phenylenediaminum hexafluoroantimonate,

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containing 0.01-1 part by weight of an organic ultraviolet-ray absorbent and 0.001-2 parts by weight of an organic infrared-ray absorbent, based on 100 parts by weight of the polycarbonate resin, wherein the polycarbonate resin comprises 10–100% by weight of a copolyestercarbonate, and said composition is manufactured by heat-molding process at 210°–245° from a mixture of the organic infrared-ray absorbent, the organic ultraviolet-ray absorbent, and the polycarbonate resin.

5,604,282

STRIPPABLE FILM COATING COMPOSITION

George W. Grogan, and Robert H. Boyd, both of Dallas, Tex., assignors to Groco Specialty Coatings Company, Dallas, Tex.

Filed Dec. 6, 1994, Ser. No. 349,942

Int. Cl.[6] C08K *5/20*

U.S. Cl. 524—232 **140 Claims**

1. A mixture for forming a strippable film coating, comprising:

a polyvinyl polymer comprising from about a 4% to about 50% by weight of said mixture, said polyvinyl polymer including from about 0.7% to about 1% by weight of said mixture of polyvinyl alcohol, a polyalkyl acrylate comprising from about 10% to about 50% by weight of said mixture wherein said polyalkyl acrylate is a polymer or copolymer of an alkyl ester of an acrylate, a release agent comprising from about 0.2% to about 6% by weight of said mixture, a surfactant comprising from about 0.1% to about 0.5 % by weight of said mixture, a defoamer comprising from about 0.1% to about 0.5 % by weight of said mixture, a dispersant comprising from about 0.02% to about 2.5 % by weight of said mixture, a plasticizer comprising from about 0.7 % to about a 4% by weight of said mixture, with a remainder of said weight of said mixture comprising an aqueous medium ranging from about 40% to about 55% by weight of said mixture.

5,604,283

FLUORORUBBER COATING COMPOSITION

Nobuyoshi Wada; Toshio Mizuno, and Hiroyuki Tanaka, all of Osaka, Japan, assignors to Daikin Industries, Ltd., Osaka, Japan

PCT No. PCT/JP92/01073, § 371 Date Apr. 20, 1993, § 102(e) Date Apr. 20, 1993, PCT Pub. No. WO93/04134, PCT Pub. Date Apr. 3, 1993

PCT Filed Aug. 26, 1992, Ser. No. 39,230

Claims priority, application Japan, Aug. 27, 1991, 3-215177

Int. Cl.[6] C08K *5/17*

U.S. Cl. 524—236 **16 Claims**

1. A fluororubber coating composition comprising a fluororubber, a liquid medium, a coupling agent, an amine crosslinking agent or a polyol crosslinking agent, and at least 0.5 parts by weight of a carboxylic acid having 1 to 8 carbon atoms.

5,604,284

POLYETHERESTERAMIDE AND ANTISTATIC RESIN COMPOSITION

Yasuhiro Ueda, Osaka; Eiichi Senda, Kyoto; Yoshitsugu Takai, Kyoto; Tokiko Kokubu, Kyoto; Toshiaki Okamoto, Osaka, and Eiji Ichihara, Kyoto, all of Japan, assignors to Sanyo Chemical Industries, Ltd., Kyoto, Japan

Division of Ser. No. 203,399, Mar. 1, 1994. This application Jun. 5, 1995, Ser. No. 464,562

Claims priority, application Japan, Mar. 3, 1993, 5-67521; Mar. 19, 1993, 5-85616; Apr. 16, 1993, 5-113715; Oct. 6, 1993, 5-276089; Oct. 18, 1993, 5-283984; Nov. 5, 1993, 5-301031

Int. Cl.[6] C08L *77/12*

U.S. Cl. 524—434 **14 Claims**

1. A resin composition comprising:

(A) at least 97% by weight based on the total composition of a polyetheresteramide consisting essentially of residues derived from (1) a polyamide oligomer having end units containing a carboxylic group and having a number average molecular weight from 200 to 5,000 and (2) an oxyalkylated bisphenol compound having a number average molecular weight from 300 to 3,000; and

(B) at least 0.01% by weight based on the total composition of a halide of an alkali metal or an alkaline earth metal.

5,604,285

RESIN COMPOSITION FOR SLIDING PART

Tsuyoshi Miyamori; Masami Kato; Masaji Komori, and Tetsuo Shimizu, all of Settsu, Japan, assignors to Daikin Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 170,283, Jan. 3, 1994, abandoned. This application Dec. 8, 1994, Ser. No. 355,202

Claims priority, application Japan, May 21, 1993, 4-128625

Int. Cl.[6] C08K *3/00*

U.S. Cl. 524—439 **16 Claims**

1. A resin composition for a sliding part comprising (a) 5 to 45% by volume of a carbon fiber, (b) 1 to 25% by volume of a metal powder and (c) a remaining amount of a melt-processable fluorine-containing resin, wherein the carbon fiber, the metal powder and the fluorine-containing resin are mixed while the fluorine-containing resin is in a molten state, and the resin composition is flowable when the fluorine-containing resin is in a molten state.

5,604,286

CAOUTCHOUC MIXTURE, TREAD MADE THEREFROM AND TIRE WITH THIS TREAD

Hans-Bernd Fuchs, Alzenau-Hörstein; Günter Dietrich, Frankfurt am Main, and Ulrich Steinbrecht, Ober-Ramstadt, all of Germany, assignors to SP Reifenwerke GmbH, Hanau, Germany

Filed Jan. 17, 1995, Ser. No. 373,392

Claims priority, application Germany, Jan. 24, 1994, 44 01 935.1

Int. Cl.[6] C08K *3/00*

U.S. Cl. 524—493 **11 Claims**

1. Caoutchouc mixture vulcanisable with sulphur and containing at least one elastomer, at least one filler, customary additives and also a vulcanisation system, characterised in that the caoutchouc mixture contains 30 to 100 parts by weight of isoprene-butadiene-copolymer, 0 to 70 parts by weight of one or more further elastomers and also 50 to 90 parts by weight of silica as filler, with all parts by weight being respectively related to 100 parts by weight of total elastomers, the butadiene of the copolymer having a 1,2 bond content of 10 to 70 parts by weight and the isoprene of the copolymer having a 3,4 bond content of 20 to 70 parts by weight.

5,604,287

POLYARYLENE SULFIDE RESIN COMPOSITION

Shinobu Yamao, Ichihara, Japan, assignor to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

PCT No. PCT/JP95/00443, § 371 Date Nov. 17, 1985, § 102(e) Date Nov. 17, 1985, PCT Pub. No. WO95/25142, PCT Pub. Date Sep. 21, 1995

PCT Filed Mar. 16, 1995, Ser. No. 545,571

Claims priority, application Japan, Mar. 17, 1994, 6-72701

Int. Cl.[6] C08K *3/34*

U.S. Cl. 524—493 **5 Claims**

1. A polyarylene sulfide resin composition comprising:

(A) a polyarylene sulfide resin,

(B) silica,

(C) (c1) a terpolymeric elastomer made from ethylene, an α, β-unsaturated carboxylate, and maleic acid anhydride, (c2) a graft composite elastomer which is a vinyl monomer grafted composite elastomer of polyorganosiloxane and alkyl (meth) acrylate, or a mixture of (c1) and (c2) and

(D) a mercaptosilane coupling agent, and wherein the amounts of components (A), (B), (C) and (D) satisfy the following inequalities (I) to (IV),

$$0.15 \leqq A/(A+B+C) \leqq 0.60 \quad \text{(I)},$$

$$0.40 \leqq B/(A+B+C) \leqq 0.85 \quad \text{(II)},$$

$$0.03 \leqq C/A \leqq 0.30 \quad \text{(III)},$$

and

$$0.001 \leqq D/(A+B+C) \leqq 5 \quad \text{(IV)}$$

and wherein said polyarylene sulfide resin (A) has a melt viscosity of 3–30 Pa·S at a resin temperature of 300° C. and a shear rate of 200 S^{-1}.

5,604,288

METHOD FOR THE PREPARATION OF THERMOPLASTIC RESIN COMPOSITIONS

Haruhiko Furukawa; Akihiro Nakamura, both of Chiba Prefecture, Japan, and Akihiko Shirahata, Midland, Mich., assignors to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Filed Nov. 29, 1995, Ser. No. 565,652

Int. Cl.[6] C08K *3/34*

U.S. Cl. 524—493 **20 Claims**

1. A method for preparing a thermoplastic resin composition, said method comprising hot-kneading, in the absence of a radical-generating catalyst,

(A) 100 parts by weight of a thermoplastic resin derived from at least one vinylic monomer ; and

(B) 0.1 to 200 parts by weight of an alkenyl-functional polyorganosiloxane filled with amorphous silica micropowder,

wherein the weight ratio of said silica micropowder to said alkenyl-functional polyorganosiloxane is 0.01:100 to 50:100, whereby said polyorganosiloxane of component (B) becomes chemically bonded to said thermoplastic resin (A).

5,604,289

COMPOSITE THERMOPLASTIC MATERIAL AND METHOD OF MANUFACTURING ARTICLES BASED ON IT

Didier Delimoy, Chaumont-Gistoux, Belgium, assignor to Solvay (Société Anonyme), Brussels, Belgium

Filed Feb. 15, 1995, Ser. No. 388,830

Claims priority, application France, Mar. 1, 1994, 94 02433

Int. Cl.[6] C08K *3/04;7/14*

U.S. Cl. 524—496 **6 Claims**

1. In a method of manufacturing an article made of thermoplastic material comprising at least one thermoplastic polymer, at least one fibrous reinforcement component, and from 1 to 1,000 ppm by weight of carbon black as infrared radiation absorbent, the improvement comprising heating said thermoplastic material with infrared radiation.

5,604,290

SELF-CROSSLINKING COMPOSITION, FORMING OBTAINED FROM THE COMPOSITION, AND METHOD FOR MANUFACTURING THE FORMING

Satoru Aikawa, and Eiichi Tajima, both of Tokyo, Japan, assignors to Tajima Incorporated, Tokyo, Japan

Filed Apr. 14, 1995, Ser. No. 421,873

Claims priority, application Japan, May 24, 1994, 6-133620

Int. Cl.[6] C08F *8/00*

U.S. Cl. 524—529 **3 Claims**

1. A self-crosslinking composition for the production of a forming selected from the group consisting of tile, wall, floor and waterproof materials comprising:

(a) a vegetable oil having at least one of unsaturated fatty acid or an ester of an unsaturated fatty acid as one of its components,

(b) a drier,

(c) at least one member that is capable of being crosslinked in the absence of a peroxide, selected from the group consisting of styrene-butadiene rubber, styrene-butadiene-acrylonitrile copolymer, styrene-butadiene-styrene block copolymer, styrene-isoprene-styrene block copolymer, styrene-ethylene-butylene block copolymer, ethylene-propylene-diene terpolymer, ethylene-vinyl acetate copolymer, ethylene-ethyl acrylate copolymer, low density polyethylene, very low density polyethylene, polybutadiene, and 1,2-syndiotactic polybutadiene, and

(d) a filler, wherein the self-crosslinking composition is free of a solvent and is free of a crosslinking agent.

5,604,291

TELOMERS

Elizabeth A. Kerr, Knutsford, and Jan Rideout, Bolton, both of England, assignors to FMC Corporation (UK) Limited, Manchester, England

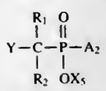
Division of Ser. No. 887,622, May 22, 1992, Pat. No. 5,376,731. This application Sep. 16, 1994, Ser. No. 308,038

Claims priority, application United Kingdom, May 31, 1991, 9111704

Int. Cl.[6] C08F *30/02*

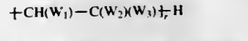
U.S. Cl. 526—240 **5 Claims**

1. A telomer having the formula V:



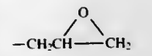
V

in which X_5 is hydrogen, C_1-C_4 alkyl, phenyl, an alkali metal—alkaline earth metal atom, or an ammonium or amine residue; A_2 is a homopolymer residue having the formula II:



II

or A_2 is a copolymer residue comprising two or more different residues —[$CH(W_1)$—$C(W_2)$ (W_3)]—, in which W_1 is hydrogen, methyl or a residue —CO_2W_4 in which W_4 is hydrogen or C_1-C_8 alkyl, optionally substituted by a hydroxy group, W_2 is hydrogen, C_1-C_4 alkyl, hydroxymethyl, —CO_2W_5 in which W_5 is hydrogen, a residue of formula:



a residue of formula:

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$+CH_2-CH(W_6)O+_s H$

in which W_6 is hydrogen, methyl or phenyl and s is an integer ranging from 1 to 100, or W_5 is C_1-C_8 alkyl which is optionally substituted by SO_3X_5 in which X_5 has its previous significance; W_3 is a residue $—CO_2W_4$ in which W_4 has its previous significance, or W_3 is C_1-C_8 alkyl optionally substituted by one or two carboxylic acid groups, or W_3 is a phenyl residue optionally substituted by hydroxyl or SO_3X_5 in which X_5 has its previous significance, or W_3 is acetyl, hydroxymethyl, hydroxyl, acetomethyl, SO_3X_5, $CH_2SO_3X_5$ or $PO_3(X_5)_2$ in which X_5 has its previous significance, or W_3 is a residue $CONW_7W_8$ in which W_7 and W_8 are the same or different and each is hydrogen, C_1-C_8 alkyl, hydroxymethyl or a residue $CH(OH)CO_2X_5$, $C(CH_3)_2CH_2SO_2X_5$, $C(CH_3)_2CH_2CO_2X_5$ or $(CH_3)_2CH_2PO_3(X_5)_2$ in which X_5 has its previous significance, or W_3 is $N(W_9)COCH_3$ in which W_9 is hydrogen or C_1-C_4 alkyl, or W_3 is $—CH_2[O(CH_2)_p]_r—OW_9$ in which W_9 and s have their previous significance and p is an integer from 1 to 12; or W_3 and W_1 may form a carboxylic acid anhydride moiety —CO.O.CO—; and r is an integer ranging from 2 to 100;

and in which Y is OR_3 in which R_3 is hydrogen or C_1-C_4 alkyl or NR_4R_5 in which R_4 and R_5, independently, are hydrogen or C_1-C_4 alkyl, or R_4 and R_5, together with the nitrogen atom to which they are attached, can form an N-heterocyclic ring; and R_1 and R_2, together with the carbon atom to which they are attached, may form a cyclopentyl or cyclohexyl ring.

5,604,292

POLYMERS WITH ELECTRICAL AND NON-LINEAR OPTICAL PROPERTIES

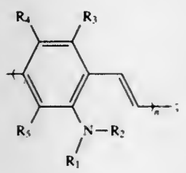
John D. Stenger-Smith; William P. Norris; Andrew P. Chafin, all of Ridgecrest, Calif., and Scott T. Sackinger, Columbia, S.C., assignors to The Untied States of America as represented by the Secretary of the Navy, Washinton, D.C.

Filed May 31, 1994, Ser. No. 252,701

Int. Cl.[6] C08F *112/00*

U.S. Cl. 526—281 **25 Claims**

1. A polymer having a singular independent repeating unit of the general formula (1):



(I)

wherein

R_1 and R_2 are each independently hydrogen; alkyl having 1 to 22 carbon atoms; alkyl sulfonate having 1 to 22 carbon atoms; alcohol having 1 to 22 carbon atoms;

R_3, R_4, R_5 are each independently hydrogen; alkyl having 1 to 22 carbon atoms; alkoxy having 1 to 22 carbon atoms; nitro; halogen; amine; sulfonates; silyl; perfluoro alkyl; and cyano esters; and

n is an integer from 2 to 20,000.

5,604,293

RECOMBINANT HUMAN BASIC FIBROBLAST GROWTH FACTOR

John C. Fiddes, Palo Alto, and Judith A. Abraham, Sunnyvale, both of Calif., assignors to Scios Inc., Mountain View, Calif.

Continuation of Ser. No. 860,688, Mar. 30, 1992, abandoned, which is a continuation of Ser. No. 50,706, May 15, 1987, abandoned, which is a continuation-in-part of Ser. No. 869,382, May 30, 1986, abandoned, and Ser. No. 809,163, Dec. 16, 1985, Pat. No. 5,439,818, and Ser. No. 775,521, Sep. 12, 1985, abandoned. This application Apr. 1, 1994, Ser. No. 221,462

Int. Cl.[6] C07K *14/50*

U.S. Cl. 530—399 **4 Claims**

1. Biologically active recombinant human basic fibroblast growth factor in homogeneous, purified and isolated form, free from any infectious impurities, and free from substances normally accompanying native human basic fibroblast growth factor and from post-translational modifications of the cysteines of native human basic fibroblast growth factor.

5,604,294

MACROCYCLIC IMMUNOMODULATORS

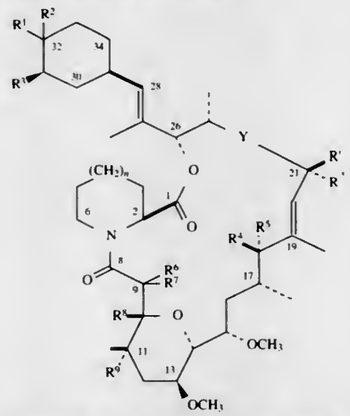
Jay R. Luly, 1021 Mayfair; Megumi Kawai, 746 Kenwood Dr.; Yat S. Or, 1107 Washington Ave.; Paul E. Wiedeman, 144 W. Park Ave., and Rolf Wagner, 6293 Old Farm La., all of Libertyville, Ill. 60048

Continuation-in-part of Ser. No. 149,416, Nov. 9, 1993, abandoned, which is a continuation-in-part of Ser. No. 32,958, Mar. 17, 1993, abandoned, which is a continuation-in-part of Ser. No. 755,208, Sep. 5, 1991, abandoned. This application Mar. 14, 1994, Ser. No. 213,318

Int. Cl.[6] C07D *491/16;* **A61K** *31/395*

U.S. Cl. 540—456 **11 Claims**

1. A compound having the formula:



(I)

or a pharmaceutically acceptable salt, ester, amide or prodrug thereof wherein the ester is selected from C_1-to-C_6 alkyl esters, C_5-to-C_7 cycloalkyl esters and aryl-C_1-to-C_{12}-alkyl esters and wherein the amide results from reaction of a carboxylic acid moiety in the compound of formula I with NH_3, $NH_2(C_1$-to-C_6 alkyl), $NH(C_1$-to-C_6 alkyl)$_2$ or a 5- or 6-membered heterocycle containing one nitrogen atom and wherein the prodrug is selected from the group consisting of (a) acyloxymethyl esters of carboxylic acids, (b) (5-methyl-2-oxo-1,3-dioxolen-4-yl)methyl esters of carboxylic acids, (c) esters derived from alcohol groups in the parent drug by reaction with succinic acid, phosphoric acid, dialkylaminoacetic acid or an amino acid (d) N-Mannich bases of amides or amines, (e) N-hydroxymethyl derivatives of amides, (f) N-acyloxyalkyl derivatives of amides or heterocyclic amines, (g)

oxazolidinones derived from ketone groups in the parent drug by reaction with 2-aminoethanol, N-methyl-2-aminoethanol, N-(2-hydroxyethyl)-2-aminoethanol, 2-aminopropanol, 2-amino-2-methylpropanol, 2-amino-2-hydroxymethylpropanol, 3-amino-2-hydroxypropane, 2-amino-1-phenylethanol, 3-aminopropanol or N-methyl-2-amino-1-phenylpropanol and (h) enol esters derived from ketone groups in the parent drug,

wherein n is zero or one;

R and R' are chosen such that one of R and R' is hydrogen, and the other is selected from the group consisting of methyl, ethyl, 2-hydroxyethyl, propyl, cyclopropylmethyl, 2-oxopropyl, 2-ethanal and allyl;

R^1 is hydrogen, and R^2 and R^3 are independently selected from the group consisting of:

(a) $—OC(S)OR^{10}$, with the proviso that one of R^{20} and R^{21} is simultaneously $—OC(S)OR^{12}$ wherein R^{10}, R^{20}, R^{21} and R^{12} are as defined herein;

(b) $—OC(O)R^{14}$; with the proviso that one of R^{20} and R^{21} is simultaneously $—OC(O)R^{15}$ wherein R^{14}, R^{20}, R^{21} and R^{15} are as defined herein,

(c) $—C(=NH)CCl_3$;

(d) $—OC(O)CH_2I$;

(e) $—OP(O)(OR^{10})_2$ wherein R^{10} is as defined herein; and

(f) C_1-to-C_8-loweralkoxy, with the proviso that R^2 and R^3 may not both be C_1-to-C_8-loweralkoxy;

or, taken together, R^1 and R^2 are $=NNHC(O)NH_2$;

R^4 and R^5 are selected from the group consisting of:

(a) hydrogen;

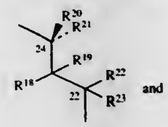
(b) $—OR^{11}$ wherein R^{11} is as defined herein;

(c) halogen; and

(d) hydroxy, with the proviso that when one of R^4 and R^5 is hydroxy, the other of R^4 and R^5 is hydrogen;

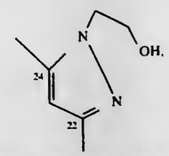
or, taken together, R^4 and R^5 form a divalent radical selected from the group consisting of oxo and thiooxo;

Y is a group selected from the subformulae:



(Ia)

and



(Ib)

wherein R^{18} and R^{19} are chosen such that:

(i) both of R^{18} and R^{19} are hydrogen, or

(ii) one of R^{18} and R^{19}, taken together with one of R^{20} and R^{21}, forms a C-23/C-24 bond, and the other of R^{18} and R^{19} is hydrogen;

R^{20} and R^{21} are chosen such that:

(i) one of R^{20} and R^{21} is hydrogen, and the other of R^{20} and R^{21} is selected from the group consisting of:

(a) hydrogen,

(b) hydroxy,

(c) amino,

(d) $—N(CH_2CH_2)_2N—R^{12}$ wherein R^{12} is as defined herein,

(e) $—N(CH_2CH_2)_2NH$,

(f) $—OR^{12}$ wherein R^{12} is as defined herein,

(g) $—OC(O)NHR^{24}$, wherein R^{24} is selected from the group consisting of:

(1) hydrogen,

(2) C_1-to-C_8-loweralkyl, and

(3) aryl,

(h) $—C(O)R^{12}$ wherein R^{12} is as defined herein,

(i) $—OC(S)OR^{12}$ wherein R^{12} is as defined herein,

(j) $—OC(O)R^{15}$ wherein R^{15} is as defined herein,

(k) $—OC(O)CH_2I$, and

(l) —O—[(hydroxy protecting group)]protected by a hydroxy-protecting group selected from methylthiomethyl tert-butyldimethylsilyl, tert-butyldiphenylsilyl, aryl-C(O)— and C_1-to-C_{12}-alkyl-C(O)— and; or

(ii) one of R^{20} and R^{21}, taken together with one of R^{18} and R^{19}, forms a C-23/C-24 bond, and the other of R^{20} and R^{21} is selected from the group consisting of:

(a) hydrogen,

(b) hydroxy, and

(c) C_1-to-C_8-loweralkoxy;

or, taken together, R^{20} and R^{21} form an oxo group;

R^{22} and R^{23} are chosen such that:

(i) both are C_1-to-C_8-loweralkoxy; or

(ii) one of R^{22} and R^{23} is hydrogen, and the other is selected from the group consisting of:

(a) hydroxy,

(b) $—OC(O)R^{13}$ wherein r^{13} is as defined herein, and

(c) $—OC(O)O$-(aryl-C_1-to-C_{12}-alkyl—);

or, taken together, R^{22} and R^{23} form an oxo group;

R^6 and R^7 are chosen such that:

(i) both of R^6 and R^7 are hydrogen;

(ii) one of R^6 and R^7 is hydrogen, and the other of R^6 and R^7, taken together with R^8, forms a C-9/C-10 bond;

(iii) one of R^6 and R^7 is hydroxy, and the other of R^6 and R^7 is selected from the group consisting of:

(a) hydrogen,

(b) C_1-to-C_8-loweralkyl,

(c) aryl-C_1-to-C_{12}-alkyl, and

(d) aryl;

or, taken together, R^6 and R^7 form a divalent radical selected from the group consisting of:

(a) oxo,

(b) =NOH,

(c) $=NNHC(O)NH_2$,

(d) $=NNR^{25}R^{26}$, where R^{25} and R^{26} are independently selected from the group consisting of:

(1) hydrogen,

(2) C_1-to-C_8-loweralkyl, and

(3) aryl,

(e) $=CH_2$,

(f) $—O—CH_2—$, and

(g) thiooxo;

(Ib) or, taken together with the carbon to which they are attached, R^6 and R^7 are absent such that C-8 is attached directly to C-10;

R^8 is selected from the group consisting of:

(a) hydroxy,

(b) halogen,

(c) amino,

(d) C_1-to-C_8-loweralkylamino,

(e) aryl-C_1-to-C_{12}-alkylamino,

(f) C_1-to-C_8-loweralkoxy, and

(g) arylalkoxy;

or, taken together with one of R^6 and R^7 as defined above, forms a C-9/C-10 double bond;

or, taken together with R^9 as defined herein forms a C-10/C-11 double bond;

R^9 is hydrogen or, taken together with R^8 as defined above, forms a C-10/C-11 bond;

R^{10}, R^{11}, R^{12} and R^{13} are each independently selected from the group consisting of C_1-to-C_8-loweralkyl, aryl-C_1-to-C_{12}-alkyl and aryl; and

R^{14} and R^{15} are each independently selected from the group consisting of:

(i) 2-nitro-aryl,

(ii) 3-nitro-aryl,

(iii) 4-nitro-aryl,

(iv) 2-pyridyl,

(v) 3-pyridyl, and

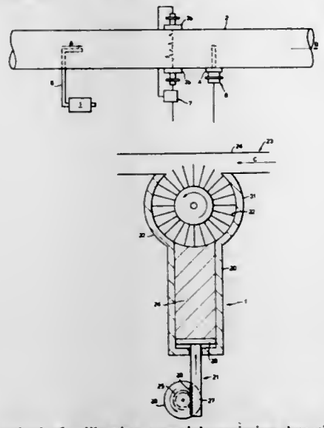
(vi) 4-pyridyl

wherein at each occurrence the aryl group is selected from phenyl, 1-naphthyl, 2-naphthyl, fluorenyl, (1,2,)-dihydronaphthyl, (1,2,3,4)-tetrahydronaphthyl, indenyl and indanyl substituted by R^{111}, R^{112} and R^{113} wherein R^{111}, R^{112} and R^{113} are independently selected from the group consisting of:

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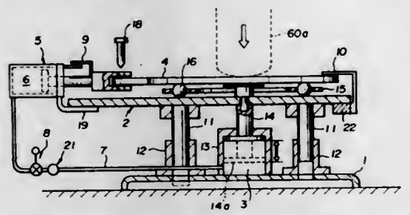
(a) hydrogen,
(b) —C_1-to-C_7-alkyl,
(c) —C_2-to-C_6-alkenyl,
(d) halogen,
(e) —$(CH_2)_mN(C_1$-to-C_3-alkyl$)_2$, where m is zero to six,
(f) —CN,
(g) —CHO,
(h) mono-, di-, tri, or perhalogenated C_1-to-C_{12}-alkyl,
(i) —$S(O)_s(C_1$-to-C_3-alkyl), where s is zero, one or two,
(j) —$C(O)N(C_1$-to-C_3-alkyl$)_2$,
(k) —$(CH_2)_mO(C_1$-to-C_3-alkyl), where m is as defined above,
(l) —$CH(OR^{115})(OR^{116})$, where R^{115} and R^{116} are independently —C_1-to-C_3-alkyl or, taken together, form an ethylene or propylene bridge,
(m) —$(CH_2)_mOC(O)(C_1$-to-C_3-alkyl) where m is as defined above,
(n) —$(CH_2)_mC(O)O(C_1$-to-C_3-alkyl) where m is as defined above,
(o) —OR^{117}, where R^{117} is selected from:
(i) —PO(OH)OH,
(ii) —SO_3H,
(iii) —$C(O)(CH_2)_mC(O)OH$ where m is as defined above,
(p) —$S(O)_tN(C_1$-to-C_3-alkyl$)_2$ where t is one or two,
(q) —NO_2,
(r) —N_3,
(s) guanidino of the structure —$NR^{105}C(=R^{106})NR^{107}2$ wherein R^{105}, R^{106} and R^{107} are independently selected from
(i) hydrogen,
(ii) C_1-to-C_{12}-alkyl,
(iii) aryl-C(O)— or C_1-to-C_{12}-alkyl-C(O),
(iv) aryl,
(v) aryl-SO_2—,
(vi) alkoxycarbonyl
(vii) arylalkoxycarbonyl,
(viii) arloxycarbonyl,
(iv) C_1-to-C_{12}-alkyl-SO_2—
or taken together, R^{106} and R^{107} are —$(CH_2)_{cc}$— wherein cc is an integer of from 2 to 6 and
at each occurrence the heterocycle or heterocyclic group is independently selected from the group consisting of pyrrolyl, pyrrolidinyl, pyrazolyl, pyrazolinyl, pyrazolidinyl, cytosinyl, thiocytosinyl, imidazolyl, imidazolinyl, imidazolidinyl, pyridyl, piperidinyl, pyrazinyl, piperazinyl, pyrimidinyl, pyridazinyl, xanthenyl, xanthonyl, xanthopterinyl, oxazoyl, oxazolidinyl, thiouracilyl, isoxazolyl, isoxazolidinyl, morpholinyl, indolyl, quinolinyl, uracilyl, urazolyl, uricyl, thiazolyl, thiazolidinyl, isothiazolyl, isothiazolidinyl, isoquinolinyl, thymidinyl, benzimidazolyl, benzothiazolyl, benzoxazolyl, furyl, thienyl and benzothienyl wherein any carbon or heteroatom with suitable valence may bear a substituent selected at each occurrence from R^{111}, R^{112} and R^{113} independently as defined above.

5,604,295
CALIBRATING PARTICLE EMISSION-DETECTING INSTRUMENTS
David P. Robinson, Dibden Purlieu, United Kingdom, assignor to British-American Tobacco Company Limited, Staines, England
Filed Mar. 27, 1996, Ser. No. 625,523
Claims priority, application United Kingdom, Mar. 29, 1995, 9506394
Int. Cl.[6] G01N *17/00*
U.S. Cl. 73—1 G **7 Claims**



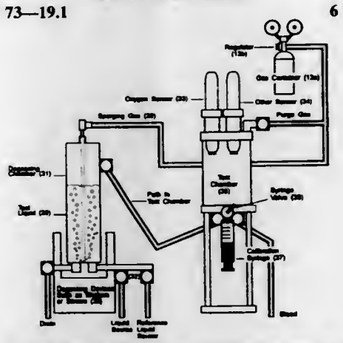
1. A method of calibrating a particle emission-detecting instrument, wherein particulate material is introduced at a controlled rate into a gas stream flowing through a duct, and during the controlled rate introduction of said particulate material into said gas stream said instrument is caused to provide a detection value of the concentration of said particulate material within said gas stream in said duct, whereby said instrument is calibrated.

5,604,296
COMPLIANCE TESTER
Hiromichi Nozaki, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Kanagawa, and Nissan Altia Co., Ltd., Tokyo, both of Japan
Filed Jul. 27, 1995, Ser. No. 508,569
Claims priority, application Japan, Jul. 27, 1994, 6-175559; Dec. 28, 1994, 6-326743
Int. Cl.[6] G01M *17/04*
U.S. Cl. 73—11.04 **10 Claims**



1. A compliance tester for testing the flexibility of a motor vehicle suspension system which includes a bush, comprising:
a first base;
a second base arranged above said first base;
means defining a fluid chamber whose volume varies when said second base vertically moves relative to said first base;
a table horizontally movably disposed on said second base, said table having an upper surface on which a tire of the motor vehicle is to be put;
a hydraulically operated power unit moved together with said second base, said power unit having a piston connected to said table; and
means for fluidly connecting said fluid chamber to a power chamber of said power unit.

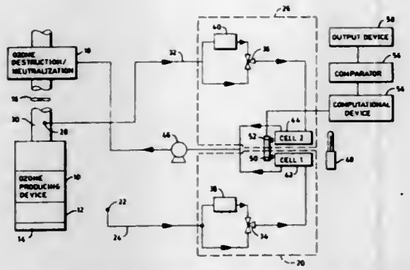
5,604,297
DEGASSING TECHNIQUES APPLIED TO SEALED CONTAINERS FOR BEVERAGES, WASTE WATER AND RESPIROMETERS FOR BACTERIA
Louis W. Seiden, 11,100 Rosemont Dr., N. Bethesda, Md. 20852; Marc J. Epstein, 14 Beach Ave., Leonardo, N.J. 07737, and Steven A. Seiden, 3701 Lail Ct., Raleigh, N.C. 27606
Continuation-in-part of Ser. No. 48,641, Apr. 2, 1993, Pat. No. 5,426,593, which is a continuation-in-part of Ser. No. 656,713, Feb. 19, 1991, Pat. No. 5,220,513. This application Apr. 28, 1995, Ser. No. 431,088
Int. Cl.[6] G01N *33/18*
U.S. Cl. 73—19.1 **6 Claims**



1. A method for measuring the respiration rate of bacteria comprising the steps of:
a) filling a degassing chamber with a test liquid containing bacteria;
b) degassing the chamber;
c) receiving a sample of a gas released from the degassing chamber into a test chamber and optionally passing the sample through at least one additional chamber;
d) measuring an amount of a component of said gas of said sample in the test chamber with a gas specific sensor; and
e) determining the respiration rate of bacteria of the liquid.

5,604,298
GAS MEASUREMENT SYSTEM
Victor J. Dosoretz, Newton Center; Daniel Behr, Needham, and Scott Keller, Lincoln, all of Mass., assignors to In USA, Inc., Needham, Mass.
Filed Dec. 7, 1995, Ser. No. 568,639
Int. Cl.[6] G06F *15/46*; G05D *25/02*; G01F *13/00*
U.S. Cl. 73—23.2 **13 Claims**

1. A gas measurement system comprising:
a first test unit for measuring a concentration of a selected gas G, in a first mixture of gases from a first location by means of a first detector, said first test unit including
a first photo absorption cell in fluid communication with said first location,
a first catalytic converter in fluid communication with said first absorption cell and said first location, and
a first valve in fluid communication with said first catalytic converter, said first absorption cell and said first location, wherein said first valve is actuatable from a first position to a second position, said first position directing said first mixture of gases through said first catalytic converter and



thence to said first absorption cell, and said second position bypassing said first mixture of gases from said first catalytic converter;

a second test unit for measuring a concentration of a selected gas G, in a second mixture of gases from a second location by means of a second detector, said second test unit including

a second photo absorption cell in fluid communication with said second location,

a second catalytic converter in fluid communication with said second absorption cell and said second location, and

a second valve in fluid communication with said second catalytic converter, said second absorption cell and said second location, wherein said second valve is actuatable from a first position to a second position, said first position directing said selected gas through said second catalytic converter and thence to said second absorption cell, and said second position bypassing said second mixture of gases from said second catalytic converter; and

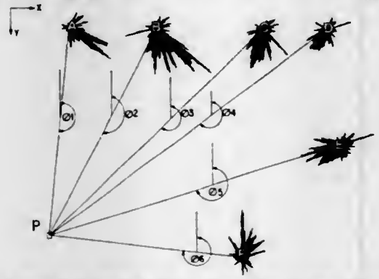
a comparator for receiving outputs from said first and second detectors, and for comparing said concentration of said selected gas G_2 from said first location with said concentration of said selected gas G_1 from said second location.

5,604,299

METHOD OF LOCATING EMISSION SOURCES

Ronald F. Cobb, Humble, Tex., assignor to Sensible Technologies, Inc., Houston, Tex.

Filed May 26, 1995, Ser. No. 451,141
Int. Cl.[6] G01M *3/04*
U.S. Cl. 73—31.02 **7 Claims**



1. A method of mapping the location of one or more sources of material emitted into a moving fluid comprising the steps of:

measuring reasonably simultaneously the concentration of the emitted material, the direction of movement of the fluid and the velocity of the fluid at a plurality of sensing points over a period of time;

calculating the directional mass flux of the material in each direction of fluid flux at each sensing point over the period of time;

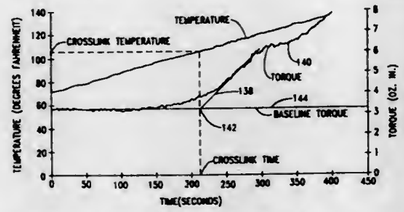
calculating the relative emission value of emitted material at each point in a plane around the sensing points by summing contributions at each said point in said plain of the plurality of determined directional mass fluxes.

5,604,300

CROSSLINK TEST METHOD

Norman A. Sayers; Russell D. Taylor, both of Duncan; David L. Lord, Mariow, all of Okla., and Audis C. Byrd, Katy, Tex., assignors to Halliburton Company, Duncan, Okla.

Filed Aug. 15, 1995, Ser. No. 515,497
Int. Cl.[6] G01N *11/14*
U.S. Cl. 73—54.31 **17 Claims**



1. A method of testing for the occurrence of chemical crosslinking of a fluid, comprising steps of:

(a) placing in a vessel a fluid having a crosslinking agent;

(b) rotating a paddle through the fluid in the vessel at substantially a constant rotational speed;

(c) sensing a paddle torque parameter at sequential times and encoding digital signals to define digital torque data representing values of the sensed torque parameter and to define digital time data representing corresponding sequential times;

(d) determining, in response to digital torque data and digital time data, a baseline torque parameter value and a change in the digital torque data representing increasing torque of the paddle; and

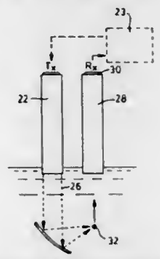
(e) determining, in response to the baseline torque parameter value and the change in the digital torque data, a crosslink time for the fluid.

5,604,301

ULTRASOUND DETECTION TECHNIQUES

Norman D. G. Mountford, 39 Richview Road, Islington, Ontario, Canada, and Iain D. Sommerville, 2063 Seafare Drive, Oakville, Ontario, Canada

Continuation-in-part of Ser. No. 971,536, Nov. 4, 1992, abandoned, which is a continuation-in-part of Ser. No. 864,450, Apr. 6, 1992, abandoned. This application Mar. 31, 1995, Ser. No. 413,725
Int. Cl.[6] G01N *29/02*
U.S. Cl. 73—61.75 **11 Claims**



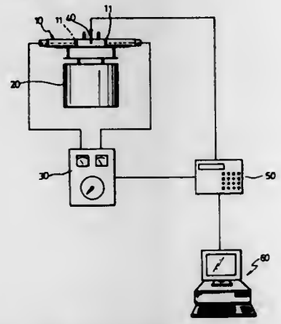
1. An ultrasonic detection device comprising an ultrasonic transmitting delay line and an ultrasonic receiving delay line, ultrasonic reflection means placed beyond said transmitting delay line and aligned therewith, said reflection means being dimensioned so that when immersed in a liquid and receiving ultrasonic waves from said transmitting delay line, said reflection means focuses said ultrasonic waves to a focal volume, said receiving delay line receiving reflected ultrasonic waves from extraneous particles in said focal volume allowing for their detection by said receiving delay line.

5,604,302

STARCH GELATINIZATION MEASURING SYSTEM

Wei-Chi Wang, 2F, No. 3, Alley 24, Lane 92, Sec. 2, Kingsun S. Road, Taipei, Taiwan

Filed May 1, 1996, Ser. No. 641,420
Int. Cl.[6] G01N *37/00*
U.S. Cl. 73—64.41 **5 Claims**



1. A starch gelatinization measuring system comprising:

an ohmic heater to hold and to heat the starch sample to be measured, said ohmic heater having a pair of plate electrodes for heating;

a power supply unit electrically connected to said ohmic heater to control the supply of electric current and electric voltage to the plate electrodes of said ohmic heater;

a temperature detector controlled to detect the temperature of the starch sample being heated by said ohmic heater;

a data logger electrically connected to said power supply unit and said temperature detector to record the data of temperature, electric current, electric voltage during heating; and

a computer electrically connected to said data logger to analyze the data provided by said data logger.

5,604,303

COMBUSTION CONDITION DETECTING SYSTEM OF INTERNAL COMBUSTION ENGINE

Naoki Tomisawa, and Atsumi Hoshina, both of Atsugi, Japan, assignors to Unisia Jecs Corporation, Atsugi, Japan

Filed Oct. 19, 1994, Ser. No. 325,665
Claims priority, application Japan, Oct. 19, 1993, 5-261130
Int. Cl.[6] G01M *15/00*
U.S. Cl. 73—117.3 **9 Claims**

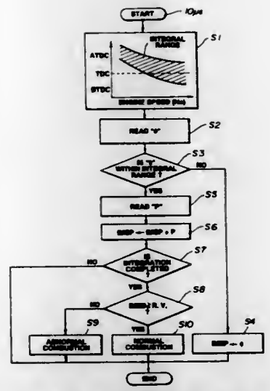
1. A combustion condition detecting system of an internal combustion engine, comprising:

first means for detecting pressure in a cylinder of said engine;

second means for setting an integral range for a crankangle in accordance with a rotation speed of said engine;

third means, coupled to said first means and to said second means, for integrating a detected cylinder pressure within said integral range thereby to derive an integrated value of pressure; and

fourth means for judging whether or not an abnormal combustion occurs in the cylinder by comparing said integrated value with a reference value; and



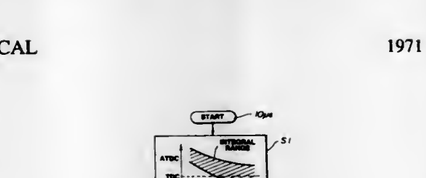
wherein said integral range includes first and second integral ranges which are selectively used when the engine operates at higher and lower speed conditions, said first integral range containing a "TDC" (top dead center) crankangle position and a crankangle range just after the "TDC" crankangle position, said second integral range containing a range which appears after a given crankangle position where pressure in the cylinder exhibits a maximum at a normal combustion condition but before the next piston bottom dead center position.

5,604,304

ENGINE CYCLE TIMING AND SYNCHRONIZATION BASED ON CRANKSHAFT ANGLE MEASUREMENTS

Naoki Kokubo, Nukata-gun; Koji Sakakibara, Hekinan; Koichi Kamabora, Tokoname, and Kenichi Nagase, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 27, 1996, Ser. No. 622,393
Claims priority, application Japan, Mar. 28, 1995, 7-069017
Int. Cl.[6] F02D *41/06;* **G01M** *15/00*
U.S. Cl. 73—117.3 **21 Claims**



1. An engine cycle timing and synchronizing system for an engine having a plurality of cylinders which are each ignited in predetermined order during two rotations of a crankshaft at least two pistons of which reciprocate at a common phase, said system comprising:

signal generating means for generating pulse signals at constant rotational intervals of the crankshaft and for generating a reference signal at a predetermined crank angle of said crankshaft;

detecting means for detecting a reference position of said crankshaft based on said reference signal;

storing means for storing the number of pulse signals occurring after said reference position of said crankshaft is detected and for storing data relating to whether or not the reference position of said crankshaft which to be next detected corresponds to a specific predetermined cylinder;

reverse rotation determination means for determining whether said crankshaft reversely rotated from a position beyond said reference position to a position before said reference position at the time of last engine stoppage using said number of pulse

signals stored in said storing means and the number of pulse signals occurring until the reference position of the crankshaft is next detected again after engine re-start;

data correcting means for correcting said stored data so that said reference position of said crankshaft corresponding to said specific predetermined cylinder is effectively shifted by one rotation of said crankshaft when said reverse rotation determination means determines that said crankshaft reversely rotated across said reference position; and

means for determining whether a cylinder is the specific predetermined cylinder using the number of pulse signals occurring after passage of said reference position of said crankshaft corresponding to said specific cylinder.

5,604,305

METHOD FOR AVOIDING INCORRECT MESSAGES IN THE DIAGNOSIS OF ADJUSTING DEVICES SUCH AS FLOW VALVES IN MOTOR VEHICLES

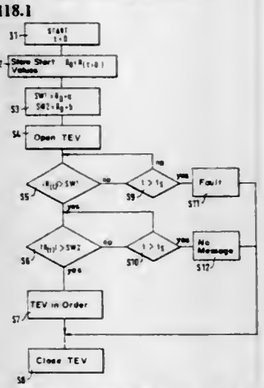
Helmut Denz, Stuttgart, and Andreas Blumenstock, Ludwigsburg, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 15, 1995, Ser. No. 404,755

Claims priority, application Germany, May 21, 1994, 44 18 010.1

Int. Cl.[6] G01M *15/00*

U.S. Cl. 73—118.1 **1 Claim**



1. In a tank-venting system including an adjusting device defined by a tank-venting valve which is operatively coupled to an element of the system having an operation characterized by an operating variable which exhibits a change in the values thereof in response to an actuation of said tank-venting valve, said variable being selected from the group including engine speed (n), engine load (L), air number (λ), pulse-duty factor of idle adjusting device and intake pressure (p), said tank-venting valve which can have a quality extending from being in order to being defective, a method for diagnosing the functional operability of said tank-venting valve, the method comprising the steps of:

determining an upper absolute threshold value (SW2) for said operating variable above which the operation of said tank-venting valve is in order thereby defining a first range of values extending from said upper absolute threshold value (SW2) to infinity;

determining a lower absolute threshold value (SW1) for said operating variable below which the operation of said tank-venting valve is defective thereby defining a second range of values extending from said lower absolute threshold value (SW1) to zero;

assuming a third range of values of said operating variable between said absolute threshold values (SW1) and (SW2) wherein it is uncertain that the operation of tank-venting valve is defective or in order (no message);

actuating the tank-venting valve;

detecting said change in said values of said variable produced by actuating said tank-venting valve;

evaluating the functional operability of the tank-venting valve to be:

(a) in order when said variable lies within said first range of said values thereof; and,

(b) inoperative when said variable lies within said second range of said values thereof; and,

terminating and/or repeating the diagnosis when said values of said variable lie in said third range.

5,604,306

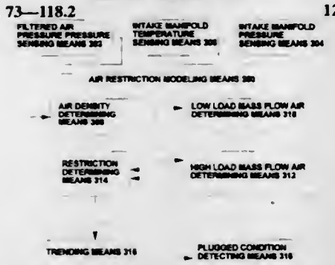
APPARATUS AND METHOD FOR DETECTING A PLUGGED AIR FILTER ON AN ENGINE

David R. Schricker, Dunlap, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Jul. 28, 1995, Ser. No. 508,649

Int. Cl.[6] G01M *15/00*

U.S. Cl. 73—118.2 **12 Claims**



1. An apparatus for detecting a plugged air filter on an engine having an intake manifold, including:

means for sensing filtered air pressure and responsively producing a filtered air pressure signal;

means for sensing intake manifold pressure and responsively producing an intake manifold pressure signal;

means for sensing intake manifold temperature and responsively producing an intake manifold temperature signal;

means for receiving said intake manifold pressure and temperature signals, responsively determining a density of air at the intake manifold, and producing an air density signal;

means for detecting a low load condition of the engine, receiving said air density signal, responsively determining a mass flow of air through the engine at said low load condition and producing a low load mass flow air signal;

means for detecting a high load condition of the engine, receiving said air density signal, responsively determining a mass flow of air through the engine at said high load condition and producing a high load mass flow air signal;

means for receiving said low load and high load condition mass air flow signals and said filtered air pressure signal, responsively determining a restriction value, and responsively producing a restriction signal; and

means for receiving said restriction signal and responsively detecting a plugged condition of the air filter.

5,604,307

TIRE PRESSURE DROP ALARM DEVICE SENSING PARTIAL TRAVEL ON IRREGULAR ROAD SURFACE

Akiko Iida; Mikao Nakajima, both of Osaka, and Hiroto Horie, Akashi, all of Japan, assignors to Sumitomo Rubber Industries, Ltd., Osaka, Japan

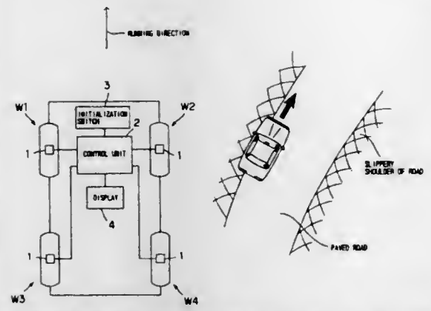
Filed Jan. 29, 1996, Ser. No. 593,370

Claims priority, application Japan, Feb. 1, 1995, 7-015399

Int. Cl.[6] B60C *23/02*

U.S. Cl. 73—146.2 **16 Claims**

1. A tire pressure drop alarm device, comprising:



rotational angular velocity calculating means for calculating rotational angular velocities of tires provided for corresponding wheels of a four-wheel vehicle having a front left wheel, a front right wheel, a rear left wheel and a rear right wheel;

pneumatic pressure drop judging means for judging whether a tire pressure drops, based on the rotational angular velocities calculated by the rotational angular velocity calculating means;

alarm means for generating a signal corresponding to a judgment result output of the pneumatic pressure drop judging means;

operating means for determining a first time differential value of a front/rear wheel ratio of the rotational angular velocities of the left tires and a second time differential value of a front/rear wheel ratio of the rotational angular velocities of the right tires, and determining a difference between the first time differential value and the second time differential value;

one-sided irregular road traveling judging means for judging a traveling condition of the vehicle, to determine a variation in road conditions between left and right sides of the vehicle, based on the difference between the first time differential value and the second time differential value determined by the operating means when the vehicle is operating under one-sided irregular road traveling conditions, and for generating a judgment result output; and

means for inhibiting the pneumatic pressure drop judging means when the one-sided irregular road traveling judging means indicates a variation in road conditions between left and right sides of the vehicle.

5,604,308

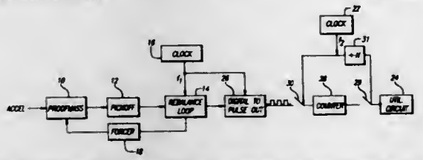
DATA INTERFACE FOR CLOSED-LOOP ACCELEROMETER

John G. Mark, Pasadena; Daniel P. McLane, Bell Canyon; Daniel A. Tazartes, West Hills, and Stanley F. Wyse, Encino, all of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Continuation of Ser. No. 129,453, Sep. 29, 1993, abandoned. This application Jan. 22, 1996, Ser. No. 589,578

Int. Cl.[6] G01P *15/00*

U.S. Cl. 73—488 **16 Claims**



1. Apparatus for converting the output of a closed-loop accelerometer of the type that includes a digital rebalance loop having an associated rebalance-cycle period to a form for use in a digital utilization circuit having an associated utilization cycle period and in which the accelerometer output is a value in the form of a first digital word representing acceleration during an accelerometer rebalance-cycle period, said apparatus comprising, in combination:

a) means for receiving said first digital word and converting said first digital word into a stream of pulses symmetrically distributed with respect to time over one accelerometer rebalance-cycle period;

b) means for sampling said stream of pulses over said utilization cycle period;

c) means for counting said symmetrically-distributed pulses to generate a second digital word; and

d) means for applying said second digital word to said utilization circuit.

5,604,309

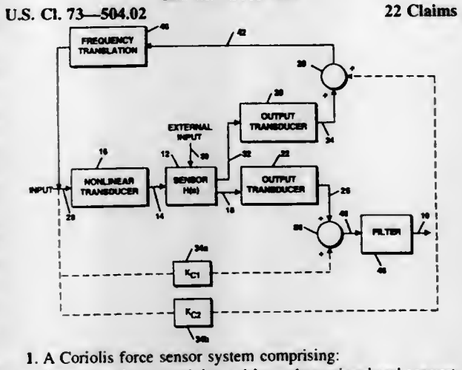
ELECTRONICS FOR CORIOLIS FORCE AND OTHER SENSORS

Paul Ward, Waltham, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Division of Ser. No. 219,023, Mar. 28, 1994, Pat. No. 5,481,914. This application May 24, 1995, Ser. No. 449,111

Int. Cl.[6] G01P *9/04*

U.S. Cl. 73—504.02 **22 Claims**



1. A Coriolis force sensor system comprising:

an input transducer receiving a drive voltage signal and converting said drive voltage signal into a force signal having a nonlinear relationship with respect to said drive voltage signal;

a sensor responsive to said force signal from said input transducer and Coriolis forces induced by an inertial input for providing an inertial sense signal having a predetermined frequency and an amplitude related to said inertial input and a force sense signal having said predetermined frequency and an amplitude related to said force signal;

an output transducer for converting said force sense signal into a feedback voltage signal; and

a frequency translation circuit, disposed in a feedback relationship between said output transducer and said input transducer, for suppressing a component of said feedback voltage signal at said predetermined frequency to provide said drive voltage signal.

5,604,310

VIBRATING GYROSCOPE

Takeshi Nakamura, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Kyoto-fu, Japan

Filed Oct. 6, 1994, Ser. No. 319,040

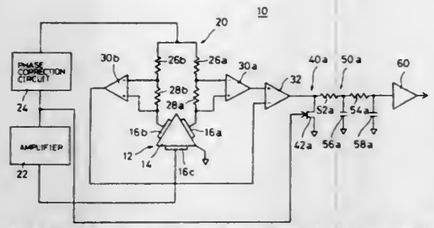
Claims priority, application Japan, Oct. 7, 1993, 5-277473; Dec. 7, 1993, 5-340668

Int. Cl.[6] G01C *19/00;* **G01P** *3/44;9/00;15/08*

U.S. Cl. 73—504.12 **9 Claims**

1. A vibrating gyroscope having two driving detecting circuit driven by a driving means comprising:

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a first dividing means, connected to one of said two driving detecting circuits, for dividing a signal from one of said two driving detecting circuits into a first pair of signals which have different levels;

a first differential means, connected to said first dividing means, for detecting a signal of a difference between said first pair of signals divided by said first dividing means;

a second dividing means, connected to the other of the two driving detecting circuits, for dividing a signal from the other of said two driving detecting circuits into a second pair of signals which have different levels;

a second differential means, connected to said second dividing means, for detecting a signal of a difference between said second pair of signals divided by said second dividing means; and

a first composite means for composing a signal from an output signal associated with said first differential means and an output signal associated with said second differential means.

5,604,311

CORIOLIS EFFECT ROTATION RATE SENSOR AND METHOD

Lalit Kumar, and Arthur R. Voros, both of Santa Barbara, Calif., assignors to Litton Systems, Inc., Woodland Hills, Calif.

Filed Jun. 7, 1995, Ser. No. 480,218

Int. Cl.[6] G01P *9/04*

U.S. Cl. 73—504.14 **21 Claims**

12. A method of measuring rotation rate about a rotation axis, comprising the steps of:

inducing vibrational oscillations in a first member along an x-direction that is orthogonal to said rotational axis, said first member mechanically coupled to at least one other member that is restrained so that it can only oscillate along a y-direction that is orthogonal to said rotation axis and said x-direction,

sensing vibrational oscillations in the at least one other member that are induced along said y-direction by the Coriolis effect, and

deriving the rate at which said members are rotated about said rotation axis from the amplitude of said oscillations along said y-direction, the term members denoting said first member and said at least one other member.

5,604,312

RATE-OF-ROTATION SENSOR

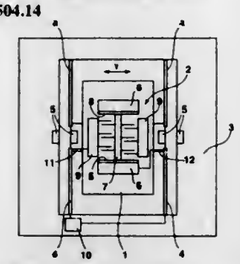
Markus Lutz, Reutlingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Sep. 29, 1995, Ser. No. 536,883

Claims priority, application Germany, Nov. 25, 1994, 44 42 033

Int. Cl.[6] G01P *9/04*

U.S. Cl. 73—504.14 **6 Claims**



1. A rate-of-rotation sensor comprising:

a plurality of webs elongated in a first direction, the plurality of webs being arranged parallel to one another in the first direction;

an oscillatory system including at least one oscillatory mass suspended on the plurality of webs;

means for exciting the oscillatory system into oscillations in a second direction, the second direction being perpendicular to the first direction; and

at least one acceleration sensor, coupled to the oscillatory system, for detecting an acceleration in the first direction.

5,604,313

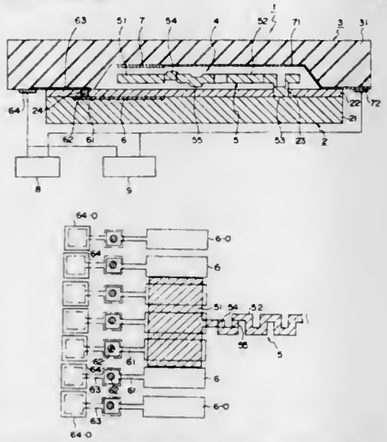
VARYING APPARENT MASS ACCELEROMETER

Sean S. Cahill, Palo Alto, Calif., and Keuichi Nakamura, Tokyo, Japan, assignors to Tokyo Gas Co., Ltd., Tokyo, Japan

Filed Nov. 23, 1994, Ser. No. 346,263

Int. Cl.[6] G01P *15/00;15/125;* **H01G** *7/00*

U.S. Cl. 73—514.38 **3 Claims**



1. A varying apparent mass accelerometer, comprising:

a frame vibrating with a vibrating wave;

a mass supported on said frame via a spring;

electrodes disposed above and below said mass;

power sources for applying voltages to said electrodes;

means for detecting the position of the mass when the mass is moved beyond a threshold by an exceeded vibration force; and

wherein the upper and lower electrodes are each divided into a plurality of sectors of electrode plates located in respective pairs above and below the electrode plates, and wherein a voltage V0 is applied across a center one of said pairs, a voltage V1 is applied across a second one of said pairs which is adjacent said center one of said pairs, a voltage V2 is applied across a third one of said pairs which is adjacent said second one of said pairs, and a voltage V3 is applied across a forth one of said pairs which is outside of said center, second and third pairs, and wherein V0>V1>V2<V3.

5,604,314

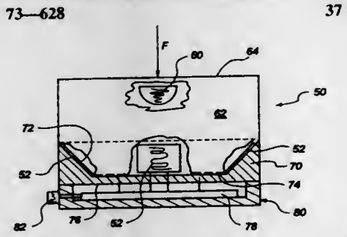
TRIAXIAL NORMAL AND SHEAR FORCE SENSOR

Allen R. Grahn, Salt Lake City, Utah, assignor to Bonneville Scientific Incorporated, Salt Lake City, Utah

Continuation-in-part of Ser. No. 329,465, Oct. 26, 1994, Pat. No. 5,553,500. This application Jul. 19, 1995, Ser. No. 504,224

Int. Cl.[6] G01L *5/16;* **G01H** *5/00*

U.S. Cl. 73—628 **37 Claims**



1. A sensor for use in determining shear and normal components of a force applied thereto, comprising:

a substantially rigid support member carrying a compliant structure;

at least one target for reflecting ultrasonic waves supported by said compliant structure;

at least two ultrasonic transducers aimed at said target, each of said transducers adapted to emit and detect ultrasonic signals, said transducers being laterally and vertically offset from said at least one target; and

a substantially acoustically-transparent, substantially acoustically-nonrefractive medium disposed between said transducers and said at least one target.

5,604,315

APPARATUS USING A FEEDBACK NETWORK TO MEASURE FLUID PRESSURES

Dennis K. Briefer, Marlborough, and Anthony T. Batista, Stow, both of Mass., assignors to Setra Systems, Inc., Acton, Mass.

Filed Jan. 12, 1995, Ser. No. 371,851

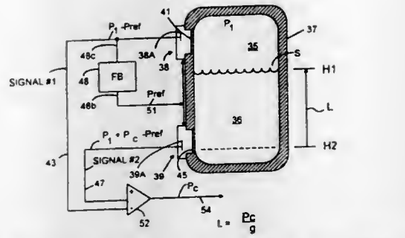
Int. Cl.[6] G01L *9/00;* **G01F** *1/34*

U.S. Cl. 73—861.49 **16 Claims**

1. An apparatus for measuring a characteristic of a liquid column in a cell having a blanket region overlying said liquid column said blanket region being characterized by a blanket pressure P_1, comprising:

A. first pressure sensing means for differentially generating a first signal representative of the pressure of said cell at a first height H1 with respect to a reference pressure;

B. second pressure sensing means for differentially generating a second signal representative of the pressure of said cell at a second height H2 with respect to said reference pressure, said second height being lower than said first height, and



C. feedback means for substantially equalizing said reference pressure with the pressure of said cell at one of said first and second heights.

5,604,316

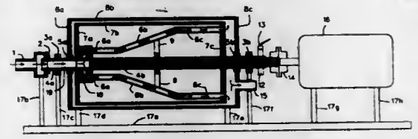
MULTIPLE PHASE CORIOLIS MASS METER

Joey G. Alonso, 3400 Princeton Way, Anchorage, Ak. 99508

Filed Oct. 19, 1994, Ser. No. 325,613

Int. Cl.[6] G01F *1/82*

U.S. Cl. 73—861.352 **11 Claims**



7. A multiple phase mass flow meter for flowable materials comprising of gas and liquid and suspended solids in any proportion of gas and liquid or all gas or all liquid, wherein total mass flow rates are determined based on effect of Coriolis forces, said flow meter consisting of a meter support, a rotating member including a shaft member with hollow inlet end containing a partition plate, the hollow inlet to allow passage of the fluid into a plurality of flow conduits having inlet and outlet ends rigidly attached to plates which are rigidly attached to the shaft member, said conduits being arranged symmetrically around the shaft such that the rotational diameter of the conduits is progressively increasing from the inlet to the outlet ends, a meter inlet conduit and coupler to communicate flow of fluid to the rotating member, a meter outlet to allow flow of fluid out of the meter and a bending beam load cell rigidly attached to each flow conduit at a point in the conduit between the inlet and outlet ends to measure Coriolis force.

5,604,317

ARRANGEMENT FOR TORQUE MEASUREMENTS IN MOTOR VEHICLES

Detlef Jachmann, Koblenz, and Gregor Waldorf, Kasbach-Ohlenberg, both of Germany, assignors to Lucas Industries public limited company, Birmingham, Great Britain

PCT No. PCT/EP94/00077, § 371 Date Apr. 5, 1995, § 102(e) Date Apr. 5, 1995, PCT Pub. No. WO94/17380, PCT Pub. Date Aug. 4, 1994

PCT Filed Jan. 12, 1994, Ser. No. 411,688

Claims priority, application Germany, Jan. 27, 1993, 9301111 U

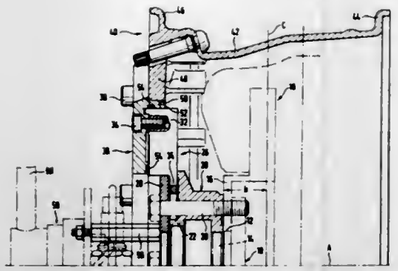
Int. Cl.[6] G01L *3/02*

U.S. Cl. 73—862.191 **4 Claims**

1. A torque measuring apparatus measuring torque in motor vehicles, comprising

a measuring hub which includes first and second peripheral zones,

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a first adapter fastened to the first peripheral zone and mounted on a vehicle hub, and

a second adapter fastened to the second peripheral zone of the measuring hub and on which a wheel body is mountable, wherein

the wheel body comprises a portion of a test wheel and has an inner diameter which is greater than the outer diameter of the vehicle hub,

the test wheel includes a rim which corresponds to a rim of a vehicle wheel normally mounted on the vehicle hub,

the measuring hub is positioned radially within the wheel body of the test wheel, and

a distance in an axial direction of the connection between the vehicle hub and the test wheel, established through the measuring hub and the first and second adapters, is such that a center plane of the rim of the test wheel is in the same position with respect to the vehicle hub as a center plane of the rim of the vehicle wheel, replaced by the test wheel, when secured directly to the vehicle hub.

5,604,318

OPTICAL PRESSURE DETECTOR

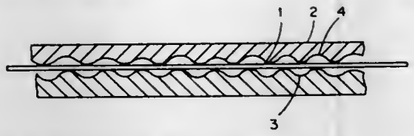
Peter Fasshauer, Neubiborg, Germany, assignor to Waldemar Marinitsch, Munich, Germany

Filed Aug. 11, 1995, Ser. No. 514,359

Claims priority, application Germany, Aug. 12, 1994, 44 28 650.3

Int. Cl.[6] G01L *1/24*; G08B *13/186*

U.S. Cl. 73—862.624 **13 Claims**



1. An optical pressure detector comprising:

a multimode light guide affixed to a layer subjected to pressure and forming spatially periodic pressure points, said light guide being spatially periodically curved by the pressure on the layer,

a light source and a light detector between which is mounted the light guide,

an analyzer analyzing the light-detector output signals as a function of the pressure,

wherein the light detector (5) covers an angle of aperture at the exit of the light guide (1) including only the lower-mode portion of the radiation field.

5,604,319

SAMPLING DEVICE FOR GAS ANALYZERS

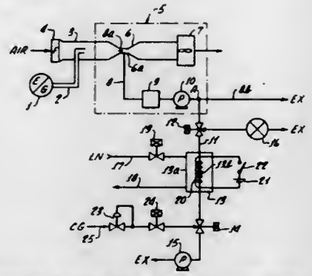
Hiroji Kohsaka, and Satoshi Ohtsuki, both of Miyanohigashi-machi, Japan, assignors to Horiba, Ltd., Kyoto, Japan

Filed Mar. 24, 1995, Ser. No. 410,349

Claims priority, application Japan, Mar. 26, 1994, 6-079916

Int. Cl.[6] G01N *1/22*

U.S. Cl. 73—863.11 **12 Claims**



1. A sampling device for gas analyzers, comprising:

a sample gas-conducting main venturi tube having a narrowed central portion including a constant gas flow rate-inducing throat portion;

a sampling passage having an inlet port at a first end thereof and an outlet port at a second end thereof, said inlet port positioned within said central portion for obtaining a diluted gas at a constant rate; and

a sample gas passage connected to said sampling passage downstream of said inlet port, said sample gas passage being provided in downstream order from said sampling passage, said sample gas passage including:

a first three-way valve connected to a gas analyzer;

a cold trap for collecting a sample of the diluted gas;

a second three-way valve for selectively supplying a carrier gas to said sample gas passage; and

a pump for drawing a portion of the diluted gas into said sample gas passage when activated;

said cold trap having supply passage for selectively supplying a cryogen to said cold trap and a discharging passage for discharging the cryogen from said cold trap;

said first and second three-way valves being actuatable such that the sample of the diluted gas collected by said cold trap is provided to the gas analyzer by the carrier gas.

5,604,320

SHROUD WITH REMOVABLE INSERT FOR A CLOSED LOOP LIQUID SAMPLER

Charles R. Boyd, Victoria, Tex., assignor to Texas Sampling, Inc., Victoria, Tex.

Continuation of Ser. No. 196,301, Feb. 15, 1994, abandoned, which is a division of Ser. No. 795,969, Nov. 22, 1991, Pat. No. 5,301,560. This application Nov. 16, 1995, Ser. No. 559,069

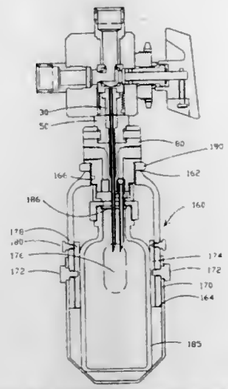
Int. Cl.[6] G01N *1/10*

U.S. Cl. 73—863.86 **8 Claims**

2. In a sampler mechanism for communicating fluid flow through a ball valve having a plurality of positions to an interior space of a sample container having a resealable septum closure, said mechanism comprising a passageway in fluid communication with a position of said valve at one end thereof and terminating with a needle tip at the opposite end thereof which tip is surrounded by a shroud into which the sample container must be inserted for septum penetration by the needle tip, the improvement comprising:

the shroud having an interior surface;

a ring insert for selectively positioning within the shroud, the ring insert having an exterior surface designed for mating with the interior surface of the shroud, an interior surface for



mating with the sample container for snugly holding the sample container, and an open lower end, the ring insert being adapted to position the sample container within the shroud; and

locking means for selectively fastening the ring insert to the shroud for selectively holding the ring insert within the shroud.

5,604,321

TUNGSTEN-LANTHANA ALLOY WIRE FOR A VIBRATION RESISTANT LAMP FILAMENT

Thomas J. Patrician, Monroeton, and Harry D. Martin, III, Troy, both of Pa., assignors to OSRAM Sylvania Inc., Danvers, Mass.

Filed Jul. 26, 1995, Ser. No. 507,184

Int. Cl.[6] B22F *5/12*; C22C *27/04*

U.S. Cl. 75—248 **6 Claims**

1. A wire for fabrication of a vibration resistant filament for an incandescent lamp, said wire comprising about 0.05–1.00 weight percent lanthanum oxide dispersed in a tungsten matrix, wherein said wire has a microstructure including stringers of fine particles of said lanthanum oxide extending parallel to the axis of said wire.

5,604,322

AUTOMATIC PERFORMANCE APPARATUS WITH A DISPLAY DEVICE

Takeshi Kikuchi, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Mar. 30, 1995, Ser. No. 413,355

Claims priority, application Japan, Mar. 30, 1994, 6-085677

Int. Cl.[6] G09B *15/02*

U.S. Cl. 84—477 R **15 Claims**

6. An automatic performing apparatus comprising:

a first memory device that stores automatic performance data for a plurality of parts;

a performing device that reads and performs the automatic performance data;

a display device that displays a score for the plurality of parts;

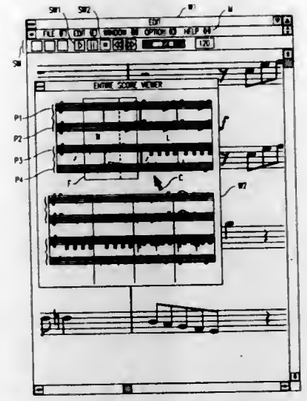
a cursor display device that displays a cursor on the score;

a cursor moving device that moves the cursor displayed on the display device;

a designating switch device, coupled to the cursor moving device, that designates one of the plurality of parts in the score displayed on the display device;

a position detection device that detects a location of the cursor when the designating switch device is manipulated;

a determination device that determines the location of the cursor detected by the position detection device on the plurality of parts in the score displayed on the display device;



a performance controlling device that controls the performing device so that the designated one of the plurality of parts, designated by the designating switch device, is set to represent a non-performance state when the determination device determines that the designating switch device is manipulated while the cursor is on the designated one of the plurality of parts in the score displayed on the display device; and

a display control device that controls the display device to display that the designated one of the plurality of parts is in the non-performance state when the determination device determines that the designating switch device is manipulated while the cursor is on the designated one of the plurality of parts in the score displayed on the display device.

5,604,323

MUSICAL TONE ELECTRONIC SYNTHESIZER AND METHOD

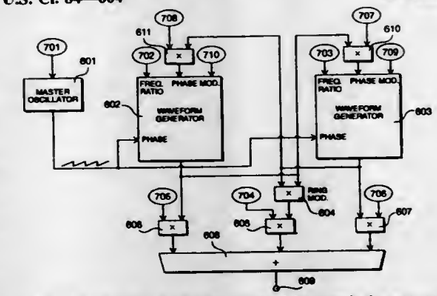
Anthony R. Hardie-Bick, London, Great Britain, assignor to Ethymonics Limited, Kent, Great Britain

Filed Sep. 6, 1994, Ser. No. 300,991

Claims priority, application United Kingdom, Sep. 7, 1993, 9318524

Int. Cl.[6] G10H *7/00*

U.S. Cl. 84—604 **20 Claims**



1. A method of electronically synthesising musical tones, comprising the steps of:

generating a plurality of waveforms using waveform generating units having respective inputs and outputs, such that each of said inputs is arranged to receive a signal for phase modulating the waveform generated by its respective waveform generating unit;

supplying a proportion of an output from a first waveform generating unit to an input of a second waveform generating unit;

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supplying a proportion of an output from said second waveform generating unit to an input of another waveform unit, whereby said plurality of waveform generating units form a chain, such that the input of said first waveform generating unit receives an output from the final waveform generating unit of said chain, thereby providing a degree of recursion; and

supplying a plurality of said outputs to a processing means to produce a tone including harmonic sums and differences of frequencies produced by said recursion.

5,604,324

MUSICAL TONE SIGNAL GENERATING APPARATUS INCLUDING A PLURALITY OF VOICE UNITS

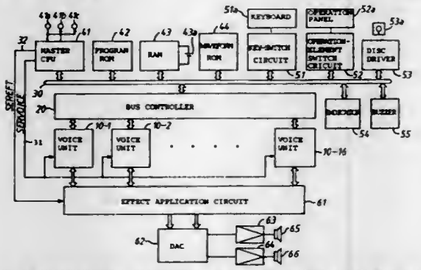
Itsuro Kubota, and Yasuyuki Umeyama, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Japan

Filed Dec. 23, 1994, Ser. No. 363,714

Claims priority, application Japan, Dec. 27, 1993, 5-332343

Int. Cl.[6] G10H *1/06;7/00*

U.S. Cl. 84—622 **5 Claims**



1. A musical tone generating apparatus having a primary processing portion connected to a common data bus for applying to said common data bus a control program for controlling musical tone signal synthesis and control data defining musical tone signals to be synthesized, said apparatus comprising:

a plurality of common voice units connected to said common data bus, said plurality of voice units each including:

ancillary memory means for receiving and storing the control program and control data applied from said common data bus, and

ancillary processing means, operatively coupled with said ancillary memory means, for executing the control program for synthesis of the musical tone signals defined by the control data;

selecting means for selecting at least two of said plurality of common voice units; and

data transmission means for simultaneously transmitting the control program and control data to said ancillary memory means of each of said selected voice units from said common data bus under control of said primary processing portion.

5,604,325

CANNON BREECH INCLUDING A BREECH BLOCK TRANSLATABLE BETWEEN TWO CHEEKS OF A BREECH RING, AND CANNON HAVING SUCH A CANNON BREECH

Patrick Balbo; Philippe Grelat, both of Bourges; Guy Malassenet, Pigny, and Fabienne Mandereau, Sainte Thorette, all of France, assignors to Giat Industries, Versailles, France

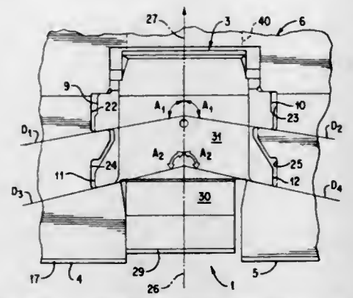
Filed May 11, 1995, Ser. No. 439,369

Int. Cl.[6] F41A *3/34*

U.S. Cl. 89—24 **10 Claims**

1. A cannon breech comprising:

a breech ring having a rear portion having two cheeks and a front portion having a barrel disposed between the cheeks;



a breech block translatable between the cheeks of the breech ring, the breech block having on each side, opposite a corresponding cheek of the breech ring, at least one bearing element having at least one bearing surface facing a rear of the cannon breech, said at least one bearing element being slidable along a paired bearing surface of a matching bearing surface of the corresponding cheek and bearable on the paired bearing surface to transfer strain to the corresponding cheek generated during firing of a round, wherein the at least one bearing surface and the paired bearing surface of the corresponding cheek face each other so that corresponding planes defined by the at least one bearing surface on each side of the breech block and the paired bearing surface of each cheek intersect each other along an axis of the barrel to define corresponding angles of more than 90° with respect to the axis as measured between a portion of the axis forward of each of the corresponding planes and each corresponding plane, and wherein the at least one bearing surface includes first and second bearing surfaces each having a corresponding paired bearing surface, and further wherein a first angle of the first bearing surface of the breech block located toward the front of the cannon breech is less than a second angle made by the second bearing surface of the breech block located toward the rear of the breech.

5,604,326

STRIKER DEVICE FOR A FIREARM

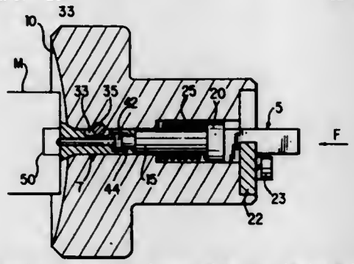
Jean-Francois Lescure, Bourges, France, assignor to Giat Industries, Versailles, France

Filed Dec. 21, 1994, Ser. No. 360,449

Claims priority, application France, Dec. 21, 1993, 93 15374

Int. Cl.[6] F41A *3/74;19/13*

U.S. Cl. 89—26 **12 Claims**



1. A striker device for a firearm of the type having a loading chamber for a munition provided with a percussion cap, the striker device comprising:

a translationally movable assembly including a striker having a striker tip, said striker being engageable with a valve in which the striker is axially guided, said valve being guided in axial displacement in a passage of an assembly body disposed adjacent the loading chamber, the assembly body having a firing pocket at the percussion cap; and

means for moving the striker and valve between a cocked position in which the striker tip is withdrawn inside the passage of the assembly body and a front face of the valve is flush with a surface of the firing pocket, and a firing position in which both the striker tip and the valve move into the firing pocket, wherein said striker and said valve are respectively mounted on opposite sides of the assembly body and joined to each other by a removable connector.

5,604,327

ORDNANCE

Örjan Skoglund, Kristinehamn; Bengt Berglund, Kariskoga; Peter Gardsiö, and Bertil Wall, both of Kristinehamn, all of Sweden, assignors to Bofors AB, Kariskoga, Sweden

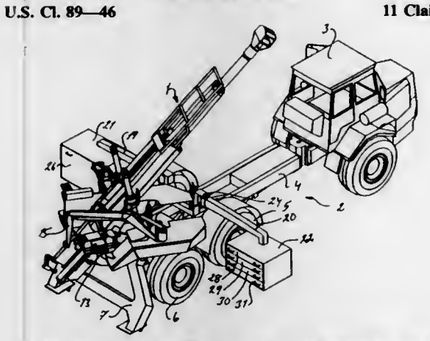
Continuation of Ser. No. 358,091, Dec. 16, 1994, abandoned.

This application Feb. 6, 1996, Ser. No. 597,685

Claims priority, application Sweden, Dec. 17, 1993, 9304188-7

Int. Cl.[6] F41A *9/14*

U.S. Cl. 89—46 **11 Claims**



1. An ammunition handling system for an ordnance gun of a self-propelled type with at least partly manual loading, comprising:

storing devices for storing a first requirement of ammunition; and

carrier arms rotatably mounted at one end on opposite sides of one of a gun carriage and its chassis and at the other end supporting said ammunition storing devices;

said carrier arms being rotatably journalled between a first inwardly folded transport position in which said carrier arms and said storing devices are substantially aligned with longitudinal direction of the ordnance gun and do not impede mobility index of the ordnance gun chassis and a second unfolded loading position suitable for ammunition loading operations wherein said carrier arms extend outwardly with respect to said longitudinal direction.

5,604,328

MULTILAYER ELECTRONIC COMPONENT

Kenji Kubota; Norio Sakai, and Shoichi Kawabata, all of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Continuation of Ser. No. 96,719, Jul. 23, 1993, abandoned.

This application May 22, 1995, Ser. No. 445,918

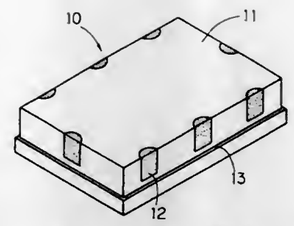
Claims priority, application Japan, Jul. 27, 1992, 4-199795

Int. Cl.[6] H02G *3/08;* **H01R** *29/00;* **H01L** *23/02;* **H05K** *7/00*

U.S. Cl. 174—52.1 **15 Claims**

1. A multilayer electronic component for mounting on a surface of a substrate with external electrodes of said multilayer electronic component being soldered to the substrate, the multilayer electronic component comprising:

an integrally sintered monolithic laminated ceramic sintered body having a plurality of stacked insulating sheets with conductors which form internal circuit elements interposed therebetween,



said ceramic sintered body having first and second opposite major surfaces and side surfaces connecting said major surfaces with each other;

steps disposed on said side surfaces extending parallel to said major surfaces so as to define a first portion of said ceramic sintered body that includes said first major surface, and a second portion of said ceramic sintered body that includes said second major surface, side surfaces of said first portion being recessed relative to side surfaces of said second portion; and

external electrodes provided on outer surfaces of said ceramic sintered body and electrically connected with said internal circuit elements, said external electrodes and said conductors which form said internal circuit elements comprising co-fired sintered metal material and said external electrodes being exposed only on said first portion of said ceramic sintered body for being soldered to a substrate.

5,604,329

HOUSING, IN PARTICULAR FOR AN ELECTRICAL TOOTH CLEANING DEVICE, AND PROCESS FOR PRODUCING IT

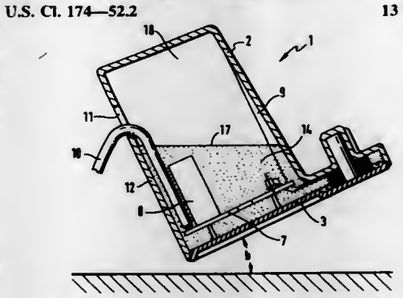
Gerhard Kressner, Altenstadt; Peter Hartwein, Kronberg, and Georg Spiekermann, Salzburg, all of Germany, assignors to Braun Aktiengesellschaft, Kronberg, Germany

Filed Mar. 3, 1995, Ser. No. 398,061

Claims priority, application Germany, Mar. 9, 1994, 44 07 782.3

Int. Cl.[6] H01L *23/28*

U.S. Cl. 174—52.2 **13 Claims**



1. An electrical device for a body care device comprising a housing having a cable orifice formed in an external wall thereof and leading into an interior cavity of the housing, electrical components arranged within said housing, a casting compound within said housing and surrounding the electrical components, an electrical cable passing through the cable orifice in the housing and connected to the electrical components, wherein the cable orifice represents the only cable orifice in the housing through which connection to the electrical components is made and wherein said casting compound only partially fills the interior of said housing thereby leaving an unfilled portion of the housing that serves as a cable stow space and at least one wall of the cable stow space is defined by a surface of the casting compound.

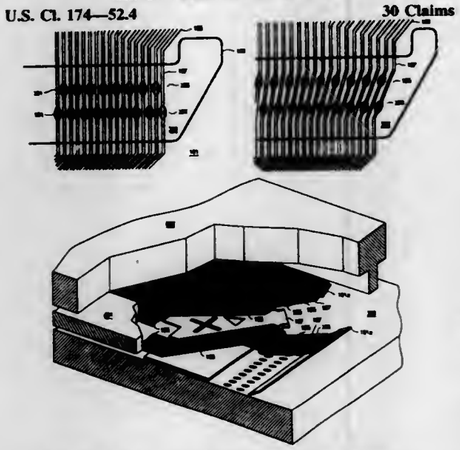
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STAGGERED LAND PAD PATTERN ON SUBSTRATE FOR TAB INTERCONNECTION

Altaf Hasan, Chandler; J. D. Wilson, Phoenix, and Siva Natarajan, Gilbert, all of Ariz., assignors to Intel Corporation, Santa Clara, Calif.

Filed Dec. 29, 1994, Ser. No. 366,250
Int. Cl.[6] H01L 23/02; H01R 9/00
U.S. Cl. 174—52.4 **30 Claims**



1. A package for a semiconductor device comprising:

a tape having a plurality of leads, said leads having an inner lead portion and an outer lead portion, said outer lead portion having a radial land portion;

a substrate having a plurality of land pads, said land pads disposed to couple with said leads at said radial land portion of said leads, wherein a first one of the said land pads disposed to couple with a first one of said leads is staggered with respect to a second one of said land pads disposed to couple with a second one of said leads, said second one of said leads adjacent to said first one of said leads, wherein first ones of said land pads are disposed in a first row, and second ones of said land pads are disposed in a second row staggered from said first row, wherein said plurality of leads have a first pitch, wherein said land pads in said first row are disposed at a second pitch greater than said first pitch.

5,604,331

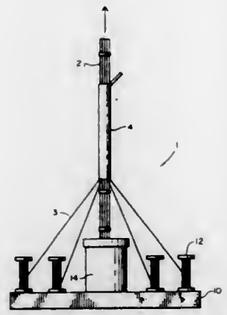
FIREPROOF SHEATH AND METHOD FOR MAKING SAME

Didier Matarin, Saint Marcel; Charles Maillard, Notre-Dame-de-l'Isle; Guy Gaillard, Anet, and Michel Peltot, Pontoise, all of France, assignors to Societe Europeenne de Propulsion, Suresnes, and Labinal, Le Bretonneux, both of France

PCT No. PCT/FR94/00941, § 371 Date Mar. 29, 1995, § 102(e) Date Mar. 29, 1995, PCT Pub. No. WO95/04358, PCT Pub. Date Feb. 9, 1995
PCT Filed Jul. 27, 1994, Ser. No. 406,949
Claims priority, application France, Jul. 30, 1993, 93 09406
Int. Cl.[6] H01B 7/18
U.S. Cl. 174—121 A **15 Claims**

1. A method of thermally and mechanically protecting cables and bundles of cables comprising:

providing braiding yarn comprising a plurality of elementary strands comprising interlaced synthetic fibers obtained after cracking and spinning an aramid fiber and a carbonizable oxidized organic fiber; and



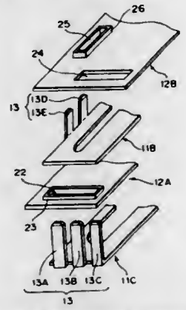
braiding the braiding yarn directly around an element to be protected to provide a sheath.

5,604,332

CIRCUIT INSULATING PLATE

Hiroki Ikeda, and Teruyuki Kitahara, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Filed Aug. 1, 1994, Ser. No. 283,942
Claims priority, application Japan, Aug. 9, 1993, 5-043549
Int. Cl.[6] H02G 5/08
U.S. Cl. 174—138 R **2 Claims**



1. A circuit insulating plate which is interposed between neighboring ones of bus bars provided in stages in an electrical connection box, the circuit insulating plate comprising:

a portion which confronts a plurality of tabs projecting at a short interval from one of the neighboring ones of the bus bars, the portion including a through-opening having a large predetermined area such that the plurality of tabs are passed through the through-opening; and

a rib extending along a peripheral edge of the through-opening, the predetermined area being set so that the rib fits closely within a through-opening of an adjacent circuit insulating plate, whereby the one of the neighboring ones of the bus bars therebetween is securely gripped.

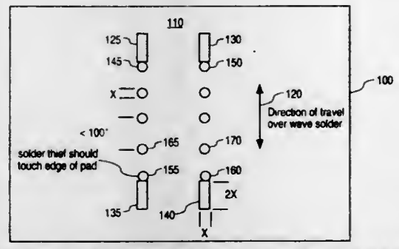
5,604,333

PROCESS AND STRUCTURE FOR A SOLDER THIEF ON CIRCUIT BOARDS

Richard A. Kennish, and Leslie S. Polaski, both of Beaverton, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Nov. 30, 1994, Ser. No. 347,820
Int. Cl.[6] H05K 1/00
U.S. Cl. 174—261 **5 Claims**

1. A circuit board that is processed through a wave solder machine in a direction to apply solder to a first surface of the circuit board, said circuit board comprising:



a plurality of pads on the first surface, said pads arranged in a first sequence delineated by a first pad and a last pad, said first pad and last pad identified in accordance with the direction the board is processed through the wave solder machine and therefore the sequence solder is placed on the pads by the wave solder machine;

at least one solder thief located at the end of the first sequence of pads, adjacent to the last pad, said solder thief having a larger surface area than the last pad such that when the circuit board is processed through a wave solder machine in the direction, said solder thief wicking excess solder from the last pad and a next-to-last pad adjacent to the last pad to the solder thief such that a solder bridge between the last pad and next-to-last pad is not formed; and

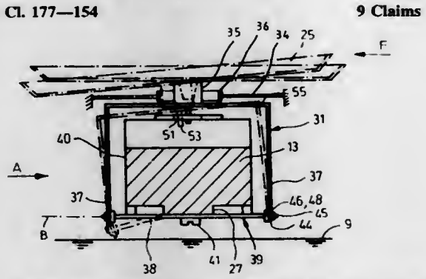
wherein the last pad is circular in shape and comprises a through hole in which pins of a component are inserted, said solder thief is approximately rectangular shape having a width at least approximately the same as the diameter of the last pad and a length approximately twice the diameter of the last pad.

5,604,334

PRECISION BALANCE

Paul Lüchinger, Uster, and Beat Lüdi, Wetzikon, both of Switzerland, assignors to Mettler-Toledo AG, Greifensee, Switzerland

Filed Jul. 19, 1994, Ser. No. 277,251
Claims priority, application Switzerland, Sep. 8, 1993, 2681/93
Int. Cl.[6] G01G 23/02; 21/10
U.S. Cl. 177—154 **9 Claims**



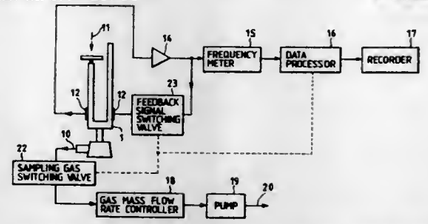
1. A precision balance comprising a short-stroke measuring system and a load receptor, a hanger for connecting the load receptor to the measuring system, the load receptor being yoke-shaped and partially surrounding the hanger, the hanger having a bottom, further comprising pre-tensioned receiving means attached to the bottom of the hanger, the receiving means having ends projecting from the hanger, the load receptor being placed on the ends of the receiving means, the load receptor having a top, the hanger having a guide means for laterally slidably guiding the top of the load receptor.

5,604,335

MEASURING METHOD OF MASS CONCENTRATION OF SUSPENDED PARTICULATE MATTER IN GAS

Fumio Isahaya, Tokyo, Japan, assignor to Shibata Scientific Technology, Ltd., Tokyo, Japan

Filed Aug. 1, 1994, Ser. No. 283,525
Claims priority, application Japan, Jul. 30, 1993, 5-189483
Int. Cl.[6] G01H 1/06
U.S. Cl. 177—210 FP **6 Claims**



1. A method of measuring the mass concentration of particulates suspended in a gas, comprising the steps of:

filtering and sampling particulates suspended in a gas with a filter paper holder mounted at a free end of an oscillator; and

measuring the frequency of said oscillator before and after said filtering and sampling;

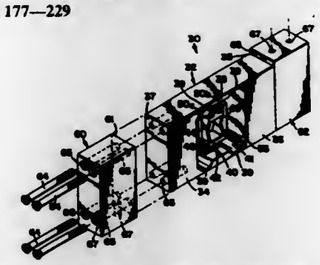
wherein the oscillation of said oscillator is stopped during said filtering and sampling.

5,604,336

LOAD CELL WITH COMPOSITE END BEAMS HAVING PORTIONS WITH DIFFERENT ELASTIC MODULUS

Thomas H. Johnson, Winnebago, Minn., assignor to Weigh-Tronix, Inc., Fairmont, Minn.

Filed Mar. 8, 1995, Ser. No. 400,680
Int. Cl.[6] G01G 3/08
U.S. Cl. 177—229 **44 Claims**



1. A force sensing composite load cell, comprising:

a load cell body including a central portion for receiving a force sensing structure and first and second opposing end beams connected to the central portion, the load cell body formed to deflect in response to an applied force; and

the first and second opposing end beams comprising a first end beam portion that is part of the load cell body and a second end beam portion, the second end beam portion constructed of a material having an elastic modulus which is at least 50% greater than that of the first end beam portion to form a composite end beam.

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5,604,337

LOUDSPEAKER ARRANGEMENT IN TELEVISION RECEIVER CABINET

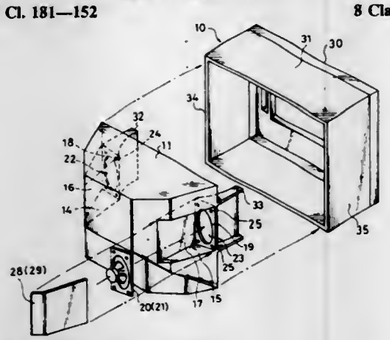
Masashi Sugimoto, Suita; Syuji Isono, Toyono-gun; Kazuo Yoshida, Takatsuki; Kiyoshi Sakai, Osaka; Yoshiaki Okihara, Ibaraki, and Katsunori Yahiro, Takatsuki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Continuation of Ser. No. 79,836, Jun. 22, 1993, abandoned, which is a continuation of Ser. No. 714,904, Jun. 17, 1991, abandoned. This application Feb. 10, 1995, Ser. No. 386,333

Claims priority, application Japan, Jun. 21, 1990, 2-163341; Jul. 6, 1990, 2-180053; Sep. 10, 1990, 2-240847

Int. Cl.[6] H04N *5/64*

U.S. Cl. 181—152 **8 Claims**



4. A television cabinet comprising:

a first cabinet portion; and

a second cabinet portion, said first and second cabinet portions being constructed and arranged to be connected together to define an interior space,

said first cabinet portion including a first part and said second cabinet portion including a second part, said first and second parts each having surfaces constructed and arranged to form a speaker horn in said interior space such that when said first and second cabinet portions are connected, said speaker horn is simultaneously formed by cooperation of said surfaces of said first and second parts.

5,604,338

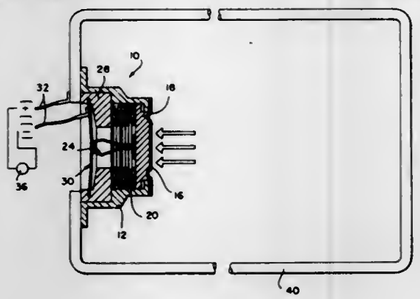
TEMPERATURE ADJUSTING LOW PRESSURE SENSOR

Donald J. Paxton, Brigham City; Marcus T. Clark, Kaysville, and Brian H. Fulmer, Farr West, all of Utah, assignors to Morton International, Inc., Chicago, Ill.

Filed Nov. 16, 1995, Ser. No. 558,358

Int. Cl.[6] H01H *35/34*

U.S. Cl. 200—83 N **10 Claims**



1. A temperature compensating low pressure sensing device for sensing a change in a mass of a fluid of a pressurized vessel due to a leak in the vessel, comprising:

a housing disposed within the pressurized vessel;

a pressure diaphragm attached to said housing in communication with the fluid in the pressurized vessel;

a retainer in contact with said pressure diaphragm and movably disposed within said housing;

a temperature sensitive thermostat movably disposed within said housing, said thermostat moving in relation to a change in temperature of the fluid;

contact means for providing contact between said diaphragm and said thermostat; and

spring means disposed in said housing in communication with said retainer for counteracting the movement of said thermostat due to a change in temperature of the fluid, wherein when said diaphragm is acted upon by a shift in pressure due to a temperature change of the fluid, said spring means moves said pressure diaphragm at the same rate as said thermostat to maintain contact between said thermostat and said contact means.

5,604,339

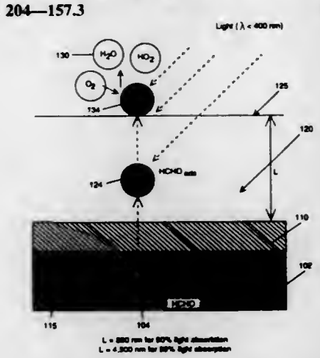
METHOD OF PHOTOCATALYTIC DESTRUCTION OF HARMFUL VOLATILE COMPOUNDS AT EMITTING SURFACES

Ali Tabatabaie-Raissi; Nazim Z. Muradov, both of Melbourne, and Philip W. Fairey, III, Merritt Island, all of Fla., assignors to University of Central Florida, Orlando, Fla.

Filed Mar. 14, 1995, Ser. No. 403,305

Int. Cl.[6] B01D *53/00*

U.S. Cl. 204—157.3 **12 Claims**



1. A method of destroying formaldehyde leakage from a wood layer of wood paneling and wood shingles comprising the steps of:

preparing a mixture of TiO_2 with H_2O; and

applying a layer of the prepared mixture to one side of a wood support surface, the wood support surface chosen from at least one of a wood paneling and a wood roof shingle;

applying light having a wavelength of up to approximately 400 nm to the wood surface, wherein light striking the wood surface having the prepared TiO_2 mixture layer causes a photocatalytic effect destroying formaldehyde emissions from the wood surface.

5,604,340

GAS INSULATED SWITCHGEAR INSERTION RESISTOR AND MAIN CONTACTS OPERATING MECHANISM HAVING TIME DELAY FEATURE

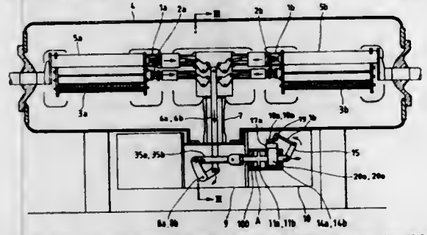
Hitoshi Yamada; Masatomo Ohno; Manabu Takamoto, and Hideo Kawamoto, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 10, 1995, Ser. No. 438,731

Claims priority, application Japan, May 23, 1994, 6-108086

Int. Cl.[6] H01H *9/42;33/16*

U.S. Cl. 218—143 **5 Claims**



1. A gas circuit breaker having a resistance circuit breaking portion connected in parallel with a main circuit breaking portion, comprising:

a main circuit breaking portion actuating mechanism; and

a resistance circuit breaking portion actuating mechanism;

wherein said resistance circuit breaking portion actuating mechanism includes a first delaying mechanism mechanically coupled to said main circuit breaking portion actuating mechanism, and a second delaying mechanism independent from said first delaying mechanism and operated in response to an electrical command signal generated according to one of a first interrupting electrical signal for activating said main circuit breaking portion actuating mechanism, and a second interrupting electrical signal independent of said first interrupting electrical signal and generated when said main circuit breaking portion actuating mechanism malfunctions; and

wherein said main circuit breaking portion actuating mechanism and said resistance circuit breaking portion actuating mechanism are encased in a casing located at a grounding potential side.

5,604,341

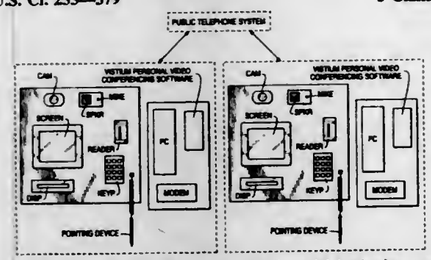
ATM AS VIDEO CONFERENCING STATION

Mark M. Grossi, Muirhead; Grant C. Paton, Dundee, both of Scotland, and George E. Schneider, Springboro, Ohio, assignors to AT&T Global Information Solutions Company, Dayton, Ohio

Filed Mar. 13, 1995, Ser. No. 403,145

Int. Cl.[6] G06F *17/60*

U.S. Cl. 235—379 **5 Claims**



1. A video conferencing system of a financial institution comprising:

first and second automated teller machines (ATMs) separate from each other; and

first and second video conferencing means associated with the first and second ATMs, respectively, and for enabling a person at one ATM to establish a video conference with another person at the other ATM.

5,604,342

NONCONTACT CARD AND CARD SYSTEM

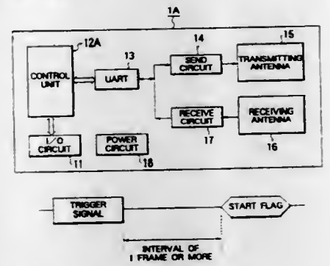
Shuzo Fujioka, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, and Mitsubishi Semiconductor Software Co. Ltd., Hyogo, both of Japan

Filed Jan. 20, 1995, Ser. No. 375,981

Claims priority, application Japan, Mar. 30, 1994, 6-060821

Int. Cl.[6] G06K *5/00*

U.S. Cl. 235—435 **5 Claims**



1. A card reader/writer comprising:

a UART for converting a digital signal in serial form into parallel form and vice versa;

a send circuit for modulating a digital signal in serial form from said UART and converting it into a send electrical signal;

a transmitting antenna for transmitting the send electrical signal as a radio wave;

a receiving antenna for converting a received radio wave into a received electrical signal;

a receive circuit for demodulating a received electrical signal and converting it into a digital signal; and

a control unit for controlling said card reader/writer and for setting an interval between a trigger signal and a start flag to at least one frame.

5,604,343

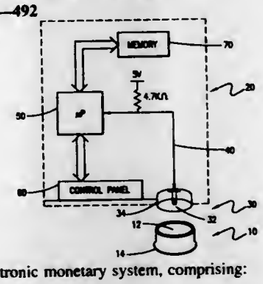
SECURE STORAGE OF MONETARY EQUIVALENT DATA SYSTEMS AND PROCESSES

Stephen M. Curry, and Michael L. Bolan, both of Dallas, Tex., assignors to Dallas Semiconductor Corporation, Dallas, Tex.

Filed May 24, 1994, Ser. No. 247,941

Int. Cl.[6] G09C *53/00*

U.S. Cl. 235—492 **13 Claims**



1. An electronic monetary system, comprising:

(a) an electronic module, said electronic module storing electronic data, said electronic data including monetary information and a unique unalterable registration number, said electronic module further including a first and a second surface, said first surface being electrically isolated from said second surface;

(b) means for manipulating and securing said electronic data;

(c) means for interfacing said electronic module with said manipulating and securing means, said interfacing means including a probe electrically connected to said manipulating means, said probe including a first and a second conductive contact for directly interfacing with, respectively, said first and second surfaces; and

(d) electronic circuitry disposed within said electronic module, said electronic circuitry being electrically connected to said first and said second surfaces, said electronic circuitry including one-way alterable random access memory for storing bits of said monetary information, wherein said bits can only be changed from one state to another state, and further wherein each of said first and second surfaces consists of a single electrical contact.

5,604,344

AUTOFOCUSSING MICROSCOPE HAVING A PATTERN IMAGING SYSTEM

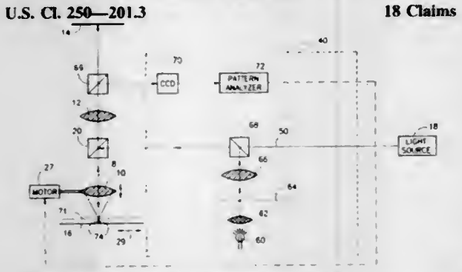
Moshe Finarov, Rehovot, Israel, assignor to Nova Measuring Instruments Ltd., Israel

Filed Oct. 4, 1995, Ser. No. 539,030

Claims priority, application Israel, Oct. 10, 1994, 111229

Int. Cl.[6] G01J *1/20*

U.S. Cl. 250—201.3 **18 Claims**



1. An autofocussing microscope comprising:

a. a microscope optical system having a main optical path, the system comprising:

i. an objective lens having an object plane;

ii. an object surface, having an object thereon, to be aligned with said object plane;

iii. means for changing the distance between said objective lens and said object surface thereby to focus the image of said object; and

iv. at least one image plane on which said object is imaged;

b. a pattern imaging system for imaging at least one pattern through said objective lens along said main optical path and onto said object surface, the image of said at least one pattern to be combined with an image of said object and to be reflected along said main optical path towards said image plane;

c. a single image detector located at one of said at least one image planes for detecting said reflected image; and

d. a pattern focus analyzer for determining the extent of sharpness of said at least one pattern by analyzing the output of the image detector.

5,604,345

OPTICAL ENCODER HAVING A COMBINATION OF A UNIFORM GRATING AND A NON-UNIFORM GRATING

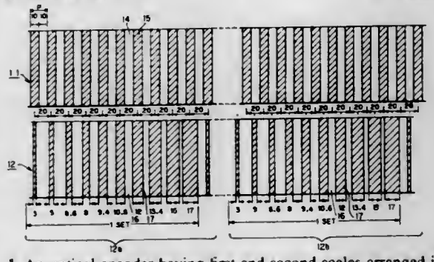
Tatsuhiko Matsuura, Kanagawa, Japan, assignor to Mitutoyo Corporation, Tokyo, Japan

Filed Nov. 16, 1995, Ser. No. 559,113

Claims priority, application Japan, Nov. 25, 1994, 6-315563

Int. Cl.[6] G01B *11/14*

U.S. Cl. 250—237 G **9 Claims**



1. An optical encoder having first and second scales arranged in parallel with each other to be relatively movable, optical gratings being formed thereon at a predetermined pitch respectively, a light source for irradiating collimated light to the first scale, and light detecting means for detecting transmitted light through the second scale, the transmitted light being modulated by movement between the first and second scales, wherein

one of the first and second scales has a uniform grating which is formed of a plurality of rectangular transmitting portions and a plurality of rectangular non-transmitting portions alternately arranged at a predetermined pitch, each of the rectangular transmitting portions having a uniform width, and

the other of the first and second scales has a non-uniform grating consisting of at least one set of M (where M is an integer of 2 or more) pairs, each pair having a rectangular transmitting portion and a rectangular non-transmitting portion, the pairs being arranged at the same pitch as the uniform grating, said rectangular transmitting portions on said non-uniform grating having different widths from each other within said one set of M pairs so as to include information of a one cycle sine waveform whose wavelength is equal to one pitch of said uniform grating.

5,604,346

ARRANGEMENT FOR RECORDING AN IR-IMAGE

Torbjorn Hamrelius, Stockholm, and Ulf Guldevall, Taby, both of Sweden, assignors to Agema Infrared Systems AB, Danderyd, Sweden

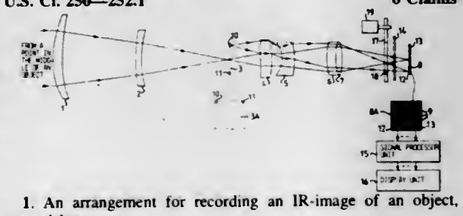
PCT No. PCT/SE93/00457, § 371 Date Jan. 17, 1995, § 102(e) Date Jan. 17, 1995, PCT Pub. No. WO93/24814, PCT Pub. Date Dec. 9, 1993

PCT Filed May 25, 1993, Ser. No. 343,471

Claims priority, application Sweden, May 25, 1993, 9201655

Int. Cl.[6] G01J *5/06;5/52*

U.S. Cl. 250—252.1 **8 Claims**



1. An arrangement for recording an IR-image of an object, comprising:

a focal plane array (FPA) of IR-detectors;

an optic which images the object on the focal plane IR-detector array;

at least one temperature reference (**10**, **11**; **20**, **21**) arranged in a beam path to the IR-detector array;

at least one IR-reference detector (**12**, **13**; **36**, **37**) assigned as a reference among the IR-detectors in said array;

each of said at least one temperature reference being coordinated with at least one of the at least one IR-reference detector, so that each of the at least one IR-reference detector will be impinged upon by radiation derived substantially only from one of the at least one temperature reference; an IR-reference detector output signal being produced for each of said at least one temperature reference; each IR-reference detector output signal setting an individual reference level for output signals from remaining IR-detectors in said IR-detector array.

5,604,347

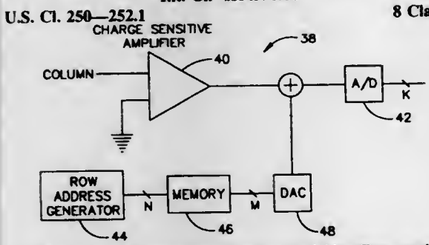
METHOD AND MEANS FOR COMPENSATING FOR ROW VARIABLE OFFSETS IN A LARGE AREA SOLID STATE X-RAY DETECTOR

Scott W. Petrick, Sussex; Lawrence R. Skrenes, Hartland; Jean C. Morvan, and Paul R. Granfors, both of Milwaukee, all of Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Jul. 13, 1995, Ser. No. 501,800

Int. Cl.[6] H04N *5/35*

U.S. Cl. 250—252.1 **8 Claims**



1. A method for compensating for row variable offsets produced by a large area solid state x-ray detector having a row-column construction with the rows being read out sequentially, the method comprising the steps of:

performing a calibration to determine row to row variation in offset by measuring average offset of each row by,

acquiring a plurality of images without x-ray exposure,

averaging the plurality of images to acquire a resulting average image, and

averaging along rows of the resulting average image to acquire row averages;

compensating for the row to row variation in offset.

5,604,348

MEASUREMENT OF ACID SULFATE LEVELS IN AEROSOLS

William A. McClenny, Raleigh, and Kenneth J. Krost, Cary, both of N.C., assignors to United States of America as represented by the Administrator of the U.S. Environmental Agency, Washington, D.C.

Filed May 2, 1995, Ser. No. 432,729

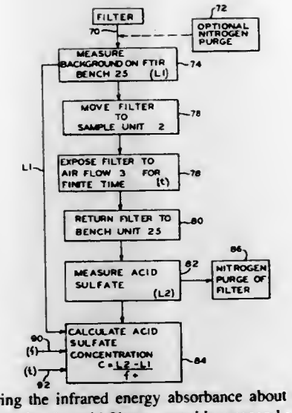
Int. Cl.[6] G01N *21/35*

U.S. Cl. 250—341.1 **13 Claims**

1. A direct non-destructive method of measuring acid sulfate levels in fine particulate matter collected on a filter from an aerosol flow comprising:

measuring the infrared energy absorbance in a band centered at a wave number selected to be responsive to ammonium bisulfate on said filter to provide a first measurement of ammonium bisulfate;

collecting the fine particle fraction of said ambient air to be measured for acid sulfate levels through a filter for a finite period of time;



remeasuring the infrared energy absorbance about the selected wave number by said filter to provide a second measurement of ammonium bisulfate; and

comparing said first measurement and said second measurement to provide a difference measurement as an indication of the amount of acid sulfate in said aerosol flow.

5,604,349

CAPSULE FOR A DETECTOR OPERATING IN AN ULTRA-HIGH VACUUM

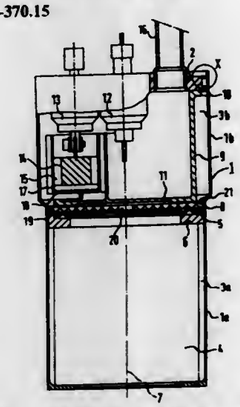
Marc Berst, Schiltigheim, France; Jürgen Eberth, Köln, Germany; Herbert M. Jäger, Aachen, Germany; Hans Kämmerling, Eschweiler, Germany; Rainer M. Lieder, Jülich, Germany, and Walter Renftle, Düren, Germany, assignors to Eurisys Mesures, Tanneries, France; Forschungszentrum Jülich GmbH, Jülich, Germany, and Universilata, Köln, Germany

Filed Jan. 22, 1996, Ser. No. 589,365

Claims priority, application Germany, Jul. 23, 1993, 43 24 709.1

Int. Cl.[6] G12B *15/00*

U.S. Cl. 250—370.15 **5 Claims**



1. A capsule for a detector operating in an ultra high vacuum, suitable as a gamma radiation spectrometer, said capsule including a detector chamber containing said detector and a getter chamber containing a heat reactivatable getter element, said getter chamber being separated from said detector chamber by a thermal protection structure.

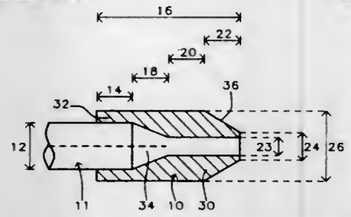
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5,604,350

FITTING FOR AN ION SOURCE ASSEMBLY

Chung-Hua Chu, Hsin-Chu, Taiwan, assignor to Taiwan Semiconductor Manufacturing Company Ltd., Hsin-Chu, Taiwan

Filed Nov. 16, 1995, Ser. No. 558,494
Int. Cl.[6] H01J *27/00*
U.S. Cl. 250—426 **30 Claims**



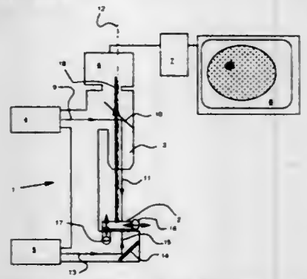
1. An ion source assembly in an ion implant machine, with the improvement being improved connections between a conduit and a fitting and between said fitting and an arc chamber, said connections which provide a gas leak proof ion source assembly, said ion source assembly comprising:
a vaporizer oven having a tubular conduit at one end;
a fitting having a front end and a back end; said fitting having a chamber entirely through the center;
said chamber having three portions: a front end portion, a central tapered portion and a back end portion; said back end portion has a larger diameter than said front end portion; said central tapered portion connecting said front end and back end portions of said chamber;
said fitting having an outer tapered front end portion;
said conduit fits into said back end portion of said chamber thereby forming a first gas leak proof connection;
an arc chamber having a tapered opening; and
said tapered front end of said fitting engages said tapered opening of said chamber forming a second gas leak proof connection thereby providing a gas leak proof ion source assembly.

5,604,351

PROCESS AND APPARATUS FOR AUTOMATIC ANALYSIS OF ELEMENTS IN WEAK CONCENTRATION ON A SUPPORT

Jean-Claude Bisconte, Briis Sous Forges, France, assignor to Biocom S.A., Les Ulis, France

Filed Feb. 6, 1995, Ser. No. 384,574
Claims priority, application France, Feb. 4, 1994, 94 01263
Int. Cl.[6] G01N *21/64*
U.S. Cl. 250—458.1 **10 Claims**



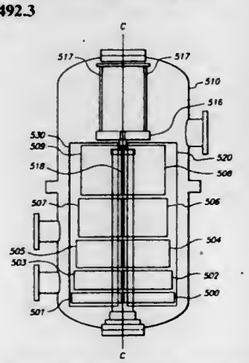
1. A process for automatic analysis of elements in weak concentration on a support for objects of low occurrence having a high-contrast surface state, consisting of illuminating the observation zone with a first light source (5) emitting in a first wavelength range and with a second source (4) emitting in the excitation spectrum of the objects (23, 32) of low occurrence, proceeding to focusing the image acquisition means and after focusing triggering the accumulation of photons emitted by the objects (23, 32) of low occurrence illuminated with a source (4) emitting in the excitation spectrum of said objects (23, 32), characterized in that one proceeds to a modification of the focusing of the image acquisition means until maximization of the contrast of a zone (30) in said first wavelength range, said zone (30) being dissociable from the observation zone illuminated by the second light source.

5,604,352

APPARATUS COMPRISING VOLTAGE MULTIPLICATION COMPONENTS

Marlin N. Schuetz, Raleigh, N.C., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Apr. 25, 1995, Ser. No. 428,615
Int. Cl.[6] G21K *5/04;* **H05H** *7/02*
U.S. Cl. 250—492.3 **22 Claims**



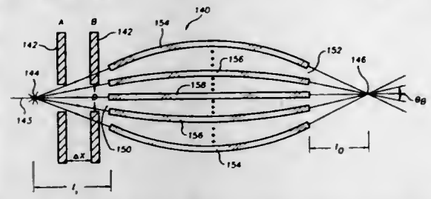
1. Apparatus for irradiating a substrate comprising:
(i) a vacuum chamber including a transmission window which is located at a first end of said vacuum chamber;
(ii) a particle beam generator within said vacuum chamber; and
(iii) a particle beam accelerator, within said vacuum chamber, which accelerates and directs particles from said generator towards and through said transmission window, said apparatus comprising a voltage multiplication apparatus having:
(i) a first and a second metallic electrode, adapted to be connected to a source of AC power,
(ii) a ground connection and a high voltage DC terminal,
(iii) a plurality of solid state rectifier units each having an anode and cathode,
said units being positioned between said electrodes and being series-connected anode to cathode between said ground connection and said high voltage DC terminal, and
(iv) a capacitor plate connected at each one of the electrical junctions thereby formed between said rectifier units;
a) each capacitor plate being independently positioned at its own predetermined spacing from one of said first electrode or said second electrode, and in combination with said electrode forming a capacitor having a predetermined capacitance, to form a plurality of capacitor modules each independently comprising at least one capacitor,
b) said predetermined spacings increasing for successive said capacitor modules,
c) said capacitor plates being adapted to capacitively couple an AC potential of substantially equal amplitude across the capacitors via the capacitance between said capacitor plates and said electrodes, and
d) the capacitance between a capacitor plate and an electrode being similar to an average value of capacitance between said capacitor plates and electrodes.

5,604,353

MULTIPLE-CHANNEL, TOTAL-REFLECTION OPTIC WITH CONTROLLABLE DIVERGENCE

David M. Gibson, Voorheesville, and Robert G. Downing, Albany, both of N.Y., assignors to X-Ray Optical Systems, Inc., Albany, N.Y.

Filed Jun. 12, 1995, Ser. No. 489,503
Int. Cl.[6] G21K *1/02;* **G01N** *23/00*
U.S. Cl. 250—505.1 **18 Claims**



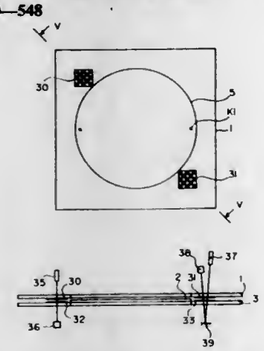
1. An apparatus for providing a focused radiation beam with controllable convergence, said apparatus comprising:
a multiple-channel, total-external reflection optic ("optic") having an input end for receiving radiation, an output end for providing said focused radiation beam, and an optical axis, said focused radiation beam having an angle of convergence at a focal spot a focal length from the output end of said optic; and
means for varying the angle of convergence of the focused radiation beam without effecting focal spot size or said focal length of said focal spot from said output end of said optic, said means for varying the angle of convergence comprising a radiation blocking structure disposed at said input end of said optic for blocking radiation from reaching at least some channels of said optic such that said angle of convergence of said focused radiation beam at said focal spot spaced said focal length from the output end of said optic is variably controlled.

5,604,354

MASKS FOR A DOUBLE-SIDE EXPOSURE MACHINE

Eric Lauverjat, Tours, France, assignor to SGS-Thomson Microelectronics S.A., Saint Genis Pouilly, France

Filed Apr. 22, 1994, Ser. No. 231,625
Claims priority, application France, Apr. 27, 1993, 93 05312
Int. Cl.[6] G01V *9/04*
U.S. Cl. 250—548 **19 Claims**



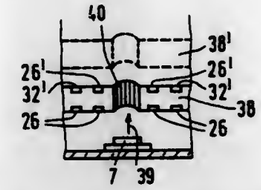
1. A pair of mask plates designed to expose an upper surface and a lower surface of a silicon wafer wherein each mask plate includes, outside an operative surface area corresponding to a surface area of the silicon wafer, sighting marks.

5,604,355

ELECTRON TUBE COMPRISING A SEMICONDUCTOR CATHODE

Tom Van Zutphen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 152,563, Nov. 12, 1993, Pat. No. 5,444,328. This application May 16, 1995, Ser. No. 442,565
Claims priority, application European Pat. Off., Nov. 12, 1992, 92203475
Int. Cl.[6] H01J *29/04*
U.S. Cl. 257—10 **2 Claims**



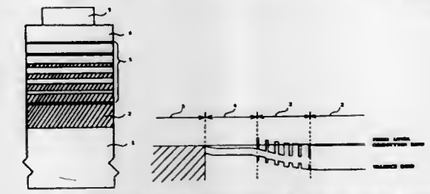
1. A vacuum tube comprising a semiconductor device for influencing a path of charged particles, characterized in that the semiconductor body has a region for generating charged particles or an aperture for passing charged particles, and that for influencing the path of charged particles at least one main surface has at least one structure with a first surface region of a first conductivity type which is at least partly surrounded by a second surface region of a second, opposite conductivity type or is substantially intrinsic.

5,604,356

SUPERLATTICE OHMIC CONTACT ON A COMPOUND SEMICONDUCTOR LAYER

Yasushi Shiraishi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 53,571, Apr. 28, 1993, abandoned. This application Jul. 5, 1995, Ser. No. 498,234
Claims priority, application Japan, Apr. 28, 1992, 4-109500
Int. Cl.[6] H01L *29/15*
U.S. Cl. 257—17 **3 Claims**



1. A low resistance metal-semiconductor ohmic contact multilayer structure comprising:
an n-GaAs layer;
a modulated-period, strain-layered superlattice structure disclosed on said n-GaAs layer;
an n-InGaAs layer having a large ratio of InAs to Ga and disposed on said modulated-period, strain-layered superlattice structure; and
a metal layer disposed on said n-InGaAs layer;
wherein said modulated-period, strain-layered superlattice structure comprises:
a plurality of alternating lamination of n-GaAs strained layers having a first energy band gap and n-InAs strained layers having a second energy band gap smaller than first energy

band gap, said n-GaAs strained layers having various thicknesses decreasing in a direction toward said metal layer, said n-InAs strained layers having various thicknesses increasing in said direction;

wherein a ratio of said thicknesses of said n-GaAs and n-InAs strained layers is varied to substantially eliminate discontinuities in the lattice constant at the interfaces between said n-GaAs and n-InAs strained-layers, and at the interfaces between said superlattice structure and said n-InGaAs and between said superlattice structure and said n-GaAs layer;

wherein said strained-layer superlattice structure has a modulated period of a short duration so as to exhibit a substantially smooth and continuous potential profile and substantially no potential barriers nor potential wells, to thereby permit said strained-layer superlattice structure to perform as a superlattice alloy-like material; and

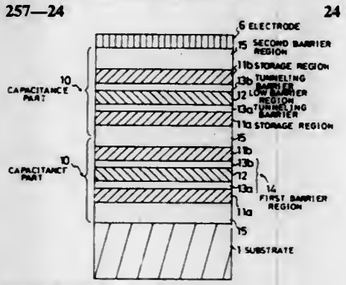
wherein said n-GaAs and n-InAs strained layers are so doped that said strained-layer superlattice structure has an impurity concentration profile in which said impurity concentration is graded from 2×10^{18} cm^{-3} to 2×10^{19} cm^{-3} in said direction toward said metal layer so that said metal-semiconductor ohmic contact has a resistance of less than 5.8×10^{-8} ohms/cm^2.

5,604,357

SEMICONDUCTOR NONVOLATILE MEMORY WITH RESONANCE TUNNELING

Takashi Hori, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 11, 1995, Ser. No. 500,826
Claims priority, application Japan, Jul. 12, 1994, 6-160269
Int. Cl.[6] H01L *29/06*
U.S. Cl. 257—24 **24 Claims**



1. A semiconductor device, comprising:

a semiconductor substrate; and

at least one conductive carrier storage part for storing conductive carriers,

wherein the conductive carrier storage part includes:

at least two barrier regions having a high energy level to give resistance against transfer of the conductive carriers; and

at least one storage region disposed between the barrier regions and having a low energy level to allow the conductive carriers to exist stably, and

at least one of the barrier regions having a multi-tunneling structure which comprises,

at least two tunneling barriers having an energy level allowing the conductive carriers to pass through the tunneling barriers by means of resonance tunneling, and

at least one low barrier region disposed between the tunneling barriers and having a lower energy level than the tunneling barriers,

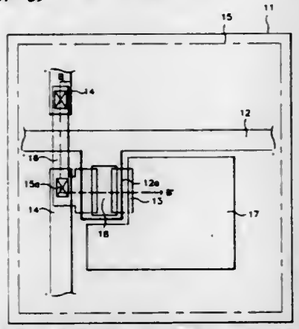
said low barrier region resulting in an incident wave from one tunneling barrier and a reflected wave from another tunneling barrier being in phase with each other.

5,604,358

DEVICE OF THIN FILM TRANSISTOR LIQUID CRYSTAL DISPLAY

Byung K. Kim, Kyungki-do, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Jan. 20, 1995, Ser. No. 375,644
Int. Cl.[6] H01L *29/04*
U.S. Cl. 257—59 **3 Claims**



1. A thin film transistor liquid crystal display comprising:

a plurality of gate lines each having projection parts formed and spaced in a certain interval on a transparent substrate;

a plurality of first data lines each formed covering one side of each of the projection parts of the gate lines for serving as drain electrodes;

a plurality of second data lines each formed on the transparent substrate at a right angle to the gate lines in parts other than the projection parts, wherein the plurality of second data lines being formed discrete so as to be intermittent to each other at parts crossing the gate lines;

an insulation layer having at least one contact hole on each of the second data lines formed on all over the surfaces of the second data lines, the gate lines and the transparent substrate;

a pixel electrode formed on a part of the insulation layer; and,

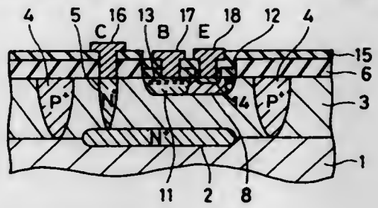
a plurality of third data lines formed on the insulation layer to cover the other side of the projection parts and to connect the second data lines through making contact with the contact holes for serving as source electrodes together with the second data lines.

5,604,359

PARASITIC PNP TRANSISTOR WITH CRYSTAL DEFECT LAYER IN THE EMITTER REGION

Kazushi Naruse, Nara; Hiroaki Yamamoto, Tenri; Toshio Naka, Nabari, and Katsuki Tsuda, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 24, 1994, Ser. No. 185,517
Claims priority, application Japan, Jan. 28, 1993, 5-012413; Apr. 14, 1993, 5-087194
Int. Cl.[6] H01L *29/76;27/108*
U.S. Cl. 257—69 **17 Claims**



1. A transistor comprising

a P-type substrate,

an N-type impurity layer, and

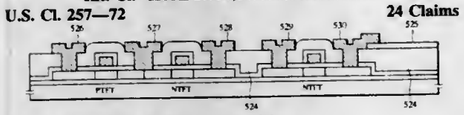
a P-type high concentration impurity diffusion layer formed in the N-type impurity layer, wherein the P-type high concentration impurity diffusion layer has a crystal defect layer formed therein by implanting ions of an inert atom or a compound thereof, said crystal defect layer being located at the entire bottom surface of an amorphous layer formed by the implantation and lowering the current amplification rate of a parasitic transistor having the P-type high concentration impurity diffusion layer serving as an emitter.

5,604,360

SEMICONDUCTOR DEVICE INCLUDING A PLURALITY OF THIN FILM TRANSISTORS AT LEAST SOME OF WHICH HAVE A CRYSTALLINE SILICON FILM CRYSTAL-GROWN SUBSTANTIALLY IN PARALLEL TO THE SURFACE OF A SUBSTRATE FOR THE TRANSISTOR

Hongyong Zhang, Yamato; Toru Takayama, Yokohama; Yasuhiko Takemura, Atsugi, and Akiharu Miyanaga, Hadano, all of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 160,908, Dec. 3, 1993, Pat. No. 5,403,772. This application May 24, 1994, Ser. No. 248,220
Claims priority, application Japan, Dec. 4, 1992, 4-350545; May 26, 1993, 5-147001; Jul. 27, 1993, 5-204775
Int. Cl.[6] H01L *29/04;31/036;31/112;27/01*
U.S. Cl. 257—72 **24 Claims**



1. A semiconductor device, comprising:

a substrate; and

a plurality of thin film transistors formed on the substrate,

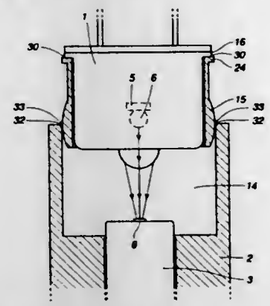
wherein a first part of the plurality of thin film transistors has a crystalline silicon film including crystals having a crystal growth direction approximately in parallel to a surface of the substrate and a second part of the plurality of thin film transistors has an amorphous silicon film.

5,604,361

OPTOLECTRONIC COMPONENT WITH A WELDED JOINT AND A METHOD OF MOUNTING THEREOF

Jan Isaksson, Täby, Sweden, assignor to Asea Brown Boveri AB, Vasteras, Sweden

Filed Oct. 24, 1995, Ser. No. 547,321
Claims priority, application Sweden, Oct. 25, 1994, 9403648
Int. Cl.[6] H01L *33/00*
U.S. Cl. 257—99 **8 Claims**



1. An optoelectronic component comprising:

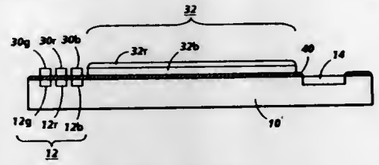
a housing having a first body and a second, spherical body, and an optoelectronic semiconductor element mounted in said second, spherical body, said second, spherical body being adjustably journalled in a cylindrical recess of the first body, the cylindrical recess including an opening edge and the spherical body including a portion having substantially the same outer periphery diameter as the diameter of said cylindrical recess, said portion being at the level with the opening edge of the cylindrical recess, and a welded joint extending around the whole opening edge for providing a hermetically sealed joint between said opening edge and the portion.

5,604,362

FILTER ARCHITECTURE FOR A PHOTOSENSITIVE CHIP

Josef E. Jedlicka, Rochester; Brian T. Ormond, and Debra S. Vent, both of Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 427,400, Apr. 24, 1995, abandoned. This application Feb. 20, 1996, Ser. No. 603,513
Int. Cl.[6] H01L *27/148*
U.S. Cl. 257—233 **9 Claims**



1. A semiconductor chip, comprising:

a main surface including a plurality of photosites and a plurality of bonding pads defined in the main surface;

a layer of polyimide disposed over the main surface exclusive of the plurality of bonding pads, the polyimide admitting visible light therethrough and including a material for blocking infrared light; and

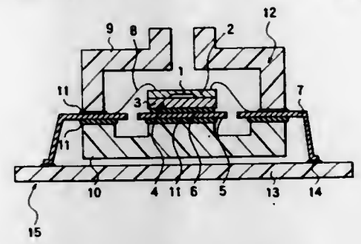
a mask layer disposed on the main surface exclusive of the plurality of photosites and the plurality of bonding pads, the mask layer including a material substantially non-reflective of visible light.

5,604,363

SEMICONDUCTOR PRESSURE SENSOR WITH PACKAGE

Motomi Ichihashi, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 5, 1995, Ser. No. 523,197
Claims priority, application Japan, Sep. 6, 1994, 6-212846
Int. Cl.[6] H01L *29/82*
U.S. Cl. 257—274 **8 Claims**



1. A semiconductor pressure sensor comprising:

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a pressure sensing element including a glass base and a pressure sensor chip having a diaphragm anodically bonded to said glass base;
a package accommodating said pressure sensing element and including a package cover and a package base supporting said pressure sensing element;
an outer lead held between said package base and said package cover;
a first bonding resin bonding said package base, said package cover, and said outer lead together;
a die pad on which said pressure sensing element is mounted, fixed to said package base, and coplanar with said outer lead;
a second bonding resin bonding said pressure sensing element, said die pad, and said package base together;
a metal wire electrically connecting said pressure sensing element to said outer lead; and
a thick film substrate to which said outer lead is mounted.

5,604,364

PHOTOELECTRIC CONVERTER WITH VERTICAL OUTPUT LINES

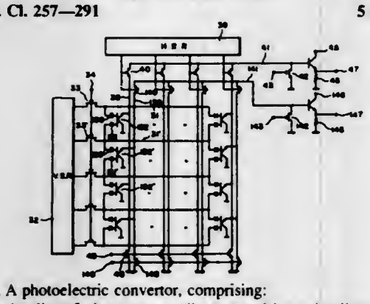
Tadahiro Ohmi, Sendai, and Nobuyoshi Tanaka, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 25,638, Mar. 20, 1993, Pat. No. 5,563,431, which is a division of Ser. No. 857,592, Apr. 24, 1992, Pat. No. 5,210,434, which is a continuation of Ser. No. 746,812, Aug. 15, 1991, Pat. No. 5,128,735, which is a continuation of Ser. No. 642,563, Jan. 18, 1991, abandoned, which is a continuation of Ser. No. 437,433, Nov. 16, 1989, abandoned, which is a division of Ser. No. 250,246, Sep. 28, 1988, Pat. No. 4,916,512, which is a division of Ser. No. 1,580, Jan. 8, 1987, Pat. No. 4,791,469, which is a division of Ser. No. 625,130, Jun. 27, 1984, Pat. No. 4,686,554. This application Jun. 7, 1995, Ser. No. 472,278

Claims priority, application Japan, Jul. 2, 1983, 58-120751; Jul. 2, 1983, 58-120752; Jul. 2, 1983, 58-120753; Jul. 2, 1983, 58-120754; Jul. 2, 1983, 58-120755; Jul. 2, 1983, 58-120756; Jul. 2, 1983, 58-120757

Int. Cl.[6] **H01L** *31/00*

U.S. Cl. 257—291 **5 Claims**



1. A photoelectric convertor, comprising:
a plurality of photosensor cells arranged in a plurality of rows including a first row and a second row;
a plurality of first vertical output lines, each first vertical output line connected to one said photosensor cell of said first row of photosensor cells;
a plurality of second vertical output lines, each second vertical output line connected to one said photosensor cell of said second row of photosensor cells;
a first scanning circuit for sequentially outputting signals from said plurality of first vertical output lines to a first horizontal output line, said first scanning circuit including a plurality of first transistors respectively disposed between each of said first vertical output lines and said first horizontal output line; and
a second scanning circuit for sequentially outputting signals from said plurality of second vertical output lines to a second horizontal output line, said second scanning circuit including a plurality of second transistors respectively disposed between each of said second vertical output lines and said second horizontal output line, a corresponding pair of first and second transistors of said pluralities of first transistors and second transistors being turned on simultaneously.

5,604,365

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE AND A MANUFACTURING METHOD THEREOF

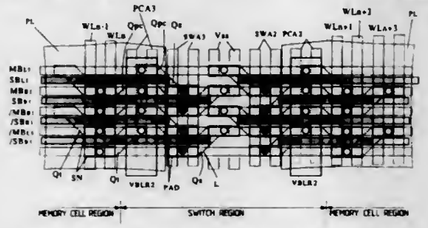
Kazuhiko Kajigaya, Iruma; Masayuki Nakamura, Akishima, and Toshikazu Tachibana, Hinode-machi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 29, 1994, Ser. No. 297,039

Claims priority, application Japan, Aug. 30, 1993, 5-214610

Int. Cl.[6] **H01L** *27/108;29/76;29/94;31/119*

U.S. Cl. 257—296 **16 Claims**



1. A semiconductor integrated circuit device including: a first bit line to which a plurality of memory cells are connected, each memory cell having a memory cell selection MISFET and a capacitor connected in series therewith; a second bit line connected to a sense amplifier and extending parallel to the first bit line; and a switching MISFET connected between the second bit line and the first bit line to connect the first bit line to the second bit line, said semiconductor integrated circuit device comprising:
a semiconductor substrate having on the main surface thereof a memory cell region and a switch region adjacent to the memory cell region;
a plurality of first active regions arranged in row and column directions in the memory cell region;
a plurality of second active regions arranged in row and column directions in the switch region;
in the memory cell region, a plurality of word lines extending in a row direction and arranged with a first pitch in a column direction, a pair of adjoining word lines being arranged to cross the first active regions;
in the switch region, a plurality of interconnections extending in a row direction and arranged with the first pitch in a column direction, a pair of adjoining interconnections being arranged to cross the second active regions;
in the memory cell region, a first semiconductor region located inside the pair of adjoining word lines and in each of the first active regions, the first semiconductor region being connected to a sub-bit line;
in the memory cell region, a second semiconductor region located outside the pair of adjoining word lines and in each of the first active regions, the second semiconductor region being connected to the capacitor;
in the switch region, a third semiconductor region located inside the pair of adjoining interconnections and in each of the second active regions, the third semiconductor region being connected to the sub-bit line;
in the switch region, a fourth semiconductor region located outside the pair of adjoining interconnections and in each of the second active regions; and
in the memory cell and the switch region, a plurality of main bit lines extending in a column direction and arranged with a specified pitch in a row direction, each of the main bit lines being connected to the fourth semiconductor region in the switch region;

wherein the memory cell selection MISFET comprises each of the word lines and the first and second semiconductor regions, and the switching MISFET comprises each of the interconnections and the third and fourth semiconductor regions, and
wherein the shape of each of said first active regions is substantially the same as the shape of each of the second active regions.

5,604,366

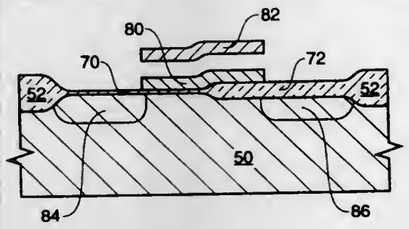
FLOATING GATE MEMORY DEVICE HAVING DISCONTINUOUS GATE OXIDE THICKNESS OVER THE CHANNEL REGION

Roger R. Lee, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 243,442, May 16, 1994, Pat. No. 5,444,279, which is a continuation of Ser. No. 104,753, Aug. 11, 1993, abandoned. This application Mar. 22, 1995, Ser. No. 409,371

Int. Cl.[6] **H01L** *29/788*

U.S. Cl. 257—316 **17 Claims**



1. A memory device comprising:
a) first and second dielectric regions formed over a channel region, said first dielectric region having a thickness of from about 100 Å to about 120 Å and said second dielectric region having a thickness of from about 200 Å to about 350 Å;
b) a transistor gate formed over said first and second dielectric regions,
wherein in a cross-section perpendicular with a control line which comprises said gate, said gate overlies said first and second dielectric regions;
a first channel region having a first impurity concentration under said first dielectric region and a second channel region having a second impurity concentration under said second dielectric region, said first impurity concentration being less than said second impurity concentration.

5,604,367

COMPACT EEPROM MEMORY CELL HAVING A FLOATING GATE TRANSISTOR WITH A MULTILAYER GATE ELECTRODE

Ming T. Yang, Hsin-Chu, Taiwan, assignor to United Microelectronics Corporation, Hsin-Chu, Taiwan

Division of Ser. No. 305,559, Sep. 14, 1994, Pat. No. 5,439,838. This application Jun. 23, 1995, Ser. No. 494,584

Int. Cl.[6] **H01L** *29/788*

U.S. Cl. 257—321 **8 Claims**

1. An EEPROM memory formed on a semiconductor substrate, comprising:
first dielectric layer on said semiconductor substrate;
a select transistor having a select transistor gate electrode formed on said dielectric layer;
a first layer of a floating gate electrode formed on said dielectric layer;
doped source/drain regions in said substrate adjacent to said select transistor gate electrode and said first layer of said floating gate electrode, a central doped source/drain region being located between said select transistor gate electrode and said first layer of said floating gate electrode, said first dielectric layer having a tunneling oxide region above at least a portion of said central doped source/drain region;
a second layer of said floating gate electrode in contact with said first layer of said floating gate electrode and in contact with an upper surface of said tunneling oxide region, wherein said first layer and said second layer of said floating gate electrode are conductive and wherein said first layer of said floating gate electrode is in direct electrical contact with said second layer of said floating gate electrode;
a third layer of said floating gate electrode disposed at least partially above said second layer of said floating gate electrode with said third layer of said floating gate electrode in contact with said second layer of said floating gate electrode;
a second layer of dielectric material disposed at least partially between said third layer of said floating gate electrode and said first layer of said floating gate electrode;
a third layer of dielectric material over at least a portion of an upper surface of said floating gate electrode; and
a control gate electrode formed on a surface of said third layer of dielectric material.

5,604,368

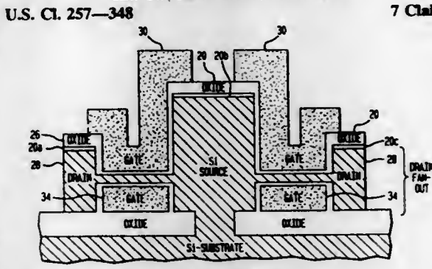
SELF-ALIGNED DOUBLE-GATE MOSFET BY SELECTIVE LATERAL EPITAXY

Yuan Taur, Bedford, and Hon-Sum P. Wong, Chappaqua, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 276,072, Jul. 15, 1994, abandoned. This application Mar. 21, 1995, Ser. No. 407,175

Int. Cl.[6] **H01L** *27/01;27/12;29/76*

U.S. Cl. 257—348 **7 Claims**

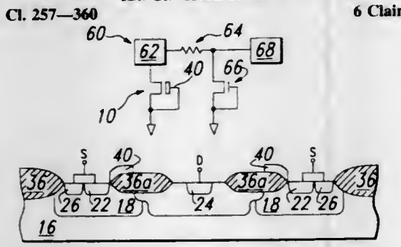


1. A double-gate MOSFET comprising:
a semiconductor substrate having an upper surface,
a silicon dioxide layer on said upper surface, said silicon dioxide layer having an opening therein, an epitaxial semiconductor structure formed from said opening,
said semiconductor structure having a channel region between a drain region and source region, the source region, the drain region and the channel region each having a thickness, the thickness of the source region and the thickness of the drain region each being greater than the thickness of the channel region,
first and second oxide layers of about 100 Å or less in thickness on first and second juxtaposed major surfaces of the channel region,

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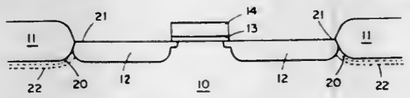
said channel region having top and bottom gate electrodes formed on said first and second oxide layers, wherein said top and bottom gate electrodes are self-aligned to each other and to said channel region.

5,604,369
ESD PROTECTION DEVICE FOR HIGH VOLTAGE CMOS APPLICATIONS
Charvaka Duvvury, Plano, and Roy C. Jones, III, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Mar. 1, 1995, Ser. No. 397,004
Int. Cl.[6] H01L *23/62*
U.S. Cl. 257—360 **6 Claims**



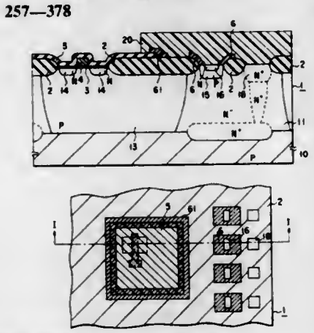
1. A protection circuit for protecting internal circuitry, comprising:
a primary protection device that comprises:
a source region connected to ground;
an extended drain well region;
a drain region within said extended drain well region connected to a bond pad; and
an oxide layer on the order of 4000 Å thick extending from said source region to over a portion of said extended drain well region;
a resistor connected between said bond pad and said internal circuitry;
a drain extended nMOS transistor connected between said resistor and ground.

5,604,370
FIELD IMPLANT FOR SEMICONDUCTOR DEVICE
Sunil Mehta, San Jose, and Jonathan Lin, Milpitas, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.
Filed Jul. 11, 1995, Ser. No. 501,230
Int. Cl.[6] H01L *29/76;29/94;31/062;31/113*
U.S. Cl. 257—372 **8 Claims**



1. A semiconductor device comprising:
a semiconductor substrate having an impurity of a first conductivity type;
a thermally grown field oxide region having an edge adjoining an isolated active region;
a first self-aligned channel-stopper ion implanted region under the field oxide region, which channel-stopper region contains an impurity of the first conductivity type at a concentration greater than the concentration of the impurity of the first conductivity type in the substrate; wherein, the channel-stopper region does not extend to the surface of the semiconductor substrate; and
a second self-aligned channel-stopper ion implanted region in the semiconductor substrate beneath the first channel-stopper region and having an impurity of the first conductivity type at a concentration less than the concentration of the impurity of the first conductivity type in the first channel-stopper region and greater than the impurity of the first conductivity type in the substrate.

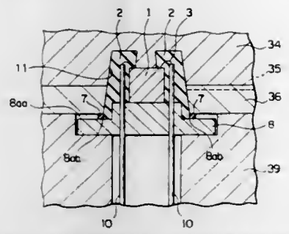
5,604,371
SEMICONDUCTOR DEVICE WITH AN INSULATION FILM HAVING AN END COVERED BY A CONDUCTIVE FILM
Koji Kimura, Chigasaki; Yuichi Nakashima, Kawasaki, and Hiroshi Kawamoto, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Apr. 14, 1995, Ser. No. 421,795
Claims priority, application Japan, Apr. 15, 1994, 6-101832
Int. Cl.[6] H01L *21/8249;29/41*
U.S. Cl. 257—378 **14 Claims**



1. A semiconductor device comprising:
a semiconductor substrate having a first element region, a second element region, and an intervening region between the first element region and the second element region;
a first insulation film formed on said intervening region of said semiconductor substrate;
a second insulation film formed on said first element region of said semiconductor substrate, the second insulation film extending to a portion of said intervening region and having an end on said portion of the intervening region;
a conductive film formed on said end of said second insulation film and extending onto said first insulation film and said second insulation film; and
a wiring film formed on said second element region, said wiring film and said conductive film being formed by patterning a common film, and said wiring film and said conductive film being electrically insulated from each other.

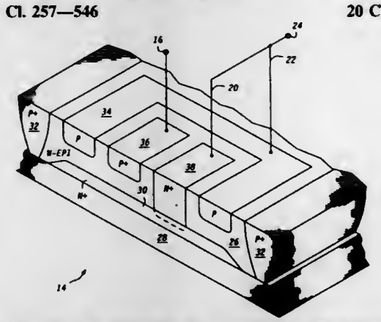
5,604,372
SEMICONDUCTOR PRESSURE SENSOR APPARATUS
Yasuo Yamaguchi, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 29, 1995, Ser. No. 521,061
Claims priority, application Japan, Aug. 30, 1994, 6-205448
Int. Cl.[6] H01L *27/14;29/82;29/84*
U.S. Cl. 257—417 **9 Claims**

1. A semiconductor pressure sensor apparatus comprising:
semiconductor pressure sensing means for detecting pressure;
a seating base having a center portion on which said semiconductor pressure sensing means is mounted and a peripheral portion for sealing attachment to an external element;
a signal line extending through said seating base and electrically connected to said semiconductor pressure sensing means for outputting a signal indicating pressure detected by said semiconductor pressure sensing means; and



annular leakage prevention means, disposed on said seating base surrounding said semiconductor pressure sensing means and said signal line, for preventing molten resin, during sealing of said semiconductor pressure sensing means in said resin, from reaching said peripheral portion.

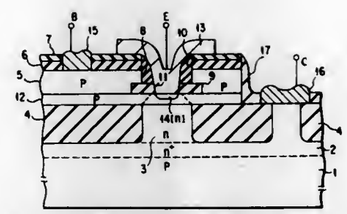
5,604,373
CIRCUIT AND METHOD OF REVERSE VOLTAGE PROTECTION USING A LATERAL TRANSISTOR HAVING A COLLECTOR RING SURROUNDING ITS BASE REGION
David M. Susak, Phoenix, and Randall C. Gray, Tempe, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Apr. 3, 1995, Ser. No. 415,889
Int. Cl.[6] H01L *23/60*
U.S. Cl. 257—546 **20 Claims**



1. A reverse protection circuit, comprising a lateral transistor having an emitter region with a first conductivity type disposed in an epitaxial region having a second conductivity type and coupled to a first power supply conductor, and a base region and collector region coupled together to a second power supply conductor, where said collector region has said first conductivity type disposed in said epitaxial region having said second conductivity type and forms a collector ring that surrounds said base region of said lateral transistor.

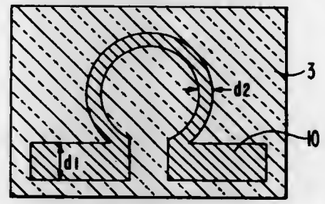
5,604,374
SEMICONDUCTOR DEVICE AND MANUFACTURING METHOD THEREOF
Kazumi Inou, Yokohama, and Yasuhiro Katsumata, Chigasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Mar. 7, 1995, Ser. No. 399,659
Claims priority, application Japan, Mar. 15, 1994, 6-044367
Int. Cl.[6] H01L *27/082;29/70*
U.S. Cl. 257—593 **16 Claims**

1. A semiconductor device comprising:
a semiconductor substrate having a main surface;



a first semiconductor region of a first conductivity type, formed on said main surface of said semiconductor substrate, said first semiconductor region being surrounded with a first insulation film;
a second semiconductor region of a second conductivity type, formed on said first insulation film and said first semiconductor region by an epitaxial growth technique;
a second insulation film, formed on said second semiconductor region, an end portion of said second insulation film being positioned just above said first insulation film, and having an opening at a central portion thereof to be positioned just above said first semiconductor region; and
a third semiconductor region of a first conductivity type formed on a surface of said second semiconductor region exposed through said opening of said second insulation film.

5,604,375
SUPERCONDUCTING ACTIVE LUMPED COMPONENT FOR MICROWAVE DEVICE APPLICATION
Aip T. Findikoglu, College Park, Md., and Michitomo Iiyama, Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan, and University of Maryland, College Park, Md.
Filed Feb. 28, 1994, Ser. No. 202,570
Int. Cl.[6] H01L *39/00*
U.S. Cl. 257—661 **14 Claims**



1. A superconducting active lumped component for a microwave device comprising:
a substrate;
a first superconducting portion of an oxide superconductor provided on said substrate;
an insulator layer formed on the first superconducting portion;
a second conductive portion arranged on the insulator layer, wherein said substrate, said first superconducting portion, said insulator layer, and said second conductive portion form a superconducting active lumped component; and
means for applying a dc bias voltage between the first superconducting portion and the second conductive portion, wherein one of a conductivity of the first superconducting portion and a dielectric property of the insulator layer is changed by said dc bias voltage such that one of a microwave reactance and a microwave resistance of the active lumped component is changed.

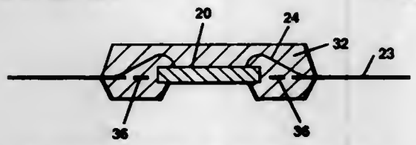
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5,604,376

PADDLELESS MOLDED PLASTIC SEMICONDUCTOR CHIP PACKAGE

William R. Hamburgen, Palo Alto; John S. Fitch, Newark, both of Calif., and Yezdi N. Dordi, Cambridge, Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 30, 1994, Ser. No. 269,294
Int. Cl.[6] H01L 23/495
U.S. Cl. 257—676 11 Claims



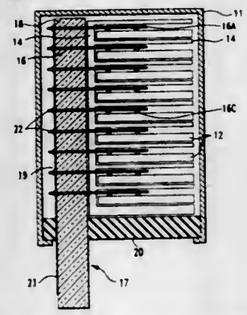
1. A molded semiconductor chip package comprising:
a lead frame having an opening therein;
a semiconductor chip having an active front side and a nonactive backside, said semiconductor chip having lateral dimensions smaller than those of the lead frame opening and being positioned within said lead frame opening with the nonactive backside of the semiconductor chip fully unsupported by said lead frame;
bonding wires extending between the active front side of the semiconductor chip and bonding pads carried by the lead frame; and
a molded body encasing said lead frame and said semiconductor chip with the nonactive back side of said semiconductor chip exposed and facing outside the package, said molded body including a stress relief feature which if a ring surrounding the outside edges of the semiconductor chip.

5,604,377

SEMICONDUCTOR CHIP HIGH DENSITY PACKAGING

Anthony M. Palagonia, Undorhill, Vt., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Oct. 10, 1995, Ser. No. 541,848
Int. Cl.[6] H01L 23/02
U.S. Cl. 257—685 10 Claims



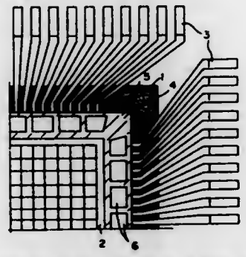
1. A package for semiconductor devices comprising:
a rack, consisting of a support having first and second major surfaces and having a plurality of parallel, juxtaposed, cantilevered plates on said first major surface;
said support having a plurality of wiring elements on said second major surface thereof;
a semiconductor chip having a fixed thickness between two of said plates;
the spacing between said two of said plates being greater than the thickness of the chip therebetween; and
conductive means coupling said semiconductor chip to selected ones of said wiring elements.

5,604,378

SEMICONDUCTOR DEVICE, ITS LEAD FRAME, AND HEAT SPREADER HAVING THROUGH HOLES

Tadashi Kimura, Hamura, and Takaya Yusa, Koganei, both of Japan, assignors to Sumitomo Metal Mining Company, Limited, Tokyo, Japan

Filed Apr. 7, 1994, Ser. No. 224,543
Claims priority, application Japan, Apr. 7, 1993, 5-103800
Int. Cl.[6] H01L 23/10;23/34
U.S. Cl. 257—706 10 Claims



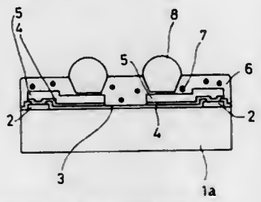
1. A semiconductor device including a semiconductor chip, a heat spreader having a central portion to which said chip is bonded by a bonding material of good thermal conductivity, a multiplicity of leads bonded to the edge of said heat spreader by an insulating material coated with an adhesive, said leads having inner ends connected to said chip by bonding wires, and a casing molded from a resin and enclosing said chip and heat spreader, wherein said heat spreader has a ring-shaped portion defined between said central portion and said inner ends of said leads, bridged by said wires, and having a width of at least 0.5 mm, said ring-shaped portion having a plurality of through holes occupying at most 60% by area of said ring-shaped portion, each of said holes having a width of at least 0.5 mm.

5,604,379

SEMICONDUCTOR DEVICE HAVING EXTERNAL ELECTRODES FORMED IN CONCAVE PORTIONS OF AN ANISOTROPIC CONDUCTIVE FILM

Katsunobu Mori, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 30, 1995, Ser. No. 452,691
Claims priority, application Japan, Sep. 21, 1994, 6-226807
Int. Cl.[6] H01L 23/48;23/52;29/40
U.S. Cl. 257—738 6 Claims



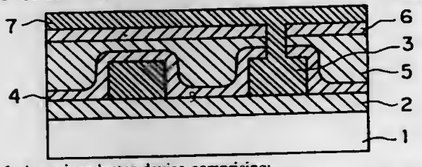
1. A semiconductor device comprising:
a semiconductor chip,
a plurality of electrode pads formed on the semiconductor chip,
a metal wiring formed on the semiconductor chip and having a desired pattern and connected to the electrode pad,
an anisotropic conductive film containing fine conductive particles and laminated on the semiconductor chip including the metal wiring, and
an external electrode arranged on the semiconductor chip, in which the anisotropic conductive film has a concave portion at a desired portion on the metal wiring and the external electrode is positioned in the concave portion and connected to the fine conductive particles whereby the metal wiring is connected to the external electrode through the intermediary of the fine conductive particles present in the anisotropic conductive film.

5,604,380

SEMICONDUCTOR DEVICE HAVING A MULTILAYER INTERCONNECTION STRUCTURE

Hiroyuki Nishimura; Hiroshi Adachi; Etsushi Adachi; Shigeyuki Yamamoto; Shintaro Minami; Shigeru Harada; Toru Tajima, and Kimio Hagi, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 10, 1995, Ser. No. 401,804
Int. Cl.[6] H01L 29/41;29/51
U.S. Cl. 257—758 8 Claims



1. A semiconductor device comprising:
a first wiring layer on which a given wiring pattern is formed;
an interlayer insulating layer formed on the first wiring layer so as to have a contact hole and absorb irregularity due to the first wiring layer; and
a second wiring layer formed by providing a given pattern on the interlayer insulating layer:
said second wiring layer and said first wiring layer being connected through the contact hole provided in the interlayer film at a predetermined position;
wherein the interlayer insulating layer has a flattening film component which is a cured resin film made of a resin material containing one or more silicone ladder polymers of which 20 to 60% by wt. is hydrogen silsesquioxane, so as to adjust the carbon atom content of said flattening film for setting an etching rate on production to a predetermined extent, the silicone ladder polymers having the formula:

$$(HO)_2(R_2Si_2O_3)_nH_2$$

wherein n denotes an integer which defines the weight average molecular weight of the silicone ladder polymer to within the range of 2,000 to 100,000; and R represents one or more of a hydrogen atom, lower alkyl or phenyl.

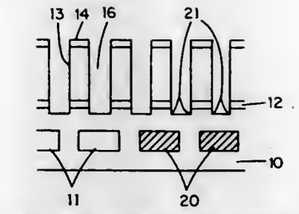
5,604,381

SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING WITHOUT UNDERCUTTING CONDUCTIVE LINES

Lewis Shen, Cupertino, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Apr. 19, 1995, Ser. No. 423,497
Int. Cl.[6] H01L 23/485
U.S. Cl. 257—773 9 Claims

1. A semiconductor device comprising:
a dielectric layer;
a dense array of upper conductive lines on the dielectric layer, wherein:
the dielectric layer contains functional circuit components and one or more selectively placed non-functional circuit components such that the dense array of upper conductive lines on the dielectric layer extends over the functional circuit components and over the one or more selectively placed non-functional circuit components;
wherein all of the non-functional circuit components included in the device are disposed only directly under portions of the dense array of upper conductive lines; and



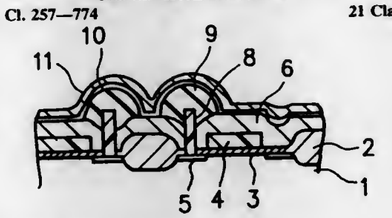
wherein the distance between upper conductive lines is less than about 1.0 microns.

5,604,382

SEMICONDUCTOR DEVICE WITH PILLAR-SHAPED CONTACT LAYER

Kuniaki Koyama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 23, 1994, Ser. No. 346,302
Claims priority, application Japan, Nov. 25, 1993, 5-318939
Int. Cl.[6] H01L 29/40;27/04
U.S. Cl. 257—774 21 Claims



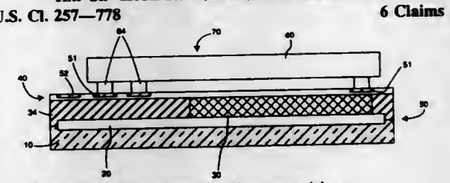
1. A semiconductor device comprising:
a first conductive layer;
an insulating layer formed on the first conductive layer;
a plurality of contact holes formed through the insulating layer;
a second conductive layer consisting of a plurality of pillar-shaped contacts each respectively formed in a corresponding one of the contact holes;
the pillar-shaped contacts each respectively having a projecting portion projecting above the insulating layer, with an equivalent sectional size to a remaining portion standing in the corresponding contact hole; and
a third conductive layer consisting of a plurality of conductive portions each respectively selectively grown on the projecting portion of a corresponding one of the pillar-shaped contacts.

5,604,383

STABILIZED POWER SUPPLY DEVICE USING A FLIP CHIP AS AN ACTIVE COMPONENT

Kazuo Matsuzaki, Nagano, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed May 11, 1995, Ser. No. 439,579
Claims priority, application Japan, May 11, 1994, 6-097088
Int. Cl.[6] H01L 23/48;29/40;23/28; H05K 7/20
U.S. Cl. 257—778 6 Claims



1. A stabilized power supply device, comprising:

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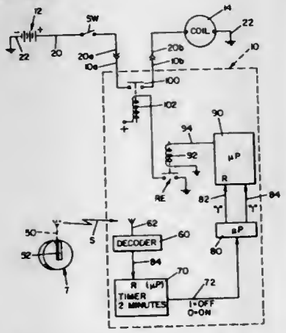
a substrate;
a passive part laminate layered on said substrate and having a single flat board shape;
said passive part laminate including a thin charge storage film element;
a thin magnetic inductive film element laminated on said thin charge storage film element;
an active part incorporated in a flip chip including semiconductors and bump electrodes;
a plurality of terminals disposed on an upper surface of said passive part laminate for connecting said passive part laminate to said bump electrodes; and
said plurality of terminals being effective for affixing said active part to said passive part laminate.

5,604,384

ANTI-THEFT DEVICE FOR MOTOR VEHICLE

Louis D. Carlo, Litchfield; Larry A. Wise, Atwater; Danut Voiculescu, Cleveland, and John Rutkowski, Cuyahoga Falls, all of Ohio, assignors to Winner International Royalty Corporation, Sharon, Pa.

Filed Feb. 8, 1993, Ser. No. 14,560
Int. Cl.[6] G08C *19/00*
U.S. Cl. 307—10.5 **35 Claims**



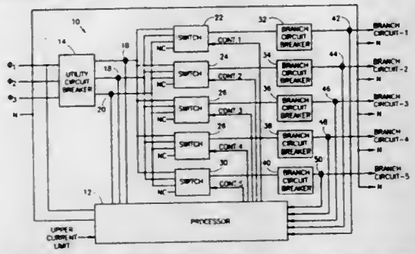
1. An anti-theft device for a motor vehicle, said anti-theft device comprising: a personal identification unit to be carried by an authorized operator of said motor vehicle, said personal identification unit having means for identifying its location in the vicinity of said motor vehicle, a vehicle control unit mounted onto said motor vehicle, said vehicle control unit having a first and second condition, means for allowing operation of said motor vehicle when said control unit is in said first condition and means for inhibiting operation of said motor vehicle when said control unit is in said second condition, means for shifting said control unit into said second condition at a time subsequent to removal of said identification unit from the vicinity of said motor vehicle, said vicinity locating means including a transmitter located in said personal identification unit, said transmitter having means for transmitting an electromagnetic signal periodically at given intervals of time in a coded pattern unique to said transmitter of a given authorized operator, and a receiver mounted in said vehicle control unit, said receiver having means for recognizing said unique coded pattern, and said means for inhibiting including program means for applying a stall sequence when said control unit is shifted to said second condition.

5,604,385

APPARATUS FOR AND METHOD OF EVENLY DISTRIBUTING AN ELECTRICAL LOAD ACROSS A THREE PHASE POWER DISTRIBUTION NETWORK

Yair David, Ramat Hasharon, Israel, assignor to Target Hi-Tech Electronics Ltd., Nejanya, Israel

Filed May 22, 1995, Ser. No. 446,968
Int. Cl.[6] H02J *1/10*
U.S. Cl. 307—52 **6 Claims**



4. A three phase load distribution system for evenly distributing an electrical load, present on a plurality of branch circuits, across a three phase power distribution network, comprising:
a first, second and third current sensor coupled to a first, second and third phase, respectively, of the three phase electrical power distribution network, said
first, second and third current sensors for measuring electrical currents flowing through said first, second and third phase, respectively; first, second and third circuit breakers coupled to said first, second and third phases, respectively;
a plurality of switches, each of said switches coupled to one of the plurality of branch circuits, each of said plurality of switches for connecting any one of said first, second or third phases to one of the plurality of branch circuits;
a plurality of circuit breakers, each coupled to one of the plurality of branch circuits;
a plurality of current sensors for measuring electrical currents flowing through each of said plurality of branch circuits; each of said current sensors coupled to one of said plurality of branch circuits; and
a processor for controlling said plurality of switches so that said electrical currents flowing through each of said first, second and third phases does not exceed a predetermined threshold; said processor coupled to said first, second and third current sensors, said plurality of switches and said plurality of current sensors.

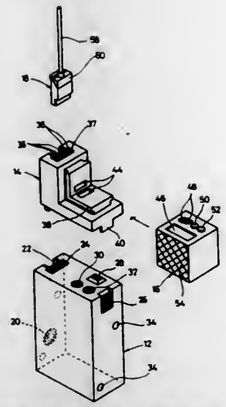
5,604,386

SWITCH DEVICE AND WIRING STRUCTURE THEREFOR

Shigekazu Nagai; Shunichi Notoyama; Shigeru Sugano, and Akio Saitoh, all of Ibaraki-ken, Japan, assignors to SMC Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP92/01159, § 371 Date Mar. 8, 1994, § 102(e) Date Mar. 8, 1994, PCT Pub. No. WO93/05491, PCT Pub. Date Mar. 18, 1993
PCT Filed Sep. 10, 1992, Ser. No. 193,061
Claims priority, application Japan, Sep. 10, 1991, 3-230633
Int. Cl.[6] H01H *35/00*
U.S. Cl. 307—118 **13 Claims**

1. A switch device comprising:
a main body comprising a sensor disposed therein for producing an electrical signal in response to a predetermined air pressure applied to said sensor and a terminal connected to said sensor through which the electrical signal is output;
a setting section detachably mounted on said main body, said setting section comprising a control unit and display means, said control unit connected to the terminal for receiving the electrical signal and externally outputting a detection signal



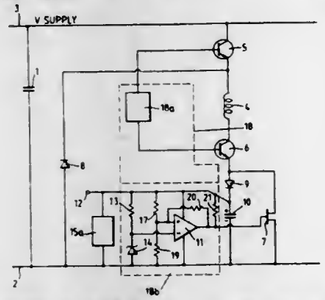
through a signal line detachably connected to the control unit, said detection signal comprising an on-state signal and an off-state signal depending on the electrical signal outputted by said sensor, and said display means displaying thereon detection signal determining conditions which have been set in advance;
wherein said setting section further comprises a control module, said control module having said display means therein, and wherein said control module is detachably mounted on said control unit.

5,604,387

POWER SUPPLY DERIVED FROM MOTOR WINDING

Neil G. Cheyne, Auckland, New Zealand, assignor to Fisher & Paykel Limited, Auckland, New Zealand

Continuation of Ser. No. 810,389, Dec. 19, 1991, abandoned. This application May 11, 1994, Ser. No. 241,067
Claims priority, application New Zealand, Dec. 19, 1990, 236551
Int. Cl.[6] H02J *1/00*
U.S. Cl. 307—125 **15 Claims**



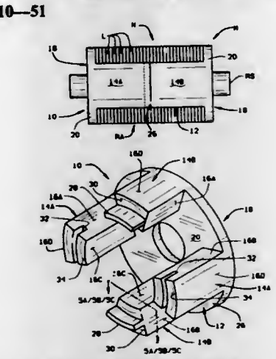
1. A method of producing a low voltage direct current for supplying a low voltage load from an electronically commutated motor system, which system comprises a high voltage direct current supply, a plurality of motor windings each having an inductance, and commutation switches which periodically connect said windings to said high voltage direct current supply to produce a current therein, said method comprising the steps of:
connecting at least one motor winding to said high voltage direct current supply;
diverting the current flowing through said at least one winding through said low voltage load using current diversion means;
controlling the current diversion means in accordance with the requirements of said low voltage load; and
providing a return path through said low voltage load so that current due to the winding inductance in said at least one winding will flow in said low voltage load whenever said high voltage direct current supply is disconnected from said at least one winding by one of said commutation switches.

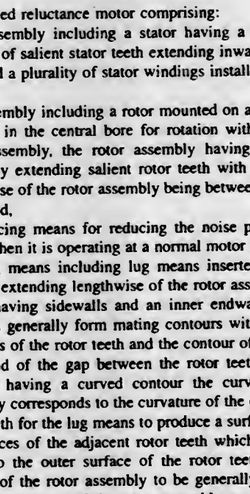
5,604,388

SWITCHED RELUCTANCE ROTOR MOLDED LUG

Gerald N. Baker, and Gary E. Horst, both of St. Louis County, Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Feb. 16, 1994, Ser. No. 197,250
Int. Cl.[6] H02K *5/24*
U.S. Cl. 310—51 **29 Claims**





1. A switched reluctance motor comprising:
a stator assembly including a stator having a central bore, a plurality of salient stator teeth extending inwardly toward the bore, and a plurality of stator windings installed on the stator teeth;
a rotor assembly including a rotor mounted on a rotor shaft and installed in the central bore for rotation with respect to the stator assembly, the rotor assembly having a plurality of outwardly extending salient rotor teeth with gaps extending lengthwise of the rotor assembly being between adjacent rotor teeth; and,
noise reducing means for reducing the noise produced by the motor when it is operating at a normal motor speed, the noise reducing means including lug means inserted in each rotor gap and extending lengthwise of the rotor assembly, each lug means having sidewalls and an inner endwall all of whose contours generally form mating contours with the respective sidewalls of the rotor teeth and the contour of the rotor at the inner end of the gap between the rotor teeth, and an outer endwall having a curved contour the curvature of which generally corresponds to the curvature of the outer face of the rotor teeth for the lug means to produce a surface between the outer faces of the adjacent rotor teeth which generally conforms to the outer surface of the rotor teeth for the outer surface of the rotor assembly to be generally uniform about the circumference of the rotor assembly so to reduce motor noise, and the noise reducing means further including cap means fitting over each end of the rotor assembly and to which the lug means are attached, the cap means being used to install the lug means on the rotor assembly, the lug means and cap means being made of an electrically non-conducting material, and the cap means comprising a pair of end caps, one to fit over each respective end of the rotor assembly, and the lug means comprises a plurality of separate lugs each of

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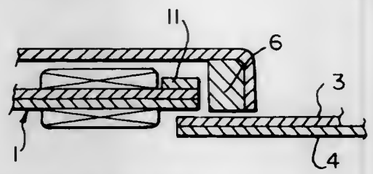
which is insertable into one of the gaps between adjacent rotor teeth, each lug having a first section integrally formed with one end cap and a second section integrally formed with the other end cap, the respective sections of the lugs being inserted into the same gap from opposite ends of the gap with each lug section extending a portion of the length of the gap for the lugs to meet at a location intermediate the ends of the gap, and further including socket means including means formed on the respective contacting ends of the lug sections for the lug sections to interconnect with each other, the socket means including a tab extending outwardly from the contacting end of one of the lug section and a pocket formed in the contacting end of the other lug section, the pocket being sized to receive the tab to lock the respective sections of the lug together whereby the noise reducing means is installed on the rotor assembly so as to remain in place when the motor is operating at speed, the tab comprising a projection whose shape generally conforms to the shape of the contacting end of the lug section, the dimensions of the projection being smaller than the dimensions of the lug section at the contacting end thereof, and the contacting end of the other lug section has a circumferentially extending shoulder formed thereon defining a pocket in which the projection fits to matingly connect the lug sections.

5,604,389

SPINDLE MOTOR

Nobuya Nitta; Saburou Kikuchi, and Masahiro Inoue, all of Gunma, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Feb. 10, 1994, Ser. No. 194,315
Claims priority, application Japan, Feb. 10, 1993, 5-022241
Int. Cl.[6] H02K *7/14;1/00;1/14*
U.S. Cl. 310—67 R **4 Claims**



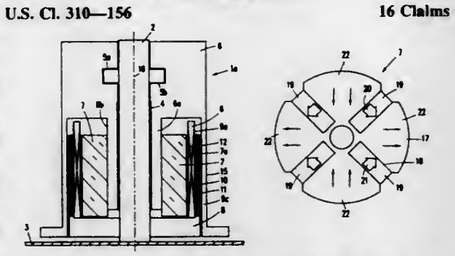
1. A spindle motor comprising:
a base plate having a plurality of openings;
a disk-shaped rotor fitted rotatably to said base plate;
a magnet fitted to said rotor, said magnet arranged on a circumference of said rotor;
a stator core fixed to said base plate, said stator core being made of a magnetic material, said stator core including radially extending poles and teeth provided at the tips of said poles, and said stator core being arranged inside said magnet, with said teeth facing said magnet;
protruding parts provided at the tips of said teeth of said stator core, said protruding parts protruding in a direction away from said base plate;
coils corresponding to said openings of said base, each of said coils is wound around one of said poles of said stator core;
wherein a portion of each of said coils is received in corresponding one of said opening of said base; and
wherein a printed wiring board is provided between said base plate and said stator core, openings are provided in said printed wiring board, and a part of each of said coils is inserted into one of said openings in said printed wiring board.

5,604,390

PERMANENT MAGNET MOTOR WITH RADICALLY MAGNETIZED ISOTROPIC PERMANENT MAGNET CYLINDRICAL YOKE

Bernd Ackermann, Aachen, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 30, 1995, Ser. No. 498,290
Claims priority, application Germany, Jul. 6, 1994, 44 23 620.4
Int. Cl.[6] H02K *21/12*
U.S. Cl. 310—156 **16 Claims**



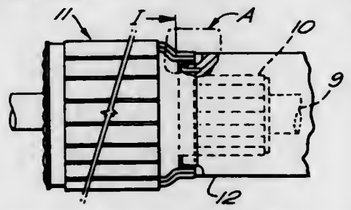
1. An electric motor with permanent-magnet excitation, comprising: motor parts which are movable relative to one another, wherein one motor part forms a multi-pole excitation field in an air gap by means of permanent magnets and the other motor part comprises a coil configuration situated in the air gap, the permanent-magnetically excited motor part comprising a cylindrical yoke having substantially radial slots uniformly spaced about the circumference in which permanent magnets are mounted, said permanent magnets being magnetized in a circumferential direction with directions of magnetisation which change from magnet to magnet, wherein the cylindrical yoke comprises an isotropic permanent-magnet material which in yoke portions between the permanent magnets is predominantly radially magnetized with such apolarity that the polarity of the resulting magnetic field in the air gap corresponds to the polarity of the magnetic field produced by the permanent magnets, and wherein the permanent magnets in the slots comprise an anisotropic permanent-magnet material.

5,604,391

ARMATURE

Douglas A. Edgerton, Wallington, Great Britain, assignor to Watliff Company Limited, London, England

Continuation of Ser. No. 302,919, Sep. 21, 1994, abandoned. This application May 22, 1996, Ser. No. 651,531
Claims priority, application United Kingdom, Mar. 26, 1992, 9206637
Int. Cl.[6] H01R *39/32*
U.S. Cl. 310—234 **15 Claims**



1. A method of connecting a winding to a segment of a commutator to form an armature for an electric rotary machine comprising the steps of:
positioning end portions of first and second conductors of the winding against a contact surface of a connection portion of the segment to form a stack,

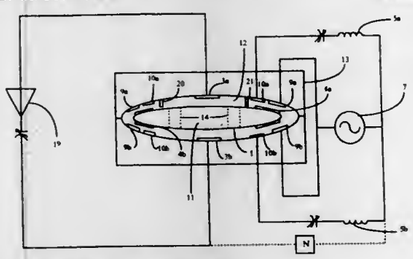
engaging a connection member against the stack so that the end portions of the conductors are interposed between the connection member and the contact surface,
engaging a support member with a support surface of the connection portion, so that energy can be applied via the connection member and the support member to secure the stack together, and whereby the stack is supported and the connection energies confined to the stack, and
disengaging the connection member and the support member from the stack after the stack is secured together.

5,604,392

LEVITATED CRYSTAL RESONATOR

John R. Vig, Colts Neck, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 12, 1995, Ser. No. 439,745
Int. Cl.[6] H01L *41/08*
U.S. Cl. 310—309 **17 Claims**



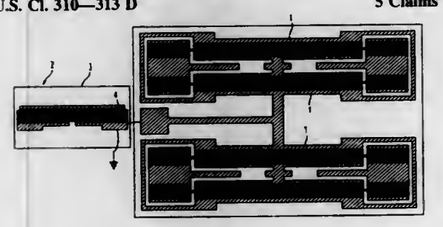
1. A resonator circuit comprising:
a crystalline resonator having an active resonating region;
means to levitate the resonator comprising an inductance/capacitance (LC) resonant circuit having at least two electrodes separated from one another and a third electrode mounted on the resonator outside the active region of the resonator, the LC circuit having a natural frequency; and
means to excite the resonator for producing a signal at a predetermined frequency, wherein the means to excite the resonator is coupled to the resonator in an electrodeless configuration.

5,604,393

SURFACE ACOUSTIC WAVE DEVICE

Yoshibisa Suzuki; Toshiyasu Fujiwara, and Katsuo Sato, all of Chiba, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Mar. 16, 1995, Ser. No. 405,008
Claims priority, application Japan, Aug. 12, 1994, 6-211796
Int. Cl.[6] H01L *41/08*
U.S. Cl. 310—313 D **5 Claims**



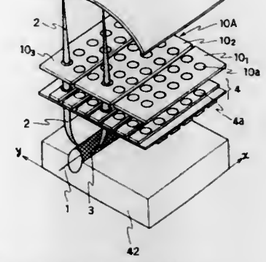
1. A surface acoustic wave device comprising: a plurality of surface acoustic wave filters connected in cascade, with an impedance matching element interposed between two adjoining surface acoustic wave filters, wherein
said impedance matching element is constructed by a surface acoustic wave resonator,
each said filter has a pass band and includes a first piezoelectric substrate having a first electromechanical coupling factor,
said resonator has an inductive band and includes a second piezoelectric substrate having a second electromechanical coupling factor, and
the second factor is greater than the first factor so that the inductive band of said resonator is wider than the pass band of said filter.

5,604,394

IMAGE DISPLAY APPARATUS

Masato Saito; Ryo Suzuki; Tetsuya Shiroishi; Kouichi Sakurai; Yoshio Yamane, and Hidenobu Murakami, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP93/01600, § 371 Date Jul. 6, 1994, § 102(e) Date Jul. 6, 1994, PCT Pub. No. WO94/11896, PCT Pub. Date May 26, 1994
PCT Filed Nov. 4, 1993, Ser. No. 256,278
Claims priority, application Japan, Nov. 6, 1992, 4-296821
Int. Cl.[6] H01J *29/70;1/62*
U.S. Cl. 313—422 **17 Claims**



1. An image display apparatus comprising:
a cathode for emitting electrons;
a perforated cover electrode for leading out and accelerating the electrons emitted from the cathode;
a flat shaped control electrode disposed almost parallel with the cathode and having an electron-pass aperture permitting the emitted electrons to pass therethrough, the control electrode being adapted to control an electron beam passing through the electron-pass aperture;
a luminous element which emits light when irradiated with the emitted electrons and is formed on a curved screen panel; and
a focusing electrode disposed between the control electrode and the luminous element and having an electron-pass aperture and a means for correcting the beam diameter of the electron beam on the luminous element which varies in accordance with a variation in the distance between the luminous element and the control electrode, wherein said means for correcting creates at least two kinds of the electron beams having different focal points from the focusing electrode.

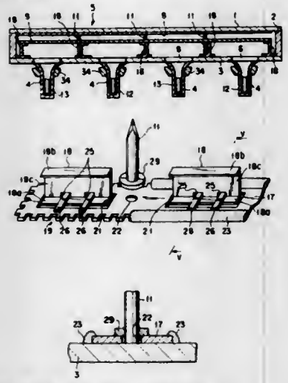
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5,604,395

COLOR CATHODE-RAY TUBE HAVING SUBSTANTIALLY FLAT FACE AND REAR PLATES OPPOSING EACH OTHER

Takashi Nishimura; Kazuyuki Seino, both of Fukaya; Tohru Takahashi, Kumagaya, and Yuuji Haraguchi, Fukaya, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 12, 1994, Ser. No. 273,871
Claims priority, application Japan, Jul. 13, 1993, 5-172899; Jun. 13, 1994, 6-129384
Int. Cl.[6] H01J 29/02;31/20
U.S. Cl. 313—482 21 Claims



1. A color cathode-ray tube comprising:
a vacuum envelope having a substantially flat face plate and a substantially flat rear plate opposing the face plate;
a phosphor screen formed on an inner surface of the face plate;
a fixing member fixed to an inner surface of the rear plate;
a shadow mask arranged in the envelope;
mask support means for supporting the shadow mask to face the phosphor screen at a predetermined distance; and
plate support means for supporting a load of atmospheric pressure acting on the face plate and the rear plate, the mask support means and the plate support means being fixed to the fixing member and having end portions that contact the inner surface of the rear plate through at least one of an opening and a notch in the fixing member.

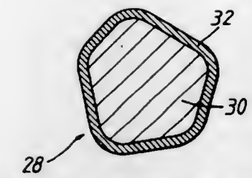
5,604,396

LUMINESCENT MATERIAL FOR MERCURY DISCHARGE LAMP INCLUDING PHOSPHOR AND A CONTINUOUS PROTECTIVE LAYER

Akio Watanabe, Kanagawa-ken; Shoji Naoki, Hyogo-ken; Masaaki Tamatani, Kanagawa-ken; Fumiyasu Yanagisawa, Kanagawa-ken, and Kenji Terashima, Kanagawa-ken, all of Japan, assignors to Toshiba Lighting & Technology Corporation, Tokyo, and Kabushiki Kaisha Toshiba, Kawasaki, both of Japan

Filed Jul. 29, 1994, Ser. No. 282,454
Claims priority, application Japan, Jul. 30, 1993, 5-190548; Aug. 24, 1993, 5-209473; Mar. 29, 1994, 6-059545
Int. Cl.[6] H01J 61/44
U.S. Cl. 313—485 19 Claims

1. A luminescent material for a mercury discharge lamp comprising:
a phosphor material including phosphor particles for emitting a luminous flux upon excitation by ultraviolet radiation at 254 nm; and
a protective layer continuously formed on the phosphor particle and containing at least one metal oxide selected from the group consisting of MgO, Y_2O_3, La_2O_3, Sm_2O_3, Gd_2O_3, Dy_2O_3, Ho_2O_3, Er_2O_3, Yb_2O_3, Lu_2O_3, CaO, ZrO_2, SrO, BaO, α-Al_2O_3, and BeO for suppressing the deterioration of the phosphor material, said protective layer being formulated from an alcohol solution containing metal alkoxide.

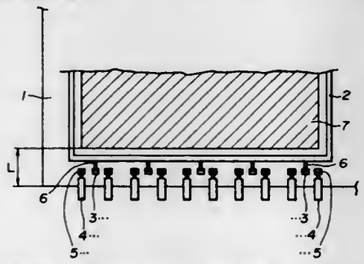


5,604,397

IMPROVED TERMINAL LEAD STRUCTURE FOR A FLOURESCENT DISPLAY DEVICE

Tadashi Mizohata, and Masashi Suzuki, both of Mobara, Japan, assignors to Futaba Denshi Kogyo K.K., Mobara, Japan

Filed Dec. 28, 1994, Ser. No. 364,929
Claims priority, application Japan, Dec. 28, 1993, 5-070427
Int. Cl.[6] H01J 1/00
U.S. Cl. 313—495 1 Claim



1. A fluorescent display device comprising:
a vacuum envelope having a substrate with anodes formed on said substrate, a control electrode and a cathode;
control electrode terminals provided on said substrate;
leads for connecting said control electrode terminals to said control electrode;
anode terminals provided on said substrate; and
lead-in wires passing through said vacuum envelope and connected to said anode terminals;
wherein said control electrode terminals and said anode terminals are alternately arranged to form a single row along an outer peripheral edge of said substrate.

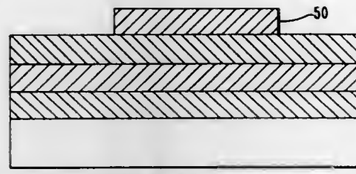
5,604,398

ELECTROLUMINESCENCE LIGHT-EMITTING DEVICE WITH MULTI-LAYER LIGHT-EMITTING STRUCTURE

Tae-Hyoung Zyung; Jang-Joo Kim, and Wol-Yon Hwang, all of Daejeon, Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Daejeon-shi, Rep. of Korea

Filed Dec. 19, 1994, Ser. No. 359,185
Claims priority, application Rep. of Korea, Sep. 16, 1994, 94-23652
Int. Cl.[6] H01J 1/62; H05B 33/12;33/14
U.S. Cl. 313—506 1 Claim

1. An electroluminescence light-emitting device for generating an optical wavelength, the device comprising:
a substrate;



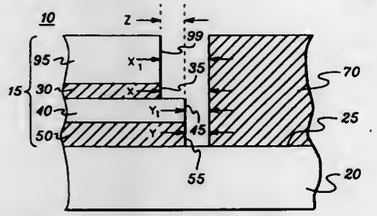
an ITO layer posed on the substrate;
at least one pair of opposed and contacting light-emitting layers creating an interface with each light-emitting layer emitting light of an optical wavelength different from each other light-emitting layer, each interface emitting light of an optical wavelength different from the light emitted from the light-emitting layers and the interface of any other pair of opposed light-emitting layers; and
a metal electrode formed on an upper light-emitting layer of at least one pair of light-emitting layers; and wherein
the ITO layer is an anode and the metal electrode is a cathode and each light-emitting layer is formed from an organic polymer.

5,604,399

OPTIMAL GATE CONTROL DESIGN AND FABRICATION METHOD FOR LATERAL FIELD EMISSION DEVICES

Jack A. Mandelman, Stormville, N.Y., and Michael D. Potter, Grand Isle, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 6, 1995, Ser. No. 470,320
Int. Cl.[6] H01J 1/62;63/04;1/46;1/42
U.S. Cl. 313—512 12 Claims



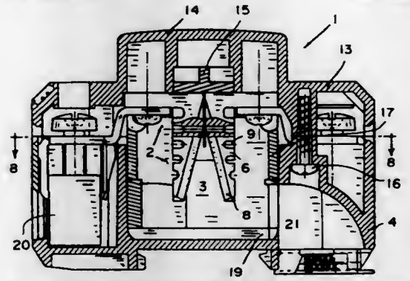
1. A lateral field emission device comprising:
a substrate having an upper surface;
an electron emitter cathode member disposed relative to said substrate so as to extend parallel to said upper surface of said substrate, at least one end of said cathode member having a tip for emitting electrons by field emission;
a gate member for controlling emission of electrons from said tip of said electron emitter cathode member tip, said gate member disposed beneath and extending laterally beyond said cathode member tip; and
an anode member for receiving electrons emitted by field emission from the tip of said cathode member, said anode member positioned on said substrate and spaced a predetermined first distance from said gate member and a predetermined second distance from the tip of said emitter cathode member, said second distance being between about 400 and about 2000 Å and greater than said first distance so that said gate member ends in an edge positioned between said cathode member tip and said anode.

5,604,400

OVERVOLTAGE PROTECTION ELEMENT

Holger Altmaier, Steinheim; Klaus Scheibe; Eberhard Lehmann, both of Kiel, and Gerhard Oertel, Blomberg, all of Germany, assignors to Phoenix Contact GmbH & Co., Germany

Continuation of Ser. No. 251,759, May 31, 1994, abandoned.
This application Apr. 10, 1996, Ser. No. 631,825
Claims priority, application Germany, Jan. 28, 1994, 44 02 615.3; May 31, 1994, 43 17 933.9
Int. Cl.[6] H01T 4/14
U.S. Cl. 313—621 26 Claims



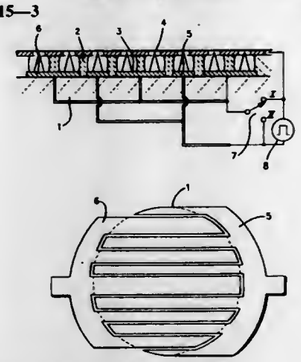
1. In an overvoltage protection element for discharging transient overvoltages of the type in which a disruptive discharge-spark air gap is active between two electrodes contained in a housing, each electrode being essentially L-shaped having a connecting leg and an arcing horn running at an acute angle to the connecting leg, and the arcing horns of the electrodes having spaced facing surfaces between which the disruptive discharge-spark air gap is formed and the connecting legs of the electrodes being directed away from each other, the improvement wherein the arcing horn of each electrode is provided with at least one hole running therethrough in an area close to the connecting leg and and parallel to said connecting leg as a means for setting in motion an arc produced next to said at least one hole.

5,604,401

FIELD-EMISSION COLD CATHODE FOR DUAL-MODE OPERATION USEABLE IN A MICROWAVE TUBE

Hideo Makishima, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 22, 1994, Ser. No. 361,535
Claims priority, application Japan, Dec. 22, 1993, 5-323580
Int. Cl.[6] H01J 23/04
U.S. Cl. 315—3 15 Claims



1. A field-emission cold cathode comprising:
an insulative substrate having a first portion and a second portion;
a first electrode disposed on said first portion;

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a second electrode disposed on said second portion; and

a plurality of electron-emitting electrodes, each having a pointed tip, disposed on said first electrode and second electrode, respectively;

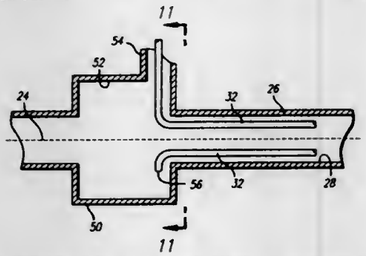
said first electrode and said second electrode comprising interfitted comb-shaped arrays of parallel strip portions.

5,604,402

HARMONIC GYRO TRAVELING WAVE TUBE HAVING A MULTIPOLE FIELD EXCITING CIRCUIT

Robert S. Symons, Los Altos, Calif., assignor to Litton Systems, Inc., Woodland Hills, Calif.

Filed Jan. 31, 1995, Ser. No. 381,138
Int. Cl.[6] H01J *25/00*
U.S. Cl. 315—5 **12 Claims**



1. A harmonic gyro-TWT having means for projecting an electron beam, a waveguide and the electron beam projected through said waveguide encircling an axis of said waveguide, the gyro-TWT comprising:

a plurality of evenly spaced electrical conductors disposed within said waveguide parallel to said axis and spaced a first fixed distance from an inner wall of said waveguide, said electrical conductors being connected together at an end of said waveguide; and

means for exciting said electrical conductors in phase with an AC signal, said exciting means being coupled to at least one of said electrical conductors;

wherein, a multipole field having an order equal to twice the number of said electrical conductors is defined within the waveguide.

5,604,403

COLOR MONITOR MAGNETIC SHIELD

Moises Levy, Melrose Park, and Ralph Wasserman, Willow Grove, both of Pa., assignors to Aydin Corporation, Horsham, Pa.

Filed Jun. 6, 1995, Ser. No. 469,384
Int. Cl.[6] H01J *29/06*
U.S. Cl. 315—8 **33 Claims**

1. An apparatus for reducing the visible distortion of a color cathode ray tube (CRT) of a color monitor caused by an external magnetic field, the CRT having a central longitudinal axis, a rear portion and a front viewing surface, the front viewing surface having a portion disposed generally perpendicular to the central longitudinal axis and peripheral edges, the external magnetic field including a component aligned with the central longitudinal axis in a first direction, said apparatus comprising:

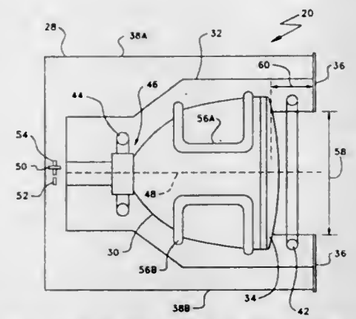
(a) a bucking coil disposed adjacent the front viewing surface of the CRT and extending along at least a portion of the peripheral edges thereof for generating a first magnetic field also aligned with the central longitudinal axis but in a second direction opposite to said first direction in order to oppose the component of the external magnetic field that is aligned with said central longitudinal axis;

(b) a convergence coil disposed adjacent the rear portion of the CRT for generating a second magnetic field also aligned with the central longitudinal axis in said second direction, said convergence coil being electrically coupled to said bucking coil;

(c) sensor means located immediately adjacent the rear portion of the CRT and remote from said bucking coil and said convergence coil for directly sensing at a single location the external magnetic field aligned with the central longitudinal axis and for generating an output signal indicative thereof;

(d) control means providing electrical current to said bucking coil and said convergence coil based on said output signal; and

(e) passive magnetic shield means covering a portion of the CRT while leaving a major portion of the front surface thereof exposed for unobstructed viewing by an operator of the monitor.

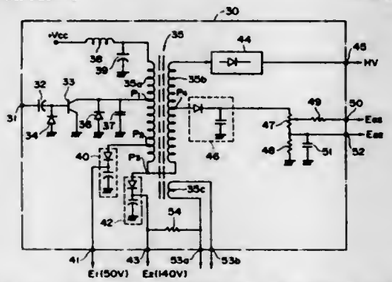


5,604,404

DRIVE CIRCUIT FOR A CATHODE RAY TUBE

Hiroshi Sahara, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 183,334, Jan. 19, 1994, abandoned.
This application Nov. 7, 1995, Ser. No. 554,799
Claims priority, application Japan, Jan. 21, 1993, 5-008306; Jan. 21, 1993, 5-008313
Int. Cl.[6] H01J *29/06*
U.S. Cl. 315—8 **5 Claims**



1. A drive circuit for a flat cathode ray tube having a cathode electrode, a first grid electrode and a second grid electrode, comprising:

a high-voltage generator receiving horizontal drive pulses for generating a first fixed DC voltage supplied to said cathode electrode, a fixed voltage supplied to said second grid electrode of said cathode ray tube, a high voltage supplied to said cathode ray tube, and a second fixed DC voltage;

a differential amplifier for supplying a video signal for producing a video display on said cathode ray tube;

means connected to said high-voltage generator and to said differential amplifier for combining said second fixed DC voltage and said video signal and for adjusting said second fixed DC voltage to effect cutoff adjustment and to supply a combined DC voltage and video signal to said first grid electrode of said cathode ray tube, said cutoff adjustment and said fixed voltage supplied to said second grid electrode being mutually independent; and

a constant-current source for supplying a constant current to said differential amplifier and for switching said differential amplifier to blank said video signal according to a blanking pulse signal,

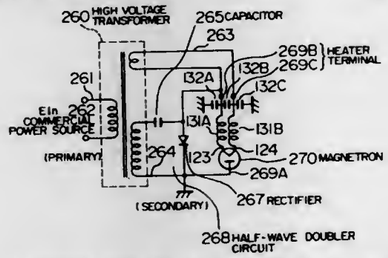
wherein said high-voltage generator includes a secondary coil that operates independently from said differential amplifier to produce a pulsed voltage, said cathode electrode being energized by said first fixed DC voltage and also by said pulsed voltage.

5,604,405

MAGNETRON WITH FEED-THROUGH CAPACITOR HAVING A DIELECTRIC CONSTANT EFFECTING A DECREASE IN ACOUSTIC NOISE

Toshio Ogura, Mobara, Japan, assignor to Hitachi, Ltd., Tokyo, and Hitachi Nisshin Electronics Co., Ltd., Chiba-ken, both of Japan

Filed Jul. 7, 1994, Ser. No. 272,118
Claims priority, application Japan, Jul. 7, 1993, 5-168010
Int. Cl.[6] H01J *23/54*
U.S. Cl. 315—39.51 **5 Claims**



1. A magnetron device provided with a filter circuit comprising:

first and second choke coils, each choke coil having a first end and a second end, each first end connected to a respective externally protruding lead for supporting a filament of the magnetron device;

a feed-through capacitor connecting second ends of said first and second choke coils, said feed-through capacitor being constructed of a dielectric ceramic material having a relative dielectric constant ϵ_s which satisfies $\sqrt{\epsilon_s} \leqq 50$, to reduce sound pressure of an acoustic wave produced by said dielectric ceramic material without increasing the size of said feed-through capacitor,

said magnetron device being of the magnetron drive power source type for driving by an alternating high voltage of several KV peak-to-peak and in the frequency range of from 20 to 1,000 Hz applied across terminals of said feed-through capacitor.

5,604,406

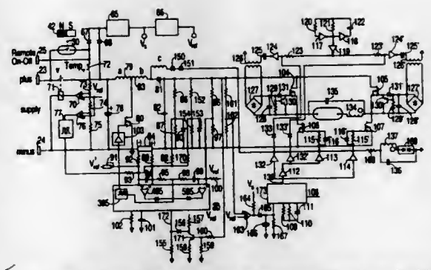
PORTABLE LAMP FOR USE WITH RAPID START METAL HALIDE BULBS

Harry Gaus, Dilsberg, Germany, assignor to Intermacon AG, Zurich, Switzerland

Filed Mar. 29, 1995, Ser. No. 413,139
Int. Cl.[6] H05B *37/02*
U.S. Cl. 315—56 **28 Claims**

1. A lamp assembly for use with a rapid start metal halide bulb, the lamp assembly comprising:

a) a lamp head housing including



i) a circuit board for providing an ignition voltage, an ignition voltage spike, and a supply voltage to the rapid start metal halide bulb, the circuit board including:

1. an input voltage checking circuit for checking an input voltage and for disconnecting the input voltage if the input voltage is below a predetermined threshold, the input voltage checking circuit generating a pulse signal for pulsing the output of the lamp when the input voltage is below a second predetermined limit thereby indicating that the discharge limit of the battery is near;

2. a measuring unit for measuring current flowing through the lamp;

3. a controlled voltage step up circuit for determining when the rapid start metal halide bulb is operating and for providing the ignition voltage when the rapid start metal halide bulb is not operating and for providing a supply voltage after the rapid start metal halide bulb has been ignited, the controlled voltage step up circuit being coupled to the measuring unit and generating the ignition and supply voltages in accordance with the current flowing through the lamp;

4. a lamp voltage polarity switching circuit for switching a polarity of the supply voltage applied to the lamp; and

5. a pulse supply circuit for supplying the ignition voltage spike to the lamp;

ii) power supply contact surfaces for connecting power to the circuit board,

iii) a high voltage resistant socket for holding the rapid start metal halide bulb, the high voltage resistant socket being electrically coupled with the circuit board,

iv) a reflector arranged relative to the high voltage resistant socket, for reflecting light emitted from the rapid start metal halide bulb, and

v) an on-off switch electrically coupled with the circuit board; and

b) a power supply source, the power supply source providing a supply voltage to the lamp head and having contacts.

5,604,407

METHOD AND DEVICE FOR CONTROLLING VEHICLE INTERIOR LIGHTING

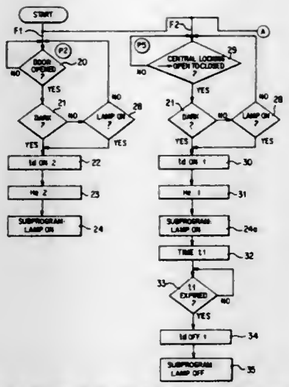
Rudolf Andres, Sindelfingen; Armin Staehle, Nufringen; Reinhold Mickeler, Altdorf; Volker Petri, Aidlingen; Helmut Grickschelt, Sindelfingen; Benno Forstner, Weil der Stadt, and Dieter Freerichs, Ostelsheim, all of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

Continuation of Ser. No. 302,983, Sep. 12, 1994, abandoned.
This application Nov. 7, 1995, Ser. No. 553,190
Claims priority, application Germany, Sep. 10, 1993, 43 30 721.3
Int. Cl.[6] B60Q *1/02*
U.S. Cl. 315—77 **10 Claims**

1. Method for controlling vehicle interior lighting, comprising the steps of:

determining each of a plurality of lighting-relevant vehicle states by interrogating at least one state condition that can be interrogated;

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monitoring the vehicle states and if one of the vehicle states is detected, activating a corresponding control process to turn the interior lighting on or off;

wherein the corresponding control processes to turn the interior lighting on or off each include a respective dimming process, wherein a lighting brightness during a certain time interval is variably set to a range between a maximum brightness and a zero brightness for each vehicle state, said respective dimming process for each vehicle state being determined by corresponding dimming parameters for each vehicle state, and includes variably setting values of said dimming parameters as a function of the vehicle state that is detected and that activates the corresponding control process.

5,604,408

CONTROL DEVICE FOR A FLUORESCENT TUBE, HAVING SYNCHRONIZED BLOCKING OF AUXILIARY AND PRIMARY TRANSISTORS

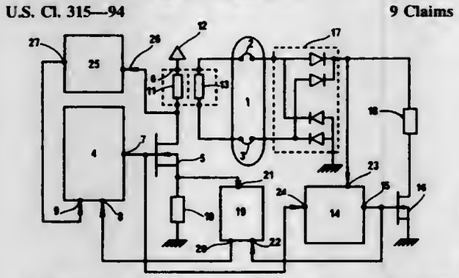
Valery Hamm, Les Pelouses Route du Lude, 72200 La Fleche, France

Filed Apr. 6, 1995, Ser. No. 418,115

Claims priority, application France, Apr. 6, 1994, 94 04046

Int. Cl.[6] H05B *37/02*

U.S. Cl. 315—94 **9 Claims**



1. Device to control a fluorescent tube, supplied with power from a DC source via an accumulating converter comprising a transformer, whose primary is in series with a primary transistor, controlled by a pulse magnitude modulator, and a current measuring means, and whose secondary is connected to the fluorescent tube, said device further comprising:

a rectifying bridge, mounted opposite to the secondary, between preheating electrodes of the tube;

an auxiliary transistor connected to the rectifying bridge, and

an energizing synchronizer connected to the rectifying bridge, receiving at one input the control signal of the primary transistor via the modulator, and controlling the auxiliary transistor **16** via an output,

in such a manner that the blocking of the auxiliary transistor is controlled by the energizing synchronizer in synchronism with the blocking of the primary transistor by the modulator.

5,604,409

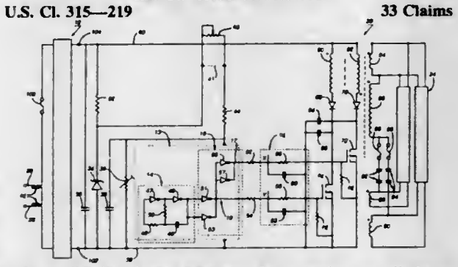
ELECTRONIC LIGHTING CONTROLLER

Dalziel L. Fisher, 21916 Peppercorn Dr., Saugus, Calif. 91350

Continuation-in-part of Ser. No. 835,811, Feb. 14, 1992, abandoned. This application Jul. 12, 1993, Ser. No. 90,520

Int. Cl.[6] H05B *39/00;37/02*

U.S. Cl. 315—219 **33 Claims**



21. A lighting fixture apparatus for powering gas discharge lamps comprising:

an AC power input for receiving an AC input signal from a main line AC power supply;

a rectifier connected to said AC power input for generating a pulsating DC signal from said AC input signal;

first and second transistors, each having an input and an output;

a clock for supplying alternating pulses at a predetermined frequency to said inputs of said first and second transistors to turn said first and second transistors on and off in alternating sequence, said first and second transistors for generating alternating outputs in response to said alternating pulses from said clock;

a transformer having first and second primary windings and a secondary winding, said first and second primary windings each connected to said rectifier and to respective first and second transistor outputs, said primary windings being driven push-pull by said transistor outputs to generate an amplitude modulated signal of relatively small scale with respect to said pulsating DC signal on said pulsating DC signal, said first and second primary windings operating in response to said amplitude modulated signal; and

a gas discharge lamp connected across said secondary winding.

5,604,410

METHOD TO OPERATE AN INCOHERENTLY EMITTING RADIATION SOURCE HAVING AT LEAST ONE DIELECTRICALLY IMPEDED ELECTRODE

Frank Vollkommer, Gauting, and Lothar Hitzschke, Munich, both of Germany, assignors to Patent-Treuhand-Gesellschaft für elektrische Glühlampen mbH, Munich, Germany

PCT No. PCT/DE94/00380, § 371 Date Jul. 11, 1995, § 102(e) Date Jul. 11, 1995, PCT Pub. No. WO94/23442, PCT Pub. Date Oct. 13, 1994

PCT Filed Apr. 5, 1994, Ser. No. 491,872

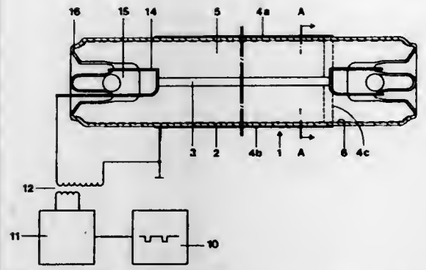
Claims priority, application Germany, Apr. 5, 1993, 43 11 197.1

Int. Cl.[6] H05B *41/00*

U.S. Cl. 315—246 **25 Claims**

1. A method to operate an incoherently emitting radiation source, in particular a discharge lamp (**1**), from an electrical energy supply (**10**, **11**, **12**), by means of an electrically impeded discharge, wherein said radiation source comprises

an at least partially transparent discharge vessel (**2**) of electrically nonconductive material;



a gas filling (**5**) inside the vessel;

at least two electrodes (**3**, **4**) mounted in the vicinity of the gas filling (**5**);

supply lines connecting said electrodes (**3**, **4**) to the electrical energy supply (**10–12**); and

a dielectric layer disposed between at least one electrode (**4**) and the gas filling (**5**),

said method, in accordance with the invention, comprising

causing the electrical energy supply (**10–12**) to furnish energy between the electrodes (**3**, **4**) in the form of a train of voltage pulses having characteristic parameters,

wherein any individual pulse (n) of the train has a voltage parameter $U_{Pn}(t)$ and a pulse duration parameter T_{Pn}, which pulse duration parameter is of the order of magnitude of approximately 1 ns to 5 μs;

wherein each pulse (n) is separated from its successor pulse (n+1) by an idle time parameter of duration T_{On}, which idle time is in the order of magnitude of approximately 500 ns to 1 ms and with an idle time voltage parameter of $U_{On}(t)$;

introducing, during the pulse duration T_{Pn}, predominantly electrical effective power into the gas filling (**5**) by controlling the voltage $U_{Pn}(t)$ of said voltage pulse during said pulse duration;

causing, during the idle time T_{On} duration, the voltage $U_{On}(t)$ to be at a level to permit the gas filling (**5**) to revert to a state which is similar to the state of said gas filling prior to the particular preceding voltage pulse $U_{Pn}(t)$; and

controlling the parameters of the variables

pulse voltage level $U_{Pn}(t)$,

pulse time duration T_{Pn},

voltage during idle time $U_{On}(t)$,

idle time duration T_{On},

mutually relative to one another such that, between the electrodes (**3**, **4**), discharge structures of comparatively low current densities are created.

5,604,411

ELECTRONIC BALLAST HAVING A TRIAC DIMMING FILTER WITH PRECONDITIONER OFFSET CONTROL

Sreeraman Venkitasubrahmanian, Torrance, Calif.; Gert W. Bruning, North Tarrytown, N.Y.; Paul Veldman, Oss, Netherlands; Thomas Farkas, South Euclid, Ohio; Raj Jayaraman, Rancho Palos Verdes, and Yongping Xia, Torrance, both of Calif., assignors to Philips Electronics North America Corporation, New York, N.Y.

Filed Mar. 31, 1995, Ser. No. 422,198

Int. Cl.[6] G05F *1/00*

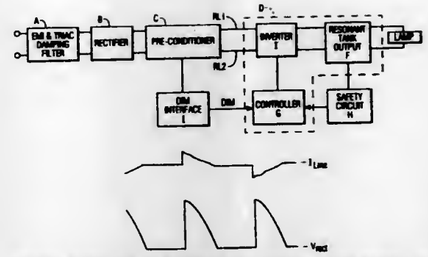
U.S. Cl. 315—307 **15 Claims**

1. A ballast for use with a phase angle dimmer having a phase controlled AC mains supply voltage output, said ballast comprising:

mains input terminals for receiving the phase controlled AC mains supply voltage output by the phase angle dimmer;

converting means connected to said mains input terminals for converting the phase controlled AC voltage to a DC voltage;

ballasting means connected to said converting means for supplying electric power to a gas discharge lamp;



filtering means for suppressing high frequency harmonics, said filtering means including capacitive means exhibiting capacitive characteristics, said capacitive means being charged by said DC voltage from said converting means;

sensing means for sensing the DC voltage from said converting means; and

means connected to said sensing means for discharging said capacitive means when said DC voltage from said converting means is at or near zero.

5,604,412

BRUSHLESS MOTOR AND A CONTROL CIRCUIT THEREOF

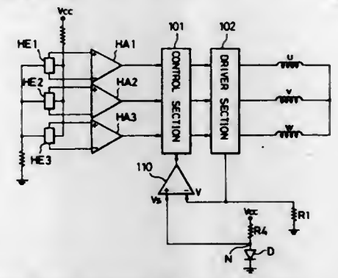
Tadashi Okada, Shiga-ken; Akira Inui, Hikone, and Kazuya Shigemori, Shiga-ken, all of Japan, assignors to Nidec Corporation, Kyoto, Japan

Filed Mar. 16, 1994, Ser. No. 213,859

Claims priority, application Japan, Mar. 19, 1993, 5-059991; Mar. 22, 1993, 5-085110; Mar. 31, 1993, 5-098524

Int. Cl.[6] H02P *6/08*

U.S. Cl. 318—254 **6 Claims**



1. A rotation control circuit of a motor comprising:

a control section for controlling exciting currents to be supplied to the stator coils of a motor in accordance with an output signal of a sensor which detects a rotational position of the motor;

a driver section connected to the control section for supplying predetermined exciting currents to the stator coils in accordance with the control by the control section;

a current detecting circuit connected to the control section for outputting a signal to the control section to stop the supply of the exciting currents when the exciting currents supplied from the driver section to the stator coils becomes larger than a predetermined value, the current detecting circuit receiving a converted voltage of one of the exciting currents and a reference voltage and sending the output signal to the control section when the converted voltage is larger than the reference voltage, the reference voltage being a forward voltage of a PN junction device;

a detecting section for detecting time intervals of edges of an output signal of the sensor; and

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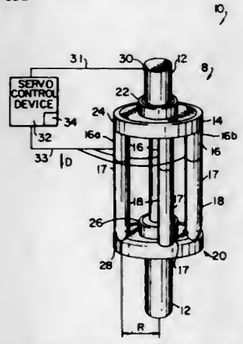
wherein when the interval becomes a predetermined value or less, the detecting section determines that the motor overruns and sends a signal to the control section to stop the motor.

5,604,413

APPARATUS FOR IMPROVING OPERATIONAL PERFORMANCE OF A MACHINE OR DEVICE

Farshad Khorrami, Brooklyn, and Jahangir Rastegar, Stony Brook, both of N.Y., assignors to Polytechnic University, and Omnitek Research & Development, Inc., both of Brooklyn, N.Y.

Filed Sep. 7, 1994, Ser. No. 301,698
Int. Cl.[6] G05D *3/00*
U.S. Cl. 318—632 **47 Claims**



1. Apparatus for compensating for deflection of a deflectable member, said apparatus comprising:

at least one attachment member coupled to said deflectable member, one of said attachment members includes inner and outer members and at least two connecting members respectively fixedly coupled at opposite respective ends thereof to said inner and outer members, said inner member being fixedly attached to said deflectable member, and each of said at least two connecting members has a relatively high stiffness in at least one direction and a relatively low stiffness in another direction; and

actuator means coupled to said at least one attachment member for moving said deflectable member so as to compensate for said deflection of said deflectable member, said actuator means includes an active-type device having a movable portion which moves in a predetermined direction, said actuator means being arranged such that said predetermined direction is substantially parallel to an axis of said deflectable member.

5,604,414

METHOD AND APPARATUS FOR ADJUSTING OVERLOAD COMPENSATION FOR A WATTHOUR METER

James W. Milligan, West Lafayette, and John T. Voisine, Lafayette, both of Ind., assignors to Landis & Gyr Energy Management, Lafayette, Ind.

Filed Sep. 15, 1994, Ser. No. 307,297
Int. Cl.[6] G01R *11/32;11/21*
U.S. Cl. 318—632 **9 Claims**

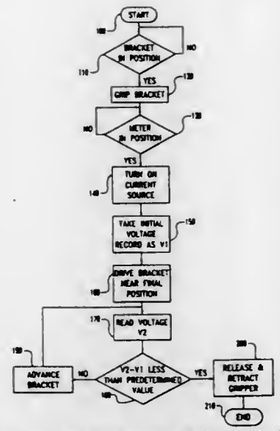
1. An apparatus for electrically setting the overload compensation of a current stator circuit for an induction type watthour meter having a current core wound with at least one current coil, and a magnetic shunt positioned adjacent to poles of the current core, comprising:

means for energizing the current stator circuit;

an electrical sensing device for sensing an electrical parameter of the current stator circuit when said current stator circuit is energized, said electrical sensing device producing a sensory signal corresponding to the sensed electrical parameter;

a motor, including a control input, with means for removably attaching to the magnetic shunt, said motor operable to change the position of the magnetic shunt in relation to the poles of the current core in accordance with a control signal supplied at said control input of said motor; and

control means for controlling said motor in response to said sensory signal by calculating a desired position of said magnetic shunt based on said sensory signal, and sending a corresponding control signal to said control input of said motor, whereby said motor positions the magnetic shunt appropriately in response to said control signal.

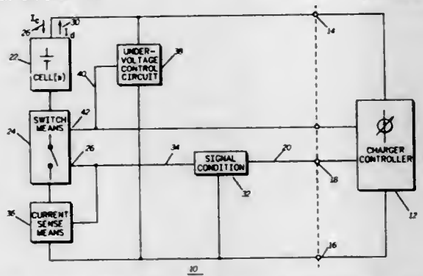


5,604,415

BATTERY LOCKOUT CIRCUIT AND BATTERY PACK USING SAME

Dipti Vashi, Lawrenceville; Vernon Meadows, Lilburn, and Scott M. Garrett, Lawrenceville, all of Ga., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 26, 1995, Ser. No. 578,773
Int. Cl.[6] H01M *10/46*
U.S. Cl. 320—12 **24 Claims**



10. A battery pack for powering a device and blocking charging by an incompatible charger, comprising:

at least one battery cell;

positive and negative contacts for allowing a compatible charger to charge said at least one battery cell;

a switch disable contact for receiving a switch disable signal from said compatible charger;

switch means coupled in series with said at least one battery cell, and having at least an over-voltage input;

signal conditioning means for receiving and conditioning said switch disable signal and providing a conditioned switch disable signal to said over-voltage input of said switch means; and

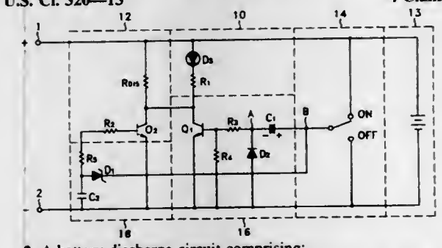
wherein said switch means blocks charging of said at least one battery cell until receiving said conditioned switch disable signal at said over-voltage input.

5,604,416

BATTERY DISCHARGE CIRCUIT WHICH PROTECTS AGAINST EXCESSIVE DISCHARGE

Byoung-ha Kim, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Nov. 30, 1994, Ser. No. 352,089
Claims priority, application Rep. of Korea, Dec. 31, 1993, 93-32024
Int. Cl.[6] H01M *10/46*
U.S. Cl. 320—13 **4 Claims**



2. A battery discharge circuit comprising:

a discharge switch for turning a discharge function on and off;

triggering means for triggering said discharge function when said discharge switch is turned on;

setting means for setting a discharge lower limit voltage;

discharging means for discharging a battery to said discharge lower limit voltage by being triggered by said triggering means; and

display means for displaying the discharge operation of said discharging means;

wherein said triggering means includes:

a capacitor whose end is connected to said discharge switch;

a first resistance connected to the other end of said capacitor;

a transistor having a base connected to said first resistance, a collector connected to a discharge resistance and an emitter connected to a negative terminal;

a second resistance connected between the emitter and the base of said transistor; and

a diode connected between the node of said first resistance and said capacitor and the negative terminal.

5,604,417

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

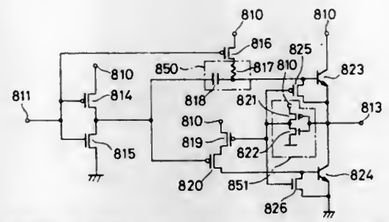
Yasuo Kaminaga; Yoji Nishio; Akihiro Tamba, all of Hitachi; Yutaka Kobayashi, Katsuta, and Masataka Minami, Hachiohji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 17, 1992, Ser. No. 992,448
Claims priority, application Japan, Dec. 19, 1991, 3-336924; Jan. 30, 1992, 4-015011; Mar. 18, 1992, 4-062602; Mar. 19, 1992, 4-063591; Mar. 19, 1992, 4-064251
Int. Cl.[6] H03R *19/013*
U.S. Cl. 320—17 **14 Claims**

1. A semiconductor integrated circuit device comprising on a semiconductor substrate:

a plurality of internal circuits each comprised of circuit elements for performing a predetermined circuit operation;

a plurality of input circuits for receiving external input signals and outputting the same to said internal circuits; and



a plurality of output circuits for receiving signals outputted from said internal circuits and externally outputting signals in response thereto,

wherein at least one circuit from the internal, input or output circuits includes:

a first NPN bipolar transistor having a collector connected to a power supply terminal and an emitter connected to an output terminal of said circuit,

a second NPN bipolar transistor having a collector connected to said output terminal and an emitter connected to a fixed potential terminal,

a first differentiator circuit comprised of a capacitor and a resistor and serving as means for supplying a base current to said first NPN bipolar transistor,

a first PMOS transistor having a source connected to said power supply terminal and a gate driven by the inverted signal of a signal of said output terminal and serving as means for supplying a base current to said second NPN bipolar transistor, and

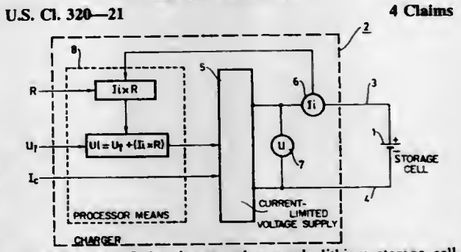
a second PMOS transistor, in series connection with said first PMOS transistor between said power supply terminal and base of said second NPN bipolar transistor, having a gate to which the inverted signal of a signal input from an input terminal of said circuit is inputted.

5,604,418

METHOD OF CHARGING A LITHIUM STORAGE CELL HAVING A CARBONE ANODE

Xavier Andrieu, Bretigny sur Orge; Philippe Poignant, Issy Les Moulineaux, and Antoine Sonnet, Bourg la Reine, all of France, assignors to Alcatel Alsthom Compagnie Generale D'Electricite, Paris Cedex, France

Filed Feb. 23, 1996, Ser. No. 606,297
Claims priority, application France, Feb. 27, 1995, 95 02251
Int. Cl.[6] H01M *10/44*
U.S. Cl. 320—21 **4 Claims**



1. A method of charging a carbon-anode lithium storage cell having as characteristics an end-of-charge voltage and an ohmic resistance, which method comprises a first step in which a constant current is imposed and during which the voltage across said storage cell is allowed to increase until it reaches a reference value, and then a second step in which said reference voltage is imposed and said current decreases, the method being characterized in that, at each instant, said reference voltage is equal to the sum of said end-of-charge voltage plus the product of said current multiplied by said ohmic resistance.

VOL 11 95 ISS 3 FE 18 1997 UMI

5,604,419
CHARGING DEVICE FOR CHARGING RECHARGEABLE BATTERIES WITH TEMPERATURE-DEPENDENT TERMINATION OF THE CHARGING PROCESS

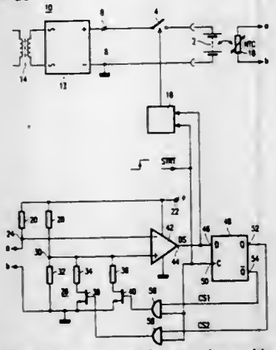
Oedilius J. Bisschop, Drachten; Johann R. G. C. M. Van Beek, Eindhoven; Eduard E. A. Gillissen, Eindhoven, and Martinus H. Van Maaren, Eindhoven, all of Netherlands, assignors to U.S. Philips Corporation, NY, N.Y.

Filed May 18, 1995, Ser. No. 444,137

Claims priority, application European Pat. Off., May 19, 1994, 94201417

Int. Cl.[6] H02J *7/04*

U.S. Cl. 320—35 **20 Claims**



15. A charging device for charging a rechargeable battery comprising:

a current supplier for supplying charging current to a battery having an initial temperature at the beginning of the supply of charging current, said initial temperature being in one of at least two predetermined temperature ranges; a selector for selecting an end temperature based upon the temperature range within which is said initial temperature; and a current terminator for terminating the supply of charging current when a battery reaches the end temperature, said end temperature being higher than said initial temperature.

5,604,420
STABILIZER FOR POWER SYSTEM

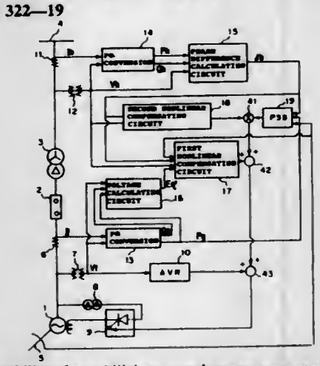
Masahiko Nambu, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 17, 1995, Ser. No. 405,774

Claims priority, application Japan, Nov. 30, 1994, 6-297235

Int. Cl.[6] H02P *9/10*

U.S. Cl. 322—19 **6 Claims**



1. A stabilizer for stabilizing a synchronous generator of a power system, said stabilizer including an automatic voltage regulator for adjusting the excitation level of the synchronous generator in said power system with an auxiliary signal based on the deviation of generator output, the deviation of the rotation speed of the generator or the deviation of the system frequency in order to stabilize the synchronous generator while operating in said power system, wherein said synchronous generator operates in said power system with an internal phase angle formed by an angular displacement caused by the load between the terminal voltage and the armature voltage generated by the component of flux produced by the field current, said stabilizer comprising a phase difference calculating circuit for calculating the phase difference between said internal phase angle of said synchronous generator and the voltage phase in the secondary bus line of a main transformer connected to said synchronous generator and for outputting a deviation of said phase difference from a phase difference reference value, and a power system stabilizer for producing an auxiliary signal based on the output of said phase difference calculating circuit.

5,604,421
ELECTRICAL SYSTEMS

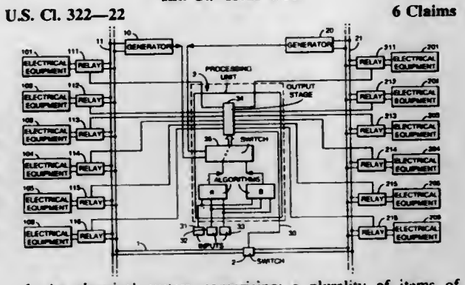
Michael P. Barnsley, Benhall, England, assignor to Smiths Industries Public Limited Company, London, England

Filed May 3, 1995, Ser. No. 433,568

Claims priority, application United Kingdom, Jun. 18, 1994, 9412261

Int. Cl.[6] H02P *9/00*

U.S. Cl. 322—22 **6 Claims**



1. An electrical system comprising: a plurality of items of electrical equipment; a processor having an input and an output; a power generator; connections between said items of equipment and said power generator, said generator being operative to provide a source of an input signal indicative of whether or not said power generator provides sufficient power for the system, said processor being operative to run a first program enabling supply of power to each said item of equipment and to run at the same time a second program different from said first program controlling disconnection of one or more items of said equipment from said power generator, and said processor having a switch and a connection between said switch and said source, said switch being operable in response to change in said input signal when said processor is providing the result of said first program to said output, to switch the result of the second program(s) to said output so as to disconnect equipment from said power generator in response to loss of power from said generator.

5,604,422
TRANSIENT VOLTAGE PROTECTION CIRCUIT FOR A DC VOLTAGE SUPPLY

Henricus P. M. Peters, Oss, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

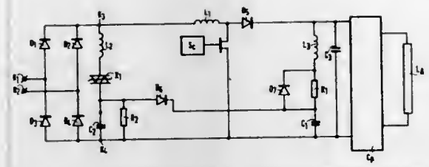
Filed Nov. 6, 1995, Ser. No. 554,120

Claims priority, application European Pat. Off., Nov. 10, 1994, 94203278

Int. Cl.[6] G05F *1/563*

U.S. Cl. 323—222 **15 Claims**

1. A circuit arrangement for operating a lamp comprising:



input terminals for connection to a supply voltage source which delivers a low-frequency AC voltage,

rectifying means coupled to the input terminals for rectifying the low-frequency AC voltage and provided with output terminals,

a first branch comprising a series arrangement of a breakdown element and first capacitive means interconnecting the output terminals,

a second branch shunting the first capacitive means for discharging said first capacitive means,

further capacitive means coupled to the lamp and across which a DC voltage for supplying the lamp is present during lamp operation,

a DC—DC converter coupled to the output terminals and the further capacitive means, and

a third branch comprising a series arrangement of diode means and the further capacitive means and shunting the first capacitive means.

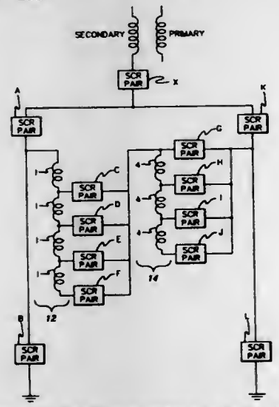
5,604,423
TAP CHANGING SYSTEM HAVING DISCRETE CYCLE MODULATION AND FAULT ROTATION FOR COUPLING TO AN INDUCTIVE DEVICE

Robert C. Degeneff, Niskayuna, N.Y.; Friedrich K. Schaeffer; Robert H. Frazer, both of Goldsboro, N.C.; David A. Torrey, Ballston Lake, and Osman Demirci, Troy, both of N.Y., assignors to Utility Systems Technologies, Inc., Niskayuna, N.Y.

Continuation-in-part of Ser. No. 966,544, Oct. 26, 1992, abandoned. This application Apr. 6, 1995, Ser. No. 223,900

Int. Cl.[6] G05F *1/16*

U.S. Cl. 323—258 **51 Claims**



1. A tap changing system for operation with an inductive device, and including a reference potential comprising:

a tap changer winding having opposite ends and a plurality of tap winding sections, said tap winding sections having upper and lower end points, said tap changer winding being serially connectable with said inductive device and said reference potential;

individual first groups of gate-controlled electronic devices, having a first end and a second end, connected between said end points on the respective tap winding sections and said reference potential;

a separate, second group of gate-controlled electronic devices connected directly to the first end of said first groups of gate-controlled electronic devices and to said reference potential, said second group being more highly rated than said first group of gate-controlled electronic devices, said second group functioning normally in the ON-state;

said separate, second group acting as a circuit breaker under over-current conditions such that, within one-half cycle thereof, said second group is transferred to the OFF-state, whereby said tap changer winding is open circuited; and

a control means for providing control signals to each of the respective gates of said gate-controlled electronic devices to control the states of combinations of said devices.

5,604,424
ELECTRICAL CHANGEOVER SWITCHING

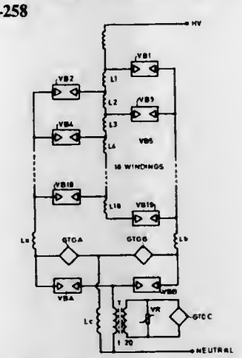
Roger Shuttleworth, Stockport, England, assignor to The National Grid Company PLC, Coventry, England

Filed May 4, 1994, Ser. No. 238,210

Claims priority, application England, Sep. 21, 1993, 9319470

Int. Cl.[6] G05F *1/20*

U.S. Cl. 323—258 **13 Claims**



1. A changeover switch for heavy electrical loads comprising:

a pair of first main switches capable of bearing said electrical loads along respective first electrical paths which share a common portion;

a pair of diverter switches each for diverting current in said respective first paths along a second path during changeover; and

an auxiliary circuit comprising a transformer, an auxiliary switch and an impedance, said transformer having primary and secondary windings;

the primary winding of said transformer being connected in said common portion of said first paths; and

said auxiliary switch and said impedance both being connected across the secondary winding of said transformer.

5,604,425
POWER LIMITING REGULATOR

Lawrence E. Smith, Noblesville, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

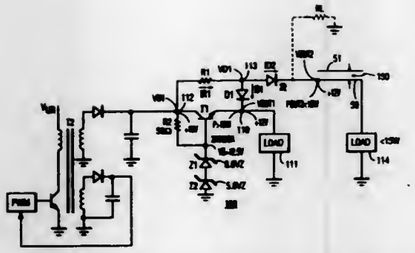
Filed Aug. 8, 1994, Ser. No. 287,591

Int. Cl.[6] G05F *1/577*; **H02M** *3/335*

U.S. Cl. 323—267 **9 Claims**

1. A power supply, comprising:

a voltage regulator for applying a first regulated supply voltage to a first load;



a power limiting impedance for applying a second supply voltage to a second load; and

a first diode having a first terminal coupled to said impedance and a second terminal coupled to said first regulated supply voltage for regulating said second supply voltage by clamping said second supply voltage to said first supply voltage and for isolating said voltage regulator from said second load to prevent said voltage regulator from energizing said second load.

5,604,426

ELECTRIC APPARATUS WITH A POWER SUPPLY INCLUDING AN ELECTRIC DOUBLE LAYER CAPACITOR

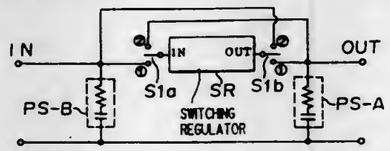
Michio Okamura; Takeshi Morimoto, and Kazuya Hiratsuka, all of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo; Okamura Laboratory Inc., Yokohama, and Elna Company Ltd., Fujisawa, all of Japan

Filed Jun. 27, 1994, Ser. No. 266,460

Claims priority, application Japan, Jun. 30, 1993, 5-187537; Jun. 30, 1993, 5-187538

Int. Cl.[6] G05F *1/40*

U.S. Cl. 323—282 **6 Claims**



1. In an electric apparatus consuming continuously a relatively constant electric power, said electric apparatus being characterized by comprising a power supply including an electric double layer capacitor and a switching regulator for transforming variant voltage electric power from the capacitor to a relatively constant voltage electric power.

5,604,427

CURRENT REFERENCE CIRCUIT USING PTAT AND INVERSE PTAT SUBCIRCUITS

Katsuji Kimura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 24, 1995, Ser. No. 547,369

Claims priority, application Japan, Oct. 24, 1994, 6-257940

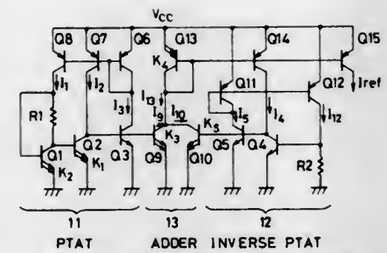
Int. Cl.[6] G05F *3/30*

U.S. Cl. 323—313 **18 Claims**

1. A current reference circuit comprising:

(a) a first current source for producing a first constant current having a positive temperature coefficient;

(b) a second current source for producing a second constant current having a negative temperature coefficient;



(c) an adder for adding said first constant current and said second constant current to cancel said positive temperature coefficient and said negative temperature coefficient, producing a reference current having no temperature coefficient; and

(d) said second current source containing a first bipolar transistor, a second bipolar transistor, a resistor and a bias subcircuit;

said resistor being connected between a base and an emitter of said first bipolar transistor;

said emitter of said first bipolar transistor being connected to an emitter of said second bipolar transistor;

a collector of said first bipolar transistor being connected to a base of said second bipolar transistor;

said second bipolar transistor being driven by a driving current whose current value is the same as a current that flows through said resistor;

a collector current of said second bipolar transistor acting as said second constant current; and

said bias subcircuit supplying said reference current to said collector of said first bipolar transistor.

5,604,428

DEVICE FOR GENERATING INTERMEDIATE VOLTAGES

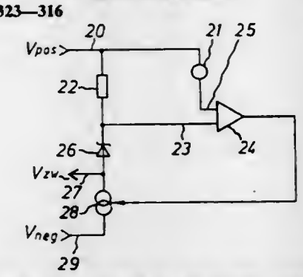
Rudolf Koblitz, Meylan, France; Karl D. Nutz, Oedheim, and Jürgen Steiner, Waldenburg, both of Germany, assignors to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Germany

Continuation of Ser. No. 185,816, May 11, 1994, abandoned. This application Apr. 27, 1995, Ser. No. 462,015

Claims priority, application Germany, Sep. 19, 1991, 41 31 170.1

Int. Cl.[6] G05F *3/16*

U.S. Cl. 323—316 **10 Claims**



1. Apparatus for generating an intermediate voltage having a value between a positive voltage supply value and a negative supply value, said apparatus comprising:

a voltage comparator having first and second inputs and generating an output signal;

a reference voltage generator coupled to said positive voltage supply and generating a reference voltage for coupling to said first input;

a device having a zener characteristic coupled to said positive voltage supply and generating a voltage for coupling to said second input; and,

a current source coupled to said negative voltage supply generating a current for coupling to a terminal to form said intermediate voltage and coupled to said device for determining said voltage generated by said device, said output signal controlling said current source.

5,604,429

RECTIFYING TRANSFER GATE CIRCUIT

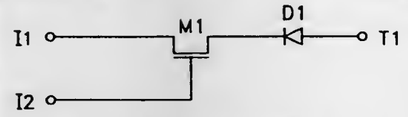
Takashi Nakashima, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 30, 1993, Ser. No. 176,489

Claims priority, application Rep. of Korea, Dec. 31, 1992, 92-27123

Int. Cl.[6] H02M *7/06*

U.S. Cl. 323—349 **3 Claims**



1. A rectifying transfer gate circuit comprising:

first and second input nodes for receiving first and second logic input signals, respectively:

an output node for providing an output signal;

a field effect transistor having a source coupled to said first input node, and a gate coupled to said second input node; and

a diode having a first end coupled to a drain of said field effect transistor and having a second end coupled to said output node.

5,604,430

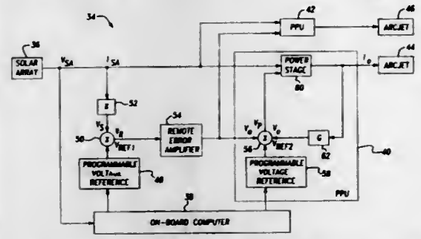
SOLAR ARRAY MAXIMUM POWER TRACKER WITH ARCJET LOAD

Darwin K. Decker, Hacienda Heights; Donald L. Baxter, Redondo Beach; Oded Lerner, Torrance; Jeffrey D. Campbell, Hawthorne; Richard A. Rosenthal, Redondo Beach, and Michael J. Cook, Garden Grove, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Oct. 11, 1994, Ser. No. 322,122

Int. Cl.[6] G05F *1/565;5/00*; H02M *7/44*; H02J *7/00*

U.S. Cl. 323—275 **20 Claims**



1. A system for regulating power output from a solar array associated with a spacecraft, said system comprising:

calculating means for determining the power output of the solar array, said calculating means generating a reference signal, said reference signal being indicative of a power change of the solar array;

solar array simulator means for sensing the output of the solar array, said simulator means being responsive to a bus voltage signal from the solar array and the reference signal from the calculating means and generating an output signal representing a change in the power output of the solar array; and

processor means for regulating the bus voltage from the solar array, said processor means being responsive to the output voltage signal from the solar array simulator means and the bus voltage signal from the solar array, said processor means combining the output signal from the solar array simulation means with the bus voltage signal from the solar array so as to generate an output signal that is applied to a spacecraft load, wherein the calculating means increments the reference signal a predetermined amount to either increase or decrease the reference signal depending on the direction of a direction indicator so as to cause the solar array simulator means to provide an updated output signal in order to operate the solar array at its peak power output point.

5,604,431

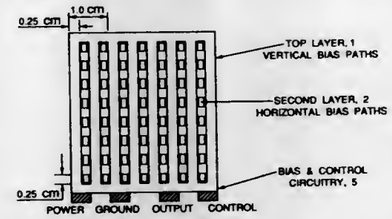
INTEGRATED GRID PARTICLE IMPACT DETECTOR

Patrick J. Serna, Albuquerque, N.M., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 29, 1995, Ser. No. 536,871

Int. Cl.[6] G01N *27/00*

U.S. Cl. 324—71.4 **4 Claims**



1. A particle impact detection system which can produce an estimation of a cross-sectional width and cross-sectional length of impacting particles with a predetermined value of precision, said particle impact detection system comprising:

a first plurality of parallel electrodes which have preselected widths and separation distances which correspond to said predetermined value of precision for said estimation of said cross-sectional widths of said impacting particles;

a second plurality of parallel electrodes which are perpendicular to said first plurality of parallel electrodes, said second plurality of parallel electrodes having preselected widths and separation distances which correspond to said predetermined value of precision for said estimation of said cross-sectional length of said impacting particles; and

a means for monitoring particle impacts on said first and second plurality of parallel electrodes, said monitoring means determining the cross-sectional width and length of impacting particles by counting the number of parallel electrodes which are destroyed in said first and second plurality of parallel electrodes by impacting particles.

5,604,432

TEST ACCESS ARCHITECTURE FOR TESTING OF CIRCUITS MODULES AT AN INTERMEDIATE NODE WITHIN AN INTEGRATED CIRCUIT CHIP

Alan Moore, Phoenix, and Patrick A. Themins, Chandler, both of Ariz., assignors to Intel Corporation, Santa Clara, Calif.

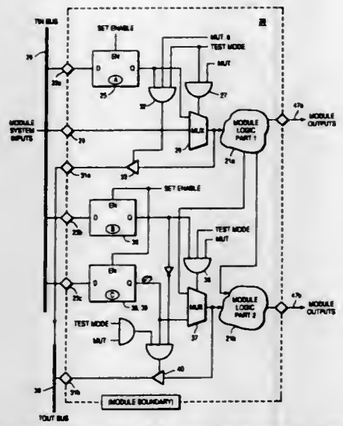
Division of Ser. No. 873,365, Apr. 23, 1992, Pat. No. 5,534,774. This application Nov. 5, 1993, Ser. No. 147,859

Int. Cl.[6] G01R *31/28*

U.S. Cl. 324—158.1 **8 Claims**

7. An apparatus for testing a first circuit module within an integrated circuit on a chip wherein said first circuit module has first circuit module logic having an intermediate node, said integrated circuit having at least a second circuit module coupled to

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said first circuit module by a module interconnect, said second circuit module having second circuit module logic, said apparatus comprising:

a test input bus coupled to said first circuit module for conveying a test input signal to said intermediate node of said first circuit module logic;

a test output bus coupled to said second circuit module for conveying a test result signal, generated by said first circuit module, out of said integrated circuit;

first signal routing circuitry incorporated in said first circuit module and coupled to said test input bus for receiving said test input signal and for propagating said test input signal to said first circuit module logic at said intermediate node; and

second signal routing circuitry incorporated within said second circuit module and coupled to said module interconnect for receiving said test result signal, generated by said first circuit module, from said first circuit module and routing said test result signal, generated by said first circuit module, to said test output bus from said second circuit module, bypassing said second circuit module logic.

5,604,433

OFFSET COMPENSATION FOR MAGNETIC-FIELD SENSOR WITH HALL EFFECT DEVICE

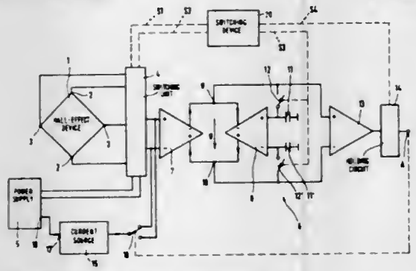
Ulrich Theus, Gundelfingen, and Mario Motz, Endingen, both of Germany, assignors to Deutsche ITT Industries GmbH, Freiburg, Germany

Filed Sep. 5, 1995, Ser. No. 523,781

Claims priority, application Germany, Apr. 19, 1995, 44 31 703.4

Int. Cl.[6] G01R *33/06;33/07;* **G01D** *5/14*

U.S. Cl. 324—251 **20 Claims**



1. A magnetic-field sensor comprising:

Hall-effect means for generating a first measurement signal during a first phase and a second measurement signal during a second phase, said first and second measurement signals each including a useful signal component and an offset signal component; and

measurement signal evaluating means having offset signal components, coupled to said Hall-effect means, said measurement evaluating means operating to substantially eliminate all of said offset signal components by superimposing said first measurement signal received from said Hall-effect means in said first phase on said second measurement signal received from said Hall-effect means in said second phase, said measurement signal evaluation means includes storage means for storing said first measurement signal during said first phase.

5,604,434

MR METHOD

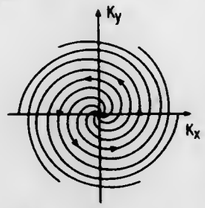
Hermann Schomberg, Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 2, 1995, Ser. No. 510,155

Claims priority, application Germany, Aug. 3, 1994, 44 27 430.0

Int. Cl.[6] G01V *3/00*

U.S. Cl. 324—309 **10 Claims**



1. An MR method for determining a spatial distribution of nuclear magnetization in an examination region, comprising:

a) exciting nuclear magnetization in the examination region one or more times by applying at least one RF pulse in the presence of a steady, uniform magnetic field;

b) reading MR signals produced after the excitation in order to acquire MR data for points in a spatial frequency domain, magnetic gradient fields acting on the examination region being applied during the reading;

c) varying these magnetic gradient fields in such a manner that the MR signals are read while traversing the spatial frequency domain along one or more spirals, a density of the spirals or their turns in a central part of the spatial frequency domain being greater than that outside the central part; and

d) reconstructing a nuclear magnetization distribution for the examination region from a data set which comprises the acquired MR data and derived MR auxiliary data for points outside the central part on mirror-images of the one or more spirals, MR data not having been acquired by traversing the mirror-images outside the central part.

5,604,435

SPIRAL SCANNING METHOD FOR MONITORING PHYSIOLOGICAL CHANGES

Thomas K. Foo, Waukesha, and Kevin F. King, New Berlin, both of Wis., assignors to General Electric Company, Milwaukee, Wis.

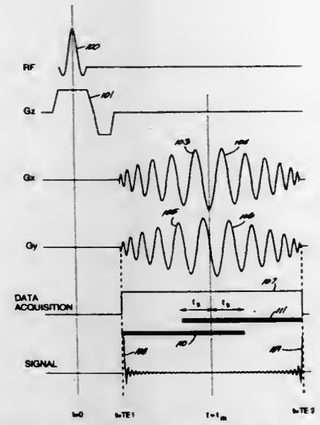
Filed Dec. 29, 1995, Ser. No. 581,284

Int. Cl.[6] G01V *3/00*

U.S. Cl. 324—309 **11 Claims**

1. An MR imaging method for measuring the parameter T_2^* in a region of an imaging subject, said method comprising the steps of:

applying spatially selective rf excitation to said region to select an imaging slice taken through structures in said region;



implementing a spiral readout gradient waveform sequence with respect to said slice, said gradient waveform sequence generating a spiral trajectory, and including the generation of an early and a late echo separated by time in the same sequence following a single rf excitation pulse;

acquiring data from the start of the spiral trajectory to the end of the spiral trajectory;

sorting said data into data sets for early and late echo images, respectively; and

calculating the signal intensity changes between the said early and late echo images respectively represented by said data sets to provide a measurement of T_2^*.

5,604,436

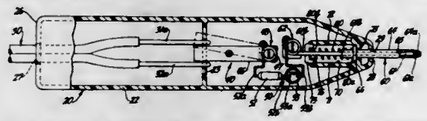
CHRISTMAS LIGHT STRING CIRCUIT TESTER

Charles L. Henritzy, 66 Stephens Rd., Grosse Pointe Farms, Mich. 48236, and William Maddock, 303 Wilkes Court, Auroa, Ontario, Canada

Filed Sep. 12, 1995, Ser. No. 526,558

Int. Cl.[6] G01R *31/02*

U.S. Cl. 324—414 **7 Claims**



1. A device for testing a defective string of light bulbs electrically connected in series or for checking polarity of other outlets or devices, said device comprising:

a plug having a first prong and a second prong;

an electrically conductive first wire having a plug end and a switch end, said plug end of said first wire electrically connected to said first prong of said plug;

an electrically conductive second wire having a plug end and a switch end, said plug end of said second wire electrically connected to said second prong of said plug;

a polarity switch comprising:

a first wire terminal electrically connected to said switch end of said first wire;

a second wire terminal electrically connected to said switch end of said second wire;

a main terminal spaced from said first wire terminal and said second wire terminal; and

means for selectively and electrically connecting one of either said first wire terminal or said second wire terminal to said main terminal;

an indicator circuit comprising:

a switch terminal electrically connected to said main terminal of said polarity switch;

means for indicating the conduction of an electric current through said device, said indication means electrically connected to said switch terminal; and

a probe terminal electrically connected to said indicating means;

an electrically conductive probe having a probe base and a probe tip, said probe base being electrically connected to said probe terminal of said indicator circuit; and

an insulated casing supporting said first wire, said second wire, said polarity switch, said indicator circuit, and said probe.

5,604,437

DEVICE FOR MEASURING CIRCUIT BREAKER WEAR

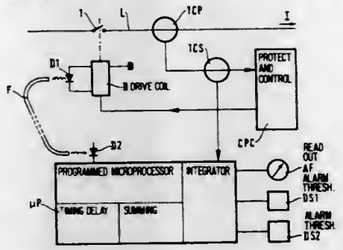
Jean-Paul Moncorge, Vaulx en Velin, and Lionel Lucot, Fleurieux sur L'Arbresle, both of France, assignors to Gec Alsthom T & D SA, Paris, France

Filed Jan. 20, 1995, Ser. No. 376,891

Claims priority, application France, Feb. 1, 1994, 94 01072

Int. Cl.[6] G01R *31/02*

U.S. Cl. 324—424 **6 Claims**



1. A device for measuring circuit breaker wear by integrating the square of the current to be interrupted, said circuit breaker including a control that is actuated by a trip coil, the device comprising an integrator, a timing delay means that is actuated by a first signal corresponding to a change in the driven or non-drive state of the trip coil, the timing delay means causing integration to begin after time has elapsed that is equal to the mechanical delay of the circuit breaker, which mechanical delay is a previously-measured data item, the device further comprising a circuit that delivers a second signal proportional to the current carried by the circuit breaker, means for squaring said second signal, and that applies said square to the integrator, said integration being performed for a given length of time that is longer than the maximum arcing time of the circuit breaker, which maximum arcing time is likewise a previously measured data item, the result of the integration being applied to a summer.

5,604,438

CONTROLLED SPARK IGNITION TESTING APPARATUS

Josephine Covino-Hrbacek, and Frank E. Hudson, III, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 6, 1995, Ser. No. 406,213

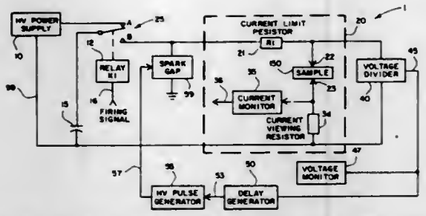
Int. Cl.[6] G01N *27/61*

U.S. Cl. 324—464 **14 Claims**

1. An apparatus for testing energetic materials by creating, measuring and controlling spark discharges through a sample of the material, said apparatus comprising:

means for supplying a predetermined voltage;

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means for applying the predetermined voltage to the sample including two separated electrodes between which the sample is placed such that a voltage difference exists between said electrodes so as to induce a spark in the sample material;

means for measuring a parameter of the spark induced in the sample by the applying means;

means responsive to the measuring means for controlling the duration of the spark; and

the spark controlling means comprises means further connected in parallel with said applying means for short-circuiting said electrodes in response to the measuring means thereby removing the voltage difference between said electrodes and returning the sample to its ambient electrostatic state.

5,604,439

TRACTOR/TRAILER LAMP CIRCUIT CONTINUITY TEST DEVICE

Clifford L. Walkington, 39 Selth Street, Albert Park, South Australia, Australia, and Lindsay R. Grist, 5 Kanangra Road, Seaview Downs, South Australia, Australia

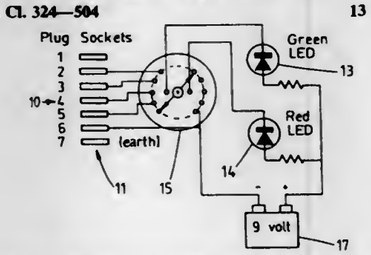
PCT No. PCT/AU94/00190, § 371 Date Mar. 10, 1995, § 102(e) Date Mar. 10, 1995, PCT Pub. No. WO94/24577, PCT Pub. Date Oct. 27, 1994

PCT Filed Apr. 15, 1994, Ser. No. 351,438

Claims priority, application Australia, Apr. 15, 1993, PL8318

Int. Cl.[6] G01R *31/02*

U.S. Cl. 324—504 **13 Claims**



1. A tractor/trailer lamp circuit continuity test device for a tractor and trailer, the tractor having tractor circuits coupled to a tractor socket and the trailer having trailer circuits coupled to a trailer plug, the tractor/trailer lamp circuit continuity test device comprising:

a) an assembly plug adapted for removable connection to the tractor socket, the assembly plug comprising a ground pin and a plurality of other pins;

b) an assembly socket adapted for removable connection to the trailer plug, the assembly socket comprising a ground socket sleeve and a plurality of other socket sleeves;

c) a ground conductor coupled in common to the ground pin and to the ground socket sleeve;

d) a plurality of other conductors, each other conductor coupled to a respective one of the other pins and coupled to a respective one of the other socket sleeves;

e) an energizer having a positive terminal and a negative terminal;

f) a switch coupled in series with the energizer;

g) a gating diode coupled to bridge across the series-coupled energizer and switch; and

h) a plurality of light emitting diodes,

wherein each light emitting diode is coupled to a respective one of the other conductors and is coupled in common to the series-coupled energizer and switch,

wherein the series-coupled energizer and switch is coupled between the ground conductor and the light emitting diodes such that the positive terminal of the energizer is coupled to the ground conductor and the negative terminal of the energizer is coupled in common to each light emitting diode,

wherein activation of a continuous one of the tractor circuits energies a respective one of the light emitting diodes when the assembly plug is connected to the tractor socket by creating a respective circuit through a respective one of the other pins, the respective one light emitting diode, the gating diode, and the ground pin, and

wherein activation of the switch energizes a respective one of the light emitting diodes for a continuous one of the trailer circuits when the assembly socket is connected to the trailer plug by creating a respective circuit from the positive terminal of the energizer and through the ground socket sleeve, the respective one continuous trailer circuit, a respective one of the other socket sleeves, and the respective one light emitting diode to the negative terminal of the energizer.

5,604,440

METHOD OF TESTING A WIRE HARNESS USING A MULTICONTACT CONNECTOR

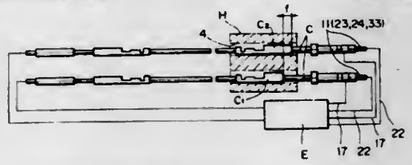
Kazuyoshi Tomikawa; Toshinori Igura, and Takayuki Tsuchiya, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Jul. 20, 1995, Ser. No. 504,790

Claims priority, application Japan, Jul. 22, 1994, 6-170789

Int. Cl.[6] G01R *27/76*

U.S. Cl. 324—539 **16 Claims**



1. A method of identifying a position of a portion of a multicontact connector, including steps of:

(a) fixedly arranging a connector to oppose at least one multicontact switch pin which has at least two contacts and a probe pin projecting outwardly of the multicontact switch pin, said probe pin being adapted to move into and/or out of contact with said contacts when pushed inwardly into the multicontact switch pin;

(b) placing a first portion on said connector at a position which varies in accordance with a kind of said connector, said first portion being in a direction in which the probe pin extends;

(c) connecting each of said contacts to a corresponding test circuit;

(d) moving said multicontact switch pin by a predetermined distance towards the connector to allow said probe pin to engage said first portion such that said probe pin moves into and/or out of contact with said contacts; and

(e) checking continuity in the test circuits to determine a position of said first portion in a direction in which said probe pin moves towards said first portion.

5,604,441

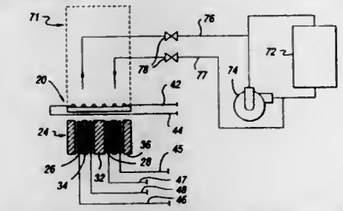
IN-SITU OIL ANALYZER AND METHODS OF USING SAME, PARTICULARLY FOR CONTINUOUS ON-BOARD ANALYSIS OF DIESEL ENGINE LUBRICATION SYSTEMS

Charles E. Freese, V, Westland, Mich.; Michael J. Rostoskey, Knoxville, and Raymond E. Garvey, III, Powell, both of Tenn., assignors to Detroit Diesel Corporation, Detroit, Mich.

Filed Mar. 14, 1995, Ser. No. 403,638

Int. Cl.[6] G01R *27/26*

U.S. Cl. 324—663 **32 Claims**



1. An apparatus for monitoring the condition of and detecting at least one physical property of contaminants in flowing lubricating oil, the apparatus comprising:

a sensor having at least two electrically conductive elements exposed to said oil, said oil separating said conductive elements as an insulating dielectric medium therebetween to form a capacitor;

monitor means for monitoring the capacitance of said sensor during discrete testing intervals and determining the condition of and at least one physical property of contaminants in said oil based upon the change in sensor capacitance over said discrete testing intervals;

at least two electromagnet windings positioned proximately to said sensor for inducing a magnetic field about said sensor, the magnetic field affecting the migration of magnetically responsive contaminants of said oil into said sensor; and

switching means for manipulating electric power of said electromagnet windings so as to remove substantially all magnetic flux from proximity of the sensor and release accumulated debris into the flowing lubricating oil between said discrete testing intervals.

5,604,442

CONTAINER INSPECTION APPARATUS HAVING DIAMETER MEASURING MEANS AND ASSOCIATED METHOD

Henry M. Dimmick, Butler; Mark F. Zanella, Sr., Cranberry Township, and Thomas F. Melnik, Butler, all of Pa., assignors to AGR Internatonal, Inc., Butler, Pa.

Division of Ser. No. 330,323, Oct. 27, 1994, Pat. No. 5,532,605. This application Feb. 20, 1996, Ser. No. 603,125

Int. Cl.[6] G01R *35/00*

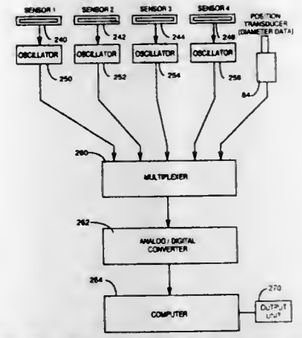
U.S. Cl. 324—671 **20 Claims**

1. A method of inspecting non-round containers comprising

employing capacitive sensor means in contact with said container to emit signals corresponding to changes in capacitance,

converting said signals into corresponding capacitive voltage signals,

determining the diameter of said container at a plurality of locations by monitoring displacement of said sensor means and emitting displacement voltage signals corresponding thereto, and



employing said capacitance voltage signals and said displacement voltage signals to determine the wall thickness of said container at a particular location.

5,604,443

PROBE TEST APPARATUS

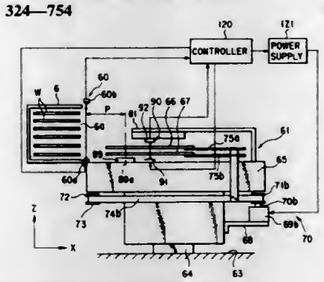
Yoshisuke Kitamura, and Munetoshi Nagasaka, both of Yamanashi-ken, Japan, assignors to Tokyo Electron Limited, Tokyo, and Tokyo Electron Yamanashi Limited, Nirasaki, both of Japan

Filed May 23, 1995, Ser. No. 448,264

Claims priority, application Japan, May 23, 1994, 6-108485; May 24, 1994, 6-109433; Dec. 2, 1994, 6-299308

Int. Cl.[6] G01R *1/04*

U.S. Cl. 324—754 **19 Claims**



1. A probe test apparatus comprising:

a test section for testing a substrate;

a cassette having an opening at one side through which the substrate is taken into and out of the cassette, grooves formed in inner faces of both sides of the cassette to hold substrates therein, and a convex portion projected downward from an underside of the cassette;

a stage on which the cassette is mounted keeping the substrates therein substantially horizontal; and

holder means having plural projection members projecting upward from a top of the cassette-mounted stage and forming a recess into which the convex portion of the cassette falls, each of said projection members having a curved smooth guide top and extending such that, when the cassette is moved along the projection members while keeping said convex portion in contact with said guide top, the convex portion of the cassette falls in said recess,

wherein when the convex portion is not fitted into the recess but contacted with the projection members, substrates in the cassette are tilted, and when the convex portion falls in the recess, the substrates are kept substantially horizontal in the cassette to thereby position the cassette relative to the test section.

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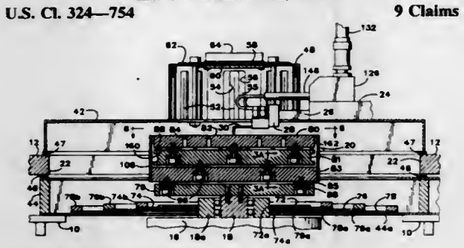
5,604,444
WAFER PROBE STATION HAVING ENVIRONMENT CONTROL ENCLOSURE

Warren K. Harwood; Paul A. Tervo, both of Vancouver, Wash., and Martin J. Koxxy, Hillsboro, Oreg., assignors to Cascade Microtech, Inc., Beaverton, Oreg.

Continuation of Ser. No. 417,982, Apr. 6, 1995, Pat. No. 5,532,609, which is a division of Ser. No. 245,581, May 18, 1994, Pat. No. 5,434,512, which is a division of Ser. No. 896,853, Jun. 11, 1992, Pat. No. 5,345,170. This application Apr. 29, 1996, Ser. No. 641,029

Int. Cl.[6] G01R *31/02;1/073*

U.S. Cl. 324—754 **9 Claims**



1. A probe station comprising:

(a) a surface extending in a lateral direction for holding a test device on said surface;

(b) a holder for an electrical probe for contacting said test device;

(c) a pair of positioning mechanisms each for selectively moving a corresponding one of said surface and said holder, independently of each other, toward or away from the other along an axis of approach; and

(d) an environment control enclosure substantially surrounding said surface for limiting fluid communication between the interior and exterior of said enclosure to a substantially constant degree despite movement by said positioning mechanisms of either one of said surface and holder, respectively, toward or away from the other along said axis of approach, said enclosure having an upper portion extending over said surface substantially in said lateral direction and a side portion, substantially surrounding said surface laterally, having a top adjacent to said upper portion and extending generally toward said upper portion, said surface being movable by one of said positioning mechanisms in said lateral direction with respect to said top of said side portion, said pair of positioning mechanisms each having a portion located at least partially outside of said enclosure for transferring movement mechanically to the corresponding one of said surface and said holder.

5,604,445
APPARATUS, AND CORRESPONDING METHOD, FOR STRESS TESTING SEMICONDUCTOR CHIPS

Kishor V. Desai, Vestal; Maganlal S. Patel, Endicott, and Sanjeev Sathe, Johnson City, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 21, 1994, Ser. No. 360,919

Int. Cl.[6] H05K *5/00;* **H01R** *9/09*

U.S. Cl. 324—755 **30 Claims**

1. An electronic package, comprising;

an electrically insulating base including first and second surfaces, said first surface bearing at least one semiconductor chip having a first plurality of contact pads, said first surface also bearing a second plurality of contact pads;

means, extending from said second surface, for communicating voltages and/or currents to said second plurality of contact pads on said first surface;

a flexible, electrically insulating layer overlying said first surface of said base and said semiconductor chip, said layer bearing a first plurality of dendritic contacts substantially aligned with said first plurality of contact pads and a second plurality of dendritic contacts substantially aligned with said second plurality of contact pads, said layer also bearing fan-out circuitry electrically connecting said second plurality of dendritic contacts to said first plurality of dendritic contacts; and

a lid, overlying said flexible, electrically insulating layer, which mates with said base, said lid including means for applying a force to each of said dendritic contacts when said lid is mated with said base so as to achieve electrical contact between said first and second plurality of dendritic contacts and, respectively, said first and second plurality of contact pads.

5,604,446
PROBE APPARATUS

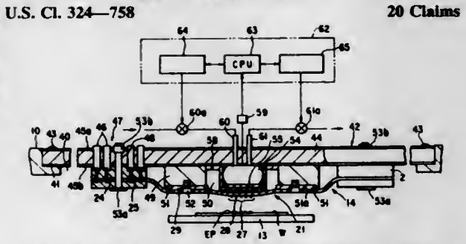
Kunio Sano, Yamanashi-ken, Japan, assignor to Tokyo Electron Limited, Tokyo, and Tokyo Electron Yamanashi Limited, Nirasaki, both of Japan

Filed Aug. 9, 1995, Ser. No. 512,915

Claims priority, application Japan, Sep. 9, 1994, 6-215870

Int. Cl.[6] G01R *1/073;31/02*

U.S. Cl. 324—758 **20 Claims**



1. A probe apparatus for examining an electrical characteristic of an object having a number of electrode pads, comprising:

a work table having a table surface on which said object is placed;

a wiring board provided above said work table, said wiring board comprising a substrate supported by a framework of said probe apparatus and having high rigidity, and board wiring provided on said substrate and electrically connected to a tester;

a probe card supported by said wiring board, said probe card comprising a flexible and insulating membrane, and flexible card wiring formed on said membrane and electrically connected to said board wiring of said wiring board, said probe card having a main region, in which a plurality of contact elements to be respectively brought into contact with said electrode pads of said object are arranged, on a front side opposing said table surface, and said contact elements being electrically connected to said card wiring;

mounting means for mounting said probe card on said wiring board;

an expandable chamber arranged behind said main region of said probe card, said expandable chamber expanding and contracting as a fluid is respectively supplied thereto and discharged therefrom, said expandable chamber pushing said main region of said probe card from a rear side thereof so as to bring said contact elements of said main region into elastic contact with said electrode pads of said object when said expandable chamber expands;

supplying means for supplying said fluid to said expandable chamber;

discharging means for discharging said fluid from said expandable chamber;

a hard flat plate provided between said expandable chamber and said main region of said probe card, said flat plate having a contour within which all of said contact elements are located;

a guide surrounding said expandable chamber and said flat plate; and

a stop provided at an end portion of said guide and being contactable with and engagable with said flat plate when said expandable chamber expands, so as to define a movement stroke of said flat plate, and to cause said flat plate to push said main region of said probe card from a rear side thereof while substantially maintaining parallelism of said main region with respect to said table surface when said expandable chamber expands.

5,604,447
PRESCALER IC TESTING METHOD AND TEST PROBE CARD

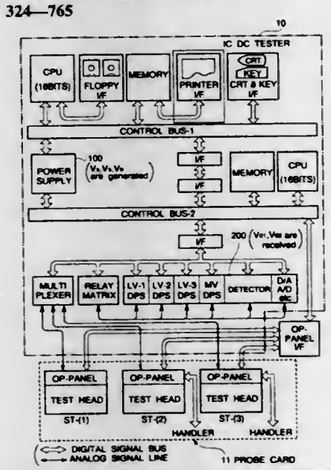
Isamu Takano, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 28, 1995, Ser. No. 580,365

Claims priority, application Japan, Dec. 28, 1994, 6-327888

Int. Cl.[6] G06F *7/38;* **G01R** *1/04;31/28*

U.S. Cl. 324—765 **7 Claims**



1. A prescaler IC testing method using an IC DC tester and a probe card which is connected to the IC tester and on which a prescaler IC to be tested is mounted, the method performing a function test of the prescaler IC in the form of a wafer by transferring DC signals between the IC tester and the probe card, the probe card including an AC signal generating means for generating an AC signal having the frequency lower than a frequency-divided frequency region of said prescaler IC, an averaged value detecting means receiving a signal outputted from said prescaler IC, for generating an averaged DC signal, and a plurality of signal switch means controlled by a control signal from said IC DC tester for changing a flow of a signal among said IC DC tester, said prescaler IC, said AC signal generating means and said averaged value detecting means, the method comprising the step of carrying out the AC test by controlling said signal switch means so that said AC signal generated by said AC signal generating means is supplied to said prescaler IC, and said signal outputted from said prescaler IC is supplied to said averaged value detecting means and converted to said averaged DC signal, whereby a non-defective/defective of said prescaler IC is discriminated on the basis of the obtained averaged DC signal, and the method also comprising the step of carrying out the DC test by controlling said signal switch means so that a DC test signal is supplied from said IC DC tester to said prescaler IC and a DC output signal outputted from said prescaler IC is supplied to said IC DC tester.

5,604,448
OUTPUT BUFFER CIRCUIT HAVING LOW NOISE CHARACTERISTICS

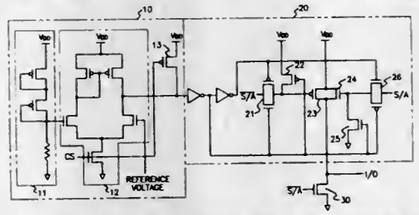
Gyu S. Kim, and Hoon M. Yoon, both of Kyoungkido, Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Kyoungkido, Rep. of Korea

Filed Sep. 5, 1995, Ser. No. 523,307

Claims priority, application Rep. of Korea, Sep. 9, 1994, 1994-22784

Int. Cl.[6] H03K *17/16*

U.S. Cl. 326—27 **6 Claims**



1. An output buffer circuit having a pull-down transistor, said circuit comprising:

controlling means for detecting whether a driving voltage of more than a normal voltage is applied or not, and generating a control signal on the basis of detection result thereof;

pull-up means for enabling a voltage down between a driving voltage supplying terminal and an output terminal of said buffer circuit in response to said control signal; and

selecting means for enabling said voltage down to be selectively alternated through a PMOS transistor or an NMOS transistor in response to said control signal.

5,604,449
DUAL I/O LOGIC FOR HIGH VOLTAGE CMOS CIRCUIT USING LOW VOLTAGE CMOS PROCESSES

Richard A. Erhart, Chandler, and Thomas W. Ciccone, Paradise Valley, both of Ariz., assignors to Vivid Semiconductor, Inc., Chandler, Ariz.

Filed Jan. 29, 1996, Ser. No. 592,920

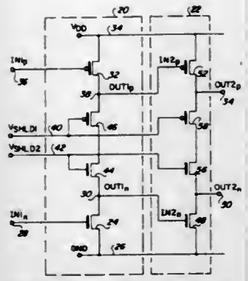
Int. Cl.[6] H03K *19/003*

U.S. Cl. 326—81 **7 Claims**

1. A CMOS integrated circuit transistor configuration for allowing operation at relatively higher power supply voltages, comprising in combination:

a. first and second power supply conductors adapted to receive first and second power supply voltages, the magnitude of the

VOL 11 95 ISS 3 FE 18 1997 UMI



difference between the first and second power supply voltages corresponding to a predetermined operating voltage;

b. a shielding voltage conductor adapted to receive a shielding voltage, the shielding voltage being approximately midway between the first and second power supply voltages;

c. a first input terminal for receiving a first input signal having a voltage that switches within the range of voltages defined by the first power supply voltage and the shielding voltage;

d. a second input terminal for receiving a second input signal having a voltage that switches within the range of voltages defined by the shielding voltage and the second power supply voltage, the second input signal having the same polarity as the first input signal;

e. a first output terminal for providing a first output signal having a voltage that switches within the range of voltages defined by the first power supply voltage and the shielding voltage;

f. a second output terminal for providing a second output signal having a voltage that switches within the range of voltages defined by the shielding voltage and the second power supply voltage;

g. a first n-channel CMOS transistor having source, drain and gate terminals, the source terminal of said first n-channel CMOS transistor being coupled to the first power supply conductor, the gate terminal of said first n-channel CMOS transistor being coupled to said first input terminal for receiving the first input signal, and the drain terminal of said first n-channel CMOS transistor being coupled to the first output terminal;

h. a second n-channel CMOS transistor having source, drain and gate terminals, the source terminal of said second n-channel CMOS transistor being coupled to the first output terminal, the gate terminal of said second n-channel CMOS transistor being coupled to the shielding voltage conductor;

i. a first p-channel CMOS transistor having source, drain and gate terminals, the source terminal of said first p-channel CMOS transistor being coupled to the second power supply conductor, the gate terminal of said first p-channel CMOS transistor being coupled to said second input terminal for receiving the second input signal, and the drain terminal of said first p-channel CMOS transistor being coupled to the second output terminal;

j. a second p-channel CMOS transistor having source, drain and gate terminals, the source terminal of said second p-channel CMOS transistor being coupled to the second output terminal, the gate terminal of said second p-channel CMOS transistor being coupled to the shielding voltage conductor, and the drain terminal of said second p-channel CMOS transistor being coupled to the drain terminal of said second n-channel CMOS transistor; and

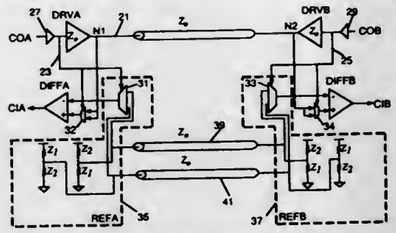
k. each of said first and second n-channel CMOS transistors, and each of said first and second p-channel CMOS transistors, operating reliably only when the voltage difference between its gate terminal and its source and drain terminals, respectively, is less than said predetermined operating voltage.

5,604,450

HIGH SPEED BIDIRECTIONAL SIGNALING SCHEME

Shekhar Borkar, Portland; Stephen R. Mooney, Beaverton, and Charles E. Dike, Hillsboro, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jul. 27, 1995, Ser. No. 508,159
Int. Cl.[6] H03K *19/0175;19/00*
U.S. Cl. 326—82 **17 Claims**



7. A computer system including memory, a CPU and a communications network coupled to said memory and said CPU wherein said communications network includes a plurality of component cores coupled to each other with data lines, each of said component cores comprising:

a) a driver coupled to one of said data lines;

b) reference means coupled to an input to said driver for generating a reference level, wherein said reference means inputs a reference control signal corresponding to an output of the component core to which it is coupled, said reference control signal being used to select one of a first and a second reference level;

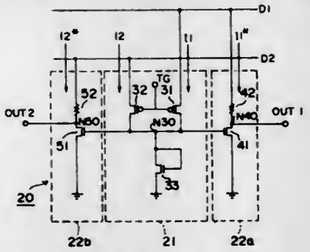
c) differential amplifier means having as a first input said selected reference level and having as a second input a signal on said data line for generating a difference signal.

5,604,451

SENSE AMPLIFIER CIRCUIT

Toshikazu Sakata, Miyazaki, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Aug. 14, 1995, Ser. No. 515,050
Claims priority, application Japan, Aug. 30, 1994, 6-204075
Int. Cl.[6] H03F *3/45;* **G11C** *7/00*
U.S. Cl. 327—51 **13 Claims**



13. A sense amplifier circuit, comprising:

a first data line having a first voltage corresponding to data transferred thereon;

a second data line having a second voltage corresponding to data transferred thereon;

a bias generating circuit including

a first transistor including a first electrode coupled to said first data line, a second electrode, and a gate electrode,

a second transistor including a first electrode coupled to said second data line, a second electrode, and a gate electrode coupled to the gate electrode of the first transistor, and

a third transistor including a first electrode coupled to the second electrodes of the first and second transistors, a second electrode coupled to a first potential, and a gate electrode;

a first amplifier for generating a first output voltage having a fourth transistor and a first resistance connected in series to form a first series circuit, the fourth transistor including a gate electrode coupled to said bias generating circuit, wherein a first end of the first series circuit is connected to the first data line and a second end of the first series circuit is connected to a second potential; and

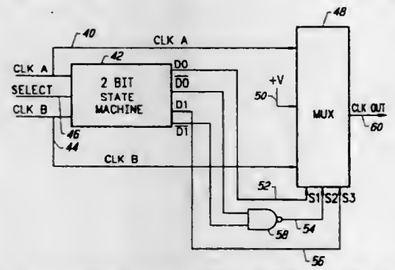
a second amplifier for generating a second output voltage having a fifth transistor and a second resistance connected in series to form a second series circuit, the fifth transistor including a gate electrode coupled to the bias generating circuit, wherein a first end of the second series circuit is connected to the second data line an a second end of the second series circuit is connected to the second potential.

5,604,452

CLOCK GENERATOR USING A STATE MACHINE TO SWITCH BETWEEN TWO OFFSET CLOCKS

Yihe Huang, Palo Alto, Calif., assignor to Exar Corporation, Fremont, Calif.

Filed Apr. 3, 1995, Ser. No. 415,793
Int. Cl.[6] H03K *17/00*
U.S. Cl. 327—99 **7 Claims**



1. A clock generator for switching between first and second offset clocks in response to a signal on a select line to provide an output clock at a clock output terminal, comprising:

a two bit state machine having said first and second clocks as clock inputs to generate first and second data outputs, and said select line being connected to a state transition control input of said state machine;

a first tri-state switch having an input coupled to said first clock, a select input coupled to said first data output of said state machine, and an output coupled to said clock output terminal;

a second tri-state switch having an input coupled to a voltage, a select input coupled to an inverse of said first data output of said state machine, and an output coupled to said clock output terminal; and

a third tri-state switch having an input coupled to said second clock, a select input coupled to said second data output of said state machine, and an output coupled to said clock output terminal.

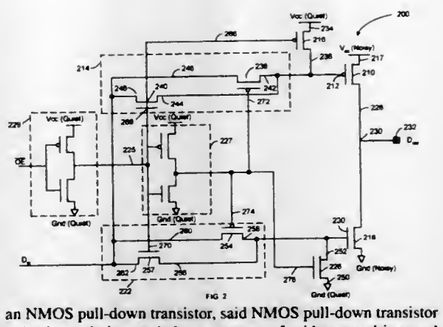
5,604,453

CIRCUIT FOR REDUCING GROUND BOUNCE

Bruce B. Pedersen, San Jose, Calif., assignor to Altera Corporation, San Jose, Calif.

Continuation-in-part of Ser. No. 52,356, Apr. 23, 1993, abandoned. This application Sep. 7, 1994, Ser. No. 301,511
Int. Cl.[6] H03B *1/00;* **H03K** *19/094*
U.S. Cl. 327—112 **15 Claims**

1. A CMOS output driver having a single mode of operation comprising:



an NMOS pull-down transistor, said NMOS pull-down transistor having a drain coupled to an output of said output driver and a source coupled to a first ground;

a PMOS pull-up transistor, said PMOS pull-up transistor having a source coupled to a first power supply and a drain coupled to said output;

a first pass device coupled to a gate of said NMOS pull-down transistor, said pass device having a first terminal coupled to said gate of said NMOS pull-down transistor and a second terminal coupled to an input of said output driver said first pass device comprising:

an NMOS pass transistor with its source connected to said first terminal and its drain connected to said second terminal; and

a PMOS pass transistor with its source connected to said first terminal and its drain connected to said second terminal,

wherein said NMOS pass transistor and said PMOS pass transistor are sized such that the sum of the currents through them is approximately inversely linearly proportional to the gate to source voltage on said NMOS pull-down transistor minus a threshold voltage of said NMOS pull-down transistor; and

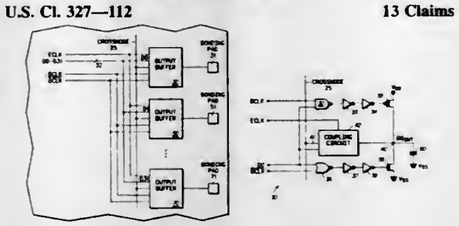
an output enable input coupled to the gates of said pass device, whereby a rate of change of a gate voltage of said NMOS pull-down transistor decreases with an increase in said gate voltage when said pull-down transistor is turned on by an input signal and said output enable input.

5,604,454

INTEGRATED CIRCUIT WITH LOW OUTPUT BUFFER ENERGY CONSUMPTION AND RELATED METHOD

Jeffrey E. Maguire, Munich, Germany, and Meng-Bing Yu, Austin, Tex., assignors to Motorola Inc., Schaumburg, Ill.

Filed Sep. 29, 1995, Ser. No. 536,541
Int. Cl.[6] H03B *1/00*
U.S. Cl. 327—112 **13 Claims**



1. An integrated circuit with low energy consumption comprising:

an internal node;

a plurality of output buffers providing output signals on a corresponding plurality of output nodes, and coupled together via said internal node, each of said plurality of output buffers comprising:

a first transistor having a first current electrode coupled to a first power supply voltage terminal, a control electrode for receiving a pullup signal, and a second current electrode coupled to an output terminal for providing an output signal thereon;

a second transistor having a first current electrode coupled to said output terminal, a control electrode for receiving a pulldown signal, and a second current electrode coupled to a second power supply voltage terminal;

a first predriver circuit responsive to a data signal of a plurality of data signals, for providing said pullup signal when said data signal is in a first logic state;

a second predriver circuit responsive to said data signal for providing said pulldown signal when said data signal is in a second logic state; and

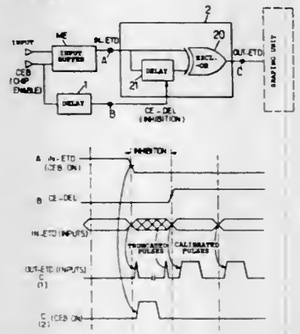
a coupling circuit having a first terminal coupled to said internal node, a second terminal coupled to said output terminal, and an input terminal for receiving said data signal, said coupling circuit being conductive to couple said internal node to said output terminal when a logic level of said output terminal is different from a logic level of said data signal.

5,604,455

TRANSITION DETECTION DEVICE GENERATING A VARIABLE-DURATION PULSE

Thierry Bion, Nantes, and Jean-Yves Danckaert, La Chapelle Sur Erdre, both of France, assignors to Matra MHS, Nantes, France

Filed May 16, 1995, Ser. No. 441,734
Claims priority, application France, Jun. 1, 1994, 94 06694
Int. Cl.[6] H03K *7/00;19/00*
U.S. Cl. 327—176 **5 Claims**



1. A signal processing circuit, comprising:

a plurality of input buffer circuits, a shaping circuit for a CMOS static memory circuit and a transition detection device receiving an enable signal and a buffered digital input signal from one of said plurality of input buffer circuits and providing a pulse of predetermined duration to said shaping circuit, wherein a plurality of buffered digital input signals from said plurality of input buffer circuits are enabled by said enable signal, said transition detection device comprising:

a first delay circuit for receiving said enable signal and generating a delayed enable signal delayed by a first delay value; and

a calibration circuit for calibrating the buffered input signal received from said one input buffer circuit, said calibration circuit comprising:

a second controlled delay circuit, controlled by said delayed enable signal, for receiving said buffered input signal and providing a delayed buffered input signal comprising a pulse of duration equal to a second delay value; and

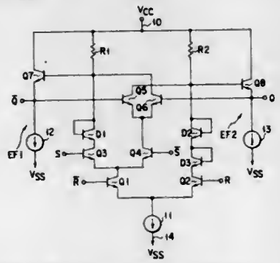
an exclusive-OR logic circuit, having a first input for receiving said buffered input signal, a second input for receiving said delayed buffered input signal and an output for providing an output signal to said shaping circuit comprising a pulse of duration equal to said second delay value only when said delayed enable signal is present simultaneously with a single buffered digital input signal.

5,604,456

DIFFERENTIAL RS LATCH CIRCUIT

Shozo Nitta, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 21, 1995, Ser. No. 576,370
Claims priority, application Japan, Jan. 17, 1995, 7-005136
Int. Cl.[6] H03K *3/037;3/26*
U.S. Cl. 327—217 **7 Claims**



1. A differential RS latch circuit by comprising:

a first differential transistor pair consisting of first differential transistors which receive first complementary input signals, respectively;

a second differential transistor pair consisting of second differential transistors which have a common emitter-coupled node connected to a collector of one of said first differential transistors, and which receive second complementary input signals, respectively;

a first resistance and a first level shift element which are connected successively in series between a first power source node and a collector of one of said second differential transistors;

a second resistance, a second level shift element, and a third level shift element which are connected successively in series between the first power source node and a collector of the other of said first differential transistors;

a first emitter follower circuit which has an output node serving as a first latch output node and an input node connected to a series-connection node between said first resistance and said first level shift element;

a second emitter follower circuit which has an input node connected to a series-connection node between said second resistance and said second level shift element, and an output node serving as a second latch output node which pairs with the first latch output node as a complementary pair;

a current source circuit which is connected between a second power source node and an emitter-coupled node which is provided between said first differential transistors; and

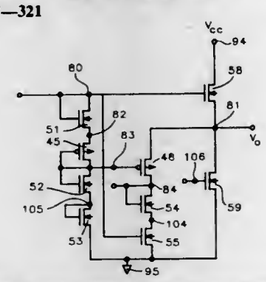
a third differential transistor pair consisting of third differential transistors which have emitters, respectively, connected to the collector of the other of said second differential transistors, bases respectively connected to the first latch output node and the second latch output node, and collectors respectively connected to the input node of said second emitter follower circuit and the input node of the first emitter follower circuit.

5,604,457

MIXED MODE OUTPUT BUFFER CIRCUIT FOR CMOSIC

Tah-Kang J. Ting, Hsinchu, Taiwan, assignor to Etron Technology, Inc., Hsinchu, Taiwan

Division of Ser. No. 512,237, Aug. 7, 1995, Pat. No. 5,534,789.
This application Jun. 13, 1996, Ser. No. 663,438
Int. Cl.[6] H03K *5/08*
U.S. Cl. 327—321 **1 Claim**



1. An output voltage clamping circuit, comprising:

a ground node;

an output voltage node;

an internal voltage node;

an interconnect node;

a P channel metal oxide semiconductor field effect transistor having a drain, a gate, and a source wherein said drain of said P channel metal oxide semiconductor field effect transistor is connected to said output voltage node and said gate of said P channel metal oxide semiconductor field effect transistor is connected to said interconnect node;

a first N channel metal oxide semiconductor field effect transistor having a drain, a gate, and a source wherein said drain of said first N channel metal oxide semiconductor field effect transistor is connected to said gate of said first N channel metal oxide semiconductor field effect transistor and to said source of said P channel metal oxide semiconductor field effect transistor; and

a second N channel metal oxide semiconductor field effect transistor having a drain, a gate, and a source wherein said drain of said second N channel metal oxide semiconductor field effect transistor is connected to said source of said first N channel metal oxide semiconductor field effect transistor, said gate of said second N channel metal oxide semiconductor field effect transistor is connected to said internal voltage node, and said source of said second N channel metal oxide semiconductor field effect transistor is connected to said ground node.

5,604,458

SCALER CIRCUIT

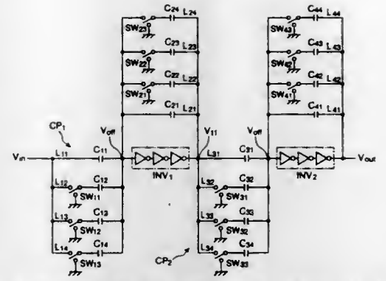
Guoliang Shou; Weikang Yang; Sunao Takatori, and Makoto Yamamoto, all of Tokyo, Japan, assignors to Yozan Inc., Tokyo, Japan, and Sharp Corporation, Osaka, Japan

Continuation-in-part of Ser. No. 191,495, Feb. 4, 1994, Pat. No. 5,457,417. This application Jun. 1, 1995, Ser. No. 457,445
Claims priority, application Japan, Feb. 5, 1993, 5-042048
Int. Cl.[6] G06F *7/44*
U.S. Cl. 327—356 **2 Claims**

1. A scaler circuit comprising:

i) a plurality of input lines, each of said plurality of input lines having a first end and a second end, said first end of each of said plurality of input line being operatively connected to a same input voltage;

ii) a plurality of first capacitances, wherein one of said plurality of first capacitances is operatively provided in each of said plurality of input lines between said first end and second end thereof;



iii) a plurality of first switching devices, wherein one of said plurality of first switching devices is operatively provided in each of said plurality of input lines between said first and second end thereof and selectively connects a terminal of said first capacitance provided in that input line to ground while simultaneously disconnecting said first end from said second end of that input line;

iv) a first inverter having an input portion operatively connected to said second end of each of said plurality of input lines and an output portion;

v) a plurality of first feed back lines connected in parallel between said input portion and said output portion of said first inverter for feeding an output of said first inverter back to an input thereof, each of said plurality of first feed back lines having a first end and a second end, said first end of each of said plurality of first feed back line lines being operatively connected to said input portion of said first inverter, and said second end of each of said plurality of first feed back line lines being operatively connected to said output portion of said first inverter;

vi) a plurality of second capacitances, wherein one of said plurality of second capacitances is operatively provided in each of said plurality of first feed back lines;

vii) a plurality of second switching devices, wherein one of said plurality of second switching devices is operatively provided in each of said plurality of first feed back lines between said second capacitance provided in that first feed back line and said second end of that first feed back line and selectively connects a terminal of said second capacitance provided in that first feed back line to ground while simultaneously disconnecting said first end from said second end of that first feed back line;

viii) a plurality of connecting lines, each of said plurality of connecting lines having a first end and a second end, said first end of each of said plurality of connecting lines being operatively connected to said output portion of said first inverter;

ix) a plurality of third capacitances, wherein one of said plurality of third capacitances is operatively provided in each of said plurality of connecting lines between said first end and second end thereof;

x) a plurality of third switching devices, wherein one of said plurality of third switching devices is operatively provided in each of said plurality of connecting lines between said first end and second end thereof and selectively connects a terminal of said third capacitance provided in that connecting line to ground while simultaneously disconnecting said first end from said second end of that connecting line;

xi) a second inverter having an input portion operatively connected to said second end of each of said plurality of connecting lines and an output portion;

xii) a plurality of second feed back lines connected in parallel between said input portion and said output portion of said second inverter for feeding an output of said second inverter back to an input thereof, each of said plurality of second feed back lines having a first end and a second end, said first end of each of said plurality of second feed back line lines being operatively connected to said input portion of said second inverter, and said second end of each of said plurality of

second feed back line lines being operatively connected to said output portion of said second inverter;

xiii) a plurality of fourth capacitances, wherein one of said plurality of fourth capacitances is operatively provided in each of said plurality of second feed back lines; and

xiv) a plurality of fourth switching devices, wherein one of said plurality of fourth switching devices is operatively provided in each of said plurality second feed back lines between said fourth capacitance provided in that second feed back line and said second end of that second feed back line and selectively connects a terminal of said forth capacitance provided in that second feed back line to ground while simultaneously disconnecting said first end from said second end of that second feed back line,

wherein each switching device in said plurality of second, third and fourth switching devices is cooperatively switched with other switching devices in said plurality of second, third and fourth switching devices so that an effective composite capacitance of said plurality of second capacitances, third capacitances and fourth capacitances becomes substantially equal, and wherein a sum of said plurality of first capacitances is substantially equal to a sum of said plurality of third capacitances.

5,604,459

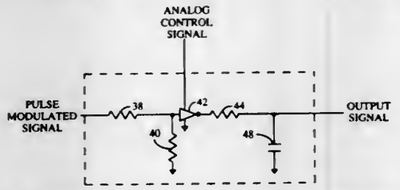
METHOD AND APPARATUS FOR MULTIPLYING A PULSE MODULATED SIGNAL BY AN ANALOG CONTROL SIGNAL

Katherine W. White, San Diego, Calif., assignor to Qualcomm Incorporated, San Diego, Calif.

Continuation of Ser. No. 283,307, Jul. 29, 1994, abandoned. This application Mar. 25, 1996, Ser. No. 622,180

Int. Cl.[6] G06F *7/44*

U.S. Cl. 327—356 **18 Claims**



1. An apparatus for multiplying an analog control signal times a digital pulse modulated signal comprising:

means for receiving and scaling said pulse modulated signal to produce a scaled pulse modulated signal;

logic gate having a signal input for receiving said scaled pulse modulated signal, having a power input for receiving said analog control signal, and having an output for providing a resultant digital product; and

a filter for receiving said resultant digital product and providing a resultant analog product.

5,604,460

AMPLIFIER ARRAY AND RECEIVER CIRCUIT THAT INCLUDES THE AMPLIFIER ARRAY

Peter Sehrig, Poecking; Josef Fenk, Eching, and Stefan Heinen, Krefeld, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

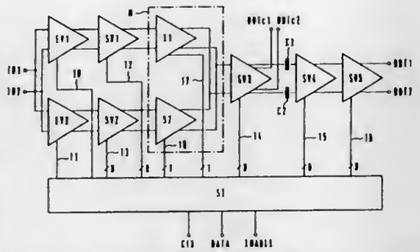
Filed Jul. 10, 1995, Ser. No. 500,041

Claims priority, application Germany, Jul. 8, 1994, 44 24 140.2

Int. Cl.[6] H03F *1/14*

U.S. Cl. 330—51 **13 Claims**

1. An amplifier array having digitally adjustable total gain and being constructed of a multiplicity of switchable individual amplifiers, comprising:



at least two parallel, selectively triggerable gain paths having input and output sides;

each of said gain paths having an input amplifier and a switching amplifier being connected downstream of said input amplifier and being switchable in stages;

a multiplexer having inputs connected to said output side of said gain paths and having an output; and

an amplifier array input connected to said input side of said gain paths and an amplifier array output being formed by said output of said multiplexer;

wherein said input amplifier are base-coupled amplifiers.

5,604,461

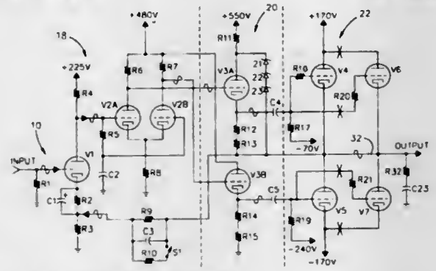
TRANSFORMERLESS OUTPUT VACUUM TUBE AUDIO AMPLIFIER

Bruce M. Rozenblit, 7244 Madison, Kansas City, Mo. 64114

Filed Jan. 22, 1996, Ser. No. 589,731

Int. Cl.[6] H03F *1/36;3/28*

U.S. Cl. 330—81 **20 Claims**



1. An audio amplifier comprising:

a gain stage including means for receiving an audio input from a source thereof and responsive to said input for producing first and second amplified audio signals 180 degrees out of phase from one another;

an intermediate stage including first and second intermediate unity gain sections having means for respectively receiving said first and second amplified audio signals and responsive thereto for producing respective first and second intermediate signals;

an output stage including first and second series connected vacuum tubes coupled in a push-pull configuration, and including means for setting the quiescent current of said first and second series connected vacuum tubes, and for receiving and responding to said first and second intermediate signals for producing an output signal on an output line, said output stage being operable for driving an audio loudspeaker coupled with said output line without a transformer and without a capacitor between said output stage and said audio loudspeaker;

said first and second series connected vacuum tubes being coupled for respectively receiving at the grids thereof said first and second intermediate signals and responsive thereto for respectively producing said output signal;

the cathode of said first series connected output tube being coupled with said output line so that said cathode follows said output signal resulting in degeneration of said first intermediate signal at said grid of said first series connected vacuum tube relative to said output line; and

means for compensating for said degeneration including means for providing said output signal as a voltage reference for said first intermediate unity gain section so that said output signal is superimposed only on said first intermediate signal thereby compensating for said degeneration.

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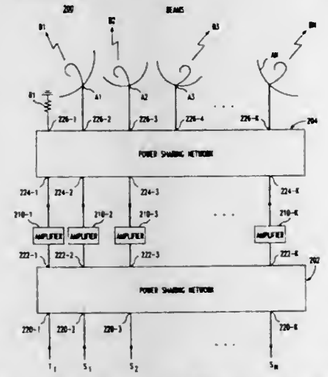
INTERMODULATION DISTORTION DETECTION IN A POWER SHARED AMPLIFIER NETWORK

Michael J. Gans, Holmdel, and Yu S. Yeh, Freehold, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Nov. 17, 1995, Ser. No. 560,450

Int. Cl.[6] H03F *3/68;3/26*

U.S. Cl. 330—124 R **26 Claims**



1. An intermodulation distortion (IMD) detection system for use in a power shared amplifier network capable of amplifying at least one input signal, comprising:

a first power sharing network having a plurality of first input ports, with at least one of said first input ports receiving at least one associated test signal and with at least one other of said first input ports receiving said at least one input signal, said first power sharing network splitting each of said at least one input signal and said at least one test signal between a plurality of first output ports, thereby producing a composite signal at each said first output port having signal power of said at least one test signal and of said at least one input signal;

a plurality of amplifier circuits, each coupled to an associated one of said first output ports and amplifying an associated one of said composite signals;

a second power sharing network having a plurality of second input ports coupled to associated ones of said amplifier circuits, and having a plurality of second output ports, for providing amplified signal power of said at least one test signal on at least one associated second output port, and amplified signal power of said at least one input signal on at least one other of said second output ports; and

at least one of said amplifier circuits including detection circuitry for detecting IMD product power associated with said at least one test signal.

5,604,463

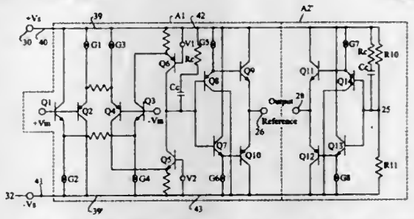
COUPLING CIRCUIT

George H. Freuler, Moreno Valley; Edward J. Collier, deceased, late of Anaheim; David Mazi, Moreno Valley, and R. David Middlebrook, San Dimas, all of Calif., assignors to Zero Impedance Systems, Yorba Linda, Calif.

Continuation-in-part of Ser. No. 914,568, Jul. 17, 1992, Pat. No. 5,402,084, which is a continuation-in-part of Ser. No. 851,334, Mar. 16, 1992, Pat. No. 5,300,893. This application Mar. 27, 1995, Ser. No. 413,194

Int. Cl.[6] H03F *1/30*

U.S. Cl. 330—149 **7 Claims**



1. In a signal coupling circuit which includes: an input terminal for receiving an input signal from a source and first and second output terminals for supplying an output signal to a load; signal processing means connected between the input terminal and the first output terminal for deriving an output signal in response to the input signal and for supplying the output signal to a load connected between the output terminals to produce a load current in the load, the signal processing means having power supply terminals for receiving operating power; power supply means having a ground terminal; and connecting lines each having a finite impedance and connected for supplying operating power from the power supply means to the signal processing means, the improvement comprising distortion eliminating means connected between said power supply means and said second output terminal for redirecting the load current from said power supply means ground terminal to said power supply terminals, thus bypassing the load current from said line impedances, said distortion eliminating means comprising at least one active circuit element and having an electric characteristic corresponding substantially to a capacitor with infinite capacitance, wherein:

said signal processing means comprise an amplifier having an output portion and said distortion eliminating means comprise a circuit unit which exhibits an electrical behavior identical to said output portion;

there are two said connecting lines;

said distortion eliminating means comprise two active circuit elements, each of said active circuit elements having a controllable current path connected between said connecting lines and a signal input connected to a first common point;

said output portion of said amplifier comprises two active circuit elements, each of said active circuit elements having a controllable current path connected between said connecting lines and a signal input connected to a second common point;

said circuit further comprises a frequency response compensation network connected between said second output terminal and each of said first and second common points; and

said frequency response compensation network comprises: a first two-terminal RC circuit unit connected between said second output terminal and said first common point; and a second two-terminal RC circuit unit connected between said second output terminal and said second common point.

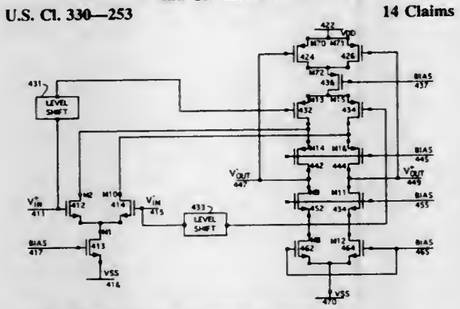
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5,604,464

CASCODE OPERATIONAL AMPLIFIER WITH MULTIPLE INPUT STAGE

Chien-Meen Hwang, Stanford, and Eugen Gershon, San Jose, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jul. 7, 1995, Ser. No. 499,315
Int. Cl.[6] H03F *3/45*
U.S. Cl. 330—253 **14 Claims**



1. A cascode operational amplifier comprising:

a differential input block which receives a differential input having a first differential input stage and a second differential input stage,

the differential input block includes a first level shift circuit coupled between the first differential input stage and the second differential stage for shifting an input level to the second differential stage,

a cascode block coupled to the differential input block which provides a differential output for the operational amplifier;

a common mode feedback block coupled to the second differential input stage of the differential input block and the differential output of the cascode block which stabilizes a direct current (DC) output level for the differential output; and

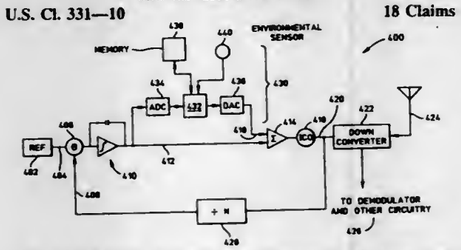
a lead block coupled to the differential output of the cascode block which applies a resistive lead to the differential output in response to a differential input signal applied to the differential input block.

5,604,465

ADAPTIVE SELF-CALIBRATION FOR FAST TUNING PHASELOCK LOOPS

Mark J. Farabaugh, Owego, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 7, 1995, Ser. No. 480,221
Int. Cl.[6] H03L *7/93;7/107*
U.S. Cl. 331—10 **18 Claims**



13. A method for operating a self-calibrating radio tuner, comprising the steps of:

generating a reference signal;

frequency dividing an output signal having an actual tune frequency by a division to generate a feedback signal;

measuring a phase difference between the reference signal and the feedback signal and providing a representative phase difference signal;

summing the phase difference signal over time and providing a representative error signal;

summing the error signal with a steering signal to provide a control signal;

providing the output signal by creating a signal with a frequency proportionate to the control signal; and

generating the steering signal by performing steps comprising:

generating a steering signal in response to the division; and

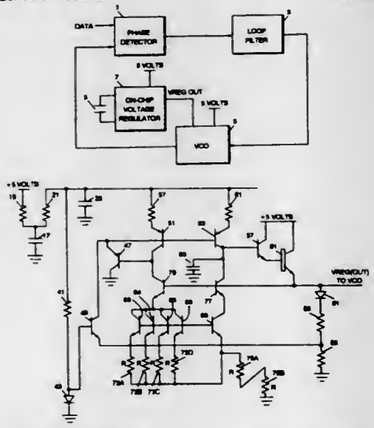
after operation of the radio tuner for a selected time period generating a corrected steering signal responsive to the error signal to minimize the error signal.

5,604,466

ON-CHIP VOLTAGE CONTROLLED OSCILLATOR

Daniel M. Dreps, Endicott, and Raymond P. Rizzo, Vestal, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 987,224, Dec. 8, 1992, abandoned. This application Nov. 28, 1994, Ser. No. 345,280
Int. Cl.[6] H03L *7/14;* **H03K** *3/281*
U.S. Cl. 331—113 R **20 Claims**



1. A circuit comprising:

a voltage regulator for rejecting low frequency noise from a regulated power supply, the voltage regulator including a voltage regulator output for providing a noise-attenuated regulated voltage; and

an oscillator, the voltage regulator and the oscillator implemented on a common substrate, the oscillator coupled to the voltage regulator output,

the voltage regulator further including attenuation means, which attenuation means includes a passive filter coupled to the regulated power supply for attenuating high frequency noise from the regulated power supply, and for supplying power from the power supply to the voltage regulator,

wherein the passive filter includes a first resistor-capacitor pair for attenuating noise frequencies higher than a response ability of the voltage regulator, wherein the noise frequencies are higher than about 5 MHz, the passive filter further including a second resistor-capacitor pair for attenuating noise frequencies higher than about 800 MHz,

wherein the attenuation means further includes means for maintaining an attenuation of at least about −30 dB for noise frequencies in a range from about DC to at least about 800 MHz.

wherein the voltage regulator further includes a band gap circuit and regulator means for providing adequate current to maintain the regulated voltage while preventing noise from passing through the regulator means to the voltage regulator output, the regulator means including a Darlington pair coupled to the voltage regulator output, and a control terminal of the Darlington pair coupled to the band gap circuit for receiving variable current, the band gap circuit coupled to the voltage regulator output and controlling the variable current in response to changes in the regulated voltage,

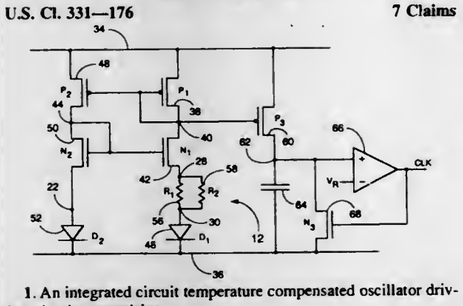
wherein the oscillator comprises a multivibrator which includes a control voltage input, and capacitors connected in parallel, wherein a top plate of one of the capacitors is connected to a bottom plate of another one of the capacitors for providing a symmetric capacitance, and further wherein the control voltage input comprises a first transistor for receiving a control voltage signal, the first transistor coupled to the regulated power supply and to one end of a resistor, another end of the resistor coupled to both a collector and a base of a second transistor, the second transistor coupled to a plurality of transistors to form a multiple output current mirror, the multiple output current mirror coupled to the capacitors connected in parallel.

5,604,467

TEMPERATURE COMPENSATED CURRENT SOURCE OPERABLE TO DRIVE A CURRENT CONTROLLED OSCILLATOR

Wallace E. Matthews, Richardson, Tex., assignor to Benchmarg Microelectronics, Dallas, Tex.

Filed Feb. 11, 1993, Ser. No. 16,439
Int. Cl.[6] H03L *1/02*
U.S. Cl. 331—176 **7 Claims**



1. An integrated circuit temperature compensated oscillator driving circuit, comprising:

a voltage generator for generating a substantially constant voltage that has an integral variation as a function of temperature;

an impedance device integrally formed with said voltage generator having the substantially constant voltage impressed thereacross to define the current drawn therethrough, said impedance device varying in value as a function of temperature;

a current mirror for mirroring the current through said impedance device to a current source, the current through said current source directly proportional to the current through said impedance device;

wherein said substantially constant voltage has a first temperature coefficient associated therewith and said impedance device has a second temperature coefficient associated therewith, said first and second temperature coefficients having the same polarity;

wherein said first and second temperature coefficients are substantially equal, such that the current through said impedance device has a substantially zero temperature coefficient; and

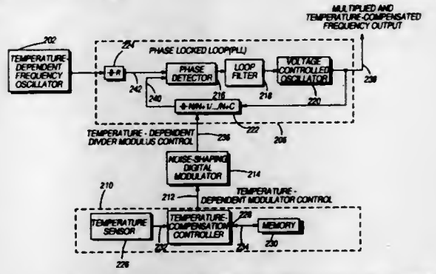
a current controlled oscillator for being driven by said current from said current source to output a periodic waveform having a frequency that varies as a function of said current such that temperature variations in said current from said current source cause a corresponding temperature variation in said frequency.

5,604,468

FREQUENCY SYNTHESIZER WITH TEMPERATURE COMPENSATION AND FREQUENCY MULTIPLICATION AND METHOD OF PROVIDING THE SAME

Steven F. Gillig, Roselle, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 22, 1996, Ser. No. 635,487
Int. Cl.[6] H03L *1/02;7/06;7/16;7/18*
U.S. Cl. 331—176 **24 Claims**



1. A frequency synthesizer with temperature compensation and frequency multiplication, comprising:

a temperature dependent frequency oscillator;

at least one frequency multiplication element, the element programmed to vary as a function of a temperature variation of the frequency oscillator and to vary as a function of a frequency multiplication factor;

at least one locked loop circuit chosen from the group consisting of a phase locked loop, a frequency locked loop and a delay locked loop; and

the oscillator and element being coupled to the locked loop circuit such that a temperature independent multiplied frequency is provided.

5,604,469

HIGH-FREQUENCY INTEGRATED CIRCUIT

Youhei Ishikawa; Toru Tanizaki, both of Kyoto, and Hiroshi Nishida, Kawanishi, all of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

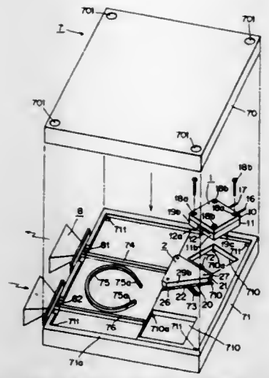
Filed Aug. 28, 1995, Ser. No. 519,949
Claims priority, application Japan, Aug. 30, 1994, 6-205427
Int. Cl.[6] H01P *1/383;3/16;* **H03B** *5/18*
U.S. Cl. 333—1.1 **9 Claims**

1. A high-frequency integrated circuit comprising a device and a mount case for containing said device, said circuit comprising:

a) a device with a nonradiative dielectric waveguide comprising:

a pair of first conductors which are parallel to each other with a specified spacing; a first dielectric strip which is disposed between the first conductors; a plane mounting surface which is formed on one of the first conductors; and an end surface which is formed on an end of the first conductors so as to be vertical to a direction in which an electromagnetic wave is propagated in the first dielectric strip, an end of the first dielectric strip being exposed on the end surface; and

b) a mount case with a nonradiative dielectric waveguide in which said device with a nonradiative dielectric waveguide is mounted, the mount case comprising:



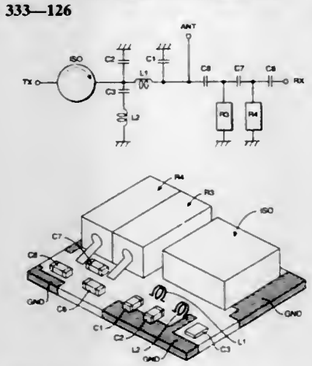
a pair of second conductors which are parallel to each other with a specified spacing, said device with a nonradiative dielectric waveguide being mounted between the second conductors; and a second dielectric strip which is disposed between the second conductors, an end of said second dielectric strip being electromagnetically coupled to said end of said first dielectric strip.

5,604,470

DUPLEXER HAVING TRANSMIT AND RECEIVE SECTIONS MOUNTED ON A SINGLE SUBSTRATE

Masayuki Atokawa, Ishikawa-ken, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Apr. 13, 1995, Ser. No. 422,143
Claims priority, application Japan, Apr. 26. 1994, 6-088524
Int. Cl.[6] H01P *1/213*; H04B *1/50*
U.S. Cl. 333—126 **14 Claims**



1. A duplexer comprising:

a transmission section consisting of an isolator and a transmission circuit devoid of any resonators and comprising inductors and capacitors;

a reception section comprising a reception filter having a dielectric resonator apparatus; and

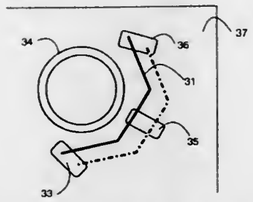
a single substrate on which said transmission and reception sections are mounted, said transmission circuit functioning to match said isolator with said reception filter.

5,604,471

RESONATOR DEVICE INCLUDING U-SHAPED COUPLING SUPPORT ELEMENT

Tapio Ráttilá; Pertti Puurunen; Seppo Salmela, all of Kempele; Jarmo Valtonen, Jaali, and Kari Lohtander, Tymävä, all of Finland, assignors to LK Products OY, Kempele, Finland

Filed Mar. 15, 1995, Ser. No. 403,380
Claims priority, application Finland, Mar. 15, 1994, 941219
Int. Cl.[6] H01P *1/20*
U.S. Cl. 333—202 **13 Claims**



1. A resonator device suitable for use in a radio frequency filter comprising:

a helical resonator coil mounted on a circuit board and an elongate inductive coupling element mounted in a positioning device at an adjustable distance from the helical resonator coil on the circuit board and in electromagnetically-coupled relation to the helical resonator coil, the coupling element having a short-circuited end and an end for providing a signal path to the resonator device,

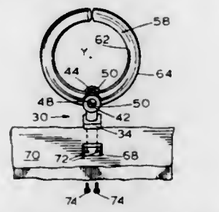
wherein the coupling element comprises a fork-like conductive strip comprising two branches between which the helical resonator coil is located, the coupling element being selectively fixedly connected to the positioning device at one of a plurality of predetermined positions.

5,604,472

RESONATOR MOUNTING MECHANISM

Moorthy K. Uppaluri, Mount Prospect, and Ronald Lepinski, Chicago, both of Ill., assignors to Illinois Superconductor Corporation, Mount Prospect, Ill.

Filed Dec. 1, 1995, Ser. No. 566,013
Int. Cl.[6] H01P *7/00*
U.S. Cl. 333—219 **19 Claims**



1. A resonator mounting mechanism for attaching a resonator to a wall in combination with the resonator, the mounting mechanism comprising:

a stand having (a) means for securing the stand to a wall at a first end of the stand and (b) a head at a second end of the stand;

a groove formed in the head;

at least one wing on the head;

a cap having at least one wing; and

means for holding the at least one wing on the cap in a fixed position with respect to the at least one wing on the head;

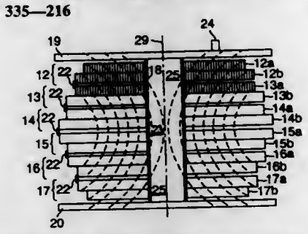
wherein the cap covers at least a portion of the groove in order to hold the resonator in the groove.

5,604,473

SHAPED SUPERCONDUCTING MAGNETIC COIL

Anthony J. Rodenbush, Mariborough, Mass., assignor to American Superconductor Corporation, Westborough, Mass.

Filed Oct. 13, 1994, Ser. No. 323,494
Int. Cl.[6] H01F *1/00;6/00;7/00*
U.S. Cl. 335—216 **15 Claims**



14. A superconducting magnetic double pancake coil comprising:

a first pancake coil having a first outer dimension comprising a superconductor wound about a longitudinal axis of the coil;

a second pancake coil, having a second outer dimension different than said first dimension, comprising a superconductor wound about the longitudinal axis of the coil; and

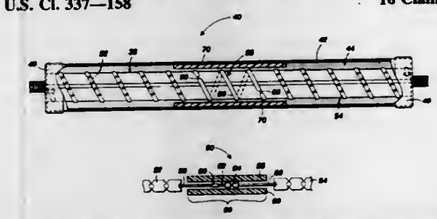
wherein said first and second pancake coils are wound from a continuous length of superconducting material.

5,604,474

FULL RANGE CURRENT LIMITING FUSE TO CLEAR HIGH AND LOW FAULT CURRENTS

John G. Leach, and Ronald E. Bennett, both of Hickory, N.C., assignors to KHT Fuses, L.L.C., Hickory, N.C.

Filed Mar. 10, 1995, Ser. No. 402,001
Int. Cl.[6] H01H *85/04*
U.S. Cl. 337—158 **16 Claims**



16. A high voltage, full range current limiting fuse, comprising:

(a) a tubular housing filled with granular dielectric material;

(b) a conductive terminal at each end of said housing;

(c) a dielectric support positioned in said housing between said terminals;

(d) a fusible structure spirally wound around said dielectric support and electrically connected to said terminals, said fusible structure including two high fault current interrupting elements with the same time-current characteristics responsive to high fault currents, each having one of its ends electrically connected to one of said terminals, and a low fault current interrupting assembly responsive to low fault currents and connected in series with said high fault current interrupting elements, said low fault current interrupting assembly having a damage sensor portion having a melting time-current characteristic which results in said damage sensor portion melting before said high fault current interrupting elements for all currents which melt open or partially melt open said high fault current interrupting elements, a low current melting component electrically connected to said damage sensor portion, and a dielectric tubular member surrounding said plurality of electrical components of said low fault current interrupting assembly; and

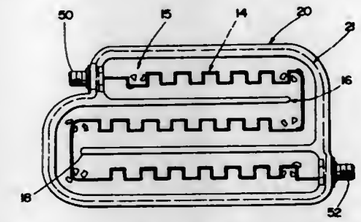
(e) a thermal shield mounted to said housing opposite said dielectric tubular member.

5,604,475

CURRENT-LIMITING FUSE AND HOUSING ARRANGEMENT

Hiram S. Jackson, Morton Grove, Ill., assignor to S&C Electric Company, Chicago, Ill.

Filed Apr. 7, 1994, Ser. No. 225,161
Int. Cl.[6] H01H *85/04;71/10*
U.S. Cl. 337—159 **14 Claims**



1. A current-limiting fuse for medium-voltage electrical power distribution comprising:

housing means for defining a cavity of predetermined dimensions;

an elongated fusible element;

means for defining an elongated circuitous path through said cavity and for supporting said elongated fusible element along said elongated circuitous path, said elongated circuitous path of said elongated fusible element including a plurality of serially interconnected non-aligned segments that generally define a plane;

means for electrically connecting said elongated fusible element between at least two points on the periphery of said housing means; and

pulverulent arc-quenching filler material surrounding said elongated fusible element and generally filling said cavity, said elongated fusible element comprising a flat thin ribbon of conductive material including an edgewise configuration that defines a series of generally rectangular-shaped departures from said elongated circuitous path and said plurality of serially interconnected non-aligned segments, each of said generally rectangular-shaped departures being formed by a first two generally right-angle bends followed by a second two generally right-angle bends in the opposite direction to said first two generally right-angle bends.

5,604,476

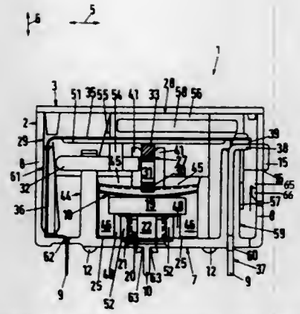
PROTECTIVE DEVICE FOR AN ELECTRICAL CONSUMER

Wolfgang Schmidt, Berg; Ulrich Reichert; Fritz Krasser, both of Altdorf; Frank Tolksdorf, Hagen; Stephan Greitzke, Dortmund, and Hansjuergen Kech, Herdecke, all of Germany, assignors to Ellenberger & Poensgen GmbH, Altdorf, and Wilo, GmbH, Dortmund, both of Germany

PCT No. PCT/DE93/00712, § 371 Date Feb. 13, 1995, § 102(e) Date Feb. 13, 1995, PCT Pub. No. WO94/05030, PCT Pub. Date Mar. 3, 1994
PCT Filed Aug. 9, 1993, Ser. No. 381,908
Claims priority, application Germany, Aug. 11, 1992, 92 10 707.9 U; Nov. 11, 1992, 92 15 345.3 U; Jan. 25, 1993, 43 01 958.7
Int. Cl.[6] H01H *37/00*
U.S. Cl. 337—298 **30 Claims**

1. In a protective device for an electrical consumer disposed in a consumer circuit, the protective device having:

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sensor means for detecting an operating state of the electrical consumer;

an electronic evaluation and control unit operatively connected to the sensor means for evaluating and controlling the operating state of the electrical consumer detected by the sensor means;

a protective switch responsive to the operating state of the electrical consumer detected by the sensor means for interrupting the consumer circuit, the protective switch comprising:

a housing including housing walls;

a control circuit disposed at least in part within the housing and including a bimetallic strip and a temperature-dependent resistor operatively associated with the bimetallic strip for deflecting the bimetallic strip for interrupting the consumer circuit, the bimetallic strip thereby defining a deflecting direction; and

a power supply unit adapted to be connected to a power supply grid and to respective ones of the sensor means, the evaluation and control unit, and the protective switch for supplying electrical power to the sensor means, the evaluation and control unit and the protective switch;

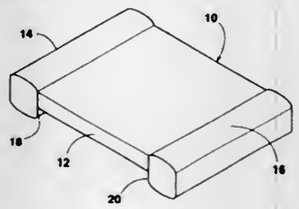
the improvement wherein the protective switch further comprises a spring disposed for biasing the bimetallic strip and the temperature-dependent resistor toward one another in the deflection direction of the bimetallic strip for effecting a structural and electrical contact between the bimetallic strip and the temperature-dependent resistor, the bimetallic strip thereby being electrically connected in series with the temperature-dependent resistor, a control current thereby being adapted to flow through the temperature-dependent resistor and the bimetallic strip.

5,604,477

SURFACE MOUNT RESISTOR AND METHOD FOR MAKING SAME

Walter Rainer, Duncan; Joel J. Smejkal, Columbus; Steve E. Hendricks, Columbus, and Gary E. Bougger, Columbus, all of Nebr., assignors to Dale Electronics, Inc., Columbus, Nebr.

Filed Dec. 7, 1994, Ser. No. 350,960
Int. Cl.[6] H01C *3/12*
U.S. Cl. 338—293 **12 Claims**



10. A surface mount resistor comprising:

an elongated first piece of electrically resistive material having first and second end edges, opposite side edges, a front face and a rear face, said piece of resistive material having a thickness between said front and rear faces and having a plurality of slots formed therein which create a serpentine current path for current moving between said first and second end edges;

second and third pieces of conductive metal each having a front face, a rear face, an edge and a thickness between said front and rear faces thereof;

a portion of each of the edges of said second and third pieces being attached to said first and second end edges respectively of said first piece;

said thickness of said second and third pieces being greater than said thickness of said first piece;

a dielectric material surrounding and encapsulating only said first piece;

a coating of solder surrounding and coating said second and third pieces.

5,604,478

PET OPERABLE DOOR CHIME

Tamara L. Grady, 11173 Bridalwood Trail, Berrien Springs, Mich. 49103, and Andrew Krochmal, Stevensville, Mich., assignors to Tamara L. Grady, Berrien Springs, Mich.

Filed Mar. 6, 1995, Ser. No. 398,741
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—330 **17 Claims**

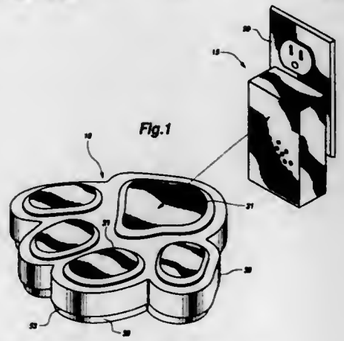


Fig.1

1. A pet-operable chime system, comprising:

a switch unit comprising

a base plate,

a movable plate spaced from said base plate, said movable plate having at least one through hole,

a transmitter for transmitting signals,

a switch electrically coupled to said transmitter and mounted to either said base plate or said movable plate,

an actuation member attached to the other of said base plate or said movable plate that does not support said switch, said actuation member being postitioned at a location that is substantially opposite said switch,

at least one spring interconnecting said movable plate and said base plate, wherein said at least one spring is biased to push said movable plate away from said base plate, and

at least one post interconnecting said movable plate and said base plate, said post having a first end and an opposing second end, wherein said first end of said post is fixed to said base plate, and said second end of said post is freely inserted through said at least one hole of said movable plate such that said movable plate is free to slide along said post; and a remote chime unit comprising

a receiver for receiving signals from said transmitter, and

a chime electrically coupled to said receiver for generating an audible sound;

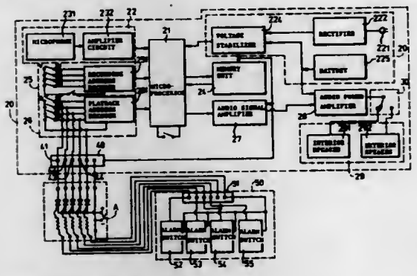
wherein said movable plate is movable between a neutral position where no pressure is applied to said movable plate and said actuation member does not engage said switch and an activated position where under pressure said movable plate is moved toward said base plate against the bias of said at least one spring such that said actuation member engages and activates said switch, said activated switch causing said transmitter to send a signal to said remote chime unit to sound said chime.

5,604,479

VOICE RECORDING AND PLAYBACK APPARATUS, AND ALARM SYSTEM WITH VOICE RECORDING AND PLAYBACK APPARATUS

Yen-Pin Chang, 3F, No. 18, Lane 100, Sung-chiang Rd., Taipei, Taiwan

Filed Mar. 22, 1996, Ser. No. 620,301
Int. Cl.[6] G08B *3/10*
U.S. Cl. 340—384.7 **4 Claims**



3. An alarm system, comprising:

a voice recording and playback apparatus including:

a memory unit having addressable memory regions;

a voice input unit for converting a user voice input into an electrical signal;

processor means, connected to said memory unit and said voice input unit, for storing the electrical signal from said voice input unit as a voice message in said memory unit;

a recording address generator including a recording address decoder which has a plurality of inputs and an output end connected to said processor means, and a plurality of recording switches for connecting a respective one of said inputs of said recording address decoder to a voltage source, said recording address decoder providing a corresponding recording address to said processor means to enable said processor means to store the voice message in a corresponding one of said memory regions of said memory unit when one of said recording switches is closed;

a playback address generator including a playback address decoder which has a plurality of inputs and an output end connected to said processor means, and a plurality of playback switches for connecting a respective one of said inputs of said playback address decoder to the voltage source, said playback address decoder providing a corresponding playback address to said processor means to enable said processor means to retrieve the voice message in a corresponding one of said memory regions of said memory unit when one of said playback switches is closed;

amplifier means, connected to said processor means, for amplifying the voice message retrieved by said processor means; and

speaker means, connected to said amplifier means, for broadcasting the voice message retrieved by said processor means;

a thyristor set including a plurality of thyristors, each of which has a first thyristor terminal connected to a respective one of said inputs of said playback address decoder, a second thyristor terminal connected to the voltage source, and a trigger input; and

a detector unit including a plurality of alarm switches, each of which connects said trigger input of a respective one of said thyristors to the voltage source;

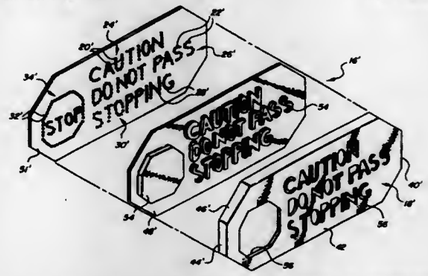
whereby, closure of one of said alarm switches triggers the respective one of said thyristors into conduction, thereby connecting one of said inputs of said playback address decoder to the voltage source.

5,604,480

FLASHING CAUTION/STOP BUS LIGHT ASSEMBLY

Ronald C. Lamparter, Grosse Pointe Shores, Mich., assignor to Transpec Inc., Troy, Mich.

Filed Sep. 29, 1995, Ser. No. 536,705
Int. Cl.[6] B60Q *1/26*
U.S. Cl. 340—433 **18 Claims**



12. A bus light system adapted to be connected to a passenger bus, said system comprising:

a first indicator assembly adapted to be fixedly secured to an upper portion of a passenger bus, said indicator assembly including a lighted display;

said lighted display including at least first and second light elements for separately illuminating first and second sections of said display in first and second colors;

said first and second sections including first and second word messages indicated thereon and associated with said first and second light elements, respectively; said first word message indicating a slowing-to-stop condition in said first color and said second word message indicating a stop condition to load and unload passengers in said second color;

a third light element for illuminating a third section of said display and a third word message, said first and third light elements adapted to flash alternately in said slowing-to-stop condition;

a fourth light element for illuminating a fourth section of said display and a fourth word message, said second and fourth light elements adapted to flash alternately in said stop condition; said first and third sections being located vertically spaced from one another on said lighted display.

5,604,481

TIRE PRESSURE DETECTOR

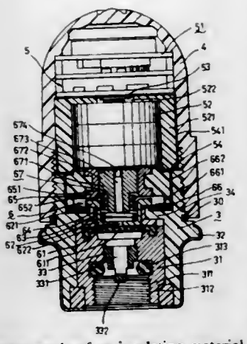
Ming-Te Lin, Tainan, Taiwan, assignor to Bai CHJ Industrial Co., Ltd., Tainan, Taiwan

Filed Mar. 8, 1995, Ser. No. 400,839
Int. Cl.[6] B60C *23/00*
U.S. Cl. 340—442 **16 Claims**

1. A pressure detector for a tire having an inflating valve, comprising:

a cap-like casing having a closed upper portion and an open lower portion;

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a hollow adaptor made of an insulating material and having an upper end engaging said open lower portion of said casing, a lower end adapted to engage and open the inflating valve to permit flow of air from the tire into said adaptor, and an inward protrusion projecting from an inner wall of said adaptor;

a detector assembly including a battery unit and a signal generating unit which are mounted within said casing;

a pressure-actuated switch unit mounted within said adaptor for connecting electrically said battery unit to said signal generating unit so as to activate said signal generating unit when pressure inside the tire is insufficient, said switch unit including:

a resilient disc member disposed in said lower end of said adaptor, said disc member having a peripheral portion secured to said inner wall of said adaptor and forming an air chamber in said lower end of said adaptor to be communicated with an interior of the tire, and a central portion moving in accordance with pressure inside the tire;

an annular conductive piece disposed on an upper surface of said inward protrusion of said adaptor and connected electrically to one of said battery unit and said signal generating unit;

a first contact unit having a conductive tubular body which is disposed on said central portion of said disc member and which extends slidably through said inward protrusion of said adaptor, said tubular body having a peripheral flange which projects outwardly from an upper end thereof and which extends above said conductive piece;

a second contact unit including a hollow conductive seat member which is mounted within said adaptor above said tubular body and which has an internally threaded portion, said seat member being connected electrically to the other one of said battery unit and said signal generating unit, said second contact unit further including an adjustment rod which has an externally threaded portion that engages said internally threaded portion of said seat member; and

a spring having one end abutting said adjustment rod and another end abutting said tubular body to bias said tubular body toward said disc member, said adjustment rod being movable within said seat member to adjust biasing force of said spring;

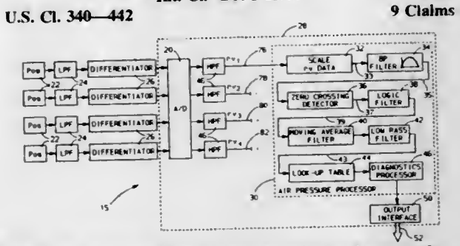
whereby, when pressure inside the tire is sufficient to overcome said biasing force of said spring, said disc member biases said tubular body such that said peripheral flange of said tubular body is spaced from said conductive piece to disconnect electrically said signal generating unit from said battery unit, and when pressure inside the tire is insufficient to overcome said biasing force, said spring biases said tubular body such that said peripheral flange of said tubular body contacts said conductive piece to connect electrically said signal generating unit to said battery unit.

5,604,482

TIRE PRESSURE MONITOR

Kamal N. Majeed, Centerville, and Mark R. De Poyster, Englewood, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed May 15, 1995, Ser. No. 441,570
Int. Cl.[6] B60C *23/00*
U.S. Cl. 340—442 **9 Claims**



4. A tire pressure monitor method according to the steps of:

determining (**102**), responsive to a sensor mounted between a vehicle body and a vehicle wheel, a signal indicative of a relative vertical velocity between the vehicle wheel and the vehicle body;

band pass filtering (**108**) the relative vertical velocity signal to provide a band passed filtered signal including frequency components indicative of wheel movement;

detecting each change in sign of the band pass filtered signal;

determining (**116**) a frequency of the sign changes;

comparing the frequency of the detected sign changes to upper and lower thresholds and passing the frequency of the detected sign changes if the frequency of the detected sign changes is within the upper and lower thresholds, wherein the frequencies passed are indicative of wheel movement;

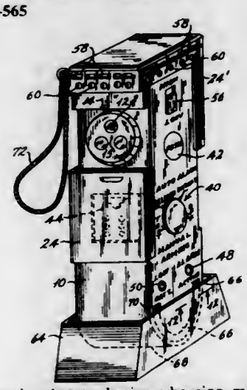
applying the frequencies passed to a moving average filter (**40, 140**) to determine a moving average of the frequencies passed, wherein the moving average is a signal indicative of pressure in a tire of the wheel.

5,604,483

PORTABLE PERSONAL SECURITY DEVICE

John J. Giangardella, 3 Calle Del Apice, San Clemente, Calif. 92672, and Procopio Soriano, Jr., 6 Belinder Rd., Gaithersburg, Md. 20878

Filed Feb. 8, 1995, Ser. No. 385,480
Int. Cl.[6] G08B *13/00*
U.S. Cl. 340—565 **20 Claims**



1. In an intrusion detector having a housing, means for sensing motion within at least one field of view and producing an output signal in response to said motion, means for emitting an alarm in response to said output signal from said sensing means, and means

for controlling electrical operation of said intrusion detector, said field of view having a central axis, and the improvement comprising:

means, integrally attached to said housing, for varying said field of view;

said field of view varying means having at least two different windows, a rotatable turret containing said windows and having a rotation axis offset from and generally parallel to said field of view central axis, each said window being disposed radially from said rotation axis such that each of said windows is selectively alignable with said central axis by rotation of said turret; and

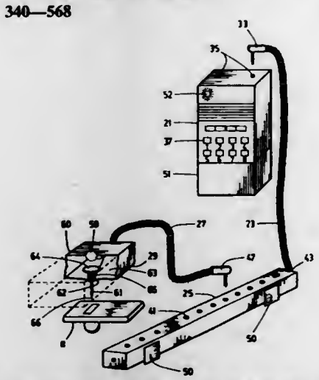
means for selectively positioning said windows into and out of a generally coaxial alignment with said central axis in order to vary said field of view.

5,604,484

ELECTRONIC PIN FASTENER

Robert Rogers, 54 Jackson's Point Avenue, Jackson's Point, Ontario, Canada

Filed Jul. 31, 1995, Ser. No. 509,139
Int. Cl.[6] G08B *13/06*
U.S. Cl. 340—568 **12 Claims**



1. An electronic pin fastener for use in a security system for garments, merchandise and the like mounted for sale or display on a display fixture, rack or bin, whereby removal of the pin fastener will cause an alarm, said pin fastener comprising: an enclosed housing having top and bottom walls, an aperture centrally disposed in said top wall, a hole centrally disposed in said bottom wall, a pin having a head and a stem, the stem of the pin extending through said hole in said bottom wall and bias means adapted so that the head of said pin is biased towards a position such as to cause an alarm, said stem of the pin adapted to be retained in a depressed non-alarm position by an EAS tag or locking mechanism after the pin is inserted through a garment.

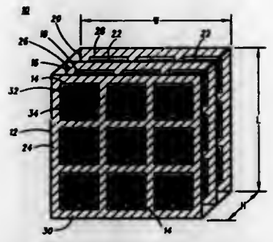
5,604,485

RF IDENTIFICATION TAG CONFIGURATIONS AND ASSEMBLIES

George L. Lauro, Lake Zurich; Rudyard L. Istvan, Winnetka, and Sanjar Ghaem, Palatine, all of Ill., assignors to Motorola Inc., Schaumburg, Ill.

Filed Apr. 21, 1993, Ser. No. 49,804
Int. Cl.[6] G08B *13/14*
U.S. Cl. 340—572 **35 Claims**

1. An RF tag comprising a plurality of RF resonant circuits, each of said RF resonant circuits comprising a conductive portion which



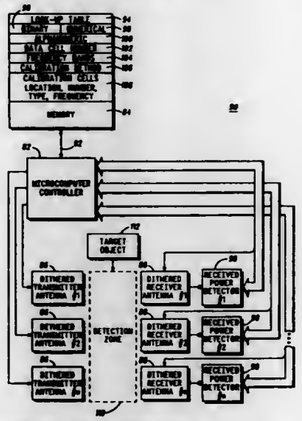
provides an inductance that determines an electrical resonant frequency for said resonant circuit, said RF resonant circuits being spaced apart and disposed in a three-dimensional array of said RF resonant circuits.

5,604,486

RF TAGGING SYSTEM WITH MULTIPLE DECODING MODALITIES

George L. Lauro, Lake Zurich; Sanjar Ghaem, Palatine, and Rudyard L. Istvan, Winnetka, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 27, 1993, Ser. No. 67,923
Int. Cl.[6] G08B *13/14*
U.S. Cl. 340—572 **1 Claim**



1. An RF tagging system comprising:

an RF tag including a plurality of RF resonant circuits, each said RF resonant circuits being resonant at a given RF frequency, said plurality of RF resonant circuits including a predetermined number of data RF resonant circuits having resonant frequencies, in various frequency bands, corresponding to a predetermined identification code and a group of decoder RF resonant circuits having resonant frequencies indicative of said various frequency bands; and

an RF tag reader for detecting the resonant frequencies of said data RF resonant circuits to provide said identification code and for detecting the resonant frequencies of said decoder RF resonant circuits and determining said various frequency bands, and altering reader frequency detection operation in accordance with the determined frequency bands, in accordance with said detected decoder resonant frequencies for accurate detection of all said data RF resonant circuits.

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5,604,487

APPARATUS AND METHOD FOR USER-SELECTIVE DATA COMMUNICATION WITH VERIFICATION

John D. Frymier, Downingtown, Pa., assignor to Lockheed Martin Tactical Systems, Inc., New York, N.Y.

Filed Jul. 30, 1993, Ser. No. 100,657
Int. Cl.[6] G05B *23/02*
U.S. Cl. 340—825.07 **27 Claims**



1. A method for verified communication of data from a holder of such data to a requester of such data, comprising the steps of:

determination by the holder of a respective first error checking/fault detection indicator for each of a plurality of data items stored by the holder;

identification of one of said plurality of data items by the requester to the holder;

provision of said one data item to the requester;

determination by the requester of a second error checking/fault detection indicator, corresponding in nature to the first indicator, for said one data item;

provision, by the requester to the holder, of the second indicator;

comparison, by the holder, of the first and second indicators; and

provision by the holder to the requester of a message indicating whether the first and second indicators are identical.

5,604,488

REMOTE CONTROL SECURITY SYSTEM

George P. Lambropoulos, Grosse Pointe Woods, Mich., assignor to TRW Inc., Lyndhurst, Ohio

Division of Ser. No. 866,906, Apr. 10, 1992, Pat. No. 5,442,341. This application Aug. 11, 1995, Ser. No. 514,398
Int. Cl.[6] H04Q *1/00*
U.S. Cl. 340—825.31 **3 Claims**

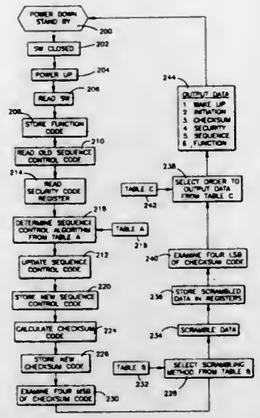
1. A method of operating a portable transmitter to remotely control at least one function on a vehicle in a secure manner, comprising the steps of:

providing a manually operable switch on said transmitter for use in manually signalling that a function on the vehicle is to be operated;

generating a message for transmission to the vehicle for controlling a function on the vehicle in response to operation of the manually operable switch;

generating an error detecting code based upon said message for use in detecting errors in transmission of said message;

scrambling said message in dependence upon the generated error detecting code and one of a fixed plurality of scrambling algorithms and wherein said error detecting code is generated for a primary purpose unrelated to any of said scrambling algorithms but wherein a secondary purpose is to describe said one of a fixed plurality of scrambling algorithms for selection in accordance with said error detecting code; and



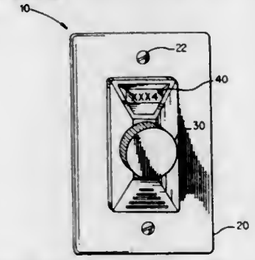
transmitting the scrambled message and the unscrambled error detecting code to said vehicle.

5,604,489

ALPHANUMERIC INPUT TERMINAL

Richard G. Hyatt, Jr., Shawsville, Va., assignor to Medeco Security Locks, Inc., Salem, Va.

Filed Oct. 9, 1992, Ser. No. 958,710
Int. Cl.[6] G06F *7/04*; **E05B** *49/00*
U.S. Cl. 340—825.56 **8 Claims**



1. An electronic input terminal, comprising:

means for generating a random alphanumeric character;

display means for displaying a first generated random alphanumeric character at a first position thereon;

adjustment means for incrementing or decrementing the first generated random alphanumeric character displayed on said display means to obtain a first selected alphanumeric character displayed by said display means;

input means for entering said first selected alphanumeric character to comparing means;

said display means further including means for preventing the first selected alphanumeric character from being viewed on said display means after said first selected alphanumeric character has been entered by said input means, and for displaying at least a second random alphanumeric character generated by said generating means at a second position thereon upon entry of said first selected alphanumeric character which second random alphanumeric character can be adjusted by said adjustment means to obtain a second selected alphanumeric character which is entered to said comparing means by activation of said input means;

wherein said preventing means comprises means for displaying a blocking symbol at said first position on said display means occupied by said first selected alphanumeric character upon entry of said first selected alphanumeric character by said input means;

means for storing a valid entry code;

said comparing means for comparing the first and second entered alphanumeric characters to a valid entry code stored in said means for storing to determine if access is permitted, and outputting a signal if the entered characters match the stored valid entry code; and

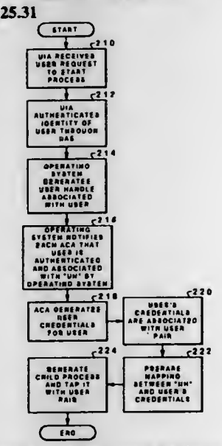
access means responsive to said signal for allowing access to a user of said terminal.

5,604,490

METHOD AND SYSTEM FOR PROVIDING A USER ACCESS TO MULTIPLE SECURED SUBSYSTEMS

George R. Blakley, III; L. Brooks Hickerson; Ivan M. Milman, all of Austin, Tex.; Robert S. Gittins, Woodland Park, Colo.; Douglas B. Scheer, Boynton Beach, Fla., and John H. Wilson, Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 9, 1994, Ser. No. 304,325
Int. Cl.[6] G06F *12/14*
U.S. Cl. 340—825.31 **26 Claims**



1. In a computer networking system having a server coupled to a plurality of clients, wherein each of said plurality of clients has access to a plurality of program procedures, accessed through said server, each said program procedure having a security protocol required for access, unique to each user of each of said plurality of clients, a method for unifying said security protocols for each user based on unique user credentials comprising the steps of:

upon request to start a program procedure by said user, authenticating the identity of said user based on information unique to said user;

generating a user handle associated with said user;

notifying each of said security protocols of said user handle associated with said user;

generating new user credentials for each of said security protocol;

associating said new user credentials with said user handle associated with said user;

mapping said user handle to said unique user's credentials for each program procedure;

generating an alternate process;

tagging said alternate process with said user handle associated with said user;

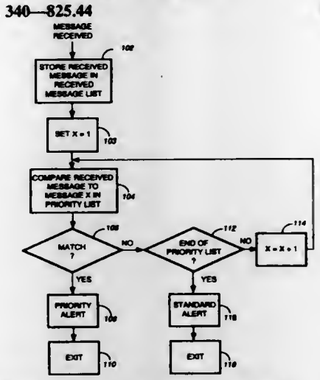
upon request from said alternate process for access to an object accessed through said server, granting access to said object based on said new user credentials associated with said user handle.

5,604,491

PAGER WITH USER SELECTABLE PRIORITY

Gregory A. Coonley, Lake Worth; Harry H. Chow, Delray Beach, and Suthirug N. Pisutha-Arnond, Boynton Beach, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 24, 1995, Ser. No. 427,121
Int. Cl.[6] H04Q *7/14*
U.S. Cl. 340—825.44 **16 Claims**



1. A selective call receiving device, comprising:

a receiver for receiving messages;

a display, coupled to the receiver, for displaying received messages;

a key operable by a user for enabling the user to designate the received messages individually as a priority message;

a memory, coupled to the receiver for storing the priority message in a priority memory space reserved for priority messages;

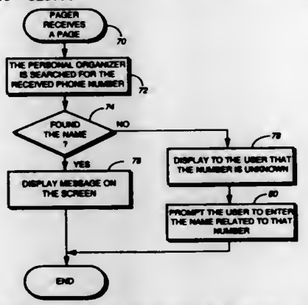
a controller having a comparator for comparing subsequently received message individually with the priority message to determine if the subsequently received message is a priority message.

5,604,492

APPARATUS AND METHOD FOR DIRECTORY-LINKED CANNED PAGER MESSAGES

Ahmad H. Abdul-Halim, Alor Star, Malaysia, assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 290,166, Aug. 15, 1994, abandoned. This application Jul. 28, 1995, Ser. No. 508,933
Int. Cl.[6] G08B *5/22*; **H04Q** *1/00*
U.S. Cl. 340—825.44 **11 Claims**



1. A method for displaying messages on a display of a portable device having selective call receiving functions, the method comprising steps of:

storing in a memory of the portable device a personal name directory having a plurality of entries, each entry comprising at least one telephone number and at least one canned message corresponding to the at least one telephone number;

receiving a paging message including a telephone number;

searching through the personal name directory to determine if the telephone number received in the paging message matches with a telephone number in any of the personal name directory entries;

displaying on a display of the portable device a canned message which corresponds to the personal name directory entry that matches the telephone number received in the paging message; and

displaying on the display of the portable device a message prompting a user to assign a message entry for the telephone number received in the paging message, if the telephone number received in the paging message does not match any telephone number in the personal name directory.

5,604,493

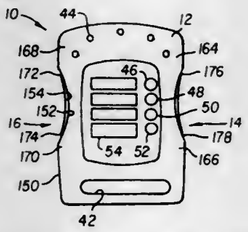
SECURITY SYSTEM TRANSMITTER WITH OPPOSED CONCAVE ACTUATORS

George E. Behlke, Victor, N.Y., assignor to Detection Systems, Inc., Fairport, N.Y.

Filed Dec. 19, 1995, Ser. No. 574,530

Int. Cl.[6] H03K *17/94*

U.S. Cl. 341—22 **15 Claims**



1. A hand portable communicator for use with a security system, said communicator comprising:

a radio frequency transmitter;

a housing containing said transmitter, said housing having a peripheral edge defining first and second opposed concavities, said concavities extending inwardly at opposite sections of said peripheral edge; and,

actuation keys supported for relative movement in said housing, said keys including first and second opposed actuation surfaces accessible from outside said housing for operating said transmitter, said first and second surfaces being inwardly concave adjacent said first and second housing concavities, respectively.

9. A hand holdable communicator including a wireless transmitter, a housing containing the transmitter and defining a peripheral edge, and first and second actuation elements for operating the transmitter, characterized in that:

said peripheral edge of said housing and said first and second actuation elements together define thumb and finger saddles on opposite sides of said housing, respectively, said peripheral edge and said first and second actuation elements having aligned depressions at said thumb and finger saddles.

5,604,494

EFFICIENT ENCODING/DECODING APPARATUS

Yoshihiro Murakami; Atsuo Yada; Hiromi Yoshinari; Haruo Togashi; Satoshi Miyazawa, and Takuya Kitamura, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

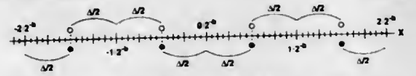
PCT No. PCT/JP94/01546, § 371 Date May 2, 1995, § 102(e) Date May 2, 1995, PCT Pub. No. WO95/09487, PCT Pub. Date Apr. 6, 1995

PCT Filed Sep. 20, 1994, Ser. No. 428,255

Claims priority, application Japan, Sep. 28, 1993, 5-241188

Int. Cl.[6] H03M *7/00*

U.S. Cl. 341—50 **5 Claims**



1. An efficient encoding/decoding apparatus comprising:

orthogonal transform means for orthogonally transforming a digital signal obtained by allowing an analog signal to undergo analog/digital conversion; and

inverse orthogonal transform means for inverse-orthogonally transforming the orthogonally transformed digital signal,

wherein rounding of endpoints of segments in even number direction or in odd number direction is used in at least one of the orthogonal transform processing and the inverse orthogonal transform processing.

5,604,495

DATA COMPRESSION METHOD AND SYSTEM

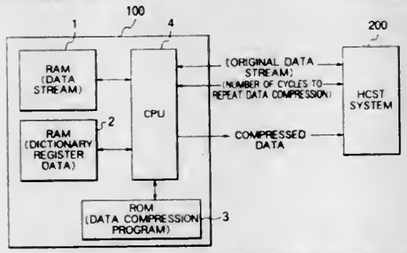
Hiroyuki Watanabe, Tokyo, Japan, assignor to Seta Co., Ltd., Tokyo, Japan

Filed Apr. 21, 1995, Ser. No. 426,620

Claims priority, application Japan, Apr. 22, 1994, 6-107837

Int. Cl.[6] H03M *7/00*

U.S. Cl. 341—51 **11 Claims**



1. A data compression method, in which a data stream of a digital input signal is stored in first storage means and data compression of the data stream is performed with registering strings appearing in said data stream in a dictionary of second storage means, comprising:

performing first process step for designating R representing a repetition number of the following third to fifth process steps wherein R is an integer smaller than or equal to D, with taking a total data capacity of the original data stream being S×N bits, wherein S is an integer greater than or equal to 2 and N is an integer greater than or equal to 3, and a maximum dictionary register number D where D is 2^n;

performing second process step for separating the original data stream of S bit length stored in said storage means and generating a working data stream by adding a non-conducting identifier bit for conversion into a working data stream having (S+1) bit working strings;

performing third process step for detecting combined string consisted of two sequential working strings in said working data stream up to D/Rth order in descending order from working string having largest occurrence frequency, and having occurrence frequency greater than or equal to 3;

performing fourth process step for registering compression dictionary data of (S+1) bits consisted of dictionary number and compression identifier bit, in said second storage means, corresponding to each of combined strings detected by said third process step; and

fifth process step for replacing combined string among combined strings in said working data stream matching with one of combined strings registered in said second storage means, with the compression dictionary data corresponding to the matching combined string,

repeating said third to fifth process steps for R times with taking data stream replaced through said fifth process step as working data stream for outputting data stream stored in said first storage means and all combined string and compression dictionary data stored in said second storage means, after R times repletion, as compressed data.

5,604,496

DATA PROCESSING DEVICE USING DATA CORRELATION

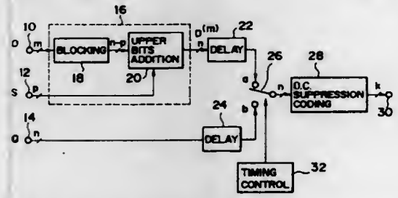
Yoshiki Ishii, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 190,577, Feb. 2, 1994, Pat. No. 5,361,066, which is a continuation of Ser. No. 84,077, Jun. 28, 1993, abandoned, which is a continuation of Ser. No. 691,494, Apr. 25, 1991, abandoned. This application Sep. 1, 1994, Ser. No. 299,421

Claims priority, application Japan, Apr. 27, 1990, 2-113956; Apr. 27, 1990, 2-113957

Int. Cl.[6] H03M *5/14;9/00*

U.S. Cl. 341—58 **8 Claims**



1. A data processing apparatus, comprising:

(a) input means for inputting information data comprising m bits, in parallel;

(b) conversion means for converting the information data inputted in parallel by said input means into serial data;

(c) adding means for adding data of p bits to the serial data converted by said conversion data, on a unit basis of m bits, wherein m and p are integers and satisfy the relation of $m>p \geqq 1$; and

(d) processing means for processing data outputted from said adding means, said processing means outputting data whose direct current component is suppressed.

5,604,497

APPARATUS AND METHOD FOR INCREASING DENSITY OF RUN LENGTH LIMITED BLOCK CODES WITHOUT INCREASING ERROR PROPAGATION

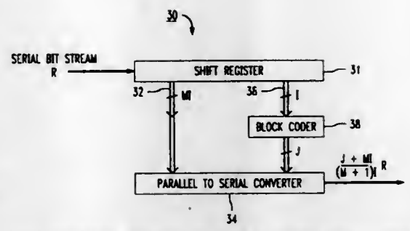
Jeffrey L. Sonntag, Rockland Township, Berks County, Pa., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Oct. 10, 1995, Ser. No. 540,510

Int. Cl.[6] H03M *7/42*

U.S. Cl. 341—59 **20 Claims**

1. An apparatus for producing from binary data a run-length-limited block code of preselectable density for encoding of data on a magnetic media, said apparatus comprising:



receiving means coupled to an input bit stream for receiving said binary data;

encoding means coupled to said receiving means for encoding selected portions of said binary data into block encoded data;

control means coupled to said input bit stream operable to select and interleave a predetermined uncoded portion of said binary data between said block encoded data; and

output means coupled to said encoding means and said control means, said output means operable to output said predetermined uncoded portion of said binary data between said block encoded data, thereby forming said run-length limited block code of said preselectable density.

5,604,498

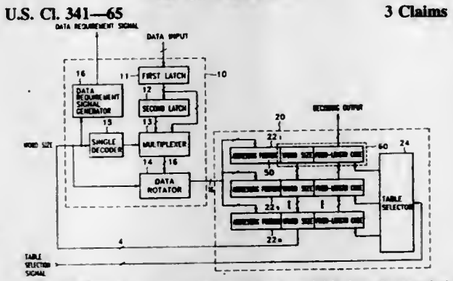
HUFFMAN DECODER

Heon-cbul Park, Ansan, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jun. 30, 1995, Ser. No. 496,881

Int. Cl.[6] H03M *7/40*

U.S. Cl. 341—65 **3 Claims**



1. A Huffman decoder for receiving variable-length-encoded data and outputting a fixed-length code corresponding to the data reconstructed in a Huffman table selected according to a table selection signal, which comprises:

a first latch for storing the current variable-length-encoded data;

a second latch for storing the previous variable-length-encoded data;

a single decoder for receiving the word size and outputting a selection signal;

a data requirement signal generator for generating a data requirement signal when the added word size is over a predetermined size after summing the word sizes;

a multiplexer for receiving the outputs of said first and second latches, to select a predetermined bit according to said selection signal;

a data rotator for cyclic-shifting the output of said multiplexer according to said word size to form a reconstructed data, and outputting said reconstructed data;

an addressing portion for comparing said reconstructed data with a predetermined value and decoding the data; and

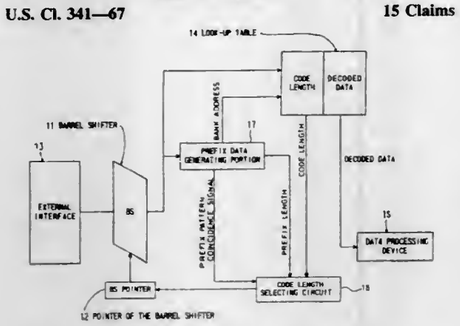
a memory for storing the size of said variable-length-encoded word and the fixed-length code corresponding thereto which are output according to the output of said addressing portion.

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5,604,499
VARIABLE-LENGTH DECODING APPARATUS

Eiji Miyagoshi; Hiroshi Imanishi, both of Osaka, and Hiroshi Takeno, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 14, 1994, Ser. No. 358,597
Claims priority, application Japan, Dec. 28, 1993, 5-337280
Int. Cl.[6] H03M *7/40*
U.S. Cl. 341—67 **15 Claims**



1. A variable-length decoding apparatus comprising:

a barrel shifter for shifting continuous variable-length codes by a predetermined number of bits;

a prefix data generating portion previously containing (i) a plurality of predetermined patterns each having a predetermined code length comprising a plurality of bits and (ii) a plurality of bank addresses in each of which the number of bits is smaller than the code length of any of said predetermined patterns and which are respectively assigned to said predetermined patterns;

said prefix data generating portion being arranged such that each variable-length code supplied from said barrel shifter is compared, from the head part thereof, with said plurality of predetermined patterns and that one of the bank addresses that corresponds to the identical predetermined pattern is supplied;

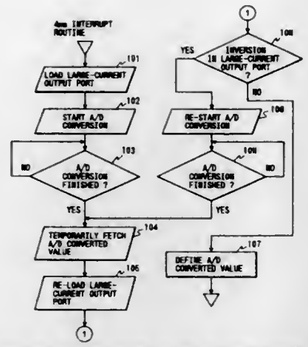
a look-up table previously containing a large number of decoded data obtained by decoding a large number of variable-length codes; and

said look-up table being arranged such that, using, as an address, (i) said address supplied by said prefix data generating portion and (ii) the remaining part of said variable-length code supplied from said barrel shifter, other than said predetermined pattern, there is supplied the decoded data corresponding to said variable-length code supplied from said barrel shifter.

5,604,500
A/D CONVERSION PROCESS

Kenji Murakami, Kariya, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 8, 1994, Ser. No. 255,779
Claims priority, application Japan, Jun. 10, 1993, 5-138796
Int. Cl.[6] H03M *1/06*
U.S. Cl. 341—118 **32 Claims**



1. A variable-length decoding apparatus comprising:

a barrel shifter for shifting continuous variable-length codes by a predetermined number of bits;

a prefix data generating portion previously containing (i) a plurality of predetermined patterns each having a predetermined code length comprising a plurality of bits and (ii) a plurality of bank addresses in each of which the number of bits is smaller than the code length of any of said predetermined patterns and which are respectively assigned to said predetermined patterns;

said prefix data generating portion being arranged such that each variable-length code supplied from said barrel shifter is compared, from the head part thereof, with said plurality of predetermined patterns and that one of the bank addresses that corresponds to the identical predetermined pattern is supplied;

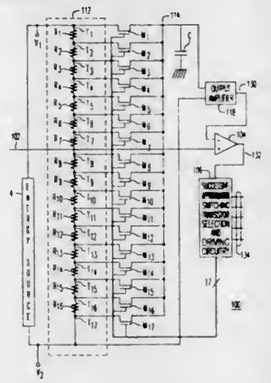
a look-up table previously containing a large number of decoded data obtained by decoding a large number of variable-length codes; and

said look-up table being arranged such that, using, as an address, (i) said address supplied by said prefix data generating portion and (ii) the remaining part of said variable-length code supplied from said barrel shifter, other than said predetermined pattern, there is supplied the decoded data corresponding to said variable-length code supplied from said barrel shifter.

5,604,501
DIGITAL-TO-ANALOG CONVERTER WITH REDUCED NUMBER OF RESISTORS

Richard J. McPartland, Nazareth, Pa., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Oct. 21, 1994, Ser. No. 327,174
Int. Cl.[6] H03M *1/78*; H03K *13/00*
U.S. Cl. 341—144 **8 Claims**



1. A digital-to-analog converter for providing an analog output, the converter comprising:

a resistor string comprising a plurality of resistors and defining intermediate taps;

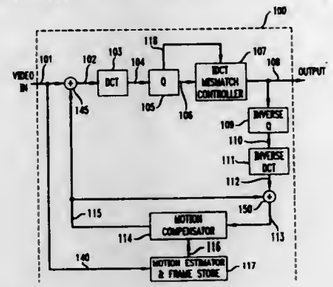
a plurality of switching transistors, each of the switching transistors coupled between a respective intermediate tap and an output node; and

a selection circuit coupled to a terminal of each of the switching transistors for selectively switching transistors, the selection circuit capable of switching at least two switching transistors to couple at least two intermediate taps to the output node to produce a voltage at the output node that is intermediate voltages developed at intermediate taps when the resistor string is energized, whereby at least two intermediate taps are electrically coupled to the output node to produce at least one analog output.

5,604,502
MOTION VIDEO COMPRESSION SYSTEM WITH INVERSE DISCRETE COSINE TRANSFORM MISMATCH CONTROL

Barin G. Haskell, Tinton Falls, and Li Yan, Holmdel, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Mar. 21, 1994, Ser. No. 215,334
Int. Cl.[6] H03M *1/00*
U.S. Cl. 341—200 **24 Claims**



1. An inverse discrete cosine transform mismatch controller, comprising:

a means for receiving a set of quantized discrete cosine transform coefficients each having an associated quantization step size, wherein said set represents at least one image in a sequence;

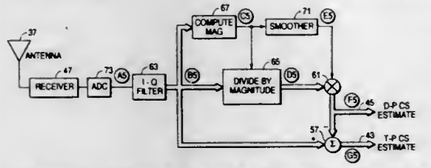
a means for summing said received quantized discrete cosine transform coefficients in said set;

a means for setting particular ones of said quantized discrete cosine transform coefficients in said set to zero when said quantization step size associated with said particular ones of said quantized discrete cosine transform coefficients is less than a first predetermined value and said sum Of said received quantized discrete cosine transform coefficients in said set is less than a second predetermined value.

5,604,503
MULTIPATH AND CO-CHANNEL SIGNAL PREPROCESSOR

Mark L. Fowler, Ithaca, and Steven V. Czarnecki, Apalachin, both of N.Y., assignors to Lockheed Martin Corporation, Bethesda, Md.

Filed Mar. 27, 1995, Ser. No. 411,026
Int. Cl.[6] G01S *3/16*; *13/00*
U.S. Cl. 342—378 **14 Claims**



1. A method of separating multipath signals received at an antenna into a strong path signal and a weak path signal, comprising the steps of:

amplifying the received multipath signal received at the antenna;

converting the amplified signal into in-phase and quadrature signal components;

generating a constant magnitude signal estimate having approximately the frequency and phase of the strong path signal from the multipath signal;

obtaining an estimate of the amplitude of the strong path signal from the received multipath signal amplitude;

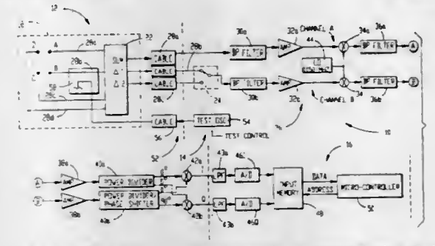
multiplying the estimate of the amplitude of the strong path signal by the constant magnitude signal estimate of the strong path signal to obtain an estimate of the strong path signal; and

subtracting the estimate of the strong path signal from the in-phase and quadrature signals to obtain difference signals which are estimates of the in-phase and quadrature components of the weak path signal.

5,604,504
AIR TRAFFIC ADVISORY SYSTEM BEARING ESTIMATION RECEIVER

David L. Nail, Stilwell, Kans., assignor to AlliedSignal Inc., Morristown, N.J.

Filed Aug. 24, 1995, Ser. No. 518,934
Int. Cl.[6] G01S *5/02*; *13/00*
U.S. Cl. 342—417 **14 Claims**



1. In a traffic advisory system wherein an intruder aircraft is equipped for transmitting intruder signals and wherein a protected aircraft is equipped for receiving the intruder signals and determining therefrom the intruder bearing as the bearing angle of the intruder aircraft relative to the protected aircraft, the intruder bearing being subject to error, an apparatus for determining a corrected intruder bearing, said apparatus comprising:

an array of antennas mounted aboard the protected aircraft, said antennas being operable for receiving the intruder signals and responsive thereto for producing respective antenna signals; and

signal processing means for receiving and processing said antenna signals for determining the bearing of the intruder aircraft relative to the protected aircraft, said signal processing means including

signal combining means including means for producing a sum signal representative of the sum of selected antenna signals, and means for producing a first delta signal representative of the differences of selected antenna signals,

receiving means for producing a first phase signal representative of the phase relationship between said sum and first delta signals, said first phase signal being representative of a first intruder bearing and being subject to error due to intruder signal reflection,

said signal combining means including means for producing a second delta signal representative of the differences of selected antenna signals,

said receiving means including means for producing a second phase signal representative of the phase relationship between said sum and second delta signals, said second phase signal being representative of a second intruder bearing and being subject to error due to intruder signal reflection,

said signal combining means including means for producing said first and second delta signals so that said errors of said first and second phase signals are at least partially offsetting,

said signal processing means further including bearing determining means for determining a corrected bearing as a function of both said first and second phase signals.

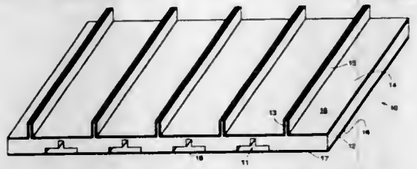
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5,604,505

PHASE TUNING TECHNIQUE FOR A CONTINUOUS TRANSVERSE STUB ANTENNA ARRAY

Veronica P. Matterer, Culver City, Calif., assignor to Hughes Electronics, Los Angeles, Calif.

Filed Feb. 26, 1996, Ser. No. 607,060
Int. Cl.[6] H01Q *13/20*
U.S. Cl. 343—772 **4 Claims**



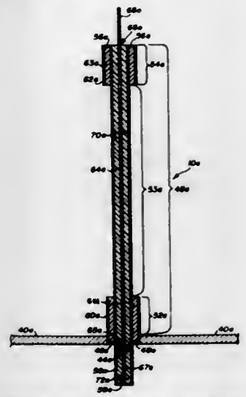
1. A continuous transverse stub antenna array comprising:
a sheet of dielectric material;
a plurality of transverse stub elements extending from a first surface of the sheet of dielectric material;
a first metal layer disposed on the first surface and side surfaces of each of the stub elements;
a second metal layer disposed on a second surface of the sheet of dielectric material that forms a ground plane of the array;
a plurality of tuning sections formed in the sheet of dielectric material that are disposed between each of the stub elements that extend laterally across the sheet of dielectric material along the dimension of the stub elements, and that have a cross sectional shape in the form of an inverted T, and wherein the ground plane encloses each of the tuning sections.

5,604,506

DUAL FREQUENCY VERTICAL ANTENNA

Eric B. Rodal, Cupertino, Calif., assignor to Trimble Navigation Limited, Sunnyvale, Calif.

Filed Dec. 13, 1994, Ser. No. 354,617
Int. Cl.[6] H01Q *9/40*
U.S. Cl. 343—791 **2 Claims**



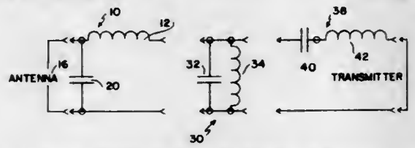
1. A dual frequency vertical antenna for radiating a first and a second airwave signal in response to a first and a second conducted signal, respectively, said first airwave signal having a first frequency and said second airwave signal having a second frequency lower than said first frequency, comprising:
an electrically conductive base member;
a mast projecting upwardly from the base member to a masthead for forming a dipole for radiating said second airwave signal, the mast including an electrically conductive rod dielectrically coupled to the mast;
radiating means coupled said masthead for radiating said first airwave signal; and
feeding means for feeding said first and said second conducted signal between the base member and said rod including a tuning sleeve electrically connected to the base member, coaxially disposed about the mast, and projecting upwardly from the base member for an electrical length of approximately ¼ wavelength at said first frequency; a lower mast extension extending from the mast and projecting downwardly from the base member to a foot for an electrical length of approximately ¼ wavelength at said first frequency; a lower rod extension coaxially disposed within the lower mast extension and electrically connected to the lower mast extension at said foot; and a coaxial cable to feed said first conducted signal and said second conducted signal, having an outer conductor electrically connected to the base member adjacent to the mast and having an inner conductor electrically connected to said rod adjacent to the base member.

5,604,507

WIDE-BANDED MOBILE ANTENNA

Wayne R. Openlander, Chicago, Ill., assignor to Antenex, Inc., Glendale, Ill.

Filed Feb. 28, 1996, Ser. No. 608,177
Int. Cl.[6] H01Q *1/50*
U.S. Cl. 343—860 **31 Claims**



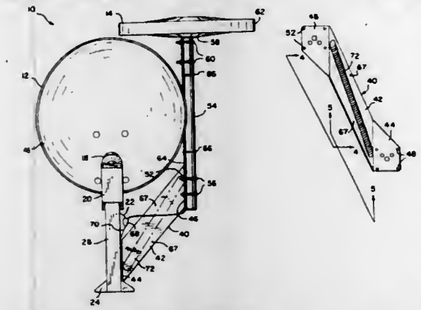
1. A mobile antenna having broadbanding characteristics, comprising:
a housing, said housing removably attachable to a connector, said housing defining an internal cavity;
an antenna, said antenna coupled to said housing;
an antenna matching network, said antenna matching network coupled to said antenna and matching an impedance of said antenna with an impedance of an incoming transmission line coupled to said antenna, said matching network in combination with said antenna and any associated ground plane comprising a combined antenna network, said combined antenna network tuned so that an impedance of said combined antenna network has a real portion between approximately twenty-five and thirty-five ohms (25–35 Ω) over an intended bandwidth of said antenna and has a reactance portion of approximately zero (0) for a frequency range extending from approximately a center frequency of said intended bandwidth to approximately one to two megahertz (1–2 MHz) higher than that of said approximate center frequency of said intended bandwidth of said antenna; and
an antenna compensating network, said antenna compensating network coupled to said antenna and broadening an initial bandwidth of said antenna, said antenna compensating network tuned approximately to said approximate center frequency of said intended bandwidth of said antenna; whereby said antenna matching network and said antenna compensating network are situated within said internal cavity of said housing and are protected by said housing.

5,604,508

ANTENNA ASSEMBLY AND INTERFACE BRACKET FOR SATELLITE AND TERRESTRIAL ANTENNAS

James L. Atkinson, Richland Center, Wis., assignor to Kaul-Tronics, Inc., Richland Center, Wis.

Filed Jan. 5, 1996, Ser. No. 583,618
Int. Cl.[6] H01Q *21/00*
U.S. Cl. 343—879 **20 Claims**



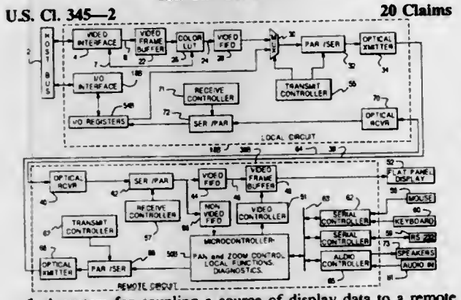
1. An antenna assembly, comprising
(a) a base mounting bracket adapted to be secured to a wall;
(b) a satellite dish antenna secured to a satellite dish antenna mast which is secured to the base mounting bracket;
(c) an antenna interface bracket having a central portion with a front face and a back face and wherein each face is in the shape of an elongated parallelogram with two short sides and two long sides, a first mounting end which is secured to the base mounting bracket and to a one of the short sides at an angle inclined toward the front face and away from the back face, and a second mounting end which is secured to the other of the short sides at an angle inclined toward the back face and away from the front face; and
(d) a terrestrial antenna secured to a terrestrial antenna mast which is secured to the second mounting end of the antenna interface bracket.

5,604,509

REMOTE DISPLAY MONITOR SYSTEM

Ronald L. Moore, San Diego; Thomas P. Rittmaster, Poway, and Thomas H. Lupfer, San Diego, all of Calif., assignors to Advent Design, Inc., San Diego, Calif.

Filed Apr. 14, 1995, Ser. No. 422,580
Int. Cl.[6] G09G *5/12*
U.S. Cl. 345—2 **20 Claims**



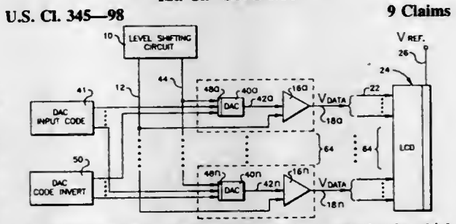
1. A system for coupling a source of display data to a remote monitor for real-time display of the data thereon, the system comprising:
(a) interface means, coupled to the source, for receiving in real-time units of display data from the source,
(b) a transmission medium having a port remote from the interface means,
(c) means for transmitting, at a selected unit transfer rate, units of display data via the transmission medium to the medium's remote port,
(d) first memory means for time buffering a unit of display data between the interface means and the means for transmitting,
(e) means for receiving, at the selected unit transfer rate, units of display data communicated to the remote port,
(f) means for communicating received units of display data to the monitor at a rate compatible with data requirements of the monitor, and
(h) second memory means for time buffering a received unit of display data between the means for receiving and the means for communicating.

5,604,510

LIQUID CRYSTAL DISPLAY DRIVE WITH VOLTAGE TRANSLATION

Randall D. Blanchard, San Diego, Calif., assignor to Palomar Technologies Corporation, Carlsbad, Calif.

Filed Jan. 10, 1995, Ser. No. 370,754
Int. Cl.[6] G09G *3/36*
U.S. Cl. 345—98 **9 Claims**



1. A drive circuit for a liquid crystal display device in which drive signals of repetitively alternate polarity are applied across the device during successive time intervals, said drive circuit comprising:
means for establishing reference signal (V_{REF}) of fixed reference voltage continuously applied to one side of the device,
means for applying to the other side of the device a data signal (V_{DATA}) comprising a fixed magnitude component that is switched between a high level voltage and a low level voltage, and a variable magnitude component that is combined with said fixed magnitude component in said successive time intervals, wherein all of said voltages maintain the same fixed polarity, and wherein said reference voltage has a magnitude between magnitudes of said high and low level voltages,
a control code for controlling the magnitude of said variable magnitude component; and
means for inverting said control code during alternate successive time intervals.

5,604,511

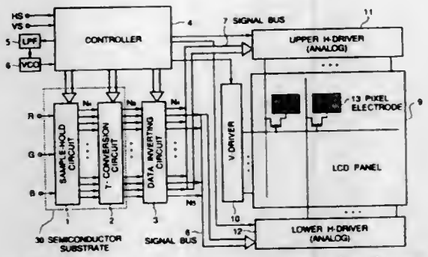
ACTIVE MATRIX LIQUID CRYSTAL DISPLAY APPARATUS

Susumu Ohi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 225,794, Apr. 11, 1994, abandoned. This application Sep. 26, 1995, Ser. No. 533,863
Claims priority, application Japan, Apr. 9, 1993, 5-83187
Int. Cl.[6] G09G *5/04*
U.S. Cl. 345—98 **8 Claims**

1. A full color active matrix liquid crystal display apparatus comprising:
a liquid crystal panel having a plurality of pixel electrodes,
a vertical driver circuit and upper and lower horizontal driver circuits for driving the liquid crystal panel,
a sample and hold circuit receiving an analog RGB video signal for level-shifting, amplifying and holding the received video signal, and for outputting the held signals having a reduced frequency as parallel signals,

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a gamma conversion circuit, directly connected to the sample and hold circuit, for receiving said parallel signals having said reduced frequency for gamma-converting the received parallel signals,

a data inverting circuit receiving the gamma-converted parallel signals output from said gamma conversion circuit for selectively generating a signal inverted in comparison with a predetermined constant voltage and a non-inverted signal, said inverted signal and said non-inverted signal being supplied to said upper and lower horizontal driver circuits, respectively, and

a controller controlling said vertical driver circuit, said upper and lower horizontal driver circuits, said sample and hold circuit, said gamma conversion circuit and said data inverting circuit,

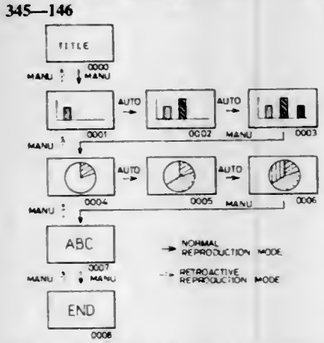
said sample and hold circuit includes an input buffer for level-shifting and amplifying said video signal, a sample holding unit for sampling and holding the amplified video signal, a shift register, responding to a first signal from an external source, for generating a signal determining a sampling timing of said sample holding unit to said sample holding unit, and a selector receiving the signals sample-held in said sample holding unit for outputting to said gamma conversion circuit ones of the sample-held signals, selected in accordance with a second signal from an external source.

5,604,512

STILL PICTURE REPRODUCTION SYSTEM THAT ALLOWS SKIP RETRIEVAL

Hiroshi Okamoto, Hashima, and Youji Sugiura, Gifu-ken, both of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Continuation of Ser. No. 66,461, May 24, 1993, abandoned. This application Dec. 21, 1994, Ser. No. 361.850
Claims priority, application Japan, May 28, 1992, 4-136901
Int. Cl.[6] H04N *5/781*
U.S. Cl. 345—146 **10 Claims**



1. A still picture reproduction system for displaying a plurality of still pictures recorded on a recording medium, said system comprising:

an order designator for designating an order in which said still pictures are to be displayed so as to form a predetermined picture order and for organizing said pictures into a plurality of separate series of pictures in which each one of said series contains a different pre-defined ordered set of said pictures, thereby forming a succession of adjacent series;

a selector having

a series selection mode in which the selector, in response to an external request, selects one of said plurality of series adjacent to a current one of said plurality of series wherein only one still picture in said one adjacent series is chosen to produce a single designated picture, and

a picture selection mode in which the selector selects a next successive one of the still pictures in said one series as the designated picture;

a reproducer for sequentially reproducing successive ones of the designated pictures from said recording medium so as to generate a corresponding plurality of reproduced pictures;

a plurality of memories for sequentially storing respective ones of the reproduced pictures;

a memory selector for selecting and reading out any of the reproduced pictures stored in said memories so as to provide an accessed picture; and

a display for displaying the accessed picture,

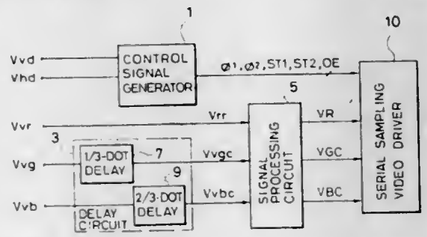
wherein said order designator has an automatic mode in which the order designator instructs the memory selector to select and read out each of the reproduced pictures stored in said memories in accordance with said predetermined picture order and at corresponding predetermined timings, and a manual mode in which the order designator instructs the memory selector to select and read out a corresponding one of the reproduced pictures stored in said memories each time said external request occurs.

5,604,513

SERIAL SAMPLING VIDEO SIGNAL DRIVING APPARATUS WITH IMPROVED COLOR RENDITION

Seiki Takahashi; Hayato Takasago; Toshio Tobita, all of Tokyo; Hiroaki Ishitani; Takatomo Watanabe, both of Nagaokakyo; Hiroaki Ideno, Amagasaki, and Mitiyasu Nouneo, Sanda, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 904,596, Jun. 26, 1992, abandoned. This application Feb. 28, 1994, Ser. No. 203,620
Claims priority, application Japan, Jun. 27, 1991, 3-156492
Int. Cl.[6] G09G *5/02*
U.S. Cl. 345—153 **18 Claims**



1. A serial sampling video signal driving apparatus that receives a plurality of different color video signals in order to drive a matrix-type color display, comprising:

serial sampling means for simultaneously receiving the plurality of different color video signals, for sampling the plurality of different color video signals in a cyclic fashion, and for providing sampled values to the matrix-type color display; and

delay means, coupled to said serial sampling means, for delaying at least one of the plurality of different color video signals before being inputted to said serial sampling means, so said sampling means simultaneously receives the plurality of different color video signals at different phases and samples the plurality of color video signals at the same phase, thereby compensating for differences in sampling times in said serial sampling means;

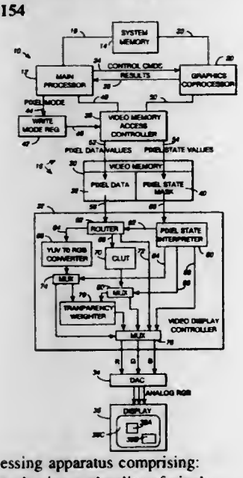
wherein said delay means leaves a first color video signal among said plurality of different color video signals undelayed, and delays successive remaining color video signals among said plurality of different color video signals by an amount equal to a sampling time difference between the successive remaining color video signals among said plurality of different color video signals.

5,604,514

PERSONAL COMPUTER WITH COMBINED GRAPHICS/IMAGE DISPLAY SYSTEM HAVING PIXEL MODE FRAME BUFFER INTERPRETATION

Steven M. Hancock, Boca Raton, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 3, 1994, Ser. No. 176,879
Int. Cl.[6] G09G *5/04*
U.S. Cl. 345—154 **13 Claims**



1. Data processing apparatus comprising:

a color display having a plurality of pixels;

a video memory having a plurality of first locations for storing different types of pixel data and a plurality of second locations for storing pixel states, each of said first locations corresponding to a different one of said pixels, each of said second locations corresponding to a different one of said first locations, said pixel data defining the colors produced by said pixels, said pixel states defining what type of pixel data is stored at the corresponding first location, said different types of pixel data including graphics pixel data and image pixel data;

first means connected to said video memory for writing pixel data into said first locations;

second means connected to said video memory for writing pixel states into said second locations; and

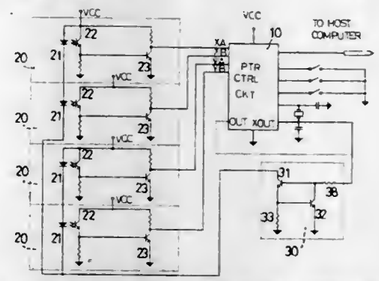
third means including a video display controller connected to said display and to said video memory for reading said pixel data and said pixel states from said video memory and operating said display in accordance therewith to concurrently display graphics data and image data, said video display controller comprising fourth means operative to interpret pixel data for each pixel in accordance with the pixel state for such pixel data and produce controller output signals for operating said display.

5,604,515

PULSE-TYPE DRIVING DEVICE

Chih-Cheng Chen, San Chung, Taiwan, assignor to Kye Systems Corp., Taipei Hsien, Taiwan

Filed Nov. 16, 1994, Ser. No. 340,591
Int. Cl.[6] G09G *5/08*
U.S. Cl. 345—163 **4 Claims**



1. A pulse-type driving device for driving a plurality of light emitting diodes comprising

a power source providing a DC voltage;

a pointer control circuit including a pulse output terminal for outputting pulses therefrom;

a plurality of sets of detecting circuits each comprising one of said light emitting diodes, a phototransistor, and a transistor, said light emitting diode emits light to activate said phototransistor which in turns triggers said transistor to output a signal to said pointer control circuit in response;

a constant current source comprising a first transistor, a second transistor and a resistor, a base of the first transistor connected to a collector of the second transistor and the pulse output terminal of the pointer control circuit for receiving pulses therefrom, an emitter of the first transistor connected to a base of the second transistor, a collector of the first transistor connected to the power source via the diodes of the detecting circuits, said resistor connected between an emitter of said first transistor and a ground;

whereby said first transistor and said second transistor are activated when receiving a pulse from said pointer control circuit, in the mean time said light emitting diodes are energized with a constant current determined by a ratio between a base-emitter voltage of said second transistor and a resistance of said resistor.

5,604,516

GRAPHICAL USER INTERFACE CONTROL FOR PROVIDING BOTH AUTOMATIC AND MANUAL DATA INPUT

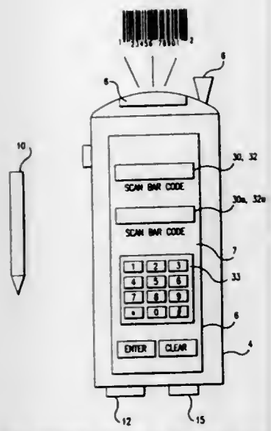
Allan Herrod, Farmingville; John Klein, Manorville, both of N.Y., and Robert Beach, Los Altos, Calif., assignors to Symbol Technologies, Inc., Holtsville, N.Y.

Filed Jun. 30, 1994, Ser. No. 269,242
Int. Cl.[6] G09G *5/00*
U.S. Cl. 345—168 **1 Claim**

1. A method of providing for entry of data by an operator from a bar code scanning device or from a manual keyboard device into a single scan-aware control field on a graphical user interface comprising the steps of:

(a) implementing a polling loop to detect if the operator has selected a key on the manual keyboard device;

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(b) selectively inputting into the scan-aware control field, when said polling loop has detected that the operator has selected a key on the manual keyboard device, data indicative of the selected key;

(c) implementing said polling loop with a check scanner routine to detect if bar code data should be entered into said scan-aware control field, said check scanner routine comprising the step of:

i) reading a drive property and exiting said check scanner routine if said drive property indicates that scanning input has not been preselected for said control;

ii) reading an entry mode property to determine if a data lock option has been preselected for said control;

iii) disabling scanning input to said control and exiting said check scanner routine when said data lock out option has been preselected and data is present in said control field otherwise enabling scanning input to said control;

iv) checking a scanner interface buffer to determine if scanner data is present due to the operator scanning a bar code, and exiting said check scanner routine when scanned data is not present otherwise;

v) entering scanned data from said scanner interface buffer to said scan-aware control field when bar code data is present.

5,604,517

ELECTRONIC DRAWING DEVICE

Andrew S. Filo, Cupertino, Calif., assignor to Binney & Smith Inc., Easton, Pa.

Filed Jan. 14, 1994, Ser. No. 182,275

Int. Cl.[6] G09G *5/00*

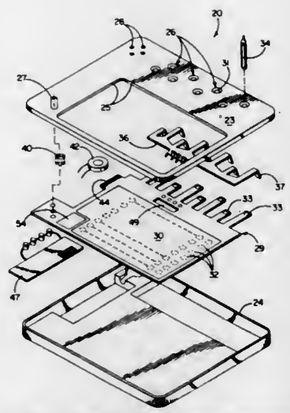
U.S. Cl. 345—173 **76 Claims**

1. An interactive drawing device for use with a drawing instrument, the interactive drawing device comprising:

a housing;

a drawing tablet disposed in the housing and having a drawing surface, the drawing tablet being adapted to generate a series of electrical pulses in response to a drawing instrument moving across its drawing surface, the frequency with which the electrical pulses occur being substantially proportional to the speed of the moving drawing instrument, the individual electrical pulses of the series being substantially the same regardless of the position of the drawing instrument when the drawing instrument moves across the drawing surface at a constant speed;

a sound generating computer electrically connected to the drawing tablet for receiving the electrical pulses generated by the translation of the drawing instrument across the drawing surface of the drawing tablet and for generating output signals in response thereto; and



an audible device connected to the sound generating computer for receiving the output signals and for converting the output signals into an audible output, the tempo of the audible output corresponding to the frequency at which the electrical pulses generated by the drawing tablet occur.

5,604,518

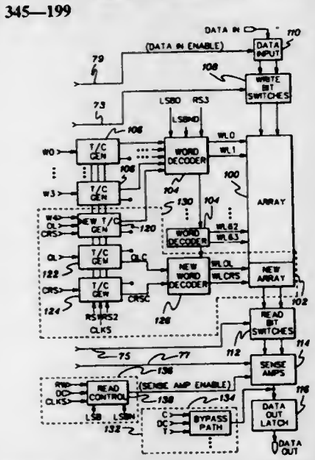
MEMORY STRUCTURE WITH MULTIPLE INTEGRATED MEMORY ARRAY PORTIONS

Roy C. Flaker; Gregory J. Schroer, both of Essex Junction; Roderick M. P. West, Colchester, and Todd Williams, Burlington, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 30, 1994, Ser. No. 220,090

Int. Cl.[6] G09G *5/06*

U.S. Cl. 345—199 **33 Claims**



1. A memory structure coupled to receive an address signal and an associated control signal, said memory structure comprising:

a single memory array having a data input, a data output, a first memory array portion implementing a first function and a second memory array portion implementing a second function, said first function being different from said second function, said first memory array portion and said second memory array portion sharing said data input and said data output and being separately accessible within said single memory array using said address signal and said associated control signal;

first access means for accessing said first memory array portion using at least a portion of said address signal as a first address signal to the first memory array portion when said first function is desired; and

second access means for accessing said second memory array portion using at least some of said control to qualify the address signal and thereby attain a second address signal to the second memory array portion when said second function is desired.

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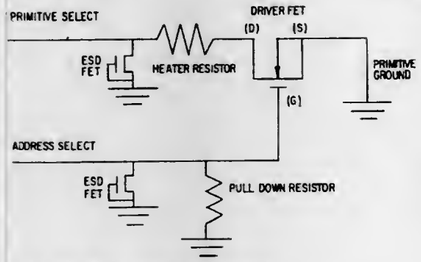
INKJET PRINTHEAD ARCHITECTURE FOR HIGH FREQUENCY OPERATION

Brian J. Keefe, La Jolla; May F. Ho, La Mesa; Kenneth J. Courian, San Diego; Steven W. Steinfield, San Diego; Winthrop D. Childers, San Diego, all of Calif.; Ellen R. Tappon; Kenneth E. Trueba, both of Corvallis, Oreg.; Terri I. Chapman, Escondido, Calif.; William R. Knight, and Jules G. Moritz, both of Corvallis, Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 179,866, Jan. 11, 1994, which is a continuation of Ser. No. 862,086, Apr. 2, 1992, Pat. No. 5,278,584. This application Oct. 6, 1994, Ser. No. 319,404

Int. Cl.[6] B41J *29/38*

U.S. Cl. 347—13 **22 Claims**



1. An inkjet print cartridge comprising:

an ink reservoir;

a substrate having a plurality of individual ink firing chambers with an ink firing element in each chamber;

said ink firing chambers arranged in a first chamber array and a second chamber array and said firing chambers spaced so as to provide greater than 400 dots per inch printing;

an ink channel connecting said reservoir with said ink firing chambers, said channel including a primary channel connected at a first end with said reservoir and at a second end to a secondary channel;

a separate inlet passage for each firing chamber connecting said secondary channel with said firing chamber for allowing high frequency refill of the firing chamber;

a group of said firing chambers in adjacent relationship forming a primitive in which a maximum of only one firing chamber in said primitive is activated at a time;

first circuit means on said substrate connected to said firing elements; and

second circuit means on said cartridge connected to said first circuit means, for transmitting firing signals to said ink firing elements at a frequency greater than 8 kHz,

wherein said primitive is one of a plurality of primitives formed on a top surface of said substrate, said first circuit means applying primitive select signals to select one or more of said primitives and applying address signals to enabling devices associated with firing elements in one or more selected primitives such that a maximum of one firing chamber in any selected primitive is activated at a time, said first circuit means further comprising electrodes for receiving signals from said second circuit means, said first circuit means being wholly formed on said top surface of said substrate such that said second circuit means contacts said electrodes of said first circuit means located only on said top surface of said substrate.

5,604,520

INK JET RECORDING METHOD USING DIFFERENT MASK PATTERNS

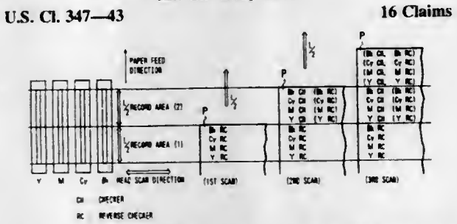
Miyuki Matsubara, Tokyo; Hiromitsu Hirabayashi, Yokohama; Shigeyasu Nagoshi; Atsushi Arai, both of Kawasaki; Yuji Akiyama; Takayuki Murata, both of Yokohama; Hitoshi Sugimoto, Kawasaki, and Kilchiro Takahashi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 921,231, Jul. 29, 1992, abandoned. This application May 24, 1995, Ser. No. 450,679

Claims priority, application Japan, Aug. 2, 1991, 3-194114; Aug. 2, 1991, 3-194130; Oct. 21, 1991, 3-272693; Dec. 20, 1991, 3-338610

Int. Cl.[6] B41J *2/015*

U.S. Cl. 347—43 **16 Claims**



1. An ink jet recording method for recording a color image on a recording medium while performing a main scan operation by using a first recording head having a plurality of ink eject orifices for ejecting an ink of a first color and a second recording head having a plurality of ink eject orifices for ejecting an ink of a second color, said method comprising the steps of:

dividing a record area of each of said first and second recording heads into n, n>2, blocks and performing a main scan operation n times for the recording medium by using said first and second recording heads, such that different thinning mask patterns are used for said n blocks of each recording head, while performing a sub scan operation by a distance corresponding to said block each time the main scan operation is performed, thereby sequentially recording n different thinned images of the first color, which correspond to said different thinning mask patterns, by using said n blocks of said first recording head and sequentially recording n different thinned images of the second color, which correspond to said different thinning mask patterns, by using said n blocks of said second recording head, on predetermined areas of the recording medium, wherein the thinning mask pattern for each of said blocks is maintained constant during recording on the recording medium.

5,604,521

SELF-ALIGNING ORIFICE PLATE FOR INK JET PRINTHEADS

Harold S. Merkel, and David E. Gough, both of Houston, Tex., assignors to Compaq Computer Corporation, Houston, Tex.

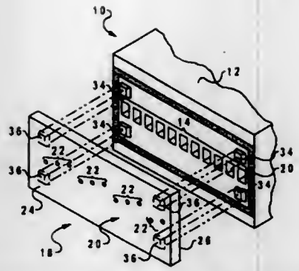
Filed Jun. 30, 1994, Ser. No. 268,816

Int. Cl.[6] B41J *2/14*

U.S. Cl. 347—47 **11 Claims**

1. A printhead assembly for use in an ink jet printer, comprising:

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a body portion formed from a piezoelectric material and having a front end surface and a spaced apart interior series of ink receiving cavities opening outwardly through said front end surface;

an orifice plate having discharge orifices formed therethrough, a rear side surface disposed in an opposing, closely adjacent relationship with said front end surface of said body portion and a front side surface; and

at least one alignment cavity formed in one of said front end surface of said body portion and said rear side surface of said orifice plate, and at least one alignment projection extending outwardly from the other of said front end surface of said body portion and said rear side surface of said orifice plate, said alignment projection configured to be closely received by said alignment cavity to align said ink discharge orifices with said interior ink receiving cavities of said body portion.

5,604,522

INK JET HEAD AND A METHOD OF MANUFACTURING THE INK JET HEAD

Kazuhiko Miura, and Toshio Narita, both of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

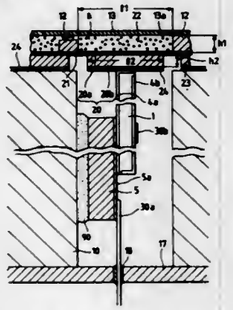
PCT No. PCT/JP93/00788, § 371 Date Apr. 14, 1994, § 102(e) Date Apr. 14, 1994, PCT Pub. No. WO93/25390, PCT Pub. Date Dec. 23, 1993

PCT Filed Jun. 11, 1993, Ser. No. 193,144

Claims priority, application Japan, Jun. 11, 1992, 4-152402; Nov. 9, 1992, 4-298858; Jan. 27, 1993, 5-011973

Int. Cl.[6] B41J *2/045*

U.S. Cl. 347—70 **17 Claims**



1. An ink jet head for forcibly discharging ink droplets, comprising:

an ink chamber having nozzle openings through which said ink droplets are forcibly discharged,

a vibrating plate having a first and a second surface and formed of a high polymeric resin thin film with rigid protrusions on one of said surfaces, said vibrating plate constituting a part of the ink chamber, and

a piezoelectric transducer directly contacting said protrusions and moving said vibrating plate to increase the pressure in said ink chamber and forcibly discharge said ink droplets.

5,604,523

INK CONTAINER, AN INK JET CARTRIDGE AND INK JET RECORDING APPARATUS

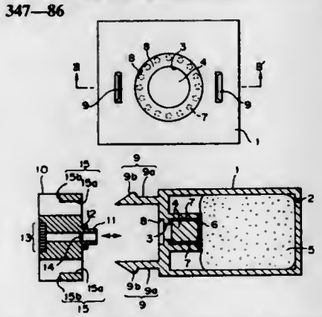
Keiichiro Tsukuda, Kawasaki, and Masanori Takenouchi, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 3, 1994, Ser. No. 316,450

Claims priority, application Japan, Oct. 4, 1993, 5-247938

Int. Cl.[6] B41J *2/175;2/19*

U.S. Cl. 347—86 **16 Claims**



1. An ink container attachable to and detachable from a recording head, comprising:

a housing accommodating a means to hold ink; and

an ink supply means provided in a part of the housing to supply ink held in the ink holding means to the recording head,

wherein the ink supply means includes an opening penetrating through a wall portion of the housing and an ink inductive portion provided between the opening and the ink holding means, the ink inductive portion including a solid portion projecting from the wall portion of the housing near the opening toward the ink holding means, and at least one fine hole provided in the solid portion to always communicate the opening with the interior of the housings, and wherein ink is absent from within said fine hole at least when said ink container is separate from the recording head.

5,604,524

ELECTROSTATIC IMAGE FORMING APPARATUS

Yoshimasa Itoh, Machida; Shinichi Takano; Tetsuya Kato, both of Kawasaki; Sohji Tsuchiya, Kanagawa-ken, and Yasue Matsuya, Sagamihara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Sep. 7, 1993, Ser. No. 116,952

Claims priority, application Japan, Sep. 9, 1992, 4-240522; Jul. 28, 1993, 5-186043

Int. Cl.[6] G03G *15/16;5/06*

U.S. Cl. 347—112 **16 Claims**

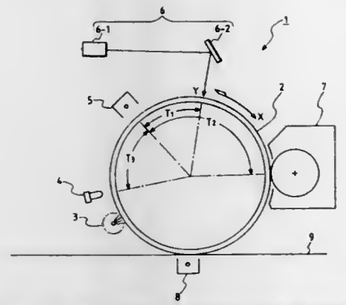
1. An electrostatic image forming apparatus comprising:

a sensitized drum covered with a single, organic, photosensitive layer, said sensitized drum being rotatable in a drum rotation direction at a predetermined speed;

charge means, disposed around said sensitized drum at a charging position, for uniformly charging a surface of said photosensitive layer of said sensitized drum;

latent image forming means, disposed downstream of said charge means in said drum rotation direction around said sensitized drum, for forming a latent image on said photosensitive layer; and

developed image forming means, disposed downstream of said latent image forming means in said drum rotation direction



around said sensitized drum, for forming a developed image from said latent image;

wherein a distance from said charge means to said latent image forming means is defined with respect to a distance from said charge means to said developed image forming means by the following expression,

$$T1 \leq T2 - 0.5 \log T2 - 0.48$$

wherein T1 is a time required for said sensitized drum to rotate from said charge means to said latent image forming means, and T2 is a time required for said sensitized drum to rotate from said charge means to said developed image forming means.

5,604,525

METHOD AND DEVICE FOR REPRODUCING ELECTRONICALLY-STORED DATA USING A LASER-REFLECTING HELICAL THREAD ON A PROM SURFACE

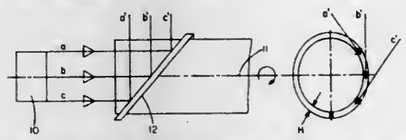
Jurgen Kieselbach, Wutha-Farnroda, Germany, assignor to Rublatex Industrieproducte GmbH, Seebach, Germany

Filed Aug. 12, 1994, Ser. No. 289,769

Claims priority, application Germany, Mar. 4, 1994, 44 07 228.7

Int. Cl.[6] B41J *2/385*

U.S. Cl. 347—169 **9 Claims**



1. Method for reproducing electronically stored data linewise on a photosensitive layer by means of electrical signal pulses corresponding to said data, which comprises the steps of:

(a) providing a rotating reflector drum having a central axis of rotation and having an outer surface supporting at least one continuous circumferential helical thread having a pitch angle of 45° in elevation thereon, said thread comprising a helical mirror having a reflecting surface which extends in a direction perpendicular to the axis of rotation of the reflector drum;

(b) supporting a photosensitive layer on a rotating copy drum having an axis of rotation which is spaced from and parallel to the axis of rotation of said reflector drum; and

(c) directing a radiation source comprising at least one beam of electrical signal pulses, corresponding to said electronically stored data along an emission axis parallel to the axis of rotation of said reflector drum in a direction perpendicular to the direction of extension of said helical mirror to reflect said beam of pulses at a continuously uniform angle of 90° and along a line on said photosensitive layer which extends parallel to the axis of rotation of said reflector drum, directly against said photosensitive layer on said rotating copy drum to scan said layer linewise and reproduce said data on said photosensitive layer.

5,604,526

CORRECTION APPARATUS FOR THERMAL PRINTER

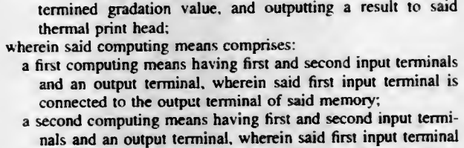
Hee-gook Kwak, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Jan. 14, 1994, Ser. No. 181,050

Claims priority, application Rep. of Korea, Jan. 14, 1993, 93-416; Jan. 3, 1994, 94-15

Int. Cl.[6] B41J *2/36;2/365;2/37*

U.S. Cl. 347—191 **3 Claims**



1. A thermal printer which introduces an image signal from a signal input source and performs a gradation comparison with respect to a predetermined gradation value by line units, and then performs printing using a thermal print head consisting of a plurality of heating elements, said printer comprising:

a line memory for storing said image signal as image data by line units;

correction means having a memory and a computing means, said memory for storing deviation information of each heating element of said thermal print head, and said computing means for adding the image data of said line memory to an amount of deviation, wherein a gradation value of said image data is reflected, by reading the deviation information stored in said memory when a resistance value of one of said heating elements for printing image data read from said line memory has a lower than an average resistance value, and for subtracting an amount of deviation, wherein a gradation value of said image data is reflected, from the image data of said line memory by reading the deviation information stored in said memory when said resistance value of one of said heating elements for printing image data read from said line memory is higher than an average resistance value; and

TPH control means for performing a gradation comparison between an output of said correction means and said predetermined gradation value, and outputting a result to said thermal print head;

wherein said computing means comprises:

a first computing means having first and second input terminals and an output terminal, wherein said first input terminal is connected to the output terminal of said memory;

a second computing means having first and second input terminals and an output terminal, wherein said first input terminal is connected to the output terminal of said memory;

a first control switch for receiving uncompensated data and having an input terminal for inputting an image data, a fixed contact point connected to said second input terminal of said first computing means, and a control point connected to the output terminal of said memory;

a second control switch for outputting compensated data and having an input terminal connected to the output terminal of said first computing means, and a control point connected to the output terminal of said memory;

a third control switch for receiving uncompensated data and having an input terminal for inputting an image data, a fixed contact point connected to said second input terminal of said second computing means, and a control point connected to the output terminal of said memory; and

a fourth control switch for outputting compensated data and having an input terminal connected to the output terminal of said second computing means, and a control point connected to the output terminal of said memory.

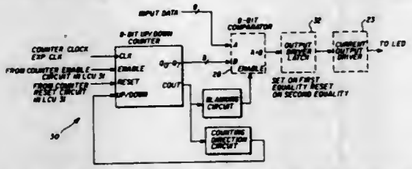
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5,604,527

DOT PRINTER AND METHOD FOR GREY LEVEL RECORDING WITH DIFFERENT BIT-DEPTH DIMENSIONS

Yee S. Ng, Fairport, and Hieu T. Pham, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 28, 1993, Ser. No. 174,559
Int. Cl.[6] B41J *2/47;2/435*
U.S. Cl. 347—240 **12 Claims**



1. A non-impact recording apparatus for recording grey level exposures of pixels with different bit-depth dimension, the recording apparatus comprising:

a recording element;

means for providing first image data signals of a first predetermined multibits per pixel bit-depth dimension and for providing second image data signals of a second predetermined multibits per pixel bit-depth dimension;

means for providing a third signal representing the first bit-depth dimension and for providing a fourth signal representing the second bit-depth dimension;

an exposure clock counter means for counting exposure clock pulses and outputting a count signal in response to said clock pulses, said count signal representing a count value, said counter means being an up/down counter having a down and up-counting modes;

adjusting means responsive to said third signal for adjusting counting in said counter means in accordance with the multibits per pixel bit-depth dimension of said first image data signals to provide count values associated with the first bit-depth dimension and responsive to said fourth signal for adjusting counting in said counter means in accordance with the multibits per pixel bit-depth dimension of said second image data signals to provide count values associated with the second bit-depth dimension;

comparator means for comparing a multibits-per-pixel image dam signal with the count signal from said counter means and generating a signal; and

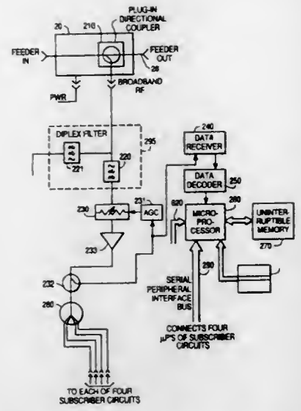
means responsive to said signal from said comparator means for controlling the recording element to control a recording duration.

5,604,528

METHOD AND APPARATUS FOR PROVIDING PERIODIC SUBSCRIPTION TELEVISION SERVICES

Robert J. Edwards, Lawrenceville; Gregory S. Durden, Jonesboro; Himanshu R. Parikh, Lawrenceville; Paul Borsetti, Jr., and Vibha Rustagi, both of Duluth, all of Ga., assignors to Scientific-Atlanta, Inc., Atlanta, Ga.

Continuation of Ser. No. 895,582, Jun. 10, 1992, Pat. No. 5,311,325. This application May 9, 1994, Ser. No. 239,980
Int. Cl.[6] H04N *7/167*
U.S. Cl. 348—5.5 **23 Claims**



5. Service denial apparatus for periodically permitting and denying service to subscribers of a subscription system, the service denial apparatus comprising

a communications receiver for receiving communications from a service provider,

a communications decoder, responsive to the communications receiver, for decoding communications received from the service provider,

a memory for storing instructions and data for periodically permitting and denying service to a particular subscriber,

selective service denial circuitry for selectively permitting and denying service to the particular subscriber, and

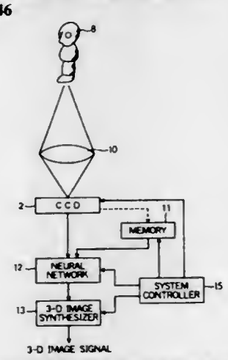
a control circuit, responsive to the communications decoder and the memory, for selectively actuating the memory and the selective service denial circuitry, the control circuit responsive to a first communication actuating storage in the memory of a data code representing a periodic service offering, the data code further indicating a predetermined plurality of channels allocated to the periodic service offering and responsive to a second communication at a first predetermined time actuating the selective service denial circuitry to permit reception of service by the particular subscriber on the predetermined plurality of channels and, responsive to a third communication at a second predetermined time actuating the service denial circuitry to deny reception of service by the particular subscriber.

5,604,529

THREE-DIMENSIONAL VISION CAMERA

Kaeko Kuga, and Takuzo Uemura, both of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Feb. 1, 1995, Ser. No. 382,394
Claims priority, application Japan, Feb. 2, 1994, 6-010749
Int. Cl.[6] H04N *13/02;15/00*
U.S. Cl. 348—46 **2 Claims**



1. A three-dimensional vision camera comprising:

an image sensing device;

an optical system for directing a light beam from a photographic object to the light sensing device;

a memory in which a plurality of image data are stored;

a neural network which obtains three-dimensional image information of the photographic object based on an image sensed by the image sensing device and the image data stored in the memory; and

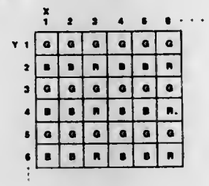
an image synthesizer which synthesizes the image sensed by the image sensing device and the three-dimensional image information obtained by the neural network into a three-dimensional image.

5,604,530

SOLID-STATE IMAGE SENSING DEVICE FOR ENDOSCOPE AND ENDOSCOPE IMAGING APPARATUS

Katsuyuki Saito; Masao Uehara; Wataru Ohno, all of Hachioji; Masahito Goto, Ohi-machi, and Shinji Yamashita, Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 105,157, Aug. 12, 1993, abandoned. This application Jul. 7, 1995, Ser. No. 497,903
Claims priority, application Japan, Aug. 14, 1992, 4-217045; Jun. 22, 1993, 5-150802
Int. Cl.[6] H04N *7/18*
U.S. Cl. 348—70 **18 Claims**



1. An endoscope imaging apparatus comprising:

an endoscope for observing the interior of an object to be observed;

a light source section for supplying illuminating light to said object through said endoscope;

a solid-state image sensing device including an image-pick-up surface and a color mosaic filter which is attached to said image pick-up surface and in which the number of filters transmitting a green light component or a complementary-color-type light component, the number of filters transmitting a blue light component or a first-complementary-color light component, and the number of filters transmitting a red light component or a second-complementary-color light component are arranged in the proportion of 3:2:1, said solid-state image sensing device picking up an image of said object to output color image signals by a plurality of pixels composed of the filters of said color mosaic filter and photosensitive elements formed on said image pick-up surface and opposed to said filters; and

a signal processing section for performing signal processing on the color image signals output from said solid-state image sensing device.

5,604,531

IN VIVO VIDEO CAMERA SYSTEM

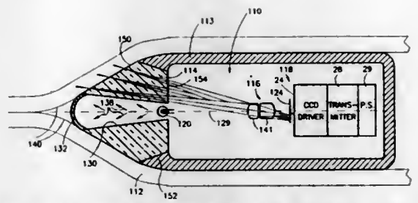
Gavriel J. Iddan, Haifa, and Doron Sturiesi, Timrat, both of Israel, assignors to State of Israel, Ministry of Defense, Armament Development Authority, Rafael, Israel

Filed Jan. 17, 1995, Ser. No. 374,272
Claims priority, application Israel, Jan. 17, 1994, 108352
Int. Cl.[6] H04N *7/18;* **A61B** *1/04;1/06*
U.S. Cl. 348—76 **17 Claims**

1. An in vivo video camera system comprising:

a swallowable capsule comprising:

a camera system;



an optical system for imaging an area of interest onto said camera system; and

a transmitter which transmits the video output of said camera system; and

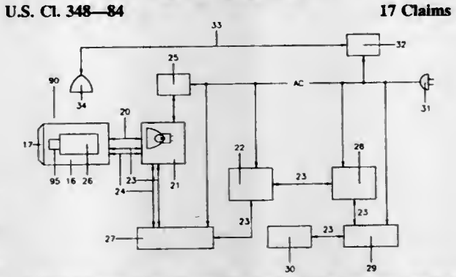
a reception system which receives said transmitted video output.

5,604,532

APPARATUS AND METHOD FOR INSITU INSPECTION OF PRESSURIZED VESSELS

Josef Tillmanns, 2316 Main St., Patterson, La. 70392

Continuation of Ser. No. 254,579, Jun. 6, 1994, abandoned. This application Oct. 25, 1995, Ser. No. 548,260
Int. Cl.[6] H04N *7/18*
U.S. Cl. 348—84 **17 Claims**



1. An apparatus for in situ inspection of all of the interior surfaces of a vessel having pressurized contents and an exterior valve means disposed on an exterior surface of said vessel for regulating said pressure therein, said apparatus comprising:

a rigid connector pipe means releasably and sealably attached while maintaining said pressure in said vessel by means of a dry seal at one end to said exterior valve means and configured at its other opposite end to axially and sealably by means of a dry seal receive a concentric rigid reach pipe means;

said rigid reach pipe means configured at one end to be rotatably and slidably received by said rigid connector pipe means and to be journalled therein, and further configured at its other opposite end to slidably and sealably by means of a dry seal receive a rigid tilt control pipe means;

said rigid flit control pipe means disposed axially and sealably by means of a dry seal within said rigid reach pipe means and configured to be journalled therein, and having a camera housing assembly manipulatively attached at an end thereof and having at its opposite end an insertion means for telescopically inserting said rigid tilt control pipe means within said rigid reach pipe means into said pressurized vessel, and, in turn, for tilting said camera housing assembly relative to said rigid tilt control pipe means; and

a conduit means axially contained within said rigid flit control pipe means enclosing an umbilical cable means for communicating video signals between said camera housing assembly and external viewing and recording means;

said conduit means also enclosing a fiber optic cable means for communicating light from an external light source to said camera housing assembly for illuminating said interior surfaces of said pressurized vessel.

5,604,533

FILM SCANNER WHICH DOUBLY SCANS TO CORRECT FOR FILM SPEED AND POSITION ERRORS

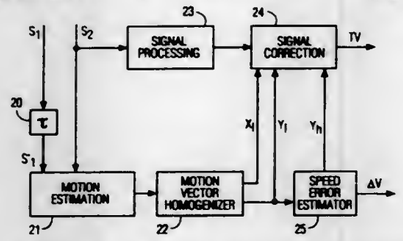
Berthold Elberger, Ober-Ramstadt, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 159,020, Nov. 29, 1993, Pat. No. 5,475,423. This application Jun. 2, 1995, Ser. No. 460,285

Claims priority, application Germany, Oct. 12, 1992, 42 41 529.2

Int. Cl.[6] H04N *3/38*

U.S. Cl. 348—97 **2 Claims**



1. A film scanner for optically scanning a film for obtaining a picture signal, which film is moving at a substantially constant speed, characterized in that the film scanner doubly scans parts of each film image during a single pass of said film through said film scanner and determines image position errors by comparing the two scanning signals of the same nominal image content, and corrects the picture signal in dependence upon the determined image position error.

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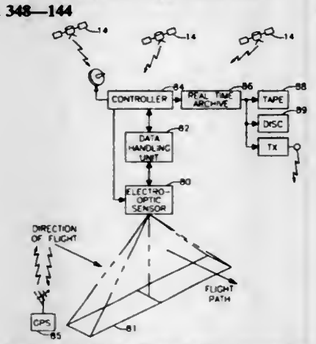
DIRECT DIGITAL AIRBORNE PANORAMIC CAMERA SYSTEM AND METHOD

Thomas M. Hedges, Great Falls, Va.; David G. Weir, Ormond Beach, Fla., and Jerry A. Speasl, Pleasanton, Calif., assignors to Omni Solutions International, Ltd., Vienna, Va.

Filed May 24, 1995, Ser. No. 449,350

Int. Cl.[6] H04N *5/33;7/18*

U.S. Cl. 348—144 **42 Claims**



1. In a direct digital airborne whisk broom-type panoramic camera having an optical system for focusing a ground area to be imaged onto a focal plane, image motion compensation means for correcting aircraft motion during camera operation, a rockably mounted sensor arm for housing a lens and optical train, drive means for moving said sensor arm across the line of flight of the aircraft during camera operation, the improvement comprising:

electro-optical multi-port line array sensor means for converting images of said ground area to be imaged into analog electric image signals having an analog initial image data rate in the order of 150 to 450 million pixel signals per second,

means for fixedly mounting said electro-optical sensor means on said sensing arm at the focal plane of the camera,

image signal processing means for digitizing said analog image signals,

data compression means for compressing said digitized image signals, and

memory means for storing said compressed digitized image signals whereby the overall image data rate is substantially reduced before storage.

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IMAGE MEMORY SYSTEM FOR STORING DIVIDED MULTIBIT DIGITAL IMAGES

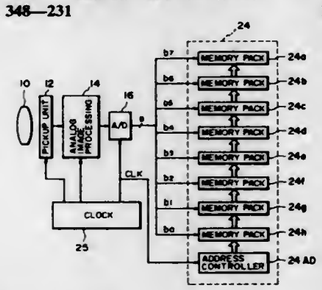
Kan Takaiwa, and Nobuhiro Takeda, both of c/o Canon Kabushiki Kaisha: (Tamagawa-Jiogyosho) 770, Shimonoge, Takatsu-ku, Kawasaki-shi, Kanagawa-ken, Japan

Continuation of Ser. No. 908,914, Jul. 2, 1992, abandoned, which is a continuation of Ser. No. 490,452, Mar. 8, 1990, abandoned. This application Jan. 10, 1994, Ser. No. 180,791

Claims priority, application Japan, Mar. 8, 1989, 1-055661

Int. Cl.[6] H04N *5/30;5/225*

U.S. Cl. 348—231 **18 Claims**



1. A camera comprising:

photoelectric converting means for converting an object image into an electric signal;

A/D converting means for converting the electric signal into multibit digital image data for each of a plurality of pixels of an image block;

dividing means for dividing the multibit digital image data for each pixel of the image block into a respective plurality of single-bit data;

processing means for converting the multibit digital image data for each pixel of the image block into a respective single-bit digital image data;

a plurality of memories for storing multibit digital image data and single-bit digital image data;

determining means for performing a calculation based on image data previously stored in said plurality of memories to provide a calculated result and for determining one of said plurality of memories into which to store the single-bit digital image data for all pixels of the image block based on the calculated result; and

mode changing means for changing recording modes between a plurality of recording modes,

said plurality of recording modes including a first mode in which each of said plurality of memories stores, in parallel, respective ones of the single-bit data of the multibit data divided by said dividing means and a second mode in which the single-bit digital image data for all pixels of the image block are stored in sequence in the one memory determined by said determining means.

5,604,537

IMAGING APPARATUS HAVING AN AUTOMATIC FOCUSING MEANS

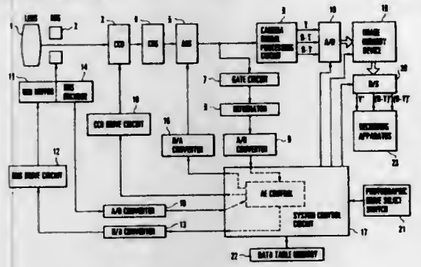
Tatsuya Yamazaki, Tokyo; Kenji Kyuma, Kanagawa-ken; Kyoji Tamura, Kanagawa-ken; Koji Takahashi, Kanagawa-ken, and Yuji Tsuda, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 116,333, Sep. 3, 1993, abandoned. This application Mar. 1, 1995, Ser. No. 396,879

Claims priority, application Japan, Sep. 10, 1992, 4-242076; Sep. 10, 1992, 4-268169

Int. Cl.[6] H04N *5/232*

U.S. Cl. 348—350 **12 Claims**



1. An imaging apparatus comprising:

(a) image pickup means for receiving an object image;

(b) automatic focusing means for controlling said image pickup means so as to automatically focus on said object image based on an image signal corresponding to a predetermined area within one frame, area changing means for automatically changing a size and/or position of said area according to a condition of said object image;

(c) mode switching means for switching said apparatus between at least a portrait mode and a non-portrait mode; and

(d) inhibit means for inhibiting changing of the size and/or position of said area by said area changing means when in said portrait mode.

(A) focus adjusting means for extracting a signal which changes in accordance with a focus condition from an image pickup signal and for driving a focusing lens so that a level of said signal is set to an extremal value;

(B) detecting means for detecting saturation information and brightness information of an object from the image pickup signal; and

(C) control means for controlling the focus adjusting means on the basis of the extracted signal and for substantially inhibiting the operation of the focus adjusting means in response to detection of a saturation and a brightness which respectively are less than predetermined levels corresponding to a low contrast condition.

5,604,538

AUTOFOCUS APPARATUS UTILIZING LUMA AND CHROMA COMPONENTS TO DETERMINE WHETHER FOCUSING IS POSSIBLE

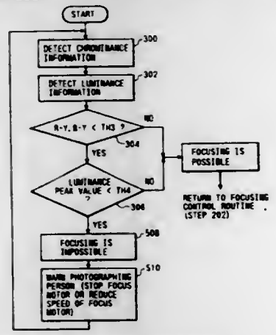
Kitahiro Kaneda, and Hirofumi Takei, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 763,803, Sep. 23, 1991, abandoned. This application Jan. 31, 1994, Ser. No. 189,298

Claims priority, application Japan, Sep. 25, 1990, 2-255944

Int. Cl.[6] G03B *13/00;* **H04N** *5/232*

U.S. Cl. 348—353 **20 Claims**



1. An image pickup apparatus comprising:

5,604,539

IMAGE PROCESSING METHOD AND APPARATUS

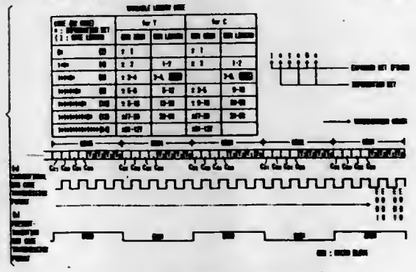
Yoshimi Ogasawara, Yokohama, and Osamu Itokawa, Akishima, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 108,800, Aug. 19, 1993. This application Sep. 28, 1995, Ser. No. 535,387

Claims priority, application Japan, Aug. 21, 1992, 4-222869; Aug. 26, 1992, 4-227268

Int. Cl.[6] H04N *11/04*

U.S. Cl. 348—396 **14 Claims**



1. An image processing apparatus comprising:

(a) input means for inputting image data;

(b) dividing means for dividing an image represented by the image data into a plurality of first blocks; and

(c) encoding means for encoding the image data in units of the first blocks,

wherein said encoding means toggle an EOB code every second block constructed by a plurality of the first blocks and transmit the toggled EOB code.

5,604,540

STRUCTURE AND METHOD FOR A MULTISTANDARD VIDEO ENCODER

Bradley Howe, San Jose, Calif., assignor to C-Cube Microsystems, Inc., Milpitas, Calif.

Division of Ser. No. 389,661, Feb. 16, 1995. This application Oct. 24, 1995, Ser. No. 547,166

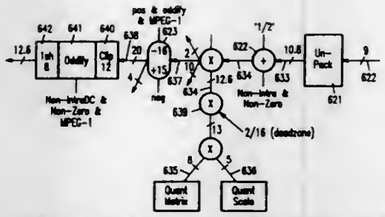
Int. Cl.[6] H04N *11/04*

U.S. Cl. 348—405 **4 Claims**

1. A central processing unit in a video signal processing integrated circuit for an image processing operation, said image processing operation including a step of dequantizing elements of a matrix of discrete cosine transform (DCT) coefficients, said central processing unit comprising:

a multiplier adapted for computing, for each DCT coefficient of said matrix of discrete cosine transform, the product of said DCT coefficient, an element of a dequantization matrix corresponding to said DCT coefficient, and a scaling factor from a dequantization scaling matrix corresponding to said DCT coefficient;

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an oddification circuit, receiving said product from said multiplier, for providing an oddified value obtained by oddifying said product when said product is even; and

a selector circuit, receiving said product from said multiplier and said oddified product from said oddification circuit, for selecting, in accordance with a predetermined video processing standard, whether said product from said multiplier or said oddified product from said oddified product is provided as an output value of said central processing unit.

5,604,541

HIGH DEFINITION TELEVISION RECEIVER

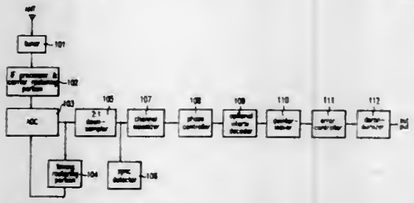
Dae-Jin Kim; Key H. Kim; Hee B. Park; Jong S. Park, all of Kyungki-do, and Yung G. Kim, Seoul, all of Rep. of Korea, assignors to LG Electronics Inc., Seoul, Rep. of Korea

Filed Nov. 13, 1995, Ser. No. 556,004

Claims priority, application Rep. of Korea, Nov. 14, 1994, 29837/1994

Int. Cl.[6] **H04N** *7/015*

U.S. Cl. 348—426 **3 Claims**



1. A HDTV receiver comprising:

a tuner for selecting a necessary channel from input signals via an antenna;

an IF processing & carrier restoring portion for performing an IF process & carrier restoration from the output of said tuner;

an analog-to-digital converter (ADC) for converting the output of said IF processing & carrier restoring portion into a digital signal;

a timing restoring portion for restoring said timing from the output of said ADC; a 2:1 down-sampler for 2:1 down-sampling the output of said ADC;

a sync detector for detecting a sync from the output of the 2:1 down-sampler;

a channel equalizer for performing a channel equalization from the output of the 2:1 down-sampler;

a phase controller for correcting the phase error from the output of the channel equalizer;

an optimal viterbi decoder for performing a viterbi decoding operation from the output of said phase controller; a deinterleaver for dissipating the output of said optimal viterbi decoder in order to enhance the correction capability due to burst errors;

an error controller for performing a Reed-Solomon decoding operation with respect to the output of said deinterleaver; and

a derandomizer for releasing the output of said error controller and restoring a signal randomly formed at a transmission port reversely.

5,604,542

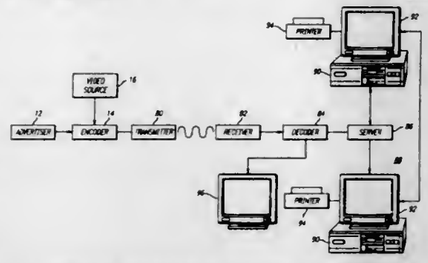
USING THE VERTICAL BLANKING INTERVAL FOR TRANSPORTING ELECTRONIC COUPONS

Rick Dedrick, Hillsboro, Oreg., assignor to INTEL Corporation, Santa Clara, Calif.

Filed Feb. 8, 1995, Ser. No. 386,310

Int. Cl.[6] **H04N** *7/00;7/08*

U.S. Cl. 348—552 **12 Claims**



1. A system for distributing an electronic advertisement, comprising:

an encoder that inserts the electronic advertisement into a vertical blanking interval of a video programming signal;

a transmitting device that transmits the video programming signal and the electronic advertisement;

a receiving device that receives the video programming signal and the electronic advertisement;

a decoder that removes the electronic advertisement from the vertical blanking interval of the video programming signal; and,

a metering server which correlates a user profile transmitted with the electronic advertisement with a user profile located within a demographic database that is stored within said metering server, and transfers the electronic advertisement to an end user computer which has a user profile that corresponds to the transmitted user profile.

5,604,543

DEVICE AND METHOD FOR AUTOMATIC CHANNEL MEMORY UTILIZING PICTURES OUT PICTURE

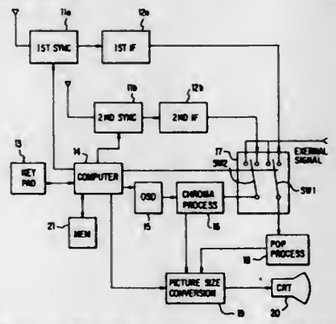
Woon G. Baek, Seoul, Rep. of Korea, assignor to Gold Star Co., Ltd., Seoul, Rep. of Korea

Continuation of Ser. No. 172,303, Dec. 23, 1993, abandoned. This application Jun. 29, 1995, Ser. No. 496,901

Claims priority, application Rep. of Korea, Dec. 23, 1992, 1992-25162

Int. Cl.[6] **H04N** *5/45*

U.S. Cl. 348—564 **6 Claims**



1. A device for automatic channel memory, comprising:

a first synchronization part for tuning channels to a broadcasting signal for display on a plurality of POP frames;

a second synchronization part for tuning channels to another broadcasting signal for display on a main frame;

a first intermediate frequency processing part for processing intermediate frequencies of the broadcasting signals of synchronized channels by the first synchronization part;

a second intermediate frequency processing part for processing intermediate frequencies of the broadcasting signals of the synchronized channel by the second synchronization part;

a microcomputer for generating first, second and third control signals in response to a key signal;

an OSD processing part for generating required OSD signals in response to the first control signal of the microcomputer;

an external signal source;

a switching part connected to outputs of (1) the first and the second intermediate frequency processing parts, (2) the external signal source and (3) the microcomputer for selecting the signals from the first and the second intermediate frequency processing parts as respectively first and second signal outputs from the switching part, or from the external signal source as a third signal output from the switching part, the switching part being operated in response to the second control signal of the microcomputer;

a chroma part interconnecting the second output of the switching part, and an output of the OSD processing part for processing a chrominance signal of the second signal selected by the switching part and of the OSD signals generated in the OSD processing part;

a POP processing part connected to the first output of the switching part for processing the first signal selected by the switching part to be displayed onto one of the POP frames; and

a picture size conversion part connected to respective signal outputs of the chroma part, the POP processing part and the microcomputer for converting picture size so as to display the signals from the chroma part and the POP processing part onto a CRT in response to the third control signal from the microcomputer; and

said microcomputer comprising:

means for entering into an automatic channel memory mode;

means for entering into a POP mode;

means for backing up the channel number of the signal being displayed on the main frame;

means for tuning the first synchronization part for channels to be displayed on the POP frames, and memorizing the channel of a broadcasting signal;

means for (a) displaying the broadcasting signal of an initial memory in moving pictures on one frame of the POP frames, (b) altering the display on the one POP frame into a still picture when a second channel having a broadcasting signal is found by the means for tuning the first synchronization part, (c) displaying the broadcasting signal of the second channel in moving pictures on a second POP frame, and (d) altering the display on the second POP frame into a still picture when a third channel having a broadcasting signal is found by the means for tuning the first synchronization part, (e) displaying the broadcasting signal of the third channel in moving pictures on a third POP frame and repeating the displaying and altering functions until all channels are searched, searching being completed when the number of the next channel to be displayed corresponds to the backed up channel number of the signal being displayed on the main frame; and

means for releasing the automatic channel memory mode and the POP mode when searching of all channels has been completed.

5,604,544

VIDEO RECEIVER DISPLAY OF CURSOR OVERLAYING VIDEO

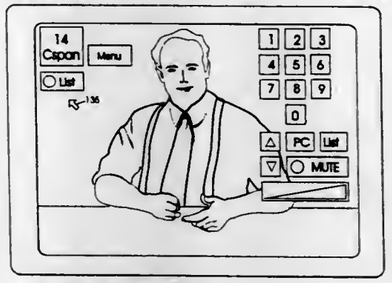
Randal Lee Bertram, Raleigh, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 31, 1995, Ser. No. 454,799

The portion of the term of this patent subsequent to May 31, 2015, has been disclaimed.

Int. Cl.[6] **H04N** *5/445*

U.S. Cl. 348—601 **41 Claims**



9. A combination comprising:

a remote control device usable at some distance of separation from a television receiver and having:

a housing sized to be held in the hand of the human observer;

a manually engageable input device mounted in said housing for manipulation by the human observer; and

control transmitter circuitry mounted in said housing and coupled to said input device for transmitting at a frequency which is outside direct sensing by the human observer command signals coordinated in a predetermined manner to manipulation of said input device by the human observer; and

a display controller for coupling to a television receiver video display device and for delivering to a coupled television receiver video display device image directing signals, said video display device having a predetermined screen area for displaying visual images to a human observer, said display controller having:

command receiver circuitry for receiving said command signals from said command transmitter circuitry and for deriving from said received command signals image directing signals directing modification of said visual images; and

command processor circuitry coupled to said command receiver circuitry and to the television receiver video display device

(a) for receiving said image directing signals,

(b) for generating a cursor image signal for overlay of a cursor image onto the visual images, and

(c) for modifying the visual images as directed by manipulation of said remote control device by the human observer;

said display controller and said remote control device cooperating for moving said cursor image across the area of said visual images.

17. An intelligent television receiver comprising:

a remote control device usable at some distance of separation from said television receiver and having:

a housing sized to be held in the hand Of the human observer;

a manually engageable input device mounted in said housing for manipulation by the human observer; and

control transmitter circuitry mounted in said housing and coupled to said input device for transmitting at a frequency which is outside direct sensing by the human observer command signals coordinated in a predetermined manner to manipulation of said input device by the human observer;

a video display device having a predetermined screen area for displaying visual images to a human observer;

video reception circuitry coupled to said video display device for receiving signals transmitted at frequencies which are

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outside direct sensing by the human observer and for delivering to said video display device video signals which drive said video display device to display said visual images;

command receiver circuitry for receiving said command signals from said command transmitter circuitry and for deriving from said received command signals image directing signals directing modification of said visual images; and

command processor circuitry coupled to said command receiver circuitry and to said video reception circuitry

(a) for receiving said image directing signals,

(b) for generating a cursor image signal for overlay of a cursor image onto said visual images, and

(c) for modifying said visual images as directed by manipulation of said remote control device by the human observer;

said display controller and said remote control device cooperating for moving said cursor image across the area of said visual images.

19. A method of displaying visual images to a human observer using a television video display device having a predetermined screen area comprising the steps of:

receiving signals transmitted at frequencies which are outside direct sensing by the human observer;

delivering, to said television video display device, video signals which drive the television video display device to display visual images;

generating, with a manually engageable input device remote from the television video display device and manipulable by the human observer, command signals indicative of desired modifications of the displayed visual images and delivering generated signals to a command transmitter;

transmitting, from the command transmitter and at a frequency which is outside direct sensing by the human observer, command signals coordinated in a predetermined manner to manipulation of the input device by the human observer;

receiving the command signals from the command transmitter and deriving from the received command signals image directing signals directing modification of the visual images;

generating a cursor image signal for overlay of a cursor image onto displayed visual images; and

receiving the image directing signals and cursor image signal and modifying the visual images as directed by manipulation of the remote control device by the human observer to overlay the cursor image onto selected portions of displayed visual images and facilitate modification of the visual images by the human observer through selection of commands.

5,604,545

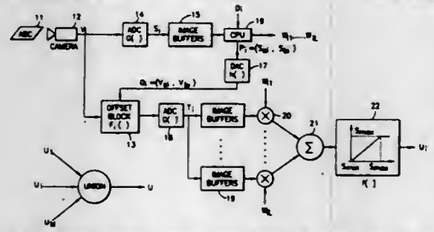
METHODS AND APPARATUS FOR ENHANCING GRAY SCALE IMAGES

Chanchal Chatterjee, Lafayette, and Vwani P. Roychowdhurry, West Lafayette, both of Ind., assignors to Purdue Research Foundation, West Lafayette, Ind.

Filed Jul. 8, 1994, Ser. No. 272,780

Int. Cl.[6] H04N *5/14;5/20*

U.S. Cl. 348—671 **21 Claims**



1. An image enhancement system that enhances images, said system comprising:

means for capturing an analog image signal V of a scene;

first means coupled to said capturing means for digitizing the image to a raw gray scale image S;

means coupled to said digitizing means for processing the raw gray scale image S in accordance with

$$t_i = gs_i + k_1 g s_a + k_2\, s_a + k_3 s_i + k_4, i = 1 \ldots M$$

where t_i is a gray scale value, g is a gain, S_a is a low offset, S_i is a full range gray scale value, k_1, k_2, k_3, k_4 are constants, and M is a maximum number of regions to be enhanced,

to obtain a set of digital enhancement offset parameters P and weights w to produce a processed signal;

means coupled to said processing means for converting the digital enhancement parameters P into analog enhancement parameters Q;

means coupled to said capturing means and said converting means for stretching and clipping the analog signal V by analog enhancement parameters Q;

second means coupled to said stretching and clipping means for digitizing the stretched and clipped analog signal V to produce an enhanced image T;

means coupled to said second means for multiplying said enhanced image T by a multiplying weight w; and

means coupled to said multiplying weight w and to said enhanced image signal T for producing an enhanced final image U of the scene.

5,604,546

IMAGE SIGNAL PROCESSING CIRCUIT FOR PERFORMING MOTION ESTIMATION

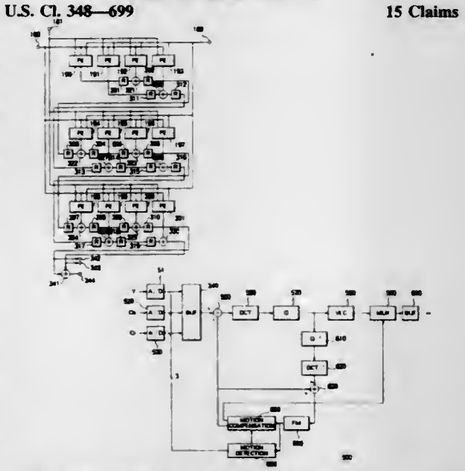
Eiji Iwata, Chiba, Japan, assignor to Sony Corporation, Japan

Filed Oct. 18, 1994, Ser. No. 324,713

Claims priority, application Japan, Oct. 20, 1993, 5-262272

Int. Cl.[6] H04N *7/30;7/32*

U.S. Cl. 348—699 **15 Claims**



1. An image signal processing circuit for:

detecting a motion vector by dividing each frame of an image signal into a plurality of blocks, each block comprising a predetermined number of pixels arranged in an array with rows and columns, wherein each pixel is associated with pixel data, and

performing a search over all frames of said image signal by a block-matching method to compare a reference block of a current frame of said image signal with a number of candidate blocks of a previous frame of said image signal to detect the motion vector of said image signal,

said processing circuit comprising:

a plurality of processing units, arranged in an array, for calculating evaluation values which are defined by the differences between pixel data of said reference block and pixel data of said candidate blocks;

a plurality of first adders connected in series with each other and connected to a first half of said processing units in said array of processing units to produce a sum of the outputs of said first half of said processing units;

a plurality of second adders connected in series with each other and connected to a second half of said processing units in said array of processing units to produce a sum of the outputs of said second half of said processing units;

a first pixel data supply unit from which said pixel data of said reference block are supplied to said processing units;

a second pixel data supply unit from which said pixel data associated with pixels in even numbered columns of pixels of said candidate blocks are supplied to said processing units; and

a third pixel data supply unit from which said pixel data associated with pixels in odd numbered columns of pixels of said candidate blocks are supplied to said processing units,

wherein said processing circuit simultaneously obtains three types of motion vectors, a motion vector derived from said pixel data associated with even numbered columns of pixels, a motion vector derived from said pixel data associated with odd numbered columns of pixels, and a motion vector derived from all said pixel data.

5,604,547

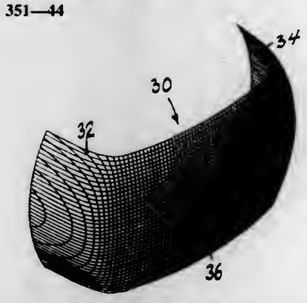
ASPHERIC/ATORIC WIDE FIELD SUNGLASSES AND SAFETY EYEWEAR

John K. Davis, E. Woodstock, and Richard P. Waido, W. Woodstock, both of Conn., assignors to Gentex Optics, Inc., Carbondale, Pa.

Continuation of Ser. No. 115,349, Sep. 1, 1993, abandoned. This application Sep. 21, 1995, Ser. No. 532,009

Int. Cl.[6] G02C *7/10;7/02*

U.S. Cl. 351—44 **23 Claims**



1. A sunglass or eye protector molded from suitable optical material with inner and outer surfaces, both of said surfaces being continuously curved and noncircular in the horizontal direction to provide substantially uniform thickness throughout and having wrap depth or rearwardly extending portions generally along the side of the head of a wearer and being curved in the vertical meridian, both surfaces being figures of revolution the curvatures of which are generated by conic sections.

5,604,548

EMERGENCY LORGNETTE

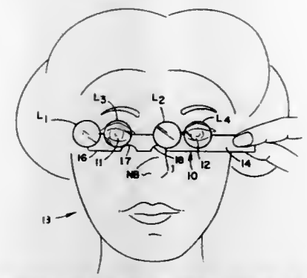
Maurice S. Kanbar, 2140 Pacific Ave., Apt. #503, San Francisco, Calif. 94115

Filed May 10, 1996, Ser. No. 644,218

Int. Cl.[6] G02C *3/04;7/08*

U.S. Cl. 351—56 **7 Claims**

1. An emergency lorgnette making it possible for a user having defective vision to see an object such as a menu more clearly regardless of the nature of the defect, said lorgnette comprising:



A. an elongated strip having an upper edge and a lower edge, said strip having a handle formed at one end thereof and having formed along its length in alignment with the upper edge first and second pairs of left and right eye lenses in staggered relation whereby the left eye lenses of the two pairs are adjacent each other and are spaced from the right eye lenses of the two pairs which are adjacent each other, the lenses of the second pair having a higher degree of optical magnification than those of the first pair;

B. a first notch intended in the lower edge of the strip midway between the lenses of the first pair to receive the nose bridge of the user whereby when the user selects this notch for use, his eyes are then aligned with the lenses of this pair; and

C. a second notch indented in the lower edge of the strip midway between the lenses of the second pair to receive the nose bridge of the user whereby when the user selects this notch, his eyes are then aligned with the lenses of this pair, the user selecting the notch which best optically accommodates his vision to the object being viewed.

5,604,549

PRESS-MOLDED OPTICAL ELEMENT

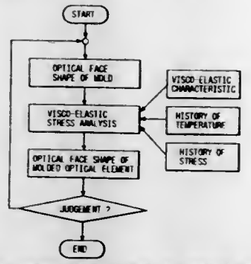
Masashi Mashige; Masaki Omori, both of Kawasaki; Masayuki Tomida, Yokohama; Takeshi Nomura, Tokyo, and Kiyoshi Yamamoto, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 69,381, Jun. 1, 1993, Pat. No. 5,435,818. This application Jan. 17, 1995, Ser. No. 373,439

Claims priority, application Japan, Jun. 2, 1992, 4-165532; Jun. 30, 1992, 4-172277; Apr. 23, 1993, 5-098152; Apr. 27, 1993, 5-122081

Int. Cl.[6] G02C *7/02;* **G02B** *3/00*

U.S. Cl. 351—177 **1 Claim**



1. An optical element formed from an optical element material press-molded in a mold, with thermal stress produced on said optical element material molded within said mold at a visco-elastic temperature range and an elastic temperature range of said optical element material in a cooling step of a molding process to be performed, then being numerically analyzed on the basis of a visco-elastic characteristic of said optical element material, a molding face of said mold is corrected on the basis of the value obtained by the numerical analysis so that an error between an optical functional face of the molded optical element analyzed at

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room temperature and a design optical functional face falls within a tolerance, thereby determining the molding face adapted to a shape of the design optical functional face, wherein the optical element is remolded in accordance with a molding process using the mold to have such a corrected molding face.

5,604,550

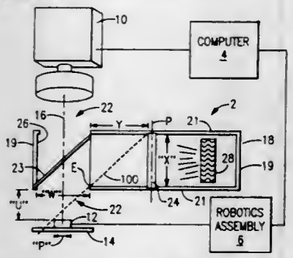
ILLUMINATION DEVICE FOR INDIRECTLY ILLUMINATING AN OBJECT WITH CONTINUOUS DIFFUSE LIGHT

Timothy P. White, New Boston, N.H., assignor to Northeast Robotics, Inc., New Boston, N.H.

Continuation-in-part of Ser. No. 331,882, Oct. 31, 1994, Pat. No. 5,539,485. This application Jul. 11, 1995, Ser. No. 501,213

Int. Cl.[6] G03B *29/00*

U.S. Cl. 396—429 **20 Claims**



1. An illumination device for illuminating an object to be observed by a camera along an observation axis extending from the camera to the object, said illumination device comprising:

a housing having at least a first aperture therein aligned with an observation axis;

a partially reflective beam splitter being supported by said housing and being positioned obliquely relative to the observation axis adjacent said at least first aperture;

a light source being arranged to cast light on a first surface of said beam splitter; and

a diffuser being positioned between said beam splitter and said light source for diffusing light from said light source as the light passes through said diffuser to said first surface of said beam splitter;

wherein said diffuser is supported within said housing such that said diffuser, during use, is only able to indirectly illuminate a desired portion of an object to be observed when the object is positioned along the observation axis.

5,604,551

MAGNETIC RECORDING/REPRODUCING APPARATUS WITH VIDEO CAMERA, SUITED FOR PHOTORECORDING WITHOUT ATTENDING CAMERA OPERATOR

Young-gyo Choi; Bong-rae Park, both of Kyungki-do, Rep. of Korea, and Allen L. Limberg, Vienna, Va., assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

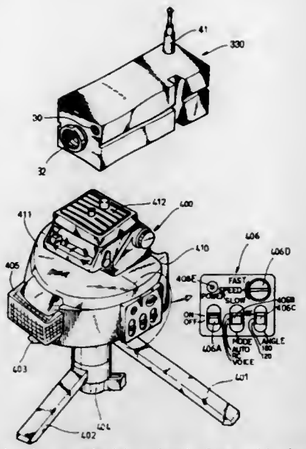
Division of Ser. No. 383,483, Feb. 2, 1995. This application Dec. 8, 1995, Ser. No. 569,541

Claims priority, application Rep. of Korea, Feb. 3, 1994, 94-1982; Apr. 28, 1994, 94-9086

Int. Cl.[6] G03B *29/00*

U.S. Cl. 396—58 **2 Claims**

1. A wireless video camera drive apparatus for a wireless video camera used in a system including a magnetic recording/reproducing apparatus with a radio receiver for receiving broadcast



television signals and television signals from said wireless video camera, said wireless video camera drive apparatus comprising:

a set of tripod legs;

a tripod main body rotatably mounted on said set of tripod legs;

a plate connected to said tripod main body so as to permit adjustment of the tilt of said plate, to which plate said wireless video camera is at least at times affixed;

a first drive motor arranged for rotating the tripod main body with respect to said set of tripod legs in response to a first drive control signal;

sound source sensing apparatus for sensing the direction of a sound source and supplying an output signal indicative of said direction;

a camera rotation signal receiver for receiving key input signals from a remote controller and supplying a respective output signal indicative of a desired camera angle responsive to each key input signal; and

a microcomputer responding to said output signals from the camera rotation signal receiver and from the sound source sensing apparatus to generate said first drive control signal.

5,604,552

SELECTABLE APERTURE SHAPE CAMERA

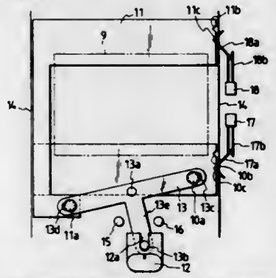
Tomohisa Ikeno, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 482,506, Jun. 7, 1995, abandoned, which is a continuation of Ser. No. 83,163, Jun. 29, 1993, abandoned. This application May 8, 1996, Ser. No. 646,559

Claims priority, application Japan, Jul. 17, 1992, 4-050218 U

Int. Cl.[6] G03B *37/00*

U.S. Cl. 396—436 **45 Claims**



3. A camera enabling photography with a plurality of selectable image plane formats, comprising:

an aperture portion having an opening for permitting photographic light to pass therethrough;

a light shield movable to a plurality of predetermined selectable positions to change a shape of said opening of said aperture portion, including a normal photographic position and a panoramic photographic position;

an operation member for moving said light shield to said predetermined positions;

detecting means for detecting whether said light shield is positioned at one of said predetermined positions or other than at said predetermined positions; and

indicating means responsive to said detecting means for automatically making indications which are changed in accordance with changes in a detection result of said detecting means;

wherein said detecting means has first and second switches, said first switch has a predetermined state when said light shield is positioned at the normal photographic position, and said second switch has a predetermined state when said light shield is positioned at the panoramic photographic position,

and said indicating means makes a first indication when only said first switch is in its predetermined state, a second indication when only said second switch is in its predetermined state, and a third indication when both switches are in a same state.

5,604,553

DATA RECORDING APPARATUS

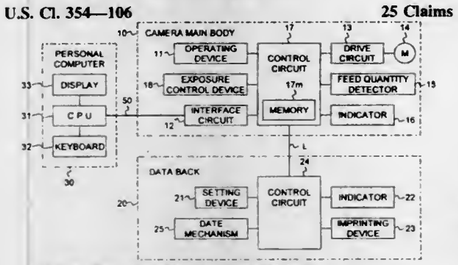
Hidehiro Ogawa, Funabashi, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Dec. 6, 1994, Ser. No. 354,081

Claims priority, application Japan, Dec. 10, 1993, 5-310737

Int. Cl.[6] G03B *17/24*

U.S. Cl. 354—106 **25 Claims**



1. A data recording apparatus, comprising:

a setting device that separately sets a first data item related to a photographic image recording medium and a second data item related to photographic images of a plurality of photographic frames to be recorded on said photographic image recording medium;

a drive device that drives a data recording medium so that data can be recorded on said data recording medium;

a recording device that records data on said data recording medium;

a control device coupled to the setting device that controls said drive device and said recording device to record said first data item only in a first recording area of said data recording medium and said second data item only in a second recording area of said data recording medium, the second recording area being used for each of the plurality of photographic frames; and

a main body that includes said drive device and said control device.

5,604,554

INDICATOR WITH FINDER OF SINGLE LENS REFLEX CAMERA

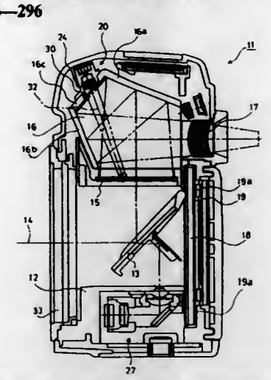
Tadayuki Kirigaya, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 19, 1994, Ser. No. 358,757

Claims priority, application Japan, Dec. 24, 1993, 5-328867

Int. Cl.[6] G03B *19/12*

U.S. Cl. 396—296 **22 Claims**



1. An indicator within a finder of a single lens reflex camera, comprising:

a mirror for reflecting light of an object transmitted through a photographing lens to form an object image onto a focusing plate;

a finder optical system for viewing said object image formed on said focusing plate;

a hollow-type pentagonal mirror comprising a pair of roof reflecting surfaces and a third reflecting surface for reflecting light, reflected by said pair of roof reflecting surfaces, towards an eyepiece optical system; and

a photographing information projector integrally provided to said pentagonal mirror and mounted in the vicinity of said pair of roof reflecting surfaces for directly projecting a plurality of light rays onto said focusing plate to form a photographing information image.

5,604,555

CAMERA

Isao Soshi, Tokyo; Hiroshi Terunuma, Chiba, and Hiroshi Wakabayashi, Kanagawa, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Feb. 16, 1995, Ser. No. 389,809

Claims priority, application Japan, Apr. 12, 1994, 6-073537; Jun. 20, 1994, 6-136789; Jun. 25, 1994, 6-132900

Int. Cl.[6] G03B *17/00*

U.S. Cl. 396—440 **20 Claims**

1. A camera comprising:

a lens having an optical axis;

a film feeding passage through which film is fed in a direction perpendicular to the optical axis;

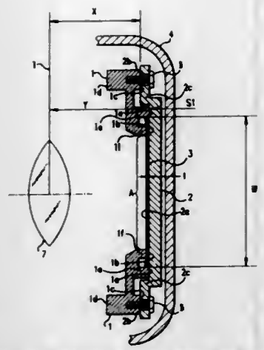
a camera body including an aperture through which an image of a subject formed by said lens is exposed onto said film;

a pair of inner rails on said camera body that are positioned outside of said aperture and on opposite sides of said aperture;

a pair of outer rails positioned outside of said inner rails and on opposite sides of said inner rails, said outer rails regulating the position of said film in a direction perpendicular to the direction of film feeding and perpendicular to the optical axis of said lens;

a regulation component that includes a regulation surface that regulates the position of said film in the direction of the optical axis in conjunction with said pair of inner rails, wherein said outer rails are formed on one of said camera

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body and said regulation component and said outer rails include outer rail surfaces facing surfaces of the other of said camera body and said regulation component and separated therefrom by a space, and wherein a dimension of said regulation component in the direction perpendicular to the direction of film feeding and perpendicular to the optical axis is greater than a distance between said pair of outer rails, and the dimension of the regulation component is greater than a dimension of the aperture in the direction of film feeding; and

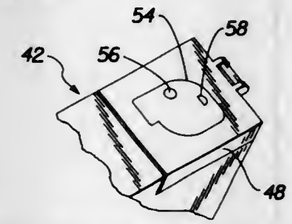
an anchoring unit that anchors the regulation component to the camera body.

5,604,556

CAMERA WITH INDICATOR FOR PREVENTING LOAD OF EXPOSED FILM

Daniel T. Meyerhoefer, Penfield, and Bruce A. Leonard, Honeoye Falls, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 11, 1995, Ser. No. 420,255
Int. Cl.[6] G03B *17/02;17/26*
U.S. Cl. 396—285 **3 Claims**



1. A family of different type cameras intended for use with a film cassette which is capable of being operated to thrust a filmstrip out of the cassette housing, regardless of whether the filmstrip is unexposed or is partially exposed, and which has respective film exposure-status indicating means for providing unexposed and partially exposed visible indications that the filmstrip inside the cassette housing is unexposed or is partially exposed, comprising:

one type camera intended to be used only with the film cassette when the film cassette contains an unexposed filmstrip and including (1) a cassette-receiving chamber with a contour substantially similar to a contour of the cassette housing and (2) only one indication means for providing an unexposed visible indication similar to the unexposed visible indication of the film cassette to advise that the one type camera can be used only with the film cassette when the film cassette contains an unexposed filmstrip, said one indication means being arranged in an orientation relative to the contour of said cassette-receiving chamber of the one type camera which is similar to the orientation the unexposed visible indication of the film cassette is arranged in relative to the contour of the cassette housing; and

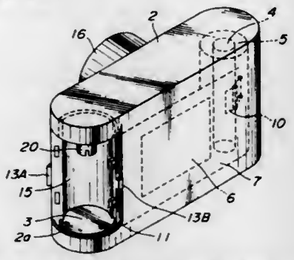
another type camera intended to be used with the film cassette when the film cassette contains an unexposed or partially exposed filmstrip and including (1) a cassette-receiving chamber with a contour substantially similar to a contour of the cassette housing and (2) respective indication means for providing unexposed and partially exposed visible indications similar to the unexposed and partially exposed visible indications of the film cassette to advise that the other type camera can be used with the film cassette when the film cassette contains an unexposed or partially exposed filmstrip, said respective indication means being arranged in orientations relative to the contour of said cassette-receiving chamber of the other type camera which are similar to the orientations the unexposed and partially exposed visible indications of the film cassette are arranged in relative to the cassette housing.

5,604,557

CAMERA

Yoshito Kobayashi, and Yu Sato, both of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 15, 1994, Ser. No. 339,569
Claims priority, application Japan, Nov. 18, 1993, 5-289345
Int. Cl.[6] G03B *17/02*
U.S. Cl. 396—538 **24 Claims**



1. A camera using a film cartridge of film feeding type, comprising:

a cartridge chamber having an access opening through which said film cartridge is loaded into said cartridge chamber in a direction transverse to a cartridge shaft of said film cartridge'

a slide cover capable of turning to an open position where said film cartridge is loaded and a closed position where said access opening is closed; and

restriction means for restricting a turning position of said slide cover so that a path between said cartridge chamber and a film feed passage is blocked by part of said slide cover, when said slide cover is turned to the open position.

5,604,558

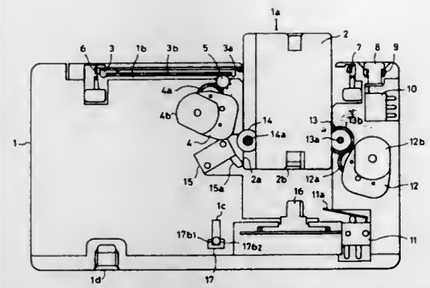
AUTOMATIC FILM CARTRIDGE EJECTION DEVICE OF A CAMERA

Katsuya Kawakita, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 27, 1995, Ser. No. 429,880
Claims priority, application Japan, May 9, 1994, 6-117431
Int. Cl.[6] G03B *17/02;17/26*
U.S. Cl. 396—538 **19 Claims**

1. An apparatus adapted for an image recording medium cartridge, comprising:

(A) a first device which automatically performs an operation relating to at least one of loading of the cartridge into and unloading of the cartridge from a cartridge chamber; and



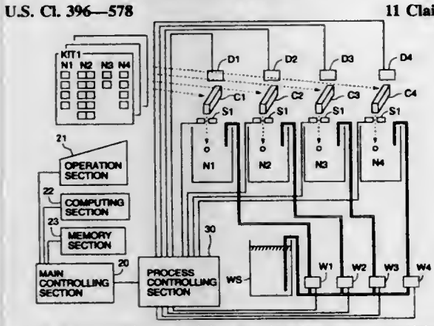
(B) a second device responsive to a state of orientation of the cartridge chamber for varying an operation of said first device.

5,604,559

PHOTOSENSITIVE MATERIAL PROCESSING APPARATUS

Kenji Yamanouchi, and Noriyoshi Suzuki, both of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Jul. 18, 1995, Ser. No. 503,765
Claims priority, application Japan, Jul. 28, 1994, 6-177031
Int. Cl.[6] G03D *3/02*
U.S. Cl. 396—578 **11 Claims**



1. A photosensitive material processing apparatus, comprising:

(a) a first processing tank for processing a photosensitive material;

(b) a second processing tank for processing said photosensitive material;

(c) a first cartridge for storing a plurality of first solid processing agent;

(d) a second cartridge for storing a plurality of second solid processing agent;

(e) first replenishing means for replenishing said first solid processing agent in said first cartridge into said first processing tank;

(f) second replenishing means for replenishing said second solid processing agent in said second cartridge into said second processing tank;

(g) first detecting means for detecting a residual quantity of said first solid processing agent in said first cartridge, wherein said first detecting means outputs a first signal when said residual quantity reaches a first preset value;

(h) second detecting means for detecting a residual quantity of said second solid processing agent in said second cartridge, wherein said second detecting means outputs a second signal when said residual quantity reaches a second preset value;

(i) memory means for storing a first data for replenishment and a second data for replenishment; and

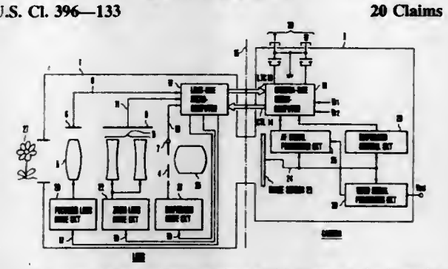
(j) controlling means for controlling said first and second processing tank so as to finish processing said photosensitive material in response to said first or second signals, and for controlling said first replenishing means so as to replenish said first processing agent in accordance with said first data for replenishment if said second detecting means outputs said second signal, and for controlling said second replenishing means so as to replenish said second processing agent in accordance with said second data for replenishment if said first detecting means outputs said first signal.

5,604,560

CAMERA APPARATUS

Naoya Kaneda, Kanagawa-ken, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 481,210, Jun. 7, 1995, abandoned, which is a continuation of Ser. No. 346,030, Nov. 29, 1994, abandoned, which is a continuation of Ser. No. 117,882, Sep. 7, 1993, abandoned, which is a continuation of Ser. No. 931,700, Aug. 18, 1992, abandoned, which is a continuation of Ser. No. 700,088, May 6, 1991, Pat. No. 5,153,629, which is a continuation of Ser. No. 410,290, Sep. 21, 1989, abandoned.
This application Feb. 12, 1996, Ser. No. 598,638
Claims priority, application Japan, Sep. 26, 1988, 63-242041
Int. Cl.[6] G03B *13/00*
U.S. Cl. 396—133 **20 Claims**



1. A video camera system having a video camera body and a lens unit detachably mounted on said video camera body, comprising:

a) communication means for communicating information between said lens unit and said camera body;

b) an actuator, disposed in said lens unit, for moving a focus lens;

c) storing means, disposed in said lens unit, for storing information relative to a maximum and/or minimum driving speed;

d) focus detecting means arranged to compare a level of a focus signal, which varies depending on a focusing condition, with a predetermined threshold level, thereby discriminating whether the focusing condition is in an in-focus condition or an out-of-focus condition, said focus detecting means being arranged to change said threshold level in response to the driving characteristic of the focus adjusting actuator in said lens unit which has been received by said receiving means;

e) control means arranged in said camera body to determine a driving instruction signal for driving said actuator on the basis of the focus condition detected by said detecting means and to supply the instruction signal to said actuator through said communication means; and

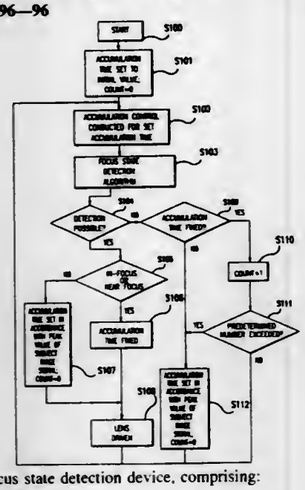
f) limiting means arranged in said camera body to take in said information on the driving range of said actuator read out from said storing means and to limit said driving instruction signal on said information so that said driving instruction signal does not exceed said driving range of said actuator.

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5,604,561
FOCUS STATE DETECTION DEVICE

Masamitsu Ozawa, Kawasaki, and Seiichi Yasukawa, Yotsukaido, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Aug. 14, 1995, Ser. No. 514,729
Claims priority, application Japan, Sep. 7, 1994, 6-213413
Int. Cl.[6] G03B *13/36*
U.S. Cl. 396—96 **19 Claims**



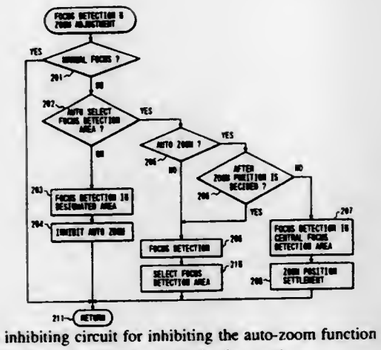
1. A focus state detection device, comprising:
a shooting lens;
re-imaging means for guiding array light rays which have passed through the shooting lens to a photoelectric conversion element array;
focus state detection algorithm means for detecting a focus state of the shooting lens through a focus state detection algorithm on the basis of output signals from the photoelectric conversion element array; and
accumulation control means for controlling the electric charge accumulation time in the photoelectric conversion element array, wherein when it is detected by the focus state detection algorithm means that the shooting lens is in focus or near focus, the accumulation control means conducts accumulation control by fixing a next accumulation time to be the accumulation time at the time when focus or near focus is detected.

5,604,562
AUTO-ZOOM CAMERA

Keisuke Aoyama, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 160,206, Dec. 2, 1993, abandoned. This application Jan. 29, 1996, Ser. No. 593,474
Claims priority, application Japan, Dec. 3, 1992, 4-349964
Int. Cl.[6] G03B *13/36*
U.S. Cl. 396—79 **63 Claims**

1. A camera having a detecting device, the detecting device outputting respective signals for focusing respective objects located at a plurality of different areas, the camera having an auto-zoom function for automatically shifting a zoom state to a predetermined state, said camera comprising:
an area selection circuit having a first mode for a photographer to select an arbitrary area among the plurality of different areas and a second mode for automatically selecting a predetermined area among the different areas; and

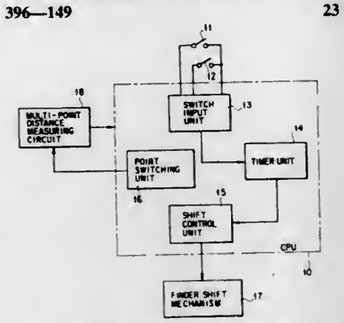


an inhibiting circuit for inhibiting the auto-zoom function when said selecting circuit selects the first mode.

5,604,563
CAMERA HAVING MULTI-POINT DISTANCE MEASURING DEVICE FOR AUTO-FOCUSING

Osamu Nonaka, Sagamihara, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 5, 1994, Ser. No. 318,354
Claims priority, application Japan, Oct. 12, 1993, 5-254301
Int. Cl.[6] G03B *3/00;13/14;* **G01C** *3/00*
U.S. Cl. 396—149 **23 Claims**

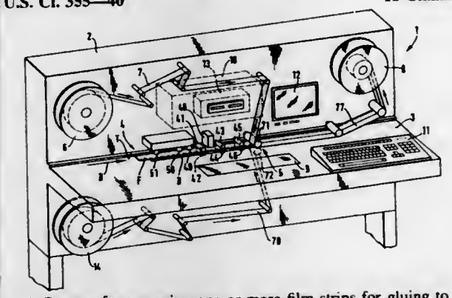


1. A camera having a photographing lens and a finder for observing an object image using an optical system different from said photographing lens, the camera comprising:
multi-point distance measuring means for measuring distances to objects corresponding to a plurality of positions on a photographing frame;
determination means for determining a distance to a principal object on the basis of a plurality of distance measurement results from said multi-point distance measuring means;
a shift mechanism for shifting an observation frame of said finder;
shift control means for driving said shift mechanism so as to eliminate a parallax of said finder in accordance with the distance to the principal object determined by said determination means; and
distance re-measuring means for performing distance re-measurement by changing the distance measuring position of the principal object by an amount shifted by said shift mechanism.

5,604,564
PROCESS AND DEVICE FOR PREPARING FILM STRIPS FOR SUBSEQUENT ORDERS

Jürg Kunz, Bülach, Switzerland, assignor to Gretag Imaging AG, Regensdorf, Switzerland

Filed Oct. 7, 1994, Ser. No. 319,514
Claims priority, application European Pat. Off., Nov. 5, 1993, 93810767
Int. Cl.[6] B32B *31/00;* **B65H** *26/00;* **G03B** *27/52*
U.S. Cl. 355—40 **12 Claims**



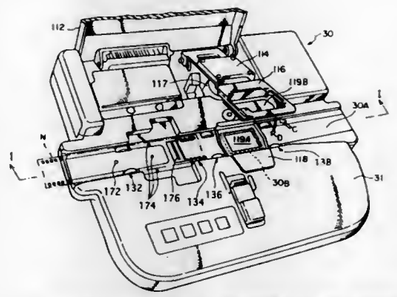
1. Process for preparing one or more film strips for gluing to a carrier belt and for coiling into a film roll that can be used at subsequent processing stations, each film strip having one or more numbered masters, said process comprising the steps of:
feeding a film strip in a conveyance direction into a preparation station;
entering order data regarding a desired number of copies of specified masters via an input unit into a computer linked to the preparation station and storing the order data as a device table onto a carrier medium that is compatible with the subsequent processing stations, the order data being entered before the film strip is fed in;
automatically checking the fed-in film strip, before it is glued to the carrier belt, for a position parallel to the conveyance direction, a position of an emulsion side of the film strip, and a number order of the masters on film strip;
comparing the parallel position, the emulsion side position and the number order with the order data entered;
verifying whether the film strip is required for processing the order data; and
signalling if a film strip is wrongly positioned or if a film strip is superfluous for processing the order data.

5,604,565
PHOTOGRAPHIC PRINTING DEVICE AND FILM CARRIER

Teruo Takanashi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 7, 1995, Ser. No. 474,714
Claims priority, application Japan, Sep. 14, 1994, 6-220541; Sep. 14, 1994, 6-220542
Int. Cl.[6] G03B *27/52;27/00;27/72*
U.S. Cl. 355—40 **20 Claims**

1. A photographic printing device comprising:
conveying means for conveying a film on which a plurality of images are recorded;
positioning means for positioning, at an exposure position, an image recorded on the film conveyed by said conveying means;
printing means for printing onto a photosensitive material the image positioned at the exposure position by said positioning means, by illuminating light to the image;
designating means for designating completion of printing of images recorded on the film; and
control means for controlling said conveying means to convey the film to a position at which the light from said printing means is not illuminated to any of the plurality of images,

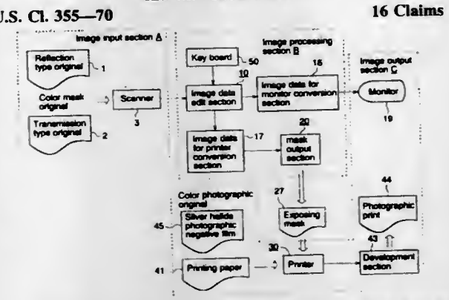


when completion of printing is designated by said designating means, wherein the conveying means retains the film at the position in a state in which the film is nipped by the conveying means.

5,604,566
PHOTOGRAPHIC PRINTING APPARATUS AND AN IMAGE FORMING METHOD

Shigeru Mano; Ichiroh Maeda, and Toshihisa Takeyama, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Jun. 12, 1995, Ser. No. 489,930
Claims priority, application Japan, Jun. 15, 1994, 6-132942
Int. Cl.[6] G03B *27/54*
U.S. Cl. 355—70 **16 Claims**



1. A method of printing an image on photographic paper with an image system including an exposure device having a reference exposure condition, comprising the steps of:
(1) reading an original image and outputting digital image signals;
(2) processing the digital image signals and forming from the processed digital image signals an image on a mask sheet corresponding to the original image, the processing step comprising:
(a) measuring density of the original image;
(b) printing the image formed on the mask sheet onto photographic paper by exposing the mask sheet under the reference exposure condition;
(c) measuring density of the printed image on the photographic paper; and
(d) processing the digital image signals so as to obtain the processed digital image signals and make the density of the printed image identical to the density of the original image, wherein the digital image signals are processed so as to satisfy a condition where the mask sheet is exposed under the reference exposure condition; and
(3) exposing the mask sheet under the reference exposure condition so that the photographic paper is exposed with exposure light passing through the mask sheet and the image on the mask sheet is formed on the photographic paper.

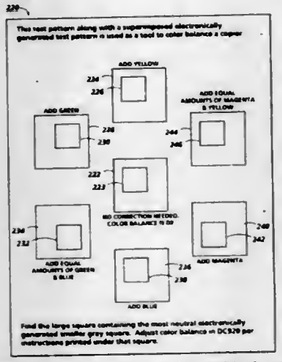
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5,604,567

PRINTER COLOR AND GRAY BALANCE ADJUSTMENT SYSTEM

Peter H. Dundas, Pittsford; Donald M. Temple, Williamson, and Susan J. Zoltner, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 3, 1994, Ser. No. 253,879
Int. Cl.[6] G03G *15/01*
U.S. Cl. 399—39 **13 Claims**



1. A printing system adapted to print multicolored indicia on sheets, comprising:

a processor, responsive to receiving a set of printer color balance adjustments, for providing a color balance judging indicator;

a controller for transmitting the set of printer color balance adjustments to said processor; and

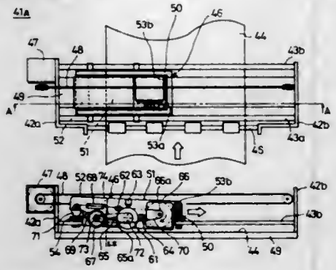
a print engine, associated with said processor, for printing a multicolored output sheet including a set of printer color balance adjustment instructions on performing color balance adjustments with said controller according to the color balance judging indicator, wherein the printer color balance adjustment instructions printed by said print engine includes a set of gradated color balance information for indicating a magnitude of the color balance adjustments to be performed.

5,604,568

IMAGE FORMING APPARATUS

Ryouichi Iwama, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 18, 1995, Ser. No. 423,931
Claims priority, application Japan, May 16, 1994, 6-101103
Int. Cl.[6] G03G *15/00*
U.S. Cl. 399—215 **10 Claims**



1. An image forming apparatus comprising:

conveying means for conveying a recording sheet in a sheet conveying direction;

a carriage comprising:

a processing means including an image carrier which is rotated about a rotational axis parallel to said sheet conveying direction, said processing means forming a latent image on said image carrier by electrically charging and developing said latent image so as to produce a developed image;

fixing means for fixing said developed image onto said recording sheet;

a supporting member for rotatably supporting said processing means and said fixing means;

transfer means for transferring said developed image on said image carrier to said recording sheet as a result of inserting said recording sheet between said image carrier and said transfer means as said carriage moves on said recording sheet in a carriage moving direction;

moving means for moving said carriage in said carriage moving direction which is perpendicular to said sheet conveying direction: and

a retreating mechanism for rotating said processing means and said fixing means so as to remove said image carrier and said fixing means from said transfer means, said retreating mechanism comprising:

driving means;

engaging means which is driven by said driving means and thus moves said image carrier and said fixing means, said engaging means comprising an eccentric cam, and

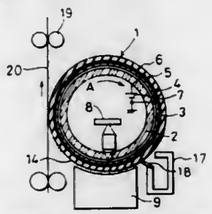
transmission means for transmitting a driving force from said driving means to said eccentric cam.

5,604,569

IMAGE FORMING METHOD EXERTING JOULE HEAT ON AN IRRADIATED PORTION OF A PHOTOCONDUCTIVE LAYER, AND AN APPARATUS USED FOR SUCH A METHOD

Hiroshi Kubota, Yamatotakada, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 17, 1995, Ser. No. 503,450
Claims priority, application Japan, Jul. 27, 1994, 6-175407
Int. Cl.[6] G03G *15/00*
U.S. Cl. 399—232 **15 Claims**



1. An image-forming method, which uses a latent-image-forming body wherein a transparent electrode layer, a photoconductive layer, an electrode layer and a pyroelectric-material layer made up of a dielectric substance are successively stacked on a transparent base, comprising the steps of:

generating conductive carriers inside the photoconductive layer by irradiating information light onto the photoconductive layer from the transparent base side by using a light source installed at an opposing position to the transparent base;

forming an electrostatic latent image by applying a voltage across the transparent electrode layer and the electrode layer so that Joule heat is exerted at the irradiated portion of the photoconductive layer by the light source, the heat being conducted to the pyroelectric-material layer to cause a temperature rise in the pyroelectric-material layer so that a charge is exerted on its surface because of the pyroelectric effect; and

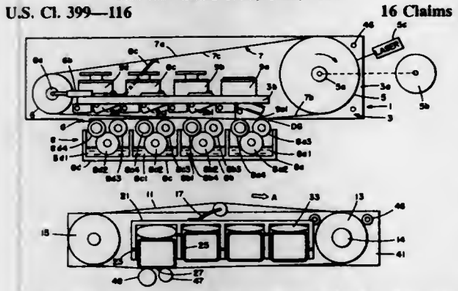
developing the electrostatic latent image by allowing developer, charged to have a polarity reversed to that of the electrostatic latent image, to be attracted to the electrostatic latent image.

5,604,570

ELECTROPHOTOGRAPHIC PRINTER WITH APPARATUS FOR MOVING A FLEXIBLE PHOTOCONDUCTOR INTO ENGAGEMENT WITH A DEVELOPER MODULE

Paul L. Jeran, Meridian; David J. Arcaro, Boise, and David S. Pitou, Meridan, all of Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 30, 1994, Ser. No. 269,310
Int. Cl.[6] G03G *5/00;15/06;15/10*
U.S. Cl. 399—116 **16 Claims**



1. A system for developing latent images in a flexible photoconductor, the system having a mechanism for moving said photoconductor with a latent image thereon, and at least one developer mechanism for transferring toner from a supply of toner to said flexible photoconductor, said system comprising:

shifting means, mounted adjacent said flexible photoconductor, for shifting a predetermined portion of said photoconductor at said latent image thereon from its path of motion into a position of functional proximity with respect to said developer mechanism, said shifting means including a displaceable platen means for contacting said flexible photoconductor, a guide housing for said platen means, and pressurizing means positioned between said guide housing and said platen means, said guide housing for guiding said platen means from a retracted position, when said pressurizing means is depressurized, to an extended position when said pressurizing means is pressurized, so as to position said flexible photoconductor at said functional proximity to said developer mechanism; and

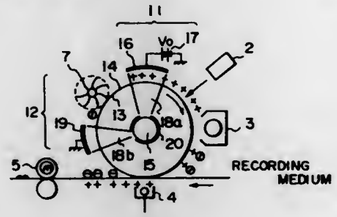
pressurizing means, connected to said shifting means, for supplying a pneumatically controlled force on said shifting means to cause the shifting of said predetermined portion of said flexible photoconductor.

5,604,571

IMAGE- FORMING APPARATUS HAVING IMAGING X-RAY GENERATION MEANS

Masayoshi Kato; Yasuhiro Tomita, and Masayoshi Ishikawa, all of Hamamatsu, Japan, assignors to Hamamatsu Photonics K.K., Hamamatsu, Japan

Filed Jan. 26, 1996, Ser. No. 592,714
Claims priority, application Japan, Jan. 26, 1995, 7-11016
Int. Cl.[6] G03G *15/00;15/02*
U.S. Cl. 399—162 **10 Claims**



1. An image-forming apparatus for forming an image on a recording medium, comprising:

a substrate which is formed like a closed loop and movable along this closed loop, said substrate being made of a light element;

charge means for electrically charging a surface of a photosensitive layer which is formed on an outer peripheral surface of said substrate, said charge means having charging X-ray generation means, which is disposed within said closed loop such that air on the surface of said photosensitive layer is electrolytically dissociated by an X-ray transmitted through said substrate and said photosensitive layer, and electric-field application means which guides, by means of an electric field, a gaseous ion formed by the electrolytic dissociation to the surface of said photosensitive layer;

exposure means for exposing the charged surface of said photosensitive layer with light to form an electrostatic latent image corresponding to said image to be formed;

developing means for attaching a coloring fine particle to an area of said electrostatic latent image;

transfer means for transferring said coloring fine particle attached to the area of said electrostatic latent image to said recording medium;

fixing means for fixing said coloring fine particle transferred to said recording medium; and

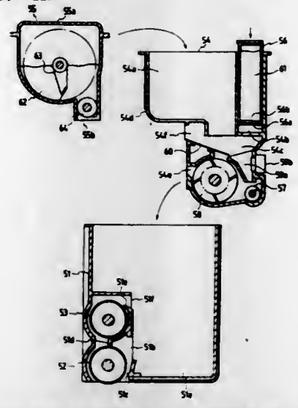
cleaning means for cleaning said coloring fine particle remaining on the surface of said photosensitive layer, said cleaning means having erasure X-ray generation means which is disposed within said closed loop such that air on said photosensitive layer in which said coloring fine particle remains is ionized by irradiation of an X-ray transmitted through said substrate and said photosensitive layer, and generates a carrier within said photosensitive layer.

5,604,572

DEVELOPING APPARATUS HAVING DEVELOPING AGENT ACCOMMODATING CARTRIDGE AND CARTRIDGE FOR ACCOMMODATING DEVELOPING AGENT FOR USE IN DEVELOPING APPARATUS

Mitsuo Suzuki; Isamu Terashima, and Katsumi Kumada, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 124,393, Sep. 21, 1993, Pat. No. 5,491,537. This application Nov. 27, 1995, Ser. No. 563,211
Claims priority, application Japan, Sep. 22, 1992, 4-252887
Int. Cl.[6] G03G *15/06*
U.S. Cl. 399—119 **11 Claims**



1. A developing apparatus having a developing container for accommodating a developing agent comprised of toners and carri-

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ers, said developing container having a developing roller for slidingly brushing a face of an electrostatic latent image by adhering the developing agent to an outer periphery surface thereof, and a recovering roller for recovering the toners on said developing roller which are not used for a development;

a developing agent accommodating cartridge member for accommodating recovered toners on said recovering roller and having a developing agent supplying roller for supplying the developing agent to said developing roller; and

a toner accommodating cartridge member having a toner supplying roller which supplies the toners to said developing agent accommodating cartridge member,

wherein said developing agent accommodating cartridge member and said toner accommodating cartridge member are detachably installed to said developing container.

5,604,573

DEVELOPING UNIT WITH A SMOOTHING PLATE

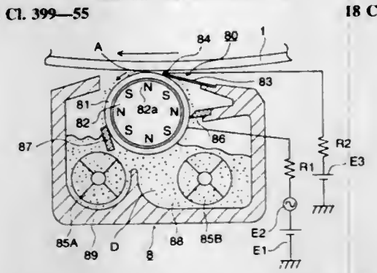
Isao Endo; Satoshi Haneda; Yotaro Sato, and Hiroyuki Nomori, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Oct. 28, 1994, Ser. No. 331,390

Claims priority, application Japan, Nov. 5, 1993, 5-277010; Jun. 3, 1994, 6-122646

Int. Cl.[6] **G03G** *15/06;15/09*

U.S. Cl. 399—55 **18 Claims**



1. A developing apparatus for developing an electrostatic latent image formed on an image retainer with a two-component developer containing magnetic particles and toner, the developing apparatus comprising:

a rotatable sleeve having a rotation center, wherein the sleeve disposed to face the image retainer, for conveying the two component developer to a developing region which is formed between the rotatable sleeve and the image retainer, and wherein the sleeve has a closest position on which the sleeve comes closest to the image retainer,

a first magnet fixed in the sleeve in close proximity to the closest position,

a second magnet disposed upstream of the first magnet in relation to a rotation direction of the sleeve and fixed in the sleeve, the second magnet having a polarity opposite to that of the first magnet so that the magnetic particles are attracted so as to convey the two component developer on the sleeve between the first and second magnets, and

a control electrode member including:

an insulating plate member arranged either to be brought into contact with or to be positioned adjacent to the sleeve, and positioned between the first and second magnets, and

a line-shaped electrode member fixed to the plate member so that the line-shaped electrode member is positioned exclusively downstream of a position where the plate member is in contact with or closest to the sleeve in relation to the conveying direction of the developer.

5,604,574

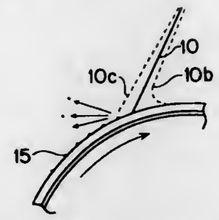
ELECTROPHOTOGRAPHIC IMAGE-FORMING METHOD

Katsumi Matsuura; Yuji Marukawa, and Yosbihiko Etob, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Feb. 16, 1996, Ser. No. 602,960

Int. Cl.[6] **G03G** *21/00*

U.S. Cl. 399—350 **3 Claims**



1. An electrophotographic image-forming method comprising the steps of

forming an electrostatic latent image on a rotating electrophotographic photoreceptor having an organic photoconductive layer,

developing said electrostatic latent image with a toner comprising toner particles which contain a releasing agent existing in said toner particle in a form of insular domain having a number average diameter of 0.1 μm to 1.1 μm to form a toner image,

transferring said toner image to an image receiving member, and

cleaning a surface of said photoreceptor after the transferring step by a cleaning member having a rubber elastic cleaning blade having an impact resilience of 35 to 75% which is contacted to the surface of the photoreceptor in a direction counter to the rotating direction of the photoreceptor with a pressure of 5 to 40 g/cm, and a coefficient of static friction between said cleaning blade and said surface of the photoreceptor is not more than 1.0.

5,604,575

IMAGE FORMING APPARATUS WITH TONER RECYCLING DEVICE

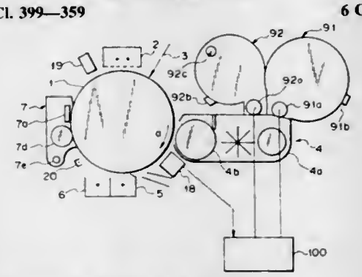
Hiromitsu Takagaki, Yokohama; Shinji Kato, Kawasaki; Hisao Murayama; Shigeru Watanabe, both of Yokohama; Mayumi Yoshida, Tokyo, and Shunji Kato, Sagamihara, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 44,394, Apr. 8, 1993, Pat. No. 5,493,382. This application May 15, 1995, Ser. No. 441,612

Claims priority, application Japan, Apr. 11, 1992, 4-118374; May 3, 1992, 4-139790; Jul. 23, 1992, 4-217189; Aug. 13, 1992, 4-237693; Feb. 22, 1993, 5-56566

Int. Cl.[6] **G03G** *21/10*

U.S. Cl. 399—359 **6 Claims**



1. An image forming apparatus comprising:

developing means comprising a developing section for developing a latent image formed on an image carrier by depositing a toner on said latent image;

cleaning means for collecting the toner remaining on said image carrier;

toner storing means provided above said developing means for storing toner including both a fresh toner and the collected toner;

toner supplementing means for supplementing the toner from said toner storing means to said developing section of said developing means;

a first drive section for driving the toner supplementing means;

toner conveying means for conveying the collected toner to said toner storing means;

a second drive section for driving the toner conveying means; and

control means for controlling the first and second drive sections associated with said toner supplementing means and said toner conveying means such that an amount of the toner fed from said toner storing means to said developing section and an amount of the collected toner conveyed to said toner storing means by said toner conveying means have a ratio lying in a predetermined range.

5,604,576

RECYCLE DEVELOPING METHOD AND APPARATUS

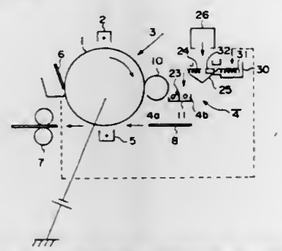
Masahide Inoue; Takeshi Arakawa; Yutaka Aso, and Ryo Fujisawa, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Aug. 28, 1995, Ser. No. 520,089

Claims priority, application Japan, Aug. 29, 1994, 6-203262

Int. Cl.[6] **G03G** *21/00*

U.S. Cl. 399—255 **8 Claims**



1. A recycle developing method comprising the steps of:

(1) providing a developing vessel containing a starting developer comprised of an electroscopic toner and a magnetic carrier;

(2) transferring toner from said developing vessel to a photosensitive material having an electrostatic latent image formed thereon;

(3) transferring a portion of said toner on said photosensitive material to a paper to form an image on said paper;

(4) recovering toner remaining on said photosensitive material after said portion of toner is transferred to said paper;

(5) repeating steps (2)–(4) while replenishing toner in said developing vessel by the sub-steps of:

(5*a*) supplying said toner recovered in step (4) to said developing vessel, and

(5*b*) supplying a virgin toner, having a higher chargeability than said electroscopic toner in said starting developer, to said developing vessel,

said sub-steps (5*a*) and (5*b*) cooperating so as to form a mixed toner in said developing vessel, an absolute value of the average charge quantity of said mixed toner being greater than the absolute value of the average charge quantity of said electroscopic toner in said starting developer plus 10 μC/g.

5,604,577

DOUBLE-SIDE IMAGE FORMING APPARATUS AND REVERSE SHEET FEEDING DEVICE

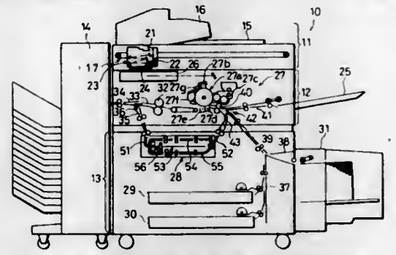
Osamu Wakuda, Yamatotakada; Toshihiro Okahashi, Kashihara, and Osamu Hashimoto, Ikoma, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 6, 1995, Ser. No. 417,885

Claims priority, application Japan, Apr. 27, 1994, 6-090257

Int. Cl.[6] **G03G** *21/00*

U.S. Cl. 399—364 **26 Claims**



1. A double-side image forming apparatus comprising:

an image forming section for forming an image on a sheet;

a turnaround section for reversing a leading edge and a trailing edge of a sheet with respect to a transporting direction after the sheet passes through said image forming section;

a plurality of reversing transport paths for transporting the sheet output from said turnaround section to said image forming section while turning over the sheet;

sheet guiding means for guiding the sheet output from said turnaround section to said reversing transport paths; and

controlling means for controlling said image forming section, said turnaround section, said reversing transport paths, and said sheet guiding means so that an image is formed on one side of each of the sheets by said image forming section and that the sheets are sequentially held in said reversing transport paths and then supplied from said reversing transport paths to said image forming section for forming an image on the other side of each of the sheets.

5,604,578

COLOR IMAGE FORMING APPARATUS HAVING A FUNCTION OF DETERMINING A CHARGE VALUE CHARGED ON A CUSTOMER ACCORDING TO AN AMOUNT OF RECORDING MATERIAL

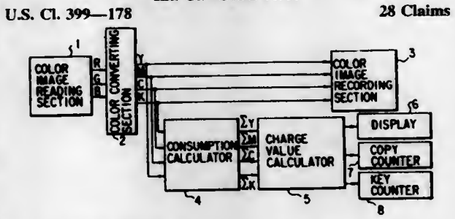
Kunihiro Shibuya, Kawasaki, and Hiroki Kanno, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Filed Dec. 21, 1995, Ser. No. 576,065

Claims priority, application Japan, Dec. 27, 1994, 6-325564

Int. Cl.[6] **G03G** *15/01*

U.S. Cl. 399—178 **28 Claims**



1. An image forming apparatus for forming a duplicate image based on first color image data, comprising:

means for fetching the first color image data subjected to color separation;

means for converting the first color image data into second color image data;

means for forming the duplicate image of the first color image data by using recording materials of different types based on the second color image data;

means for calculating the consumptions of the respective recording materials used for image formation; and

means for calculating a charge value for image formation of the duplicate image based on the consumption of the recording materials calculated by the consumption calculating means.

5,604,579

METHOD AND APPARATUS FOR ELECTRONICALLY CREATING IMPOSITION DATA, INCLUDING DUMMY DATA FOR ORIGINAL FILM AND PLATEMAKING

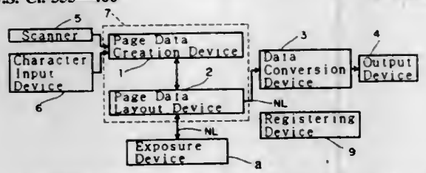
Masahiko Kushida, Minami-ku, Japan, assignor to Dainippon Screen Manufacturing Co., Ltd., Japan

Filed Sep. 1, 1994, Ser. No. 299,898

Claims priority, application Japan, Sep. 6, 1993, 5-221137; Jul. 11, 1994, 6-158978

Int. Cl.[6] H04N *1/00;1/387;* **G03B** *27/52;* **G06K** *1/00*

U.S. Cl. 355—400 **10 Claims**



1. A method for creating a printing plate for use in the production of printed matter, comprising the steps of:

inputting page data into an imposition data creation device;

generating multiple pages of page data, including dummy page data where at least one page of page data has not been inputted;

producing images on a photosensitive film to produce an original film having images thereon representing the generated page data, wherein at least one portion of said original film also defines a masked area that corresponds to the dummy page data;

exposing at least a portion of a printing plate to the original film to transfer images from the original film to the printing plate, wherein the masked area of the original film causes a portion of the printing plate to remain unexposed and corresponds to the dummy page data;

supplying an additional original film having an additional page of page data formed thereon;

positioning the additional original film with respect to the printing plate in the area corresponding to the dummy page data; and

exposing only the area of the printing plate corresponding to the dummy page data to the additional original film.

5,604,580

OPTICAL RADAR APPARATUS FOR VEHICLE

Naohisa Uehara, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 9, 1995, Ser. No. 385,881

Claims priority, application Japan, Feb. 10, 1994, 6-016840

Int. Cl.[6] B60T *7/16;* **B60Q** *1/00;* **G01B** *3/36;* **G01C** *3/08*

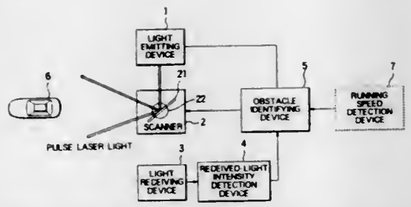
U.S. Cl. 356—28 **7 Claims**

1. A vehicular optical radar apparatus comprising:

optical radiation means for scanning and radiating light;

light receiving means for receiving light which is radiated by said optical radiation means and is then reflected by an object;

received-light intensity detection means for detecting an intensity of the reflected light;



obstacle identifying means for identifying said object based on a distribution pattern of the received-light intensity detected by said intensity detection means, the distribution pattern being obtained with respect to the direction of scanning performed by said optical radiation means;

distance calculation means for calculating a distance to said object, based on a propagation lag duration from the time when the light is radiated by said optical radiation means to the time when the reflected light is received by said light receiving means; and

object-width calculation means for calculating a width of said object based on a scanning angle of said optical radiation means and the distance calculated by said distance calculation means;

wherein said obstacle identifying means identifies said object based on the distance calculated by said distance calculation means, the distribution pattern of the received-light intensity with respect to the scanning direction, and the width of said object.

5,604,581

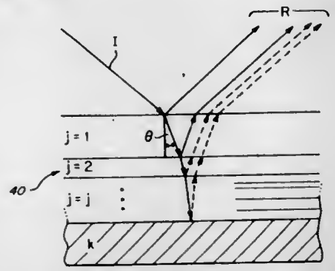
FILM THICKNESS AND FREE CARRIER CONCENTRATION ANALYSIS METHOD AND APPARATUS

Shaohua Liu, San Jose, Calif.; Peter R. Solomon, West Hartford, Conn.; Peter A. Rosenthal, West Simsbury, Conn., and Stuart Farquharson, New Haven, Conn., assignors to On-Line Technologies, Inc., East Hartford, Conn.

Filed Oct. 7, 1994, Ser. No. 319,749

Int. Cl.[6] G01B *11/06;* **G01N** *21/41*

U.S. Cl. 356—73 **29 Claims**



1. A method for determining the thickness and the free carrier concentration of at least one layer of a structure, comprising the steps:

(a) providing a structure composed of k layers of material, wherein k is an integer and wherein the numbers 1.2 . . . k designate the relative position of each layer j in said structure;

(b) irradiating an exposed surface of said structure using spectral radiation within the range inclusive of the far-ultraviolet and far-infrared regions;

(c) measuring radiation reflected from said surface to determine at least one reflectance spectrum R from said surface;

(d) calculating a reflectance spectrum R_c according to the expression:

$$R_c = ar_s^2 + (1-a)r_p^2,$$

wherein a is the instrument-dependent polarization coefficient and is a constant having a positive value not greater than unity, and wherein r_s and r_p are the perpendicular (s) and parallel (p) polarized reflectance amplitude components of the reflectance spectrum and are calculated in accordance with the following matrix formalism:

$$r_s = \frac{(m_{11} + m_{12}g_{(k+1)s})g_{0s} - (m_{21} + m_{22}g_{(k+1)s})}{(m_{11} + m_{12}g_{(k+1)s})g_{0s} + (m_{21} + m_{22}g_{(k+1)s})}$$

$$r_p = \frac{(m_{11} + m_{12}g_{(k+1)p})g_{0p} - (m_{21} + m_{22}g_{(k+1)p})}{(m_{11} + m_{12}g_{(k+1)p})g_{0p} + (m_{21} + m_{22}g_{(k+1)p})}$$

wherein the matrix components: m_{11}, m_{12}, m_{21}, m_{22} are derived from the matrix product:

$$\begin{bmatrix} m_{11} & m_{12} \\ m_{21} & m_{22} \end{bmatrix} = \prod_{j=1}^{k} m_j$$

wherein the matrices m_j are determined separately for each layer j being defined for the perpendicular and parallel polarization, respectively, by:

$$m_{jp} = \begin{bmatrix} \cos b_{jp} & -i\sin b_{jp}/g_{jp} \\ -ig_{jp}\sin b_{jp} & \cos b_{jp} \end{bmatrix}$$

$$m_{js} = \begin{bmatrix} \cos b_{js} & -i\sin b_{js}/g_{js} \\ -ig_{js}\sin b_{js} & \cos b_{js} \end{bmatrix}$$

wherein b_j is the optical path difference between the interface of said each layer j, and wherein g_j is the effective complex refractive index, in accordance with the expressions:

$$b_{js} = 2\pi n z_j (h_j + ik_j)\cos q_{js}$$

$$g_{js} = (h_j + ik_j)\cos q_{js}$$

$$b_{jp} = 2\pi n z_j (h_j + ik_j)\cos q_{jp}$$

$$g_{jp} = \cos q_{jp}/(j_j + ik_j)$$

wherein n represents the wavenumbers of said radiation, z_j is the thickness of said each layer j, $(h_j + ik_j)$ is the complex refractive index of said each layer j, q_j, and q_{jp} are the angles of radiation inside said each layer j in accordance with the expressions:

$$h_0 \sin q_{0s} = j_j \sin q_{js}$$

$$h_0 \sin q_{0s} = h_j \sin q_{jp}$$

wherein h_0 is the refractive index of air, and q_0 is the angle of said radiation incident to said surface, and wherein the complex refractive index for said one layer, the jth layer, is calculated in accordance with:

$$(j_j + ik_j)^2 = e_m(w) - 4\pi(n_j e^2/m^*)/(w^2 + iw\tau^{-1}),$$

wherein $e_m(w)$ represents the dielectric constant of the material of which said j^{th} layer is composed, but devoid of free carriers, as a function of frequency w, e is the charge of the free carrier and has the nominal value 1.6×10^{-19} coulombs, m* is the effective mass of said carrier, τ is the scattering time of said carrier, and n_j is the free carrier concentration of said j^{th} layer; and

(e) comparing said calculated spectrum R_c to said determined spectrum R, and iteratively assigning values to the parameters n_j and z_j so as to achieve a best fit relationship between said spectra R_c and R, to thereby determine n_j and z_j.

5,604,582

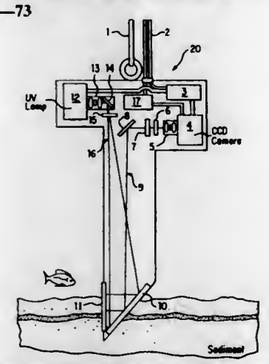
METHODS AND APPARATUS FOR TAKING SPECTROSCOPIC MEASUREMENTS OF SEDIMENT LAYERS BENEATH A BODY OF WATER

Donald C. Rhoads, Falmouth, Mass.; Christopher Coyle, San Diego, Calif.; Roger Ward, Portmouth, R.I.; Gregory Mooradian, Del Mar, and Richard Anderson, San Diego, both of Calif., assignors to Science Application International Corporation, San Diego, Calif.

Continuation of Ser. No. 241,992, May 12, 1994, abandoned. This application Feb. 27, 1995, Ser. No. 395,515

Int. Cl.[6] G01N *21/27;21/64*

U.S. Cl. 356—73 **68 Claims**



1. A spectrometer system comprising a processing center, an underwater remote sensor and a communications link coupled therebetween, the sensor at least partially penetrating a sediment layer disposed beneath a body of water, the sensor comprising:

a window defining a sediment window plane through which a profile of the sediment layer is observable; and

a CCD camera, an image plane of which is a conjugate of the window, the camera sensing light from objects in the sediment window plane as received at the camera to generate imagewise data for transmission over the communications link, the CCD camera being controllable by the processing center to generate the imagewise data so as to be formed with a selectable one of a plurality of resolutions.

5,604,583

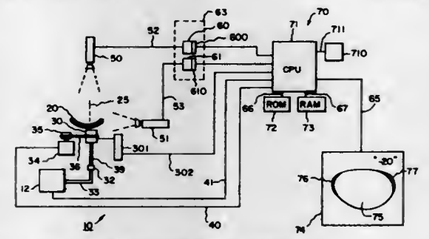
COMPUTER VISION INSPECTION STATION

David L. Byron, Honeoye Falls, N.Y., and Rory L. C. Flemmer, Independence, W. Va., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Mar. 20, 1995, Ser. No. 407,581

Int. Cl.[6] G01B *11/00*

U.S. Cl. 356—124 **18 Claims**



1. A process for inspecting a lens comprising:

rotating a lens;

taking first and second video images of the rotating lens, said first image being taken of a major surface of the lens and said second image being taken of an edge of said lens;

converting said first and second images into first and second image signals, said first and second image signals comprising a plurality of digital signals representative of the first and second video images;

comparing said first and second digital images to first and second stored data signals representative of a predetermined major surface and a predetermined edge.

5,604,584

PHOTOMETRY DEVICE WITH CORRECTION FOR TEMPERATURE CHANGE

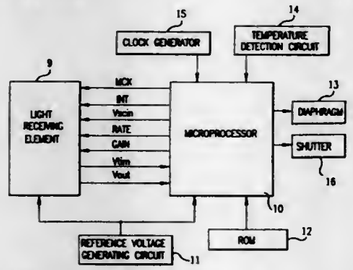
Hiroyuki Iwasaki, Kanagawa-ken, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed May 11, 1995, Ser. No. 439,370

Claims priority, application Japan, Jun. 23, 1994, 6-141846

Int. Cl.[6] G01J *1/42*

U.S. Cl. 356—218 **16 Claims**



1. A photometry device, comprising:

a light receiving element generating an output signal from light incident on a subject field, an amplitude of the output signal of the light receiving element corresponding to an intensity of the light from the subject field;

a light sensitivity detection device generating light sensitivity output data;

a temperature detection device generating a temperature value corresponding to a temperature of the light receiving element; and

a light sensitivity correction device correcting the amplitude of the output signal of the light receiving element for changes due to temperature variations of the light receiving element based on at least the light sensitivity output data generated by the light sensitivity detection device and an accurate temperature value, wherein the accurate temperature value is generated based on the temperature value and a set of temperature characteristic values of the temperature detection device stored in a memory device, the set of temperature characteristic values accounting for all temperature variations of the temperature detection device.

5,604,585

PARTICLE DETECTION SYSTEM EMPLOYING A SUBSYSTEM FOR COLLECTING SCATTERED LIGHT FROM THE PARTICLES

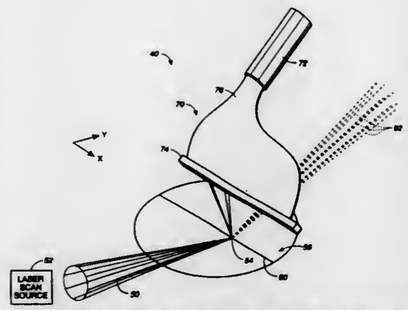
Ralph Johnson, Los Gatos; Keith Wells, Santa Cruz, and Lee K. Galbraith, San Diego, all of Calif., assignors to Tencor Instruments, Santa Clara, Calif.

Filed Mar. 31, 1995, Ser. No. 412,331

Int. Cl.[6] G01N *21/88*

U.S. Cl. 356—237 **34 Claims**

1. An apparatus for inspecting a surface, comprising:



a light source providing a light beam in an incident direction to a spot on said surface, said spot tracing a line on said surface as time progresses to illuminate spots along the line; and

a collection system for collecting in directions at a substantially constant azimuth angle to the incident direction light scattered by the illuminated spots, said system rejecting scattered light not substantially at said constant azimuth angle from such spots, said azimuth angle being different from 90 degrees, and said directions for collecting light being transverse to a plane of the incident direction and a specular reflection thereof.

5,604,586

COLOR-MATCHING APPARATUS FOR THE VISUAL ON-LIGHT EVALUATION OF FLEXIBLE COPIES

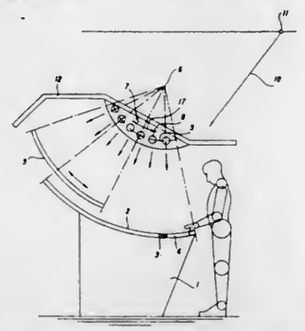
Klaus Bähr, Offenbach am Main; Eckhard Köbler, Heidelberg, and Tobias Müller, Hirschberg, all of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed Jan. 20, 1995, Ser. No. 375,965

Claims priority, application Germany, Jan. 20, 1994, 44 01 534.8

Int. Cl.[6] G01N *21/01*; A47F *5/16*; G09F *13/04*

U.S. Cl. 356—244 **9 Claims**



1. A color-matching apparatus for visual on-light evaluation of flexible copies, comprising:

a color-matching support for at least one flexible printed copy having a supporting surface being concave as viewed by an observer; and

an illumination configuration emitting light onto copies and generating a defined intensity of illumination in said supporting surface, said illumination configuration having a radiating surface being substantially convex, as viewed by the observer;

said color-matching support and said illumination configuration being disposed so as to allow visual inspection of the at least one printed copy by the observer.

5,604,587

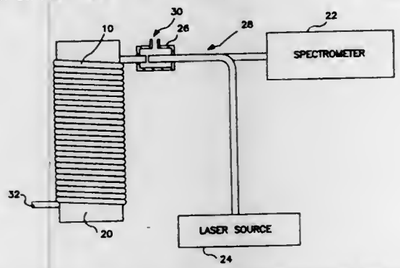
LONG CAPILLARY WAVEGUIDE RAMAN CELL

Diping Che, and Su-Yi Liu, both of Sarasota, Fla., assignors to World Precision Instruments, Inc., Sarasota, Fla.

Filed Nov. 16, 1995, Ser. No. 559,560

Int. Cl.[6] G01N *1/10*

U.S. Cl. 356—246 **23 Claims**



1. A cell for use in the measurement of the chemical properties of aqueous samples containing dissolved analytes by Raman spectroscopy, said cell comprising:

capillary tube means having a wall which defines interior and exterior surfaces, said tube means having an elongated inner central region for receiving a sample to be analyzed, at least that part of said capillary tube means which is in direct communication with said central region being non-reactive with the sample, said tube means being capable of being flexed without significantly varying the cross-sectional shape of said central region said capillary tube means further having first and second ends which determine the length of the measurement cell, said capillary tube means defining a reflection surface for confining light energy within said capillary tube means, the portion of said tube means situated to the interior of said reflection surface comprising a light transmitting core which includes said central region whereby light energy may be transmitted from the first end of said capillary tube means to said second end of said capillary tube means, irradiation light energy launched into and transmitted through said core causing Raman scattering in the sample whereby light with wavelengths different from said irradiation light wavelength is produced by interaction between said irradiation light and the sample, said different wavelengths being commensurate with a line spectrum which identifies constituents of the analytes;

means for coupling irradiation light energy into said core via said capillary tube means first end whereby a liquid sample in said core region may function as a light conducting medium in an aqueous liquid core wavelength; and

light receiving means positioned adjacent one of said ends of said capillary tube means for receiving at least a portion of the Raman scattering light produced by interaction between said irradiation light and the sample in said core region, said Raman scattering light being reflected to said light receiving means by said reflection surface.

5,604,588

IMAGING PLASMA IN NONLINEAR LIMITER CELLS

Robert V. Goedert, Ferndale, Mich., assignor to United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 20, 1995, Ser. No. 505,519

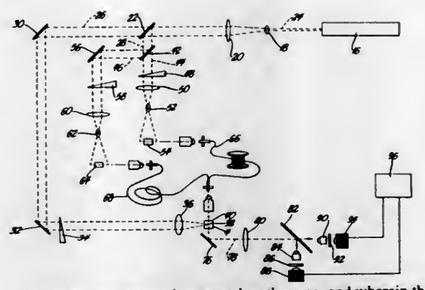
Int. Cl.[6] G01N *21/63*

U.S. Cl. 356—318 **14 Claims**

1. A method to examine a laser induced formation in a material, comprising:

producing a collimated coherent pulse from a laser;

splitting the collimated coherent pulse into an initiation pulse, a first probe pulse and a second probe pulse, wherein the initiation pulse has a given wavelength range, and wherein the probe pulses are of shorter duration than an expected life of the formation;



focussing the initiation pulse at a site in the material, so that a formation initiates at the site;

converting the first probe pulse to a first new wavelength range different from the given wavelength range;

converting the second probe pulse to a second new wavelength range different from the first new wavelength range and different from the given wavelength range;

sending the first probe pulse through a first single mode fiber having a first predetermined length;

sending the second probe pulse through a second single mode fiber having a second predetermined length greater than the first predetermined length;

aligning the first and second probe pulses along a common path in which lies the site, the probe pulses being coherent and collimated;

wherein the initiation pulse arrives at the site before the first probe pulse and the first probe pulse arrives at the site before the second probe pulse;

imaging a first shadowgraph resulting from passage of the first probe pulse past the formation;

imaging a second shadowgraph resulting from passage of the second probe pulse past the formation.

5,604,589

DIODE ARRAY SPECTROPHOTOMETER

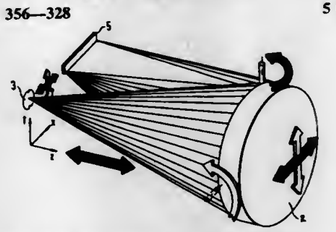
Karsten Kraiczek, Karlsbad, Germany, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 23, 1996, Ser. No. 589,074

Claims priority, application Germany, Feb. 14, 1995, 195 04 834.2

Int. Cl.[6] G01J *3/02;3/36*

U.S. Cl. 356—328 **5 Claims**



1. A diode array spectrophotometer comprising:

an entrance slit apparatus;

a diffraction grating;

a diode array;

a casing for defining positions of the entrance slit apparatus and the diode array relative to one another; and

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a grating holder fixed to the casing for receiving the diffraction grating, by means of which the diffraction grating is fixed relative to the entrance slit apparatus and the diode array in an adjusted position, the casing and the grating holder comprised of ceramics having coefficients of thermal expansion which are matched to the coefficient of thermal expansion of the diode array.

5,604,590

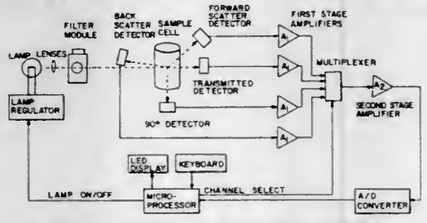
NEPHELOMETER INSTRUMENT

Richard J. Cooper, Loveland; Kevin A. Keilbach, Ft. Collins; Richard P. Kolman; Ernie R. Paoli, both of Loveland; Kenneth L. Stutzman, and Robert D. Stream, both of Ft. Collins, all of Colo., assignors to Hach Company, Loveland, Colo.

Division of Ser. No. 303,176, Sep. 8, 1994, Pat. No. 5,506,679. This application Feb. 6, 1996, Ser. No. 597,217

Int. Cl.[6] G01N *21/00*

U.S. Cl. 356—338 **15 Claims**



1. A nephelometer instrument capable of measuring the turbidity of a liquid having a turbidity up to about 10,000 NTU, said instrument comprising:

(a) a transparent sample cell for containing a liquid sample to be tested;

(b) a light source for directing a light beam into said sample cell;

(c) a first light detector positioned for receiving light scattered at right angles from a region in the sample cell illuminated by the light beam and producing a first signal;

(d) a second light detector positioned for receiving forward-scattered light through said sample cell and producing a second signal;

(e) a third light detector positioned for receiving light transmitted through said sample cell and producing a third signal; and

(f) a fourth light detector positioned for receiving back-scattered light from said sample cell and producing a fourth signal, and

(g) means for calculating turbidity with an algorithm wherein said first signal is in the numerator and said second, third and fourth signals are in the denominator.

5,604,591

METHOD OF MEASURING PHASE DIFFERENCE AND APPARATUS FOR CARRYING OUT THE SAME

Junichi Kitagawa, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 11, 1995, Ser. No. 420,837

Claims priority, application Japan, Apr. 11, 1994, 6-072115; Sep. 21, 1994, 6-226587

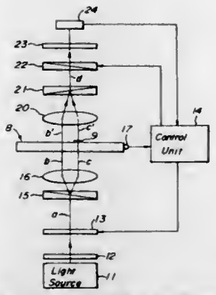
Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—351 **26 Claims**

1. An apparatus for measuring a phase difference of an object having a pattern including a transparent portion which transmits a first portion of a light flux and a phase shift portion which changes an intensity as well as a phase of a second portion of said light flux, comprising:

a light source means for emitting said light flux;

a polarization rotating means for converting the light flux emitted by said light source means into a linearly polarized light flux and for controllably rotating a polarizing direction of the linearly polarized light flux;



a beam separating means having a birefringency for dividing said linearly polarized light flux into the first and second portions so that polarizing directions of the first and second portions are different from each other;

a condenser lens system for projecting said first and second portions onto the object;

an objective lens system for forming an image of the pattern of the object illuminated by said first and second portions;

a combining means having a birefringency for combining said first and second portions emanating from the objective lens system;

a phase difference adjusting means for changing a phase difference between said first and second portions; and

a detecting means for selectively detecting given linearly polarized components of an interference image formed by the first and second portions;

said detecting means comprising a means for detecting a ratio of a transmissivity of the transparent portion of the object with respect to a transmissivity of the phase shift portion to derive a transmissivity ratio signal and a means for controlling said polarization rotating means in accordance with said transmissivity ratio signal to rotate the polarizing direction of the linearly polarized light flux.

5,604,592

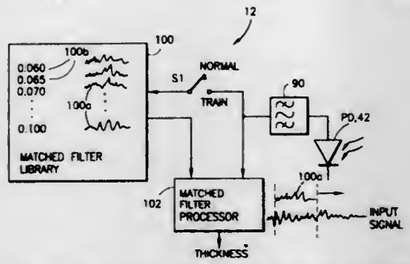
LASER ULTRASONICS-BASED MATERIAL ANALYSIS SYSTEM AND METHOD USING MATCHED FILTER PROCESSING

Petros A. Kotidis, Framingham; James F. Cunningham, Lincoln; Paul F. Gozewski, Haverhill; Charles Borsody, Winchester; Daniel E. Klimek, Lexington, and Jaime A. Woodroffe, North Reading, all of Mass., assignors to Textron Defense Systems, Division of Avco Corporation, Wilmington, Mass.

Division of Ser. No. 308,372, Sep. 19, 1994. This application Jun. 7, 1995, Ser. No. 482,782

Int. Cl.[6] G01B *9/02*; **G01N** *21/00*

U.S. Cl. 356—357 **2 Claims**



1. A system for determining a characteristic of a target, comprising:

means for launching an elastic wave within the target;

an interferometer for detecting a displacement of a surface of the target in response to said launched elastic wave;

means, responsive to said detected displacement, for determining a time of flight of said elastic wave within the target; and

means for correlating the determined time of flight with a characteristic of the target, wherein

said interferometer includes at least one photodetector, and wherein said correlating means is comprised of:

means for detecting a waveshape of a signal output from said photodetector; and

matched filter processing means comprising means for storing a plurality of predetermined waveshapes, each of said plurality of predetermined waveshapes corresponding to a different target thickness; means for comparing said detected waveshape to said stored plurality of predetermined waveshapes; and means for correlating a thickness of the target with a predetermined thickness that is associated with a selected one of said stored plurality of waveshapes that best matches said detected waveshape.

5,604,593

INTERFEROMETER POSITION MEASUREMENT SYSTEM WITH EXTENSIBLE LEGS

David R. McMurtry, Wotton-Under-Edge, United Kingdom, assignor to Renishaw plc, Gloucestershire, United Kingdom

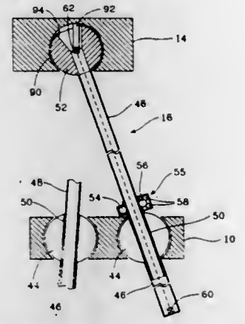
PCT No. PCT/GB94/02593, § 371 Date Jun. 27, 1995, § 102(e) Date Jun. 27, 1995, PCT Pub. No. WO95/14905, PCT Pub. Date Jun. 1, 1995

PCT Filed Nov. 25, 1994, Ser. No. 464,835

Claims priority, application United Kingdom, Nov. 25, 1993, 9324218

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—358 **13 Claims**



1. A machine comprising:

two support structures which are movable in three dimensions relative to each other;

a plurality of extensible legs connected between the support structures, a position and an orientation in said three dimensions of one support structure relative to the other being defined by the relative lengths of the extensible legs;

a plurality of interferometers acting between the support structures, each comprising a light emitting unit associated with one support structure and a reflector associated with the other support structure, wherein the reflector is rigidly mounted on its associated support structure.

5,604,594

DEVICE AND METHOD FOR DETERMINING THE COLOR VALUE OF A LIGHT

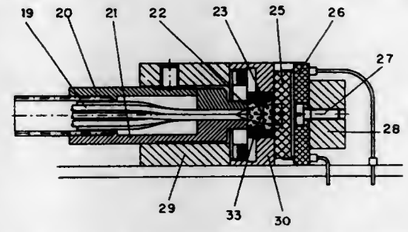
Josef Juffinger, Thiersee, Austria, assignor to Schablonentechnik Kufstein Aktiengesellschaft, Kufstein, Austria

Filed May 18, 1995, Ser. No. 443,811

Claims priority, application European Pat. Off., May 19, 1994, 94107788

Int. Cl.[6] G01J *3/51*

U.S. Cl. 356—405 **19 Claims**



1. An apparatus for determining the color value of light emitted from a light source comprising:

a linear graded interference filter having only one expansion direction receiving said light, said light passing through said linear graded interference filter;

a plurality of PIN photodiodes receiving light passed through said linear graded interference filter, said plurality of PIN photodiodes being arranged adjacent to one another in said expansion direction of said linear graded interference filter, said plurality of PIN photodiodes outputting a measured signal for computing the color value of the light;

focussing optics, including a cylindrical lens extending in said expansion direction, arranged in front of said linear graded interference filter; and

a plurality of optical fibers which deliver light from said light source to said focussing optics and having light exit ends arranged closely adjacent to one another along at least one row extending in said expansion direction of said linear graded interference filter.

5,604,595

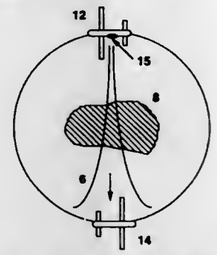
LONG STAND-OFF RANGE DIFFERENTIAL ABSORPTION TOMOGRAPHIC ATMOSPHERIC TRACE SUBSTANCES SENSOR SYSTEMS UTILIZING BISTATIC CONFIGURATIONS OF AIRBORNE AND SATELLITE LASER SOURCE AND DETETOR REFLECTOR PLATFORMS

Neil C. Schoen, 9817 Freestate Pl., Gaithersburg, Md. 20879

Filed Jan. 20, 1995, Ser. No. 375,614

Int. Cl.[6] G01N *21/00*

U.S. Cl. 356—432 **4 Claims**



1. A long range large coverage area tomographic atmospheric sensing system comprising:

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a first and second mobile craft, wherein either of said mobile craft is at least one of a group consisting of aircraft platforms and spacecraft platforms;

wherein said first mobile craft further contains a transmitting system with a laser transmitting at least frequencies f1 and f2;

wherein said second mobile craft further contains a detector;

wherein said transmitting system further comprises a servo control loop system comprising a probe beam and a quadrant detector;

wherein said quadrant detector detects said probe beam after it returns from a reflector on said second mobile craft whence it is inputted as a signal into said servo control loop for providing correction signals ensuring said laser and said detector are optically linked and track-locked;

wherein only after said first and second mobile craft are track-locked will said first and second mobile craft commence movement to measure said atmosphere;

wherein said frequency f2 is tuned to a center of an absorption line of an atmospheric trace substance;

wherein the frequency f1 is relatively unabsorbed and functions as a reference signal for transmitted, absorbed, scattered and radiated energy;

wherein said laser is swept through said atmosphere by movement of at least one of the mobile craft with sufficient angular diversity to provide measurements allowing tomographic reconstruction of the three dimensional distribution of said atmospheric trace substance by solving a set of linear coupled equations; and

means to calculate a concentration and distribution of said atmospheric trace substance from said absorption measurements to determine a location of a source of said trace substance.

5,604,596

COPYING APPARATUS HAVING DETERMINATION UNIT FOR SPECIAL ORIGINAL AND FOR CONTROLLING COPYING AND MARKING BASED ON DETERMINATION

Takeshi Ukai, Yokohama, and Yasuhiro Tabata, Kawasaki, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

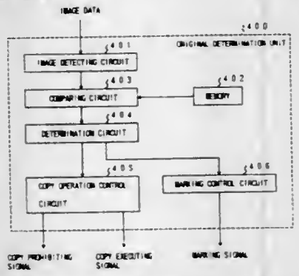
PCT No. PCT/JP93/01444, § 371 Date Jun. 9, 1994, § 102(e) Date Jun. 9, 1994, PCT Pub. No. WO94/09590, PCT Pub. Date Oct. 7, 1993

PCT Filed Oct. 7, 1993, Ser. No. 244,377

Claims priority, application Japan, Oct. 9, 1992, 4-297815

Int. Cl.° H04N *1/00;1/387;* **G03G** *21/00;* **G06K** *9/00*

U.S. Cl. 358—296 **10 Claims**



1. A copying apparatus comprising:

image reading means for optically reading an original and for outputting image signals corresponding to the original;

image processing means for processing the image signals supplied from said image reading means in accordance with a predetermined method and for outputting image data;

image forming means for forming an image corresponding to the image data supplied from said image processing means on a recording sheet;

original determination means for determining whether a rank of certainty that the original is a predetermined special original is a first rank or a second rank lower than the first rank;

prohibiting means for prohibiting the image corresponding to the original from being formed on the recording sheet when the determination result obtained by said original determination means is the first rank;

information adding means for adding predetermined information to the recording sheet on which the image is formed by said image forming means when the determination result obtained by said original determination means is the second rank.

5,604,597

IMAGE COMMUNICATION DEVICE WITH SELECTABLY VARIABLE RESOLUTION CONTROL AND SCAN SPEED CONTROLLED BY THE SELECTED RESOLUTION

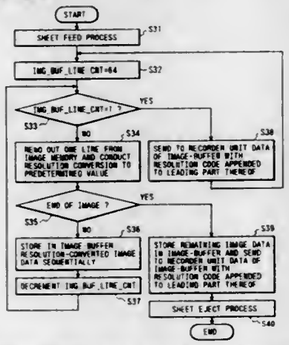
Takashi Imai, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 26, 1994, Ser. No. 249,929

Claims priority, application Japan, May 27, 1993, 5-126178

Int. Cl.° H04N *1/04*

U.S. Cl. 358—296 **13 Claims**



1. An image communication apparatus capable of recording an image on a record medium at a first resolution in accordance with image data transmitted through a line by record-scanning by using record means having a plurality of recording elements arranged at a predetermined recording density, comprising: selection means for selecting a resolution of the image to be recorded by said record means;

supply means for dropping the image data at a predetermined rate when a second resolution lower than said first resolution of the image to be recorded by said record means is selected and supplying the dropped image data to said record means; and

scan means for conducting the record-scanning of said record means at a high speed in accordance with said second resolution, wherein said scan means conducts the record-scanning at the second resolution at a speed of (the first resolution)/(the second resolution) times of the speed in the first resolution.

5,604,598

IMAGE PROCESSING APPARATUS

Yoshihiro Shigemura, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

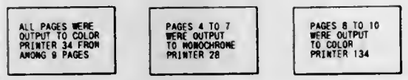
Filed Jun. 20, 1994, Ser. No. 262,571

Claims priority, application Japan, Jun. 22, 1993, 5-150643

Int. Cl.° H04N *1/21;1/00*

U.S. Cl. 358—296 **23 Claims**

1. An image processing apparatus comprising:



a monochromatic printer for monochromatically printing received images;

a color printer which is separately provided from said monochrome printer and which prints color images of received images;

discriminating means for discriminating whether a color image is included in a document including a plurality of received images;

output means for outputting said received image data to a color printer according to a discrimination result of said discriminating means, said output means outputting a color page of said received images to said color printer and a monochrome page to said monochrome printer; and

means for notifying an output condition of said output means to an operator, wherein the output condition includes at least information relating to which printer a page.

5,604,599

SERIAL PRINTING FACSIMILE APPARATUS

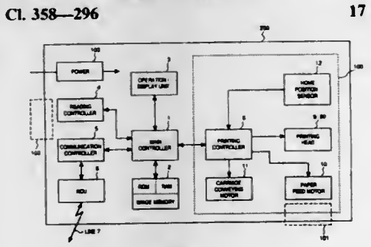
Takeshi Ono, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

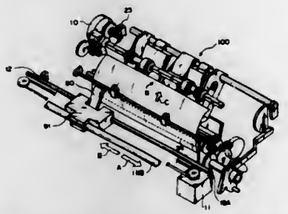
Filed Aug. 9, 1994, Ser. No. 287,415

Claims priority, application Japan, Aug. 24, 1993, 5-209396

Int. Cl.° H04N *1/21*

U.S. Cl. 358—296 **17 Claims**





1. A facsimile apparatus having a serial printer which holds a printing head at a stand-by position in stand-by status of the apparatus and performs serial printing by moving the printing head in a main-scanning direction while shifting a recording sheet in a subscanning direction upon a printing operation, said apparatus comprising:

a communication controller for communicating with external apparatuses;

a first controller for judging if said communication controller received a receiving signal among image data:

a detector for detecting presence/absence of the printing head at the stand-by position; and

a second controller for, when the receiving signal among image data is judged to have been received by said first controller, performing initialization by moving the printing head to the stand-by position based on a detected result by said detector.

5,604,600

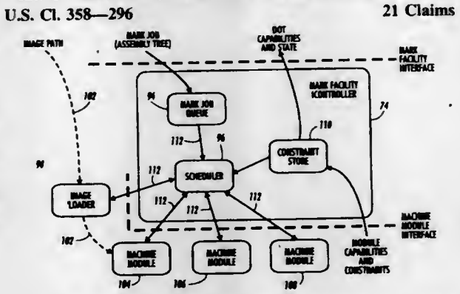
PRODUCTION TREES FOR GENERIC REPRESENTATION OF DOCUMENT REQUIREMENTS FOR PARTICULAR OUTPUT TERMINALS

Marc W. Webster, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 6, 1995, Ser. No. 568,073

Int. Cl.° H04N *1/00;* **G03G** *21/00;* **G01M** *1/00;* **G06F** *15/00*

U.S. Cl. 358—296 **21 Claims**



1. In an electronic image processing apparatus comprising a controller and a plurality of modules, each of the modules including an associated processor, each of the processors storing data related to operational capabilities of the associated module, a method of operating the image processing apparatus in response to a job requirement comprising the steps of:

converting the job requirement into an assembly tree, the assembly tree being a relationship of images, copy sheets, and compilations of copy sheets representing the job requirement,

receiving from each of the processors the data related to the operational capabilities of each associated module,

interrogating each of the processors to determine the interconnection of each of the modules to other modules,

responding to the data related to the operational capabilities of each of the modules, the interconnection of the modules, and to the the assembly tree relationship of images, copy sheets, and compilations of copy sheets representing the job requirement for providing a production tree relationship of the operational capabilities of the modules including timing relationships for operating the image processing apparatus.

5,604,601

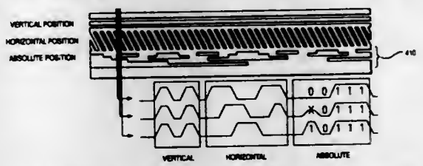
REFERENCE GRID RECTILINEAR CORRECTION

Albert D. Edgar, Austin, and Steven C. Penn, Georgetown, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 24, 1994, Ser. No. 295,319

Int. Cl.° H04N *1/047*

U.S. Cl. 358—302 **18 Claims**



13. A scanner for copying an image from substrate comprising:

a scanning means for sensing the substrate image and a reference grid disposed proximate to the substrate;

transport means for moving the substrate and reference grid relative to the scanning means; and

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means for interpreting a sensed portion of the reference grid as a horizontal and vertical position and associating the position with a contemporaneously sensed raw scan line of the image to establish a relative horizontal and vertical position of the raw scan line.

5,604,602

PROCESS AND DEVICE FOR BITE-RATE REDUCTION FOR THE RECORDING OF IMAGES ON A VIDEO RECORDER

Philippe Guillotel, St Etienne, and Philippe Tourtier, Rennes, both of France, assignors to Thomson-CSF, Paris, France

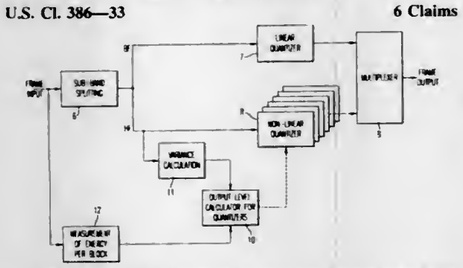
PCT No. PCT/FR93/01076, § 371 Date May 3, 1995, § 102(e) Date May 3, 1995, PCT Pub. No. WO94/10800, PCT Pub. Date May 11, 1994

PCT Filed Oct. 29, 1993, Ser. No. 424,465

Claims priority, application France, Nov. 3, 1992, 92 13153

Int. Cl.[6] H04N *9/79;5/76*

U.S. Cl. 386—33 **6 Claims**



1. Method of bit-rate reduction for recording images on a digital video recorder, the method comprising the steps of:

splitting a source image into plural sub-bands,

pre-analyzing the source image by image blocks,

allocating an available bit rate to each pixel of the plural sub-bands recursively and adaptively, as a function of a spatial parameter and a frequency parameter, the spatial parameter calculated during the pre-analysis step,

selecting a quantizer determined by a probability density of the source image and a minimum variance calculation for a quantization error, and

coding, as a function of the selected quantizer, each pixel of each component of the source image in each of the plural sub-bands,

wherein the step of pre-analyzing the source image by image blocks comprises the sub-step of

calculating an adaptive weighting coefficient, cod(k,n), based on a difference in each of the plural sub-bands between values, $F_p(k,i,n)$, of each pixel of a block and a first variance, Var(i,n), of the each of the plural sub-bands in accordance with the relation

$$cod(k,n) = \frac{\alpha}{N} \sum_{i=1}^{N} (|F_p(k,i,n)| - \sqrt{Var(i,n)})$$

where i is a sub-band number, n represents a luminance component or a chrominance component, k denotes a block number, N is a number of sub-bands used, $F_p(k,i,n)$ represents a value of the pixel belonging to block k of sub-band i for component n, Var(i,n) is the first variance of sub-band i for component n, cod(k,n) is an adaptive weighting coefficient for block k of component n, and α is a coefficient dependent on the luminance and chrominance components.

5,604,603

SYSTEM AND METHOD FOR RECORDING DIGITAL AUDIO SIGNAL AND DIGITAL VIDEO SIGNAL AND RECORDING MEDIUM FOR SAME

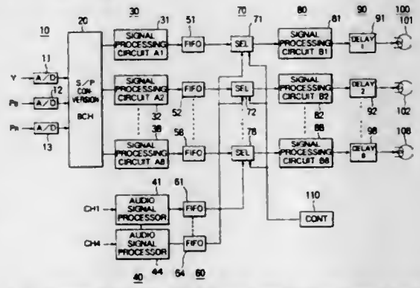
Tadaaki Yoshinaka; Takashi Sasaya; Tetsuo Kani, and Takeo Ooba, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 24, 1994, Ser. No. 248,253

Claims priority, application Japan, May 28, 1993, 5-127605

Int. Cl.[6] H04N *5/78;5/76*

U.S. Cl. 386—100 **9 Claims**



1. A system for recording a digital audio signal and a digital video signal on a recording medium, comprising:

assembling means for assembling a plurality of digital audio signals and a plurality of digital video signals to be recorded on a plurality of helical tracks of said recording medium in correspondence with said tracks;

code adding means for adding inner codes and outer codes, of which a parity rate with respect to data is equal to or greater than (N-2):2, where N is an integer equal to or greater than 3, to said assembled signals;

a multi-head unit with N heads for simultaneously recording N helical tracks onto the recording medium;

timing adjustment means for adjusting a timing of said digital audio signals so that said digital audio signals on a same channel are aligned and simultaneously recorded on said N helical tracks of said recording medium in a direction orthogonal to a direction of said N helical tracks and any digital audio signals erased on adjoining tracks during a rewrite of an audio channel are all from the same channel; and

recording means for recording said digital audio signals with said timing adjustment and said digital video signals, to which said inner codes and said outer codes are added, on said recording medium.

5,604,604

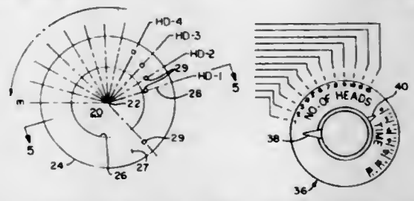
MULTIPLE HEAD SIGNAL DISTRIBUTION SYSTEM

George Fan, 32 Quidnic Rd., Newton, Mass. 02168

Filed Feb. 6, 1995, Ser. No. 383,950

Int. Cl.[6] H04N *5/76*

U.S. Cl. 386—125 **8 Claims**



1. A method of allowing multiple viewers to simultaneously view different selected portions of a same video program that has a length and is constituted by video data contained in a continuous

spiral track in a video disk with a center wherein the continuous spiral track in the video disk has a beginning, comprising the steps of:

a) rotating the video disk;

b) positioning a first head in the beginning of the continuous spiral track in the rotating video disk;

c) moving said first head radially inwardly towards the center of the rotating video disk and in the continuous spiral track in the rotating video disk;

d) threading said first head automatically radially inwardly towards the center of the rotating video disk on a first motor-operated, rotating, radially-disposed and threaded drive rod and being guided therealong by a first radially-disposed and smooth guide rod, so that first head moves automatically radially inwardly on the rotating video disk;

e) reading the video data contained in the continuous spiral track in the rotating video disk by said first head while the rotating video disk continues to rotate and said first head moves in the continuous spiral track in the rotating video disk;

f) causing the video data contained in the continuous spiral track in the rotating video disk that is being read by said first head to be simultaneously sent directly, without being stored and thereby in real time, to a viewing device by one of activating a first head switch disposed on a control panel and thereby illuminating a corresponding first head indicator light disposed in proximity to said first head switch, and rotating a head selector dial disposed on said control panel, so that a user can determine if the video data contained in the continuous spiral track in the rotating video disk that is being read by said first head is to be simultaneously sent directly to the viewing device and thereby allow the multiple viewers to view the selected portion of the same video program constituted by the video data contained in the continuous spiral track in the rotating video disk that is being simultaneously read by said first head without delay or possible lost or garbled information inherent to storage devices;

g) waiting a predetermined variable interval of time while said first head continuously reads the video data contained in the continuous spiral track in the rotating video disk before a second head is positioned, by at least one of rotating a first head interval dial disposed in proximity to said first head switch, and rotating a head interval dial disposed concentrically with said head selector dial, so that the amount of the video data contained in the continuous spiral track in the rotating video disk being read by the first head can be varied before said second head is positioned;

h) positioning said second head in the beginning of the continuous spiral track in the rotating video disk;

i) moving said second head radially inwardly towards the center of the rotating video disk and in the continuous spiral track in the rotating video disk, while said first head simultaneously moves radially inwardly towards the center of the rotating video disk and in the continuous spiral track in the rotating video disk and continues reading the video data contained in the continuous spiral track in the rotating video disk;

j) threading said second head automatically radially inwardly towards the center of the rotating video disk on a second motor-operated, rotating, radially-disposed, and threaded drive rod at a different radial distance from the center of the rotating video disk than said first head and being guided therealong by a second radially-disposed and smooth guide rod, so that said second head moves automatically radially inwardly on the rotating video disk at a different radial distance from the center of the rotating video disk than said first head so as not to interfere therewith;

k) reading the video data contained in the continuous spiral track in the rotating video disk that was previously read by said first head, by said second head after said predetermined interval of time of step g) has elapsed, so that the same video data contained in the continuous spiral track in the rotating video disk can be read at different times by said first head and said second head;

l) causing the video data contained in the continuous spiral track in the rotating video disk that is being read by said second head to be simultaneously sent directly, without being stored and thereby in real time, to the viewing device, by one of activating a second head switch disposed on said control panel and thereby illuminating a corresponding second head indicator light disposed in proximity to said second head switch, and rotating said head selector dial disposed on said control panel, so that the user can determine if the video data contained in the continuous spiral track in the rotating video disk that is being read by said second head is to be simultaneously sent directly to the viewing device and thereby allow the multiple viewers to view the selected portion of the same video program constituted by the video data contained in the continuous spiral track in the rotating video disk that is being simultaneously read by said second head without delay or possible lost or garbled information inherent to storage devices;

m) waiting a predetermined interval of time while said second head continues reading the video data contained in the continuous spiral track in the rotating video disk before a nth head is positioned, by at least one of rotating a second head interval dial disposed in proximity to said second head switch, and rotating said head interval dial disposed concentrically with said head selector dial, so that the amount of the video data contained in the continuous spiral track in the rotating video disk being read by the second head can be varied before said nth head is positioned;

n) positioning said nth head in the beginning of the continuous spiral track in the rotating video disk, wherein n>2;

o) moving said nth head radially inwardly towards the center of the rotating video disk and in the continuous spiral track in the rotating video disk, while said first head, said second head, and a n-1 head simultaneously move radially inwardly towards the center of the rotating video disk and in the continuous spiral track in the rotating video disk and continue reading the video data contained in the continuous spiral track in the rotating video disk;

p) threading said nth head automatically radially inwardly towards the center of the rotating video disk on a nth motor-operated, rotating, radially-disposed, and threaded drive rod at a different radial distance from the center of the rotating video disk than said first head, said second head, and said n-1 head and being guided therealong by a nth radially-disposed and smooth guide rod, so that said nth head moves automatically radially inwardly on the rotating video disk at a different radial distance from the center of the rotating video disk than said first head, said second head, and said n-1 head so as not to interfere therewith;

q) reading the video data contained in the continuous spiral track in the rotating video disk that was previously read by said first head, said second head, and said n-1 head, by said nth head after said predetermined interval of time of step m) has elapsed, so that the same video data contained in the continuous spiral track in the rotating video disk can be read at different times by said first head, said second head, said n-1 head, and said nth head; and

r) causing the video data contained in the continuous spiral track in the rotating video disk that is being read by the nth head to be simultaneously sent directly, without being stored and thereby in real time, to the viewing device, by one of activating a nth head switch that is disposed on said control panel and thereby iiluminating a corresponding nth head indicator light disposed in proximity to said nth head switch, and rotating said head selector dial disposed on said control panel, so that the user can determine if the video data contained in the continuous spiral track in the rotating video disk that is being read hy the nth head is to be simultaneously sent directly to the viewing device and thereby allow the multiple viewers to view the selected portion of the same video program constituted by the video data contained in the continuous spiral track in the rotating video disk that is being simultaneously read by said nth head without delay or possible lost or garbled information inherent to storage devices.

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5,604,605

METHOD AND DEVICE FOR INTRALINEARLY HALFTONING DIGITIZED GREY VALUE IMAGES

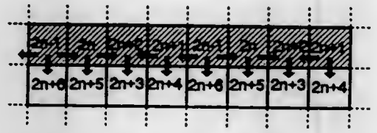
Abraham Moolenaar, Venlo, Netherlands, assignor to Oce-Nederland B.V., Netherlands

Filed Apr. 13, 1994, Ser. No. 227,284

Claims priority, application Netherlands, Apr. 22, 1993, 9300684

Int. Cl.[6] H04N *1/407*

U.S. Cl. 358—456 **45 Claims**



1. A method of parallel intralinear halftoning of digitized grey value images divided into rows and columns thereby defining a pixel as an intersection of a row and column, comprising the steps of:

a) selecting either the rows or the columns as lines Upon which thresholding will be performed;

b) ordering the lines into a sequence

c) successively thresholding, according to the sequence, grey values of pixels in the lines of an image; and

d) transporting a quantization error, caused by said thresholding for each pixel, to at least one neighboring pixel yet to be thresholded, by adding said quantization error or part thereof to a grey value of said at least one neighboring pixel;

wherein the step c) includes:

c1) dividing each of said lines of said image into at least two disparate groups, each group having a plurality of pixels; and

c2) separately thresholding each group within each line; and

wherein the step d) transports at least a portion of said quantization error from a pixel of one group in the line to at least one pixel of at least one other disparate group;

wherein the step a) selects the rows to be the lines;

wherein the step c) further includes:

c3) establishing, for each row, a group of pixels situated in odd columns of said row and, for each row, a group of pixels situated in even columns of said row;

wherein the method transports said quantization error from a pixel in an odd column to pixels yet to be thresholded in two adjacent even columns of the same row; and

wherein the method transports the quantization error from a pixel of a row situated in an even column to pixels yet to be thresholded in two adjacent odd columns of an adjacent row.

5,604,606

PICTURE READING APPARATUS WITH FLARING LIGHT ELIMINATION CAPABILITY

Takaaki Miyashita, and Kazuhiro Fujita, both of Yokohama, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 726,220, Jul. 5, 1991, abandoned. This application Apr. 13, 1994, Ser. No. 227,174

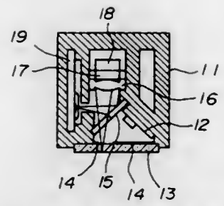
Claims priority, application Japan, Jul. 6, 1990, 2-179897; Jul. 6, 1990, 2-179898; Jul. 6, 1990, 2-179899; Sep. 27, 1990, 2-260243; Apr. 18, 1991, 3-115301

Int. Cl.[6] H04N *1/04*

U.S. Cl. 358—474 **14 Claims**

1. A picture reading apparatus which comprises:

a housing;



a light source located in said housing and emitting light wherein said light source comprises an array of light emitting diodes;

a contact glass against which a document is positionable wherein said light emitting diodes emit light toward said contact glass so that the document is scanned by the emitted light from said light emitting diodes along a main scanning line;

a lens array in which a plurality of lenses are arranged consecutively at equal intervals therebetween along the main scanning line, each of said plurality of lenses converging a reflected light which is reflected from the document through the contact glass;

a roof mirror array, located in said housing and positioned substantially perpendicularly to the light source, in which a plurality of roof-like reflection surfaces reflecting the converged light from the lens array back to the lens array are arranged, corresponding to said plurality of lenses, at equal intervals therebetween along the main scanning line;

a restricting plate provided between said lens array and said roof mirror array and eliminating flaring light between adjacent lenses of said lens array wherein said roof mirror array and said lens array are accommodated in said housing to form said roof mirror lens array;

a sensor located on said housing and receiving the converged light reflected by said roof mirror array so that said received light is converted into a picture signal indicative of a picture contained in the document;

an optical separation mirror located in said housing, said optical mirror reflecting the converged light from the lens array to said sensor separately from an optical path of the light reflected from the document and led to the lens array; and

a light shield layer formed integrally with a surface of the contact glass so as to be spaced from said sensor and be located inside said housing, said light shield layer including a reading portion to which the emitted light from the light emitting diodes is led to pass through the contact glass for scanning the document, said light shield layer being provided at a portion other than said reading portion on said surface of the contact glass wherein said separation mirror, said light emitting diodes, and said light shield layer are located within a lower portion of said housing and wherein an internal space of said housing containing said light emitting diodes is bounded by said contact glass, said light emitting diodes and said separation mirror.

5,604,607

LIGHT CONCENTRATOR SYSTEM

Alexander D. Mirzaoff, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

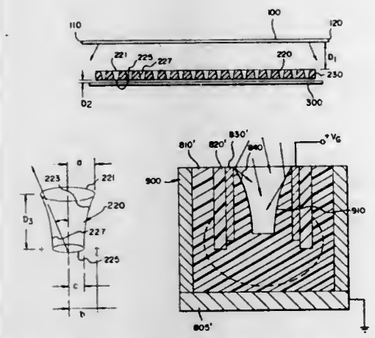
Filed Oct. 19, 1992, Ser. No. 963,292

Int. Cl.[6] G03B *27/00*

U.S. Cl. 358—484 **22 Claims**

1. An image capture system comprising:

a photosensitive medium for capturing an image;



a single path planar array located proximate to said medium for projecting light modulated with image information to the photosensitive medium, said array including a plurality of non-cylindrical concentrator elements formed in said array, said concentrator elements each having an input opening and an output opening and a reflective inner wall between each input opening and output opening which guides and concentrates said light towards and through an output opening towards said photosensitive medium for capturing said image, wherein for each of said elements, said input opening is larger than said output opening.

5,604,608

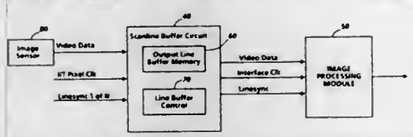
DEVICE AND METHOD FOR CONTROLLING THE SCAN SPEED OF AN IMAGE INPUT TERMINAL TO MATCH THE THROUGHPUT CONSTRAINTS OF AN IMAGE PROCESSING MODULE

John F. Walsh, and James W. Stevens, both of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 28, 1995, Ser. No. 535,598

Int. Cl.[6] H04N *1/04*; **G06F** *15/00*

U.S. Cl. 358—486 **15 Claims**



1. A system for Synchronously transferring video data representing a scanned image from an image input terminal to an image processing module, the image processing module having a throughput rate slower than a data generation rate of the image input terminal, comprising:

input means for inputting a scanning parameter;

control means for setting, prior to scanning an image, a scanline parameter N and a discard parameter D based on the received scanning parameter and a maximum image processing module throughput;

image means, operatively connected to said control means, for scanning a predetermined portion of the image and for producing a set of N scanlines of valid image data therefrom,

buffer means, operatively connected to said control means, for storing N-D scanlines of valid image data; and

interface means, operatively connected to said buffer means, for outputting the stored scanlines of image data to the image processing module.

5,604,609

LIGHT REFLECTION TYPE DETECTION DEVICE IN FACSIMILE MACHINE

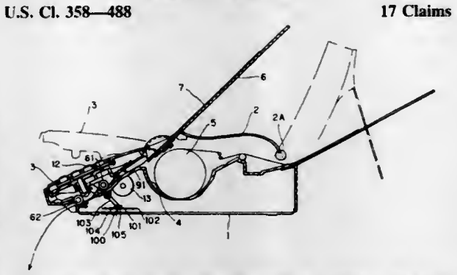
Katsutoshi Seguchi, Aichi-ken; Yoshikatsu Kameyama, Gifu-ken; Yasuhito Bandai, Nagoya; Tomohisa Higuchi, Nagoya; Hiroaki Yazawa, Nagoya, and Makoto Yamada, Gifu, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Oct. 26, 1994, Ser. No. 329,474

Claims priority, application Japan, Nnv. 1, 1993, 5-297255; Nov. 15, 1993, 5-284708

Int. Cl.[6] H04N *1/04*

U.S. Cl. 358—488 **17 Claims**



1. A detection device for detecting a state or a phase of an article to be detected in an image forming apparatus having a main frame, the detection device comprising:

a reflection type sensor having a light emitting portion and a light receiving portion, the sensor generating a detection signal upon receiving light in the light receiving portion;

a control board having control elements into which the detection signal is input;

an actuator movably supported by the main frame and having one end abuttable against the article to be detected and having another end, the movement of the actuator being determinative by the abutment of the one end against the article;

a reflection member provided at the other end of the actuator, the reflection member being movable toward and away from the reflection type sensor in accordance with the movement of the actuator; and

a regulation member provided for providing a regulated distance between the reflection type sensor and the reflection member when the reflection member is moved to the vicinity of the reflection type sensor;

wherein the reflection type sensor is mounted on the control board, and wherein the regulation member is provided integrally with the reflection member and extends therefrom, the regulation member having a free end contactable with the control board when the reflection member is moved to the vicinity of the reflection type sensor, whereby the regulated distance is provided between the reflection type sensor and the reflection member.

5,604,610

TRANSFORMING COLOR SIGNAL VALUES FOR USE BY A PARTICULAR DEVICE

Kevin E. Spaulding, and James R. Sullivan, both of Spencerport, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

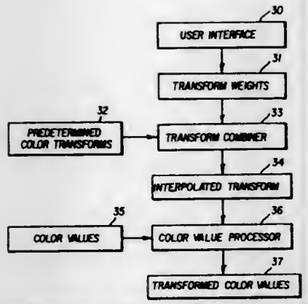
Filed Nov. 3, 1994, Ser. No. 333,828

Int. Cl.[6] H04N *1/46*; **G03F** *3/08*

U.S. Cl. 358—525 **17 Claims**

1. A method for transforming input color values of a digital image to produce suitable output color values for use by a particular device, comprising the steps of:

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(a) storing a plurality of color transforms, each such transform responding to input color values of a digital image and producing output color values which can be used by the particular device; and

(b) interpolating between the plurality of transforms to produce an intermediate transform which is user desirable for transforming the input color values to produce output color values which can be used by the particular device.

5,604,611

HOLOGRAM

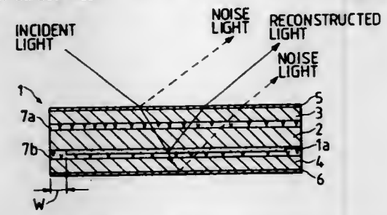
Toshiki Saburi, Inazawa; Minoru Ohta, Okazaki; Hirokatsu Mukai, Kuwana; Yasuhiro Mizutani, Mie-Ken, and Tetsuya Kato, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Division of Ser. No. 958,262, Oct. 9, 1992, Pat. No. 5,313,317. This application Feb. 15, 1994, Ser. No. 196,381

Claims priority, application Japan, Oct. 9, 1991, 3-262008

Int. Cl.[6] G03H *1/00*

U.S. Cl. 359—13 **15 Claims**



1. A hologram comprising:

an optically transparent base plate having first and second opposite surfaces, each surface extending to first and second base plate edges;

a hologram element provided on said first surface of second base plate, where a recording medium is formed on said hologram element having a predetermined holographic pattern corresponding to interference fringes formed therein;

a first cover provided on a side of said base plate which corresponds to said first surface thereof;

a second cover provided on a side of said base plate which corresponds to said second surface thereof, for preventing reflection of light;

first sealing material provided between said first surface of said base plate and said first cover for bonding said base plate, said hologram element and said first cover together; and

second sealing material provided between said second surface of said base plate and second cover for bonding said base plate and said second cover together;

wherein said first cover and said first surface of said base plate define a sealing region of a predetermined size, said sealing ration extending along said first surface of said base plate, said sealing region separating said hologram element from said base plate edges, wherein each of said first and second sealing materials is made of at least one of a group consisting of organic resin of an ultraviolet-ray hardening type, and organic resin of a thermosetting type.

5,604,612

PAPER WHITE PDLC SYSTEM

David Coates, Merley Wimborne; Patrick Nolan, Poole, both of Great Britain, and Ewald Ginter, Stuttgart, Germany, assignors to Merck Patent Gesellscaft mit beschrankter Haftung, Darmstadt, Germany

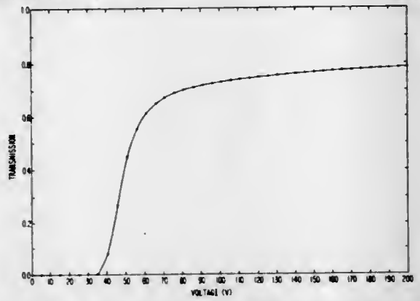
PCT No. PCT/EP93/02145, § 371 Date Feb. 24, 1995, § 102(e) Date Feb. 24, 1995, PCT Pub. No. WO94/04958, PCT Pub. Date Mar. 3, 1994

PCT Filed Aug. 12, 1993, Ser. No. 387,850

Claims priority, application European Pat. Off., Aug. 25, 1992, 92114456

Int. Cl.[6] G02F *1/1333*

U.S. Cl. 349—86 **17 Claims**



1. A paper white PDLC system which between 2 electrodes contains a PDLC film comprising a liquid crystal mixture in the form of microdroplets in an optically isotropic, transparent polymer matrix, wherein:

one of the refractive indices of the liquid crystal mixture is matched to the refractive index of the polymer matrix, n_M;

neither the liquid crystal mixture nor transparent polymer matrix contains a dye;

the transmission of the PDLC film can be varied by applying an electrical voltage; and

wherein the PDLC film exhibits the following properties:

$$|\bar{n}-n_M| \geqq 0.05$$

wherein $\bar{n}$ is the mean refractive index of the liquid crystal mixture defined via

$$\bar{n}^2=1/3(n_e^2+2n_o^2)$$

where n_e is the extraordinary refractive index of the liquid crystal mixture and n_o is the ordinary refractive index of the liquid crystal mixture;

a mean microdroplet diameter $\leqq 2$ μm;

a thickness, d, of the PDLC film of 5 μm $\leqq d \leqq$ 75 μm; and

a degree of backscatter $\geqq 0.20\%$.

5,604,613

LIQUID CRYSTAL DISPLAY DEVICE WITH PIXELS HAVING STRIPE-SHAPED PROJECTIONS WITH EQUAL HEIGHTS

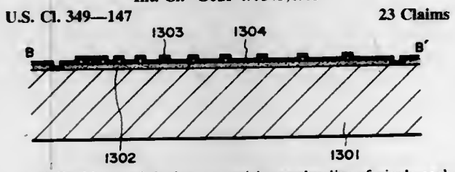
Katsuhiko Shinjo, Isehara; Tetsuya Kaneko; Shuzo Kaneko, both of Yokohama, and Takeo Tsukamoto, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 099,054, Jul. 29, 1993, Pat. No. 5,495,352. This application May 26, 1995, Ser. No. 452,019

Claims priority, application Japan, Jul. 30, 1992, 4-222287; Jul. 30, 1992, 4-222288; Jul. 30, 1992, 4-222289; Dec. 28, 1992, 4-348689

Int. Cl.[6] G02F *1/1343;1/13*

U.S. Cl. 349—147 **23 Claims**



1. A liquid crystal device, comprising a plurality of pixels each comprising a pair of opposing electrodes, and a ferroelectric smectic liquid crystal disposed between the opposing electrodes so as to develop bistable states,

the liquid crystal device being equipped with a halftone signal application means for applying a halftone signal between the opposing electrodes,

each pixel being provided with stripe-shaped projections having substantially equal heights and being disposed with a prescribed spacing therebetween, such that each pixel is provided with locally different threshold voltages so as to develop at least one inverted region corresponding to the halftone signal in a stripe pattern substantially parallel to smectic layers of the liquid crystal.

5,604,614

LIQUID CRYSTAL DEVICE WITH ONE LIQUID CRYSTAL SHOWING A CHOLESTERIC PHASE AND ONE SHOWING A CHIRAL SMECTIC PHASE

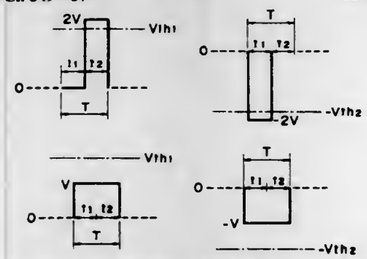
Kazuharu Katagiri, Tama; Kazuo Yoshinaga, Machida; Shinjiro Okada, Isehara, and Junichiro Kanbe, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 420,319, Apr. 10, 1995, which is a division of Ser. No. 178,827, Jan. 7, 1994, abandoned, which is a division of Ser. No. 863,781, Apr. 6, 1992, Pat. No. 5,301,049, which is a continuation-in-part of Ser. No. 251,028, Sep. 26, 1988, Pat. No. 5,120,466, which is a continuation of Ser. No. 750,295, Jul. 1, 1985, abandoned. This application Jun. 7, 1995, Ser. No. 472,272

Claims priority, application Japan, Jul. 13, 1984, 59-146211; Jul. 14, 1984, 59-146498; Sep. 12, 1984, 59-190789; Sep. 12, 1984, 59-190790; Sep. 14, 1984, 59-192920

Int. Cl.[6] G02F *1/141;1/13*

U.S. Cl. 349—37 **12 Claims**



9. A liquid crystal apparatus, comprising:

a liquid crystal device comprising a pair of substrates including one having thereon a group of scanning electrodes and the other having thereon a group of signal electrodes intersecting the scanning electrodes to form an electrode matrix, and a chiral smectic liquid crystal having one and another threshold voltage disposed between the substrates so as to form a picture element at each intersection of the scanning electrodes and the signal electrodes; only one of said pair of substrates having been subjected to a uniaxial aligning treatment; said chiral smectic liquid crystal comprising at least two liquid crystal compounds including one having a temperature range where it assumes smectic phase and another having a temperature range where it assumes cholesteric phase; and

drive means for:

sequentially applying a scanning selection signal having a first phase voltage and a second phase voltage,

applying a voltage signal of one polarity exceeding said one threshold voltage of the chiral smectic liquid crystal to at least one picture element on a scanning electrode receiving said first phase voltage of the scanning selection signal, and applying a voltage signal of the other polarity exceeding said another threshold voltage of the chiral smectic liquid crystal to at least one picture element on the scanning electrode receiving said second phase of the scanning selection signal, thereby to write in the picture elements on the scanning electrode, and

applying a voltage signal capable of retaining written states formed on scanning selection to the picture elements on a scanning electrode not receiving scanning selection signal.

5,604,615

LIQUID CRYSTAL DISPLAY DEVICE AND METHODS FOR PRODUCING SAME WITH ALIGNMENT LAYER HAVING NEW BOND FORMATION OR BOND CLEAVAGE REACTION OF MOLECULAR CHAINS BY LIGHT IRRADIATION

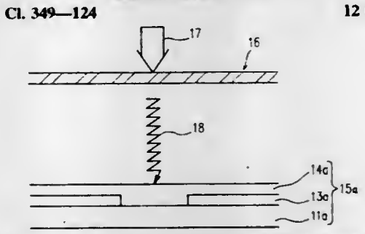
Hiroko Iwagoe, Yamatokoriyama, and Shigeaki Mizushima, Ikoma, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 22, 1995, Ser. No. 447,040

Claims priority, application Japan, May 27, 1994, 6-115151

Int. Cl.[6] G02F *1/1337*

U.S. Cl. 349—124 **12 Claims**



8. A method for producing a liquid crystal display device including:

a pair of substrates;

a pair of electrodes formed on the pair of substrates;

a pair of alignment films formed on the pair of electrodes; and

a liquid crystal layer sandwiched between the pair of alignment films, comprising a step of:

irradiating at least one of the pair of alignment films with a light beam to cause bond cleavage reaction of molecular chains of the at least one of the pair of alignment films such that the at least one alignment film has a property to align liquid crystal molecules of the liquid crystal layer with a pretilt angle.

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5,604,616

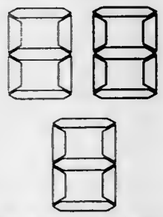
DUAL FUNCTION ELECTRO-OPTICAL DISPLAY DEVICE EXHIBITING A BISTABLE IMAGE OR A FUGITIVE IMAGE DEPENDING THE APPLIED VOLTAGE

Patrick M. Dunn, Plantation, and Thomas J. Swirbel, Davie, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 3, 1995, Ser. No. 415,901

Int. Cl.[6] G02F *1/13*

U.S. Cl. 349—168 **24 Claims**



22. In an electro-optical display device including a first substrate having an optically transmissive and electrically conducting coating on a face thereof, a second substrate having an electrically conductive coating on a face thereof, said substrates being positioned such that the coatings are adjacent and substantially equidistantly spaced, a light source means positioned to direct light toward the substrates, a liquid crystal composition occupying a space between said coatings, and means for impressing a voltage between selected portions of said coatings, the display characterized by said liquid crystal composition exhibiting a nematic response to a first voltage of less than 10 volts to form a fugitive image which vanishes when the first voltage is removed, and exhibiting a bistable response to a second voltage of greater than 15 volts to form a persistent image which remains when the second voltage is removed.

5,604,617

TELECOMMUNICATIONS SWITCHING ELEMENT

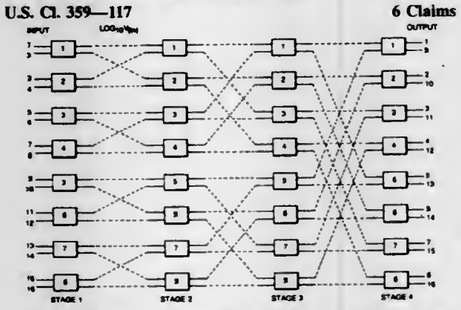
Nigel J. Burton, Poole, United Kingdom, assignor to GPT Limited, United Kingdom

Filed Aug. 23, 1994, Ser. No. 294,551

Claims priority, application United Kingdom, Aug. 27, 1993, 9317897

Int. Cl.[6] H04J *14/00*

U.S. Cl. 359—117 **6 Claims**



1. A multi-stage telecommunications switch having 2^n input and 2^n output ports, where 'n' is an integer greater than 1, comprising: a number $nxy^{(n-1)}$ of y×y switching elements, where 'y' is an integer greater than 1, arranged in n stages, wherein each switching element within a stage x, where x is an integer between 1 and n, changes state every $y^{(x-1)}$ timeslots to provide switching only in the space domain.

5,694,618

OPTICAL PARAMETRIC CIRCUIT AND OPTICAL CIRCUIT USING THE SAME

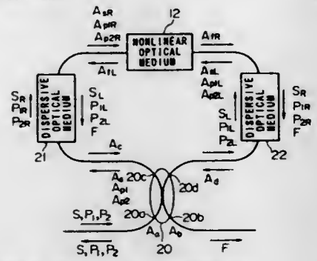
Kunihiko Mori; Toshio Morioka, and Masatoshi Saruwatari, all of Yokosuka, Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Oct. 10, 1995, Ser. No. 544,414

Claims priority, application Japan, Oct. 12, 1994, 6-246523; Oct. 25, 1994, 6-260443; May 18, 1995, 7-120155; Aug. 18, 1995, 7-210868

Int. Cl.[6] H04J *14/02*

U.S. Cl. 359—127 **26 Claims**



1. An optical parametric circuit comprising:

a nonlinear optical medium for generating optical waves having carrier angular frequencies ω_{f1}, ω_{f2}, . . . ω_{fN} from optical waves having carrier angular frequencies ω_{S1}, ω_{S2}, . . . ω_{SN}, ω_{P1}, and ω_{P2}, where $\omega_{fj}=\omega_{P1}+\omega_{P2}-\omega_{Sj}$(j=1,2, . . . N);

an optical directional coupler having a first input port, second input port, first output port and second output port, for dividing optical waves having carrier angular frequencies ω_{Sj}, ω_{P1}, ω_{P2} and ω_{fj} into two optical waves of equal intensities and polarization states, respectively;

a first dispersive optical medium having a length dimension L_1 and a propagation constant $K_1(\omega)$, for connecting the first output port of said optical directional coupler with one end of said nonlinear optical medium;

a second dispersive optical medium having a length dimension L_2 and a propagation constant $K_2(\omega)$, for connecting the second output port of said optical directional coupler with other end of said nonlinear optical medium;

wherein signal waves having carrier angular frequencies ω_{S1}, ω_{S2}, . . . ω_{SN} and pump waves having carrier angular frequencies ω_{P1}, ω_{P2} are injected into the first input port of said optical directional coupler so as to output four-wave-mixing waves having carrier angular frequencies ω_{f1}, ω_{f2}, . . . ω_{fN} generated in said nonlinear optical medium from the second input port of said optical directional coupler, and wherein said carrier angular frequencies ω_{Sj}, ω_{P1}, ω_{P2}, and ω_{fj} are related by an expression:

$$L_2=\frac{\{K_2(\omega_{fj})+K_2(\omega_{Sj})-K_2(\omega_{P1})-K_2(\omega_{P2})\}}{\{K_1(\omega_{fj})+K_1(\omega_{Sj})-K_1(\omega_{P1})-K_1(\omega_{P2})\}}\,L_1+(2n-(\pm\alpha)\pi$$

where n is an integer and an allowable error α is in a range $0\leqq\alpha<\frac{1}{2}$.

5,604,619

Patent Not Issued For This Number

5,604,620

LIGHT DEFLECTOR

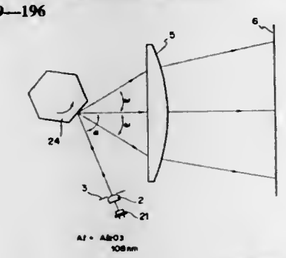
Nagato Osano, Kawasaki; Susumu Ito, Tokyo; Hiroshi Saito, Kawasaki, and Shiro Higashikozono, Tsukuba, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

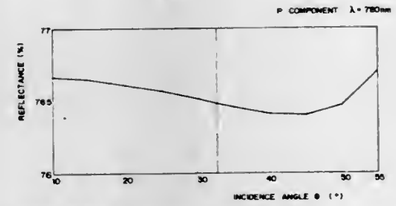
Continuation of Ser. No. 400,265, Mar. 3, 1995, abandoned, which is a continuation of Ser. No. 734,699, Jul. 23, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 474,969

Claims priority, application Japan, Jul. 26, 1990, 2-199483; Feb. 19, 1991, 3-024459; Jul. 12, 1991, 3-198775

Int. Cl.[6] G02B *26/08*

U.S. Cl. 359—196 **6 Claims**





1. A light deflector comprising:

a light deflector member of a material principally composed of an aluminum alloy; and

an aluminum oxide film formed on deflecting reflection face(s) of said light deflector member;

wherein the optical film thickness (nd) of said aluminum oxide film is within a range of:

λ/11.1–λ/5.0;

λ/4.11–λ/2.89;

λ/1.73–λ/1.47; or

λ/1.28–λ/1.20

wherein the light incident to said deflecting reflection face(s) is P-polarized light with a wavelength λ; and

wherein reflectance of the incident light is substantially constant when the angle of incidence on the reflection face(s) is between 10° and 55°.

5,604,621

SCANNER MOTOR

Masau Fujikane, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Mar. 28, 1995, Ser. No. 411,998

Claims priority, application Japan, May 31, 1994, 6-139610

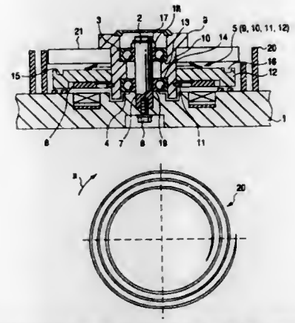
Int. Cl.[6] G02B *26/08*

U.S. Cl. 359—200 **8 Claims**

1. A scanner motor, comprising:

a housing having an outwardly extending spiral-shaped rib;

an inner fixed shaft having a base portion, said inner fixed shaft being attached to said housing centrally of said spiral shaped rib; and



a polygon mirror having a lower side and an upper side, said polygon mirror being rotatable about said inner fixed shaft at a high speed;

the spiral-shaped rib being formed on said housing to underlie at least the lower side of said polygon mirror such that a forced air current is generated and flows toward the base portion of said inner fixed shaft when said polygon mirror rotates.

5,604,622

LASER SCANNING DEVICE

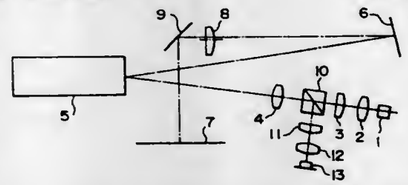
Takashi Iizuka, and Ryota Ogawa, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 180,997, Jan. 14, 1994. This application Apr. 27, 1995, Ser. No. 429,875

Claims priority, application Japan, Jan. 14, 1993, 5-004957; Nov. 5, 1993, 5-276974

Int. Cl.[6] G02B *26/08*

U.S. Cl. 359—207 **20 Claims**



1. A scanning optical system for scanning an object surface, comprising:

an anamorphic lens having power mainly in a direction of an auxiliary scanning, a beam of light from an object surface passing through said anamorphic lens;

a curved mirror having a predetermined curvature in a direction of a main scanning, wherein said beam passing through said anamorphic lens is incident to said curved mirror at a predetermined angle in said direction of an auxiliary scanning;

a deflection mirror rotatable to deflect a beam reflected by said curved mirror which is incident to said deflection mirror at another predetermined angle in said direction of an auxiliary scanning; and

a light receiving device having an optical axis which intersects a rotational axis of said deflection mirror, wherein beams reflected from said object surface along said direction of a main scanning are subsequently incident to said light receiving device as said deflection mirror rotates.

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5,604,623

ARRAY OF THIN FILM ACTUATED MIRRORS HAVING AN IMPROVED OPTICAL EFFICIENCY AND METHOD FOR THE MANUFACTURE THEREOF

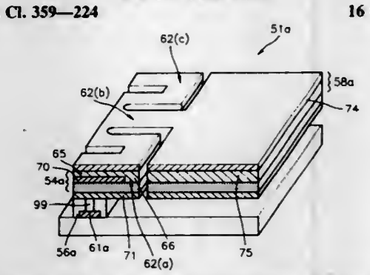
Jeong-Beom Ji, and Yong-Ki Min, both of Seoul, Rep. of Korea, assignors to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 23, 1994, Ser. No. 363,469

Claims priority, application Rep. of Korea, Jan. 18, 1994, 94-801

Int. Cl.[6] G02B *26/08*

U.S. Cl. 359—224 **16 Claims**



1. An array of M×N thin film actuated mirrors, wherein M and N are integers, for use in an optical projection system, said array comprising:

an active matrix including a substrate, an array of M×N transistors and an array of M×N connecting terminals;

an array of M×N thin film actuating structures, each of the actuating structures including a first, a second and a third actuating parts, the first, second and third actuating parts being identically structured, each of the first, second and third actuating parts being provided with a top and a bottom surfaces, and a proximal and a distal ends, each of the first, second and third actuating parts having at least a thin film layer of a motion-inducing material including a top and a bottom surfaces, each of the first, second and third actuating parts further being provided with a first and a second electrodes with the first electrode being placed on the top surface of the motion-inducing thin film layer, and the second electrode, on the bottom surface of the motion-inducing layer, the first electrode from each of the first, second and third actuating parts in each of the actuating structures being connected to ground, thereby functioning as a bias electrode, the second electrode from each of the first, second and third actuating parts in each of the actuating structures being connected to a common signal source in the corresponding actuating part, thereby functioning as a signal electrode, wherein an electrical signal applied across the motion-inducing thin film layer between the first and second electrodes in each actuating part causes a deformation of the motion-inducing thin film layer, and hence said each actuating part;

an array of M×N supporting members, each of the supporting members being used for holding each of the actuating structures in place, wherein the proximal end of each of the actuating parts in each of the actuating structures is secured to the corresponding supporting member;

an array of M×N mirror layers, each of the mirror layers including a mirror for reflecting light beams and a supporting layer, each of the mirror layers being provided with an odd number, greater than or equal to five, of tab portions, each of the tab portions being partially separated from the neighboring tab portions by a dividing slot therebetween, wherein the second actuating part is located on bottom of the middle tab portion and the first and third actuating parts, on bottom of the two next nearest tab portions located at either side of the middle tab portion, respectively, such that when the first, second and third actuating parts in each of the actuating structures deform in response to the electrical signal, the tab portions with the actuating parts attached thereto tilt while the remainder of the mirror layer, including the tab portions without the actuating parts attached thereto, stays planar, thereby allowing the remainder of the mirror layer, including the tab portions without the actuating parts attached thereto, to reflect light beams, resulting in an increased optical efficiency.

5,604,624

OPTICAL SYSTEM FOR PROJECTION DISPLAY

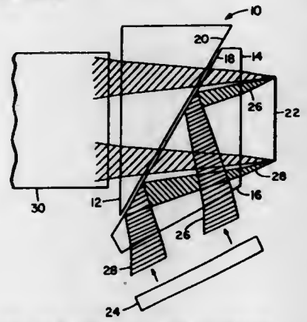
Simon Magarill, Cincinnati, Ohio, assignor to Corning Incorporated, Corning, N.Y.

Division of Ser. No. 44,720, Apr. 12, 1993, Pat. No. 5,552,922.

This application Jun. 5, 1995, Ser. No. 465,205

Int. Cl.[6] G02B *26/08;5/04*

U.S. Cl. 359—224 **2 Claims**



1. An image projection system which comprises:

a) a light source;

b) an array of adjustable mirrors which reflect light incident thereupon and received from said light source;

c) A projection lens system which receives and transmits light reflected from said array of mirrors;

d) a prism disposed in the light path between said light source and said array of mirrors, and also disposed in the light path between said array of mirrors and said lens system, said prism including first and second pairs of spaced apart surfaces, said first pair of surfaces being disposed to receive and reflect light from said light source to said array of mirrors and being further disposed to allow light reflected from said mirrors to pass therethrough, said second pair of surfaces being disposed to receive light which passes through said first pair of surfaces and to reflect light from said mirrors in a second position and to allow light reflected from said mirrors in a first position to pass therethrough.

5,604,625

MICROMECHANICAL DEVICE MANUFACTURED OUT OF INCOMPATIBLE MATERIALS

Steven A. Henck, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 220,429, Mar. 30, 1994. This application Jun. 7, 1995, Ser. No. 473,596

Int. Cl.[6] G02B *26/08*

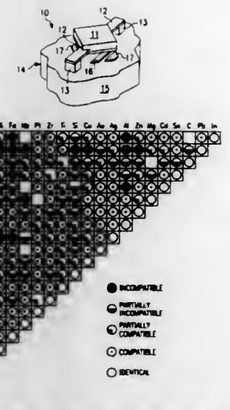
U.S. Cl. 359—224 **4 Claims**

1. A digital micro-mechanical device, comprising:

an array of beam elements fabricated over a substrate, each beam element having a beam supported by a hinge that permits said beam to tilt downward toward said substrate;

an address-memory circuit fabricated upon said substrate, said address-memory circuit having at least one address electrode and at least one landing electrode associated with each said beam element;

wherein the spacing of each said beams from its associated landing electrode permits said beam to contact said landing electrode during operation of said micro-mechanical device; and



wherein the underside of each said beam and the upper surface of said landing electrode are comprised of incompatible materials, said materials being titanium and tantalum.

5,604,626

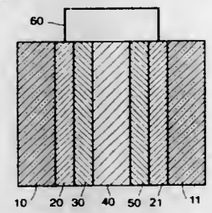
PHOTOCHROMIC DEVICES

Gimtong Teowee; Pierre-Marc Allemand; John P. Cronin; Juan C. L. Tonazzi, and Anoop Agrawal, all of Tucson, Ariz., assignors to Donnelly Corporation, Holland, Mich.

Filed Feb. 10, 1995, Ser. No. 386,771

Int. Cl.[6] G02F *01/15*

U.S. Cl. 359—265 **130 Claims**



1. A photochromic device capable of a reversible color change comprising (i) a first conducting electrode opposing a second conducting electrode, wherein at least one of said electrodes is transparent, (ii) a radiation sensitive electrode disposed on an opposing surface of said first conducting electrode, (iii) an interconnecting medium containing a redox promoter disposed between said second conducting electrode and said radiation sensitive electrode, (iv) an electrical connection means for electrically connecting said first conducting electrode and said second conducting electrode and (v) an ion intercalative electrode disposed between said interconnecting medium and said second conducting electrode.

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OPTICAL AMPLIFIER DEVICE

Ulrich Kohn, Bachnang, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

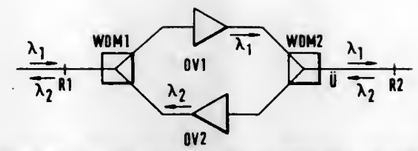
Filed Feb. 12, 1996, Ser. No. 599,817

Claims priority, application Germany, May 18, 1995, 195 18 294.4

Int. Cl.[6] H01S *3/00;* **H04B** *10/00*

U.S. Cl. 359—341 **3 Claims**

1. An optical amplifier device for an optical transmission system with bidirectional wavelength multiplex to a light transmission



wave guide, said optical amplifier device comprising a first optical amplifier (OV1) for amplifying signals of a first wavelength (λ_1) in a first direction, said first optical amplifier (OV1) having an input and an output; a second optical amplifier (OV2) for amplifying signals of a second wavelength (λ_2) in a second direction, said second optical amplifier (OV2) having an input and an output; a first wavelength selective coupler (WDM1) connecting the input of the first optical amplifier (OV1) and the output of the second optical amplifier (OV2) with a light transmission wave guide (Ü) and a second wavelength selective coupler (WDM2) connecting the input of the second optical amplifier (OV2) and the output of the first optical amplifier (OV1) with said light transmission wave guide (Ü);

wherein each of said wavelength selective couplers (WDM1, WDM2) has two light transmission paths (A1, A2), the dependence of transmittance on transmitted light wavelength differs along each of said light transmission paths (A1, A2) for each of said wavelength selective couplers but the transmittance along each of said light transmission paths (A1, A2) of said first wavelength selective coupler (WDM1) is equal at a first predetermined wavelength (λ_1) and the transmittance along each of said light transmission paths (A1, A2) of said second wavelength selective coupler (WDM2) is equal at a second predetermined wavelength (λ_2); and said predetermined wavelength (λ_1) of said first wavelength selective coupler (WDM1) is different from said second predetermined wavelength (λ_2) of said second wavelength selective coupler (WDM2).

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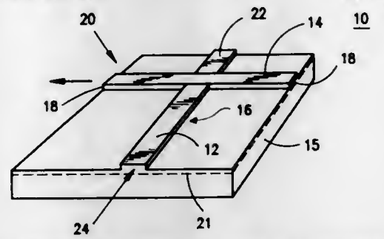
OPTICAL LASER AMPLIFIER COMBINED WITH A SPONTANEOUS EMISSION FILTER

Michael A. Parker, Liverpool, N.Y.; Paul D. Swanson, Solana Beach, Calif.; Stuart I. Libby, Albuquerque, N.M.; Douglas B. Shire, and Chung C. Tang, both of Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Dec. 30, 1994, Ser. No. 366,218

Int. Cl.[6] H01S *3/00;* **G02F** *3/00*

U.S. Cl. 359—344 **20 Claims**



1. A combined laser amplifier and filter device comprising:

a) an optical laser amplifier for generating an unfiltered amplified output signal, said unfiltered amplified output signal including a stimulated emission component and a spontaneous emission component;

b) a laser for generating a filtered output signal; and

c) means for quenching said laser with the stimulated emission component of said unfiltered amplified output signal, and thereby causing said filtered output signal to be an inverted version of said unfiltered amplified signal with said spontaneous emission component removed.

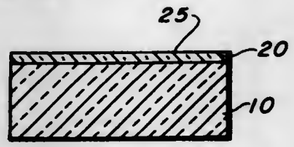
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5,604,629

DISCRETE VACUUM ULTRA VIOLET REFLECTIVE INTERFERENCE FILTER

William R. Hunter, Springfield, Va., and James P. Long, Accokeek, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 27, 1993, Ser. No. 99,489
Int. Cl.[6] G02B 5/20
U.S. Cl. 359—359 15 Claims



1. A vacuum ultraviolet reflecting interference filter device comprising:

a substrate;

an interference layer, deposited on said substrate so as to create a layer-substrate interface and an ambient-layer interface, said interference layer comprising material having a critical wavelength longer than a desired fundamental wavelength such that wavefronts incident on said device at angles less than a wavelength dependent critical angle are reflected from said layer-substrate interface and said ambient-layer interface, resulting in interference between reflected wavefronts, and such that wavefronts incident on said device at angles greater than said wavelength dependent critical angle reflected only from said ambient-layer interface; and

a mismatch layer, having optical constants more different from optical constants of said material than the difference between ambient optical constants and optical constants of said material, formed on top of said interference layer;

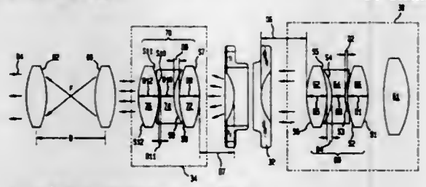
wherein said material has a well-defined plasma oscillation.

5,604,630

NIGHT VISION MONOCULAR WITH BALANCED OPTICS

Gary L. Palmer, Vinton, Va., assignor to ITT Corporation, New York, N.Y.

Filed Jun. 30, 1995, Ser. No. 497,200
Int. Cl.[6] G02B 23/00;13/14;9/04
U.S. Cl. 359—409 20 Claims



1. A night vision device, comprising:

an image intensifier tube having an input surface for receiving low intensity light and an output surface for producing a visible image;

an objective lens assembly, including a first plurality of lenses adjacent said input surface of said image intensifier tube, for directing the low intensity light onto said input surface;

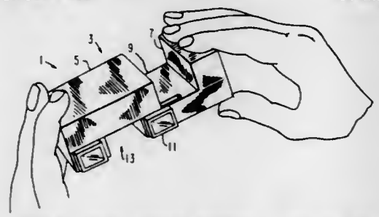
a collimator assembly, including a second plurality of lenses adjacent said output surface of said image intensifier tube, for collimating said visible image, wherein said second plurality of lenses are arranged as a mirror image of said first plurality of lenses.

5,604,631

SLIDING BINOCULAR BODY

John A. Gelardi, P.O. Box 714, Kennebunkport, Me. 04046; Anthony L. Gelardi, P.O. Box 213, Cape Porpoise, Me. 04014; Arthur P. Becker, New York, N.Y., and Benjamin A. Wells, Lincoln, Mass., assignors to Bnox, Inc., N.Y.; John A. Gelardi, and Anthony L. Gelardi, both of Me.

Continuation of Ser. No. 230,525, Apr. 20, 1994, abandoned.
This application Nov. 15, 1994, Ser. No. 339,781
Int. Cl.[6] G02B 23/00
U.S. Cl. 359—412 14 Claims



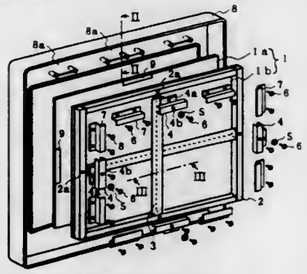
1. A compact optical housing apparatus, comprising first and second assemblies, each including a short section and a long section to provide a generally L-shape, said L-shape assemblies reversed and overlapped with respect to each other and having their long sections in opposed relationship to provide first and second facing portions, an intermediate plate interposed between the first and second assemblies, and rails disposed on said facing portions and on the intermediate plate for sliding the assemblies with respect to the intermediate plate.

5,604,632

SCREEN FIXING STRUCTURE

Yasuhiko Sawai, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 18, 1996, Ser. No. 634,231
Claims priority, application Japan, Jan. 8, 1996, 8-001004
Int. Cl.[6] G03B 21/56
U.S. Cl. 359—443 7 Claims



1. A screen fixing structure comprising:

a screen for receiving light to be projected from a picture projecting means,

a frame for securing said screen,

a frame body fixed to an edge of said screen on a side of said picture projecting means,

a holder fixed to said frame and pressing said frame body to the frame for holding it,

holding brackets having an elongated hole oriented toward a central part of said screen and disposed at central parts of respective sides of said frame body, and

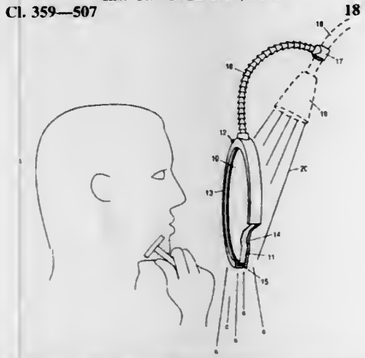
regulation means inserted into said elongated holes of said holding brackets and pressing the holding bracket toward a side of said frame.

5,604,633

CONDENSATION-FREE SHOWER MIRROR HEATED BY HOT SHOWER STREAM

Thomas R. Christianson, Napa, Calif., assignor to ShowerTek, Inc., Napa, Calif.

Continuation of Ser. No. 271,107, Jul. 6, 1994, abandoned.
This application Oct. 12, 1995, Ser. No. 542,038
Int. Cl.[6] G02B 5/08;7/182
U.S. Cl. 359—507 18 Claims



1. A shower mirror assembly comprising:

a mirror having front and rear surfaces, said front surface being a reflecting surface, said rear surface being in thermal contact with said front surface such that hot water from a shower stream applied to said rear surface will be conducted to heat and be retained by said front surface sufficiently to keep said front surface fog-free in a steamy shower environment for a predetermined time period, even when said mirror is no longer in front of said shower steam,

an elongated postionable arm comprising a continuous elongated bendable member, said member having distal and proximal opposite ends, said distal end being connected to said mirror to support said mirror, said arm being easily bendable to any position within a range of different positions, but able to stay in a chosen position when released, and

attaching means for securely attaching said proximal end of said continuous elongated bendable member to a stationary object, said attaching means comprising a fixed C-shaped clip, said fixed C-shaped clip having predetermined dimensions so that it can be snapped onto a shower head supply arm having a predetermined diameter, rotated to any circumferential position on said supply arm and removed from said shower head supply arm,

said continuous elongated bendable member being long and flexible enough so that when said fixed C-shaped clip is attached to said shower head arm adjacent a shower head, said mirror can be positioned so that said rear surface can either (a) be moved to a first position in front of said shower head so that the hot water stream from said shower head will flow onto said rear surface for immediate fog-free use, or (b) can be moved to a second standby position away from said shower head for either storage or for further fog-free use during said predetermined time period.

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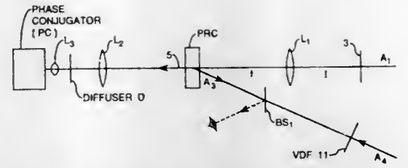
ALL OPTICAL NONLINEAR JOINT FOURIER TRANSFORM CORRELATOR

Jihad Khoury, Arlington, and Charles L. Woods, Stow, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 20, 1993, Ser. No. 300,692
Int. Cl.[6] G02B 27/46; G03H 1/02;1/16
U.S. Cl. 359—559 30 Claims

1. A nonlinear joint Fourier transform image correlator (JTC) comprising:

(a) joint image production means for producing a single signal beam having an intelligence bearing joint image of a reference image and a signal image;



(b) first Fourier transform means for producing a joint transform spectrum (JTS) of the single signal beam at a Fourier transform plane;

(c) a nonlinear holographic recording means positioned at the Fourier transform plane for receiving said JTS;

(d) reference input beam means illuminating said nonlinear holographic recording means with a reference beam for forming a hologram thereon having a grating associated therewith;

(e) phase conjugating means for forming a counter-propogating phase conjugate JTS in said nonlinear holographic recording means to produce an output beam therefrom; and

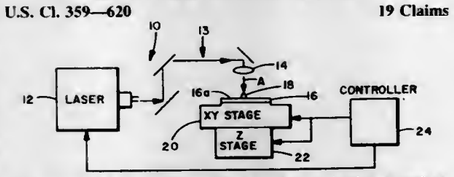
(f) a second Fourier transform means for inverse Fourier transforming the nonlinear holographic recording means output beam to produce a cross-correlation output signal from said JTC.

5,604,635

MICROLENSES AND OTHER OPTICAL ELEMENTS FABRICATED BY LASER HEATING OF SEMICONDUCTOR DOPED AND OTHER ABSORBING GLASSES

Nabil M. Lawandy, Providence, R.I., assignor to Brown University Research Foundation, Providence, R.I.

Filed Mar. 8, 1995, Ser. No. 400,835
Int. Cl.[6] G02B 27/10;3/00; G01J 1/20
U.S. Cl. 359—620 19 Claims



1. An optical device comprising a substrate having a surface, said substrate being comprised of a material that is substantially transparent at wavelengths of interest, said material having a first index of refraction at the wavelengths of interest, wherein a region of said surface extends away from said substrate for forming a refractive microlens, said microlens being comprised of a portion of said material that comprises said substrate, wherein said a portion of material that comprises said microlens has a second index of refraction that is less than said first index of refraction such that light having said wavelengths of interest experiences a phase change when passing through said microlens that differs from a phase change experienced when passing through said material that comprises said substrate.

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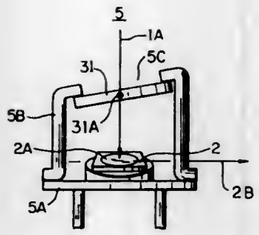
METHOD OF RECEIVING LIGHT AND LIGHT RECEIVING MODULE OF LESS POLARIZED LIGHT DEPENDENCY

Keisuke Asami; Naoto Satoh, and Akishige Itoh, all of Tokyo, Japan, assignors to Ando Electric Co., Ltd., Tokyo, Japan

Filed Apr. 25, 1995, Ser. No. 428,657
Claims priority, application Japan, May 20, 1994, 6-131142
Int. Cl.[6] G02B 27/14
U.S. Cl. 359—637 5 Claims

3. A light receiving module for receiving incident light that is focused along an optical axis comprising:

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a stem;

a light receiving element mounted on said stem, said light receiving element having a light receiving surface for receiving the incident light, said light receiving surface being tilted relative to a first normal plane to the optical axis of the incident light so that relative to the incident light said light receiving surface has a polarized light dependency, wherein said light receiving surface is rotated about an axis;

a cap attached to said stem that is oriented towards a direction from which the incident light is applied, said cap having a window opening onto said light receiving surface of said light receiving element; and

a parallel-surface transparent plate secured to said window of said cap wherein said transparent plate is tilted relative to a second normal plane to the optical axis of the incident light wherein said transparent plate is tilted so as to have a polarized light dependency equal to the polarized light dependency of said light receiving surface of said light receiving element, wherein said transparent plate is rotated about an axis that is perpendicular to said axis about which said light receiving surface of said light receiving element is rotated.

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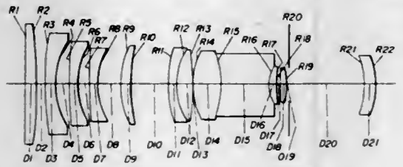
ZOOM LENS

William T. Goosey, Jr., Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 17, 1995, Ser. No. 423,341

Int. Cl.[6] G02B *15/14*

U.S. Cl. 359—689 **17 Claims**



1. A zoom lens comprising, in order, from front to rear:

a movable negative unit,

a movable positive unit, the movable positive unit including a cemented triplet, which triplet has a middle negative element between two positive elements, the middle negative element having an Abbe V number less than the Abbe V number of both the two positive elements, and

a fixed unit, the fixed unit consisting of a single meniscus lens component having front and rear surfaces concave to the front, which front and rear surfaces have radii of curvature having a difference between them less than eight percent of the radius of curvature of the front surface.

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ANTI-REFLECTION STRUCTURE FOR ZOOM LENS BARREL

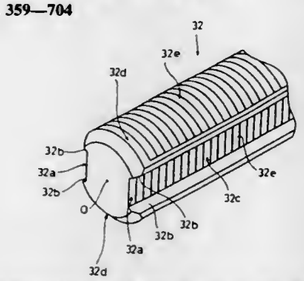
Hiroshi Nomura, and Takamitsu Sasaki, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 1, 1994, Ser. No. 353,210

Claims priority, application Japan, Dec. 1, 1993, 5-64451; Dec. 6, 1993, 5-65077

Int. Cl.[6] G02B *15/14*

U.S. Cl. 359—704 **12 Claims**



10. An anti-reflection structure for a zoom lens barrel, comprising:

a rotation transmitting shaft positioned in said zoom lens barrel and rotated by a drive source;

a pinion fitted on said rotation transmitting shaft and slidable in an axial direction thereof so as to move in a direction parallel to an optical axis of a zoom lens;

a contact guide portion formed on said rotation transmitting shaft for allowing said pinion to slidably move on said contact guide portion;

a non-contact portion formed on said rotation transmitting shaft which does not contact said pinion; and,

anti-reflection means formed on said non-contact portion for preventing light from being reflected on said non-contact portion.

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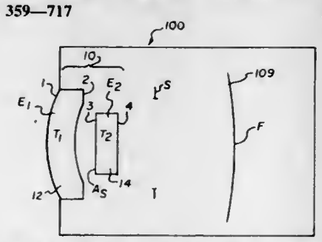
TWO-ELEMENT OPTICAL SYSTEM AND CAMERA AND METHOD OF MAKING A CAMERA

Joseph R. Bietry, and Alan E. Lewis, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 30, 1994, Ser. No. 366,660

Int. Cl.[6] G02B *3/02;9/04;9/06*

U.S. Cl. 359—717 **36 Claims**



1. An optical system for use in a low-cost camera having an image surface curved toward said optical system, said optical system comprising a shutter and only two single lens elements, wherein $2.0 \geq f/f_2 \geq 1.2$, where f_1 is the focal length of the front lens element and f_2 is the focal length of the rear lens element, said optical system having an F/number below F/11, and said optical system having a curved image corresponding substantially to the curved image surface of the camera through a full field angle of at least 65 degrees.

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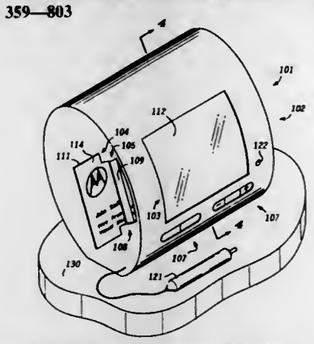
BUSINESS CARD SCANNER AND METHOD OF USE

Mary J. Zipf, Tempe, and Karen E. Jachimowicz, Laveen, both of Ariz., assignors to Motorola, Schaumburg, Ill.

Continuation of Ser. No. 189,778, Jan. 31, 1994, abandoned. This application Jul. 14, 1995, Ser. No. 499,650

Int. Cl.[6] G02B *27/02;* **G06K** *5/00;7/10*

U.S. Cl. 359—803 **20 Claims**



1. A business card scanning system comprising:

a hollow body having an exterior surface, an interior surface, a first aperture, and a second aperture, the first aperture being designed for receiving a business card inserted into the hollow body;

a viewing port positioned in optical communication with the second aperture of the hollow body to directly view the inserted business card; and

a data scanning system including a sensor, data processing circuits, and data storage circuits mounted in the hollow body, the data scanning system being positioned to scan the business card to generate data therefrom, the generated data is coupled to and processed by the data processing circuits and processed data from the data processing circuits is coupled to and stored in the data storage circuits.

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OBJECTIVE LENS ACTUATOR AND METHOD FOR MANUFACTURING THE SAME

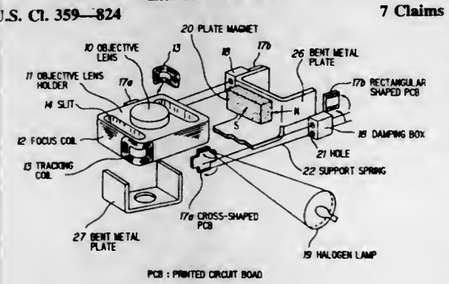
Tsutomu Matsui, Tokyo, Japan, assignor to NEC Corporation, Japan

Division of Ser. No. 388,523, Feb. 14, 1995. This application Dec. 26, 1995, Ser. No. 578,091

Claims priority, application Japan, Feb. 14, 1994, 6-17092

Int. Cl.[6] G02B *7/02*

U.S. Cl. 359—824 **7 Claims**



1. A method for manufacturing an objective lens actuator, comprising the steps of:

constructing two magnetic circuits, a portion of which serves as an actuator base, by combining two bent metal plates and two plate magnets;

constructing an objective lens holder and mounting an objective lens thereon;

constructing a coil assembly combining a focus coil wound around said objective lens holder and a pair of tracking coils stuck on said focus coil;

constructing four support springs for said objective lens holder, each of said springs including a first and a second elastic wire with damping material filling a clearance therebetween, and said support springs being fixed to said actuator base through a damping box;

constructing an electromagnetic force generating means by combining said magnetic circuits and said coil assembly in such a way that said coil assembly is movable in focus and tracking directions;

sticking two first printed circuit boards on said objective lens holder and sticking two second printed circuit boards on said actuator base respectively;

coating all of said printed circuit boards with cream solder;

supporting said first elastic wire in each of said four support springs between said first and second printed circuit boards, wherein said first elastic wire is in a no mechanical stress condition and its ends contact with said cream solder on said first and second printed circuit boards, respectively; and

soldering said both of said ends to said first and second printed circuit boards by non-contact heating.

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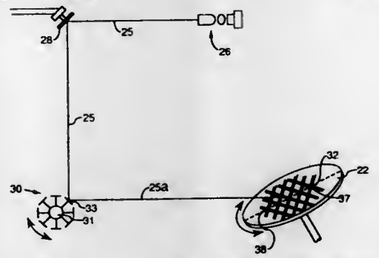
LASER WELDING OF LIGHT-WEIGHT HONEYCOMB MIRRORS

Czeslaw Deminet, and George Luke, both of Albuquerque, N.M., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 20, 1995, Ser. No. 376,588

Int. Cl.[6] G02B *5/08*

U.S. Cl. 359—848 **24 Claims**



1. A method for making light-weight honeycomb mirrors comprising,

a) assembling ribs on a turntable in a honeycomb pattern so that rib ends are proximate other rib ends to form rib junctions,

b) directing a laser beam at a plurality of said junctions on one side thereof to weld the rib ends together on said one side,

c) rotating the so-welded ribs a sufficient number of degrees to present another side of said junctions to said laser beam and

d) directing said laser beam at a succession of said rib junctions to weld each junction on at least one other side thereof so as to weld said ribs into a honeycomb structure having a plurality of rib-defined cells or modules,

e) positioning a plate across of one said cells and

f) welding said plate to a plurality of ribs defining said cell.

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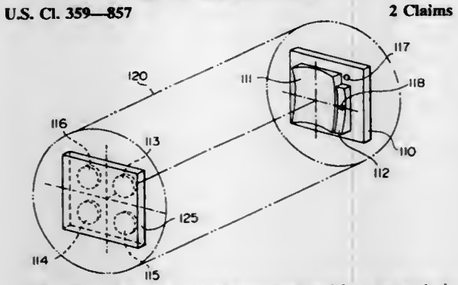
MULTIPLE REFLECTION OPTICAL INSTRUMENT AND REFLECTED LIGHT CATCHING METHOD USING THE SAME

Kazushige Yamamoto, Koganei, Japan, assignor to Tokyo Gas Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 216,481, Mar. 22, 1994. This application Dec. 6, 1994, Ser. No. 349,878

Int. Cl.[6] G02B *5/10;17/00*

U.S. Cl. 359—857 **2 Claims**



1. A multiple reflection optical instrument used for a gas analysis or the like comprising:

(a) a housing formed in a cell,

(b) a main field mirror fixedly mounted on a mount which is disposed at one longitudinal end of the housing and is provided with a light beam inlet window for introducing a light beam from a light source into an inside of the housing and with an outlet window for causing a light beam multiple-reflected in the housing to be directed to a measuring equipment,

(c) an auxiliary field mirror having the same radius of curvature as that of the main field mirror, fixedly mounted on the mount so as to be adjacent to the main field mirror on the light beam inlet window side, and

(d) first to fourth objective mirrors arranged at the other longitudinal end of the housing where is opposite to the two field mirrors and being freely rotated entirely through a holder and also individually in every directions, having equal radii of curvature each equal to that of the main field mirror, and arranged such that a center of curvature of the auxiliary field mirror becomes a point of symmetry between the first and third objective mirrors,

wherein an image matrix is formed on the main and auxiliary field mirrors by a plurality of reflection spots of the light beam passing through the inlet window into the housing, and a position of a center of curvature of each of the first to fourth objective mirrors, which is projected onto the main field mirror, is adjusted such that the finally reflected light beam toward the outlet window is a maximum even-numbered coming and going reflection reflected from the third objective mirror in the image matrix, wherein a position of a center of curvature of each of said form pieces of objective mirrors, which is projected onto the main field mirror, is adjusted such that a number of lines of spots arranged in a horizontal direction of the image matrix are an odd number, said outlet window being formed on said auxiliary field mirror, wherein said first to fourth objective mirrors are arranged such that a center of curvature of the first objective mirror is a point of symmetry between a position of the inlet light beam at the inlet window and a first spot focused through the first objective mirror at a cross point of a left end column of the image matrix on the main field mirror and a lowermost line thereof, that a center of curvature of the second objective mirror is a point of symmetry between the first spot and second spot focused through the second objective mirror at a cross point of a right end column of the image matrix on the main field mirror and an uppermost line thereof, that a center of curvature of the third objective mirror is a point of symmetry between a spot in a lowermost line on the auxiliary field mirror and a spot focused through the third objective mirror at a cross point of a left end column of the image matrix on the main field mirror and a second line from the top thereof, that a center of curvature of the fourth objective mirror is a point of symmetry between the spot focused through the third objective mirror at the cross point of the left end column of the image matrix on the main field mirror and the second line from the top thereof and a spot focused through the fourth objective mirror at a cross point of the right end column of the image matrix on the main field mirror and the lowermost line thereof, that a distance between the centers of curvature of the first and third objective mirrors or between the centers of curvature of the second and fourth objective mirrors is a half of a distance between two spots vertically adjacent to each other, and that a distance between the centers of curvature of the first and second objective mirrors is a half of a distance between two spots horizontally adjacent to each other.

5,604,644

REAR-VIEW MIRROR, IN PARTICULAR FOR TRUCKS

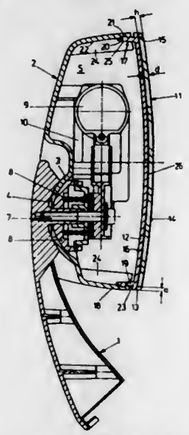
Heinrich Lang, Ergersheim, and Wolfgang Seiboth, Bad Windsheim, both of Germany, assignors to Mekra Rangau Plastics GmbH & Co. KG, Germany

Filed Dec. 13, 1994, Ser. No. 354,680

Claims priority, application Germany, Dec. 21, 1993, 43 43 691.9

Int. Cl.[6] G02B *7/182*

U.S. Cl. 359—871 **19 Claims**



1. A rear-view mirror, in particular for trucks, comprising a holder (**1, 103**), a housing (**2, 101**) being adjustably arranged on the holder (**1,103**) via a joint means (**3, 4, 105, 110**);

a mirror glass (**11, 118**) disposed on said housing (**2, 101**), said mirror glass being fixed relative to said housing and interchangeable, the mirror glass (**11, 118**) has a rear side (**26, 119**), a surface (**14, 121**), and an edge (**15, 122**);

a support plate (**12, 117**), upon which said mirror glass is fixed, wherein the entire surface (**14, 121**) of the mirror glass (**11, 118**) lies free and wherein on a rear (**16, 123**) of the support plate (**12, 117**) turned away from the mirror glass (**11, 118**), the support plate (**12, 117**) is provided with at least one locking web (**17, 124**) which engages with a suited recess (**21, 127**) in the housing (**2, 101**), said support plate being detachably disposed on the housing.

5,604,645

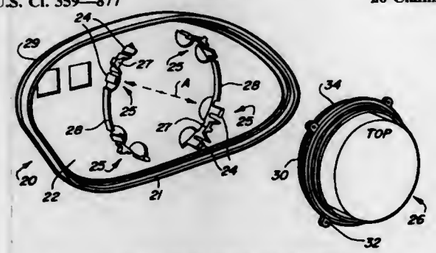
MIRROR MOTOR MOUNTING BRACKET

James M. Weaver, Greenville, Ohio, assignor to United Technologies Automotive Systems, Dearborn, Mich.

Filed Mar. 17, 1995, Ser. No. 405,971

Int. Cl.[6] G02B *7/182*

U.S. Cl. 359—877 **20 Claims**



1. A mounting bracket for a mirror motor comprising:

a bracket body having a planar portion defining a bracket face, a plurality of elongate snapping fingers extending from said face and disposed at circumferentially spaced locations around an axis extending perpendicular to said bracket face;

a plurality of arcuate support members extending from said face, and disposed circumferentially around said axis and between said snapping fingers; and

said plurality of elongate snapping fingers each having a height measured away from said bracket face and a circumferential width, wherein the ratio of said beight to said width is at least about 1.5:1, and wherein said plurality of arcuate support members are spaced from said plurality of snapping fingers by slots extending to said planar portion.

5,604,646

DATA ERROR CORRECTING METHOD AND SIGNAL PROCESSING UNIT FOR DISK ACCESSING APPARATUS

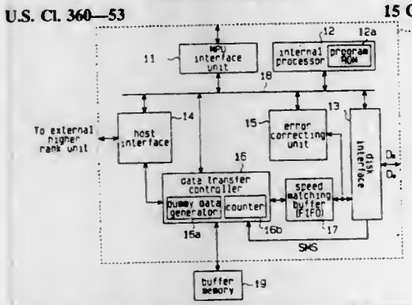
Hirofumi Yamawaki, Kasugai, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Oct. 31, 1995, Ser. No. 550,840

Claims priority, application Japan, Nov. 11, 1994, 6-277813

Int. Cl.[6] G11B *5/09*

U.S. Cl. 360—53 **15 Claims**



12. An apparatus for reading data from a disk drive, said apparatus comprising:

a circuit for receiving read data from a disk of the disk drive;

a detector for detecting a reference pattern in the read data;

a data acquisition circuit for sequentially reading target data following the reference pattern on the disk;

a circuit for storing the target data read by said data acquisition circuit in a first storage buffer;

a data transfer controller for transferring the target data from the first storage buffer to a second storage buffer;

a circuit for directly supplying the second storage buffer with dummy data without first storing the dummy data in the first storage buffer when said detector fails to detect the reference pattern in the read data; and

a error correction circuit for performing an error correction operation on the target data stored in the second storage buffer.

5,604,647

METHOD FOR CHECKING ABNORMAL OPERATIONS OF VIDEO CASSETTE RECORDER

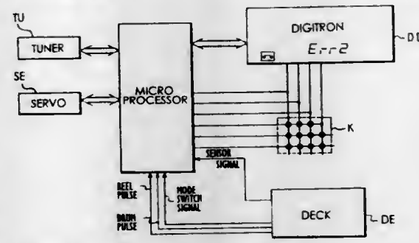
Seong W. Jo, Seoul, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Jul. 8, 1991, Ser. No. 726,879

Claims priority, application Rep. of Korea, Sep. 29, 1990, 90-15854

Int. Cl.[6] G11B *15/22*

U.S. Cl. 360—69 **21 Claims**



1. A video cassette recorder, comprising:

a microprocessor;

means for manually entering data into said microprocessor;

means for providing a reel pulse, a drum pulse and a mode switch signal to said microprocessor;

means for displaying a state of the video cassette recorder according to a control signal from said microprocessor;

wherein said microprocessor:

determines whether the video cassette recorder is operating, during a selected mode, according to said selected mode by checking the mode switch signal, the reel pulse, and the drum pulse; and

when the video cassette recorder is not operating according to said selected mode, transmits error data to the displaying means.

5,604,648

CIRCUIT AND METHOD FOR CONTROLLING SPEED AND PHASE OF VCR SERVO SYSTEM

Young G. Oh, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Continuation of Ser. No. 81,883, Jun. 25, 1993, abandoned. This application Apr. 13, 1995, Ser. No. 422,611

Claims priority, application Rep. of Korea, Jun. 26, 1992, 11225/1992

Int. Cl.[6] G11B *15/46*

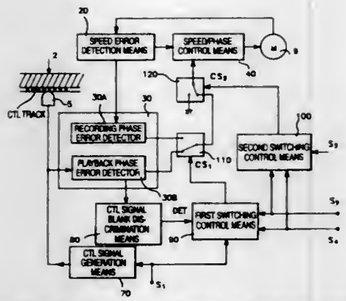
U.S. Cl. 360—73.11 **8 Claims**

1. A circuit for controlling a speed and a phase of a VCR servo system, comprising:

control (CTL) signal generation means for generating a CTL signal to be recorded on a control track of a video tape in response to a recording mode signal;

speed error detection means for detecting a capstan frequency generation (CFG) signal from a capstan motor when the video tape is wound, converting the detected CFG signal into a CFG pulse in a form of a square wave, and detecting a speed error from the CFG pulse as speed control data;

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phase error detection means having a recording phase error detector and a playback phase error detector, said recording phase error detector detecting a recording phase error from the CFG pulse from said speed error detection means in a recording mode and outputting the detected recording phase error as recording phase control data, said playback phase error detector inputting the CTL signal from the control track of the video tape in a playback mode, converting the inputted CTL signal into a CTL pulse in the form of a square wave and detecting a playback phase error from the CTL pulse as playback phase control data;

speed and phase control means for controlling a speed and a phase of the capstan motor in accordance with the speed control data from said speed error detection means and the phase control data from said phase error detection means;

CTL signal blank detection means for inputting the CTL pulse from said playback phase error detector in said phase error detection means, detecting a blank interval in the CTL signal based on the inputted CTL pulse and outputting a detection signal in accordance with the detecting of the blank interval;

first switching control means for inputting the detection signal from said CTL signal blank detection means, a fast forward or rewind (FF/REW) mode signal, the recording mode signal, and a tape type discriminating signal and performing a first logical operation based on the four inputted signals to output a first control signal;

second switching control means for inputting a video tape loading signal indicating that a video tape has been loaded in the system, the FF/REW mode signal, and the tape type discriminating signal and performing a second logical operation based on the three inputted signals to output a second control signal;

first switching means responsive to the first control signal from said first switching control means for selecting an output from said recording phase error detector in said phase error detection means in the recording mode or in the blank interval of the CTL signal in the playback mode or when the type of the video tape is not discriminated in the FF/REW modes and for selecting an output from said playback phase error detector in said phase error detection means in a recorded interval of the CTL signal in the playback mode; and

second switching means responsive to the second switching control signal from said second switching control means for one of connecting said speed and phase control means to a ground terminal to prevent data from being applied to said speed and phase control means upon discriminating the type of the video tape in the FF/REW modes, applying the recording phase control data selected by said first switching means to said speed and phase control means upon not discriminating the type of the video tape in the FF/REW modes, and applying the recording phase control data or the playback phase control data according to the first switching means to said speed and phase control means in modes other than the FF/REW modes.

5,604,649

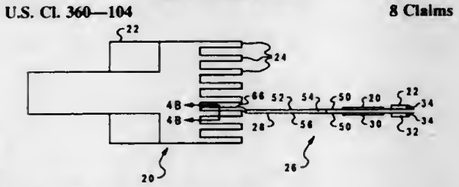
DISK DRIVE SYSTEM HAVING A NOVEL HEAD GIMBAL ASSEMBLY WITH A SINGLE OFFSET MOUNTING PLATE ON EACH ACTUATOR ARM

Manuel A. Hernandez, San Jose, Calif., assignor to International Business Machines, Armonk, N.Y.

Continuation of Ser. No. 488,006, Jun. 7, 1995, abandoned, which is a continuation of Ser. No. 173,527, Dec. 23, 1993, abandoned. This application Jun. 25, 1996, Ser. No. 670,039

Int. Cl.[6] G11B *5/48*

U.S. Cl. 360—104 **8 Claims**



7. A disk drive system comprising:

rotatably mounted, vertically spaced apart magnetic disks, a disk motor for rotating said rotatably mounted, vertically spaced apart magnetic disks, an actuator hub, an actuator hub motor, a control circuit for controlling said disk motor and said actuator hub motor to allow selective positioning of read/write heads over said rotatably mounted, vertically spaced apart magnetic disks;

an actuator arm extending radially from said actuator hub, said actuator arm having an upper surface and a lower surface, said actuator arm being attached to a double-head gimbal assembly;

the double-head gimbal assembly having a mounting plate having an attachment end portion for attachment to said actuator arm, a first load beam having a proximal end attached to a first face of a distal end portion of said mounting plate, a second load beam having a proximal end attached to a second face of said distal end portion of said mounting plate, a first slider mounted to said distal end of said first load beam, a second slider mounted to said distal end of said second load beam, a first read/write head attached to said first slider, a second read/write head attached to said second slider;

the mounting plate being attached to only one of said upper and lower surfaces of said actuator arm;

the other surface of said actuator arm being free of attachment to any mounting plate;

the mounting plate further having a bend portion located between the attachment end portion and the distal end portion;

said actuator arm having only one mounting plate attached thereto; and

said attachment end portion of said mounting plate and the distal end portion of said mounting plate being vertically offset from one another wherein a smaller spacing between said opposing surfaces of said adjacent, vertically spaced apart magnetic disks is obtained.

5,604,650

ROTARY HEAD DRUM HAVING HEAD-AFFIXING, TRANSFORMER-AFFIXING, AND BEARING-ENGAGING SURFACES LYING IN THE SAME PLANE

Tong M. Chang, Seoul, and Kyung S. Suh, Kyungki-do, both of Rep. of Korea, assignors to Goldstar Co., Ltd., Rep. of Korea

Continuation of Ser. No. 319,305, Oct. 6, 1994, abandoned. This application Apr. 2, 1996, Ser. No. 626,438

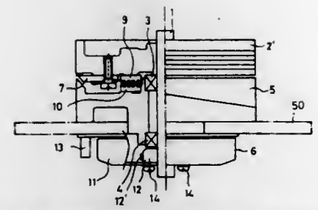
Claims priority, application Rep. of Korea, Oct. 6, 1993, 20656/1993

Int. Cl.[6] G11B *5/53*

U.S. Cl. 360—107 **3 Claims**

1. A rotary head drum apparatus, comprising:

a stationary lower drum;



a rotating shaft passing through the center of the lower drum and being rotatably engaged with a bearing member supported by said lower drum;

an upper drum, rigidly affixed to the rotating shaft, and including a head-affixing surface to which a head is affixed, a rotary transformer-affixing surface to which a rotary transformer is affixed, and a bearing-engaging surface with which the bearing member is engaged,; and

a driving device for driving the rotating shaft;

wherein said head-affixing surface, said rotary transformer-affixing surface and said bearing-engaging surface are all provided at a bottom surface of said upper drum, face said lower drum, and lie in the same plane, whereby rotary head drum assembly accuracy is enhanced.

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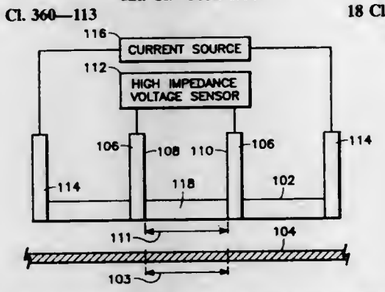
READ HEAD WITH 4-POINT MAGNETORESISTIVE SENSING

Pierre Asselin, Santa Barbara, Calif., assignor to Applied Magentics Corporation, Goleta, Calif.

Continuation of Ser. No. 200,745, Feb. 23, 1994, abandoned. This application Aug. 31, 1995, Ser. No. 521,793

Int. Cl.[6] G11B *5/127*

U.S. Cl. 360—113 **18 Claims**



1. A magnetoresistive read head for sensing recorded data from tracks on moving magnetic media, said magnetoresistive read head comprising:

(a) an elongated strip of magnetoresistive material having first and second ends, and a length between the first and second ends exceeding that of a width of a track on the moving magnetic media, said strip of magnetoresistive material extending perpendicular to a direction of movement of the moving magnetic media, and being positionable such that an active sensing region thereof is in a transducing relationship with a track on the moving magnetic media;

(b) a pair of elongated voltage-sensing leads connected to a voltage meter and directly contacting at least a portion of a width of the strip of magnetoresistive material at a 90 degree angle, said pair of voltage-sensing leads being spaced apart along the length of the strip of magnetoresistive material a distance approximately equal to the width of the track on the moving magnetic media, and wherein the area of the strip of magnetoresistive material between the pair of voltage-sensing leads forms the active sensing region and does not have equipotential strips located thereon; and,

(c) a pair of elongated current feed leads receiving current from a current source and directly contacting, separate from said voltage-sensing leads, at least a portion of the width of the strip of magnetoresistive material, a first current feed lead of which is connected on one side of the pair of voltage-sensing leads and a second current feed lead of which is connected on the opposite side of the pair of voltage-sensing leads, wherein no equipotential strips are located on the areas of the strip of magnetoresistive material between the first current feed lead and one of the pair of voltage-sensing leads and between the second current feed lead and the opposite one of the pair of voltage-sensing leads, and wherein said current feed leads directly contact said strip of magnetoresistive material a sufficient spaced apart distance from said voltage-sensing leads so that parasitic fields induced in the strip of magnetoresistive material is localized near each respective current feed lead directly contacting said strip of magnetoresistive material so that the current feed leads do not significantly disrupt magnetic domains within the active sensing region between the pair of voltage-sensing leads.

5,604,652

TAPE SPEED CONTROL APPARATUS USING ROTATION SPEED RATIO OF FIRST AND SECOND TAPE REELS

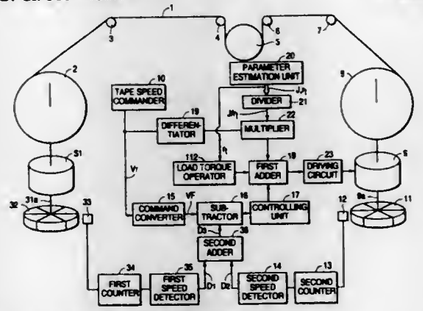
Masafumi Nishida, Ibaraki; Osamu Yamaguchi, Katano; Souichirou Fujioka, Sakai; Hiroshi Okamoto, Nara, and Yoshiho Gotoh, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 942,825, Sep. 10, 1992, abandoned. This application May 24, 1995, Ser. No. 448,975

Claims priority, application Japan, Sep. 10, 1991, 3-230148; Sep. 24, 1991, 3-243072; Sep. 24, 1991, 3-243078; Feb. 25, 1992, 4-037641

Int. Cl.[6] G11B *15/54*

U.S. Cl. 360—73.14 **2 Claims**



1. A tape speed control apparatus comprising:

a first reel on which a tape is wound;

a second reel for drawing the tape out or the first reel and taking up the tape;

a first motor for directly driving the first reel and giving a specific back tension to the tape;

a second motor for directly driving the second reel;

a tape speed command means for producing a tape speed command signal from a specific tape speed set from outside;

a differentiator for differentiating the tape speed command signal;

a parameter estimation unit for estimating a moment of inertia of the second reel and a winding radius of the tape wound on the second reel;

a divider for determining from an output of the parameter estimation unit a ratio of the moment of inertia of the second reel to the winding radius of the tape wound on the second reel;

a multiplier for multiplying an output of the differentiator by an output of the divider;

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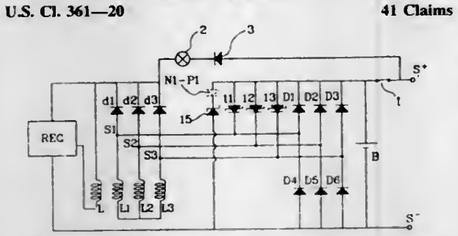
a tape speed detecting means for detecting a tape speed;
a comparing means for comparing an output of the tape speed detecting means with the tape speed command signal;
an adder for summing at least an output of the multiplier and an output of the comparing means; and
a driving circuit for generating a torque proportional to an output of the adder in the second motor;
wherein the parameter estimation unit comprises:
a winding radius ratio detector, operable when the tape is being moved, for detecting a winding a radius ratio of a winding radius of the tape wound on the first reel and the winding radius of the tape wound on the second reel at predetermined intervals of time when the tape is being moved, said winding radius ratio detector comprising: a first rotation speed detector for detecting a rotation speed of the first reel, a second rotation speed detector for detecting a rotation speed of the second reel, and a detector for detecting a rotation speed ratio of the rotation speed of the second reel detected by the second rotation speed detector with respect to the rotation speed of the first reel detected by the first rotation speed detector at the predetermined intervals of time when the tape is being moved, the detected rotation speed ratio being outputted as the winding radius ratio;
a winding area sum detector for detecting a sum of an area of a circle whose radius is the winding radius of the tape wound on the first reel and an area or a circle whose radius is the winding radius of the tape wound on the second reel;
a winding radius operator for determining the winding radius of the tape wound on the second reel from an output of the winding area sum detector and an output of the winding radius ratio detector; and
an inertia moment operator for calculating the moment of inertia of the second reel from an output of the winding radius operator.

5,604,653

PROTECTION COMPONENT FOR A THREE-PHASE ALTERNATOR USED IN AUTOMOBILE VEHICLES

Robert Pezzani, Vouvray, and Denis Berthiot, Tours, both of France, assignors to SGS-Thomson Microelectronics S.A., Saint Genis Pouilly, France

Filed Mar. 24, 1994, Ser. No. 217,393
Claims priority, application France, Apr. 9, 1993, 93 04548
Int. Cl.[6] H02H *7/125*
U.S. Cl. 361—20 **41 Claims**



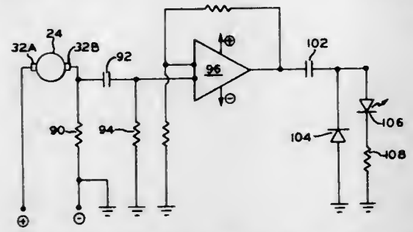
1. A protection component for a three-phase alternator associated with a rectifier, including:
an avalanche diode having a first electrode with a first polarity and a second electrode with a second polarity;
a first Shockley diode having a first electrode of the first polarity that is interconnected with the second electrode of the avalanche diode; the first electrode also being interconnected to a common terminal that is connected to a first output terminal of the rectifier, the first output terminal having the first polarity; the first Shockley diode having a second electrode being connected to a first output of the three-phase alternator;
a second Shockley diode having a first electrode of the first polarity that is interconnected with the second electrode of the avalanche diode; the first electrode of the second Shockley diode also being interconnected to the common terminal; the second Shockley diode having a second electrode being connected to a second output of the three-phase alternator;
a third Shockley diode having a first electrode of the first polarity that is interconnected with the second electrode of the avalanche diode; the first electrode of the third Shockley diode also being interconnected to the common terminal; the third Shockley diode having a second electrode being connected to a third output of the three-phase alternator; and
wherein the first electrode of the avalanche diode is connected to a second output terminal of the rectifier.

5,604,654

PERMANENT MAGNET DIRECT CURRENT MOTOR

Guillermo Wille, Hendersonville; Donald B. Pedigo, Gallatin, both of Tenn.; Harald E. Blaettner, Fort Wayne, Ind.; Bernd A. Wieland, Gaggenau, Germany, and Eldon R. Cunningham, Fort Wayne, Ind., assignors to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 77,513, Jun. 17, 1993, which is a continuation-in-part of Ser. No. 72,579, Jun. 7, 1993, abandoned. This application May 5, 1995, Ser. No. 435,210
Int. Cl.[6] H02H *5/04*
U.S. Cl. 361—23 **4 Claims**



1. A motor stalled indication circuit for providing an electrical indication that a direct current electrical motor is stalled, where stalled is defined as power applied to the brushes of the motor but the motor is not turning, said motor having brushes, said indication circuit comprising:
a high pass filter means, connected only to one of said brushes, for passing a ripple frequency output;
amplifier means, responsive to said high pass filter means, for amplifying any ripple frequency output of said filter and providing an amplified output; and
rectifying means for rectifying the amplified output and providing an electrical indication of no output when said motor is stalled and a rectified output when said motor is not stalled.

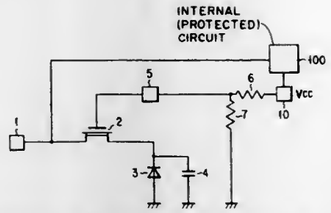
5,604,655

SEMICONDUCTOR PROTECTION CIRCUIT AND SEMICONDUCTOR PROTECTION DEVICE

Takao Ito, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 12, 1994, Ser. No. 302,998
Claims priority, application Japan, Sep. 17, 1993, 5-230678
Int. Cl.[6] H02H *9/00*
U.S. Cl. 361—56 **6 Claims**

1. A semiconductor protection circuit for protecting a main semiconductor device from a surge voltage, comprising:



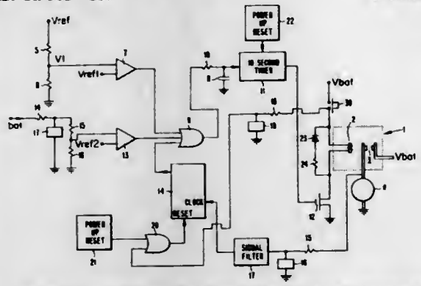
a depletion-type MOS transistor, one of a source and a drain of which is connected to an input/output terminal of said main semiconductor device;
a control terminal connected to a gate of said depletion-type MOS transistor, said control terminal applying one of first and second potentials, selected in accordance with switching between an operation state and a non-operation state of said main semiconductor device, to said gate, and said first and second potentials rendering a channel of said depletion-type MOS transistor non-conductive or conductive, respectively;
a bypass for releasing a surge current when a surge voltage is applied to said input/output terminal;
semiconductor rectifying means for connecting the other of said source and drain of said depletion-type MOS transistor to said bypass; and
a capacitor connected in parallel with said rectifying means, for connecting said other of said source and drain of said depletion-type MOS transistor to said bypass.

5,604,656

ELECTROMECHANICAL RELAYS

Ashley D. Derrick, North Humberside, England, and Nicholas Hobson, Rockford, Ill., assignors to J. H. Fenner & Co., Limited, North Humberside, England

PCT No. PCT/GB94/01438, § 371 Date Jun. 5, 1995, § 102(e) Date Jun. 5, 1995, PCT Pub. No. WO95/02254, PCT Pub. Date Jan. 19, 1995
PCT Filed Jul. 4, 1994, Ser. No. 392,989
Claims priority, application United Kingdom, Jul. 6, 1993, 9313928
Int. Cl.[6] H01H *47/00*
U.S. Cl. 361—187 **6 Claims**



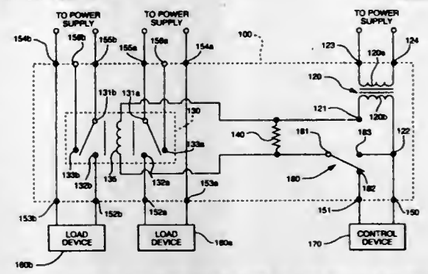
1. A device for preventing welding of the switch contacts of a relay caused by oscillation of the switch contacts due to low voltage excursions in the voltage across the relay coil, comprising a counter having a clock input which is clocked each time the switch contacts open and close following the connection of a voltage supply to the relay coil, and switching means for disconnecting the voltage supply to the relay when the clock count exceeds a predetermined number.

5,604,657

RELAY CIRCUIT HAVING A TEST SWITCH AND METHOD OF TESTING A RELAY CIRCUIT

Roger P. Michaud, Orrs Island, Me., assignor to Erie Manufacturing Company, Milwaukee, Wis.

Filed Oct. 27, 1994, Ser. No. 329,424
Int. Cl.[6] H01H *47/00*
U.S. Cl. 361—189 **15 Claims**



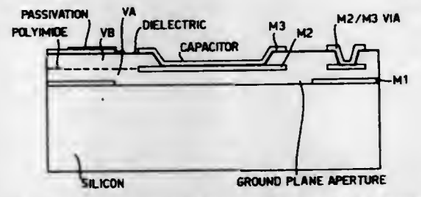
1. A relay circuit for controlling a load in response to a control device, the relay circuit comprising:
a relay switch provided in a power supply line to the load, said relay switch including a relay coil having a first terminal connected to a first power supply terminal, and a second terminal; and
a switch having a first terminal connected to said second terminal of said relay coil, a second terminal connected to a second power supply terminal, and a third terminal connected to a first terminal of the control device, the second power supply terminal being connected to a second terminal of the control device,
wherein said switch selectively connects said second terminal of said relay coil with the control device when the relay circuit is in an operating mode, and selectively connects said second terminal of said relay coil with said second power supply terminal while disconnecting the control device from the relay circuit when the relay circuit is in a test mode.

5,604,658

TRIMMABLE CAPACITOR

David J. Pedder, Long Compton, Great Britain, assignor to Plessey Semiconductors Limited, United Kingdom

Filed Jul. 12, 1995, Ser. No. 501,630
Claims priority, application United Kingdom, Jul. 15, 1994, 9414362
Int. Cl.[6] H01G *5/011*
U.S. Cl. 361—277 **7 Claims**



1. A multi-layer metallization/dielectric structure on a substrate, and forming a capacitor providing a trimmable value of capacitance, said structure comprising:
a first metallization layer formed on said substrate;
a first dielectric layer formed over at least part of said first metallization layer;
a second metallization layer formed over said first dielectric layer;
a second dielectric layer formed over said second metallization layer;

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a third metallization layer formed over said second dielectric layer;

at least one of said second and third metallization layers being formed as a first plurality of separate segments of predetermined areas;

said first metallization layer being formed as a second plurality of narrow metallization links equal in number to said first plurality and extending from a common connection; and

means, including respective via connections through at least said first dielectric layer, for connecting each of said separate segments to a respective one of said links.

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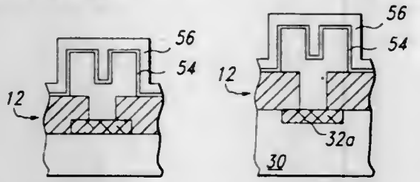
MICROELECTRONIC DEVICE WITH CENTERED STORAGE CAPACITOR CAVITY SIZED LESS THAN FEATURE SIZE

Sudhir K. Madan, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 288,515, Aug. 10, 1994, Pat. No. 5,539,612, which is a continuation of Ser. No. 941,484, Sep. 8, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 486,128

Int. Cl.[6] H01G *4/005;4/06*

U.S. Cl. 361—303 **7 Claims**



1. A microelectronic device comprising:

a) a substrate including at least one conductive region;

b) an insulating layer overlying said substrate and having at least one storage node contact window overlying at least one selected area of said conductive region;

c) at least one storage electrode that is in electrical communication with said at least one selected area of said conductive region of said substrate through said at least one storage node contact window and having exterior sidewalls extending a selected distance above said insulating layer, said at least one storage electrode including interior sidewalls forming a cavity substantially centered above said at least one storage node contact window and having a horizontal dimension less than a minimum lithographic feature size;

d) a dielectric layer conformably covering said storage electrode, including said interior and exterior sidewalls; and

e) a conductive layer conformably covering said dielectric layer and forming a plate electrode capacitively-coupled to said storage electrode.

5,604,660

ELECTROCHEMICAL CELL HAVING SOLID POLYMER ELECTROLYTE AND ASYMMETRIC INORGANIC ELECTRODES

Lijun Bai, Vernon Hills; John E. Nerz, Hawthorn Woods, and Changming Li, Vernon Hills, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

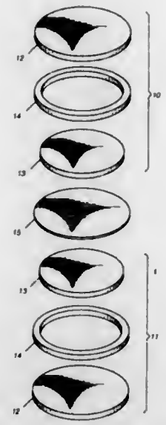
Continuation of Ser. No. 513,648, Aug. 10, 1995, Pat. No. 5,518,838. This application Jan. 18, 1996, Ser. No. 588,219

Int. Cl.[6] H01G *9/02*

U.S. Cl. 361—525 **4 Claims**

1. An electrochemical capacitor device comprising:

an anode from the group consisting of zinc, zinc oxides, zinc hydroxides, zinc alloys, and combinations thereof;



a cathode from the group consisting of manganese, manganese oxide, manganese alloys, and combinations thereof; and

a solid polymer electrolyte with and disposed between said anode and said cathode, said solid polymer electrolyte comprising a binder of one or more polymers selected from the group consisting of polyethylene oxide, polyvinyl(alcohol), polyvinyl acetate, polyacrylamide, poly(vinylpyrrolidone), poly-(2-vinylpyridine), poly(4-vinylpyridine), and polyethyleneimine, and having dispersed therein H_2SO_4 or H_3PO_4.

5,604,661

STRUCTURE FOR MOUNTING SWITCH OR THE LIKE TO ELECTRIC APPARATUS

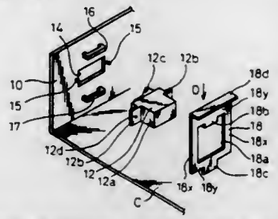
Hiroshi Nagao, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 10, 1995, Ser. No. 513,234

Claims priority, application Japan, Dec. 28, 1994, 6-326623

Int. Cl.[6] H02B *1/04*

U.S. Cl. 361—643 **14 Claims**



1. A structure mounting an electric element to an electric apparatus, said structure comprising:

an electric element having a body containing a flat mounting surface;

said electric apparatus including a casing having a wall containing a flat surface engaging the mounting surface of said body and an opening receiving said electric element and exposing at least a portion thereof through said opening;

a plurality of support members disposed on the wall surface of the casing on opposite sides of the opening; and

a substantially straight elongated elastic member of substantially constant cross-section extending between, and being retained at opposite ends by, each of said support members, said elastic member, intermediate its ends, engaging said electric element to bias said mounting surface of said electric element against said surface of said casing wall by the elastic deformation of the elastic member.

5,604,662

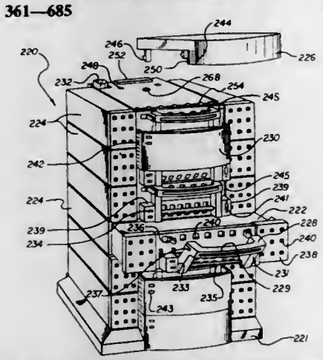
EXPANDABLE MODULAR DATA STORAGE SYSTEM

Michael Anderson, Moorpark; Donald E. Shewmon, Thousand Oaks; Michael L. Steen, Newbury Park, and Martin E. Smith, Camarillo, all of Calif., assignors to StreamLogic Corporation, Chatsworth, Calif.

Continuation of Ser. No. 345,492, Nov. 28, 1994, abandoned, which is a continuation of Ser. No. 27,668, Mar. 8, 1993, abandoned, and a continuation of Ser. No. 932,794, Aug. 20, 1992, abandoned. This application Nov. 20, 1995, Ser. No. 562,559

Int. Cl.[6] G06F *1/16;* **H05K** *7/10*

U.S. Cl. 361—685 **31 Claims**



1. An expandable modular data storage system, comprising:

a plurality of data storage devices, each of the data storage devices including a device power connector;

a plurality of substantially identical, vertically stacked storage device housings adapted to slidably receive a data storage device, each storage device housing defining a top and a bottom and including an interior power connector, a top power connector and a bottom power connector, the interior power connector being adapted to engage the device power connector of a data storage device received in a storage device housing and the top and bottom power connectors being located such that the top power connector of one storage device housing mates with the bottom power connector of another storage device housing stacked thereon; and

at least one flexible latching member associated with at least one of the storage device housings, the flexible latching member engaging an adjacent storage device housing in response to the positioning of the at least one storage device housing in close proximity to the adjacent storage device housing.

5,604,663

PORTABLE COMPUTER DOCKING STATION HAVING A ROTATABLE MEMBER AND AUDIO SPEAKERS MOUNTED ON THE ROTATABLE MEMBER

Seong S. Shin, Cupertino, and Young S. Kim, Los Altos, both of Calif., assignors to Daewoo Telecom Ltd., Inchon, Rep. of Korea

Filed Dec. 27, 1994, Ser. No. 364,573

Int. Cl.[6] G06F *1/16;* **H05K** *5/00*

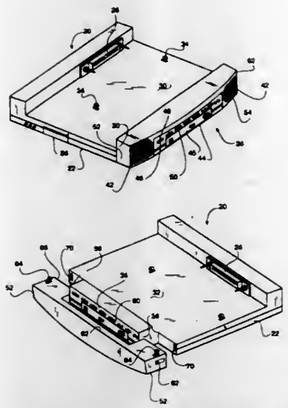
U.S. Cl. 361—686 **20 Claims**

14. A portable computer docking station comprising:

a base for supporting a portable computer, the base having an electrical connector for connection with the portable computer and a hinge block;

a rotatable member rotatably attached to the hinge block, the rotatable member having a first extended position and a second locking position;

audio speakers mounted on the rotatable member, the speakers being electronically attached to the electrical connector to respond to signals generated by the portable computer; and



electronic controls mounted on the base for regulating operation of the audio speakers,

whereby, when the base supports a portable computer the electrical connector connects with the portable computer and the rotatable member rotates from the first extended position to the second locking position to secure the portable computer with the base.

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Patent Not Issued For This Number

5,604,665

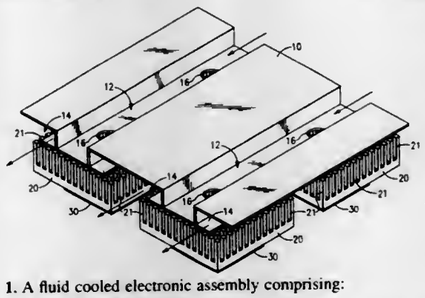
MULTIPLE PARALLEL IMPINGEMENT FLOW COOLING WITH TUNING

Gregory M. Chrysler; Richard C. Chu, both of Poughkeepsie, and Richard M. Koenig, Gardiner, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1995, Ser. No. 497,579

Int. Cl.[6] H05K *7/20*

U.S. Cl. 361—703 **16 Claims**



1. A fluid cooled electronic assembly comprising:

an exterior housing;

a substrate having electronic components disposed thereon, said substrate being disposed within said housing;

a plurality of heat sinks disposed in thermal contact with said electronic components, said heat sinks including a plurality of surface area enhancing projections extending therefrom, said projections permitting introduction therebetween of a coolant fluid in a direction substantially aligned with said projections, while also permitting exit of said coolant fluid in directions substantially perpendicular to said projections; and

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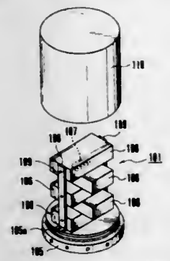
an integrated coolant fluid supply and exhaust distribution path-defining structure, said path-defining structure being in the form of a substantially flat unitary single piece slab having a plurality of interleaved supply and exhaust channels disposed therein in side-by-side alternation, said supply channels including apertures disposed therein aligned with said heat sink projections, said exhaust channels being open to receive coolant fluid flow subsequent to its passage through said heat sink projections, and wherein said housing, said substrate, and said path-defining structure defining a closed fluid flow path.

5,604,666

OUTDOOR COMMUNICATION DEVICE HAVING DISK-LIKE MOUNTING PORTION, UNITS STACKED ON THE MOUNTING PORTION, AND FIXING MEMBERS FOR FIXING THE UNITS ON THE MOUNTING PORTION

Kazuhisa Yoshizawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 20, 1995, Ser. No. 426,117
Claims priority, application Japan, Apr. 20, 1994, 6-104393
Int. Cl.[6] H05K *7/02;5/00*
U.S. Cl. 361—735 **7 Claims**



1. A structure of an outdoor communication device comprising:
a device body including,
a disk-like mounting portion,
a plurality of units, stacked and mounted on said disk-like mounting portion in rectangular parallelepiped cases, for separately storing electrical circuits for driving said device, and
a cylindrical cover, having an opening portion on one end face side, for storing said stacked units, the opening portion being fixed to said disk-like mounting portion; and
a mounting base on which said disk-like mounting portion is detachably mounted such that said device body is suspended from and fixed to said mounting base with said disk-like mounting portion being located above said device body; and
fixing members for fixing said units while said units are stacked on said disk-like mounting portion, such that said vertically adjacent units are stacked substantially in a form of a cross.

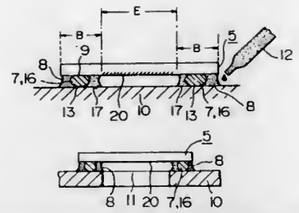
5,604,667

MOUNTING STRUCTURE FOR MOUNTING A PIEZOELECTRIC ELEMENT

Ryoichi Morimoto, Kyoto, Japan, assignor to Murata Mfg. Co., Ltd., Nagaokakyo, Japan

Continuation of Ser. No. 255,362, Jun. 8, 1994, abandoned, which is a continuation of Ser. No. 134,415, Oct. 8, 1993, Pat. No. 5,359,494. This application Jun. 30, 1995, Ser. No. 496,918
Claims priority, application Japan, Oct. 13, 1992, 4-77526 U; Jan. 8, 1993, 5-2825 U
Int. Cl.[6] H05K *7/02;* **H01L** *41/04*
U.S. Cl. 361—760 **11 Claims**

1. In a mounting arrangement for mounting a piezoelectric element to a circuit board,



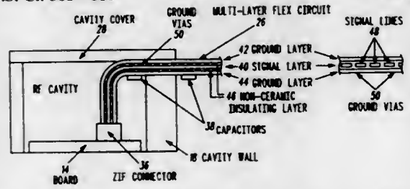
the piezoelectric element having a plurality of electrical connections,
the electrical connections extending between and directly supporting the piezoelectric element from the circuit board,
a substantially nonconductive bonding agent, which is different from the electrical connections, formed at least partially around at least one of the electrical connections in order to strengthen the at least one electrical connection and substantially surrounding the at least one electrical connection,
the improvement comprising:
the piezoelectric element having opposite ends and a medial portion located therebetween, the electrical connections being located at the opposite ends so that the medial portion of the piezoelectric element is free to vibrate; and
the bonding agent not extending beneath the medial portion.

5,604,668

APPARATUS FOR SHIELDING ELECTRONIC CIRCUIT BOARDS

Katharine M. Wohrstein, Mount Prospect, and Vito A. Copertino, Carol Stream, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 6, 1995, Ser. No. 568,213
Int. Cl.[6] H05K *9/00*
U.S. Cl. 361—816 **17 Claims**



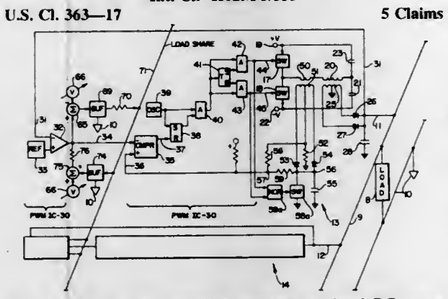
1. An apparatus for shielding electronic circuit boards, the apparatus comprising:
a compartment assembly including a wall defining first and second compartments, said wall having a first surface and a second surface substantially perpendicular to the first surface;
an electrical connection layer having a first ground layer in electrical contact with the wall of the compartment assembly, a non-ceramic insulating layer connected to the first ground layer, and a conductive layer connected to the non-ceramic insulating layer, said conductive layer electrically coupling a first circuit board in the first compartment and a second circuit board in the second compartment; and
a cover connected to the electrical connection layer;
said electrical connection layer substantially parallel to the second surface and substantially parallel to the cover over a region where the ground layer is in electrical contact with the wall.

5,604,669

RESONANT, CURRENT MODE REGULATED, HALF-BRIDGE POWER SUPPLY

Maurice L. Strong, III, Wheeling, Ill., assignor to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Mar. 28, 1995, Ser. No. 413,030
Int. Cl.[6] H02M *3/335*
U.S. Cl. 363—17 **5 Claims**



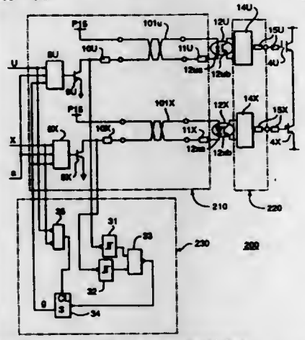
1. A current mode controlled, resonant regulated DC power supply, comprising:
a half-bridge resonant inverter including a power output transformer having a primary winding and a secondary winding;
a DC converter driven by said secondary winding, for connection to a load;
a pulse width modulator having a comparator responsive to an error amplifier connected to a reference voltage and to the output of said converter, and connected to control said inverter in a manner to regulate the voltage of said output in response thereto; and
means responsive to the current in said primary winding for providing to the other input of said compare circuit a ramp voltage dependent on the current in said primary winding which increases the modulation pulse width of said modulator in response to a current imbalance in said inverter.

5,604,670

POWER CONVERTING APPARATUS AND CONTROL DEVICE FOR A POWER CONVERTING APPARATUS

Michiyoshi Sonoda, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Filed May 15, 1995, Ser. No. 441,198
Claims priority, application Japan, Aug. 15, 1994, 6-191539; Dec. 22, 1994, 6-320846
Int. Cl.[6] H02H *7/122*
U.S. Cl. 363—56 **20 Claims**



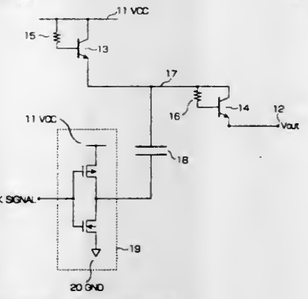
1. A power converting apparatus comprising:
conversion means including first and second semiconductor devices coupled in series;
control means for outputting a plurality of control signals for switching on the first and second semiconductor devices; and
protection means for detecting the control signals and cutting off the control signals for the first and second semiconductor devices when the control signals for the first and second semiconductor devices are detected simultaneously.

5,604,671

CHARGE PUMP CIRCUIT FOR BOOSTING VOLTAGE

Hitoshi Okamura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 14, 1995, Ser. No. 421,890
Claims priority, application Japan, Apr. 18, 1994, 6-078298
Int. Cl.[6] H02M *3/18*
U.S. Cl. 363—60 **6 Claims**



1. A charge pump circuit comprising:
a first input terminal,
an output terminal,
a first capacitor element having first and second electrodes, said first electrode connected to said input terminal,
a first bipolar transistor having a current path connected between said second electrode of said first capacitor element and a high potential source line,
a second bipolar transistor having a current path connected between said second electrode of said first capacitor element and said output terminal,
a second input terminal,
a second capacitor element having a first electrode connected to said second input terminal and a second electrode connected to a base electrode of said first bipolar transistor through a resistor element, and
a third bipolar transistor having a current path connected between said second electrode of said second capacitor element and said high potential source line.

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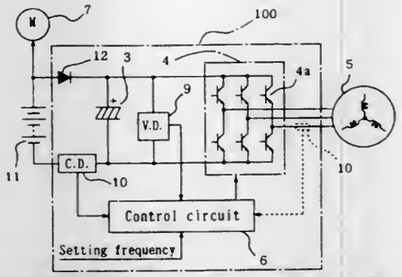
INVERTER APPARATUS FOR AIR CONDITIONER

Makoto Yoshida, Kusatsu, and Naomi Goto, Kurita-gun, both of Japan, assignors to Matsushita Electric Industrial Co., Inc., Osaka, Japan

Filed Sep. 11, 1995, Ser. No. 526,520
Claims priority, application Japan, Sep. 16, 1994, 6-220709
Int. Cl.[6] H02M *3/24;* **H02P** *5/28*
U.S. Cl. 363—97 **5 Claims**

1. An inverter apparatus for air conditioner, which converts DC voltage supplied from a DC power source into pseudo AC voltage of variable voltage and variable frequency by means of pulse-width modulation, comprising:

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switching means for making switching operation to a DC voltage supplied thereto;

voltage detection means for detecting a DC voltage applied to said switching means; and

control means for controlling said switching means to generate a pulse train whose pulse-width is modulated with a predetermined frequency-voltage characteristic; wherein

said control means refers to pulse-widths of said pulse train for holding said frequency-voltage characteristic when said DC voltage is a nominal DC voltage of said DC power source, and said control means varies said pulse-widths in response to degree of variation of said DC voltage against said nominal DC voltage, and

when said DC voltage has an insufficient value to obtain said frequency-voltage characteristic, said control means controls said switching means to issue a maximum AC voltage obtained by said value of the DC voltage independent of frequency.

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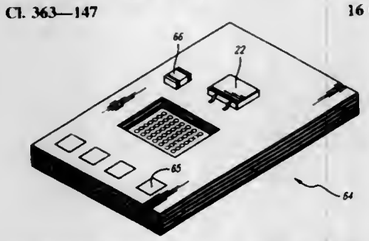
LOW TEMPERATURE CO-FIRED CERAMIC SUBSTRATES FOR POWER CONVERTERS

Robert D. Washburn, Malibu; Robert F. McClanahan, Valencia, and Andrew A. Shapiro, Orange, all of Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Filed Jun. 7, 1995, Ser. No. 479,293

Int. Cl.[6] H01L *23/12*

U.S. Cl. 363—147 **16 Claims**



1. An electronic power converter circuit formed within a low temperature co-fired ceramic substrate comprising:

(1) a low temperature co-fired ceramic substrate comprising multiple layers; and

(2) an electronic power converter circuit wherein a selected plurality of the passive components thereof are chosen from the group consisting of capacitors, resistors, inductors, and transformers and are formed as an integral part of one or more of said multiple layers of said low-temperature co-fired ceramic substrate.

5,604,674

DRIVING CIRCUIT MODULE

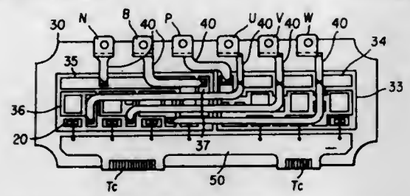
Noriho Terasawa, Nagano, Japan, assignor to Fuji Electric Co., Ltd., Japan

Filed Aug. 7, 1995, Ser. No. 511,330

Claims priority, application Japan, Aug. 10, 1994, 6-187976

Int. Cl.[6] H02M *1/00*

U.S. Cl. 363—147 **14 Claims**



1. A driving circuit module comprising:

a driving circuit device having a main circuit including power semiconductor elements connected in a bridge circuit, said bridge circuit being connected between a pair of power supply points comprised of first and second input terminals, said semiconductor elements including semiconductor chips and said main circuit further including output terminals;

control input circuits including control input terminals and control chips for controlling the respective semiconductor elements; and

a rectangular base plate having a length direction and a width direction; wherein

the semiconductor chips are aligned along the length direction of the rectangular base plate;

the control chips are aligned along the length direction of the rectangular base plate and are displaced along the width direction of the rectangular base plate from corresponding semiconductor chips;

the input and output terminals of the main circuit are arranged on a first long side of the rectangular base plate along which the semiconductor chips are arranged, the input and output terminals being connected with the corresponding semiconductor elements via respective conductors; and

the control input terminals are arranged on a second long side of the rectangular base plate along which the control chips are arranged, the control input terminals being connected with the respective control input circuits via a wiring board.

5,604,675

APPARATUS AND METHOD FOR CONTROLLING EXECUTIONS OF MULTIPLE FUNCTIONS IN AN ELECTRIC HOME APPLIANCE

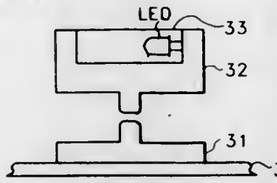
Kwon-pyo Hong, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Sep. 9, 1991, Ser. No. 756,804

Claims priority, application Rep. of Korea, Sep. 12, 1990, 90-14363

Int. Cl.[6] G05B *11/01*

U.S. Cl. 364—146 **21 Claims**



1. An apparatus for controlling continuously executions of multiple functions in an appliance controlled and operated according to a program in which continuous execution operations desired by a user are stored, the apparatus comprising:

key input and display means for enabling user selection and display of predetermined continuous multiple function data desired by said user, said function data being indicative of individual ones of a plurality of functions comprising fast-forward, play, rewind, and record; and

control means for storing said function data supplied from said key input and display means, and for controlling predetermined functions to be sequentially carried out according to the stored function data.

5,604,676

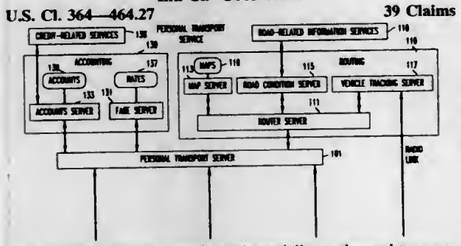
SYSTEM AND METHOD FOR COORDINATING PERSONAL TRANSPORTATION

Arno A. Penzias, Highland Park, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jul. 25, 1994, Ser. No. 280,040

Int. Cl.[6] G06F *17/60*

U.S. Cl. 364—464.27 **39 Claims**



1. A system for coordinating substantially on-demand transportation, comprising:

means for receiving at least one request for a ride, said request specifying a pick-up location and a destination location;

means for storing a route for each of a plurality of vehicles;

means for monitoring at least a present position of each of said vehicles and the traffic conditions existing along their respective routes; and

means for developing and updating a path for said ride as a function of current factors including (i) said pick-up location, (ii) said destination location, (iii) said present position of said vehicles, (iv) said route for each of said vehicles, and (v) said traffic conditions, and on changes in the current factors; said path for said ride specifying an ordered arrangement of at least one of said vehicles and the locations of any required transfers.

5,604,677

CONTROL OF CNC MACHINE TOOLS

Glenn C. Brien, Harkaway, Australia, assignor to Anca Pty. Ltd., Bayswater North, Australia

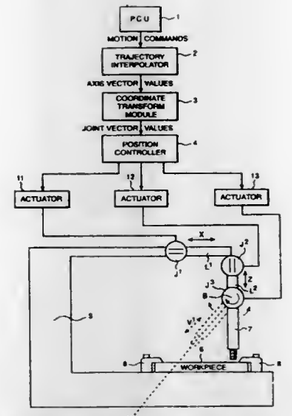
Continuation of Ser. No. 157,091, Dec. 3, 1993, Pat. No. 5,471,395. This application Jun. 7, 1995, Ser. No. 481,950

Claims priority, application Australia, Jun. 4, 1991, PK6494

Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—474.28 **18 Claims**

1. A computer program recorded on memory or data storage means for a multi-axis computer numerically controlled (CNC) machine having workpiece mounting means for mounting a workpiece, a tool operable upon said workpiece, a plurality of machine members and a plurality of controllable joint means movable under the control of a part program to cause relative movement between the tool and the workpiece mounting means so as to cause the tool to move along a programmed path relative to the workpiece mounting means, said machine having a plurality of principal programmable axes for the machine which axes constitute the minimum number of axes required to position the tool relative to the workpiece mounting means, said program recorded on said memory or data storage means synthesising at least one additional concurrently programmable axis for the machine and automatically controlling relative movement of said tool and said workpiece mounting means in relation to said additional concurrently programmable axis in accordance with said part program without physical location of said additional concurrently programmable axis by said joint means of the machine.



5,604,678

CONTROLLER FOR A PROGRESSIVE DIE ASSEMBLY FOR THE MANUFACTURE OF LIMITED PARTS

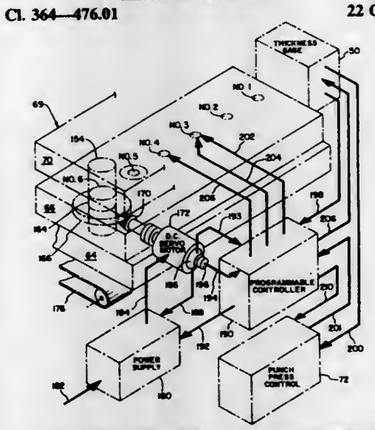
Thomas R. Neuenschwander, Fort Wayne, Ind., assignor to L.H. Carbide Corporation, Fort Wayne, Ind.

Continuation of Ser. No. 43,002, Apr. 5, 1993, Pat. No. 5,377,115, which is a division of Ser. No. 874,860, Apr. 28, 1992, Pat. No. 5,373,622, which is a division of Ser. No. 724,866, Jul. 2, 1991, Pat. No. 5,123,155, which is a continuation of Ser. No. 171,555, Mar. 22, 1988, Pat. No. 5,087,849, which is a continuation of Ser. No. 853,207, Apr. 17, 1986, Pat. No. 4,738,020, which is a division of Ser. No. 478,692, Mar. 25, 1983, Pat. No. 4,619,028. This application Jul. 25, 1994, Ser. No. 279,787

The portion of the term of this patent subsequent to Apr. 5, 2013, has been disclaimed.

Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—476.01 **22 Claims**



1. A controller for providing control signals to a progressive die assembly, the progressive die assembly including advancing means for advancing sheet stock material, punching means for forming

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laminas from the sheet stock material, and rotating means for rotating at least one lamina prior to stacking and interlocking said at least one lamina with another lamina to thereby form a stack of laminas, the improvement comprising:

selection means for selecting an arc through which to rotate said at least one lamina relative to a said another lamina prior to stacking and interlocking said at least one lamina; and

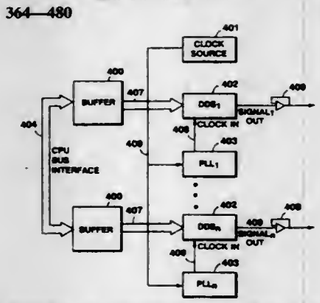
angular rotation means for providing electrical control signals to the said rotating means to enable the said rotating means to rotate said at least one lamina relative to said another lamina through said selected arc prior to stacking and interlocking said at least one lamina to thereby compensate for lamina thickness variations.

5,604,679

SIGNAL GENERATING DEVICE USING DIRECT DIGITAL SYNTHESIS

James C. Slater, Palo Alto, Calif., assignor to Nomadic Technologies, Inc., Mountain View, Calif.

Filed Oct. 17, 1994, Ser. No. 324,520
Int. Cl.[6] G06F *17/50*
U.S. Cl. 364—480 **12 Claims**



1. An apparatus for simultaneously generating more than one analog signal for use in testing AC power lines, comprising:

a plurality of monolithic direct digital synthesis (MDDS) circuit, each producing an analog MDDS output signal having a frequency less than 100 Hz and each having at least one digital MDDS input for specifying a desired signal characteristic of the MDDS output signal;

at least one clock, generating one clock signal coupled to all the MDDS circuits, the clock having a frequency greater than 10 MHz; and

a microprocessor executing a computer program that communicates desired signal characteristics to the MDDS inputs, wherein at least one of the desired signal characteristics is a command for a frequency less than 100 Hz.

5,604,680

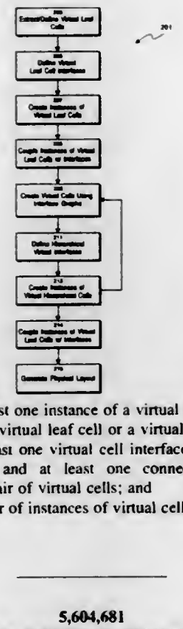
VIRTUAL INTERFACE REPRESENTATION OF HIERARCHICAL SYMBOLIC LAYOUTS

Cyrus Bamji, and Ravi Varadarajan, both of Fremont, Calif., assignors to Cadence Design Systems, Inc., San Jose, Calif.

Filed Aug. 15, 1994. Ser. No. 290,364
Int. Cl.[6] G06F *17/50*
U.S. Cl. 364—491 **22 Claims**

1. A method for symbolically representing a circuit layout comprised of a plurality of circuit elements, the circuit elements defined without geometrical values, the method comprising:

a) defining at least one virtual cell containing a topological constraint model of a plurality of circuit elements, a virtual cell being either a virtual leaf cell or a virtual hierarchical cell;



b) creating at least one instance of a virtual cell, the virtual cell being either a virtual leaf cell or a virtual hierarchical cell;

c) defining at least one virtual cell interface between a pair of virtual cells, and at least one connectivity relationship between the pair of virtual cells; and

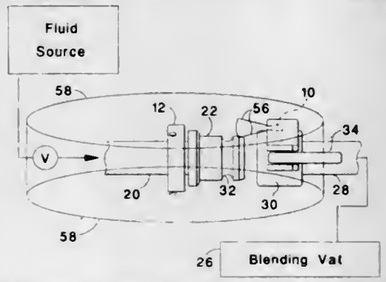
d) coupling a pair of instances of virtual cells with a virtual cell interface.

5,604,681

COUPLER IDENTIFICATION SYSTEMS

Robert C. Koeninger, Fairfield, Ohio, assignor to Dover Corporation, New York, N.Y.

Filed Jun. 3, 1994, Ser. No. 253,545
Int. Cl.[6] B67D *5/01*
U.S. Cl. 364—509 **16 Claims**



1. A system for treating fluids selected from a plurality of fluid sources,

said systems comprising

a plurality of supply conduits, respectively, connected to known, fluid sources,

each of said supply conduits having a distal end from which fluid in the fluid source, to which it is connected, may be discharged,

at least one utilization conduit having a distal end adapted for connection to the distal end of a supply conduit,

means for sealingly connecting the distal end of the utilization conduit to the distal end of any one of the supply conduits, and

utilization signal generating means characterized by

antenna means disposed adjacent the distal end of each supply conduit,

means for transmitting a request signal from each antenna means,

a tag disposed adjacent the distal end of the utilization conduit, said tag comprising means for generating an identifying signal,

said means for generating an identifying signal being actuated by the request signal transmitted from the antenna means of a supply conduit when the utilization conduit is connected thereto, and

means responsive to generation of said identifying signal for generating a utilization signal indicative of the supply conduit to which the utilization conduit is connected,

further characterized in that

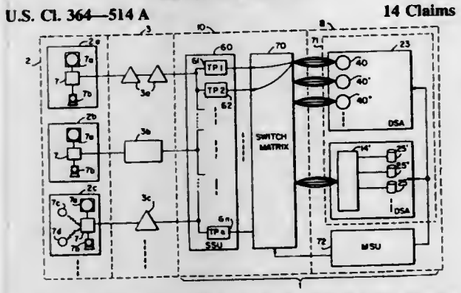
each antenna means comprises a wound coil disposed generally coaxially of the supply conduit with which it is associated and generates a magnetic field which is disposed coaxially of that supply conduit, said magnetic field being toroidal and having a longitudinal dimension substantially greater than its diameter.

5,604,682

INFORMATION SERVICE CONTROL POINT WHICH RETRIEVES INFORMATION AS BLOCKS OF DATA AND OUTPUTS THE RETRIEVED DATA VIA A COMMUNICATIONS LINK

Robert McLaughlin, Arlington, and M. James Bullen, Reston, both of Va., assignors to Image Telecommunications Corp., Westport, Conn.

Division of Ser. No. 136,185, Oct. 15, 1993. This application Apr. 19, 1996, Ser. No. 634,614
Int. Cl.[6] H04N *7/14*
U.S. Cl. 364—514 A **14 Claims**



1. A system for communicating data, the data together forming at least one title in an interactive services information database, from a central station configured to administrate the information database to a plurality of remote stations, said system comprising:

storage means in the information database for storing the data;

retrieving means operatively connected to said storage means for retrieving the data as data blocks, wherein each data block is a sequential segment of the data;

a communications link operatively connected to said storage means and said retrieving means for receiving the retrieved data blocks and transmitting the retrieved data blocks from the central station; and

a plurality of communications paths connecting respective remote stations with said communications link,

wherein said communications link comprises:

an array of trunk processors, each associated with at least one of said communications paths; and

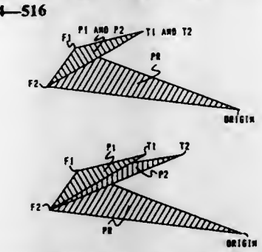
a switch matrix operatively connected to said storage means, said retrieving means, and said array of trunk processors, wherein said switch matrix establishes switch paths between said storage means and said array of trunk processors in accordance with commands from said retrieving means.

5,604,683

EVALUATING TARGET TRACKING WHEN USING MULTIPLE SENSORS

James A. Roecker, Boulder, Colo., assignor to Lockheed Martin Corporation, Bethesda, Md.

Filed Sep. 12, 1991, Ser. No. 758,014
Int. Cl.[6] G01S *11/04*
U.S. Cl. 364—516 **9 Claims**



9. In a system for tracking targets from at least two passive sensors relatively spaced, the method comprising the steps of:

determining at least two planes each plane being defined by the location of one sensor, a target associated with the sensor, and the location of the other sensor; and

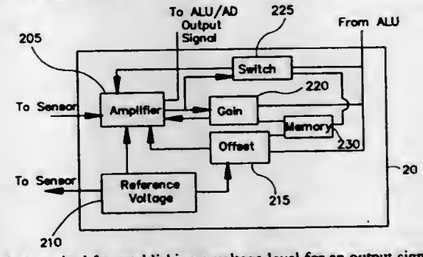
qualifying said targets as the same target if said planes are the same and as separate targets if the planes are not the same.

5,604,684

EMBEDDED PROGRAMMABLE SENSOR CALIBRATION METHOD

Robert D. Juntunen, 5767 Vine Hill Rd., Minnetonka, Minn. 55345

Filed Dec. 30, 1993, Ser. No. 175,908
Int. Cl.[6] G01F *1/60*
U.S. Cl. 364—571.04 **4 Claims**



1. A method for establishing a voltage level for an output signal from a sensor and its associated correction circuit, the sensor having a desired null output level achieved by said correction circuit that is substantially equal to Vo2 and a desired full scale output equal to Vo1, said Vo1 and Vo2 levels being the approximate range of acceptable input to an analog to digital converter that accepts output from said correction circuit, the correction circuit comprising an amplifier having first and second input ports and an output port said output port supplying said output level as its output, and a resistance R1 connected to provide an offset signal to said second input port, the sensor being connected to the first input port, wherein the method for providing a voltage value for said offset signal comprises the steps of:

(a) connecting the sensor output to a measurement device so as to be able to measure the output signal of the sensor at a zero stimulus level (named Vlo) and at a full scale level (named Vhi), said connection to a measurement device being named a measurement configuration;

(b) measuring the output signal of the sensor at both Vlo and Vhi;

(c) based on these measurements, determining the offset voltage value (named Vr) by calculating the relationship defined as:

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$Vr=(Vhi*Vo2-Vlo*Vo1)/(Vhi-Vo1-Vlo+Vo2)$;

(d) based again on these measurements and the determined Vr, determining a gain voltage value (named gain') for correcting the sensor output signal for span error using the equations:

$Rf=((Vhi-Vo1)*R1)/(Vr-Vhi)$

$gain'=Rf/R1$;

(e) configuring the correction circuit to apply said gain voltage and said offset voltage values to said first input port of said amplifier; and

(f) disconnecting the sensor output from said measurement device.

5,604,685

CIRCUIT ARRANGEMENT FOR THE LINEARIZATION AND TEMPERATURE COMPENSATION OF SENSOR SIGNALS

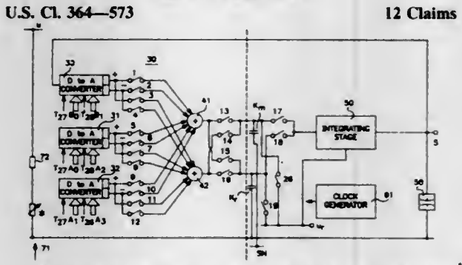
Petrus H. Seesink, Chamonixlaan 210, NL-5627 KE Eindhoven, Netherlands; Georg Schneider, Talstrasse 55, D-79650 Schopfheim, Netherlands; Richard Wagner, Im Hungerich 16, D-79618 Rheinfelden, Netherlands, and Vierten M. Mellert, Obertal 22, D-77790 Steinach, Netherlands

Filed Nov. 18, 1994, Ser. No. 342,218

Claims priority, application European Pat. Off., Nov. 11, 1994, 94117802

Int. Cl.[6] G01L *19/04*

U.S. Cl. 364—573 **12 Claims**



1. A circuit arrangement for the linearization and temperature compensation of sensor signals from capacitive sensors which comprises:

a measuring capacitor;

a reference capacitor;

a clock generator;

a temperature-dependent voltage divider with a resistive temperature sensor connected between an operating potential and a first reference potential, particularly ground, and measuring the temperature of the measuring capacitor;

an adjusting circuit controlled by the clock generator for generating the output signal of the circuit arrangement, the adjusting circuit acting on the measuring capacitor and the reference capacitor by analog signals,

the adjusting circuit having a first input connected to the operating potential, a second input connected to the temperature sensor, and a third input; and

an integrating stage controlled by the clock generator and connected to the measuring capacitor and the reference capacitor

the integrating stage having an output which is connected to the third input of the adjusting circuit and is the output of the circuit arrangement and

the output of the circuit arrangement having an output signal, S, indicative of one of the linearized and temperature compensated sensor signals and obeying the following equation:

$$S=\frac{U\cdot\{a_0+A_1\cdot v_t+(a_2+a_3\cdot v_t)\cdot c_v\}}{b_0+b_1\cdot c_v}$$

where

C_v is one of the following capacitance ratios:

$C_{V1}=(C_m-C_r)/C_m$,

$C_{V1}=(C_m-C_r)/(C_m+C_r)$,

$C_{V3}=(C_m-C_r)/C_r$;

C_m is the capacitance of the measuring capacitor;

C_r is the capacitance of the reference capacitor;

U is the operating potential;

a_0 is a zero adjustment value;

a_1 is a temperature coefficient zero adjustment value;

a_2 is a first span adjustment value;

a_3 is a temperature coefficient span adjustment value;

b_0 is a second span adjustment value;

b_1 is a linearization adjustment value, and

v_1 is the temperature-dependent resistance ratio of the voltage divider.

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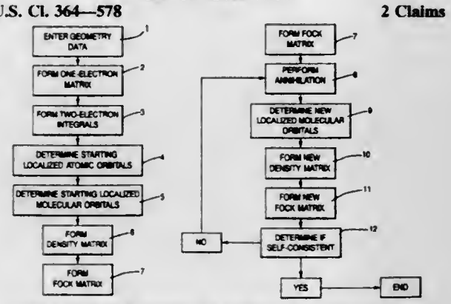
METHOD AND APPARATUS FOR ANALYZING CHEMICAL SYSTEMS

James J. P. Stewart, Colorado Springs, Colo., assignor to Fujitsu, Ltd., Kawasaki, Japan

Filed Jul. 16, 1993, Ser. No. 92,687

Int. Cl.[6] G06F *17/50*

U.S. Cl. 364—578 **2 Claims**



1. An apparatus for analyzing a chemical compound, comprising:

memory means for storing information on molecular geometry of a model of a model of the chemical compound, the chemical compound having an energy which converges;

processing means for:

forming localized molecular orbitals of the chemical compound based on the molecular geometry;

forming a Fock matrix for the chemical compound based on the localized molecular orbitals;

determining distances between bonding orbitals ψ_i and non-bonding orbitals ψ_j^*:

eliminating an interaction between bonding orbitals ψ_i and non-bonding orbitals ψ_j^* only if the distance between the bonding orbital ψ_i, and the non-bonding orbital ψ_j^* is less than a predetermined distance, using a corresponding member F of the Fock matrix by diagonalizing the following 2×2 matrix:

$$\begin{vmatrix} \langle\Psi_i F\Psi_i\rangle & \langle\Psi_i F\Psi_j^*\rangle \\ \langle\Psi_i F\Psi_j^*\rangle & \langle\Psi_j^* F\Psi_j^*\rangle \end{vmatrix}$$

determining if the energy of the chemical compound has converged within a preset limit; and

repeating the formation of localized molecular orbitals, the formation of the Fock matrix and the elimination of the interaction between bonding orbitals ψ_i and non-bonding orbitals ψ_j^* if it is determined that the energy of the chemical compound has not converged within the preset limit; and

output means for producing an output analysis of the chemical compound if the processing means determines that the energy of the chemical compound has converged within the preset limit.

5,604,687

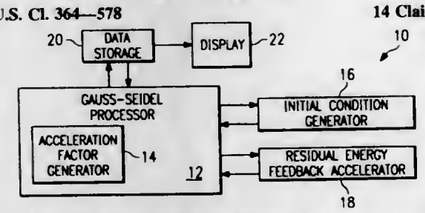
THERMAL ANALYSIS SYSTEM AND METHOD OF OPERATION

Ming J. Hwang, Richardson, and Darvin R. Edwards, Garland, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 31, 1994, Ser. No. 189,401

Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—578 **14 Claims**



1. A thermal analysis system for analyzing a thermal model of an object, comprising:

a Gauss-Seidel processor operable to analyze a resistor network thermal model of an object by performing a Gauss-Seidel iteration analysis, wherein the Gauss-Seidel processor uses an acceleration factor and performs a plurality of iterations to transform a first set of data defining a first plurality of temperatures for a plurality of nodes in the resistor network thermal model into a second set of data defining a second plurality of temperatures for the plurality of nodes;

an acceleration factor generator coupled to the Gauss-Seidel processor, the acceleration factor generator operable to generate a value for the acceleration factor for each of said iterations performed by the Gauss-Seidel processor and operable to provide the value for the acceleration factor to the Gauss-Seidel processor, wherein the value generated for the acceleration factor varies periodically between a lower-value and an upper-value responsive to a number of said iterations performed by the Gauss-Seidel processor.

5,604,688

MESSAGE DISPLAY CALCULATOR

William Chu, Taipei, Taiwan, and Richard A. Waldinger, Searingtown, N.Y., assignors to Tomax Enterprises, Inc., Irwindale, Calif.

Continuation of Ser. No. 95,148, Jul. 20, 1993, abandoned, which is a continuation-in-part of Ser. No. 3,722, Jan. 13, 1993, abandoned. This application Jan. 23, 1995, Ser. No. 376,233

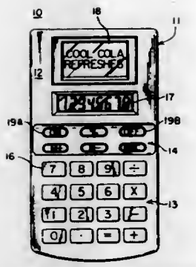
Int. Cl.[6] G06F *3/00*

U.S. Cl. 364—710.01 **9 Claims**

1. A multiple display calculator device comprising:

a calculator including a casing having a front face, a plurality of numeric and function keys located on said front face, a numeric first LCD located on said front face, a calculator network responsive to the actuation of said keys and having an output actuating said first LCD, and voltage means for energizing said calculator network;

a second LCD located on said front face for selectively passing light therethrough; and



a predetermined message positioned behind the second LCD such that the message is visible when light is selectively passed through the second LCD.

5,604,689

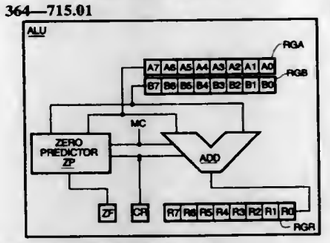
ARITHMETIC LOGIC UNIT WITH ZERO-RESULT PREDICTION

Kenneth A. Dockser, San Jose, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.

Division of Ser. No. 315,465, Sep. 30, 1994. This application May 24, 1996, Ser. No. 653,010

Int. Cl.[6] G06F *7/00*

U.S. Cl. 364—715.01 **5 Claims**



1. A zero-sum predictor comprising:

register means for storing first and second binary addends;

logic means for determining whether or not the following conditions are met

a) for each pair of adjacent bit positions, the four included bits are consistent with complementarity,

b) the least significant bits of the operands are the same.

5,604,690

SIGNAL FORM SYNTHESIZER ARRANGEMENT, TRANSMITTER STATION AND RECEIVER STATION COMPRISING SUCH AN ARRANGEMENT

Maurice Bellanger, Paris, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 16, 1995, Ser. No. 405,338

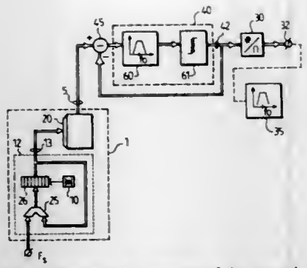
Claims priority, application France, Mar. 23, 1994, 94 03423

Int. Cl.[6] G06F *1/07*

U.S. Cl. 364—718 **12 Claims**

1. Frequency synthesizer arrangement, which arrangement comprises a digital signal generator circuit for producing a first series of digital samples which are representative of the signal to be synthesized and are formed by binary words of N bits, and a digital-to-analog converter circuit for producing said signal in analog form, characterized in that an assembly is provided for filtering the samples of the first series in accordance with a band-pass characteristic curve and for supplying to said digital-to-analog converter circuit a second series of samples formed by binary words of N' bits, where $N \geqq N'$, and in that a negative feedback loop

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is provided for subtracting the samples of the second series from the samples of the first series.

5,604,691

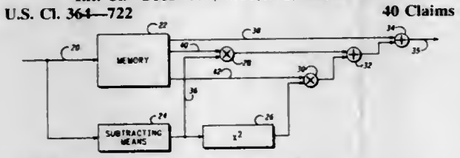
LOGARITHM/INVERSE-LOGARITHM CONVERTER UTILIZING A TRUNCATED TAYLOR SERIES AND METHOD OF USE THEREOF

James D. Dworkin, Chandler, and John M. Buss, Tempe, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 31, 1995, Ser. No. 381,167

Int. Cl.[6] G06F *7/00;15/00;1/02;* **H03M** *7/50*

U.S. Cl. 364—722 **40 Claims**



5. A logarithm converter, which comprises:

a memory for storing a plurality of coefficients that include a zero-order coefficient, a first-order coefficient, and a second-order coefficient, wherein the coefficients are based on a second-order Taylor polynomial which approximates a logarithmic function over a domain of input values;

a first multiplier for multiplying an interval value by the first-order coefficient to produce a first-order term;

means for squaring the interval value to produce a squared interval value;

a second multiplier for multiplying the squared interval value by the second-order coefficient to produce a second-order term;

a first adder for summing the first-order term and the second-order term to produce a first sum; and

a second adder for summing the first sum and the zero-order coefficient to produce the log value.

5,604,692

METHOD OF CONTROLLING DRUG CONVEYOR SYSTEM

Shoji Yuyama, 3-8, Honan-cho Nishi 4-chome, Toyonaka-shi, Osaka, Japan

Filed Jan. 3, 1995, Ser. No. 367,879

Claims priority, application Japan, Jul. 19, 1994, 6-167063

Int. Cl.[6] G06F *17/00;* **G06G** *7/48*

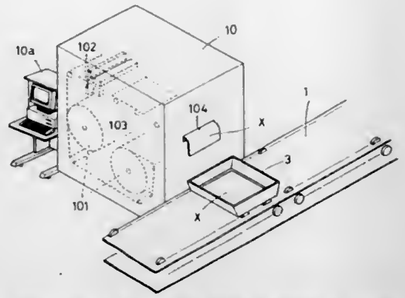
U.S. Cl. 364—788 **4 Claims**

1. A method of controlling a drug conveyor system comprising the steps of:

entering a plurality of patients' names or codes and respective prescription-based drug preparation data into a logic control circuit;

producing a plurality of drug preparation signals respectively indicative of a plurality of different prescription orders for said plurality of patients based on said drug preparation data;

sending each of said plurality of drug preparation signals from said logic control circuit to a plurality of drug preparation stations which are arranged along a straight or looped conveyor line and which are for preparing simultaneously the different prescription orders; and



producing a drug preparation completion signal each time a corresponding prescription order for a patient has been completely prepared in at least one of said plurality of drug preparation stations; and

moving one of a plurality of carrier means along said conveyor line every time said drug preparation completion signal is produced to collect the corresponding prescription order prepared in said at least one of said plurality of drug preparation stations, wherein an order of collection of said plurality of different prescription orders by said plurality of carrier means is the same as an order of complete preparation of said plurality of prescription orders by said plurality of drug preparation stations.

5,604,693

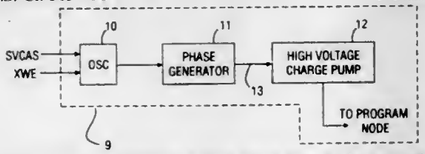
ON-CHIP PROGRAM VOLTAGE GENERATOR FOR ANTIFUSE REPAIR

Todd A. Merritt, and Kevin Duesman, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Aug. 16, 1995, Ser. No. 516,005

Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—96 **2 Claims**



1. Circuitry in a dynamic random access memory for generating pulses for programming anti fuse elements, comprising:

an oscillator for generating clocking signals;

a phase generator responsive to the clocking signals of the oscillator for generating a plurality of timing pulses whose active states are sequential in time from one another; and

a high voltage charge pump that is responsive to the timing pulses from the phase generator to produce a voltage sufficient in magnitude to program antifuse elements.

5,604,694

CHARGE PUMP ADDRESSING

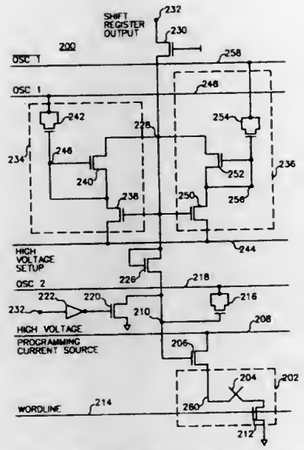
John Callahan, Fremont, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.

Filed Jan. 16, 1996, Ser. No. 586,138

Int. Cl.[6] G11C *17/00*

U.S. Cl. 365—96 **28 Claims**

13. An improved dual charge pump circuit for programming an anti-fuse memory cell, comprising:



a memory cell (**202**) to be programmed from a high-voltage programming current source (**208**), wherein the memory cell includes an anti-fuse link (**204**) having a first terminal and a second terminal;

a column-select transistor (**206**) having a drain terminal connected to the high voltage current source, having a source terminal connected to the first terminal of the anti-fuse link, and having a gate terminal connected to a column select transistor gate terminal (**210**);

wherein the memory cell includes a word-selection transistor (**212**), wherein the word selection transistor has a drain terminal connected to the second terminal of the anti-fuse link, wherein the word selection transistor has a source terminal connected to a ground reference voltage, and wherein the word selection transistor has a gate terminal connected to a word selection line (**214**);

a high-voltage blocking transistor (**230**) having a drain terminal connected to a shift register output terminal (**232**) at which is provided a select signal to activate the high-voltage blocking transistor, the transistor (**230**) having a gate terminal connected to a VCC voltage, and the high-voltage blocking transistor (**230**) having a source terminal connected to a pump output terminal (**228**);

a first charge pump (**234**) including:

a first high-voltage setup transistor (**238**), which has a drain terminal connected to a high-voltage setup line (**244**), which has a gate terminal connected to pump output terminal (**228**) and which has a source terminal (**246**) connected to a pump gate terminal (**246**);

a first pump transistor (**240**) which has a drain terminal and a gate terminal, both connected to the source terminal of the first setup transistor, and which has a source terminal connected to the pump output terminal (**228**);

a first capacitor-connected transistor (**242**) which has a gate terminal connected to the source terminal of the first setup transistor and which has source and drain terminals connected to an oscillator-input terminal (**248**) at which is provided an alternating signal voltage;

a second charge pump (**236**) having:

a second high-voltage setup transistor (**250**) which has a drain terminal connected to the high-voltage setup line (**244**), which has a gate terminal connected to the pump output terminal (**228**), and which has a source terminal connected to a second pump-gate terminal (**256**);

a second pump transistor (**252**) which has a drain terminal and a gate terminal, both connected to the source terminal of the second setup transistor, and which has a source terminal connected to the pump output terminal (**228**);

a second capacitor-connected transistor (**254**) which has a gate terminal connected to the source terminal of the second setup transistor and which has source and drain terminals connected to the oscillator-input terminal (**258**) at which is provided an alternating signal voltage;

a diode-connected trapping transistor (**226**) which has a gate terminal and a drain terminal both connected to the pump output terminal (**228**) and which has a source terminal connected to column select transistor gate terminal (**210**);

a charge-kicker circuit including a capacitor-connected transistor (**216**), which has a gate terminal connected to the column select transistor gate terminal (**210**) and which has both source and drain terminals connected to an oscillator-input terminal (**218**) at which is provided an alternating signal voltage.

5,604,695

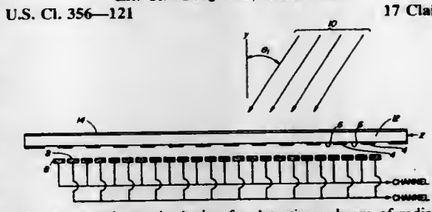
ANALOG HIGH RESOLUTION LASER IRRADIATION DETECTOR (HARLID)

André Cantin, Loretteville; Maurice Gravel, Ste-Foy, and Jacques Dubois, Neufchatel, all of Canada, assignors to Her Majesty the Queen, as represented by the Minister of National Defence of Her Majesty's Canadian Government, Ontario, Canada

Filed Jun. 5, 1995, Ser. No. 462,065

Int. Cl.[6] G01J *1/00;* **G01B** *11/26*

U.S. Cl. 356—121 **17 Claims**



1. An opto-electronic device for detecting a beam of radiation and determining the angle-of-arrival of said beam with a high degree of angular resolution, the device comprising a first linear array of radiation detectors arranged in a plane with a shadow mask being located at a predetermined height h above and parallel to said plane, the shadow mask having a plurality of transparent apertures separated by opaque areas arranged in a second linear array; wherein each radiation detector has at least one pair of individual detector elements and each aperture has substantially the same width, along the length of the second linear array, as an individual detector element, with inner apertures in the second linear array each being centered, along the width of said inner apertures, directly above the area between adjacent detector elements of each radiation detector; the device having means for adding together signals generated by corresponding detector elements of the radiation detectors in separate channels and a means for determining the angle-of-arrival of said beam from output signals of said channels.

5,604,696

STACKED CAPACITOR TYPE SEMICONDUCTOR MEMORY DEVICE WITH GOOD FLATNESS CHARACTERISTICS

Yoshihiro Takaishi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 28, 1995, Ser. No. 506,979

Claims priority, application Japan, Jul. 29, 1994, 6-177867

Int. Cl.[6] H01L *27/02*

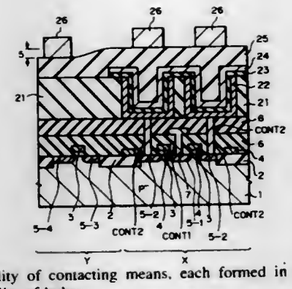
U.S. Cl. 365—149 **19 Claims**

1. A dynamic random access memory device comprising:

a semiconductor substrate;

a first insulating layer formed on a memory cell array area and a peripheral circuit area of said semiconductor substrate having a plurality of holes leading to a plurality of impurity doped regions, respectively;

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a plurality of contacting means, each formed in one of said plurality of holes;

a second insulating layer formed on said first insulating layer and having a plurality of openings in said memory cell array area; and

a plurality of stacked capacitors each buried in one of said openings,

each of said stacked capacitors being electrically connected via one of said plurality of contacting means to one of said plurality of impurity doped regions of said semiconductor substrate.

5,604,697

SEMICONDUCTOR

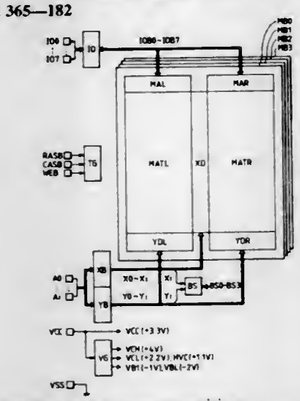
Tsugio Takahashi, Ome; Goro Kitsukawa, Hinode; Takesada Akiba, Tachikawa; Yasushi Kawase, Kokubunji, and Masayuki Nakamura, Nagoya, all of Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Device Engineering Co., Ltd., Chiba, both of Japan

Filed Dec. 20, 1995, Ser. No. 574,104

Claims priority, application Japan, Dec. 20, 1994, 6-334950

Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—182 **23 Claims**



1. A semiconductor memory comprising:

a first memory array having a plurality of first main word lines, a plurality of sets of first sub word lines, a plurality of pairs of first data lines, and a plurality of first memory cells each of which is coupled to a corresponding one of said plurality of first sub word lines and a corresponding one of said plurality of first data lines, each of said sets of first sub word lines corresponding to one of said plurality of first main word lines;

a second memory array having a plurality of second main word lines, a plurality of sets of second sub word lines, a plurality of pairs of second data lines, and a plurality of second memory cells each of which is coupled to a corresponding one of said plurality of second sub word lines and a corresponding one of said plurality of second data lines, each of said sets of second sub word lines corresponding to one of said plurality of second main word lines;

a third memory array having a plurality of third main word lines, a plurality of sets of third sub word lines, a plurality of pairs of third data lines, and a plurality of third memory cells each of which is coupled to a corresponding one of said plurality of third sub word lines and a corresponding one of said plurality of third data lines, each of said sets of third sub word line corresponding to one of said plurality of third main word lines;

a fourth memory array having a plurality of fourth main word lines, a plurality of sets of fourth sub word lines, a plurality of pairs of fourth data lines, and a plurality of fourth memory cells each of which is coupled to a corresponding one of said plurality of fourth sub word lines and a corresponding one of said plurality of fourth data lines, each of said sets of fourth sub word lines corresponding to one of said plurality of fourth main word lines;

a pair of first sub common data line extending in a first direction;

a pair of second sub common data line extending in said first direction;

a pair of third sub common data line extending in said first direction;

a pair of fourth sub common data line extending in said first direction;

a pair of first main common data line extending in a second direction perpendicular to said first direction;

a pair of second main common data line extending in said second direction;

a first switching circuit coupled between said plurality of pairs of first data lines and said pair of first sub common data line;

a second switching circuit coupled between said plurality of pairs of second data lines and said pair of second sub common data line;

a third switching circuit coupled between said plurality of pairs of third data lines and said pair of third sub common data line;

a fourth switching circuit coupled between said plurality of pairs of fourth data lines and said pair of fourth sub common data line;

a fifth switching circuit coupled between said pair of first sub common data line and said pair of first main common data line;

a sixth switching circuit coupled between said pair of second sub common data line and said pair of second main common data line;

a seventh switching circuit coupled between said pair of third sub common data line and said pair of first main common data line; and an eighth switching circuit coupled between said pair of fourth sub common data line and said pair of second main common data line.

5,604,698

VIRTUAL-GROUND FLASH EPROM ARRAY WITH REDUCED CELL PITCH IN THE X DIRECTION

Albert M. Bergemont, Santa Clara, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 531,015, Sep. 20, 1995, abandoned, which is a continuation of Ser. No. 213,215, Mar. 15, 1994, abandoned. This application Apr. 10, 1996, Ser. No. 631,824

Int. Cl.[6] G11C *16/04*

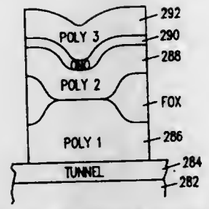
U.S. Cl. 365—185.01 **11 Claims**

1. A non-volatile memory cell formed in a semiconductor substrate for storing data, the memory cell comprising:

a layer of first insulation material formed on and in contact with the substrate;

a layer of first conductive material formed on and in contact with the layer of first insulation material, the layer of first conductive material having a top surface;

a first layer of second insulation material formed on and in contact with the top surface of the layer of first conductive material;



a second layer of second insulation material formed on and in contact with the top surface of the layer of first conductive material and spaced apart from the first layer of second insulation material;

a layer of second conductive material formed on and in contact with the first and second layers of second insulation material and the layer of first conductive material;

a layer of third insulation material formed over the layer of second conductive material; and

a layer of third conductive material formed over the layer of third insulation material.

5,604,699

METHOD OF EVALUATING THE DIELECTRIC LAYER OF NONVOLATILE EPROM, EEPROM AND FLASH-EEPROM MEMORIES

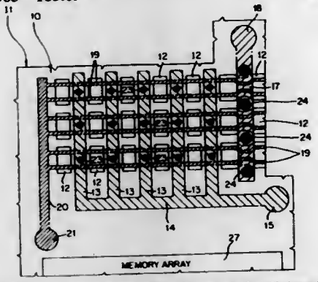
Paolo G. Cappelletti, Seveso, and Leonardo Ravazzi, Dalmine, both of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Division of Ser. No. 140,628, Oct. 21, 1993. This application May 31, 1995, Ser. No. 454,854

Claims priority, application European Pat. Off., Oct. 29, 1992, 92830589; Jan. 4, 1993, 93830134

Int. Cl.[6] G11C *29/00*

U.S. Cl. 365—185.09 **30 Claims**



1. A method for evaluating defectiveness of a dielectric layer of an erasable, programmable, READ-ONLY-MEMORY device comprising the steps of:

(a) measuring a characteristic of the device while applying source current,

(b) applying stress to the device for a predetermined interval of time, wherein said stress is less than a tunneling stress required to cause Fowler-Nordheim tunneling in a non-defective cell,

(c) re-measuring the characteristic of the device while re-applying source current,

(d) calculating a result according to the measured characteristic from step (a) and the measured characteristic from step (c), and

(e) determining the device is defective if the result is greater than a predetermined threshold.

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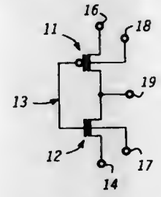
NON-VOLATILE MEMORY CELL HAVING A SINGLE POLYSILICON GATE

Patrice M. Parris, and Yee-Chaung See, both of Phoenix, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 28, 1995, Ser. No. 506,989

Int. Cl.[6] G11C *11/34*

U.S. Cl. 365—185.1 **19 Claims**



1. A non-volatile memory cell having a single polysilicon gate comprising:

a body of semiconductor material;

a first transistor having a source and a drain formed in the semiconductor material, wherein the drain of the first transistor provides a first read voltage when the first transistor is operating, the first transistor further having a first threshold voltage controlled by a first gate region;

a second transistor having a source and a drain formed in the semiconductor material, wherein the drain of the second transistor provides a second read voltage when the second transistor is operating, the second transistor further having a second threshold voltage controlled by a second gate region; and

a floating gate structure connected to the first gate region and to the second gate region to provide the single polysilicon gate.

5,604,701

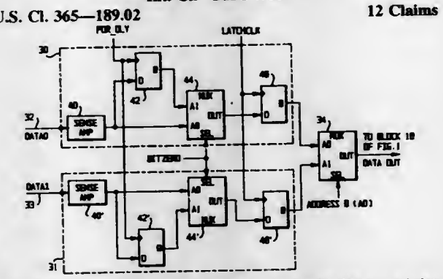
INITIALIZING A READ PIPELINE OF A NON-VOLATILE SEQUENTIAL MEMORY DEVICE

Samuel E. Alexander, Phoenix, and Kent D. Hewitt, Gilbert, both of Ariz., assignors to Microchip Technology Incorporated, Chandler, Ariz.

Filed Jul. 27, 1995, Ser. No. 508,331

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—189.02 **12 Claims**



1. A non-volatile sequential memory device having a read data structure for reading data from a memory array of the device, the memory array including a plurality of memory cells for storing a plurality of data bits, the read data structure including at least one data path for coupling to bitlines of the memory array and comprising:

means for sensing the logic level of data bits appearing on a bitline;

means for latching the data bits sensed; and

means for initializing the data path upon power up of the device including means responsive to a power-on reset signal for

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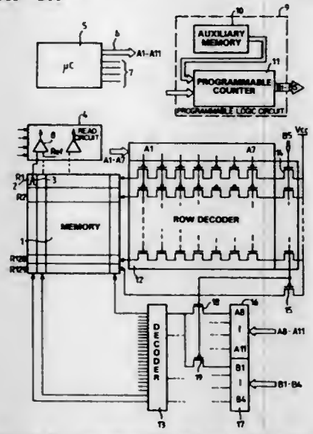
allowing sensing of the first data bit and means responsive to a delayed power-on reset signal for latching the first data bit before the occurrence and without the need of a clock signal.

5,604,702

DYNAMIC REDUNDANCY CIRCUIT FOR MEMORY IN INTEGRATED CIRCUIT FORM

François Tailliet, Epinay sur Seine, France, assignor to SGS-Thomson Microelectronics S.A., Saint Genis Pouilly, France

Filed Sep. 15, 1994, Ser. No. 306,500
Claims priority, application France, Sep. 20, 1993, 93 11169
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—200 **44 Claims**



1. An electrically programmable and erasable non-volatile integrated circuit memory, comprising:
- a plurality of memory words, each word corresponding to an address;
- means for accessing a memory word of the plurality of words in response to the memory receiving an input address;
- a dynamically programmable auxiliary memory for storing addresses of defective memory words;
- a comparison circuit for comparing the input address with an address stored in the dynamically programmable auxiliary memory; and
- a readdressing circuit for selecting another memory word from the plurality of memory words in response to the comparison circuit detecting that the input address matches an address stored in the dynamically programmable auxiliary memory;
- wherein the dynamically programmable auxiliary memory includes a valid bit for each stored address to indicate whether the stored address is valid, and wherein the plurality of memory words includes a second plurality of supplementary memory words that are addressable through the readressing circuit only and not through the means for accessing.

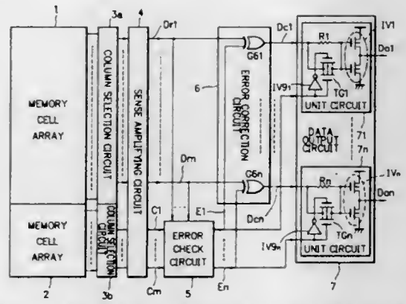
5,604,703

SEMICONDUCTOR MEMORY DEVICE WITH ERROR CHECK-CORRECTION FUNCTION PERMITTING REDUCED READ-OUT TIME

Hirokazu Nagashima, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 23, 1995, Ser. No. 546,983
Claims priority, application Japan, Oct. 24, 1994, 6-257814
Int. Cl.[6] G06F *11/00*
U.S. Cl. 365—200 **5 Claims**

1. A semiconductor memory device comprising:



a first memory for storing therein a set of n-bit data, where n is a predetermined integer such that $n \geqq 1$;

a second memory for storing therein a set of m-bit data of which a respective one is prepared for use in a checking operation for checking n bits of a corresponding one of the n-bit data for an errorneous bit and a correcting operation for correcting the errorneous bit, where m is a predetermined integer;

a data reading means for reading said respective m-bit data and said corresponding n-bit data;

an error check means for performing the checking operation to provide an error check signal:

an error correction means responsive to the error check signal to perform the correcting operation to provide n correct bits of which a correspondent one to the errorneous bit is corrected; and

a data output circuit comprising:

n buffer circuits for performing a buffering amplification of the n correct bits, conducting a power supply current, respectively,

a power supply current reduction means for performing a reduction of the power supply current for the buffering amplification of a respective one of the n correct bits, and

a current reduction control means responsive to the error check signal to control the reduction of the power supply current for the buffering amplification of the corrected bit.

5,604,704

COMPOUND SEMICONDUCTOR STATIC RANDOM ACCESS MEMORY DEVICE EQUIPPED WITH PRECHARGING CIRCUIT CONTROLLED BY BOOSTED SIGNAL

Takao Atsumo, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed May 25, 1995, Ser. No. 450,381
Claims priority, application Japan, May 30, 1994, 6-116399
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—203 **11 Claims**

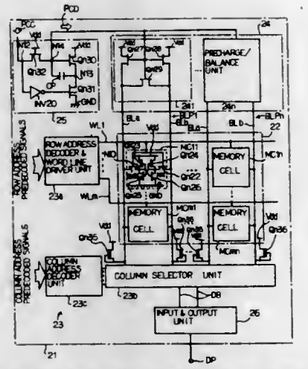
1. A compound semiconductor static random access memory device, comprising:

a plurality of addressable memory cells respectively having pairs of memory nodes for storing data bits in the form of potential difference;

a plurality of bit line pairs selectively associated with said plurality of addressable memory cells for propagating potential differences from or to memory cells selected from said plurality of addressable memory cells;

an addressing means responsive to an address signal for selectively coupling the pairs of memory nodes of said memory cells to said plurality of bit line pairs;

a precharging means coupled to said plurality of bit line pairs for precharging said plurality of bit lines to a precharging level, and including at least n-channel enhancement type charging transistors having respective gate electrodes and respective n-type conductive channels of a compound semiconductor material and coupled between a source of power voltage level



and bit lines of said plurality of bit line pairs, said compound semiconductor having an electron mobility larger than a hole mobility; and

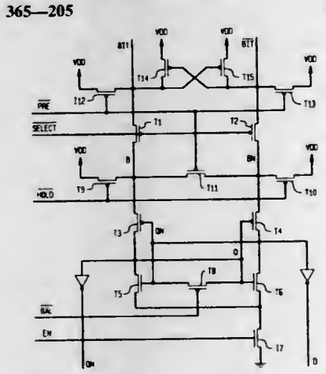
a precharge driver unit responsive to a precharge control signal for supplying a precharge drive signal to said gate electrodes of said at least n-channel enhancement type charging transistors, and having a boosting circuit for boosting said precharge drive signal.

5,604,705

STATIC RANDOM ACCESS MEMORY SENSE AMPLIFIER

Bryan D. Ackland, Old Bridge, and Jay H. O'Neill, Freehold, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Aug. 22, 1995, Ser. No. 518,055
Int. Cl.[6] G11C *7/06*
U.S. Cl. 365—205 **16 Claims**



11. A circuit for reading from a selected memory cell of a synchronous random access memory during a multi-phase memory cycle, comprising:

a pair of bit lines for connecting to the outputs of the memory cell,

means for precharging said bit lines during first portion of the memory cycle,

a regeneratively cross-coupled sense amplifier connected to the bit lines for generating a sensed output indicative of the value stored in the memory cell,

means for temporarily balancing the state of said sense amplifier during a second portion of the memory cycle, and

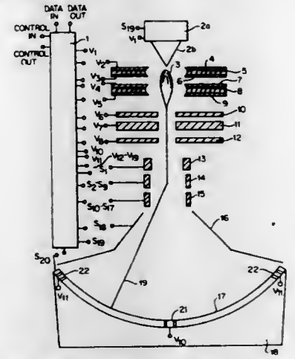
means for temporarily connecting said sense amplifier to a source of electrical power following said first and said second portions of the memory cycle to enable said generating of said sensed output.

5,604,706

DATA STORAGE MEDIUM FOR STORING DATA AS A POLARIZATION OF A DATA MAGNETIC FIELD AND METHOD AND APPARATUS USING SPIN-POLARIZED ELECTRONS FOR STORING THE DATA ONTO THE DATA STORAGE MEDIUM AND READING THE STORED DATA THEREFROM

Thomas D. Hurt, Chantilly, Va., and Scott A. Halpine, Gaithersburg, Md., assignors to TeraStore, Inc., College Park, Md.

Division of Ser. No. 188,828, Jan. 31, 1994, Pat. No. 5,446,687.
This application Mar. 23, 1995, Ser. No. 408,784
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—217 **11 Claims**



1. A data storage medium, comprising:

a substrate;

a data storage layer formed on the substrate, the data storage layer including a fixed number of atomic layers of a magnetic material, the fixed number of atomic layers providing the data storage layer with a magnetic anisotropy perpendicular to a surface of the data storage layer; and

a data magnetic field created in the data storage layer, the data magnetic field being polarized either in a first direction perpendicular to the surface of the data storage layer and corresponding to a first data value or in a second direction opposite the first direction and corresponding to a second data value.

5,604,707

SEMICONDUCTOR MEMORY DEVICE RESPONSIVE TO HIERARCHICAL INTERNAL POTENTIALS

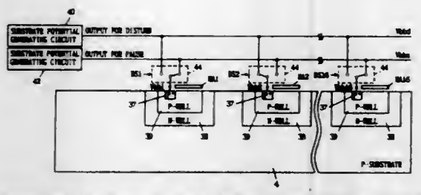
Shigehiro Kuge; Shigeki Tomishima; Kazutami Arimoto; Hideto Hidaka, and Takahiro Tsuruda, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 6, 1995, Ser. No. 466,049
Claims priority, application Japan, Sep. 19, 1994, 6-223040
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—226 **11 Claims**

1. A semiconductor memory device comprising:

a plurality of memory blocks each storing a plurality of data and being activated in response to a corresponding block select signal;

an internal potential generating means for generating one of a substrate potential, a cell plate potential, a precharge potential, and a boosted ground potential for said memory blocks; and



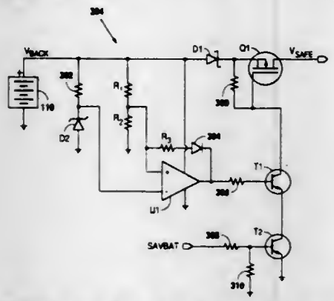
select means for selecting the activated at least one memory block among said memory blocks and supplying said one potential generated by said internal potential generating means to said selected memory block.

5,604,708

FAIL-SAFE SYSTEM FOR PRESERVING A BACKUP BATTERY

Frank Helms, Round Rock, and Alan E. Brown, Georgetown, both of Tex., assignors to Dell USA L.P., Austin, Tex.

Filed Jan. 25, 1995, Ser. No. 378,169
Int. Cl.[6] G11C *11/40*
U.S. Cl. 365—229 **13 Claims**



1. A fail-safe system for preventing excessive drainage of a backup battery used to maintain power to configuration memory of a computer system, the computer system including at least one low power device receiving power from the backup battery during removal of a primary battery and a microprocessor which provides a save battery signal, said fail-safe system comprising:

reference means for coupling to the backup battery for providing a reference signal indicative of a predetermined minimum voltage level of the backup battery;

monitoring mean for coupling to the backup battery for providing a battery voltage signal indicative of the voltage level of the backup battery;

a comparator coupled to said reference means and said monitoring means and for coupling to the backup battery for comparing the voltage of the backup battery with said predetermined minimum voltage level and for providing a disable signal indicative thereof; and

a switch circuit coupled to said comparator and for coupling to the backup battery and the low power device, said switch circuit for coupling the backup battery to the low power device if said disable signal indicates that the voltage of the backup battery is above said predetermined minimum voltage level and if the save battery signal is provided, but otherwise disconnecting the backup battery from the low power device while the backup battery continues to maintain power to the configuration memory said switch circuit including:

a first transistor having a control terminal and having a controlled current path for coupling between the backup battery and the low power device;

a second transistor having a control terminal for receiving said disable signal and a current path coupled to said control terminal of said first transistor; and

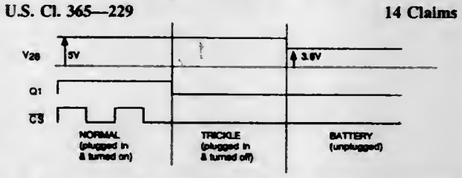
a third transistor having a control terminal for receiving the save battery signal and a current path coupled in series with said current path of said second transistor.

5,604,709

PERSISTENT DATA STORAGE WHICH UTILIZES A SHARED POWER SUPPLY

Noah M. Price, Campbell, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Aug. 7, 1995, Ser. No. 512,180
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—229 **14 Claims**



1. An electronic memory circuit for the storage of persistent data, comprising:

a memory device having a select terminal for receiving a signal which controls the memory to selectively permit data to be read therefrom and having an enable terminal for coupling a supply voltage;

a source of power for supplying said supply voltage in at least two different states including a normal operating state and a standby state, said supply voltage being inversely coupled to said select terminal with respect to said enable terminal; and

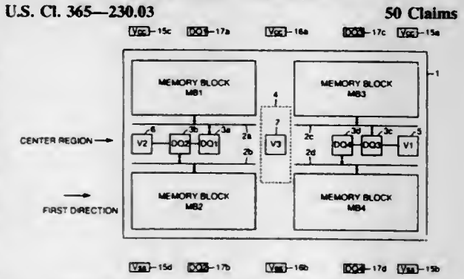
a switch responsive to the state of said power source for selectively isolating said select terminal from a source of said signal when said power source is in said standby state.

5,604,710

ARRANGEMENT OF POWER SUPPLY AND DATA INPUT/OUTPUT PADS IN SEMICONDUCTOR MEMORY DEVICE

Shigeki Tomishima; Mikio Asakura; Masaki Tsukude, and Kazutami Arimoto, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 445,819, May 22, 1995, abandoned. This application Mar. 15, 1996, Ser. No. 616,734
Claims priority, application Japan, May 20, 1994, 6-106879; Nov. 29, 1994, 6-294205; May 10, 1995, 7-111866
Int. Cl.[6] G11C *7/00;8/00;5/02*
U.S. Cl. 365—230.03 **50 Claims**



1. A semiconductor memory device formed on a chip, comprising:

a plurality of memory blocks arranged in alignment with each other in a first direction on both sides of a center region along said first direction on said chip;

a plurality of data input/output buffer means arranged corresponding to said plurality of memory blocks and adjacent to corresponding memory blocks in said center region, each said data input/output buffer means including a buffer for transmitting and receiving data to and from the corresponding memory block and a pad connected to the buffer; and

a plurality of peripheral buffer means arranged in the vicinity of a center portion in said center region along said first direction for receiving an external signal for accessing said plurality of memory blocks,

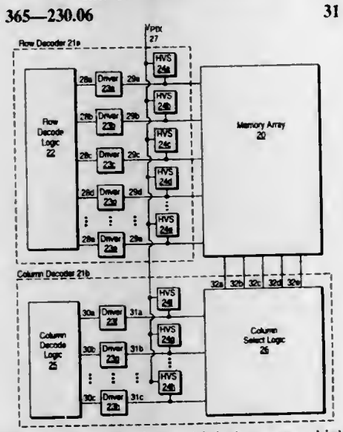
said plurality of data input/output buffer means being arranged in a region excluding the vicinity of said center portion.

5,604,711

LOW POWER HIGH VOLTAGE SWITCH WITH GATE BIAS CIRCUIT TO MINIMIZE POWER CONSUMPTION

Sammy S. Y. Cheung, Pleasanton, Calif., assignor to Cypress Semiconductor, Corporation, San Jose, Calif.

Filed May 19, 1995, Ser. No. 446,539
Int. Cl.[6] G11C *7/00;8/00*
U.S. Cl. 365—230.06 **31 Claims**



1. A memory circuit having multiple low power high voltage switches, said memory circuit comprising:

a memory array that includes a plurality of memory cells and a plurality of word lines wherein each memory cell is coupled to a corresponding word line;

a high voltage line coupled to an input of said memory circuit, said high voltage line provides a conductive path for a programming input signal;

a row decoder coupled to said memory array by said plurality of word lines, said row decoder selects at least one of said plurality of word lines and deselects at least one of said plurality of word lines during a reading operation or a programming operation,

each of said selected word lines has a corresponding selected word line driver and a corresponding selected high voltage switch wherein said corresponding selected word line driver is coupled to said corresponding selected high voltage switch by said corresponding selected word line,

each of said deselected word lines has a corresponding deselected word line driver and a corresponding deselected high voltage switch wherein said corresponding deselected word line driver is coupled to said corresponding deselected high voltage switch by said corresponding deselected word line,

each of said corresponding selected high voltage switches and each of said corresponding deselected high voltage switches is coupled to said high voltage line,

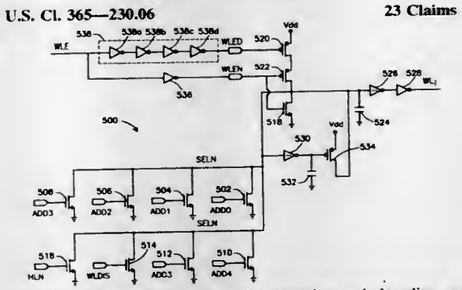
each of said corresponding selected word line drivers includes a first input coupled to a first voltage conduit and each of said corresponding deselected word line drivers has a second input coupled to a second voltage conduit such that leakage current flows from said first input of said corresponding selected word line driver over said corresponding selected word line through said corresponding selected high voltage switch onto said high voltage line through said corresponding deselected high voltage switch over said corresponding deselected word line and out through said second input of said corresponding deselected word line driver during said reading operation.

5,604,712

FAST WORD LINE DECODER FOR MEMORY DEVICES

Gordon W. Priebe, Maple Grove, Minn., assignor to LSI Logic Corporation, Milpitas, Calif.

Filed Sep. 13, 1995, Ser. No. 527,704
Int. Cl.[6] G11C *7/00;8/00*
U.S. Cl. 365—230.06 **23 Claims**



1. A word line decoder gate for receiving and decoding an address asserted on a plurality of address signals in response to the assertion of a clock signal, comprising:

a plurality of first semiconductor devices coupled in parallel to a common node, each one of said plurality of first semiconductor devices connected to receive a corresponding one of the plurality of address signals or its inverted counterpart as a predetermined address, said plurality of first semiconductor devices comparing the asserted address on the plurality of address signals with said predetermined address;

a second semiconductor device coupled to said common node, said second semiconductor device receiving the inverted clock signal and keeping said common node at a first voltage level until the clock signal is asserted;

a delay device for receiving the clock signal and for asserting a delayed clock signal;

a third semiconductor device coupled to said common node and for receiving the inverted clock signal; and

a fourth semiconductor device coupled between said third semiconductor device and a second voltage level and receiving said delayed clock signal, wherein said third and fourth semiconductor devices provide a current path from said second voltage level to said common node during a time period while said clock signal is asserted and said delayed clock signal is deasserted for pulling said common node to said second voltage level;

wherein said plurality of first semiconductor devices allow said common node to go to said second voltage level during said time period if the asserted address equals said predetermined address, and wherein at least one of said plurality of first semiconductor devices provides a current path sufficient to keep said common node substantially discharged during said time period if the asserted address does not equal said predetermined address.

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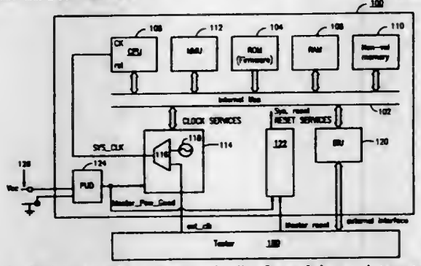
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5,604,713

CIRCUITRY AND METHOD THAT ALLOWS FOR EXTERNAL CONTROL OF A DATA SECURITY DEVICE

Timothy A. Short, Duncanville, and Matthew H. Childs, Arlington, both of Tex., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Dec. 19, 1995, Ser. No. 575,209
Int. Cl.[6] G11C *13/00*
U.S. Cl. 365—230.06 10 Claims



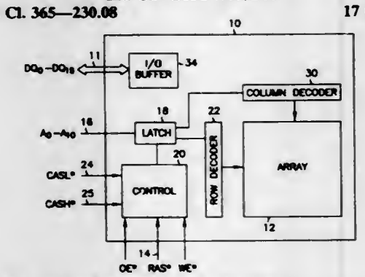
1. A data security system unitarily formed in an integrated circuit, comprising:
a processor that operates in response to a clock signal provided at a clock input of the processor;
clock signal generation circuitry that generates an internal clock signal;
first processor-readable program code configured to cause the processor to detect an internal, protectable, non-volatile indication of a state of the integrated circuit data security system;
clock signal selection circuitry that selectively provides a path for the internal clock signal to be provided to the clock input of the processor or a path for an externally-provided clock signal to be provided to the clock input of the processor; and
second processor-readable program code, responsive to the state indication, configured to cause the processor to control the selection by the clock signal selection circuitry.

5,604,714

DRAM HAVING MULTIPLE COLUMN ADDRESS STROBE OPERATION

Troy A. Manning; Todd Merritt, and Brett Williams, all of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Nov. 30, 1995, Ser. No. 565,420
Int. Cl.[6] G11C *7/00;8/00*
U.S. Cl. 365—230.08 17 Claims



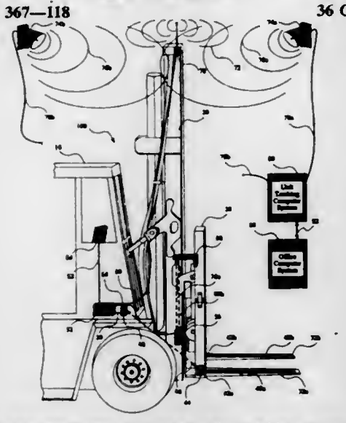
1. An integrated memory circuit comprising:
an array of memory cells arranged in rows and columns;
a plurality of column address strobe inputs;
data output circuitry for reading a plurality of bytes of data stored in the array, and outputting the plurality of bytes of data on communication lines in response to a signal provided on one of the plurality of column address strobe inputs; and
data input circuitry for storing one byte of data in the array in response to a signal provided on one of the plurality of column address strobe inputs.

5,604,715

AUTOMATED LUMBER UNIT TRUCKING SYSTEM

James A. Aman, 134 Bridle View Way, Souderton, Pa. 18964, and William R. Haller, 425 Brighton St., #403, Bethlehem, Pa. 18015

Continuation-in-part of Ser. No. 263,090, Jun. 21, 1994, abandoned. This application Sep. 19, 1995, Ser. No. 530,465
Int. Cl.[6] G01S *3/80*
U.S. Cl. 367—118 36 Claims



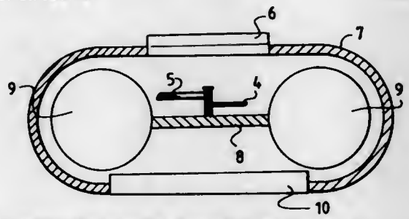
1. An automated omni-directional object tacking system operable within a prescribed arm comprising: means for engaging/disengaging said object;
means for transporting said engaged object from an initial engaged position to a final disengaged position; and
means responsive to said transporting means for determining said initial and final positions of said object.

5,604,716

BLACK LIGHT ILLUMINATED ANALOG WATCH

James Cheung, 37-48 78th St., Jackson Heights, N.Y. 11372

Filed Dec. 22, 1994, Ser. No. 363,638
Int. Cl.[6] G04B *19/30*
U.S. Cl. 368—67 1 Claim



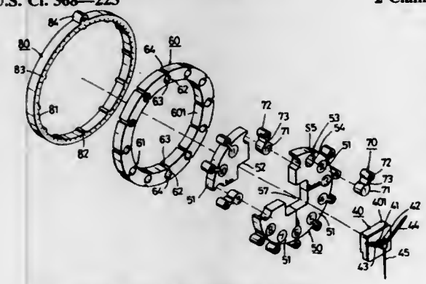
1. A black light illuminated analog watch comprising:
a. an analog wrist watch comprising a watch casing, a dial having hour and minute hands mounted within said casing, and a portion of said casing being open and covered with a transparent watch glass for viewing said dial and hour and minute hands;
b. means for emitting ultraviolet light comprising an extended fluorescent tube coated on the inside of said tube with UV-emitting phoshor, said tube mounted within and following the inside contour of and spaced from said casing and extending around said dial so that ultraviolet light from said fluorescent tube when energized falls directly and without any interference on said dial and hour and minute hands, said fluorescent tube being circular in cross section and filling substantially the full annular space between the dial face and the side wall of said casing and throwing light directly on the face of said dial and the surfaces of said hour and minute hands visible through said transparent watch glass;
c. visible portions of said dial and hour and minute hands being coated with visible light emitting phosphor, said phosphor coated portions glowing and visible through said transparent watch glass when ultraviolet light from said fluorescent tube is incident upon said dial and hour and minute hands; and
d. means within said casing for supplying high voltage to said fluorescent tube comprising a battery, an inverter to convert dc from said battery to ac, step-up transformer means to output a voltage high enough to energize said fluorescent tube, and momentary push button switch means to provide momentary lighting of said dial and hour and minute hands when it is desired to read the time when ambient light is insufficient to permit said reading.

5,604,717

EDUCATIONAL CLOCK ASSEMBLY

I-Hwa Wang, No. 16, Kuo-Tai Lane, Sec. 2, Chang-Pin Rd., Pei-Tun Dist., Taichung City, Taiwan

Filed Oct. 19, 1995, Ser. No. 545,299
Int. Cl.[6] G04B *19/00*
U.S. Cl. 368—223 2 Claims



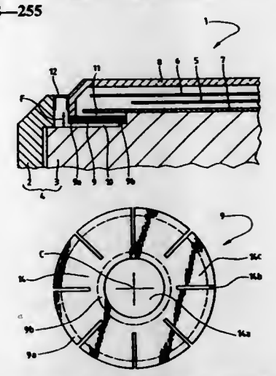
1. An educational clock assembly, comprising:
a clock mechanism;
a circular face plate which is formed of a plurality of modular pieces, said face plate having a central receiving hole into which said clock mechanism is press-fitted, a plurality of first grooves which are spaced angularly and equally on a circumference of said face plate, each of said first grooves having a hour-piece which engages detachably therein and which bears a hour numeral;
a fastening ring engaging around said circumference of said face plate in order to bind said modular pieces together, said fastening ring having an inner periphery which has a plurality of second grooves, each of said second grooves being aligned radially with a corresponding one said first grooves of said face plate and having a minute-piece which engages detachably therein and which bears a minute numeral; and
wherein each of said first and second grooves is formed of a bore for receiving a respective one of said hour-pieces and minute-pieces and a reduced slot connected to said bore, said slot of each of said first grooves being aligned and communicated with a corresponding one of said slots of said second grooves, each of said hour-pieces having a connecting piece which is connected to a corresponding one of said minute-pieces and which is inserted in said slots of said first and second grooves in order to enhance an engaging force of said face plate and said fastening ring, said hour numeral of each of said hour-pieces corresponding to said minute numeral of the corresponding one of said minute-pieces.

5,604,718

TIMEPIECE COMPRISING AN ELECTRO-ACOUSTIC TRANSDUCER

Jean-Pierre Mignot, Peseux; Jacques Labourey, Neuchâtel, and Michel Christen, Yverdon-Les-Bains, all of Switzerland, assignors to Asulab S.A., Bienne, Switzerland

Filed Jul. 13, 1995, Ser. No. 501,809
Claims priority, application Switzerland, Jul. 25, 1994, 02338/94
Int. Cl.[6] G04C *21/16*
U.S. Cl. 368—255 10 Claims



1. A timepiece comprising a casing, a movement arranged in said casing and forming with the latter a mechanical set, a glass, and means for joining said glass to said mechanical set comprising a piezo-electric device having a first attachment zone fixed to said glass and a second attachment zone fixed to said mechanical set, said piezo-electric device having a first face situated in a plane and being arranged such that it undergoes, in response to an exciting signal, a deformation producing a displacement of said glass relative to said mechanical set in a direction at least substantially perpendicular to said plane, wherein said first attachment zone and said second attachment zone are distinct one from the other when said timepiece is looked at in a direction perpendicular to said plane, and wherein said deformation of said piezoelectric device is a flexion deformation in a direction perpendicular to said plane.

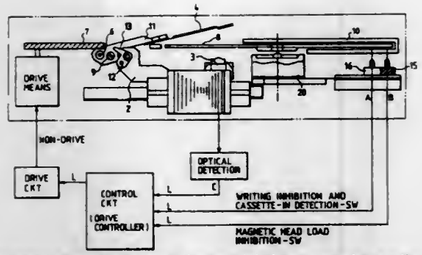
5,604,719

MAGNETOOPTICAL INFORMATION RECORDING/REPRODUCING METHOD AND APPARATUS EMPLOYING A FLOATING SLIDER SUPPORTING A MAGNETIC HEAD

Hiroaki Kakimoto, Yokohama; Nobuaki Date; Yoshikazu Miyajima, both of Kawasaki, and Masahiko Chaya, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 914,564, Jul. 17, 1992, abandoned. This application Dec. 27, 1994, Ser. No. 364,425
Claims priority, application Japan, Jul. 25, 1991, 3-207176; Jul. 25, 1991, 3-207177; Jul. 25, 1991, 3-207178; Nov. 5, 1991, 3-315270; Nov. 7, 1991, 3-318681; Dec. 9, 1991, 3-349485; Jan. 8, 1992, 4-018445; Jan. 8, 1992, 4-018449; Jan. 21, 1992, 4-029074
Int. Cl.[6] G11B *11/00*
U.S. Cl. 364—13 21 Claims

1. A magnetooptical information recording/reproducing apparatus for effecting at least one of recording of information on and reproducing of information from a magnetooptical recording



medium by using a magnetic field modulation system that applies a magnetic field modulated corresponding to the information while a light beam is irradiated to the magnetooptical recording medium, said apparatus comprising:

a magnetic head for applying to the medium the magnetic field modulated corresponding to the information;

a floating slider for mounting said magnetic head thereon;

retracting means for retracting said floating slider from the medium, when (i) loading a medium utilized with the magnetic field modulation system and (ii) when a medium other than a medium utilized with the magnetic field modulation system is loaded onto said apparatus; and

an optical head for irradiating the light beam to a portion of the medium to which the magnetic field is applied.

5,604,720

METHOD AND APPARATUS FOR ACCESSING A TARGET TRACK ON OPTICAL MEDIUM

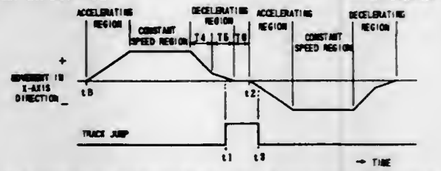
Yasuyuki Kimura, Kawagoe, and Koichi Yamazaki, Sakado, both of Japan, assignors to Nippon Conlux Co., Ltd., Tokyo, Japan

Filed Apr. 19, 1995, Ser. No. 424,203

Claims priority, application Japan, Apr. 22, 1994, 6-106307

Int. Cl.[6] G11B *17/22*

U.S. Cl. 369—32 **6 Claims**



1. A method of recording and/or reproducing optical information in which a light beam is controlled to access a desired track from among a plurality of tracks provided in parallel with each other on an optical recording medium, the method comprising the steps of:

moving the light beam relative to the optical recording medium along a longitudinal direction of the plurality of tracks;

decelerating a movement of the light beam relative to the optical recording medium along the longitudinal direction, wherein the step of decelerating the movement of the light beam includes controlling a speed of the movement of the light beam relative to the optical recording medium to decrease gradually or stepwise from a relatively high speed to a relatively low speed; and

moving the light beam in a direction transverse to the plurality of tracks toward the desired track while the movement of the light beam relative to the optical recording medium is at the relatively low speed.

5,604,721

DEVICE FOR PLAYING BACK DISKS INCLUDING THE DETECTION OF A MAGAZINE CARRIAGE WHICH IS SIMULTANEOUSLY CARRYING TWO DISKS

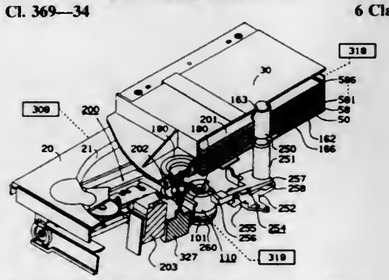
Michihiro Asano, Tokyo, Japan, assignor to Nakamichi Corporation, Tokyo, Japan

Filed Jun. 3, 1994, Ser. No. 253,735

Claims priority, application Japan, Jun. 3, 1993, 5-157913

Int. Cl.[6] G11B *17/22;15/16*

U.S. Cl. 369—34 **6 Claims**



1. A device for playing back disks, comprising: carriages;

a magazine for storing said carriages;

each of said carriages having means for carrying at least one of said disks;

means for playing a selected disk at a playback position in a selected carriage of said carriages;

said selected disk at least partly overlapping stored disks carried by carriages stored in said magazine when said selected carriage is in said playback position;

means for moving said magazine relative to said playback position;

means for transporting said selected carriage between said magazine, said playback position, and an eject position whereat access is provided for loading and unloading disks;

means for detecting when another disk and said selected disk are simultaneously carried by said selected carriage;

means for denying entry of said another disk to said magazine as said selected carriage and said selected disk are transported into said magazine, such that said another disk remains in a position between said magazine and said eject position;

said means for detecting sensing said another disk at one of said playback position and said position between said playback position and said eject position, after transporting of said selected carriage at least partially into said magazine; and

means, responsive to said means for detecting, for permitting said another disk to be removed from said device.

5,604,722

ACCESS CONTROL METHOD AND DEVICE OF DISK UNIT

Haruyuki Suzuki, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 303,144, Sep. 8, 1994, abandoned, which is a continuation of Ser. No. 990,450, Dec. 15, 1992, abandoned. This application Aug. 22, 1995, Ser. No. 517,990

Claims priority, application Japan, Dec. 20, 1991, 3-354295

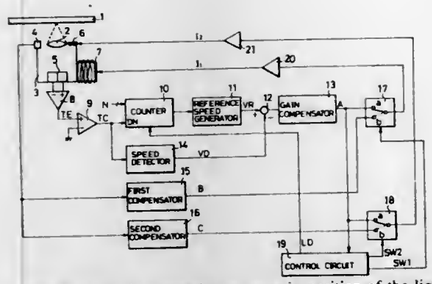
Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—44.28 **2 Claims**

1. An access control device in which a light spot is formed on a disk, a track-crossing signal is detected from light reflected from the disk when said light spot crosses a track of the disk, and a track-crossing speed of said light spot is controlled by using the detected track-crossing signal to access the light spot in a radial direction of the disk, said access control device comprising:

a precise actuator for slightly displacing said light spot in the radial direction of the disk;

a coarse actuator for greatly displacing said light spot in the radial direction of the disk;



counting means for outputting an error in position of the light spot according to a difference between a present position of the light spot and a target position of the light spot by counting said track-crossing signal;

reference speed generating means for outputting a reference speed signal indicative of a reference speed monotonously reduced in accordance with a reduction of said error in position;

speed detecting means for outputting a relative speed signal indicative of a relative speed of movement between the light spot and the track determined in accordance with said track-crossing signal;

comparing means for outputting a speed error signal indicative of an error in speed determined according to a difference between said reference speed and the relative speed;

a first switching means controlled in such a manner that the speed error signal is transferred to the coarse actuator on a first mode and that a driving signal for displacing the coarse actuator in accordance with a displacing amount of the precise actuator is transferred to the coarse actuator on a second mode;

a second switching means controlled in such a manner that the speed error signal is not transferred to the precise actuator on the first mode and is transferred to the precise actuator on the second mode;

control means connected to the first switching means and the second switching means for controlling the track-crossing speed of the light spot at the first mode so as to make the error in speed small on starting an accessing operation and for switching from the first mode to the second mode when said speed error signal is smaller than a predetermined value;

a lens position sensor for generating a lens position signal in accordance with the displacing amount of the precise actuator and a driving signal generating means for generating the driving signal for displacing the coarse actuator in accordance with the lens position signal; and

a lens hold signal generating means for generating a lens hold signal for holding the precise actuator at a reference position in accordance with the lens position signal, and wherein said second switching means transfers the lens hold signal to the precise actuator on the first mode and transfers the speed error signal to the precise actuator on the second mode.

5,604,723

METHOD FOR READING A SYNCHRONIZING SIGNAL FROM A RECORD MEDIUM AND AN APPARATUS THEREOF

Kazuyoshi Kikuta, Nagoya, Japan, assignor to Fujitsu Limited, Kawasaki, and Fujitsu VLSI Limited, Kasugai, both of Japan

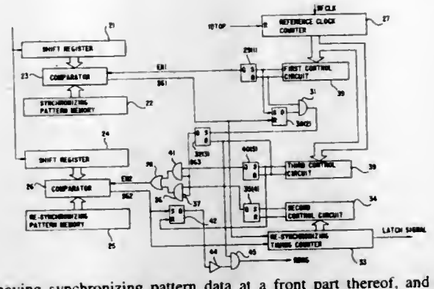
Filed Jan. 17, 1991, Ser. No. 642,575

Claims priority, application Japan, Jan. 17, 1990, 2-007843

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—48 **12 Claims**

2. A synchronizing signal reading apparatus for a recording medium, said recording medium having a sector in which an address portion and a data portion are recorded, said data portion



having synchronizing pattern data at a front part thereof, and a plurality of divided data portions and re-synchronizing pattern data between the divided data portions, said synchronizing signal reading apparatus comprising:

a synchronizing pattern detecting means for first detecting said synchronizing pattern data provided at a front part of said data portion read from said recording medium on which a plurality of sectors are formed on a track;

re-synchronizing pattern detecting means for second detecting re-synchronizing pattern data provided between the divided data portion read from said recording medium;

synchronizing pattern detecting judging means for judging whether the first detection by said synchronizing pattern detecting means is successful;

re-synchronizing pattern detecting judging means for judging, within a predetermined period, whether the second detection by said re-synchronizing pattern detecting means is successful; and

control means for controlling a predetermined time period for detecting by said re-synchronizing pattern detecting judging means based on the judgment by said synchronizing pattern detecting judging means, said predetermined time period being a first effective time period when said first detection by said synchronization pattern detecting means is successful, and said time period being a second effective time period when said first detection is unsuccessful, said second effective time period being longer than said first effective time period.

5,604,724

MAXIMUM LIKELIHOOD ESTIMATION USING REFERENCE AND SPONTANEOUS OUTPUT PEAKS OF PARTIAL RESPONSE EQUALIZER

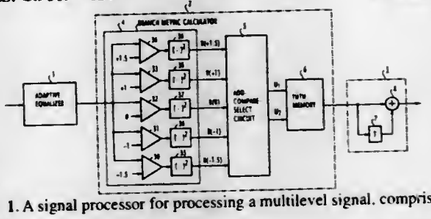
Masato Shiokawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 26, 1995, Ser. No. 534,210

Claims priority, application Japan, Sep. 26, 1994, 6-229254; Feb. 27, 1995, 7-063428

Int. Cl.[6] G11B *7/00;* **H03H** *7/30*

U.S. Cl. 369—124 **8 Claims**



1. A signal processor for processing a multilevel signal, comprising:

a partial response equalizer having a first predetermined number of reference amplitudes, the equalizer receiving said multilevel signal and detecting therefrom a significant instant of amplitude transition with respect to said reference amplitudes and producing a signal representative of the amplitude at the detected significant instant, said amplitude representative sig-

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nal assuming one of a second predetermined number of amplitudes including spontaneously generated amplitudes, the second predetermined number being greater than the first predetermined number of said reference amplitudes; and

a maximum likelihood estimator having transition states and a state transition rule which determines one of said states with respect to decision thresholds greater in number than said first predetermined number and equal to or smaller than said second predetermined number, the estimator receiving said amplitude representative signal from the equalizer and estimating therefrom a maximum likelihood amplitude according to said state transition rule.

5,604,725

INFORMATION RECORDING METHOD AND COLLECTOR AND DISTRIBUTOR FOR RECORDING INFORMATION

Hiroshi Fuji, Soraku-gun, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 13, 1994, Ser. No. 357,203
Claims priority, application Japan, Dec. 16, 1993, 5-316125; Dec. 16, 1993, 5-316127
Int. Cl.[6] G11B *5/09*
U.S. Cl. 369—275.3 **4 Claims**

DATA	EVEN TRACK	ODD TRACK
0	000	001
1	010	100



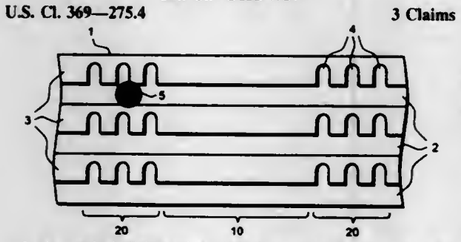
1. A coding method for an information recording/reproduction apparatus and a recording medium, comprising the step of setting a second code bit of a second track adjacent to a first code bit of a first track in the direction perpendicular to a track to "0" or "nonmark" when the first code bit of the first track is "1" or "record mark".

5,604,726

PRE-FORMAT CONFIGURATION OF OPTICAL DISKS AND METHOD OF DATA PROCESSING USING THE SAME

Hiroo Karube, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Oct. 5, 1995, Ser. No. 539,769
Claims priority, application Japan, Oct. 7, 1994, 6-244208
Int. Cl.[6] G11B *7/24*
U.S. Cl. 369—275.4 **3 Claims**



1. An optical disk having optical memory systems for data recording and reproduction, comprising;

a plurality of grooves extending circumferentially of the optical disk;

a plurality of lands defined by said grooves and having recorded data; and

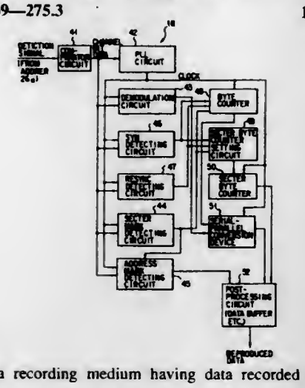
a plurality of pre-pits which have track number data and which are formed in said lands such that portions of a periphery side of each of said lands are cut out so as to provide said pre-pits.

5,604,727

DATA RECORDING MEDIUM AN OPTICAL DISK AND AN OPTICAL DISK APPARATUS

Atsushi Ishihara, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 23, 1995, Ser. No. 409,069
Claims priority, application Japan, Mar. 24, 1994, 6-079452
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—275.3 **18 Claims**



1. A data recording medium having data recorded in tracks comprising:

a plurality of sectors defined by dividing one of the tracks into predetermined lengths;

one of the sectors including a header section that has an address area for recording address information, and a data recording section;

the data recording section including a gap area, a frequency synchronization area, a byte synchronization area, and a data area;

the frequency synchronization area including at least two first areas in which a frequency synchronization pattern is recorded, and a second area, which is positioned between the at least two first areas, in which a specific pattern that is useful for byte synchronization is recorded;

the gap area having a length that is variable so as to allow the frequency synchronization area, the byte synchronization area, and the data area to vary in position within the data recording section.

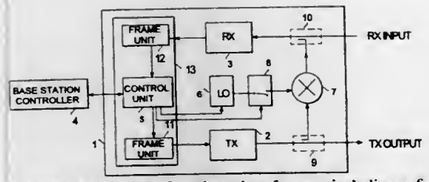
5,604,728

METHOD FOR TESTING A TRANSCEIVER, AND BASE STATION OF A TIME-DIVISIONAL RADICOMMUNICATION SYSTEM

Raimo Jylhä, Oulu, Finland, assignor to Nokia Telecommunications OY, Espoo, Finland

PCT No. PCT/FI94/00240, § 371 Date Apr. 10, 1995, § 102(e) Date Apr. 10, 1995, PCT Pub. No. WO94/29976, PCT Pub. Date Dec. 22, 1994
PCT Filed Jun. 6, 1994, Ser. No. 379,661
Claims priority, application Finland, Jun. 11, 1993, 932699
Int. Cl.[6] H04B *17/00*
U.S. Cl. 370—241 **7 Claims**

1. A method for testing a transceiver unit, having a transmitter and a receiver, the receiver having a reception frequency, in a time-divisional radiocommunication system, said method comprising:



assigning at least two free time slots for use, including a first selected time slot and a second selected time slot, selected in such a manner that when said transmitter transmits on the first selected time slot, said receiver simultaneously receives the second selected time slot,

supplying a predetermined test signal to an input of said transmitter,

transmitting a predetermined test signal as an output signal by said transmitter using said first selected time slot,

converting said output signal transmitted on said first selected time slot into said reception frequency of said receiver,

supplying said signal of said reception frequency to said receiver, which receives said second selected time slot, and

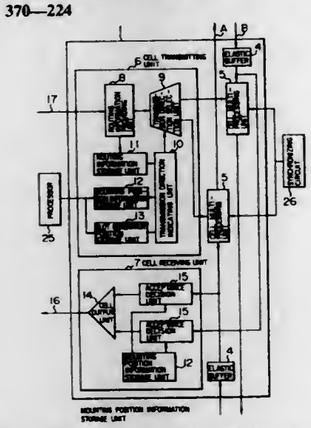
comparing the signal obtained from an output of said receiver with said test signal supplied to said transmitter.

5,604,729

ATM COMMUNICATION SYSTEM HAVING A PHYSICAL LOOP FORM WITH LOGICAL START POINT AND END POINT

Kaoru Aoki; Masataka Takano, both of Yokohama; Junichirou Yanagi, Kodaira; Tetsushi Nakano, Fujisawa, and Miho Iino, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 566,702, Dec. 4, 1995, which is a continuation of Ser. No. 230,152, Apr. 19, 1994, Pat. No. 5,487,062. This application Sep. 29, 1994, Ser. No. 314,776
Claims priority, application Japan, Oct. 1, 1993, 5-246563
Int. Cl.[6] H04L *12/437*
U.S. Cl. 370—224 **18 Claims**



14. An ATM communication system comprising:

a plurality of communication nodes connected in a physical loop form by two transmission means having opposite cell transmission directions relative to each other, each of said two transmission means has a logical start point and an end point;

buffer means disposed in each communication node to transmit and receive a cell, said buffer means being connected to said two transmission means;

synchronizing pulse generating means connected to said each communication node to generate a timing pulse of reading out a cell from said buffer means;

cell multiplexing means disposed in said each communication node to multiplex a cell to said two transmission means, said cell multiplexing means having an input port and an output port which is connected to said two transmission means;

cell transmitting means disposed in said each communication node to transmit a cell from an input line to said cell multiplexing means, said cell transmitting means being connected to said cell multiplexing means;

cell receiving means disposed in said each communication node to receive a cell from said two transmission means and to supply said cell to an output line, said cell receiving means being connected to said cell multiplexing means at said input port;

first storage means disposed in said each communication node to store information identifying said each communication node connected by said two transmission means;

second storage means disposed in said each communication node to store information identifying a communication node functioning as a logical start point of a physical loop; and

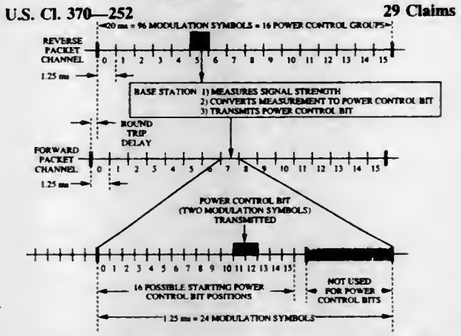
direction selecting means disposed in said each communication node to select a cell transmission direction from said opposite cell transmission directions based on information stored in said first and second storage means.

5,604,730

REMOTE TRANSMITTER POWER CONTROL IN A CONTENTION BASED MULTIPLE ACCESS SYSTEM

Edward G. Tiedemann, Jr., San Diego, Calif., assignor to QUALCOMM Incorporated, San Diego, Calif.

Filed Jul. 25, 1994, Ser. No. 280,095
Int. Cl.[6] H04J *3/14*
U.S. Cl. 370—252 **29 Claims**



1. A method for controlling transmit power of a plurality of radios, the plurality of radios communicating with a base station, the method comprising the steps of:

the base station determining the transmit power required from each radio of the plurality of radios;

the base station instructing more than one of the plurality of radios to monitor a single power control bit stream; and

the base station transmitting said single power control bit stream to the more than one of the plurality of radios to instruct each of the more than one of the plurality of radios to alter its transmit power in response to the required transmit power.

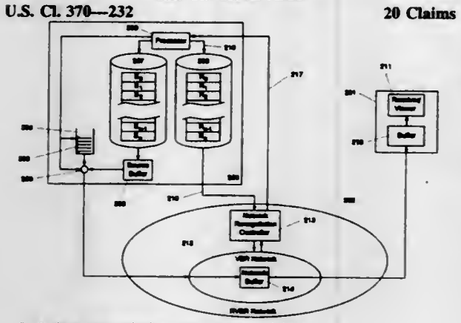
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5,604,731

RENEGOTIATED BIT-RATE SERVICE SYSTEM AND METHOD

Matthias Grossglauser, Sophia-Antipolis, France; Srinivasan Keshav, Berkeley Heights, and David Tse, New Providence, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Apr. 19, 1995, Ser. No. 424,844
Int. Cl.[6] H04L *12/26*
U.S. Cl. 370—232 **20 Claims**



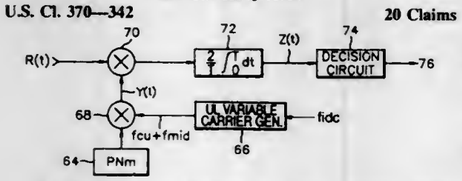
1. A data transmission system comprising:
a first site;
a second site;
a variable bit-rate network providing a connection between said first and said second sites;
a first memory storing a series of data segments;
a second memory storing a previously compiled record of instantaneous transmission rates, each of said stored rates being associated with one or more of said stored data segments; and
a network controller adapted to negotiate a connection between said first site and said second site having a particular bandwidth in response to the contents of said second memory.

5,604,732

UP-LINK ACCESS APPARATUS IN DIRECT SEQUENCE CODE DIVISION MULTIPLE ACCESS SYSTEM

Je-Woo Kim, Suwon, and Jong-Hyeon Park, Seoul, both of Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 27, 1994, Ser. No. 364,719
Claims priority, application Rep. of Korea, Dec. 31, 1993, 31814/1993
Int. Cl.[6] H04J *13/04*
U.S. Cl. 370—342 **20 Claims**



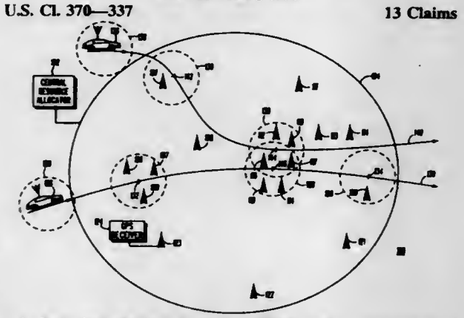
1. An up-link access apparatus in a direct sequence spread spectrum code division multiple access system having a base station and a plurality of mobile stations, said apparatus comprising:
a transmitter for mixing base band data with a pseudo-noise code unique to a first of said plurality of mobile stations to generate a pseudo-noise code modulated signal, said transmitter then mixing said pseudo-noise code modulated signal with a carrier signal having a frequency shifted by an identification frequency unique to said first of said plurality of mobile stations to output a spread spectrum signal for transmission to said base station; and
a receiver of said base station for mixing a demodulation carrier comprised of said pseudo-noise code and said carrier signal with said spread spectrum signal from said transmitter to output a mixed signal, said receiver then integrating said mixed signal to output an integrated signal and demodulating said integrated signal to output a digital signal.

5,604,733

DYNAMIC TIME SLOT ALIGNMENT IN A DIGITAL RADIO COMMUNICATION SYSTEM

Phillip C. Hargrave, Palatine, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 22, 1995, Ser. No. 518,089
Int. Cl.[6] H04J *3/16*
U.S. Cl. 370—337 **13 Claims**



1. In a time division multiplex (TDM) radio communication system, a method of providing communication service to a plurality of subscribers throughout a coverage area, the coverage area including a central resource allocator, the method comprising the steps of:
providing a plurality of satellite receivers throughout the coverage area;
at at least one of the plurality of satellite receivers;
upon receipt of a transmission from a transmitting one of the plurality of subscribers, transmitting to the central resource allocator an arrival time for the transmission; and
at the central resource allocator;
selecting, based at least in part on the arrival time, a favorable one of the plurality of satellite receivers for facilitating subsequent transmissions from the transmitting subscriber.

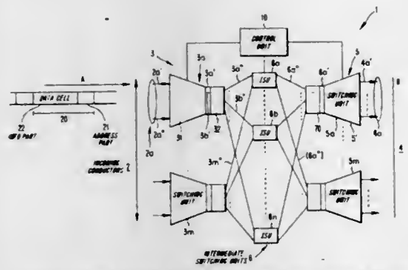
5,604,734

ATM-SYSTEM ADAPTED THREE STAGE SWITCHING UNIT

Magnus K. S. Buhrgard, Bromma, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Jun. 5, 1995, Ser. No. 463,559
Claims priority, application Sweden, Jun. 10, 1994, 94 02021
Int. Cl.[6] H04L *12/56;* **H04J** *14/08*
U.S. Cl. 370—388 **21 Claims**

1. An ATM-System adapted three stage switching unit, comprising:
an input circuit including a number of incoming group related conductors, wherein every group is connected to a first switching stage;
an output circuit including a number of outgoing group related conductors, wherein every group is connected to a second switching stage;
a third switching stage, related and connectable between said first and second switching stages, whereby said incoming group related conductors and said outgoing group related conductors are able to transfer electrical information-carrying signals;



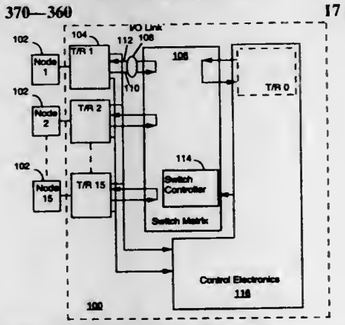
a control unit which coacts with said switching stages to connect one of said incoming group related conductors with a selected outgoing conductor by means of a connecting path through said third switching stage whereby each of the outgoing conductors, belonging to said first switching stage, coacts with an electro-optical converter and wherein a respective connection between the first switching stage and the third switching stage is an optical conductor, whereby the third switching stage is able to transfer optical information-carrying signals through said connecting path, and the connections between the third switching stage and the second switching stage are optical conductors and the incoming conductors, belonging to said second switching stage, are pre-connected by opto-electrical converters wherein,
based upon a required bandwidth for a call, said control unit is able to activate and establish a connecting path through one of a plurality of switching units within the third switching stage, said control unit being activated to maintain said connecting path during a complete information transmitting sequence and deactivated to terminate said connecting path by the end of the sequence.

5,604,735

HIGH SPEED NETWORK SWITCH

Frank H. Levinson, Palo Alto; Mark J. Farley, Napa; Minh Q. Vu, San Jose, and Calvin P.-K. Leung, Newark, all of Calif., assignors to Finisar Corporation, Calif.

Continuation-in-part of Ser. No. 404,873, Mar. 15, 1995, Pat. No. 5,566,171. This application May 12, 1995, Ser. No. 440,088
Int. Cl.[6] H04Q *11/04*
U.S. Cl. 370—360 **17 Claims**



1. A high speed network switch comprising:
a plurality of transceivers for interfacing directly with a like plurality of nodes, each of said transceivers having a receive and transmit through port for passing data to and from said nodes, said data comprising an encoded connect sequence, a first wait sequence, and user data;
isolation means for initializing each transceiver for looping back said data;
switching means for directly connecting any pair of said transceivers; and
a controller for establishing and prioritizing matrix connections and disconnections, said controller decoding said connect sequence and scheduling said switching means connections, such that a requesting node sequentially transmits said encoded connect sequence followed by said user data to said network switch assuming node-to-node communication has been established with a destination node, said isolation means looping said user data back to said requesting node when said destination node is unavailable.

5,604,736

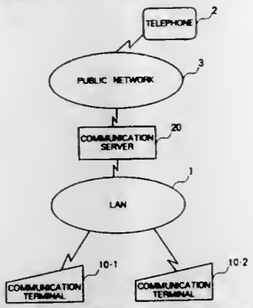
Patent Not Issued For This Number

5,604,737

VOICE COMMUNICATION SYSTEM AND VOICE COMMUNICATION METHOD

Naoko Iwami; Susumu Matsui, both of Machida, and Keiko Takahara, Kawasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 13, 1994, Ser. No. 357,189
Claims priority, application Japan, Dec. 15, 1993, 5-343162
Int. Cl.[6] H04L *12/56*
U.S. Cl. 370—352 **21 Claims**



1. A voice communication system including a line switching network to which telephones are connected, a packet switching network to which communication terminals are connected and which has a communication address scheme different from a telephone number scheme of said line switching network, and a communication server connected to said line switching network and said packet switching network and assigned a communication terminal address on said packet switching network, wherein:
each of said communication terminals comprises:
means for transmitting a voice communication request when an apparatus with which a communication is desired is a telephone connected to said line switching network, and performing communication control between said communication server and said communication terminal to establish a connection between said communication terminal and said communication server, and said voice communication request including the telephone number of the telephone, and
said communication server comprises:
means for receiving the voice communication request transmitted from said communication terminal to the communication terminal address of said communication server, and performing communication control between said communication server and said communication terminal which has transmitted said voice communication request to establish a connection between said communication server and said communication terminal;

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means for performing communication control between said communication server and a telephone having a telephone number included in the received voice communication request to set said communication server and said telephone in a communication available state; and

means for receiving voice information transmitted from the telephone having said telephone number, editing said voice information into packets, and transmitting the packets to said communication terminal, while receiving packets transmitted from said communication terminal, and transmitting the voice information in the packets to the telephone having said telephone number.

5,604,738

MULTIPOINT TELECONFERENCE SYSTEM EMPLOYING H. 221 FRAMES

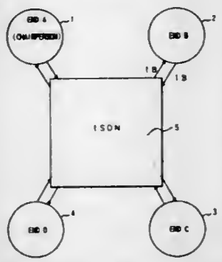
Yoji Shibata, Yokosuka, and Masaaki Takizawa, Tokyo, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 913,403, Jul. 15, 1992, Pat. No. 5,402,418. This application Jan. 13, 1995, Ser. No. 372,133

Claims priority, application Japan, Jul. 15, 1991, 3-174031

Int. Cl.[6] H04L *12/18*

U.S. Cl. 370—264 **5 Claims**



1. In a multipoint video telephone/teleconference system having a plurality of terminals which are connected to digital communication channels for transmitting and receiving communication frames containing video telephonic/teleconferential data, which includes video data including video data through the digital communication channels, said multipoint teleconference system comprising:

wherein said digital communication channels connect said plurality of terminals in a ring configuration; and

wherein at least some of said terminals each comprises:

generation means for generating said video telephonic/teleconferential data to be sent to the other terminals,

resumption means for resuming said video data contained in said communication frame received from the terminal at an upper stream position of a loop with respect to transfer of said communication frame,

relay means for transmitting the received communication frame to the terminal at a lower stream position of said loop so that said communication frame may revolve around said loop, said loop being formed of said digital communication channels which connect said plurality of terminals to one another,

removing means for removing the video data within said communication frame which is to be relayed by said relay means, and

transmission means for entering the generated video data into an unused area of said communication frame which is to be relayed by said relay means, thereby sending said generated video data to said other terminals which lie on said loop; and

wherein a plurality of the video data respectively generated in said at least some of said terminals are entered into a same communication frame which is relayed along the loop, and wherein terminals other than said at least some of said terminals comprises:

resumption means for resuming a plurality of said video data contained in said communication frame received from the terminal at an upper stream position of a loop with respect to transfer of said communication frame, and

relay means for transmitting the received communications frame to the terminal at a lower stream position of said loop so that said communication frame may revolve around said loop, said loop being formed of said digital communication channels which connect said plurality of terminals to one another.

5,604,739

SIGNAL RECEIVING AND TRANSMITTING UNIT FOR CONVERTING A TRANSMISSION RATE OF A RECEIVED SIGNAL TO A TRANSMISSION RATE OF A TRANSMITTTED SIGNAL

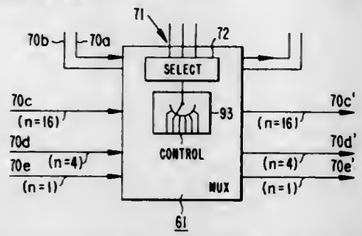
Kari S. M. Buhrgard, Stockholm; Johan U. Tingsborg, Solna; Mats L. B. Lindblom, Johanneshov, and Hao Jiang, Bandhagen, all of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Oct. 11, 1994, Ser. No. 320,660

Claims priority, application Sweden, Oct. 12, 1993, 9303338

Int. Cl.[6] H04J *3/22*

U.S. Cl. 370—468 **21 Claims**



1. A signal receiving and signal transmitting unit for converting a first transmission rate of a received information carrying signal to a second transmission rate of a transmitted information carrying signal that is different from the first transmission rate, said unit comprising:

a plurality of signal receiving inputs for receiving information carrying signals, wherein each input is structured to receive information carrying signals at a different rate;

a plurality of signal transmitting outputs for transmitting information carrying signals, wherein each output is structured to transmit information carrying signals at a different rate;

at least one control conductor for supplying control information indicative of a conversion mode to be applied to said received information carrying signals;

control logic for receiving said control information and selecting a corresponding conversion mode;

a memory for receiving said information carrying signals from said inputs; and

a buffer circuit for recieving said information carrying signals from said memory and outputting said information carrying signals to said signal transmitting outputs under control of said control logic,

wherein the control logic connects one signal receiving input to one signal transmitting output based on said control information, and the unit performs rate conversion, using the control logic, the memory and the buffer circuit, in said selected conversion mode.

5,604,740

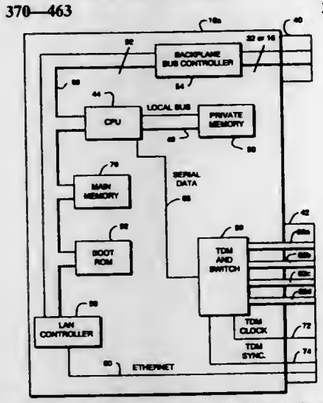
MULTI-PATH BUS DIGITAL SIGNAL PROCESSOR

Michael Pinault, Hudson, N.H., and Malcom Strandberg, Cambridge, Mass., assignors to Davox Corporation, Westford, Mass.

Continuation-in-part of Ser. No. 252,336, Jun. 1, 1994. This application Nov. 8, 1994, Ser. No. 336,264

Int. Cl.[6] H04J *3/02*

U.S. Cl. 370—463 **24 Claims**



1. A multi-path digital signal processor for use in a telephony system, said multi-path digital signal processor comprising:

a first means for directly interfacing to a local area network;

a second means for interfacing to a standard computer backplane bus; and

a third means for interfacing to at least one synchronous serial signal path supporting time division multiplexing;

wherein said digital signal processor can transmit and receive data to and from said telephony system by any one of said first, second and third means for interfacing.

5,604,741

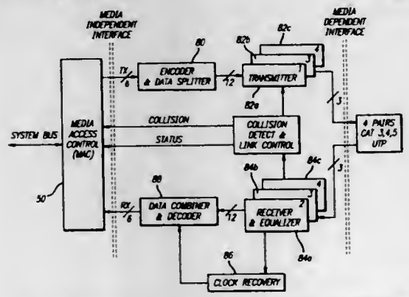
ETHERNET SYSTEM

Henry Samueli, Northridge; Mark Berman, Los Angeles, and Fang Lu, Torrance, all of Calif., assignors to Broadcom Corporation, Irvine, Calif.

Filed Mar. 16, 1995, Ser. No. 398,759

Int. Cl.[6] H03H *7/30*

U.S. Cl. 370—402 **103 Claims**



1. In combination for use in a system providing signals having individual ones of a plurality of analog levels to represent information,

a hub,

a plurality of computers,

a plurality of pairs of twisted wires, each plurality being disposed between the hub and an individual one of the computers to transmit signals between the individual one of the computers and the hub,

each of the computers including a receiver for receiving from the hub the signals having the plurality of analog levels,

first means responsive in each of the computers to the received signals for providing a digital conversion of the received signals at a particular frequency,

second means responsive in each of the computers to the digitally converted signals from the first means in such computer for regulating such digital conversion by the first means at the particular frequency,

third means responsive in each of the computers to the digitally converted signals from the first means in such computer for providing an adaptive equalization of such digitally converted signals from the first means and for selecting, after such adaptive equalization, individual ones of the analog levels closest in magnitude to the digitally converted signals, and

fourth means in each of the computers for decoding the individual ones of the analog levels selected by the third means in such computer to recover the information represented by the received signals.

5,604,742

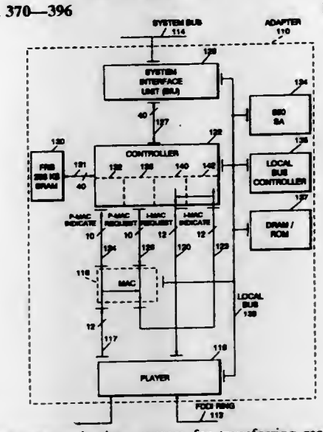
COMMUNICATIONS SYSTEM AND METHOD FOR EFFICIENT MANAGEMENT OF BANDWIDTH IN A FDDI STATION

Michel M. Colmant, Kain, Belgium; William A. McIntosh, Herndon, Va., and Alexander A. Smith, Carrollton, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 31, 1995, Ser. No. 456,150

Int. Cl.[6] H04L *12/417*

U.S. Cl. 370—396 **19 Claims**



1. In a communications system for transferring real time synchronous and asynchronous data between a network and a host system, a communication adapter for efficient and dynamic management of bandwidth in a station included in the network comprising:

a queue manager including a synchronous data threshold register and counter and an asynchronous data threshold register and counter; the queue manager controlling receiving or transmitting of the synchronous or asynchronous data at a first, a second and a third interfaces while keeping track of the synchronous and asynchronous data stored in separate queues of a storage means;

the first interface coupled between a system bus and the queue manager, the first interface transmitting or receiving synchronous or asynchronous data to/from the host system and the

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second or the third interface according to instructions received from the host system or the queue manager;

the second interface coupled between the storage means and the queue manager for storing synchronous and asynchronous data in separate queues, as directed by the queue manager;

the third interface coupled between the network and the queue manager; the third interface processing all synchronous or asynchronous data received from the network for the host system or sent to the network by the host system;

bandwidth control logic coupled to the queue manager, and the third interface; the bandwidth control unit specifying the amount of bandwidth available for synchronous data transmission to/from the network and the host system;

means for dynamically switching between the transmission of synchronous and asynchronous data between the host system and the network, in real time, in either direction, while ensuring synchronous and asynchronous data bandwidth are not exceeded; and

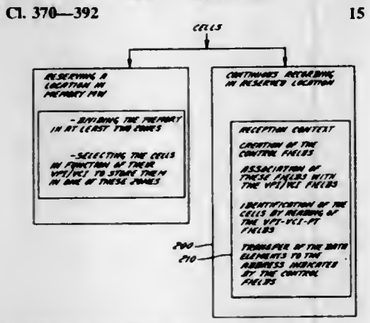
means for initiating token capture in the network before the synchronous or asynchronous data has been buffered in storage.

5,604,743

METHOD FOR THE PROCESSING OF DATA COMING FROM AN ADAPTATION LAYER FOR TRANSMISSION ACCORDING TO AN ATM TYPE ASYNCHRONOUS TRANSFER MODE

Marc Le Guigner; Gaëlle de Hauteclocque, both of Lannion, and Michel Bourbao, Tregastel, all of France, assignors to France Telecom, Paris, France

Filed Feb. 13, 1995, Ser. No. 388,101
Claims priority, application France, Feb. 14, 1994, 94 01643
Int. Cl.[6] H04J *3/02*
U.S. Cl. 370—392 **15 Claims**



1. A method of processing data coming from an adaptation layer of an ATM type asynchronous transfer network at an ATM receiver terminal, the data being in the form of a flow of cells, the cells each comprising a header field followed by an information field, the method comprising the following steps:

providing the ATM receiver terminal having a microprocessor coupled to a working memory, the receiver terminal being disposed on an ATM network,

reserving a location in the working memory of the receiver terminal, with a given maximum size,

receiving the cells with the receiver terminal,

reassembling the cells in the working memory of the receiver terminal, the reassembling step including the step of contiguously recording the constituent cells of one and the same message at the location in the working memory of the receiver terminal, and

exploiting the message with the microprocessor,

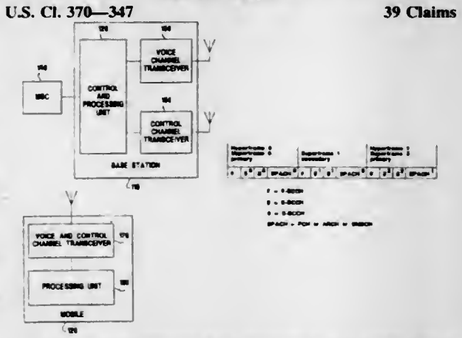
and wherein the reassembling step and the exploiting step are performed such that the message is transferred directly from the ATM network to the working memory of the receiver terminal where it is exploited by the microprocessor without additionally transferring the message to an intermediate memory.

5,604,744

DIGITAL CONTROL CHANNELS HAVING LOGICAL CHANNELS FOR MULTIPLE ACCESS RADIOCOMMUNICATION

Håkan C. Andersson, Ekerö, Sweden; John W. Diachina, Garner, N.C.; Bengt Persson, Djursholm, Sweden; Alex K. Raith, Durham; Anthony J. Sammarco, Garner, both of N.C., and Francois Sawyer, St-Hubert, Canada, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Continuation-in-part of Ser. No. 147,254, Nov. 1, 1993, and a continuation-in-part of Ser. No. 956,640, Oct. 5, 1992, Pat. No. 5,404,355. This application Oct. 31, 1994, Ser. No. 331,703
Int. Cl.[6] H04J *3/16*
U.S. Cl. 370—347 **39 Claims**



1. A method of communicating information to a remote station comprising the steps of:

grouping the information into a plurality of successive time slots on a radio carrier signal;

grouping the time slots into a plurality of successive superframes;

grouping the successive superframes into a plurality of successive hyperframes, wherein at least two successive superframes are grouped into each hyperframe; and

assigning one of the time slots in each of a plurality of said plurality of successive superframes to the remote station, the assigned time slot being for sending a paging message to the remote station;

wherein information sent in the assigned time slot of a superframe in a hyperframe is repeated in the assigned time slot in all other superframes in that hyperframe.

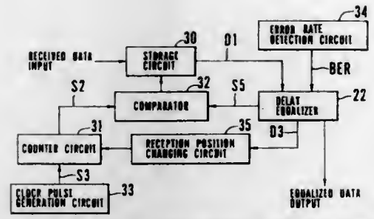
5,604,745

TDMA MOBILE TELEPHONE APPARATUS

Kazuyoshi Hijli, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 27, 1995, Ser. No. 495,020
Claims priority, application Japan, Jun. 28, 1994, 6-146460
Int. Cl.[6] H04B *7/26*
U.S. Cl. 370—347 **6 Claims**

1. A TDMA mobile telephone apparatus which has a delay equalizer for equalizing necessary data and outputting equalized data, and which captures data in a predetermined slot from a signal including a plurality of slots, said apparatus comprising:



(a) a storage circuit for storing received data and sending the received data to said delay equalizer;

(b) a reception position changing circuit for correcting a capture position of the received data by generating a start pulse signal for performing slot synchronization in accordance with position correction data from said delay equalizer when a position of data sent from said delay equalizer is offset;

(c) a counter circuit for outputting a count value of a reference clock from a clock pulse generation circuit in determining a width of a reception window, said counter circuit being responsive to said start pulse signal; and

(d) comparison circuit means for determining the number of data to be stored in said storage circuit and the width of the reception window, said comparison circuit means receiving said count value, and outputting a stop pulse to said storage circuit when said count value coincides with a set value;

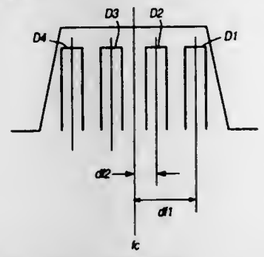
wherein said comparison circuit means determines said reception window width in response to a selection signal from said delay equalizer.

5,604,746

DIGITAL DATA RECEIVER

Hideki Oto, Saitama-ken, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 8, 1995, Ser. No. 400,249
Claims priority, application Japan, Mar. 9, 1994, 6-038046
Int. Cl.[6] H04J *1/00;* **H04B** *1/06;1/26*
U.S. Cl. 370—481 **2 Claims**



2. A digital data receiver comprising:

a converter for converting a high frequency digital orthogonal modulation signal into a fixed intermediate frequency band;

a demodulator for performing an orthogonal demodulation of an intermediate frequency signal output from the converter based on a fixed frequency; and

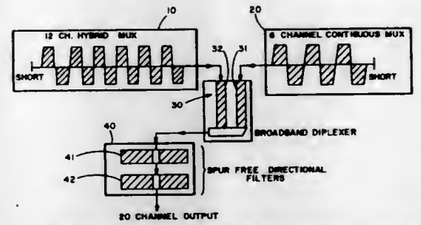
a controller for matching a frequency of an oscillation signal with a central frequency of the intermediate frequency band based on a frequency control signal generated for performing an orthogonal detection processing by the demodulator, and for offsetting the central frequency of the oscillation signal to correspond with a carrier frequency of a digital orthogonal modulation signal when a plurality of digital orthogonal modulation signals are frequency division multiplexed in the intermediate frequency band.

5,604,747

MODULAR CONTIGUOUS OUTPUT MULTIPLEXER

Michael C. Callas, Valencia, Calif., assignor to Hughes Electronics, Los Angeles, Calif.

Filed Feb. 28, 1996, Ser. No. 608,163
Int. Cl.[6] H04J *1/00*
U.S. Cl. 370—297 **20 Claims**



1. A modular multiplexer having a multi-channel contiguous output comprising:

at least two multi-channel contiguous multiplexer means for respectively outputting high and low contiguous ranges of passband frequencies;

a diplexer means, for receiving said contiguous high and low ranges of passband frequencies and comprising a high frequency passband filter, with high attenuation at the highest frequency of said range of low passband frequencies, and a low frequency passband filter, with high attenuation at the lowest frequency of said range of high passband frequencies; and

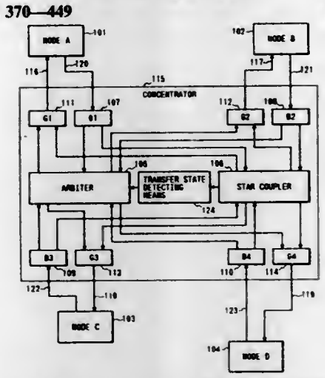
spur free directional filter means for receiving the output of said diplexer means and providing a multi-channel contiguous output.

5,604,748

INFORMATION PROCESSING APPARATUS FOR TRANSMITTING INFORMATION AMONG A PLURALITY OF NODES AND ARBITRATION METHOD IN SUCH INFORMATION PROCESSING APPARATUS

Atsushi Date, Tokyo; Kazumasa Hamaguchi; Masato Kosugi, both of Yokohama, and Toshiyuki Fukui, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 3, 1995, Ser. No. 383,184
Claims priority, application Japan, Feb. 9, 1994, 6-015329
Int. Cl.[6] H04B *10/20*
U.S. Cl. 370—449 **8 Claims**



1. An information processing apparatus for transmitting data among a plurality of nodes, comprising:

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a common transmission line;

a plurality of nodes which are connected by said common transmission line, each said node transmitting data to others of said nodes over said common transmission line;

an arbiter which selectively, gives a use permission, to use said common transmission line for transmitting data, to a requesting one of said nodes on the basis of at least a use request for said common transmission line from the requesting node;

information transmitting means, which couples said arbiter and each of said nodes, for transmitting the use request from the requesting node to said arbiter; and

data transmission state detecting means for detecting a data transmission state of data that is transmitted on said common transmission line by monitoring for a separate signal on said common transmission line, said data transmission state detecting means notifying the detected data transmission state to said arbiter to enable said arbiter to use the detected data transmission state to give use permission to the requesting node.

5,604,749

HIGH CAPACITY DATA COMMUNICATION NETWORK AND NETWORK NODE SUITABLE FOR THE SAME

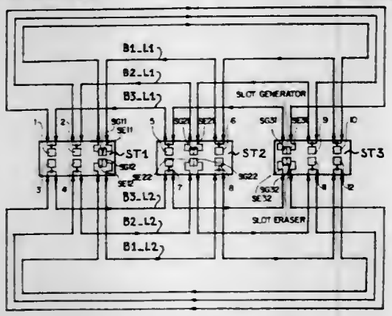
Francesco Masetti, Bologna, Italy, and Jean-Michel Gabriagues, Bois Colombes, France, assignors to Alcatel N.V., Amsterdam, Netherlands

Continuation of Ser. No. 278,278, Jul. 21, 1994, abandoned. This application Oct. 13, 1995, Ser. No. 542,873

Claims priority, application Italy, Jul. 23, 1993, MI93A1636

Int. Cl.[6] H04J *1/02*; **H04L** *12/433*

U.S. Cl. 370—440 **10 Claims**



1. A data communication network comprising:

a plurality of nodes, and

a plurality of communication media;

wherein each of said plurality of nodes communicates data through said plurality of communication media according to a distributed queue dual bus protocol;

wherein each of said plurality of communication media interconnects all of said plurality of nodes to bidirectionally carry transmitted data independently of a remainder of said plurality of communication media;

wherein each respective communication medium of said plurality of communication media has a different one of said plurality of nodes functioning as a respective head-end station of said respective communication medium; and

wherein said respective head-end station has a highest priority to transmit data through said respective communication medium.

5,604,750

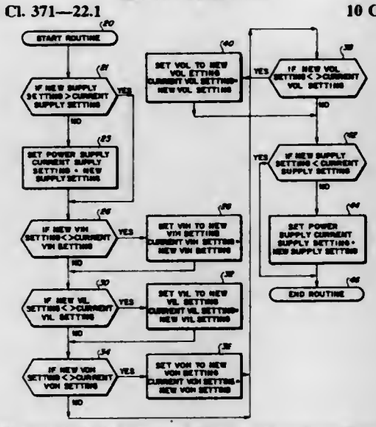
METHOD FOR VOLTAGE SETUP OF INTEGRATED CIRCUIT TESTER

Paul S. Levy, Chandler, Ariz., assignor to VLSI Technology, Inc., San Jose, Calif.

Filed Nov. 1, 1994, Ser. No. 332,678

Int. Cl.[6] G01R *31/28*

U.S. Cl. 371—22.1 **10 Claims**



1. A method for programming of an integrated circuit tester for an integrated circuit device under test where said tester includes a memory storing the hardware setup of the current voltage settings for the last test operated by said tester, said method including the steps of:

providing voltage settings in software which constitute representations of designated hardware voltage settings for the next test to be performed;

comparing, via software, the current voltage settings for the hardware setup stored in a memory of a tester with said software voltage settings for said next test; and

resetting hardware voltage settings in the memory of said tester for said next test only if the stored voltage settings are different from said software settings for said next test.

5,604,751

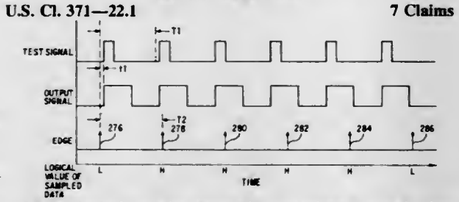
TIME LINEARITY MEASUREMENT USING A FREQUENCY LOCKED, DUAL SEQUENCER AUTOMATIC TEST SYSTEM

Michael C. Panis, Brookline, Mass., assignor to Teradyne, Inc., Boston, Mass.

Filed Nov. 9, 1995, Ser. No. 555,438

Int. Cl.[6] G01R *31/28*

U.S. Cl. 371—22.1 **7 Claims**



1. A method of operating automatic test equipment to make time measurements on digital electronic circuits, used to determine whether a digital semiconductor chip is functioning properly, comprising:

(a) measuring the frequency, f1, of an output signal at a node of the digital electronic circuit;

(b) repetitively sampling said output signal at a predetermined frequency f2 to produce sampled data;

(c) determining the number of logical high data samples; and

(d) multiplying the number of high data samples by |(1/f2)−(1/f1)|, whereby |(1/f2)−(1/f1)| is the effective time period between data samples.

5,604,752

COMMUNICATION METHOD AND APPARATUS THEREFOR

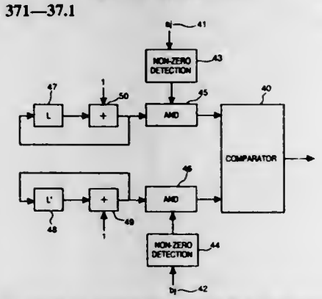
Keiichi Iwamura, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 27, 1994, Ser. No. 363,957

Claims priority, application Japan, Dec. 29, 1993, 5-354518

Int. Cl.[6] H03M *13/00*

U.S. Cl. 371—37.1 **9 Claims**



1. A communication apparatus for decoding an encoded received word, comprising:

syndrome polynomial generating means for generating a syndrome polynomial on the basis of a received word;

polynomial updating means for sequentially updating an error locator polynomial and an error evaluator polynomial which are set, a predetermined number of times, using the generated syndrome polynomial;

decoded sequence generating means for generating a decoded sequence on the basis of the error locator polynomial and the error evaluator polynomial updated the predetermined number of times;

degree calculating means for calculating a degree of the latest error locator polynomial; and

comparison means for comparing the degree of the latest error locator polynomial with a predetermined threshold value,

wherein said polynomial updating means updates the latest error locator polynomial and the latest error evaluator polynomial in a way of updating corresponding to the result of the comparison by said comparison means.

5,604,753

METHOD AND APPARATUS FOR PERFORMING ERROR CORRECTION ON DATA FROM AN EXTERNAL MEMORY

John M. Bauer; Glenn J. Hinton, both of Portland; Gregory P. Meece, and David B. Papworth, both of Beaverton, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jan. 4, 1994, Ser. No. 177,861

Int. Cl.[6] G06F *11/10*

U.S. Cl. 371—40.1 **29 Claims**

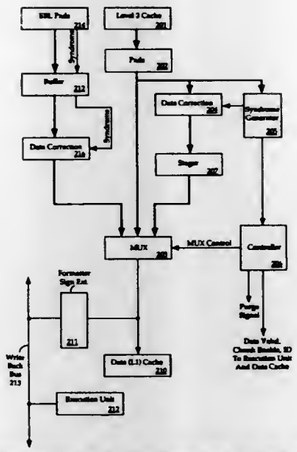
9. A processor for use in a computer system having at least one memory external to said processor, said processor comprising:

an internal bus;

an execution core coupled to the internal bus and executing instructions using data;

a cache memory coupled to the internal bus for storing data for use by the processor;

an error correction logic coupled to the internal bus and operable to perform error correction on data received from said at least one memory that has an error in parallel to the data being received and immediately used by the execution core;



a controller coupled to the execution core and the error correction logic and operable to cause the execution core to be purged of results from the execution core operating with erroneous data and to cause the error correction logic to send corrected data to the cache memory in a clock cycle immediately subsequent to the execution core receiving the faulty data to enable the execution core to obtain the corrected data; and

a reorder buffer having a plurality of entries storing data results from the execution core operating with erroneous data, wherein the reorder buffer invalidates said plurality of entries when the execution core is purged.

5,604,754

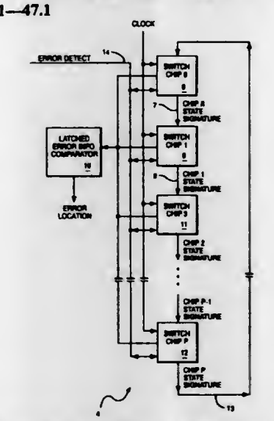
VALIDATING THE SYNCHRONIZATION OF LOCK STEP OPERATED CIRCUITS

Randall C. Itskin, Austin; John C. Pescatore, Jr., Georgetown, and David B. Ruth, Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 27, 1995, Ser. No. 395,937

Int. Cl.[6] G01R *31/28*; **G06F** *11/00*

U.S. Cl. 371—47.1 **20 Claims**



1. In an electronic system having multiple lock step operated circuits, apparatus to validate synchronization of the circuits, comprising:

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means for specifying circuit state information in three or more synchronized lock step operated circuits;

means for transmitting circuit state information along a daisy chain connection of the lock step operated circuits;

means in a first lock step operated circuit for comparing circuit state information derived within the first lock step operated circuit to circuit state information transmitted from a next successive lock step operated circuit along the daisy chain; and

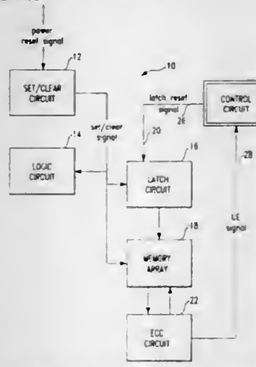
means for generating an error signal responsive to a mismatch detected during a comparison performed in the first lock step operated circuit.

5,604,755

MEMORY SYSTEM RESET CIRCUIT

Claude L. Bertin, S. Burlington; Charles E. Drake; John A. Fifield, both of Underhill, and Erik Hedberg, Essex Junction, all of Vt., assignors to International Business Machine Corp., Armonk, N.Y.

Filed Nov. 20, 1995, Ser. No. 565,627
Int. Cl.[6] G06F *11/00*
U.S. Cl. 371—48 **14 Claims**



1. A reset circuit for resetting at least portions of a memory system including a RAM circuit having one or more circuit zones, each of which includes a redundancy memory array, said reset circuit comprising:

a) an error detect circuit for producing an error signal in response to detection of an uncorrectable error in a respective circuit zone of said memory system; and

b) a control circuit for resetting circuit zones of said memory system in response to an error signal associated with such circuit zone, and said control circuit being radiation hardened.

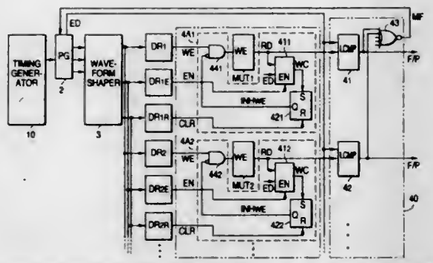
5,604,756

TESTING DEVICE FOR CONCURRENTLY TESTING A PLURALITY OF SEMICONDUCTOR MEMORIES

Yasuhiro Kawata, Gyoda, Japan, assignor to Advantest Corporation, Tokyo, Japan

PCT No. PCT/JP94/00632, § 371 Date Dec. 1, 1994, § 102(e) Date Dec. 1, 1994, PCT Pub. No. WO94/24674, PCT Pub. Date Oct. 27, 1994
PCT Filed Apr. 15, 1994, Ser. No. 347,300
Claims priority, application Japan, Apr. 15, 1993, 5-024903
Int. Cl.[6] G06F *7/02*
U.S. Cl. 371—67.1 **8 Claims**

1. An apparatus for testing semiconductor memories, comprising:



pattern generating means for generating, in accordance with a program for determining a sequence of pattern generation, an address pattern of a series of address signals each specifying an address of a memory under test, a test data pattern of a series of test data signals to be written into addresses of the memory under test specified by said address signals, an expected data to be compared with a test data signal read out of a specified address of said memory under test, and a control signal for controlling the operation of said memory under test, and for applying said test data pattern, said address pattern, and said control signal to said memory under test, said control signal including an operation status control signal for controlling a write/read operation of data into/out of said memory under test;

logic comparison means, receiving data read out of said memory under test and said expected data, for comparing said data from said memory under test with said expected data and outputting a signal that represents a pass when said data from said memory under test match with said expected data or outputting a signal that represents a fail when said data from said memory under test does not match with said expected data;

comparing means, receiving data read out of said memory under test and said expected data, for comparing said data from said memory under test with said expected data and outputting a write end signal that represents a completion of a write when said data from said memory under test match with said expected data;

inhibit signal holding means, connected to the output side of said comparing means, for holding said write end signal when received from said comparing means and outputting said write end signal as an inhibit signal; and

inhibit gate means, connected between said pattern generating means and said memory under test, for inhibiting, when said inhibit signal is received from said inhibit signal holding means, said operation status control signal from being supplied to said memory under test to prevent said test data pattern from being written into said memory under test.

5,604,757

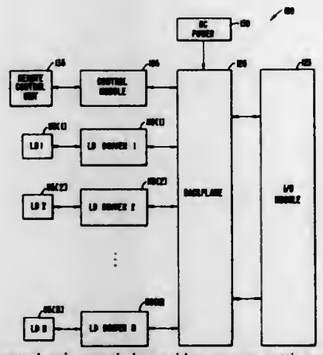
MULTICHANNEL, PROGRAMMABLE LASER DIODE POWER SUPPLY, STABILIZER AND CONTROLLER

Yungfu F. Liang, Fremont, and Jing J. Pan, Milpitas, both of Calif., assignors to E-Tek Dynamics, Inc., San Jose, Calif.

Filed May 10, 1994, Ser. No. 241,030
Int. Cl.[6] H01S *3/10*
U.S. Cl. 372—29 **9 Claims**

1. A system for controlling operation of a plurality of laser diodes, said system comprising:

(a) parameter setting means for setting operating temperature, current, and power levels for first and second laser diodes;



(b) a control unit, coupled to said parameter setting means, for generating control and data signals in response to said parameter setting means, said control unit generating a first set of control and data signals to control said first laser diode and a second set of control and data signals to control said second laser diode;

(c) a first laser diode driver, disposed on a first circuit board, for driving said first laser diode in response to said first set of control signals, said first laser diode driver module including:

i) first low power control means for interpreting said first set of control signals to control said first laser diode;

ii) a first digital-to-analog converter, coupled to said digital control means, for converting said first set of digital data signals to a first set of analog data signals;

iii) first laser diode regulating means for regulating and stabilizing operation of said first laser diode according to said first set of analog data signals, said first laser diode regulating means including:

a temperature stabilization circuit for setting and stabilizing operation of the first laser diode at a temperature level set by said first set of analog data signals, and

a current and power stabilization circuit for setting and stabilizing operation of the first laser diode at a current level and power level set by said first set of analog data signals;

(d) a second laser diode driver unit for driving a second laser diode in response to said second set of control and data signals, said second laser diode driver module including:

i) second low power control means for interpreting said second set of control signals to control said second laser diode;

ii) a second digital-to-analog converter, coupled to said digital control means, for converting said second set of digital data signals to a second set of analog data signals;

iii) second laser diode regulating means for regulating and stabilizing operation of said second laser diode according to said second set of analog data signal, said second laser diode regulating means including:

a second temperature stabilization circuit for setting and stabilizing operation of the second laser diode at a temperature level set by said second set of analog data signals, and

a second current and power stabilization circuit for setting and stabilizing operation of the second laser diode at a current level and power level set by said second set of analog data signals

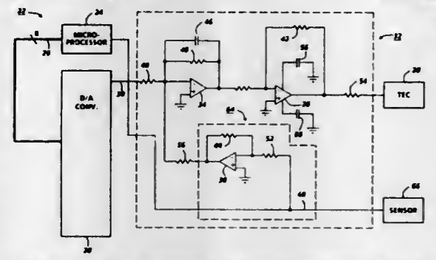
wherein said first set of digital data and control signals are transmitted on a first layer of said first circuit board and said first set of analog data signals are transmitted on a second layer of said first circuit board different than said first layer.

5,604,758

MICROPROCESSOR CONTROLLED THERMOELECTRIC COOLER AND LASER POWER CONTROLLER

Vincent AuYeung, Temple City; Kristine Cam, Stanton, and Tiffany G. To, El Monte, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 8, 1995, Ser. No. 524,660
Int. Cl.[6] H01S *3/04*
U.S. Cl. 372—34 **8 Claims**



1. A process for maintaining a desired temperature of a laser comprising:

a) a laser,

b) a thermoelectric cooler responsive to a driving signal and operatively connected to said laser for maintaining a desired temperature of said laser,

c) a temperature sensor being so constructed and arranged to sense a current thermoelectric cooler temperature and output a current temperature signal,

d) means for storing at least two temperature range values and at least two temperature target value signals where each temperature range value has an associated temperature target value signal, one of the at least two temperature range values is a desired temperature range value, the desired temperature range value's associated temperature target value signal is a desired temperature target value signal which represents the desired temperature of said laser, the other temperature range values are non-desired temperature range values and the non-desired temperature range values' associated temperature target value signals are non-desired temperature target value signals which represent temperatures oversbooting the desired temperature of said laser,

e) sensing the current thermoelectric cooler temperature with said temperature sensor and outputting the current temperature signal,

f) comparing the current temperature signal to the at least two temperature range values and determining within which temperature range the current temperature signal falls,

g) retrieving the target value signal associated with the determined temperature range value,

h) converting the retrieved target value signal into the driving signal,

i) transmitting the driving signal to said thermoelectric cooler for operating said thermoelectric cooler, and

k) repeating the process steps of e through i, if the determined temperature range value does not equal the desired temperature range value, until the determined temperature range value equals the desired temperature range value so that while the determined temperature range value does not equal the desired temperature range value the thermoelectric cooler is operated by a driving signal that is converted from a non-desired temperature target value signal to shorten the time for the thermoelectric cooler to reach the desired temperature range value by using a temperature target value signal which overshoots the desired temperature of the laser in comparison with using a temperature target signal which represents the desired temperature of the laser.

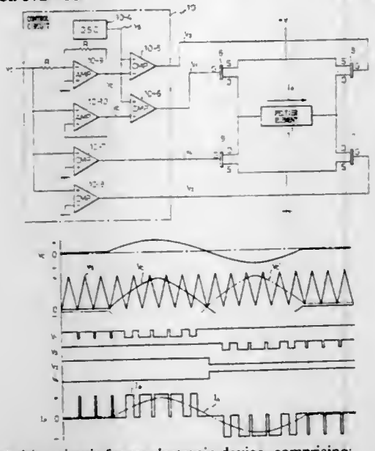
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5,604,759

DRIVE CIRCUIT FOR ELECTRONIC DEVICE

Yuji Miyaki, and Michikazu Shima, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Jan. 28, 1993, Ser. No. 10,285
Claims priority, application Japan, Jan. 30, 1992, 4-015534
Int. Cl.[6] H01S *3/103*
U.S. Cl. 372—38 **6 Claims**



1. A drive circuit for an electronic device, comprising:
the electronic device for converting electric power into light or heat energy;
first, second, third, and fourth switches disposed on both sides of the electronic device, for passing a drive current in different directions through the electronic device; and
a control circuit for controlling the switches to change the direction and magnitude of the average of the drive current flowing through the electronic device in response to an input control signal, the control circuit controlling the first to fourth switches such that the drive current flows in both directions through the electronic device according to a pulse modulation signal having a frequency is higher than the response frequency of the electronic device, the direction and magnitude of the average of the drive current being changed in response to the control signal.

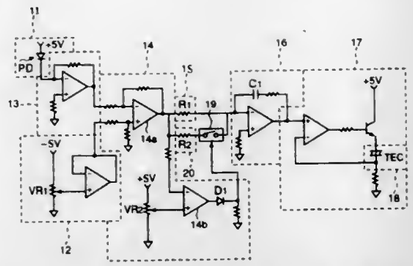
5,604,760

CIRCUIT FOR DRIVING SECOND HARMONIC GENERATOR

Hyeon-yong Jang, Na-202, 284-12, Seokchon-dong, Songpa-gu, Seoul, Rep. of Korea

Filed Aug. 18, 1995, Ser. No. 516,542
Claims priority, application Rep. of Korea, Aug. 31, 1994, 94-21898
Int. Cl.[6] H01S *3/00*
U.S. Cl. 372—38 **11 Claims**

1. A circuit for stabilizing a harmonic generator, said circuit comprising:
an optical signal generator for generating an optical output electrical signal in proportion to a detected optical output value output by a non-linear optical element of said harmonic generator;
a first comparator for comparing said optical output electrical signal to a setting signal received from means for setting said harmonic generator, and for producing an error signal based upon the comparison;
an integrator for integrating said error signal to produce an integral of said error signal;



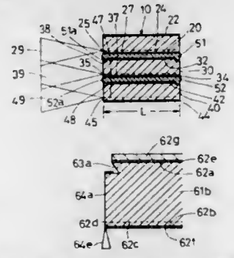
integration coefficient setting means for setting an integration coefficient to be multiplied by said integral of said error signal, said integration coefficient setting means comprising means for altering said integration coefficient when said error signal is above a pre-set overshoot value; and
means for controlling a temperature of said non-linear optical element of said harmonic generator in accordance with an output signal formed with said integral of said error signal multiplied by said integration coefficient.

5,604,761

LAYERED SEMICONDUCTOR LASER HAVING SOLDER LAMINATIONS AND METHOD OF MAKING SAME

Akinori Seki; Toyokazu Ohnishi, both of Toyota; Jiro Nakano, Okazaki; Takahide Sugiyama, Aichi-ken; Kazuyoshi Tomita, Nagoya, and Hiroyuki Kano, Aichi-ken, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Oct. 14, 1994, Ser. No. 323,431
Claims priority, application Japan, Oct. 15, 1993, 5-258510
Int. Cl.[6] H01S *3/18*
U.S. Cl. 372—43 **2 Claims**



2. A semiconductor laser assembly which has an emitting surface and a reflective surface opposite said emitting surface for generating a laser beam therebetween that is emitted from said emitting surface, said assembly comprising:
a plurality of coplanar semiconductor layers wherein each layer includes a substantially coplanar active layer in a portion thereof that produces an associated laser beam between the reflective and emitting surfaces of said assembly, said coplanar layers being formed from segments of a semiconductive layer material that is cleaved along grooves form in said layer thereby to define solder sump recesses along said grooves,
a solder layer between respective semiconductor layers for holding together said plurality of semiconductor layers in a unitary structure,
each semiconductor layer including said solder sump recess extending along an edge which runs across said semiconductor layer at said emitting surface of said assembly,
said solder sump recess partially extending into said semiconductor layer to a depth that avoids disturbing said active layer and wherein said solder sump recess has an inverted mesa-shaped configuration,

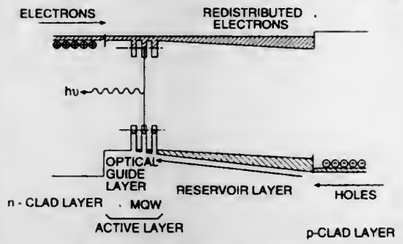
whereby, during assembly, said solder is directed into said solder sump recess rather than forming a solder flash which interferes with the emission path of said laser beam at said emitting surface of said assembly.

5,604,762

SEMICONDUCTOR OPTICAL DEVICE

Motoyasu Morinaga, Yokohama; Nobuo Suzuki, Tokyo, and Masaki Tohyama, Souka, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Filed Nov. 23, 1994, Ser. No. 346,250
Claims priority, application Japan, Nov. 25, 1993, 5-295398; Mar. 15, 1994, 6-070155
Int. Cl.[6] H01S *3/19*
U.S. Cl. 372—43 **48 Claims**



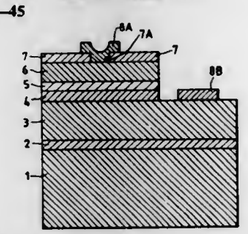
1. A semiconductor optical device comprises:
a p-clad layer of a p-type semiconductor;
an n-clad layer of an n-type semiconductor;
a semiconductor active layer, in which injected carriers recombine so as to emit light, disposed between the n-clad layer and the p-clad layer; and
a semiconductor carrier reservoir layer disposed between the active layer and at least one of the p-clad layer and the n-clad layer, the carrier reservoir layer being sufficiently thick to accumulate carriers so as to enlarge an oscillation wavelength shift due to a plasma effect relative to an oscillation wavelength shift due to a thermal effect.

5,604,763

GROUP III NITRIDE COMPOUND SEMICONDUCTOR LASER DIODE AND METHOD FOR PRODUCING SAME

Hisaki Kato, Toyohashi; Norikatsu Koide, Nagoya; Masayoshi Koike, Ichinomiya; Isamu Akasaki, and Hiroshi Amano, both of Nagoya, all of Japan, assignors to Toyoda Gosei Co., Ltd.; Research Development of Japan; Isamu Akasaki, and Hiroshi Amano, all of Aichi, Japan

Filed Apr. 19, 1995, Ser. No. 423,940
Claims priority, application Japan, Apr. 20, 1994, 6-106057; Apr. 20, 1994, 6-106058
Int. Cl.[6] H01S *3/19*
U.S. Cl. 372—45 **8 Claims**



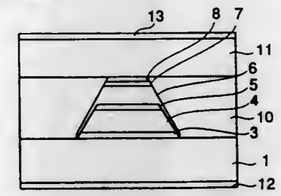
1. A laser diode made of a gallium nitride compound semiconductor satisfying the formula $(Al_xGa_{1-x})_yIn_{1-y}N$, $0 \leq x \leq 1$ $0 \leq y \leq 1$, said laser diode comprising a double heterojunction structure having an active layer held between layers having a greater band gap, said laser diode further comprising:
a sapphire substrate having a (1,1–2,0) plane, face a, as a principal plane;
a multi-layered coating formed of a gallium nitride compound semiconductor satisfying the formula $(Al_xGa_{1-x})_yIn_{1-y}N$, $0 \leq x \leq 1$; $0 \leq y \leq 1$, said multi-laycred coating comprising said double heterojunction structure and being formed over said principal place of said sapphire substrate; and
mirror surfaces formed by cleaving said multi-layered coating and said sapphire substrate in directions parallel to a <0001≦, c axis, of said sapphire substrate.

5,604,764

SEMICONDUCTOR LASER

Takashi Motoda, and Manabu Kato, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 399,649, Mar. 7, 1995. This application Mar. 5, 1996, Ser. No. 611,089
Claims priority, application Japan, Jul. 25, 1994, 6-172553
Int. Cl.[6] H01S *3/19*
U.S. Cl. 372—46 **16 Claims**



1. A semiconductor laser structure including:
a semiconductor substrate having a first conductivity type and a {100} oriented surface; and
a double-heterojunction structure comprising a first conductivity type lower cladding layer having a {100} oriented surface and disposed on the {100} surface of the substrate, an active layer having a band gap energy and disposed on the {100} surface of the first conductivity type lower cladding layer, and an upper cladding layer having a second conductivity type, opposite the first conductivity type, and covering opposite side surfaces of the active layer and the first conductivity type lower cladding layer, wherein the double-heterojunction structure is a stripe-shaped ridge extending in a <011> direction and having a mesa-shaped cross-section in a direction perpendicular to the stripe direction.

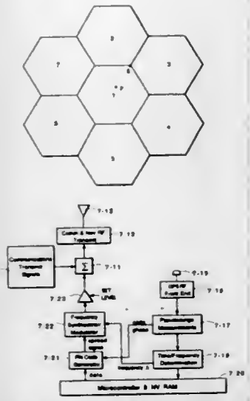
5,604,765

POSITION ENHANCED COMMUNICATION SYSTEM INCLUDING SYSTEM FOR EMBEDDING CDMA NAVIGATION BEACONS UNDER THE COMMUNICATIONS SIGNALS OF A WIRELESS COMMUNICATION SYSTEM

Ronald Bruno, Arlington, Va.; Leonard Schuchman, Potomac, Md., and Lloyd Engelbrecht, Reston, Va., assignors to Stanford Telecommunications, Inc., Reston, Va.

Filed Dec. 23, 1994, Ser. No. 363,773
Int. Cl.[6] H04B *15/00*; H04K *1/00*; H04L *27/30*
U.S. Cl. 375—200 **8 Claims**

1. In a cellular telephone system having three or more cell sites with each cell site having a source of cellular communication signals and an RF transmitter and antenna for broadcasting said cellular communication signals, the improvement comprising:
means for embedding a direct sequence spread spectrum waveform carrying navigation signals in said cellular communication signals, including means for controlling the signal



strength of said navigation signals so that the combined energy of said navigation signals from all said cell sites at any location is at least a predetermined energy level below the energy level of said cellular communication signals.

5,604,766

TRANSMISSION POWER CONTROL METHOD OF A SPREAD-SPECTRUM COMMUNICATION SYSTEM, AND A SPREAD-SPECTRUM COMMUNICATION SYSTEM EMPLOYING THE CONTROL METHOD

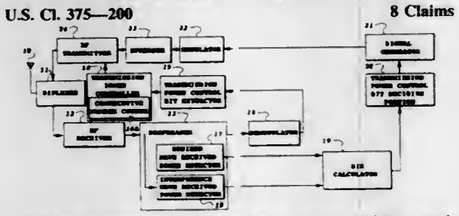
Tomohiro Dohi, Yokohama; Mamoru Sawahashi, Yokosuka, and Fumiyuki Adachi, Yokohama, all of Japan, assignors to NTT Mobile Communications Network Inc., Tokyo, Japan

Filed May 11, 1995, Ser. No. 439,503

Claims priority, application Japan, May 12, 1994, 6-098814; Apr. 3, 1995, 7-077935

Int. Cl.[6] H04B *7/26;* **H04L** *27/30*

U.S. Cl. 375—200 **8 Claims**



5. A spread-spectrum communication system which controls transmission power of a transmitting station by using a transmission power control bit sequentially sent from a receiving station to the transmitting station, said spread-spectrum communication system comprising:

means for storing in advance, at said transmitting station, control quantities of said transmission power of said transmitting station, which are predetermined in accordance with the number of consecutive receptions of the same value of said transmission power control bit;

means for sending said transmission power control bit sequentially from said receiving station to said transmitting station;

means for detecting, at said transmitting station, the number of consecutive receptions of the same value of said transmission power control bit kent from said receiving station; and

means for controlling, at said transmitting station, said transmission power in accordance with the stored control quantities associated with said number of consecutive receptions of the same value of said transmission power control bit.

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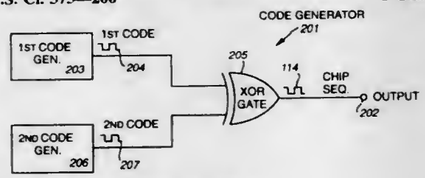
SPREAD SPECTRUM SPECTRAL DENSITY TECHNIQUES

Robert C. Dixon, Palmer Lake, Colo., and Scott R. Bullock, South Jordan, Utah, assignors to Omnipoint Corporation, Colorado Springs, Colo.

Continuation of Ser. No. 146,499, Nov. 1, 1993, Pat. No. 5,436,941. This application Jul. 24, 1995, Ser. No. 506,207

Int. Cl.[6] H04B *1/707*

U.S. Cl. 375—206 **1 Claim**



1. A method, comprising the steps of

receiving a plurality of data bits;

generating a pseudo-random chip sequence and an inverse of said pseudo-random chip sequence;

pseudo-randomly selecting one of said pseudo-random chip sequence and its inverse, and generating a signal in response thereto;

modulating each one of said plurality of data bits with said signal.

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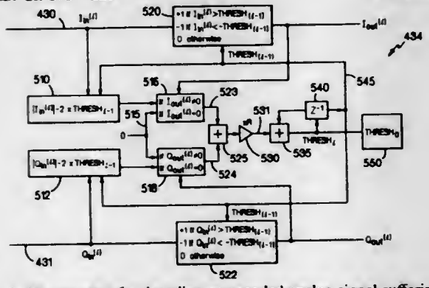
FREQUENCY SYNCHRONIZED BIDIRECTIONAL RADIO SYSTEM

Forrest F. Fulton, Los Altos, Calif., assignor to CellNet Data Systems, Inc., San Carlos, Calif.

Continuation-in-part of Ser. No. 818,693, Jan. 9, 1992, Pat. No. 5,377,232. This application Dec. 21, 1994, Ser. No. 361,799

Int. Cl.[6] H04B *1/38;* **H04L** *5/16*

U.S. Cl. 375—220 **8 Claims**



1. An apparatus for decoding an encoded analog signal suffering from amplitude modulation to determine discrete output values, said discrete output values including a first nonzero value and a zero value, comprising:

a first means for comparing a first component of said encoded analog signal to a threshold value, if said first component is greater than said threshold value then said first means for comparing sets a first one of said discrete output values equal to said first nonzero value, and if said first component of said encoded analog signal is less than said threshold value then said first means for comparing sets said first one of said discrete output values equal to one of a set of discrete values, said set of discrete values including a zero value; and

a first means for modifying said threshold value by adding a first error signal multiplied by a first reduction factor thereto, if said first one of said discrete output values is said zero value then said first means for modifying sets said first error signal equal to zero, and if said first one of said discrete output values is said first nonzero value then said first means for modifying sets said first error signal equal to a difference between said first component of said encoded analog signal and twice said threshold value.

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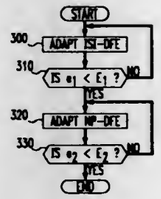
HYBRID EQUALIZER ARRANGEMENT FOR USE IN DATA COMMUNICATIONS EQUIPMENT

Jin-Der Wang, Ocean, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Oct. 13, 1994, Ser. No. 322,878

Int. Cl.[6] H04L *27/01*

U.S. Cl. 375—229 **5 Claims**



1. Apparatus for use in data communications equipment, the apparatus comprising:

precoding means responsive to a data signal for providing a sequence of precoded data symbols; and

means for transmitting the sequence of precoded data symbols to a receiver;

wherein the means for precoding further includes a feedback filter means for filtering the sequence of precoded data symbols, where the response function of the feedback filter means is equal to (1+I(z)) (1+N(z))−1, where I(z) is equal to a set of intersymbol interference decision feedback equalizer coefficients transmitted from the receiver and N(z) is equal to a set of noise predictive decision feedback equalizer coefficients transmitted from the receiver.

5,604,770

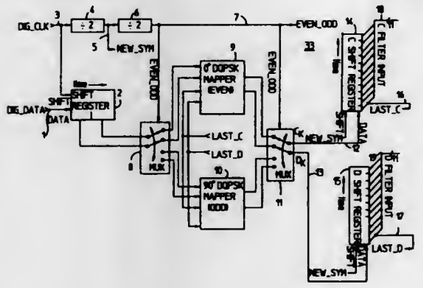
PI/4 DQPSK MODULATION WITH COARSE MAPPER PRECESSION AND FINE FILTER PRECESSION

Brian P. Fetz, Veradale, Wash., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 13, 1994, Ser. No. 322,899

Int. Cl.[6] H04K *1/02*

U.S. Cl. 375—296 **6 Claims**



1. A modulator comprising:

a mapper coupleable to digital program data and that produces therefrom modulation state symbols that exhibit a coarse precession that occurs every nth modulation state symbol, where n is an integer greater than one;

a shift register having an input coupled to receive the modulation state symbols and having a plurality of outputs representing a sequence of consecutive modulation state symbols;

a ROM addressed by the outputs of the shift register and by a collection of cyclically incrementing bits representing a fine precession that is zero for every nth modulation state symbol exhibiting the coarse precession, and that at times when intervening modulation state symbols occur adds fine precession by an amount equal to 1/nth the coarse precession, the ROM producing at each addressable location an I control value and a Q control value; and

an IQ modulator coupled to receive the I and Q control values.

5,604,771

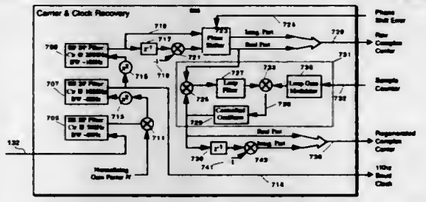
SYSTEM AND METHOD FOR TRANSMITTING SOUND AND COMPUTER DATA

Robert Quiros, 205 Locust Ave., San Rafael, Calif. 94901

Filed Oct. 4, 1994, Ser. No. 317,721

Int. Cl.[6] H04L *27/06;* **H03D** *3/24*

U.S. Cl. 375—326 **3 Claims**



1. A receiver for receiving a modulated signal containing computer data, comprising:

a communications interface coupling the receiver to a communications line;

a signal recovery unit coupled to receive from the communications interface the modulated signal, the signal recovery unit recovering a first and second reference signals, each reference signal having a phase, the signal recovery unit including a phase shifter for adjusting the phase of the first reference signal; and

a demodulator coupled to receive the modulated signal from the communications interface, and further coupled to receive the first reference signal from the signal recovery unit, the demodulator demodulating the modulated signal using the first reference signal, and producing a computer data signal having a real component and an imaginary component, the demodulator further including a phase comparator receiving the computer data signal and comparing the real and imaginary components thereof to determine a phase shift error signal, the phase comparator providing the phase shift error signal to the phase shifter, the phase shifter adjusting the phase of the first reference signal until the phase shift error signal reaches a predefined limit, the signal recovery unit producing the second reference signal having a same phase as the first reference signal, the demodulator receiving the second reference signal and demodulating the modulated signal with the second reference signal.

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5,604,772

TRANSMISSION SYSTEM AND MODEM UTILIZING CODED MODULATION

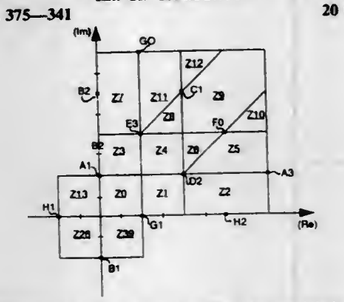
Jean-Luc Botto, Montrouge, and Didier Lepitre, Paris, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 304,107, Sep. 9, 1994. This application Mar. 12, 1996, Ser. No. 614,294

Claims priority, application France, Sep. 13, 1993, 93 10865

Int. Cl.[6] H04L *27/38*

U.S. Cl. 375—341 **20 Claims**



1. Transmission system utilizing trellis-coded modulation based on a constellation split up into N sub-sets, and comprising a data source and a data receiver which itself comprises a decision arrangement which arrangement makes it possible to determine the closest points to a received symbol in each sub-set of the constellation by assigning to the received symbol a combination of N closest points, wherein whilst the constellation is split up into zones corresponding each to a given combination of N closest points each zone having one point from each subset, said decision arrangement comprises a searching module for searching for the zone in which the received symbol is situated, and a Table which provides, when read using the zone as an index, the combination of N closest points corresponding to this zone.

5,604,773

DESYNCHRONIZER AND METHOD FOR SUPPRESSING POINTER JITTER IN A DESYNCHRONIZER

Reino Urala, Helsinki, Finland, assignor to Nokia Telecommunications OY, Espoo, Finland

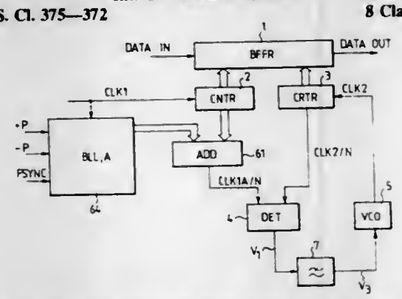
PCT No. PCT/FI93/00046, § 371 Date Oct. 6, 1994, § 102(e) Date Oct. 6, 1994, PCT Pub. No. WO93/16536, PCT Pub. Date Aug. 19, 1993

PCT Filed Feb. 12, 1993, Ser. No. 284,551

Claims priority, application Finland, Feb. 14, 1992, 920644

Int. Cl.[6] H04L *7/00;23/00*

U.S. Cl. 375—372 **8 Claims**



1. A method for suppressing pointer phase jitter in a desynchronizer, said method comprising the steps of:

receiving a digital synchronous signal at an input of the desynchronizer;

generating buffer write addresses under control of a write clock;

writing said digital synchronous signal to a buffer in accordance with said buffer write addresses;

generating buffer read addresses under control of a read clock;

reading said synchronous digital signal from said buffer in accordance with said buffer read addresses;

phase-locking the read clock to the write clock by a phase-locked loop; and

modulating a phase jitter induced by pointer justifications occurring in said digital synchronous signal at the input of the desynchronizer to a frequency substantially higher than the bandwidth of the phase-locked loop.

5,604,774

FULLY SECONDARY DPLL AND DESTUFFING CIRCUIT EMPLOYING SAME

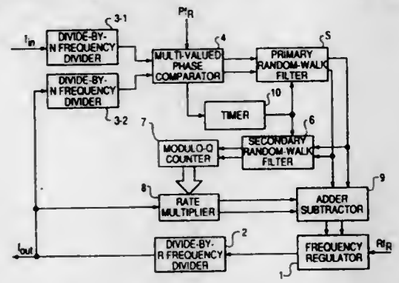
Yoshinori Rokugo, and Masaaki Itoh, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Sep. 12, 1995, Ser. No. 527,353

Claims priority, application Japan, Sep. 12, 1994, 6-217438

Int. Cl.[6] H03D *3/24*

U.S. Cl. 375—376 **4 Claims**



1. A fully secondary digital phase-locked loop comprising:

a primary loop including frequency regulating means for regulating a reference frequency Rf_R by adding or removing pulses, divide-by-R frequency dividing means for dividing a regulated frequency from said frequency regulating means by R to produce an output frequency f_{out}, first and second divide-by-N frequency dividing means for dividing an input frequency f_{in} and said output frequency f_{out} by N, multi-valued phase comparing means for comparing output signals from said first and second divide-by-N frequency dividing means in phase with each other, a primary random-walk filter having longer and shorter time constants, for dividing, by N1, the difference between the numbers of leading and lagging pulses outputted from said multi-valued phase comparing means, and adder/subtracting means for producing control pulses to be supplied to said frequency regulating means;

a secondary loop including a secondary random-walk filter having longer and shorter time constants, for dividing, by N2, an output signal from said primary random-walk filter, a modulo-Q counter for storing an output signal from said secondary random-walk filter, a rate multiplier energizable by said output frequency f_{out} and controllable by the output signal stored by said modulo-Q counter, for generating additional or removable pulses corresponding to a central system frequency, and said adding/subtracting means for adding and subtracting output signals from said primary random-walk filter and said rate multiplier to produce control pulses to be supplied to said frequency regulating means;

phase comparing means for generating a start signal if a phase error generated when an abrupt frequency change occurs exceeds a given value; and

timer means for setting said primary random-walk filter and said secondary random-walk filter to the shorter time constants in response to said start signal, and setting said primary random-walk filter and said secondary random-walk filter to the longer time constants after elapse of a predetermined period of time.

5,604,775

DIGITAL PHASE LOCKED LOOP HAVING COARSE AND FINE STEPSIZE VARIABLE DELAY LINES

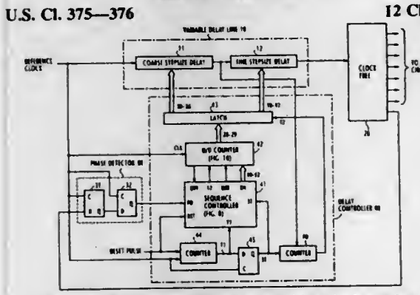
Tetsuo Saitoh; Syuji Matsuo; Itsurou Taniyoshi, and Koichi Kitamura, all of Kanagawa, Japan, assignors to NEC Corporation, Japan

Filed Sep. 29, 1995, Ser. No. 536,989

Claims priority, application Japan, Sep. 29, 1994, 6-235157

Int. Cl.[6] H03D *3/24*

U.S. Cl. 375—376 **12 Claims**



1. A digital phase locked loop for use with a clock tree having an input and a plurality of clock propagation paths extending from the input to a plurality of outputs, comprising:

a coarse stepsize variable delay line and a fine stepsize variable delay line connected in series for receiving a reference clock pulse and imparting thereto variable delays in accordance with higher significant bits applied to the coarse stepsize delay line and in accordance with lower significant bits applied to the fine stepsize delay line, and delivering the delayed clock pulse to the input of said clock tree;

a phase detector for detecting a phase difference between the reference clock pulse and delayed clock pulse appearing at one of the outputs of the clock tree; and

delay control means for counting the reference clock pulse to produce a count value, incrementing or decrementing the count value in accordance with an output of said phase detector and supplying the count value as said higher and lower significant bits to said coarse and fine stepsize variable delay lines at longer intervals than intervals at which said reference clock pulse occurs so that said delayed clock pulse is allowed a sufficient time to propagate through said clock tree,

said delay control means including:

a first time counter for counting said reference clock pulse to produce a count and producing a first timing pulse when the count repeatedly reaches a predetermined value, said first timing pulse defining the start timing of each of said longer intervals;

a sequence controller responsive to a first occurrence of said first timing pulse for producing a first enable pulse when the output of said phase detector has a first logic level, and responsive to a repeated occurrence of said first timing pulse for producing a second enable pulse when the output of said phase detector has changed to a second logic level;

an up-down counter arranged to be enabled in response to said first and second enable pulses for counting the reference clock pulse to produce a count value, incrementing or decrementing the count value in accordance with a phase comparison provided by said phase detector, and producing from the count value a first group of delay control bits in response to said first enable pulse, and a second group of delay control bits and a third group of delay control bits in response to said second enable pulse;

a second timing counter responsive to each occurrence of said first timing pulse for counting a delayed clock pulse from said coarse stepsize delay line to produce a count, and producing a second timing pulse when the count reaches a predetermined value, said second timing pulse defining the end timing of each of said longer intervals; and

a latch, responsive to said second timing pulse, for latching and forwarding the first and second groups of delay control bits to said coarse stepsize delay line as said higher significant bits and latching and forwarding the third group of control bits to said fine stepsize delay line as said lower significant bits.

5,604,776

METHOD FOR MAKING A SEALED PASSAGE IN A REFRACTORY COMPOSITE PART WITH A PLASTICALLY DEFORMABLE METAL LINING WHICH SEALS PASSAGE WALLS, AND APPLICATION OF THE PRODUCTION OF A REFRACTORY COMPOSITE STRUCTURE COOLED BY FLUID CIRCULATION

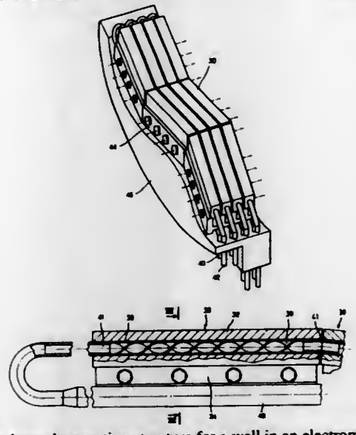
Ludovic Filipuzzi, Pessac, and Philippe Huet, Margaux, both of France, assignors to Societe Europeenne de Propulsion, Suresnes, France

Division of Ser. No. 256,253, Jun. 29, 1994. This application Jun. 6, 1995, Ser. No. 471,648

Claims priority, application France, Dec. 31, 1991, 91 16390

Int. Cl.[6] G21C *11/08*

U.S. Cl. 376—150 **12 Claims**



5. A thermal protection structure for a wall in an electromagnetic plasma confinement chamber of an installation for controlled thermonuclear fusion, said structure comprising a plurality of elements of thermostructural refractory composite material each having an internal passage whose wall is sealed by a metal lining bonded to the refractory composite material, with the passages of the elements being connected together and to pipework for feeding and removing a cooling fluid by means of couplings bonded to said metal linings, to allow a cooling fluid to flow along said passages for cooling the thermal protection structure, the metal lining of each element being plastically deformable under the conditions of use of the thermal protection structure such that differential expansion of thermal origin between the refractory composite material and the metal lining can be compensated by plastic deformation of the lining whereas mechanical strength of the thermal protection structure is provided by the thermostructural refractory composite material.

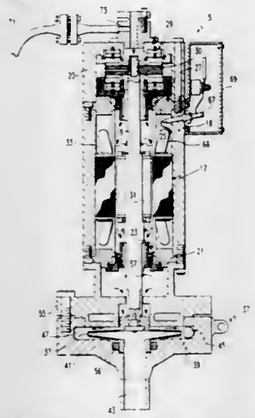
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5,604,777

NUCLEAR REACTOR COOLANT PUMP

James R. Raymond, Allegheny, and Clarence I. Thomson, III, Murrysville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 13, 1995, Ser. No. 403,041
Int. Cl.[6] G21C *19/307*
U.S. Cl. 376—310 3 Claims



1. A method for cooling electrical motor means of a reactor water cleanup pump of a boiling water reactor, said pump having an inlet side, an outlet side, and casing means having cavities containing bearings and said electrical motor means, the steps comprising:

delivering purge fluid into said inlet side of said reactor water cleanup pump at a desired flow rate and at a predetermined temperature, and

allowing said purge fluid to flow into said cavities containing said bearings and said electrical motor means and into said outlet side of said reactor water cleanup pump at a desired temperature for said purge fluid,

said delivering step, including the steps of:

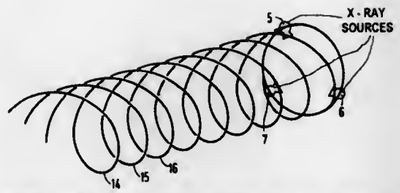
continuously delivering said purge fluid at least during the operation of said pump, and determining said desired flow rate of said purge fluid based on at least the heat losses from said electrical motor means and a differential temperature defined as being the difference between said predetermined temperature of said purge fluid delivered into said inlet side of said pump and said desired temperature of said purge fluid exiting into said outlet side of said pump.

5,604,778

SPIRAL SCAN COMPUTED TOMOGRAPHY APPARATUS WITH MULTIPLE X-RAY SOURCES

Arkadiusz Polacin, and Christoph Suess, both of Eriangen, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Oct. 11, 1995, Ser. No. 541,175
Claims priority, application Germany, Oct. 13, 1994, 44 36 688.4
Int. Cl.[6] A61B *6/03*
U.S. Cl. 378—9 7 Claims



1. A spiral scan computed tomography apparatus comprising:

a gantry rotatable around a system axis extending through a measurement field;

a plurality of x-ray sources disposed on said gantry and co-rotatable therewith, each x-ray source having a focus and the respective foci of said x-ray sources being symmetrically disposed on a circle concentric with said measurement field;

support means for supporting an examination subject, said support means having a longitudinal access extending substantially parallel to said system axis;

means for producing relative motion along said longitudinal axis of said support means between said support means and said x-ray sources while said x-ray sources are rotated around said measurement field on said gantry for spirally scanning a subject on said support means with x-rays from said x-ray sources;

radiation detector means for detecting radiation attenuated by said subject while said subject is spirally scanned and for generating electrical signals corresponding thereto; and

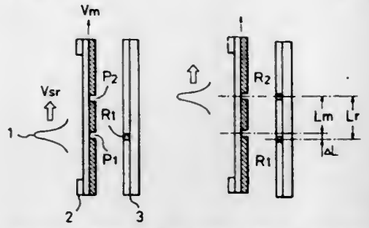
computer means for generating a tomographic image of said subject from said electrical signals.

5,604,779

OPTICAL EXPOSURE METHOD AND DEVICE FORMED BY THE METHOD

Mitsuaki Amemiya, Utsunomiya, and Yutaka Watanabe, Isehara, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 31, 1995, Ser. No. 455,154
Claims priority, application Japan, Jun. 7, 1994, 6-125104; Mar. 23, 1995, 7-064158
Int. Cl.[6] H01L *21/30*
U.S. Cl. 378—34 14 Claims



1. A method of transferring a pattern formed on a mask to a wafer by exposure with an X-ray beam, said method comprising the steps of:

positioning the mask and the wafer in a predetermined relation to each other;

relatively performing X-ray beam scanning in a scanning direction in relation to the mask and the wafer; and

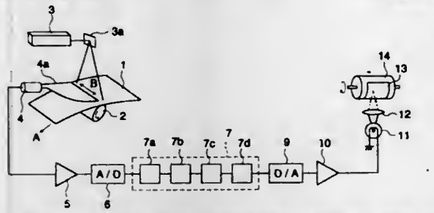
relatively moving the wafer and the mask in the scanning direction simultaneously with the beam scanning, so as to change the transfer magnification.

5,604,780

METHOD FOR PROCESSING A RADIATION IMAGE

Masayuki Nakazawa; Hideyuki Handa, and Wataru Motoki, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Mar. 3, 1995, Ser. No. 397,798
Claims priority, application Japan, Mar. 10, 1994, 6-039844
Int. Cl.[6] G01N *23/04*
U.S. Cl. 378—62 23 Claims



1. A method for processing a radiographic image to obtain a processed image signal Sproc based on an original image signal Sorg, the method comprising the steps of:

obtaining the original image signal Sorg representing said radiographic image based on radiographic image information transmitted through an object;

obtaining an unsharp mask signal Sus corresponding to said original image signal Sorg; and

conducting an operation presented by a formula (1):

$$Sproc=A(Sorg)+B(Sus) \quad (1)$$

wherein A(Sorg) is the function of said original image signal Sorg, which excludes said unsharp mask signal Sus, and B(Sus) is the function of said unsharp mask signal Sus, which excludes said original image signal Sorg.

14. A method for processing a radiographic image to obtain a processed image signal Sproc of a target pixel based on an original image signal Sorg, the method comprising the steps of:

obtaining the original image signal Sorg representing said radiographic image based on radiographic image information transmitted through an object;

obtaining a signal Stotal which is a total of said original image signal Sorg corresponding to N pixels in a predetermined mask area including said target pixel, wherein N is an integer selected from both of the product of some powers of 2 and numbers other than the product of some powers of 2;

obtaining an unsharp mask signal Sus corresponding to said original image signal Sorg by shifting said signal Stotal in a direction of the Least Significant Bit for z bits; wherein z is a positive integer; and

conducting an operation presented by a formula (6):

$$Sproc=A(Sorg, Sus) \quad (6)$$

wherein said operation conducting step includes the steps of:

referring to a conversion table, prestored in a memory, so as to obtain a conversion value for a formula (7):

$$Sproc=A(Sorg, \alpha \cdot Sus) \quad (7);$$

wherein α is a correction value;

conducting a processing operation presented by said formula (7) in use with said conversion value for obtaining said processed image signal Sproc corresponding to one pixel of said radiographic image; and

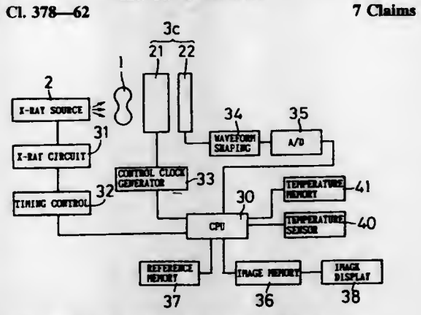
repeating said referring step of said conversion table and said processing operation conducting step in response to each pixel of said radiographic image so as to obtain said processed image signal Sproc.

5,604,781

MEDICAL X-RAY IMAGING APPARATUS

Masakazu Suzuki; Keisuke Mori; Akifumi Tachibana; Kazunari Matoba, all of Kyoto; Hitoshi Asai; Kazuhisa Miyaguchi, both of Hamamatsu, and Toshitaka Takeguchi, Shizuoka, all of Japan, assignors to J. Morita Manufacturing Corporation, Kyoto, and Hamamatsu Photonics Kabushiki Kaisha, Shizuoka, both of Japan

Filed Feb. 8, 1996, Ser. No. 598,440
Claims priority, application Japan, Feb. 9, 1995, 7-022146
Int. Cl.[6] G01N *23/04*
U.S. Cl. 378—62 7 Claims



1. A medical X-ray imaging apparatus comprising:

an X-ray generator for emitting X-ray toward a subject;

an X-ray imaging device for detecting an X-ray image passed through the subject;

a swivel member for rotating the X-ray generator and the X-ray imaging device disposed opposingly around the subject;

an image memory for storing an image signal from the X-ray imaging device;

means for displaying the image signal stored in the image memory;

a first reference memory for storing as first correction data at least one line of data from the signal outputted by the X-ray imaging device while the X-ray imaging device is operated with no X-ray beam incident; and

a second reference memory for storing as second correction data at least one line of data from the signal outputted by the X-ray imaging device while the X-ray imaging device is operated with an X-ray incident beam having nearly uniform intensity distribution,

wherein the X-ray imaging device contains CCD sensors each of which is provided with a plurality of light-receiving pixels arranged in two dimensions, and takes the image of a predetermined tomographic plane by changing the frequency of a change transfer clock signal in accordance with the rotation speed of the swivel member;

and the image signal is corrected through addition or subtraction by the use of the first correction data stored in the first reference memory or through multiplication or division by the use of the second correction data stored in the second reference memory.

5,604,782

SPHERICAL MIRROR GRAZING INCIDENCE X-RAY OPTICS

Webster C. Cash, Jr., Boulder, Colo., assignor to The Regents of the University of Colorado, Boulder, Colo.

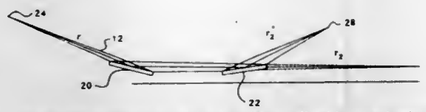
Continuation of Ser. No. 241,098, May 11, 1994, abandoned.
This application Aug. 11, 1995, Ser. No. 514,134
Int. Cl.[6] G21K *1/06*
U.S. Cl. 378—85 11 Claims

1. Apparatus for processing incident radiation between an object and a focal plane comprising:

a first mirror having a spherical surface;

a second mirror having a spherical surface; and

means for orienting said first and second mirrors such that the object radiation reflects off said first mirror spherical surface



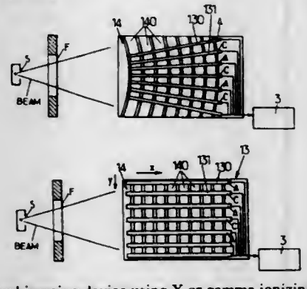
in grazing orientation, and then reflects off said second mirror spherical surface in grazing orientation onto the focal plane, whereby comatic aberration of extremum rays is reduced at least to the level of spherical aberration of extremum rays.

5,604,783

MEDICAL IMAGING DEVICES USING LOW-DOSE X OR GAMMA IONIZING RADIATION

Georges Charpak, 2, rue de Poissy, 75005 Paris, France

Filed Mar. 1, 1996, Ser. No. 609,208
Claims priority, application France, Mar. 3, 1995, 95 02518
Int. Cl.[6] G01T *1/185*
U.S. Cl. 378—146 **9 Claims**



1. Medical imaging device using X or gamma ionizing radiation, comprising a source of ionizing radiation in a divergent beam, a longitudinal slit forming a diaphragm making it possible to deliver a sheet-form illumination beam distributed substantially in a plane containing the longitudinal slit, and means for detecting a beam transmitted by a body to be observed, illuminated by the sheet-form illumination beam, characterized in that said detection means comprise a drift chamber and a multiwire chamber which are filled with a gas making it possible to generate electrons, said chambers comprising, arranged in a direction orthogonal to the plane containing the slit and the sheet-form illumination beam:

a drift space for the electrons, comprising a first cathode electrode,

an electron proportional multiplier anode for generating multiplied electrons and corresponding ions,

a second cathode electrode, placed in the vicinity of the multiplier anode, said multiplier anode and the second cathode electrode consisting of conductor elements extending in two planes parallel to that of the sheet-form illumination beam, along substantially orthogonal directions, in order to permit two-dimensional localization of the electrons in this plane.

5,604,784

RADIATION SHIELD COATING

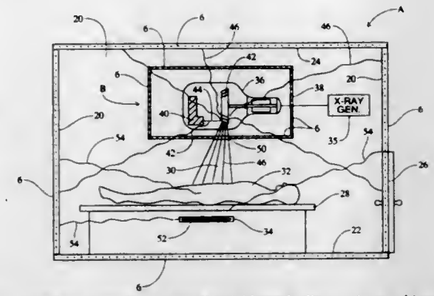
William C. Widlicka, Chardon, and Renard J. Passerell, Litchfield, both of Ohio, assignors to Picker International, Inc., Cleveland, Ohio

Filed Apr. 19, 1995, Ser. No. 424,050
Int. Cl.[6] H01J *35/16*
U.S. Cl. 378—203 **20 Claims**

11. An x-ray enclosure comprising:

a source of x-radiation;

an enclosure substantially surrounding said radiation source, said enclosure having a surface defining a boundary of said enclosure; and



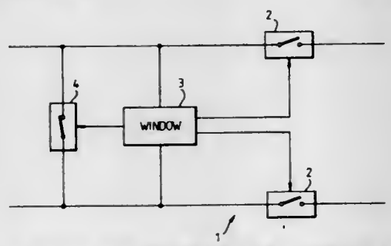
a coating comprising granulated bismuth disposed on said surface for attenuating the propagation of said radiation.

5,604,785

REMOTELY ACTUATED SWITCH AND PROTECTION CIRCUIT

Dennis M. Pryor, and Michael Challis, both of Swindon, England, assignors to Raychem Limited, Swindon, England

PCT No. PCT/GB93/01371, § 371 Date Dec. 21, 1994, § 102(e) Date Dec. 21, 1994, PCT Pub. No. WO94/01960, PCT Pub. Date Jun. 20, 1994
PCT Filed Jun. 30, 1993, Ser. No. 360,754
Claims priority, application United Kingdom, Jul. 1, 1992, 9213992
Int. Cl.[6] H04M *1/24;3/08;3/22*
U.S. Cl. 379—2 **10 Claims**



1. A switching arrangement which can be connected in a communications channel, the communications channel comprising a pair of lines, the switching arrangement, in use, being connected between sets of terminal equipment, and comprising:

(i) first and second series switching circuits, each of which, in use, is series connected in one of the lines and will open when subjected to an overcurrent in the line in which it is series connected; and

(ii) a shunt switching circuit which, in use, is connected between the lines, or between one of the lines and ground, and which will close when subjected to an overvoltage;

wherein the first series switching circuit, the second series switching circuit and the shunt switching circuit can be remotely actuated by means of a test signal sent along the channel.

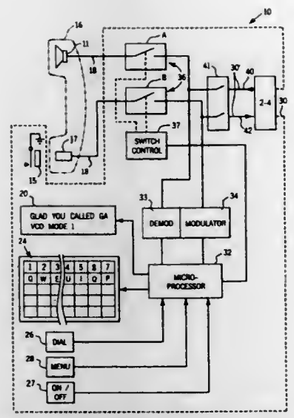
5,604,786

TELEPHONE WITH UNIFIED FEATURES FOR HEARING AND DEAF USERS

Robert M. Engelke; Kevin R. Colwell, both of Madison; Ronald W. Schultz, Middleton, and Troy Vitek, Madison, all of Wis., assignors to Ultratec, Inc., Madison, Wis.

Filed Jun. 10, 1994, Ser. No. 258,044
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—52 **10 Claims**

1. A telecommunication device for the deaf to communicate on a telephone line supporting voice and text signals comprising:



a handset having a microphone and a speaker;

an alphanumeric display;

a text detection circuit connected to the phone line and producing a text present signal when text signals are on the phone line; and

a switch communicating with the text detection circuit to, in a voice carry-over mode, attenuate at least one signal between the phone line and the handset speaker when the text present signal is received; and further including an alphanumeric keyboard and wherein the text detection circuit communicates with the alphanumeric keyboard so that the text present signal further indicates if the text signals on the phone line originated from the alphanumeric keyboard; and

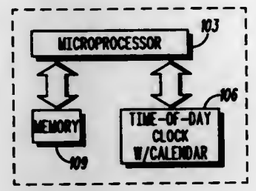
wherein the switch includes a delay timer delaying the attenuation of the signal between the phone line and the handset for a predetermined time only if the text present signal indicates that the text signals on the phone line did not originate from the alphanumeric keyboard.

5,604,787

METHOD AND APPARATUS FOR TRANSFERRING INFORMATION TO A DEVICE IN A COMMUNICATION SYSTEM

Michael D. Kotzin, Buffalo Grove, and Jeffrey D. Bonta, Arlington Heights, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 7, 1994, Ser. No. 320,017
Int. Cl.[6] H04Q *7/32*
U.S. Cl. 379—58 **9 Claims**



1. A portable smart card, comprising:

a controller;

a memory coupled to the controller; and

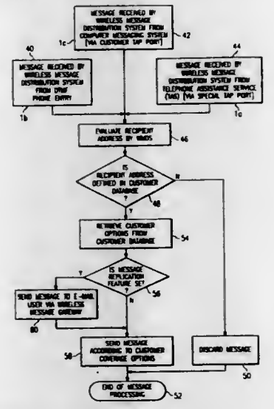
a time device, wherein the controller controls operation of the smart card, the controller to transfer a secure subscriber unit identity stored in the smart card to a communication device for a time period negotiated by the controller, to control the smart card to make the secure subscriber unit identity not available from the smart card for use by an other device during the negotiated time period, and to make the secure subscriber identity available to the other device during other time periods, whereby the controller automatically prevents transfer of the secure subscriber unit identity to the other device for use during the negotiated time period and the secure subscriber unit identity is automatically made available for transfer from the smart card for use at times other than the negotiated time period.

5,604,788

WIRELESS MESSAGING SYSTEM WITH ELECTRONIC MAIL REPLICATION

Richard J. Tett, Plano, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 16, 1995, Ser. No. 405,528
Int. Cl.[6] H04M *112/00;* **H04Q** *7/00*
U.S. Cl. 379—58 **11 Claims**



1. A messaging system comprising:

a wireless message distribution system operable to receive wireless messages;

a radio frequency transmission system coupled to the wireless message distribution system and operable to receive wireless messages from the wireless message distribution system and to transmit radio frequency signals to paging units within the transmission range of the transmission system;

a wireless message gateway server coupled to the wireless message distribution system and operable to receive from the wireless message distribution system copies of wireless messages sent by the wireless message distribution system to the radio frequency transmission system; and

the wireless messaging gateway server coupled to at least one electronic mail system network, the wireless messaging gateway server operable to assemble an electronic mail message including a portion of one of the copies of the wireless messages and to transmit the assembled electronic mail message to an electronic mail system network such that a user of the messaging system may retrieve messages through the electronic mail system that were originally sent to the wireless message distribution system.

5,604,789

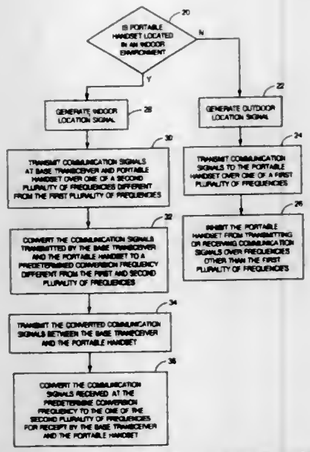
METHOD AND SYSTEM FOR PROVIDING A DIGITAL WIRELESS LOCAL LOOP

Ruvin I. Lerman, Longmont, Colo., assignor to U S West Technologies, Inc., Boulder, Colo.

Continuation-in-part of Ser. No. 270,070, Jul. 1, 1994. This application Dec. 6, 1994, Ser. No. 349,769
Int. Cl.[6] H04Q *7/30*
U.S. Cl. 379—59 **17 Claims**

1. For use with one of a plurality of base transceivers located in one of a plurality of cells defining a cellular service area, each of

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the plurality of base transceivers having a plurality of frequencies assigned thereto, and one of the plurality of base transceivers operative to communicate with a portable handset at a first plurality of frequencies assigned to the one of the plurality of base transceivers, a method for providing a wireless local loop comprising:

determining whether the portable handset is located in an indoor environment or an outdoor environment and generating an indoor or outdoor location signal in response thereto;

in response to a generated outdoor location signal, (a) transmitting communication signals between the base transceiver and the portable handset at one of the first plurality of frequencies, and (b) inhibiting the portable handset from transmitting or receiving communication signals at frequencies other than the first plurality of frequencies; and

in response to a generated indoor location signal, (a) transmitting communication signals at one of the base transceiver and the portable handset at one of a second plurality of frequencies different from the first plurality of frequencies, the second plurality of frequencies corresponding to one of the plurality of frequencies assigned to another one of the plurality of base transceivers located at another one of the plurality of cells, (b) converting the communication signals to a predetermined conversion frequency, the predetermined conversion frequency corresponding to another one of the first plurality of frequencies, (c) transmitting the converted communication signals to an indoor environment base transceiver and the portable handset at the predetermined conversion frequency, and (d) converting the communication signals received at the predetermined conversion frequency to the one of the second plurality of frequencies for receipt by the indoor environment base transceiver and the portable handset.

5,604,790

VOICE PROCESSING CALL ANNOUNCEMENT AND ANSWERING SYSTEM

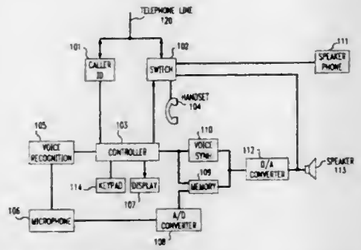
Gary J. Grimes, Birmingham, Ala., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Aug. 31, 1994, Ser. No. 298,901
Int. Cl.[6] H04M *1/66*
U.S. Cl. 379—67 **20 Claims**

1. A method of controlling incoming calls received by a telephone terminal comprising the steps of:

receiving caller identification information with an incoming call received by the telephone terminal;

determining from the caller identification information whether the caller is of a first group or second group of callers by the telephone terminal;



announcing a name of the caller;

recognizing first command information received by the telephone terminal from first audio information spoken by a user of the telephone terminal;

performing a first operation by the telephone terminal in response to the first command information when the caller is of the first group; and

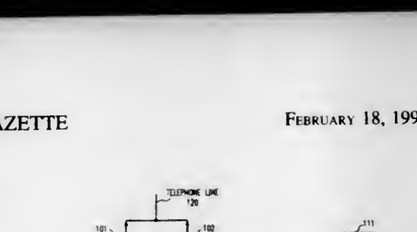
performing a second operation by the telephone terminal in response to the first command information when the caller is of the second group.

5,604,791

SINGLE LINE TELEPHONE ANSWERING SYSTEM WITH ACCESS SECURITY FEATURES

Shonh S. Lee, 267 Pulido Rd., Danville, Calif. 94526

Continuation of Ser. No. 135,733, Oct. 13, 1993, abandoned. This application Feb. 15, 1995, Ser. No. 390,278
Int. Cl.[6] H04M *1/64;1/57;1/72*
U.S. Cl. 379—67 **27 Claims**



1. A telephone system coupled to receive telephone signals including a high voltage ringing signal issued to signal an incoming telephone call, and issue telephone signals through a telephone line, said telephone system comprising:

at least one peripheral utility device coupled to the telephone line;

at least one telephone comprising a telephone handset, said handset comprising a receiver, said telephone coupled to the peripheral utility device;

a base unit coupled to the telephone line, said base unit comprising;

memory for storing a list of at least one authorized telephone number, said list stored in memory identifying telephone numbers of callers authorized to contact a called party,

means for answering the incoming telephone call from a caller,

means for prompting the caller of the answered incoming telephone call to input a telephone number of the caller,

means for comparing the telephone number input by the caller to the list stored in memory to determine whether the caller is authorized to contact the called party,

means for issuing a low voltage DTMF ringing signal on the telephone line to the at least one peripheral utility device, said means for issuing responsive to the means for comparing, and issues the low voltage DTMF ringing signal if the caller is authorized to contact the called party, said low voltage DTMF ringing signal at a voltage lower than the high voltage ringing signal, and

means for connecting the caller of the answered incoming telephone call via the telephone line and the peripheral utility device to the telephone if the handset is picked up by the called party to answer; said peripheral utility device comprising;

means for blocking the incoming high voltage ringing signal from reaching the telephone by preventing the high voltage ringing signal from reaching the telephone, and

means for detecting the low voltage DTMF ringing signal on the telephone line and causing a low voltage ringing sound to be generated at a location of the peripheral utility device to notify the called party of the answered incoming telephone call;

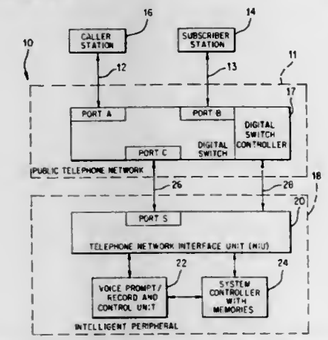
wherein the called party is only notified of the answered incoming telephone call if the answered incoming telephone call is an authorized incoming call.

5,504,792

CALL SCREENING METHOD

Merrill Solomon, Washiogton, D.C.; John Kimball, Germantown, and Dana L. Goldstein, Rockville, both of Md., assignors to The Telephone Connection, Inc., Rockville, Md.

Division of Ser. No. 265,865, Jun. 27, 1994, which is a division of Ser. No. 774,963, Oct. 11, 1991, Pat. No. 5,361,295, which is a continuation-in-part of Ser. No. 448,110, Dec. 12, 1989, Pat. No. 5,058,152. This application Jun. 7, 1995, Ser. No. 478,575
Int. Cl.[6] H04M *1/64;1/66;3/42*
U.S. Cl. 379—67 **1 Claim**



1. A call screening method for allowing subscriber to screen calls made to him/her from callers, the method comprising the steps of:

storing at a system controller station data that is received from a plurality of subscribers at a plurality of respective subscriber stations, such data including a private telephone number of each subscriber station;

providing a public telephone number for each of said subscriber stations, each of said public telephone numbers terminating at said system controller station;

indexing each public telephone number to its corresponding private telephone number in said system controller station;

receiving a call at said system controller station from a caller who dials a particular public telephone number for a particular subscriber;

identifying the particular public telephone number for the particular subscriber;

retrieving the private telephone number of the particular subscriber on the basis of the particular public telephone number;

placing a second call to the particular subscriber by dialing the particular subscriber private telephone number;

playing an introductory message to the caller in communication with said system controller station and prompting the caller to record a message identifying the caller;

if the particular subscriber picks up the second call, playing the caller's message so that the particular subscriber may hear the caller's message but the caller does not hear or know that the particular subscriber is hearing the message; and

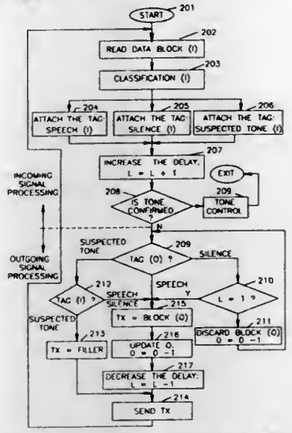
connecting the caller and the particular subscriber for full two-way communication upon the authorization of the particular subscriber.

5,604,793

TONE BLOCKING USING VARIABLE DELAY BUFFER

Prabhakar Chitrapu, Princeton, and Wei Lin, Parsippany, both of N.J., assignors to Dialogic Corporation, Parsippany, N.J.

Filed Aug. 3, 1995, Ser. No. 511,060
Int. Cl.[6] H04M *1/00*
U.S. Cl. 379—88 **2 Claims**



1. A method of processing storage blocks in a buffer comprising the steps of:

storing a received audio signal as a plurality of audio blocks:

setting an inpointer and an outpointer at predetermined ones of said audio blocks, the number of storage blocks between said inpointer and outpointer defining a length L of a delay;

increasing the length of the delay each time an additional new audio block is written in which tone is suspected; and

decreasing the length of the delay each time either (i) an output audio block in which there is speech is read out or (ii) an output audio block in which there is tone is confirmed and then discarded or (iii) an output audio block in which there is silence is read out.

5,604,794

SWITCH SYSTEM FOR DIRECTING CALL FROM A CALLING TO A RECEIVING INSTRUMENT

David A. Vogel, Westwood; Danny C. Vogel, Randolph, and Diane P. Cherry, Foxboro, all of Mass., assignors to Intertech Engineering Associates, Inc., Dedham, Mass.

Continuation of Ser. No. 102,704, Aug. 5, 1993, abandoned, which is a continuation of Ser. No. 706,225, May 28, 1991, abandoned, which is a continuation-in-part of Ser. No. 384,772, Jul. 25, 1989, Pat. No. 5,056,132. This application Mar. 20, 1995, Ser. No. 407,809
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—94 **1 Claim**

1. A switch system comprising:

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a modem identifier unit operatively connected to a calling instrument to receive a signal from the calling instrument; and

a switch device connected to the modem identifier unit through a telephone line;

said modem identifier unit having means for transmitting a first code along the telephone line to said switch device upon receipt of the signal from the calling instrument;

said switch device for receiving an incoming communication over the telephone line and being adapted to interface between the telephone line and an internal telephone system that includes a telephone, a facsimile machine, and an auxiliary device, said switch device including:

a) connector means for connecting said switch device to the telephone line for receiving the incoming communication;

b) ring detector means connected to said connector means for detecting a ring signal of the incoming communication;

c) a central processing unit, connected to and being alerted by said ring detector means, for initiating a program for answering the incoming communication;

d) a voice synthesis circuit, responsive to said central processing unit, for identifying the internal telephone system to a caller and requesting a second code from the caller that identifies the incoming communication;

e) code detection means for receiving and for classifying the incoming communication based on said second code, said code detection means includes default means for defaulting to a preselected one of a telephone, the facsimile machine and the auxiliary device should the caller fail to provide a proper second code thereby assuring that no incoming communication will be lost;

f) means for programming the default means to the preselected one of the telephone, facsimile machine or the auxiliary device;

g) means for ringing one of the telephone, the facsimile machine or the auxiliary device of the internal telephone system in accordance with the classification of the incoming communication; and

h) means for blocking out access to the other two of the internal telephone system; and

i) means for transmitting an acknowledgment tone to said modem identifying unit from said switch device, wherein said acknowledgment tone acknowledges the receipt of said first code.

5,604,795

COMMUNICATION METHOD AND APPARATUS FOR PROVIDING TERMINAL INFORMATION TO A LINE CONNECTED TO PLURAL NETWORKS

Toshiaki Saito, Hatogaya, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 1, 1993, Ser. No. 159,519
Claims priority, application Japan, Dec. 11, 1992, 4-353022
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—100 **14 Claims**

1. A communication apparatus connected to an extension line of a private network which is connected in turn to an external line of a public network, comprising:

input means for judging whether the communication request is sent to an extension terminal of the private network or to the external line through the private network;

selecting means for selecting either terminal name information for the private network or terminal name information for the public network in accordance with a judgment by said input means; and

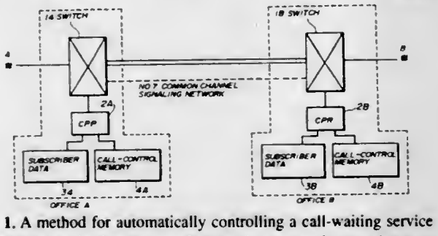
transmitting means for transmitting to the extension line a protocol signal including terminal name information selected by said selecting means.

5,604,796

METHOD FOR AUTOMATICALLY CONTROLLING A CALL-WAITING-INTERRUPTION RESTRICTION AND SWITCHING SYSTEM

Yuki Yamazaki, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Mar. 6, 1995, Ser. No. 398,904
Claims priority, application Japan, Jun. 27, 1994, 6-144242
Int. Cl.[6] H04M *3/42*
U.S. Cl. 379—215 **11 Claims**



1. A method for automatically controlling a call-waiting service in a communication system, for carrying out an interruption processing for a first subscriber which is in communication with a second subscriber when an interruption call from a third subscriber occurs in the communication system, the method comprising the steps of:

(a) supplying a said call-waiting service to said first and second subscribers;

(b) supplying a call-waiting-interruption restriction service for restricting said call-waiting service even when the interruption call from the third subscriber occurs, to said first subscriber according to a request from the first subscriber; and

(c) automatically restricting, when said first and second subscribers are in communication with each other, and when the interruption call from the third subscriber to said second subscriber occurs, said call-waiting service for said second subscriber, wherein:

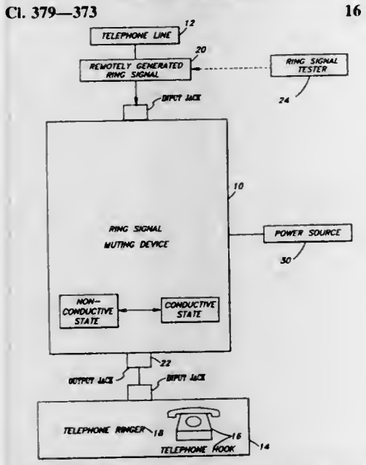
even the interruption call from the third subscriber to any one of said first and second subscribers occurs, when they are in communication with each other, the call-waiting service is restricted for both the first subscriber and the second subscriber.

5,604,797

RING-TONE MUTING DEVICE AND PROCESSING METHOD

Stanley J. Adcock, 518 Whitnell Ave., Murray, Ky. 42071

Filed Dec. 19, 1995, Ser. No. 574,655
Int. Cl.[6] H04M *1/66*
U.S. Cl. 379—373 **16 Claims**



1. A ring-tone muting device for use with a telephone having a telephone ringer, comprising

a gate for selectively conducting a ring signal to the telephone ringer, wherein said gate has at least two states, said states including a conductive state and a non-conductive state;

sensing means for determining when an incoming ring signal arrives;

at least one delay timing means, responsive to said sensing means, for beginning a delay sequence being a predetermined period of time after a ring signal is sensed, said delay timing means having at least one mode of operation;

at least one window timing means, responsive to said delay timing means, for beginning a window sequence being a predetermined period of time after said delay sequence is completed;

gate controlling means responsive to said window timing means such that said state of said gate is conductive; and,

means for connecting said gate in series between a telephone line and telephone;

whereby a telephone ringer is disabled while the gate is in a non-conductive state and enabled while the gate is in a conductive state; whereby further, said non-conductive state is coincident with the activation of said delay sequence of said delay timing means; and, whereby further, said conductive state is controlled by the deactivation of said delay sequence and coincident with the activation of said window sequence of said window timing means.

5,604,798

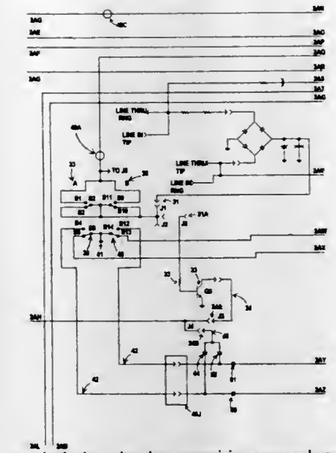
TELEPHONE SYSTEM WITH AUTOMATIC VOLUME CONTROL

John S. Sacchetti, and Mark J. Sacchetti, both of 1136 Larrabee St., #412, W. Hollywood, Calif. 90069

Filed Apr. 18, 1994, Ser. No. 229,206
Int. Cl.[6] H04M *1/72*
U.S. Cl. 379—387 **3 Claims**

1. A telephone system comprising:

a. a first telephone handset comprising a first earpiece and a first microphone;



b. a second telephone handset comprising a second earpiece and a second microphone;

c. a first cradle into which said first telephone handset normally fits such that said first cradle is normally in the down position;

d. a second cradle into which said second telephone handset normally fits such that said second cradle is normally in the down position;

e. dialing means comprising circuitry for dialing a telephone number;

f. alerting means comprising circuitry for alerting a user that an incoming telephone call is waiting;

g. means for interfacing said two handsets to a telephone trunk line; and

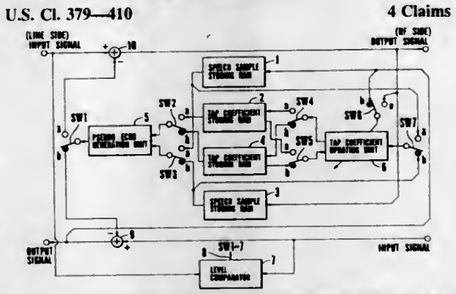
h. means comprising circuitry to prevent an increase or decrease in outgoing or incoming volume in response to the lifting of one of said handsets from its cradle or the return of one of said handsets to its cradle.

5,604,799

SWITCHING TYPE ECHO CANCELER

Motoyoshi Komoda, Tokyo, and Yoshiaki Hosoi, Saitama, both of Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Nov. 13, 1995, Ser. No. 558,279
Claims priority, application Japan, Nov. 11, 1994, 6-277638
Int. Cl.[6] H04M *9/00*
U.S. Cl. 379—410 **4 Claims**



1. A switching type echo canceler comprising a first subtracter for subtracting a first pseudo echo signal approximated to an echo generated on a transmitter/receiver side from a speech signal input from said transmitter/receiver side and sending a signal, a second

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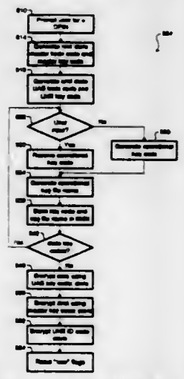
subtracter for subtracting a second pseudo echo signal approximated to an echo generated on a line side from a speech signal input from said line side and sending a signal, first and second memory means for temporarily storing the signals sent from said first and second subtracters, third and fourth memory means for temporarily storing data representing tap coefficients for generating the first and second pseudo echo signals, pseudo echo generation means for generating the first pseudo echo signal upon reception of the data read out from said first and third memory means and generating the second pseudo echo signal upon reception of the data read out from said second and fourth memory means, tap coefficient updating means for updating the data in said third memory means upon reception of the signal sent from said first subtracter and the data read out from said first memory means and updating the data in said fourth memory means upon reception of the signal sent from said second subtracter and the data read out from said second memory means, level comparison means for comparing levels of input signals from said transmitter/receiver side and said line side and generating a switching control signal in accordance with a level difference, and switching means for switching a combination of signals supplied to said pseudo echo generation means and said tap coefficient updating means in response to the switching control signal.

5,604,800

PERSONAL ACCESS MANAGEMENT SYSTEM

William C. Johnson, Los Angeles, Calif., and Charles C. McMullen, Colorado Springs, Colo., assignors to ETA Technologies Corporation, Los Angeles, Calif.

Filed Feb. 13, 1995, Ser. No. 388,268
Int. Cl.[6] H04L *9/00*
U.S. Cl. 380—4 **47 Claims**



1. In a system comprising a processing device having a memory, and a storage device coupled to the processing device, a method for establishing recognition parameters within the processing device, comprising the steps of: accessing by the processing device a set of instructions stored on the storage device; and executing by the processing device said set of instructions to carry out the steps of:

deriving a key code;

generating an operational key file name to associate with said key code;

creating a file within the memory of the processing device;

assigning said operational key file name to said file; and

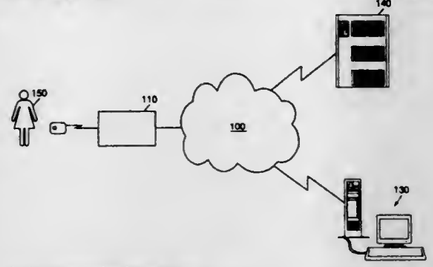
storing said key code into the memory in said file, thereby establishing said operational key file name and said key code as recognition parameters within the processing device.

5,604,801

PUBLIC KEY DATA COMMUNICATIONS SYSTEM UNDER CONTROL OF A PORTABLE SECURITY DEVICE

George M. Dolan, Charlotte, N.C.; Christopher J. Holloway, Woking, England, and Stephen M. Matyas, Jr., Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 3, 1995, Ser. No. 383,129
Int. Cl.[6] H04L *9/00*
U.S. Cl. 380—21 **11 Claims**



1. A communications system

in which messages are processed using public key cryptography with a private key unique to one or more users (**130**) under the control of a portable security device (**120**) held by the, or each, user,

the system comprising:

a server (**130**) for performing public key processing using the private key;

the server (**130**) being adapted for data communication with the portable security device (**120**);

characterised in that

the server (**130**) comprises, or has access to, data storage means in which is stored in a secure manner the private key for the, or each, user in encrypted form only,

the private key being encrypted with a key encrypting key,

the server comprising secure processing means (**360**) to receive a message to be processed from the user, retrieve the encrypted private key for the user, decrypt the private key using the key encrypting key, perform the public key processing for the message using the decrypted private key, and delete the key encrypting key and decrypted private key after use,

and in that each security device (**120**) comprises means for storing or generating the key encrypting key and providing the key encrypting key to the server (**130**) and means for specifying a message to be processed,

the system being arranged so that communication of at least the key encrypting key to the server is secure and so that the server can only use the key encrypting key to process the message specified by the user.

5,604,802

TRANSACTION PROCESSING SYSTEM

Christopher J. Holloway, Woking, United Kingdom, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 18, 1994, Ser. No. 276,138
Claims priority, application United Kingdom, Oct. 29, 1993, 9322360
Int. Cl.[6] H04K *1/00*
U.S. Cl. 380—24 **21 Claims**

1. A transaction processing system comprising:

a data processing system (**14**) and at least one transaction terminal (**10, 11, 12**) for use at a remote location by a user, the transaction terminal comprising:

means to receive characteristic data (**517***a*) from the user, which characteristic data is required to generate a characteristic image (**521**) associated with the user from user data (**523**) stored in the data processing system;

logic for generating a transaction message (**520**) by combining data relating to a transaction (**514**) with the characteristic data (**517***a*) in such a way that the transaction data (**514**) is required to recover the characteristic data (**517***a*) from the transaction message (**520**); and

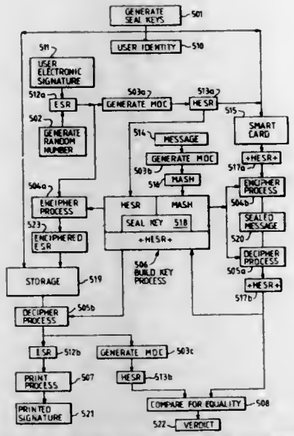
means connectable to a data communications network for transmitting the transaction message (**520**) to the data processing system, and the data processing system comprising:

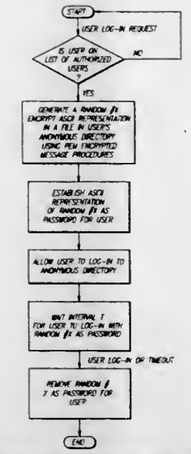
means to store the user data (**523**);

means to receive from the network and store the transaction message (**520**);

logic for recovering the characteristic data (**517***b*) from the stored transaction message (**520**) using the transaction data (**514**); and

logic for reconstructing the characteristic image (**512***b*, **521**) from the user data (**523**) using the characteristic data (**523**, **517***b*) for use in establishing that the transaction was valid by associating the characteristic image with the transaction data.





providing an element for performing the step of said first computer decrypting said one time password and providing said decrypted one time password to said second computer; and

providing an element for performing the step of said second computer comparing said received decrypted one time password to said stored one time password, such that if said received and stored one time passwords match, said user is authenticated.

5,604,803

METHOD AND APPARATUS FOR SECURE REMOTE AUTHENTICATION IN A PUBLIC NETWORK

Ashar Aziz, Fremont, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Jun. 3, 1994, Ser. No. 253,802
Int. Cl.[6] H04L *9/00*
U.S. Cl. 380—25 **20 Claims**

1. A method for user authentication between a first computer and a second computer, comprising the steps of:

providing an element for performing the step of said first computer providing a first request to said second computer, said first request including a user identification code identifying a user of said first computer;

providing an element for performing the step of said second computer receiving said first request and determining if said user identification code of said user is authorized, such that if said user identification code is authorized, said second computer:

generates a first random number;

stores said first random number as a one time password; and

encrypts said first random number used as said one time password;

providing an element for performing the step of said second computer providing said encrypted one time password to said first computer;

5,604,804

METHOD FOR CERTIFYING PUBLIC KEYS IN A DIGITAL SIGNATURE SCHEME

Silvio Micali, 459 Chestnut Hill Ave., Brookline, Mass. 02146

Filed Apr. 23, 1996, Ser. No. 636,854
Int. Cl.[6] H04L *9/00;9/30*
U.S. Cl. 380—25 **46 Claims**

1. A method for certifying pieces of data in a system having authorities that certify data, comprising the steps of:

(a) presenting a piece of data requiring certification to a first authority for inspection of a given property;

(b) if the piece of data passes the inspection of the first authority, causing a second authority to receive an indication that the piece of data has passed the inspection of at least the first authority;

(c) having the second authority issue a certificate that the piece of data possesses the given property, the second authority including in the certificate a signature of the second authority and the second authority omitting from the certificate a public key of the first authority; and

(d) storing accountability information that renders at least the first authority accountable for pieces of data that the first authority contributes to certify.

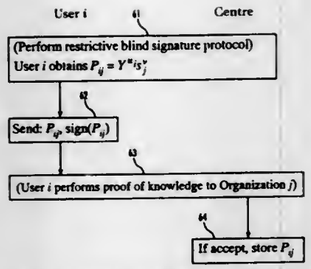
5,604,805

PRIVACY-PROTECTED TRANSFER OF ELECTRONIC INFORMATION

Stefanus A. Brands, Ina Boudier-Bakkerlaan 143 III 3582 XW, Utrecht, Netherlands

Division of Ser. No. 203,231, Feb. 28, 1994, Pat. No. 5,521,980. This application Feb. 9, 1996, Ser. No. 598,871
Int. Cl.[6] H04L *9/30*
U.S. Cl. 380—30 **8 Claims**

1. A method for a first party to demonstrate to a second party a property of a vector of numbers, $(u_1, \ldots, u_k)$, where $k \geq 1$ and each



of $u_1, \ldots, u_k$, is a number in a ring, $\mathbb{Z}_v$, where v is a positive number, the method comprising the steps of:

generating k numbers, $Z_1, \ldots, Z_k$, each of which is a number in a group, $\mathbb{Z}_n^*$, where n is a product of at least two distinct prime numbers;

computing by the first party, $A=Z_1^{a_1} \ldots Z_k^{a_k} u_{k+1}^{v}$, where u_{k+1} is a number in $\mathbb{Z}_n^*$;

transmitting by the first party to the second party, a signal representative of A; and

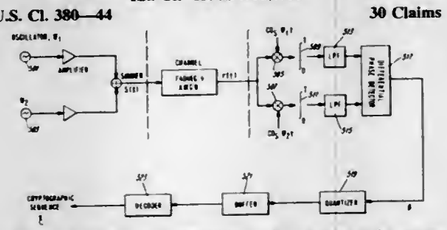
demonstrating that the first party has access to a vector of numbers, $(a_1, \ldots, a_j; a_{j+1})$, such that $Y_1^{a_1} \ldots Y_j^{a_j} a_{j+1}^{v}$ is equal to a product of powers of numbers in the set, $\{A, Z_1, \ldots, Z_k\}$, where $l \leqq 0$ and each of the numbers, $Y_1, \ldots, Y_j$, is a product of powers of numbers in the set, $\{Z_1, \ldots, Z_k\}$.

5,604,806

APPARATUS AND METHOD FOR SECURE RADIO COMMUNICATION

Amer A. Hassan, Durham, N.C.; John E. Hershey, Ballston Lake, N.Y., and Sandeep Chennakeshu, Cary, N.C., assignors to Ericsson Inc., Research Triangle Park, N.C.

Filed Jan. 20, 1995, Ser. No. 376,144
Int. Cl.[6] H04L *9/08;9/00*
U.S. Cl. 380—44 **30 Claims**



26. An apparatus for establishing a key sequence for secure communication between a first radio transceiver and a second radio transceiver comprising:

in the first radio transceiver, means for transmitting a predetermined digital word including a plurality of bits;

in the second radio transceiver, means for detecting the predetermined digital word transmitted by the first radio transceiver, and for transmitting the predetermined digital word after a predetermined time period;

in each of the first and second radio transceivers, means for determining a phase of each of the plurality of bits received from the other radio transceiver;

in each of the first and second radio transceivers, means for determining a difference between each phase determined and a respective predetermined phase;

in each of the first and second radio transceivers, means for quantizing each difference into a respective one of a plurality of phase decision values; and

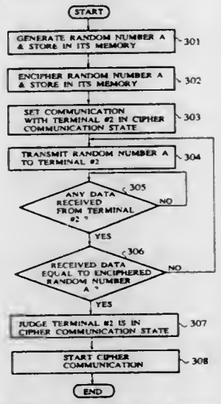
in each of the first and second radio transceivers, means for decoding a plurality of the quantized differences into a key sequence according to a predetermined block code.

5,604,807

SYSTEM AND SCHEME OF CIPHER COMMUNICATION

Toshikazu Yamaguchi, and Kiyoto Tanaka, both of Kanagawaken, Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Division of Ser. No. 319,449, Oct. 6, 1994. This application Apr. 20, 1995, Ser. No. 425,904
Claims priority, application Japan, Oct. 6, 1993, 5-250851
Int. Cl.[6] H04L *9/12*
U.S. Cl. 380—48 **6 Claims**



1. A method of cipher communication between first and second terminals, comprising the steps of:

generating a synchronization data at the first terminal, and transmitting the synchronization data from the first terminal to the second terminal after setting a communication state of the first terminal with respect to the second terminal as a cipher/non-cipher communication state;

checking a communication state of the second terminal with respect to the first terminal when the synchronization data transmitted from the first terminal is received at the second terminal;

returning a return data from the second terminal to the first terminal, the return data being provided by an enciphered synchronization data obtained by enciphering the synchronization data as received at the second terminal when the communication state of the second terminal with respect to the first terminal is the cipher/non-cipher communication state at the checking step, and by the synchronization data as received at the second terminal when the communication state of the second terminal with respect to the first terminal is not the cipher/non-cipher communication state at the checking step; and

starting/ending the cipher communication at the first terminal only when the return data returned at the returning step is equal to the enciphered synchronization data obtained by enciphering the synchronization data generated at the generating step.

5,604,808

FM SIGNAL PROCESSOR

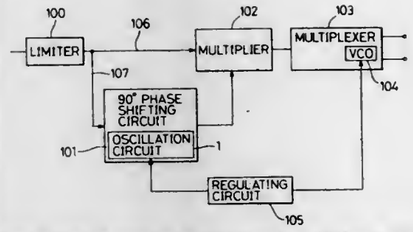
Isoshi Takeda, and Yoshikazu Shimada, both of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Nov. 10, 1994, Ser. No. 338,771
Claims priority, application Japan, Nov. 10, 1993, 5-281195
Int. Cl.[6] H04H *5/00*
U.S. Cl. 381—7 **3 Claims**

1. An FM signal processor comprising:

a multiplier for demodulating a stereo composite signal;

a first line for supplying the FM signal to the multiplier;



a second line for supplying an FM signal phase-shifted by 90° to the multiplier;

a 90° phase shifting circuit provided on the second line, said 90° phase shifting circuit having a first oscillation circuit whose phase shift amount varies according to a timing at which an amount of a current flowing through a charging and discharging capacitor is changed;

a multiplexer for processing the stereo composite signal demodulated by the multiplier to output left and right channel signals, said multiplexer having a second oscillation circuit of a voltage control type for generating a signal multiplied by the stereo composite signal to extract the left and right channel signals from the composite signal; and

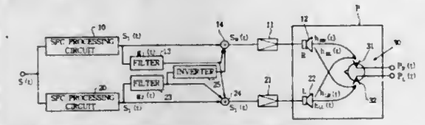
a trimming circuit for setting a constant current of a constant current source of a differential amplifier constituting a part of the first oscillation circuit and a constant current of a constant current source of a differential amplifier constituting a part of the second oscillation circuit, said trimming circuit being connected to the constant current source of each of the differential amplifiers.

5,604,809

SOUND FIELD CONTROL SYSTEM

Hiroshi Tsubonuma, and Hirofumi Yanagawa, both of Saitama-ken, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Oct. 30, 1995, Ser. No. 550,104
Claims priority, application Japan, Oct. 31, 1994, 6-267272
Int. Cl.[6] H04R *5/00*
U.S. Cl. 381—17 **3 Claims**



1. A sound field control system comprising:

a first processing circuit for carrying out a reverberation process of an input signal to produce a first stereo-simulated signal;

a second processing circuit for carrying out a reverberation process of the output signal to produce a second stereo-simulated signal;

a first filter for applying a first amplitude characteristic to the first stereo-simulated signal to produce a first amplitude-controlled signal;

a second filter for applying a second amplitude characteristic to the second stereo-simulated signal to produce a second amplitude-control signal;

a first adder for adding the first stereo-simulated signal with the second amplitude-controlled signal at opposed phase;

a second adder for adding the second stereo-simulated signal with the first amplitude-controlled signal at in-phase;

a first speaker to receive an output signal of the first adder;

a second speaker to receive an output signal of the second adder;

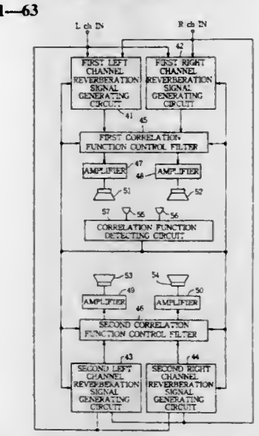
means for determining the first and second amplitude characteristics in dependency on a correlation coefficient of sound pressures of sounds from the first and second speakers.

5,604,810

SOUND FIELD CONTROL SYSTEM FOR A MULTI-SPEAKER SYSTEM

Hirofumi Yanagawa, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 15, 1994, Ser. No. 212,981
Claims priority, application Japan, Mar. 16, 1993, 5-55571
Int. Cl.[6] H03G *3/00*
U.S. Cl. 381—63 **2 Claims**



1. A sound field control system for a multi-speaker system having at least two main speakers and reverberation speakers, the system comprising:

a reverberation circuit for generating a plurality of reverberation signals from input audio signals of at least two channels, the plurality of reverberation signals having a predetermined function of correlation between each other,

the reverberation circuit including a plurality of delay circuits provided for every channel for producing a plurality of retarded audio signals, each of which has a retarded time different from other retarded audio signals, and a plurality of adders for adding a plurality of retarded audio signals to produce the reverberation signals;

filter means including an all-pass filter provided for controlling the function of correlation of each of the reverberation signals to a value corresponding to an interaural correlation coefficient to provide a spatial impression in reproduced sound, and for applying controlled reverberation signals to the reverberation speakers; and

at least two microphones for receiving a diffused sound from the speakers, and function detecting circuit means for detecting a function of correlation of the diffused sound and for controlling a characteristic of the filter means.

5,604,811

STETHOSCOPE AND HEADSET SYSTEM

Kenneth M. McIntyre, and Constance T. McIntyre, both of 102 Arcadia Pl., apt. 808, San Antonio, Tex. 78209

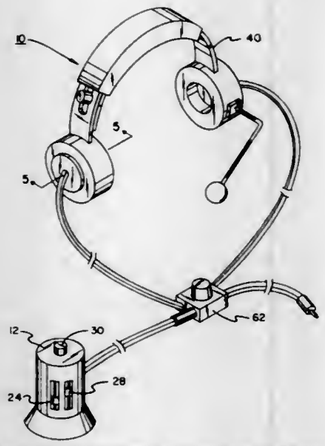
Filed Sep. 29, 1994, Ser. No. 314,669
Int. Cl.[6] A61B *7/04*
U.S. Cl. 381—67 **1 Claim**

1. A stethoscope and headset system for allowing a crew member of an aircraft to monitor a patient's internal bodily vibrations and communicate with other crew members through an aircraft's intercom system comprising, in combination;

a stethoscope further comprising:

a rigid, hollow, and generally cylindrical housing having an open lower end and a sealed upper end;

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a diaphragm coupled within the lower end of the housing and extended therefrom for monitoring internal bodily vibrations of a patient when placed upon the patient's body;

conversion circuitry disposed within the housing and coupled to the diaphragm for receiving the internal bodily vibrations within a range of sensitivities and transmitting internal bodily indication signals at strengths based upon the internal bodily vibrations;

filter circuitry disposed within the housing and coupled to the conversion circuitry for controlling the range of sensitivities of the conversion circuitry to vibrations from the diaphragm, the filter circuitry having a user-orientable first slider switch extended from the housing with the first slider switch having one range of orientations for increasing the sensitivity of the conversion circuitry and having another range of orientations for decreasing the sensitivity of the conversion circuitry;

volume control circuitry disposed within the housing and coupled to the conversion circuitry for receiving the internal bodily indication signal's therefrom and transmitting the internal bodily indication signals at a controlled strength, the volume control circuitry having a user-orientable second slider switch extended from the housing with the second slider switch having one range of orientations for increasing the controlled strength of the internal bodily indication signals and another range of orientations for decreasing the controlled strength of the internal bodily indication signals; and

a user-orientable power switch coupled to the conversion circuitry, filter circuitry, and volume control circuitry and extended from the housing with the power switch having one orientation for allowing the transmission of internal bodily indication signals and another orientation for preventing such transmission;

a headset further comprising;

an elongated, concave, and adjustable headband for placement on a user's head, the headband having two elongated strips slidably coupled together and a pad disposed therearound for cushioning a user's head when placed thereon;

a pair of essentially cylindrical and insulated earpieces, each earpiece coupled to a separate end of the headband, each earpiece having an open interior end and a sealed exterior end;

a microphone coupled to one of the earpieces for receiving a user's voice and transmitting a plurality of intercom signals; and

a pair of speakers, each speaker coupled across the interior end of each earpiece for transmitting audible sounds upon actuation by internal bodily indication signals and intercom signals; and

a user-orientable selector switch having lines extended therefrom coupled with the volume control circuitry of the stethoscope and the speakers and the microphone of the headset, the selector switch further coupleable with an intercom system of an aircraft, the selector switch having one orientation for allowing internal bodily indication signals to be transmitted to the speakers of the headset, thereby enabling a user to listen to a patient's internal bodily vibrations, the selector switch having another orientation for allowing intercom signals to be received by and transmitted from the headset, thereby enabling a user to communicate through the intercom system;

whereby the intercom overrides the stethoscope for allowing the conveyance of emergency information and further the stethoscope is coupled to the intercom system for allowing electrical power received therefrom to be supplied to the stethoscope.

5,604,812

PROGRAMMABLE HEARING AID WITH AUTOMATIC ADAPTION TO AUDITORY CONDITIONS

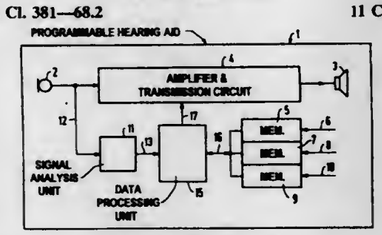
Wolfram Meyer, Moehrendorf, Germany, assignor to Siemens Audiologische Technik GmbH, Erlangen, Germany

Filed Feb. 8, 1995, Ser. No. 385,695

Claims priority, application European Pat. Off., May 6, 1994, 94107143

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—68.2 **11 Claims**



1. A programmable hearing aid comprising:

a microphone which receives incoming audio signals;

an earphone which emits output audio signals produced from said incoming audio signals;

amplifier and transmission means connected between said microphone and said earphone, and being adjustable to different transmission characteristics, for producing said output audio signals from said incoming audio signals;

first data memory means for storing audiometric data;

second data memory means for storing characteristic data of said hearing aid;

third data memory means for storing algorithms;

signal analysis means connected to said microphone, for generating control signals, dependent on said incoming audio signals, which characterize a current ambient auditory situation; and

data processing means, connected to said signal analysis means, said first, second and third data memory means, and said amplifier and transmission means for automatically and autonomously generating setting data for setting said transmission characteristics of said amplifier and transmission means dependent on said audiometric data, said characteristic data of said hearing aid, said algorithms and said control signals characterizing said current ambient auditory situation.

5,604,813

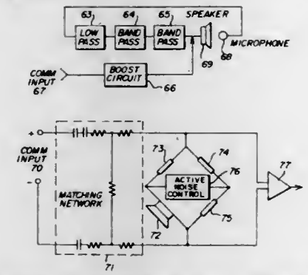
INDUSTRIAL HEADSET

Robert D. Evans; John Roeder, both of Baltimore; Michael J. Burke, Annapolis; George W. Tye, Sykesville, and William J. Hoge, Westminster, all of Md., assignors to Noise Cancellation Technologies, Inc., Linthicum, Md.

Filed May 2, 1994, Ser. No. 236,848

Int. Cl.[6] A61F *11/06*

U.S. Cl. 381—71 **12 Claims**



1. An improved communications headset which provides active noise cancellation without interruption of normal communication function, said headset comprising

support means to allow a user to support the headset on his head,

speaker means on said support means,

communications means on said support means allowing the wearer to communicate remotely with others,

active noise cancellation means on said support means,

electronic control means on said support means which allows said wearer to employ said communication means with or without said active noise cancellation means,

said electronic control means including an acoustic feed back circuit means with a booster circuit means to compensate for any low frequency losses in the communication signal due to operation of the active noise cancellation means and wherein said electronic control means includes a bridge Circuit means that allows for by-pass of said active noise cancellation means without affecting operation of said communication means and to override the active noise cancellation means when it is in operation.

5,604,814

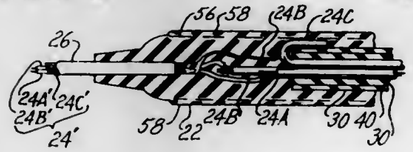
FLEXIBLE NECK MICROPHONE

Sun-Chih Chen, and Sun-Jen Chen, both of Diamond Bar, Calif., assignors to Midi Land, Inc., San Dimas, Calif.

Filed Apr. 20, 1995, Ser. No. 425,580

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—169 **14 Claims**



1. A microphone fixture comprising:

(a) a base having a body member, a base surface formed the body member, and means for mounting the base with the base surface in fixed relation to a supporting surface;

(b) an elongate curvable structure comprising an elongate ductile element, the ductile element being manually formable to a desired shape of the curvable structure, the ductile element being of solid copper wire of uniform cross-section and having a stiffness of at least approximately equivalent to AWG 16 round solid copper wire, the curvable structure having a free length of at least approximately 12 inches;

(c) a microphone supported by the curvable structure proximate one end thereof and having an electrical conductor for signalling operation of the microphone to an external device, the conductors extending within the curvable structure and from an opposite end thereof, the ductile element imparting sufficient stiffness to the curvable structure for supporting the microphone;

(d) an anchor member fixedly connected to the opposite end of the curvable structure, an engagement surface being formed on the anchor member; and

(e) a yoke member fixably projecting relative to the base, for biasingly gripping the engagement surface of the anchor member for releasably fixably connecting the curvable structure to the base, the microphone being adjustably supported in a desired position and orientation relative to the base.

5,604,815

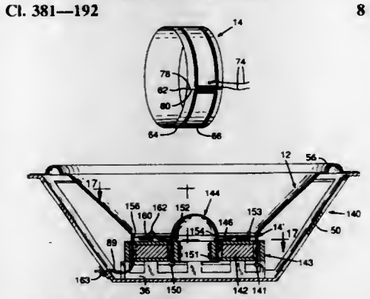
SINGLE MAGNET AUDIO TRANSDUCER AND METHOD OF MANUFACTURING

Paul W. Paddock, McMinnville, Oreg., assignor to Linaeum Corporation, Portland, Oreg.

Continuation of Ser. No. 962,988, Oct. 15, 1992, abandoned, which is a continuation-in-part of Ser. No. 916,038, Jul. 17, 1992. This application Jul. 8, 1994, Ser. No. 272,295

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—192 **8 Claims**



1. A two-way audio transducer comprising:

a non-magnetizable bridge;

a magnet connected to the bridge, the magnet having first and second magnet poles;

a first ferromagnetic element connected to the bridge adjacent the magnet to define a first magnet gap between the magnet and the first ferromagnetic element traversed by magnetic flux;

a second ferromagnetic element connected to the bridge adjacent the magnet to define a second magnet gap between the magnet and the second ferromagnetic element, the second magnet gap being traversed by magnetic flux passing between the first magnet pole and the second ferromagnetic element, and between the second magnetic pole and the second ferromagnetic element;

a first electrically conductive coil received within the first magnet gap;

a second electrically conductive coil independent of the first coil and received within the second magnet gap, the second coil being formed as a plurality of nested, elonqated concentric loops serially connected to one another, the second coil being configured as a cylindrical tube having a cylinder axis, a first end and a second end such that each loop has a first loop portion proximate the first end of the tube and adapted to conduct an electrical signal from a source circumferentially in a first direction at least partially around the tube, and a second loop portion distal from the first end of the tube and adapted to conduct the electrical signal from the source circumferentially in a second direction opposite the first direction at least

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partially around the tube so as to cause the second coil to move, whenever electrical current is passing through the second coil, along the cylinder axis relative to the second magnet gap;

a first acoustic element connected to the first coil; and

a second acoustic element connected to the second coil, the acoustic elements being operable independently of each other.

5,604,816

VIBRATOR FOR PRODUCING A SENSIBLE VIBRATION

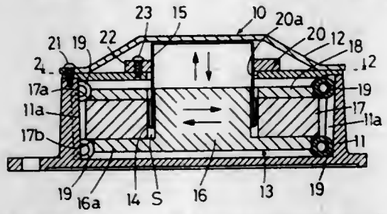
Tsutomu Totani, Nagoya, Japan, assignor to Kabushiki Kaisha Nippon Memorial, Nagoya, Japan

Continuation-in-part of Ser. No. 917,573, Jul. 21, 1992, abandoned. This application Feb. 24, 1995, Ser. No. 393,690

Claims priority, application Japan, Jul. 25, 1991, 3-66250 U

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—199 **4 Claims**



1. A vibrator for producing a sensible vibration, the vibrator comprising:

a casing having plural concavities provided in an inner wall thereof,

a cylinder,

a coil wound around the cylinder,

a magnetic pole having an annular gap of such a required breadth as to have the coil inserted thereinto without contacting with the magnetic pole, and

rubber elastic bodies securely provided in the concavities, and wherein:

the cylinder is fixed to the casing so that the coil is inserted into the gap, and

the magnetic pole is supported to the casing at its periphery by the rubber elastic bodies such that said magnetic pole is radially and centrally displaceable and rotatable in the casing.

5,604,817

TOOTH MEASUREMENT WITHOUT CALBRATION BODIES

Robert Massen, Wangen/Öhningen; Christian Konz, Radolfzell; Joachim Gässler, Geisingen, and Harald Richter, Constance, all of Germany, assignors to Kaltenbach & Volgt GmbH & Co., Bismarckring, Germany

Filed Aug. 18, 1993, Ser. No. 108,390

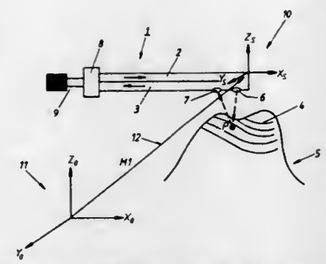
Claims priority, application Germany, Sep. 3, 1992, 42 29 466.5

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—120 **15 Claims**

1. Method for optical 3D-measurement of teeth without calibration bodies, with at least one optical projection system being provided for the projection of patterns onto a tooth and an optical imaging system being provided for imaging the patterns projected onto the tooth, comprising the steps:

projection of a pattern onto the tooth and imaging the pattern reflected by the tooth, from a first position in space and subsequently from a second position in space, changed to be different from the first position in spaced, with the images from the two positions in space having common imaged areas of the tooth; and



evaluation of the imaged patterns, with 3D-coordinate data of the tooth surface relative to the respective imaging position being calculated for each image and the two images being combined to give a single 3D tooth-surface data record,

wherein points and/or surfaces are selected from the common imaged areas of the two images, their selection being effected with the aid of properties of the tooth surface contour which are invariant under displacement and rotation, so that they can be clearly correlated with each other, and

wherein the change in position between the first and the second positions in space is determined with the aid of the selected points and/or surfaces and their relative coordinate data.

5,604,818

APPARATUS FOR MEASURING SIGHTING DIRECTION

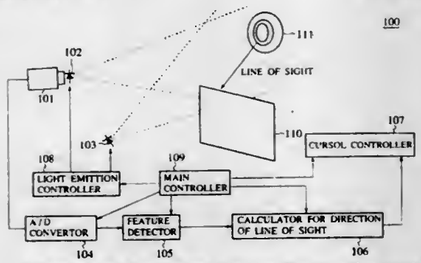
Hiroshi Saitou; Masao Sakata, and Shigeru Okabayashi, all of Yokohama, Japan, assignors to Nissan Motor Co., Ltd., Kanagawa-ken, Japan

Filed Mar. 10, 1994, Ser. No. 208,324

Claims priority, application Japan, Mar. 11, 1993, 5-050619

Int. Cl.[6] G06T *7/00*

U.S. Cl. 382—128 **8 Claims**



1. An apparatus for measuring a sighting direction of an eye ball of an operator, comprising:

a camera oriented toward the eye ball of the operator for receiving an image transmitted from the eye ball and providing image data therefrom;

a first light source coaxially located with said camera on a coaxial line on which said camera is located, for emitting an invisible light toward the eye ball;

a second light source located apart from said first light source at a position (F2) and also emitting invisible light toward the eye ball;

first arithmetic operation means for solving, according to images of the eye ball received by said camera,

a) a first expression representing a first straight line (F1A) passing between a center (Q) of a pupil of the eye ball and a focus point (F1) of said camera;

b) a second expression representing a second straight line (F1B) passing between a position (P') of reflection of light from said first light source and the focus point (F1) of said camera; and

c) a third expression representing a third straight line (F1C) passing between a position (P) of reflection of light from said second light source and the focus point (F1) of said camera;

second arithmetic operation means for calculating a position of the center (O) of the corneal sphere of the eye ball according to the second and third expressions representing the second and third straight lines passing through the positions of the reflections of light from said first and second light sources calculated by the first arithmetic operation means; and

third arithmetic operation means for calculating a sighting direction of the eye ball according to an expression representing a straight line passing through the center (Q) of the pupil, obtained by the first arithmetic operation means, and the center (O) of the corneal sphere of the eye ball, obtained by said second arithmetic operation means.

5,604,819

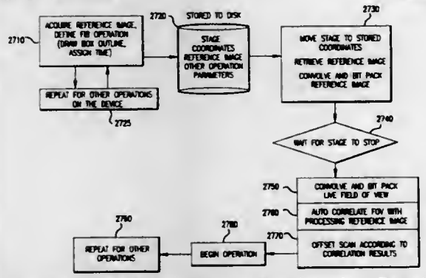
DETERMINING OFFSET BETWEEN IMAGES OF AN IC

Richard D. Barnard, San Jose, Calif., assignor to Schlumberger Technologies Inc., San Jose, Calif.

Filed Mar. 15, 1993, Ser. No. 31,547

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—151 **18 Claims**



1. A method of operating a processor to determine offset of a second image relative to a first image, wherein each image is defined by stored pixel data describing a respective plurality of pixels in which each pixel is defined by a location within an x-y grid and an intensity value, comprising the steps of:

a. retrieving from said stored pixel data a set of data describing a first patch (**710**) comprising nxn pixels from a first image (**700**);

b. preparing data defining a first Laplacian patch (**1010**) by convolving intensity values of pixels of the first patch with values of a zero-mean Laplacian kernel (**900**), the data defining the first Laplacian patch describing a plurality of pixels in which each pixel is defined by a location within an x-y grid and an intensity value having a sign;

c. preparing data defining a first registration image (**1810**) by convolving intensity values of pixels of the first Laplacian patch with a Gaussian kernel (**1200**) along two axes of an x-y grid, the Gaussian kernel having a plurality of Gaussian kernel values (e.g., 1, 6, 15, 20) which can be arranged to approximate a Gaussian sequence (e.g., 1, 6, 15, 20, 15, 6, 1), the data defining the first registration image describing a plurality of pixels (e.g., **1720**) in which each pixel is defined by a location within an x-y grid and an intensity value having a sign;

d. preparing data defining a first binarized image by converting intensity values of pixels of the first registration image to respective binary values in dependence upon the sign of the intensity value, the data defining the first binarized image describing a plurality of pixel locations within an x-y grid and a binary value for each pixel location;

e. retrieving from said stored pixel data a set of data describing a second patch (**810**) of mxm pixels from a second image (**800**), where m is a value less than n;

f. preparing data defining a second Laplacian patch (**1110**) by convolving intensity values of pixels of the second patch with values of a zero-mean Laplacian kernel (**900**), the data defining the second Laplacian patch describing a plurality of pixels in which each pixel is defined by a location within an x-y grid and an intensity value having a sign;

g. preparing data defining a second registration image (**1910**) by convolving intensity values of pixels of the second Laplacian patch with a Gaussian kernel (**1200**) along two axes of an x-y grid, the Gaussian kernel having a plurality of Gaussian kernel values (e.g., 1, 6, 15, 20) which can be arranged to approximate a Gaussian sequence (e.g., 1, 6, 15, 20, 15, 6, 1), the data defining the second registration image describing a plurality of pixels in which each pixel is defined by a location within an x-y grid and an intensity value having a sign;

h. preparing data defining a second binarized image by converting intensity values of pixels of the second registration image to respective binary values in dependence upon the sign of the intensity value, the data defining the second binarized image describing a plurality of pixel locations within an x-y grid and a binary value for each pixel location;

i. for each of a plurality of possible offset of the second binarized image relative to the first binarized image for which mxm pixels of the second binarized image are aligned with mxm pixels of the first binarized image,

(1) performing an EXOR operation for each of mxm pixel locations between the binary value of the binarized first registration image and the binary value of the binarized second registration image to produce a binary pixel-correlation value per pixel location; and

(2) determining a sum of the binary pixel-correlation values to obtain an image-correlation value; and

j. comparing the image-correlation values to identify an offset of the second binarized image relative to the first binarized image which results in a maximum correlation between the second binarized image and the first binarized image; and

k. storing a representation of the identified offset, said stored representation being indicative of offset of the second image relative to the first image.

5,604,820

METHOD FOR EXTRACTING OBJECT IMAGES AND METHOD FOR DETECTING MOVEMENTS THEREOF

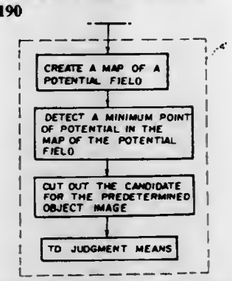
Shuji Ono, Kanagawa-ken, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 944,850, Sep. 14, 1992. This application Jun. 5, 1995, Ser. No. 463,501

Claims priority, application Japan, Sep. 12, 1991, 3-233213; Dec. 6, 1991, 3-323342; Dec. 6, 1991, 3-323343; Dec. 6, 1991, 3-323344; Jan. 28, 1992, 4-13092; Jan. 28, 1992, 4-13093; Jan. 28, 1992, 4-13094; Jan. 28, 1992, 4-13095; Jan. 28, 1992, 4-13096; Jan. 28, 1992, 4-13097

Int. Cl.[6] G06K *9/46;9/66*

U.S. Cl. 382—190 **51 Claims**



1. A method for extracting an object image, in which an extraction area for extraction of a candidate for a predetermined object image from an image is determined, the method for extracting the object image comprising the steps of:

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i) creating a map of a potential field of the whole area of said image; and

ii) determining an extraction area in accordance with the size and/or the shape of said candidate for the predetermined object image by taking a minimum point of the potential field as a reference point.

5,604,821

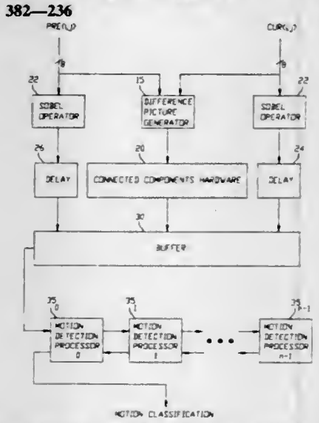
STRUCTURE AND METHOD FOR DYNAMIC SCENE ANALYSIS

N. Ranganathan, Tampa, Fla., and Rajiv Mehrotra, Lexington, Ky., assignors to The University of South Florida, Tampa, Fla.

Continuation of Ser. No. 842,985, Feb. 28, 1992, abandoned. This application Oct. 17, 1994, Ser. No. 324,383

Int. Cl.[6] G06K *9/36*

U.S. Cl. 382—236 **25 Claims**



1. Circuit architecture for dynamic scene analysis, comprising:

difference picture generator hardware which takes as inputs pixel values corresponding to the same location in the scene from previous and current time frames and provides as output a representation of the difference picture of the scene,

connected components hardware which takes as input the output of the difference picture generator and provides as output connected component labels of the difference picture,

edge detector hardware which take as input pixel values corresponding to the same location in the scene from previous and current time frames and provide as outputs the edge values of the current and previous frames, and

a plurality of motion detection processors which analyze separate regions of the difference picture, each of said motion detection processors having hardware which takes as input a connected component label of the difference picture in one region of the difference picture, the edge value in the current frame and the edge value in the previous frame, determines the motion relationship between each pixel and a predetermined set of neighborhood pixels, and provides as output a value representing the type of motion occurring in that region depending upon the motion relationship between each pixel and the neighborhood pixels;

wherein each of said motion detection processors has a feature extractor stage which determines the motion parameters of the region;

wherein said feature extractor has means for comparing each pixel in the region with the predetermined set of neighborhood pixels to determine the adjacency of the pixel to the neighborhood pixels;

wherein said feature extractor has means for determining the number of current frame edge fragments, the number of previous frame edge fragments, a boolean value representing the closedness of the current frame edge fragment, a boolean value representing the closedness of the previous frame edge fragment, and the number of current and previous frame edge points depending on the adjacency of the pixel to the neighborhood pixels;

wherein said means for determining the number of current frame edge fragments, the number of previous frame edge fragments, a boolean value representing the closedness of the current frame edge fragment, a boolean value representing the closedness of the previous frame edge fragment, and the number of current and previous frame edge points includes counter means and flip-flop means;

wherein said plurality of motion detectors are arranged in a systolic array; and

wherein each of said motion detection processors has a labeled picture generator in circuit communication with said feature extractor, said labeled picture generator associating with each pixel a k-bit label, and wherein said feature extractor comprises:

(a) a line delay having a plurality of k-bit registers connected in circuit communication, at least one of said k-bit registers corresponding to a predetermined pixel location and at least two other of said k-bit registers corresponding to a predetermined neighbor pixel location of said predetermined pixel location, said predetermined pixel location having associated therewith a predetermined pixel and each of said predetermined neighbor pixel locations having associated therewith a predetermined neighborhood pixel;

(b) a plurality of adjacency logic units, each of said adjacency logic units being in circuit communication with:

(i) the at least one k-bit register of said line delay corresponding to said predetermined pixel location and

(ii) at least one other k-bit register of said line delay, said other k-bit register corresponding to one of said predetermined neighbor pixel locations; and

(c) feature extraction logic in circuit communication with said plurality of adjacency logic units.

5,604,822

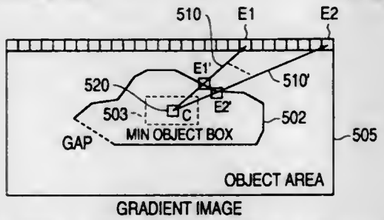
METHODS AND APPARATUS FOR CENTROID BASED OBJECT SEGMENTATION IN OBJECT RECOGNITION-TYPE IMAGE PROCESSING SYSTEM

William A. Pearson, Orlando; Richard W. Benton, Altamonte Springs, and John D. Lofgren, Orlando, all of Fla., assignors to Martin Marietta Corporation, Bethesda, Md.

Filed Nov. 12, 1993, Ser. No. 150,829

Int. Cl.[6] G06K *9/48*

U.S. Cl. 382—199 **11 Claims**



GRADIENT IMAGE

1. A method of establishing the boundaries of an object in an input image including a plurality of image pixels having gradient values predetermined gray scale, wherein the object includes a centroid, the method, performed by a signal processing system, comprising the steps of:

deciding on a perimeter surrounding the object in the input image;

repeatedly searching, from an image pixel corresponding to the centroid of the object to image pixels of the perimeter, for an image pixel having a highest gradient value of the gradient values of the searched pixels;

marking, as an edge pixel, the image pixel having the highest gradient value for each of the repeated searches when said highest gradient value exceeds a predetermined threshold; and

locating and connecting gaps, if any are located between marked edge pixels.

5,604,823

METHOD FOR EXTRACTING OBJECT IMAGES AND METHOD FOR DETECTING MOVEMENTS THEREOF

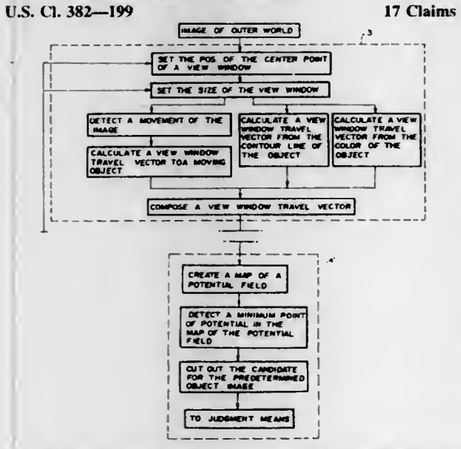
Shuji Ono, Kanagawa-ken, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 944,850, Sep. 14, 1992. This application Jun. 5, 1995, Ser. No. 463,754

Claims priority, application Japan, Sep. 12, 1991, 3-233213; Dec. 6, 1991, 3-323342; Dec. 6, 1991, 3-323343; Dec. 6, 1991, 3-323344; Jan. 28, 1992, 4-13092; Jan. 28, 1992, 4-13093; Jan. 28, 1992, 4-13094; Jan. 28, 1992, 4-13095; Jan. 28, 1992, 4-13096; Jan. 28, 1992, 4-13097

Int. Cl.[6] G06K *9/48*

U.S. Cl. 382—199 **17 Claims**



1. A method for detecting a gradient of a contour line field, wherein a gradient of a contour line field is detected from information representing an object image falling within a region inside of a view window which has a predetermined size and is set in an image the view window having a size smaller than the entire image, the method for detecting the gradient of the contour line field comprises the steps of:

i) cutting out a cut-out image which falls within the region inside of said view window having the predetermined size, from said image, said cut-out image corresponding to a candidate for a predetermined object image;

ii) detecting from said cut-out image a contour line of said candidate for a predetermined object image, the contour line extending in a predetermined direction, the contour line being comprised of one or more components;

iii) extracting from said detected contour line of said candidate for the predetermined object image all of said components of said detected contour line, which are tilted at a predetermined angle with respect to a direction along the circumference of a concentric circle centered on the center point of the view window;

iv) detecting azimuths and intensities of said extracted components with respect to the center point of said view window, the azimuths and the intensities being detected as azimuth vectors; and

v) composing a vector from said azimuth vectors, said vector corresponding to a gradient vector of the contour line field being thereby determined.

5,604,824

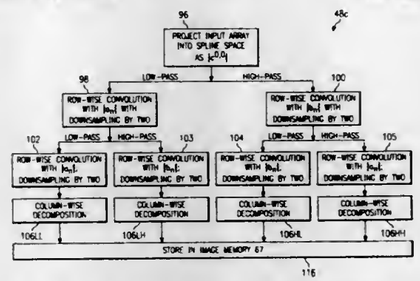
METHOD AND APPARATUS FOR COMPRESSION AND DECOMPRESSION OF DOCUMENTS AND THE LIKE USING SPLINES AND SPLINE-WAVELETS

Charles K. Chui, and Pak-Kay Yuen, both of College Station, Tex., assignors to Houston Advanced Research Center, The Woodlands, Tex.

Filed Sep. 22, 1994, Ser. No. 310,731

Int. Cl.[6] G06K *9/36*

U.S. Cl. 382—248 **42 Claims**



1. A method of compressing digital data representative of a document, comprising the steps of:

formatting digital data corresponding to an image of the document into a two-dimensional array of digital values, each value corresponding to the appearance of the document at a corresponding location of the document;

performing a first decomposing of the array of digital values, in a first direction, into low-frequency and high-frequency portions by performing integer operations using a decomposition scaling function and a corresponding decomposition wavelet function, respectively, each of said decomposition scaling and wavelet functions described by a finite integer sequence of coefficients, the first decomposing step comprising the substeps of:

convolving the array, in the first direction, with a sequence of integer corresponding to the decomposition scaling function;

convolving the array, in the first direction, with a sequence of integers corresponding to the decomposition wavelet function; and

storing the results of the convolving substeps in memory as an array of first decomposed sequences;

performing a second decomposing of the results of the first decomposing step in a second direction, by performing integer operations using the decomposition scaling and wavelet functions, the second decomposing step comprising the substeps of:

convolving the array, of first decomposed sequences, in the second direction, with the sequence of integers corresponding to the decomposition scaling function;

convolving the array of first decomposed sequences, in the second direction, with the sequence of integers corresponding to the decomposition wavelet function; and

storing the results of the convolving substeps in memory as an array of second decomposed sequences; and

communicating the results of the decomposing steps to a receiving unit.

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5,604,825

IMAGE PROCESSING APPARATUS CAPABLE OF VARYING MAGNIFICATION OF IMAGES AND METHOD OF USING SAME

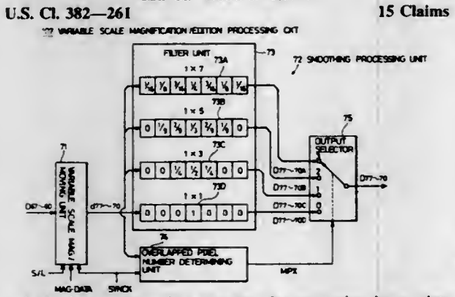
Yoshihiko Hirota, and Katsuaki Tajima, both of Toyokawa, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 799,152, Nov. 27, 1991, abandoned. This application Apr. 12, 1994, Ser. No. 226,368

Claims priority, application Japan, Nov. 30, 1990, 2-337735; May 29, 1991, 3-155756

Int. Cl.[6] G06T *3/40;5/20*

U.S. Cl. 382—261 **15 Claims**



I. An image processing apparatus for processing image data including a number of pixel data, comprising:

enlarging means for increasing the number of pixel data by repeating respective pixel data a number of repeat times to enlarge an image, wherein the number of said repeat times is determined for each of said pixel data;

a plurality of smoothing filters which have different matrix sizes in one dimension from each other; and

smoothing means for selecting, individually for each of said pixel data, one of said smoothing filters in accordance with said number of the repeat times of each of said pixel data, said selected smoothing filter having a matrix size in said one dimension which is not less than the said number of the repeat times, and for filtering each of said pixel data by using said selected smoothing filter, wherein the smoothing means includes means for selecting different smoothing filters for different pixels within the same image in accordance with said number of the repeat times.

5,604,826

IMAGE RECORDING APPARATUS

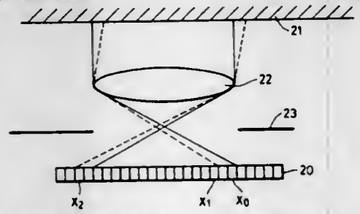
Koji Kajita, Kanagawa-ken, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 86,768, Jul. 6, 1993, abandoned, which is a continuation of Ser. No. 750,234, Aug. 20, 1991, abandoned, which is a continuation of Ser. No. 420,145, Oct. 19, 1989, abandoned. This application Jan. 26, 1995, Ser. No. 378,937

Claims priority, application Japan, Oct. 11, 1988, 63-256325

Int. Cl.[6] G06K *9/20*

U.S. Cl. 382—312 **14 Claims**



1. An image reading apparatus, comprising:

a line sensor, having a plurality of picture elements, for photoelectrically reading an image of an object and for generating image data, said line sensor reading a reading line extending in a direction of arrangement of the plurality of picture elements divisionally by performing reading a plurality of times, said line sensor being movably mounted to permit movement in the direction of arrangement of the plurality of picture elements;

optical means for guiding image light from the object to said line sensor, said optical means having a lens and an aperture which are fixedly arranged to said line sensor;

discriminating means for discriminating picture elements of said line sensor which are substantially exposed to the image light through said optical means;

motor means for physically moving said line sensor in the direction of arrangement of the plurality of picture elements of said line sensor; and

adjusting means for automatically driving said motor means so as to read the image of the object by using the picture elements of said line sensor discriminated by said discriminating means.

5,604,827

METHOD FOR SELECTING A SEMICONDUCTOR INTEGRATED OPTICAL MODULATOR/LASER LIGHT SOURCE DEVICE

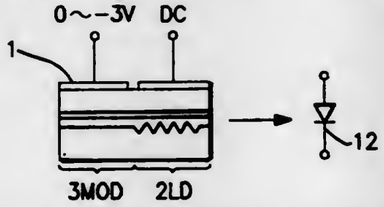
Masayuki Yamaguchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 14, 1995, Ser. No. 528,159

Claims priority, application Japan, Sep. 14, 1994, 6-220077

Int. Cl.[6] G02F *1/01*

U.S. Cl. 385—1 **10 Claims**



1. A method for selecting a semiconductor integrated optical modulator/laser light source device comprising a modulator section and a laser section, said method comprising the steps of:

measuring both a first threshold current of said laser section when said modulator section is reversely biased with a first direct-current voltage and a second threshold current of said laser section when said modulator section is reversely biased with a second direct-current voltage, said first and second direct-current voltages respectively corresponding to first and second voltage levels of a binary pulse signal to be practically used for a pulse modulation of said modulator section wherein said modulator section performs no light attenuation function in said first direct-current voltage and said modulator section performs a light attenuation in said second direct-current voltage; and

verifying that a difference between said first and second threshold currents be below a predetermined reference value.

5,604,828

MULTI-PURPOSE OPTICAL INTEGRATED CIRCUIT

Henry H. Yaffe, Dunwoody, Ga., assignor to Lucent Technologies Inc., Murray Hill, N.J.

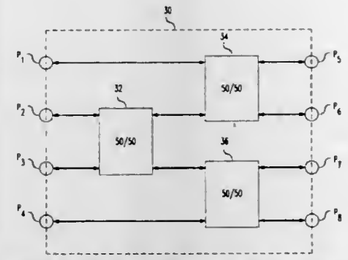
Filed Nov. 21, 1995, Ser. No. 560,754

Int. Cl.[6] G02B *6/12;6/28*

U.S. Cl. 385—14 **25 Claims**

11. An optical circuit for providing multiple power splitting functions, comprising:

first, second, third, fourth, fifth, sixth, seventh, and eighth optical ports with each of said first to eighth ports capable of both



inputting light into said optical circuit and outputting light from said optical circuit;

a first power splitter;

a second power splitter; and

a third power splitter;

said first power splitter connected to said first, fifth, and sixth ports and to said second power splitter, light from one of said first port or second power splitter being split with a first fraction of the light going to said fifth port and a second fraction of the light going to said sixth port and wherein light from one of said fifth or sixth ports being split with said first fraction of the light going to said first port and said second fraction of the light going to said second power splitter;

said second power splitter connected to said second and third ports, to said first power splitter, and to said third power splitter, light from one of said second or third ports being split with a third fraction of the light going to said first power splitter and a fourth fraction of the light going to said second power splitter and wherein light from one of said first or second power splitters being split with said third fraction of the light going to said second port and said fourth fraction of the light going to said third port;

said third power splitter connected to said fourth, seventh, and eighth ports and to said second power splitter, light from one of said second power splitter or fourth port being split with a fifth fraction of the light going to said seventh port and a sixth fraction of the light going to said eighth port and wherein light from one of said seventh or eighth ports being split with said fifth fraction of the light going to said second power splitter and said sixth fraction of the light going to said fourth port;

wherein said first, second, third, fourth, fifth, and sixth fractions are each less than 1 and said optical circuit provides at least a 1×2 power splitting function, a 1×3 power splitter function, and a 1×4 power splitting function.

5,604,829

OPTICAL WAVEGUIDE WITH DIFFRACTION GRATING AND METHOD OF FORMING THE SAME

Hans Bruesselbach, Calabasas, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 17, 1995, Ser. No. 423,070

Int. Cl.[6] G02B *6/34*

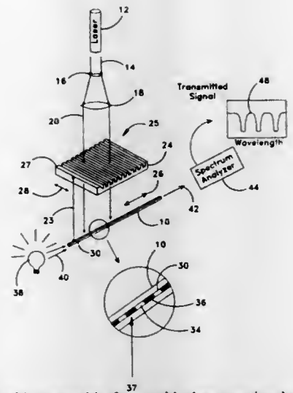
U.S. Cl. 385—37 **6 Claims**

1. A method of forming a high-order diffraction grating in a photosensitive optical waveguide for reflecting a first optical beam at a design wavelength and at other wavelengths, comprising the steps of:

generating a second optical beam having a wavelength that corresponds to a wavelength to which said waveguide is photosensitive,

passing said second beam through an optical phase grating with a non-sinusoidal cross-sectional shape, said grating having a period that is more than twice the design wavelength, and that is an integer multiple of the design wavelength,

directing said second optical beam to said photosensitive waveguide,



spacing said waveguide from said phase grating by a distance that corresponds to an integer fraction of the Talbot self-imaging distance so that said optical grating is imaged in said waveguide as alternating light and dark regions that have substantially the same period and cross-sectional shape as said phase grating, said alternating light and dark regions establishing a refractive index grating in said waveguide with substantially the same period and cross-sectional shape as said phase grating.

5,604,830

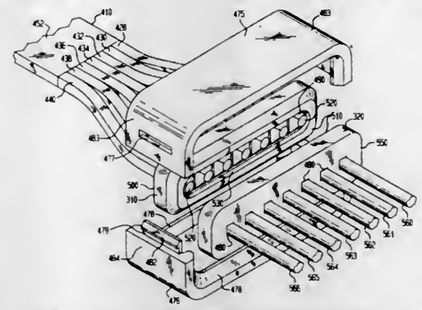
MULTIPLE FIBER CONNECTOR FOR INJECTION MOLDED MULTIPLE FIBEROPTIC COUPLER UNIT AND CLADDING FOR SAME

James E. Kuder, Fanwood; Kevin F. Manning, Annandale; Pascal J. B. Landi, Summit; Elizabeth E. Fernekess, Basking Ridge, and Matthew Cardone, Belleville, all of N.J., assignors to Hoechst Celanese Corp., Somerville, N.J.

Filed Dec. 22, 1994, Ser. No. 362,624

Int. Cl.[6] G02B *6/38*

U.S. Cl. 385—59 **12 Claims**



1. A thermoplastic optical fiber connector comprising a first connecting block, a second connecting block and a housing;

each connecting block comprising a plurality of uniformly-spaced openings centered along the length of said block for housing a plurality of optical fibers, each opening is configured and dimensioned to engage and immobilize said optical fiber in said opening, each block having a recessed area surrounding the openings;

said housing comprising means for engaging the first connecting block and second connecting block with the connecting surface of the first block facing the connecting surface of the second block within the housing in a position so that the

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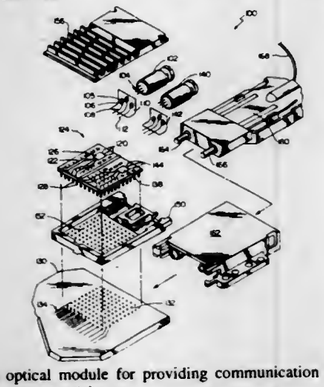
opposed optical fiber ends in the block are aligned and contact one another thereby minimizing light loss.

5,604,831

OPTICAL MODULE WITH FLUXLESS LASER REFLOW SOLDERED JOINTS

Eberhard S. Dittman, Granby, Canada, and Mukund K. Saraiya, Endwell, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 16, 1992, Ser. No. 976,620
Int. Cl.[6] G02B *6/42*
U.S. Cl. 385—88 **19 Claims**



1. An optical module for providing communication with fiber optic means, comprising:

a housing including at least one receptacle for connection with fiber optic means;

one or more optical sub-assemblies each having multiple solder-wettable conductive pins extending from one end for receiving or transmitting electrical signals, for transceiving between the electrical signals and optical signals, and positioned to communicate with said fiber optic means connected in the receptacle for transmitting or receiving the optical signals from or to said fiber optic means;

electronic circuit means for processing the electrical signals transmitted by the optical sub-assemblies or for transmitting electrical signals to the optical sub-assemblies;

an interconnect structure located within said housing adjacent said sub-assemblies on a side of the optical sub-assembly from which the pins extend, having a row of conductive pads for soldered connection, and having conductive vias for electrical interconnection between said conductive pads and said electronic circuit means;

flexible ribbon cables for respective optical sub-assemblies for transmitting signals between the pins of the respective optical sub-assembly and said conductive pads, the cables respectively including:

a flexible conductive film layer patterned to provide a multiple of conductive paths which extend as leads from one end of the flexible ribbon;

a flexible dielectric film layer on each major surface of the conductive layer and which does not extend completely over the leads;

at least two passages at an other end of each cable, through which a respective pin of the respective optical sub-assembly is inserted; and

solder-wadable lands proximate said passages and connected to the conductive paths of the flexible ribbon cable for soldered connection between the lands and the pins;

solder joints connecting between the respective pins of the sub assemblies and the lands of the cables;

a solder pad of Pb and 3 to 20% Sn solder alloy on one of the conductive pads on the surface of the interconnect structure for each respective lead; and

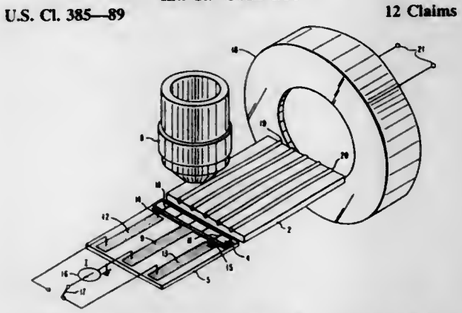
a reflow solder joint of Pb and 3 to 20% SN solder alloy between each solder pad and respective lead.

5,604,832

METHOD AND APPARATUS FOR BATCH, ACTIVE ALIGNMENT OF LASER ARRAYS TO FIBER ARRAYS

Shawn A. Hall, Pleasantville; Ramon Lane, Crompond, and Han-chung Wang, Chappaqua, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 247,940, May 24, 1994, abandoned, which is a division of Ser. No. 990,865, Dec. 15, 1992, Pat. No. 5,343,548. This application Jul. 12, 1995, Ser. No. 501,390
Int. Cl.[6] G02B *6/36*
U.S. Cl. 385—89 **12 Claims**



1. A method for aligning a substantially co-linear laser array with a substantially co-linear optical fiber array, comprising the steps of:

a. first, activating a first laser in proximity to a first end of said laser array;

b. second, positioning the laser array with respect to the fiber array to maximize energy coupled from the activated first laser to a first corresponding fiber;

c. third, activating a second laser in proximity to a second end of said laser array; and

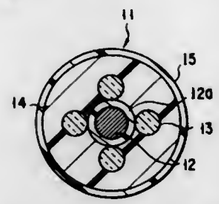
d. fourth, positioning the laser array with respect to the fiber array to maximize energy coupled from the activated second laser to a second corresponding fiber.

5,604,833

RESIN-PACKED TYPE OPTICAL FIBER UNIT

Hideaki Kambe, and Kazuhisa Kashihara, both of Ichihara, Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Dec. 22, 1995, Ser. No. 577,238
Claims priority, application Japan, Jan. 10, 1995, 7-001946
Int. Cl.[6] G02B *6/44*
U.S. Cl. 385—104 **18 Claims**



1. A resin-packed type optical fiber unit comprising:

an inner layer unit packing member through which a plurality of optical fiber cores are put; and

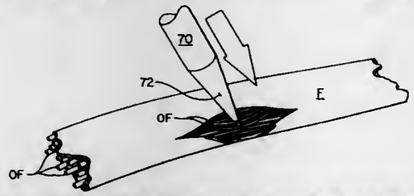
an outer layer unit packing member formed on the outer surface of said inner layer unit packing member; wherein resin which constitutes said outer layer unit packing member has a tear elongation ratio 3.0 to 4.5%.

5,604,834

METHOD OF MIDSPAN AND/OR END ENTRY TO ACCESS SELECTED OPTICAL FIBERS WITHIN AN OPTICAL RIBBON FIBER

William E. Beasley, Jr., and Taichiro Nagao, both of Durham, N.C., assignors to Sumitomo Electric Lightwave Corp., Research Triangle Park, N.C.

Continuation-in-part of Ser. No. 260,713, Jun. 16, 1994, Pat. No. 5,460,682. This application Nov. 2, 1994, Ser. No. 333,423
Int. Cl.[6] G02B *6/44*; B32B *35/00*
U.S. Cl. 385—114 **16 Claims**



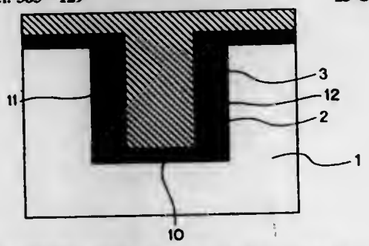
1. An optical ribbon fiber comprising a common encapsulant and a plurality of optical fibers contained within said common encapsulant and characterized in that it is particularly well suited for a friction abrading-type delamination midspan entry procedure, said optical ribbon fiber having a peel strength between about 4.0 and 33.0 gm and an encapsulant tensile modulus greater than 38.2 kg/mm^2, wherein said peel strength is less than said encapsulant strength.

5,604,835

INTEGRATED OPTICAL WAVEGUIDE DEVICE

Tohru Nakamura, Mitaka; Tomonori Tanoue, Machida; Takeshi Kato, Akishima, and Mitsuo Takeda, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 22, 1994, Ser. No. 361,681
Claims priority, application Japan, Dec. 27, 1993, 5-330503
Int. Cl.[6] G02B *6/10*
U.S. Cl. 385—129 **23 Claims**



1. An integrated optical waveguide device comprising:

a substrate; and

an optical waveguide including a first optical area which is made of a first optical material and is formed in the form of projection on a surface of said substrate or is provided in a trench formed in said substrate, and a second optical area which is made of a second optical material, and is provided on a side face of said projection or trench, and is surrounded by said first optical area,

wherein refractive index of said second optical material is larger than that of said first optical material, and a length h_{eff} parallel to said substrate, of said first optical area is expressed by the following relation,

$$h_{eff} = \frac{H}{k\sqrt{n_f^2 - n_s^2}} = \frac{H}{V}h$$

and a length h, parallel to said substrate, of said second optical area is expressed by the following relation,

$$h = \frac{V}{k\sqrt{n_f^2 - n_s^2}}, \quad k = \frac{2\pi}{\lambda}$$

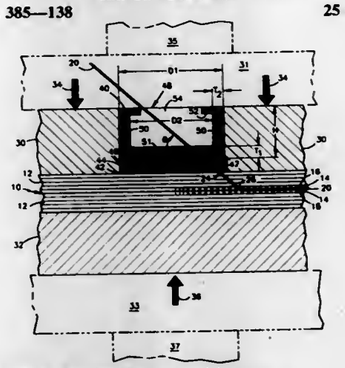
where H represents a normalized thickness of said first optical area, V represents a normalized thickness of said second optical area, λ represents a wavelength, n_s represents refractive index of said first optical area, and n_f represents refractive index of said second optical area.

5,604,836

OPTICAL FIBER ENTRY STRAIN RELIEF INTERFACE FOR COMPRESSION-MOLDED STRUCTURES

James R. Dunphy, South Glastonbury; Robert M. Rukus, South Windsor, both of Conn., and Jong-Min Ha, Seoul, Rep. of Korea, assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 11, 1995, Ser. No. 570,049
Int. Cl.[6] G02B *6/00*
U.S. Cl. 385—138 **25 Claims**



1. An optical fiber interface, comprising:

a structure comprising structure bonding material;

an optical fiber entering said structure at a fiber entry point and being embedded within said structure;

sealing means, disposed on said structure and having said fiber passing therethrough at a sealing pass-through region, for sealing around said fiber at said sealing pass-through region and for preventing said bonding material from leaking through said sealing means at said sealing pass-through region;

strain relief means, disposed adjacent to and contiguous with said sealing means and having said fiber passing therethrough at a strain relief pass-through region, for providing strain relief of said fiber near said fiber entry point; and

said sealing means for bonding said strain relief means to said structure.

5,604,837

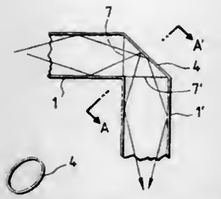
LIGHT TRANSMITTING APPARATUS

Takao Tanaka, Kyoto, Japan, assignor to Japan Storage Battery Co., Ltd., Kyoto, Japan

Filed Feb. 28, 1995, Ser. No. 395,695
Int. Cl.[6] G02B *6/00*
U.S. Cl. 385—147 **4 Claims**

1. A light transmitting apparatus comprising:

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a first cylindrical duct for transmitting a light therein in **9** first direction, said duct having an internal light reflection effect;

a second cylindrical duct for transmitting a light therein in a second direction, said duct having an internal reflection effect; and

a bending portion, having a longitudinal axis, connected between said first and second ducts for changing a light transmission direction from said first direction to said second direction, said bending portion having an internal reflection effect,

wherein said bending portion has a shape which is elliptical in cross-section in a plane perpendicular to the longitudinal axis of said bending portion.

5,604,838

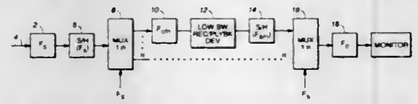
METHOD AND APPARATUS FOR RECORDING AND READING A MULTIPLEXED VIDEO SIGNAL

Louis F. Schaefer, Palo Alto, Calif., assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Continuation of Ser. No. 944,982, Sep. 15, 1992, abandoned. This application Nov. 15, 1994, Ser. No. 341,035

Int. Cl.[6] H04N *5/91*; **G11B** *5/02*

U.S. Cl. 386—122 **13 Claims**



1. Apparatus for storing and reading video information on an optical recording medium comprising:

means for receiving an analog video signal having a first frequency bandwidth, said receiving means including a first low pass filter having a first predetermined cutoff frequency;

distributing means for sampling the analog video signal and distributing the sampled analog signal into a number of distributed channels, each of which has a frequency bandwidth less than said first frequency bandwidth, and each of which includes a low pass filter having a second cutoff frequency, said first predetermined cutoff frequency being a multiple of said second cutoff frequency, said multiple corresponding to said number of distributed channels;

means for recording a signal from each of said distributed channels onto the optical recording medium and for reading said distributed signals from the optical recording medium, said means for recording and for reading including a scanning laser which receives signals from a multiplicity of said plurality of distributed channels;

means for reproducing said analog video signal by reassembling said distributed signals read from the optical recording medium; and

means for outputting said reproduced analog video signal.

5,604,839

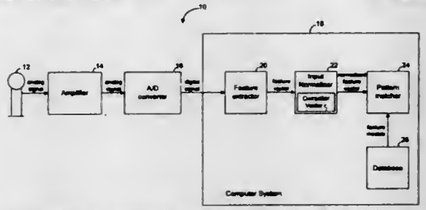
METHOD AND SYSTEM FOR IMPROVING SPEECH RECOGNITION THROUGH FRONT-END NORMALIZATION OF FEATURE VECTORS

Alejandro Acero, and Xuedong Huang, both of Redmond, Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Jul. 29, 1994, Ser. No. 283,271

Int. Cl.[6] G10L *9/00*

U.S. Cl. 395—2.43 **21 Claims**



1. A method for improving speech recognition through front-end normalization of feature vectors, wherein the speech being recognized comprises utterances, each utterance comprising frames of speech, each frame of speech being represented by a feature vector, the method comprising the steps of:

providing a database of known utterances, the database of utterances having an average noise feature vector and an average speech feature vector;

receiving a feature vector representing a frame of speech in an utterance to be recognized, the frame of speech having a probability of being noise, the utterance having an average noise feature vector and an average speech feature vector;

computing a correction vector based on the probability of the frame of speech being noise and based on the average noise and speech feature vectors for the utterance and the database of utterances; and

computing a normalized feature vector based on the feature vector and the correction vector.

5,604,840

INFORMATION PROCESSING APPARATUS

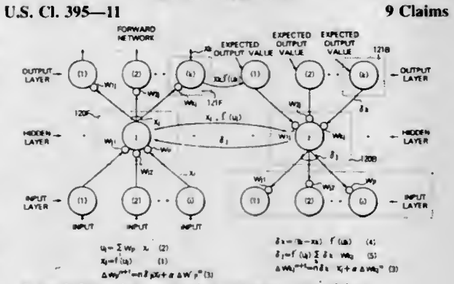
Mitsuo Asai; Noboru Masuda, both of Kokubunji; Moritoshi Yasunaga, Kawaguchi; Masayoshi Yagyu, Kokubunji; Minoru Yamada, Hanno, and Katsunari Shibata, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 602,661, Oct. 24, 1990, Pat. No. 5,214,743, which is a continuation-in-part of Ser. No. 461,080, Jan. 4, 1990, Pat. No. 5,165,010. This application Mar. 29, 1993, Ser. No. 38,839

Claims priority, application Japan, Oct. 25, 1989, 1-275834

Int. Cl.[6] G06F *15/18*

U.S. Cl. 395—11 **9 Claims**



5. An information processing apparatus comprising:

a neural network of neuron processors comprising:

an input layer,

an intermediate layer,

an output layer,

first means for holding a first weighting value corresponding to an output value from said input layer, wherein said output value is determined in an order of said input layer, said intermediate layer and said output layer in an output operation,

second means for holding a second weighting value corresponding to a learning signal value from said output layer, wherein said learning signal value is determined in an order of said output layer, said intermediate layer and said input layer in a learning operation, and

modification means for modifying said first weighting value and said second weighting value to a same value by said learning operation,

wherein said learning signal value is calculated in parallel in each of said neuron processors by supplying said second weighting value to each of said neuron processors; and

communication means for performing broadcast communications among said neuron processors.

5,604,841

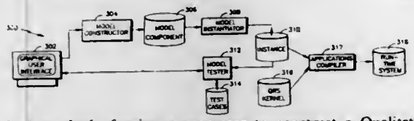
HIERARCHICAL RESTRUCTURING GENERIC TEST TEMPLATES AND REUSABLE VALUE SPACES FOR MACHINE FAILURE ISOLATION USING QUALITATIVE PHYSICS

Thomas P. Hamilton, South Windsor; Robert T. Clark, Enfield, and Steven Gallo, Vernon, all of Conn., assignors to United Technologies Corporation, Stratford, Conn.

Continuation-in-part of Ser. No. 128,255, Sep. 28, 1993, Pat. No. 5,353,381, which is a continuation-in-part of Ser. No. 549,520, Jul. 6, 1990, abandoned. This application Apr. 26, 1994, Ser. No. 233,349

Int. Cl.[6] G06F *15/18*

U.S. Cl. 395—12 **5 Claims**



1. A method of using a processor to construct a Qualitative Physics model of a machine, comprising the steps of:

the processor providing a user with a graphical user interface to define, select and interconnect machine components of the model that are described using variables and equations;

the processor allowing the user to define at least one landmark domain to provide a value space template for one or more of the variables; and

the processor generating and manipulating the Qualitative Physics model in response to input to the processor by the user, wherein at least one pair of variables of the model are defined according to the value space template of the at least one landmark domain.

5,604,842

FUZZY REASONING PROCESSOR AND METHOD, AND RULE SETTING APPARATUS AND METHOD

Hajime Nishidai, Kyoto, Japan, assignor to Omron Corporation, Japan

Filed May 12, 1992, Ser. No. 881,855

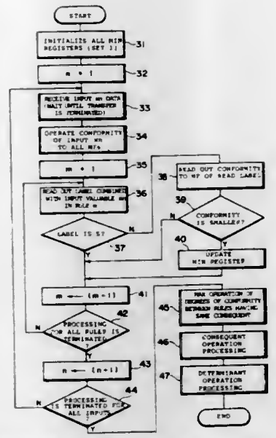
Claims priority, application Japan, May 15, 1991, 3-138663; May 16, 1991, 3-139452

Int. Cl.[6] G05B *13/00*; **G06F** *9/44*

U.S. Cl. 395—61 **9 Claims**

4. A fuzzy reasoning processing method, comprising the steps of:

previously setting pairs of input variables and membership functions constituting antecedents of a plurality of rules for each input variable and in connection with identification codes for each membership function included in a respective pair;



receiving input data for each of said pairs associated with one of said input variables;

executing antecedent processing on said input data with regard to all of said pairs to which such one input variable is related and then, performing antecedent processing with regard to all of said pairs to which such another input variable is related for which input data has been received; and

enabling reception of input data of another input variable while performing said executing step on said received input data of one input variable.

5,604,843

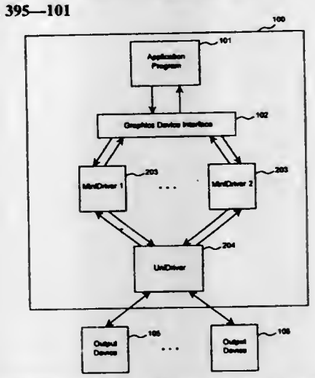
METHOD AND SYSTEM FOR INTERFACING WITH A COMPUTER OUTPUT DEVICE

Lin F. Shaw, Redmond; Eric J. Bidstrup, Carnation, and Zhanbing Wu, Kent, all of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Dec. 23, 1992, Ser. No. 995,287

Int. Cl.[6] G06K *15/00*

U.S. Cl. 395—101 **13 Claims**



1. A computer system for outputting data to an output device, comprising:

an application program for invoking a plurality of predefined graphics device interface functions to control the sending of data to the output device;

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a graphics device interface having an implementation of the plurality of the graphics device interface functions, wherein the implementation invokes a plurality of device driver functions for controlling the outputting of the data;

a plurality of minidrivers, each minidriver having an implementation of the plurality of device driver functions that are invoked by the graphics device interface functions for an output device, wherein each device driver function invokes an analogous device driver function, each minidriver having device-specific information describing attributes of an output device, and having means for invoking an initialization function passing the device-specific information; and

a universal driver having an implementation of the initialization function that is invoked by each minidriver wherein the initialization function processes and stores the device-specific information passed to the initialization function by the invoking minidriver, the universal driver having an implementation of each analogous device driver function that is invoked by each minidriver wherein the analogous device driver functions control the outputting of data to each output device in accordance with the stored device-specific information for that output device.

5,604,844

PRINTING METHOD AND APPARATUS

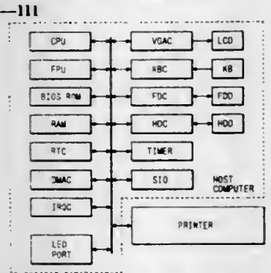
Masaki Nishiyama, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 994,982, Dec. 22, 1992. This application Jun. 7, 1995, Ser. No. 474,184

Claims priority, application Japan, Dec. 25, 1991, 3-343284

Int. Cl.[6] G06K *15/00*

U.S. Cl. 395—111 **12 Claims**



1. A print control apparatus for controlling print means which has an on-line mode and an off-line mode and, in the on-line mode, receives data from a host computer and executes data printing onto a recording medium based on the received data, said apparatus comprising:

memory means for storing identification information for identifying whether a print unit of the print means is executing the data printing onto the recording medium based on the received data;

determining means for determining whether the print unit of the print means is executing the data printing onto the recording medium based on the received data on the basis of the identification information stored in said memory means; and

control means for, in the on-line mode, controlling the print means to execute a paper feed operation in the event that said determining means determines that the print unit of the print means is not executing the data printing onto the recording medium based on the received data and controlling the print means so as not to execute a paper feed operation in the event that said determining means determines that the print unit of the print means is executing the data printing onto the recording medium based on the received data.

5,604,845

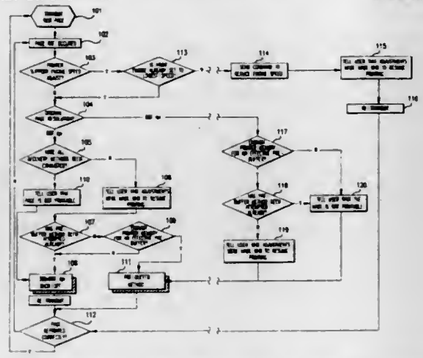
METHOD FOR RECOVERY OF FAULTED PAGES IN A HOST BASED PRINTING SYSTEM

Vincent J. Kenkel, Boise, Id., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 25, 1995, Ser. No. 533,597

Int. Cl.[6] G06K *15/00*

U.S. Cl. 395—113 **8 Claims**



1. A method, used in a host based printing system, for recovering a faulted page image, said host based printing system including a printer and a host, said method comprising the steps of:

first transmitting a page image from said host to said printer;

detecting if said page image causes a fault;

determining a resolution of said page image;

if said resolution is a first resolution then:

checking if said printer has enough memory;

second transmitting said page image to said printer;

first pre-buffering said page image in said enough memory;

if said resolution is a second resolution then:

checking if said printer has enough memory;

third transmitting said page image to said printer;

second pre-buffering said page image in said enough memory;

verifying if said page image prints correctly;

if said step of verifying verifies that said page image causes a fault then:

changing said page's image resolution to said first resolution; and

fourth transmitting said page image to said printer.

5,604,846

PRINTER AND METHOD FOR DEVELOPING PRINT DATA

Masatoshi Kadota, Takahama, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Aichi-ken, Japan

Filed Oct. 12, 1995, Ser. No. 542,255

Claims priority, application Japan, Oct. 13, 1994, 6-276110; Apr. 10, 1995, 7-084321; May 16, 1995, 7-116975

Int. Cl.[6] G06K *15/00*

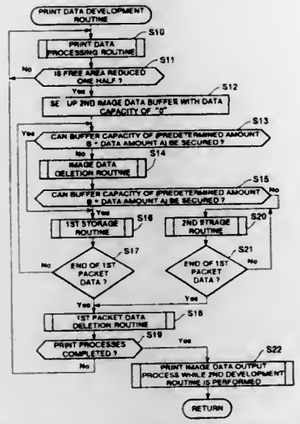
U.S. Cl. 385—115 **26 Claims**

1. A printer comprising:

a reception buffer storing print data received from an external device;

first packet data storing means for receiving the print data from said reception buffer and storing first type packet data including code data indicative of a character or a symbol and print position information indicative of a print position of the character or the symbol identified by the code data, the first type packet data being prepared on a band basis wherein the band is defined by a predetermined range of data amount;

developing means for sequentially developing the first type packet data into print image data in a printable format;



compression means for compressing according to a predetermined compression format, the print image data developed by said developing means to provide compressed print image data;

compressed print image data storing means having a storage capacity for storing the compressed print image data on the band basis;

judgement means for judging whether or not one band's worth of the compressed print image data can be stored in said compressed print image data storing means;

storage capacity securing means for increasing the storage capacity of said compressed print image data storing means when said judgement means judges that the one band's worth of compressed print image data cannot be snored in said compressed print image data storing means;

decoding means for decoding the compressed print image data stored in said compressed print image data storing means into the print image data; and

printing means for printing, on a print medium, the print image data provided by said decoding means while feeding the print medium in an auxiliary scanning direction.

5,604,847

SYSTEM AND METHOD OF PRINTER BANDING

Stephen V. Dennis, Bothell, and Gabe L. Newell, Seattle, both of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Division of Ser. No. 911,523, Jul. 10, 1992. This application Jun. 7, 1995, Ser. No. 478,503

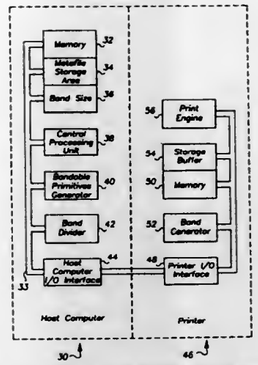
Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—116 **7 Claims**

4. A system for processing a page of data to be printed on a printer with unidirectional page movement, using an unprocessed data file that describes a plurality of objects to be printed on the page and a user specified appearance of the plurality of objects to be printed on the page, by defining a plurality of bands for the page, each of the bands having a selected band size, the printer coupled to a computer having a memory storing the unprocessed data file, the system comprising:

a controller to transfer the unprocessed data file from the computer to the printer;

a processor to transfer the unprocessed data file into bandable primitives for each of the bands, said bandable primitives for each band corresponding to the plurality of objects and portions of the plurality of objects within that band and to store said bandable primitives in a manner indicative of a data processing sequence determined by the user specified appearance of the plurality of objects to be printed on the page; and



a band divider to divide said bandable primitives into sets of banded primitives corresponding to the bands to generate a set of banded primitives for each of the bands with each of said set of banded primitives describing only the plurality of objects and portions of the plurality of objects within the respective one of the corresponding bands, said set of banded primitives for each of the bands maintaining said data processing sequence determined by the user specified appearance of the plurality of objects to be printed on the page, whereby the printer processes the unprocessed data file into said banded sets of primitives with each of said banded sets of primitives maintaining said data processing sequence determined by the user specified appearance of the plurality of objects to be printed on the page, whereby the computer does not process the unprocessed data file one time for each of said bands in order to generate said bit-map data files.

5,604,848

VIEWPOINT SETTING APPARATUS FOR A COMPUTER GRAPHICS SYSTEM FOR DISPLAYING THREE-DIMENSIONAL MODELS

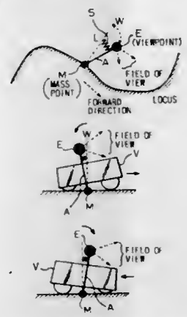
Hiroaki Harada, and Tatsuro Aoyama, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 7, 1995, Ser. No. 399,540

Claims priority, application Japan, Mar. 18, 1994, 6-048675

Int. Cl.[6] G06T *15/00*

U.S. Cl. 395—119 **6 Claims**



1. A viewpoint setting apparatus for setting a viewpoint, provided on a three-dimensional model, on a display monitor in a computer graphics system, comprising:

a model information database storing three-dimensional model information including model coordinates and physical attributes thereof;

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a viewpoint locus database storing viewpoint information including locus data produced when the viewpoint moves on the display monitor;

a field of view conversion matrix database storing a three-dimensional conversion matrix in order to change a field of view from the viewpoint;

motion calculation means operatively connected to said model information database, said viewpoint locus database, and said field of view conversion matrix database, for receiving the model information and the viewpoint information, calculating the motion of the model caused by the change of the field of view based on the change of the viewpoint which is caused by physical forces applied to the model having the viewpoint, and sequentially updating the field of view conversion matrix database in accordance with the change in the field of view calculated;

drawing processing means operatively connected to the motion calculation means, for receiving the result of calculation of the field of view conversion matrix from said motion calculation means, and drawing the three-dimensional model on the display monitor based on new field of view calculated by the motion calculation means; and

input means operatively connected to the motion calculation means for outputting a view-parameter which adjusts the motion of the three-dimensional model so as to conform to an actual viewpoint of a user, wherein said three-dimensional model is formed by a bar-shaped model having a mass at the end thereof and a viewpoint at the top thereof.

5,604,849

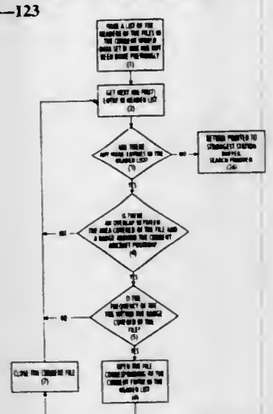
OVERLAY MANAGEMENT SYSTEM AND METHOD

Bruce A. Artwick, Champaign; Steven W. Setzler, Broadlands, and Mark R. Randel, Champaign, all of Ill., assignors to Microsoft Corporation, Redmond, Wash.

Division of Ser. No. 116,155, Sep. 2, 1993, abandoned. This application Mar. 20, 1995, Ser. No. 407,583

Int. Cl.[6] G06F *9/40;9/46*

U.S. Cl. 395—123 **10 Claims**



1. In an improved overlay management system for a computer system having

means for being invoked in response to execution of an original call to a subroutine, the original call originating from a calling address;

means for determining if the subroutine is present in an executable portion of memory of the computer system and for loading the subroutine into the executable portion of memory in response to the original call in the event the subroutine is not already loaded;

means for unloading the subroutine according to a predetermined criteria for memory management;

the improvement comprising:

means for determining the calling address and an identity of the subroutine being called from the calling address;

means for determining an address of the subroutine loaded in the executable portion of memory, and for rewriting the original call at the calling address for directly calling the address of the subroutine; and

means for rewriting the original call at the calling address to restore the original call to the subroutine in response to unloading the subroutine from the executable portion of memory.

5,604,850

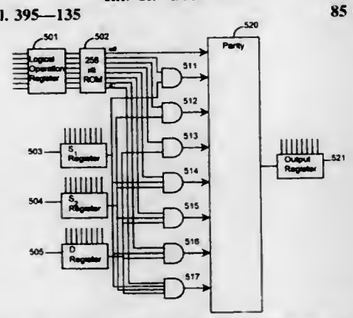
METHOD AND SYSTEM FOR DYNAMICALLY GENERATING COMPUTER INSTRUCTIONS FOR PERFORMING A LOGICAL OPERATION ON BITMAPS

Charles Whitmer, Redmond, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Filed Jul. 6, 1992, Ser. No. 909,248

Int. Cl.[6] G06T *11/00*

U.S. Cl. 395—135 **85 Claims**



1. A method of generating a set of computer instructions to implement a logical operation to be performed on a plurality of bitmaps, the method comprising the steps of:

specifying a Boolean equation, the equation having a plurality of terms, wherein each term has a corresponding coefficient;

for each term of the Boolean equation, generating a subset of computer instructions that implements the term;

storing each generated subset of computer instructions in a computer instructions table; and

during execution of a computer program,

requesting a logical operation;

mapping the requested logical operation to a set of coefficients;

determining which stored subsets of computer instructions are needed to implement the requested logical operation based on the mapped set of coefficients;

retrieving the determined subsets of computer instructions from the computer instructions table; and

combining the retrieved subsets of computer instructions to generate the set of computer instructions that implements the requested logical operation.

5,604,851

METHOD AND APPARATUS FOR CONSTRUCTING DISPLAYS OF PARTIALLY ORDERED DATA

David J. Taylor, Waterloo, Canada, assignor to International Business Machines Corporation, Armonk, N.Y.

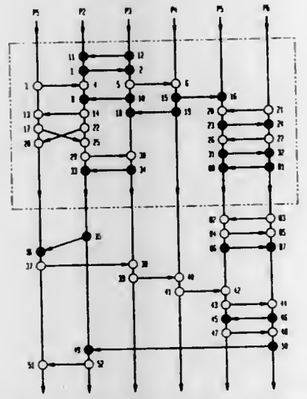
Filed May 24, 1995, Ser. No. 449,854

Claims priority, application Canada, Jul. 29, 1994, 2129190

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—140 **42 Claims**

1. A method of constructing a display of partially ordered information comprising a plurality of events, at least some of the



plurality of events being related in a synchronous or asynchronous manner to form an event pair, each of the plurality of events being associated with one of a plurality of processes, the information being displayed on a display with opposed first and second boundaries, the method comprising the steps of:

(i) identifying and locating an event of interest on the display adjacent the first boundary, the first boundary defining a datum point in the partial order and the second boundary defining a traversal direction extending from the datum to the second boundary for traversing the partial order;

(ii) creating a set S to represent events to be considered for placement on the display and setting S to comprise the event of interest;

(iii) defining an operation direction equivalent to said traversal direction;

(iv) for each event in S, adding a partner event to S if: said partner event is a synchronous event or if said partner event is an asynchronous event succeeding said event in the partial order with respect to the operation direction and said partner event does not precede, with respect to the traversal direction, any first event on the previously completed display; and either the process to which the partner event is associated with is currently not in S or the event in said process already in S succeeds the partner event in the partial order with respect to the operation direction;

(v) determining events in S for which no other event in S precedes them in the partial order with respect to the operation direction and placing said events into a set T;

(vi) displaying each event in T on the display in the farthest position opposite said operation direction which is consistent with the partial order, the placement of each event in T being arranged to create a grouping of the displayed events associated with each process;

(vii) updating the contents of set S to remove each event also in set T and to replace each of those removed events in S with the event in the process associated with the removed event which succeeds the removed event in the partial order with respect to the operation direction, and removing all events from set T;

(viii) repeating steps (iv) through (vii) until the display cannot be further updated in the operation direction;

(ix) if the operation direction is opposite said traversal direction, repositioning in the operation direction each displayed event to the position within the grouping of events for its associated process which is closest said first boundary and is consistent with the partial order of the information;

(x) setting said operation direction to the opposite direction;

(xi) replacing the contents of S with: the set of events which immediately succeed, with respect to the direction of operation, the event in each process which is displayed furthest in the direction of operation; non-displayed asynchronous events which are the partner events of events already placed on the display and which succeed their displayed partner events with respect to the direction of operation when the operation direction is the traversal direction; and non-displayed asynchronous events which are the partner events of events already placed on the display and which succeed their displayed partner events with respect to the direction of operation but which do not precede, with respect to the traversal direction, any first event on the previously completed display when the operation direction is opposite the traversal direction; and wherein if two events from the same process are eligible to be placed in S, only the preceding event, with respect to the direction of operation, is placed in S;

(xii) repeating steps (iv) through (xi) until no events, which are associated with at least one process on the display for which no events had yet been displayed, are added to the display;

(xiii) determining the set of processes which are to be displayed and for which no events have yet been displayed;

(xiv) determining the subset of said set of processes whose previously displayed event in the position closest said first boundary cannot be displayed in compliance with said partial order;

(xv) replacing the contents of S with the first events succeeding, with respect to the traversal direction, each of said previously displayed events in said subset of events and which may be displayed according to the partial order;

(xvi) repeating steps (iii) through (xv) until set S is a null set;

(xvii) replacing the contents of S with the previously displayed event in the position closest said first boundary for each process in said set of processes formed in step (xiii);

(xviii) repeating steps (iii) through (viii).

5,604,852

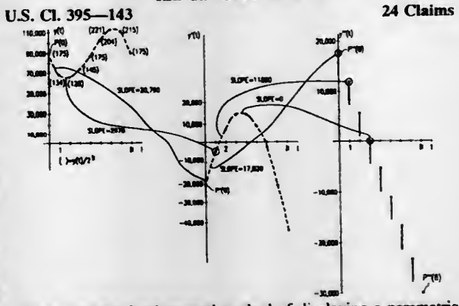
METHOD AND APPARATUS FOR DISPLAYING A PARAMETRIC CURVE ON A VIDEO DISPLAY

John J. Watters, Spring; Giang H. Dao, Houston, and Randolph W. Spurlock, Tomball, all of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Continuation-in-part of Ser. No. 381,104, Jan. 31, 1995. This application Apr. 13, 1995, Ser. No. 421,404

Int. Cl.[6] G06T *11/00*

U.S. Cl. 395—143 **24 Claims**



1. A computer-implemented method of displaying a parametric curve on a video display in a computer system by generating a polyline approximating a line defined by a parametric equation of degree n, wherein the polyline includes a plurality of segments with one or more points, comprising the steps of:

receiving a starting point for the line defined by the parametric equation of degree n;

receiving starting points for n-1 equations corresponding to first through n-1 order derivatives of the parametric equation;

receiving an endpoint for the n-1 order derivative equation of the parametric equation;

responsive to the starting point and the endpoint of the n-1 order derivative equation, generating a set of points corresponding to points of the n-1 order derivative equation;

for each segment of the polyline to be displayed on the video display:

for each of the first through n-2 order derivative equations, determining an endpoint for a segment of the derivative associated with the segment of the polyline responsive to the starting point of the segment of the derivative and a slope corresponding to a value of a predetermined point in a corresponding segment of a next higher derivative equation; and

determining an endpoint for a segment of the polyline responsive to the starting point of the segment of the polyline and a slope corresponding to a value of a predetermined point in a corresponding segment of the first derivative: and

displaying the segment of the polyline on the video display in the computer system.

5,604,853

TEXT EDITOR USING INSERT, UPDATE AND DELETE STRUCTURES FOR UNDO AND REDO OPERATIONS

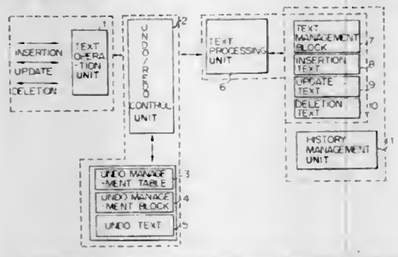
Hironobu Nagashima, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed May 18, 1992, Ser. No. 884,405

Claims priority, application Japan, May 18, 1991, 03113578

Int. Cl.[6] G06F *17/24*

U.S. Cl. 395—803 **3 Claims**



1. A text managing system for performing an editing operation of a text, by using a text editing program in a computer system, said text managing system comprising:

text operation means for receiving at least one of insertion, update and deletion information for the text, as instructed by an operator, and for displaying the result of editing the text on a screen;

UNDO/REDO control means, operatively connected to said text operation means, for restoring the text to be displayed on said screen to a most recent previous state, said previous state existing prior to a result of the editing, and for reexecuting the text restored as a result of said restoring;

text processing means, operatively connected to said UNDO/REDO control means, for managing the text already edited during the editing operation in response to said UNDO/REDO control means;

a text management block, for managing current text, comprising a plurality of entries of pointers to a plurality of UNDO texts;

each of said plurality of UNDO texts comprising an ID field, an ADDRESS field and a CONTENT field, said ID field storing a type of the UNDO text, said ADDRESS field storing a pointer to one of said plurality of entries of said text management block and said CONTENT field storing a character-string data being edited;

an UNDO management table, operatively connected to said UNDO/REDO control means, for storing in correspondence with each editing operation which is performed, a corresponding UNDO level indicating the number of the UNDO operation; and

a plurality of UNDO management blocks, each storing a plurality of pointers and each pointer pointing to one of said plurality of UNDO texts.

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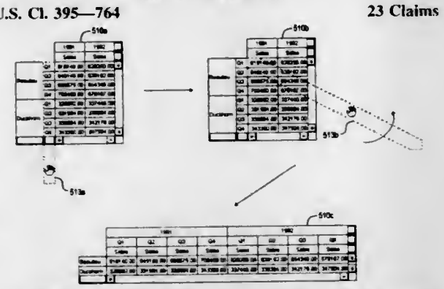
SYSTEM AND METHODS FOR REFORMATTING MULTI-DIMENSIONAL SPREADSHEET INFORMATION

Colin R. Glassey, San Jose, Calif., assignor to Borland International, Inc., Scotts Valley, Calif.

Continuation of Ser. No. 233,143, Apr. 22, 1994, abandoned. This application May 22, 1996, Ser. No. 651,580

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—764 **23 Claims**



1. In an electronic spreadsheet system having a spreadsheet comprising a plurality of information cells for storing user-supplied data and formulas operative on said data, a method for transforming three-dimensional spreadsheet information into two-dimensional format for generating a cross-tabular report, the method comprising:

(a) receiving user input specifying a three-dimensional block of information cells, said three-dimensional block comprising a plurality of two-dimensional blocks, each of said two-dimensional blocks comprising an array of information cells arranged in row and column format, each of said information cells in said three-dimensional block being uniquely identified by a row, a column, and a spreadsheet page where the cell is located;

(b) transforming said three-dimensional block of spreadsheet information into two-dimensional format by copying rows of spreadsheet information from said three-dimensional block into a two-dimensional block, said transforming step comprising:

(i) determining how many columns are present in said three-dimensional block;

(ii) creating a new two-dimensional block of information cells, said new two-dimensional block having one additional column than that present in said three-dimensional block, so that said new two-dimensional block includes a number of columns that is one more than said determined number of columns in said three-dimensional block, each of said information cells in said new two-dimensional block being uniquely identified by a row and a column;

(iii) storing a first row of information cells from said three-dimensional block as a reference row for recognizing each subsequent page of said three-dimensional block; and

(iv) for at least some subsequent rows of information cells present in said three-dimensional block, storing corresponding information in respective columns of said new two-dimensional block of information cells and storing in said additional column an identifier for the page where said each row originated, so that each row of said two-dimensional block comprises a row of information from said three-dimensional block stored together with an identifier for the page where said each row originated, said identifier being determined at least in part on the basis of said recognizing each subsequent page of said three-dimensional block;

(c) receiving additional user input specifying creation of a cross-tabular report based on information from said two-dimensional block of information cells; and

(d) in response to said additional user input, displaying a cross-tabular report generated from said two-dimensional block of information cells, so that identifiers for said pages and information cell contents for at least one column appear as cross-tabular labels for the report.

5,604,855

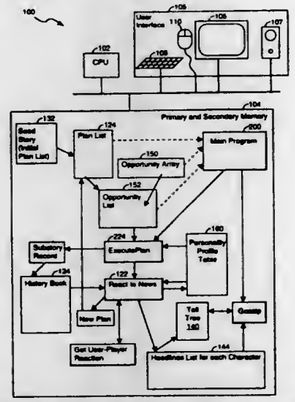
COMPUTER STORY GENERATION SYSTEM AND METHOD USING NETWORK OF RE-USABLE SUBSTORIES

Christopher C. Crawford, 5251 Sierra Rd., San Jose, Calif. 95132

Filed Sep. 28, 1994, Ser. No. 313,989

Int. Cl.[6] G06T *13/00*

U.S. Cl. 395—173 **9 Claims**



1. A method of generating a sequence of images representing a dynamically generated story line, comprising:

establishing a set of characters;

defining a set of re-usable substories, a multiplicity of said substories representing an action by a subject comprising a selectable one of said characters where the action is performed with respect to at least one object comprising at least a selectable one of said characters; for each said substory, establishing a set of possible reaction substories comprising a subset of said set of re-usable substories;

establishing a plan list for storing plans indicating ones of said substories to be performed;

storing in said plan list an initial set of plans, each of said stored plans representing a substory to be performed;

executing ones of said substories represented by said plans stored in said plan list;

establishing a physical position for each of said characters and updating said characters' physical positions during said executing step;

establishing a current time and advancing said current time during said executing step;

generating, in reaction to each said executed substory, additional plans to perform additional ones of said substories wherein said additional substories comprise selected ones of said set of possible reaction substories for said executed substory; and

storing said generated plans in said plan list; said plan list at times storing a multiplicity of said generated plans;

said generating plans step including receiving, in reaction to at least a subset of said executed substories, input from an end user and selecting at least a subset of said additional substories in accordance with said end user input;

said plan generating step including assigning each generated plan an earliest execution time and a set of associated characters including a subject and an object, wherein said subject and object are each a specified one of said characters;

each stored plan in said plan list including said assigned earliest execution time, subject and object, such that at various times at least a subset of said plans in said plan list have respective earliest execution times that are later than said current time;

at least a subset of said generated plans comprising deferred plans, where each deferred plan's execution is deferred because its earliest execution time is later than said current time and/or its associated characters are not physically proximate each other;

said executing step including selecting for execution one plan from those of said stored plans in said plan list whose associated earliest execution time is at least as early as said current time and that meet opportunity availability criteria, said opportunity availability criteria including a requirement that the characters associated with said one plan have physical positions that are proximate to one another;

wherein said generated plans are executed in a different order than those generated plans are added to said plan list by said generated plans storing step;

further including

storing history data representing each specific substory that bas been executed;

evaluating newsworthiness of said executed substories represented by said history data and selecting in accordance with predefined newsworthiness criteria a set of most newsworthy executed substories from the history data;

said set of reusable substories including at least one re-usable "gossip" substory having a subject, comprising a selectable one of said characters, who informs an object, comprising a different selectable one of said characters of one of said most newsworthy executed substories;

said substory executing step including executing said gossip substory so as to pass information about a first previously executed substory from a first one of said characters to a second one of said characters;

said plan generating step including generating a plan in reaction to execution of said gossip substory in which said second one of said characters is specified as the subject, and the planned substory is one of said set of possible reaction substories for said first previously executed substory.

5,604,856

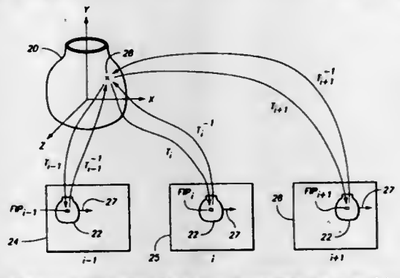
MOTION COMPENSATED NOISE REDUCTION METHOD AND SYSTEM FOR COMPUTER GENERATED IMAGES

Brian Guenter, Redmond, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Filed Oct. 13, 1994, Ser. No. 322,958

Int. Cl.[6] G06T *7/20;13/00;15/70*

U.S. Cl. 395—173 **30 Claims**



1. A method for reducing noise in a computer generated image that is created for viewing on a visual display screen, the visual display screen having a matrix of pixels, the method comprising the following steps:

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providing a frame image point on a computer generated image in a reference frame, the frame image point corresponding to a reference pixel in the visual display screen when the reference frame is depicted on the visual display screen;

predicting motion of the frame image point from its reference location in the reference frame to a projected location in a projected frame;

deriving an intensity of the reference pixel in the reference frame by using the intensity of one or more pixels in the projected frame which are adjacent to the projected location of the moving image point in the visual display screen when the projected frame is depicted on the visual display screen, the intensity of the reference pixel comprises multiple illumination components selected from a group comprising intrinsic reflectance, shadow, specular reflectance, and specular spot;

breaking the intensity of the one or more adjacent pixel intensities in the projected frame into multiple illumination components which correspond to the illumination components of the reference pixel; and

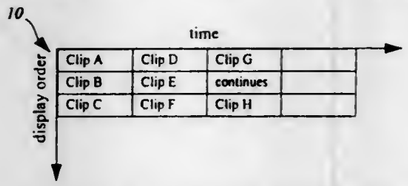
the deriving step comprises independently deriving each illumination component of the reference pixel by using each illumination component in the intensity of the one or more adjacent pixels.

5,604,857

RENDER SYSTEM FOR THE RENDERING OF STORYBOARD STRUCTURES ON A REAL TIME ANIMATED SYSTEM

Simon R. Walmsley, 3/9 Pembroke Street, Epping, New South Wales 2112, Australia

Continuation of Ser. No. 181,246, Jan. 13, 1994, abandoned. This application May 10, 1996, Ser. No. 644,714
Claims priority, application Australia, Jan. 15, 1993, PL6833
Int. Cl.[6] G06T *13/00*
U.S. Cl. 395—173 **18 Claims**



1. An automated storyboard rendering system for the reproduction of a storyboard using a real-time processor on a reproduction device, said storyboard comprising a number of columns each containing references to a plurality of information clips intended for reproduction, each of said plurality of information clips extending over a plurality of image frames displayed by said reproduction device, wherein the plurality of information clips for a given column are displayed simultaneously, said system comprising:

current column determination means adapted to determine those information clips that are intended for reproduction, and thereby active, in a current column, and if said current column includes at least one active information clip, identifying said current column as an active column and automatically adjusting a duration of the other clips in said current active column to be the same as a shortest duration of one of said active information clips, and

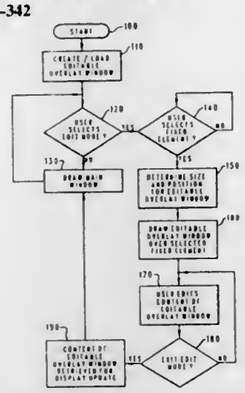
column rendering means connected to said column determination means and adapted to receive a current active column and to then simultaneously render in real-time those active information clips in said current active column on said reproduction device.

5,604,858

METHOD AND SYSTEM FOR APPARENT DIRECT EDITING OF FIXED DISPLAY ELEMENTS WITHIN A DATA PROCESSING SYSTEM

Kendall J. Jefferson, Bedford, and Kendall A. Lock, Trophy Club, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 10, 1992, Ser. No. 928,249
Int. Cl.[6] G06F *3/14*
U.S. Cl. 395—342 **7 Claims**



1. A method of apparent direct editing of a fixed element displayed within a main window being provided by an application within a data processing system, said method comprising the data processing system implemented steps of:

creating an editable overlay window, wherein said editable overlay window allows its shape or its contents to be edited;

in response to the selection of a first fixed element displayed within a main window that is a separate and distinct window from said editable overlay window, wherein the main window contains at least two fixed elements including the first fixed element and a second fixed element, and further wherein the fixed element is fixed such that it cannot be edited or cannot be controlled directly in the main window, sizing and shaping said editable overlay window so that said editable overlay window equals the dimensions of said first fixed element, and overlaying said editable overlay window over said main window so that said editable overlay window is precisely positioned such that said first fixed element is no longer displayed, but such that portions of said main window including the second fixed element remain displayed; and

permitting a user to create and edit information within said editable overlay window, wherein, because the dimensions of said editable overlay window are indistinguishable from said selected first fixed element, it appears from visual observation by a user of the displayed portions of the main window that said fixed element is being edited directly within said main window when, in fact, information is created and edited by said user in said editable overlay window.

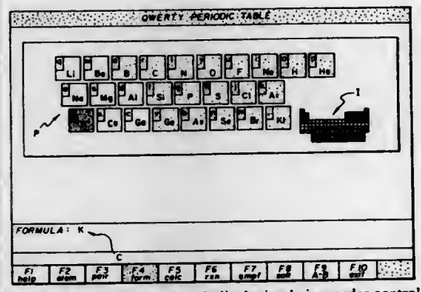
5,604,859

DISPLAY OF PARTIAL PERIODIC TABLE ARRAYS

O. Bertrand Ramsay, 1203 Sherman, Ypsilanti, Mich. 48197

Filed Mar. 30, 1994, Ser. No. 220,104
Int. Cl.[6] G06F *19/00*
U.S. Cl. 395—161 **14 Claims**

1. In an instrument having a screen and a keyboard, said instrument being constructed and arranged for performing chemical calculations and for displaying results of said calculations on said



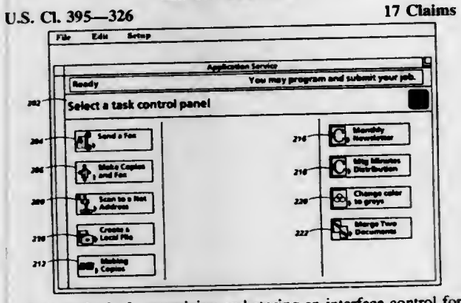
screen, such performing and such displaying being under control of keys of said keyboard, the improvement wherein keys of said keyboard are actuable by a user of said instrument for causing said instrument to display on said screen a partial array of the periodic table of elements, said partial array consisting essentially of some symbols of the elements in said table, and wherein said screen at the same time displays an icon having the shape of said table, but wherein the part of said shape corresponding to said symbols is visibly different from the rest of of said shape.

5,604,860

FEATURE LIBRARY AND STORED CUSTOMIZED CONTROL INTERFACES

Denise C. McLaughlin, Macedon, and Frank Marino, Jr., Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 27, 1994, Ser. No. 329,811
Int. Cl.[6] G06F *3/14*
U.S. Cl. 395—326 **17 Claims**



1. A method of customizing and storing an interface control for printing devices on a network, the network including a repository of printing device control features, the devices including an interface with screen display, comprising the steps of:

entering an interface control customizing mode providing access to a library of control features in said repository;

selecting a set of control features for use on a given device on the network;

arranging the set of control features in a given configuration on a display;

storing the set of control features and given configuration in memory; and

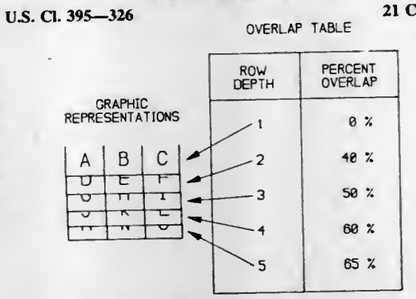
referencing the set of control features and given configuration with a given identifier whereby upon accessing said identifier the set of control features and given configuration are provided on the interface screen display of said given device to control the operation of said given device.

5,604,861

METHOD AND APPARATUS FOR IMPROVED NOTEBOOK CONTROL IN A DATA PROCESING SYSTEM

Thomas B. Douglas, Dallas; Daryl J. Kahl, Flower Mound; Peter Scannell, Carrollton, and Robert J. Torres, Colleyville, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 997,419, Dec. 28, 1992, abandoned. This application Oct. 20, 1995, Ser. No. 546,151
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—326 **21 Claims**



17. A data processing system which maintains notebook control of software objects, comprising:

means for organizing software objects into a plurality of sections, with selected sections including software objects arranged for selective display in a workspace, and with divider pages defining boundaries for said plurality of sections, and a plurality of tab portions;

means for allowing a user to interactively specify an amount of overlap between selected ones of said tab portions and adjoining others of said tab portions; and

means for automatically displaying said tab portions of said divider pages in accordance with said amount of overlap between said selected ones of said tab portions and said adjoining offers of said tab portions specified by said user.

5,604,862

CONTINUOUSLY-SNAPSHOTTED PROTECTION OF COMPUTER FILES

Christopher W. Midgely, Framingham; Charles J. Holland, Northboro; John W. Webb, Sutton, and Manuel Gonsalves, Brookline, all of Mass., assignors to Network Integrity, Inc., Marlborough, Mass.

Filed Mar. 14, 1995, Ser. No. 403,347
Int. Cl.[6] G06F *11/34*
U.S. Cl. 395—182.04 **31 Claims**

1. A method for managing copies of a protected set of files on a bounded number of sequential-access volumes, the method being executed by computer and comprising:

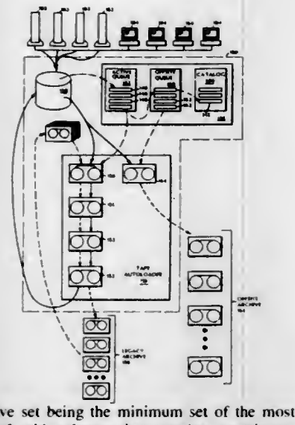
(a) from among a plurality of said sequential-access volumes, selecting one as the current volume;

(b) when an external process independent of the sequential-access volumes alters the contents of one of the protected files to produce a new current version of the protected file, snapshotting the new current version of the altered protected file at the end of the current volume;

(c) when the current volume is full to a defined limit, selecting a new volume to be the current volume;

(d) maintaining the population of an active set of said sequential-access volumes at or below said bounded number,

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said active set being the minimum set of the most-recently-current of said volumes that together contain at least one version of each of said protected files, by:

as said population approaches or equals said bounded number, selecting for compaction one volume of said active set, and

copying from the compaction volume to the current volume those versions of file versions stored on the compaction volume not having a more recent version stored on the active set; and

(e) repeating steps (b)–(d) while the external process continues.

5,604,863

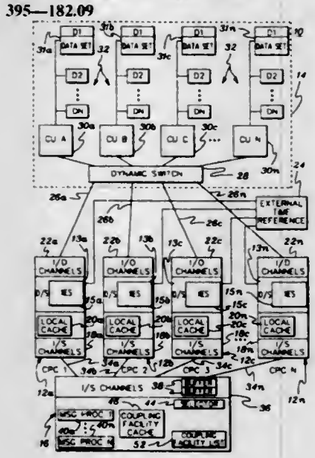
METHOD FOR COORDINATING EXECUTING PROGRAMS IN A DATA PROCESSING SYSTEM

Ruth A. Allen, Poughkeepsie, N.Y.; Jaime Anaya; Roger L. Brookmeyer, both of San Jose, Calif.; Lisa M. Goetze, Austin, Tex.; James C. Kleewein, San Jose, Calif.; Jeffrey M. Nick, Fishkill, N.Y.; Ronald E. Parrish, San Jose, Calif.; Kelly B. Pushong, Highland, N.Y.; David H. Surman, Milton, N.Y., and Michael D. Swanson, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 146,635, Nov. 1, 1993. This application May 9, 1995, Ser. No. 439,269

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—182.09 **6 Claims**



1. A method by which one or more programs coordinate process execution in a data processing system for building structures with different characteristics, said method comprising the steps of:

identifying to an operating system each of the one or more said programs to coordinate the process execution;

designating a coordination event to said operating system by one of said programs for synchronizing execution of the one or more said programs prior to ending a task being performed by the one or more said programs;

notifying by said operating system all of the one or more said programs of the coordination event;

synchronizing process execution by the one or more said programs after being notified of occurrence of said coordination event, said synchronizing step accomplished by one or more said programs continuing to execute, pausing execution, or terminating execution as determined by the one or more said programs as a response to occurrence of said coordination event prior to ending the task;

responding prior to ending the task by the one or more said programs sending status information to said operating system then synchronizing process execution by said one or more programs; and

notifying by said operating system the one or more said programs after said operating system receives all of the responses from the one or more said programs for enabling synchronization of the one or more said programs prior to the end of the task.

5,604,864

METHOD AND SYSTEM FOR DETECTING INVALID ACCESS TO A MEMORY

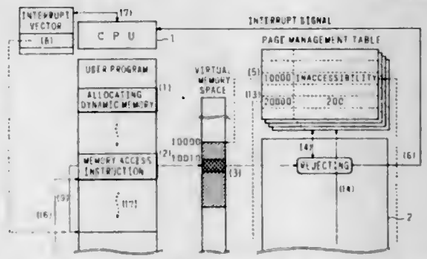
Katsuhiko Noda, Hirakata, Japan, assignor to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed May 23, 1995, Ser. No. 447,704

Claims priority, application Japan, May 26, 1994, 6-112872

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—184.01 **18 Claims**



1. A method of detecting an invalid access to a memory associated with a user program, the memory including a dynamic memory, said invalid access being defined to include a request for allocating the dynamic memory and accessing the dynamic memory, said method comprising the steps of:

setting an inaccessible address area and obtaining a real memory address area corresponding to said inaccessible address area in response to a request for allocating the dynamic memory, as well as creating an address translation table for translating an address in said inaccessible address area into an address in said real memory address area; and

determining whether or not an access to the dynamic memory is invalid based on an address for accessing said dynamic memory from said user program, the address in said inaccessible address area, and said address translation table, when said user program is executed.

5,604,865

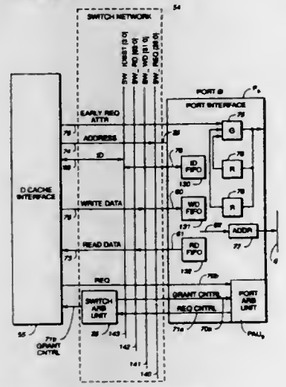
MICROPROCESSOR ARCHITECTURE WITH A SWITCH NETWORK FOR DATA TRANSFER BETWEEN CACHE, MEMORY PORT, AND IOU

Derek J. Lentz, Los Gatos; Yasuaki Hagiwara, Santa Clara; Te-Li Lau, Palo Alto; Cheng-Long Tang, San Jose, and Le Trong Nguyen, Monte Sereno, all of Calif., assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 726,893, Jul. 8, 1991, Pat. No. 5,440,752. This application Jun. 7, 1995, Ser. No. 474,385

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.08 **20 Claims**



1. A multiprocessor system, comprising:

a plurality of microprocessors; and

a memory array unit (MAU);

wherein each of said microprocessors comprises master devices and slave devices, said slave devices including a memory port coupled to said MAU, and a memory control unit (MCU) for controlling access to said memory port;

wherein said MCU comprises:

a switch network for transferring data between said master devices and said memory port;

a memory port interface circuit;

means for coupling said memory port interface circuit between said memory port and said switch network;

switch arbitration means for arbitrating for said switch network;

port arbitration means for arbitrating for said memory port;

means for transferring to said port arbitration means a request to transfer data via said memory port through said switch network and said port interface circuit;

means for transferring a port available signal from said port arbitration means to said switch arbitration means when said port interface circuit is free to process said request; and

means responsive to said port available signal for transferring a switch available signal from said switch arbitration means to the source of said request and to said port arbitration means when said switch network is free to process said request.

5,604,866

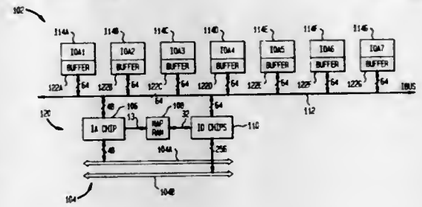
FLOW CONTROL SYSTEM HAVING A COUNTER IN TRANSMITTER FOR DECREMENTING AND INCREMENTING BASED UPON TRANSMITTING AND RECEIVED MESSAGE SIZE RESPECTIVELY FOR INDICATING FREE SPACE IN RECEIVER

Ronald L. Kolb, Milpitas; Ramesh Padmanabhan, San Jose, and Eric M. Williams, Palo Alto, all of Calif., assignors to Silicon Graphics, Inc., Mountain View, Calif.

Filed Sep. 30, 1993, Ser. No. 128,722

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.13 **8 Claims**



1. A system for controlling the flow of messages transferred between modules of a computer system, comprising:

a plurality of receiver modules, each receiver module comprising a buffer having a capacity to store a number of messages;

a transmitter module, coupled to each of said receiver modules, comprising:

a plurality of counters, one for each of said plurality of receiver modules, for maintaining a count value representative of free space in said buffer of a receiver module;

transmission means, coupled to each of said counters, for transmitting a message having an address corresponding to one of said plurality of receiver modules to said buffer in said one of said plurality of receiver modules when a count value corresponding to said one of said plurality of receiver modules is greater than zero, wherein the size of said message is smaller than said count value;

decrementing means, responsive to said transmission, for decrementing said count value corresponding to said one of said plurality of receiver modules by a value equal to a size of said transmitted message, such that said count value corresponding to said one of said plurality of receiver modules is updated to be representative of free space in said buffer in said one of said plurality of receiver modules;

means for receiving an "Increment Count Value" message from said one of said plurality of receiver modules, wherein said "Increment Count Value" is representative of a size of a second message that has been retired from said buffer in said one of said plurality of receiver modules; and

incrementing means responsive to receipt of said "Increment Count Value" message for incrementing said count value corresponding to said one of said plurality of receiver modules in accordance with said received "Increment Count Value" message such that said count value corresponding to said one of said plurality of receiver modules is updated to be representative of free space in said buffer in said one of said plurality of receiver modules after retirement of said second message from said buffer in said one of said plurality of receiver modules.

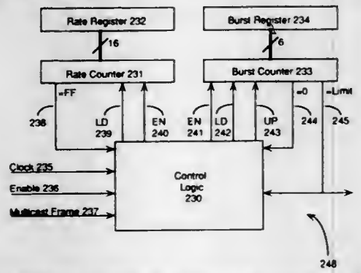
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5,604,867

SYSTEM FOR TRANSMITTING DATA BETWEEN BUS AND NETWORK HAVING DEVICE COMPRISING FIRST COUNTER FOR PROVIDING TRANSMITTING RATE AND SECOND COUNTER FOR LIMITING FRAMES EXCEEDING RATE

Michael J. Harwood, San Jose, Calif., assignor to Network Peripherals, Milpitas, Calif.

Filed Jul. 22, 1994, Ser. No. 279,468
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—200.13 27 Claims



1. An apparatus transmitting frames of data between a plurality of data networks, comprising:

a data bus; and

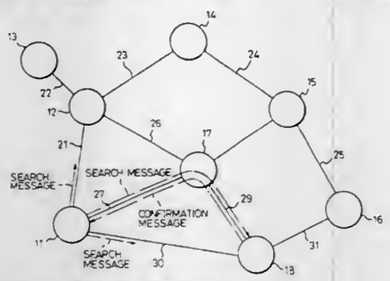
a plurality of ports, each coupling said data bus to one of said plurality of data networks, each transmitting said frames of data between said data bus and said one of said plurality of data networks, each having a device limiting a rate at which said frames of data may be transmitted from said data bus to said one of said plurality of data networks, said device comprising a first counter providing said rate at which said frames of data may be transmitted and a second counter limiting a number of said frames of which may transmitted at a rate exceeding said rate.

5,604,868

COMMUNICATION SYSTEM USING ESTABLISHING NETWORK ROUTE

Hiroaki Komine, Yamato; Takafumi Chujo, Hachioji; Keiji Miyazaki; Takao Ogura, both of Kawasaki, all of Japan, and Tetsuo Soejima, San Jose, Calif., assignors to Fujitsu Limited, Japan

Filed Jun. 25, 1991, Ser. No. 720,916
Claims priority, application Japan, Jun. 27, 1990, 2-168760
Int. Cl.[6] G06F *13/14;* H04L *12/56;5/14*
U.S. Cl. 395—200.15 12 Claims



1. A communications system comprising:

a plurality of nodes; and

a plurality of lines connecting said nodes, wherein each node of said plurality of nodes includes,

communication control means for controlling communications between said node and other nodes among said plurality of nodes, said communication control means including detecting means for detecting, in response to a search message received from one node of said other nodes, if said search message can be transmitted to another of said other nodes, said detecting means including means to determine,

whether the search message has already passed through a predetermined number of nodes, and,

whether a vacant line from among said plurality of lines exists for transmitting the search message to another node;

message delivery means, connected to said communication control means, for delivering a cancel message to said one node when said detecting means detects that either said search message has already passed through said predetermined number of nodes or that a vacant line does not exist;

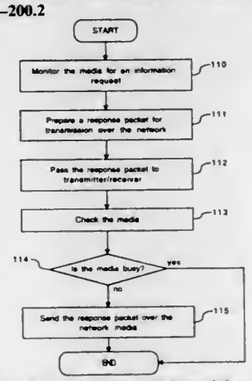
release means, within said communication control means, for releasing said node from said one node upon delivery of a cancel message by said message delivery means.

5,604,869

SYSTEM AND METHOD FOR SENDING AND RESPONDING TO INFORMATION REQUESTS IN A COMMUNICATIONS NETWORK

Richard W. Miacher, San Jose, and Kerry E. Lynn, Redwood City, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 89,732, Jul. 9, 1993, abandoned. This application Dec. 20, 1995, Ser. No. 579,094
Int. Cl.[6] G06F *13/42;* H04J *3/02;* H04L *29/08*
U.S. Cl. 395—200.2 26 Claims



1. A node system for sending and receiving messages in a wireless network, the node system comprising:

a display device for displaying information to the user, the display device having an input;

an input device for inputting information to the system, the input device having an output;

a memory for storing data and routines, the memory having inputs and outputs, the memory including a means for responding to an information request message with a response message; said means for responding sensing whether the wireless network is in use and discarding the response message without transmitting the message over the wireless network and without further attempting to transmit the message, if the wireless network is in use;

a transmitter/receiver for receiving and translating radio signals into digital signals and for translating and transmitting digital signals into radio signals in response to digital control signals, the transmitter/receiver coupled to an antenna to receive and transmit radio signals, the transmitter/receiver having an input and an output for processing digital signals; and

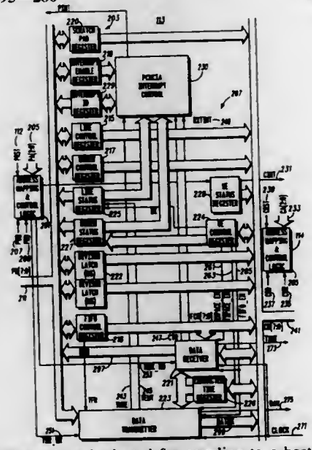
a processing unit for receiving signals from the input device, the memory and the transmitter/receiver; for sending signals to the display device, the memory and the transmitter/receiver; the processing unit having inputs and outputs; the inputs of the processing unit coupled to the output of the input device, the outputs of memory and the output of the transmitter/receiver; the outputs of the processing unit coupled to the inputs of memory, the input of the display device, the inputs of the transmitter/receiver, and the input of the transmitter/receiver; the processing unit controlling and processing the message sent and received from the wireless network via the transmitter/receiver.

5,604,870

UART EMULATOR CARD

Barry Moss, 2560 Adelaide Street, Matsqui, British Columbia, Canada, and Denis Beaudoin, 12353 Northpark Cres., Surrey, British Columbia, Canada

Filed Aug. 1, 1994, Ser. No. 283,365
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—280 15 Claims



1. A peripheral card adapted for coupling to a host processor, comprising:

an emulated universal asynchronous receiver transmitter (UART) comprising:

a plurality of registers corresponding to the registers of a UART,

a host processor port having a first address mapped parallel interface for said plurality of registers,

a peripheral controller port having a second address mapped parallel interface for said plurality of registers, and

control logic for providing status signals, including UART signals, to said host processor port and to said peripheral controller port;

a peripheral card parallel interface coupled to said host processor port and adapted for coupling to a parallel interface of said host processor;

a peripheral card controller coupled to the peripheral controller port.

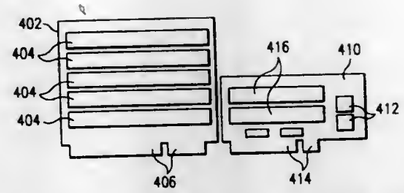
5,604,871

MODULAR HOST LOCAL EXPANSION UPGRADE

Victor Pecone, Austin, Tex., assignor to Dell USA, L.P., Austin, Tex.

Continuation of Ser. No. 92,179, Jul. 15, 1993, Pat. No. 5,513,329. This application Oct. 11, 1995, Ser. No. 540,975
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—281 10 Claims

1. An apparatus, in a computer system, for expanding the functionality of the computer system, comprising:



a plurality of motherboard connectors on a computer system motherboard, said plurality of motherboard connectors connected to address, data, control, power and ground buses of the motherboard;

a first riser card having a side edge portion removably insertable into said motherboard connectors so as to connect to the address, data, control, power and ground buses of the motherboard;

a second riser card having a plurality of riser card connectors adapted for connection to a plurality of peripheral device interface cards and having logic circuits capable of translating bus signals between the motherboard and interface cards, said first and second riser cards in-line and spaced so that a first peripheral device interface card may be inserted into said first and second riser cards simultaneously; and

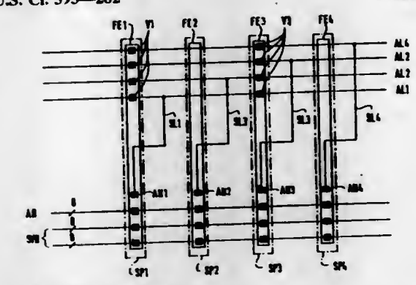
said first riser card having a plurality of riser card connectors adapted for connection to a plurality of peripheral device interface cards and having logic circuits for translation of bus signals between the motherboard and interface cards.

5,604,872

STORED-PROGRAM CONTROLLER WITH MEANS FOR CONNECTING MULTIPLE PLUG-IN FUNCTIONAL UNITS TO A CORRESPONDING ARRAY OF PLUG-IN POSITIONS CONNECTED TOGETHER BY MULTIPLE ADDRESS LINES

Michael Abert, Au; Siegfried Block, Kandel; Johannes Bozenhardt; Franz Leigsnering, both of Ettlingen; Werner Pfatteicher, Pfinztal, and Franz-Clemens Schewe, Karlsruhe, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

PCT No. PCT/DE93/01097, § 371 Date May 17, 1995, § 102(e) Date May 17, 1995, PCT Pub. No. WO94/11827, PCT Pub. Date May 26, 1994
PCT Filed Nov. 18, 1993, Ser. No. 436,249
Claims priority, application Germany, Nov. 19, 1992, 42 39 030.3
Int. Cl.[6] G06F *12/06;9/06;1/16*
U.S. Cl. 395—282 5 Claims



1. A system comprising:

a plurality of plug-in positions each having connection means and a selector terminal;

a system bus having data and control lines interconnecting said plurality of plug-in positions;

address lines coupled to the connection means of the plug-in positions, each is additionally connected, via a corresponding line, to the selector terminal of a corresponding plug-in position; and

a plurality of plug-in functional units, at least one of which has means for connecting the address lines to this unit, and each of the remaining functional units having means for connecting that unit to the selector terminal of the corresponding plug-in position;

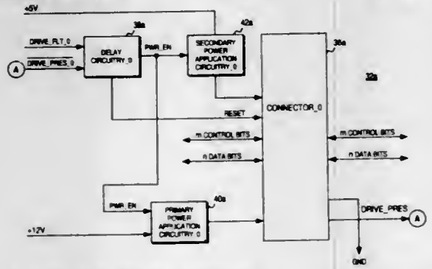
wherein at least one of the plug-in functional units that are connected to the address lines is a functional unit capable of executing read and write operations.

5,604,873

CIRCUITRY FOR CONTROLLING POWER APPLICATION TO A HOT DOCKING SCSI SCA DISK DRIVE

Robert J. Fite, Hillsboro; David A. Underwood, Scappoose, and Dale Rembold, Boring, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Dec. 28, 1994, Ser. No. 366,230
Int. Cl.[6] H01J *13/00*
U.S. Cl. 395—283 **24 Claims**



1. A disk drive interface comprising:

a) a connector interface for mating with a hot docking disk drive having equal length connecting pins and detecting the hot docking disk drive's presence when the hot docking disk drive's equal length connecting pins make contact with the connector interface; and

b) a first power application circuit coupled to the connector interface for applying a first power in a time delayed and gradual manner to the hot docking disk drive making contact with the connector interface, the first power being applied in the time delayed and gradual manner in response to receiving a first time delayed enabling signal which is provided to the first power application circuit as a result the connector interface detecting the presence of the hot docking disk drive.

5,604,874

METHOD FOR CONTROLLING A BUS TO PROGRESS TRANSFER CYCLES WITHOUT INSERTING A CYCLE FOR ACKNOWLEDGMENT

Nobukazu Kondo, Ebina; Seiji Kaneko, Yokohama; Hideaki Gemma, Hadano; Tetsuhiko Okada, Hachioji; Kazuhiko Komori, Ebina, and Koichi Okazawa, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

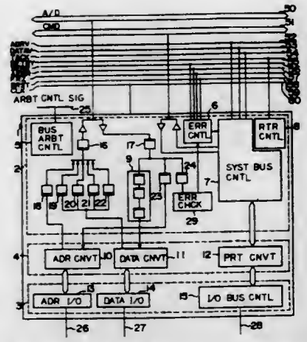
Division of Ser. No. 60,055, May 13, 1993, Pat. No. 5,428,753. This application Jun. 7, 1995, Ser. No. 480,395
Claims priority, application Japan, May 15, 1992, 4-123569
Int. Cl.[6] G06F *15/16*
U.S. Cl. 395—298 **42 Claims**

1. An information processing system comprising:

a bus;

a plurality of modules connected to the bus; and

an acknowledge bus line, separate from the bus, to be used for transmitting an acknowledge report, said acknowledge bus line being connected to said plurality of modules; wherein



a master module which has acquired bus mastership control a sequence in which said master module executes a transfer cycle for transferring either of an address or data to a slave module of a transfer destination, and said master module releases said bus mastership after said transfer cycle and before a transference of the acknowledge report for said transfer cycle from said slave module;

said slave module which had received either of the transferred address or data as said slave, controlling a sequence in which said slave module sends said acknowledge bus line an acknowledge report for indicating receipt of either of said address or said data, a predetermined number of cycles after said transfer cycle having transferred either of said address or said data therein; and

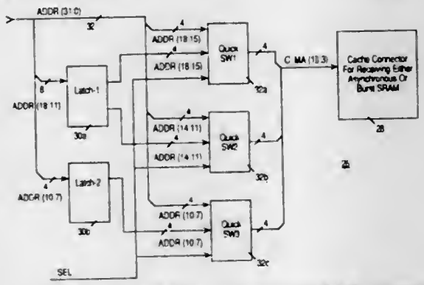
said master module which had executed a transfer cycle as said master, then controlling a sequence in which said master module verifies success of the transfer in said transfer cycle having been executed, depending upon if said acknowledge report has been received said predetermined number of cycles after said transfer cycle.

5,604,875

METHOD AND APPARATUS FOR REMOVABLY CONNECTING EITHER ASYNCHRONOUS OR BURST CACHE SRAM TO A COMPUTER SYSTEM

George R. Munce, Aloha, and James D. Warren, Hillsboro, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Dec. 19, 1994, Ser. No. 358,798
Int. Cl.[6] G06F *13/00;12/00*
U.S. Cl. 395—311 **9 Claims**



1. A cache static random access memory (SRAM) connector assembly comprising:

a connector for removably receiving and connecting either asynchronous cache SRAM or burst cache SRAM to a bus, the asynchronous and burst cache SRAM having an opposing latched and unlatched manner of address delivery requirement respectively;

storage circuitry coupled to the bus for storing a plurality of address bits of a memory address being driven on the bus by a bus agent coupled to the bus; and

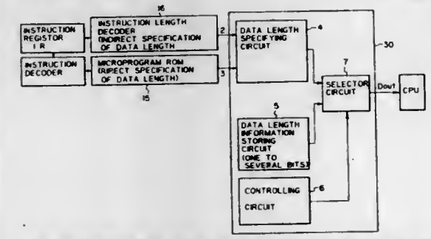
high performance switching circuitry coupled to the connector, the storage circuitry and the bus for providing either the stored address bits to a connected asynchronous cache SRAM or the address bits on the bus to a connected burst cache SRAM, the high performance switching circuitry having a switching speed of not more than 15 ns and a data propagation delay of not more than 0.25 ns, thereby allowing the opposing unlatched and latched manner of address delivery to be selectively met, but without consequentially distorting address timing.

5,604,876

APPARATUS FOR HANDLING DIFFERING DATA LENGTH INSTRUCTIONS USING EITHER DIRECTLY SPECIFIED OR INDIRECTLY SPECIFIED DATA LENGTHS

Satoshi Matsui, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 19, 1991, Ser. No. 671,318
Claims priority, application Japan, Mar. 20, 1990, 2-071127
Int. Cl.[6] G06F *9/34*
U.S. Cl. 395—386 **4 Claims**



1. An information processing apparatus for processing information utilizing a plurality of instructions having different data lengths by use of microprogram after judging first data length information related to each for the instructions according to either a method of indirectly specifying the first data length information or a method of directly specifying the first data length information in the microprogram, comprising:

a data length specifying means for specifying one of either the directly specified data length information or indirectly specified data length information;

a storing means for storing second data length information dedicated to an interrupt process;

a controlling means for controlling the storing means; and

a selecting means for selecting the output of either the data length specifying means or the storing means.

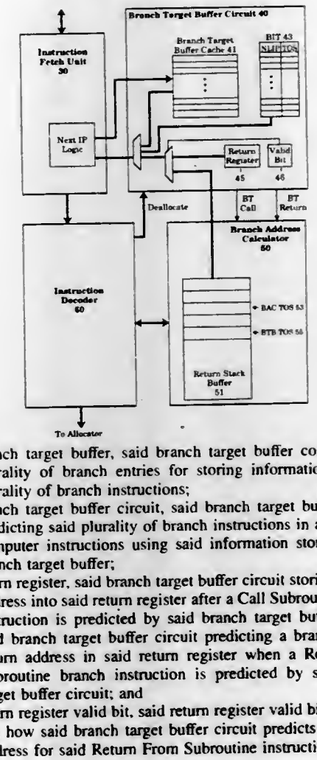
5,604,877

METHOD AND APPARATUS FOR RESOLVING RETURN FROM SUBROUTINE INSTRUCTIONS IN A COMPUTER PROCESSOR

Bradley D. Hoyt; Glenn J. Hinton, both of Portland; David B. Papworth; Ashwani K. Gupta, both of Beaverton; Michael A. Fetterman, Hillsboro; Subramanian Natarajan; Sunil Shenoy, both of Portland, and Reynold V. D'Sa, Aloha, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jan. 4, 1994, Ser. No. 176,065
Int. Cl.[6] G06F *9/42*
U.S. Cl. 395—590 **28 Claims**

1. An apparatus for predicting return addresses for Return From Subroutine instructions, said apparatus comprising



a branch target buffer, said branch target buffer comprising a plurality of branch entries for storing information about a plurality of branch instructions;

a branch target buffer circuit, said branch target buffer circuit predicting said plurality of branch instructions in a stream of computer instructions using said information stored in said branch target buffer;

a return register, said branch target buffer circuit storing a return address into said return register after a Call Subroutine branch instruction is predicted by said branch target buffer circuit, said branch target buffer circuit predicting a branch to said return address in said return register when a Return From Subroutine branch instruction is predicted by said branch target buffer circuit; and

a return register valid bit, said return register valid bit determining how said branch target buffer circuit predicts said return address for said Return From Subroutine instruction.

5,604,878

METHOD AND APPARATUS FOR AVOIDING WRITEBACK CONFLICTS BETWEEN EXECUTION UNITS SHARING A COMMON WRITEBACK PATH

Robert P. Colwell, Portland; Michael A. Fetterman; Andrew F. Glew, both of Hillsboro; Glenn J. Hinton, Portland; Robert W. Martell, Hillsboro, and David B. Papworth, Beaverton, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

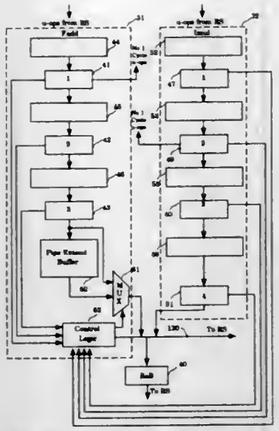
Continuation of Ser. No. 202,945, Feb. 28, 1994, abandoned. This application Aug. 1, 1995, Ser. No. 513,679
Int. Cl.[6] G06F *9/38;13/00*
U.S. Cl. 395—393 **24 Claims**

1. An apparatus for extending the length of time required for execution of an instruction in a pipelined execution unit comprising:

first and second execution units wherein said first execution unit shares a writeback path with said second execution unit, said first execution unit having at least a final pipeline stage, said second execution unit having a pipeline having at least one stage more than said first execution unit, wherein said instruction remains in each pipeline stage for one clock cycle and comprises one pipeline stage duration;

a result buffering element coupled to said final pipeline stage of said first execution unit for delaying write back of a result of said first execution unit for a predetermined number of pipeline stage durations;

multiplexing logic coupled to said result buffering element and to said final pipeline stage of said first execution unit, said result buffering element providing a first input to said multi-



plexing logic and said final pipeline stage of said first execution unit providing a second input to said multiplexing logic, said multiplexing logic providing an output to said writeback path; and

writeback conflict detect logic coupled to said first and second execution units for detecting if said execution units will encounter a writeback conflict, said writeback conflict detect means being coupled to said multiplexing logic for providing a control signal to said multiplexing logic for selecting one of said first or second inputs to be the output provided to said writeback path.

5,604,879

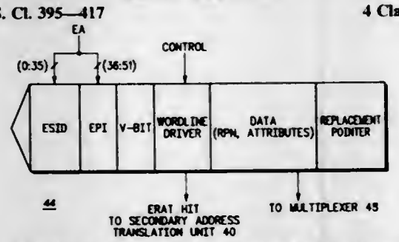
SINGLE ARRAY ADDRESS TRANSLATOR WITH SEGMENT AND PAGE INVALIDATE ABILITY AND METHOD OF OPERATION

Brad Beavers; Chua-Eoan Lew; Pei-Chun Liu, and Chih-Jui Peng, all of Austin, Tex., assignors to Motorola Inc., Schaumburg, Ill., and IBM, Armonk, N.Y.

Continuation of Ser. No. 223,266, Apr. 4, 1994, abandoned. This application May 23, 1996, Ser. No. 653,677

Int. Cl.[6] G06F *12/10*

U.S. Cl. 395—417 **4 Claims**



1. A single array address translator for translating a received effective address into a real address, each received effective address comprising a segment identifier and a page identifier, the address translator comprising:

a plurality of entries, each one of the plurality of entries translating a received effective address into a real address, each one of the plurality of entries comprising:

a first plurality of content addressable memory bit cells storing a first translation tag, the first plurality of content addressable memory bit cells asserting a first control signal if the segment identifier is logically equivalent to the first translation tag;

a second plurality of content addressable memory bit cells storing a second translation tag, the second plurality of content addressable memory bit cells asserting a second control signal if the segment identifier is logically equivalent to the second translation tag;

a valid bit cell storing valid bit;

a plurality of bit cells storing the real address, the plurality of bit cells outputting the real address responsive to an assertion of a third control signal; and

a wordline driver coupled to the first and second plurality of content addressable memory bit cells, to the valid bit cell, and to the plurality of bit cells, the wordline driver asserting the third control signal if the first and second plurality of content addressable memory cells assert the first and second control signal, respectively, according to a first received operation and the received effective address the wordline driver writing a logic state corresponding to an invalid entry into the valid bit cell if (1) only the first plurality of content addressable memory cells asserts the first control signal according to a second received operation or (2) only the second plurality of content addressable memory cells asserts the second control signal according to a third received operation.

5,604,880

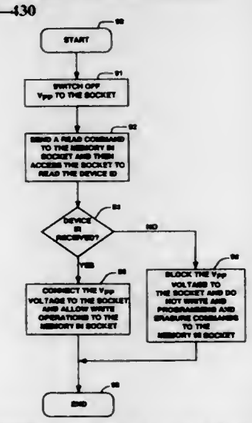
COMPUTER SYSTEM WITH A MEMORY IDENTIFICATION SCHEME

Brian L. Dipert, Sacramento, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 289,054, Aug. 11, 1994, abandoned. This application May 7, 1996, Ser. No. 643,990

Int. Cl.[6] G06F *12/00;12/14*

U.S. Cl. 395—430 **14 Claims**



1. In a computer system having a central processing unit (CPU) coupled to a memory, a method of identifying whether the memory is a first type of memory or a second type of memory, comprising the steps of:

(A) decoupling a programming voltage from a control circuit of the memory such that the control circuit is disabled from accessing a memory array of the memory during a write operation of the memory while still allowing the control circuit to be accessible from the CPU through the write operation;

(B) accessing the control circuit of the memory from the CPU without accessing the memory array through the write operation for a device identification from the memory such that data integrity of the memory is maintained during the write operation, wherein the first type of memory includes the device identification stored in the control circuit and the second type of memory does not include the device identification;

(C) identifying the memory as the first type of memory if the CPU receives the device identification from the memory and as the second type of memory if the CPU does not receive the device identification from the memory.

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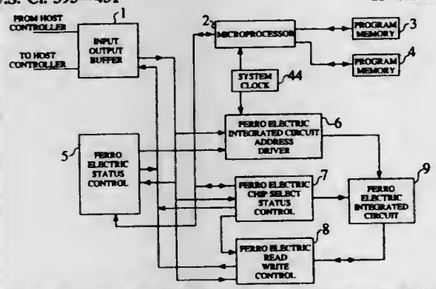
FERROELECTRIC STORAGE DEVICE EMULATING A ROTATING DISK DRIVE UNIT IN A COMPUTER SYSTEM AND HAVING A MULTIPLEXED OPTICAL DATA INTERFACE

Michael E. Thomas, San Jose, Calif., assignor to Framdrive, Greenbrae, Calif.

Continuation-in-part of Ser. No. 895,328, Jun. 8, 1992, Pat. No. 5,359,726, which is a continuation-in-part of Ser. No. 374,822, Jul. 3, 1989, abandoned, which is a continuation-in-part of Ser. No. 288,160, Dec. 22, 1988, abandoned. This application Oct. 19, 1994, Ser. No. 326,656

Int. Cl.[6] G06F *3/00;13/00;* **G11C** *11/22*

U.S. Cl. 395—431 **15 Claims**



1. A solid-state, non-volatile random access memory (RAM) pack for emulating a rotating disk drive peripheral device in a host data processing system in response to control signals from the host data processing system, the control signals including stepping and direction signals representing movement from a present location to a desired location; the non-volatile random access memory pack using the control signals to address a selected block of solid state memory within the memory pack using a given controller specification including the stepping and stepping direction signals and an indexing control signal, said pack comprising:

a removable solid-state non-volatile random access memory means for storing data, said random access memory means comprising a plurality of ferroelectric random access memory integrated circuits, each including a ferroelectric film layer underneath a silicon substrate;

multiplexed optical data interface means for coupling the random access memory means to said host data processing system, the multiplexed optical data interface means including:

controller means for receiving control signals used for a disk drive peripheral device;

means for generating from the control signals an address for addressing a section of said random access memory means, said section including a plurality of data storage locations; and

means for sequentially addressing said storage locations within the selected section when reading data from the random access memory to the disk drive controller and when writing data to the random access memory means from the disk drive controller; and from the host data processing system, including means for providing status signals including an index signal to the host data processing system.

5,604,882

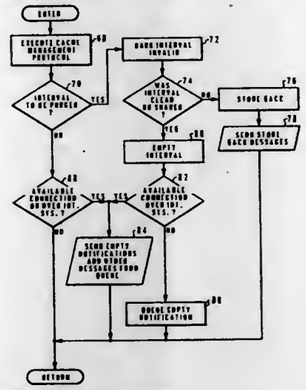
SYSTEM AND METHOD FOR EMPTY NOTIFICATION FROM PEER CACHE UNITS TO GLOBAL STORAGE CONTROL UNIT IN A MULTIPROCESSOR DATA PROCESSING SYSTEM

Russell D. Hoover; John C. Willis, both of Rochester; Donald F. Baldus, Mazeppa; Frederick J. Ziegler, Rochester, all of Minn., and Lishing Liu, Pleasantville, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 27, 1993, Ser. No. 113,554

Int. Cl.[6] G06F *12/08*

U.S. Cl. 395—448 **16 Claims**



1. A multiprocessor, comprising:

a plurality of processing units;

a local private cache within each processing unit;

at least a first global storage control unit providing a shared memory space for storing a plurality of records for access by the plurality of processing units where each of the plurality of records may be modified by one of the plurality of processing units;

an interconnection system between the plurality of processing units and the first global storage control unit for providing data and synchronization communications between the plurality of processing units and the first global storage control unit;

a coherency controller in the global storage control unit for tracking each instance of records owned by the global storage control unit which are currently resident in the local private cache for a particular processing unit; and

means for transmitting an empty notification from said particular processing unit to the global storage control unit identifying instances purged from the local private cache for said particular processing unit whether or not said instances have been modified by said particular processing unit wherein a subsequent request for exclusive access to said instances need not await confirmation of purging of said instances from said local private cache for said particular processing unit.

5,604,883

COMPUTER MEMORY OPEN PAGE BIAS METHOD AND SYSTEM

Edward C. King, Fremont, Calif., and Fulps V. Vermeer, Delft, Netherlands, assignors to NCR Corporation, Dayton, Ohio

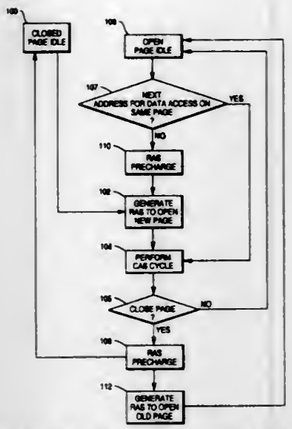
Continuation of Ser. No. 563,221, Aug. 6, 1990, abandoned. This application Apr. 9, 1996, Ser. No. 629,789

Int. Cl.[6] G06F *12/06*

U.S. Cl. 395—481 **16 Claims**

1. A method for accessing data in a random access memory divided into pages of a first and second type, said first and second types being based on identifiable differences in data stored in said pages, comprising the steps of:

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opening a first page of said first type in said random access memory by generating a first memory access signal in response to a first address signal;

storing an address signal representing said first page;

opening a second page of said second type in said random access memory, after closing said first page, by generating a second memory access signal in response to a second address signal; and

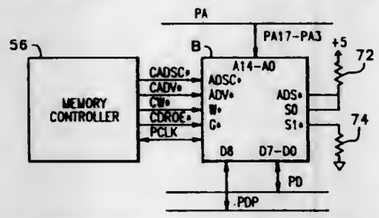
reopening said first page in said random access memory in response to said stored address signal prior to receiving another address signal.

5,604,884

BURST SRAMS FOR USE WITH A HIGH SPEED CLOCK

Gary W. Thome, and Michael J. Collins, both of Tomball, Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Mar. 22, 1993, Ser. No. 34,288
Int. Cl.[6] G06F *13/28*
U.S. Cl. 395—494 **1 Claim**



1. A computer system incorporating a memory system designed to provide data at a predetermined rate corresponding to a first clock signal, the memory system operating with a second, higher frequency clock signal, the computer system comprising:

a bus;

a burst RAM coupled to said bus, comprising:

a memory array adapted to receive and provide data at the predetermined data rate corresponding to the first clock signal; and

memory array control logic coupled to said bus and said memory array and receiving an address load signal, an address advance signal and the second clock signal, said memory array control logic configured to latch an address from said bus to said memory array on an edge of the second clock when said address load signal is asserted, and to increment the address provided to said memory array on clock edges of the second clock when said address advance signal is asserted, said memory array control logic operating using the second clock signal; and

a memory controller coupled to said bus and said burst RAM, comprising:

bus interface logic coupled to said bus and configured to detect the start of a burst cycle on said bus, and to provide said address load signal during a first cycle of said second clock signal; and

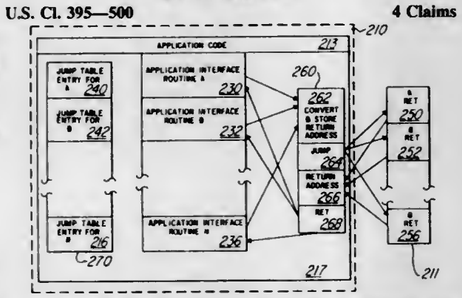
conversion logic coupled to said bus interface logic and said burst RAM, wherein said conversion logic asserts said address advance signal during clock edges of the second clock signal corresponding to the predetermined data rate, and negates said address advance signal otherwise.

5,604,885

APPARATUS AND METHOD ENABLING A COMPUTER TO TRANSFER CONTROL BETWEEN TWO PROGRAM SEGMENTS THAT CALL ONE ANOTHER BUT OPERATE IN DIFFERENT MODES

Michael A. Denio, Sugerland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 1, 1991, Ser. No. 649,624
Int. Cl.[6] G06F *3/00*
U.S. Cl. 395—500 **4 Claims**



4. A method enabling a computer to provide interprocess communication between a first process operating in a first operating mode having a first memory addressing format and a second process operating in a second operating mode having a second memory addressing format without changing operating mode, said method comprising the step of:

converting all arguments passed from said first process to said second process from said first memory addressing format used by said first operating mode to said second memory addressing format used by said second operating mode.

5,604,886

DESIGN SUPPORTING APPARATUS AND METHOD FOR PERFORMING DESIGN WORK AT EACH OF A PLURALITY OF DESIGN STAGES

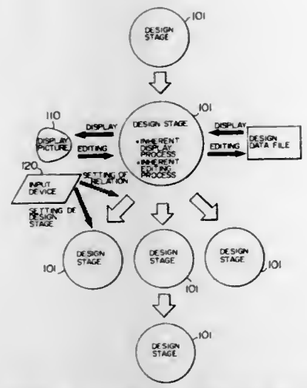
Yasumasa Kawashima; Shiro Nonaka; Shinji Tokumasu, and Takayuki Ishikawa, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 12, 1992, Ser. No. 834,352
Claims priority, application Japan, Feb. 13, 1991, 3-019742
Int. Cl.[6] G06F *17/00*
U.S. Cl. 395—500 **33 Claims**

1. A design supporting apparatus for supporting design work including a plurality of design stages, comprising:

memory means for storing said plurality of design stages and design data corresponding to said plurality of design stages,

wherein each of said design stages involves an inherent display process and an inherent editing process, and each of said design stages is set by a user so as to increase customizing capabilities within a respective design stage;



display means for simultaneously displaying said design data corresponding to said plurality of design stages;

first input means for entering editing process information indicative of a group of tools for editing said design data corresponding to at least one of said simultaneously displayed design stages and displaying at least one predetermined area on a screen of said display means so as to associate the predetermined area with one of said design data;

output and selection means for outputting and editing process information corresponding to said design stage, for sequentially selecting each of said group of tools;

second input means for entering display process information indicative of a display form of said design data corresponding to said design stage entered by said first input means and displaying said design data on the screen of said display means so as to associate each portion of said design data with one of said simultaneously displayed design stages,

wherein said second input means includes a menu for displaying said display process information on a display screen of said display means; and

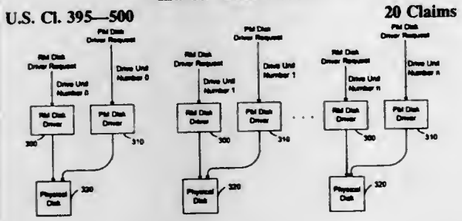
design stage definition file means for storing said editing process information and said display process information including first limitation processing information for limiting constituent elements of said design data, second limitation processing information for spatially limiting said design data, abstraction processing information for abstracting said design data and projection conversion processing information for converting said design data into projection data.

5,604,887

METHOD AND SYSTEM USING DEDICATED LOCATION TO SHARE INFORMATION BETWEEN REAL AND PROTECTED MODE DEVICE DRIVERS

Harish Naidu, and William G. Parry, both of Redmond, Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Jan. 21, 1994, Ser. No. 184,668
Int. Cl.[6] G06F *13/10*
U.S. Cl. 395—500 **20 Claims**



1. A method, performed by a computer connected to at least one disk drive having a disk and capable of operating in a real mode and a protected mode, of a protected mode disk driver assigning a same drive unit number to a device accessed by the protected mode disk driver as a real mode disk driver which accesses the same disk drive assigns to the same disk drive, the method comprising the steps of:

(a) the real mode disk driver assigning a unique drive unit number to the disk drive accessed by the real mode disk driver;

(b) the real mode disk driver accessing the disk drive to which the drive unit number was assigned in step (a), to read disk information which uniquely identifies the disk residing on the disk drive;

(c) storing the drive unit number identifying the disk in a memory location associated with a checksum of the disk information read from the disk in step (b);

(d) the protected mode disk driver accessing the disk drive to read the disk information from the disk residing on the disk drive;

(e) obtaining the drive unit number stored in step (c) in the memory location associated with the checksum of the disk information read by the protected mode disk driver in step (d); and

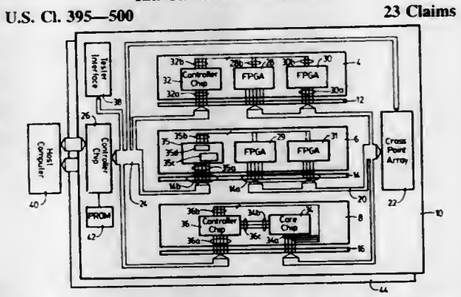
(f) the protected mode disk driver assigning the drive unit number obtained in step (e) to the disk drive accessed by the protected mode disk driver in step (d).

5,604,888

EMULATION SYSTEM EMPLOYING MOTHERBOARD AND FLEXIBLE DAUGHTERBOARDS

Bijan Kiani-Shabestari, Ascot; John Dunn, Reading, and Shaun Lytollis, Patchet, all of United Kingdom, assignors to Zycad Corporation, Fremont, Calif.

Filed Apr. 7, 1994, Ser. No. 224,148
Int. Cl.[6] G06F *17/00;13/00*
U.S. Cl. 395—500 **23 Claims**



1. An emulation system for emulating a circuit design comprising:

(a) a motherboard having a plurality of sockets, said sockets including first pin group locations electrically connected to an interconnect structure and second pin group locations electrically connected to a busing structure; and

(b) at least one card with

(i) pins arranged such that the card can be attached to a socket of said sockets, the pins including a first pin group arranged to contact the first pin group locations of a socket and a second pin group arranged to contact the second pin group locations of the socket,

(ii) at least one field programmable gate array for emulating a portion of the circuit design, said at least one field programmable gate array including signal pins, some of the signal pins electrically connected to pins of the first pin group on the card, and

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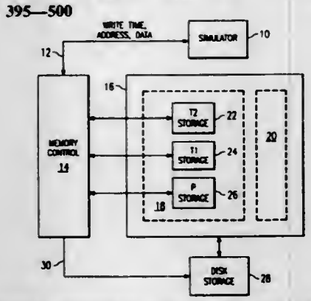
(iii) a card controller chip, said card controller chip being electrically connected to control pins of the at least one field programmable gate array, the card controller chip loading configuration data into said at least one field programmable gate array, said card controller chip including control pins, some of the control pins electrically connected to pins of the first pin group on the card.

5,604,889

MEMORY MANAGEMENT SYSTEM FOR CHECKPOINTED LOGIC SIMULATOR WITH INCREASED LOCALITY OF DATA

Daniel C. Pickens, Dallas, and Patrick W. Bosshart, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 15, 1994, Ser. No. 259,845
Int. Cl.[6] G06F *12/08*
U.S. Cl. 395—500 **12 Claims**



1. A memory management system for use with a logic simulator which produces simulated memory storage requests comprising, in combination:

a physical memory for storing time value pairs of data to be stored by a simulator at a simulated address in each memory being simulated, said data including a time representation of the time in the simulation when the storage request was generated and the value requested to be stored by the simulator, said memory being segmented into a T2 storage area, a T1 storage area and a P storage area, said T2 storage area storing the most recent time value pair written to each simulated memory location, said T1 storage area storing all the previous time value pairs written to each simulated memory address during each of B blocks of A simulator cycles, where A and B are integers, said T1 storage area including the block of simulator cycles which includes the latest simulator cycle, said P storage area storing the most recent time value pair written to each simulated memory storage location during each block of A cycles which was checkpointed out of said T1 storage area provided that the most recent write to that location during a given block of A cycles is not the most recent write to that location;

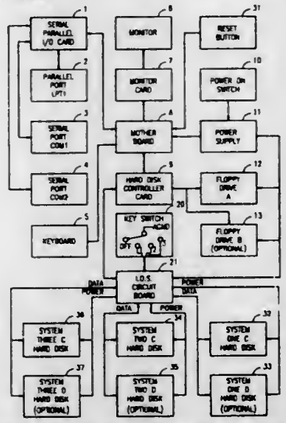
a memory control system coupled to said logic simulator and to said physical memory for controlling the movement of time value pairs of data from said logic simulator to said physical memory, each said simulated memory storage request causing the most recently received time value pair from said simulator to be stored in said T2 storage area and, in the event a prior store had occurred to the same simulated memory location during the most recently started block of A simulation cycles, the time value pair for that prior store is moved from said T2 storage area to said T1 storage area and a pointer associated with the time value pair in T2 storage area is set to the physical address of the time value pair moved to said T1 storage area.

5,604,890

COUPLING DEVICE FOR THE SWITCHING OF DATA LINES BETWEEN A DATA STORAGE DEVICE CONTROLLER AND A PLURALITY OF BOOTABLE DATA STORAGE DEVICES

Paul B. Miller, 1339 N. Wembley Clr., Port Orange, Fla. 32124

Filed Aug. 16, 1994, Ser. No. 290,586
Int. Cl.[6] G06F *9/455*
U.S. Cl. 395—500 **12 Claims**



1. Coupling means for connecting a personal computer, including startup means and a data storage device controller, to a plurality of bootable data storage devices, comprising:

first circuit means for connecting data lines from the data storage device controller to the coupling means:

second circuit means for connecting data lines from the plurality of bootable data storage devices to the coupling means;

switching means for connecting the data lines of a selected one of the plurality of data storage devices to the data lines of the data storage device controller through the first and second circuit means; and

actuating means operable by a user for actuating the switching means, thereby connecting the data lines of the selected one of the data storage devices to the data lines of the data storage device controller, the startup means configuring the computer for the selected one of the data storage devices, upon initiation of a boot sequence initiated after the connection of the data lines of the selected one of the data storage devices to the data lines of the data storage device controller.

5,604,891

3-D ACOUSTIC INFINITE ELEMENT BASED ON A PROLATE SPHEROIDAL MULTIPOLE EXPANSION

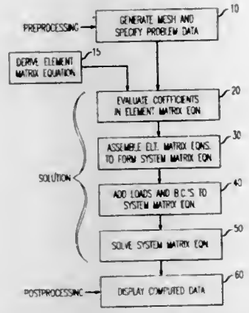
David S. Burnett, Roxbury, and Richard L. Holford, Denville, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Oct. 27, 1994, Ser. No. 330,160
Int. Cl.[6] G06F *17/16*
U.S. Cl. 395—500 **8 Claims**

1. A method for predicting an acoustic field of a body surrounded by a fluid medium and subjected to given driving conditions, comprising:

a) constructing an inner boundary of the fluid medium, such that said inner boundary surrounds the body;

b) constructing a prolate spheroid, wherein the prolate spheroid is a bounding spheroid, which encloses the inner fluid boundary;



c) filling a space surrounding the bounding spheroid with infinite elements, wherein: (i) each infinite element is bounded by a base, at least three side faces, and an outer face: (ii) each respective base lies on the bounding spheroid; (iii) each respective outer face belongs to a prolate spheroidal surface confocal with the bounding spheroid; (iv) each respective side face is a locus of hyperbolas confocal with the bounding spheroid; and (v) the outer face recedes to an infinite prolate radius;

d) specifying an element matrix equation for each infinite element;

e) assembling the respective element matrix equations into a system matrix equation; and

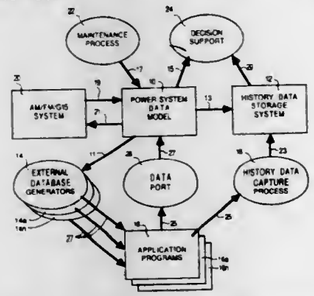
f) solving the system matrix equation.

5,604,892

METHOD FOR MODELING A PHYSICAL SYSTEM OF ELEMENTS USING A RELATIONAL DATABASE

David J. H. Nuttall, 20634 NE. 181 Pl., Woodinville, Wash. 98072, and Bertram G. Brehm, 25119 NE. 18 St., Redmond, Wash. 98053

Continuation of Ser. No. 941,366, Sep. 1, 1992, abandoned. This application Dec. 19, 1994, Ser. No. 359,335
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—500 **27 Claims**



1. A method for creating a computer implemented single source information model based on physical elements in a system, comprising the steps of:

creating a type hierarchy, the hierarchy being downwardly extendable by a database user, the objects lower in the hierarchy being a type of the object higher on the hierarchy and inheriting attributes from the higher level objects;

identifying as objects said physical elements;

collapsing said objects into relational database tables, where attributes specific to all objects below base types are collapsed into type tables, and all objects above base types are collapsed into object tables, using a common object table with surrogate keys; and

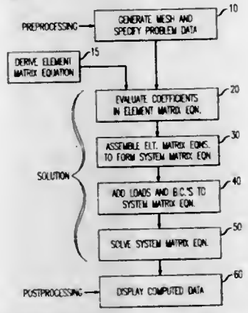
externalizing and collapsing object relationships into tables, using typing to identify the type and relationship.

5,604,893

3-D ACOUSTIC INFINITE ELEMENT BASED ON AN OBLATE SPHEROIDAL MULTIPOLE EXPANSION

David S. Burnett, Roxbury Township, Morris County, and Richard L. Holford, Denville, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed May 18, 1995, Ser. No. 443,534
Int. Cl.[6] G06F *17/16*
U.S. Cl. 395—500 **14 Claims**



1. A method for operating a digital computer, having at least one digital memory and at least one data processing element, to simulate the acoustic behavior of a body surrounded by a fluid medium, the body having an outer surface, and the body subjected to given driving conditions, comprising:

a) subdividing at least the fluid medium into a pattern of elements, said pattern to be referred to as a mesh, and storing said mesh in the memory;

b) for each element of the mesh, computing a set of element matrix coefficients, and storing said coefficients in the memory;

c) assembling all of the element matrix coefficients into a system matrix, and storing the system matrix in the memory;

d) in the data processing element, solving the system matrix equation, thereby to create a description of the values assumed by an acoustic field variable throughout the mesh; and

e) recording the description in a data-storage device,

wherein the subdividing step comprises:

f) constructing an inner boundary of the fluid medium, such that said inner boundary coincides with the outer surface of the body;

g) constructing an oblate spheroid, to be referred to as the bounding spheroid, which encloses the inner fluid boundary; and

h) filling a space surrounding the bounding spheroid with elements, to be referred to as infinite elements, wherein: (i) each infinite element is bounded by a base, at least three side faces, and an outer face; (ii) each respective base lies on the bounding spheroid; (iii) each respective outer face belongs to an oblate spheroidal surface confocal with the bounding spheroid; (iv) each respective side face is a locus of hyperbolas

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confocal with the bounding spheroid; and (v) the outer face recedes to an infinite oblate radius.

5,604,894

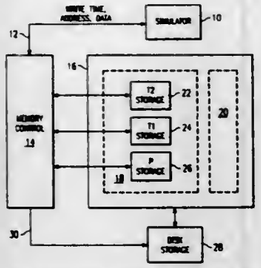
MEMORY MANAGEMENT SYSTEM FOR CHECKPOINTED LOGIC SIMULATOR WITH INCREASED LOCALITY OF DATA

Daniel C. Pickens, Dallas, and Patrick W. Bosshart, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 259,845, Jun. 15, 1994. This application Jun. 7, 1995, Ser. No. 473,841

Int. Cl.[6] G06F *12/08*

U.S. Cl. 395—500 **9 Claims**



1. A method for processing historical data of simulated memory writes which occur during a simulation of a logic network including at least one memory, the method comprising the steps of:

segmenting a physical memory for storing time value pairs of data to be stored by a simulator at a simulated address in each memory being simulated, said physical memory being segmented into a T2 storage area, a T1 storage area and a P storage area, said T2 storage area for storing the most recent time value pair written to each simulated memory location, said T1 storage area for storing all the previous time value pairs written to each simulated memory address during each of the most recently executed B blocks of A simulator cycles, where A and B are integers, said T1 storage area including the block of simulator cycles which includes the latest simulator cycle, said P storage area for storing the most recent time value pair written to each simulated memory storage location during each block of A cycles which was checkpointed out of said T1 storage area provided the most recent write to a given simulated memory location during a given block of A cycles is not the most recent write to that location, each said time value pair having associated therewith a pointer which identifies the location of the time value pair for the next preceding time value pair remaining in physical memory;

receiving from a simulator a simulated memory storage request which includes a simulated memory address to which simulated memory data is to be stored and a time value pair comprising a simulator time identifying the simulation cycle during which the write occurred and the data value to be stored at said simulated memory address;

storing, in response to each said simulated memory storage request, the most recently received time value pair from said simulator in said T2 storage area; and,

in the event a prior store had occurred to the same simulated memory location, storing the time value pair and a pointer associated therewith for that prior store in the portion of said T1 and P storage area containing other time value pairs occurring during the same block of A simulator cycles and setting a pointer associated with the time value pair in T2 storage area to the address of the time value pair stored in said T1 and P storage area from said T2 storage area.

5,604,895

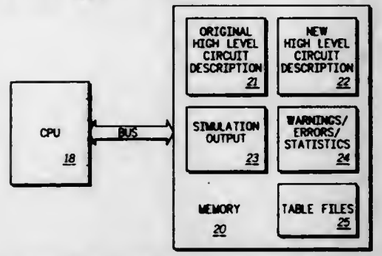
METHOD AND APPARATUS FOR INSERTING COMPUTER CODE INTO A HIGH LEVEL LANGUAGE (HLL) SOFTWARE MODEL OF AN ELECTRICAL CIRCUIT TO MONITOR TEST COVERAGE OF THE SOFTWARE MODEL WHEN EXPOSED TO TEST INPUTS

Richard S. Raimi, Austin, Tex., assignor to Motorola Inc., Schaumburg, Ill.

Continuation of Ser. No. 199,433, Feb. 22, 1994, abandoned. This application Sep. 29, 1995, Ser. No. 536,420

Int. Cl.[6] G06F *11/30;17/50*

U.S. Cl. 395—500 **36 Claims**



1. A method for estimating test coverage of an original high level language description which represents an electrical circuit, the original high level description having at least one executable assignment statement which models the circuit, the at least one executable assignment statement having a left side and a right side separated by an assignment operator, the left side being a variable, and the right side being an expression which has a set of at least one variable and at least one logic operator, the expression on the right side, when evaluated, determining a value to be assigned to the variable on the left side, the method comprising the steps of:

parsing the original high level language description having at least one executable assignment statement to obtain information of the structure of the electrical circuit represented by the original high level language description; and

generating a new high level language description which includes both: (1) new code generated in response to the step of parsing and (2) all the code of the original high level language description necessary for preserving the circuit behavior of the original high level language description;

executing the new high level language description via a central processing unit (CPU) in order to simulate the electrical circuit while providing binary test vectors as input to the simulation of the new high level language description;

storing, via the new code in the new high level language description, data which indicates whether, during the simulation of the new high level language description of the electrical circuit, the set of variables from the right side of the at least one executable assignment statement has been set to predetermined combinations of values to allow an acceptable level of test coverage of the electrical circuit.

5,604,896

COMPUTER WITH TERMINAL EMULATION INTERFACE FOR MULTI-ENVIRONMENT CLIENT/ SERVER APPLICATIONS

Paul Duxbury, Sandbach, and Robert C.-W. Yau, London, both of England, assignors to International Computers Limited, London, England

Continuation of Ser. No. 273,196, Jul. 11, 1994, abandoned. This application Apr. 5, 1996, Ser. No. 628,195

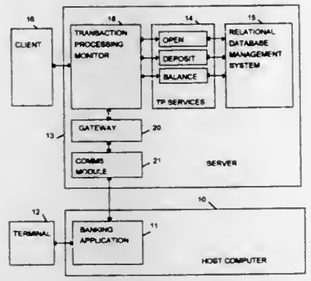
Claims priority, application United Kingdom, Jul. 13, 1993, 9314460

Int. Cl.[6] G06F *9/455*

U.S. Cl. 395—500 **5 Claims**

1. A computer system comprising:

(a) a first processing environment, including a first application;



(b) a second processing environment including a second application;

(c) terminal emulation means for storing a virtual screen;

(d) communication means for coupling said terminal emulation means to said second application, to allow said second application to write prompts to said virtual screen, to read data from said virtual screen, and to write data into said virtual screen; and

(e) conversion means, interconnecting said first application with said terminal emulation means, for receiving service requests from said first application and converting each of said service requests into a dialog wherein the conversion means waits for the second application to write a series of prompts into said virtual screen and, in response to each of said prompts, writes data derived from said service request into said virtual screen, and wherein the conversion means constructs response messages containing data derived from said virtual screen and returns said response messages to said first application.

5,604,897

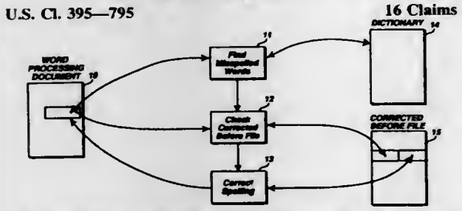
METHOD AND SYSTEM FOR CORRECTING THE SPELLING OF MISSPELLED WORDS

Paul A. Travis, Kirkland, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Filed May 18, 1990, Ser. No. 525,405

Int. Cl.[6] G06F *7/04*

U.S. Cl. 395—795 **16 Claims**



5. A method in a computer system for correcting the spelling of words in a document, the system including a dictionary file containing correctly spelled words, the system also including a corrected before file containing misspelled words and associated correctly spelled words comprising the steps of:

retrieving a word from the document;

ascertaining whether the retrieved word is in the dictionary so as to determine if the retrieved word is correctly spelled;

if the retrieved word is not in the dictionary file, determining whether the retrieved word is in the corrected before file as a misspelled word;

if the retrieved word is in the corrected before file, retrieving the associated correctly spelled word from the corrected before file and automatically replacing the retrieved word in the document with the associated correctly spelled word to effect the correction of the spelling.

5,604,898

DATABASE ENQUIRY SYSTEM

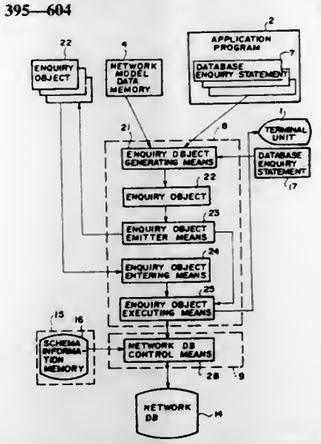
Masaru Saijyo, and Kuninaga Takeda, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed May 6, 1993, Ser. No. 57,787

Claims priority, application Japan, May 7, 1992, 4-114998

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—604 **10 Claims**



1. An enquiry control system coupled to a terminal unit which inquires of a database via an enquiry and displays an answer to the enquiry, a relational type database and a network type database, the enquiry control system comprising:

a relational type database directory file for storing a directory of said relational type database, said directory including table definition data of an original relational database;

a relational type database control portion for generating a first enquiry object matching with said relational type database, the content of the first enquiry object to be processed by said relational type database to obtain an answer for said first enquiry object;

a network type database control portion for generating a second enquiry object matching with said network type database, the content of the second enquiry object to be processed by said network type database to obtain an answer for said second enquiry object; and

a network model data memory for storing a condition in which a record of the network type database is stored,

said network type database control portion providing an object generating/executing circuit for parsing a retrieval request statement from said terminal unit to reference data stored within said network model data memory to determine a shortest route retrieving method.

5,604,899

DATA RELATIONSHIPS PROCESSOR WITH UNLIMITED EXPANSION CAPABILITY

Karol Doktor, Wheelers Hill, Australia, assignor to Financial Systems Technology Pty. Ltd., Melbourne, Australia

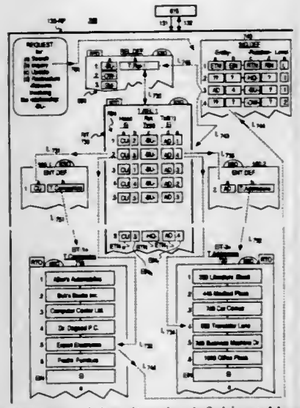
Continuation of Ser. No. 526,424, May 21, 1990, abandoned. This application Jun. 28, 1993, Ser. No. 83,861

Int. Cl.[6] G06F *1/00;15/00*

U.S. Cl. 395—603 **8 Claims**

1. In a computer system, a relational database processing system for retrieving a desired entity instance record, said relational database processing system comprising:

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memory means containing (i) entity definition table means comprised of at least one entity type record containing an entity type and specifying an entity instance table associated with said entity type, (ii) entity instance table means comprised of at least one entity instance table, wherein each entity type record of said entity definition table is associated with an entity instance table, and wherein each entity instance table is comprised of a plurality of entity instance records wherein each entity instance record is of an entity type of said entity definition table means, (iii) relation definition table means comprised of at least one relation type record defining a provided relation type associating said desired entity type with a provided entity type, and iv) relation instance table means comprised of at least one relation instance record which defines a relation of said provided relation type between said desired entity instance record and a provided entity instance record, wherein said entity definition table means, said entity instance table means, said relation definition table means and said relation instance definition means are part of a relational database;

means, operatively coupled to said relation definition table means, using said provided relation type, for retrieving from said relation definition table means said relation type record defining said provided relation type;

means, operatively coupled to said relation definition table retrieving means and to said relation instance table means, using said relation type record, for retrieving from said relation instance table means a specific relation instance record containing said provided relation type and said provided entity instance record, wherein said desired entity instance record is specified in said specific relation instance record by a desired entity type and a desired entity record identifier;

means, operatively coupled to said relation instance retrieving means and said entity definition table means, using said desired entity type, for retrieving from said entity definition table means a desired entity type record defining said desired entity type; and

means, operatively coupled to said entity type record retrieving means and said entity instance table means, using said desired entity type and said desired record identifier, for retrieving from said entity instance table means said desired entity instance record;

wherein a desired entity instance table is specified by said desired entity type record; and

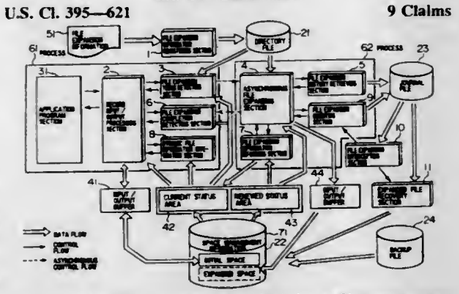
further wherein said desired entity instance record is a record identified by said desired entity record identifier in said entity instance table means.

5,604,900

METHOD AND SYSTEM FOR DYNAMICALLY AND ASYNCHRONOUSLY EXPANDING A FILE IN A ON-LINE DATABASE SYSTEM WITHOUT SUPPRESSION OF JOB EXECUTION

Kouji Iwamoto, Yokohama; Kota Yamaguchi, Yamato, and Yasushi Murakata, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Software Engineering Co., Ltd., Yokohama, both of Japan

Continuation of Ser. No. 857,657, Mar. 26, 1992, Pat. No. 5,479,655. This application Jun. 6, 1995, Ser. No. 469,997
Claims priority, application Japan, Mar. 28, 1991, 3-064352
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—621 **9 Claims**



1. A dynamic file expansion method for a file management system providing efficient operations of storing records in a file, renewing, deleting, and referring records stored in the file, said dynamic file expansion method comprising the steps of:

registering information of an allocated expansion space to be added to said file upon occurrence of insufficient space therein, and registering information indicating an amount of remaining empty space of said file at which an expansion timing indicating a need for file expansion is set;

detecting whether actual remaining space of said file becomes equal to or less than said registered information indicating said amount of remaining empty space at which said expansion timing is set, and issuing a file expansion request when said actual remaining space of said file is equal to or less than said registered information indicating said amount of remaining empty space at which said expansion timing is set;

in response to said file expansion request, expanding a file by generating and holding new space management information in accordance with said registered allocated expansion space information, expanding space to the file, and initializing said expanded space to the file, in parallel and asynchronously with record input/output processing relative to an already existing space before said file expansion;

during execution of said file expanding step, executing said record input/output processing relative to said already existing space by using old before expansion space management information, in accordance with a record input/output process;

informing said record input/output process of a completion of said file expanding step and the amount of after-expansion space, to logically set said held space management information as after-expansion space management information.

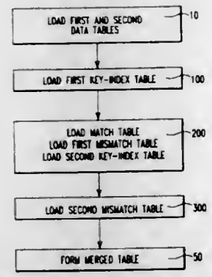
5,604,901

INTERROGATION INDEX FILE COMPARISON

Edward E. Kelley, Wappingers Falls, and John F. Paleveda, Pleasant Valley, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 867,950, Apr. 13, 1992, abandoned. This application Oct. 3, 1995, Ser. No. 538,377
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—603 **52 Claims**

1. A method of comparing in a data processing system a first file of data and a second file of data in only one pass through each of



said first and second files, each of said first and second files comprising a set of records, each record including a key, comprising the steps of:

initializing and loading a set of at least one data table including at least the step of loading a first key-index table with a first key-index record corresponding to each record in said first file in a first data pass, said first key-index record having a first interrogation index element related in a one to one correspondence to a first-file key of said first file;

sequentially fetching a second-file key from a record in said second file in a second data pass; interrogating a corresponding record in said first key-index table having a second interrogation index element related to said second-file key and to said first interrogation index element; and

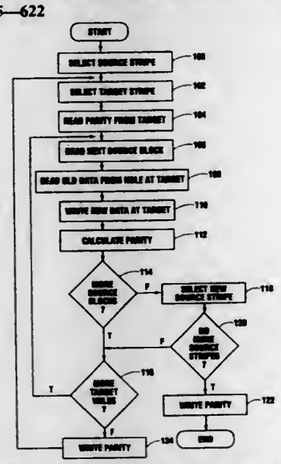
storing data representative of a matching relationship between said record of said first file and said record of said second file.

5,604,902

HOLE PLUGGING GARBAGE COLLECTION FOR A DATA STORAGE SYSTEM

Theresa A. Burkes, Meridian, Id.; Carl Staelin, San Francisco; Timothy T. Sullivan, Mountain View, both of Calif.; Douglas L. Voigt, Boise, Id., and John Wilkes, Palo Alto, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 16, 1995, Ser. No. 391,429
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—622 **20 Claims**



1. A storage management system for defragmenting storage space in a data storage system, comprising:

(a) selection means for selecting from the storage space at least one source fragmented area-having first blocks of data therein, and at least one target fragmented area having second blocks of data therein and holes of unused storage space, and wherein the source and target fragmented areas are separate areas in the storage space; and,

(b) means for moving the first blocks of data into the holes to fill the holes, whereby the source and target fragmented areas are each defragmented substantially concurrently.

5,604,903

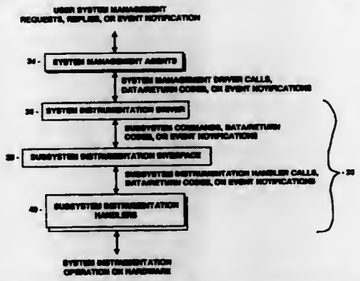
Patent Not Issued For This Number

5,604,904

METHOD AND APPARATUS FOR ACCESSING SYSTEM MANAGEMENT FUNCTIONS OF A COMPUTER SYSTEM

Vittal Kini, Aloha, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Sep. 26, 1994, Ser. No. 312,145
Int. Cl.[6] G06F *9/40*
U.S. Cl. 395—682 **34 Claims**



1. In a computer system having system management information, a method for manipulating or retrieving said system management information by a system management agent, said method comprising the steps of:

a) said system management agent causing subsystem set or get commands to be issued to a subsystem instrumentation interface, said set or get commands including subsystem and subsystem variable identifications, said set commands further including set values for said identified subsystem variables of said identified subsystems;

b) said subsystem instrumentation interface in response invoking set or get services of subsystem instrumentation handlers, and providing said invoked set or get services of said subsystem instrumentation handlers with said subsystem and subsystem variable identifications, and for set services, said set values; and

c) said subsystem instrumentation handlers in response setting said identified subsystem variables of said identified subsystems to said set values or getting current values of said identified subsystem variables of said identified subsystems.

5,604,905

METHOD AND APPARATUS FOR ARCHITECTURE INDEPENDENT EXECUTABLE FILES

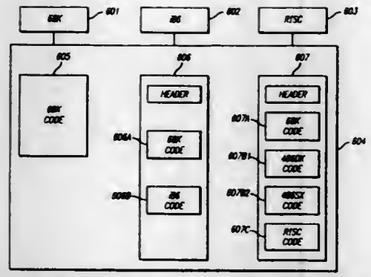
Avadis Tevanian, Palo Alto; Michael Demoney, San Jose; Kevin Enderby; Douglas Wiebe, both of Redwood City, all of Calif., and Garth Snyder, Boulder, Colo., assignors to NeXT Software, Inc., Redwood City, Calif.

Continuation of Ser. No. 110,156, Aug. 20, 1993, Pat. No. 5,432,937. This application Feb. 28, 1995, Ser. No. 395,444
Int. Cl.[6] G06F *9/44*
U.S. Cl. 395—706 **20 Claims**

10. An article of manufacture comprising:

an architecture independent executable file stored in a computer usable data storage medium, the file comprising;

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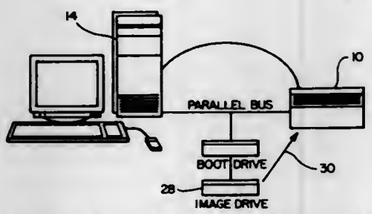
a first object block for use with a first computer architecture;
a second object block for use with a second computer architecture; and
a header for use in accessing said first and second object blocks.

5,604,906

METHOD AND APPARATUS FOR INSTALLING SOFTWARE BLOCK-BY BLOCK VIA AN IMAGE OF THE TARGET STORAGE DEVICE

Colm J. Murphy, and John L. Stanley, both of Cork, Ireland, assignors to Apple Computer, Inc.

Filed Feb. 6, 1995, Ser. No. 383,864
Int. Cl.[6] G06F *15/16*
U.S. Cl. 395—712 **30 Claims**



26. A method for downloading a software bundle onto a computer, comprising the steps of:
creating an image of a storage device of the type onto which the software bundle is to be downloaded;
copying said software bundle onto said image device;
connecting a computer to said image device; and
copying the software bundle from said image device to a storage medium on a connected computer on a block-by-block basis.

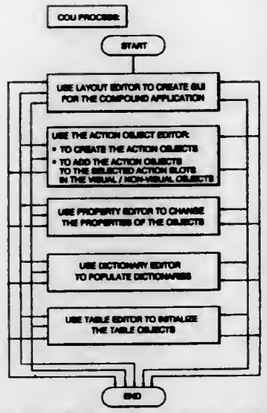
5,604,907

COMPUTER SYSTEM FOR EXECUTING ACTION SLOTS INCLUDING MULTIPLE ACTION OBJECT CLASSES

Michael H. Conner, Austin, and Nurcan Coskun, Austin, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 175,999, Dec. 30, 1993, abandoned. This application Mar. 10, 1995, Ser. No. 402,408
Int. Cl.[6] G06F *9/06*
U.S. Cl. 395—683 **11 Claims**

1. An object oriented data processing system, for executing application programs having one or more objects, comprising:
a processor for executing said objects;
a memory, associated with said processor, for storing said objects;
a display subsystem for providing a user interface and for displaying representations of said objects;
one or more action objects of a first class;



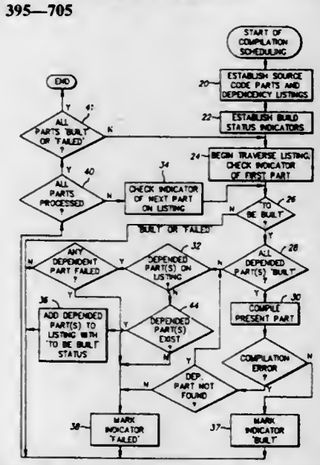
one or more action objects of a second class, each of said second class action objects being associated with one or more of said action objects of said first class, said action objects of said second class including logic for interpreting programming interfaces defined by said action objects of said first class;
one or more action slots, each including a reference to one or more action objects of said first class: and
means for execution of said one or more action slots.

5,604,908

COMPUTER PROGRAM PRODUCT FOR USING BUILD STATUS INDICATORS IN CONNECTION WITH BUILDING OF COMPLEX COMPUTER PROGRAMS FROM SOURCE CODE PARTS

Douglas J. Mortson, Bradford, Canada, assignor to International Business Machines Corportion, Armonk, N.Y.

Continuation of Ser. No. 257,621, Jun. 8, 1994, Pat. No. 5,513,357, which is a division of Ser. No. 16,622, Feb. 12, 1993, Pat. No. 5,357,239. This application Jun. 6, 1995, Ser. No. 466,694
Claims priority, application Canada, Feb. 17, 1992, 2061298
Int. Cl.[6] G06F *9/44*
U.S. Cl. 395—705 **2 Claims**



1. A computer program product comprising a computer readable medium having computer program logic recorded thereon for

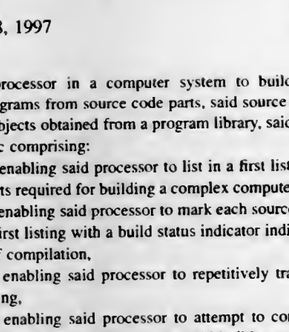
enabling a processor in a computer system to build complex computer programs from source code parts, said source code parts comprising objects obtained from a program library, said computer program logic comprising:
means for enabling said processor to list in a first listing source code parts required for building a complex computer program,
means for enabling said processor to mark each source code part in said first listing with a build status indicator indicative of a status of compilation,
means for enabling said processor to repetitively traverse said first listing,
means for enabling said processor to attempt to compile each said source code part according to said build status indicator as said first listing is traversed, and if said attempted compilation of said source code part is successful, replacing said build status indicator for said source code part with a successful compilation indicator, and
means for enabling said processor to stop said traversing of said first listing when a traverse of said first listing creates a specific state of said build status indicators.

5,604,909

APPARATUS FOR PROCESSING INSTRUCTIONS IN A COMPUTING SYSTEM

Chandra Joshi, Saratoga; Paul Rodman, Palo Alto; Peter Hsu, Fremont, and Monica R. Nofal, Los Altos, all of Calif., assignors to Silicon Graphics Computer Systems, Inc., Mountain View, Calif.

Filed Dec. 15, 1993, Ser. No. 168,744
Int. Cl.[6] G06F *9/00*
U.S. Cl. 395—384 **19 Claims**



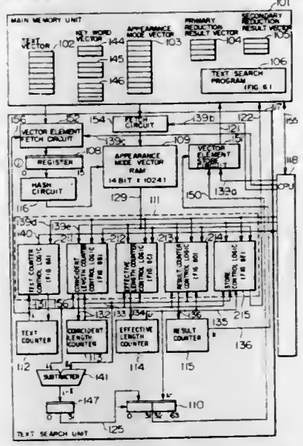
1. An apparatus for processing instructions in a computing system comprising:
first and second instruction storing circuits, each instruction storing circuit storing N instructions for parallel output;
an instruction dispatch circuit, coupled to the first instruction storing circuit, for dispatching L instructions stored in the first instruction storing circuit, wherein L is less than or equal to N; and
an instruction loading circuit, coupled to the instruction dispatch circuit and to the first and second instruction storing circuits, for loading L instructions from the second instruction storing circuit into the first instruction storing circuit after the L instructions are dispatched from the first instruction storing circuit and before further instructions are dispatched from the first instruction storing circuit.

5,604,910

METHOD OF AND VECTOR PROCESSOR FOR SEARCHING TEXT FOR KEY WORDS BASED ON CANDIDATE CHARACTER STRINGS OBTAINED FROM THE TEXT USING PARALLEL PROCESSING

Keiji Kojima, Kodaira, and Yusuke Mishina, Kunitachi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

PCT No. PCT/JP89/01064, § 371 Date Jun. 18, 1990, § 102(e) Date Jun. 18, 1990, PCT Pub. No. WO90/04826, PCT Pub. Date Mar. 5, 1990
PCT Filed Oct. 17, 1989, Ser. No. 499,424
Claims priority, application Japan, Oct. 18, 1988, 63-260616
Int. Cl.[6] G06F *7/00*
U.S. Cl. 395—800 **39 Claims**



1. A vector processor for searching a text character string for a candidate character string likely to coincide with one of a plurality of key word character strings, comprising:
first generating means for generating, from the text character string, a text vector including elements representing each of the characters in the text character string;
second generating means for generating, from the key word character strings and the text vector, an appearance mode vector including elements representing an appearance mode for each different character in the text character string, the appearance mode for each character indicating at least if the character appears in at least one of the key word character strings;
storing means for storing the text vector and the appearance mode vector;
first reading means for sequentially reading the elements of the text vector from the storing means;
second reading means for reading, from the storing means, the elements of the appearance mode vector corresponding to the elements of the text vector sequentially read from the storing means by the first reading means; and
detecting means for detecting a candidate character string constituted by a sequence of characters in the text character string each appearing in at least one of the key word character strings based on the elements of the text vector sequentially read from the storing means by the first reading means and the elements of the appearance mode vector read from the storing means by the second reading means, the sequence of characters being a continuous series of characters in the text character string.

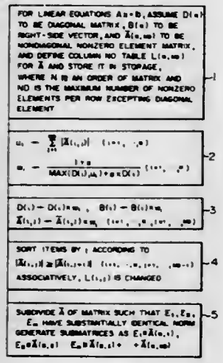
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5,604,911

METHOD OF AND APPARATUS FOR PRECONDITIONING OF A COEFFICIENT MATRIX OF SIMULTANEOUS LINEAR EQUATIONS

Yasunori Ushiro, Yokosuka, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 21, 1992, Ser. No. 947,801
Claims priority, application Japan, Sep. 19, 1991, 3-239260
Int. Cl.[6] G06F *15/347*
U.S. Cl. 395—800 15 Claims



1. An apparatus for generating submatrices for a preconditioning of a coefficient matrix of simultaneous linear equations, said apparatus comprising:

storing means for storing therein data of a coefficient matrix of simultaneous linear equations and data of a right-side vector;

indexing means for assigning a column index L to each nondiagonal nonzero element for each row selected from the stored coefficient matrix with a correspondence established therebetween and storing the nonzero elements in the storing means;

means for performing a summation of all absolute values of the stored nonzero elements for each row of the coefficient matrix fetched from the storing means, where an absolute value of the nonzero element is a number with a positive sign derived from changing the sign to positive if negative;

scaling means for scaling the data of the coefficient matrix and the data of the right-side vector fetched from the storing means according to a plurality of diagonal elements on a main diagonal axis of the coefficient matrix and the summation of the absolute values produced by the summation performing means;

sorting means for comparing with each other absolute values of the nonzero elements scaled by said scaling means for each row, thereby sorting the nonzero elements into an ascending or descending order and changing an order of the column index L to keep correspondence thereof; and

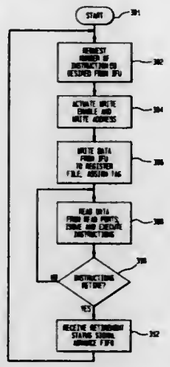
submatrix generating means for subdividing a matrix consisting of the sorted nonzero elements $\tilde{A}(N,1)$, $\tilde{A}(N,2)$, $\tilde{A}(N,ND)$ wherein N denotes a number of rows of the coefficient matrix and ND denotes a maximum number of nonzero elements per row into submatrices E1, E2, . . . , Em, wherein each submatrix is a matrix consisting of the nonzero elements $\tilde{A}$ (N,j) or $\tilde{A}$ (N,k)+ . . . +A (N,l) $1 \leqq j, k, l \leqq ND$, and a norm represented by |A (N,j)| or |A (N,k)|+ . . . +|A (N,l)| is approximately the same value respectively, where |A (N,j)| represents an absolute value of the A (N,j).

5,604,912

SYSTEM AND METHOD FOR ASSIGNING TAGS TO INSTRUCTIONS TO CONTROL INSTRUCTION EXECUTION

Trevor A. Deosaran, Sunnyvale; Sanjiv Garg, Fremont, and Kevin R. Iadonato, San Jose, all of Calif., assignors to Seiko Epson Corporation, Japan

Filed Dec. 31, 1992, Ser. No. 999,648
Int. Cl.[6] G06F *9/38*
U.S. Cl. 395—800 40 Claims



1. A system for tracking instructions in a variable advance instruction window of a predetermined size, comprising:

control logic that identifies an increment of advancement in the variable advance instruction window, requests an instruction source to send, to a register file, decoded instruction information for a set of instructions equal in number to said increment of advancement, and assigns a tag to each new instruction that enters the variable advance instruction window, wherein said tag comprises a unique address in said register file where said decoded instruction information is to be stored; and

a recycling queue comprising a plurality of slots equal in number to the predetermined size of the instruction window, each of said plurality of slots containing one of said tags, wherein an order defined by a position of said assigned tags in said recycling queue corresponds to the order of instructions in the variable advance instruction window.

5,604,913

VECTOR PROCESSOR HAVING A MASK REGISTER USED FOR PERFORMING NESTED CONDITIONAL INSTRUCTIONS

Yoichi Koyanagi, and Takeshi Horie, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed May 3, 1994, Ser. No. 237,305
Claims priority, application Japan, Aug. 10, 1993, 5-198416
Int. Cl.[6] G06F *15/347*
U.S. Cl. 395—800 7 Claims

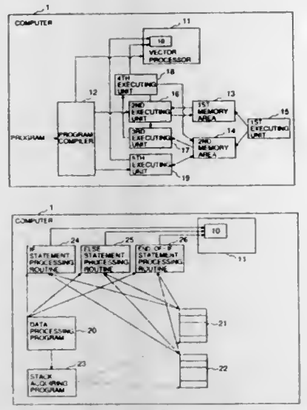
1. A computer, comprising:

a mask register having array elements, in which mask register is stored operation mask data indicating, for each array element, whether an operation of an IF statement or an operation of an ELSE statement should be implemented; the computer having:

a vector processor executing vector operation processing according to the operation mask data stored in the mask register;

first executing means for acquiring first and second memory areas in which mask data is saved in a stack order;

second executing means for generating, when an IF statement appears in execution of a program, condition indicating mask data indicating truth or falsity of a conditional expression of said IF statement and for saving the condition indicating mask



data indicating the truth or falsity of the conditional expression in the first memory area;

third executing means for reading a latest operation mask data saved in the second memory area in synchronism with the operation by the second executing means; and

fourth executing means for performing a bit-base logic operation on the condition indicating mask data saved by the second executing means and the latest operation mask data read by the third executing means, storing result data thus generated by the fourth executing means and applied to the operation of the IF statement in the mask register and saving the result data in the second memory area.

5,604,914

COMMUNICATION DEVICE FOR USE WITH A FACTORY AUTOMATION NETWORK HAVING MULTIPLE STATIONS FOR ACCESSING A FACTORY AUTOMATED DEVICE USING ADDRESS VARIABLES SPECIFIC TO THE FACTORY AUTOMATED DEVICE

Akiyoshi Kabe, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

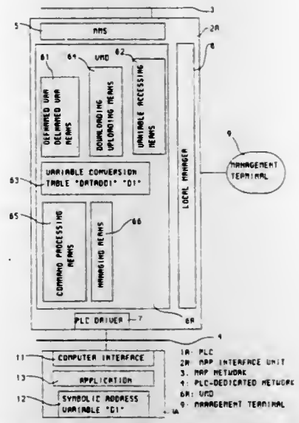
Continuation of Ser. No. 910,794, Jul. 9, 1992, abandoned.
This application Mar. 10, 1995, Ser. No. 402,327
Claims priority, application Japan, Jul. 10, 1991, 3-169848
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—800 12 Claims

1. A communication device for use in a manufacturing automation protocol network comprising at least a first and a second station, said communication device being operative with said first station, coupled to said second station via said manufacturing automation protocol network, and coupled to a factory automation device having a vendor-defined symbolic address variable which enables said second station to use a user-defined named variable to access said factory automation device, said communication device comprising:

a manufacturing message specification protocol comprising a downloading service and communicating said user-defined named variable between said first station and said second station;

a virtual manufacturing device which converts said manufacturing message specification protocol into a protocol dedicated to said factory automation device, said virtual manufacturing device comprising a variable conversion table; and

a downloading/uploading device, operative in response to said downloading service of said manufacturing message specification protocol, which downloads from said second station contents of a variable conversion table of said second station



in which said user-defined named variable is defined as corresponding to a symbolic address variable specific to said factory automation device, which registers said contents into said variable conversion table of said virtual manufacturing device, and which uploads to said second station said contents registered in said variable conversion table of said virtual manufacturing device; and

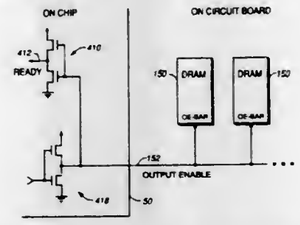
wherein said downloading/uploading device provides said user-defined named variable from said second station to said first station upon implementation of a power on condition.

5,604,915

DATA PROCESSING SYSTEM HAVING LOAD DEPENDENT BUS TIMING

Charles H. Moore, Woodside, and Russell H. Fish, III, Mt. View, both of Calif., assignors to Nanotronics Corporation, Eagle Point, Oreg.

Division of Ser. No. 389,334, Aug. 3, 1989, Pat. No. 5,440,749.
This application Jun. 7, 1995, Ser. No. 485,031
Int. Cl.[6] G06F *13/372*
U.S. Cl. 395—800 21 Claims



1. A data processing system in which data transfer timing is adjusted based on the number of devices that are connected in said data processing system, said data processing system comprising:

a microprocessor including a sensing circuit and a driver circuit, said driver circuit impressing a signal upon the control line;

one or more devices external to said microprocessor;

a control line connected to said one or more devices external to said microprocessor and to said sensing circuit;

said sensing circuit being configured to monitor, during a data transfer operation, a response time required for said signal to reach a predetermined electrical level upon said control line, said response time being a function of the number of devices and their interconnections on said control line; and

said microprocessor adjusting the timing of data transfer between said microprocessor and said one or more devices external to said microprocessor in accordance with said response time.

5,604,916

CONTROLLING DEVICE FOR SWITCHING SERIAL COMMUNICATION PORT AND LIGHT COMMUNICATION PORT AND ITS DRIVING METHOD

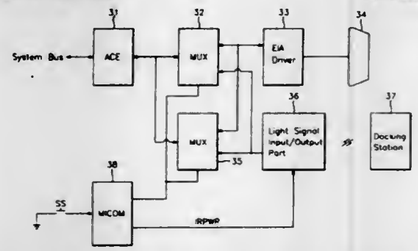
Man S. Kim, Seoul, and Kwan H. Lee, Kwacheon, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Sep. 8, 1994, Ser. No. 302,251

Claims priority, application Rep. of Korea, Sep. 8, 1993, 93-18038

Int. Cl.[6] G06F *9/00;13/00;13/10*

U.S. Cl. 395—822 **6 Claims**



1. A switch controlling device of a wired serial communication port and a light serial communication port comprising:

a single asynchronous communication part for executing one of producing a control signal for controlling lines or a modem, said lines or modem being connected to exterior peripheral equipment, and transmitting an information signal such as conditions of lines or modem inputted from the exterior peripheral equipment, wherein said execution is effected when an information signal containing a control command or data is inputted;

a switch for producing a switch signal which is used for selecting one of the light serial communication port and the wired serial communication port;

a micro-controlling means for outputting a control signal which causes selection of the wired serial communication port as a transmit channel and which de-activates the light serial communication port as a transmit channel by cutting off power to the light serial communication port when the light serial communication port is not selected by the switch signal produced by the switch, and for outputting a control signal which activates the light serial communication port as a transmit channel by applying power to the light serial communication port when the light communication serial port is selected by the switch signal;

at least one multiplexer for selecting one of the wired serial communication port and the light serial communication port as the transmit channel according to a control signal inputted from said micro-controlling means;

an EIA driver electrically connected to said asynchronous communication part via the transmit channel selected by said at least one multiplexer; and

a light signal input/output part electrically connected to said asynchronous communication part via the transmit channel selected by said at least one multiplexer and to which power is applied or cut off according to the control signal outputted by said micro-controlling means.

5,604,917

IC MEMORY CARD HAVING MASKING FUNCTION FOR PREVENTING WRITING OF DATA INTO A FIXED MEMORY AREA

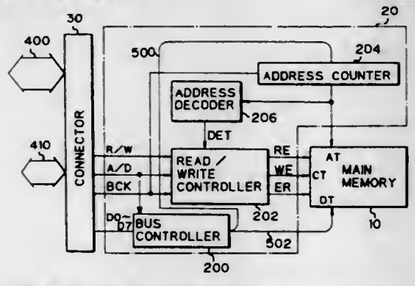
Osamu Saito, and Kaoru Adachi, both of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 752,006, Aug. 29, 1991, abandoned. This application Aug. 29, 1994, Ser. No. 294,870

Claims priority, application Japan, Sep. 28, 1990, 2-257379

Int. Cl.[6] G06F *12/16;12/06*

U.S. Cl. 395—869 **8 Claims**



1. An IC memory card comprising:

storage means having fixed areas for storing control information and variable areas for storing rewritable data;

control means for controlling writing, reading and erasing of data in said storage means; and

input/output means removably connectable to host processing means for transferring data between said host processing means and said storage means,

said control means comprising

bidirectional bus control means, connected to said input/output means, for receiving address signals and data signals from said input/output means and for transferring data signals to a data terminal of said storage means through a switching unit via a first signal line,

address counter means, connected to said bidirectional bus control means through said switching unit via a second signal line, said input/output means and an address terminal of said storage means, for latching the address signals received from said bidirectional bus control means,

address detecting means, connected to said address terminal, for detecting whether or not the latched address signals correspond to the fixed areas of said storage means and for generating a detection signal when a latched address signal corresponding to the fixed areas is detected, and

read/write control means, connected to said input/output means, said address detecting means, and control terminals of said storage means, for masking write, read and erase control signals supplied from said input/output means and directed to said storage means upon receipt of the detection signal generated from said address detection means, so as to inhibit the data from being written into said storage means.

5,604,918

TWO-LINE MIXED ANALOG/DIGITAL BUS SYSTEM AND A MASTER STATION AND A SLAVE STATION FOR USE IN SUCH SYSTEM

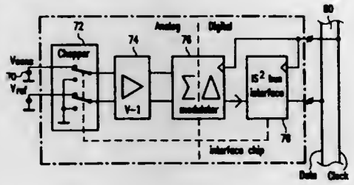
Johan H. Huijsing, Schipluiden; Roeland F. Tuk, Voorhout; Frank R. Riedijk, Pijnacker; Martinus Bredius; Gerrit Van Der Horn, both of Delft, and Herman Schutte, Eindhoven, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 3, 1994, Ser. No. 253,465

Claims priority, application European Pat. Off., Jun. 4, 1993, 93201595

Int. Cl.[6] G06F *13/42;* **G11B** *27/36*

U.S. Cl. 395—892 **16 Claims**



8. A master station for use in a two-line multi-station bus system including a data bus, a clock bus and a plurality of slave stations, comprising a clock terminal coupled to said clock bus, a data terminal coupled to said data bus, means for addressing said plurality of slave stations over said clock bus and means for controlling said clock signal, said master station data terminal adapted to provide digital data and analog signal transfer, wherein analog signal transfer occurs when said master station addresses one of said slave stations and said controlling means holds said clock bus until said master station terminates signal transfer by terminating the holding of the clock bus.

5,604,919

SINTERED PARTS MADE OF OXYGEN-SENSITIVE NON-REDUCIBLE POWDERS AND THEIR PRODUCTION BY INJECTION-MOLDING

Hans-Josef Sterzel, Dannstadt-Schauernheim, and Hans Wohlfromm, Ludwigshafen, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Continuation of Ser. No. 397,951, Mar. 3, 1995, abandoned. This application Jul. 29, 1996, Ser. No. 684,477

Claims priority, application Germany, Mar. 11, 1994, 44 08 304.1

Int. Cl.[6] B22F *3/16*

U.S. Cl. 419—30 **10 Claims**

1. In the process for producing sintered parts in which green parts comprising sinterable material and binder are converted into raw parts by binder removal, and the raw parts are sintered in the absence of oxygen, the improvement which comprises removing the binder from the green part in a separate binder removal furnace to prepare the raw part, transferring the raw part in a container which withstands sintering temperatures and is designed and operated in such a way that the raw part is protected from exposure to harmful materials, in particular oxygen, into a separate sintering furnace and sintering the raw part in the container in the separate sintering furnace.

5,604,920

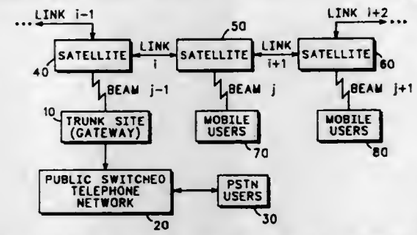
SATELLITE CELLULAR TELEPHONE AND DATA COMMUNICATION SYSTEM

Bary R. Bertiger, Scottsdale; Raymond J. Leopold, Chandler, and Kenneth M. Peterson, Tempe, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 50,753, Apr. 21, 1993, Pat. No. 5,410,728. This application Dec. 22, 1994, Ser. No. 363,065

Int. Cl.[6] H04B *7/185;* **H04M** *11/00*

U.S. Cl. 455—13.1 **7 Claims**



6. A cellular communication satellite for use in a satellite cellular system comprising:

means for receiving a cellular communication between users at the satellite;

means within the satellite for handing-off that ongoing cellular communication between the users from a cell of the satellite to a cell of another satellite; and

means within the satellite for handing-off that ongoing cellular communication between the users from a cell of the satellite to another cell of the same satellite.

5,604,921

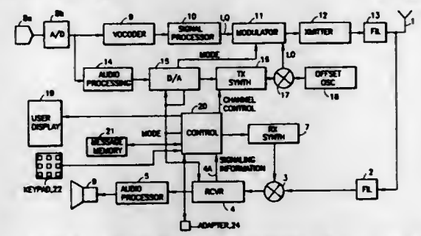
RADIOTELEPHONE USER INTERFACE FOR BROADCAST SHORT MESSAGE SERVICE

Seppo M. Alanara, Oulu, Finland, assignor to Nokia Mobile Phones Ltd., Salo, Finland

Filed Jul. 7, 1995, Ser. No. 499,165

Int. Cl.[6] H04B *1/68*

U.S. Cl. 455—45 **20 Claims**



1. A method for operating a radiotelephone for receiving digitally encoded broadcast messages from a radio channel, comprising the steps of:

operating a user interface for inputting information to a controller of the radiotelephone, the information specifying at least one category of broadcast message to be received;

in response to the inputted information, receiving a broadcast message that belongs to the at least one category;

storing at least a portion of the received message in a memory of the radiotelephone; and

displaying all or a portion of the stored message, wherein the message is received from a short message service broadcast channel.

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5,604,922

Patent Not Issued For This Number

5,604,923

ELECTRONIC DISPLAY SYSTEM CAPABLE OF DISPLAYING COMMUNICATION SIGNAL STRENGTH ON INDIVIDUAL ELECTRONIC DISPLAY MODULES AND METHOD OF USING THE SAME

Stephen A. Wilkus, Lincroft, N.J., assignor to AT&T Global Information Solutions Company, Dayton, Ohio

Filed Nov. 15, 1994, Ser. No. 339,624

Int. Cl.[6] H04B *17/00*

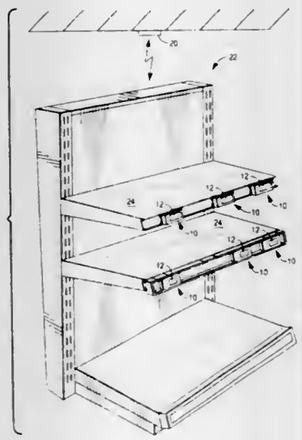
U.S. Cl. 455—67.7 **12 Claims**

1. An electronic display system, comprising:

at least one electronic display module having an electronic display;

an antenna having a receiver portion to receive communication signals from said at least one electronic display module and a transmitter portion to transmit communication signals to said at least one electronic display module; and

a base communications station to send communication signals to said antenna for transmittal to said at least one electronic display module, to receive a return acknowledgment signal from said at least one electronic display module and to send back a communication signal having a value of the communication signal strength of said return acknowledgment signal received from said at least one electronic display module for display on said electronic display of said at least one electronic display module.



5,604,924

RADIO COMMUNICATION APPARATUS IN WHICH OUTPUT POWER IS CONTROLLED BY PULSE WIDTH MODULATION USING A MOBILE ATTENUATION CODE

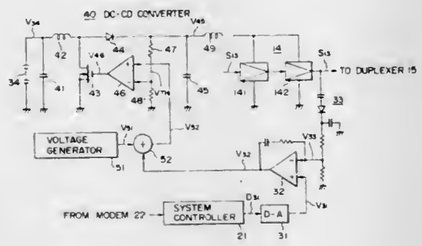
Satoshi Yokoya, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 3, 1994, Ser. No. 237,151

Claims priority, application Japan, May 25, 1993, 5-145508

Int. Cl.[6] H04B *7/005*; **H04Q** *7/32*

U.S. Cl. 455—68 **6 Claims**



1. A radio communication apparatus capable of varying the magnitude of its transmission output comprising:

a transmitting circuit for forming a transmission signal;

a receiving circuit for receiving from a base station a signal including a mobile attenuation code;

an amplifier for amplifying the transmission signal obtained from said transmitting circuit;

a variable voltage converter for converting a source voltage into an operating voltage of said amplifier; and

means for controlling said variable voltage converter, so that a magnitude of the operating voltage supplied from said variable voltage converter to said amplifier is varied in conformity to a magnitude of the transmission signal, wherein said means for controlling comprises:

a detector for detecting the magnitude of the transmission signal;

a comparator for comparing a detection signal from said detector with a value corresponding to the mobile attenuation code from said receiving circuit,

wherein an output of said comparator is supplied to said variable voltage converter as a control signal for a pulse width modulator included in said variable voltage converter and a pulse width modulated signal output from said pulse width modulator is integrated to form said operating voltage of said amplifier;

a sawtooth waveform reference signal generator for generating a sawtooth waveform reference signal; and

an adder for adding an output signal of said comparator to the reference signal obtained from said reference signal generator,

wherein an output signal of said adder is supplied to control said pulse width modulator included in said variable voltage converter.

5,604,925

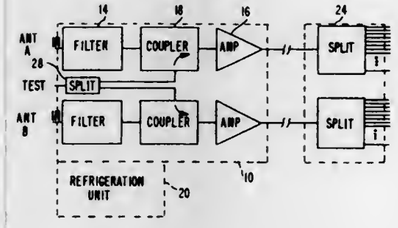
SUPER LOW NOISE MULTICOUPLER

John P. O'Malley, Herndon; William J. Rinard, Fairfax, both of Va., and Rodney O. Williams, Kensington, Md., assignors to Raytheon E-Systems, Dallas, Tex.

Filed Apr. 28, 1995, Ser. No. 430,381

Int. Cl.[6] H04B *7/00*

U.S. Cl. 455—254 **26 Claims**



1. A multicoupler for a receiver at a base station in a radio communication system, the base station having an antenna tower and a ground station adjacent a base of the antenna tower, said multicoupler comprising:

a cooled container on the antenna tower adjacent an antenna, said cooled container comprising thereinside,

a preselector filter connected to a feed from the antenna, and

a highly linear amplifier connected to said filter and to an output from said cooled container; and

a refrigeration unit for cooling said filter, said amplifier and connections therebetween to a temperature less than 175° K. and greater than 100° K.; and

a power splitter connected between said output from said cooled container and the receiver.

5,604,926

PHASE LOCKED LOOP CIRCUIT CURRENT MODE FEEDBACK

Gary L. Pace; Vance H. Peterson, and Edgar H. Callaway, Jr., all of Boca Raton, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 7, 1995, Ser. No. 399,784

Int. Cl.[6] H04B *1/30*

U.S. Cl. 455—260 **13 Claims**

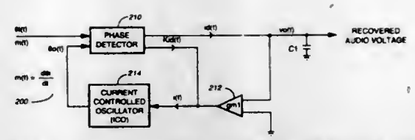
1. A phase locked loop circuit comprising:

a phase detector having first and second signal inputs, and first and second signal outputs, the first signal input receiving a signal to be processed, the phase detector detecting a phase difference between signals at the first and second signal inputs and generating at the first signal output a first current signal which is proportional to the phase difference between signals at the first and second signal inputs, and at the second signal output a second current signal which is proportional to the first current signal by a constant factor;

a first capacitor connected to the first signal output of the phase detector and generating an output voltage signal;

a first transconductance amplifier coupled to the first capacitor and receiving as input the output voltage signal and generating at an output an output current signal; and

a current controlled oscillator having an input coupled to the output of the first transconductance amplifier and to the second signal output of the phase detector and generating at an output an output signal having a frequency which is proportional to a current signal at the input of the current controlled oscillator, the output of the current controlled oscillator being coupled to the second signal input of the phase detector.



5,604,927

RECEIVER HAVING AN ADJUSTABLE BANDWIDTH FILTER

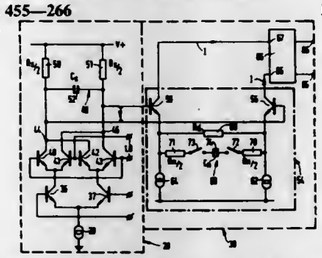
Paul A. Moore, Seaford, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 22, 1994, Ser. No. 362,621

Claims priority, application United Kingdom, Dec. 24, 1993, 9326464

Int. Cl.[6] H04B *1/16; 15/00*

U.S. Cl. 455—266 **15 Claims**



1. A radio frequency receiver comprising: a frequency down conversion stage which includes first passive filtering means having a first cut-off frequency, first and second outputs from the frequency down conversion stage, an amplifier having first and second active devices coupled respectively to the first and second outputs and having respective current outputs, first resistive means interconnecting corresponding electrodes of the first and second active devices, filtering means having inputs for receiving current outputs from said first and second active devices, said filtering means including transconducting means connected to said inputs, and second passive filtering means which is selectively connected in parallel with said first resistive means, whereby when said second passive filtering means is not connected in parallel with the first resistive means a narrow band signal is applied to the filtering

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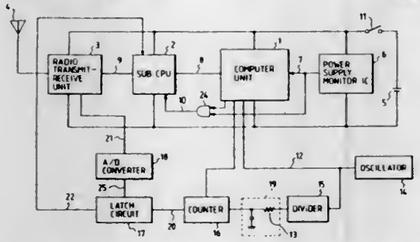
means and when said second passive filtering means is connected in parallel with the first resistive means a wideband signal is applied to the filtering means.

5,604,928

PORTABLE ELECTRONIC DEVICE WITH RADIO COMMUNICATION AND CONTROLLED COMPUTER STATUS

Soji Hamano, and Takayuki Tanabe, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 10,567, Jan. 28, 1993, abandoned.
This application Jun. 2, 1995, Ser. No. 460,716
Claims priority, application Japan, Jan. 31, 1992, 4-040673; Jan. 20, 1993, 5-007761
Int. Cl.[6] H04B *1/10*
U.S. Cl. 455—310 **13 Claims**



1. An electronic device having a radio transmit-receive unit for performing radio communication processing with an external device via an antenna, and a computer unit for processing desired information, comprising:

set control means for setting said computer unit to a rest state;

timer means for measuring a signal receive time of said radio transmit-receive unit in accordance with activation of said set control means and the computer unit in the rest state;

holding means for holding electric field strength information associated with at least one carrier received by said radio transmit-receive unit during the rest state of the computer unit; and

restart control means for switching the rest state of said computer unit to an active state after a predetermined period of time measured by said timer means.

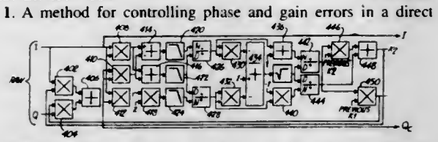
5,604,929

SYSTEM FOR CORRECTING QUADRATURE GAIN AND PHASE ERRORS IN A DIRECT CONVERSION SINGLE SIDEBAND RECEIVER INDEPENDENT OF THE CHARACTER OF THE MODULATED SIGNAL

Roger K. Loper, Marion; Thomas R. Hope, and Charles S. Farlow, both of Cedar Rapids, all of Iowa, assignors to Rockwell International, Seal Beach, Calif.

Filed Apr. 21, 1995, Ser. No. 426,315
Int. Cl.[6] H04B *1/26*
U.S. Cl. 455—324 **2 Claims**

1. A method for controlling phase and gain errors in a direct



conversion receiver having a pair of signal channels carrying baseband signal components I and Q which are in approximate quadrature comprising:

generating a first set of three intermediary signals based upon the baseband signal components, wherein the three intermediary signals are denoted as A, B, C and are derived in accordance with the following relationships:

$$A=I^2-Q^2,$$

$$B=2IQ$$

$$C=I^2+Q^2;$$

filtering the DC component from each intermediary signal of the first set of intermediary signals;

generating a second set of two intermediary signals based upon the first set of intermediary signals; wherein the second set of intermediary signals are denoted as D, E and are derived in accordance with the following relationships:

$$D=\bar{A}/\bar{C};$$

$$E=\bar{B}/\bar{C};$$

where $\bar{A}$, $\bar{B}$, $\bar{C}$ represent the filtered first set of intermediary signals:

determining a pair of correction coefficient factors based upon the second set of intermediary signals k1, k2, Initially determined in accordance with the following relationships:

$$k1=(1+D)/(1-D^2-E^2)^{1/2},$$

$$k2=-E/(1-D^2-E^2)^{1/2},$$

and

determining a modified signal value for one of the baseband signal components based upon correction coefficient factors that adjusts for the phase and gain error between the baseband signal components.

DESIGNS

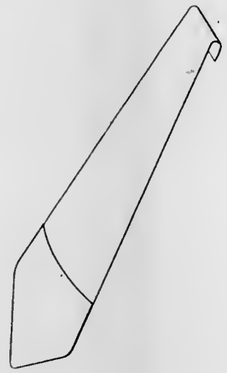
FEBRUARY 18, 1997

378,007

TIE SHIELD AND POCKET

John A. Dean, 1205 Earl Cir., Anaheim, Calif. 92806

Filed Dec. 22, 1995, Ser. No. 48,211
Term of patent 14 years
U.S. Cl. D2—609



378,008

JEANS OVERGARMENT

James R. Van Norman, and Perri K. Van Norman, both of P.O. Box 315, Edgerton, Wyo. 82635

Filed Jul. 3, 1995, Ser. No. 41,024
Term of patent 14 years
U.S. Cl. D2—839

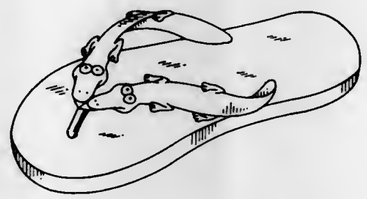


378,009

LIZARD STRAP THONG SANDAL

Kevin P. Sullivan, P.O. Box 75165, and John A. Lutfey, P.O. Box 75165, both of Honolulu, Hi. 96836

Filed May 30, 1995, Ser. No. 39,407
Term of patent 14 years
U.S. Cl. D2—917

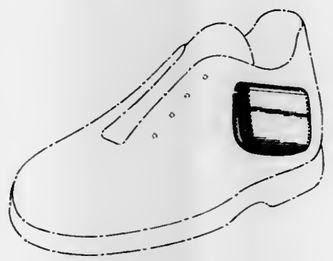


378,010

POCKET FOR A SHOE

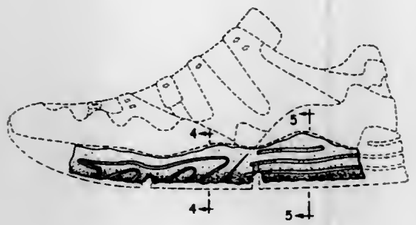
Robert Isenberg, Lexington, Mass., assignor to Right Stuff, Inc., Burlington, Mass.

Filed Jul. 12, 1995, Ser. No. 41,344
Term of patent 14 years
U.S. Cl. D2—946

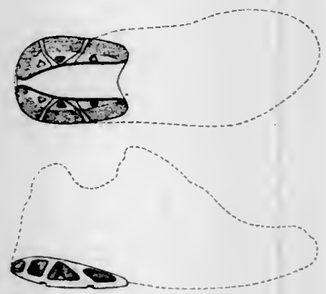


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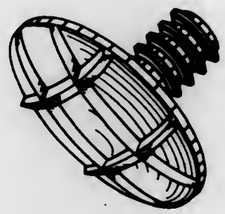
378,011
ELEMENT OF A SHOE MIDSOLE
Robert J. Lucas, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Feb. 8, 1996, Ser. No. 50,067
Term of patent 14 years
U.S. Cl. D2—947



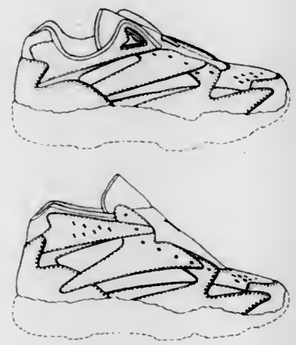
378,012
HEEL ELEMENT OF A SHOE SOLE
Tuan Le, 16160 SW. Upper Boones Ferry Rd., Portland, Oreg. 97223
Filed Jun. 7, 1995, Ser. No. 39,948
Term of patent 14 years
U.S. Cl. D2—964



378,013
WAFFLE BOTTOM GOLF SHOE SPIKE
Faris W. McMullin, Boise, Id., assignor to Softspikes, Inc., Rockville, Md.
Filed Aug. 31, 1994, Ser. No. 27,884
Term of patent 14 years
U.S. Cl. D2—962



378,014
SHOE UPPER
David J. Preskar, N. Quincy, Mass., assignor to Reebok International Ltd., Stoughton, Mass.
Filed Apr. 24, 1995, Ser. No. 37,993
Term of patent 14 years
U.S. Cl. D2—969



378,015
SOCK
Frederick Kluttz, and Lisa A. Kluttz, both of 3217 Cedar Ave. S., Minneapolis, Minn. 55407
Division of Ser. No. 11,337, Feb. 4, 1994, Pat. No. Des. 364,500. This application Aug. 23, 1995, Ser. No. 43,024
Term of patent 14 years
U.S. Cl. D2—980



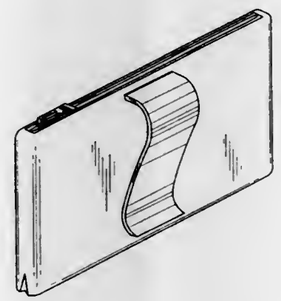
378,016
CANISTER FOR SHAVING ITEMS
Joseph M. Armbruster, and Sue B. Armbruster, both of 2700 NE. 47 St., Lighthouse Point, Fla. 33064
Filed Apr. 3, 1995, Ser. No. 37,060
Term of patent 14 years
U.S. Cl. D3—205



378,017
INFANT FRAME CARRIER
Sean Svendsen, Columbus; Paul Kolada, Bexley; David J. Stroud, Dayton, and Steve Courtney, Troy, all of Ohio, assignors to Lisco, Inc., Tampa, Fla.
Filed Nov. 9, 1995, Ser. No. 46,213
Term of patent 14 years
U.S. Cl. D3—214

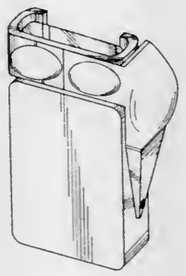


378,018
CREDIT CARD CASE
Larry Ouellette, 317 W. 4th St., Washington, Kans. 66968
Filed Jul. 17, 1995, Ser. No. 41,534
Term of patent 14 years
U.S. Cl. D3—215

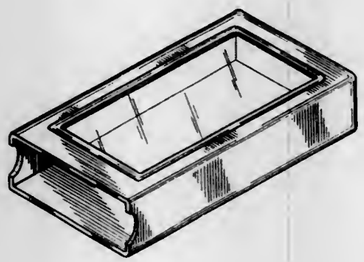


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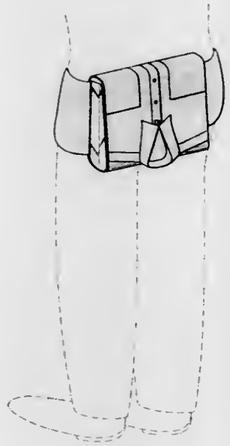
378,019
PAGER HOLDER
Benjamin C. Wells, 9461 E. Calle Cascada St., Tucson, Ariz. 85715
Filed Nov. 4, 1994, Ser. No. 30,697
Term of patent 14 years
U.S. Cl. D3—218



378,020
COMBINED REMOTE CONTROL COVER AND PROTECTOR
Jody D. Hatt, 98-33rd St. N, Wasaga Beach, Ontario, Canada
Filed Jan. 19, 1995, Ser. No. 33,746
Term of patent 14 years
U.S. Cl. D3—218



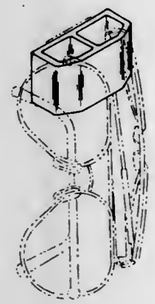
378,021
PURSE WITH GARMENT FRONT AND SLEEVE TIES
Kristan L. Kosmos, 200 W. 20th St., Apt. 315, New York, N.Y. 10011
Filed Jan. 25, 1996, Ser. No. 49,467
Term of patent 14 years
U.S. Cl. D3—226



378,022
WATER BOTTLE HOLDER
Juliet Chen, 2235 E. 7th St., Los Angeles, Calif. 90035
Filed Dec. 21, 1995, Ser. No. 48,136
Term of patent 14 years
U.S. Cl. D3—229



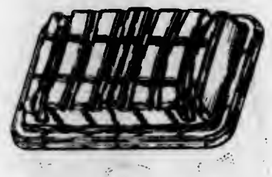
378,023
EYEGLASS HOLDER
George R. Grassey, 6 Capitol Rd., Milford, Mass. 01757
Filed Apr. 16, 1996, Ser. No. 53,095
Term of patent 14 years
U.S. Cl. D3—266



378,024
PAINTER'S TOOL BAG
Malcolm G. Tucker, 9 Westburn Ter., Christchurch, New Zealand
Filed Dec. 12, 1994, Ser. No. 32,020
Claims priority, application New Zealand, Jun. 16, 1994, 25975
Term of patent 14 years
U.S. Cl. D3—315



378,025
LID
Thomas Perelli, Winchester, Va., assignor to Rubbermaid Office Products Inc., Maryville, Tenn.
Filed Sep. 5, 1995, Ser. No. 43,424
Term of patent 14 years
U.S. Cl. D3—323



378,026
COMBINED NAIL-ART LIQUID BRUSH AND CAP
Andrea Balazs, 134 Wyncrest Rd., Marlboro, N.J. 07746
Filed Jul. 3, 1995, Ser. No. 41,056
Term of patent 14 years
U.S. Cl. D4—121

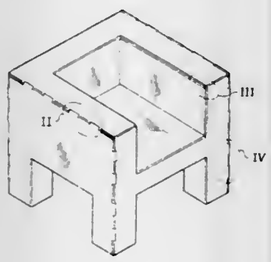


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378,027
WALL COVERING
Debbie T. Guseman, 160 Shawnee Dr., Lancaster, Ohio 43130
Filed Oct. 2, 1995, Ser. No. 44,595
Term of patent 14 years
U.S. Cl. D5—8



378,028
CARDBOARD ARMCHAIR FOR CHILDREN
Wolfram Schefcik, Korpitsch 37, A-9587 Riegersdorf, Austria
Filed Jan. 31, 1995, Ser. No. 34,287
Term of patent 14 years
U.S. Cl. D6—334



378,029
GUITAR SUPPORT TABLE
Jonathan R. Clark, 11 Palmetto Ct., Trophy Club, Tex. 76262
Filed Oct. 27, 1995, Ser. No. 45,708
Term of patent 14 years
U.S. Cl. D6—396



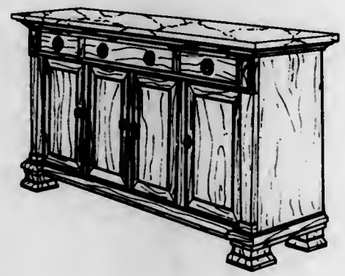
378,030
LINEN CABINET
James J. Palka, 22351 W. Thornridge Dr., Kildeer, Ill. 60047
Filed Sep. 21, 1995, Ser. No. 44,231
Term of patent 14 years
U.S. Cl. D6—445



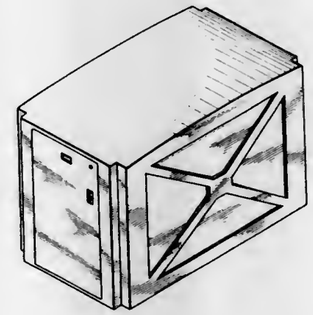
378,031
DOUBLE DRESSER
H. Thomas Keller, and Scott Risdon, both of High Point, N.C., assignors to Vaughan Furniture Company, Inc., Galax, Va.
Division of Ser. No. 30,024, Oct. 20, 1994. This application Oct. 3, 1995, Ser. No. 44,891
Term of patent 14 years
U.S. Cl. D6—445



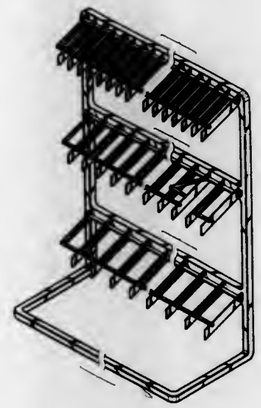
378,032
SIDEBOARD
Paul A. Rosebrock, Morganton, N.C., assignor to Henredon Furniture Industries, Inc., Morganton, N.C.
Filed Nov. 30, 1995, Ser. No. 47,317
Term of patent 14 years
U.S. Cl. D6—445



378,033
BICYCLE STORAGE LOCKER
Thomas E. Volk, Jr., 860 Jose Dr., Ojai, Calif. 93023
Filed Nov. 22, 1995, Ser. No. 46,973
Term of patent 14 years
U.S. Cl. D6—448



378,034
RIBBON DISPENSER
James W. Buckley, P.O. Box 206, Cokeville, Wyo. 83114
Filed Aug. 4, 1995, Ser. No. 42,258
Term of patent 14 years
U.S. Cl. D6—515

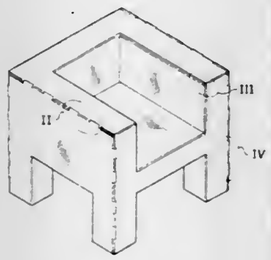


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378,027
WALL COVERING
Debbie T. Guseman, 160 Shawnee Dr., Lancaster, Ohio 43130
Filed Oct. 2, 1995, Ser. No. 44,595
Term of patent 14 years
U.S. Cl. D5—8



378,028
CARDBOARD ARMCHAIR FOR CHILDREN
Wolfram Schefcik, Korpitsch 37, A-9587 Riegersdorf, Austria
Filed Jan. 31, 1995, Ser. No. 34,287
Term of patent 14 years
U.S. Cl. D6—334



378,029
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Jonathan R. Clark, 11 Palmetto Ct., Trophy Club, Tex. 76262
Filed Oct. 27, 1995, Ser. No. 45,708
Term of patent 14 years
U.S. Cl. D6—396



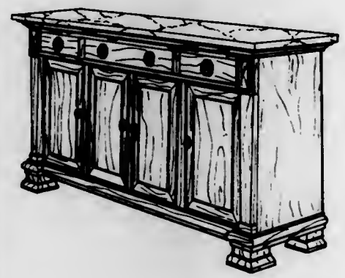
378,030
LINEN CABINET
James J. Palka, 22351 W. Thornridge Dr., Kildeer, Ill. 60047
Filed Sep. 21, 1995, Ser. No. 44,231
Term of patent 14 years
U.S. Cl. D6—445



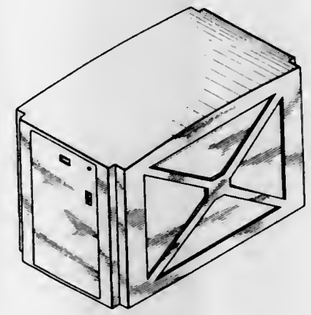
378,031
DOUBLE DRESSER
H. Thomas Keller, and Scott Risdon, both of High Point, N.C., assignors to Vaughan Furniture Company, Inc., Galax, Va.
Division of Ser. No. 30,024, Oct. 20, 1994. This application Oct. 3, 1995, Ser. No. 44,891
Term of patent 14 years
U.S. Cl. D6—445



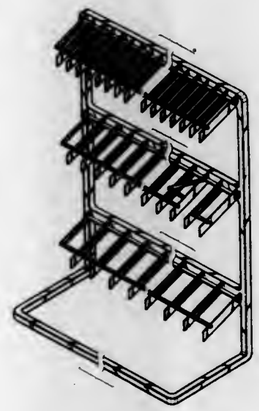
378,032
SIDEBOARD
Paul A. Rosebrock, Morganton, N.C., assignor to Henredon Furniture Industries, Inc., Morganton, N.C.
Filed Nov. 30, 1995, Ser. No. 47,317
Term of patent 14 years
U.S. Cl. D6—445



378,033
BICYCLE STORAGE LOCKER
Thomas E. Volk, Jr., 860 Jose Dr., Ojai, Calif. 93023
Filed Nov. 22, 1995, Ser. No. 46,973
Term of patent 14 years
U.S. Cl. D6—448



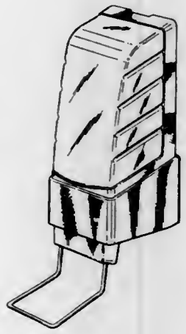
378,034
RIBBON DISPENSER
James W. Buckley, P.O. Box 206, Cokeville, Wyo. 83114
Filed Aug. 4, 1995, Ser. No. 42,258
Term of patent 14 years
U.S. Cl. D6—515



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378,035
LIQUID DISPENSER
Heiner Ophardt, Vineland, Canada, assignor to Hygiene-Technik Inc., Beamsville, Canada
Filed May 30, 1995, Ser. No. 39,554
Claims priority, application Canada, Apr. 27, 1995, 0913
Term of patent 14 years
U.S. Cl. D6—545

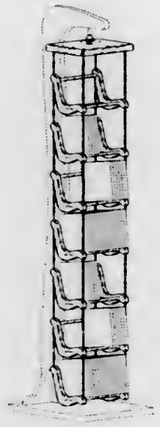




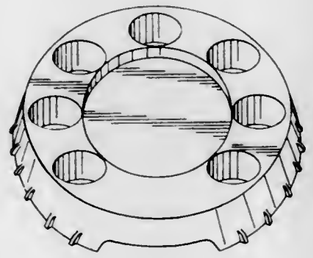
378,036
MAT
Y. W. Chang, No. 81 Sz-Yueh Road, Tai-Ping Village, Hou-Li Hsiang, Taichung Hsien, Taiwan
Filed Dec. 26, 1995, Ser. No. 48,337
Term of patent 14 years
U.S. Cl. D6—589



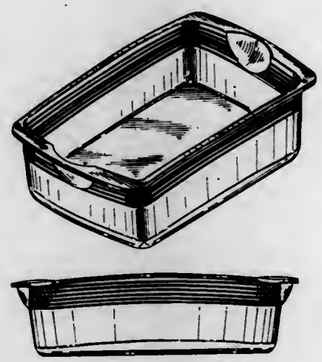
378,037
COMPACT DISC SUPPORT RACK
Kenneth Dunlap, P.O. Box 3303, Yuba City, Calif. 95992
Filed Feb. 16, 1996, Ser. No. 50,378
Term of patent 14 years
U.S. Cl. D6—630



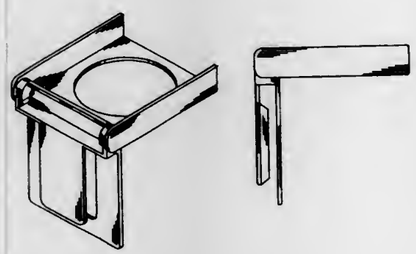
378,038
TRAY
Greg Gaines, 7227 Winchester #266, Memphis, Tenn. 38125
Filed Oct. 31, 1995, Ser. No. 45,827
Term of patent 14 years
U.S. Cl. D7—551



378,039
FOOD CONTAINER
Ian Ferris, Finchampstead, England, assignor to Dart Industries Inc., Deerfield, Ill.
Filed Sep. 28, 1995, Ser. No. 43,927
Term of patent 14 years
U.S. Cl. D7—602



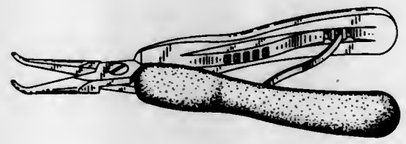
378,040
CUP HOLDER
Clayton P. Flint, 12712 NE. 120th St., #G4, Kirkland, Wash. 98034, and Phillip E. Hearron, 802 Speyers Rd., Selah, Wash. 98942
Filed Nov. 2, 1995, Ser. No. 45,936
Term of patent 14 years
U.S. Cl. D7—620



378,041
HOT BUTTER BOTTLE
Joey Stovall, 910 Benton Dr., Apt. 13, Iowa City, Iowa 52240
Filed Sep. 22, 1994, Ser. No. 28,759
Term of patent 14 years
U.S. Cl. D7—670

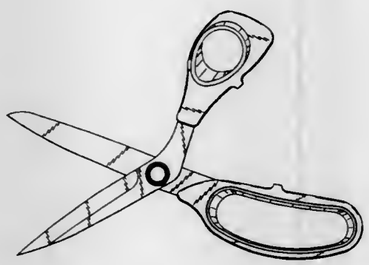


378,042
PLIERS
Conny Jansson, Enkoping; Hans Himberg; Håkan Bergqvist, both of Bromma, and Olle Bobjer, Spanga, all of Sweden, assignors to Sandvik AB, Sandviken, Sweden
Filed May 11, 1994, Ser. No. 22,776
Claims priority, application Sweden, Nov. 11, 1993, 93-2538; Nov. 11, 1993, 93-2539; Nov. 11, 1993, 93-2540; Nov. 11, 1993, 93-2541; Nov. 11, 1993, 93-2542; Nov. 11, 1993, 93-2543
Term of patent 14 years
U.S. Cl. D8—52

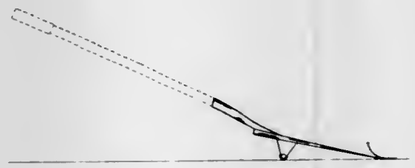


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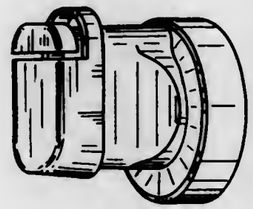
378,043
SCISSORS
Motoshi Ogura, Gifu-ken, Japan, assignor to Kai R & D Center Co., Ltd., Seki, Japan
Filed Jul. 11, 1995, Ser. No. 41,316
Claims priority, application Japan, Mar. 3, 1995, 7-5788
Term of patent 14 years
U.S. Cl. D8—57



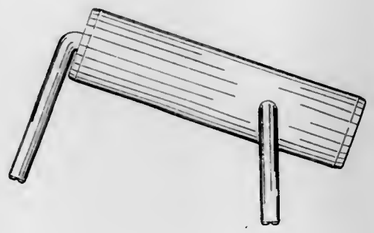
378,044
BLADE OF A ROOF STRIPPING SPADE
Julien P. Benjamin, P.O. Box 24133, Jacksonville, Fla. 32241
Continuation of Ser. No. 108,468, Aug. 18, 1993, abandoned. This application Oct. 24, 1994, Ser. No. 30,194
Term of patent 14 years
U.S. Cl. D8—88



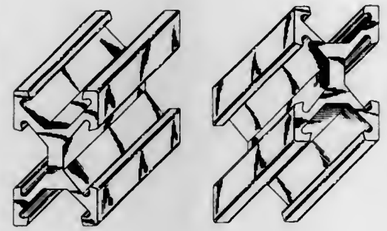
378,045
SAFETY KNOB
Luke E. Lewis, and Christopher E. Lewis, both of 312 Arbor Vista Blvd., Jackson, Miss. 39209
Filed Sep. 25, 1995, Ser. No. 44,508
Term of patent 14 years
U.S. Cl. D8—307



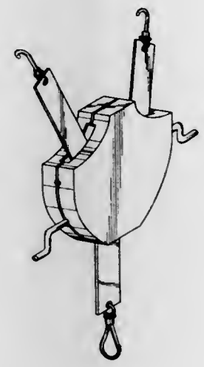
378,046
PARTS HOLDER
Irwin W. Sweeney, 1640 Harmony rd., Winnemucca, Nev. 89445
Filed Aug. 10, 1995, Ser. No. 42,450
Term of patent 14 years
U.S. Cl. D8—354



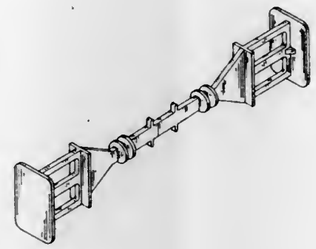
378,047
MOUNTING RAIL
Josef Chudoba, Kullavägen 11, 746 95 Bålsta, Sweden
Filed Aug. 22, 1995, Ser. No. 42,979
Claims priority, application Sweden, Feb. 23, 1995, 95-0384
Term of patent 14 years
U.S. Cl. D8—354



378,048
VEHICLE TIE-DOWN STRAP UNIT
James T. Seigel, 134 High St., Dublin, Pa. 18917
Filed Feb. 6, 1996, Ser. No. 50,015
Term of patent 14 years
U.S. Cl. D8—354



378,049
TIE FOR CONCRETE FORMING SYSTEM
Patrick E. Boeshart, P.O. Box 774, Sioux City, Iowa 51102
Filed Mar. 14, 1996, Ser. No. 51,604
Term of patent 14 years
U.S. Cl. D8—354

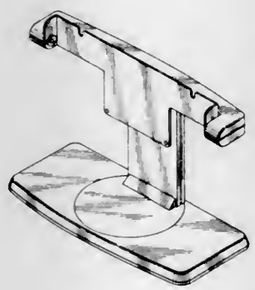


378,050
PEG BOARD HOOK
James Richeson, 23504-29 Ave. W., Brier, Wash. 98036
Filed Nov. 26, 1990, Ser. No. 617,867
Term of patent 14 years
U.S. Cl. D8—367

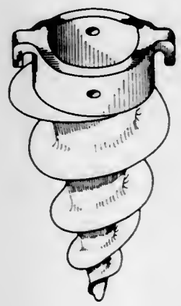


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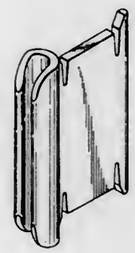
378,051
STAND FOR IMAGE DISPLAYING DEVICE
Toru Shinano, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Toyko, Japan
Filed Aug. 17, 1995, Ser. No. 42,770
Claims priority, application Japan, Feb. 21, 1995, 7-4405
Term of patent 14 years
U.S. Cl. D8—373



378,052
SOIL ANCHOR
Gilles Perreault, 88, Principale, Frampton, Quebec, Canada
Filed Dec. 9, 1994, Ser. No. 32,647
Claims priority, application Canada, Aug. 20, 1993, 20-08-93-3
Term of patent 14 years
U.S. Cl. D8—387



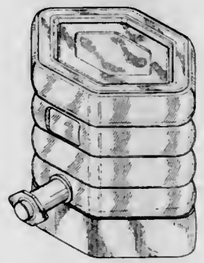
378,053
WINDOW BLIND STORAGE CLIP
John C. Forbis, 9227 115th Ave., NE., Lake Stevens, Wash. 98528
Filed Nov. 6, 1995, Ser. No. 46,025
Term of patent 14 years
U.S. Cl. D8—395



378,054
PROTECTIVE BUMPER
Robert J. Engberg, Fairmont, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Dec. 12, 1995, Ser. No. 47,734
Term of patent 14 years
U.S. Cl. D8—402



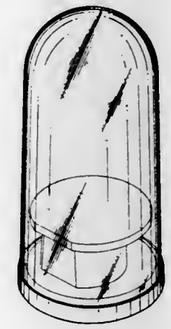
378,055
LIQUID DISPENSING JAR
Bryan K. Waldon, 126 Willow Creek Estates, Lewisville Denton County, Tex. 75067; Cricket H. Lee, 5520 W. Hanover Ave., Dallas, Dallas County, Tex. 75209; Caroline R. Hunt, 100 Crescent Ct., Suite 1700, Dallas, Dallas County, Tex. 75201, and Vivian Young, 3525 Beverly Dr., Dallas, Dallas County, Tex. 75205
Filed Feb. 14, 1995, Ser. No. 34,865
Term of patent 14 years
U.S. Cl. D9—300



378,056
FLEXIBLE WRAPPER
Hyun S. Park, Kyungki-do, Rep. of Korea, assignor to Lotte Confectionery Co., Ltd., Seoul, Rep. of Korea
Filed Sep. 14, 1995, Ser. No. 43,910
Term of patent 14 years
U.S. Cl. D9—305



378,057
DOMED WATCH DISPLAY
Jerry Dikowitz, Plainview, N.Y., assignor to E. Gluck Corporation, Long Island City, N.Y.
Filed Sep. 22, 1995, Ser. No. 44,335
Term of patent 14 years
U.S. Cl. D9—418



378,058
COMBINED BOTTLE AND CAP
Edward H. Meisner, Short Hills, N.J.; Roland Charriez, Peekskill; Adam Sherman, Larchmont, both of N.Y., and Peter Stagl, Morris Plains, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.
Filed Oct. 2, 1995, Ser. No. 44,845
Term of patent 14 years
U.S. Cl. D9—523



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COMBINED BOTTLE AND STOPPER

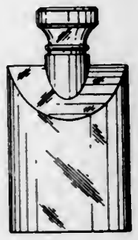
Thierry De Baschmakoff, Paris, France, assignor to Bulgari S.p.A., Rome, Italy

Filed Dec. 6, 1995, Ser. No. 47,530

Claims priority, application Hague Agreement, Jun. 6, 1995, DM/033194

Term of patent 14 years

U.S. Cl. D9—544



378,060

COMBINED PERFUME BOTTLE AND CLOSURE

Philippe Charriol, 66 Black's Link, Hong Kong, Hong Kong

Filed Jan. 16, 1996, Ser. No. 48,959

Claims priority, application Hague Agreement, Jul. 18, 1995, DM/033 565

Term of patent 14 years

U.S. Cl. D9—560



378,061

WATCH CASE

Pierre Ludvig, St Nom-la-Breteche, France, assignor to Titan International Marketing Ltd., Bangalore, Ind.

Filed Jun. 6, 1995, Ser. No. 39,841

Claims priority, application United Kingdom, Apr. 26, 1995, 2047011

Term of patent 14 years

U.S. Cl. D10—30



378,062

WRISTWATCH

Giovanni Bulgari, Rome, Italy, assignor to Gianni Bulgari S.p.A., Rome, Italy

Filed Oct. 5, 1995, Ser. No. 44,995

Claims priority, application Hague Agreement, Apr. 6, 1995, DMA/002856

Term of patent 14 years

U.S. Cl. D10—32



378,063

WRISTWATCH

Giovanni Bulgari, Rome, Italy, assignor to Gianni Bulgari S.p.A., Rome, Italy

Filed Oct. 5, 1995, Ser. No. 44,996

Claims priority, application Hague Agreement, Apr. 6, 1995, DMA/002856

Term of patent 14 years

U.S. Cl. D10—32



378,064

WRISTWATCH

Daniel Wild, Le Sentier, Switzerland, assignor to Manufacture Jaeger-le Coultre SA, Le Sentier, Switzerland

Filed Oct. 11, 1995, Ser. No. 45,152

Claims priority, application Hague Agreement, May 11, 1995, DMA/002 936

Term of patent 14 years

U.S. Cl. D10—32



378,065

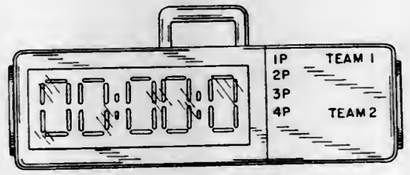
PORTABLE SPORT TIMER

Jason E. Levy, 2302 Woodhead, Apt. 104, Houston, Tex. 77019

Filed Aug. 29, 1995, Ser. No. 43,221

Term of patent 14 years

U.S. Cl. D10—40



378,066

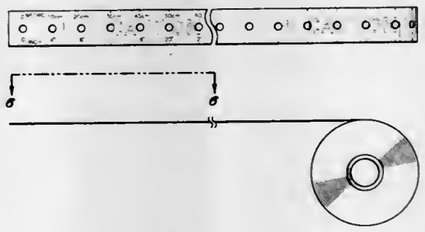
MEASUREMENT, SPACER AND BARRICADE WARNING TAPE

Duc T. Doan, 4125 S. Figuroa St., Unit 301, Los Angeles, Calif. 90037

Filed Mar. 12, 1996, Ser. No. 51,521

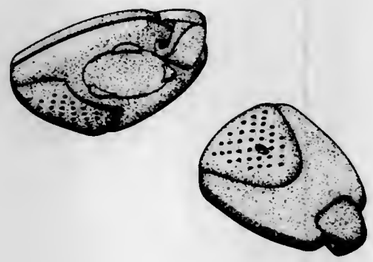
Term of patent 14 years

U.S. Cl. D10—71

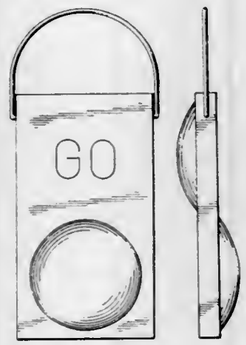


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378,067
AUDIBLE TRANSMITTER FOR LOCATING MISSING OBJECTS
Michael G. Sirois, Ottawa; Walter M. Zanetti, Gloucester, and Rudy A. Vandenbelt, Ottawa, all of Canada, assignors to Headwaters Research & Development Inc., Ottawa, Canada
Filed Jan. 22, 1996, Ser. No. 49,237
Term of patent 14 years
U.S. Cl. D10—104



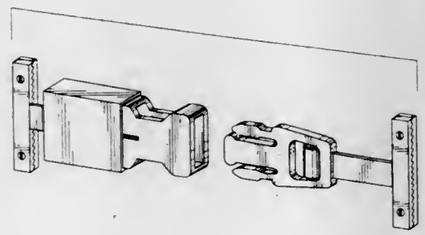
378,068
DIRECTIONAL SIGN
Ray D. Davis, and Birdell Davis, both of 5145 NW. 5th Ave., Miami, Fla. 33127-2138
Filed Dec. 13, 1995, Ser. No. 47,866
Term of patent 14 years
U.S. Cl. D10—114



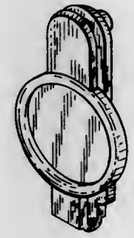
378,069
CLASP SET
Melvin R. Koven, P.O. Box 52, Chama, N.M. 87520
Division of Ser. No. 7,056, Apr. 12, 1993, Pat. No. Des. 360,848. This application Jul. 6, 1995, Ser. No. 41,164
Term of patent 14 years
U.S. Cl. D11—87



378,070
CHILD PROOF SEATBELT LOCK
Charles D. Hurd, 3820 Quadrant Dr., North Bend, Ohio 45052
Filed Jan. 16, 1996, Ser. No. 48,944
Term of patent 14 years
U.S. Cl. D11—215



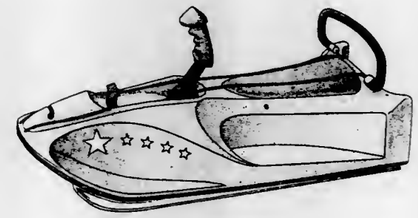
378,071
REUSABLE EXTENSION FOR ZIPPER PULLS
David A. Kincman, Sr., 37 Tadmuck Rd., Westford, Mass. 01886
Filed Jul. 24, 1995, Ser. No. 41,778
Term of patent 14 years
U.S. Cl. D11—221



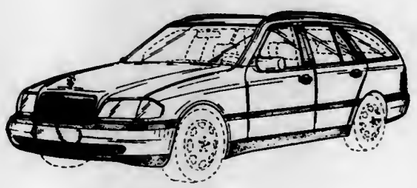
378,072
SLIDE FASTENER SLIDER
Hiroshi Mizuno, Toyama, Japan, assignor to YKK Corporation, Tokyo, Japan
Filed Oct. 26, 1995, Ser. No. 46,708
Claims priority, application Japan, Apr. 28, 1995, 7-12308
Term of patent 14 years
U.S. Cl. D11—221



378,073
TOBOGGAN
Hans-Günther Löhr, Neuhausen/Enzkreis, Germany, assignor to L+H Lemlteg GmbH, Neuhausen/Enzkreis
Filed Jan. 19, 1995, Ser. No. 33,770
Claims priority, application Germany, Jul. 21, 1994, M9405691.9
Term of patent 14 years
U.S. Cl. D12—11

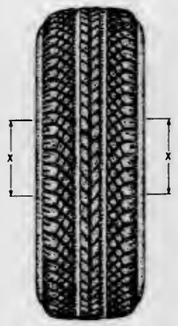


378,074
MOTOR VEHICLE
Bruno Sacco; Josef Gallitzendoerfer, both of Sindelfingen; Peter Pfeiffer, Boeblingen, and Hans-Dieter Futschik, Echingen, all of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany
Filed Mar. 25, 1994, Ser. No. 20,357
Claims priority, application Germany, Sep. 25, 1993, 93 07 492.1
Term of patent 14 years
U.S. Cl. D12—91

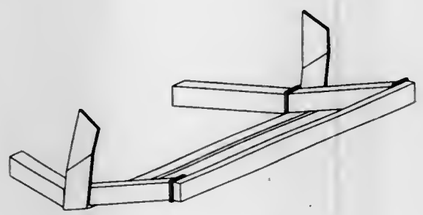


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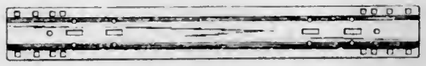
378,075
AUTOMOBILE TIRE
Yoshimasa Hashimoto; Sadakazu Takei; Toshihiko Suzuki, all of Hiratsuka; Izumi Kuramochi, and Hiroshi Tokizaki, both of Tokyo, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan
Filed Feb. 27, 1995, Ser. No. 35,499
Claims priority, application Japan, Aug. 31, 1994, 6-25936
Term of patent 14 years
U.S. Cl. D12—147



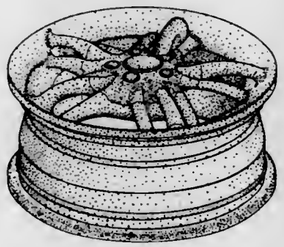
378,076
CRASH ENERGY MANAGEMENT FRAME FOR A VEHICLE
Robert G. Whirley, Santa Rosa, and Bruce E. Engelmann, Sebastopol, both of Calif., assignors to U.S. Electricar, Inc., San Francisco, Calif.
Filed Feb. 8, 1995, Ser. No. 34,609
Term of patent 14 years
U.S. Cl. D12—159



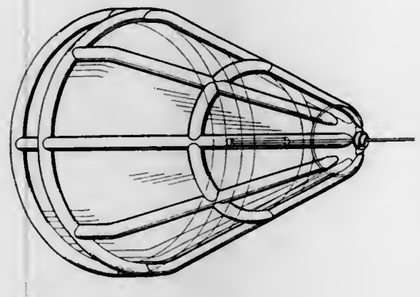
378,077
FIFTH WHEEL BASE RAIL
Thomas W. Lindenman, South Bend, and Richard McCoy, Granger, both of Ind., assignors to Reese Products, Inc., Elkhart, Ind.
Filed Oct. 20, 1995, Ser. No. 46,645
Term of patent 14 years
U.S. Cl. D12—161



378,078
SPOKED WHEEL FOR MOTORVEHICLES
Marco Cattaneo, Pavia, Italy, assignor to Momo S.P.A., Milan, Italy
Filed Aug. 2, 1995, Ser. No. 42,137
Claims priority, application Italy, Feb. 28, 1995, MI95/0122
Term of patent 14 years
U.S. Cl. D12—205



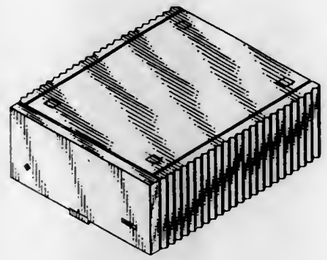
378,079
HOLLOW INFLATABLE BELL FOR PULLING BY A POWER BOAT TOW ROPE
George V. Lavino, 8 Painted Bunting, Amelia Island, Fla. 32034, and Peter M. Larocque, HCR 66, Box 198, Unity, N.H. 03773
Filed Dec. 28, 1995, Ser. No. 48,414
Term of patent 14 years
U.S. Cl. D12—317



378,080
RACK FOR OFF-ROAD UTILITY/RECREATIONAL VEHICLE
Richard S. Walters. and Glenn T. Walters, both of Port Washington, Wis., assignors to Polaris Industries Partners L.P., Minneapolis, Minn.
Filed Sep. 29, 1995, Ser. No. 44,675
Term of patent 14 years
U.S. Cl. D12—407



378,081
CONFIGURABLE MULTI-PRODUCT ELECTRONICS ENCLOSURE
Michael J. Antonczak, Aptos; Philip G. Yurkonis, Campbell; Michael S. Dann, Mountain View; Paul S. Montgomery; Herbert H. F. Pfeifer, both of San Francisco, and James G. Ammon, San Jose, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.
Filed May 10, 1993, Ser. No. 8,431
Term of patent 14 years
U.S. Cl. D13—184

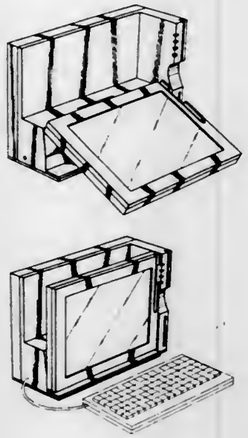


378,082
FREESTANDING INTERACTIVE COMPUTERIZED INFORMATION SYSTEM
Donald Wilson, Toronto, Canada, assignor to King Products Inc., Mississauga, Canada
Continuation-in-part of Ser. No. 37,821, Apr. 21, 1995. This application Nov. 9, 1995, Ser. No. 46,254
Claims priority, application Canada, Dec. 22, 1994, 1994-2529
Term of patent 14 years
U.S. Cl. D14—100

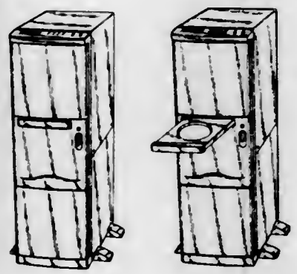


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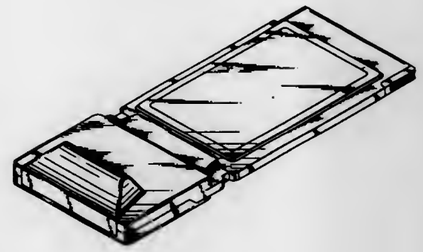
378,083
ELECTRONIC COMPUTER
Takaharu Ando, Ryugasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Continuation of Ser. No. 40,512, Jun. 20, 1995, abandoned. This application Jan. 16, 1996, Ser. No. 48,885
Claims priority, application Japan, Dec. 22, 1994, 6-38899
Term of patent 14 years
U.S. Cl. D14—100



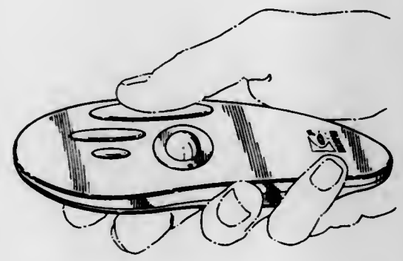
378,084
OPTICAL DISK PLAYER
Takayuki Hayami; Tetsuya Imamura; Yutaka Kono, all of Osaka, and Makoto Fujita, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Mar. 13, 1996, Ser. No. 51,546
Claims priority, application Japan, Sep. 13, 1995, 7-27369
Term of patent 14 years
U.S. Cl. D14—109



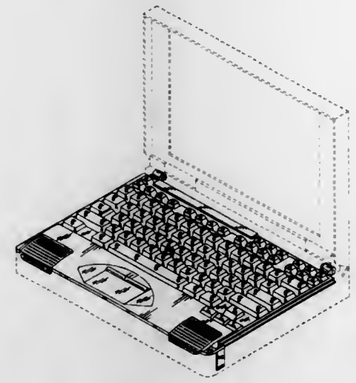
378,085
OPTICAL TRANSCEIVER CARD
Albert J. Kerklaan, Milton, and Mike J. Preyde, Oshawa, both of Canada, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed May 12, 1994, Ser. No. 22,888
Claims priority, application Canada, Nov. 16, 1993, 16119934
Term of patent 14 years
U.S. Cl. D14—114



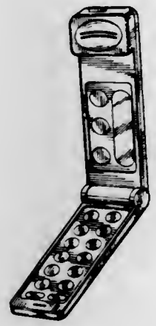
378,086
REMOTE CONTROL COMPUTER MOUSE
Peter Sheehan; B. J. Benett, both of Co. Wicklow, and Brian Stephens, Co. Dublin, all of Ireland, assignors to Logitech S.A., Romanel/Morges, Switzeriand
Filed Dec. 13, 1994, Ser. No. 32,279
Claims priority, application Hague Agreement, Jun. 14, 1994, DM 029854
Term of patent 14 years
U.S. Cl. D14—114



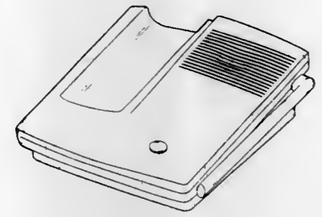
378,087
KEYBOARD
Nariaki Mieki, Yokohama, and Kazuhiko Yamazaki, Hiratuka, both of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sep. 29, 1995, Ser. No. 44,760
Claims priority, application Japan, Mar. 31, 1995, 7-9140
Term of patent 14 years
U.S. Cl. D14—115



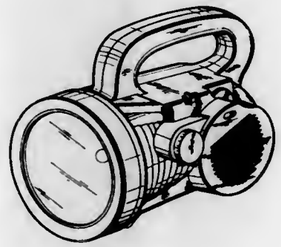
378,088
PORTABLE RADIO TELEPHONE
Takaharu Ando, Ryugasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Division of Ser. No. 948,858, Sep. 15, 1992, Pat. No. Des. 355,182. This application Jun. 13, 1994, Ser. No. 24,349
Term of patent 14 years
U.S. Cl. D14—138



378,089
TELEPHONE STAND
Daniel R. Biskup, Somerset; Pratod V. Kasbekar, Manalapan, both of N.J.; Michael J. Nuttall, Portola Valley, Calif.; Heidi A. Rajan, Morganville, N.J.; Christopher A. Robinette, Woodside, Calif.; John H. Schaffeld, New Vernon, and Chaonong Yoh, Matawan, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.
Filed Jan. 4, 1995, Ser. No. 33,044
Term of patent 14 years
U.S. Cl. D14—149

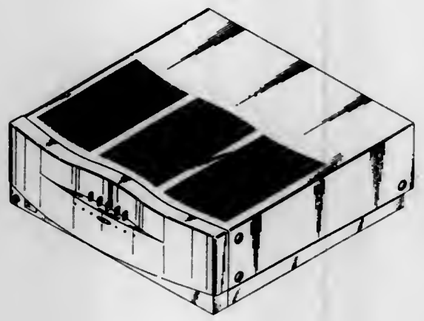


378,090
COMBINED RADIO, FIRST AID KIT AND FLASHLIGHT
Se Kit Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Division of Ser. No. 27,549, Aug. 24, 1994. This application Dec. 4, 1995, Ser. No. 47,447
Claims priority, application United Kingdom, Jun. 2, 1994, 2039449
Term of patent 14 years
U.S. Cl. D14—168

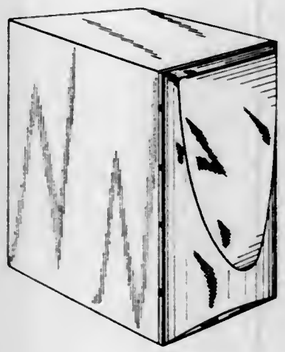


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378,091
COMBINED AUDIO AND VIDEO AMPLIFIER
Jan Hippen, Portland, Oreg., assignor to Kenwood Corporation, Tokyo, Japan
Filed Mar. 29, 1996, Ser. No. 52,406
Term of patent 14 years
U.S. Cl. D14—188



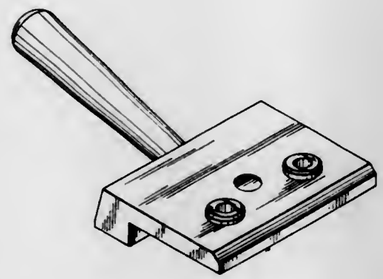
378,092
BOOK SHELF LOUDSPEAKER
Edward L. Boyd, Montvale, N.J., assignor to Sony Corp. of America, Park Ridge, N.J.
Filed Jun. 13, 1995, Ser. No. 40,227
Term of patent 14 years
U.S. Cl. D14—214



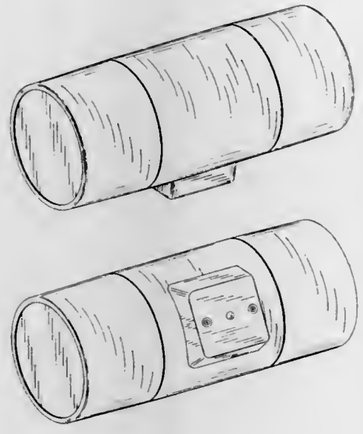
378,093
HAND-HELD REMOTE CONTROL
Bryce G. Rutter, and Michael D. Prstojevich, both of St. Louis, Mo., assignors to Scientific-Atlanta, Inc., Norcross, Ga.
Filed Jun. 29, 1995, Ser. No. 40,880
Term of patent 14 years
U.S. Cl. D14—218



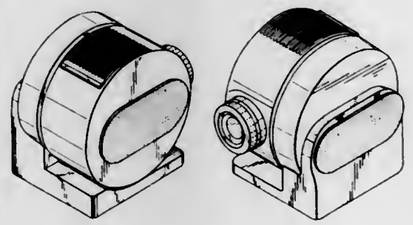
378,094
BORING JIG
Josef Eberhard, Haupstrasse 41, A-8502 Lannach Österreich, Austria
Filed Aug. 30, 1995, Ser. No. 43,267
Claims priority, application Austria, Mar. 3, 1995, MU 722/95
Term of patent 14 years
U.S. Cl. D15—140



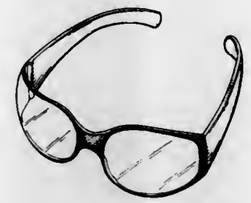
378,095
SURVEILLANCE CAMERA
Fumio Hasegawa, Nagoya, Japan, assignor to Elmo Company Limited, Japan
Continuation of Ser. No. 36,583, Mar. 23, 1995, abandoned. This application Jan. 18, 1996, Ser. No. 49,162
Claims priority, application Japan, Sep. 26, 1994, 6-29204
Term of patent 14 years
U.S. Cl. D16—203



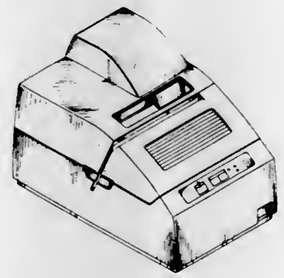
378,096
APPARATUS FOR PROJECTING VIDEO IMAGES
Tomohiro Harada, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Division of Ser. No. 32,259, Dec. 12, 1994. This application Nov. 17, 1995, Ser. No. 46,510
Claims priority, application Japan, Jul. 15, 1994, 6-21268
Term of patent 14 years
U.S. Cl. D16—225



378,097
SPECTACLES
Chiang-Hsiang Huang, No. 66, Lane 32, Hai Huan Street, Tainan, Taiwan
Filed Dec. 12, 1995, Ser. No. 47,753
Term of patent 14 years
U.S. Cl. D16—326

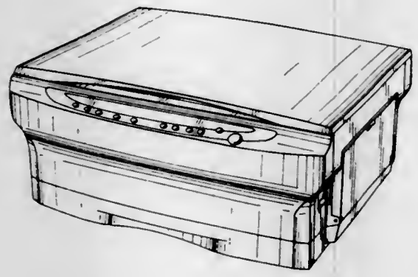


378,098
PRINTER FOR A CASH REGISTER
Maki Sato, Yokohama, Japan, assignor to Kabushiki Kaisha TEC, Shizuoka, Japan
Filed Oct. 4, 1995, Ser. No. 44,972
Claims priority, application Japan, Apr. 17, 1995, 7-10655
The portion of the term of this patent subsequent to Oct. 8, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D18—4

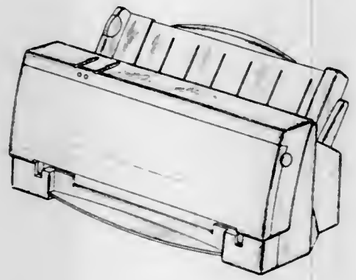


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378,099
COPIER
Kenzo Yoshida, Nara-ken; Kenji Ohta, Osaka-fu, and Akira Tanabe, Nara-ken, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Mar. 27, 1996, Ser. No. 52,339
Claims priority, application Japan, Sep. 27, 1995, 7-28851
Term of patent 14 years
U.S. Cl. D18—36



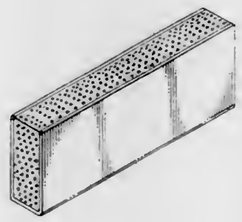
378,100
PRINTER FOR ELECTRONIC COMPUTER
Tetsuya Sekioe, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 24, 1995, Ser. No. 45,592
Claims priority, application Japan, Apr. 26, 1995, 7-11778
Term of patent 14 years
U.S. Cl. D18—54



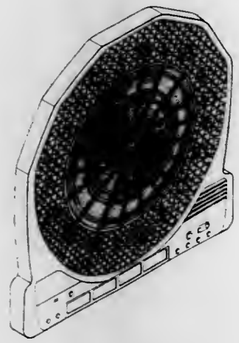
378,101
TAPE CARTRIDGE FOR TAPE PRINTER
Masafumi Ito, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Jul. 31, 1995, Ser. No. 42,062
Claims priority, application Japan, Mar. 2, 1995, 7-5798
Term of patent 14 years
U.S. Cl. D18—56



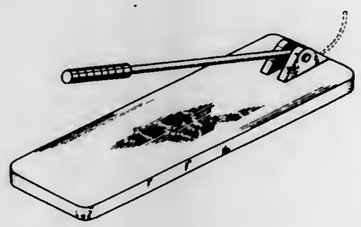
378,102
CADDY FOR DESK AND HANDTOOL ACCESSORIES
James Jamieson, 508 W. Acacia Ave., El Segundo, Calif. 90245
Filed Dec. 9, 1994, Ser. No. 31,958
Term of patent 14 years
U.S. Cl. D19—77



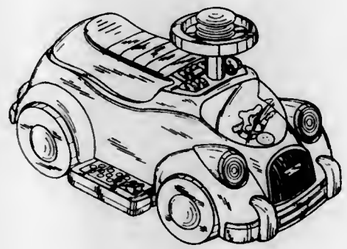
378,103
DART TARGET
Chih-Hao Yiu, 7F-1, No. 30, Lin Sen Road, Taichung, Taiwan
Filed Aug. 21, 1995, Ser. No. 42,880
Term of patent 14 years
U.S. Cl. D21—6



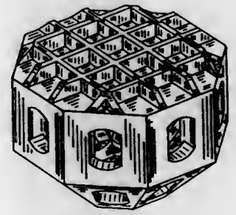
378,104
HELICOPTER VIDEO GAME COLLECTIVE PITCH CONTROLLER
James M. Harreli, Jr., 990 Kiely Blvd., Santa Clara, Calif. 95051
Filed May 1, 1995, Ser. No. 38,220
Term of patent 14 years
U.S. Cl. D21—48



378,105
CAR FOR CHILD
Keiichi Nakai, Tokyo, Japan, assignor to Plus One Co., Ltd., Tokyo, Japan
Filed Jun. 26, 1995, Ser. No. 40,764
Term of patent 14 years
U.S. Cl. D21—74

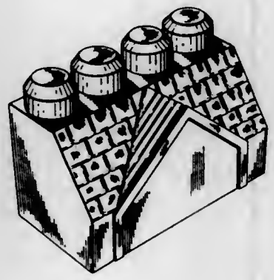


378,106
BALL CONNECTOR FOR TOY CONSTRUCTION SET WITH FEMALE STUD INTERFACE
Richard Gabriel, Portland, Oreg., assignor to Matrix Toys, Ltd., Portland, Oreg.
Filed Jan. 11, 1996, Ser. No. 49,625
Term of patent 14 years
U.S. Cl. D21—108

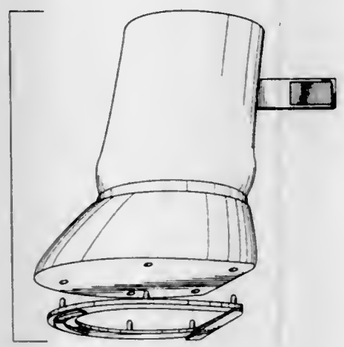


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378,107
ROOF-SHAPED CONSTRUCTION TOY BLOCK
Sandra Bean, Notre Dame de l'Ile Perrot, Canada, assignor to Ritvik Group, Inc., Quebec, Canada
Filed Feb. 8, 1996, Ser. No. 50,063
Claims priority, application Canada, Jan. 1, 1996, 1996-0091
Term of patent 14 years
U.S. Cl. D21—108



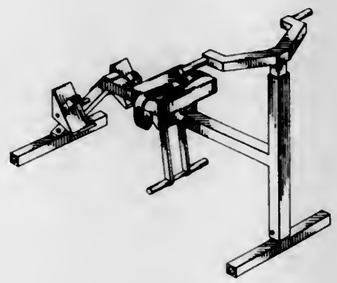
378,108
ANIMAL FOOT TOY
Steven Shippy, R.R. 1, Bluffton, AB, T0C 0M0, Canada
Filed Jun. 15, 1995, Ser. No. 40,318
Term of patent 14 years
U.S. Cl. D21—189



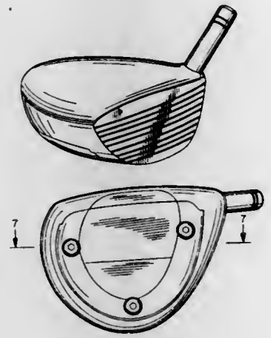
378,109
ANIMAL HEAD MASK
Patrick S. Yager, Belmont, N.C., and Joseph F. Higginbothan, 6 Airline St., Belmont, N.C. 28012, assignors to Joseph F. Higginbothan, Belmont, N.C.
Filed Dec. 13, 1993, Ser. No. 16,266
Term of patent 14 years
U.S. Cl. D21—190



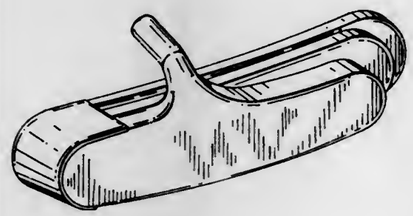
378,110
EXERCISING DEVICE
Tommy E. Collinsworth, Box 462, Sibley, La. 71073
Filed Aug. 9, 1995, Ser. No. 42,364
Term of patent 14 years
U.S. Cl. D21—191



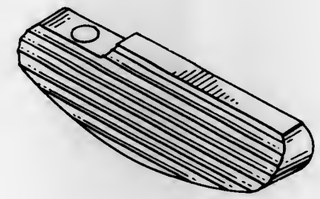
378,111
GOLF CLUB HEAD
Richard E. Parente, San Diego; Richard De La Cruz, Pauma Valley, and Danny C. Ashcraft, Vista, all of Calif., assignors to Goldwin Golf U.S.A., Inc., Carlsbad, Calif.
Filed Jul. 5, 1994, Ser. No. 25,553
Term of patent 14 years
U.S. Cl. D21—214



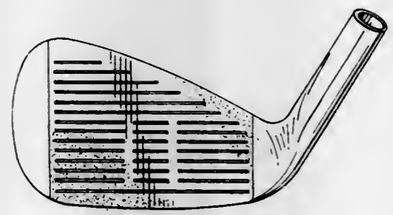
378,112
GOLF CLUB HEAD
Theodore Salonica, 139 Beacon Dr., Weirton, W. Va. 26062
Filed Aug. 31, 1995, Ser. No. 43,307
Term of patent 14 years
U.S. Cl. D21—217



378,113
GOLF PUTTER HEAD WITH FLUTED REAR SIDE AND STEPPED TOP WALL
Augustin W. Rollinson, and Richard C. Helmstetter, both of Carlsbad, Calif., assignors to Callaway Golf Company, Carlsbad, Calif.
Filed Jan. 16, 1996, Ser. No. 47,833
Term of patent 14 years
U.S. Cl. D21—217



378,114
GOLF CLUB HEAD WITH A CENTER STRIKING AREA INDICATOR
Alan Hendrickson, 9318 E. Casitas Del Rio Dr., Scottsdale, Ariz. 85255
Filed Nov. 20, 1995, Ser. No. 46,916
Term of patent 14 years
U.S. Cl. D21—220



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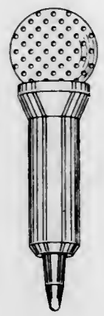
378,115
SKATE
Arthur D. Baker, Santa Monica; Thomas G. Baumann, Valencia, and Steven D. Kimmell, Granada Hills, all of Calif., assignors to Rollerball International Inc., Los Angeles, Calif.
Filed Jan. 26, 1996, Ser. No. 49,484
Term of patent 14 years
U.S. Cl. D21—226



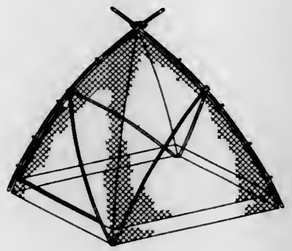
378,116
ROLLER SKATE
Ting-Hsing Chen, Tainan, Taiwan, assignor to Far Great Plastics Industrial Co., Ltd., Tainan, Taiwan
Filed Mar. 19, 1996, Ser. No. 51,888
Term of patent 14 years
U.S. Cl. D21—226



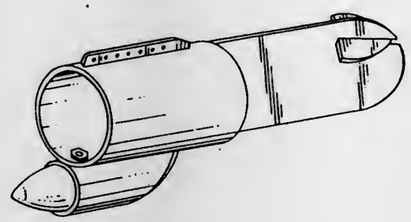
378,117
GOLF BALL MARKER
Aran S. Aleamoni, 6730 N. Camino Padre Isidoro, Tucson, Ariz. 85718
Filed Sep. 29, 1995, Ser. No. 44,683
Term of patent 14 years
U.S. Cl. D21—234



378,118
TENT
Jehkun Lah, 542-3 Gajwa-Dong, Suh-Ku, Inchon, Rep. of Korea
Filed Jan. 31, 1996, Ser. No. 49,809
Term of patent 14 years
U.S. Cl. D21—253



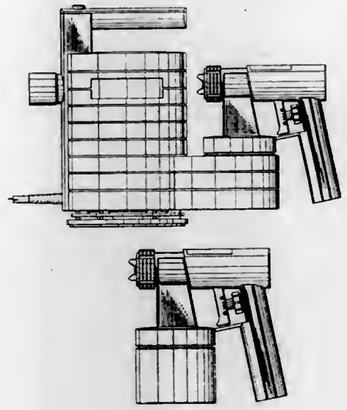
378,119
FISHING SINKER
D. Jorge Roca Navarro, Paseo De Nuestra Senora Del Coll, No. 1, Atico, Barcelona 08023, Spain
Filed Nov. 15, 1995, Ser. No. 46,480
Claims priority, application Spain, May 16, 1995, 135053
Term of patent 14 years
U.S. Cl. D22—145



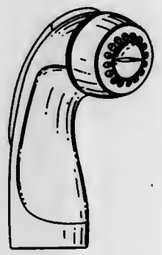
378,120
SPIRAL FOUNTAIN
Colin L. H. Wood, 24 Brook Avenue, New Milton, Hants BH25 5HD, United Kingdom
Filed Mar. 1, 1996, Ser. No. 50,994
Term of patent 14 years
U.S. Cl. D23—201



378,121
SPRAYER
Jörn Lüzeler, Waldweg; Guido Zimmermann, and Klaus Buttenbender, both of Friedrichshafen, all of Germany, assignors to J. Wagner GmbH, Markdorf, Germany
Filed Nov. 22, 1995, Ser. No. 47,092
Claims priority, application Germany, May 26, 1995, M 95 04 540.6
Term of patent 14 years
U.S. Cl. D23—225

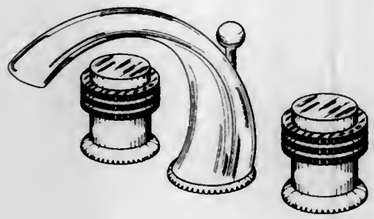


378,122
SINK DECK SIDE SPRAY
Eduardo E. Milrud, Chagrin Falls; Kevin W. Rosenbaum, Parma; Lonnie E. Cool, La Grange, and Witold Bauer, Sagamore Hills, all of Ohio, assignors to Moen Incorporated, North Olmsted, Ohio
Filed Nov. 13, 1995, Ser. No. 46,296
Term of patent 14 years
U.S. Cl. D23—226

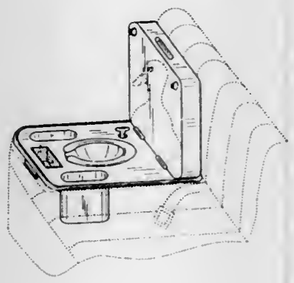


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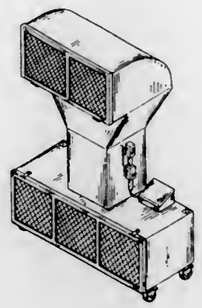
378,123
COMBINED FAUCET AND HANDLE SET
Jerome Warshawsky, Hewlett Harbor, N.Y., assignor to I. W. Industries, Inc., Melville, N.Y.
Filed Jun. 27, 1996, Ser. No. 56,357
Term of patent 14 years
U.S. Cl. D23—242



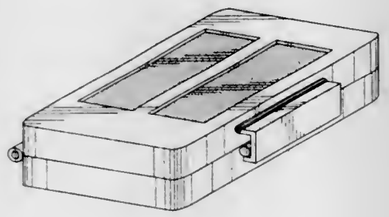
378,124
CHILD DUCK SEAT
Dan W. Jordan, 119 Robins Song Dr., Ellisville, Mo. 63021-4790
Filed Aug. 31, 1995, Ser. No. 43,318
Term of patent 14 years
U.S. Cl. D23—296



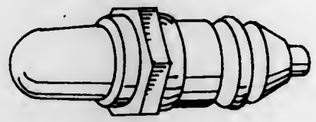
378,125
PORTABLE PAINT STATION
Mervin R. Vannier, 2145 S. 35th St., Omaha, Nebr. 68105
Filed Mar. 18, 1996, Ser. No. 51,773
Term of patent 14 years
U.S. Cl. D23—364



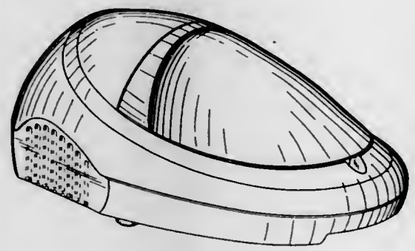
378,126
AIR FRESHENER FOR MICROWAVE OVENS
Diana Williams, 1009-B Charlotte, Austin, Tex. 78703
Filed Mar. 1, 1996, Ser. No. 51,059
Term of patent 14 years
U.S. Cl. D23—366



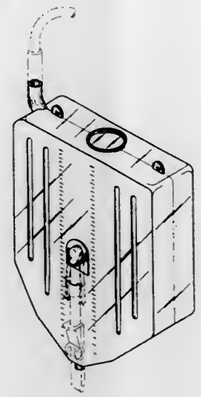
378,127
EAR PLUG
John J. Brown, 4890 Buffalo Rd., Buchanan, Mich. 49107
Filed Sep. 25, 1995, Ser. No. 44,466
Term of patent 14 years
U.S. Cl. D24—106



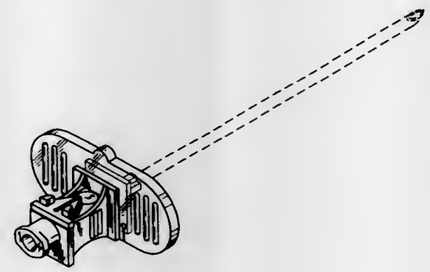
378,128
CABINET FOR NEBULIZER
Roy J. Rozek, Plymouth; Jeff H. Behnke; Todd W. Leonhard, both of Sheboygan, all of Wis., and John Ledingham, Chicago, Ill., assignors to Thomas Industries Inc., Sheboygan, Wis.
Filed Nov. 13, 1995, Ser. No. 46,283
Term of patent 14 years
U.S. Cl. D24—110



378,129
DISPOSABLE URINE COLLECTION CONTAINER
Morton Wexler, Conyers; Richard M. Kauder, Lilburn; James C. Han, Lawerenceville, and Timothy J. Kelly, Atlanta, all of Ga., assignors to C. R. Bard, Inc., Covington, Ga.
Filed Jun. 2, 1995, Ser. No. 39,716
Term of patent 14 years
U.S. Cl. D24—122

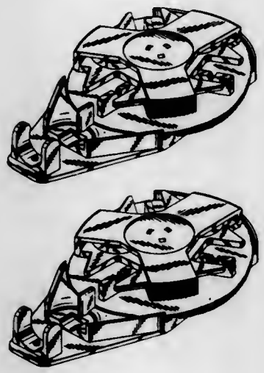


378,130
UNIVERSAL HUB FOR AN ANESTHESIA NEEDLE
Bruno J. Schmidt, New Smyrna Beach, Fla., assignor to N.I.T., Inc., Tarpon Springs, Fla.
Filed Mar. 24, 1995, Ser. No. 36,681
Term of patent 14 years
U.S. Cl. D24—129

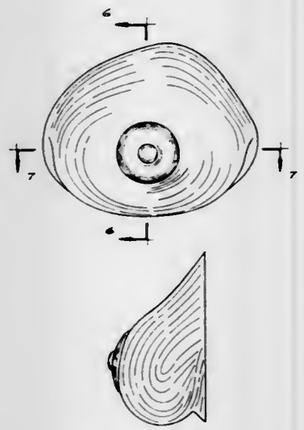


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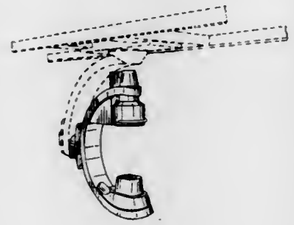
378,131
LOADING MECHANISM FOR A SURGICAL SUTURING INSTRUMENT
Corbett W. Stone, Newtown, Conn.; Stephen W. Zlock, Hawthorne, N.Y., and David Farascioni, Bethel, Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Filed Oct. 6, 1994, Ser. No. 29,478
Term of patent 14 years
U.S. Cl. D24—145



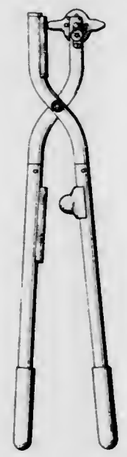
378,132
BREAST FORM
Robert 1. Strain, P.O. Box 516, Simi Valley, Calif. 93062
Filed Nov. 8, 1994, Ser. No. 30,807
Term of patent 14 years
U.S. Cl. D24—155



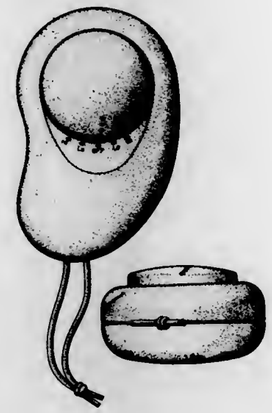
378,133
X-RAY CAMERA FOR MEDICAL TREATMENT
Makoto Murakami, Yokohama, and Tadashi Kurokawa, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Aug. 31, 1995, Ser. No. 43,294
Claims priority, application Japan, Mar. 3, 1995, 5879/95
Term of patent 14 years
U.S. Cl. D24—158



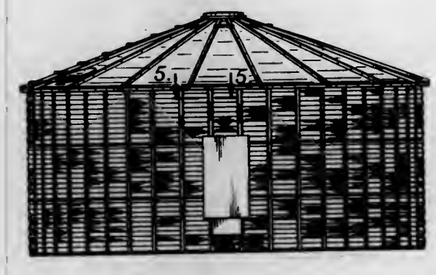
378,134
MASSAGER FOR FOOT OR LEG
Yo-Mo Kuan, 4-5-8 Kami-Osaki, Bounryo-ryo B-3, Tokyo, Japan
Filed Jan. 19, 1995, Ser. No. 33,722
Claims priority, application Japan, Jul. 22, 1994, 6-22230
Term of patent 14 years
U.S. Cl. D24—200



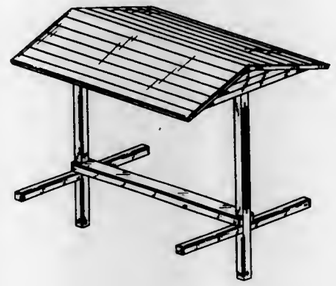
378,135
HANDHOLDABLE MASSAGING DEVICE
Michael G. Sirois; Robert D. Watters, and Rudy A. Vandenbelt, all of Ottawa, Canada, assignors to Headwaters Research & Development Inc., Ottawa, Canada
Filed Sep. 19, 1995, Ser. No. 44,795
Term of patent 14 years
U.S. Cl. D24—215



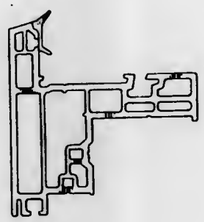
378,136
GRAIN BIN WITH SIDE WALLS HAVING INTEGRAL VERTICAL STIFFENERS AND AIR CONDUITS
George E. Miller, Jr., Raytown, Mo., assignor to Butler Manufacturing Company, Kansas City, Mo.
Filed Nov. 20, 1995, Ser. No. 46,540
Term of patent 14 years
U.S. Cl. D25—14



378,137
COMBINED SHELTER AND GAZEBO
Danny Gregoire, 1711 Connecticut Ave., St. Cloud, Fla. 34769
Filed Sep. 19, 1995, Ser. No. 44,164
Term of patent 14 years
U.S. Cl. D25—56



378,138
CASEMENT WINDOW SASH COMPONENT
Raymond Dallaire, and Dominique Dallaire, both of Levis, Canada, assignors to Dallaire Industries Ltd., Quebec, Canada
Filed Mar. 19, 1996, Ser. No. 51,905
Term of patent 14 years
U.S. Cl. D25—124

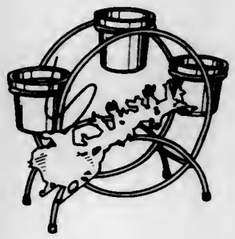


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PYLON
Marc Mimram, Paris, France, assignor to Electricite De France, Paris, France
Filed Sep. 25, 1995, Ser. No. 44,414
Claims priority, application France, Mar. 23, 1995, 951 745
Term of patent 14 years
U.S. Cl. D25—127



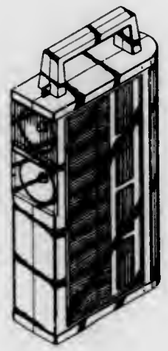
378,140
CANDLEHOLDER
Liu Chia-Chen, and Yang Chin-Yuan, both of 10th Fl, 87-1 Hoping east Rd., Sec. 1, Taipei, Taiwan
Filed Jan. 18, 1996, Ser. No. 49,149
Term of patent 14 years
U.S. Cl. D26—13



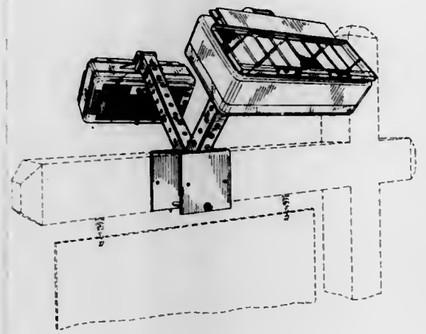
378,141
LANTERN
Se K. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Ltd., Hong Kong, Hong Kong
Filed Dec. 20, 1994, Ser. No. 32,509
Claims priority, application United Kingdom, Oct. 18, 1994, 2042650
Term of patent 14 years
U.S. Cl. D26—42



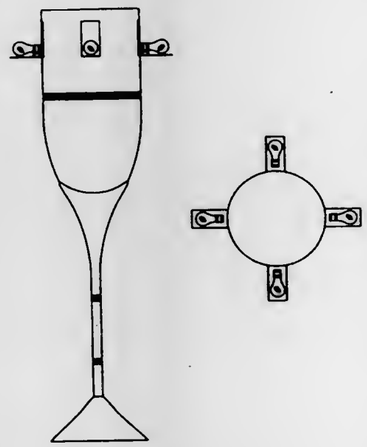
378,142
COMBINED FLASHLIGHT AND FLUORESCENT LAMP
Yuen-Ming Lam, Chai Wan, Hong Kong, assignor to Goldmaster Development Limited, Hong Kong, Hong Kong
Filed Aug. 24, 1995, Ser. No. 43,047
Term of patent 14 years
U.S. Cl. D26—42



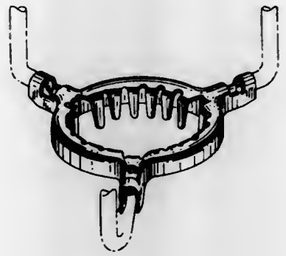
378,143
PORTABLE SOLAR POWERED YARD SIGN LIGHT
Joseph A. Kollins, 7500 Canton Center Rd., Canton, Mich. 48187
Filed Aug. 8, 1995, Ser. No. 42,343
Term of patent 14 years
U.S. Cl. D26—67



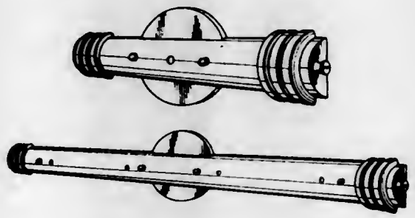
378,144
FLOOR LAMP WITH CLOSABLE LIGHTS
Anthony E. Agbonkhese, 2206 Pine Wood Ave. Apt. C3, Baltimore, Md. 21214-1040
Filed Mar. 27, 1995, Ser. No. 36,718
Term of patent 14 years
U.S. Cl. D26—110



378,145
LAMP SHADE HOLDER
Richard Cohon, Hackensack, N.J., assignor to Paterson Shade Company, Paterson, N.J.
Filed Sep. 11, 1995, Ser. No. 43,717
Term of patent 14 years
U.S. Cl. D26—141



378,146
WALL PLATE FOR A LIGHTING FIXTURE
Pasquale Miranda, Briarcliff Manor, N.Y., assignor to Murray Feiss Import Corp., Bronx, N.Y.
Filed Mar. 6, 1995, Ser. No. 35,697
Term of patent 14 years
U.S. Cl. D26—142

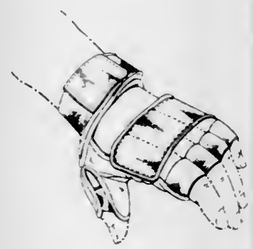


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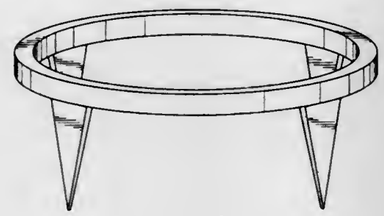
378,147
SAFETY RAZOR
Kenneth J. Hegemann, 3980 Garfield St., Carosbad, Calif. 92008
Filed Jul. 15, 1994, Ser. No. 25,891
Term of patent 14 years
U.S. Cl. D28—46



378,148
SPORTS GLOVE
Lee Haney, 105 Trail Point Cir., Fairburn, Ga. 30213
Filed Jan. 30, 1996, Ser. No. 49,727
Term of patent 14 years
U.S. Cl. D29—114



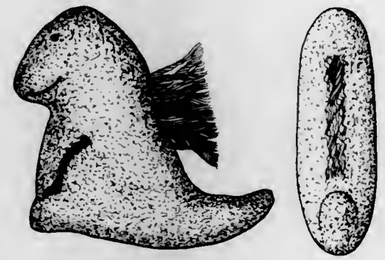
378,149
PET FOOD DISH HOLDER
Florence Mann, 179 Lantern Hill Rd., Ledyard, Conn. 06339
Filed Jul. 13, 1995, Ser. No. 41,414
Term of patent 14 years
U.S. Cl. D30—133



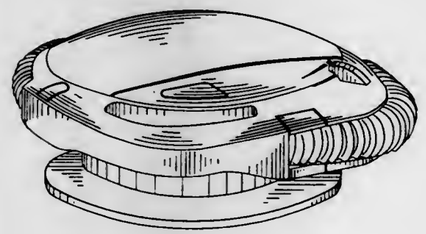
378,150
CANINE HALTER
Denise DuBarry, La Quinta, Calif., assignor to Thane Marketing International, Inc., La Quinta, Calif.
Filed Aug. 2, 1995, Ser. No. 42,231
Term of patent 14 years
U.S. Cl. D30—152



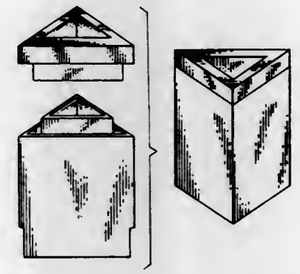
378,151
FLEECE-TYPE CHEW TOY FOR DOGS
Kenneth G. Plunk, Dallas, Tex., assignor to Pet Avenue, Inc., Dallas, Tex.
Filed Mar. 31, 1995, Ser. No. 36,973
Term of patent 14 years
U.S. Cl. D30—160



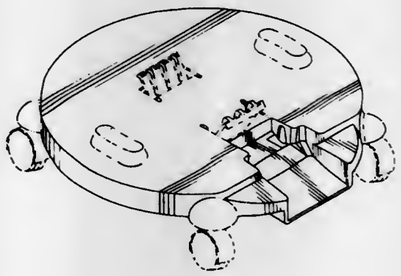
378,152
VACUUM CLEANER
Bryan P. deBlois, Guilford; Richard J. Carbone, Southbury; David W. Kaiser, North Haven, and Daniel Haberstich, Rocky Hill, all of Conn., assignors to Black & Decker Inc., Newark, Del.
Filed Oct. 30, 1995, Ser. No. 45,799
Term of patent 14 years
U.S. Cl. D32—21



378,153
TRIANGULAR LINER RETAINING TRASH RECEPTACLE
Darryle Freedland, 20110 NE. 23rd Ct., North Miami Beach, Fla. 33180
Filed Jan. 4, 1995, Ser. No. 33,062
Term of patent 14 years
U.S. Cl. D34—1

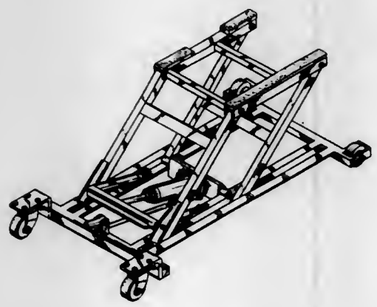


378,154
REFUSE CONTAINER DOLLY
Donald C. Presnell, Stephens City, Va., assignor to Rubbermaid Commercial Products Inc., Winchester, Va.
Filed Aug. 25, 1995, Ser. No. 43,113
Term of patent 14 years
U.S. Cl. D34—23

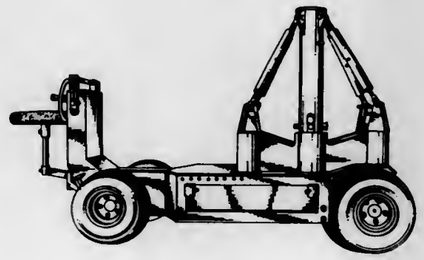


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378,155
MOTORCYCLE LIFT
Lourel E. Bartow, and Doris E. Bartow, both of 5206 Kati Lynn Dr., Apopka, Fla. 32712-6228
Filed Jul. 31, 1995, Ser. No. 42,048
Term of patent 14 years
U.S. Cl. D34—28



378,156
MOBILE CAMERA CRANE BASE
Leonard T. Chapman, North Hollywood, Calif., assignor to Leonard Studio Equipment, Inc., North Hollywood, Calif.
Filed Oct. 4, 1994, Ser. No. 29,359
Term of patent 14 years
U.S. Cl. D34—34



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PATENTS WERE ISSUED ON THE 18th DAY OF FEBRUARY, 1997

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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ABB Flexible Automation Inc.: *See—*
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ABB Management AG: *See—*
Schulte-Werning, Burkhard, 5,603,212, Cl. 60-39.170.

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Hanley, Kathleen A.; Hofferbert, A. David; Lee, Helen H.; Pepe, Curtis J.; and Zurek, Thomas F., 5,604,101, Cl. 435-6.000.
Or, Yat S.; and Luly, Jay R., 5,604,234, Cl. 514-291.000.
Wang, Nai-Yi; and Hu, Roger C., 5,603,868, Cl. 252-700.000.

Abdel-Baky, Samy: *See—*
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Abelleira, Angel: *See—*
Berke, Neal S.; Dallaire, Michael P.; and Abelleira, Angel, 5,603,760, Cl. 106-802.000.

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Ablashi, Dharam V.: *See—*
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Abraham, Judith A.: *See—*
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Abrams, Mark A.: *See—*
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Henriksson, Bengt-Åke, 5,603,465, Cl. 242-246.000.

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Achiwa, Noriyuki: *See—*
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Adachi, Fumiyuki: *See—*
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Adachi, Hiroshi: *See—*
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Adachi, Kaoru: *See—*
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Pozzo, Jean L.; Guglielmetti, Robert; Samat, André; Lokshin, Vladimir; and Harie, Guenaëlle, 5,604,280, Cl. 524-110.000.

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Blizzard, John D.; Cray, Steven E.; Gilles, Jenny L.; Graiver, Daniel; Lomas, Arnold W.; and McVie, James, 5,603,888, Cl. 264-477.000.

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Candau, Didier; and Simon, Pascal, 5,603,940, Cl. 424-401.000.
Gueret, Jean-Louis, 5,603,340, Cl. 132-293.000.
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Kobayashi, Shoichi; Tsuzuki, Wakako; Sakurai, Koji; and Itoh, Yoshio, 5,603,977, Cl. 426-578.000.

Louez, Nigel R. Three piece ball template. 5,603,497, Cl. 473-609.000.

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Barber, Ivor, 5,604,161, Cl. 437-216.000.
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Lu, Fang: *See—*
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Howard, James R.; Lucas, Gregory L.; Bryan, Scott K.; Choe, Jin S.; and Biunno, Nicholas, 5,603,847, Cl. 216-17.000.

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Jachmann, Detlef; and Waldorf, Gregor, 5,604,317, Cl. 73-862.191.

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Grimes, Gary J., 5,604,790, Cl. 379-67.000.
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Wang, Jin-Der, 5,604,769, Cl. 375-229.000.
Yaffe, Henry H., 5,604,828, Cl. 385-14.000.

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Moore, Ronald L.; Rittmaster, Thomas P.; and Lupfer, Thomas H., 5,604,509, Cl. 345-2.000.

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Meybeck, Alain; Dumas, Marc; Bonte, Frédéric; and Marechal, Christian, 5,603,949, Cl. 424-450.000.

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Jones, Philip A., 5,603,265, Cl. 105-167.000.

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Dole, Douglas R.; and Madara, Scott D., 5,603,484, Cl. 251-148.000.

Maddock, William: *See*—
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Maeda, Fumikata: *See*—
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Maeda, Ichiroh: *See*—
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Magarill, Simon, to Corning Incorporated. Optical system for projection display. 5,604,624, Cl. 359-224.000.

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Scaringe, Robert P.; Gui, Fulin; and Gann, Steven D., 5,603,224, Cl. 62-125.000.

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Makishima, Hideo, to NEC Corporation. Field-emission cold cathode for dual-mode operation useable in a microwave tube. 5,604,401, Cl. 315-3.000.

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Balbo, Patrick; Grelat, Philippe; Malassenet, Guy; and Mandereau, Fabienne, 5,604,325, Cl. 89-24.000.

Malico Inc.: *See*—
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Malinski, Tadeusz; Wink, David A.; Younathan, Janet; Murray, Royce W.; Sullivan, Melani; Meyer, Thomas J.; and Christodoulou, Danae D., to United States of America, Health and Human Services; and University of North Carolina at Chapel Hill, The. Nitric oxide sensor. 5,603,820, Cl. 205-781.000.

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Brent, Randall J.; and Blaha, David A., 5,603,818, Cl. 204-488.000.

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Mandelman, Jack A.; and Potter, Michael D., to International Business Machines Corporation. Optimal gate control design and fabrication method for lateral field emission devices. 5,604,399, Cl. 313-512.000.

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Balbo, Patrick; Grelat, Philippe; Malassenet, Guy; and Mandereau, Fabienne, 5,604,325, Cl. 89-24.000.

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Mannlein, Dean J., to Lever Brothers Company, Division of Conopco, Inc. Adjustable bucket. 5,603,399, Cl. 198-803.110.

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Deutsch, Peter K., 5,603,477, Cl. 248-311.200.

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Fasshauer, Peter, 5,604,318, Cl. 73-862.624.

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McLaughlin, Denise C.; and Marino, Frank, Jr., 5,604,860, Cl. 395-326.000.

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Marks, Larry D.; and Spiegel, Raymond W., to Whirlpool Corporation. Appliance front panel retainer. 5,603,557, Cl. 312-265.600.

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Marsh, David A.: *See*—
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Patrician, Thomas J.; and Martin, Harry D., III, 5,604,321, Cl. 75-248.000.

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Matsuura, Katsumi; Marukawa, Yuji; and Etoh, Yoshihiko, 5,604,574, Cl. 399-350.000.

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Yamazaki, Shunpei; Takemura, Yasuhiko; Mase, Akira; and Uochi, Hideki, 5,604,137, Cl. 437-40.000.

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Maskasky, Joe E., to Eastman Kodak Company. High bromide ultrathin emulsions improved by peptizer selection. 5,604,085, Cl. 430-567.000.

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Zhang, Hongyong; Takayama, Toru; Takemura, Yasuhiko; and Miyanaga, Akiharu, to Semiconductor Energy Laboratory Co., Ltd. Semiconductor device including a plurality of thin film transistors at least some of which have a crystalline silicon film crystal-grown substantially in parallel to the surface of a substrate for the transistor. 5,604,360, Cl. 257-72.000.
Zhao, Jun: *See—*
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Zhong, Weimin: *See—*
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Zhong, Yuanzhen; and Wolf, Philip F., to ISP Investments Inc. Color stabilized aqueous n-vinyl heterocyclic copolymer solutions. 5,604,275, Cl. 524-96.000.
Ziegler, Frederick J.: *See—*
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Zikeli, Stefan, to Lenzing Aktiengesellschaft. Process of and apparatus for making celluose products. 5,603,883, Cl. 264-187.000.
Zilker, Daniel P., Jr.: *See—*
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Zimin, Alejandro, Sr.; and Caputo, Peter A., to Morton International, Inc. Water-reducible dye compositions comprising solvent dyes and citrus solvents. 5,603,735, Cl. 8-617.000.
Zimmer, Linda L. Treasure box. 5,603,558, Cl. 312-290.000.
Zimmerman, Steven M., to International Business Machines, Corporation. Structure and method of making field emission displays. 5,603,649, Cl. 445-24.000.
Zimmermann, Anton, to Antogi AG. Housing for twin worm-gear press with internal insert to reduce wear of housing. 5,603,564, Cl. 366-77.000.
Zipf, Mary J.; and Jachimowicz, Karen E., to Motorola. Business card scanner and method of use. 5,604,640, Cl. 359-803.000.
Zmyslowski, Mark, to Radar Industries, Inc. Methodology for forming stamped sheet metal parts of complex configuration. 5,603,153, Cl. 29-509.000.
Zolotovsky, Boris P.: *See—*
Bouyanov, Roman A.; Tsyboulesky, Albert M.; Zolotovsky, Boris P.; Klevtsov, Dimitri P.; and Mourine, Vladimir L., 5,604,173, Cl. 502-354.000.
Zoltner, Susan J.: *See—*
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Zomeworks Corporation: *See—*
Baer, Stephen C.; and Harrison, David C., 5,603,656, Cl. 454-339.000.
Zucker, Menachem S.; and Iddan, Gabriel J., to State of Israel, Ministry of Defence, The. Infra-red vascular angiography system. 5,603,328, Cl. 128-664.000.
Zuckerman, Andrew M., to Different Dimensions Inc. Garment hanger, size indicator and combination thereof. 5,603,437, Cl. 223-85.000.
Zurek, Thomas F.: *See—*
Hanley, Kathleen A.; Hofferbert, A. David; Lee, Helen H.; Pepe, Curtis J.; and Zurek, Thomas F., 5,604,101, Cl. 435-6.000.
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Zycon Corporation: *See—*
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Zyung, Tae-Hyoung; Kim, Jang-Joo; and Hwang, Wol-Yon, to Electronics and Telecommunications Research Institute. Electroluminescence light-emitting device with multi-layer light-emitting structure. 5,604,398, Cl. 313-506.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 18th DAY OF FEBRUARY, 1997

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Abdel-Malek, Aiman A.: *See—*
Yassa, Fathy F.; Abdel-Malek, Aiman A.; Bloomer, John J.; and Srinivas, Chukka, Re. 35,456, Cl. 378-98.200.
Aberlyn Capital Management Limited Partnership: *See—*
Rhodes, Buck A., Re. 35,457, Cl. 424-1.490.
Azuara, Lena R., to Universidad Nacional Autonoma De Mexica (UNAM). Process to obtain new mixed copper aminoacidate complexes from phenylate phenathrolines to be used as anticancerigenic agents. Re. 35,458, Cl. 556-116.000.
Bloomer, John J.: *See—*
Yassa, Fathy F.; Abdel-Malek, Aiman A.; Bloomer, John J.; and Srinivas, Chukka, Re. 35,456, Cl. 378-98.200.
Cobb, Delwin E. Apparatus and method for separating solid particles from liquids. Re. 35,454, Cl. 166-265.000.
General Electric Company: *See—*
Yassa, Fathy F.; Abdel-Malek, Aiman A.; Bloomer, John J.; and Srinivas, Chukka, Re. 35,456, Cl. 378-98.200.
Jonkman, Kenneth R., to Medtronic, Inc. Aortic root cannula. Re. 35,459, Cl. 604-164.000.
Kabushiki Kaisha TEC: *See—*
Sakurai, Haruo; Yamamoto, Kazuo; Kono, Mitunori; and Tanaka, Hideo, Re. 35,455, Cl. 186-61.000.
Kono, Mitunori: *See—*
Sakurai, Haruo; Yamamoto, Kazuo; Kono, Mitunori; and Tanaka, Hideo, Re. 35,455, Cl. 186-61.000.
Medtronic, Inc.: *See—*
Jonkman, Kenneth R., Re. 35,459, Cl. 604-164.000.
Rhodes, Buck A., to Aberlyn Capital Management Limited Partnership. Radiolabeling antibodies and other proteins with technetium or rhenium by regulated reduction. Re. 35,457, Cl. 424-1.490.
Rodgers, Paul, to Slumberland PLC. Spring unit assembly. Re. 35,453, Cl. 53-114.000.
Sakurai, Haruo; Yamamoto, Kazuo; Kono, Mitunori; and Tanaka, Hideo, to Kabushiki Kaisha TEC. Checkout apparatus. Re. 35,455, Cl. 186-61.000.
Sargeant, Lawrence B., to Wolverine World Wide, Inc. Single point triangular adjustment system for sandals. Re. 35,452, Cl. 36-11.500.
Slumberland PLC: *See—*
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Srinivas, Chukka: *See—*
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Tanaka, Hideo: *See—*
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Sargeant, Lawrence B., Re. 35,452, Cl. 36-11.500.
Yamamoto, Kazuo: *See—*
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Yassa, Fathy F.; Abdel-Malek, Aiman A.; Bloomer, John J.; and Srinivas, Chukka, to General Electric Company. Fluoroscopic method with reduced x-ray dosage. Re. 35,456, Cl. 378-98.200.

LIST OF REEXAMINATION PATENTEES

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Air-Shields, Inc.: *See—*
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Electrostatic Technology, Inc.: *See—*
Hajek, Bedrich; and Gillette, Donald J., B1 5,052,332, Cl. 118-72.000.
Gillette, Donald J.: *See—*
Hajek, Bedrich; and Gillette, Donald J., B1 5,052,332, Cl. 118-72.000.
Grosholz, James R., to Air-Shields, Inc. Incubator having warm air curtain across access opening. B1 4,361,137, Cl. 600-22.000.
Hajek, Bedrich; and Gillette, Donald J., to Electrostatic Technology, Inc. Apparatus and system for steam cleaning and coating of laminated articles. B1 5,052,332, Cl. 118-72.000.

LIST OF DESIGN PATENTEES

Agbonkhese, Anthony E. Floor lamp with closable lights. 378,144, Cl. D26-110.000.
Aleamoni, Aran S. Golf ball marker. 378,117, Cl. D21-234.000.
Ammon, James G.: *See—*
Antonczak, Michael J.; Yurkonis, Philip G.; Dann, Michael S.; Montgomery, Paul S.; Pfeifer, Herbert H. F.; and Ammon, James G., 378,081, Cl. D13-184.000.
Ando, Takaharu, to Kabushiki Kaisha Toshiba. Electronic computer. 378,083, Cl. D14-100.000.
Ando, Takaharu, to Kabushiki Kaisha Toshiba. Portable radio telephone. 378,088, Cl. D14-138.000.
Antonczak, Michael J.; Yurkonis, Philip G.; Dann, Michael S.; Montgomery, Paul S.; Pfeifer, Herbert H. F.; and Ammon, James G., to Sun Microsystems, Inc. Configurable multi-product electronics enclosure. 378,081, Cl. D13-184.000.
Armbruster, Joseph M.; and Armbruster, Sue B. Canister for shaving items. 378,016, Cl. D3-205.000.
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Baker, Arthur D.; Baumann, Thomas G.; and Kimmell, Steven D., to Rollerball International Inc. Skate. 378,115, Cl. D21-226.000.
Balazs, Andrea. Combined nail-art liquid brush and cap. 378,026, Cl. D4-121.000.
Bartow, Doris E.: *See—*
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442 5,603,145

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509 5,603,153
596 5,603,154
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623.4 5,603,157
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890.039 5,603,159
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443 5,603,199
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61.75 5,604,301
64.41 5,604,302
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118.1 5,604,305
118.2 5,604,306
146.2 5,604,307
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504.14 5,604,311
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67 R 5,603,278
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322 5,603,300
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509 5,603,304
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662 5,603,837
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727 5,603,841
743 5,603,842
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CLASS 211

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113 5,603,418
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153.14 5,603,434
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341.1 5,604,348
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458.1 5,604,351
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348.4 5,603,504
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250.1 5,603,520
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758 5,604,446
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99 5,604,452
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217 5,604,456
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124 R 5,604,462
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CLASS 355

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265 5,604,626
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409 5,604,630
412 5,604,631
443 5,604,632
507 5,604,633
559 5,604,634
620 5,604,635
637 5,604,636
689 5,604,637
704 5,604,638
717 5,604,639
803 5,604,640
824 5,604,641
848 5,604,642
857 5,604,643
871 5,604,644
877 5,604,645

CLASS 360

53 5,604,646
69 5,604,647
73.11 5,604,648
73.14 5,604,652
104 5,604,649
107 5,604,650
113 5,604,651

CLASS 361

20 5,604,653
23 5,604,654
56 5,604,655
187 5,604,656
189 5,604,657
277 5,604,658
303 5,604,659
525 5,604,660
643 5,604,661
685 5,604,662
686 5,604,663
703 5,604,665
735 5,604,666
760 5,604,667
816 5,604,668

CLASS 362

80 5,603,561
96 5,603,562
309 5,603,563

CLASS 363

17 5,604,669
56 5,604,670
60 5,604,671
97 5,604,672
147 5,604,673
5,604,674

CLASS 364

13 5,604,719
146 5,604,675
464.27 5,604,676
474.28 5,604,677
476.01 5,604,678
480 5,604,679
491 5,604,680
509 5,604,681
514 A 5,604,682
516 5,604,683
571.04 5,604,684
573 5,604,685
578 5,604,686
5,604,687
710.01 5,604,688
715.01 5,604,689
718 5,604,690
722 5,604,691
788 5,604,692

CLASS 365

96 5,604,693
5,604,694
149 5,604,696
182 5,604,697
185.01 5,604,698
185.09 5,604,699
185.1 5,604,700
189.02 5,604,701
200 5,604,702
5,604,703
203 5,604,704
205 5,604,705
217 5,604,706
226 5,604,707
229 5,604,708
5,604,709
230.03 5,604,710
230.06 5,604,711
5,604,712
5,604,713
230.08 5,604,714

CLASS 366

77 5,603,564
85 5,603,565
107 5,603,566
139 5,603,567
196 5,603,568
347 5,603,569

CLASS 367

118 5,604,715

CLASS 368

67 5,604,716
223 5,604,717
255 5,604,718

CLASS 369

32 5,604,720
34 5,604,721
44.28 5,604,722
48 5,604,723
124 5,604,724
275.3 5,604,725
5,604,727
275.4 5,604,726

CLASS 370

224 5,604,729
232 5,604,731
241 5,604,728
252 5,604,730
264 5,604,738
297 5,604,747
337 5,604,733
342 5,604,732
347 5,604,744
5,604,745
5,604,737
360 5,604,735
388 5,604,734
392 5,604,743
396 5,604,742
402 5,604,741
440 5,604,749
449 5,604,748
463 5,604,740
468 5,604,739
481 5,604,746

CLASS 371

22.1 5,604,750
5,604,751
37.1 5,604,752
40.1 5,604,753
47.1 5,604,754
48 5,604,755
67.1 5,604,756

CLASS 372

29 5,604,757
34 5,604,758
38 5,604,759
5,604,760
43 5,604,761
5,604,762
45 5,604,763
46 5,604,764

CLASS 374

100 5,603,570
140 5,603,571
185 5,603,572

CLASS 375

200 5,604,765
5,604,766
206 5,604,767
220 5,604,768
229 5,604,769
296 5,604,770
326 5,604,771
341 5,604,772
372 5,604,773
376 5,604,774
5,604,775

CLASS 376

150 5,604,776
310 5,604,777

CLASS 378

9 5,604,778
34 5,604,779
62 5,604,780
5,604,781
5,604,782
85 Re.35,456
98.2 5,604,783
146 5,604,784
203

CLASS 379

2 5,604,785
52 5,604,786
58 5,604,787
5,604,788
59 5,604,789
67 5,604,790
5,604,791
5,604,792
88 5,604,793
94 5,604,794
100 5,604,795
215 5,604,796
373 5,604,797
387 5,604,798
410 5,604,799

CLASS 380

4 5,604,800
21 5,604,801
24 5,604,802
25 5,604,803
5,604,804
30 5,604,805
44 5,604,806
48 5,604,807

CLASS 381

7 5,604,808
17 5,604,809
63 5,604,810
67 5,604,811
68.2 5,604,812
71 5,604,813
169 5,604,814
192 5,604,815
199 5,604,816

CLASS 382

120 5,604,817
128 5,604,818
151 5,604,819
190 5,604,820
199 5,604,822
5,604,823
236 5,604,821
248 5,604,824
261 5,604,825
312 5,604,826

CLASS 383

117 5,603,573

CLASS 384

117 5,603,574
446 5,603,575
491 5,603,576

CLASS 385

1 5,604,827
14 5,604,828
37 5,604,829
59 5,604,830
88 5,604,831
89 5,604,832
104 5,604,833
114 5,604,834
115 5,604,846
129 5,604,835
138 5,604,836
147 5,604,837

CLASS 386

33 5,604,602
100 5,604,603
122 5,604,838
125 5,604,604

CLASS 395

2.43 5,604,839
11 5,604,840
12 5,604,841
61 5,604,842
101 5,604,843
111 5,604,844
113 5,604,845
116 5,604,847
119 5,604,848
123 5,604,849
135 5,604,850
140 5,604,851
143 5,604,852
161 5,604,859
173 5,604,855
5,604,856
5,604,857
182.04 5,604,862
182.09 5,604,863
184.01 5,604,864
200.08 5,604,865
200.13 5,604,866
5,604,867
200.15 5,604,868
200.2 5,604,869
280 5,604,870
281 5,604,871
282 5,604,872
283 5,604,873
298 5,604,874
311 5,604,875
326 5,604,860
5,604,861
342 5,604,858
384 5,604,909
386 5,604,876
393 5,604,878
417 5,604,879
430 5,604,880
431 5,604,881
448 5,604,882
481 5,604,883
494 5,604,884
500 5,604,885
5,604,886
5,604,887
5,604,888
5,604,889
5,604,890
5,604,891
5,604,892
5,604,893
5,604,894
5,604,895
5,604,896
590 5,604,877
603 5,604,899
5,604,901
604 5,604,898
621 5,604,900
622 5,604,902
682 5,604,904
683 5,604,907
705 5,604,908
706 5,604,905
712 5,604,906
764 5,604,854
795 5,604,897
800 5,604,910
5,604,911
5,604,912
5,604,913
5,604,914
5,604,915
803 5,604,853
822 5,604,916
869 5,604,917
892 5,604,918

CLASS 396

58 5,604,551
79 5,604,562
96 5,604,561
133 5,604,560
149 5,604,563
285 5,604,556
296 5,604,554
429 5,604,550
436 5,604,552
440 5,604,555
538 5,604,557
5,604,558
578 5,604,559

CLASS 399

39 5,604,567
55 5,604,573
116 5,604,570
119 5,604,572
162 5,604,571
178 5,604,578
215 5,604,568
232 5,604,569
255 5,604,576
350 5,604,574
359 5,604,575
364 5,604,577

CLASS 400

124.1 5,603,577
279 5,603,578
616.3 5,603,579

CLASS 403

232.1 5,603,580
272 5,603,581
298 5,603,582
320 5,603,583
371 5,603,584
382 5,603,585
401 5,603,586

CLASS 405

36 5,603,587
172 5,603,588
302.2 5,603,589

CLASS 408

31 5,603,590

CLASS 410

97 5,603,591

CLASS 411

34 5,603,592
55 5,603,593
84 5,603,594
366 5,603,595
508 5,603,596

CLASS 414

24.5 5,603,597
140.3 5,603,598
411 5,603,599
462 5,603,600

CLASS 415

55.1 5,603,601
105 5,603,602
173.4 5,603,603
208.1 5,603,604
211.2 5,603,605

CLASS 416

97 R 5,603,606
228 5,603,607

CLASS 417

13 5,603,608
63 5,603,609
222.2 5,603,610
269 5,603,611
417 5,603,612
474 5,603,613

CLASS 418

55.2 5,603,614

CLASS 419

30 5,604,919

CLASS 420

443 5,603,891

CLASS 422

3 5,603,892
22 5,603,893
23 5,603,894
5,603,895
28 5,603,896
30 5,603,897
57 5,603,898
100 5,603,899
101 5,603,900
103 5,603,902
104 5,603,903
143 5,603,904
173 5,603,905
182 5,603,906

CLASS 423

210 5,603,907
220 5,603,908
239.1 5,603,909
244.07 5,603,910
266 5,603,911
467 5,603,912
576.8 5,603,913
702 5,603,914

CLASS 424

1.11 5,603,915
1.49 Re.35,457
9.3 5,603,917
9.45 5,603,916
46 5,603,918
47 5,603,919
49 5,603,920
5,603,921
5,603,922
60 5,603,923
61 5,603,924
65 5,603,925
70.15 5,603,926
76.1 5,603,927
76.2 5,603,928
78.04 5,603,929
93.45 5,603,930
136.1 5,603,931
184.1 5,603,932
185.1 5,603,933
5,603,934
195.1 5,603,935
5,603,936
5,603,937
256.1 5,603,938
401 5,603,939
5,603,940
405 5,603,941
5,603,942
434 5,603,943
442 5,603,945
445 5,603,946
448 5,603,947
5,603,948
450 5,603,949
451 5,603,950
455 5,603,951
456 5,603,952
473 5,603,953
5,603,954
484 5,603,955
488 5,603,956
489 5,603,957
5,603,958
490 5,603,959
501 5,603,960
502 5,603,961
613 5,603,962
649 5,603,963

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CLASS 425

110 5,603,964
130 5,603,965
168 5,603,966
556 5,603,967
5,603,968
593 5,603,969

CLASS 426

5 5,603,970
96 5,603,971
240 5,603,972
243 5,603,973
415 5,603,974
506 5,603,975
574 5,603,976
578 5,603,977
611 5,603,978
633 5,603,979
641 5,603,980

CLASS 427

96 5,603,981
121 5,603,982
126.3 5,603,983
133 5,603,984
207.1 5,603,985
213.34 5,603,986
221 5,603,987
248.1 5,603,988
356 5,603,989
393.3 5,603,990
508 5,603,991
534 5,603,992

CLASS 428

7 5,603,993
11 5,603,994
34.1 5,603,995
34.2 5,603,996
5,603,997
36.6 5,603,998
36.92 5,603,999
40.1 5,604,000
41.8 5,604,001
64.1 5,604,003
64.3 5,604,005
67 5,604,006
92 5,604,007
95 5,604,009
118 5,604,010
122 5,604,011
136 5,604,012
141 5,604,013
5,604,014
144 5,604,015
192 5,604,016
209 5,604,017
210 5,604,018
212 5,604,019
213 5,604,020
218 5,604,021
317.1 5,604,026
323 5,604,027
5,604,028
327 5,604,029
332 5,604,030
335 5,604,031
336 5,604,032
350 5,604,033
355 5,604,034
355 AC 5,604,035
376 5,604,036
408 5,604,037
429 5,604,038
447 5,604,039
472.3 5,604,040
473.5 5,604,041
507 5,604,042
518 5,604,043
577 5,604,044
641 5,604,002
5,604,004
692 5,604,045
694 ML 5,604,046

CLASS 429

19 5,604,047
44 5,604,048
93 5,604,049
97 5,604,050
99 5,604,051
100 5,604,052
103 5,604,053
166 5,604,054
176 5,604,055
218 5,604,056
224 5,604,057
225 5,604,058

CLASS 430

5 5,604,059
5,604,060
14 5,604,073
58 5,604,061
5,604,062
59 5,604,063
5,604,064
83 5,604,065
106 5,604,066
106.6 5,604,067
109 5,604,068
110 5,604,069
5,604,070
5,604,071
5,604,072
120 5,604,074
137 5,604,075
5,604,076
192 5,604,077
201 5,604,078
218 5,604,079
280.1 5,604,080
322 5,604,081
481 5,604,082
528 5,604,083
567 5,604,084
5,604,085
5,604,086
569 5,604,087
584 5,604,088
5,604,089

CLASS 432

128 5,603,615

CLASS 433

175 5,603,616

CLASS 434

252 5,603,617

CLASS 435

5 5,604,090
5,604,091
5,604,092
5,604,093
6 5,604,094
5,604,095
5,604,096
5,604,097
5,604,098
5,604,099
5,604,100
5,604,101
7.1 5,604,102
5,604,103
5,604,104
7.23 5,604,106
5,604,107
7.32 5,604,108
7.34 5,604,109
7.4 5,604,105
7.92 5,604,110
15 5,604,111
29 5,604,112
5,604,113
69.1 5,604,114
5,604,115
69.52 5,604,116
70.21 5,604,117
91.1 5,604,118
134 5,604,119
135 5,604,120
172.3 5,604,121
5,604,122
189 5,604,123
252.4 5,604,127
254.1 5,604,128
254.11 5,604,129
286.7 5,604,130
320.1 5,604,131
332 5,604,126
422 5,604,125

CLASS 436

52 5,604,132

CLASS 437

4 5,604,133
8 5,604,134
22 5,604,135
23 5,604,136
40 5,604,137
41 5,604,138
5,604,139
5,604,140
43 5,604,141
5,604,142
48 5,604,143
51 5,604,144
52 5,604,145
5,604,146
60 5,604,147
5,604,148
67 5,604,149
70 5,604,150
100 5,604,151
101 5,604,152
173 5,604,153
186 5,604,154
190 5,604,155
195 5,604,156
200 5,604,157
5,604,158
203 5,604,159
209 5,604,160
216 5,604,161
225 5,604,162

CLASS 439

64 5,603,618
69 5,603,619
95 5,603,620
120 5,603,621
121 5,603,622
144 5,603,623
157 5,603,624
5,603,625
224 5,603,626
235 5,603,627
327 5,603,628
331 5,603,629
347 5,603,630
352 5,603,631
357 5,603,632
404 5,603,633
5,603,634
5,603,635
581 5,603,636
585 5,603,637
587 5,603,638
606 5,603,639
607 5,603,640
620 5,603,641
680 5,603,642
752 5,603,643
822

CLASS 440

86 5,603,644

CLASS 441

65 5,603,645
94 5,603,646
106 5,603,647
5,603,648

CLASS 442

6 5,604,024
338 5,604,022
394 5,604,025

CLASS 445

24 5,603,649
33 5,603,650

CLASS 446

16 5,603,651
130 5,603,652

CLASS 450

56 5,603,653

CLASS 451

36 5,603,654
450 5,603,655

CLASS 454

339 5,603,656
359 5,603,657

CLASS 455

13.1 5,604,920
45 5,604,921
67.7 5,604,923
68 5,604,924
254 5,604,925
260 5,604,926
266 5,604,927
310 5,604,928
324 5,604,929

CLASS 463

1 5,603,658
25 5,603,659
29 5,603,507

CLASS 464

68 5,603,660

CLASS 470

3 5,603,661

CLASS 472

25 5,603,662

CLASS 473

5,603,664
134 5,603,665
230 5,603,666
307 5,603,667
324 5,603,668
328 5,603,669
405 5,603,495
447 5,603,496
487 5,603,498
563 5,603,506
585 5,603,497
609

CLASS 474

43 5,603,670

CLASS 475

5 5,603,671

CLASS 477

110 5,603,672
5,603,673
170 5,603,674

CLASS 482

52 5,603,675
56 5,603,676
69 5,603,677
97 5,603,678
106 5,603,679
107 5,603,680
129 5,603,681
142 5,603,682

CLASS 493

412 5,603,683

CLASS 501

12 5,604,163
96 5,604,164
5,604,165
137 5,604,166
138 5,604,167
141 5,604,168

CLASS 502

60 5,604,169
115 5,604,170
120 5,604,171
5,604,172
354 5,604,173
439 5,604,174

CLASS 503

201 5,604,175
207 5,604,176

CLASS 504

147 5,604,177
213 5,604,178
5,604,179
227 5,604,180
242 5,604,181
291 5,604,182
344 5,604,183

CLASS 507

117 5,604,184
119 5,604,185
204 5,604,186

CLASS 508

168 5,604,187
371 5,604,188

CLASS 510

112 5,604,189
114 5,604,190
175 5,604,191
180 5,604,192
212 5,604,193
325 5,604,194
400 5,604,195
407 5,604,196
516 5,604,197

CLASS 514

6 5,604,198
5,604,199
8 5,604,200
12 5,604,201
5,604,202
5,604,203
5,604,204
5,604,205
21 5,604,206
23 5,604,207
25 5,604,208
40 5,604,209
45 5,604,210
46 5,604,211
53 5,604,212
159 5,604,213
176 5,604,214
177 5,604,215
178 5,604,216
182 5,604,217
202 5,604,218
205 5,604,219
211 5,604,220
5,604,221
214 5,604,223
220 5,604,225
230.8 5,604,226
247 5,604,227
248 5,604,228
255 5,604,229
5,604,230
256 5,604,231
283 5,604,233
291 5,604,234
292 5,604,235
5,604,236
297 5,604,237
299 5,604,238
300 5,604,239
5,604,240
305 5,604,241
316 5,604,242
317 5,604,244
318 5,604,245
5,604,246
320 5,604,247
324 5,604,248
365 5,604,249
367 5,604,250
396 5,604,251
413 5,604,252
415 5,604,253
419 5,604,254
422 5,604,255
452 5,604,256
460 5,604,257
560 5,604,258
570 5,604,259
605 5,604,260
630 5,604,261
675 5,604,262
690 5,604,263
726.8 5,604,224

CLASS 521

38 5,604,264
99 5,604,265
122 5,604,266
133 5,604,267

CLASS 523

164 5,604,268
404 5,604,269
421 5,604,270
454 5,604,271

CLASS 524

3 5,604,272
4 5,604,273
69 5,604,274
96 5,604,275
100 5,604,276
110 5,604,280
204 5,604,281
232 5,604,282
236 5,604,283
270 5,604,277
399 5,604,278
427 5,604,279
434 5,604,284
439 5,604,285
493 5,604,286
5,604,287
5,604,288
496 5,604,289
529 5,604,290

CLASS 526

240 5,604,291
281 5,604,292

CLASS 530

399 5,604,293

CLASS 540

218 5,604,222
456 5,604,294

CLASS 556

116 Re.35,458

CLASS 588

252 5,603,684

CLASS 600

22 B1 4,361,137
29 5,603,685
166 5,603,687
190 5,603,688
201 5,603,689

CLASS 601

148 5,603,690

CLASS 602

8 5,603,691
28 5,603,692

CLASS 604

20 5,603,693
49 5,603,694
89 5,603,695
93 5,603,696
95 5,603,697
104 5,603,698
110 5,603,699
122 5,603,700
164 Re.35,459
211 5,603,701
256 5,603,702
268 5,603,703
281 5,603,704
282 5,603,705
283 5,603,706
383 5,603,707
389 5,603,708

CLASS 606

5 5,603,709
15 5,603,710
51 5,603,711
5,603,712
61 5,603,713
5,603,714
63 5,603,715
88 5,603,716
102 5,603,717
145 5,603,718
185 5,603,719
191 5,603,720
195 5,603,721
198 5,603,722
205 5,603,723
207 5,603,724

CLASS 607

11 5,603,725
57 5,603,726
108 5,603,727
110 5,603,728
114 5,603,729
116 5,603,730
121 5,603,731
129 5,603,732

CLASSIFICATION OF DESIGNS

D2— 609 378,007
839 378,008
917 378,009
936 378,010
947 378,011
962 378,013
964 378,012
969 378,014
980 378,015
D3— 205 378,016
214 378,017
215 378,018
218 378,019
378,020
226 378,021
229 378,022
266 378,023
315 378,024
323 378,025
D4— 121 378,026
D5— 8 378,027
D6— 334 378,028
396 378,029
445 378,030
378,031
378,032
448 378,033
515 378,034
545 378,035
589 378,036
630 378,037
D7— 551 378,038
602 378,039
620 378,040
670 378,041
D8— 52 378,042
57 378,043
88 378,044
307 378,045
354 378,046
378,047
378,048
378,049
367 378,050
373 378,051
387 378,052
395 378,053
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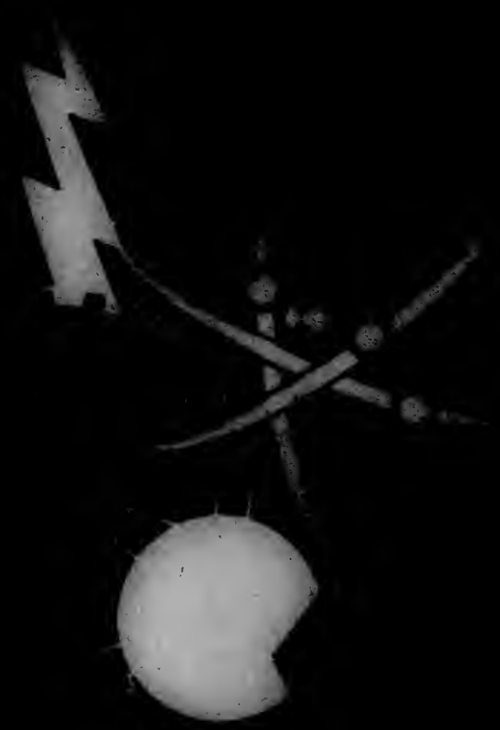
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General and Mechanical (5,604,930)			2237
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Electrical (5,606,109)			2617
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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1194 O.G. 618, on January 21, 1997.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on September 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective July 1, 1996, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1187 O.G. 73, on June 25, 1996.

International fees were changed, effective on February 1, 1997, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1194 O.G. 617, on January 21, 1997.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective October 1, 1996, and were announced in the *Official Gazette* at 1189 O.G. 62, on August 20, 1996.

The schedule of PCT fees (in U.S. dollars), effective February 1, 1997, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	230.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
— No corresponding prior U.S. national application filed	680.00
— Corresponding prior U.S. national application filed	440.00
— Supplemental search fee, per additional invention (payable only upon invitation)	200.00
European Patent Office as ISA	1585.00
International fees	
Basic fee	590.00
Basic supplemental fee (for each page over 30)	12.00
Designation fee per country or region	
— For the first 11 national or regional offices designated	143.00
— For each designation in excess of 11 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
— Designation fee	143.00
— Confirmation fee	71.50
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	180.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
— USPTO was ISA in PCT Chapter I	480.00
— Additional examination fee, per additional invention (payable only upon invitation)	140.00
— USPTO was not ISA in PCT Chapter I	730.00
— Additional examination fee, per additional invention (payable only upon invitation)	260.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
— All claims presented satisfied provisions of PCT Article 33(2) to (4)	48.00	96.00
— All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	350.00	700.00
USPTO was ISA but not IPEA	385.00	770.00
USPTO was neither ISA nor IPEA		
— Search report has not been prepared by the European Patent Office or the Japanese Patent Office	520.00	1040.00
— Search report has been prepared by the European Patent Office or the Japanese Patent Office	455.00	910.00
Other National fees		
— For each independent claim in excess of 3	40.00	80.00
— For each claim in excess of 20.	11.00	22.00
— For each application containing a multiple dependent claim	130.00	260.00
— Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
— Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

Dec. 26, 1996

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on February 22, 1994 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,287,559 through 5,289,589

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Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on February 20, 1990 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,901,370 through 4,903,344
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on February 18,1986 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,570,266 through 4,571,740
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1996, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $510.00
By other than a small entity $1,020.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,025.00
By other than a small entity $2,050.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,540.00
By other than a small entity $3,080.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:
(1) unavoidable $680.00
(2) unintentional $1,600.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment; the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED December 18, 1996
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 33,119	07/168,525	11/28/89
(4,488,823)	(06/317,333)	(12/18/84)
Re. 33,180	06/943,050	03/13/90
(4,489,358)	(06/423,330)	(12/18/84)
Re. 34,057	07/736,853	09/08/92
(4,790,399)	(07/165,760)	(12/13/88)
Re. 34,170	07/626,548	02/02/93
(4,790,130)	(07/105,813)	(12/13/88)
4,488,326	06/431,249	12/18/84
4,488,328	06/460,567	12/18/84
4,488,335	06/516,087	12/18/84
4,488,337	06/258,647	12/18/84
4,488,338	06/410,129	12/18/84
4,488,339	06/442,635	12/18/84
4,488,341	06/408,150	12/18/84
4,488,344	06/354,746	12/18/84
4,488,346	06/276,134	12/18/84
4,488,347	06/281,384	12/18/84
4,488,349	06/475,403	12/18/84
4,488,356	06/481,505	12/18/84
4,488,359	06/457,498	12/18/84
4,488,361	06/395,046	12/18/84
4,488,367	06/401,715	12/18/84
4,488,368	06/398,283	12/18/84
4,488,376	06/483,712	12/18/84
4,488,381	06/418,417	12/18/84
4,488,384	06/256,893	12/18/84
4,488,388	06/396,037	12/18/84
4,488,390	06/371,905	12/18/84
4,488,392	06/432,263	12/18/84
4,488,393	06/360,081	12/18/84
4,488,399	06/460,272	12/18/84
4,488,406	06/571,261	12/18/84
4,488,407	06/478,148	12/18/84
4,488,410	06/302,771	12/18/84
4,488,417	06/448,597	12/18/84
4,488,419	06/400,478	12/18/84
4,488,426	06/496,422	12/18/84
4,488,444	06/449,010	12/18/84
4,488,447	06/394,703	12/18/84
4,488,454	06/356,873	12/18/84
4,488,472	06/369,195	12/18/84
4,488,474	06/458,508	12/18/84
4,488,475	06/469,376	12/18/84
4,488,478	06/511,985	12/18/84
4,488,485	06/497,539	12/18/84
4,488,495	06/334,987	12/18/84
4,488,498	06/552,408	12/18/84
4,488,502	06/507,632	12/18/84
4,488,507	06/429,656	12/18/84
4,488,517	06/485,149	12/18/84
4,488,522	06/410,918	12/18/84
4,488,529	06/554,450	12/18/84
4,488,535	06/488,147	12/18/84
4,488,543	06/459,250	12/18/84
4,488,546	06/507,172	12/18/84
4,488,552	06/372,704	12/18/84
4,488,562	06/404,784	12/18/84
4,488,566	06/506,953	12/18/84

Patent Number	Serial Number	Issue Date
4,488,572	06/514,784	12/18/84
4,488,587	06/498,218	12/18/84
4,488,590	06/397,717	12/18/84
4,488,591	06/370,961	12/18/84
4,488,592	06/525,859	12/18/84
4,488,594	06/543,638	12/18/84
4,488,595	06/507,075	12/18/84
4,488,598	06/476,642	12/18/84
4,488,607	06/423,515	12/18/84
4,488,609	06/346,973	12/18/84
4,488,619	06/599,118	12/18/84
4,488,622	06/352,408	12/18/84
4,488,625	06/373,161	12/18/84
4,488,632	06/361,155	12/18/84
4,488,646	06/538,345	12/18/84
4,488,649	06/315,430	12/18/84
4,488,650	06/444,083	12/18/84
4,488,658	06/560,325	12/18/84
4,488,659	06/374,482	12/18/84
4,488,661	06/322,274	12/18/84
4,488,666	06/334,403	12/18/84
4,488,682	06/529,993	12/18/84
4,488,685	06/417,634	12/18/84
4,488,686	06/456,886	12/18/84
4,488,695	06/381,077	12/18/84
4,488,696	06/599,600	12/18/84
4,488,708	06/413,709	12/18/84
4,488,710	06/529,822	12/18/84
4,488,714	06/478,040	12/18/84
4,488,717	06/383,929	12/18/84
4,488,718	06/386,624	12/18/84
4,488,720	06/448,317	12/18/84
4,488,735	06/463,275	12/18/84
4,488,737	06/398,099	12/18/84
4,488,740	06/350,374	12/18/84
4,488,741	06/462,469	12/18/84
4,488,742	06/352,409	12/18/84
4,488,754	06/394,680	12/18/84
4,488,755	06/419,804	12/18/84
4,488,757	06/486,993	12/18/84
4,488,758	06/322,451	12/18/84
4,488,762	06/382,351	12/18/84
4,488,764	06/397,489	12/18/84
4,488,772	06/414,199	12/18/84
4,488,773	06/452,674	12/18/84
4,488,778	06/359,700	12/18/84
4,488,790	06/344,062	12/18/84
4,488,794	06/392,686	12/18/84
4,488,795	06/417,816	12/18/84
4,488,802	06/458,078	12/18/84
4,488,803	06/463,184	12/18/84
4,488,804	06/454,583	12/18/84
4,488,805	06/495,597	12/18/84
4,488,814	06/306,206	12/18/84
4,488,816	06/453,187	12/18/84
4,488,817	06/511,469	12/18/84
4,488,825	06/565,985	12/18/84
4,488,834	06/442,377	12/18/84
4,488,853	06/360,094	12/18/84
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4,488,903	06/589,469	12/18/84
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4,488,910	06/552,528	12/18/84
4,488,920	06/379,284	12/18/84
4,488,930	06/382,979	12/18/84
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4,488,957	06/382,360	12/18/84
4,488,962	06/338,903	12/18/84
4,488,971	06/407,594	12/18/84
4,488,977	06/441,928	12/18/84
4,488,979	06/464,326	12/18/84
4,488,982	06/275,468	12/18/84
4,488,995	06/577,444	12/18/84
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4,489,007	06/478,392	12/18/84
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4,489,030	06/521,480	12/18/84
4,489,031	06/450,557	12/18/84
4,489,045	06/505,288	12/18/84
4,489,049	06/386,465	12/18/84
4,489,052	06/418,156	12/18/84
4,489,056	06/393,990	12/18/84
4,489,059	06/497,629	12/18/84
4,489,062	06/463,935	12/18/84
4,489,075	06/489,271	12/18/84
4,489,076	06/542,833	12/18/84
4,489,080	06/447,051	12/18/84
4,489,082	06/483,615	12/18/84
4,489,083	06/442,685	12/18/84
4,489,091	06/492,873	12/18/84
4,489,093	06/495,481	12/18/84
4,489,107	06/455,759	12/18/84
4,489,110	06/515,728	12/18/84
4,489,112	06/479,603	12/18/84
4,489,113	06/346,328	12/18/84
4,489,133	06/442,066	12/18/84
4,489,134	06/397,771	12/18/84
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4,489,138	06/285,975	12/18/84
4,489,143	06/572,345	12/18/84
4,489,147	06/331,402	12/18/84
4,489,161	06/436,497	12/18/84
4,489,164	06/412,672	12/18/84
4,489,165	06/460,141	12/18/84
4,489,168	06/546,071	12/18/84
4,489,177	06/566,835	12/18/84
4,489,180	06/560,515	12/18/84
4,489,185	06/536,114	12/18/84
4,489,186	06/511,087	12/18/84
4,489,188	06/545,707	12/18/84
4,489,191	06/528,274	12/18/84
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4,489,202	06/547,537	12/18/84
4,489,205	06/507,976	12/18/84
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4,489,226	06/414,607	12/18/84
4,489,227	06/569,969	12/18/84
4,489,232	06/310,327	12/18/84
4,489,235	06/579,478	12/18/84
4,489,238	06/395,158	12/18/84
4,489,255	06/398,722	12/18/84
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4,489,258	06/463,551	12/18/84
4,489,259	06/373,281	12/18/84
4,489,261	06/450,080	12/18/84
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4,489,317	06/574,189	12/18/84
4,489,331	06/341,580	12/18/84
4,489,333	06/508,683	12/18/84
4,489,347	06/413,003	12/18/84
4,489,348	06/422,361	12/18/84
4,489,351	06/419,518	12/18/84
4,489,353	06/434,102	12/18/84
4,489,361	06/438,253	12/18/84
4,489,363	06/462,275	12/18/84
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4,489,377	06/415,093	12/18/84
4,489,387	06/294,671	12/18/84
4,489,388	06/310,582	12/18/84
4,489,397	06/573,588	12/18/84
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4,489,408	06/328,969	12/18/84
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4,489,411	06/552,021	12/18/84
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4,790,110	07/056,062	12/13/88
4,790,113	07/063,724	12/13/88
4,790,114	07/047,167	12/13/88
4,790,120	07/018,880	12/13/88
4,790,129	06/942,953	12/13/88
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4,790,140	07/115,630	12/13/88
4,790,141	07/132,024	12/13/88
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5,170,622	07/679,444	12/15/92
5,170,634	07/713,968	12/15/92
5,170,637	07/689,478	12/15/92
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5,170,643	07/829,929	12/15/92
5,170,644	07/802,879	12/15/92
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5,170,654	07/680,435	12/15/92
5,170,655	07/761,636	12/15/92
5,170,656	07/643,973	12/15/92
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5,170,664	07/414,099	12/15/92
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5,170,667	07/621,432	12/15/92
5,170,676	07/668,538	12/15/92
5,170,681	07/855,216	12/15/92
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5,170,934	07/898,915	12/15/92
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5,171,934	07/632,545	12/15/92
5,171,937	07/733,948	12/15/92
5,171,939	07/596,678	12/15/92
5,171,940	07/589,073	12/15/92
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5,172,032	07/851,568	12/15/92
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5,172,042	07/746,759	12/15/92
5,172,044	07/660,001	12/15/92
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5,172,062	07/534,757	12/15/92
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5,172,086	07/704,086	12/15/92
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5,172,119	06/234,038	12/15/92
5,172,120	06/234,044	12/15/92
5,172,122	06/234,049	12/15/92
5,172,125	06/234,042	12/15/92
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5,172,129	07/606,174	12/15/92
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5,172,220	07/645,544	12/15/92
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5,172,291	07/500,366	12/15/92
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5,172,305	07/741,373	12/15/92
5,172,313	07/463,161	12/15/92
5,172,318	07/885,920	12/15/92
5,172,323	07/804,627	12/15/92
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5,172,395	07/738,984	12/15/92
5,172,410	07/515,067	12/15/92
5,172,412	07/567,079	12/15/92

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

5,325,828, Re. S.N. 08/677,360, July 5, 1996, Cl. , AIR INTAKE ARRANGEMENT FOR INTERNAL COMBUSTION ENGINE, Junichi Yamaguchi et. al., Owner of Record: *Hitachi Ltd, Tokyo, Japan,* Attorney or Agent: Gregory E. Montone, Ex. Gp.: 3402

5,349,275, Re. S.N. 08/710,734, September 20, 1996, Cl. 318/254, BRUSHLESS DIRECT CURRENT MOTOR, Rolf Muller, Owner of Record: *Papst Licensing Gmbh, Spaichingen, Federal Republic of Germany,* Attorney or Agent: Jeffrey W. Salmon, Ex. Gp.: 2107

5,351,947, Re. S.N. 08/725,812, October 4, 1996, Cl. 271/93, SHEET SORTING APPARATUS, Jack Aaron, Owner of Record: *Optimotion, Inc., Huntington Beach, Calif.,* Attorney or Agent: Newton H. Lee Jr., Ex. Gp.: 3101

5,355,302, Re. S.N. 08/771,379, December 16, 1996, Cl. 364, SYSTEM FOR MANAGING A PLURALITY OF COMPUTER JUKEBOXES, John R. Martin et. al., Owner of Record: *Arachnid, Inc., Rockford, Ill.,* Attorney or Agent: John J. Held, Ex. Gp.: 3304

5,367,364, Re. S.N. 08/752,894, November 30, 1996, Cl. 355/219, CHARGE ROLLER CONTACT STABILIZE SPRING, Steven B. Michlin et. al., Owner of Record: *Inventor, West Bloomfield, Mich.,* Attorney or Agent. None, Ex. Gp.: 2105

5,376,668, Re. S.N. 08/770,484, December 20, 1996, Cl. 514/340, HETERCYCLIC COMPOUNDS AND THEIR PREPARATION AND USE, Per Sauenberg et. al., Owner of Record: *Novo Nordisk A/S, Baasvaerd, Denmark,* Attorney or Agent: Elias J. Lambiris, Ex. Gp.: 1203

5,393,276, Re. S.N. 08/749,873, November 21, 1996, Cl. 192/91, METHOD AND APPARATUS FOR CONTROL OF ENGINE COMPRESSION BRAKES BEFORE, DURING AND AFTER AN ELECTRICALLY CONTROLLED GEAR SHIFT, Gregory R. White, Owner of Record: *Cummins Engine Company Inc., Columbus, Indiana,* Attorney or Agent: Jeffrey A. Michael, Ex. Gp.: 3502

5,476,830, Re. S.N. 08/758,701, September 18, 1996, Cl. 503/206, LATENT IMAGE PRINTING SUBSTRATE, Arshavir Gundjian, Owner of Record: *Nobopi International Inc.,* Attorney or Agent: Ira J. Schaefer, Ex. Gp.: 1317

5,487,879, Re. S.N. 08/754,178, November 19, 1996, Cl. 423/155, STABILIZED PRESSURE-HYDRATED MAGNESIUM HYDROXIDE SLURRY FROM BURNT MAGNESIUM AND PROCESS FOR ITS PRODUCTION, Joseph T. Witkowski et. al., Owner of Record: *Martin Marietta Magnesia Specialties, Inc., Raleigh, N.C.,* Attorney or Agent: F. Michael Sajovec, Ex. Gp.: 1103

5,518,261, Re. S.N. 08/700,022, August 20, 1996, Cl. 280/414.1, PERSONAL WATERCRAFT TRAILER, Byron L. Godbersen, Owner of Record: *Inventor,* Attorney or Agent: H. Robert Henderson, Ex. Gp.: 3106

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED NOVEMBER 18, 1996
DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
108,622	71/088,770	02/15/1916
332,292	71/369,109	02/11/1936
332,295	71/369,087	02/11/1936
332,319	71/368,453	02/11/1936
332,323	71/368,845	02/11/1936
332,332	71/368,745	02/11/1936
332,356	71/368,157	02/11/1936
332,363	71/369,534	02/11/1936
332,374	71/356,443	02/11/1936
332,382	71/370,735	02/11/1936
332,385	71/368,929	02/11/1936
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1,033,436	73/037,268	02/10/1976
1,033,438	73/030,228	02/10/1976

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office who have been given provisional recognition pursuant to 37 CFR 10.9(a) to prepare and prosecute patent applications before the Office until their registration certificates are mailed to them. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before April 11, 1997.

Brears, Timothy, 3054 Cornwallis Rd., Research Triangle Park, N.C. 27709-2257

Briggs, Wilbert J., Sr., 1733 12th St. South, Arlington, Va. 22204

Chan, Ko H., 12712 Roark Court, Reston, Va. 20191

Hunter, Jeanette M., 5321 Colorado Ave., N.W., Washington, D.C. 20011

Kannan, Philip C., 13012 Parson Ln., Fairfax, Va. 22033

Moody, Patsy R., 11504 Clopper Rd., Gaithersburg, Md. 20878

Oehling, George J., 2700 Woodland Park Dr., #1415, Houston, Tex. 77082

Richman, Barry S., 1801 Crystal Dr., #511, Arlington, Va. 22202

Spear, Frank A., 12513 Castleleigh Pl., Silver Spring, Md. 20904

January 24, 1997

KAREN L. BOVARD, *Director*
Office of Enrollment and Discipline

Registration To Practice

The following person successfully passed the registration examination that was held May 3, 1995 and has been given provisional recognition pursuant to 37 CFR 10.9(a) to prepare and prosecute patent applications before the Office until applicant's registration certificate is mailed to applicant. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of the following applicant on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before April 11, 1997.

Helmer, Steven J., 2000 S. Eads St., #227, Arlington, Va. 22202

January 24, 1997

KAREN L. BOVARD *Director*
Office of Enrollment and Discipline

Service by Publication

A petition to cancel the registration identified below having been filed, and the notice of such proceeding sent by certified mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrant listed herein, its assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will proceed as in the case of default.

Neil D. Peck, Logan, Utah, Reg. No. 1,714,168, for the mark "CARPET MAID AND DESIGN", Canc. No. 25,524.

JEAN BROWN
Technical Program Manager,
Trademark Trial
and Appeal Board, for
ROBERT M. ANDERSON
Deputy Assistant Commissioner
for Trademarks

Adverse Decisions in Interference

In the designated interferences involving the following patents, final decisions have been rendered that the respective patentees are not entitled to patents containing the claims listed.

Patent No. 4,675,173, Kenneth J. Widder, METHOD OF MAGNETIC RESONANCE IMAGING OF THE LIVER AND SPLEEN, Interference No. 103,590, final judgment adverse to the patentee rendered November 15, 1996, as to claims 1-14.

Patent No. 4,797,911, Alcksander Szlam, James W. Crooks, Jr., Curtis G. Marks, CUSTOMER ACCOUNT ONLINE SERVICING SYSTEM, Interference No. 103,691, final judgment adverse to the patentees rendered November 20, 1996, as to claim 53.

Patent No. 4,849,210, Kenneth J. Widder, MAGNETIC RESONANCE IMAGING OF LIVER AND SPLEEN WITH SUPERPARAMAGNETIC CONTRAST AGENTS, Interference No. 103,714, final judgment adverse to the patentee rendered November 22, 1996, as to claims 1-7.

Patent No. 4,977,357, Karen P. Shrier, OVERVOLTAGE PROTECTION DEVICE AND MATERIAL, Interference No. 103,573, final judgment adverse to the patentee rendered September 30, 1996, as to claims 1-4, 10-12 and 15-20.

Patent No. 5,206,375, Ernst Schefczik, Karl-Heinz Etzbach, Heinz Eilingsfeld, THIOPHENE DERIVATIVES, Interference No. 103,223, final judgment adverse to the patentees rendered December 17, 1996, as to claim 3.

Patent No. 5,217,706, Raghavan Rajagopalan, Rebecca A. Wallace, Muthunadar P. Periasamy, COMPLEXES AND COMPOSITIONS FOR MAGNETIC RESONANCE IMAGING, Interference No. 103,684, final judgment adverse to the patentees rendered January 15, 1997, as to claims 1-23.

Patent No. 5,227,038, Richard E. Smalley, Robert E. Haufler, ELECTRIC ARC PROCESS FOR MAKING FULLERENES, Interference No. 103,527, final judgment adverse to the patentees rendered December 18, 1996, as to claims 10-12 and 14-15.

Patent No. 5,290,647, Junji Miyazaki, Hitoshi Nagata, PHOTOMASK AND METHOD OF MANUFACTURING A PHOTOMASK, Interference No. 103,649, final judgment adverse to the patentees rendered December 6, 1996, as to claims 1-9.

Patent No. 5,290,807, Moses J. Folkman, Donald Ingber, METHOD FOR REGRESSING ANGIOGENESIS USING O-SUBSTITUTED FUMAGILLOL DERIVATIVES, Interference No. 103,500, final judgment adverse to the patentees rendered November 22, 1996, as to claims 1-3 and 5.

OLIVIA M. DUVALL, *Sup'v Legal*
Instruments Examiner
Board of Patent Appeals
& Interferences
(703) 308-9846

Major Changes in Trademark Classification Policy

On January 1, 1997, the seventh edition of the Nice Agreement (Agreement) went into effect. As a result of the changes in the Agreement and policy decisions made within the PTO, the following class changes have been made in U.S. trademark classification policy. There are additional changes and additions to the U.S. Acceptable Identification of Goods and Services Manual (U.S. Manual), however, those listed below are the most significant and frequently encountered. The revised U.S. Manual is available at the PTO web site (http://www.uspto.gov/) in the area entitled "Information by Topic." The updated U.S. Manual will also be included on all future trademark CD-ROM products that are produced by the PTO. Also, the U.S. Manual will be available in paper form through the Government Printing Office in the near future. GPO is currently accepting orders for the U.S. Manual at (202) 512-1800.

. **Retail store services (and other retail/distributorship, etc. services)** transferred from Class 42 to Class 35.
. **Computer game programs** transferred from Class 28 to Class 9.
. **Cleaning machines, such as vacuum cleaners and floor polishing machines,** transferred from Class 9 to Class 7 with other cleaning machines.
. **Gas-powered welding apparatus** transferred from Class 8 to Class 7.
. **Lottery services** transferred from Class 36 to Class 41.
. **Videotape editing and other film editing services** transferred from Class 40 to Class 41.
. **Destruction and incineration of waste and trash** transferred from Class 42 to Class 40.
. **Computer programs downloadable from a global computer network** transferred from Class 42 to Class 9.

February 3, 1997

PHILIP G. HAMPTON, II
Assistant Commissioner for Trademarks

Patent Term Extended Under 35 U.S.C. § 156

An interim extension of the term of U.S. Patent No. Re. 34,617 has been granted under 35 U.S.C. § 156(e)(2) for a period of nine (9) months from the extended expiration date of the patent, February 12, 1997. The patent received two one-year extensions under 35 U.S.C. § 156(d)(5). See 1159 OG 77, February 22, 1994, and 1171 OG 32, February 14, 1995. Subsequently, the product "Olean" (olestra) was granted permission for commercial marketing or use by the Food and Drug Administration and an application for patent term extension under 35 U.S.C. § 156 was timely filed by The Procter and Gamble Company. The patent then received a one-year extension under 35 U.S.C. § 156(e)(2). See 1184 OG 39, March 12, 1996. Initial PTO review of the application to date indicates that the patent would be eligible for a maximum extension of the patent term for a period of two years from the effective date of receipt of permission for commercial marketing or use for the product Olean (January 30, 1996) under 35 U.S.C. §§ 156(g)(6)(C) and (d)(5)(E)(ii).

Certificates of Correction
For the Week of February 25, 1997

P. 09,733	5,438,420	5,503,230	5,529,059
Re. 35,216	5,438,775	5,504,068	5,529,359
Re. 35,274	5,443,475	5,504,652	5,529,821
Re. 35,288	5,453,934	5,505,933	5,529,953
Re. 35,374	5,454,414	5,507,448	5,530,192
D. 369,824	5,455,201	5,509,643	5,530,941
4,973,584	5,455,794	5,511,578	5,531,048
4,996,545	5,457,208	5,512,329	5,531,364
5,041,860	5,458,933	5,512,557	5,531,699
5,106,061	5,459,126	5,512,992	5,532,013
5,143,846	5,459,850	5,514,629	5,532,513
5,176,631	5,462,720	5,514,732	5,534,052
5,199,958	5,464,872	5,514,825	5,534,516
5,232,596	5,465,860	5,515,007	5,535,708
5,268,454	5,466,117	5,515,902	5,536,362
5,270,759	5,466,698	5,517,353	5,536,899
5,274,167	5,470,658	5,517,552	5,537,092
5,279,763	5,475,113	5,519,299	5,537,581
5,283,663	5,476,733	5,519,661	5,537,960
5,288,724	5,476,872	5,520,521	5,538,405
5,289,225	5,477,173	5,521,434	5,539,168
5,291,071	5,484,470	5,522,057	5,540,003
5,294,716	5,485,592	5,522,343	5,540,809
5,327,007	5,488,305	5,522,594	5,541,052
5,348,016	5,489,584	5,523,006	5,541,221
5,355,915	5,489,967	5,523,600	5,541,247
5,357,695	5,489,993	5,523,972	5,541,348
5,388,245	5,490,020	5,524,068	5,541,794
5,396,178	5,491,153	5,524,422	5,542,297
5,405,516	5,494,036	5,524,691	5,542,322
5,405,867	5,498,755	5,526,335	5,543,887
5,414,007	5,498,843	5,527,404	5,543,891
5,418,263	5,500,246	5,527,630	5,544,483
5,418,735	5,500,756	5,527,728	5,545,474
5,423,956	5,501,316	5,528,893	5,545,883
5,424,497	5,502,108	5,528,942	5,546,285
5,427,380	5,502,937	5,529,003	5,546,578

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5,546,669	5,551,217	5,555,935	5,561,216	5,565,365	5,570,616	5,576,877	5,581,762
5,546,998	5,552,365	5,556,080	5,561,499	5,565,739	5,571,031	5,577,040	5,582,246
5,547,201	5,552,833	5,556,263	5,561,537	5,565,955	5,571,644	5,577,234	5,582,602
5,547,260	5,552,996	5,556,361	5,561,731	5,565,976	5,571,870	5,577,248	5,582,657
5,547,379	5,553,018	5,556,616	5,561,957	5,566,403	5,571,951	5,577,793	5,583,105
5,547,576	5,553,052	5,556,645	5,561,962	5,566,435	5,572,292	5,578,103	5,583,501
5,547,661	5,553,082	5,556,923	5,562,051	5,566,487	5,572,340	5,578,552	5,583,973
5,548,002	5,553,110	5,557,427	5,562,185	5,567,368	5,572,352	5,578,728	5,583,988
5,548,350	5,553,659	5,558,414	5,562,198	5,567,501	5,572,359	5,579,032	5,584,001
5,548,441	5,554,187	5,558,893	5,563,255	5,567,529	5,572,439	5,579,237	5,584,193
5,548,546	5,554,437	5,559,191	5,563,367	5,567,767	5,572,445	5,579,515	5,585,702
5,548,754	5,554,455	5,559,591	5,563,415	5,568,371	5,572,692	5,579,659	5,587,219
5,548,858	5,554,632	5,559,763	5,563,522	5,568,434	5,572,869	5,579,758	5,587,701
5,548,914	5,554,736	5,559,952	5,563,673	5,568,517	5,572,992	5,579,829	5,587,915
5,549,264	5,555,045	5,560,002	5,563,690	5,568,700	5,573,035	5,579,991	5,589,251
5,549,456	5,555,093	5,560,147	5,563,711	5,569,088	5,573,843	5,580,670	5,589,600
5,549,550	5,555,130	5,560,463	5,563,877	5,569,955	5,574,317	5,580,734	5,589,809
5,550,208	5,555,154	5,560,483	5,564,185	5,570,232	5,574,518	5,581,047	5,590,357
5,550,259	5,555,231	5,560,969	5,564,210	5,570,268	5,574,737	5,581,352	
5,550,669	5,555,784	5,561,123	5,564,553	5,570,275	5,575,941	5,581,497	

Interim Internet Usage Policy

The Patent and Trademark Office (PTO) is in the process of providing Internet access to PTO employees. Effective January 27, 1997, all PTO employees who have electronic mail (e-mail) accounts on the PTOnet will have the capability to send and receive mail through the Internet. PTO is also deploying Netscape browser software to all PTOnet servers. Policies and guidelines governing use of the Internet were distributed to all PTO employees in July of 1996 in a document titled "Rules of the Road." PTO employees must follow the "Rules of the Road" when using the Internet (copy attached).

In view of the fact that all communications and data transmitted from or to the applicant by the Internet are neither encrypted nor secure, and in order to ensure that usage of the Internet by PTO employees will not violate the confidentiality requirements of 35 U.S.C. 122, the following interim Internet usage policy is being published. The policies and guidelines set forth below are interim since the public has not yet had an opportunity to comment on them. PTO will publish a Notice in the Federal Register and Official Gazette requesting comments from the public on the use of the Internet in PTO patent and trademark examination.

(1) PTO employees are NOT permitted to use the Internet e-mail to conduct official PTO business where sensitive data will be exchanged or where there exists a possibility that sensitive data could be identified unless there is an express waiver of the confidentiality requirements under 35 U.S.C. 122 by the applicant. Sensitive data includes confidential information related to patent applications (see Rules 4 and 5 of the "Rules of the Road"). The following is a sample form which may be used by applicant for waiver of the confidentiality requirements of 35 U.S.C. 122:

"Recognizing that Internet communications are not secured, I hereby authorize the PTO to communicate with me concerning any subject matter of this application by electronic mail. I understand that a copy of these communications will be made of record in the application file."

Where an express waiver of 35 U.S.C. 122 is given by the applicant and upon mutual agreement between applicant and the PTO employee, communications via Internet e-mail, other than those under 35 U.S.C. 132 or which otherwise require a signature, may be used. In such cases, a printed copy of the Internet e-mail communications must be given a paper number, entered into the Patent Application Locating and Monitoring System (PALM) and entered in the application file. At the present time, a response to an Office action may NOT be communicated by applicant to the PTO via Internet e-mail. Where communication via Internet e-mail is initiated by a registered practitioner, or an applicant in a pro se case, sufficient information must be provided to show representative capacity in compliance with 37 CFR 1.34. Examples of such information are the attorney docket number and registration number.

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PTO employees are NOT permitted to initiate communications with applicant via Internet e-mail except where an express waiver of 35 U.S.C. 122 is of record in the application.

(2) Where the Internet is used to search and retrieve prior art information, PTO employees must restrict their search operations to determining the general state of the art. Internet prior art search strategies that could disclose sensitive information such as the elements of an invention are NOT permitted.

The policies and guidelines set forth in this Interim Internet Usage Policy document are intended to be an extension of the policies and guidelines set forth in the "Rules of the Road" and they are not intended to be a replacement of the policies and guidelines in the "Rules of the Road." Final policies and guidelines will be published at a later date.

Questions concerning these policies and guidelines regarding Internet usage and suggestions as to how Internet usage capability may be expanded without violating the confidentiality requirements of 35 U.S.C. 122 may be addressed to the Office of the Deputy Assistant Commissioner for Patent Policy and Projects, Assistant Commissioner for Patents, Washington, D.C. 20231.

Date: FEB 10 1997

Bruce A. Lehman
Assistant Secretary of Commerce and
Commissioner of Patents and Trademarks

July 1996

PTOnet AND PTO SYSTEMS "RULES OF THE ROAD"

PTOnet, PTO Systems and other computing resources are shared among PTO employees. PTOnet provides access to PTO business systems that operate on the PTO information technology infrastructure, and provides access to remote locations through secure gateways. In the near future, PTOnet will provide access to the Internet. The PTOnet and PTO Systems "Rules of the Road" are intended to help PTO employees use the PTO's computing and network facilities responsibly, safely, and efficiently, thereby maximizing the availability of these facilities to all employees. Complying with these rules will help maximize access to these facilities, and help assure that your use of them is responsible, legal, and respectful of privacy. While use of PTO automation resources is voluntary, PTO employees must follow the "Rules of the Road" when using these resources.

The "Rules of the Road" amplify and clarify previous PTO policy on PTOnet and PTO System use, including Internet access via Pioneer. The rules are grouped into the following three categories:

- Complying with the intended use of PTOnet and PTO Systems
- Assuring ethical use of PTOnet and PTO Systems
- Assuring proper use of PTOnet and PTO Systems

The following is a more detailed discussion of the individual rules associated with each category. The "Rules of the Road" are also discussed in appropriate sections of the PTO's Office Automation Services Guide. Each PTO Cost Center may supplement the "Rules of the Road" for better administration of information within its own domain.

I. Complying with the Intended Use of PTOnet and PTO Systems

It is important that each employee understand the purpose of PTOnet and PTO systems so that their use is in compliance with that purpose.

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II. Assuring Ethical Use of PTOnet and PTO Systems

Along with the many opportunities that PTOnet and PTO Systems provide for PTO employees to share information, comes the responsibility to use the system in accordance with PTO standards of conduct. These standards are outlined in the PTO Employee Handbook. Appropriate use of PTOnet and PTO systems includes maintaining the security of the system, protecting privacy, and conforming to applicable laws, particularly copyright and harassment laws.



RULE 3: Don't Let Anyone Know Your Password(s)

While you should feel free to let others know your username (this is the name by which you are known to the whole PTOnet, PTO Systems and Internet community), you should ***never*** let anyone know your account passwords. This includes even trusted friends, and computer system administrators (e.g. Information System staff).

Giving someone else your password is like giving them a signed blank check, or your charge card. You should never do this, even to "lend" your account to them temporarily. Anyone who has your password can use your account, and whatever they do that affects the system will be traced back to your username -- if your username or account is used in an abusive or otherwise inappropriate manner, the PTO will hold you responsible.

When creating or changing your password, always use a password that you can easily remember but is unique enough that it cannot be easily guessed by your co-workers. Never use the names of spouses, children, pets or birthdates, as these can easily be compromised.



RULE 4: Don't Violate the Privacy of Other Users

The Electronic Communications Privacy Act (18 USC 2510 et seq., as amended) and other Federal laws protect the privacy of users of wire and electronic communications. The facilities of the PTOnet and PTO Systems are in place to facilitate the sharing of information among PTO employees, our international partners, and our customers. All users of PTOnet and PTO Systems should make sure that their actions don't violate the privacy of other users, even if unintentionally.

Some specific areas to watch for include the following:

- Don't try to access the files of directories of another user without clear authorization from that user.
- Don't try to intercept or otherwise monitor any network communications not explicitly intended for you.
- Don't use names or other personal identifiers in communications that might be of a sensitive or confidential nature.
- Don't intentionally seek information about, browse, obtain copies of, or modify files, mail, or passwords belonging to others, whether they are at the PTO or elsewhere, unless specifically authorized to do so by those individuals.
- Don't attempt to decrypt or translate encrypted material belonging to another person or organization.
- Don't attempt to alter the "From" line of your Internet user-ID or other attributes of origin in electronic mail, messages, or postings.
- Don't edit or change the content of an e-mail message when sending a reply to the message's originator or forwarding the message to another person without indicating where and how the message was edited.
- Don't create any shared programs that secretly collect information about PTO users.



RULE 5: Don't Transmit Classified or Sensitive Data

Every attempt has been made to ensure that appropriate security mechanisms are in place for protecting information from unintended access, from within the system or from the outside. However, these mechanisms, by themselves, are not sufficient. PTOnet and PTO System users should ensure that they take appropriate action to safeguard classified or sensitive data. Users are instructed to implement the following requirements:

- Don't transmit classified data, data subject to a secrecy order, and data under seal through Internet or e-mail, or post such data on bulletin boards.

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- Don't store or transmit sensitive data without proper protection as defined in applicable Federal laws and regulations. Sensitive data should not be posted on bulletin boards. Data should be considered sensitive if they might be exempt from Freedom of Information Act (FOIA) disclosure or protected under the Privacy Act. Sensitive data include records about individuals in which there is a reasonable expectation of privacy, trade secrets or confidential business information, and confidential information related to Patent and Trademark applications.

- Don't transmit data that are part of PTO's decision making process over the Internet.

The following are examples of sensitive data that should not be discussed or transmitted on PTOnet or related computing services:

- Anything with sensitive personnel data such as names with SSN, leave balances, salaries, benefits for which an employee is signed up, etc.

- Anything dealing with the details surrounding an Employee Relations or Union issue.

- Sensitive procurement information (this is in the $1 million or over category, not purchase orders).

- Anything dealing with the details surrounding contract award prior to award.

- All information categorized as Source Selection Information by Section 27 of the Office of Federal Procurement Policy Act (41 U.S.C. 423) that concerns the number, identity, ranking, or evaluation of offerors in response to an ongoing procurement action.

- Information marked by an offeror as proprietary.

- Source selection information, including bid prices prior to bid opening, proposed costs/prices in response to a solicitation, source selection plans, technical evaluation of proposals, cost or price evaluations, competitive range determinations, ranking of offers, and reports or evaluations of source selection panels.

- Anything dealing with budget policy prior to the budget submission, particularly as it may deal with PTO employees.

- Passwords or other computer security related items.

Summary of Final Decisions
Issued by the
Trademark Trial and Appeal Board
December 30, 1996-January 3, 1997

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
12-30	CANC	20,288	Sachtler Corp. of America v. Simmons Outdoor Corp.	2(d)	Petition to Cancel Denied	design mark [camera systems supporting equipment, namely, fluid heads, tripods, camera interfaces, pan arms, tripod interfaces, tripod supports, and shoulder braces to be used to support movie, television, video, motion picture, studio and still cameras]	design mark [binoculars, telescopic sights and shooting glasses]		No
1-2	OPP OPP	92,049 92,113	Cyrmus Vineyards v. Lisa Frank, Inc.	2(d); affirmative defenses: that opposer lacks standing and that opposer's pleaded mark is non-distinctive	Oppositions Sustained	"CAYMUS" [wines and related promotional items, including wine glasses, cork screws, t-shirts, caps, posters, note pad, etc.]	"CAYMUS" [stickers, notebooks, party goods, etc.] and "CAYMUS" [toy figures, stuffed toy animals, dolls, flying disks, etc.]		No
1-2	EX	74/462,243	Monceau, Inc.	2(d)	Refusal Reversed		"MADE IN FRANCE FOR YOU" [perfumes and colognes]	"FOR YOU" (in stylized lettering) [cosmetics]	No
1-3	EX	74/357,479	Max Makow	2(d)	Refusal Affirmed		"CRAFTIME" (in stylized lettering) [paper cake decorations, paper ribbons, adhesives for stationery or household purposes, canvas for painting, artists' brushes, drawing brushes, paint brushes, paint brushes, and stencils]	"CRAFTIME" [toys and games, namely, lanyard and lacing sets and hobby craft kits for making jewelry, bracelets, animal figures, charm bracelets, beaded bracelets, necklaces, earrings, hair bands, hair combs, barettes and patchwork]	No

([1])EX = EX PARTE APPEAL; OPP = OPPOSITION; CANC = CANCELLATION; CU = CONCURRENT USE; (SJ) = SUMMARY JUDGMENT; (R) = REQ. FOR RECONSIDERATION

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Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
1-3	EX	74/518,238	Phillips-Van Husen Corp.	2(d)	Refusal Affirmed		"FRIDAY UPDATE" [men's sport shirts]	"UPDATE" [men's outer shirts, dress shirts, and sport shirts]	No
1-3	EX	74/441,668	Courtaulds Performance Films, Inc.	2(d)	Refusal Affirmed		"VISTA" [tinted, laminated or reflective plastic films for use on the windows of buildings]	"VISTA" (and design) [metal and non-metal custom windows]	No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION

SPECIAL BOXES FOR PATENT MAIL

Special box designations should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these special boxes. If any documents other than the specified type identified for each special box are addressed to that box, they will be significantly delayed in reaching the appropriate area for which they are intended.

Please address mail as follows:

Box _____
Assistant Commissioner for Patents
Washington, D.C. 20231

Box Designations	Explanation
Box 7	Reissue applications for patents involved in litigation and subsequently filed related papers.
Box 12	Contributions to the Examiner Education Program.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Comments Patents	Public comments regarding patent related regulations and procedures.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or materials related to the Disclosure Document Program.
Box Design	The filing of all design patent applications and any communications relating thereto.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62).
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box Issue Fee	All communications following the receipt of a PTOL–85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box Missing Parts	Response to the Notice to File Missing Parts of Application and associated papers and fees.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box PATENT APPLICATION	New patent applications and associated papers and fees.
Box Patent Ext.	Applications for patent term extension and any communications relating thereto.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Provisional Patent Application	The filing of all provisional patent applications and any communications relating thereto.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return post card or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

SPECIAL BOXES FOR TRADEMARK MAIL

Special box designations should be used to allow forwarding of particular types of trademark mail to the appropriate areas as quickly as possible. In addition to these box designations, filers are encouraged to indicate whether the contents of the envelope contain a fee. Envelopes containing a fee should be marked "FEE;" envelopes not containing a fee should be marked "NO FEE." Box designations and "FEE/NO FEE" indicators should appear on the envelope as well as on the cover sheet or first page of any document.

Please address mail as follows:

Box _____
FEE (or NO FEE)
Assistant Commissioner for Trademarks
2900 Crystal Drive
Arlington, Virginia 22202-3513

Box Designations	Explanation
Box NEW APP FEE	New trademark applications and fees.
Box ITU FEE	Statements of Use (SOUs) and extension requests.
Box TTAB FEE	Oppositions, cancellation petitions, and ex parte appeals.
Box TTAB NO FEE	Interferences, motions, and extension requests.
Box STATUS NO FEE	Written status inquiries.
Box POST REG FEE	Affidavits, renewals, corrections and amendments.
Box RESPONSES NO FEE	Responses to Examining Attorneys' Office actions and Post Registration actions.

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SPECIAL BOXES APPLICABLE TO *BOTH* PATENT AND TRADEMARK MAIL

The following special box designations are applicable to both patent and trademark related mail, and the recommendations for "Special Boxes for Patent Mail" (above) should be followed for the types of mail listed below.

Please address mail as follows:

Box _____
Commissioner of Patents and Trademarks
Washington, D.C. 20231

Box Designations	Explanation
Box 3	Mail for the Office of Personnel from NFC.
Box 4	Mail for the Deputy Assistant Secretary of Commerce and Deputy Commissioner of Patents and Trademarks; Office of Legislative and International Affairs.
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In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

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Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
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Colorado	Denver Public Library	(303) 640-6249
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	Detroit: Great Lakes Patent and Trademark Center	(313) 833-3379
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South Carolina	Clemson University Libraries	(803) 656-3024
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Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
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	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
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	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
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PATENT EXAMINING CORPS

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PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, ENGINEERING AND DESIGNS, GROUP 1100—JOHN E. KITTLE, Director	308-0661	11/21/95
ORGANIC CHEMISTRY, DRUG, BIO-AFFECTING AND BODY TREATING COMPOSITION, GROUP 1200—RICHARD V. FISHER, Director	308-1235	09/08/95
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—JOHN F. TERAPANE, Director	308-0651	09/17/95
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	10/15/95
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COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—JOSEPH J. ROLLA, Director	305-9600	06/07/95
SPECIAL COMPUTER APPLICATIONS: COMPUTER GRAPHICS, BUSINESS PRACTICES, & DIAGNOSTIC TESTING, GROUP 2400—GERALD GOLDBERG, Director	305-3800	06/16/95
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	06/14/95
TELECOMMUNICATIONS, GROUP 2600—NICHOLAS P. GODICI, Director	305-4700	04/20/95
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	308-0661	04/22/95
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MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—ETHEL CROSS, Director	308-1148	07/29/95
MEDICAL INSTRUMENTS, DIAGNOSTIC EQUIPMENT AND TREATMENT DEVICES; SURGERY AND SURGICAL SUPPLIES; AMUSEMENT AND EXERCISING DEVICES; ANIMAL HUSBANDRY; SPORTING GOODS; TOBACCO PRODUCTS AND MANUFACTURING EQUIPMENT; AND PRINTING, GROUP 3300—J.J. LOVE, Director	308-0858	09/28/95
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	08/05/95
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	10/20/95

*A communication from the examiner should have been received in most applications filed prior to this date.

Patents will Expire as Follows:
(1) The term of any utility or plant patent that is in force on or results from an application filed before June 8, 1995 is the greater of the 20 year term provided in 35 U.S.C. 154(a)(2) or 17 years from grant subject to any terminal disclaimers. 35 U.S.C. 154(c)(1).
(2) All utility and plant patents granted on applications having an actual United States filing date on or after June 8, 1995 are granted for a term which begins on the date on which the patent is granted and ends 20 years from the date on which the application was filed in the United States. If the application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term ends twenty years from that date on which the earliest application was filed. 35 U.S.C. 154(a)(2).
(3) All design patents are granted for a term of 14 years from the date of the grant.
However, the term of any patent may have been curtailed by disclaimer under the provisions of 35 U.S.C. 153, have lapsed due to failure to pay maintenance fees, or have been extended under the provisions of 35 U.S.C. 154, 155, or 156. Thus, if more reliable information is needed with respect to a particular patent, then the specific patent file should be reviewed to determine the actual date of patent expiration.

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Condition of Trademark Applications as of February 1, 1997

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 101—Ron Williams, Managing Attorney, (703) 308–9101—4th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/09/96	11/21/96
Law Office 102—Myra Kurzbard, Managing Attorney, (703) 308–9102—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/24/96	09/06/96
Law Office 103—Kathryn Erskine, Managing Attorney, (703) 308–9103—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/08/96	12/26/96
Law Office 104—Sidney Moskowitz, Managing Attorney, (703) 308–9104—6th Floor Unwrought metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/06/96	11/08/96
Law Office 105—Thomas Howell, Managing Attorney, (703) 308–9105—6th Floor Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/06/96	10/10/96
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308–9106—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/07/96	09/27/96
Law Office 107—Thomas Lamone, Managing Attorney, (703) 308–9107—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/26/96	11/22/96
Law Office 108—David Shallant, Managing Attorney, (703) 308–9108—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/28/96	12/06/96
Law Office 109—Deborah Cohn, Managing Attorney, (703) 308–9109—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/31/96	11/15/96
**Collective Marks—Class 200 **Certification Marks—Classes A & B		
Office of Trademark Services—Terron Simms, Director, (703) 308-9100 Trademark Assistance Center—(703) 308-9000 Pre-Examination—Alan Lambert, Supervisor, (703) 308-9401 ext. 188 Intent-To-Use—(ITU)—(703) 308-9500 Post Registration Section—Mary Bowman, Supervisor, (703) 308-9500 ext. 126		
Affidavits Under Sections 8 & 15 (All Classes)	12/13/96	—0—
Renewals (All Classes)	11/14/96	—0—
Section 12(c) Publications (All Classes)	07/26/96	—0—

1. ** Assigned to all Law Office

2. Applicants with inquiries concerning the status of their applications and a touch telephone should call (703) 305–8747 from 6:30 a.m. to Midnight EST, Monday through Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquiries concerning the status of their applications. See SECTION 411 of the TRADEMARK MANUAL OF EXAMINING PROCEDURE.

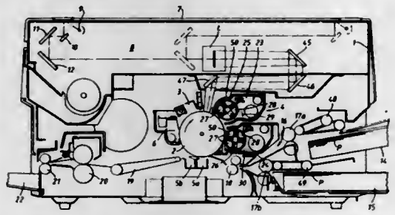
3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

REEXAMINATIONS

FEBRUARY 25, 1997

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,710,016 (3134th)
DEVELOPING APPARATUS
Junji Waatanabe, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Reexamination Request No. 90/004,066, Dec. 8, 1995.
Reexamination Certificate for Patent 4,710,016, issued Dec. 1, 1987, Ser. No. 835,249, Mar. 3, 1986.
Claims priority, application Japan, Mar. 26, 1985, 60-61477; Jul. 15, 1985, 60-155508
Int. Cl.[6] G03G *15/01;15/08;15/09*
U.S. Cl. 355—326 R



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–4** is confirmed.

Claim **5** is determined to be patentable as amended.

Claims **6–10**, dependent on an amended claim, are determined to be patentable.

1. A copying machine comprising:
(a) an image carrier having a surface on which a latent image can be formed;
(b) a first developing unit arranged close to said image carrier for developing a latent image formed on the surface of said image carrier with a first developer;
(c) a second developing unit arranged close to said image carrier for developing a latent image formed on the surface of said image carrier with a second developer;
(d) a first moving means for moving said first developing unit between a first position in which said first developing unit is operably associated with said image carrier and a second position in which said first developing unit is disassociated from said image carrier, said first moving means comprising a first spring member one end of which is connected to said first developing unit;
(e) a second moving means for moving said second developing unit between a first position in which said second developing unit is operably associated with said image carrier and a second position in which said second developing unit is disassociated from said image carrier, said second moving means comprising a second spring member one end of which is connected to said second developing unit; and
(f) an actuating means connected to said first and second means for selectively actuating said first and second moving means so that said first or second developing unit is operably associated with said image carrier while said second or first developing units is disassociated from said image carrier, said actuating means comprising:
(i) an arm member pivotable about a fulcrum positioned at the middle portion of said arm member, one end of said arm member being connected to the other end of said first spring member while the other end of said arm member is connected to the other end of said second spring member, and
(ii) a reversible motor connected to said arm member so as to reversibly pivot said arm member.

B1 4,843,186 (3135th)
LONG SHELF LIFE HETEROZYGOUS TOMATO PLANT
Kedar Nahum, Rehovot, Israel, assignor to LSL, Inc., Tiburon, Calif.
Reexamination Request No. 90/002,859, Oct. 7, 1992.
Reexamination Certificate for Patent 4,843,186, issued Jun. 27, 1989, Ser. No. 889,915, Jul. 28, 1986.
Int. Cl.[6] A01H *1/02;5/00;5/08;5/10*
U.S. Cl. 800—200

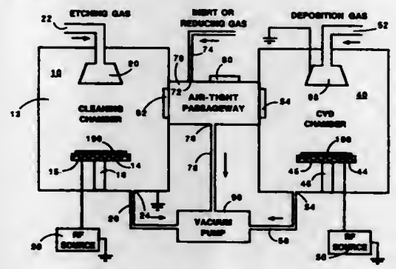
AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–9** is confirmed.

New claims **10–12** are added and determined to be patentable.

1. A heterozygous tomato plant resulting from crossing a male parent containing the Rin/Rin gene with a female parent, said tomato plant having a Rin gene from the male parent as a heterozygote and having the characteristics of a very firm fruit with excellent tomato-like taste having a shelf like of at least two weeks, without substantially deteriorating taste or firmness, and developing a full red color.

B1 5,043,299 (3136th)
PROCESS FOR SELECTIVE DEPOSITION OF TUNGSTEN ON SEMICONDUCTOR WAFER
Mei Chang, Cupertino, and David N. Wang, Saratoga, both of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.
Reexamination Request No. 90/004,070, Nov. 17, 1995.
Reexamination Certificate for Patent 5,043,299, issued Aug. 27, 1991, Ser. No. 444,485, Dec. 1, 1989.
Int. Cl.[6] H01L *21/00;21/02;21/203;21/302*
U.S. Cl. 437—192



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1** to **15** is confirmed.

New claims **16** to **19** are added and determined to be patentable.

1. An improved process for the selective deposition of tungsten on a masked semiconductor wafer in a vacuum apparatus comprising a vacuum cleaning chamber connected through an air-tight passageway to a CVD chamber which comprises:

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a) cleaning the surfaces of the wafer in said vacuum cleaning chamber while maintaining said chamber at a pressure within a range of from about 1 milliTorr to about 500 millTorr. by flowing one or more cleaning gaes selected from the group consisting of H_2 and a halogen-containing gas into said chamber for a period of from about 5 to bout 300 seconds, while using a plasma within a power range of from about 1 to aboug 200 watts, and while maintaining said wafer at a temperature within a range of from about 20° to about 80° C.;

b) cleaning said CVD chamber prior to transfer of said cleaned wafer thereto by using an NF_3 plasma followed by an H_2 plasma to remove any tungsten residues from prior depositions;

c) transferring said cleaned wafer from said cleaning chamber to said CVD chamber through an air-tight passageway between said respective chambers in which one or more non-oxidizing gases selected from the group consisting of argon, helium, nitrogen, and hydrogen and mixtures thereof are present to exclude moisture or oxidizing gases to thereby permit subsequent selective tungsten deposition on the clean surfaces on the wafer without exposing the cleaned wafer to conditions which would recontaminate the cleaned wafer prior to said selective deposition; and

d) selectively depositing a CVD layer of tungsten on the unmasked surfaces of the wafer by flowing a tungsten-containing gas and a reducing gas through said CVD chamber.

B1 5,061,147 (3137th)
VEHICLE CARRIER WITH WHEEL LIFT

Ronald R. Nespor, Sharpsville, Pa., assignor to Chevron, Inc., Mercer, Pa.

Reexamination Request Nos. 90/003,653, Dec. 5, 1994 and 90/003,749, Mar. 15, 1995.
Reexamination Certificate for Patent 5,061,147, issued Oct. 29, 1991, Ser. No. 538,742, Jun. 15, 1990.
Continuation of Ser. No. 288,854, Dec. 23, 1988, abandoned, which is a continuation of Ser. No. 204,642, Jun. 9, 1988, Pat. No. 4,929,142.
The portion of the term of this patent subsequent to May 29, 2007, has been disclaimed.
Int. Cl.[6] B60J *9/00*
U.S. Cl. 414—563



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **2–11** is confirmed.

Claims **1**, **12** and **13** are cancelled.

New claims **14–45** are added and determined to be patentable.

43. A combination tilting bed carrier and attached wheel lift apparatus for mounting on a chassis of a towing vehicle comprising,

a bed carrier having a movably mounted bed, for supporting a vehicle in tow, said bed carrier being movable between an untilted and a tilted position.

first pivot means positioned on said bed carrier for pivotally connecting said bed carrier to the chassis,

first motive means extending between the chassis and said bed carrier for actuating tilting of said bed carrier about said first pivot means relative to the chassis,

a wheel lift positiond below said bed carrier and extending rearwardly thereof,

second pivot means positioned on said bed carrier for pivotally connecting said wheel lift to said bed carrier, and

second motive means extending between said wheel lift and said bed carrier, for actuating tilting of said wheel lift about said second pivot means relative to said bed carrier and the chassis,

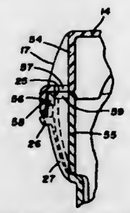
said second pivot means being fixed relative to said first pivot means,

said second pivot means and said second motive means being constructed and positioned such that said wheel lift can be rotated to a wheel engaging position when said bed carrier is in said untilted position, thereby permitting loading of said vehicle in tow onto said wheel lift without having to substantially tilt said bed carrier.

B1 5,193,706 (3138th)
TOOLBOX

Thomas E. Hanna, and Keith E. Brightbill, both of Wooster, Ohio, assignors to Rubbermaid Incorporated, Wooster, Ohio

Reexamination Request No. 90/003,730, Feb. 23, 1995.
Reexamination Certificate for Patent 5,193,706, issued Mar. 16, 1993, Ser. No. 471,285, Jan. 26, 1990.
Int. Cl.[6] B65D *45/16*
U.S. Cl. 220—324



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **9**, **20** and **21** were previously cancelled.

Claims **1** and **22** are cancelled.

Claims **2**, **3**, **5**, **6**, **10**, **11**, **13**, **14** and **15** are determined to be patentable as amended.

Claims **4**, **7**, **8**, **12**, **16**, **17**, **18** and **19**, dependent on an amended claim, are determined to be patentable.

2. A utility box according to claim **[1]** *5* wherein said complementary mating surfaces include a first arcuate skirt downwardly directed from said top surface of said cover portion and a second arcuate skirt near the top of said base portion.

B1 5,207,650 (3139th)
INFUSION CATHETERS

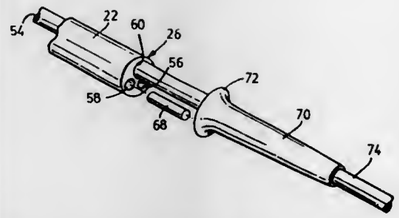
Geoffrey S. Martin, Mississauga, Canada, assignor to Med-Pro Design, Inc., Mississauga, Canada

Reexamination Request No. 90/003,936, Aug. 28, 1995.
Reexamination Certificate for Patent 5,207,650, issued May 4, 1993, Ser. No. 854,023, Mar. 19, 1992.
Claims priority, application Canada, Mar. 20, 1991, 2038676
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—173

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–6** is confirmed.

1. An infusion catheter comprising:



a main body having a continuous generally round cross-section about a longitudinal axis and having proximal and distal ends;

a tip section having a round cross-section and being smaller in cross-section than the main body and ending in a tip;

a transition portion connecting the tip section to said distal end and tapering smoothly from the main body to the tip section;

the main body and tip section defining a primary lumen extending from said proximal end to the tip, the lumen being continuous where the main body meets the tip section and having a longitudinal axis offset from that of the main body;

the main body further including a pair of side-by-side secondary lumens terminating at respective side openings in the main body, a first of these openings being adjacent the transition portion and the second being spaced from the transition portion;

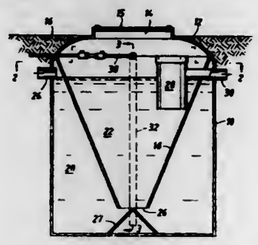
plug material in the main body between said second opening and the transition portion; and

a junction at said proximal end and three flexible tubes connected for fluid flow to the respective lumens by the junction.

B1 5,221,470 (3140th)
APPARATUS FOR TREATING WASTE WATER

Jerry L. McKinney, P.O. Box 546, Silsbee, Tex. 77656

Reexamination Request No. 90/004,190, Mar. 18, 1996.
Reexamination Certificate for Patent 5,221,470, issued Jun. 22, 1993, Ser. No. 808,424, Dec. 16, 1991.
Int. Cl.[6] C02F *3/06;3/20*
U.S. Cl. 210—151



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

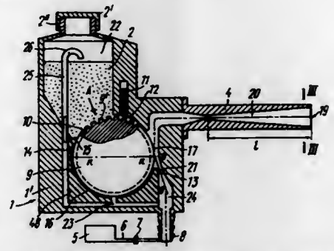
The patentability of claims **1–9** is confirmed.

1. In a waste water treatment plant having an aeration chamber, an inlet located adjacent the top of the aeration chamber through which the waste water flows into the aeration chamber and downwardly toward the bottom of the aeration chamber, means for injecting air into the waste water in the aeration chamber to support the growth of aerobic microorganisms and a clarifier chamber within said aeration chamber, said clarifier chamber being formed by a partition in the form of an inverted, truncated cone-like member into the bottom of which the waster water flows from the aeration chamber and rises therein, the improvement comprising a filter housing mounted in the clarifier with an open lower end extending below the level of the waste water in the clarifier, a horizontal outlet tube connected to the filter housing through which the waste water can flow out of the filter housing and the clarifier, and a filter located in the housing below the level of waste water through which the waste water flows without turbulence to reach the outlet, said filter having a plurality of relatively narrow vertical passageways providing a large surface area for aerobic bacteria to cover and remove the small solid particles form the waste water as it flows upwardly through the filter toward the outlet, said means for injecting air in the aeration chamber also providing means to supply the aerobic bacteria covering the filter with sufficient oxygen to keep it functioning.

B1 5,302,414 (3141st)
GAS-DYNAMIC SPRAYING METHOD FOR APPLYING A COATING

Anatoly P. Alkhimov; Anatoly N. Papyrin, ulitsa Vyazemskogo 2, kv. 72; Vladimir F. Kosarev; Nikolai I. Nesterovich, and Mikabil M. Shusbpanov, all of Novosibirsk, Russian Federation, assignors to Anatoly Nikiforovich Papyrin, Novosibirsk, Russian Federation

Reexamination Request No. 90/004,204, Apr. 3, 1996.
Reexamination Certificate for Patent 5,302,414, issued Apr. 12, 1994, Ser. No. 781,233, May 19, 1990.
PCT No. PCT/SU90/00126, § 371 Date Feb. 2, 1992, § 102(e) Date Feb. 2, 1992, PCT Pub. No. WO91/19016, PCT Pub. Date Dec. 12, 1991
Int. Cl.[6] B05D *1/12*
U.S. Cl. 427—192



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **1** is determined to be patentable as amended.

Claims **2–6**, dependent on an amended claim, are determined to be patentable.

1. A gas-dynamic spraying method for applying a coating *of particles* to an article, *the coating being formed of a cohesive layering of particles in solid state on the surface of the article*, the method comprising:

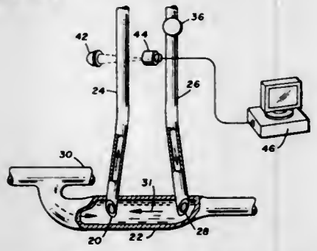
[introducing into a gas**]** *mixing* particles of a powder of at least one first material selected from the group consisting of a metal, alloy, polymer and mechanical mixture of a metal and an alloy *into a gas*, the particles having a particle size of from about 1 to 50 microns;

[forming**]** *following the step of mixing the gas and particles, accelerating* the gas and particles into a supersonic jet **[**having a temperature**]** *while maintaining the temperature of the gas and particles* sufficiently low *so as* to prevent *melting or* thermal softening of the first material **[**and**]**, *said particles having* a velocity of from 300 to about 1,200 m/sec.; and

directing the jet *of gas and particles in solid state* against an article of a second material selected from the group consisting of a metal, alloy and dielectric; thereby coating the article with **[** the**]** *a desired thickness of* particles.

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B1 5,312,550 (3142nd)
METHOD FOR DETECTING UNDESIRED DIALYSIS RECIRCULATION
Robert L. Hester, 1426 Tracewood Dr., Jackson, Miss. 39211
Reexamination Request No. 90/003,794, Apr. 14, 1995.
Reexamination Certificate for Patent 5,312,550, issued May 17, 1994, Ser. No. 873,781, Apr. 27, 1992.
Int. Cl.[6] B01D *61/32*
U.S. Cl. 210—646



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–5** is confirmed.

New claim **6** is added and determined to be patentable.

1. In a dialysis process wherein blood is removed from a patient's vascular system and passed through a dialyzer system comprising an inlet arterial line, a dialyzer, and an outlet venous line, said blood being fed via said inlet arterial line to said dialyzer and returned to the patient via said outlet venous line, the improvement comprising:

(a) injecting a material at an injection point in said dialyzer system, said material having a physical property differing from that of blood; and

(b) monitoring the fluid in said dialyzer system at a point in said dialyzer system upstream from said injection point for the presence of said differing physical property, to thereby detect undesired recirculation of freshly dialyzed blood from said venous line directly to said arterial line.

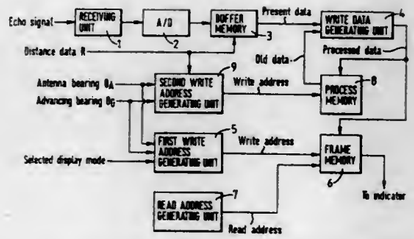
B1 5,351,055 (3143rd)
RADAR APPARATUS
Takumi Fujikawa, Takarazuka, and Motoji Koodo, Kobe, both of Japan, assignors to Furuno Electric Company, Limited, Nishinomiya, Japan
Reexamination Request No. 90/003,958, Sep. 15, 1995.
Reexamination Certificate for Patent 5,351,055, issued Sep. 27, 1994, Ser. No. 67,165, May 26, 1993.
Continuation of Ser. No. 721,547, Jul. 18, 1991, abandoned.
Claims priority, application Japan, Nov. 21, 1989, 1-304188; Nov. 25, 1989, 1-305835
Int. Cl.[6] G01S *7/04*
U.S. Cl. 342—184

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–29**, **35**, **37–40** and **43–47** is confirmed.

Claims **30**, **36**, **48** and **49** are determined to be patentable as amended.

Claims **31–34**, **41** and **42**, dependent on an amended claim, are determined to be patentable.



1. A radar apparatus for successively radiating search signals in different directions, receiving echo signals and displaying the signals so that surrounding conditions in a wide range of directions are displayed, comprising:

a receiving unit for receiving echo signals;

a buffer memory for storing the received echo signals based on one search signal, said echo signals being supplied from the receiving unit;

a first memory for storing echo signals coming from a wide range of directions in memory elements thereof, the memory elements being determined with respect to a bearing;

correlation means for performing a correlation process upon signals supplied by said buffer memory and signals read from said first memory and for outputting resultant processed signals;

said first memory storing said resultant processed signals;

a second memory for storing said resultant processed signals outputted by said correlation means in memory elements thereof, said memory elements being determined by a selected display mode; and

an indicator for displaying signals read from said second memory;

said first and second memories functioning in combination to remove unwanted sea clutter.

B1 5,367,085 (3144th)
PREPARATION OF TICL$_3$ COORDINATION COMPLEXES
Jamie R. Strickler, Baton Rouge, La., assignor to Albermarle Corporation, Richmond, Va.
Reexamination Request No. 90/004,137, Feb. 13, 1996.
Reexamination Certificate for Patent 5,367,085, issued Nov. 22, 1994, Ser. No. 123,666, Sep. 20, 1993.
Int. Cl.[6] C07F *17/00;3/00*
U.S. Cl. 549—206

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1**, **2**, **5–8** and **10** are cancelled.

Claims **3**, **9** and **11** are determined to be patentable as amended.

Claim **4**, dependent on an amended claim, is determined to be patentable.

New claims **12**, **13** and **14** are added and determined to be patentable.

3. [The process of claim **1** wherein said ether is a cyclic ether] *A process for preparing a $TiCl_3$ coordination complex with an ether, said process comprising adding maroon-red $TiCl_3$·⅓$AlCl_3$ to an ether solvent so as to form a solid $TiCl_3$-ether coordination complex in said solvent, wherein said solvent is a cyclic ether having from 4 to about 10 carbon atoms* and said complex is substantially $AlCl_3$ free.

REISSUES

FEBRUARY 25, 1997

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 35,460
METHOD FOR FIBER LOADING A CHEMICAL COMPOUND
John H. Klungness; Daniel F. Caulfield; Irving B. Sachs; Marguerite S. Sykes; Freya Tan, all of Madison, and Richard W. Shilts, Stoughton, all of Wis., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.
Original No. 5,223,090, dated Jun. 29, 1993, Ser. No. 805,025, Dec. 11, 1991. Continuation-in-part of Ser. No. 665,464, Mar. 6, 1991, abandoned. Application for reissue Oct. 21, 1993, Ser. No. 141,181
Int. Cl.[6] D21H *11/16*
U.S. Cl. 162—9 **38 Claims**

21. A method for loading cellulosic fibers with calcium carbonate comprising:

(a) Providing a cellulosic fibrous material comprising a plurality of elongated fibers having a fiber wall surrounding a hollow interior, said fibrous material containing from about 40% to about 85% moisture, and having the form of dewatered crumb pulp;

(b) adding a chemical selected from the group consisting of calcium oxide and calcium hydroxide to said pulp in a manner such that at least some of said chemical becomes associated with the water present in the hollow interior of said pulp said chemical being added at a level of from about 0.1% to about 50% by weight based on the dry weight of said fibrous material; and

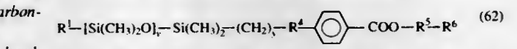
(c) contacting said cellulosic fibrous material with carbon dioxide so as to provide a cellulosic fibrous material having a substantial amount of calcium carbonate loaded within the hollow interior and within the fiber walls of the plurality of cellulosic fibers, said contact with said carbon dioxide being effected in a closed container pressurized with carbon dioxide gas.

Re. 35,461
LUBRICATING OIL ADDITIVES
John F. Marsh, and Joseph M. Swietlik, both of Abingdon, United Kingdom, assignors to Exxon Research and Engineering Company, Linden, N.J.
Original No. 5,069,804, dated Dec. 3, 1991, Ser. No. 232,952, Aug. 17, 1988. Continuation of Ser. No. 896,572, Aug. 18, 1986, abandoned, which is a continuation of Ser. No. 492,474, May 6, 1983, abandoned. Application for reissue Dec. 2, 1993, Ser. No. 162,551
Claims priority, application United Kingdom, May 14, 1982, 8214192
Int. Cl.[6] C10M *159/22*
U.S. Cl. 508—322 **28 Claims**

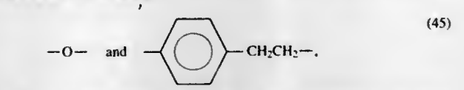
1. An additive concentrate for incorporation in lubricating oil composition consisting essentially of lubricating oil; and from 10 to 90 wt. % of overbased alkaline earth metal hydrocarbyl sulphurized phenate which has been treated, either during or subsequent to overbasing, with from 0.1 to 10 weight %, based on the weight of the additive concentrate, of stearic acid or anhydride or salt thereof, and which has a total base number of 235– [300] *about 260.*

Re. 35,462
SILYLATED BENZOIC ACID DERIVATIVES
Wolfgang Haas, Germering; Norman Häberle; Rainer Winkler, both of Munich, and Franz-Heinrich Kreuzer, Martinsried, all of Germany, assignors to Consortium fur elekochemische Ind. GmbH, Munich, Germany
Original No. 5,106,530, dated Apr. 21, 1992, Ser. No. 542,477, Jun. 22, 1990. Application for reissue Feb. 7, 1994, Ser. No. 192,515
Claims priority, application Germany, Jun. 22, 1989, 3920509; Apr. 24, 1990, 4013067
Int. Cl.[6] C09K *19/06;19/34;* **C07F** *7/04;7/08*
U.S. Cl. 252—299.6 **2 Claims**

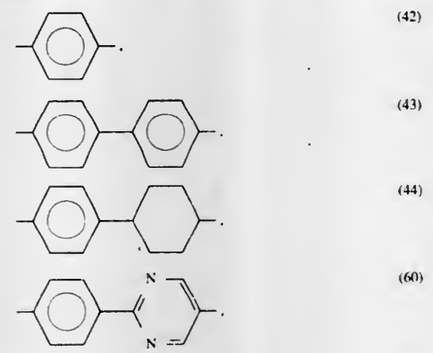
1. A liquid crystalline compound of the formula



in which R^1 is a C_1- to C_{18} alkyl group, v is an integer having a value of from [0] *1* to 10, y is an integer of from 3 to 12, R^4 is selected from the group consisting of a single chemical bond, a radical of the formula



R^5 is a radical selected from the group consisting of divalent radicals of the formulas and halogenated, divalent radicals of the formulas



R^6 is selected from the group consisting of R^1, a halogen atom, a cyano group, a hydrogen atom, a C_1- to C_{18} alkoxy group, a C_1- to C_{18} alkyl group substituted with chlorine atoms and a group of the formula

$$—O—(CH_2)_y—Si(CH_3)_2—[OSi(CH_3)_2]_v—R^1. \quad (66)$$

where y, v and R^1 are the same as above, with the proviso that if R^5 is a group of formula 64, R^6 is a C_1–C_{18} alkyl group substituted with chlorine atoms.

Re. 35,463

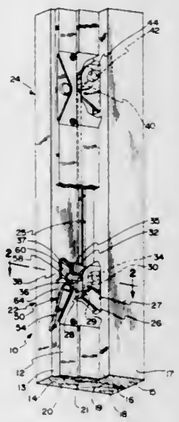
SASH LOCK

Gregory J. Vetter, Owatonna, and Daniel G. Tucker, deceased, late of Waseca, both of Minn., assignors to Truth Hardware Corporation, Owatonna, Minn.

Original No. 5,087,087, dated Feb. 11, 1992, Ser. No. 669,530, Mar. 14, 1991. Application for reissue Feb. 4, 1994, Ser. No. 191,876

Int. Cl.[6] **E05L** *3/08*

U.S. Cl. 292—48 **17 Claims**



15. A lock for a window frame including a catch capable of grasping and releasing a keeper mounted on a window sash so as to releasably maintain the frame adjacent the sash, said lock comprising:

a housing for mounting against an interior face of the frame, said housing having a cavity and an opening therethrough with a portion substantially cylindrical about an axis substantially perpendicular to the frame face; and

an operator having

a portion receivable within said housing cylindrical portion and adapted to pivot about said axis,

a handle portion extending from the pivotal portion, and

an actuator portion extending from the pivotal portion and having a button at one end for engaging said catch to control movement thereof;

whereby said frame interior face secures the receivable operator portion in the housing cylindrical portion when said housing is mounted against the frame by preventing substantial movement of the operator other than pivoting about said axis.

Re. 35,464

APPARATUS AND METHOD FOR TRANSLATING SENTENCES CONTAINING PUNCTUATION MARKS

Hitoshi Suzuki, Nara; Shinobu Shiotani, Kashiba; Shinji Tokunaga, Nara; Tokuyuki Hirai, Nara; Yoji Fukumochi, Nara-ken; Shuzo Kugimiya, Nara, and Ichiko Sata, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Original No. 4,964,030, dated Oct. 16, 1990, Ser. No. 126,262, Nov. 27, 1987. Continuation of Ser. No. 961,575, Oct. 15, 1992, abandoned. Application for reissue Nov. 3, 1994, Ser. No. 336,199

Claims priority, application Japan, Nov. 28, 1986, 61-284484; Nov. 28, 1986, 61-284485; Nov. 28, 1986, 61-284491

Int. Cl.[6] **G06F** *19/00*

U.S. Cl. 395—752 **33 Claims**

I bought a car "with 1000 dollars."	私は、「1000ドルで」自動車を買った。

11. A system for enabling translation of an input sentence of an original language into a sentence of a target language comprising:

first detecting means for detecting an insertion mark within the original language sentence input into the translation system;

second detecting means for detecting a position and type of the detected insertion mark in the original language sentence, said position being either at an end of the original language sentence or within the body of the original language sentence; and

means for defining the detected insertion mark located within the body of the original language sentence as a conjunction, a punctuation mark, or a pronoun based upon the detected position and detected type of the detected insertion mark, to enable subsequent translation of the original language sentence into the target language sentence.

Re. 35,465

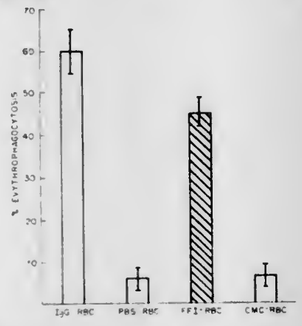
METHOD AND AGENTS FOR REMOVING ADVANCED GLYCOSYLATION ENDPRODUCTS

Helen Vlassara, Shelter Island; Michael Brownlee, New York, and Anthony Cerami, Shelter Island, all of N.Y., assignors to The Rockefeller University, New York, N.Y.

Original No. 4,900,747, dated Feb. 13, 1990, Ser. No. 91,534, Sep. 3, 1987. Continuation-in-part of Ser. No. 907,747, Sep. 12, 1986, abandoned, which is a continuation-in-part of Ser. No. 798,032, Nov. 14, 1985, Pat. No. 4,758,583, which is a continuation-in-part of Ser. No. 590,820, Mar. 19, 1984, Pat. No. 4,665,192. Application for reissue May 9, 1995, Ser. No. 437,064

Int. Cl.[6] **A61K** *31/415*

U.S. Cl. 514—402 **26 Claims**



1. A method for averting the adverse sequelae of the accumulation of advanced glycosylation endproducts in the body of an animal, comprising introducing into said body an effective amount of an agent capable of causing said body to increase its activity of recognizing and removing macromolecules that have undergone advanced glycosylation selected from the group consisting of an advanced glycosylation endproduct, an advanced glycosylation endproduct bound to a carrier, [the fluorescent chromophore 2-(2-furoyl)-4(5)-(2-furanyl)-1H-imidazole bound to a carrier] a monokine that stimulates the phagocytic cells in said body to increase said recognizing and removing activity toward said macromolecules, and mixtures thereof.

2. The method of claim 1 comprising introducing an agent capable of causing said body to increase its activity or recognizing and removing macromolecules that have undergone advanced glycosylation in combination with a co-stimulatory agent which potentiates the activity of said agent.

4. The method of claim 2 wherein said advanced glycosylation endproduct is selected from the group consisting of the reaction product of albumin and glucose, the reaction product of albumin and glucose-6-phosphate, *the fluorescent chromaphore 2-(2-furoyl)-4(5)-(2-furanyl)-1H-imidazole bound to a carrier,* and mixtures thereof.

Re. 35,466

FLUORINE-CONTAINING POLYMERS AND PREPARATION AND USE THEREOF

Werner M. Grootaert, Oakdale, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Original No. 5,256,745, dated Oct. 26, 1993, Ser. No. 6,062, Jan. 15, 1993. Division of Ser. No. 869,943, Apr. 17, 1992, Pat. No. 5,208,305. Application for reissue Jun. 30, 1994, Ser. No. 269,192

Int. Cl.[6] **C08F** *4/16*

U.S. Cl. 526—194 **9 Claims**

1. A fluorine-containing polymer comprising a fluorine-containing, saturated, carbon-carbon backbone chain comprising interpolymerized units derived from a fluorine-containing ethylenically unsaturated monomer, and an organometallic group, derived from a non-free-radically polymerizable organometallic compound, comprising **[**a**]** *1 to 10* silicon **[**atom**]** *atoms* and an aliphatic carbon atom bonded directly to *one of* said silicon **[**atom**]** *atoms.*

Re. 35,467

Patent Not Issued For This Number

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PLANT PATENTS

GRANTED FEBRUARY 25, 1997

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

9,809

CHRYSANTHEMUM PLANT NAMED 'FELICIA'

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Mar. 1, 1996, Ser. No. 609,493
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—74.1 **1 Claim**

1. A new and distinct Chrysanthemum plant named Felicia, as described and illustrated.

9,810

CHRYSANTHEMUM PLANT NAMED 'SONATA'

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Oct. 24, 1995, Ser. No. 547,756
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—77 **1 Claim**

1. A new and distinct Chrysanthemum plant named Sonata, as described and illustrated.

9,811

CHRYSANTHEMUM PLANT NAMED 'BRISA'

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Mar. 14, 1996, Ser. No. 615,799
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—77 **1 Claim**

1. A new and distinct Chrysanthemum plant named Brisa, as described and illustrated.

9,812

CHRYSANTHEMUM PLANT NAMED 'YORK'

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Mar. 1, 1996, Ser. No. 608,623
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—82.2 **1 Claim**

1. A new and distinct Chrysanthemum plant named York, as described and illustrated.

9,813

GERMANIUM PLANT NAMED 'SANWHITE'

Henricus G. W. Stemkens, Hoorn, Netherlands, assignor to S&G Seeds B.V., Enkhuizen, Netherlands

Filed Dec. 12, 1995, Ser. No. 571,308
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—87.12 **1 Claim**

1. A new and distinct cultivar of ivy-leaved geranium plant substantially as herein shown and described, particularly distinguished by its very short internodes and well branched plant, and its early appearing blush white single flowers that do not set seed.

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PATENTS

GRANTED February 25, 1997

ERRATA

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442–259	5,605,744
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442–347	5,605,746
442–005	5,605,748
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399–120	5,606,405
399–111	5,606,406
399–303	5,606,407

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ERRATA–CONTINUED

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386–001	5,606,422
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396–235	5,606,496
395–232	5,606,497
395–757	5,606,498

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GRANTED FEBRUARY 25, 1997

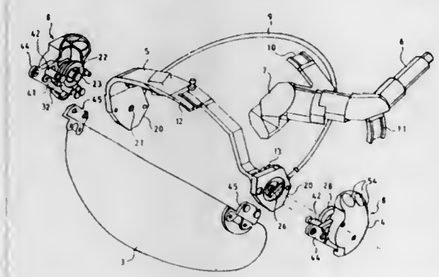
GENERAL AND MECHANICAL

5,604,930

PAIR OF HINGES WITH SYNCHRONIZED OPERATION FOR THE ATTACHMENT OF A RETRACTABLE VISOR TO A HELMET

Eric Petit, Martignas S/Jalle, and Vincent Vitte, Bordeaux, both of France, assignors to Sextant Avionique, Meudon la Foret, France

Filed Sep. 15, 1995, Ser. No. 528,765
Claims priority, application France, Sep. 20, 1994, 94 11176
Int. Cl.[6] A42B *3/22*
U.S. Cl. 2—6.5 **5 Claims**



1. A pair of hinges with synchronized operation for the fastening of a retractable visor to a helmet, wherein each hinge comprises:

a pivot pin pivoting about an axis that is fixed with respect to the side wall of the helmet;

a side fastening lug for the visor fitted on to the pivot pin by means of a buttonhole-shaped hole whose width permits, in addition to the rotational motion, a clearance for the visor in translation with respect to the helmet, said lug being provided with a cam-shaped notch in which there slides a finger fixedly joined to the side wall of the helmet to guide the visor in translation and rotation when it is swinging with respect to the helmet;

a rotary wrist pin fixed to the pivot pin that gets engaged in an ovalized hole of the fastening lug so that, by its motion of rotation with the pivot pin, it causes the swinging of said fastening lug;

a handle fixed to said wrist pin on the exterior of the hinge so that it can be rotated by hand; and

elastic draw-back means drawing back the wrist pin in the end positions of its range of clearance in rotation:

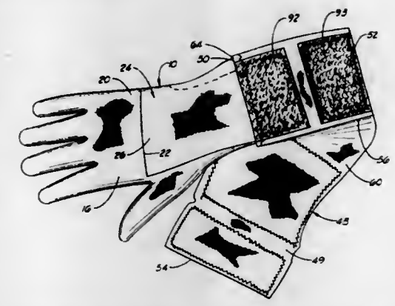
and wherein said hinges are coupled by mechanical means of synchronization that synchronize the motions of their wrist pins.

5,604,931

PROTECTIVE GLOVE

Harvey I. Rhoades, 300 Hal Muldrow Dr. #236, Norman, Okla. 73069

Continuation of Ser. No. 952,198, Sep. 28, 1992, abandoned, which is a continuation of Ser. No. 673,713, Mar. 22, 1991, abandoned. This application Jan. 19, 1993, Ser. No. 4,475
Int. Cl.[6] A41D *19/00*
U.S. Cl. 2—16 **12 Claims**



1. A protective batting glove adapted to be secured about an individual's hand and wrist when batting a baseball to protect a hand area and a wrist area of the individual from injury if hit thereon by the baseball, the protective glove comprising:

a flexible hand cover positionable about the hand of the individual so as to substantially cover the hand, the hand cover having a lower end;

hand protector means for protecting the hand area of the individual from injury when hit on the hand area with the baseball when batting the baseball, the hand protector means secured to the hand cover so that the hand protector means is positioned over the hand area of the individual when the hand cover is disposed about the hand of the individual; and

wrist protector means secured to the lower end of the hand cover for protecting the wrist area of the individual from injury when hit on the wrist area with the baseball when batting the baseball;

wherein the hand protector means and the wrist protector means are secured to the hand cover so as not to impede the flexibility of the wrist of the individual when batting the baseball the hand protector means comprises:

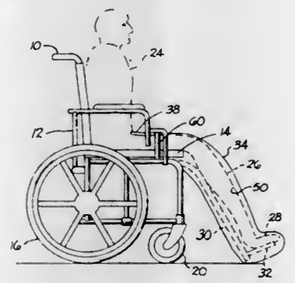
a base constructed of a rigid metal material capable of being hit with the baseball when same is traveling at a relatively high velocity without substantially bending or breaking, the base having an upper surface and a lower surface; and pad means connected to the lower surface of the base for absorbing a portion of a shock when the base is bit with the baseball.

5,604,932

POUCH FOR WHEELCHAIR OCCUPANT

Monique M. Lawicki, 2293 Wilshire, Westland, Mich. 48186

Filed Feb. 26, 1996, Ser. No. 607,219
Int. Cl.[6] A41D *3/00;* **A41B** *13/06*
U.S. Cl. 2—69.5 **5 Claims**



4. A pouch for use with a chair structure means for supporting an occupant in a seated position, said chair structure means having a relatively rigid horizontal seat member and a downwardly depending leg frame for supporting the occupant's legs and feet when she is seated in the seat member, the leg frame being supported in a generally cantilever manner from the seat member, the pouch comprising:

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a fabric member having an opening and a cavity for receiving the occupant's legs and the leg frame into the cavity, the fabric member having a lower panel extending up beneath the leg frame, the seat member and the thighs of the occupant;

a fabric upper panel extending over the lap of the occupant; and

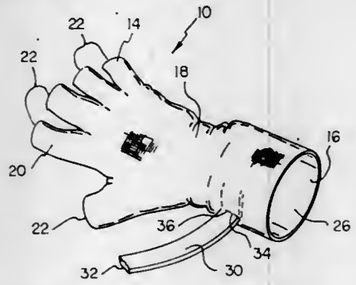
strap means attached to the lower panel and having a sufficient length to pass around both the seat and the thighs of the occupant for connecting the pouch to the seat member.

5,604,933

HAND AND WRIST RESTRAINT FOR A PATIENT

Rusty Stephens, P.O. Box 622, Munford, Ala. 36268

Filed Sep. 13, 1994, Ser. No. 305,053
Int. Cl.[6] A41D *13/10*
U.S. Cl. 2—159 **1 Claim**



1. A new and improved hand and wrist restraint for a patient wearer comprising, in combination:

a glove having a thickness, the glove fabricated of cotton and having an inboard end and an outboard end and a central extent positionable over the palm and back of the hand, the glove having a forward extent formed with elongated finger portions having openings at their outboard end for the passage of the fingers and thumb of the wearer therethrough, the glove having an opening at the inboard end positionable around the wrist of the wearer;

a nylon strap secured to the glove adjacent to the inboard end adjacent to one side of the wrist, the strap having a remote free end and a securement end passing through an aperture in the glove and secured to an interior surface thereof;

an opening formed through the entire thickness of the glove, the opening formed in the central portion of the glove with edges in a rectangular configuration and overlying the back of the hand of the wearer; and

an associated rectangular flap with edges in a rectangular configuration and pivotally secured to an adjacent edge of the opening and forming a hinge and with pile-type fasteners on the glove and the flap in facing relationship adjacent to adjacent edges of the opening and flap remote from the hinge to allow for the opening and closing of the opening.

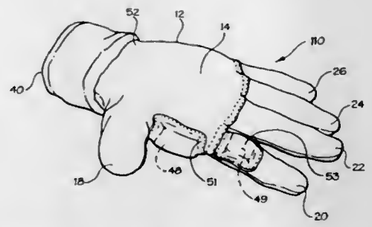
5,604,934

ATHLETIC GLOVE FOR BAT, CLUB AND RACQUET SPORTS

Fred L. Willett, Winston-Salem, N.C., assignor to Sandlot Sports, Inc., Advance, N.C.

Continuation-in-part of Ser. No. 216,914, Mar. 23, 1994, abandoned. This application Sep. 25, 1995, Ser. No. 533,062
Int. Cl.[6] A41D *19/00*
U.S. Cl. 2—161.1 **6 Claims**

1. An athletic glove to be worn on a hand by a participant in bat, club or racquet sports to promote proper gripping disposition of a handle portion of a bat, club or racquet within the participant's hand, the glove comprising a main glove body having a palm portion to overlay the palm of the participant's hand when worn and spacing means integrally affixed to the palm portion of the glove body for engagement with the handle portion of a bat, club or racquet when gripped in the participant's hand to maintain the handle portion at a spacing from the palm of the hand and to induce the participant to cradle the handle portion within the fingers of the hand, the palm portion of the main glove body including a crotch area for overlaying a crotch region of the participant's palm between the thumb and forefinger, and said spacing means including a spacing member disposed only in said crotch area of said glove body located between the respective junctions of the thumb and forefinger with the hand to maintain the handle portion of the bat, club or racquet spaced from the crotch region of the participant's palm, other than said primary spacing member, said palm portion being free of spacing members.

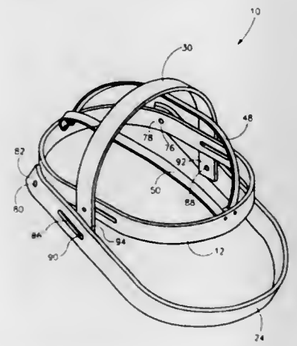


5,604,935

COLLAPSIBLE HELMET

Shlomo Nezer, Carmiel, Israel, assignor to Motorika Ltd., Nazeret Elite, Israel

Filed Jan. 13, 1995, Ser. No. 372,743
Int. Cl.[6] A42B *3/32*
U.S. Cl. 2—410 **17 Claims**



1. A collapsible helmet comprising:

(a) a substantially elliptic rigid headband having a left side portion and a right side portion, said headband including a forehead portion and a nape portion;

(b) a rigid arc-shaped strap hingedly attached to said left side portion and said right side portion, said strap extending laterally across the crown of a wearer when deployed in its substantially upright operative position so as to define a head protecting shell and lying substantially co-planar with said headband when deployed in its folded inoperative position so as to define a compact package; and

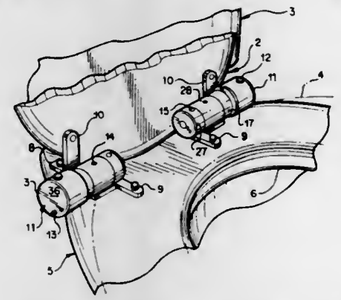
(c) a pair of rigid arc-shaped ribs hingedly attached to said forehead portion and to said nape portion, said pair of ribs extending longitudinally across the crown of a wearer when deployed in their substantially upright operative positions and lying co-planar with said headband when deployed in their folded inoperative positions.

5,604,936

SELF-LOWERING TOILET SEAT

Melvin J. Mausolf, 11 Claremont Dr., Flat Rock, N.C. 28731

Filed Sep. 28, 1995, Ser. No. 535,640
Int. Cl.[6] A47K *13/10*
U.S. Cl. 4—246.1 **20 Claims**



1. An apparatus for automatically lowering a toilet seat from a raised position to a lowered position adjacent a toilet bowl rim, comprising:

a first cylindrically shaped rotatable section;

a fluid-filled pneumatic cylinder located adjacent to said first cylindrically shaped rotatable section, said cylinder provided with a horizontal shaft and a piston connected to said horizontal shaft for lateral movement within said cylinder;

an air compression outlet provided in said pneumatic cylinder;

first attachment means for attaching said first cylindrically shaped rotatable section to the toilet seat, allowing said first cylindrically shaped section to rotate when the toilet seat is raised or lowered;

a rotatable shaft provided within said first cylindrically shaped section and axially aligned with said horizontal shaft;

a means provided between said first cylindrically shaped section and said rotatable shaft, allowing said rotatable shaft to rotate responsive to rotation of said first cylindrically shaped section; and

gearing provided between said rotatable shaft and said horizontal shaft for translating rotational movement of said rotatable shaft to a lateral movement of said horizontal shaft; wherein movement of the toilet seat from a raised position to a lowered position would cause the fluid in said pneumatic cylinder to be compressed by the lateral movement of said piston, thereby resulting in reducing the lateral speed of said piston and the rotational speed of said rotatable shaft and said first cylindrically shaped rotatable section, consequently reducing the speed of descent of the toilet seat.

5,604,937

URINAL SCREEN

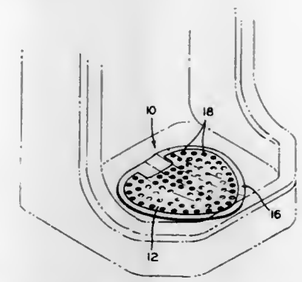
Robert A. Davenport, Sylvania, Ohio, assignor to Impact Products, Inc., Toledo, Ohio

Filed Oct. 26, 1995, Ser. No. 548,709
Int. Cl.[6] E03D *13/00*
U.S. Cl. 4—309 **5 Claims**

1. A urinal screen assembly comprising:

a main body having an extended upper surface, a corresponding extended lower surface, and a marginal edge portion integral with and surrounding the upper surface and the lower surface;

a plurality of spaced apart apertures formed to extend through said body to provide fluid communication between the upper surface and the lower surface of said body; and



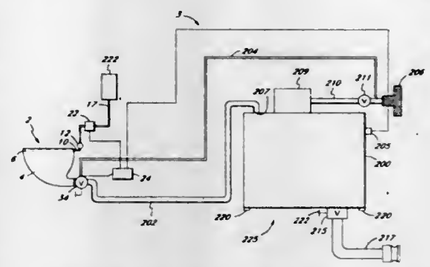
a plurality of spaced apart feet depending from said body to at least support the marginal edge portion of said body in spaced relation from a supporting surface whereby a portion of a quantity of liquid flowing along said support surface can flow outside of a boundary defined by said marginal edge portion, beneath said marginal edge portion without flowing over said marginal edge portion and beneath said body.

5,604,938

VACUUM FLUSH WASTE DISPOSAL SYSTEM FOR RAILCARS

Steven J. Tyler, Riverside, Calif., assignor to Norcan Aircraft Corporation, Santa Ana, Calif.

Continuation-in-part of Ser. No. 862,320, Apr. 2, 1992, abandoned. This application Jul. 19, 1994, Ser. No. 276,952
Int. Cl.[6] E03D *11/10*
U.S. Cl. 4—321 **3 Claims**



1. A vacuum-operated flush waste disposal toilet system for railcars comprising:

a full retention composite waste holding tank;

a bowl which receives waste matter, said bowl having a top rim and an interior surface;

vacuum operated means to transfer the waste matter received in said bowl, to said tank;

a plurality of compression load cells located on a bottom exterior of said tank, said cells not coming into contact with the waste so as to give more accurate readings of the level of waste contained in said tank;

a disposable spray ring for supplying rinse water to said bowl, said spray ring having a disposable hollow tube selectively coupled to a source of water and having a plurality of openings for dispensing the water directly from said ring onto said interior surface of said bowl;

means to maintain a constant vacuum within said waste tank to provide for a rapid flush cycle;

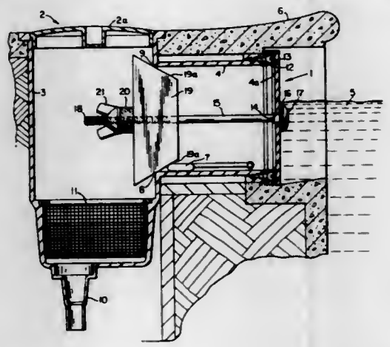
means for averaging and comparing a value received from said cells to calculate the waste level of said tank; and

a lightweight support base used to cradle said bowl, said support base comprising a front end and a back end, said ends connected by a pair of triangular, slanted, composite legs, to a

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front portion of said bowl about halfway down from said top rim of said bowl resting on said front end of said base, and a rear portion of said bowl being secured to said back end of said base so that said base compensates for the center of gravity of said bowl.

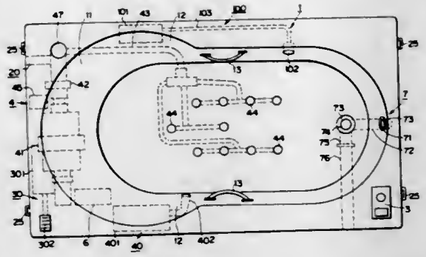
5,604,939
SWIMMING POOL SKIMMER CLOSURE
Robert E. Widener, 4607 Lee Hwy., Verona, Va. 24482
Filed Sep. 14, 1995, Ser. No. 528,349
Int. Cl.[6] E04H *4/00*
U.S. Cl. 4—507 **9 Claims**



1. In combination closure and a swimming pool skimmer having a housing including a side wall an inlet portion having an open end adapted to communicate with water in a swimming pool and an opposite end adapted to enable water from the swimming pool to flow to a filter, and a pair of interior transversely spaced shoulders integral with said sidewall and in proximity to the inlet portion and spaced inwardly from the open end of said inlet portion; said closure comprising a face plate having an inner surface and an outer surface, said inner surface abutting the open end of said inlet portion, a transversely extending brace member positioned in said inlet portion and abutting said shoulders, and means for fastening said face plate to said brace member and to said housing for holding said face plate in sealing engagement with said open end, whereby the skimmer can be drained without draining the water from the swimming pool during the winterizing of the pool.

5,604,940
MOVABLE BATHTUB UNIT HAVING A FUNCTION OF EMITTING AIR-BUBBLE JET
Hideo Shimizu, Toshima-ku, Japan, assignor to Cappeline Buono, Tokyo, Japan
Filed Mar. 22, 1995, Ser. No. 408,071
Claims priority, application Japan, Feb. 10, 1995, 7-022589
Int. Cl.[6] A47K *3/00*
U.S. Cl. 4—541.1 **13 Claims**

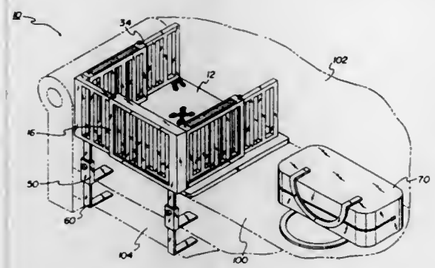
1. A portable bathtub unit that is capable of being moved at will to a desired location of use and that is devoid of plumbing connections to be connected to a water supply, said unit comprising:
a bathtub for containing water, said bathtub having bottom and side walls, an upper peripheral flange, and bubble jet nozzles in at least one of said walls;
a jacket receptacle having bottom and side walls;
said bathtub being positioned within said receptacle and defining therewith a double-wall structure having between confronting respective walls of said bathtub and said receptacle a back accommodating space, a front space and opposite lateral side



space, and said bathtub and said receptacle being devoid of water supply plumbing connections or fixtures;
bubble-jet producing means for generating and emitting a jet of air bubbles into said bathtub, said means comprising an air blowing pump for drawing in open air and forcibly discharging such air, a pressure control valve for controlling the pressure of the air discharged from said air blowing pump, a pipe leading the air discharged from said air blowing pump to said bubble jet nozzles, a portion of said pipe being raised to extend to said flange and having an opening exposed therethrough and a cap removably closing said opening;
a driving controller operably connected to said air blowing pump for controlling operation thereof;
a filter unit for filtering water in said bathtub, and a pump for circulating water between said bathtub and said filter unit;
a steam mechanism including a steam producing device for producing and supplying steam into said bathtub;
a drain for draining water from said bathtub;
injecting means for injecting a bath liquid or an aromatic into said bathtub;
an illuminating means for illuminating said bathtub, said illuminating means including a light source spaced from said bathtub, an optical projecting means for emitting light into said bathtub, and optical fibers for transmitting light from said light source to said optical projecting means;
a cord reel supporting a reeled electric cord operatively connected to said air blowing pump and to be connected selectively to an electric source for selectively enabling power to be supplied to said air blowing pump;
said air blowing pump, said pressure control valve, said pipe portion, said driving controller, said filter unit, said steam mechanism, said injecting means, said light source and said cord reel all being accommodated within said back accommodating space;
a control panel having a switch operably connected to said driving controller for selectively controlling operation of said air blowing pump; and
damper leg stands mounted on said receptacle for supporting said bathtub unit.

5,604,941
PORTABLE CRIB FOR A SOFA
Edward Román, 2265 N. Howard St., Philadelphia, Pa. 19133
Filed Nov. 3, 1995, Ser. No. 553,047
Int. Cl.[6] A47D *7/04*
U.S. Cl. 5—95 **7 Claims**

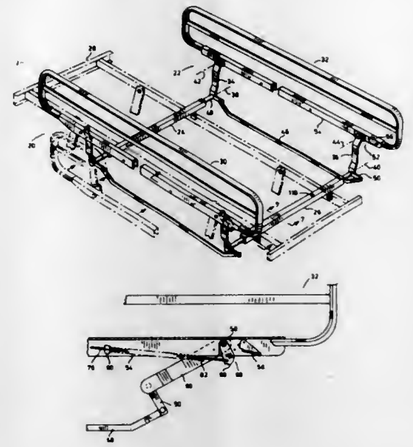
1. A portable crib for a sofa for forming a crib mountable to cushions of a sofa comprising, in combination:
a mattress having a generally square configuration, the mattress positionable on an upper surface of a sofa cushion;
a front section comprised of an inner gate and an outer gate, the inner gate being slidably received within the outer gate, the outer gate having an aperture formed through an upper surface thereof adjacent to an open end thereof where the outer gate slidably receives the inner gate, an adjustment knob extends through the aperture to secure the inner gate within



the outer gate at a desired length, distal ends of the inner gate and the outer gate having vertical slots formed therein;
a pair of side sections, each of the side sections comprised of an inner gate and an outer gate, the inner gate being slidably received within the outer gate, the outer gate having an aperture formed through an upper surface thereof adjacent to an open end thereof where the outer gate slidably receives the inner gate, an adjustment knob extends through the aperture to secure the inner gate within the outer gate at a desired length, each outer gate having a hook and loop strip on the upper surface thereof, each outer gate having securement portions slidably secured within the vertical slots in the distal ends of the inner gate and the outer gate of the front section;
a sofa securement mechanism comprised of a pair of upper L-shaped brackets each having a vertical extent and a horizontal extent, the vertical extent being hingedly coupled with a lower distal end of each of the inner gate and the outer gate of the front section, the vertical extent having a receiving channel formed therein, an aperture extending through a side of the vertical extent into the receiving channel, the sofa securement mechanism having a pair of lower L-shaped brackets each having a vertical extent and a horizontal extent, the vertical extent being slidably coupled with the receiving channel, the sofa securement mechanism having a pair of adjustment knobs each extending through the aperture to secure the lower L-shaped bracket within the upper L-shaped brackets at a desired length;
a carrying case adapted to receive the portable crib in a disassembled configuration.

5,604,942
SIDE RAIL FOR BED
Eugene F. Allevato; Everett A. d'Entremont, both of Burlington, and Mits Sumiya, North York, all of Canada, assignors to M.C. Healthcare Products Inc., Beamsville, Canada
Filed Aug. 24, 1995, Ser. No. 519,005
Int. Cl.[6] A47C *21/08*
U.S. Cl. 5—428 **18 Claims**

1. A side rail assembly for a bed having a mattress support structure for supporting a mattress, the assembly comprising:
a pair of mounting members for attachment to the mattress support structure;
a pair of swing arms having proximal ends pivotally connected to respective ones of the mounting members for rotation in a vertical plane about respecting parallel first and second axes;
a link pivotally coupled to the swing arms adjacent the mounting members;
a frame pivotally coupled to the distal ends of the swing arms about respective third and fourth axes parallel to said first and second axes such that the frame and the link cause each of the swing arms to maintain a common angular relationship with the vertical at all times, so that the frame maintains a longitudinal orientation as the swing arms rotate and the frame moves downwardly from a deployed position generally above the mattress support structure to a lowered position generally below the mattress support structure;

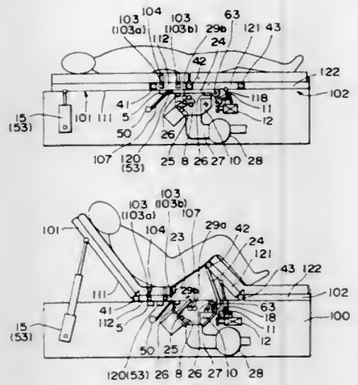


a crank connected to the distal end of one of the swing arms for angular movement with that swing arm about a selected one of said third and fourth axes;
an elongate compression spring having a line of action and being anchored to the frame and coupled to the crank at a point offset from said selected axis, whereby movement of the frame from the deployed to the lowered position will store energy in the compression spring ready for use to assist elevating the frame back to the deployed position, the distance between said line of action of the spring and said selected axis varying as the frame is moved, the distance being a maximum when the swing arms are substantially horizontal, and said line of action crossing said selected axis as the frame reaches the lowered position to provide an over-centre effect to retain the frame in the lowered position; and
a latch cooperating with said crank to releasably retain the frame in the deployed position.

5,604,943
BED SYSTEM WITH EXCRETING MECHANISM
Motoyasu Kimura, and Tomoe Kimura, both of Tokyo, Japan, assignors to Kimura Industry Co., Ltd., Tokyo, Japan
Division of Ser. No. 22,371, Feb. 25, 1993, Pat. No. 5,461,738.
This application Jun. 7, 1995, Ser. No. 479,161
Claims priority, application Japan, Feb. 28, 1992, 4-43686; Sep. 24, 1992, 4-255119
Int. Cl.[6] A61G *7/02*
U.S. Cl. 5—604 **10 Claims**

1. A bed system with an excreting mechanism for use by a patient and operable with a bed sheet comprising:
a front base for receiving the upper half of a patient's body, said front base having front and rear portions and side portions and capable of having its front portion tilted upward;
a rear base for receiving the lower half of said patient's body, said rear base having a front portion and being movable forward and backward and having a front portion capable of being tilted upward;
a posture regulating mechanism comprising at least a pair of rollers provided in said front portion of said front base and said rear portion of said front base, respectively; said bed sheet being stretched between said rollers and capable of being moved forward and backward by rotation of said rollers;
a roller drive means for driving said rollers;
a pot seat provided at an opening portion between said rear portion of said front base and said front portion of said rear

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base when said front base is tilted up and said rear base is moved backward to tilt said front portion of said rear base upward; and

a chamber pot disposed under said pot seat in such a manner that the upper surface thereof is opened and closed when said front portion of said rear base is tilted up or down, at least a pair of rollers provided in the vicinities of both side portions of said front base, said sheet being stretched between said rollers so as to be movable rightwardly and leftwardly by rotation of said rollers, and a roller drive means for driving said rollers.

5,604,944

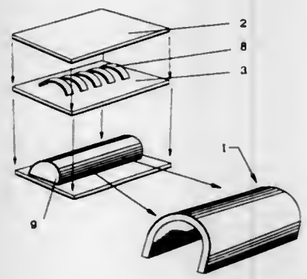
REINFORCED ARM PROTECTOR HEAD REST

Robert Meade, 14262 Ida Way, Westminster, Calif. 92683

Filed Oct. 10, 1995, Ser. No. 541,957

Int. Cl.[6] A47G *9/00*

U.S. Cl. 5—643 **2 Claims**



1. A device for resting a head comprising a head rest of generally semicircular cross section formed as half an elongated cylinder having an outer surface, an inner surface and a wall of resilient foam reinforced with a plurality of spaced apart U-shaped ribs contained in the wall, whereby the head rest has sufficient rigidity such that when a head is resting on the head rest, an arm may be positioned in a passageway beneath the wall in a manner that does not require the arm to support the weight of the head.

5,604,945

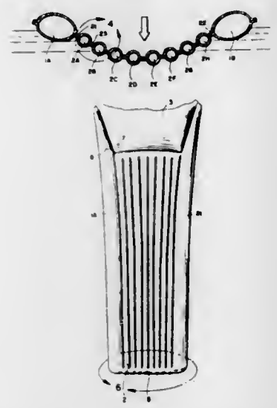
INFLATABLE MATTRESS

David R. Fisher, and Hua H. Lin, both of Long Beach, Calif., assignors to Intex Recreation Corp., Long Beach, Calif.

Filed Jun. 16, 1995, Ser. No. 491,487

Int. Cl.[6] A47C *27/10*

U.S. Cl. 5—706 **7 Claims**



1. An inflatable mattress for use on solid and fluid surfaces comprising:

(a) a pair of exterior tubes, longitudinally disposed in parallel on opposite sides of the periphery of the mattress, said pair of external tubes having tapering edges;

(b) a plurality of parallel, connected interior tubes formed of multiple PVC layers, said plurality of interior tubes being smaller in diameter than the pair of exterior tubes and disposed in series between the exterior tubes, said plurality of interior tubes being of sufficient numbers and dimension to partially enwrap, when inflated, a human user reclining longitudinally thereon when the mattress is in use;

(c) multiple valve means to inflate each of said tubes through a common air manifold; and

(d) pillow tube for communicating with each of said tubes.

5,604,946

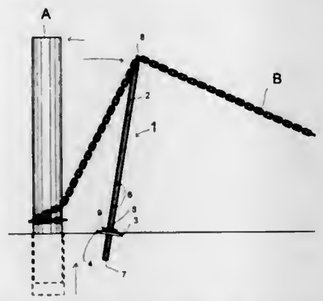
MULTI-PURPOSE FENCE BUILDING TOOL

Wilfred W. Stenerson, 10570 Hwy. 16, Eagle, Id. 83616

Filed Feb. 25, 1994, Ser. No. 202,392

Int. Cl.[6] B25F *1/00*

U.S. Cl. 7—117 **12 Claims**



1. A tool for pulling posts and for stretching wire between fence posts, comprising:

an elongated member having two ends, a first end and a second end and a longitudinal axis, wherein the second end of the elongated member is modified to form a taper or point, the elongated member having a pair of holes therethrough disposed generally transversely with respect to the longitudinal axis with one hole being located proximate the first end and the other hole being located proximate a mid-point of the elongated member;

a flange slideably adjustable between two positions between the ends of the elongated member, a first post pulling position having the flange positioned proximate the first end of the elongated member and a second wire dispensing position having the flange positioned proximate the mid-point of the elongated member, the flange having a flange collar being configured to slidably receive the elongated member, the flange collar having a hole therethrough positioned to align with the hole in the elongated member, and the flange having a flange plate permanently affixed to the flange collar, the flange plate being configured to present a substantially planar surface perpendicular to the elongated member having a surface area substantially greater than the cross sectional area of the elongated member and great enough to prevent penetration of the elongated member into the ground past the flange in the first position and to support a spool of wire for dispensing in the second position; and

a pin being removably engagable with the hole in the flange collar and the holes in the elongated member to fix the flange between the two ends of the elongated member in the first and second positions to selectively prevent the flange from sliding along the elongated member.

wherein each of the given radii of said high and low portions is selected such that the given radii of said high portions are less than the given radii of said opposably engageable low portions.

5,604,947

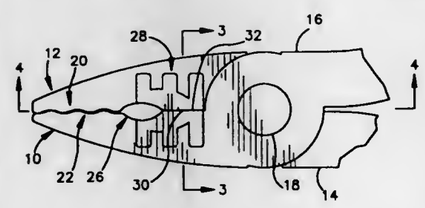
PLIER-TYPE TOOL FOR GRIPPING, TWISTING, AND PULLING WIRES

Darryle E. Bates, Stowe, Ohio, and Vincent J. Kiernan, Marco Island, Fla., assignors to Milbar Corporation, Chagrin Falls, Ohio

Filed Jan. 11, 1995, Ser. No. 371,275

Int. Cl.[6] B25B *7/22*

U.S. Cl. 7—133 **15 Claims**



1. A plier-type tool for gripping wires, comprising a centerline and a pair of plier arms equidistant from said centerline, each plier arm having:

(a) a jaw portion, wherein said jaw portion comprises undulating wire gripping surfaces, wherein each of said undulating wire gripping surface comprises a plurality of high and low portions, each of said high and low portions having a given radius,

(b) a handle portion,

(c) a pivot joint interconnecting said arms for allowing movement of said jaw portion from an open to a closed position; and

wherein said jaw portions are opposably engageable with each other such that the high portions of the wire gripping surface on one jaw are opposably engageable with the low portions of the wire gripping surface on the opposing jaw, and

5,604,948

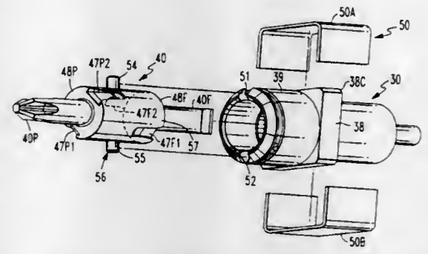
IMPACT TERMINATION TOOL CONFIGURED FOR TORQUE APPLICATIONS

Kenneth L. McMahon, Newbury Park, and Robert W. Sullivan, Simi Valley, both of Calif., assignors to Harris Corporation, Melbourne, Fla.

Filed Apr. 22, 1994, Ser. No. 231,576

Int. Cl.[6] B25B *15/00*

U.S. Cl. 7—165 **14 Claims**



1. A termination tool of the type used to connect an electrical conductor to a terminal element, said termination tool comprising a torque and slide element configured so that said torque and slide element may be selectively axially translated in the direction of an axis of said termination tool and may be selectively rotated about said axis of said termination tool, said torque and slide element having an interior longitudinal bore that is sized to receive and capture a selected one of a termination blade and a torque bit element at a first, external end thereof, and being coupled to receive an axial impact from an impact device at a second, interior end thereof, said torque and slide element having a raised body portion solid with an outer body portion thereof, and a handle containing an impact device, which is operative to apply an impact force to said second, interior end of said torque and slide element, said handle further having an interior bore sized to accommodate said raised body portion of said torque and slide element, and further including a protective sleeve, which surrounds said raised body portion of said torque and slide element, and wherein said interior bore of said handle is sized to capture said protective sleeve surrounding said raised body portion of said torque and slide element, and wherein each of said raised portion of said torque and slide element and said protective sleeve captured in said interior bore of said handle has the same regular polygon shape, and wherein said raised body portion of said torque and slide element has smooth radius corners and a length less than the length of said interior bore and said protective sleeve, so as to allow relatively smooth axial translation of said raised body portion of said torque and slide element along interior surfaces of said protective sleeve within said interior bore of said handle.

5,604,949

WELD-FREE GRATINGS FOR BRIDGE DECKS

Ronald W. Mangone, New Kensington, Pa., assignor to Mangone Enterprises, New Kensington, Pa.

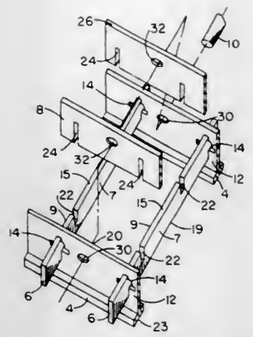
Continuation-in-part of Ser. No. 541,732, Oct. 10, 1995. This application Jan. 22, 1996, Ser. No. 589,500

Int. Cl.[6] E04C *2/42*; **E01D** *19/12*

U.S. Cl. 14—73 **29 Claims**

28. In an improved weldless grating comprised of a plurality of longitudinally extending primary load-bearing members having an

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upper portion, a lower portion and a web located between said upper portion and said lower portion, the primary load-bearing member having a plurality of spaced-apart openings in said web, the openings in each of said primary load-bearing members being aligned with the openings in adjacent primary load-bearing members, the improvement wherein said openings in said web are defined by:

(a) a generally cross shaped configuration having a generally vertical extent having a top and bottom and a generally horizontal extent having a first side and a second side, the distance between the top and bottom of the vertical extent being shorter than the distance between the first side and the second side of the horizontal extent, the opening having a first land and a second land substantially opposite each other, the first land extending from the top of said vertical extent to said second side, the second land extending from said first side to said bottom; and

(b) a plurality of secondary load-bearing members having an upper edge and a lower edge, the secondary load-bearing members provided with first slots extending downwardly through the upper edge to provide top slots,

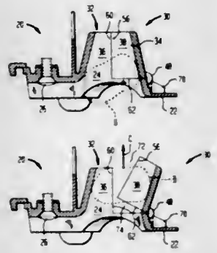
the secondary load-bearing members positioned in the aligned openings in said web of the primary load-bearing members, said top slot in said secondary load-bearing member forming a locking engagement with said web surrounding said openings in said primary load-bearing members.

5,604,950

ANTI-CLOGGING, VARIABLE THROAT SUCTION NOZZLE AND SUCTION CLEANING DEVICE EQUIPPED THEREWITH

Carl M. Stern, Pennington, N.J., assignor to H-Tech, Inc., Wilmington, Del.

Filed Oct. 27, 1995, Ser. No. 549,047
Int. Cl.[6] E04H *4/16*; A47L *9/02*
U.S. Cl. 15—1.7 **22 Claims**



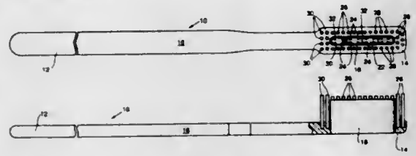
1. A suction nozzle adapted for use in a suction cleaning device, comprising a body which is split into a plurality of discrete body portions cooperating to define a throat which tapers from an inlet at one end of said body to an outlet at an opposite end of said body, at least one of said body portions being movable relative to another of said body portions in response to the entry into said nozzle of foreign objects which are smaller than said inlet but larger than said outlet, whereby said throat is expandable so as to facilitate the passage of foreign objects through said nozzle during the operation of an associated suction cleaning device.

5,604,951

PROPHY TOOTHBRUSH

Anthony D. Shipp, 351 N. Foothill Rd., Beverly Hills, Calif. 90210

Filed Dec. 30, 1994, Ser. No. 366,789
Int. Cl.[6] A46B *9/04*
U.S. Cl. 15—167.1 **2 Claims**



1. A toothbrush for brushing teeth and gums of human beings and animals, the toothbrush comprising:

(a) a long and narrow handle having a longitudinal axis;

(b) a brush head connected to the handle, the brush head having an end proximal to the handle and an end distal from the handle;

(c) a prophy cup device, made of a flexible elastomeric material, secured to the brush head, the prophy cup device comprising

(1) sides extending from the brush head,

(2) a central cavity portion allowing for placement of tooth cleaning material therein, and

(3) a plurality of vanes extending from the sides of the prophy cup device into the central cavity portion;

(d) a plurality of lateral bristle tufts secured to the brush head, the lateral bristle tufts comprising a plurality of individual nylon bristles, the lateral bristle tufts extending above the prophy cup device and placed in at least one row on at least one of the sides of the prophy cup device along lines parallel to the longitudinal axis of the handle;

(e) a plurality of leading bristle tufts secured to the brush head, the leading bristle tufts comprising a plurality of individual nylon bristles, the leading bristle tufts extending above the lateral bristle tufts and placed on the end of the brush head distal from the handle; and

(f) a plurality of trailing bristle tufts secured to the brush head, the trailing bristle tufts comprising a plurality of individual nylon bristles, the trailing bristle tufts extending above the lateral bristle tufts and placed on the end of the brush head proximal to the handle.

5,604,952

INTERPROXIMAL TOOTHBRUSH

Glenn Zeleznick, 8158 Beverly Blvd., Los Angeles, Calif. 90048

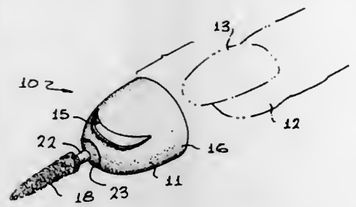
Filed Jan. 16, 1996, Ser. No. 587,019
Int. Cl.[6] A46B *3/18*
U.S. Cl. 15—167.1 **2 Claims**

1. An interproximal toothbrush comprising:

a base member having two opposite ends, one end of which has an internal recess for insertably receiving the fingertip of a user and the other end having a curved surface;

an elongated brush support having a plurality of bristles outwardly projecting from said base member;

a mounting element fixedly attaching said brush to said curved surface of said base member;



said elongated brush having a bristle arrangement of said bristles in a tapered spiral plurality of radiating individual bristles, said bristles radiating outwardly from said elongated brush support;

said elongated brush support having at least one twisted wire carrying said bristles in outwardly radiating formation with smaller diameter bristles at one end of said brush and larger diameter bristles at its other end; and

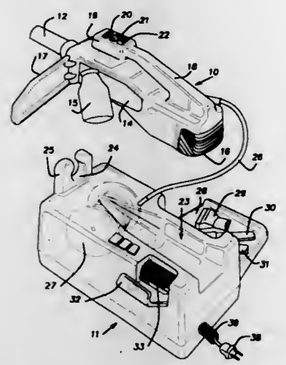
said mounting element includes an arcuate portion mateable with and affixed to said curved surface.

5,604,953

VACUUM CLEANER

Lennart W. Castwall, Täby; Magnus C. W. Lindmark, Stockholm, and Lars G. Moren, Huddinge, all of Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden

PCT No. PCT/SE94/00003, § 371 Date Aug. 23, 1995, § 102(e) Date Aug. 23, 1995, PCT Pub. No. WO94/15518, PCT Pub. Date Jul. 21, 1994
PCT Filed Jan. 3, 1994, Ser. No. 507,465
Claims priority, application Sweden, Jan. 8, 1993, 9300032
Int. Cl.[6] A47L *9/26*; *5/24*
U.S. Cl. 15—323 **5 Claims**



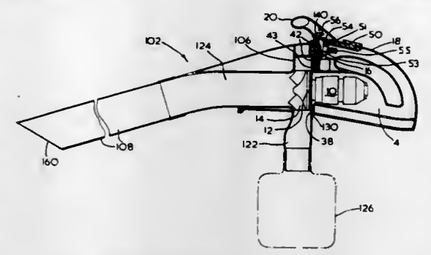
1. Vacuum cleaner system including a hand-held vacuum cleaning unit and a storage unit, said hand-held unit being arranged, when not in use, to be positioned on said storage unit, said hand-held unit comprising an electric motor and an associated suction fan, and having an inlet opening and an outlet opening for an air stream from which dust particles are to be removed, said particles being collected by a dust separating device incorporated in the hand-held unit, coupling means being provided at the inlet opening to fluidly connect said inlet opening with a suction nozzle, said hand-held unit being electrically connected to said storage unit by means of an extensible cord, and an additional cord, connecting said storage unit to a mains outlet, said extensible cord permitting said hand-held unit to be removed from said storage unit and operated at a position remote from said storage unit.

5,604,954

BLOWER-VACUUM DEVICE

Craig Webster, Jesmond, and John Sadler, Darlington, both of United Kingdom, assignors to Black & Decker Inc., Newark, Del.

Filed Jan. 30, 1996, Ser. No. 594,005
Claims priority, application United Kingdom, Jan. 30, 1995, 9501751; Sep. 1, 1995, 9517834
Int. Cl.[6] A47L *9/28*
U.S. Cl. 15—330 **12 Claims**



1. A blower vacuum comprising:

a motor (**10**) operated by a switch (**16**) and located in a housing (**4**),

a fan (**14**) drivable by a motor,

at least one attachment member (**6, 106**) which covers the fan and which is releasably attachable to the housing, and

a safety interlock located at the interface between the housing and the attachment member comprising;

actuating means responsive to the attachment member for activating the switch only when the attachment member is attached to the housing,

characterised in that the safety interlock additionally comprises;

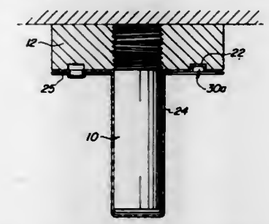
a locking means (**54**) for locking the attachment member to the housing when the motor is switched on.

5,604,955

SURGICAL LIGHTING FIXTURE COVER

Robert T. Horan, Northridge, Calif., assignor to Graphic Controls Corporation, Chatsworth, Calif.

Continuation-in-part of Ser. No. 258,498, Jun. 10, 1994, abandoned. This application Sep. 5, 1995, Ser. No. 523,259
Int. Cl.[6] B25G *1/02*; F21L *15/12*
U.S. Cl. 16—114 R **7 Claims**



1. A cover for a surgical lighting fixture handle, comprising:

a generally flat disc having an outer perimeter, a top surface, and a bottom surface, and a central opening;

a tubular and collapsible sheath having a closed bottom end and an open top end, with the open top end attached substantially perpendicularly to the bottom surface of the disc, around the central opening;

a first holding tab on and projecting outwardly from the top surface of the disc; and

a second holding tab on and projecting outwardly from the bottom surface of the disc.

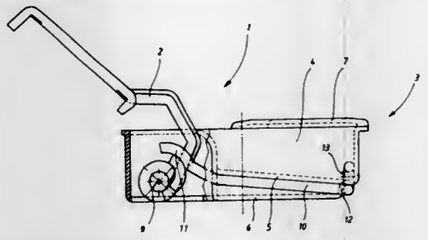
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5,604,956

SINGLE PIVOT HINGE WITH SELF-CLOSING MECHANISM

Alfred Grass, Höchst/Vlbg., Austria, assignor to Grass AG, Hochst/Vlbg., Austria

Filed Aug. 11, 1995, Ser. No. 514,520
Int. Cl.[6] E05F *1/08*
U.S. Cl. 16—278 **12 Claims**



1. A hinge comprising:
a hinge cup with a bottom and a projection nose, the hinge cup bottom including two slanting bottom areas and a flat middle bottom area disposed between the slanting bottom areas;
a hinge arm pivotably connected to the hinge cup;
a pivot axis pivotally connecting the hinge arm to the hinge cup and having a bearing surface; and
an elongate elastic element with two substantially parallel legs having two partially rounded front end areas and joined at an opposite end area, wherein the elastic element is positioned outside and under the bottom of the hinge cup with the parallel legs lying against the slanting bottom areas, the opposite end area of the elastic element being held by the projection nose, and the front end areas of the elastic element parallel legs acting on the bearing surface of the pivot axis.

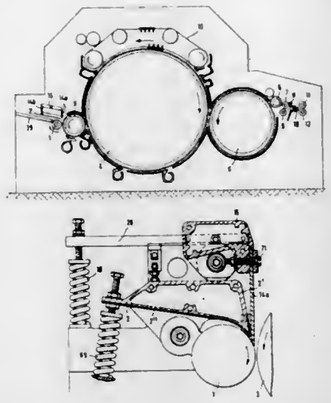
5,604,957

FIBER BATT FEEDING APPARATUS FOR A FIBER PROCESSING MACHINE

Ferdinand Leifeld, Kempen, Germany, assignor to Trützschler GmbH & Co. KG, Mönchengladbach, Germany

Continuation-in-part of Ser. No. 172,158, Dec. 23, 1993, Pat. No. 5,479,679. This application May 24, 1995, Ser. No. 448,984
Claims priority, application Germany, Jun. 18, 1994, 44 21 377.8
Int. Cl.[6] D01G *15/40*
U.S. Cl. 19—105 **8 Claims**

1. An apparatus for feeding a fiber batt to a fiber processing machine, comprising
(a) a rotatably supported feed roll;
(b) a feed table made of a material selected from the group consisting of extruded aluminum and an extruded aluminum alloy; said feed table having a face portion cooperating with said feed roll and defining therewith a nip through which the fiber batt passes in an advancing direction; said feed table having a surface contacting the fiber batt upon passage thereof;
(c) means for rendering at least one part of said surface of said feed table harder than said extruded material for rendering said part of said surface more wear resistant than said extruded material;
(d) a movably supported elongated holding element extending spaced from, and generally parallel to said feed roll;
(e) a plurality of sensor elements each having a securing zone and a sensing zone spaced from said securing zone; each said sensor element being affixed at said securing zone to said holding element; said sensing zone of each said sensor element being arranged for a direct engagement with the fiber batt to undergo excursions as a function of thickness variations of the fiber batt passing through said nip; said sensor elements imparting displacing forces on said holding element; said holding element being moved by said displacing forces to an extent representing a sum of said displacing forces; and
(e) sensor means connected to said holding element for generating a signal as a function of displacements of said holding element.

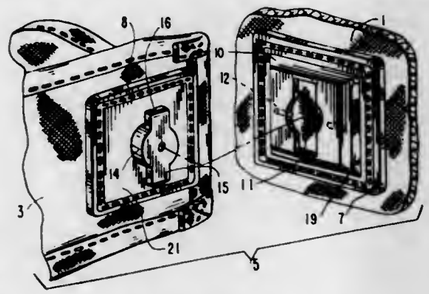


5,604,958

ATTACHMENT SYSTEM FOR BACKPACKS, VESTS, BELTS AND THE LIKE

Joseph Anscher, Muttontown, N.Y., assignor to National Molding Corp., Farmingdale, N.Y.

Filed Nov. 6, 1995, Ser. No. 554,069
Int. Cl.[6] A45F *5/02*
U.S. Cl. 24—3.1 **9 Claims**



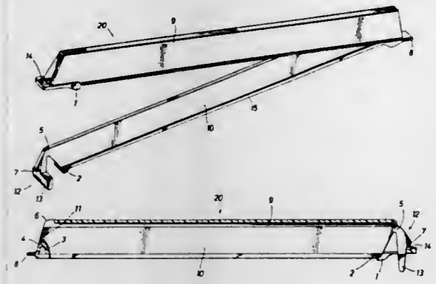
1. A system which couples a pouch or a case to a garment, comprising:
a tab attached to an outer surface of a garment, the tab having an elevated region which is spaced away from a padded region on said outer surface, and the elevated region defining an opening therein;
a coupling member which defines a structure which may be inserted into said opening, wherein the structure is selectively movable in said opening between a first position in which the structure may be removed from said opening and a second position in which at least a portion of the structure is situated in the space between the elevated region of the tab and the padded region of the outer surface of the garment, whereby said at least a portion of the structure is squeezed between the padded region and the elevated region of the tab to hold the coupling member to the tab; and the coupling member having a tab which is attached to the pouch or case.

5,604,959

ICE PACK CLIP

Michael L. Bowen, Arlington, Tex., assignor to Tecnol Medical Products, Inc., Fort Worth, Tex.

Filed Sep. 28, 1995, Ser. No. 535,715
Int. Cl.[6] B65D *77/00*
U.S. Cl. 24—30.5 R **5 Claims**



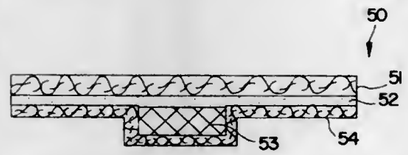
1. A closure device, comprising:
a substantially planar blade having a blade hinge end and a blade latch end;
a trough having a trough hinge end and a trough latch end;
a hinge pivotally connecting the blade hinge end and the trough hinge end;
a latch for releasably attaching the blade latch end and the trough latch end;
wherein the trough hinge end has an inwardly projecting cam and the blade hinge end has a cam follower surface;
wherein the blade latch end has at least one extending stop and the trough has at least one projecting nub near the trough latch end;
wherein the cam, the cam follower surface, the at least one nub and the at least one stop are designed to prevent longitudinal movement of the blade in relation to the trough; and
wherein the cam, the cam follower surface, the at least one nub and the at least one stop are further designed as a secondary latch.

5,604,960

MAGNETIC GARMENT CLOSURE SYSTEM AND METHOD FOR PRODUCING SAME

Elaine M. Good, 77 Bleeker St., Suite 903 N, New York, N.Y. 10012-1551

Filed May 19, 1995, Ser. No. 444,855
Int. Cl.[6] A44B *17/00*; H01F *7/00*
U.S. Cl. 24—303 **18 Claims**



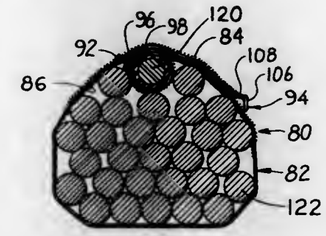
1. A closure system for a garment comprising cooperating magnet assemblies interdimensionally fixed on opposing closure surfaces of the garment and magnetically opposable to each other, said cooperating magnet assemblies serving to securely and removably join said opposing closure surfaces, wherein said cooperating magnet assemblies each comprise:
a support layer;
an adhesive layer bonded to the support layer;.
at least one securing body bonded to the adhesive layer;
a cover layer positioned adjacent said at least one securing body and bonded to said at least one securing body and to said adhesive layer.

5,604,961

MULTIPLE PURPOSE FASTENING DEVICE, SYSTEM AND METHOD

Robert G. Cole, Rogers, Ark., assignor to Fox Ridge Enterprises, Inc., Rogers, Ark.

Filed Jul. 11, 1995, Ser. No. 501,203
Int. Cl.[6] B65D *63/00*
U.S. Cl. 24—306 **10 Claims**



1. A versatile releasable fastening device consisting of an elongate flexible strap having a first free end, a second free end, a first surface and a second surface with each of said surfaces completely covered by respective releasably interlocking elements, at least one of said free ends having one of an end tab and an end ring, a first loop formed at one of said first and second ends of said strap and comprising said strap wrapped around one or more objects and upon itself in a singular direction with a portion of said first and second surfaces releasably interlocked, and at least a second loop comprising at least a portion of the remainder of said strap wrapped around one or more additional objects and upon itself in said singular direction with at least another portion of said first and second surfaces releasably interlocked.

5,604,962

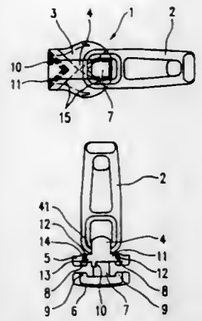
ZIPPER SLIDE

Friedrich Mayerhofer, Rolliweg 15, CH- 2543 Lengnau, Switzerland

Continuation of Ser. No. 172,193, Dec. 23, 1993, abandoned. This application Aug. 18, 1995, Ser. No. 516,932
Claims priority, application European Pat. Off., Dec. 29, 1992, 92811027
Int. Cl.[6] A44B *19/30*
U.S. Cl. 24—421 **12 Claims**

1. A lockable slider for a slide fastener having a pair of coupling elements along respective slide-fastener halves interconnectable upon movement of the slider along the coupling elements in a fastener-closing direction and adapted to disengage the coupling elements upon movement of the slider in an opposite fastener-opening direction, said slider comprising:
a slider body having an upper plate and a lower plate, each having first and second ends, and a separating wedge connecting said first ends of said upper and lower plates and forming therewith a pair of guide channels for the respective coupling elements merging at a narrow mouth of the slider body remote from said separating wedge;
a resiliently deflectable bow member surmounting said upper plate and extending in a longitudinal direction of said slider

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from said first end to said second end of said upper plate, said bow member having first and second ends, said first end of said bow member being anchored to said body at said first end of said upper plate, and said second end of said bow member terminating at said mouth;

a pull tab movably secured within an eye formed between said upper plate and said bow member;

a locking cam connected with and forming an extension of said second end of said bow member and projectable into said guide channels at said mouth for engagement with said coupling elements to lock the slider thereto, said cam being withdrawable from engagement with the coupling elements upon deflection of said second end of said bow member away from said body;

a first stop portion formed on said second end of said upper plate; and

a second stop portion formed on said second end of said bow member and disposed in spaced relation with said first stop portion of said upper plate when said bow member is in a relaxed condition and engageable with said first stop portion to limit deflection of said bow member away from said body;

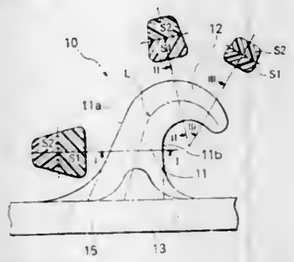
said first stop portion and said second stop portion each having surface cross sections uniform along an axis oriented at an angle with respect to said longitudinal direction of said slider, whereby said slider body, said bow member, said pull tab, said locking cam, said first stop portion, and said second stop portion may be unitarily molded from plastic material.

5,604,963

HOOK STRUCTURE FOR MOLDED SURFACE FASTENER

Mitsuru Akeno, Toyama-ken, Japan, assignor to YKK Corporation, Tokyo, Japan

Filed Oct. 23, 1995, Ser. No. 546,938
Claims priority, application Japan, Oct. 24, 1994, 6-258153
Int. Cl.[6] A44B *18/00*
U.S. Cl. 24—452 **19 Claims**



10. A hook structure for a molded surface fastener comprising:

a substrate sheet; and

a multiplicity of hooks molded on and projecting from one surface of said substrate sheet,

each of said hooks is composed of a stem, which has a rear surface rising from said substrate sheet and a front surface rising upwardly from said substrate sheet, and a hook-shape engaging portion extending forwardly from a distal end of said stem, said hook shape engaging portion having an upper surface and a lower surface, and

wherein a first transverse cross section of said stem of each of said hooks taken in an arbitrary plane parallel to the surface of said substrate sheet has a first cross sectional area, and the first transverse cross section is shaped such that when said first cross sectional area is divided into front and rear side cross-sectional areas with respect to a transverse line located midway between said front and rear surfaces, said front side cross-sectional area is larger than said rear side cross-sectional area, and

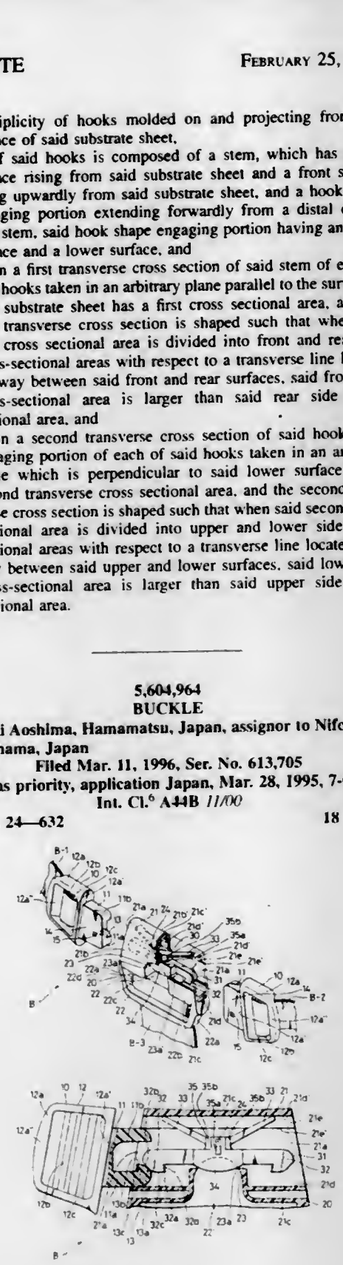
wherein a second transverse cross section of said hook-shape engaging portion of each of said hooks taken in an arbitrary plane which is perpendicular to said lower surface has a second transverse cross sectional area, and the second transverse cross section is shaped such that when said second cross sectional area is divided into upper and lower side cross-sectional areas with respect to a transverse line located midway between said upper and lower surfaces, said lower side cross-sectional area is larger than said upper side cross-sectional area.

5,604,964

BUCKLE

Tomoaki Aoshima, Hamamatsu, Japan, assignor to Nifco, Inc., Yokohama, Japan

Filed Mar. 11, 1996, Ser. No. 613,705
Claims priority, application Japan, Mar. 28, 1995, 7-093247
Int. Cl.[6] A44B *11/00*
U.S. Cl. 24—632 **18 Claims**



1. A buckle, comprising:

a female member comprising a main body portion; a pair of sockets defined within first and second opposite lateral sides of said main body portion; a belt retainer provided upon a third side of said main body portion for fastening one end of a first belt to said main body portion of said female member; a window opening defined within said third side of said main body portion; an engaging member movably disposed within said main body portion of said female member between said third side of said main body portion and a fourth side of said main body portion disposed opposite said third side of said main body portion, and provided with a pair of oppositely disposed, first engaging claws respectively disposed within said sockets of said main body portion, an operating projection, and means for biasing said engaging member away from said fourth side of said main body portion and toward said third side of said main body portion such that said operating projection of said engaging member extends through said window opening so as to be externally accessible; and

a pair of male members having belt retainer means defined thereon for respectively fastening one end of second and third belts thereto; and inserts insertable into said sockets of said main body portion of said female member and having formed thereon second engaging claws for respectively engaging said first engaging claws of said engaging member of said female member when said pair of male members are respectively inserted into said pair of sockets formed within said main body portion of said female member,

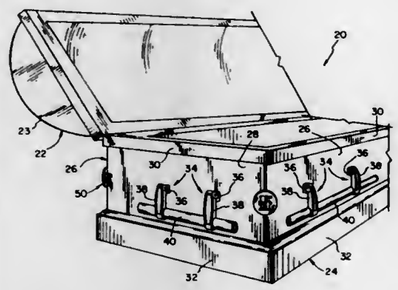
the engagement between said first and second engaging claws of said engaging member of said female member and said inserts of said pair of male members being releasable by moving said operating projection of said engaging member, extending through said window opening of said main body portion of said female member, away from said third side of said main body portion and toward said fourth side of said main body portion against the biasing force of said biasing means.

5,604,965

DECORATIVE HARDWARE FOR CASKET

Charles B. Shaw; David A. Hazelett, both of Lynn; Ronald G. Williams, Connersville, all of Ind., and David D. Shook, Ansonia, Ohio, assignors to Astral Industries Inc., Lynn, Ind.

Continuation of Ser. No. 94,716, Jul. 20, 1993, abandoned.
This application Sep. 5, 1995, Ser. No. 526,131
Int. Cl.[6] A61G *17/00*
U.S. Cl. 27—2 **15 Claims**



1. A casket, comprising:

a plurality of walls;

decorative hardware; and

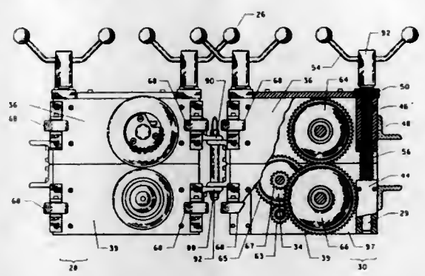
attaching means connected to at least one of said walls for attaching said decorative hardware to the exterior of said casket, said attaching means including means for preventing said decorative hardware from being pulled away from the side of said wall attached to said decorative hardware, whereby said decorative hardware can only be detached by accessing the interior of the casket.

5,604,966

SEAMING DEVICE CAPABLE OF JOINING CURVED AND STRAIGHT PANELS

Frederick Morello, and Christopher K. Kastner, both of Johnstown, Pa., assignors to M.I.C. Industries, Inc., Reston, Va.

Filed Jun. 7, 1995, Ser. No. 477,262
Int. Cl.[6] B23P *11/00*
U.S. Cl. 29—243.58 **2 Claims**



1. A seaming apparatus for connecting a pair of adjacent panels by traveling along the seam at which the two panels are to be connected, one panel having an outturned flange portion with a downturned terminal portion forming a U-shaped channel and the other panel having an inturned flange portion positioned in the U-shaped channel of the one panel, said seaming apparatus comprising:

a first frame and a second frame, each of said frames including a drive motor mounted to said frame,

an inside roller and an outside roller, said inside roller and said outside roller being mounted in horizontal opposition and being mounted for rotation on said frame with said inside roller capable of being positioned such that said inside roller rides over the outturned flange portion and opposite the downturned terminal portion and said outside roller is in contact with the downturned terminal portion, and with at least one of said rollers being coupled to said drive motor by a drive train; and

a hinge coupling said first frame to said second frame with the hinge operating across the direction of travel of the seaming apparatus.

5,604,967

DOWEL EXTRACTION DEVICE

Richard P. McMahon, 181 Sulphide St., Broken Hill, New South Wales 2880, Australia

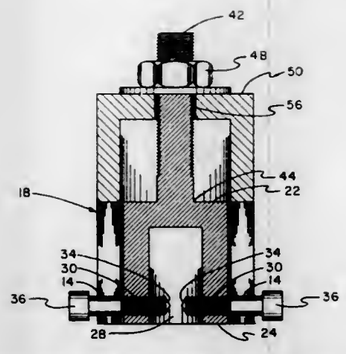
Filed May 15, 1995, Ser. No. 446,950
Int. Cl.[6] B23P *19/04*
U.S. Cl. 29—263 **4 Claims**

1. A new and improved dowel extraction device comprising, in combination:

an inner cylinder formed in an essentially solid generally cylindrical configuration, the inner cylinder having an upper surface, a lower surface and a cylindrical side wall therebetween, the lower surface including a large centrally positioned bore extending axially therein, the cylindrical side wall including three equidistantly spaced threaded apertures extending into the central bore, the apertures being positioned slightly above the lower surface;

three allen head bolts, each bolt being threaded and including an inboard end and an outboard end, the inboard end of each bolt including a point, the outboard end of each bolt including an allen head socket, the bolts being threadedly coupled within the threaded apertures of the inner cylinder, the allen head sockets adapted to receive and be rotated by an allen wrench, the bolts being inwardly or outwardly adjustable to permit gripping of dowels having different diameters;

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a central shaft formed an elongated generally cylindrical configuration with a plurality of external screw threads, the threaded shaft having an upper extent and a lower extent, the lower extent being fixedly attached to the approximate center point of the upper surface of the inner cylinder, a washer formed in a planar generally circular configuration, the washer including a large centrally positioned aperture and adapted to be positioned around the shaft, a nut formed in a planar generally hexagonal configuration, the nut having a threaded aperture and adapted to be threadedly coupled to the central shaft; and

an outer cylinder formed in a hollow generally cylindrical configuration with an essentially closed upper end and an open lower end, the open lower end including three equidistantly spaced upwardly extending slots, the upper end including a large circular aperture extending therethrough, the outer cylinder adapted to be positioned over the inner cylinder with the upper extent of the central shaft extending through the aperture of the upper end, the washer and nut being coupled around the upper extent of the shaft, the slots of the outer cylinder adapted to be positioned around the allen head bolts, the apparatus adapted to grip and vertically remove a dowel by rotating the large nut thereby causing upward movement of the inner cylinder.

5,604,968

FASTENER SYSTEM INCLUDING A SWAGE FASTENER AND TOOL FOR INSTALLING SAME

David J. Fulbright, and Walter J. Smith, both of Waco, Tex., assignors to Huck Patents, Inc., Wilmington, Del.

Division of Ser. No. 189,871, Feb. 1, 1994, Pat. No. 5,548,889, which is a continuation of Ser. No. 765,399, Sep. 24, 1991, Pat. No. 5,315,755, which is a continuation of Ser. No. 654,412, Feb. 11, 1991, abandoned, which is a continuation of Ser. No. 359,482, May 31, 1989, abandoned. This application Jun. 6, 1995, Ser. No. 479,046

Int. Cl.[6] B23Q *17/00*; **B23P** *11/00*

U.S. Cl. 29—407.05 **18 Claims**

1. In a fastening system for securing a plurality of workpieces with a multi-piece swage type fastener through aligned openings in the workpieces, the method comprising:

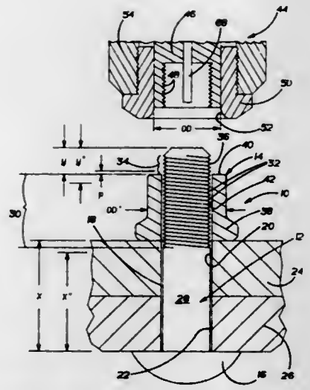
a. providing a pin member with an elongated pin shank and an enlarged head,

b. providing said pin member with a locking groove portion on said pin shank comprising a plurality of generally circumferentially extending locking grooves,

c. locating said pin member with said pin shank extending through the aligned openings,

d. providing said pin member with a pull portion comprising a plurality of generally circumferentially extending pull grooves,

e. said pull portion located at the terminal end of said pin shank with said pull grooves defining a thread form,



f. providing a tubular collar and locating said collar on said pin shank surrounding said locking grooves with said pull grooves being accessible at an outer end of said collar,

g. providing a gripping member adapted to threadably engage and grip said pull grooves,

h. providing a swage anvil operatively associated with said gripping member and adapted to engage said collar and to radially overengage said collar to swage it into said locking grooves in response to a relative axial force of a first magnitude,

i. threadably engaging said pull grooves with said gripping member,

j. automatically detecting the extent of relative engagement of said pull grooves by said gripping member, thereby determining a first extent or a second extent of relative engagement, with said first extent being greater than said second extent,

k. if said first extent is sensed then automatically applying a relative axial force between said gripping member and said swage anvil of a first magnitude, thereby swaging said collar into said locking grooves and clamping the workpieces together via said pin and said collar under a final clamp load, and then removing said swage anvil from said collar and unthreading said gripping member from said pull portion with said pull portion remaining integral with said pin,

l. if said first extent is not sensed but said second extent is sensed then automatically applying a relative axial force of a second magnitude between said gripping member and said swage anvil, thereby pulling the workpieces together under an initial clamp load, said second magnitude being less than said first magnitude and less than that at which initiation of swaging of said collar into said lock grooves of said pin occurs, and after application of the relative axial force of said second magnitude applying a rotary force, thereby threading said gripping member further onto said pull groove portion until said first extent is attained and then repeating step k.

5,604,969

METHOD OF MANUFACTURING HYDRAULIC ACTUATORS

Geoffrey R. Coop, Warwick, United Kingdom, assignor to Automotive Products, plc, Warwickshire, United Kingdom

PCT No. PCT/GB94/00317, § 371 Date Dec. 29, 1994. § 102(e) Date Dec. 29, 1994, PCT Pub. No. WO94/19618, PCT Pub. Date Sep. 1, 1994

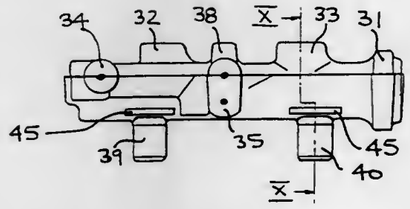
PCT Filed Feb. 16, 1994, Ser. No. 313,313

Claims priority, application United Kingdom, Feb. 17, 1993, 9303113; Jun. 19, 1993, 9312730

Int. Cl.[6] B23P *17/00*

U.S. Cl. 29—418 **8 Claims**

1. A method of manufacturing a hydraulic actuator comprising the steps of:



a) providing a casting mould contoured to produce a basic actuator body including an integrally formed gripping spigot projecting therefrom, and locating surfaces on opposite sides of the gripping spigot;

b) casting the basic actuator body in the mould;

c) removing the basic actuator body from the mould;

d) inserting said gripping spigot of said basic actuator body between a cooperative pair of jaws in a machining jig, and gripping said gripping spigot with said cooperative jaws such that said locating surfaces rest against said jaws;

e) machining the body while gripped in the jig to form a completed hydraulic actuator; and

f) removing said gripping spigot from said hydraulic actuator.

5,604,970

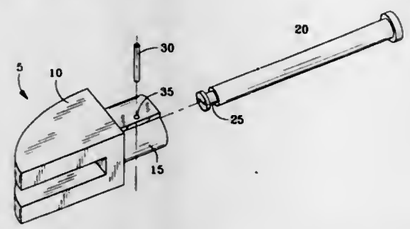
BOLT AND BAR ATTACHMENT METHOD FOR AUTO ASSEMBLY

Helmut R. Algner, and Michael R. Ahlgren, both of Colorado Springs, Colo., assignors to Schlage Lock Company, San Francisco, Calif.

Filed Dec. 26, 1995, Ser. No. 578,775

Int. Cl.[6] B23P *19/02*

U.S. Cl. 29—525 **1 Claim**



1. A method for attaching a bolt for a mortise lock to its draw bar, comprising the steps of:

boring a hole longitudinally in said bolt on the longitudinal axis of the bolt;

drilling a hole, having a small diameter relative to that of the bored hole, transversely in said bolt to intersect said bored hole such that the drilled hole is tangent to the wall of the bored hole at its outer edge and intersects the bored hole at the midpoint of the depth of said bored hole;

selecting a bar having a diameter which fits snugly in said bored hole;

cutting a groove around said bar, said groove having a depth and width substantially equal to the diameter of the drilled hole, and being set back from a first end of said bar a distance substantially equal to half the depth of said bored hole;

inserting said bar into said bored hole; and

pressing a spring pin into said drilled hole.

5,604,971

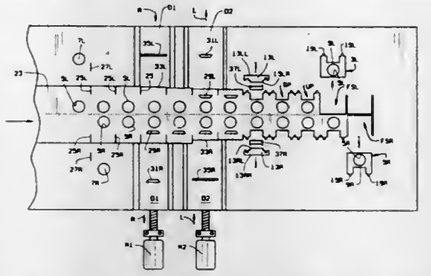
MANUFACTURING METHOD FOR VARIABLE LAMINATIONS USED IN ELECTRO-MAGNETIC INDUCTION DEVICES

Robert E. Steiner, 1760 Horseshoe Ridge, Chesterfield, Mo. 63005

Continuation-in-part of Ser. No. 129,336, Sep. 30, 1993, Ser. No. 172,822, Dec. 27, 1993, Ser. No. 173,095, Dec. 27, 1993, Ser. No. 197,255, Feb. 16, 1994, abandoned, and Ser. No. 199,600, Feb. 22, 1994. This application Aug. 12, 1994, Ser. No. 267,392

Int. Cl.[6] H02K *15/04*

U.S. Cl. 29—596 **15 Claims**



1. The method of forming and stacking laminations for C-frame motors comprising:

forming a series of C-frame laminations from magnetically conductive coil stock, each C-frame lamination being formed with a rotor opening adjacent one end and a U-shaped opening adjacent an opposite end;

progressively forming a series of separate coil winding laminations from the magnetically conductive coil stock adjacent to said C-frame laminations during the forming of said C-frame laminations, said coil winding laminations being formed with predetermined incrementally varying width;

stacking a predetermined number of said C-frame laminations with the rotor openings and U-shaped openings thereof in vertical alignment with corresponding openings of adjacent laminations;

stacking said coil winding laminations in a predetermined sequence to provide a stacked coil winding area of generally circular cross sectional shape at least along opposed spaced sections thereof;

whereby an electrically conductive wire of predetermined length can be positioned about the coil winding area of generally circular outer cross sectional shape prior to the mounting of the stacked coil winding laminations relative to the aligned U-shaped openings of said stacked C-frame laminations.

5,604,972

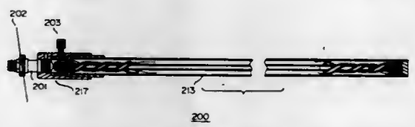
METHOD OF MANUFACTURING A HELICAL ANTENNA

Charles D. McCarrick, Plymouth, Mass., assignor to AMSC Subsidiary Corporation

Division of Ser. No. 58,079, May 10, 1993, Pat. No. 5,485,170. This application Jun. 7, 1995, Ser. No. 481,995

Int. Cl.[6] H01P *11/00*

U.S. Cl. 29—600 **24 Claims**



1. A method of manufacturing a helical antenna comprising the steps of:

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cutting a section of flexible twin conductor antenna lead to a predetermined length, said twin conductor antenna lead having a first conductor and a second conductor surrounded by an insulating sheath,

wrapping said cut section of flexible twin antenna lead in a helix shape about a form of a predetermined diameter, to produce a wrapped lead, and

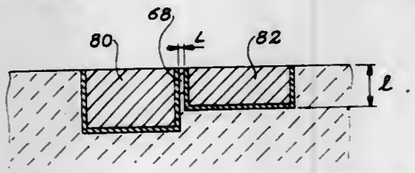
heating said wrapped lead to produced a thermoformed lead.

5,604,973

PROCESS FOR THE PRODUCTION OF A VERTICAL MAGNETIC HEAD

Pierre Gaud, St Egreve; Henri Sibuet, le Fontanil, and Brigitte Desloges, Seyssins, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Feb. 23, 1995, Ser. No. 393,359
Claims priority, application France, Mar. 1, 1994, 94 02330
Int. Cl.[6] G11B *5/42*
U.S. Cl. 29—603.15 **6 Claims**



1. A process for the production of a vertical magnetic head, comprising the steps of:

etching a substrate through a first mask to form a pre-recess of a predetermined depth;

forming a thin-material layer in said pre-recess constituting a second mask;

eliminating said thin layer over at least a part of a bottom of the pre-recess, while maintaining a section of the thin material layer along at least one wall of the pre-recess;

forming a third mask with an opening which exposes at least part of the pre-recess and substrate on a side of the at least one wall covered by the thin material layer;

etching through the third mask so that the section of the thin material layer remains in place and preserves an extended wall extending from the section of the thin material, the extended wall formed from the material constituting the substrate, said etching forming a first recess and a second recess separated by the extended wall of the material constituting the substrate;

eliminating all layers above the substrate after forming the first and second recesses;

filling the first and second recesses with a magnetic material;

planarizing parallel to the substrate at least up to the extended wall, to form two pole pieces separated by the extended wall to form a magnetic spacer; and

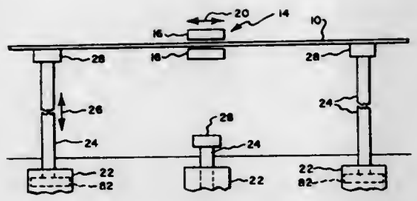
machining to define a friction surface perpendicular to a surface of the substrate such that the magnetic spacer is level with said friction surface.

5,604,974

APPARATUS FOR POSITIONING A WING PANEL FOR RIVETING

Bradley M. Roberts, Williamsville; James J. Birke, North Tonawanda; Joseph Dionne, West Seneca, and Kurt R. Kubanek, Tonawanda, all of N.Y., assignors to Gemcor Engineering Corporation, Buffalo, N.Y.

Filed May 11, 1994, Ser. No. 241,352
Int. Cl.[6] B23Q *15/00*
U.S. Cl. 29—703 **26 Claims**



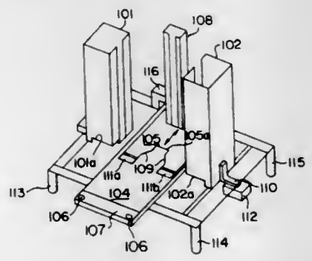
4. Apparatus for raising and lowering an elongated member comprising a plurality of spaced hydraulic cylinders each having a piston rod for raising the member from a first position at which the member is loadable thereon to a second position and for lowering the member to the first position, and means for controlling hydraulic fluid flow to and from said hydraulic cylinders for synchronizing the movements of said piston rods so that each of said piston rods bears its share of the member load throughout raising and lowering of the member, the apparatus further comprising controller means, means for inputting to said controller means position of said piston rod of each of said hydraulic cylinders during raising and lowering of said member, and said controller means including means for outputting signals for varying the speed of said piston rods in response to the inputted positions thereof.

5,604,975

AUTOMATIC APPARATUS FOR ASSEMBLING HANGERS WITH INDEXING CAPS

David J. Marshall, Victoria, Australia; Stanley Gouldson, Northport, N.Y.; John Mazza, Indianapolis, Minn.; Olaf Olk, Haupague, and Robert Maiorca, Syosset, both of N.Y., assignors to Spotless Plastics Pty. Ltd., Victoria, Australia

Division of Ser. No. 173,905, Dec. 27, 1993, Pat. No. 5,507,086, which is a division of Ser. No. 670,963, May 2, 1991, Pat. No. 5,272,806, which is a continuation-in-part of Ser. No. 287,985, Dec. 20, 1988, abandoned. This application Jun. 7, 1995, Ser. No. 484,485
Int. Cl.[6] B23Q *7/10*
U.S. Cl. 29—787 **6 Claims**



1. An automatic means for assembly of hangers and indexing caps at the time clothing is hung from said hangers, said means comprising:

means for receiving a bundle of stacked caps;

means for receiving a plurality of stacked hangers;

reciprocal means for simultaneously dispensing one of said caps and securing said one of said caps to one of said hangers to define an indexed hanger;

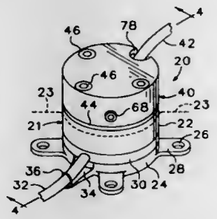
wherein an index defined by the secured cap is correlated to a specific characteristic of a garment hung thereon.

5,604,976

METHOD OF MAKING PERCUTANEOUS CONNECTOR FOR MULTI-CONDUCTOR ELECTRICAL CABLES

John J. Stoble, Portland, Oreg.; Edward M. Schmidt, Bethesda; Martin J. Bak, Germantown, both of Md.; Scott S. Corbett, III, Portland, Oreg.; Thomas R. Clary, Issaquah, Wash.; David Edell, Lexington, Mass.; Fredrick T. Hambrecht, Rockville, Md.; William J. Heetderks, Silver Spring, Md., and Conrad V. Kufta, Rockville, Md., assignors to PI Medical Corporation, Portland, Oreg., and The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Oct. 18, 1994, Ser. No. 326,291
Int. Cl.[6] H01R *43/02*
U.S. Cl. 29—825 **34 Claims**



1. A method for making a biologically implantable connector for a multi-conductor miniature electrical cable, comprising:

(a) holding a plurality of electrically conductive rods located in respective predetermined positions, with respective portions of said rods extending through a passage defined through a collar;

(b) while said rods are being held in said predetermined positions, embedding at least a respective portion of each rod, located at least partly within said passage, in a matrix of a dielectric material, thereby forming a contact block;

(c) shaping said dielectric material to form a mating face and a terminal face on said contact block, said mating face including a first end of each of said rods surrounded by a surface of said dielectric material of said matrix, and said terminal face including an opposite, terminal end of each said rod surrounded by a surface of said dielectric material of said matrix.

5,604,977

METHOD OF FABRICATING FOCAL PLANE ARRAY

James E. Robinson, Dallas; James F. Belcher, Plano; Howard R. Beratan, Richardson; Steven N. Frank, McKinney; Charles M. Hanson, Richardson; Paul O. Johnson, Allen; Robert J. S. Kyle, Rowlett; Edward G. Meissner, Dallas; Robert A. Owen, Rowlett; Gail D. Shelton, Mesquite, and William K. Walker, Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 235,413, Apr. 29, 1994, Pat. No. 5,457,318. This application Jun. 7, 1995, Ser. No. 478,570
Int. Cl.[6] H01R *43/00*
U.S. Cl. 29—825 **8 Claims**

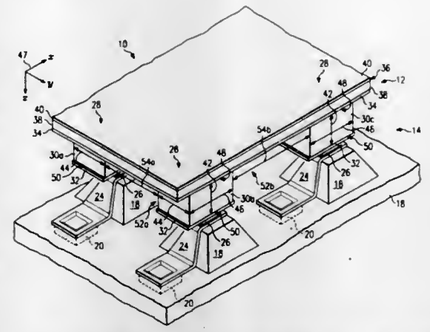
1. A method for fabricating a focal plane array with a plurality of thermal sensors for providing a sensor signal output representative of the amount of thermal radiation incident to the focal plane array, comprising the steps of:

forming a common electrode for supplying a voltage to the thermal sensors;

forming an optical coating sensitive to infrared radiation on one side of the common electrode;

forming a pyroelectric material on the side of the common electrode opposite the optical coating; and

removing the pyroelectric material to form a plurality of thermal sensitive elements spatially separated by a plurality of reticulation kerfs, each reticulation kerf separating adjacent thermal sensitive elements by a distance at least half the average width of a single thermal sensitive element.

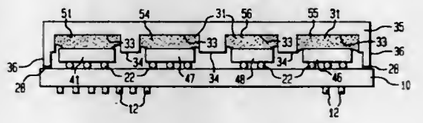


5,604,978

METHOD FOR COOLING OF CHIPS USING A PLURALITY OF MATERIALS

Raed A. Sherif, Hopewell Junction; Mark G. Courtney; David L. Edwards, both of Poughkeepsie, all of N.Y.; Albert J. Fahey, Pasadena, Calif.; Gregory S. Hopper, Fishkill, N.Y.; Sushumna Iruvanti, Wappingers Falls, N.Y.; Charles F. Jones, Poughkeepsie, N.Y., and Gaetano P. Messina, Hopewell Junction, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 349,232, Dec. 5, 1994. This application May 31, 1995, Ser. No. 455,463
Int. Cl.[6] H05K *3/34*
U.S. Cl. 29—840 **17 Claims**



1. A method to provide a customized thermally conductive path between a plurality of chips and a thermal cap, comprising the steps of:

(a) securing said chips to a substrate, wherein said thermal cap has at least one blind hole facing said substrate,

(b) placing at least one first thermally conductive material on a first chip, and at least one second thermally conductive material on a second chip, wherein the thermal conductivity of said first thermally conductive material is different than the thermal conductivity of said second thermally conductive material, and

(c) securing said thermal cap to said substrate.

5,604,979

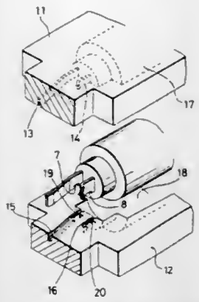
MOLDING APPARATUS FOR MOLDING AND INSERT TERMINAL AND METHOD FOR MOLDING SAME

Hisashi Sawada, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Filed Jun. 2, 1994, Ser. No. 252,784
Claims priority, application Japan, Jul. 13, 1993, 5-043447 U
Int. Cl.[6] H01R *43/00*
U.S. Cl. 29—883 **4 Claims**

1. A molding apparatus having a first portion and a second portion for molding an insert terminal in which a terminal plate is integrated with a resin portion, the molding apparatus comprising:

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a holding groove in at least one of said first portion and said second portion;

a semi-circular cavity formed at a termination of said holding groove, wherein when the first portion and the second portion are assembled, a cylindrical cavity is formed and is filled with resin to form an O-ring assembly cylindrical portion that holds an O-ring while said terminal plate penetrates said O-ring; and

a protruding portion in said holding groove engageable with a cutout portion in said terminal plate.

3. A method of integrally forming a cylindrical O-ring engagement portion and a terminal plate of an insert terminal using a mold having an injection port, said method comprising:

forming a positioning groove on said mold and a molding protrusion in said positioning groove:

providing the terminal plate with a cutout portion along an edge thereof;

positioning the terminal plate in the positioning groove while registering the molding protrusion with the cutout portion;

injecting a resin through said injection port in a cylindrical cavity to form said cylindrical O-ring engagement portion, said terminal plate being integrally connected to said O-ring engagement portion; and

sliding an O-ring over the terminal plate to engage the O-ring with said O-ring engagement portion.

5,604,980

METHOD OF MAKING A CATALYTIC VESSEL FOR RECEIVING METAL CATALYSTS BY DEPOSITION FROM THE GAS PHASE

Alexander Shustorovich; Eugene Shustorovich, both of Pittsford, N.Y.; Richard Montano, Vienna, Va.; Konstantin Solntsev, Moscow, Russian Federation; Yuri Buslaev, Moscow, Russian Federation; Veniamin Kalner, Moscow, Russian Federation; Nikolai Moiseev, Moscow, Russian Federation, and Aleksandr Bragin, Moscow, Russian Federation, assignors to Blue Planet Technologies Co., LP, New York, N.Y.

Division of Ser. No. 38,435, Mar. 29, 1993, Pat. No. 5,460,790, which is a continuation-in-part of Ser. No. 840,060, Feb. 25, 1992, Pat. No. 5,322,671. This application Aug. 8, 1995, Ser. No. 512,611

Int. Cl.[6] B23P *15/00*

U.S. Cl. 29—890 **5 Claims**

1. A method of forming a catalytic vessel for adsorbing catalyst metals by deposition from the gas phase and for performing three-way catalysis of emissions from a combustion chamber comprising:

forming an inlet at an upstream end of the catalytic vessel;

forming at least one catalytic chamber located downstream of the inlet, the catalytic chamber including a steel packing member;

forming an outlet; and

treating the packing member by a process including (a) washing the steel with a solution of KOH (b) washing the steel with distilled water, (c) treating the steel by exposure to a HCl solution, (d) washing the steel with distilled water, and (e) heating the steel at a temperature up to about 400° C.

5,604,981

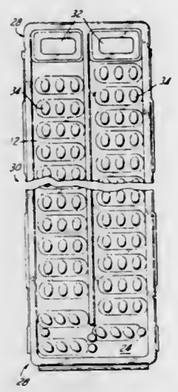
METHOD OF MAKING AN AUTOMOTIVE EVAPORATOR

Kathleen L. Frazier, Farmington Hills, Mich.; Kevin B. Wise, Connersville, Ind., and David W. Bertrand, Warren, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 6, 1995, Ser. No. 417,554

Int. Cl.[6] B23P *15/26*

U.S. Cl. 29—890.039 **8 Claims**



1. A method of making a heat exchanger plate of the kind having an end portion including apertures for transporting a heat exchange medium therethrough, the plate being configured to be joined to a second plate in face-to-face contact to form a fluid passageway for the heat exchange medium to flow therethrough, the method comprising the steps of:

providing a sheet of deformable material;

forming a generally planar plate blank from the deformable sheet of material, the plate blank defining a top surface, a bottom surface, a first end and a second end;

forming an aperture at one end of the plate blank;

forming a plurality of generally elongate bead preforms in a predetermined configuration by drawing the plate blank from the bottom surface of the plate blank towards the top surface, the bead preforms projecting from the plane of the plate blank by a predetermined height;

forming a plurality of individual beads in each of the plurality of bead preforms by reverse drawing the bead preforms in a direction from the top surface of the plate blank towards the bottom surface of the plate blank; and

forming finish edges on the plate blank.

5,604,982

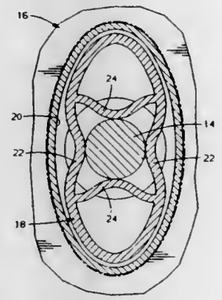
METHOD FOR MECHANICALLY EXPANDING ELLIPTICAL TUBES

Scott E. Kent, Albion, and Michael A. Gavlak, Buffalo, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 5, 1995, Ser. No. 465,300

Int. Cl.[6] B23P *15/26*

U.S. Cl. 29—890.044 **3 Claims**



1. A method for mechanically joining an elongated heat exchanger tube to a heat dissipating fin that is oriented generally perpendicular to said tube, comprising the steps of,

forming an opening in said fin having a generally elliptical outline with a center point, a major axis and a minor axis,

forming said tube with a central length axis coincident to said center point and a generally elliptical cross section of similar shape to, but smaller initial perimeter outline than, said fin opening outline, said tube having, in an unexpanded state, a pair of opposed concave channels running the length of said tube and substantially centered on a plane containing said minor axis, with a ridge to ridge internal separation less than said minor axis, said tube also having a pair of internal webs running the length of said tube spaced evenly to either side of a plane containing said minor axis, each of said webs having an initial internal separation, measured along said major axis, comparable to said channel separation,

providing an expansion rod with a generally conical head the circular cross section of which increases continuously in diameter along the axis of said conical head, said head having a largest diameter circular cross section generally equal to the minor axis of said fin opening outline,

holding said unexpanded tube and fin in a fixture with said tube central axis extending perpendicularly through and generally centered within said fin opening.

forcefully pushing said expansion rod through said tube along its central length axis, thereby forcing said expansion rod head between and through said opposed tube channels and webs and expanding said concave channels to a convex shape matching said tube opening outline while simultaneously engaging said webs and pushing them apart, thereby expanding said tube out tightly into said fin opening and joining said tube to said fin.

5,604,983

RAZOR SYSTEM

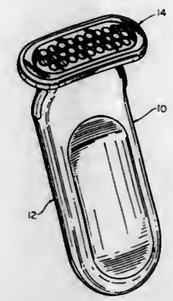
Graham J. Simms, Reading, United Kingdom, and Daniel B. Lazarchik, Boston, Mass., assignors to The Gillette Company, Boston, Mass.

Continuation of Ser. No. 228,695, Apr. 14, 1994, abandnned. This application Mar. 29, 1995, Ser. No. 412,613

Int. Cl.[6] B26B *21/18;21/56*

U.S. Cl. 30—49 **13 Claims**

1. A razor blade for employment in a shaving system,



said blade comprising a metallic foil sheet having a thickness in the area of 0.10 millimeters

said sheet having a substantially arcuate planar surface with a plurality of apertures formed therein, the perimeter of each said aperture forming a cutting edge, said cutting edges being disposed on a surface lying above said arcuate planar surface of said sheet,

said blade further comprising a peripheral surface extending outwardly from the periphery of said blade planar surface and spaced radially downwardly therefrom for mounting said blade into a shaving system.

5,604,984

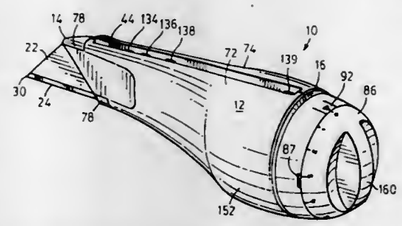
UTILITY KNIFE WITH ROTARY BLADE MAGAZINE

Charles G. Shepherd, Oakville, and Edward A. Funger, Burlington, both of Canada, assignors to The Nack Company Limited, Burlington, Canada

Filed Oct. 26, 1995, Ser. No. 548,941

Int. Cl.[6] B26B *1/10*

U.S. Cl. 30—125 **15 Claims**



11. A blade magazine comprising:

a body rotatable about a longitudinal axis and having a front end and a rear end, the body having a series of radially and longitudinally extending circumferentially spaced blade-receiving slots for respectively receiving thin blades having a cutting edge at at least one end thereof, each slot having an open front end to enable a blade therein to be removed from the slot by forward movement through the front end of the slot,

the first part having a first end portion with a series of radially and longitudinally extending circumferentially spaced first slot-forming finger member, said finger members extending in a longitudinal direction from said first end portion to an opposite end of said first part, and

the second part having a second end portion with a series of radially and longitudinally extending circumferentially spaced second slot-forming finger members, said second finger members extending in a longitudinal direction from said second end portion to an opposite end of said second part,

said first part having been assembled with said second part by longitudinal movement of the first finger members between

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the second finger members to provide a blade receiving slot between each adjacent pair of first and second finger members,

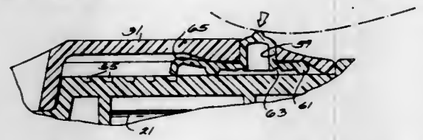
said slot being open at at least one end to enable a blade in the slot to be removed therefrom through the open end thereof.

5,604,985

HAIR TRIMMER WITH MOVABLE COMB AND LATCH

Matthew L. Andis, Racine, and John M. Piwaron, Milwaukee, both of Wis., assignors to Andis Company, Racine, Wis.

Filed Aug. 25, 1994, Ser. No. 296,002
Int. Cl.[6] B26B *19/04; F16B 7/14*
U.S. Cl. 30—132 **11 Claims**



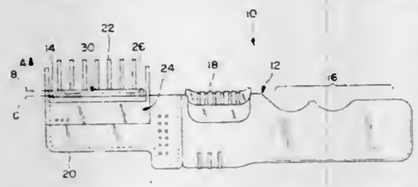
4. A hand held appliance including a housing including a surface area, a moveable member moveable in a given direction relative to said surface area of said housing and including therein an opening, and a latch for releasably preventing and permitting movement of said moveable member relative to said housing and including a series of indentations in said surface area of said housing, and a latch member carried for movement in common with said moveable member and for movement relative to said moveable member in a direction perpendicular to the given direction and between a latch position preventing movement of said moveable member relative to said housing and a release position permitting movement of said moveable member relative to said housing and including a generally planar base portion, a portion raised from said base portion and extending through said opening for access by a user to displace said latch member in the perpendicular direction between said latch and release positions, and a flange portion which is received in a selected one of said indentations when said latch member is in said latch position and free of said indentations when said latch member is in said release position.

5,604,986

ELECTRIC HAIR TRIMMER

Kesayuki Masuda, Matsumoto, Japan, assignor to Izumi Products Company, Nagano, Japan

Filed Jun. 6, 1995, Ser. No. 466,407
Claims priority, application Japan, Jan. 11, 1995, 7-002447
Int. Cl.[6] B26B *19/20*
U.S. Cl. 30—233 **3 Claims**



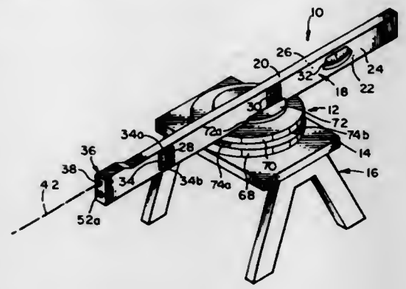
1. An electric hair trimmer comprising a trimmer head formed at one end of a main body case of said trimmer, an immovable blade installed on the trimmer head such that an edge of said immovable blade protrudes from said trimmer head, said edge of said immovable blade being formed as a sawtooth; a movable blade which is installed on said immovable blade such that said movable blade is linearly reciprocatingly movable relative to said immovable blade, an edge of said movable blade being formed as a sawtooth and slides against said edge of said immovable blade, and a means for linearly reciprocating said movable blade; and said trimmer being characterized in that a shutter plate which is capable of moving between a first position and a second position in a direction of protrusion of said edge of said immovable blade is installed in said trimmer head along said immovable and movable blades, so that when said shutter plate has been moved into said first position, a tip of said shutter plate protrudes beyond said edges of said immovable blade and movable blade from said trimmer head, and when said shutter plate has been moved into said second position, said tip of said shutter plate is retracted from said edges of said immovable and movable blades.

5,604,987

LASER LEVEL, ACCESSORIES AND METHOD OF USE

John P. Cupp, 1825 Bridgetown Rd., #501, Feasterville, Pa. 19053, assignor to John P. Cupp, Feasterville, Pa.

Filed Feb. 10, 1995, Ser. No. 386,632
Int. Cl.[6] G01C *5/00*
U.S. Cl. 33—275 R **11 Claims**



1. A laser level comprising:

a carpenter's level having at least a flat reference surface and a gauge built into the level to allow an observer to determine when said reference surface is horizontal;

a laser beam generator fixed in position relative to the level so that the laser beam lies in the plane of the flat reference surface;

support means for power means on the level for receiving and holding power means; and

a circuit for energizing the laser beam generator including at least connectors for connecting the power means in the circuit with the laser beam generator.

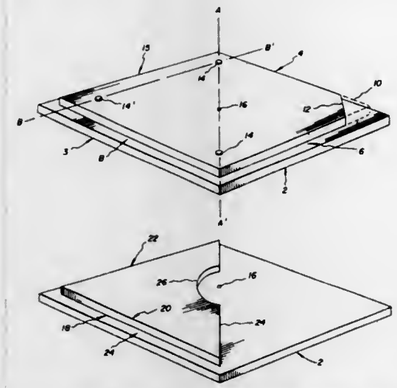
5,604,988

MULTIPURPOSE DEVICE FOR MARKING OR PLACING A WORKPIECE

Paul M. Costelloe, Box 121, Stockbridge, Mass. 01262

Filed Mar. 30, 1995, Ser. No. 413,511
Int. Cl.[6] G01B *3/30*
U.S. Cl. 33—501 **7 Claims**

1. A multipurpose device for marking the placing of a workpiece comprising in fixed relationship a composite of two planar outer sections and a planar middle section said planar sections being arranged in a substantially parallel relationship wherein the two outer planar sections in combination with the middle planar section provide means for setting a reveal between an edge of a substrate and an edge of a partially overlapping member, and wherein one said outer planar section is in the form of a triangle for forming and marking an angle from 10° to 90° on the workpiece, said other outer section being multi-edge and having means for determining the center of a solid flat surface between two parallel edges, and



means for setting a space between two parallel members, wherein said middle planar section extends beyond at least one side of said two outer planar sections.

5,604,989

SHOTGUN BARREL BORE CHECKING GAUGE

Kim E. Stevenson, 11268 Hickory Dale Dr., Boise, Id. 83713

Filed Apr. 6, 1995, Ser. No. 418,781
Int. Cl.[6] G01B *3/46*
U.S. Cl. 33—506 **16 Claims**

1. A gauge for determining the diameter of a bore of a shotgun barrel comprising a flat bar member having first and second ends, a predetermined length, a predetermined width, a predetermined thickness and first and second edges, the flat bar member having a stepped configuration along the first and second edges such that the width of the flat bar member varies along its length, the variations in the width of the gauge corresponding to the variations in the bore of different shotgun barrels.

5,604,990

PRINTING PLATE DRYING APPARATUS

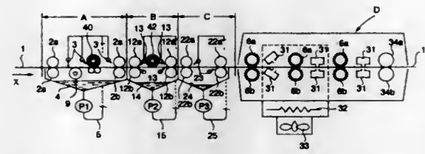
Tomoaki Takekoshi, Shizuoka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 7, 1995, Ser. No. 483,274
Claims priority, application Japan, Jun. 8, 1994, 6-126478
Int. Cl.[6] F26B *19/00*
U.S. Cl. 34—68 **10 Claims**

8. A printing plate drying apparatus comprising:

warm air duct means for blowing warm air to perform surface drying of a printing plate having a printing surface including an image-forming portion and a non-image-forming portion, said warm air duct means drying a uniform coating that is disposed on the image-forming portion; and

solution-absorbing roller means for touching said printing surface of said printing plate to perform solution absorption, said solution-absorbing roller means being provided only at a predetermined position that is at a downstream side of said warm air duct, said predetermined position being within the range of 60% of the entire length from the most upstream side of a drying path of said apparatus, said solution absorbing roller means drying additional coating in excess of said uniform coating.



5,604,991

SWITCHING AND PURGING MECHANISM FOR A TWIN TOWER AIR DRYER

T. Kevin Castle, Wellford, and Michael V. Kazakis, Simpsonville, both of S.C., assignors to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Feb. 6, 1996, Ser. No. 597,262
Int. Cl.[6] F26B *21/06*
U.S. Cl. 34—80 **17 Claims**

12. A dual valve mechanism for controlling flow of four streams of fluid within a system, said dual valve mechanism comprising:

(a) a valve body defining a first and a second piston bore, a first and a second supply passage, a first and a second output port, and a third and a fourth supply passage such that

(i) said first supply passage for receiving a first of such streams of fluid from a source thereof,

(ii) said second supply passage for receiving a second of such streams of fluid from a source thereof,

(iii) said third supply passage for receiving a third of such streams of fluid from a source thereof,

(iv) said fourth supply passage for receiving a fourth of such streams of fluid from a source thereof,

(v) said first supply passage is communicable with said first output port through said first piston bore, and said second supply passage is communicable with said second output port through said second piston bore, and

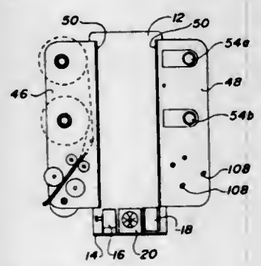
(vi) said third supply passage is communicable with said first output port through said first piston bore, and said fourth supply passage is communicable with said second output port through said second piston bore;

(b) a first valve cup concentrically disposed and affixed within said first piston bore;

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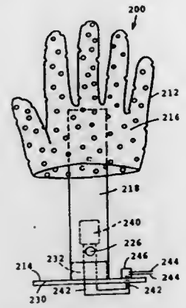
(c) a second valve cup concentrically disposed and affixed within said second piston bore;
(d) a first valve stem disposed within said first valve cup for reciprocal movement within said first piston bore from a first upper valve seat of said valve body to a first lower valve seat of said first valve cup such that
(i) when said first valve stem seats against said first lower valve seat, said first valve stem occupies a primary flow position in which such first stream of fluid flows from said first supply passage through said first piston bore through said first output port and communication between said third supply passage and said first output port ceases, and
(ii) when said first valve stem seats against said first upper valve seat, said first valve stem occupies a secondary flow position in which such third stream of fluid flows from said third supply passage through said first piston bore through said first output port and communication between said first supply passage and said first output port ceases;
(e) a second valve stem disposed within said second valve cup for reciprocal movement within said second piston bore from a second upper valve seat of said valve body to a second lower valve seat of said second valve cup such that
(i) when said second valve stem seats against said second lower valve seat, said second valve stem occupies said primary flow position in which such second stream of fluid flows from said second supply passage through said second piston bore through said second output port and communication between said fourth supply passage and said second output port ceases, and
(ii) when said second valve stem seats against said second upper valve seat, said second valve stem occupies said secondary flow position in which such fourth stream of fluid flows from said fourth supply passage through said second piston bore through said second output port and communication between said second supply passage and said second output port ceases; and
(f) a valve stem control means for switching said first and said second valve stems periodically between said primary and said secondary flow positions.

5,604,992
DUAL ROLL DISPENSER
Joe M. Robinson, 1334 Timberlane Rd., Tallahassee, Fla. 32312
Continuation-in-part of Ser. No. 373,849, Jan. 18, 1995, Pat. No. 5,442,867. This application Aug. 18, 1995, Ser. No. 516,991
Int. Cl.[6] F26B *19/00*
U.S. Cl. 34—90 **29 Claims**



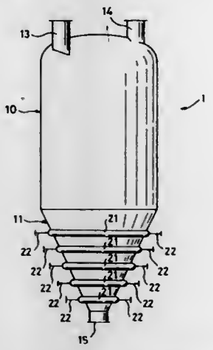
1. A dual roll dispenser comprising:
a housing unit having an aperture located thereon;
a first holder means, located within the housing unit, for rotatably holding a first paper towel roll;
a second holder means, located within the housing unit, for rotatably holding a second paper towel roll;
a paper plate;
a top plate, in substantial parallel spaced apart relation to the paper plate, forming a first channel;
a first set of spaced apart feed wheels for rotatably friction feeding paper from the first paper towel roll through the first channel;
a bottom plate, in substantial parallel spaced apart relation to the paper plate, forming a second channel;
a second set of spaced apart feed wheels for rotatably friction feeding paper from the second paper towel roll through the second channel;
motor means for rotating the first set of feed wheels and the second set of feed wheels;
a first sensor means, located within the housing unit, for detecting the presence or absence of paper on the first paper towel roll;
a second sensor means, located within the housing unit, for detecting the presence or absence of paper on the second paper towel roll;
a first control means for activating only one of either the first dispensing means or the second dispensing when the device is activated and switching to the other dispensing means when the respective sensor means detects an absence of paper on the current roll being dispensed; and
an activation means, located on the housing, for activating paper dispension.

5,604,993
GLOVE DRYING DEVICES AND METHODS
Irmgard G. Auckerman, 3041 Kaiser Dr., #G, Santa Clara, Calif. 95051
Filed Dec. 28, 1995, Ser. No. 580,174
Int. Cl.[6] F26B *25/00*
U.S. Cl. 34—104 **15 Claims**



1. A device for drying gloves comprising:
a) a drying form which is adapted for receiving a glove, wherein the drying form comprises a hollow perforated body configured substantially as a human hand, including: (1) an inside surface, (2) an exterior surface opposing the inside surface, (3) a plurality of areas wherein each of the plurality of areas defines a hole, whereby the hollow body is perforated, (4) a palm portion, (5) a back of the hand portion which opposes the palm portion, (6) a thumb portion, (7) four finger portions and (8) an open end distal from the finger portions;
b) a tube affixed to the inside surface of the drying form wherein the tube comprises: (1) a first length positioned inside the drying form, (2) a second length positioned outside the drying form, (3) a first length first end which is proximal the finger portions and (4) a second length second end which is distal from the drying from open end;
c) an area defining a tube hole draft means for providing a draft in the tube in the tube second length proximate the second end, in which the tube hole has a predetermined diameter and wherein the tube hole is positioned a predetermined distance X from the tube second end; and
d) a support comprising (1) a base and (2) a post which is positioned substantially perpendicular to the base, wherein the post is adapted for receiving the tube second end, in which the post has a predetermined length which is shorter than X.

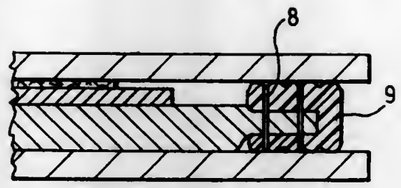
5,604,994
DRYING HOPPER AND POWDER DRYING METHOD USING THE SAME
Yoshiaki Annen, Ichihara; Akira Tsuzaki, Tokyo; Isao Shizuma, Tokyo; Takao Uetake, Tokyo, and Mitsunori Ichimura, Ichihara, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan
Division of Ser. No. 61,367, May 14, 1993, Pat. No. 5,423,133. This application Feb. 22, 1995, Ser. No. 392,200
Claims priority, application Japan, May 15, 1992, 4-123671
Int. Cl.[6] F26B *5/08*
U.S. Cl. 34—314 **9 Claims**



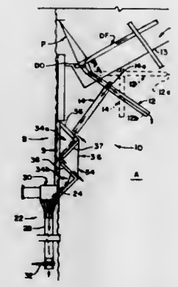
1. A method for drying powder, comprising: providing a drying hopper comprising an upper cylindrical portion and a lower conical portion, said lower conical portion having a slanted, circular wall having a diameter which decreases toward a lower end of said lower conical portion, said lower conical portion having a plurality of nozzles formed through said slanted, circular wall, said plurality of nozzles being uniformly disposed throughout said conical portion;
introducing powder to be dried into said drying hopper through powder inlets disposed in said upper cylindrical portion and allowing said powder to descend through said drying hopper
injecting a high temperature gas into said drying hopper, through said plurality of nozzles formed through said slanted, circular wall, so as to bring the high temperature gas into counterflow contact with said powder descending in the drying hopper;
removing dried powder from said lower end of said lower conical portion of said drying hopper;
removing said gas through an outlet disposed in said upper cylindrical portion of said drying hopper.

5,604,995
WIRE SEAL FOR A DRYING SPACE IN A DRYING APPARATUS
Jukka Lehtinen; Paavo Rantakorpi, both of Tampere, and Seppo Haavisto, Hämeenkyrö, all of Finland, assignors to Valmet-Tampella Oy, Tampere, Finland
Filed May 2, 1994, Ser. No. 236,452
Int. Cl.[6] F26B *5/04*
U.S. Cl. 34—417 **3 Claims**

1. In a drying apparatus in which a web to be dried passes in a substantially airless space between two bands together with at least a first drying wire, one of the bands being arranged to be heated and the other being arranged to be cooled, the web being positioned against the heating band for evaporating moisture contained in the web, the moisture condensing on the cooled band which is separated from the web by the first drying wire, wherein the improvement comprises a seal between an edge of the heating band and a corresponding edge of the cooling band to prevent leakages thereat between a drying space defined by the bands and a surrounding space comprising the seal being combined with the first drying wire, wherein the seal comprises a sealant filling a portion of the first drying wire close to an edge of the first drying wire and a U-shaped seal bent around the edge of the first drying wire to cover the filled portion of the first drying wire and attached to the first drying wire by at least one of sewing, riveting, vulcanizinng and gluing.



5,604,996
GRAIN SAMPLER AND METHOD FOR BATCH GRAIN DRYER
Ronald Bestwick, Taylorville, and Jeffrey D. Decker, Lerna, both of Ill., assignors to The GSI Group, Assumption, Ill.
Filed Aug. 15, 1995, Ser. No. 515,486
Int. Cl.[6] F26B *3/00*
U.S. Cl. 34—484 **21 Claims**



2. Apparatus for sampling grain discharged from a batch grain dryer, said dryer having a sloped drying floor which supports a batch of grain to be dried, said grain dryer having a plurality of discharge chutes for discharging said batch of grain from said drying floor, means for sampling grain from a stream of grain flowing along one of said discharge chutes, said apparatus comprising means for diverting a portion of said grain flowing in said stream to a sampling path, means for splitting said grain flowing along said sampling path to a collection path and for discharging the balance of said grain flowing along said sampling path, and means for collecting at least a portion of said grain flowing along said sampling path so as to accumulate grain for a sample that is representative to all of said grain flowing along said path, wherein said diverting means comprises a diverter which extends up into said one discharge chute for intercepting only a portion of said steam of grain flowing down said one chute and for diverting said portion of said stream of grain flowing along said one chute to said sampling path.

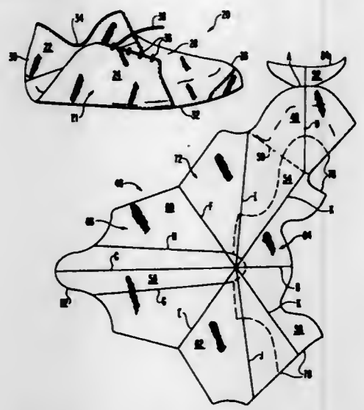
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5,604,997

SHOE UPPER AND METHOD OF MAKING SAME

William M. Dieter, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.

Filed Feb. 24, 1995, Ser. No. 393,487
Int. Cl.[6] A43B 23/00; A43D 11/00
U.S. Cl. 36—45 21 Claims



1. A blank of material for forming a shoe upper, said blank comprising:

a first section including a heel portion adapted to wrap around the heel of a foot, medial and lateral side portions adapted to cover the medial and lateral sides of a foot, and a toe portion adapted to cover the toes of a foot;

a second section extending from one side of said first section and including a bottom portion adapted to underlie the bottom of a foot, said bottom portion having medial and lateral sides and being generally in alignment with and extending from said heel portion of said first section; and

a fold area located between said heel portion and said bottom portion about which said first and second sections are folded to place said bottom portion in contact with said heel portion, said medial and lateral side portions and said toe portion:

wherein said second section includes a wing portion on at least one of the medial and lateral sides of said bottom portion, said wing portion being foldable upward from said bottom portion to overlay one of said side portions of said first section.

5,604,998

SPORTS SHOE PROVIDING HEEL STABILIZATION

Keijiro Kita, Osaka, Japan, assignor to Mizuno Corporation, Osaka-fu, Japan

PCT No. PCT/JP94/00170, § 371 Date Oct. 4, 1994, § 102(e) Date Oct. 4, 1994, PCT Pub. No. WO94/17685, PCT Pub. Date Aug. 18, 1994
PCT Filed Feb. 4, 1994, Ser. No. 313,252
Claims priority, application Japan, Feb. 5, 1993, 5-008349 U; Jan. 14, 1994, 6-015977
Int. Cl.[6] A43B 23/08; 19/00; 7/14
U.S. Cl. 36—69 7 Claims

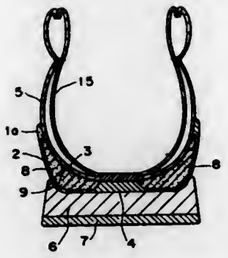
1. A sports shoe comprising:

an upper member,

a sole,

a reinforcing element connected to at least one of the upper member and the sole, and

a bouncing putty-containing pad positioned on an inner surface of said reinforcing element for holding and stabilizing a heel of a wearer.



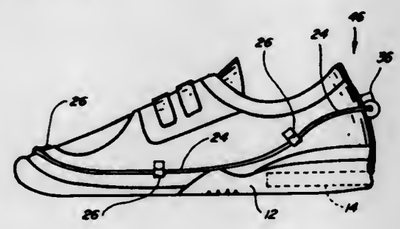
wherein said pad comprises an open-cell foam impregnated with the bouncing putty.

5,604,999

FOOTWEAR WITH ILLUMINATED LINEAR OPTICS

Dale E. Barker, 1318 State St., Alton, Ill. 62002

Division of Ser. No. 237,790, May 4, 1994, Pat. No. 5,502,903.
This application Sep. 8, 1995, Ser. No. 525,353
Int. Cl.[6] A43B 23/00
U.S. Cl. 36—137 15 Claims



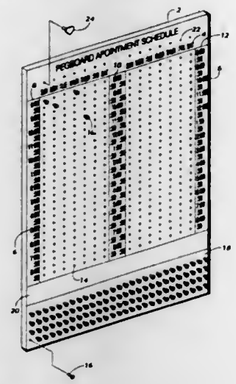
1. An illuminated shoe comprising a body portion and a heel portion, a cavity formed in said heel portion, an opening extending from said cavity to an outer surface of said heel portion for providing access to said cavity from the exterior of said shoe, power supply means located in said heel cavity, at least one light source located in said heel cavity and operatively connected to said power supply means, means for selectively illuminating said light source, a linear fiber optic conduit having opposed end portions, said linear fiber optic conduit extending along adjacent the exterior portion of at least a portion of the body portion of said shoe and being capable of emitting light conducted therethrough outwardly through its circumferential periphery substantially linearly along its entire length, at least one end portion of said linear fiber optic conduit being positioned and located within said heel cavity in close proximity to said light source, said light source directing light towards said fiber optic conduit end portion and illuminating said fiber optic conduit linearly along substantially its entire circumferential periphery when said light source is selectively illuminated, a closure member configured for cooperatively engaging said cavity opening to protect and seal said power supply means within said heel cavity, means for enabling said at least one end portion of said linear fiber optic conduit to be positioned and located in close proximity to said light source within said heel cavity, and means for holding said fiber optic conduit adjacent the exterior portion of the body portion of said shoe.

5,605,000

SCHEDULING BOARD

Sylvia M. Scott, 1637 Westway Dr., Charleston, S.C. 29412

Filed Feb. 22, 1995, Ser. No. 393,085
Int. Cl.[6] G09D 3/00
U.S. Cl. 40—107 4 Claims



1. A scheduling board, comprising:

a. a board;

b. a multiplicity of vertical indicia designations positioned vertically across said board;

c. a multiplicity of horizontal indicia designations positioned horizontally along said board;

d. a multiplicity of apertures, with each of said apertures corresponding to one of said vertical designations and to one of said horizontal designations;

e. a multiplicity of series of pegs, with each series of pegs differing in color from each remaining series of pegs, and wherein each of said pegs is capable of selective attachment to any one of said multiplicity of apertures,

f. a second multiplicity of apertures which are arranged to form a generally linear array, wherein each of said apertures of said second multiplicity of marker receivers is positioned adjacent to and above said horizontal designations; and

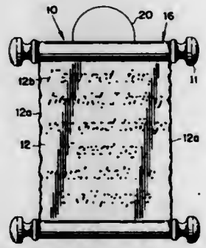
g. an indicator grid which is positioned on said board, wherein said indicator grid has a series of sections, wherein each section is of a different color, and wherein each section corresponds in color to one of said series of pegs.

5,605,001

ORNAMENTAL SCROLL DEVICE

Laura J. Derk, P.O. Box 68, Cheboygan, Mich. 49721

Filed Mar. 10, 1994, Ser. No. 208,387
Int. Cl.[6] G09F 11/18
U.S. Cl. 40—518 13 Claims



1. An ornamental scroll device comprising:

a) flexible sheet means including two opposed outer end portions, two opposed outer edges, and an indicia bearing section having a message located on an obverse side of the flexible sheet means and between the end portions and outer edges,

b) stiffening means maintain the indicia bearing section rigid between the outer end portions,

c) each of the outer end portions including a roll section having two cap means secured at opposite ends of each roll section, and

d) location fixing means for displaying the indicia bearing section,

e) the flexible sheet means includes a single piece of flexible sheet material having outer end sections wrapped around the dowel sections to form the outer end portions,

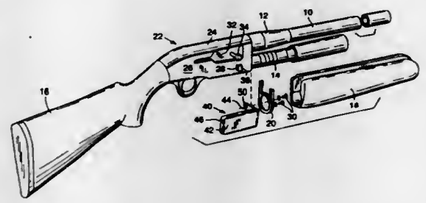
f) each said roll sections includes a dowel section having a length that is shorter than the overall width of the sheet material to provide open-mouth pockets for receiving a cap means at each end of the roll section.

5,605,002

FIREARM BREECH BLOCK ACTUATOR

Donald C. Carey, 11430 Payette Hts. Rd., Payette, Id. 83661

Filed Oct. 30, 1995, Ser. No. 550,107
Int. Cl.[6] F41A 3/00; F41C 27/00
U.S. Cl. 42—17 9 Claims



1. In a firearm comprising a receiver housing a latch-controlled breech block and having a side face positioned for pressing engagement by the fingers of the marksman, and a latch-operating push button extending outwardly from the side face, the improvement comprising:

a) an arm overlying the push button in bearing engagement therewith and having an outer surface sufficiently large to accommodate a plurality of a marksman's fingers, and

b) mounting means for mounting the arm on the firearm for reciprocating movement toward and away from the said side face, thereby operating the breech block latch.

5,605,003

COLLAPSIBLE FISH NET

Paul Krc, 7427 Beverly Blvd., Everett, Wash. 98203, and Steve Studley, 212 N. Russell Rd., Snohomish, Wash. 98290

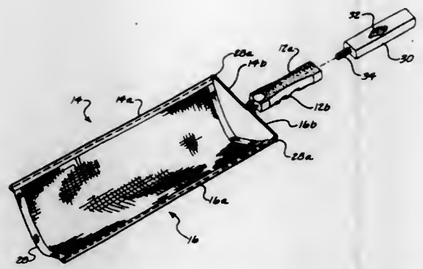
Filed Oct. 11, 1995, Ser. No. 541,019
Int. Cl.[6] A01K 77/00
U.S. Cl. 43—12 13 Claims

1. A collapsible fish net comprising:

a handle having a longitudinal axis;

first and second support arms each having a first portion that is secured to the handle and a second portion that extends parallel to and spaced apart from the longitudinal axis of the handle;

a flexible mesh having a pair of open ends to form a sling that is extendable between the first and second support arms; and

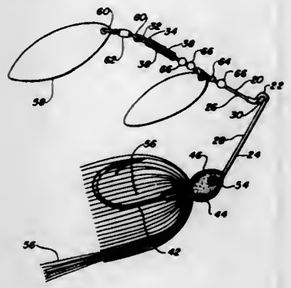


means for moving the support arms from a first position where the first and second support arm are adjacent to one another to a second position where the first and second support arms are spaced farther apart such that the flexible mesh is extended.

5,605,004
SPINNER FISHING LURE

John H. Boullt, 10249 Cardinal St., Fountain Valley, Calif. 92708, and Robert E. Coulter, 9592 Juanita St., Cypress, Calif. 90630

Filed Nov. 6, 1995, Ser. No. 554,187
Int. Cl.[6] A01K *85/10*
U.S. Cl. 43—42.13 **17 Claims**

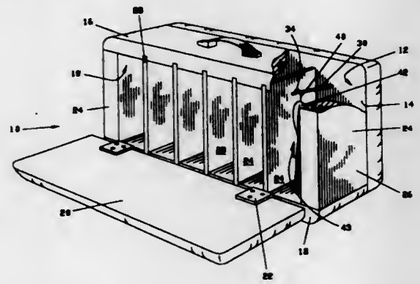


1. A spinner artificial fishing lure comprising:
a wire shaft angularly bent into a substantially V-shape at an apex forming a first arm and a second arm,
said first arm having a hollow stainless steel surgical tube intimately surrounding the shaft compounding stiffness of the first arm,
said shaft having an arched open loop formed integrally with the hollow tube at the V-shape apex for attaching a fishing line thereunto,
said second arm having a contiguous loop formed at a distal end for attachment purposes,
a hook angularly crimped onto the first arm and tube at an outermost end for retaining a fish,
a weighted head surrounding the hook and first arm crimp creating visual bait for fish,
a filament skirt attached around the head for attracting fish, and
at least one spinner rotatably attached to the second arm including the contiguous loop, freely oscillating and vibrating, eliminating any counter effects of movement and harmonics of the first arm, thus permitting the second arm to throb, flutter, and wiggle the lure in a captivating manner.

5,605,005
TACKLE BOX

Wiley F. Maraman, 32127 County Rd. 87, Robertsdale, Ala. 36567

Filed Oct. 27, 1995, Ser. No. 548,961
Int. Cl.[6] A01K *97/06*
U.S. Cl. 43—57.1 **6 Claims**

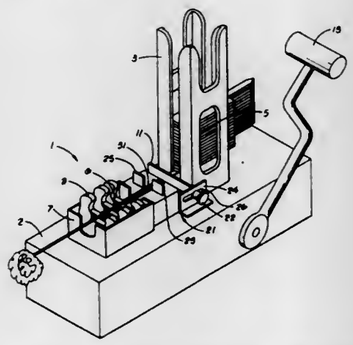


1. In a fishing lure storage compartment comprising a rigid end wall, a moveable closure opposite the rigid end wall and a second rigid wall extending from the end wall to the closure, an improvement comprising a flexible hanger rod extending inward from the rigid end wall to a free end distal from the rigid end wall, a portion of the hanger rod adjacent the free end thereof biased into contact with the second rigid wall.

5,605,006
APPARATUS FOR STEMMING FLOWERS

Donald E. Weder, Highland; William F. Straeter, Breese; Joseph G. Straeter, Highland, all of Ill.; Paul Fantz, Imperial, Mo.; Gary E. Wilson, Troy, Ill., and Charles E. Schlueter, St. Louis, Mo., assignors to Southpac Trust International, Inc., Oklahoma City, Okla.

Division of Ser. No. 144,917, Oct. 28, 1993, which is a continuation-in-part of Ser. No. 949,411, Sep. 22, 1992, Pat. No. 5,391,208. This application May 18, 1995, Ser. No. 443,831
Int. Cl.[6] A01G *7/00*
U.S. Cl. 47—1.01 **1 Claim**



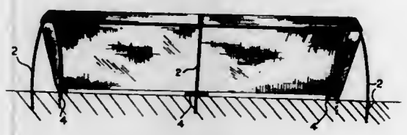
1. An apparatus for applying a stem pick to a flower stem, the stem pick having laterally directed fingers for wrapping around the flower stem when applied, the apparatus comprising:
means for positioning the stem pick into a position ready for attachment to the flower stem;

means for attaching the stem pick to the flower stem by pressure forming the fingers of the stem pick about the periphery of the flower stem; and
pressure adjusting means for adjusting the pressure of the fingers of the stem pick formed about the periphery of the flower stem, the pressure adjusting means comprising:
a clutch mechanism having means for adjusting the torque applied to the means for attaching the stem pick so as to accommodate different diameters of flower stems and to apply the appropriate forming pressure to the fingers of the stem pick without crushing the flower stem while forming the fingers of the stem pick about the flower stem in a secure manner.

5,605,007
FABRIC-VENTED GREENHOUSE

Peter Hinsperger, 3262 Shelburne Place, Oakville, Ontario, Canada

Filed Apr. 14, 1995, Ser. No. 421,770
Claims priority, application Canada, Apr. 26, 1994, 2122188
Int. Cl.[6] A01G *9/00*
U.S. Cl. 47—17 **17 Claims**



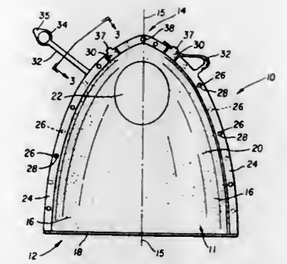
1. A fabric-vented greenhouse comprising:
(a) a central section of transparent or translucent flexible light-stabilized plastic material having a surface area;
(b) at least one peripheral or vent section of substantially open-weave scrim material having an initial open condition and formed from loosely woven thin and narrow strips of transparent or translucent light-stabilized plastic material having a superimposed lace form reinforcing ribbing of light-stabilized plastic, with greater than 50% of the surface area of the scrim material being non-reinforced and deformable from said initial open condition to a second open condition to permit increased passage of air and moisture;
(c) support means for forming a raised central section from (a) and an attached peripheral or vent section from (b), said central section having a bottom portion; and
(d) fastener means for securing said central section and said peripheral or vent section about said support means and said bottom portion.

5,605,008
PLANT SHELTER

David B. Johnston, Fairport, N.Y.; Vincent P. Johnston, and Marjorie R. Johnston, both of Sheridan, Wyo., assignors to Northern Tier Gardens Corporation, Fairport, N.Y.

Filed Dec. 1, 1995, Ser. No. 565,850
Int. Cl.[6] A01G *13/02*
U.S. Cl. 47—21 **12 Claims**

1. A dome-shaped plant shelter for protecting seed germination and young plants in the ground compromising:
at least two substantially identical mating sections, each section having a curved peripheral side wall with an open side, a narrow closed top end, a wider bottom end, an axis about which the side wall is formed, and a substantially continuous edge at the open side of the peripheral side wall, the two sections forming an enclosed interior space between them when the substantially continuous edges of the sections are placed against each other and the bottom ends of the sections placed on the ground;

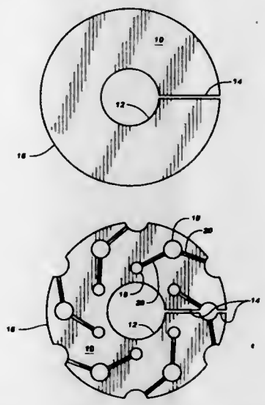


connecting means formed on the substantially continuous edges of both sections for readily and detachably connecting the sections to each other, the connecting means comprising a substantially continuous mating flange on each of the sections and integral with the substantially continuous edge of the section, each flange having a face extending substantially laterally away from the axis of the section for mating with the face of the flange of the other section, and male and female resilient snap connectors integrally formed on each flange face and positioned such that the male snap connectors of each one of the sections detachably engages the female snap connectors of the other of the sections when the mating flange faces of the sections are hand pressed against each other:
means formed by the mating flanges for defining an access opening to the interior space; and
closure means formed on the connecting means for selectively opening and closing the access opening to the interior space for selectively admitting ambient air and plant irrigation.

5,605,009
PROTECTIVE COVERING FOR PLANTS AND TREES

Charles R. Elder, P.O. Box 217, Venetia, Pa. 15367-0217

Filed Jul. 11, 1995, Ser. No. 501,200
Int. Cl.[6] A01G *17/00*
U.S. Cl. 47—25 **16 Claims**

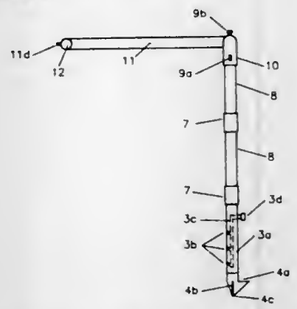


1. A protective cover for plants and trees, comprising:
(a) a flexible thin disc, wafer-shaped cover having a substantially centrally located center cavity for receiving a base of plants and trees;
(b) a slot running from said center cavity to the outside diameter of said cover;
(c) a plurality of large holes in said cover; and
(d) grooves in said cover connecting said large holes, wherein said large holes are sized in increasing diameters from the

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center cavity outward and said grooves connect said large holes having increasing diameters.

5,605,010
WATERING STAKE AND TREE SUPPORT
Laurence L. Furlong, and Dennis W. Morse, both of P.O. Box 375, Columbus, N.M. 88029
Filed Nov. 20, 1995, Ser. No. 560,816
Int. Cl.[6] A01G *29/00*
U.S. Cl. 47—48.5 **1 Claim**



1. A kit for forming a watering stake and tree support comprising:

a watering stake having a first pointed end with two anchoring fins positioned at about 90 degree angles to each other, an inner conduit adapted to conduct water, a plurality of egress holes provided along the length of said inner conduit and a coupling adapted to connect said inner conduit to a supply of water,

said kit further including a pounding cap having a rubber washer adapted to engage a second end of said watering stake for preventing injury to said stake when driving said stake into the earth;

a plurality of upper support segments;

a plurality of means for engaging each segment with another segment or with the said watering stake; and

said kit providing an uppermost support segment in the shape of an 180 degree horizontal arc; and

the means for engaging said horizontal arc segment to main upright support segments; and

the means to engage at least one part of said upper horizontal arc segment in a supporting relationship with a tree.

5,605,011
NUCLEIC ACID FRAGMENT ENCODING HERBICIDE RESISTANT PLANT ACETOLACTATE SYNTHASE
John R. Bedbrook, Piedmont, Calif.; Roy S. Chaleff, Pennington, N.J.; Saverio C. Falco, Arden; Barbara J. Mazur, Wilmington, both of Del.; Christopher R. Somerville, Portola Valley, Calif., and Narendra S. Yadav, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of Ser. No. 892,305, Jun. 2, 1992, Pat. No. 5,378,824, which is a division of Ser. No. 642,976, Jan. 18, 1991, Pat. No. 5,141,870, which is a division of Ser. No. 164,360, Mar. 4, 1988, Pat. No. 5,013,659, which is a continuation-in-part of Ser. No. 900,609, Aug. 26, 1986, abandoned. This application Dec. 22, 1994, Ser. No. 362,022
Claims priority, application Israel, Jul. 27, 1987, 83348
Int. Cl.[6] A01G *13/00;* **A01H** *5/00;* **C12N** *15/29;15/82*
U.S. Cl. 47—58 **19 Claims**

1. A method for controlling the growth of undesired vegetation growing at a locus where a plant has been cultivated, said plant having been transformed with an isolated nucleic acid fragment comprising a nucleotide sequence encoding a plant acetolactate synthase protein which is resistant to a compound selected from the group consisting of sulfonylurea, triazolopyrimidine sulfonamide, and imidazolinone herbicides, said nucleotide sequence comprises at least one sub-sequence which encodes one of the substantially conserved amino acid sub-sequences designated A, B, C, D, E, F, and G, in FIG. **6**, the nucleic acid fragment is further characterized in that at least one of the following conditions is met,

(a) the nucleic acid fragment has a sequence which encodes an amino acid sub-sequence A wherein ϵ_1 is an amino acid other than alanine, or ϵ_2 is an amino acid other than glycine,

(b) the nucleic acid fragment has a sequence which encodes an amino acid sub-sequence B wherein α_1 is an amino acid other than proline,

(c) the nucleic acid fragment has a sequence which encodes an amino acid sub-sequence C wherein δ_2 is an amino acid other than alanine,

(d) the nucleic acid fragment has a sequence which encodes an amino acid sub-sequence D wherein λ_1 is an amino acid other than lysine,

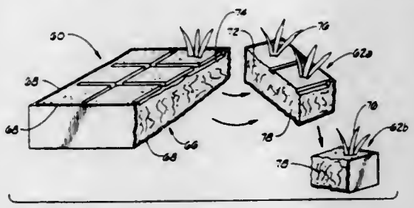
(e) the nucleic acid fragment has a sequence which encodes an amino acid sub-sequence E wherein γ_1 is an amino acid other than aspartic acid,

(f) the nucleic acid fragment has a sequence which encodes an amino acid sub-sequence F wherein β_3 is an amino acid other than tryptophan, or β_8 is an amino acid other than valine or β_7 is an amino acid other than phenylalanine, and

(g) the nucleic acid has a sequence which encodes an amino acid sub-sequence G wherein σ_1 is an amino acid other than methionine,

said method comprising applying to the locus an effective amount of said herbicide.

5,605,012
FLORAL CONTAINER HAVING A WATER-IMPERMEABLE EXTERNAL LAYER
Donald E. Weder, Highland, and William F. Straeter, Breese, both of Ill., assignors to Southpac Trust International, Inc., Oklahoma City, Okla.
Continuation of Ser. No. 415,263, Apr. 3, 1995, Pat. No. 5,515,644, which is a division of Ser. No. 53,062, Apr. 26, 1994, Pat. No. 5,402,599, which is a continuation-in-part of Ser. No. 941,992, Sep. 8, 1992, Pat. No. 5,410,856, Ser. No. 949,175, Sep. 22, 1992, Pat. No. 5,339,601, Ser. No. 934,832, Aug. 24, 1992, Pat. No. 5,426,914, and Ser. No. 940,930, Sep. 4, 1992, Pat. No. 5,361,482, which is a continuation-in-part of Ser. No. 926,098, Aug. 5, 1992, which is a continuation-in-part of Ser. No. 803,318, Dec. 4, 1991, Pat. No. 5,344,016, which is a continuation-in-part of Ser. No. 707,417, May 28, 1991, abandoned, which is a continuation of Ser. No. 502,358, Mar. 29, 1990, abandoned, which is a continuation-in-part of Ser. No. 391,463, Aug. 9, 1989, abandoned, which is a continuation-in-part of Ser. No. 249,761, Sep. 26, 1988, abandoned, said Ser. No. 934,832is a continuation of Ser. No. 819,311, Jan. 9, 1992, abandoned, which is a continuation of Ser. No. 765,416, Sep. 26, 1991, Pat. No. 5,106,599, which is a continuation of Ser. No. 530,491, May 29, 1990, abandoned, which is a continuation of Ser. No. 315,169, Feb. 24, 1989, abandoned. This application May 10, 1995, Ser. No. 438,856
Int. Cl.[6] A01G *31/00*
U.S. Cl. 47—64 **11 Claims**

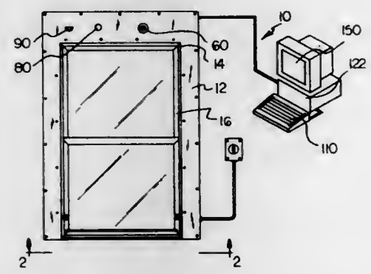


1. A growing tray, comprising:

a porous self-supporting holding material having an upper side, a lower side, and an outer peripheral surface extending between the upper side and the lower side, the porous self supporting holding material for growing a botanical item or propagule without an external pot means, the porous self supporting holding material further comprising a plurality of subunits wherein each subunit is adapted for growing or maintaining a separate botanical item or propagule disposed therein and wherein each subunit is adapted for separation from other subunits of the porous self supporting material for independent disposition; and

an external surface layer comprising a lacquer composition applied to the lower side and the outer peripheral surface of the porous self supporting holding material and integral thereto, the external surface layer having the property of being impermeable to an irrigant introduced into the porous self supporting holding material, the external surface layer serving to retain the irrigant within the porous self supporting holding material to sustain the botanical items or propagule disposed therein.

5,605,013
PROGRAMMABLE AUTOMATIC WINDOW
Timothy W. Hogston, 2 Lake Ridge Pl., Apt L, Cockeysville, Md. 21030
Filed Jan. 17, 1995, Ser. No. 373,966
Int. Cl.[6] E05F *15/20*
U.S. Cl. 49—31 **2 Claims**



1. A programmable automatic window for allowing automatic opening and closing of a window based on environmental, timing, and user instructions comprising, in combination:

a hollow rigid rectangular frame with a central rectangular aperture disposed therethrough;

a generally rectangular window including an upper part formed of a transparent sheet of material bounded by a rigid border secured within an upper extent of the aperture of the frame and a lower part formed of a transparent sheet of material bounded by a sash slidably secured within a lower extent of the aperture and positionable in a facing relationship with the upper part;

a pair of elongated rigid threaded ball screws disposed within the frame on either side of the window and with each ball screw having a base end rotatably coupled to the frame at a lower extent thereof and an upper end with an angled gear formed thereon extended a distance above the window;

a pair of opposed and threaded ball screw nuts with each ball screw nut threadedly disposed on one of the ball screws and with each ball screw nut fixedly coupled to the sash of the window;

a motor disposed within and coupled to the frame at a location above the window, the motor having a central fixed stator and an elongated rotatable rotor extended therethrough and with each end of the rotor having an angle gear coupled thereto in mesh with one of the angle gears of a ball screw, the motor electrically energizable with a positive polarity to cause rotation of the ball screws and upper displacement of the ball screw nut engaged therewith, thus allowing the lower part of the window to be raised for creating an opening for providing ventilation, the motor electrically engaged with a negative polarity to cause opposite rotation of the ball screws and downward displacement of the ball screw nut threadedly engaged therewith, thus allowing the lower part of the window to be lowered for closing the opening and preventing ventilation;

a hand crank mechanism coupled to the rotor of the motor and extended through the frame and actuatable by a hand-held wrench for manually rotating the rotor for generating movement of the lower part of the window;

a power supply coupleable with an external power source for providing electrical energy for operation;

a temperature sensor coupled to the frame and power supply for transmitting temperature indication signals;

a rain sensor coupled to the frame and power supply for transmitting rain indication signals;

a real time clock coupled to the power supply for transmitting real time clock signals;

a keyboard coupled to the power supply for generating a plurality of instruction signals upon actuation by a user;

microprocessor-based controller circuitry coupled to the power supply, the temperature sensor, the rain sensor, the real time clock, and the keyboard for selectively generating a first motor activation signal and a second motor activation signal based upon receipt and evaluation of temperature indication signals, rain indication signals, real time clock signals, and instruction signals;

a display mechanism coupled to the controller circuitry for providing a visual indication of operation; and

motor logic switch circuitry coupled to the power supply for controlling operation of the motor and with the motor logic switch circuitry further comprising:

a down magnetic switch coupled to the frame at a lower extent thereof and engagable with one of the downwardly moving ball screw nuts to thereby transmit a motor de-activation signal;

an up magnetic switch coupled to the frame at a central extent thereof and engagable with one of the upwardly moving ball screw nuts to thereby transmit a motor de-activation signal;

a momentary manually-depressible down switch having one orientation for transmitting a first motor activation signal;

a momentary manually-depressible up switch having one orientation for transmitting a second motor activation signal;

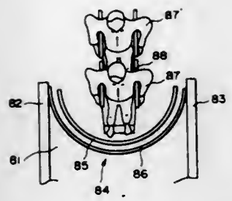
combinatorial switch circuitry coupled to the switches and controller circuitry for receiving the motor de-activation signals, first motor activation signals, and second motor activation signals from both the switches and controller circuitry during operation and then selectively transmitting the motor de-activation signal, the first motor activation signal, and the second motor activation signal; and

motor driving circuitry coupled to the combinatorial switch circuitry and the motor for allowing the motor to be energized with a positive polarity upon receipt of the first motor activation signal and for allowing the motor to be energized with a negative polarity upon receipt of the second motor activation signal and for preventing the motor from being energized upon receipt of the motor de-activation signal.

5,605,014
DOOR APPARATUS FOR REST ROOM
Motoyasu Kimura, Tokyo, Japan, assignor to Kimura Industry Co., Ltd., Japan
Filed Nov. 9, 1994, Ser. No. 336,425
Claims priority, application Japan, Nov. 16, 1993, 5-286970; Nov. 16, 1993, 5-286971
Int. Cl.[6] E06B *3/34*
U.S. Cl. 49—40 **7 Claims**

1. A door apparatus for a rest room, comprising:

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wall means defining a predetermined space with an opening for entrance into and exit from said space

a door means for opening or closing said space, said door means comprising a pair of substantially half-cylindrical door members which are separated from each other and are rotatable about the center of curvature of said door members, and

drive means for driving and rotating said door members about the center of curvature.

5,605,015

TURNSTILE WITH AUTOMATICALLY PIVOTING ARMS

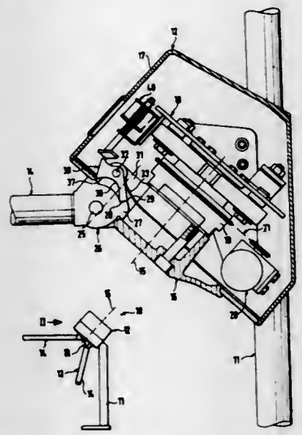
Albert Uhl, Karlsruhe, and Thomas Birk, Bühl, both of Germany, assignors to Kaba Gallenschütz GmbH, Bühl, Germany

Filed Dec. 7, 1995, Ser. No. 568,942

Claims priority, application Germany, Dec. 21, 1994, 44 45 698.0

Int. Cl.[6] E06B *11/08*

U.S. Cl. 49—47 **6 Claims**



1. An apparatus including a turnstile for controlling a passage of persons comprising:

a hub assembly including a hub support and a hub for rotating about an axis of rotation which is oriented approximately 45° from a horizontal line;

a releasable locking device for selectively allowing and restraining rotational movement of said hub in both directions;

at least two arms pivotally mounted to said hub about pivot axes extending transverse to a longitudinal axis of each said arms, said arms being spaced from each other in a circumferential direction of said hub, each said arms including a bearing body and pivoting between (i) a substantially-horizontal locked position blocking the passage and successively operable by rotation of said hub about the axis of rotation to allow the passage of persons and (ii) a released position in which an arm blocking passage folds down about the pivot axis onto said hub permitting unobstructed passage through the turnstile;

a double-arm lever, for each said arms, pivotally mounted on said hub and comprising one reset lever and one arrest lever engaging said bearing body for arresting one of said arms in said locked position and a first spring for maintaining said double-arm lever in the locked position; and

an electromagnet, a second spring and a release device retained in a pre-cocked position against a biasing force of said second spring by said electromagnet, wherein in an absence of an electromagnet retaining force, said release device actuating said double-arm lever so that one of said arms is folded down into the released position, wherein said release device includes;

(i) a U-shaped bracket, with a top leg and a bottom leg, mounted on said hub support with said electromagnet mounted on said top leg;

(ii) two longitudinally-displaceable guide bars with lower ends extending through said bottom leg, one bar being located on either side of said electromagnet;

(iii) a release plate connected to said lower ends of said guide bars;

(iv) a metallic holding plate connected to said guide bars between said electromagnet and said bottom leg;

(v) retaining clips disposed on said guide bars facing said top leg and supporting said holding plate; and

(vi) a third spring disposed on each guide bar between said top leg and said retaining clip and a fourth spring disposed on each guide bar berween said holding plate and said bottom leg;

said release device being mounted on said hub support and positioned to disengage one of said arms from the locked position;

wherein said reset lever is operatively pivoted by said bearing body as one of said arms folds into the released position, to automatically reset said release device upon restoration of the electromagnet retaining force.

5,605,016

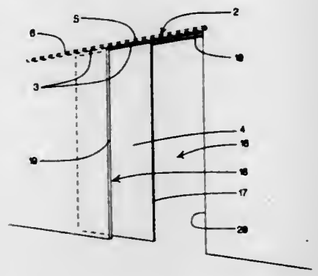
ADJUSTABLE POCKET DOOR TRACK

Albert C. Pollard, P.O. Box 266, Irvington, Va. 22480

Division of Ser. No. 298,408, Aug. 30, 1994, abandoned. This application Jun. 23, 1995, Ser. No. 494,592

Int. Cl.[6] E06B *3/00*

U.S. Cl. 49—506 **1 Claim**



1. A method of installing a pocket door assembly having a door pocket, a doorway opening and a door, said doorway opening having a pocket opening at said door pocket and a jamb on an opposite side of said doorway opening from said pocket opening, said door having a substantially vertical visible door edge, said method provides for adjusting said substantially vertical visible door edge to be parallel to said jamb when said door is positioned in said doorway opening independently of adjusting said substantially vertical visible door edge to be parallel to said pocket opening when said door is positioned inside said door pocket, said method comprising the following steps:

hanging said door by means of an adjustable suspension from a track comprised of a center flexible hinge portion between a pocket track segment and a door way track segment, said doorway track segment having a hinge end at said center flexible hinge portion and an adjustment end being the opposite end from said hinge end;

supporting rigidly said pocket track segment from a head member within said door pocket;

supporting said adjustment end of said doorway track segment by an adjustment means disposed between said adjustment end and said head member;

adjusting said adjustable suspension so that said door, when in said door pocket, hangs with said substantially vertical visible door edge parallel to said pocket opening;

adjusting said adjustment means so as to raise or lower said adjustment end of said doorway track segment so that said door, when in said doorway opening, hangs with said substantially vertical visible door edge parallel to said jamb.

5,605,017

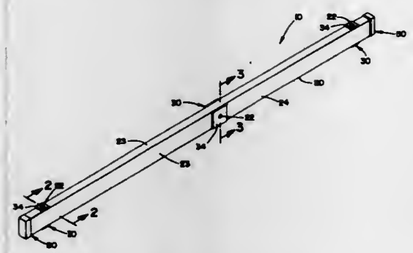
PULTRUDED UTILITY LINE SUPPORT STRUCTURE AND METHOD

Conrad F. Fingerson, Chatfield, and William J. O'Brien, Proctor, both of Minn., assignors to PUPI Enterprises L.L.C., Duluth, Minn.

Filed Jan. 13, 1994, Ser. No. 180,651

Int. Cl.[6] E04H *12/00*

U.S. Cl. 52—40 **26 Claims**



1. A utility line support structure comprising:

(a) a hollow fiber reinforced beam having a transverse hole extending therethrough;

(b) a bushing inserted into the transverse hole, the bushing having:

(i) a hollow inner member; and

(ii) a pair of integral washers arranged on opposite ends of the inner member against an outer surface of the beam; and

(c) a bolt received in the hollow inner member and applying an axial load against the integral washers;

(d) the hollow inner member and the integral washers of the bushing being constructed and arranged so as to cooperate to support the axial load applied by the bolt.

5,605,018

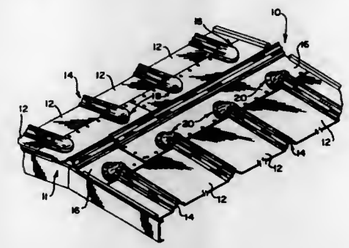
FLEXIBLE ROOF END CAP

James W. McElderry, Schaumburg; Michael C. Dill, Elk Grove Village; Juergen O. Rathgeber, Arlington Heights; John A. Wand, Crystal Lake, all of Ill., and John F. Fox, Riverdale, Ga., assignors to Illinois Tool Work Inc., Glenview, Ill.

Filed Aug. 4, 1995, Ser. No. 511,520

Int. Cl.[6] E04B *7/00*

U.S. Cl. 52—57 **17 Claims**



1. A roof end cap for covering an end of a roof rib of a metal roof, comprising:

at least one flexible membrane for covering the end of the roof rib, said membrane being pliant and having a top peripheral portion and a bottom peripheral portion; and

at least one frame member for attachment to at least a portion of said top peripheral portion for supporting said flexible membrane in a sealing relationship with the roof rib; and

said flexible membrane and said at least one frame member being sufficiently pliant to be manipulable by an installer to cover and seal the end of a roof rib formed by various sizes and contours of metal roof panels.

5,605,019

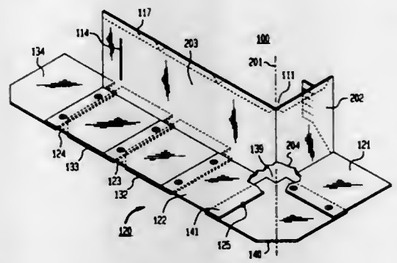
FOLDABLE AND EXPANDABLE PITCH POCKET AND METHOD OF FORMING SAME

Dennis E. Maziekien, 116 Hillside Ave., Watchung, N.J. 07060, and Edward F. Maziekien, 1204 Bay Ave., P.O. Box 884, Mantoloking, N.J. 08738

Filed Apr. 22, 1994, Ser. No. 231,339

Int. Cl.[6] E04D *13/14*

U.S. Cl. 52—58 **7 Claims**



3. A pitch pocket comprising

an elongated, L-shaped, thin piecepart having a vertical wall and a horizontal wall,

said horizontal wall being partitioned into a plurality of flaps having slits separating adjacent flaps, said flaps being joined to the base of the vertical wall,

said vertical wall having a plurality of notches on its top tip, said notches and said slits being cooperatively aligned so that said vertical wall is bendable about a plurality of vertical axes in

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correspondence to the number of aligned notches and slits, said vertical wall also having a vertical slot proximate to one end and having a bendable tab formed at the end opposite to said vertical slot, said slot and said tab cooperatively arranged so that said tab inserts into said slot upon bending of said vertical wall about the vertical axes, and

said pitch pocket further comprising flat, thin, substantially rectangularly-shaped fillers equal to the number of flaps, each of said fillers attached to the underside of a corresponding one of said flaps, with one of said fillers projecting beyond said horizontal wall at one end, and each remaining one of said fillers extending from the flap to which the filler is attached to an adjacent one of said flaps, thereby overlapping a corresponding one of said slits between adjacent ones of said flaps, said fillers being sized to form a composite horizontal wall composed of said flaps and said fillers when said piecepart is folded about the vertical axes.

5,605,020

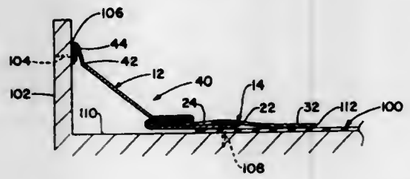
ROOFING TERMINATION DEVICE

Alan Chambers, Glendale, Ariz., assignor to The Garland Co., Inc., Cleveland, Ohio

Filed Jun. 5, 1995, Ser. No. 464,105

Int. Cl.[6] E04D *1/36;13/14*

U.S. Cl. 52—58 **9 Claims**



1. In combination with a roofing system consisting of a roofing membrane, a roofing system support structure and a vertical termination of a roof of a building, an improved device for terminating the roofing system at said a vertical termination of a the roof said improved device comprising:

a first member, having a first and a second end, said ends separated by a length dimension, and having first and second edges, said edges separated by a width dimension with each edge parallel to the length dimension;

a second member, formed of a flexible material, having a first and a second end, said ends separated by a length dimension, and having first and second edges, said edges separated by a width dimension with each edge parallel to the length dimension;

the first edge of the second member being sealed in an airtight and watertight manner in a channel formed longitudinally along the first member near the first edge thereof such that the second member flexibly covers and extends beyond the first edge of the first member, which is attached to the roofing system support structure by fastening means;

the second edge and the ends of the second member being adhered in an airtight and watertight manner to a top surface of the roofing membrane; and

the second edge of the first member being attached to the building at the vertical termination of the roof.

5,605,021

EARTHQUAKE-PROOF BUILDING

Bernard Thomann, 56, rue Molitor, 75016 Paris, France

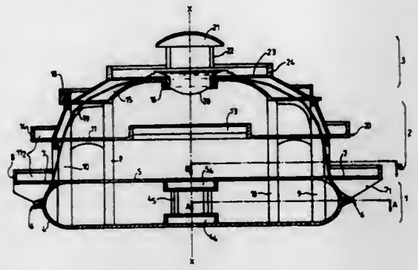
PCT No. PCT/FR93/00075, § 371 Date Mar. 9, 1995, § 102(e) Date Mar. 9, 1995, PCT Pub. No. WO93/19264, PCT Pub. Date Sep. 30, 1993

PCT Filed Jan. 26, 1993, Ser. No. 307,598

Claims priority, application France, Mar. 17, 1992, 92 103149

Int. Cl.[6] E02D *27/34*

U.S. Cl. 52—167.1 **18 Claims**



1. Earthquake-proof building comprising:

a circular horizontal base structure formed from first joined-together elements juxtaposed along radii of the circular base structure to form a first dish element and second joined-together elements juxtaposed along radii of the circular base structure to form a second dish element center of the first dish element being situated on a vertical axis of the building, the second dish element being inverted with respect to the first dish element and having a periphery of the second dish element bearing on a periphery of the first dish element story panels,

a vertical story structure including pillars bearing on the horizontal base structure and supporting the story panels,

a circular roof structure bearing on the pillars of the story structure, the roof structure being formed from beams and panels which are juxtaposed along a radii of this circular roof, and

tensioned cable arranged in a horizontal plane to encircle the circular base structure, and in vertical planes pointing radially to surround the building from periphery of the base structure, passing through the roof structure.

5,605,022

VENTED CLOSURE

David A. Fulton, Houston, Tex., assignor to NCI Building Systems, Inc., Houston, Tex.

Filed Dec. 26, 1995, Ser. No. 576,965

Int. Cl.[6] E04B *7/00*

U.S. Cl. 52—199 **15 Claims**



1. A vented closure for installation in a roofing system, said roofing system including a roofing panel and a ridge cap, said vented closure being located between an upper end of the roofing panel and the ridge cap, wherein said vented closure comprises:

a cap flange for attachment to the ridge cap;

a downwardly disposed closure wall connected to the cap flange;

a bottom wall, connected to the closure wall, said bottom wall attached to the upper end of the roofing panel;

an upwardly disposed inner sidewall connected to the bottom wall, thereby forming an open topped trough;

a vent opening located in said closure wall; and

means for excluding birds, vermin and debris, covering said vent opening.

5,605,023

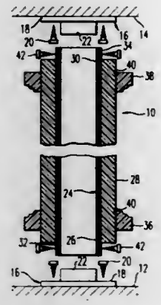
COMBINED DECORATIVE AND LOAD BEARING ARCHITECTURAL COLUMN FOR BUILDINGS

Christian P. Biernazki, White Hall, Md., assignor to Fypon Inc., Stewartstown, Pa.

Filed Jul. 8, 1994, Ser. No. 272,233

Int. Cl.[6] E04C *3/30*

U.S. Cl. 52—301 **19 Claims**



1. A combined decorative and load bearing architectural building column of a length to extend between a roof and a foundation, said column comprising:

an anchor member,

means for rigidly fastening said anchor member to said foundation, said anchor member including a vertical component having a predetermined height and a predetermined cross-sectional configuration,

a load bearing unit having a length substantially equal to the predetermined finished distance that the roof is spaced above the foundation, said unit having at least a lower end whose cross-sectional configuration is complementary to the cross-sectional configuration of the vertical component of said anchor member, one of said lower end of said unit and said vertical component of said anchor member being hollow and slideably receivable within the other such that the lower end of said unit is anchored to said foundation,

a sleeve of molded plastic material adhered to the exterior surface of said unit, said plastic material having a density and external appearance of selected material commonly used in the construction of building columns and having a length less than the length of said unit such that the ends of said unit extend freely by predetermined distances beyond ends of said sleeve to define gaps between the respective ends of said unit and said sleeve,

means for anchoring the upper free end of said unit to the roof, and

a decorative base and capital members slideably received on said sleeve and having central passages complementary to the external surface of the sleeve and a depth greater than said gaps between the end of said unit and said sleeve such that following installation of said unit and said sleeve between said roof and foundation, said base and capital members are slidable along said sleeve until said members respectively engage the foundation and the roof and thereby cover and disguise the respective gaps between the ends of said unit and said sleeve wherein the means for anchoring the upper free end of the unit comprises a second vertical component and wherein at least the upper and lower ends of said unit are hollow and are slideably received over said vertical components.

5,605,024

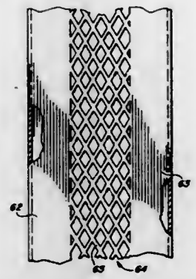
STUD ASSEMBLY

Edward Sucato, 3102 N. 24th St., Phoenix, Ariz. 85016, and John A. Powers, III, 4118 E. Ellwood St., Phoenix, Ariz. 85040

Continuation-in-part of Ser. No. 192,599, Feb. 7, 1994. This application Nov. 2, 1995, Ser. No. 552,104

Int. Cl.[6] E04C *3/32*

U.S. Cl. 52—696 **2 Claims**



1. A stud assembly comprising first and second elongated channel members of hollow U-shaped metal construction each comprising a pair of parallel sidewalls interconnected by a connecting wall, each sidewall of said channel members facing a similar sidewall of the other of said channel members in a common plane, and

an elongated connecting member integrally connecting said first and second channel members for holding said channel members in inwardly facing spaced parallel arrangement to form a hollow stud having a generally rectangular cross-section, wherein said connecting member comprises an elongated flat sheet of expanded metal mesh integrally joined along opposite side edges to corresponding facing sidewalls of said channel members, said metal mesh having openings adapted to expand only in a direction transverse to the longitudinal axes of said channel members, thereby enabling said channel members to be moved transversely away or toward each other in said transverse direction to adjust the spacing between said channel members and provide a stud assembly of desired width,

wherein said expanded metal mesh is creased at points along its length to strengthen said stud assembly in its expanded position.

5,605,025

DECK ASSEMBLY FOR RETROFITTING BLEACHERS

Eugene T. Paddock, Downers Grove, Ill., assignor to E. T. Paddock Enterprises, Inc., Lockport, Ill.

Filed Sep. 7, 1995, Ser. No. 522,986

Int. Cl.[6] E04H *3/12;* **A47C** *4/00*

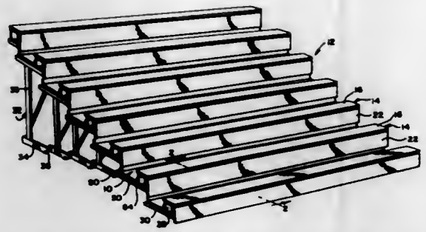
U.S. Cl. 52—741.3 **4 Claims**

1. A method of retrofitting bleachers having a plurality of rows of seats, a foot board located between adjacent rows of seats providing a walkway surface and supported by a plurality of floor support members, and an open area between the walkway surface and a first row of seats and an open area between the walkway surface and a second adjacent row of seats, said method comprising the steps of:

removing the floor board from the floor support members;

placing a toe riser having an upstanding flange on the floor support members adjacent the first row of seats;

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placing a heel riser having an upstanding flange on the floor support members in spaced relation to said toe riser and adjacent the second row of seats; and

placing a walkway panel between said upstanding flange of said toe riser and said upstanding flange of said heel riser, said walkway panel providing a walkway surface;

whereby said flange of said toe riser substantially encloses the area between the walkway surface and the first row of seats and said flange of said heel riser substantially encloses the area between the walkway surface and the second adjacent row of seats.

5,605,026

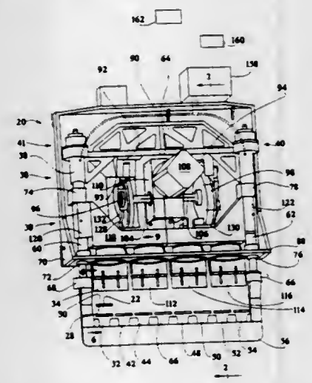
ULTRASONIC CARTON SEALER

Erik Schott, Buffalo Grove; Hisami Mitsuishi, Wheeling; Par Svensson, Palatine; Stefan Annehed, Palatine; Dean Skonieczny, Palatine, all of Ill.; Olof Stark, Ystad, and Gunnar Drevfors, Akarp, both of Sweden, assignors to Tetra Laval Holdings & Finance S.A., Pully, Switzerland

Continuation-in-part of Ser. No. 190,546, Feb. 2, 1994, Pat. No. 5,488,812. This application Sep. 28, 1994, Ser. No. 315,412

Int. Cl.[6] B65B *7/20;51/10*

U.S. Cl. 53—373.7 **34 Claims**



1. A carton sealer for sealing a closure of a carton having first and second sides and disposed at a closure sealing position, said sealer comprising:

A. an anvil mounted on an anvil bar, the anvil bar fixed to a pull rod for reciprocal, linear travel with the pull rod between an open position allowing a carton to pass and a closed position for bearing against the first side of a closure located at the closure sealing position;

B. an anvil drive comprising a first cam surface mounted for rotation on a drive shaft and engaging a corresponding cam follower in fixed engagement with the anvil bar for linearly reciprocating said anvil bar and anvil between its open position and its closed position in a plane;

C. an ultrasonic sealing horn mounted to a cradle, the cradle slidably mounted for sliding movement along the pull rod for reciprocal, linear travel in the plane between an open position allowing a carton to pass and a closed position for bearing against the second side of a closure located at the closure sealing position;

D. a horn drive comprising a second cam surface mounted for rotation on the drive shaft and engaging a corresponding cam follower in fixed engagement with the cradle for linearly reciprocating said horn and cradle between its open position and its closed position;

E. whereby a rotation of the drive shaft resulting in corresponding rotation of the cam surfaces to thereby concurrently drive the ultrasonic sealing horn and the anvil linearly toward one another to the closed positions.

5,605,027

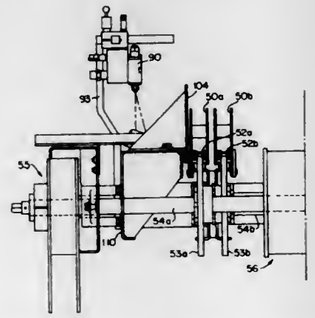
PACKAGING MACHINE WITH SIDE FLAP GLUING AND FOLDING CAPABILITY

Daniel J. Scroggin, Portland, and John L. Raudat, Madison, both of Conn., assignors to Standard-Knapp, Inc., Portland, Conn.

Division of Ser. No. 332,974, Nov. 10, 1994, abandoned. This application Nov. 29, 1995, Ser. No. 563,934

Int. Cl.[6] B65B *51/10*

U.S. Cl. 53—377.2 **6 Claims**



1. In a packaging machine for moving flat tray blanks downstream from a load station where articles are deposited on a bottom panel of the tray blank; the improvement comprising: a pocket chain conveyor system comprising one set of spaced chains carrying a first front flap folding pocket lug pair, and a second set of spaced chains carrying a second pair of rear flap folding pocket lugs, and a differential unit provided between said chains associated with said first and second pairs of pocket lugs, said differential unit including phase adjustment means to vary the pitch distance between said first and second pairs of pocket lugs to accommodate trays of different dimensions.

5,605,028

SEALING JOINTS BETWEEN CEMENTITIOUS ARTICLES

Christopher J. Cawte, Belton, United Kingdom, assignor to Caswick Limited, Belton, United Kingdom

Filed Nov. 3, 1994, Ser. No. 334,566

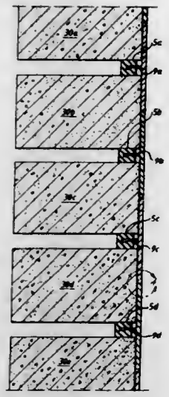
Claims priority, application United Kingdom, Nov. 5, 1993, 9322796

Int. Cl.[6] F16L *49/00*

U.S. Cl. 52—393 **15 Claims**

1. An access shaft comprising an upper and a lower, vertically spaced, cementitious tubular article and a joint between them, said lower tubular article having an annular shoulder portion adjacent an edge thereof, and said upper article bearing vertically on said shoulder;

wherein the joint comprises an elastomeric sealing ring positioned between said shoulder and said upper tubular article and vertically compressed by the weight of the upper tubular article to provide a seal, and a location ring of greater rigidity than the sealing ring and comprising an annular flange which rests against said edge and a portion extending to engage said sealing ring before vertical compression thereof.



5,605,029

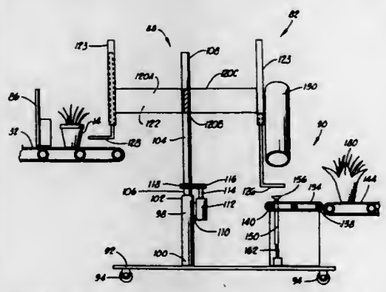
ARTICLE PACKAGING SYSTEM

Frank Craig, Valley Park, Mo.; Joseph G. Straeter, and Donald E. Weder, both of Highland, Ill., assignors to Southpac Trust International, Inc., Oklahoma City, Okla.

Division of Ser. No. 417,477, Apr. 5, 1995, which is a continuation of Ser. No. 954,635, Sep. 30, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 462,332

Int. Cl.[6] B65B *25/02*

U.S. Cl. 53—397 **62 Claims**



1. A method of packaging potted plants comprising the steps of:

providing a covering station having automatic covering means for automatically applying a decorative cover;

providing a plurality of potted plants, each having an exterior surface;

sequentially moving each potted plant toward the covering station via conveying means;

automatically transferring the potted plant from the conveying means to the covering station by gripping the potted plant via gripping means at a position on the conveying means and automatically delivering the gripped potted plant in an upright position to the covering station where a decorative cover is automatically applied about the exterior surface of each potted plant to form a covered potted plant; and

automatically removing each covered potted plant from the covering station.

5,605,030

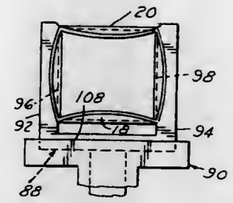
CARTON END CLOSURE SCORE LINE PRE-BREAKING METHOD AND MECHANISM

Frank A. Rodocker, Milford, Mich., assignor to Elopak Systems AG, Glattbrugg, Switzerland

Filed May 19, 1995, Ser. No. 445,369

Int. Cl.[6] B65B *7/16*

U.S. Cl. 53—484 **19 Claims**



1. A method of forming a carton end closure having a loop of first, second, third and fourth closure panels connected by primary lines of weakness to one another and to first, second, third and fourth carton body panels, the first and third closure panels each including secondary lines of weakness, comprising pre-breaking the primary and secondary lines of weaknesses, the pre-breaking including displacement of said first and third closure panels outwardly away from each other, and subsequently folding the said first and third closure panels towards one another, the folding including displacement of said first and third closure panels inwardly towards each other between said second and fourth closure panels prior to any sealing of the end closure and fourth closure panels toward each other to seal them together wherein such displacement of said first and third closure panels outwardly away from each other is produced by pressing inwardly upon an external surface of at least said second closure panel of said second and fourth closure panels to cause at least said second closure panel of said second and fourth closure panels to bulge inwards and thus said first and third closure panels to bulge outwards away from each other.

5,605,031

DEVICE FOR PACKING FILLED BAGS IN CASES

Bouwe Prakken, Spijkerlaan 9, NL-3471 EG, Kamerik, Netherlands

PCT No. PCT/NL94/00194, § 371 Date Feb. 8, 1996, § 102(e) Date Feb. 8, 1996, PCT Pub. No. WO95/05312, PCT Pub. Date Feb. 23, 1995

PCT Filed Aug. 16, 1994, Ser. No. 596,128

Claims priority, application Netherlands, Aug. 19, 1993, 9301436

Int. Cl.[6] B65B *5/08*

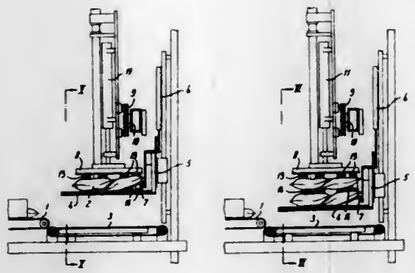
U.S. Cl. 53—537 **1 Claim**

1. Device for packing filled bags in cases, comprising:

means for placing the bags in a row in such a way that they overlap each other,

a suction box provided with suction cups for retaining the filled bags, which suction box can be moved between a pick-up position above the above mentioned means for forming a row and a delivery position above a case or device for feeding in a case, and

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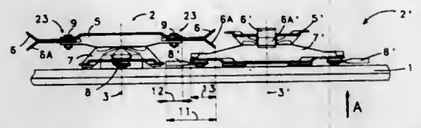


means for pushing a formed row of bags up against the suction cups of the suction box,

characterized in that the suction box (8) is provided with first and second rows of suction cups (13, 14) parallel with respect to the feed direction of the bags, the mouths of the first row or rows on the one hand being distanced in the vertical direction from the mouths of the second row or rows of suction cups by a vertical height being substantially equal to or larger than the thickness of a filled bag, and on the other being distanced in the horizontal direction by a length smaller than the width of a filled bag as seen perpendicular to a row of collected bags,

that the suction box is connected to a part which is movable between a first pick-up position and a second pick-up position, the distance between the first and second pick-up positions substantially corresponding to the horizontal distance between the first and second rows of suction cups so as to provide a densely packed layer of bags which overlap each other in two directions perpendicular to each other.

5,605,032
DEVICE FOR CUTTING AND CHOPPING AND/OR CRUSHING CUT PLANTS
Jean-Paul Gantzer, Dannelbourge, France, assignor to Kuhn S.A., Saverne Cedex, France
Filed Jan. 27, 1995, Ser. No. 379,998
Claims priority, application France, Jan. 27, 1994, 9401052
Int. Cl.[6] A01D *34/73*
U.S. Cl. 56—6 **19 Claims**

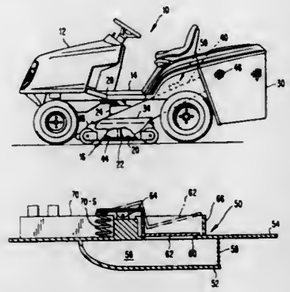


1. A device that is to be combined with a disk bar which includes a plurality of cutting elements, each one of the cutting elements turning about a respective upwardly directed axis during work, said plurality of cutting elements being arranged alongside one another along a line which is transverse with respect to a movement direction of the device during work, each cutting element comprising a cutting disk and cutting blades which are connected to said cutting disk, the device including:

a plurality of cutting groups, each one of said cutting groups including at least one support which is provided with at least one blade and adapted to be attached to the cutting disk of a corresponding cutting element, a cutting group and the corresponding cutting element constituting a chopping and/or crushing component; and

a hood which is intended to extend above the chopping and/or crushing components, wherein said hood includes a deflecting plate, including a first area which is approximately horizontal and flat, located above the chopping and/or crushing components and has a front edge onto which is attached a second area which extends toward the front and upward, while at a rear edge of said first area a third area is attached which extends downward.

5,605,033
LAWNMOWING APPARATUS WITH GRASS COLLECTOR FULLNESS DETECTOR
Jaroslav J. Olmr, 2919 N. 8th St., Sheboygan, Wis. 53083
Filed May 2, 1995, Ser. No. 433,262
Int. Cl.[6] A01D *34/70*
U.S. Cl. 56—10.2 R **16 Claims**



1. A lawnmower including a cutting chamber and a motor-driven rotary cutter blade therein;

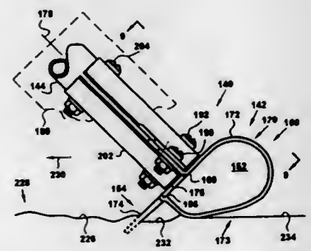
an air flow passage through which grass cuttings are discharged from said cutting chamber in a current of air;

a collector connected to said air flow passage for accumulating said grass cuttings;

a detector including a pressure actuated switch responsive to an air pressure condition within said air flow passage to change the state of said pressure actuated switch under a predetermined pressure condition related to the fullness of said collector; and

a blade control mechanism operatively connected to said pressure actuated switch and responsive to the change in state thereof to effectively deactivate said blade.

5,605,034
SAND-TRAP RAKE WITH AN EXTRUDED HEAD
Robert E. South, and Steven J. Petty, both of Warsaw, Ind., assignors to Midwest Rake Co., Winona Lake, Ind.
Continuation-in-part of Ser. No. 379,070, Jan. 27, 1995, Pat. No. 5,544,476. This application May 3, 1995, Ser. No. 433,775
Int. Cl.[6] A01D *7/06*
U.S. Cl. 56—400.07 **25 Claims**



1. A method for making a rake, which method comprises:

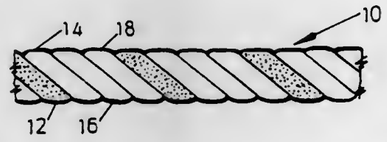
a) extruding a white-metal extrusion that includes a shaped wall, a tooth-blanking flange extending outwardly from a first portion of said shaped wall, and a handle-attaching flange extending outwardly from a second portion of said shaped wall;

b) severing an elongated head blank from said extrusion;

c) defining a plurality of rake teeth in said tooth-blanking flange of said elongated head blank; and

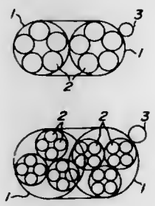
d) attaching an elongated handle to said handle-attaching flange.

5,605,035
ROPE WITH STRAIN DAMAGE INDICATOR
Richard A. Pethrick, Glasgow, and David Wotherspoon, Newtonmore, both of Scotland, assignors to University of Strathclyde, Glasgow, and Bones Ord (Holdings) Ltd., Inverness, both of Scotland
PCT No. PCT/GB92/01409, § 371 Date Feb. 22, 1994, § 102(e) Date Feb. 22, 1994, PCT Pub. No. WO93/03219, PCT Pub. Date Feb. 18, 1993
PCT Filed Jul. 30, 1992, Ser. No. 182,182
Claims priority, application United Kingdom, Aug. 1, 1991, 9116626
Int. Cl.[6] D02G *3/02;3/36*
U.S. Cl. 57—200 **14 Claims**



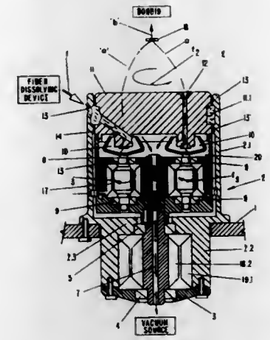
1. A rope including a heat sensitive component which is subject to a visible change in appearance when exposed to a selected elevated temperature resulting from a strain related heat release from the rope.

5,605,036
STEEL CORDS FOR THE REINFORCEMENT OF RUBBER ARTICLES AND HAVING A WRAPPING CORD
Shuichi Onuma, Ohtawara; Naohiko Obana, Kuroiso; Kazuto Fujita, and Motonori Bundo, both of Tokyo, all of Japan, assignors to Bridgestone Metalpha Corporation, Tokyo, Japan
Filed Dec. 20, 1994, Ser. No. 359,634
Claims priority, application Japan, Dec. 24, 1993, 5-328737
Int. Cl.[6] D02G *3/36;* **D07B** *1/06*
U.S. Cl. 57—212 **3 Claims**



1. A steel cord for the reinforcement of rubber articles, in which a wrapping filament is helically wound around a bundle formed by contacting a plurality of strands, each of which strands being obtained by twisting 3 or more steel filaments, with each other and arranging them in the same plane, and wherein each of said strands has a 1×5 single twisting structure.

5,605,037
METHOD AND DEVICE FOR PRODUCING A TWISTED YARN
Ulrich Ballhausen, Krefeld; Guido Spix, Kaarst, and Wilfried Rütten, Wegberg, all of Germany, assignors to Palitex Project-Company GmbH, Krefeld, Germany
Filed Aug. 4, 1995, Ser. No. 511,712
Claims priority, application Germany, Aug. 6, 1994, 44 27 876.4
Int. Cl.[6] D01H *4/00;7/86*
U.S. Cl. 57—406 **16 Claims**



1. A method for manufacturing a twisted yarn in a yarn twisting machine comprising a twisting spindle with a rotating spindle rotor comprising a vacuum chamber, said method comprising the steps of:

positioning at least two spinning rotors in the vacuum chamber;

generating a vacuum within the vacuum chamber;

dissolving fiber material to produce individual staple fibers;

feeding the individual staple fibers by means of said vacuum into an annular channel located within the spindle rotor;

intermediately storing the individual staple fibers in said annular channel;

supplying the individual staple fibers by means of said vacuum from the annular channel through supply channels to the spinning rotors;

spinning in the spinning rotors individual spun yarns from the individual staple fibers;

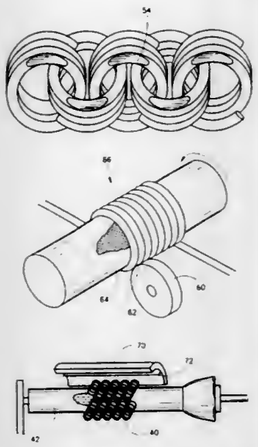
gathering the individual spun yarns from the spinning rotors in a centering device above the spinning rotors to form a twisted yarn from the individual spun yarns; and

winding the twisted yarn onto a bobbin.

5,605,038
DIAMOND CUT HOLLOW JEWELRY CHAIN
David Rozenwasser, Savion, Israel, assignor to Avraham Moshe Rozenwasser, Savion, Israel
Filed Feb. 27, 1995, Ser. No. 394,825
Claims priority, application Israel, Feb. 2, 1995, 112526
Int. Cl.[6] B21L *15/00*
U.S. Cl. 59—35.1 **8 Claims**

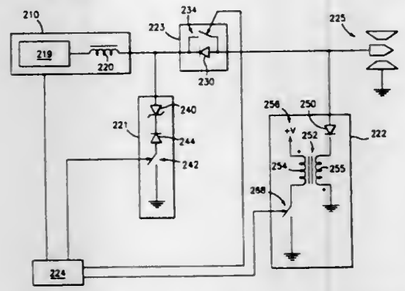
1. A method of imparting flat facets on hollow coiled chain links intertwined to form a jewelry chain, each coiled link having X+Y turns, where X is an integer, preferably from 1–5, and Y is one or a fraction, preferably about ¾, said coiled links having the coil axes oriented diagonal to the length of the chain, the method comprising:

tightly winding said jewelry chain about a drum of an ice lathe with the coiled links diagonal to the drum surface, each coiled link having at least part of each turn of said coil close to said drum surface and at least part of each turn of said coil distant from said drum surface;



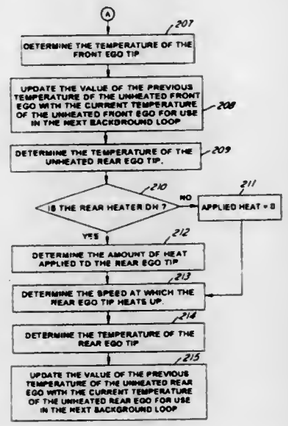
freezing said drum and rotating said drum with said jewelry chain;
spraying water on said rotating chain in a controlled manner, to freeze at least part of each of the turns of said coiled links in ice, leaving at least a part of each of the turns of said coils distant from said drum surface free of ice;
applying a force of a pressure roller against at least one of said at least part of each of the turns distant from said drum surface left free of ice so as to at least partially flatten the outer wall of each of said distant turns left free of ice;
melting the ice; and
removing the chain from the drum.

5,605,039
PARALLEL ARCJET STARTER SYSTEM
Steven D. Meyer, Snohomish, and Robert J. Kay, Kirkland, both of Wash., assignors to Olin Corporation, Redmond, Wash.
Continuation-in-part of Ser. No. 92,299, Jul. 15, 1993, Pat. No. 5,513,087. This application Oct. 16, 1995, Ser. No. 543,659
Int. Cl.[6] F03H *1/00*
U.S. Cl. 60—204 **14 Claims**



1. An arcjet starter, the arcjet having a breakdown voltage, an initial voltage, and an operating voltage, comprising:
a current supply;
a shunt circuit connected to the current supply and ground for establishing an initial current in the current supply;
a starter circuit connected between the arcjet and ground for initiating breakdown in the arcjet; and
a diverter switch connected between the current supply and the arcjet for connecting the current supply to the arcjet when the arcjet is in breakdown;
a control circuit for controlling the shunt circuit, the starter circuit, and the diverter switch.

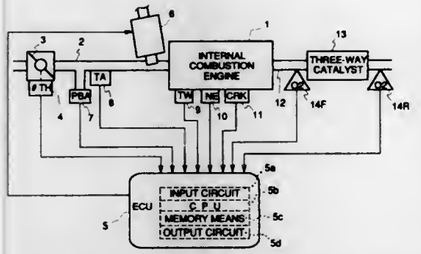
5,605,040
INFERRING TEMPERATURE OF A HEATED EXHAUST GAS OXYGEN SENSOR
Michael J. Cullen, Northville; Paul F. Smith, Dearborn Heights, and Thomas S. Gee, Canton, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Mar. 29, 1995, Ser. No. 412,663
Int. Cl.[6] F01N *3/20*
U.S. Cl. 60—274 **19 Claims**



1. A method of controlling the operation of an internal combustion engine producing exhaust gas wherein controlling the air to fuel ratio includes the steps of:
establishing an exhaust gas temperature at startup to a function of time since the engine was turned off;
subtracting a temperature offset from the exhaust gas temperature;
calculating a time constant that describes the speed at which an exhaust gas oxygen (EGO) sensor heats up as a function of air mass; and
using a rolling average to predict the EGO sensor temperature as a function of said exhaust gas temperature at start-up, said temperature and said time constant.

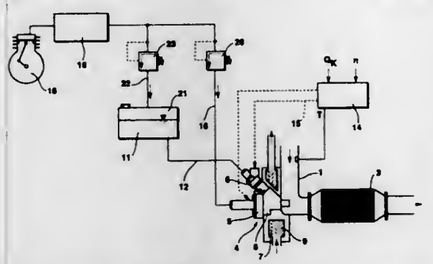
5,605,041
AIR-FUEL RATIO CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES
Yoichi Iwata; Yoshiharu Ave, both of Wako, and Takayoshi Nakayama, Tochigi-ken, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 20, 1994, Ser. No. 326,391
Claims priority, application Japan, Oct. 20, 1993, 5-285886
Int. Cl.[6] F01N *3/28*
U.S. Cl. 60—276 **8 Claims**

1. An air-fuel ratio control system for an internal combustion engine having an exhaust system, and a catalytic converter arranged in said exhaust system, for purifying noxious components in exhaust gases emitted from said engine, comprising:



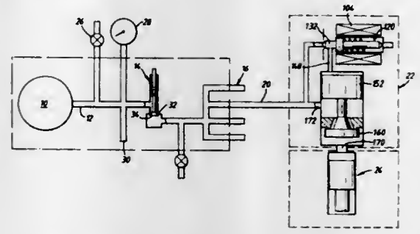
upstream air-fuel ratio-detecting means arranged in said exhaust system at a location upstream of said catalytic converter, for detecting concentration of a specific component of said exhaust gases;
downstream air-fuel ratio-detecting means arranged in said exhaust system at a location downstream of said catalytic converter, for detecting concentration of said specific component of said exhaust gases;
control variable-setting means for setting a control variable having a value proportional to a difference between an output from Said downstream air-fuel ratio-detecting means and a first predetermined reference value;
air-fuel ratio correction value-calculating means for comparing between an output from said upstream air-fuel ratio-detecting means and a second predetermined reference value, and calculating an air-fuel ratio correction value, based on results of said comparison and said control variable set by said control variable-setting means; and
air-fuel ratio control means for controlling an air-fuel ratio of an air-fuel mixture supplied to said engine, based on said air-fuel ratio correction value calculated by said air-fuel ratio correction value-calculating means.

5,605,042
ARRANGEMENT FOR THE AFTERTREATMENT OF EXHAUST GASES
Heinz Stutzenberger, Vaihingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed Oct. 12, 1995, Ser. No. 542,203
Claims priority, application Germany, Oct. 12, 1994, 44 36 397.4
Int. Cl.[6] F01N *3/00*
U.S. Cl. 60—286 **20 Claims**



1. An arrangement for the aftertreatment of exhaust gases from a compression-ignition internal combustion engine with an exhaust gas collecting system (1) in which a reducing catalytic converter (2) is arranged for the reduction of NO_x components of the exhaust gas from the internal combustion engine, comprising a metering device, said metering device comprising an electrically controlled metering valve (6) for a metered introduction of a reducing agent into a flow of the exhaust gas fed to the catalytic converter (2) as a function of engine operating values, stored in a characteristic map, for the NO_x content of the exhaust gas given various operating parameters of the internal combustion engine and of the catalytic converter, and further comprising an air supply, controlled by a valve (5), from a compressed-air source (18), by means of the air supply the quantities of reducing agent emerging at an outlet end (36) of the electrically controlled metering valve (6) are fed to the exhaust gas finely dispersed in air, wherein the valve for controlling the air supply is an electrically controlled valve (5) which has an outlet opening (26) arranged downstream of the outlet opening of the metering valve (6) and the outlet opening (26) opens directly into the exhaust gas of the internal combustion engine.

5,605,043
GAS OPERATED EJECTION SYSTEM
Ivan H. Dimmock, Avon, Great Britain, assignor to Meggitt (UK) Limited, Cowgrove, United Kingdom
Continuation of Ser. No. 48,877, Apr. 16, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 462,567
Claims priority, application United Kingdom, Apr. 16, 1992, 9208381
Int. Cl.[6] F16D *31/02*; G05D *11/00*
U.S. Cl. 60—407 **29 Claims**

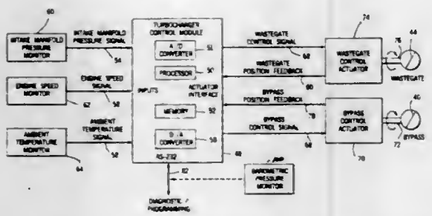


1. A gas operated release or ejection system comprising: a pressure vessel; a discharge pathway connected to said pressure vessel, said pathway including a pressure regulating valve, a pressure relief valve and a control valve; and a release or ejection mechanism connected to said pathway downstream of said control valve, said pressure relief valve being operable to release gas from said pathway when pressure upstream of said control valve reaches a predetermined value and to prevent pressure in said pathway upstream of said control valve from exceeding said predetermined value, wherein loads are ejected from the system, each load having an ejection velocity, the ejection velocity from load to load being constant when the pressure regulating valve and the pressure relief valve are maintained in a constant position.

5,605,044
TURBOCHARGER CONTROL MANAGEMENT SYSTEM
Michael T. Zimmer, Brookfield; Richard J. Kakoczki, Waukesha; James A. Davis, Ripon; Jerrold A. Pratt, Eagle, and Edward O. Reinbold, Waukesha, all of Wis., assignors to Dresser Industries, Inc., Dallas, Tex.
Division of Ser. No. 236,467, May 2, 1994. This application Jun. 7, 1995, Ser. No. 472,474
Int. Cl.[6] F01K *23/06*
U.S. Cl. 60—602 **5 Claims**

1. An electronic turbocharger control system for an internal combustion engine comprising:
at least one turbocharger connected to the engine and having a turbine and a compressor;
at least one engine characteristic monitor that senses engine speed;
an engine characteristic signal produced by the monitor;
an electronic control for processing the characteristic signal;

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a control signal produced by the electronic controller in response to the characteristic signal;

a wastegate connected between the engine and the turbine for diverting engine exhaust away from the turbine in response to the control signal; and

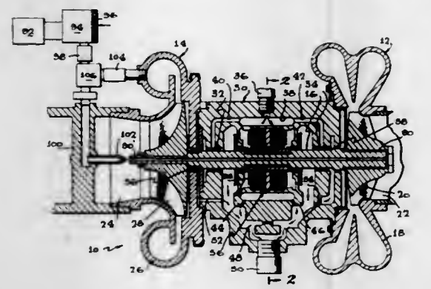
wherein the electronic controller includes a memory storing sets of predetermined parameters, each set based upon barometric pressure.

5,605,045

TURBOCHARGING SYSTEM WITH INTEGRAL ASSISTING ELECTRIC MOTOR AND COOLING SYSTEM THEREFOR

Edward M. Halimi, Montecito; Ralph P. Maloof, Calabasas, and William E. Woollenweber, Carlsbad, all of Calif., assignors to Turbodyne Systems, Inc., Carpinteria, Calif.

Filed Sep. 18, 1995, Ser. No. 529,672
Int. Cl.[6] F02B *37/10*
U.S. Cl. 60—607 **40 Claims**



1. A structure for an internal combustion engine turbocharging system comprising:

a housing, said housing having first and second spaced bearings therein, a shaft extending through said housing and through said bearings from a first end to a second end, said shaft having an opening therethrough from said first end to said second end, said shaft being configured so that an air compressor can be mounted on said first end of said shaft and an exhaust gas turbine can be mounted on said second end of said shaft to rotatably drive said shaft in said bearings;

an electric motor mounted in said housing between said bearings, said electric motor having a rotor mounted on said shaft and a stator fixed in said housing;

means for energizing said electric motor for maintaining rotation of said shaft at a preselected minimum speed, even though insufficient exhaust gas is supplied to the turbine to maintain such preselected minimum speed, such minimum speed being preselected to provide charge air to an engine over and above that amount of charge air which could be provided by the exhaust gas turbine alone; and

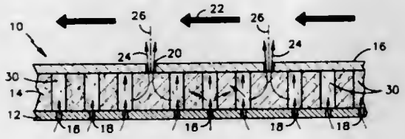
means for passing fluid through said opening through said shaft even when said shaft is not rotating to remove heat from said rotor of said motor.

5,605,046

COOLED LINER APPARATUS

George P. Liang, 1431 SW. Eagle Nest Way, Palm City, Fla. 34990

Filed Oct. 26, 1995, Ser. No. 548,896
Int. Cl.[6] F02C *7/18*
U.S. Cl. 60—752 **5 Claims**



1. A cooled multi-wall liner, comprising:

a first wall, having a plurality of first apertures, each having a cross-sectional area;

a second wall, having a plurality of sections separated by gaps; and

a porous midsection, disposed between and attached to said first and second walls;

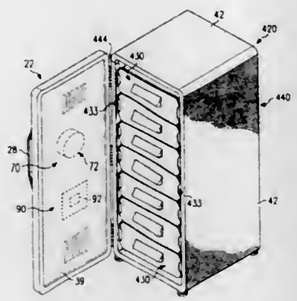
wherein fluid on said first wall side of said liner at a pressure greater than fluid on said second wall side of said liner selectively enters said liner through said first apertures, is diffused within said porous midsection, and exits said liner through said gaps between said sections of said second wall.

5,605,047

ENCLOSURE FOR THERMOELECTRIC REFRIGERATOR AND METHOD

Brian V. Park, Austin, Tex., and Ralph D. McGrath, Granville, Ohio, assignors to Owens-Corning Fiberglas Corp., Granville, Ohio, and Oceaneering Space Systems, Houston, Tex.

Division of Ser. No. 180,879, Jan. 12, 1994, abandoned. This application Jun. 6, 1995, Ser. No. 465,731
Int. Cl.[6] F25B *21/02*
U.S. Cl. 62—3.6 **22 Claims**



6. A thermoelectric refrigerator comprising:

an enclosure having five walls and an opening to the interior of the enclosure;

a door assembly mounted on the opening for selectively controlling access to the interior of the enclosure;

a thermoelectric assembly for maintaining the temperature in the interior of the enclosure within a selected range;

the walls formed from superinsulation materials having an overall R-value per inch of greater than approximately twenty (R20/inch);

a plurality of drawers slidably disposed within the enclosure;

a plurality of matching slides formed on the interior of the enclosure and each drawer;

an air flow passage formed between the sides of each drawer and the adjacent interior portion of the enclosure;

a plurality of openings in the side of each drawer; and

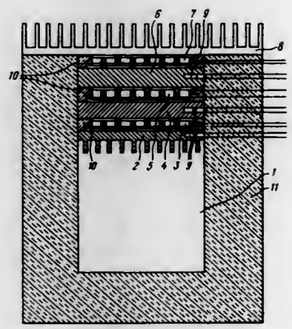
the air flow passage and the openings cooperating with each other to allow air circulation within the enclosure and through the respective drawers.

5,605,048

METHOD OF COOLING AN OBJECT WITH A THERMOELECTRIC BATTERY CASCADE

Jury F. Kozlov, and Valery M. Berdnikov, both of Moscow, U.S.S.R., assignors to Tovarischestvo s ogranichennoi otvetstvennostju Libratsia, Moscow, Russian Federation

PCT No. PCT/RU93/00224, § 371 Date Jun. 9, 1995, § 102(e) Date Jun. 9, 1995, PCT Pub. No. WO94/10514, PCT Pub. Date Mar. 11, 1994
PCT Filed Sep. 3, 1993, Ser. No. 433,338
Claims priority, application U.S.S.R., Nov. 5, 1992, 92004830
Int. Cl.[6] F25B *21/02*
U.S. Cl. 62—3.7 **1 Claim**



1. Method of cooling an object with a thermoelectric battery cascade by carrying heat from the object and further from stage to stage with an adjustable regulated direct current applied to the terminals of the battery until a steady-state operation mode is obtained corresponding to the required temperature of the object being cooled, characterized in that transfer of heat is conducted successively in time in portions from stage to stage with intermediate heat storage on heat accumulators, wherein operation of each stage is conducted in active heat removal and thermal switch modes, while the duration of the time intervals and values of currents flowing through the stages of the thermobattery for these modes is adjusted during the process of bringing it to the steady-state mode of operation with required values of temperatures of the object being cooled and of the heat accumulators and with minimum value of electric power consumption.

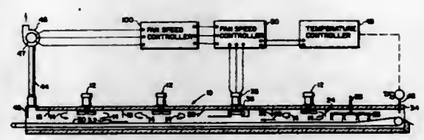
5,605,049

EXHAUST SYSTEM FOR A CRYOGENIC FREEZER

Earl W. Moore, Macungie, and David J. Klee, Emmaus, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation of Ser. No. 759,261, Sep. 13, 1991, abandoned. This application Feb. 25, 1993, Ser. No. 23,263
Int. Cl.[6] F25D *13/06*
U.S. Cl. 62—63 **1 Claim**

1. In a process for quick freezing a product utilizing a vaporizing cryogen passed by means of a variable speed gas flow control fan in counterflow heat exchange with said product passing through a tunnel-type freezer having an entry portal with a loading table and an exit portal and a system including an exhaust blower for removing vaporized cryogen from said freezer, the improvement comprising:



establishing the flow of vaporizing cryogen within said freezer by establishing the relationship of the speed of rotation of the gas flow control fan to the speed of rotation of the exhaust blower until the loading table fills with cold nitrogen gas as evidenced by a water vapor cloud formed by the cold nitrogen gas contacting ambient atmosphere outside of said freezer, and

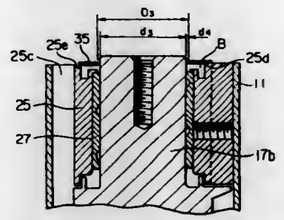
adjusting the speed of said exhaust blower to maintain said cloud on said loading table without spilling off said table.

5,605,050

BEARING STRUCTURE FOR AUGER-TYPE ICE MAKING MACHINES

Susumu Tatematsu, Nagoya; Hiroyuki Sugie, Nishikamo-gun; Naoya Uchida, Nagoya; Yasumitsu Tsukiyama, Toyoake, and Hideyuki Ikari, Kariya, all of Japan, assignors to Hoshizaki Denki Kabushiki Kaisha, Aichi-ken, Japan

Division of Ser. No. 319,010, Oct. 6, 1994, Pat. No. 5,531,079. This application Apr. 8, 1996, Ser. No. 629,401
Claims priority, application Japan, Oct. 7, 1993, 5-54574; Dec. 6, 1993, 5-65035
Int. Cl.[6] F25C *5/12*
U.S. Cl. 62—131 **2 Claims**



1. A bearing structure for auger-type ice making machines comprising:

an auger having a helical blade which rotates within a vertical, cylindrical refrigeration casing so as to scrape off ice generated on the inner surface of said refrigeration casing and push it up and out of the casing;

a slide bearing for supporting an upper shaft section of said auger;

a press head provided inside an upper end portion of said refrigeration casing for supporting said slide bearing; and

a gauge ring provided on the upper end of said press head in a coaxial relationship with said upper shaft section of said auger for detecting the wear amount of said slide bearing and said upper shaft section of said auger.

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5,605,051
AUTOMOTIVE AIR CONDITIONER HAVING CONDENSER AND EVAPORATOR PROVIDED WITHIN AIR DUCT

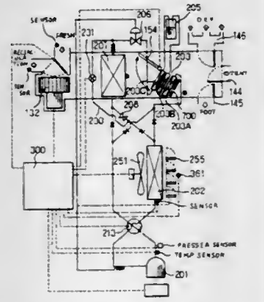
Kunio Iritani, Anjo; Shigeo Numazawa, Nagoya; Kenichi Fujiwara, Kariya; Yasushi Yamanaka, Nakashima-gun; Akira Isaji, Nishio; Takahisa Suzuki, and Ryoichi Sanada, both of Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Japan

Continuation of Ser. No. 19,185, Feb. 17, 1993, abandoned, which is a continuation-in-part of Ser. No. 873,430, Apr. 24, 1992, Pat. No. 5,299,431. This application Nov. 30, 1994, Ser. No. 351,113

Claims priority, application Japan, Apr. 26, 1991, 3-097290; Oct. 1, 1991, 3-253947; Dec. 3, 1991, 3-319417; Dec. 27, 1991, 3-347130; Feb. 17, 1992, 4-029743; Mar. 17, 1992, 4-060616; Aug. 4, 1992, 4-207740

Int. Cl.[6] F25B *13/00;29/00*

U.S. Cl. 62—160 **29 Claims**



1. An automotive air conditioner, comprising:
a duct defining a passageway for conditioned air to a room of an automobile;
an evaporator disposed in said duct for evaporating refrigerant to cool air;
a condenser disposed on the downstream side of said evaporator in said duct for condensing refrigerant to heat air;
a subcooler disposed in said duct for causing air and refrigerant of a high temperature having passed said condenser to exchange heat with each other to heat the air;
a compressor for compressing and discharging refrigerant;
an outside heat exchanger exposed outside said duct for causing air outside said duct and refrigerant to exchange heat with each other; and
expanding means disposed between said subcooler and said evaporator for decompressing and expanding refrigerant.

5,605,052
MIST SPRAY SYSTEM FOR REFRIGERATION CONDENSERS

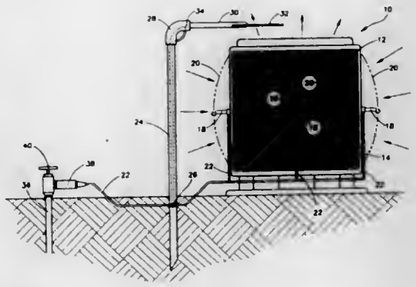
Stephen C. Middleton, and Linda M. Middleton, both of 4303 Colt La., West Palm Beach, Fla. 33406

Filed Apr. 7, 1995, Ser. No. 418,368

Int. Cl.[6] F28D *3/00*

U.S. Cl. 62—171 **4 Claims**

1. An improved mist spray system for refrigeration condensers comprising:
a means for applying a fluid mist spray to the coils of a refrigeration condenser comprising an adjustable spray nozzle;
means for affixing the means for applying to the coils of a refrigeration condenser system;
valve means for controlling the flow of fluid to the means for applying the fluid;



the valve means comprising;
a pinch valve that closes and opens said tubing: and
a mast housing a portion of the pinch valve;
means for controlling said valve means by causing the valve to allow fluid flow only during the operation of the condenser;
means for controlling the quantity and pressure of fluid flow to the said valve comprising:
a pressure reducer,
a filter member; and
a tubing size reducer;
flexible tubing for connecting the elements of the system; and
the pinch valve comprising:
a pivoting control arm;
a pivot point member pivotally connecting the control arm to the mast;
a pinch end on the control arm proximate the pivot point member;
a paddle, connected to another end of the control arm, distal the pivot point member;
said paddle extending over the condenser exhaust air vent;
a flow of air against the paddle operatively pivoting the control arm from a closed position to an open position;
the pinch end of the control arm pinching the flexible tubing end against a support pin and restricting a flow of fluid through the flexible tubing when the control arm is in the closed position; and
the pinch end of the control arm allowing flow of the fluid through the flexible tubing when the control arm is in the open position.

5,605,053
HEAT PUMP TYPE AIR CONDITIONER AND METHOD FOR CONTROLLING A HEAT PUMP TYPE AIR CONDITIONER

Masahiko Otori, Shizuoka-ken, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

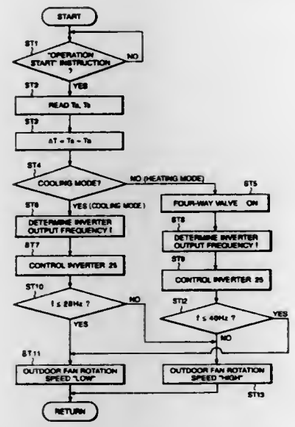
Filed Jul. 12, 1995, Ser. No. 501,710

Claims priority, application Japan, Jul. 13, 1994, 6-161274

Int. Cl.[6] F24F *11/00*

U.S. Cl. 62—180 **13 Claims**

1. A heat pump type air conditioner comprising:
a refrigeration circuit including a variable speed compressor, a four-way valve, an indoor heat exchanger, an expansion device and an outdoor heat exchanger, and capable of operating in a cooling mode to cool a room and a heating mode to heat the room;
compressor speed setting means for setting the compressor rotational speed;
an outdoor fan blowing air through the outdoor heat exchanger which selectably rotates at one of a high speed and a low speed; and
outdoor fan speed selecting means for selecting either the high speed or the low speed of the outdoor fan based on the operation mode, a cooling mode reference compressor rotational speed value, a heating mode reference compressor



rotational speed value and the set compressor rotational speed, the cooling mode reference compressor rotational speed value being smaller than the heating mode reference compressor rotational speed value.

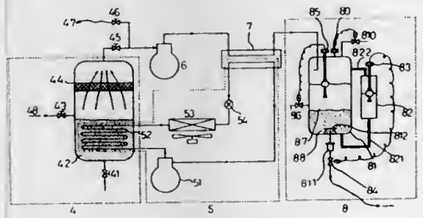
5,605,054
APPARATUS FOR RECLAIMING REFRIGERANT

Kuo-Fu Chen, Ping-Tung Hsien, Taiwan, assignor to Chief Havc Engineering Co., Ltd., Kaohsiung, Taiwan

Filed Apr. 10, 1996, Ser. No. 629,875

Int. Cl.[6] F25B *43/04*

U.S. Cl. 62—195 **1 Claim**



1. An apparatus for reclaiming refrigerant comprising:
a distillation tank;
an eliminator arranged within an upper portion of said distillation tank;
a booster connected to an upper end of said distillation tank for extracting refrigerant vapor from said distillation tank;
a heat exchanger connected to said booster;
a heat pump for transferring condensing heat from said heat exchanger to said distillation tank; and
an air/water/refrigerant separator connected to said heat exchanger, said separator including a separation chamber and a float chamber which are connected in parallel to said separation chamber, said separation chamber being provided with a level switch, a pressure switch and an anti-vortex plate, said float chamber being provided with a level switch.

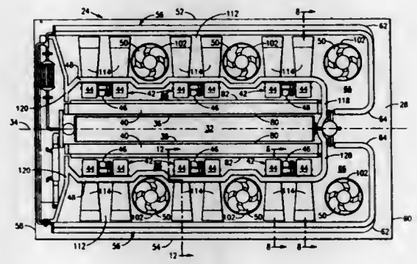
5,605,055
ROOF MOUNTED AIR CONDITIONER

Mauricio M. Salgado, Escondido, Mexico, assignor to Carrier Corporation, Syracuse, N.Y.

Filed Oct. 20, 1995, Ser. No. 545,962

Int. Cl.[6] B60H *1/32*

U.S. Cl. 62—244 **6 Claims**



1. An air conditioner unit suitable for mounting on the roof of a vehicle, the vehicle having a front, back, first and second sides, a passenger compartment, air delivery ducts for delivering conditioned air to the passenger compartment, conditioned air openings in the roof in communication with said air delivery ducts, and return air openings in the roof in communication with the passenger compartment, said air conditioning unit comprising:
a base having a bottom, top, first and second ends, first and second sides, and a longitudinal axis extending between said first and second ends said base being adapted to be attached to the roof of said vehicle, with the longitudinal axis of the base oriented front to back on said vehicle,
a longitudinal opening in the bottom of said base extending substantially parallel to said longitudinal axis and having first and second sides respectively, which are equally spaced, from, and substantially parallel to, said first and second sides of said base;
first and second elongated evaporator coils having first and second sides, first and second ends, and a longitudinal axis which extends between said first and second ends, said first and second evaporator coils each being mounted with the first side thereof adjacent to said first and second sides respectively of said longitudinal opening, with the longitudinal axes of said evaporator coils being parallel to the longitudinal axes of said base
first and second evaporator air delivery means mounted on said base respectively adjacent to the second sides of said first and second evaporator coils;
first and second elongated condenser coils having first and second ends and a longitudinal axis which extends between the first and second ends, said first and second condenser coils being mounted respectively adjacent to said first and second sides of said base, with the longitudinal axes of said condenser coils being substantially parallel to the longitudinal axis of said base; and
first and second condenser air delivery means mounted on said base respectively, between said first condenser coil and said first evaporator air delivery means, and, between said second condenser coil and said second evaporator air delivery means.

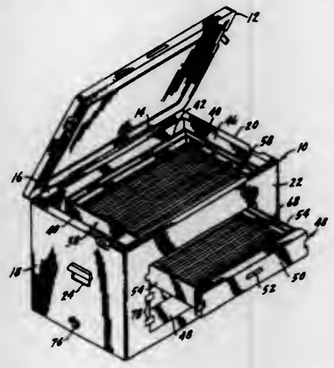
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5,605,056

PORTABLE COOLER WITH SUSPENDED GRATE FOR ICE-FREE STORAGE AREAS

Albert C. Brown, and Matthew K. Starling, both of Savannah, Ga., assignors to Cooler Ideas, Inc., Savannah, Ga.

Filed Sep. 25, 1995, Ser. No. 533,613
Int. Cl.[6] F25D *3/08*
U.S. Cl. 62—457.4 **12 Claims**



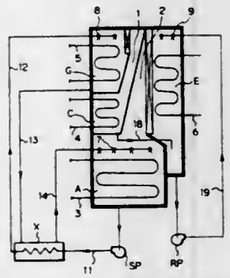
1. A portable cooler including a housing having a bottom, side walls and a pivotal top hinged to one of the side walls, said bottom, side walls, and top being formed of an insulating material,
   a support having side walls positioned within said housing, a space for ice defined between a plurality of said support side walls and a plurality of said housing side walls,
   a plurality of drawers movable in said support and accessible from outside one of said housing side walls, each drawer including a front, side walls, and a bottom, at least one of said drawers having a grate supported on the drawer side walls above the drawer bottom, the space beneath the grate providing a container for ice to cool articles positioned on the grate, but spaced from the ice beneath the grate.

5,605,057

ABSORPTION REFRIGERATING MACHINE

Naoyuki Inoue, and Teiichi Mochizuki, both of Kanagawa-ken, Japan, assignors to Ebara Corporation

Filed Nov. 21, 1995, Ser. No. 561,285
Claims priority, application Japan, Dec. 1, 1994, 6-321198
Int. Cl.[6] F25B *15/00*
U.S. Cl. 62—476 **4 Claims**



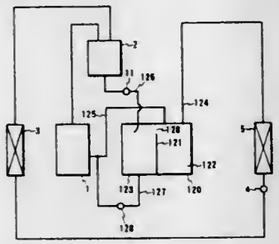
1. An absorption refrigerating machine wherein refrigerant gas separated from solution in a generator (G) is cooled by a condenser (C) to form refrigerant solution, the refrigerant solution is vaporized in an evaporator (E) to cool a cooling load (6) in said evaporator, the solution from said generator is introduced into an absorber (A) through a heat exchanger (X), and the refrigerant gas generated in said evaporator is absorbed to the solution in said absorber, said machine comprising:
   a single housing containing said absorber (A), said evaporator (E), said generator (G) and said condenser (C), said absorber (A) occupying a lowermost portion of said housing, said condenser (C) being superposed on said absorber (A) on one transverse side of said housing and said generator (G) being superposed upon said condenser (C) in said one transverse side of said housing, and said evaporator (E) being disposed above said absorber (A) on the other transverse side of said housing.

5,605,058

AIR CONDITIONING SYSTEM, AND ACCUMULATOR THEREFOR AND MANUFACTURING METHOD OF THE ACCUMULATOR

Mitsunori Kurachi; Masahiko Sugino; Tomohiko Kasai; Hirofumi Kouge; Tatsuo Ono, all of Wakayama; Masaharu Moriyasu, Hyogo; Youichi Hisamori, Hyogo; Kenji Kawaguchi, Hyogo, and Michio Fujiwara, Hyogo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 15, 1995, Ser. No. 404,463
Claims priority, application Japan, Mar. 15, 1994, 6-043999; Jul. 28, 1994, 6-176928; Oct. 6, 1994, 6-242676
Int. Cl.[6] F25B *43/00*
U.S. Cl. 62—503 **38 Claims**



1. An air conditioning system comprising:
   a refrigerant circuit including a compressor, an oil separator, a condenser, an expansion device, an evaporator, a first accumulator, and a second accumulator which are connected in order by piping;
   a first oil return bypass for connecting said oil separator and at least one of said first accumulator and said second accumulator; and
   a second oil return bypass for connecting said compressor and at least one of said first accumulator and said second accumulator.

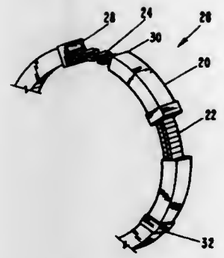
5,605,059

SLEEVED BANGLE BRACELET

Robin Woodward, #12 Lucero La., Los Lunas, N.M. 87031

Filed Mar. 9, 1995, Ser. No. 400,929
Int. Cl.[6] A44C *5/02*
U.S. Cl. 63—5.1 **3 Claims**

1. An expansible bracelet comprising:
   a plurality of removable links forming a continuous contractile band joined at both ends wherein the removable links are adapted to adjust the length of the contractile band to conform to a user's body part; and
   a plurality of tubular bangles strung on said contractile band, each tubular bangle comprising:
   a sleeve with a constant first outer dimension and a socket affixed to one end of said sleeve comprising a second outer dimension larger than said first outer dimension;



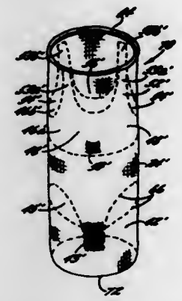
wherein said sleeve from a next bangle is slidably insertable within said socket; and
an angle of curvature.

5,605,060

CIRCULARLY KNIT BODYSUIT AND A BLANK AND METHOD FOR MAKING SAME

Harold G. Osborne, Boomer, N.C., assignor to Alba-Waldensian, Inc., Valdese, N.C.

Continuation-in-part of Ser. No. 237,114, May 3, 1994, Pat. No. 5,479,791, and a continuation-in-part of Ser. No. 420,247, Apr. 11, 1995. This application Jun. 7, 1995, Ser. No. 479,177
Int. Cl.[6] A41C *3/00*; D04B *1/24*
U.S. Cl. 66—171 **47 Claims**



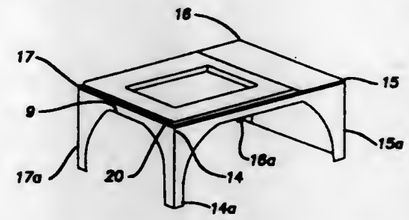
1. A method of making a circular knit blank for the manufacture of a garment for covering substantially the entire torso of a wearer comprising:
   knitting a series of courses defining a non-raveling edge; and then
   knitting to the non-raveling edge a series of courses defining a tubular fabric lower torso portion; and then
   knitting to said lower torso portion a series of courses defining a tubular fabric middle torso portion having a first predetermined cross-stretch; and then
   knitting to said middle torso portion a series of courses defining a tubular fabric upper torso portion having a second predetermined cross-stretch, a front portion of said upper torso portion having a pair of differentially shaped breast cups with respect to the remainder of the upper torso portion defined by areas in which the courses are simple knit courses; and then
   knitting to said upper torso portion a series of courses defining a shoulder portion including a plurality of elongated areas in which the courses are simple knit, with the areas being separated from each other by an elongate panel area, and then completing the blank by
   knitting several courses forming a non-raveling edge.

5,605,061

WASHING MACHINE WITH IMPROVED FRAME STRUCTURE

Piero Durazzani, Porcia, Italy, assignor to Electrolux Zanussi Elettrodomestici S.p.A., Pordenone, Italy

Filed Mar. 14, 1995, Ser. No. 403,673
Claims priority, application Italy, Mar. 16, 1994, PN940006 U
Int. Cl.[6] D06F *37/26*
U.S. Cl. 68—3 R **6 Claims**



1. A washing machine, comprising a top loading washer assembly (1); an appliance exterior including front (2), and side (3, 4) plates; an upper lid (5); an upper control panel (6); and support feet, characterized by the fact that:
   said washer assembly, said appliance exterior, said upper lid, said panel, and said feet, are assembled and supported on a bearing structure;
   said bearing structure includes distinct lower (8) and upper (9) elements;
   the lower element (8) includes a lower support base having substantially a same rectangular profile as a horizontal cross-section of the washing machine;
   four lower vertical columns (10*a*, 11*a*, 12*a*, 13*a*) are provided at respective corners (10, 11, 12, 13) of the lower support base wherein the lower support base is made as a unit with the lower vertical columns;
   the upper element (9) includes an upper support base with substantially a same perimeter as the lower base;
   four upper vertical columns (14*a*, 15*a*, 16*a*, 17*a*) are provided at respective corners (14, 15, 16, 17) of the upper element and are directed toward the base and terminate at substantially the same height wherein the upper support base is made as a unit with the upper vertical columns; and
   the bottoms of said upper columns are supported on tops of said lower columns, resting thereon.

5,605,062

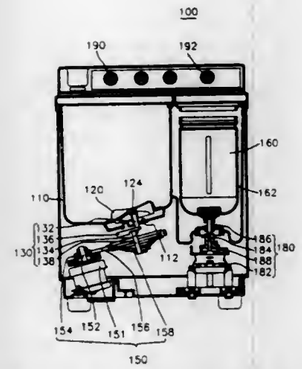
WASHING MACHINE HAVING AN ECCENTRIC LINK FOR PREVENTING A TANGLING OF WASHING OBJECTS

Kwan C. Park, Kwang-Ju, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Jul. 7, 1995, Ser. No. 499,475
Claims priority, application Rep. of Korea, Nov. 29, 1994, 1994/31832
Int. Cl.[6] D06F *17/08*
U.S. Cl. 68—131 **5 Claims**

1. A washing machine comprising:
   a washing tub for receiving a washing object, the washing tub having a bellows at a bottom wall of the washing tub;
   a pulsator mounted above the bottom wall of the washing tub and having a plurality of blades for generating a liquid flow in the washing tub;
   a pulsator driving section for driving the pulsator; and
   a means for transferring a driving force from the pulsator driving section to the pulsator, the transferring means being disposed between the pulsator driving section and the pulsator and

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receiving a rotational force from the pulsator driving section so as to pseudo-rotate the pulsator in the washing tub,

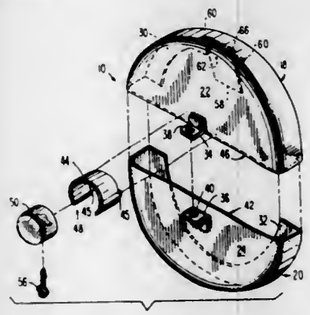
wherein the transferring means includes an eccentric link having a base plate, an Upper shaft formed on an upper surface of the base plate and connected to the pulsator, and a lower shaft formed on a lower surface of the base plate and connected to the pulsator driving section, the upper shaft being eccentrically disposed with respect to the lower shaft in such a manner that the Upper shaft may circularly move about the lower shaft as the lower shaft is rotated on its own axis, and wherein the base plate of the eccentric link has a weighty portion for maintaining the center of gravity of an eccentric link constant, the weighty portion being formed thicker than a remaining portion of the base plate.

5,605,063

STEERING WHEEL RESTRAINT

Avraham Taurog, 1445 Carroll St., Brooklyn, N.Y. 11213

Filed Aug. 16, 1995, Ser. No. 515,992
Int. Cl.[6] B60R *25/02*
U.S. Cl. 70—209 **8 Claims**



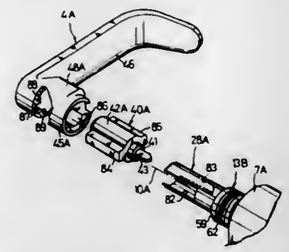
1. A steering wheel restraint for providing a vehicle theft deterrent wherein the steering wheel structure includes a steering column terminating at a hub, at least one wheel spoke radiating from the hub and terminating at a wheel rim, said wheel restraint comprising complimentary cover members adapted for lockable engagement over the steering wheel, said cover members having a substantially planar face overlying the hub and the wheel spoke and further including a peripheral flange substantially surrounding the wheel rim, restriction means for preventing rotational movement of the cover members, said restriction means including a flap member pivotally mounted to the peripheral flange of one of said cover members and resiliently displaceable rearwardly with respect to the face of the cover members for abutment with an interior surface of the vehicle independent of the steering wheel structure, said flap member being within a marginal area defined by and underlying the wheel rim.

5,605,064

DOOR LOCK FOR HANDICAPPED PERSONS

Akira Katayama, and Kimikazu Hoshikawa, both of Tokyo-to, Japan, assignors to Miwa Lock Co., Ltd., Tokyo, Japan

Filed Jul. 8, 1994, Ser. No. 272,175
Claims priority, application Japan, Apr. 21, 1994, 6-107732
Int. Cl.[6] E05B *13/10*
U.S. Cl. 70—224 **5 Claims**



1. A door lock for a door which comprises an inside lever handle (3A) and an outside lever handle (4A) attached to a lock body (5A) for assembling into the door, a latch (8) including a latch bolt arranged on a latch axis perpendicular to a handle axis said latch bolt is operated by rotation of an inside or outside rotary shaft (27A, 28A) of the lock body, said outside lever handle includes an enlarged outer portion (48A) that includes a tubular fitting portion (45A), said tubular fitting portion includes

a slot cut portion (87) opposite to a slot (47A) in said enlarged outer portion (48A), said slot cut portion (87) and said slot (47A) are formed at an inner circumferential wall of said tubular fitting portion (45A) of the outside lever handle, a cylinder lock (40A) that includes left and right projected cover portions (84, 85) in a projection form of an outer tube (42A) of said cylinder lock, said left and right cover portions (84, 85) are respectively fitted into the slot cut portion (87) and slot (47A) of said tubular fitting portion (45A), for driving the cylinder lock said outside rotary shaft (28A) includes oppositely disposed left and right cut portions (82, 83) which receive one end of said left and right projected cover portions (84, 85) of said cylinder lock, and said left and right cut portions of the outside rotary shaft align with suitable portions of the inner circumferential wall of the tubular fitting portion.

5,605,065

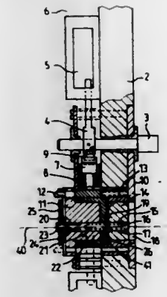
MAGNETIC CONTROLLED LOCKING APPARATUS

Jesus Lopez-Casals, and Jacques Sarthou, both of 42 Rue du Couriat, 63200 Riom (Puy-de-Dôme), France

Filed Jul. 6, 1994, Ser. No. 271,284
Claims priority, application France, Jul. 7, 1993, 93 08351
Int. Cl.[6] E05B *47/00*
U.S. Cl. 70—276 **11 Claims**

1. An improved magnetically generated locking device having a key and a cylinder, the cylinder having a longitudinal axis and having a stator and a rotor, an interface being defined between the stator and the rotor, the rotor is rotatable by the key about the longitudinal axis of the cylinder, the improvement comprising:

a plurality of magnets on the key which are cooperative with a plurality of magnets mobile in the cylinder, said plurality of magnets on the key being gripped in sheaths of ferromagnetic material, said plurality of magnets on the cylinder being gripped in sheaths of ferromagnetic material, said plurality of magnets of the cylinders slidable in an area of the interface in holes formed therein, said plurality of magnets of the cylinder being slidable in said holes so as to lock the rotor against rotations relative to the stator, said plurality of magnets of the cylinder being magnetically identical and of an identical geometrical distribution as said plurality of magnets of the key, each of said sheaths of ferromagnetic material of the cylinder and of the key having an magnetic sleeve means extending therearound and a yoke means of ferromagnetic material receiving said magnetic sleeve therein, said magnetic sleeve means and said yoke means for concentrating a magnetic flux of said plurality of magnets in a given direction.

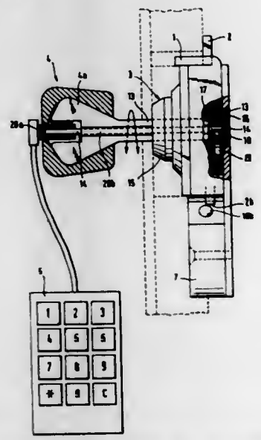


5,605,066

ELECTROMECHANICAL LOCK ARRANGEMENT

Oiva Hurskainen, Joensuu, Finland, assignor to Abloy Security Ltd Oy, Helsinki, Finland

Filed Apr. 1, 1993, Ser. No. 41,962
Claims priority, application Finland, Apr. 16, 1992, 921713
Int. Cl.[6] E05B *49/00*
U.S. Cl. 70—278 **8 Claims**



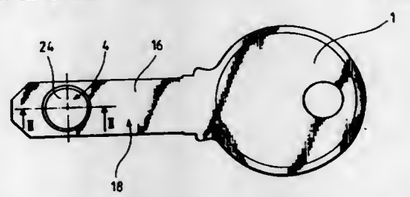
1. Electromechanical lock arrangement including a lock body (1), which is provided with a cylinder lock mechanism (3) having a key channel (17) and a turnable lock cylinder (16), a dead bolt (2) movable back and forth by means of the cylinder lock mechanism (3), electrically operable latch means (7) for controlling the operation of the dead bolt (2) and a logic unit (8) for controlling said electrically operable latch means (7); the arrangement includes further a key unit (4) having a mechanical key member (4a) for operating the cylinder lock mechanism (3) as well as means for supplying electric power and means for sending a coded electrical signal into said logic unit (8), whereby the logic unit (8) at the reception of a correct code, is arranged to switch current to said electrically operable latch means (7) so that they allow said dead bolt (2) to be moved from its protruding locking position into its withdrawn releasing position in the lock body (1), the improvement being that said supplying of a code and electric power is accomplished through said mechanical key member (4a) at the inner end of the key channel (17) of the cylinder lock mechanism (3) by making use of a coupling arrangement, which includes a first electrically conductive coupling element (18) turnable with the lock cylinder (16), arranged in electric contact with the mechanical key member (4a) and being electrically insulated from the cylinder lock mechanism (3), and a second electrically conductive coupling element (19) stationarily installed in the lock body (1), electrically insulated from the lock mechanism and connected through the logic unit (8) to said electrically operable latch means (7), whereby said first coupling element (18) is by means of the mechanical key member (4a) arranged to be turned at the position of the second coupling element (19) for enabling said supply of a code and electric power.

5,605,067

ELECTRONIC IDENTIFICATION DEVICE

Alain Juan, Chézard, Switzerland, assignor to Em Microelectronique-Marin S.A., Marin, Switzerland

Filed Sep. 20, 1995, Ser. No. 530,634
Claims priority, application France, Sep. 21, 1994, 94 11262
Int. Cl.[6] E05B *19/26*
U.S. Cl. 70—413 **8 Claims**



1. An identification device comprising a conducting body having a substantially parallel first face and second face, an electronic identification unit and at least one external electric contact surface electrically connected to said electronic unit, wherein this device comprises:

a first recess and a second recess arranged in said body and opening respectively onto said first and second faces, these first and second recesses being arranged substantially facing each other and separated from each other by an intermediate wall belonging to said conducting body,

a first opening provided in said intermediate wall between said first recess and said second recess,

a first conducting element and a second conducting element comprising respectively a first plate and a second plate arranged respectively in said first and second recesses so that they have no electric contact with said lateral walls of these recesses, the external face of said first plate forming said contact surface,

assembling means for mechanically and electrically connecting said first and second plates in said first opening, said electronic unit being situated between said first and second plates,

a non-conducting sheet arranged at least partially between said first plate and said intermediate wall, said sheet comprising a second opening substantially aligned with said first opening and a first conducting pad in electrical connection with said intermediate wall and electrically connected to said electronic unit, said sheet also comprising a second conducting pad in electrical contact with said first plate and electrically connected to said electronic unit, and

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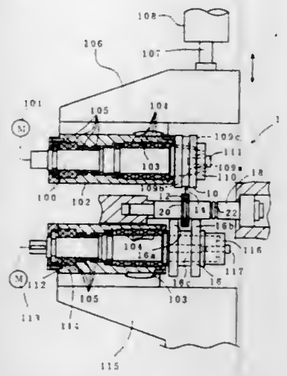
an insulating layer arranged between said intermediate wall and said second plate.

5,605,068

APPARATUS FOR ROLLING A RING-SHAPED WORK

Takao Yamasoto, Nagoya, and Hirokazu Ishiyama, Chita, both of Japan, assignors to Daido Tokushuko Kabushiki Kaisha, Nagoya, Japan

Filed May 18, 1995, Ser. No. 443,420
Int. Cl.[6] B21H *1/06*
U.S. Cl. 72—105 **21 Claims**



1. An apparatus for rolling a ring-shaped work comprising:
a forming roll contacted with the outer surface of a ring-shaped work;
a mandrel provided movably in the axial direction thereof;
a plurality of forming portions formed on the outer surface of said mandrel, wherein said forming portions are arranged at an arbitrary distance along the axial direction of said mandrel, wherein one of said forming portions is selected according to the moving distance of said mandrel in said axial direction, and said selected forming portion is contacted with the inner surface of said work for rolling the work with a cooperation of said forming roll;
a mandrel driving device which drives said mandrel in said axial direction for selecting one of said forming portions,
a mandrel backup roll;
a work holding device inserted between said backup roll and said work which holds said work for making a gap between said work and said forming portions when said mandrel is axially moved for selecting one of said forming portions.

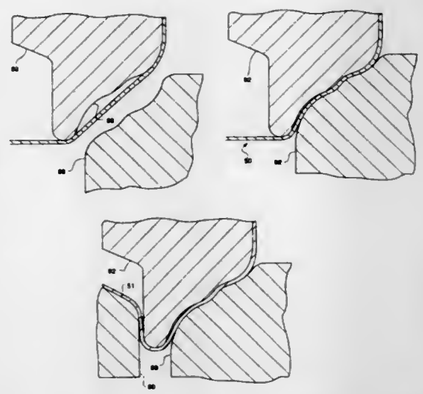
5,605,069

BEVERAGE CONTAINER WITH WAVY TRANSITION WALL GEOMETRY AND METHOD FOR PRODUCING THE SAME

K. Reed Jentzsch, Arvada, Colo., assignor to Ball Corporation, Muncie, Ind.

Filed Apr. 12, 1995, Ser. No. 421,432
Int. Cl.[6] B21D *22/00;22/21*
U.S. Cl. 72—347 **22 Claims**

1. A method for forming a metal container body from a metal blank, said method comprising the steps of:
drawing the blank to form a cup having a sidewall and an integral bottom;
ironing the sidewall of the cup to reduce the wall thickness thereof;



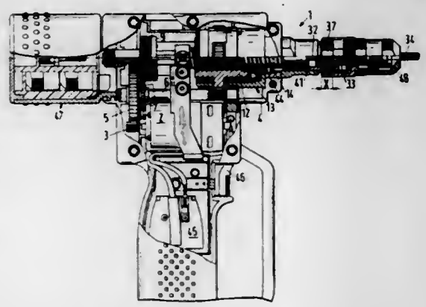
forming at least two annular concave portions in a transition wall of the cup bottom, said transition wall extending generally downwardly and inwardly from a lower end of said sidewall;
upwardly forming a center panel into the cup bottom; and
pulling down material through the annular concave portions of the transition wall.

5,605,070

BLIND RIVET NUT SETTING DEVICE

Lothar Wille, Mörfelden-Walldorf, Germany, assignor to GESIPA Blindniettechnik GmbH, Franfurt am Main, Germany

Filed Mar. 1, 1995, Ser. No. 396,668
Claims priority, application Germany, Mar. 4, 1994, 44 06 946.4
Int. Cl.[6] B21J *15/26;* **B21D** *9/05*
U.S. Cl. 72—391.4 **17 Claims**



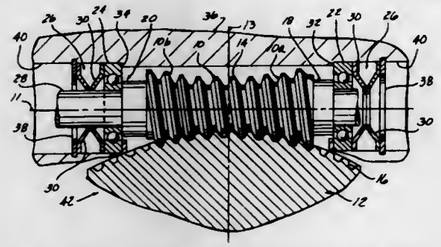
1. A blind rivet nut setting device comprising:
a drawing mandrel;
a motor;
a first drive line being disposed between said motor and said drawing mandrel, said first drive line having means for selectively producing a rotational movement of said drawing mandrel;
a second drive line being disposed between said motor and said drawing mandrel, said second drive line having means for producing an axial movement of said drawing mandrel, said second drive line including a drive element and an output element, said drive element being axially movable for a predetermined length that includes an idle stroke length and an effective stroke length where an end position of said axial movement of said drive element is predetermined, so that said effective stroke length ends immediately when said drive element reaches said end position, said idle stroke length being adjustable.

5,605,071

ENVELOPED WORM GEAR CLUTCH WEDGELOCK RESPONSIVE TO REACTION FORCE

Harry C. Buchanan, Jr., Spring Valley, Ohio, assignor to ITT Automotive Electrical Systems, Inc., Auburn Hills, Mich.

Filed Jun. 6, 1995, Ser. No. 468,721
Int. Cl.[6] F16H *55/22;1/16;* **B60T** *7/12*
U.S. Cl. 74—425 **19 Claims**



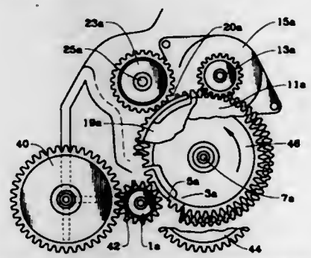
1. An apparatus responsive to a reaction force for absorbing rotary energy comprising:
intermeshing gear means for transmitting rotation through an angle, said gear means including an elongated, enveloping worm gear having a longitudinally extending axis of rotation and an output gear having an axis of rotation offset from and perpendicular to said longitudinally extending axis of said worm gear, said worm gear moveable axially in response to a predetermined reaction force, said intermeshing gear means for frictionally braking bi-directional rotary motion when moved from a first position centered with respect to said output gear to a second position off-center with respect to said output gear; and
biasing means, adjacent at least one end of said worm gear, for centering said worm gear with respect to said output gear when subjected to force below said predetermined reaction force.

5,605,072

LOAD-ISOLATED, SINGLE-CYCLE MECHANISM

John A. Schmidt, Lexington, and Kevin D. Schoedinger, Nicholasville, both of Ky., assignors to Lexmark International, Inc., Lexington, Ky.

Filed Sep. 14, 1995, Ser. No. 528,068
Int. Cl.[6] F16H *55/17;29/12*
U.S. Cl. 74—435 **13 Claims**



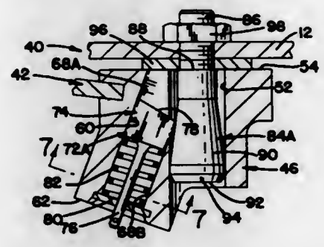
1. In a single-cycle, driven-member selection apparatus comprising a drive gear driven by a rotating power source, a driven member, a first gear axially mounted on and integral with said driven member, said drive gear having peripheral engaging means with said first gear except at a sector of said first gear, an angularly rotatable solenoid seeking a detent position which may be overcome by a predetermined force and permitting full circumferential rotation of said solenoid without impairing said operation of said solenoid, said driven member being operatively mounted for rotation by rotation of said first gear and being operatively mounted for rotation by rotation of said solenoid, the detent position of said solenoid being a location at which said drive gear faces said sector, the improvement comprising a driven gear and a second gear axially mounted on and integral with said driven member, said second gear having peripheral engaging means with said driven gear except at a sector of said second gear, said sector of said first gear facing said drive gear when said sector of said second gear faces said driven gear.

5,605,073

MOTOR VEHICLE STEERING COLUMN

Thomas J. Milton, Bay City; William D. Cymbal, Freeland, and Kevin C. Ross, Hemlock, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 31, 1995, Ser. No. 521,763
Int. Cl.[6] B62D *1/19*
U.S. Cl. 74—492 **5 Claims**



1. A motor vehicle steering column including
an energy absorbing mast jacket collapsible in the direction of a longitudinal centerline of said mast jacket in response to an impact force thereon,
a lower mount supporting a lower end of said mast jacket on a body of said motor vehicle and accommodating vertical pivotal movement of said mast jacket, and
an upper mount normally rigidly supporting an upper end of said mast jacket on said vehicle body separable in response to said impact force on said mast jacket to release said upper end of said mast jacket from said vehicle body for energy absorbing collapse,
characterized in that said upper mount comprises:
a capsule bracket on said mast jacket including a first slot having an open side,
a first capsule in said first slot pivotable vertically as a unit with said mast jacket and slidable out of said first slot through said open end thereof to release said mast jacket for energy absorbing collapse,
a socket in said first capsule open through an upper surface of said first capsule,
a first striker on said vehicle body seated in said socket in said first capsule when said mast jacket is pivoted vertically upward, and
a snap-in retaining means on said striker and on said capsule automatically operative to prevent forced dislodgment of said socket in said first capsule from said first striker after said first striker is seated in said socket in said first capsule.

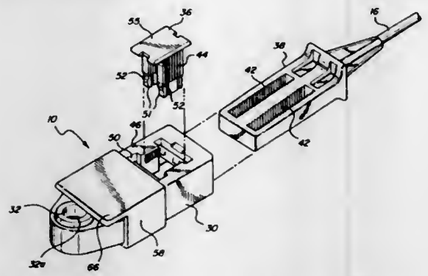
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5,605,074

SECURITY COLLAR FOR ADJUSTABLE CORE ELEMENT TERMINAL

Michael Hall, Ortonville; John W. Harrison, Lapeer; Dan Chegash, Roseville; Michael Reasoner, Ortonville, and Orest Iwasiuk, Farmington Hills, all of Mich., assignors to Teleflex Incorporated, Plymouth Meeting, Pa.

Filed Sep. 5, 1995, Ser. No. 523,187
Int. Cl.[6] F16C *1/14*
U.S. Cl. 74—502.6 **9 Claims**



1. A motion-transmitting remote-control assembly (**10**) for transmitting motion along a curved path, said assembly comprising:
a flexible motion-transmitting core element (**12**),
a conduit (**14**) slidably supporting said core element (**12**),
terminal means (**30**) having a bore (**32**) extending therethrough defining oppositely facing first (**32***a*) and second (**32***b*) openings with said second opening (**32***b*) disposed for connecting said core element (**12**) to a control member (**28**),
adjustment means interconnecting said terminal means (**30**) and said core element (**12**) for adjusting the position of said terminal means (**30**) axially along said core element (**12**) and including a lock button (**36**) movable between an unlocked position extending from said assembly and a locked position within said assembly for locking the axial position of said terminal means (**30**) relative to said core element (**12**), and
characterized by security means (**58**) locked in a shipping position by said lock button (**36**) for preventing the insertion of the control member (**28**) into said first opening (**32***a*) and movable to an installed position for maintaining said lock button (**36**) in said locked position whereby said security means (**58**) prevents an installer from inadvertently inserting the control member (**28**) into the first opening (**32***a*) during installation and to thereafter insure that the lock button (**36**) is fully in the locked position when moved to said installed position.

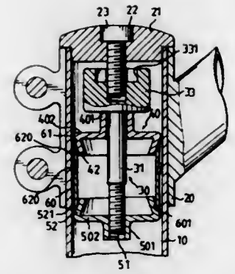
5,605,075

ANTI-DEFORMING MEANS FOR A STEERER TUBE

Yi-Chen Chi, No. 139-5, Ann-may Rd., May-San Village, Ho-li Hsian, Taichung Hsien, Taiwan

Filed May 31, 1995, Ser. No. 455,721
Int. Cl.[6] F16B *7/10;* **B62K** *21/16*
U.S. Cl. 74—551.1 **1 Claim**

1. An anti-deforming means for a steerer tube and comprising:
a tubular element having a first end and a second end, each of said first end and said second end having a respective tapered periphery formed thereon but each of said two tapered peripheries extending to a direction opposite from each other, a plurality of slits longitudinally defined in said tubular element, at least one protrusion extending outwardly and inclinedly from an outer periphery of said tubular element and a plurality of flanges extending radially from said outer periphery of said tubular element;
a first element having a first stud and a first skirt, said first stud having a top flange extending radially from a top thereof and said first skirt extending upwardly from said top flange of said first stud and said first stud having a threaded hole defined therein, said first skirt having a first tapered periphery formed on an outer periphery thereof for engagement with said tapered periphery of said first end of said tubular element;
a second element having a second stud and a second skirt, said second stud having a top flange extending radially from a top thereof, said second skirt extending upwardly from said top flange of said second stud and said second stud having a plane hole defined therein, said second skirt having a second tapered periphery formed on an outer periphery thereof for engagement with said tapered periphery of said second side of said tubular element;
a driving element having a head and a threaded rod, said head having a polygonal recess defined in an upper side thereof to form a recessed surface defining said polygonal recess and a threaded recess defined in said recessed surface, said threaded rod extending through said plane hole of said second element and threadedly engaged with said threaded hole of said first element, and
a cap having a hole defined therein for a bolt extending therethrough and said bolt threadedly engaged with said threaded recess of said driving element.

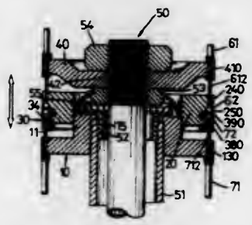


5,605,076

SWIVEL MECHANISM FOR A BICYCLE

Chin-chang Wu, No. 19, Lane 108, Yungfeng Rd., Taiping Village, Taiping Hsiang, Taichung Hsien, Taiwan

Filed Aug. 29, 1995, Ser. No. 521,070
Int. Cl.[6] B62K *21/18*
U.S. Cl. 74—551.1 **8 Claims**



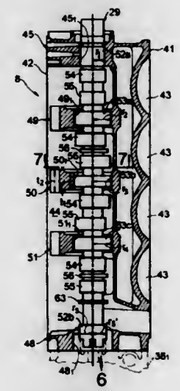
1. A swivel mechanism in a bicycle which comprises a head tube and a steerer tube rotatably mounted therein, said swivel mechanism comprising:
a base fixedly mounted around an upper end of said head tube and having an annular flange formed on an upperside thereof and extending upwardly therefrom;
an annular sleeve rotatably mounted around said annular flange wherein said annular sleeve has an annular ridge formed on an underside thereof, a groove defined in an inner periphery of a swivel ring, and a self-lubricating bearing rotatably received in said groove and rotatably mounted on said annular ridge;
said swivel ring mounted on the upperside of said base and rotatably mounted around the underside of said annular sleeve;
a cap securely mounted around an upper end of said steerer tube; and
a separating brake module comprising:
an upper connector including at least one first brake cable fixedly mounted on an outer periphery of said cap, a first wire slidably mounted in said first brake cable and having a lower end fixedly mounted on an outer periphery of said annular sleeve; and
a lower connector including at least one second brake cable fixedly mounted on an outer periphery of said base, a second wire slidably mounted in said second brake cable and having an upper end fixedly mounted on an outer periphery of said swivel ring.

5,605,077

CAMSHAFT SUPPORTING STRUCTURE IN AN ENGINE

Masaki Tsunoda, and Mitsuharu Tanaka, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 29, 1995, Ser. No. 536,392
Claims priority, application Japan, Sep. 30, 1994, 6-236639
Int. Cl.[6] F16H *53/00;* **F01L** *13/00*
U.S. Cl. 74—567 **2 Claims**



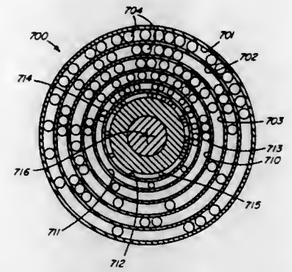
1. A camshaft supporting structure in an engine, comprising:
a camshaft inserting opening formed in a cylinder head;
a plurality of intermediate bearing bosses which are formed in said cylinder head;
bearing holes defined in said intermediate bearing bosses; and
a camshaft having a plurality of valve operating cams and a plurality of journal portions, said plurality of journal portions being rotatably supported in said bearing holes by inserting said camshaft through said camshaft inserting opening, wherein
a radius of each of said bearing holes is larger than a largest radius of said valve operating cams, and radii of the bearing holes are progressively smaller in sequence from a side closer to the camshaft inserting opening to a side farthest from the camshaft inserting opening.

5,605,078

WEIGHT COMPENSATING METHOD AND APPARATUS

Gary R. Taylor; Paul Wierzba, and R. Craig Hannah, all of Calgary, Canada, assignors to ETI Technologies Inc., Guernsey, Channel Islands

Continuation of Ser. No. 246,864, May 20, 1994, which is a continuation-in-part of Ser. No. 66,307, May 21, 1993, Pat. No. 5,460,017, which is a continuation-in-part of Ser. No. 887,340, May 21, 1992, abandoned, and a continuation of Ser. No. 175,320, Dec. 29, 1993, abandoned. This application May 17, 1996, Ser. No. 648,984
Int. Cl.[6] G05G *1/00;* **F16F** *15/10*
U.S. Cl. 74—573 R **18 Claims**



1. Structure for removing an out of balance condition, comprising a first pathway positioned concentrically about an axis, said first pathway being defined by opposed first inner wall surfaces, a second pathway positioned concentrically about said axis, said second pathway being defined by opposed second inner wall surfaces, a third pathway positioned concentrically about said axis, said third pathway being defined by opposed third inner wall surfaces, said first, second and third pathways being separate from one another, the first, second and third pathways being coplanar with the first pathway located radially inwardly of the second pathway and with the second pathway being located radially inwardly of the third pathway, a plurality of first weights positioned in said first pathway and freely movable within said first pathway during rotation of the structure, a plurality of second weights positioned in said second pathway and freely movable within said second pathway during rotation of the structure, a plurality of third weights positioned in said third pathway and freely movable within said third pathway during rotation of said structure, said first, second and third weights being substantially identical in weight, said first second and third weights each having an outer peripheral surface, said first, second and third weights being movable within the respective pathways in such a way that the outer peripheral surface of the first weights are able to directly contact one of the first inner wall surfaces, so that the outer peripheral surface of the second weights are able to directly contact one of the second inner wall surfaces and so that the outer peripheral surface of the third weights are able to contact one of the third inner wall surfaces, said first, second and third weights moving within the respective pathways upon the occurrence of an out of balance condition so that the weights counteract the out of balance condition and remove imbalance.

5,605,079

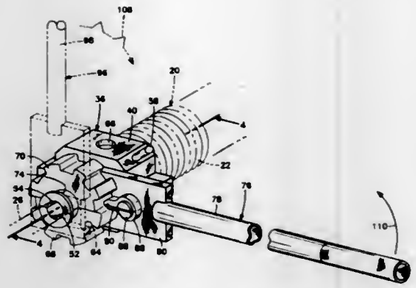
TORSION SPRING TENSIONING TOOL

Robert L. Way, 820 Muirfield Dr., Arroyo Grande, Calif. 93420

Filed Nov. 13, 1995, Ser. No. 556,485
Int. Cl.[6] B25B *13/46*
U.S. Cl. 81—61 **2 Claims**

1. A tensioning tool for a torsion spring assembly comprising:
a housing having an internal chamber, said housing being splittable into a first part and a second part, said first part and said

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second part being securable together into a single unit and adapted to be located about a portion of a torsion spring assembly;

means located within said internal chamber for fixing said housing to said torsion spring assembly;

a sprocket fixed to said housing, said sprocket located exteriorly of said housing, said sprocket having an exterior surface, said sprocket also being splittable into two parts when said housing is split;

separate ratchet tool means connectable with said sprocket, said ratchet tool means to be manually operated to cause pivoting of said portion of said torsion spring assembly to thereby induce stored energy therein; and

a first annular groove formed between said sprocket and said housing, said separate ratchet tool means comprising a right hand ratchet tool and a left hand ratchet tool, said right hand ratchet tool to be connectable with said first annular groove, a second annular groove abutting said exterior surface of said sprocket, said left hand ratchet tool to be connectable with said second annular groove, whereby said right hand ratchet tool and said left hand ratchet tool to be sequentially manually used in unison to induce said stored energy within said torsion spring assembly.

5,605,080

SCREW DRIVER

Joachim Pfefferle, Munstertal; Michael Roth, Ebringen; Peter Scheuble, Wasenweiler, and Hermann Zeuner, Freiburg, all of Germany, assignors to Elekta Instrument GmbH, Umkirch, Germany

Filed Nov. 27, 1995, Ser. No. 562,967

Claims priority, application Germany, Nov. 25, 1994, 44 41 965.1

Int. Cl.[6] B25B *23/08*

U.S. Cl. 81—456 **30 Claims**

1. A screwdriver for bone screws comprising:

a grip;

a driver blade having a shank with a tip end and an opposing grip end, said tip end having a blade tip for engaging screws, said grip end being insertable into said grip;

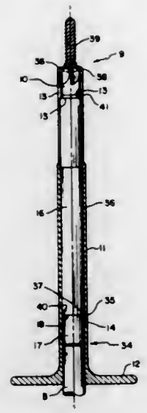
a locking device preventing rotation and longitudinal movement of said driver blade relative to said grip; and

a chuck enclosing said driver blade, said chuck being longitudinally displaceable relative to said driver blade;

a plurality of collets extending from an end of said chuck disposed adjacent to said blade tip, each of said collets being inwardly biased and having a claw disposed at an end of said collets opposite said chuck, whereby said claws retain a screw on said blade tip when said chuck is in a retaining position;

a blade tip bevel located on said driver blade and adapted to engage said claws thereby inhibiting the longitudinal displacement of said claws towards said grip end of said driver blade beyond said bevel; and

a stop device comprising a stop face defining a portion of a groove surface, said groove located on said driver blade, and



a detent spring located on said chuck, said detent spring having a free end extending towards said collets and biased inward, whereby said free end is disposed within said groove when said screwdriver is assembled and bears upon said stop face when said chuck is in said retaining position thereby inhibiting further longitudinal displacement of said chuck towards said blade tip.

5,605,081

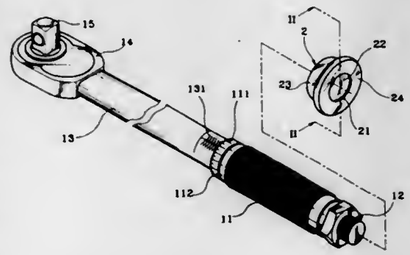
STRUCTURE OF WRENCH

Johnny Chen, No. 23, Alley 1, Lane 27, Hwa Hsi Street, and Joseph Chow, 9F., No. 82, Sec. 2, An Ho Rd., both of Taipei, Taiwan

Filed Dec. 5, 1995, Ser. No. 567,241

Int. Cl.[6] B25B *23/14*

U.S. Cl. 81—467 **2 Claims**



1. A wrench comprising an operation arm having an operation head at one end for turning a workpiece, a calibration handle connected to said operation arm at one end remote from said operation arm and turned relative to said operation arm to set the desired index number of torsion, and a lock screw controlled to lock said calibration handle when the desired index number is set, wherein said calibration handle has an annular groove around the periphery adjacent to said operation arm; a transparent socket is mounted around said calibration handle, having an inside annular flange forced into engagement with the annular groove of said calibration handle, and an arched lens at one side around the periphery to magnify indexes on said operation arm.

5,605,082

TOOL WITH INTEGRAL TORQUE DELIVERY SYSTEM

Andrew J. Tarpill, East Haddam, Conn., assignor to Capewell Components Company, Cromwell, Conn.

Filed Nov. 8, 1995, Ser. No. 555,479

Int. Cl.[6] B25B *23/157*

U.S. Cl. 81—475 **18 Claims**



1. A tool for installing and removing load break probes, comprising:

a handle;

a body rotatably attached to the handle, the body having an engagement device for non-rotatably engaging a load break probe;

a torque delivery system operatively connected with the handle and the body, the system having a first clutch half attached to the handle and a second clutch half attached to the body, the clutch halves being engaged up to a predetermined torque in a first direction and positively engaged when the tool is rotated in a second direction, the torque delivery system further comprising a force exerting device for exerting a predetermined force upon the clutch halves to effect engagement of the clutch halves when the torque in the first direction is less than the predetermined torque; and

an elongate member extending through the clutch halves, the elongate member having a first end attached to the body and a second end, the force exerting device being mounted on the elongate member between the second end and one of the clutch halves, the clutch halves being positioned between the force exerting device and the body.

5,605,083

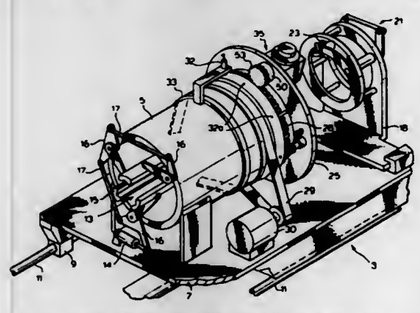
PIPE CUTTING APPARATUS WITH DIFFERENTIAL SPEED ROTATABLE RING CUTTER ACTUATION

Manfred A. A. Lupke, 92 Elgin Street, Thornhill, Ontario, Canada, and Stefan Lupke, 32 Vintage Lane, Thronhill, Ontario, Canada

Filed Apr. 10, 1995, Ser. No. 419,413

Int. Cl.[6] B23B *5/14;5/08*

U.S. Cl. 82—67 **1 Claim**



1. Pipe cutting apparatus comprising a housing with a pipe passage through said housing, a rotatable collar and a rotatable ring both of which rotate about said pipe passage and a pipe cutter mounted on said collar, said pipe cutter being movable inwardly toward and outwardly away from said pipe passage and said pipe cutter having a gear drive which engages said ring such that differences in rotating speeds between said collar and said ring operate said gear drive to produce movement of said pipe cutter, said pipe cutter being stationary when said collar and said ring rotate at the same speed with one another, said apparatus including a first motor which rotates said collar and a second motor which, when active, rotates said ring, said ring being rotated by said collar when said second motor is inactive, wherein the collar includes a catch and the ring includes a pin which engages the catch, and the catch being movable by said pin between a movable and blocking position when said ring is rotating at a different speed than said collar.

5,605,084

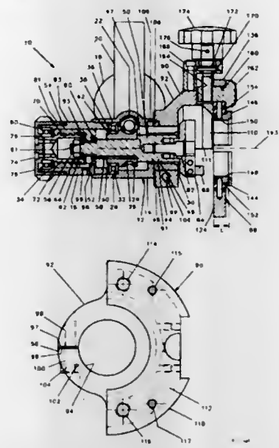
SQUARING MACHINE FOR VARIOUS SIZED TUBES

Kenneth R. Pierce, Lake Zurich, Ill., assignor to The E. H. Wachs Company, Wheeling, Ill.

Filed Nov. 29, 1995, Ser. No. 564,781

Int. Cl.[6] B23B *5/16*

U.S. Cl. 82—113 **7 Claims**



1. A tube squaring machine comprising in combination,

a housing having a first end, a second end, and a tubular section between said first end and said second end,

a drive member rotatable within said housing,

a shaft axially slidable relative to said drive member, said shaft having a first end,

a feed screw having a threaded cylindrical outer surface, said feed screw rotatable in said housing,

a cap fitted over said first end of said housing, said cap fixed to said feed screw for movement therewith,

said feed screw entirely enclosed in said housing,

means for locking said feed screw against axial movement within said housing,

a feed ring axially movable within said housing,

means for locking said feed ring against rotation within said housing,

attachment means for rotatably attaching said shaft to said feed ring, said attachment means extending from an end of said shaft,

said feed screw having an axial opening on an end thereof for receiving at least a portion of said attachment means,

said feed ring having a cylindrical inner surface with threads along a portion thereof,

said threads of said feed screw engaged with said threads of said feed ring, and

means for retaining a tool at said second end of said housing.

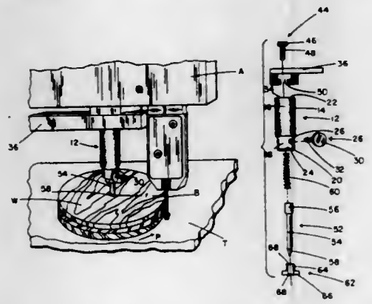
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5,605,085

CIRCLE CUTTING DEVICE

Stephen P. Bohrer, St. Louis, Mo., assignor to Laborsaber, Inc., St. Louis, Mo.

Filed Apr. 19, 1994, Ser. No. 229,630
Int. Cl.[6] B26D 7/06; B27B 13/04
U.S. Cl. 83—439 17 Claims



1. A circle cutting device on a jigsaw for selectively rotatably retaining a workpiece in the jigsaw so as to permit a user of the circle cutting device to cut accurate circles with the jigsaw, the circle cutting device comprising:

circle radius positioning means secured to the jigsaw;

a housing having an upper portion slidably adjustably attached to the circle radius positioning means for location at a preselected position, and a lower portion with a centrally located opening therein;

a pin positioned in the centrally located opening of the lower portion of the housing and extending a predetermined distance from said opening for selectively engaging a workpiece and maintaining the workpiece in a preselected position in relation to a blade of the jigsaw, thereby providing a pivot point for rotatably retaining the workpiece in the jigsaw so as to permit the user of the jigsaw to accurately cut circles from the workpiece;

biasing means, located within the housing, for biasing the pin downwardly onto the workpiece; and

pin adjustment means, located in the lower portion of the housing, for securing the pin within the housing at said predetermined distance.

5,605,086

COMPOUND MITRE SAW

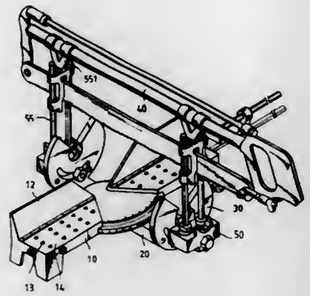
Hsieh Huang-Mo, and Mary Wang, both of Changhua Hsien, Taiwan

Continuation of Ser. No. 205,177, Mar. 3, 1994, abandoned.
This application Mar. 14, 1995, Ser. No. 402,115
Int. Cl.[6] B26D 7/01
U.S. Cl. 83—759 1 Claim

1. An improved compound miter saw of a type characterized in having an elongate base for supporting a workpiece over a generally planar support surface of said base, a transverse arm adjustably secured in horizontal angle to said base at a central position thereunder, and at least two mutually parallel guide rods adjustably secured in vertical angle on each end portion of said arm for supporting a saw at a selected angle with respect to a vertical plane, wherein the improvement thereof comprises:

a guide plate fixed to one side of said base extending vertically in a substantially perpendicular direction with respect to said support surface, an upper terminal edge thereof being at a predetermined height above said support surface.

a plurality of rows of discrete guide projections on said support surface extending parallel to the longitudinal direction thereof with each row of said guide projections having a predetermined separation from said guide plate, whereby a suitably



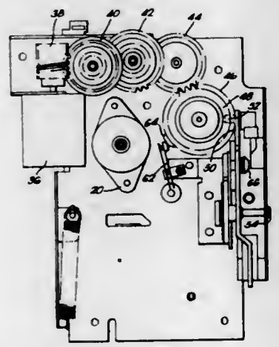
shaped workpiece having a substantially rectangular section is positionable over said support surface at a predetermined elevated angle with respect therewith wherein a first side of the workpiece is in abutment with a selected first row of said guide projections, a proximate portion of a perpendicular second side of the workpiece is in abutment with an adjacent second row of said guide projections, and a distal portion of the perpendicular second side is in abutment with the terminal edge of said guide plate, each pair of adjacent rows of said guide projections providing a unique elevational angle to the workpiece, said guide projections having a triangular section, with a first base side of each said guide projections being aligned with the direction of the row thereof and abutting the first side of the workpiece, and an opposing apex of each said guide projections abutting the proximate portion of the perpendicular second side of the workpiece.

5,605,087

TAPE CUTTING APPARATUS

Michael A. Beadman, Royston, United Kingdom, assignor to Esselte N.V., St. Niklass, Belgium

Filed Jan. 10, 1994, Ser. No. 178,689
Claims priority, application United Kingdom, Jan. 13, 1993, 9300579
Int. Cl.[6] B26D 3/08; B41J 11/70
U.S. Cl. 83—881 18 Claims



1. A tape cutting apparatus comprising:

cutting means comprising a cutting blade arranged to cut through one layer only of a multilayer tape;

a tape supporting surface for supporting the multilayer tape during cutting;

drive means controllable to actuate the cutting means;

position control means for controlling the position of the cutting means between an inactive position and a cutting position; and

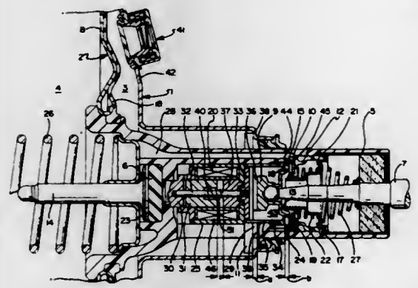
braking means, controllable in response to the position control means, for providing a braking action to the drive means when the cutting means has reached the inactive position.

5,605,088

VACUUM BRAKE POWER BOOSTER

Jürgen Balz, Wiesbaden; Karlheinz Bill, Dreieich; Horst Krämer, Dietzenbach; Peter Drott, Frankfurt am Main; Jurgen Bauer, Wiesbaden; Heinz Zingel, Bad Camberg; Holger Von Havn, Bad Vilbel; Ralf Harth, Oberursel; Jürgen Schonlau, Walluf, and Wolfgang Ritter, Oberursel, all of Germany, assignors to ITT Automotive Europe, GmbH, Germany

Continuation of Ser. No. 256,497, Sep. 30, 1994, Pat. No. 5,460,074. This application Sep. 19, 1995, Ser. No. 530,600
Claims priority, application Germany, Nov. 13, 1992, 42 38 333.1; Jul. 23, 1993, 43 24 688.5
Int. Cl.[6] F15B 9/10
U.S. Cl. 91—369.1 6 Claims



1. A vacuum brake power booster for automotive vehicles comprising a booster housing whose interior is subdivided into a vacuum chamber and a working chamber by a moveable wall, and a control housing carrying the moveable wall and accommodating a control valve which controls a pressure differential acting upon the moveable wall, the control valve having at least two sealing seats cooperating with an elastic valve member and being operable by an actuating rod, and one of the sealing seats being operable, irrespective of the actuating rod, by an electromagnetic whose armature is in force transmitting interaction with the one of the sealing seats and including electrical switching means, the control signals of which influence the current supply of the electromagnet, thereby enabling its deactivation, wherein the switching means are operable by a relative movement between a valve piston and the control housing.

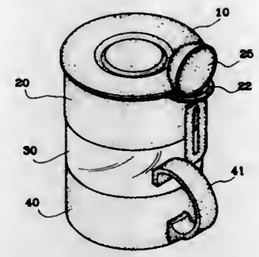
5,605,089

COFFEE CUP

Yeung J. Yu, No. 46, Santso Wn, San-Min Li, Chuangli City, Taoyuan Hsien, Taiwan

Filed Oct. 16, 1995, Ser. No. 543,491
Int. Cl.[6] A47J 31/10
U.S. Cl. 99—306 6 Claims

1. A coffee cup comprises a thermal insulation cover, a container that can receive a filter therein and having an upper part and a lower part, a glass cup and a base for receiving the glass cup, characterized in that: the cover closes the upper opening of the container, and the upper end of the container having an integrally formed part with which the cover mates; the container having a radius of the lower part thereof that is smaller than the radius of the upper part thereof, the lower part having a central opening, the opening defined by a surface having an outer, bigger portion and an inner, smaller portion so as to receive a filter therein, the glass cup



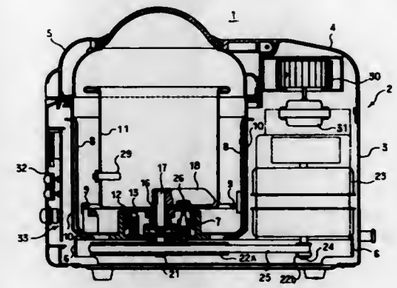
having an upper diameter which is a little bigger than the diameter of the bottom of the container so as to permit the container to receive the glass cup, the cup having a lower part comprising a portion having a smaller diameter for receiving the base thereunder, the base having a handle on the side of the base, with one end of the handle attached to the base and the other end of the handle extending higher than the base and having á shape so as to be in contact with the glass cup when inserted in the base, the base, having means therein for cushioning the glass cup.

5,605,090

BREAD MAKER

Nobunori Mantani, and Hisanobu Tanaka, both of Osaka, Japan, assignors to Funai Techno-Systems Co., Ltd., Osaka, Japan

Filed Jan. 16, 1996, Ser. No. 585,582
Claims priority, application Japan, Jan. 20, 1995, 7-026025
Int. Cl.[6] A21B 1/00; A21D 8/00; A47J 27/00; 37/01
U.S. Cl. 99—326 16 Claims



1. A bread maker for making bread from ingredients and water, the bread maker comprising:

a bread case for holding said ingredients and water;

a kneading means for kneading the ingredients and water in the bread case;

a heating means for heating the bread case for the purpose of baking;

a first weighing means for weighing the ingredients following placement thereof into the bread case and prior to introduction of the water;

a second weighing means for weighing the ingredients and the water together following introduction of the water into the bread case and calculating means for determining a weight of the water based on output from the first and second weighing means;

a memorizing means for storing processing time data based on a ratio of a weight of the water to the weight of the ingredients, said processing time data including a kneading time period of a kneading process executable by the kneading means, a rising time period for a rising process for rising kneaded

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dough and a baking time period for a baking process executable by the heating means; and

a control means for controlling the kneading means and the heating means based on said processing time data read from the memorizing means in accordance with the ratio of the weight of the water to the weight of the ingredients calculated by the calculating means to carry out the kneading process, the rising process and the baking process sequentially for making bread.

5,605,091

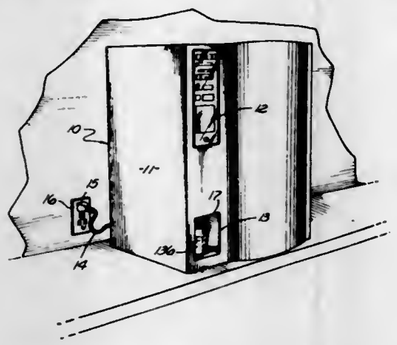
SELF CONTAINED FRYING MACHINE

Jack C. Garber, Sherman Oaks, Calif., assignor to Fry Factory, Inc., Studio City, Calif.

Continuation-in-part of Ser. No. 150,853, Aug. 11, 1993, abandoned. This application Nov. 8, 1994, Ser. No. 336,292

Int. Cl.[6] A47J *37/12*

U.S. Cl. 99—330 **37 Claims**



1. A fry machine comprising:

a hopper for dispensing a dehydrated food product into a mixing chamber;

a mixing chamber having an upper end and a lower end and an opening leading therein communicating with said hopper;

a piston chamber mounted above said mixing chamber communicating with the upper end thereof, said piston chamber having a reciprocating piston rod movably mounted therein, said piston rod having an upper end and a lower end with a piston portion at the lower end thereof, said piston rod including reciprocating means for moving said rod from a first position wherein said piston portion is disposed away from the lower end of said mixing chamber to a second position wherein said piston portion is disposed adjacent the lower end of said mixing chamber; and a die plate closing off the lower end of said mixing chamber;

said die plate having a plurality of predetermined spaced openings extending therethrough;

a reciprocally mounted slide below said die plate and including reciprocating means for reciprocating said slide from a first position normally closing off the spaced openings through said die plate to a second position disposed away from said spaced openings thereby allowing passage of food product therethrough;

a water inlet having a slot opening into fluid communication with the interior of said mixing chamber between said opening leading therein and said die plate; and

a fry pot mounted below said slide having at least one basket mounted therein.

5,605,092

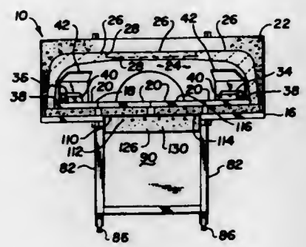
OVEN WITH STONE COVERED BOTTOM AND SUPPLEMENTAL HEATER

Renato Riccio, 11350 Pagemill, Dallas, Tex. 75243

Filed Feb. 7, 1996, Ser. No. 609,262

Int. Cl.[6] A47J *37/08;* **A21B** *1/04*

U.S. Cl. 99—401 **19 Claims**



1. An oven for baking a food product, comprising: a bottom; at least one stone covering said bottom including a baking area in which the food product may be baked; a top connected to said bottom and constructed to form a chamber over the baking area; a constant heat source connected to said bottom to provide a constant heat within the chamber, said constant heat source disposed above said bottom, said constant heat source including a burner laterally spaced from the baking area; and a supplemental heat source provided below said stone for supplying additional heat to the baking area, said supplemental heat source including an electrical heater disposed below the baking area.

5,605,093

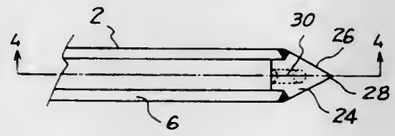
PICKLE SOLUTION INJECTION NEEDLE

Tsuyoshi Higashimoto, Ikoma, Japan, assignor to Higashimoto Kikai Co., Ltd., Japan

Filed Jun. 2, 1995, Ser. No. 463,315

Int. Cl.[6] A22C *9/00; 17/00;* **A23L** *1/31; 3/34*

U.S. Cl. 99—533 **4 Claims**



1. An injection needle for injecting a processing solution such as a pickle solution into a food material in an apparatus for making a processed food, comprising:

an elongated hollow pipe including an opening end, said processing solution being fed into said hollow pipe;

a tip welded or press fitted into said opening end of said hollow pipe to thereby close said opening end, said tip including a tapered outer surface extending from said opening end of said hollow pipe to the point of said tip to thrust said tip and said hollow pipe into said food material; and

hole means formed in said tip, said hole means being communicated with the interior of said hollow pipe and opened to said tapered outer surface, whereby said processing solution can be injected into said food material through said hole means in said tip.

5,605,094

APPARATUS FOR THE DECONTAMINATION OF CONTAINERS CONTAINING RADIOACTIVE LIQUID

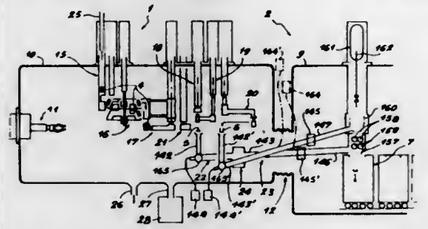
Joseph Besnier, Acqueville, France, assignor to Compagnie Generale des Matieres Nucleaires, Velizy-Villacoublay, France

Filed Mar. 15, 1995, Ser. No. 404,260

Claims priority, application France, Mar. 16, 1994, 94 03055

Int. Cl.[6] B30B *9/00;* **B08B** *3/00*

U.S. Cl. 100—70 R **14 Claims**



1. Unit for the decontamination of containers containing radioactive liquid and having a jug portion and a sealing stopper portion, said unit comprising means for opening, emptying, washing and drying the containers, said means for opening, emptying, washing and drying arranged in chain form, an outlet for the containers downstream of said opening, emptying, washing and drying means and connected to scrapping means, a residual radiation contamination counter at said outlet, said outlet having a branch downstream of said counter, and means for receiving and regulating the flow of containers located upstream of the container opening means.

5,605,095

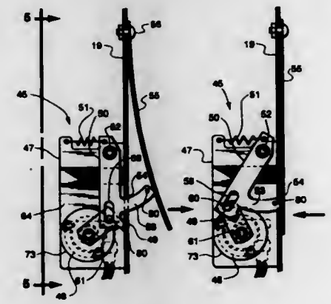
COMPACTION SENSOR FOR ROUND BALER

John R. McClure, New Holland, Pa., assignor to New Holland North America, Inc., New Holland, Pa.

Filed Feb. 13, 1996, Ser. No. 600,574

Int. Cl.[6] B30B *15/00*

U.S. Cl. 100—99 **10 Claims**



1. In a round baler having

an expandable bale forming chamber including opposing sidewalls between which generally cylindrically shaped packages of crop material are formed,

a crop compaction sensor mounted on at least one of said sidewalls,

said sensor including a leaf spring engageable with the crop material for sensing the degree of compaction of crop material in the vicinity of said at least one sidewall, a potentiometer having rotatable means for providing a variable signal corresponding to the position of said leaf spring relative to said sidewall, said leaf spring having an outermost position corresponding to no crop in the vicinity of said sensor and an innermost position corresponding to maximum crop compaction in the vicinity of said sensor, and intermediate apparatus for coupling said rotatable means of said potentiometer to said leaf spring, the improvement comprising

said intermediate apparatus including a mounting bracket, and means for adjustably mounting said potentiometer on said mounting bracket to secure it to said bracket under conditions where said outermost position of said leaf spring corresponds to a range of positions at one end of travel of said rotatable means to enable the outermost position of said leaf spring to be calibrated to correspond to a selected position in said range of positions.

5,605,096

MECHANICAL PRESSING MACHINE WITH DYNAMIC BALANCING DEVICE

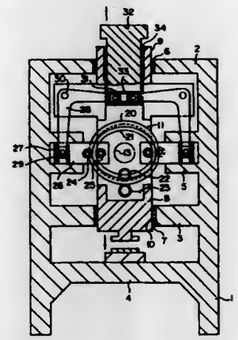
Heizaburo Kato, Shizuoka-ken, Japan, assignor to Sankyo Seisakusho, Tokyo, Japan

Continuation-in-part of Ser. No. 293,752, Aug. 22, 1994, abandoned. This application Mar. 4, 1996, Ser. No. 610,452

Claims priority, application Japan, Aug. 25, 1993, 5-210664

Int. Cl.[6] B30B *1/26*

U.S. Cl. 100—292 **6 Claims**



1. In a mechanical pressing machine wherein a slider is slidingly moved vertically relative to a frame by a drive cam fixedly mounted on one end portion of an input shaft to which a rotational force of a motor is transmitted;

the improvement wherein a balance weight movable in a direction opposite to the direction of movement of said slider is slidably mounted on said slider.

5,605,097

METHOD FOR PRODUCING A SCREEN PRINTING STENCIL WITH A LASER

Siegfried Ruckl, Langkampfen, and Harald Kapfinger, Kirchbirchl, both of Austria, assignors to Schablonentechnik Kufstein Aktiengesellschaft, Kufstein, Austria

Filed Apr. 26, 1995, Ser. No. 427,814

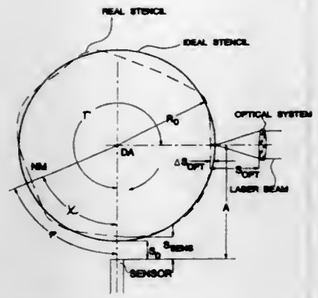
Claims priority, application European Pat. Off., Apr. 26, 1994, 94106498

Int. Cl.[6] B41C *1/14;* **B23K** *26/04*

U.S. Cl. 101—128.4 **13 Claims**

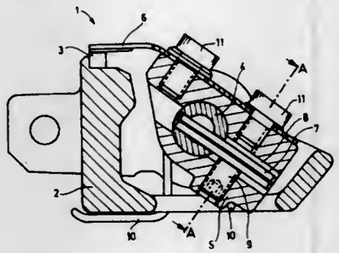
1. A method for producing a screen printing stencil comprising:

exposing a thin-walled hollow cylinder having a light responsive layer on an outer surface thereof, said exposing comprising, while rotating said cylinder about its cylindrical axis, impinging a laser beam on said cylinder;



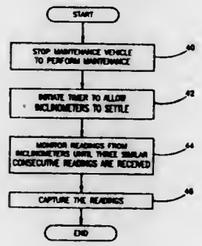
focusing said laser beam onto said light responsive layer;
moving said focusing along said cylindrical axis;
switching said laser beam on and off in accordance with a desired stencil pattern;
fixing at least one measuring position relative to said laser beam;
determining, from said at least one measuring position, a radial deviation ($\Delta s_{sens1}(k)$) of the actual position of a wall of said cylinder from an ideal position for a multiplicity of circumferential positions of said cylinder;
deriving a first actuating signal ($\Delta t_{opt}<k+N_r>$) from said radial deviation obtained at said at least one measuring position; and
displacing said stencil pattern in the circumferential direction of the cylinder in response to said first actuating signal, thereby compensating a tangential deviation of said wall from said ideal position.

5,605,098
GRIPPERS FOR SHEET-FED PRINTING PRESSES
Ralf Wadlinger, Ludwigshafen, Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany
Filed Sep. 22, 1995, Ser. No. 532,170
Claims priority, application Germany, Sep. 24, 1994, 44 34 151.2
Int. Cl.[6] B41F *1/30*
U.S. Cl. 101—415.1 **7 Claims**



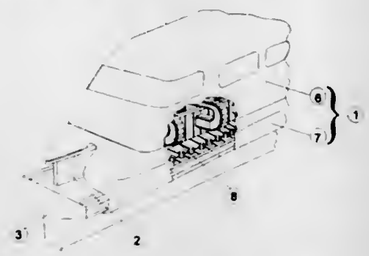
1. Grippers for sheet-fed printing presses, comprising: a gripper shaft, a gripper bar housing gripper seats arranged on said gripper bar housing, and gripper finger supports with gripper fingers, the gripper finger supports being swivellable relative to and carried by said gripper shaft, said gripper finger supports having slots formed therein, a drive acting via the gripper shaft, springy elements for determining a closing force of the grippers, entrainer pins directly carried by the gripper shaft and positioned in the slots formed in the gripper finger supports, and stop screws supported in the gripper finger support and projecting into the slots, the stop screws abutting against the entrainer pins for adjusting the gripper finger support, and the slots providing clearance for the entrainer pins to allow movement thereof relative to said gripper finger support.

5,605,099
MAINTENANCE VEHICLE AND METHOD FOR MEASURING AND MAINTAINING THE LEVEL OF A RAILROAD TRACK
Dennis A. Sroka; William E. Perry; Bruce W. Bradshaw, all of Ludington, Mich., and David M. Johnson, Matlock, United Kingdom, assignors to Pandrol Jackson, Inc., Ludington, Mich.
Filed Dec. 22, 1994, Ser. No. 361,571
Int. Cl.[6] E01B *35/00*
U.S. Cl. 104—2 **15 Claims**



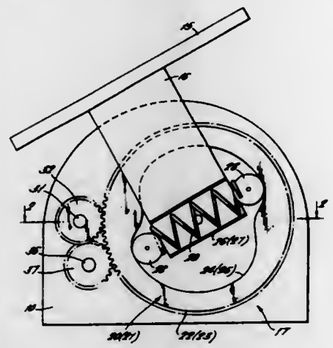
1. A method for measuring and maintaining the level of the rails of a railroad track, comprising the steps of:
(a) measuring data indicative of the profile of the railroad track using a primary measuring system;
(b) measuring data indicative of the profile of the railroad track using a secondary measuring system during a maintenance pass over the rails;
(c) comparing the data collected by the secondary measuring system with the data collected by the primary measuring system to evaluate the accuracy of the data collected by the primary measuring system; and
(d) resolving any significant deviation between the data collected by the primary measuring system and the data collected by the secondary measuring system.

5,605,100
PROPULSION SYSTEM FOR A MAGNETICALLY MOVABLE VEHICLE
Tony J. Morris, Marietta, and Kent R. Davey, Lithonia, both of Ga., assignors to American Magley Technology of Florida, Inc., Edgewater, Fla.
Continuation-in-part of Ser. No. 601,109, Oct. 23, 1990, abandoned. This application Feb. 12, 1992, Ser. No. 835,156
Int. Cl.[6] B60L *13/06;13/00*
U.S. Cl. 104—284 **5 Claims**



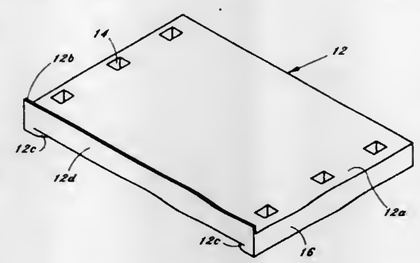
1. A system for transportation using magnetic propulsion, the system comprising:
a first means for producing a direct current in each of at least two conductors, said conductors each having a length and a volume (v), the current density in each of said conductors representable by a direction vector (J);
a plurality of second means for producing magnetic flux densities, said magnetic flux densities being representable by direction vectors (B); and,
a maglev vehicle positioned by a guideway, said maglev vehicle attached to said first means or second means, wherein said first and said second means are not in physical contact, but are oriented so that said current densities and said magnetic flux densities will interact to produce linear forces representable by direction vectors (f) such that f=(J×B)v, so as to induce linear propulsion of said maglev vehicle with respect to said guideway in the direction of said vectors (f), and wherein said first means for producing direct current includes means on said maglev vehicle and means on said guideway interacting to provide a signal to a computer programmed to control the speed of said maglev vehicle by controlling the average value of said direct current in each of said at least two currents.

5,605,101
TILTABLE PAYLOAD MOUNTING
Richard A. Lindsay, Eye, United Kingdom, assignor to Vitec Group, PLC, Bury St. Edmunds, United Kingdom
PCT No. PCT/GB93/01948, § 371 Date Jan. 12, 1995, § 102(e) Date Jan. 12, 1995, PCT Pub. No. WO94/07080, PCT Pub. Date Mar. 31, 1994
PCT Filed Sep. 15, 1993, Ser. No. 367,283
Claims priority, application United Kingdom, Sep. 15, 1992, 9219525
Int. Cl.[6] A47F *5/12*
U.S. Cl. 108—7 **11 Claims**



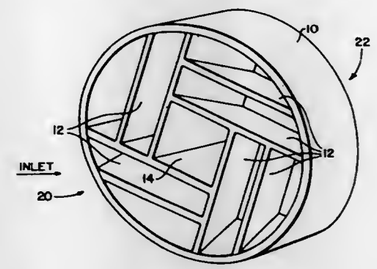
1. A tiltable mounting for a payload comprising a base, a support member for supporting the payload thereon, the support member being tiltable about a horizontal axis on the base for tilting about each side of a top dead center position about said horizontal axis, and torque generating means mounted on the base and acting on the tiltable support member to generate a torque in response to tilting of the support member equal and opposite to an out of balance moment of the support member to hold the support member balanced in any position of movement about said axis, wherein the improvement comprises a plurality of rotary torque generating devices, each generating a torque which varies sinusoidally with rotational displacement, and means are provided for adjusting the phase angle between the torque generating devices to vary the collective amplitude of the resulting torque generated to suit the weight of the payload on the support member.

5,605,102
HAND CART PLATFORM
Ronald P. S. Simpson, 8644 NW. 29th Dr., Coral Springs, Fla. 33065
Filed Jan. 18, 1996, Ser. No. 588,431
Int. Cl.[6] B65D *19/00*
U.S. Cl. 108—51.1 **10 Claims**



1. A hand cart platform for transport and display of merchandise, comprising:
a rigid support platform having a top planar surface and sized for use with a hand cart, said support platform having a periphery defined by a front portion, a rear portion, and opposing side portions;
a front vertical wall, a rear vertical wall, and a pair of opposing side vertical walls, each of said vertical walls extending downwardly from the periphery of said top planar surface;
said front vertical wall defining a recessed opening extending at least partially thereacross and sized to receive a hand cart support plate; and
said recessed opening further defined by a bottom structure disposed beneath, and attached to, said rigid support platform, said bottom structure includes a first portion having a wall structure of a first height, and a second portion having a wall structure of a second, different height than said first portion, said second portion wall structure positioned around said first portion wall structure, thereby defining an opening forming a recess beneath said support platform, and sized to receive the support plate of said hand cart therein.

5,605,103
INTERNAL PITCH IMPELLER FOR A COAL BURNER
Albert D. LaRue, Uniontown, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.
Filed Sep. 11, 1995, Ser. No. 526,292
Int. Cl.[6] F23D *1/02*
U.S. Cl. 110—262 **8 Claims**



1. A low NO_x coal burner with impeller for a furnace comprising:

a pulverized coal burner nozzle having a longitudinal axis, and being for connection to a pulverized coal and primary air supply, the nozzle having an outlet end;

a housing defining a passage with a first end, a second end and a longitudinal axis;

attachment means for attaching the housing to the coal outlet end of the coal nozzle with the longitudinal axis of the housing being collinear with the longitudinal axis of the coal nozzle; and

an impeller situated in the second end of the housing passage for redirecting the pulverized coal and primary air supply into a plurality of non-intersecting flows, each directed obliquely toward the longitudinal axis of the housing, said impeller including a housing with a plurality of sets of blades for each flow, each set of blades being oriented within the impeller housing, each set of blades extending at an acute angle to the longitudinal axis.

5,605,104

METHOD AND DEVICE FOR MELTING DOWN SOLID COMBUSTION RESIDUES

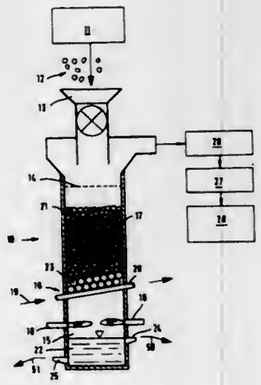
Gerhard Gross, Willich, and Frank Lichtmann, Gummersbach, both of Germany, assignors to Messer Griesheim GmbH, Germany

Filed Nov. 14, 1994, Ser. No. 337,980

Claims priority, application Germany, Nov. 22, 1993, 43 39 675.5

Int. Cl.[6] F23G *5/00;5/10*

U.S. Cl. 110—346 **12 Claims**



1. In a process to melt solid metal-containing combustion residues stemming from waste combustion installations fluid fossil fuels in a melting device, the improvement being in conveying the combustion residues stemming from the combustion installation into the filling opening of the melting device, providing the melting device as a shaft furnace with a fire-proof lined furnace chamber and with a water-cooled grate therein, on which there is at least one layer consisting of spheres made of a fireproof material, piling the combustion residues onto the grate, and by melting the combustion residues at temperature between 1300° C. and 1500° C. by means of a fuel-oxygen mixture in which the oxygen content of the oxidant amounts to 30% by volume$<O_2<$100% by volume and which is introduced into the shaft furnace below the combustion residue pile.

5,605,105

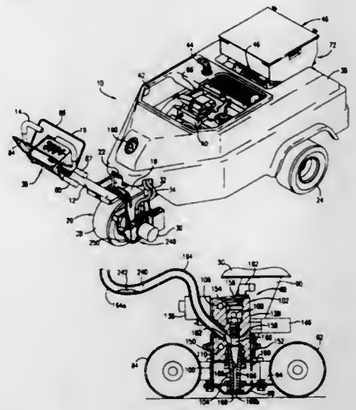
METHOD AND APPARATUS FOR PLACING DRY OR LIQUID MATERIALS INTO THE SOIL SUBSURFACE WITHOUT TILLAGE TOOLS

Stanley R. Clark, Hesston, and Mark R. Stelter, Lindsborg, both of Kans., assignors to Great Plains Manufacturing, Incorporated, Assaria, Kans.

Filed Oct. 17, 1994, Ser. No. 323,786

Int. Cl.[6] A01C *23/00*

U.S. Cl. 111—127 **33 Claims**



1. In turf maintenance apparatus, the improvement comprising:

an injection head for directing periodic jets of liquid and additive into the ground as the apparatus is moving along a path of travel;

a liquid supply system for supplying pressurized liquid to the injection head;

an additive supply system for introducing additive to the liquid within the injection head; and

a control system for causing said jets to discharge from the injection head at spaced intervals along said path of travel of the apparatus,

said control system including a controller, a distance sensor operable to provide ground traversing distance information to the controller, and a valve operable by the controller to admit successive bursts of pressurized liquid into the injection head as a function of the distance information provided to the controller by said sensor,

said additive supply system including a dispenser for the additive and a mechanism for metering the additive from the dispenser at a predetermined rate,

said metering mechanism being operable to deliver additive to the nozzle at a variable rate of delivery,

said controller being operably coupled with said metering mechanism for driving the metering mechanism at a rate that varies as a function of distance traversed by the apparatus.

5,605,106

FRONT ROLLER FEEDER

Manfred Ackermann, Elmhurst; Dale R. Carr, Belvidere, and Larry D. Crisler, Crystal Lake, all of Ill., assignors to Union Special Corporation, Huntley, Ill.

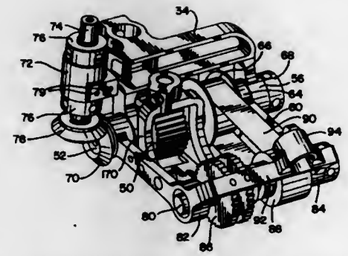
Filed Jun. 20, 1995, Ser. No. 493,849

Int. Cl.[6] D05B *27/12*

U.S. Cl. 112—475.01 **30 Claims**

1. A sewing machine including a sewing head and a lower arm;

a throat plate carried by said lower arm, said throat plate having a flat upper surface including a portion that has no apertures formed therethrough;



stitch forming mechanism including reciprocating needles mounted on said sewing head; a presser foot carried by said sewing head; a main bracket mounted on said sewing head such that it can be moved toward and away from said throat plate; a rear roller shaft journaled on said main bracket; a rear feeder roller secured to said rear roller shaft and disposed above said portion of the throat plate that has no apertures formed therethrough and to the rear of said presser foot;

a material folding device mounted on said lower arm forward of said throat plate, at a location relative to said stitch forming mechanism to provide desired margins between the folded edges and the stitch line, for folding material to be fed to said stitch forming mechanism;

a front roller bracket connected to said sewing head; a front roller shaft journaled on said front roller bracket, a front feeder roller carried by said front roller bracket, said front feeder roller functioning to receive the folded material from the folding device, positively feed the folded material into the stitch forming mechanism such that the control of the margins is improved and the need for manually controlling the folded material is diminished; and

driving mechanisms for positively driving said rear and front feeder rollers.

5,605,107

METHOD OF MANUFACTURING VARIABLE GAUGE FABRICS

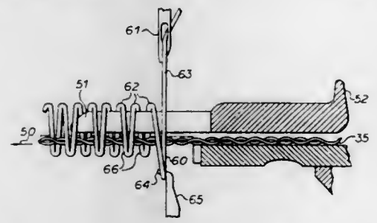
W. Paul Padgett, III, Rome, Ga., and Brian K. Lovelady, Soddy-Daisy, Tenn., assignors to Burlington Industries, Inc., Greensboro, N.C.

Continuation of Ser. No. 429,838, Apr. 27, 1995, which is a continuation of Ser. No. 112,664, Aug. 25, 1993, abandoned.

This application Jun. 6, 1995, Ser. No. 466,394

Int. Cl.[6] D05C *15/30*

U.S. Cl. 112—475.23 **6 Claims**



1. A method of forming a fabric which comprises:

(a) feeding a substrate in a longitudinal direction through a tufting machine having a multiplicity of reciprocally mounted needles laterally spaced across said machine on one side of the substrate and transverse to the direction of the substrate feed, a loop seizing hook cooperating with each needle on the opposite side of the substrate for seizing and thereafter shedding a loop of yarn received from a respective needle and a multiplicity of loop forming fingers;

(b) penetrating the substrate with yarn carrying needles to form an array of yarn pile loops seized and shed from respective hooks extending from one surface of the substrate;

(c) removing the needles from the substrate to a distance further removed from the substrate than the loop forming fingers;

(d) laterally shifting the needles in predetermined increments transversely of said feeding direction, carrying yarn across at least one loop forming finger; and

(e) repeating steps (b) through (d), wherein the needles are laterally shifted a different length increment in at least one successive repetition of step (d), until the desired length of fabric is formed.

5,605,108

METHOD OF FORMING A VARIABLE DENSITY MOTOR VEHICLE CARPET

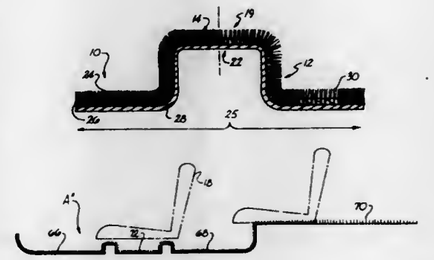
Robert S. Woosley, Greenville, S.C., assignor to JPS Automotive Products Corp., Greenville, S.C.

Division of Ser. No. 185,397, Jan. 24, 1994, Pat. No. 5,474,829.

This application Sep. 18, 1995, Ser. No. 529,562

Int. Cl.[6] D05C *15/04;* **B62D** *25/20*

U.S. Cl. 112—475.23 **18 Claims**



1. A method of forming a pile carpet for use as an original carpet floor of a motor vehicle body assembly; said vehicle body assembly having a front seat for accommodating passengers and a rear seat disposed behind said front seat for accommodating passengers; an interior vehicle floor which includes an area forward of said front seat which extends rearwardly to an area forward of said rear seat to define a front floor area located in front of said front seat and a rear floor area located in front of said rear seat, and behind said front seat; and said front and rear floor areas extending generally between spaced sidewalls of said vehicle assembly; said method comprising:

providing a backing fabric having one dimension substantially equal the length of said interior vehicle floor;

tufting pile forming yarn into said backing fabric in a first yarn density to form a front floor carpet section of said pile carpet which corresponds to said front floor area of said vehicle interior floor;

tufting pile forming yarn into said backing fabric in a second yarn density to form a rear floor carpet section of said pile carpet which corresponds to said rear floor area of said vehicle interior floor;

tufting said carpet sections so that said second yarn density of said rear floor carpet section is less than said first yarn density of said front floor section; and

selecting said first and second yarn densities in accordance with varying passenger traffic in each said carpet section and in a manner that said varying yarn densities are relatively unnoticeable so that an economical carpeted vehicle floor is provided without sacrificing wearability and aesthetic appearances.

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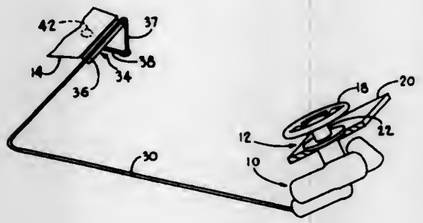
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5,605,109

POWER STEERING SYSTEM

Timothy W. Merten, Winnebago County, and James M. Hundertmark, Fond du Lac County, both of Wis., assignors to Performance 1 Marine, Inc., Overland Park, Kans.

Filed Apr. 17, 1995, Ser. No. 422,894
Int. Cl.[6] B63H *25/22*
U.S. Cl. 114—150 **6 Claims**



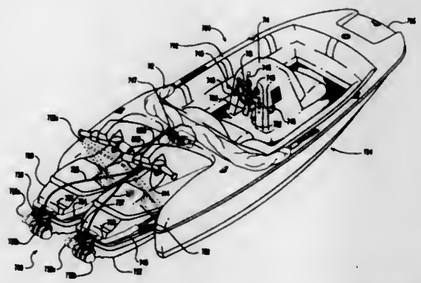
1. In a power steering system for a marine vehicle having a propulsion unit pivotal about a steering axis, and including an operator actuable steering helm and a steering member connected to said propulsion unit, which comprises: power steering assist means including a hydraulic fluid cylinder-piston assembly having a reciprocally mounted piston thereby defining a chamber to either side of said piston to accommodate hydraulic fluid, and actuated in response to steering actuation at said steering helm; hydraulic fluid source means for delivery of pressurized hydraulic fluid to said cylinder-piston assembly; first valve means disposed in said cylinder-piston assembly biased to a closed position for a no steering change position and adapted to establish fluid communication between said cylinder-piston assembly and said fluid source means; means to selectively actuate said first valve means to establish said fluid communication upon steering actuation; actuatable input means to effect actuating input to said power steering assist means upon actuation at said steering helm; actuatable output means to effect common movement of said steering member in response to steering actuation of said steering helm to pivot said propulsion unit about said steering axis; and means for maintaining anti-feed back upon a failure in the fluid source means including second valve means to establish fluid communication between said fluid source means and said chamber to either side of said piston thereby maintaining said chamber substantially full of hydraulic fluid.

5,605,110

MULTI-USE WATERCRAFT

Dennis W. Talbot, Salt Lake City, Utah, assignor to Aerotrans Corporation, Salt Lake City, Utah

Continuation-in-part of Ser. No. 97,080, Jul. 22, 1993, Pat. No. 5,353,730. This application Oct. 11, 1994, Ser. No. 321,539
The portion of the term of this patent subsequent to Oct. 11, 2011, has been disclaimed.
Int. Cl.[6] B63B *7/04*
U.S. Cl. 114—248 **17 Claims**



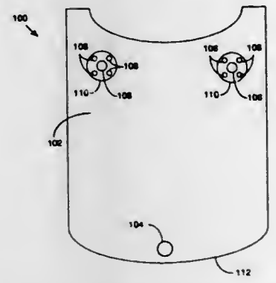
1. A watergoing vessel, intended to float and be propelled in a water medium, comprising:
at least one personal watercraft means for powering said watergoing vessel, said at least one personal watercraft means comprising:
a bow, a stern, a starboard, and a port, said bow having a hull configuration thereat, the hull configuration of said at least one personal watercraft means having a bottom, the bow and the stern having a keel configuration therebetween, the keel configuration having a means for intaking a stream of water and having a means, aft of said water intaking means, for outputting said stream of water;
jet pump means for pumping said stream of water from said intake means to said output means so as to impel said at least one personal watercraft means while floating in the water medium;
power plant means for driving the jet pump means;
handlebar means for controlling the angle of the outputting means with respect to both the port and the starboard of said at least one personal watercraft means so as to control the impelled direction of said at least one personal watercraft means; and
means for controlling the jet pump means so as to vary the flow rate of said water stream exiting the outputting means and to control the propulsion rate of said at least one personal watercraft means in the water medium,
boat means, powered by said at least one personal watercraft means, for carrying cargo comprising:
a bow, a stern, a starboard, a topside comprising a cargo area and a port, said stern of said boat means comprising:
at least one docking means, respectively for said at least one personal watercraft means, for slidably receiving and at least in part circumscribing a portion of the hull configuration of said at least one personal watercraft means, said at least one docking means comprising:
releasable attachment means for holding the hull configuration of said at least one personal watercraft means within said docking means;
means for maintaining the intake means of said at least one personal watercraft means in the water medium while the watergoing vessel is underway; and
a recessed area in the stern of the boat means, and
an adapter means, situated on an external surface of the recessed area, for cushioning, and making an interface of conforming fit between the hull configuration of said at least one personal watercraft means and the recessed area, and wherein the adapter means is above the bottom of the hull configuration of said at least one personal watercraft means;
steering means for a user to control the impelled direction of the boat means in the water medium, comprising:
a user steering interface; and
a steering linkage means, connected to the handlebar means of said at least one personal watercraft means and also connected to the user steering interface, for moving the handlebar means of said at least one personal watercraft means so as to control the angle of the outputting means of said at least one personal watercraft means;
throttle means for a user to control the jet pump means of said at least one personal watercraft means, comprising:
a user throttle interface; and
a throttle linkage means, connected to the means for controlling the jet pump means of said at least one personal watercraft means and also connected to the user throttle interface, for moving the means for controlling jet pump means of said at least one personal watercraft means via the user throttle interface.

5,605,111

SUBMERSIBLE AQUATIC SLED

Thomas G. Culpepper, P.O. Box 1976, Indiantown, Fla. 34956

Filed Dec. 19, 1995, Ser. No. 574,996
Int. Cl.[6] B63C *11/46*
U.S. Cl. 114—315 **10 Claims**



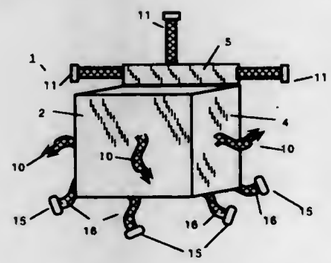
1. A submersible aquatic sled for towing a diver in water with a tow rope, comprising:
a substantially planar surface having a distal end and a proximal end, the proximal end of the planar surface has extended arms on either side of the proximal end which provide arm supports;
tow rope attachment means at tile distal end of tile planar surface for securing the submersible aquatic sled to a tow rope; and
steering means in the planar surface, the steering means capable of varying the orientation of the planar surface such that the submersible aquatic sled can be controllably steered from a surface towing position to an underwater towing position, and the steering means are located away from the proximal edge of the planar surface a sufficient distance to allow a diver's forearms to be supported by the planar surface while the steering means are being manipulated;
whereby a diver can steer the submersible aquatic sled such that the submersible aquatic sled can be towed at surface level or underwater.

5,605,112

STORAGE BAG HAVING TIE-DOWN STRAPS FOR BOATS AND METHOD OF USE THEREOF

Michelle Schuman, P.O. Box 242, Sutton, Ak. 99674

Filed Aug. 31, 1995, Ser. No. 520,892
Int. Cl.[6] B63B *17/00*
U.S. Cl. 114—343 **11 Claims**



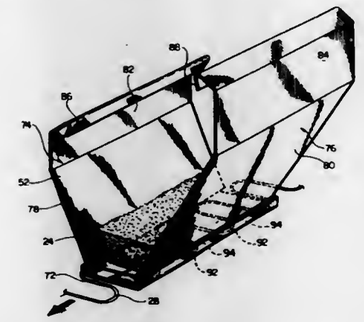
1. A storage bag for raftS, and boats comprising:
a) a front panel, being generally rectangular and having a top edge and a bottom edge;
b) a back panel, being generally rectangular and having a top edge and a bottom edge;
c) a pair of oppositely disposed side panels, also being generally rectangular, each side panel having a top edge and a bottom edge, and being fixedly attached to said front panel and said back panel, thereby forming a box-like structure;
d) a bottom panel, being fixedly attached to the bottom edges of said front, back and side panels;
e) a top panel, being generally rectangular, and having a back edge, said top panel being hingibly attached to the top edge of said back panel;
f) means for sealably closing the top edges of said front and back panels;
g) a pair of webbing strips, fixedly attached to said bottom panel and running parallel to said front and back panels, each webbing strip having two ends whereby each end of said pair of webbing strips extending outwardly from said bottom panel at least four inches, each webbing strip further including a D-ring, fixedly attached to each of the ends of said webbing strips; and
h) a third webbing strip, fixedly attached to said bottom panel and running perpendicular to said front and back panels, said third webbing strip having two ends extending outwardly from said bottom panel, at least four inches, said third webbing strip further including a D-ring, fixedly attached to each of the ends of said third webbing strip.

5,605,113

FEED CONVEYOR

Michael E. Krehl, Corunna, Ind., assignor to CTB, Inc., Milford, Ind.

Filed Aug. 22, 1995, Ser. No. 517,813
Int. Cl.[6] A01K *5/02;* **B65G** *19/04*
U.S. Cl. 119—57.92 **13 Claims**



1. A feed conveyor for delivering feed to animals or the like, said feed conveyor comprising: a tough member for holding the feed which is to be delivered to the animals or the like; a spring element disposed within the trough member for moving the feed through the trough member when said spring element is moved along the trough, said spring element being a substantially planar winding, tortuous member which generally lies on a bottom of the trough member; and a driving mechanism for moving the spring element along the bottom of the trough member to selectively move substantially all of the feed located in the trough member through the trough member and deliver the feed to said animals or the like.

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5,605,114

ABSORBENT MATERIAL COMPRISING DRIED VEGETABLE PULP AND ITS USE FOR TREATING ORGANIC WASTE

Willem Peltenburg, Hoeven; Bastiaan Walraven; Diederick Meyer, both of Roosendaal, and Harald Teeuwen, Klundert, all of Netherlands, assignors to Coöperatie Cosun U.A., Breda, Netherlands

Filed Apr. 12, 1995, Ser. No. 420,778
Int. Cl.[6] A01K *1/015*
U.S. Cl. 119—171 **17 Claims**

1. Absorbent material comprising dried extraction pulp of a vegetable material extracted by means of water, said absorbent material produced by an extraction sequence comprising cutting of the vegetable material,

swelling of the cut material in water;

extracting the solutes from the swollen material with a stream of water without squeezing,

draining the extracted material to obtain wet pulp,

pressing the wet pulp to presspulp, and

drying the presspulp to dried extraction pulp, either with steam or hot air,

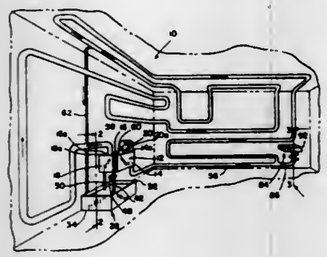
wherein the absorbent material comprises at least 50% of dried extraction pulp.

5,605,115

TUBULAR AQUARIUM SYSTEM

Stephen M. Dale, 2592 Bay Settlement, Green Bay, Wis. 54311

Filed Apr. 7, 1995, Ser. No. 418,940
Int. Cl.[6] A01K *63/00*
U.S. Cl. 119—249 **14 Claims**



1. An aquarium system having water therein for displaying marine life, comprising:

a reservoir for receiving the water therein, the water in the reservoir defining a reservoir water level;

a tank positioned above the reservoir for receiving water therein, the water in the tank defining a tank water level such that the reservoir water level is below the tank water level;

a fish display tube having first and second inlet ends, each inlet end of the fish display tube communicating with the water in the tank;

a syphon including a return tube having a first end coupled to and communicating with the fish display tube, and a second end communicating with the reservoir such that the second end of the return tube draws water from the tank, through the fish display tube and the return tube, into the reservoir; and

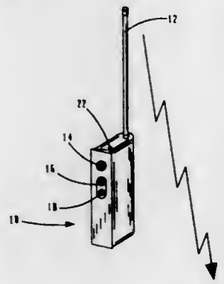
means for pumping water from the reservoir into the tank to prevent the overflow of water in the reservoir.

5,605,116

ELECTRONIC ANIMAL TRAINING SYSTEM

J. S. Kim; Harry Currie, both of Dallas; Moon Choi, Plano, all of Tex., and H. Y. So, Incheon, Rep. of Korea, assignors to D.T. Systems, Inc., Dallas, Tex.

Filed Sep. 1, 1994, Ser. No. 299,443
Int. Cl.[6] A01K *15/02*
U.S. Cl. 119—720 **4 Claims**



1. A dog training system, comprising:

A. a transmitter unit including:

a transmitter housing,

a microphone mounted on the transmitter housing for receiving a voice training command,

switch means mounted on the transmitter housing,

a first transmitting circuit mounted within the transmitter housing and responsive to the switch means for transmitting a shock triggering signal,

a second transmitting circuit mounted within the transmitter housing and responsive to the microphone and the switch means for transmitting a voice training command signal,

said first and second transmitting circuits operating on separate channels and therefore adapted for simultaneous operation, and

antenna means mounted on the transmitting housing for transmitting signals generated by the first and second transmitting circuits; and

B. a receiver unit including:

at least one shocking electrode,

means for mounting the shocking electrode on a dog to be trained with the shocking electrode in contact with a predetermined part of the body of the dog,

a receiver housing supported on the mounting means,

a first receiver circuit mounted within the receiver housing for generating a shocking signal through the shocking electrode in response to receipt of a shock triggering signal from the transmitter unit,

a second receiver circuit mounted within the receiver housing for generating an output signal in response to receipt of the voice training command signal from the transmitter unit,

a speaker mounted on the receiver housing and responsive to the output of the second receiver circuit for generating a voice command reproduction of a voice command received by the microphone on the transmitter unit, and

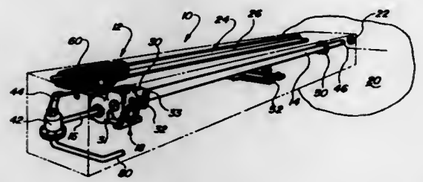
a receiver antenna mounted on the mounting means and operably connected to the first and second receiver circuits for transmitting received signals thereto.

5,605,117

ARTICULATING SOOTBLOWER

Thomas E. Moskal, Pickerington, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Nov. 21, 1994, Ser. No. 342,868
Int. Cl.[6] F22B *37/18*
U.S. Cl. 122—379 **19 Claims**



1. An articulating, retractable sootblower for cleaning heat exchanger surfaces within a large scale combustion device including a wall having an access port defined therein, said sootblower comprising:

a frame located exteriorly of the device;

a lance tube defining a lance axis and having at least one nozzle for projecting a blowing medium therethrough, said nozzle directing the blowing medium against the heat exchanger surfaces;

supply means for supplying the blowing medium to the lance tube for discharge therefrom;

a carriage assembly supported by said frame, said carriage assembly being coupled to said lance tube and including a translational drive means for causing translational movement of said carriage assembly and said lance tube along said frame resulting in insertion and retraction of said lance tube into and out of the combustion device, said carriage assembly also including drive means for causing rotational movement of said lance tube about said lance axis; and

articulating means for articulation of said lance tube to vary the angular orientation of said lance tube with respect to the heat exchanger surfaces, said articulating means enabling said carriage assembly to cause said lance tube to be advanced into and withdrawn from the interior of the combustion device along a plurality of differently oriented axes as the blowing medium is discharged resulting in an increased area of cleaning coverage.

5,605,118

METHOD AND SYSTEM FOR REHEAT TEMPERATURE CONTROL

Brian T. Sinn, Williamsport; Michael G. Alliston, Lewisburgh; Kulwarn S. Parmar; Leonid S. Blokh, both of Williamsport; Song Wu, Montoursville; Brian G. Martin, and Matti Rautanen, both of Williamsport, all of Pa., assignors to Tampella Power Corporation, Williamsport, Pa.

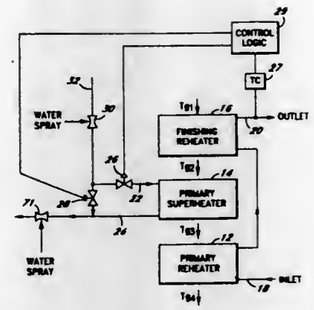
Filed Nov. 15, 1994, Ser. No. 339,831
Int. Cl.[6] F22G *5/00*
U.S. Cl. 122—479.1 **15 Claims**

1. A method for controlling rebeater steam temperature, comprising the steps of:

(a) providing a convection pass comprising a primary rebeater section, a secondary reheater section upstream of the primary rebeater section relative to a direction of flow of a combustion gas in the convection pass, and a non-reheater heat exchanger;

(b) positioning the non-reheater heat exchanger between the primary and secondary reheater sections; and

(c) positioning a second non-reheater heat exchanger outside the convection pass;



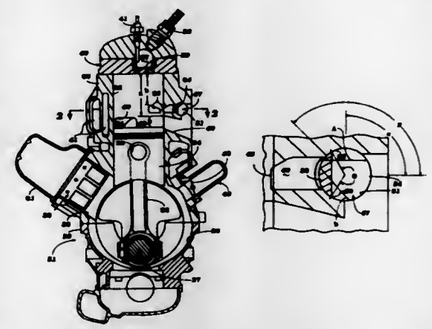
(d) selectively adjusting a flow of a fluid through the non-rebeater beat exchanger, and in response to the selective adjustment controlling reheater steam temperature.

5,605,119

EXHAUST CONTROL VALVE FOR ENGINE

Tatsuyuki Masuda; Kousei Maebashi; Michihisa Nakamura, and Hidenori Suhara, all of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Division of Ser. No. 173,208, Dec. 23, 1993, Pat. No. 5,410,993. This application Jan. 30, 1995, Ser. No. 380,802
Claims priority, application Japan, Dec. 25, 1992, 4-357766
Int. Cl.[6] F02B *75/02*
U.S. Cl. 123—65 PE **5 Claims**



1. An exhaust control valve for an internal combustion engine comprised of a member forming an exhaust passage, a cylindrical bore intersecting said exhaust passage and extending across both the width and height of said exhaust passage, a valve element having cylindrical end portions journalled in said bore on opposite sides of the width of said exhaust passage for rotation between first and second positions, said valve element having a valving portion formed between said end portions and movable to a non-obstructing position within a portion of said bore intersecting said exhaust passage when said valve element is in its first position for unrestricted flow through said exhaust passage and an obstructing position extending completely across said exhaust passage when in said second position, said valving portion having generally the shape of a cylindrical segment complementary to said bore portion, and a surface discontinuity formed in said cylindrical section to form a scraping edge for clearing of both sides of the height of said bore portion upon rotation of said valve element.

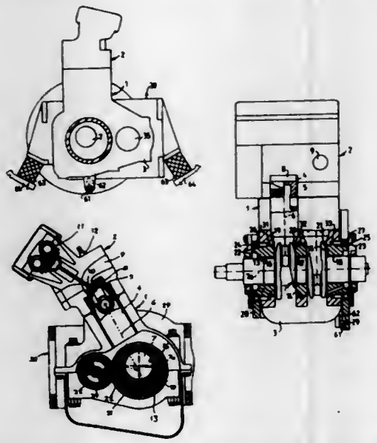
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5,605,120

METHOD AND A DEVICE FOR CHANGING THE COMPRESSION RATIO IN AN INTERNAL COMBUSTION ENGINE

Lars Hedelin, Djursholm, Sweden, assignor to Fanja Ltd., St. Heller, United Kingdom

PCT No. PCT/SE93/00597, § 371 Date Feb. 9, 1995, § 102(e) Date Feb. 9, 1995, PCT Pub. No. WO94/00681, PCT Pub. Date Jan. 6, 1994
PCT Filed Jun. 30, 1993, Ser. No. 362,444
Claims priority, application Sweden, Jun. 30, 1992, 9202018
Int. Cl.[6] F02B *75/04;75/36*
U.S. Cl. 123—78 C **9 Claims**



1. In a process for setting the compression ratio of an internal combustion engine by changing the relative distance between the axis of rotation of the engine crankshaft and the engine cylinder head surface delimiting the end of each cylinder in the engine, the relative displacement between the rotational axis of the crankshaft and the cylinder head being effected along a predetermined path that has components both parallel to a plane containing the longitudinal axis of each of the engine cylinders and perpendicular to said plane;

the improvement comprising holding the crankshaft with its rotational axis stationary in relation to the engine mountings and the vehicle in which the engine is mounted, and displacing the cylinder head along the predetermined path together with the cylinder.

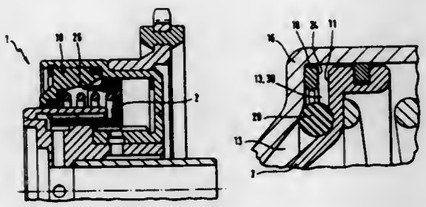
5,605,121

DEVICE FOR ADJUSTING VALVE TIMING IN AN INTERNAL COMBUSTION ENGINE

Martin Scheidt, Adelsdorf; Andreas Strauss, Herzogenaurach, and Eduard Golovatai-Schmidt, Nuremberg, all of Germany, assignors to Ina Walzlager Schaeffler KG, Germany

Filed Dec. 11, 1995, Ser. No. 570,132
Claims priority, application Germany, Feb. 27, 1995, 195 06 751.7
Int. Cl.[6] F01L *1/34;1/04*
U.S. Cl. 123—90.17 **11 Claims**

1. A device (1) for adjusting valve timing in an internal combustion engine, disposed within a control gear of at least one camshaft on a drive pinion (3) which is in driving relationship with this camshaft, said device (1) comprising an adjusting piston (2) which is axially displaceable by a hydraulic medium and whose first and second end faces (11, 12) delimit a first and a second pressure chambers (13,14) while a peripheral surface (15) of the adjusting piston (2) bears sealingly against a housing (16) which delimits the first and the second pressure chambers (13, 14) radially outwards, the adjusting piston (2) comprising two oppositely oriented helical gear sections, (6,7) and a first (6) of said two helical gear sections cooperates with a corresponding gear (5) of a driving element (4) connected to the drive pinion (3), while a second (7) of said two helical gear sections cooperates with a gear (8) of a driven element (9) connected to the camshaft, a stop element (18,19) or an end portion of the housing being arranged in an axially outer portion of each of the two pressure chambers (13,14) to define a position of maximum displacement of the camshaft, characterized in that the stop element (18) or the end portion of the housing of the first pressure chamber (13), towards which the adjusting piston (2) is displaced on starting of the engine, and/or the first end face (11) of the adjusting piston (2) facing this pressure chamber (13) comprises a hydraulic and/or pneumatic end position damping means for the adjusting piston (2).

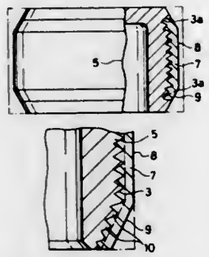


5,605,122

TAPPET IN AN INTERNAL COMBUSTION ENGINE AND A METHOD OF MANUFACTURING IT

Nobuo Hara, Fujisawa, and Tatsuo Kanzaki, Yamato, both of Japan, assignors to Fuji Oozx Inc., Fujisawa, Japan

Filed May 6, 1996, Ser. No. 643,747
Int. Cl.[6] F01L *1/16*
U.S. Cl. 123—90.51 **4 Claims**



1. A tappet in an internal combustion engine, the tappet comprising a core material having a helical groove on an outer circumferential surface and a wear resistant coating layer which covers the outer circumferential surface of the core material, an end of the outer circumferential surface being chamfered, characterized in that:

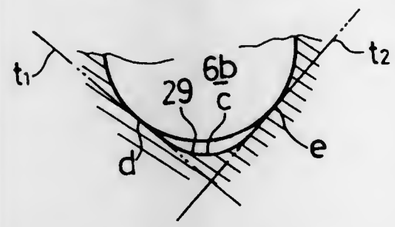
in the vicinity of the end of the outer circumferential surface, said helical groove gradually becomes smaller in diameter toward the end, thereby preventing peaks of the helical groove from being exposed over an outer circumferential surface of said coating layer.

5,605,123

INTAKE PORT STRUCTURE IN INTERNAL COMBUSTION ENGINE

Ichirou Ohmura; Tobru Amemiya, and Naomi Kurosaki, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 2, 1996, Ser. No. 582,063
Claims priority, application Japan, Jan. 9, 1995, 7-001558
Int. Cl.[6] F02B *31/00*
U.S. Cl. 123—188.14 **22 Claims**



1. An intake port structure in an internal combustion engine, comprising:

an intake port having an axis which is inclined with respect to a plane perpendicular to an axis of a cylinder bore in which a piston is slidably received, and said intake port axis is eccentric with respect to said axis of said cylinder bore, said intake port being connected to a combustion chamber through at least one intake opening which is opened and closed by at least one intake valve, wherein

said intake port has a deflecting recess formed in a wall surface on a side of said cylinder bore in a vicinity of the at least one intake opening, said deflecting recess for deflecting a flow of intake air flowing into the combustion chamber into a direction along the plane perpendicular to the axis of the cylinder bore.

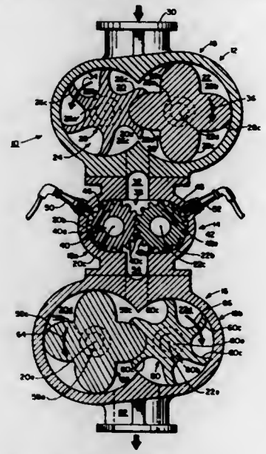
5,605,124

ROTARY SCREW INTERNAL COMBUSTION ENGINE

Christopher K. Morgan, 2624 Tom Dr., Slaughter, La. 70777

Filed Nov. 6, 1995, Ser. No. 554,091
Int. Cl.[6] F02B *53/00*
U.S. Cl. 123—222 **18 Claims**

1. A modular rotary screw internal combustion engine having at least three separate modules comprising:



a. a compressor module comprising a rotary screw compressor section for receiving and compressing a mixture of air and fuel, said rotary screw compressor section having a pair of intermeshing screw compressor rotors rotatably mounted in a compressor housing, each of said pair of intermeshing screw compressor rotors being rigidly connected to a rotatable shaft, each of said rotatable compressor shafts being parallel, the first compressor shaft of said pair of rotatable compressor shafts having a compressor drive means connected thereto for rotating said first compressor shaft, the second compressor shaft of said pair of rotatable compressor shafts being adapted to rotate in the opposite direction from said first compressor shaft when said first compressor shaft is rotated by said drive means,

b. a combustion module comprising a rotary positive displacement pump section for receiving said compressed air and fuel mixture from said rotary screw compressor section and pumping said mixture of compressed air and fuel therethrough, said pump section having igniting means for igniting said mixture of compressed air and fuel inside of said pump section to cause constant volume combustion of said air and fuel mixture inside said pump section, said rotary positive displacement pump section having a pair of intermeshing pump rotors rotatably mounted in a pump housing, each of said pair of intermeshing pump rotors being rigidly connected to a rotatable shaft, each of said rotatable pump shafts being parallel, the first pump shaft of said pair of rotatable pump shafts having a pump drive means connected thereto for rotating said first pump shaft, the second pump shaft of said pair of rotatable pump shafts being adapted to rotate in the opposite direction from said first pump shaft when said first pump shaft is rotated by said drive means, and

c. a power module comprising rotary screw expander section for receiving said ignited mixture of compressed air and fuel discharged from said pump section and permitting said ignited mixture of air and fuel to expand through said rotary screw expander section to rotate said rotary screw expander, said rotary screw expander section having a pair of intermeshing screw expander rotors rotatably mounted in an expander housing, each of said pair of intermeshing screw expander rotors being rigidly connected to a rotatable shaft, each of said rotatable expander shafts being parallel, the first expander shaft of said pair of rotatable expander shafts having an expander drive means connected thereto, said expander drive means being driven by said gases expanding in said expander section, the second expander shaft of said pair of rotatable expander shafts being adapted to rotate in the opposite direction from said first expander shaft, said expander drive means being connected to said pump section and to said rotary screw compressor section to rotate said rotary screw compressor shaft and said pump shaft.

5,605,125

DIRECT FUEL INJECTION STRATIFIED CHARGE ENGINE

Yasuhito Yaoita, Yugen-Kaisha Royal Portrait 2-37-4, Kouenji Minami, Suginami-ku, Tokyo, 166, Japan

Filed Feb. 6, 1995, Ser. No. 383,844
Int. Cl.[6] F02B *3/00*
U.S. Cl. 123—275 **5 Claims**

1. A direct fuel injection stratified charge engine comprising:

a cylinder block defining a cylinder;

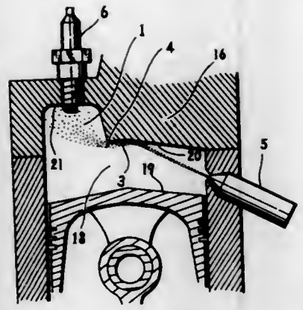
a piston located in said cylinder;

a cylinder head on said cylinder block; said cylinder head defining a squish surface facing said piston, and a pocket defining a main combustion chamber facing said piston;

a spark plug in said main combustion chamber, wherein the greatest spacing between electrodes of the spark plug and any portion of said pocket is less than the radius of said cylinder; and

a fuel injector disposed in one of said head and block, said fuel injector adapted to direct a stream of fuel to obliquely deflect

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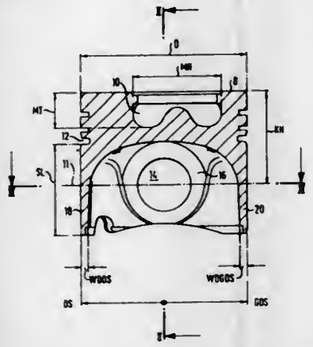
off a surface of said cylinder head adjacent said main combustion chamber and then into said main combustion chamber.

5,605,126

PISTON FOR INTERNAL COMBUSTION ENGINES, ESPECIALLY DIESEL ENGINES

Lothar Hofmann, Neumarkt/Opf.; Rudolf Schwarz; Andreas Deuber, both of Nürnberg, and Karl-Heinz Obermeier-Wagner, Fürth/Bay., all of Germany, assignors to Alcan Deutschland GmbH, Gottingen, Germany

Filed Feb. 6, 1996, Ser. No. 596,013
Int. Cl.[6] F02F *3/26*
U.S. Cl. 123—276 **8 Claims**



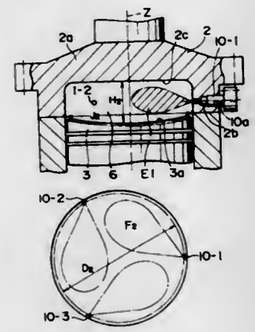
1. A piston for internal combustion engines, especially diesel engines, including
a piston diameter D,
a compression height KH,
a combustion chamber recess (**10**) with a diameter MN and a depth MT,
a pin bore (**14**) with a diameter B,
a radially inner spacing AA of the piston pin bosses above the piston pin axis,
a piston pin length SA,
a length SL of the piston body beneath the lowermost piston ring groove (**12**),
a body wall thickness WDDS(X) on the thrust side in the connecting rod pivoting plane X,
a body wall thickness WDGDS(X) on the counter-pressure side in the connecting rod pivoting plane X,
the body wall thicknesses WDDS(X) and WDGDS(X) continuously decreasing in an angular area α between the connecting rod pivoting plane X and the piston pin plane Y from Y in the direction of X, and
the mentioned dimensions lying within the following ranges:
KH=(0.48 to 0.63)×D
MT=(0.16 to 0.35)×D
MN=(0.40 to 0.62)×D
B=(0.29 to 0.41)=D
AA=(0.24 to 0.43)×D
SA=(0.70 to 0.86)×D
SL=(0.25 to 0.45)×D
WDDS (X)=(0.030 to 0.065)×D
WDGDS (X)=(0.023 to 0.047)×D, and
the body wall thicknesses in the angular area α decreasing from the piston pin plane Y in the direction of the connecting rod pivoting plane X according to the following dimension rules:
from (0.09 to 0.06)×D to (0.065 to 0.030)× D on the thrust side, and
from (0.09 to 0.06)×D to (0.047 to 0.023)× D on the counter-thrust side.

5,605,127

CYLINDER COVER FOR DIESEL ENGINE

Sadao Yoshihara; Masahiko Okabe; Tooru Nakamura; Katsuhiko Sakaguchi, and Nobuyuki Kunihiro, all of Kobe, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 25, 1995, Ser. No. 449,730
Claims priority, application Japan, May 27, 1994, 6-136645
Int. Cl.[6] F02B *3/00*
U.S. Cl. 123—299 **3 Claims**



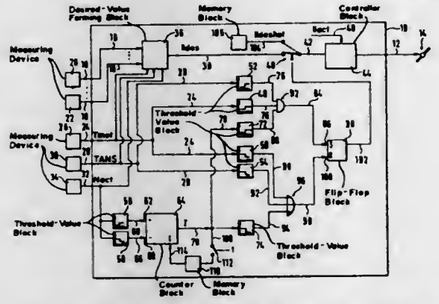
1. In a diesel engine in which a plurality of fuel valves are mounted in a cylinder cover to directly inject fuel into a combustion chamber, a cylinder cover wherein said plural fuel valves are mounted in a side wall of said cylinder cover so that said plural fuel valves are arranged in the circumferential direction about said side wall and the centerline of each of said plural fuel valves is substantially at right angles to the cylinder centerline, wherein one of said fuel valves includes a needle valve seat portion (S) and a spherical surface (**10***h*) which define a volume portion (**10***i*) therebetween and a nozzle hole is formed so as to be adjacent to a small-diameter portion (d) of said seat portion and smaller than a hemisphere with a diameter of d.

5,605,128

METHOD AND ARRANGEMENT FOR IDLE ADJUSTMENT OF AN INTERNAL COMBUSTION ENGINE

Claus-Dieter Nusser, Schwieberdingen, and Helmut Sperling, Gifhorn, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Jun. 7, 1995, Ser. No. 478,773
Claims priority, application Germany, Sep. 19, 1994, 44 33 300.5
Int. Cl.[6] F02M *3/00*
U.S. Cl. 123—339.24 **11 Claims**



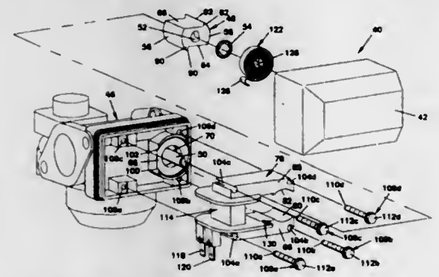
1. A method for adjusting the idle speed of an internal combustion engine equipped with an adjusting device for adjusting the idle speed, the method comprising the steps of:
detecting operating variables of the engine including engine temperature (Tmot), intake-air temperature (TANS) and engine speed (Nact);
evaluating said operating variables in a microcomputer to determine an operating state of the engine defined by an oil temperature greater than an oil temperature threshold above which an oil pressure can occur which is too low to effect an improved cooling of the engine; and,
generating a drive signal to drive said adjusting device to increase the idle speed when said operating state is determined to be present.

5,605,129

ELECTRICALLY CONTROLLED ACTUATOR APPARATUS AND METHOD

David W. Strombeck, Plymouth, and Michael C. Miller, Coon Rapids, both of Minn., assignors to Onan Corporation, Minneapolis, Minn.

Filed Nov. 29, 1994, Ser. No. 346,534
Int. Cl.[6] F02D *41/00*
U.S. Cl. 123—361 **29 Claims**



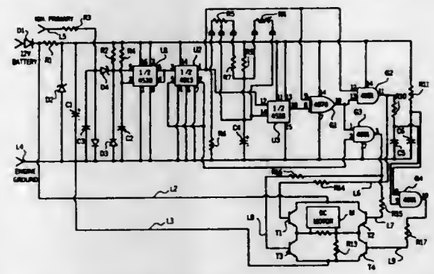
1. An electrically controlled actuator, comprising:
a rotor, detachably mounted on a rotating shaft through a center bore of the rotor, having at least two symmetric curved outer surfaces, at least two side surfaces, and at least two symmetric tip portions extended from the curved outer surfaces at two leading edges between the side surfaces and the curved outer surfaces;
a stator, disposed around the rotor, having at least two symmetric curved inner surfaces corresponding to the curved outer surfaces of the rotor, an air gap being defined between the inner surfaces of the stator and the outer surfaces of the rotor;
a fluid flow plate being mounted on the rotating shaft, so that the fluid flow plate rotates with the rotor, the plate being further disposed in a fluid passageway, so that the plate closes the passageway when the rotor is in an unactuated position, and the plate opens the passageway when the rotor is in an actuated position;
a spiral spring being detachably mounted on one end of the rotating shaft proximate to the rotor, the spring being increased in tension when the rotor rotates from the unactuated position to the actuated position, the spring opposing rotation of the rotor, so that the rotor is forced to rotate back to the unactuated position by the spring when the actuator is unactuated; and
wherein the stator includes means for mounting the stator to a valve body which defines the fluid passageway, the mounting means includes a plurality of screw captive slots disposed on an outer surface of the stator, and a plurality of screws received in the screw captive slots.

5,605,130

ELECTRONIC GOVERNOR HAVING INCREASED DROOP AT LOWER SELECTED SPEEDS

Richard A. Dykstra, Cedar Grove, and Robert K. Mitchell, Brookfield, both of Wis., assignors to Briggs & Stratton Corporation, Wauwatosa, Wis.

Continuation-in-part of Ser. No. 228,288, Apr. 15, 1994, Pat. No. 5,524,588. This application Apr. 2, 1996, Ser. No. 630,871
Int. Cl.[6] F02D *41/00*
U.S. Cl. 123—361 **25 Claims**



1. A speed governor that controls the actual speed of a device, comprising:
input means for receiving a periodic signal indicative of the actual speed of the device;
first means for generating a pulsed speed signal that is functionally related to said periodic signal;
second means for generating a pulsed reference signal, including means for selecting a reference speed for said device;
means for reducing said reference speed by a speed droop to yield a new reference speed when a load is applied to said device;
means for increasing said speed droop when a lower reference speed is selected using said selecting means;
means for comparing said pulsed speed signal with said pulsed reference signal, and for generating a pulsed error signal that is functionally related to a difference between said speed signal and said reference signal; and
means for changing the speed of the device as a function of said error signal.

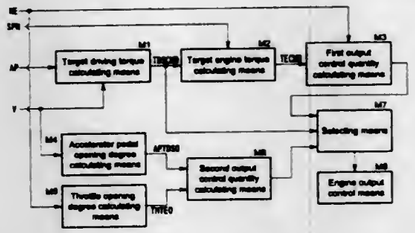
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5,605,131

ENGINE OUTPUT CONTROL SYSTEM FOR VEHICLE

Tetsuya Ohno; Toru Kitamura; Kenichirou Ishii, and Toshiaki Hirota, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 20, 1996, Ser. No. 603,341
Claims priority, application Japan, Feb. 21, 1995, 7-032188
Int. Cl.[6] F02D 7/00
U.S. Cl. 123—399 3 Claims



1. An engine output control system for a vehicle for controlling engine output by electrically regulating throttle opening degree in accordance with accelerator opening degree, comprising:

a target driving torque calculating means for calculating target driving torque based on accelerator opening degree and vehicle speed;

a target engine torque calculating means for calculating target engine torque based on the target driving torque and shift position;

a first output control quantity calculating means for calculating first output control quantity of the engine based on the target engine torque and the number of revolutions of the engine;

an accelerator opening degree calculating means for calculating the accelerator opening degree at which the target driving torque is equal to or smaller than a first predetermined value, based on the vehicle speed;

a throttle opening degree calculating means for calculating the throttle opening degree at which the engine torque is equal to or smaller than a second predetermined value, based on the number of revolutions of the engine;

a second output control quantity calculating means for calculating a second output control quantity of the engine based on the accelerator opening degree calculated in the accelerator opening degree calculating gears and the throttle opening degree calculated in the throttle opening degree calculating means;

a selecting means for selecting one of the first and the second output control quantity, based on the target driving torque; and

an engine output control means for controlling the engine output based on the selected one of the first and second output control quantity.

5,605,132

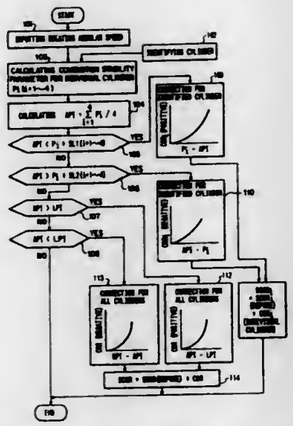
CONTROL METHOD AND CONTROLLER FOR ENGINE

Toshio Hori; Takeshi Atago, both of Katsuta; Nobuo Kurihara, Hitachiota; Hiroshi Kimura, and Kimio Hoshi, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Japan

Continuation of Ser. No. 234,156, Apr. 28, 1994, abandoned.
This application Dec. 11, 1995, Ser. No. 570,244
Claims priority, application Japan, Apr. 27, 1993, 5-100711; Aug. 6, 1993, 5-195823
Int. Cl.[6] F02D 41/04; F02P 5/15
U.S. Cl. 123—419 13 Claims

1. A control method for an engine comprising the steps of:

(a) determining combustion state parameters indicating a combustion state in each cylinder of said engine based on fluctuation of rotational speed for an explosion cycle of the respective cylinders;



(b) determining an average combustion state parameter from said combustion state parameters determined for each of the cylinders in order to get information on the overall combustion state;

(c) judging a combustion state in each of the cylinders by comparing said average combustion state parameter with the combustion state parameter determined for each of the cylinders; and

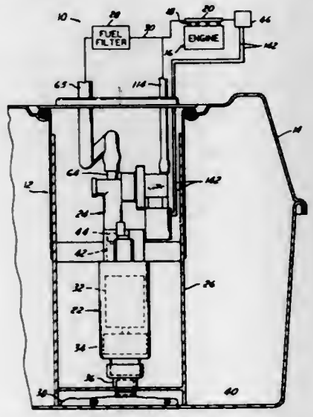
(d) controlling the combustion state in each of the cylinders based on results of the judgment.

5,605,133

FUEL RAIL PRESSURE CONTROL

Charles H. Tuckey, Cass City, Mich., assignor to Walbro Corporation, Cass City, Mich.

Filed Nov. 20, 1995, Ser. No. 560,150
Int. Cl.[6] F02M 37/04; 41/00
U.S. Cl. 123—458 10 Claims



1. A no-return fuel system for an internal combustion engine which comprises:

(a) a fuel pump,

(b) a main fuel line connecting the fuel pump and the engine,

(c) a pressure regulator valve in the main fuel line operable when open to bypass fuel upon pressure in the main fuel line

reaching a predetermined value, a diaphragm controlling the open and closed positions of said valve,

(d) a line connecting one side of the diaphragm with the main fuel line downsteam of the fuel pump and upstream of the engine,

(e) a normally closed bypass valve in the line, and

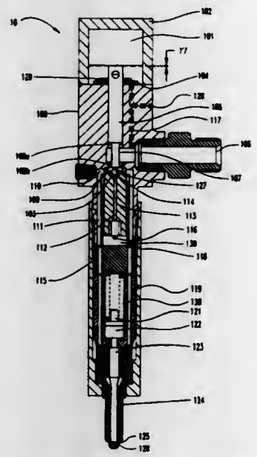
(f) a temperature responsive means adjacent the engine and operably associated with the bypass valve to open the bypass valve upon the temperature exceeding a set point to actuate the diaphragm to increase the pressure in the main fuel line to prevent vaporization of fuel in the main fuel line from reaching the engine.

5,605,134

HIGH PRESSURE ELECTRONIC COMMON RAIL FUEL INJECTOR AND METHOD OF CONTROLLING A FUEL INJECTION EVENT

Tiby M. Martin, 3836 Holly La., Waterloo, Iowa 50702

Filed Apr. 13, 1995, Ser. No. 421,616
Int. Cl.[6] F02M 41/00
U.S. Cl. 123—467 24 Claims



1. A high pressure electronic common rail fuel injector, comprising:

an injector body having a fuel inlet therein;

a first fuel chamber formed within the injector body and in fluid communication with the fuel inlet;

a second fuel chamber formed within the injector body;

a nozzle coupled to the injector body;

a first fuel passage fluidy coupling the second fuel chamber to the nozzle;

a shuttle valve seat formed in the injector body between the first and second fuel chambers;

a shuttle valve slidingly disposed within the injector body; and

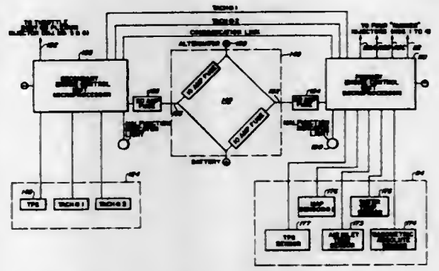
a shuttle valve actuator mechanically linked to the shuttle valve, wherein activation of the shuttle valve actuator operates to unseat the shuttle valve from the shuttle valve seat, thereby allowing fuel flow between the first and second fuel chambers, and deactivation of the shuttle valve actuator operates to seat the shuttle value on the shuttle valve seat, thereby preventing fuel flow between the first and second fuel chambers.

5,605,135

ENGINE MANAGEMENT SYSTEM

John Netherwood, 3146 N. Coronado St., Chandler, Ariz. 85224

Filed Jul. 27, 1995, Ser. No. 508,299
Int. Cl.[6] F02D 41/22
U.S. Cl. 123—479 12 Claims



1. An engine management system for controlling fuel delivery to an internal combustion engine having fuel delivery apparatus comprising:

(a) a primary engine control unit including a microprocessor, said microprocessor being connected to first sensing means to receive and process signals representative of first predetermined operating conditions and providing an output signal to said fuel delivery apparatus and a control signal indicative of the operating condition of said primary engine control unit;

(b) a secondary engine control unit including a microprocessor connected to second sensing means to receive and process signals representative of a second predetermined operating condition to send an output signal to said fuel delivery apparatus; and

(c) power switching control unit connected to a supply power and having switch means to direct said power supply to said primary engine control unit under normal operating conditions and maintaining said secondary engine control unit disconnected from power supply under said normal operating conditions, said switch means being operative to disconnect said primary engine control unit from said power supply and to connect said secondary engine control unit to power supply upon a predetermined change in said control signal from said primary engine control unit.

5,605,136

FUEL INJECTION CONTROL APPARATUS WITH INJECTOR RESPONSE DELAY COMPENSATION

Kazushi Nakashima, Nisshin, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 14, 1995, Ser. No. 572,640
Claims priority, application Japan, Jan. 18, 1995, 7-005863
Int. Cl.[6] F02D 41/34
U.S. Cl. 123—480 12 Claims

1. A fuel injection control apparatus comprising:

a fuel injector mounted on an engine to inject fuel into said engine when driven by a battery;

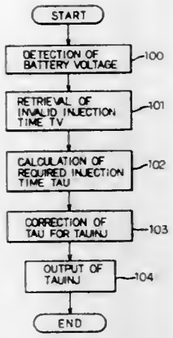
a pressure regulator operatively connected to said fuel injector to regulate a pressure of said fuel constant relative to a predetermined pressure which is independent of an intake pressure of said engine;

means for determining a required fuel injection time of said fuel injector based on operating conditions of said engine;

means for determining an invalid injection time of said fuel injector based on a voltage of said battery and a pressure difference between said pressure of said fuel and a selected pressure which is lower than an atmospheric pressure;

means for compensating said required fuel injection time by adding said invalid injection time to determine a final injection time; and

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means for driving said fuel injector by said battery during said final injection time,

wherein said selected pressure is a minimum pressure which said intake pressure becomes during operation of said engine.

5,605,137

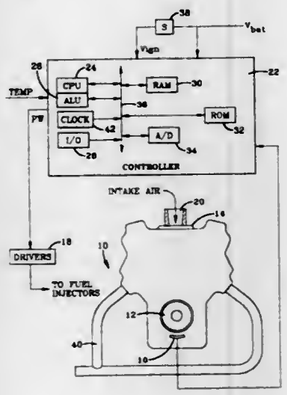
ENGINE FUEL CONTROL

John D. Priestly, Fenton; Michael J. Carman, Flint, and Steven D. Thomson, Highland, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 20, 1995, Ser. No. 575,919

Int. Cl.[6] F02D *41/06*

U.S. Cl. 123—491 **8 Claims**



1. An engine control method for controlling operation of an internal combustion engine during an engine startup period following an engine shutdown period, comprising the steps of:

generating a base engine control command;

determining the time length of the engine shutdown period;

measuring engine shutdown temperature at the beginning of the engine shutdown period;

measuring engine startup temperature at the end of the engine shutdown period;

modeling the temperature of predetermined engine parts as a predetermined function of the measured engine shutdown temperature, the measured engine startup temperature, and the determined time length;

referencing a control command adjustment as a predetermined function of the determined time length and as a predetermined function of the modeled temperature;

applying the control command adjustment to the base engine control command to adjust the base engine control command; and

controlling operation of the engine during the startup period in accord with the adjusted base engine control command.

5,605,138

METHOD AND APPARATUS FOR PROPORTIONING FUEL UPON THE STARTING OF AN INTERNAL COMBUSTION ENGINE

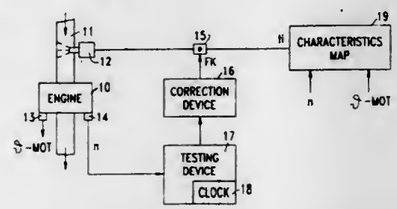
Hans Deichsel, Murr; Klaus Joos, Bietigheim-Bissingen; Ralf Klein, Bad Wimpfen, and Bernhard Erb, Möglingen, all of Germany, assignors to Robert Bosch, GmbH, Stuttgart, Germany

Continuation of Ser. No. 290,277, Aug. 15, 1994, abandoned. This application Apr. 16, 1996, Ser. No. 632,925

Claims priority, application Germany, Sep. 1, 1993, 43 29 448.0

Int. Cl.[6] F02M *51/00*

U.S. Cl. 123—491 **10 Claims**



1. A method of proportioning fuel in an air/fuel mixture to be fed to an internal combustion engine upon a starting of the engine, the method comprising the steps of:

a) sensing a speed of rotation of the engine;

b) determining whether there is an increase in the speed of rotation of the engine within a predetermined range, for as long as a test-end condition has not been satisfied;

c) changing a stored correction value for correcting an amount of fuel injected if it is determined in step b) that the increase in the engine speed of rotation is not within the predetermined range, the correction value being changed as a function of a state of operation of the engine so as to yield an air/fuel mixture which leads, upon combustion, to an increase in the speed of rotation within the predetermined range; and

d) controlling a fuel injection device by applying to the fuel injection device a fuel injection control signal derived from a combination of the stored correction value and a fuel injection quantity value.

5,605,139

TARGET TRAP

Erik G. Orwoll, Holmen, Wis., assignor to Blount, Inc., Montgomery, Ala.

Filed Oct. 17, 1994, Ser. No. 324,412

Int. Cl.[6] F41J *9/22*

U.S. Cl. 124—8 **27 Claims**

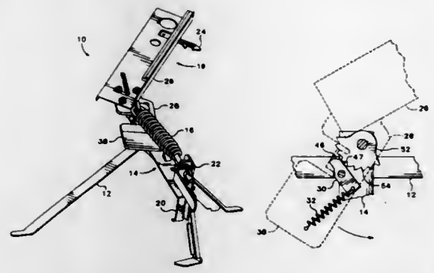
1. A target trap, comprising:

(a) a frame;

(b) an arm pivotally attached to the frame for rotational movement along an arc;

(c) a potential energy storage device for urging the arm in a first rotational direction; and

(d) a ratchet mechanism that permits the arm to rotate in the first rotational direction when the arm begins motion from a cocked position and that arrests the motion of the arm against rotation in the first rotational direction when the arm changes



rotational direction from a second direction to the first direction within an engagement zone that forms an angular part of a rotational arc of motion of the arm.

5,605,140

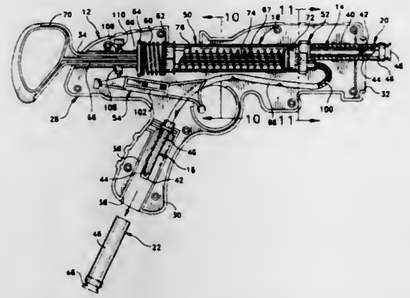
TOY GUN WITH CONCEALED SECONDARY BARREL

David R. Griffin, Morning View, Ky., assignor to Tonka Corporation, Pawtucket, R.I.

Filed Jan. 19, 1995, Ser. No. 375,290

Int. Cl.[6] F41B *11/14*

U.S. Cl. 124—59 **6 Claims**



1. A toy gun for use in combination with primary and secondary projectiles comprising:

primary barrel means for guiding said primary projectile in a first direction;

handle means extending angularly from said primary barrel means;

secondary barrel means substantially concealed within said handle means and coextending a distance therewith for guiding said secondary projectile in a second direction which is in angular relation to said first direction; and

launching means selectively communicating with said primary and secondary barrel means for selectively alternatively launching said primary projectile from said primary barrel means or said secondary projectile from said secondary barrel means, said launching means being selectively actuatable for alternatively delivering a blast of compressed air to said primary barrel means for launching said primary projectile therefrom or for delivering a blast of compressed air to said secondary barrel means for launching said secondary projectile therefrom.

5,605,141

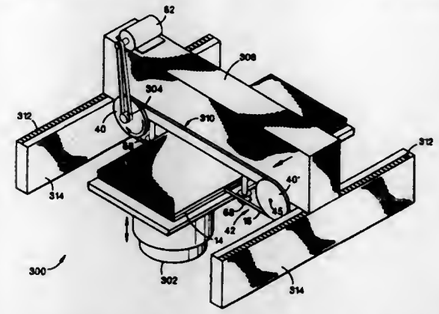
MAKING NON-VERTICAL PLANAR CUTS IN MASONRY SLABS

Alessandro Bilotta, Via Matteo Bartoli 137, 00143 Rome, Italy

Filed Mar. 31, 1994, Ser. No. 221,419

Int. Cl.[6] B28D *1/08*

U.S. Cl. 125—16.02 **31 Claims**



1. A method for making a non-vertical planar cut from one edge of a slab of masonry material, through the slab, to an opposite edge of the slab, comprising

holding a moving cutting wire in a non-vertical position,

aligning the slab with said one edge facing the cutting wire, and

causing relative motion between the slab and the cutting wire so that the cutting wire moves completely through the slab in a non-vertical cutting plane.

5,605,142

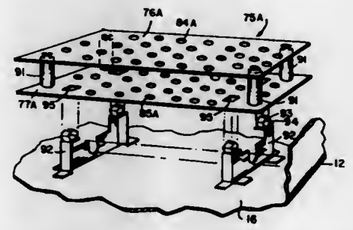
PORTABLE BARBEQUE

Nicholas S. Parker, Sun Valley, Id., assignor to Parker, Inc., Sun Valley, Id.

Filed Apr. 4, 1994, Ser. No. 221,645

Int. Cl.[6] F24C *1/16;3/00*

U.S. Cl. 126—9 B **16 Claims**



1. In a barbecue having a base means for forming a combustion chamber with a floor portion and support means spanning the combustion chamber for supporting food in a support plane generally parallel to said combustion chamber floor, the improvement of plate means intermediate the combustion chamber and the support means distributing heat, said plate means comprising first and second perforated flat plates and plate support means extending substantially perpendicularly to said plates for supporting said plates in a spaced relationship parallel to the support plane and wherein said plate support means includes first and second upstanding legs mounted substantially perpendicularly to to said combustion chamber floor portion, releasable clip means on said leg means for engaging a first of said flat plates through certain of the perforations therethrough and means for supporting said second plate means relative to said first plate means, said perforations in one of said plates being offset from the perforations in the other of

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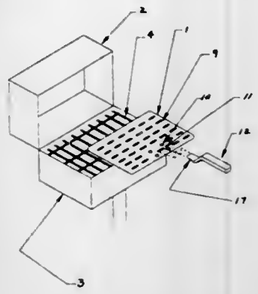
said plates whereby heated air flows from the combustion chamber through said perforations in said first and second plates to heat said plate means and food on said support means.

5,605,143

METHOD AND PRODUCT FOR CLEANING COOKING GRILLS

Paul R. Hebert, 321 S. Elm St., Wallingford, Conn. 06492, and John R. Busca, 230 Brooksvale Ave., Hamden, Conn. 06514

Filed Jul. 31, 1995, Ser. No. 509,550
Int. Cl.[6] F24C *3/00*
U.S. Cl. 126—41 R **6 Claims**



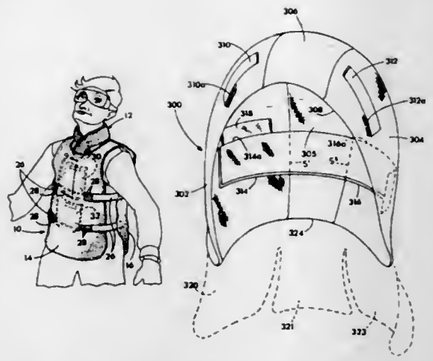
1. A device for cleaning barbecue gratings comprising:
a cooking grill having a barbecue grating therein;
a highly polished heat reflective perforated plate having holes therein, evenly slotted with approximately 1 inch by 0.25 inch slots said slots spaced about 1 inch minimum apart, having a thickness sufficient to resist flexing and warpage during the elevated heat levels necessary to clean the grating by reducing food soils to ash, for placement on the barbecue grating; and
a removable handle for insertion in a handle receiver as part of said plate for use in conjunction with said plate for placement and removal thereof.

5,605,144

HEATING GARMENT WITH POUCH FOR ACCOMMODATING INSERTED HEATING PACKETS

John J. Simmons; Jane Simmons, and Steve Simmons, all of Bismarck, N. Dak., assignors to Thermo-Cool Products Inc, Bismarck, N. Dak.

Continuation-in-part of Ser. No. 986,680, Dec. 8, 1992, Pat. No. 5,302,806. This application Apr. 8, 1994, Ser. No. 224,437
Int. Cl.[6] A61F *7/00*
U.S. Cl. 126—204 **12 Claims**



1. A heating garment in combination with an inserted air-activated chemical heating packet that can produce overheating or a sensation of burning of the skin comprising,
a garment article formed from cloth for covering a portion of the body, said garment article being flexible and sufficiently supple to conform to the body contours,
said garment article having inner and outer adjacent layers of cloth forming a pouch therebetween for receiving and supporting the heating packet therein,
each pouch has an opening to enable the heating packet to be inserted into the pouch before use and removed after use,
said air-activated chemical heating packet comprises a flexible packet containing chemically reactive substances that provide an exothermic chemical reaction which increases the temperature of the packet to about 130° F. to 140° F. to provide heat for up to about 18 hours,
at least the inner layer of cloth of the pouch is a porous layer positioned between the heating packet and the person's body and comprising a high pile cloth including a multiplicity of fibers extending from a portion of the cloth for holding trapped air to control heat distribution by diffusing the heat supplied by the chemical heating packet to the body to enhance the comfort of the user,
the pouch is elongated horizontally to provide a passage that is substantially longer than the width of the chemical heating packet and extends in a generally horizontal direction when the garment is in use to support the heating packet so that the packet will rest in the pouch wherever it is positioned therein,
the heating packet is smaller than the pouch which extends substantially from one end of the garment to the other and the elongated shape of the pouch serves as a means for enabling the relatively smaller heating packet to be shifted within the garment to different positions throughout substantially the entire length of the garment in heat transfer relationship with different selected parts of the body for distributing heat to different points for providing optimum warmth and comfort for the user, and
the friction between the pouch and the packet holds the heating packet in the desired position in the pouch.

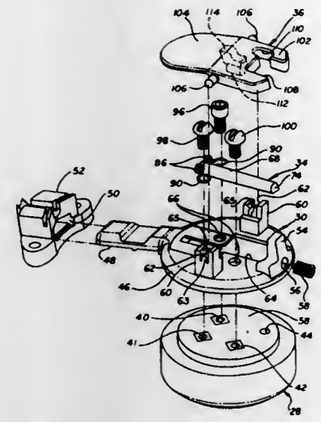
5,605,145

MICROPHONE ATTENUATION DEVICE FOR USE IN OXYGEN BREATHING MASKS

Gary R. Hannah, Merriam, and Randy G. Stratman, Prairie Village, both of Kans., assignors to Puritan-Bennett Corporation, Overland Park, Kans.

Filed Jul. 18, 1995, Ser. No. 503,667
Int. Cl.[6] A62B *18/08*
U.S. Cl. 128—201.19 **21 Claims**

1. A microphone signal attenuating breathing mask to be placed over a wearer's face and comprising:
a mask body including a gas inlet port to be disposed in flow communication with the wearer's breathing passage for flow of a gas in a predetermined flow stream therethrough upon inhalation by said wearer;
a microphone for receiving sounds from said wearer and to produce transmissions related thereto;
an attenuation device for attenuating said transmissions by said microphone;
a reed switch coupled with said attenuation device and responsive to a magnetic field of a predetermined strength to switch from an actuation position to an attenuation position;
an activating magnet to apply said magnetic field disposed adjacent said switch and shiftable between an activating position and a deactivating position;
a movable vane pivotally mounted on said mask body mounting said activating magnet and having a normal position disposing said magnet in said activating position and a displaced position disposing said magnet in said deactivating position;
a bias element for biasing said vane to said normal position; and



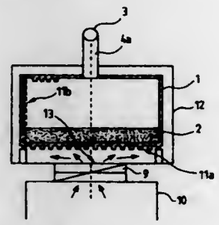
said vane being configured such that impingement of said predetermined flow stream thereto is effective to shift said vane to said displaced position.

5,605,146

METHOD AND AN ARRANGEMENT IN CONNECTION WITH VAPORIZING AN ANAESTHETIC

Antti Särelä , Espoo, Finland, assignor to Instrumentarium OY, Finland

Filed Nov. 29, 1994, Ser. No. 346,545
Claims priority, application Finland, Nov. 29, 1993, 935311
Int. Cl.[6] A61M *16/18*
U.S. Cl. 128—203.12 **38 Claims**



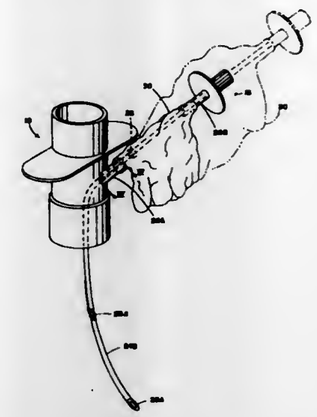
1. A method for providing a quantity of heat to a low temperature boiling point liquid anaesthetic to compensate for temperature reductions resulting from vaporization of such a liquid anaesthetic and to stabilize the temperature of the anaesthetic and the generation of a gaseous anaesthetic from the liquid anaesthetic, the vaporization occurring in an anaesthetic containing chamber having a wall capable of transferring heat, said method consuming low amounts of power and comprising the step of:
forcing the passage of 0.5–5 m^3/min. of ambient air along the wall of the chamber to transfer, from the air to the liquid anaesthetic, a quantity of heat that stabilizes the generation of gaseous anaesthetic from the liquid anaesthetic by vaporization of the latter.

5,605,147

ENDOTRACHEAL TUBE INSERT WITH NEEDLELESS MEDICATION INJECTION PORT

Charles E. Truthan, 4075 Rum Run Ave. SE., Grand Rapids, Mich. 49546

Filed Feb. 24, 1995, Ser. No. 394,679
Int. Cl.[6] A61M *15/00*
U.S. Cl. 128—203.12 **18 Claims**



1. An endotracheal tube insert apparatus coupleable to a syringe containing liquid medicant comprising:
a rigid, tubular ventilation adaptor apparatus having a proximal ventilation adaptor end and a distal endotracheal adaptor;
a medication injection apparatus and a flexible medication tubing connecting said medication injection apparatus to said ventilation adaptor apparatus;
a generally elongated, semirigid medication tubing starting from a connection within said ventilation adaptor apparatus and exiting thru said endotracheal adaptor;
said semirigid medication tubing being of sufficient length to extend to a distal end of an endotracheal tube without extending past the endotracheal tube distal end and terminating in an ejection port;
a collapsible sheath attached to said medication injection apparatus and to said ventilation adaptor apparatus;
wherein said semirigid medication tubing freely passes thru said connection of said ventilation adaptor apparatus and connects with said medication injection apparatus;
wherein said ejection port can not be withdrawn past said connection of said ventilation adaptor apparatus; and
said semirigid medication tubing including a stopper positioned between said connection and said medication injection apparatus that can not be extended past said connection of said ventilation adaptor apparatus thereby preventing said ejection port from extending past an endotracheal tube distal end;
wherein said collapsible sheath surrounds said semirigid medication tubing between said ventilation adaptor apparatus and said medication injection apparatus;
wherein said collapsible sheath provides protection from contamination of said semirigid medication tubing;
whereby, pulling on said medication injection apparatus said semirigid medication tubing can be withdrawn from an endotracheal tube air passage lumen, protected by said collapsible sheath and reinserted, by pushing on said medication injection apparatus, into an endotracheal tube air passage lumen as needed for the injection of additional said liquid medicant, without disconnecting and removing said endotracheal tube insert apparatus from such endotracheal tube.

5,605,148

GAS MIXING DEVICES FOR RESUSCITATION/LUNG VENTILATION APPARATUS

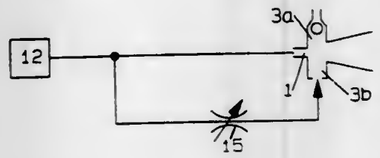
Norman S. Jones, Leighton Buzzard, United Kingdom, assignor to pneuPAC Limited, Bedfordshire, United Kingdom

Filed Jun. 28, 1995, Ser. No. 496,251

Claims priority, application United Kingdom, Sep. 5, 1994, 9413499

Int. Cl.[6] A61M *16/12*

U.S. Cl. 128—205.11 **7 Claims**



4. Resuscitation/ventilation apparatus including:

(a) an entrainment mixer comprising an entrainment chamber, a diffuser extending from the entrainment chamber and expanding in cross-section from the entrainment chamber, a nozzle opening into the entrainment chamber and directed across the entrainment chamber towards the diffuser, a first entrainment gas port communicating laterally with the entrainment chamber and communicating with atmosphere, and a second entrainment gas port communicating laterally with the entrainment chamber;

(b) a source of primary gas;

(c) means for supplying primary gas from said source of primary gas to said nozzle to issue in a stream across the entrainment chamber into the diffuser;

(d) a source of oxygen under pressure;

(e) an oxygen supply line extending between said source of oxygen under pressure and said second entrainment gas port; and

(f) means in said oxygen supply line for steplessly adjusting the flow of oxygen from said oxygen source to said second gas port.

5,605,149

METHOD AND APPARATUS FOR DIRECTING AIR FLOW WITHIN AN INTUBATED PATIENT

Robert D. Warters, Houston, Tex., assignor to Board of Regents, The University of Texas System, Austin, Tex.

Filed Mar. 17, 1995, Ser. No. 406,310

Int. Cl.[6] A61M *16/00*

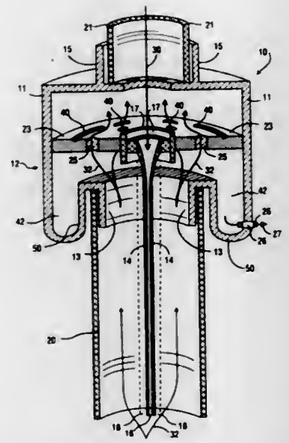
U.S. Cl. 128—207.14 **20 Claims**

1. An air flow assembly positionable within a patient to facilitate removal of secretions from within the patient without aspiration, said assembly comprising:

an air conduit positionable within a patient, said air conduit having an inspiratory pathway and a separate expiratory pathway;

a conduit coupling assembly coupled to said air conduit including a housing having an upper and a lower port; and

air flow control means disposed within said housing for directing inhalation gasses through said inspiratory pathway to expand said patient's lungs and for allowing exhalation gasses to pass through said separate expiratory pathway to force



secretions out of said patient through said separate expiratory pathway without aspiration by the force of exhalation gasses expulsed by a patient's lungs.

5,605,150

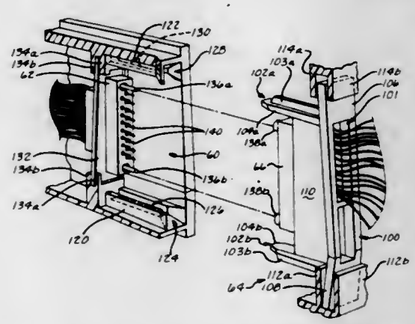
ELECTRICAL INTERFACE FOR A PORTABLE ELECTRONIC PHYSIOLOGICAL INSTRUMENT HAVING SEPARABLE COMPONENTS

Stephen W. Radons, Snohomish; George H. Manset, Woodinville; Steven L. King, Kirkland; Randall D. Mills, Woodinville; Curt C. Johansen, Everett, and Richard C. Nova, Kirkland, all of Wash., assignors to Physio-Control Corporation, Redmond, Wash.

Filed Nov. 4, 1994, Ser. No. 334,625

Int. Cl.[6] A61B *5/00; 19/00; 19/02*

U.S. Cl. 128—630 **14 Claims**



1. A portable electronic physiological instrument having first and second separable components and an electrical interface therebetween to allow electrical connection between the first and second components, the instrument comprising:

(a) a first component having a housing, said first component including groove member means coupled to the housing of the first component for mating the first component to a second component, said first component also including support means coupled to the housing for mounting a plug assembly to the housing so that the plug assembly has a limited freedom to move, wherein the plug assembly comprises:

(i) a body;

(ii) a first connector fixedly mounted to the body; and

(iii) a pair of guide fingers extending from the body, one of the pair of guide fingers located on one side of the first connector and the other of the pair of guide fingers located on the other side of the first connector, wherein the guide fingers extend from the body in a direction that is substantially parallel with a path that the first connector must travel in order to mate with a complementary connector; and

(b) a second component having a housing, said second component including tongue member means coupled to the housing of the second component, the tongue member means receiving the groove member means of the first component with a translative, sliding fit to provide mechanical interconnection between the first and second components, said second component also including a socket assembly formed in the housing of the second component, said socket assembly comprising:

(i) a socket having a floor, a ceiling, a left wall, a right wall, and a rear wall, the walls of the socket forming an opening opposite the rear wall of the socket that is sized to receive the plug assembly;

(ii) a second connector fixedly mounted on the rear wall of the socket and oriented to face the opening of the socket, the second connector complementary formed to mate with the first connector; and

(iii) a pair of guides, one of the pair of guides formed in the floor of the socket and the other of the pair of guides formed in the ceiling of the socket, the set of guides substantially aligned along a path that a corresponding connector must travel to mate with the second connector, so that as the first component is slidably connected with the second component, the guides channel the guide fingers of the plug assembly and bring the first connector into alignment and eventual connection with the second connector.

5,605,151

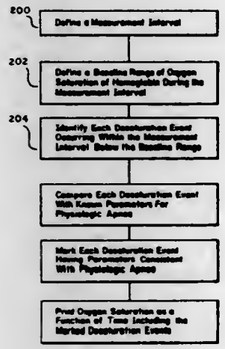
METHOD FOR THE DIAGNOSIS OF SLEEP APNEA

Lawrence A. Lynn, 1275 Olentangy River Rd., #223, Columbus, Ohio 43212

Continuation of Ser. No. 151,901, Nov. 15, 1993, Pat. No. 5,398,682, and a continuation-in-part of Ser. No. 931,976, Aug. 19, 1992, abandoned. This application Feb. 21, 1995, Ser. No. 391,811

Int. Cl.[6] A61B *5/0205*

U.S. Cl. 128—633 **27 Claims**



1. A method of evaluating a patient for diagnosis of sleep apnea using an oximeter having a sensor, the method comprising steps of:

(1) disposing said oximeter sensor adjacent a human body part, said oximeter having an output signal indicating an oxygen saturation of a patient's blood and a processor element responsive to said signal indicating oxygen saturation, and generating an oxygen saturation waveform as a function of time,

(2) using a computer for:

a) repetitively calculating slopes along said oxygen saturation waveform,

b) continuously comparing said slopes to a first predetermined range of slopes and identifying a first slope comprising a desaturation slope which falls within said first predetermined range of slopes,

c) further comparing said slopes to a second predetermined range of slopes and said computer identifying a second slope comprising a resaturation slope which falls within the second predetermined range of slopes, immediately following said desaturation slope,

d) comparing said desaturation slope to said resaturation slope to identify at least one coupled pair of desaturation and resaturation slopes wherein said comparison yields a result consistent with said coupled pair of slopes being induced by sleep apnea,

e) continuously repeating at least steps b through d along said waveform,

(3) using at least said comparing step d) to determine the diagnosis of sleep apnea.

5,605,152

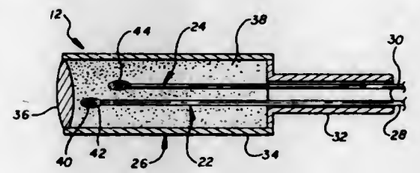
OPTICAL GLUCOSE SENSOR

John B. Slate, San Diego, and Peter C. Lord, Valencia, both of Calif., assignors to MiniMed Inc., Sylmar, Calif.

Filed Jul. 18, 1994, Ser. No. 276,453

Int. Cl.[6] A61B *5/00; G02B 6/00*

U.S. Cl. 128—634 **12 Claims**



1. A glucose sensor, comprising:

a semipermeable probe housing defining an interior sensor chamber, said housing being formed from a material permeable to glucose and oxygen (O_2) entrained in a patient fluid and adapted to be contacted therewith; and

optrode means for monitoring glucose concentration in the patient fluid, said optrode means being disposed within said sensor chamber and comprising an enzyme optrode including a first optical fiber having a selected enzyme coating thereon for generating an enzymatic reaction to catalyze glucose in the presence of oxygen (O_2), and an oxygen sensitive coating on said first optical fiber at a position to generate a light signal representative of oxygen (O_2) depletion in response to the enzymatic reaction, and a reference optrode having an additional oxygen sensitive coating on a second optical fiber at a position spaced from said enzyme and oxygen sensitive coatings on said first optical fiber;

said optrode means further including means for supporting and retaining said first and second optical fibers in a spaced array within said housing, said supporting and retaining means comprising a gel permeable to glucose and oxygen.

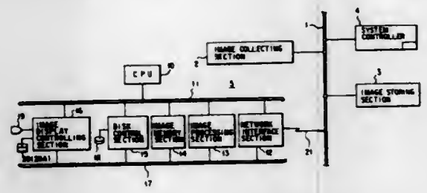
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5,605,153

MEDICAL IMAGE DIAGNOSTIC SYSTEM

Yoshio Fujioka, Tochigi-ken; Masakazu Osada, Ootawara, and Chikayoshi Yuzawa, Yaita, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 77,933, Jun. 18, 1993, abandoned. This application Jan. 3, 1995, Ser. No. 368,054
Claims priority, application Japan, Jun. 19, 1992, 4-160963
Int. Cl.[6] A61B 5/05
U.S. Cl. 128—653.1 19 Claims



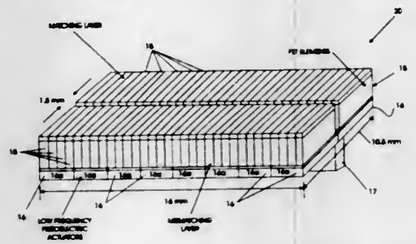
1. A medical image diagnostic system comprising:
image collection means for collecting a plurality of images of various objects of the same subject to be examined;
image storing means for storing said plurality of images by said image collecting means;
image processing means for processing at least one of said plurality of images in accordance with predetermined conditions;
display means for displaying at least one of said plurality of images; and
determining means for determining an image as an important image in accordance with an important image determining condition, said important image determining condition is defined by subjecting an image derived from said image collecting means, stored in said image storing means and read out from said image storing means to a predetermined image processing operation; and
adding means for adding preset identification information to the image which is determined to be an important image by said determining means.

5,605,154

TWO-DIMENSIONAL PHASE CORRECTION USING A DEFORMABLE ULTRASONIC TRANSDUCER ARRAY

Lorianne L. Ries; Stephen W. Smith, both of Durham, and Gregg E. Trahey, Hillsborough, all of N.C., assignors to Duke University, Durham, N.C.

Filed Jun. 6, 1995, Ser. No. 467,003
Int. Cl.[6] A61B 8/00
U.S. Cl. 128—660.08 26 Claims



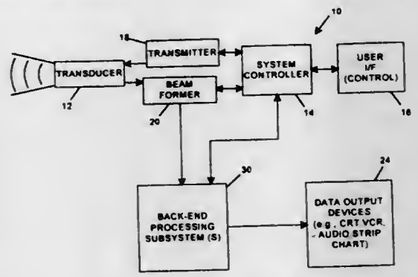
10. A medical ultrasound imaging array transducer system configured for insertion in or contacting to the human body and having two-dimensional phase correction capability, said system comprising:
a) a transducer array assembly comprising:
a base member;
a plurality of transducer elements secured to said base member; and
at least one actuator connected to said base member and at least one of said transducer elements for deflecting said at least one transducer element relative to at least one other transducer element; and
b) a base unit operatively associated with said transducer array assembly, said base unit comprising:
control means associated with said at least one actuator for mechanically correcting ultrasound beam phase errors in a first dimension.

5,605,155

ULTRASOUND SYSTEM FOR AUTOMATICALLY MEASURING FETAL HEAD SIZE

Vikram Chalana, Mountlake Terrace; Yongmin Kim, and David R. Haynor, both of Seattle, all of Wash., assignors to University of Washington, Seattle, Wash.

Filed Mar. 29, 1996, Ser. No. 624,949
Int. Cl.[6] A61B 8/00
U.S. Cl. 128—660.07 20 Claims



1. A method for automatically measuring fetal head size based upon ultrasound image data of the fetal head, the method comprising the steps of:
detecting an ultrasound image of the fetal head;
identifying a radial maxima point on each of a plurality of radii extending from a substantially common vertex point within the fetal head image, each radial maxima point corresponding to an ultrasound sample along its corresponding radius and having a maximum ultrasound echo strength;
defining a first curve and a detected boundary from the radial maxima points;
modifying the detected boundary to define an initial fetal head boundary;
deriving an inner fetal head boundary and outer fetal head boundary from the initial fetal head boundary and a predetermined fetal skull thickness; and
computing fetal head size from the inner fetal head boundary and outer fetal head boundary.

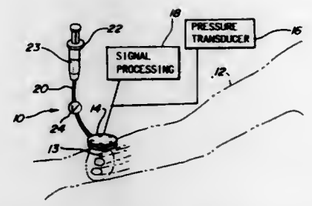
5,605,156

FLEXIBLE DIAPHRAGM TONOMETER

Gary M. Drzewiecki, Princeton, N.J., and Robert D. Butterfield, Poway, Calif., assignors to Rutgers University, Piscataway, N.J.

Division of Ser. No. 154,801, Nov. 17, 1993, Pat. No. 5,439,001. This application May 16, 1995, Ser. No. 442,033
Int. Cl.[6] A61B 5/021
U.S. Cl. 128—672 14 Claims

1. A method of noninvasively monitoring the pressure waveform of a vessel, comprising the steps of:
(A) providing a container filled with a volume of fluid and having a flexible diaphragm forming one side of the container, the flexible diaphragm having a calibrated position;



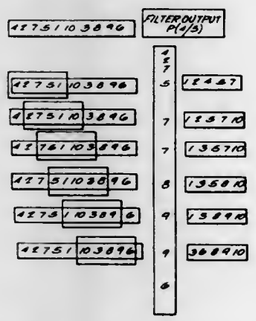
(B) placing the flexible diaphragm against tissue generally covering the vessel such that the diaphragm effectively becomes an extension of the tissue whereby the diaphragm is deflected across a portion of the diaphragm in response to stresses in the tissue against which it is placed, the stresses being caused by vessel pressure;
(C) adjusting the volume of fluid within the container to return the diaphragm to the calibrated position from the deflected position; and
(D) determining the pressure within the container when the diaphragm returns to said calibrated position, whereby the pressure waveform of a vessel is determined.

5,605,157

SYSTEMS AND METHODS FOR FILTERING SIGNALS DERIVED FROM BIOLOGICAL EVENTS

Dorin Panescu, Sunnyvale, and James G. Whayne, Saratoga, both of Calif., assignors to EP Technologies, Inc., Sunnyvale, Calif.

Filed Feb. 17, 1995, Ser. No. 390,587
Int. Cl.[6] A61B 5/04
U.S. Cl. 128—696 34 Claims



1. An analog or digital processing element for analyzing a derived biological signal comprising sample values arranged with respect to time, the element comprising
means for selecting a set of n sample values from the derived biological signal,
means for arranging the n sample values of the set into ordered positions following a predetermined permutation,
means for selecting one of the ordered positions, z, within the permutation, where z is a positive integer and:

$$z \neq \left[\frac{n+1}{2}\right]$$

and where:
$1<z<n$, and
the expression:

$$\left[\frac{n+1}{2}\right]$$

represents the integer part of:

$$\frac{n+1}{2}$$

and,
means for generating a processed output comprising the sample value occupying the ordered position, z, in the permutation.

5,605,158

APPARATUS FOR ANNOTATING PHYSIOLOGICAL WAVEFORMS

Jeffery D. Snell, Oak Park, Calif., assignor to Pacesetter, Inc., Sylmar, Calif.

Filed Aug. 2, 1995, Ser. No. 510,448
Int. Cl.[6] A61B 5/04;5/0402;5/044
U.S. Cl. 128—696 83 Claims



1. An apparatus for monitoring a parameter indicative of a patient's condition, comprising an implantable medical device having a plurality of operating states and an external monitoring device, wherein the implantable medical device comprises:
means for detecting at least one physiological parameter of the patient and for producing a characteristic signal in response thereto;
control means for comparing the characteristic signal to preset criteria for detecting the occurrence of a physiological event and for changing the operating state of said implantable medical device in response thereto;
means for transmitting event codes representative of the state of the implantable medical device; and
means for transmitting event codes representative of the occurrence of a physiological event;
and wherein said monitoring device comprises:
means for receiving said transmitted event codes;
means for selectively displaying annotating labels, at least some of said annotating labels functioning to represent one or more of said received event codes;
means for selectively determining annotating labels to be displayed; and
means for receiving a user input, wherein said user input selects a subset of annotating labels to be displayed.

5,605,159

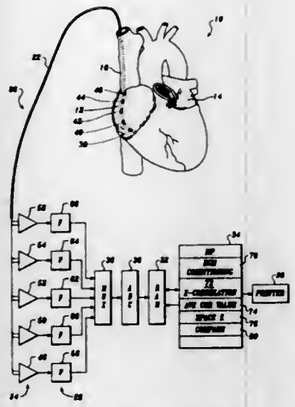
SYSTEM AND METHOD FOR DETERMINING SPATIAL ORGANIZATION OF ATRIAL ACTIVATION

Joseph M. Smith, 6343 Waterman Ave., St. Louis, Mo. 63130, and Gregory W. Botteron, 354 Spring Ave., Webster Grove, Mo. 63119

Filed Feb. 16, 1996, Ser. No. 602,957
Int. Cl.[6] A61B 5/0452
U.S. Cl. 128—702 2 Claims

1. A method of evaluating the effectiveness of a medication towards terminating an atrial arrhythmia of a heart of a patient, said method including the steps of:

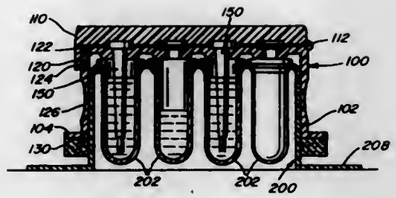
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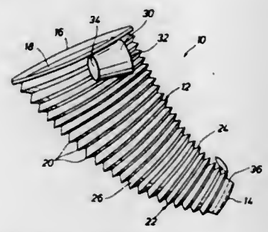
(a) sensing electrical activity of an atrium of a heart at a predetermined number of different localized locations within the atrium, the localized locations being spaced apart by preselected distances with respect to each other;
(b) generating a like predetermined number of electrograms, each electrogram representing the electrical activity sensed at each of the predetermined number of localized locations;
(c) cross-correlating the electrogram generated for at least one of the localized locations with the electrogram generated for at least one other one of the localized locations to derive a pre-medication correlation value for at least one of the preselected distances;
(d) administering the medication to the patient;
(e) after a predetermined period of time, repeating steps (a) and (b);
(f) cross-correlating the electrogram generated for said at least one of the localized locations with the electrogram generated for said at least one other of the localized locations to derive a post-medication correlation value for said at least one of the preselected distances;
(g) comparing the pre-medication correlation value to the post-medication correlation value, and
(h) determining if post-medication correlation value is greater than the pre-medication correlation value.

5,605,160
ALLERGY TESTING APPARATUS WITH VARIABLY SPACED TEST TESTING SITES
Henry Fishman, 5173 Linnean Terrace N.W., Washington, D.C. 20008
Continuation of Ser. No. 13,679, Feb. 3, 1993, abandoned, which is a continuation-in-part of Ser. No. 931,202, Aug. 17, 1992, Pat. No. 5,335,670, which is a continuation of Ser. No. 685,626, Apr. 15, 1991, Pat. No. 5,154,181, which is a continuation of Ser. No. 501,376, Mar. 29, 1990, Pat. No. 5,027,826, which is a continuation of Ser. No. 339,863, Apr. 14, 1989, abandoned, which is a continuation of Ser. No. 204,967, May 31, 1988, abandoned, which is a continuation of Ser. No. 88,139, Aug. 21, 1987, abandoned, which is a continuation of Ser. No. 853,710, Apr. 18, 1986, Pat. No. 4,711,247. This application Jun. 5, 1995, Ser. No. 461,251
Int. Cl.[6] A61B *5/10*
U.S. Cl. 128—743 **12 Claims**

1. An allergy testing apparatus for testing a patient for a plurality of substances, comprising:
a first member having a plurality of openings therein, said openings being arranged at respective positions on said first member, said openings selectively receiving a respective pricking or piercing elements therein;
a plurality of pricking or piercing elements which are selectively received in openings of said first member, at selected positions on said first member, for pricking or piercing the skin of a patient at spaced apart positions in use;
a locking device arranged to lockingly engage said pricking or piercing elements in respective openings of said first member to retain said pricking or piercing elements in said first member and to prevent tipping or tilting of said pricking or piercing elements in said first member, said locking device comprising a cover member which is engageable with said first member to contact and engage upper portions of said pricking or piercing elements when said cover member is engaged with said first member; and
a well tray having a plurality of receptacles for receiving substances for which a patient is to be tested at selected receptacles corresponding in position to the pricking or piercing elements which are received in openings of said first member, said first member with said received pricking or piercing elements, being engageable with said well tray for causing the pricking or piercing elements to contact said substances in respective associated receptacles, said first member being thereafter removable from said well tray for application of said substances to a patient;
said removed first member then being adapted to be placed against the skin of a patient and to be pressed downwardly against the skin of the patient to cause said pricking or piercing elements to contact the skin of the patient and to apply said substances at respective spaced apart positions on the skin of the patient.

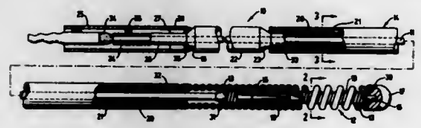


5,605,161
DISPOSABLE URINALYSIS DEVICE WITH INDICATOR
Leta K. Cross, 169 Sage Rd., Houston, Tex. 77056-1417
Filed Jun. 24, 1994, Ser. No. 265,228
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—771 **15 Claims**



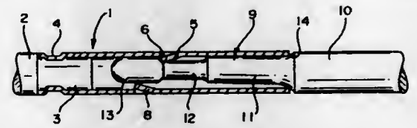
1. A urinalysis device, comprising:
a) a downwardly tapering, funnel-shaped unitary body defining an axial passage extending therethrough;
b) a substantially rigid rim defining an upper end of the body, the rim circumscribing an opening forming the upper end of the body;
c) a discharge opening defining a lower end of the body, the discharge opening being in fluid communication with the opening, wherein the discharge opening and the opening define opposite ends of the axial passage extending therebetween;
d) positioning means secured adjacent to the rim for holding said body in position for use; and
e) urinalysis means secured to said body by an adhesive strip for contacting with urine.

5,605,162
METHOD FOR USING A VARIABLE STIFFNESS GUIDEWIRE
Daryush Mirzaee, Santa Clara, and William S. Tremulis, Redwood City, both of Calif., assignors to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.
Division of Ser. No. 776,622, Oct. 15, 1991, abandoned. This application Sep. 1, 1993, Ser. No. 115,225
Int. Cl.[6] A61M *25/00;* **A61B** *5/00;19/00*
U.S. Cl. 128—772 **4 Claims**



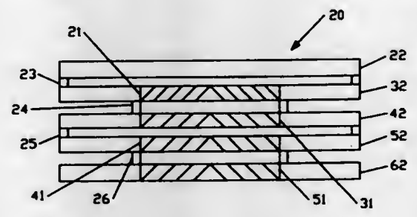
1. A method of performing an intraluminal diagnostic or therapeutic procedure in which a catheter is advanced within a body lumen of a patient over a guidewire disposed therein, said procedure comprising:
a) providing
i) a guidewire having an elongated, longitudinally movable core member having a proximal end and a shapable distal end,
ii) a compressible body which is relatively flexible when uncompressed and is stiff enough to cross a stenosed area of the patient's body lumen when compressed having a proximal end and a rounded distal end, wherein the compressible body is disposed about the shapable distal end of the core member, the rounded distal end is secured to the shapable distal end of the core member and a proximal portion of the compressible body is slidably mounted onto the core member,
iii) an elongated tubular support member having proximal and distal ends which is disposed about the elongated, longitudinally movable core member wherein the distal end abuts the proximal end of the compressible body, and
iv) a tensioning means at the proximal ends of the core member and tubular support member to effect relative longitudinal movement between the core member and the tubular support member and change the compression of the compressible body; and
b) performing the procedure which includes the steps of,
i) advancing the distal end of the guidewire through a body lumen to a stenosed region of the lumen,
ii) reducing the flexibility of the distal end of the guidewire by using the tensioning means to longitudinally move the elongated longitudinally movable core member with respect to the tubular support member and compress the compressible body, and
iii) further advancing the distal end of the guidewire within the body lumen past the stenosed region of the lumen with the compressible body of the guidewire in a relatively compressed condition.

5,605,163
GUIDEWIRE ATTACHMENT ASSEMBLY
Robert Hani, Unterlunkhofen, Switzerland, assignor to Schneider (Europe) A.G., Bulach, Switzerland
Filed May 11, 1995, Ser. No. 442,714
Claims priority, application European Pat. Off., May 11, 1994, 94107357
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—772 **11 Claims**



1. A guidewire attachment assembly comprising:
(a) an elongated member having a nonuniform outer surface defining at least one recessed area;
(b) a tubular member having an inner surface forming a lumen adapted to receive the elongated member; and
(c) at least one resilient member projecting from the inner surface of the tubular member into the lumen, the at least one resilient member adapted to deflect from a first position and then at least partially return toward the first position such that the resilient member is disposed at least in part within the at least one recessed area of the elongated member to releasably connect the elongated member and tubular member;
wherein the elongated member has a tip ending in a shoulder including a flat surface forming an imaginary non-perpendicular angle with the inner surface of the tubular member, the at least one resilient member including a flat surface forming about the same imaginary non-perpendicular angle with the inner surface of the tubular member when the at least one resilient member is in its at least partially returned position, the shoulder flat surface and the resilient member flat surface adapted to make contact with one another along the flat surfaces.

5,605,164
PROPHYLACTIC DEVICE AND PRODUCTION OF SAME
Thomas W. Wilson, III, Chapel Hill, N.C., assignor to Family Health International, Durham, N.C.
Filed Jun. 7, 1995, Ser. No. 487,712
Int. Cl.[6] A61F *6/02*
U.S. Cl. 128—842 **19 Claims**



1. A prophylactic device formed of flexible film material and having an open proximal end and a closed distal end, said device comprising:
(i) an odd number of superposed extension pieces, each extension piece having a peripheral edge and an aperture defining an aperture edge, said extension pieces being alternately sealed at their peripheral edges and their aperture edges to form a collapsible and extendable structure having a central opening therethrough and having a distally oriented end

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defined by a peripheral edge of said structure and a proximally oriented end defined by an aperture edge of said structure;

(ii) a distal end piece formed without an aperture for providing a closed end for the device, said distal end piece including a peripheral edge;

(iii) a proximal end piece with an aperture for providing an open end for the device, said proximal end piece defining an aperture edge;

(iv) a seal joining the peripheral edge of the distal end piece and the peripheral edge of said structure; and

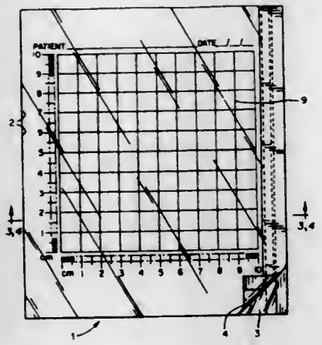
(v) a seal joining the aperture edge of said structure and the aperture edge of the proximal end piece.

5,605,165

WOUND MEASURMENT DEVICE AND METHOD FOR ITS USE

Robert W. Sessions, Hinsdale; Roy D. Carr, Burr Ridge, and Rainer Schmeichel, Glen Ellyn, all of Ill., assignors to Ferris Corp., Burr Ridge, Ill.

Filed Mar. 3, 1995, Ser. No. 398,225
Int. Cl.[6] A61F *5/37*
U.S. Cl. 128—888 **17 Claims**



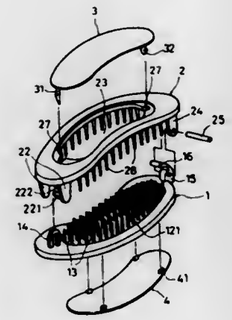
4. A device for recording the surface area of a wound or opening in the tissue of an animal comprising a transparent polymer sheet having a series of perforations defining first and second sections of the sheet which allow the first and second sections to be separated from one another along the perforations, the second section having an indicia thereon which allows a user to determine the surface area of a wound, the transparent polymer sheet being folded along the perforations so that at least a portion of each first and second section overlap and contact one another, the sections being substantially free of adhesive material therebetween.

5,605,166

HAIR CLIP

Kuo-Hua Chou, No. 17, Alley 10, Lane 118, Su-Wei Rd., Wu-Ku Hsiang, Taipei County, Taiwan

Filed Nov. 13, 1995, Ser. No. 556,652
Int. Cl.[6] A45D *8/22;8/28*
U.S. Cl. 132—279 **3 Claims**



1. A hair clip comprising:

a base plate having an elongated, curved, center opening, a first retaining notch and a second retaining notch at two opposite ends of said center opening, a plurality of downward teeth raised from a bottom side thereof around said center opening, a pair of first downward lugs disposed at one end in a parallel relation, two inward retainer rods raised from one first downward lug at different elevations, a pair of second downward lugs disposed at an opposite ends, a stop block disposed adjacent to said second downward lugs;

an ornament plate fastened to said base plate and covering said center opening, said ornament plate having a first downward retainer rod and a second downward retainer rod respectively fastened to the first and second retaining notches of said base plate; and

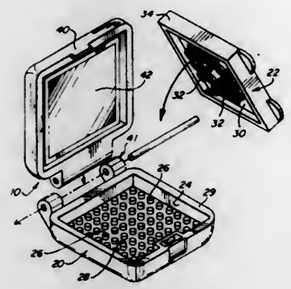
a clamping plate having a coupling portion at one end pivotably connected between said second downward lugs of said base plate by a pivot, a springy pressure rod extending from said coupling portion for acting against said stop block of said base plate for permitting said clamping plate retained to said base plate in an open status, a retaining loop at an opposite end for fastening to one inward retainer rod of said base plate, a raised portion at one side corresponding to the center opening of said base plate, a back recess at an opposite side, and a cover board covering said back recess, said cover board having a plurality of hooks respectively hooked on said back recess.

5,605,167

COMPACT WITH REPLACEABLE PRODUCT TRAY

Antonio Montoli, Brookfield, Conn., assignor to Risdon Corporation, Naugatuck, Conn.

Filed Aug. 2, 1995, Ser. No. 510,550
Int. Cl.[6] A45D *33/24;33/26*
U.S. Cl. 132—294 **18 Claims**



1. A compact for a cosmetic, comprising:

a base having a recess therein, said recess having a bottom wall and a peripheral wall;

a plurality of regularly spaced apart studs extending upwardly from said bottom wall;

a removable product tray fittable into said recess, said tray having a plurality of regularly spaced apart resilient elements extending downwardly from a bottom surface of said tray;

said studs and said resilient elements being positioned relative to each other such that said product tray is fittable into said recess, and said studs and said resilient elements interfit and frictionally engage with each other to hold said tray in said recess.

5,605,168

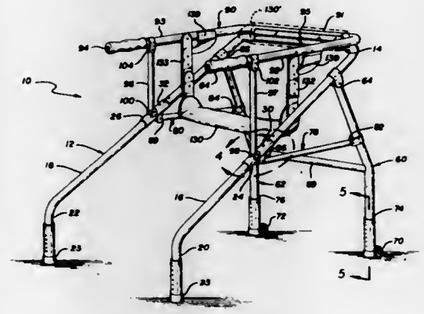
Patent Not Issued For This Number

5,605,169

COLLAPSIBLE WALKER WITH A RETRACTABLE SEAT

Richard D. Light, Canoga Park, Calif., assignor to Jenny Walker, Van Nuys, Calif.

Filed Jun. 12, 1996, Ser. No. 662,039
Int. Cl.[6] A45B *3/00*
U.S. Cl. 135—66 **8 Claims**



1. A walker for an invalid comprising:

a first U shaped member having a center portion and two parallel arm portions extending downward at an acute angle terminating in vertically extending front supports for contacting the ground;

a sleeve slidably mounted on each of said arm portions of said first U shaped member;

means to releasably lock said sleeve at an intermediate position on each of said arm portions;

a pair of generally vertical extending rear support members in a spaced relationship having first ends for contacting the ground providing rear support and second ends pivotally connected to the upper portions of said arm portions of said first U shaped member in proximity to said center portion;

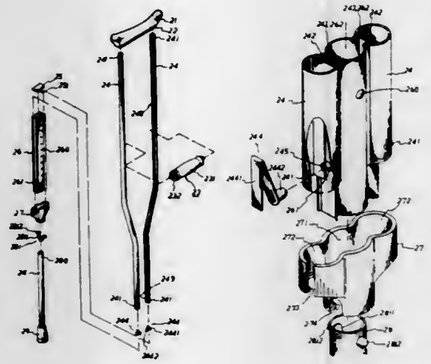
a pair of first links pivotally connected by their first ends to said rear support members intermediate the ends thereof and by their second ends to said sleeves on each of said arm portions of said first U shaped member;

a second generally U shaped member having a center portion and arm portions terminating in gripping handles, said center portion of said second U shaped member pivotally connected to said center portion of said first U shaped member; and

a pair of second links having first and second ends, said first ends pivotally connected to said arm portions of said second U shaped member intermediate said gripping handles and said center portion thereof and by said second ends to said sleeves on said first U shaped member.

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5,605,170
CRUTCH
Kuan-Jen Weng, 58, Ma Yuan West St., Taichung, Taiwan
Filed Mar. 29, 1996, Ser. No. 630,862
Int. Cl.[6] A61H *3/02*
U.S. Cl. 135—68 **1 Claim**



1. An assembled crutch comprising a pad enclosing a hollow arm piece, two bow rods connecting said hollow arm piece longitudinally, a handpiece connecting two bow rods transversely, a pipe with adjusting holes clamped by lower portions of said two bow rods, an upper portion of an extensible rod inserted in said pipe, a tip cushion covering a lower end of said extensible rod, a mount confining lower ends of said pipe and said two bow rods, and a plug with a lower post disposed on an upper end of said pipe, the improvement comprises:

said hollow arm piece having a plurality of separators therein to reinforce said arm piece;

said handpiece having a foamed outer tube with two round openings, an inner tube with two rectangular openings inserted in said outer tube, a spring inserted in said inner tube, and two positioning blocks blocking said two corresponding rectangular openings, respectively;

each said positioning block having a disk, a lug disposed on said disk, a protuberance disposed on said lug, and a rectangular pivot disposed beneath said disk;

each said bow rod having a reinforced rib therein;

said reinforced rib having a plurality of positioning holes;

said protuberance inserted in said corresponding positioning hole;

a recess defined by said bow rod and said reinforced rib;

a plurality of protruded blocks disposed on an upper end and a lower end of said bow rod;

said protruded blocks which are disposed on said upper end of said bow rod positioned in said arm piece;

said protruded blocks which are disposed on said lower end of said bow rod positioned in said mount;

said pipe having two lateral flanges to be inserted in said corresponding recesses, respectively;

an inserted hole disposed on said lateral flange to match a piercing hole;

an elastic retainer inserted in said lower end of said bow rod;

said elastic retainer having a V-shaped plate with a projection at one end of said V-shaped plate;

said projection inserted in said inserted hole and said piercing hole;

said mount having a first and second inner flanges, a middle interior to receive said pipe and two lateral interiors to receive said corresponding bow rods, respectively;

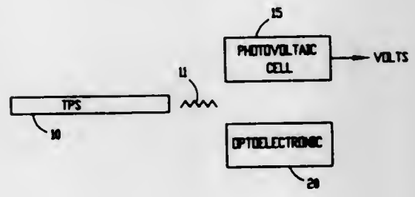
two circular holes formed on an upper end of said extensible rod;

an elastic plate inserted in said upper end of said extensible rod;

said elastic plate having two connecting arms;

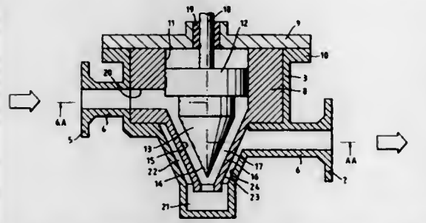
each said connecting arm having a retaining end inserted in said corresponding circular hole and said corresponding adjusting hole.

5,605,171
POROUS SILICON WITH EMBEDDED TRITIUM AS A STAND-ALONE PRIME POWER SOURCE FOR OPTOELECTRONIC APPLICATIONS
Shiu-Wing Tam, Downers Grove, Ill., assignor to The University of Chicago, Chicago, Ill.
Filed Aug. 18, 1995, Ser. No. 517,001
Int. Cl.[6] G21H *1/12;3/02;* H02N *6/00;* F21K *2/00*
U.S. Cl. 136—253 **23 Claims**



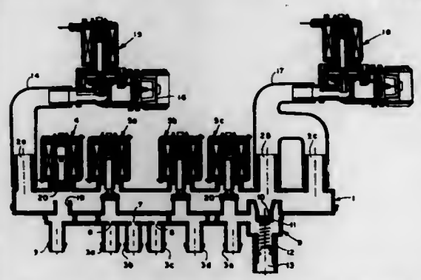
16. The combination of a photovoltaic device and an illumination source of tritiated porous silicon.

5,605,172
FLUID CONTROL VALVE AND METHOD FOR SUBJECTING A LIQUID TO A CONTROLLED PRESSURE DROP
Mark F. Schubert, Houston, Tex., and Frank Skilbeck, Gloucester, United Kingdom, assignors to Baker Hughes Limited, London, England
Filed Aug. 11, 1994, Ser. No. 289,675
Claims priority, application United Kingdom, Aug. 27, 1993, 9317889
Int. Cl.[6] F16K *1/38*
U.S. Cl. 137—1 **11 Claims**



1. A method of subjecting a fluid to a controlled pressure drop, wherein said fluid is supplied under pressure with a tangential velocity component to a first annular passageway having an axis, at least a portion of the annular passageway having a decreasing outer diameter in a first direction along the axis, a cross section of at least a part of said first passageway being adjustable by means of a tapered, annular passage forming member movable along the axis, said fluid swirling around said axis of said first passageway while flowing axially along said first passageway in the first direction, said fluid thereafter flowing to an outlet through a second annular passageway having an increasing outer diameter and cross sectional area in a second direction along said axis.

5,605,173
LIQUID DISTRIBUTION OPERABLE BY SOLENOID VALVES
Gérard Arnaud, Beausoleil, France, assignor to Eaton Corporation, Cleveland, Ohio
Filed Nov. 23, 1994, Ser. No. 344,436
Claims priority, application France, Dec. 1, 1993, 93 14623
Int. Cl.[6] F16K *11/24*
U.S. Cl. 137—7 **8 Claims**



7. A method of distributing liquid from a supply to an appliance comprising:

(a) providing a manifold having an inlet with an electrically operated line valve and a valving chamber communicating with a plurality of discharge outlets;

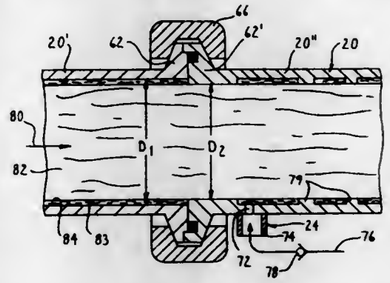
(b) valving each of said plurality of outlets individually with an electrically operated direct acting valve capable of opening against manifold pressures not greater than a predetermined level;

(c) opening said line valve and pressurizing said chamber at supply pressure and:

(i) where supply pressure is less than said predetermined level, selectively opening said outlet valves for flow to the desired outlets,

(ii) where supply pressure is greater than said predetermined level, closing said line valve and bleeding chamber pressure through a pilot passage in one of said valves until chamber pressure drops to said predetermined level and opening desired ones of said outlet valves and re-opening said line valve.

5,605,174
DEVICE FOR CONVEYING THICK SUBSTANCES CONTAINING A GREAT DEAL OF SOLID MATERIAL
Karl Schlecht, Filderstadt; Axel Rockstroh, Bad Urach, and Ulrich Schuster, Waldkraiburg, all of Germany, assignors to Putzmeister-Werk Maschinenfabrik GmbH, Aichtal, Germany
PCT No. PCT/EP93/00251, § 371 Date Dec. 27, 1994, § 102(e) Date Dec. 27, 1994, PCT Pub. No. WO93/20002, PCT Pub. Date Oct. 14, 1993
PCT Filed Feb. 4, 1993, Ser. No. 313,292
Claims priority, application Germany, Apr. 3, 1992, 42 11 138.2
Int. Cl.[6] F17D *1/16*
U.S. Cl. 137—13 **18 Claims**

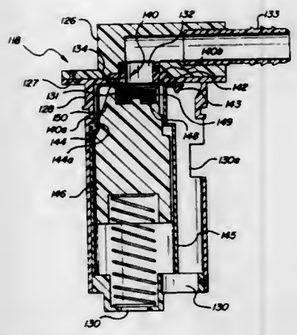


1. In a device for the conveyance of thick substances rich in solid material through a conveyor pipe having an inner wall that defines a pipe interior filled with a thick substance plug flow under pressure and having at least one injection point opening into the conveyor pipe for introducing a lubricant into a region between the inner wall of the pipe and the surface of a plug flow that is formed in the conveyor pipe and is transported therealong, the improvement wherein the conveyor pipe has at least one annular cross section constriction located downstream a distance from the injection point wherein the cross section constriction extends inwardly from the inner wall of the conveying pipe to block the flow of the lubricant.

5,605,175
FLUID RESPONSIVE VENT CONTROL VALVE WITH PEEL-AWAY OPENING ACTION
Rudolph Bergsma, 2145 Greenview, Ann Arbor, Mich. 48106, and Lindsey E. Waldorf, 7366 Jennings Rd., Whitmore Lake, Mich. 48189
Filed May 24, 1995, Ser. No. 448,805
Int. Cl.[6] F16K *24/04;31/18*
U.S. Cl. 137—202 **10 Claims**

1. A liquid-responsive vent control valve for mounting on a vehicle fuel tank to selectively vent fuel vapor from the tank to a vapor trap, the valve comprising:

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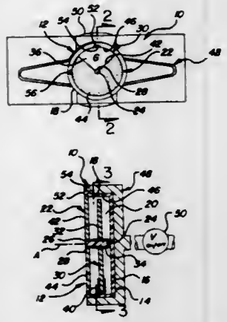
a hollow valve body having a fuel vapor inlet communicating with the tank interior and a high flow fuel vapor tank outlet communicating with the vapor trap;

valve means associated with the vent outlet, the valve means movable between an open venting position and a closed non-venting position;

fuel level responsive float means in the hollow valve body connected to the valve means to open and close the valve means in response to the level of liquid fuel in the tank; wherein,

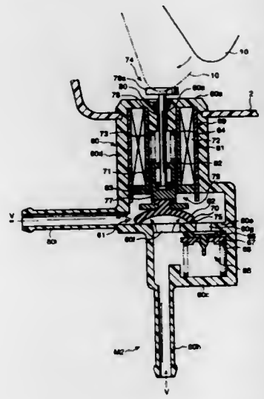
the valve means comprises a flexible ribbon valve element connected at one end to the valve body and at the other end to the float means such that the float means peels the ribbon valve element in continuous fashion on and off the valve seat, and further wherein the float means and the vent outlet are coaxial.

5,605,176
POSITION INDICATOR FOR ON/OFF VALVES
Richard C. Herzberger, Bay City, Mich., assignor to Servapure Company, Bay City, Mich.
Filed Aug. 22, 1995, Ser. No. 517,739
Int. Cl.[6] F16K *37/00*
U.S. Cl. 137—556 **17 Claims**



II. A valve position indicator device for on/off valves comprising: a housing adapted for mounting on a handle of an on/off valve for movement therewith between open and closed valve positions of the handle, said housing having a base, a cover, and a spindle extending between said cover and said base along a nonvertical axis, said cover having a window providing a view to the inside of said housing; a gravity-responsive position card accommodated within said housing and journaled by said spindle to permit relative rotation between said housing and said card about said axis, said card having a face underlying said cover and provided with green indicia and adjacent red indicia representing correct and incorrect positioning, respectively, of the valve handle with respect to the open and closed valve positions; and said card being gravity biased to retain said card and said indicia substantially stationary when said housing is rotated with the handle for alternately displaying through said window said red and said green indicia.

5,605,177
FUEL RESERVOIR APPARATUS
Tamiyoshi Ohashi; Sukehiro Sawada, both of Aichi-ken, and Osamu Hokari, Kanagawa-ken, all of Japan, assignors to Toyoda Gosei Co., Ltd., Shikasugai-gun, and Isuzu Motors Limited, Shinagawa-ku, both of Japan
Filed Aug. 26, 1994, Ser. No. 296,803
Claims priority, application Japan, Aug. 30, 1993, 5-214335
Int. Cl.[6] F02M *33/02*
U.S. Cl. 137—587 **12 Claims**



I. A fuel reservoir apparatus comprising:

a fuel tank constructed and arranged to store fuel to be supplied to an engine of an automobile;

a canister constructed and arranged to absorb fuel vapor;

a fuel vapor passage connected between said fuel tank and said canister;

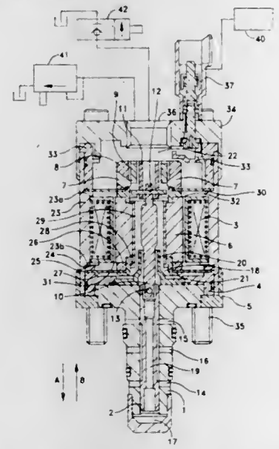
a pressure control valve having a valve member and a valve stem coupled to said valve member, said pressure control valve being provided in said fuel vapor passage including biasing means for biasing said valve member to control the pressure within said fuel tank;

valve means, including said valve stem, provided in said fuel vapor passage constructed and arranged to open during an operation of the engine to permit a flow of fuel vapor towards said canister; and

a closure valve provided in said fuel vapor passage constructed and arranged to close said fuel vapor passage when fuel is supplied to said fuel tank,

wherein said valve stem of said pressure control valve defines an armature of said valve means.

5,605,178
LINEAR MOTOR VALVE
William S. Jennins, Warrington, United Kingdom, assignor to Electro Hydraulic Technology Limited, Warrington, United Kingdom
PCT No. PCT/GB93/01842, § 371 Date Mar. 2, 1995, § 102(e) Date Mar. 2, 1995, PCT Pub. No. WO94/05939, PCT Pub. Date Mar. 17, 1994
PCT Filed Aug. 31, 1993, Ser. No. 392,874
Claims priority, application United Kingdom, Sep. 3, 1992, 9218610
Int. Cl.[6] F15B *13/044*
U.S. Cl. 137—625.651 **10 Claims**



1. A linear motor valve adapted to be controlled by a reversible electrical current comprising a valve body (1) defining a valve chamber (17), a stator (3) which is rigidly mechanically linked to but not in magnetic connection with the valve body (1), an armature (6) disposed for axial movement within the stator, said armature defining an axial magnetic bore, a valve spool (2) disposed in the valve body and being arranged to be driven by the armature, characterized in that the spool (2) and armature (6) are arranged so that only a minor part of flow through the valve due to spool leakage enters the chamber containing the armature via a sleeve (20) leading from an intermediate chamber (18) and further being characterized in that the flow is reciprocated within the bore between the chambers (21 and 22) disposed at opposite axial ends of the armature as the armature reciprocates within the stator whereby any magnetic debris remaining suspended in the said minor part of the flow will be continually subjected to the magnetic force within the armature during each and every reciprocal movement, and the magnetic debris remains within the bore of the armature being precluded from any further movement to any other part by retention by the magnetic field of the armature.

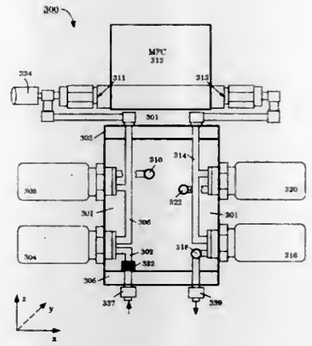
5,605,179
INTEGRATED GAS PANEL
Benjamin R. Strong, Jr., Sunnyvale; Brent D. Elliot, Santa Clara, and Frank R. Balma, San Jose, all of Calif., assignors to Insync Systems, Inc., Santa Clara, Calif.
Filed Mar. 17, 1995, Ser. No. 404,485
Int. Cl.[6] F16K *11/10*
U.S. Cl. 137—884 **3 Claims**

1. An integrated gas panel comprising:

a first process gas module comprising:

a first process gas inlet;

a first upstream isolation valve coupled between said first process gas inlet and a first MFC inlet;



a first upstream purge port;

a first upstream purge valve coupled between said first upstream purge port and said first MFC inlet;

a first mass flow controller (MFC) having an input coupled to said first MFC inlet and an output coupled to a first MFC outlet;

a first mix isolation valve coupled between said first MFC outlet and a first mix port; and

a second process gas module comprising:

a second process gas inlet;

a second upstream isolation valve coupled between said second process gas inlet and a second MFC inlet;

a second upstream purge port;

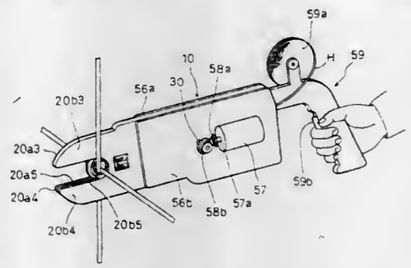
a second upstream purge valve coupled between said second upstream purge port and said second MFC inlet;

a second mass flow controller (MFC) having an input coupled to said second MFC inlet and an output coupled to a second MFC outlet;

a second mix isolation valve coupled between said second MFC outlet and a second mix port;

wherein said first upstream purge port is coupled to said second upstream purge port and said first mix port is coupled to said second mix port.

5,605,180
BINDER
Yoshiaki Tange; Humiko Tange, and Atsuko Kawamura, all of Nagoya, Japan, assignors to Kounan Kougyo Kabushikikaisya, Koutacho, Japan
Filed Dec. 27, 1994, Ser. No. 363,777
Claims priority, application Japan, Dec. 27, 1993, 5-353846
Int. Cl.[6] B21F *15/04*
U.S. Cl. 140—119 **9 Claims**



1. A binder for joining a plurality of objects together with a binding string, said binder comprising:

a base member having a recess for receiving said objects therein,

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means for feeding said binding string disposed behind said recess,

a hook-shaped hand for guiding said binding string around said objects and for causing a loose end of said binding string to turn back in a U shape while pressing said binding string against said objects to be bound, and for twisting said loose end of said binding string with another portion of said binding string to perform binding, wherein said hook-shaped hand includes:

a slide base plate capable of moving backward and forward relative to said recess,

a hook-shaped curved member rotatably coupled to said slide base plate and movable backward and forward in response to movement of said slide base plate, and

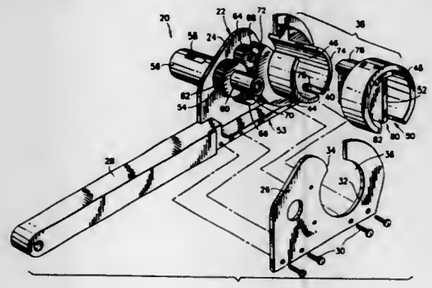
a rotation mechanism for engaging and thereby rotating said hook-shaped curved member toward said recess in synchronized relation with forward movement of said slide base plate.

5,605,181

PORTABLE WIRE TWISTING TOOL

Cuong T. Vuong, Fountain Valley, Calif., assignor to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Feb. 13, 1995, Ser. No. 387,981
Int. Cl.[6] B21F *7/00*
U.S. Cl. 140—119 **7 Claims**



1. Handheld wire twisting apparatus comprising:

a longitudinally extending housing having an internal cylindrical bearing surface means defining a transverse axis and including an inlet into the bearing cavity being a hiatus in said bearing surface; and

an elongated handle adapted to be gripped by a user fixed to and extending from said housing;

wire twisting head means journaled on said cylindrical bearing surface means for rotation about the transverse axis and defining a transverse passageway for reception therethrough of a wire bundle to be twisted, said wire twisting head means including a generally c-shaped cylindrical driven member having a peripheral gap for reception therethrough of the wire bundle into the transverse passageway when the peripheral gap is coextensive with the inlet in said housing, said wire twisting head means preventing entry of the wire bundle into the transverse passageway or egress of the wire bundle from the transverse passageway when the peripheral gap is substantially non-coextensive with the inlet in said housing;

a c-shaped cylindrical socket member having a peripheral opening and adapted for releasable attachment to said drive wheel;

a diametrically extending wire engagement member fixed to said socket member and projecting toward the peripheral opening; and

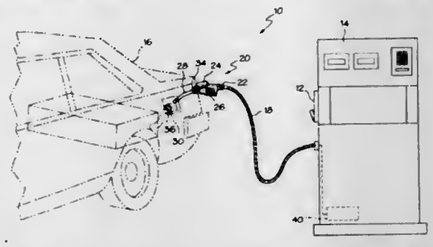
drive means for rotating said wire twisting head means about the transverse axis to thereby mutually twist in opposite directions first and second lengths of the wire bundle.

5,605,182

VEHICLE IDENTIFICATION SYSTEM FOR A FUEL DISPENSER

David Oberrecht; Stephen J. Stephenson, both of Cincinnati; Sean Scott, Springboro; Curtis E. Frederick, Maineville, and Jonathan P. Young, West Chester, all of Ohio, assignors to Dover Corporation, New York, N.Y.

Filed Apr. 20, 1995, Ser. No. 425,099
Int. Cl.[6] B67D *5/01*
U.S. Cl. 141—94 **16 Claims**



10. A vehicle identification system adapted, for use with one or more fuel dispensers for refueling vehicles, each of the dispensers having at least one fuel nozzle associated therewith and attached to the dispenser by a fuel hose, the system comprising:

a first circuit located in each dispenser for generating a first power signal;

a second circuit disposed on each fuel nozzle;

an intrinsically safe circuit connection between the first and second circuits, the intrinsically safe circuit connection including at least one power limiting circuit component, the first power signal being transmitted to the second circuit through the intrinsically safe circuit connection such that power from the first power signal is stored in the second circuit, the second circuit using the stored power to generate a second power signal;

an antenna associated with the second circuit for generating an electromagnetic signal from the stored second power signal; and

an identifying device associated with a vehicle for generating an identification signal in response to the electromagnetic signal.

5,605,183

MULTI-FLAVOR DISTRIBUTION DECK FOR POUCH PACKAGING MACHINE

Donn A. Hartman, Gurnee, and Thomas E. Cloud, Glenview, both of Ill., assignors to Cloud Corporation, Des Plaines, Ill.

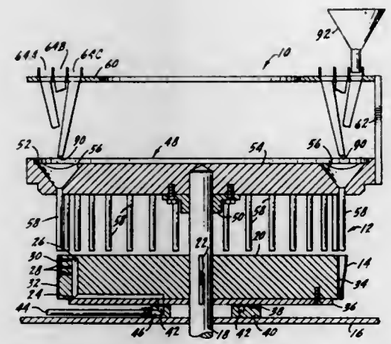
Continuation of Ser. No. 314,886, Sep. 29, 1994, abandoned. This application Dec. 18, 1995, Ser. No. 573,872
Int. Cl.[6] B65B *1/00*
U.S. Cl. 141—237 **9 Claims**

1. In a pouch packaging machine of the type having a continuous strip of pouches moving into and out of a product filling wheel which includes a plurality of moving pouch stations for positioning the moving pouches while they are filled, opening means for opening the top edge of the pouches, a product feed tube associated with each pouch station, each product feed tube comprising an inlet and a nozzle, the product feed tube being movable in synchronous motion with the pouch station for dispensing a product through the nozzle into an open pouch while the pouch is resident at a pouch station, the improvement comprising a multiple flavor distribution deck, comprising:

a plate including a hub adapted for mounting the plate to the filling wheel such that the plate is mounted above the filling wheel and is movable therewith;

at least two channels formed in the plate by upstanding walls, the channels being open at the bottom and top thereof;

a series of arcuate funnels for each channel, the funnels being mounted on the underside of the plate, each funnel having



walls defining a mouth at the upper end and a spout at the lower end, the mouth being in fluid communication with the bottom of the channel while the spout is aligned with an inlet of a product feed tube, the funnel mouths of a series occupying substantially all of its channel; and

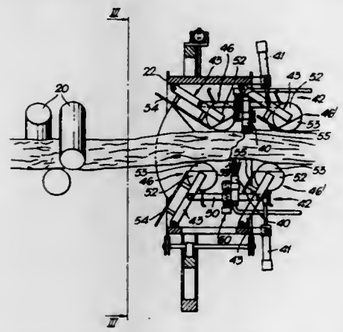
product supply means for metering a desired amount of a first product to the top of one channel and a second product to the top of the other channel.

5,605,184

APPARATUS FOR DEBARKING LOGS INDIVIDUALLY

Ulf Nordin, Mazurkavägen 4; Lennart Börjesson, Rud, and Roland Eriksson, Södra Bryggerivägen 36, all of S-663 02 Hammarö, Sweden

PCT No. PCT/SE94/00161, § 371 Date Sep. 1, 1995, § 102(e) Date Sep. 1, 1995, PCT Pub. No. WO94/20272, PCT Pub. Date Sep. 15, 1994
PCT Filed Feb. 28, 1994, Ser. No. 530,280
Claims priority, application Sweden, Mar. 5, 1993, 9300763
Int. Cl.[6] B27L *3/00;1/14*
U.S. Cl. 144—208.3 **16 Claims**



1. An apparatus for debarking a log passed therethrough, comprising:

a ring member having a central axis and through which the log is passed; and

a plurality of spray units mounted on said ring member, wherein each spray unit comprises:

an articulated frame including:

first and second pairs of parallel arms, each arm of said first and second pairs of parallel arms being pivotably connected at respective first ends thereof to said ring member; and

an intermediate arm pivotably interconnected with both said first and second pairs of parallel arms; and

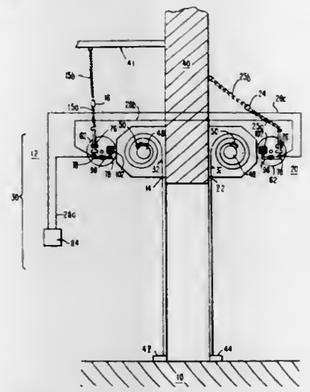
a spray nozzle mounted on said articulated frame and arranged to spray a water jet against each log passed through said ring member, wherein said spray nozzle is arranged so as to maintain a substantially constant distance from the log.

5,605,185

FIRE DOOR SYSTEM

James M. McKeon, Brooklyn, N.Y., assignor to McKeon Rolling Steel Door Co., Inc., Brooklyn, N.Y.

Filed Oct. 21, 1994, Ser. No. 327,188
Int. Cl.[6] E05F *15/20*
U.S. Cl. 160—1 **13 Claims**



1. A fire door system for simultaneously closing at least two retractable fire doors, said system comprising:

at least two fire door assemblies, each comprising a fire door having a fixed surface proximate thereto, an activatable operator connected to said fire door for closing said fire door when said operator is activated, and a temperature sensing means, each of said temperatures sensing means being connected between the fixed surface proximate said fire door and its respective activatable operator for activating said operator when a temperature exceeding a predetermined value is sensed by said temperature sensing means; and

a stationary circuit connected to said activatable operators, said circuit in response to activation of one operator, activating the other operator thereby closing the fire door connected to said other operator.

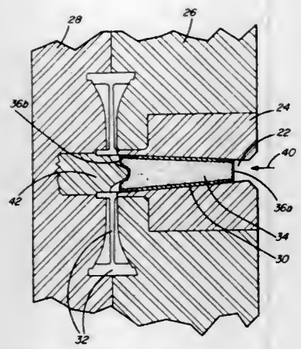
5,605,186

DIE-CASTING OF METALS WITH DISPERSION OF SOLID PARTICLES IN RESULTING CASTINGS

Andre Dusablon, and Claude Berthiaume, both of Quebec, Canada, assignors to Institut de la technologie du magnesium (ITM), Quebec, Canada

Filed Jul. 10, 1995, Ser. No. 500,209
Int. Cl.[6] B22D *19/14;17/12*
U.S. Cl. 164—97 **25 Claims**

1. A method of die-casting of metals, with dispersion of predetermined quantities of solid particles in resulting metal castings, said metal castings being made by injection of a diecastable molten metal into a cavity formed between two halves of a die, a fixed half and a moving half, the injection of the molten metal into said cavity being effected through a runner leading into the cavity, said method comprising: inserting into said runner a cartridge containing a predetermined quantity of solid particles to be dispersed in a metal casting, said cartridge being sealed with foil at least at one end thereof so as to retain the solid particles within the cartridge;



injecting a shot of the molten metal into the cavity through said cartridge, thereby piercing the foil sealing said cartridge and entraining the solid particles contained in said cartridge into the cavity while intermixing said particles with said molten metal; allowing said molten metal to solidify in the cavity to form the metal casting with the predetermined quantity of the solid particles dispersed therein; and moving the moving half of the die away from the fixed half to eject said casting from the cavity.

5,605,187

APPARATUS AND METHOD FOR CLOSING, CONNECTING, CLAMPING AND OPENING DIE HALVES

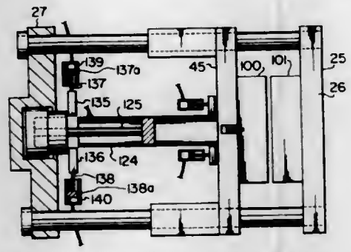
Guido Perrella, Westmount, and Nicolas Bigler, Morin Heights, both of Canada, assignors to DBM Industries Limited, Quebec, Canada

Division of Ser. No. 857,463, Mar. 25, 1992, Pat. No. 5,379,827. This application Oct. 27, 1994, Ser. No. 330,186

Claims priority, application Canada, Jun. 27, 1991, 2045879-8

Int. Cl.[6] B22D *17/26*

U.S. Cl. 164—342 **4 Claims**



1. In a die casting machine having two fixed platens including left and right hand side fixed platens, connecting rods, a moving platen, two die halves including left and right hand side die halves, a parting line, open-closing apparatus, clamping apparatus and connecting apparatus in which the two fixed platens are connected by the connecting rods, the moving platen is guided by the connecting rods, the right hand side die half attached to the right hand side fixed platen, the left hand side die half attached to the moving platen, the two die halves forming the parting line therebetween when clamped to one another,

the clamping apparatus comprising a clamping cylinder and a clamping piston, the clamping cylinder connected to the left hand side fixed platen, the clamping piston being disposed in the clamping cylinder extending outwardly therefrom,

the open-closing apparatus comprising an open and close cylinder, piston rod and piston head, the open and close cylinder fastened to the moving platen, an end of the open and close piston rod opposite the open and close piston head connected to the clamping piston,

an end of the open and close cylinder and the clamping piston defining a space therebetween when the two die halves are proximate the parting line, means for engaging and disengaging the clamping piston and the open and close cylinder between the space therebetween in order to transmit movement of the clamping piston to the open and close cylinder and the moving platen for closing the left and right hand side die halves together at the parting line,

the clamping piston defining an opening in the interior central portion thereof to receive the open and close cylinder therein when the means for engaging and disengaging is disengaged from the space at the clamping piston and the open and close cylinder and the moving platen is moved towards the left hand side platen.

5,605,188

METHOD AND DEVICE FOR REGULATING THE LEVEL OF LIQUID METAL IN A MOLD FOR THE CONTINUOUS CASTING OF METALS

Thierry Banny, Tressange; Joël Drouot, Angers; Jean-François Martin, Chateauneuf les Martigues; Michèle Nadif, Metz; Didier Becler, Lantefontaine; Hervé Dusser, Metz; Alain Mouchette, Semecourt, and Odile Thomardel, Marbach, all of France, assignors to Sollac (Societe Anonyme), Puteaux, France

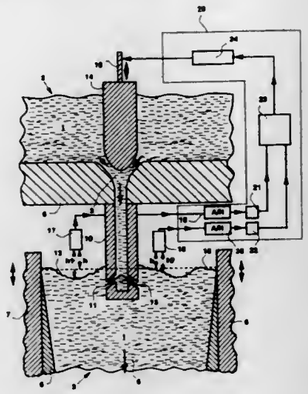
PCT No. PCT/FR94/00292, § 371 Date Oct. 23, 1995, § 102(e) Date Oct. 23, 1995, PCT Pub. No. WO94/22618, PCT Pub. Date Oct. 13, 1994

PCT Filed Mar. 17, 1994, Ser. No. 513,870

Claims priority, application France, Mar. 30, 1993, 93 03872

Int. Cl.[6] B22D *11/18;11/16*

U.S. Cl. 164—453 **8 Claims**



1. A method for regulating the level of the meniscus of liquid metal in a mold of a machine for the continuous casting of metals, comprising the steps of picking up electrical signals supplied by at least one pair of sensors overhanging said meniscus, said signals being a function of the respective distances (h_1, h_2) between said sensors and said meniscus; combining these two signals so as to obtain a single signal representing an imaginary level of said meniscus, and sending said single signal to means for controlling a device for regulating the flow rate of metal penetrating the mold, so that said device brings said imaginary level of said meniscus back to a predetermined set value (h), wherein each signal coming from said sensors is conditioned by eliminating therefrom oscillations having both a frequency greater than a threshold (F) and an amplitude less than a threshold (D).

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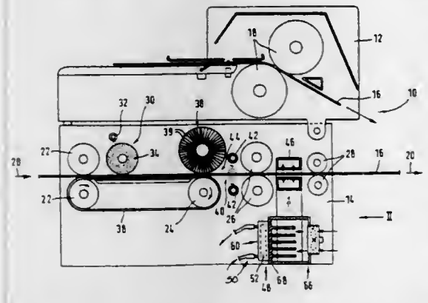
METHOD FOR CONTROLLING THE TEMPERATURE OF AN INTERMITTENTLY STANDING AND FLOWING FLUID WHICH IS AT REST DURING STANDSTILL INTERVALS AND IS FLOWING DURING FLOW INTERVALS

Reiner Schlickhoff, Westphalia, Germany, assignor to Imation Corp., St. Paul, Minn.

Filed Feb. 23, 1995, Ser. No. 393,340

Int. Cl.[6] F25B *13/00*

U.S. Cl. 165—263 **11 Claims**



1. A method for controlling the temperature of an intermittently standing and flowing fluid which is at rest during standstill intervals and is flowing during flow intervals, wherein

a desired temperature for the fluid is predetermined,

a temperature of the fluid is measured,

the temperature of the fluid is changed by a tempering device, said changed temperature being raised if the temperature measured is lower than said desired temperature and being lowered if said temperature measured is higher than said desired temperature,

said tempering device is controlled by a control unit with at least one variable and self-adjusting control parameter,

the fluid is determined to be in a motion selected from the group consisting of flow and stationary, and

a value of said self-adjusting control parameter of said control unit variable when a flow interval ends is stored and at a beginning of a next flow interval said stored control unit variable is set as a current control parameter in said control unit.

5,605,190

HEAT ACCUMULATOR, IN PARTICULAR FOR LATENT HEAT, AND METHOD OF MANUFACTURE OF THE SAME

Roland Strähle, Unterensingen; Stephan Hörz, Filderstadt, and Henryk Bednarek, Landsberg, all of Germany, assignors to Längerer & Reich GmbH & Co, Filderstadt, and Bayrische Motoren Werke Aktiengesellschaft, Munich, both of Germany

PCT No. PCT/DE93/00918, § 371 Date Mar. 16, 1995, § 102(e) Date Mar. 16, 1995, PCT Pub. No. WO94/08195, PCT Pub. Date Apr. 14, 1994

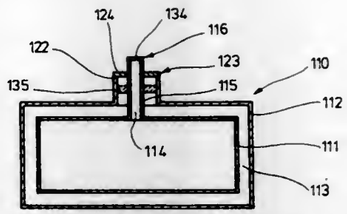
PCT Filed Sep. 27, 1993, Ser. No. 403,890

Claims priority, application Germany, Sep. 29, 1992, 42 32 556.0

Int. Cl.[6] F28D *17/00*

U.S. Cl. 165—10 **9 Claims**

1. A heat accumulator, comprising an inner casing containing an accumulator core with a storage medium; an outer casing enclosing said inner casing at a distance thereto so as to form an insulation space, said inner casing having a pipe connection with a fill opening through which the storage medium is introducible; a mechanical closing element which closes said fill opening after the storage medium has been introduced, said outer casing also having a pipe connection with a fill opening through which said insulation space is fillable with an insulating medium or evacuatable; a mechanical closing element for closing said filling opening of said pipe connection of said outer casing, said pipe connection of said inner casing being disposed coaxially to said pipe connection of said outer casing, said pipe connection of said inner casing extending through said pipe connection of said outer casing and has an end projecting over said pipe connection of said outer casing, said closing element of said pipe connection of said inner casing being located outside said insulation space, said pipe connections forming an annular space therebetween, said closing element of said pipe connection of said outer casing being penetrated by said pipe connection of said inner casing and closing said annular space between said pipe connections; and an additional closing member which is insertable in said annular space between said pipe connections.



5,605,191

HEAT EXCHANGER

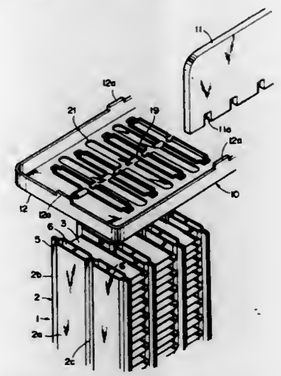
Yoshibisa Eto; Toshio Tsubakida, and Takashi Sugita, all of Konan, Japan, assignors to Zexel Corporation, Tokyo, Japan

Filed Jan. 19, 1996, Ser. No. 589,006

Claims priority, application Japan, Jan. 19, 1995, 7-024708; Nov. 21, 1995, 7-325235

Int. Cl.[6] F28D *7/06*

U.S. Cl. 165—176 **12 Claims**



1. A heat exchanger, comprising:

a plurality of tube elements alternately laminated with fins in a direction of lamination, each said tube element comprising a U-shaped heat exchanging medium passage having an open end in an elongate direction of said tube element comprising intake/output openings;

a tank comprising a deep concave tank member and an end plate fitting together, said end plate having a plurality of insertion holes formed therein;

wherein said open ends of said tube elements are inserted into said plurality of insertion holes;

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wherein said tank has a inside partitioned by a partition extending in the direction of lamination so as to define an intake side and an output side in said tank, said intake/output opening into said intake and output sides, respectively;

intake/output pipes connected to said deep concave tank member and communicating with said intake side and said output side, respectively;

a first projection formed in said end plate of said tank, projecting on the outside to said end plate and extending in the direction of lamination;

a second projection formed in said end plate of said tank, projecting on the outside of said end plate and positioning between adjacent said insertion holes and on opposite sides of the first projection; and

a fit groove extending in the direction of lamination and formed on the other side of said first projection on the inside of said end plate, said partition being fit in said fit groove.

5,605,192

MEANS AND METHOD TO DISPLACE A LOGGING TOOL TO THE BOTTOM OF A WELL FOR WITHDRAWAL THROUGH THE WELL

Thor Bjørnstad, Sør Audnedal, Norway, assignor to Den Norske Stats Oljeselskap A.S., Stavanger, Norway

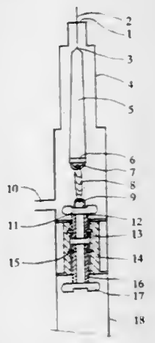
PCT No. PCT/NO94/00026, § 371 Date Sep. 5, 1995, § 102(e) Date Sep. 5, 1995, PCT Pub. No. WO94/17278, PCT Pub. Date Aug. 4, 1994

PCT Filed Jan. 31, 1994, Ser. No. 495,524

Claims priority, application Norway, Jan. 29, 1993, 930304

Int. Cl.[6] E21B *23/08*

U.S. Cl. 166—254.2 **8 Claims**



1. A device for displacing a logging tool to the bottom of a well: a plug having a central bore being located in said well in spaced relationship below a lower end of said logging tool; a first member being located in an upper portion of said plug bore and protruding upwardly from said plug, said first member being connected to the lower end of said logging tool; means for releasably connecting said first member to said plug; a second member being located in a lower portion of said plug bore and protruding downwardly from said plug into said well; and means releasably connecting said second member with said plug, whereby upon said second member abutting the bottom of the well, the means for releasably connecting said second member to said plug are ruptured to facilitate said released second member to impact said first member and cause said means releasably connecting said first member to said plug to rupture thereby enabling said first member in connection with said logging tool to be hauled upwardly from said well to enable the registering of well parameters.

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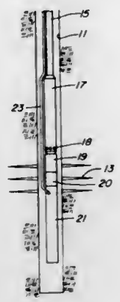
DOWNHOLE GAS COMPRESSOR

John L. Bearden, Claremore; Ketankumar K. Sheth, Tulsa, and Fred S. Martin, Claremore, all of Okla., assignors to Baker Hughes Incorporated, Houston, Tex.

Filed Jun. 30, 1995, Ser. No. 497,197

Int. Cl.[6] E21B *43/00*

U.S. Cl. 166—370 **20 Claims**



12. A method of handling gas and liquid produced by a well, comprising:

connecting a centrifugal gas compressor to an upper end of an electrical motor assembly;

placing the gas compressor and motor assembly in the well, with an intake of the gas compressor in communication with the gas and a discharge leading to a selected gas delivery location;

placing a liquid pump in the well with an intake of the pump in communication with the liquid and a discharge leading to a selected liquid delivery location;

supplying power to the motor assembly and rotating the gas compressor to compress the gas and deliver it to the selected gas delivery location; and

pumping the liquid with the pump to the selected liquid delivery location.

5,605,194

INDEPENDENT SCREWED WELLHEAD WITH HIGH PRESSURE CAPABILITY AND METHOD

Leslie D. Smith, Fritch, Tex., assignor to J. M. Huber Corporation, Tomball, Tex.

Filed Jun. 19, 1995, Ser. No. 492,350

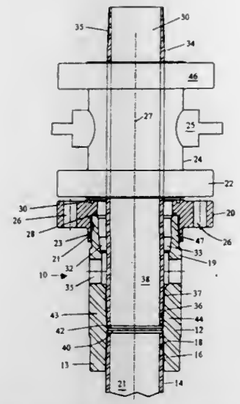
Int. Cl.[6] E21B *33/04*

U.S. Cl. 166—382 **20 Claims**

16. A method of supplying pressurized fluid to a tubular string supported within a wellbore by a wellhead, the pressure within the wellbore being controlled by a blowout preventer having a blowout preventer bore axis substantially concentric with an axis of the tubular string, the blowout preventer being supported above the wellhead, and the upper end of the tubular string being adapted for connection to a body member of the wellhead, the method comprising:

extending a tubular member through a blowout preventer bore such that an end portion is positioned below the blowout preventer and within the wellhead;

threadably connecting the tubular member to the body member of the wellhead while sealing a bore within the tubular string from an annulus between the body member of the wellhead and the tubular member; and



pressurizing the tubular member to supply high pressure fluid to the tubular string.

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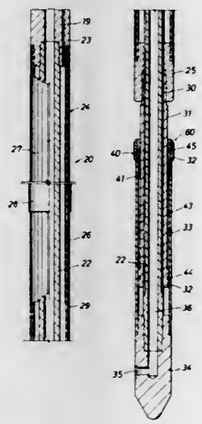
INFLATION SHAPE CONTROL SYSTEM FOR INFLATABLE PACKERS

David M. Eslinger, Tulsa, Okla.; L. Michael McKee, Alvin, Tex.; Robert M. Sorem, Lawrence, Kans.; Kevin L. Case, Richmond, and Jean L. Pessin, Houston, both of Tex., assignors to Dowell, a division of Schlumber Technology Corporation, Houston, Tex.

Division of Ser. No. 362,629, Dec. 22, 1994. This application Jan. 11, 1996, Ser. No. 585,215

Int. Cl.[6] E21B *33/127*

U.S. Cl. 166—387 **10 Claims**



10. A method of controlling the shape of an inflatable packer element as it is inflated and expanded in a borehole, said packer element having an inner elastomer bladder covered by an outer sheath of expansible armor, comprising the steps of: applying pressure to said bladder to inflate it; and applying restraining forces to the ends of said armor to increase the stiffness thereof so that said bladder maintains substantially the same shape as said armor during expansion; said restraining forces being generated by forming a fluid-filled variable volume chamber having a movable wall connected to one of said ends, and preventing movement of said wall unless the pressure in said chamber exceeds a predetermined value.

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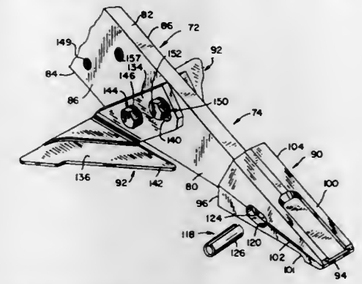
MULTI-PIECE SUBSOILER UNIT FOR AN AGRICULTURAL IMPLEMENT

William L. Grimm, Wheaton, and Austin W. Lutz, Jr., Woodridge, both of Ill., assignors to Case Corporation, Racine, Wis.

Filed Mar. 30, 1995, Ser. No. 413,599

Int. Cl.[6] A01B *61/04*

U.S. Cl. 172—266 **24 Claims**



1. A farm implement comprising:

a transversely elongated tool bar adapted for attachment behind an off-highway machine; and

a plurality of ground penetrating units individually attached to the tool bar for performing a subsoiling operation, each ground penetrating unit comprising a generally vertical support member operably connected at an upper end to the tool bar in a manner permitting the ground penetrating unit to move along a fixed path of travel between an operating position and a tripped position and having a forwardly projecting lower end, with a plow point assembly releasably connected to the lower end of the support member, said plow point assembly comprising a shoe that is connected to the support member and a pair of vanes connected to opposite sides of the support member independently of each other and of said shoe, wherein said shoe releasably fits about and extends forwardly and downwardly from the lower end of said support member and has a transverse ground engaging point at its foremost end, a generally vertical surface at its rear end, an upwardly inclined top surface extending rearwardly from said point and forming an optimum angle of about 31 degrees to about 35 degrees relative to the ground surface passing beneath said point so as to facilitate reinsertion of the plow point assembly into the ground, and a bottom surface extending rearwardly from the ground engaging point, with said bottom surface having a relief extending thereacross and disposed rearwardly of said point for providing ground clearance as the ground penetrating unit is drawn through the ground, wherein each vane is releasably connected to the support member rearwardly of the rear surface of the shoe and such that each vane transversely diverges away from a respective side of the support member, with each vane including an attachment portion and a blade portion, said attachment portion being pivotally attached to the support member to allow for angular movement of the blade portion of each vane through a predetermined range of angular movement, and wherein said attachment portion further includes stops for limiting the range of angular movement of the blade portion of each vane, and a fastener for releasably securing the respective vane to the support member in an infinite number of positions throughout said range of angular movement thereby securing the blade portion at a selected angular orien-

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tation to impart a desired lifting force to the ground broken by said plow point assembly as the implement is drawn across a field.

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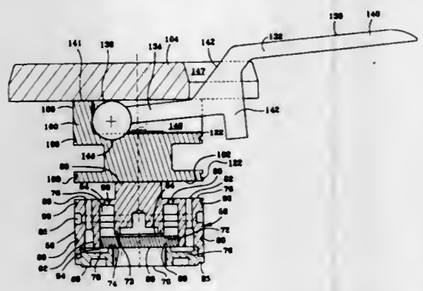
VALVE ASSEMBLY FOR A FLUID-ACTIVATED, PERCUSSIVE PAVING BREAKER

Ted C. Chang, Roanoke; Steven W. Bodell; Robert R. Kimberlin, both of Troutville; Robert M. Diesel, Roanoke, and Scott Barker, Daleville, all of Va., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Continuation of Ser. No. 283,014, Jul. 29, 1994, abandoned. This application Nov. 27, 1995, Ser. No. 563,162

Int. Cl.[6] B25D *9/18;9/04*

U.S. Cl. 173—17 **2 Claims**



1. A unitary valve assembly for use in a rear housing bore of a fluid-activated, percussive paving breaker, the paving breaker having a piston reciprocable therein between a high pressure chamber and a low pressure chamber, said unitary valve assembly for transmitting a percussive fluid comprising:

(a) valve chest having a top surface;

(b) an outer sidewall extending axially from said top surface to form an internal valve chamber, said outer sidewall including an outer sidewall surface having at least one groove means extending circumferentially around said outer sidewall, for retaining therein an elastomeric o-ring sealing member;

(c) reciprocal valve means in said internal valve chamber, for reciprocating between a first and second position;

(d) a bottom plate fastened to said outer sidewall, said bottom plate having an aperture therethrough concentric with said internal valve chamber;

(e) said top surface, said outer sidewall, said reciprocal valve means and said bottom plate dividing said internal valve chamber into a first, low pressure chamber portion and a second, high pressure chamber portion;

(f) passageway means through said top surface for admitting said percussive fluid into said internal valve chamber;

(g) said bottom plate being permanently fastened to said valve chest;

(h) said top surface of said valve chest containing an external, axially extending stop member thereon, for providing a stop for any adjacent member; and

(i) said passageway means further comprises:

(a) a plurality of first apertures through said top surface of said valve chest into said low pressure portion, said first apertures having a first cross-sectional size; and

(b) a plurality of second apertures through said top surface of said valve chest into said high pressure portion, said second apertures having a second cross-sectional size, said second cross-sectional size being greater than said first cross-sectional size.

5,605,198

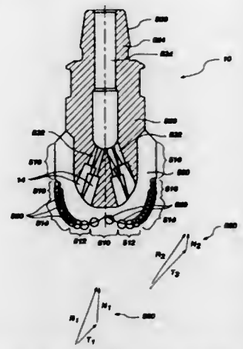
STRESS RELATED PLACEMENT OF ENGINEERED SUPERABRASIVE CUTTING ELEMENTS ON ROTARY DRAG BITS

Gordon A. Tibbitts, Salt Lake City, Utah, and Evan C. Turner, The Woodlands, Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Continuation-in-part of Ser. No. 353,453, Dec. 9, 1994, and a continuation-in-part of Ser. No. 164,481, Dec. 9, 1993, Pat. No. 5,435,403. This application Apr. 28, 1995, Ser. No. 430,444

Int. Cl.[6] E21B *10/46*

U.S. Cl. 175—432 **15 Claims**



1. A rotary drill bit for drilling a subterranean formation, comprising:

a bit body including a crown having a face thereon for carrying cutting elements, said face defining at least a first region and a second region, said first region being predominantly subjected to a first direction and magnitude of resultant loading during said drilling, and said second region being predominantly subjected to a second direction and magnitude of resultant loading during said drilling, at least one of said direction and magnitude of loading substantially differing between said regions; and

at least a first cutting element disposed in said first region and at least a second cutting element disposed in said second region, said at least a first cutting element being structured to withstand the predominant direction and magnitude of resultant drilling loading in said first region, and said at least a second cutting element being structured to withstand the predominant direction and magnitude of resultant drilling loading in said second region.

5,605,199

ELEMENTS FACED WITH SUPER HARD MATERIAL

Alex Newton, Clifton, Great Britain, assignor to Camco Drilling Group Limited, Stonehouse, England

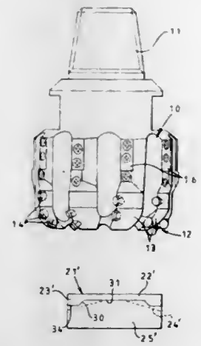
Filed Jun. 20, 1995, Ser. No. 493,191

Claims priority, application United Kingdom, Jun. 24, 1994, 9412779

Int. Cl.[6] E21B *10/46*

U.S. Cl. 175—432 **17 Claims**

1. A preform element including a facing table of superhard material having a front face, an outer peripheral surface, and a rear surface bonded to a substrate which is less hard than the superhard material, the facing table comprising a peripheral region surrounding an inner region disposed inwardly of said peripheral surface, the peripheral region having an inner surface which is generally inclined at an angle of greater than 90° to the rear surface of the facing table so as to face in a direction having a component rearwardly away from the facing table as well as inwardly towards said inner region thereof, and wherein the peripheral edge of said



inner surface which is furthest from the facing table is spaced inwardly of said outer peripheral surface, a further annular surface extending outwardly from the rearmost peripheral edge of said inner surface to the outer peripheral surface of the facing table.

5,605,200

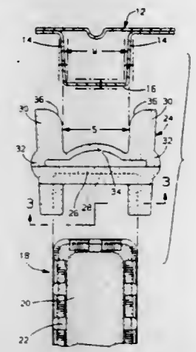
SELF ATTACHING UPPER RADIATOR MOUNT

Eric L. Mayberry, Haslett, and Steven W. Abbruzzese, Lansing, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 3, 1995, Ser. No. 416,114

Int. Cl.[6] B60K *11/04*

U.S. Cl. 180—68.4 **3 Claims**



1. A self attaching upper mounting system for a vehicle radiator having a lower edge and an upper edge, comprising,

a vehicle body subframe to which said radiator lower edge is fixed in a generally vertical orientation, said subframe being movable upwardly as said vehicle is assembled

a vehicle body upper frame member located above said radiator upper edge and generally aligned with said radiator upper edge, said upper frame member having a grippable portion of predetermined width, and,

an upper mount having a base solidly fixed to said radiator upper edge and a pair of resilient fingers with a free state separation sufficiently smaller than said predetermined width so as to be capable of gripping said upper frame member grippable portion, said fingers further having a pair of opposed lead in surfaces located so as to engage said frame member grippable portion when said subframe and radiator are moved upwardly and thereby simultaneously slide over and grip said frame member grippable portion as said vehicle is assembled.

5,605,201

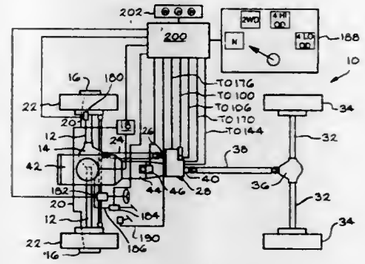
ON DEMAND VEHICLE DRIVE SYSTEM

Ward D. McGinn, Brighton; Todd L. Perttola, New Hudson; Will Watson, Southfield, all of Mich.; Alan L. Miller, Ithaca, N.Y.; Drew A. Sundquist, Canton, Mich.; Roger T. Simpson, Ithaca, N.Y.; Diane K. Ducklow, Farmington, Mich.; Joseph W. Beckerman, Livonia, Mich., and Dan J. Showalter, Plymouth, Mich., assignors to Borg-Warner Automotive, Inc., Sterling Heights, Mich.

Division of Ser. No. 172,432, Dec. 23, 1993, Pat. No. 5,492,194. This application Feb. 15, 1996, Ser. No. 601,939

Int. Cl.[6] B60K *23/08*

U.S. Cl. 180—233 **20 Claims**



1. An adaptive four-wheel vehicle drive system (**10;10'**) comprising, in combination,

a primary drive line (**32,36,38;12',14',24'**) having primary drive wheels, (**34;22'**)

a secondary drive line (**12,14,24;32',36',38'**) having secondary drive wheels (**22;34'**);

clutch means (**124;124'**) for selectively transferring torque from said primary drive line to said secondary drive line,

means (**170;170'**) for sensing the rotational speed of said primary drive line (**32,36,38;12',14',24'**),

means (**176;176'**) for sensing the rotational speed of said secondary drive line (**12,14,24;32',36',38'**),

and microcontroller means (**200**) for

determining a non-transient speed difference between said primary drive line and said secondary drive line,

determining a transient speed difference between said primary drive line and said secondary drive line and engaging said clutch means when the transient speed difference is greater than a predetermined value as adjusted by said non-transient speed difference.

5,605,202

APPARATUS AND METHOD FOR ENHANCING PERFORMANCE OF AN OCCUPANT RESTRAINT SYSTEM IN A VEHICLE

Scott M. Dixon, Sterling Heights, Mich., assignor to ITT Automotive, Inc., Auburn Hills, Mich.

Filed Jun. 7, 1995, Ser. No. 476,663

Int. Cl.[6] B60R *21/32;22/46*

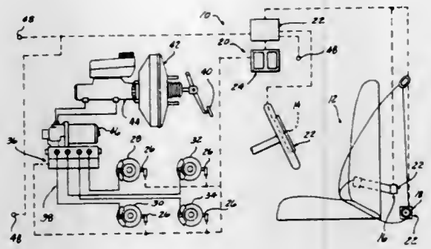
U.S. Cl. 180—268 **20 Claims**

1. In an occupant restraint system for a vehicle having at least one sensor for sensing a state of at least one accident avoidance system, and control means for periodically performing a diagnostic subroutine function with respect to at least one crash sensor, the improvement comprising:

means for generating a signal based on vehicle dynamics corresponding to said sensed state by said at least one accident avoidance system sensor; and

safety means for selectively placing at least one safety module in a heightened state of awareness in response to said signal,

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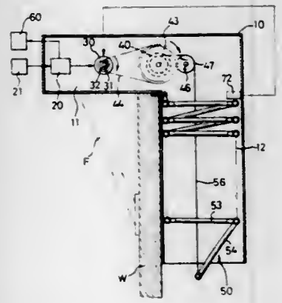


wherein said heightened state of awareness includes temporarily suspending periodic performance of said diagnostic subroutine function by said control means.

5,605,203
AUTOMATIC FOLDABLE EMERGENCY LADDER SYSTEM

Mu-Yi Chang, No. 7-7, Shihlin Rd., Touliu City, Yunlin Hsien, Taiwan

Filed Aug. 30, 1995, Ser. No. 520,779
Int. Cl.[6] E06C *9/00;1/00;1/383*
U.S. Cl. 182—18 **10 Claims**

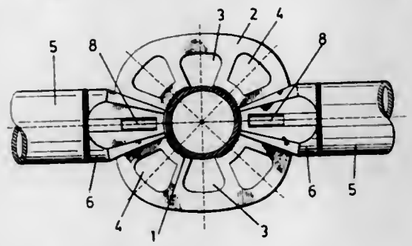


1. An automatic foldable emergency ladder system for use in a building having a smoke detecting device comprising:
an inverted L-shaped housing having a horizontal portion and a vertical portion and adapted to be securely mounted to an external wall of a roof of the building;
a primary control unit mounted in the horizontal portion of the housing and having at least one input port for receiving a signal from the smoke detecting device;
an electrically powered driving means mounted in the horizontal portion of the housing and electrically connected to the primary control unit for receiving a signal therefrom and being activated/deactivated thereby;
a spool means rotatably mounted in the housing and driven by the driving means;
a foldable ladder adapted to be securely coupled to the wall of the building at one end of said foldable ladder and having at least one wire which is secured to the spool means at one end thereof and an opposite end thereof is coupled to a free end of the foldable ladder such that the ladder can be folded/extended by the spool means; said foldable ladder being secured within said L-shaped housing when said foldable ladder is in its folded position, and
a display means electrically connected to the control unit for displaying the status of the system.

5,605,204
MULTIDIRECTIONAL SCAFFOLDING

Felipe V. Ausejo, Oñate, Spain, assignor to Ulma, S. Coop. Ltda, Onate, Spain

Continuation of Ser. No. 223,084, Apr. 4, 1994, abandoned. This application Apr. 18, 1996, Ser. No. 634,076
Claims priority, application Spain, May 4, 1993, 9300941
Int. Cl.[6] E04G *7/00*
U.S. Cl. 182—179 **2 Claims**



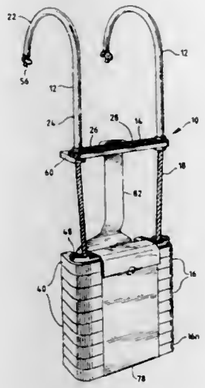
1. An improved scaffolding forming a removable three-dimensional truss comprising:
a plurality of standards;
a number of disc-shaped bodies integrally fitted to the standards and each having a first set of bores and a second set of bores defined therein, each bore of said first set of bores being an undercut extending radially outwardly from an inner circumference of one of said disc-shaped bodies and into the one of said disc-shaped bodies, each bore of said second set of bores being disposed between adjacent bores of said first set of bores and extending radially outwardly beyond said first set of bores from a location which is displaced away from said inner circumference and into the one of said disc-shaped bodies, wherein the bores of said first set of bores open towards a radial inside of the disc-shaped body and are closed by a side surface of the standard to which said disc-shaped body is attached;
a number of tie tubes removably attached to the standards, each of said tie tubes having opposite ends;
at least one stiffening brace obliquely and diagonally attached, at opposite ends, to at least two of said standards;
attachment parts at opposite ends of each of said tie tubes and at opposite ends of said at least one stiffening brace;
a fastening hook defined on each of the attachment parts, each fastening hook at ends of one of said tie tubes being insertable into one of the first set of bores for initial positioning and each fastening hook at ends of said at least one stiffening brace being insertable into one of the second set of bores for initial positioning; and
wedge keys, each of which passes through one of said bores and a slot defined in each of the attachment parts to press and tighten each fastening hook for locking and attachment of each of the tie tubes and the at least one stiffening brace to the standards.

5,605,205
READILY DEPLOYABLE PORTABLE ESCAPE LADDER

Patrick Douglas; Don Jursich, both of Chicago, and Kenneth R. Fenne, Glen Ellyn, all of Ill., assignors to BRK Brands, Inc., Aurora, Ill.

Filed Aug. 12, 1994, Ser. No. 289,929
Int. Cl.[6] E06C *1/36*
U.S. Cl. 182—198 **6 Claims**

1. A light weight, portable, and storable ladder which can be hung on a surface of a window of a building, the ladder comprising:
a pair of hooks wherein said hooks each have a curved end engageable with the surface and a rigid spacing member

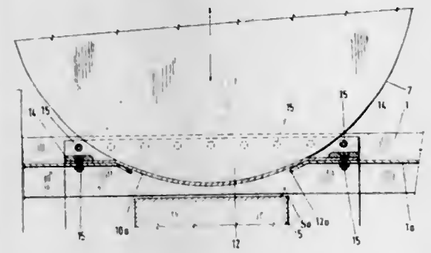


displaced from said curved ends and extending between said hooks and wherein said spacing member defines a slot;
an elongated flexible support element attached to said hooks;
a plurality of rungs wherein each of said rungs is attached to said element in spaced apart relation to another of said rungs, wherein each of said rungs is nestable with at least an adjacent one of said rungs, wherein each of said rungs and an adjacent rung define an internal storage region therebetween when said rungs are in a nested state, and wherein a portion of said elongated flexible support element extending between each said rung and an adjacent rung is storable in said storage region when said rungs are in said nested state; and
a cover for holding said rungs in said nested state, wherein said cover has an elongated releasing handle with a neck portion which extends through said slot from said cover toward said curved ends, and wherein said handle is linearly movable in said slot to release said cover from said rungs and to permit the ladder to self-deploy to the extended state.

5,605,206
PLATFORM FOR STORAGE OR REMOVAL OF MOTOR VEHICLES IN PARKING GARAGES

Karl-Hans Ries, Gross-Umstadt, and Oliver Remsberger, Obertshausen, both of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Germany

Filed Aug. 11, 1995, Ser. No. 513,724
Claims priority, application Germany, Aug. 11, 1994, 44 29 393.3
Int. Cl.[6] B66F *7/00*
U.S. Cl. 187—203 **11 Claims**

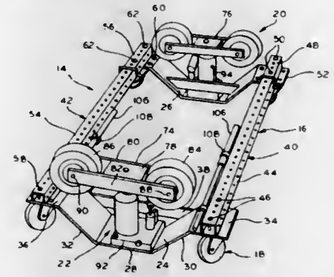


1. A platform base, suitable for storage or removal of a variety of motor vehicles having at least two axles and having wheels mounted thereon, each said wheel having a predetermined contour, diameter and width; and
a lifting device positioned beneath said platform which operates in cooperation with said platform;
said platform base having an upper surface and a lower surface with an opening therethrough at a location corresponding to the location of each said wheel of said motor vehicle during storage on said upper surface of said platform base, each said opening covered by a diaphragm comprising an elastic plate having an indentation therein and adapted to receive one of said wheels, said indentation resulting from said elastic plate adapting to said contours and said width of said wheel during storage on said platform with the result that said indentation of said plate extends beneath said lower surface of said platform when said vehicle is stored thereon.

5,605,207
FUEL TANK TENDER

Larry W. Betcher, Northfield; Charles L. Mosher, and Scott E. Jirele, both of Owatonna, all of Minn., assignors to OTC Div. of SPX Corporation, Owatonna, Minn.

Filed May 10, 1995, Ser. No. 437,953
Int. Cl.[6] B66B *9/16*
U.S. Cl. 187—244 **18 Claims**



3. A fuel tank tender for facilitating servicing of fuel tanks on vehicles comprising:
a frame comprising a plate at each of opposite ends secured together with elongate tubes;
wheel means rotatably mounted on the frame for moving the frame over a support surface including into position beneath a fuel tank;
a cradle for supporting a fuel tank; and
elevating means mounting the cradle to the frame for raising and lowering the cradle relative to the support surface to Support the fuel tank.

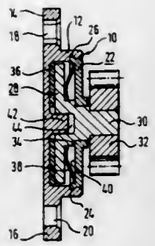
5,605,208
ROTARY DAMPER

Bernd Friedrichsen, and Werner Janoschek, both of Norderstedt, Germany, assignors to ITW Ateco GmbH, Norderstedt, Germany

Filed Dec. 26, 1995, Ser. No. 587,778
Claims priority, application Germany, Dec. 23, 1994, 9420646 U
Int. Cl.[6] F16F *7/02;7/04*
U.S. Cl. 188—130 **20 Claims**

1. A rotary damper, comprising:
a housing having a substantially cup-shaped configuration comprising a closed end wall, an annular side wall, and an open end disposed opposite said closed end wall;
friction means disposed within said housing upon said end wall;
cover means mounted upon said housing for closing said open end of said housing;
a rotor rotatably mounted within said housing and disposed in contact with said friction means for generating a friction

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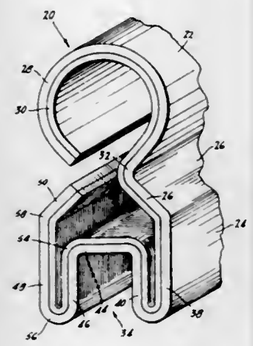
damping force as said rotor rotates with respect to said housing and said friction means disposed within said housing; and spring means disposed within said housing so as to be interposed between and in contact with said cover means and said rotor for biasing said rotor into contact with said friction means.

5,605,209

COMPOSITE ELECTRICAL CONDUCTOR RAIL

Robin A. Clarke, Woodbridge; William R. Heil, Shelton, and Robert S. Beale, Stratford, all of Conn., assignors to Howell Corporation, Stratford, Conn.

Filed Dec. 19, 1995, Ser. No. 582,148
Int. Cl.[6] B60M *1/34*
U.S. Cl. 191—23 A **22 Claims**



1. An electrical conductor rail for sliding engagement by a collector shoe, comprising in combination:

a) a bimetallic non-integral laminate assemblage constituted of two nested essentially tubular metal strips each of irregular substantially identical cross-sectional configuration,

b) said assemblage having a grooved track portion for receiving and guiding a collector shoe, and having a suspension portion adapted to be clamped by suspender fittings,

c) said track portion being connected with said suspension portion by a web which is coextensive with said track and suspension portions,

d) one of said metal strips being completely and fully exterior to the other strip and comprising abrasion-resistant material,

e) the other of said metal strips being characterized by high electrical conductivity and high heat conductivity, and

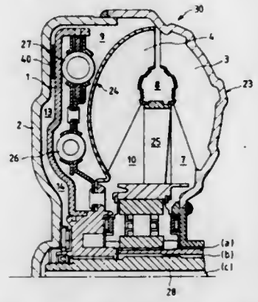
f) said nested strips being in intimate, large-surface heat-exchanging contact with each other.

5,605,210

TORQUE CONVERTER WITH A LOCKUP MECHANISM

Yasuhito Koike; Tatsuro Miyoshi, and Masao Shoji, all of Fukuroi, Japan, assignors to NSK-Warner K.K., Tokyo, Japan

Filed Dec. 23, 1994, Ser. No. 363,338
Claims priority, application Japan, Dec. 24, 1993, 5-327549
Int. Cl.[6] F16D *33/00;13/64*
U.S. Cl. 192—3.29 **12 Claims**



1. A torque converter with a main body that transmits power through a fluid, and a lockup mechanism, said lockup mechanism having a lockup clutch capable of being displaced between engaged and released conditions and assuming a slipping state between said engaged and released conditions, said torque converter comprising:

a first fluid space that receives fluid to bias said lockup clutch toward said engaged condition;

a second fluid space in fluid communication with said first fluid space within said main body and that receives fluid to bias said lockup clutch toward said released condition; and

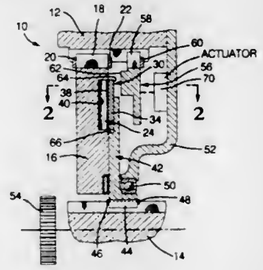
a hydraulic control mechanism in fluid communication with said first and second fluid spaces and that changes a flow rate of fluid supplied to a frictional surface on said lockup clutch while maintaining substantially constant a fluid pressure difference between said first and second fluid spaces in order to control said slipping state.

5,605,211

PARK MECHANISM FOR A POWER TRANSMISSION

Arthur Hall, III, Cicero, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 20, 1995, Ser. No. 546,421
Int. Cl.[6] B60K *41/26*
U.S. Cl. 192—4 A **1 Claim**



1. A park mechanism in a power transmission comprising:

a transmission output member;

a stationary housing portion supporting the output member;

a wall secured in the housing portion having a plurality of pawl support recesses formed therein;

a plurality of pawl members pivotally supported in pairs in the pawl support recesses, each pair being disposed to present engagement surfaces in opposite facing directions;

a driven disc member drivingly connected with the transmission output member and having a plurality of pockets formed therein, each pocket being of sufficient size to accept insertion of a pair of said pawl members and having oppositely disposed engaging surfaces defining two edges of the respective pocket and being selectively engageable by respective pawl members when a "Park" position is attained; and

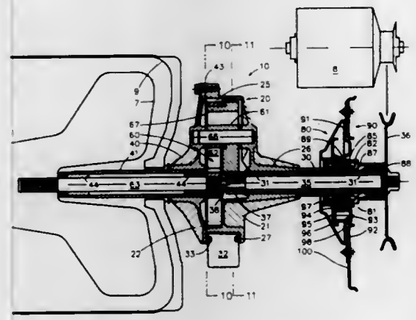
an actuator disposed for sliding movement in the housing to selectively pivot the pawls between the "Park" position and a non-"Park" position.

5,605,212

WASHING MACHINE TRANSMISSION CLUTCH/BRAKE MECHANISM

Hans Hauser, Strongsville, Ohio, assignor to MTD Products Inc, Cleveland, Ohio

Continuation-in-part of Ser. No. 237,014, Apr. 29, 1994, Pat. No. 5,509,284, and a continuation-in-part of Ser. No. 322,291, Oct. 3, 1994, Pat. No. 5,522,242. This application Feb. 10, 1995, Ser. No. 386,881
Int. Cl.[6] F16D *67/02;* **D06F** *37/30*
U.S. Cl. 192—12 BA **19 Claims**



1. A clutch/brake mechanism for a washing machine transmission including an input shaft driven by a bidirectional motor,

an actuation member, unidirectional clutch means to fixedly connect said actuation member to the input shaft on rotation of the motor in one direction,

a reaction member, means to rotatively support said reaction member about the input shaft next to said actuation member, separation means between said actuation member and said reaction member such that rotation of said actuation member in said one direction moves said reaction member away from said actuation member,

a brake disc, means to rotatively mount said brake disc about the input shaft next to said reaction member connected to said reaction member for common movement away from said actuation member,

a brake surface, means to non-rotatively mount said brake surface to the washing machine,

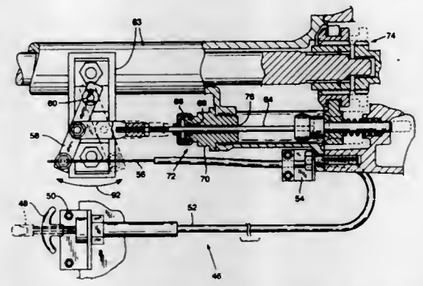
and spring means to bias said brake disc into braking contact with said brake surface such that rotation of the motor in said one direction releases the brake.

5,605,213

INSTANT ACTUATOR FOR SPLIT AXLE DRIVE MECHANISM

Richard E. White, 6625 SW. McEwan Rd., Lake Oswego, Oreg. 97035

Filed Dec. 21, 1994, Ser. No. 361,738
Int. Cl.[6] F16D *19/00*
U.S. Cl. 192—82 R **18 Claims**



1. An apparatus adapted to operate a clutch in a split-axle mechanism of a vehicle, comprising:

an actuator adapted to be operatively connected to the clutch in the split-axle mechanism for engaging the clutch to cause two shafts of a split axle to rotate together and for disengaging the clutch to allow the shafts of the split axle to rotate independently;

a cable operatively connected to the actuator for operating the actuator, the cable being adapted for engaging or disengaging the clutch from the split-axle mechanism; and

a control switch operatively connected to the cable for instantaneously moving the cable to operate the actuator and adapted to instantaneously engage or disengage the clutch;

wherein the control switch includes a lock operable for preventing movement of the cable once the cable is moved to operate the actuator.

5,605,214

BANKNOTE PROCESSOR

Koji Yukimoto, Sakado; Kenji Nishiumi, Hanno, and Kanesue Shimizu, Sakado, all of Japan, assignors to Kabushiki Kaisha Nippon Conlux, Japan

Continuation of Ser. No. 91,961, Jul. 15, 1993, abandoned. This application Sep. 1, 1995, Ser. No. 522,912
Claims priority, application Japan, Jul. 29, 1992, 4-202649; Dec. 3, 1992, 4-324461
Int. Cl.[6] G07F *7/04*
U.S. Cl. 194—348 **6 Claims**

1. A banknote processor for judging whether a banknote inserted into a banknote insertion port is authentic or false, storing the inserted banknote in an interior of a processor body when judging that the inserted banknote is authentic and returning the inserted banknote to the banknote insertion port when judging that the inserted banknote is false, the banknote processor comprising:

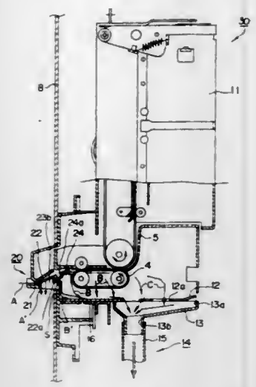
an underplate mounted on the processor body for forming a bottom face of the banknote insertion port;

an inclined wall formed as an upper face of the underplate such as to gradually ascend along a banknote insertion direction;

a plurality of first fluid discharge openings and a second fluid discharge opening having opening areas smaller than those of the first fluid discharge openings, the first and second fluid discharge openings formed on a midpoint of the ascending inclined wall disposed adjacent to each other in a width direction of the inclined wall;

a notch formed at a top end portion of the underplate above the second fluid discharge opening and having a rectangular shape in plan;

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a chute provided following a top end of the inclined wall and constituting a part of a banknote conveying path along which a banknote inserted into the banknote insertion port is conveyed;

a projection provided at the chute opposed to the notch of the underplate and bending downward, the projection having a rectangular shape in plan;

a gap serving as a fluid discharge opening, defined by a bottom of the notch and the projection when the positioning of the underplate relative to the chute is performed by inserting the projection into the notch;

fluid collector means provided below the processor body having a funnel shape with a top part thereof being an opening for collecting liquid and a lower part thereof being a liquid discharge opening for discharging collected liquid; and

fluid guiding means connected to the liquid discharge opening of the fluid collector means, for guiding the collected liquid outside of the processor body.

5,605,215

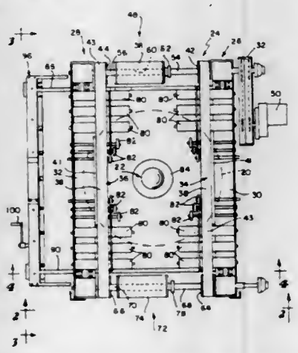
CONVEYING AND CENTERING APPARATUS

Peter L. Gross, Indianapolis, and Norman G. Poole, Plainfield, both of Ind., assignors to Illinois Tool Works Inc., Glenview, Ill.

Division of Ser. No. 320,905, Oct. 11, 1994. This application Mar. 21, 1996, Ser. No. 619,996

Int. Cl.[6] B65G *47/24*

U.S. Cl. 198—345.1 **13 Claims**



1. A centering mechanism comprising two centering sections, each including a supporting frame mountable to extend in generally parallel spaced-apart relation to the frame of the other centering section, first and second centering columns rotatably mounted in the frame, and a centering arm provided at an end of each centering column remote from the frame, first and second drive wheels for driving the first and second centering columns, respectively, and a flexible member trained about the first and second drive wheels to drive them in opposite directions, movement of the flexible member in a first direction driving the ends of the centering arms remote from the centering columns toward each other and movement of the flexible member in a second and opposite direction driving the ends of the centering arms remote from the centering columns away from each other.

5,605,216

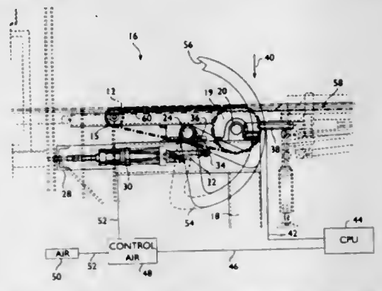
BOARD TURNING APPARATUS

Christopher Raybon; Russell R. Kennedy; L. Charles Gaither, and Patrick M. Conry, all of Hot Springs, Ark., assignors to Hi-Tech Engineering Inc., Hot Springs, Ark.

Filed Dec. 30, 1994, Ser. No. 366,584

Int. Cl.[6] B65G *47/252*

U.S. Cl. 198—395 **13 Claims**



1. An apparatus for inspecting and orienting moving wood boards having opposite side edges for subsequent operations on each wood board comprising a conveyor for moving the wood boards sequentially along a travel path, an inspection station positioned adjacent said path at a first location, said inspection station including a photoelectric device for scanning a surface of a wood board as the wood board passes through said first location and providing an electronic data output, an analyzing device for receiving said output from said photoelectric device and comparing said output to a set of conditions stored in said analyzing device, said analyzing device providing a control signal in response to a selected correspondence between said output and said set of conditions, an orienting device located adjacent said first location along said path, a control device operably connected to said orienting device for actuation of said orienting device upon receipt of a said control signal from said analyzing device, said orienting device comprising a pivot means for turning a board over on said conveyor upon receipt of a said control signal.

5,605,217

VACUUM COMBINER AND VACUUM CONVEYOR

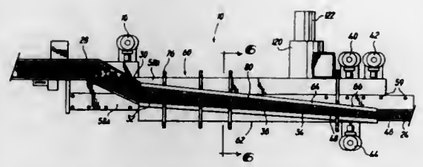
Robert F. Risley, Ellicott City; Paul E. Barkely, Sykesville, and Gordon S. Lawless, Finksburg, all of Md., assignors to Ambec, Owings Mills, Md.

Continuation-in-part of Ser. No. 242,776, May 16, 1994, abandoned, which is a continuation of Ser. No. 10,770, Jan. 29, 1993, Pat. No. 5,311,979. This application Mar. 29, 1995, Ser. No. 412,708

Int. Cl.[6] B65G *47/12*

U.S. Cl. 198—453 **12 Claims**

1. A process for combining a randomly arranged plurality of containers into a narrower stream of containers as the containers



are moved along a processing path and thereafter transporting the containers to a downstream workstation, comprising the steps of:

operating a first surface conveyor and a second laterally adjacent and parallel surface conveyor at progressively greater effective surface speeds with respect to each other;

delivering the containers in a randomly arranged mass to an upstream end of said first surface conveyor;

guiding the containers through a progressively constricted path laterally across said first and said second surface conveyors from the slower operating first surface conveyor to the faster operating second surface conveyor;

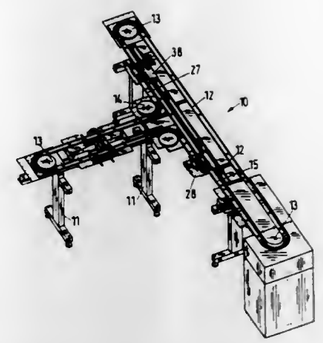
applying a substantially uniform level of vacuum across the width of said first and said second surface conveyors from beneath the surfaces of each of said surface conveyor to the containers moving across said surface conveyors, and increasing the vacuum level from said first surface conveyor to said second surface conveyor;

operating a discharge surface conveyor at a progressively greater effective surface speed than the effective surface speed of the second surface conveyor;

applying a substantially uniform level of vacuum to the containers moving along said discharge conveyor from beneath the surface of said discharge conveyor, wherein said level of vacuum is greater than the level of vacuum applied to said second surface conveyor; and

guiding the containers from said second surface conveyor toward said discharge conveyor;

whereby the second surface conveyor with an amount of vacuum greater than the first surface conveyor tends to pull the containers off of the first surface conveyor and onto the second surface conveyor, and the discharge surface conveyor with an amount of vacuum greater than the second surface conveyor tends to pull the containers off of the second surface conveyor and onto the discharge conveyor to transport the containers to the workstation.



at the beginning and the end of the second conveying path, further comprising at least one switch for transferring the material carriers between the first conveying path and the second conveying path, wherein the second conveying path has a T-shaped configuration including a cross-member and a beam member, the cross-member extending parallel to the first conveying path and the beam member extending perpendicularly to the first conveying path, so that the second conveying path comprises a 90° bend, wherein, in the cross-member of the second conveying path, the conveyor belts include a return portion extending underneath the second conveying path.

5,605,219

ARTICLE CONVEYOR SYSTEM

Bruce Zimmerman, Glen Ellyn; George Campise, Jr., Aurora; Charles Styles, Bolingbrook; David Rndzinski, Woodridge; Russell Jones, Aurora, and Richard Thomas, Marseilles, all of Ill., assignors to Avtec Industries, Inc., Oswego, Ill.

Continuation-in-part of Ser. No. 304,801, Sep. 12, 1994, abandoned. This application Jan. 13, 1995, Ser. No. 372,497

Int. Cl.[6] B65G *45/00*

U.S. Cl. 198—495 **5 Claims**

5,605,218

CONVEYOR SYSTEM, PARTICULARLY FOR MATERIAL CARRIERS FOR USE IN MEDICAL LABORATORIES

André von Froreich, Forsthöhe 33 D-21149, Hamburg, Germany

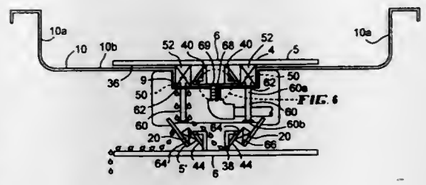
Filed Sep. 15, 1995, Ser. No. 528,939

Claims priority, application Germany, Sep. 28, 1994, 44 34 714.6

Int. Cl.[6] B65G *29/00*

U.S. Cl. 198—465.2 **8 Claims**

1. A conveyor system particularly for material carriers for use in medical laboratories, the conveyor system comprising a first conveying path comprising components having upwardly extending side walls, the conveying path having a beginning and an end, two endless conveyor belts guided parallel to each other in a horizontal plane and driven by a motor in the same direction on the components, the conveyor belts being guided around deflection rollers at the beginning and the end of the conveying path, further comprising a second conveying path extending in the horizontal plane parallel next to a portion of the first conveying path, the second conveying path comprising second components having upwardly extending side walls, the second conveying path having a beginning and as end, two endless conveying belts guided parallel to each other in a horizontal plane and driven by another motor in the same direction on the second components, the conveyor belts of the second conveying path being guided around deflection rollers



1. A conveyor system comprising

bed means having an upper surface,

an endless conveyor means for movement on said upper surface movement in a conveyor path from a first position to a second position,

said bed means including a pair of tracks extending along at least a portion of said conveyor path,

said conveyor means being movable along said tracks,

retention means for retaining said tracks to said bed means,

said retention means being releasable to permit said tracks to be lifted for cleaning in a captive relationship to said bed means, and

said retention means being an elongated member having unthreaded portions permitting upward movement.

5,605,220

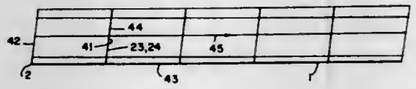
HIGH-PERFORMANCE CHAIN SCRAPER CONVEYOR WITH SYMMETRIC TURNING CHANNEL

Reinold Krohm, Herne, Germany, assignor to Udo Adam Maschinenfabrik, Bochum, Germany

Continuation of Ser. No. 267,251, Jun. 29, 1994, abandoned. This application Dec. 21, 1995, Ser. No. 576,163

Int. Cl.[6] B65G *19/28*

U.S. Cl. 198—735.6 **27 Claims**



1. Chain scraper conveyor with channels for transporting material comprising plural channel elements, plural dog bone shaped toggles connected to opposite ends of the channel elements in a swivelling manner for providing upper material carrying runs and lower return runs for carriers of a chain scrape conveyor, each channel section having side profiles with adjacent channel sections having abutting end surfaces, said side profiles being formed with V-shaped carrier shoe guide recesses, and a bottom plate forming a conveyor floor, said floor being offset on the ends of the channel belt by alternately formed projecting overlap tongues, and guide shoes provided on the carriers, wherein the side profiles with the guide recesses are shaped complementary to the guide shoes, wherein the ends of each channel section together with the overlap tongues and the abutting surfaces run diagonally and non-perpendicularly in a straight line across the entire width of the channels and together with the side profiles form structures running diagonally to a transport direction.

5,605,221

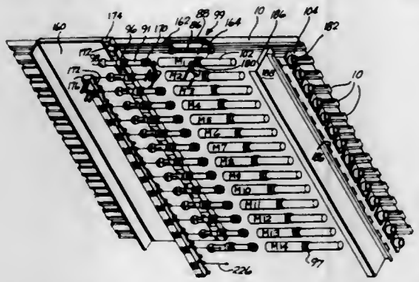
DRIVE UNIT WITH BEARING MOUNT

Raymond K. Foster, P.O. Box 1, Madras, Oreg. 97741

Continuation-in-part of Ser. No. 390,759, Feb. 17, 1995, Pat. No. 5,482,155, which is a continuation-in-part of Ser. No. 304,404, Sep. 12, 1994, Pat. No. 5,415,271. This application Dec. 13, 1995, Ser. No. 571,564

Int. Cl.[6] B65G *25/00*

U.S. Cl. 198—750.5 **32 Claims**



1. In a reciprocating floor conveyor of a type having a plurality of elongated floor slat members mounted adjacent each other for longitudinal reciprocation, a drive unit for reciprocating at least one of said floor slat members, said drive unit comprising:

a longitudinally fixed piston component having an outer end portion mounted on a fixed support and an inner end portion, said inner end portion including a piston head, and said piston component including a piston rod extending outwardly from said piston head;

a cylinder component including a cylinder barrel mounted to travel on said piston head, said cylinder barrel having a first end through which said piston rod extends and a second closed end;

an axially-extending tubular extension attached to said second end to travel with said cylinder barrel; and

a fixed tubular slide bearing having an axial opening through which said tubular extension extends;

wherein said bearing supports and guides said tubular extension to aid alignment of said cylinder barrel.

5,605,222

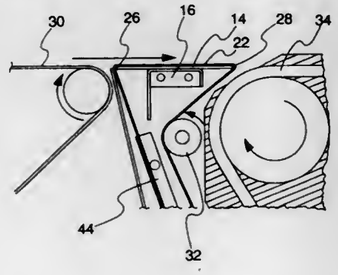
DUAL KNIFE EDGE TRANSFER CONVEYOR

Jay C. Huberty, Centerville; Mark A. Rekucki, Blaine, and Thomas M. Sorensen, White Bear Lake, all of Minn., assignors to Illinois Tool Works Inc., Glenview, Ill.

Filed Apr. 24, 1996, Ser. No. 636,950

Int. Cl.[6] B65G *15/00*

U.S. Cl. 198—841 **7 Claims**



1. In an arrangement including two endless conveyors revolving about deflection rollers for transporting articles, upper sections of said conveyors being in approximately the same plane, said conveyors being driven in the same transport direction and following each other immediately in the transport direction and thus forming a gap between the two conveyors; and a transfer device for transferring articles from a first conveyor to a second conveyor, an improved transfer device comprising a dual knife-edge transfer conveyor, said dual knife-edge transfer conveyor comprising:

a dual knife-edge plate member, an endless transfer belt, said transfer belt revolving about said dual knife-edge plate member, a transfer conveyor frame, said dual knife-edge plate member being attached to an upper section of said frame, said dual knife-edge plate member also having a pair of edges, each of said edges having a small radius, said frame being positioned in between the two conveyors such that said dual knife-edge plate member lies in approximately the same plane as the two conveyors with one edge facing the first conveyor and the second edge facing the second conveyor, said dual knife-edge plate member further having a length slightly smaller than the gap formed between the two conveyors, deflection means, said deflection means being attached to said frame below said dual knife-edge plate member for deflecting said transfer belt around the edges of the dual knife-edge plate member inwardly and away from the two conveyors at an angle less than 90 degrees to enable the transfer belt to snugly fit within the gap created by the two conveyors without the transfer belt touching the two conveyors, drive means, said drive means being attached to said frame below said deflection means for driving said transfer belt in the same transport direction as the two conveyors, and a deflection pulley, said deflection pulley being attached to a lower section of said frame and deflecting said transfer belt back up to said dual knife-edge plate member.

5,605,223

CONDUCTIVE LACQUER CONTACT SURFACE

Klaus Gutmann, Paderborn, and Hans-Werner Lückehe, Salzkotten-Holsen, both of Germany, assignors to Siemens Nixdorf Informationssysteme AG, Paderborn, Germany

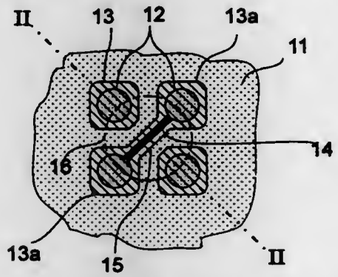
PCT No. PCT/DE93/01197, § 371 Date Aug. 2, 1995, § 102(e) Date Aug. 2, 1995, PCT Pub. No. WO94/17541, PCT Pub. Date Aug. 4, 1994

PCT Filed Nov. 15, 1993, Ser. No. 500,961

Claims priority, application Germany, Jan. 25, 1993, 43 01 928.5

Int. Cl.[6] H01H *1/06*

U.S. Cl. 200—275 **4 Claims**



1. A contact zone for electrical pushbutton switches, the contact zone having a plurality of contact surfaces that are connectable by a conductive contact bridge, comprising:

contact surfaces of said plurality of contact surfaces being arranged symmetrically about a center point of the contact zone;

the contact surfaces being structured as at least two pair of convex surface elements;

at least one diagonally opposite first pair of contact surface elements being spaced apart such that a substantial part of a center area of the contact zone is left open, and at least one diagonally opposite second pair of contact surface elements being electrically connected to one another; and

the contact surfaces of the plurality of contact surfaces being substantially square and clear spacings between edges of adjacent contact surface elements being between half and a fifth of a lateral length of the contact surfaces.

5,605,224

ACCESSORY COMPARTMENT FOR HIGH AMPERE-RATED CIRCUIT BREAKER

Raymond K. Seymour; Paul T. Rajotte, both of Plainville; Paul H. Singer, West Hartford, and John A. Pollman, Seymour, all of Conn., assignors to General Electric Company, New York, N.Y.

Filed May 25, 1994, Ser. No. 248,900

Int. Cl.[6] H01H *23/00*

U.S. Cl. 200—401 **17 Claims**

1. An industrial-rated circuit breaker for high level overcurrent protection comprising:

an insulative circuit breaker cover arranged on an insulative base;

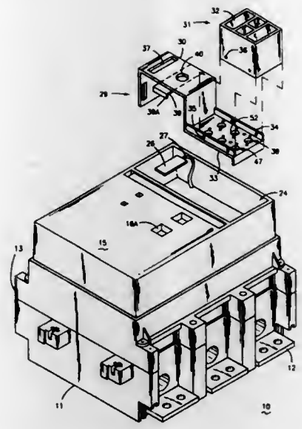
a recess in said circuit breaker cover;

a support within said recess;

an electronic trip unit on a first part of said support and arranged for interrupting circuit current upon occurrence of an overcurrent condition, said trip unit including a keypad and display for entering and displaying trip parameters;

retainer means on said first part arranged for securing said trip unit to said support;

a retainer stud extending from said trip unit, said retainer stud being received within said retainer means when said trip unit is inserted within said recess; and



an accessory housing on a second part of said support for receiving a plurality of circuit breaker accessories.

5,605,225

PUSH-PULL TYPE LATCHING CONTROL BUTTON, IN PARTICULAR FOR ACTUATING AN ELECTRICAL COMPONENT

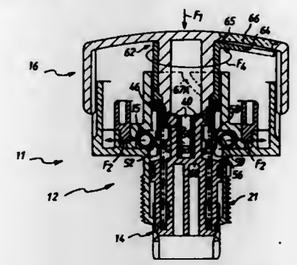
Maurice Schaeffer, Strasbourg, France, assignor to Baco Constructions Electriques Anct.Baumgarten, Strasbourg, France

Filed Nov. 15, 1995, Ser. No. 558,852

Claims priority, application France, Nov. 16, 1994, 94 13690

Int. Cl.[6] H01H *3/20*

U.S. Cl. 200—539 **20 Claims**

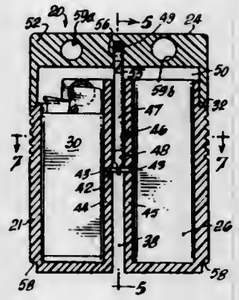


1. Control button comprising a guide body for mounting the control button on a support, a main plunger mounted for axial reciprocating movement along a path and adapted to actuate an underlying component, retractable latching means disposed on the path of movement of said plunger for releasably retaining said main plunger in at least one axial direction, a control member mounted to move axially in said guide body between an "out" inactive position and an "in" active position, said control member having a head adapted to be actuated by a user and a shank for actuating said plunger, return spring means for urging said control member towards the "out" inactive position, lost motion coupling means between said main plunger and said shank of said control member for applying traction to said main plunger by means of said control member, an auxiliary plunger disposed between said main plunger and the shank of said control member and aligned with said main plunger, said shank of said control member arranged to actuate said main plunger by-means of said auxiliary plunger, said auxiliary plunger also being releasably retained by

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said latching means, and said return spring means comprising elastic spreader means operative between said main plunger and said auxiliary plunger.

5,605,226
CADDY
William J. Hernlein, 1929 Wilcox Ave. #2, Los Angeles, Calif. 90068
Filed Feb. 13, 1995, Ser. No. 387,575
Int. Cl.[6] A24F *19/10*
U.S. Cl. 206—86 **25 Claims**

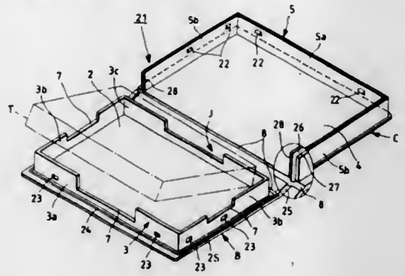


1. A caddy comprising
a body having opposing faces and a length and a top and a bottom and one or more pockets from within the top,
a lid seatable upon said body at the top of said body and at the bottom of said body,
a slot formed in at least one of said opposing faces extending the length of the body,
elastic connecting means mounted in said slot, and
means pivotally attaching said elastic connecting means to said body and to said lid,
said lid pivotable between its seat at the top of the body and its seat at the bottom of the body,
said elastic connecting means providing inseparableness between said lid and body and stretching so that said lid can pivot to seat said lid either on said top or bottom of said body.

23. In a carrying case having a body, a lid, and at least one pocket in the body,
the improvement comprising
a slot in and extending the length of said body,
elastic connecting means connecting said lid to said body, and means in said slot and in said lid pivotally connecting said elastic connecting means to said body and to said lid.

24. A caddy comprising
a case having at least one pocket therein and with a top and a bottom,
a lid seatable upon said top and upon said bottom,
a pair of slots formed in said case in opposing relation to one another and extending the length of the case,
elastic connecting means mounted in each one of said pair of slots, and
means pivotally attaching each said elastic connecting means to said body and to said lid,
whereby the lid by means of said elastic connecting means is pivotable between its seat at the top of the body and its seat at the bottom of the body,
said elastic connecting means providing inseparableness between said lid and body and stretching so that said lid can pivot to seat said lid either on said top or bottom of said body, and
a lighter unit mounted on said lid.

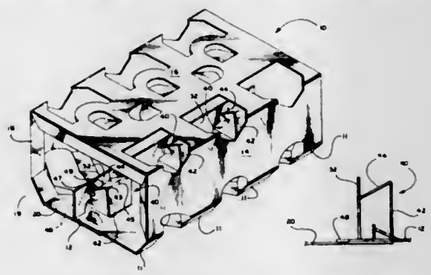
5,605,227
CASE FOR RECORDING MEDIUM
Kiyoo Morita, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Sep. 13, 1995, Ser. No. 527,713
Claims priority, application Japan, Oct. 6, 1994, 6-266111
Int. Cl.[6] B65D *85/672*
U.S. Cl. 206—387.1 **9 Claims**



1. A case for encasing a recording medium therein, said case comprising a case body connected with a closure member through a connection member and a thin hinge so that said case body and said closure member are operative to open and close relative to each other, said case body being formed on a bottom surface thereof with a frame defining a space in which a cassette is to be stored, said closure member being formed on an upper surface thereof with a peripheral wall structure which overlaps said frame at an external surface of said frame when said case is closed, said case being characterized by: supplementary fitting means disposed between an edge of said peripheral wall structure and an internal surface of said case facing said edge of said peripheral wall structure, said supplementary fitting means comprising a continuously formed first groove having a semicircular cross-section disposed outside a front wall and side walls of said frame and at a location which faces an upper edge of said peripheral wall structure on said bottom surface of said case body, said first groove being formed in said bottom surface along the external surfaces of said front wall and said side walls, thereby to prevent entrance of dust into said case when said case is closed; and engaging means, disposed in the vicinity of said fitting means, for engaging said case body to said closure member so that said case body is kept closed relative to said closure member.

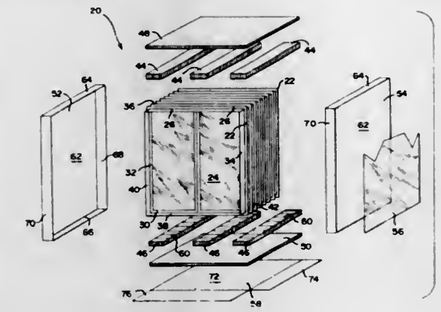
5,605,228
KEEL FOR WRAPAROUND ARTICLE CARRIER
Ronald A. Baxter, Douglasville, Ga., assignor to The Mead Corporation, Dayton, Ohio
Filed Jun. 6, 1995, Ser. No. 465,852
Int. Cl.[6] B65D *65/00*
U.S. Cl. 206—427 **9 Claims**

1. A keel structure for separating adjacent rows of articles in



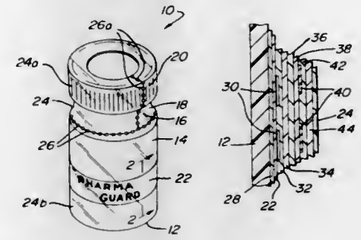
wraparound type article carrier comprising at least one keel element which separates one of the rows of articles from another, each keel element having spaced upstanding panels against which an article abuts, said upstanding panels spaced apart and interconnected by a platform having curved edges extending toward one another which permit adjacent portions of each of said upstanding panels to be flexed inwardly toward the other of said upstanding panels to receive a wall portion of one of the articles, and wherein a first height at which said platform is interconnected to one of said upstanding panels above a base of the article carrier is greater than a second height at which said platform is interconnected to the other of said upstanding panels above said base of the article carrier.

5,605,229
BULK VERTICAL WINDOW PACKAGE
Paul E. Sowa, Wheeling, Ill., assignor to Illinois Tool Works Inc., Glenview, Ill.
Filed Feb. 27, 1995, Ser. No. 394,788
Int. Cl.[6] B65D *85/48*
U.S. Cl. 206—454 **20 Claims**



1. A package, comprising:
a plurality of items, wherein each one of said plurality of items includes a top edge portion, a bottom edge portion, and a middle section disposed between said top and bottom edge portions and having opposed side edge portions, and wherein said plurality of items are disposed within said package in a side-by-side manner and spaced apart from each other;
a top member overlying said top edge portions of said plurality of items and having opposed side edge portions respectively disposed adjacent to said opposed side edge portions of said plurality of items and disposed upon opposite sides of a middle portion of said top member;
a bottom member underlying said bottom edge portions of said plurality of items and having opposed side edge portions, disposed upon opposite sides of a middle portion of said bottom member, respectively disposed adjacent to said opposed side edge portions of said plurality of items;
means provided upon said top and bottom members for maintaining said plurality of items in spaced relationship with respect to each other; and
first and second end caps respectively overlying said opposed side edge portions of each one of said plurality of items, and overlying said opposed side edge portions of both of said top and bottom members by being removably mounted upon said opposed side edge portions of said top and bottom members so as to embrace and retain said top and bottom members in position with respect to each other, and with respect to said side edge portions of each one of said plurality of items, and yet facilitate disassembly of said package by removal of said first and second end caps from said opposed side edge portions of said top and bottom members, when said plurality of items are to be removed from said package, with said opposed side edge portions of said top and bottom members remaining intact with said middle portions of said top and bottom members so as to permit reassembly of said first and second end caps onto said opposed side edge portions of said top and bottom members when reassembly of said package is desired, said first and second end caps also overlying said opposed side edge portions of said plurality of items in such a manner as to leave a portion of said middle section of at least one of said plurality of items, disposed upon one end of said package, exposed to view.

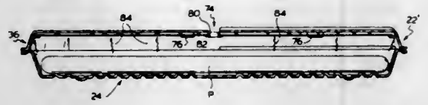
5,605,230
SEALED LABEL HAVING ANTI-COUNTERFEIT CONSTRUCTION
Michael A. Marino, Jr., Marlton; John L. Gordon, Jr., Yardville, and Richard J. St. Hilaire, Cherry Hill, all of N.J., assignors to ELR, Inc., Wilmington, Del.
Filed Oct. 11, 1994, Ser. No. 320,720
Int. Cl.[6] B65D *5/43*
U.S. Cl. 206—534 **33 Claims**



1. A container of the type having a base portion, an upper neck portion and a removable closure means applied to the neck portion in a sealed relation therewith, the container including a label thereon, the label comprising:
a label base having a front side and a back side,
an adhesive applied to the back side of the label base for adhesively securing the label to the base portion of the container,
a protective film sleeve heat shrunk into a conforming, sealed relation around the container and covering at least a portion of the label base,
a sleeve adhesive provided between the front side of the label base and the sleeve, the sleeve adhesive forming a bond between the label base and the sleeve such that removal of the portion of the sleeve covering the label removes a portion of the printing on the front side of the label base, and
a printed indicia on the label base, the printed indicia including
an underlying printed message applied to the front side of the label base,
a release coating covering at least a portion of the underlying printing, and
an overlying printing applied over the release coating and covering at least a portion of the underlying printing,
the sleeve adhesive being secured upon activation to at least the overlying printing and separable from the underlying printing by means of the release coating,
whereby removal of the sleeve causes removal of the overlying printing above the release coating and exposing the underlying printing.

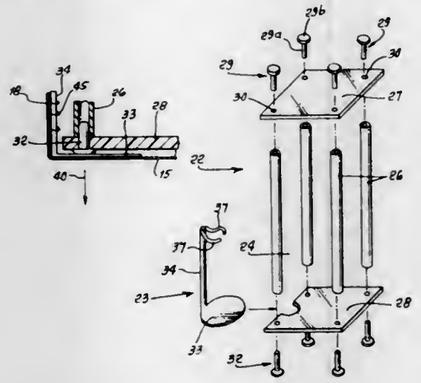
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5,605,231
FOOD DELIVERY CONTAINER
Anthonius H. Borsboom, Lenox, and Anthony Giordano, Boston, both of Mass., assignors to The Green Partnership Inc., Toronto, Canada
Continuation-in-part of Ser. No. 276,583, Jul. 18, 1994, abandoned. This application Feb. 22, 1995, Ser. No. 391,860
Int. Cl.[6] A45C *11/20*
U.S. Cl. 206—551 **23 Claims**



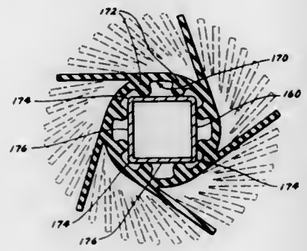
2. A re-usable food delivery container comprising upper and lower container sections which are shaped to co-operate and define an enclosure for receiving a food item to be delivered in the container, the sections being made from a material which is selected to withstand a maximum food item temperature, and to permit cleaning of the container sections after use, to a standard sufficient to permit the sections to be re-used for subsequent deliveries of food items, wherein said upper container section is adapted to receive a replaceable liner which is capable of absorbing moisture given off by said food item, and is provided with means for retaining the liner clear of the food item, wherein said upper and lower container sections comprise respective dish-shaped plastic mouldings which are designed to interfit with one another and form said enclosure, wherein said plastic mouldings are of circular shape in plan, each comprising a circular base, and a sidewall which extends outwardly from the base, and wherein said liner retaining means comprises a post at the center of said circular base, including means for engaging the liner, and liner support elements spaced around said sidewall for engaging a marginal portion of said liner, the liner having a circular shape corresponding to the shape of said base, with an opening at the center for receiving said post.

5,605,232
DOLL TRANSPORTER
Lynn B. Bickle, 2667 San Miguel Cir., Thousand Oaks, Calif. 91360
Filed May 24, 1995, Ser. No. 449,803
Int. Cl.[6] B65D *5/50*
U.S. Cl. 206—764 **14 Claims**



1. In a doll transporter, the combination comprising
a) a cage comprising laterally spaced, longitudinally elongated members and means holding the ends of said members in fixed position, said means including end plates to which said member ends are connected.
b) a doll stand located to support a doll at the rear thereof and contained within the cage, said stand having a base supported adjacent one of said plates,
c) and a cover extending protectively about the cage and to be sufficiently removable therefrom as to provide access to the doll, by manipulation of the cage, said cover holding said base in position adjacent said one plate, said base and plate being generally parallel.

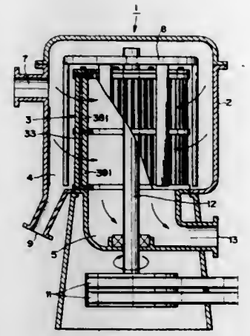
5,605,233
TROMMEL CLEANER
David A. Hauch, Afton, Minn., assignor to Carter Day Industries Inc., Minneapolis, Minn.
Filed Jan. 30, 1995, Ser. No. 380,025
Int. Cl.[6] B07B *1/50*
U.S. Cl. 209—385 **28 Claims**



1. A trommel cleaner for cleaning a trommel, said trommel cleaner comprising:
a shaft having a non-circular cross section;
means for driving said shaft; and
a plurality of flapper elements, each said flapper element comprising:
a hub having an interior and an exterior surface;
a plurality of flappers extending outwardly from said hub exterior surface for engaging the trommel; and
a plurality of indexing lobes arrayed about said hub interior surface and engaging said non-circular cross section of said shaft.

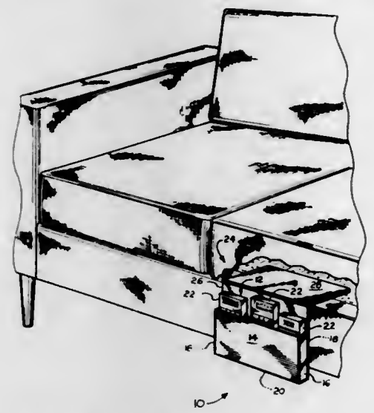
5,605,234
PAPER MAKING SCREEN PLATE
Yoshihiko Aikawa, Shizuoka, Japan, assignor to Aikawa Iron Works Co., Ltd., Shizuoka, Japan
Filed Jul. 17, 1995, Ser. No. 503,090
Claims priority, application Japan, Jan. 27, 1995, 7-011868
Int. Cl.[6] B07B *1/49*
U.S. Cl. 209—411 **5 Claims**

1. A paper making screen plate, comprising:
first and second support members;
a plurality of longitudinal members each having an end fixed to said first support member and the other end fixed to said second support member, respectively and annularly disposed in parallel with each other with gaps defined therebetween;
an intermediate support member interposed between said first support member and said second support member, having openings for causing said longitudinal members to pass therethrough and supporting said longitudinal members by being abutted thereagainst;
a first interval keeping member having an end abutted against said first support member and the other end abutted against said intermediate support member, respectively; and



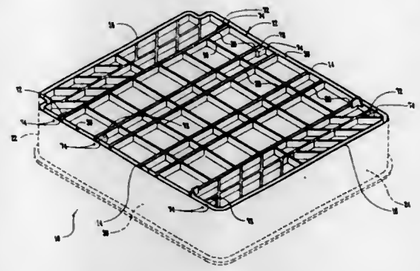
a second interval keeping member having an end abutted against said intermediate support member and the other end abutted against said second support member, respectively, wherein said first interval keeping member and said second interval keeping member hold said intermediate support member therebetween to thereby regulate the movement of said intermediate support member.

5,605,235
REMOTE CONTROL HOLDER
Rhonda D. Johnson, P.O. Box 220402, Anchorage, Ak. 99522
Filed Dec. 30, 1994, Ser. No. 366,736
Int. Cl.[6] A47F *7/00*
U.S. Cl. 211—13 **2 Claims**



1. A monolithic holder for supporting remote controllers of audiovisual equipment on household furniture between top and supporting cushions, said holder comprising:
a pocket having a rear wall being extended higher than the remaining walls and an opening at the top for holding the remote controllers, and
a support arm comprising a singular horizontal extension projecting from the top of said rear wall of the pocket,
said singular horizontal extension of said support arm being substantially planar, smooth, and unbroken,
said singular horizontal planar extension of said support arm projecting in a perpendicular direction of the rear wall of said pocket,
wherein said horizontal planar member slips under the top cushion and above the supporting cushion of the furniture so as to hold the remote controllers entirely beneath an upper surface of the supporting cushion.

5,605,236
DISHWASHER RACK
Rodney M. Welch, Newton, Iowa, assignor to Maytag Corporation, Newton, Iowa
Filed Mar. 17, 1995, Ser. No. 405,731
Int. Cl.[6] A47F *7/00*
U.S. Cl. 211—41 **26 Claims**

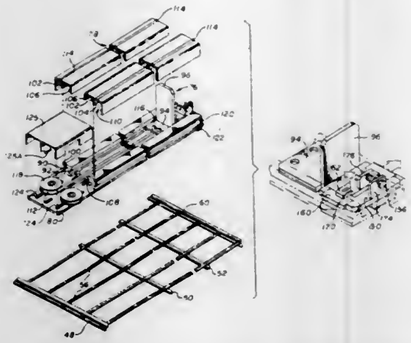


1. A dishwasher rack–for holding objects to be washed in a dishwasher having a tub, the rack comprising:
a plastic base portion with opposite upper and lower surfaces, opposite side edges, and opposite front and back edges;
plastic side walls extending upwardly from the opposite side edges of the base portion;
plastic front and back walls extending upwardly from the front and back edges of the base portion, respectively;
plurality of wheels extending from the side edges of the base portion and being adapted to engage the tub for movement of the rack relative no the tub;
the base portion having a plurality of cross channels formed therein and extending between the opposite side edges of the base portion; and
a plurality of metal cross braces positioned within the cross channels to transfer the weight of the objects in the rack to the side edges of the rack, and thus to the wheels and to the tub.

5,605,237
PRODUCT ADVANCE MECHANISM
Richard J. Richardson, Simi Valley, and Charles E. Crown, San Fernando, both of Calif., assignors to Anthony's Manufacturing Company, Inc., San Fernanado, Calif.
Filed Dec. 14, 1994, Ser. No. 355,615
Int. Cl.[6] A27F *5/00*
U.S. Cl. 211—59.3 **19 Claims**

1. A product advance mechanism comprising:
a product contact element for contacting a product and for moving so as to push the product;
a track for supporting and guiding the product contact element as the product element moves;
a bias element for biasing the product contact element in a direction along the track; and
an adjustable brake mechanism for controlling the amount of bias applied to the product contact element, the adjustable

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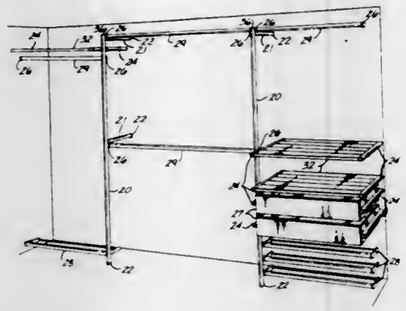
brake mechanism having a continuous predetermined range of adjustment and adapted to be set, independent of the product, within the predetermined range.

5,605,238

SHELVING SYSTEM

Kenneth Jacobs, Bramley, England, assignor to The Stanley Works, New Britain, Conn.

Filed Jan. 26, 1995, Ser. No. 378,743
Int. Cl.[6] A47F *5/00*
U.S. Cl. 211—90 **19 Claims**



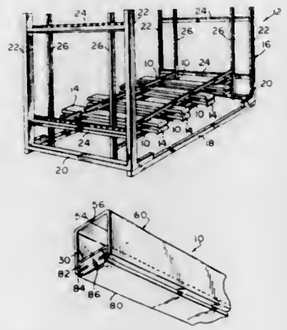
1. A shelving system comprising:
a generally horizontal shelf having a back edge adjacent a wall and end edges at each end of the shelf;
an shelf bracket at each end of the shelf, each such shelf bracket comprising:
a U-shaped channel encompassing the end edge of the shelf,
a front hole through the root of the U-shaped channel for receiving a mounting screw,
a tab closing a back end of the U-shaped channel and including a back hole for receiving a mounting screw secured to a wall, and
a peripheral slot inside a front end of the U-shaped channel; and
a shelf bracket cap complementary to the slot in the shelf bracket for concealing a front corner of the shelf.

5,605,239

DUNNAGE RACK BAR

Thomas F. DeVoursney, Muskegon, and Peter Sturrus, Grand Haven, both of Mich., assignors to Shape Corp., Grand Haven, Mich.

Filed May 3, 1995, Ser. No. 433,601
Int. Cl.[6] A47F *5/00*
U.S. Cl. 211—183 **8 Claims**



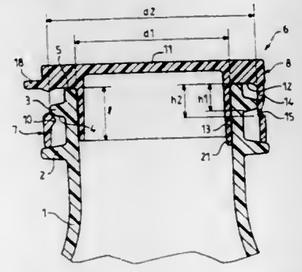
1. A one-piece dunnage rack bar comprising:
a generally C-shaped outer portion; and
a generally C-shaped inner portion integral with and substantially surrounded by said outer portion, said inner portion and said outer portion together defining a mouth;
said inner portion including a pair of inner wall segments defining said mouth;
said outer portion including a pair of outer wall segments defining said mouth, each of said outer wall segments integrally connected to one of said inner wall segments along a fold line, each of said outer wall segments overlying engaging one of said inner wall segments; and
each of said inner and outer portions having a generally uniform wall thickness except at said inner and outer wall segments, each of said inner and outer wall segments having a reduced wall thickness substantially less than the uniform wall thickness.

5,605,240

CAP FOR A CONTAINER HAVING A NECK HAVING A SINGLE ATTACHMENT FLANGE

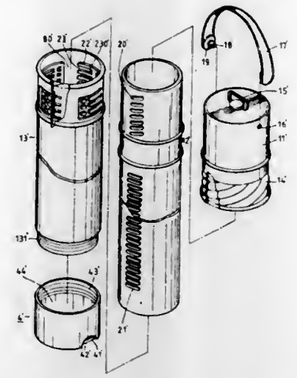
Bernard Guglielmini, Crimolois, France, assignor to Rical S. A., Longvic Cedex, France

Filed May 8, 1995, Ser. No. 436,553
Claims priority, application France, May 6, 1994, 94 05634
Int. Cl.[6] B65D *41/32*
U.S. Cl. 215—256 **9 Claims**



1. A unitary, one-piece, container cap on a container, comprising:

a ring (7) with a bead (10) for attaching it by clipping behind an external flange (3) on a container neck,
a stopper (8) with a perimeter having a disk (11), an annular bearing surface (12), and an annular sealing skirt (13) cooperating with the inside of the neck (1) which is joined by a hinge (15) to said ring (7), and
a tamper proof strip (9) joining the stopper (8) to the ring (7) until it is torn off the first time the cap is opened, where capping said container having said neck (1) with said single attachment flange (3) at a distance from the upper edge (5) of the neck, the annular bearing surface (12) bears on the upper edge (5) of the neck and surrounds said entire skirt (13), said skirt (13) projecting from said bearing surface (12) over a length (1) greater than a distance (h_1) between a lower side (4) of the flange (3) and the upper edge (5) of the neck, and the hinge is offset relative to said annular bearing surface (12) towards the ring (7) by an amount (h_2) at least equal to said distance (h_1).



5,605,241

HYDRAULICALLY CONTROLLED CONTAINER DISCHARGE LID TO PREVENT SPILLAGE

Rosemarie V. Imperioli, 901 Earl of Chatham La., Virginia Beach, Va. 23454

Filed Jan. 13, 1995, Ser. No. 373,939
Int. Cl.[6] B65D *55/16*
U.S. Cl. 215—306 **15 Claims**



1. A hydraulically expellable lid, comprising:
a beveled plug member having an exterior circumferential surface exhibiting a first diameter substantially equal to an inner diameter of a neck defining an orifice into a flexible container closable by a cap providing engagement with an outer surface of the neck, and tapering to a second diameter less than said first diameter;
an elastically deformable ridge superimposed around and circumscribing a central portion of said plug member between said first and second diameters, releasably engaging the inner surface of the neck when said plug member is forcibly inserted into the neck of the container, said ridge having a diameter greater than said first diameter, and releasably disengaging the inner surface of the neck when the volume of the flexible container is compressed;
an upper lip extending radially outwardly from said first diameter of said plug member to beyond the inner surface of the neck of the container when said plug member is forcibly inserted into the neck of the container, with said lip forming a continuous surface exhibiting a greatest cross-sectional dimension that lies in a plane including the orifice and that accommodates said engagement; and
an elongated tether attached at a first end to a surface of said upper lip exterior to said container when said plug member is forcibly inserted into the neck of the container and extending radially outwardly from said upper lip, and attached at a second end to one of the exterior of the container and the cap.

5,605,242

STORAGE CONTAINER FOR GRAPHIC SHEET MATERIAL

Chin C. Hwang, P.O. Box 1032, Tainan, Taiwan

Continuation-in-part of Ser. No. 351,524, Dec. 7, 1994, abandoned. This application Nov. 28, 1995, Ser. No. 563,274
Int. Cl.[6] B65D *85/00*
U.S. Cl. 220—8 **1 Claim**

1. A storage container comprising:
a cylindrical body including an upper portion and a lower portion, said lower portion including a plurality of projections formed thereon;
a cap for engaging on said upper portion of said cylindrical body;
said cap having a fastener seat on top of said cap to conneet an upper fastener;
a casing including an open top for engaging with said lower portion of said cylindrical body and including an enclosed bottom, said casing including an upper portion having at least one channel formed therein for engaging with one of said projections so as to retain said casing to said cylindrical body;
said upper portion of said casing including at least two ribs laterally formed therein and spaced with each other so as to define said channel therebetween;
said channel including one side having a stop formed thereon for engaging with said projection so as to prevent said projection from disengaging said channel;
said cylindrical body including an outer peripheral surface, and said projections projected radially outward from said outer peripheral surface of said cylindrical body;
said casing having a threaded end;
a hollow cylindrical seat disposed beneath said casing, said cylindrical seat having an inner threaded rim to receive said threaded end, a notch at a bottom of said cylindrical seat, and a lower fastener on said notch; and
a strap fastening said upper fastener and said lower fastener.

5,605,243

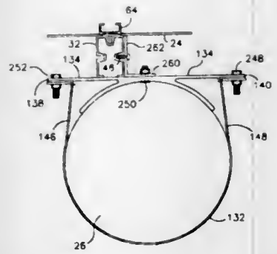
FLOATING ROOF

Ronald P. Jolly, Magnolia, Tex., assignor to HMT, Inc., Houston, Tex.

Continuation of Ser. No. 313,000, Sep. 27, 1994, abandoned, which is a continuation-in-part of Ser. No. 62,006, May 14, 1993, Pat. No. 5,533,640. This application Apr. 10, 1996, Ser. No. 630,270
Int. Cl.[6] B65D *88/34*
U.S. Cl. 220—216 **3 Claims**

1. An arrangement for coupling a pontoon to a floating roof in a storage tank for liquid product comprising a floating roof having a girder, a pontoon, a saddle and strap assembly for receiving and securing the pontoon therein, and a mounting plate attached to the girder of the floating roof and having a lower flange with an aperture therein for pivotally coupling the saddle and strap assembly thereto, the saddle and strap assembly including a saddle having an intermediate portion thereof between opposite ends and a strap having opposite ends attached to the opposite ends of the saddle, the intermediate portion of the saddle being coupled to the lower flange by a single, pivotable coupling extending through the aperture therein, so that the saddle and strap assembly can assume

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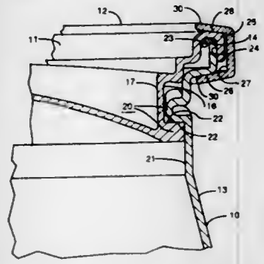
different angular orientations relative to the lower flange and thereby permit attachment of the mounting plate at any of a plurality of locations along the girder.

5,605,244

PLASTIC CONTAINER WITH CLOSURE LOCKING MECHANISM

T. Gary Bradshaw, El Dorado, Ark., assignor to Lobo Containers, Inc., El Dorado, Ark.

Filed Dec. 22, 1994, Ser. No. 362,253
Int. Cl.[6] B65D *45/32*
U.S. Cl. 220—320 **6 Claims**



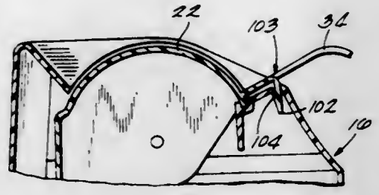
1. A molded container and closure combination comprising: a container having a tubular side wall with top and bottom ends and interior and exterior surfaces and a circular bottom wall, said tubular side wall having a neck portion located below and adjacent said top end, a circular closure lid for said container having a central panel and a skirt extending upwardly from adjacent the periphery of said central panel, said skirt having an exterior surface, thread lock means on the interior surface of said container side wall adjacent said top end and on the exterior surface of said lid skirt for mating thread locking engagement with each other to secure said closure lid at said neck portion, a circumferential perimeter overhang on said closure lid extending radially outwardly from said skirt and providing an inverted annular U-shaped rim channel above and outside of said thread lock means for circumferentially receiving and engaging said top end of said container when said closure lid is secured to said container, said skirt located radially inwardly of said inverted U-shaped annular rim channel, a downwardly facing annular shoulder on the exterior surface of said container side wall positioned between said thread lock means and said top end thereof, and located radially outwardly of said neck portion, said top end terminating in the form of an upwardly facing edge annularly receivable in said closure lid inverted U-shaped channel, and split ring clamp means for circumferentially clamping said closure lid to said container when secured together, said clamp means having an inwardly open U-shaped channel for engaging said container annular shoulder and circumferential top portions of said lid in vertical compressed engagement for compressing said container top edge into said closure inverted U-shaped channel.

5,605,245

SHARPS DISPOSAL CONTAINER

Richard A. Bemis, Sheboygan, and Kenneth V. Pepper, Plymouth, both of Wis., assignors to Bemis Manufacturing Company, Sheboygan Falls, Wis.

Division of Ser. No. 45,830, Apr. 9, 1993, Pat. No. 5,413,243, which is a continuation of Ser. No. 651,294, Feb. 5, 1991, abandoned, which is a continuation of Ser. No. 309,208, Dec. 20, 1988, abandoned, which is a continuation-in-part of Ser. No. 40,430, Apr. 20, 1987, Pat. No. 4,736,860. This application Feb. 14, 1995, Ser. No. 388,348
Int. Cl.[6] B65D *43/00*
U.S. Cl. 220—324 **24 Claims**



1. A sharps container apparatus comprising a container including a door manually movable between a closed position and an open position, said container being completely closed when said door is in said closed position, and a mechanism for selectively and permanently locking said door in said closed position, said locking mechanism including a recess in one of said container and said door, and a projection which is pivotally connected to the other of said container and said door by a living hinge for movement relative to said other of said container and said door between a first position wherein said projection cannot be inserted into said recess regardless of the position of said door and a second position wherein said projection extends into said recess when said door is in said closed position.

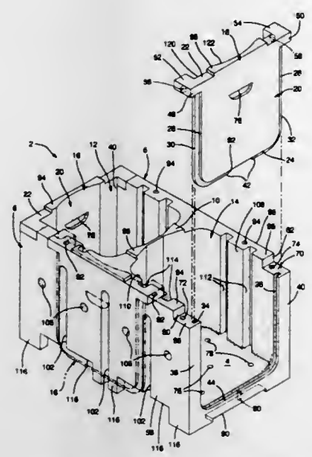
5,605,246

REUSABLE ERGONOMIC SHIPPING AND HANDLING CONTAINER

William E. Rausch, Sr., Warren, and Raymond A. Zagger, Brookfield, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 18, 1996, Ser. No. 599,685
Int. Cl.[6] B65D *7/00*
U.S. Cl. 220—555 **6 Claims**

1. A reusable, ergonomic shipping and handling container for receiving and discharging a plurality of substantially flat items from a stack thereof contained in a compartment of the container, said container comprising a floor, a pair of opposing sidewalls upstanding from said floor, a fixed endwall upstanding form said floor and joining first ends of said sidewalls together, a pair of opposing channels in second ends of said sidewalls opposite said first ends, an opening in said container and between said channels for providing lateral access to said compartment for removal of said items through the end of said container during said discharging, a removable gate filling said opening for preventing access to said compartment through said opening during said shipping, said gate comprising a central panel having a top rim, a bottom rim, first and second opposing lateral rims, and a tongue extending from each of said lateral rims into said channels when said gate is positioned in said opening, a retainer disposed on said bottom rim and engaging the bottom of said opening for preventing said panel from unintentionally becoming disengaged from said opening, a pair of flanges extending from opposite ends of said top rim of said gate so as to overlie said second ends of said sidewalls and a pair



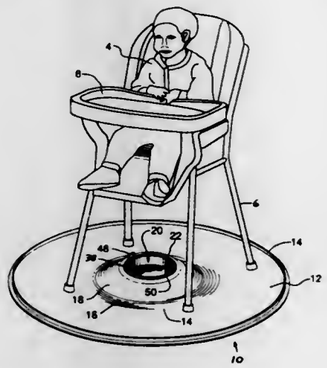
of interlocks associated with said flanges for engaging said opposing sidewalls at said second ends to prevent said second ends from spreading apart during shipment.

5,605,247

MAT WITH REMOVABLE RECEPTACLE

Shannon Earnshaw, Glen Morris, Canada, assignor to Tidy Tot Inc., Glen Morris, Canada

Filed Sep. 29, 1995, Ser. No. 536,910
Int. Cl.[6] F16N *31/00*
U.S. Cl. 220—571 **13 Claims**



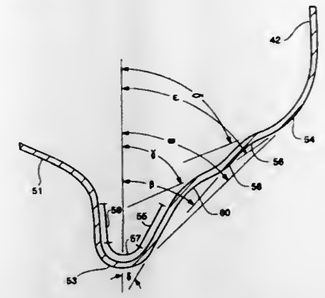
1. A mat comprising:
a flexible sheet having a raised peripheral rim and a central opening;
a base receptacle having a periphery about an upwardly extending opening, said periphery joined about said central opening;
a removable receptacle nestable in and removable from said base receptacle whereby said flexible sheet is foldable within said base receptacle for storage and said base receptacle is closeable by said removable receptacle.

5,605,248

BEVERAGE CONTAINER WITH WAVY TRANSITION WALL GEOMETRY

K. Reed Jentzsch, Arvada, Colo., assignor to Ball Corporation, Muncie, Ind.

Division of Ser. No. 421,432, Apr. 12, 1995. This application Dec. 13, 1995, Ser. No. 571,563
Int. Cl.[6] B65D *1/02*
U.S. Cl. 220—608 **15 Claims**



1. A metal drawn and ironed container body, comprising:
a sidewall disposed substantially circumferentially about a central axis and comprising upper and lower ends;
an annular neck integrally formed with said sidewall and extending upwardly from said upper end of said sidewall and inwardly toward said axis; and
a bottom integrally formed with said sidewall, disposed adjacent said lower end of said sidewall, said bottom comprising an annular convex support, an annular transition wall interconnecting said lower end of said sidewall to said support, and a generally concave center panel extending upwardly and inwardly relative to said convex support, said transition wall comprising:
a first convex annular portion extending generally downwardly and inwardly from said lower end of said sidewall;
a first concave annular portion extending generally downwardly and inwardly from said first convex annular portion;
a second convex annular portion extending downwardly and inwardly from said first concave annular portion; and
a second concave annular portion extending downwardly and inwardly from said second convex annular portion.

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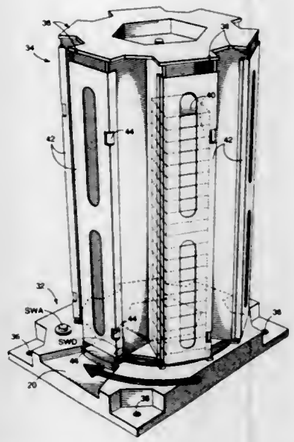
BATTERY OPERATED VENDING MACHINE HAVING A CAROUSEL STACKING ARRANGEMENT AND PLUNGER-TYPE DISPENSER

Gerald Gonyea, 9 Missouri Ave., Potsdam, N.Y. 13676

Filed Dec. 12, 1994, Ser. No. 354,478
Int. Cl.[6] G07F *11/00*
U.S. Cl. 221—6 **21 Claims**

1. A vending machine for dispensing a product comprising:
a frame;
a carousel rotatably fastened to said frame including a plurality of column compartments arranged along a circumference of said carousel, wherein each said column is adapted to store a stack of products;
a reciprocating plunger assembly adapted to horizontally displace a bottom-most product of a stack within a column which is aligned with said plunger assembly;
control means for controlling said plunger assembly; and

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a donation slot and secure receptacle for accepting donations, wherein said donation slot is separate from a currency slot for accepting currency in exchange for merchandise.

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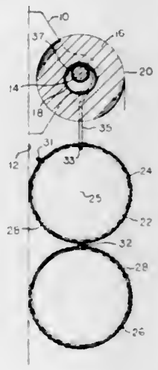
STORAGE DEVICE FOR TOILET PAPER ROLLS

Sergio G. Meiron, 870 S. Crenshaw Blvd. #101, Los Angeles, Calif. 90005, and Josef Nahum, 5738 Katherine Ave., Van Nuys, Calif. 91401

Filed May 27, 1994, Ser. No. 249,364

Int. Cl.[6] B65H *1/00*

U.S. Cl. 221—32 **4 Claims**



1. A storage device for toilet paper rolls comprising:

two horizontal rigid circular tubes having open ends; said tubes having the same diameter and same axial length;

said tubes being arranged with their axies parallel and their ends aligned in common planes;

each tube having a diameter slightly greater than the diameter of the toilet paper roll, whereby each tube is enabled to store one toilet paper roll;

means securing said tubes together; and

a U-shaped means for suspending said tubes from the spindle of a wall-mounted toilet paper roll dispenser;

said U-shaped tube-suspending means comprising a rod extending within one of said tubes so as to be seated against the interior roof surface of said one tube to bear the tube weight, and two hooks integral with said rod; said hooks extending upwardly from said rod at opposite ends of said one tube so as to be normal to the tube axis; said hooks being similarly constructed;

Each hook comprising a curved end portion adapted to partially encircle the spindle of a wall-mounted toilet paper roll dispenser, whereby said tubes are suspended directly below the dispenser; the curved end portions of each hook curcumscribing a space greater than the spindle diameter whereby said hooks can be lifted from the spindle to remove said tubes from the space below the dispenser.

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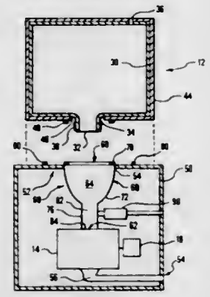
PULSELESS PUMP APPARATUS

Kahrl L. Retti, Timonium, Md., assignor to Quick Tools, LLC, Baltimore, Md.

Filed Dec. 7, 1994, Ser. No. 351,580

Int. Cl.[6] G01F *11/00*

U.S. Cl. 222—1 **36 Claims**



7. A dispensing apparatus for providing a continuous supply of fluid material, said apparatus comprising:

a supply container, for containing a fluid material;

a pump having a fluid material inlet and outlet, said inlet being connected to said supply container for receiving the fluid material;

a dispensing device connected to said pump outlet, said dispensing device having an outlet for dispensing said fluid material;

a pressure sensor disposed in said dispensing device, for continuously sensing fluid material pressure in said dispensing device;

a processing device connected to said pressure sensor and to said pump, for continuously monitoring fluid pressure at said dispensing device and adjusting the fluid output of said pump in relation to said fluid pressure at said dispensing device,

wherein said supply container is separable from said pump, said supply container further comprising

an outlet to connect said supply container with said fluid material inlet of said pump;

an identification device on said supply container for identifying the composition of the fluid material; and

a sensor coupled to said processing device, for contacting said identification device and sending signals to said processing device corresponding to the composition of said fluid material.

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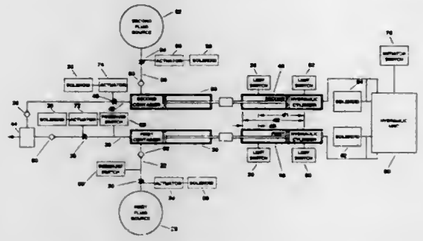
METERING SYSTEM FOR COMPRESSIBLE FLUIDS

David P. Owen, Pasadena; Wayne C. Jones, Baltimore; David E. Johnson, Arnold, and George V. Nagle, Belcamp, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 675,203, Mar. 26, 1991, abandoned. This application Apr. 10, 1995, Ser. No. 419,473

Int. Cl.[6] B67D *5/30*

U.S. Cl. 222—1 **20 Claims**



17. Method for metering fluid from a source of said fluid to a receptacle for said fluid, said method comprising:

providing a container for said fluid; and

controlling, selectively with respect to the pressure and the volume of said fluid in said container, said conducting of said fluid from said source to said container and from said container to said receptacle, said controlling including:

establishing a first pressure setting;

establishing a first volume setting;

causing said fluid to cease to be conducted from said source of said fluid to said container when the pressure of said fluid in said container equals said first pressure setting and when the volume of said fluid in said container equals said first volume setting;

establishing a second pressure setting;

establishing a second volume setting;

causing said fluid to cease to be conducted from said container to said receptacle when the pressure of said fluid in said container equals said second pressure setting and when the volume of said fluid in said container equals said second volume setting.

5,605,253

WATER-EJECTION TOY

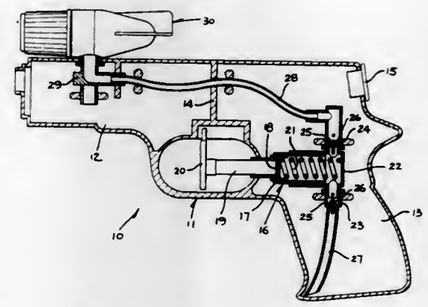
Ka-Shiu Luk, Hong Kong, Hong Kong, assignor to Heep Tung Manufactory Limited, Hong Kong

Filed May 1, 1995, Ser. No. 432,944

Int. Cl.[6] A63H *3/18*

U.S. Cl. 222—79 **12 Claims**

1. A water-ejection toy comprising a body having a front end, a nozzle unit provided at the front end of the body, a reservoir provided inside the body for containing water, and a pump assembly supported by the body for delivering water from the reservoir to the nozzle unit for discharge through the nozzle unit, which nozzle unit has a housing and an internal valve comprising a spring-loaded valve member and a valve seat against which the valve member is to engage to control the discharge of water, said housing including a front part which has an aperture through which water is to be discharged and is movable between an inner position to have the valve member bear resiliently against the valve seat to effect a dispersed discharge of water and an outer position to have the valve member disengaged from the valve seat to effect a concentrated discharge of water.



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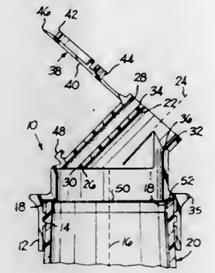
VENTILATED DIRECTIONAL DISPENSING CAP

George J. Wagner, III, 2436 Eagles Eyrie Ct. #6, Louisville, Ky. 40206, and Gerald Cox, Louisville, Ky., assignors to George J. Wagner, III, Louisville, Ky.

Filed Mar. 1, 1995, Ser. No. 396,675

Int. Cl.[6] B67D *1/16*

U.S. Cl. 222—108 **10 Claims**



1. A one-piece dispensing cap, comprising:

a substantially cylindrical base, defining internal threads in its lower portion, and having a substantially vertical axis, and defining an annular ledge on its inner surface above said threads for sealing against the vessel;

a dispensing tube in fluid communication with said base and having an axis which lies at an angle to the axis of the base; said dispensing tube having a lower terminaton point which lies above said annular ledge; and

an elongated air tube in fluid communication with said base and having a lower termination point which lies above said annular ledge, wherein said dispensing tube and said air tube lie substantially parallel to each other and define upper termination points which are coplanar, with said dispensing tube and said air tube being entirely separate from each other at their upper termination points.

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5,605,255

APPARATUS FOR SPRAYING A MIXTURE OF TWO COMPONENTS

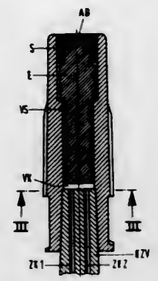
Guillermo Reidel; Dietmar Weitzel, both of Marburg, and Hans Grothoff, Dortmund, all of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg, Germany

Filed Jun. 26, 1995, Ser. No. 494,524

Claims priority, application Germany, Jun. 28, 1994, 44 22 505.9

Int. Cl.[6] B67D *5/60*

U.S. Cl. 222—137 **9 Claims**



1. An apparatus for spraying a liquid mixture comprising:

first and second syringes, each having an outlet for supplying first and second liquids;

a connecting piece having first and second channels in communication with said first and second syringe outlets;

said first and second channels terminating at a premixing chamber for premixing the first and second liquids to form a mixture;

a reduced volume section downstream from said premixing chamber, said reduced volume section terminating in a homogenization region for homogenizing the liquid mixture; and

an exit aperture for spraying the liquid mixture.

5,605,256

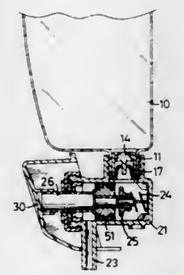
FLUID DISPENSER APPARATUS

Chen-Yueh Fan, 3 Fl., No. 2, Alley 2, Lane 88, Sec. 2, Shui Yuan Rd., Hsin Chih Chen, Taipei Hsien, Taiwan

Filed Dec. 20, 1994, Ser. No. 360,072

Int. Cl.[6] B67D *5/06*

U.S. Cl. 222—181.2 **3 Claims**



1. A dispenser for dispensing a fluid comprising:

a body defining a channel, a port for coupling to a fluid container and a nozzle for dispensing the fluid;

a shaft slidably mounted through a wall of the body with an urging ring and a piston mounted in the body for applying a pressure to the channel from an outer wall of the body;

a flow control means having a socket secured in the port, a rivet-like stopper with a round head portion for blocking a hole of the socket, a conical support received within the socket having a opening for receiving a shank portion of the stopper thereby raising the round head portion of the rivet to block the hole of the socket in response to said pressure, and a plurality of holes on a wall of the support for the fluid to pass through for controlling the fluid from the container in response to the pressure;

a collar slidably received in the body and mounted to the shaft with a plurality of gaps between the collar and the shaft; and

a spring mounted in the body for urging the piston to have the fluid to pass through the gaps.

5,605,257

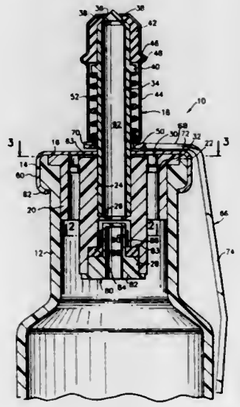
STERILE LIQUID SQUEEZE-BOTTLE-TYPE DISPENSER

Walter C. Beard, P.O. Box 340, Middlebury, Conn. 06762

Filed Mar. 4, 1996, Ser. No. 610,228

Int. Cl.[6] B65D *37/00*

U.S. Cl. 222—189.09 **13 Claims**



11. A sterile liquid dispenser comprising:

a. a resilient squeeze bottle having an interior and a discharge opening,

b. a discharge head comprising:

(1) a base sealingly disposed in the opening and formed with an outward tubular stem,

(2) a gasket disposed on the distal end of the stem to comprise a discharge valve,

(3) a resilient check valve disposed between the interior of the bottle and the stem permitting movement of fluid from the interior of the bottle into the stem but blocking fluid movement in the reverse direction,

(4) a discharge chamber defined by structure coextensive with the stem and having an inner end and an outer end, the check valve at the inner end and the discharge valve at its outer end,

(5) a tubular shell disposed about the stem and chamber, the shell carrying the gasket and the stem and shell being moveable relative to each other, so that movement of the shell will move the gasket away from the stem to open the discharge valve, and

(6) an actuator lever for the shell, the lever extending down alongside the side wall of the bottle,

c. a vent in the dispenser structured to permit air to enter through the vent into the interior of the bottle but not permit passage of liquid out through it.

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TWO-PIECE AEROSOL VALVE FOR VERTICAL OR TILT ACTION

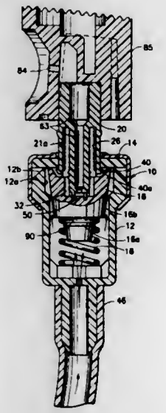
Robert H. Abplanalp, 10 Hewitt Ave., Bronxville, N.Y. 10708

Continuation of Ser. No. 493,001, Jun. 21, 1995, abandoned, which is a continuation of Ser. No. 329,675, Oct. 26, 1994, abandoned, which is a continuation of Ser. No. 206,198, Mar. 2, 1994, abandoned, which is a continuation of Ser. No. 87,467, Jul. 6, 1993, abandoned, which is a continuation of Ser. No. 724,657, Jul. 2, 1991, abandoned, which is a continuation-in-part of Ser. No. 385,981, Jul. 24, 1989, Pat. No. 5,027,985, which is a continuation of Ser. No. 275,654, Nov. 21, 1988, abandoned, which is a continuation of Ser. No. 159,468, Feb. 19, 1988, abandoned, which is a continuation of Ser. No. 934,817, Dec. 3, 1986, abandoned. This application Feb. 9, 1996, Ser. No. 599,121

The portion of the term of this patent subsequent to Jul. 2, 2008, has been disclaimed.

Int. Cl.[6] B65D *83/00*

U.S. Cl. 222—402.1 **29 Claims**



1. An aerosol valve unit comprising a mounting cup, a gasket having a central opening, a valve housing, a valve stem and a valve body, wherein the valve stem and valve body move within the valve housing in response to forces exerted on the valve stem,

wherein the valve body has a recess defined by a main body portion and a radially inward upstanding wall portion extending from the main body portion, said main body portion having an upper annular shoulder for sealing against the gasket, said upstanding wall portion having a continuous outer wall and an interior surface with at least one thin region disposed longitudinally and radially inward of the continuous outer wall, which thin region extends from the top shoulder of the upstanding wall portion to the base of the upstanding wall and terminates in a slot in the upstanding wall portion, the slot communicating with the interior of the container when the valve is actuated;

wherein the valve stem comprises an outer wall portion that frictionally and releasably engages the upstanding wall portion of the valve body and extends into the valve body recess below the gasket, the valve stem having an opening through its longitudinal axis and an orifice at the base of the longitudinal opening, which orifice communicates on one side with the slot in the recess of the valve body and communicates at its other side with the longitudinal opening in the valve stem; and

wherein the gasket seals the slot when the valve is in a closed position.

5,605,259

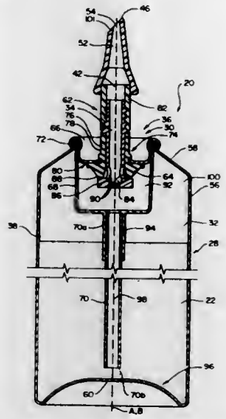
METHOD AND APPARATUS FOR COVERING IRREGULARITIES IN A WALL SURFACE

Ross W. Clawson; Lester R. Greer, Jr., and Robert C. Foster, all of Bellingham, Wash., assignors to Homax Products, Inc., Bellingham, Wash.

Filed Apr. 7, 1995, Ser. No. 418,753

Int. Cl.[6] B65D *83/46*

U.S. Cl. 222—402.23 **3 Claims**



1. An apparatus for applying spackle material to a surface, comprising:

an aerosol container defining a main chamber and having a valve opening formed therein;

valve means selectively operable between an open position and a closed position to open and close, respectively, an exit passageway extending through the valve opening from the main chamber to an exterior of the aerosol container, the exit passageway having an interior end and an exterior end;

wet spackle material arranged within the aerosol container; and

propellant material arranged within the aerosol container; wherein

when the valve means is in the open position, the propellant material expands to force the wet spackle material from the main chamber to the exterior of the aerosol container through the exit passageway; and

the propellant material acts directly on the spackle material.

5,605,260

MACHINE FOR THE CONTROL AND BOARDING OF STOCKINGS AND TIGHTS

Javier Olivas Coll, Banyoles, Spain, assignor to Firsan, S.A., Palol De Revardit, Spain

Filed Apr. 12, 1995, Ser. No. 420,670

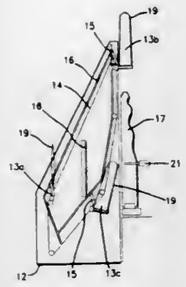
Claims priority, application Spain, Apr. 12, 1994, 9400765

Int. Cl.[6] D06C *5/00*

U.S. Cl. 223—76 **14 Claims**

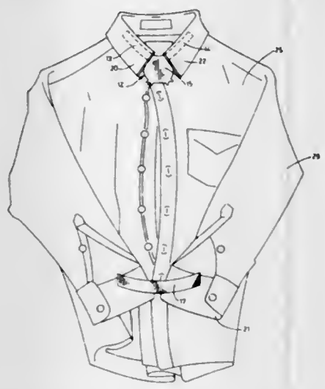
1. Machine for the control and boarding of stockings and tights, comprising a rotary transfer base comprising a circular series of forms fixed at peripheral positions of said base, and a series of treatment stations positioned adjacent said transfer base such that each of said circular series of forms passes through said series of treatment stations in succession, a first said treatment station being an autoclave for steaming stockings and tights positioned on said circular series of forms, and a second said treatment station being a kiln for drying stockings and tights after passage through said autoclave, wherein a third said station is a loading station disposed upstream of said autoclave, said third loading station comprising a generally triangular frame along which several movable supports

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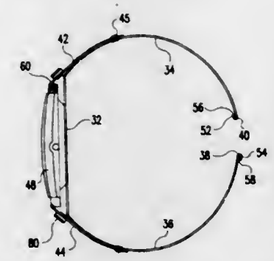
are positioned, said movable supports being driven by two lateral drag chains and guided by arms which are movable along lateral guides, thereby to transfer stockings or tights positioned on said movable supports directly to one of said circular series of forms disposed adjacent said third loading station.

5,605,261
LAUNDERED SHIRT STABILIZER
Stephen E. Berglund, 5128 N. Palm Ave., Fresno, Calif. 93704
Filed Jun. 30, 1995, Ser. No. 497,607
Int. Cl.[6] D06C *15/00*
U.S. Cl. 223—84 **2 Claims**



1. A disposable shirt stabilizer kit comprising, in combination:
a first stiff yieldably flexible substantially Y-shaped flat paperboard blank having a front and back surface, an arcuate upper portion defining two generally horizontal elongated members centrally attached to a larger lower portion, said back surface being coated with a pressure sensitive adhesive material, wherein the two elongated members are adhesively attached to a shirt neckband underneath the collar and the lower portion is attached over the upper part of the front placket of said shirt in order to maintain said shirt collar in a desired configuration until it is worn; and
a second stiff yieldably flexible flat generally horizontal arcuate paperboard blank having a front and back surface with pressure sensitive adhesive material on the back surface for attachment between the shirt sleeves in order to prevent the sleeves from wrinkling.

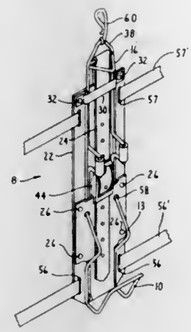
5,605,262
ADJUSTABLE WRIST BAND
James R. Bond, P.O. Box 280, Magnolia Springs, Ala. 36555
Filed Jun. 1, 1995, Ser. No. 457,122
Int. Cl.[6] A44C *5/12*
U.S. Cl. 224—179 **10 Claims**



1. A wrist band comprising a center region, a first arm member and a second arm member,
said first arm member and second arm member adapted to be connected to said center region in a non-pivoted member and extend from said center region to form a "C" shape when said wrist band is in a relaxed condition,
resilient means to enable said first and said second arm members to be resiliently flexed towards each other and allow an outside surface of said first arm to contact an inner surface of said second arm causing said first arm and said second arm to overlap one another,
said first arm member and said second arm member each having a plurality of hook retaining means,
said hook retaining means formed at positions equidistant from terminal ends of said first arm member and said second arm member,
a first hook formed on said terminal end of said first arm member turning towards said central region,
a second hook formed on said terminal end of said second arm member extending away from said central region,
said first and second hooks, said hook retaining means and said resilient means further comprising fastening means to secure said first and second arm members together wherein said first and second hooks are retained in said hook retaining means located on opposite arms by force applied by said resilient means urging said arms to move away from each other in a tangential direction, thereby causing said first and second hooks to engage said hook retaining means and said engagement causing both said arms to independently prevent movement away from each other thereby retaining said wrist band in tension when in a closed position and said first and second arms coupled together.

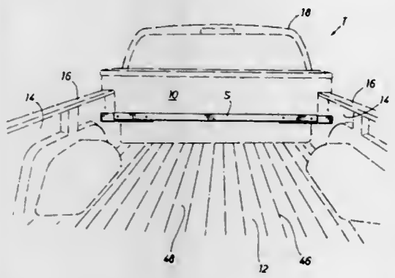
5,605,263
HOLDER FOR HEADED TOOLS
Richard W. Pursley, 54554-30th St., Paw Paw, Mich. 49079, and Stephen D. Roberts, 4640 W. D Ave., Kalamazoo, Mich. 49009
Filed Oct. 18, 1995, Ser. No. 544,539
Int. Cl.[6] A45F *5/00; B25B 5/00*
U.S. Cl. 224—248 **7 Claims**

1. A holder for carrying a T-shaped tool having a head and a handle against the outside surface of one leg comprising
cradle means sized and shaped to hold said head at a first end of said holder.
stop means to limit further the vertical movement of the said handle at a second end of said holder.
clamping means sized and shaped to firmly but retrievably fasten said handle to said holder and located between said cradle means and said stop means.



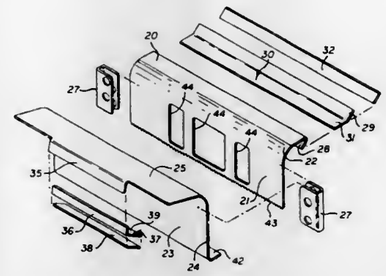
guide rail means between said clamping means and said cradle means configured to limit further the horizontal movement of the handle when said holder is attached to the leg of the holder wearer,
means for adjusting the distance between said stop means and said cradle means to match the length of said tool,
means for attaching the first and second ends of said holder to the leg of the holder wearer
wherein said tool can be placed in and retrieved from said holder by the same hand that said wearer of said holder uses when he uses the said tool.

5,605,264
BED SAVER TOOL BOX MOUNT
Gerald V. Neal, 107 Bartmess Dr., Lufkin, Tex. 75901
Filed Jul. 5, 1995, Ser. No. 498,504
Int. Cl.[6] B60R *7/60*
U.S. Cl. 224—404 **10 Claims**



1. Apparatus for anchoring a tool box to a pick-up truck bed having opposing sidewall portions and a bottom surface extending therebetween wherein the opposing sidewall portions and the bottom surface define a truck bed space, said apparatus comprising:
a truck tool box;
two struts, each attached to said box and each extending between and adapted to be attached to the opposing sidewall portions of the truck bed;
wherein said box is anchored substantially within the truck bed space while out of contact with the bottom surface of the truck bed.

5,605,265
ROLL PAPER TOWEL ADAPTER
Emmanuel A. Hanna, Lakeview Terrace, Calif., assignor to Bobrick Washroom Equipment, Inc., North Hollywood, Calif.
Filed May 8, 1995, Ser. No. 438,056
Int. Cl.[6] B65H *35/04*
U.S. Cl. 225—46 **7 Claims**

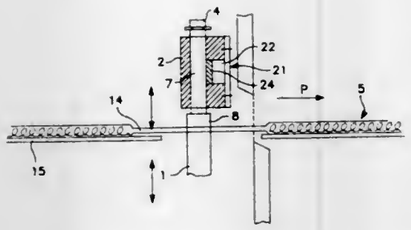


2. An adapter for use with a single sheet towel dispenser to dispense towels from a roll.
the single sheet towel dispenser having a housing with an access opening and a towel support tray within said housing, said tray having a dispenser slot for movement of a towel from said tray downward through said dispenser slot and outward through said access;
said adapter having a front member and a rear member, each of the front and rear members having a lower section and an upper section, with the lower section of said front member joined together with the lower section of said rear member to define a towel passage therebetween, with said towel passage of a size to slide a towel downward through said dispenser slot of said tray;
with the upper sections of the front and rear members curving away from each other and each of the upper sections terminating in a housing tray contact section for resting on said tray of said single sheet dispenser housing, and
a strip of adhesive material with a peelable protective layer carried on each housing tray contact section for attaching said adapter to said tray.

5,605,266
DEVICE FOR ALIGNING MATERIAL WEBS
Karl Müssig; Martin Schnaus, both of Bad Königshofen, and Roland Behr, Grossbardorf, all of Germany, assignors to Texpa Arbter Maschinenbaugesellschaft mbH, Saale, Germany
Filed May 16, 1995, Ser. No. 441,815
Claims priority, application Germany, May 25, 1994, 44 18 241.4
Int. Cl.[6] B65H *23/18;* **B26D** *7/14;5/20;* **D06C** *13/06*
U.S. Cl. 226—39 **10 Claims**

1. Device for aligning material webs, which, in a longitudinal direction, have alternating regions of differing thickness, the device comprising:
a top and a bottom aligning rail disposed substantially at right angles to the material web and opposite one another with slight clearance;
a plurality of aligning elements disposed in a longitudinal direction along the top aligning rail, the aligning elements movable substantially at right angles to the plane of the material web and capable of being brought to rest on the bottom aligning rail with the material web for alignment lying in between; and
means for releasably clamping the aligning elements in place;

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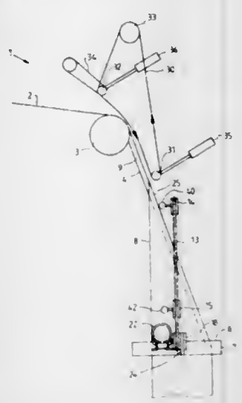
wherein the aligning elements each have a shaft, which is guided with at least slight play in a recess of a complementary shade in the top aligning rail, and an aligning foot restable on the material web, and wherein the shaft is substantially cylindrical and has an at least slightly smaller diameter than the likewise cylindrical recess of the top aligning rail.

5,605,267

APPARATUS FOR AUTOMATICALLY FEEDING THE END OF A WEB OF MATERIAL

David E. Whitten, Barrington, N.H., assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany, and Heidelberg Harris, Inc., Dover, N.H.

Filed May 9, 1995, Ser. No. 437,352
Int. Cl.[6] G03B *1/56*; B41L *43/04*
U.S. Cl. 226—91 **15 Claims**



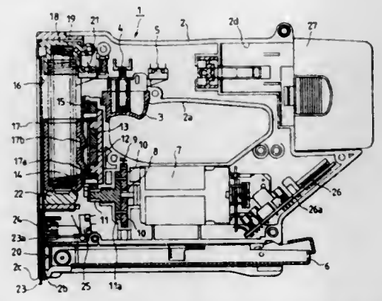
1. An apparatus for feeding a web into a folder comprising:
a former, said web being capable of passing over said former;
at least one endless belt;
at least one pulley, said at least one endless belt being entrained over said at least one pulley, said at least one pulley being movable from a first position to a second position;
a pulley moving device for moving said at least one pulley from said first position of said at least one pulley to said second position of said at least one pulley, said pulley moving device moving said at least one pulley so that at said first position of said at least one pulley, said at least one endless belt engages a portion of said web on said former and in said second position of said at least one pulley, said at least one endless belt does not engage said web; and
a belt moving device for moving said at least one endless belt over said at least one pulley, movement of said at least one endless belt over said at least one pulley, when said at least one pulley is in said first position of said at least one pulley, thereby advancing said web over said former.

5,605,268

PORTABLE MOTOR-DRIVEN STAPLE MACHINE

Susumu Hayashi, and Hitoshi Matsumoto, both of Tokyo, Japan, assignors to Max Co., Ltd., Tokyo, Japan

Filed Dec. 5, 1994, Ser. No. 353,316
Claims priority, application Japan, Dec. 6, 1993, 5-065102
Int. Cl.[6] B25C *5/15*
U.S. Cl. 227—8 **4 Claims**



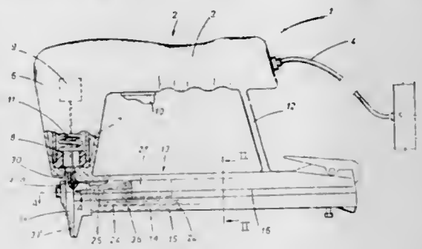
4. A portable motor-driven staple machine having an automatic power interrupting function for interrupting the application of power to an electric actuator every operation cycle thereof, comprising:
means for controlling the automatic power interrupting function; and
a mode change-over switch for selecting a single cycle operation mode or a continuous operation mode,
the automatic power interrupting function being disabled when the mode change-over switch selects the continuous operation mode.

5,605,269

APPLIANCE FOR DRIVING SHARP POINTED FASTENER ELEMENTS INTO OBJECTS

Gianfranco Musiani, Monteveglio, Italy, assignor to FIMCA S.r.L., Bologna, Italy

PCT No. PCT/IT93/00048, § 371 Date Jan. 21, 1994, § 102(e) Date Jan. 21, 1994, PCT Pub. No. WO93/23209, PCT Pub. Date Nov. 25, 1993
PCT Filed May 10, 1993, Ser. No. 185,902
Claims priority, application Italy, May 21, 1992, BO92A0195
Int. Cl.[6] B25C *5/16*
U.S. Cl. 227—109 **20 Claims**



1. An appliance for driving a pointed elongated fastening element from a strip of a plurality of such elements comprising:
a vertically disposed hollow body having a bottom end;
a magazine having a fastener exit end associated with the bottom end of said hollow body;
a tubular element within said magazine for holding in its interior a strip of said fastener selected from a plurality of strips of fasteners of different widths and shapes, each fastener in a strip having the same width and length dimensions;
an elongated guide within said tubular element having a generally U-shaped cross-section along its length with two spaced lateral arms joined by a cross-piece, said arms spaced relative to said cross-piece to define with the interior of said tubular element a chase having a respective first and second passage of a corresponding first and second width between each said arm and the respective opposing interior surface of the tubular element and a third passage of a corresponding third width between said two arms, the respective widths of said first, second and third passages each being different to accommodate for movement along the length of the guide in the respective passages all or a part of the fasteners of a strip of fasteners entirely in a selected one of said first, second and third passages, in a combination of said first and second passages and extending over both of said arms, in a combination of said first and third passages and extending over one of said arms, and in a combination of said second and third passages and extending over the other of said arms;
a restraining element in said vertically disposed hollow body at and opposing the exit end of said magazine;
a pusher within said magazine to engage a strip of fasteners in the magazine and move the end fastener of a strip of fasteners in the magazine to the exit end against the restraining element said restraining element including a stabilizing member for engaging at least a part of the end fastener of a strip of fasteners in the magazine to stabilize the end fastener along at least a part of its length; and
a forcing element in said hollow body to engage the end fastener at the exit end of the magazine positioned against said restraining element to separate it from the strip of fasteners and drive it out of the magazine.

5,605,271

NAIL DRIVER

Michael W. Russell, 2100 Dove Loop Rd. #27, Grapevine, Tex. 76051

Filed Jun. 6, 1995, Ser. No. 463,625
Int. Cl.[6] B25D *1/02*
U.S. Cl. 227—147 **6 Claims**



1. A nail driver for driving a nail having an outer diameter into a surface, wherein the nail driver comprises:
a hollow nail chamber having an inner diameter that is larger than the outer diameter of the nail, and having an outer diameter, a forward end, and a rearward end;
a solid driver rod, concentric with the nail chamber and having a forward end for contacting the nail and a rearward end extending beyond the rearward end of the nail chamber;
a hollow driver sleeve having an inner diameter larger than the outer diameter of the nail chamber a forward end, and a rearward end, wherein the rearward end of the driver sleeve is connected to the rearward end of the driver rod, and wherein the forward end of the driver sleeve extends past the rearward end of the nail chamber;
a chamber guide nut attached to the forward end of the driver sleeve; and
a coil spring attached between the chamber guide nut and the rearward end of the nail chamber.

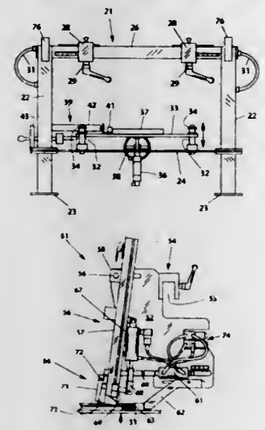
5,605,270

METHOD AND APPARATUS FOR APPLYING FASTENERS TO PICTURE FRAMES

Brian J. Dunn, Oakland, Calif., assignor to Bullseye Fastener Development, Inc., Oakland, Calif.

Filed Nov. 28, 1994, Ser. No. 345,639
Int. Cl.[6] B32Q *3/00*; B27F *7/09*; *7/34*
U.S. Cl. 227—140 **25 Claims**

1. An apparatus for securing artwork in a picture frame, including;



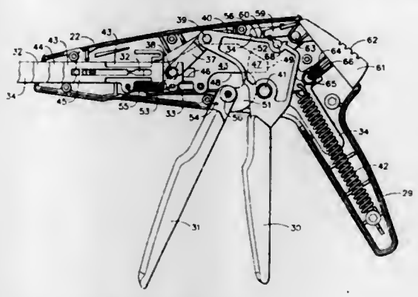
a table for supporting the picture frame,
a support structure extending superjacently of said table;
at least one fastener module secured to said support structure and disposed to drive a fastener into the picture frame supported on said table for securing the artwork in the picture frame.

5,605,272

TRIGGER MECHANISM FOR SURGICAL INSTRUMENTS

David A. Witt, Loveland; Kirk M. Nicola, West Chester; Robert G. Cook, Mason; Joseph C. Hueil, Loveland, and Richard W. Flaker, Fairfield, all of Ohio, assignors to Ethicon Endo-Surgery, Inc., Cincinnati, Ohio

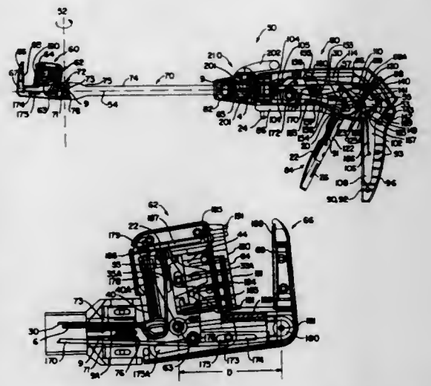
Filed Mar. 12, 1996, Ser. No. 614,415
Int. Cl.[6] A61B *17/068*
U.S. Cl. 227—175.2 **19 Claims**



1. A surgical instrument comprising:
a) a frame at a first end of said instrument for gripping and manipulating said instrument, said frame having a body portion and a hand grip descending from said body portion thereof;
b) an end effector at an opposite end of said instrument for performing a surgical procedure;
c) a first trigger pivotally mounted to a first pivot pin within said body portion of said frame for pivotal rotation in a counterclockwise direction from an unactuated first trigger position spaced from said hand grip to a fully actuated first trigger position adjacent said hand grip;

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d) a first transmission assembly having proximal and distal ends, the proximal end of said first transmission assembly coupled to said first trigger and the distal end of said first transmission member coupled to said end effector, wherein:
(i) when said first trigger is pivotally rotated in the counterclockwise direction from said unactuated first trigger position toward said hand grip, said first transmission assembly moves distally so as to cause said end effector to perform a first surgical function in the surgical procedure;
e) a second trigger pivotally mounted to a second pivot pin within said body portion of said frame for pivotal rotation in a counterclockwise direction from an unactuated second trigger position spaced from said first trigger to a fully actuated second trigger position adjacent said first trigger, wherein said second pivot pin is spaced from said first pivot pin, said pivotal rotation of said second trigger is independent of said pivotal rotation of said first trigger, and said first trigger is positioned between said second trigger and said hand grip; and
f) a second transmission assembly having proximal and distal ends, the proximal end of said second transmission assembly being engagable with said second trigger and the distal end of the said second transmission assembly being engagable with said end effector, wherein:
(i) when said first trigger is positioned in said unactuated first trigger position, the proximal end of said second transmission assembly blocks the pivotal rotation of said second trigger in a counterclockwise direction;
(ii) when said first trigger is pivotally rotated in the counterclockwise direction from said unactuated first trigger position toward said hand grip, said second transmission assembly moves distally concurrently with said first transmission assembly so as to prevent blocking of said pivotal rotation of said second trigger; and
(iii) when said first trigger is positioned in said fully actuated first trigger position and said second trigger is pivotally rotated in a counterclockwise direction toward said first trigger, said second transmission assembly continues to move distally so as to cause said end effector to perform a second surgical function in the surgical procedure.



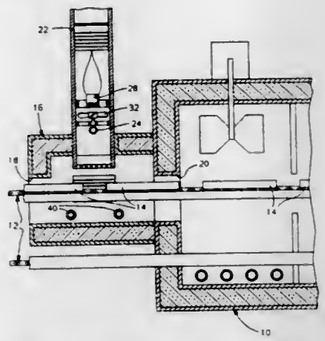
handle assembly, whereby as said actuator means is acted upon by a pulling motion, said pull cable translates said pulling motion of said actuator means into distal motion of said fastener holding means, thereby moving said proximal moveable jaw distally toward said distal jaw;
said fastener applying assembly sized and contoured for insertion between human ribs without spreading said ribs.

5,605,273
SURGICAL INSTRUMENT HAVING STAPLE HEAD ADAPTED FOR RIB INSERTION
Steven W. Hamblin; David A. Witt, both of Loveland; Thomas J. Sierocuk; Kirk M. Nicola, both of West Chester; Matthew R. Otten, Cincinnati, and Craig B. Berky, Milford, all of Ohio, assignors to Ethicon Endo-Surgery, Cincinnati, Ohio
Division of Ser. No. 219,846, Mar. 30, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 473,260
Int. Cl.[6] A61B *17/068*
U.S. Cl. 227—176.1 **9 Claims**

1. A surgical instrument for applying one or more surgical fasteners to tissue, comprising:
an articulatable fastener applying assembly including a proximal moveable jaw, said proximal moveable jaw including fastener holding means including a reloadable fastener cartridge for holding one or more surgical fasteners, means for driving said surgical fasteners into the tissue, a distal jaw including anvil means for forming said surgical fasteners about the tissue, means for capturing and clamping said tissue prior to forming said fasteners and for releasing said tissue after forming said fasteners;
a shaft assembly for articulatably mounting to the distal end thereof said fastener applying assembly;
an actuator handle assembly mounted to the proximal end of said shaft assembly and including means for actuating said means for driving said surgical fasteners wherein said fastener applying assembly includes pulley means for reversing direction of a pull cable, said pull cable having two ends, said pull cable being anchored at one end to said fastener holding means and at its other end to actuator means of said actuator

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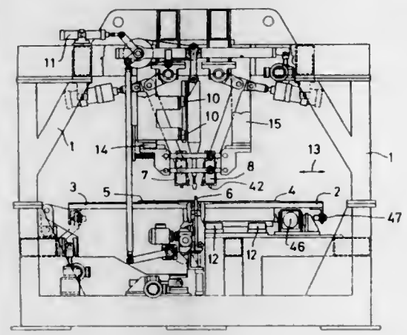
5,605,274
CONTROLLED ATMOSPHERE BRAZE FURNACE WITH FREE PART ENTRY
Brian L. Barten, Lockport, and Shrikant M. Joshi, Getzville, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.
Filed Nov. 13, 1995, Ser. No. 556,330
Int. Cl.[6] B23K *3/00*
U.S. Cl. 228—42 **2 Claims**



1. A vestibule for transporting workpieces continually into or out of the substantially oxygen free internal environment of a braze furnace without the necessity of an outside air excluder of the type that also physically impedes the entry or exit of workpieces to or from said vestibule, comprising,
a chamber that is open on one side to said braze furnace, open on the opposite side to the outside air through an open door, and open at the top to the outside air through an exhaust stack,
a transport mechanism to continually carry workpieces through said chamber and freely through said open door without physical contact with said door,
a combustible gas burner within said chamber, below said exhaust stack, for burning gas in conjunction with any outside

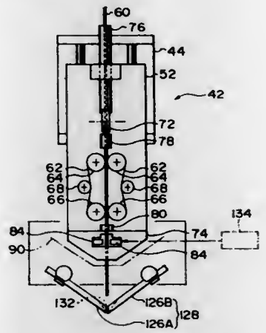
oxygen present within said chamber, said combustible gas having a known stoichiometric combustion profile that is measurable in terms of sensible levels of exhausted gaseous combustion products,
a modulator mechanism for controlling the rate of gas fed to said burner,
an analyzer for measuring the level of combustion products in said exhaust stack, above said burner, to sense whether true stoichiometric combustion has been achieved, and,
a controller programmed to continually increase or decrease the rate of gas feed to said burner in response to the level of exhausted gaseous combustion products measured by said analyzer,
whereby, workpieces may continually travel through said chamber open door without physical impediment while oxygen entering with outside air leakage is substantially removed by combustion before reaching said braze furnace.

5,605,275
APPARATUS FOR POSITIONING OF METAL SHEETS IN CONNECTION WITH WELDING
Martti Rintala, Olofström, Sweden, assignor to AB Volvo, Gothenburg, Sweden
PCT No. PCT/SE94/00491, § 371 Date May 10, 1996, § 102(e) Date May 10, 1996, PCT Pub. No. WO94/29073, PCT Pub. Date Dec. 22, 1994
PCT Filed May 25, 1994, Ser. No. 564,075
Claims priority, application Sweden, Jun. 11, 1993, 9302008
Int. Cl.[6] B23K *37/04*
U.S. Cl. 228—49.4 **18 Claims**



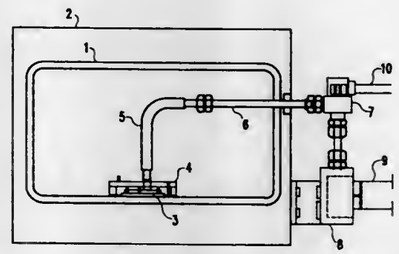
1. An apparatus for the positional fixing of two metal sheets (4, 5) which are to be welded together along a joint (44), comprising a support member (2, 3) provided for each sheet, and clamping means (7, 8) which are urgeable against the metal sheets disposed on the support members, characterized in that there is disposed, in a region where the joint (44) between the sheets (4, 5) is to be located, between closely adjacent edges of the support members (2, 3), an abutment (6) which is movable between an active position where it extends up over the upper sides of the support members (2, 3) to serve as an arrest on insertion of the sheets (4, 5), and a passive position where it is located beneath this level; that the support members are movable in a relative advancement movement towards and away from one another; that the clamping members are provided with movement devices (16, 17; 22, 23) by means of which they are guided in movements towards and away from the support members, substantially transversely directed in relation to their plane of extent; and that the movement devices are, in themselves or in their anchorages (14) in a frame (1) for the apparatus proper, disposed to permit the clamping members to accompany the support members in their relative advancement movements.

5,605,276
SOLDERING METHOD AND SOLDERING APPARATUS
Eishu Nagata, 453-23, Wakabadai, Nagareyama-shi, Chiba 270-01, Japan
Filed Jun. 22, 1995, Ser. No. 493,246
Claims priority, application Japan, Jul. 7, 1994, 6-177719
Int. Cl.[6] B23K *3/06; 1/00*
U.S. Cl. 228—257 **10 Claims**



1. A soldering method comprising the steps of supplying a predetermined volume of solid solder to a solder melting pot, heating and melting the solder in said solder melting pot, and then dropping the molten solder onto a workpiece,
wherein a wire solder is held between at least one pair of endless running belts which run with opposed faces thereof in contact with each other thereby to straighten the wire solder,
wherein a fore tip-end of the straightened wire solder fed by the running belts is abutted and pressed against said solder melting pot to melt the wire solder from the tip-end, and
wherein on completion of feeding a predetermined volume of the wire solder to said solder melting pot, said running belts are run in reverse to retreat the tip-end of the wire solder from said solder melting pot.

5,605,277
HOT VACUUM DEVICE REMOVAL PROCESS AND APPARATUS
Raymond A. Jackson; Kathleen A. Lidestri; William E. Sablinski; David C. Linnell, and Raj N. Master, all of Dutchess County, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 20, 1994, Ser. No. 360,100
Int. Cl.[6] B23K *1/018*
U.S. Cl. 228—264 **12 Claims**

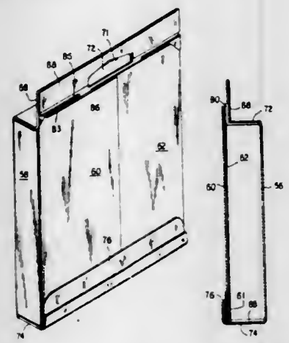


1. An apparatus for non-destructively removing multiple electronic devices and components from a substrate comprising:
an oven;
a substrate fixture for securing a substrate within the oven;

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a probe fixture proximate the substrate fixture holding at least one vacuum tip placed proximate a device or component to be removed from the substrate;
a vacuum source connected to said vacuum tip;
a temperature sensing means in thermal contact with the substrate; and
a means for activating said vacuum source, responsive to said temperature sensing means whereby, upon the temperature sensing means sensing a predetermined temperature, a signal is sent to the activating means which activates the vacuum source, thereby lifting and removing the device or component from the substrate.

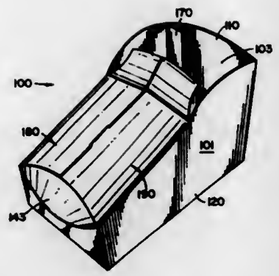
5,605,278
BARRIER PACKAGE FOR INSTANT FILM
Kurt D. Jensen, Newburgh, N.Y., assignor to International Paper Company, Purchase, N.Y.
Division of Ser. No. 521,487, Aug. 30, 1995. This application Jan. 29, 1996, Ser. No. 593,301
Int. Cl.[6] B65D *5/08*
U.S. Cl. 229—103.2 **3 Claims**



1. A carton for forming a package for photographic film, said carton fashioned from a unitary blank of paperboard, said blank coated with a thermoplastic barrier coating, said carton having a rear wall, a front wall, a top wall, a bottom wall, and two side walls, said top wall having an integral and upwardly extending extension which is coplanar with said rear wall, said carton having four interior corners each having a folded gusset, two of said corners being lower corners and two of said corners being upper corners, each folded gusset having a raw paperboard edge, said carton having an interior, said gusset raw paperboard edges located outside of said carton interior, said rear wall at least partially defined by partially overlapping panels, a portion of each of said two lower corner gussets being folded against an outer surface portion of said rear wall, a portion of each of said two upper corner gussets folded against an interior surface portion of said rear wall, whereby no raw paperboard edges of said gussets are exposed to the carton interior.

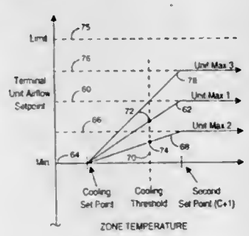
5,605,279
CARTON FOR CARRY-OUT TYPE FOOD
David J. Adamek, River Falls, Wis., assignor to Flour City Packaging Corporation, Minneapolis, Minn.
Filed Nov. 6, 1995, Ser. No. 554,255
Int. Cl.[6] B65D *5/20;5/64*
U.S. Cl. 229—116.1 **18 Claims**

1. A carton of a type suitable for temporary storage and transportation of at least one combination of food and beverage, comprising:



a rear panel;
a right side panel having a first edge joined to a first edge of said rear panel;
a front panel having a first edge joined to a second, opposite edge of said right side panel;
a left side panel having a first edge joined to a second, opposite edge of said front panel, and having a second, opposite edge joined to a second, opposite edge of said rear panel;
a bottom joined to lower edges of said rear panel, said right side panel, said front panel, and said left side panel;
a first top panel joined to an upper edge of said right side panel, wherein said first top panel extends between a forward end relatively nearer to said bottom and a rearward end relatively farther from said bottom;
a second top panel joined to an upper edge of said left side panel, wherein said second top panel extends between a forward end relatively nearer to said bottom and a rearward end relatively farther from said bottom, and overlapping portions of said first top panel and said second top panel cooperate to span an underlying portion of said bottom; and
a forward top panel joined to an upper edge of said front panel, wherein said forward top panel extends upward and rearward from said front panel and underlies a portion of said overlapping portions to enclose a forward portion of the carton.

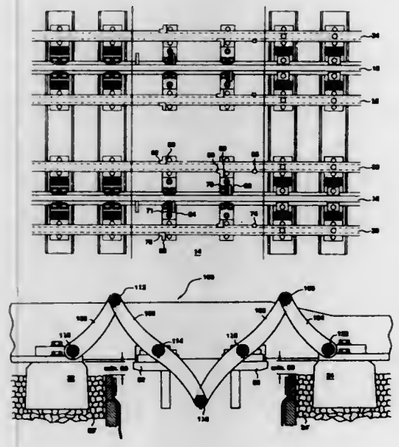
5,605,280
SELF-BALANCING VARIABLE AIR VOLUME HEATING AND COOLING SYSTEM
Thomas B. Hartman, 9905 39th Drive Northeast, Marysville, Wash. 98270-9116
Division of Ser. No. 532,969, Sep. 22, 1995, Pat. No. 5,535,814. This application May 20, 1996, Ser. No. 650,621
Int. Cl.[6] F24F *3/044*
U.S. Cl. 236—49.3 **8 Claims**



6. In a VAV terminal unit coupled to a primary air supply and having a damper to control terminal unit airflow, the terminal unit also having a predetermined terminal unit maximum airflow, a method of operation comprising the steps of:
monitoring a local zone temperature;
monitoring a local terminal unit airflow setpoint;

determining whether the local zone temperature has remained continuously within predetermined zone requirements for at least a predetermined time interval;
determining whether the terminal unit airflow setpoint has continuously remained below the current unit maximum airflow for at least the predetermined time interval, incrementally decreasing the terminal unit maximum airflow, thereby adjusting the operation of the terminal unit so as to reduce load on the primary air supply.

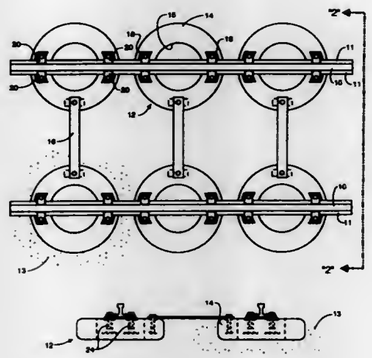
5,605,281
RAIL SUPPORT SYSTEM
Sebastian Benenowski; Hubertus Höhne, both of Butzbach; Alfred Kais, Lich-Eberstadt, and Erich Nuding, Aalen, all of Germany, assignors to BWG Butzbacher Weichenbau, GmbH, Butzbach, Germany
PCT No. PCT/EP93/03297, § 371 Date Jun. 15, 1995, § 102(e) Date Jun. 15, 1995, PCT Pub. No. WO94/12729, PCT Pub. Date Jun. 9, 1994
PCT Filed Nov. 24, 1993, Ser. No. 424,505
Claims priority, application Germany, Nov. 27, 1992, 42 39 878.9
Int. Cl.[6] E01B *3/00*
U.S. Cl. 238—26 **12 Claims**



1. A support system for a stock rail extending in a longitudinal direction between foundations which are separated by a variable distance and thus moveable relative to one another while holding said stock rail in position, comprising:
supporting elements extending across said foundations and arranged to run parallel to both sides of said stock rail; and
said supporting elements including at least one means underpinning said stock rail,
said underpinning means being moveable in the longitudinal direction of the stock rail and the supporting elements.

5,605,282
TIRE RAILROAD TIES
William B. Snead, P.O. Box 1000, Georgetown, Tex. 78627
Continuation-in-part of Ser. No. 188,787, Jan. 31, 1994, abandoned. This application Apr. 20, 1995, Ser. No. 425,283
Int. Cl.[6] E01B *3/00*
U.S. Cl. 238—109 **15 Claims**

12. A railroad construction comprising:



first and second elongated metal rails in spaced parallel relationship, each said rail having a rail flange;
a plurality of tire ties supporting each said rail, each said tire tie comprising,
an annular tire body having a tread portion and upper and lower sidewall portions surrounding a central opening,
an annular concrete core filling at least a portion of said annular tire body and having a central opening aligned with said central opening in said tire body,
a pair of load distributing tie plates disposed on said upper sidewall portions of said tire bodies on opposite sides of said central opening for supporting said rails on said tire ties and for distributing the load imposed by said rail across a portion of each said tire tie,
anchor means for anchoring each said tie plate to said annular concrete core, and
hold-down clips attached to said tie plates and extending above said rail flange so as to retain said rail in position on said tie plates; and
ballast disposed in surrounding relationship to at least part of said tread portions of said tire ties and filling at least a portion of said central openings defined by said tire bodies and said annular concrete cores.

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5,605,283

WELD JOINT BETWEEN TWO RAILS ARRANGED BEHIND EACH OTHER ALONG A RAIL TRACK

Robert Lahnsteiner, Wels, and Julius Ehrlich, Vienna, both of Austria, assignors to Fronius Schweissmaschinen KG. Austria, Wels/Thalheim, Austria

Continuation of Ser. No. 349,458, Dec. 5, 1994, abandoned, which is a continuation of Ser. No. 983,774, Dec. 1, 1992, abandoned. This application Jan. 16, 1996, Ser. No. 586,538
Claims priority, application Austria, Dec. 3, 1991, 2396/91
Int. Cl.[6] E01B *11/44*
U.S. Cl. 238—164 **4 Claims**

1. A weld joint between two adjoining and aligned rail sections extending in a longitudinal direction, each rail section having a rail foot, a rail stem and a rail head forming a running surface, the adjoining rail sections having facing ends extending parallel to each other and transversely to the longitudinal direction, the facing ends defining a gap therebetween and the weld joint connecting the facing ends of the adjoining rail sections, comprising

(a) at least one welding zone at the rail section feet,

(b) a second welding zone at the rail section stems, and

(c) a third welding zone at the rail section heads,

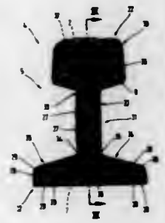
(1) the welding zones consisting of superposed rows of abutting beads of a material filling said gap, the beads in said welding zones extending substantially parallel to each other and transversely to the longitudinal direction of the rail sections, and the beads adjacent each other in the longitudinal direction overlapping each other and being offset in the longitudinal direction,

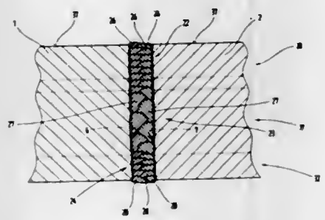
(2) adjoining areas of the welding zones being interlocked with each other,

(3) the at least one welding zone at the rail section feet consisting of at least three and no more than ten beads,

(4) the second welding zone at the rail section stems consisting of at least three and no more than sixteen beads, and

(5) the third welding zone at the rail section heads consisting of at least three and no more than fifteen beads.



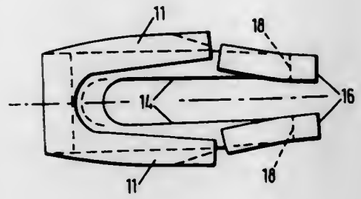


5,605,284

ELASTIC RAIL CLAMPS

Hartley F. Young, Melton, Australia, assignor to Pandrol Limited, Addlestone, Great Britain

Filed Aug. 7, 1995, Ser. No. 512,183
Claims priority, application United Kingdom, Aug. 8, 1994, 9415981
Int. Cl.[6] E01B *9/30*
U.S. Cl. 238—351 **8 Claims**



5. An elastic rail clamp for fastening a rail to an underlying rail plate or rail tie, which clamp comprises a toe portion which is adapted to lie on a flange of the rail and a base portion which is adapted to seat in a slot provided either in the rail plate or in a shoulder secured to the rail tie, said clamp comprising a pair of substantially parallel members bent into a D configuration such that one end region of said pair of substantially parallel members forms the toe portion of the clamp and the other end region of the substantially parallel members forms the base portion of said clamp, the pair of members being joined together at a curved rear portion of the members intermediate the toe portion and the base portion.

5,605,285

Patent Not Issued For This Number

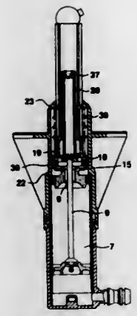
5,605,286

NOZZLE CARRIER OF A WINDSHIELD WASHING SYSTEM FOR VEHICLES, PARTICULARLY FOR VEHICLE HEADLIGHTS

Peter Orth, Lippstadt; Thomas Lind, Freudenberg, and Martin Thorn, Lippetal, all of Germany, assignors to Hella KG Hueck & Co., Lippstadt, Germany

Filed May 8, 1995, Ser. No. 438,087
Claims priority, application Germany, May 13, 1994, 44 16 924.8
Int. Cl.[6] B05B *1/10*
U.S. Cl. 239—284.2 **10 Claims**

1. Nozzle carrier of a windshield washing apparatus for vehicles, particularly for vehicle headlights, having an outer cylinder (1), a telescoping inner cylinder (2) in the outer cylinder with a jet nozzle



(3) at an end portion thereof which can be shoved from the outer cylinder, first and second plungers (4, 5) for defining and pressing toward the jet nozzle a particular quantity of washing liquid, and a valve (6) coupled in series with the jet nozzle which is opened in an outwardly-shoved position of the jet nozzle, wherein:

the first plunger (4) is sealed about its periphery to the outer cylinder, is movable by pressure of the washing liquid away from the second plunger (5), and serves to push the jet nozzle of the inner cylinder outwardly;

the first and second plungers, at their greatest spacing from one another, determine, with the outer cylinder (2), a space which serves to receive the particular quantity of washing liquid; and

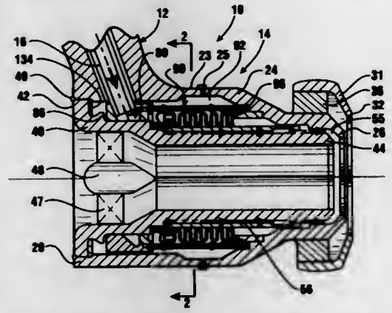
the second plunger (5) is movable by pressure of the washing liquid toward the first plunger and, upon such moving, presses the particular quantity of washing liquid through a passageway (8) of the first plunger and out the jet nozzle.

5,605,287

AIRBLAST FUEL NOZZLE WITH SWIRL SLOT METERING VALVE

Robert T. Mains, Euclid, Ohio, assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Jan. 17, 1995, Ser. No. 373,835
Int. Cl.[6] B05B *7/10*
U.S. Cl. 239—402 **30 Claims**



1. An airblast fuel nozzle having an injector head with a fuel inlet and a longitudinal axis, said injector head comprising:

an annular valve spool fixed relative to said head and defining an axially-extending inner air chamber with an air inlet orifice and an air discharge orifice, and having longitudinally-extending fuel slots spaced about an outer surface of the spool proximate the air discharge orifice,

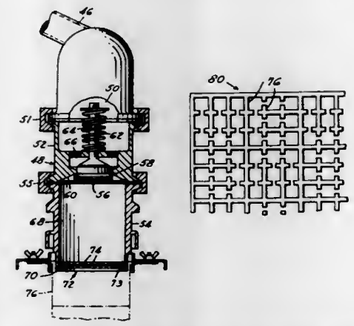
a metering valve assembly surrounding said valve spool, said metering valve assembly including an axially slidable annular valve sleeve and an annular bellows having circumferential convolutions, said bellows being attached at one end to said injector head and at the other end to said valve sleeve for providing a preset axial bias on said valve sleeve, said valve sleeve defining a fuel path from said fuel inlet to said fuel slots, the relative axial displacement of said valve sleeve with respect to said valve spool varying the fuel metering area through said fuel slots.

5,605,288

FILLING APPARATUS CLOG-FREE NOZZLE SCREEN

Kenneth P. McDonald, Union Lake, Mich., assignor to Elopak Systems AG, Glattbrugg, Switzerland

Division of Ser. No. 273,482, Jul. 11, 1994, Pat. No. 5,472,144. This application Dec. 4, 1995, Ser. No. 566,735
Int. Cl.[6] B67C *3/22*
U.S. Cl. 239—533.14 **8 Claims**



6. Apparatus comprising a fluid flow duct having a longitudinal axis, and a screen disposed in the path of fluid flow through said duct, characterised in that said screen comprises a plurality of interconnected links, with predetermined intersecting rows of links being broken to thereby form cantilevers lying substantially in an imaginary surface transverse to said longitudinal axis and resiliently turnable out of said imaginary surface.

5,605,289

FUEL INJECTOR WITH SPRING-BIASED CONTROL VALVE

Dale C. Maley, Fairbury; Steven B. Coleman, Peoria; Darwin Carrell, Edwards, all of Ill., and Doug Kinnear, Clifton Springs, N.Y., assignors to Caterpillar Inc., Peoria, Ill., and G. W. Lisk Company, Inc., Clifton Springs, N.Y.

Filed Dec. 2, 1994, Ser. No. 348,567
Int. Cl.[6] B05B *1/30;* **F02M** *51/00*
U.S. Cl. 239—585.1 **16 Claims**

1. A fuel injector assembly for causing fuel to be injected during a fuel injection cycle having a start time and a stop time, said fuel injector assembly comprising:

a fuel injector nozzle;

a fuel pump;

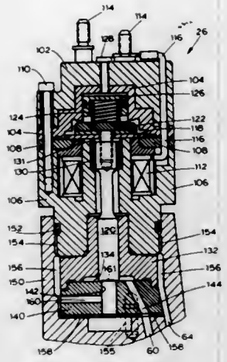
a fuel inlet associated with said fuel pump, said fuel pump causing fuel to be periodically pumped from said fuel inlet through said fuel injector nozzle; and

a control valve associated with said fuel pump for controlling said start time and said stop time of said fuel injection cycle, said control valve comprising:

a valve body;

an armature disposed in a recess in said valve body, said armature having a first side and an opposed second side and being reciprocable within said recess between a first position and a second position;

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a first spring disposed on said first side of said armature to exert a first spring force on said armature, said first spring having a first long-term spring characteristic;

a second spring disposed on said second side of said armature to exert a second spring force on said armature, said second spring having a second long-term spring characteristic different than said first long-term spring characteristic so that said start time of said fuel injection cycle changes over time;

an electromagnetic device disposed adjacent one of said sides of said armature, said electromagnetic device causing said armature to occupy one of said first and second positions when said electromagnetic device is electrically energized; and

a valve element rigidly connected to said armature and disposed for reciprocating movement within said valve body, said valve element allowing fluid flow through said control valve when said armature is in said first position and preventing fluid flow through said control valve when said armature is in said second position.

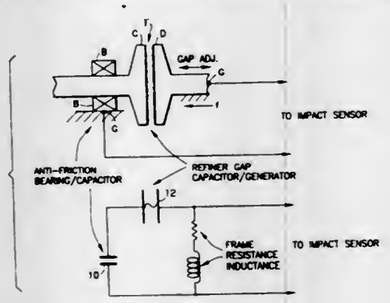
5,605,290

APPARATUS AND METHOD FOR PARTICLE SIZE CLASSIFICATION AND MEASUREMENT OF THE NUMBER AND SEVERITY OF PARTICLE IMPACTS DURING COMMINUTION OF WOOD CHIPS, WOOD PULP AND OTHER MATERIALS

Irving R. Brenholdt, Stratford, Conn., assignor to The Lektrox Company, New Port Richey, Fla.

Filed Jun. 2, 1995, Ser. No. 460,549
Int. Cl.[6] B02C *7/14*
U.S. Cl. 241—21 **24 Claims**

16. A method for determining at least one parameter of a



material undergoing comminution in a comminution device, comprising the steps of:

sensing first and second comminution elements of the comminution device to provide an electrical signal indicative of impacts of said material undergoing comminution;

providing, in response to said electrical signal, an output signal indicative of at least one of the number of said impacts and the impact potential; and

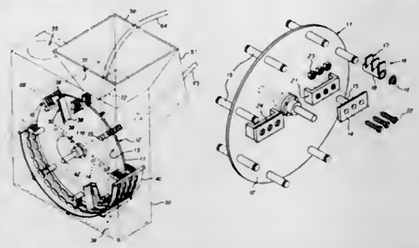
processing said output signal on a real time basis to predict at least one-property of the material as it is undergoing comminution.

5,605,291

CHIPPER/MULCHER

David Doskocil, 1324 W. Rialto, San Bernardino, Calif. 92410

Filed Apr. 28, 1994, Ser. No. 234,055
Int. Cl.[6] B02C *13/04*
U.S. Cl. 241—55 **27 Claims**



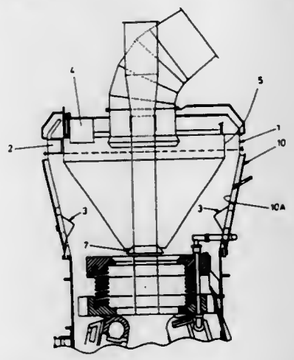
14. In a chipper/mulcher having a frame, a housing attached to the frame, a motor attached to the frame, and a disc rotatably mounted to the frame and housed within the housing, said disc made to rotate by said motor, and said disc having attached thereto on at least one side thereof a plurality of knives and flails, the improvement comprising said flails having a plurality of sharpened blades fixedly attached to a hollow sleeve which is rotatably attached to a post, said post is fixedly attached to, and extends outwardly from, said disc, such that as said disc is rotated, said sleeves pivot about said posts, causing said flails also to pivot.

5,605,292

PULVERIZER MILL HIGH PERFORMANCE CLASSIFIER SYSTEM

Joe H. Bunton, Ft. Collins, Colo., assignor to March-Southwestern Corp., Ft. Collins, Colo.

Filed Sep. 6, 1995, Ser. No. 524,246
Int. Cl.[6] B02C *15/04*
U.S. Cl. 241—79.1 **16 Claims**



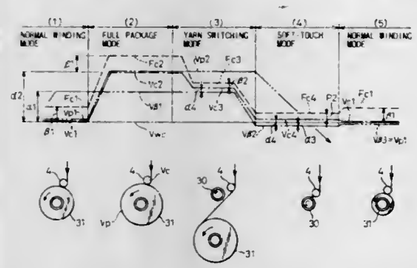
1. In a pulverizer mill of the vertical spindle type including a grinding means for crushing coal, a vertical feed pipe for introducing coal to said grinding means, a cone-shaped classifier for separating large particles from small particles, and air flow means passing upwardly from said pulverizer means to said classifier, wherein said classifier includes upper and lower ends, and wherein the improvement comprises a cylindrical extension member secured to and extending vertically upward from said upper end of said classifier, wherein said extension member includes an interior surface, and wherein said interior surface includes a plurality of projections extending radially inward.

5,605,293

METHOD FOR CONTROLLING SPINDLE-DRIVE TYPE YARN WINDER

Masazumi Imae, Moriyama, and Naotaka Yamamoto, Koga-gun, both of Japan, assignors to Toray Engineering Co., Ltd., Osaka, Japan

Filed Apr. 21, 1995, Ser. No. 426,655
Claims priority, application Japan, Apr. 22, 1994, 6-107761
Int. Cl.[6] B65H *67/044*
U.S. Cl. 242—18 A **4 Claims**



1. A method for taking up yarn in a yarn winder that includes a turret member which is rotatably mounted on a machine frame for rotation about an axis of rotation, a pair of spindles rotatably mounted on the turret member for removably mounting bobbins, a contact roller urgable into contacting relation with a bobbin on one of the spindles, and a traversing mechanism held on the machine frame so as to be located upstream of one of the spindles positioned in a yarn winding condition, the method comprising the steps of:

winding yarn on the bobbin on one of the spindles through rotation of said one spindle and the contact roller while the contact roller is under a press-contact condition at a predetermined pressure with a yarn layer wound on the bobbin on said one spindle and while the yarn is traversed by the traversing mechanism so that a package of yarn is formed on the bobbin on said one spindle;

switching winding of the yarn from the bobbin on said one spindle to an empty bobbin on the other spindle when a full package condition is obtained on the bobbin on said one spindle by rotating the turret member about said axis of rotation, said switching step being followed by keeping a soft-touch or non-touch condition of the contact roller with respect to the bobbin on said other spindle while yarn is wound on the bobbin on the other spindle just after the commencement of the winding of the yarn on the empty bobbin;

controlling the peripheral speed of the contact roller through a programmed control during the switching step and the soft-touch or non-touch condition; and

winding yarn on the bobbin on said other spindle through the press contact condition of the contact roller with the yarn on the bobbin on said other spindle,

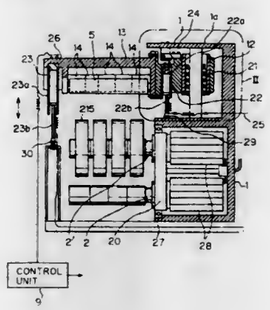
the programmed control of the peripheral speed of the contact roller including obtaining a first predetermined value of the peripheral speed of the contact roller just before commencement of the movement of the turret member, obtaining a second predetermined value of the peripheral speed of the contact roller during movement of the turret member, and obtaining a third predetermined value of the peripheral speed of the contact roller during the soft-touch or non-touch winding condition.

5,605,294

METHOD FOR CONTROLLING THE DRIVE OF A YARN WINDER, AND THE YARN WINDER THEREOF

Yoshiro Migaki; Jun Takagi, both of Otsu, and Takashi Iwade, Soraku-gun, all of Japan, assignors to Toray Engineering Co., Ltd., Japan

Filed Mar. 14, 1994, Ser. No. 209,910
Claims priority, application Japan, Mar. 15, 1993, 5-081398; Mar. 25, 1993, 5-092200; Nov. 5, 1993, 5-300896; Nov. 10, 1993, 5-305776
Int. Cl.[6] B65H *54/00;67/44*
U.S. Cl. 242—18 R **9 Claims**



1. A winding machine for winding a yarn from a yarn supplying source, comprising:

a machine frame;

a support member movably connected to the machine frame;

a spindle on the support member, at least one tube being detachably connected to the spindle, the at least one tube having a surface on which the yarn is wound initially;

a first drive means for generating rotating movement of the spindle;

a frame body movably connected to the machine frame;

a pressure roller rotatably mounted on the frame body and extending in parallel to the spindle;

a second drive means for generating rotating movement of the pressure roller;

means for commencing a winding of the yarn on the surface of the at least one tube;

means for causing, immediately after the commencement of the winding of the yarn, said pressure roller to be set at a position spaced by a predetermined distance from the surface of said at least one tube, thereby to position the pressure roller out of contact with said at least one tube while layers of yarn are formed on the at least one tube; and

means for causing, after a predetermined amount of the yarn has been formed on the at least one tube, the pressure roller and the tube to be moved toward each other, thereby first causing said predetermined distance to be reduced, and then permitting the pressure roller to come into contact with a surface of the yarn layer on the at least one tube at a predetermined surface pressure.

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5,605,295

METHOD AND DEVICE FOR WINDING A YARN

Werner Klee, Winterthur, Switzerland, assignor to Maschinenfabrik Rieter AG, Winterthur, Switzerland

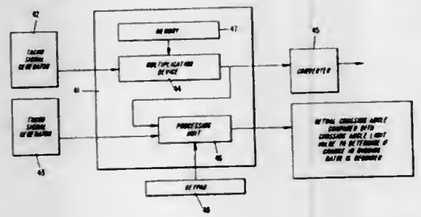
PCT No. PCT/CH93/00255, § 371 Date Sep. 7, 1994, § 102(e) Date Sep. 7, 1994, PCT Pub. No. WO94/11290, PCT Pub. Date May 26, 1994

PCT Filed Nov. 11, 1993, Ser. No. 256,460

Claims priority, application Switzerland, Nov. 13, 1992, 3-511/92

Int. Cl.[6] B65H *54/38;54/28*

U.S. Cl. 242—18.1 **15 Claims**



1. A method for building a package with a stepped precision winding system that includes a chuck on which the package is built and a traverse device for moving yarn back and forth with respect to the chuck, comprising:

winding yarn on the chuck to build a package;

determining a chuck rotational speed to obtain a chuck rotational speed signal;

controlling the traverse device based on the chuck rotational speed signal and a set winding ratio;

determining the circumferential speed of the package;

deriving a quantity from the determined chuck rotational speed;

determining a crossing angle at which the yarn is being wound on the package based on the determined circumferential speed of the package and the quantity derived from the determined chuck rotational speed;

comparing the determined crossing angle to a predetermined crossing angle value; and

changing the set winding ratio to a different winding ratio when the determined crossing angle reaches the predetermined crossing angle value.

5,605,296

METHOD AND APPARATUS FOR WINDING A YARN

Rolf Haasen, Mönchengladbach, and Hans-Günter Wedershoven, Im Loewinkel, both of Germany, assignors to W. Schlafhorst AG & Co., Monchen-Gladbach, Germany

Filed Sep. 20, 1995, Ser. No. 530,613

Claims priority, application Germany, Sep. 28, 1994, 44 34 610.7

Int. Cl.[6] B65H *69/04;63/00*

U.S. Cl. 242—35.6 E **7 Claims**

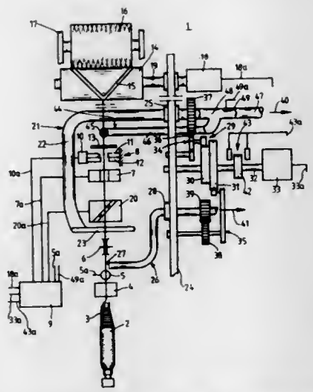
1. In a process for winding a yarn at a winding station of a bobbin winding machine from a feed bobbin to a take-up bobbin rotating in a take-up direction, a method of correcting an interruption of yarn travel resulting in a trailing end of yarn from the take-up bobbin and a leading end of yarn from the feed bobbin, the method comprising the steps of:

stopping the take-up bobbin,

sensing the absence of the trailing yarn end on the peripheral surface of the take-up bobbin,

rotating the take-up bobbin briefly in the take-up direction to wind the trailing yarn end onto the peripheral surface of the take-up bobbin if the trailing yarn end is sensed to be absent from the peripheral surface of the take-up bobbin,

suppressing the rotating of the take-up bobbin in the take-up direction once the trailing yarn end is on the peripheral surface of the take-up bobbin,



aspirating the trailing yarn end from the peripheral surface of the take-up bobbin by means of a pivotable suction nozzle while rotating the take-up bobbin opposite to the take-up direction, and

placing the aspirated trailing yarn end in a yarn end joining device for joining with the leading yarn end from the feed bobbin in order to restore yarn travel.

5,605,297

DEVICE FOR CONTROLLING YARN BALLOONING AT THE WINDING HEAD OF A BOBBIN WINDING MACHINE

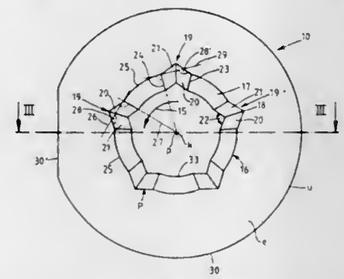
Siegfried Bruns, Mönchengladbach, Germany, assignor to W. Schlafhorst AG & Co., Moenchengladbach, Germany

Filed May 10, 1995, Ser. No. 435,412

Claims priority, application Germany, May 26, 1994, 44 18 312.7

Int. Cl.[6] B65H *57/00*

U.S. Cl. 242—157 R **5 Claims**



1. A device for influencing unwinding travel of a yarn at a winding head of a bobbin winding machine wherein the yarn is unwound axially endwise off a delivery bobbin and rewound onto a take-up bobbin, the device being disposed above the delivery bobbin and comprising a substantially annular body having an annular interior yarn guide surface defining an axial opening for travel of the yarn therethrough, the annular yarn guide surface having a first set of curved guide segments and a second set of angled guide segments alternating annularly with one another, each of the curved guide segments being tapered to collectively define a truncated cone having a larger diameter adjacent the delivery bobbin and each of the angled guide segments being tapered to collectively define a truncated pyramid having a larger transverse dimension adjacent the delivery bobbin, the truncated cone and the truncated pyramid having respective axis which coincide.

5,605,298

FISHING SPINNING REEL

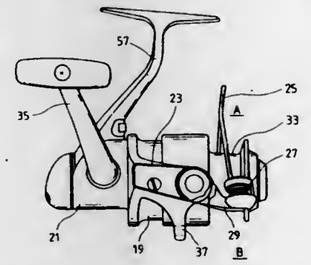
Tetsuya Shimozaki, Irvine, Calif., and Hiroshi Yoshimura, Saitama, Japan, assignors to Daiwa Seiko, Inc., Tokyo, Japan

Filed Dec. 20, 1994, Ser. No. 359,329

Claims priority, application Japan, Dec. 22, 1993, 5-324698

Int. Cl.[6] A01K *89/01*

U.S. Cl. 242—231 **9 Claims**



1. A rotor for a fishing reel in which a fishline is wound onto a spool, said spool and rotor having a common axis; said rotor comprising:

a base frame having a periphery;

a pair of upstanding support arms each positioned near said periphery of said base frame and extending therefrom in a direction substantially parallel to said common axis terminating at an end, said pair of upstanding members defining a fishing line winding side and a fishing line releasing side one on either side of a plane, said plane being substantially parallel to said common axis and intersecting said upstanding support arms;

a bail pivotably mounted to each of said ends so that said bail is swingable from either one of said sides to the other;

a first protective member disposed between said pair of upstanding support arms along an arc on said fishing line releasing side, said protective member being entirely positioned between said base frame and said ends of said upstanding supporting arms.

a spindle mounted in the housing and extending forwardly therefrom;

a hollow rotor shaft which is rotatably mounted on the spindle and supports a gear wheel non-rotatably connected to the rotor shaft;

a drive shaft mounted in the housing;

a handle for rotating the drive shaft;

a gear drive which is non-rotatably arranged on the drive shaft and meshes with the gear wheel of the rotor shaft, for rotating the rotor shaft on rotation of the drive shaft;

a line spool rotatably mounted on the spindle in front of the rotor shaft;

a rotor non-rotatably mounted on the rotor shaft and supporting a bail mechanism which is arranged, upon rotation of the rotor in one direction, to wind a fishing line onto the line spool; and

a free-wheeling hub mechanism which is operatively arranged between the housing and the rotor shaft and comprises

an outer ring fixedly connected to the housing coaxially with the rotor shaft,

an inner ring non-rotatably mounted on the rotor shaft and positioned inside the outer ring, an annular gap extending between the two rings, and

an annular roll holder arranged in the gap and supporting at least two rolls, whose axes are substantially parallel with the rotor shaft and which are uniformly distributed around the rotor shaft;

wherein the rolls are rotatably supported on resilient shafts connected to the roll holder and adapted to hold the rolls in resilient abutment against the inner ring;

wherein the outer ring has, for each roll, an internal ramp surface, which together with the inner ring defines a space intended for the roll and widening in said one direction of rotation of the rotor;

wherein the roll holder is, within narrow limits, turnable back and forth about the rotor shaft between a first turning position to which the roll holder is movable by rotation of the inner ring in the opposite direction to said one direction and in which the rolls are positioned in a narrow portion of the respective spaces and clamped between the inner ring and the associated ramp surface of the outer ring, thereby preventing rotation of the rotor in the opposite direction to said one direction, and a second turning position, to which the roll holder is movable by rotation of the inner ring in said one direction and in which the rolls are positioned in the wide portion of the respective spaces and abut against the inner ring only to be rotated thereby.

5,605,299

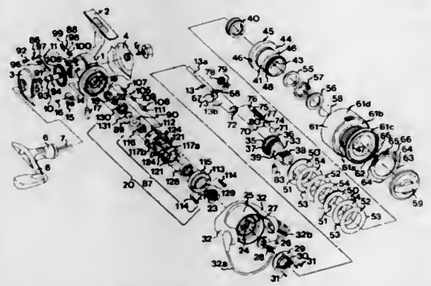
OPEN-FACE FISHING REEL OF THE FIXED-SPOOL TYPE HAVING A DISCONNECTIBLE FREE-WHEELING HUB

Bengt-Åke Henriksson, Svängsta, Sweden, assignor to Abu AB, Svängsta, Sweden

Filed Dec. 11, 1995, Ser. No. 570,529

Int. Cl.[6] A01K *89/02*

U.S. Cl. 242—247 **6 Claims**



1. An open-face fishing reel of the fixed-spool type, comprising a housing;

5,605,300

TAPE TENSION REGULATING SYSTEM FOR A TAPE CASSETTE RECORDING AND/OR REPRODUCING APPARATUS ACCOMODATING CASSETTES OF DIFFERENT SIZES

Akibiro Uetake, Tokyo, and Shuichi Ota, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 73,555, Jun. 9, 1993, abandoned. This application Aug. 31, 1995, Ser. No. 521,953

Claims priority, application Japan, Jun. 30, 1992, 4-173008

Int. Cl.[6] G11B *23/04;* **B65H** *23/06;77/00*

U.S. Cl. 242—336 **1 Claim**

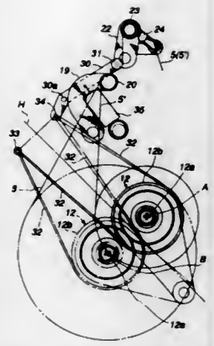
1. A recording/reproducing apparatus within which different tape cassettes of different sizes are installable, comprising:

a base plate,

a pair of reel mounts movably disposed on said base plate for selectively setting a predetermined distance between the mounts to receive thereon a tape cassette positioned in said apparatus, at least one of said reel mounts being movable between a first position and a second position,

tension balancing means pivotably supported by said base plate and positioned to be in elastic contact with a magnetic tape withdrawn from a tape cassette positioned on said reel mounts so as to pivot in response to a change in the tension of said magnetic tape, and

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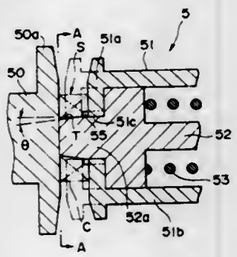
a tension regulating belt having first and second ends and wrapping around said at least one of said reel mounts, said belt being fixed at said first end to said base plate and at said second end to said tension balancing means and being in slidable contact with said at least one reel mount for applying a braking force thereto, said first and second positions of said at least one of said reel mounts being asymmetrically positioned with respect to a perpendicular bisector of a line segment connecting said first and second ends of said belt so that said braking force is altered according to the position of said at least one of said reel mounts.

5,605,301

COIL WINDING METHOD AND APPARATUS THEREFOR

Minoru Ujita, Saitama; Masataka Nakajin, Kanagawa, and Masao Ishihara, Tokyo, all of Japan, assignors to Sony Corporation, Japan

Filed Jun. 17, 1994, Ser. No. 262,021
Claims priority, application Japan, Jun. 21, 1993, 5-173714
Int. Cl.[6] H01F *41/06*
U.S. Cl. 242—447 **12 Claims**



1. A rotatable coil winding jig which can be rotated so that a wire under a fixed tension can be wound into a coil thereon, said coil winding jig comprising:

a first block having a first flange to which a free end of the wire is fixed;

a second block having a second flange, said second block being disposed opposite and coaxially with said first block with a front surface of the second flange facing a front surface of the first flange, said first and second flanges being spaced apart by a distance corresponding to the width of the coil to be formed;

a coil form;

a third block disposed coaxially with the second block, said third block having a middle portion which is rigid with said coil form, the middle portion being disposed within the second block, said coil form having side surfaces and a front end adapted to be pressed against the first flange, said coil form being arranged to extend from the middle portion of said third block through a hole formed in the second flange of said second block toward and into engagement with the first flange of said first block; and

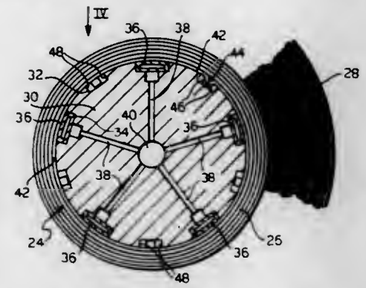
step means formed on said coil form for causing all of a first winding of wire which is wound on said coil form to be axially displaced toward the second flange by a predetermined amount selected to improve the regularity of the subsequent coil windings, said step means including steps which are formed on the side surfaces of said coil form and which extend contiguously with the front surface of the second flange.

5,605,302

SHAFT FOR SUPPORTING CUT ROLL PORTIONS IN A CUTTING-REELING MACHINE

Adelio Miglietta, Villanova Monferrato, Italy, assignor to Massimo Miglietta, and Maurizio Miglietta, both of Villanova Monferrato, Italy

Filed Oct. 5, 1995, Ser. No. 538,822
Int. Cl.[6] B65H *75/24*
U.S. Cl. 242—571.2 **6 Claims**



1. A shaft (**24**) for supporting cut roll portions (**28**) in a cutting-reeling machine (**10**) comprising a cylindrical body (**30**) having a longitudinal axis and an outer surface having at least one recess (**34**) for housing a resilient envelope (**36**) which can be connected to a source of fluid under pressure by ducts (**38**, **40**) in the cylindrical body (**30**),

a plurality of rings (**42**) open along respective generatrices (**44**), arranged side by side around the outer surface of the body (**30**) and coaxial with the longitudinal axis of the shaft (**24**), the rings (**42**) having means for engagement with the body (**30**) of the shaft (**24**) which allow the rings to expand circumferentially upon inflation of the resilient envelope (**36**) into direct contact with said rings.

5,605,303

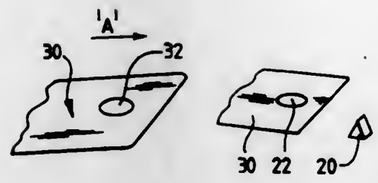
METHOD OF RELEASABLY ATTACHING A FILMSTRIP TO A FILM CASSETTE SPOOL

Edward C. T. S. Glover, London, and Anthony Earle, Middlesex, both of England, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 18, 1995, Ser. No. 516,681
Claims priority, application United Kingdom, Aug. 24, 1994, 9417131
Int. Cl.[6] B65H *75/28*
U.S. Cl. 242—584.1 **2 Claims**

1. A method of releasably attaching a filmstrip to a film cassette spool, the cassette spool comprising a body portion having a slot formed therein, the slot having retaining means for retaining an end of the filmstrip, the method comprising the steps of:

a) inserting the end of the filmstrip in a first direction into the slot in the body portion;



b) engaging the end of the filmstrip with the retaining means to effect attachment of the filmstrip to the spool; and

c) withdrawing the filmstrip in a direction which is the reverse to the first direction from the slot to effect detachment of the filmstrip from the spool;

characterized in that step c) includes the steps of:

d) further inserting the end of the filmstrip into the slot in the first direction to disengage the end of the filmstrip from the retaining means; and

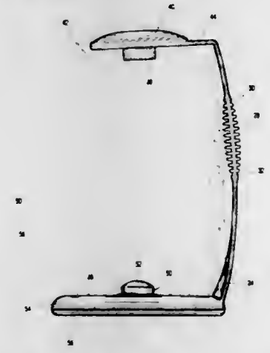
e) moving the filmstrip in a second direction which is transverse to the first direction to misalign the end of the filmstrip with the retaining means prior to withdrawal of the filmstrip from the slot.

5,605,304

PAPER TOWEL DISPENSER

Richard B. Ahern, Jr., Akron, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio

Filed Jul. 3, 1995, Ser. No. 498,671
Int. Cl.[6] B65H *75/02*
U.S. Cl. 242—588 **12 Claims**



1. A dispenser for a roll of sheet material, comprising:

an integral, substantially C-shaped body having an elongate arcuate shaped arm member, a substantially horizontal platform portion connected to a lower end of the arm member, and a substantially horizontal upper retaining cap member connected to an upper end of the arm member, the cap member and the platform portion having opposed, spaced apart retaining surfaces adapted to receive and retain a roll of sheet material therebetween, and the arm member nonfrangibly and temporarily distoring from a queiscent configuration into a flexed configuration to increase the spacing between the opposed retaining surfaces, whereby facilitating insertion of the roll of sheet material therebetween, and thereafter resuming the quiescent configuration to decrease the spacing between the retaining surfaces, whereby capturing the roll between the retaining surfaces; and

a midsection of the arm member is sufficiently spaced from the captured roll to permit a digital grasp thereof, whereby enabling the dispenser to be carried by a user; and

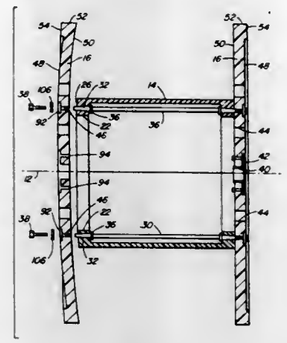
the arm member having a flexure controlling reinforcement flange projecting outward from an inward facing arm surface, the flange extend along the inward arm surface upwardly from the platform portion.

5,605,305

KNOCK-DOWN, RETURNABLE, HIGH LOAD CAPACITY PLASTIC CABLE REEL

Valentine L. Picton, 4897 Stoneybrook Rd., Vernon, N.Y. 13476

Continuation-in-part of Ser. No. 95,942, Jul. 22, 1993, abandoned, which is a continuation-in-part of Ser. No. 979,303, Nov. 20, 1992, abandoned. This application Mar. 21, 1995, Ser. No. 408,697
Int. Cl.[6] B65H *75/14;75/22*
U.S. Cl. 242—608 **12 Claims**



1. A high strength plastic cable reel capable of carrying heavy loads, the reel having a central longitudinal axis and comprising: a plastic drum having opposite axial ends, a prestressed plastic side flange at each said end of the drum, each side flange tending to assume a dished configuration and attachments securing each side flange to the corresponding end of the drum, the attachments serving to flatten each side flange in opposition to its tendency to assume said dished configuration.

5,605,306

MECHANICAL TOW LINE REGULATION SYSTEM FOR AN AIRBORNE TOWED AEROBODY

Patrick J. Fitzgerald, Northridge; John T. Fialko, Long Beach; Joseph A. Wysocki, Malibu, all of Calif., and Ronald B. Chesler, Tucson, Ariz., assignors to Hughes Electronics, Los Angeles, Calif.

Filed Jan. 11, 1995, Ser. No. 371,308
Int. Cl.[6] B64D *3/00;* **B64F** *1/04;* **B63B** *21/60;* **F41F** *5/00*
U.S. Cl. 244—1 TD **6 Claims**

1. A mechanical regulation system for use in airborne tow line payout between a towed aerobody and a towing vehicle, said system comprising:

a housing;

a nonrotating member disposed in the housing;

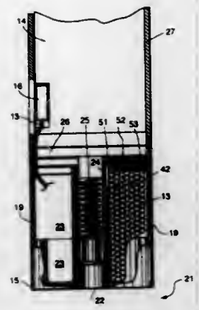
a tow line wound around the nonrotating member and coupled between the towed aerobody and the towing vehicle;

a rotatable wedge-shaped tube disposed in the housing;

a rotatable mechanical regulator slidably coupled to the rotatable wedge-shaped tube that is adapted to rotate with the tube and move transversely along the length of the tube as the tow line is removed from the nonrotating member;

a brake mechanism disposed in the rotatable mechanical regulator; and

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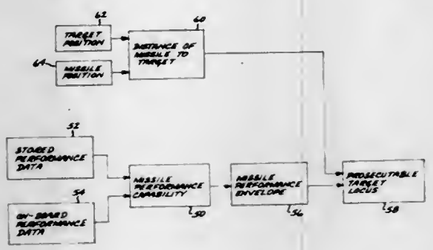
a brake drum disposed around the periphery of the rotatable mechanical regulator that is adapted to be contacted by the brake mechanism.

5,605,307

MISSILE SYSTEM INCORPORATING A TARGETING AID FOR MAN-IN-THE-LOOP MISSILE CONTROLLER

Loren E. Batchman, Solana Beach, Calif., and Carl G. Foster, Tucson, Ariz., assignors to Hughes Aircraft Compay, Los Angeles, Calif.

Filed Jun. 7, 1995, Ser. No. 487,367
Int. Cl.[6] F42B *15/00*
U.S. Cl. 244—3.11 **15 Claims**



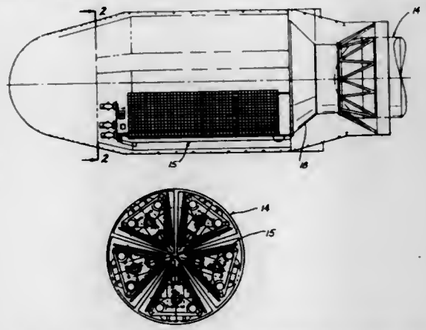
1. A remotely controlled vehicle system, comprising:
a remote vehicle;
a source of remote vehicle performance capability data;
a source of remote vehicle location data;
a source of remote vehicle imagery;
a base controller including a guidance controller by which a person selectively produces guidance commands for the remote vehicle;
a data link between the base controller and the remote vehicle, the data link including a guidance data channel carrying the guidance commands from the base controller to the remote vehicle; and
means for providing to the person a representation of a prosecutable target locus of the remote vehicle within the remote vehicle imagery responsive to the performance capability data and the vehicle location data.

5,605,308

SPACE VEHICLE DISPENSER

Gary Quan, Fountain Valley; John A. Carlson, Huntington Beach; Alan H. Wilkins, Irvine; Leo Rosadiuk, Torrance; Sam Carter, Orange, and George Budris, Westminster, all of Calif., assignors to McDonnell Douglas Corp., Huntington Beach, Calif.

Filed Jun. 6, 1994, Ser. No. 254,613
Int. Cl.[6] B64G *1/10*
U.S. Cl. 244—158 R **21 Claims**



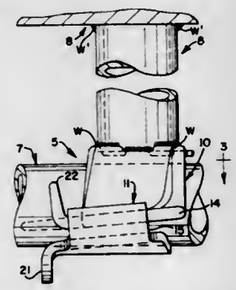
1. A carrier having a dispenser for dispensing a vehicle therefrom, comprising:
a mounting platform for mounting the vehicle thereon;
an outer support structure secured to the carrier and secured to said mounting platform;
an inner support structure positioned generally within said outer support structure and secured to the carrier and to said mounting platform;
means for detachably mounting the vehicle on said platform; and
means for pivotally and releasably securing the vehicle to said platform, the securing means causing the vehicle to pivot about the securing means when the vehicle is dispensed from the carrier;
wherein said support structures are dimensioned so that said mounting platform is positioned generally normal to a longitudinal axis of the carrier.

5,605,309

PIPE ANCHORING MEANS

Rudolph E. Nadherny, Naperville, Ill., assignor to Ireco, Inc., Chicago, Ill.

Filed Apr. 7, 1995, Ser. No. 418,937
Int. Cl.[6] F16L *3/08*
U.S. Cl. 248—62 **14 Claims**



1. Pipe anchor means for anchoring pipe at a plurality of intervals along its length and at a predetermined distance from and

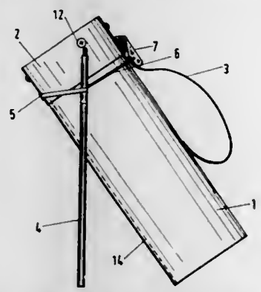
to a structural support, comprising a pipe anchor and a relatively short piece of a bar cut to length from a bar of standard commercial shape and dimension,
said pipe anchor comprising an anchor base and a mating pipe clamping wedge, said anchor base having a pipe to-be-anchored receiving saddle with an attaching portion, said clamping wedge being drivable into mating relationship with said anchor base wherein it rigidly clamps said pipe to-be-anchored in said saddle, and said attaching portion having a surface to which one end of said piece of a bar is secured,
the combined length of said piece of a bar and the distance of said surface from said length of anchored pipe equaling said predetermined distance, and
wherein said surface to which said piece of a bar is secured has a bar end locating formation in which the secured end of said piece of a bar is seated in mating relationship.

5,605,310

SUPPORTING DEVICE FOR A GOLFBAG

Roland Jungkind, Garmisch-Partenkirchen, Germany, assignor to MS-Trade Handels-GmbH, Germany

Filed Aug. 12, 1994, Ser. No. 289,820
Claims priority, application Germany, Aug. 13, 1993, 43 27 289.4
Int. Cl.[6] A63B *55/00*
U.S. Cl. 248—96 **10 Claims**



6. A supporting device for a golf bag comprising:
a plurality of support legs pivotably attached to said golf bag, said support legs being capable of pivoting from a stored position in abutment of said golf bag to a support position at an angle oblique to said golf bag,
a rubber band attached to said support legs, said rubber band being capable of pivoting said support legs from said stored position to said support position,
a tension cable attached to said support legs,
a support leg securing means having a secured and a released position, said securing means being connected to said tension cable, such that, when said securing means is in said secured position, said tension cable secures said support legs in opposition to said rubber band, and when said securing means is in said released position, said rubber band pivots said support legs to said support position.

5,605,311

UPPER TORSO SUPPORT FOR A WORKSTATION

Michael McGrath, 415 Summerhill Ter., Alpine, Calif. 91901; Joseph McGrath, 6841 Xana Way, Carlsbad, Calif. 92009, and Josephine McGrath, 415 Summerhill Ter., Alpine, Calif. 91901

Filed Sep. 20, 1994, Ser. No. 309,119
Int. Cl.[6] B68G *5/00*
U.S. Cl. 248—118 **14 Claims**

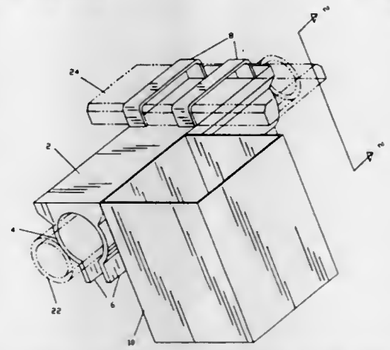
1. An arm support apparatus configured to be positioned on a ground surface comprising:
a work surface having a front, a back and at least two sides;
at least one arm support mechanically connected to the work surface so as to be slidably positionable along at least a portion of the front of said work surface and wherein said at least one arm support is vertically movable with respect to said ground surface and thereby being positionable adjacent a user of the work surface so that said user's upper arm is substantially vertical and said user's forearm being substantially horizontal and supported by said at least one arm rest from the elbow substantially to the wrist of said user to thereby provide arm and upper body support for said user, and said arm support being horizontally rotatable about a location outward from a side of the work surface such that said arm support pivots outward and away from said front of said work surface and swings toward said side of said work surface, thereby providing a clear path for movement of said user with respect to the work surface when arm support is not desired by said user.

5,605,312

UNIVERSAL HOLDER

Derek Elder, and Minta Elder, both of 309 Dakota Dr., Ellsworth AFB, S. Dak. 57706

Filed Aug. 7, 1995, Ser. No. 511,995
Int. Cl.[6] A47B *96/06*
U.S. Cl. 248—230.7 **5 Claims**



1. A universal holder for holding a remote control unit, said universal holder being removably attachable to a substantially horizontal member of an exercise machine or similar object, said universal holder comprising:
(1) a base having a forward end and a rearward end, a top and a bottom, a front face and a back face; the base having a flat top surface;
(2) a hollow cylinder having a top and a bottom, the top of the hollow cylinder being attached to the bottom of said base; the bottom of said hollow cylinder having an opening running the

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length of said hollow cylinder parallel to the longitudinal axis of said hollow cylinder;

(3) a plurality of flanges protruding vertically downward from the bottom of said hollow cylinder; the flanges being in pairs with each pair running parallel to the longitudinal axis of said hollow cylinder, with one of each pair being attached to opposite sides of the opening in the bottom of said hollow cylinder, and with each pair being aligned with each other; said flanges all having holes in the center of each flange with the holes being perpendicular to said flanges;

(4) a plurality of nuts, the number of the nuts being equal to the number of pairs of said flanges and said nuts being affixed to the rearward face of the rearward most of each of the pairs of said flanges and being aligned with said holes in said flanges;

(5) a plurality of thumb screws, the number of the thumb screws being equal to the number of nuts and said thumb screws being capable of passing through the hole in the forwardmost of each pair of said flanges and being screwed into each of said nuts; and

(6) remote control unit fastening means for removably attaching a conventional remote control unit to said base such that the operating keys or buttons of the remote control unit are accessible;

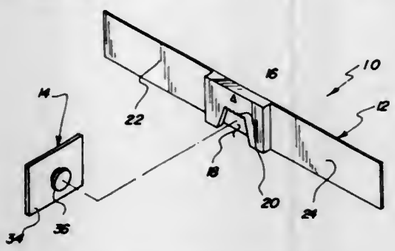
whereby said flanges and said hollow cylinder may be snapped down over the horizontal or nearly horizontal member of an exercise machine or similar object and the universal holder may be secured by tightening said thumb screws within said holes, a remote control unit may be removably attached to the universal holder, and the remote control unit held in a convenient and secure position for use by a person using the exercise machine or similar object.

5,605,313

VERTICAL SURFACE OBJECT HANGER

Donald L. Erickson, and Linda L. Serna-Erickson, both of 9899 Sturgeon Ave., Fountain Valley, Calif. 92708

Filed Jul. 17, 1995, Ser. No. 503,282
Int. Cl.[6] A47G *1/16*
U.S. Cl. 248—467 **6 Claims**



1. A vertical surface object hanger comprising;

an object mounting means for securing to a rear surface of an object, the object mounting means comprises a central receiver shaped so as to define a receiving slot directed thereinto and serrated engaging edge extending linearly across the receiving slot; a first lateral mounting plate projecting in a first direction from a lateral edge of the central receiver; and a second lateral mounting plate projecting from a second lateral edge of the central receiver in a direction opposite that of the first lateral mounting plate;

a vertical surface mounting means removably coupled to the object mounting means for securing to a vertical surface so as to support an object coupled to the object mounting means relative to the vertical surface, the vertical surface mounting means comprises a vertical surface mounting plate having a mounting projection extending substantially orthogonally therefrom, the mounting projection being positioned within the receiving slot of the object mounting means so as to engage the serrated engaging edge, whereby the object mounting means will be suspended from the vertical surface mounting means; and

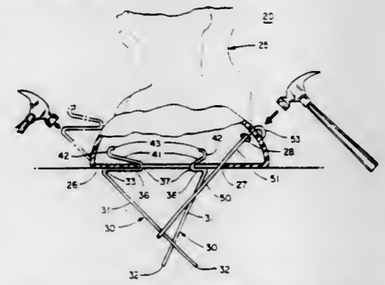
the mounting projection comprises a projecting member secured to the vertical surface mounting plate and projecting substantially orthogonally therefrom, the projecting member being shaped so as to define a pair of angled lateral walls tapering towards one another and terminating in a pair of projecting apex teeth which cooperatively engage with serrations of the serrated engaging edge so as to preclude lateral movements of the vertical surface mounting means relative to the object mounting means.

5,605,314

STAKING SYSTEM FOR SECURING BLOW MOLDED FIGURES

William F. Protz, Jr., Lake Forest, Ill., assignor to Santa's Best, Northfield, Ill.

Filed Feb. 9, 1995, Ser. No. 386,095
Int. Cl.[6] A47B *97/00*
U.S. Cl. 248—508 **17 Claims**



1. A staking system for a blow molded figure having a flange at the base thereof, comprising at least two stakes each having a first elongated portion terminating in a first bend of less than about 60° leading to a second portion and an upper portion connected to the second portion, said upper portion extends over and above the second portion for retaining the base of the blow molded figure, and at least one additional stake having an engagement portion at one end thereof for contacting the outside of the blow molded figure, whereby said at least two stakes driven into the ground have the second portions thereof for contacting with the flange on the blow molded figure and said additional stake has the engagement portion thereof for contacting with the blow molded figure to provide at least three angularly separated points of contact between the blow molded figure and said stakes.

5,605,315

ADJUSTABLE TREE STAND

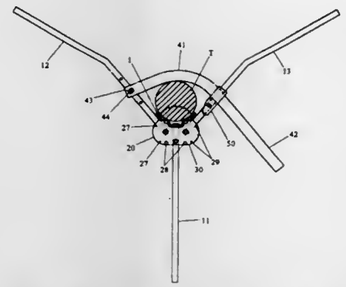
Kenneth A. Hartung, Box 571 Rt. 5, Bedford, Pa. 15522, and Michael R. Conrad, R.D. 5 Box 276, Altoona, Pa. 16602

Filed Jul. 14, 1995, Ser. No. 502,552
Int. Cl.[6] F16M *13/00*
U.S. Cl. 248—523 **14 Claims**

1. An adjustable tree stand for securing a tree in an upright vertical position comprising:

(a) a tree bracket in the form of a V-channel having an inner surface and a lower end and having complementary side notches disposed within said tree bracket for securing an upper leg-retaining plate and a lower leg-retaining plate thereto;

(b) a central leg member and first and second side leg members connected to said tree bracket by means of said upper leg-retaining plate and said lower leg-retaining plate;



(c) a clamping mechanism comprising a clamping arm mounted to one of said side leg members and engaging a locking means which is slidably mounted to the other of said side leg members; and

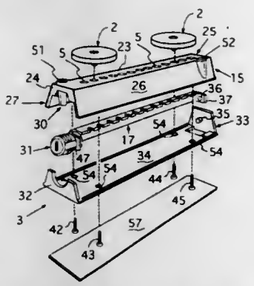
(d) an upper-leg retaining plate and a lower leg-retaining plate, each of said upper-leg retaining plate and lower-leg retaining plate having a notched rear edge configured to cooperatively engage said complementary side notches within said tree bracket.

5,605,316

EQUIPMENT SECURITY APPARATUS

Donald W. Kelley, Fremont, Calif., assignor to Qualtec Data Products, Inc., Fremont, Calif.

Filed May 27, 1994, Ser. No. 250,523
Int. Cl.[6] F16M *13/00*
U.S. Cl. 248—551 **4 Claims**



1. An equipment security apparatus for securing a first object to a second object comprising:

A) a first assembly including:

1) an attachable member having a first surface for use in attaching said the first assembly to the first object; and

2) a pin member terminated by an enlarged end portion extending outwardly therefrom; and

B) a second assembly including:

1) an end hole defined at an end of the second assembly,

2) a housing comprising:

a) a base member having

i) a bottom plate member,

ii) a first end wall having an opening therein defining a portion of the end hole of the second assembly, and

iii) a second end wall having a pin means extending inwardly therefrom;

b) an elongated U-shaped cover member having

i) a plurality of pin receiving holes,

ii) first and second side walls,

iii) a first end wall having an opening therein defining another portion of the end hole of the second assembly and mating with the first end wall of the base member such that the opening of the base member first end wall is aligned with the opening of the cover member first end wall to define the end hole,

iv) a second end wall having an opening therein for mating with the second end wall of the base member, and

c) means for connecting the cover member to the base plate member;

3) a locking bar having

a) a plurality of notches along an edge of the locking bar,

b) a first end wall having a first hole, and

c) a second end wall having a second hole for receiving the pin means; and

4) a locking mechanism which extends through the end hole into the housing where the locking mechanism and the end hole is shaped so as to prevent relative rotation of the locking mechanism with reference to the housing, the locking mechanism having

a) a rotatable means which extends from the locking mechanism and engages the first hole of the locking bar for rotating the locking bar within the housing beneath the plurality of pin receiving holes between a locking position and an unlocking position; and

5) means for attaching the second assembly to the second object; and

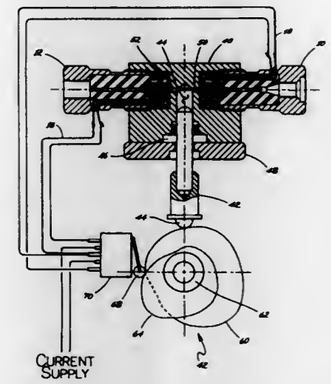
the first assembly is securely connected to the second assembly when the locking bar is rotated from the unlocking position to the locking position by the plurality of notches capturing the enlarged end portion of the pin member inserted through one of the pin receiving holes.

5,605,317

ELECTRO-MAGNETICALLY OPERATED VALVE

Stephen Mealy, Sagamore Beach, and Keith D. Besse, Falmouth, both of Mass., assignors to Sapphire Engineering, Inc., Pocasset, Mass.

Continuation-in-part of Ser. No. 215,505, Mar. 21, 1994. This application Sep. 30, 1994, Ser. No. 315,943
Int. Cl.[6] F16K *31/06*; F04B *7/00*
U.S. Cl. 251—129.01 **14 Claims**



1. An electro-magnetically operated valve for control of pressurized fluid comprising:

a) valve body means having a first side and a second side comprising:

i) a housing having an opening at one end and a hollow cylinder at the other—end—;

ii) a bobbin means for positioning an electro-magnetic coil inside the valve body means disposed in the hollow cylinder having a fixed valve seat disposed at—one—end, a

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tubular chamber disposed at—the other end—and—a fluid conduit extending therebetween having an inlet and an outlet;

b) a plunger subassembly movably mounted in said tubular chamber for movement between a first opened position and a second sealed position—, said subassembly—comprising a plunger of cylindrical construction having external flow passage means and including a magnet disposed in one end and a valve seal means disposed in the other end operative between a open state and a closed state for opening and closing said fluid conduit and thereby regulate flow of fluid through the valve body means end for regulating flow of fluid through the valve body means by alternatively permitting and preventing flow there through;

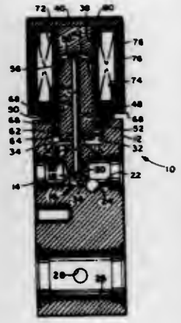
c) sensor means for sensing phase relations of a piston of a pump connected to the valve body means for timing opening and closing of said valve;

d) control means—connected to—the bobbin means operationally connected to a switch apparatus for forming a magnetic circuit with the magnet for operationally urging the plunger subassembly between the first open position to the seconded sealed position by passing a current through said coil, the opened or closed state of the valve seal means being determined by the direction of current flow through said coil, the opened or closed state of the seal means being determined by the directions of current flow through said coil acting on said magnet tending to urge the valve seal means alternatively against the valve seat for sealing the outlet or away from said valve seat for opening the valve seal means.

5,605,318
ELECTRIC EXPANSION VALVE

Peter J. Malone, Mount Prospect, Ill.; Charles J. Tennies, Waukesha, Wis.; Mark A. Juds, New Berlin, Wis., and Todd L. King, Cedarburg, Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Apr. 14, 1994, Ser. No. 227,425
Int. Cl.[6] F16K *31/06*
U.S. Cl. 251—129.15 **18 Claims**



1. An electrically operated expansion valve assembly comprising:

(a) body means defining an inlet port and an outlet port and a valving passage connecting said inlet and outlet ports with a valve seat formed in said passage;

(b) ferromagnetic armature means having an annular configuration and movably disposed with respect to said body means and including an elongated non-magnetic valve member operable for movement with respect to said valve seat for controlling flow from said inlet to said outlet port, said valve member extending through said annular armature means and including fastening means received over and frictionally engaging said valve member for retaining said valve member on said armature means;

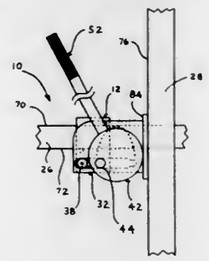
(c) an armature guide attached to said body means exteriorly thereof and operative to guide movement of said armature means, said armature guide formed of non-magnetic material and encasing said armature means in fluid pressure sealing arrangement, said guide including a ferromagnetic pole piece therein; and,

(d) electromagnetic operator means received over said armature guide and including a coil and a generally cup-shaped ferromagnetic pole frame disposed about said coil, said pole frame co-operating with said guide pole piece to form a ferromagnetic flux loop about said coil.

5,605,319
LUMBER-STRAIGHTENING DEVICE

R. Patrick Reiley, 3997 Rd. 6.5 NE., Moses Lake, Wash. 98837

Filed Aug. 7, 1995, Ser. No. 512,152
Int. Cl.[6] B66F *3/00*
U.S. Cl. 254—17 **4 Claims**



1. A device mountable to a first member for adjusting the position of a second member that is positioned generally cross-wise of the first, comprising:

a base part adapted to be releasably mounted to the first member;

a cylindrical cam head pivotably mounted to the base part in a manner defining a pivot point that is off-center relative to the center of the cam head;

a sliding part in sliding engagement with the base part and having a pushing portion adapted to push against at least a portion of the cross-wise member, wherein the sliding part is a rectangular plate having an elongated groove opening, and including a guide pin mounted to the base part, the guide pin having a portion shaped to track along the elongated groove opening, for guiding sliding movement of the sliding plate relative to the base part, and further, the pushing portion is slidingly drivable by the cam head toward the cross-wise member as the cam head rotates.

5,605,320
STAPLE REMOVERS

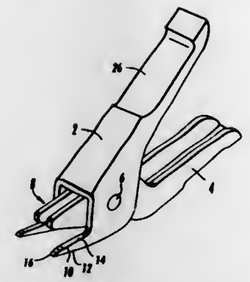
Jamieson Crawford, London, England, assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 15, 1995, Ser. No. 528,825
Claims priority, application United Kingdom, Jan. 18, 1995, 9500929
Int. Cl.[6] B25C *11/00*
U.S. Cl. 254—28 **10 Claims**

1. A staple remover for extracting a conventional clinched office staple from a stapled set of paper sheets, wherein the clinched staple has a central staple crown portion and two opposing clinched staple legs extending with arcuate bends from the opposite ends of the crown portion through staple holes through the paper sheets made by the two staple legs during stapling, comprising: a first member including two spaced apart prongs adapted to be inserted between the crown of the staple and the stapled set of paper sheets, and a second member mounted for movement relative to said first member, said second member including a nose member mounted for movement between and closely adjacent to but spaced from said two spaced prongs upon said relative movement between said first and second members, said nose member being adapted, upon said prongs insertion and said relative movement between said first and second members, to apply staple deformation forces at two spaced apart positions adjacent to the opposite ends of the crown of the staple, at the opposite side of the crown from said prongs, adjacent to the clinched staple legs and adjacent to said two spaced prongs, to cause the ends of the crown adjacent the two clinched staple legs to be substantially deformed without substantial deformation of the central portion of the crown of the staple, so as to allow the two staple legs to be withdrawn substantially through the staple holes in the paper sheets;

wherein said nose member comprises two separate and spaced apart nose portions for respectively applying said forces at said two spaced apart positions so as to deform each said end of the crown between one said nose portion and one said prong;

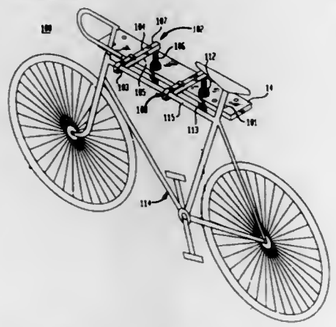
wherein said two separate spaced apart portions of said nose member are respectively maintained adjacent to but slightly spaced from said two prongs of said first member upon said relative movement between said first and second members.



5,605,321
APPARATUS FOR HOLDING SNOWBOARDS, SKIS, KNEEBOARDS, SURFBOARDS AND BICYCLES

Paul Jarvis, 51 Mt. Kemble Ave. - #308, Morristown, N.J. 07960

Filed Aug. 2, 1994, Ser. No. 284,257
Int. Cl.[6] B23Q *3/02*
U.S. Cl. 269—100 **1 Claim**



1. An apparatus for supporting a bicycle on a work surface comprising:

at least one base having a first and second end for supporting said bicycle;

a depression formed in said first end of said base for receiving said bicycle;

a rod extending perpendicularly from said second end of said base, said rod being received in an aperture of said work surface, said rod having a threaded outer surface;

a nut having a threaded inner surface, said nut mating with said threaded outer surface of said rod for coupling said base to said work surface,

a strap attached to the bottom surface of said base member,

a ring attached to the upper surface of said base member, said strap is received in said ring; and

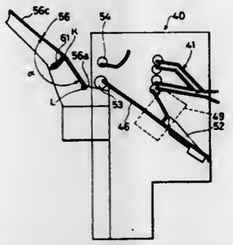
adjusting means attached to said base for securing said bicycle in said depression,

wherein a top portion of said strap is formed of a hook and loop material and said strap loops around said ring and is attached to itself.

5,605,322
DEVICE FOR FURTHER PROCESSING AFTER COPYING

Kaoru Suzuki, Yamatokoriyama; Tadahiro Ando; Hiroshi Naka, both of Nara; Mitsutoshi Sawada, Yamatokoriyama; Tomonori Obata, Osaka; Hiroshi Miura, Yamatokoriyama; Masayoshi Nakabayashi, Wakayama, and Eiiti Ando, Higashiosaka, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 429,819, Apr. 27, 1995, Pat. No. 5,480,130, which is a division of Ser. No. 247,750, May 23, 1993, Pat. No. 5,435,535, which is a division of Ser. No. 982,320, Nov. 25, 1992, Pat. No. 5,344,130. This application Oct. 3, 1995, Ser. No. 538,574
Claims priority, application Japan, Nov. 25, 1991, 3-309009; Nov. 25, 1991, 3-309012; Nov. 29, 1991, 3-316299; Nov. 29, 1991, 3-316306; Dec. 9, 1991, 3-324712; Dec. 9, 1991, 3-324715; Feb. 26, 1992, 4-39793; Feb. 27, 1992, 4-41135; Mar. 16, 1992, 4-58250; Mar. 26, 1992, 4-68534
Int. Cl.[6] B42B *5/00;* **B65H** *31/12*
U.S. Cl. 270—58.13 **11 Claims**



1. A device for further processing after copying, comprising:

sheet holding means for placing thereon a plurality of sheets;

means for processing after copying which carries out a predetermined process on a plurality of copied sheets stacked on said sheet holding means;

sheet push-out means for pushing out the sheets processed by said means for processing after copying, to be discharged from said sheet holding plate;

a discharge tray for placing thereon the sheets pushed out by said sheet push-out means;

drive means for driving said discharge tray up and down;

upper limit detection means for detecting that said discharge tray has been raised to the upper limit position where the support face of said discharge tray, or the top surface of a sheet placed on the support face reaches a virtual plane including the support face of said sheet holding means;

control means which controls respective operations by said sheet push-out means and said drive means so as to start pushing out by said push-out means when said upper limit detection

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means detects that said discharge tray reaches the upper limit position, and lowers said discharge tray when the upper ends of the sheets pushed out by said sheet push-out means reaches either the support face of said discharge tray or the top surface of the sheet placed on said discharge tray; and

a discharge roller, provided at a discharge opening for the sheets on said sheet holding means, for discharging the sheets by rotating, wherein as said discharge tray with a recessed portion for the discharge roller is raised by said drive means, the sheets placed on said discharge tray are sandwiched between said discharge tray and the discharge roller.

3. A device for further processing after copying, comprising:

sheet holding means for placing thereon a plurality of sheets;

means for processing after copying which carries out a predetermined process on a plurality of sheets stacked on said sheet holding means;

a discharge roller for discharging the sheets processed by said means for processing after copying from said sheet holding means;

a discharge tray provided with a support face for supporting the sheets discharged by said discharge roller and a resting face for said discharge roller, said resting face being positioned beneath said discharge roller, said discharge tray being installed on a vertical wall of said device;

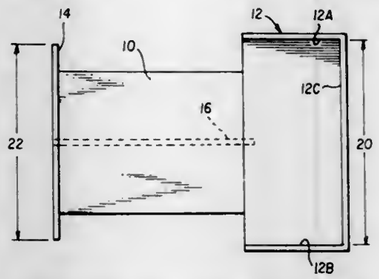
drive means for shifting said discharge tray up and down along the vertical wall according to a volume of sheets to be discharged.

5,605,323

IMAGING APPARATUS WITH SHEET MEDIA TRAY HAVING PARTIAL SIDES

Henry G. Wirth, and Mark A. Bobb, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 21, 1995, Ser. No. 407,836
Int. Cl.[6] B65H *1/04*
U.S. Cl. 271—145 **5 Claims**



1. A tray for holding a stack of sheets of imaging media to be fed to an imaging apparatus in a feed direction, said tray comprising:

a base having a generally planar surface for receiving a stack of imaging media sheets; and

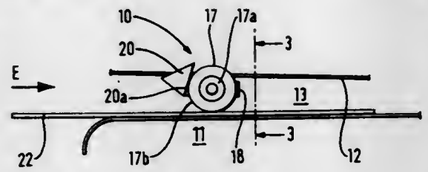
a plurality of sides extending generally perpendicular from the surface of the base on one side of the base to partially surround the received stack of sheets on the one side of the base, at least one of said sides terminating short of the end of the received stack of sheets in the feed direction such as to provide the received stack of sheets with an exposed lateral edge relative to the feed direction, said exposed lateral edge to be contacted by an alignment mechanism of the imaging apparatus, wherein said plurality of sides include two parallel sides on opposed sides of the received stack of sheets, said at least one of said sides being one of the two parallel sides, a third side normal to said two parallel sides and to said base, and a fourth side normal to said two parallel sides and separated from the third side and said two parallel sides, whereby the length of the fourth side is less than or equal to the width of the stack of sheets.

5,605,324

ONE WAY GATE

Mark T. Gilligan, Bengeo, England, assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 13, 1994, Ser. No. 354,982
Int. Cl.[6] B65H *29/20*
U.S. Cl. 271—314 **11 Claims**



1. A one way gate for items traveling along a transport path including a transport surface against which items are supported during travel, the gate comprising:

a rotatable roller disposed opposite said transport surface such that an item traveling forwardly along said transport path engages said roller; and

means, including a further surface and resilient biasing means biasing the roller against movement toward and away from the transport surface and the further surface, to limit rotation of the roller in one direction, whereby travel of an item in a reverse direction along said transport path is prevented by frictional engagement between said item and the roller;

wherein the resilient biasing means includes a mounting member resiliently deformable towards and away from the transport surface and the further surface and adapted for the rotatably securing thereon of the roller;

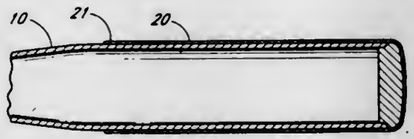
wherein the mounting member comprises a resiliently bendable support arm fixed at one end relative to the transport surface, the resilience of the support arm being substantially equal in mutually orthogonal directions in a plane generally perpendicular to the longitudinal axis of the support arm.

5,605,325

BATTING PRACTICE ATTACHMENT FOR BASEBALL BATS

Kenneth R. Haringa, P.O. Box 7200-520, Costa Mesa, Calif. 92628

Continuation of Ser. No. 100,618, Jul. 30, 1993, abandoned. This application Jun. 2, 1995, Ser. No. 458,857
Int. Cl.[6] A63B *69/40*
U.S. Cl. 273—457 **7 Claims**



1. A bat assembly, comprising:

a regulation bat including an elongate body having a first end and a second end, said body defining a handle portion proximate said first end and a predetermined contact portion proximate said second end having a length, said contact portion defining a generally cylindrical outer surface;

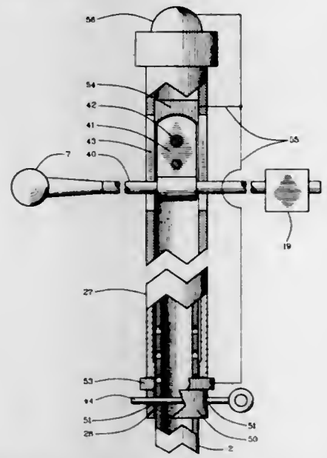
a removable one-piece attachment having a length of eight inches to ten inches so as to be approximately equal to said length of said predetermined contact portion, said attachment comprising an elastic tubular member defining an inner surface and an outer surface, said attachment being stretched circumferentially over said bat so as to be resiliently held in place, said attachment being positioned such that said inner surface is directly against said outer surface of said bat and said entire outer surface is exposed so as to be positioned to directly strike a ball, said attachment having a weight of approximately five percent to ten percent of the weight of said bat so as to have a insignificant weight relative said bat and a thickness between 1/64 inch and 1/16 inch such that a difference in diameter between said outer surface of said attachment and said outer surface of said contact portion of said bat is insignificant.

5,605,326

OBJECT HITTING APPARATUS

Thomas C. Spear, Jr., Longwood, Fla., assignor to Sport Innovations, Inc., Longwood, Fla.

Filed Nov. 18, 1994, Ser. No. 342,372
Int. Cl.[6] A63B *69/40*
U.S. Cl. 273—26 R **5 Claims**



1. A batting practice apparatus, comprising:

a base member supporting the apparatus on a surface;

a vertical support post extending from the base member;

a sleeve coaxially rotatably mounted on the vertical support post;

an elongated suspension pivotally attached at one end thereof adjacent the top end of the sleeve by a pivot axis perpendicular to the sleeve;

an arm member having first and second ends attached to the other end of said of the suspension bracket and being substantially perpendicular to said pivot axis; and

an object attached to one end of said arm member.

5,605,327

SHOCK DAMPING RACQUET BUTT CAP

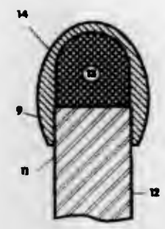
Wilmot H. McCutchen, P.O. Box 701129, Houston, Tex. 77270

Continuation-in-part of Ser. No. 302,060, Sep. 7, 1994, abandoned. This application Oct. 18, 1995, Ser. No. 544,832
Int. Cl.[6] A63B *49/08*
U.S. Cl. 473—523 **8 Claims**

1. A butt cap for a racquet, the racquet having a polygonal handle terminating in a handle end and having a longitudinal axis extending along a centerline of the handle, the butt cap comprising:

walls defining a polygonal cavity for slidably engaging the handle, and

a distal extension continuous with said cavity defining walls and protruding at least 1 cm along the longitudinal axis beyond the handle end;



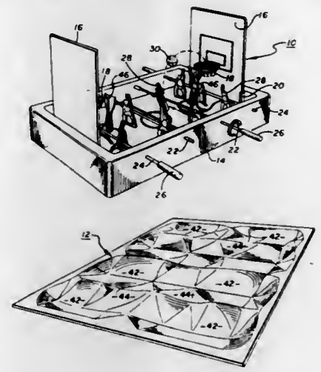
the butt cap having a truncated egg-shape with smoothly tapering longitudual sections through said cavity defining walls and said distal extension such that a hand might comfortably grasp around said cavity defining walls and said distal extension simultaneously without encountering any low radius of curvature radial projection.

5,605,328

TABLETOP BASKETBALL GAME WITH PLAY FIGURES ON OPERABLE RODS

Elliot A. Rudell, 1619 Gramercy Ave., Torrance, Calif. 90501; George Foster, Signal Hill, Calif.; Roger Gardner, Lomita, Calif., and Ian Osborne, Manhattan Beach, Calif., assignors to Elliot A. Rudell, Torrance, Calif.

Continuation of Ser. No. 348,536, Dec. 1, 1994, abandoned. This application Jun. 4, 1996, Ser. No. 658,979
Int. Cl.[6] A63F *7/06*
U.S. Cl. 273—108.1 **10 Claims**



1. A table top basketball game, comprising:

a floor that has a plurality of recess areas that are separated by a plurality of ramped surfaces and a plurality of recess channels that extend through said ramped surfaces between said recess areas;

a hoop suspended above said floor;

a ball that can roll along said floor through said recess channels between said recess areas;

a rod that can spin and move in a lateral direction relative to said floor; and,

a first player figure that is attached to said rod such that said first player figure can move relative to said floor and be rotated to project said ball into said hoop and move said ball through said recess channels.

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5,605,329

METAL BODY DETECTING APPARATUS FOR DETECTING LOCATION OF METAL BODY AND A SENSING MATRIX ASSEMBLY USED THEREFOR

Takatoshi Takemoto; Kazunari Kawashima, both of Tokyo, and Shigeru Handa, Hachioji, all of Japan, assignors to Kabushiki Kaisha Ace Denken, Tokyo, Japan

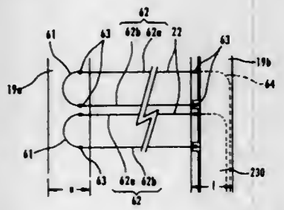
PCT No. PCT/JP93/00490, § 371 Date Dec. 1, 1994, § 102(e) Date Dec. 1, 1994, PCT Pub. No. WO93/21494, PCT Pub. Date Oct. 28, 1993

PCT Filed Apr. 16, 1993, Ser. No. 307,783

Claims priority, application Japan, Apr. 16, 1992, 4-96800

Int. Cl.[6] A63F *7/02*

U.S. Cl. 273—121 B **13 Claims**



1. A metal body detecting apparatus comprising;

a sensing matrix assembly having a planar detecting area;

a signal processing system for detecting the presence of the metal body and location thereof by driving said sensing matrix assembly;

said sensing matrix assembly having a plurality of transmission lines arranged in parallel and a plurality of reception lines arranged in parallel and a wiring board for supporting said lines,

said plurality of transmission lines arranged in parallel and said plurality of transmission lines arranged in parallel crossing each other so that the crossing portions thereof are arranged in a matrix on said wiring board;

said signal processing system comprising;

a transmission circuit for successively scanning said plurality of transmission lines to send a transmission signal thereto,

a reception circuit for successively scanning said plurality of reception lines to obtain a reception signal applied thereto,

a signal processing device for determining whether a metal body is present or not based on the obtained signal through said reception circuit, and for determining the location where the metal body is detected, based on information indicative of the transmission line scanning position in said transmission circuit, and information indicative of the reception line scanning position in said reception circuit,

said transmission lines and said reception lines, each having a pair of lead wires formed of an outward path and a return path being parallel with each other,

said outward path and said return path in each pair of wires being connected with each other at one end thereof, and the other end side being adapted to be an input and an output end of a signal,

said wiring board comprising;

a transmission terminal unit for connecting to said transmission circuit,

a reception terminal unit for connecting to said reception circuit,

a wiring area on which said transmission lines and said reception lines are arranged,

a circumventive wiring board for transmission lines for providing circumventive wiring for said transmission lines for connecting said input/output ends of the transmission lines to said transmission terminal unit,

a circumventive wiring board for reception lines for providing circumventive wiring for said reception lines for connecting the input/output ends of the reception lines to said reception terminal unit,

said circumventive wiring board for said transmission lines, and said cricumventive wiring board for said reception lines being provided out of said wiring area, and

at least one of said circumventive wiring board for said transmission lines and said circumventive wiring board for said reception lines comprising;

individual wiring provided for only one of the input or output ends of said outward path and said return path in each pair of wirings,

common wiring provided for the other end,

an insulation board, and

a pair of shield layers laminated on both sides of said insulation board through an insulation,

said individual wiring being provided on said insulation board and a part of said common wiring being formed of said shield layer.

5,605,330

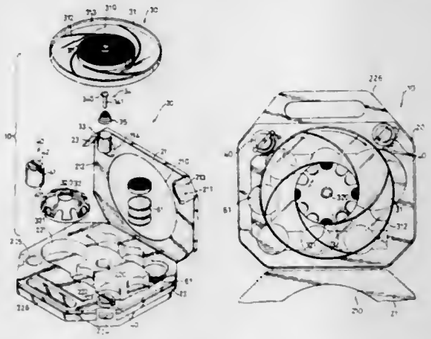
PORTABLE CONTAINER INVOLVING GAMES OF CHANCE

Wonder Huang, No. 51, Lane 2, Sec. 5, Changlu Rd., Lukang Chen, Changhua Hsien; Victoria Ho, 2nd Fl., No. 38, Lane 452, Chungcheng Rd., Chingfu Li, Hsinchu, and Wei-po Hsu, No. 31, Lane 227, Kungyuan Rd., Tungyuan Li, Hsinchu, all of Taiwan

Filed Sep. 8, 1995, Ser. No. 525,996

Int. Cl.[6] A63F *9/00*

U.S. Cl. 273—142 R **11 Claims**



1. A portable container for games of chance comprising:

a box combined by a cover and a base, the cover having a hole disposed in a center thereof, the base having a smaller hole in a center thereof, a larger hole and a plurality of pockets for containing disks disposed around the smaller hole;

a rotatable means whose components are disposed in the cover and the base when carried including

a rotatable plate having a protruding block and a central shaft extending through the block, a mantel covering the block of the rotatable plate, a socket having a guide hole for receiving the central shaft under the rotatable plate, a guide post and a spring disposed in the socket, the guide post having a head for supporting the central shaft and a body for the spring to mount therearound, the spring provided for admitting the central shaft of the rotatable plate to elevate in the socket.

5,605,331

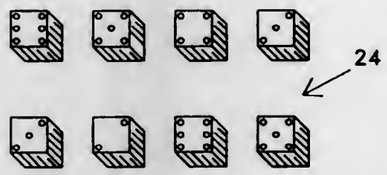
DICE GAME AND BOARD

Marvin Boe, 3402 Ivy, Rapid City, S. Dak. 57701

Filed Jun. 24, 1996, Ser. No. 669,142

Int. Cl.[6] A63F *9/04*

U.S. Cl. 273—146 **7 Claims**



1. A method of playing a dice game for two or more players utilizing a plurality of dice and a dice cup which comprises the following steps:

(a) establishing an order of play whereby players are designated lead player, second player, and so on to the last player;

(b) initiating a first round of play by using the dice cup to throw the plurality of dice and playing in rounds beginning with the lead player and ending with the last player; each player having a turn in each round; the lead player throwing said plurality of dice one, two, or three times;

(c) establishing the number of times each player may throw the plurality of dice in each turn by determining whether the lead player threw said plurality of dice one, two, or three times;

(d) establishing the lead player's result in each round by setting a predetermined value to the number of either 6's, 5's, 4's, 3's, 2's, or 1's which the lead player rolled using said plurality of dice in either one, two, or three rolls;

(e) establishing the results of all other players in each round by determining the predetermined value of the number of either 6's, 5's, 4's, 3's, 2's, or 1's which each of the other players rolled using said plurality of dice in the same number of rolls as the lead player;

(f) determining whether the lead player achieved the highest result in any round of play; and, if the lead player achieved the highest result, the lead player is awarded a predetermined score and continues as lead player for the next round of play; and, if a player other than the lead player achieved the highest result in any round of play, that player becomes the lead player for the next round of play; and

(g) continuing play in rounds an adding each player's score achieved in any round to the player's scores achieved in previous rounds until one player wins the game by achieving some predetermined score.

5,605,332

PIXELATED PUZZLE

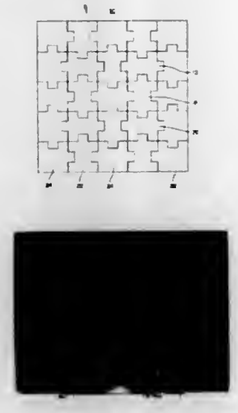
Brian P. Harnett, Toronto, Canada, assignor to Pixel Products Unlimited, Toronto, Canada

Filed Jan. 19, 1996, Ser. No. 588,750

Int. Cl.[6] A63F *9/10*

U.S. Cl. 273—157 R **29 Claims**

1. A jigsaw puzzle comprising a plurality of inner pieces each adapted to engage at least one other inner piece and together bearing a complete solved image which has been pixelated, and which comprises a plurality of pixels arranged on a grid defined by a plurality of sets of parallel lines which sets of lines intersect one another, wherein each inner piece comprises a plurality of said



pixels and wherein edges of each inner piece comprise portions of said lines whereby each pixel is located solely on a single inner piece.

5,605,333

CARD GAME EMPLOYING CARD VALUES TO DETERMINE A WINNING CARD HAND

Peter Field, 530 N. 3rd St., Montebelleo, Calif. 90640

Filed Oct. 31, 1995, Ser. No. 550,788

Int. Cl.[6] A63F *1/00*

U.S. Cl. 273—274 **6 Claims**

1. A method of playing e card game, comprising:

(a) determining a target point value,

(b) providing a dealer and multiple players, wherein each player plays a dealt card hand against a bank's hand,

(c) providing at least one deck, of playing cards having a plurality of suits, containing selected natural cards and a full complement of face cards,

(d) dealing five cards to the backhand and to each player and,

(e) exposing the cards in each hand to determine the winning hands,

(f) determining a point value of the cards of each suit in each hand, such that each suit has a total point value based on the value of the cards of each suit in the particular hand, said point value determined such that when the total point value of the cards in a given suit exceeds ten, then the total point value will be reduced by ten to arrive at a final point value for that suit, such that each selected natural card, from the ace to the nine, has its indicated point value and each ten and each face card has a zero point value,

(g) declaring a winning hand to be the hand having the final point value in my one suit closest to the target point value without exceeding said target point value.

5,605,334

SECURE MULTI-SITE PROGRESSIVE JACKPOT SYSTEM FOR LIVE CARD GAMES

Charles H. McCrea, Jr., 2816 La-Casita, Las Vegas, Nev. 89120

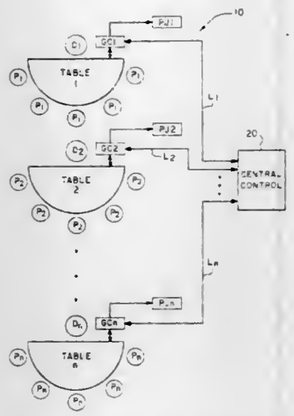
Filed Apr. 11, 1995, Ser. No. 420,303

Int. Cl.[6] A63F *1/18*

U.S. Cl. 273—309 **20 Claims**

1. A secure game table system for monitoring each hand in a progressive live card game, said progressive live card game having at least one deck, said at least one deck having a predetermined number of cards, said secure game table system having players at a plurality of player positions and a dealer at a dealer position, said secure game table system comprising:

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a shoe for holding each card from said at least one deck before being dealt by said dealer in said hand, said shoe having a detector for reading at least the value and the suit of said each card, said detector issuing a signal corresponding at least to said value and suit for said each card,

a game bet sensor located near each of said plurality of player positions for sensing the presence of a game bet, when the presence of said game bet is sensed, said game bet sensor issuing a signal corresponding to said presence,

a progressive bet sensor located near each of said plurality of player positions for sensing the presence of a progressive bet, when said progressive bet is sensed, said progressive bet sensor issuing a signal corresponding to said presence,

a card sensor located near each of said plurality of player positions and said dealer position, said card sensor issuing a signal when a card in said hand is received at said card sensor,

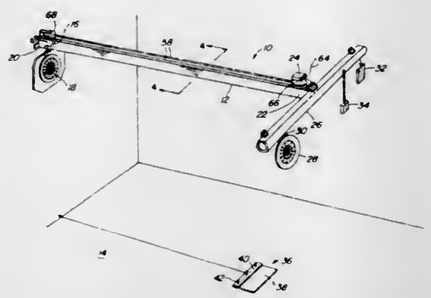
a game control, said game control having a memory, said game control receptive of said game bet signals from said game bet sensor at each of said plurality of player positions for storing in memory which player positions have in place a game bet, said game control receptive of said value and suit signals from said detector in said shoe for storing in said memory at least the value and suit of each card dealt from said shoe in said hand, said game control receptive of said card received signals from said card sensor at each of said plurality of player positions and said dealer position for correlating in said memory each card dealt from said shoe in game sequence to each card received at a player position having a game bet sensed, said game control receptive of said progressive bet signals from said progressive bet sensor at each of said player positions for storing in said memory which player positions have in place a progressive bet.

5,605,335
DART GAME APPARATUS
William R. Simpson, 52 Graham Lake Road, R.R.#4, Mallorytown, Ont., Canada
Filed Jan. 16, 1996, Ser. No. 585,565
Claims priority, application Canada, Jul. 4, 1995, 2153212
Int. Cl.[6] F41J *3/00*
U.S. Cl. 273—406 **14 Claims**

1. A dart game apparatus for installation in a room, said apparatus comprising:

a target supporting track for suspension above the floor of said room at a predetermined height, said track having a distal end and a proximal end;

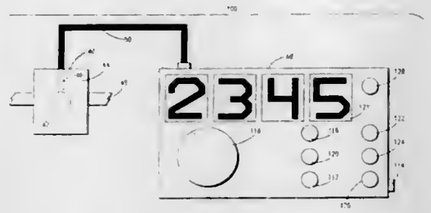
a target hanger with a target detachably secured thereto and suspended from said supporting track for reciprocal movement thereon between said distal and proximal ends;



means associated with said track for effecting said reciprocal movement of said target hanger and said target along said track between said proximal end and said distal end; and

a second, transverse track located normal to said target-supporting track adjacent the proximal end thereof with a simulated target suspended from said transverse track for movement therealong.

5,605,336
DEVICES AND METHODS FOR EVALUATING ATHLETIC PERFORMANCE
Albert A. Gaoiran, and Mayrose A. Gaoiran, both of 811 Cape Kennedy Dr., San Jose, Calif. 95133
Filed Jun. 6, 1995, Ser. No. 471,421
Int. Cl.[6] A63B *69/00*
U.S. Cl. 273—445 **52 Claims**



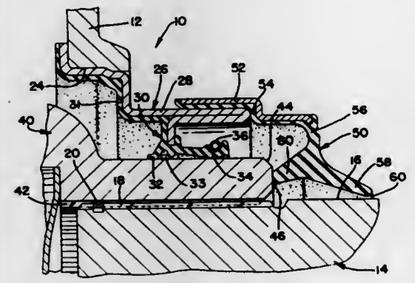
1. An athletic performance evaluating device comprising:

a) a first shock sensor having a predetermined sensitivity, wherein the first shock sensor comprises a transducer responding to a shock induced movement of an inertial mass, in which the shock induced movement is caused by a first shock magnitude, whereby the shock induced movement generates a first electrical effect;

b) a first control means for detecting, controlling and reporting the first shock sensor first electrical effect, wherein the first control means comprises: (1) a delay state generator for selectively generating a delay time, (2) a ready state generator wherein a ready state is generated upon completion of the delay time, during which ready state the first control means is enabled to detect the first electrical effect, (3) an electrical effect processing means for processing the first electrical effect when the first control means is in the ready state, wherein the electrical effect processing means provides a first athletic performance result, (4) a performance reporting means for reporting the first athletic performance result, (5) a power supply to provide electrical power to the first control means and (6) a first control means housing, to contain the first control means therein, wherein the first shock sensor is external to the first control means housing; and

c) a communicating means for operatively connecting the first shock sensor to the first control means.

5,605,337
PIVOTING SEAL FOR OIL-FILLED ROTATING MACHINE
Bhapinder Puri, Ann Arbor, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Mar. 13, 1996, Ser. No. 617,514
Int. Cl.[6] F16J *15/32*
U.S. Cl. 277—8 **5 Claims**

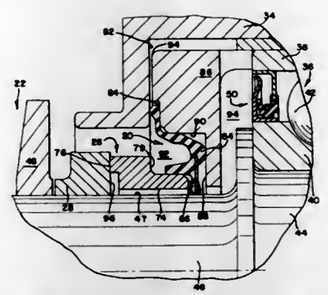


5. In a rotating machine having a primary shaft with an unsplined portion rotatably mounted in an oil filled housing and a splined portion thereof registering with an oversized opening in the housing, a primary seal carried by the housing opening for sealingly engaging with a splined secondary shaft upon insertion of the splined secondary shaft into the opening and into spline-mating engagement with the splined primary shaft, the improvement comprising:

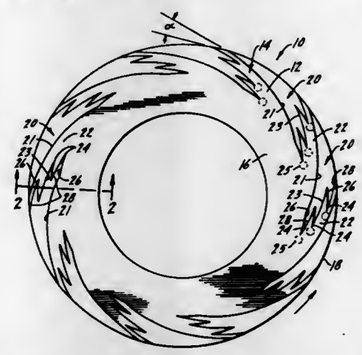
an annular seal located axially inboard the primary seal and having a flexible sealing lip for sealing engagement with the primary shaft to maintain oil within the housing, an abutment lever extending to be engaged by the splined secondary shaft upon insertion of the splined secondary shaft through the housing, and a fulcrum portion axially intermediate the flexible sealing lip and the abutment lever and extending radially outward and carried by the housing whereby upon insertion of the splined secondary shaft through the housing opening said splined secondary shaft first obtains sealing engagement with the primary seal and upon further insertion the secondary shaft engages with the abutment lever to bias the annular seal about the fulcrum portion thereby lift the flexible sealing lip radially outward away from sealing engagement with the splined primary shaft to thereby open a path of oil flow to the splined portion of the splined primary shaft so that the mating splines between the primary and secondary shafts are bathed in oil.

5,605,338
LIQUID PUMP SEAL
Gerhard W. Poll, Elgin, Ill., assignor to SKF USA Inc., Elgin, Ill.
Filed Sep. 7, 1995, Ser. No. 524,481
Int. Cl.[6] F16J *15/32;15/36*
U.S. Cl. 277—85 **2 Claims**

1. A liquid seal unit comprising, in combination, a seal ring of annular configuration, having an end face adapted to cooperate with a seal mating ring on an associated component to form a liquid-tight dynamic seal, and a composite multi-functional member having a flexible finger spring embedded in a unitary elastomeric body, said spring having an annular continuous outer body portion and a plurality of circumferentially spaced apart, radially inwardly extending flexible spring fingers, terminating adjacent a circular locus, said unitary elastomeric body having portions defining a radially outer mounting collar with a generally radially inwardly directed surface, a radial web portion extending radially inwardly from said outer collar and enclosing said flexible finger spring, a first annular load bearing formation having a contoured outer surface and extending axially outwardly from the region of said body surrounding the radially outer portion of said annular finger spring, a second annular load bearing formation having a contoured outer surface and extending axially inwardly of the inner end portions of said finger spring, and an axially inwardly extending seal ring positioning collar having a generally radially inwardly facing secondary sealing surface receivable in facing relation to a seating surface on said seal ring, said collar responding to an axially outward deflection of said fingers on said finger spring by radially inward deflection and increase of the radial load exterted on said seal ring seating surface.



5,605,339
NON-CONTACTING MECHANICAL FACE SEAL
Glenn G. Pecht, Vernon Hills, and Jon B. Hamaker, Schaumburg, both of Ill., assignors to John Crane Inc., Morton Grove, Ill.
Continuation of Ser. No. 101,589, Aug. 3, 1993, Pat. No. 5,441,283. This application Aug. 14, 1995, Ser. No. 514,865
Int. Cl.[6] F16J *15/34*
U.S. Cl. 277—96.1 **11 Claims**



1. A mechanical face seal for providing a seal between a pair of relatively rotatable components comprising a first seal ring adapted to be mounted non-rotatably on one of said components and sealed with respect to said one component; a second seal ring adapted to be mounted non-rotatably on the other component and sealed with respect to said other component, said second seal ring being mounted in axial alignment with the first seal ring; and means being provided for resiliently urging an annular sealing face of the first seal ring axially into sealing engagement with an annular sealing face of the second seal ring; the sealing face of one of said seal rings having an annular grooved portion including a plurality of spaced apart grooved areas disposed around its circumference, with said grooved areas open to one circumferential edge of the sealing face, and a continuous annular dam provided between the grooved portion and the other circumferential edge of said sealing

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face, the grooved portion and the dam being defined by a circumferential border, each said grooved area having:

first and second spaced apart groove boundaries formed by groove edges, said first groove boundary defining a first point of intersection with said circumferential edge of said sealing face to which said grooved areas open and said second groove boundary defining a second point of intersection with said circumferential edge of said sealing face to which said grooved areas open, said first groove boundary and said second groove boundary having a point of intersection with said circumferential border, said groove edge of said second groove boundary including at least two spaced apart groove edge portions, each said groove edge portion extending from a point of commencement radially toward said dam and circumferentially in a direction away from said first point of intersection to a terminal point, said first groove boundary extending from said first point of intersection radially toward said dam and circumferentially in a direction toward said second point of intersection.

5,605,340

Patent Not Issued For This Number

5,605,341

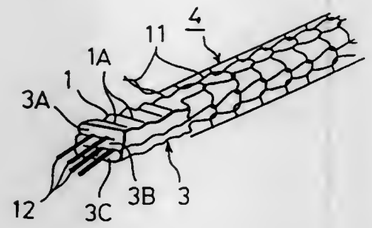
KNITTING YARN FOR GLAND PACKING AND GLAND PACKING MADE FROM THE KNITTING YARN

Takahisa Ueda, Sanda, Japan, assignor to Nippon Pillar Packing Co., Ltd., Osaka, Japan

Continuation of Ser. No. 402,556, Mar. 13, 1995, which is a continuation of Ser. No. 6,523, Jan. 21, 1993, abandoned. This application Nov. 30, 1995, Ser. No. 565,582

Int. Cl.[6] F16J *15/20*

U.S. Cl. 277—204 **4 Claims**



1. A knitting yarn for a gland packing having a composite structure, comprising:

a string-like body formed from an expanded elongated graphite tape which is so cut as to have a wide width and contains crimpling molding in the longitudinal direction thereof effected by corrugating or embossing and is folded in the widthwise direction thereof, thus forming a plurality of layers;

a first reinforcing member made of a knitted or braided body for covering the entire outer peripheral surface of said folded string-like body; and

a yarn-like second reinforcing member, such as organic fibers, interposed between said folded layers of said string-like body and extending in the longitudinal direction thereof.

5,605,342

GASKETS

Bernard C. D. Genin, Venissieux, France, and Christopher R. Harland, Oxon, England, assignors to T&N plc, Manchester, England, and Curty Payen SA, Saint Priest, France

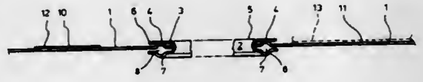
PCT No. PCT/GB94/00474, § 371 Date Sep. 13, 1995, § 102(e) Date Sep. 13, 1995, PCT Pub. No. WO94/20745, PCT Pub. Date Sep. 15, 1994

PCT Filed Mar. 10, 1994, Ser. No. 513,943

Claims priority, application United Kingdom, Mar. 10, 1993, 9303255

Int. Cl.[6] F16J *15/08*

U.S. Cl. 277—235 B **5 Claims**



1. A cylinder head gasket for an internal combustion engine comprising at least one metal core sheet having a plurality of apertures defined therein including at least one cylinder bore aperture, wherein the margin of said cylinder bore aperture is provided with an annular upwardly convex corrugation extending around the margin thereof, together with a metal eyelet having upper and lower portions adapted to overlie said corrugation on upper and lower faces, respectively, of said core sheet, said eyelet being provided with an annular upwardly concave corrugation in its lower portion which, when the eyelet is in place in the aperture, is aligned with the annular upwardly convex corrugation in the core sheet, the respective corrugations defining an annular space therebetween.

5,605,343

GRIPPING JAW

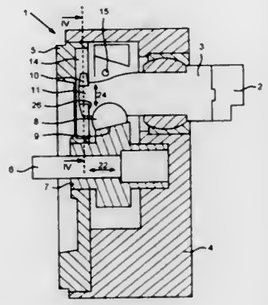
Jacques Barbieux, Louvres, France, assignor to Sandvik Tobler S.A., Louvres, France

Filed Jun. 7, 1995, Ser. No. 474,381

Claims priority, application France, Jun. 7, 1994, 94 06935

Int. Cl.[6] B23B *31/18*

U.S. Cl. 279—132 **6 Claims**



1. A chuck comprising:

a body;

a traction rod sliding axially in the body;

at least one jaw holder having an end which slides radially in the body; and

a transmission system converting axial translation of the traction rod into radial translation of the end of each jaw holder,

the jaw holder is fitted with a guiding member guided radially along a groove recessed within the chuck, the guiding member being free to swivel axially in relation to the jaw holder.

5,605,344

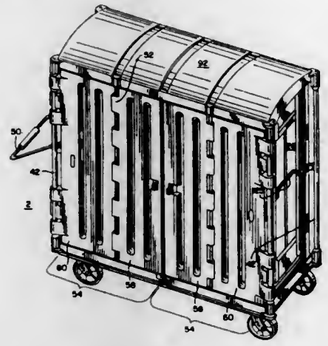
TRANSPORT CART

Robert W. Insalaco, Holland, Mich., and Edgar B. Montague, Charlotte, N.C., assignors to Herman Miller, Inc., Zeeland, Mich.

Filed Sep. 14, 1994, Ser. No. 306,510

Int. Cl.[6] B62B *3/02*

U.S. Cl. 280—47.34 **59 Claims**



1. A cart for transporting materials along a floor, comprising:

a generally horizontal rectangular base positioned parallel to said floor and having a front edge, a back edge opposite said front edge, a first side edge attached to said front and back edges, and a second side edge opposite said first side edge and attached to said front and back edges;

a first generally vertical side wall supported on said first side edge of said base;

a second generally vertical side wall supported on said second side edge of said base;

a back wall supported on said back edge of said base and attached to said first and second side walls;

a cover supported on said back wall and said first and second side walls;

four inner vertical frame members extending upward from said base and contacting said cover, wherein an end of each inner vertical frame member is inserted within an opening located on said base and another end of each inner vertical frame member is inserted within an opening located in said cover;

four outer vertical frame members extending upward from said base and contacting said cover and separated from said four inner vertical frame members by said first and second side walls, back wall and front door, wherein each of said outer vertical frame members are attached to a corner of said base and said cover.

5,605,345

WHEELED APPARATUS FOR USE AS WALKER AND WHEELCHAIR

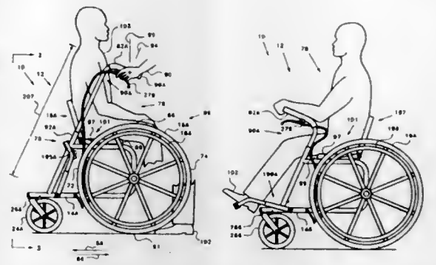
Ronald L. Erfurth, Oregon, Wis.; Lloyd L. Lautzenhiser, Nobel, Canada, and Wendell E. Miller, Warsaw, Ind., assignors to Brookefield Hunter Incorporated, Oregon, Wis.

Filed Oct. 21, 1993, Ser. No. 140,779

Int. Cl.[6] B62M *1/14*

U.S. Cl. 280—250.1 **53 Claims**

49. Wheeled apparatus (**10**) which comprises a frame (**12** or **258**) having a longitudinal axis (**20**), first (**16A**) and second (**16B**) transversely spaced-apart wheels being operatively attached to said frame, a third wheel (**24A**) being longitudinally spaced from said first and second wheels and being operatively attached to said frame, and a seat cushion (**97**) and a seat back (**106, 126, 148, 164**) being operatively attached to said frame, the improvement which is characterized by:



means, comprising a push handle (**90A** or **90B**), for using said apparatus as either a wheelchair or a wheeled walker;

bi-directional seating means (**101, 124, 146,** or **162**) for selectively positioning said seat back toward said push handle when said apparatus is used as a wheelchair, and away from said push handle when said wheeled apparatus is used as a wheeled walker;

said seat back (**106**) includes first (**108A**) and second (**108B**) surfaces;

said means for selectively positioning said seat back toward and away from said push handle (**90A** or **90B**) comprises means for selectively using different ones of said surfaces as a backrest; and

said bi-directional seating means (**101**) further comprises means for folding said seat back down toward said seat cushion (**97**).

5,605,346

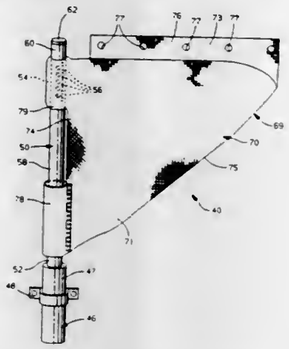
SIDE MOUNTED AIR BAG MODULE

Bonnie Y. Cheung, Auburn Hills; Brian H. Frantz, Royal Oak; Kenneth H. Desaele, Romeo; Timothy W. Hill, Troy, and Jeffrey A. Welch, Saint Clair Shores, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 28, 1995, Ser. No. 520,532

Int. Cl.[6] B60R *21/22;21/26*

U.S. Cl. 280—728.2 **12 Claims**



1. An air bag module for a vehicle comprising:

an inflator for discharging inflator gas;

an air bag for inflation by the discharging inflator gas, the air bag having a sliding edge, the sliding edge of the air bag having a folded condition prior to air bag inflation and an extended condition upon air bag inflation;

a conduit having a first portion in fluid communication with the inflator for receiving discharging inflator gas therein and a second portion spaced apart from the inflator and having an opening in fluid communication with the air bag for directing discharging inflator gas into the air bag; and

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the sliding edge of the air bag being slidably connected to the conduit whereby upon air bag deployment, the sliding edge of the air bag slides along the conduit to the extended condition.

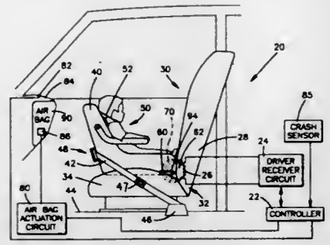
5,605,347
AIRBAG MODULE WITH SIMPLIFIED CUSHION ATTACHMENT
James P. Karlow, Milford, and Mohamed Boumarafi, Rochester Hills, both of Mich., assignors to Takata, Inc., Auburn Hills, Mich.
Filed Oct. 10, 1995, Ser. No. 541,792
Int. Cl.[6] B60R *21/20;21/30*
U.S. Cl. 280—728.2 **15 Claims**



1. An airbag module for a motor vehicle for providing occupant protection comprising:
a cushion assembly formed of a foldable fabric and having an interior volume with an inflation opening formed by at least one edge flap having a plurality of mounting slits,
an inflator for generating an inflation gas for said cushion assembly,
a housing defining an interior volume and having an opening for receiving said cushion assembly, said housing further defining a series of slots and having means for receiving and retaining said inflator within said interior volume, and
a retainer bracket having a perimeter edge with a plurality of protruding tabs, said retainer bracket dimensioned to be received within said housing opening causing deflection of said bracket, with said tabs passing through said cushion assembly flap mounting slits and said housing slots oriented to receive said tabs such that the interaction between said tabs and said housing attaches said cushion assembly to said housing.

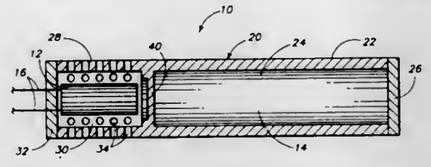
5,605,348
METHOD AND APPARATUS FOR SENSING A REARWARD FACING CHILD SEAT
Brian K. Blackburn, Rochester; Joseph F. Mazur, Washington; Gregory S. Bayley, Livonia, and Scott B. Geotry, Romeo, all of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio
Filed Nov. 3, 1993, Ser. No. 147,682
Int. Cl.[6] B60R *21/08*
U.S. Cl. 280—735 **32 Claims**

1. An apparatus for preventing actuation of an actuatable occupant restraining device of a vehicle, said apparatus comprising:
sensing means for sensing the presence and orientation of a child restraining seat on an occupant seat of the vehicle; and
control means operatively connected to said sensing means and to said actuatable occupant restraining device for preventing actuation of said actuatable occupant restraining device when



said sensing means senses said child restraining seat on said occupant seat in a predetermined orientation.

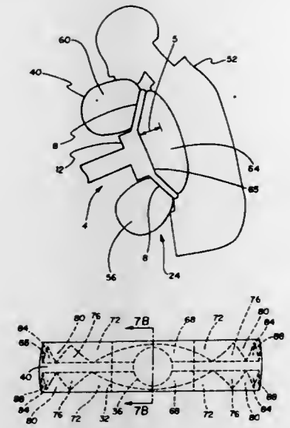
5,605,349
INTEGRATED CANISTER FOR AN AIRBAG INFLATOR
David Childree, Livermore, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Pleasanton, Calif.
Filed Dec. 21, 1995, Ser. No. 576,766
Int. Cl.[6] B60R *21/26*
U.S. Cl. 280—741 **20 Claims**



1. A canister for an airbag inflator comprising:
a tubular body having a cylindrical shape elongated from a first end to a second end along a longitudinal central axis, the tubular body forming a continuous wall that defines a pressurized gas chamber at the first end and a diffuser at the second end, the continuous wall being spaced from the central axis by an approximately constant radial distance from the first end to the second end; and
a burst disk integrally formed with the body wherein the body and disk are formed together from a single piece of material, the burst disk being oriented transverse to the central axis to separate the pressurized gas chamber from the diffuser.

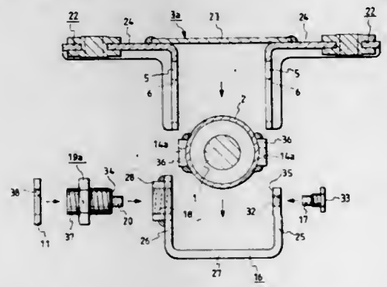
5,605,350
AIR BAG FOLD AND METHOD
Sonya A. Bates, Vandalia, and John P. Sparkman, Dayton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed May 30, 1995, Ser. No. 454,495
Int. Cl.[6] B60R *21/20*
U.S. Cl. 280—743.1 **7 Claims**

1. A supplemental inflatable restraint system in a vehicle for restraining an occupant, comprising:
a steering wheel having a hub portion, a rim portion, and spoke portions connecting the hub portion to the rim portion;
an inflator for generating gas; and
an air bag inflatable upon generation of gas by the inflator, the air bag having an upper portion, a lower portion and a central portion, the air bag having a fold configuration including a fold stack having a roll fold and a fan fold and two tuck folds and wherein the roll fold and the fan fold are positioned between the two tuck folds in the fold stack such that when the air bag interacts with the occupant, inflation of the deploying air bag is blocked and the upper portion and the lower portion of the air bag are each directed away



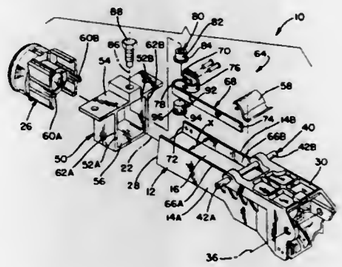
from the occupant and under the rim portion and between the spoke portions such that the upper and lower portions of the air bag engage the rim portion and are restrained from deployment in a rearwardly direction towards the occupant.

5,605,351
TILT TYPE STEERING APPARATUS
Kiyoharu Higashino, Gunma-ken, Japan, assignor to NSK Ltd., Tokyo, Japan
Filed Jan. 4, 1996, Ser. No. 582,899
Claims priority, application Japan, Feb. 27, 1995, 7-038631
Int. Cl.[6] B62D *1/18*
U.S. Cl. 280—775 **1 Claim**



1. A tilt type steering apparatus provided with:
a steering column having rotatably inserted therein a steering shaft having a steering wheel fixed to the rear end portion thereof;
a pivotally supporting portion pivotally supporting the fore end portion of said steering column for pivotal movement about a lateral shaft;
a pair of left and right restraining holes formed in both sides of the intermediate portion of said steering column in the widthwise direction of said steering column;
a fixed bracket having a pair of left and right fixed plate portions each disposed in a vertical direction, and fixed to a vehicle body with the intermediate portion of said steering column sandwiched by and between said fixed plate portions from the widthwisely left and right sides thereof;
slot-like portions long in a vertical direction formed in those portions of said fixed plate portions which are aligned with said retaining holes;
a hold-down bracket formed into a U-shape by first and second hold-down arm portions each disposed in a vertical direction and a connecting arm portion connecting the lower ends of said hold-down arm portions together;
a first retaining pin projectedly provided on the inner side of the upper end portion of said first hold-down arm portion and having its tip end portion inserted in one of said pair of restraining holes through one of said pair of slot-like portions;
a threaded hole formed in the upper end portion of said second hold-down arm portion laterally through said upper end portion;
a tilt bolt threadably engaged with said threaded hole;
a second restraining pin projectedly provided on the central portion of the inner end surface of said tilt bolt and having its tip end portion inserted in the other of said pair of restraining holes through the other by said pair of slot-like portions; and
a tilt lever having its base end portion fixed to the outer end portion of said tilt bolt.

5,605,352
ENERGY ABSORBING STEERING COLUMN
Richard K. Riefe, Saginaw; Kurt J. Hilbrandt, Hemlock, and Howard D. Beauch, Frankenmuth, all of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Dec. 8, 1995, Ser. No. 569,539
Int. Cl.[6] B62D *1/11*
U.S. Cl. 280—777 **2 Claims**



1. An energy absorbing steering column for a motor vehicle including
a housing,
a steering shaft rotatably supported on said housing,
a steering wheel rotatable as a unit with said steering shaft,
means operative to mount said housing on a body structure of said motor vehicle for linear translation through a collapse stroke in response to in impact on said steering wheel, and
an energy absorber between said housing and said body structure of said motor vehicle operative during said linear collapse stroke of said housing to convert into work a fraction of the kinetic energy of the impact on said steering wheel,
characterized in that said energy absorber comprises:
a pair of parallel containment walls on said housing separated by a span dimension,
a flat metal ribbon between said pair of containment walls having a first end and a loop-shaped first undulation adjacent to and open toward said first end and a loop-shaped second undulation tangent to said first undulation open in a direction opposite said first undulation,
the sum of the diameters of said first and said second undulations exceeding said span dimension between said containment walls so that said first and said second undulations overlap each other,
a first roller in said first undulation supported on said body structure of said motor vehicle for rotation about a stationary centerline engaging said flat metal ribbon over at least one half of the circumference of said first roller,

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a second roller in said second undulation engaging said flat metal ribbon over at least one half of the circumference of said second roller, and

means operative to rigidly connect said first end of said flat metal ribbon to said housing so that said flat metal ribbon is pulled sequentially over a pair of rotating anvils defined by said first and said second rollers during said collapse stroke of said housing while said second undulation is prevented from expanding and releasing said second roller by said first roller and one of said pair of containment walls.

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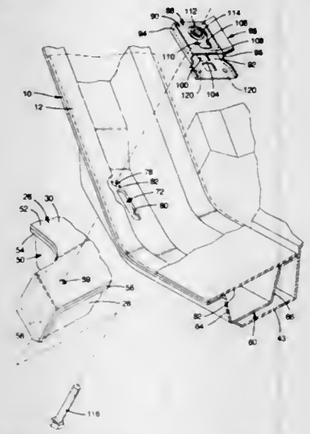
VEHICLE CHASSIS WITH ENERGY MANAGEMENT

Stephen P. Moss, Troy; John C. Johnson, Warren; Dilip M. Bhaisod, Troy, and Craig W. Stumpf, Lansing, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 9, 1995, Ser. No. 513,161

Int. Cl.[6] B62D *21/15*

U.S. Cl. 280—784 **5 Claims**



1. An energy managing vehicle chassis comprising:

first and second longitudinal extending chassis side rails spaced laterally apart;

a cross member extending transversely across the vehicle between the first and second side rails and having first and second bolt holes therein to enable attachment of the cross member to the side rails;

first and second longitudinal extending slotted apertures provided respectively in the side rails and registering respectively with the first and second bolt holes in the cross member;

first and second cage members attached respectively to the first and second side rails and aligned with the slotted apertures thereof, each cage member having a longitudinal extending slot registering with the aligned slotted aperture of the respective side rail and each cage member having a nut captured therein for longitudinal movement of the nut within the cage member along the respective slotted aperture; and

first and second bolts extending respectively through the first and second cross member bolt holes, through the aligned slotted aperture of the respective side rail, and threaded into the nut captured by the respective cage member to attach the cross member and the side rails together and yet permit an impact force applied against the cross member to induce forced longitudinal movement of the cross member relative to the side rails, as permitted by longitudinal movement of the bolts along the slotted apertures;

at least one of the slotted apertures having a constriction thereof to impede relative longitudinal movement of the bolt along the at least one slotted aperture to absorb energy.

5,605,354

ALBUM

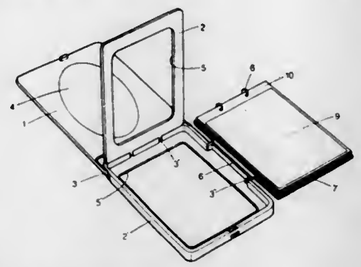
Hyung-Seok Kwon, 790-37, Sihung 4-Dong, Kulo-Gu, Seoul 152-034, Rep. of Korea

Filed Jul. 13, 1995, Ser. No. 502,325

Claims priority, application Rep. of Korea, May 27, 1995, 95-11647

Int. Cl.[6] B42D *1/08*; **B42F** *5/00*; **G09F** *9/00*

U.S. Cl. 281—22 **2 Claims**



1. An album comprising:

top and bottom frames having their openings, said top frame being pivoted to a top side of said bottom frame by means of a first hinge;

a front cover pivoted to a top side of said bottom frame by means of a second hinge such that the top frame is positioned between the front cover and the bottom frame, said cover being provided with a mirror on its inside surface and said second hinge having a protrusion and a protrusion receiving hole;

a binder's board sheet pivoted to a right side of said bottom frame by means of a third hinge such that the board sheet is positioned between the top and bottom frames, a top portion of said binder's board sheet being provided with at least one binder ring; and

a plurality of picture mount sheets for keeping pictures therein, said picture mount sheets being bound on the binder's board sheet by said binder ring.

5,605,355

DEVICE FOR COUPLING A PIPE ON AN INSERT HAVING A ZONE OF WEAKNESS

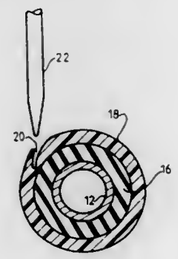
Maxime Andre, Chateaurenard, France, assignor to Hutchinson, Paris, France

Filed Nov. 6, 1995, Ser. No. 554,075

Claims priority, application France, Nov. 7, 1994, 94 13298

Int. Cl.[6] F16L *33/207*

U.S. Cl. 285—3 **6 Claims**



1. A device for coupling a flexible pipe on a rigid tubular insert, the device comprising a tubular part of molded plastics material which surrounds a portion of the pipe engaged on the insert and which radially clamps said portion of the pipe on the insert, said tubular part including at least one zone of weakness configured to permit breaking or tearing of said tubular part to enable the pipe to be dismounted from the insert, said zone of weakness including at least one face that is substantially tangent to the inside surface of said tubular part configured to form a guide for a tool permitting the breaking or tearing of said tubular part without damage to said portion of the pipe.

5,605,356

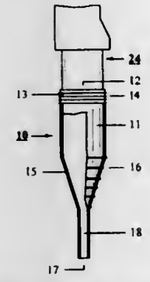
AIR INFLATER ADAPTER

Stephen Salvi, 8 Deepwoods Dr., Natick, Mass. 01760

Filed May 17, 1995, Ser. No. 442,699

Int. Cl.[6] F16L *25/00*

U.S. Cl. 285—7 **6 Claims**



1. A monolithic adapter of generally uniform wall thickness for connecting a source of air to a device to be inflated which has an air inlet opening, comprising:

a first larger hollow inlet end portion defining an enlarged generally cylindrical air inlet and connectable to a source of air;

a second smaller outlet end portion comprising an elongated, cylindrical tube defining a smaller cylindrical air outlet, for insertion in the air inlet opening of the device to be inflated; and

a single, gradually-tapered hollow frustoconical portion directly connecting said inlet end portion to said outlet end portion sealingly-engaging and gripping the air inlet opening, for directing maximum air flow from said inlet portion into and out of said outlet portion into the device to be inflated.

5,605,357

PIPE COLLAR

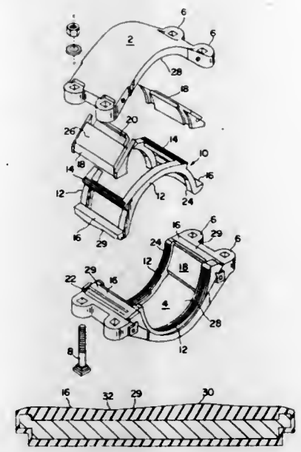
Edwin A. Bird, Ashdown, Ark., assignor to M&FC Holding Co., Wilmington, Del.

Filed Jun. 5, 1995, Ser. No. 461,115

Int. Cl.[6] F16L *55/172*

U.S. Cl. 285—15 **20 Claims**

1. In a pipe collar comprising first and second arcuate shell members, clamping means for drawing said shell members together around a pipe, first and second sealing assemblies of elastomeric material, respectively disposed interiorly of said shell members, wedge members disposed between said shell members proximate said clamping means and adapted to slide along interior surfaces of said shell members as said shell members are drawn together, each of said sealing assemblies comprising a pair of circumferential sealing strips spaced apart and interconnected by axially extending sliding sealing strips and axially extending end sealing strips, said end sealing strips being disposed within axial end grooves in said wedge members, such that a first of said wedge members having a first of said end sealing strips therein is opposed to and movable towards a second of said wedge members having a second of said end sealing strips therein, whereby engagement of said first and second end sealing strips effects a seal therebetween, the improvement in which each of said end sealing strips in side elevation is of a zig-zag configuration and disposed in one of said end grooves, said end sealing strips being complementary to each other such that a peak of said first end sealing strip is adapted to be received by a valley of said second end sealing strip and a peak of said second end sealing strip is adapted to be received by a valley of said first end sealing strip, whereby upon engagement of said first and second end sealing strips, said end sealing strips are urged into interfitting relationship, thereby to properly position said sealing assemblies lengthwise thereof.



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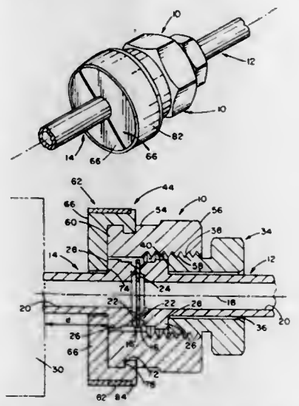
TUBE COUPLING

Michael J. Mohlenkamp, University Heights, Ohio, assignor to Cajon Company, Macedonia, Ohio

Filed Oct. 13, 1995, Ser. No. 543,172

Int. Cl.[6] F16L *35/00*

U.S. Cl. 285—39 **13 Claims**



1. In a tube coupling assembly including first and second generally cylindrical coupling components each terminating in a radially outwardly extending flange surrounding a sealing end face, the coupling components positioned in axial alignment, an improved nut assembly for selectively driving the sealing end faces toward one another, said improved nut assembly comprising:

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a sleeve-like main body positioned in surrounding relationship to said first and second coupling components, said sleeve-like main body terminating in first and second ends;

a nut member threadedly connected with the first end of the main body and engaged with the radially outwardly extending flange on the first coupling component on the side opposite its sealing face; and,

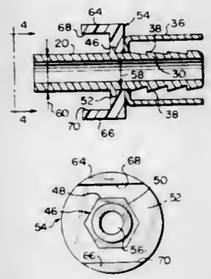
a split-ring means comprising cooperating half-ring members positioned in surrounding relationship to the second end of the main body and releasably connected thereto, said half-ring members including radially inwardly extending flanges engaged with the radially outwardly extending flange on the second coupling component on the side opposite its sealing face.

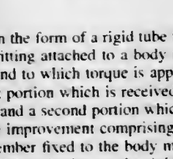
5,605,359

STABILIZED HOSE FITTING FOR COUPLING

Steven R. Hoff, Franklin, Tenn., assignor to Dana Corporation, Toledo, Ohio

Filed Jun. 2, 1995, Ser. No. 458,410
Int. Cl.[6] F16L *55/00*
U.S. Cl. 285—92 **4 Claims**





1. In a coupling in the form of a rigid tube for connecting a first end of a hose to a fitting attached to a body member wherein the hose has a second end to which torque is applied and wherein the rigid tube has a first portion which is received and retained within a bore in the fitting and a second portion which is fixed to the first end of the hose, the improvement comprising:

a non-circular member fixed to the body member;

a non-circular radial projection on the rigid tube; and

a collar having a non-circular recess therein for receiving the non-circular projection on the rigid tube, the collar including axially extending arms defining non-circular surfaces which slidably engage the non-circular member fixed to the body member to prevent rotation of the collar member, and thus the rigid tube, with respect to the body member.

5,605,360

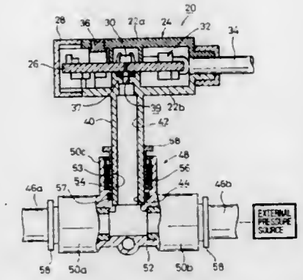
CONNECTING STRUCTURE FOR PRESSURE DETECTOR

Shogo Kurisaki, and Kuniko Suzuki, both of Ibaraki-ken, Japan, assignors to SMC Kabushiki Kaisha, Tokyo, Japan

Filed May 17, 1995, Ser. No. 443,375
Claims priority, application Japan, Sep. 9, 1994, 6-215557
Int. Cl.[6] F16L *47/00*; **G01L** *7/00*
U.S. Cl. 285—93 **3 Claims**

1. A connecting structure connecting a pressure detector to a fluid passage, said pressure detector having a casing and a pressure sensor mounted in said casing, said structure comprising:

a cylindrical member having a through-hole defined therein, said cylindrical member being connected to said casing and communicating with said pressure sensor at one end thereof; and



a tube fitting mounted in said fluid passage in advance, wherein said tube fitting comprises at least first, second and third quick release mechanisms, said tube fitting being detachably inserted at an intermediate position between two pipings conveying a pressurized fluid, such that said first quick release mechanism is detachably fitted to an end of a first piping conveying said pressurized fluid, said second quick release mechanism is detachably fitted to an end of a second piping conveying said pressurized fluid, and said cylindrical member is coupled to said third quick release mechanism,

said pressure detector being detachably connected to said fluid passage by inserting the other end of said cylindrical member into said third quick release mechanism

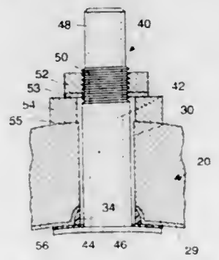
wherein said casing comprises a projection disposed therein proximate said one end of the cylindrical member, said pressure sensor and a circuit board being disposed on said projection, and said projection further having a hole therein permitting communication between said pressure sensor and said one end of said cylindrical member.

5,605,361

REPLACEMENT NOZZLE FOR PRESSURE VESSELS AND METHOD OF A ATTACHING SAME

William Sims, Russellville, Ark., assignor to Entergy Operations, Inc., Russellville, Ark.

Filed May 6, 1994, Ser. No. 239,177
Int. Cl.[6] G21C *13/00*; **F16L** *41/14*
U.S. Cl. 285—206 **56 Claims**



1. A method for replacing a nozzle which is attached to a pressure vessel of a nuclear power facility passing through a bore in the vessel with a replacement nozzle, comprising:

removing the entire nozzle to be replaced from the vessel;

providing a mechanical attachment of the full replacement nozzle to the vessel with the replacement nozzle passing through the bore in the vessel from which the nozzle to be replaced was removed; and

providing a mechanical seal of the full replacement nozzle with the vessel implemented either as part of the step of providing a mechanical attachment of the nozzle to the vessel or separately therefrom;

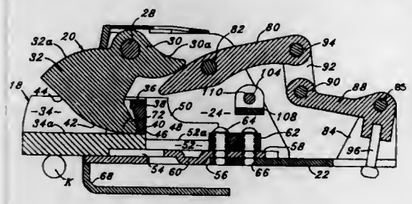
said mechanical attachment and said mechanical seal not including a weld of the nozzle to the vessel.

5,605,362

EXIT DEVICE HAVING A DEADBOLT AS ITS SECURING MEMBER

Walter E. Surko, Jr., Southington, Conn., assignor to Yale Security Inc., Monroe, N.C.

Continuation of Ser. No. 144,243, Nov. 1, 1993, abandoned.
This application Sep. 12, 1995, Ser. No. 527,101
Int. Cl.[6] E05B *65/10*; **E05C** *1/02*
U.S. Cl. 292—92 **38 Claims**



1. An exit device adapted to be mounted on a pivoting door, the exit device comprising:

a. a frame including a base plate having a longitudinal axis and side plates secured to and extending from either side of the base plate,

b. a pin secured to and extending between the side plates spaced from the base plate,

c. a deadbolt between the pin and the base plate, the deadbolt having a longitudinal axis parallel to the longitudinal axis of the base plate and slidable longitudinally with respect to the longitudinal axis of the base plate from an extended position to a retracted position and having an abutment surface,

d. a retractor blade pivotally mounted on the pin for movement from an extended position to a retracted position, the retractor blade having on a periphery

a nose adapted to engage the abutment surface,

a deadbolt pressure surface extending along the periphery from the nose and adapted as the retractor blade pivots and the deadbolt slides to roll progressively along a longitudinal surface on the deadbolt, and

a strike-plate-engaging surface for engaging a strike plate as the door closes for pivoting the retractor blade to the retracted position as the nose engages the abutment surface and retracts the deadbolt,

e. a manually operated press bar assembly operatively connected to the retractor blade so that when the press bar is pushed the retractor blade pivots to the retracted position as the nose engages the abutment surface and retracts the deadbolt, and

f. a spring for urging the deadbolt toward the extended position.

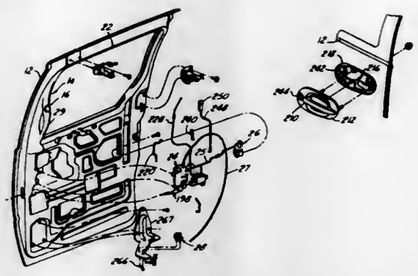
5,605,363

SLIDING DOOR LATCH CONTROL ASSEMBLY

Richard C. Kapes, Shelby Township, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Feb. 7, 1995, Ser. No. 384,890
Int. Cl.[6] E05C *3/06*
U.S. Cl. 292—196 **11 Claims**

1. The combination comprising first and second latches, and a vehicle sliding door latch control assembly including a plate; a first mounting pin fixed on said plate; first, second and third latch release levers stacked on and pivotally mounted on said first mounting pin; linkage means connected between said second lever and said first latch; a second mounting pin fixed on said plate; a locking lever pivotally mounted on said second mounting pin between a locked and an unlocked mode; said second lever adapted to be pivoted by pivoting either of said first or third levers with said locking lever in its unlocked mode to thereby move said linkage means to unlatch said first latch.

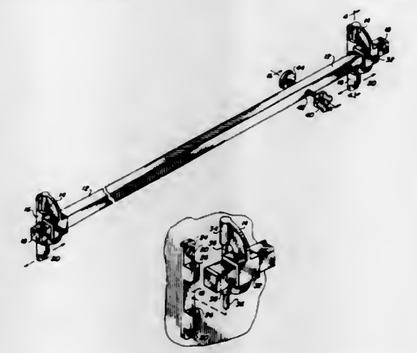


5,605,364

DOORWAY SECURITY DEVICE AND METHOD OF USING SAME

Jack R. Shelledy, 510 W. Golfview, Blue Springs, Mo. 64014

Filed Jul. 11, 1995, Ser. No. 500,805
Int. Cl.[6] E05C *19/18*
U.S. Cl. 292—259 R **19 Claims**



3. A doorway security apparatus, comprising in combination:

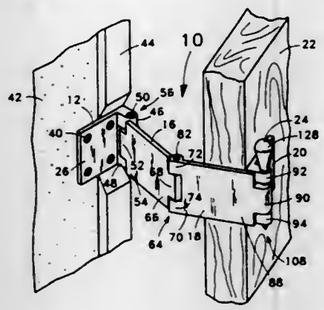
a bar member;

at least two bar bracket members coupled to and moveable along a longitudinal axis of said bar member;

at least two mounting members each of said mounting members being secured to lateral aspects of a doorway and having receiving means for removably coupling one of said at least two bar bracket members such that said bar member extends across a doorway thereby impeding full opening of a door wherein said at least two bar bracket members each comprise a generally C-shaped planar member having an upper and a lower leg portion thereof and a transverse opening passing therethrough, said transverse opening being sized to receive said bar member therethrough, and coupling means projecting downwardly from each of said upper and said lower leg portions of said generally C-shaped planar member, said coupling means being removably engageable with one of said at least two mounting members.

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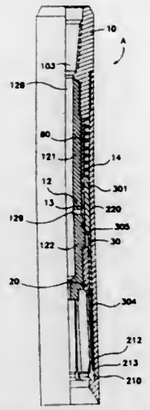
5,605,365
DOOR SECURITY DEVICE
David L. George, 300 S. 24th St., San Jose, Calif. 95116
Filed Jul. 21, 1995, Ser. No. 505,376
Int. Cl.[6] E05C 17/32
U.S. Cl. 292—263 16 Claims



1. A door security device for a first door member and a second door member, at least one of said first and second door members being a door, comprising:
a first hinge member hingedly attached to said first door member;
a second hinge member having a first borehole, said first and second hinge members being hingedly connected;
a door member fixture having a second borehole, said door member fixture being attached to said second door member, the first and second boreholes capable of being substantially aligned when said door is in a closed position;
a hinge pin having an upper stop and a lower stop, said hinge pin being simultaneously insertable within the first and second boreholes when the first and second boreholes are in substantial alignment and hingedly connecting said second hinge member and said door member fixture thereby, the upper and lower stops having a thickness such that said hinge pin is impassable through the first and second boreholes when the first and second boreholes are not substantially aligned; and
biasing means for selectively biasing the first and second boreholes in and out of substantial alignment.

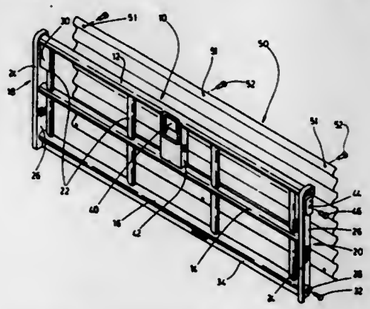
5,605,366
EXTERNAL PULLING TOOL AND METHOD OF OPERATION
Robert S. Beeman, Bossier City, La., assignor to Weatherford/Lamb, Inc., Houston, Tex.
Continuation-in-part of Ser. No. 346,258, Nov. 23, 1994. This application Apr. 24, 1995, Ser. No. 426,867
Int. Cl.[6] E21B 31/18
U.S. Cl. 294—86.28 12 Claims

1. An apparatus for retrieving an object from an oil well comprising:
a support body;
gripping means, substantially fixedly positioned against axial movement with respect to said support body, for selectively gripping the object to be retrieved from the oil well;
biasing means, slidably disposed on said support body between said gripping means and said support body, for selectively radially biasing said gripping means for engagement with the object to be retrieved; wherein
said support body comprises a mandrel and an outer cover surrounding said mandrel, said biasing means disposed between said gripping means and said outer cover;
an expandable cavity formed between said biasing means and said mandrel;
a bore formed within said mandrel; and



a fluid communication path formed between said bore and said expandable cavity.

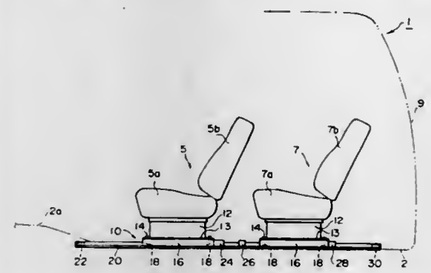
5,605,367
TAILGATE
John E. Mc Cormack, Newmarket, Canada, assignor to Atoma International Inc., Newmarket, Canada
Continuation of Ser. No. 354,338, Dec. 12, 1994, Pat. No. 5,518,286. This application Nov. 16, 1995, Ser. No. 559,241
Int. Cl.[6] B62D 35/00
U.S. Cl. 296—57.1 16 Claims



1. A tailgate for a truck having side walls and a floor defining a truck bed, comprising
a pair of side rails,
a top horizontal member, a bottom horizontal member and a middle horizontal member extending between the side rails in spaced generally parallel relation, the bottom and middle horizontal members being load bearing members,
a plurality of vertical members extending between the horizontal members in spaced relation,
a plurality of spaces being thereby defined by the horizontal and vertical members whereby a load extending through a space is borne by the bottom or middle horizontal member and prevented from substantial lateral shifting by the vertical members which define the space and confine the load thereof,
a hinge structure disposed adjacent to a bottom of the side rails constructed and arranged to mount the tailgate between rear edges of the side walls, such that the tailgate can swing between an open position substantially parallel to the truck bed and a closed position abutting a rear edge of the side walls, and

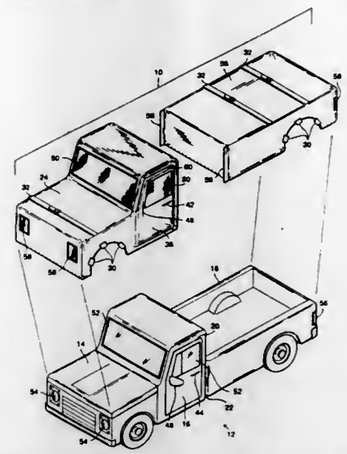
a latch structure constructed and arranged to selectively latch the tailgate in a closed position.

5,605,368
SEAT SLIDING DEVICE FOR VEHICLE
Kohji Noma; Osamu Kishi, and Minoru Toyota, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima-ken, Japan
Continuation of Ser. No. 218,941, Mar. 28, 1994, abandoned. This application May 31, 1996, Ser. No. 656,488
Claims priority, application Japan, Mar. 30, 1993, 5-072397; Mar. 16, 1994, 6-045333
Int. Cl.[6] B60N 2/00
U.S. Cl. 296—64 21 Claims



1. A seat sliding device for a vehicle having a first seat, a second seat located rearward of the first seat in a lengthwise direction of the vehicle, guide means for guiding the first and second seats in the lengthwise direction, and a first seatbelt unit for the first seat and a second seatbelt unit for the second seat provided in the vehicle, the guide means comprising:
rail means for movably supporting both the first and second seats, the rail means continuously extending in the lengthwise direction past the first seat and the second seat so that the first and second seats are movable substantially throughout a length of the rail means in the lengthwise direction;
first sliding means for carrying the first seat movably on the rail means;
second sliding means for carrying the second seat movably on the rail means;
first latching means for positioning the first seat in place on the rail means, the first latching means being provided on the first sliding means so as to be moved together with the first seat;
second latching means for positioning the second seat in place on the rail means, the second latching means being provided on the second sliding means so as to be moved together with the second seat;
a first stop, provided within an effective area of said rail means along which the first sliding means is movable on the rail means, for limiting rearward movement of the first seat; and
a second stop, provided within the effective area of the rail means along which the second sliding means is movable on the rail means, for limiting forward movement of the second seat;
wherein (1) the first and second stops are positionable so that a desired distance between the first seat and the second seat remains when rearward movement of the first seat and forward movement of the second seat are limited by the first and second stops, respectively, (2) seatbelts of the first and second seatbelt units are useable when rearward movement of the first seat is limited by said first stop and forward movement of the second seat is limited by the second stop, and (3) the first and second stops are releasable so that the first and second seats may be positioned by said first and second latching means within the effective area of the rail meads but beyond positions for the first and second stops.

5,605,369
PROTECTIVE COVER FOR VEHICLES
Jose J. Ruiz, 1924 W. Vermont, Phoenix, Ariz. 85015
Filed Oct. 20, 1995, Ser. No. 546,393
Int. Cl.[6] B60J 9/00
U.S. Cl. 296—136 17 Claims

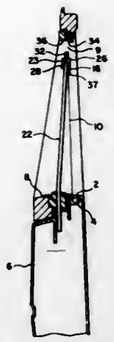


1. A protective cover for a vehicle having a body having an exterior contour, a door attached to said body and having an exterior contour and a perimeter, and a seam formed between said body and said door when said door is closed, said protective cover comprising:
a main section configured to substantially cover said body, said main section being shaped to approximately follow the exterior contour of said body;
a door section coupled to said main section and configured to substantially cover said door, said door section being shaped to approximately follow the exterior contour of said door; and
a flap section for covering said seam, said flap section being attached to said door section, and adapted to be located proximate the perimeter of said door and to overlap said main section when said door is closed; wherein
said protective cover is configured to allow said door to operate when said protective cover is installed upon said vehicle.

5,605,370
WINDOW SHADE AND VEHICLE WINDOW COMBINATION
Carmelo C. Ruiz, 725 W. Jackson St., Morris, Ill. 60450
Filed Feb. 7, 1994, Ser. No. 192,530
Int. Cl.[6] B60J 1/20;3/00
U.S. Cl. 296—152 6 Claims

1. A window shade and vehicle window combination, said vehicle window comprising a window opening in a side wall portion of a vehicle including a horizontally extending lower window opening wall, vertically extending side window opening walls, and a horizontally extending upper window opening wall, said side wall portion of said vehicle including an outwardly facing vehicle side wall, an inwardly facing vehicle side wall spaced apart inwardly from said outwardly facing vehicle side wall, a window receiving recess in said side wall portion between said outwardly and inwardly facing vehicle side walls, said window receiving recess opening to said lower window opening wall, a transparent vehicle window positioned for movement downwardly into said window receiving recess to an open position and upwardly out of said window receiving recess to a closed position covering said window opening, window operating means to move said vehicle window between its said open and closed positions, a window

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shade recess in said side wall portion between said vehicle window and said inwardly facing vehicle side wall and opening to said lower window opening wall, a retractable and extendable shade assembly in said window shade recess, said window shade assembly comprising a window shade positioned for movement into said window shade recess to a retracted position and out of said window shade recess to an extended position, window shade operating means for movement of said window shade out of said window shade recess to its said extended position and into said window shade recess to its said retracted position, said window shade being adjacent to said vehicle window to cover it when said vehicle window is moved to its said closed position and said window shade is moved to its said extended position, wherein said window shade operating means includes a biasing member to bias said window shade toward the said retracted position of said window shade, wherein said horizontally extending upper window opening wall includes an elongated window receiving slot which extends the full length between said vertically extending side window opening walls to normally and snugly receive the upper edge of said vehicle window when in its said closed position, an elongated rib member comprising a securing portion to secure to the said upper edge of said vehicle window and an elongated rib extending upwardly from said securing portion of said elongated rib member, said upwardly extending elongated rib extending the full length of said elongated window receiving slot and having a cross-sectional dimension corresponding to that of said upper edge of said vehicle window for snug reception of said elongated rib in said elongated window receiving slot when said vehicle window is in its said closed position with said elongated rib member secured to the said upper edge of said vehicle window, first cooperative fastening means on said elongated rib member to releasably fasten said upper end of said window shade panel thereto when in its said extended position and when said vehicle window is in its said closed position, and second cooperative fastening means on said window shade to releasably interconnect with said first cooperative fastening means on said elongated rib member.

5,605,371

LIGHT WEIGHT STEEL AUTO BODY CONSTRUCTION

James E. Borchelt, Hobart; John M. Lude, Beverly Shores, both of Ind., and Bernard S. Levy, Chicago, Ill., assignors to Inland Steel Company, Chicago, Ill.

Continuation-in-part of Ser. No. 231,834, Apr. 25, 1994, abandoned. This application Apr. 4, 1995, Ser. No. 416,507

Int. Cl.[6] B62D *25/10*

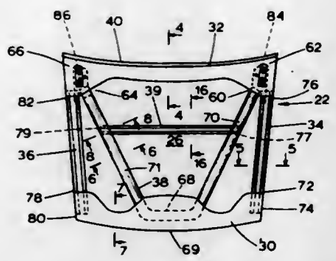
U.S. Cl. 296—188 **24 Claims**

1. An automobile body panel comprising:

an outer contour-defining component;

an inner structural component comprising a plurality of individually formed members joined together to form said inner structural component;

said individually formed members including individually formed front and rear members;



said individually formed members comprising a plurality of individually formed side members each having a substantially closed cross-sectional geometry;

said inner structural component having a central region substantially enclosed by said front member, said rear member, and said side members;

said individually formed members further including at least one individually formed internal member, each internal member having a substantially closed cross-sectional geometry and being disposed in said central region; and

means for substantially continuously bonding each of said side members and each internal member to said outer contour-defining component.

5,605,372

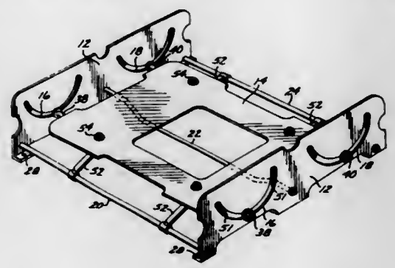
SAFETY SEAT SYSTEM

Abdulghafour Al-Abdullateef, P.O. Box 88897, Los Angeles, Calif. 90045

Filed Oct. 14, 1994, Ser. No. 324,245

Int. Cl.[6] B60N *2/42*

U.S. Cl. 297—216.16 **8 Claims**



1. A seating system within an automobile, comprising:

a base component rigidly affixed to said automobile;

a seat support component shiftably affixed to said base component;

a seat rigidly affixed to said seat support component, said seat having a substantially horizontal seating surface; and

a mechanism for causing said seat support component to shift in an arcuate path relative to said base component and thereby elevate said seat while maintaining said seating surface substantially horizontal when the base component is subjected to a preselected accelerative force.

5,605,373

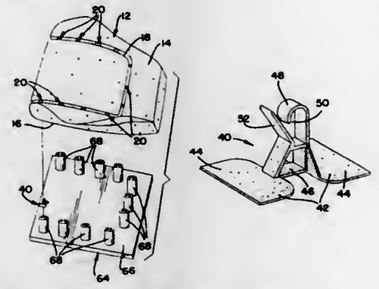
AUTOMOTIVE SEAT COVER ATTACHMENT ARRANGEMENT

William J. Wildern, IV, Farmington Hills; Michael J. Twork, Clarkston, and Jared E. Collinge, Jr., Royal Oak, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 21, 1995, Ser. No. 517,391

Int. Cl.[6] A47C *31/00*

U.S. Cl. 297—218.4 **6 Claims**



1. An automotive vehicle seat cushion comprising:

a resilient body having a top surface and a bottom surface and a multi-dimensional bore intersecting the top and bottom surfaces, the bore having a shoulder juxtaposed between the top and bottom surfaces;

a membrane cover for covering at least a portion of the top surface of the resilient body, the cover having connected thereto a rod extending generally parallel to the top surface; and

a retainer, the retainer having a generally planar base adjacent and contacting the resilient body bore shoulder, the retainer having a hook extending upwardly and perpendicularly from the base through the bore of the resilient body, the retainer hook having an opening toward the resilient body bottom surface, and the retainer having a guide generally extending upwardly toward the resilient body top surface, the guide generally aligning the cover rod to a location between the guide and the retainer hook to capture the rod within the retainer hook and thereby retaining the cover to the resilient body.

5,605,374

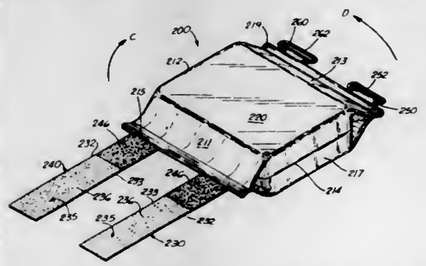
ADJUSTABLE PADDED ARM REST

Mary O. Perry, 144 Santee Dr., Panama City, Fla. 32404

Continuation-in-part of Ser. No. 29,078, Sep. 29, 1994, and a continuation-in-part of Ser. No. 334,047, Nov. 4, 1994. This application Jul. 17, 1995, Ser. No. 502,963

Int. Cl.[6] A47C *31/02*

U.S. Cl. 297—227 **11 Claims**



1. A cushion for removable attachment to the arm of a chair, the cushion comprising:

(a) a sack having a foam cushion therein, said sack being closed by stitching around its perimeter, thereby defining a pair of opposing marginal side edges, said sack having a top and a bottom, said bottom being selectively severable at its center into two portions of substantially equal length such that one of said portions longitudinally overlaps the other of said portions, said bottom being so severable into said two portions to allow for the removal and insertion of said foam cushion from and into said sack; and,

(b) means for removably securing said sack around said arm of a chair, said securing means being attached to said pair of opposing marginal side edges of said sack, said securing means including:

(i) a pair of elongated rings;

(ii) a first pair of bands, each of said bands being looped through a respective one of said elongated rings and fixedly attached at both ends thereof to one of said opposing marginal side edges of said sack to thereby form a closed loop, thereby securing said elongated rings to said one of said opposing marginal side edges of said sack; and,

(iii) a second pair of bands, longer than said first pair, each attached at one of its ends to the other of said opposing marginal side edges of said sack, each of said second bands having fastening means on one surface thereof, whereby when said second bands are each inserted through a respective one of said elongated rings and folded back on itself, said fastening means secure each of said second bands to itself.

5,605,375

CHILD'S SEAT RESTRAINING SYSTEM

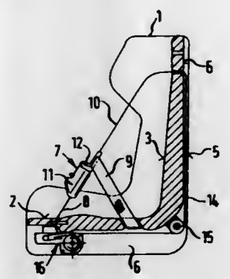
Mattias Friedrich, Enger, and Volkmar Wölfl, Vlotho-Valdorf, both of Germany, assignors to Van Riesen GmbH u. Co. KG, Enger, Germany

Filed Jun. 8, 1995, Ser. No. 488,747

Claims priority, application Germany, Jun. 13, 1994, 44 20 457.4

Int. Cl.[6] A47C *1/08*

U.S. Cl. 297—250.1 **2 Claims**



1. A child restraint seat for securing a child therein, said seat affixed to an automobile bench having a seat and a back portion, said restraint seat being affixed to said automobile bench by an automobile seat belt system, said child restraint seat comprising:

a molded plastic shell having a seat area and a backrest area for receiving said child therein, and a base area and a contact area, each having respective raised sides, said raised sides of said base area creating a centrally located empty space along said seat area between said base area and said automobile seat when said child restraint seat is affixed to said automobile bench, said raised sides of said contact area creating an empty space along said backrest area between said contact area and said automobile back portion when said child restraint seat is affixed to said automobile bench, said empty space along said seat area defining an underside of said child restraint seat, said empty space along said backrest area defining a back side of

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said child restraint seat, said molded shell including an opposed pair of slots extending from said backrest area to said contact area, each of said pair of slots generally located near a respective raised side of said backrest area;

a restraint seat belt system comprised of a central buckle having a housing, a crotch belt, a first and second waist belt, a first and a second shoulder belt, a gusset plate, a pair of slip-on parts, that are removably attachable to a buckle housing, and a belt extending between and within said empty space of said seat area and said backrest area,

said crotch belt having a pair of ends wherein one end is attached to said seat area and the other end to said buckle housing,

said first and second shoulder and waist belts integrally formed from a single piece of belt housing having a pair of ends, wherein a one belt end is passed through one of said pairs of slots and is attached to said gusset plate located within said empty space on said back side of said child restraint seat, and another said belt end is passed through the other of said pair of slots and is attached to said same gusset plate, said single piece of belt passed through each of said slip-on parts so as to transform the single piece of belt into said first and second waist belts and shoulder belts,

said belt having an effective length and a pair of ends, wherein one end is attached to said same gusset plate and said other end extends downwardly through said empty space of said backrest area and through said empty space of said seat area;

a belt length adjustment device that receives said other end of said belt, said device located within said empty space of said seat area, away from said backrest area, said adjustment device comprised of a unit having a U-shaped support body attached to said base area of said molded shell, said support body formed from a pair of opposed flanges and an interconnecting web, each of said flanges provided with recesses therein for hingedly receiving a belt reel that has said other end of said belt attached thereto and a belt blocking device, said belt blocking device engaging said belt on said belt reel and located behind said reel in an unwinding direction so that operation of said adjustment device blocks said belt and not said belt reel, said belt reel mounted on a shaft that extends between said flanges of said support body, wherein an end of said shaft protrudes beyond a respective said flange and receives a roll spring, said roll spring for maintaining a force on said belt reel so as to keep said belt wound around said reel,

said belt blocking device comprised of a U-shaped construction element having a pair of side flanges and a web which overlaps said interconnecting web and said flanges on said U-shaped support body and is guided by said support body flanges, said side flanges of said construction element having respective recesses therein for receiving a fixed clamping jaw, a movable clamping jaw and a deviating roller mounted on a axle that extends between said flanges of said construction element, said belt wrapped around said deviating roller, said roller in contact with said movable clamping jaw when said blocking device is operated, each of said jaws having a respective front face wherein said front faces are in opposed relationship and receive said belt therebetween, said movable clamping jaw rotationally and laterally movable within said recess upon operation of said blocking device and said deviating roller, whose axle transmits loads in a clamping direction;

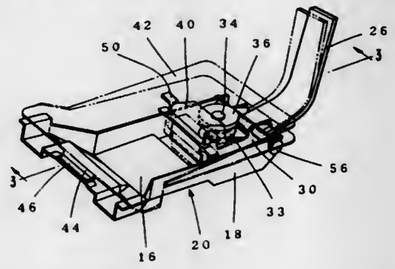
wherein said movable clamping jaw is spring loaded and is operably movable within said recess by actuation of a release control functionally interconnected to said blocking device, such that operation of said release control disables said blocking device so that said effective length of said belt can be one of increased and decreased by respectively counteracting and cooperating with said spring force of said roll spring, wherein release of said release control causes slip-free blocking of said belt by said blocking device.

5,605,376

METHOD FOR INCLINING A CHAIR SEAT, AND CHAIR HAVING AN INCLINABLE SEAT

Koichi Kogai, Nissin Cho, Japan, assignor to AIKO Co., Ltd., Nagoya, Japan

Filed Mar. 22, 1995, Ser. No. 408,384
Claims priority, application Japan, Apr. 12, 1994, 6-097999
Int. Cl.[6] A47C *3/00*
U.S. Cl. 297—300.5 **19 Claims**



1. A chair comprising:

a leg portion;

a supporting column extending upwardly from said leg portion;

an attaching frame mounted to an upper end of said supporting column, said attaching frame having a front end and a rear end;

a generally L-shaped backrest attaching member having a substantially vertical backrest-receiving portion and a substantially horizontal portion pivotally attached to said rear end of said attaching frame for pivotal motion relative thereto about a first substantially horizontal pivot axis to allow said substantially vertical backrest-receiving portion to be moved in forward and rearward directions;

a seat receiving plate having a front end and a rear end, said seat receiving plate being pivotally mounted to said attaching frame for pivotal movement about a second substantially horizontal pivot axis; and

a push-up member attached to and extending upwardly from said substantially horizontal portion of said backrest attaching member at a position of said substantially horizontal portion located forwardly of said first substantially horizontal pivot axis, said push-up member having an upper end engaged against an underside of said seat receiving plate at a position on said seat receiving plate located rearwardly of said second substantially horizontal pivot axis.

5,605,377

VEHICLE SEAT WITH FULL MEMORY EASY ENTRY

Omar D. Tame, W. Bloomfield, Mich., assignor to Atoma International Inc., Markham, Canada

Filed Sep. 27, 1995, Ser. No. 534,990
Int. Cl.[6] B60N *2/08*
U.S. Cl. 297—341 **10 Claims**



1. A vehicle seat comprising

a track assembly including a fixed track assembly constructed and arranged to be disposed in fixed relation in a vehicle and

a movable track assembly mounted on said fixed track assembly for fore and aft movement with respect thereto,

a seat cushion assembly carried by said movable track assembly for movement therewith,

a seat back cushion assembly mounted for movement with the movable track assembly in operative relation with said seat cushion assembly, said seat back cushion assembly being constructed and arranged to be pivotally moved with respect to said seat cushion assembly between (1) an operative position disposed to support the back of an occupant in operative seated relation on said seat cushion assembly and (2) a rear accessing position disposed forwardly in overlying relation to said seat cushion assembly,

a releasable locking assembly carried by said movable track assembly for movement between locking and releasing positions, said releasable locking assembly being constructed and arranged (1) when in said locking position to lock said fixed and movable track assemblies together with said cushion assemblies in any one of a multiplicity of different fore and aft positions and (2) when in said releasing position to permit relative movement between said fixed and movable track assemblies to enable said cushion assemblies to be moved into any one of said multiplicity of positions,

a manually actuated releasing mechanism carried by said movable track assembly for movement between an inoperative position and an operative position, said manually actuated releasing mechanism being constructed and arranged with respect to said releasable locking mechanism (1) to control the movement of said releasable locking assembly from the locking position thereof into the releasing position thereof when said manually actuated releasing mechanism is moved from the inoperative position thereof into the operative position thereof and (2) to control the movement of said releasable locking assembly from the releasing position thereof into the locking position thereof when said manually actuated releasing mechanism is moved from the operative position thereof into the inoperative position thereof,

a seat back actuated releasing mechanism carried by said movable track assembly for movement between inoperative and operative positions, said seat back actuated releasing mechanism being constructed and arranged with respect to said seat back cushion assembly and said releasable locking mechanism to be moved (1) from the inoperative position thereof into the operative position thereof in response to the movement of said seat back cushion assembly from the operative position thereof into the rear accessing position thereof during which said releasable locking assembly is moved from the locking position thereof into the releasing position thereof and (2) from the operative position thereof into the inoperative position thereof,

a memory carriage assembly constructed and arranged to be moved independently in a fore and aft direction with respect to said track assembly,

said memory carriage assembly having a connector mechanism mounted thereon for movement between first and second positions, said connector mechanism (1) connecting said memory carriage assembly to said movable track assembly for movement therewith relative to said fixed track assembly when said connector mechanism is in the first position thereof and (2) connecting said memory carriage assembly in fixed relation with said fixed track assembly at a position corresponding to the desired position of use of said cushion assemblies with respect to said fixed track assembly when said connector mechanism is moved from the first position thereof into the second position thereof,

said memory carriage assembly also having an actuator mechanism mounted thereon for movement between first and second positions, said actuator mechanism being constructed and arranged (1) to move said connector mechanism from the first position thereof into the second position thereof when said actuator mechanism is moved from the first position thereof into the second position thereof and (2) to move said connector mechanism from the second position thereof into the first position thereof when said actuator mechanism is moved from the second position thereof into the first position thereof,

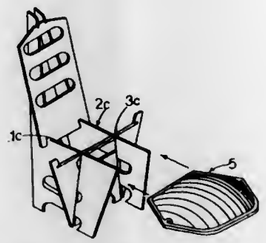
the arrangement of said releasable locking assembly, said releasing mechanisms and said actuator mechanism being such that (1) when said releasable locking assembly is in the locking position thereof said actuator mechanism is in the first position thereof and said connector mechanism is in the first position thereof, (2) when said releasable locking assembly is moved from the locking position thereof into the releasing position thereof by the movement of said seat back actuated releasing mechanism from the inoperative position into the operative position thereof in response to the movement of said seat back cushion assembly from the operative position thereof into the rear access position thereof said actuator mechanism is moved from the first position thereof into the second position thereof causing the connector mechanism to engage the fixed rail and retain said memory carriage assembly in fixed relation to said fixed track assembly at a position corresponding to the position of use of said cushion assemblies therewith, thereby enabling the cushion assemblies to be (A) moved forwardly from said corresponding position with said seat back releasing mechanism and said releasable locking assembly being disposed in a cooperative relationship wherein the releasable locking assembly is retained in its releasing position by a releasing arm connected to the seat back releasing mechanism and (B) returned rearwardly into said corresponding position of use wherein said actuator mechanism disrupts the cooperating relationship between the releasable locking assembly and said seat back releasing mechanism by engaging and moving said releasing arm and thus enabling the releasable locking assembly to return to its locking position and generally simultaneously causing the actuator mechanism to be moved from the second position thereof into the first position thereof, and (3) when said releasable locking assembly is moved from the locking position thereof into the releasing position thereof by the movement of said manually actuated releasing mechanism from the normally biased inoperative position thereof into the operative position thereof said actuator mechanism will be retained in the first position thereof to enable said memory carriage assembly to be moved by said connector mechanism with said cushion assemblies.

5,605,378

TAKE-APART CHAIR

Badejo A. Oyediran, 1705 Mansion St., Bronx, N.Y. 10460

Filed Dec. 26, 1995, Ser. No. 578,463
Int. Cl.[6] A47C *4/02*
U.S. Cl. 297—440.13 **2 Claims**



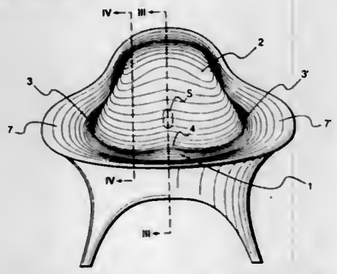
1. In a take-apart chair of wood, plastic, laminated fiberboard, aluminum or the like comprising a pair of side pieces each having a back support portion and a seat support portion, a backrest adapted to be held in place by said back support portion of said side pieces, a brace member joining said side pieces when the chair is assembled, said brace member extending downwardly to engage a floor supporting surface and a seat having front and back and side edges resting on said seat support portion of said side pieces, the improvement comprising:

a. hooks at the upper ends of said side pieces,

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b. notches in the upper part of said backrest engaging said hooks,
c. notches in the lower portion of said backrest engaging the seat support portion of said side pieces,
d. downwardly facing slots in said brace member engaging the seat support portion of said side pieces,
e. upwardly facing slots in the seat support portion of said side pieces engaging said brace member, said upwardly facing slots positioned at approximately a midpoint of the seat support portion,
f. upwardly extending tabs at each end of said brace member extending beyond said seat and having notches therein engaging the edges of the seat, and
g. fastener means holding said seat in position against the backrest locking the seat and backrest in position,
the combination insuring structural rigidity of the chair.

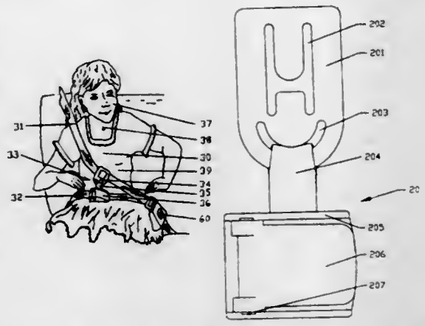
5,605,379
CHAIR FOR PROVIDING A STRAIGHT SITTING POSITON
Friederike Weiss, Larochegasse 23 A-1130, Vienna, Austria
Filed Aug. 22, 1995, Ser. No. 517,665
Claims priority, application Austria, Aug. 24, 1994, 263/94
Int. Cl.[6] A47C *7/02*
U.S. Cl. 297—452.24 **7 Claims**



1. A chair for providing a straight sitting position of a user sitting with crossed legs in yoga position, comprising:
a seat having a sitting surface with a left side part, a right side part, a rear area, and a front area, said left and right side parts being raised for laterally supporting the user's thighs, and said sitting surface being wider at said front area than at said rear area and being adapted to the contour of the user's body resulting from a crossed leg yoga position;
a central elevation integrally formed in the rear area of said sitting surface of said seat, said central elevation adapted to form an extension of the user's coccyx;
a back rest surface connected to said rear area of said sitting surface for providing back support to the user; and
a protrusion integrally formed with and disposed on said back rest surface, said protrusion being adapted to contact the user approximately in the area of his fourth and fifth lumbar vertebrae for straightening and stimulating the user's spine.

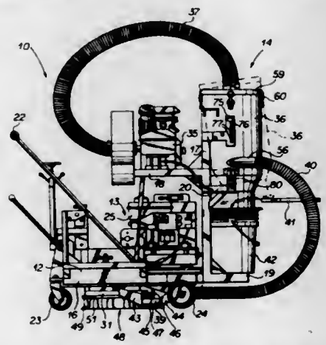
5,605,380
SEAT BELT ADJUSTER
Paul J. Gerstenberger; Marcus Gerstenberger, both of Longmont, and James Rupp, Boulder, all of Colo., assignors to Child Safe International, LLC, Boulder, Colo.
Filed Nov. 14, 1995, Ser. No. 557,938
Int. Cl.[6] A47D *15/00*; **B60R** *22/00;22/12*
U.S. Cl. 297—483 **1 Claim**

1. A seat belt adjuster comprising:
an auxiliary belt buckle affixed to a waist belt;
a shoulder clip affixed to a shoulder strap;

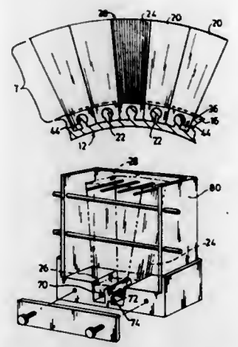


a tether affixing the shoulder clip to the auxiliary belt buckle, thereby allowing the shoulder strap to form a compound angle across a user's upper torso while maintaining the shoulder strap away from a user's face;
said auxiliary belt buckle further comprises a slot and a locking means functioning to lock the auxiliary belt buckle at a desired position along the waist belt;
said locking means further comprises a locking lever having a tongue and the slot further comprises an H-shaped cutout having a receiving groove for the tongue;
said shoulder clip further comprises a slot for the tether, thereby providing adjustment for the shoulder strap;
said tether further comprises a flexible webbing looped through the shoulder clip slot and a rigid attachment to the auxiliary belt buckle; and
said shoulder clip consists of an H-shaped cutout for mounting on the shoulder strap, thereby providing for a slidably adjustable position along the shoulder strap with no moving parts.

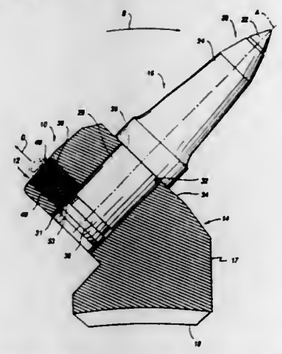
5,605,381
PAVEMENT MARKING ERADICATOR
Carl J. Schmoock, Jr., Acworth, and Quinton W. Robinson, Dallas, both of Ga., assignors to Stimsonite Corporation, Atlanta, Ga.
Continuation of Ser. No. 323,811, Oct. 17, 1994, abandoned.
This application Jun. 12, 1996, Ser. No. 662,908
Int. Cl.[6] E01C *23/08*
U.S. Cl. 299—39.2 **21 Claims**



1. An eradicator for removing pavement marking from the surface of pavement, the eradicator comprising a frame; wheel means mounted to said frame for movably supporting said frame upon the surface of the pavement; a housing defining a work chamber; a collector in fluid communication with said work chamber and adjustably mounted to said housing for adjusting the elevation of said collector above the pavement; grinding means mounted within said work chamber for grinding pavement marking from the surface of the pavement over which said work chamber passes; vacuum means supported upon said frame in fluid communication with said collector and said work chamber for vacuuming pavement marking debris ground from the surface of the pavement from said work chamber, said fluid communication being provided by a funnel portion of said collector coupled to a vacuum tube in communication with said vacuum means; and storage means supported upon said frame for collecting and storing vacuumed pavement marking debris.



5,605,382
CUTTING TOOL RETENTION SYSTEM
Ted R. Massa, Latrobe, Pa., assignor to Kennametal Inc., Latrobe, Pa.
Filed Aug. 2, 1995, Ser. No. 510,160
Int. Cl.[6] E21C *35/19*
U.S. Cl. 299—107 **29 Claims**

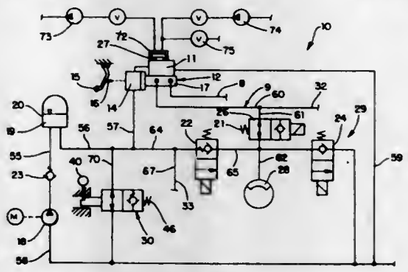


17. A cutting tool retention system for retaining a cutting tool having a recess, the cutting tool retention system comprising:
a support block having a main bore;
a cutting tool holder which is inserted into the main bore of the support block, the cutting tool holder having a tool holder bore and a spring seat;
a pin movably mounted to the spring seat; and
a spring member positioned between the spring seat and the pin so as to urge the pin into an engaging relationship with the recess of the cutting tool inserted into the tool holder bore of the cutting tool holder such that the cutting tool cannot be removed from the tool holder bore unless the pin is withdrawn from an engaging relationship with the recess of the cutting tool.

5,605,383
METHOD OF MAKING RADIAL BRUSH
Peter M. Biocca, Rochester, N.Y., assignor to Abtex Corp., Dresden, N.Y.
Division of Ser. No. 273,379, Jul. 11, 1994. This application Jun. 7, 1995, Ser. No. 477,922
Int. Cl.[6] A46D *1/08*
U.S. Cl. 300—21 **8 Claims**

2. A method of assembling a radial brush for rotation about an axis, comprising:
(a) forming a bundle of fibers having one of a predetermined weight and fiber number to define an inner end and an outer end, each fiber having an independent terminal inner end and an independent terminal outer end;
(b) temporarily retaining the bundle of fibers to expose the terminal inner ends;
(c) contacting the inner ends with a bonding material to bond the inner terminal end of the fibers in a bundle to form a rectilinear base of a discrete brush segment wherein the fibers in the segment are parallel to a first plane, the base including a locking portion; and
(d) engaging the locking portion of a plurality of segments to a core to preclude radial separation of the brush segment and the core upon rotation of the core and dispose the first plane perpendicular to the axis of rotation.

5,605,384
ACCESS VALVE EVACUATION AND FILL OF INACCESSIBLE CAVITIES
Gary L. Johnston, Pleasant Hill; William C. Kruckemeyer, Beaver Creek; James W. Zehnder, II, Hober Heights, and Michael L. Oliver, Xenia, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed May 6, 1996, Ser. No. 642,992
Int. Cl.[6] B60T *17/04*
U.S. Cl. 303—113.1 **20 Claims**



1. A fluid power system comprising:
a closed loop system of communicative passageways;
a pump interconnected in the system of communicative passageways;
a normally closed valve interconnected in the system of communicative passageways;
an access opening to the system of communicative passageways wherein a section of the system of communicative passageways is normally inaccessible from the opening due to positioning of the normally closed valve;
an access valve providing a charging route between the access opening and the normally inaccessible section, wherein the access valve is initially provided in an open position, wherein the fluid power system is operable to provide fluid powered functions and wherein during all fluid powered functions provided by system operation the access valve is in a completely closed position.

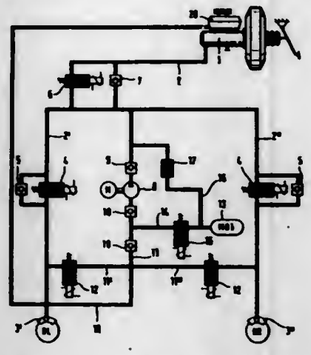
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5,605,385

HYDRAULIC BRAKE SYSTEM WITH BRAKE SLIP AND TRACTION SLIP CONTROL

Dalibor Zaviska, Frankfurt am Main, and Paul Linhoff, Kelkheim-Eppenhain, both of Germany, assignors to ITT Automotive Europe GmbH, Frankfurt, Germany

PCT No. PCT/EP93/00032, § 371 Date Oct. 12, 1994, § 102(e) Date Oct. 12, 1994, PCT Pub. No. WO93/21047, PCT Pub. Date Oct. 28, 1993
PCT Filed Jan. 9, 1993, Ser. No. 313,187
Claims priority, application Germany, Apr. 22, 1992, 42 13 199.5
Int. Cl.[6] B60T 8/48
U.S. Cl. 303—116.2 18 Claims



1. A hydraulic brake system with a device to control both brake slip and traction slip, a master cylinder to which a brake circuit is connected which can be separated from said master cylinder by means of separating valve, said brake circuit being comprised of wheel brakes for wheels driven by a vehicle engine and of valves for the control of pressure in the wheel brakes depending on sensors which monitor rotational behavior of the wheels, furthermore of a pump which delivers hydraulic pressure agent into said brake circuit, and of an accumulator which is connected to a suction side of said pump, a switch-on valve being provided in a connecting line, characterized in that said accumulator is a medium-pressure accumulator with a pressure put at disposal upstream of said pump which is higher than resistances in said brake circuit.

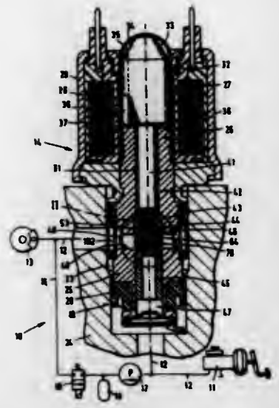
5,605,386

SOLENOID VALVE FOR SLIP-CONTROLLED HYDRAULIC BRAKE SYSTEMS IN MOTOR VEHICLES

Ewald Ziegler, Heimsheim; Volker Holzgrefe, Ditzingen, and Norbert Mittwollen, Markgroeningen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Jun. 5, 1995, Ser. No. 462,364
Claims priority, application Germany, Jul. 28, 1994, 44 26 796.7
Int. Cl.[6] F16K 31/06; B60T 8/36; F15B 13/044;9/12
U.S. Cl. 303—119.2 3 Claims

1. A solenoid valve (14), for slip-controlled hydraulic brake systems (10) in motor vehicles, having the following features:
- a magnet armature (32) surrounded with pressure fluid at opposite end faces (33, 36) is accommodated in a longitudinally movable fashion in a valve dome (27),
- the valve (dome (27) is surrounded by a solenoid (28),
- a tappet (41), said tappet (41) has a closing element (43) of a seat valve (44), said tappet is firmly connected to the magnet armature (32) and projects therefrom along a tappet axis (52),
- a fixed valve body (45) with a valve seat (46) of the seat valve (44) is accommodated in a housing bore (42) of the solenoid valve (14) leading from a pressure fluid inlet (47),



- an annular channel (64) is formed into the valve body (45) of the seat valve (44) with bounding walls (65, 66) extending parallel to the tappet axis (52), said annular channel (64), is arranged centrally relative to the valve seat (46) and is open axially towards the tappet (41), and is connected on a base side to a pressure fluid outlet (49) of the solenoid valve (14),

when the solenoid (28) is not excited the closing element (43) is raised from the valve seat (46) because of the action of a resetting spring (70),

which comprises the following features:
- integrally formed on the tappet (41) is a hollow cylindrical shoulder (53) which surrounds the closing element (43) with a clearance, the shoulder (53) and the valve body (45) are provided in a region of the annular channel (64) with end faces (56, 67) that extend at right angles to the tappet axis (52) with a slight radial gap (68, 69) in the closed position of the seat valve (44),
- an outlet of the seat valve (44) is connected to the annular channel (64) at least inside the shoulder (53), and
- a pressure fluid channel (61) leads from the outlet of the seat valve (44) into the valve dome (27).

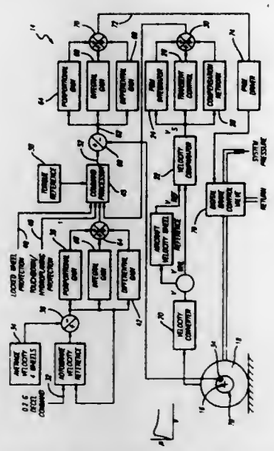
5,605,387

BRAKE ENERGY BALANCING SYSTEM FOR MULTIPLE BRAKE UNITS

Robert D. Cook, Valencia, and Bijan Salamat, Santa Clarita, both of Calif., assignors to Hydro-Aire Division of Crane Company, Burbank, Calif.

Continuation of Ser. No. 318,470, Oct. 5, 1994, Pat. No. 5,507,568, which is a continuation of Ser. No. 157,692, Nov. 24, 1993, Pat. No. 5,390,990. This application Jan. 31, 1996, Ser. No. 594,862
Int. Cl.[6] B60T 5/58
U.S. Cl. 303—132 14 Claims

1. A brake energy balancing system for controlling at least one wheel brake independently of operator brake application, said system comprising:
- at least one wheel brake assembly having at least one wheel and at least one wheel brake;
- brake application means for applying brake torque to each said wheel brake independently of operator brake application;
- a torque signal generator for producing brake torque signals that are a function of the brake torque applied to each said wheel brake;
- a command brake torque signal generator for generating a command brake torque signal in response to a deceleration command;
- a torque comparator for comparing said brake torque signals with said command brake torque signal for generating brake torque difference signals indicative of the difference between said brake torque signals and said command brake torque signal; and
- control means for providing an energy balancing control signal to said brake application means to control said brake application means independent of operator brake application, in response to said brake torque difference signals.

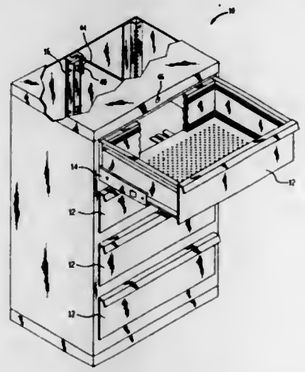


5,605,388

CABINET DRAWER INTERLOCKING SYSTEM

Roger Laakso, Medfield, Mass., assignor to Lista International Corporation, Holliston, Mass.

Filed Feb. 14, 1995, Ser. No. 388,623
Int. Cl.[6] E05B 65/46; E05C 7/06
U.S. Cl. 312—218 36 Claims



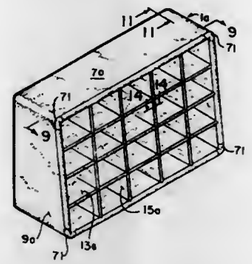
1. A storage cabinet comprising:
- a plurality of drawers each of which is movable between an open position and a closed position;
- a plurality of camplates each attached to one of the drawers and each having a camming surface;
- a locking bar which is engaged by a camming surface of each of the camplates such that said locking bar pivots about a pivot axis from an unlocked to a locked position when one of the drawers is moved to an open position and which, in the locked position, provides an obstruction which prevents drawers in the closed position from being moved to an open position, the locking bar, in the direction of the pivot axis, having two opposite end portions and an intermediate portion between the two end portions; and
- a support rail which contacts and supports the intermediate portion of the locking bar, the support rail restricting lateral movement of the locking bar, but allowing pivoting movement thereof.

5,605,389

CABINET, BOOKCASE, LOCKER AND CUBBY STRUCTURES

Ray G. Kelly; Sharon A. Turnbough, both of St. Louis, Mo.; Allan Flowers, San Diego, Calif., and Douglas L. Blocker, Jefferson, Mo., assignors to Angeles Group, Inc., Pacific, Mo.

Filed Sep. 16, 1994, Ser. No. 307,162
Int. Cl.[6] A47B 43/00;43/02;47/00;47/06
U.S. Cl. 312—258 17 Claims



1. A storage unit including a frame defining a top, bottom, and sides to said storage unit, at least one shelf member and at least one shelf supporting member;
- said frame comprising a first blank forming said top and at least a part of said sides and a second blank forming at least a part of said bottom; each said blank having a core having upper and lower surfaces, each said upper and lower surfaces being covered with a liner, said liners extending beyond edges of said blanks to define a channel; at least said top blank having a pair of core grooves extending through one liner surface and said core, said core grooves defining bending points for said blank; said first and second blanks each defining at least one shelf groove for each of said top, bottom, and sides, said shelf groove extending through said one liner surface and at least a portion of said core, the shelf grooves of said top and bottom being aligned and the shelf grooves of said sides being aligned;
- said shelf supporting member being received in said shelf grooves formed in the top and bottom of said frame, said shelf supporting member comprising a shelf supporting core having an upper and a lower surface and a second liner which covers each said surface, said second liners extending beyond at least a front edge of said shelf supporting member to define an edge channel; a first finishing piece received in said edge channel; at least one slot formed in said shelf supporting member and extending rearwardly from a front edge of said shelf supporting member;
- said shelf member being received in said shelf grooves formed in the sides of said frame, said shelf member comprising a shelf core having an upper and a lower surface and a third liner which covers each said surface, said shelf liners extending beyond at least a front edge of said shelf supporting member to define another edge channel in a front edge of said shelf; a finishing piece received in said another edge channel; at least one slot formed in said shelf member and extending forwardly from said rear edge of said shelf supporting member;

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said shelf member slot cooperating with said shelf supporting member slot such that said shelf member and shelf supporting member when assembled define a plurality of storage openings;

a backing for said storage openings; and

a third finishing piece received in said channels of said blanks, said third finishing piece being snugly received in said channels to hold said blanks together without the use of fasteners.

5,605,390

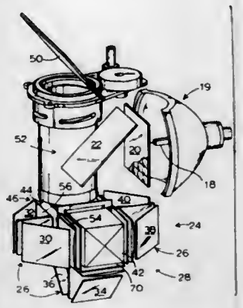
OPTICAL PROJECTOR

Steve Brice, Portland; Gary Kingsley, Tigard, and David Payne, Hillsboro, all of Oreg., assignors to Sarif, Inc., Vancouver, Wash.

Filed Jan. 25, 1996, Ser. No. 590,395

Int. Cl.[6] G03B *21/14*

U.S. Cl. 353—119 **10 Claims**



9. An optical tower-like projector comprising

a frame having a footing portion restable on an external support structure,

an image-modulatible light source mounted on said frame, high thereon in relation to said footing portion, and designed to direct light in a flow downwardly from the source toward the footing portion,

optical convolution structure communicatively associated with and located optically downstream from, said light source, including componentry which, effectively, causes light which is downwardly flowing from the source to flow through a reverse-bend region defined by said componentry, which reverse-bend region is characterized by three reverse-bend paths, two of which are substantially co-planar, and the third one of which lies in a plane which is substantially orthogonal to the common plane of the first-mentioned two reverse-bend paths;

light-modulation structure disposed adjacent said reverse-bend region designed to interact with light traveling through the reverse-bend region, and thereby to modulate the same so as to infuse it with projectable image information, with the optical convolution structure directing such modulated light upwardly on the optical downstream side of said reverse-bend region in a projectable, image-containing stream of light, and

outward-projection directing structure mounted, and located high, on said frame in relation to said footing portion for receiving and outwardly directing the modulated, image-containing stream of light.

5,605,391

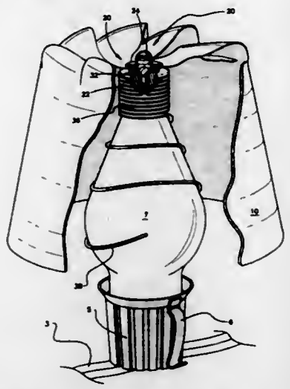
CONVECTION ROTATED ORNAMENT

Peter M. Wood, 1445 Church St., Ventura, Calif. 93001

Filed May 24, 1996, Ser. No. 653,459

Int. Cl.[6] F21V *21/30*

U.S. Cl. 362—35 **8 Claims**



1. An ornamental cover for diffusing the light emanating from an incandescent bulb, comprising;

shade means, formed generally as a translucent frustoconical surface with an open large end and a smaller capped end, surrounding the bulb so as to completely hide the bulb from view and passing an appreciable portion of the light emanating from the bulb;

mounting means for removably supporting said shade means upon said bulb and having bearing means enabling free rotation of said shade about a central vertical axis of said shade means, said mounting means comprising a spiralled wire having a first coiled section engaging the bulb and and a second coiled section receiving said bearing means, and wherein said bearing means comprises a cup releasably secured within said second coiled section of said spiralled wire;

vane means formed integrally with said shade means and forming a cap over said smaller capped end of said frustoconical surface; and

pivot means having a needle fixed to said vane means and to said shade means, said pivot means disposed within said cup and on said central axis, said pivot means projecting downwardly from said vane means and said shade means, and said pivot means rotatably supporting said vane means and said shade means on the bulb by pivoting contact with said bearing means, whereby

heat created by the bulb warms the surrounding air and causes a convective air current to flow upwardly into said open large end, and outwardly past said vanes from said smaller capped end, thus causing said cover to rotate about said central vertical axis.

5,605,392

HEADLIGHT-LIGHT UNIT FOR VEHICLE

Hans Daumueller, Bodelshausen; Frieder Liedtke, Dettingen; Peter Kusserow, Sonnenbuehl, and Friedrich Schmied, Pfullingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

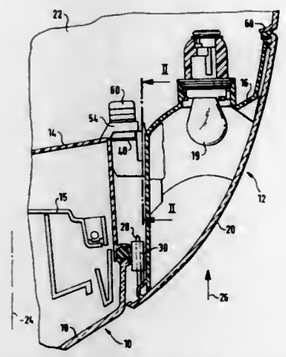
Filed Jan. 3, 1995, Ser. No. 367,693

Claims priority, application Germany, Feb. 26, 1994, 44 06 393.8

Int. Cl.[6] B60Q *1/28*

U.S. Cl. 362—83.3 **12 Claims**

1. A headlight-light unit for a vehicle mountable in a receptacle of the vehicle, comprising a headlight provided with a headlight housing; a light provided with a light housing and releasably



connectable with said headlight by moving said light relative to said light in a mounting direction substantially parallel to a longitudinal axis of the vehicle; at least one springy locking element arranged on one of said housings and partially arrestable on the other of said housings; and a holding element on which said locking element is arrestable, said locking element being formed as an arresting lever having an arresting edge on which said arresting lever is arrestable, said holding element being mountable on the other housing and movable to different positions along said mounting direction of said light on said other housing.

5,605,393

TABLE WITH LIGHT EMITTING PLANE FOR TREATMENT OF PETS

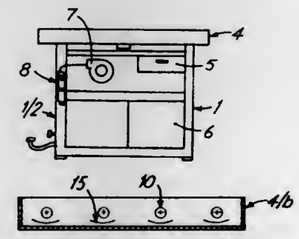
Massimo Cucchi, ia Achille Grandi 1, Albinea (RE), Italy; Oscar Ripamonti, Via D.C.Cazzaniga 9, Albinea (CO), Italy, and Ivo Zapparoli, Via F.Parri 2, Carpi, Italy

Filed Jun. 6, 1994, Ser. No. 254,185

Claims priority, application Italy, Jun. 7, 1993, 93A000051

Int. Cl.[6] F21V *33/00*

U.S. Cl. 362—97 **18 Claims**



1. A table with a light emitting plane for the treatment of pets, comprising:

a water-proof box-like structure having outer edges and light reflective properties;

a light emitting source positioned within the box-like structure;

means for coloring light;

means for reflecting and diffusing light;

means for varying an intensity of light emitted from the device;

a single piece removable cover, supported by an upper surface of the box-like structure, having a tray-like shape, and having edges extending beyond the outer edges of the box-like structure, wherein the shape and position of the edges of the cover relative to the edges of the box-like structure prevent liquid from entering the box-like structure;

a shaped supporting structure mounted to the box-like structure which support the box like structure, light emitting source, means for coloring light, means for reflecting and diffusing light and removable cover;

at least one electrical cable, electrically connected to the light emitting source;

a device for winding the electrical cable, mounted to the supporting structure;

and an electric circuit for supplying electric current to the light emitting source, wherein the means for reflecting and diffusing light comprises a plurality of parabolic shaped reflectors positioned within the box-like structure which reflect light, and further comprising a microswitch means positioned on an upper surface of the box-like structure, actuated by removal of the cover, for interrupting the electric current.

5,605,394

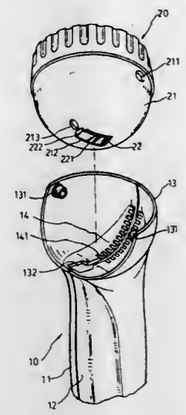
FLASHLIGHT

Meng J. Chen, Taichung Hsien, Taiwan, assignor to Regitar Power Co., Ltd., Taichung Hsien, Taiwan

Filed Jun. 19, 1996, Ser. No. 665,847

Int. Cl.[6] F21L *7/00*

U.S. Cl. 362—197 **4 Claims**



1. A flashlight comprising:

an elongated housing having a spherical seat at an upper end thereof and containing a battery, said spherical seat being formed with a plurality of grooves on an inner side thereof;

a head assembly pivotally mounted in said spherical seat and including a rotatable head carrying a light bulb, said head being provided with a resilient member at a bottom thereof, tending to engage with said grooves; and

means for switching said flashlight on and off.

5,605,395

STRUCTURE OF CHRISTMAS TREE LIGHT

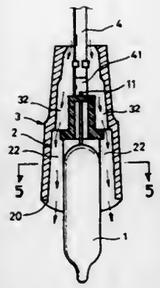
Juel-Tang Peng, No. 312, Yen Ping Rd., Sec. 3, Hsinchu City, Taiwan

Filed Jun. 18, 1996, Ser. No. 664,426

Int. Cl.[6] H01R *33/00*

U.S. Cl. 362—226 **1 Claim**

1. A Christmas tree light comprising a downwardly-opened socket holder, a lamp socket mounted in said socket holder and having a bottom open end, two electric wires having a respective metal terminal respectively mounted in said socket holder, and a bulb mounted in said lamp socket and having two electric contact legs respectively disposed in contact with the metal terminals of said electric wire, wherein said lamp socket is a downwardly-opened, hollow taper shell having an outward annular flange raised



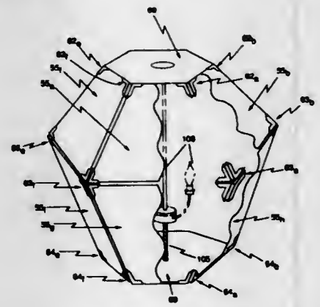
around the periphery of the bottom open end thereof and two longitudinal splits disposed at two opposite sides and respectively intersecting said outward annular flange; said socket holder has two longitudinal grooves bilaterally disposed on the inside and respectively disposed in communication with the longitudinal splits of said lamp socket and adapted for guiding out water, snow that passes to the inside of said socket holder out of said lamp socket through said longitudinal splits.

5,605,396

APPARATUS AND METHOD FOR SECURING COMPONENT PANELS IN A TIERED LIGHTING FIXTURE

Paul W. Chin, Jr., Saratoga, and Hsing M. Keng, Palos Verdes Estates, both of Calif., assignors to Lite Corporation, Saratoga, Calif.

Filed May 16, 1994, Ser. No. 243,232
Int. Cl.[6] F21V *3/00*
U.S. Cl. 362—367 **26 Claims**



12. A corner structure for coupling adjacent panels in a lighting fixture at predetermined angles to each other, the corner structure comprising:

at least first and second sockets, each of said first and second sockets including first and second flange members for straddling connection to opposite sides of one of at least first and second panels being coupled, each of said at least first and second sockets including a central base portion,

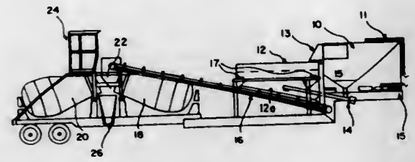
adjacent ones of said at least first and second sockets being coupled to each other exclusively at respective central base portions for connecting together the adjacent panels near selected corners thereof, each of said first and second flange members being connected to corresponding ones of said central base portions, wherein said central base portion includes first and second regions which are disposed with respect to each other at a predetermined angle which conforms to the angle of intersecting edges of a panel to which the corner structure may be coupled.

5,605,397

SYSTEM FOR MIXING CEMENT AND AGGREGATE

Neil G. Oberg, Milliken, and Jerome J. Doherty, Berthoud, both of Colo., assignors to Port-A-Pour, Inc., Berthoud, Colo.

Filed Feb. 29, 1996, Ser. No. 608,764
Int. Cl.[6] B28C *5/00*
U.S. Cl. 366—2 **11 Claims**



1. A method for mixing cement particles with aggregate having moisture on its surface, comprising the steps of:

(a) providing an aggregate hopper having a bottom gate section with an opening therein;

(b) providing an elongated tube for conveying particulate cement to a point within the aggregate hopper above said opening in said hopper;

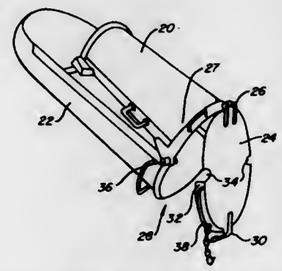
(c) dispensing said aggregate and cement though said opening in said hopper while simultaneously dispensing particulate cement from said elongated tube, wherein said particulate cement becomes adhered to the surface of said aggregate.

5,605,398

FLAP FOR CEMENT TRUCK BACK

Jeff Cronquist, 1045 Freestone Ranch Rd., Bodega, Calif. 94922

Filed Aug. 31, 1995, Ser. No. 521,906
Int. Cl.[6] B28C *7/16*
U.S. Cl. 366—68 **20 Claims**



1. An apparatus which prevents the unintentional escape of cement from a cement truck comprising:

a main chute;

an over-chute hingeably connected to the main chute, the hinged connection of the over-chute to the main chute being such that the over-chute can be positioned to rest on top of the main chute and the hinged connection being such that the over-chute can be folded down from this resting position so that the main chute and over-chute section form an elongated chute through which cement can be poured; and

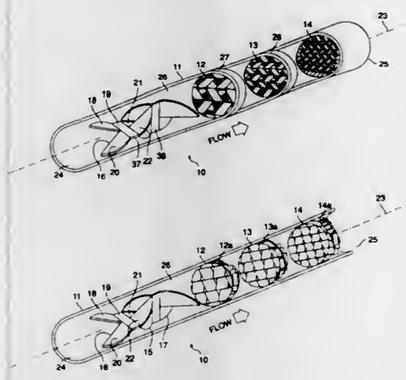
a rigid cover connected by a hinge to the over-chute, the hinged connection of the rigid cover to the over-chute being such that when the over-chute is positioned to rest on the main chute, the rigid cover can be positioned against the main chute so as to prevent any cement material from accidentally escaping from the main chute, and when the over-chute is folded down, the rigid cover is positioned under the main chute and over-chute.

5,605,399

PROGRESSIVE MOTIONLESS MIXER

Leonard T. King, Long Beach, Calif., assignor to Komax Systems, Inc., Wilmington, Calif.

Filed Oct. 17, 1995, Ser. No. 544,325
Int. Cl.[6] B01F *5/06*
U.S. Cl. 366—337 **10 Claims**



1. A stationary material mixing apparatus for the mixing of a fluid stream comprising a conduit having a length, cross-section, a longitudinal axis through said length and a chamber extending longitudinally through said length opening at first upstream and second downstream ends of said conduit and including said longitudinal axis, at least two mixing stations located within said conduit and along said longitudinal axis, each mixing station comprising an array of mixing elements occupying the entire cross-section of said conduit such that all fluid passing from said upstream end to said downstream end must pass through each array of mixing elements, and wherein the array of mixing elements at each mixing station being related to mixing elements at other mixing stations and that mixing elements at downstream mixing stations are of a smaller dimension than mixing elements at upstream mixing stations so that more mixing elements are contained within each mixing station as mixing stations approach the second downstream end and wherein said array of mixing elements comprise a series of parallel mixing elements, each element comprising a flat rectangular central portion having first and second ears emanating from said central portion bent upwards and downwards relative to the plane of said central portion.

5,605,400

MIXING ELEMENT AND METHOD OF PRODUCING THE SAME

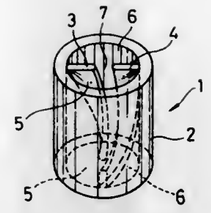
Hisao Kojima, 3-53-21, Shioiri-cho, Tsurumi-ku, Yokohama-shi, Kanagawa-ken, Japan

Filed Apr. 18, 1995, Ser. No. 425,036
Claims priority, application Japan, Apr. 19, 1994, 6-115817
Int. Cl.[6] B01F *5/06*
U.S. Cl. 366—339 **3 Claims**

1. A mixing element comprising:

a cylindrical passage pipe through which a liquid flows; and

a plurality of blade bodies disposed inside the passage pipe, the blade bodies forming inside the passage pipe a plurality of fluid passages extending spirally and in a longitudinal direction of the passage pipe, and a gap between the blade bodies forming an opening for communicating the fluid passages to each other,



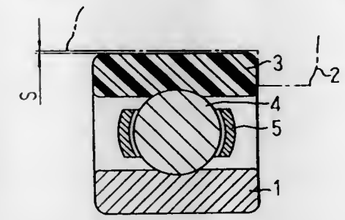
wherein said blade bodies are selected from the group consisting of perforated bodies and porous bodies.

5,605,401

ROLLING CONTACT BEARING

Hiromitsu Kondo, and Michiyoshi Ishimaru, both of Kuwana, Japan, assignors to NTN Corporation, Osaka-fu, Japan

Filed Oct. 31, 1995, Ser. No. 551,245
Claims priority, application Japan, Oct. 31, 1994, 6-266845; Jan. 31, 1995, 7-014279
Int. Cl.[6] F16C *19/06*
U.S. Cl. 384—492 **6 Claims**



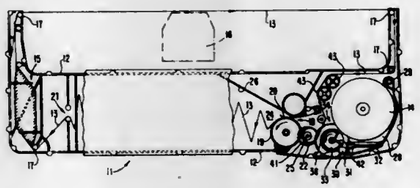
1. A rolling contact bearing characterized in that at least one of the components having a contact surface subjected to rolling friction or sliding friction is formed of condensed polynuclear aromatic resin.

5,605,402

INKED RIBBON CARTRIDGE WITH A RIBBON INKING ELEMENT

Sergio Uggetti, Ivrea, Italy, assignor to Baltea S.p.A., Ivrea, Italy

Filed Apr. 26, 1995, Ser. No. 429,149
Claims priority, application Italy, Apr. 28, 1994, TO94A0339
Int. Cl.[6] B41J *33/34*
U.S. Cl. 400—192 **5 Claims**



1. A cartridge (**11**) for a printing ribbon, comprising

a container (**12**),

a ring shaped inked ribbon (**13**) housed in said container (**12**).

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a feeding roller (19) rotating in contact with said ribbon for feeding it, and

an inking element (14) for inking said ribbon (13), said inking element (14) being selectively movable from a rest position, in which it is separate from said ribbon (13), to a work position in which the inking element (14) contacts the ribbon (13) for supplying it with the ink,

wherein the improvement comprises

activating means (31, 33, 34) for moving said inking element (14) from said rest position to said work position responsive to a predetermined number of turns of said feeding roller (19) said activating means comprising:

a reducing device (34) having an input rotated synchronously with said feeding roller (19) and an output;

a rotating element (33) fixed to the output of said reducing device (34) for being rotated with a reduced rotation with respect to the rotation of said feeding roller (19) according to a fixed reduction ratio, whereby the rotation of said rotating element (33) is indicative of the number of revolutions of the feeding roller, and

means for causing movement of the inking roller (14) from said rest position to said work position after said predetermined number of turns.

5,605,403

INKING RIBBON LOADING SHOE FOR A PRINTER WITH THERMAL TRANSFER PRINTING

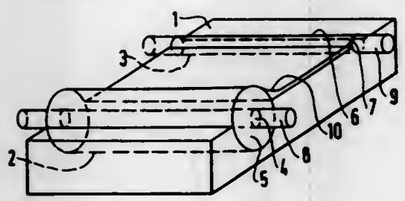
Patrick Vegeais, Paris, and Eric Cavarero, Conflans Sainte Honorine, both of France, assignors to Societe D'Applications Generales D'Electricite et de Mechanique Sagem, France

Filed Dec. 15, 1994, Ser. No. 356,672

Claims priority, application France, Dec. 15, 1993, 93 15094

Int. Cl.[6] B41J *35/28*

U.S. Cl. 400—207 **4 Claims**



1. A loading shoe adapted for operatively loading a ribbon pay-out roll and a ribbon take-up roll, of a thermal transfer printing ribbon, into a thermal transfer printer; said loading shoe comprising means for receiving and detachably holding the ribbon pay-out roll and the ribbon take-up roll in their relative use positions in said printer, wherein each of the ribbon pay-out roll and the ribbon take-up roll comprises means for fixing thereof respectively to said printer and wherein the shoe is configured to leave said respective fixing means exposed to permit fixing of the ribbon pay-out roll and ribbon take-up roll to said printer, with said shoe being adapted to be removed from the ribbon pay-out roll and take-up roll after said fixing.

5,605,404

TAPE PRINTING DEVICE AND TAPE CARTRIDGE USED THEREIN

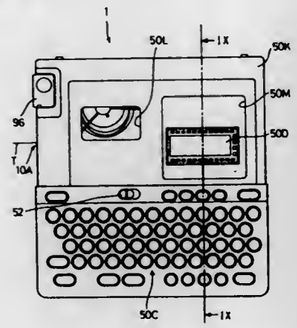
Masahiko Nunokawa, Suwa, and Kenji Watanabe, Tokyo, both of Japan, assignors to Seiko Epson Corporation, and King Jim Co., Ltd., both of Tokyo, Japan

Continuation of Ser. No. 132,556, Oct. 6, 1993, Pat. No. 5,492,420. This application Jun. 6, 1995, Ser. No. 486,741

Claims priority, application Japan, Feb. 12, 1992, 5-47492; Oct. 6, 1992, 4-267166; Oct. 13, 1992, 4-300304; Nov. 4, 1992, 4-294991

Int. Cl.[6] B41J *35/28*

U.S. Cl. 400—208 **13 Claims**



1. A tape cartridge that accommodates a printable tape and is suitable for being detachably received in a tape printing device having a tape cartridge-receiving member therein, said tape cartridge comprising:

a characteristic member disposed on an undersurface face of said tape cartridge, the characteristic member being arranged to come into contact with said tape cartridge-receiving member of said tape printing device when said tape cartridge is attached in said tape printing device, said characteristic member storing information corresponding to a printing condition on said printable tape and having a plurality of digitized elements in a form readable by said tape printing device; and

a printable tape including a printing surface, said printing surface being arranged to receive printed characters from said tape printing device such that said printed characters are affixed to said printable tape in a readable form.

5,605,405

INK RIBBON FOR A PRINTER, TYPEWRITER OR THE LIKE

Herbert Kurz, Fuerth, Germany, assignor to Leonhard Kurz GmbH & Co., Furth, Germany

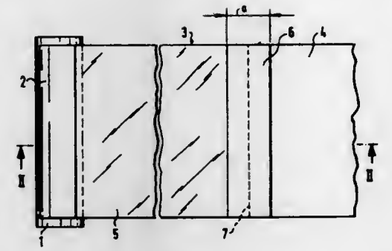
Filed Sep. 15, 1994, Ser. No. 306,815

Claims priority, application Germany, Oct. 4, 1993, 43 33 740.6

Int. Cl.[6] B41J *33/02*

U.S. Cl. 400—239 **7 Claims**

1. An ink ribbon having a spool for a printer, typewriter or the like, which comprises an optically operative control strip attached to said spool at a trailing end of said ink ribbon, said optically operative control strip, respectively, having only a first light-impervious control portion and only a second transparent control portion, said first light-impervious control portion adjoining said



ink ribbon, the length of said first light-impervious control portion adjoining said ink ribbon as measured in a direction of feed of said ink ribbon being from about 1 to 4 cm.

5,605,406

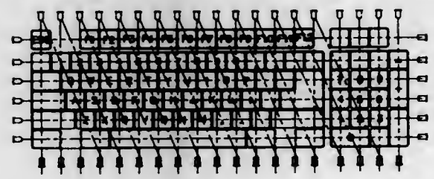
COMPUTER INPUT DEVICES WITH LIGHT ACTIVATED SWITCHES AND LIGHT EMITTER PROTECTION

James H. Bowen, 12190 Richland Dr., Catharpin, Va. 22018

Continuation-in-part of Ser. No. 933,749, Aug. 24, 1992, abandoned, and Ser. No. 311,256, Sep. 23, 1994. This application Nov. 17, 1994, Ser. No. 343,892

Int. Cl.[6] G09G *5/00;* **B41J** *5/00*

U.S. Cl. 400—472 **4 Claims**



1. An operator input device with light emitters and light detectors, comprising:

a plurality of light emitters opposed by light detectors disposed in a pattern at a border of an area in said operator input device;

an electronic circuit that illuminates light emitters of said plurality of light emitters to emit light to said light detectors;

means for selectively turning on and off individual light emitters of said plurality of light emitters at a first scan rate and at a second scan rate, wherein said first scan rate is greater than said second scan rate;

means for sensing the presence or absence of an operators finger within said area in said operator input device; and

means for directing said means for selectively turning on and off individual light emitters to turn on and off said individual light emitters at said first scan rate in response to sensing the presence of an operator's finger within a predetermined time with said means for sensing and to turn on and off said individual light emitters at said second scan rate in response to sensing the absence of an operator's finger with a predetermined time with said means for sensing.

5,605,407

PRINTER AND ITS CONTROL METHOD

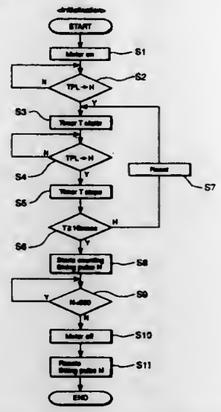
Susumu Hama; Hiroshi Takizawa; Toshiaki Watanabe; Masahiro Kamijo, and Manabu Shimizu, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Dec. 22, 1994, Ser. No. 362,684

Claims priority, application Japan, Dec. 27, 1993, 5-333329

Int. Cl.[6] B41J *29/42*

U.S. Cl. 400—705.1 **6 Claims**



1. A printer control method for a printer comprising the steps of:

(a) applying power to a drive mechanism;

(b) driving the drive mechanism as power is applied in step (a) for moving a carriage in a direction to a reference position;

(c) measuring a pulse width of timing pulses from a position detection means while moving the carriage in step (b), wherein if the pulse width is less than a predetermined width, the pulse width is reset and steps (b) and (c) are repeated, wherein if the pulse width is at least the predetermined width, step (d) is then executed;

(d) counting a number of the timing pulses after the pulse width measured in step (c) reaches at least a predefined reference time;

(e) stopping the drive mechanism when the number of timing pulses is equal to a predetermined value.

5,605,408

REPLACABLE LIPSTICK TUBE WITH A CLAMPING SEAT

Cheng-Yuan Su, P.O. Box 438, Hsinchu City, Taiwan

Filed Nov. 16, 1995, Ser. No. 559,065

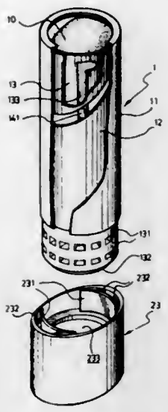
Int. Cl.[6] A45D *40/06*

U.S. Cl. 401—78 **3 Claims**

1. A lipstick tube structure with a replaceable lipstick seat, comprising:

a lipstick seat assembly supporting a lipstick and comprising an outer tube, an intermediate tube located within and attached to said outer tube, the intermediate tube having an inner wall provided with a spiral groove, and a rotatable inner tube rotatably disposed within said intermediate tube and having a vertical slot said inner tube of said lipstick tube having a lower section thereof extending outside of said outer tube to form an extended section provided with a toothed ring having a multiplicity of indentations, said inner tube further having a bottom rim provided with a convergingly tapered guide piece; and an elevating seat located within said inner tube for supporting the lipstick, said elevating seat provided with at least one projection extending from an outer wall thereof and penetrating said vertical slot and said spiral groove, said elevating seat being caused by said spiral groove to rise or

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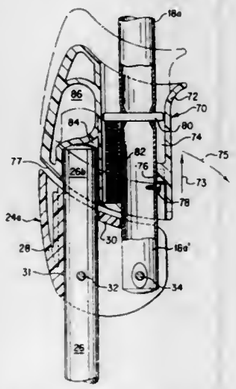


lower along said vertical slot when said inner tube and said intermediate tube are relatively rotated; and

a housing comprising a cap, a decorative ring, a base and a clamping seat located in said base, wherein

said clamping seat is made of an elastic material having an inner wall with a plurality of ribs projecting from opposite sides of the inner wall thereof, said ribs connected to concavely curved urging plates which collectively define an insert slot such that said urging plates elastically press inwardly, against sides of said lower section of said inner tube so that said urging plates frictionally contact said toothed ring.

5,605,409
COLLAPSIBLE STROLLER
Robert E. Haut, Wayne, and James A. Sack, Elverson, both of Pa., assignors to Graco Children's Products, Inc., Elverson, Pa.
Division of Ser. No. 49,468, Apr. 20, 1993, Pat. No. 5,454,584.
This application Jun. 7, 1995, Ser. No. 485,156
Int. Cl.[6] B62B *7/08*
U.S. Cl. 403—102 **9 Claims**



1. A lockable hinge for use on a stroller to pivotally and lockingly interconnect an arm forming a handle of the stroller and a leg forming a lower frame of the stroller, comprising:

a upper body member slidably coupled to the arm to enable the upper body member to move substantially axially to the arm between a locked lowered position and an unlocked raised position, the upper body member having a forward portion with a finger indent adapted to receive a finger of a user to allow the user to slide the upper body member to the unlocked position, and a lower end of the arm extending below the upper body member;

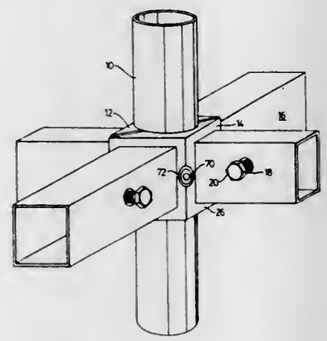
a lower body member fixedly attached to the leg, with an upper end of the leg protruding beyond the lower body member; and

a spring member disposed within the upper body member and between the arm and the leg such that the spring member biases the upper body member toward the locked position,

wherein the lower end of the arm of the handle is pivotally connected to the lower body member to permit the arm to pivot relative to the lower body member, and

wherein the upper body member includes a seat for engaging the upper end of the leg in the locked position such that when the upper end of the leg is engaged by the seat, the lower end of the arm is prevented from pivoting relative to the leg.

5,605,410
CONNECTING MECHANISM FOR TUBULAR FRAME MEMBERS
George Pantev, 310 Millway Ave., Unit 11, Concord, Ontario 14 K3W3, Canada
Filed Jan. 17, 1995, Ser. No. 372,995
Int. Cl.[6] F16B *2/04*
U.S. Cl. 403—297 **22 Claims**



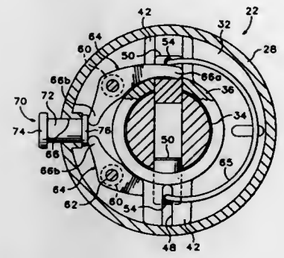
1. A connector for joining one or more tubular members to a support structure, comprising:

a first one-piece base portion having an inner face and an outer face, a second one-piece base portion having an inner face and an outer face, said second base portion being separate from and engageable with said first base portion, whereby the inner faces of the first and second base portions form an opening therebetween for resting firmly against said support structure to permit a rigid joint between said connector and said support structure;

the outer face of the first base portion having at least one fork extending outwardly therefrom and being dimensioned for closely fitting to an internal cross-section of a tubular member;

said fork having substantially parallel and spaced apart first and second arms, the second arm being further subdivided into two parallel prongs having a slit therebetween, said first arm having a transverse threaded hole therethrough aligned with said slit, whereby a threaded member is screwed into said transverse threaded hole and extends into said slit to push against said prongs to expand said first and second arms apart in a first direction and expand said prongs apart in a direction substantially normal thereto.

5,605,411
LOCK FOR CYLINDRICAL ROD
Jerry L. Wilson, 570 NE. 53rd Ave., Hillsboro, Oreg. 97124, and Richard A. Edinger, Hillsboro, Oreg., assignors to Jerry L. Wilson, Hillsboro, Oreg.
Filed Aug. 14, 1995, Ser. No. 514,598
Int. Cl.[6] F16B *2/18*
U.S. Cl. 403—325 **11 Claims**



1. An assembly comprising:

at least one pair of weight plates having cylindrical holes defined centrally therein;

a cylindrical rod that slidably receives said weight plates with one of said weight plates being disposed on each end of said cylindrical rod;

a handgrip which fits on said cylindrical rod, said handgrip having stops which keep the weight plates at said each end of said rod separated from one another by a pre-determined distance;

a pair of locks wherein each lock being releasibly attachable to said each end of said rod, said each lock including:

a case having a cylindrical passageway extending therethrough that slidably receives said cylindrical rod;

at least one piston movable between an unlocked position where the piston is located within said case and a locked position where the piston projects partially into said cylindrical passageway;

an actuator for moving said piston between the locked and unlocked positions;

wherein said cylindrical rod has at least one hole defined therein proximate said each end thereof for receiving said piston when said piston is in the locked position, such that said lock holds the respective weight plate in place against said stop.

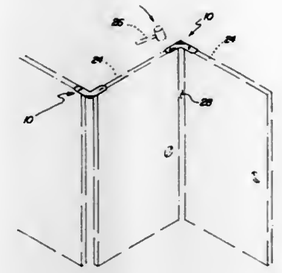
5,605,412
DOOR HOLDING CONNECTOR PLATE
Dave D. Davis, P.O. Box 414, Flora Vista, N.M. 87415, and Christopher P. Edwards, 6100 McKensey St., Farmington, N.M. 87401
Filed Jan. 6, 1995, Ser. No. 369,462
Int. Cl.[6] F16B *15/00*
U.S. Cl. 403—403 **9 Claims**

1. A door holding connector plate comprising:

a first planar member;

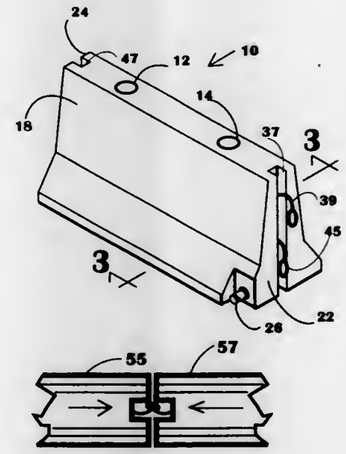
a second planar member residing within a common plane with the first planar member;

an integral corner plate fixedly secured to the first planar member and the second planar member to fixedly secure the first planar member to the second planar member such that the first planar member is oriented so as to extend substantially orthogonally for the second planar member and projecting out of the common plane at an oblique angle relative the common plan; and



a plurality of piercing teeth projecting downardly from the planar members for piercing engagement with a workpiece to secure the planar members the workpiece.

5,605,413
HIGHWAY BARRICADE
James C. Brown, 2121 Skyhawk Dr., Fort Wayne, Ind. 46815
Filed Jun. 26, 1995, Ser. No. 494,345
Int. Cl.[6] E01F *15/00*
U.S. Cl. 404—6 **17 Claims**



1. In a New Jersey style barricade system having a plurality of individual hollow molded water-fillable barriers each having interior and exterior surfaces, the barriers being aligned end-to-end in the barricade system, an improved system for joining adjacent barrier ends comprising:

a plurality of longitudinally extending cable receiving grooves in each barrier;

a cable disposed in each groove, each cable having opposite ends terminating in closed loops near respective barrier ends;

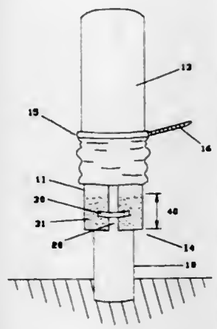
means associated with each cable for retaining respective cables in corresponding grooves;

means within each barrier for interconnecting the means for retaining one cable and the means for retaining another cable; and

means for coupling the closed loops near the end of one barrier to the closed loops near the end of an adjacent barrier.

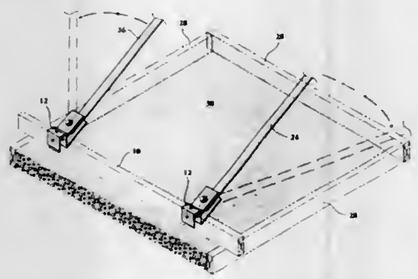
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5,605,414
APPARATUS AND METHOD FOR PROTECTING BARRIER
Johnny M. Fuller, 8214 Westchester, Suite 500, Dallas, Tex. 75225, and Halley D. Fuller, Longview, Tex., assignors to Johnny M. Fuller, Dallas, Tex.
Filed Sep. 26, 1995, Ser. No. 533,845
Int. Cl.[6] E01F *15/00*
U.S. Cl. 404—6 **35 Claims**



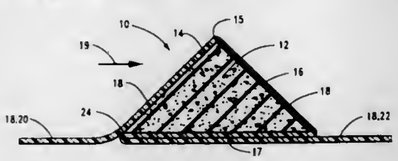
5. In combination with a barrier, a barrier protector, comprising:
a resilient membrane, the resilient membrane being of a predetermined shape and size to surround the barrier when wrapped around the barrier;
a cover, the cover being of a predetermined shape and size to incarcerate the resilient membrane; and
the cover having at least one anchor end, each anchor end providing a contractible cuff, each contractible cuff disposed to substantially permanently anchor its respective anchor end to the barrier once the cover has incarcerated the resilient membrane.

5,605,415
SCREED BAR ATTACHMENT
Larry Shamblin, Porum, Okla., assignor to Michael A. Marshall, Stigler, Okla.
Continuation-in-part of Ser. No. 452,662, May 25, 1995. This application Oct. 16, 1995, Ser. No. 543,609
Int. Cl.[6] E01C *19/22*
U.S. Cl. 404—118 **1 Claim**



1. A screeding apparatus for leveling concrete freshly poured within concrete forms by two individuals who place the apparatus on the concrete forms and then move the apparatus back and forth along the forms to level the concrete, said apparatus comprising:
a screed bar of rectangular cross-section having a first end and a second end;
a handle attachment secured to each end of said screed bar, each handle attachment including a three-sided U-shaped member and a pair of parallel plates extending outwardly and upwardly from said U-shaped member at an angle of about 70°, each U-shaped member having an upper horizontal top portion, a first vertical side portion, and a second vertical side portion, said first vertical side portion and said second vertical side portion each having an upper end attached to said upper horizontal top portion and a lower end remote from said upper horizontal top portion, wherein one of said parallel plates is attached to the lower end of said first vertical side portion, and wherein the other of said parallel plates is attached to said first vertical side portion between the lower end of the first vertical side portion and the upper end of the first vertical side portion;
means for attaching each handle attachment to said screed bar, said means each including a first fastener passing first through said one of said parallel plates, then through said first vertical side portion, and then into said screed bar; and
a handle pivotally connected between the pair of parallel plates of each U-shaped member and extending outwardly from each said pair of parallel plates.

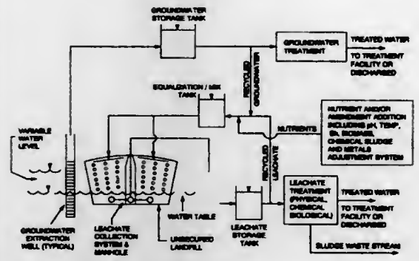
5,605,416
WATER, SEDIMENT AND EROSION CONTROL APPARATUS AND METHODS
Gary W. Roach, P.O. Box 1632, Midwest City, Okla. 73110
Filed Mar. 27, 1995, Ser. No. 410,720
Int. Cl.[6] E02B *3/00*
U.S. Cl. 405—21 **27 Claims**



1. An apparatus for controlling water, sediment and soil erosion comprising:
a water-permeable foam barrier extending generally longitudinally, said barrier having an upstream surface and a downstream surface; and
an apron extending laterally away from at least one of said surfaces of said barrier, said barrier attached to said apron by attaching means wherein said barrier is reconfigurable by rotating said barrier about a longitudinal axis of said attaching means.

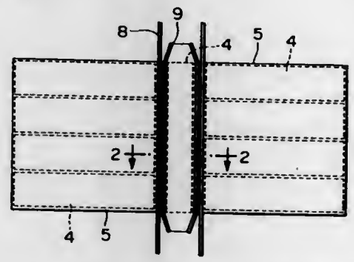
5,605,417
METHOD AND APPARATUS FOR IMPROVING DEGRADATION OF AN UNSECURED LANDFILL
Christopher J. Englert, Novi, and James Dragun, Farmington Hills, both of Mich., assignors to The Dragun Corporation, Farmington Hills, Mich.
Filed Jul. 18, 1994, Ser. No. 277,421
Int. Cl.[6] B09B *3/00*
U.S. Cl. 405—129 **26 Claims**

1. A method for improving degradation, stabilization, detoxification and volume reduction of refuse within an unsecured landfill comprising:
installing at least one well proximate to the landfill in the direction of the flow of groundwater so as to provide control over the groundwater proximate the landfill;
extracting the groundwater from the well to substantially prevent migration of contaminated groundwater or leachate from the landfill and provide a source of moisture for use within the landfill;



collecting leachate from the landfill;
monitoring the leachate so as to determine the chemical constituents of the refuse within the landfill;
injecting additives into the leachate so as to alter the chemical constituents of the refuse within the landfill and increase the rate of degradation; and
recirculating the leachate within the landfill.

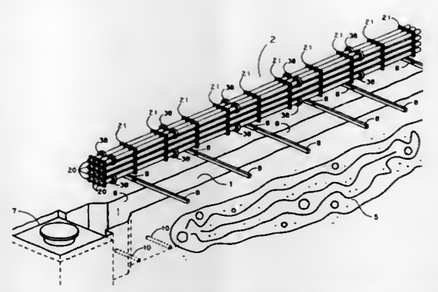
5,605,418
ROAD SNOW MELTING SYSTEM USING A SURFACE HEATING ELEMENT
Koji Watanabe, Akita, and Yoshinori Nagai, Ichikawa, both of Japan, assignors to Taisei Home Engineering Kabushiki Kaisha, Japan
Continuation of Ser. No. 886,597, May 21, 1992, abandoned. This application Sep. 20, 1993, Ser. No. 123,044
Claims priority, application Japan, Feb. 28, 1992, 4-92476
Int. Cl.[6] E02D *19/14*
U.S. Cl. 405—131 **9 Claims**



1. A snow melting system for melting ice and snow on roads comprising a heating unit having an electrical surface heating element in sheet form positioned between a pair of adjacent metal plates and wrapped in a tar-based moisture-proof sheet, said heating unit embedded beneath a surface material of a paved road surface.

5,605,419
UNDERGROUND DUCT BANKS
Gary L. Reinert, Sr., 4319 Middle Rd., Allison Park, Pa. 15101
Filed Jun. 14, 1994, Ser. No. 259,393
Int. Cl.[6] F16L *1/00*
U.S. Cl. 405—154 **9 Claims**

1. A method of installing an underground duct bank, comprising:
(a.) providing a plurality of flexible, substantially hollow, elongated ducts or conduits;
(b.) assembling said ducts or conduits into a preassembled duct bank having a substantially continuous length of 500 feet or more above ground;

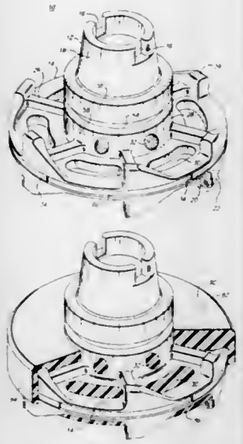


(c.) excavating an underground trench with substantially straight sidewalls of sufficient dimension to hold said above-ground-preassembled duct bank;
(d.) placing said above-ground-preassembled duct bank into said underground trench to provide an underground duct bank using at least three pieces of lifting and lowering equipment by:
(i) sequentially moving said above-ground-preassembled duct bank having a substantially continuous length of 500 feet or more above ground to a position supported by transverse support members spanning said trench to position said above-ground-preassembled duct bank above ground directly over said trench;
(ii) placing said above-ground-preassembled duct bank into said underground trench by sequentially lifting said above-ground-preassembled duct bank;
(iii) removing said transverse support members spanning said trench;
(iv) sequentially lowering said above-ground-preassembled duct bank into said trench onto transverse support members positioned in the bottom of said trench to provide said underground duct bank; and
(v) providing for an angle of displacement less than about twenty degrees from the horizontal for the above-ground-preassembled duct bank, while lowering said above-ground-preassembled duct bank into the bottom of said trench, and onto said transverse support members positioned in the bottom of said trench;
(e.) installing precast concrete manholes at 500 feet or more distances apart in the ground; and,
(f.) tieing said preassembled underground duct bank into said precast concrete manholes.

5,605,420
HIGH SPEED ROTATING TOOL HAVING A BAND OF HIGH TENACITY MATERIAL ABOUT THE PERIMETER
Timothy R. Feldsine, Clayton, N.C., assignor to Kennametal Inc., Latrobe, Pa.
Filed Dec. 22, 1995, Ser. No. 577,164
Int. Cl.[6] B23C *5/10;5/16;5/00*
U.S. Cl. 407—32 **28 Claims**

1. A rotating tool mateable with the spindle of a machine tool for high speed rotation about a longitudinal axis comprised of:
a) a shank mountable within the spindle;
b) a disk symmetric about the longitudinal axis, connected to the shank and having a central hub and an outer periphery;
c) cutting inserts symmetrically attached to the periphery of the disk; and

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d) a separate band of high tenacity material about the perimeter of the disk to restrain expansion from centrifugal forces on the disk.

5,605,421

DUST EXTRACTOR

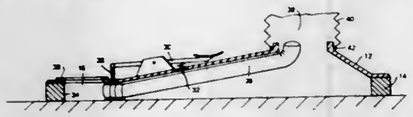
Phillip Hodgson, Carlisle, Great Britain, assignor to Black & Decker Incorporated, Newark, Del.

Filed Apr. 27, 1995, Ser. No. 429,690

Claims priority, application United Kingdom, Apr. 28, 1994, 9408403

Int. Cl.[6] B23B *47/34*

U.S. Cl. 408—67 **16 Claims**



1. A dust extractor for use with a hand or power tool, the dust extractor comprising at least two compartments which are in fluid communication with each other, sealing means to allow each compartment to be sealed to a surface, one of the compartments having an opening to provide access to the surface for a tool and the other compartment having an outlet which is connectable to a suction source, the compartments being connected by at least one fluid passage which is at least partially closed off by a valve.

5,605,422

NAIL WITH EXPANSION REGION

Artur Fischer, Waldachtal, Germany, assignor to fischerwerke Artur Fischer GmbH & Co KG, Waldachtal, Germany

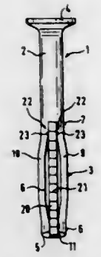
Filed Mar. 9, 1995, Ser. No. 401,179

Claims priority, application Germany, Mar. 28, 1994, 44 10 793.5

Int. Cl.[6] F16B *15/00*

U.S. Cl. 411—357 **10 Claims**

1. A nail, comprising a shank having a first straight shank portion located at a forward insertion end of the shank and a second straight shank portion located at an opposite end of the shank with an expansion region defined therebetween; the expansion region having two curved expansion limbs defining sidewalls of a longitudinal notch therebetween; said expansion limbs protruding outwardly from said shank effectively defining a shank portion of larger diameter than said straight shank portions; the notch having a notch base whose depth increases in a direction from the forward insertion end of the nail towards the opposite end; and a wedge arranged in said longitudinal notch and bearing against said notch base, said wedge having an upper edge projecting slightly beyond said longitudinal notch of said shank and adapted to be displaceable in a direction toward said insertion end.



5,605,423

SELF-DRILLING STUD

Michael Janusz, Elgin, Ill., assignor to Elco Textron, In., Rockford, Ill.

Filed Apr. 26, 1996, Ser. No. 638,115

Int. Cl.[6] F16B *25/00;* **E04B** *1/38*

U.S. Cl. 411—387 **6 Claims**

1. A single piece fastener for use in a supporting structure for a concrete slab, the supporting structure being of the type which includes a plurality of metal support members secured to the concrete slab at a plurality of spaced locations by a plurality of said fasteners, each said fastener comprising:

a threaded portion having first and second ends and a helical thread,

a fluted drill tip projecting from said first end of said threaded portion and located at a first end of said fastener,

the fluted drill tip and lead turns of the helical threaded portion having a relatively high hardness so that said drill tip and lead threads are sufficiently hard to penetrate and tap threads in support members of the type used in the supporting structure,

a first relatively smaller integral annular flange located above the threaded portion, and having a straight stud projecting from the flange opposite the threaded portion,

a second and comparatively larger annular flange located atop the stud, and a driving means located atop the second annular flange for allowing engagement by a tool to rotate the fastener for securing same in a support member of the type used in said supporting structure,

an upper section of the fastener including the first annular flange and threads of the threaded portion which are adapted to be in threaded engagement with a support member being hardened to a lesser degree of hardness than the drill point to render the upper section of said fastener substantially more ductile than the drill tip and lead threads,

the length of the fastener between the first and second flanges being less than the desired thickness of the concrete slab so that the second annular flange when installed in a deck will be encased in the slab with the second annular flange resisting and transmitting shear forces which might be imposed by the slab onto the supporting structure, and

the lesser degree of hardness being at a level which imparts sufficient ductility to the portions of the fastener intended to project above the support member to resist and transmit shear loads imposed by the concrete deck attempting to shift on its supporting structure.

5,605,424

TWO-PART FASTENING SYSTEM

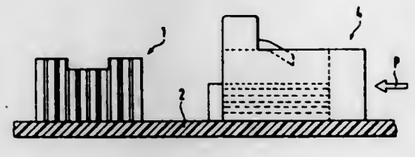
Daniel Boville, Paris, and Bernard Houte, Meylan, both of France, assignors to A. Raymond & CIE, Grenoble, France

Filed Aug. 4, 1995, Ser. No. 511,136

Claims priority, application Germany, Aug. 5, 1994, 44 27 723.7

Int. Cl.[6] F16B *21/00;21/18;* **F16D** *9/00;* **F16G** *11/00*

U.S. Cl. 411—522 **8 Claims**



1. A fastening system comprising:

an anchoring part formed of a first plastic material and having a plurality of parallel spaced apart ribs extending perpendicularly from a support plate; and

a fastening member having a pair of spaced apart clamping walls, each of said clamping walls having at least one pointed projection for transversely engaging said ribs of said anchoring part, said fastening member being formed of a second plastic material having a predetermined hardness which is harder than a predetermined hardness of said first plastic material of said anchoring part such that said pointed projections cut into said ribs of said anchoring part.

5,605,425

THREE PIECE TAPE BOUND HARD COVER BOOKS

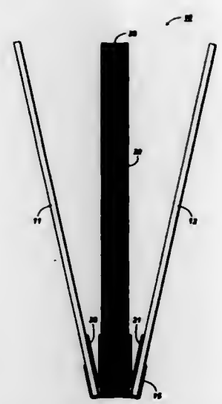
Barbara J. Schaefer, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 27, 1995, Ser. No. 430,022

Int. Cl.[5] B42C *11/00*

U.S. Cl. 412—4 **2 Claims**

1. A method of creating a hard cover book on demand, comprising the steps of: (a) providing front and rear covers; (b) placing a book body between the front and rear covers; (c) attaching a folded end sheet having an adhesive on one surface thereof to each of said front and rear covers above the fold and attaching the portion of said end sheets below the fold to said book body; (d) providing a thermal binding apparatus with a thermal actuable tape therein; (e) placing the composite of steps (a) through (c) into said thermal binding apparatus with a spine portion of said composite resting against a portion of said tape, said tape extending around said spine portion of said composite and up a portion of an outside surface of both of said front and rear covers; and (f) actuating said thermal binding apparatus to apply heat to said tape and thereby bind said tape to said spine portion of said composite and front and rear covers.



5,605,426

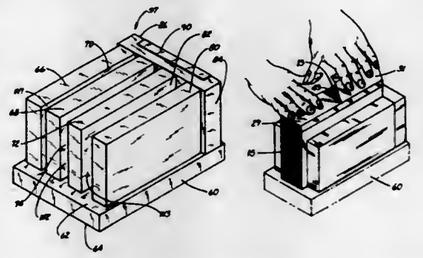
APPARATUS FOR BINDING SHEET-LIKE ARTICLES

Richard S. Werner, 326 Cedar Sauk Rd., West Bend, Wis. 53095

Continuation-in-part of Ser. No. 298,781, Aug. 31, 1994, which is a continuation-in-part of Ser. No. 231,425, Apr. 22, 1994, abandoned. This application Feb. 7, 1995, Ser. No. 384,824

Int. Cl.[6] B42B *5/00*

U.S. Cl. 412—9 **7 Claims**



1. An apparatus for supporting a group of articles for binding comprising:

a base member;

a first holding member perpendicular to the base member;

a second holding member disposed perpendicular to the base member and parallel to the first holding member, the first and second holding members being spaced from one another in fixed relationship to form a first slot of non-adjustable width therebetween, and

a third holding member perpendicular to the base member and parallel to the second holding member, the second and third holding members being spaced from one another in fixed relationship to form a second slot therebetween having a non-adjustable width different than the width of the first slot, whereby a plurality of articles to be bound are positioned in the slot for alignment.

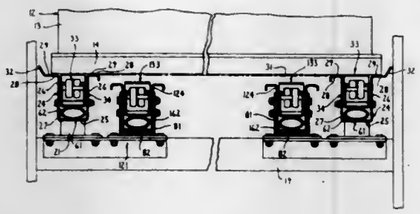
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5,605,427

LEVEL GRAVITY CONVEYOR WITH GRAVITY RETURN OF TRANSFER UNITS

Theodore A. Hammond, 6233 St. Ives Blvd., Orlando, Fla. 32819

Filed Jul. 6, 1993, Ser. No. 88,156
Int. Cl.[6] B65G *25/02*; B60P *1/00*
U.S. Cl. 414—276 15 Claims



13. A level gravity-type transporting apparatus for transporting loads, such as pallets, generally horizontally along a predetermined direction, comprising:

a horizontally and longitudinally elongate stationary support structure having horizontally and longitudinally spaced first and second ends, said support structure extending longitudinally parallel to the direction of load movement, said support structure extending along a longiiudinal direction from said first end to said second end and including horizontally elongate and longitudinally-extending load supporting elements which define thereon substantially horizontally and upwardly-facing load supporting surfaces;

a load-advancing means mounted on said support structure and extending generally horizontally and longitudinally from said first end to said second end for effecting steplike advancing movement of loads in a direction from said first end to said second end;

said load-advancing means including:

(a) a plurality of separate and independently movable load-advancing pad units disposed in aligned relationship generally between said first and second ends of said support structure, each said pad unit being adapted to engage and effect forward advancing movement of a load through a determined steplike distance,

(b) a support housing associated with each said pad unit and movably mounting the respective pad unit thereon for permitting linear movement of the pad unit relative to the respective support housing between upstream and downstream positions which are spaced apart generally along said longitudinal direction,

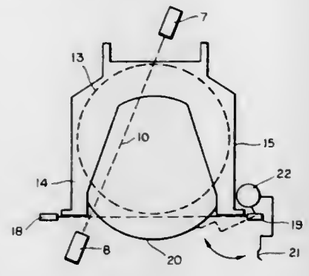
(c) lifting means cooperating with said support housings for effecting vertical displacement thereof between (1) a raised position wherein the pad unit when in said upstream position is at an elevation above the pad unit when in the downstream position and the pad unit engages and lifts a load upwardly from the supporting surfaces so that the pad unit and the load thereon forwardly advance by gravity toward the downstream position, and (2) a lowered position wherein the pad unit when in the downstream position is at an elevation above the pad unit when in the upstream position so that the pad unit moves rearwardly by gravity back to said upstream position.

5,605,428

DEVICE FOR INDEXING MAGAZINE COMPARTMENTS AND WAFER-SHAPED OBJECTS IN THE COMPARTMENTS

Andreas Birkner; Berndt Lahne, and Klaus Schultz, all of Jena, Germany, assignors to Jenoptik GmbH, Jena, Germany

PCT No. PCT/EP94/00620, § 371 Date Nov. 3, 1994, § 102(e) Date Nov. 3, 1994, PCT Pub. No. WO94/20979, PCT Pub. Date Sep. 15, 1994
PCT Filed Mar. 3, 1993, Ser. No. 331,523
Claims priority, application Germany, Mar. 5, 1993, 43 06 957.6
Int. Cl.[6] H01J *40/14*
U.S. Cl. 414—331 2 Claims



1. In a device for indexing compartments of a magazine and wafer-shaped objects contained in said compartments, said magazine being movable in a vertical direction relative to a first handling plane by a magazine lift to allow removal and charging of said wafer-shaped objects for the purpose of processing said wafer-shaped objects, said device comprising:

optoelectronic sensor means including transmitter means and receiver means for detecting the position of a wafer-shaped object relative to a reference plane via a bundle of measurement rays, said bundle of measurement rays also being used for detecting a position of said magazine compartments relative to said reference plane whose location in the device is rigidly defined by design with respect to the first handling plane; wherein

opposite walls are provided defining said magazine compartments, said walls having projections,

the bundle of measurement rays which is emitted by said transmitter means has a middle ray which lies in said reference plane and is guided between said opposite walls defining said magazine compartments and is directed on said projections of one of the walls, said projections being directed toward the interior of the magazine and forming magazine compartments serving to support the wafer-shaped objects and to interrupt the bundle of measurement rays, so that, as a result of vertical adjustment in the direction of the magazine compartments which are located one above the other and which successively occupy a position in common with the reference plane, an image of the magazine compartments and of the wafer-shaped objects contained therein is produced by modulating the bundle of measurement rays, and

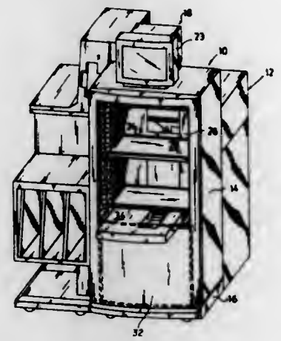
wafer returning means are provided in a second handling plane parallel to the first handling plane for positioning wafer-like objects protruding from the magazine, said wafer returning means being actuated depending upon a sensor signal of a second sensor means whose bundle of measurement rays is directed to seated wafer-shaped objects and directly adjoins the removal and charging side of the magazine during vertical adjustment of the magazine.

5,605,429

DOOR SAFETY SYSTEM FOR STORAGE PHOSPHOR CASSETTE AUTOLOADER

Shahram Hejazi, Webster; Gary W. Shope, Rochester; Jeffrey J. Yaskow, Williamson; Carl A. Swanson, Penfield, and Michael J. Epner, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 86,445, Jun. 30, 1993, abandoned.
This application Nov. 8, 1995, Ser. No. 555,312
Int. Cl.[6] B65G *1/00*; E05F *15/02*
U.S. Cl. 414—331 5 Claims



1. A storage phosphor cassette autoloader comprising:

first and second endless conveyor belts, said conveyor belts being spaced apart and having a plurality of outwardly extending shelves in vertical alignment so as to define a cassette read site and a plurality of cassette retaining sites;

a conveyor belt drive for driving said conveyor belts in unison to transfer cassettes loaded in said retaining sites serially through said read site;

a body encasing said conveyor belts and having a portal adjoining said cassette retaining sites for allowing cassettes to be placed on or removed from said shelves of said conveyor belts, a reader attached to said body and operatively connected to said read site to read the cassettes when located thereon;

at least one door assembly with a leading edge located adjacent to said portal for allowing access through said portal, and which is movably mounted on said body encasing for movement between a closed position and an open position;

means for moving cassettes through said portal into and out of said reader;

a door drive for moving said door assembly between the open and closed positions;

a force sensitive assembly mounted on said leading edge of said door assembly for sensing if said door assembly is obstructed while it is being closed;

a source of electrical power for supplying power to said conveyor belt drive and said door drive; and

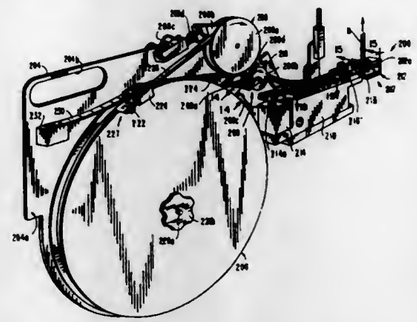
a safety control circuit connected to said source of electrical power for (a) cutting off all power from said source of power to said conveyor belt drive and said door drive when the power in a portion of said circuit fall below a predetermined level; (b) disabling the conveyor belt drive while said door is in the open position; and (c) controlling said door drive to move said door to said open position in response to said force sensitive assembly engaging an obstruction when said door is being closed.

5,605,430

FEEDER AND METHOD OF SUPPLYING A CONTINUOUS STRIP OF SURFACE MOUNT CONTACTS TO SURFACE MOUNTING EQUIPMENT

Janos Legrady, Putnam Valley, N.Y., assignor to Zierick Manufacturing Corporation, Mount Kisco, N.Y.

Continuation-in-part of Ser. No. 196,864, Feb. 15, 1994, Pat. No. 5,449,265. This application Feb. 28, 1995, Ser. No. 395,822
Int. Cl.[6] B65B *69/00*
U.S. Cl. 414—412 10 Claims



1. Feeder for individually dispensing surface-mount contacts from a strip of tab-connected contacts on a pick-and-place machine having a pick-up member at a pick-up station and an actuator for actuating the feeder when the pick-and-place machine is ready to pick up a surface-mount contact oriented along a predetermined direction at the pick-up station, the feeder comprising receiving means for receiving a leading end of the tab-connected strip of surface-mounted contacts; transporting means for transporting at least the leading surface-mount contact with an orientation along said predetermined direction to said pick-up station; advancing means responsive to the actuator for advancing the strip of contacts one contact at a time along said transporting means; cutting means responsive to the actuator for severing a connecting tab between the leading surface-mount contact and the next following surface mount contact of the strip to thereby free said leading surface-mount contact, said cutting means temporarily holding said leading surface-mount contact to maintain said predetermined direction and position of the severed surface-mount contact between the time that said leading surface-mount contacts is severed from the strip and the time that the pick-up member of the pick-and-place machine has engaged the contact sufficiently to enable it to pick up the contact and remove it from said pick-up station.

5,605,431

LOCKING WHEELCHAIR LIFT

Stanton D. Saucier, Tarzana, Calif.; Pierre Savaria, St-Eustache; Jules Tremblay, Sunland, both of Canada, and Nelson Tremblay, Woodland Hills, Calif., assignors to Ricon Corporation, Pacoima, Calif.

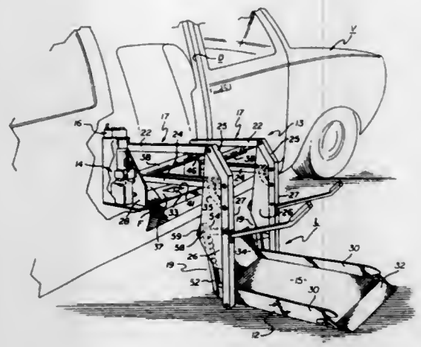
Continuation of Ser. No. 485,238, Jun. 6, 1995, abandoned, which is a continuation of Ser. No. 114,774, Aug. 31, 1993, Pat. No. 5,445,488, which is a continuation-in-part of Ser. No. 920,796, Jul. 28, 1992, Pat. No. 5,308,215. This application Aug. 7, 1996, Ser. No. 692,979
Int. Cl.[6] B60P *1/44*
U.S. Cl. 414—546 9 Claims

1. A wheelchair lift for transporting a passenger in relation to a vehicle and including motion patterns between a loading position, an entry position and a stowed position, said lift comprising:

a platform structure for carrying a passenger; and

a pivotal mechanism including at least two pairs of parallelogram structures linked for distinct pivotal motion patterns,

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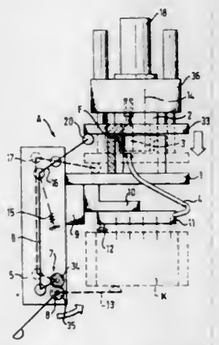


said parallelogram structures being affixed to said platform structure and adapted to be affixed to said vehicle for moving said platform structure between said loading position, said entry position and said stowed position, each of said pairs of parallelogram structures comprising an upper parallelogram structure and a lower parallelogram structure, each of said upper and lower parallelogram structures comprising two elongated structures, said upper and said lower parallelogram structures being releasably interlocked in sliding engagement while said platform structure moves between selected of said positions.

5,605,432
ROBOT MANIPULATOR

Friedhelm Fink; Klaus Panthel, both of Taunusstein, and Hans-Werner Fuchs, Thurnau, all of Germany, assignors to Hauni Maschinenbau AG, Hamburg, Germany

Filed Mar. 23, 1994, Ser. No. 216,892
Claims priority, application Germaoy, Mar. 24, 1993, 43 09 539.9; Mar. 4, 1994, 44 07 324.0
Int. Cl.[6] B65G *47/91*
U.S. Cl. 414—752 **6 Claims**

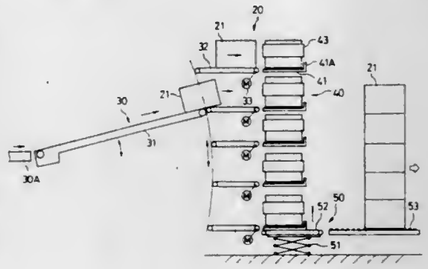


1. A manipulator comprising an arm including a head movable along a plurality of substantially straight paths and rotatable about at least one axis, a tool having means for gripping stacks of substantially flat objects, said gripping means including suction-operated means for engaging the stacks from above and mobile means for supporting the stacks from below and said tool further having a carrier for said supporting means; means for mechanically and separably coupling said tool to said head ineluding a jaw chuck provided on said head and arranged to engage a substantially cylindrical surface of said tool; a suction generating device; means for connecting said device to said suction-operated means when said tool is coupled to said head; and means for moving said supporting means including a pusher movably carried by said head and means for transmitting motion from said pusher to said supporting member, said motion transmitting means comprising at least one lever pivotable on said carrier and having follower means engageable by said pusher, a shaft rotatably supported by said carrier and mounting said supporting means, a connecting member receiving motion from said at least one lever, and a transmission between said member and said shaft.

5,605,433
METHOD AND APPARATUS FOR STACKING BOX-SHAPED ARTICLES

Nobuhiro Tanaka, Saitama, Japan, assignor to KAO Corporation, Tokyo, Japan

Filed Apr. 19, 1995, Ser. No. 425,146
Claims priority, application Japan, Jun. 21, 1994, 6-160711
Int. Cl.[6] B65G *57/06*
U.S. Cl. 414—793.4 **6 Claims**



4. An apparatus for stacking and feeding a plurality of box-shaped articles comprising: an article in-feeder having an out-feed side; an article supporter; and an article out-feeder,

the article supporter being disposed on the out-feed side of the article in-feeder and above the article out-feeder, said supporter comprised of a plurality of vertically spaced article receiving zones, each of said zones having an upper and lower portion, wherein a supporting member is disposed in a lower portion of each article receiving zone, each of the supporting members movable between an article supporting position and an article releasing position,

the article in-feeder supplying box-shaped articles to each of the supporting members when the supporting members are in the article supporting position,

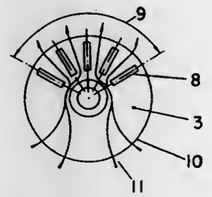
the article out-feeder comprised of an article receiving portion and a lifter, said lifter vertically lifting said article receiving portion in order to move said article out-feeder to each of said article receiving zones,

such that the article outfeeder is lifted to a first receiving zone and receives a first box-shaped article from a respective supporting member, when the supporting member of said first article receiving zone is in the article releasing position, and wherein said articles arranged within the other article receiving zones are received by said out-feeder in the exact manner as said first article, such that a later-received article is stacked upon the first article so that all articles resultantly are in a stacked form.

5,605,434
IMPELLER HAVING TRANSPORT ELEMENTS DISPOSED ON A PRESSURE SIDE OF A COVER DISK FOR A CENTRIFUGAL PUMP FOR DIRTY LIQUIDS

Christian Haag, Halle; Christoph Jaeger, Gerolsheim; Wolfgang Kochanowski, Windesheim; Thomas Pensler, Langenbogen, and Rolf Witzel, Ebersburg/Weybens, all of Germany, assignors to KSB Aktiengesellschaft, Frankenthal, Germany

Filed Sep. 29, 1995, Ser. No. 536,956
Claims priority, application Germany, Sep. 30, 1994, 44 35 192.5
Int. Cl.[6] F04D *29/22*
U.S. Cl. 415—106 **6 Claims**



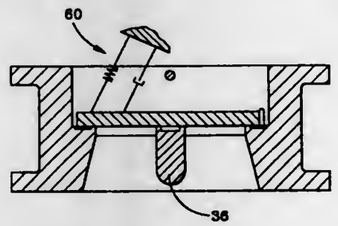
1. An impeller for transporting dirty liquids, said impeller comprising:

a cover disk having a suction side and a pressure side, said cover disk having at least one transport element disposed on said pressure side of said cover disk, said at least one transport element being asymmetrically disposed on said cover disk within an arc sector of a predetermined angle, said predetermined angle being less than 360°.

5,605,435
METHOD AND APPARATUS TO ACHIEVE PASSIVE DAMPING OF FLOW DISTURBANCES IN A CENTRIFUGAL COMPRESSOR TO CONTROL COMPRESSOR SURGE

Ronald L. Haugen, Mayfield, Ky., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Division of Ser. No. 238,994, May 6, 1994, Pat. No. 5,520,507.
This application May 30, 1995, Ser. No. 453,547
Int. Cl.[6] F04D *27/02*
U.S. Cl. 415—146 **8 Claims**



1. An apparatus for achieving passive damping of flow disturbances in a centrifugal compressor to control centrifugal compressor surge, the apparatus comprising:

a centrifugal compressor for compressing a low pressure fluid, the centrifugal compressor having an impeller, an inlet which communicates with an atmosphere and a discharge through which compressed air is supplied to a compressed air system;

a fluid flow control connected with the inlet for controlling the flow of a low pressure fluid to the compressor;

a check valve connected with the discharge for preventing high pressure fluid from back flowing to the compressor, the check valve having at least one valve plate;

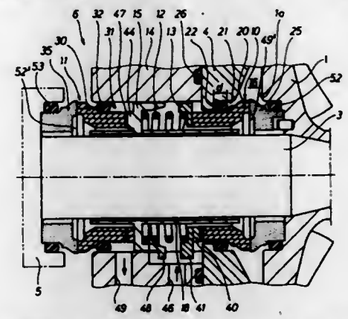
a vane diffuser assembly fluidly communicating with the impeller, the vane diffuser assembly forming an annular shaped plenum which communicates with a high static pressure fluid; and

means for damping low amplitude flow disturbances of the compressible fluid, the damping means comprising the at least one valve plate which is connected to passive elements to form a spring-mass-damper system to dampen low amplitude flow disturbances of the compressible fluid.

5,605,436
CENTRIFUGAL PUMP

Bent Pedersen, Århus C, Denmark, assignor to APV Fluid Handling Horsens A/S, Horsens, Denmark

Filed May 29, 1996, Ser. No. 655,019
Claims priority, application Denmark, May 24, 1995, 0596/95
Int. Cl.[6] F04D *29/08*
U.S. Cl. 415—170.1 **8 Claims**



1. A centrifugal pump provided with an impeller, a pump shaft and a pump housing as well as with a motor coupled to the pump shaft, and where a shaft seal device circumscribes the pump shaft and is provided with a first set of the sealing means arranged between the rear wall and the pump shaft and with a second set of sealing means arranged so as to prevent coolant such as cooling water from leaking between the shaft and a cooling unit mounted on the outer surface of the rear wall, and where a preloaded spring means such as a coil spring is provided between the two sets of sealing means, wherein the spring means partly abuts a thrust plate which in turn abuts the first set of sealing means and partly abuts a thrust collar which in turn abuts the second set of sealing means and that the thrust collar is interconnected with a flush pipe extending inside said collar, but around the pump shaft and further arranged under the two sets of sealing means, the flush pipe further allowing coolant to pass on its inner surface as well as on its outer surface.

5,605,437
COMPRESSOR AND METHOD OF OPERATING IT

Pierre Meylan, Neuenhof, Switzerland, assignor to ABB Management AG, Baden, Switzerland

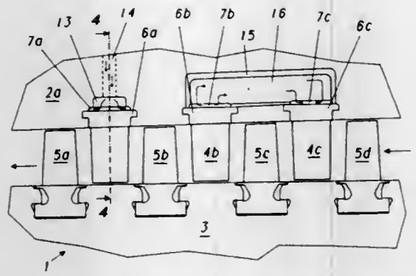
Filed Jun. 3, 1994, Ser. No. 253,985
Claims priority, application Germany, Aug. 14, 1993, 43 27 376.9
Int. Cl.[6] F01D *25/10;11/14*
U.S. Cl. 415—175 **13 Claims**

1. A compressor for a gas turbine, comprising:

a rotor rotatably supported about a compressor center line;

a plurality of rotor blades mounted at a periphery of the rotor;

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a compressor casing, which concentrically surrounds the rotor, a radial clearance being provided between the outer ends of the rotor blades and the inner wall of the compressor casing, wherein the compressor casing includes a plurality of peripheral heating passages positioned in series parallel to the compressor center line for circulating a heated compressed air through the compressor casing to reduce temperature generated fluctuations in radial clearance between the casing and the blades; and

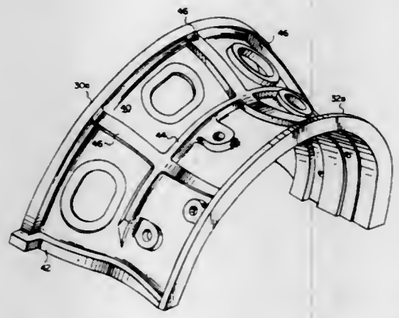
a separate heating appliance connected to deliver heated compressed air to the peripheral heating passages, the heating appliance including a heating system, a compressed air connection to receive compressed air from a compressed air source, and a compressed air supply conduit to carry compressed air through the heating system to the compressor casing, the heating appliance being operable independently of the operation of the compressor.

5,605,438

CASING DISTORTION CONTROL FOR ROTATING MACHINERY

Steven S. Burdgick; John R. Hess, both of Clifton Park; Gary D. Mercer, Ballston Lake, all of N.Y.; Gregory A. Crum, Greenville, S.C.; James E. Cencula, Ballston Lake, and John A. Eastman, Clifton Park, both of N.Y., assignors to General Electric Co., Schenectady, N.Y.

Filed Dec. 29, 1995, Ser. No. 580,694
Int. Cl.[6] F01D *25/26*
U.S. Cl. 415—182.1 **9 Claims**



1. In a rotating machine having an axis of rotation and operable in a high pressure and high temperature environment, a casing for controlling distortion about said axis, comprising:

a pair of generally semi-cylindrical casing halves, each having a pair of generally radially outwardly directed, axially extending flanges along diametrically opposite sides having bolt holes offset outwardly of the casing for receiving bolts for securing the casing halves to one another to form an annular housing for the rotating machine about its axis of rotation; and

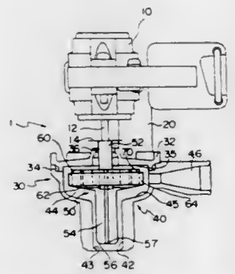
a generally circumferentially extending rib about each casing half disposed between opposite axial ends of the casing half and terminating adjacent said flanges, said rib being located to prevent inward radial distortion of the flanges, when the casings are secured together, caused by the bolt hole locations offset outwardly of the casing and meridional roll of the housing resulting from the high temperature and high pressure environment, when the casing halves are secured to one another.

5,605,439

DRAINAGE PUMP

Takashi Endoh; Tatsushi Ninomiya, and Masayuki Imai, all of Tokyo, Japan, assignors to Fujikoki Corporation, Tokyo, Japan

Filed May 22, 1996, Ser. No. 651,524
Claims priority, application Japan, Aug. 29, 1995, 7-220250
Int. Cl.[6] F04D *1/00*
U.S. Cl. 415—199.4 **4 Claims**



1. A drainage pump having a motor, an impeller coupled to a drive shaft of the motor, and a pump housing accommodating the impeller therein, wherein said impeller comprises:

a shaft coupled to the drive shaft of said motor;

a plurality of large-radius vanes in form of flat plates radially extending from said shaft;

small-radius vanes in form of flat plates continuous from lower ends of said large-radius vanes;

a cylindrical wall member connecting outer circumferential edges of said large-radius vanes; and

an annular member extending radially inward from said cylindrical wall member along lower edges of said large-radius vanes,

the height of the upper edge of said cylindrical member being lower than the height of the upper edges of said large-radius vanes.

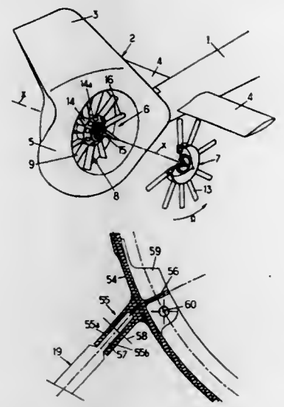
5,605,440

FLOW-STRAIGHTENER VANE MADE OF COMPOSITE, FLOW-STRAIGHTENER INCLUDING IT, FOR A COUNTER-TORQUE DEVICE WITH DUCTED ROTOR AND DUCTED FLOW-STRAIGHTENING STATOR, AND METHOD FOR MANUFACTURING THEM

Claude D. Bocoviz, Marseille; André Gautier, Rognes, and Henri F. Barquet, Chateauneuf les Martigues, all of France, assignors to Eurocopter France, Marignane Cedex, France

Filed Jun. 6, 1995, Ser. No. 466,296
Claims priority, application France, Jun. 10, 1994, 94 07141
Int. Cl.[6] B64C *27/20*; **F01D** *9/00*
U.S. Cl. 415—200 **24 Claims**

1. A counter-torque device for a rotary-wing aircraft comprising:



a duct passing through a rear part of the aircraft and having a duct axis substantially transverse to a longitudinal axis of the aircraft, said duct including an annular duct wall;

a rotor mounted substantially coaxial with the duct axis in said duct;

a rotational drive mechanism fastened substantially coaxially to the duct axis in said duct which drives said rotor to create an airflow in said duct; and

a flow-straightening stator which is fastened in said duct downstream of said rotor with respect to a direction of the airflow, said stator including (a) an annular central body to which said drive mechanism and the associated said rotor are mounted, and (b) composite vanes, each said vane having

a main vane section provided with an aerodynamic profile for straightening out the airflow downstream of said rotor to be towards the duct axis,

a vane root at a radially inner end of said main vane section which is attached to said central body and a vane tip at a radially outer end of said main vane section which is attached to said annular duct wall, whereby said vanes support said central body in said duct and hence mount said drive mechanism and said rotor in said duct,

a laminated suction face and a laminated pressure face on each said main vane section, each said laminated face comprising a pile of at least three layers of reinforcing carbon fibers made rigid by a thermosetting synthetic agglomerating resin,

at least an internal one or an external one of said three layers of said pile comprising two sets of unidirectional fibers being orientated from approximately 30° to approximately 70° with respect to each other and being substantially symmetrically with respect to a longitudinal vane axis of said vane,

an intermediate one of said three layers of said pile comprising a set of unidirectional fibers orientated substantially along the longitudinal vane axis, and

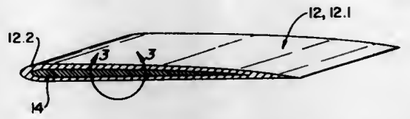
at least one of said vane tip or said vane root having a laminated fastening tab, said fastening tab comprising (1) a pile of extensions of the reinforcing fibers of the three layers of said pile of an associated one of said laminated faces and (2) at least one complementary pile including (i) a central layer of unidirectional reinforcing fibers orientated substantially parallel to the reinforcing fibers of said intermediate layer, and (ii) two plies of balanced fabric of reinforcing fibers between which said central layer is sandwiched, said plies of fabric having a warp which is orientated substantially parallel to the unidirectional fibers of said central layer.

5,605,441

COMPRESSOR BLADE CONTAINMENT WITH COMPOSITE STATOR VANES

Samuel M. Boszor, and Stuart A. Sanders, both of Palm Beach Gardens, Fla., assignors to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 194,200, Feb. 9, 1994, Pat. No. 5,509,781.
This application Nov. 15, 1995, Ser. No. 559,502
Int. Cl.[6] F01D *9/04*
U.S. Cl. 415—200 **4 Claims**



1. A gas turbine engine comprising stator vanes located between compressor stages, characterized by:

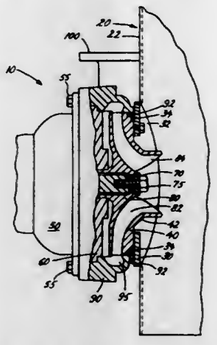
the stator vanes including a composite shell of fibers laid-up over a core, said fibers comprising a plurality of plies of graphite fibers in a binder bonded to said core, said core comprising randomly oriented fibers selected to have an elongation velocity that exceeds the elongation velocity of said fibers in said composite shell.

5,605,442

CENTRIFUGAL PUMP FOR PUMPING FIBER SUSPENSIONS

George Wilson, Skaneateles, and Daniel R. Roll, Seneca Falls, both of N.Y., assignors to Goulds Pumps Incorporated, Seneca Falls, N.Y.

Continuation of Ser. No. 78,575, Jun. 17, 1993, Pat. No. 5,413,460. This application May 8, 1995, Ser. No. 437,187
Int. Cl.[6] F04D *1/00;29/60*
U.S. Cl. 415—206 **18 Claims**



1. A centrifugal pump for pumping high consistency fiber suspensions from a cylindrical vessel including a side wall defining a cylindrical contour, the side wall further including an opening therein, said pump comprising:

a sideplate disposed adjacent to the opening in said side wall;

a pump housing assembly adapted to be in a fixed relation to said sideplate and including a shaft and a bearing frame rotatably supporting said shaft;

an impeller mounted for rotation with said shaft, said impeller having vanes including elongated portions which extend axially, said vanes and elongated portions having radially outermost surfaces which form an outside contour including a substantially axial portion; and

at least a portion of said sideplate extending at least partially and in close proximity along the outside contour of said vanes for

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at least partially determining the directions from which the fiber suspensions enter said impeller;

said impeller being mounted to said vessel so that a portion of said impeller extends beyond the cylindrical contour defined by said side wall of said cylindrical vessel in the area of said opening in said wall; said impeller thereby directly contacting said high consistency fiber suspensions within said cylindrical vessel.

5,605,443

COMPRESSOR SET

Rudolf Schöning, Hohenroth, and Manfred Balling, Bad Neustadt, both of Germany, assignors to Siemens Aktiengesellschaft, München, Germany

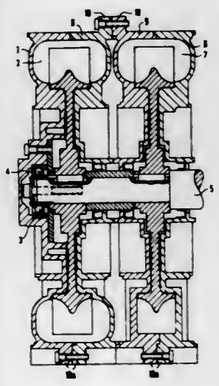
PCT No. PCT/DE93/00988, § 371 Date May 4, 1995, § 102(e) Date May 4, 1995, PCT Pub. No. WO94/11637, PCT Pub. Date May 26, 1995

PCT Filed Oct. 18, 1993, Ser. No. 428,099

Claims priority, application Germany, Nov. 9, 1992, 9215231

Int. Cl.[6] F01D 25/24

U.S. Cl. 415—214.1 12 Claims



1. A compressor set comprising:

at least two side-channel compressors, said compressors being in an axially adjacent arrangement, wherein each of said compressors includes:

a casing comprising at least an inner casing half and an outer casing half, said inner and outer casing halves having an outer circumference, such that the inner casing halves of said compressor are located in a middle of said compressor set and are cast in a substantially similar manner;

radially, outwardly projecting connecting plates provided on said outer circumference of said inner and outer casing halves; and

connecting elements joining together said inner casing halves and said inner and outer casing halves of each of said side-channel compressors, said connecting elements capable of being inserted into corresponding openings in said connecting plates, such that the connecting plates coupled to said inner casing halves of said compressors are designed at least on a first end face of said casing halves so that spaces exist on both sides of each of said connecting elements mounted in the middle of the circumference of said connecting plates, such that further connecting elements are mounted in said spaces.

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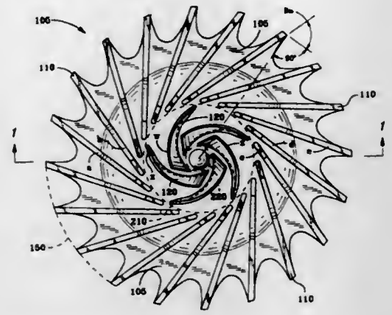
PUMP IMPELLER HAVING SEPARATE OFFSET INLET VANES

Alan Paton, Nottinghamshire, United Kingdom; Bruno Schiavello, Millburn, N.J., and Giovanni Rigamonti, Seveso, Italy, assignors to Ingersoll-Dresser Pump Company, Liberty Corner, N.J.

Filed Dec. 26, 1995, Ser. No. 578,299

Int. Cl.[6] F01D 1/02

U.S. Cl. 416—183 13 Claims



1. A fluid impeller for a centrifugal pump comprising:

a hub having a substantially disk-like form with first and second surfaces, a center and an edge, an axis of rotation, circular symmetry about the axis, and provision for being rotatably driven;

a first plurality of vanes projecting substantially axially and perpendicularly from the first surface of said hub and extending radially outwardly from a locus near the center of said hub to another locus near the edge of said hub; and

a second plurality of vanes, separate from said first plurality of vanes; said second plurality of vanes being twisted, projecting substantially axially and perpendicularly from said first surface of said hub, and extending radially outwardly to said locus near the center of said hub from another locus nearer the center of said hub.

5,605,445

LIQUID RING MACHINE HAVING A RELIEF PASSAGE FOR EXCESS LIQUID

Peter Trimborn, Feucht/Bundesrepublik, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

PCT No. PCT/DE94/00021, § 371 Date Jul. 21, 1995, § 102(e) Date Jul. 21, 1995, PCT Pub. No. WO94/17309, PCT Pub. Date Aug. 4, 1994

PCT Filed Jan. 11, 1994, Ser. No. 491,985

Claims priority, application Germany, Jan. 25, 1993, 43 01 907.2

Int. Cl.[6] F04C 19/00

U.S. Cl. 417—68 7 Claims

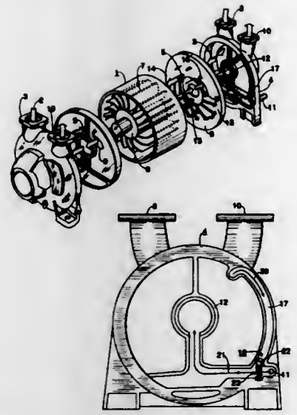
1. A liquid ring machine, comprising:

a rotor including a rotor shaft;

a machine housing surrounding said rotor, said machine housing including at end faces thereof two lateral shields supporting said rotor shaft such that said rotor is eccentrically positioned in said machine housing;

a control body in said machine housing for the rotor, said control body having a suction slot in a suction region of the control body and a pressure slot in a pressure region of the control body, said control body also including a relief passage in the pressure region; and

a feed line, located in the housing, for feeding working fluid to the machine, the feed line being connected to said relief passage so that excess liquid exiting through the relief passage is fed to the working liquid.



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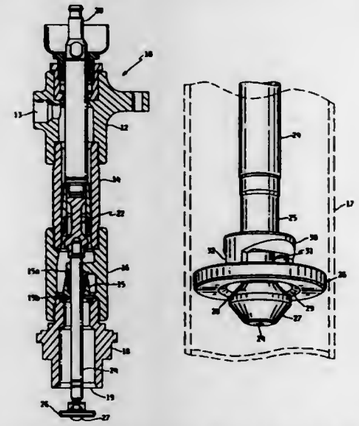
HIGH VISCOSITY MATERIAL PUMP HAVING VALVED PRIMING PISTON

James J. Handzel, Minnetonka, and Bradley K. Voigt, Maple Lake, both of Minn., assignors to Graco Inc., Minneapolis, Minn.

Filed Oct. 18, 1994, Ser. No. 324,921

Int. Cl.[6] F04B 7/00

U.S. Cl. 417—262 13 Claims



1. In a reciprocable liquid pump having a piston rod and piston adapted for connection to a driving source, and a piston valve assembly in the piston and reciprocably movable along an axis within a main pumping cylinder, and an intake valve housing having an intake valve and intake valve seat, connected to the main pumping cylinder, the improvement comprising:

a) a priming cylinder connected to said intake valve housing in alignment with said axis;

b) a priming piston rod having a first end connected to said piston valve assembly in alignment with said axis, and having a second end;

c) a priming valve element affixed to said second end; and

d) a priming piston slidably movable along said priming piston rod and having a central opening and valve seat engageable against said priming valve element.

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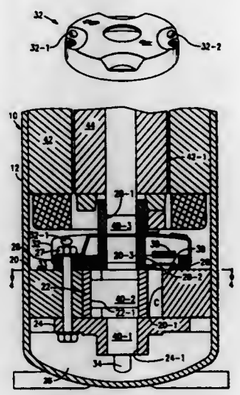
NOISE REDUCTION IN A HERMETIC ROTARY COMPRESSOR

Han-Jun Kim, Liverpool, N.Y., and In-Soo Hwang, Kyungki-do, Rep. of Korea, assignors to Carrier Corporation, Syracuse, N.Y.

Filed Jul. 3, 1996, Ser. No. 676,870

Int. Cl.[6] F04B 39/00; F04C 29/06

U.S. Cl. 417—312 4 Claims



1. In a high side rotary hermetic compressor means having a shell bearing means and muffler means coacting to define an annular muffler chamber, a single discharge port overlain by said muffler chamber whereby said muffler chamber receives discharge gas passing through said discharge port the improvement comprising:

a pair of circumferentially spaced facing surfaces formed in said muffler means;

an outlet formed in each of said facing surfaces whereby discharge gas entering said muffler chamber passes therefrom via said outlets in a common plane but is opposing circumferential directions whereby noise canceling takes place.

5,605,448

AC FUEL PUMP

Thomas B. Martin, Sr., 1620 SE. Cascade Ave., Vancouver, Wash. 98684

Filed Jul. 31, 1995, Ser. No. 509,366

Int. Cl.[6] F04B 17/00

U.S. Cl. 417—360 7 Claims

1. A pump comprising:

an AC motor having a housing and a rotor mounted vertically in the housing;

a cap removably secured to the housing;

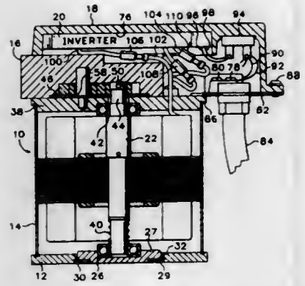
a pump body clamped between the housing and the cap, the pump body and the housing cooperatively defining a pump cavity;

the rotor having an upper end extending into the pump cavity;

pump means within the pump cavity and operatively connected to the rotor upper end;

an inlet port and an outlet port in communication with the pump cavity; and

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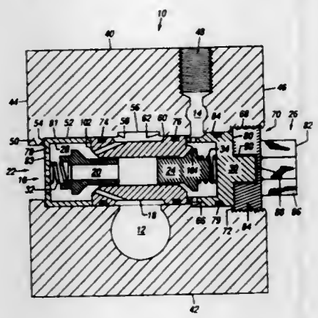
a DC-AC inverter mounted within the cap and having an output electrically connected to the AC motor and an input electrically connected to a DC current source.

5,605,449

SUCTION AND DISCHARGE VALVE ARRANGEMENT FOR A HIGH PRESSURE PISTON PUMP

Glen E. Reed, Houston, Tex., assignor to Wendy Buskop, Houston, Tex.

Filed Jan. 25, 1996, Ser. No. 590,017
Int. Cl.[6] F04B *53/10;* **F16K** *15/00*
U.S. Cl. 417—454 **14 Claims**



1. A fluid side of a high pressure water pump, said fluid side to be used with a pump having a power side having at least one piston and at least one stuffing box, said fluid side comprising:

a unitary substantially block shaped fluid end defining a generally cylindrical fluid inlet bore, a generally cylindrical fluid outlet bore, and at least one generally cylindrical working bore intersecting said fluid inlet bore and said fluid outlet bore;

at least one substantially tubular suction/discharge seat sealably positioned in the at least one working bore, said suction/discharge seat having a longitudinal axis, a suction end, a discharge end, an outside surface extending between the suction end and the discharge end, and an inside surface extending between the suction end and the discharge end, said at least one substantially tubular suction/discharge seat further comprising

a first outside surface having a first end at the suction end of the suction/discharge seat, and a second end, said first outside surface defining a first outside diameter,

a second outside surface having a first end adjacent to the second end of the first outside surface, and a second end, said second outside surface defining a second outside diameter smaller than the first outside diameter,

a third outside surface having a first end adjacent to the second end of the second outside diameter, and a second end at the discharge end of the suction/discharge seat, said third outside surface defining a third outside diameter substantially similar to the first outside diameter,

a first annular shoulder joining the first outside surface with the second outside surface,

a second annular shoulder joining the second outside surface with the third outside surface,

an inside surface extending from near the inlet end to the near the outlet end, said inside surface defining an inside diameter,

a first seating surface located at the suction end, and

a second seating surface located at the discharge end,

wherein said suction/discharge seat defines a plurality of fluid holes at the suction end, said fluid holes providing a flow path of a fluid from the fluid inlet bore to the inlet end of the fluid end;

at least one suction valve element linearly movable within said at least one working bore and positioned near an inlet end of the at least one working bore;

at least one discharge valve element linearly movable within said at least one working bore;

at least one end plug removably positioned in an outlet end of the at least one working bore, said end plug having an outside diameter which is greater than the inside diameter of the working bore, a first end, and a second end and is used as the means for seating the tubular suction/discharge seat;

at least one suction valve element stop positioned in the at least one working bore between the at least one suction valve element and the inlet end of said working bore;

at least one discharge valve dement stop positioned in the at least one working bore between the at least one discharge valve element and the at least one end plug;

at least one suction spring between said at least one suction valve element stop and said at least one suction valve element, said at least one suction spring having a first end and a second end and defining an outside diameter, said suction spring having the characteristic of biasing said at least one suction valve element against said at least one suction/discharge seat;

at least one discharge spring between said at least one discharge valve element stop and said at least one discharge valve dement, said at least one discharge spring having a first end and a second end and defining an inside diameter, said at least one discharge spring having the characteristic of biasing said at least one discharge valve element against said at least one suction/discharge seat; and

a means for removably fastening said fluid end to said power side, wherein the at least one working bore is in line with the at least one piston and at least one stuffing box and the inlet end of said at least one working bore is attached to an end of the at least one stuffing box; and

wherein the second outside surface of the at least one suction/discharge seat is in contact with the fluid inlet bore and wherein the at least one suction/discharge seat further segregates the intersection of the fluid inlet bore and the working bore from the intersection of the fluid outlet bore and the at least one working bore.

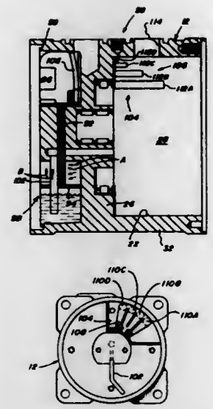
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NON-CONTACT VANE-TYPE FLUID DISPLACEMENT MACHINE WITH MULTIPLE DISCHARGE VALVING ARRANGEMENT

Thomas C. Edwards, 1426 Gleneagles Way, Rockledge, Fla. 32955

Continuation of Ser. No. 283,471, Jun. 28, 1994, abandoned. This application Nov. 9, 1995, Ser. No. 556,234
Int. Cl.[6] F03C *2/00;* **F01C** *1/00*
U.S. Cl. 418—15 **4 Claims**

1. A non-contact vane-type fluid displacement machine, comprising:



(a) a stator housing having an annular interior wall surface defining an interior bore having a longitudinal axis and a pair of opposing flat interior walls having wall surfaces extending in transverse relation to said annular interior wall surface and said longitudinal axis and closing opposite ends of said interior bore to define an interior cavity;

(b) a rotor supported in said interior bore of said stator housing between said opposing flat interior wall surfaces thereof and in an eccentric position relative to said annular interior wall surface thereof to undergo rotation relative to said stator housing about a central rotational axis laterally offset from said longitudinal axis said rotor having a pair of opposite flat end surfaces, an annular outer surface extending between said opposite flat end surfaces and at least one slot defined therein extending radially from said annular outer surface toward said central rotational axis and axially between said opposite flat end surfaces;

(c) at least one vane disposed in said slot of said rotor to undergo reciprocable movement in a radial direction relative to said central rotational axis of said rotor such that an outer tip portion of said vane is maintained in a non-contacting substantially sealed relationship with said annular interior wall surface of said stator housing, said at least one vane having a preselected arcuate thickness, and

(d) a discharge valving arrangement mounted on said stator housing, said valving arrangement including a plurality of discharge ports in said stator housing defined in spaced side-by-side relation with one another and circumferentially spaced from one another such that said outer tip portion of said vane passes said bores of said discharge ports one at a time in sequence with rotation of said rotor in said interior cavity of said stator housing, each of said plurality of discharge ports comprising:

(i) respective first portions in the form of full cylindrical holes defined in and extending through said stator housing and opening into said interior cavity at one of said wall surfaces of said opposing flat interior walls of said stator housing and adjacent to said annular interior wall surface thereof, each of said holes having an exit end and having an arcuate extent less than said preselected arcuate vane thickness.

(ii) respective second portions extending axially from said first portions and being defined in said annular interior wall surface of said stator housing in said cavity adjacent to said one of said opposite flat wall surfaces, and

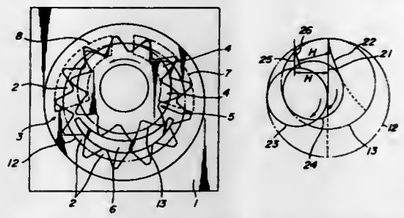
(iii) an assembly of multiple reed valves respectively mounted on said stator housing and overlying said exit ends of said holes and being separately actuable between opened and closed positions relative thereto.

5,605,451

FLUID APPARATUS OF AN INTERNAL GEAR TYPE HAVING DEFINED TOOTH PROFILES

Masaoki Saitoh, Hiki-gun, Japan, assignor to Tokyo Sintered Metal Company Limited, Tokyo, Japan

Filed Mar. 7, 1996, Ser. No. 612,312
Claims priority, application Japan, Mar. 14, 1995, 7-054297
Int. Cl.[6] F01C *1/10;* **F03C** *2/08;* **F04C** *2/10*
U.S. Cl. 418—150 **1 Claim**



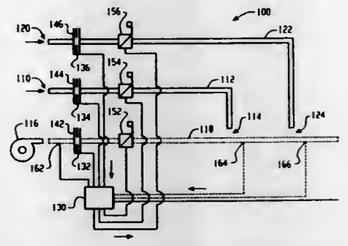
1. A fluid apparatus of an internal gear type, said apparatus comprising; an internally toothed gear rotatively mounted within a housing, an externally toothed gear disposed within said internally toothed gear so as to mesh therewith, and a crescent-shaped partition piece disposed within the housing between both gears, each tooth profile of said gears being defined by a line equidistant from an inner cycloid described by a rolling circle rolling along intermeshing pitch circles of said gears in an inscribed manner, the diameter of the rolling circle being equal to a radius of the intermeshing pitch circle of the internal gear.

5,605,452

METHOD AND APPARATUS FOR CONTROLLING STAGED COMBUSTION SYSTEMS

Thomas F. Robertson, Cleveland, and John L. Homa, Highland Heights, both of Ohio, assignors to North American Manufacturing Company, Cleveland, Ohio

Filed Jun. 6, 1995, Ser. No. 469,220
Int. Cl.[6] F23C *5/00*
U.S. Cl. 431—8 **18 Claims**



1. A method of controlling a staged combustion system comprising the steps of:

a) supplying a flow of at least a first reactant to a burner, wherein said reactant is supplied as at least a primary flow and a secondary flow;

b) flowing at least a second reactant into the primary flow and combusting to produce a primary combustion stage;

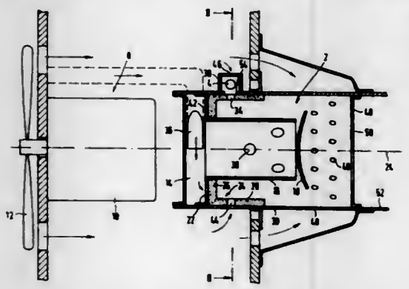
c) measuring the rates of the respective flows of said reactants to produce respective primary flow and second reactant flow signals;

d) establishing independent control over the respective primary flow and second reactant flow in response to said respective flow signals so that the primary combustion stage has a primary predetermined equivalence ratio;

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e) flowing the combusted products of the primary combustion stage into the secondary flow to produce a secondary combustion stage;
f) measuring the rate of the secondary flow to produce a secondary flow signal;
g) establishing independent control over the secondary flow in response to the secondary flow signal so that the primary and secondary combustion stages have an overall predetermined equivalence ratio; and
h) varying the respective flows of the first reactant and second reactant wherein the respective predetermined equivalence ratios are maintained by the respective independent controls in response to the respective flow signals.

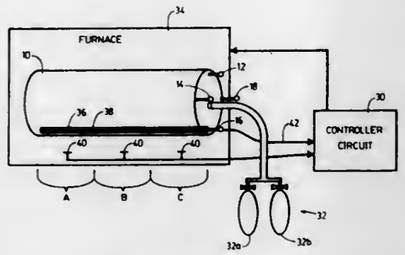
5,605,453
BURNER OF A VEHICLE HEATER
Erich Kenner, Esslingen; Herbert Langen, Altbach; Wolfgang Schaffert, Aichwald, and Peter Reiser, Esslingen, all of Germany, assignors to J. Eberspächer, Esslingen, Germany
PCT No. PCT/EP94/02813, § 371 Date Dec. 15, 1995, § 102(e) Date Dec. 15, 1995, PCT Pub. No. WO95/06224, PCT Pub. Date Mar. 2, 1995
PCT Filed Aug. 25, 1994, Ser. No. 571,891
Claims priority, application Germany, Aug. 26, 1993, 43 28 790.5
Int. Cl.[6] F23Q *7/08*
U.S. Cl. 431—262 **19 Claims**



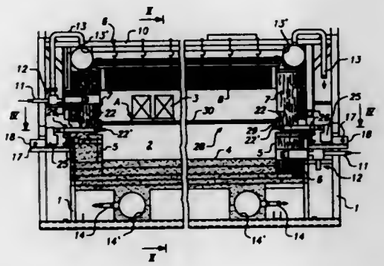
1. A burner comprising:
a combustion chamber including a cylindrical wall;
a porous lining positioned on an inner surface of said combustion chamber;
fuel supply means for supplying fuel to said porous lining;
glow plug means for igniting fuel evaporated from said porous lining, said glow plug means including a plug longitudinal axis, said glow plug means being positioned to cause said plug longitudinal axis to be substantially parallel to a tangential plane which is tangential to said cylindrical wall.

5,605,454
FOUR PORT TUBE TO EXTEND THE LIFE OF QUARTZ TUBES USED FOR THE WELL DRIVE PROCESS
Craig A. Bellows, and Curtis M. Herbert, Jr., both of San Antonio, Tex., assignors to VLSI Technology, Inc., San Jose, Calif.
Filed Oct. 12, 1995, Ser. No. 542,090
Int. Cl.[6] F27D *19/00*
U.S. Cl. 432—50 **22 Claims**

1. A device for use with a semiconductor processing apparatus, the semiconductor processing apparatus using a thermocouple, the device comprising:
a quartz tube elongated along a longitudinal axis, the quartz tube having multiple ports arranged at different positions on the radius of the quartz tube, the ports being arranged to orient objects placed into the tube through the ports in a direction along the longitudinal axis of the tube, the quartz tube being such that when each port is in a bottom position, an elongated thermocouple can be placed into quartz tube through the port in the bottom position in a direction along the longitudinal axis of the tube.

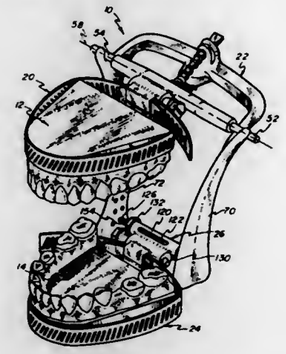


5,605,455
KILN WITH DISPLACEABLE FRAMES FOR THE FIRING OF MANUFACTURED ARTICLES
Carlo Melotti, Modena, Italy, assignor to Mori S.p.A., Modena, Italy
Continuation of Ser. No. 325,546, Oct. 18, 1994, abandoned, which is a continuation of Ser. No. 980,799, Feb. 26, 1993, abandoned. This application Aug. 3, 1995, Ser. No. 513,669
Claims priority, application Italy, Sep. 3, 1990, 40117/90
Int. Cl.[6] F27D *3/00*
U.S. Cl. 432—246 **9 Claims**



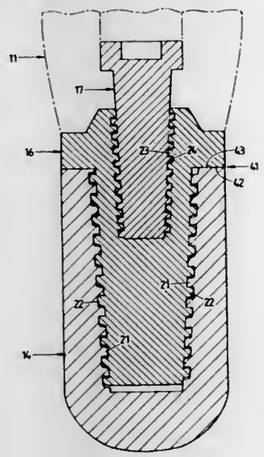
1. A kiln with displaceable frames for the firing of manufactured articles, said kiln having an inside and an outside and comprising:
an external support structure;
fitting within the external support structure, an insulating shell defining internal walls of the kiln; and
a formation of short transverse transport rollers passing through opposite internal walls of the kiln, said rollers being motorized and distributed in at least one pair of opposite rows to define at least one plane of transport, with each short roller having an outer end facing towards the outside of the kiln and an internal end facing towards the inside of the kiln, each roller being supported at said outer end, said internal end being free from any support, the internal ends of the rollers from each pair of opposite rows being aligned with each other;
wherein said internal end of each roller has a length which is a minute portion of the total length of each roller.

5,605,456
DENTAL ARTICULATOR
Richard Young, 313 E. Stroop Rd., Kettering, Ohio 45429
Filed Aug. 4, 1995, Ser. No. 511,530
Int. Cl.[6] A61C *11/00*
U.S. Cl. 433—60 **10 Claims**



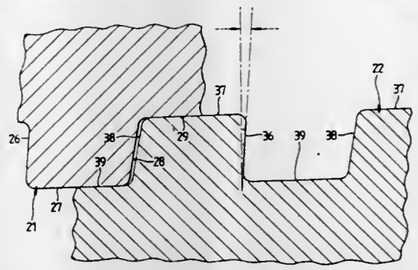
1. A dental articulator comprising:
a maxillary clamp;
a clamp support including a first post defining a first set of engagement sites, a second post defining a second set of engagement sites, and a hinge pivotally supporting the maxillary clamp;
a mandibular clamp; and
a mandibular clamp detent for engagement with corresponding engagement sites of the first and second sets of engagement sites to position the mandibular clamp relative to the maxillary clamp.

5,605,457
IMPLANT CONNECTOR
A. Gregory Bailey, Alabaster, and Aubrey C. Folsom, Jr., Pelham, both of Ala., assignors to Crystal Medical Technology, a division of Folsom Metal Products, Inc., Birmingham, Ala.
Filed Feb. 13, 1995, Ser. No. 387,320
Int. Cl.[6] A61K *8/00*
U.S. Cl. 433—174 **16 Claims**



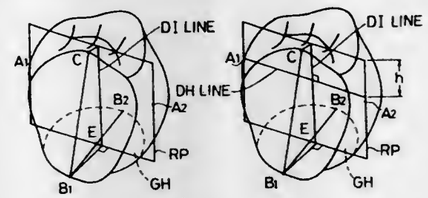
1. An implant assembly for use in a medical implant, including an implant provided with an abutment for attachment to a prosthesis by a threaded fastener, said abutment and said implant having a cooperative male and female thread and a thrust connection between connected parts, wherein the improvement comprises a thread profile for reducing stress on selected highly stressed threads of said abutment and implant by varying the incremental lead between the male and female thread.

5,605,458
NEGATIVE LOAD FLANK IMPLANT CONNECTOR
A. Gregory Bailey, Alabaster, and Aubrey C. Folsom, Jr., Pelham, both of Ala., assignors to Crystal Medical Technology, a division of Folsom Metal Products, Inc., Birmingham, Ala.
Filed Mar. 6, 1995, Ser. No. 398,605
Int. Cl.[6] A61C *8/00*
U.S. Cl. 433—174 **11 Claims**



1. A medical implant assembly having an improved thread profile for use in implant connectors, wherein a threaded member is used to attach components of the implant and is threadably engaged by a cooperatively formed threaded receptacle, said thread profile including a stab flank and a load flank separated by a crest with successive turns of said thread about a longitudinal axis being separated by a root, wherein said load flank has an inclination between positive 5 degrees relative to a plane normal to the longitudinal axis and a negative inclination.

5,605,459
METHOD OF AND APPARATUS FOR MAKING A DENTAL SET-UP MODEL
Takayuki Kuroda, Yokohama; Nobuyoshi Motohashi, Musashino, and Mutsushi Muramoto, Osaka, all of Japan, assignors to Unisn Incorporated, Osaka, and Takayuki Kuroda, Kanagawa, both of Japan
Filed Aug. 31, 1995, Ser. No. 522,458
Claims priority, application Japan, Apr. 14, 1995, 7-113790
Int. Cl.[6] A61C *9/00;11/00;19/04*
U.S. Cl. 433—214 **11 Claims**



1. A method of making a dental set-up model which comprises:
a profile acquiring step of acquiring electronic data by determining on a non-contact basis a shape of an impression model,

which is a replica of dental teeth and dental alveolar ridges of a patient by the use of a three-dimensional profile analyzer utilizing an irradiation beam, said electronic data being descriptive of the shape of the dental teeth and dental alveolar ridges;

a representative plane forming step of forming representative planes by cutting out the individual teeth, within the framework of the electronic data, said representative planes being defined by anatomically proximal contact points A1, anatomically distal contact points A2 and an intermediate point E between a bucco-cervical point B1 and a linguo-cervical point B2;

a reference line forming step of forming, for each tooth, a DI line, which is a straight line connecting between the bucco-cervical point B1 and a representative point C of a cusp or edge that has been projected onto the representative plane, and a DH line intersecting the DI line perpendicularly at a point spaced a predetermined distance from the representative point C towards the dental alveolar ridge;

an arranging step of arranging the DH lines for the respective teeth on a plane along a guide line descriptive of an ideal individual dental arch form;

a DH line height adjusting step of adjusting respective heights of the DH lines for all teeth which have been lined up to a predetermined height; and

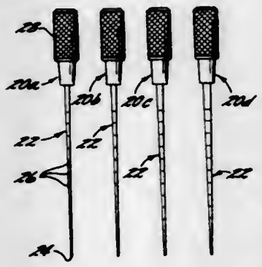
an inclination angle adjusting step of adjusting an angle of inclination of the representative plane for each tooth relative to a facial reference line set up on the face.

5,605,460

ENDODONTIC INSTRUMENT AND PROCEDURE

Derek E. Heath, and Jerry A. Mooneyhan, both of Johnson City, Tenn., assignors to Tulsa Dental Products, L.L.C., Tulsa, Okla.

Filed Apr. 26, 1995, Ser. No. 427,806
Int. Cl.[6] A61C *5/02*
U.S. Cl. 433—224 **14 Claims**



1. A kit comprising a plurality of endodontic obturating instruments which are adapted for use in performing root canal therapy, with each of the instruments comprising an elongate blade having a proximate end and an opposite distal end, with the blade of each of said instruments having circular cross-sectional outline and a smooth, non-fluted exterior surface, and with the blades of said instruments respectively having progressively increasing tapers.

5,605,461

ACOUSTIC TRIGGERED LASER DEVICE FOR SIMULATING FIREARMS

Gary E. Seeton, 203 Fireside, College Station, Tex. 77840

Filed Oct. 27, 1994, Ser. No. 330,199
Int. Cl.[6] F41G *3/26*
U.S. Cl. 434—21 **43 Claims**

1. A device for mounting on a firearm and for momentarily emitting a beam of light to simulate the firing of the firearm, wherein the firearm includes a firing mechanism, and wherein activation of the firing mechanism causes an acoustical energy pulse to be generated, the device comprising:

means for sensing the acoustical energy and producing a voltage pulse having an amplitude in response to the acoustical energy pulse, said voltage pulse amplitude being proportional to the energy of the acoustical energy pulse;

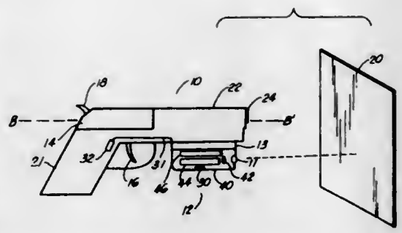
means for setting a threshold voltage;

an amplifier having a non-inverting input, an inverting input, and an output, wherein the inverting input is coupled to said means for setting a threshold voltage and the non-inverting input is coupled to said means for sensing;

means coupled to the output of said amplifier for asserting an activation signal for at least a predetermined duration if said voltage pulse amplitude is above said threshold voltage;

means for emitting the beam of light when powered; and

means responsive to said activation signal and coupled to said light beam emitting means for powering said light beam emitting means when said activation signal is asserted.

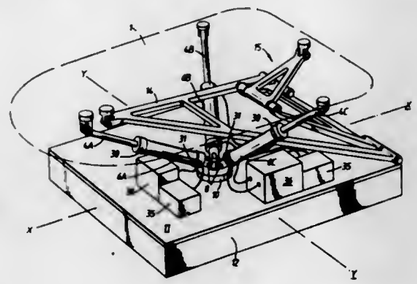


5,605,462

MOTION IMPARTING APPARATUS

Phillip R. M. Denne, Bournemouth, United Kingdom, assignor to Denne Developments Ltd., Bournemouth, England

PCT No. PCT/GB92/01279, § 371 Date Mar. 14, 1994, § 102(e) Date Mar. 14, 1994, PCT Pub. No. WO93/01577, PCT Pub. Date Jan. 21, 1993
PCT Filed Jul. 12, 1991, Ser. No. 178,319
Claims priority, application United Kingdom, Jul. 12, 1991, 9115180; Feb. 3, 1992, 9202252; Mar. 12, 1992, 9205436
Int. Cl.[6] G09B *9/00*
U.S. Cl. 434—55 **7 Claims**



1. An arrangement for controlling relative movement in a plurality of degrees of freedom between a platform and a reference plane comprising a fluid ram and pressurized gas reservoir for counterbalancing the weight of a platform, at least one electromagnetic impulse drive actuator in the form of a linear electromagnetic ram for applying an impulsive force between the platform and the reference plane, and control means for controlling the actuator to alter the instantaneous position or orientation of the platform with respect to the reference plane in a predetermined manner, wherein the fluid ram and the electromagnetic ram form a combined assembly.

5,605,463

PERFORMANCE OF ADD IN PRINTED CIRCUIT CARDS FOR COMPUTER SYSTEMS

Duncan D. MacGregor, Shingle Springs, Calif., and Daryl J. Nelson, Beaverton, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed May 16, 1994, Ser. No. 243,395
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—64 **21 Claims**



1. In an add in card for a host computer system consisting of a card having a printed circuit board surrounded and supported by a frame, a first connector mounted to said frame and electrically connected to said printed circuit board and having top and bottom covers attached to said frame and thereby enclosing said printed circuit board and a portion of said first connector and 2) a header which is electrically and mechanically connected to said host computer and having a first connector included therein and electrically connected to said host computer, said first connector adapted to mate with the first connector in said card, the improvement comprising:

a first plurality of electrically conductive and mechanically deformable interconnects mounted on said card substantially adjacent to said first connector and electrically connected to said printed circuit board, said interconnects being accessible through one of said covers of said card;

a second plurality of electrically conductive interconnects mounted to said header and electrically connected to said host computer and positioned to make electrical contact with said first plurality of electrically conductive interconnects mounted on said card when said card is inserted into said header.

5,605,464

IC PACKAGE CONNECTOR

Hiroshi Ikesugi, Yokohama, Japan, and George M. Simmel, The Waterside, Singapore, assignors to Molex Incorporated, Lisle, Ill.

Filed Mar. 22, 1994, Ser. No. 216,223
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—70 **18 Claims**

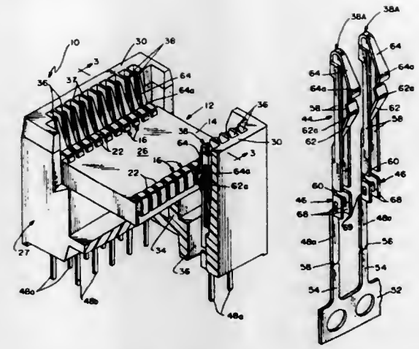
1. In an IC connector for an IC package which includes a plurality of J-bend type leads arranged in parallel rows along opposite sides of an IC package body, each lead including a vertical portion and a bent portion at each end thereof extending toward the body, the connector including

a housing having a package-receiving recess defined by generally parallel opposite side walls, a bottom wall and a row of terminal-receiving passages extending through the bottom wall and along the inside of each of said side walls, and

a plurality of stamped and formed terminals received in said passages, each of said terminals including a contact section for contacting a respective one of the leads of the IC package, a retention section for fixing the terminal in a respective one of the passages and a tail section exposed exteriorly of the housing,

wherein the improvement comprises

said contact section of each said terminal having a generally channel-shaped cross-section to define a pair of rigidifying side walls extending in planes generally transverse to the side walls of the housing and a central base portion joining the rigidifying side walls, and a pair of resilient cantilevered beam portions formed from said central base portion and defining a pair of spring contacts projecting into said recess toward respective one of the leads of the IC package.

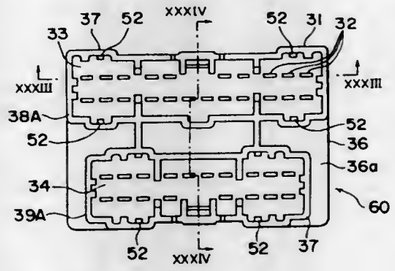


5,605,465

BRANCH JOINT BOX

Makoto Kobayashi, and Tsutomu Naitou, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Division of Ser. No. 329,827, Oct. 27, 1994, Pat. No. 5,490,794. This application Nov. 14, 1995, Ser. No. 557,822
Claims priority, application Japan, Nov. 5, 1993, 5-277066; Feb. 11, 1994, 6-20574
Int. Cl.[6] H01R *9/24*
U.S. Cl. 439—76.2 **4 Claims**



1. A branch joint box, comprising:

a base plate; and

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a pair of connector coupling portions formed on opposite faces of said base plate so as to oppose each other;

said base plate having a plurality of insertion openings for inserting therethrough bus bars, each bus bar including an elongated base portion and at least one pair of tabs extending from opposite sides of said base portion;

said insertion openings extending through said base plate so that said connector coupling portions communicate with each other;

wherein said bus bars are secured in respective insertion openings, such that said tabs project into respective connector coupling portions;

at least one partition wall portion is provided at a predetermined interval in each of said insertion openings so as to divide each of said insertion openings into a plurality of tab insertion holes for inserting respective tabs therein; and

a retainer plate having a plurality of through-holes for inserting respective tabs therethrough;

wherein one of said tabs is inserted through each of said through-holes such that said retainer plate is retained in one of said connector coupling portions, while the other of said tabs is inserted into each of said tab insertion holes;

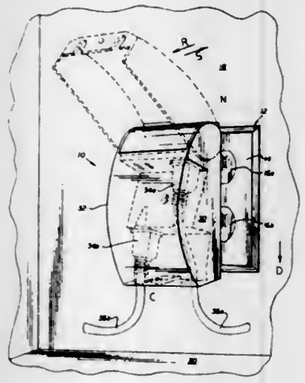
wherein said bus bars are gripped between said retainer plate and said partition wall portions so as to be secured in respective insertion openings.

5,605,466

WALL OUTLET ADAPTER HAVING SAWTOOTH PROFILE

Thomas E. Devlin, Brighton; Karl T. Ulrich, Cambridge, both of Mass., and George Favaloro, Houston, Tex., assignors to New Vector Products, Inc., Cambridge, Mass.

Filed Jan. 12, 1995, Ser. No. 371,950
Int. Cl.[6] H01R *13/44*
U.S. Cl. 439—144 **24 Claims**



1. An electrical outlet adapter comprising:

a) a base, comprising:

i) a shell comprising:

A) a support face comprising a substantially planar annular perimeter, having:

I) a cord end;

II) an oppositely disposed nose end; and

III) two sides, each connecting said cord end to said nose end;

B) a room face, spaced away from said support face and generally coextensive therewith, comprising:

I) a cord end socket surface and a nose end socket surface, spaced from each other and substantially parallel, each socket surface having a room edge and a support edge and forming an angle with said support face of between 90° and 135° as measured from the cord end of said support face;

II) a medial surface that connects the room edge of said cord end socket surface with the support edge of an adjacent socket surface relatively noseward; and

III) piercing each said socket surface, at least one set of socket holes adapted to receive a multi-prong electrical power plug;

C) a first side that joins said room face to a first side of said support face; and

D) a second side that joins said room face to the second side of said support face;

ii) adjacent each set of socket holes, between said socket holes and said support face, an electrical conductor configured to mate with said multi-prong electrical power plug when inserted into said set of holes; and

iii) connected to each said electrical conductor, an electrical network that extends beyond said support face away from said room face and is configured as a multi-prong electrical power plug;

b) a cover comprising:

i) a main plate that extends over an area substantially at least as large as said medial surface of said base, said main plate comprising:

A) a cord end;

B) a nose end; and

C) two side edges, each connecting said cord end to said nose end; and

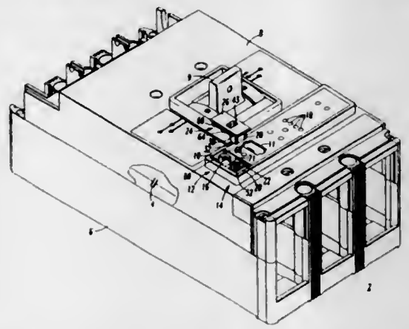
ii) means for attaching said main plate to said base, movably between a closed position and an open position, wherein in said closed position, an opening is defined between said cord end of said cover and said shell to accommodate the passage of electrical cords therethrough.

5,605,467

COVER FOR BATTERY COMPARTMENT AND COMMUNICATIONS PORT

H. Richard Beck, Moon Township, and Kenneth M. Fischer, Union Township, both of Pa., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jan. 19, 1995, Ser. No. 375,454
Int. Cl.[6] H01R *13/44*
U.S. Cl. 439—148 **9 Claims**



1. A cover for a communications port and an aperture at a surface of an electrical switching device, the communications port having a recess having a shoulder, said cover comprising:

cover means with an opening for covering at least the communications port and the aperture; and

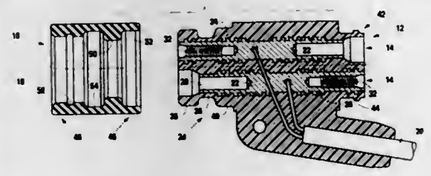
plug means having a proximate end attached to said cover means and having a distal end for insertion within the recess of the communications port, said plug means including latch means connected to the distal end of said plug means having a detent insertable into the recess of the communications port in order to engage the shoulder of the recess and secure said cover means to the communications port, the latch means being a leaf spring means having a fixed end cantilevered from the distal end of said plug means and having a free end which protrudes through the opening of said cover means, the free end of the leaf spring means being movable toward said plug means in order to disengage the detent of said plug means from the shoulder of the recess of the communications port, said cover means including frangible locking means for holding the leaf spring means away from said plug means in order to prevent disengagement of the detent of said plug means from the shoulder of the recess of the communications port, the frangible locking means being adjacent the opening of said cover means and passing around the leaf spring means for holding the leaf spring means, and being breakable in order to permit disengagement of the detent of said plug means from the shoulder of the recess of the communications port.

5,605,468

ELECTRICAL CONNECTOR ASSEMBLY HAVING REPLACEABLE SLEEVE SEAL

Richard G. Wood, Magnolia, Tex., assignor to Tescorp Seismic Products, Inc., Houston, Tex.

Filed Nov. 22, 1995, Ser. No. 562,017
Int. Cl.[6] H01R *13/52*
U.S. Cl. 439—282 **9 Claims**



1. An electrical connector assembly comprising:

a connector body having at least one electrical contact assembly extending in a direction parallel with a longitudinal axis of the connector body and embedded therein, and an end portion which has an outer surface defined by a first cylindrical surface having a predefined diameter and second and third cylindrical surfaces each of which have a predefined diameter different than said first surface, said second and third cylindrical surfaces being disposed in axially adjacent relationship with said first cylindrical surface whereby said first surface forms a circumferentially stepped surface between said second and third surfaces; and

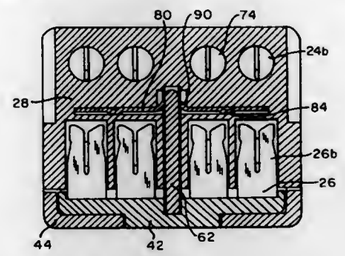
an elastomeric sleeve removably attached to said connector body having a longitudinal axis and two end portions spaced apart from each other along said longitudinal axis, at least one of said end portions having an inner surface defined by first, second and third bore surfaces, said second and third bore surfaces being disposed in axially adjacent relationship with said first bore surface whereby said first bore surface forms a circumferentially stepped surface between said second and third bore surfaces, and arranged to respectively forcibly abut a corresponding one of the first, second and third cylindrical surfaces of the connector body, said first bore surface having a free diameter less than the predefined diameter of said first cylindrical surface of the connector body, said second bore surface having a free diameter less than the diameter of said second cylindrical surface of the connector body, and said third bore surface having a free diameter less than the diameter of said third cylindrical surface of the connector body.

5,605,469

ELECTRICAL CONNECTOR HAVING AN IMPROVED CONDUCTOR HOLDING BLOCK AND CONDUCTOR SHIELD

Wayne T. Wellinsky, Moore, and Randal B. Lord, Inman, both of S.C., assignors to Thomas & Betts Corporation, Memphis, Tenn.

Filed Jan. 5, 1995, Ser. No. 369,062
Int. Cl.[6] H01R *4/24*
U.S. Cl. 439—417 **17 Claims**



1. An electrical connector comprising:

an elongate connector housing having a connector interconnection end and an opposed cable termination end;

a plurality of elongate electrical contacts supported by said housing, said contacts having interconnection portions adjacent said interconnection end of said housing and insulation displacing contact portions adjacent said cable termination end, said insulation displacing contact portions being arranged in transversely aligned, longitudinally offset and vertically spaced pair of contact rows within said housing, each said contact row including at least two said contacts;

a conductor holding block, insertably movably supportable by said housing with respect to said insulation displacing contact portions, said conductor holding block including contact slots which are arranged therein in transversely aligned, longitudinally offset and vertically spaced rows for receipt of said insulation displacement contact portions upon said insertable movement of said holding block, said conductor holding block further including transversely aligned vertically spaced conductor receiving passages in communication with said contact slots for receipt of said conductors, the conductor receiving passages being generally aligned in a pair of vertically spaced rows, one row of passages being alignable with said insulation displacing contact portions of one of said contact rows; and

a conductor shield positioned within said holding block between said rows of conductor receiving spaces and overlying said insulation displacing contact portions of one of said contact rows;

wherein said insertable movement of said conductor holding block effects simultaneous insulation displacing electrical connection of said conductors with said rows of insulation displacing contact portions.

5,605,470

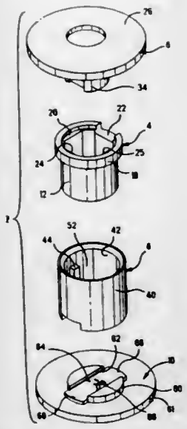
DETONATOR HARNESS UNIT AND A METHOD OF MAKING THE SAME

Jim Braithwaite, St. Albans, and Gary Langridge, Monks Gate, both of England, assignors to The Whitaker Corporation, Wilmington, Del.

Filed Jan. 12, 1995, Ser. No. 371,913
Int. Cl.[6] H01R *13/00;4/24*
U.S. Cl. 439—417 **9 Claims**

1. An electrical connector assembly comprising a first connector and a second connector that is matable with the first connector, each connector being attachable to a cable having conductors therein, the first connector including terminals having a first wire

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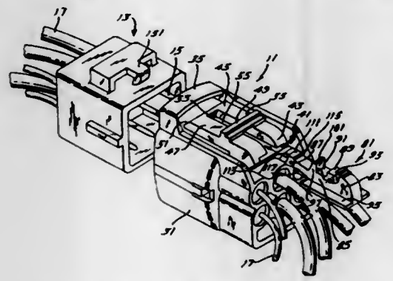
connecting portion and a second wire connecting portion where the first wire connecting portion is engaged with one of the conductors when the first connector is attached to the cable and the second wire connecting portion is accessible, the second connector includes a front face through which the cable is accessible to the second wire connecting portion of the terminals when the second connector is mated with the first connector; the connector includes a housing portion and a pressing block receivable therein, the housing portion includes an outer surface having the front face with at least one aperture for receiving the corresponding second wire connecting portion and a bore wherein the pressing block is receivable therein, the pressing block having a channel for receiving the cable and moving the cable downward adjacent the aperture where the channel laterally positions the cable relative thereto such that the conductors correspond to respective apertures.

5,605,471

ELECTRICAL CONNECTOR ASSEMBLY EMPLOYING A CONNECTOR POSITION ASSURANCE DEVICE

Robert G. Plyler, Vienna, Ohio, assignor to United Technologies Automotive, Inc., Dearborn, Mich.

Filed Feb. 1, 1995, Ser. No. 382,079
Int. Cl.[6] H01R *3/00*
U.S. Cl. 439—489 **28 Claims**



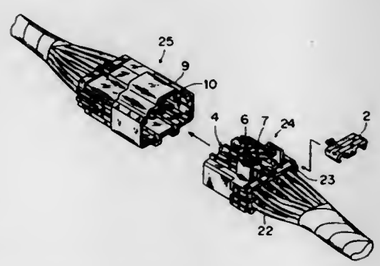
1. An electrical connector assembly comprising:
a first electrical connector having a locking arm defined by a proximal end joined to a body of said first electrical connector, said locking arm further defined by a distal end flexibly projecting in a longitudinal manner from said body, a substantially transversely oriented locking surface disposed upon said distal end of said locking arm;
a connector position assurance device including a base, a finger and a median segment therebetween, a fin upwardly projecting from said median segment;
a thinned section of said connector position assurance device being disposed substantially between said finger and said median segment, said thinned section allowing for additional flexure of said connector position assurance device thereat;
said fin preventing said connector position assurance device from becoming inadvertently disengaged from said first electrical connector by being abuttable against a transversely oriented disengagement portion of said first electrical connector; and
a second electrical connector mating with said first electrical connector, a latching arm of said second electrical connector having a barb projecting from a distal end thereof, said barb flexing said distal end of said locking arm of said first electrical connector and said finger of said connector position assurance device upon insertion therepast.

5,605,472

CONNECTOR FITTING DETECTION MECHANISM

Hitoshi Sakai, and Kazuto Ohtaka, both of Haibara-gun, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Jul. 7, 1995, Ser. No. 499,576
Claims priority, application Japan, Jul. 12, 1994, 6-159857
Int. Cl.[6] H01R *3/00*
U.S. Cl. 439—489 **3 Claims**



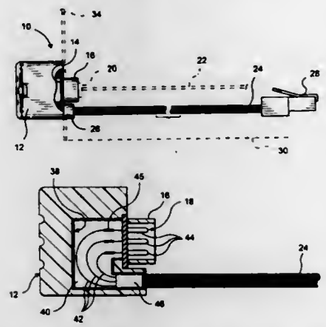
1. A mechanism for detecting a perfect fitting of two mating connectors, comprising:
a first connector housing;
second connector housing;
a resilient locking arm provided on said first connector housing, said resilient locking arm including a locking protuberance and a pushing plate having a pair of guide rails formed on both sides thereof;
a fitting projection formed on said second connector housing for engaging said locking protuberance of said first connector housing;
a fitting detection means slidably mounted on said first connector housing for coupling with said resilient locking arm of said first connector housing;
an operating section provided on said fitting detection means which covers said pushing plate when coupled with said locking arm, said operating section having a pair of fitting pieces on both sides thereof for slidably engaging said pair of guide rails of said resilient locking arm; and
a resilient fitting detecting arm provided on said fitting detection means and having a locking projection for engaging said locking protuberance, wherein said locking projection is slidable on a respective lowest end surface of said fitting projection and said locking protuberance when the connectors are coupled with each other.

5,605,473

VGA LOOPBACK CABLE PLUG

Jakob Kishon, San Ramon, Calif., assignor to Capetronic Computer USA (HK) Inc., Campbell, Calif.

Filed Sep. 5, 1995, Ser. No. 523,769
Int. Cl.[6] H01R *11/00*
U.S. Cl. 439—502 **4 Claims**



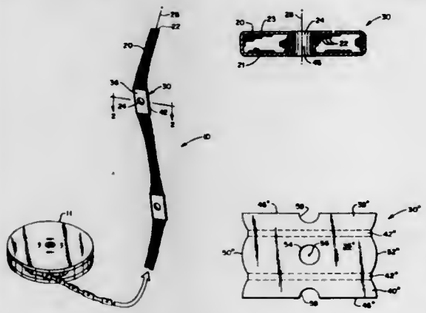
1. A connector for use in connecting the output of a video socket mounted on a PC motherboard to a remote video monitor mounted on a common chassis with the motherboard, said connector comprising an end cover, an internal cavity, a video plug including a plurality of pins, said plug being adapted to be connected to the video socket, a plurality of conductors in said cavity having one of their ends respectively connected to said plurality of pins, a video cable having one end connected to the other ends of said plurality of conductors and another end adapted to be connected to the input of the video monitor, said conductors being looped around an angle of approximately 180° between the connections to said pins and the connection to said cable, whereby said cable can extend inwardly from the connector and under the motherboard to the video monitor input.

5,605,474

ELECTRICAL HARNESS

Randolph L. Auclair, New Hartford, Conn., assignor to Electric Motion Company, Inc., Winsted, Conn.

Filed Jan. 19, 1995, Ser. No. 375,545
Int. Cl.[6] H01R *11/00*
U.S. Cl. 439—505 **12 Claims**



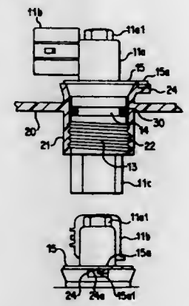
1. An electrical harness comprising:
an elongated twisted wire comprising a multiplicity of electrically conductive strands and having a generally circular cross section, an axis, and means defining at least one transverse aperture;
a connector of electrically conductive material and one-piece integral form positioned at said aperture and fastened to said wire, said connector comprising:
a center portion having a longitudinal axis, said connector being positioned wherein said center portion axis is substantially parallel to said wire axis and wherein said center portion has a surface which engages a first surface portion of said wire; and
first and second wing portions integrally extending from said center portion, each of said wing portions being bent so as to crimpingly engage a second surface portion of said wire to securely fasten said connector to said wire, said first and second wing portions each comprising means defining a semicircular notch, said notches defining a second orifice when said wing portions are bent to engage said wire second surface portion, said second orifice being substantially coaxial with said aperture,
wherein said connector defines a substantially rectilinear member having substantially planar opposed surfaces extending axially in opposite directions from said aperture.

5,605,475

ELECTRICAL CONNECTOR

Shinji Ogawa, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Japan

Filed Dec. 21, 1994, Ser. No. 361,312
Claims priority, application Japan, Dec. 21, 1993, 5-073596
Int. Cl.[6] H01R *13/74*
U.S. Cl. 439—562 **10 Claims**



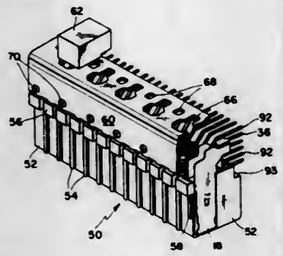
1. An electrical connector provided with terminals and a body in combination with a tube member which extends through and is fixed to a wall and is provided with a mouth for receiving the electrical connector, the tube member having an internal thread and the connector having an external thread for engagement therewith to secure said connector in said wall such that terminals are located on each side of said wall, wherein the connector and tube member have a seal therebetween, and engagement means to limit relative rotation thereof to prevent removal of said electrical connector from said tube member, said engagement means being engageable on contact between the mouth of said tube member and a portion of the body of said connector.

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5,605,476
SHIELDED ELECTRICAL CONNECTOR

David M. McNamara, Lyndeborough; Daniel B. Provencher, Weare, both of N.H.; Philip T. Stokoe, Attleboro, Mass.; William E. Howard, New Boston, N.H., and Mark W. Gailus, Somerville, Mass., assignors to Teradyne, Inc., Boston, Mass.

Continuation of Ser. No. 307,920, Sep. 16, 1994, abandoned, which is a division of Ser. No. 43,195, Apr. 5, 1993, Pat. No. 5,403,206. This application Jun. 7, 1995, Ser. No. 487,576
Int. Cl.[6] H01R *13/658*
U.S. Cl. 439—608 9 Claims

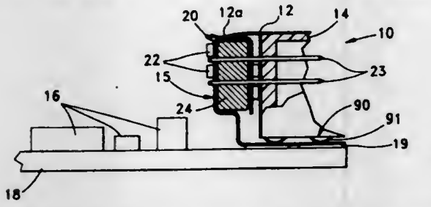


1. A circuit board connector unit of the type having a plurality of modular connectors joined in a line, the connector unit comprising
a) a first stiffener having a first plurality of modular connector elements disposed in a first line attached thereto, each modular connector element comprising an insulative housing with a plurality of electrical contacts therein,
b) a second stiffener having a second plurality of modular connector elements disposed in a second line attached thereto, each modular connector element comprising an insulative housing with a plurality of electrical contacts therein, and
c) a coupler, said coupler being secured to the first stiffener and the second stiffener and disposed in line with the first plurality of connector elements and the second plurality of connector elements to hold the first stiffener and the second stiffener with the first line and the second line being the same.

5,605,477
FLEXIBLE ETCHED CIRCUIT ASSEMBLY

Jeff C. Wu, Clemmons, and Bobby G. Ward, King, both of N.C., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Jan. 13, 1995, Ser. No. 372,269
Int. Cl.[6] H01R *9/09;13/66*
U.S. Cl. 439—620 28 Claims

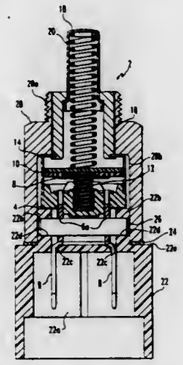


1. An electrical connector assembly for use with a printed circuit board (PCB) having electrical traces thereon, including a connector housing with electrical contacts therein, said electrical connector assembly comprising:
a flexible etched circuit. (FEC) member having electrical traces and at least one electrical component disposed on a first side thereof in electrical connection with at least one of said FEC traces and at least one of said electrical contacts, a ground circuit on a second side of said FEC member, said FEC member further includes at least one electrically conductive hole therethrough for electrical connection between said electrical component and said ground circuit, thereby forming an electrical circuit between said electrical component, said ground plane, and said at least one electrical contact; and
plane, and said at least one electrical contact; and
wherein said FEC member is at least partially wrapped around a ferrite plate.

5,605,478
MEANS FOR ATTACHING A CONNECTOR BODY TO AN ELECTRIC DEVICE

Tony O. Woodard, Pine Level, N.C., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jun. 19, 1995, Ser. No. 491,774
Int. Cl.[6] H01R *13/502*
U.S. Cl. 439—695 16 Claims



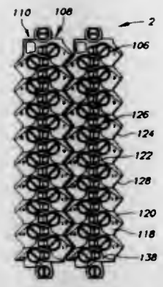
1. Means for attaching a connector body to an electric device comprising:
an electric device having a housing and a pair of spaced apart terminals projecting from said housing, said terminals each having a hole therethrough;
a connector body disposed over said terminals said connector body having a cavity open to an end disposed away from said housing, said terminals being disposed in said cavity, said connector body having openings aligned with said holes in said terminals;
pin means inserted through said connector body openings into said terminal holes for attaching said connector body to said electric device; and
means blocking withdrawal of said pin means from said connector body.

5,605,479
PANEL MOUNT CONNECTOR

Rudolf Krämer, Lautertal; Christian Schrettlinger, Bensheim, and Werner Tille, Stockstadt, all of Germany, assignors to The Whitaker Corporation, Wilmington, Del.

Filed Dec. 22, 1994, Ser. No. 362,316
Claims priority, application United Kingdom, Jan. 4, 1994, 9400021
Int. Cl.[6] H01R *9/22*
U.S. Cl. 439—709 6 Claims

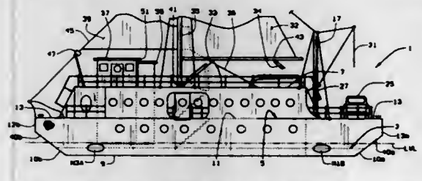
1. A connector mountable to a panel, comprising an insulative housing and terminals mounted therein and arranged in two adjacent and parallel rows, each terminal of first row comprising a wire connection section accessible by a conductor through a slot from one side of the connector extending alongside the first row of terminals, and each terminal of a second row comprising a wire connection section accessible by a conductor through a slot from another side of the connector extending alongside the second row of terminals, the connector characterized in that the terminals of the first row are offset with respect to terminals of the second row such that terminals form a zig-zag arrangement, and each terminal is separated from an adjacent terminal of the same row by a wall of the housing, the wall extending obliquely from a position proximate the longitudinal centre line of the connector to the corresponding side thereof, whereby the adjacent separating walls define the slots.



5,605,480
EASILY MANEUVERABLE VESSEL PROPELLED BY EIGHT JETS AND SAILS

Clarence E. Wright, 1900 Maple Rd., Williamsville, N.Y. 14221

Filed Nov. 8, 1995, Ser. No. 555,122
Int. Cl.[6] B63H *11/117*
U.S. Cl. 440—43 19 Claims

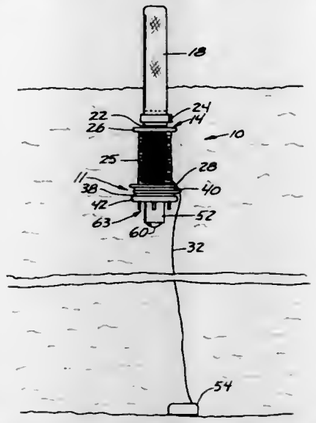


1. In a vessel having a hull which has a stern and bow and is generally of effective rectangular configuration including one of a barge, houseboat, and catamaran, the improvement comprising the vessel having in combination, a sail propulsion system and a jet propulsion system whereby the vessel with both propulsion systems can be more effectively maneuvered than a sail propulsion system and more efficiently propelled than when using either system alone,
I) the sail propulsion system comprising,
a) at least one mast mounted to said hull, and
b) at least one sail secured to said mast to be selectively furled and unfurled,
II) the jet propulsion system being an eight jet arrangement comprising;
a) a stem-port pair of jets,
b) a stern-starboard pair of jets,
c) a bow-port pair of jets,
d) a bow-starboard pair of jets,
e) the jets in each said pair being aligned and forming an aligned pair having their flows oriented in opposite directions 180° from each other,
f) each of the jets having a longitudinal and lateral thrust component,
g) at least one pump with an inlet through the hull of the vessel and with discharge connected by piping to-all pairs of jets, and
h) appropriate remotely controlled valves so that jets may be activated in all possible combinations.

5,605,481
LINE TENDING MARKER FLOAT

Charles Van Raden, 1701 N. 11th St., Moorhead, Minn. 56560

Filed Apr. 24, 1996, Ser. No. 637,130
Int. Cl.[6] B63B *22/18*
U.S. Cl. 441—25 15 Claims



1. A line tending device for a flotation marker unit including a base, a clutch hub on the base, a source of a line that will extend in response to a weight thereon, said clutch hub having a clutch hub outer surface and upper and lower flanges, and an elastomeric O-ring surrounding the hub outer surface between the upper and lower flanges, said line passing over an outer edge of the upper flange, and inwardly to the clutch hub between the hub outer surface and the O-ring, and extending out from the hub outer surface around an outer edge of the lower flange, an anchor weight on an end of the line of sufficient weight to cause the line to extend and move between the O-ring and the hub outer surface when the line is substantially vertically below the outer edge of the lower flange, the O-ring providing a tension on the line to tend to provide a clamping action on the line around the upper flange that increases as the line angle relative to a central axis of the hub and the weight increases.

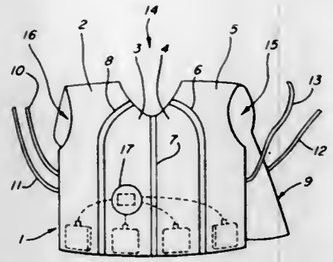
5,605,482
INFLATABLE FLOTATION DEVICES

Fuk C. A. Choy, 10 Howard, Campbellton N.B., Canada

Filed Aug. 29, 1995, Ser. No. 521,093
Int. Cl.[6] B63C *9/08*
U.S. Cl. 441—106 14 Claims

1. A trigger device comprising
an anchor component,
an alignment component,
an activation pin member displaceable between an armed position and a released position,
a trigger filament fixed to said anchor component and to said activation pin member for releaseably maintaining said activation pin member in said armed position,
and
a biasing component for maintaining said trigger filament under tension when said activation pin member is in said armed position,
said biasing component engaging said activation pin member,

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said alignment component being configured to guide said activation pin member from said armed position to said released position,

said trigger filament being configured and disposed so as to be able to define a portion of an electric circuit such that when said trigger filament is maintained under tension in said armed position by said biasing component a predetermined electric current passing therethrough will cause the trigger filament to snap-break,

said alignment component and said biasing component being configured and disposed such that when said trigger filament is broken by passage of said electric current therethrough said biasing component is able to urge said activation pin member to said released position.

5,605,483

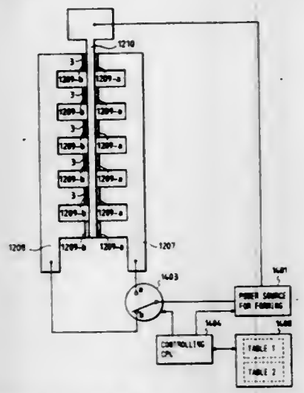
ELECTRON SOURCE AND PRODUCTION THEREOF, AND IMAGE-FORMING APPARATUS AND PRODUCTION THEREOF

Toshihiko Takeda; Ichiro Nomura, both of Atsugi; Hidetoshi Suzuki, Fujisawa; Yoshikazu Banno, Ebina, and Tetsuya Kaneko, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 165,845, Dec. 14, 1993. This application May 26, 1995, Ser. No. 451,766

Int. Cl.[6] H01J *1/30;9/42;9/50*

U.S. Cl. 445—2 **8 Claims**



1. A process for producing an electron source having a substrate, and an electron-emitting element provided on the substrate: said process comprising steps of forming a plurality of electrode pairs on the substrate, forming a thin film for generating an electron-emitting region between each of the electrode pairs, testing for detecting a defect of the electrode pairs and/or the thin film, and generating the electron-emitting region so as to have no defect after the step of detecting a defect.

5,605,484

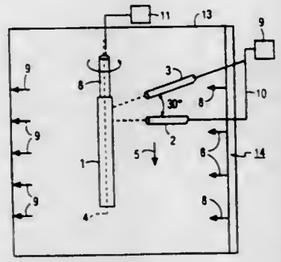
CRT ELECTRON GUN CLEANING USING CARBON DIOXIDE SNOW

Richard A. Bailey, Canton, Mich., and John C. Midavaine, Rochester, N.Y., assignors to Philips Electronics North America Corporation, New York, N.Y.

Continuation of Ser. No. 358,450, Dec. 16, 1994, Pat. No. 5,462,468. This application Sep. 7, 1995, Ser. No. 525,434

Int. Cl.[6] H01J *9/38*

U.S. Cl. 445—59 **8 Claims**



1. A method of cleaning CRT electron guns comprising the steps of

(a) heating an electron gun, and

(b) passing combined CO_2 particles and CO_2 gas to said electron gun to remove contaminants from said electron gun.

5,605,485

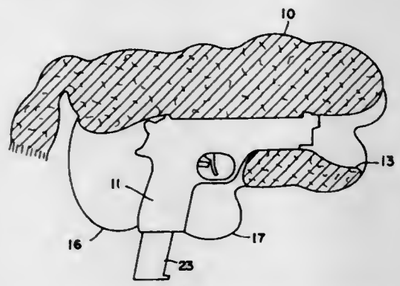
WATER-PISTOL AND ANIMAL FIGURE ASSEMBLY

Donald Spector, 380 Mountain Rd., Union City, N.J. 07080

Continuation-in-part of Ser. No. 431,834, May 1, 1995, Pat. No. 5,564,961. This application Nov. 6, 1995, Ser. No. 554,259

Int. Cl.[6] A63H *3/00;33/30*

U.S. Cl. 446—72 **6 Claims**



1. A water pistol and animal figure assembly comprising:

A. an animal figure having a head provided with an open mouth, a body joined to the head having an internal cavity communicating with the head, the cavity being open at an underside of the body; and

B. a water pistol concealed in the cavity of the figure, said pistol having a barrel whose front end is socketed in the head and is provided with a nozzle in alignment with the open mouth, said pistol having a hand grip provided with a trigger which when the grip is grasped by the fingers of a player's hand extended into the cavity, the figure then appears to be held by the player, and when the player pulls the trigger with a finger of his hand, water is then ejected from the nozzle and spit out of the open mouth of the figure.

5,605,486

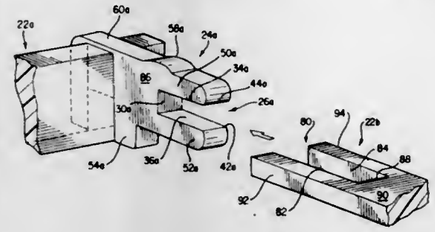
THREE-DIMENSIONAL MODEL STRUCTURES

Yu Zheng, 1065 Howard Ave., Covina, Calif. 91722

Filed Jan. 11, 1996, Ser. No. 584,519

Int. Cl.[6] A63H *33/08*

U.S. Cl. 446—114 **10 Claims**



1. An object assembled by interconnecting a plurality of puzzle pieces, the object having at least one puzzle piece comprising:

at least three outer side edges including a first outer side edge;

at least one joint having a substantially U-shaped mortise defined by a first leg and a second leg, the U-shaped mortise comprising a bottom edge, and first and second inner side edges extending from the bottom edge, with the first leg defined by the first inner side edge and the first outer side edge; and

a protrusion provided along the first outer side edge at a location substantially opposite the bottom edge of the joint.

5,605,487

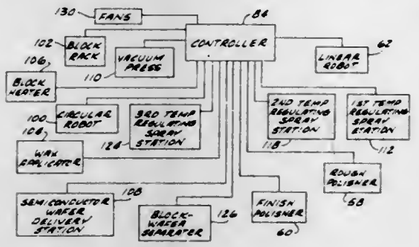
SEMICONDUCTOR WAFER POLISHING APPARTUS AND METHOD

Harold J. Hileman, Kirkwood; Robert J. Walsh, Ballwin, both of Mo., and Thomas A. Walsh, Templeton, Calif., assignors to MEMC Electric Materials, Inc., St. Peters, Mo.

Filed May 13, 1994, Ser. No. 242,560

Int. Cl.[6] B24B *49/00*

U.S. Cl. 451—5 **67 Claims**



1. Apparatus for polishing semiconductor wafers comprising:

a housing;

a wax mounting apparatus within the housing for wax mounting a first face of a semiconductor wafer to a first face of a polishing block;

a first semiconductor wafer polisher within the housing for polishing a second face of the semiconductor wafer, the second face of the semiconductor wafer being opposite the first face of the semiconductor wafer;

a first transfer mechanism within the housing for delivering the polishing block and semiconductor wafer from the mounting apparatus to adjacent the first semiconductor wafer polisher; and

a controller for controlling operation of the mounting apparatus, the first semiconductor wafer polisher, and the first transfer mechanism.

5,605,488

POLISHING APPARATUS OF SEMICONDUCTOR WAFER

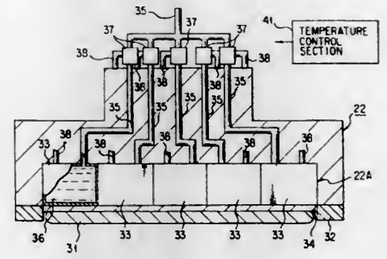
Hiroyuki Ohashi, Kamakura; Naoto Miyashita; Ichiro Katakabe, both of Yokohama, and Tetsuya Tsukihara, Kitakyushu, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 27, 1994, Ser. No. 329,423

Claims priority, application Japan, Oct. 28, 1993, 5-270654

Int. Cl.[6] B24B *49/00*

U.S. Cl. 451—7 **12 Claims**



1. A polishing apparatus comprising:

a top plate having a concave portion on its back face;

a plurality of cells provided in the concave portion of said top plate, each of said cells being filled with liquid and retaining a portion of a semiconductor substrate to be polished;

a plurality of pipes for introducing said liquid to each of said cells, respectively; and

adjusting means, provided in each of said pipes, for adjusting temperature of said liquid in each of said cells to compensate for polishing rate variations of the respective portions of said semiconductor substrate.

5,605,489

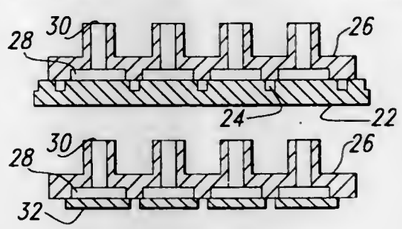
METHOD OF PROTECTING MICROMECHANICAL DEVICES DURING WAFER SEPARATION

Richard O. Gale, Richardson, and Michael A. Mignardi, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 82,183, Jun. 24, 1993, Pat. No. 5,445,559. This application May 23, 1995, Ser. No. 448,205

Int. Cl.[6] B24B *41/06*

U.S. Cl. 451—28 **10 Claims**



1. A method of processing a wafer containing one or more micromechanical devices, said method comprising:

partially sawing between said devices on a first side;

placing a protective fixture over and in contact with said first side of said wafer, said protective fixture defining a headspace above each device;

evacuating said headspace to create a vacuum;

grinding the side of said wafer opposite said first side to separate said devices; and

removing said vacuum to release said devices from said fixture.

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5,605,490

METHOD OF POLISHING LANGASITE

Sally M. Laffey, Eatontown; John R. Vig, Colts Neck, and Mary A. Hendrickson, Forked River, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 26, 1994, Ser. No. 311,794
Int. Cl.[6] B24B *1/00*
U.S. Cl. 451—36 5 Claims

1. A method of treating langasite to provide the langasite with a film free, scratch free surface having a surface roughness of less than 10 nm rms, said method comprising the steps of:
polishing the surface of the langasite with a colloidal and fumed silica suspension; and
wet etching the polished surface of the langasite so the polished surface remains polished after etching.

5,605,491

BLAST MEDIA WITH DEFOAMERS

Benny S. Yam, Holmdel, and Andrew Logan, East Windsor, both of N.J., assignors to Church & Dwight Co., Inc., Princeton, N.J.

Filed Jun. 2, 1995, Ser. No. 458,662
Int. Cl.[6] B24B *1/00*
U.S. Cl. 451—40 35 Claims

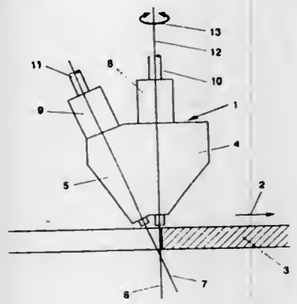
1. A blast media for use in wet abrasive blasting of a targeted surface to remove contaminants therefrom comprises abrasive particles, at least one surfactant and a defoaming agent.

5,605,492

METHOD AND MACHINE TOOL FOR CUTTING WORKPIECES

Hans Klingel, Möglingen, Germany, assignor to Trumpf GmbH & Co., Ditzingen, Germany

Filed Nov. 14, 1995, Ser. No. 558,610
Claims priority, application Germany, Nov. 14, 1994, 44631.2
Int. Cl.[6] B24B *1/00*
U.S. Cl. 451—40 19 Claims



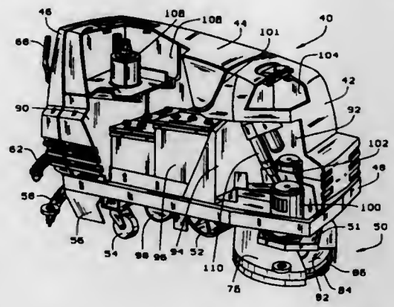
1. In a process for cutting workpieces by means of a cutting beam, the steps comprising:
(a) directing a first cutting beam at a workpiece to be machined;
(b) directing at least one other cutting beam at said workpiece so that the axes of said first and said other cutting beams impinge on the surface of said workpiece adjacent each other to cooperate in effecting cutting of said workpiece; and
(c) moving said workpiece and said cutting beams relative to one another to cut said workpiece along a cutting line, said cutting beams intersecting at a point spaced from said surface of said workpiece in the direction opposite from the origin of said cutting beams.

5,605,493

STONE POLISHING APPARATUS AND METHOD

Joseph M. Donatelli; Joseph Donatelli; Thomas P. Donatelli; Franklin P. Donatelli, all of Scotch Plains, and John A. Castaldo, New Providence, all of N.J., assignors to Clarke Industries, Inc., St. Louis, Mo.

Filed Apr. 19, 1994, Ser. No. 229,592
Int. Cl.[6] B24B *1/00;7/18*
U.S. Cl. 451—41 15 Claims



1. A method of polishing a stone floor with a self-propelled stone polishing machine having a solution tank with a liquid lubricant therein, a recovery tank, a vacuum assembly for removing material from the floor and delivering it to the recovery tank, and a disc pad driver assembly having a rotatable shaft, the method comprising the steps of:
attaching a disc pad having a stone abrading surface on one side to the rotatable shaft of the pad driver assembly such that the stone abrading surface is adjacent the floor, the disc pad being rotatable with the rotatable shaft;
applying the liquid lubricant from the solution tank to the area between the stone abrading surface of the disc pad and the stone floor;
rotating the disc pad to abrade a portion of the stone floor so as to create a slurry from the liquid lubricant and the stone floor; and
moving the machine so that the vacuum assembly contacts the slurry to deposit the slurry in the recovery tank, and the rotating disc pad contacts another portion of the stone floor.

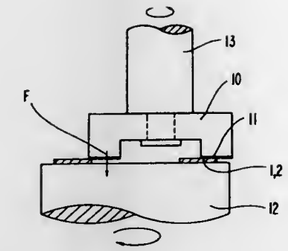
5,605,494

FACILITY FOR GRINDING SILICON NITRIDE CERAMIC WORKPIECE

Takao Nishioka; Kenji Matsunuma, and Akira Yamakawa, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Division of Ser. No. 162,302, Dec. 6, 1994, which is a division of Ser. No. 921,255, Jul. 29, 1992, Pat. No. 5,297,365. This application Apr. 18, 1995, Ser. No. 423,726
Claims priority, application Japan, May 1, 1992, 4-112649
Int. Cl.[6] B24B *7/22*
U.S. Cl. 451—41 6 Claims

1. A facility for grinding a silicon nitride ceramic workpiece, comprising:
a grinding wheel positioned relative to the workpiece and having a rotational axis;
spindle means for rotating said grinding wheel about said rotational axis at a peripheral cutting speed of not less than 25 meters/second and not more than 75 meters/second; and
moving means for moving one of the workpiece and said grinding wheel toward the other of the workpiece and said grinding wheel so as to cause said grinding wheel to be fed into the workpiece in a direction parallel to said rotational axis at a feed rate of not less than 0.005 microns per rotation of said grinding wheel and not more than 0.1 microns per rotation of said grinding wheel, such that said feed rate is varied in a linear manner; and
whereby said grinding wheel constitutes a means for grinding the workpiece to a surface finish having a maximum height-roughness surface roughness Rmax of 0.1 microns or less and a ten-point mean roughness Rz of 0.05 microns or less.

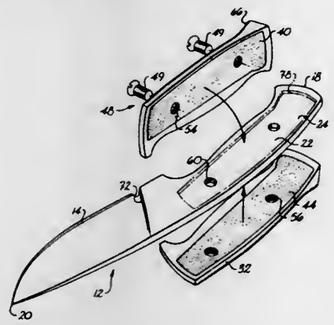


5,605,495

KNIFE WITH SHARPENING MEMBER HANDLES

R. B. Jenkins, Jr., P.O. Box 2089, Gastonia, N.C. 28053-2089

Filed Nov. 30, 1995, Ser. No. 565,228
Int. Cl.[6] B24B *3/60;* B26B *11/00*
U.S. Cl. 451—45 11 Claims



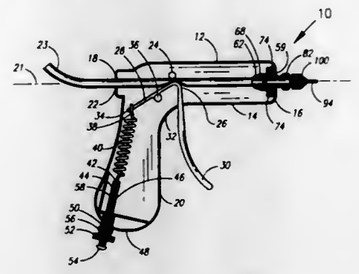
1. A knife, comprising:
an elongated blade member having an edge portion and a first end and a second end opposite said first end; said first end of said blade member defining a tang; said tang defining a first side and a second side opposite said first side;
first and second handle members connected to said tang; said first handle member being connected to said first side of said tang, and said second handle member being connected to said second side of said tang; said first handle member having a first compartment adjacent said first side of said tang;
a first sharpening member carried in said first compartment of said first handle member;
attachment means associated with said tang and said first handle member for releaseably connecting said first handle member to said tang, wherein said first handle member is removable for using said first sharpening member for sharpening said edge of said blade; and
means for causing said first sharpening member to extend outwardly beyond said first handle member, when said first handle member is detached from said elongated blade, and for said first sharpening member to extend substantially flush with said first handle member when said first handle member is attached to said elongated blade with said attachment means.

5,605,496

ABRASIVE BLASTING GUN

Robert W. Pickard, McLoud, Okla., assignor to The Pickard's Trust, McLoud, Okla.

Filed May 2, 1995, Ser. No. 434,352
Int. Cl.[6] B24C *3/00*
U.S. Cl. 451—90 14 Claims



1. An abrasive blasting gun for use in sandblasting comprising:
barrel means for holding a flexible tube in a straight path between a rear end and a front end of said barrel means,
a pinch point provided on the barrel means on one side of said flexible tube.
a first end of a spring being attached to a lower end of a pivotal lever provided on an opposite side of said flexible tube so that said spring pulls said lower end away from said tube causing an upper end of said lever to be normally biased toward said pinch point and causing said flexible tube to be normally pinched between said pinch point and said upper end of said lever,
a trigger provided on said lever for pivoting said upper end of said lever away from said pinch point when said trigger is depressed,
a delivery end of said flexible tube removably secured to a nozzle provided at said front end of said barrel means.

5,605,497

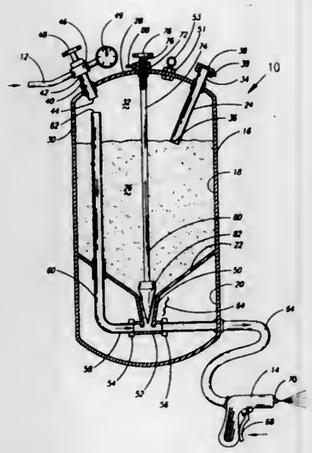
AIR/ABRASSIVE MIXING DEVICE

Robert W. Pickard, McLoud, Okla., assignor to The Pickard's Trust, McLoud, Okla.

Filed May 15, 1995, Ser. No. 441,429
Int. Cl.[6] B24C *3/04*
U.S. Cl. 451—90 18 Claims

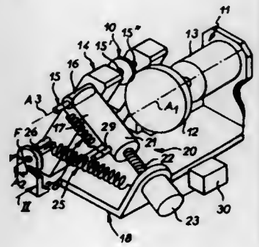
1. A device for mixing air and abrasive for use in artistic abrasive blasting comprising:
an upper chamber for receiving abrasive, abrasive being provided in said upper chamber so as to partially fill said upper chamber,
means for regulating introduction of air into said upper chamber,
an air delivery line extending between said upper chamber above said abrasive and a receiving end of a mixing chamber, said mixing chamber being straight between said receiving end and an opposite dispensing end provided on said mixing chamber,
adjustable valve means for admitting said abrasive into said mixing chamber from said upper chamber, and

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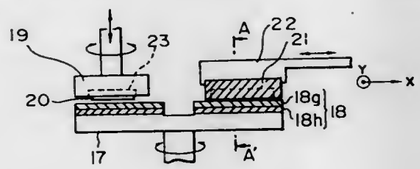
means for flexibly attaching a delivery gun to said dispensing end of said mixing chamber.

5,605,498
MACHINE FOR TRIMMING EYEGLASS LENSES
Michel Nauche, Soisy S/Montmorency, France, assignor to Essilor International Cie Generale d'Optique, Charenton le Pont, France
Filed Oct. 5, 1994, Ser. No. 318,114
Claims priority, application France, Oct. 19, 1993, 93 12420
Int. Cl.[6] B24B *7/00*
U.S. Cl. 451—240 **8 Claims**



1. Machine for trimming eyeglass lens comprising at least one cutting tool, such as grinding wheel or a milling cutter, mounted on a chassis to rotate about a rotation axis, a carriage pivotally mounted on the chassis about an axis parallel to the rotation axis of the cutting tool, a support spindle mounted to rotate on the carriage about an axis parallel to the rotation axis of said cutting tool and adapted to support a lens to be trimmed co-axially of the rotation axis of the support spindle and in vertical alignment with the cutting tool, a template carried by said support spindle and spaced from said lens, a feeler carried by said chassis and mounted for movement in relation to the chassis, said feeler being disposed in vertical alignment with said template for cooperation therewith, main spring means operatively disposed between said carriage and the chassis, and auxiliary spring means operatively disposed between said carriage and said feeler, said chassis and auxiliary spring means both arranged to urge said carriage towards said feeler.

5,605,499
FLATTENING METHOD AND FLATTENING APPARATUS OF A SEMICONDUCTOR DEVICE
Misuo Sugiyama, and Hatsuyuki Arai, both of Ayase, Japan, assignors to Speedfam Company Limited, Tokyo, Japan
Filed Apr. 13, 1995, Ser. No. 421,706
Claims priority, application Japan, Apr. 27, 1994, 6-112091
Int. Cl.[6] B24B *21/18*
U.S. Cl. 451—443 **21 Claims**



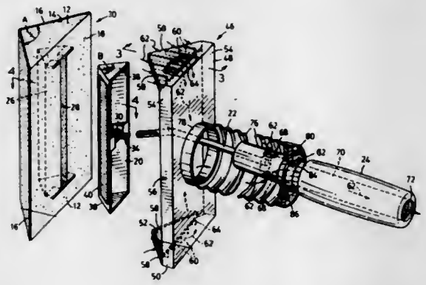
6. A flattening method of a semiconductor device by a chemical-mechanical polishing process comprising,

preparing a synthetic resin polishing cloth in a circular form and a tool for forming a surface layer of the synthetic resin polishing cloth to have fluff thereon, said tool having an annular shape with a diameter less than a radial length of the polishing cloth,

rotating the polishing cloth along a central axis thereof and pressing the tool on one radial portion of the polishing cloth, said tool being moved along a radial direction of the polishing cloth and perpendicular to the radial direction to form the fluff on the polishing cloth, and

rotating means for supporting the semiconductor device along a central axis thereof and pressing the semiconductor device on a different radial portion of the polishing cloth to polish the semiconductor device while the tool is moved on the polishing cloth to recreate a surface shape thereof so that the polishing cloth can evenly and continuously polish the semiconductor device.

5,605,500
VACUUM ATTACHMENT ASSEMBLIES FOR SANDING TOOLS
William Matechuk, Apt. 314, 20 Bradman Avenue, St. Catharines, Ontario, Canada
Filed Nov. 16, 1995, Ser. No. 558,646
Int. Cl.[6] B24B *55/10*
U.S. Cl. 451—456 **14 Claims**



8. A combination of a sanding tool and a vacuum attachment assembly therefor, the sanding tool employing a replaceable sander block of resilient foam material having two end surfaces, at least one sanding side surface coated with abrasive material, and a back side surface;

the corner sanding tool comprising handle means attachable to and detachable from the sander block for its manipulation to carry out a sanding operation;

the handle means comprising a carrier member and a handle pivotally connected to the carrier member;

the sander block having a chamber therein opening to the back side surface and shaped to snugly receive the carrier member and thereby operatively connect the handle means and the sander block together;

the vacuum attachment assembly comprising an attachment body having a central portion and two parallel end portions each extending at a right angle from a respective end of the central portion;

the length of the central portion in relation to the corresponding length of the sander block being such that with a sander block in position in the assembly the assembly end portions and the block end surfaces are engaged with one another under the urge of the resilient sander block material to retain the attachment body securely on the block, whereby the vacuum assembly is supported by the sander block on the corner sanding tool;

the central portion having two parallel side walls extending between the two end portions which are butted by the back side surface of a sander block in position in the attachment body to thereby establish an air-receiving plenum chamber between the side walls, the central portion and the block back side surface;

the end portions having respective connected edges at their junctions with the central portion and the side walls, and at least portions of the remainder of their edges being free edges adjacent to the sander block sanding surface;

the attachment body end portions being of smaller area than the respective sander block end surfaces which they engage, so that the end surfaces protrude beyond the respective free edges of the end portions;

the end portions having therein air flow passages connecting the free edges with the plenum chamber interior, whereby air flow through the passages can entrain dust produced by sanding adjacent the end portion free edges and convey it into the plenum chamber interior;

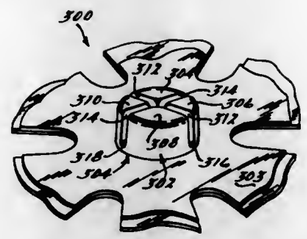
the central portion having therein at least one opening from the plenum chamber to permit passage therefrom of air and entrained dust, and to permit extension of the handle freely through the attachment body to the carrier member.

5,605,501
LENS SURFACING PAD WITH IMPROVED ATTACHMENT TO TOOL
Ronald C. Wiand, 1494 Heatherwood Dr., Troy, Mich. 48098
Continuation of Ser. No. 345,254, Nov. 28, 1994, abandoned, which is a continuation of Ser. No. 9,379, Jan. 27, 1993, abandoned, which is a continuation of Ser. No. 767,521, Sep. 25, 1991, abandoned, which is a continuation of Ser. No. 511,460, Apr. 20, 1990, abandoned, which is a continuation-in-part of Ser. No. 418,933, Oct. 6, 1989, abandoned, which is a continuation of Ser. No. 323,233, Mar. 13, 1989, abandoned, which is a continuation of Ser. No. 183,525, Apr. 19, 1988, abandoned, which is a continuation of Ser. No. 904,899, Sep. 8, 1986, abandoned. This application Sep. 20, 1995, Ser. No. 531,924
Int. Cl.[6] B24D *11/00*
U.S. Cl. 451—526 **3 Claims**

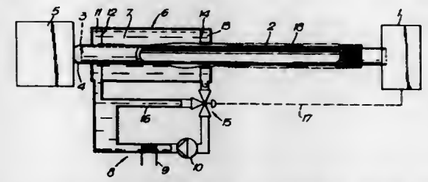
1. A surfacing pad for use on a curved surface of a lapping tool having an aperture which extends below said curved surface, comprising:

a substrate sheet having an overall annular shape with radially extending slots to allow said pad to conform precisely to the curved surface of the lapping tool and projection means extending from said pad, said projection extending transverse to the pad, said projection adapted to couple with the aperture in the lapping tool;

said projection means having an open center with radially outwardly extending channels, said channels extending longitudinally the length of said projection to thereby provide at least a pair of spaced segments hingedly connected at a first end adjacent the substrate sheet for forming a hinge means, said hinge means for enabling radially inward movability of the segments when inserted into the aperture, such that the segments are hingedly movable with respect to one another for enabling conformance of the underlying surfacing pad to the curved surface of the lapping tool at the projection means location.



5,605,502
HEAT-SHRINKABLE TUBULAR FILM MATERIAL
Knud E. Christensen, Copenhagen, Denmark, assignor to W. R. Grace & Co.-Conn., Duncan, S.C.
Division of Ser. No. 971,698, Nov. 4, 1992, which is a continuation of Ser. No. 805,242, Dec. 9, 1991, abandoned, which is a continuation of Ser. No. 527,686, May 17, 1990, abandoned.
This application May 31, 1995, Ser. No. 454,883
Int. Cl.[6] A22C *11/00*
U.S. Cl. 452—30 **1 Claim**



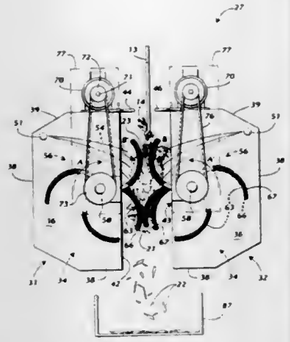
1. Apparatus for manufacturing heat-shrinkable tubular film material including a mandrel, means for feeding tubular film material onto one end of the mandrel, means further from said one end of the mandrel for applying shrinking heat to the tubular film material to shrink it into contact with the mandrel, giving it a precise modified calibre; and

sets of clamping members for supporting the mandrel, said clamping members being driven in alternation so that some of the clamping members are operative while others are inoperative to allow the heat-shrinkable tubular film material being processed to pass from one side of the released clamping members to the other, followed by reversal of the operating states of the clamping members to allow the advance of the tubular film material to proceed on a continuous basis.

5,605,503
SCRUB WASHER
Roger L. Martin, Tyler, Tex., assignor to Dapec, Inc., Canton, Ga.
Filed Apr. 20, 1995, Ser. No. 425,423
Int. Cl.[6] A22C *21/04*
U.S. Cl. 452—173 **11 Claims**

1. In a method of automatically cleaning and defeathering birds in a poultry processing system comprising the sequential steps of

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hanging birds by their legs from spaced shackles of a suspended conveyor line, advancing the shackles and the birds suspended by the shackles in spaced series along the conveyor line, and as the birds move along the conveyor line, stunning the birds, severing the jugular of the birds, scalding the birds, and defeathering the birds, the improvement therein comprising:

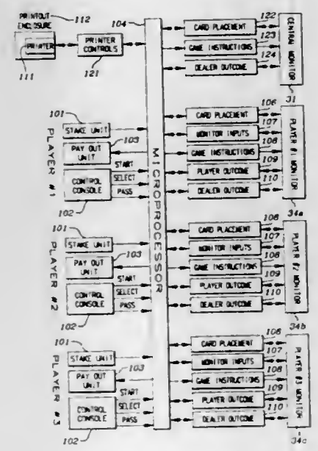
between the steps of severing the jugular and scalding the birds, applying fluid to the birds and engaging the birds with flailing, flexible members with enough force to cause the birds to excrete matter from the digestive tracts of the birds, and cleaning debris and matter excreted from the digestive tracts of the birds from the birds.

5,605,504

ELECTRONIC WAGERING MACHINE

Sming Huang, 45 Stouts La., Suite 8, Monmouth Junction, N.J. 08852

Filed Apr. 28, 1995, Ser. No. 431,275
Int. Cl.[6] A63F *1/18;3/06*
U.S. Cl. 463—22 **16 Claims**



1. A microprocessor aided apparatus for simulating a game of chance for at least one player, the apparatus comprising:

means for generating a sequence consisting of a finite number of hidden elements;

means associated with said generating means for randomizing said sequence;

means associated with said randomizing means for displaying said sequence in a concealed predetermined arrangement;

means associated with said displaying means for selecting by said player, and revealing as required, as many of said hidden elements of said arrangement to complete said game;

a printer for generating a printout of all of said hidden elements of said arrangement at a beginning of said game;

a locked enclosure for displaying or receiving said printout such that said hidden elements of said arrangement are inaccessible from view;

means for viewing said printout by said player wherein said viewing means is only after said game is completed;

a plurality of platforms; and,

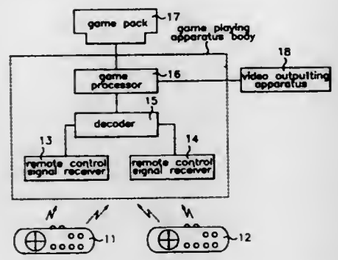
means for rotating said platforms amongst each other to conceal said printout at the beginning of and during said game and to reveal said printout only after said game is completed.

5,605,505

TWO-PLAYER GAME PLAYING APPARATUS USING WIRELESS REMOTE CONTROLLERS

Jang W. Han, Kyungki-do, Rep. of Korea, assignor to LG Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Feb. 24, 1995, Ser. No. 393,771
Claims priority, application Rep. of Korea, Feb. 25, 1994, 1994-3478
Int. Cl.[6] A63F *9/22*
U.S. Cl. 463—39 **13 Claims**



1. A two-player game playing apparatus for playing a game program stored in a game pack using wireless remote controllers, the two-player game playing apparatus comprising:

a first remote controller for transmitting without a wire a game key signal input by a first player in a specific frequency band;

a second remote controller for transmitting without a wire a game key signal input by a second player in a frequency band which is different from the frequency band of the game key signal transmitted from said first remote controller;

a first remote control signal receiver for receiving the game key signal transmitted from said first remote controller without a wire;

a second remote control signal receiver for receiving the game key signal transmitted from said second remote controller without a wire;

a decoder for reading out the respective players' game key signals output from said first and second remote control signal receivers;

a game processor for reading out and performing the game program from said game pack according to the respective players' game key signals output from said decoder; and

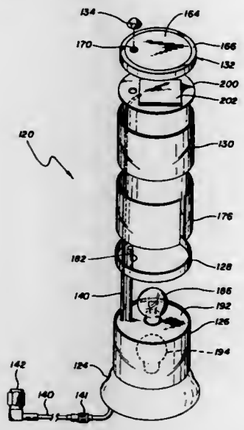
a video outputting apparatus for processing game video and audio signals output from said game processor and outputting the signals as an image and sound.

5,605,506

CANDLE ANTENNA

Dennis W. Hoorn, Sparks, Nev.; David W. Loar, Reno, Calif., and Roy E. Adams, Reno, Nev., assignors to International Game Technology, Reno, Nev.

Filed May 24, 1995, Ser. No. 449,349
Int. Cl.[6] H04B *10/00*
U.S. Cl. 463—47 **30 Claims**



1. A candle antenna assembly comprising:

a substantially hollow candle housing which is at least partially transparent to light;

a first light source disposed within said candle housing;

an antenna disposed within said candle housing; and

a mounting mechanism configured to mount said candle antenna assembly to a gaming machine.

5,605,507

MECHANICAL LINKING DEVICE MADE OF WOUND FIBER-REINFORCED RESIN MANUFACTURING PROCESS

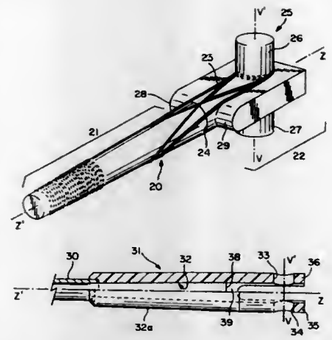
Michel Huvey, Bougival; Francois Grosjean, Versailles; Lucien Montabord, Sartrouville, and Roland Bernollin, Lamastre, all of France, assignors to Institut Francais du Petrole, Rueil Malmaison, France

Filed Jun. 2, 1994, Ser. No. 252,992
Claims priority, application France, Jun. 2, 1993, 93 06686
Int. Cl.[6] F16C *3/00*
U.S. Cl. 464—181 **8 Claims**

1. A mechanical linking device formed about a principle axis, the device connecting a first element to a second element, wherein the first element is connected to the device by at least one pin and the second element is received in a bore through the device aligned with the principle axis, the device comprising:

a first end having at least one fork defined by two opposed legs, the opposed legs having holes therein aligned with a transverse axis oriented orthogonally with respect to the principal axis, the holes each adapted to receive at least one of the pins, the fork extending from a circular base portion of the first end, the base portion having a cylindrical bore extending therethrough in the direction of the principle axis;

a second end, unitary with the first end, having a base radially coextensive with the base of the first end, the second end extending away from the base of the first end and being substantially frustoconical about the principle axis and having a frustoconical bore tapering away from the base of the second end and extending therein for receiving the second element; and



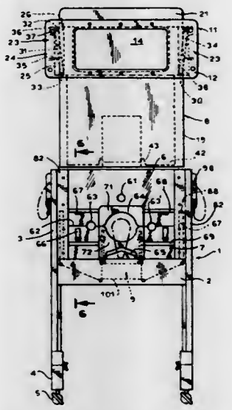
a winding of resin-coated reinforcing fiber looped around the holes in the legs and extending throughout the first and second ends of the device to configure the device as a unitary member comprised of reinforcing fiber and resin.

5,605,508

MAGICIANS' GUILLOTINE APPARATUS

William J. Schmeelk, 15 Birchwood La., Hillsdale, N.J. 07642, and Alan Wakeling, Westlake Village, Calif., assignors to William J. Schmeelk, Hillsdale, N.J.

Filed Oct. 23, 1995, Ser. No. 547,029
Int. Cl.[6] A63J *21/00*
U.S. Cl. 472—69 **11 Claims**



1. A magician's guillotine apparatus comprising:

support frame means having a horizontal member and uprights upstanding in spaced apart relation from opposite ends thereof;

stock means supported vertically on the frame between the uprights and providing a primary, central aperture for holding an article not to be severed and upper, lower and lateral, demonstration apertures located above, below, and on respective opposite sides of the primary aperture for holding articles to be severed;

upper blade means;

means for mounting the upper blade means in the frame in selected first and second operating positions, respectively, for descending movement to extend, visible to a spectator, across the primary aperture and all demonstration apertures, severing any articles held therein, and for descending movement to

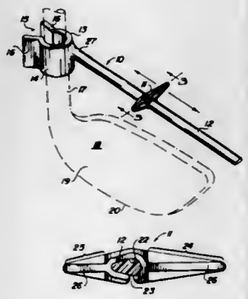
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extend visible to the spectator across only the upper and lateral demonstration apertures severing articles held therein, respectively;

a lower blade; and,

means for mounting the lower blade concealed from the spectator's view within the horizontal frame member below the lower demonstration aperture in the first operating position of the upper blade means and, for raising the lower blade to extend visibly across the lower demonstration aperture to sever an article held therein, in the second operating position of the upper blade means, during descending movement thereof, after crossing the lateral apertures, so that all demonstration apertures have blade portions extending thereacross but the article held in the central aperture remains unscathed, providing an illusion to the spectator that a same blade has descended across all apertures.

5,605,509
GOLF TRAINING DEVICE
Mark E. Gray, 4443 E. Anderson Dr., Phoenix, Ariz. 85032
Filed Jan. 11, 1996, Ser. No. 584,325
Int. Cl.[6] A63B *69/36*
U.S. Cl. 473—237 **3 Claims**



1. A training/playing aid for clamping on the shaft of a golf club for use in the development of an appropriate ball address consistent with the individual golfer's characteristic swing, said aid comprising:

an elongated arm having a clamp at one end for securing said arm to said shaft of the golf club to extend laterally thereof,

said clamp comprising a cylindrical shell having an opening at one side, said opening incorporating diverging flanges which allow said clamp to be snapped into position about the shaft of the golf club where its position will be securely sustained by the gripping action of said clamp,

said arm having a streamlined periphery for minimizing air resistance introduced by said golf club during a golf club swing,

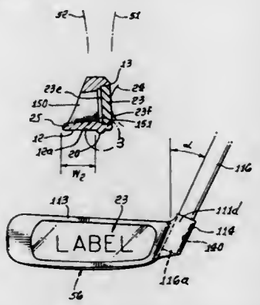
a pointer movably mounted on said arm provided with an opening extending therethrough having a periphery of the same shape as the periphery of said arm,

said arm passing through said opening in said pointer with sufficient interference between said arm and the periphery of said opening so as to assure that when said pointer is set to a desired position along the length of said arm, said position will be sustained throughout the normal stresses experienced during a golf club swing, and

said arm of said aid extending laterally from the shaft of the golf club in a direction parallel with the head of the golf club and passes directly over and above the face of the golf club when the device is attached to the shaft of the golf club by said clamp,

whereby the pointer is aligned with the "sweet spot" of the golf club and movable to positions on either side of the "sweet spot", the pointer serving as a point of reference for aligning the golf club with the golf ball at the correct point of impact, allowing for maximum consistency due to proper pre-impact positioning.

5,605,510
GOLF PUTTER WITH FACE PLATE INSERT
Glenn H. Schmidt, Malibu, and Richard C. Helmstetter, Carlsbad, both of Calif., assignors to Callaway Golf Company, Carisbad, Calif.
Continuation of Ser. No. 286,275, Aug. 5, 1994, Pat. No. 5,460,377, which is a continuation of Ser. No. 161,592, Dec. 6, 1993, abandoned, which is a continuation of Ser. No. 999,249, Jan. 19, 1993, abandoned, which is a continuation-in-part of Ser. No. 921,857, Aug. 5, 1992, Pat. No. 5,282,625. This application May 15, 1995, Ser. No. 440,936
Int. Cl.[6] A63B *53/04*
U.S. Cl. 473—251 **12 Claims**



7. A golf club for use with a shaft supporting a head, the head comprising in combination

a) a body having a heel, toe and sole defining a bottom wall, and a front wall, the body elongated between the heel and toe, and

b) the body having at least one recess originating from a rear portion of the body and projecting forwardly toward a plane defined by the front wall,

c) the body having a second recess sunk in said front wall, there being a face plate which is non-metallic and having a periphery received in said second recess and bonded to said body, said plate having a forward surface and said second recess extending rearwardly from a plane defined by said plate,

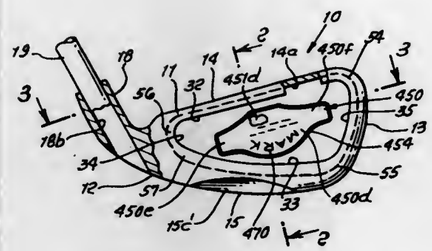
d) there being structure on the body forming a shaft-receiving bore spaced from each recess and from said face plate,

e) the body having a third recess located between said first and second recesses, and peripherally stepped relative thereto.

f) and wherein the face plate has a thickness and said third recess has a thickness, said face plate thickness exceeding the thickness of the third recess.

5,605,511
GOLF CLUB HEAD WITH AUDIBLE VIBRATION ATTENUATION
Glenn H. Schmidt, Malibu, and Richard C. Helmstetter, Carlsbad, both of Calif., assignors to Callaway Golf Company, Carisbad, Calif.
Continuation of Ser. No. 119,622, Sep. 13, 1993, Pat. No. 5,395,114, which is a continuation-in-part of Ser. No. 999,250, Jan. 19, 1993, Pat. No. 5,301,946, which is a continuation-in-part of Ser. No. 921,857, Aug. 5, 1992, Pat. No. 5,282,625. This application Dec. 6, 1994, Ser. No. 350,335
Int. Cl.[6] A63B *53/04*
U.S. Cl. 473—324 **30 Claims**

1. A golf club head having a body defining a heel, toe, top wall, sole defining a bottom wall, and a front wall defining an upwardly and rearwardly inclined front face, and comprising



a) said body defining a forwardly extending main recess located rearwardly of said front wall,

b) and said body also defining an undercut recess located directly rearwardly of said front wall and extending outwardly from said main recess toward at least one the following:

i) said top wall

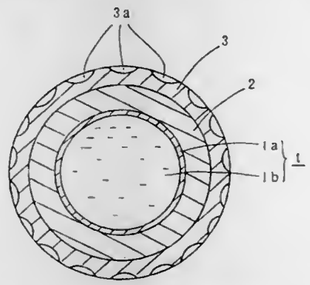
ii) said bottom wall

iii) said toe

iv) said heel,

c) and means on said body and openly exposed to said undercut recess for attenuating audible vibration created when a golf ball is struck by said front face.

5,605,512
GOLF BALL
Mikio Yamada, Kobe, and Kazushige Sugimoto, Shirakawa, both of Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo-ken, Japan
Filed Sep. 20, 1995, Ser. No. 531,298
Claims priority, application Japan, Sep. 20, 1994, 6-252815.
Int. Cl.[6] A63B *37/08*
U.S. Cl. 473—354 **13 Claims**



1. A thread wound golf ball comprising a liquid center formed from a center bag filled with liquid, a thread layer wound on the liquid center and a cover covering the thread layer, wherein the center bag is made of a crosslinked rubber obtained from a rubber composition comprising:

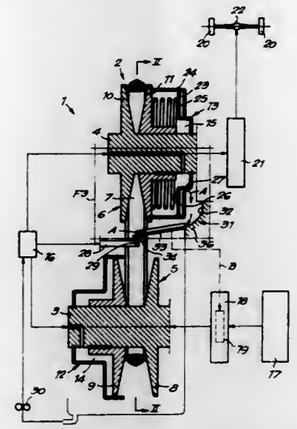
(a) a rubber component containing a mixture of 10 to 80% by weight of cis-1,4-polybutadiene and 90 to 20% by weight of a natural rubber or cis-isoprene rubber as a base rubber

(b) either a metal salt of an unsaturated carboxylic acid selected from the group consisting of acrylic acid and methacrylic acid, or a combination of the unsaturated carboxylic acid and metal oxide forming a metal salt with the unsaturated carboxylic acid, and

(c) a peroxide crosslinking agent,

the component (b) being present in an amount 3 to 20 parts by weight based on 100 parts by weight of the component (a) when calculated in terms of an amount of the unsaturated carboxylic acid.

5,605,513
METHOD FOR LUBRICATING/COOLING TRANSMISSION IN MOTOR VEHICLE
Frederik E. C. Van Der Hardt Aberson, Hasselt., Belgium, assignor to VCST naamloze vennootschap, Belgium
Filed Jun. 21, 1995, Ser. No. 492,933
Claims priority, application Belgium, Jun. 21, 1994, 09400590
Int. Cl.[6] F16H *57/05*
U.S. Cl. 474—43 **9 Claims**



1. In a continuously variable transmission including moveable drive elements including an endless transmission element extending between at least two pulleys at least one of which includes first and second relatively movable pulley elements, at least one hydraulic actuator unit including a pressure chamber into which fluid can be supplied to vary a drive ratio of the transmission by shifting said first pulley element relative to said second pulley element and a pressure compensation chamber fluidly connected to the pressure chamber of said actuator unit, a method of lubricating and/or cooling at least one movable drive element of said transmission comprising:

providing for a flow of hydraulic medium out of said pressure compensation chamber; and

guiding the hydraulic medium flowing from said pressure compensation chamber onto said endless transmission element.

5,605,514
AUTOMATIC TRANSMISSION SYSTEM FOR A CYCLE
Gary W. Driver, 101 Holcombe St., Shepherd, Tex. 77371
Filed Aug. 21, 1995, Ser. No. 517,434
Int. Cl.[6] F16H *9/00*
U.S. Cl. 474—70 **18 Claims**

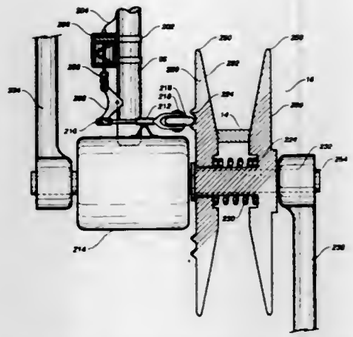
1. An automatic transmission system for a cycle comprising:

a belt member having a fixed width, said belt member extending from a first pulley connected to pedals of the cycle to a second pulley in driving connection to a wheel of the cycle, said second pulley having a belt-receiving slot of tapering width such that said slot is widest adjacent an outer diameter of said second pulley; and

an actuator means contacting said belt member, said actuator means for applying a pressure to said belt member in relation to a rate of rotation of the wheel, said actuator means for causing said belt member to move radially in said belt-receiving slot, said actuator means comprising:

an actuator affixed to said cycle, said actuator being a pneumatic actuator having a pump driven by the wheel; and

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an arm member extending outwardly from said actuator, said arm member being in interactive contact with said belt member, said arm member comprising:

a piston arm extending outwardly from said actuator so as to move relative to the rate of rotation of the wheel; and

a control arm pivotally connected at one end to a frame of the cycle and contacting the belt member at an opposite end.

5,605,515

CONTROL FOR A POSITIVE DISPLACEMENT MACHINE OF A HYDROSTATIC/MECHANICAL POWER SHIFT GEAR

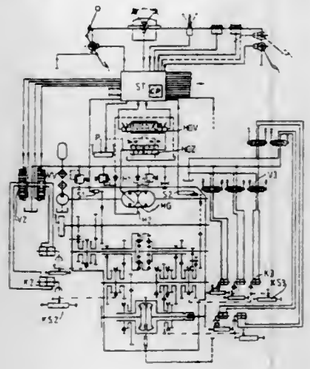
Nils Fredriksen, Harsewinkel, Germany, assignor to Claas oHG beschrankt haftende offene Handelsgesellschaft, Harsewinkel, Germany

Filed Sep. 14, 1995, Ser. No. 528,495

Claims priority, application Germany, Sep. 20, 1994, 44 33 488.5

Int. Cl.[6] F16H *61/40*

U.S. Cl. 475—76 **10 Claims**



1. A process for controlling a hydrostatic positioning mechanism of a hydrostatic/mechanical, continuously output-distributing power shift gear, comprising the steps of:

altering a positive displacement volume for a gear change, until a predetermined rpm ratio of a gear engaging shaft rpm to an output shaft rpm is present, and then engaging a clutch of a new gear, and then changing a positive displacement volume in accordance with a theoretical positive displacement volume, in the direction of a new positive displacement volume, disengaging and then releasing a clutch of the respective previously effective gear, which is still running;

including triggering, in the disengaging direction during the change of the positive displacement volume, the clutch (K3, K2) of the respective, previously effective gear, which is still running; and

continuously monitoring a clutch setting signal as to whether disengagement is beginning, and when disengagement has begun, keeping the positive displacement volume achieved constant until a complete disengagement of the respective clutch (K3, K2) is reported by the clutch setting signal.

5,605,516

OIL PRESSURE CONTROLLER OF AUTOMATIC TRANSMISSION

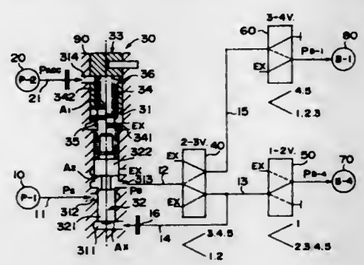
Kazumasa Tsukamoto, Toyota; Masahiko Ando, Okazaki; Akira Fukatsu, Anjo; Tsuyoshi Mikami, Toyota; Masato Kaigawa, Toyota; Kagenori Fukumura, Toyota; Hidehiro Oba, Numazu; Yasuo Hojo, Nagoya; Atsushi Tabata, Okazaki, and Nobuaki Takahashi, Toyota, all of Japan, assignors to Aisin AW Co., Ltd., and Toyota Jidosha Kabushiki Kaisha, both of Japan

Filed Nov. 24, 1995, Ser. No. 562,387

Claims priority, application Japan, Dec. 2, 1994, 6-329493

Int. Cl.[6] F16H *61/00*

U.S. Cl. 475—128 **6 Claims**



1. An oil pressure controller of an automatic transmission, comprising:

a hydraulic power source;

a first hydraulic servo;

a second hydraulic servo;

signal pressure generating means for generating a signal pressure;

a pressure governing valve for governing an oil pressure sure from said hydraulic power source by said signal pressure; and

a directional control valve, disposed between said pressure governing valve and said first hydraulic servo and second hydraulic servo, for selectively supplying the oil pressure from said pressure governing valve to said first or second hydraulic servo:

said pressure governing valve having:

a first pressure receiving face to which said signal pressure is applied in one direction;

a second pressure receiving face to which the oil pressure supplied from said pressure governing valve to said control valve is applied in another direction; and

a third pressure receiving face to which the oil pressure supplied from said control valve to said first hydraulic servo is applied in the other direction.

5,605,517

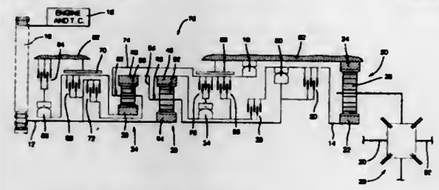
MULTI-SPEED POWER TRANSMISSION

James F. Sherman, Brighton, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 21, 1995, Ser. No. 561,345

Int. Cl.[6] F16H *3/62*

U.S. Cl. 475—276 **2 Claims**



1. A power transmission comprising:

an input member;

an output member;

a first planetary gear set having a first sun gear, a first ring gear and a first planet carrier assembly including a plurality of rotatably mounted pinion gears each meshing with both the first sun gear and the first ring gear;

a second planetary gear set having a second sun gear, a second ring gear and a second carrier assembly including a plurality of rotatably mounted pinion gears each meshing with both the second sun gear and the second ring gear;

said first sun gear being continuously connected with said input member, said first carrier assembly and said second ring gear being connected for common rotation;

a first brake means selectively connectible between the second carrier assembly and a stationary member for selectively preventing rotation of the second carrier;

a first clutch means selectively connectible between the second carrier assembly and the first ring gear for effecting common rotation therebetween;

a second brake means for selectively connecting said second sun gear with said stationary member;

a second clutch means for selectively connecting said second carrier assembly with said input member;

a third clutch means for selectively connecting the second sun gear with said input member;

fourth clutch means for selectively connecting said carrier gear and said output member; and

fifth clutch means for selectively connecting said first ring gear to said output member,

said clutch means and said brake means being selectively engaged to establish five forward ratios and one reverse ratio between said input member and said output member and the fourth clutch means being interchanged with the fifth clutch means when a fourth ratio to fifth ratio interchange is undertaken.

5,605,518

PLANETARY GEAR DEVICE

Kiyoshi Kogure, Ibaraki-ken; Hiroshi Agata, Ryugasaki, and Naoyuki Tanaka, Abiko, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

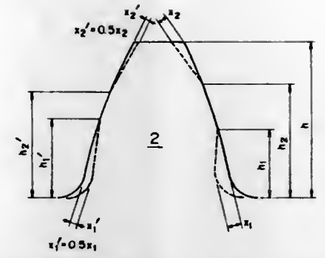
Filed Mar. 23, 1994, Ser. No. 216,450

Claims priority, application Japan, Mar. 26, 1993, 5-067871

Int. Cl.[6] F16H *57/08*

U.S. Cl. 475—344 **9 Claims**

1. A planetary gear device including a sun gear, planet gears meshing with the sun gear and an internal gear meshing with the planet gears with each tooth of the planet gears having two load carrying faces, each gear having a tooth profile formed to an involute curve, teeth surfaces of the planet gears having a different amount of profile correction of the teeth faces of each tooth based on an amount of deformation of the teeth faces of the planet gears caused by meshing with the sun gear and the internal gear, said profile corrections including decrease profile corrections of the dedendum of the teeth faces and wherein an amount of correction of the tooth profile of a dedendum of the teeth faces of the planet gears meshing with the sun gear is greater than an amount of correction of the tooth profile of the dedendum of the teeth faces of the planet gears meshing with the internal gear, whereby rotary motion is smoothly transmitted when the teeth faces of the planet gears mesh with the sun gear and the internal gear during elastic deformation of the teeth caused by the meshing thereof.



5,605,519

METHOD FOR CONTROLLING KICKDOWN WHILE BRAKING AND AS A FUNCTION OF VEHICLE'S OPERATING PARAMETERS

Willi Seidel, Eberdingen-Hochdorf, and Joseph Petersmann, Wimsheim, both of Germany, assignors to Dr. Ing. h.c.F. Porsche AG, Weissach, Germany

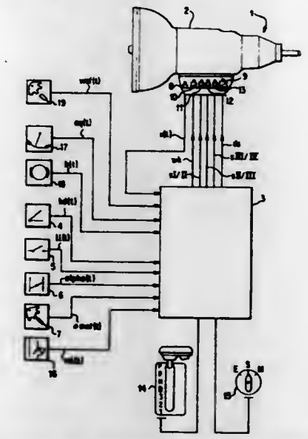
PCT No. PCT/EP92/01136, § 371 Date Jun. 22, 1994, § 102(e) Date Jun. 22, 1994, PCT Pub. No. WO93/00624, PCT Pub. Date Jan. 7, 1993

PCT Filed May 21, 1992, Ser. No. 167,924

Claims priority, application Germany, Jun. 21, 1991, 41 20 603.7

Int. Cl.[6] G05D *1/02*; B60K *31/12;41/06*

U.S. Cl. 477—120 **25 Claims**



17. A method for controlling an automatic transmission of a motor vehicle fitted with a combustion engine, while the combustion engine is influenced via a power control element, and gear positions (g) of the transmission are shifted via characteristic shifting diagrams (SKFj) which, at least as a function of a throttle valve position (alpha(t)), a traveling speed (v(t)) and a motor speed (nmot(t)), are shifted automatically, the method comprising the steps of:

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performing a backshift (increase in the gear ratio) when:

(1) a time variation of the traveling speed (dv(t)/dt) is lower than a first negative longitudinal acceleration limiting value (albg(g,nmot,t);

(2) a transversal acceleration (aq(t)) recorded via a transversal acceleration sensor (17) lies below a first transverse acceleration limit curve (aqgl(v(t));

(3) a time variation of the traveling speed (dv(t)/dt) is higher than a second negative longitudinal acceleration limiting value (albbg(nmot, g, SK(t), t); and

(4) a traveling speed (v(t)) is less than a traveling speed limiting value (vg(g, SK(t), t));

determining a second negative longitudinal acceleration limiting value (albbg(nmot, g, SK(t), t) according to a product from a gear position-dependent factor (k(g−1, SK(t))) and a value, to be determined with the instantaneous value of the traveling speed (v(t)), of the longitudinal acceleration to be expected in the next lower gear position (g−1);

determining the motor speed ($mot(t)|_{g-1}$) expected in the next lower gear position (g−1) from the instantaneous value of the traveling speed (v(t)) and the value of the gear ratio (i(g−1)) at the next lower gear level (g−1); and

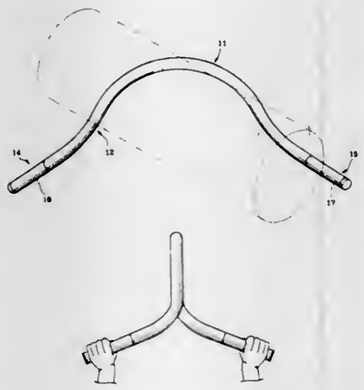
allocating a value to the longitudinal acceleration ($dv/dt|_{g-1}$) expected in the next lower gear position (g−1) which is determined via the characteristic diagram ALB(g, nmot)) from the next lower gear level g−1 and the determined value of the motor speed ($nmot(t), |_{g-1}$) to be expected in the next lower gear position (g−1).

5,605,520

BLOOD VESSEL EXERCISER

Chun N. Chen, No. 3, Lane 232, Sec. 2, Kual Yang St., Taipei, Taiwan

Filed Nov. 14, 1995, Ser. No. 557,561
Int. Cl.[6] A63B *23/14*
U.S. Cl. 482—46 **1 Claim**



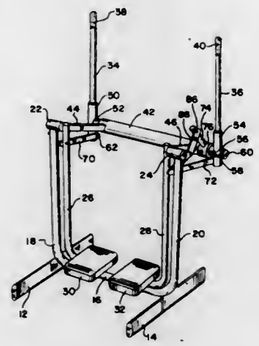
1. An exercise device for stimulating the blood circulation in a user's arms and hands, comprising a long continuous length of tubular material having a central portion formed in a longitudinally directed semicircular contour, said continuous length of tubular material having two curved arc sections respectively formed on opposing ends of said central portion and extending symmetrically in opposing directions transverse said longitudinal direction, each of said two curved arc section having a handle portion formed adjacent a distal end thereof; and a pair of bushings, each of said pair of bushings being rotatably coupled to a handle portion of respective one of said two curved arc sections, said two curved arc sections extending from said central portion at a predetermined angular extent for causing a variation in relative positioning of said handle portions as a user displaces said central portion in a circular rotational trajectory.

5,605,521

STRIDING EXERCISER

Yi F. Hsieh, Succasunna, N.J., assignor to LifeGear, Inc., Rockaway Township, N.J.

Filed Feb. 15, 1996, Ser. No. 602,101
Int. Cl.[6] A63B *22/00*
U.S. Cl. 482—51 **9 Claims**



1. Exercise apparatus comprising:

a frame having a base adapted to be supported on a horizontal surface and a pair of spaced upright supports each secured to and extending upwardly from said base;

a pair of stride assemblies each mounted to said frame, each of said stride assemblies including:

a leg member pivotally mounted to a respective frame support at a horizontal first pivot axis and extending below said first pivot axis between said pair of supports;

a foot platform mounted to said leg member at a location below and remote from said first pivot axis and adapted to support a user thereon;

an arm member pivotally mounted to said frame at a horizontal second pivot axis parallel to and spaced from said first pivot axis, said arm member extending above said second pivot axis;

a hand grip mounted to said arm member at a location above and remote from said second pivot axis; and

first interconnect means for interconnecting said leg member and said arm member for concurrent pivoting movement in the same angular direction about their respective pivot axes; and

second interconnect means for interconnecting said pair of stride assemblies for concurrent pivoting movement in opposite angular directions about the pivot axes.

5,605,522

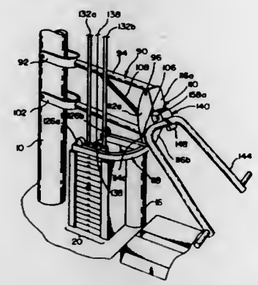
Patent Not Issued For This Number

5,605,523

MULTIPLE STATION SINGLE STACK WEIGHT LIFTING APPARATUS WITH DIRECT LIFT PRESS

A. Buell Ish, III, and L. Kent Lines, both of Carnation, Wash., assignors to Vectra Fitness, Inc., Redmond, Wash.

Continuation-in-part of Ser. No. 838,472, Feb. 19, 1992, Pat. No. 5,336,148. This application Aug. 1, 1994, Ser. No. 283,602
Int. Cl.[6] A63B *21/00*
U.S. Cl. 482—99 **17 Claims**



1. A multiple station, single load exercise machine comprising:

a frame to provide suitable mounting locations for multiple exercise stations;

a first exercise station having user operated functional portions;

a load to provide variable resistance to forces applied thereto;

a first cable operatively linking the user operated functional portions of the first exercise station to the load whereby the operation of the first exercise station causes tensioned movement of the first cable when presented with a force sufficient to overcome the resistance provided by the load;

a second exercise station having user operated functional portions and having a rigid member operatively linking the user operated functional portions of the second exercise station to the load by non-cable means whereby operation of the second exercise station provides an opposing force to the resistance provided by the load; and

means for preventing incidental movement of the user operated functional portions of the first exercise station during operation of the second exercise station

wherein tensioned movement of the first cable of the first exercise station does not cause movement of the user operated functional portions and rigid member of the second exercise station.

5,605,524

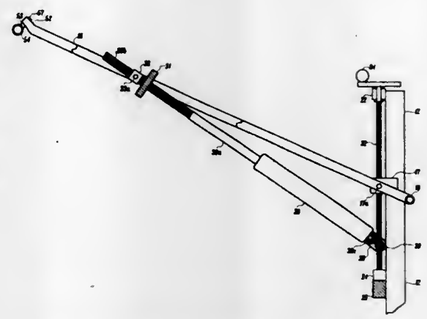
EXERCISE DEVICE

Royce H. Husted, R.R. 4, Box 550, Forest, Va. 24551

Continuation-in-part of Ser. No. 260,877, Jun. 16, 1994, abandoned. This application Feb. 27, 1995, Ser. No. 394,505
Int. Cl.[6] A63B *21/008*
U.S. Cl. 482—112 **25 Claims**

1. A method of providing a variable load and a variable starting position for an exercise device comprising:

providing an articulated triangular lever arm system with a spring means having a free length as one arm thereof; and independently adjusting the lengths of two arms of said articulated triangular lever arm system.

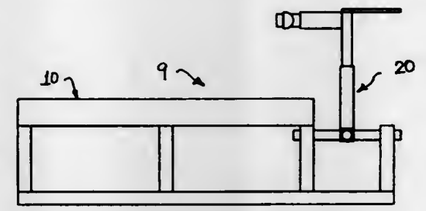


5,605,525

TURNING EXERCISE APPARATUS

Gary L. Johnston, P.O. Box 183, Cowarts, Ala. 36321

Continuation-in-part of Ser. No. 234,544, Apr. 28, 1994, Pat. No. 5,441,472. This application Jul. 12, 1995, Ser. No. 501,313
Int. Cl.[6] A63B *21/015*
U.S. Cl. 482—118 **11 Claims**



1. An exercise apparatus comprising;

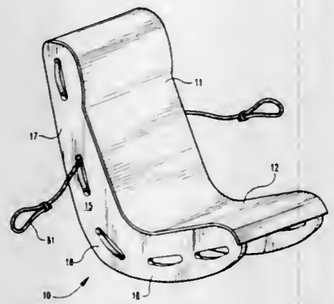
a structural frame means comprising a rigid frame, a back support means mounted at a substantially horizontal position on said rigid frame, and an assembly support means turnably coupled to said rigid frame; and

a user engagement means comprising at least one upwardly extending support member turnably coupled near its lower end to said assembly support means of said structural frame means in such a manner that the turning motion of said support member is generally perpendicular to the turning motion of said assembly support means, and an engagement member mounted near the top of said support member, whereby

a user may position themselves in a relatively reclined position upon said back support means of said structural frame means, engage said engagement member of said user engagement means with the general thigh portion of the legs, and turn said user engagement means in the forward, backward, and side directions.

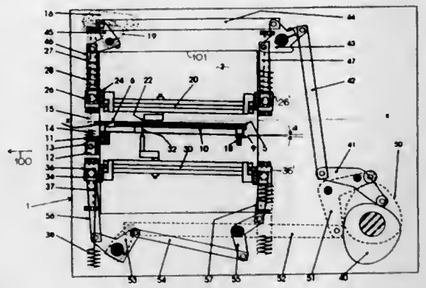
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5,605,526
EXERCISE DEVICE
Steven L. Hatfield, 1630A 30th St. Box 496, Boulder, Colo. 80301
Continuation of Ser. No. 105,014, Aug. 10, 1993, abandoned. This application Apr. 5, 1995, Ser. No. 417,091
Int. Cl.[6] A63B *23/02*
U.S. Cl. 482—142 **29 Claims**



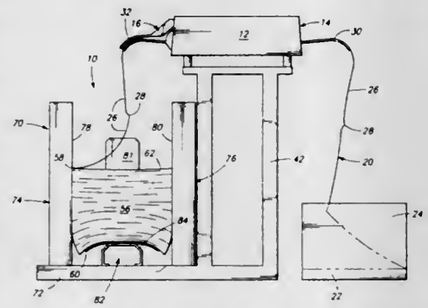
1. An exercise device for stimulating blood flow, comprising:
(a) a seat;
(b) a back;
(c) a first rockable side member;
(d) a second rockable side member; wherein
each of said rockable side members consists of an upper portion adjacent to the back and a lower portion adjacent to the seat; wherein each upper portion is joined to its corresponding lower portion by an arcuate portion; each of said rockable side members further including a supporting surface and a rocking surface; wherein said seat member and said back member are mounted to the supporting surface, and the rocking surface is shaped to enable a user seated in the device to smoothly rock the device backward until the user's feet are elevated above the user's head; and further wherein the rocking surface is shaped to enable a user seated in the device to smoothly rock the device forward from its feet-elevated to its feet-lowered orientation; and
(e) apertures in each of said side members, said apertures being shaped to enable a user to grip the device during exercise in a manner effective to stabilize the user in the exercise device, at least some of said apertures being located in the upper portion of the side members near a mid point between an end of the upper portion and the arcuate portion and said apertures being positioned rearward the back of the device.

5,605,527
WASTE STRIPPING STATION IN A MACHINE THAT DIE-CUTS PLATE-LIKE WORKPIECES
Jean-Luc Gillieron, Lausanne, Switzerland, assignor to Bobst SA, Lausanne, Switzerland
Filed May 15, 1995, Ser. No. 441,622
Claims priority, application Switzerland, May 13, 1994, 01492/94
Int. Cl.[6] B31B *1/24*
U.S. Cl. 493—342 **5 Claims**



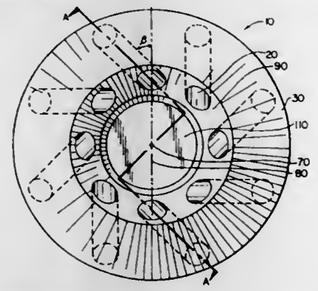
1. A waste stripping station in a machine that die-cuts plate-like workpieces, said stripping station including an upper stripping tool having pins, a lower stripping tool having telescopic pins, means for mounting said upper and lower stripping tools to reciprocate in a vertical direction, a perforated board being positioned between said upper and lower stripping tools and mounted for rotation around an upstream edge of the board, means for raising the downstream edge of the perforated board to lift a plate-like workpiece having waste bits seized by the pins of the upper and lower stripping tools.

5,605,528
PAPER COLLECTOR WITH RESILIENT PAPER SUPPORT ASSEMBLY FOR FACILITATING REFOLDING AND RESTACKING FANFOLD PAPER DISCHARGED FROM A CONTINOUS FORM PRINTER OR THE LIKE
Reese G. Larson, Spokane, Wash., assignor to Output Technology Corporation, Spokane, Wash.
Filed Jan. 23, 1995, Ser. No. 377,933
Int. Cl.[6] B31B *1/26*
U.S. Cl. 493—411 **9 Claims**



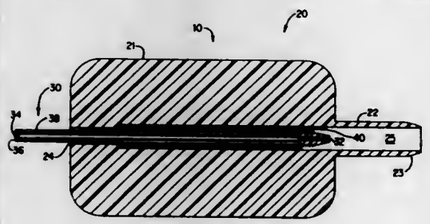
1. A printer output paper collector for refolding and restacking fanfold paper discharged from a continuous form printer or the like into a restack, in which the fanfold paper has fold lines at prescribed intervals defining paper sheets therebetween of prescribed lengths extending along a longitudinal direction of the fanfold paper, comprising:
a base;
spaced guides associated with the base for receiving the fanfold paper discharged from the continuous form printer and assisting in the progressive refolding of the fanfold paper at the fold lines into a restack having a bottom sheet layer and a top sheet layer;
a pedestal supported on the base for supporting a central portion of the restack;
a resilient support assembly between the spaced guides, responsive to the weight of the restack adjacent the fold lines, to maintain the top sheet layer relatively flat without a substantial downward concave contour between the fold lines as the restack is being progressively formed; and
wherein the resilient support assembly has resilient spring elements adjacent opposite sides of the pedestal for resiliently supporting the restack adjacent the fold lines, in which the resilient spring elements progressively deflect downward relative to the pedestal to enable the fold lines of the lower sheet layer to move downward relative to a center of the lower sheet layer to maintain the top sheet layer substantially flat without a substantial downward concave contour between the fold lines as the restack is being progressively formed.

5,605,529
HIGH EFFICIENCY CENTRIFUGE ROTOR
Henry Petithory, Fayville, Mass., assignor to Norfolk Scientific, Inc., Norwood, Mass.
Filed Jan. 17, 1996, Ser. No. 587,608
Int. Cl.[6] B04B *5/02*
U.S. Cl. 494—16 **17 Claims**



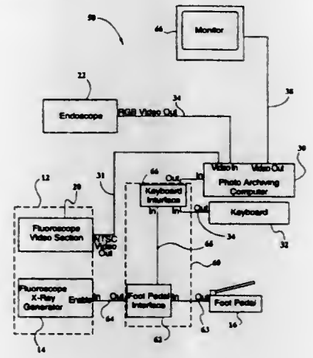
1. A centrifuge rotor comprising:
a rotor body rotatable about a central axis of rotation having a plurality of tubular cavities open at a first end at a top surface of said rotor body, said tubular cavities disposed at a compound angle comprising a first angle with respect to said central axis of rotation and a second angle with respect to an axis perpendicular to said central axis of rotation.

5,605,530
SYSTEM FOR SAFE IMPLANTATION OF RADIOISOTOPE STENTS
Robert E. Fischell, 14600 Viburnum Dr., Dayton, Md. 21036; Tim A. Fischell, 1018 Chancery La., Nashville, Tenn. 37215, and David R. Fischell, 71 Riverlawn Dr., Fair Haven, N.J. 07704
Filed Mar. 23, 1995, Ser. No. 408,780
Int. Cl.[6] A61N *5/00*
U.S. Cl. 600—3 **14 Claims**



1. A system for preventing health care workers from being exposed to ionizing radiation when delivering a radioisotope stent into a vessel of a human body, the system comprising:
an axially extending stent delivery catheter assembly having a distal portion;
a radioisotope stent that is placed at the distal portion of the stent delivery catheter assembly; and,
a radiation shield coaxially disposed externally about the distal portion of the stent delivery catheter assembly to shield health care workers using the system from exposure to ionizing radiation during insertion of the radioisotope stent into a vessel of the human body, the stent delivery catheter assembly being axially displaceable relative to the radiation shield, the radiation shield being maintained external to the vessel of the human body.

5,605,531
APPARATUS FOR USE WITH ENDOSCOPY AND FLUOROSCOPY FOR AUTOMATIC SWITCHING BETWEEN VIDEO MODES
Timothy G. Lane, Merritt Island, and Mark J. Weber, Satellite Beach, both of Fla., assignors to Tilane Corporation, Rockledge, Fla.
Filed Apr. 8, 1994, Ser. No. 225,142
Int. Cl.[6] A61B *1/04;* **G01N** *23/04*
U.S. Cl. 600—118 **17 Claims**



1. An apparatus comprising:
a first video apparatus generating a video output signal in a first video format;
a second video apparatus generating a video output signal in a second video format which is incompatible with said first video format;
a video component capable of operating in either a first video mode capable of receiving and processing a video signal in said first video format, or a second video mode capable of receiving and processing a video signal in said second video format, said video output signal from said first video apparatus and said second video output signal from said second video apparatus being input into said video component;
a data input device operatively associated with said video component, said video component being responsive to a predetermined signal from said data input device for selecting from between said first video mode and said second video mode for operation;
a switch for selectively actuating and deactuating said first video apparatus, and
means for detecting operation of said switch to actuate said first video apparatus and for sending said predetermined signal to said video component to select said first video mode for operation.

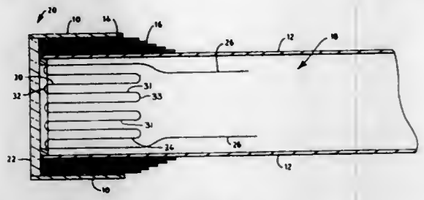
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FOG-FREE ENDOSCOPE

Richard Schermerhorn, Natick, Mass., assignor to Vista Medical Technologies, Inc., Carlsbad, Calif.

Filed Oct. 20, 1995, Ser. No. 546,271
Int. Cl.[6] A61B 1/06
U.S. Cl. 600—169 **1 Claim**



1. A fog-free endoscope comprising:

an elongated tube having a distal end and defining an optical path extending from said distal end of said endoscope;

a front window fixed to said endoscope distal end; and

an electrically conductive wire coil disposed in said distal end of said endoscope, wherein said wire coil is disposed around the periphery of said window, said wire coil comprising a series of elongated axially-extending portions defining distal bend portions between neighboring ones of said axially extending portions and disposed adjacent to and spaced from said window and defining proximal bend portions between neighboring ones of said axially extending portions and disposed proximally of said window and said distal bend portions;

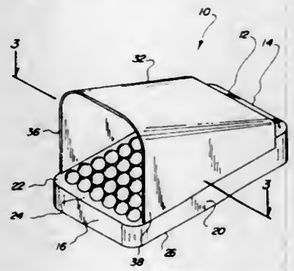
whereby said wire coil is operative to raise the temperature of a distal end portion of said endoscope, thereby to raise the temperature of said window, to maintain said window in a fog-free condition.

5,605,533

TOUCH ACTIVATED FOOT MASSAGE DEVICE

Bernard D. Badilla, 551 Peralta Ave., San Francisco, Calif. 94110

Filed Sep. 20, 1995, Ser. No. 531,320
Int. Cl.[6] A61H 7/00
U.S. Cl. 601—103 **1 Claim**



1. A new and improved touch activated foot massage device comprising in combination:

a generally rectangular housing having a front portion, back end and side walls therebetween, the housing having a top with a plurality of ball chambers therethrough and a bottom, each ball chamber having a diameter of about ½ inch, the housing having an exterior width of about 5 to 6 inches, the back end and side walls having a height of about 4 inches, the front portion having a front height about 30 percent greater than the back end and side walls, the greater height providing space for a motor, the housing having a length being between about 14 to 15 inches;

a generally U-shaped cover formed of a flexible material having an upper portion with a pair of sleeves extending therefrom, the cover being positionable over the housing with the sleeves being in communication with the side walls of the housing, the cover having a decreasing height along the length of the housing with the height being 75 percent less at the front portion than at the back end of the housing, the back end of the housing allows a foot to easily be positioned on the device;

a plurality of rubber balls with each ball having a rigid interior with a crank pin therein, each rubber ball having a diameter for allowing each ball to pass through a respective ball chamber of the top of the housing;

a plurality of crank shafts with each crank shaft having a coupling end, a rotation end and a plurality of cranks therebetween, each crank shaft being positioned within the housing and each crank extending into a respective one of said rubber balls, each crank being in communication with the crank pin of each ball, the crank being integral with the crank pin, the coupling end of each crank shaft having a pulley coupled therearound, the crank shaft having a length of about 4 to 5 inches, each crank shaft being supported above the bottom of the housing and within the housing by a pair of rectangular projections;

each projection being within the housing and extending upward from the bottom and spaced from the side wall of the housing, each projection having an upper end with a bearing therein, one of the bearings of each said pair of projections being capable of receiving the coupling end prior to the coupling end being positioned within the pulley, the other of said bearings being capable of receiving the rotation end of each crank shaft;

a cylindrical motor being positioned within the front portion of the housing, the motor having a shaft rod with a gear extending therefrom, the gear being integral with the shaft rod and having a tooth belt positioned therearound, the tooth belt is rotated about the gear when the motor is operated; and

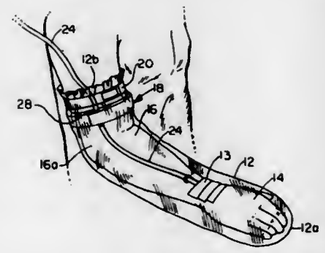
the tooth belt having a length to extend around the pulley of each crank shaft, the length of the belt being about 75 percent of the length of the housing for ensuring tightness around the gear and pulleys, the tooth belt being capable of applying an amount of tension when wrapped around the pulley of the crank shaft for allowing movement of the crank, the crank shaft being moved along a center of rotation when the motor is activated, the motor being activated when a foot being positioned on the top of the housing applies a force to the balls thus causing the crank to move the crank shaft and cause the belt around the gear to move.

5,605,534

SHOWER GUARD FOR IV SITE

Jeffrey W. Hutchison, 6143 Lodi Rd., Alexandria, La. 71303

Filed Dec. 26, 1995, Ser. No. 579,630
Int. Cl.[6] A61F 5/00
U.S. Cl. 602—3 **20 Claims**



1. An apparatus adapted to cover an IV site on a limb having a tube connected thereto in order to prevent contact of the IV site with water and other contaminants, the apparatus comprising:

a. a water impermeable sleeve open at one end for placement over the end of said limb and over said IV site, said sleeve having a plurality of folds therein adapted to expand and contract in order to receive limbs of various length,

b. a band connected to the inside of said sleeve adjacent to the open end of said sleeve, said band having

i. a passage formed therein and extending completely therethrough for receipt of said tube connected to said IV site,

ii. a flap integrally formed on the inside of said band covering said passage for selective opening to enable said tube to be placed in said passage, a portion or said passage being formed in said flap, and

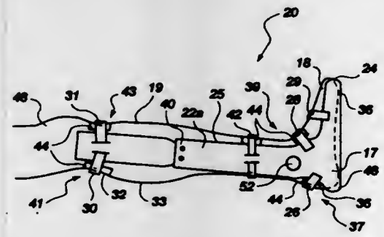
iii. a seal for sealing said flap to said band after placement of said tube in said passage to prevent liquids from flowing through said band between said flap and said band and through said passage around the outside of said tube.

5,605,535

ANKLE POSITIONING SPLINT

Jeffrey A. Lepage, 7067 S. 2155 East, Salt Lake City, Utah 84121

Filed May 1, 1995, Ser. No. 432,085
Int. Cl.[6] A61F 5/00
U.S. Cl. 602—27 **32 Claims**



1. An ankle positioning splint for maintaining a patient's foot in a desired position relative to a corresponding lower leg of the patient to thereby position an ankle of the foot, wherein the foot includes a heel, said ankle positioning splint comprising:

load-bearing foot brace means including a bottom plate for supporting the patient's foot in a supported position and leg supporting means extending upwardly from the plate and along opposing sides of the lower leg, respectively, when the foot is supported in the supported position, said leg supporting means further including an upper rear opening;

foot holding means disposed on the foot brace means for pressing against the patient's foot anterior to the ankle; and

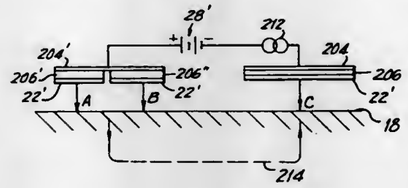
calf support means secured to opposing portions of the leg supporting means and extending across the upper rear opening thereof for pressing against a posterior portion of the lower leg residing between a knee joint and a larger portion of a calf section of the lower leg, said posterior portion residing forwardly of the larger portion of the calf such that said calf section extends rearwardly to a location beneath and rearward of the portion of the calf support means which is pressing against said posterior portion of the lower leg, to thereby aid in preventing substantial migration of the heel away from the bottom plate of the foot brace means.

5,605,536

TRANSDERMAL DRUG APPLICATOR AND ELECTRODES THEREFOR

Dan Sibalis, Stony Brook, N.Y., assignor to Drug Delivery Systems Inc., New York, N.Y.

Continuation of Ser. No. 858,544, Mar. 27, 1992, abandoned, which is a continuation of Ser. No. 746,691, Aug. 16, 1991, abandoned, which is a division of Ser. No. 428,478, Oct. 30, 1989, Pat. No. 5,087,240, which is a division of Ser. No. 198,652, May 25, 1988, abandoned, which is a continuation of Ser. No. 922,296, Oct. 23, 1986, abandoned, which is a division of Ser. No. 839,050, Mar. 12, 1986, Pat. No. 4,640,689, which is a continuation of Ser. No. 702,486, Feb. 19, 1985, abandoned, which is a continuation-in-part of Ser. No. 660,192, Oct. 12, 1984, Pat. No. 4,622,031, which is a continuation-in-part of Ser. No. 524,252, Aug. 18, 1983, Pat. No. 4,557,723. This application Oct. 14, 1993, Ser. No. 136,726
Int. Cl.[6] A61N 1/30
U.S. Cl. 604—20 **14 Claims**



1. An electrically powered transdermal drug applicator having at least one medicament for application to a living body for the migration of the at least one medicament through the skin into the blood stream comprising essentially of the following elements:

Three generally flat electrode elements, free of a flexible, non-conductive substrate having conductive coated areas and free of any folds, and forming a transdermal drug applicator with multiple electrode elements, and with one electrode element thereof being separated from the other two which are juxtaposed to each other, and with two of said three electrode elements being either an active medicament containing electrode element or an inactive electrode element having no medicament,

reservoir means having a predetermined depth and a plurality of sides forming a periphery, in each of said electrode elements of said transdermal drug applicator, with at least one of said juxtaposed electrode elements including said reservoir means containing said at least one medicament; and said reservoir means being free of transversing elements passing through at least a portion of said electrode elements and/or said reservoir means;

each of said electrode elements, including said at least one having said at least one medicament in said reservoir means having an impermeable tacky, non-conducting and insulating barrier seal coextensive with the sides of said electrode elements and said reservoir means and extending along at least the full depth of said electrode elements and said reservoir means, so as to form an effective dam between said juxtaposed electrode elements and said reservoir means, with an end lip-like curtain about all sides forming said periphery of said electrode elements and said reservoir means; the dam-like barrier seal maintaining electrode and reservoir separation of said juxtaposed electrode and reservoir elements from each other and forming a tacky peripheral lip seal against the skin for precluding electrical shorting across said electrode-reservoir elements;

an electrical circuit, including a power source and current control device, for supplying electrical power in parallel to all of said electrode elements and said reservoir means and forming a closed electrical loop circuit from said power source connected via conductors to said electrode elements and said reservoir means, and the skin when the transdermal drug applicator is applied thereto;

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a relatively, thin non-conductive cover means partially enclosing and conforming to said electrode elements and said reservoir means so as to envelope at least said electrode elements and said reservoir means and at least portions of said electrical circuit and leaving sides of said electrode elements and said reservoir means exposed for contact with the skin, and

adhesive means for affixing said transdermal drug applicator to said skin, whereby said electrical circuit through the skin is formed when said transdermal drug applicator is adhesively affixed to said skin, thereby creating at least one physico/chemical mass transfer phenomenon which causes said at least one medicament to migrate from said reservoir means containing said at least one medicament through the skin and into the blood stream of said living body.

5,605,537

ENDOSCOPIC DEVICE

Jack L. Ivey, 1900 Preston Rd. #350, Plano, Tex. 75093

Filed Aug. 8, 1994, Ser. No. 287,044
Int. Cl.[6] A61M *1/30*
U.S. Cl. 604—21 **19 Claims**



1. An endoscopic device for use in medical procedures comprising:

a rigid hollow endoscopic tube having a distal end, a proximal end and a substantially cylindrical side wall, said distal end and said proximal end being open, and said endoscopic tube having an axis which is substantially straight, such that another endoscopic instrument having an external diameter smaller than the internal diameter of the endoscopic tube may be inserted therethrough while the distal end of the endoscopic tube is in a patient's body;

at least a port formed in the endoscopic tube side wall near said distal end

means for transferring vacuum from a vacuum source to the endoscopic tube, and thereby effectuating the removal of fluids and debris from said patient's body while the endoscopic tube distal end is in said patient's body; and

means for preventing the leakage of fluid or vacuum out of said proximal end.

5,605,538

Patent Not Issued For This Number

5,605,539

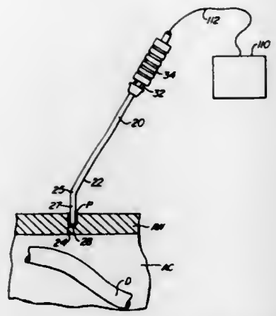
SELF-INTRODUCING INFUSION CATHETER

Terry Buelna, Long Beach, and Wayne A. Noda, Mission Viejo, both of Calif., assignors to Urohealth Systems, Inc., Costa Mesa, Calif.

Continuation of Ser. No. 943,808, Sep. 11, 1992, abandoned. This application May 12, 1994, Ser. No. 241,953
Int. Cl.[6] A61M *1/00*
U.S. Cl. 604—51 **11 Claims**

1. A method of introducing a fluid into a lumen of a body duct, the method comprising:

percutaneously introducing a catheter through body tissue into the lumen by applying ablative energy to said tissue through an electrode disposed at the distal tip of the catheter to form an opening in a wall of the duct;



positioning a distal portion of the catheter through said opening in the wall of the duct such that an infusion port in the distal portion of the catheter lies in the lumen of the duct;

applying a clip about the duct with the distal portion of the catheter positioned therein to seal the lumen around the catheter, the clip being applied so as to compressively deform a sleeve about the distal portion of the catheter to secure the catheter in position in the lumen; and

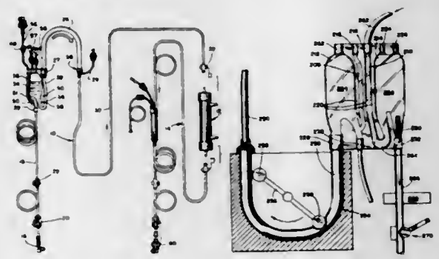
infusing a fluid into the duct through the infusion port.

5,605,540

BLOOD AIR TRAP CHAMBER

David S. Utterberg, 1080 Chestnut St., San Francisco, Calif. 94109

Division of Ser. No. 254,428, Jun. 6, 1994, which is a continuation of Ser. No. 876,039, Apr. 30, 1992, abandoned. This application Aug. 15, 1994, Ser. No. 290,604
The portion of the term of this patent subsequent to Jun. 6, 2014, has been disclaimed.
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—80 **18 Claims**



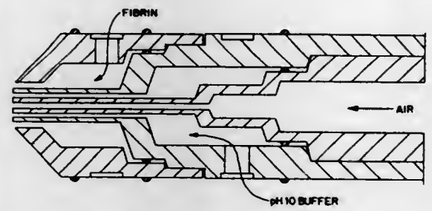
1. A blood chamber which comprises a sealed, integral, flattened plastic tube which defines a pair of spaced reservoir chambers, and a first conduit for each of said chambers respectively communicating with a first end of each reservoir chamber through a first port, each of said first conduits extending laterally along substantially the length of each said reservoir chamber in spaced relation thereto, for connection with tubing adjacent each reservoir chamber end opposed to the first end of said reservoir chamber, said sealed, flattened plastic tube also defining a pair of second ports, each second port respectively communicating with one of the reservoir chambers.

5,605,541

FIBRIN SEALANT APPLICATOOR

Niels-Erik Holm, Birkerod, Denmark, assignor to E. R. Squibb and Sons, Inc., Princeton, N.J.

Filed Dec. 8, 1994, Ser. No. 351,867
Int. Cl.[6] A61M *37/00*
U.S. Cl. 604—82 **3 Claims**



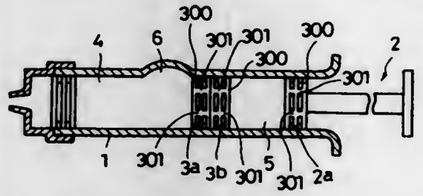
1. A device for applying a fibrin sealant comprising two components which will form said sealant when combined, which device comprises commonly actuable reservoirs for each of said components and a source of gas, wherein each of said reservoirs and said gas in separate fluid communication via a discrete channel to a spray head, said spray head having a first aperture located centrally in an exit end of said spray head through which said gas is discharged, said spray head having a first annular aperture in the exit end of said spray head within first annular aperture is concentric with said first aperture and through which one of said fibrin-sealant-forming components is discharged, and a second annular aperture in the exit end of said spray head being concentric with said first aperture and concentric with, and having a radius larger than said first annular aperture through which the second of said fibrin-sealant-forming components is discharged wherein all of said apertures are in a common plane.

5,605,542

PREFILLED SYRINGE

Nobuo Tanaka, Mishima-gun; Jotaro Kishimoto, Nishinomiya; Kotaro Wakamatsu, Ikeda; Takayuki Hagihara, Suita, and Seiji Ohtani, Ibaragi, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 52,682, Apr. 27, 1993, abandoned. This application Nov. 14, 1995, Ser. No. 557,517
Claims priority, application Japan, Apr. 30, 1992, 4-028792 U; Apr. 30, 1992, 4-028793 U; Sep. 18, 1992, 4-065171 U; Sep. 21, 1992, 4-065612 U
Int. Cl.[6] A61M *37/00*
U.S. Cl. 604—89 **25 Claims**



1. A prefilled syringe, comprising:

a tubular body having front and rear end portions and having adjacent compartments therein, each of said compartments having a separate substance therein, said front end portion being sealed and engageable with a needle for injection of the substances after they are mixed, and said rear end portion being sealed by a plunger having a push rod connectable therewith for axially sliding said plunger in said tubular body;

a sealing means comprising a first bypass stopper for separating and sealing said adjacent compartments from each other, axially slidably disposed in said tubular body between said adjacent compartments, said sealing means being slidable in said tubular body in response to sliding of said plunger in said tubular body; and

a bypass between said sealing means and said front end portion having an axial length along said tubular body, said bypass permitting one of the substances in one of said adjacent compartments to bypass said sealing means and be introduced into the other of said adjacent compartments;

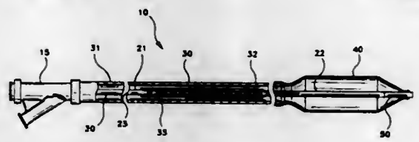
wherein said sealing means further comprises a second bypass stopper axially slidably disposed in said tubular body between said adjacent compartments separating and sealing said adjacent compartments from each other independently of said first bypass stopper, said first and second bypass stoppers being located adjacent to each other and between said bypass and said plunger, said first and second bypass stoppers each having an axial thickness such that the combined axial thickness of said first and second bypass stoppers is less than said axial length of said bypass such that, upon sliding of said plunger in said tubular body, said first and second bypass stoppers are slidable to said bypass so that one of the substances in one of said adjacent compartments can be introduced into the other of said adjacent compartments.

5,605,543

CATHETER HAVING SHAFT OF VARYING STIFFNESS

William J. Swanson, St. Paul, Minn., assignor to Schneider (USA) Inc., Plymouth, Minn.

Continuation of Ser. No. 374,388, Jan. 17, 1995, abandoned, which is a continuation of Ser. No. 209,342, Mar. 10, 1994, abandoned. This application Jan. 30, 1996, Ser. No. 594,355
Int. Cl.[6] A61M *29/00*
U.S. Cl. 604—96 **22 Claims**



1. A catheter comprising:

(a) an inner tube; and

(b) an outer tube positioned around the inner tube and forming a lumen between the outer tube and inner tube, the outer tube comprising:

(i) a proximal section having a distal portion, the distal portion having a substantially circular and uninterrupted cross-section throughout its length and a first flexibility;

(ii) a distal section having a proximal portion, the proximal portion having a substantially circular and uninterrupted cross-section throughout its length and a second flexibility; and

(iii) a transition section intermediate the proximal section and the distal section, the transition section having one or more openings therein, with the transition section being configured to provide a flexibility which is greater than the first flexibility of the distal portion of the proximal section and which flexibility is less than the second flexibility of the proximal portion of the distal section.

5,605,544

SAFETY INJECTOR WITH RETURNABLE NEEDLE

Chien-Hua Tsao, 7Fl., No. 6, Lane 134, Sec. 2, Chung Hsiao East Rd., Taipei, Taiwan

Filed Feb. 12, 1996, Ser. No. 600,256
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—110 **12 Claims**

1. A safety injector, comprising

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a drug tube assemblage which comprises an outer tube for storing medicament, a hollow push rod which has an open mouth on a top thereof and an inner space therein, and a rubber plunger affixed to said top of said push rod for maintaining fluid tight properly with said outer tube and enabling said push rod and said rubber plunger to move together while injecting, in which said outer tube has an exhaust gas hole formed on a top thereof and a hollow neck extended from said exhaust gas hole, said rubber plunger including a sealing element which has a frangible surface for sealing said open mouth provided on said top of said hollow push rod, so that after the medicament in said outer tube has entirely been injected, the motion of said rubber plunger is braked up and a relative motion occurred between said rubber plunger and a continuously movement of said push rod forces said frangible surface of said sealing element to crack due to a squeezing effect by said relative motion, said drug tube assemblage further comprising a spherule positioned on a top of said inner space for resisting pressure and preventing said frangible sealing element to crack by any excessive pressure before the medicament has not been injected; and

an injector needle assemblage, which is replaceably connected and affixed to said drug tube assemblage, comprising a body connected and affixed to a top side of said hollow of said outer tube in such a manner that said body is capable of separating again from said hollow neck of said outer tube when it is necessary, an injector needle extended out of said body, a needle base which is temporary hooked to an inner part of said body in a releasable manner and is molded in one piece with said injector needle for supporting said injector needle, at least an elastic element which is positioned in said body for exerting downwards an elastic force to said needle base, a soft release element having an upper piece and a lower piece for preventing the medicament intruding in said body, said soft release being positioned in a top portion of said outer tube for maintaining a fluid tight property with an inner surface of said outer tube, thereby after the medicament is injected up by a pushing force exerted by said rubber plunger which is moved together with said push rod, said soft release element being pushed to move for a very short distance by said push rod so as to separate said needle base form said body and provide a squeezing force to exert said elastic element, said needle base and said injector needle being slipped into said inner space of said push rod after passing through said pre-cracked frangible surface of said sealing element.

5,605,545

TUBING SYSTEM FOR DELIVERING FLUID TO A SURGICAL SITE

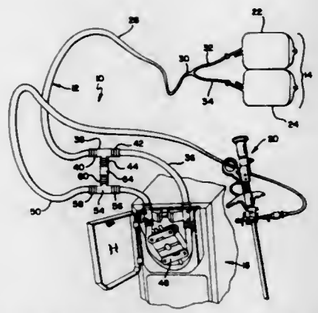
Albert Nowosielski, Roselle; Robert Mantell, Arlington Heights; Peter Manzie, Berwyn, and Charles Zander, Grayslake, all of Ill., assignors to Northgate Technologies Incorporated, Elgin, Ill.

Filed May 5, 1994, Ser. No. 238,647
Int. Cl.[6] A61M *1/00*
U.S. Cl. 604—118 **17 Claims**

1. A tubing set for use with a peristaltic pump for providing pressurized fluid from a source to a surgical instrument, comprising:

a first section of tubing having a fitting for connection to a source of fluid;

a second section of tubing being formed of a flexible material and being sized and adapted for placement in a peristaltic-type pump said second section of tubing connected to said first section of tubing;



a third section of tubing connected to said section of tubing, said third section of tubing having a fitting for connection to a surgical instrument; and

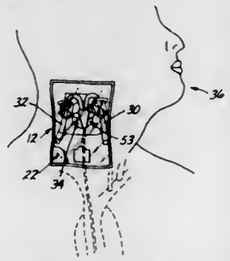
a by-pass section of tubing connecting said first section of tubing and said third section of tubing, and further in which said by-pass section has a pressure relief valve that opens upon reaching a threshold pressure.

5,605,546

APPARATUS AND METHODS FOR PROTECTING INDWELLING MEDICAL DEVICES

Renah Wolzinger, 4212 Silliman Dr., and Ezekiel Joseph, 16242 Typhoon La., both of Huntington Beach, Calif. 92649

Filed Nov. 28, 1994, Ser. No. 345,495
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—174 **22 Claims**



1. An apparatus useful for caring for the outwardly extending portion of a device partially located within the body of a human or animal which comprises:

a receptacle defining a chamber sized and adapted to receive an outwardly extending portion of a medical treatment device partially located within the body of a human or animal, at least a portion of said receptacle being transparent, said receptacle including a permanently sealed periphery or a periphery which is resealable over a minor portion thereof when said receptacle is being used;

an inlet located in said receptacle through which the outwardly extending portion is passed to be received in said chamber; and

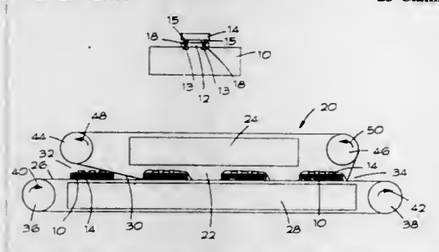
a securement member located on said receptacle, including an adhesive surface and adapted to be adhesively secured to the body of the human or animal, provided that said apparatus includes no vent which allows continuous passage of fluid out of said receptacle when said securement member is adhesively secured to the body of the human or animal.

5,605,547

METHOD AND APPARATUS FOR MOUNTING A COMPONENT TO A SUBSTRATE USING AN ANISOTROPIC ADHESIVE, A COMPRESSIVE COVER FILM, AND A CONVEYOR

Rickie C. Lake, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Mar. 27, 1995, Ser. No. 410,889
Int. Cl.[6] H01L *21/288;21/58;21/603*
U.S. Cl. 29—25.01 **23 Claims**



1. A method for mounting a component to a substrate comprising:

placing the component on the substrate with an anisotropic adhesive therebetween;

moving the component and substrate on a conveyor through a chamber;

drawing a cover film moving at a same speed as the conveyor over the component and substrate to compress the anisotropic adhesive;

curing the anisotropic adhesive while under compression; and

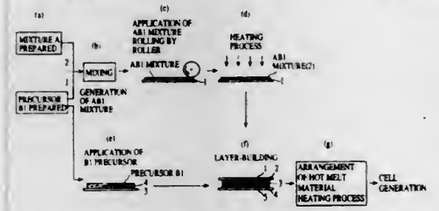
withdrawing the cover film from the component and substrate.

5,605,548

MANUFACTURING METHOD FOR A POLYMER SOLID ELECTROLYTE CELL WHICH USES COMPOSITE POSITIVE ELECTRODE

Tsukasa Itou, Sumoto; Masato Nishioka, Ibaraki; Takashi Oda, Sumoto; Tsutomu Sonozaki, Mihara-gun, and Yasunobu Kodama, Sumoto, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Nov. 21, 1995, Ser. No. 561,286
Claims priority, application Japan, Nov. 21, 1994, 6-286733
Int. Cl.[6] H01M *4/04;10/38*
U.S. Cl. 29—623.1 **15 Claims**



1. A manufacturing method for a current collector single body sheet-like composite positive electrode where a sheet-like composite positive electrode, including a positive electrode active material, is formed on a positive electrode current collector and constitutes a single body with the positive electrode current collector, said method comprising:

generation of positive electrode mixture process for generating a positive electrode mixture by mixing a non-aqueous solvent, polymer material, an electrolyte salt, the positive electrode active material and an electrically conductive material;

expanded sheet conversion process for expanding the positive electrode mixture after the generated positive electrode mixture has been applied onto the positive electrode current collector; and

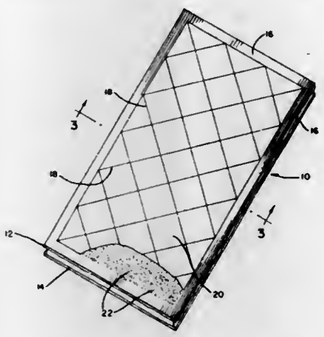
hardening/attachment process for hardening a sheet-like composite positive electrode and attaching the sheet-like composite positive electrode to the positive electrode current collector by polymerizing the polymer material distributed in the generated sheet-like positive electrode mixture by applying one of heat and ionizing radiation to the sheet-like positive electrode mixture.

5,605,549

BATTERY ELECTROLYTE PAD WITH GELLING AGENTS AND METHOD

Jerry Zucker, Charleston, S.C., assignor t. Daramic, Inc., Burlington, Mass.

Filed Feb. 28, 1996, Ser. No. 608,152
Int. Cl.[6] H01M *4/64*
U.S. Cl. 29—623.1 **14 Claims**



1. A storage battery comprising a pair of electrodes having a space therebetween, and an electrolyte pad within said space between said electrodes, said electrolyte pad comprising a pair of outer porous layers and a quantity of acid gelling agent distributed between said porous layers and sealed therebetween.

5,605,550

BATTERY LAMINATE WITH IMPROVED ELECTROLYTE AND ANODE OR CATHODE LAYER CHARACTERISTICS

Gert L. Jensen, San Jose; Benjamin Chaloner-Gill, and Mark J. Isaacson, both of Santa Clara, all of Calif., assignors to Valence Technology, Inc., Henderson, Nev.

Continuation-in-part of Ser. No. 77,310, Jun. 14, 1993, abandoned. This application Aug. 2, 1994, Ser. No. 284,311
Int. Cl.[6] H01M *6/00*
U.S. Cl. 29—623.3 **17 Claims**

1. A method for making a structure for use in a laminar battery assembly, comprising:

(a) depositing a layer of battery electrode material on a surface of a substrate layer;

(b) causing said material to have an uneven surface;

(c) curing said battery electrode material; and

(d) after step 1(b), depositing a layer of electrolyte material on the uneven surface of the battery electrode material layer.

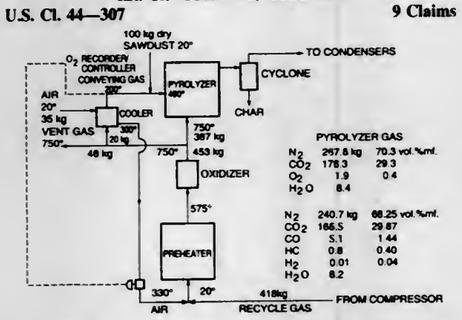
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5,605,551
PROCESS FOR THE THERMAL CONVERSION OF BIOMASS TO LIQUIDS

Donald S. Scott; Jan Piskorz; Desmond Radlein, and Piotr Majerski, all of Waterloo, Canada, assignors to University of Waterloo, Waterloo, Canada

PCT No. PCT/CA93/00504, § 371 Date Jul. 31, 1995, § 102(e) Date Jul. 31, 1995, PCT Pub. No. WO94/12592, PCT Pub. Date Jun. 9, 1994
PCT Filed Nov. 24, 1993, Ser. No. 446,789
Claims priority, application United Kingdom, Nov. 26, 1992, 9224783
Int. Cl.[5] C10L *1/02;* **C10G** *1/02*
U.S. Cl. 44—307 **9 Claims**



1. A process for the thermal conversion of biomass or biomass derived substances to high yields of liquid products employing a short-residence time reaction, the process comprising the steps of:

a) adding to a stream of recycle process gas to be used for conveying or fluidization in a short-residence time pyrolysis reactor sufficient oxygen-containing gas to give an excess of oxygen of 0% to about 200% of that required for combustion of combustible gas components to form an oxygen-containing gas-recycle gas mixture,

b) passing the oxygen-containing gas-recycle gas mixture through a catalytic converter, with preheating if necessary, to oxidize combustible gas components in the recycle gas mixture,

c) preheating the oxidized recycle gas together with any excess oxygen to a sufficiently high temperature to supply the required heat to a pyrolysis reaction,

d) subjecting a biomass feed, after grinding and drying the particles to less than about 10% moisture, to short-residence time pyrolysis in the presence of 0 to about 2% by volume of oxygen at temperatures of from about 400° C. to about 650° C., gas plus volatiles residence times less than about 2 seconds, and at pressures substantially atmospheric to form a product gas,

e) condensing from the product gases an organic liquid product together with water after removal of char or unreacted or inert solids to provide said recycle process gas, and,

f) recycling said recycle process gas to step (a).

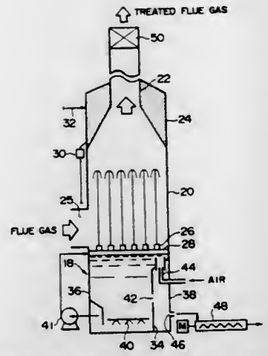
5,605,552
WET TYPE FLUE GAS DESULFURIZATION APPARATUS

Taku Shimizu; Tsuyoshi Ohishi; Koichiro Iwashita, and Yoshikazu Endo, all of Tokyo, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 16, 1995, Ser. No. 442,405
Claims priority, application Japan, May 17, 1994, 6-102494
Int. Cl.[6] B01D *47/00;* **C01B** *17/22*
U.S. Cl. 55—228 **4 Claims**

1. A wet type flue gas desulfurization apparatus in which desulfurization of flue gas is carried out through gas/liquid contact of the flue gas and an absorbent slurry;

said apparatus comprising a combined absorption tower which includes within a single body a liquid tank accommodating



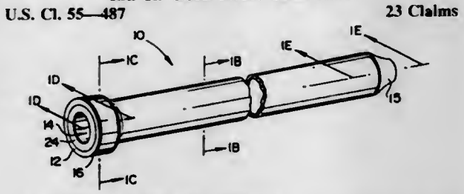
the absorbent slurry, a thickening tank in which a product of reaction between the absorbent and SO_2 present in the flue gas becomes concentrated through settling, an absorption section which situated over said liquid tank and in which desulfurization reaction takes place through gas/liquid phase contact of the flue gas and the absorbent slurry, nozzles provided near a lower end of said absorption section positioned directly above a liquid surface for spraying of the absorbent slurry in an upward direction, and a stack section situated over said absorption section serving for dispersing the treated flue gas into atmosphere;

wherein said flue gas introduced at a lower end of said absorption section and the absorbent slurry sprayed through said nozzles are contacted, and an unreacted portion of the absorbent slurry and a reaction product slurry descend, and are collected in, said liquid tank, the reaction product slurry is introduced from said liquid tank into said thickening tank and a concentrated sludge is discharged from the thickening tank.

5,605,553
CERAMIC HOT-GAS FILTER

Elizabeth S. Connolly, Wilmington, Del., and George D. Forsythe, Landenberg, Pa., assignors to Du Pont Lanxide Composites Inc., Newark, Del.

Continuation-in-part of Ser. No. 221,139, Mar. 31, 1994, Pat. No. 5,460,637. This application Jun. 7, 1995, Ser. No. 475,286
Int. Cl.[6] B01D *39/20;* **C04B** *41/50*
U.S. Cl. 55—487 **23 Claims**



1. A ceramic hot gas filter comprising:

a porous elongated filter support, said support having an outer surface, an opening at one end into a hollow interior, a closed end opposite said open end, and an external flange integral with said open end, said support being formed of a plurality of layers of oxide ceramic yarn, each layer being arranged in a criss-crossing relationship with neighbosing layers to form a plurality of quadrilateral-shaped openings, said yarn being coated with a first oxide ceramic material, said first oxide ceramic material providing, upon heat treatment, a porous refractory oxide support matrix; and

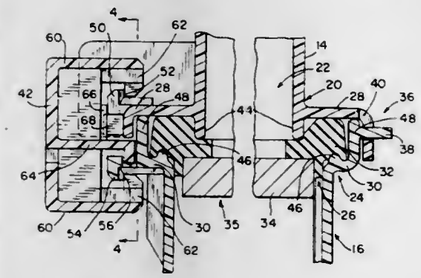
a porous membrane layer on the inner surface of said support, said membrane layer having a porosity less than that of said support wherein the pore diameters are about 0.1 to 10 microns in said membrane layer and comprising an ordered

arrangement of continuous filament oxide ceramic yarn coated with a second oxide ceramic material, said second oxide ceramic material providing, upon heat treatment, a porous refractory oxide membrane matrix.

5,605,554
MULTI-PIECE AIR FILTER HOUSING AND CLOSURE ARRANGEMENT

Gary I. Kennedy, Clarkston, Mich., assignor to Siemens Electric Limited, Windsor, Canada

Filed Aug. 30, 1995, Ser. No. 520,994
Int. Cl.[6] B01D *46/10*
U.S. Cl. 55—493 **20 Claims**



1. An air filter housing comprising:

a compressible seal;

a first housing portion including a first edge including at least two spaced hook members;

a second housing portion including a second edge including at least one hook member; and

a one-piece clamp having a generally U-shaped cross-section including first and second legs, the first and second legs being generally parallel, the first leg including at least two spaced catches, and the second leg including at least one catch;

wherein the first and second housing portions are joinable to form an enclosure and the seal is positioned between the first and second housing portions generally at the first and second edges, the catches of the first leg are engaged with the two spaced hook members of the first housing portion, and the catch of the second leg is engaged with the hook member of the second housing portion to compress the seal between the first and second housing portions.

5,605,555
AIR/OIL SEPARATOR WITH INTERLOCKED FLANGE

Jhina U. Patel, Willoughby, Ohio, and Morgan H. Morgan, Greenville, Tenn., assignors to Air-Maze Corporation, Stow, Ohio

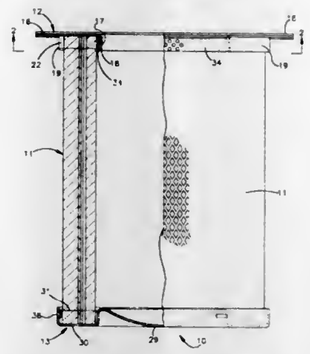
Filed May 30, 1995, Ser. No. 453,634
Int. Cl.[6] B01D *35/30*
U.S. Cl. 55—502 **11 Claims**

1. A filtering assembly, which comprises:

a filter media pack having first and second ends;

a flange member at the first end of the media pack, the flange member including a flange for mounting the filtering assembly;

a retainer member at the second end of the media pack;



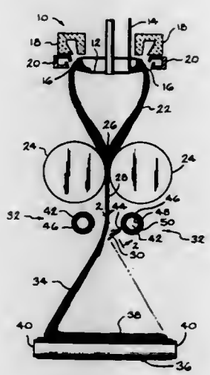
a layer of perforated material attached to the flange member, the perforated material located adjacent to the first end of the media pack and spaced from the second end of the media pack; and

hardenable material which permeates the first end of the media pack and which permeates the perforated material to mechanically interlock the flange member to the media pack.

5,605,556
LINEAR RAMPED AIR LAPPER FOR FIBROUS MATERIAL

David P. Aschenbeck, Newark, Ohio, assignor to Owens-Corning Fiberglas Technology Inc., Summit, Ill.

Filed Mar. 31, 1995, Ser. No. 414,692
Int. Cl.[6] C03B *37/06*
U.S. Cl. 65—454 **20 Claims**



1. A method for distributing fibrous material comprising establishing a flow of fibrous material, positioning at least one flow distributor in a position to direct at least one gaseous flow into contact with the flow of fibrous material to distribute the fibrous material, and directing an intermittent flow of gas from the distributor, where the flow of gas increases linearly during the flow cycles.

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5,605,557

CONDITIONING COMPOSITION AND CATALYST FOR USE THEREWITH

David A. Hall, Arundel, Australia, assignor to Plantagenet Holdings Pty Ltd., Arundel, Australia

Filed Feb. 14, 1995, Ser. No. 388,464
Claims priority, application Australia, Feb. 14, 1994, PM3870; Feb. 14, 1994, PM3871; Sep. 26, 1994, PM8410
Int. Cl.[6] C05G *3/00*
U.S. Cl. 71—62 **30 Claims**

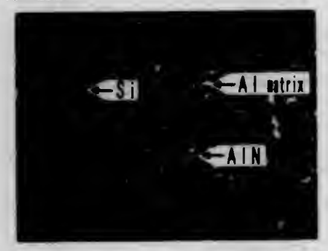
1. A soil conditioning composition comprising from 60 to 80% by weight of a mineral source, said mineral source being stone or rock of the granite-like family from 20 to 40% by weight of basalt, from 2 to 5% by weight of a bonding agent, from 1 to 20% by weight of a mixed colloidal mineral source and a catalyst to assist in releasing nutrients from the mineral source and the basalt to the soil, said catalyst applied in the ratio of at least one half liter of catalyst to at least 20 liters of water per 10 ton of composition.

5,605,558

NITROGENOUS ALUMINUM-SILICON POWDER METALLURGICAL ALLOY

Shin-ichi Yamagata; Yoshishige Takano; Tetsuya Hayashi, and Yugaku Abe, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Nov. 4, 1994, Ser. No. 334,604
Claims priority, application Japan, Nov. 10, 1993, 5-281401; Sep. 1, 1994, 6-208667; Sep. 27, 1994, 6-258704
Int. Cl.[6] C22C *29/16*
U.S. Cl. 75—230 **8 Claims**



1. A nitrogenous aluminum-silicon powder as a metallurgical alloy containing aluminum crystals and silicon crystals having a maximum grain diameter of 74 μm and an average grain diameter of 67 μm at the most, said alloy further containing nitrogen within the range of at least 4 wt % and at most 15 wt %, said nitrogen forming aluminum nitride grains (AlN) present on the surfaces of said aluminum and silicon crystals and in an interface between said aluminum and silicon crystals, said alloy further containing a remainder consisting essentially of aluminum, silicon and unavoidable impurities.

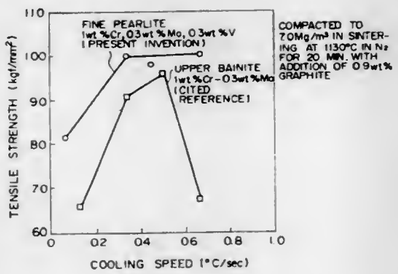
5,605,559

ALLOY STEEL POWDERS, SINTERED BODIES AND METHOD

Shigeru Unami, and Satoshi Uenosono, both of Chiba, Japan, assignors to Kawasaki Steel Corporation, Japan

Filed Feb. 22, 1995, Ser. No. 392,120
Claims priority, application Japan, Apr. 15, 1994, 6-076789
Int. Cl.[6] C22C *38/24;38/46*
U.S. Cl. 75—255 **48 Claims**

44. An alloy steel powder for manufacturing a sintered body having high strength, said alloy steel powder comprising, by wt %, about 0.5–2% of Cr, not greater than about 0.08% of Mn, about 0.1–0.6% of Mo, about 0.05–0.5% of V, not greater than about 0.015 of S, not greater than about 0.2% of O, and the balance being Fe and inevitable impurities, and, in addition, mixed and partially prealloyed onto the alloy steel powder one or more component powders selected from the group consisting of (a) about 0.5–5% of Ni, and (b) about 0.5–3% of Cu.

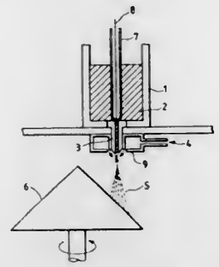


5,605,560

METHOD OF PRODUCING AN ATOMIZED ALLOY POWER

Yasuichi Ono, Furukawa; Akihiro Makino, Nagaoka; Akihisa Inoue, Kawauchi-jutaku, Kawauchi Mubanchi, Aoba-ku, Sendai-shi, Miyagi-ken; Tsuyoshi Masumoto, 8-22 3-chome Kamisugi, Sendai-shi, Miyagi-ken, and Yoshio Harakawa, Okaya, all of Japan, assignors to Alps Electric Co., Ltd., Tokyo; Teikoku Piston Ring Co., Ltd., Miyagi; Akihisa Inoue, and Tsuyoshi Masumoto, all of Japan

Division of Ser. No. 82,192, Jun. 24, 1993, Pat. No. 5,458,702.
This application Jun. 6, 1995, Ser. No. 472,944
Claims priority, application Japan, Jun. 30, 1992, 4-173187
Int. Cl.[6] B22F *9/08*
U.S. Cl. 75—334 **1 Claim**



1. A method of producing an atomized alloy powder having a homogeneous single-phase solid solution structure in which copper (Cu) is supersaturated with silver (Ag) dissolved therein, wherein the atomized alloy powder has a composition expressed by a chemical formula Cu_xAg_{1-x}, where $0.8 \leqq x < 0.95$, the method comprising the steps of:

discharging, from a nozzle, a molten alloy consisting essentially of Cu and Ag, wherein Cu comprises 70 to 95% by weight of the molten alloy;

atomizing the molten alloy by means of a high-pressure gas jetted from a gas nozzle disposed under the nozzle, thereby forming liquid droplets of the alloy; and

quenching the liquid droplets of alloy by causing the liquid droplets to collide with a rotating cooling member disposed under the gas nozzle so as to quickly cool the droplets at a cooling rate equal to or greater than 10^5 °C./sec, thereby solidifying and flattening the alloy.

5,605,561

TANTALUM POWDER AND ELECTROLYTIC CAPACITOR USING SAME

Katsuo Iwabuchi; Tadashi Komeya; Hiroshi Oki, all of Omiya-machi, Japan, and Dieter Behrens, Goslar, Germany, assignors to Starck Vtech Ltd., Tokyo, Japan

Filed Sep. 6, 1995, Ser. No. 523,965
Claims priority, application Japan, Sep. 28, 1994, 6-233307
Int. Cl.[6] B22F *9/20*
U.S. Cl. 75—364 **4 Claims**

1. Powdered tantalum which is prepared by:

reducing potassium tantalum fluoride with sodium metal thereby obtaining powdered tantalum:

reacting the powdered tantalum without a prior heat treatment which agglomerates the tantalum metal, with powdered magnesium to remove oxygen present in the tantalum powder; and

washing the magnesium treated tantalum powder with acid and drying the washed powder, thereby producing said powdered tantalum having a capacitance of at least about 66,000 μFV/g.

5,605,562

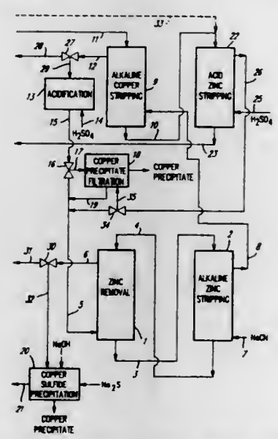
Patent Not Issued For This Number

5,605,563

METHOD FOR REMOVING COPPER FROM AN ANION EXCHANGE MATERIAL LOADED WITH PRECIOUS METALS

Denis K. Kidby, Belwood, Canada, and David M. Menne, Dalkeith, Australia, assignors to Ann Huber, Belwood, Canada

PCT No. PCT/CA94/00098, § 371 Date Jun. 6, 1995, § 102(e) Date Jun. 6, 1995, PCT Pub. No. WO94/19500, PCT Pub. Date Sep. 1, 1994
PCT Filed Feb. 23, 1994, Ser. No. 448,392
Claims priority, application Canada, Feb. 25, 1993, 2090348
Int. Cl.[6] C22B *3/42*
U.S. Cl. 75—744 **98 Claims**



1. A method for removing copper values from an anion exchange material, said anion exchange material being loaded with initial copper and precious metal values, said method comprising

i) subjecting an anion exchange material loaded with adsorbed complex copper cyanide anions and adsorbed complex precious metal cyanide anions, to a copper stripping treatment step for removing copper values therefrom, said copper stripping treatment step comprising contacting said anion exchange material with an alkaline copper eluting solution comprising zinc complex cyanide ions so as to obtain an alkaline eluate comprising complex copper cyanide anions and complex zinc cyanide anions and a treated zinc loaded anion exchange material loaded with precious metal values and adsorbed complex zinc cyanide anions,

ii) admixing an acidification agent with so obtained alkaline eluate so as to obtain a mixture comprising an acidic product solution and a cyanide containing precipitate, said acidic product solution comprising zinc cations and hydrocyanic acid, said cyanide containing precipitate comprising copper values and cyanide values,

iii) subjecting so obtained acidic product solution to a zinc removal step for removing zinc cations therefrom, said zinc removal step comprising contacting the acidic product solution with a cation exchange material so as to obtain an acidic product liquor comprising hydrocyanic acid and a cation exchange material loaded with adsorbed zinc cations,

iv) subjecting so obtained cation exchange material loaded with adsorbed zinc cations to an alkaline zinc stripping treatment step for removing zinc values therefrom, said alkaline zinc stripping treatment step comprising contacting cation exchange material loaded with adsorbed zinc cations, with an alkaline zinc eluting solution comprising an alkali metal cyanide so as to obtain an alkaline zinc containing product solution and a treated cation exchange material, said alkaline zinc containing product solution comprising complex zinc cyanide anions,

and

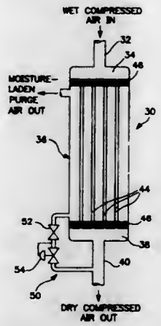
v) recycling so obtained treated cation exchange material to said zinc removal step.

5,605,564

MEMBRANE GAS DEHYDRATOR

D. Stephen Collins, Bridgton, Me., assignor to Howell Laboratories, Inc., Bridgton, Me.

Filed Feb. 14, 1996, Ser. No. 599,983
Int. Cl.[6] B01D *53/22*
U.S. Cl. 95—52 **4 Claims**



2. A method for dehydrating a fluid stream which comprises:

flowing a fluid feed stream containing water vapor into membrane capillary fibers under a pressure P_1;

flowing the water vapor through the membrane walls to the shell side of the tubes to:

form a water vapor rich stream; and

a water vapor lean stream;

discharging the water vapor lean stream;

bypassing a portion of the water vapor lean stream and introducing the bypassed portion of the stream as a sweep stream into the shell side to absorb the water vapor therein;

discharging the sweep stream from the shell side; and

maintaining the pressure of the sweep stream at a pressure P_2 which is lower than the inlet pressure of the feed stream P_1.

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5,605,565

PROCESS FOR ATTAINING METALLIZED ARTICLES

Nathan Feldstein, Princeton, N.J., assignor to Surface Technology, Inc., Trenton, N.J.

Continuation-in-part of Ser. No. 270,622, Jul. 5, 1994, abandoned, which is a continuation-in-part of Ser. No. 824,655, Jan. 23, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 465,401

Int. Cl.[6] C23C *18/31;18/00*

U.S. Cl. 106—1.22 **30 Claims**

4. A plating bath for depositing on the surface of a body a codeposited free metal coating said bath comprising a solution of metal ions to be plated and finely divided insoluble particulate matter which are not codeposited along with said metal ions, wherein, said particles are dispersed within said solution and further wherein said insoluble particles selected from the group consisting of PTFE, FEP, boron nitride, graphite, MoS_2, TaLc, Mica, WS_2, AgS, WSe_2, $NbSe_2$, $MoSe_2$, $MoTe_2$, CaF_2, FeS, and mixtures thereof.

5,605,566

INK FOR INK JET RECORDING AND INK JET RECORDING PROCESS

Toshitake Yui; Akihiko Chujo; Yasuharu Endo; Eisuke Hiraoka; Hitoshi Kojima; Atsushi Suzuki, and Ken Hashimoto, all of Minami-ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Mar. 27, 1996, Ser. No. 622,153

Claims priority, application Japan, Apr. 4, 1995, 7-101646

Int. Cl.[6] C09D *11/02*

U.S. Cl. 106—22 R **9 Claims**

1. An ink for ink jet recording, which comprises water, a water-soluble dye and a water-soluble organic solvent, wherein said ink contains potassium ion in an amount of from not less than 450 ppm to not more than 10,000 ppm, and said water-soluble organic solvent comprises glycerin in an amount of from 5 to 20% by weight based on the total weight of said ink.

5,605,567

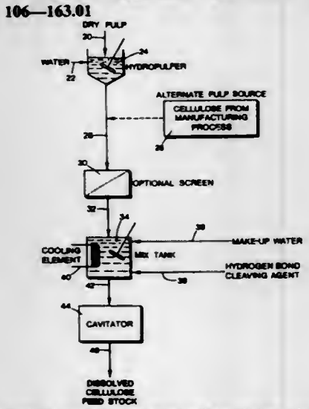
METHOD OF PRODUCING CELLULOSE DOPE

E. Peter Lancaster, Gig Harbor, Wash., assignor to Weyerhaeuser Company, Federal Way, Wash.

Continuation of Ser. No. 222,727, Apr. 4, 1994, abandoned, which is a continuation of Ser. No. 804,241, Dec. 5, 1991, abandoned. This application Apr. 24, 1995, Ser. No. 428,315

Int. Cl.[6] C08L *1/02;* **C09D** *101/02*

U.S. Cl. 106—163.01 **19 Claims**



1. A method for the preparation of a cellulose dope for use in regeneration of cellulose comprising:

subjecting a cellulose slurry that includes underivatized cellulose I to cavitation to expose the cellulose, including the underivatized cellulose I, to dissolution; and,

combining the cellulose slurry with a cellulose solvent.

5,605,568

$CACO_3$-TALC COATING PIGMENT SLURRY, PROCESS OF PREPARING THE SAME, AND USE THEREOF

Christian Naydowski, Brittnau/AG, and Dieter Strauch, Zofingen/AG, both of Switzerland, assignors to Pluess-Staufer AG, Oftringen, Switzerland

Filed Apr. 14, 1994, Ser. No. 227,555

Claims priority, application Germany, Apr. 16, 1993, 43 12 463.1

Int. Cl.[6] C09C *1/02*

U.S. Cl. 106—464 **35 Claims**

1. A $CaCO_3$-talc coating pigment slurry consisting of the following four co-ground components:

a. 24 to 64% by weight $CaCO_3$,

5 to 48% by weight talc,

20 to 40% by weight H_2O, and

an adjuvant combination consisting of:

0.05 to 1.4% by weight of at least one commercially available grinding aid, and

0.05 to 1.2% by weight of at least one commercially available dispersing agent;

wherein the talc and the $CaCO_3$ have an average statistical particle diameter of 0.7 μm to 1.3 μm.

5,605,569

PRECIPITATED SILICA HAVING HIGH SODIUM SULFATE CONTENT

James L. Boyer, Monroeville; Thomas G. Krivak, Harrison City; Harold E. Swift, Gibsonia, and Robert C. Wang, Wexford, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 8, 1995, Ser. No. 555,552

Int. Cl.[6] C04B *14/04;* **C01B** *33/12*

U.S. Cl. 106—482 **10 Claims**

1. Particles comprising particulate amorphous precipitated silica in association with from 5 to 10 percent by weight sodium sulfate and less than 10 percent by weight water, wherein the percentages are based on the weight of the silica, the sodium sulfate, and the water; said particles having a BET surface area of from 100 to 300 m^2/g, a total intruded volume from 1.8 to 3.6 cm^3/g, and a DBP oil absorption of from 180 to 320 $cm^3/100$ g.

5,605,570

ALKALI-ACTIVATED GLASSY SILICATE FOAMED CONCRETE

Dennis L. Bean, and Philip G. Malone, both of Vicksburg, Miss., assignors to U.S. Army Corps of Engineers as represented by The Secretary of the Army, Washington, D.C.

Filed Jul. 20, 1995, Ser. No. 504,623

Int. Cl.[6] C04B *38/02;7/14*

U.S. Cl. 106—673 **6 Claims**

1. A cementious building material produced by the method comprising the steps of: preparing a mixture consisting essentially of:

(a) ground calcium-rich glassy slag,

(b) 0.03 to 0.08 parts sodium peroxide by weight of the slag ground therewith,

(c) water with a water-to-slag ratio of 0.25 to 0.40 by weight; and allowing the mixture to foam and harden.

5,605,571

SETTING- AND HARDENING-ACCELERATOR CONTAINING NO CHLORIDE AND NITRITE AND A METHOD TO ACCELERATE THE SETTING AND HARDENING OF HYDRAULIC BINDERS AND MIXTURES THEREOF

Theodor A. Buerge, Geroldswil; Urs Maeder, Frauenfeld; Franz Wombacher, Oberwil-Lieli, and Beat Marazzani, Zürich, all of Switzerland, assignors to Sika Ag, vorm. Kaspar Winkler & Co., Switzerland

Filed Mar. 2, 1995, Ser. No. 397,565

Claims priority, application Switzerland, Mar. 3, 1994, 624/94

Int. Cl.[6] C04B *24/00;24/04*

U.S. Cl. 106—808 **32 Claims**

1. A setting and hardening accelerator which comprises 1–35% of at least one alkanolamine component, 1–20% of at least one thiocyanate component, 1–25% of at least one carboxylic acid component, and 1–40% of at least one component which includes a nitrate, a sulfite or a combination of a nitrate and a sulfite.

5,605,572

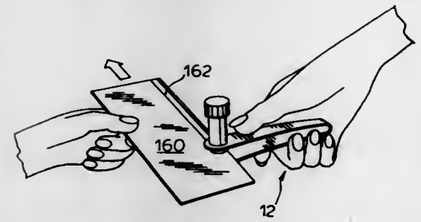
GLUE APPLICATOR SYSTEM

David B. Berger, 631 Conacher Drive, Willowdale, Ontario, Canada

Filed Mar. 3, 1995, Ser. No. 398,097

Int. Cl.[6] B05C *17/00*

U.S. Cl. 118—241 **20 Claims**



1. Dispensing apparatus for dispensing an adherent agent in applied relation to the surface of a medium, comprising: dispenser mounting means to receive a dispenser of adherent agent in secured relation therewith; an adherent agent dispenser secured thereto, having an output end portion with a removable sealing cap; said apparatus including anvil means positionable in opposed, spaced relation with said dispenser mounting means to receive said medium in interposed relation between said dispenser output end portion and said anvil means, in supported relation with said anvil means, the output end portion of the agent dispenser being displaceable, in use, into adherent applying relation with said supported medium, to apply said adherent agent thereto.

5,605,573

HOLDER FOR A CRADLE OF A COATING BAR OR FOR A COATING BLADE

Markku Salo, Muurame, and Tauno Orava, Jyväskylä, both of Finland, assignors to Valmet Corporation, Helsinki, Finland

Filed Mar. 18, 1993, Ser. No. 32,963

Claims priority, application Finland, Mar. 19, 1992, 921195

Int. Cl.[6] B05C *3/00*

U.S. Cl. 118—413 **12 Claims**

1. An assembly for use in a coating unit including means for containing and applying a size film or a corresponding layer of a coating agent onto a face of a moving base to be coated, said assembly comprising

a coating blade or a cradle comprising a coating bar, said coating bar or said coating blade being loaded against the moving base to spread and smooth the size film or the corresponding layer of coating agent on the face of the moving base,

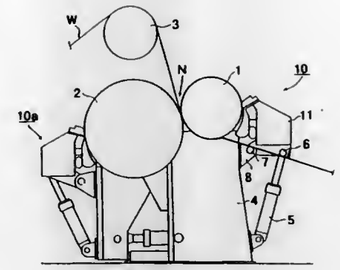
a holder for retaining said cradle or said coating blade, said holder comprising

an application beam arranged in a first direction, said application beam having a support arranged thereon,

a frame arranged on said application beam,

a journalling duct arranged in said frame in said first direction, and

an oblong member rotatably arranged in said journalling duct and having a cam projection, said oblong member being rotatable to engage and fix said cradle of said coating bar or said coating blade in an operating position such that said projection rests against a rear face of said cradle of said coating bar or a rear face of said coating blade and secures said cradle or said coating blade against said support.



5,605,574

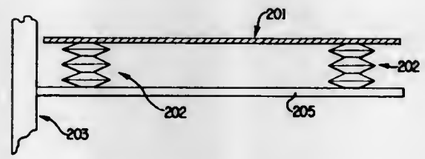
SEMICONDUCTOR WAFER SUPPORT APPARATUS AND METHOD

Yoshitaka Tsunashima, and Katsuya Okumura, both of Poughkeepsie, N.Y., assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 20, 1995, Ser. No. 530,641

Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—500 **23 Claims**



5. A support apparatus for a semiconductor wafer, comprising:

a plurality of flexible elastic supports onto which said semiconductor wafer is directly positioned, wherein each of said plurality of flexible elastic supports supports said wafer during processing by compressing or expanding in response to bending of said wafer during said processing to provide continuous support for said wafer during said processing;

wherein each of said flexible elastic supports has a smooth upper surface for contacting a wafer to minimize a contact area between said support and said wafer and a spring-like lower portion which extends and compresses in response to the weight of the wafer and changes in the curvature of the wafer during processing.

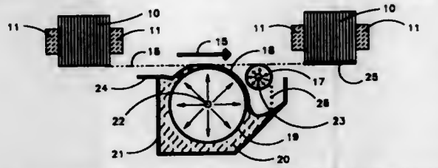
VOL 11 95 ISS 4 FE 25 1997 UMI

5,605,575

INTERCHANGEABLE ADHESIVE-APPLYING APPARATUS

Clarence L. Anderson, 59 Rte. 24, Chester, N.J. 07930

Filed Feb. 3, 1995, Ser. No. 383,564
Int. Cl.[6] B05C *1/00*
U.S. Cl. 118—679 **1 Claim**



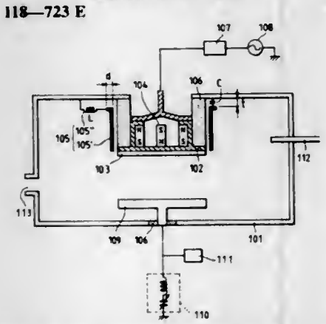
1. An apparatus for applying a layer of adhesive to a stack of clamped pages comprising:
a vessel containing a reservoir of adhesive;
an applicator roller rotatable in said adhesive and positioned to move said adhesive to the stack of clamped pages;
a doctor roller positioned downstream of said applicator roller to intersect with a spine of said pages to smooth the adhesive applied by the applicator roller;
means disposed in said applicator roller to melt the adhesive;
means disposed in said doctor roller to heat said doctor roller;
means in communication with said vessel to interchange said vessel with another vessel in an easily removable manner;
means to level adhesive on the applicator roller by use of a doctor blade disposed next to and parallel with the roller;
means in communication with said applicator and doctor rollers to drive the rollers at predetermined speeds to achieve adhesion and appearance of a finished bind;
means to adjust the applicator and doctor rollers with the path of travel of the stack of pages by use of leveling screws located at a base of the vessel so that the rollers with not come out of adjustment once set;
means connected to said applicator and doctor rollers to electrically control the temperature of respective roller surfaces; and
means to turn on the apparatus and indicate to an operator that the apparatus is ready for use.

5,605,576

HIGH FREQUENCY MAGNETRON PLASMA APPARATUS

Makoto Sasaki, Sendai; Hirofumi Fukui, Taiwa-machi; Masami Aihara, Sendai, and Tadahiro Ohmi, 1-7 Yukigaya, Otsuka-Cho, Ota-ku, Tokyo, all of Japan, assignors to Frontec Incorporated, and Tadahiro Ohmi, both of Sendai, Japan

Filed Nov. 9, 1994, Ser. No. 336,631
Claims priority, application Japan, Nov. 11, 1993, 5-282723
Int. Cl.[6] C23C *16/00*
U.S. Cl. 118—723 E **6 Claims**



1. A high-frequency magnetron plasma apparatus comprising a susceptor electrode, a plasma exciting electrode, magnets mounted on said plasma exciting electrodes, and a magnetic shield formed from a high-permeability material disposed around said plasma exciting electrode, all of which are arranged in a vacuum chamber, wherein said magnetic shield has a high impedance relative to earth at high frequencies.

5,605,577

METHOD FOR THE SEPARATION OF PROTEINS FROM GRAIN FLOUR

Luis M. Rayas, and Perry K.W. Ng, both of East Lansing, Mich., assignors to Board of Trustees operating Michigan State University, East Lansing, Mich.

Continuation-in-part of Ser. No. 272,555, Jul. 11, 1994, Pat. No. 5,472,511. This application Nov. 28, 1995, Ser. No. 562,212
Int. Cl.[6] C08B *30/00*; C13F *3/00*; A23J *1/00*; C07K *14/00*
U.S. Cl. 127—67 **9 Claims**

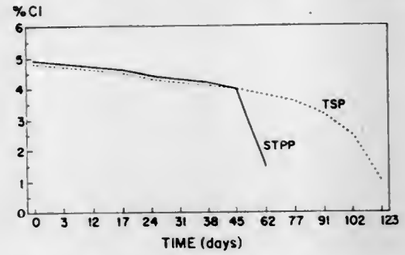
1. A process for separation of proteins in a grain flour with film formation which consists essentially of the steps of:
(a) mixing the flour containing essentially proteins and starch with water containing between about 50 and 95% ethanol, based on the total amount of water and ethanol and a base as a solution at a pH between about pH 10 to 12 which causes the proteins to be solubilized in the solution so that the starch is essentially insoluble in the solution; and
(b) centrifuging the solution to separate the starch from the solution;
(c) removing the solution from the starch;
(d) optionally heating the solution at a temperature between about 30° C. and a boiling point of the solution to concentrate the solution; and
(e) forming a film from the solution by removal of the water and any ethanol which is remaining.

5,605,578

METHOD FOR CLEANING OUTDOOR SURFACE SUCH AS VINYL SIDING

Charles Hawes, Summerville, and Mark Thompson, Charlestoo, both of S.C., assignors to Armor All Products Corporation, Charleston, S.C.

Filed Feb. 3, 1995, Ser. No. 383,769
Int. Cl.[6] B08B *3/02;3/04;3/08*
U.S. Cl. 134—36 **18 Claims**



1. A method for cleaning material such as mold, mildew, algae, dirt and/or stains from a soiled outdoor vinyl surface, comprising the steps of:
forming a diluted cleaning composition by feeding a concentrated cleaning composition from a container and water under pressure from a water hose into a mixing chamber of a spray gun attached to the container and the water hose, the concentrated cleaning composition consisting essentially of an aqueous chlorinated bleach solution and the concentrated cleaning composition having a hypochlorite content of about 3.0 to 10.0%;

spraying the diluted cleaning composition from the spray gun onto a vinyl surface to be cleaned;
allowing the diluted cleaning composition to remain on the vinyl surface to be cleaned for a period of time sufficient to loosen material to be removed from the vinyl surface to be cleaned; and
removing the loosened material together with the diluted cleaning composition from the vinyl surface to be cleaned by spraying rinsing water onto the vinyl surface to be cleaned.

5,605,579

AMMONIUM BICARBONATE/AMMONIUM CARBAMATE ACTIVATED BENZYL ALCOHOL PAINT STRIPPER

John Distaso, Orange, Calif., assignor to Elf Atochem North America, Inc., Philadelphia, Pa.

Division of Ser. No. 340,919, Nov. 17, 1994, Pat. No. 5,569,410. This application Aug. 23, 1995, Ser. No. 518,286
Int. Cl.[6] B08B *7/00*
U.S. Cl. 134—38 **17 Claims**

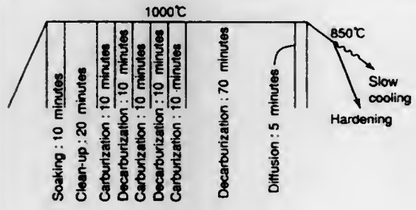
1. A method of stripping paint comprising the steps:
(1) emulsifying an organic phase comprising benzyl alcohol and an emulsifying agent with an aqueous phase comprising a source of ammonia and carbon dioxide selected from the group consisting of ammonium carbonate, ammonium carbamate, ammonium bicarbonate and ammonium carbamate acid carbonate to produce a water-in-oil emulsion;
(2) applying the water-in-oil emulsion to a painted surface, and
(3) washing the painted surface with water to remove the paint.

5,605,580

CARBURIZATION PROCESS

Kazuyuki Orita, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima-ken, Japan

Filed Mar. 29, 1995, Ser. No. 413,073
Claims priority, application Japan, Mar. 29, 1994, 6-084136
Int. Cl.[6] C23C *8/20*
U.S. Cl. 148—208 **8 Claims**



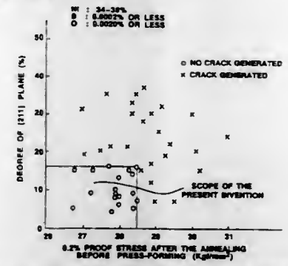
1. A method for carburizing a surface of workpiece provided with an edge or edges, which comprises steps of:
placing the workpiece in a vacuum furnace,
subjecting the workpiece to plasma carburization in which carburizing gas is fed into the said vacuum furnace and glow-discharged, and
then subjecting the workpiece to decarburization.

5,605,581

THIN FE-NI ALLOY SHEET FOR SHADOW MASK AND METHOD FOR MANUFACTURING THEREOF

Tadashi Inoue; Kiyoshi Tsuru; Tomoyoshi Okita, and Michihito Hiasa, all of Kawasaki-ku, Japan, assignors to NKK Corporation, Tokyo, Japan

Division of Ser. No. 7,755, Jan. 22, 1993, Pat. No. 5,456,771. This application Jan. 21, 1994, Ser. No. 184,830
Claims priority, application Japan, Jan. 24, 1992, 4-032941; Feb. 28, 1992, 4-078506; Sep. 24, 1992, 4-279542
Int. Cl.[6] H01F *1/04*
U.S. Cl. 148—310 **8 Claims**



1. A thin Fe—Ni alloy sheet for forming a shadow mask by annealing to form an annealed thin Fe—Ni alloy sheet and thereafter press forming the annealed thin Fe—Ni alloy sheet, the thin Fe—Ni alloy sheet consisting essentially of Ni in an amount of 34 to 38 wt. % Si in an amount of 0 05 wt. % or less, B in an amount of 0.00005 to 0.001 wt. %, O in an amount of 0.003 wt. % or less and N in an amount of 0.0015 wt. % or less and optionally C, Mn and Cr, with the balance being Fe and inevitable impurities;
the Fe—Ni alloy sheet before being annealed and press-formed having the following properties:
(i) an average austenite grain size Dav of 10.5 to 15 μm;
(ii) a ratio of a maximum to a minimum size of austenite grains of 1 to 15;
(iii) a Vickers hardness (Hv) of 165 to 220 and satisfying a condition of 10×Dav+80≧(Hv)≧10×Day+50;
(iv) the degree of the {111} plane being 14% or less,
(v) the degree of the {100} plane being 5 to 75%,
(vi) the degree of the {110} plane being 5 to 40%,
(vii) the degree of the {311} plane being 20% or less,
(viii) the degree of the {331} plane being 20% or less,
(ix) the degree of the {210} plane being 20% or less and
(x) the degree of the {211} plane being 20% or less,
each of said degrees of planes being calculated by dividing a relative X-ray intensity ratio of each of the respective {331}, {210}, {211}, {111}, {100}, {110}and {311} diffraction planes by a sum of relative X-ray intensity ratios of the {111}, {200}, {220}, {311}, {331}, {420} and {422} diffraction planes.

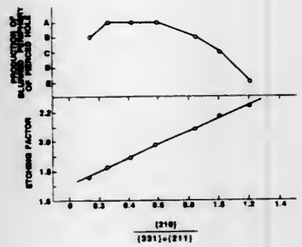
5,605,582

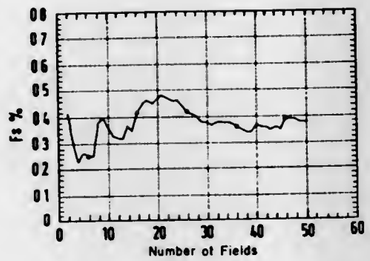
ALLOY SHEET HAVING HIGH ETCHING PERFORMANCE

Tadashi Inoue; Hidekazu Yoshizawa; Kiyoshi Tsuru; Yoshiaki Shimizu, and Tomoyoshi Okita, all of Kawasaki, Japan, assignors to NKK Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 6,802, Jan. 2, 1993, Pat. No. 5,308,723. This application Nov. 17, 1993, Ser. No. 153,890
Claims priority, application Japan, Jan. 24, 1992, 4-032939; Jan. 31, 1992, 5-40714; Jul. 22, 1993, 5-201879; Aug. 20, 1993, 5-206628
The portion of the term of this patent subsequent to May 3, 2011, has been disclaimed.
Int. Cl.[6] G03C *5/00*
U.S. Cl. 148—320 **20 Claims**

20. A Fe—Ni—Co—Cr alloy sheet which is etched to have a pierced hole surface,





said Fe—Ni—Co—Cr alloy sheet consisting essentially of 28 to 38 wt. % Ni, 20 wt. % or less Co, 3 wt. % or less Cr and the balance being Fe;

said alloy sheet having gathering degrees of {111}, {100}, {110}, {311}, {331}, {210} and {211} planes on a surface thereof;

the gathering degree S_1 of the {111} plane being 1 to 10%,

the gathering degree S_2 of the {100} plane being 50 to 94%,

the gathering degree S_3 of the {110} plane being 1 to 24%,

the gathering degree S_4 of the {311} plane being 1 to 14%,

the gathering degree S_5 of the {331} plane being 1 to 14%,

the gathering degree S_6 of the {210} plane being 1 to 14%, and

the gathering degree S_7 of the {211} plane being 1 to 14%,

each of said gathering degrees of said planes being calculated by dividing a relative X-ray intensity ratio of each of {331}, {210}, {211}, {111}, {100}, {110} and {311} diffraction planes by a sum of relative X-ray intensity ratios of the {111}, {100}, {110}, {311}, {331}, {210} and {211} diffraction planes; and

a ratio of the gathering degrees of the planes, which is $(S_2+S_4+S_6)/(S_1+S_3+S_5+S_7)$ being 0.8 to 20;

said Fe—Ni—Co—Cr alloy sheet having an average crystal grain size of 10 μm or less in a thickness direction of the alloy sheet,

said Fe—Ni—Co—Cr alloy sheet prior to being etched is annealed at a temperature of 910° to 990° C.,

said Fe—Ni—Co—Cr alloy sheet having an etching factor of 1.8 or higher,

said Fe—Ni—Co—Cr alloy sheet having a surface roughness, Ra, of 0.9 μm or less,

said Fe—Ni—Co—Cr alloy sheet having a penetration ratio of light of 1.0 or more, and

said Fe—Ni—Co—Cr alloy sheet having an average thermal expansion coefficient of no more than $2.0\times(1/10^6)/°$ C. at a temperature range of 30° to 100°C.

5,605,583

METALLURGICAL SILICON WITH CONTROLLED MICROSTRUCTURE FOR THE PREPARATION OF HALOGENOSILANES

Thomas Margaria, Chedde, France, assignor to Pechiney Electrometallurgie, Courbevoie, France

Filed Feb. 17, 1995, Ser. No. 390,022

Claims priority, application France, Feb. 25, 1994, 94 02487

Int. Cl.[6] C01B *33/02*

U.S. Cl. 148—405 **3 Claims**

1. Metallurgical silicon for the preparation of halogenosilanes, comprising a microstructure characterized by an image obtained with a scanning electron microscope processed by binarization in zones between an intermetallic phase and a silicon matrix, and expanded with an extension of about 10 μm around the zones with determination of surface fraction of the intermetallic phase before and after expansion, the surface fraction of the intermetallic phase after expansion and the surface fraction of the intermetallic phase before expansion being in a ratio S/S_0 of between 20 and 40.

5,605,584

DAMAGE TOLERANT ANISOTROPIC NICKEL BASE SUPERALLOY ARTICLES

Daniel P. DeLuca, Tequesta; Howard B. Jones, and Bradford A. Cowles, both of Palm Beach Gardens, all of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 140,345, Oct. 20, 1993, abandoned. This application Jan. 30, 1995, Ser. No. 380,231

Int. Cl.[6] C22C *19/05*

U.S. Cl. 148—410 **6 Claims**



1. A nickel base superalloy material having a composition selected from the group consisting of about 10% Cr, 5% Co, 4% W, 1.5% Ti, 12% Ta, 5% Al, Bal essentially Ni and about 9% Cr, 10.1% Co, 12% W, 2% Ti, 5% Al, 0.015% B, 1Cb, 2Hf, 0.14% C, Bal essentially Ni, with a microstructure selected from the group consisting of single crystal and columnar grain and having a multiple particle size γ' precipitate in a γ phase matrix comprising:

a. large irregularly shaped barrier γ' particles ranging from about five to about 15 microns in size;

b. an array of cuboidal γ' particles ranging from about 0.2 microns to about 0.7 microns in size; and

c. a γ phase continuous matrix, wherein the multiple size γ' precipitates provide improved resistance to crack propagation.

5,605,585

METHOD FOR PRODUCING HYDROGEN STORAGE ALLOY PARTICLES AND SEALED-TYPE NICKEL-METAL HYDRIDE STORAGE BATTERY USING THE SAME

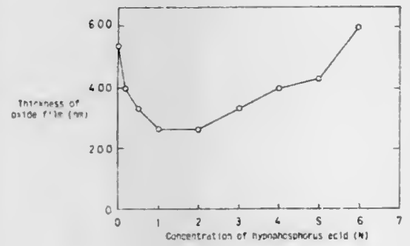
Osamu Yamamoto, Hirakata; Katsunori Komori, Kadoma; Kohei Suzuki, Yao; Seiji Yamaguchi, Osaka; Tadao Kimura, Kobe; Munehisa Ikoma, Shiki-gun, and Yoshinori Toyoguchi, Yao, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 7, 1994, Ser. No. 271,826

Claims priority, application Japan, Jul. 15, 1993, 5-198860; Aug. 3, 1993, 5-212310; Oct. 25, 1993, 5-265329

Int. Cl.[6] B22F *9/08;* **H01M** *4/04*

U.S. Cl. 148—513 **32 Claims**



17. A method for manufacturing hydrogen storage alloy particles comprising steps of:

pulverizing the hydrogen storage alloy by a water atomizing process,

removing at least part of an oxide film formed on the surfaces of the obtained hydrogen storage alloy particles, and

annealing the hydrogen storage alloy particles in a hydrogen gas atmosphere.

5,605,586

ALUMINUM ALLOY SHEET SUITABLE FOR HIGH-SPEED FORMING AND PROCESS FOR MANUFACTURING THE SAME

Yoichiro Bekki; Minoru Hayashi, and Ryo Syoji, all of Tokyo, Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, and Kawasaki Steel Corporation, Hyogo, both of Japan

Division of Ser. No. 152,486, Nov. 12, 1993, abandoned. This application Mar. 15, 1995, Ser. No. 404,524

Claims priority, application Japan, Nov. 13, 1992, 4-328879; Nov. 13, 1992, 4-328880; Nov. 13, 1992, 4-328881

Int. Cl.[6] C22F *1/04*

U.S. Cl. 148—549 **10 Claims**

1. A process for manufacturing an aluminum alloy sheet suitable for high-speed forming, comprising the steps of:

subjecting, to a homogenization treatment at 480° C. or above, an aluminum alloy ingot containing 4.0 to 10.0 wt. % of Mg, inevitable impurities of Fe and Si whose content is limited to 0.2 wt. % or less, other impurity elements whose content is limited to 0.05 wt. % or less, and the balance of Al;

subjecting the aluminum alloy ingot, which has undergone the homogenization treatment, to a hot rolling process and a cold rolling process, thereby obtaining a cold rolled sheet; and

subjecting the cold rolled sheet to an annealing process in which the cold rolled sheet is heated at a temperature of 300° to 450° C. at a heating rate of 200° C./h or less and said cold rolled sheet is maintained for six hours or less at said temperature.

5,605,587

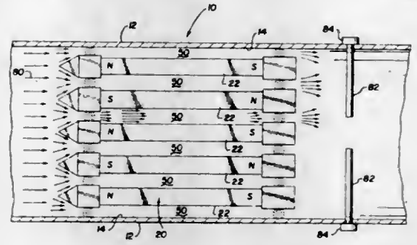
APPARATUS FOR MAGNETIC CONDITIONING OF LIQUIDS AND METHODS OF MAKING SAME

John H. Meckling, Franklinton, La., assignor to Hydrodynamics Corporation, Arlington, Tex.

Filed Apr. 7, 1995, Ser. No. 418,773

Int. Cl.[6] C21D *1/30*

U.S. Cl. 148—590 **2 Claims**



1. A method of increasing corrosion resistance of a magnetic assembly used for treatment of calcareous liquids wherein the assembly has a machined martensitic steel element, the method comprising the steps of:

(a) gradually increasing the temperature of a machined martensitic steel element over a period of time and in a substantially inert atmosphere until a grain boundary temperature of about 1187° C. and below the melting point of the steel is reached;

(b) maintaining said element at said temperature of about 1187° C. in said substantially inert atmosphere for period of about eight (8) hours to relax tho internal lattice structure of said element and promote homogenous distribution of carbon entrapped in said element: and

(c) rapidly quenching said element to a temperature of about 100° C. or lower by substantially submerging it in an emulsion of water and water-soluble oil having a specific gravity substantially similar to water.

5,605,588

STUDLESS TIRE

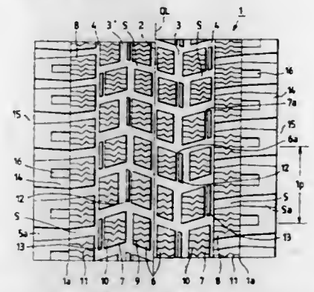
Kenji Hatakenaka; Kenichi Mineta, both of Hyogo, and Akihiro Miyoshi, Okayama, all of Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo, Japan

Filed Jun. 14, 1994, Ser. No. 261,113

Claims priority, application Japan, Jun. 14, 1993, 5-165918; Jun. 24, 1993, 5-175869

Int. Cl.[6] B60C *11/12*

U.S. Cl. 152—209 R **4 Claims**



1. A studless tire with a tread pattern comprising a plurality of longitudinal grooves and a plurality of transverse grooves which define at least two rows of blocks that extend in the peripheral direction of the tire, the two rows of blocks being separated by a center line of the tire;

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wherein said plurality of longitudinal grooves includes one longitudinal groove and another longitudinal groove, each of said one and another longitudinal grooves having first portions and second portions such that the first portions and the second portions alternate and the first portions are offset from the second portions in the direction of the rotating axis,

wherein each of said blocks has a plurality of sipes extending from one side of the block to an opposite side of the block, the one side being substantially parallel to the peripheral direction,

wherein every other block in each of the two rows is separated from an axially outward sub-block by a sub-groove which is disposed between adjacent first portions of a respective longitudinal groove, each said sub-block having no sipe therein, each said sub-groove being less deep than said longitudinal grooves and transverse grooves, each said sub-block having longer side in the peripheral direction, said longer side being substantially parallel to the peripheral direction of the tire, and a shorter side in the direction of the rotating axis, and

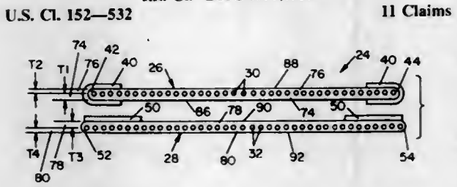
wherein said sub-blocks are spaced at a predetermined distance from said center line and alternate in the peripheral direction.

5,605,589

PNEUMATIC TIRE WITH SPECIFIED SPACING BETWEEN CORDS OF INNER AND OUTER BELTS

Gregory S. Johanning, Canton, Ohio; Blaine A. Harrison, Fancy Farm, Ky., and Danny E. Harrison, Union City, Tenn., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 6, 1995, Ser. No. 399,273
Int. Cl.[6] B60C *9/18;9/20*
U.S. Cl. 152—532 **11 Claims**



1. A pneumatic tire having a reinforcing structure, said reinforcing structure comprising:

a first belt, said first belt being reinforced with a plurality of generally parallel first cords, said first belt having a first portion and a second portion, said first portion of said first belt being between centerlines of said first cords and a first surface, said second portion of said first belt being between said centerlines of said first cords and a second surface, said first portion having a thickness T1 which is greater than a thickness T2 of said second portion wherein T1 is between 110% and 150% of T2.

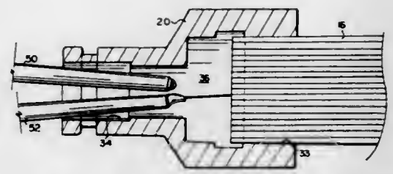
5,605,590

METHODS FOR SEALING LIQUID-COOLED STATOR BAR END CONNECTIONS FOR A GENERATOR

Michael P. Manning, Watervliet; Robert T. Lembke, Amsterdam; Larry S. Rosenzweig, Clifton Park, and Mark Markovitz, Schenectady, all of N.Y., assignors to General Electric Co., Schenectady, N.Y.

Filed May 22, 1995, Ser. No. 446,158
Int. Cl.[6] B32B *35/00*
U.S. Cl. 156—94 **19 Claims**

1. A method of sealing a stator bar end and a fitting receiving the end to effect a seal substantially impermeable to liquid, the fitting having a chamber for receiving a liquid through an opening in the fitting and in communication with hollow strands forming at least a portion of said stator bar end for flow of the liquid through the hollow strands, comprising the steps of:



inserting a viewer and epoxy applicator through the opening in said fitting for viewing a joint portion between the fitting and the stator bar end and applying epoxy thereto, respectively;

viewing said joint portion;

applying the epoxy to said joint portion using said applicator while maintaining the joint portion in view through the viewer; and

curing the epoxy to form a seal substantially impermeable to liquid at the portion of the joint to which the epoxy is applied.

5,605,591

PROCESS FOR THE PREPARATION OF A LAMINATED ENAMELLED GLAZING AND ENAMEL COMPOSITION USED

Andre Beyrle, Trancy-le-Val, France; Walter Goerenz, Alsdorf, Germany; Dieter Küstner, Herzogenrath, Germany, and Wolfgang Schafer, Aachen, Germany, assignors to Saint-Gobain Vitrage International, Courbevoie, France

PCT No. PCT/FR94/00311, § 371 Date Jan. 30, 1995, § 102(e) Date Jan. 30, 1995, PCT Pub. No. WO94/22779, PCT Pub. Date Oct. 13, 1994
PCT Filed Mar. 22, 1994, Ser. No. 338,515
Claims priority, application France, Mar. 26, 1993, 93 03520; May 13, 1993, 93 05750
Int. Cl.[6] C03B *40/033;* **C03C** *8/16;8/22;* **B32B** *17/10*
U.S. Cl. 156—106 **26 Claims**

1. Process for the production of a laminated glazing comprising at least two glass sheets and a spacer, said process comprising coating with at least one enamel layer at least one part of the inner face of at least one glass sheet, said enamel layer being formed from an enamel composition comprising a frit having anti-stick properties, a medium which is able to be eliminated at low temperature and a frit having a melting point below approximately 450° C., heat treating the enamelled glass sheet at a temperature between 150° C. and the deformation temperature of the glass in order to release the gaseous reaction products of the components of the enamel, make said enamel non-stick with respect to another glass sheet and perform a preattachment of the enamel to the glass, placing a second glass sheet on the enamelled face of the glass sheet, simultaneously bending the two sheets and final firing the enamel, separating the glass sheets and assembling the glass sheets with the spacer.

5,605,592

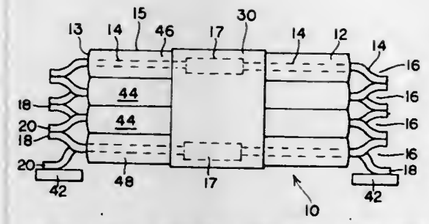
METHOD OF MANUFACTURING A BUS COMMUNICATION SYSTEM FOR STACKED HIGH DENSITY INTEGRATED CIRCUIT PACKAGES

Carmen D. Burns, Austin, Tex., assignor to Staktek Corporation, Austin, Tex.

Division of Ser. No. 206,829, Mar. 7, 1994, Pat. No. 5,445,740. This application May 22, 1995, Ser. No. 445,895
Int. Cl.[6] H01R *23/70*
U.S. Cl. 156—182 **5 Claims**

1. A method of manufacturing a rail-less high density integrated circuit module, comprising the steps of:

(a) providing a plurality of integrated circuit packages, each having bifurcated leads wherein each said bifurcated lead comprises a pair of lead end fingers, wherein each bifurcated lead is split partially lengthwise to form a pair of adjacent



lead end fingers, wherein one of said fingers extends upward and said other finger extends downward;

(b) stacking said packages to provide alignment of said bifurcated leads;

(c) electrically coupling bifurcations of selected leads from adjacent integrated circuit packages, wherein said bifurcations exert a spring force load on each other; and

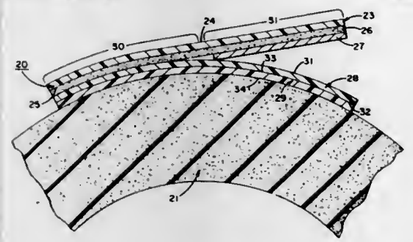
(d) applying a high temperature adhesive to bind said integrated circuit packages together.

5,605,593

MULTI-LAYERED BONDED CLOSURE SYSTEM FOR FOAM TUBES OR PROFILES

Eduardo Lauer, Zebulon, N.C., assignor to NMC of North America, Zebulon, N.C.

Division of Ser. No. 47,487, Apr. 19, 1993, Pat. No. 5,421,371. This application Feb. 28, 1995, Ser. No. 395,758
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—230 **4 Claims**



1. A process for securely, integrally bonding a multi-layered closure system to an elongated, pre-formed, foamed thermoplastic or elastomeric tube member comprising the steps of

A. forming an elongated, substantially continuous tube member from foamed thermoplastic or elastomeric material, said tube member having an axial bore extending therethrough and a sufficient thickness for being self supporting;

B. forming an elongated, continuous length of a multi-layered closure system comprising

a. a laminating film layer, and

b. a film support layer integrally affixed to said laminating film layer in secure, aligned, affixed interrelationship therewith;

C. longitudinally advancing the elongated, pre-formed, self-supporting, foamed tube member with a portion of the outer surface thereof advancing in contact with a plurality of compression rollers;

D. feeding the elongated, multi-layered closure system between the compression rollers and the outer surface of the elongated tube; and

E. heating the laminating film layer of said multi-layered closure system to its melting temperature prior to contacting the laminating film layer with the outer surface of the elongated tube,

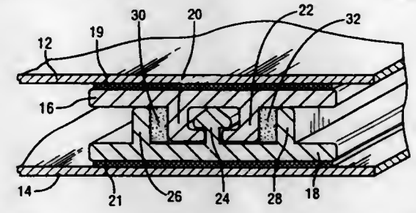
whereby the multi-layered closure system is integrally bonded to the outer surface of the elongated tube in a continuous, efficient, and expeditious manner.

5,605,594

CLOSURE ARRANGMENT HAVING A PEELABLE SEAL

Timothy J. May, Greenville, Wis., assignor to Reynolds Consumer Products Inc., Appleton, Wis.

Division of Ser. No. 432,502, May 1, 1995, Pat. No. 5,474,382. This application Sep. 18, 1995, Ser. No. 529,793
Int. Cl.[6] B65D *33/18;33/25*
U.S. Cl. 156—244.22 **8 Claims**



1. A method of manufacturing a closure arrangement for a polymeric bag, the method comprising the steps of:

forming first and second opposing base panels;

forming first and second closure profiles extending inwardly toward an interior of the bag from the respective first and second base panels, the first closure profile including a first locking member having engageable surfaces and the second closure profile including a second locking member having engageable surfaces adapted to be releasably engageable with the first locking member, the second closure profile further including a generally straight post free of a locking hook at the end thereof, the post being laterally spaced from the second locking member by a lateral distance sufficient to permit the first locking member to be received between the second locking member and the post while providing a gap between the first locking member and the post;

forming a peelable strip of a peel-seal material along a length of the first locking member adapted to face the post;

softening the peelable strip; and

engaging the first and second locking members while the peelable strip is soft such that the peelable strip is disposed in the gap between the first locking member and the post, thereby creating a peelable seal between the first locking member and the post the engageable surfaces of the first and second closure profiles being free from peel-seal material.

5,605,595

FACEPLATE BONDING PROCESS AND APPARATUS THEREFOR

John Beeteson, Skelmorlie, and Anthony C. Lowe, Braishfield, both of United Kingdom, assignors to IBM Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 262,728, Jun. 20, 1994, Pat. No. 5,417,791. This application May 15, 1995, Ser. No. 441,711
Claims priority, application United Kingdom, Dec. 18, 1993, 9325932
Int. Cl.[6] B32B *17/06*
U.S. Cl. 156—295 **5 Claims**

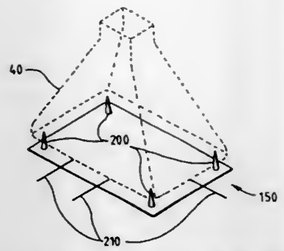
1. A method of attaching a transparent faceplate (**20**) to a screen of a visual display unit (**40**), by adhesion of opposed surfaces thereof, comprising the steps of:

locating reference points on the faceplate (**20**) and on the visual display unit for precise relative positioning of said surfaces by a positioning tool without the need for the positioning of physical spacers between said surfaces;

dispensing (**80**) an adhesive material onto at least one of said surfaces;

bringing said surfaces together (**90**) in a controlled manner using said reference points, such that the opposed surfaces displace the adhesive material outwards towards the edges of said surfaces to form an adhesive layer which fills the gap therebe-

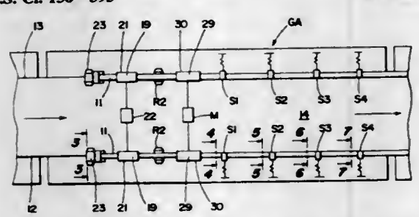
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tween, wherein a termination point for the step of bringing said surfaces together is determined using a detection means for determining when the adhesive material has reached predefined points proximate the outer edges of the opposed surfaces;

curing (**100,120**) the adhesive material to secure the faceplate to the screen.

5,605,596
DUAL GUMSTRIP APPLICATOR FOR TIRE CORD BELTS
James L. McLaughlin, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Feb. 6, 1995, Ser. No. 384,053
Int. Cl.[6] B32B *31/08*
U.S. Cl. 156—395 **16 Claims**



1. An apparatus for applying a strip of unvulcanized gum rubber, hereinafter referred to as a gumstrip, to at least one marginal edge of an unvulcanized tire reinforcement belt, as the belt moves in a horizontal pathway through the apparatus, comprising in combination:

a) at least one supply of a continuous tire reinforcement belt which is movable in a horizontal pathway through the apparatus;

b) first means, including at least one reel of gumstrip, disposed in spaced relation from the horizontal pathway of the moving belt, for paying out the gumstrip from the reel in a direction towards an adjacent marginal edge of the belt, as the belt begins to move through the apparatus, the first means including a device for braking the paying out of the gumstrip to tension the gumstrip as it moves towards the horizontal pathway of the moving belt, the gumstrip having a pair of opposing sides which are tacky, one of the sides being exposed and the other of the sides being covered by a removable liner;

c) second means downstream of the gumstrip paying out first means, relative to the movement of the gumstrip towards the belt moving in the horizontal pathway, for positioning the gumstrip for contact with the belt, prior to contact of the exposed side of the gumstrip with the adjacent marginal edge of the moving belt, the second means including at least one barrel-shaped roller;

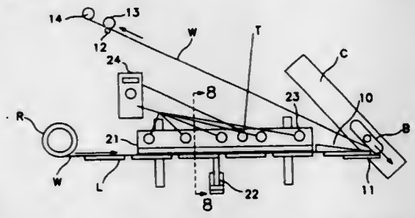
d) third means for guiding the gumstrip, in tension, at least partially around the at least one barrel-shaped roller, such that the gumstrip compressively engages the roller to effect the positioning of the gumstrip for contact on the belt;

e) an applicator roller adjacent the horizontal pathway of the moving belt, for receiving the gumstrip from the at least one barrel-shaped roller and directing the exposed side of the gumstrip into compressive engagement with the adjacent marginal edge of the moving belt, the applicator roller having a pair of opposing ends, midway between which ends is a smooth cylindrical surface which is the only surface of the applicator roller to engage the gumstrip;

f) fifth means for removing the liner from the gumstrip at an obtuse angle of about 120 degrees, measured from the horizontal pathway of the moving belt immediately downstream from the fifth means, after the gumstrip is engaged with the moving belt, the fifth means including i) a flat plate which is angularly disposed to the horizontal pathway of the moving belt at a similarly measured obtuse angle which is at least 120 degrees, the plate having a straight edge which extends transversely across the gumstrip and engages the liner as it leaves the gumstrip, and ii) a stripping roller associated with the flat plate and disposed in farther spaced relation from the horizontal pathway of the moving belt than the associated flat plate which is in farther spaced relation from the applicator roller, measured horizontally, than the stripping roller; and

g) sixth means for supporting the belt and attached gumstrip, as they move through the apparatus along the horizontal pathway.

5,605,597
METHOD AND APPARATUS FOR APPLYING PRESSURE SENSITIVE LABELS TO HOLLOW CONTAINERS
John A. Plenzler, Sylvania, Ohio, assignor to Owens-Illinois Plastic Products Inc., Toledo, Ohio
Filed Nov. 14, 1994, Ser. No. 338,064
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—499 **1 Claim**



1. In an apparatus for applying pressure sensitive labels to articles such as hollow containers wherein the label is carried on a label web and the label web is moved about an acute bend on the label web to transfer the label to a hollow article, the improvement comprising

heating means spaced from and in advance of the acute bend for simultaneously heating a plurality of labels as they are moved by the web toward the acute bend to heat each said pressure sensitive label while it is carried by the label web directly to elevate the label temperature above ambient temperature before the acute bend to warm the label sufficiently to permit the pressure sensitive adhesive on the label to enter microscopic irregularities of the surface of the hollow article,

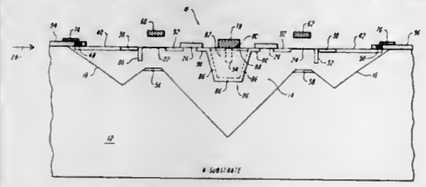
said heating means comprising means mounted on said apparatus for directing warm air lengthwise of the label web directly and simultaneously against a plurality of labels as they are moved by the web toward the acute bend to heat each label while it is on the label web,

said heating means for heating said labels comprising heating plate means mounted on said apparatus and spaced from and in advance of the acute bend in direct contact with the label web on the surface of the label web opposite to that on which said label is carried by the web, the length of said heating plate being such that a plurality of labels are simultaneously heated as they are moved toward the acute bend,

means for moving said heating plate means on said apparatus for movement into and out of contact with said web,

said means for moving said heating plate means comprising means hinging said heating plate means for movement into and out of contact with said web and cylinder means for moving said plate means.

5,605,598
MONOLITHIC MICROMECHANICAL VIBRATING BEAM ACCELEROMETER WITH TRIMMABLE RESONANT FREQUENCY
Paul Greiff, Wayland, Mass., assignor to The Charles Stark Draper Laboratory Inc., Cambridge, Mass.
Continuation-in-part of Ser. No. 599,131, Oct. 17, 1990, Pat. No. 5,408,119. This application May 13, 1994, Ser. No. 242,274
Int. Cl.[6] H01L *21/00*
U.S. Cl. 156—630.1 **82 Claims**



1. A method of fabricating a semiconductor transducer including the steps of:

providing a first semiconductor substrate having an etch resistant first surface;

providing a second semiconductor substrate with a precursor portion and a second portion, and bonding said second portion to said etch resistant first surface of said first substrate;

removing said precursor portion;

selectively diffusing said second portion to define a plurality of electrodes and supports;

growing on said second portion a first epitaxial layer;

aperturing said first epitaxial layer above said support defining diffusions;

growing on said first epitaxial layer a second epitaxial layer;

removing selected portions of said second epitaxial layer to define a suspended portion; and

removing said first epitaxial layer.

5,605,599
METHOD OF GENERATING PLASMA HAVING HIGH ION DENSITY FOR SUBSTRATE PROCESSING OPERATION
Jeffrey C. Benzing, Saratoga; Eliot K. Broadbent, and J. Kirkwood H. Rough, both of San Jose, all of Calif., assignors to Novellus Systems, Inc., San Jose, Calif.
Continuation of Ser. No. 273,574, Jul. 11, 1994, Pat. No. 5,405,480, which is a continuation-in-part of Ser. No. 971,363, Nov. 4, 1992, Pat. No. 5,346,578. This application Feb. 17, 1995, Ser. No. 390,337
Int. Cl.[6] B44C *1/22*
U.S. Cl. 156—643.1 **10 Claims**

1. A method of generating a high density of ions for a substrate processing operation, comprising:

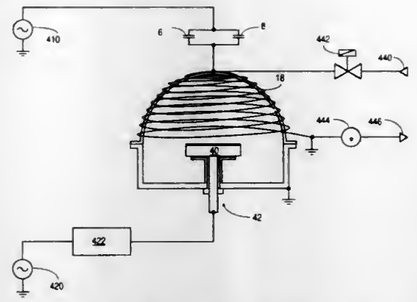
placing a substrate in a process chamber;

introducing a process gas into the process chamber;

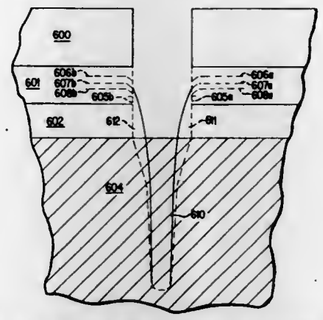
generating a bias voltage on the substrate;

providing an oscillating current to an induction coil defining in conjunction with the substrate a column of the process gas, the oscillating current in the induction coil establishing a strong axial time-varying magnetic field in the process gas column that accelerates electrons azimuthally inside of and proximate to the induction coil, the accelerated electrons creating a high electric field region in the process gas column inside of and proximate to the induction coil and mostly canceling the axial magnetic field inside of the high electric field region, thereby creating a low electric field region in the process gas column inside of the high electric field region; and

maintaining the process gas in the process gas column at a pressure so that electron collisions in the high and low electric field regions ignite a plasma and cause an ion current to fall on the substrate, the induction coil being shaped so that portions of the substrate nearer to the induction coil receive a greater contribution of ion current from ionization in the high electric field region than portions of the substrate farther from the induction coil to equalize ion current falling across the substrate.



5,605,600
ETCH PROFILE SHAPING THROUGH WAFER TEMPERATURE CONTROL
Karl P. Muller; Klaus B. Roithner, both of Wappingers Falls; Bernhard Poschenrieder, Poughkeepsie, and Toru Watanabe, Hopwell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.; Siemens Aktiengesellshaft, Munich, Germany, and Kabushiki Kaisha Toshiba, Tokyo, Japan
Filed Mar. 13, 1995, Ser. No. 402,378
Int. Cl.[6] H01L *21/302*
U.S. Cl. 156—643.1 **26 Claims**



1. A method of etch profile shaping wafer temperature control during an etch process wherein deposition of a passivation film is temperature dependent, comprising the steps of:

pressurizing a gap between a semiconductor wafer to be etched and a cathode at a first pressure; and

changing the pressuring in said gap to a second pressure at a first time during the etch process, thereby altering heat transfer from said semiconductor wafer to said cathode.

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METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE

Satoshi Kawasaki, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 31, 1996, Ser. No. 594,196
Claims priority, application Japan, Sep. 19, 1995, 7-239858
Int. Cl.[6] H01L *21/3065*
U.S. Cl. 156—643.1 **10 Claims**

PRESSURE	mTorr	0.6	1.2	3.0	5.0	10.0
Cl_2/NF_3	sccm	20/10	40/20	40/20	40/20	40/20
NOTCHING	OVER-ETCHING 50%	NONE	NONE	NONE	SLIGHTLY FOUND	FOUND
	OVER-ETCHING 25%	—	—	—	NEARLY NONE	—

1. A method of manufacturing a semiconductor device, which method comprises etching a multi-layer film comprising a conductive film and/or an insulating film using

a mixed gas containing Cl_2 and NF_3 at a vacuum of 0.1–5.0 mTorr with an electron density of at least $10^{10}/cm_3$; and

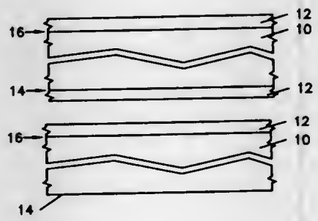
said mixed gas having NF^3 flow ratio of at most 70% relative to the total flow, wherein said conductive film includes a metal silicide film and/or a polysilicon film.

5,605,602

METHOD AND DEVICE FOR REMOVING A THIN FILM FROM A WAFER BACKSIDE SURFACE

Damon K. DeBusk, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Sep. 8, 1994, Ser. No. 303,186
Int. Cl.[6] H01L *21/306*
U.S. Cl. 156—646.1 **15 Claims**



1. A method for removing a thin film from a wafer backside surface comprising the steps of:

providing a fumer device having a bowl-shaped receptacle with upwardly directed walls terminating in a rim and a plurality of ports extending through said walls;

forming a thin film upon exposed front and backside surfaces of a silicon substrate by inserting said silicon substrate into a wafer boat and introducing said wafer boat into a furnace such that said front and backside surfaces are exposed to a gas flow within said furnace;

without any intervening depositing steps after said forming step, sealing the backside surface of said substrate in a downward direction against the rim of said fumer device; and

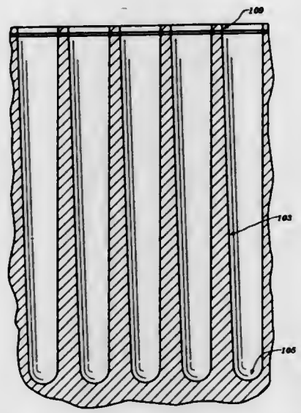
delivering etchant vapors into said fumer device through one of said plurality of ports, whereby said etchant vapors react with and cause removal of said thin film.

5,605,603

DEEP TRENCH PROCESS

Dennis S. Grimard, Williston, and Neal P. Marmillion, Colchester, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 29, 1995, Ser. No. 412,666
Int. Cl.[6] H01L *21/302*
U.S. Cl. 156—662.1 **7 Claims**



1. A process for anisotropically etching a crystalline silicon substrate comprising:

(a) immobilizing a crystalline silicon substrate on an electrostatic chuck in a plasma etching apparatus having a cathode and an anode;

(b) heating said silicon substrate by raising the cathode temperature to 30° to 80° C.;

(c) exposing said silicon substrate to a plasma generated from a mixture of gases comprising sources of bromine, fluorine and oxygen; and

(d) carrying out a plasma etch with the temperature of the cathode held at 30° to 80° C.

5,605,604

METHOD OF REDUCING THE RESIN CONTENT IN SULFITE PULP

Bjorn Dillner; Hans Arne, and Goran Tidstam, all of Saffle, Sweden, assignors to Kvaerner Pulping Aktiebolag, Karlstad, Sweden

Filed Feb. 14, 1995, Ser. No. 389,693
Claims priority, application Sweden, Mar. 4, 1994, 9400738
Int. Cl.[6] D21C *9/153*
U.S. Cl. 162—65 **20 Claims**

1. A method for reducing the resin content in sulfite pulp, in an ozone bleaching process wherein the sulfite pulp is bleached using ozone, at a pulp concentration of about 6 to about 14% by weight, and at a Ph of less than about 7, the method consisting essentially of the steps of:

alkalizing the sulfite pulp to a pH of greater than about 7 after said ozone bleaching; and then

mechanically processing the sulfite pulp to press resin out of the sulfite pulp and to thicken the sulfite pulp to a pulp concentration exceeding about 20% by weight.

5,605,605

PROCESS FOR TREATING AND SIZING PAPER SUBSTRATES

Paul D. Coleman, Sewell, N.J., and John R. Robertson, Glen Mills, Pa., assignors to Imperial Chemical Industries PLC, London, England

Continuation-in-part of Ser. No. 136,174, Oct. 13, 1993, abandoned, which is a continuation-in-part of Ser. No. 844,346, Mar. 2, 1992, abandoned. This application Jan. 27, 1995, Ser. No. 379,045
Int. Cl.[6] D21H *19/16*
U.S. Cl. 162—135 **2 Claims**

1. A process for treating a paper substrate comprising the steps of applying a composition comprising (a) an isocyanate and (b) an isocyanate-reactive component comprising at least one polyol having an ethylene oxide content of 1 to 90%, wherein said composition does not contain water, to the paper substrate by means of an electrostatic spraying device having a linear orifice.

5,605,606

REMOVAL FOULANTS FROM DISTILLATION TRAIN USING NON-SOLVENT PRECIPITATION

Allen R. Syrinek, Richmond, Tex., assignor to Nalco/Exxon Energy Chemicals. L.P., Sugarland, Tex.

Continuation-in-part of Ser. No. 409,777, Mar. 24, 1995, abandoned, which is a continuation-in-part of Ser. No. 93,405, Jul. 19, 1993, abandoned. This application Jun. 19, 1995, Ser. No. 491,825
Int. Cl.[6] B01D *3/34*
U.S. Cl. 203—8 **3 Claims**

1. A method for the reduction of fouling in a distillation train, the distillation train being used to purify an organic fluid containing fouling components which method comprises the steps of:

a. forming a fluid mixture of a first fluid comprising monomers used in condensation polymerization reactions selected from the group consisting of C_2–C_8 dichlorides, diacids and diamines to be distilled with a second fluid which is a solvent of the first fluid and in which fouling components present in the first fluid are insoluble, the second fluid having a boiling point at least 20° F. greater than the boiling point of the first fluid;

b. precipitating fouling components from the fluid mixture;

c. removing the fluid mixture from the precipitated fouling components;

d. distilling the first fluid from the fluid mixture to recover a purified first fluid whereby fouling of the distillation column is reduced; and

e. reusing the second fluid to repeat steps a–d.

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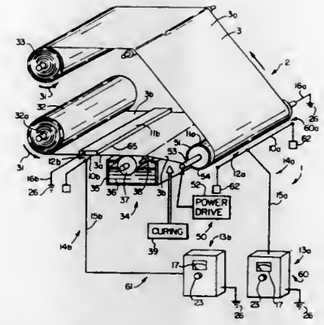
WEB FEEDER WITH CONTROLLED ELECTROSTATIC FORCE AND METHOD

Joseph A. LaRose, Ravenna, and Allen S. Pucciani, Mentor, both of Ohio, assignors to Avery Dennison Corporation, Pasadena, Calif.

Filed Mar. 15, 1995, Ser. No. 404,726
Int. Cl.[6] H05F *3/00*
U.S. Cl. 204—164 **61 Claims**

1. A method of applying an electrostatic force to a moving web, comprising

moving a nonconductive and non-metallic web in a space between at least one pair of electrodes,



supplying a voltage to the electrodes to cause a flow of current in the space between the electrodes to apply an electrostatic force to the web, and

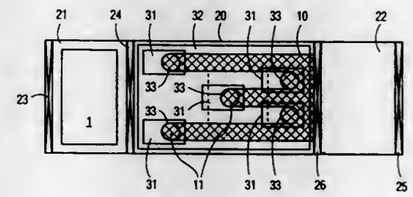
maintaining the electrostatic force substantially constant at a selected value by controlling the current flowing between the electrodes.

5,605,608

DEVICE FOR SPUTTERING A METALLIC MATERIAL ON A PLATE

Richard Pepi, Pourrieres; Michel Garcia, Les Milles, and Robert Meyer, Saint Nazaire les Eymes, all of France, assignors to Pixel International S.A., Rousset, France

Filed Jun. 16, 1995, Ser. No. 491,446
Int. Cl.[6] C23C *14/34*
U.S. Cl. 204—192.12 **7 Claims**



1. A device for sputtering a metallic material on an entire surface of a plate comprising:

a vacuum chamber (**20**),

a linear conveyor (**28**; **34**) carrying at least one plate (**1**) having a surface to be processed, said surface to be processed being turned downward,

at least two sputtering sources (**31**) containing material to be vaporized (**10**) disposed under the conveyor, perpendicularly to its moving direction; and

a collimator (**32**, **33**; **35**) associated with each source, the sputtering sources and their associated collimators being arranged to coat the whole width of the plate (**1**) under a substantially normal incidence.

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5,605,609

METHOD FOR FORMING LOW REFRACTIVE INDEX FILM COMPRISING SILICON DIOXIDE

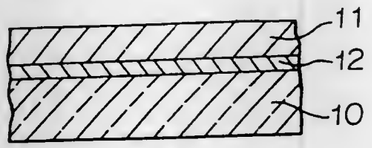
Eiichi Ando; Akira Mitsui, both of Yokohama; Junichi Ebisawa, Tokyo; Koichi Suzuki, Yokohama; Kiyoshi Matsumoto, Tokyo, and Takuji Oyama, Yokohama, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Continuation of Ser. No. 55,782, May 3, 1993, abandoned, which is a continuation of Ser. No. 671,801, Apr. 22, 1991, abandoned, which is a continuation-in-part of Ser. No. 318,330, Mar. 3, 1989, Pat. No. 5,110,637. This application Oct. 17, 1994, Ser. No. 323,579

Claims priority, application Japan, Mar. 3, 1988, 63-48765; Mar. 31, 1988, 63-76202; Jun. 14, 1988, 63-144827; Oct. 21, 1988, 63-264163; Aug. 1, 1989, 1-197993; Sep. 1, 1989, 1-224484; Jun. 21, 1990, 2-161413

Int. Cl.[6] C23C *14/34*

U.S. Cl. 204—192.23 1 Claim



1. A method for forming a low refractive index film comprising silicon dioxide as the main component, by a DC sputtering method in an oxygen-containing atmosphere by means of a target comprising Si as the main component, which target contains Zr in an amount of from 4 to 35 atoms relative to from 65 to 96 atoms of Si.

5,605,610

METHOD OF FABRICATING TRANSPARENT CONDUCTIVE ITO FILMS

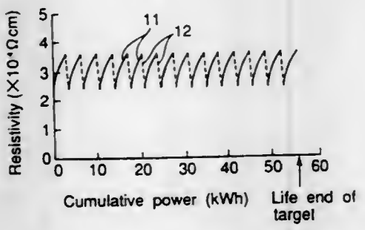
Keizi Ishibashi, Fuchu, Japan, assignor to Anelva Corporation, Fuchu, Japan

Filed Sep. 22, 1995, Ser. No. 532,937

Claims priority, application Japan, Dec. 17, 1994, 6-334267

Int. Cl.[6] C23C *14/35*

U.S. Cl. 204—192.29 27 Claims



1. A method of fabricating transparent conductive ITO films having In and O as basic constituent elements and added Sn as a donor by a magnetron sputtering process in an atmosphere comprising an inert gas and oxygen, a mixture of oxides of In and Sn being used as a target, said method comprising a first step of forming said transparent conductive ITO film on a substrate magnetron sputtering, and a second step of performing, after the first step is stopped, electric discharge at a power density at which the rate at which the target is eroded is faster than the formation rate of a superficial oxygen-deficient layer of said target formed in said first step in order to remove the superficial oxygen-deficient layer, the first and second steps being alternately repeated.

5,605,611

CARBON DIOXIDE-GENERATING ELECTRODE APPARATUS

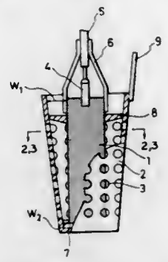
Sanji Ozawa, Nishiyatsusiro-gun; Chikara Yokose, Nakakomagun, and Yoichi Ishikawa, Hoya, all of Japan, assignors to Oriental Sangyo Co., Ltd., Yamanashi, and Able Corporation, Tokyo, both of Japan

Filed Oct. 12, 1995, Ser. No. 542,436

Claims priority, application Japan, Oct. 14, 1994, 6-276111

Int. Cl.[6] C25B *9/00;11/12*

U.S. Cl. 204—242 9 Claims



1. A carbon dioxide-generating electrode apparatus comprising a carbon anode and a cathode disposed in a non-contacting face-to-face relationship, said carbon anode having a terminal provided at an upper portion thereof which is connected to a source of electric current and the distance between the carbon anode and the cathode gradually increasing from a lower portion of said carbon anode through said carbon anode upper portion.

5,605,612

GAS SENSOR AND MANUFACTURING METHOD OF THE SAME

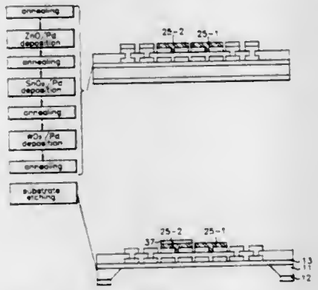
Hyeon S. Park, Seoul; Kyu C. Lee, Shungcheongbuk-do; Chul H. Kwon, Chungcheongbuk-do; Dong H. Yun, Chungcheongbuk-do; Hyuo W. Shin, Chungcheongbuk-do, and Hyung K. Hong, Chungcheongbuk-do, all of Rep. of Korea, assignors to Goldstar Electron Co., Ltd., Chungcheongbuk-do, Rep. of Korea

Filed Nov. 10, 1994, Ser. No. 337,065

Claims priority, application Rep. of Korea, Nov. 11, 1993, 1993-23897; Mar. 15, 1994, 1994-5132

Int. Cl.[6] G01N *27/26*

U.S. Cl. 204—429 12 Claims



1. A thin-film gas sensor comprising:
a silicon substrate;
an insulating layer formed on a surface of said silicon substrate;
a heater of a plurality of lines in zigzag on a first region of a surface of said insulating layer, each of said lines being connected to adjacent lines;
a temperature sensor formed in zigzag on a second region of the surface of said insulating layer, a loop of heaters in zigzag on the first region and a loop of temperature sensors in zigzag on the second region being arranged in the same plane side by side with each other;
an interlayer insulating layer for electrically insulating said heater and temperature sensor;
a plurality of electrodes formed on said interlayer insulating layer;
a plurality of pairs of gas sensing layers disposed in an array on said electrodes and for reacting to detected gas; and
a plurality of gas shielding layers each formed on one gas sensing layer out of said pair of gas sensing layers.

5,605,613

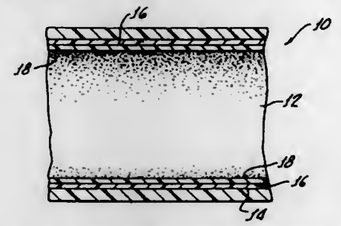
POLYVINYLALCOHOL COATED CAPILLARY ELECTROPHORESIS COLUMNS

Chia-Hui Shieh, Irvine, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Continuation-in-part of Ser. No. 186,736, Jan. 25, 1994, Pat. No. 5,447,617. This application Jan. 27, 1995, Ser. No. 379,383

Int. Cl.[6] C25B *7/00*

U.S. Cl. 204—451 14 Claims



1. A capillary column for electrophoretic separations of sample components, said capillary column comprising:
a length of tubing having an interior surface, said interior surface having an interconnected polymeric coating, said interconnected polymeric coating comprising a hydrophobic hydrocarbon backbone polymeric functionality covalently bound to said interior surface and polyvinylalcohol copolymerized with said hydrophobic polymeric functionality.

5,605,614

MAGNETIC MICROCONTACTOR AND MANUFACTURING METHOD THEREOF

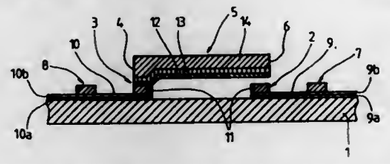
Etienne Bornand, Boudry, Switzerland, assignor to Asulab S.A., Bienne, Switzerland

Filed Jun. 14, 1995, Ser. No. 490,546

Claims priority, application France, Jun. 17, 1994, 94 07468

Int. Cl.[6] C25D *7/00*

U.S. Cl. 205—50 7 Claims



1. Method of manufacturing a magnetic microcontactor comprising a flexible beam in one or more conducting materials, having one end attached to an insulating substrate via the intermediary of a foot, and a free distal end disposed above a contact stud arranged on said substrate, said feet and stud being composed of conducting materials and provided with connecting means to an external electronic circuit, and said beam being at least partly composed of a ferromagnetic material activated by a magnet enabling distal end to move towards or away from the contact stud to establish or to break an electrical contact, consisting in the successive steps of:
a) forming two separate conducting areas each comprising a gripping metallization layer and a layer of a non oxidizable metal on the substrate;
b) forming a first mask by depositing a layer of photoresist and configuring the latter, so as to form at least two windows disposed above a conducting area in the vicinity of their facing edges, said windows having substantially vertical walls;
c) growing by electrodeposition, inside the windows, a conducting material in order to obtain studs until said material is flusb with the photoresist surface;
d) forming a second mask by depositing a layer of photoresist and configuring, over its entire thickness, a window above a single stud, said window having tapered walls;
e) depositing an intermediate metallization layer over the whole surface of the photoresist, walls and the bottom of the window formed in step d);
f) forming a third mask by depositing a thick layer of photoresist and configuring, over its entire thickness, a channel extending between the farthest edges of the studs disposed on the edges facing the conducting areas;
g) growing by electrodeposition a ferromagnetic material, to form the beam;
h) growing by electrodeposition a compressive material;
i) removing, in one or more steps, the photoresist layers and the intermediate metallization layer either chemically and mechanically, or solely chemically.

5,605,615

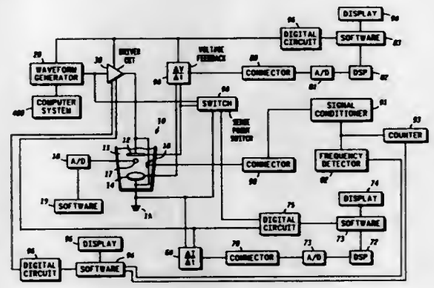
METHOD AND APPARATUS FOR PLATING METALS

Peter G. Goolsby, Phoenix; Dan R. Ramirez, Chandler, and Lei P. Lai, Glendale, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 5, 1994, Ser. No. 349,590

Int. Cl.[6] C25D *21/12;5/18;5/50;* G01N *27/26*

U.S. Cl. 205—83 12 Claims



1. A plating system, comprising:
an electrode positioned for providing an electrical pulse to an electrochemical solution;
means for positioning an object to be plated in the electrochemical solution, wherein the object is adapted for coupling to ground;
a driver circuit comprised of a power operational amplifier coupled to the electrode to supply the electrical pulse to the electrode, wherein the power operational amplifier is comprised of at least a 15 amp device;
a control element coupled to the electrode and the driver circuit, wherein the control element provides offset error control and digital control feedback via the driver circuit; and
an input coupled to the driver circuit.

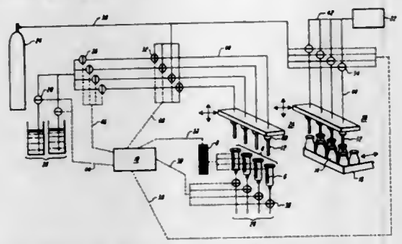
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5,605,616

REVERSIBLE CHARGE-BASED SEQUESTRATION ON SOLID SUPPORT

Charles M. Zepp, Hardwick, Mass., assignor to VersiCor, Inc., Marlborough, Mass.

Filed Nov. 6, 1995, Ser. No. 553,842
Int. Cl.[6] C25F *5/00*
U.S. Cl. 205—688 **23 Claims**



1. A method for modifying a substrate compound, the method comprising:

(i) providing, in a reaction mixture, a substrate compound comprising a reactive moiety;

(ii) contacting the reactive moiety with a reactant to form a modified substrate compound;

(iii) providing a solid support, wherein one of said substrate compound and said solid support comprises a selectively chargeable moiety (SCM) having a non-associating charge state;

(iv) altering the non-associating charge state of the selectively chargeable moiety to an associating charge state;

(v) contacting the modified substrate compound with the solid support such that the modified substrate compound is sequestered by the solid support; and

(vi) altering the associating charge state of the selectively chargeable moiety to a non-associating charge state such that the modified substrate compound is not sequestered by the solid support.

5,605,617

CONDUCTIVE POLYMER FILM DOPED BY MIXED HETEROPOLYANIONS USABLE FOR THE DETECTION OF NITRITE IONS, NITROGEN MONOXIDE OR A SUBSTANCE CONTAINING NO

Gerard Bidan, Grenoble; Bruno Fabre, Saint-Egreve, both of France, and Mieczyslaw Lapkowski, Zabrze, Poland, assignors to Commissariat a l'Energie Atomique, Paris, France

PCT No. PCT/FR94/00350, § 371 Date Nov. 23, 1994, § 102(e) Date Nov. 23, 1994, PCT Pub. No. WO94/23291, PCT Pub. Date Oct. 13, 1994
PCT Filed Mar. 29, 1994, Ser. No. 338,616
Claims priority, application France, Mar. 29, 1993, 93 03588
Int. Cl.[6] G01N *27/333*
U.S. Cl. 205—781 **10 Claims**

1. A process for amperometric detection of nitrite ions, nitrogen monoxide or a substance containing a NO group present in a sample, which comprises the steps of:

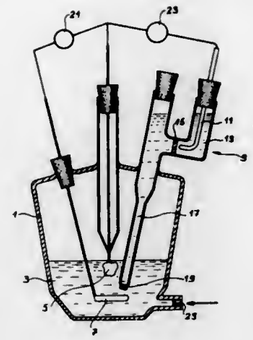
providing a sensor having a first electrode, a second auxiliary electrode, and a third reference electrode that are immersed in an aqueous solution contained in an enclosure,

introducing the sample into the aqueous solution,

applying a potential between the first and third electrodes, and

measuring the electric current flowing between the first and second electrodes, wherein the first electrode comprises an electrically conductive support coated with an electronically conductive polymer film doped by mixed heteropolyanions complying with one of the formulas:

$[M^{III}X^1W_{11}O_{39}(H_2O)]^{n-}$ and



$[M^{III}X_2{}^2W_{17}O_{61}(H_2O)]^{7-}$

in which M represents Fe, Rh, Al, Ga, In or Tl,

X^1 represents P or As and is equal to 4,

X^1 represent Si or Ge and n is equal to 5, or

X^1 represents B and n is equal to 6, and

X^2 represents P or As, provided that X^1 does not represent Si when M represents Fe and wherein the mixed heteropolyanions catalyze the reduction of the nitrite ions, nitrogen monoxide or a substance containing a NO group.

5,605,618

PROCESS FOR PREPARING NITROGEN-CONTAINING ISOTROPIC PITCH AND NITROGEN-CONTAINING ISOTROPIC PITCH

Takashi Maeda, and Tomiji Hosotsubo, both of Kamisu, Japan, assignors to Petoca, Ltd., Tokyo, Japan

Filed Sep. 7, 1995, Ser. No. 524,847
Claims priority, application Japan, Sep. 9, 1994, 6-240757; Sep. 9, 1994, 6-240758
Int. Cl.[6] C10C *30/06*
U.S. Cl. 208—39 **7 Claims**

1. A process for preparing nitrogen-containing isotropic pitch comprising the steps of:

preparing a homogeneous dispersion containing a petroleum heavy oil, a nitrating reagent and water, said nitrating reagent comprising at least one selected from the group consisting of nitric acid, organic nitric acid esters and nitrous acid;

contacting the petroleum oil with the nitrating reagent in the homogeneous dispersion state to obtain a crude nitrated heavy oil;

removing water and the unreacted nitrating reagent contained in the crude nitrated heavy oil to prepare a refined nitrated heavy oil;

heating the refined nitrated heavy oil to polymerize the heavy oil so as to prepare a crude nitrogen-containing isotropic pitch; and

vacuum-distilling the crude nitrogen-containing isotropic pitch to remove light components produced by the polymerization, thereby adjusting a softening point and a residual carbon ratio of the nitrogen-contafning isotropic pitch.

5,605,619

DESULPHURIZATION TREATMENT

Andrew Holt, Fulwood, Great Britain, assignor to Dytech Corporation, Sheffield, Great Britain

Filed Mar. 22, 1994, Ser. No. 215,992
Claims priority, application United Kingdom, Oct. 3, 1991, 9120973
Int. Cl.[6] C10G *25/05*
U.S. Cl. 208—213 **5 Claims**

1. A method of reducing the content of a sulphur compound in a hydrocarbon stream, the method comprising reacting the stream with bonded granules of a manganese-containing compound and a promoter, said promoter being nickel hydroxide, whereby the bonded granules take up an increased amount of the sulphur compound.

5,605,620

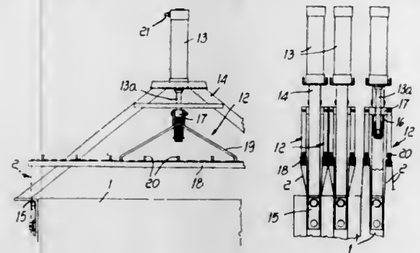
Patent Not Issued For This Number

5,605,621

UNLOADING DEVICE FOR FILTER PRESS

Franco Grigoletti, Via Acquacalda 27, 48022 Lugo (Prov. of Ravenna), Italy

Filed Jan. 28, 1993, Ser. No. 10,041
Claims priority, application Italy, Feb. 6, 1992, BO92A0034
Int. Cl.[6] B01D *25/34*
U.S. Cl. 210—91 **10 Claims**



1. A filter press with an unloading device for unloading solid residue bricks, the filter press comprising:

a series of mutually aligned plates arranged in a pack and forming a longitudinal duct for feeding liquid to be filtered, the plates having lateral sides provided with central region recesses thereby to form chambers between the mutually aligned plates;

support means for slidably supporting said mutually aligned plates thereby said plates being slidable along a longitudinal direction between on open position in which said chambers are open and accessable between the respective plates and a closed position for filtering in which said chambers are closed;

means for compressing said plates into said closed position; and

flexible filtering cloth elements arranged at said lateral sides of said plates;

a series of rod elements arranged above said plates with respect to a supporting surface of the filter press and each supporting a pair of said filtering cloth elements which downwardly extend from a respective rod element towards the supporting surface and between a respective pair of plates;

fluid piston-cylinder means for raising and lowering said rod elements with respect to said supporting surface between a raised position in which the pair of said filtering cloth elements are tensioned between the respective pair of plates and a lowered position in which the pair of filtering cloth elements are slackened thereby to allow solid residue bricks to unload from said chambers when said chambers are open; and

connection means interposed between said rod elements and said fluid piston-cylinder means for connecting said rod elements to said fluid piston-cylinder means;

wherein said fluid piston-cylinder means comprise, for a set of a pair of said plates, a pneumatic piston-cylinder supported above said set of a pair of said plates by a bridge frame connected to one of said set of a pair of said plates, said pneumatic piston-cylinder comprising a cylinder and a piston stem extending downwardly from said cylinder towards said set of a pair of said plates, and wherein said connection means comprise, for said set of a pair of said plates:

a cross member extending above and perpendicularly to an extension of a pair of rod elements, said cross member being connected to said piston stem; and

a pair of coupling elements each connected to said cross member and extending downwardly therefrom and connected to a respective one of said pair of rod elements;

said piston stem extending downwardly from said cylinder and slidably through said cross member, the filter pressure further comprising a spring surrounding said piston stem and interposed between said cross member and an end abutment element of said piston stem.

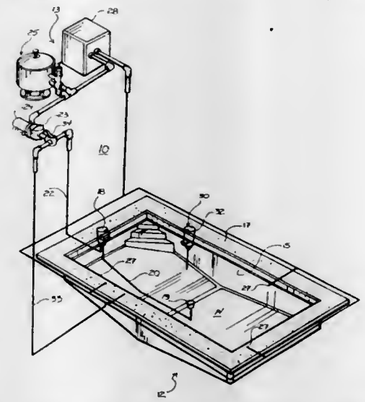
2. The filter press with unloading device as claimed in claim **1**, further comprising a photocell means for detecting the position of said connection means.

5,605,622

SWIMMING POOL VACUUM SYSTEM

Michael J. Ferraro, 14812 N. 49th St., Scottsdale, Ariz. 85254

Filed Jul. 18, 1995, Ser. No. 503,885
Int. Cl.[6] E04H *4/16*; B01D *29/50*
U.S. Cl. 210—169 **13 Claims**



1. A vacuum system for use in a swimming pool installation including a swimming pool and a recirculating system, the recirculating system having a skimmer device and a main drain coupled to a pump and a filter assembly for recirculating the water in the swimming pool, said vacuum system comprising:

a vacuum module mounted adjacent the swimming pool independent of the skimmer device;

a conduit coupling the vacuum module to the pump;

a single fluid inlet defined by a hose coupling extending from the vacuum module in direct liquid communication with the swimming pool, the hose coupling adapted to receive a vacuum hose; and

the vacuum module including a housing having an upper end, a lower end, and a sidewall extending therebetween defining a first chamber;

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the single fluid inlet formed in the housing in communication with the first chamber, defined by the hose coupling;

an outlet formed in the housing in communication with the first chamber, the outlet coupled to the conduit;

a first opening formed in the housing in communication with the first chamber; and

a cover sealingly closing the first opening wherein the skimmer device and vacuum module are constructed and arranged such that the swimming pool may be continuously vacuumed while the skimmer device and main drain are also operating.

5,605,623

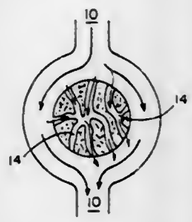
PERFUSIVE CHROMATOGRAPHY

Noubar B. Afeyan, Lexington, Mass.; Fred E. Regnier, Lafayette, Ind., and Robert C. Dean, Jr., Norwich, Vt., assignors to PerSeptive Biosystems, Inc., Framingham, Mass.

Continuation of Ser. No. 317,161, Oct. 3, 1994, which is a division of Ser. No. 14,473, May 10, 1993, Pat. No. 5,384,042, which is a division of Ser. No. 988,028, Dec. 9, 1992, Pat. No. 5,228,989, which is a continuation of Ser. No. 669,047, Mar. 14, 1991, abandoned, which is a division of Ser. No. 595,661, Oct. 9, 1990, Pat. No. 5,019,270, which is a continuation of Ser. No. 376,885, Jul. 6, 1989, abandoned. This application Jan. 20, 1995, Ser. No. 375,910

Int. Cl.[6] B01D *15/08*

U.S. Cl. 210—198.2 **14 Claims**



1. An adsorption chromatography system for efficiently separating biological molecules in a liquid, said system comprising:

a matrix defining:

interconnected first and second throughpore sets, each of which comprise a multiplicity of pores for channeling through said matrix a biological molecule disposed in a liquid, and

interactive regions in fluid communication with members of the second throughpore set,

the relative dimensions of the members of said first and second throughpore sets permitting, when said liquid is passed through said matrix at a velocity of about 1000 cm/hr or greater,

a convective fluid flow velocity through members of said second throughpore set greater than the rate of diffusion of said biological molecule within members of said second throughpore set, and

a pump for passing liquids through the matrix at a velocity greater than 1500 cm/hr,

whereby there exists a range of flow velocities through said matrix over which the effective plate height or capacity of the matrix is substantially constant.

5,605,624

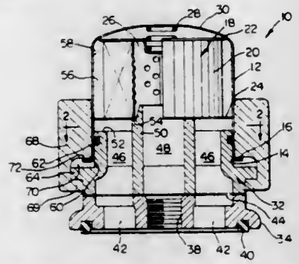
QUICK CONNECT/DISCONNECT LIQUID FILTER

Allen B. Wright, Coventry, R.I., assignor to AlliedSignal Inc, Morristown, N.J.

Continuation of Ser. No. 49,054, Apr. 19, 1993, abandoned, which is a continuation of Ser. No. 823,939, Jan. 22, 1992, abandoned. This application Nov. 9, 1993, Ser. No. 150,334

Int. Cl.[6] B01D *27/08*

U.S. Cl. 210—232 **4 Claims**



1. Filter assembly comprising a base and a filter cartridge for installation on said base, said filter cartridge including a filter element mounted within a cupshaped housing having a circumferentially extending wall and axially opposing open and closed ends, said housing including a radially outwardly extending flange at said open end, said element being installed in said housing through said open end, said base having an axially projecting portion slidably received within said open end of the housing, said axially projecting portion including a circumferentially extending surface slidably engaging an interior surface of the circumferentially extending wall of said housing when the cartridge is installed on the base to define a chamber between said base and said housing, said circumferentially extending surface having a radial groove therein for locating a circumferentially extending seal which sealingly engages said circumferentially extending wall to seal said chamber from the environment, an element engaging surface defined on said projecting portion for sealingly engaging said element, said base including a set of outwardly projecting bayonet lugs projecting radially outwardly from said base and perpendicular to said circumferentially extending surface, wherein said radial groove and said seal is located axially between said element and said outwardly projecting bayonet lugs, each of said outwardly projecting bayonet lugs having opposed ends and defining recesses therebetween, each said outwardly projecting bayonet lug including an engagement surface facing in a direction axially away from said axially projecting portion, a collar slidably engaging an exterior surface of the circumferentially extending wall of said housing to maintain said sealing engagement between said seal and wall, a portion of said collar cooperating with the housing to define a cavity therebetween and including a shoulder for engaging said flange, said collar including radially inwardly projecting bayonet lugs projecting into said cavity, each of the inwardly projecting lugs having opposed ends and defining recesses therebetween, each said inwardly projecting bayonet lug including an engagement surface facing axially toward said cavity, said recesses defined by said outwardly projecting lugs being sized to accept said inwardly projecting lugs and the recesses defined by said inwardly projecting lugs being sized to accept the outwardly projecting lugs, whereby the collar may be rotated to a fully engaged position after the inwardly projecting lugs have been inserted through the recesses defined between the outwardly projection lugs such that the engagement surfaces of the inwardly projecting lugs engage the engagement surfaces of the outwardly projecting lugs, and a spring between the closed end of said housing and said element for yieldably urging said element into sealing engagement with said element engaging surface.

5,605,625

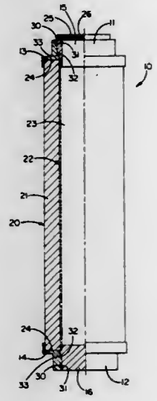
FILTER ASSEMBLY

Steven L. Mills, Cortland, N.Y., assignor to Pall Corporation, East Hills, N.Y.

Continuation of Ser. No. 21,850, Feb. 24, 1993, Pat. No. 5,476,585. This application Mar. 9, 1995, Ser. No. 401,233

Int. Cl.[6] B01D *27/08*

U.S. Cl. 210—232 **13 Claims**



1. A reusable core assembly for use in a filtration system comprising:

(a) a perforated core having first and second ends and an outer diameter; and

(b) first and second impervious adapters attached to the first and second ends of the perforated core, wherein the first impervious adapter has an outer periphery which includes a large diameter portion, a small diameter portion, and a shoulder extending between the large diameter portion and the small diameter portion, wherein the large diameter portion includes a larger diameter than the outer diameter of the perforated core and defines a sealing surface, and the small diameter portion is affixed to the perforated core and wherein the second impervious adapter has a largest diameter portion substantially equal to the outer diameter of the perforated core.

5,605,626

PLATE SIEVE CHANGER

Detlef Gneuss, Bad Oeynhausen, Germany, assignor to Gneuss Kunststofftechnik GmbH, Bad Oeynhausen, Germany

Filed May 31, 1995, Ser. No. 455,282

Claims priority, application Germany, Jun. 1, 1994, 44 19 284.3

Int. Cl.[6] B01D *29/96*

U.S. Cl. 210—236 **19 Claims**

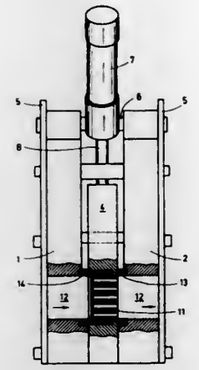
1. A filter device for molten plastic, comprising:

a pair of plates having axially aligned openings;

a movable element between said plates formed with at least one sieve insert displaceable by said element between a position in which said sieve insert registers with said openings for filtration of a molten plastic forced through said openings and a position wherein said sieve insert is out of registry with said openings;

means for displacing said element relative to said plates; and

respective annular seals surrounding said openings and fitting between said plates and said element for sealing between said plates and said element, at least one of said seals comprising a hollow metal sealing body enclosing a closed space filled with a substance having a thermal expansion coefficient greater than that of said body.



5,605,627

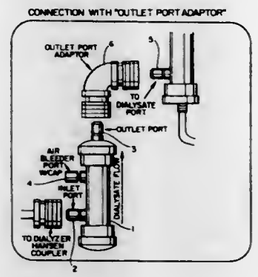
DIALYSATE FILTER INCLUDING AN ASYMMETRIC MICROPOROUS, HOLLOW FIBER MEMBRANE INCORPORATING A POLYIMIDE

Daniel B. Carlsen; Robert G. Andrus, both of Minneapolis, and Robert T. Hall, II, Welch, all of Minn., assignors to Minntech Corporation, Minneapolis, Minn.

Continuation-in-part of Ser. No. 58,904, Jun. 30, 1993, which is a continuation-in-part of Ser. No. 958,027, Oct. 7, 1992, abandoned. This application Apr. 7, 1995, Ser. No. 418,802

Int. Cl.[6] B01D *63/00*

U.S. Cl. 210—321.79 **30 Claims**



1. A filter comprising;

an housing defining an interior chamber;

an inlet port connected to said housing;

an outlet port connected to said housing;

an access port connected to said housing; and

a bundle of asymmetric, microporous, hollow fiber membranes disposed within said interior chamber, said asymmetric, microporous, hollow fiber membranes comprising a polyimide polymer, said asymmetric, microporous, hollow fiber membranes including pores having a pore size range from about 0.005 μm to about 0.2 μm, wherein said asymmetric, microporous, hollow fiber membranes have a flux in excess of about 75×10^{-5} ml/(min×cm^2×mmHg); and

wherein said inlet port, said outlet port and said access port are in fluid communication with said bundle of hollow fiber membranes.

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5,605,628

COMPOSITE MEMBRANES

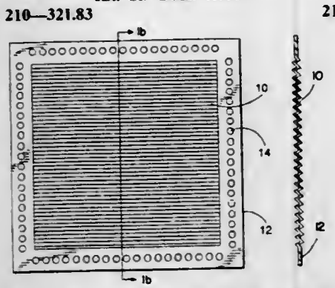
Alexander P. Davidson, Shipston-on-Stour, United Kingdom; Michael P. Thomas, Westmount, Canada; Steven W. Summers, Radford Semele, United Kingdom; David R. Cowieson, Newton, United Kingdom, and Peter J. Williams, Frodsham, United Kingdom, assignors to North West Water Group PLC, Warrington, United Kingdom

Continuation-in-part of Ser. No. 37,712, Mar. 24, 1993, Pat. No. 5,376,442, which is a continuation of Ser. No. 884,214, May 11, 1992, abandoned, which is a continuation of Ser. No. 355,646, May 22, 1989, abandoned. This application Dec. 6, 1994, Ser. No. 349,985

Claims priority, application United Kingdom, May 24, 1988, 8812217; Feb. 7, 1989, 8902649

Int. Cl.[6] B01D *63/00*

U.S. Cl. 210—321.83 **21 Claims**



1. A composite membrane comprising an inorganic support composed of woven or non-woven fibres and having interstices of diameter greater than 5 μm and length less than ten times their diameters, and porous inorganic films of sintered non-metallic particles carried by the support and bridging the interstices thereof, the films having pore sizes up to 2 μm.

5,605,629

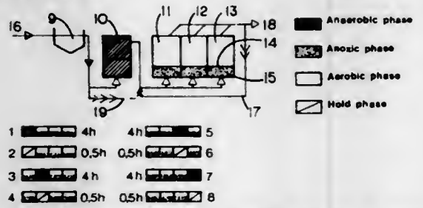
METHOD FOR THE REMOVAL OF NUTRIENTS CONTAINING CARBON, NITROGEN AND PHOSPHORUS

Frank A. Rogalla, 839 W. End Ave., Apt. 6-E, New York, N.Y. 10025

Continuation-in-part of Ser. No. 923,433, Aug. 3, 1992, abandoned. This application Apr. 13, 1995, Ser. No. 421,227

Int. Cl.[6] C02F *3/30*

U.S. Cl. 210—605 **12 Claims**



1. A method of biologically treating wastewater to remove carbon and phosphorus utilizing submerged biofilters in a series of cell, comprising: directing wastewater into and through a series of cells and a submerged biofilter contained in each cell; during one phase of treatment maintaining a first cell and its biofilter under anaerobic conditions while maintaining a second cell and its biofilter under aerobic conditions and directing the effluent from the first anaerobic cell to the second aerobic cell; during a second phase of treatment reversing the anaerobic/aerobic cell treatment by maintaining the first cell and its biofilter under aerobic conditions while maintaining the second cell and its biofilter under anaerobic conditions and directing the influent from the second anaerobic cell to the first aerobic cell; and in each phase, directing wastewater into the cell that is maintained under anaerobic conditions prior to passing the wastewater into the cell maintained under aerobic conditions.

5,605,630

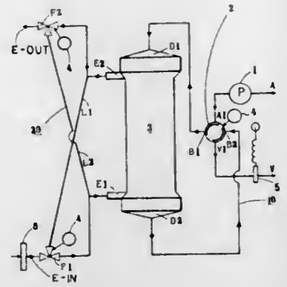
BLOOD FLOW DIRECTION CHANGEOVER DEVICE AND METHOD FOR HEMODIALYZER

Takeru Shibata, Yokohama, Japan, assignor to Scitec Kabushiki Kaisha, Kamakura, Japan

Filed Feb. 25, 1994, Ser. No. 202,265

Int. Cl.[6] B01D *61/00;61/28;61/32*

U.S. Cl. 210—646 **3 Claims**



3. A hemodialysis method comprising:

providing a dialyzer having first and second blood flow ports and first and second dialytic liquid flow ports;

coupling a blood flow circuit, having an arterial inlet and a venous outlet, to each of said first and second blood flow ports of said dialyzer;

operating a blood flow direction changeover device connected in said blood flow circuit to intermittently change a blood flow direction through said dialyzer between a first blood flow direction in which blood flows into said dialyzer through said first blood flow port and out of said dialyzer through said second blood flow port, and a second blood flow direction in which blood flows into said dialyzer through said second blood flow port and out of said dialyzer through said first blood flow port; and

coupling a dialytic liquid flow circuit to said first and second dialytic liquid flow ports of said dialyzer.

5,605,631

MEMBRANES

Sami A. I. Barri, Berkshire; Graham J. Bratton, Kent, and Timothy d. Naylor, Egham, all of England, assignors to The British Petroleum Company, P.L.C., London, England

Continuation of Ser. No. 285,897, Aug. 4, 1994, which is a division of Ser. No. 9,425, Jan. 27, 1993, Pat. No. 5,362,522, which is a continuation of Ser. No. 776,951, Oct. 15, 1991, abandoned. This application Jun. 6, 1995, Ser. No. 467,181

Claims priority, application United Kingdom, Oct. 19, 1990, 9022836

Int. Cl.[6] B01D *61/14*

U.S. Cl. 210—650 **26 Claims**

1. In a method of separating water from a mixture of water and an alcohol by contact with a membrane, the improvement comprising separating through a crystalline membrane which comprises a film of a crystalline material which is a molecular sieve with a crystal structure made up of tetrahedra joined together through oxygen atoms to produce an extended network with channels of moleculara dimensions, said film being carried by a porous support characterised in that the crystal growth of the crystalline material is essentially continuous over the pores of the support and that the crystalline material is crystallised directly from and bonds directly to the support.

5,605,632

SILVER RECOVERY DEVICE AND PROCESS

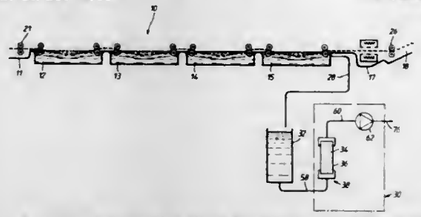
Benedictus Jansen, Geel; Frank Michiels, Arendonk, and Werner Van de Wynckel, Mortsel, all of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Filed Aug. 21, 1995, Ser. No. 517,389

Claims priority, application European Pat. Off., Sep. 5, 1994, 94202530

Int. Cl.[6] C02F *1/42*

U.S. Cl. 210—688 **8 Claims**



1. A process for removing silver from a silver-containing solution, comprising:

using a pump to direct the solution through an ion-exchange resin bed, with the pump being positioned downstream of the resin bed, the resin bed being held within a retaining space of variable dimension, and the dimension being variable in response to flow rate of liquid passing through the resin bed so as to restrain fluidization of the resin.

5,605,633

PROCESS FOR TREATING PHOTOGRAPHIC WASTE WATER

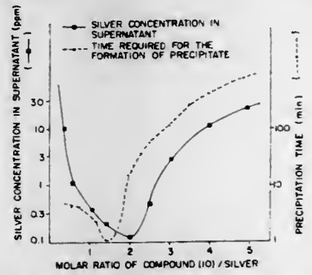
Takashi Nakamura; Koji Matsuo, and Masaharu Yamada, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 29, 1994, Ser. No. 348,806

Claims priority, application Japan, Nov. 29, 1993, 5-320928

Int. Cl.[6] C02F *1/62;1/56*

U.S. Cl. 210—732 **14 Claims**



1. A process for treating a photographic waste water containing a used processing liquid resulting from a processing step having a bleaching ability or a fixing ability in the processing of a silver halide photographic material, which process comprises adding a polymer capable of forming a complex with at least one metal in the waste water to the waste water in an amount in the range of from 0.5 to 4 equivalents to a metal contained in the waste water to thereby form a polymer-metal complex and theo separating the polymer-metal complex with a single layer membrane filter having a pore size of 0.05 to 10 μm to remove the metal.

5,605,634

TREATMENT OF CONTAMINATED GROUNDWATER

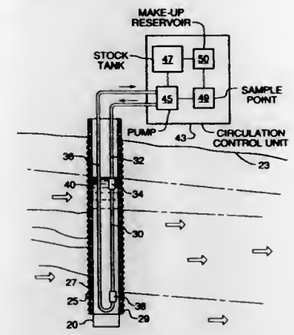
Ryan D. Wilson, Kitchener, Canada, and Douglas M. Mackay, Stanford, Calif., assignors to University of Waterloo, Canada

Filed Apr. 24, 1995, Ser. No. 426,966

Claims priority, application United Kingdom, Apr. 23, 1994, 9408125

Int. Cl.[6] C02F *1/00*

U.S. Cl. 210—747 **11 Claims**



1. Procedure for placing small quantities of a substance into groundwater moving through an aquifer, comprising the steps of:

in a borehole in the material of the aquifer, placing a diffusion tube down from the ground surface into the depth of the borehole;

the borehole being of the kind into which groundwater can enter from the aquifer, can pass through, and can re-enter the aquifer, laterally;

providing a source of the substance in fluid form;

the diffusion tube is made of a material of the kind through which the fluid substance is capable of diffusing molecularly;

placing the diffusion tube in the borehole, whereby the diffusion tube is located in the groundwater in the borehole;

the diffusion tube having an entry end and an exit end, and forming means for passing fluid through the diffusion tube, from the entry end to the exit end thereof;

the diffusion tube being substantially imperforate, and being thereby closed to the escape of fluid out of the diffusion tube, other than by molecular diffusion through the material of the tube, between the entry end and the exit end thereof;

providing a circulation means, comprising a means for pressurising the fluid substance, and for conducting the fluid substance to the entry end of the diffusion tube, conducting the fluid substance through the diffusion tube from end to end thereof, and for collecting the fluid substance emerging from the exit end of the diffusion tube, and for circulating the fluid substance and returning same to the entry end;

and circulating the fluid substance through the diffusion tube.

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5,605,635

METHOD OF PURIFYING GASEOUS OR LIQUID EFFLUENTS CONTAINING SULFUR DERIVATIVES

Philippe-Marie David, 15 Le Clos Saint Jean, 27150 Le Thil en Vexin, France

Filed Mar. 3, 1995, Ser. No. 398,381
Int. Cl.[6] C02F *1/20*
U.S. Cl. 210—750 **4 Claims**

1. A process for purifying gaseous or liquid effluents containing a sulphur-containing derivative, comprising the steps of:
(i) basification of the effluent to be treated at a pH>9 in the presence of a base;
(ii) reacting the product obtained in (i) with a compound of general formula I:

$$X-(CH_2)_n-CO-R,$$

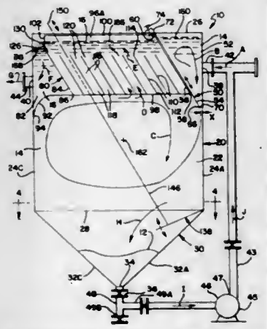
in which,
X represents:
a halogen,
a sulphonyl halide of formula $X'-SO_2-R'$, in which X' represents a halogen and R' represents a C_1–C_{20} alkyl group or an optionally substituted aryl group,
an OH group,
R represents:
a C_1–C_{16} alkoxy,
a group NH—R", in which R" represents a hydrogen atom or a primary or secondary amine radical,
a group OR_2 in which R_2 represents a hydrogen atom, an alkali metal, an alkaline-earth metal or an ammonium group, or
a halogen,
n is an integer between 1 and 4,
at a temperature between 12° C. and 95° C. and at atmospheric pressure.

5,605,636

LIQUID CLARIFICATION DEVICE AND METHOD

David Wyness, Springfield, Ill., assignor to McNish Corporation, Aurora, Ill.

Filed Apr. 20, 1995, Ser. No. 425,436
Int. Cl.[6] B01D *21/24*
U.S. Cl. 210—801 **24 Claims**



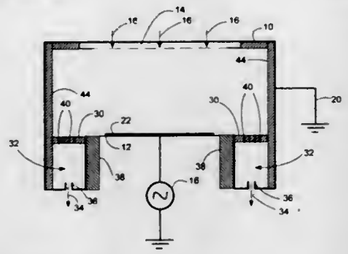
18. A method of separating particles from a mixture of particles and liquid to form a clarified a liquid comprising the steps of:
providing a flow of the mixture into an inlet chamber formed by a wall member having a first end and a second end, said inlet chamber having a first cross-sectional area at said first end of said wall member and a second cross-sectional area at said second end of said wall member, said first cross-sectional area being smaller than said second cross-sectional area;
providing a flow of the mixture from said inlet chamber through a flow passage located adjacent said end of said wall member of said inlet chamber into a settling chamber formed by a housing;
fully rotating the mixture within the settling chamber about a generally horizontal axis to separate the particles from the liquid; said
passing the clarified liquid from the settling chamber through an outlet port of removal from the housing.

5,605,637

ADJUSTABLE DC BIAS CONTROL IN A PLASMA REACTOR

Hongching Shan, San Jose; Evans Lee, Milpitas, and Robert Wu, Pleasanton, all of Calif., assignors to Applied Materials Inc., Santa Clara, Calif.

Filed Dec. 15, 1994, Ser. No. 356,825
Int. Cl.[6] H05H *1/00*
U.S. Cl. 216—71 **21 Claims**



1. A plasma reactor with selectable direct current (dc) bias control, comprising:
a grounded reactor chamber having conductive walls;
a grounded first electrode located in the chamber;
a second electrode spaced apart from the first electrode, for supporting a workpiece to be processed in the reactor chamber;
at least one inlet port for supplying process gases to the reactor chamber;
at least one outlet port for evacuating gases from the chamber;
a high-frequency power source connected between the second electrode and ground, to generate and sustain a plasma in the reactor chamber; and
a plasma shield installed in the reactor chamber to prevent the plasma from reaching a portion of the reactor chamber;
wherein the plasma shield has a plurality of narrow slits through it to permit the flow of process gases but not the plasma, the slits each having a cross-sectional area defined by a slit length dimension that is long relative to a slit width dimension, and the slits each having a length in the direction of gas flow that is also long relative to the slit width;
and wherein the effective area of the grounded first electrode is reduced because the plasma is prevented from contacting the full extent of the chamber walls, and the reduced effective area results in a reduced dc bias on the second electrode.

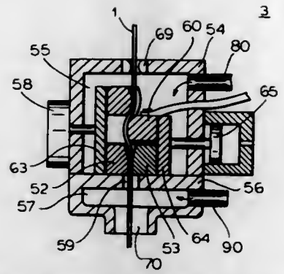
5,605,638

ELECTRIC DISCHARGE MACHINING (EDM) APPARATUS

Ichiro Fujita, Fukui, Japan, assignor to Sodick Co., Ltd., Yokohama, Japan

PCT No. PCT/JP94/00979, § 371 Date Feb. 8, 1995, § 102(e) Date Feb. 8, 1995, PCT Pub. No. WO94/29059, PCT Pub. Date Dec. 22, 1994
PCT Filed Jun. 16, 1994, Ser. No. 374,775
Claims priority, application Japan, Jun. 16, 1993, 5-181825
Int. Cl.[6] B23H *1/00;1/10*
U.S. Cl. 219—69.14 **3 Claims**

1. An EDM machine comprising:
a work tank;



a tool electrode mounted in said work tank;
means for mounting a workpiece to be machined in said work tank for juxtaposition with said tool electrode, said workpiece to be machined and said electrode forming a gap therebetween in said work tank;
means for storing a first fluid containing a powdery substance;
means for storing a second fluid free from said powdery substance,
cover means bounding a space containing parts to be protected from said first fluid; and
fluid feeding means for selectively delivering said first fluid to said gap and said second fluid to said space whereby said sectional fluid excludes said first fluid from said parts and an electric discharge across said gap machine said workpiece with said tool electrode.

5,605,639

METHOD OF PRODUCING DIFFUSION HOLES IN TURBINE COMPONENTS BY A MULTIPLE PIECE ELECTRODE

John H. Banks, Amston, and Roger A. Poggio, Meriden, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 21, 1993, Ser. No. 171,293
Int. Cl.[6] B23H *1/00;9/14*
U.S. Cl. 219—69.17 **7 Claims**



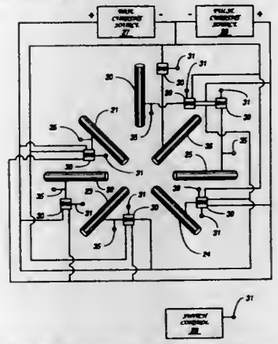
1. A method of forming diffusion holes in a superalloy article by electrical discharge machining comprising the steps of:
(a) inserting into an electrical discharge machining device a multiple piece electrode comprising (i) at least one tooth, wherein said at least one tooth is placed in close proximity to the superalloy article to form a gap across which an electric charge may be transmitted to erode a portion of the superalloy article, (ii) at least one movable, elongated rod, wherein said at least one movable, elongated rod is positioned through said at least one tooth, and (iii) means for securing said at least one movable, elongated rod to said at least one tooth,
(b) advancing the multiple piece electrode longitudinally into the superalloy article such that said at least one movable, elongated rod forms a metering section hole in the superalloy article of about 0.010 inches in diameter at a depth in excess of about 0.250 inches and said at least one tooth forms a diffused area, with an angle of about 10 degrees, at one end of the hole.

5,605,640

REACTOR FOR THE TREATMENT OF PARTICULATE MATTER BY ELECTRICAL DISCHARGE

Marek K. Tylko, and Jozef K. Tylko, both of Minneapolis, Minn., assignors to Refranco Corp., Mpls, Minn.

Continuation of Ser. No. 248,701, May 24, 1994, abandoned, which is a continuation of Ser. No. 109,606, Aug. 19, 1993, Pat. No. 5,403,991. This application Aug. 30, 1995, Ser. No. 521,275
Int. Cl.[6] B23K *10/00*
U.S. Cl. 219—121.36 **13 Claims**



1. A reactor for the treatment of particulate matter by electrical discharge which comprises:
a plurality of spaced electrode means defining an inter-electrode space of desired configuration;
means for preionizing the inter-electrode space, including means for establishing a base current within said inter-electrode space;
means for introducing particulate matter to be treated into the inter-electrode space; and
means for producing a sequence of discrete electrical discharges throughout the preionized inter-electrode space.

5,605,641

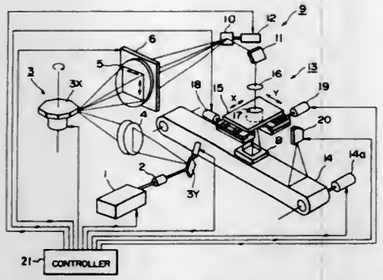
METHOD AND APPARATUS FOR LASER MARKING A CONTINUOUSLY MOVING WORKPIECE

Teiichiro Chiba, and Koji Yoshida, both of Hiratsuka, Japan, assignors to Komatsu Ltd., Tokyo, Japan

PCT No. PCT/JP93/01718, § 371 Date May 23, 1995, § 102(e) Date May 23, 1995, PCT Pub. No. WO94/12310, PCT Pub. Date Jun. 9, 1994
PCT Filed Nov. 24, 1993, Ser. No. 433,417
Claims priority, application Japan, Nov. 25, 1992, 4-336753
Int. Cl.[6] B23K *26/06;* **B41J** *2/465;* **G02B** *26/08*
U.S. Cl. 219—121.68 **30 Claims**

1. A laser marking apparatus for marking workpieces, said apparatus comprising:
a transfer mechanism for moving a workpiece in a workpiece feeding direction through a laser irradiation area at a workpiece transfer speed Without any Stopping of the movement of the workpiece;
a laser oscillator for providing a laser beam;
a first polarizer for polarizing said laser beam from said laser oscillator and raster-scanning the thus polarized laser beam;
a mask capable of displaying a specified pattern which selectively passes the thus raster-scanned laser beam;

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a second polarizer for further polarizing the thus raster-scanned laser beam which has passed through said mask, said second polarizer being provided with a reflection mirror device for reflecting said thus raster-scanned laser beam which has passed through said mask;

a movable lens for receiving a reflected laser beam from said reflection mirror and irradiating the thus received reflected laser beam Onto a workpiece in said laser irradiation area; and

a moving mechanism, on which said movable lens is mounted, for moving said movable lens in synchronism with said workpiece transfer speed;

wherein said reflection mirror device comprises:

a first mirror for receiving and reflecting the thus raster-scanned laser beam which has passed through said mask; and

a second mirror for reflecting to said movable lens a laser beam reflected by said first mirror;

wherein said first mirror is movable between a first position and a second position thereof, said first mirror in said first position directing the laser beam reflected by said first mirror toward said second mirror, said first mirror in said second position directing the laser beam reflected by said first mirror toward said movable lens.

5,605,642

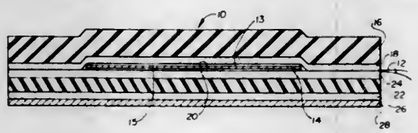
FLEXIBLE FOOT WARMING DEVICE FOR A SNOWMOBILE

Gary L. Nece, 14105 36th Ave. N., Plymouth, Minn. 55447

Filed Jun. 15, 1994, Ser. No. 241,156

Int. Cl.[6] B60L *1/02;* **H05B** *3/34*

U.S. Cl. 219—202 **4 Claims**



1. A warming device which attaches to a surface of a snowmobile, comprising:

a) a generally planar flexible electrical heating element, which provides heat when electrically actuated, said element consisting of a single etched-foil electrically resistive layer, said single layer laminated between two layers of flexible electrical insulation;

b) electrical connectors which provide electrical connection of the heating element to a battery of the snowmobile;

c) a moisture impervious layer mounted along an exterior surface of one of the flexible electrical insulation layers of the heating element, which moisture impervious layer protects the electrically resistive element and the flexible electrical insulation layers of the heating element from moisture;

d) a heat reflecting layer, positioned along an exterior surface of the second flexible electrical insulation layer of the heating element, which heat reflecting layer reflects heat produced by the heat element toward the first surface;

e) a thermal insulating layer, positioned to abut the heat reflecting layer, which thermally insulates the heating element; and

f) an adhesive layer which attaches the warming device to a surface of the snowmobile.

5,605,643

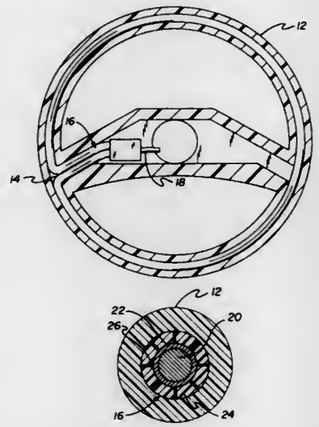
HEATED STEERING WHEEL WITH A PLURALITY OF RADIALLY EXTENDING WIRES FOR AFFORDING SUITABLE HEAT CONDUCTIVITY

Mildred D. Reece, Rte. 2, Box 688, Lake Chelan, Wash. 98816

Filed Dec. 21, 1995, Ser. No. 576,761

Int. Cl.[6] B60L *1/02;* **H05B** *3/50*

U.S. Cl. 219—204 **1 Claim**



1. A heated steering wheel assembly comprising:

a vehicle steering wheel having a hollow interior around a peripheral section thereof;

an elongated heating element comprising a flexible electrically conductive metallic wire composed of metal in the group including copper and aluminum axially disposed within said hollow interior, said elongated heating element adapted to afford resistance heating;

an illuminated toggle switch mounted on a dashboard of a vehicle for controlling the amount of heat deliverable to the steering wheel;

a flexible metallic foil sheath disposed around an exterior surface of said elongated heating element and fixedly attached thereto, said sheath acting as an insulator to control a level of heat dissipation from said heating element to an exterior surface of said steering wheel;

a protective plastic sheath disposed around an exterior surface of said foil sheath and fixedly attached thereto to protect said foil sheath from damage during a positioning of said foil sheath in said hollow interior, wherein the plastic sheath is provided with a large number of substantially straight heat conducting wires randomly disposed within said plastic sheath and directed from an interior surface of the plastic sheath to an exterior surface of the plastic sheath to facilitate heat transfer through said plastic sheath from said heating element;.

wherein said large number of heat conducting wires on said exterior surface of said plastic sheath are in heat conducting contact with a wall surface of said hollow interior of said steering wheel and further are radially aligned relative a center longitudinal axis of said heating element thereby to provide a minimum distance for heat transfer from said heating element through said plastic sheath to said wall surface of said hollow interior.

5,605,644

YARN HEATING APPARATUS

Siegfried Morhenne, Breckerfeld, Germany, assignor to Barmag AG, Remscheid, Germany

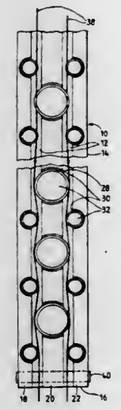
PCT No. PCT/EP94/01886, § 371 Date May 24, 1995, § 102(e) Date May 24, 1995, PCT Pub. No. WO94/29501, PCT Pub. Date Dec. 22, 1994

PCT Filed Jun. 9, 1994, Ser. No. 387,751

Claims priority, application Germany, Jun. 15, 1993, 43 19 796.5

Int. Cl.[6] F27B *9/28;* **F27D** *11/02;* **D01H** *13/28*

U.S. Cl. 219—388 **17 Claims**



1. A yarn heating apparatus for use in a false twist crimping machine comprising:

an elongate rail defining a heating surface,

means for heating the heating surface,

a plurality of cylindrical yarn guides mounted in an axially spaced apart arrangement along the rail, with the axes of the cylindrical yarn guides being disposed substantially perpendicular to the heating surface, with axially adjacent yarn guides being positioned on opposite sides of a common central plane which is generally perpendicular to the heating surface, and with the yarn guides being sized and positioned such that the peripheries thereof extend beyond the common central plane and present curved contact surfaces to a yarn advancing along the rail,

whereby a yarn advancing along said rail assumes a zigzagged path in contact with the curved contact surfaces of the yarn guides.

5,605,645

FURNACE HEATER SURROUNDED BY A CERAMIC TUBE AND FASTENED WITH A CERAMIC FLANGE

Anke Brandstädter-Springer; Ludwig Weiler, both of Heidelberg; Hans Ammon, Wettingen, and Fritz Hegewaldt, München, all of Germany, assignors to ABB Gadelius KK, Tokyo, Japan

Filed Apr. 26, 1995, Ser. No. 429,305

Claims priority, application Germany, Aug. 26, 1992, 43 28 718.2

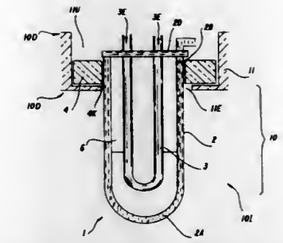
Int. Cl.[6] H05B *3/06;3/62*

U.S. Cl. 219—542 **3 Claims**

1. A heating element for a furnace used for the vitrification of ash from refuse incineration plants, comprising:

a U-shaped heating bar defining two ends;

a ceramic protective tube surrounding said heating bar and having an outer surface, a closed end, an open end, and an edge;



a flange fastened to said outer surface of said protective tube at said open end, said flange being a ring made from a material selected from the group consisting of nitridic, oxidic and carbidic heavy-duty ceramic, said flange being fastened to said outer surface of said protective tube with an adhesive selected from the group consisting of silicate-ceramic adhesive and phosphate-ceramic adhesive, and being disposed in a U-shaped recess formed in a ceiling brick of the furnace;

said two ends of said heating bar being guided outwards for electrical connection through and being mounted on a cover disposed on said edge of said protective tube.

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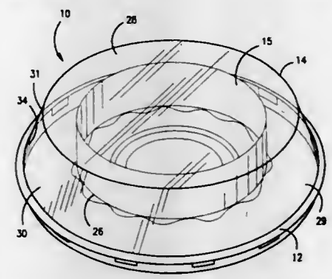
CONTAINERS FOR PREPARATION AND DISPLAY OF FOODS

Edward A. Colombo, Penfield, and Stephen L. Goulette, Newark, both of N.Y., assignors to Tenneco Plastics Company, Evanston, Ill.

Filed Sep. 15, 1994, Ser. No. 305,911

Int. Cl.[6] B29C *33/12;33/38;* **A47J** *37/01*

U.S. Cl. 249—134 **27 Claims**



1. A domed container for the preparation and display of food, the container comprising:

(i) a receptacle having a bottom with a top surface and an outer circumference, which bottom possesses at least one groove in a closed, continuous pattern, said groove having two side surfaces and a bottom surface, each side surface configured to include projections extending into said groove;

(ii) a dome cover which comprises a top wall having at least one wall depending therefrom, the depending wall having an outside surface and an inside surface, the container possessing a locking means for releasably locking the cover to the receptacle; and

(ii) at least one hollow mold member having a lower edge, wherein the hollow mold member forms a closed continuous pattern, the lower edge of the hollow mold member fitting into said groove of the receptacle and being held in place from each side by an interference fit between the projections of the side surfaces of said groove and the lower edge, thereby removably attaching the hollow mold member perpendicularly to the receptacle.

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5,605,647

FLUOROIODOCARBON BLENDS AS CFC AND HALON REPLACEMENTS

Jonathan S. Nimitz, Albuquerque, N.M., and Lance H. Lankford, Newcastle, Calif., assignors to Ikon Corporation, Carson City, Nev.

Division of Ser. No. 27,227, Mar. 5, 1993. This application Jun. 30, 1994, Ser. No. 268,583

Int. Cl.[6] A62D *1/00*

U.S. Cl. 252—2 **34 Claims**

1. A composition of matter, comprising a blend of at least one additive selected from the group consisting of alcohols, esters, ethers, fluoroethers, hydrocarbons, hydrofluorocarbons, ketones, and perfluorocarbons selected from the group consisting of decafluorobutane, dodecafluoropentane, hexafluorocyclopropane, hexafluoroethane, octafluorocyclobutane, octafluoropropane, tetradecafluorohexane, and tetrafluoromethane and at least two different species of fluoroiodocarbons of the formula $C_aH_bBr_cCl_dF_eI_fN_gO_h$, wherein a is between and including 1 and 8, b is between and including 0 and 2, c, d, g and h are each between and including 0 and 1, e is between and including 1 and 17, and f is between and including 1 and 2, wherein at least one of the fluoroiodocarbons is selected from the group consisting of bromodifluoroiodomethane, chlorodifluoroiodomethane, 1,1,2,2,3,3,4,4,5,5-decafluoro-1,5-diiodopentane, difluorodiiodomethane, difluoroiodomethane, fluoroiodomethane, 1,1,2,2,3,3,3-heptafluoro-1-iodopropane, 1,1,2,2,3,3-hexafluoro-1,3-diiodopropane, iodoheptafluorocyclobutane, iodopentafluorocyclopropane, N-iodobis (trifluoromethyl) amine, pentafluoroiodoethane, 1,1,2,2-tetrafluoro-1,2-diiodoethane, 1,1,2,2-tetrafluoro-1-iodoethane, 1,1,2-trifluoro-1-iodoethane, trifluoroiodomethane and trifluoromethyl-1,1,2,2-tetrafluoro-2-iodoethyl ether, said composition of matter being electrically nonconductive and said additive being nonreactive with the said fluoroiodocarbons.

5,605,648

PIEZOELECTRIC CERAMIC

Yasuyuki Satou, Niwa-gun; Hiroshi Matsuoka; Hiroyuki Satou, both of Anjo; Eturo Yasuda, Okazaki, and Yasushi Sawada, Chita-gun, all of Japan, assignors to Nippon Soken Inc., Nishio, Japan

Filed Dec. 26, 1995, Ser. No. 578,277

Claims priority, application Japan, Dec. 28, 1994, 6-340599

Int. Cl.[6] C04B *35/49;* **H01L** *41/00*

U.S. Cl. 252—62.9 PZ **13 Claims**

1. A piezoelectric ceramic having a basic composition expressed as a ternary $Pb(Y_{0.5}Nb_{0.5})O_3$—$PbTiO_3$—$PbZrO_3$ solid solution, wherein a portion of the Pb is substituted by Sr, wherein the $PbTiO_3$ is present in an amount of more than 42 mol % of the ternary solid solution, and wherein the ceramic contains Mn_2O_3 in an amount in a range from at least 0.01 wt % to less than 0.5 wt %.

5,605,649

POLYMERIZABLE LIQUID-CRYSTALLINE SILOXANES

Juergen Stohrer, Munich, and Willibald Lottner, Weilheim, both of Germany, assignors to Consortium fur elektrochemische Industrie GmbH, Munich, Germany

Filed Dec. 22, 1994, Ser. No. 362,390

Claims priority, application Germany, Dec. 23, 1993, 43 44 308.7

Int. Cl.[6] C09K *19/52;* **G02F** *1/1335*

U.S. Cl. 252—299.01 **7 Claims**

1. A liquid-crystalline siloxane of the formula

$$Y^1—(SiR_2O)\pi—SiR_2—Y^2 \quad (I)$$

in which

Y^1 is a mesogenic group which is bonded to a silicon atom of the (SiR_2O) group by an alkyl or alkenyl radical,

Y^2 is an organic radical containing at least one polymerizable group having at least one ethylenically unsaturated double bond and at least one divalent cyclic group,

R is a C_1- to C_3-alkyl radical, and

π is an integer having a value of from 1 to 5.

5,605,650

SECURITY OF ARTICLES, GOODS, VEHICLES OR PREMISES

Micheal Cleary, Thurstaston, United Kingdom, assignor to Probe FX Patents Limited, West Midlands, United Kingdom

PCT No. PCT/GB91/01697, § 371 Date Mar. 30, 1994, § 102(e) Date Mar. 30, 1994, PCT Pub. No. WO93/07233, PCT Pub. Date Apr. 15, 1993

PCT Filed Oct. 2, 1991, Ser. No. 211,245

Int. Cl.[6] C09K *11/02;11/06*

U.S. Cl. 252—301.35 **21 Claims**

1. A method for detecting tampering, comprising applying to at least a portion of a surface of an object a composition comprising at least one fluorescent material and a solvent medium therefor, said solvent medium containing a volatile solvent and said composition being colorless, odorless and having no feel thereto upon application as a film to the surface of said object, and being capable of transfer from the surface of said object to another surface, and

directly transferring said composition from said object to a person tampering therewith.

5,605,651

EMULSIFIERS FOR THE PREPARATION OF OIL-IN-WATER EMULSIONS OF ESSENTIAL OILS USABLE IN COSMETICS OR MEDICINE

Dieter Balzer, Haltern, Germany, assignor to Huels Aktiengesellschaft, Marl, Germany

Continuation of Ser. No. 860,076, Mar. 30, 1992, abandoned. This application Feb. 17, 1995, Ser. No. 390,424

Claims priority, application Germany, Mar. 30, 1991, 41 10 506.0

Int. Cl.[6] B01J *13/00;* **C11D** *1/66*

U.S. Cl. 252—312 **13 Claims**

1. A method for producing an oil-in-water emulsion usable in cosmetics or topical medical preparations, which is storage-stable at elevated temperature, said emulsion comprising an essential oil, which method comprises:

introducing an emulsifier-and-oil system into water, or introducing an emulsifier-and-water into oil, wherein the oil comprises an essential oil in an amount of from 10% to about 50% by weight based on the total weight of the emulsion optionally in admixture with a cosmetic oil base, with the use of shear forces, wherein the emulsifier consists essentially of:

(a) 80 to 99.9 wt. % of an alkyl polyglycoside of the formula (I):

$$R—O—Z_n \quad (I)$$

wherein R is a straight-chain or branched, saturated or unsaturated alkyl group having 8–16 carbon atoms, Z is a glycoside group and n has an average value of 1–5, and

(b) from 0.1 to 20 wt. % of a co-emulsifier selected from the group consisting of an anionic, cationic and betainic co-emulsifier.

5,605,652

METHOD OF PREPARING SUNSCREENS

Carole A. M. Tapley, Cleveland, England, assignor to Tioxide Specialties Limited, United Kingdom

Division of Ser. No. 953,265, Sep. 30, 1992. This application Jun. 2, 1995, Ser. No. 459,704

Claims priority, application United Kingdom, Oct. 4, 1991, 9121153

Int. Cl.[6] B01J *13/00;* **C09C** *1/36;* **A61K** *7/42*

U.S. Cl. 252—313.1 **7 Claims**

1. A mixed oxide dispersion comprising an oil, particles of zinc oxide having an average size of from 0.005 to 0.15 micron, particles of titanium dioxide having an average size of from 0.005 to 0.15 micron and an organic dispersing agent for said particles in said oil, the amounts of said particles being such that the dispersion has a total solids content of greater than 30 weight per cent and said dispersion being substantially transparent to visible light and having an absorbance for ultraviolet light such that the extinction coefficient (E(308)) at a wavelength of 308 nm is at least 15 liters per gram per centimeter, the extinction coefficient (E(360)) at a wavelength of 360 nm is at least 10 liters per gram per centimeter and the ratio E(360):E(308) is in the range 0.3:1 to 1.5:1.

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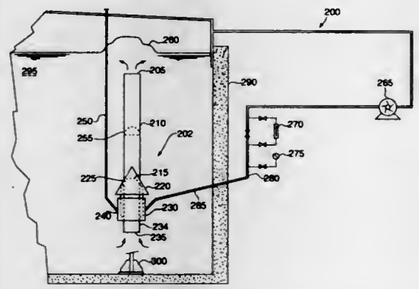
LIQUID CIRCULATION APPARATUS

Jerry DeVos, JDV Equipment Corp., 26 Commerce Rd.-Unit G, Fairfield, N.J. 07004

Filed Nov. 9, 1995, Ser. No. 556,417

Int. Cl.[6] B01F *3/04*

U.S. Cl. 261—77 **14 Claims**



1. A liquid circulation apparatus for submersible placement within a tank having a body of liquid, for generating a continuous circulation of the liquid from the lower region of the tank up to near the surface level of the liquid, said liquid circulation apparatus comprising:

a draft tube having a lower section and an upper section, said lower section having an inlet end and a second end, said upper section having a flared end and an outlet end, where said second end of said lower section is separated from said flared end of said upper section, and said upper section and said lower section are in substantial vertical alignment;

a bubble generator adjacent to said lower section at an elevation between said inlet and second ends of said lower section, said bubble generator having internal chambers for receiving gas and having a bubble release port for directing a bubble from said bubble generator into said upper section of said draft tube;

a gas supply means coupled to said internal chambers of said bubble generator for supplying gas; and

a support means coupled to said draft tube and said bubble generator for mounting said draft tube vertically within the tank.

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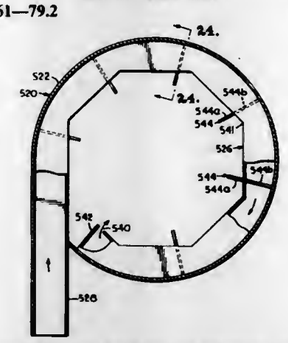
METHOD AND APPARATUS TO IMPROVE VAPOR DISTRIBUTION IN MASS TRANSFER AND HEAT EXCHANGE COLUMNS

Chang-Li Hsieh, Carlisle, Mass.; Neil Yeoman, Merrick, N.Y., and O. Jeffrey Berven, Wichita, Kans., assignors to Koch Engineering Company, Inc., Wichita, Kans.

Continuation-in-part of Ser. No. 195,533, Feb. 14, 1994, Pat. No. 5,516,465, which is a continuation-in-part of Ser. No. 101,924, Aug. 4, 1993, abandoned. This application Feb. 21, 1996, Ser. No. 604,671

Int. Cl.[6] B01F *3/04*

U.S. Cl. 261—79.2 **31 Claims**



1. A vapor distribution apparatus for placement within a mass transfer or heat exchange column having an external shell, a vapor inlet nozzle which extends through the external shell and an open interior volume through which vapor and liquid streams may flow and interact, said apparatus comprising:

a distributor defining an annular flow channel adapted for placement in vapor flow communication with the vapor inlet nozzle to receive a vapor stream entering the column through the vapor inlet nozzle and convey the vapor stream in at least one direction of flow about an inner periphery of the column shell, said distributor having an inner annular wall which defines a radially inner wall of the flow channel and a top plate which forms an at least substantially closed top of the flow channel, said inner annular wall having a outward side facing said flow channel and an inward side facing away from said flow channel, said distributor further having an at least partially open bottom in vapor flow communication with the flow channel to permit at least portions of the vapor stream in the flow channel to be discharged through the at least partially open bottom, and including a deflector having a first portion extending generally upwardly along said inward side of the inner annular wall to contact vapor traveling circumferentially along said inward side of the inner annular wall and divert it away therefrom.

5,605,655

GAS-LIQUID CONTACTING APPARATUS

Makiichi Ishihara; Takakazu Sunada, both of Tokyo; Shigeo Hasegawa, Hiroshima; Naohiko Ukawa, Hiroshima; Toru Takashina, Hiroshima; Yukio Kita; Kouichiro Iwashita, both of Tokyo; Kousuke Yamashita, Hiroshima; Junji Ozaki, and Kaname Kaneshige, both of Hofu, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, and Ohji Rubber & Chemicals Co., Ltd., Hofu, both of Japan

Filed Mar. 31, 1995, Ser. No. 413,722

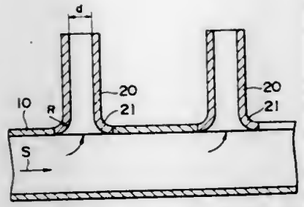
Claims priority, application Japan, Apr. 11, 1994, 6-072047; Dec. 13, 1994, 6-308680

Int. Cl.[6] B01D *53/34*

U.S. Cl. 261—116 **2 Claims**

2. A gas-liquid contacting apparatus in which spray nozzles for spraying slurry solution upward are arranged in a tower body through which gas passes, wherein a liquid inlet portion of said

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spray nozzle is of a bell shape having a radius of curvature of 0.2 times or more of the diameter of a liquid discharge port of said spray nozzle, and the material of the spray nozzle is one of polyether urethane rubber having a JIS-A hardness of 50 to 100 and polyethylene having an average molecular weight of 1,000,000 to 4,000,000.

5,605,656

LIQUID FILLING METHOD AND LENS MANUFACTURING METHOD

Masami Sasano, Sagamihara, Japan, assignor to Hoya Corporation, Tokyo, Japan

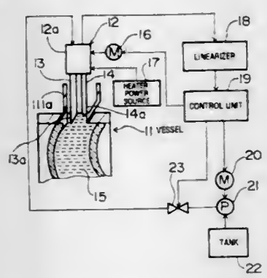
PCT No. PCT/JP94/01532, § 371 Date May 12, 1995, § 102(e) Date May 12, 1995, PCT Pub. No. WO95/08754, PCT Pub. Date Mar. 30, 1995

PCT Filed Sep. 16, 1994, Ser. No. 433,486

Claims priority, application Japan, Sep. 22, 1993, 5-257513

Int. Cl.[6] B29D *11/00*

U.S. Cl. 264—1.1 **8 Claims**



1. A lens material liquid filling method of controlling an amount of a lens material liquid to be filled into a cavity, comprising the steps of:

setting and keeping a thermal sensing portion of a temperature sensor having a protection sheath made of stainless steel to a temperature different from that of said lens material liquid which is selected from polyurethane, allylic, acrylic monomers, and combinations thereof;

pouring said lens material liquid into a vessel;

detecting a change of an output from said temperature sensor when the surface of said lens material liquid comes into contact with said thermal sensing portion; and

stopping the filling of said lens material liquid when it is determined that said liquid surface has reached a predetermined level.

7. A method of manufacturing a lens by pouring a lens material liquid into a cavity, comprising the steps of:

forming a cavity in a casting gasket to which two molds are attached;

setting and keeping a thermal sensing portion of a temperature sensor to a temperature different from that of said lens material liquid;

disposing a filling nozzle for the lens material liquid and said temperature sensor at a first pouring position;

pouring said lens material liquid into the cavity until said temperature sensor detects the first pouring position by means of changing of the temperature of the thermal sensing portion when the surface of said lens material liquid comes into contact with said thermal sensing portion;

lifting said filling nozzle and said temperature sensor to a second pouring position;

pouring said lens material liquid into said cavity until said temperature sensor detects said second pouring position; and

putting said gasket filled with the liquid into a polymerizer to polymerize said lens material liquid in said polymerizer.

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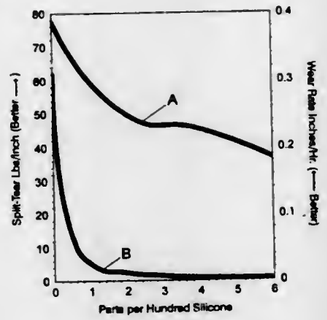
INDUSTRIAL SOLID TIRES AND METHOD OF MANUFACTURE

George H. Nybakken, Middlebury; Richard L. Palinkas, Northfield, both of Conn., and David M. Cloncb, Bristol, Va., assignors to Uniroyal Chemical Company, Inc., Middlebury, Conn.

Division of Ser. No. 882,726, May 14, 1992, abandoned. This application Jul. 1, 1993, Ser. No. 85,713

Int. Cl.[6] B29C *39/10;45/14*

U.S. Cl. 264—102 **2 Claims**



1. A batch method for producing a solid polyurethane tire for heavy-load, off-road use, the polyurethane of the tire having better wear resistance than a polyurethane article that is different only in having lesser amounts of liquid silicone, the polyurethane of the tire having equal skid resistance to a polyurethane article that is different only in having no liquid silicone, the method comprising the steps of:

(a) providing a liquid polyol prepolymer;

(b) adding to said prepolymer a preselected amount of a liquid silicone, said preselected amount of liquid silicone being between 1.0 and 4.0 parts per hundred of said prepolymer, wherein the combined total amount of said silicone and said prepolymer is sufficient in quantity for use in combination with one tire rim;

(c) adding and mixing an isocyanate and a curative into said prepolymer, thereby producing a prepolymer mixture;

(d) casting said prepolymer mixture into a tire mold incorporating a tire rim;

(e) curing said prepolymer mixture to form a polyurethane tire on said incorporated rim; and

(f) removing said tire from said mold.

5,605,658

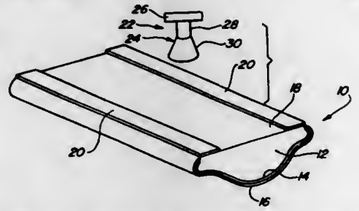
LOCATING PROTRUSION ON EXTRUDED PART

Mark Remington, Strongsville, Ohio, assignor to The Standard Products Company, Cleveland, Ohio

Filed Jun. 7, 1994, Ser. No. 254,960

Int. Cl.[6] B29C *33/42*

U.S. Cl. 264—320 **5 Claims**



1. A method of producing an integral protrusion, said method comprising the steps of:

providing a thermoplastic component;

providing a die cavity positioned relative to the thermoplastic component, said die cavity including a hollow region;

heating the die cavity to a temperature sufficient to melt the material of the thermoplastic component;

applying the heated die cavity to be in contact with thermoplastic component so that the thermoplastic material surrounding the heated die cavity melts and is forced into the hollow region of the die cavity;

cooling the die cavity in order to solidify the thermoplastic material within the die cavity; and

removing the die cavity from the thermoplastic component such that a protrusion having the shape of the hollow region is formed integral with the thermoplastic component.

5,605,659

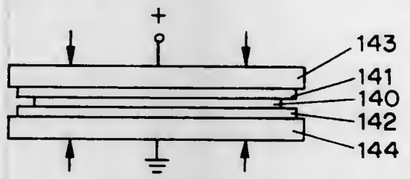
METHOD FOR POLING A CERAMIC PIEZOELECTRIC PLATE

Edward R. Moynihan, Lebanon; David W. Gailus, Merrimack; Robert G. Palifka, Orford, all of N.H.; Paul A. Hoisington, Norwich; Nathan P. Hine, South Strafford, both of Vt.; David Adams-Brady, Meriden, N.H.; Melvin L. Biggs, Norwich, Vt.; Marlene M. McDonald, Enfield; Steven H. Barss, Wilmot Flat, both of N.H.; Diane Mackay, Corinth, Vt.; Bruce A. Paulson, Newport, N.H., and Stephen C. Mackay, Corinth, Vt., assignors to Spectra, Inc., Keene, N.H.

Division of Ser. No. 406,297, Mar. 17, 1995, which is a continuation-in-part of Ser. No. 215,301, Mar. 21, 1994. This application Jun. 2, 1995, Ser. No. 460,393

Int. Cl.[6] B29C *35/08*

U.S. Cl. 264—430 **3 Claims**



1. A method for poling a ceramic piezoelectric plate comprising compressing a ceramic piezoelectric plate between electrode plates with a slightly conductive rubber sheet interposed between each electrode plate and the ceramic piezoelectric plate and applying an electric potential to the electrode plates to pole the piezoelectric plate, the slightly conductive rubber plates being effective to provide intimate electric contact with the piezoelectric plate while limiting the current available for arcing in the event of breakdown.

2. A method for poling a ceramic piezoelectric plate comprising applying one surface of a ceramic piezoelectric plate to a ground plate and applying electric charge from a corona discharge device to the opposite surface of the ceramic piezoelectric plate until the applied charge is sufficient to create a breakdown.

5,605,660

PROCESS FOR MAKING A MULTI-LAYER FILM CONTAINING RECYCLE POLYMER FROM CROSS-LINKED FILMS

Livio Buongiorno, Naviglio, and Paolo Ciocca, Lumellogno, both of Italy, assignors to W. R. Grace & Co.-Conn., Duncan, S.C.

Filed Apr. 20, 1995, Ser. No. 427,549

Claims priority, application European Pat. Off., Apr. 28, 1994, 94106672

Int. Cl.[6] B29C *35/10*

U.S. Cl. 264—456 **11 Claims**

1. A process for the manufacture of a multilayer, cross-linked, heat shrinkable, polyolefin film, said film having at least one inner layer comprising thermoplastic polymer disposed between two outer layers comprising thermoplastic polymer different from the thermoplastic polymer of said inner layer, comprising the steps of:

a) coextruding the thermoplastic polymers into a tape;

b) cross-linking the tape; and

c) converting said cross-linked tape into a heat shrinkable film by orientation, the film having at least one inner layer;

wherein scrap material produced in the manufacture of the heat shrinkable film is incorporated into at least one inner layer by recycling the film into the coextrusion step in an amount up to 50% by weight of the total film weight.

5,605,661

METHODS OF USING LIQUID ENZYME COMPOSITIONS CONTAINING MIXED POLYOLS

Bahram Asgharian, and Bor-Shyue Hong, both of Arlington, Tex., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

Filed Aug. 18, 1995, Ser. No. 516,664

Int. Cl.[6] B08B *3/08*

U.S. Cl. 422—28 **14 Claims**

1. A method for cleaning and disinfecting a contact lens comprising:

placing the lens in an aqueous disinfecting solution containing an amount of an antimicrobial agent effective to disinfect the lens;

forming an aqueous disinfectant/enzyme solution by dispersing an amount of a liquid enzyme cleaning composition in said disinfecting solution, said cleaning composition comprising: an enzyme in an amount effective to clean the lens; 30–70% w/v of a mixed polyol; and water; and

soaking the lens in said aqueous disinfectant/enzyme solution for a period of time sufficient to clean and disinfect the lens.

5,605,662

ACTIVE PROGRAMMABLE ELECTRONIC DEVICES FOR MOLECULAR BIOLOGICAL ANALYSIS AND DIAGNOSTICS

Michael J. Heller, Encinitas, and Eugene Tu, San Diego, both of Calif., assignors to Nanogen, Inc., San Diego, Calif.

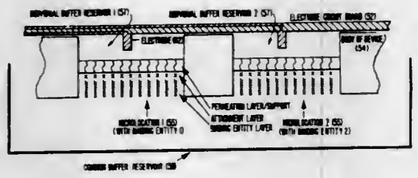
Filed Nov. 1, 1993, Ser. No. 146,504

Int. Cl.[6] C12M *1/40;* **C12Q** *1/68;* **C07H** *21/02;21/04*

U.S. Cl. 422—68.1 **47 Claims**

1. An electronic device adapted to receive a solution comprising: a substrate,

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a plurality of selectively addressable electrodes, the electrodes being disposed upon the substrate and electrically insulated from one another prior to receipt of the solution,

a current source for providing a selective current for the electrodes, individual buffer reservoirs associated with said electrodes, and

individual permeation layers disposed adjacent said individual buffer reservoirs, forming addressable binding locations.

5,605,663

AROMATIC ACIDS

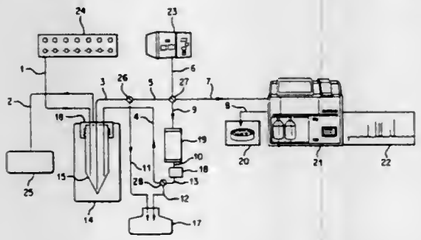
Jui Y. Chang, Bubendorf, Switzerland, assignor to Ciba-Geigy Corporation, Tarrytown, N.Y.

Division of Ser. No. 316,268, Sep. 30, 1994, which is a division of Ser. No. 255,298, Jun. 7, 1994, Pat. No. 5,382,659, which is a continuation of Ser. No. 56,725, May 3, 1993, abandoned, which is a division of Ser. No. 758,249, Sep. 11, 1991, Pat. No. 5,229,503, which is a continuation of Ser. No. 348,315, May 5, 1989, abandoned. This application Jun. 5, 1995, Ser. No. 463,472

Claims priority, application Switzerland, May 10, 1988, 1766/88; Mar. 22, 1989, 1065/89

Int. Cl.[6] G01N *30/02;* **C12M** *1/36*

U.S. Cl. 422—70 **10 Claims**



1. A device for modifying a protein with a chemical reagent and thereafter performing high-performance liquid chromatography (HPLC) analysis of the chemically modified protein, comprising

a reactor;

a vacuum pump connected to said reactor;

syringe pump means for

introducing the unmodified protein and chemical reagent into the reactor for reaction,

introducing inert gas into the reactor which, when kept at sufficiently high pressure in the reactor by the vacuum pump, causes evacuation of the reactor contents, and

washing the reactor after evacuation by introduction of washing solution into the reactor;

a desalting unit for separating excess reagents and by-products from chemically modified protein;

a HPLC component for analyzing the reactor contents;

a waste reservoir;

control means for directing the reactor contents after evacuation from the reactor to the desalting unit for separation, to the HPLC component for analysis, or, if the reactor contents is washing solution, to the waste reservoir;

an eluent delivery pump for delivering eluent to the desalting unit for use in the separating process; and

a detector which detects whether the product exiting the desalting unit contains chemically modified protein, in which case the product is directed back into the reactor, or whether the product does not contain chemically modified protein, in which case the product is directed to the waste reservoir.

5,605,664

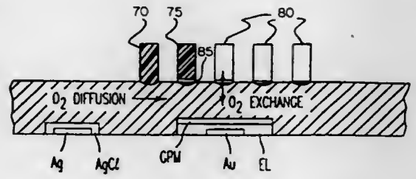
METHODS AND APPARATUS FOR RAPID EQUILIBRATION OF DISSOLVED GAS COMPOSITION

Imants R. Lauks, Rockcliffe Park; Raymond J. Pierce, Ottawa, both of Canada; Joseph W. Rogers, Doylestown, Pa., and Michael P. Zelin, Brooklyn, N.Y., assignors to i-STAT Corporation, Princeton, N.J.

Division of Ser. No. 274,387, Jul. 13, 1994. This application Oct. 23, 1995, Ser. No. 546,796

Int. Cl.[6] G01N *7/00*

U.S. Cl. 422—83 **17 Claims**



1. A cartridge for measuring the concentration of a dissolved gas in a sample fluid comprising:

(a) a housing with a plurality of regions, including a sensor region and a calibrant fluid region which holds an aqueous calibrant fluid apart from a gas equilibration reservoir wherein said aqueous calibrant fluid has dissolved gases;

(b) a gas sensor located in the sensor region of said housing

(c) at least one conduit, within said housing, wherein said conduit joins the sensor region with the calibrant fluid region of said housing; and

(d) a gas equilibration reservoir positioned in said conduit wherein said reservoir contains a predetermined composition of calibrant gases such that a calibrant fluid brought in contact with said reservoir undergoes an exchange of the calibrant fluid's dissolved gases with calibrant gases contained in said reservoir to provide a calibrant fluid with an equilibrated dissolved gas composition that reflects substantially the predetermined composition of calibrant gases contained in said reservoir, said conduit and sensor region having a configuration which allows the displacement of said equilibrated calibrant fluid and a sample fluid across the gas sensor.

5,605,665

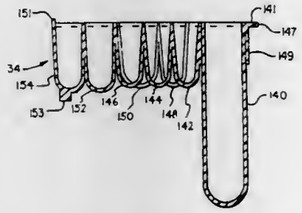
REACTION VESSEL

Frederic L. Clark; Larry W. Moore, both of Plano, Tex.; William J. Kanewske, III, Pleasanton, Calif.; Douglas D. McDowell, Wildwood, Ill., and Gilbert Clift, Mesquite, Tex., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation-in-part of Ser. No. 126,411, Sep. 24, 1993, abandoned, which is a continuation-in-part of Ser. No. 859,218, Mar. 27, 1992, abandoned, said Ser. No. 126,411is a continuation-in-part of Ser. No. 915,162, Jul. 20, 1992, Pat. No. 5,376,313, Ser. No. 915,163, Jul. 20, 1992, abandoned, Ser. No. 915,164, Jul. 20, 1992, abandoned, Ser. No. 915,166, Jul. 20, 1992, abandoned, Ser. No. 915,167, Jul. 20, 1992, abandoned, Ser. No. 915,168, Jul. 20, 1992, abandoned, Ser. No. 916,425, Jul. 20, 1992, abandoned, Ser. No. 916,551, Jul. 20, 1992, abandoned, Ser. No. 916,556, Jul. 20, 1992, abandoned, Ser. No. 916,737, Jul. 20, 1992, Pat. No. 5,451,528, Ser. No. 917,253, Jul. 20, 1992, abandoned, Ser. No. 917,634, Jul. 20, 1992, abandoned, Ser. No. 27,268, Mar. 18, 1993, abandoned, Ser. No. 27,270, Mar. 18, 1993, abandoned, Ser. No. 27,387, Mar. 18, 1993, abandoned, Ser. No. 27,388, Mar. 18, 1993, abandoned, and Ser. No. 27,481, Mar. 18, 1993, abandoned, each which is a continuation-in-part of Ser. No. 859,218, said Ser. No. 126,411is a continuation-in-part of Ser. No. 27,269, Mar. 18, 1993, abandoned, which is a continuation-in-part of Ser. No. 917,634, which is a continuation-in-part of Ser. No. 859,218, said Ser. No. 126,411is a continuation-in-part of Ser. No. 27,482, Mar. 18, 1993, abandoned, which is a continuation-in-part of Ser. No. 916,556, which is a continuation-in-part of Ser. No. 859,218. This application Jan. 3, 1994, Ser. No. 176,430

Int. Cl.[6] G01N *35/02*

U.S. Cl. 422—102 **7 Claims**



1. A device for holding a plurality of liquids for assays to be performed on an automated analytical system, said holding device releasably engageable by a loading device for positioning a plurality of said holding devices in said system, said holding device comprising:

a platform having two side edges, a front edge, and a rear edge; and

a plurality of wells for holding said liquids, said wells extending below said platform from a plurality of openings therein, said holding device releasably engageable by said loading device, said holding device further comprising a support skirt tubular in shape extending below said platform from one of said plurality of openings therein, said holding device further comprising a container for holding liquids, said container secured in said support skirt, said holding device further including a reaction vessel tab extending downwardly from one of said plurality of wells adjacent to said rear edge of said platform, said reaction vessel tab for engaging said loading device to facilitate transfer of said holding device between locations in said automated analytical system.

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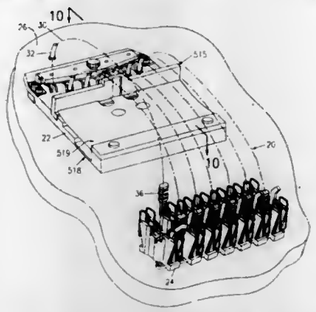
CAPILLARY RETAINING SYSTEM

David L. Goodale; Duane G. Barber, both of Yorba Linda, and Richard C. Meyer, Lahabra, all of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Continuation-in-part of Ser. No. 71,832, Jun. 3, 1993, Pat. No. 5,417,925, which is a continuation of Ser. No. 48,709, Apr. 16, 1993, abandoned. This application Mar. 23, 1995, Ser. No. 410,036

Int. Cl.[6] B01L *11/00*

U.S. Cl. 422—103 **53 Claims**



44. A capillary retaining system suitable for receiving optical cables having end barrels retaining optical fibers, the retaining system comprising:

(a) a capillary holder system for holding a capillary tube having a first end and a second end, the system comprising:

(i) a first capillary holder for holding a portion of the capillary tube proximate the first end, the first holder being electrically conductive and comprising: (1) a flange for cooperation and removable engagement with a capillary retaining system, (2) a first cylindrical portion proximate the first end of the capillary tube and extending from the flange, (3) a second cylindrical portion extending from the flange away from the first end of the capillary tube, the second cylindrical portion providing an area of sufficient size to be griped between fingertips of a user, and (4) a nonconductive sleeve covering the second portion; and

(ii) a second capillary holder for holding a portion of the capillary tube proximate the second end, the second holder comprising: (1) an outlet portion proximate the second end of the capillary tube, and (2) a flattened portion proximate the outlet portion, the flattened portion having opposing sides, the flattened portion comprising opposite aligned recesses formed in the opposing sides of the flattened portion, the recesses being sized to receive the end barrels of the optical cables, wherein the recesses expose the capillary tube, the flattened portion further comprising orientation means so that the second holder can cooperate with an removably engage a retaining system only in a predetermined direction;

(b) a first retainer for releasably engaging the first capillary holder, the first retainer comprising a base, an opening in the based size to receive the first cylindrical portion of the first holder, and a clamp disposed on the base proximate the opening, the clamp comprising an arm for releasably engaging the flange on the first holder to urge the first holder against the base; and

(c) a second retainer for releasably engaging the second capillary holder, the second retainer comprising:

(i) a retainer body defining (1) a first opening sized to receive the second holder flattened portion, and (2) opposite bores in the retainer body and intersecting the first opening, the bores sized to receive end barrels of the optical cables;

(ii) a lever pivotally carried by the second retainer in secondary openings defined in the retainer body to pry the second holder out of the first opening when the lever is rotated from a first lever position to a second lever position; and

(iii) retainer locks pivotally carried by the second retainer in tertiary openings defined in the retainer body, wherein the retainer locks comprise clips for removably engaging end barrels of the optical cables, each clip comprising a spring clip having a pair of substantially parallel legs, each leg having an upper and a lower end, with the upper end of the legs joined and the legs spaced apart to receive and engage end barrels of the optical cables between the legs, and wherein the horizontal lower end of the legs are pivotally disposed in the tertiary openings.

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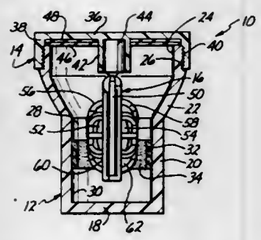
APPARATUS FOR DISINFECTING A CONTACT LENS AND DETECTING THE PRESENCE OF AN OXIDATIVE DISINFECTANT

Charles H. Powell, Jr., Irvine, Calif., assignor to Allergan, Waco, Tex.

Division of Ser. No. 782,899, Oct. 24, 1991, Pat. No. 5,531,963, which is a continuation of Ser. No. 588,086, Sep. 25, 1990, abandoned. This application Jan. 16, 1996, Ser. No. 586,052

Int. Cl.[6] A61L *2/16*

U.S. Cl. 422—119 **17 Claims**



16. An apparatus useful for disinfecting a contact lens comprising:

a substantially transparent cup assembly capable of holding a liquid medium containing an oxidative contact lens disinfectant;

a basket assembly acting to hold a contact lens in the liquid medium in said cup assembly; and

a color indicator assembly constructed to be located at least partially in the liquid medium in said cup assembly and capable of providing a first color indication of the presence of the oxidative contact lens disinfectant in the liquid medium, said color indicator assembly comprising an iodine component bonded to an anion exchange resin, which bonding is substantially irreversible at the conditions at which said apparatus is used to disinfect a contact lens.

5,605,668

SOLVENT EXTRACTION OF COBALT FROM COBALT SULFATE SOLUTION

John E. Fittock; Malcolm J. Price; John G. Reid, all of Townsville; David T. White, Yangebup, and Michael R. Davis, Inglewood, all of Australia, assignors to Queensland Nickel Pyt. Ltd., Queensland, Australia

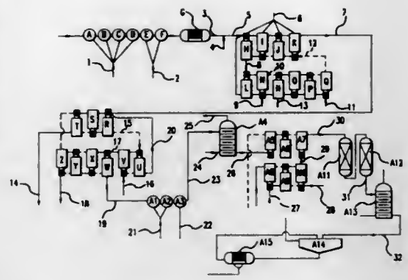
Filed Oct. 27, 1994, Ser. No. 329,848

Claims priority, application Australia, Oct. 29, 1993, PM2092

Int. Cl.[6] C01G *49/00;51/00;53/00*

U.S. Cl. 423—139 **25 Claims**

1. A process for the preparation and purification of a cobalt oxide hydroxide compound from a cobalt sulphate solution containing cationic and anionic impurities, comprising the successive steps of:



(i) contacting the cobalt sulphate solution at an initial pH of less than 2.8 with an organic reagent specific for the extraction of ferric iron and zinc to extract the majority of ferric iron cationic impurities from the cobalt sulphate solution and slowly raising the pH to about 3.5 to separate zinc cationic impurities from the sulphate solution;

(ii) extracting cobalt cations from the sulphate solution produced from step (i) with an organic reagent to produce a cobalt loaded organic phase substantially free of all anionic impurities;

(iii) stripping the cobalt loaded organic phase with a concentrate ammoniacal ammonium carbonate solution to produce an ammoniacal ammonium carbonate strip liquor rich in cobalt II ammines;

(iv) oxidizing the cobalt II ammines in the ammoniacal ammonium carbonate strip liquor to cobalt III tetraammines to form a cobalt III tetraammine rich ammoniacal strip liquor;

(v) extracting the majority of nickel, as an impurity, from the cobalt III tetraamine rich ammoniacal strip liquor with an organic reagent; and

(vi) recovering the cobalt from the cobalt III tetraamine rich ammoniacal ammonium carbonate strip liquor.

5,605,669

PROCESS OF PREPARING CESIUM SALTS FROM CESIUM ALUMINUM ALUM

Hartmut Hofmann, Bad Soden; Klaus Köbele, Dietzenbach; Horst Prinz, Friedberg; Bernd Phillipp, Langeisheim; Gerd Harms, Goslar; Alexander Schiedt, Mainz, and Ulrike Hecktor, Friedberg, all of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

PCT No. PCT/EP94/01202, § 371 Date Nov. 24, 1995, § 102(e) Date Nov. 24, 1995, PCT Pub. No. WO94/25422, PCT Pub. Date Nov. 10, 1994

PCT Filed Apr. 19, 1994, Ser. No. 537,927

Claims priority, application Germany, Apr. 24, 1993, 43 13 480.7

Int. Cl.[6] C22B *26/10;* **C01D** *3/00;* **C01F** *1/00;* **C07C** *55/00*

U.S. Cl. 423—208 **7 Claims**

1. A process of making a cesium salt from cesium-aluminum-alum, said process comprising the steps of:

a) reacting cesium-aluminum-alum with calcium hydroxide in an amount equimolar to aluminum in said cesium-aluminum-alum and a water-soluble calcium salt in an amount equimolar to cesium in said cesium-aluminum-alum in the presence of water in a single vessel to precipitate aluminum hydroxide and calcium sulfate; and

b) separating the aluminum hydroxide and calcium sulfate precipitated in step a) from filtrate which contains the cesium salt by one of filtering and centrifuging.

5,605,670

METHOD FOR PURIFYING HYDROGEN PEROXIDE

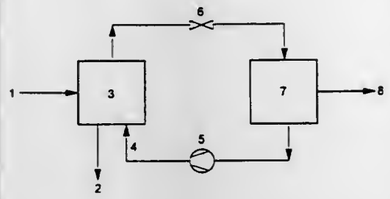
Ilkka Turunen, Oulu, Finland, assignor to Kemirachemicals Oy, Helsinki, Finland

Filed Mar. 29, 1995, Ser. No. 412,425

Claims priority, application Finland, Sep. 21, 1994, 944373

Int. Cl.[6] C01B *15/01;15/023*

U.S. Cl. 423—584 **14 Claims**



1. A method for purification of hydrogen peroxide by extraction, the method comprising the steps of:

a) contacting a hydrogen peroxide aqueous solution containing impurities with a solvent comprising at least one substance which dissolves the impurities, for transferring the impurities from the hydrogen peroxide aqueous solution to the solvent,

b) separating the hydrogen peroxide aqueous solution, from which the impurities have been removed, from the solvent, and

c) recovering the separated hydrogen peroxide aqueous solution, wherein said substance which dissolves the impurities is in a supercritical state.

5,605,671

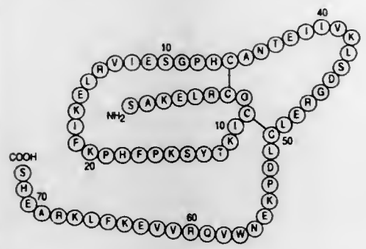
RADIOLABELED NEUTROPHIL ACTIVATING PEPTIDES FOR IMAGING

Leon R. Lyle, Webster Groves, Mo.; Steven L. Kunkel, and Robert M. Strieter, both of Ann Arbor, Mich., assignors to The Regents of The University of Michigan, Ann Arbor, Mich., and Mallinckrodt Medical, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 956,862, Oct. 5, 1992, Pat. No. 5,413,778, and Ser. No. 956,863, Oct. 5, 1992, Pat. No. 5,346,686. This application Apr. 29, 1994, Ser. No. 235,659

Int. Cl.[6] A61K *49/02;51/08;* **C07K** *1/00*

U.S. Cl. 424—1.41 **25 Claims**



1. A method of imaging a target site in an animal body, comprising providing a radionuclide-labelled chemokine, wherein said chemokine is a Neutrophil-activating Peptide-2 (NAP-2) peptide, introducing the labelled chemokine into an animal's body, allowing said labelled chemokine to accumulate at a target site of the animal's body, wherein receptor molecules recognizable by said chemokine are located at said target site, and detecting the accumulated, labelled chemokine so as to image said target site.

5,605,672

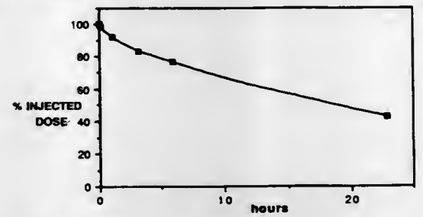
BLOOD POOL IMAGING COMPOSITION AND METHOD OF ITS USE

Alexel A. Bogdanov, Newton; Ralph Weissleder, Charlestown; Thomas J. Brady, Winchester, and Ronald Callahan, Boston, all of Mass., assignors to The General Hospital Corporation, Boston, Mass.

Filed Jun. 9, 1993, Ser. No. 74,319

Int. Cl.[6] A61K *51/00;* **C07F** *5/00*

U.S. Cl. 424—1.65 **44 Claims**



1. A blood pool imaging composition comprising:

an imaging agent comprising a polymeric backbone, protective groups, and chelating groups, wherein each of said protective groups and chelating groups are, independently, covalently bonded to amino groups present on said backbone, and wherein said protective groups are polyethylene glycol derivatives,

a reducing compound, and

a buffer.

5,605,673

STABILIZED MICROBUBBLE COMPOSITIONS FOR ULTRASOUND

Ernest G. Schutt, San Diego; Charles D. Anderson, Lebanon, and David P. Evitts, La Jolla, all of Calif., assignors to Alliance Pharmaceutical Corp., San Diego, Calif.

Continuation-in-part of Ser. No. 99,951, Jul. 30, 1993, abandoned. This application Aug. 1, 1994, Ser. No. 284,083

Int. Cl.[6] A61K *49/00*

U.S. Cl. 424—9.51 **82 Claims**

1. A method for forming microbubbles, comprising the steps of:

providing a first gas, a second component, a membrane forming material, and a liquid, wherein said first gas and said second component are present in a molar ratio of about 1:100 to about 1,000:1, and wherein said second component comprises vapor of a compound that is liquid at 37° C. and 760 mm Hg but which has a vapor pressure of at least 75 mm Hg at 37° C. with the proviso that said first gas and said second component are not water vapor; and

surrounding said first gas and said second component with said membrane forming material to form microbubbles in said liquid.

5,605,674

MEDICINAL AEROSOL FORMULATIONS

Tarlochan S. Purewal, Leamington Spa, and David J. Greenleaf, Loughborough, both of England, assignors to Riker Laboratories, Inc., St. Paul, Minn.

Division of Ser. No. 26,476, Mar. 4, 1993, which is a division of Ser. No. 649,140, Jan. 30, 1991, Pat. No. 5,225,183, which is a continuation of Ser. No. 442,119, Nov. 28, 1989, abandoned. This application May 31, 1995, Ser. No. 471,618

Int. Cl.[6] A61L *9/04*

U.S. Cl. 424—45 **1 Claim**

1. An aerosol formulation contained in an aerosol container equipped with a metering valve, said formulation comprising:

(a) a therapeutically effective amount of a medicament; and

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(b) a propellant substantially free of chlorofluorocarbons, said propellant comprising 1,1,1,2-tetrafluoroethane

said formulation being suitable for delivery to the lung by inhalation from said aerosol container.

5,605,675

PROCESSES AND COMPOSITIONS FOR REMINERALIZATION AND PREVENTION OF DEMINERALIZATION OF DENTAL ENAMEL

Norman Usen, Marlboro, and Anthony E. Winston, East Brunswick, both of N.J., assignors to Enamelon Inc., East Brunswick, N.J.

Filed Jun. 6, 1995, Ser. No. 465,875
Int. Cl.[6] A61K *7/16*
U.S. Cl. 424—49 **16 Claims**

1. A product for remineralizing at least one demineralized subsurface of at least one tooth, comprising:

(i) a first discrete component comprising from about 0.05% to 15.0% of at least one water-soluble calcium salt;

(ii) a second discrete component comprising from about 0.05% to 15.0% of at least one water-soluble phosphate salt and from about 0.01% to 5.0% of at least one water-soluble fluoride salt which yields fluoride ions;

(iii) a dispensing container comprising at least two discrete compartments each with an outlet in proximity to the other, the first compartment storing the first component which includes calcium salt and the second compartment storing the second component which includes phosphate salt;

(iv) a closure mechanism for closing the compartments; and

(v) a closure means for allowing the first and second components to be simultaneously dispensed from said compartments so as to permit said dispensed first and second components to simultaneously and directly contact said at least one tooth;

wherein the first and second components each have a pH such that when the contents of the two compartments are mixed to form an aqueous mixture, the mixture has a the pH of between about 4.5 and 10.0, further wherein said aqueous mixture has a stability such that upon introduction of said mixture into an oral cavity, calcium ions released by said at least one water-soluble calcium salt and phosphate ions released by said at least one water-soluble phosphate salt diffuse through a surface of said at least one tooth to said at least one demineralized subsurface of said at least one tooth to form hydroxyapatite and thereby remineralize said at least one demineralized subsurface.

5,605,676

ORAL COMPOSITION EXHIBITING IMPROVED UPTAKE AND RETENTION OF ANTIBACTERIAL COMPOUNDS ON DENTAL TISSUE SURFACES

Abdul Gaffar, Princeton, and Nuran Nabi, Cranbury, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Jun. 26, 1995, Ser. No. 494,744
Int. Cl.[6] A61K *7/16*
U.S. Cl. 424—49 **14 Claims**

1. In an antibacterial oral composition containing an effective therapeutic amount of a halogenated diphenyl ether or phenolic antibacterial compound the improvement consisting essentially of a monoalkyl phosphate compound present in an amount effective to increase the uptake of the antibacterial compound by dental tissue.

5,605,677

REMINERALIZING DENTAL CARE PREPARATION

Klaus Schumann, Erkrath; Franz Foerg, Langenfeld, and Hans Laska, Duesseldorf, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP93/02991, § 371 Date May 8, 1995, § 102(e) Date May 8, 1995, PCT Pub. No. WO94/10969, PCT Pub. Date May 26, 1994
PCT Filed Oct. 28, 1993, Ser. No. 433,391
Claims priority, application Germany, Nov. 6, 1992, 42 37 500.2
Int. Cl.[6] A61K *7/16;7/18*
U.S. Cl. 424—52 **16 Claims**

1. In a toothpaste for restoring the surface of teeth containing a polishing agent, fluorine compounds, humectants, binders and water, the improvement which comprises: a polishing agent comprising silica and dicalcium phosphate dihydrate (brushite) in a ratio by weight of 10:1 to 1:1 and a water-soluble magnesium salt in an amount sufficient to provide 0.1 to 0.5% by weight magnesium.

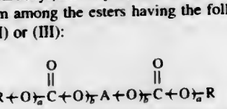
5,605,678

PHOTOPROTECTIVE/COSMETIC COMPOSITIONS COMPRISING 2,4,6-TRIS[P-((2'-ETHYLHEXYL)OXYCARBONYL)ANILINO]-1,3,5-TRIAZINE ANDOILY ESTERS

Jean-Marc Ascione, Paris; Delphine Allard, Colombes, and Isabelle Hansenne, Paris, all of France, assignors to L'Oreal, Paris, France

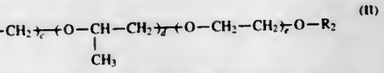
Filed Jun. 5, 1995, Ser. No. 463,505
Claims priority, application France, Jun. 3, 1994, 94 068835
Int. Cl.[6] A61K *7/42;7/40*
U.S. Cl. 424—59 **28 Claims**

1. A topically applicable sunscreen/cosmetic composition adopted for the photoprotection of human skin and/or hair, comprising (i) a photoprotecting effective amount of 2,4,6-tris[p-((2'-ethylhexyl)oxycarbonyl)anilino]- 1,3,5-triazine and (ii) at least one oil selected from among the esters having the following structural formulae (I), (II) or (III):



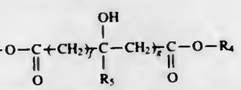
(I)

in which formula (I) a and b are integers equal to 0 or 1, but cannot simultaneously be equal to 0, R is a linear or branched C_6–C_{12} alkyl radical and A is a linear or branched C_3–C_{12} alkylene radical;



(II)

in which formula (II) c, d and e are integers ranging from 0 to 30, inclusive, the sum c+d+e being at least 8, R_1 is an aroyl radical or a linear or branched C_{10}–C_{18} alkyl radical and R_2 is hydrogen or a radical —CH_2—$COOR_3$, wherein R_3 is a linear or branched C_3–C_{18} alkyl radical, with the provisio that, when R_1 is an alkyl radical, then R_2 cannot be hydrogen;



(III)

in which formula (III) f and g are integers equal to 0 or 1, but cannot simultaneously be equal to 0, R_4 is a linear or branched C_{10}–C_{22} alkyl radical and R_5 is hydrogen or a radical —$COOR_6$, wherein R_6 is a linear or branched C_{10}–C_{22} alkyl radical; in a cosmetically acceptable vehicle, carrier or diluent therefor.

5,605,679

PHOTOPROTECTIVE/COSMETIC COMPOSITIONS COMPRISING AT LEAST ONE SOLID ORGANIC SUNSCREEN COMPOUND AND DIPHENYLACRYLATE SOLVENT THEREFOR

Isabelle Hansenne, and Victoria Van Leeuwen, both of Paris, France, assignors to L'Oreal, Paris, France

Filed Jun. 5, 1995, Ser. No. 463,762
Claims priority, application France, Jun. 3, 1994, 94 06833
Int. Cl.[6] A61K *7/42;7/40*
U.S. Cl. 424—59 **25 Claims**

1. A topically applicable sunscreen/cosmetic composition adopted for the photoprotection of human skin and/or hair, comprising (i) a photoprotecting effective amount of 4-methylbenzylidenecamphor and, optionally, of 4-(tert-butyl)-4'-methoxydibenzoylmethane and (ii) a 2-ethylhexyl α-cyano-β,β-diphenylacrylate sunscreen solvent, in an amount sufficient to substantially completely dissolve the total amount of the sunscreen constituent (i), in a cosmetically acceptable vehicle, diluent or carrier therefor.

5,605,680

PHOTOSTABLE COSMETIC COMPOSITION CONTAINING A UV-A SCREEN AND A UV-B SCREEN AND A PROCESS FOR STABILIZING THE UV-A SCREEN WITH THE UV-B SCREEN

Andre Deflandre, Orry-la-Ville; Serge Forestier, Claye-Souilly; Gerard Lang, Saint-Gratien; Jean F. Grollier, Paris, and Jean Cotteret, Verneuil-sur-Seine, all of France, assignors to L'Oreal, Paris, France

Continuation of Ser. No. 51,282, Apr. 23, 1993, which is a continuation of Ser. No. 857,105, Mar. 24, 1992, abandoned, which is a continuation of Ser. No. 129,048, Dec. 7, 1987, abandoned. This application Jun. 7, 1995, Ser. No. 487,484
Claims priority, application Luxembourg, Dec. 8, 1986, 86703
Int. Cl.[6] A61K *7/42*
U.S. Cl. 424—59 **14 Claims**

1. A sunscreening cosmetic composition wherein 4-(1,1-dimethylethyl)-4'-methoxydibenzoylmethane is stabilized against UV radiation, consisting essentially of at least 4.5% by weight of p-methylbenzylidenecamphor, 1 to 3% by weight of 4-(1,1-dimethylethyl)-4'-methoxydibenzoylmethane, the weight ratio of p-methylbenzylidenecamphor to 4-(1,1-dimethylethyl)-4'-methoxydibenzoylmethane being higher than or equal to 3, and a cosmetically acceptable substrate containing at least one fatty phase, said substrate being in a form selected from the group consisting of oily and oleoalcoholic lotions, fatty and oleoalcoholic gels, solid sticks, emulsions and aerosols, said substrate containing at least one cosmetic adjuvant selected from the group consisting of thickeners, softeners, humectants, surfactants, preservatives, antifoaming agents, perfumes, oils, waxes, lower monoalcohols, lower polyols, propellants, colorants and pigments.

5,605,681

MILD GEL DEODORANT COMPOSITION CONTAINING SOAP, POLYMERIC HYDROGEL FORMING POLYMER AND HIGH LEVEL OF WATER

Angie Trandai, and Dean Van Phan, both of West Chester, Ohio, assignors to The Proctor & Gamble Company, Cincinnati, Ohio

Filed Sep. 16, 1994, Ser. No. 307,951
Int. Cl.[6] A61K *7/32*
U.S. Cl. 424—65 **22 Claims**

1. A deodorant gel composition, comprising:

(a) from about 0.001% to about 20%, by weight, of deodorant active fragrance, or combination thereof;

(b) from about 0.01% to about 15%, by weight, of a soap gelling agent selected from the group consisting of salts of C_{12}–C_{40} fatty acids, and combinations thereof;

(c) a hydrogel component comprising from about 0.001% to about 5%, by weight of the composition, of hydrogel forming crosslinked polymeric gelling agent, said hydrogel forming polymeric gelling agent being present in said composition as a gel;

(d) from about 5% to about 70%, by weight, of a polyhydroxy solvent for said soap gelling agent, said polyhydroxy solvent being selected from the group consisting of: alkyl alcohols having at least three hydroxy groups; polymers of C_3–C_{12} alcohols having at least three hydroxy groups per monomer wherein the polymers have a weight average molecular weight of about 800 or less; polyoxyethylenes, polyoxypropylenes, and polyoxyethylene/polyoxypropylene copolymers, having a weight average molecular weight of from about 200 to about 4,000; copolymers of C_3–C_{12} alcohols having at least three hydroxy groups with C_2–C_{10} dihydric alcohols, said copolymers having a weight average molecular weight of from about 200 to about 4,000; and combinations thereof; and

(e) at least about 25%, by weight, water, said compositions having a penetration value of from about 60 to about 200 tenths of a millimeter.

5,605,682

ANTIPERSPIRANT AEROSOL COMPOSITION WITH HIGH SOLIDS CONTENT

Lloyd Ross, Hampton, and Frank Schebece, Edison, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 869,996, Apr. 16, 1992, abandoned. This application May 4, 1994, Ser. No. 238,195
Int. Cl.[6] A61K *7/32;7/36;7/38*
U.S. Cl. 424—68 **7 Claims**

1. An antiperspirant aerosol composition consisting essentially of:

10–35 wt. % of particulate material,

0.2 to 2 wt. % of a suspending agent to resist the tendency of the particulate material to settle out,

5 to 50 wt. % of liquid emollient carrier material for carrying the particulate material from the container to the skin in the form of a moist spray, and

a propellant for expelling these components from a container,

wherein said propellant makes up no more than 60 wt. % of said composition and said particulate material consists of either a particulate antiperspirant active material or a combination of said particulate antiperspirant active material and a particulate filler material selected from the group consisting of talc, sodium bicarbonate, corn starch, chemically modified corn starch, polyethylene, polyacrylate, and cross-linked polyurethane.

5,605,683

ALKYL POLYGLYCOSIDES IN HAIR SKIN CLEANSING COMPOSITIONS

Suresbchandra G. Desai, Wayne; John F. Hessel, Metuchen, both of N.J.; Allen D. Urfer, Shelbyville, Ind.; Charles B. Allen, Norristown, and Stephen A. Fischer, Yardley, both of Pa., assignors to Henkel Corporation, Plymouth Meeting, Pa.

Division of Ser. No. 338,701, Nov. 10, 1994. This application Apr. 30, 1996, Ser. No. 641,446
Int. Cl.[6] A61K *7/06*
U.S. Cl. 424—70.11 **10 Claims**

1. A process for cleansing human hair or skin comprising contacting human hair, skin and combinations thereof with a cleansing composition comprised of:

(a) an alkyl polyglycoside of formula I:

$$RO(Z)_a \qquad I$$

wherein R is a monovalent organic radical having from about 8 to about 18 carbon atoms; Z is a saccharide residue having 5 or 6

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carbon atoms; a is a number having a value from 1 to about 6 and an effective amount of a dicarboxylic acid additive having from about 8 to about 36 carbon atoms;

(b) a salt of an alkyl ether sulfate having an average degree of ethoxylation of about 2; and

(c) an N-alkoxylated fatty acid amide, thereby imparting to said human hair, skin and combinations thereof a feeling which is free of tackiness, roughness, dryness and combinations thereof.

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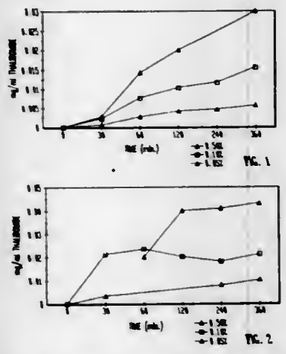
TOPICAL THALIDOMIDE COMPOSITIONS FOR SURFACE OF MUCOSAL WOUNDS, ULCERATIONS, AND LESIONS

Daniel J. Piacquadio, 4262 Altamarino Way, San Diego, Calif. 92103

Continuation-in-part of Ser. No. 212,520, Mar. 14, 1994, Pat. No. 5,443,824. This application Jun. 7, 1995, Ser. No. 477,622

Int. Cl.[6] A01N *43/40;* **C08K** *5/3417;5/3432*

U.S. Cl. 424—78.02 **20 Claims**



1. A method of treating inflammatory eye disorders selected from the group consisting of eye ulcerations, lesions, and retinopathy, comprising: topically applying to an affected eye a small but treatment effective amount of a thalidomide composition comprising from about 0.001% to about 30% by weight thalidomide.

5,605,685

NON-IRRITATING SKIN AND HAIR REJUVENATING COMPOSTION HAVING A PH BETWEEN 1 AND 6.5

Susan Y. Tseng, Staten Island, N.Y.; Michael W. Helloff, Westfield, N.J.; Jui-Chang Chuang, Wayne, N.J.; H. Karl Krummel, Montville, N.J., and Mary R. Davis, Suffern, N.Y., assignors to ISP Investments Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 528,383, Sep. 13, 1995. This application Nov. 30, 1995, Ser. No. 565,605

Int. Cl.[6] A61K *7/00;31/19;47/32*

U.S. Cl. 424—78.03 **28 Claims**

1. A non-irritating, skin and hair rejuvenating composition having a pH of from about 1 and about 6.5 which comprises a flowable, homogenized composition of

(a) a micronized, lightly crosslinked N-vinyl lactam hydrogel of 1–15 wt. % solids and

(b) an active organic rejuvenating agent selected from the group consisting of

(1) pyruvic acid,

(2) mono- and poly-carboxylated C_1 to C_{20} hydrocarbon optionally substituted with from 1 to 3 hydroxy groups,

(3) an ammonium or alkali metal salt of (2) and mixtures of (1), (2) and/or (3).

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Patent Not Issued For This Number

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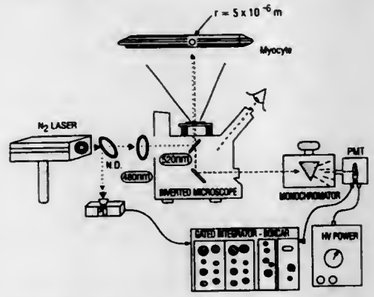
METHODS AND COMPOSITIONS OF A POLYMER (POLOXAMER) FOR REPAIR OF ELECTRICAL INJURY

Raphael C. Lee, Chicago, Ill., assignor to Arch Development Corporation, Chicago, Ill.

Continuation of Ser. No. 884,429, May 15, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 461,255

Int. Cl.[6] A61K *9/06;9/12;31/77*

U.S. Cl. 424—78.96 **10 Claims**



1. A method of reducing animal tissue damage due to electrical injury comprising treating the affected tissue topically with a composition consisting essentially of an amount of a surface active copolymer, selected from the group consisting of a poloxamer, meroxapol, poloxamine and PLURADOT® polyol, that is effective to reduce damage to the tissue by stabilizing cellular membranes or reducing membrane permeability, the surface active copolymer having a molecular weight of between about 2,000 and about 20,000 Daltons and from about 45 % to 95 % hydrophobic groups by weight of the copolymer; in a pharmaceutically acceptable topical vehicle, wherein the composition is administered topically to the electrically injured tissue.

5,605,688

RECOMBINANT DOG AND HORSE TYPE I INTERFERONS

Adolf Himmler, Vienna, Austria; Rudolf Hauptmann, Ebreichsdorf; Norbert Hauel, Biberach, both of Germany; Gunther Adolf, and Peter Swetly, both of Vienna, Austria, assignors to Boehringer Ingelheim International GmbH, Germany

Continuation of Ser. No. 851,691, Mar. 13, 1992, abandoned, which is a division of Ser. No. 5,300, Dec. 17, 1986, abandoned. This application Sep. 8, 1994, Ser. No. 302,391

Claims priority, application Germany, Aug. 16, 1985, 35 29 262.8; Oct. 2, 1985, 35 35 115.2; Dec. 17, 1985, 35 44 520.3; Dec. 18, 1994, 34 46 124.8; Dec. 18, 1994, 34 46 122.1

Int. Cl.[6] A61K *38/21;* **C07K** *14/555;14/56;14/565*

U.S. Cl. 424—85.4 **13 Claims**

1. An interferon (IFN) protein, produced by expression of heterologous nucleic acid in a host cell, free from other proteins of animal origin, and having the amino acid sequence of an IFN protein found in a horse or a dog,

wherein the protein is encoded by the complement of a DNA sequence which will hybridize, under conditions of stringency selecting for at least 85% homology, to a DNA molecule having a sequence selected from the group consisting of:

the DNA sequence encoding residues 1-161 of mature EqIFN-α1, as shown in FIG. 4;

the DNA sequence encoding residues 1-161 of mature EqIFN-α2, as shown in FIG. 10;

the DNA sequence encoding residues 1-165 of mature EqIFN-β, as shown in FIG. 8;

the DNA sequence encoding residues 1-172 of mature EqIFN-ω1, as shown in FIG. 12;

the DNA sequence encoding residues 1-172 of mature EqIFN-ω2, as shown in FIG. 31;

and

the DNA sequence encoding residues 1-164 of mature CaIFN-α1, as shown in FIG. 25.

5,605,689

TREATMENT OF HIV-ASSOCIATED IMMUNE THROMBOCYTOPENIC PURPURA

Arthur J. Ammann, San Rafael, Calif., assignor to Genentech, Inc., South San Francisco, Calif.

Continuation of Ser. No. 709,006, May 31, 1991, abandoned. This application May 3, 1994, Ser. No. 237,962

Int. Cl.[6] A61K *39/395;39/42;39/44;* **C07K** *16/46*

U.S. Cl. 424—134.1 **7 Claims**

1. A method for the treatment of human immunodeficiency virus associated immune thrombocytopenic purpura which comprises:

a) administering to a patient having the condition of human immunodeficiency virus-associated immune thrombocytopenic purpura about 6 mg/ml of a hybrid molecule consisting essentially of the V1 and V2 domains of CD4 fused at the carboxy terminus to the N-terminus of an IgG heavy chain constant region consisting essentially of a hinge and the CH2 and CH3 domains;

b) monitoring the change in a parameter or symptom characteristic of the condition of human immunodeficiency virus-associated immune thrombocytopenic purpura in response to the administration; and

c) continuing the treatment until a positive response is attained.

5,605,690

METHODS OF LOWERING ACTIVE TNF-α LEVELS IN MAMMALS USING TUMOR NECROSIS FACTOR RECEPTOR

Cindy A. Jacobs, and Craig A. Smith, both of Seattle, Wash., assignors to Immunex Corporation, Seattle, Wash.

Continuation of Ser. No. 946,236, Sep. 15, 1992, abandoned, which is a continuation-in-part of Ser. No. 523,635, May 10, 1990, Pat. No. 5,395,760, which is a continuation-in-part of Ser. No. 421,417, Oct. 13, 1989, abandoned, which is a continuation-in-part of Ser. No. 405,370, Sep. 11, 1989, abandoned, which is a continuation-in-part of Ser. No. 403,241, Sep. 5, 1989, abandoned. This application Feb. 8, 1995, Ser. No. 385,229

Int. Cl.[6] A61K *39/395;38/00;* **C12P** *21/04;* **C07K** *14/715*

U.S. Cl. 424—134.1 **6 Claims**

1. A method for lowering the levels of active TNF-α in a mammal in need thereof which comprises administering to said mammal a TNF-lowering amount of a TNF antagonist selected from the group consisting of:

(a) a TNF receptor comprising the sequence of amino acids 3–163 of SEQ ID NO:1; and

(b) a chimeric antibody comprising a TNF receptor according to (a) fused to the constant domain of an immunoglobulin molecule.

5,605,691

IMMUNOLOGICALLY ACTIVE PROTEINS FROM INCLUSION BODIES

Sean B. Carroll, Cottage Grove, Wis., assignor to Ophidian Pharmaceuticals, Inc., Madison, Wis.

Continuation of Ser. No. 946,927, Sep. 17, 1992, abandoned. This application Sep. 29, 1993, Ser. No. 129,027

Int. Cl.[6] A61K *39/00;* **C07K** *1/14;1/22*

U.S. Cl. 424—184.1 **13 Claims**

1. A method for solubilizing and maintaining the solubility of inclusion body protein, comprising:

a) providing:

i) inclusion body protein,

ii) a first solution comprising between approximately 2% and 10% sodium dodecyl sulfate detergent that is substantially free of reactive amine groups,

iii) at least a second solution that is substantially free of reactive amine groups and that contains less sodium dodecyl sulfate detergent than said first solution; and

iv) a non-detergent-containing diluent that is substantially free of reactive amine groups;

b) treating said inclusion body protein with said first solution at 95° C. to 100° C. so that a solubilized protein solution is produced wherein greater than 95% of said inclusion body protein is solubilized;

c) diluting said solubilized protein solution with said non-detergent-containing diluent; and

d) removing said detergent to a concentration of less than 0.5% by dialysis of said diluted first solution against at least said second solution under conditions such that said solubilized protein remains solubilized.

5,605,692

EXPRESSION OF STRUCTURAL (P1) REGION OF 1 HEPATITIS A VIRUS BY VACCINIA IN CELL CULTURE FOR USE IN VACCINES

Howard C. Thomas, and Peter Karayiannis, both of London, England, assignors to Imperial College of Science, Technology and Medicine, London, England

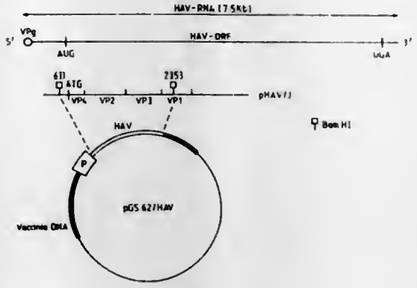
PCT No. PCT/GB91/00163, § 371 Date Jul. 31, 1992, § 102(e) Date Jul. 31, 1992, PCT Pub. No. WO91/11460, PCT Pub. Date Aug. 8, 1991

PCT Filed Feb. 4, 1991, Ser. No. 916,149

Claims priority, application United Kingdom, Feb. 2, 1990, 9002387

Int. Cl.[6] A61K *39/29;39/125;39/285;* **C12N** *7/01;15/51*

U.S. Cl. 424—192.1 **19 Claims**



1. A polypeptide comprising the sequence of hepatitis A virus (HAV) VP4, VP2, VP3, and part but not all of VP1, wherein said part of VP1 comprises at least the 57 amino acids from the amino terminal end of VP1.

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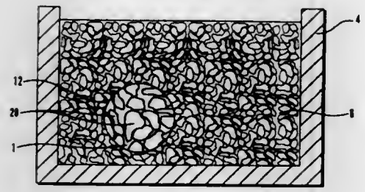
METHODS OF MAKING A POROUS DEVICE

William J. Seare, Jr., 3190 Chula Vista Cir., Salt Lake City, Utah 84121

Division of Ser. No. 156,675, Nov. 22, 1993, which is a continuation of Ser. No. 779,387, Oct. 18, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 475,210

Int. Cl.[6] A61K *9/00*

U.S. Cl. 424—400 **36 Claims**



1. A method of forming a device including one or more porous portions for promoting neovascularization and ingrowth of vascularized tissue, each of said porous portions comprising continuously interconnected pores, said pores being each connected to at least one adjacent pore by pore interconnections and said pores and pore interconnections having a substantially smoothly flowing configuration, said method comprising the steps of:

(a) obtaining a selectively removable open-cell porous mold form comprising particles formed into a shaped and solidified mass of continuously interconnected particles defining continuously interconnected pores, said pores being each connected to at least one adjacent pore by pore interconnections and said pores and pore interconnections having a substantially smoothly flowing configuration, said mold form consisting of a material which can be desolidified upon exposure to a selected condition;

(b) selectively filling the pores and pore interconnections of said mold form with a selected moldable material such that the mold form mass is maintained;

(c) substantially solidifying said moldable material; and

(d) exposing said mold form filled with solidified moldable material to a selected condition to desolidify and thereby selectively remove said mold form from contact with the solidified material within the pores and pore interconnections of the mold form to thereby form the device having a porous portion with substantially continuously interconnected pores.

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Patent Not Issued For This Number

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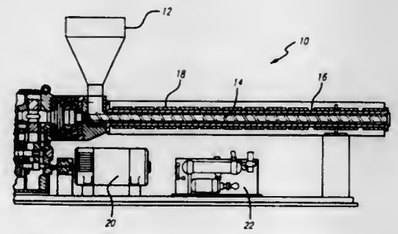
DRUG LOADED POLYMERIC MATERIAL AND METHOD OF MANUFACTURE

Robert P. Eury, Cupertino; Darlene Garguilo, Fremont, and Plaridel Villareal, San Jose, all of Calif., assignors to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.

Filed Mar. 30, 1995, Ser. No. 413,475

Int. Cl.[6] A61F *2/02;2/06;* **A61K** *9/50;* **B01J** *13/02*

U.S. Cl. 424—423 **39 Claims**



5,605,694

STABILIZED EMULSION INTENDED TO MOISTURIZE THE SKIN, AND USE THEREOF

Jean-Francois Nadaud, Clamart; Jean-Pierre Laugier, Antony; Isabelle Le Royer, Jouy en Josas, and Dominique Bernard, Paris, all of France, assignors to L'Oreal, Paris, France

Filed Jan. 31, 1995, Ser. No. 381,153

Claims priority, application France, Jan. 31, 1994, 94 01030

Int. Cl.[6] A61K *7/48*

U.S. Cl. 424—401 **10 Claims**

1. A stabilized, cosmetically or dermatologically acceptable moisturizing emulsion comprising

6 to 12% by weight, relative to the total weight of the emulsion, of a fatty phase comprising a mixture of polydimethylsiloxane and polymethylisopropyl perfluoro ether,

an aqueous phase comprising 0.01 to 1% by weight, relative to the total weight of the emulsion, of an ascorbyl phosphate alkaline earth metal or alkali metal salt,

0.1 to 10% by weight, relative to the total weight of the emulsion, of at least one emulsifying agent, and

0.1 to 20% by weight, relative to the total weight of the emulsion, of at least one moisturizing agent.

1. A method of incorporating a therapeutically effective amount of a therapeutic drug into a polymeric material for application to an intravascular stent, the method comprising the steps of:

forming solid particles of a therapeutic drug to have a maximum cross-sectional dimension of about 10 microns;

uniformly dispersing said solid particles of said therapeutic drug in said polymeric material such that said particles of said therapeutic drug form up to 70% by weight of the total weight of the therapeutic drug and the polymeric material; and

uniformly dispersing a porosigen in said polymeric material together with said therapeutic drug, said porosigen being selected from the group consisting of sodium chloride, lactose, sodium heparin, polyethylene glycol, copolymers of polyethylene oxide and polypropylene oxide, and mixtures thereof.

5,605,697

BIFIDOBACTERIUM GROWTH PROMOTANT

Toshihiko Asano, Tsuchiura; Ryoko Kondo; Yasumi Mori, both of Tsukuba; Seishi Takenawa, Nara; Motoko Yamochi, Toyonaka; Kiyohiko Kunugita, Tsukuba, and Tsutomu Terachi, Osaka, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

PCT No. PCT/JP93/01473, § 371 Date Apr. 24, 1995, § 102(e) Date Apr. 24, 1995, PCT Pub. No. WO94/09650, PCT Pub. Date May 11, 1994

PCT Filed Oct. 14, 1993, Ser. No. 325,183

Claims priority, application Japan, Oct. 27, 1992, 4-288643; Mar. 5, 1993, 5-45022; Mar. 9, 1993, 5-48354; Mar. 11, 1993, 5-49805; Mar. 22, 1993, 5-61721; Mar. 23, 1993, 5-63765; Mar. 23, 1993, 5-63972; Mar. 23, 1993, 5-64222; Mar. 23, 1993, 5-64451; Mar. 24, 1993, 5-64560; Mar. 31, 1993, 5-72695; Mar. 26, 1994, 5-67892

Int. Cl.[6] A61K *47/12;9/68;* **A23L** *3/3463*

U.S. Cl. 424—439 **28 Claims**

1. A composition comprising a bifidobacterium growth promoting amount of an agent selected from the group consisting of gluconic acid, a nontoxic salt of gluconic acid and glucono-δ-lactone.

5,605,698

ORAL COMPOSITION

Gaku Ueno, Chiba-ken, Japan, assignor to Dai-Nippon Meiji Sugar Co., Ltd., Tokyo, Japan

Filed Dec. 5, 1994, Ser. No. 349,724

Claims priority, application Japan, Dec. 28, 1993, 5-335186

Int. Cl.[6] A61K *9/68*

U.S. Cl. 424—440 **2 Claims**

1. A method for decreasing the sensitivity of the tongue to sweetness comprising orally administering a composition in the form of a chewable gum, chewable tablet, oral refrigerant, or oral troche, said composition containing gymnemic acid in an amount effective to decrease the sensitivity of the tongue to sweetness.

5,605,699

PIGMENTATION WITH CAROTENOIDS

Kurt Bernhard, Lupsingen; Jiri Broz, Rheinfelden; Urs Hengartner, Basel; Paul Kreienbühl, Riehen, and Katharina Schiedt, Ariesheim, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Jun. 21, 1994, Ser. No. 263,308

Claims priority, application European Pat. Off., Jun. 24, 1993, 93110074; Apr. 29, 1994, 94106738

Int. Cl.[6] A23K *1/165*

U.S. Cl. 424—442 **4 Claims**

1. A beadlet for adding to a feed composition to provide a feed composition for poultry, fish or crustacea effective for pigmenting egg yolk, integuments and subcutaneous fat of poultry and the meat and integuments of fish and crustacea in respect of the animal to which it is fed, said beadlet comprising a conventional matrix for consumption in animal feed, an antioxidant, and one or more carotenoids selected from the group consisting of 2'-dehydroplectaniaxanthin, desmethylspheroidenone, spheroidenone, 1-hydroxy-3,4-didehydro- 1,2-dihydro-γ,γ-caroten-2-one, 5'-hydroxy-5',6'-dihydro'4'-apo-β-caroten-6'-one, 1'-hydroxy- 3',4'-didehydro- 1',2'-dihydro-β,γ,-carotene-4,2'-dione, and 5'-hydroxy-5',6'-dihydro-4'-apo-β-carotene-4,6'-dione in an amount effective to pigment the egg yolk, integuments and subcutaneous fat of poultry and the meat and integuments of fish and crustacea when added to a feed composition which is fed to poultry, fish or crustacea whose egg yolk, integuments and/or subcutaneous fat are to be pigmented.

5,605,700

TOPICAL ADMINISTRATION OF TOREMIFENE AND ITS METABOLITES

Michael W. DeGregorio, Granite Bay, Calif., and Kauko O. A. Kurkela, Espoo, Finland, assignors to Orion-Yhtyma Oy, Espoo, Finland

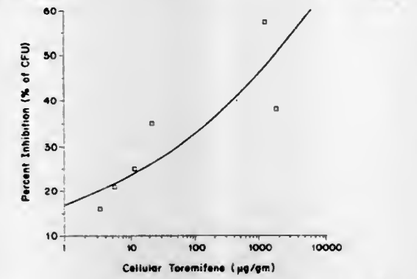
PCT No. PCT/FI93/00119, § 371 Date Oct. 31, 1994, § 102(e) Date Oct. 31, 1994, PCT Pub. No. WO93/19746, PCT Pub. Date Oct. 14, 1993

PCT Filed Mar. 25, 1993, Ser. No. 313,103

Claims priority, application United Kingdom, Apr. 3, 1992, 9207437

Int. Cl.[6] A61F *13/00*

U.S. Cl. 424—448 **21 Claims**



1. A transdermal preparation comprising as active ingredient toremifene or one of its metabolites N-demethyltoremifene(4-chloro-1,2-diphenyl-[4-[2-(N-methylamino)ethoxy]phenyl]-1-butene) or 4-hydroxytoremifene(4-chloro-1-(4-hydroxyphenyl)-2-phenyl-1-[4-[2-(N, N-dimethylamino)ethoxy] phenyl]-1-butene) or a pharmaceutically acceptable non-toxic salt thereof, together with one or more pharmaceutically acceptable excipients.

5,605,701

TRANSDERMAL FORMULATION

Franklin P. Bymaster, Brownsburg; Harlan E. Shannon, Carmel; Lisa A. Shipley, Fishers, all of Ind., and Kirti H. Valia, Plainsburo, N.J., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Feb. 17, 1995, Ser. No. 390,447

Int. Cl.[6] A61F *13/00;13/02;* **A61K** *9/70*

U.S. Cl. 424—448 **14 Claims**

1. A method for treating a condition associated with modulation of a muscarinic receptor comprising administering a transdermal matrix comprising as an active ingredient an effective amount of 3-[3-(hexylthio)-1,2,5-thiadiazol-4-yl]-1,2,5,6-tetrahydro-1-methylpyridine.

5,605,702

EVA-BASED TRANSDERMAL MATRIX SYSTEM FOR THE ADMINISTRATION OF AN ESTROGEN AND/OR A PROGESTOGEN

Eric Tellaud, Talant; Antoine Sawaya, Dijon, and Marie-Christine Math, Talant, all of France, assignors to Laboratoires d'Hygiene et de Dietetique, Paris, France

Filed Mar. 28, 1995, Ser. No. 413,208

Claims priority, application France, Mar. 28, 1994, 94 03598

Int. Cl.[6] A61F *13/00*

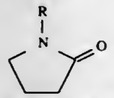
U.S. Cl. 424—448 **29 Claims**

1. A self-adhesive transdermal matrix system for the administration by percutaneous route of a hormone, said system, which comprises a support and self-adhesive matrix, having a matrix consisting essentially of:

(a) 40 to 60 parts by weight of an ethylene/vinyl acetate copolymer,

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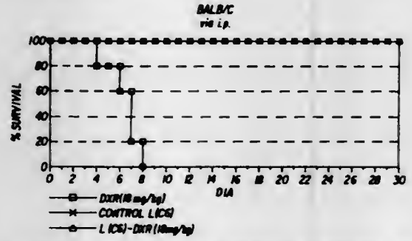
(b) 5 to 20 parts by weight of a cellulose compound,
(c) 35 to 55 parts by weight of at least one compound selected from the group consisting of:
crotamiton,
N-substituted 2-pyrrolidones of the formula I,



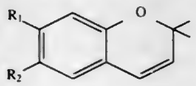
(I)

in which the R group represents a (C_1–C_{15})-alkyl, cyclohexyl or 2 - hydroxyethyl group, and higher C_{12}–C_{20} aliphatic alcohols, and
(d) 0.01 to 7 parts by weight of a hormone selected from the group consisting of estrogen compounds, progestogen compounds and mixtures thereof.

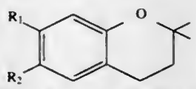
5,605,703
LIPOSOMES ENCAPSULATING DOXORUBICIN
Fernando P. Lambiez, Nocius de Rei; Raquel D. Gonzalez, Barcelona, and Antonio P. Duena, Saint Just Desvern, all of Spain, assignors to Lipotec, S.A., Spain
Filed Nov. 23, 1994, Ser. No. 346,236
Claims priority, application Spain, Nov. 25, 1993, 9302481
Int. Cl.[6] A61K *9/127*
U.S. Cl. 424—450 **23 Claims**



1. Liposomes encapsulating doxorubicin, comprising lipids, doxorubicin and a compound of general formula A or B:



A



B

wherein R_1 and R_2 are the same or different and are independently selected from the group consisting of HO—, CH3—, CF_3CH_2O—, and CH_3O—.

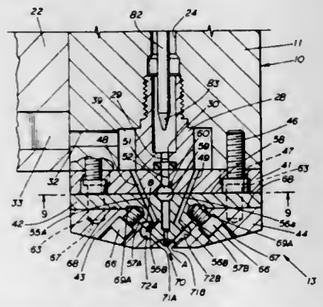
5,605,704
LIPOSOMES FOR DEPOSITION ON HAIR
Christophe M. Finel; Jonathan D. Hague, and Euan S. Reid, all of Wirral, Great Britain, assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.
Filed Mar. 2, 1995, Ser. No. 397,463
Claims priority, application European Pat. Off., Mar. 4, 1994, 94301574
Int. Cl.[6] A61K *9/127*
U.S. Cl. 424—450 **4 Claims**

1. A method for treating hair with an active ingredient comprising applying to the hair a hair treatment composition comprising a cationic liposomal dispersion incorporating the active ingredient, the cationic liposomal dispersion consisting essentially of:
(i) from 0.5 to 2% by weight of a cationic surfactant based on total weight of the hair treatment composition, the cationic surfactant being acetyl trimethylammonium salt;
(ii) from 0.1 to 1% by weight of cholesterol based on total weight of the hair treatment composition;
(iii) from 0.005 to 5% by weight of the active ingredient based on total weight of the hair treatment composition, the active ingredient being selected from the group consisting of sunscreen and anti-dandruff agents;
wherein the liposomal dispersion is pre-prepared, including the active ingredient therewithin, before combination into the hair treatment composition.

5,605,705

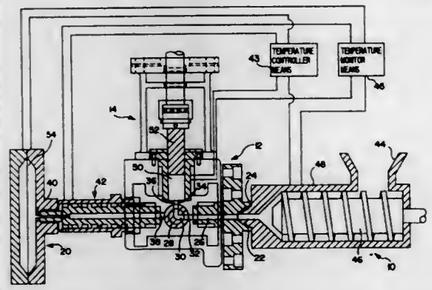
Patent Not Issued For This Number

5,605,706
MELTBLOWING DIE
Martin A. Allen, and John T. Fetcko, both of Dawsonville, Ga., assignors to Exxon Chemical Patents Inc., Linden, N.J.
Continuation of Ser. No. 326,539, Oct. 20, 1994, abandoned, which is a continuation of Ser. No. 136,778, Oct. 14, 1993, abandoned, which is a division of Ser. No. 934,870, Aug. 24, 1992, Pat. No. 5,269,670, which is a division of Ser. No. 599,006, Oct. 17, 1990, Pat. No. 5,145,689. This application Feb. 1, 1996, Ser. No. 593,115
Int. Cl.[6] B29C *47/12*
U.S. Cl. 425—72.2 **6 Claims**



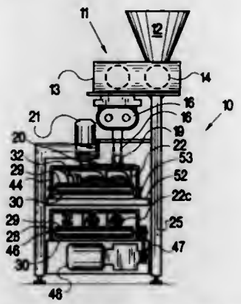
1. A meltblowing die which comprises:
(a) a die body having polymer flow passage means and air flow passages formed therein; and
(b) a die tip assembly mounted on the body comprising:
(i) a die tip having a base and a triangular nosepiece extending outwardly from the base and terminating in an apex, a row of filament forming means formed in the apex, and polymer flow passage means formed in the die tip extending through the base and the nosepiece and in fluid communication with the orifices,
(ii) air plates mounted on either side of the nosepiece and therewith defining converging air flow slots, and
(iii) a transfer plate having polymer flow passage means and air flow passages formed therein, wherein the transfer plate interconnects the die tip and the die body with the polymer flow passage means thereof being in registry whereby polymer flows through the die body, through the transfer plate, through the die tip, and out the filament forming means, and wherein the transfer plate air flow passages interconnect the die body air flow passages and the converging air flow slots whereby air flows through the die body, through the transfer plate, and through the air slots emerging at the apex of the die tip as converging sheets of air.

5,605,707
MOLDING APPARATUS AND A METHOD OF USING THE SAME
Jean-Pierre Ibar, New Canaan, Conn., assignor to Thermold Partners L.P., Stamford, Conn.
Division of Ser. No. 138,673, Oct. 18, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 476,947
Int. Cl.[6] B29C *45/78*
U.S. Cl. 425—144 **7 Claims**



1. An apparatus for molding and modifying the physical properties of a molten, moldable material, said apparatus comprising:
(a) a mold defining a mold cavity, said mold comprises an inlet through which a molten, moldable material can pass into or pass through the mold cavity,
(b) a feeder for preparing a molten, moldable material, said feeder comprises:
(i) an outlet through which molten, moldable material can pass, and
(ii) a means for expelling a molten, moldable material through the feeder's outlet,
(c) a first accumulator spaced from said feeder and said mold, said first accumulator comprises:
(i) an inlet conduit through which molten, moldable material can pass from said feeder outlet to said first accumulator,
(ii) an outlet conduit through which molten, moldable material can pass from said first accumulator to said mold inlet, and, a means for expelling a molten, moldable material through the first accumulator's outlet,
(iii) a means for expelling a molten, moldable material through the tint accumulator's outlet, and
(iv) a means for exerting one of a shear stress, compressive force and a stress tensor on a molten, moldable material contained within the first accumulator or within or through the mold cavity,
(d) a second accumulator spaced from said feeder and said mold, said second accumulator comprises:
(i) an inlet conduit through which molten, moldable material can pass from said feeder outlet to said second accumulator,
(ii) an outlet conduit through which molten, moldable material can pass from said second accumulator to said mold inlet, and, a means for expelling a molten, moldable material through the second accumulator's outlet,
(iii) a means for expelling a molten, moldable material through the second accumulator's outlet, and
(iv) a means for exerting one of a shear stress, compressive force and a stress tensor on a molten, moldable material contained within the second accumulator or within or through the mold cavity,
(e) a manifold interposed between said mold, feeder first accumulator and second accumulator, said manifold having flow channels therethrough which are in fluid communication with said mold inlet, feeder outlet, first accumulator inlet, first accumulator outlet, second accumulator inlet and second accumulator outlet,
(f) a flow control means positioned within the manifold, said flow control means being design to prevent the flow of molten, moldable material from the fast accumulator or the second accumulator back into the feeder,
(g) a means for controlling the temperature of a molten, moldable material contained within one of the first accumulator, the second accumulator, and the mold cavity, and
(h) a means for monitoring the temperature of a molten, moldable material contained within one of the first accumulator, the second accumulator and the mold cavity.

5,605,708
ROUNDER APPARATUS FOR PROCESSING BAKERY DOUGH
Chris Cummins, Mechanicsville, and Sam Seiling, Richmond, both of Va., assignors to Cummins Eagle, Inc., Ashland, Va.
Filed Sep. 11, 1995, Ser. No. 524,976
Int. Cl.[6] A21C *11/00*
U.S. Cl. 425—332 **12 Claims**



1. A rounder apparatus adapted for use with a dough handling machine that dispenses through one or more nozzles at one or more laterally spaced drop points sequential pieces of dough of substantially constant weight, said apparatus comprising:
a) upper and lower advancing assemblies, each assembly comprised of:
1) an endless flat conveyor belt driven horizontally between proximal and distal rollers which define the longitudinal travel length of the belt and cause the belt to have oppositely moving top and bottom surfaces, said belt having a lateral width defined by opposed straight edges, said proximal roller adapted to be positioned below and longitudinally adjacent said nozzle, and
2) at least one elongated stationary rounding vane disposed above said top surface in close adjacency therewith and disposed in angled relationship to the direction of belt travel, said vane having a substantially uniform arcuate surface directed toward an edge of said belt, the number of vanes corresponding to the number of drop points,
b) said upper assembly being positioned above said lower assembly in a manner such that the belts are in substantially parallel disposition with the edges of both belts in vertical alignment, and the distal roller of the lower assembly extends longitudinally beyond the distal roller of the upper assembly in the direction opposite to said proximal extremities,
c) the direction of movement of the top surface of the belt of said upper assembly being from the proximal to the distal rollers, and the direction of movement of the top surface of the belt of the lower assembly being from the distal to the proximal rollers,
d) the angled relationship of the vanes of the upper assembly being opposite to the direction of angled relationship of the vanes of the lower assembly.

e) the arcuate surfaces of the vanes of the upper assembly facing in a direction opposite to the direction faced by the arcuate surfaces of the vanes of the lower assembly, whereby

f) pieces of dough which fall onto the top surface of the belt of said upper assembly are transported laterally and longitudinally in contact with said arcuate surfaces and drop from the distal roll extremity onto the top surface of the belt of said lower assembly which transports the pieces in opposite lateral and longitudinal directions.

5,605,709

FOAM SHEET, METHOD AND APPARATUS FOR WIDENING FOAM SHEET

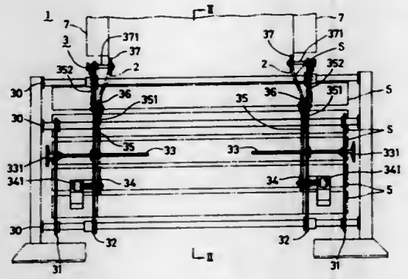
Naoyuki Morimoto, Hasuda; Ken Takahashi, Kazo, and Takeo Takahashi, Saitama-ken, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 197,971, Feb. 8, 1994, abandoned. This application Jun. 2, 1995, Ser. No. 460,190

Claims priority, application Japan, Feb. 12, 1993, 5-23993; May 14, 1993, 5-113307; Sep. 9, 1993, 5-224503

Int. Cl.[6] A01J *25/12;* **B65H** *20/00*

U.S. Cl. 425—383 **4 Claims**



1. An apparatus for widening a foam sheet comprising:

a pair of chains, each chain of said pair being constructed in the form of an endless chain with links having pins for engaging the foam sheet; and

driving means for driving said chains, said driving means including an inner gear pair and an outer gear pair, each of said gear pairs having a first gear and a second gear, each of said first gears being disposed on one side of the foam sheet and each of said second gears being disposed on another side of the foam sheet, said sides being sides along an advancing direction of the foam sheet, each of said first and second gears engaging an associated chain of said pair of chains,

said inner gear pair being arranged at a sheet receiving point with said first and second gears of said inner gear pair being spaced a distance substantially equal to a width of the foam sheet, said outer gear pair being disposed downstream of said inner gear pair, with respect to the advancing direction of the foam sheet, and the first and second gears of said outer gear pair being spaced a distance to widen the foam sheet along gently curved loci having inflection points,

each of said chains of said pair being constructed and arranged to travel along said gently curved loci from the inner gear pair to the outer gear pair such that each chain of said pair is first inwardly convexed and then outwardly convexed during travel.

5,605,710

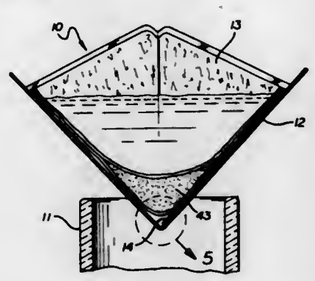
SINGLE CUP DISPOSABLE COFFEE BREWING DEVICE

Carl Pridonoff, Los Angeles, and Kenneth Tarlow, Corte Madera, both of Calif., assignors to Marathon Partners, Los Angeles, Calif.

Filed Jun. 6, 1994, Ser. No. 254,113

Int. Cl.[6] A47J *31/10*

U.S. Cl. 426—86 **9 Claims**



1. A single cup disposable coffee brewing device comprising an outer housing of a relatively stiff foldable material foldable from a first folded unopened position to a second open unfolded position and having an interior and an exterior thereby forming a conically shaped holder adapted to extend into a cup when set on top thereof;

a filter secured in the interior of said housing having coffee grounds of a predetermined grind and of a predetermined measurement disposed therein, said filter having comprised of a filter paper adapted to pass water therethrough;

an opening below said filter of a predetermined size disposed in said holder communicating the interior of said holder with the exterior thereof; and

valve means of a hot water dissolvable non-toxic gelatinous material for closing off said opening and adapted to dissolve after a predetermined period of time when contacted by water of a predetermined temperature, said time period being sufficient to cause brewing of coffee grounds in said housing prior to dissolving of said valve.

5,605,711

Patent Not Issued For This Number

5,605,712

STABILIZER COMPOSITIONS, FROZEN DESSERTS CONTAINING THE SAME AND STABILIZING METHOD

Dale T. Bertrand, East Windsor, N.J.; Daniel T. Hogan, Yardley, and Domingo C. Tuason, Bensalem, both of Pa., assignors to FMC Corporation, Philadelphia, Pa.

Filed Sep. 29, 1995, Ser. No. 536,821

Int. Cl.[6] A23G *9/00*

U.S. Cl. 426—565 **37 Claims**

1. A stabilizer composition, useful for stabilizing frozen desserts, comprising (a) a first component of microcrystalline cellulose (MCC) coprocessed with a calcium/sodium alginate salt complex and containing sufficient MCC such that the weight ratio of MCC to alginate salt complex is greater than about 80:20, in combination with (b) a second component of at least one water soluble hydrocolloid selected from the group consisting of guar gum, locust bean gum, sodium alginate, carrageenan, gum tragacanth, karaya gum, gum arabic, agar, konjac, xanthan gum, carboxymethylcellulose, methylcellulose, hydroxymethylcellulose and hydroxypropylmethylcellulose.

5,605,713

PROCESS FOR THE PREPARATION OF CALCIUM PHOSPHATE CEMENTS AND ITS APPLICATION AS BIO-MATERIALS

Maria G. Boltong, Menzenlaan 12, NL-6581 CM Malden, Netherlands

Continuation-in-part of Ser. No. 970,028, Nov. 2, 1992, abandoned. This application Feb. 15, 1995, Ser. No. 389,624

Claims priority, application Spain, Nov. 22, 1991, 9102606

Int. Cl.[6] A61C *13/00;* **A61L** *27/00;* **C04B** *12/02*

U.S. Cl. 427—2.1 **9 Claims**

5. A method for using calcium orthophosphate cement said cement comprising a calcium orthophosphate paste which consists essentially of a water mix, with a pH of 6.5 to 8, of three or four calcium compounds selected from the group consisting of $Ca(H_2PO_4)_2$—H_2O, $CaHPO_4$, $CaHPO_4$—$2H_2O$, $Ca_8(HPO_4)_2(PO_4)_4$—5 H_2O, β-$Ca_3(PO_4)_2$, α-$Ca_3(PO_4)_2$, $Ca_{10}(PO_4)_6(OH)_2$, $Ca_{8.5}Na_{1.5}(PO_4)_{4.5}(CO_3)_{1.5}$, $Ca_9(PO_4)_{4.5}(CO_3)_{1.5}(OH)_{1.5}$, $Ca_4Mg_5(PO_4)_6$, $CaZn_2(PO_4)_2$, $CaKPO_4$, $CaNaPO_4$, $Ca_{10}Na(PO_4)_7$, Ca_2PO_4Cl, CaO, $Ca(OH)_2$, $CaMgO_2$ and $Ca_{10}(PO_4)_6Cl_2$, wherein at least one of said calcium compounds is a calcium phosphate comprising the steps of:

preparing said calcium orthophosphate paste by grinding each calcium compound to a powder with a grain or cluster size of about 5 to 10 microns, mixing the ground, powdered calcium compounds, and adding water or a water-based solution;

applying said paste to bone tissue;

exposing said paste to moisture at body temperature thereby causing said paste to cure to a calcium orthophosphate cement.

5,605,714

TREATMENTS TO REDUCE THROMBOGENETICITY IN HEART VALVES MADE FROM TITANIUM AND ITS ALLOYS

Geoffrey Dearnaley, and James Lankford, Jr., both of San Antonio, Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Continuation-in-part of Ser. No. 220,234, Mar. 29, 1994. This application Jun. 7, 1995, Ser. No. 472,495

Int. Cl.[6] B05D *3/00;* **C23C** *14/06;* **B01S** *3/06;* **A61F** *2/24*

U.S. Cl. 427—2.24 **25 Claims**

1. A method for coating a substrate comprised of titanium with diamond-like carbon comprising:

exposing said substrate to a vacuum at a pressure of about 10^{-5} torr or less;

heating said substrate to between at least about 600° C.–650° C. (1112° F.–1202° F.);

depositing silicon onto said substrate in an amount sufficient to form an inner bonding layer of titanium-silicide cohesively bonded to an outer layer of silicon;

substantially simultaneous with said depositing of silicon, bombarding said deposited silicon with a first energetic beam of ions at a first energy, a first ion density, and for a first amount of time sufficient to form said inner titanium-silicide bonding layer cohesively bonded to said outer layer of silicon;

condensing a diamond-like carbon precursor onto said outer layer of silicon at a second temperature and for a second amount of time sufficient to form a film of precursor molecules tin said outer layer of silicon, wherein said second temperature is sufficiently low that said diamond-like carbon precursor is not vaporized off of said substrate;

substantially simultaneous with said condensing of a diamond-like carbon precursor, bombarding said diamond-like carbon precursor with a second energetic beam of ions at a second energy, a second ion density, and for a third amount of time sufficient to form an inner silicon carbide layer cohesively bonded to an outer coating of diamond-like carbon.

5,605,715

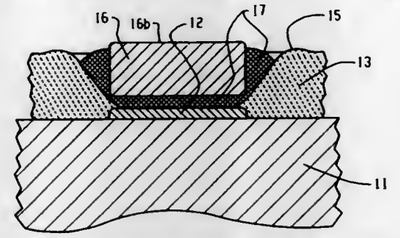
METHODS FOR MAKING ELECTRICAL CIRCUIT DEVICES

Richard N. Giardina; Craig C. Sundberg, and Joseph J. Herbert, all of Erie, Pa., assignors to The Erie Ceramic Arts Company, Erie, Pa.

Filed Dec. 9, 1993, Ser. No. 164,297

Int. Cl.[6] B05D *5/12;* **H01R** *43/16*

U.S. Cl. 427—96 **12 Claims**



1. A method of making an electrical circuit device comprising the steps of:

forming a base of electrically conductive material,

securing an electrically conductive masking element to a discrete surface portion of said base and in electrically conductive contact therewith,

coating by electrophoresis other surface portions of said base with fusible particles of a coating material that is adhered to said other surface portions and repelled from the surface of said masking element whereby the surface of said masking element remains exposed,

heating the resulting product to sintering temperature to fuse said particles and to provide a dielectric or resistive layer bonded to said other surface portions of said base whereby said masking element provides an exposed conductive path to said base.

5,605,716

METHOD OF MAKING HOLLOW WAVEGUIDES

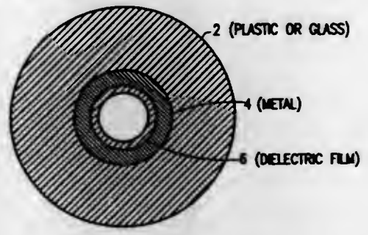
Nathan Croitoru, Kfar Saba; Jacob Dror, Tel Aviv, and Alexandra Inberg, Herzliya, all of Israel, assignors to Ramot University Authority for Applied Research & Development, Tel Aviv, Israel

Filed Dec. 4, 1995, Ser. No. 566,693

Claims priority, application Israel, Dec. 6, 1994, 111904

Int. Cl.[6] B65D *5/06*

U.S. Cl. 427—163.2 **20 Claims**



1. A method of making a bollow waveguide for transmitting electromagnetic radiation, comprising:

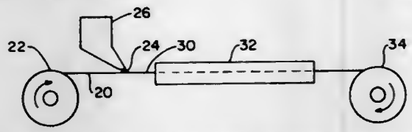
preparing an insulator tube;

filling voids on the inner surface of the insulator tube with a coating of a void-filling, hydrophylic material having a free pair of electrons and capable of complexing metal ions;

applying a solution of a metal salt over said coating of void-filling material to form a metal complex with said void-filling material;

reducing said metal complex to a pure metal layer;
and depositing a dielectric film on said pure metal layer.

5,605,717
PROCESS FOR FOAMING AN ADHESIVE USING MOISTURE IN A BACKING
George R. Simmons, Mentor, and John L. Schmitz, Hiram, both of Ohio, assignors to Morgan Adhesives Company, Stow, Ohio
Filed Jun. 1, 1995, Ser. No. 457,088
Int. Cl.[6] B05D *5/10*
U.S. Cl. 427—208.2 **5 Claims**



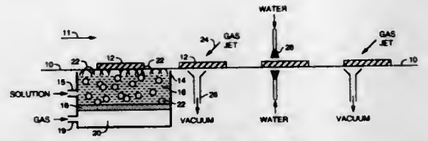
1. A process for forming a laminate comprising a foamed pressure sensitive thermoplastic material and a release liner having a backing and a release surface which comprises:
(a) applying a thin layer of a non-foamed thermoplastic hot pressure sensitive adhesive material to said release surface, wherein said backing initially contains moisture and is at a temperature below the boiling point of water; and
(b) heating the resulting laminate to a temperature sufficient to cause moisture from said backing to form gas and said gas to migrate into said adhesive material to effect foaming of said adhesive material;
thereby obtaining a coating comprising a layer of a foamed pressure sensitive thermoplastic material and a release liner having a release surface to which said layer of foamed pressure sensitive adhesive material is applied.

5,605,718
PROCESS FOR THE SURFACE TREATMENT OF AN ARTICLE BY SULPHONATION AND NEUTRALIZATION
Anne Tinant, Brussels; Frédéric Menu, Frameries, and Zdenek Hruska, Brussels, all of Belgium, assignors to Solvay (Société Anonyme), Brussels, Belgium
Filed Jun. 2, 1995, Ser. No. 458,413
Claims priority, application Belgium, Jul. 20, 1994, 09400693
Int. Cl.[6] B05D *3/10*
U.S. Cl. 427—236 **15 Claims**

1. A process for the surface treatment of at least a part of an article comprising at least one surface essentially composed of a plastic, said process comprising contacting said at least one plastic surface in at least one sulphonation stage and in at least one neutralization stage, said neutralization stage carried out by contact with a mixture of polyamine compounds.

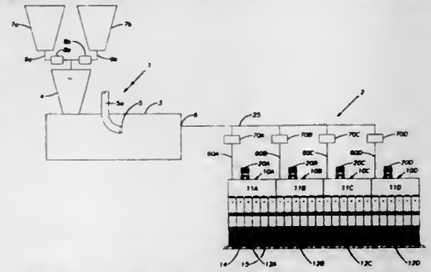
5,605,719
METHOD OF TRANSPORTING AND APPLYING A SURFACE TREATMENT LIQUID USING GAS BUBBLES
D. Morgan Tench, Ventura, Calif., and Egbert U. Beske, Kreuzwertheim, Germany, assignors to Rockwell International Corporation, Seal Beach, Calif.
Filed Mar. 3, 1995, Ser. No. 398,473
Int. Cl.[6] C23C *16/00*
U.S. Cl. 427—248.1 **14 Claims**

1. A method of transporting and applying a surface treatment solution to a part, comprising the steps of:
providing a reservoir containing said surface treatment solution at a static fluid level, said solution having no foam-inducing surfactants;



connecting said reservoir to a source of gas;
generating bubbles of said gas in said solution, said bubbles rising above said static level of said solution in said reservoir; and
placing the part to be treated above said static level of said solution in said reservoir such that said bubbles rising above said static level contact the part and burst, thereby applying said solution to the part.

5,605,720
METHOD OF CONTINUOUSLY FORMULATING AND APPLYING A HOT MELT ADHESIVE
Martin A. Allen, Dawsonville, and John T. Fetcko, Cumming, both of Ga., assignors to J & M Laboratories Inc., Dawsonville, Ga.
Filed Apr. 4, 1996, Ser. No. 626,048
Int. Cl.[6] B05D *5/00*
U.S. Cl. 427—288 **14 Claims**



1. An in-line continuous method of formulating and applying a hot melt adhesive to a substrate which comprises the steps of:
(a) continuously metering into an extruder raw materials comprising particles of a polymer adhesive and a tackifier resin in the proper weight ratio;
(b) heating and mixing the raw materials in the extruder to form a homogeneous melt of the raw materials;
(c) continuously discharging the melt from the extruder directly into an applicator system comprising a plurality of air assisted applicators, each applicator having a pump and an applicator head; and
(d) discharging the melt from the applicator heads onto a substrate.

5,605,721
SHOCK ABSORBING UNDERLAYMENT FOR ARTIFICIAL PLAYING SURFACES
Joseph W. Di Geronimo, 5 Apple Hill Rd., Sturbridge, Mass. 01566
Division of Ser. No. 289,764, Aug. 12, 1994, Pat. No. 5,514,722. This application Jun. 7, 1995, Ser. No. 484,889
Int. Cl.[6] E01C *13/06;* **C08J** *9/00*
U.S. Cl. 427—373 **17 Claims**

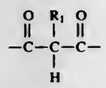
1. A method of using a shock absorbing underlayment composition, said method comprising the steps of:
(a) making said composition in a mixing container, said composition comprising:
from about 90% to about 85% by weight of butadiene rubber, based on the weight of said composition;



from about 3% to about 1% by weight of a moisture-retaining component selected from the group consisting of hydrated aluminum silicate, organopolysilicate and volcanic glass based on the weight of said composition; and
from about 12% to about 8% by weight of a binder mixture, based on the weight of said composition, said binder mixture comprising from about 10% to about 8% by weight of an isocyanate polyurethane, based on the weight of said composition and from about 1.6% to about 0.2% by weight of an acid, based on the weight of said composition;
(b) uniformly applying said composition to a foundational substrate surface in a thickness ranging from about 19 mm to about 102 mm; and
(c) trowelling said composition to a substantially level, smooth finished surface.

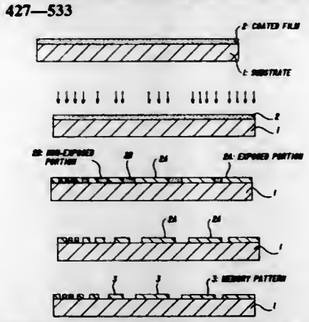
5,605,722
CROSSLINKABLE SURFACE COATINGS
Richard J. Esser, Aarlanderveen, Netherlands, assignor to S. C. Johnson & Son, Inc., Racine, Wis.
Division of Ser. No. 320,795, Oct. 7, 1994, Pat. No. 5,498,659, which is a continuation of Ser. No. 833,250, Feb. 10, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 470,778
Int. Cl.[6] B05D *3/02*
U.S. Cl. 427—388.4 **45 Claims**

1. A method of using a novel aqueous polymeric formulation to provide a crosslinked surface coating on a substrate, the method comprising the steps of:
producing an aqueous evaporable polymeric formulation by admixing at least one polymeric ingredient, a non-polymeric polyfunctional amine, and base, in an evaporable aqueous carrier, wherein the polymeric ingredient has both acid-functional pendant moieties and pendant moieties having the ability to form stable enamine structures by reaction with amines and contain a divalent group of the structure



wherein R_1 is either H, a C_1 to C_{10} alkyl group, or phenyl, wherein the non-polymeric polyfunctional amine has at least two amine-functional moieties and wherein the amount of base in the formulation is effective for inhibiting gellation, which would otherwise occur as a result of crosslinking between the pendant moieties having the ability to form stable enamine structures and amine-functional moieties, thereby producing a reaction mixture;
holding the reaction mixture at a preselected reaction temperature for a predetermined period of time, thereby producing the aqueous evaporable polymeric formulation;
applying the aqueous evaporable polymeric formulation onto a substrate; and
evaporating that amount of evaporable ingredients from the substrate-applied formulation which is effective for enabling desired crosslinking to take place as between the pendant moieties having the ability to form stable enamine structures and amine-functional moieties, thereby producing the crosslinked polymeric surface coating on the substrate.

5,605,723
METHOD FOR FORMING A PATTERN OF NON-VOLATILE FERROELECTRIC THIN FILM MEMORY
Katsumi Ogi; Tsutomu Atsuki; Hiroto Uchida; Tadashi Yonezawa, and Nobuyuki Soyama, all of Omiya, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan
Filed May 2, 1995, Ser. No. 434,312
Claims priority, application Japan, May 16, 1994, 6-100931
Int. Cl.[6] B05D *3/06;3/02;* **H05H** *1/00;* **C23C** *18/00*
U.S. Cl. 427—533 **19 Claims**



1. A method for forming a prescribed pattern of a non-volatile ferroelectric thin film memory comprised of a dielectric substance of a metal oxide of formula (I) on a substrate,

$$(Bi_2O_2)^{2+}(A_{m-1}B_mO_{3m+1})^{2-} \quad (I)$$

where X is one or more elements selected from the group consisting of Ba, Sr, Pb and Bi; Y is one or more elements selected from the group consisting of Ti, Nb and Ta; and m is an integer of from 2 to 5,
the method comprising the steps of:
applying onto the substrate a solution comprising a hydrolytic metal compound which forms the metal oxide of formula (I) through a hydrolysate, a water generating agent which generates water when irradiated with active rays and an organic solvent to form a film; exposing the film through the prescribed pattern to active rays of sufficient energy to cause said water generating agent to generate water and to hydrolyze said hydrolytic metal compound to said hydrolysate and to form an image having the prescribed pattern; developing said image by solvating non-exposed portions of the film; and then subjecting said image to a heat treatment to convert the hydrolysate into the metal oxide of formula (I), thereby forming the prescribed pattern of the non-volatile ferroelectric thin film memory.

5,605,724
METHOD OF FORMING A METAL CONDUCTOR AND DIFFUSION LAYER
Qi-Zhong Hong, Dallas, and Robert H. Havemann, Garland, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Mar. 20, 1995, Ser. No. 407,353
Int. Cl.[6] H05H *1/00*
U.S. Cl. 427—535 **22 Claims**

1. A method for minimizing reaction between a metal conductor and another metal to minimize change in sheet resistance of said conductor upon heat treatment, comprising the steps of:
(a) providing a substrate;
(b) depositing a diffusion barrier layer having a metal component on said substrate;
(c) treating the exposed surface of said diffusion barrier layer with a plasma; and
(d) depositing an electrical conductor on plasma treated surface of said diffusion barrier layer.

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5,605,725

COATED SUBSTRATE FOR USE AS A TONER RECORDING MEDIUM AND METHOD OF MAKING SAME

Norman Macaulay, Tonawanda; Nancy G. Mitchell, Grand Island, and Mary R. Dean, Williamsville, all of N.Y., assignors to Moore Business Forms, Inc., Grand Island, N.Y.

Division of Ser. No. 11,715, Feb. 1, 1993, Pat. No. 5,437,925, which is a continuation-in-part of Ser. No. 684,202, Apr. 12, 1991, abandoned. This application Jun. 2, 1995, Ser. No. 459,224

Int. Cl.[6] B05D 3/06

U.S. Cl. 427—557 23 Claims

1. A process for the production of a toner recording medium comprising:

coating a substrate with a formulation of about 25–45 parts of a dispersion of particulate silica, about 10–50 parts of an aqueous polyvinyl alcohol and about 25–45 parts water, by weight; and

drying the coated substrate to remove the water, leaving a toner receptive composition of about 50 to less than 90 parts silica and about 10 to about 50 parts of a polyvinyl alcohol, by dry weight, in a coating weight of less than 2.0 g/m^2 per side of the substrate; wherein the substrate has a Stockigt sizing degree before coating greater than 25 seconds.

5,605,726

ORGANOSILICON POLYMERS, AND DYES, EXHIBITING NONLINEAR OPTICAL RESPONSE

Wayne M. Gibbons, Bear; Robert P. Grasso, Wilmington, both of Del.; Michael K. O'Brien, Berwyn; Paul J. Shannon, Exton, both of Pa., and Shao-Tang Sun, Newark, Del., assignors to Herecules Incorporated, Wilmington, Del.

Division of Ser. No. 192,900, Feb. 7, 1994, which is a division of Ser. No. 96,389, Jul. 26, 1993, Pat. No. 5,298,588, which is a division of Ser. No. 831,609, Feb. 5, 1992, Pat. No. 5,254,655. This application Jun. 2, 1995, Ser. No. 460,616

Int. Cl.[6] B32B 25/20

U.S. Cl. 428—1 3 Claims

1. A medium exhibiting second order nonlinear optical susceptibility, $X^{(2)}$, of greater than 0.25 picometers/volt, said medium comprising an organosilicon crosslinked polymer which is the hydrosilation reaction product of reactants comprising the following:

(a) at least one cyclic polysiloxane having at least two hydrosilation reactive ≡SiH groups; and

(b) at least one organic dye having:

(i) an absorption maximum between 300 and 2000 nm;

(ii) an extinction coefficient, at the absorption maximum, greater than 2×10^3 L/mol cm; and

(iii) at least two hydrosilation reactive carbon-carbon double bonds;

wherein at least one of said at least one cyclic polysiloxane and said at least one organic dye has more than two hydrosilation reactive sites; and

wherein said organosilicon crosslinked polymer is characterized by sufficient organic dye alignment to exhibit said second order nonlinear optical susceptibility.

5,605,727

METHOD FOR OBTAINING COMPOSITE MATERIALS BASED ON CROSS-LINKED POLYMER AND FLUID MOLECULES, COMPRISING A STEP OF DRYING IN SUPERCRITICAL PHASE

Laurent Bouteiller, Massy, France, assignor to Thomson-CSF, Paris, France

Filed Jun. 7, 1995, Ser. No. 475,942

Claims priority, application France, Jun. 21, 1994, 94 07572

Int. Cl.[6] G07F 1/13

U.S. Cl. 428—1 9 Claims

1. A method for obtaining composite material comprising a cross-linked polymer (P), fluid molecules (m), wherein said method comprises the following steps:

the making of a porous film (F) of cross-linked polymer comprising liquid crystal $(\chi^L)_o$ within the pores;

the immersion of said film in a solvent (S) of liquid crystal $(\chi^L)_o$ to dissolve said liquid crystal;

the drying of said film under temperature (T_E) and pressure (P_E) conditions that are at least in the supercritical phase;

the filling of the dried film with molecules (m).

7. A method for obtaining composite material according to claim 1, wherein the molecules (m) are liquid crystal molecules.

5,605,728

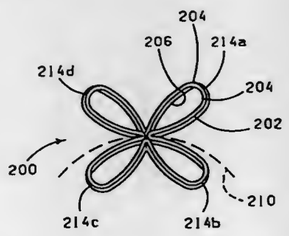
RIBBON ASSEMBLY FORMING CURVED SEGMENTS FOR MAKING A BOW OR RUFFLE

Donald E. Weder, Highland, Ill., assignor to Southpac Trust International, Inc., Oklahoma City, Okla.

Continuation of Ser. No. 384,496, Feb. 6, 1995, Pat. No. 5,470,620, which is a continuation of Ser. No. 286,853, Aug. 5, 1994, Pat. No. 5,411,774, which is a continuation of Ser. No. 101,210, Aug. 3, 1993, Pat. No. 5,387,446. This application Sep. 7, 1995, Ser. No. 529,251

Int. Cl.[6] B32B 9/00

U.S. Cl. 428—4 5 Claims



1. A ribbon assembly comprising:

a strip of material having a plurality of strip segments;

a resilient member having a stretched condition and an unstretched condition, the resilient member connected to the strip of material whereby the resilient member pulls the strip of material to form the segment of the strip of material into curves or ruffles when the resilient member is moved from the stretched condition to the unstretched condition.

5,605,729

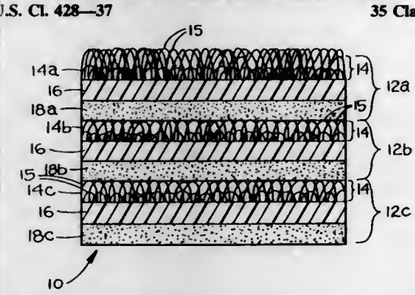
LOOP FASTENER MATERIAL STORAGE/DISPENSING ASSEMBLY

Kirit C. Mody, Shoreview; Roy D. Erickson, Woodbury, and Stephen P. Polski, Shoreview, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 48,845, Apr. 16, 1993, abandoned. This application Jan. 19, 1995, Ser. No. 374,920

Int. Cl.[6] B32B 3/02; A44B 1/04; A61F 13/02

U.S. Cl. 428—37 35 Claims



1. A loop fastener material assembly comprising one or more multilayer sheets of loop fastener material for the loop portion of a hook and loop fastener,

said assembly being selected from the group consisting of a stack comprising two or more said sheets of loop fastener material and a roll comprising one or more said sheets of loop fastener material wound together in roll form;

said loop fastener material comprising in order: (1) a loop layer on its first major surface, said loop layer comprising (a) a multiplicity of flexible loops adapted to be releasably engaged by the complementary hook portion of the hook and loop fastener (b) a base layer to which said loops are anchored, (2) a pressure-sensitive adhesive layer on its second major surface and (3) a release control agent selected from the group of release control agents consisting of a release control agent incorporated into said loops prior to arranging said loop fastener material into said assembly, and a release control agent applied to the surface of said loops prior to arranging said loop fastener material into said assembly;

wherein said loop fastener material is arranged in said assembly such that the adhesive layer of an overlying portion of said loop fastener material is in direct contact with the loop layer of an underlying portion of said loop fastener material, said loops being such that, when said overlying portion of said loop fastener material is removed from said assembly, said loops of said underlying portion are presented in an engagable state.

5,605,730

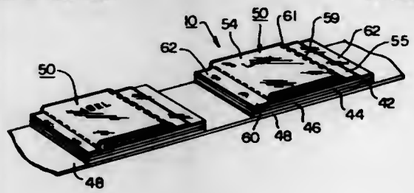
LABEL

Carl W. Treleaven, Greensboro, N.C., assignor to Westlake Ventures, L.L.C., Greensboro, N.C.

Continuation-in-part of Ser. No. 259,856, Jun. 15, 1994. This application Oct. 21, 1994, Ser. No. 327,386

Int. Cl.[6] B32B 3/00; G09F 3/00

U.S. Cl. 428—40.1 10 Claims



1. A label product, comprising:

(a) a web of transfer tape, said web including a release liner having an upper surface and a layer of release adhesive thereon;

(b) a plurality of unitary outserts affixed at spaced positions along said web, each of said outserts having a bottom panel;

(c) each of said bottom panels being directly adhered to said upper surface by said release adhesive layer; and

(d) wherein each of said bottom panels is releasably secured to said upper surface of said release liner by said release adhesive layer;

(e) a plurality of laminate covers each overlying a respective one of said outserts, each of said laminate covers including;

(i) a central portion overlying said respective outsert;

(ii) first and second marginal portions disposed on opposite sides of said central portion, said first marginal portion extending beyond a side edge of said respective outsert and releasably secured to said upper surface of said release liner by said tape adhesive layer; and

(iii) a removal tear line formed in said first marginal portion adjacent said side edge of said respective outsert whereby said central portion may be torn away from said first marginal portion and said label product; and

(f) means for accessing said outserts formed adjacent side edges of said outserts opposite each of said removal tear lines.

5,605,731

PROCESS FOR OBTAINING DISPOSABLE CLEANING CLOTHS AND RESULTING DISPOSABLE CLEANING CLOTH

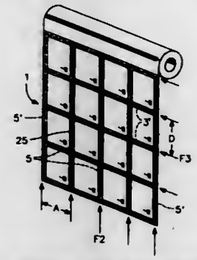
Marcos Guasch Pubill, Pere IV, 314, Barcelona, Spain

Filed Feb. 15, 1994, Ser. No. 196,758

Claims priority, application Spain, Mar. 1, 1993, P 9300565; Oct. 30, 1993, P 9302060; Jan. 18, 1994, P 9400089

Int. Cl.[6] B65D 65/28

U.S. Cl. 428—43 9 Claims



1. A process for obtaining disposable cleaning cloths, starting from woven or knit fabric made of natural or synthetic fibers or mixtures of the two, which upon output from a loom is subjected to conventional continuous or batch finishing processes, wherein said process comprises the steps of:

providing a fabric piece of said fabric having a width corresponding to that of the cleaning cloth to be obtained,

making successive transversal cuts intermittently or continuously in the direction of the weft, spaced according to the length of the cleaning cloth, which cuts prevent subsequent unravelling and help the user to detach each cleaning cloth individually from the rest of the piece with the longitudinal edges of the cleaning cloth which may not be unraveled either, extending in the direction of the warp,

wherein, when said fabric has a width which is a multiple of said width of the cleaning cloth to be obtained, said step of providing a fabric piece includes the step of making longitudinal cuts continuously in the fabric in the direction of the wrap, said longitudinal cuts being spaced according to said width of the cleaning cloth, and

printing a peripheral trim of the cleaning cloth along said transversal and longitudinal cuts in the fabric at ambient tempera-

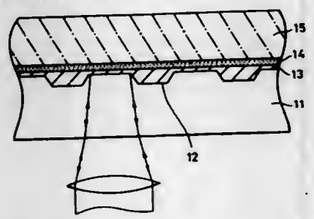
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ture for bonding of the cuts threads of the fabric to avid unravelling of the edges of the cleaning cloth.

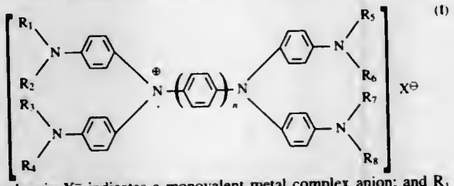
5,605,732
AMINIUM SALT COMPOUND AND OPTICAL RECORDING MEDIUM

Chieko Mihara, Isehara; Hiroyuki Sugata, Yamato, and Tsuyoshi Santoh, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 29, 1992, Ser. No. 997,882
Claims priority, application Japan, Jan. 6, 1992, 4-000249
Int. Cl.[6] B32B *3/00*
U.S. Cl. 428—64.8 **38 Claims**



1. An optical recording medium comprising a substrate and a recording layer, wherein said recording layer contains an organic dye and a compound expressed by the following formula (I):



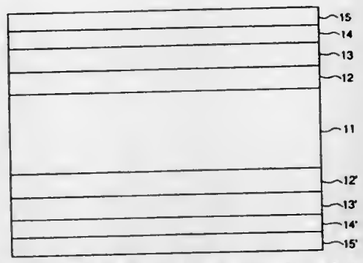
wherein X^- indicates a monovalent metal complex anion; and R_1 through R_8 each indicate a hydrogen atom or a monovalent organic residue, and at least one of R_1 through R_8 is a monovalent organic residue selected from the group consisting of a substituted or unsubstituted alkoxyalkyl group, substituted or unsubstituted alkenyl group, substituted or unsubstituted alkynyl group and substituted or unsubstituted aralkyl group; and n is 1 or 2.

5,605,733
MAGNETIC RECORDING MEDIUM, METHOD FOR ITS PRODUCTION, AND SYSTEM FOR ITS USE

Akira Ishikawa, Kodaira; Sadao Hishiyama, Sayama; Tomoo Yamamoto; Yoshihiro Shiroishi, both of Hachioji; Tomoyuki Ohno, Odawara; Yotsuo Yahisa, and Yukio Kato, both of Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 22, 1993, Ser. No. 7,969
Claims priority, application Japan, Jan. 22, 1992, 4-009011; Jan. 28, 1992, 4-012810; Mar. 19, 1992, 4-063057
Int. Cl.[6] G11B *5/66*
U.S. Cl. 428—65.3 **28 Claims**

1. A thin-film magnetic recording medium, comprising:
a substrate;
an underlayer on said substrate;
a first magnetic layer on said underlayer;
a first nonmagnetic intermediate layer on said first magnetic layer; and
a second magnetic layer on said first nonmagnetic intermediate layer;
wherein the residual magnetic flux density B_r and thickness δ are each different for each magnetic layer; and

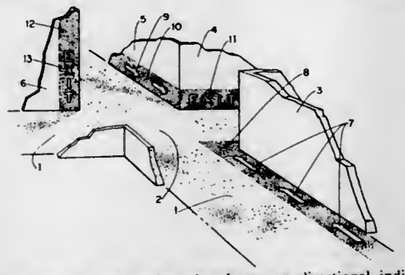


wherein the dot product $B_r \cdot \delta$ is the same for each magnetic layer.

5,605,734
PHOSPHORESCENT DIRECTIONAL SIGNALS AND MANUFACTURING METHOD

Ling Yeh, Anderson, S.C., assignor to BASF Corporation, Mt. Olive, N.J.

Continuation of Ser. No. 725,959, Jun. 28, 1991, abandoned, which is a continuation of Ser. No. 430,763, Nov. 2, 1989, abandoned. This application Mar. 19, 1993, Ser. No. 33,990
Int. Cl.[6] B32B *3/02*; D02G *3/00*
U.S. Cl. 428—97 **7 Claims**



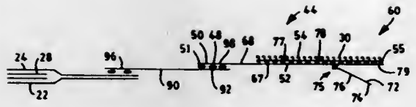
1. A tufted carpet having phosphorescent directional indicia formed in an area of the carpet which experiences low or no traffic when installed, said carpet comprising a backing, directional yarn tufts comprised of melt-spun, draw-textured phosphorescent fibers which are tufted into that portion of the carpet backing corresponding to said directional indicia so as to form said directional indicia in said low or no traffic area of the carpet, and colored yarn tufts comprised of non-phosphorescent colored fibers which are tufted into a remaining portion of said backing surrounding the phosphorescent directional indicia, wherein said phosphorescent fibers of said directional tufts are melt-spun with a zinc sulfide copper activated pigment such that said pigment is dispersed within said phosphorescent fibers.

5,605,735
HIGH-PEEL TAB FASTENER

Georgia L. Zehner, Larsen; Paul T. VanGompel, Hortonville; Thomas H. Roessler, Menasha, and Yung H. Huang, Appleton, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Dec. 28, 1994, Ser. No. 366,080
Int. Cl.[6] A61F *13/56*; B32B *3/06*
U.S. Cl. 428—100 **33 Claims**

1. A fastening tab, comprising:
a fastener substrate having a construction-bond portion for attaching said fastener substrate to an article, a user-bond portion connected to said construction-bond portion, a user-

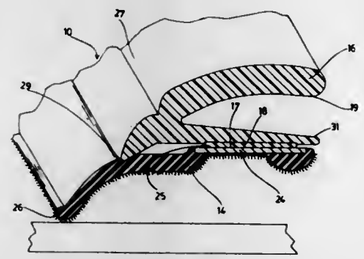


bond end edge section, a construction-bond end edge section, a pair of opposed side edge sections, a fastening surface and a user surface;
securing means connected to said fastening surface of said fastener substrate at least along said user-bond portion thereof for securing said user-bond portion; and
a gripping member affixed to said user surface at said user-bond portion of said fastener substrate for applying a force for removing said securing of said user-bond portion of said fastening tab, said gripping member having a distal end portion which is substantially free and a base portion which is operably connected to the user surface of said fastener substrate, said gripping member configured to intersect said fastener substrate at said base portion at an intersect location which is spaced from said construction-bond portion, is positioned to extend between said fastener substrate side edge sections, and is positioned between said construction-bond portion and said user-bond end edge section of said fastener substrate, said intersect location positioned laterally inboard from a terminal free edge of said user-bond end section of said fastener substrate by a predetermined spacing distance.

5,605,736
COMPOSITE BELT WEATHERSTRIP MOULDING

Avi Zohar, Thornhill, and William E. Armstrong, Etobicoke, both of Canada, assignors to Decoma International Inc., Concord, Canada

Filed Jun. 15, 1994, Ser. No. 260,970
Int. Cl.[6] B60J *10/02*
U.S. Cl. 428—122 **12 Claims**



1. A composite belt weatherstrip for attachment to a motor vehicle body, said weatherstrip comprising,
an elongate base member comprising a flexible, plastic material extrudate portion coextensive with and partially enveloping an elongate core portion which consists of a flat strip which is comparatively rigid with respect to said extrudate portion, the core portion having an exposed face flush with an outer surface of the base member;
an elongate injection moulding as an outer decorative trim member of thermoplastic material coextensive with and extending over an outer surface of said elongate base member; and
double faced adhesive tape adhering said exposed face of the core member portion of said elongate base member and an inner surface of said outer decorative trim member.

5,605,737
WHITE-COLORED POLYMER FILM

Young-Jin Lee; Sang-Il Kim, both of Kyungki-do, and Bum-Sang Kim, Seoul, all of Rep. of Korea, assignors to SKC Limited, Kyungki-do, Rep. of Korea

Filed Apr. 8, 1996, Ser. No. 629,246
Claims priority, application Rep. of Korea, Apr. 18, 1995, 95-9133
Int. Cl.[6] B32B *1/00*
U.S. Cl. 428—188 **5 Claims**

1. A white-colored polymer film having elongated spherical pores, which is characterized in that said pores exposed on a surface created by cutting the film along a longitudinal direction satisfy the following formulae:

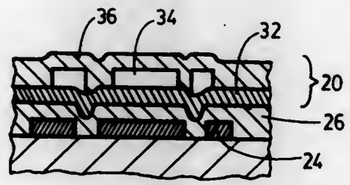
$$P_{L,90} \geq 5\ \mu m \qquad P_{D,90} \geq 0.1\ \mu m$$
$$P_{L/D,50} \geq 5 \qquad 100 \geq P_N \geq 10$$
$$0.5 \geq P_A \geq 0.05$$

wherein,
$P_{L,90}$ is an average length of longer axes of 90% or more of the exposed pores;
$P_{D,90}$ is an average length of shorter axes of 90% or more of the exposed pores;
$P_{L/D,50}$ is an average of the longer axis to the shorter axis length ratios of the exposed pores;
P_N is the number of exposed pores per 1000 μm^2 of the exposed surface; and
P_A is the ratio of the exposed pore area to the exposed surface area,
said polymer film being prepared by compounding and melt-extruding a resinous composition comprising a mixture of 65 to 95% by weight of a polyester resin and 5 to 35% by weight of a polyolefin resin, and, based on the weight of the polyester resin, 0.01 to 10% by weight of inorganic particles having an average particle diameter ranging from 0.01 to 10 μm, 0.01 to 1.0% by weight of a metal sulfonate and 0.005 to 0.5% by weight of a hindered phenol, to form a sheet, and then biaxially extending the sheet.

5,605,738
TAMPER RESISTANT SYSTEM USING ULTRAVIOLET FLUORESCENT CHEMICALS

William G. McGinness, Burlington, Ky., and Louis Liang, Los Altos, Calif., assignors to Angstrom Technologies, Inc., Erlanger, Ky.

Filed Sep. 30, 1993, Ser. No. 130,095
Int. Cl.[6] B41M *3/14*
U.S. Cl. 428—195 **24 Claims**



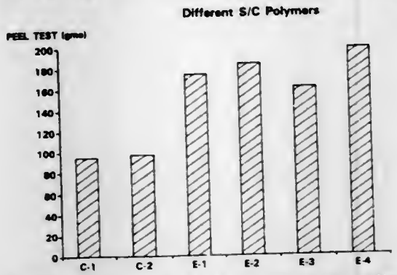
21. An article protected against tampering, comprising:
a first layer of a release agent over an article;
a second layer of a material in a predetermined first pattern in contact with the release agent layer so that the first layer is between the article and the second layer, wherein the material fluoresces in response to ultraviolet radiation; and
a third authenticating layer over said second layer, so that tampering is detectable when the material exhibits a pattern different from the first pattern.

5,605,739

NONWOVEN LAMINATES WITH IMPROVED PEEL STRENGTH

Ty J. Stokes, Suwanee, and Karen L. English, Marietta, both of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation-in-part of Ser. No. 379,373, Jan. 27, 1995, Pat. No. 5,534,339, which is a continuation-in-part of Ser. No. 201,582, Feb. 25, 1994, Pat. No. 5,424,115. This application Dec. 21, 1995, Ser. No. 576,521
Int. Cl.[6] B32B 27/14
U.S. Cl. 428—198 18 Claims



1. A laminate comprising a first thermoplastic polymer film or nonwoven layer thermally bonded to a second thermoplastic polymer nonwoven layer comprising sheath/core bicomponent fibers or filaments wherein the density of the core component exceeds the density of the sheath component and said first film or nonwoven comprises a polymer compatible with said sheath component and wherein the peel strength of said laminate exceeds about 125% of that obtained under similar thermally bonding conditions using a nonwoven wherein said density difference does not exist as said second nonwoven layer.

5,605,740

ACTINIC RADIATION-CURABLE COLORED COATING COMPOSITION FOR USE IN VACUUM-FORMING FILM, VACUUM-FORMING FILM AND VACUUM-FORMED PRODUCT

Takeshi Tomiyama; Shinichi Ogino; Tsutomu Maruyama, and Kenji Seko, all of Hiratsuka, Japan, assignors to Kansai Paint Co., Ltd., Amagasaki, Japan

Division of Ser. No. 122,364, Sep. 17, 1993, abandoned. This application Jan. 27, 1995, Ser. No. 379,032
Claims priority, application Japan, Sep. 22, 1992, 4-276821
Int. Cl.[6] B32B 3/00
U.S. Cl. 428—200 1 Claim

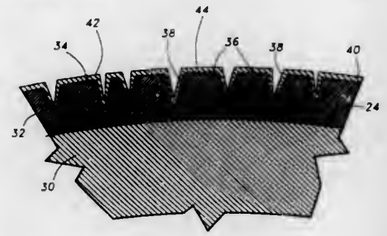
1. A laminate film for vacuum forming a vacuum-formed product, said laminate film being formed by a process which comprises laminating a base film layer onto an adhesive layer to form a substrate, coating or printing an actinic radiation-curable colored coating composition containing, as the essential components, (A) an ethylenically unsaturated group-containing acrylic resin containing 0.1 to 0.4 of polymerizable unsaturated group per 1,000 units of molecular weight and having a weight-average molecular weight of 2,000 to 300,000, (B) a coloring material selected from the group consisting of color pigments, dyes, fluorescent dyes and fluorescent pigments, and (C) an organic solvent capable of dissolving or dispersing the acrylic resin (A) and having a boiling point of 220° C. or lower, onto the surface of the base film layer, followed by evaporating the organic solvent to form a colored coating or printing layer, and coating a clear coating composition consisting of the acrylic resin (A) and the organic solvent (C) onto the surface of the colored coating or printing layer, followed by evaporating the organic solvent to form a clear coating layer, and consisting of the adhesive layer, the base film layer, the colored coating or printing layer and the clear coating layer, said coloring material (B) being contained in an amount of 0.5 to 150 parts by weight per 100 parts by weight of the acrylic resin (A), the adhesive layer and the base film layer being heat-softening when heated on vacuum forming, the colored coating or printing layer and the clear coating layer being tack-free and heat-softening when heated on vacuum forming.

5,605,741

HYBRID FACE COATING FOR PISTON RING

Russell E. Hite, Richmond, Ind.; Ihor R. Maksymiak, Toledo, Ohio, and Michael A. Kestner, Richmond, Ind., assignors to Dana Corporation, Toledo, Ohio

Filed Jun. 2, 1995, Ser. No. 459,072
Int. Cl.[6] F16J 9/26
U.S. Cl. 428—216 16 Claims



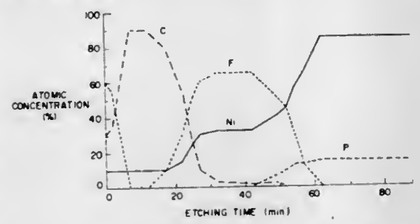
1. A piston ring comprising:
a generally annular base body having an upper peripheral face, an upper surface, and a lower surface;
a sub-layer applied to said peripheral face, said sub-layer having a pocketed surface with randomly oriented reservoirs that are closed between said upper surface and lower surface; and
a metallic nitrided face coating applied to said pocketed surface.

5,605,742

METAL MATERIAL FORMED WITH FLUOROCARBON FILM, PROCESS FOR PREPARING THE MATERIAL AND APPARATUS MADE WITH USE OF THE MATERIAL

Tadahiro Ohmi, Sendai; Kazuo Chiba, Mishima; Hideo Kume, Numazu; Yutaka Mikasa, Mishima; Matagoro Maeno; Yoshinori Nakagawa, both of Izumi; Hiroto Izumi, Sendai, and Kazuhito Yamane, Sakai, all of Japan, assignors to Hashimoto Chemical Co. Ltd., Osaka-fu, and Mitsubishi Aluminum Co., Ltd., Tokyo, both of Japan

Filed Sep. 27, 1995, Ser. No. 534,985
Claims priority, application Japan, Oct. 28, 1994, 6-288805
Int. Cl.[6] B32B 9/00
U.S. Cl. 428—216 3 Claims



1. A metal material comprising a substrate metal, a first film comprising a nickel fluoride layer and formed on the substrate metal, said first film having a thickness of 100 Å to 1 micrometer, and a second film comprising a carbon layer and formed on said first film, said second film having a thickness of 10 Å to 1 micrometer.

5,605,743

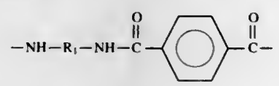
PAPERMAKER'S FABRIC OF POLYPHTHALAMIDE MONOFILAMENT

John R. Reither, Summerville, S.C., assignor to Asten, Inc., Charleston, S.C.

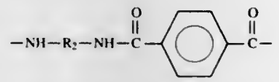
Continuation of Ser. No. 204,527, Mar. 1, 1994, abandoned. This application Oct. 6, 1995, Ser. No. 540,315
Int. Cl.[6] D03D 15/00;15/12; D21F 3/02; F16G 1/04
U.S. Cl. 442—414 6 Claims

1. An improved industrial fabric formed of interconnected yarns wherein the improvement comprises at least some of the interconnected yarns being monofilament yarns consisting essentially of:

(A) about 65 to about 90 mole % of recurring units according to the formula

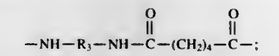


(B) about 0 to about 25 mole % of recurring units according to the formula



and,

(C) about 5 to about 35 mole % of recurring units according to the formula



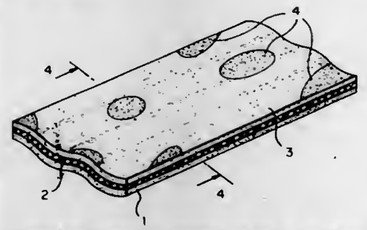
wherein the sum of (A)–(C) totals to 100 mole %; each of R_1, R_2 and R3 is independently a divalent aliphatic hydrocarbyl radical of 4–12 carbon atoms; and further provided, that the mole ratio of the dicarboxylic acid moieties in the units (B):(C) is less than 3:1.

5,605,744

LAMINATED PAPER GLASS CAMOUFLAGE

Jonathan C. Duke, Jr., Tyndall AFB, Fla.; Bartley P. Durst, Vicksburg, Miss., and David L. Meeker, Bryon, Tex., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 184,704, Jan. 21, 1994, Pat. No. 5,474,837. This application Jun. 21, 1995, Ser. No. 493,037
Int. Cl.[6] B32B 17/12;17/06
U.S. Cl. 442—259 5 Claims



1. A camouflage composite laminate having a core layer comprised of kraft paper saturated with a mixture of styrene and polyester bonding resin to provide a resin-cellulose matrix, and two encapsulating layers of fiberglass cloth impregnated with polyester bonding resin, wherein the polyester resin within the resin-cellulose matrix and the resin impregnated within the fiberglass cloth provide a bonding surface that bonds the layers of kraft paper and fiberglass cloth together, said camouflage composite laminate further comprising a plurality of metal fibers capable of imparting partial radar reflective characteristics.

5,605,745

TOUGHENED THERMOSETTING STRUCTURAL MATERIALS

Hans G. Recker, Irvine, Calif.; J. Timothy Hartness, Tega Cay, S.C.; Thomas Folda, Neuleiningen, Germany; Helmut Tesch, Birkenheide, Germany; Thomas Weber, Ludwigshafen, Germany, and Jack D. Boyd, Westminster, Calif., assignors to Cytec Technology Corp., Wilmington, Del.

Continuation of Ser. No. 221,334, Mar. 31, 1994, abandoned, which is a continuation of Ser. No. 339,273, Apr. 14, 1989, abandoned. This application Dec. 29, 1994, Ser. No. 366,392
Int. Cl.[6] B32B 5/16
U.S. Cl. 442—175 35 Claims

1. A method for increasing the toughness of a cured epoxy resin composition, comprising the steps of:

(1) adding to a curable epoxy resin system from 15 to 50 weight percent, based on the total composition, of a particulate amorphous thermoplastic under conditions wherein a substantial amount of the amorphous thermoplastic does not dissolve in the curable epoxy resin system; then

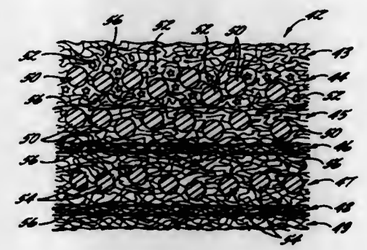
(2) curing the so-formed particulate amorphous thermoplastic containing epoxy resin system by heating the system to cure temperature under conditions whereby the particulate thermoplastic dissolves in the epoxy resin system prior to or contemporaneously with the epoxy resin gel time.

5,605,746

FIBROUS STRUCTURES CONTAINING PARTICULATE AND INCLUDING MICROFIBER WEB

H. Gunter Groeger; George A. Serad, and Clinton D. Felton, all of Charlotte, N.C., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Division of Ser. No. 245,103, May 17, 1994, Pat. No. 5,486,410, which is a continuation-in-part of Ser. No. 977,995, Nov. 18, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 476,002
Int. Cl.[6] B32B 5/16;5/06; D02G 3/00
U.S. Cl. 442—347 16 Claims



1. A fibrous structure comprising a microfiber web disposed within said fibrous structure, and a non-woven macrofiber matrix formed from composite fiber and with functional particulate entrapped in and fusion bonded to said macrofiber matrix.

5,605,747

Patent Not Issued For This Number

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5,605,748

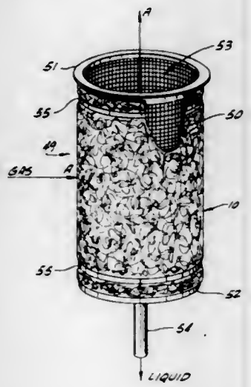
FIBER BEDS FOR FIBER BED MIST ELIMINATORS

Eugene D. Kennedy, Maryland Heights; John S. Merz, Florissant; Prabhakar D. Paranjpe, and Albert E. Tung, both of Chesterfield, all of Mo., assignors to Monsanto Enviro-Chem Systems, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 7,717, Jan. 22, 1993, abandoned. This application Jan. 19, 1994, Ser. No. 183,673

Int. Cl.[6] D04H *11/00*

U.S. Cl. 442—5 17 Claims



1. A field-replaceable fiber bed for use in a fiber bed mist eliminator for removing aerosols and soluble solids from a moving gas stream, the fiber bed in the form of a flexible mat having a void fraction exceeding about 0.89 and in excess of about 700 net collection targets, the mat comprising:

a layer of collecting fibers having an average fiber diameter between about 1 μm and about 5 μm, the collecting fiber layer having a first face and a second face; and

a plurality of stabilizing fibers for positionally stabilizing the collecting fibers of the mat, the stabilizing fibers penetrating into and disposed interstitially within the collecting fiber layer such that the stabilizing fibers extend into the collecting fiber layer in the thickness direction thereof and in a direction generally parallel to the direction of gas flow through the mat, the number of stabilizing fibers and the extent to which the stabilizing fibers penetrate into the collecting fiber layer being sufficient so that the collecting fibers are mechanically stable under design operating conditions.

5,605,749

NONWOVEN PAD FOR APPLYING ACTIVE AGENTS

Richard D. Pike, Norcross, and John W. Fowler, Marietta, both of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Dec. 22, 1994, Ser. No. 363,096

Int. Cl.[6] D04H *1/04*

U.S. Cl. 442—60 21 Claims

1. A treated pad comprising a nonwoven web that comprises crimped conjugate fibers, said conjugate fibers selected from spunbond fibers and staple fibers, and said nonwoven web containing autogenous interfiber bonds at the crossover contact points of said fibers throughout said web, wherein said nonwoven pad is impregnated with a topically appliable active agent.

5,605,750

MICROPOROUS INK-JET RECORDING ELEMENTS

Charles E. Romano; Douglas E. Bugner, both of Rochester, and Wayne T. Ferrar, Fairport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 29, 1995, Ser. No. 580,698

Int. Cl.[6] B41M *5/00*

U.S. Cl. 428—304.4 17 Claims

1. An opaque image-recording element for an ink-jet printer which comprises an opaque support having on at least one surface thereof a lower layer of a solvent-absorbing microporous material comprising:

(a) a matrix of substantially water-insoluble thermoplastic organic polymer;

(b) finely divided substantially water-insoluble filler particles, of which at least 50 percent by weight are siliceous particles, said filler particles being distributed throughout said matrix and constituting from 40 to 90 percent by weight of said microporous material;

(c) a network of interconnecting pores communicating substantially throughout said microporous material, said pores constituting from 35 to 95 percent by volume of said microporous material, and

an upper image-forming layer of porous pseudo-boehmite having an average pore radius of from 10 to 80 Å.

5,605,751

LAMINATES

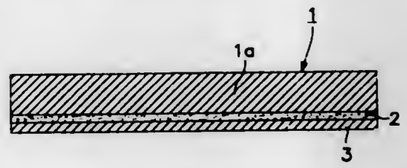
Fukuji Suzuki; Tsutomu Saito, both of Kanagawa; Nobuhisa Tsujita, Tokyo; Yoshimi Kanada, Tokyo; Kazumi Saito, Tokyo, and Toshiaki Ougiya, Tokyo, all of Japan, assignors to Shiseido Company, Ltd., and Figla Co., Ltd., both of Tokyo, Japan

Continuation of Ser. No. 117,068, Sep. 3, 1993, abandoned. This application Apr. 17, 1995, Ser. Nu. 425,243

Claims priority, application Japan, Jan. 6, 1992, 4-018155; Jan. 6, 1992, 4-018156; Sep. 21, 1992, 4-274803; Sep. 21, 1992, 4-274804; Oct. 6, 1992, 4-290894; Oct. 6, 1992, 4-290895

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—323 1 Claim



1. A laminate for use as a building construction material consisting of a light-transmitting base, a paint film on the base, and a black light-intercepting and absorbing protective film on the paint film, wherein the paint film comprises a dispersion of mica grains with only layers of titanium oxide coated on the surfaces of the mica grains and said layers of titanium oxide comprises at least one layer of a low-valent titanium oxide and the remainder of the layers being titanium dioxide.

5,605,752

MAGNETIC RECORDING MEDIUM CONTAINING MAGNETIC POWDER OF IRON NITRIDE

Yoshiteru Matsubayashi, Mito, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Sep. 27, 1995, Ser. No. 534,331

Claims priority, application Japan, Sep. 28, 1994, 6-259132; Dec. 28, 1994, 6-339728

Int. Cl.[6] G11B *5/706*

U.S. Cl. 428—323 1 Claim

10



1. A magnetic recording medium comprising a magnetic layer formed by painting a support film with magnetic material, said magnetic layer containing magnetic powder and a binder, mainly, wherein said magnetic powder is represented by

$$Fe\ \alpha N\beta M\gamma M^{*}\delta$$

where α, β, γ and δ satisfy the following relation:

$$0.05 \leqq \frac{\beta}{\alpha+\beta} \leqq 0.15, 0 < \frac{\gamma+\delta}{\alpha+\beta} \leqq 0.3$$

and M and M* each is selected from a group consisting of Be, Mg, Ca, Sr, Ba, Ra, Sc, Y, La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, Ti, Zr, Hf, V, Nb, Ta, Cr, Mo, W, Mn, Re, Ru, Os, Co, Rh, Ni, Pd, Cu, Zn, B, Al, Ca, In, Tl, Si, Ge, Sn, Pb, P, As, Sb, Bi, Se, Te

and has saturation magnetization σ_s of 160–210 emu/g, coersive force Hc of 1500–2500 Oe, acicular ratio of 5–15 and major axis length of 0.05–0.15 μm, and

wherein the binder contains at least one of vinyl chloride copolymer, polyvinyl chloride acetate copolymer, polyester resin and urethane resin and at least one functional group selected from a group consisting of amino group, methylol group, carboxyl group, acid amide group, isocyanate group, sulfonic acid metallic salt group, phosphate group, quaternary ammonium salt group, sulfo betaine group and epoxy group.

5,605,753

MAGNETO-PLUMBITE FERRITE PARTICLES FOR MAGNETIC CARD, PROCESS FOR PRODUCING THE SAME, AND MAGNETIC CARD USING THE SAME

Kazutoshi Sanada, and Shigehisa Yamamoto, both of Hiroshima, Japan, assignors to Toda Kogyo Corporation, Japan

Filed Jan. 27, 1994, Ser. No. 187,043

Claims priority, application Japan, Jan. 28, 1993, 5-034084

Int. Cl.[6] H01F *1/03*; C04B *35/00*; G11B *5/66*; *5/70*

U.S. Cl. 428—332 6 Claims

1. Magneto-plumbite ferrite particles for magnetic cards which are represented by the following formula:

$$AO\text{-}n\{[Fe_{1-(a+b)}Bi_aM_b]_2O_3\}$$

wherein A represents at least one metal selected from the group consisting of Ba, Sr and Ca, M represents either Co and Sn or Co, Ti and Sn, n is 5.5 to 6.1, a is 0.001 to 0.010 and b is 0.010 to 0.200,

wherein the average particle diameter of the magneto-plumbite ferrite particles is 0.3 to 3.0 μm, the plate ratio of the magneto-plumbite ferrite particles is 2:1 to 10:1, the coercive force of the magneto-plumbite ferrite particles is 300 to 3500 Oe, the saturation magnetization of the magneto-plumbite ferrite particles is not less than 47 emu/g, and the change of the coercive force of the magneto-plumbite ferrite particles with temperature in the temperature range of −10° to 120° C. is −1.5 to +1.5 Oe/°C.

5,605,754

COATED POLYCARBONATE ARTICLES

Josef G. Berndsen, Bergen op Zoom, Netherlands, and Luca P. Fontana, Brasschaat, Belgium, assignors to General Electric Company, Pittsfield, Mass.

Filed Nov. 30, 1995, Ser. No. 565,801

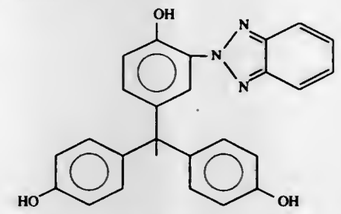
Claims priority, application European Pat. Off., Mar. 18, 1995, 95104009

Int. Cl.[6] C08K *5/34*; C08F *20/00*; C07D *249/16*

U.S. Cl. 428—339 9 Claims

1. A thermoplastic coated article comprising a protective layer of at least 5 μm and an ultra violet light sensitive substrate wherein the protective layer comprises

a blend of 2–20% by weight of a trihydricphenol-benzotriazol of the formula:



and correspondingly 98 to 80 weight % of an aromatic polycarbonate resin, an aromatic copolyester carbonate resin or an aliphatic copolyester aromatic carbonate resin.

5,605,755

LOW COST, ASBESTOS FREE FRICTION MATERIAL

Arvind S. Patil, Williamsburg, Va., and George P. Boyd, Jr., North Attleboro, Mass., assignors to Textron Systems Corporation, Wilmington, Mass.

Continuation of Ser. No. 132,762, Oct. 6, 1993, Pat. No. 5,508,109. This application Jun. 7, 1995, Ser. No. 473,435

Int. Cl.[6] D02G *3/04*

U.S. Cl. 428—364 4 Claims

1. A fiber blend for use in friction materials comprising:

a) a high surface area component, consisting essentially of fibrillated polyacrylonitrile fiber; and

b) a strength component consisting essentially of oxidized carbon fiber precursor.

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5,605,756

DISPOSABLE TOOTHBRUSH HAVING MINT FLAVORED TOOTHPASTE COMPOSITION BONDED TO BRISTLES THEREOF

Mohan L. Sanduja, Flushing, N.Y.; Kenneth Sugathan, Piscataway, N.J.; Carl Horowitz, and Lina Zilberman, both of Brooklyn, N.Y., assignors to GMZ Holding Company, Jericho, N.Y.

Continuation of Ser. No. 150,599, Nov. 10, 1993, abandoned, which is a continuation-in-part of Ser. No. 121,161, Sep. 14, 1993, abandoned. This application Mar. 23, 1995, Ser. No. 409,909

Int. Cl.[6] D02G *3/00*

U.S. Cl. 428—318 **24 Claims**

1. A toothbrush and toothpaste combination comprising:

(a) a plurality of polymeric bristles; and

(b) a toothpaste composition comprising a polymer chemically bonded to the surface of the bristles.

5,605,757

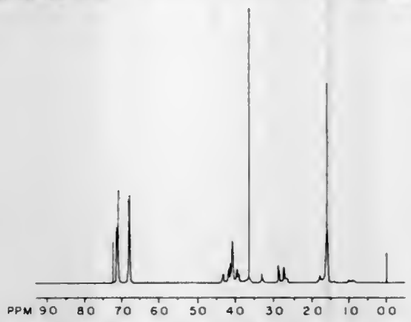
GLASS FIBER SIZING COMPOSITIONS, SIZED GLASS FIBERS AND METHODS OF REINFORCING POLYMERIC MATERIALS USING THE SAME

Michael W. Klett, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 186,963, Jan. 27, 1994, abandoned. This application Dec. 20, 1994, Ser. No. 359,778

Int. Cl.[6] B32B *9/00;* **B05D** *3/00*

U.S. Cl. 428—392 **32 Claims**



1. An aqueous sizing composition for coating a plurality of glass fibers adapted for reinforcing a thermosetting polymer, the composition comprising:

(a) a non-ionic thermosetting urethane-modified epoxy polymer which is the reaction product of (1) an epoxy and hydroxy functional polyglycidyl ether of a polyhydric alcohol having hydroxyl groups and (2) a polyfunctional isocyanate containing material having isocyanate groups, the polyglycidyl ether and the polyfunctional isocyanate containing material being reacted in the ratio of about 0.01 to about 1.0 isocyanate groups per mole of polyglycidyl ether with the ratio of isocyanate groups to hydroxyl groups in the polyglycidyl ether being no more than one;

(b) a water soluble, dispersible or emulsifiable epoxy film-forming polymer different from the urethane-modified epoxy polymer;

(c) an emulsifying agent;

(d) an organo functional silane coupling agent; and

(e) a fiber lubricant.

5,605,758

Patent Not Issued For This Number

5,605,759

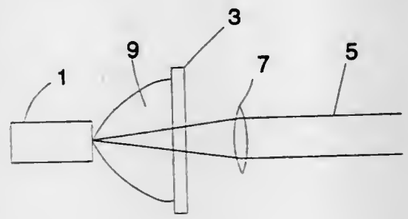
PHYSICAL VAPOR DEPOSITION OF DIAMOND-LIKE CARBON FILMS

Robert Prince, R.R. #3, Stouffville, Ontario, Canada, and Elisa Bourdon, #8 Apsco Avenue, Scarborough, Ontario, Canada

Division of Ser. No. 821,416, Jan. 14, 1992, Pat. No. 5,366,556. This application Oct. 12, 1994, Ser. No. 321,548

Int. Cl.[6] B05D *3/06*

U.S. Cl. 428—408 **11 Claims**



1. A process for production of diamond-like carbon films having at least about 4 ev bandgap comprising the steps of:

a) physically ablating a source of carbon in the vicinity of a substrate such that a carbon film grows on said substrate through bonding of carbon atoms in graphitic form and aliphatic form; and

b) physically discriminating said carbon film during growth thereof by etching or supressing said graphitic form within said carbon film while permitting said aliphatic form to remain by optical discrimination applied continuously during film growth using pulsed UV laser light having a wavelength which is opaque to graphitic forms of carbon but transparent to aliphatic forms of carbon, thereby resulting in a diamond-like carbon film.

5,605,760

POLISHING PADS

John V. H. Roberts, Newark, Del., assignor to Rodel, Inc., Newark, Del.

Filed Aug. 21, 1995, Ser. No. 517,578

Int. Cl.[6] B24B *1/00;3/60;29/00;* **B32B** *33/00*

U.S. Cl. 428—409 **8 Claims**

1. A pad useful for polishing integrated circuit wafers, said pad having at least a portion comprised of a solid uniform polymer sheet with no intrinsic ability to absorb or transport slurry particles, said polymer sheet being transparent to light having a wavelength within the range of 190 to 3500 nanometers.

5,605,761

ARTICLES EXHIBITING DURABLE COLOR CONTAINING A POLYCARBONATE, A FLUORESCENT DYE AND AN AMINE LIGHT STABILIZER

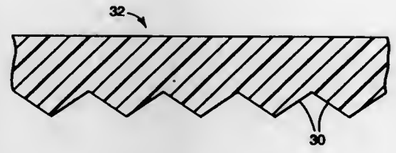
David M. Burns, Woodbury, and Lee-A. Pavelka, Cottage Grove, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 345,608, Nov. 28, 1994, abandoned. This application May 21, 1996, Ser. No. 650,964

Int. Cl.[6] B32B *27/36*

U.S. Cl. 428—412 **22 Claims**

1. An article exhibiting durable color and/or fluorescent properties comprising polymeric matrix, dye and hindered amine light stabilizer, wherein the dye contains at least one of the dyes selected



from the group of thioxanthone, perylene imide and thioindigoid compounds and polymeric matrix comprises polycarbonate.

5,605,762

POLYURETHANE SRIM COMPOSITIONS HAVING INTERNAL MOLD RELEASE PROPERTIES

Richard P. Harrison, Lincoln Park; Bari W. Brown, Trenton; Richard C. Rossio, Troy; Gladys M. Aviles, Canton; Edward M. Dexheimer, Grosse Ile, all of Mich., and David Ho, Singapore, Singapore, assignors to BASF Corporation, Mt. Olive, N.J.

Division of Ser. No. 303,995, Sep. 9, 1994, Pat. No. 5,547,608. This application May 24, 1995, Ser. No. 448,712

Int. Cl.[6] C08G *18/58*

U.S. Cl. 428—425.6 **1 Claim**

1. A molded polyurethane article having internal mold release properties, produced by the process of

providing a mold;

placing in the mold, a composition comprising:

I.) an isocyanate component; and

II.) an isocyanate-reactive polyol component, comprising:

A.) at least one polyoxyalkylene polyether polyol having as an initiator an aromatic diamine with vicinal amino groups as an initiator; and

B.) an effective amount of an internal mold release composition, consisting of:

a.) from 1 to 50 pbw of a secondary hydroxyl functional polydimethylsiloxane, based on the weight of the internal mold release composition; and,

b.) from 50 to 99 pbw of an epoxidized 2-ethylhexyl tallate ester, based on the weight of the internal mold release composition;

wherein the isocyanate reactive polyol component (II) is substantially free of separation behavior with respect to the internal mold release composition (B); and

allowing the composition to react within the mold for a time sufficient to produce a molded polyurethane article having internal mold release properties; and

removing the molded polyurethane article from the mold.

5,605,763

ELECTRICALLY CONDUCTIVE BONDING FILMS

Masami Yusa, Shimodate; Shinji Takeda, Tsukuba; Takashi Masuko, Tsukuba; Yasuo Miyadera, Tsukuba, and Mitsuo Yamazaki, Takahagi, all of Japan, assignors to Hitachi Chemical Company Ltd., Japan

Continuation of Ser. No. 122,868, Sep. 16, 1993, abandoned. This application Nov. 20, 1995, Ser. No. 560,182

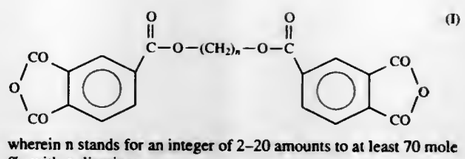
Claims priority, application Japan, Sep. 16, 1992, 4-245395; Sep. 17, 1992, 4-247758; Aug. 4, 1993, 5-193452

Int. Cl.[6] B32B *27/18;* **C90J** *7/00*

U.S. Cl. 428—473.5 **9 Claims**

1. An electrically conductive bonding film which is non-sticky at room temperature, consisting essentially of a resin film comprising

(A) a polyimide resin obtained by reacting a tetracarboxylic dianhydride component, in which the content of a tetracarboxylic dianhydride represented by the following formula (I):



(I)

wherein n stands for an integer of 2–20 amounts to at least 70 mole %, with a diamine;

(B) 1–8000 parts by weight of an electrically conductive filler per 100 parts by weight of the polyimide resin; and

(C) 0–200 parts by weight of a thermosetting resin or a compound capable of forming a thermosetting resin when heated per 100 parts by weight of the polyimide resin.

5,605,764

ARTICLE CONTAINING A WATER-DISPERSIBLE ADHESIVE COMPOSITION

Richard A. Miller; Scott E. George; Theron E. Parsons, III, and Mark A. Montgomery, all of Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Division of Ser. No. 283,011, Jul. 29, 1994, Pat. No. 5,543,488, which is a continuation-in-part of Ser. No. 175,330, Dec. 29, 1993, abandoned. This application Oct. 31, 1995, Ser. No. 551,184

Int. Cl.[6] C08G *63/68;* **B32B** *27/06*

U.S. Cl. 428—480 **15 Claims**

1. An article of manufacture comprising a hot melt adhesive composition laminated between two substrates, wherein said hot melt adhesive composition comprises a branched water-dispersible polyester composition made of the moieties of reaction products;

(I) at least one difunctional dicarboxylic acid which is not a sulfomonomer;

(II) about 2 to 25 mol percent, based on the total of all acid, hydroxyl and amino equivalence, of residues of at least one difunctional sulfomonomer containing at least one sulfonate group bonded to an aromatic ring wherein the functional groups are hydroxyl, carboxyl, or amino;

(III) at least one diol or a mixture of a diol and a diamine comprising:

(A) about 0.1 to 85 mol percent, based on the total mol percent of diol moieties or diol and diamine moieties, of a diol or diamine having the formula $H(—OCH_2CH_2—)_nOH$ and $HRN(-(CH_2CHO-))_nNHR$ wherein n is 2 to about 20 and R is hydrogen or C_1–C_6 alkyl provided that the mol percent of such moieties is inversely proportional to the value of n;

(B) about 0.1 to about 15 mol percent, based on the total mol percent of diol moieties or diol and diamine moieties, of moieties of a poly(ethylene glycol) having the formula $H(—OCH_2CH_2—)_nOH$ wherein n is 2 to about 500, provided that the mol percent of such moieties is inversely proportional to the value of n; and

(C) 0 to no greater than about 99 mol percent of the diol component or diol and diamine mixture being selected from the group consisting of a glycol-and a mixture of glycol and diamine having two —NRH groups, the glycol containing two $—C(R^1)_2—OH$ groups wherein R^1 in the reactant is a hydrogen atom, an alkyl of 1 to 5 carbon atoms, or an aryl group of 6 to 10 carbon atoms;

(IV) 0 to about 40 mol % of a difunctional monomer reactant selected from the group consisting of hydroxycarboxylic acids having one $—C(R—)_2—OH$ group, aminocarboxylic acids having one —NRH group, aminoalkanols having one $—C(R—)_2OH$ group and one —NRH group and mixtures of said difunctional reactants wherein R in the reactant is hydrogen or an alkyl group of 1 to 6 carbon atoms; and

(V) about 0.1 to 40 mol % of a multifunctional reactant containing at least three functional groups selected from the group consisting of hydroxyl, carboxyl, amino, and mixtures thereof;

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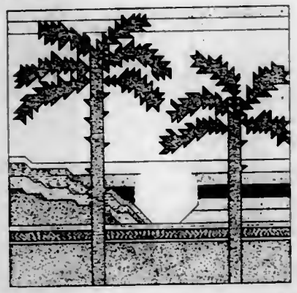
the polymer containing substantially equal mol proportions of acid equivalents (100 mol %) and diol or diol and diamine equivalents (100 mol %) wherein at least 20 weight percent of the groups linking the moieties of the monomeric units are ester linkages and wherein the inherent viscosity is at least 0.2 dL/g measured in a 60/40 parts by weight solution of phenol/tetrachloroethane at 25° C. and at a concentration of about 0.25 g of polymer in 100 ml of the solvent, the glass transition temperature T_g is no greater than 20° C., and the ring and ball softening point (RBSP) is at least 70° C.

5,605,765

DECORATIVE COMPOSITE ARTICLE AND METHOD OF MAKING A DECORATIVE PATTERN

Dan Rudick, Petach Tikva, Israel, assignor to Magma Industries (ILUM) Ltd., Petach Tikva, Israel

Filed Dec. 6, 1994, Ser. No. 354,103
Int. Cl.[6] B32B *9/00*
U.S. Cl. 428—484 **111 Claims**



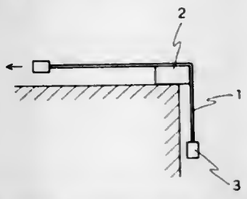
1. An elongated composite article having a longitudinal axis, a front face and a rear face, which elongated article comprises a plurality of elongated wax rods, each wax rod extending generally parallel to the longitudinal axis and having a distinct color, wherein the plurality of wax rods define a decorative pattern throughout the elongated composite article including on the front and rear faces and at any cross-section taken in a direction generally perpendicular to the longitudinal axis, and wherein the elongated article comprises greater than about 30 wax rods per square centimeter of cross-sectional area.

5,605,766

THERMAL TRANSFER RECORDING MEDIUM

Takao Arimura, and Motoshi Morimoto, both of Osaka, Japan, assignors to Fujicopian Co., Ltd., Osaka, Japan

Filed Dec. 15, 1994, Ser. No. 356,652
Claims priority, application Japan, Dec. 16, 1993, 5-316632
Int. Cl.[6] B41M *5/26*
U.S. Cl. 428—488.4 **5 Claims**



1. A thermal transfer recording medium comprising a foundation, and a release layer and a heat-meltable colored ink layer provided on the foundation in that order, the release layer containing 50 to 100% by weight of a polyethylene wax having a melting or softening point of not lower than 100° C., the heat-meltable colored ink layer comprising a coloring agent and a vehicle, the vehicle containing 50 to 100% by weight of carnauba wax.

5,605,767

HARDENED AND FIRE RETARDANT WOOD PRODUCTS

B. Shannon Fuller, Nashville, Tenn.; W. Dale Ellis, McFarland, and Roger M. Rowell, Madison, both of Wis., assignors to Triangle Pacific Corporation, Dallas, Tex.

Continuation of Ser. No. 574,469, Dec. 8, 1995, which is a continuation of Ser. No. 74,772, Jun. 9, 1993, abandoned. This application Feb. 2, 1996, Ser. No. 594,635
Int. Cl.[6] B32B *23/08*
U.S. Cl. 428—514 **5 Claims**

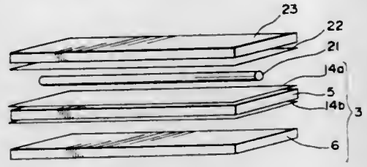
1. A multiple ply board including at least one hardened ply comprising: wood impregnated with from 30% to 80% by weight based on the weight of the wood of a polymerized monomer selected from the group consisting of hexanediol diacrylate and hexanediol dimethacrylate.

5,605,768

MAGNETIC MARKER AND MANUFACTURING METHOD THEREFOR

Shinji Furukawa; Kazuki Oka, both of Kyoto; Nobuyoshi Yano; Toshiyuki Hirano, both of Uji, and Isamu Ogasawara, Otsu, all of Japan, assignors to Unitika Ltd., Hyogo, Japan

Filed Dec. 6, 1995, Ser. No. 568,432
Claims priority, application Japan, Dec. 8, 1994, 6-304721
Int. Cl.[6] G08B *13/24*
U.S. Cl. 428—611 **17 Claims**



1. A magnetic marker comprising at least one wire member made of a first magnetic material and a plane member made of a second magnetic material, said plane member having uniaxial magnetic anisotropy, wherein said wire member contacts substantially to said plane member and an angle of magnetic easy axis of said plane member relative to a longitudinal direction of said wire member is between 40° and 90°.

5,605,769

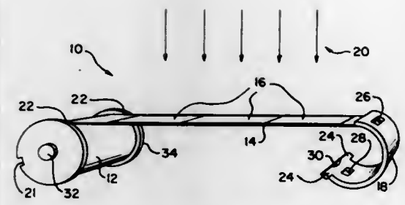
METHOD AND APPARATUS FOR SUPPLYING ELECTRICAL ENERGY TO BATTERY POWERED EQUIPMENT

Dennis J. Toms, 1750 30th St. #612, Boulder, Colo. 80301

Filed Jul. 3, 1995, Ser. No. 498,659
Int. Cl.[6] H01L *31/045*
U.S. Cl. 429—9 **23 Claims**

1. A method of supplying electrical energy to an item of equipment requiring electrical power and having a compartment for at least one removable battery, comprising the steps of:

(a) inserting in said compartment a rechargeable storage means for storing electrical energy together with a flexible member wrapped around said rechargeable storage means and containing a conversion means for converting light to electrical



energy, said flexible member compactible by furling and extensible by unfurling;

(b) establishing electrical connection between said rechargeable storage means and said item of equipment;

(c) utilizing said item of equipment until said rechargeable storage means is at least partially discharged;

(d) removing said rechargeable storage means together with said flexible member from said compartment;

(e) unfurling said flexible member so as to form a substantially flat surface;

(f) placing said rechargeable storage means together with said flexible member in such location and position that light impinges on said conversion means when said location is illuminated;

(g) conducting electrical charge from said conversion means to said rechargeable storage means as light impinges on said conversion means;

(h) waiting a period of time until said rechargeable storage means is at least partially recharged as a result of light impinging on said conversion means;

(i) compacting said flexible member by furling same around said rechargeable storage means so that said rechargeable storage means together with said flexible member may be manipulated to fit within said compartment;

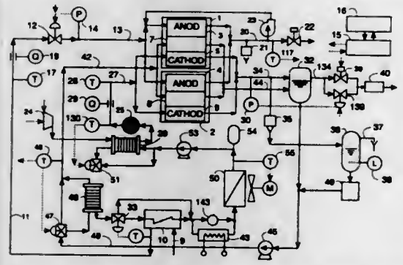
(j) reinserting said rechargeable storage means together with said flexible member in said compartment.

5,605,770

SUPPLY SYSTEM FOR FUEL CELLS OF THE S.P.E. (SOLID POLYMER ELECTROLYTE) TYPE FOR HYBRID VEHICLES

Giuseppe L. Andreoli, Alessandria, and Flavio Federici, Genoa, both of Italy, assignors to Finmeccanica S.p.A. Azienda Ansaldo, Genoa, Italy

Filed Mar. 11, 1996, Ser. No. 613,836
Claims priority, application European Pat. Off., May 4, 1995, 95830179
Int. Cl.[6] H01M *8/04*
U.S. Cl. 429—20 **10 Claims**



1. A supply system for fuel cells of the solid polymer electrolyte for vehicles, comprising a stack of fuel cells, a first subsystem for supplying the cells with hydrogen, a second subsystem for supplying the cells with compressed air and a primary cooling and humidifying circuit for the cells with forced circulation of pressurised, demineralised water, said supply system further comprising:

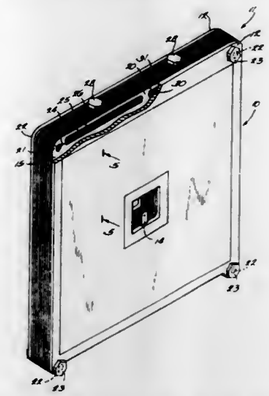
a secondary cooling circuit with forced circulation of a secondary liquid, including a first liquid/liquid exchanger traversed in countercurrent by the secondary liquid and by the demineralised water of the primary circuit, a second air/liquid heat exchanger traversed by the secondary liquid and the compressed air for cooling the latter to a working temperature for the cells and a radiator traversed by the secondary liquid for cooling it with ambient air.

5,605,771

COMPONENT DESIGN FOR AN ELECTRIC ENERGY STORING DEVICE

Phillip A. Eidler, Muskego, and Eric Loppnow, Milwaukee, both of Wis., assignors to ZBB Technologies, Inc., Wauwatosa, Wis.

Filed Oct. 26, 1995, Ser. No. 547,744
Int. Cl.[6] H01M *2/40;6/46*
U.S. Cl. 429—72 **11 Claims**



1. A component for an electric energy storing device, the component comprising:

a first nonconductive frame having an opening and a perimeter;

a plastic sheet having a peripheral edge and an opening, the peripheral edge of the plastic sheet mounted on the first frame; and

a second nonconductive frame having an opening and a perimeter which is less than the perimeter of the first frame and mounted on the opening of the plastic sheet.

5,605,772

COMPOSITE CARBON/POLYMER ELECTRODE FOR A RECHARGEABLE ELECTROCHEMICAL LITHIUM CELL

Rachid Yazami, Saint Nazaire Les Eymes; Marc Deschamps, Belley, and Michel Moreau, Clichy, all of France, assignors to Le Carbone Lorraine, Courbevoie, France

Filed Sep. 8, 1995, Ser. No. 525,006
Claims priority, application France, Sep. 9, 1994, 94 10998
Int. Cl.[6] H01M *4/36;10/40*
U.S. Cl. 429—190 **17 Claims**

11. A rechargeable electrochemical lithium cell comprising an electrolyte, a negative electrode and a positive electrode with a base of transition metal oxide selected from the group consisting of lithiated oxides of cobalt, nickel, manganese, vanadium, and mixtures thereof.

said negative electrode comprising a composite carbon/polymer electrode comprising a carbonaceous material and a coating polymer rendered ionically conductive by the addition of a lithium salt, said carbonaceous material containing and amount of volatile matter between 5 an 22 wt %.

5,605,773

LITHIUM MANGANESE OXIDE COMPOUND AND METHOD OF PREPARATION

Paul C. Eligen, Oklahoma City, Okla., assignor to Kerr-McGee Corporation, Oklahoma City, Okla.

Filed Dec. 6, 1995, Ser. No. 568,225
Int. Cl.[6] H01M *10/40; 4/50*
U.S. Cl. 429—194 **48 Claims**

1. A method for manufacturing $Li_2M_bMn_{2-b}O_4$ comprising the steps of:

a. Providing $LiM_bMn_{2-b}O_4$ wherein M is selected from the group consisting of Al, Ti, V, Cr, Fe, Co, Ni, and Cu and b is from about 0.001 to about 1.999;

b. Providing a source of lithium;

c. Providing a liquid medium in which lithium generates solvated electrons or the reduced form of an electron-transfer catalyst;

d. Dissolving lithium from the lithium source in the liquid medium; and

e. contacting the $LiM_bMn_{2-b}O_4$ with the liquid medium containing the dissolved lithium and the solvated electrons or the reduced form of the electron-transfer catalyst.

5,605,774

IONICALLY PERMEABLE SEPARATOR FOR LECLANCHE CELL

Ronald J. Ekern, Verona; Janna L. Rose, and Miguel E. Armacanqui, both of Madison, all of Wis., assignors to Rayovac Corporation, Madison, Wis.

Division of Ser. No. 526,762, Sep. 11, 1995, which is a continuation-in-part of Ser. No. 275,019, Jul. 13, 1994. This application May 13, 1996, Ser. No. 645,307
Int. Cl.[6] H01M *2/16*
U.S. Cl. 429—248 **13 Claims**



1. An ionically permeable separator configured for use in a Heavy Duty LeClanche cell, the separator comprising a Kraft paper substrate and a coating on the substrate, the coating being selected for an ability to inhibit corrosion of a zinc anode, the coating comprising an organic inhibitor, an inorganic inhibitor, a binding agent, and a starch.

5,605,775

PHOTOMASK USED BY PHOTOLITHOGRAPHY AND A PROCESS OF PRODUCING SAME

Hisashi Watanabe, Kyoto, Japan, assignor to Matsushita Electronics Corporation, Osaka, Japan

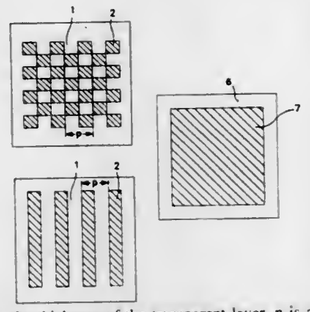
Continuation of Ser. No. 718,337, Jun. 19, 1991. This application Jun. 24, 1993, Ser. No. 81,835
Claims priority, application Japan, Jun. 21, 1990, 2-163343
Int. Cl.[6] G03F *9/00*
U.S. Cl. 430—5 **15 Claims**

1. A photomask comprising:

a transparent substrate; and

patterns of a transparent layer covering an area, wherein said transparent layer has a thickness t defined by the following formula,

$$t=(2i-1)\lambda/[2(n-1)]$$



where t is the thickness of the transparent layer, n is a refractive index of the transparent layer, i is an integer and λ is a wavelength of an incident light to the photomask,

thereby providing a phase difference of π multiplied by an odd number between light transmitted through the transparent substrate and light transmitted through the transparent layer;

and wherein said patterns of the transparent layer are arranged with a pitch p not larger than four times of a resolution limit R of an optical system defined by the following formula,

$$R=K_1\lambda/NA$$

where K_1 is an optical constant of the photomask, λ is a wavelength of an incident light and NA is a numerical aperture of a lens;

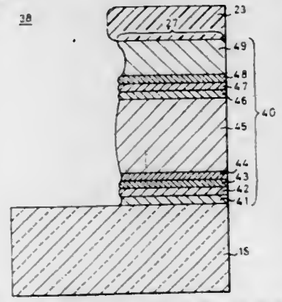
whereby the light transmitted through the transparent substrate and the light transmitted through the transparent layer interfere with each other to reduce the light intensity in the whole area covered by said arranged patterns of the transparent layer.

5,605,776

PHASE-SHIFTING PHOTOMASK BLANK, PHASE-SHIFTING PHOTOMASK, AND METHOD OF MANUFACTURING THEM

Akihiko Isao; Susumu Kawada; Atsushi Hayashi, all of Chichibu; Nobuyuki Yoshioka, and Kazuyuki Maetoko, both of Itami, all of Japan, assignors to Ulvac Coating Corporation, Chichibu, and Mitsubishi Denki Kabushiki Kaisha, Tokyo, both of Japan

Filed Aug. 15, 1995, Ser. No. 515,165
Claims priority, application Japan, Mar. 24, 1995, 7-091401
Int. Cl.[6] G03F *9/00*
U.S. Cl. 430—5 **28 Claims**



1. A method of manufacturing a phase-shifting photomask blank, comprising the steps of:

depositing a phase-shifting film on a transparent substrate such that the phase-shifting film includes a transversely central composition;

reducing the rate of side etching of the transversely central composition;

masking the phase-shifting film with a patterned photoresist film; and

dry-etching said phase-shifting film through said patterned photoresist film while substantially equalizing transversely different rates of side etching of the phase-shifting film due to said reduced rate of side etching resulting from said transversely central composition.

5,605,777

METHOD AND APPARATUS FOR REGENERATING IMAGE HOLDING MEMBER

Kazuhiro Ando, Tokyo; Yoshiaki Miyashita, Kawasaki; Youichi Asaba; Kiyoshi Tanikawa, both of Yokohama; Satoshi Singuryo, Kawasaki; Shinichi Kuramoto, Numazu; Sadao Takahashi; Yoshiyuki Kimura, both of Tokyo; Tadashi Saito, Yokohama; Mitsuru Ohminato, Yokohama; Masaru Nakano, Yokohama, and Eiichi Kawamura, Numazu, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 213,152, Mar. 14, 1994, abandoned, which is a continuation-in-part of Ser. No. 115,194, Aug. 31, 1993, Pat. No. 5,474,617. This application Nov. 27, 1995, Ser. No. 563,131
Claims priority, application Japan, Aug. 31, 1992, 4-255915; Aug. 31, 1992, 4-255916; Apr. 8, 1993, 5-106062; Apr. 27, 1993, 5-123344; Jul. 21, 1993, 5-201169; Aug. 31, 1993, 5-239075
Int. Cl.[6] G03G *13/095*
U.S. Cl. 430—97 **20 Claims**

1. A method for regenerating an image holding member in which at least one portion of the image holding member is constructed by paper;

an image is constructed by an image forming substance fixed on a paper layer of the image holding member and

at least one kind of water or aqueous solution is selected from a group of water, an aqueous solution including a surfactant, an aqueous solution including a water-soluble polymer, and an aqueous solution including a water-soluble polymer and a surfactant;

the regenerating method comprising the steps of: impregnating the paper layer of the image holding member having the image forming substance with said at least one kind of water or aqueous solution so as to reduce an adhesive force between the image forming substance and the image holding member; and

separating the image forming substance from the paper layer of the image holding member through an image separating member by heating adhesion or pressure adhesion.

5,605,778

TONER WITH WAX COMPONENT FOR DEVELOPING ELECTROSTATIC IMAGE

Tsutomu Onuma, Yokohama; Satoshi Matsunaga, Tokyo; Manabu Ohno, Funabashi, and Minoru Shimojo, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 3, 1996, Ser. No. 627,112
Claims priority, application Japan, Apr. 7, 1995, 7-107051
Int. Cl.[6] G03G *9/097*
U.S. Cl. 430—110 **21 Claims**

1. A toner for developing an electrostatic image, comprising: a binder resin, a colorant or a magnetic material, and a wax component; wherein the wax component provides a DSC curve on temperature increase, as measured by a differential scanning calorimeter, showing a minimum onset temperature of heat absorption of at least 50° C. and at least two heat absorption peaks including a largest peak and a second largest peak of which a lower temperature peak P_1 and a higher temperature peak P_2 have a peak temperature difference therebetween of at least 15° C., the lower temperature peak P_1 shows a half-value width of at most 20° C. between a lower half-width temperature L_1P and a higher half-width temperature H_1P, and the higher temperature peak P_2 shows a half-value width of at most 20° C. between a lower half-width temperature L_2P and a higher half-width temperature H2P, satisfying:

$$L_2P-H_1P\geqq 5° C.$$

5,605,779

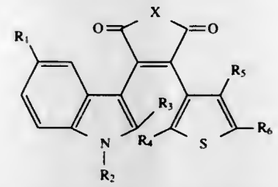
OPTICAL MEMORY MEDIUM

Masahiro Irie, Kasuga, and Kazuo Van, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 25, 1993, Ser. No. 23,817
Claims priority, application Japan, Feb. 27, 1992, 4-041143
Int. Cl.[6] G11B *7/24*
U.S. Cl. 430—270.15 **7 Claims**

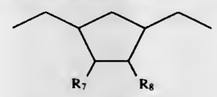
1. An optical memory medium comprising a recording layer formed by dispersing a photochromic material in a polymeric binder and a transparent substrate,

wherein said photochromic material includes a diarylethene derivative represented by the formula



where R_1 is a hydrogen atom, an alkoxy group, or a straight-chain or branched alkyl group having from 1 to 20 carbons, each of R_2, R_3, R_4 and R_5 is a straight-chain or branched alkyl group having from 1 to 20 carbons, R_6 is a cyano group or an alkoxy carbonyl group, and X is an oxygen atom or a substituted or unsubstituted nitrogen atom, and

wherein said polymeric binder includes a non-polar polymeric molecule having the repeating unit



wherein R_7 and R_8 are a hydrocarbon.

5,605,780

LITHOGRAPHIC PRINTING PLATE ADAPTED TO BE IMAGED BY ABLATION

Mitchell S. Burberry, Webster; Charles D. DeBoer, Rochester, and Sharon W. Weber, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 12, 1996, Ser. No. 614,437
Int. Cl.[6] G03F *7/09*
U.S. Cl. 430—278.1 **15 Claims**

1. A lithographic printing plate comprising an anodized aluminum support and an image-forming layer overlying said support; said image-forming layer comprising an infrared-absorbing agent dispersed in a film-forming polymeric binder; said film-forming polymeric binder being a cyanoacrylate polymer and said infrared-absorbing agent being dispersed therein in an amount sufficient for said image-forming layer to be imaged by laser-induced thermal ablation which completely removes said image-forming layer in exposed regions thereof to thereby reveal said underlying support.

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5,605,781

PHOTOSENSITIVE COMPOSITION WITH CYANATE ESTERS AND USE THEREOF

Jeffrey D. Gelorme; Eugene R. Skarvinko, both of Binghamton, and David W. Wang, Vestal, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 348,944, Nov. 25, 1994, Pat. No. 5,464,726, which is a division of Ser. No. 382,311, Jul. 20, 1989, abandoned. This application Jun. 7, 1995, Ser. No. 483,976

Int. Cl.[6] G03F *7/0269;7/039;7/004*

U.S. Cl. 430—280.1 **15 Claims**

1. A positive photosensitive composition containing a curable cyanate ester or a prepolymer thereof and a cationic photoinitiator that generates a Bronsted acid upon exposure to actinic light wherein said cyanate ester is a polyaromatic cyanate ester containing cycloaliphatic bridging group between aromatic rings.

9. The photosensitive composition of claim **1** which further includes an organic monomer or organic polymer, or both.

10. The photosensitive composition of claim **9** wherein said organic polymer is an epoxy polymer.

5,605,782

METHOD OF MAUFACTURING A MASTER DISC AND AN APPARATUS FOR CARRYING OUT THE METHOD

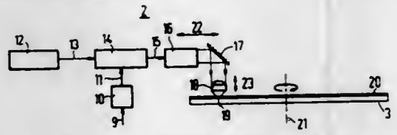
Paul L. M. Put, and Albericus A. M. Hoevenaars, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 22, 1994, Ser. No. 362,622

Claims priority, application Belgium, Dec. 24, 1993, 09301461; European Pat. Off., Aug. 5, 1994, 94202262

Int. Cl.[6] G11B *7/26;7/007;7/125*

U.S. Cl. 430—321 **14 Claims**



1. A method of manufacturing a master disc for use in replicating optical information carriers by recording information comprising information units in said master disc, said method comprises the steps:

scanning the master disc with a radiation beam;

modulating, in power, the radiation beam with the information thereby exposing a photoresist layer of the master disc to form a pattern of short and long exposed areas; and

subsequently developing the photoresist to form a pattern of information areas, the beginning and duration of the exposure for each exposed area being determined by the associated information unit, characterized in that the exposure dose has substantially a constant value over the length of each recorded area, said constant value being independent of said length.

5,605,783

PATTERN TRANSFER TECHNIQUES FOR FABRICATION OF LENSLET ARRAYS FOR SOLID STATE IMAGERS

Joseph F. Revelli; Jeffrey I. Hirsh; Joseph Jech, all of Rochester; Douglas R. Robello, Webster; Stephen P. Barry, Albion, and Alan C. G. Nutt, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 6, 1995, Ser. No. 369,235

Int. Cl.[6] G03F *7/40*

U.S. Cl. 430—321 **14 Claims**

1. A method for forming lenslets which collect light and focus the light onto photosensitive elements of an electronic imager, comprising the steps of:

(a) providing a transparent lenslet-forming layer which includes an organic material on a substrate or on layer(s) on the substrate;

(b) forming a thin etch-stop layer which includes a photosensitive resin layer containing metallic elements on the transparent lenslet-forming layer and patterning the etch-stop layer to form a mask so that the patterned etch-stop layer corresponds to lenslets to be formed;

(c) anisotropically plasma etching the transparent lenslet-forming layer according to the pattern in the etch-stop layer to form a patterned transparent layer;

(d) removing the patterned etch-stop layer by a freon plasma followed by an oxygen plasma or a plasma containing freon and oxygen; and

(e) thermally reflowing the patterned transparent layer to form the transparent lenslets.

5,605,784

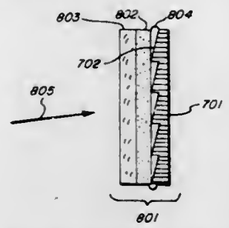
LIPPMANN PROCESS OF COLOR PHOTOGRAPHY, WHICH PRODUCES A PHOTOGRAPH WITH A 2-DIMENSIONAL IMAGE, TO RESULT IN ANOTHER PROCESS OF COLOR PHOTOGRAPHY, WHICH PRODUCES A PHOTOGRAPH WITH A 3-DIMENTIONAL IMAGE

George M. Sawyer, 7251 Garden Grove Blvd., Ste. E, Garden Grove, Calif. 92641

Continuation of Ser. No. 292,318, Aug. 19, 1994, Pat. No. 5,449,597, which is a continuation of Ser. No. 168,274, Dec. 15, 1993, abandoned, which is a continuation of Ser. No. 737,889, Jul. 25, 1991, abandoned, which is a continuation of Ser. No. 291,535, Dec. 27, 1988, abandoned, which is a division of Ser. No. 920,782, Oct. 20, 1986, Pat. No. 4,835,090, which is a continuation-in-part of Ser. No. 699,504, Feb. 8, 1985, abandoned, which is a continuation of Ser. No. 539,640, Oct. 5, 1983, abandoned, which is a continuation of Ser. No. 348,610, Feb. 12, 1982, abandoned, which is a continuation of Ser. No. 72,209, Sep. 4, 1979, abandoned, which is a continuation of Ser. No. 72,197, Sep. 14, 1970, Pat. No. 4,178,181, which is a continuation of Ser. No. 544,275, Apr. 21, 1966, abandoned. This application May 22, 1995, Ser. No. 445,776

Int. Cl.[6] G03C *1/765;1/825;5/10;7/00*

U.S. Cl. 430—367 **8 Claims**



1. A method of reducing undesired specular surface reflections from a reflecting surface, wherein the reflecting surface is the surface of an interference photograph where the interference photograph is the photograph that results from the use of

a layered photosensitive assembly comprising

a photosensitive layer, and

a reflecting layer.

wherein during exposure, incident light passes through the photosensitive layer and is reflected by the reflecting layer as reflected light, and the incident light and the reflected light interfere with each other within the photosensitive layer and form interference patterns of light waves which are recorded by the photosensitive layer,

the method comprising the following steps:

1. obtain the reflecting surface from which specular reflection is to be reduced, and

2. obtain a transparent sheet comprising a surface characterized as being covered with a multiplicity of small surfaces angled with respect to the general plane of the sheet, and

3. overlay the reflecting surface with the sheet.

5,605,785

ANNEALING PROCESSES FOR NANOCRYSTALLIZATION OF AMORPHOUS DISPERSIONS

John Texter, Rochester, and David A. Czekai, Honeoye Falls, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 28, 1995, Ser. No. 412,252

Int. Cl.[6] G03C *1/815;7/30*

U.S. Cl. 430—546 **26 Claims**

1. A process for forming a nanocrystalline dispersion of a photographically useful compound in a continuous phase comprising the steps of:

providing a nanoamorphous dispersion of said photographically useful compound in said continuous phase, and

annealing said nanoamorphous dispersion to transform the physical state of said chemical compound therein to a crystalline physical state and to thereby obtain a nanocrystalline dispersion.

5,605,786

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT SENSITIVE MATERIAL CONTAINING A NAPHTHOLIC COUPLER WHICH CONTAINS AN ELECTRON TRANSFER AGENT GROUP

Naoki Saito, and Toshihiro Nishikawa, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

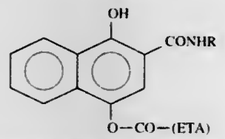
Filed Apr. 4, 1995, Ser. No. 416,193

Claims priority, application Japan, Apr. 6, 1994, 6-090751

Int. Cl.[6] G03C *7/305;7/34*

U.S. Cl. 430—553 **19 Claims**

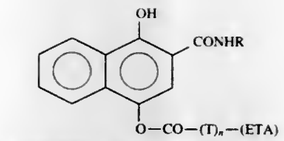
1. A silver halide color photographic light-sensitive material comprising a support having thereon at least one hydrophilic colloid layer, wherein at least one of said hydrophilic colloid layer(s) is a silver halide red sensitive emulsion layer and wherein said red sensitive emulsion layer contains a coupler represented by formula (1)A:



(1)A

wherein R is a ballast group and represents an alkyl group, an aryl group, or a heterocyclic group; and ETA represents a group functioning as an electron transfer agent after cleavage from —O—CO—.

9. A silver halide color photographic light-sensitive material comprising a support having thereon at least one hydrophilic colloid layer, wherein at least one of said hydrophilic colloid layer(s) is a silver halide light-sensitive emulsion layer and wherein at least one of said hydrophilic colloid layer(s) contains a coupler represented by formula (1)B:



(1)B

wherein R represents a hydrogen atom, an alkyl group, an aryl group, or a heterocyclic group and is not a ballast group; T represents a ballasted divalent linking group bonded to the —O—CO— group via an atom other than a carbon atom; n represents 1 or 2; and ETA represents a group functioning as an electron transfer agent after cleavage from —O—CO—$(T)_n$.

5,605,787

3-ANILINO PYRAZOLONE MAGENTA COUPLERS AND PROCESS

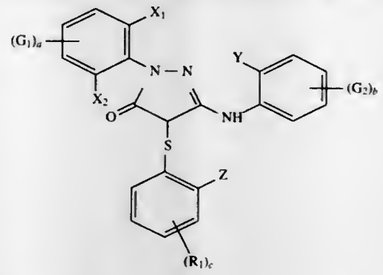
John L. Pawlak; David S. Bailey, both of Rochester; William R. Schleigh, Brockport; Charles E. Romano, Jr.; Paul B. Merkel, both of Rochester, and Sundaram Krishnamurthy, Penfield, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 83,842, Jun. 25, 1993, Pat. No. 5,447,830, which is a continuation-in-part of Ser. No. 872,576, Apr. 23, 1992, abandoned, which is a continuation-in-part of Ser. No. 689,436, Apr. 23, 1991, Pat. No. 5,298,368. This application Mar. 8, 1995, Ser. No. 400,731

Int. Cl.[6] G03C *7/38*

U.S. Cl. 430—555 **24 Claims**

1. A photographic element comprising a support bearing at least one silver halide emulsion layer having associated therewith a 5-pyrazolone photographic coupler represented by the formula:



wherein

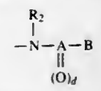
a) substituents X_1, X_2, Y, G_1, and G_2 are individually selected from the group consisting of halogen, alkyl, alkoxy, aryloxy, acylamino, alkylthio, arylthio, sulfonamido, sulfamoyl, sulfamido, carbamoyl, diacylamino, alkoxycarbonyl, aryloxycarbonyl, alkoxysulfonyl, aryloxysulfonyl, alkylsulfonyl, alkylsulfoxyl, arylsulfoxyl, arylsulfonyl, alkoxycarbonylamino, aryloxycarbonylamino, alkylureido, arylureido, acyloxy, nitro, cyano, trifluoromethyl and carboxy and, in the case of X_1, X_2 and Y, hydrogen;

b) a, b, and c are individually integers from 0 to 3 provided that "a" cannot be an integer which, combined with the selection of X_1 and X_2, allows the number of chloride substituents on the ring containing G_1 to exceed 3;

c) R_1 is selected from the group consisting of G_1 and hydroxyl;

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d) Z is an amine group of the formula:



wherein R_2 is selected from the group consisting of hydrogen, alkyl, alkenyl, aryl, acyl, and heterocyclic;

A is carbon and d is 1;

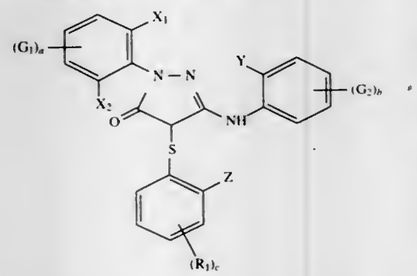
B is bonded to A by a carbon atom of said group B, wherein B has the formula:



wherein R_3, R_4, and R_5 are individually selected from the group consisting of hydrogen, halogen, alkyl, aryl, heterocyclic group and W, wherein W is selected from the group consisting of $—OR_6$, $—SR_6$, and $—NR_7R_8$, wherein R_6 is selected from the group consisting of alkyl, aryl, and heterocyclic groups, and R_7 and R_8 are individually selected from the group consisting of hydrogen, alkyl, aryl, acyl, alkylsulfonyl, arylsulfonyl and heterocyclic group, provided that at least one of R_3, R_4, and R_5 is neither hydrogen nor alkyl, and provided that two of R_3, R_4, and R_5 may join to form an aliphatic, aromatic, or heterocyclic ring and that in the case of an aromatic ring the remaining member of R_3, R_4, and R_5 is an aromatic pi bond, and provided further that the carbon forming the link to A is nonchiralic; and

e) the sum of the sigma values for X_1,X_2,G_1,G_2, and Y is at least 1.3.

15. A photographic element comprising a support bearing at least one silver halide emulsion layer having associated therewith a 5-pyrazolone photographic coupler represented by the formula:



wherein

a) substituents X_1, X_2, Y, G_1, and G_2 are individually selected from the group consisting of halogen, alkyl, alkoxy, aryloxy, acylamino, alkylthio, arylthio, sulfonamido, sulfamoyl, sulfamido, carbamoyl, diacylamino, alkoxycarbonyl, aryloxycarbonyl, alkoxysulfonyl, aryloxysulfonyl, alkylsulfonyl, alkylsulfoxyl, arylsulfoxyl, arylsulfonyl, alkoxycarbonylamino, aryloxycarbonylamino, alkylureido, arylureido, acyloxy, nitro, cyano, trifluoromethyl and carboxy and, in the case of X_1, X_2 and Y, hydrogen;

b) a, b, and c are individually integers from 0 to 3 provided that "a" cannot be an integer which, combined with the selection of X_1 and X_2, allows the number of chloride substituents on the ring containing G_1 to exceed 3;

c) R_1 is selected from the group consisting of G_1 and hydroxyl;

d) Z is an amine group of the formula:



wherein R_2 is selected from the group consisting of hydrogen, alkyl, alkenyl, aryl, acyl, and heterocyclic;

A is carbon and d is 1;

B is bonded to A by a carbon atom of said group B, wherein B has the formula:



wherein R_3, R_4, and R_5 are individually selected from the group consisting of hydrogen, halogen, alkyl, aryl, heterocyclic group and W, wherein W is selected from the group consisting of $—OR_6$, $—SR_6$, and $—NR_7R_8$, wherein R_6 is selected from the group consisting of alkyl, aryl, and heterocyclic groups, and R_7 and R_8 are individually selected from the group consisting of hydrogen, alkyl, aryl, acyl, alkylsulfonyl, arylsulfonyl and heterocyclic group, provided that at least two of R_3, R_4, and R_5 are identical, provided further that at least one of R_3, R_4, and R_5 is neither hydrogen nor alkyl, and provided that two of R_3, R_4, and R_5 may join to form an aliphatic, aromatic, or heterocyclic ring having a plane of symmetry and that in the case of an aromatic ring the remaining member of R_3, R_4, and R_5 is an aromatic pi bond, or, in the case of a nonaromatic unsaturated aliphatic or heterocyclic ring, the remaining member of R_3, R_4, and R_5 may be a bond forming part of a double bond in the nonaromatic unsaturated aliphatic or heterocyclic ring; and

e) the sum of the sigma values for X_1,X_2,G_1,G_2, and Y is at least 1.3.

5,605,788

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Toshio Kawagishi; Takeshi Nakamine, and Masuji Motoki, all of Kanagawa, Japan; assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

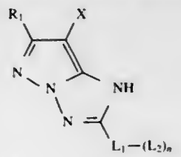
Filed Nov. 9, 1995, Ser. No. 556,141

Claims priority, application Japan, Nov. 14, 1994, 6-279295

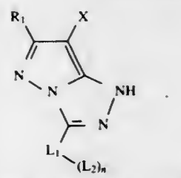
Int. Cl.[6] G03C *7/38*

U.S. Cl. 430—558 **10 Claims**

1. A silver halide color photographic material comprising a support having provided thereon at least one layer containing a pyrazolotriazole coupler represented by formula (I) or (II):



(I)



(II)

wherein R_1 represents a hydrogen atom, a halogen atom, or a substituent; X represents a hydrogen atom, a halogen atom, or a

group capable of being splitted off by the reaction with an oxidation product of a developing agent; L_1 represents an (n+1)-valent linking group; L_2 represents a group represented by formula (III); and n represents 1 or 2, and when n is 2, two L_2's may be the same or different;

$$—[(A_1)_a(B_1)_b(A_2)_c(B_2)_d(A_3)_e(B_3)_f(A_4)_g(B_4)_h] \quad \text{(III)}$$

wherein A_1, A_2, A_3 and A_4 each represents —O—, —S—, $—NR_2$—, $—N(R_2)CO$—, $—CON(R_2)$—, $—N(R_2)SO_2$—, $—SO_2N(R_2)$—, $—CO_2$—, —OCO—, $—N(R_2)CON(R_3)$—, $—OCON(R_2)$— or $—N(R_2)CO_2$—; R_2 and R_3 each represents a hydrogen atom, an alkyl group, an aryl group, an acyl group, an alkanesulfonyl group or an arenesulfonyl group; B_1, B_2 and B_3 each represents an alkylene group or an arylene group; B_4 represents an alkyl group or an aryl group; a, b, c, d, e, f and g each represents 0 or 1, h represents 1, provided that a-b=0, c-d=0 and e-f=0; and at least one group represented by R_2, R_3, B_1, B_2, B_3 and B_4 in the substituents represented by L_2 has a group represented by formula (IV):

$$—A—NH_2 \quad \text{(IV)}$$

wherein A represents —CO— or $—SO_2$—.

5,605,789

IODOCHLORIDE EMULSIONS CONTAINING IODONIUM SALTS HAVING HIGH SENSITIVITY AND LOW FOG

Benjamin T. K. Chen, Penfield, and Roger Lok, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 22, 1994, Ser. No. 361,923

Int. Cl.[6] G03C *1/035;1/34*

U.S. Cl. 430—567 **35 Claims**

1. A radiation sensitive emulsion comprised of a dispersing medium and silver iodochloride grains

WHEREIN the silver iodochloride grains

are cubical grains having at least one {111} crystal face and contain from 0.05 to 1 mole percent iodide, based on total silver, with a region of maximum Iodide concentrations confined to the exterior 50 percent of the grain,

and wherein said emulsion further comprises an iodonium salt represented by formula (I) $\{R_1I^+R_2\}$ Q^-

wherein R_1, R_2, may be independently substituted alkyl, aryl, alkylaryl, or together R_1 and R_2 may form carbocyclic, heterocyclic, aromatic, or heteroaromatic rings and Q is an anion wherein the substituent groups may comprise halogen, carboxy, amido, cyano, methoxy, alkyl, fluoroalkyl, alkoxy, aryl, hydroxy, aryloxy, alkylthio, arylthio, acyl, sulfonyl, acylamino, sulfonylamino, acyloxy, sulfo, or amino groups.

5,605,790

METHOD OF PRODUCING A SILVER HALIDE PHOTOGRAPHIC EMULSION

Yumiko Nimura; Chikao Mamiya; Haruhiko Masutomi, and Kazuyoshi Ichikawa, all of Hino, Japan, assignors to Konica Corporation, Japan

Filed Dec. 8, 1995, Ser. No. 569,654

Claims priority, application Japan, Dec. 14, 1994, 6-310769

Int. Cl.[6] G03C *1/015;11/06*

U.S. Cl. 430—569 **8 Claims**

1. A method of producing a silver halide photographic emulsion comprising

(a) preparation of a crystal growth process emulsion containing a nucleus of a silver halide grain in a reaction vessel;

(b) mixing at least a silver salt solution and a halide solution so that a fine grain emulsion containing fine grains of silver halide and unnecessary ions is formed in a mixing vessel;

(c) removing said unnecessary ions from said fine grain emulsion;

(d) thereafter introducing said fine grain emulsion into said crystal growth process emulsion in the vessel;

(e) conducting crystal growth in said crystal growth process emulsion so that said fine grains grow said nucleus into a crystal of said silver halide grain, whereby said silver halide photographic emulsion is formed.

5,605,791

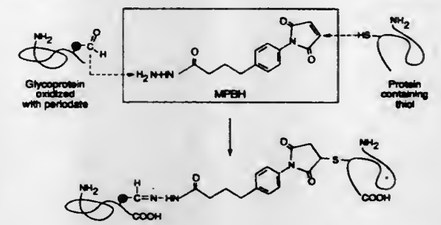
CARBOHYDRATE-DIRECTED CROSS-LINKING REAGENTS

Avi J. Ashkenazi; Steven M. Chamow, both of San Mateo, Calif., and Timothy P. Kogan, Sugar Land, Tex., assignors to Genentech, Inc., South San Francisco, Calif.

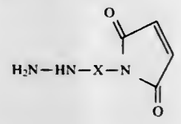
Division of Ser. No. 115,404, Sep. 1, 1993, which is a division of Ser. No. 926,077, Aug. 5, 1992, Pat. No. 5,329,028. This application Mar. 31, 1995, Ser. No. 416,402

Int. Cl.[6] C12Q *1/68;1/70;* **G01N** *33/53*

U.S. Cl. 435—5 **9 Claims**



1. A method for detecting human immunodeficiency virus (HIV) infected cells, comprising (a) contacting the cells to be tested with a conjugate comprising a CD4 molecule linked to a detectable marker via a compound of formula I



wherein X is an aliphatic hydrocarbon spacer of 6 to about 25 carbon atoms or is composed of an aliphatic hydrocarbon chain and an alicyclic or aromatic moiety having a total number of 6 to about 25 carbon atoms and has a residue which reacts with hydrazide or a hydrazide derivative linked to the hydrazide terminus and (b) detecting the signal of said marker.

5,605,792

INFECTIOUS BURSAL DISEASE VIRUS VP2 FUSION PROTEIN EXPRESSED BY BACULOVIRUS, USE AS DIAGNOSTIC

Daral J. Jackwood, and Renee J. Jackwood, both of Wooster, Ohio, assignors to The Ohio State University Research Foundation, Columbus, Ohio

Division of Ser. No. 148,252, Nov. 4, 1993, abandoned. This application May 19, 1995, Ser. No. 445,300

Int. Cl.[6] C12Q *1/70;* **C12N** *7/01;* **C07K** *19/00*

U.S. Cl. 435—5 **6 Claims**

1. A diagnostic composition comprising a diagnostically acceptable carrier and a fusion protein antigen, wherein the fusion protein antigen comprises a 314 amino acids sequence encoded by the PstI-BalI fragment of the VP2 gene of infectious bursal disease virus (IBDV) variant A, said PstI-BalI fragment containing bases 434-1377 of the VP2 gene, and said fusion protein antigen further comprises sequences from the baculovirus polyhedrin protein encoded by a PAC360 vector.

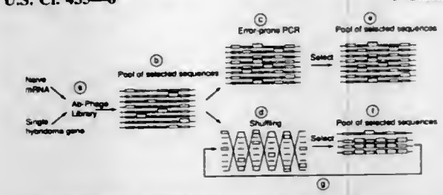
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5,605,793

METHODS FOR IN VITRO RECOMBINATION

Willem P. C. Stemmer, Los Gatos, Calif., assignor to Affymax Technologies N.V., Curaco, Netherlands Antilles

Filed Feb. 17, 1994, Ser. No. 198,431
Int. Cl.[6] C12Q *1/68*
U.S. Cl. 435—6 **5 Claims**



1. A method for forming a mutagenized double-stranded polynucleotide from a template double-stranded polynucleotide, wherein the template double-stranded polynucleotide has been cleaved into double-stranded-random fragments of a desired size, comprising:

a) adding to the resultant population of double-stranded random fragments one or more single or double-stranded oligonucleotide, wherein said oligonucleotides comprise an area of identity and an area of heterology to the double-stranded template polynucleotide;

b) denaturing the resultant mixture of double-stranded random fragments and oligonucleotides into single-stranded fragments;

c) incubating the resultant population of single-stranded fragments with a polymerase under conditions which result in the annealing of said single-stranded fragments at said areas of identity to form pairs of annealed fragments, said areas of identity being sufficient for one member of a pair to prime replication of the other thereby forming a mutagenized double-stranded polynucleotide; and

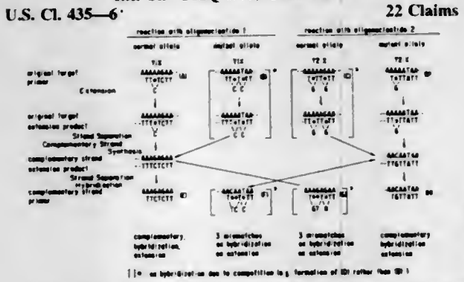
d) repeating steps b) and c) for at least two further cycles, wherein the resultant mixture in step (b) of a further cycle includes the mutagenized double-stranded polynucleotide from step c) of the previous cycle, and the further cycle forms a further mutagenized double-stranded polynucleotide.

5,605,794

METHOD OF DETECTING VARIANT NUCLEIC ACIDS

Stephan Rust; Harald Funke; Gerd Assmann, all of Munster; Christoph Kessler, Dorfen, and Rudiger Rueger, Seeshaupt, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Continuation of Ser. No. 939,479, Sep. 4, 1992, abandoned. This application Mar. 3, 1994, Ser. No. 205,777
Claims priority, application Germany, Sep. 6, 1991, 41 29 653.2
Int. Cl.[6] C12Q *1/68*; C12P *19/34*
U.S. Cl. 435—6 **22 Claims**



1. A method of detecting variant nucleic acids whose nucleotide sequences differ from one another in at least one position X, comprising the steps of:

a) in a single reaction vessel combining a set of oligonucleotides, whose nucleotide sequences differ from one another in a position which corresponds to position X and in at least one additional position Y, with the nucleic acids to be detected under hybridization conditions,

b) extending any oligonucleotides which hybridize to the nucleic acids to be detected to form extension products, wherein said nucleic acids are used as templates,

c) denaturing the complexes of said variant nucleic acids and said extension products,

d) hybridizing said extension products with an oligonucleotide, wherein at least a portion of the oligonucleotide is fully complementary to a portion of said extension products,

e) extending any oligonucleotides which hybridize to said extension products formed in step b) to form nucleic acids complementary to at least a part of said extension products,

f) combining oligonucleotides of said set of oligonucleotides of step a) with the complementary nucleic acids formed in step e),

g) extending any oligonucleotides which hybridize to the complementary nucleic acids formed in step e) to form nucleic acids, and

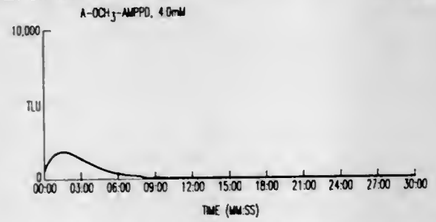
h) detecting the nucleic acids formed in step e) or step g).

5,605,795

ASSAYS USING CHEMILUMINESCENT, ENZYMATICALLY CLEAVABLE SUBSTITUTED 1,2-DIOXETANES AND KITS THEREFOR

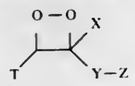
Irena Y. Bronstein, Newton, Mass., assignor to Tropix, Inc., Bedford, Mass.

Continuation of Ser. No. 990,800, Dec. 15, 1992, abandoned, which is a division of Ser. No. 574,787, Aug. 30, 1990, Pat. No. 5,112,960, which is a continuation-in-part of Ser. No. 382,125, Jul. 20, 1989, Pat. No. 4,978,614, which is a continuation-in-part of Ser. No. 265,405, Oct. 26, 1988, abandoned, which is a continuation-in-part of Ser. No. 889,823, Jul. 24, 1986. This application Jun. 7, 1994, Ser. No. 255,795
Int. Cl.[6] C12Q *1/68*
U.S. Cl. 435—6 **63 Claims**



1. A method of detecting an enzyme in a sample comprising the steps of:

(a) providing an enzymatically cleavable chemiluminescent 1,2-dioxetane compound capable of producing light energy when decomposed, substantially stable at room temperature before a bond by which an enzymatically cleavable labile substituent thereof is intentionally cleaved, represented by the formula:



wherein T is a cycloalkyl group or a fused polycyclo-alkylidene group bonded to the dioxetane ring through a spiro linkage; Y is a fluorescent chromophore capable of absorbing energy to form an excited energy state from which it emits optically detectable energy to return to its original energy state; X is hydrogen or an alkyl, aryl, aralkyl, alkaryl, heteroalkyl, heteroaryl, cycloalkyl or cycloheteroalkyl group, or an enzyme-cleavable group containing a bond cleavable by an enzyme to yield an electron-rich moiety

bonded to the dioxetane ring, Z is hydrogen, hydroxyl or an enzyme-cleavable group containing a bond cleavable by an enzyme to yield an electron-rich moiety bonded to the dioxetane ring, at least one of X and Z being an enzyme-cleavable group, and T also includes a substituent which enhances the solubility of the dioxetane in aqueous solution, or a substituent which facilitates bonding of the dioxetane to a membrane, film, bead, polymer or polymerizable group, or a substituent which enhances the kinetics of the dioxetane enzyme degradation

(b) contacting said 1,2-dioxetane compound with said sample containing said enzyme; whereupon said enzyme cleaves said enzymatically cleavable labile substituent from said 1,2-dioxetane compound to form a negatively charged substituent bonded to said 1,2-dioxetane compound, said negatively charged substituent causing said 1,2-dioxetane compound to decompose to form a luminescent substance comprising said fluorescent chromophone group; and

(c) detecting said luminescent substance as an indication of the presence of said enzyme.

5,605,796

METHOD FOR PREVENTING AMPLIFICATION OF NUCLEIC ACID CONTAMINANTS IN AMPLIFICATION MIXTURES USING NUCLEASE-RECEPTOR CONJUGATES

Yan Chen, Palo Alto; Samuel J. Rose, Los Altos, and Edwin F. Ullman, Atherton, all of Calif., assignors to Behringwerke AG, Marburg, Germany

Filed Jul. 19, 1994, Ser. No. 277,547
Int. Cl.[6] C12Q *1/68*; C12P *19/34*
U.S. Cl. 435—6 **45 Claims**

1. A method of preventing amplification of a modified nucleic acid contaminant suspected of being present in a sample containing a nucleic acid to be amplified, said method comprising:

(a) combining with said sample a conjugate comprising a specific binding pair (sbp) member bound to a nuclease, wherein said sbp member binds to a modification in said modified nucleic acid contaminant, said modification having been introduced therein in a prior amplification of said nucleic acid,

(b) adjusting the temperature and pH of said sample to provide conditions wherein prior to amplification of said nucleic acid to be amplified said sbp member binds to said modified nucleic acid contaminant and said nuclease degrades said modified nucleic acid contaminant but not said nucleic acid,

(c) inactivating said nuclease, and

(d) amplifying said nucleic acid.

5,605,797

BOVINE β-MANNOSIDASE GENE AND METHODS OF USE

Karen Friderici, Bath; Margaret Z. Jones, East Lansing, both of Mich.; Hong Chen, Chapel Hill, N.C., and Kevin T. Cavanagh, Okemos, Mich., assignors to Board Of Trustees Operating Michigan State University, East Lansing, Mich.

Filed Sep. 15, 1994, Ser. No. 306,546
Int. Cl.[6] C12Q *1/68*; C12P *19/34*; C07H *21/02*;*21/04*
U.S. Cl. 435—6 **15 Claims**

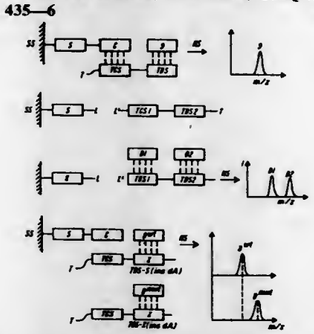
1. An isolated and purified oligonucleotide sequence consisting of at least twenty contiguous nucleic acids of the nucleotide sequence of SEQ ID NO. 1 which specifically hybridizes with the bovine β-mannosidase gene.

5,605,798

DNA DIAGNOSTIC BASED ON MASS SPECTROMETRY

Hubert Köster, Concord, Mass., assignor to Sequenom, Inc., Boston, Mass.

Continuation-in-part of Ser. No. 178,216, Jan. 6, 1994, Pat. No. 5,547,835, which is a continuation-in-part of Ser. No. 1,323, Jan. 7, 1993, abandoned. This application Mar. 17, 1995, Ser. No. 406,199
Int. Cl.[6] C07H *21/04*; C12P *19/34*; C12Q *1/68*
U.S. Cl. 435—6 **45 Claims**



1. A process for detecting a target nucleic acid sequence present in a biological sample, comprising the steps of:

a) obtaining a nucleic acid molecule containing a target nucleic acid sequence from a biological sample;

b) hybridizing a detector oligonucleotide with the target nucleic acid sequence, wherein at least one of the detector oligonucleotide or the target nucleic acid sequence has been conditioned;

c) removing unhybridized detector oligonucleotide;

d) ionizing and volatizing the product of step c); and

e) detecting the detector oligonucleotide by mass spectrometry, wherein detection of the detector oligonucleotide indicates the presence of the target nucleic acid sequence in the biological sample.

5,605,799

SOMATIC MUTATIONS IN NEUROFIBROMATOSIS TYPE 1 GENE IN HUMAN TUMORS

Raymond L. White; Richard M. Cawthon, and Ying Li, all of Salt Lake City, Utah, assignors to University of Utah Research Foundation, Salt Lake City, Utah

Continuation of Ser. No. 47,088, Apr. 16, 1993, abandoned, which is a continuation-in-part of Ser. No. 551,531, Jul. 12, 1990, Pat. No. 5,227,292. This application Mar. 28, 1995, Ser. No. 411,389
Int. Cl.[6] C12Q *1/68*; C12P *19/34*; C07H *21/04*; C12N *15/00*
U.S. Cl. 435—6 **14 Claims**

1. A method for determining defective ras regulation at the neurofibromatosis type 1 (NF1) gene in a tumor which comprises

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determining said defective ras regulation by comparing the DNA sequence of the NF1 gene from said tumor with the DNA sequence of the native, non-variant NF1 gene, wherein the nucleotides within positions 3809 to 4888 of SEQ ID NO:1 are compared, wherein a mutation in the region spanning said positions in the NF1 gene of the tumor is indicative of defective ras regulation at the NF1 gene.

5,605,800

METHOD OF DETECTING AND CHARACTERIZING A NUCLEIC ACID OR A SEQUENCE OF THE LATTER, AND ENZYMATIC REACTANT FOR THE APPLICATION OF THIS METHOD

Philippe Kourilsky; Stratis Avrameas; Brigitte Cami, born Contamine, and Jean-Luc Guesdon, all of Paris, France, assignors to Institut Pasteur, Paris, France

Continuation of Ser. No. 940,750, Sep. 8, 1992, which is a continuation of Ser. No. 826,631, Jan. 23, 1992, abandoned, which is a continuation of Ser. No. 715,854, Jan. 17, 1991, abandoned, which is a continuation of Ser. No. 513,040, Apr. 23, 1990, abandoned, which is a continuation of Ser. No. 353,177, May 16, 1989, abandoned, which is a continuation of Ser. No. 848,239, Apr. 4, 1986, abandoned, which is a division of Ser. No. 373,017, Apr. 29, 1982, Pat. No. 4,581,333, which is a continuation of Ser. No. 169,370, Jul. 16, 1980, abandoned, which is a continuation of Ser. No. 29,735, Apr. 13, 1979, abandoned. This application Jun. 6, 1995, Ser. No. 471,462

Claims priority, application France, Apr. 13, 1978, 7810975

Int. Cl.[6] C12Q *1/68*

U.S. Cl. 435—6 **28 Claims**

1. A detection method for detecting the presence or absence of a nucleic acid sought to be detected in a biological medium, the medium containing also other nucleic acids which are not sought to be detected, by means of a probe containing a nucleic acid complementary of said nucleic acid sought to be detected and by means of measurement on a substrate specific to an enzyme, which method comprises:

coupling said probe containing said complementary nucleic acid with said enzyme, thereby forming an enzyme-bonded probe,

hybridizing the nucleic acid sought to be detected with said enzyme-bonded probe, thereby forming an enzyme-bonded product,

separating excess of non-hybridized enzyme-bonded probe from said enzyme-bonded product,

wherein the probe or the enzyme is modified by a chemical group,

measuring the activity of the enzyme-bonded product on the substrate specific to the enzyme in the presence of the other nucleic acids, thereby detecting whether or not the nucleic acid sought to be detected is present.

5,605,801

METHODS OF DETECTING LESIONS IN THE PLATELET-ACTIVATING FACTOR ACETYLHYDROLASE GENE

Lawrence S. Cousens, Oakland, Calif.; Christine D. Eberhardt, Auburn, Wash.; Patrick Gray; Hai L. Trong, both of Seattle, Wash.; Larry W. Tjoelker, Bothell, Wash., and Cheryl L. Wilder, Bellevue, Wash., assignors to ICOS Corporation, Bothell, Wash.

Division of Ser. No. 318,905, Oct. 6, 1994, which is a continuation-in-part of Ser. No. 133,803, Oct. 6, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 478,465

Int. Cl.[6] C12Q *1/68*

U.S. Cl. 435—6 **3 Claims**

1. A method for detecting a genetic lesion in the human platelet-activating factor acetylhydrolase(PAF-AH) gene resulting in a substitution of a phenylalanine residue for a valine residue at amino acid 279 of the human plasma PAF-AH enzyme comprising the steps of:

performing restriction fragment length polymorphism analysis, and

differentiating between wild type and mutant alleles by detecting a different number of restriction sites between the wild type and mutant alleles.

5,605,802

METHOD FOR IDENTIFYING AGENTS WHICH BLOCK INFECTION OF CELLS BY HIV

Didier P. Trono, Solana Beach; Christopher R. Aiken, Encinitas; Simon M. Swingler, San Diego, and Philippe A. Gallay, Solana Beach, all of Calif., assignors to The Salk Institute for Biological Studies, La Jolla, Calif.

Filed Sep. 30, 1994, Ser. No. 316,038

Int. Cl.[6] G01N *33/569*

U.S. Cl. 435—7.4 **12 Claims**

1. A method for identifying compounds that inhibit tyrosine phosphorylation of human immunodeficiency virus type 1 Matrix protein (MA), said method comprising:

exposing MA to tyrosine phosphorylation conditions independently in the presence, and in the absence, of test compound,

detecting the level of tyrosine phosphorylation of MA upon exposure of MA to said test compound, and

identifying those test compounds which cause a reduced level of tyrosine phosphorylation of MA as compounds that inhibit tyrosine phosphorylation of MA.

5,605,803

HUMAN SPERM DIAGNOSTIC

John C. Herr, Charlottesville, and Richard M. Wright, Palmyra, both of Va., assignors to University of Virginia Alumni Patents Foundation, Charlottesville, Va.

Continuation-in-part of Ser. No. 858,798, Mar. 27, 1992, which is a continuation-in-part of Ser. No. 481,491, Feb. 16, 1990, which is a continuation-in-part of Ser. No. 318,551, Mar. 3, 1989, abandoned. This application Apr. 25, 1994, Ser. No. 231,675

Int. Cl.[6] G01N *33/567*

U.S. Cl. 435—7.21 **33 Claims**

1. A method for determining the concentration of sperm present in the ejaculate of a male human individual, comprising:

combining an ejaculate sample from said individual with a preparation comprising a first antibody specific for a testes-specific and sperm tissue-specific protein antigen, under conditions which permit said antibody to bind any said antigen present in said sample, and

inspecting said combined sample to determine the frequency of said binding,

wherein the frequency of occurrence of said binding is indicative of the total sperm concentration in said ejaculate.

5,605,804

DIAGNOSIS AND MONITORING OF LUNG CANCER PATIENTS BY MEASUREMENT OF NCA 50/90 IN BLOOD

William J. Allard, Poughquag, N.Y., and Kwok K. Yeung, Prospect, Conn., assignors to Bayer Corporation, Tarrytown, N.Y.

Continuation of Ser. No. 193,976, Feb. 8, 1994, abandoned, which is a continuation-in-part of Ser. No. 51,111, Apr. 21, 1993, abandoned. This application Mar. 7, 1995, Ser. No. 400,152

Int. Cl.[6] G01N *33/574;33/48;33/53;33/543*

U.S. Cl. 435—7.23 **15 Claims**

1. A method for monitoring the course of disease in a patient diagnosed with lung cancer, comprising the performance of a series of specific immunoassays over time to determine changes in the level of NCA 50/90 in blood samples obtained from such patient, whereby changes in the NCA 50/90 blood level correlate with changes in disease status.

5,605,805

AUTOMATIC LINEAGE ASSIGNMENT OF ACUTE LEUKEMIAS BY FLOW CYTOMETRY

Ben J. H. Verwer, San Jose, and Leon W. M. M. Terstappen, Palo Alto, both of Calif., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Continuation-in-part of Ser. No. 15,709, Feb. 9, 1993, abandoned. This application Oct. 19, 1994, Ser. No. 326,153

Int. Cl.[6] G01N *33/536;33/574;33/49;21/64*

U.S. Cl. 435—7.24 **3 Claims**

1. A method for determining the lineage of acute leukemia cells in a sample by flow cytometry comprising:

a) staining a first aliquot of the sample with CD10 conjugated to the first fluorochrome and CD 19 conjugated to the second fluorochrome, staining a second aliquot of the sample with CD20 conjugated to the first fluorochrome and CD5 conjugated to the second fluorochrome, staining a third aliquot of the sample with CD3 conjugated to the first fluorochrome and CD22 conjugated to the second fluorochrome, staining a fourth aliquot of the sample with CD7 conjugated to the first fluorochrome and CD33 conjugated to the second fluorochrome, staining a fifth aliquot of the sample with HLA-DR conjugated to the first fluorochrome and CD 13 conjugated to the second fluorochrome, and staining a sixth aliquot of the sample with CD34 conjugated to the first fluorochrome and CD38 conjugated to the second fluorochrome, the first and second fluorochromes being distinguishable by flow cytometry;

b) analyzing the stained first, second, third, fourth, fifth and sixth aliquots by flow cytometry, acquiring listmode data files for forward light scatter, orthogonal light scatter, first fluorochrome fluorescence and second fluorochrome fluorescence for each aliquot;

c) identifying cell clusters in each of the first, second, third, fourth, filth and sixth aliquots using the acquired forward light scatter, orthogonal light scatter, first fluorochrome fluorescence and second fluorochrome fluorescence data;

d) establishing a scatter profile for each cluster identified in step (c);

e) identifying cell populations by correlating the scatter profiles of the clusters in each aliquot in a combinatorial process and identifying clusters which have common scatter profiles, thereby establishing a scatter profile for each cell population;

f) determining an immunological profile for each cell population identified using the fluorescence data of those cells of each cluster which fall within the scatter profile of cell population;

g) identifying normal cell populations by comparing the immunological profile and scatter profile of each cell population to a scatter profile and immunological profile expected for normal cells;

h) subtracting the scatter profile of the normal cell population from the scatter profile of each cluster containing cells belonging to the normal cell population, and;

i) determining the lineage of remaining abnormal cell populations by comparing the scatter profiles and immunological profiles of the abnormal cell populations to scatter profiles and immunological profiles expected for known leukemic cell populations.

5,605,806

REAGENT FOR ASSAYING ENDOTOXIN

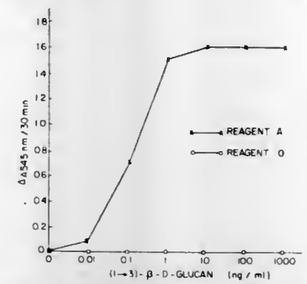
Shigenori Tanaka, and Hiroshi Tamura, both of Tokyo, Japan, assignors to Seikagaku Kogyo Kabushiki Kaisha (Seikagaku Corporation), Tokyo, Japan

Continuation of Ser. No. 847,102, Aug. 20, 1992, abandoned. This application Apr. 24, 1995, Ser. No. 427,260

Claims priority, application Japan, Aug. 22, 1991, 2-218954

Int. Cl.[6] G01N *33/569;33/543;33/579*

U.S. Cl. 435—7.32 **11 Claims**



1. A reagent for assaying an endotoxin comprising limulus amebocyte lysate and an antibody to (1 → 3)-β-D-glucan sensitive factor, wherein said antibody specifically binds to and neutralizes (1 → 3)-β-D-glucan sensitive factor.

11. A method of assaying for an endotoxin in a sample comprising:

(a) admixing limulus amebocyte lysate with an antibody to (1 → 3)-β-D-glucan sensitive factor, wherein said antibody specifically binds to and neutralizes (1 → 3)-β-D-glucan sensitive factor in the lysate,

(b) combining the admixed lysate with a sample under conditions whereby endotoxin in the sample, acting via an endotoxin-sensitive factor-dependent cascade, activates clotting enzyme in the lysate,

(c) contacting the activated clotting enzyme with a synthetic peptide substrate for clotting enzyme having an amino acid sequence in common with the hydrolysis sites of coagulogen, and

(d) measuring enzymatic activity of the activated clotting enzyme on coagulogen or on the synthetic peptide substrate as an indication of endotoxin in the sample.

5,605,807

PROCESS FOR SCREENING FOR MALIGNANT TUMORS BY DETERMINING THE AMOUNT OF GLCNAC TRANSFERASE V ACTIVITY

James W. Dennis, Etobicoke, Canada, assignor to Mount Sinai Hospital Corporation, Toronto, Canada

Division of Ser. No. 571,069, Aug. 23, 1990, Pat. No. 5,427,914, which is a continuation-in-part of Ser. No. 188,574, Apr. 28, 1988, abandoned. This application Sep. 13, 1994, Ser. No. 304,952

Int. Cl.[6] C12Q *1/48;* **G01N** *33/48*

U.S. Cl. 435—15 **10 Claims**

1. A process for screening for a miligant tumor which comprises determining an amount of GlcNAc transferase V activity in a tumor sample which comprises reacting the GlcNAc transferase V in a tumor sample with an acceptor substrate and a sugar nucleotide donor to produce a detectable change, and detecting the change, wherein the acceptor substrate is an oligosaccharide, a glycopeptide or a glycoprotein having the structure GlcNAc β1-2Man α1-6Man β1-R_1, where R_1 is GlcNAc β1-4GlcNAc with or without fucose or a synthetic linker, and wherein the sugar nucleotide donor is uridine diphospho-N-acetylglycosamine, thereby determining the amount of GlCNAc transferase V activity in the sample, and determining if the tumor is malignant by

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comparing the amount of GlcNAc transferase V activity in the sample with an amount of GlcNAc transferase V activity associated with normal tissues or with known malignant tumors.

5,605,808

ONCOPROTEIN PROTEIN KINASE

Michael Karin; Masahiko Hibi, both of San Diego, and Anning Lin, La Jolla, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Division of Ser. No. 276,860, Jul. 18, 1994, which is a continuation-in-part of Ser. No. 220,602, Mar. 25, 1994, which is a continuation-in-part of Ser. No. 94,533, Jul. 19, 1993. This application May 19, 1995, Ser. No. 444,393

Int. Cl.[6] C12Q *1/48*

U.S. Cl. 435—15 **4 Claims**

1. A method for identifying a composition which affects a kinase characterized as having a molecular weight of 46 kD as determined by reducing SDS-PAGE; having serine and threonine kinase activity; and phosphorylating the c-Jun N-terminal activation domain, comprising:

a incubating components comprising the composition and the kinase or polynucleotide encoding the kinase, wherein the incubating is carried out under conditions sufficient to allow the components to interact; and

b measuring the effect of the composition on the kinase or polynucleotide encoding the kinase.

5,605,809

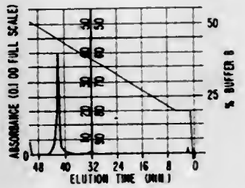
COMPOSITIONS FOR THE DETECTION OF PROTEASES IN BIOLOGICAL SAMPLES AND METHODS OF USE THEREOF

Akira Komoriya, and Beverly S. Packard, both of Rockville, Md., assignors to Oncoimmunin, Inc., Rockville, Md.

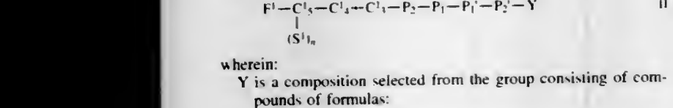
Filed Oct. 28, 1994, Ser. No. 331,383

Int. Cl.[6] C12Q *1/00; 1/37;* G01N *33/00*

U.S. Cl. 435—23 **33 Claims**

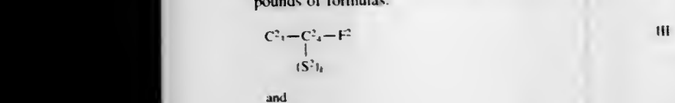


1. A fluorogenic composition for the detection of the activity of a protease, said composition having the formula:

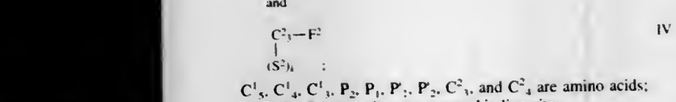


wherein:

Y is a composition selected from the group consisting of compounds of formulas:



and



C^1_5, C^1_4, C^1_3, P_2, P_1, P_1', P_2', C^2_3, and C^2_4 are amino acids;

P_2-P_1-P_1'-P_2' comprises a protease binding site;

F^1 and F^2 are fluorophores;

S^1 and S^2 are peptide spacers ranging in length from 1 to about 50 amino acids;

n and k are independently 0 or 1 and when n is 1, S^1 is joined to C^1_5 by a peptide bond through a terminal alpha amino group of C^1, and when k is 1, S^2 is joined to C^2_3 or to C^2_4 by a peptide bond through a terminal alpha carboxyl group of the respective C^2_3 or C^2_4; and wherein C^1_5-C^1_4-C^1_3 and C^2_3-C^2_4 or C^2_3 introduce a bend into the composition thereby creating a generally U-shaped configuration of said composition in which said fluorophores are adjacent to each other with a separation of less than about 100 Å.

5,605,810

NADH OXIDASE ASSAY FOR NEOPLASIA DETERMINATION

D. James Morrè; Steven R. Byrn; Frederick L. Crane, and Dorothy M. Morrè, all of West Lafayette, Ind., assignors to Purdue Research Foundation, West Lafayett, Ind.

Filed Apr. 5, 1994, Ser. No. 222,799

Int. Cl.[6] C12Q *1/26;* C12N *9/99*

U.S. Cl. 435—25 **6 Claims**

1. A method for determining neoplasia in a mammalian host, said method comprising:

detecting the presence of an NADH oxidase associated with neoplastic cells as compared to a different NADH oxidase associated with normal cells in a biological sample of said host;

correlating the result obtained with said sample with the response of NADH oxidase associated with neoplastic cells or normal cells, where the respone associated with neoplastic cells is indicative of the presence of neoplasia;

wherein said detecting is by means of an immunoassay which differentiates said NADH oxidase associated with neoplasia compared to said NADH oxidase associated with normal cells or by determining the response of NADH oxidase in said sample to an inhibitor of said NADH oxidase to which said NADH oxidase associated with neoplasia responds differently from NADH oxidase associated with normal cells.

5,605,811

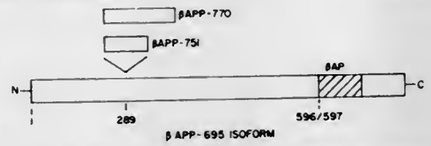
METHODS AND COMPOSITIONS FOR MONITORING CELLULAR PROCESSING OF BETA-AMYLOID PRECURSOR PROTEIN

Peter A. Seubert, South San Francisco; Dale B. Schenk, Pacifica, and Lawrence C. Fritz, San Francisco, all of Calif., assignors to Athena Neurosciences, Inc., South San Francisco, and Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 965,971, Oct. 26, 1992, Pat. No. 5,441,870, which is a continuation-in-part of Ser. No. 868,949, Apr. 15, 1995, abandoned. This application May 12, 1995, Ser. No. 440,261

Int. Cl.[6] C12Q *1/02*

U.S. Cl. 435—29 **7 Claims**



1. An in vitro method of screening compounds to identify β-amyloid production inhibitors, said method comprising:

(a) culturing cells Under conditions which result in a secretion of a soluble fragment of β-amyloid precursor protein (βAPP), wherein an amino acid sequence of said soluble βAPP fragment extends substantially from the amino-terminus of βAPP to the amino-terminus of β-amyloid peptide;

(b) exposing the cultured cells to a test compound; and

(c) detecting an amount of said soluble βAPP fragment; whereby a decrease in the amount of said soluble βAPP fragment as compared to the amount of soluble βAPP fragment from cells not exposed to the compound indicates that the compound is a β-amyloid production inhibitor.

5,605,812

TEST KIT AND METHOD FOR THE QUANTITATIVE DETERMINATION OF COLIFORM BACTERIA AND *E. COLI*

Eliezer Zomer, Newton, Mass., assignor to Charm Sciences, Inc., Malden, Mass.

Filed May 19, 1995, Ser. No. 446,039

Int. Cl.[6] C12Q *1/10*

U.S. Cl. 435—38 **47 Claims**

1. In a test method for the quantitative determination of bacteria in a sample, which test method comprises:

a) combining in a container a test sample, water where the test sample does not comprise or constitute water, and a test composition, which composition comprises a growth nutrient medium for the bacteria, and a first chromogenic agent which is cleaved by enzymes in the bacteria to produce and to indicate by the presence of a color from the cleavage of the first agent, the presence in the test sample of bacteria; and

b) observing the color, or absence thereof, to determine the quantitative presence of the bacteria in the test sample, the improvement which comprises:

i) providing a sterile, flexible, transparent, sealable, plastic test container which includes therein a powdered test composition and a gelling agent in amount to provide in situ with the water or test sample and the test composition a generally transparent gel medium;

ii) adding the test sample or water to said test container;

iii) sealing said test container;

iv) admixing the test sample or water with the powdered test composition and gelling agent in said sealed container to form a generally transparent gel medium;

v) forming the gel medium in said sealed container into a generally flat gel medium layer;

vi) incubating the flat gel medium layer to provide for the growth, if any, of bacteria in said test sample throughout the gel medium layer; and

vii) counting the color of the bacteria colonies in the incubated gel layer to determine the quantitative amount of bacteria in the test sample.

5,605,813

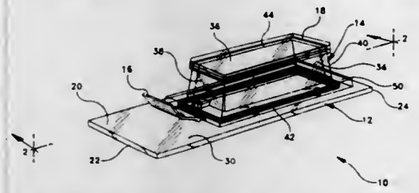
CULTURE SLIDE ASSEMBLY

Timothy A. Stevens, Madison, and Tadeusz A. Tyndorf, Manalapan, both of N.J., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Jun. 6, 1995, Ser. No. 468,786

Int. Cl.[6] C12Q *1/08*

U.S. Cl. 435—40.52 **14 Claims**



12. A method for growing tissue cultures with an apparatus having a base member, a receptacle chamber removably attached to said base member, a movable lever attached to said chamber and a removable lid, comprising:

(a) placing a liquid tissue culture medium containing a suspension of cells in said chamber;

(b) placing said lid over said chamber;

(c) incubating said apparatus until a mass of tissue cells is attached to said base;

(d) removing said receptacle from said base with said lever;

(e) rinsing said tissue cells attached to said base;

(f) staining said tissue cells; and

(g) examining said tissue cells.

5,605,814

DNA ENCODING HUMAN PROSTAGLANDIN RECEPTOR EP2

Mark Abramovitz, Dollard des Ormeaux; Mohammed Adam, Kirkland; Lison Bastien, St. Lazare; Richard Grygorczyk, Dollard des Ormeaux; Kathleen Metters, Montreal, all of Canada; Thomas H. Rushmore, Hatfield, Pa., and Nicole Sawyer, Pincourt, Canada, assignors to Merck Frosst Canada Inc., Kirkland, Canada

Filed Aug. 31, 1993, Ser. No. 115,365

Int. Cl.[6] C12N *15/12;* C07K *14/705*

U.S. Cl. 435—69.1 **5 Claims**

1. An isolated and purified DNA molecule encoding a human prostaglandin EP2 receptor protein wherein said EP2 receptor protein comprises the amino acid sequence as set forth in SEQ. ID. NO.:2.

5,605,815

NUCLEIC ACIDS ENCODING AND EXPRESSION OF PARATHYROID HORMONE-LIKE PEPTIDE

Arthur E. Broadus, New Haven; Andrew F. Stewart, North Haven, and Marguerite Mangin, Old Lyme, all of Conn., assignors to Yale University, New Haven, Conn.

Continuation of Ser. No. 839,722, Feb. 18, 1992, abandoned, which is a continuation of Ser. No. 167,593, Mar. 14, 1988, abandoned. This application Jun. 21, 1994, Ser. No. 263,242

Int. Cl.[6] C07H *21/02;* C12P *21/00*

U.S. Cl. 435—694 **22 Claims**

18. A method of preparing a mammalian PTH-Like Peptide, comprising:

introducing into a host cell a recombinant DNA molecule capable of directing the expression and secretion of a mammalian PTH-Like Peptide, said recombinant DNA molecule containing a transcriptional promoter operatively linked to a DNA molecule encoding said PTH-Like Peptide, and a signal sequence capable of directing the secretion of the protein from the host cell;

growing said host cell in an appropriate medium; and

isolating the protein product of said DNA molecule from said host cell.

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5,605,816

RECOMBINANT DNA ENCODING PDGF A-CHAIN POLYPEPTIDES

Carl-Henrik Heldin; Christer Betsholtz; Bengt Westermark, all of Uppsala, Sweden; Timothy J. Knott, London, England; James Scott, Harrow, United Kingdom, and Graeme I. Bell, San Francisco, Calif., assignors to Chiron Corporation, Emeryville, Calif.

Continuation of Ser. No. 178,448, Jan. 6, 1994, abandoned, which is a continuation of Ser. No. 12,235, Feb. 2, 1993, abandoned, which is a continuation of Ser. No. 574,540, Aug. 27, 1990, Pat. No. 5,219,759, which is a continuation of Ser. No. 41,299, Apr. 22, 1987, abandoned. This application May 30, 1995, Ser. No. 454,425

Int. Cl.[6] C12N *15/18;15/19*

U.S. Cl. 435—69.4 13 Claims

1. A recombinant DNA molecule which encodes a PDGF A-chain polypeptide, said polypeptide comprising the amino acid sequence numbered 87 to 193 inclusive, in FIG. 1.

5,605,817

DNA ENCODING CHEMOKINE EXPRESSED IN FETAL SPLEEN

Roger Coleman, Mountain View; Craig G. Wilde, Sunnyvale, and Jeffrey J. Seilhamer, Los Altos Hills, all of Calif., assignors to Incyte Pharmaceuticals, Inc., Palo Alto, Calif.

Filed Jan. 19, 1995, Ser. No. 375,346

Int. Cl.[6] C07K *14/52;* C12N *15/19*

U.S. Cl. 435—69.5 4 Claims

1. A recombinant DNA molecule comprising fetal spleen expressed chemokine (fsec) gene, having the sequence shown in SEQ ID NO 1.

5,605,818

PROCESS FOR PRODUCING L-TRYPTOPHAN, L-TYROSINE OR L-PHENYLALANINE

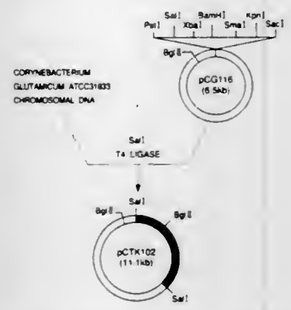
Ryoichi Katsumata, Machida, and Masato Ikeda, Hofu, both of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 160,810, Dec. 3, 1993, abandoned. This application Apr. 19, 1995, Ser. No. 424,621

Claims priority, application Japan, Dec. 3, 1992, 4-324105

Int. Cl.[6] C12N *1/21;* C12P *13/22*

U.S. Cl. 435—108 3 Claims



3. A process for producing L-tyrosine, which comprises culturing in a medium *Corynebacterium glutamicum* ATCC21571 carrying a recombinant plasmid pCTK102 comprising a vector plasmid and a DNA fragment consisting of a gene coding for transketolase, until the L-tyrosine is produced and accumulated in the culture, and recovering the L-tyrosine therefrom.

5,605,819

QUANTITATIVE CONVERSION OF INDENE TO (1S,2R) INDENE OXIDE AND (1S,2R)-INDANDIOL BY COMBINATION OF HALOPEROXIDASE BIOCONVERSION AND CHEMICAL STEPS

Michel M. Chartrain, Westfield; Neal C. Connors, Fanwood; George M. Garrity, Westfield; Roger C. Olewinski, Jr., Milltown; Thomas R. Verhoeven, Cranford, and Jinyou Zhang, Edison, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed May 19, 1995, Ser. No. 445,154

Int. Cl.[6] C12P *17/02;7/22;1/02;5/00*

U.S. Cl. 435—123 18 Claims

1. A process of synthesizing quantitatively (1S,2S) bromoindanol from indene, comprising the steps of

(a) providing a mixture of one equivalent of indene, and an excess of a source of bromide ions, and haloperoxidase in buffer of pH between about 5.0 and about 8.0;

(b) slowly mixing thereto between about one and about two equivalents of H_2O_2 and incubating the resulting second mixture until substantially all of the indene is consumed;

(c) to give (1S,2S)-bromo-indanol.

5,605,820

PRODUCTION OF STRAINS HAVING BIOLOGICAL ACTIVITIES BY SEXUAL CROSSES BETWEEN VEGETATIVELY INCOMPATIBLE STRAINS OF *ASPERGILLUS NIDULANS*

William E. Timberlake, Bolton, and T. Vance Morgan, Natick, both of Mass., assignors to Chemgenics Pharmaceuticals, Inc., Cambridge, Mass.

Filed Jun. 23, 1994, Ser. No. 264,952

Int. Cl.[6] C12N *15/00;1/14*

U.S. Cl. 435—172.2 1 Claim

1. A process for producing fungal strains which produce biologically active secondary metabolites in detectable amounts, comprising the steps of

(a) carrying out a sexual cross between the vegetatively incompatible strains D34-2 and R99 of *Aspergillus nidulans;*

(b) recovering the progeny produced;

(c) culturing the progeny of said sexual cross in an aqueous nutrient medium containing assimilable sources of carbon, nitrogen and inorganic substances;

(d) screening the progeny of said sexual cross or the cultured fermentation broth thereof for the production of biologically active secondary metabolite products having biological activity which products are not detectable upon cultivation of either said D34-2 or R99 strains under the same process conditions and using the same detection techniques as used in the screening of the progeny of said sexual cross.

5,605,821

EXPRESSION CONTROL SEQUENCES OF THE P-SELECTIN GENE

Rodger P. McEver, and Junliang Pan, both of Oklahoma City, Okla., assignors to Board of Regents of the University of Oklahoma, Norman, Okla.

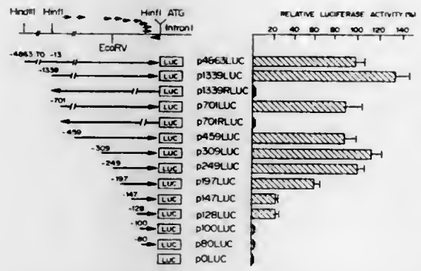
Continuation-in-part of Ser. No. 320,408, Mar. 8, 1989, Pat. No. 5,378,464. This application Aug. 20, 1993, Ser. No. 110,158

Int. Cl.[6] C12N *15/00;* C07H *21/04*

U.S. Cl. 435—172.3 10 Claims

1. A method for the expression of a gene in cultured endothelial cells or megakaryocytes comprising

fusing the 5' end of the coding sequence of the gene to the 3' end of a DNA molecule comprising a nucleotide sequence consisting of nucleotides 1 to 4863 of SEQ ID NO. 5, or portions thereof effective to promote expression of a gene in cultured endothelial cells or megakaryocytes and consisting of at least



128 nucleotides immediately 5' from the translational start site of the P-selectin gene sequence including nucleotides 4736 to 4863 of SEQ ID NO. 5, to yield a recombinant gene construct;

inserting the recombinant gene construct into cultured endothelial cells or megakaryocytes and

assaying for expression of the recombinant gene inserted into the cultured endothelial cells or megakaryocytes.

5,605,822

METHODS, COMPOSITIONS AND DEVICES FOR GROWING HUMAN HEMATOPOIETIC CELLS

Stephen G. Emerson; Michael F. Clarke, and Bernhard O. Palsson, all of Ann Arbor, Mich., assignors to The Regents of The University of Michigan, Ann Arbor, Mich.

Continuation of Ser. No. 100,337, Jul. 30, 1993, abandoned, which is a continuation of Ser. No. 628,343, Dec. 17, 1990, abandoned, which is a continuation-in-part of Ser. No. 366,639, Jun. 15, 1989, abandoned. This application Dec. 1, 1994, Ser. No. 352,196

Int. Cl.[6] C12N *15/00;5/00;* C12M *3/00*

U.S. Cl. 435—172.3 64 Claims

1. A method for obtaining ex vivo human stem cell proliferation, expansion, or both, comprising culturing human hematopoietic cells comprising human stem cells found in the human hematopoietic system in a substantially continuously perfused liquid culture medium in the presence of transformed stromal cells capable of excreting at least one growth factor which directs the proliferation, differentiation, or both, of said human stem cells, and thereby obtaining ex vivo proliferation, expansion, or both, of said human stem cells, while maintaining said culture under physiologically acceptable conditions.

5,605,823

BIOCONVERSIONS CATALYSED BY THE TOLUENE MONOOXYGENASE OF *PSEUDOMONAS MENDOCINA* KR-1

Kwang-Mu Yen, Thousand Oaks; Lawrence M. Blatt, West Hills, and Michael R. Karl, Port Hueneme, all of Calif., assignors to Amgen Inc., Thousand Oaks, Calif.

Continuation of Ser. No. 960,025, Oct. 13, 1992, abandoned, which is a division of Ser. No. 590,374, Sep. 28, 1990, Pat. No. 5,171,684, which is a contiouation-in-part of Ser. No. 177,631, Apr. 5, 1988, Pat. No. 5,017,495. This application Mar. 17, 1994, Ser. No. 210,407

Int. Cl.[6] C07K *14/21*

U.S. Cl. 435—189 4 Claims

1. A biologically active toluene monooxygenase enzyme from *Pseudomonas mendocina* KR-1, wherein the enzyme comprises TmoA, TmoB, TmoC, TmoD, and TmoE proteins, wherein said enzyme is free from association with other *Pseudomonas mendocina* KR-1 proteins, and wherein said enzyme has been produced by expression of the tmoA, tmoB, tmoC, tmoD, and tmoE genes in a microorganism other than *P. mendocina.*

5,605,824

COMPOSITION FOR HYBRIDIZING NUCLEIC ACIDS USING SINGLE-STRANDED NUCLEIC ACID BINDING PROTEIN

Kirk B. Nielson, San Diego, and Eric J. Mathur, Solana Beach, both of Calif., assignors to Stratagene, La Jolla, Calif.

Continuation of Ser. No. 603,466, Oct. 24, 1990, abandoned, which is a continuation-in-part of Ser. No. 425,867, Oct. 24, 1989, abandoned, and Ser. No. 425,864, Oct. 24, 1989, Pat. No. 5,449,603. This application Jun. 16, 1993, Ser. No. 78,769

Int. Cl.[6] C12N *9/12;* C12P *19/34;* A61K *38/16*

U.S. Cl. 435—194 15 Claims

1. A composition comprising

a single stranded binding protein in an amount sufficient to produce increased specificity of a PCR amplification reaction, and

a thermostable DNA polymerase.

5,605,825

HUMAN PAK65

Arie Abo, San francisco, and George A. Martin, Berkeley, both of Calif., assignors to Onyx Pharmaceuticals, Inc., Richmond, Calif.

Continuation of Ser. No. 369,780, Jan. 6, 1995, Pat. No. 5,518,911. This application Jun. 7, 1995, Ser. No. 475,682

Int. Cl.[6] C12N *9/12;* C12P *21/04;* A61K *38/00;* C07K *1/00*

U.S. Cl. 435—194 29 Claims

1. An isolated, polypeptide with an amino acid sequence having at least 95% identity to an amino acid sequence selected from the group consisting of:

a) a full length amino acid sequence of SEQ ID NO:2,

b) an amino acid sequence having amino acids 49 to 113 of SEQ ID NO:2.

c) an amino acid sequence having amino acids 231 to 486 of SEQ ID NO:2, and

d) an amino acid sequence having amino acids 1 to 481 of SEQ ID NO:2.

5,605,826

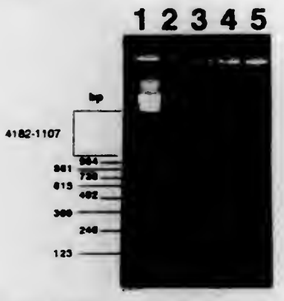
24 KILODALTON CYTOPLASMIC PROTEASE ACTIVATING DNA FRAGMENTATION IN APOPTOSIS

Susan C. Wright, Saratoga, and James W. Larrick, Woodside, both of Calif., assignors to Panorama Research, Inc., Mountain View, Calif.

Filed Jun. 10, 1994, Ser. No. 259,752

Int. Cl.[6] C12N *9/64;9/50;* C07K *1/22*

U.S. Cl. 435—226 10 Claims



1. A process for isolating and purifying an apoptotic protease from mammalian cells, the process comprising the steps of

a) preparing a cytoplasmic extract of mammalian cells pretreated with an apoptosis-inducing agent;

b) applying the extract to an affinity column having an immobilized DK120 protease inhibitor;

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c) eluting a protease containing fraction from the affinity column;

d) applying the protease containing fraction to a heparin-sepharose column; and

e) eluting a fraction having protease activity with a NaCl gradient to obtain a substantially pure apoptotic protease.

5,605,827

INFECTIOUS BURSAL DISEASE VIRUS VP2 FUSION PROTEIN EXPRESSED BY BACULOVIRUS

Daral J. Jackwood; Renee J. Jackwood, both of Wooster, Ohio, and Kenneth S. Henderson, Pelham, N.H., assignors to The Ohio State University Research Foundation, Columbus, Ohio

Continuation of Ser. No. 148,252, Nov. 4, 1993, abandoned. This application Oct. 4, 1995, Ser. No. 538,844

Int. Cl.[6] C12N *7/01;15/86;* **C07K** *19/00*

U.S. Cl. 435—235.1 **3 Claims**

1. A fusion protein comprising a 314 amino acid sequence encoded by the PstI-BalI fragment of the VP2 gene of IBDV variant A, said PstI-BalI fragment containing bases 434–1377 of the VP2 gene, and said fusion protein further comprising sequences from the baculovirus polyhedrin protein encoded by a PAC360 vector.

5,605,828

ANTIVIRAL COMPOUNDS

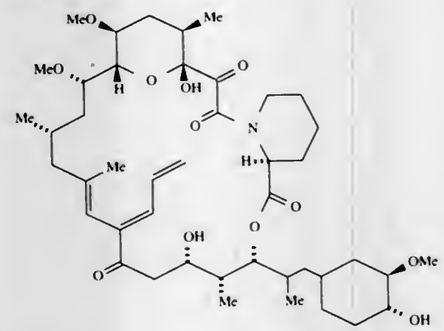
Jeffrey S. Glenn, Palo Alto, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Continuation of Ser. No. 144,759, Oct. 27, 1993, abandoned. This application May 16, 1995, Ser. No. 442,322

Int. Cl.[6] C12N *7/04;* **A01N** *43/72;43/90*

U.S. Cl. 435—236 **2 Claims**

1. A method to inhibit the replication of hepatitis D virus, which method comprises contacting a cell in which said virus replicates with a compound



selected from the group consisting of FK506 rapamycin and 506BD at a sufficient concentration effective to inhibit said viral replication.

5,605,829

STROMA-DERIVED STEM CELL PROTEOGLYCAN GROWTH FACTOR

Philip B. McGlave; Catherine M. Verfaillie, both of St. Paul, and Pankaj Gupta, Minneapolis, all of Minn., assignors to Regents of the University of Minnesota, Minneapolis, Minn.

Continuation-in-part of Ser. No. 293,466, Aug. 19, 1994, abandoned, which is a continuation-in-part of Ser. No. 152,051, Nov. 12, 1993, Pat. No. 5,523,286. This application Nov. 30, 1994, Ser. No. 346,893

Int. Cl.[6] C12N *5/00;* **A16K** *38/16;* **C07K** *14/475*

U.S. Cl. 435—377 **16 Claims**

3. A method for culturing hematopoietic cells, comprising: culturing a population of hematopoietic cells comprising stem cells or committed progenitor cells in a culture medium comprising a synthetic proteoglycan having a core protein and a polysaccharide portion, wherein the polysaccharide portion of the synthetic proteoglycan comprises heparan sulfate, chondroitin sulfate, dermatan sulfate or combinations thereof and the core protein comprises ovalbumin, so that the ability of the stem cell population to differentiate and self-replicate is maintained or the ability of the committed progenitors to expand and differentiate is maintained.

5,605,830

MURINE AND HUMAN C-MYC INTERACTING PROTEIN

George C. Prendergast, Doylestown, and Daitoku Sakamuro, Philadelphia, both of Pa., assignors to The Wistar Institute of Anatomy & Biology, Philadelphia, Pa.

Filed May 5, 1995, Ser. No. 435,454

Int. Cl.[6] C07H *21/04;* **C12N** *15/85;15/63;15/12*

U.S. Cl. 435—325 **8 Claims**

7. A vector comprising a mammalian nucleic acid sequence encoding a c-myc interacting polypeptide (MIP) under the control of suitable regulatory sequences, said mammalian nucleic acid sequence selected from the group consisting of:

a) SEQ ID NO:1;

b) SEQ ID NO:3;

c) a sequence comprising 400 nucleotides which hybridizes to SEQ ID NO:1 under stringent conditions; and

d) a sequence comprising 400 nucleotides which hybridizes to SEQ ID NO:3 under stringent conditions.

8. A host cell transformed with the vector according to claim 7.

5,605,831

HUMAN MELANOMA CELL SPECIFIC ANTIGENS AND ANTIBODIES

Juergen R. Vielkind, Vancouver, Canada, assignor to University of British Columbia, Vancouver, Canada

Filed Jan. 31, 1992, Ser. No. 829,855

Int. Cl.[6] C07K *16/44;* **A61K** *38/03;* **G01N** *33/53*

U.S. Cl. 435—344 **15 Claims**

1. A hybridoma cell line producing monoclonal antibodies specific for an epitope which (1) is present on the surface of human melanoma cells and is essentially absent from melanocytes and malignant cells other than melanoma cells and (2) has an apparent molecular weight of 180KDal in the PSM cell line.

5,605,832

DYE TRANSFER INHIBITION

Ture Damhus; Ole Kirk, both of Copenhagen; Gitte Pedersen, Frederiksberg C, all of Denmark, and Manuel G. Venegas, Cincinnati, Ohio, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark, and The Proctor & Gamble Company, Cincinatti, Ohio

Division of Ser. No. 599,331, Oct. 17, 1990, Pat. No. 5,273,896, which is a continuation-in-part of Ser. No. 421,414, Oct. 13, 1989, abandoned. This application Aug. 11, 1993, Ser. No. 105,222

Int. Cl.[6] C12N *9/08;* **D06M** *16/00;* **C07K** *7/00*

U.S. Cl. 435—263 **14 Claims**

1. A process for inhibiting the transfer of a textile dye from a first fabric dyed with the textile dye to a second fabric, comprising washing or rinsing the first fabric and the second fabric in a wash liquor, wherein the wash liquor comprises an effective amount for inhibiting the transfer of the textile dye of:

(a) a peroxidase and

(b) a hydrogen peroxide source selected from the group consisting of hydrogen peroxide, a hydrogen peroxide precursor and an enzymatic system capable of generating hydrogen peroxide.

5,605,833

PROCESS FOR PREPARATION OF D-LACTIC ACID FROM D,L LACTIC ACID ESTER USING WHEAT GERM OR PANCREATIC LIPASE

Chun-Lung Hsieh, and Jer-Ying Houng, both of Hsinchu, Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Jun. 7, 1995, Ser. No. 474,812

Int. Cl.[6] C12P *41/00*

U.S. Cl. 435—280 **3 Claims**

1. A process for the preparation of D-lactic acid comprising the steps of:

(a) hydrolyzing L-lactic acid alkyl ester from a racemic mixture of DL-lactic acid alkyl ester with a lipase obtained from wheat germ or pancreas as a catalyst;

(b) separating the unhydrolyzed D-lactic acid alkyl ester by extraction with an organic solvent; and

hydrolyzing the D-lactic acid alkyl ester with a base to obtain D-lactic acid.

5,605,834

COMPOSTING DEVICE

Lars Eberthson, and Rita Eberthson, 4:e Långgatan 26, S-413 27 Göteborg, both of Sweden, assignors to Rita Eberthson, Sweden

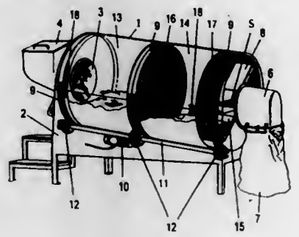
PCT No. PCT/SE93/00906, § 371 Date Jun. 14, 1995, § 102(e) Date Jun. 14, 1995, PCT Pub. No. WO94/10103, PCT Pub. Date May 11, 1994

PCT Filed Oct. 29, 1993, Ser. No. 428,152

Claims priority, application Sweden, Oct. 29, 1992, 9203194

Int. Cl.[6] C12M *3/00*

U.S. Cl. 435—290.3 **3 Claims**



1. A composting device comprising a drum rotatably arranged about an axis lightly inclined to the horizontal, and having a feeding opening for composting material at the higher situated side of the drum and a discharge opening for the finished composted material at the lower side of the drum, the interior of the drum being subdivided into a number of consecutive chambers arranged in the longitudinal direction of the drum, with intermediate sieve screens wherein said adjacent chambers of the drum are entirely separated from each other by said sieve screens each sieve screen having the same size of mesh over its entire surface and a smaller mesh size in relation to the nearest preceding sieve screen.

5,605,835

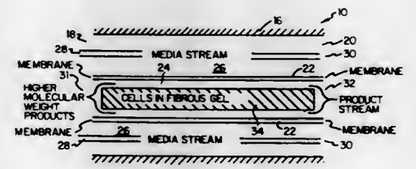
BIOREACTOR DEVICE WITH APPLICATION AS A BIOARTIFICIAL LIVER

Wei-Shou Hu, Falcon Heights; Frank B. Cerra, Edina; Scott L. Nyberg, St. Louis Park; Matthew T. Scholz, Woodbury, and Russell A. Shatford, Minneapolis, all of Minn., assignors to Regents of the University of Minnesota, Minneapolis, Minn.

Continuation of Ser. No. 864,893, Apr. 3, 1992, abandoned, which is a continuation-in-part of Ser. No. 355,115, May 18, 1989, abandoned, which is a continuation-in-part of Ser. No. 197,700, May 23, 1988, abandoned, and a continuation-in-part of Ser. No. 605,371, Oct. 29, 1990, abandoned. This application Jan. 20, 1995, Ser. No. 376,095

Int. Cl.[6] C12M *3/06*

U.S. Cl. 435—297.2 **55 Claims**



1. A bioreactor apparatus for retaining cells in vitro over a sustained period of time for continuous production of a desired dell product, said cells being selected from the group consisting of animal cells, genetically altered animal cells and mixtures thereof, said apparatus comprising:

(a) means for defining a housing having a proximal end and a distal end;

(b) at least one selectively permeable membrane within said housing means extending from said proximal to said distal end of said housing means, said membrane dividing the interior of said housing means into a cell chamber and a chamber for cell nutrient and cell waste, said membrane selectively allowing cell nutrient and cell waste to cross between said chambers but retaining the desired cell product within the cell chamber;

(c) a substantially insoluble, biocompatible matrix means formed in situ from a solution of matrix precursors in said cell chamber for entrapping said cells, said matrix means being contracted within said cell chamber so as to form a cell-biocompatible matrix zone and a liquid zone for accumulating the desired cell product, said cells causing a significant degree of the contraction of said matrix means so that at most 90% of said cell chamber is occupied by said matrix means and at least 10% of said cell chamber is unobstructed to form said liquid zone; and

(d) means communicating with said chamber for cell nutrient and cell waste for supplying nutrient medium for maintaining said cells and for withdrawing expended cell nutrient and cell waste.

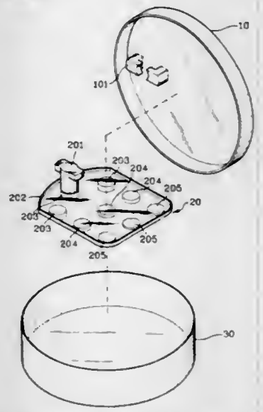
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5,605,836

MODULAR METHOD AND DEVICE FOR THE EVALUATION OF THE ABILITY OF BIOCIDE TO PENETRATE BIOFILM

Chin-Yu Chen, 2F, No. 21, Lane 295, Ching Hsin St., and Woan-Jiun Swei, 2F, No. 21, Lane 295, Ching Shin St., both of Chung Ho City, Taiwan

Filed Jun. 13, 1995, Ser. No. 489,794
Int. Cl.[6] C12M *3/00*
U.S. Cl. 435—305.4 **5 Claims**



1. A thickness modular device used in the evaluation of the ability of biocide to penetrate biofilms of varying thicknesses comprising:

a petri dish including a horizontal base and a continuous sidewall extending vertically from the base;

a dish cover including a flat base with a top surface and underside surface for closing the dish;

an internal thickness module having a flat top and bottom surface and being positioned adjacent the horizontal base for producing depressions on a surface of a biofilm;

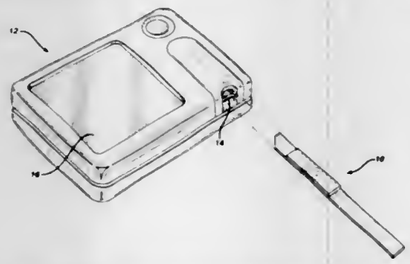
a locking means for connecting in a locking relation the dish cover with the internal thickness module.

5,605,837

CONTROL SOLUTION FOR A BLOOD GLUCOSE MONITOR

Saker A. Karimi, Milpitas; Geoffrey McGarraugh, Scotts Valley, and Yeung S. Yu, Pleasanton, all of Calif., assignors to LifeScan, Inc., Milpitas, Calif.

Filed Feb. 14, 1996, Ser. No. 601,386
Int. Cl.[6] G01N *31/00*
U.S. Cl. 436—14 **16 Claims**



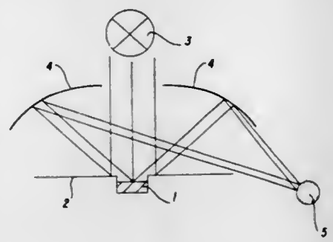
1. The control solution that mimics whole blood for use with a photometric blood glucose strip, which comprises a suspension of opaque iron oxide or carbon water, a dispersant to keep the particles in suspension, and a predetermined concentration of glucose.

5,605,838

METHOD FOR THE QUANTITATIVE ANALYSIS OF SAMPLE LIQUID

Juergen Backhaus, Edingen-Neckarhausen, and Reinhold Mischler, Ludwigshafen, both of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Filed Sep. 19, 1994, Ser. No. 307,415
Claims priority, application Germany, Sep. 17, 1993, 43 31 596.8
Int. Cl.[6] G01N *21/00*
U.S. Cl. 436—34 **28 Claims**



1. A method for the quantitative analysis of sample liquids, comprising the steps of:

applying a defined amount of sample liquid containing a solvent and at least one component to be analyzed on the surface of a sample carrier,

drying the sample liquid to produce a residue of drying having a solvent content below 20% by weight,

irradiating the residue of drying with a cone of rays of radiation in at least one of the infrared or visible range of the spectrum, wherein the residue of drying is located completely in the cone of rays,

detecting radiation which has been diffusely reflected from the residue of drying and the sample carrier, and

analyzing the detected radiation in order to calculate the concentration of at least one constituent of the sample liquid.

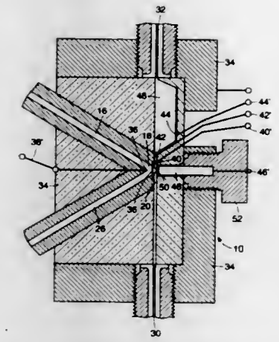
5,605,839

METHODS AND APPARATUS FOR USE IN SEQUENTIAL CHEMICAL REACTIONS

Richard J. Simpson, Richmond; Antony W. Burgess, Camberwell, and Robert L. Moritz, Victoria, all of Australia, assignors to Ludwig Institute for Cancer Research, N.Y.

Continuation-in-part of Ser. No. 842,363, Mar. 25, 1992. This application May 29, 1992, Ser. No. 891,162
Claims priority, application Australia, Apr. 11, 1990, PJ9605
Int. Cl.[6] G01N *33/50*
U.S. Cl. 436—89 **10 Claims**

1. A method for conducting a chemical reaction, the method comprising: immobilizing a first reactant at an electrode defining a reaction locus; introducing an additional reactant to the reaction locus; electrolytically activating a reaction between the first and additional reactants; and removing remaining additional reactant or a reaction by-product from the reaction locus, wherein said method further comprises resolving, separating, or purifying at least one



reactant by using a capillary liquid chromatographic system comprising a capillary column of ≦0.50 mm I.D. packed with bonded-phase particles having from about 200 Å to about 500 Å pore size.

5,605,840

METHOD FOR THE DETECTION OF GASTRIC EPITHELIAL DAMAGE

Jonathan B. Meddings, 16 Varshaven Place NW., Calgary, Canada; Lloyd Sutherland, 500 Eau Claire Ave., Calgary, Canada, and John L. Wallace, Site 5 R.R. #1, Cochrane, Canada

Division of Ser. No. 190,139, Feb. 3, 1994, abandoned. This application May 31, 1995, Ser. No. 456,203
Claims priority, application Canada, Sep. 18, 1991, 2051787
Int. Cl.[6] G01N *31/22*
U.S. Cl. 436—94 **3 Claims**

1. The use of a disaccharide as a diagnostic marker for indicating the existence or extent of gastric epithelial damage in a patient comprising orally administering to the patient a disaccharide, which does not transport across cell membranes, and which metabolizes to its monosaccharides in the lower intestine, and not in the stomach, and assaying the patient's blood or urine for the presence of the disaccharide to determine the existence or extent of gastric epithelial damage.

5,605,841

SYSTEM FOR AUTOMATIC SAMPLE ANALYSIS AND A METHOD FOR PRODUCING THE SYSTEM INCLUDING A CLEANING UNIT FOR A MOVABLE OPTICAL HEAD

Erik Johnsen, Vejle; Jens Heinrichson, Give, and Michael Bjerre, Vejle, all of Denmark, assignors to Jesma-Matador A/S, Vejle, Denmark

PCT No. PCT/DK93/00165, § 371 Date Nov. 14, 1993, § 102(e) Date Nov. 14, 1993, PCT Pub. No. WO93/23731, PCT Pub. Date Nov. 25, 1993
PCT Filed May 14, 1993, Ser. No. 335,762
Claims priority, application Denmark, May 14, 1992, 0644/92
Int. Cl.[6] G01N *1/20;21/01;21/15*
U.S. Cl. 436—164 **16 Claims**

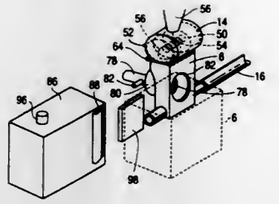
14. A method for on-line analysis of material samples with a system having a grinding mill for comminuting sample material samples to output comminuted material samples, an analyzer unit for performing the on-line analysis of the outputted comminuted material samples and having a housing holding an optical system including an optical head and a front glass with the optical system performing the on-line analysis of the outputted comminuted material samples and a receiving chamber for receiving the outputted comminuted material samples from the grinding mill, and a mechanism for moving the housing relative to the receiving chamber between a first position at which the front glass closes a wall opening into the receiving chamber and a second position at which the front glass is cleaned by a cleaning mechanism comprising:

modifying an existing laboratory equipment by removing the optical head from the existing laboratory equipment and mounting the optical head in the housing in operative connection with the receiving chamber while maintaining an electrical connection between the optical head and the analyzer unit and an original calibration of the analyzer;

using the grinding mill to output a comminuted material sample;

providing the comminuted material sample to the receiving chamber and performing tests on the comminuted material sample with the optical head in the receiving chamber using the original calibration; and

moving the housing between the first and the second position after each analysis operation.

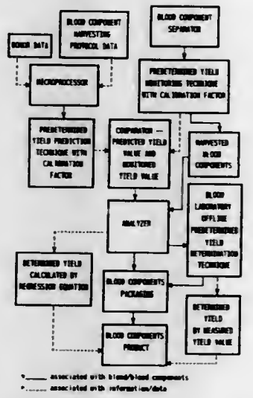


5,605,842

METHOD FOR PRODUCING BLOOD COMPONENT PRODUCTS

Robert W. Langley, Westminister, and Larry J. Dumont, Arvada, both of Colo., assignors to Cobe Laboratories, Inc., Lakewood, Colo.

Continuation of Ser. No. 912,973, Jul. 10, 1992. This application May 12, 1995, Ser. No. 439,954
Int. Cl.[6] G01N *1/18*
U.S. Cl. 436—177 **11 Claims**



11. A method for providing a blood component product having a determined yield, comprising the steps of:

harvesting a plurality of a predetermined type of blood component from a source of blood;

establishing a first calibration factor for a predetermined yield prediction technique in relation to a predetermined off-line yield determination technique, said predetermined yield prediction technique comprising an on-line yield determination technique;

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using said predetermined yield prediction technique to obtain a first predicted yield value for said harvested blood components;

applying said first calibration factor to said first predicted yield value to obtain a second predicted yield value;

monitoring said harvested blood components during at least a portion of said harvesting step;

utilizing a predetermined yield monitoring technique to obtain a first monitored yield value for said harvested blood components based at least in part upon said monitoring step, said predetermined yield monitoring technique comprising another said on-line yield determination technique;

establishing a second calibration factor for said predetermined yield monitoring technique in relation to said predetermined off-line yield determination technique;

applying said second calibration factor to said first monitored yield value to obtain a second monitored yield value;

verifying a validity of said second predicted yield value in relation to said second monitored yield value comprising the step of comparing said second predicted yield value and said second monitored yield value to identify any difference in magnitude between said second predicted yield value and said second monitored yield value;

performing a first determined yield step when said any difference in magnitude between said second predicted yield value and said second monitored yield value from said comparing step is less than a predetermined value, said performing a first determined yield step comprising using said second predicted yield value and said second monitored yield value to provide said determined yield for said harvested blood components;

performing a second determined yield step when any difference in magnitude between said second predicted yield value and said second monitored yield value from said comparing step is at least as great as said predetermined value, said performing a second determined yield step comprising using said predetermined off-line yield determination technique to provide said determined yield for said harvested blood components;

packaging said harvested blood components; and

recording said packaged blood components as having said determined yield, whereby said blood component product is completed.

5,605,843

KIT FOR PRENATAL SCREENING FOR DOWN'S SYNDROME

Jacob A. Canick, Newton, Mass.; Nicholas J. Wald; Howard S. Cuckle, both of London, United Kingdom, and James E. Haddow, Sebago Lake, Me., assignors to 3 i Research Exploitation Ltd., United Kingdom

Division of Ser. No. 908,875, Jul. 7, 1992, Pat. No. 5,506,150, which is a continuation of Ser. No. 457,687, Jan. 9, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 478,045

Claims priority, application United Kingdom, Jul. 9, 1987, 8716158; Oct. 23, 1987, 8724913

Int. Cl.[6] G01N *33/53;33/74;33/76*

U.S. Cl. 436—510 **3 Claims**

1. An assay kit for a sample of serum from a pregnant woman at a stage before the beginning of the third trimester of pregnancy to determine if a pregnant woman is carrying a fetus having an increased risk of Down's syndrome, said kit consisting of:

an immunoassay means to determine a level of unconjugated oestriol in said sample,

an immunoassay means to determine a level of alpha-fetoprotein in said sample, and

an immunoassay means to determine a level of human chorionic gonadotrophin in said sample.

5,605,844

INSPECTING METHOD FOR SEMICONDUCTOR DEVICES

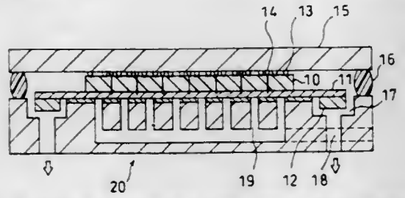
Shinichi Oki; Koichi Nagao, both of Osaka, and Yoshiro Nakata, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 27, 1996, Ser. No. 624,954

Claims priority, application Japan, Mar. 31, 1995, 7-076071

Int. Cl.[6] H01L *21/66*

U.S. Cl. 437- -8 **18 Claims**



1. An inspecting method for a semiconductor device, comprising:

a first step of fixing a semiconductor wafer on an expandable sheet, said semiconductor wafer being formed with a plurality of semiconductor chips each having a test electrode;

a second step of dividing said plural semiconductor chips from each other by dicing said semiconductor wafer fixed on said sheet without dividing said sheet;

a third step of aligning a contactor for supplying an electric signal to said test electrode of each semiconductor chip against said semiconductor wafer after performing said dicing operation, and fixing said semiconductor wafer to said contactor; and

a fourth step of heating said semiconductor wafer fixed to said contactor so as to expand a gap between adjacent semiconductor chips in response to thermal expansion of said contactor, and then performing a burn-in on all of said plural semiconductor chips.

5,605,845

MANUFACTURE OF ELECTRONIC DEVICES COMPRISING THIN-FILM TRANSISTORS HAVING SELF-ALIGNED PLURAL GATES

Nigel D. Young, Redhill, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 20, 1994, Ser. No. 359,372

Claims priority, application United Kingdom, Dec. 20, 1993, 9325984

Int. Cl.[6] H01L *21/84*

U.S. Cl. 437—21 **16 Claims**

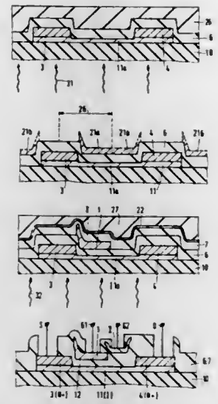
1. A method of manufacturing an electronic device which comprises a thin-film field-effect transistor on a substrate, the transistor having a gate for controlling current flow between source and drain, the gate being formed using self-aligned photolithographic process steps which include:

(a) selectively exposing a first photoresist film by illumination through the substrate while using opaque areas of the source and drain as a photomask, and

(b) developing the selectively-exposed first photoresist film to leave a first photoresist area for defining an area of the gate, which method is characterised in that the transistor has first and second gates formed from respective first and second conductive layers in separate self-aligned photolithographic process steps, wherein the first photoresist film of steps (a) and (b) is of positive type and is used in a lift-off process including the steps of:

(c) depositing the first conductive layer of opaque material after developing the first photoresist film in step (b), and

(d) then removing the first photoresist area to leave a first area of the first conductive layer where the first and second gates are to be provided, after which a part of the first area of the first



conductive layer is removed in a step (e) to leave a smaller, second area of the first conductive layer for forming the first gate, and thereafter a second photoresist film is provided in a step (f), and the second gate is then formed by further self-aligned photolithographic process steps which include:

(g) selectively exposing the second photoresist film by illumination through the substrate while using the opaque areas of the source and drain and first gate as a photomask, and

(h) developing the selectively-exposed second photoresist film to leave a second photoresist area for defining an area of the second conductive layer which provides the second gate.

5,605,846

METHOD FOR MANUFACTURING SEMICONDUCTOR DEVICE

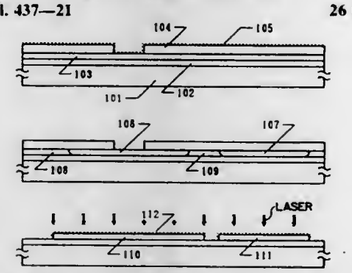
Hisahi Ohtani; Akiharu Miyanaga; Hongyong Zhang, and Naoaki Yamaguchi, all of Kanagawa, Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Filed Feb. 21, 1995, Ser. No. 391,580

Claims priority, application Japan, Feb. 23, 1994, 6-051237

Int. Cl.[6] H01L *21/268;21/84*

U.S. Cl. 437—21 **26 Claims**



19. A method of manufacturing a semiconductor device over a substrate comprising the steps of:

forming a base insulating film on said substrate;

forming a semiconductor film comprising silicon on said base insulating film in direct contact therewith;

disposing a catalyst capable of promoting a crystallization of an amorphous silicon on at least a portion of said semiconductor film;

heating said semiconductor film in order to crystallize said semiconductor film to a degree of crystallization of 97% or less; and then irradiating said semiconductor film with light in order to further improve the crystallinity of said semiconductor film.

5,605,847

PROCESS FOR FABRICATING A TFT BY SELECTIVELY OXIDIZING OR NITRIDING A LIGHT SHIELDING LAYER

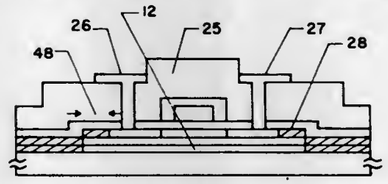
Hongyong Zhang, Kanagawa, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Atsugi, Japan

Division of Ser. No. 263,433, Jun. 21, 1994, abandoned. This application Jun. 2, 1995, Ser. No. 459,826

Claims priority, application Japan, Jun. 24, 1993, 5-177408

Int. Cl.[6] H01L *21/84*

U.S. Cl. 437—24 **9 Claims**



1. A method for manufacturing a semiconductor device comprising:

forming a light-shielding layer on a transparent substrate;

forming a semiconductor island on a first portion of said light-shielding layer; and

oxidizing a second portion of said light-shielding layer to render said second portion light-transparent and to leave said first portion to be light-shielding,

wherein said first portion is larger than said semiconductor island by a constant or substantially constant width all around a circumference of said semiconductor island.

5,605,848

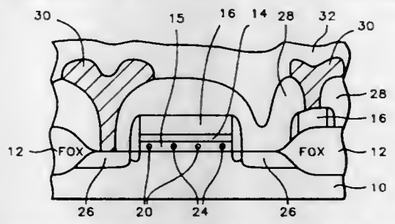
DUAL ION IMPLANTATION PROCESS FOR GATE OXIDE IMPROVEMENT

Sukhum Ngaoaram, Singapore, Singapore, assignor to Chartered Semiconductor Manufacturing Pte Ltd., Singapore, Singapore

Filed Dec. 27, 1995, Ser. No. 579,166

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—24 **14 Claims**



1. A method of fabricating an integrated circuit device comprising:

growing a layer of gate silicon oxide over the surface of a semiconductor substrate;

depositing a polysilicon layer overlying said gate silicon oxide layer;

implanting fluorine ions through said polysilicon layer wherein said fluorine ions congregate at the interface between the gate silicon oxide layer and the surface of the semiconductor substrate;

thereafter implanting nitrogen ions through said polysilicon layer wherein said nitrogen ions congregate at the interface between the gate silicon oxide layer and the surface of the semiconductor substrate;

annealing said substrate;

patterning said polysilicon and said gate silicon oxide layers to form gate electrodes and interconnection lines;

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implanting source/drain ions to form source and drain regions within said semiconductor substrate using said gate electrodes and said interconnection lines as a mask; and

providing metallization with electrical connections to complete the fabrication of said integrated circuit device.

5,605,849

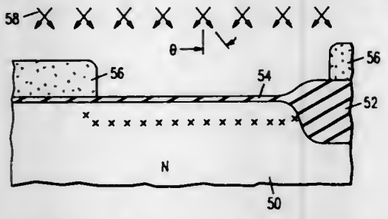
USE OF OBLIQUE IMPLANTATION IN FORMING BASE OF BIPOLAR TRANSISTOR

Hung-Sheng Chen, and Chih S. Teng, both of San Jose, Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Oct. 7, 1994, Ser. No. 320,144

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—31 **30 Claims**



1. A transistor base region fabrication method comprising the step of introducing semiconductor dopant into a semiconductor body through part of its upper surface to define a doped zone that forms a PN junction with adjoining material of the semiconductor body outside the doped zone, a portion of the doped zone constituting a base region for a bipolar transistor, the introducing step entailing ion implanting the dopant into the semiconductor body at a tilt angle of at least 15° relative to a direction generally perpendicular to the semiconductor body's upper surface using a shield to control where the dopant enters the semiconductor body.

5,605,850

METHOD FOR MAKING A LOW-NOISE BIPOLAR TRANSISTOR

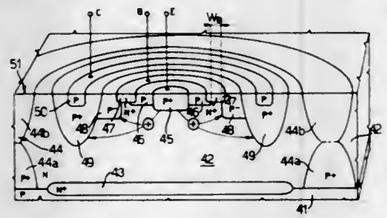
Flavio Villa, Milan, Italy, assignor to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Continuation of Ser. No. 312,472, Sep. 26, 1994. This application Jun. 6, 1995, Ser. No. 471,084

Claims priority, application European Pat. Off., Sep. 27, 1993, 93830393

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—31 **18 Claims**



1. A method for making a transistor, comprising:

forming in a semiconductor layer of a first conductivity type having a surface an emitter region of a second conductivity type;

forming in said semiconductor layer a collector region of said second conductivity type that surrounds said emitter region;

forming in said semiconductor layer between said emitter and collector regions a base region of said first conductivity type that surrounds said emitter region and extends a first depth from said surface into said semiconductor layer;

forming an electrically conductive contact on said base region; and

forming in said semiconductor layer between said emitter and said base regions an intermediate region of said second conductivity type having a lower dopant concentration than said emitter region.

5,605,851

METHOD OF FORMING SEMICONDUCTOR DEVICE WITH A BURIED JUNCTION

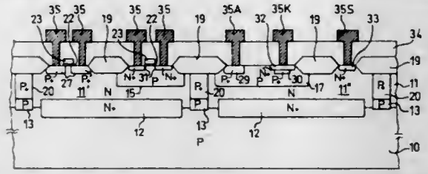
Michele Palmieri, Settimo Milanese, and Riccardo Depetro, Domodossola, both of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Filed Mar. 31, 1995, Ser. No. 414,120

Claims priority, application European Pat. Off., Mar. 31, 1994, 94830160

Int. Cl.[6] H01L *21/8228*

U.S. Cl. 437—33 **13 Claims**



1. A method for forming, on a chip of semiconductor material, a structure which includes a first region having conductivity of a first type bounded by a major surface of the chip and a second region having conductivity of a second type, being buried in the chip and forming a junction with the first region, which method comprises:

a first doping step for introducing impurities of a first type into an area of the major surface of the chip;

a second doping step for introducing impurities of a second type into a portion of said area; and

a high-temperature treatment step for diffusing the impurities introduced by the first and second steps through the chip, thereby forming said first and second regions; and is characterized in that the second doping step is carried out after the first doping step and comprises at least one sub-step of implanting impurities of the second type at a first dosage and low energy, and at least one sub-step of implanting impurities of the second type at a second dosage lower than the first dosage and high energy; the implantation impurities, dosages and energies being selected such that the type of conductivity of the first region is neither compensated nor reversed, and such that the concentration of impurities in the second region is substantially due to the second dosage, high energy implantation sub-step only.

5,605,852

METHOD FOR FABRICATING HIGH VOLTAGE TRANSISTOR HAVING TRENCHED TERMINATION

Izak Bencuya, San Jose, Calif., assignor to Siliconix Incorporated, Santa Clara, Calif.

Division of Ser. No. 918,996, Jul. 23, 1992, Pat. No. 5,430,324. This application May 18, 1995, Ser. No. 444,336

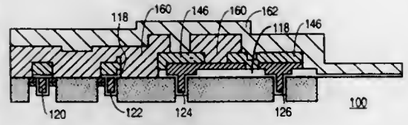
Int. Cl.[6] H01L *21/335*

U.S. Cl. 437—40 **9 Claims**

1. A method of forming a transistor structure in a substrate comprising the steps of:

forming in the substrate a field effect transistor including a doped deep body region and a gate electrode in a gate trench in the substrate;

forming a first doped annular region in the substrate laterally surrounding the field effect transistor;



forming a second doped annular region in the substrate spaced apart from and laterally surrounding the first doped annular region;

forming a first trench in the substrate laterally surrounding the field effect transistor and lying between the first and second annular doped regions; and

forming insulation in the trench;

wherein a depth and doping level of the first and second doped annular regions are the same as that of the deep body region and the depth and width of the first insulated trench are the same as that of the gate trench.

5,605,853

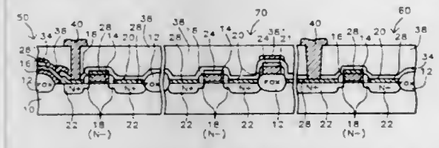
METHOD OF MAKING A SEMICONDUCTOR DEVICE HAVING 4 TRANSISTOR SRAM AND FLOATING GATE MEMORY CELLS

Chue-San Yoo; Mong-Song Liang, and Jin-Yuan Lee, all of Hsin-Chu, Taiwan, assignors to Taiwan Semiconductor Manufacturing Company Ltd., Hsinchu, Taiwan

Filed May 28, 1996, Ser. No. 654,131

Int. Cl.[6] H01L *21/8247;21/8244*

U.S. Cl. 437—43 **15 Claims**



1. A method of forming an SRAM (Static Random Access Memory), a floating gate memory, and a logic device on a single semiconductor substrate, in a first memory region, a second memory region, and a logic region, respectively, comprising the steps of:

providing a semiconductor substrate;

forming field isolation regions in said semiconductor substrate;

forming a gate oxide over said substrate between said field isolation regions;

depositing a first polysilicon layer over said gate oxide;

patterning said first polysilicon layer, comprising:

forming gates over a portion of said gate oxide a gate being formed in said first and second memory regions and said logic region,

forming a polysilicon interconnect over a portion of said field isolation regions, only in said first memory region; and

forming a floating gate over a field oxide region in said second memory region;

forming lightly doped drain (LDD) active regions in said substrate, adjacent to each said gates over a portion of said gate oxide;

forming insulating spacers on sidewalls of said gates, polysilicon interconnect and said floating gate;

completing formation of said active regions by a heavy ion implant;

removing said insulating spacers from the sidewalls of said polysilicon interconnect;

forming a first interpoly oxide over said floating gate and over said gate in said second memory region, whereby protected gate areas are formed;

forming a layer of titanium silicide over said gates, polysilicon interconnect and active regions, except over said protected gate areas, whereby said titanium silicide electrically connects said polysilicon interconnect and said active regions in said first memory region;

forming a second interpoly oxide over said semiconductor substrate;

forming an opening in said second interpoly oxide over said polysilicon interconnect;

depositing a second layer of polysilicon over said substrate; and

patterning said second layer of polysilicon to form a control gate over said floating gate, and to form a load resistor for said SRAM.

5,605,854

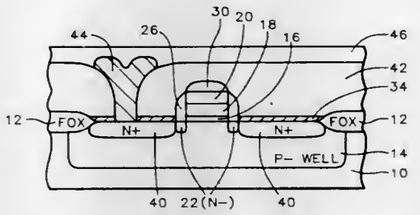
INTEGRATED TI-W POLYCIDE FOR DEEP SUBMICRON PROCESSING

Chue-san Yoo, Hsin-Chu, Taiwan, assignor to Taiwan Semiconductor Manufacturing Company Ltd., Hsin-Chu, Taiwan

Filed Feb. 20, 1996, Ser. No. 603,116

Int. Cl.[6] H01L *21/441*

U.S. Cl. 437—44 **24 Claims**



1. A method of fabricating an integrated circuit device comprising:

growing a layer of gate silicon oxide over the surface of a semiconductor substrate;

depositing a polysilicon layer overlying said gate silicon oxide layer;

forming a tungsten silicide layer overlying said polysilicon layer;

patterning said tungsten silicide, said polysilicon and said gate silicon oxide layers to form gate electrodes;

implanting first ions to form lightly doped regions within said semiconductor substrate using said gate electrode as a mask;

forming spacers on the sidewalls of said gate electrode;

annealing said substrate in an oxidizing ambient to drive in said lightly doped regions whereby a first silicon dioxide layer is formed overlying said gate electrode and a second silicon dioxide layer is formed overlying said semiconductor substrate wherein said first silicon dioxide layer is thicker than said second silicon dioxide layer;

etching away said first and second silicon dioxide layers whereby said second silicon dioxide layer is completely removed and a portion of said first silicon dioxide layer remains;

depositing a layer of titanium over the surface of said substrate;

performing a second annealing whereby the portion of said titanium layer directly overlying said semiconductor substrate is transformed into titanium salicide and whereby the remaining said titanium nitride layer overlying said first silicon dioxide layer and overlying said titanium salicide is transformed into titanium nitride;

removing said titanium nitride layer leaving said titanium salicide layer directly overlying said semiconductor substrate; and

implanting second ions to form heavily doped source and drain regions completing the fabrication of said integrated circuit device.

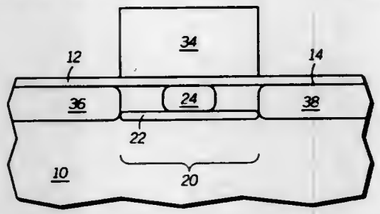
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5,605,855

PROCESS FOR FABRICATING A GRADED-CHANNEL MOS DEVICE

Ko-Min Chang; Marius Orlowski; Craig Swift; Shih-Wei Sun, and Shiang-Chyong Luo, all of Austin, Tex., assignors to Motorola Inc., Schaumburg, Ill.

Filed Feb. 28, 1995, Ser. No. 395,339
Int. Cl.[6] H01L *21/8234*
U.S. Cl. 437—45 **9 Claims**



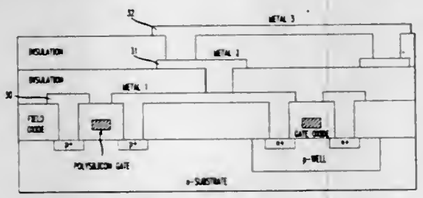
1. A process for fabricating a semiconductor device comprising the steps of:
providing a semiconductor substrate of a first conductivity type having a surface;
defining a channel region in the semiconductor substrate;
forming a first doped region of the first conductivity type in the channel region;
forming a second doped region of the first conductivity type in the channel region, wherein:
the second doped region extends from the surface to the first doped region and separates the first doped region from the surface;
the second doped region is narrower in cross-sectional width than the first doped region; and
the steps of forming the first doped region and forming the second doped region are performed during separate processing steps;
forming a gate electrode overlying the channel region; and
forming source and drain regions of a second conductivity type in the semiconductor substrate on either side of the gate electrode.

5,605,856

METHOD FOR DESIGNING AN ELECTRONIC INTEGRATED CIRCUIT WITH OPTICAL INPUTS AND OUTPUTS

Keith W. Goosen, Aberdeen, N.J.; Fouad E. Kiamilev, Charlotte, N.C.; Ashok V. Krishnamoorthy, Middletown, N.J.; David A. B. Miller, Fair Haven, N.J., and James A. Walker, Howell, N.J., assignors to University of North Carolina, Charlotte, N.C., and Lucent Technologies Inc., Murray Hill, N.J.

Filed Mar. 14, 1995, Ser. No. 403,316
Int. Cl.[6] H01L *21/768*
U.S. Cl. 437—51 **25 Claims**



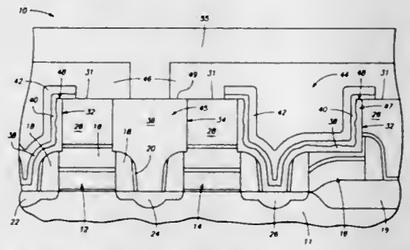
1. A method comprising the steps of:
(a) selecting an electronic integrated circuit design having at least one circuit cell design for processing electric signals, said circuit cell design having a number of electric inputs and electric outputs, said integrated circuit design further including a plurality of layers of metalization for providing electric coupling;
(b) subsequent to step (a), locating a number of optical input devices on the circuit cell design in a first orientation, the number of optical input devices being no greater than the number of electric inputs to the circuit cell;
(c) subsequent to step (a), locating a number of optical output devices on the circuit cell design in a second orientation, the number of optical output devices being no greater than the number of electric outputs to the circuit cell;
(d) selecting at least a topmost layer of metalization for electrically coupling each optical input device to a distinct one of said electric inputs of the circuit cell and for electrically coupling each optical output device to a distinct one of said electric outputs of the circuit cell;
(e) fabricating an integrated circuit with optical inputs and outputs in accordance with steps (a)–(d).

5,605,857

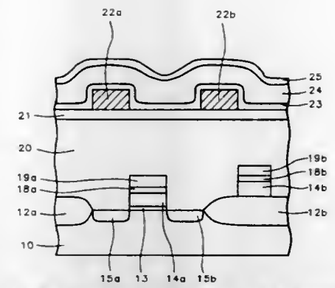
METHOD OF FORMING A BIT LINE OVER CAPACITOR ARRAY OF MEMORY CELLS AND AN ARRAY OF BIT LINE OVER CAPACITOR ARRAY OF MEMORY CELLS

Mark Jost, Boise, and Charles Dennison, Meridian, both of Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation-in-part of Ser. No. 277,916, Jul. 20, 1994, Pat. No. 5,401,681, which is a continuation-in-part of Ser. No. 47,668, Apr. 14, 1993, Pat. No. 5,338,700, and Ser. No. 17,067, Feb. 12, 1993, Pat. No. 5,340,763. This application Feb. 22, 1995, Ser. No. 394,546
Int. Cl.[6] H01L *21/8242*
U.S. Cl. 437—60 **6 Claims**



1. A method of forming a bit line over capacitor array of memory cells comprising the following steps:
providing an array of substantially electrically isolated word lines atop a semiconductor wafer;
providing active areas about the word lines to define an array of memory cell FETs, the active areas being defined by a first active region for electrical connection with a memory cell capacitor and a second active region for electrical connection with a bit line;
providing a layer of electrically insulating material over the word lines and active areas, the layer of insulating material having an uppermost surface which is above the word lines;
providing a second contact opening through the insulating material layer to the second active region;
providing a first electrically conductive layer over the insulating material upper surface and within the second contact opening which electrically connects with the second active region, the first electrically conductive layer being provided to a thickness which completely fills the second contact opening;
providing a first contact opening through the first electrically conductive layer and through the insulating material to the first active region;
providing a capacitor storage node electrically conductive layer over the first electrically conductive layer and within the first contact opening which electrically connects with the first active region, the storage node layer being provided to a thickness which less than completely fills the first contact opening; and
chemical-mechanical polishing the capacitor storage node layer and the first conductive layer to at least the upper surface of the insulating material, the chemical-mechanical polishing step effectively electrically isolating the first conductive layer material within the second contact opening from the storage node conductive layer material within the first contact opening, the chemical-mechanical polishing step effectively defining a homogeneous second contact plug having a plug upper surface, the chemical-mechanical polishing step effectively defining an isolated capacitor storage node having an upper surface, the upper surfaces of the plug and storage node being elevationally coincident.



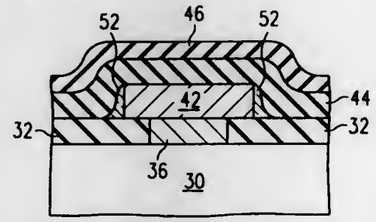
forming a first insulating layer directly upon a semiconductor substrate, the first insulating layer being formed from a glasseous material;
forming a polysilicon resistor in contact with the first insulating layer;
forming a second insulating layer directly upon the first insulating layer and above the polysilicon resistor, the second insulating layer being formed from a silicon oxide material deposited through a Plasma Enhanced Chemical Vapor Deposition process employing silane as the silicon source material, the second inflating layer being formed at a temperature of about 300 to about 500 degrees centigrade and at a deposition rate of about 5000 to about 10000 angstroms per minute to yield the second insulating layer having an index of refraction of about 1.4 to about 1.5.

5,605,858

METHOD OF FORMING HIGH-DIELECTRIC-CONSTANT MATERIAL ELECTRODES COMPRISING CONDUCTIVE SIDEWALL SPACERS OF SAME MATERIAL AS ELECTRODES

Yasushiro Nishioka, Tsukuba, Japan; Scott R. Summerfelt, Dallas, Tex.; Kyung-ho Park, and Pijush Bhattacharya, both of Tsukuba, Japan, assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 283,871, Aug. 1, 1994, Pat. No. 5,489,548. This application Jun. 7, 1995, Ser. No. 483,804
Int. Cl.[6] H01L *21/70*
U.S. Cl. 437—60 **11 Claims**



1. A method of forming a microelectronic structure, said method comprising steps:
(a) forming a supporting layer having a principal surface;
(b) forming an adhesion layer on said principle surface;
(c) forming an unreactive layer on said adhesion layer, said unreactive layer having a lateral surface and an upper surface forming a corner edge,
(d) forming a conductive sidewall spacer of the same material of said unreactive layer adjacent said lateral surface of said unreactive layer, said sidewall spacer abutting said corner edge to form a rounded corner; and
(e) depositing a high-dielectric-constant material layer having a dielectric constant of about 50 or greater on said unreactive layer and on said sidewall spacer, whereby the rounded corner reduces crack formation in the high-dielectric-constant material layer.

5,605,859

METHOD OF MAKING INSULATOR STRUCTURE FOR POLYSILICON RESISTORS

Chung-Kuang Lee, Hsin-Chu, Taiwan, assignor to Taiwan Semiconductor Manufacturing Company, Ltd., Hsin-Chu, Taiwan

Filed Jul. 5, 1995, Ser. No. 498,355
Int. Cl.[6] H01L *21/8244*
U.S. Cl. 437—60 **13 Claims**

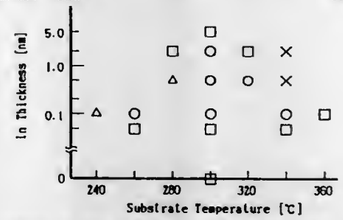
1. A method for forming a polysilicon resistor structure within an integrated circuit comprising:

5,605,860

METHOD OF FABRICATING SEMICONDUCTOR THIN FILM AND METHOD OF FABRICATION HALL-EFFECT DEVICE

Tetuo Kawasaki, Katano; Tetuhiro Koretika, Hirakata; Makoto Kitabatake, Nara, and Takasi Hirao, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 247,655, May 23, 1994, Pat. No. 5,385,864. This application Jan. 18, 1995, Ser. No. 374,207
Claims priority, application Japan, May 28, 1993, 5-126926; Jun. 18, 1993, 5-147422; Jan. 18, 1994, 6-3462
Int. Cl.[6] H01L *21/20*
U.S. Cl. 437—126 **15 Claims**



1. A method of fabricating a semiconductor thin film, comprising the steps of:
preparing a substrate having a surface including a single crystal of Si;
removing an oxide film from the surface of the substrate and terminating dangling bonds of Si atoms on the surface with hydrogen atoms;
forming an initial layer of at least one member selected from the group consisting of Al, Ga, and In on the substrate terminated with the hydrogen atoms;
forming a buffer layer containing at least In and Sb on the initial layer; and
forming a semiconductor thin film containing at least In and Sb on said buffer layer at a temperature higher than a temperature at which said buffer layer is started to be formed.

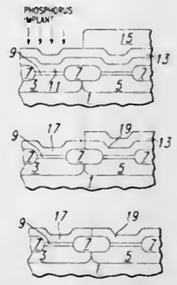
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5,605,861

THIN POLYSILICON DOPING BY DIFFUSION FROM A DOPED SILICON DIOXIDE FILM

Andrew T. Appel, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 5, 1995, Ser. No. 436,028
Int. Cl.[6] H01L *21/225*
U.S. Cl. 437—164 **12 Claims**



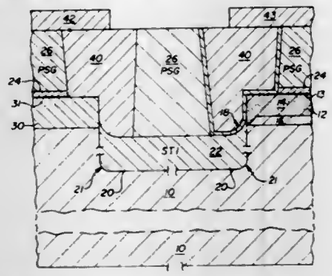
1. A method of forming a CMOS transistor comprising the steps of:
(a) providing a partially fabricated CMOS structure having a p-type region and an n-type region, a separate window to each of said p-type and n-type regions, a gate oxide layer having a finite thickness less than 90 Å over each said window and a polysilicon gate layer having a finite thickness less than 3200 Å over said gate oxide layer;
(b) depositing a layer of glass having a boron doping species therein over said polysilicon gate layer disposed over said window over said n-type region;
(c) then doping the portion of said polysilicon gate layer disposed over said window over said p-type region n-type;
(d) heating the structure formed in step (c) to cause boron to diffuse from said layer of glass into said polysilicon gate layer disposed over said window over said n-type region;
(e) removing said layer of glass; and
(f) completing fabrication of said CMOS device.

5,605,862

PROCESS FOR MAKING LOW-LEAKAGE CONTACTS

John H. Givens; Charles W. Koburger, III, and Jerome B. Lasky, all of Essex Junction, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 5, 1995, Ser. No. 417,326
Int. Cl.[6] H01L *21/44*
U.S. Cl. 437—180 **12 Claims**



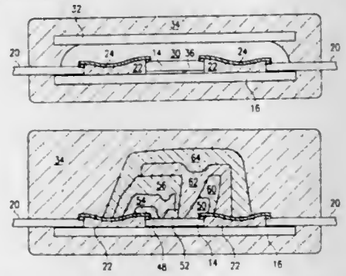
1. A process for selectively forming low-leakage contacts to doped electronic elements, comprising:
providing a substrate having first and second openings, said first and second openings exposing side portions of respective first and second doped electronic elements, said first electronic element having a lightly doped region of a first dopant type, a side portion of said lightly doped region being exposed by said first opening;
depositing a first dopant layer within said first and second openings adjacent said first and second electronic elements, said first dopant layer comprising a source of dopant of said first dopant type;
protecting the first layer adjacent said first electronic element and removing said first layer from adjacent said second electronic element;
de-protecting the first layer adjacent said first electronic element;
diffusing dopant of said first dopant type from said first layer into said lightly doped region of said first electronic element to thereby increase dopant level of the side portion of said region; and
depositing a conductive material within said first and second openings.

5,605,863

DEVICE PACKAGING USING HEAT SPREADERS AND ASSISTED DEPOSITION OF WIRE BONDS

Kendall S. Wills, Houston, and Paul A. Rodriguez, Lewisville, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 98,008, Jul. 27, 1993, which is a continuation of Ser. No. 817,972, Jan. 6, 1992, which is a continuation of Ser. No. 575,744, Aug. 31, 1990. This application Jun. 7, 1995, Ser. No. 472,103
Int. Cl.[6] H01L *21/283;21/56;21/60*
U.S. Cl. 437—182 **20 Claims**



1. A method of packaging a device, comprising the steps of:
placing a die on a first heat spreader;
positioning a lead frame on said first heat spreader and around said die;
dispensing a filler material from said die to said lead frame;
focusing a high intensity energy source on a region of said filler material where deposition is to take place; and
depositing a bond lead from a bond pad on said die, across the die and said region of filler material where deposition is to take place, to a bond location on said lead frame.

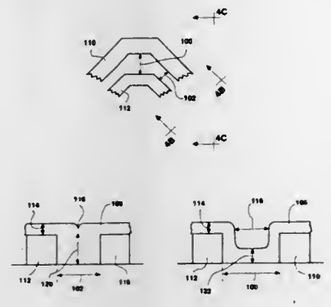
5,605,864

METHOD FOR FORMING A SEMICONDUCTOR BURIED CONTACT WITH A REMOVABLE SPACER

Kirk D. Prall, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Aug. 2, 1994, Ser. No. 285,335
Int. Cl.[6] H01L *21/44;21/48*
U.S. Cl. 437—195 **17 Claims**

11. A method of forming a connection to a semiconductor wafer having transistor gate structure formations thereon, the method comprising:
a) depositing an insulator over the wafer and gate structure formations;



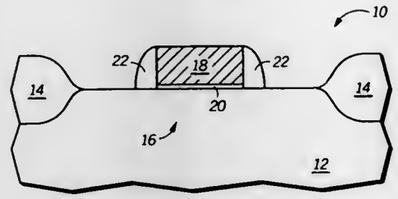
b) depositing a removable spacer over the insulator such that:
(i) a first gap between the gate structure formations is essentially filled in by the removable spacer; and,
(ii) a second gap between the gate structure formations at a location defined for the connection is not completely filled by the removable spacer, whereby a thickness of the removable spacer in the first gap is greater than a thickness of the removable spacer in the second gap;
c) patterning the connection in the removable spacer;
d) anisotropically etching the removable spacer and insulator to form the connection such that the connection is sublithographic in at least a dimension parallel to the gate structure formations; and,
e) further etching the removable spacer to completely remove the removable spacer.

5,605,865

METHOD FOR FORMING SELF-ALIGNED SILICIDE IN A SEMICONDUCTOR DEVICE USING VAPOR PHASE REACTION

Papu D. Maniar, and Arkalgud R. Sitaram, both of Austin, Tex., assignors to Motorola Inc., Schaumburg, Ill.

Filed Apr. 3, 1995, Ser. No. 416,124
Int. Cl.[6] H01L *21/285*
U.S. Cl. 437—200 **16 Claims**



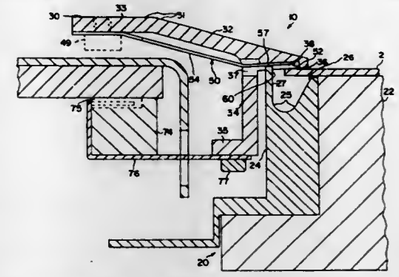
1. A method for forming self-aligned silicide in a semiconductor device comprising the steps of:
providing a semiconductor substrate having exposed silicon regions;
placing the semiconductor substrate in a reaction chamber;
introducing a cobalt precursor into the reaction chamber, without also introducing a silicon source gas; and
exposing the cobalt precursor to a heat sufficient to react the cobalt precursor with the exposed silicon regions to form cobalt silicide regions only on the exposed silicon regions.

5,605,866

CLAMP WITH WAFER RELEASE FOR SEMICONDUCTOR WAFER PROCESSING EQUIPMENT

Adolphus E. McClanahan, San Jose; Frederick T. Turner, Sunnyvale; Kenneth E. Anderson; Phillip B. Nicholson, both of San Jose, and Martin A. Hutchinson, Santa Clara, all of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Division of Ser. No. 140,351, Oct. 20, 1993, Pat. No. 5,513,594. This application Nov. 30, 1995, Ser. No. 565,355
Int. Cl.[6] H01L *21/302*
U.S. Cl. 437—225 **4 Claims**



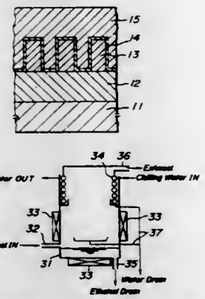
1. A method of clamping a substrate to a platform in a processing chamber, comprising the steps of,
positioning a substrate on a platform,
translating a clamping mechanism to engage the substrate so that the substrate is securely held against said platform,
processing the substrate while it is being held against the platform,
translating the clamping mechanism away from the platform,
using a wafer engaging surface to apply a separation force to said substrate if the substrate sticks to the clamping mechanism.

5,605,867

METHOD OF MANUFACTURING INSULATING FILM OF SEMICONDUCTOR DEVICE AND APPARATUS FOR CARRYING OUT THE SAME

Nobuyoshi Sato; Tomohiro Ohta; Tadashi Nakano, and Hiroshi Yamamoto, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Mar. 15, 1993, Ser. No. 34,748
Claims priority, application Japan, Mar. 13, 1992, 4-055336; Apr. 7, 1992, 4-085554; Jun. 16, 1992, 4-156844; Jun. 16, 1992, 4-156845; Sep. 10, 1992, 4-242138; Oct. 5, 1992, 4-266247; Dec. 9, 1992, 4-329397
Int. Cl.[6] H01L *21/02*
U.S. Cl. 437—235 **11 Claims**



1. A method of forming an insulating film on a surface of a substrate of a semiconductor device that has protrusions and depressions, comprising the steps of:

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(a) receiving a semiconductor substrate comprising a surface having hydroxyl containing groups thereon;
(b) adsorbing molecules of at least one organic compound on the surface of said semiconductor substrate using a fluid comprising said at least one organic compound;
(c) esterifying said hydroxyl containing groups; and
(d) forming an insulating film on the thus treated surface of the semiconductor substrate by chemical vapor deposition using an organic silicon compound.

5,605,868

OXIDATIVE STABLE CERAMIC COMPOSITES

Kenneth Chyung, Painted Post; Steven B. Dawes, Corning; David C. Larsen, Alpine, and Ronald L. Stewart, Elmira, all of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Dec. 29, 1994, Ser. No. 365,811

The portion of the term of this patent subsequent to Dec. 29, 2014, has been disclaimed.

Int. Cl.[6] C03C *10/06;14/00*

U.S. Cl. 501—8 **20 Claims**

1. A SiC fiber reinforced, ceramic matrix composite article exhibiting high temperature oxidative stability comprising:
(a) a glass-ceramic matrix wherein alkali metal and/or alkaline earth metal aluminosilicate crystals constitute the predominant crystal phase;
(b) a fiber reinforcing phase comprising SiC fibers coated with an alkali metal and/or alkaline earth metal sheet silicate entrained within said glass-ceramic matrix; and
(c) a borosilicate glass phase dispersed as an intergranular glass within said glass-ceramic matrix, said borosilicate glass phase being present in an amount sufficient to provide an intergranular glass phase therein.

5,605,869

GLASS COMPOSITIONS

Harbans K. Mangat; Peter J. Smith, both of Oxfordshire; Richard J. Hall, and Shaun Wingfield, both of Staffordshire, all of United Kingdom, assignors to Cookson Matthey Ceramics & Materials Limited, London, United Kingdom

Filed Jan. 30, 1995, Ser. No. 380,586

Claims priority, application United Kingdom, Jan. 31, 1994, 9401818

Int. Cl.[6] C03C *1/00*

U.S. Cl. 501—14 **16 Claims**

1. An on-glaze low expansion glass flux composition suitable for coating onto a glazed surface which is essentially free from lead and cadmium and which consists of the following components:

	Mole %
SiO_2	35–75
Bi_2O_3	4–12
Al_2O_3	2–12
B_2O_3	18–35
rare earth oxide	0–5
at least one of Li_2O, Na_2, K_2O	up to 12 (in total)
optionally at least one of ZnO, MgO, CaO, SrO, BaO	0–10 (in total)
ZrO_2	0–5
TiO_2	0–5
WO_3	0–5
MoO_3	0–5
optionally at least one of Y_2O_3, HfO_2, Ta_2O_5, Nb_2O_5, SnO_2	0–5 (in total)
P_2O_5	0–10
V_2O_5	0–3

with the provisos that BaO is not contained in an amount of more than 2 mole percent, the total amount of $Bi_2O_3+B_2O_3+Li_2O$, Na_2O and K_2O is in the range of from 25 to 45 mole percent, the total amount of Li_2O,Na_2O and K_2O is in the range of up to 10 percent by weight except when the only alkali metal oxide present is Li_2O, and the composition has a coefficient of thermal expansion in the range of from 4.0 to 7.0×10^{-6}/°C.

5,605,870

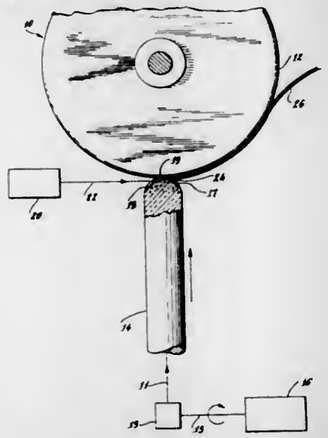
CERAMIC FIBERS, AND METHODS, MACHINES AND COMPOSITIONS OF MATTER FOR MAKING SAME

John O. Strom-Olsen, Montreal; Grazyna Rudkowska, and Piotr Z. Rudkowski, both of Dollard-Des-Ormeaux, all of Canada, assignors to Martinex Science, Inc., Montreal, Canada

Continuation-in-part of Ser. No. 69,194, May 28, 1993, abandoned. This application May 19, 1994, Ser. No. 242,715

Int. Cl.[6] C04B *35/06*

U.S. Cl. 501—95 **10 Claims**



1. A free-formed ceramic filament that is small in diameter and is substantially round in cross-section and of substantially uniform diameter throughout, is substantially 100% dense, is made from material which when melted exhibits a viscosity of less than 10 poises, has a physical structure which is selected from the group consisting of 1) partially amorphous with the balance made up of complex crystals which are less than substantially 5 microns in dimension and 2) substantially made up of complex crystals which are less than substantially 5 microns,
the outer surface of said filament being substantially smooth throughout except for a substantially linear matt surfaced line which extends longitudinally along said outer surface.
said crystals increasing in size radially from said linear matt surfaced line.

5,605,871

PROCESS OF PRODUCIING SINTERED MATERIALS BASED ON SI_3N_4/BN USING SI-B-N COMPONENT

Hans-Peter Baldus, Leverkusen; Gerd Passing, Köln, and Gerhard Wötting, Coburg, all of Germany, assignors to Bayer AG, Leverkusen, Germany

Filed Jul. 3, 1995, Ser. No. 497,772

Claims priority, application Germany, Jul. 18, 1994, 44 25 312.5

Int. Cl.[6] C04B *35/583*

U.S. Cl. 501—96 **12 Claims**

1. Process for the production of sintered materials comprising BN, sintering additives and at least one compound selected from the group consisting of Si_3N_4 and SiAlON, wherein the BN is present in the form of crystalline particles with an average particle size ≦2 μm and the BN content amounts to between 0.1 and 34 vol-%, further wherein in said process a single phase amorphous Si-B-N component with a specific surface <1.5 m^2/g is mixed with sintering additives and optionally Si_3N_4 powder to form a mixture, the mixture is formed into a moulded article, and the moulded article is sintered at temperatures in the range from 1,450° C. to 2,100° C. in an atmosphere which contains N_2.

5,605,872

FUNCTIONALIZED AMINE INITIATORS FOR ANIONIC POLYMERIZATION

John F. Engel, Belmont; Conrad W. Kamienski, Gastonia; James A. Schwindeman, Lincolnton; Randy W. Hall, Kings Mountain; Robert C. Morrison, Gastonia, and B. Troy Dover, Kings Mountain, all of N.C., assignors to FMC Corporation, Philadelphia, Pa.

Division of Ser. No. 354,998, Dec. 13, 1994, Pat. No. 5,527,753. This application Jun. 2, 1995, Ser. No. 459,585

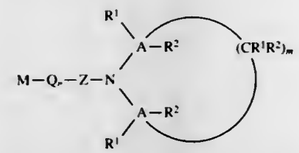
Int. Cl.[6] C08F *4/48;* **B01J** *31/12;31/18*

U.S. Cl. 502—157 **8 Claims**

1. A process for the preparation of monofunctional amine initiators in hydrocarbon solvents of the following general structures:

$$M{-}Q_n{-}Z{-}N(A(R^1R^2R^3))_2$$

or



wherein M is an alkali metal selected from the group consisting of lithium, sodium and potassium, Q is a saturated or unsaturated hydrocarbyl group selected from the group consisting of C_4 to C_{10} alkene hydrocarbons and C_8 to C_{19} alkaryl substituted aromatic selected from the group consisting of carbon and silicon, R^1, R^2, and R^3 are hydrocarbons; Z is a hydrocarbon group containing 3–25 carbon atoms, A is an element independently selected from hydrogen, alkyl, substituted alkyl, cycloalkyl, aryl or substituted aryl groups, m is an integer from 1 to 7, and n is an integer from 1 to 5, comprising reacting a tertiary amino-1-haloalkyl wherein the halo anion is selected from bromo and chloro with an alkali metal selected from the group consisting of lithium, sodium and potassium having a particle size between 10 and 300 microns in size, at a temperature between 35° and 130° C. in an alkane or cycloalkane solvent containing 5 to 10 carbon atoms to form an intermediate alkali metal-containing monofunctional amine product which is reacted further with an unsaturated material selected from the group consisting of C_4 to C_{10} conjugated diene hydrocarbons and C_8 to C_{19} alkenyl substituted aromatic hydrocarbons.

5,605,873

PRESSURE-SENSITIVE VERIFICATION SYSTEM AND USE THEREOF

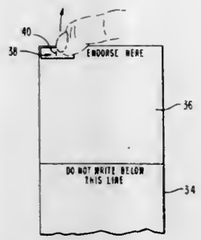
John C. H. Chang, Naperville, Ill., assignor to Wallace Computer Services, Inc., Hillside, Ill.

Division of Ser. No. 75,420, Jun. 14, 1993, Pat. No. 5,395,138. This application Oct. 6, 1994, Ser. No. 319,018

Int. Cl.[6] B41M *5/165*

U.S. Cl. 503—201 **25 Claims**

1. A verification method for avoiding acceptance of an unauthorized photoduplicated security document, which comprises, in sequence,



presenting a tendered security document to a receiving authority, said receiving authority being concerned with authenticity of said tendered security document, said security document comprising a support bearing an information area and at least one verification area, said information area comprising a visible principal image;
said verification area comprising a localized coating of a pressure-sensitive chromogenic composition which provides a visible colored authentication image by external pressure;
said receiving authority verifying authenticity of said document by applying external pressure to said pressure-sensitive chromogenic composition in at least one of said verification areas to form a visible colored image in said verification area, said visible colored image signifying that said document is authentic and not a photoduplicate;
said receiving authority accepting and retaining said authentic security document;
said authenticated security document being surrendered to said receiving authority in exchange for a valuable consideration.

5,605,874

PRESSURE-SENSITIVE COPYING MATERIAL

David J. Taylor, Monks Risborough; Ivan Sheiham, Marlow, and Margaret P. Templey, Thame, all of England, assignors to The Wiggins Teape Group Limited, United Kingdom

Filed Jul. 20, 1995, Ser. No. 504,766

Claims priority, application United Kingdom, Jul. 20, 1994, 9414637

Int. Cl.[6] B41M *5/12*

U.S. Cl. 503—201 **15 Claims**

1. Pressure-sensitive copying material comprising a sheet support carrying isolated droplets of an oil solution of chromogenic material, said droplets being confined within respective pressure-rupturable barriers, and, on the opposite surface of the same sheet or on a different sheet support, a coating of an inorganic colour developer material effective to develop the colour of the chromogenic materials in said solution on contact therewith, wherein:
a) the oil solution comprises, as a solvent, vegetable oil and/or a mono-, di- or tri-functional ester of a non-aromatic monocarboxylic acid having a straight or branched hydrocarbon chain with at least three carbon atoms in the chain in addition to the carboxyl carbon atom;
b) the solution of chromogenic materials includes at least one 3,1 benzoxazine; and
c) the surface pH of the colour developer coating is not more than about 8.7.

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5,605,875

HERBICIDAL COMPOSITIONS COMPRISING 3-(2-CHLOROPHENYLMETHYL)-1-(1-METHYL-1-PHENYLETHYL)- AND/OR 1-(METHYL-1-PHENYLETHYL)-3-(4-TOLYL)UREA AND AT LEAST ONE CYCLOHEXENONE OXIME ETHER

Matthias Bratz, Limburgerhof; Ulf Misslitz, Neustadt; Jürgen Kast, Böhl-Iggelheim; Wilhelm Rademacher, Limburgerhof, and Helmut Walter, Obrigheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Jun. 1, 1995, Ser. No. 458,041

Claims priority, application Germany, Jun. 3, 1994, 44 19 513.3

Int. Cl.[6] A01N *25/32*

U.S. Cl. 504—100 **16 Claims**

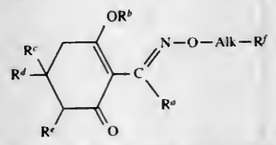
1. A herbicidal composition which comprises: at least one liquid and/or solid carrier, and

a) an antagonistically active amount of 3-(2-chlorophenylmethyl- 1-(1-methyl-1-phenylethyl)urea and/or 1-(1-methyl-1-phenylethyl)-3-(4-tolyl)urea

and

b) a herbicidally active amount of at least one cyclohexenone oxime ether of the formula I

I



where the substituents have the following meanings:

R^a is C_1–C_6-alkyl;

R^b is hydrogen, an equivalent of an agriculturally utilizable cation, (C_1–C_8-alkyl)carbonyl, C_1–C_{10}-alkylsulfonyl, C_1–C_{10}-alkylphosphonyl, benzoyl, benzenesulfonyl or benzenephosphonyl, it being possible for the aromatic rings, if desired, to carry one to five halogen atoms;

R^c is hydrogen, cyano, formyl or C_1–C_6-alkyl, which can carry one of the following radicals: C_1–C_4-alkoxy, C_1–C_4-alkylthio, phenoxy, phenylthio, pyridyloxy or pyridylthio, it being possible for the phenyl and pyridyl rings, if desired, in turn to carry one to three substituents selected from the group consisting of nitro, cyano, halogen, C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio, C_3–C_6-alkenyl, C_3–C_6-alkenyloxy, C_3–C_6-alkynyl, C_3–C_6-alkynyloxy and $—NR^eR^h$, where

R^e is hydrogen, C_1–C_4-alkyl, C_3–C_6-alkenyl, C_3–C_6-alkynyl, (C_1–C_6-alkyl) carbonyl or benzoyl, which, if desired, can carry one to three radicals selected from the group consisting of nitro, cyano, halogen, C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy and C_1–C_4-alkylthio,

and

R^h is hydrogen, C_1–C_4-alkyl, C_3–C_6-alkenyl or C_3–C_6-alkynyl;

C_3–C_7-cycloalkyl or C_5–C_7-cycloalkenyl, it being possible for these cyclic systems, if desired, to carry one to three radicals selected from the group consisting of hydroxyl, halogen, C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, benzylthio, C_1–C_4-alkylsulfonyl, C_1–C_4-alkylsulfenyl and C_1–C_4-alkylsulfinyl;

a 5-membered saturated heterocycle which, in addition to carbon atoms, contains one or two oxygen or sulfur atoms or an oxygen atom and a sulfur atom as ring members, and which if desired can carry one to three radicals selected from the group consisting of C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy and C_1–C_4-alkylthio;

a 6- or 7-membered saturated or mono- or diunsaturated heterocycle which, in addition to carbon atoms, contains one or two oxygen or sulfur atoms or one oxygen and one sulfur atom as ring members, and which if desired can carry one to three radicals selected from the group consisting of hydroxyl, halogen, C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy and C_1–C_4-alkylthio;

a 5-membered heteroaromatic system which, in addition to carbon atoms, contains one or two nitrogen atoms and one oxygen or sulfur atom or one to three nitrogen atoms or one oxygen or one sulfur atom as ring members and which, if desired, can carry one to three radicals selected from the group consisting of cyano, halogen, C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio, C_2–C_6-alkenyl, C_2–C_6-alkenyloxy, C_2–C_6-alkynyl, C_2–C_6-alkynyloxy and C_1–C_4-alkoxy-C_1–C_4-alkyl;

phenyl or pyridyl, which both, if desired, can carry one to three radicals selected from the group consisting of nitro, cyano, formyl, halogen, C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio, C_2–C_6-alkenyl, C_2–C_6-alkenyloxy, C_3–C_6-alkynyl, C_3–C_6-alkynyloxy and $—NR^eR^h$;

R^d is hydrogen, hydrogen, hydroxyl or, if R^c is C_2–C_6-alkyl, also C_2–C_6-alkyl;

R^e is hydrogen, cyano, halogen, (C_1–C_4-alkoxy)carbonyl or (C_1–C_4-alkyl)ketoxime;

Alk is a C_1–C_6-alkylene, C_3–C_6-alkenylene or C_3–C_6-alkynylene chain which in each case can carry a methylene group ($=CH_2$) and/or one to three of the following radicals: halogen and/or C_1–C_3-alkyl;

a saturated or unsaturated 3- to 6-membered chain which, in addition to carbon members, contains one of the following bridge members: oxygen or sulfur, —SO—, —SO_2— or —N(R′)—, and which if desired can carry one to three C_1–C_3-alkyl and/or halogen substituents, R′ being hydrogen, C_1–C_4-alkyl, C_3–C_6-alkenyl or C_3–C_6-alkynyl;

R^f is hydrogen or —CH=CH—Z,

Z being hydrogen, cyano, carboxyl, halogen, C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, (C_1–C_8-alkoxy)carbonyl , benzyloxycarbonyl or C_3–C_6-cycloalkyl which, if desired, can carry one to three radicals selected from the group consisting of hydrolxyl, halogen, C_1–C_4-alkyl, C_1–C_4-haloalkyl and C_1–C_4-alkoxy, or

is phenyl, halophenyl, dihalophenyl, thienyl or pyridyl, it being possible for these 5 rings, if desired, to carry one to three radicals selected from the group consisting of nitro, cyano, halogen, C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio and C_3–C_6-cycloalkyl, it being possible for the cyclic radical, if desired, in turn to carry one to three substituents selected from the group consisting of halogen, C_1–C_4-alkyl, C_1–C_4-haloalkyl and C_1–C_4-alkoxy;

ethynyl which can carry a C_1–C_4-alkyl or C_3–C_6-cycloalkyl radical, it being possible for these radicals, if desired, in turn to carry one to three substituents selected from the group consisting of hydroxyl, halogen, C_1–C_4-alkyl, C_1–C_4-haloalkyl and C_1–C_4-alkoxy;

ethynyl which carries a phenyl, thienyl or pyridyl radical, it being possible for the aromatic radical, if desired, in turn to carry one to three substituents selected from the group consisting of nitro, cyano, halogen, C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy and C_1–C_4-alkylthio;

phenyl, phenoxy, a 5-membered heteroaromatic system which, in addition to carbon ring members, contains one or two nitrogen atoms and an oxygen or sulfur atom or one to three nitrogen atoms or an oxygen or a sulfur atom, or a 6-membered heteroaromatic system which, in addition to carbon ring members, contains one to four nitrogen atoms it being possible for the phenyl ring and the heretoaromatic systems, if desired, to carry one to three radicals selected from the group consisting of nitro, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkylthio, a substituent Z and a substituent $—NR^kR^l$,

R^k being hydrogen, C_1–C_4-alkyl, C_3–C_6-alkenyl or C_3–C_6-alkynyl and

R^l being hydrogen, C_1–C_4-alkyl, C_3–C_6-alkenyl, C_3–C_6-alkynyl, (C_1–C_6-alkyl)carbonyl or benzoyl which, if desired, can carry one to three radicals selected from the group consisting of nitro, cyano, halogen, C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy and C_1–C_4-alkylthio.

5,605,876

HERBICIDAL COMPOSITION HAVING A REDUCED PHYTOTOXICITY

Minoru Higashimura, Ibaraki; Atsuhiko Yuda, Kawachinagano, and Masakazu Shibayama, Takatsuki, all of Japan, assignors to Nihon Nohyaku Co. Ltd., Tokyo, Japan

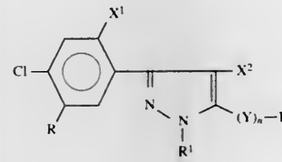
Continuation of Ser. No. 191,540, Feb. 4, 1994, abandoned. This application Aug. 18, 1995, Ser. No. 524,098

Claims priority, application Japan, Feb. 6, 1993, 5-042065

Int. Cl.[6] A01N *25/30;25/32;43/56*

U.S. Cl. 504—103 **5 Claims**

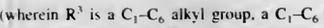
1. A method of reducing phytotoxicity to crops selected from the group consisting of wheat, barley, oats and rye, of herbicidal compositions comprising as an active ingredient at least one compound selected from 3-substituted phenylpyrazole derivatives represented by the general formula (I):



wherein R is

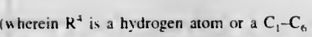


(wherein R^3 is a C_1–C_6 alkyl group, a C_1–C_6 haloalkyl group, a C_2–C_6 alkenyl group or a C_2–C_6 alkynyl group, and Y^1 is —O— or —S—),



(wherein R^4 is a hydrogen atom or a C_1–C_6 alkyl group, R^5 is a hydrogen atom, a C_1–C_6 alkyl group, a C_1–C_6 haloalkyl group, a C_2–C_6 alkenyl group or a C_2–C_6 alkynyl group, and Y^2 is —O—, —S— or —NH—),

(wherein R^4, R^5 and Y^1 are as defined above), or



(wherein R^6 is a C_1–C_6 alkyl group, a C_2–C_6 alkenyl group or a C_2–C_6 alkynyl group), R^1 is a C_1–C_6 alkyl group, R^2 is a hydrogen atom, a C_1–C_6 alkyl group or a C_1–C_6 haloalkyl group, X^1 and X^2, which may be the same or different, are halogen atoms, Y is —O—, —S—, —SO— or —SO_2—, and n is zero or 1,

said herbicidal composition further comprising as an additive(s) at least one anionic surfactant selected from the following:

polyoxyethylene styryl phenyl ether sulfates, polyoxyethylene styryl phenyl ether phosphates, C_8–C_{18} alkyl sulfates, polycarbonates, condensation products of cresol and formaldehyde, and fatty acid alkyltaurines.

5,605,877

BICYCLIC IMIDES AS HERBICIDES

Matthias Schafer, Haibach; Karlheinz Drauz, Freigericht; Dieter Feit, Wachtersbach, all of Germany, and Kofi S. Amuti, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

PCT No. PCT/EP93/02413, § 371 Date Mar. 10, 1995, § 102(e) Date Mar. 10, 1995, PCT Pub. No. WO94/05668, PCT Pub. Date Mar. 17, 1994

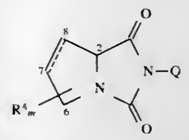
Continuation-in-part of Ser. No. 942,800, Sep. 10, 1992, abandoned. This PCT application Sep. 6, 1993, Ser. No. 397,282

Int. Cl.[6] A01N *43/90;* **C07D** *487/04*

U.S. Cl. 504—266.2 **11 Claims**

1. A bicyclic imide of formula I

I



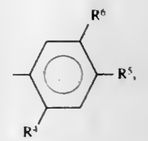
wherein the bond linking C-7 and C-8 may be single or double;

m is 1–7;

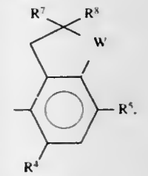
R^A can occupy one or more of the 2 or 6–8 positions and is independently selected from the group: hydroxy, halogen CN OR^3, (C_1–C_4) alkyl, $S(O)_nR^3$, COR^3, and $C(O)SR^3$;

Q is

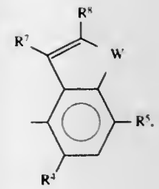
Q-1



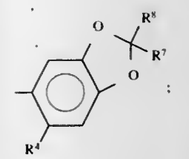
Q-2



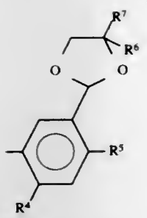
Q-3



Q-6



-continued



wherein

R^3 is $(C_1–C_8)$alkyl, $(C_3–C_8)$cycloalkyl, $(C_3–C_8)$alkenyl, $(C_3–C_8)$alkynyl, $(C_1–C_8)$haloalkyl, $(C_2–C_8)$ alkoxyalkyl, $(C_2–C_4)$carboxy alkyl, $(C_3–C_8)$alkoxycarbonylalkyl, $(C_4–C_8)$alkenyloxyalkyl, $(C_4–C_8)$alkynyloxyalkyl, $(C_3–C_8)$haloalkoxyalkyl, $(C_3–C_8)$trialkylsilyl, $(C_3–C_8)$cyanoalkyl, $(C_3–C_8)$haloalkenyl, $(C_3–C_8)$haloalkynyl, $(C_2–C_8)$alkylcarbonyl, $(C_2–C_8)$alkoxycarbonyl, $(C_2–C_8)$haloalkoxycarbonyl, $P(O)(OR^{17})_2$, $CHR^{16}P(O)(OR^{17})_2$ or $CHR^{16}P(S)(OR^{17})_2$, phenyl or benzyl optionally substituted with halogen, $(C_1–C_3)$alkyl, $(C_1–C_3)$haloalkyl or $(C_1–C_4)$alkoxy;

R^4 is hydrogen or halogen;

R^5 is $(C_1–C_2)$alkyl, $(C_1–C_2)$haloalkyl, OCH_3, SCH_3, $OCHF_2$, halogen, CN or NO_2;

R^6 is hydrogen, $(C_1–C_8)$alkyl, $(C_1–C_8)$haloalkyl, halogen, OR^{10}, $S(O)_nR^{10}$, COR^{10}, $(O)SR^{10}$, $C(O)NR^{11}R^{12}$, CHO, $CH{=}CHCO_2R^{10}$, $CO_2N{=}CR^{13}R^{14}$, NO_2, CN, $NHSO_2R^{15}$ or $NHSO_2NHR^{15}$;

R^7 and R^8 are independently hydrogen, $(C_1–C_3)$alkyl, $(C_1–C_3)$haloalkyl or halogen; when Q is Q-2 or Q-6, R^7 and R^8 together with the carbon to which they are attached may be C=O;

R^{10} is $(C_1–C_8)$alkyl, $(C_3–C_8)$ cycloalkyl, $(C_3–C_8)$alkenyl, $(C_3–C_8)$alkynyl, $(C_1–C_8)$haloalkyl, $(C_2–C_8)$alkoxyalkyl, $(C_2–C_6)$alkylthioalkyl, $(C_2–C_8)$alkylsulfinylalkyl, $(C_2–C_8)$alkylsulfonylalkyl, $(C_3–C_8)$alkoxyalkoxyalkyl, $(C_4–C_8)$cycloalkylalkyl, $(C_2–C_4)$carboxyalkyl, $(C_3–C_8)$alkoxycarbonylalkyl, $(C_6–C_8)$alkenyloxycarbonylalkyl, $(C_6–C_8)$alkynyloxycarbonylalkyl, $(C_6–C_8)$cycloalkoxyalkyl, $(C_4–C_8)$alkenyloxyalkyl, $(C_4–C_8)$alkynyloxyalkyl, $(C_3–C_8)$haloalkoxyalkyl, $(C_4–C_8)$haloalkenyloxyalkyl, $(C_4–C_8)$haloalkynyloxyalkyl, $(C_6–C_8)$cycloalkylthioalkyl, $(C_4–C_8)$alkenylthioalkyl, $(C_4–C_8)$alkynylthioalkyl, $(C_4–C_8)$trialkylsilylalkyl, $(C_3–C_8)$cyanoalkyl, $(C_3–C_8)$halocycloalkyl, $(C_3–C_8)$haloalkenyl, $(C_5–C_8)$alkoxyalkenyl, $(C_5–C_8)$haloalkoxyalkenyl, $(C_5–C_8)$alkylthioalkenyl, $(C_3–C_8)$haloalkynyl, $(C_5–C_8)$alkoxyalkynyl, $(C_5–C_8)$haloalkoxyalkynyl, $(C_5–C_8)$alkylthioalkynyl, $(C_2–C_8)$alkylcarbonyl, $CHR^{16}COR^{17}$, $CHR^{16}P(O)(OR^{17})_2$, $P(O)(OR^{17})_2$, $CHR^{16}P(S)(OR^{17})_2$, $CHR^{16}C(O)NR^{11}R^{12}$, $CHR^{16}C(O)NH_2$, $(C_1–C_4)$alkyl substituted with phenoxy or benzyloxy optionally substituted with halogen, $(C_1–C_3)$alkyl or $(C_1–C_3)$haloalky; benzyl optionally substituted with halogen, $(C_1–C_3)$alkyl or $(C_1–C_3)$haloalkyl; or phenyl optionally substituted with halogen, $(C_1–C_3)$alkyl, $(C_1–C_3)$haloalkyl or $(C_1–C_4)$alkoxy;

R^{11} and R^{13} are independently hydrogen or $(C_1–C_4)$alkyl;

R^{12} and R^{14} are independently $(C_1–C_4)$alkyl, or phenyl optionally substituted with halogen, $(C_1–C_3)$alkyl, $(C_1–C_3)$haloalkyl or $(C_1–C_4)$alkoxy;

R^{11} and R^{12} may be taken together as $—(CH_2)_5—$, or $—(CH_2)_4—$, in which optionally one or more H-atoms may be replaced by $(C_1–C_3)$alkyl, phenyl or benzyl;

R^{13} and R^{14} may be taken together with the carbon to which they are attached to form $(C_3–C_7)$cycloalkyl;

R^{15} is $(C_1–C_4)$alkyl or $(C_1–C_4)$haloalkyl;

R^{16} is hydrogen or $(C_1–C_3)$alkyl;

R^{17} is $(C_1–C_6)$alkyl, $(C_3–C_6)$alkenyl Or $(C_3–C_6)$alkynyl;

W is 0 or S;

n is 0, 1 or 2;

Q-7 provided that when Q is not fused to a ring bridging the 5'- and 6'-position and C-7 and C-8 are linked by a single bond, then at least one R^4 is other than hydroxy, halogen, $(C_1–C_4)$alkyl, $(C_1–C_4)$ alkoxy.

5,605,878

Patent Not Issued For This Number

5,605,879

OLEFIN ISOMERS AS LUBRICANTS, RATE OF PENETRATION ENHANCERS, AND SPOTTING FLUID ADDITIVES FOR WATER-BASED DRILLING FLUIDS

William S. Halliday, Cypress, and David Schwertner, The Woodlands, both of Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Filed Apr. 17, 1995, Ser. No. 423,150

Int. Cl.[6] C09K *7/02;7/06;* **E21B** *31/03*

U.S. Cl. 507—103 **26 Claims**

1. A drilling fluid additive for water-based drilling muds comprising olefin isomers comprising between about 8–30 carbon atoms, said olefin isomers comprising a carbon backbone comprising at least one double bond located internally within said carbon backbone.

5,605,880

LUBRICATING OIL COMPOSITION

Katsuya Arai, Iruma-gun, and Hirotaka Tomizawa, Tokorozawa, both of Japan, assignors to Exxon Chemical Patents Inc., Linden, N.J.

PCT No. PCT/JP94/00723, § 371 Date Feb. 9, 1996, § 102(e) Date Feb. 9, 1996, PCT Pub. No. WO94/25549, PCT Pub. Date Nov. 10, 1994

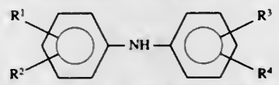
PCT Filed Apr. 28, 1994, Ser. No. 535,236

Claims priority, application Japan, Apr. 30, 1993, 5-128049

Int. Cl.[6] C10M *141/06;141/12*

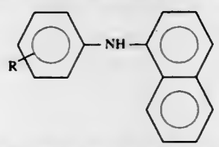
U.S. Cl. 508—379 **1 Claim**

1. A lubricating oil composition characterized by containing, in (A) a lubricating base oil in which the content of the aromatic ingredients is 3.0% by weight or less, the sulfur content is 50 ppm by weight or less, the nitrogen content is 50 ppm by weight or less, and the viscosity at 100% is 2.0–50.0 mm^2, based on the total weight of the composition, (B) 0.05–2.0% by weight of at least one kind of compound selected from the group consisting of alkyldiphenylamines represented by the general formula:



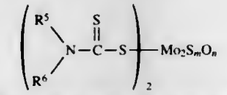
(1)

wherein R^1, R^2, R^3, and R^4, which may be the same or different, are each a hydrogen atom or an alkyl group having 3–18 carbon atoms, provided that at least one of them is said alkyl group, and phenyl-α-naphthyl amines represented by the general formula:



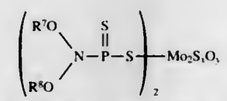
(2)

wherein R is a hydrogen atom or an alkyl group having 3–18 carbon atoms, and (C) 50–2,000 ppm by weight in terms of the amount of molybdenum of at least one kind of compound selected from the group consisting of oxymolybdenum sulfide dithiocarbamates represented by the general formula:



(3)

wherein R^5 and R^6, which may be the same or different, are each a hydrocarbon group having 8–23 carbon atoms, "m" and "n" are each a positive integer such that their sum is 4, and oxymolybdenum sulfide organophosphorodithioates represented by the general formula:



(4)

wherein R^7 and R^8, which may be the same or different, are each a hydrocarbon group having 3–18 carbon atoms, and "x" and "y" are each a positive integer such that their sum is 4.

5,605,881

CLEANING LIQUID FOR RECYCLING COPY MEDIUM FOR ELECTROPHOTOGRAPHY

Junji Machida, Toyonaka; Masazumi Yoshida, Amagasaki, and Kaoru Furusawa, Toyonaka, all of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Aug. 31, 1994, Ser. No. 297,933

Claims priority, application Japan, Sep. 3, 1993, 5-219827; Sep. 3, 1993, 5-219828; Mar. 11, 1994, 6-041127

Int. Cl.[6] C11D *3/386*

U.S. Cl. 510—166 **10 Claims**

1. A cleaning liquid which will remove an image forming material containing a resin component from a surface of a recording medium comprising 30–90% by weight water, 5–60% by weight of an monoester of a divalent organic acid compatible with water wherein the monoester of divalent organic acid is represented by the following chemical formula: $HOOC—(CH_2)_n—COOR_1$ in which R_1 denotes an alkyl group of carbon numbers of 1–5 and n denotes an integer of 0–8, and 0.001–20% by weight of an enzyme.

5,605,882

AZEOTROPE(LIKE) COMPOSITIONS OF PENTAFLUORODIMETHYL ETHER AND DIFLUOROMETHANE

Diana L. Klug, Wilmington, Del.; Barbara H. Minor, Elkton, Md.; Donna M. Patron, Newark, Del.; Tuneen E. C. Chisolm, New Castle, Del., and Allen C. Sievert, Elkton, Md., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 954,999, Oct. 1, 1992, abandoned, which is a continuation-in-part of Ser. No. 890,508, May 28, 1992, abandoned. This application Mar. 5, 1993, Ser. No. 26,714

Int. Cl.[6] C09K *5/04;* **C11D** *7/30;7/26*

U.S. Cl. 510—411 **4 Claims**

1. An azeotrope-like composition consisting essentially of 25 to 73 weight percent pentafluorodimethyl ether and, correspondingly, 27 to 75 weight percent difluoromethane, said composition having a vapor pressure of about 184 to about 228 psia at 25° C., and wherein, after 50% of the original composition is evaporated to produce a final composition, the difference in vapor pressures of the original and final compositions is less than about 10%.

5,605,883

AGGLOMERATED COLORANT SPECKLE EXHIBITING REDUCED COLORANT SPOTTING

Robert J. Iliff, 4303 Redwood Dr., Oakley, Calif. 94561; Linda A. Bernard, 2058 Drake Dr., Oakland, Calif. 94611, and Erle D. Mankin, 5145 Brookside La., Concord, Calif. 94521

Continuation of Ser. No. 339,309, Nov. 14, 1994, abandoned, which is a continuation of Ser. No. 21,715, Feb. 24, 1993, abandoned. This application Nov. 8, 1995, Ser. No. 554,672

Int. Cl.[6] C11D *11/00;3/12;3/14;3/42*

U.S. Cl. 510—444 **17 Claims**

1. A colorant speckle exhibiting reduced spotting consisting essentially of:

(a) 20–80 weight percent of a zeolite having a particle size of less than about 20 microns;

(b) 5–25 weight percent of a nonionic surfactant;

(c) 1–10 weight percent of a an insoluble substantive colorant having a positive zeta potential;

(d) 1–8 weight percent of a binding agent; and

(e) 0–8 weight percent water; and wherein the speckle is produced by an agglomeration process, has a ratio of zeolite:surfactant of about 2:1 to 5:1 and the speckle exhibits reduced colorant spotting as determined by an average ΔE value.

5,605,884

FACTOR VIII FORMULATIONS IN HIGH IONIC STRENGTH MEDIA

Ted C. K. Lee, Lansdale, and Michael E. Hrinda, Gwynedd Valley, both of Pa., assignors to Rhone-Poulenc Rorer Pharmaceuticals Inc., Collegeville, Pa.

Continuation of Ser. No. 76,495, Jun. 14, 1993, abandoned, which is a continuation of Ser. No. 875,558, Apr. 27, 1992, abandoned, which is a continuation of Ser. No. 325,634, Mar. 20, 1989, abandoned, which is a continuation-in-part of Ser. No. 114,314, Oct. 29, 1987, abandoned. This application Dec. 27, 1994, Ser. No. 364,837

Int. Cl.[6] A61K *38/36;38/37;* **C07K** *14/745;14/755*

U.S. Cl. 514—8 **6 Claims**

1. A stable Factor VIII formulation in an aqueous solution for the treatment of hemophilia type A consisting essentially of:

a therapeutically effective amount of Factor VIII having an activity of at least 130 U/mg of protein;

from about 0.40M to about 1.2M sodium chloride, potassium chloride, or mixtures thereof;

from about 1.5 mM to about 40 mM calcium chloride; and from about 1 mM to about 50 mM histidine;

said formulation having a pH of from about 6.0 to about 7.6.

5,605,885

METHOD FOR STIMULATING THE IMMUNE SYSTEM

Edward W. Bernton, Washington, D.C.; John W. Holaday, Rowayton, Conn., and Henry U. Bryant, Indianapolis, Ind., assignors to EntreMed, Inc., Rockville, Md.

Continuation of Ser. No. 161,905, Dec. 3, 1993, abandoned, which is a division of Ser. No. 985,434, Dec. 3, 1992, abandoned, which is a continuation of Ser. No. 586,608, Sep. 24, 1990, abandoned, which is a continuation-in-part of Ser. No. 190,568, May 5, 1988, abandoned. This application Sep. 29, 1994, Ser. No. 315,199

Int. Cl.[6] A61K *39/395;38/00*

U.S. Cl. 514—12 **20 Claims**

1. A method for stimulating lymphocyte proliferation in a human having suppressed lymphocyte function comprising administering to the human an amount of a prolactin agonist effective to stimulate lymphocyte proliferation.

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5,605,886

ANTI-OBESITY PROTEINS

Margret B. Basinski, Indianapolis; Richard D. DiMarchi, Carmel; David B. Flora, Greenfield; William F. Heath, Jr., Fishers; James A. Hoffmann, Greenwood; Brigitte E. Schoner, Monrovia; James E. Shields, Noblesville, and David L. Smiley, Greenfield, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 383,648, Feb. 6, 1995, abandoned, which is a continuation-in-part of Ser. No. 381,265, Jan. 31, 1995, abandoned. This application May 17, 1995, Ser. No. 442,916

Int. Cl.[6] A61K *38/00*

U.S. Cl. 514—12 **25 Claims**

1. A biologically active peptide of the formula: SEQ ID NO: 1 or a pharmaceutically acceptable salt thereof.

5,605,887

THERAPEUTIC FIBRINOGEN COMPOSITIONS

Eli Pines, Watchung, N.J., and William J. White, Wayne, Pa., assignors to Fibratek, Inc., Pepper Pike, Ohio

Division of Ser. No. 24,121, Mar. 1, 1993, Pat. No. 5,330,974. This application Apr. 8, 1994, Ser. No. 225,853

Int. Cl.[6] A61K *38/00*

U.S. Cl. 514—21 **1 Claim**

1. A method for producing a therapeutic fibrinogen composition comprising three or more steps including at least the steps of:

(A) precipitating fibrinogen from a sample of mammalian blood plasma with polyethylene glycol 1000;

(B) resuspending said fibrinogen in solution; and

(C) reprecipitating said fibrinogen with glycine; and

wherein recipitation of said fibrinogen with polyethylene glycol is performed only once and wherein at least about 90% of the fibrinogen in said sample is recovered.

5,605,888

Patent Not Issued For This Number

5,605,889

METHOD OF ADMINISTERING AZITHROMYCIN

William J. Curatolo, Niantic; George H. Foulds, Waterford, both of Conn., and Hylar L. Friedman, Brattleboro, Vt., assignors to Pfizer Inc., New York, N.Y.

Filed Apr. 29, 1994, Ser. No. 235,069

Int. Cl.[6] A61K *31/70;9/14;9/20*

U.S. Cl. 514—29 **99 Claims**

1. An oral dosage form of azithromycin which is in the form of a tablet made by wet granulation, which is administrable to a mammal that has eaten, which comprises azithromycin and a disintegrant, and which exhibits no adverse food effect, said dosage form effecting at least about 90% dissolution of azithromycin within about 30 minutes when an amount of the dosage form equivalent to 200 mg of azithromycin is tested as set forth in USP test <711> in a USP-2 dissolution apparatus under conditions at least as stringent as the following: 900 ml sodium phosphate buffer pH 6.0, 37° C., with paddles turning at 100 rpm, provided that said dosage form contains less than a taste-masking amount of an alkaline earth metal oxide or hydroxide.

5,605,890

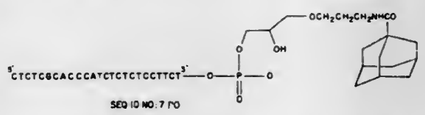
CYCLODEXTRIN CELLULAR DELIVERY SYSTEM FOR OLIGONUCLEOTIDES

Sudhir Agrawal, Shrewsbury; Qiuyan Zhao, Worcester, and Ivan Habus, Shrewsbury, all of Mass., assignors to Hybridon, Inc., Worcester, Mass.

Division of Ser. No. 341,522, Nov. 17, 1994, which is a continuation-in-part of Ser. No. 252,072, Jun. 1, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 480,833

Int. Cl.[6] A61K *48/00;* **C12N** *7/06*

U.S. Cl. 514—44 **2 Claims**



1. A method for treating a cell infected by a virus or for the prevention of viral infection of a cell, comprising contacting the cell with an oligonucleotide covalently linked to adamantane and noncovalently complexed with a cyclodextrin, the oligonucleotide having a nucleotide sequence complementary to a portion of the nucleic acid of the virus, whereby the function of the virus is inhibited.

5,605,891

USE OF POLYSACCHARIDES IN ACUTE PERIPHERAL NEUROPATHIES

Giuseppe Prino; Ennio Lanzarotti; Benito Casu, and Laura Ferro, all of Milan, Italy, assignors to Crinos Industria Farmacobiologica SpA, Villa Guardia, Italy

Filed Jul. 21, 1993, Ser. No. 94,626

Claims priority, application Italy, Jul. 31, 1992, MI92A1881

Int. Cl.[6] A61K *31/715;31/725*

U.S. Cl. 514—54 **8 Claims**

1. A method for treating acute peripheral neuropathies of traumatic and toxic origin in a patient in need of such treatment, said method comprising administering to said patient a therapeutically effective amount of at least one glycosaminoglycan or a pharmaceutically acceptable salt thereof selected from the group consisting of:

heparin;

heparin derivative obtained by oxidizing heparin with sodium periodate and then with sodium borohydride;

a mixture of glycosaminoglycans having a composition, in percentage by weight: 10–20% slow moving heparin, 40–60% fast moving heparin+heparitin sulfate, 20–35% dermatan sulfate, 0–8% chondroitin sulfate A+chondroitin sulfate C;

chondroitin 4 sulfate;

dermatan sulfate.

5,605,892

COMPOSITIONS OF ARGININE AMIDE WITH CYCLODEXTRIN OF CAFFEINE, AND METHODS OF USE

Yoshifumi Ikejiri, Ibaraki, and Shirou Sawa, Kobe, both of Japan, assignors to Senju Pharmaceutical Co., Ltd., Osaka, and Mitsubishi Chemical Corporation, Tokyo, both of Japan

Continuation of Ser. No. 229,767, Apr. 19, 1994, abandoned. This application Apr. 5, 1996, Ser. No. 626,146

Claims priority, application Japan, Apr. 22, 1993, 5-096275; Dec. 22, 1993, 5-324760

Int. Cl.[6] A61K *31/715;31/555;31/52*

U.S. Cl. 514—58 **7 Claims**

1. An aqueous agent consisting essentially of at least one arginine amide selected from the group consisting of (2R, 4R)-4-methyl-1-{N^2-((RS)-3-methyl-1,2,3,4-tetrahydro-8-quinolinesulfonyl)-L-arginyl]-2-piperidinecarboxylic acid, the monohydrate thereof or a pharmacologically acceptable salt thereof at a concentration of 0.1–1 (W/V) %, at least one compound selected from the group consisting of cyclodextrin and caffeine, and at least one pharmaceutically acceptable additive selected from the group consisting of a buffer, an isotonizing agent, an antiseptic and a thickener,

the concentration of said cyclodextrin, when present, being from 0.05–10 (W/v) % and the concentration of said caffeine, when present, being from 0.05–2.0 (W/V) %.

5,605,893

METHOD OF USING A THERAPEUTIC FOOD COMPOSITION TO DIMINISH BLOOD SUGAR FLUCTUATIONS IN DIABETIC PATIENTS

Francine Kaufman, Los Angeles, Calif., assignor to Children's Hospital of Los Angeles, Los Angeles, Calif.

Continuation-in-part of Ser. No. 213,542, Mar. 15, 1994, abandoned. This application Apr. 7, 1995, Ser. No. 418,210

Int. Cl.[6] A61K *31/715*

U.S. Cl. 514—60 **14 Claims**

1. A method of treating a diabetic patient to diminish fluctuations in blood sugar levels and prevent hypoglycemic episodes, said method consisting of the administration to the patient of a therapeutic food composition comprising per serving or unit about 20–50 grams of nutrients including:

a) about 5–15 g of slowly absorbed complex carbohydrate;

b) about 7–19 g of rapidly absorbed complex carbohydrate;

c) about 5–20 g of protein; and

d) about 3–7 g of fat,

said composition being substantially free of simple sugars.

5,605,894

COMPOSITIONS FOR REGULATING SKIN WRINKLES AND/OR SKIN ATROPHY

Roy L. Blank, Spring Valley, N.Y.; Darrell G. Doughty, Shelton, and Carlos G. Linares, Stamford, both of Conn., assignors to Richardson-Vicks Inc., Shelton, Conn.

Continuation of Ser. No. 47,602, Apr. 14, 1993, abandoned, which is a continuation of Ser. No. 796,749, Nov. 25, 1991, abandoned. This application Nov. 21, 1994, Ser. No. 342,673

Int. Cl.[6] A61K *31/60;7/42;7/44*

U.S. Cl. 514—159 **10 Claims**

1. A composition for regulating wrinkles or atrophy in mammalian skin comprising:

(a) a safe and effective amount of salicylic acid;

(b) another active agent selected from the group consisting of a safe and effective amount of (i) a sunscreen selected from the group consisting of 2-ethyl-p-methoxycinnamate, butylmethoxydibenzoylmethane, 2-hydroxy-4-methoxybenzophenone, octyldimethyl-p-aminobenzoic acid, menthyl salicylate, dioxbenzone, 4-isopropyldibenzoylmethane, octabenzone, etocrylene and mixtures thereof; (ii) an anti-inflammatory agent; (iii) a vitamin; (iv) an anti-oxidant; (v) a chelator; (vi) a retinoid; (vii) a benzufuran derivative; (viii) an N-acetyl-L-cysteine derivative; and (ix) a skin protectant; derivatives thereof; and mixtures thereof; and

(c) a pharmaceutically acceptable carrier.

5,605,895

CEPHALOSPORIN ANTIBIOTICS AND PROCESSES FOR PREPARATION THEREOF

Chan S. Bang; Yong Z. Kim; Jae H. Yeo; Jong C. Lim; Young M. Woo; Hun S. Oh; Duk H. Yang; Sam S. Kim, all of Daejeon; Se H. Kim; Jae H. Jeon, both of Seoul; Tae H. Lee, Daejeon; Sung I. Kim, Inchun; Mi K. Seo, and Jae W. Lee, both of Seoul, all of Rep. of Korea, assignors to Lucky, Ltd., Seoul, Rep. of Korea

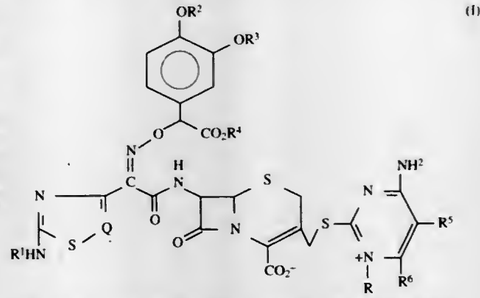
Filed Jul. 20, 1994, Ser. No. 277,629

Claims priority, application Rep. of Korea, Jul. 23, 1993, 93-14063

Int. Cl.[6] A61K *31/545;* **C07D** *501/36*

U.S. Cl. 514—206 **3 Claims**

1. A cephalosporin compound represented by the following formula (I):



(I)

, its pharmaceutically acceptable non-toxic salt, physiologically hydrolyzable ester, hydrate and solvate and isomer thereof, in which

R^1 represents hydrogen or an amino-protecting group,

R^2 and R^3 can be identical or different and each represents hydrogen or a hydroxy-protecting group, or

R^2 and R^3 together can form a diol-protecting cyclic group,

R^4 represents hydrogen or a carboxyl-protecting group,

R^5 represents hydrogen, C_{1-4} alkyl, alkoxycarbonyl, carboxyl or sulfomethyl,

R^6 represents hydrogen, amino or amino substituted with C_{1-4} alkyl, and

R^7 represents C_{1-4} alkyl, amino or amino substituted with C_{1-4} alkyl, or

R^5 and R^6 together with the carbon atoms to which they are attached can form a cyclopentyl or cyclohexyl group, or

R^6 and R^7 together with the carbon and nitrogen atoms to which they are attached can form a 3 to 7-membered heterocyclic ring which may optionally contain additional heteroatoms selected from nitrogen and/or oxygen and which may be substituted with a substituent selected from C_{1-4} alkyl, amino and substituted amino, and Q represents CH or N.

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5,605,896

BICYCLIC HETEROCYCLIC DERIVATIVES HAVING α_1 ADRENERGIC AND $5HT_{1A}$ ACTIVITIES

Amedeo Leonardi, Milan; Gianni Motta, Barlassina; Carlo Riva, Varese, and Rodolfo Testa, Milan, all of Italy, assignors to Recordati S.A., Chemical and Pharmaceutical Company, Chiasso, Switzerland

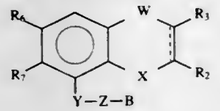
Continuation-in-part of Ser. No. 67,861, May 26, 1993, Pat. No. 5,474,994, which is a continuation-in-part of Ser. No. 888,775, May 26, 1992, Pat. No. 5,403,842. This application Aug. 31, 1994, Ser. No. 299,188

Claims priority, application Italy, Feb. 25, 1992, MI92A0408

Int. Cl.[6] C07D *243/08;413/00;215/16;235/04;* **A61K** *31/395;31/47;31/38;31/335*

U.S. Cl. 514—218 **24 Claims**

1. A compound having the general formula I



wherein

---- represents a single or double bond;

X represents a nitrogen, oxygen or sulfur atom, an amino or alkylamino, a sulfinyl or sulfonyl group;

W represents a carbonyl, thiocarbonyl, hydroxymethylene, a methylene group or a bond; or

X is nitrogen and W is methine, and the fused rings represent quinolyl ring;

R_2 represents a hydrogen atom or an alkyl, alkenyl, alkynyl, carbocyclic or heterocyclic group, each of which groups may optionally be substituted by one or more substituents selected from the group consisting of alkyl, cyano, hydroxy, alkoxy, halogen, phenyl, phenoxy, trifluoromethyl, nitro, acylamino, alkylsulfonylamino and benzoyl; or R_2 itself represents a trifluoromethyl or an aroyl group; wherein the carbocyclic group may be substituted with amino, alkylamino or dialkylamino:

with the proviso that the heterocyclic group cannot be linked through a nitrogen atom;

R_3 represents a hydrogen atom or an alkyl, hydroxyalkyl, phenyl, hydroxy, O—R_4, or alkyl-OR_4 group, where R_4 represents an alkyl group optionally substituted with an aryl group;

R_6 represents a hydrogen or halogen atom or a nitro, amino, acetylamino, alkylamino, dialkylamino, cyano, hydroxy, alkoxy or alkyl group;

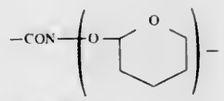
R_7 represents a hydrogen atom;

Y represents one of the following groups, each of which is depicted with its left hand end being the end which attaches to the heterobicyclic ring and its right hand end being the end which attaches to the group Z:

$-CO-$.	(Y1)
$-COO-$.	(Y2)
$-CONH-$.	(Y3)
$-CON(CH_3)-$.	(Y4)
$-CON(OH)-$.	(Y5)
$-CH(OH)-$.	(Y6)
$-CH(OAlkyl)-$.	(Y7)
$-CH=CH-$.	(Y8)
$-CH=CH-COO-$.	(Y9)
$-CH=CH-CONH-$.	(Y10)
$-CH=NO-$.	(Y11)

-continued

$-CH_2-$.	(Y12)
$-CH_2COO-$.	(Y13)
$-CH_2CONH-$.	(Y14)
$-CH_2NH-$.	(Y15)
$-CH_2N(CH_3)-$.	(Y16)
$-CH_2N(COCH_3)-$.	(Y17)
$-CH_2N(CONH_2)-$.	(Y18)
$-CH_2NHCO-$.	(Y19)
$-CH_2N(CH_3)CO-$.	(Y20)
$-CH_2NH-CONH-$.	(Y21)
$-CH_2NHSO_2-$.	(Y22)
$-CH_2O-$.	(Y23)
$-CH_2S-$.	(Y24)
$-CH_2SO-$.	(Y25)
$-CH_2SO_2-$.	(Y26)
$-CH_2SO_2NH-$.	(Y27)
$-CH_2SO_2N(CH_3)-$.	(Y28)
$-NH-$.	(Y29)
$-N(CH_3)-$.	(Y30)
$-N(COCH_3)-$.	(Y31)
$-N(CONH_2)-$.	(Y32)
$-NHCO-$.	(Y33)
$-N(CH_3)CO-$.	(Y34)
$-NH-CONH-$.	(Y35)
$-NHSO_2-$.	(Y36)
$-O-$.	(Y37)
$-S-$.	(Y38)
$-SO-$.	(Y39)
$-SO_2-$.	(Y40)
$-SO_2NH-$.	(Y41)
$-SO_2N(CH_3)-$.	(Y42)
$-CONHO-$.	(Y43)
$-CON(COCH_3)-$.	(Y44)
$-CSNH-$.	(Y45)
$-CSN(CH_3)-$.	(Y46)



(Y47)

$-NHCOO-$.	(Y48)

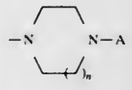
and

$-COS-$	(Y49)

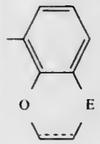
Z a linear or branched chain alkylene group having from 1 to 6 carbon atoms and optionally having one hydroxy substituent; and

represents one of the following groups:

(B1)

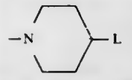


wherein n is 1 or 2 and A represents a phenyl group; wherein said phenyl group is unsubstituted or substituted by one or more substituents selected from the group consisting of alkoxy, alkyl, halogen, hydroxy, or A represents a 2-pyrimidinyl group or a bicyclic ring of formula



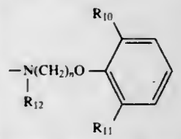
where ---- represents a single or double bond and E represents an oxygen atom or a bond;

(B2)



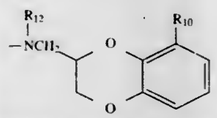
wherein L represents one or two groups selected among phenyl, 4-fluorobenzoyl or a 2-oxo-1-benzimidozolinyl group or a group of the formula $(CH_2)_n$-O-A wherein n=0, 1, or 2 and A has the same meaning defined under B1,

(B3)



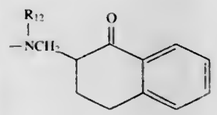
wherein each of R_{10} and R_{11} independently represents a hydrogen atom or an alkoxy or alkylthio group, R_{12} represents a hydrogen atom or an alkyl group and n is 2 or 3,

(B4)



wherein R_{12} has the meaning defined under B3 and R_{13} represents a hydrogen atom or a alkoxy group,

(B5)



wherein R_{12} has the meaning defined under B3, or an enantiomer, a diastereomer, an N-oxide, a prodrug, a metabolite, a prodrug of a metabolite, or a pharmaceutically acceptable salt of said compound.

5,605,897

2-METHYL-THIENO-BENZODIAZEPINE

Charles M. Beasley, Jr., Indianapolis, Ind.; Jiban K. Chakrabarti, Camberley, England; Terrence M. Hotten, Farnborough, England, and David E. Tupper, Reading, England, assignors to Eli Lilly and Company, Indianapolis, Ind., and Lilly Industries Limited, Basingstoke

Continuation-in-part of Ser. No. 44,844, Apr. 8, 1993, abandoned, which is a continuation-in-part of Ser. No. 890,348, May 22, 1992, Pat. No. 5,229,382, which is a continuation of Ser. No. 690,143, Apr. 23, 1991, abandoned. This application Feb. 13, 1995, Ser. No. 387,498

Int. Cl.[6] A61K *31/55*

U.S. Cl. 514—220 **4 Claims**

1. A method of treating a patient suffering from or susceptible to a pathological psychological condition selected from the group consisting of Moderate Mental Retardation; Severe Mental Retardation; Profound Mental Retardation; Autistic disorder; Pervasive Development Disorder NOS; Conduct Disorder, Group Type; Conduct Disorder, Solitary Aggressive Type; Tourette's Disorder; Primary Degenerative Dementia of the Alzheimer Type, Senile Onset, with Delirium; Primary Degenerative Dementia of the Alzheimer Type, Senile Onset, with Delusions; Bipolar Disorder NOS; Personality Disorders, Paranoid; Personality Disorders, Antisocial; and Personality Disorders, Borderline; which comprises administering to a patient in need thereof an effective amount of olanzapine, or an acid addition salt thereof.

5,605,898

ANELLATED TRIAZOLE COMPOUNDS

Matthias Schäfer, Goldbach; Karlheinz Drauz, Freigericht, and Dieter Felt, Wächtersbach, all of Germany, assignors to Degussa AG, Frankfurt, Germany, and E. I. DuPont de Nemours and Company, Wilmington, Del.

PCT No. PCT/EP93/02957, § 371 Date Apr. 24, 1995, § 102(e) Date Apr. 24, 1995, PCT Pub. No. WO94/10173, PCT Pub. Date May 11, 1994

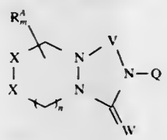
PCT Filed Oct. 26, 1993, Ser. No. 424,421

Claims priority, application Germany, Oct. 27, 1992, 42 36 220.2

Int. Cl.[6] A61K *31/535;* **C07D** *273/04*

U.S. Cl. 514—229.2 **10 Claims**

1. Anellated triazole compounds formula I



I

wherein

X—X is C—O;

m is 0 to 6;

n is 1;

V is —C(=W)—;

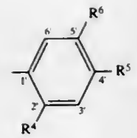
W is O or S;

R^4 is independently selected from the group: hydrogen; hydroxy; CO_2H; CO_2R^2; halogen; CN; $C(O)NR^{11}R^{12}$; OR^3; (C_1-C_8)alkyl; (C_2-C_8)haloalkyl; (C_2-C_8)alkenyl, (C_2-C_8)alkynyl; $S(O)_mR_3$; $C(O)R^3$; or $C(O)SR^2$; or

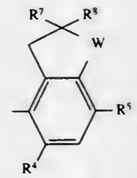
two R^4 groups attached to the same carbon are taken together along with the carbon atom to which they are attached to form C=O;

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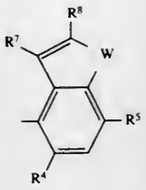
Q is



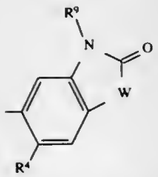
Q-1



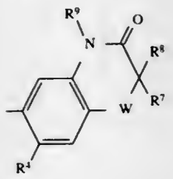
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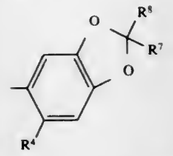
Q-3



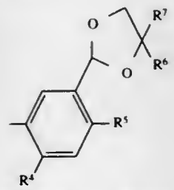
Q-4



Q-5



Q-6



Q-7

R^1 is hydrogen, hydroxy, halogen, CN, $(C_1–C_8)$alkyl, $(C_1–C_8)$haloalkyl, $(C_1–C_8)$alkenyl, $(C_1–C_8)$alkynyl, COR^3, CHO, OR^3, $C(O)SR^2$, CO_2R^2 or $C(O)NR^{11}R^{12}$;

R^2 is hydrogen, $(C_1–C_8)$alkyl, $(C_1–C_8)$haloalkyl, $(C_1–C_8)$alkenyl, $(C_1–C_8)$alkynyl, or COR^3;

R^3 is $(C_1–C_8)$alkyl, $(C_3–C_8)$cycloalkyl, $(C_3–C_8)$alkenyl, $(C_3–C_8)$alkynyl, $(C_1–C_8)$haloalkyl, $(C_2–C_8)$alkoxyalkyl, $(C_2–C_4)$carboxy alkyl, $(C_3–C_8)$alkoxycarbonylalkyl, $(C_4–C_8)$alkenyloxyalkyl, $(C_4–C_8)$alkynyloxyalkyl, $(C_4–C_8)$haloalkoxyalkyl, $(C_4–C_8)$trialkylsilyl, $(C_3–C_8)$cyanoalkyl, $(C_3–C_8)$haloalkenyl, $(C_3–C_8)$haloalkynyl, $(C_2–C_8)$alkylcarbonyl, $(C_2–C_8)$alkoxycarbonyl, $(C_2–C_8)$haloalkoxycarbonyl, $p(O)(OR^{17})_2$, $CHR^{16}P(O)(OR^{17})_2$ or $CHR^{16}P(S)(OR^{17})_2$, phenyl or benzyl, said phenyl or benzyl being optionally substituted with halogen, $(C_1–C_3)$alkyl, $(C_1–C_3)$haloalkyl or $(C_1–C_4)$alkoxy;

R^4 is hydrogen or halogen;

R^5 is $(C_1–C_2)$alkyl, $(C_1–C_2)$haloalkyl, OCH_3, SCH_3, $OCHF_2$, halogen, CN or NH_2;

R^6 is hydrogen, $(C_1–C_8)$alkyl, $(C_1–C_8)$haloalkyl, CO_2R^{10} halogen, OR^{10}, $S(O)_nR^{10}$, COR^{10}, $C(O)SR^{10}$, CO_2R^{10}, $SCH_2C{\equiv}CH$, $C(O)NR^{11}R^{12}$, CHO, $CH{=}CHCO_2R^{10}$, $CO_2N{=}CR^{13}R^{14}$, NO_2, CN, $NHSO_2R^{15}$ or $NHSO_2NHR^{15}$;

$R^7$and R^8 are independently hydrogen, $(C_1–C_3)$alkyl, $(C_1–C_3)$haloalkyl or halogen, or when Q is Q-2, Q-5 or Q-6, then R^7 and R^8 together with the carbon to which they are attached are additionally selected from C=O;

R^9 is hydrogen, $(Cl_1–C_6)$alkyl, $(C_1–C_6)$haloalkyl, $(C_2–C_6)$alkoxyalkyl, $(C_3–C_6)$alkenyl or $(C_3–C_6)$alkynyl;

R^{10} is $(C_1–C_8)$alkyl, $(C_3–C_8)$cycloalkyl, $(C_3–C_8)$alkenyl, $(C_3–C_8)$alkynyl, $(C_1–C_8)$haloalkyl, $(C_2–C_8)$alkoxyalkyl, $(C_2–C_6)$alkylthioalkyl, $(C_2–C_8)$alkylsulfinylalkyl, $(C_2–C_8)$alkylsulfonylalkyl, $(C_3–C_8)$alkoxyalkoxyalkyl, $(C_4–C_8)$cycloalkylalkyl, $(C_2–C_4)$carboxyalkyl, $(C_3–C_8)$alkoxycarbonylalkyl, $(C_6–C_8)$alkenyloxycarbonylalkyl, $(C_6–C_8)$alkynyloxycarbonylalkyl, $(C_6–C_8)$cycloalkoxyalkyl, $(C_4–C_8)$alkenyloxyalkyl, $(C_4–C_8)$alkynyloxyalkyl $(C_3–C_8)$haloalkoxyalkyl, $(C_4–C_8)$haloalkenyloxyalkyl, $(C_4–C_8)$haloalkynyloxyalkyl, $(C_6–C_8)$cycloalkylthioalkyl, $(C_4–C_8)$alkenylthioalkyl, $(C_4–C_8)$alkynylthioalkyl, $(C_4–C_8)$trialkylsilylalkyl, $(C_3–C_8)$cyanoalkyl, $(C_3–C_8)$halocycloalkyl, $(C_3–C_8)$haloalkenyl, $(C_5–C_8)$alkoxyalkenyl, $(C_5–C_8)$haloalkoxyalkenyl, $(C_5–C_8)$alkylthioalkenyl, $(C_3–C_8)$haloalkynyl, $(C_5–C_8)$alkoxyalkynyl, $(C_5–C_8)$haloalkoxyalkynyl, $(C_5–C_8)$alkylthioalkynyl, $(C_2–C_8)$alkylcarbonyl, $CHR^{16}COR^{17}$, $CHR^{16}P(O)(OR^{17})_2$, $P(O)(OR^{17})_2$, $CHR^{16}P(S)(OR^{17})_2$, $CHR^{16}C(O)HR^{11}R^{12}$, $CHR^{16}C(O)NH_2$, $(C_1–C_4)$alkyl substituted with phenoxy or benzyloxy, said phenoxy or benzyloxy being optionally substituted with halogen, $(C_1–C_3)$alkyl or $(C_1–C_3)$haloalkyl; benzyl optionally substituted with halogen, $(C_1–C_8)$alkyl or $(C_1–C_3)$haloalkyl; or phenyl or pyridyl each optionally substituted with halogen, $(C_1–C_3)$alkyl, $(C_1–C_3)$haloalkyl or $(C_1–C_4)$alkoxy;

R^{11} and R^{13} are independently hydrogen or $(C_1–C_4)$alkyl;

R^{12} and R^{14} are independently $(C_1–C_4)$alkyl, phenyl optionally substituted with halogen, $(C_1–C_3)$alkyl, $(C_1–C_3)$haloalkyl or $(C_1–C_4)$alkoxy; or

R^{11} and R^{12} are taken together as $—(CH_2)_5—$, $—(CH_2)_4—$ or $—CH_2CH_2OCH_2CH_2—$, each ring optionally substituted with $(C_1–C_3)$alkyl, phenyl or benzyl; or

R^{13} and R^{14} are taken together with the carbon to which they are attached to form $(C_5–C_8)$cycloalkyl;

R^{15} is $(C_1–C_4)$alkyl or $(C_1–C_4)$haloalkyl;

R^{16} is hydrogen or $(C_1–C_3)$alkyl:

R^{17} is $(C_1–C_6)$alkyl, $(C_3–C_6)$alkenyl or $(C_3–C_6)$alkynyl;

R^{18} is hydrogen, hydroxy, CN, $(C_1–C_8)$alkyl, $(C_1–C_8$haloalkyl, $(C_1–C_8$alkenyl, $(C_1–C_8)$alkynyl, COR^3, CHO, OR^3, $C(O)SR^2$, CO_2R^2 or $C(O)NR^{11}R^{12}$.

5,605,899

1-SUBSTITUTED, 2-SUBSTITUTED 1H-IMIDAZO[4,5-C]QUINOLIN-4-AMINES

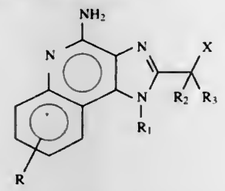
John F. Gerster, Woodbury; Stephen L. Crooks, Mahtomedi, both of Minn., and Kyle J. Lindstrom, Houlton, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 938,295, Aug. 28, 1992, Pat. No. 5,389,640, which is a continuation-in-part of Ser. No. 838,475, Feb. 19, 1992, abandoned, which is a continuation-in-part of Ser. No. 687,326, Apr. 18, 1991, abandoned, which is a continuation-in-part of Ser. No. 662,926, Mar. 1, 1991, abandoned. This application Dec. 12, 1994, Ser. No. 353,802

Int. Cl.[6] C07D *413/06;471/04;* **A61K** *31/44;31/47*

U.S. Cl. 514—232.8 **36 Claims**

1. A compound of the formula:



wherein

R_1 is selected from the group consisting of hydrogen; straight chain or branched chain alkyl containing one to about ten carbon atoms and substituted straight chain or branched chain alkyl containing one to about ten carbon atoms, wherein the substituent is selected from the group consisting of cycloalkyl containing three to about six carbon atoms and cycloalkyl containing three to about six carbon atoms substituted by straight chain or branched chain alkyl containing one to about four carbon atoms; straight chain or branched chain alkenyl containing two to about ten carbon atoms and substituted straight chain or branched chain alkenyl containing two to about ten carbon atoms, wherein the substituent is selected from the group consisting of cycloalkyl containing three to about six carbon atoms and cycloalkyl containing three to about six carbon atoms substituted by straight chain or branched chain alkyl containing one to about four carbon atoms; hydroxyalkyl of one to about six carbon atoms; alkoxyalkyl wherein the alkoxy moiety contains one to about four carbon atoms and the alkyl moiety contains one to about six carbon atoms; acyloxyalkyl wherein the acyloxy moiety is alkanoyloxy of two to about four carbon atoms or benzoyloxy, and the alkyl moiety contains one to about six carbon atoms; benzyl; (phenyl)ethyl; and phenyl; said benzyl, (phenyl)ethyl or phenyl substituent being optionally substituted on the benzene ring by one or two moieties independently selected from the group consisting of alkyl of one to about four carbon atoms, alkoxy of one to about four carbon atoms, and halogen, with the proviso that when said benzene ring is substituted by two of said moieties, then the moieties together contain no more than six carbon atoms;

R_2 and R_3 are independently selected from the group consisting of hydrogen, alkyl of one to about four carbon atoms, phenyl, and substituted phenyl wherein the substituent is selected from the group consisting of alkyl of one to about four carbon atoms, alkoxy of one to about four carbon atoms, and halogen;

X is selected from the group consisting of alkoxy containing one to about four carbon atoms, alkoxyalkyl wherein the alkoxy moiety contains one to about four carbon atoms and the alkyl moiety contains one to about four carbon atoms, haloalkyl of one to about four carbon atoms, hydroxyalkyl of one to about four carbon atoms, alkylamido wherein the alkyl group contains one to about four carbon atoms, amino, substituted amino wherein the substituent is alkyl or hydroxyalkyl of one to about four carbon atoms, azido, chloro, hydroxy, 1-morpholino, 1-pyrrolidino, and alkylthio of one to about four carbon atoms; and

R is selected from the group consisting of hydrogen, straight chain or branched chain alkoxy containing one to about four carbon atoms, halogen, and straight chain or branched chain alkyl containing one to about four carbon atoms;

or a pharmaceutically acceptable acid addition salt thereof;

with the proviso that when R_1 is selected from the group consisting of:

hydroxyalkyl of one to about six carbon atoms and alkoxyalkyl wherein the alkoxy moiety is of one to about four carbon atoms and the alkyl moiety is of one to about six carbon atoms; and

R_2 and R_3 are independently selected from the group consisting of hydrogen and alkyl of one to about four carbon atoms;

then X is other than alkoxy of one to about four carbon atoms, alkoxyalkyl wherein the alkoxy moiety is of one to about four carbon atoms and the alkyl moiety is of one to about four carbon atoms, hydroxyalkyl of one to about four carbon atoms, and hydroxy.

5,605,900

BENZOTRIAZINES HAVING ADENOSINE UPTAKE INHIBITOR ACTIVITY

Shigeki Fujiwara; Daisuke Machii; Haruki Takai; Hiromi Noraka, all of Sunto-gun; Hiroshi Kase, Koganei; Kozo Yao, Sunto-gun; Michiyo Kawakage, Inazawa, all of Japan; Hideaki Kusaka, Pittsburgh, Pa., and Akira Karasawa, Sunto-gun, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

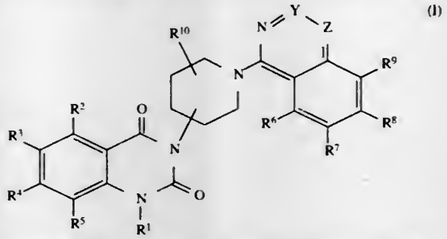
Division of Ser. No. 318,876, Oct. 17, 1994. This application Apr. 28, 1995, Ser. No. 430,227

Claims priority, application Japan, Feb. 18, 1993, 5-028830

Int. Cl.[6] C07D *401/04;* **A61K** *31/53;31/445;31/50*

U.S. Cl. 514—245 **8 Claims**

1. An adenosine uptake inhibitor containing a 1,2,3,4-tetrahydro-2,4-dioxoquinazoline derivative represented by formula (I):



(I)

wherein R^1 represents hydrogen, substituted or unsubstituted lower alkyl, alkenyl, or substituted or unsubstituted aralkyl; R^2, R^3, R^4, and R^5 independently represent hydrogen, halogen, amino, mono- or di(lower alkyl)amino, lower alkanoylamino, nitro, cyano, substituted or unsubstituted lower alkyl, hydroxy, lower alkoxy, lower alkylthio, carboxy, lower alkoxycarbonyl, lower alkanoyl, aralkyloxy, or lower alkanoyloxy; R^6, R^7, R^8, and R^9 independently represent hydrogen, hydroxy, substituted or unsubstituted lower alkoxy, or aralkyloxy, or any adjoining two of them are combined to form methylenedioxy; R^{10} represents hydrogen or lower alkyl; and Y and Z each represent or a pharmaceutically acceptable salt thereof as an active ingredient.

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5,605,901

INDANE DERIVATIVES, PROCESSES FOR PREPARING THE SAME AND SYNTHETIC INTERMEDIATE OF THE SAME

Akihiko Ishida, Urawa; Koichi Homma, Tokyo-to; Michihisa Yato, Urawa; Shinsuke Nishiyama, and Fumikazu Okumura, both of Ohmiya, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

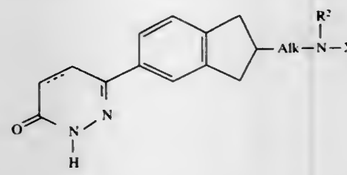
Filed Dec. 28, 1994, Ser. No. 365,289

Claims priority, application Japan, Dec. 28, 1993, 5-333967

Int. Cl.[6] C07D *401/10;237/04;* **A61K** *31/50*

U.S. Cl. 514—247 **22 Claims**

1. An indane compound represented by the formula:



(I)

wherein R^1 represents a substituted or unsubstituted aryl group, a C_{1-6} alkyl group, a C_{3-6} cycloalkyl group, a halogeno-C_{1-6} alkyl group, a C_{2-7} alkenyl group, a phenyl-substituted C_{2-7} alkenyl group, a substituted or unsubstituted monocyclic aromatic six-membered heterocyclic group having 1 or 2 nitrogen atoms as hetero atoms, a C_{1-6} alkyl group which is subsitituted by a substituted or unsubstituted monocyclic aromatic six-membered heterocyclic group having 1 or 2 nitrogen atoms as hetero atoms, a substituted or unsubstituted C_{1-6} alkoxy group which may be substituted by a phenyl group, phenoxy group, a C_{1-6} alkylamio group, a C_{2-7} alkenylamino group, phenylamino group or a C_{2-7} alkenyloxy group; R^2 represents hydrogen atom or a C_{1-6} alkyl group; X represents carbonyl group or thiocarbonyl group; Alk represents a single bonding arm or a C_{1-10} alkylene group; and the dotted line represents presence or absence of a double bond, or a pharmaceutically acceptable salt thereof.

5,605,902

5-HT$_2$ RECEPTOR ANTAGONIST COMPOSITIONS USEFUL IN TREATING VENOUS CONDITIONS

Moh S. Amer, Santa Barbara, Calif., assignor to Sam Amer & Co., Monecito, Calif.

Continuation-in-part of Ser. No. 818,389, Jan. 9, 1992, Pat. No. 5,266,571. This application Aug. 7, 1995, Ser. No. 512,235

Int. Cl.[6] A61K *31/495;31/445;31/44*

U.S. Cl. 514—252 **15 Claims**

1. A method for treating or preventing varicose veins comprising administering to an afflicted or susceptible patient a non-blood pressure-reducing 5-HT$_2$ receptor antagonist at a therapeutically effective dose.

5,605,903

CARBOCYCLIC NUCLEOSIDE ANALOGS USEFUL AS IMMUNOSUPPRESSANTS

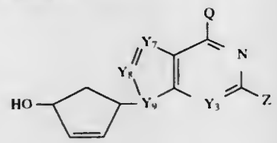
David R. Borcherding, Overland Park; Carl K. Edwards, III, Olathe, both of Kans.; Ronald E. Esser, Kansas City, Mo., and Douglas L. Cole, Carlsbad, Calif., assignors to Hoechst Marion Roussel, Inc., Cincinnati, Ohio

Division of Ser. No. 336,706, Nov. 8, 1994, Pat. No. 5,470,857, which is a continuation of Ser. No. 212,338, Mar. 14, 1994, abandoned, which is a continuation of Ser. No. 123,577, Sep. 17, 1993, abandoned, which is a continuation of Ser. No. 824,413, Jan. 23, 1992, abandoned, which is a continuation-in-part of Ser. No. 748,173, Aug. 23, 1991, abandoned, which is a continuation-in-part of Ser. No. 582,265, Sep. 14, 1990, abandoned. This application Mar. 22, 1995, Ser. No. 408,365

Int. Cl.[6] A61K *31/435;31/52*

U.S. Cl. 514—258 **12 Claims**

1. A method of effecting immunosuppression in a patient at risk of suffering from allograft rejection comprising administering to said patient an effective immunosuppressive amount of a compound of the formula



(I)

wherein

the hydroxy substituent on the cyclopentenyl ring is in the CIS configuration relative to the bicyclic substituent,

Y_3, Y_7, Y_8 and Y_9 are each independently nitrogen or a CH group,

Q is NH_2, halogen or hydrogen, and

Z is hydrogen, halogen, or NH_2;

or a pharmaceutically-acceptable salt thereof.

5,605,904

ELLIPTICINE DERIVATIVE AND PROCESS FOR PREPARING THE SAME

Kenji Tsujihara; Naoyuki Harada, both of Urawa; Kunihiko Ozaki, Higashimurayama; Motoaki Ohashi, Kawaguchi, and Koji Oda, Urawa, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

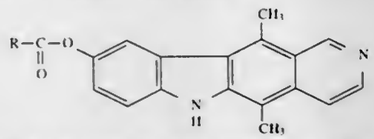
Division of Ser. No. 186,016, Jan. 25, 1994, Pat. No. 5,565,569. This application May 24, 1995, Ser. No. 449,273

Claims priority, application Japan, Jan. 29, 1993, 5-013441

Int. Cl.[6] A61K *31/435;* **C07D** *471/04*

U.S. Cl. 514—285 **12 Claims**

4. A method of treating a tumor susceptible to treatment by ellipticine in a warm-blooded animal which comprises administering to said warm-blooded animal a pharmaceutically effective amount of a compound of the formula (I):



(I)

wherein R is a lower alkyl group substituted by 1 to 3 groups selected from a lower alkoxy group, a lower alkoxy-substituted lower alkoxy group, a carboxyl-substituted lower alkoxy group, a carboxyl group, a lower alkoxycarbonyl group, a lower alkoxy-substituted lower alkoxycarbonyl group, a carboxyl-substituted lower alkoxycarbonyl group, an aminocarbonyl group, a lower alkylaminocarbonyl group, an amino group, a lower alkylamino group, a formylamine group, an amino-substituted lower alkanoylamino group, and a hydroxy group; a lower alkoxy group; a lower alkoxy-substituted lower alkoxy group; or a thiazolidinyl group, or a pharmaceutically acceptable salt thereof.

5,605,905

ANTITUMORAL COMPOUNDS

Carmen Avendano; Miguel A. Alonso; Modesta Espada; Dolores Garcia-Gravalos; Jose C. Mendendez; Blanca Ocana, and Jose M. Perez, all of Madrid, Spain, assignors to Universidad Complutense de Madrid, Madrid, Spain

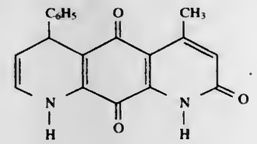
Continuation of Ser. No. 73,109, Jun. 4, 1993, abandoned. This application Mar. 28, 1995, Ser. No. 412,983

Claims priority, application United Kingdom, Jun. 5, 1992, 9212000

Int. Cl.[6] A61K *31/44;* **C07D** *471/06*

U.S. Cl. 514—292 **3 Claims**

1. The diazaquinomicin analog represented by the following structure:



5,605,906

CANNABINOID RECEPTOR AGONISTS

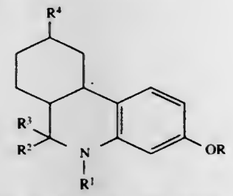
Cheuk K. Lau, Quebec, Canada, assignor to Merck Frosst Canada, Inc., Kirkland, Canada

Filed Mar. 24, 1995, Ser. No. 410,256

Int. Cl.[6] A61K *31/445;* **C07D** *221/12*

U.S. Cl. 514—298 **7 Claims**

1. A compound of structural formula I:



I

or pharmaceutically acceptable salts thereof, or diastereomers, enantiomers or mixtures thereof, wherein:

R is selected from the group consisting of:

(1) hydrogen,

(2) C_{1-3}fluoroalkyl,

(3) C_{1-6}alkyl, or

(4) phenyl or benzyl, optionally substituted with halo, C_{1-6}alkyl, C_{1-6}alkoxy, C_{1-6}alkyltio, CN, CF_3, CO_2H, or CO_2C_{1-4}alkyl;

R^1 is selected from the group consisting of:

(a) hydrogen,

(b) C_{1-6}alkoxy,

(c) CN,

(d) C_{1-3}fluoroalkyl,

(e) C_{1-6}alkyl,

(f) $—CO_2—C_{1-4}$alkyl,

(g) $—C(R^5)(R^6)—C_{1-4}$alkyl, or

(h) $—C_{1-6}$alkyl$—CO_2—R^7$;

R^2 and R^3 are each independently selected from the group consisting of:

(a) hydrogen,

(b) C_{1-6}alkoxy,

(c) C_{1-6}alkylthio,

(d) CN,

(e) C_{1-3}fluoroalkyl,

(f) C_{1-6}alkyl,

(g) $—CO_2H$,

(h) $—CO_2—C_{1-4}$alkyl,

(i) $—C(R^5)(R^6)—OH$,

(j) $—C(R^5)(R^6)—O—C_{1-4}$alkyl, or

(k) $—C_{1-6}$alkyl$—CO_2—R^7$;

R^4 is selected from the group consisting of:

(a) halo,

(b) C_{1-6}alkoxy,

(c) C_{1-6}alkylthio,

(d) CN,

(e) C_{1-3}fluoroalkyl,

(f) C_{1-6}alkyl,

(g) N_3,

(h) $—CO_2H$,

(i) $—CO_2—C_{1-4}$alkyl,

(j) $—C(R^5)(R^6)—OH$,

(k) $—C(R^5)(R^6)—O—C_{1-4}$alkyl, or

(l) $—C_{1-6}$alkyl$—CO_2—R^7$; and

R^5, R^6 and R^7 are each independently selected from the group consisting of:

(a) hydrogen, or

(b) C_{1-6}alkyl.

5,605,907

CYCLOHEXANE DERIVATIVES

Yasuhiro Kabasawa, Tsukuba; Fumihiro Ozaki, Ushiku; Keiji Ishibashi, Tsukuba; Takashi Hasegawa, Tsukuba; Hitoshi Oinuma, Tsukuba; Manabu Shirato, Tsukuba; Katsuhiro Moriya, Tsukuba; Toshiaki Ogawa, Tokyo; Satoshi Katayama, Tsukuba, and Shigeru Souda, Ushiku, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

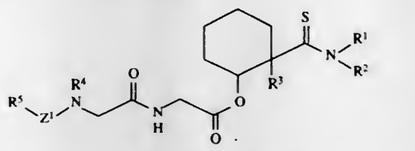
Division of Ser. No. 300,201, Sep. 2, 1994, Pat. No. 5,478,839. This application Sep. 19, 1995, Ser. No. 531,201

Claims priority, application Japan, Sep. 21, 1993, 5-234538

Int. Cl.[6] C07D *471/04;* **A61K** *31/435*

U.S. Cl. 514—300 **3 Claims**

1. A compound of the formula:



wherein R^1 and R^2, which may be the same or different are hydrogen or lower alkyl; R^3 is imidazopyridyl; R^4 is hydrogen or lower alkyl; Z^1 is $—SO_2—$ or

—CO—; and R^5 is optionally substituted aryl, optionally substituted arylalkyl,

optionally substituted heteroaryl or optionally substituted heteroarylalkyl, or a pharmaceutically acceptable salt thereof.

5,605,908

HETEROCYCLIC COMPOUNDS AND THEIR USE

Leander Merritt, and John S. Ward, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 24, 1994, Ser. No. 327,741

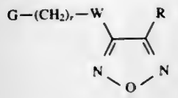
Int. Cl.[6] C07D *271/04;* **A61K** *31/41;31/55;31/445*

U.S. Cl. 514—305 **14 Claims**

1. A method of treating a disease in the central nervous system caused by malfunctioning of the muscarinic cholinergic system comprising administering to a subject in need thereof a pharma-

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ceutically effective amount of a compound of Formula I or the quaternized form thereof:



I

wherein

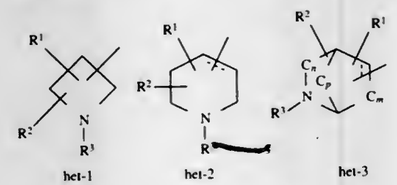
W is oxygen or sulphur;

R is hydrogen, amino, halogen, NHR^6, NR^6R^7, R^4, $—OR^4$, $—SR^4$, $—SOR^4$, $—SO_2R^4$, C_{3-10}-cycloalkyl, C_{4-12}-(cycloalkylalkyl), $—Z—C_{3-10}$-cycloalkyl and $—Z—C_{4-12}$-(cycloalkylalkyl); wherein R^4 is C_{1-15}-alkyl, C_{2-15}-alkenyl, C_{2-15}-alkynyl, each of which is optionally substituted with one or more halogen(s), $—CF_3$, —CN, Y, phenyl or phenoxy wherein phenyl or phenoxy is optionally substituted with halogen, —CN, C_{1-4}-alkyl, C_{1-4}-alkoxy, $—OCF_3$, $—CF_3$, $—CONH_2$ or $—CSNH_2$; or

R is phenyl or benzyloxycarbonyl, each of which is optionally substituted with halogen, —CN, C_{1-4}-alkyl, C_{1-4}-alkoxy, $—OCF_3$, $—CF_3$, $—CONH_2$ or $—CSNH_2$; or

R is $—OR^5Y$, $—SR^5Y$, $OR^5—Z—Y$, $—SR^5ZY$, $—O—R^5—Z—R^4$ or $—S—R^5—Z—R^4$; wherein Z is oxygen or sulphur; R^5 is C_{1-15}-alkylene, C_{2-15}-alkenylene or C_{2-15}-alkynylene; and Y is a 5 or 6 membered heterocyclic group; and

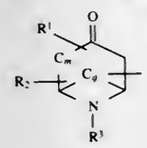
G is selected from one of the following azacyclic or azabicyclic ring systems:



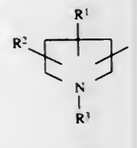
het-1

het-2

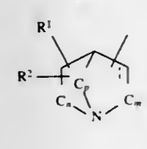
het-3



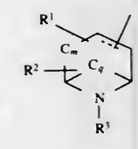
het-4



het-5



het-6



het-7

or G can optionally be substituted C_3–C_8 cycloalkyl or substituted C_{1-6}-alkyl wherein the substitution is $—NR^6R^7$;

R^6 and R^7 independently are hydrogen or C_{1-6}-alkyl or R^6 and R^7 together with the nitrogen atom optionally form a 4- to 6-member ring;

R^1 and R^2 independently are hydrogen, C_{1-15}-alkyl, C_{2-5}-alkenyl, C_{2-5}-alkynyl, C_{1-10}-alkoxy, C_{1-5}-alkyl substituted with —OH, $—COR^6$, $CH_2—OH$, halogen, $—NH_2$, carboxy, or phenyl;

R^3 is hydrogen, C_{1-5}-alkyl, C_{2-5}-alkenyl or C_{2-5}-alkynyl;

R^6 is hydrogen, C_{1-6}-alkyl;

m is 0, 1 or 2;

n is 0, 1 or 2;

p is 0, 1 or 2;

q is 1 or 2;

r is 0, 1 or 2; and

- - - - - - - - is a single or double bond; or a pharmaceutically acceptable salt or solvate thereof.

5,605,909

SUBSTITUTED N-HETEROARYL-1,2-DIAMINOCYCLOBUTENE-3,4-DIONE COMPOUNDS

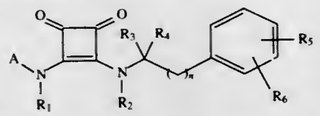
John A. Butera, Clarksburg; Schuyler A. Antane, Lawrenceville, and Bradford H. Hirth, Monmouth Junction, all of N.J., assignors to American Home Products Corporation, Madison, N.J.

Division of Ser. No. 477,840, Jun. 7, 1995, Pat. No. 5,532,245, which is a division of Ser. No. 334,475, Nov. 4, 1994, Pat. No. 5,466,712. This application Feb. 14, 1996, Ser. No. 601,632

Int. Cl.[6] C07D *213/02;* **A61K** *31/47;31/415*

U.S. Cl. 514—307 **5 Claims**

1. A compound of the formula:



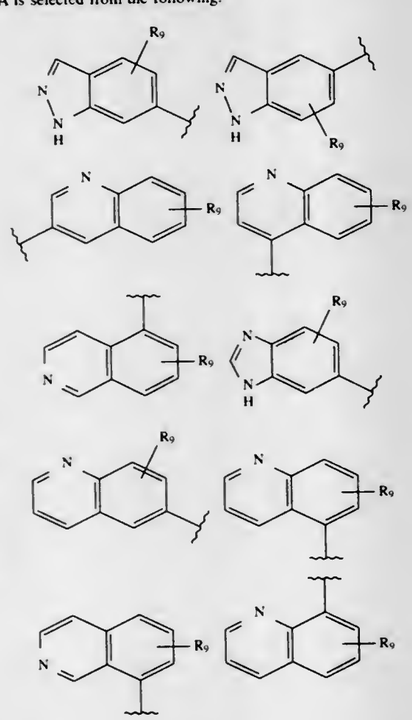
(I)

wherein:

R^1 is hydrogen, C_{1-10} straight or branched chain alkyl, C_{3-10} cyclic or bicyclic alkyl, alkanoyl of 2 to 7 carbon atoms, alkylsulfonyl of 1 to 7 carbon atoms, aroyl of 7 to 12 carbon atoms, arylalkenoyl of 9 to 20 carbon atoms, arylsulfonyl of 6 to 12 carbon atoms, arylalkanoyl of 8 to 12 carbon atoms or arylalkylsulfonyl of 7 to 12 carbon atoms;

R_2 is hydrogen, C_{1-10} straight or branched chain alkyl or C_{3-10} cyclic or bicyclic alkyl;

A is selected from the following:



5,605,910

QUINOLONE-AND NAPHTHYRIDONECARBOXYLIC ACID DERIVATIVES

Uwe Petersen, Leverkusen; Thomas Schenke, Bergisch Gladbach; Thomas Jaetsch, Köln; Stephan Bartel, Bergisch Gladbach; Klaus D. Bremm, Recklinghausen; Rainer Endermann, and Karl G. Metzger, both of Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

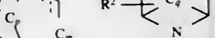
Filed Jul. 28, 1995, Ser. No. 508,603

Claims priority, application Germany, Aug. 4, 1994, 44 27 530.7

Int. Cl.[6] C07D *215/227;215/44;401/04;* **A61K** *31/475*

U.S. Cl. 514—312 **9 Claims**

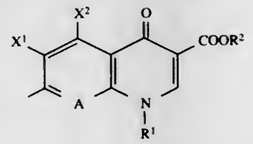
1. Compounds of the formula (I)



(I)

in which

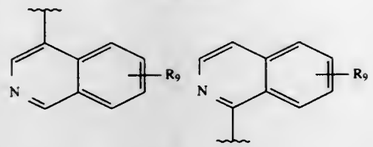
Q denotes a radical of the formulae



wherein

R^1 represents alkyl which has 1 to 4 carbon atoms and is optionally mono- or disubstituted by halogen or hydroxyl, alkenyl having 2 to 4 carbon atoms, cycloalkyl which has 3 to 6 carbon atoms and is optionally substituted by 1 or 2 fluorine atoms, bicyclo[1.1.1] -pent-1-yl, 1,1-dimethylpropargyl, 3-oxetanyl, methoxy, amino, methylamino, dimethylamino or phenyl which is optionally mono- or disubstituted by halogen, amino or hydroxyl,

-continued



wherein:

R_9 is hydrogen, C_{1-6} alkyl, C_{1-6}-perfluoroalkyl, C_{1-6} alkoxy, C_{1-6} perfluoroalkoxy, amino, C_{1-12} mono- or dialkylamino, C_{1-6} alkylsulfonamido, C_{1-6} alkylcarboxamido, nitro, cyano, carboxyl, chloro, bromo, fluoro, iodo;

n is an integer from 0 to 6;

R_3 and R_4 are, independent from each other, hydrogen, C_{1-10} straight or branched chain alkyl, or C_{3-10} cyclic or bicyclic alkyl;

C_{1-10} perfluoro alkyl, C_{1-10} hydroxyalkyl, C_{1-10} alkoxyalkyl, fluoro; or, when taken together, form a spirocyclic ring containing a total of 3–7 carbon atoms;

R_5 and R_6, independent from each other, are selected from the following: cyano, nitro, amino, C_{1-6} alkyl, C_{1-6} perfluoroalkyl, C_{1-6} alkoxy, C_{1-6} perfluoroalkoxy, amino, C_{1-12} mono- or dialkylamino, sulfonamide, C_{1-6} alkylsulfonamido, C_{6-12} arylsulfonamido, C_{1-6} alkylcarboxamido, C_{6-12} arylcarboxamido, C_{1-6} alkylsulfonyl, C_{1-6} perfluoroalkylsulfonyl, C_{6-12} arylsulfonyl, chloro, bromo, fluoro, iodo, 1-imidazolyl, carboxyl, carboalkoxy, hydroxyl, or hydrogen;

or a pharmaceutically acceptable salt thereof.

5,605,911

USE OF ALPHA-2 ADRENERGIC DRUGS TO PREVENT ADVERSE EFFECTS OF NMDA RECEPTOR HYPOFUNCTION (NRH)

John W. Olney, Ladue, and Nuri B. Farber, University City, both of Mo., assignors to Washington University, St. Louis, Mo.

Filed Jan. 31, 1995, Ser. No. 381,334

Int. Cl.[6] A61K *31/54;31/445*

U.S. Cl. 514—315 **20 Claims**

1. A method for reducing neurotoxic side effects of an NMDA antagonist drug, comprising the step of co-administering, to a mammalian patient receiving an NMDA antagonist drug which has both a therapeutic benefit and a neurotoxic side effect, a second drug which:

a. penetrates mammalian blood-brain barriers;

b. functions as an agonist at alpha-2 adrenergic receptors in central nervous system tissue;

c. acts as a pharmacological safener agent when co-administered with an NMDA antagonist drug, by reducing at least one neurotoxic side effect caused by the NMDA antagonist drug;

and wherein the alpha-2 adrenergic agonist is administered at a therapeutically effective dosage which is effective in reducing neurotoxic side effects of the NMDA antagonist drug.

R^2 represents hydrogen, alkyl which has 1 to 3 carbon atoms and is optionally substituted by hydroxyl, methoxy, amino or dimethylamino, benzyl, (5-methyl-2-oxo-1,3-dioxol-4-yl)-methyl, acetoxymethyl, pivaloyloxymethyl, 5-indanyl, phthalidinyl or 3-acetoxy-2-oxo-butyl,

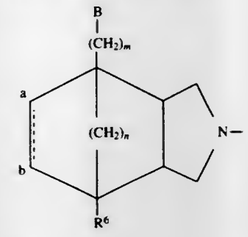
X^1 represents halogen or nitro,

X^2 represents hydrogen, halogen, amino, hydroxyl, methoxy, mercapto, methyl, halogenomethyl or vinyl,

A represents $C—R^7$, wherein

R^7 represents hydrogen, halogen, CF_3, OCH_3, $OCHF_2$, CH_3, CN, $CH=CH_2$ or $C≡CH$, and

T denotes a radical of the formula



wherein

B represents NR^3R^4 or OR^5, wherein

R^3 represents hydrogen, methyl or alkoxycarbonyl having 1 to 4 carbon atoms in the alkyl part,

R^4 represents hydrogen or methyl and

R^5 represents hydrogen or methyl,

R^6 represents hydrogen or methyl,

m represents 0 or 1 and

n represents 1 or 2,

and wherein a single or a double bond can stand between the carbon atoms a and b,

or the pharmaceutically usable hydrates and acid addition salts thereof, or the alkali metal, alkaline earth metal, silver and guanidinium salts of the underlying carboxylic acids.

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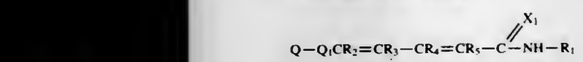
5,605,912

CERTAIN PIPERDINO-2,4-DIENAMIDE PESTICIDES

George S. Cockerill, Milton Keynes; David A. Pulman, Berkeley; Robert J. Blade, and Malcom H. Black, both of Herts, all of England, assignors to Roussel Uclaf, France

Division of Ser. No. 991,239, Dec. 16, 1992, Pat. No. 5,380,733. This application Oct. 14, 1994, Ser. No. 321,843
Claims priority, application United Kingdom, Dec. 19, 1991, 91-26955
Int. Cl.[6] A01N *43/40;* **C07D** *211/06;405/08;405/12*
U.S. Cl. 514—320 **5 Claims**

1. A compound of the formula:



where Q is phenyl or naphthyl optionally substituted by

(a) C_{1-6} hydrocarbyl, C_{1-6} alkoxy or methylenedioxy, which in turn is optionally substituted by one to five halogen atoms; or

(b) halo, cyano, nitro; or

(c) a group $S(O)_nR_7$ wherein n=0, 1, or 2 and R_7 is C_{1-6} alkyl optionally substituted by halogen, or R_7 is amino optionally substituted by one or two C_{1-6} alkyl groups; or a group NR_8R_9 where R_8 and R_9 are independently selected from hydrogen, C_{1-6} alkyl or a group COR_{12} where R_{12} is C_{1-6} alkyl or C_{1-6} alkoxy;

Q_1 is a 1,2-cyclopropyl ring optionally substituted by a group selected from C_{1-13} alkyl, halo, C_{1-3} haloalkyl or C_{1-3} alkynyl or cyano;

R_2, R_3, R_4 and R_5 are the same or different with at least one being hydrogen and the others being independently selected from the group consisting of hydrogen, halo, C_{1-4}, alkyl or C_{1-4} haloalkyl;

X_1 is oxygen or sulfur;

R_1 is a saturated 6 membered heterocycle containing a nitrogen atom which is bound to NH through a nitrogen atom;

or a pesticidally, insecticidally, or acaricidally acceptable salt thereof.

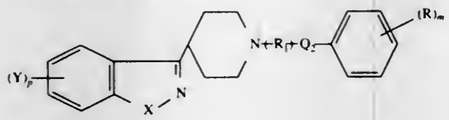
5,605,913

1-(ARYLTHIOALKYL, ARYLAMINOALKYL OR ARYLMETHYLENEALKYL)-4-(HETEROARYL) PIPERIDINES AND RELATED COMPOUNDS USEFUL AS ANTIPSYCHOTICS AND ANALGESICS

Joseph T. Strupczewski, Flemington; Yulin Chiang, Covent Station; Edward J. Glamkowski, Warren, all of N.J.; Kenneth J. Bordeau, Kintnersville, Pa., and Grover C. Heisley, Stockton, both of N.J., assignors to Hoechst Roussel Pharmaceuticals, Inc., Somerville, N.J.

Division of Ser. No. 329,000, Oct. 25, 1994, and a continuation-in-part of Ser. No. 144,265, Oct. 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 969,383, Oct. 30, 1992, Pat. No. 5,364,866, which is a continuation-in-part of Ser. No. 944,705, Sep. 5, 1991, abandoned, which is a continuation of Ser. No. 619,825, Nov. 29, 1990, abandoned, which is a continuation of Ser. No. 456,790, Dec. 29, 1989, abandoned, which is a continuation-in-part of Ser. No. 354,411, May 19, 1989, abandoned. This application Jun. 6, 1995, Ser. No. 471,032
Int. Cl.[6] C07D *403/00;417/00;419/00;221/04;401/00;275/04;239/02;* **A61K** *31/495;31/55;31/505*
U.S. Cl. 514—321 **21 Claims**

1. A compound of the formula:



wherein,

X is —O—, —S—, —NH—, or $—N(R_2)—$;

R_2 is selected from the group consisting of lower alkyl, aryl lower alkyl, aryl, (C_3-C_{10})cycloalkyl, aroyl, (C_2-C_{18})alkanoyl, (C_1-C_{18})alkoxycarbonyl, and phenylsulfonyl groups;

aryl is as defined hereinafter;

p is 1 or 2;

Y is hydrogen, lower alkyl, hydroxy, chlorine, fluorine, bromine, iodine, lower alkoxy, trifluoromethyl, nitro, or amino;

R_1 is $—CR_{24}R_{27}—(CR_{23}R_{24})_n—CR_{24}R_{27}—$ wherein n is 0, 1, 2, or 3; or

$—CHR_{24}—CH=CH—CHR_{24}—$,

$—CHR_{24}—C\equiv C—CHR_{24}—$,

$—CHR_{24}—CH=CH—CR_{23}R_{24}—CHR_{24}—$,

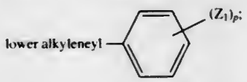
$—CHR_{24}—CR_{23}R_{24}—CH=CH—CHR_{24}—$,

$—CHR_{24}—C\equiv C—CR_{23}R_{24}—CHR_{24}—$, or

$—CHR_{24}—CR_{23}R_{24}—C\equiv C—CHR_{24}—$,

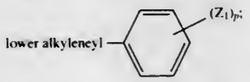
the —CH=CH— bond being cis or trans;

R_{23} is hydrogen, (C_1-C_{18})linear alkyl, phenyl, hydroxy, (C_1-C_{18})alkoxy, aryloxy, aryl(C_1-C_{18})alkyloxy, (C_1-C_{18})alkanoyloxy, hydroxy(C_1-C_6)alkyl, (C_1-C_{18})alkoxy(C_1-C_6)alkyl, phenyl(C_1-C_6)alkoxy, aryl(C_1-C_{18})alkyloxy(C_1-C_6)alkyl, (C_1-C_{18})alkanoyloxy (C_1-C_6)alkyl, or



where Z_1 is lower alkyl, —OH, lower alkoxy, $—CF_3$, $—NO_2$, $—NH_2$, or halogen, and p is as previously defined; and

R_{24} is hydrogen, (C_1-C_{18})linear alkyl, phenyl, hydroxy(C_1-C_6)alkyl, (C_1-C_{18})alkoxy(C_1-C_6)alkyl, phenyl(C_1-C_6)alkyloxy, aryl(C_1-C_{18})alkyloxy(C_1-C_6)alkyl, (C_1-C_{18})alkanoyloxy(C_1-C_6)alkyl, or

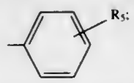


where Z_1 is as previously defined, and p is as previously defined;

R_{27} is hydrogen or R_{24} and R_{27} taken together with the carbon to which they are attached form C=O or C=S;

Q_2 is S, NH, or $—CH_2—$;

aryl is phenyl or



wherein R_5 is hydrogen, lower alkyl, lower alkoxy, hydroxy, chlorine, fluorine, bromine, iodine, lower monoalkylamino, lower dialkylamine, nitro, cyano, trifluoromethyl, or trifluoromethoxy;

R is hydrogen, lower alkyl, lower alkoxy, hydroxyl, carboxyl, chlorine, fluorine, bromine, iodine, amino, lower mono- or dialkylamino, nitro, lower alkyl thio, trifluoromethoxy, cyano, acylamino, trifluoromethyl, trifluoroacetyl, aminocarbonyl, monoalkylaminocarbonyl, dialkylaminocarbonyl, formyl,

—C(=O)—alkyl,

—C(=O)—O—alkyl,

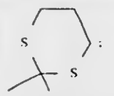
—C(=O)—aryl,

—C(=O)—heteroaryl,

$—CH(OR_7)—$alkyl,

—C(=W)—aryl, or

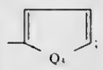
—C(=W)—heteroaryl, or



alkyl is (C_1-C_{18})alkyl;

aryl is as previously defined;

heteroaryl is



Q_3 is —O—, —S—, —NH—, or —CH=N—;

W is CH_2 or CHR_9 or $N—R_9$;

R_7 is hydrogen, alkyl, or alkanoyl;

R_8 is lower alkyl;

R_9 is hydroxy, alkoxy, or $—NHR_{10}$;

R_{10} is hydrogen, lower alkyl, (C_1-C_{18})acyl, aryl, —C(=O)—aryl or —C(=O)—heteroaryl, where aryl and heteroaryl are as defined above;

and, any hydroxyl group attached to an aliphatic or aromatic carbon atom, or any primary or secondary nitrogen atom may be acylated with a (C_4-C_{18})carboxylic group, in addition, any nitrogen atom may alternatively be acylated with a (C_4-C_{18})alkoxycarbonyl group;

m is 1, 2, or 3;

with the exclusion of a compound wherein X is —NH— or $—N(R_2)—$, Y is hydrogen, halogen, lower alkyl, lower alkoxy, hydroxy, or trifluoromethyl, and Q_2 is $—CH_2—$;

with the exclusion of a compound wherein X is —O—, Q_2 is $—CH_2—$, Y is hydrogen, lower alkyl, lower alkoxy, hydroxy, or halogen, and p is 1 or 2;

with the exclusion of a compound wherein X is —S—, Q_2 is $—CH_2—$, Y is hydrogen, halogen, lower alkyl, lower alkoxy, or hydroxy, p is 1 or 2, R is hydrogen, and m is 1;

all geometric, optical, and stereoisomers thereof,

or a pharmaceutically acceptable acid addition salt thereof.

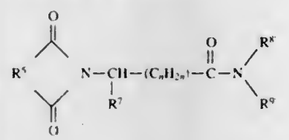
5,605,914

IMIDES

George W. Muller, Bridgewater, N.J., assignor to Celgene Corporation, Warren, N.J.

Continuation-in-part of Ser. No. 87,510, Jul. 2, 1993, abandoned, and a continuation-in-part of Ser. No. 140,237, Oct. 20, 1993, Pat. No. 5,463,063. This application Jun. 10, 1994, Ser. No. 258,587
Int. Cl.[6] C07D *209/48;* **A61K** *31/40*
U.S. Cl. 514—339 **32 Claims**

1. A compound of the formula:



in which

R^5 is o-phenylene, unsubstituted or substituted with 1 to 4 substituents each selected independently from nitro, cyano, trifluoromethyl, carbethoxy, carbomethoxy, carbopropoxy, acetyl, carbamoyl, acetoxy, carboxy, hydroxy, amino, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, or halo;

R^7 is (i) pyridyl, (ii) phenyl substituted with one or more substituents each selected independently of the other from nitro, cyano, trifluoromethyl, carbethoxy, carbomethoxy, carbopropoxy, acetyl, carbamoyl, acetoxy, carboxy, hydroxy, amino, alkyl of 1 to 10 carbon atoms, alkoxy of 1 to 10 carbon atoms, or halo, (iii) benzyl unsubstituted or substituted with one to three substituents selected from the group consisting of nitro, cyano, trifluoromethyl, carbethoxy, carbomethoxy, carbopropoxy, acetyl, carbamoyl, acetoxy, carboxy, hydroxy, amino, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, or halo, (iv) naphthyl, (v) benzyloxy, or (vi) imidazol-4-ylmethyl;

each of R^8 and R^9, independently of the other, is hydrogen or alkyl of 1 to 10 carbon atoms; and

n has a value of 0, 1, 2, or 3.

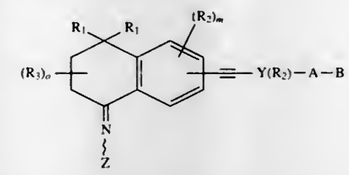
5,605,915

ACETYLENES DISUBSTITUTED WITH A 5 SUBSTITUTED TETRAHYDRONAPHTHYL GROUP AND WITH AN ARYL OR HETEROARYL GROUP HAVING RETINOID-LIKE BIOLOGICAL ACTIVITY

Vidyasagar Vuligunda, Irvine; Richard L. Beard, Newport Beach; Alan T. Johnson, Rancho Santa Margarita; Min Teng, Aliso Viejo; Tae K. Song, Long Beach, and Roshantha A. Chandraratna, Mission Viejo, all of Calif., assignors to Allergan

Division of Ser. No. 366,169, Dec. 29, 1994. This application May 31, 1996, Ser. No. 656,135
Int. Cl.[6] A61K *31/44;* **C07D** *213/44*
U.S. Cl. 514—356 **18 Claims**

1. A compound of the formula



wherein

R_1 is hydrogen or alkyl of 1 to 10 carbons;

R_2 and R_3 are hydrogen, or alkyl of 1 to 6 carbons and the substituted ethynyl group occupies either the 2 or the 3 position of the tetrahydronaphthalene ring;

m is an integer having the value of 0–3;

o is an integer having the value 0–4;

Y is pyridyl optionally substituted with one or two R_2 groups;

A is $(CH_2)_n$ where n is 0–5, lower branched chain alkyl having 3–6 carbons, cycloalkyl having 3–6 carbons, alkenyl having 2–6 carbons and 1 or 2 double bonds, alkynyl having 2–6 carbons and 1 or 2 triple bonds;

B is hydrogen, COOH or a pharmaceutically acceptable salt thereof, $COOR_8$, $CONR_9R_{10}$, $-CH_2OH$, CH_2OR_{11}, CH_2OCOR_{11}, CHO, $CH(OR_{12})_2$, $CHOR_{13}O$, $-COR_7$, $CR_7(OR_{12})_2$, $CR_7OR_{13}O$, or tri-lower alkylsilyl, where R_7 is an alkyl, cycloalkyl or alkenyl group containing 1 to 5 carbons, R_8 is an alkyl group of 1 to 10 carbons or (trimethylsilyl)alkyl where the alkyl group has 1 to 10 carbons, or a cycloalkyl group of 5 to 10 carbons, or R_7 is phenyl or lower alkylphenyl, R_9 and R_{10} independently are hydrogen, an alkyl group of 1 to 10 carbons, or a cycloalkyl group of 5–10 carbons, or phenyl or lower alkylphenyl, R_{11} is lower alkyl, phenyl or lower alkylphenyl, R_{12} is lower alkyl, and R_{13} is divalent alkyl radical of 2–5 carbons; the wavy line represents a single valence bond around which the configuration is syn or anti, and

Z is OR_1, R_1, phenyl, benzyl, lower alkyl or lower alkoxy substituted phenyl, $OSi(R_2)_3$, $OCOR_{13}$, $OC(R_{14})(R_{16})XR_{17}$, $N(R_{14})_2$, $NHCON(R_{14})_2$, $NHCSN(R_{14})_2$, where X is O or S; R_{14} is hydrogen, alkyl of 1 to 10 carbons, alkenyl of 2 to 10 carbons and having 1 to 3 double bonds, alkynyl having 2 to 10 carbons and 1 to 3 triple bonds, carbocyclic aryl selected

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from the group consisting of phenyl, C_1-C_{10}-alkylphenyl, naphthyl, C_1-C_{10}-alkylnaphthyl, phenyl-C_1-C_{10}alkyl, naphthyl-C_1-C_{10}-alkyl; R_{15} and R_{16} are hydrogen or lower alkyl of 1 to 6 carbons, R_{17} is lower alkyl of 1 to 6 carbons, or R_{16} and R_{17} jointly form a ring having a total of 4 to 5 carbons and the X heteroatom.

5,605,916

ARYLALKYL-AMINES HAVING ANTICONVULSANT AND NEUROPROTECTIVE PROPERTIES

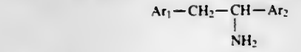
Ronald C. Griffith, Pittsford, N.Y., and James J. Napier, Lindenhurst, Ill., assignors to Astra AB, Sodertalje, Sweden

Continuation of Ser. No. 915,489, Jul. 16, 1992, Pat. No. 5,430,044, which is a division of Ser. No. 427,661, Oct. 27, 1989, abandoned, which is a continuation-in-part of Ser. No. 232,566, Aug. 12, 1988, abandoned, which is a continuation-in-part of Ser. No. 11,982, Feb. 6, 1987, abandoned. This application Mar. 6, 1995, Ser. No. 398,850

Int. Cl.[6] A61K *31/44;31/135;* **C07D** *213/73*

U.S. Cl. 514—357 **2 Claims**

1. An anticonvulsant or antihypoxia method of treatment which comprises the administration, to a patient in need of such treatment, of an effective amount of a compound of Formula I,



I

wherein

Ar_1 represents phenyl or phenyl substituted by one or more of nitro, halogen, hydroxy, C1 to 6 alkoxy, C1 to 6 alkyl or cyano; or 2-, 3-, or 4-pyridinyl; and

Ar_2 represents phenyl or phenyl substituted by one or more of nitro, halogen, hydroxy, C1 to 6 alkoxy, C1 to 6 alkyl or cyano;

or a pharmaceutically acceptable salt thereof.

5,605,917

METHOD OF TREATING DYSMENORRHEA EMPLOYING AN INTERPHENYLENE 7-OXABICYCLOHEPTYL SUBSTITUTED HETEROCYCLIC AMIDE PROSTAGLANDIN ANALOG

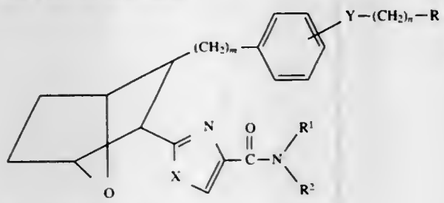
Martin L. Ogletree, Newtown, Pa., assigner to Bristol-Myers Squibb Company, Princeton, N.J.

Filed Dec. 22, 1994, Ser. No. 361,397

Int. Cl.[6] A61K *31/41;31/55;31/445;31/42*

U.S. Cl. 514—365 **15 Claims**

1. A method for treating dysmenorrhea in a mammalian species, which comprises administering to a mammalian species in need of such treatment a therapeutically effective amount of a thromboxane A_2 receptor antagonist, which is an interphenylene 7-oxabicycloheptyl substituted heterocyclic amide prostaglandin analog and has the formula



and including all stereoisomers thereof, wherein

m is 1, 2 or 3; n is 0, 1, 2, 3 or 4;

Y is O or a single bond, with the proviso that when n is 0, Y is a single bond;

R is CO_2H, CO_2lower alkyl, CO_2alkali metal, CH_2OH, $CONHR^{3a}$, $CONHSO_2R^3$ or 5-tetrazolyl, with the proviso that when R is 5-tetrazolyl, n cannot be 0;

X is O, S or NH;

R^1 is H, lower alkyl, aryl, cycloalkyl, lower alkenyl, lower alkynyl, aralkyl, cycloalkylalkyl, cycloheteroalkyl, cycloheteroalkylalkyl, heteroaryl, heteroarylalkyl or an amide;

R^2 is hydrogen, lower alkyl, aryl, or aralkyl; or R^1 and R^2 together with the nitrogen to which they are linked may form a 5- to 8-membered ring;

R^3 is lower alkyl, aryl or aralkyl; and R^{3a} is H, lower alkyl, aryl or aralkyl.

5,605,918

ANTI-HYPERGLYCEMIC AGENTS

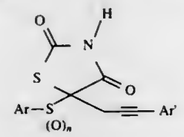
Jay E. Wrobel, Lawrenceville; Zenan Li, Plainsboro, and Arlene J. Dietrich, Delran, all of N.J., assignors to American Home Products Corporation, Madison, N.J.

Division of Ser. No. 207,980, Mar. 8, 1994, abandoned. This application May 24, 1995, Ser. No. 448,851

Int. Cl.[6] A61K *31/425;* **C07D** *277/06*

U.S. Cl. 514—369 **19 Claims**

1. A 5-[3-Aryl-prop-2-ynyl]-5-(arylsulfonyl)thiazolidine-2,4-dione or 5-[3 -Aryl-prop-2-ynyl]-5-(arylsulhnyl)thiazolidine-2,4-dione of the formula:



wherein

Ar is phenyl, 2-napthyl, alkyl substituted phenyl, alkoxy substituted phenyl, or halogen substituted phenyl.

n is 0 or 2; and

Ar' is phenyl, alkyl substituted phenyl, perfluoroalkyl substituted phenyl, halogen substituted phenyl, alkoxy substituted phenyl, perfluoroalkoxy substituted phenyl or alkylthio substituted phenyl; or a pharmaceutically acceptable salt thereof.

5,605,919

TREATMENT FOR VIRAL DISEASES

Akira Matsumori, Osaka, Japan, assignor to Takeda Chemical Industries, Ltd., Osaka, Japan

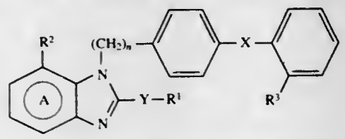
Filed Feb. 23, 1994, Ser. No. 200,686

Claims priority, application Japan, Feb. 26, 1993, 5-038234

Int. Cl.[6] A61K *31/41*

U.S. Cl. 514—381 **9 Claims**

1. A method for treating or preventing viral myocarditis in an animal, which comprises administering to said animal an effective amount of an angiotensin II antagonist compound as an active ingredient and a pharmaceutically acceptable carrier, wherein said angiotensin II antagonist compound is a compound of the formula:



wherein the ring A represents a benzene ring optionally having at least one substituent in addition to R_2; R^1 represents a hydrogen atom or a hydrocarbon residue which may be substituted; R^3 represents a group capable of forming or transformable to an anion; X signifies that the phenylene group and phenyl group are joined to each other either directly or through a spacer comprising a chain of not more than 2 spacer atoms; R^2 represents a carboxyl group which may be esterified; Y represents a bond, —O—, —$S(O)_m$— where m represents 0, 1 or 2, or —$N(R^4)$— where R^4 represents a hydrogen atom or an alkyl group which may be substituted; and n represents a whole number of 1 or 2.

5,605,920

TETRAZOLINONES

Toshio Goto, Shimotsuga-gun; Yoshinori Kitagawa, Tochigi; Seishi Ito, Oyama; Katsuhiko Shibuya, Tochigi; Tatsuya Yamaoka, Tochigi; Chieko Ueno, Tochigi, and Yoshiko Kyo, Tochigi, all of Japan, assignors to Nihon Bayer Agrochem K.K., Tokyo, Japan

Filed Mar. 20, 1996, Ser. No. 618,954

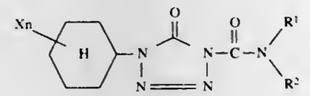
Claims priority, application Japan, Mar. 23, 1995, 7-088619

Int. Cl.[6] A01N *43/713;* **A61K** *31/41*

U.S. Cl. 514—381 **13 Claims**

1. A tetrazolinone of the formula

(I)



wherein

X represents C_{1-4} alkyl,

n represents 1, 2, 3 or 4,

R^1 and R^2 each independently represents C_{1-6} alkyl, C_{2-4} alkenyl, C_{2-6} alkynyl, C_{3-8} cycloalkyl, aryl which may optionally be substituted wherein the substituent is at least one radical selected from the group consisting of halogen, C_{1-4} alkyl, C_{1-2} haloalkyl, C_{1-2} haloalkoxy, C_{1-2} haloalkylthio, acyl, nitro and cyano or aralkyl optionally substituted by halogen or

R^1 and R^2 form, together with the N-atom to which they are bonded, a cyclic ring which may be substituted.

5,605,921

TRIAZOLE DERIVATIVES AND SALTS THEREOF, AND ANTIFUNGAL AGENT CONTAINING THE SAME

Hiroyuki Imaizumi, Toyama; Tetsuya Kajita, Takaoka; Kenichi Takashima, Oyabe; Minako Yotsuji, Toyama-ken; Keiko Takakura, Toyama; Akira Yotsuji, Toyama-ken; Junichi Mitsuyama; Katsumi Shimizu, both of Toyama; Hiroshi Sakai, Takaoka, and Hirokazu Narita, Toyama, all of Japan, assignors to Toyama Chemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 986,800, Dec. 8, 1992, Pat. No. 5,366,989. This application Jun. 17, 1994, Ser. No. 261,952

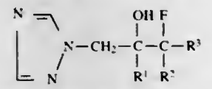
Claims priority, application Japan, Dec. 9, 1991, 3-350318; Oct. 8, 1992, 4-293961

Int. Cl.[6] A01N *43/653;* **C07D** *249/08*

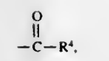
U.S. Cl. 514—383 **11 Claims**

1. A triazole derivative represented by the formula (1) or its salt:

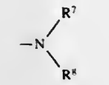
(1)



wherein R^1 represents a substituted or unsubstituted phenyl group; R^2 represents methyl group; and R^3 represents a group represented by the formula



in which R^4 is a group of the formula



(R^7 and R^8, which may be the same or different, are hydrogen atoms or substituted or unsubstituted C_{1-10} alkyl, or C_{3-8} cycloalkyl,

wherein the substituted phenyl group in the definition of R^1; and the substituted C_{1-10} alkyl and C_{3-8} cycloalkyl groups in the definitions of R^7 and R^8 are at least one substituent selected from the group consisting of halogen atoms, unsubstituted or cyano-substituted C_{1-4} alkyl groups, C_{1-4} alkoxy groups, halo-C_{1-4} alkoxy groups, C_{1-4} alkylthio groups, C_{1-4} alkoxycarbonyl groups, hydroxyl group, mercapto group, carboxyl group, amino group, N—C_{1-4} alkylamino groups, N,N-di-C_{1-4} alkylamino groups, cyano group, nitro group, halo-C_{1-4} alkyl groups, unsubstituted or halogen-substituted phenyl groups, unsubstituted or halogen-substituted naphthyl groups, unsubstituted or halogen-substituted formyl groups, unsubstituted or halogen-substituted C_{2-10} alkanoyl groups, unsubstituted or halogen-substituted benzoyl groups and unsubstituted or C_{1-10} alkyl-, C_{3-8} cycloalkyl-, phenyl- or naphthyl-substituted carbamoyl groups.

5,605,922

COMBINATIONS OF PROSTAGLANDINS AND CLONIDINE DERIVATIVES FOR THE TREATMENT OF GLAUCOMA

Louis DeSantis, Jr., Fort Worth, and Verney L. Sallee, Southlake, both of Tex., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

Continuation of Ser. No. 422,570, Apr. 10, 1995, Pat. No. 5,480,900, which is a continuation of Ser. No. 213,380, Mar. 14, 1994, abandoned, which is a continuation of Ser. No. 960,065, Oct. 13, 1992, abandoned. This application Dec. 12, 1995, Ser. No. 571,326

Int. Cl.[6] A61K *31/415;31/215;31/19*

U.S. Cl. 514—392 **20 Claims**

1. A topical ophthalmic composition for the treatment of glaucoma, comprising a combination of a pharmaceutically effective amount of a prostaglandin and a pharmaceutically effective amount of a clonidine derivative, wherein the clonidine derivative is selected from the group consisting of 2-(arylmethylene) imidazolidines and 2-(arylimino) imidazolidines.

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5,605,923

COMPOUNDS USEFUL FOR TREATING INFLAMMATORY DISEASES AND INHIBITING PRODUCTION OF TUMOR NECROSIS FACTOR

Siegfried B. Christensen, IV, Philadelphia, and Cornelia J. Forster, Bensalem, both of Pa., assignors to SmithKline Beecham Corporation, Philadelphia, Pa.

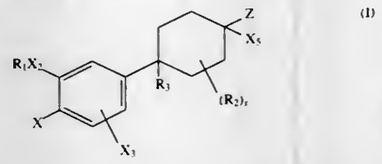
PCT No. PCT/US93/02516, § 371 Date Sep. 29, 1994, § 102(e) Date Sep. 29, 1994, PCT Pub. No. WO93/19751, PCT Pub. Date Oct. 14, 1993

Continuation-in-part of Ser. No. 968,761, Oct. 30, 1992, abandoned, which is a continuation-in-part of Ser. No. 862,111, Apr. 2, 1992, abandoned. This PCT application Mar. 5, 1993, Ser. No. 313,093

Int. Cl.[6] A61K *31/275;* **C07C** *255/50*

U.S. Cl. 514—417 **6 Claims**

1. A compound of Formula (I):



(I)

wherein:

R_1 is $-(CR_4R_5)_nC(O)O(CR_4R_5)_mR_6$, $-(CR_4R_5)_nC(O)NR_4(CR_4R_5)_mR_6$, $-(CR_4R_5)_nO(CR_4R_5)_mR_6$, or $-(CR_4R_5)_rR_6$ wherein the alkyl moieties may be optionally substituted with one or more halogens;

m is 0 to 2;

n is 1 to 4;

r is 0 to 6;

R_4 and R_5 are independently selected from hydrogen or a C_{1-2} alkyl;

R_6 is hydrogen, methyl, hydroxyl, aryl, halo substituted aryl, aryloxyC_{1-3} alkyl, halo substituted aryloxyC_{1-3} alkyl, indanyl, indenyl, C_{7-11} polycycloalkyl, C_{3-6} cycloalkyl, or a C_{4-6} cycloalkyl containing one or two unsaturated bonds, wherein the cycloalkyl moiety may be optionally substituted by 1 to 3 methyl groups or one ethyl group;

provided that:

a) when R_6 is hydroxyl, then m is 2; or

b) when R_6 is hydroxyl, then r is 2 to 6; or

c) when n is 1 and m is 0, then R_6 is other than H in $-(CR_4R_5)_nO(CR_4R_5)_mR_6$;

X is YR_2, halogen, nitro, NR_4R_5, or formyl amine;

Y is O;

m' is a number having a value of 0, 1, or 2;

X_2 is O or NR_8;

X_3 is hydrogen or X;

R_2 is independently selected from $-CH_3$ or $-CH_2CH_3$ optionally substituted by 1 or more halogens;

s is 0 to 4;

R_3 is CN or $C{\equiv}R_4$;

Z is OR_{14}, OR_{15}, SR_{14}, $S(O)_mR_7$, $S(O)_2NR_{10}R_{14}$, $NR_{10}R_{14}$, $NR_{14}C(O)R_9$, $NR_{10}C(Y')R_{14}$, $NR_{10}C(O)OR_7$, $NR_{10}C(Y')NR_{10}R_{14}$, $NR_{10}S(O)_2NR_{10}R_{14}$, $NR_{10}C(NCN)NR_{10}R_{14}$, $NR_{10}S(O)_2R_7$, $NR_{10}C(CR_4NO_2)NR_{10}R_{14}$, $NR_{10}C(NR_{10})SR_9$, $NR_{10}C(CR_4NO_2)SR_9$, $NR_{10}C(NR_{10})NR_{10}R_{14}$, $NR_{10}C(O)C(O)NR_{10}R_{14}$, or $NR_{10}C(O)C(O)OR_{14}$;

Y' is O;

R_7 is $-(CR_4R_5)_qR_{12}$ or C_{1-6} alkyl wherein the R_{12} or C_{1-6} alkyl group is optionally substituted one or more times by C_{1-2} alkyl optionally substituted by one to three fluorines, —F, —Br, —Cl, $—NO_2$, $—NR_{10}R_{11}$, $—C(O)R_8$, $—C(O)OR_8$, $—OR_8$, —CN, $—C(O)NR_{10}R_{11}$, $—OC(O)NR_{10}R_{11}$, $—OC(O)R_8$, $—NR_{10}C(O)NR_{10}R_{11}$, $—NR_{10}C(O)R_{11}$, $—NR_{10}C(O)OR_9$, $—C(NR_{10})NR_{10}R_{11}$, $—C(NCN)NR_{10}R_{11}$, $—C(NCN)SR_9$, $—NR_{10}C(NCN)SR_9$, $—NR_{10}C(NCN)NR_{10}R_{11}$, $—NR_{10}S(O)_2R_9$, $—S(O)_mR_9$, $—NR_{10}C(O)C(O)NR_{10}R_{11}$, $—NR_{10}C(O)C(O)R_{10}$;

q is 0, 1, or 2;

R_{12} is C_{3-7} cycloalkyl, naphthyl, or phenyl;

R_8 is independently selected from hydrogen or R_9;

$R_{8'}$ is R_8 or fluorine;

R_9 is C_{1-4} alkyl optionally substituted by one to three fluorines;

R_{10} is OR_8 or R_{11};

R_{11} is hydrogen, or C_{1-4} alkyl optionally substituted by one to three fluorines; or when R_{10} and R_{11} are as $NR_{10}R_{11}$ they may together with the nitrogen form a 5 to 7 membered ring optionally containing at least one additional heteroatom selected from O, N, or S;

R_{14} is hydrogen or R_7;

R_{15} is $C(O)R_{14}$, $C(O)NR_4R_{14}$, $S(O)_2R_7$, or $S(O)_2NR_4R_{14}$;

or the pharmaceutically acceptable salts thereof.

5,605,924

SULFONATE AND CARBAMATE DERIVATIVES OF 3-AROYLBENZO[B] THIOPHENES

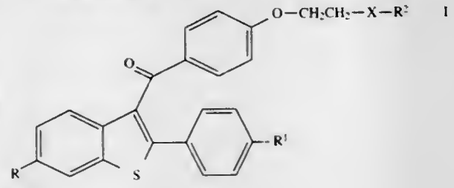
Larry J. Black; Henry U. Bryant, both of Indianapolis, and George J. Cullinan, Trafalgar, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 392,445, Feb. 22, 1995, which is a continuation of Ser. No. 35,121, Mar. 19, 1993, Pat. No. 5,482,949. This application Jan. 17, 1996, Ser. No. 588,663

Int. Cl.[6] A61K *31/40;31/38;* **C07D** *409/10*

U.S. Cl. 514—422 **10 Claims**

1. A compound of the formula



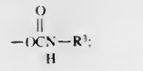
I

where

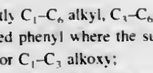
X is a bond or $—CH_2—$;

R^2 is a heterocyclic ring selected from pyrrolidino;

R is OH, $—OSO_2—(CH_2)_n—CH_3$ or

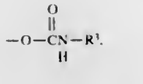


R^1 is hydrogen, OH, fluoro, chloro, $—OSO_2—(CH_2)_n—CH_3$ or



each R^3 is independently C_1–C_6 alkyl, C_3–C_6 cycloalkyl, unsubstituted or substituted phenyl where the substituent is fluoro, chloro, C_1–C_3 alkyl or C_1–C_3 alkoxy;

each n is independently 3, 4 or 5; and pharmaceutically acceptable salts and solvates thereof; provided that at least one of R and R^1 is



5,605,925

1-AMINOACETAMIDOPYRROLES AND 1-AMINO ACETAMIDO-2-(SUBSTITUTED) PYRROLES AND RELATED COMPOUNDS

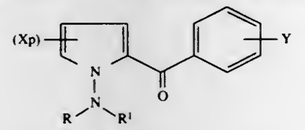
Lawrence L. Martin, Lebanon; Raymond W. Kosley, Jr.; Denise M. Flanagan, both of Bridgewater, all of N.J.; Gert U. Kuerzel, Hofheim, Germany; Peter A. Nemoto, Raritan, and David G. Wettlaufer, Phillipsburg, both of N.J., assignors to Hoechst Marion Roussel, Inc., Cincinnati, Ohio

Division of Ser. No. 102,181, Aug. 4, 1993, Pat. No. 5,428,053, which is a division of Ser. No. 922,291, Jul. 30, 1992, Pat. No. 5,274,116. This application Nov. 7, 1994, Ser. No. 335,238

Int. Cl.[6] A61K *31/40;* **C07D** *207/335*

U.S. Cl. 514—423 **2 Claims**

1. A method of treating a patient in need of the enhancement of learning and memory which comprises administering to such a patient an effective amount of a compound of the formula



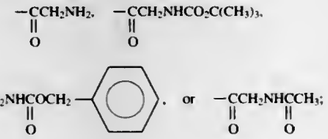
where

R is hydrogen, loweralkyl, loweralkylaminoloweralkyl or dialoweralkylaminoloweralkyl;

Y is hydrogen, halogen, trifluoromethyl or nitro;

X is hydrogen, halogen or loweralkyl; and

R_1 is hydrogen,



and

p is 0, 1 or 2.

5,605,926

TRIFLUOROMETHYL-CONTAINING PSEUDOPEPTIDES ACTIVE AGAINST RETROVIRUSES

Dieter Häbich, Wuppertal; Wolfgang Röben, Bergisch Gladbach; Jutta Hansen, Wuppertal, and Arnold Paessens, Haan, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

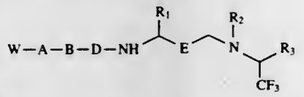
Division of Ser. No. 920,216, Jul. 24, 1992, Pat. No. 5,430,151. This application Apr. 10, 1995, Ser. No. 419,294

Claims priority, application Germany, Aug. 10, 1991, 41 26 485.1

Int. Cl.[6] C07D *207/04;* **A61K** *31/40*

U.S. Cl. 514—428 **5 Claims**

1. A compound of the formula (I)



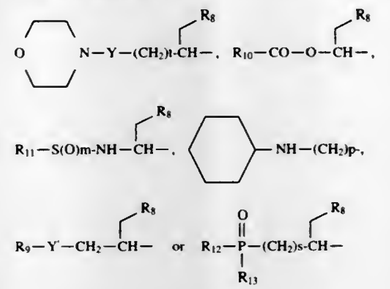
(I)

in which

W represents hydrogen or an amino protective group, or represents straight-chain or branched alkyl or alkenyl each having up to 6 carbon atoms which are optionally substituted by aryl having 6 to 10 carbon atoms or represents a group of the formula $R^4—CO—$, $R^5R^6N—CO—$ or $R^7—SO_2—$,

in which

R^4 represents hydrogen, trifluoromethyl or straight-chain or branched alkoxy having up to 8 carbon atoms or alkyl having up to 18 carbon atoms, each of which is optionally monosubstituted or disubstituted by identical or different substituents from the group consisting of aryl having 6 to 10 carbon atoms or pyridyl, or represents aryl having 6 to 10 carbon atoms, which is optionally substituted by halogen, trifluoromethyl, trifluoromethoxy or by straight-chain or branched alkyl having up to 8 carbon atoms, represents cycloalkyl having 3 to 7 carbon atoms, or represents quinolyl, quinolyl-N-oxide, indolyl, pyridyl, morpholino or piperazinyl, or represents a radical of the formula



in which

R^8 represents phenyl or naphthyl,

R^9 and R^{10} independently of one another represent straight-chain or branched alkyl having up to 14 carbon atoms, which is optionally substituted by phenyl or naphthyl, or benzyloxy or aryl having 6 to 10 carbon atoms, which is in turn substituted by alkyl having up to 4 carbon atoms,

R^{11} has the abovementioned meaning of R^9 and R^{10} and is identical to or different from this or represents morpholino or pyrrolidinyl bonded via N,

m represents a number 0, 1 or 2,

p represents a number 1, 2 or 3,

Y and Y' independently of one another represent CO— or SO_2—,

t represents a number 0, 1 or 2,

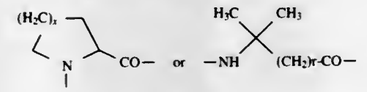
R^{12} and R^{13} independently of one another represent hydroxyl or alkoxy having up to 8 carbon atoms,

s represents a number 1 or 2,

R^5 and R^6 independently of one another represent hydrogen or aryl having 6 to 10 carbon atoms, which can optionally be substituted by straight-chain or branched alkyl having up to 6 carbon atoms or by halogen, or represent cycloalkyl having 3 to 7 carbon atoms, or represent straight-chain or branched alkyl having up to 18 carbon atoms, which is optionally substituted by pyridyl,

R^7 represents straight-chain or branched alkyl having up to 8 carbon atoms,

A, B and D are identical or different and represent a direct bond or represent a radical of the formula



in which

x represents the number 1 or 2 and

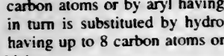
r represents the number 0 or 1, or

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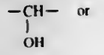
represent a group of the formula



in which
z represents the number 0 or 1,
R^{14} represents hydrogen or straight-chain or branched alkyl having up to 4 carbon atoms,
R^{15} represents cycloalkyl having 3 to 8 carbon atoms or aryl having 6 to 10 carbon atoms or hydrogen, or represents straight-chain or branched alkyl having up to 8 carbon atoms, where the alkyl is optionally substituted by cyano, methylthio, hydroxyl, mercapto or guanidyl or by a group of the formula $—NR^{16}R^{17}$ or $R^{18}—OC—$,
in which
R^{16} and R^{17} independently of one another represent hydrogen, straight-chain or branched alkyl having up to 8 carbon atoms or phenyl, and
R^{18} represents hydroxyl, benzyloxy, alkoxy having up to 6 carbon atoms or the abovementioned group $—NR^{16}R^{17}$, or the alkyl is optionally substituted by cycloalkyl having 3 to 8 carbon atoms or by aryl having 6 to 10 carbon atoms, which in turn is substituted by hydroxyl, halogen, nitro or alkoxy having up to 8 carbon atoms or by the group $—NR^{16}R^{17}$,
in which
R^{16} and R^{17} have the abovementioned meaning,
or the alkyl is optionally substituted by a 5- or 6-membered nitrogen-containing heterocycle or indolyl, in which the appropriate —NH functions are optionally protected by alkyl having up to 6 carbon atoms or by an amino protective group,
R^1 represents straight-chain or branched alkyl or alkenyl having up to 10 carbon atoms which are optionally substituted by cycloalkyl having 3 to 8 carbon atoms or aryl having 6 to 10 carbon atoms, each of which can in turn be substituted by halogen, nitro, hydroxyl, amino or straight-chain or branched alkoxy having up to 4 carbon atoms,
E represents a radical of the formula

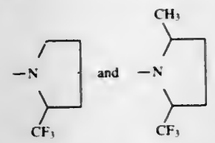


R^2 and R^3, together with the nitrogen atom and including the



group,

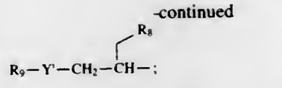
form a heterocyclic radical selected from the group consisting of



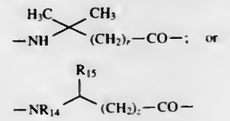
said heterocyclic radical being optionally substituted by straight-chain or branched alkyl having up to 8 carbon atoms, or a physiologically acceptable salt thereof; with the exception of compounds or salts thereof of formula (I) in which
W represents a group of the formula $R^4—CO—$
in which
R^4 represents a radical selected from the group consisting of those of the formula:



-continued



and, also
A, B and D together represent a radical of the formula:



5,605,927

TREATMENT OF SKIN DISEASES USING GINKGOLIDE PAF ANTAGONISTS

Ruth Korth, Palestrinastr. 7A, D-80639, Munich, Germany, assignor to Ruth Korth, Munich, Germany

Continuation of Ser. No. 969,674, Oct. 28, 1992, Pat. No. 5,346,894, which is a continuation-in-part of Ser. No. 246,476, May 19, 1994, abandoned. This application Jun. 17, 1994, Ser. No. 261,765

Claims priority, application European Pat. Off., Nov. 4, 1991, 91118745

Int. Cl.[6] A61K *31/35*

U.S. Cl. 514—453 **3 Claims**

1. A method of treating skin diseases selected from the group consisting of sclerotic, genetic and thermic disease, comprising administering to a subject requiring said treatment an effective amount of a natural ginkgolide selected from the group consisting of BN 52020, BN 52021, BN 52022 and mixtures thereof.

5,605,928

ANTIEMETIC COMPOSITIONS

Raphael Mechoulam, and Abraham Abrahamov, both of Jerusalem, Israel, assignors to Yissum Research Development Company of The Hebrew University in Jerusalem, Jerusalem, Israel

PCT No. PCT/EP93/01335, § 371 Date Nov. 30, 1994, § 102(e) Date Nov. 30, 1994, PCT Pub. No. WO93/24125, PCT Pub. Date Dec. 9, 1993

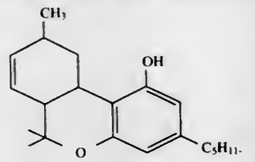
PCT Filed May 27, 1993, Ser. No. 343,604

Claims priority, application Israel, Jun. 2, 1992, 102082

Int. Cl.[6] A61K *31/35*

U.S. Cl. 514—454 **6 Claims**

1. A method for treating emesis in children undergoing anticancer chemotherapy which comprises orally administering to said children an effective amount of the compound of formula I



(I)

5,605,929

METHODS AND COMPOSITIONS FOR INHIBITING 5α-REDUCTASE ACTIVITY

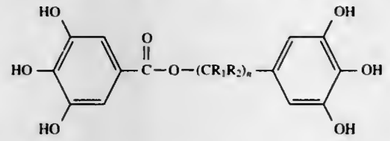
Sbutsung Liao, Chicago, Ill., and Tehming Liang, Centerville, Ohio, assignors to Arch Development Corp., Chicago, Ill.

Continuation-in-part of Ser. No. 904,443, Jul. 1, 1992, Pat. No. 5,422,371, which is a continuation-in-part of Ser. No. 889,589, May 27, 1992, abandoned. This application May 16, 1995, Ser. No. 442,055

Int. Cl.[6] A61K *31/35;* **C07D** *311/04*

U.S. Cl. 514—456 **8 Claims**

1. A method of reducing weight in an animal comprising administering to the animal an amount of a compound in a pharmaceutically acceptable vehicle, the compound having the structure



and isomers thereof where n=1 or 2; R_1 and R_2 are :independently H, halogen, lower alkyl, OH, or OR_3, where R_3 is lower alkyl, and pharmaceutically acceptable salts thereof.

5,605,930

COMPOSITIONS AND METHODS FOR TREATING AND PREVENTING PATHOLOGIES INCLUDING CANCER

Dvorit Samid, Rockville, Md., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

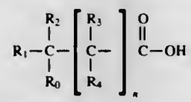
Continuation-in-part of Ser. No. 135,661, Oct. 12, 1993, which is a continuation-in-part of Ser. No. 779,744, Oct. 21, 1991.

This application Mar. 7, 1994, Ser. No. 207,521

Int. Cl.[6] A61K *31/21;* **A01N** *37/00;47/40;47/46*

U.S. Cl. 514—510 **25 Claims**

1. A method of treating a neoplastic condition in a subject comprising administering a therapeutic amount of an inhibitor of the mevalonate pathway in combination with a therapeutic amount of a compound of the formula I:



(I)

wherein
$R_0$is phenyl, naphthyl, phenoxy, substituted phenyl, substituted naphthyl, or substituted phenoxy, wherein the substitution is, independently, one or more halogen, hydroxy, or lower straight or branched chain alkyl;
R_1 and R_2 are, independently, H, hydroxy, lower alkoxy, lower straight or branched chain alkyl or halogen;
R_3 and R_4 are, independently, H, lower alkoxy, lower straight or branched chain alkyl or halogen; and
n is an integer from 0 to 2;
a pharmaceutically-acceptable salt thereof or a mixture thereof.

5,605,931

PROTECTIVE PROSTAGLANDINS FOR USE IN CONJUNCTION WITH CHEMOTHERAPEUTIC AGENTS

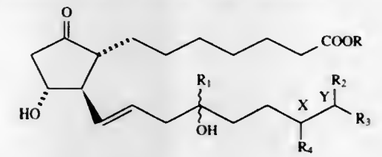
Wayne R. Hanson, Oak Park, Ill., assignor to Loyola University of Chicago, Chicago, Ill.

Division of Ser. No. 286,074, Aug. 4, 1994, which is a continuation-in-part of Ser. No. 886,270, May 20, 1992, abandoned. This application May 11, 1995, Ser. No. 438,802

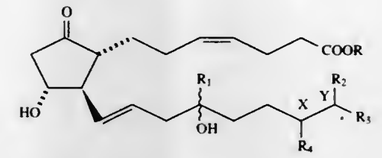
Int. Cl.[6] A61K *31/215;31/19;31/557*

U.S. Cl. 514—530 **2 Claims**

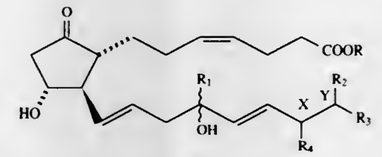
1. A method for lessening the reduction of circulating lymphocytes, white blood cells and bone marrow stem cells in a mammal being treated with a lymphocyte-reducing chemotherapeutic agent by administering a therapeutically-effective amount of an E-type prostaglandin selected from the group consisting of:



I



II



III

16, 16-dimethyl PGE_2; and PGE_1,
wherein R represents hydrogen or lower alkyl having 1 to 6 carbon atoms; R_1 represents hydrogen, vinyl or lower alkyl having 1 to 4 carbon atoms and the wavy line represents R or S stereochemistry; R_2, R_3, and R_4 are hydrogen or lower alkyl having 1 to 4 carbon atoms or R_2 and R_3 together with carbon Y form a cycloalkenyl having 4 to 6 carbon atoms or R_3 and R_4 together with carbons X and Y form a cycloalkenyl having 4 to 6 carbon atoms and wherein the X-Y bond can be saturated or unsaturated, less than 5 hours prior to administration of the chemotherapeutic agent.

5,605,932

OPIATE RECEPTOR LIGANDS

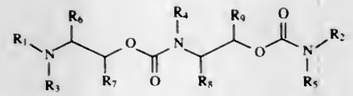
Simon Ng, Walnut Creek; Robert L. Warne, San Francisco; Ronald N. Zuckermann, Berkeley; Eric J. Martin, El Cerrito, and Reyna J. Simon, Felton, all of Calif., assignors to Chiron Corporation, Emeryville, Calif.

Division of Ser. No. 366,830, Dec. 30, 1994, Pat. No. 5,481,020. This application Jan. 2, 1996, Ser. No. 582,156

Int. Cl.[6] A61K *31/185*

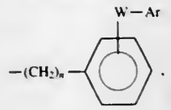
U.S. Cl. 514—553 **3 Claims**

1. A method for modulating opioid receptor activity, said method comprising:
contacting an opioid receptor with an effective amount of a compound of Formula I which binds to the opioid receptor:



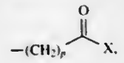
wherein

R_1 is a group of the formula,



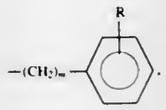
where W is $-(CH_2)_a-$ (where a is 0, 1or 2), —O—, —NH—, —S—, —SO—, or $—SO_2—$, and Ar is phenyl, phenyl-alkyl, phenyl substituted with 1–3 halo, nitro, lower alkyl, hydroxy, amino, alkylamino, dialkylamino, and/or hydroxy-lower alkyl groups, and n is 0, 1, 2, 3, or 4;

R_2 and R_3 are each independently H, lower alkyl, or



where X is H, OH, lower alkyl, or lower alkoxy, and p is 0, 1, 2, or 3;

R_4 is



where m is 0, 1, 2, or 3, and R is 1–3 halo, nitro, lower alkyl, hydroxy, amino, alkylamino, dialkylamino, and/or hydroxy-lower alkyl groups;

R_5 is cycloalkyl, bicycloalkyl, or tricycloalkyl;

R_6, R_7, R_8, and R_9 are each independently H or lower alkyl.

5,605,933

RETINOID CONJUGATE COMPOUNDS AND METHODS FOR TREATING OF SKIN AGING

John A. Duffy, West Milford, N.J.; Janice J. Teal, Suffern; Mark S. Garrison, White Plains, both of N.Y., and George P. Serban, Ridgefield, Conn., assignors to Avon Products, Inc., Suffern, N.Y.

Continuation of Ser. No. 167,424, Dec. 15, 1993, abandoned. This application Jul. 20, 1995, Ser. No. 504,693

Int. Cl.[6] A61K *31/07;31/19;31/22*

U.S. Cl. 514—557 **7 Claims**

1. A method for the treatment of aged and aging skin, which comprises topical application of an effective amount of a conjugate of a retinoid with a bioactive compound selected from the group consisting of organic acids having from 2 to 24 carbon atoms.

5,605,934

METHOD OF MANUFACTURING AND STORING SOLUTIONS

Joseph A. Giertych, Lake Forest, Ill., assignor to Baxter International Inc., Deerfield, Ill.

Filed Mar. 23, 1995, Ser. No. 409,110

Int. Cl.[6] B65B *31/00;* **A61K** *33/10*

U.S. Cl. 424—686 **37 Claims**

1. A method for creating a medical solution comprising the steps of:

creating a medical solution that has a pH that is less than a desired final pH;

adding a base to the medical solution to increase the pH of the medical solution to at least the desired final pH;

adding carbon dioxide gas to the medical solution causing the pH of the medical solution to be lowered; and

housing the medical solution in a gas permeable container.

5,605,935

RECYCLING OF FLEXIBLE FOAM

Giovanni Parrinello, Fort Collins, Colo.; David Thorpe; Gabriel Verheist, both of Herent, Belgium; Julian F. G. Hopper, Maassluis, Netherlands, and Mireille B. A. De Witte, Merelbeke, Belgium, assignors to Imperial Chemical Industries, London, England

Filed Mar. 3, 1994, Ser. No. 206,562

Claims priority, application United Kingdom, Oct. 11, 1993, 9320874

Int. Cl.[6] C08J *11/04*

U.S. Cl. 521—49.5 **15 Claims**

1. Process for alcoholizing a flexible polyurethane foam comprising:

a) bringing the foam in contact with an alcoholizing polyol, allowing the foam and the polyol to react, then allowing the mixture to separate into an upper and lower phase, subsequently collecting these two phases in different containers and (b) subjecting the upper phase to an extraction process by bringing it into contact with an extracting compound which is a polyol or a polyol mixture having a number average molecular weight of at most 500 and being immiscible with it, mixing the extracting compound and the upper phase, allowing the mixture to separate into an upper phase and a lower phase and collecting these two phases, the extraction process being conducted 2–10 times batchwise or continuously.

5,605,936

FOAMED ARTICLES COMPRISING HIGH MELT STRENGTH PROPYLENE POLYMER MATERIAL

Anthony J. DeNicola, Jr., Newark, Del.; Jeanine A. Smith, West Chester, Pa., and Massimo Felloni, Ferrara, Italy, assignors to Montell North America Inc., Wilmington, Del.

Division of Ser. No. 373,925, Jan. 17, 1995, Pat. No. 5,541,236, which is a division of Ser. No. 92,344, Jul. 15, 1993, Pat. No. 5,414,027. This application Mar. 28, 1996, Ser. No. 625,450

Int. Cl.[6] C08G *81/00;* **C08J** *3/28;9/00;* **C08L** *23/12*

U.S. Cl. 521—50.5 **9 Claims**

1. A foamed article comprising a normally solid, high molecular weight, non-linear, substantially gel-free, propylene polymer material having strain hardening elongational viscosity and enhanced melt strength selected from the group consisting essentially of:

(1) a propylene polymer composition consisting essentially of:

(a) from 10 to 50% by weight of a propylene homopolymer having an isotactic index of from 80 to 99%, or a copolymer selected from the group consisting of (i) propylene and ethylene, (ii) propylene, ethylene and a CH_2=CHR alpha-olefin, where R is a C_{2-8} straight or branched alkyl, and (iii) propylene and an alpha-olefin, as defined above in (a) (ii), wherein said copolymer contains from 85 to 99% by weight propylene and having an isotactic index greater than 80 to 99%

(b) from 5 to 20% by weight of a semi-crystalline, essentially linear copolymer having a crystallinity of about 20 to 60%, by differential scanning calorimetry (DSC), wherein the copolymer is selected from the group consisting of (i) ethylene and propylene containing over 55% by weight ethylene; (ii) ethylene, propylene, and an alpha-olefin, as defined above in (a) (ii) , containing from 1 to 10% by weight of the alpha-olefin and over 55% up to 98% by weight of both ethylene and alpha-olefin; and (iii) ethylene and an alpha-olefin, as defined in (a) (ii), containing over 55% up to 98% by weight of said alpha-olefin, which copolymer is insoluble in xylene at room or ambient temperature, and

(c) from 40 to 80% by weight of a copolymer selected from the group consisting of a copolymer of (i) ethylene and propylene wherein the copolymer contains from 20% to less than 40% by weight ethylene; (ii) ethylene, propylene, and an alpha-olefin, as defined in (a) (ii), wherein the alpha-olefin is present in an amount of from 1 to 10% by weight and the amount of ethylene and alpha-olefin present is from 20% to less than 40% by weight; and (iii) ethylene and an alpha-olefin, as defined in (a) (ii), containing from 20 to less than 40% by weight of the alpha-olefin, and optionally containing 0.5 to 10% by weight of a diene, said copolymer being soluble in xylene at ambient temperature, and having an intrinsic viscosity of from 1.7 to 3.0 dl/g, wherein the total amount of ethylene units or said alpha-olefin units or of ethylene and said alpha-olefin units when both are present in the composition is from 15 to 35% by weight, the total amount of (b) and (c), based on the total olefin polymer composition is from about 65% to 80% by weight, the weight ratio of (b)/(c) is from 0.1 to about 0.3, and the total content of ethylene or C_{4-8} alpha-olefin or combination thereof in (b+c) is less than 50% by weight; and

(2) a propylene polymer composition consisting essentially of:

(a) 10–60 parts by weight of homopolymer polypropylene having an isotactic index greater than 90 to 99, or of crystalline propylene copolymer with ethylene, with a CH_2=CHR olefin where R is a 2–6 carbon alkyl radical, or combinations thereof, containing over 85% by weight of propylene and having an isotactic index greater than 85 to 94%;

(b) 8–40 parts by weight of a crystalline copolymer containing ethylene and propylene, having an ethylene content greater than 50% by weight and insoluble in xylene at room temperature;

(c) 30–60 parts by weight of an amorphous ethylene-propylene copolymer, soluble in xylene at room temperature and containing 40 to 70% by weight ethylene.

5,605,937

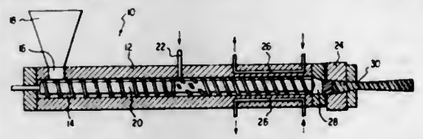
MOLDABLE THERMOPLASTIC POLYMER FOAM BEADS

Dennis A. Knaus, 1 Andrews Rd., Malbern, Pa. 19355

Filed Sep. 30, 1994, Ser. No. 315,446

Int. Cl.[6] C08J *9/18*

U.S. Cl. 521—60 **57 Claims**



1. A method for producing moldable thermoplastic polymer foam beads, comprising the steps of:

a. mixing a composition comprising a thermoplastic polymer in an extruder to form a melt;

b. injecting a blowing agent into said melt at a rate effective to produce a predetermined foam density, to form an admixture;

c. extruding said admixture into a first pressure zone to form foamable beads, wherein said pressure zone has sufficient pressure to prevent appreciable expansion of said beads and said foamable beads comprise blowing agent to further foam said beads;

d. adjusting the temperature of said beads in said first pressure zone to a suitable foaming temperature; and

e. expelling said temperature adjusted beads from said first pressure zone into a second pressure zone of lower pressure than said first pressure zone, causing said beads to expand into foamed beads.

5,605,938

METHODS AND COMPOSITIONS FOR INHIBITION OF CELL INVASION AND FIBROSIS USING DEXTRAN SULFATE

Dikla Roufa, St. Louis, Mo.; Adrian Harel, Woodmere, Ohio; Robert C. A. Frederickson, Bentleyville, Ohio, and George T. Coker, III, Mayfield Heights, Ohio, assignors to Gliatech, Inc., Beachwood, Ohio

Filed May 31, 1991, Ser. No. 708,660

Int. Cl.[6] A61K *31/715*

U.S. Cl. 514—59 **50 Claims**

1. A composition comprising:

(a) an amount of dextran sulfate effective to inhibit fibrosis at the site of a lesion in a mammal in which the average molecular weight of the dextran sulfate is in the range of about 40,000 to 2,000,000 Daltons; and

(b) an amount of an adhesive protein effective to anchor the dextran sulfate at the site of the lesion.

5. A method for inhibiting fibrosis at a site of a lesion in a mammal comprising administering to a site of a lesion in a mammal a composition comprising an amount of dextran sulfate effective to inhibit fibrosis at the site of administration in which the average molecular weight of the dextran sulfate is in the range of about 40,000 to 2,000,000 Daltons.

5,605,939

POLY(OXYPROPYLENE/OXYETHYLENE) RANDOM POLYOLS USEFUL IN PREPARING FLEXIBLE HIGH RESILIENCE FOAM WITH REDUCED TENDENCIES TOWARD SHRINKAGE AND FOAM PREPARED THEREWITH

Stanley L. Hager, Crosslanes, W. Va., assignor to Arco Chemical Technology, L.P., Greenville, Del.

Filed Jan. 26, 1996, Ser. No. 592,087

Int. Cl.[6] C08G *18/62*

U.S. Cl. 521—137 **22 Claims**

1. A high resilience polyurethane foam prepared by the catalyzed reaction of one or more di- or polyisocyanates at an index of from 70 to about 130; with

a polyol component comprising a polyoxyalkylene polyol component containing from 20 weight percent to about 100 weight percent of one or more poly(oxypropylene/oxyethylene) random polyols having an unsaturation of less than about 0.02 meq/g, a functionality of two or more, prepared at least in part by double metal cyanide complex catalyzed oxyalkylation and containing less than 35 weight percent of an all oxypropylene, double metal cyanide complex catalyzed internal block, and having one or more random external blocks prepared by oxyalkylation with one or more mixture(s) of propylene oxide and ethylene oxide, said mixture(s) containing at least 2 weight percent ethylene oxide;

in the presence of a blowing agent comprising water;

optionally in the presence of

a polyol polymer dispersion and one or more chain extenders/crosslinkers.

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5,605,940

HIGH EQUIVALENT WEIGHT POLYESTER POLYOLS FOR CLOSED CELL, RIGID FOAMS

Michael J. Skowronski, Clearwater, and Kenneth G. Trout, Tampa, both of Fla., assignors to The Celotex Corporation, Tampa, Fla., and Apache Products Co., Meridian, Miss.

Filed Feb. 13, 1995, Ser. No. 387,642
Int. Cl.[6] C08G *18/34*
U.S. Cl. 521—172 **17 Claims**

1. A closed cell, rigid polyisocyanurate foam which comprises the reaction product of a polyisocyanate and an isocyanate-reactive component in the presence of a catalyst and a hydrogen-containing blowing agent or a mixture of a hydrogen-containing blowing agent and at least one co-blowing agent wherein the isocyanate-reactive component comprises (a) a hydroxy terminated polyester having an equivalent weight greater than about 350, or (b) a mixture of the hydroxy terminated polyester with at least one other isocyanate-reactive compound, and wherein the equivalent weight of the hydroxy terminated polyester and the amount thereof in the foam are sufficiently high to reduce the cold temperature shrinkage of the foam to below the cold temperature shrinkage of the corresponding foam having the same density and being prepared from the same foam-forming mixture except that the equivalent weight of the hydroxy terminated polyester and/or the amount thereof is lower.

5,605,941

VINYL ETHER COMPOUNDS HAVING ADDITIONAL FUNCTIONAL GROUPS OTHER THAN VINYL ETHER GROUPS AND THE USE THEREOF IN THE FORMULATION OF CURABLE COMPOSITIONS

Bettina Steinmann, Les Russilles, 1724 Praroman; Adrian Schulthess, Uff em Bärg 22, 1734 Tentlingen, and Max Hunziker, Chasseralstrasse 8, 3186 Düdingen, all of Switzerland

Filed Sep. 12, 1994, Ser. No. 304,464
Claims priority, application Switzerland, Sep. 16, 1993, 2786/93; Mar. 8, 1994, 684/94
Int. Cl.[6] C08G *59/00;65/00;* **C08F** *16/12;2/50*
U.S. Cl. 522—170 **16 Claims**

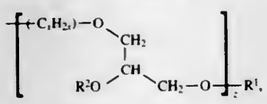
1. A radiation polymerizable composition comprising:

a compound having at least one vinyl ether group which also contains in the molecule at least one further functional group, which compound is represented by the formula

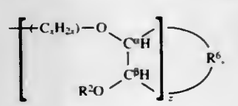
$$[H_2C{=}CH{-}O\tfrac{}{}]_z A,$$

wherein the symbols used in the above formula and in the formulae below have the following definitions:

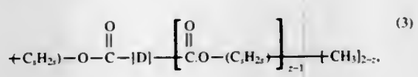
A is a z-valent radical selected from the radicals of the following formulae (1), (2), (3) and (4)



(1)

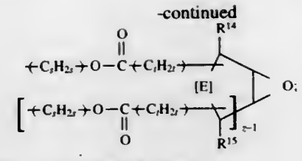


(2)



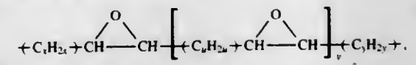
(3)

-continued



(4)

[D] is a group of the formula



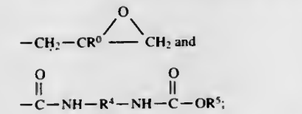
(5)

[E] is a C_1- or a C_2-alkylene group;

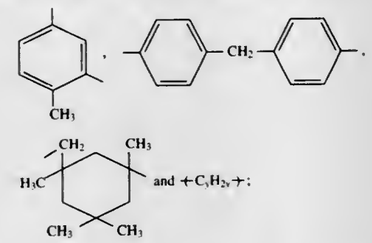
R^0 is a hydrogen atom or a methyl group;

R^1 is a z-valent radical selected from aliphatic, cycloaliphatic, aromatic, aliphatic-aromatic and aliphatic-cycloaliphatic radicals and polyoxyalkylene radicals and is unsubstituted or may have one or more substituents which in the case of an aliphatic radical R^1 are selected from C_1–C_4alkoxy and halogen substituents; and in the case of other types of radical R^1 are selected from C_1–C_4alkyl, C_1–C_4alkoxy and halogen substituents;

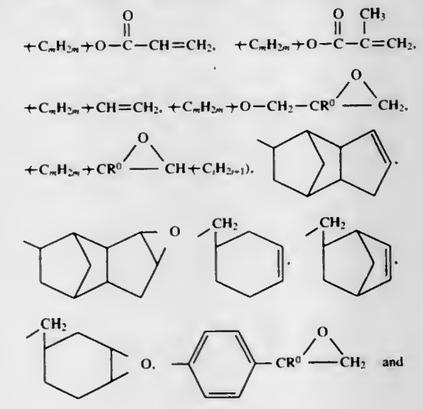
R^2 is a radical selected from the radicals of the formulae



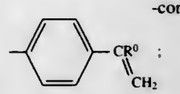
R^4 is a group selected from the groups of the formulae



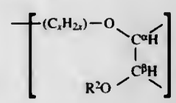
R^5 is a group selected from the groups of the formulae



-continued



R^6 is a (2·z)-valent organic group which, together with the carbon atoms C^α and C^β of each of the z groups of the formula



(6)

in a radical of formula (2), forms a cycloaliphatic ring having at least 5 carbon atoms;

R^{14} and

R^{15} are each a hydrogen atom or, when [E] is a C_2alkylene group, are each a hydrogen atom or together form a methylene group;

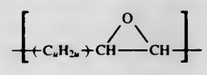
i is an integer from 0 to 20;

m is an integer from 1 to 20;

s is an integer from 2 to 10;

t is an integer from 0 to 10;

u in the individual units of the formula



in formula (5) are independently of one another an integer from 1 to 20;

v is an integer from 0 to 4;

x and

y are independently of one another an integer from 2 to 20, and

z is the number 1 or 2;

at least one radically or cationically polymerisable compound that is different therefrom selected from the group consisting of mono-, di-, and poly(meth)acrylates, vinyl compounds, and di- and polyfunctional epoxy compounds; and

at least one photoinitiator for the cross-linking of the compounds.

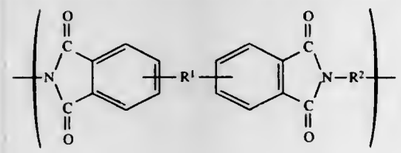
5,605,942

CONTACT LENS MATERIAL

Haruyuki Hiratani; Kazuhiko Nakada, both of Nagoya; Shoji Ichinohe, Gunma-ken; Toshio Yamazaki, Gunma-ken, and Hideto Kato, Gunma-ken, all of Japan, assignors to Menicon Co., Ltd., Nagoya, and Shin-Etsu Chemical Co., Ltd., Tokyo-to, both of Japan

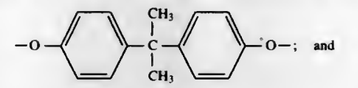
Continuation-in-part of Ser. No. 274,293, Jul. 12, 1994. This application Jan. 17, 1996, Ser. No. 583,746
Claims priority, application Japan, Jul. 13, 1993, 5-173308; Sep. 2, 1993, 5-218560; Apr. 1, 1994, 6-065054
Int. Cl.[6] A61F *2/16*
U.S. Cl. 523—107 **3 Claims**

1. A contact lens material comprising a condensation polymer having a recurring unit represented by the general formula (I):



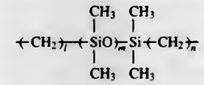
(I)

wherein R^1 is $—C(CF_3)_2—$ or a group represented by the formula:

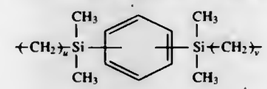


; and

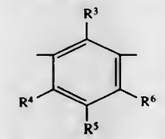
R^2 is a group represented by the general formula:



in which l is an integer of 1 to 3, m is an integer of 1 to 15 and n is an integer of 1 to 3, a group represented by the general formula:

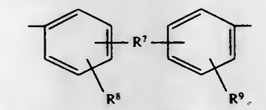


in which u is an integer of 1 to 3 and v is an integer of 1 to 3, a group represented by the general formula (II):



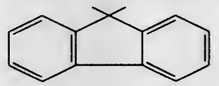
(II)

wherein R^3, R^4, R^5 and R^6 are the same or different and each is hydrogen atom or an alkyl group having 1 to 5 carbon atoms, or a group represented by the general formula (III):



(III)

wherein R^7 is $—C(CF_3)_2—$, a group represented by the formula:



or a direct bond, and R^8 and R^9 are the same or different and each is an alkyl group having 1 to 3 carbon atoms, a fluoroalkyl group having 1 to 3 carbon atoms, hydrogen atom, hydroxyl group or carboxyl group.

5,605,943

PATTERN FORMING THERMOPLASTIC COMPOSITION CORES CONTAINING FLUORESCING DYE, PATTERNS THEREOF AND PROCESSES RELATED THERETO

Paul Solomon, Glencoe, Ill., assignor to M. Argueso & Company, Inc., New York, N.Y.

Filed Oct. 20, 1995, Ser. No. 546,373
Int. Cl.[6] B22C *3/00;* **B29C** *33/38*
U.S. Cl. 523—139 **13 Claims**

1. A method for forming a shaped, cavity-containing mass of thermoplastic composition for use in investment casting, the method comprising:

(a) causing fluid thermoplastic pattern composition to flow into a mold and to solidify in the mold and about a core of moldable pattern core material comprising a water-soluble continuous

phase organic material and a water-soluble fluorescing dye dispersed through the continuous phase organic material;

(b) exposing the core material to water to remove the core material from the solidified thermoplastic pattern composition thereby to leave a cavity in the solidified thermoplastic pattern composition; and then

(c) inspecting the cavity for residual core material remaining in the cavity by directing into the cavity electromagnetic radiation of wave length to cause the fluorescing dye, upon exposure thereto, to produce electromagnetic radiation, and attempting to detect electromagnetic radiation that may be produced by the fluorescing dye in the residual core material that may remain in the cavity.

5,605,944

HEAT-RESISTANT ADHESIVE FOR USE ESPECIALLY IN MAKING STERILIZABLE PACKAGING

Gerald W. Heebner, Savannah, Ga., assignor to Union Camp Corporation, Wayne, N.J.

Filed Apr. 27, 1995, Ser. No. 430,056

Int. Cl.[6] C08K *3/20;* **C08L** *63/02*

U.S. Cl. 523—404 **27 Claims**

1. A polyamide/epoxy, thermoplastic, curable adhesive resin system, comprising:

(a) a non-solvated aqueous dispersion of a solid epoxy resin having unreacted epoxy groups numbering, on average, between about 2 and about 8; and

(b) a non-solvated aqueous dispersion of a mixture of solid polyamide resins comprising: (i) an acid terminated polyamide resin having an acid number, on average, of from about 10 to about 30, in an amount of from about 20% to about 60% by weight of the total weight of polyamide resin; and (ii) an amine terminated polyamide resin having an amine number, on average, of from about 5 to about 30, in an amount of from about 80% to about 40% by weight of the total weight of polyamide resin; and combined with said mixture of polyamide resins, a neutralizing base in amount sufficient to neutralize from about 50% to about 100%, on an equivalents basis, of the total number of free acid groups occurring on said acid and amine terminated polyamide resin components; AND OPTIONALLY:

(c) at least one water soluble, dipolar chemical moiety in an amount effective to stabilize said aqueous dispersion and provide stability in the overall resin composition; said water soluble, dipolaf chemical moiety comprising one or more members selected from the group consisting of amino acids of the formula:

including anionic and cationic salts derived therefrom and mixtures thereof, wherein R is an alkyl, alkenyl, phenyl or phenylalkyl group of one to ten carbon atoms and Y is any polar or non-polar, ionic or non-ionic substituent;

AND OPTIONALLY:

(d) at least one surfactant selected from the group consisting of anionic, cationic and non-ionic surfactants;

wherein the cured adhesive resin system is resistant to heat and moisture and remains stable upon exposure to a temperature and a humidity associated with autoclave sterilization.

5,605,945

POLYAMIDE COMPOUNDS CONTAINING DIEPOXIDE AND HAVING HIGH VISCOSITY

Aziz E. Sayed, Leverkusen; Edgar Ostlinning, Düsseldorf; Karsten-Josef Idel, Krefeld; Hubert Goldbach, Ratingen; Dieter Löhr, Uedem, and Ralf Lange, Krefeld, all of Germany, assignors to Bayer Aktiengeselischaft, Leverkusen, Germany

Filed May 22, 1995, Ser. No. 445,886

Claims priority, application Germany, Jun. 3, 1994, 44 19 592.3

Int. Cl.[6] C08L *63/00;77/00*

U.S. Cl. 523—440 **2 Claims**

1. Polyamide molding compounds consisting of:

A. from 79 to 47% by weight of thermoplastic, partly crystalline polyamide;

B. from 0 to 50% by weight of reinforcing materials;

C. from 0.1 to 4% by weight of a diepoxide based on bisphenol and epichlorohydrin, or based on cycloaliphatic dicarboxylic acids and epichlorohydrin, or a mixture thereof; and

D. from 0.1 to 2% by weight of processing additives selected from the group consisting of lubricants, heat stabilizers, nucleating agents, and colorants.

5,605,946

PROCESS FOR THE PREPARATION OF BITUMEN-POLYMER COMPOSITIONS, APPLICATION OF THE COMPOSITIONS OBTAINED TO THE PRODUCTION OF COATINGS AND POLYMER MASTER SOLUTION FOR OBTAINING THE SAME COMPOSITIONS

Jean-Pascal Planche, Lyons; Laurent Germanaud, Heyrieux; Pascal Nicol, Pau, and François Travers, La Talaudiere, all of France, assignors to Koch Materials Company, Wichita, Kans.

Continuation of Ser. No. 140,101, Nov. 2, 1993, abandoned. This application Nov. 6, 1995, Ser. No. 553,820

Claims priority, application France, Mar. 3, 1992, 92 02506

Int. Cl.[6] C08L *95/00*

U.S. Cl. 524—68 **28 Claims**

1. A process for the preparation of a bitumen-polymer composition which comprises

(a) producing at a temperature of between 100° C. and 230° C. a mixture of

(i) a bitumen;

(ii) A linear block copolymer of styrene and a conjugated diene selected from the group consisting of butadiene, isoprene, chloroprene, carboxylated butadiene and carboxylated isoprene, said block copolymer being used in a quantity of from 0.5% to 25% by weight of bitumen and having a weight-average molecular weight of between 170,000 and 250,000 and a structure of A-B with A denoting a polymer block consisting of a polystyrene block by itself or extended on the B side by a random copolymer of styrene and of the conjugated diene and B denoting a polymer block consisting of conjugated diene units, the block copolymer having a styrene content in the form of a polystyrene block in the polymer block A which comprise between 5.2% and 14.7% by weight of the copolymer and, when the block A of the block copolymer A-B consist of a polystyrene block extended on the B side by a random copolymer of styrene and the conjugated diene, an overall weight content of styrene not more than 20% by weight of the block copolymer; and

(iii) a coupling agent containing at least one sulphur-donor compound and used in an amount to provide a quantity of sulphur representing, by weight, 0.1% to 10% of the weight of the linear block copolymer of styrene and conjugated diene; and

(b) Keeping the mixture thus produced at a temperature of between 100° C. and 230° C. and with stirring for a period of at least ten minutes.

5,605,947

AMORPHOUS NEO-DIOL PHOSPHITE COMPOSITIONS

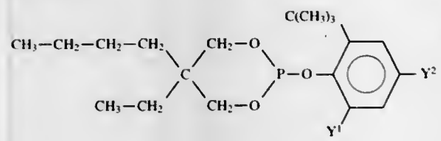
James A. Mahood, Morgantown, W. Va., assignor to General Electric Company, Pittsfield, Mass.

Continuation-in-part of Ser. No. 307,545, Sep. 16, 1994, Pat. No. 5,424,348, which is a continuation of Ser. No. 96,530, Jul. 22, 1993, abandoned. This application Dec. 21, 1994, Ser. No. 361,263

Int. Cl.[6] C08K *5/17;5/527;* **C07F** *9/6574*

U.S. Cl. 524—117 **17 Claims**

1. An amorphous phosphite composition, comprising phosphite of the formula:



wherein

Y^1 is alkyl and Y^2 is t-butyl and said phosphite is in solid amorphous form.

5,605,948

POLYMER MIXTURE FROM ABS OR ABS +PC AND A COPOLYETHER ESTER BLOCK COPOLYMER; ARTICLES FORMED THEREFROM

Jean-Marie G. L. Dumont, Rosoy par Liancourt, France; Johannes J. de Bont, Wouw, Netherlands; Johannes C. Gosens, Roosendaal, Netherlands, and Ronald van der Wal, Steenbergen, Netherlands, assignors to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 224,095, Apr. 6, 1994, abandoned, which is a continuation of Ser. No. 933,555, Aug. 24, 1992, abandoned. This application Apr. 11, 1995, Ser. No. 421,304

Claims priority, application Netherlands, Oct. 7, 1991, 9101686

Int. Cl.[6] C08L *69/00*

U.S. Cl. 524—162 **15 Claims**

1. A polymer mixture comprising the following constituents:

Ai) a grafi copolymer built up from a grafi base consisting essentially of a butadiene rubber, on which one or more vinyl aromatic monomeric compounds and one or more unsaturated nitrile monomeric compounds have been grafted, or

Aii) a mixture of Ai and an aromatic polycarbonate, or

Aiii) a mixture of Aii and a styrene-acrlyonitrile copolymer, and

B) a copolyether ester block copolymer having a polyether block derived from an ethylene-oxide-capped polo-(propylene oxide)glycol, the polyether block having an ethylene oxide content of 15–35% by weight and the polyether block having a number-average molecular weight of 1,500–3,000, wherein said polymer mixture further consisting essentially of an aromatic polycarbonate.

5,605,949

LATEX COMPOSITION EMPLOYING SPECIFICALLY DEFINED ALCOHOL ETHOXYLATE SURFACTANT AND HYDROPHOBIC DEFOAMING AGENT

Michael J. Anchor, Northville, Mich.; Rebecca P. Hollis, Flemington, N.J., and Gregory W. Drewno, Riverview, Mich., assignors to BASF Corporation, Mount Olive, N.J.

Filed Oct. 11, 1994, Ser. No. 321,103

Int. Cl.[6] C08K *5/04*

U.S. Cl. 524—261 **16 Claims**

1. An improved latex composition suitable for use in coating or adhesive end uses which exhibits a superior ability to form a substantially uniform film upon a substrate in the absence of excessive foaming during handling and during application to a substrate consisting essentially of:

(a) an aqueous dispersion medium,

(b) approximately 40 to 60 percent by weight of discrete solid polymeric particles present in said aqueous dispersion medium formed by the polymerization of at least one ethylenically-unsaturated monomer,

(c) approximately 0.25 to 1.5 percent by weight dissolved in said aqueous medium of a normally liquid predominantly hydrophobic nonionic alcohol ethoxylate surfactant of the formula:



having a molecular weight of approximately 260 to 600 where R is an alkyl group containing approximately 8 to 14 carbon atoms, and x is approximately 3 to 9, and

(d) approximately 0.05 to 1 percent by weight dispersed in said aqueous medium of a solely hydrophobic defoaming agent selected from the group consisting of hydrocarbon-based mineral oil, organosiloxane, metal soap, and mixtures of the foregoing.

5,605,950

TIRE TREAD COMPOSITION COMPRISING HIGHLY REINFORCING REINFORCED AMORPHOUS PRECIPITATED SILICA

Larry R. Evans, Jeannette; Walter H. Waddell, Pittsburgh, and Thomas G. Krivak, Irwin, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 169,797, Dec. 20, 1993, abandoned. This application Sep. 21, 1995, Ser. No. 531,680

Int. Cl.[6] C08K *3/00*

U.S. Cl. 524—492 **19 Claims**

1. In a tire comprising:

(a) a carcass having a crown; and

(b) cured tread rubber composition adhered to said crown of said carcass;

the improvement wherein said cured tread rubber composition comprises in combination:

(c) organic rubber;

(d) from 0 to 20 phr of reinforcing carbon black; and

(e) from 40 to 120 phr of reinforcing reinforced amorphous precipitated silica wherein said reinforcing reinforced amorphous precipitated silica has a surface area of from 160 to 340 m^2/g and a pore diameter at the maximum of the volume pore size distribution function of from 5 to 19 nm.

5,605,951

SILICA REINFORCED RUBBER COMPOSTITION AND TIRE WITH TREAD THEREOF

Paul H. Sandstrom, and Lawson G. Wideman, both of Tallmadge, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Feb. 20, 1996, Ser. No. 604,141

Int. Cl.[6] C08K *5/54;5/16;* **C08G** *73/00*

U.S. Cl. 524—494 **18 Claims**

1. A rubber composition comprised of (A) 100 parts by weight of at least one diene-based elastomer, (B) about 25 to about 100 phr of filler composed of particulate, precipitated silica and carbon black, and (C) a silica coupler selected from (i) 3,3'-tetrathiodipropionitrile polysulfidic mixture containing 2 to 8 sulfur atoms per polysulfidic bridge or from (ii) a combination of about 95 to about 25 weight percent 3,3'-tetrathiodipropionitrile polysulfide mixture and, correspondingly, about 5 to about 75 weight percent of bis-(3-trialkoxysilylalkyl) polysulfide containing from 2 to 8 sulfur atoms in its polysulfide bridge wherein the weight ratio of said silica coupler to silica is in a range of about 0.01/1 to about 0.2/1; wherein the weight ratio of silica to carbon black, is at least about 0.1/1.

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5,605,952

CROSSLINKABLE SURFACE COATINGS

Richard J. Esser, Aarlanderveen, Netherlands, assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Division of Ser. No. 320,795, Oct. 7, 1994, Pat. No. 5,498,659, which is a continuation of Ser. No. 833,250, Feb. 10, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 468,163

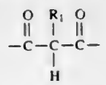
Int. Cl.[6] C08J *3/00*

U.S. Cl. 524—522 **21 Claims**

1. An aqueous polymeric formulation comprising:

an evaporable aqueous carrier;

at least two polymeric ingredients contained within the aqueous carrier, one of the two polymeric ingredients having acid-functional pendant moieties and the other of the two polymeric ingredients having pendant moieties having the ability to form stable enamine structures by reaction with amines and contain a divalent group of the structure



wherein R_1 is either H, a C_1 to C_{10} alkyl group, or phenyl;

a non-polymeric polyfunctional amine also contained within the aqueous carrier and having at least two amine-functional moieties; and

an effective amount of base, in the aqueous carrier, for inhibiting gellation, which would otherwise occur as a result of crosslinking between the pendant moieties having the ability to form stable enamine structures and amine-functional moieties, both of which are contained within the aqueous carrier.

5,605,953

CROSSLINKABLE SURFACE COATINGS

Richard J. Esser, Aarlanderveen, Netherlands, assignor to S. C. Johnson & Son, Inc., Racine, Wis.

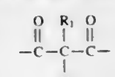
Division of Ser. No. 320,795, Oct. 7, 1994, Pat. No. 5,498,659, which is a continuation of Ser. No. 833,250, Feb. 10, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 485,912

Int. Cl.[6] C08J *3/00*

U.S. Cl. 524—522 **43 Claims**

1. A method of producing a novel aqueous polymeric formulation, comprising the steps of:

admixing at least one polymeric ingredient, a non-polymeric polyfunctional amine, and base, in an evaporable aqueous carrier, wherein the polymeric ingredient has both acid-functional pendant moieties and pendant moieties having the ability to form stable enamine structures by reaction with amines and contain a divalent group of the structure



wherein R_1 is either H, a C_1 to C_{10} alkyl group, or phenyl, wherein the non-polymeric polyfunctional amine has at least two amine-functional moieties, and wherein the amount of base in the aqueous carrier is effective for inhibiting gellation, which would otherwise occur as a result of crosslinking between the pendant moieties having the ability to form stable enamine structures and amine-functional moieties, thereby producing a reaction mixture;

holding the reaction mixture at a preselected reaction temperature for a predetermined period of time, thereby producing the aqueous evaporable polymeric formulation.

5,605,954

Patent Not Issued For This Number

5,605,955

SILICONE RUBBER COMPOSITION

Kazuo Hirai, Sodegaura, Japan, assignor to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Filed Sep. 20, 1995, Ser. No. 531,021

Claims priority, application Japan, Sep. 30, 1994, 6-261955

Int. Cl.[6] C08G *77/12*

U.S. Cl. 524—588 **16 Claims**

2. A silicone rubber composition comprising:

(A) 100 parts by weight of an organopolysiloxane described by average unit formula

$$R^1_nSiO_{(4-n)/2}$$

where R^1 is a substituted or an unsubstituted monovalent hydrocarbon group, and n is a number of 1.9 to about 2.1,

(B) 0.1 to about 10 parts by weight of an organic peroxide,

(C) 0.1 to about 10 parts by weight of an addition reaction product or a reaction mixture of (i) a carboxylic acid ester described by general formula

$$(C_6H_{6-x})\left[\begin{array}{c}O\\ \|\\ -C-O-R^2\end{array}\right]_x$$

where R^2 is an alkenyl group and x is a number of 1 to 6, and (ii) an alkoxysilane expressed by general formula

$$\begin{array}{l}R^3_{(3-a)}\\ |\\ HSi(OR^4)_a\end{array}$$

where R^3 is a monovalent hydrocarbon group which does not contain aliphatic unsaturated linkage, R^4 is an alkyl group, and a is a number of 1 to 3, and

(D) 1 to about 300 part by weight of a reinforcing filler with a specific surface area of 50 m^2/g or greater.

5,605,956

FLUORINATED POLYISOCYANATES

Douglas R. Anton, Wilmington, Del.; Micbael J. Darmon, Aston; William F. Graham, Wayne, both of Pa., and Richard R. Thomas, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 16, 1995, Ser. No. 543,773

Int. Cl.[6] C08J *3/00;* **C08K** *3/20;* **C08L** *75/00;* **C08G** *18/28*

U.S. Cl. 524—590 **8 Claims**

1. A fluorinated polyisocyanate which comprises an organic polyisocyanate reacted with a fluorinated monofunctional alcohol represented by the formula

$$R_f-(X)_n-(CH_2CH-O)_m-H$$
$$\quad\quad\quad

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5,605,961

THERMOPLASTIC COMPOSITION CONTAINING POLYURETHANE AND POLYPROPYLENE

Bin Lee, Coraopolis; H. Pielartzik; Robert J. Kumpf, both of Pittsburgh; Clifford J. Lau, Sewickley; Raymond A. Yourd, and Jeffrey S. Wiggins, both of Pittsburgh, all of Pa., assignors to Bayer Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 335,430, Nov. 7, 1994, abandoned, which is a continuation of Ser. No. 118,367, Sep. 8, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 470,282

Int. Cl.[6] C08L *77/00*

U.S. Cl. 525—66 **15 Claims**

1. A resinous homogeneous thermoplastic composition comprising (a) a first polyolefin selected from the group consisting of isotactic polypropylene, syndiotactic polypropylene and TPO and (b) a mixture of about 1 to 99% thermoplastic polyurethane and 1 to 99% of an agent, said percents being relative to the weight of said mixture, said agent comprising the product of a reaction of reactant (i) and reactant (ii) wherein

(i) is a modified polyolefin having a molecular weight of about 2,000 to 600,000, selected from the group consisting of homopolymers, random and block copolymers said group polymerized from olefin monomers selected from the group consisting of ethylene, propylene, butylene and mixtures thereof, and mixtures of ethylene/C_{3-12} α,βunsaturated alkenes characterized in having in a main or side chain thereof a functional group selected from the group consisting of carboxylic acid; C_{1-8}-carboxylate ester; carboxylic acid anhydride; carboxylate salts formed from the neutralization of carboxylic acid group(s) with metal ions from Groups I, II, III, IV-A and VIII of the periodic table; amide; epoxy; hydroxy; and C_{2-6}-acyloxy;

wherein said functional group is part of an unsaturated monomer precursor which is either copolymerized with an olefin monomer or grafted onto a polyolefin to form said modified polyolefin, and where said functional group is present in the molar range of 0.005 to 5 percent relative to the weight of said modified polyolefin, and wherein

(ii) is a polyamide resin which is a condensation product of one or more C_{4-40}-dicarboxylic acid with one or more C_{4-40}-diamine, said first polyolefin excluding said modified polyolefin.

5,605,962

FLAME RETARDING RESIN COMPOSITION

Masanori Suzuki; Hiroyuki Itoh; Koichi Sumi; Yoichi Kamoshida; Shigeru Abe; Seiichi Atomori, and Tateki Furuyama, all of Tokyo, Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Feb. 24, 1994, Ser. No. 201,031

Claims priority, application Japan, Feb. 26, 1993, 5-061216

Int. Cl.[6] C08F *8/40;* **C08C** *19/24;* **C08L** *61/04;55/02*

U.S. Cl. 525—70 **20 Claims**

1. A flame retarding resin composition, comprising:

(Z) 100 parts by weight of at least one rubber-reinforced resin, which comprises:

(A) a rubber-reinforced resin, which is:

(i) a graft copolymer obtained by the polymerization of a monomer mixture, comprising (a) at least one aromatic vinyl compound and (b) at least one cyanated vinyl compound in the presence of a rubbery polymer having a gel content of 2–50% by weight, or

(ii) a mixture of this graft polymer and a polymer obtained by the polymerization of at least one monomer selected from the group consisting of (a) aromatic vinyl compounds, (b) cyanated vinyl compounds and (c) at least one monomer selected from the group consisting of

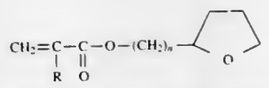
(c1) an epoxy group-containing monomer,

(c2) a hydroxy-group-containing monomer,

(c3) a carboxyl group-containing monomer,

(c4) an amide group-containing monomer, and

(c5) a compound of the formula:



wherein R is a hydrogen atom or hydrocarbon group, and n is an integer of 1–4, and wherein the amount of the monomers containing the at least one monomer c) is 0.5–40% by weight of said component (R);

wherein the content of the at least one monomer (c) in component (A) is 0–40% by weight, or

(B) a rubber-reinforced resin, which is:

(i) a graft copolymer obtained by the polymerization of a monomer mixture comprising (a) at least one aromatic vinyl compound and (b) at least one cyanated vinyl compound in the presence of a rubbery polymer having a gel content of at least 2% by weight, or

(ii) a mixture of this graft copolymer and a polymer obtained by the polymerization of at least one monomer selected from the group consisting of (a) aromatic vinyl compounds, (b) cyanated vinyl compounds (c) at least one monomer selected from the group consisting of one or more monomers as defined above in (c1)–(c5), and d) maleimide compounds;

wherein the content of the at least one monomer (c) and the maleimide compounds (d) in component (B) is 0–40% by weight and 5–50% by weight, respectively, or a combination of any of the above;

(C) 1–200 parts by weight of a phenol resin; and

(D) 1–200 parts by weight of an organic phosphorus-containing compound selected from the group consisting of trixylenylphosphate and triphenylphosphate; and wherein said resin and said organic phosphorus-containing compound remain unreacted in the composition.

5,605,963

ABS POLYMER COMPOSITIONS HAVING A UNIFORM MATT SURFACE

Edgar Leitz; Herbert Eichenauer, both of Dormagen; Karl-Erwin Piejko, Bergisch Gladbach; Dieter Wittmann, Leverkusen, and Ekkehard Frohberg, Köln, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 6, 1995, Ser. No. 383,832

Claims priority, application Germany, Feb. 15, 1994, 44 04 749.5

Int. Cl.[6] C08L *51/04*

U.S. Cl. 525—71 **3 Claims**

1. An ABS polymer composition consisting of:

A) 5 to 80 parts by weight of at least one ABS polymer prepared by mass polymerization or solution polymerization, having rubber particles with a average particle diameter of from 800 to 15,000 nm and a rubber content of from 1 to 20% by weight;

B) 1 to 50 parts by weight of at least one ABS polymer prepared by emulsion polymerization, having a average particle diameter of from 50 to 500 nm and a rubber content of from 20 to 80% by weight;

C) 0 to 70 parts by weight of at least one thermoplastic vinyl resin prepared by radical polymerization of at least two monomer components selected from the group consisting of styrene,α-methylstyrene, methyl methacrylate, acrylonitrile and N-phenylmaleinide; and

D) 0.5 to 10 parts by weight of at least one polybutadiene prepared by emulsion polymerization, having a average particle diameter d_{50} in the latex form of from 80 to 500 nm and a gel content of from 10 to 95% by weight.

5,605,964

ACRYLATE-CONTAINING POLYMER BLENDS AND METHODS OF USING

James D. Groves, Hudson, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 22, 1995, Ser. No. 493,801

Int. Cl.[6] C08L *53/02;33/04;33/26*

U.S. Cl. 525—93 **27 Claims**

21. A polymer blend comprising

(a) a block copolymer, in an amount sufficient to associate with a substrate, comprising (i) a polystyrene block; and (ii) a polydiene block or a hydrogenated polydiene block, said block copolymer (a) being non-maleated, and

(b) a polymer, in an amount sufficient to bond to block copolymer (a), comprising a polymerization reaction product of

(i) at least one mono-ethylenically unsaturated acrylic or methacrylic acid ester of a non-tertiary alcohol having 1 to 14 carbon atoms, inclusive;

(ii) at least one mono-ethylenically unsaturated nitrogen-containing monomer selected from the group consisting of an N-vinyllactam and N,N-dialkylacrylamide; and

(iii) from 1–10 parts, based upon 100 parts of polymer (b), of a monomer having at least one of carboxylic acid functionality, hydroxy functionality or epoxy functionality.

5,605,965

HIGH GLOSS AND/OR HIGH DOI COATING UTILIZING CARBAMATE-FUNCTIONAL POLYMER COMPOSITION

John W. Rehfuss, West Bloomfield, and Donald L. St. Aubin, Commerce Township, both of Mich., assignors to BASF Corporation, Southfield, Mich.

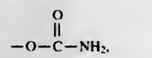
Continuation-in-part of Ser. No. 241,925, May 11, 1994, Pat. No. 5,474,811, which is a continuation of Ser. No. 965,577, Oct. 23, 1992, Pat. No. 5,356,669. This application Nov. 3, 1994, Ser. No. 333,916

Int. Cl.[6] C08F *8/00*

U.S. Cl. 525—100 **20 Claims**

1. A coating having a 20° gloss, as defined by ASTM D523-89, of at least 80 or a DOI, as defined by ASTM E430-91, of at least 80, or both, derived from a curable coating composition comprising:

(a) a first component comprising a polymer backbone having appended thereto at least one carbamate functional group represented by the formula:



and

(b) a second component comprising a compound having a plurality of functional groups that are reactive with said carbamate group.

5,605,966

MICROCAPSULES CONTAINING A CORE MATERIAL SUITABLE AS A LEVELING AGENT

Bernhard Schuler, Mannheim; Georg Bobar, Bad Duerkheim; Tilmann Korth, Wachenheim; Ottokar Flocken, Carlsberg, and Peter Gleich, Flein, all of Germany, assignors to BASF Aktiensellschaft, Ludwigshafen, Germany

Filed Dec. 13, 1993, Ser. No. 165,660

Claims priority, application Germany, Dec. 15, 1992, 42 42 193.4

Int. Cl.[6] C08F *8/30;* **C08L** *63/00;75/04*

U.S. Cl. 525—125 **1 Claim**

1. A powder formulation for the production of coatings, comprising:

a film-forming polymer in powder form; and

a plurality of microcapsules comprising a polymeric core material and a polymeric resin wall material covering said core material;

said polymeric resin wall material being selected from the group consisting of an aminoplast resin, an epoxy resin, a polyamide resin, a polyurethane resin, a polyurea resin, a poly-(meth)acrylate resin, a vinyl resin and mixtures thereof;

said polymeric core material comprising a leveling agent for the film-forming polymer, wherein said microcapsules are present in an amount of from 0.1 to 10% of the total weight of the powder formulation.

5,605,967

GOLF BALL

Yoshinori Egashira; Yasushi Ichikawa, and Hideo Watanabe, all of Chichibu, Japan, assignors to Bridgestone Sports Co., Ltd., Tokyo, Japan

Filed Apr. 19, 1995, Ser. No. 424,181

Claims priority, application Japan, Apr. 22, 1994, 6-107710

Int. Cl.[6] A63B *37/12;* **C08L** *23/26;33/02*

U.S. Cl. 525—221 **1 Claim**

1. A golf ball comprising a core and a cover enclosing the core, said cover being formed of a resin composition containing a resin component consisting of

(a) a potassium ionomer resin in the form of an ethylene-α, β-unsaturated carboxylic acid copolymer containing 10 to 15% by weight of α, β-unsaturated carboxylic acid, 20 to 70 mol % of the carboxyl group being neutralized with potassium ion, said potassium ionomer resin having a melt index of 0.6 to 8 and a Shore D hardness of 55 to 70, and

(b) a magnesium ionomer resin in the form of an ethylene-α, β-unsaturated carboxylic acid copolymer containing 10 to 15% by weight of α, β -unsaturated carboxylic acid, 20 to 70 mol % of the carboxyl group being neutralized with magnesium ion, said magnesium ionomer resin having a melt index of 0.6 to 8 and a Shore D hardness of 55 to 70,

components (a) and (b) being blended in a weight ratio of from 85:15 to 20:80.

5,605,968

GOLF BALL

Yoshinori Egashira, Hidaka; Hisashi Yamagishi, Yokohama; Hideo Watanabe, Yokohama, and Jun Shindo, Yokohama, all of Japan, assignors to Bridgestone Sports, Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 213,587, Mar. 16, 1994, abandoned. This application May 22, 1995, Ser. No. 447,044

Claims priority, application Japan, Mar. 17, 1993, 5-082714

Int. Cl.[6] A63B *37/12;37/06;* **C08L** *23/08;33/02*

U.S. Cl. 525—221 **3 Claims**

1. A golf ball comprising a solid core and a cover enclosing the core, wherein

said cover is based on a resin component consisting of 30 to 90% by weight of a first ionomer resin in the form of an ethylene-methacrylic acid-acrylate terpolymer having a flexural modulus of 10,000 to 14,000 psi and a Shore D hardness of 56 to 59 and 70 to 10% by weight of a second ionomer resin in the form of an ethylene-(meth)acrylic acid copolymer having a flexural modulus of 20,000 to 29,000 psi and a Shore D hardness of 56 to 62.

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5,605,969

METHOD FOR THE PREPARATION OF ETHYLENE POLYMER COMPOSITION

Toshiyuki Tsutsui, and Takashi Ueda, both of Kuga-gun, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 654,031, Feb. 12, 1991, abandoned. This application Oct. 25, 1993, Ser. No. 140,895

Claims priority, application Japan, Feb. 13, 1990, 2-32092; Feb. 13, 1990, 2-32093

Int. Cl.[6] C08L *23/08;23/18;23/16*

U.S. Cl. 525—240 **8 Claims**

1. A process for the preparation of an ethylene polymer composition having a density of 0.88–0.92 g/cm^3, an intrinsic viscosity (η) of 1.2–4 dl/g, a melt flow ratio MFR_{10}/MFR_2 of from 8 to 40 and, satisfying the relationship between density D and a temperature T (°C.) showing the highest peak in an endothermic curve measured by differential scanning calorimetry (DSC) of T<450×D−297 said process comprising

(a) copolymerizing ethylene and an alpha-olefin having from 3 to 20 carbon atoms in the presence of an olefin polymerization catalyst comprising (A) a transition metal compound having a cycloalkadienyl skeleton and (B) an organoaluminum oxy-compound to form an ethylene copolymer (II) having a density which is lower by at least 0.005 g/cm^3 than the density of the below-defined ethylene polymer (I), and an intrinsic viscosity (η) of from 1.5 to 7 dl/g and which is from 2 to 10 times that of the below-defined ethylene polymer (I) and satisfying the relationship between density D of the copolymer (II) and a temperature T (°C.) thereof showing the highest peak in an endothermic curve measured by DSC of T<450×D−297; and

(b) polymerizing ethylene or copolymerizing ethylene and an alpha-olefin of from 3 to 20 carbon atoms in the presence of ethylene copolymer (II) obtained in step (a) and without addition of fresh olefin polymerization catalyst, to obtain an ethylene polymer (I) having a density of 0.88 g/cm^3 to 0.94 g/cm^3, an intrinsic viscosity (η) of 0.5 to 2.0 dl/g, and satisfying the relationship between density D of the copolymer (I) and a temperature T (°C.) thereof showing the highest peak in an endothermic curve measured by DSC of T<450×D−297, and the relationship between density D of the copolymer (I) and an amount (W) of a portion thereof soluble at 23° C. in n-decane of log W<−50×D+46.2, and wherein the amounts of ethylene polymer (I) produced in step (b) is such that the amount of ethylene copolymer (II) is from 10 to 1000 parts by weight based on 100 parts by weight of ethylene polymer (I).

5,605,970

SYNTHESIS OF HIGH MOLECULAR WEIGHT ANIONIC DISPERSION POLYMERS

Radhakrishnan Selvarajan, Downers Grove, Ill., assignor to Nalco Chemical Company, Naperville, Ill.

Filed Mar. 20, 1996, Ser. No. 620,051

Int. Cl.[6] C08F *2/16*

U.S. Cl. 525—274 **1 Claim**

1. A process for synthesizing high molecular weight anionic dispersion polymers, the process consisting of:

providing a mixture of water and acrylic acid;

cooling the mixture to a temperature of less than 35° C.;

lowering the pH of the mixture to less than 4.5;

adding from about 2.0 about 20.0% by weight of ammonium sulfate, glycerine, ethylene glycol and a low molecular weight terpolymer of 66 mole percent acrylic acid, 22 mole percent sodium acrylate and 12 mole percent ethylhexyl acrylate, wherein the intrinsic viscosity of the terpolymer is from about 0.6 to about 3.0 to form an aqueous solution;

stirring the aqueous solution; adding from about 3 mole percent to about 14 mole percent of ethylhexyl acrylate to the solution;

purging the solution with nitrogen simultaneous with the step of stirring; heating the solution to about 48° C.;

adding initiator for from about 2 to about 3 hours; heating the solution to about 75° C. for about 30 to about 60 minutes; and cooling and collecting the high molecular weight sodium acrylate/acrylic acid/ethylhexyl acrylate terpolymer, wherein the high molecular weight terpolymer has an intrinsic viscosity of from about 4.0 to about 10.0.

5,605,971

FLUORINATED THERMOPLASTIC ELASTOMERS HAVING SUPERIOR MECHANICAL AND ELASTIC PROPERTIES, AND PREPARATION PROCESS THEREOF

Vincenzo Arcella, Novara; Giulio Brinati, Milan; Margherita Albano, Milan, and Vito Tortelli, Milan, all of Italy, assignors to Ausimont S.p.A., Milan, Italy

Filed May 15, 1995, Ser. No. 441,233

Claims priority, application Italy, May 18, 1994, MI94A0997

Int. Cl.[6] C08F *259/00;14/16*

U.S. Cl. 525—276 **19 Claims**

1. A fluorinated thermoplastic elastomer having a block structure constituted by at least a fluorinated polymer segment having elastomeric properties and by at least a fluorinated polymer segment having plastomeric properties, wherein at least one segment comprises monomer units derived from an iodinated olefin having the formula:

$$CX_2{=}CX{-}R_fCHR{-}I \qquad (I)$$

wherein:

X is selected from the group consisting of —H, —F, and —CH_3; R is —H or —CH_3; R_f is selected from the group consisting of a (per)fluoroalkylene radical, linear or branched, optionally containing one or more ether oxygen atoms, and a (per)fluoropolyoxyalkylene radical.

5,605,972

GRAFT AND CORE-SHELL COPOLYMERS HAVING IMPROVED PHASE BONDING BETWEEN GRAFT SUBSTRATE AND GRAFTED-ON POLYMER PHASE

Klaus Kohlhammer, Markt1, and Walter Dobler, Tann, both of Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

PCT No. PCT/EP94/00230, § 371 Date Jul. 24, 1995, § 102(e) Date Jul. 24, 1995, PCT Pub. No. WO94/17114, PCT Pub. Date Aug. 4, 1994

PCT Filed Jan. 27, 1994, Ser. No. 492,101

Claims priority, application Germany, Jan. 29, 1993, 43 02 552.8

Int. Cl.[6] C08F *265/04;267/06;259/02;279/00*

U.S. Cl. 525—308 **17 Claims**

1. A graft or core-shell copolymer prepared from a peroxy-containing copolymer phase a) which copolymer phase contains from 0.01 to 20% by weight of residues of an olefinically di-unsaturated peroxy compound of the formula $H_2C{=}CH{-}O{-}CO{-}R^1{-}CO{-}O{-}O{-}CO{-}R^1{-}CO{-}O{-}CH{=}CH_2$, where R^1 is a chemical bond or a linear or branched alkylene group having from 1 to 10 carbon atoms or a cycloalkylene group having from 3 to 10 carbon atoms or a divalent radical of an aromatic compound having from 6 to 14 carbon atoms, and from 80 to 99.99% by weight of residues of at least one comonomer selected from the group consisting of (meth)acrylic esters of alcohols having from 1 to 10 carbon atoms, vinyl esters of saturated aliphatic carboxylic acids having from 2 to 10 carbon atoms, olefins, vinylaromatics, vinyl halides and vinyl ethers, and a polymer phase b) grafted thereon, which is obtained by grafting on one or more monomers selected from the group consisting of (meth-)acrylic esters of alcohols having from 1 to 10 carbon atoms, vinyl esters of saturated aliphatic carboxylic acids having from 2 to 10 carbon atoms, olefins, vinyl halides, styrene and free radical polymerizable styrene derivatives, with the graft or core-shell copolymer containing from 1 to 99% of polymer phase b), based on the total weight of the graft or core-shell copolymer.

5,605,973

BISAMIDRAZONE COMPOUND AND VULCANIZING AGENT FOR FLUORINE-CONTAINING ELASTOMER COMPRISING THE SAME

Yuichi Yamamoto; Satoru Saito; Haruyoshi Tatsu, all of Ibaraki, Japan; Lev S. German, deceased, late of Moscow, Russian Federation; Zielman Y. Vilovich, Moscow, Russian Federation; Postovoi S. Anatol'evich, Moscow, Russian Federation, and Rusanov A. Lvovich, Moscow, Russian Federation, assignors to Nippon Mektron, Limited, Tokyo, Japan

Filed Oct. 23, 1995, Ser. No. 547,031

Claims priority, application Japan, Oct. 21, 1994, 6-282943

Int. Cl.[6] C08L *27/12;* **C08K** *5/29*

U.S. Cl. 525—326.3 **2 Claims**

1. A curable, fluorine-containing elastomer composition which comprises a fluorine-containing elastomer having cyano groups as cross-linkable groups and a bisamidrazone compound represented by the following general formula:

wherein R is an alkylidene group having 1 to 6 carbon atoms or a perfluoroalkylidene group having 1 to 10 carbon atoms.

5,605,974

PROCESS FOR THE PREPARATION OF A MODIFIED COPOLYMER AS A PIGMENT DISPERSANT FOR AQUEOUS COATING COMPOSITIONS

Clint W. Carpenter, Royal Oak, and Zenon P. Czornij, Warren, both of Mich., assignors to BASF Corporation, Southfield, Mich.

Filed Aug. 28, 1991, Ser. No. 751,027

Int. Cl.[6] C08F *16/02;16/12*

U.S. Cl. 525—328.2 **15 Claims**

1. A process for the preparation of modified copolymers as pigment dispersants for coating compositions, comprising the steps of

a) polymerizing

i) an ethylenically unsaturated monomer containing an isocyanate group with

ii) an ethylenically unsaturated monomer having no functional group capable of undergoing a reaction with said isocyanate group to form a copolymer with isocyanate groups and

b) reacting stepwise or simultaneously said isocyanate groups with

iii) a polyalkyleneglycol monoalkyl ether or amine terminated polyalkylene glycol monoalkyl ether and

iv) optionally, a compound having one primary or one secondary amino group or another alcohol.

5,605,975

BRANCHED ENERGETIC AZIDO POLYMERS

Elie Ahad, Ste-Foy, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Continuation of Ser. No. 130,129, Oct. 4, 1993, abandoned. This application Aug. 28, 1995, Ser. No. 519,763

Int. Cl.[6] C08G *65/32;65/24*

U.S. Cl. 525—403 **24 Claims**

1. A process for the preparation of branched chain hydroxy-terminated aliphatic azido ether polymers and copolymers comprising heating a reaction mixture consisting of:

i) an epichlorohydrin polymer (PECH) or an epichlorohydrin/alkylene oxide (PEEC) copolymer, or a mixture of PECH and PEEC wherein the PECH or PEEC has a molecular weight of between 0.50×10^6 to 5.0×10^6;

ii) an alkali metal azide, in a suitable organic solvent; and

iii) optionally a basic cleaving agent, at a temperature of greater than 70° C., to thereby affect degradation and azidation of said PECH polymer or PEEC copolymer.

3. A process for the preparation of branched chain hydroxy-terminated aliphatic azido ether polymers and copolymers comprising reacting:

i) an epichlorohydrin polymer (PECH) or an epichlorohydrin/alkylene oxide (PEEC) copolymer, or a mixture of PECH and PEEC wherein the PECH or PEEC has a molecular weight of between 0.50×10^6 to 5.0×10^6;

ii) an alkali metal azide;

iii) optionally a basic cleaving agent; and

iv) at least one polyol selected from the group consisting of hexanetriol, trimethylol propane, trimethylolethane, pentaerythritol, dipentaerythritol, sucrose, polyethylene glycol, polypropylene glycol, polytetrahydrofuran, a polycaprolactone, a polyethyleneadipate, a polyoxetane and a polyvinyl alcohol, said polyol being incorporated into the azido ether polymer, in a suitable organic solvent, at a temperature of greater than 70° C., to thereby affect degradation and azidation of said PECH polymer or PEEC copolymer.

5,605,976

METHOD OF PREPARING POLYALKYLENE OXIDE CARBOXYLIC ACIDS

Anthony J. Martinez, Hamilton Square, and Richard B. Greenwald, Somerset, both of N.J., assignors to Enzon, Inc., Piscataway, N.J.

Filed May 15, 1995, Ser. No. 440,732.

Int. Cl.[6] C08G *65/32*

U.S. Cl. 525—408 **23 Claims**

1. A method of preparing a polyalkylene oxide containing a terminal carboxylic acid, comprising:

i) reacting a polyalkylene oxide with a tertiary alkyl haloacetate in the presence of a base to form a tertiary alkyl ester of polyalkylene oxide carboxylic acid; and

ii) reacting said tertiary alkyl ester with an acid to form said polyalkylene oxide carboxylic acid.

5,605,977

Patent Not Issued For This Number

5,605,978

BLOCK POLYSILOXANE-POLYCARBONATE COPOLYMER BLENDS WITH POLYAMIDES

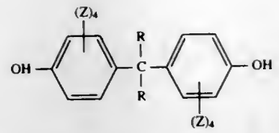
Louis M. Maresca, Pittsfield, Mass., and Raymond Z. Naar, Delmar, N.Y., assignors to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 255,835, Jun. 7, 1994, abandoned, which is a continuation of Ser. No. 65,074, May 19, 1993, abandoned, which is a continuation of Ser. No. 397,334, Aug. 22, 1989, abandoned, which is a continuation of Ser. No. 109,121, Oct. 16, 1987, abandoned. This application Oct. 12, 1995, Ser. No. 542,101

Int. Cl.[6] C08L *77/06;69/00*

U.S. Cl. 525—431 **5 Claims**

1. A thermoplastic molding composition, which consists essentially of from 55% to 95% by weight of a solidified melt blend of a block polysiloxane-polycarbonate copolymer which is the reaction product of (A) a halogen chain-stopped polydiorganosiloxane composed of from about 5 to 200 chemically combined diorganosiloxy units consisting essentially of dialkylsiloxy units which are connected to each other by silicon-oxygen-silicon linkages wherein each of the silicon atoms has two organo radicals attached through a carbon-silicon bond, and (B) a dihydric phenol having the formula:



where Z is a member selected from the group consisting of hydrogen, lower alkyl and halogen and combinations, thereof, and R is a member selected from the group consisting of hydrogen, hydrocarbyl and halogenated hydrocarbyl; and phosgenating the purified reaction product with or without additional dihydric phenol until the resulting copolymer achieves a maximum intrinsic viscosity and from 45% to 5% by weight of a thermoplastic polyamide resin having a number average molecular weight of from about 12,000 to about 60,000 g/mole whereby articles molded therefrom are resistant to delamination and have a notched Izod impact of at least about 630 J/m when tested according to ASTM D-256.

5,605,979

METHOD FOR MODIFYING THE BACKBONE OF POLYMERIC RESINS

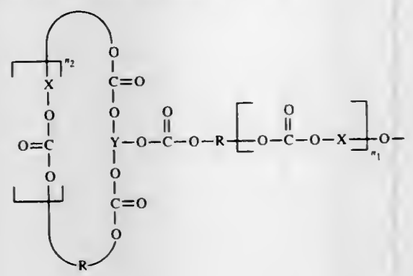
Duane B. Priddy, Jr., and Robert J. Kumpf, both of Pittsburgh, Pa., assignors to Bayer Corporation, Pittsburgh, Pa.

Filed May 22, 1995, Ser. No. 447,333

Int. Cl.[6] C08F *20/00*

U.S. Cl. 525—439 **32 Claims**

1. A process for the preparation of modified resin comprising transesterification reaction in the melt of (i) a polymeric resin the repeat units of which contain at least one member selected from the group consisting of ester bond and carbonate bond with (ii) at least one cyclic carbonate having a molecular weight of about 80–10000 g/mole conforming to



(II)

wherein X and R independently denote aliphatic, cycloaliphatic or an aromatic residues of a dihydroxy compound or of a bischloroformate, Y denotes a trifunctional nucleophile, and n_1, n_2 and n_3 independently denote an integer of 0 to 16, wherein said (i) is present in an amount of about 60 to 99.99 percent and said (ii) is present in an amount of about 0.01 to 40.0 percent said percent being relative to the total weight of said (i) and (ii).

5,605,980

COPOLYESTERCARBONATE AND POLYCARBONATE

Omar M. Boutni, Mt. Vernon; Luca P. Fontana, and Sarah E. Morgan, both of Evansville, all of Ind., assignors to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 254,468, Jun. 6, 1994, abandoned, which is a continuation of Ser. No. 7,403, Jan. 21, 1993, abandoned, which is a continuation of Ser. No. 681,302, Apr. 8, 1991, abandoned. This application Feb. 15, 1996, Ser. No. 601,883

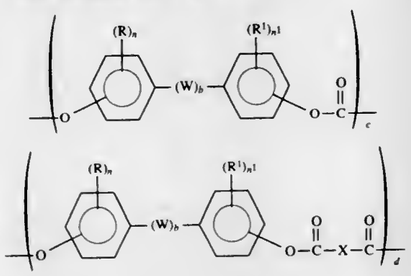
Int. Cl.[6] C08L *69/00;67/02*

U.S. Cl. 525—439 **14 Claims**

1. A composition comprising

(i) about 20 to 80 weight percent of a linear aromatic polycarbonate in admixture with a

(ii) about 80 to 20 weight percent of a copolyestercarbonate having repeating units of the structure

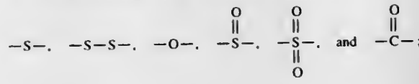


wherein:

R is independently selected from monovalent hydrocarbon and monovalent hydrocarbonoxy radicals;

R^1 is independently selected from monovalent hydrocarbon and monovalent hydrocarbonoxy radicals;

W is selected from divalent hydrocarbon radicals,



n and n^1 are independently selected from integers having a value of from 0 to 4 inclusive;

b is either zero or one;

X is an alkylene group of about 6 to 18 carbon atoms, inclusive;

d is from about 2 to 30 mole percent of the total units

(i) and (ii) are calculated as weight percent of (i)plus (ii) wherein the intrinsic viscosity, measured at 25° C. in methylene chloride in dl/g units, difference between (i) and (ii) is at least 0.04 intrinsic viscosity units whereby the melt Viscosity Index measured at 280° C. and 12 Newtons increases proportionally with the weight percent of copolyestercarbonate but the tensile elongation, measured in percent, is substantially the same for all proportions of copolyestercarbonate and the tensile break, measured in Mpa according to ASTM D638, of the composition is greater than either the copolyester carbonate or polycarbonate alone.

5,605,981

PROCESS FOR THE PREPARATION OF HIGH MOLECULAR LACTIC COPOLYMER POLYESTER

Shoji Imamura, and Hiroshi Ebato, both of Chiba, Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan

Division of Ser. No. 503,608, Jul. 18, 1995. This application Jun. 28, 1996, Ser. No. 672,917

Claims priority, application Japan, Jul. 20, 1994, 6-167960

Int. Cl.[6] C08F *20/00*

U.S. Cl. 525—440 **7 Claims**

1. A process for the preparation of a high molecular lactic copolymer polyester, which comprises reacting a polyester terminated by hydroxyl group at both ends (B1) with a polyvalent isocyanate (E) having 2 or more functionalities in such an amount that the proportion of the component (E) is from 0.01 to 5% by weight of the amount of the polyester (B1) to obtain a polyester (B4) having a weight-average molecular weight of from 10,000 to 300,000, and then allowing said polyester (B4) and lactide (A) to undergo ring opening copolymerization in such an amount that the weight ratio of (A)/(B4) is from 50/50 to 98/2 in the presence of a ring opening polymerization catalyst (D).

5,605,982

SHEET AND TUBE SILOXANE POLYMERS

Timothy C. Chao, Cleveland; Malcolm E. Kenney, Cleveland Heights, both of Ohio, and Dimitris E. Katsoulis, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich., and Case Western Reserve University, Cleveland, Ohio

Filed Oct. 12, 1995, Ser. No. 542,081

Int. Cl.[6] C08G *77/00*

U.S. Cl. 525—474 **20 Claims**

1. A method of making an organopolysiloxane sheet or tube polymer comprising contacting a sheet or tube silicate with an alkenyl group containing chlorosilane to form an alkenylsiloxy sheet or tube polymer, and subsequently contacting the alkenylsiloxy sheet or tube polymer with a hydrosilane or hydrosiloxane in the presence of a hydrosilation catalyst, in an amount effective to catalyze a hydrosilation reaction between the alkenyl group on the alkenylsiloxy sheet or tube polymer and hydride functionality on the hydrosilane or hydrosiloxane, to form the organopolysiloxane sheet or tube polymer.

5,605,983

SOLUBLE ORGANOPOLYSILOXANE FREE-RADICAL MACROINITATORS FOR GRAFT COPOLYMERIZATION

Jochen Dauth, Burghausen, Germany; Catherine Oleggini, Oyonnax, France, and Bernward Deubzer, Burghausen, Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

Filed Dec. 20, 1994, Ser. No. 360,102

Claims priority, application Germany, Dec. 23, 1993, 43 44 309.5

Int. Cl.[6] C08G *77/392;77/388*

U.S. Cl. 525—479 **7 Claims**

1. A partially crosslinked organopolysiloxane containing radical-forming groups, composed of from 0.2 to 50.0% by weight of units of the formula

$$[R_aSi(O_{(3-a)/2})—R^1—X—R^1—Si(O_{(3-a)/2}R_a)] \quad (1),$$

from 0% to 80.0% by weight of units of the formula

$$[R^2{}_3SiO_{1/2}] \quad (2),$$

from 0% to 99.3% by weight of units of the formula

$$[R^2{}_2SiO_{2/2}] \quad (3),$$

from 0% to 99.8% by weight of units of the formula

$$[R^2SiO_{3/2}] \quad (4),$$

and from 0% to 80.0 by weight of units of the formula

$$[SiO_{4/2}] \quad (5),$$

where

R radicals denote identical or different monovalent SiC-bonded, optionally substituted C_1–C_{18}-hydrocarbon radicals,

R^1 radicals denote identical or different divalent SiC-bonded, optionally substituted C_1–C_{18}-hydrocarbon radicals which may be interrupted by divalent radicals, attached on both sides to carbon atoms, from the group consisting of —O—, —COO—, —OOC—, —CONR[2]—, —NR[2]CO—, —NR[2]— and —CO—,

R^2denotes a hydrogen atom or a radical R,

X denotes a radical from the group consisting of —N=N—, —O—O—, —S—S— and —C(C_6H_5)$_2$—C(C_6H_5)$_2$, and

a denotes the value 0, 1 or 2,

with the proviso that the sum of the units of the formulae (4) and (5) is at least 0.5% by weight and that at least 15 g of the organopolysiloxanes are soluble in 100 ml of toluene at 20° C.

5,605,984

POLYMERIC COMPOSITIONS AND COMPONENTS THEREOF

Patrick T. McGrail, Mickleby, and Jeffrey T. Carter, Redcar, both of England, assignors to Imperial Chemical Industries PLC, United Kingdom, and ICI Composites Inc., Ariz.

Filed Sep. 21, 1990, Ser. No. 585,940

Claims priority, application United Kingdom, Sep. 29, 1989, 8921999; Mar. 22, 1990, 9006435

Int. Cl.[6] C08L *61/06;61/10;81/06*

U.S. Cl. 525—481 **14 Claims**

1. A curable polymer composition comprising a phenol/formaldehyde thermosetting system and a polyarylsulphone comprising reactive epoxy groups.

5,605,985

POWDER COATING AND ITS USE FOR INTERNAL COATING OF PACKAGING CONTAINERS

Josef Rademacher, Münster; Udo Reiter, Telgte, and Peter Lessmeister, Münster, all of Germany, assignors to BASF Lacke + Farben, AG, Muenster-Hiltrup, Germany

PCT No. PCT/EP93/00243, § 371 Date Aug. 10, 1994, § 102(e) Date Aug. 10, 1994, PCT Pub. No. WO93/16141, PCT Pub. Date Aug. 19, 1993

PCT Filed Feb. 3, 1993, Ser. No. 256,891

Claims priority, application Germany, Feb. 13, 1992, 42 04 266.6

Int. Cl.[6] C08F *283/00;* **C08G** *8/28;* **C08L** *61/00*

U.S. Cl. 525—481 **12 Claims**

1. Powder coating based on epoxy resins and phenolic hardeners, comprising

A) at least one epoxy resin having an epoxide equivalent weight of from 300 to 5500 and

B) at least one hardener having more than one phenolic hydroxyl group per molecule and a hydroxyl equivalent weight, based on the phenolic OH groups, of from 100 to 500,

wherein the powder coating has a particle size distribution such that

a) at least 90 percent by weight of the powder coating particles have a particle size of between 1 and 60 μm,

b) the maximum particle size of the powder coating particles is 100 μm for at least 99 percent by weight of the particles,

c) the mean particle size of the powder coating particles is between 5 and 20 μm and

d) the gradient of the particle distribution curve at the point of inflection is ≧100.

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5,605,986

AMINOPLAST-ANCHORED ULTRAVIOLET LIGHT STABILIZERS

Jeno G. Szita, Norwalk, and Paul S. Waterman, Shelton, both of Conn., assignors to Cytec Technology Corp., Wilmington, Del.

Division of Ser. No. 998,099, Dec. 29, 1992. This application May 23, 1995, Ser. No. 447,668

Int. Cl.[6] C08F *283/00;* **C08G** *8/28*

U.S. Cl. 525—509 **18 Claims**

1. A process for preparing an aminoplast-anchored stabilizer composition, comprising the step of contacting an alkoxymethylated aminoplast with a phenolic stabilizer in the presence of concentrated sulfuric acid at a temperature and for a length of time sufficient to pendently attach the phenolic stabilizer to the aminoplast.

5,605,987

PRODUCTION PROCESS OF ALKYLENE THIOETHER-ARYLENE THIOETHER COPOLYMER

Yukichika Kawakami; Mitsuru Hoshino, and Hiroyuki Sato, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo K.K., Tokyo, Japan

Filed Jul. 8, 1992, Ser. No. 920,743

Claims priority, application Japan, Jul. 24, 1991, 3-207598

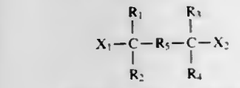
Int. Cl.[6] C08F *283/00*

U.S. Cl. 525—537 **9 Claims**

1. A process for the production of an alkylene thioether-arylene thioether copolymer, which comprises copolymerizably reacting a compound having at least one alkali thiolate group and obtained by causing an alkali metal sulfide to act on a poly(arylene thioether) having recurring units represented by the general formula (I):

(I)

wherein Ar means an arylene group, in a water-containing polar organic solvent so as to depolymerize the poly(arylene thioether) with a dihalogen-substituted aliphatic compound represented by the general formula (II):



(II)

wherein X_1 and X_2 mean individually a halogen atom, R_1 through R_4 denote individually a hydrogen atom or an alkyl group having 1–6 carbon atoms and may be identical to or different from one another, and R_5 stands for an aliphatic compound residue having 1–200 carbon atoms, and optionally, an alkali metal sulfide in a water-containing polar organic solvent.

5,605,988

POLYMER FORMED BY REACTION OF A POLYKETONE AND AN AMINO ACID

Gurudus D. Sinai-Zingde, Mohegan Lake, N.Y., assignor to Akzo Nobel NV, Arnhem, Netherlands

Filed Mar. 16, 1992, Ser. No. 851,820

Int. Cl.[6] C08G *73/00;67/02*

U.S. Cl. 525—539 **8 Claims**

1. A nitrogen-containing polymer formed by the reaction of a polyketone copolymer, formed by polymerizing carbon monoxide and at least one olefin, and an amino acid or derivative thereof.

5,605,989

PROCESS FOR THE POLYMERISATION OF OLEFINS IN THE PRESENCE OF AN ACTIVATED CATALYST

Benoit Koch, Hannut, Belgium, assignor to Solvay (Société Anonyme), Brussels, Belgium

Division of Ser. No. 272,287, Jul. 8, 1994, abandoned, which is a continuation of Ser. No. 958,156, Oct. 9, 1992, abandoned. This application Jun. 2, 1995, Ser. No. 460,202

Claims priority, application Belgium, Oct. 14, 1991, 09100942

Int. Cl.[6] C08F *4/24*

U.S. Cl. 526—106 **10 Claims**

1. A process for the polymerization of at least one olefin in the presence of an activated catalyst, comprising:

a. providing an activated catalyst by a method comprised of:

(1) mixing, in the absence of a solvent, at least one chromium salt with a support composition comprised of at least one compound (A) which is an inorganic, oxygen containing compound of at least one element selected from the group consisting of Group IVb, IIIa and IVa, and at least one compound (B) which is an inorganic compound containing at least one element selected from the group consisting of Group IVb and IIIa, the at least one compound (B) being different from the at least one compound (A), to provide a mixture;

(2) preactivating the mixture by heating for a period ranging from 0.5 to 18 hours without calcining in an oxidizing atmosphere to a temperature ranging from at least 30° C. above room temperature to a temperature which is lower than the decomposition temperature of the at least one chromium salt and which is 5° C. below the melting temperature of the at least one chromium salt to obtain a catalyst precursor; and

(3) activating the catalyst precursor by calcining in an oxidizing atmosphere and under conditions such that part of the chromium is converted to hexavalent chromium; and

b. polymerizing the at least one olefin in the presence of the activated catalyst under conditions effective therefor.

5,605,990

PROCESS FOR PRODUCING POLYOLEFIN

Toshiya Abiko, and Kenji Nakacho, both of Ichihara, Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

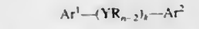
Filed Mar. 11, 1994, Ser. No. 208,952

Claims priority, application Japan, Mar. 12, 1993, 5-052438

Int. Cl.[6] C08F *4/54*

U.S. Cl. 526—128 **18 Claims**

1. A process for producing a polyolefin which comprises the step of polymerizing olefins in the presence of a catalyst comprising (A) a compound of titanium, (B) an aluminoxane, and (C) a compound having 2 or more aromatic rings in its molecule represented by the formula



wherein Ar^1 and Ar^2 are each an aryl group, and they may be the same or different; Y is an atom in the group XIV of the Periodic Table; R is a hydrogen atom, halogen atom, alkyl group having 1 to 20 carbon atoms or aryl group having 6 to 20 carbon atoms, n is a valence of Y; k is an integer of 0 to 10; when k is 2 or more, Y may be the same or different; when the plural Rs are present, they may be the same or different; and when the two Rs are the alkyl groups, they may bond to each other in a cyclic form.

5,605,991

MULTIFUNCTIONAL INITIATOR FROM DIVINYL DISLANE

Linda R. Chamberlain, Richmond; Ronald J. Hoxmeier, and Philip A. DeFriend, both of Houston, all of Tex., assignors to Shell Oil Company, Houston, Tex.

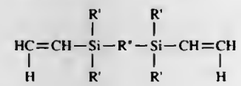
Filed Mar. 21, 1996, Ser. No. 620,112

Int. Cl.[6] C08F *4/48;* **C07F** *7/08*

U.S. Cl. 526—178 **20 Claims**

1. A process for forming a multifunctional initiator in a reaction zone comprising:

contacting an organo-alkali metal compound with a silane represented by the formula

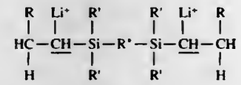


wherein each R' is individually selected from the group consisting of 1–20 carbon atom alkyl groups, 6–10 carbon atom aryl groups and H with the provision that no more than two of the R' groups are H, and no more than 1 H is on either Si;

wherein R" is an $-(CH_2)_n-$ moiety where n=1 to 20;

wherein said contacting is carried out in the presence of a promoter selected from the group consisting of ethers and amines, said promoter being present in an amount of at least 0.1 moles per mole of said organo-alkali metal compound.

19. A composition represented by the formula



wherein each R is selected from the group consisting of 1–20 carbon atom alkyl groups, 1–20 carbon atoms cycloalkyl groups, and 6–10 carbon atoms aryl groups;

each R' is individually selected from the group consisting of 1–20 carbon atom alkyl groups, 6–10 carbon atom aryl groups and H with the provision that no more than 2 of the R' groups are H; and no more than one H group is on either Si; and

wherein R" is an $-(CH_2)_n-$ moiety where n=1 to 20.

5,605,992

EMULSION POLYMERIZATION INHIBITOR AND SUSPENSION POLYMERIZATION METHOD USING THE AGENT

Nobuaki Urashima, Nara; Hayato Ikeda, Osaka; Mitsuo Kushino, Hyogo, and Yoshikuni Mori, Osaka, all of Japan, assignors to Nippon Shokubai Co., Ltd., Osaka, Japan

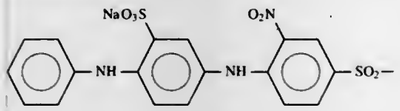
Filed May 30, 1995, Ser. No. 453,248

Claims priority, application Japan, May 27, 1994, 6-115124

Int. Cl.[6] C08F *2/00*

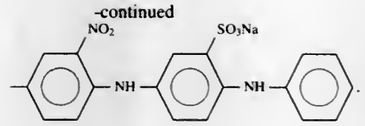
U.S. Cl. 526—217 **4 Claims**

1. A suspension polymerization method comprising polymerizing a polymerizable monomer suspended in aqueous medium in the presence of an emulsion polymerization inhibitor comprising an aromatic series compound which has a NO_2 group, a SO_3Na group, and a secondary amino group represented by the following structural formula (I)



(I)

-continued



5,605,993

DERIVATIVES OF POLYETHERS AND OF PENTACYCLIC HETEROCYCLES, THEIR POLYMERS AND THEIR APPLICATIONS, PARTICULARLY TO THE COMPLEXING OF METAL IONS

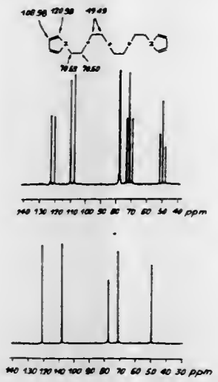
Olivier LeClerc, Moret Sur Loing, France, assignor to Electricite De France-Service National, Paris, France

Division of Ser. No. 274,784, Jul. 14, 1994. This application Jun. 7, 1995, Ser. No. 473,112

Claims priority, application France, Jul. 16, 1993, 93 08789

Int. Cl.[6] C08F *128/06;126/06;116/12;* **C25D** *9/02;* **B01D** *39/00*

U.S. Cl. 526—256 **4 Claims**



1. A process for the manufacture of a filter cartridge for the purification and/or recovery of metal ions contained in a solution, wherein polymer units are produced, by constant-current electrolysis, from an electrolyte charge with monomer units comprising an aliphatic polyether chain containing at least three ether units and pyrrole or thiophene heterocyclic units bonded to ends of the chain via, for each of said heterocyclic units either carbon atoms in the 3,3'-positions of the heterocyclic units or, with respect to the pyrrole heterocyclic units, via the respective nitrogen atoms, the 2- and 2'-positions of said heterocyclic units being free of all substituents or substituted by easily removable protective groups, on a carbon-based conductive support material contained in a reservoir possessing porous walls belonging to a voluminous anode; at the end of electrolysis, the polymer units thus obtained are dedoped to remove anions arising from the electrolyte; after dedoping the polymers units, means for supplying the current of the reservoir are removed; and then the reservoir, which contains the support material coated with polymer units, is sealed off in order to obtain the filter cartridge.

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5,605,994

METAL ION BINDING MONOMER AND POLYMER

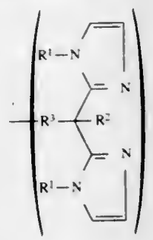
J. Thomas Ippoliti; Gary A. Mabbott, both of St. Paul, Minn.; Jeremy Hans, Madison, Wis., and Michelle Stohlmeyer, Dubuque, Iowa, assignors to Research Corporation Technologies, Inc., Tucson, Ariz.

Division of Ser. No. 317,433, Oct. 3, 1994, which is a continuation-in-part of Ser. No. 130,330, Oct. 1, 1993, Pat. No. 5,455,359. This application Jun. 6, 1995, Ser. No. 466,160

Int. Cl.[6] C08F *26/06;212/06;210/00;30/04;20/04*

U.S. Cl. 526—258 **52 Claims**

1. A polymer comprising a polymerizable unit of the formula:



wherein:

R^1 is hydrogen, lower alkyl, lower alkenyl, lower alkynyl or lower alkoxy;

R^2 is lower alkoxy or hydroxy;

R^3 is lower alkylene or a substituted arylene containing 6 to 10 ring carbon atoms wherein the substituents on the ring carbon atoms are independently hydrogen, lower alkyl, lower alkenyl, lower alkynyl, lower alkoxy, halogen, sulfate, nitro, lower alkanoyl or formyl.

5,605,995

HYDROXY-FUNCTIONAL ALLYL TERPOLYMERS

Shao-Hua Guo, West Goshen, Pa., assignor to Arco Chemical Technology, L.P., Greenville, Del.

Division of Ser. No. 440,865, May 15, 1995, which is a continuation-in-part of Ser. No. 309,699, Sep. 21, 1994, Pat. No. 5,480,954. This application Mar. 18, 1996, Ser. No. 618,301

Int. Cl.[6] C08F *218/02*

U.S. Cl. 526—330 **6 Claims**

1. A terpolymer which comprises recurring units of:

(a) an allyl ester of the formula $CH_2{=}CR'{-}CH_2{-}O{-}CO{-}R$ in which R is hydrogen or a saturated linear, branched, or cyclic C_1–C_{30} alkyl, aryl, or aralkyl group, and R' is selected from the group consisting of hydrogen and C_1–C_8 alkyl;

(b) a propoxylated allylic alcohol of the formula

$$CH_2{=}CR'{-}CH_2{-}(A)_n{-}OH$$

in which A is an oxypropylene group, R' is selected from the group consisting of hydrogen and C_1–C_4 alkyl, and n, which is the average number of oxypropylene groups in the propoxylated allylic alcohol, has a value less than or equal to 2; and

(c) a vinyl monomer selected from the group consisting of vinyl aromatic monomers, vinyl halides, vinyl ethers, acrylonitrile, methacrylonitrile, acrylamide, methacrylamide, acrylates, methacrylates, and vinyl esters;

wherein the terpolymer has an average hydroxyl functionality within the range of about 2 to about 10, and a number average molecular weight within the range of about 300 to about 15,000.

5,605,996

OXYGEN SCAVENGING COMPOSITION

Michael S. Chuu, Northbrook, and Thomas T. Tung, Barrington, both of Ill., assignors to American National Can Company, Chicago, Ill.

Continuation-in-part of Ser. No. 835,716, Feb. 12, 1992, abandoned. This application Mar. 16, 1994, Ser. No. 214,803

Int. Cl.[6] C08F *236/00*

U.S. Cl. 526—340 **12 Claims**

1. An oxygen scavenging polymer in an article, where the anti-oxidant property of the article is supplied substantially solely by said polymer in the presence of moisture, said polymer having one or more unsaturated carbon-carbon bonds, wherein said unsaturated carbon-carbon bonds in said polymer operate as an anti-oxidant when triggered by the presence of moisture formed as a result of a sterilization process and wherein said polymer is selected from the group consisting of: styrene butadiene copolymer, styrene butadiene rubber, styrene butadiene rubber copolymer, polybutadiene, butyl rubber, ethylene propylene terpolymer, propylene oxide rubber, polyacrylic rubber, nitrile rubber, and styrene butadiene styrene triblock copolymer.

5,605,997

PROCESS FOR PRODUCING ORGANOPOLYSILOXANES

Kenji Yamamoto, and Masaaki Yamaya, both of Matsuida-machi, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Oct. 5, 1995, Ser. No. 539,701

Claims priority, application Japan, Oct. 6, 1994, 6-268373

Int. Cl.[6] C08G *77/08*

U.S. Cl. 528—10 **8 Claims**

1. A process of producing an organopolysiloxane, comprising hydrolyzing and condensing at least one alkoxyl-containing organosilicon compound selected from the group consisting of an alkoxysilane having the general formula:

$$R_mSi(OR^1)_{4-m}$$

wherein R is a monovalent hydrocarbon group, R^1 is an alkyl group and m is an integer of 0 to 3, and partial hydrolysis-condensation products thereof, in the presence of a fluorine compound selected from the group consisting of fluoride salt compounds and fluorine-containing silicon compounds having at least one Si-F bond in its molecule.

5,605,998

METHOD FOR PRODUCING POLYCARBOSILANES

Toshi-aki Kobayashi, and Masato Tanaka, both of Tsukuba, Japan, assignors to Director-General of Agency of Industrial Science and Technology, Tokyo, Japan

Filed Mar. 9, 1995, Ser. No. 401,913

Claims priority, application Japan, Mar. 11, 1994, 6-068022

Int. Cl.[6] C08G *77/08*

U.S. Cl. 528—19 **15 Claims**

1. A method for producing polycarbosilanes, which comprises polymerizing silane of the formula SiH_4 with an α,ω-alkadiene in the presence of an organic neodymium complex, wherein said polycarbosilanes obtained from said polymerizing are represented by the following formula (IV):

$$+{-}SiH_2{-}+{-}CH_2CH_2{-}A{-}CH_2CH_2{-}+_n \quad \text{(IV)}$$

wherein n is a positive integer of 2 to 10,000 and A represents a divalent organic group.

5,605,999

ANAEROBICALLY CURABLE SILICONES

Hsien-Kun Chu, Wethersfield; Richard D. Rich, Avon; I. David Crossan, Hebron, and Robert P. Cross, Rock Hill, all of Conn., assignors to Loctite Corporation, Hartford, Conn.

Filed Jun. 5, 1995, Ser. No. 463,173

Int. Cl.[6] C08G *77/06*

U.S. Cl. 528—24 **37 Claims**

1. An anaerobically curing composition comprising:

(i) a silicone fluid formed as the reaction product of at least one first silane of formula I:

$$R_nSi(X)_{4-n} \quad \text{(I)},$$

wherein the R groups are the same or different and are selected from the group consisting of hydrogen, C_1–C alkyl, C_6–C aryl, C_7–C_arylalkyl, C_7–C_{18} alkylaryl, haloalkyl, haloaryl and monovalent ethylenically unsaturated radicals excluding (meth)acryloxy functional groups,

X is a hydrolyzable functionality selected from the group consisting of halogen, alkoxy, aryloxy, isocyanato, amino, acetoxy, oximinoxy, aminoxy, amidato, and alkenyloxy, and

n is an integer from 0 to 3, and

at least one second silane of formula II:

$$R^1{}_mR^2{}_pSi(X)_{4-(m+p)} \quad \text{(II)},$$

wherein R^1 is a (meth)acrylic functional group and R^2 can be the same or different and is selected from the group consisting of monovalent ethylenically unsaturated radicals, hydrogen, C1–C alkyl, C_6–C aryl, C_7–C_arylalkyl, and C_7–C_alkylaryl,

X is a hydrolyzable functionality selected from the group consisting of halogen, alkoxy, aryloxy, isocyanato, amino, acetoxy, oximinoxy, aminoxy, amidato, and alkenyloxy,

m is an integer from 1 to 3, and

m+p is an integer from 1 to 3,

(ii) a polymerizable organic (meth)acrylate monomer; and

(iii) a hydroperoxy anaerobic polymerization initiator capable of inducing polymerization of the composition in the substantial absence of oxygen, and yet not inducing polymerization of the composition in the presence of oxygen.

5,606,000

SILICON CONTAINING POLYARYLATES

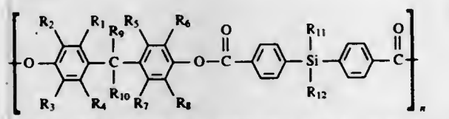
Arun S. Jadhav; Jayarani Purushotham; Sudhir S. C. Kulkarni, and Subhash P. Vernekar, all of Maharashtra, Ind., assignors to National Chemical Laboratory, Maharashtra, Ind.

Filed Feb. 6, 1995, Ser. No. 383,512

Int. Cl.[6] C08G *77/52*

U.S. Cl. 528—29 **4 Claims**

1. Silicon containing polyarylates comprising a repeating unit of Formula I



where R_1 and R_8 represent hydrogen, alkyl groups containing 1 to 5 carbon atoms or halogen atoms, R_9 and R_{10} represents alkyl groups containing 1 to 5 carbon atoms or CF_3 group and R_{11} and R_{12} represent alkyl groups with 1 and 5 carbon atoms or phenyl groups.

174-413 O.G.-97-13: QL3

5,606,001

POLYISOCYANATES CONTAINING ALLOPHANATE GROUPS AND OPTIONALLY ISOCYANURATE GROUPS

Myron W. Shaffer, New Cumberland, W. Va., assignor to Bayer Corporation, Pittsburgh, Pa.

Filed Sep. 14, 1995, Ser. No. 527,913

Int. Cl.[6] C08G *18/10*

U.S. Cl. 528—49 **17 Claims**

1. A polyisocyanate containing allophanate groups and optionally isocyanurate groups that is prepared by reacting a compound which

i) is substantially free of hydroxyl groups and isocyanate groups,

ii) has an average of at least two urethane groups per molecule and

iii) is the reaction product of a linear or branched, aliphatic isocyanate with an organic hydroxyl compound,

with an excess quantity, based on the urethane groups, of 4,4'-bis-(isocyanatocyclohexyl)-methane to form a polyisocyanate containing allophanate groups and optionally isocyanurate groups and optionally removing at least a portion of the unreacted excess 4,4'-bis-(isocyanatocyclohexyl)-methane.

5,606,002

Patent Not Issued For This Number

5,606,003

PRIMERLESS URETHANE ADHESIVE COMPOSITIONS

Chia L. Wang, Hudson; Arden E. Schmucker, Alliance; Fred V. Sandels, Hartville; Richard H. Harshbarger, Monroe Falls, and Robert L. Spencer, Lyndhurst, all of Ohio, assignors to GenCorp Inc., Fairlawn, Ohio

Filed Sep. 1, 1994, Ser. No. 299,790

Int. Cl.[6] C08G *18/10*

U.S. Cl. 528—60 **21 Claims**

1. In a polyurethane composition comprising:

an isocyanate terminated prepolymer component comprising the reaction product of one or more polyols and one or more polyisocyanates and

a curative component comprising one or more polyol curing agents, having sufficient hydroxyl functionality to form a crosslinked composition when reacted with said isocyanate terminated prepolymer component, and optionally one or more polyamines

the improvement wherein at least 80 wt. % of said one or more polyols used to make said isocyanate terminated prepolymer component are one or more grafted poly(alkylene oxide) polyols formed from grafting reactions of poly(alkylene oxide) polyols with ethylenically unsaturated monomers comprising acrylonitrile, said acrylonitrile being at least 80 wt. % of said unsaturated monomers and wherein said poly(alkylene oxide) polyols have an average functionality of at least 2, wherein the isocyanate terminated prepolymer component has NCO groups and the curative component has OH and optionally NH groups, and wherein said composition is free of latent catalysts.

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LACQUER POLYISOCYANATES WITH ALIPHATICALLY AND AROMATICALLY BOUND ISOCYANATE GROUPS

Martin Brahm, Engelskirchen; Josef Pedain, and Lutz Schmalstieg, both of Köln, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jul. 31, 1995, Ser. No. 509,258

Claims priority, application Germany, Aug. 9, 1994, 44 28 107.2

Int. Cl.[6] C08G *18/76;18/79;* **C07D** *251/34;* **C07C** *265/02*

U.S. Cl. 528—73 **18 Claims**

1. A process for preparing a liquid lacquer polyisocyanate having aliphatically and aromatically bound isocyanate groups and an NCO content of 5 to 25 wt. %, based on solids, by catalytically trimerizing

A) 100 parts by weigt of an aromatic isocyanate component containing

A1) 70 to 100 wt. % of 2,4- and/or 2,6-diisocyanatotoluene (TDI) and

A2) 0 to 30 wt. % of one or more aromatic isocyanates other than TDI having a molecular weight of 119 to 350,

wherein the percentages of A1) and A2) add up to 100 and

B) 15 to 700 parts by weight of an aliphatic isocyanate component containing one or more lacquer polyisocyanates having exclusively aliphatically bound isocyanate groups, an NCO content of 10 to 25 wt %, a concentration of distillable, monomeric diisocyanates of less than 0.7 wt. % and a viscosity of less than 10,000 mPa.s at 23° C., optionally with prior, simultaneous and/or subsequent reaction of a portion of the isocyanate groups with

C) up to 40 equivalent percent, based on the isocyanate groups of component A), of an alcohol component containing one or more alcohols having a molecular weight of 32 to 900 and optionally in the presence of

D) one or more solvents which are inert towards isocyanate groups, until the concentration of distillable, monomeric isocyanates A) has dropped to less than 0.5 wt. %, based on the weight of the total mixture.

5,606,005

POLYURETHANE AND MOLDED ARTICLE COMPRISING THE SAME

Tatuya Oshita; Kimio Nakayama; Michihiro Ishiguro; Koji Hirai; Shigeaki Suzaki, and Noriaki Yoshimura, all of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Nov. 16, 1995, Ser. No. 558,779

Claims priority, application Japan, Nov. 16, 1994, 6-282006; Dec. 28, 1994, 6-327291; Mar. 3, 1995, 7-044079

Int. Cl.[6] C08G *18/42*

U.S. Cl. 528—83 **5 Claims**

1. A polyurethane comprising polyester diol units, organic diisocyanate units and units from a chain extender, wherein said polyester diol units comprise dicarboxylic acid units and diol units, wherein at least 30 mole % of said dicarboxylic acid units are units derived from 3,8-dimethyldecanedioic acid, 3,7-dimethyldecanedioic acid or a mixture thereof, and wherein said polyester diol units have a number-average molecular weight in a range from 500 to 6000.

5,606,006

TRISEPOXY RESIN COMPOSITIONS

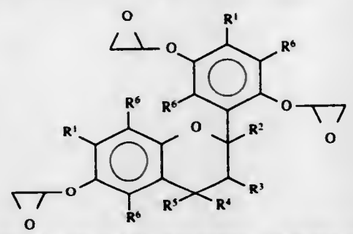
Pen-Chung Wang, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Apr. 8, 1996, Ser. No. 629,310

Int. Cl.[6] C08G *59/00*

U.S. Cl. 528—87 **8 Claims**

1. A trisepoxy resin having the structural formula



(I)

in which R^1s and R^6s are independently a hydrogen atom or a C_{1-20} alkyl group, provided R^1s do not simultaneously represent hydrogen atoms, R^2 is methyl or together with R^3 form a fused ring, R^3 is hydrogen atom or together with R^2 form a fused ring, R^4 and R^5 are independently a C_{1-6} alkyl or together form a spiro-ring.

5,606,007

PROCESSES FOR PREPARING AROMATIC POLYCARBONATES

Takeshi Sakashita, Iwakuni; Tomoaki Shimoda, Kuga-gun; Hideyuki Itoi, Utsunomiya; Takashi Nagai, Otake, and Kotarou Kishimura, Iwakuni, all of Japan, assignors to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 627,138, Dec. 13, 1990, abandoned. This application May 21, 1993, Ser. No. 67,245

Claims priority, application Japan, Dec. 28, 1989, 1-344042; Mar. 30, 1990, 2-85218; Aug. 3, 1990, 2-207076; Aug. 3, 1990, 2-207078

Int. Cl.[6] C08G *63/00*

U.S. Cl. 528—176 **4 Claims**

1. An aromatic polycarbonate composition comprises

(i) an aromatic polycarbonate obtained by allowing an aromatic dihydroxy compound and a carbonic acid diester to undergo melt polycondensation in the presence of an alkaline catalyst, comprised of an alkali metal compound and/or alkaline earth metal compound and

(ii) an acid compound, said acid compound being selected from the group consisting of a Bronsted acid, Lewis acid or Ester of an acid containing a sulfur atom wherein an amount of the acid compound is 0.1–50 moles based on one mole of the sum of the alkali metal compound and/or alkaline earth metal compound.

5,606,008

PREPARATION METHOD OF POLYCARBONATE RESIN

Takeshi Sakashita, Utsunomiya; Tomoaki Shimoda, Moka, and Takashi Nagai, Utsunomiya, all of Japan, assignors to General Electric Company, Pittsfield, Mass.

Filed Jul. 21, 1995, Ser. No. 506,280

Claims priority, application Japan, Jul. 22, 1994, 6-171453

Int. Cl.[6] C08G *64/00;* **B01J** *31/00;27/24*

U.S. Cl. 528—199 **6 Claims**

1. An improved method for manufacturing polycarbonate comprising melt condensation polymerizing an aromatic dihydroxy compound and a carbonic acid ester in the presence of a catalyst, wherein the improvement comprises melt condensation polymerizing the aromatic dihydroxy compound and the carbonic ester in the presence of from 1×10^{-6} to 1×10^{-1} moles for each mole of the aromatic dihydroxy compound of

(a) an aliphatic amine with 24–60 carbon atoms, and from 5×10^{-8} to 8×10^{-7} moles for each mole of the aromatic dihydroxy compound of

(b) an alkali metal compound or alkaline earth metal compound as the catalyst.

5,606,009

COPOLYMERIZED POLYCARBONATES

Takeshi Sakashita; Tomoaki Shimoda, both of Iwakuni, and Takashi Nagai, Otake, all of Japan, assignors to General Electric Company, Pittsfield, Mass.

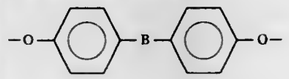
Division of Ser. No. 119,317, Sep. 9, 1993, Pat. No. 5,405,933, which is a continuation of Ser. No. 863,926, Apr. 6, 1992, abandoned. This application Feb. 17, 1995, Ser. No. 390,200

Claims priority, application Japan, Apr. 9, 1991, 3-76478; Feb. 21, 1992, 4-35305

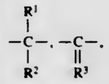
Int. Cl.[6] C08G *64/00;* **C08F** *6/00*

U.S. Cl. 528—204 **6 Claims**

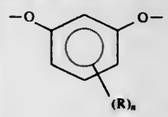
1. A copolymerized polyester-polycarbonate consisting essentially of (a) units of the formula



where B is



—O—, —S—, —SO— or —SO_2—, R^1 and R^2 are hydrogen atoms or monovalent hydrocarbyl groups, R^3 is a divalent hydrocarbylene group, and (b) units of the formula



where each R is a C_{1-10} hydrocarbyl group, a halogenated hydrocarbyl group, or a halogen atom and n is an integer from 0 to 4 provided that when n is 2 or more, the R groups are the same or different and (c) a group comprising units of the formula



wherein up to 50 mol % of the units (c) are derived from the group consisting of dicarboxylic acids, dicarboxylic acid esters, dicarboxylic acid halides or mixtures thereof whereby the copolymerized polyester-polycarbonate has an intrinsic viscosity of from 0.2 to 1.2 dL/g when measured at 20° C. in methylene chloride solution.

5,606,010

METHODS FOR THE PREPARATION OF INHERENTLY METAL BINDING POLY-AMINE-QUINONE POLYMERS

Semih Erhan, 2301 Cherry St., Apt. 12-B, Philadelphia, Pa. 19103, and Varabelambedu S. Nithianandam, Philadelphia, Pa., assignors to Semih Erhan, Philadelphia, Pa.

Filed Jul. 7, 1994, Ser. No. 271,712

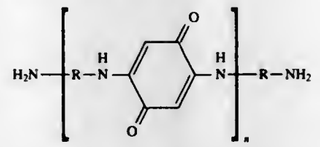
Int. Cl.[6] C08G *12/00*

U.S. Cl. 528—229 **38 Claims**

1. A method for the preparation of a poly-amine-quinone polymer, comprising;

(a) reacting by 1,4 addition polymerization an aromatic or an aliphafic polyamine with a quinone or a quinone precursor in a mole ratio of aromatic or aliphatic polyamine to quinone or a quinone precursor in a mole ratio of aromatic or aliphatic polyamine to quinone or quinone precursor of about 1:3 to 3:1 in a solvent in the presence of an external oxidizing agent, thereby resulting in polymer chain growth, until substantially complete polymerization to a poly-amine-quinone polymer product; and,

(b) isolating the poly-amine-quinone polymer product comprising the general chemical formula:



wherein each R is independently selected from the group of alkyl, cycloalkyl, aralkyl, aryl, silyl, siloxyl and the alkyl, alkoxy, aryl, carboxyl, amino, sulfhydryl, sulfoxyl, sulfonyl substituted derivatives thereof and n is about 50 to 2,000 and the molecular weight of the polymer is about 10,000 to 1,000,000.

5,606,011

MELAMINIC POLYCONDENSATES

Roberto Cipolli, Novara; Roberto Oriani, Milan; Enrico Masarati, Castelnuovo Valtidone, and Gilberto Nucida, San Giuliano Milanese, all of Italy, assignors to Ministero Dell'Universita' e Della Ricerca Scientifica e Tecnologica, Rome, Italy

Continuation of Ser. No. 976,455, Nov. 13, 1992, abandoned. This application Feb. 22, 1994, Ser. No. 199,961

Claims priority, application Italy, Nov. 14, 1991, MI91A3044

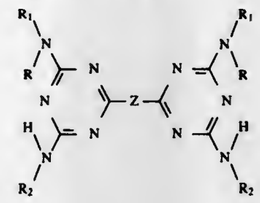
Int. Cl.[6] C08G *10/02;12/02*

U.S. Cl. 528—243 **9 Claims**

1. An aminoplastic resin produced by reacting:

(a) from 0 to 50 parts by weight of one or more polyaminic derivatives;

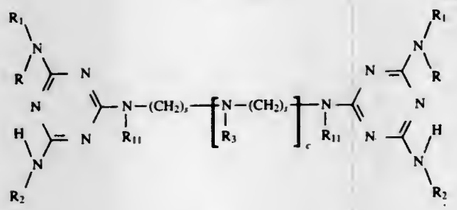
(b) from 50 to 100 parts by weight of one or more derivatives of 2,4,6-triamino-1,3,5-triazine selected from:



(i)

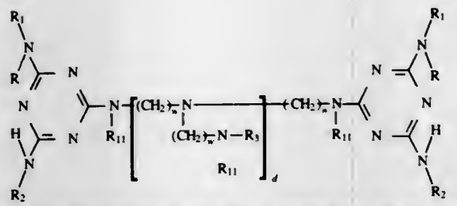
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(ii)

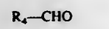


or

(iii)



with formaldehyde or a mixture of formaldehyde and an aldehyde having the formula (II):

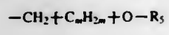


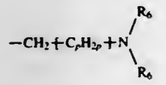
(II)

wherein the aldehyde having the formula (II) is present in an amount of up to 20% by mol, and wherein:

the radical R which may have different meanings on each triazinic ring is:

C_{1-18} alkyl; C_2–C_8 alkenyl; C_6–C_{16} cycloalkyl, alkycloalkyl, unsubstituted or substituted with a hydroxy, or C_1–C_4 hydroxyalkyl function:





wherein:

m is an integer comprised within the range of from 1 to 7;

p is an integer comprised within the range of from 1 to 5;

R_5 is H; C_1–C_8 alkyl; C_2–C_6 alkenyl; $-(C_qH_{2q})O-R_7$ wherein q is an integer comprised within the range of from 1 to 4 and R_7 is H or C_1–C_4 alkyl; C_6–C_{12} cycloalkyl or alkylcycloalkyl;

the radicals R_6, which may be the same, or different from each other, are:

H, C_1–C_8 alkyl; C_2–C_6 alkenyl; C_6–C_{12} cycloalkyl or alkylcycloalkyl; C_1–C_4 hydroxyalkyl; or the moiety:



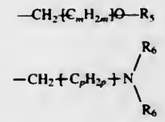
is replaced by a heterocyclic radical linked to the alkyl chain through the nitrogen atom; or the moiety:



is replaced by a heterocyclic radical linked to the triazinic ring through the nitrogen atom;

the radicals R_1 and R_2, which may be the same, or different from each other, and may have different meanings on each triazinic ring, are:

H; C_1–C_{18} alkyl; C_2–C_8 alkenyl; C_6–C_{16} cycloalkyl, alkylcycloalkyl, unsubstituted or substituted with a hydroxy or C_1–C_4 hydroxyalkyl function;



wherein:

m is an integer comprised within the range of from 1 to 7;

p is an integer comprised within the range of from 1 to 5;

R_5 is H; C_1–C_8 alkyl; C_2–C_6 alkenyl; $-(C_qH_{2q})O-R_7$ wherein q is an integer comprised within the range of from 1 to 4 and R7 is H or C_1–C_4 alkyl; C_6–C_{12} cycloalkyl or alkylcycloalkyl;

the radicals R_6, which may be the same, or different from each other, are:

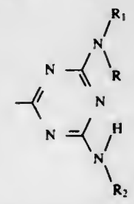
H, C_1–C_8 alkyl; C_2–C_6 alkenyl; C_6–C_{12} cycloalkyl or alkylcycloalkyl; C_1–C_4 hydroxyalkyl; or the moiety:



is replaced by a heterocyclic radical linked to the alkyl chain through the nitrogen atom; or the moiety:

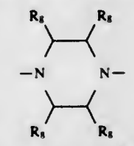


is replaced by a heterocyclic radical linked to the triazinic ring through the nitrogen atom; R_3 is hydrogen or:



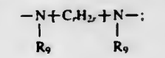
and its meaning may vary within each repeating unit;

Z is a divalent radical falling within the scope of one of the following formulas:



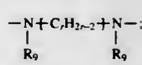
(III)

wherein the radicals R_8, which may be the same or different from each other, are hydrogen or C_1–C_4 alkyl;



(IV)

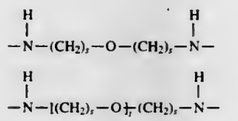
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(V)

wherein r is an integer comprised within the range of from 2 to 14;

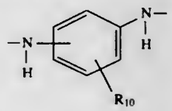
R_9 is hydrogen; C_1–C_4 alkyl; C_2–C_6 alkenyl; C_1–C_4 hydroxyalkyl;



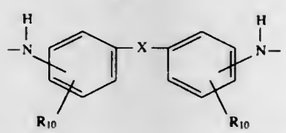
(VI)

(VII)

where s is an integer comprised within the range of from 2 to 5 and t is an integer comprised within the range of from 1 to 3;



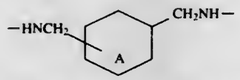
(VIII)



(IX)

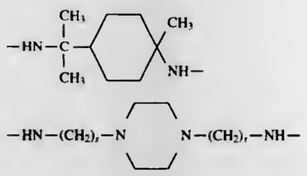
wherein:

X is a direct C—C bond; O; S; S—S; SO; SO_2; NH; $NHSO_2$; NHCO; N=N; CH_2; R_{10} is hydrogen; hydroxy; C_1–C_4 alkyl; C_1–C_4 alkoxy;



(X)

wherein A may be a saturated or unsaturated ring;



(XI)

(XII)

wherein s has the above defined meaning;

R_{11} is hydrogen or C_1–C_4 alkyl;

c is an integer comprised within the range of from 1 to 5;

the indexes s, which may be the same or different from each other, have the above defined meaning;

w is an integer comprised within the range of from 2 to 4;

d is either 1 or 2; and

R_4 is C_1–C_8 alkyl; C_2–C_6 alkenyl; C_6–C_{12} cycloalkyl; C_6–C_2 aryl, or substituted with one or more C_1–C_4 alkyl radicals; C_7–C_{16} aralkyl; C_8–C_{12} aralkenyl.

5,606,012

POLYETHERAMIDOAMINE HYDROGELS AS HEPARINIZABLE MATERIALS

Maria C. Tanzi, Milan, and Gianfranco Palumbo, Pescara, both of Italy, assignors to Societa' Consortile Ricerche Angelini S.p.A., Pescara, Italy

PCT No. PCT/EP93/00920, § 371 Date Nov. 22, 1994, § 102(e) Date Nov. 22, 1994, PCT Pub. No. WO93/21257, PCT Pub. Date Oct. 28, 1993

PCT Filed Apr. 16, 1993, Ser. No. 331,512

Claims priority, application Italy, Apr. 21, 1992, MI92A0955

Int. Cl.[6] C08G 73/02

U.S. Cl. 528—342 **12 Claims**

1. Polyetheramidoamine hydrogels consisting of polyetheramidoamine and/or polyamidoamine prepolymers of molecular weight Mw not higher than 20,000, cross-linked by Michael nucleophilic polyaddition with α-ω-diamino monomers or oligomers, said hydrogels having a swelling degree in water from 50 to 500%.

5,606,013

POLYAMIC ACIDS AND POLYIMIDES

Mohammad A. Chaudhari, Bethel; John J. King, Ridgefield, and Byung Lee, Brookfield, all of Conn., assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

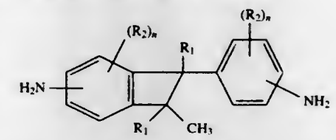
Filed Dec. 31, 1986, Ser. No. 948,278

Int. Cl.[6] C08G 73/10

U.S. Cl. 528—353 **16 Claims**

1. A polyamic acid obtained from the reaction of

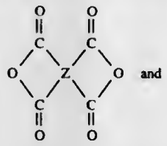
(a) a phenylindane diamine of the formula



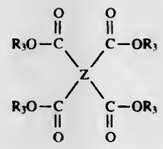
wherein R_1 is hydrogen or C_1–C_5alkyl;

R_2 independently are hydrogen, halogen or C_1–C_4alkyl; and n is 1–4;

(b) a polyfunctional anhydride or ester thereof of the formulae



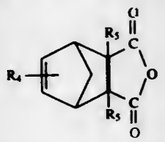
and



wherein Z is a tetravalent aryl radical; and

R_3 is hydrogen or C_1–C_6alkyl, with at least two R_3 groups being alkyl; and

(c) a monofunctional anhydride of the formula



wherein R_4 is hydrogen, C_1–C_6alkyl, allyl or methallyl; and R_5 is hydrogen or C_1–C_6alkyl.

5,606,014

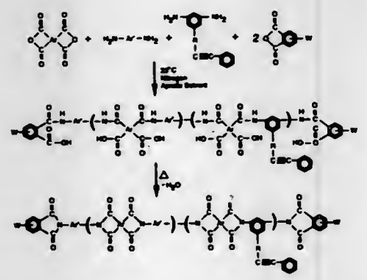
IMIDE OLIGOMERS AND CO-OLIGOMERS CONTAINING PENDENT PHENYLETHYNYL GROUPS AND POLYMERS THEREFROM

John W. Connell, Yorktown; Joseph G. Smith, Jr., Grafton, and Paul M. Hergenrother, Yorktown, all of Va., assignors to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.

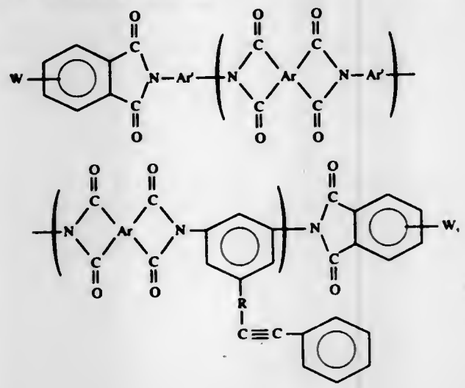
Filed Aug. 4, 1995, Ser. No. 511,422

Int. Cl.[6] C08G *73/10;69/26*

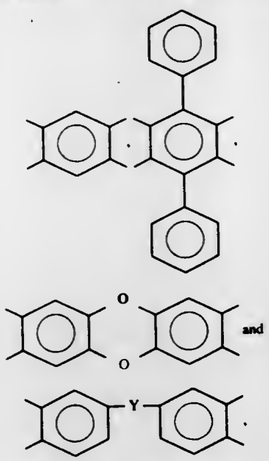
U.S. Cl. 528—353 **44 Claims**



1. Controlled molecular weight copolyimides containing pendent phenylethynyl groups and chain terminated with either non-reactive or reactive phthalic anhydride based endcapping agents have the following repeat unit:



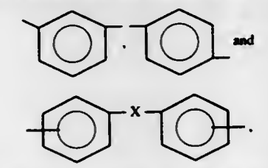
wherein Ar is a member selected from the group consisting of:



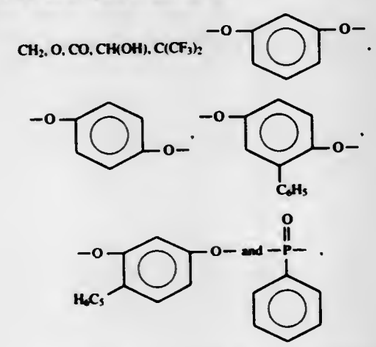
wherein Y is a bond or Y is a radical selected from the group consisting of:

O, CO, SO_2, $C(CF_3)_2$, isophthalpyl, terephthaloyl, 1,3-diphenoxy and 1,4-diphenoxy,

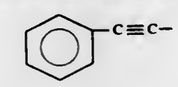
wherein Ar' is a member selected from the group consisting of:



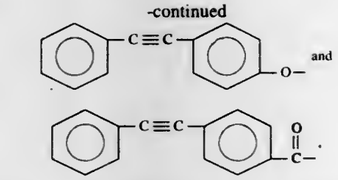
wherein the catenation is selected from the group consisting of 2,2'; 2,3'; 2,4'; 3,3'; 3,4'; and 4,4' and X is a bond or X is a radical selected from the group consisting of:



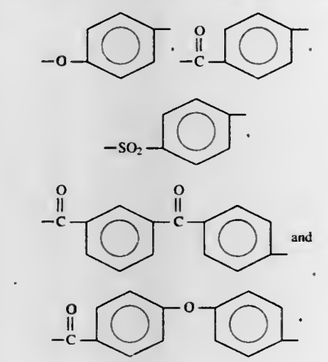
wherein W is a radical selected from the group consisting of: H,



-continued



wherein R is a radical selected from the group consisting of:



wherein the amount of diamine containing pendent phenylethynyl groups ranges from 1–99 mole %.

5,606,015

POLYMER POWDER STABILITY

Shang J. Chiou, and Mlao-Hsun L. Sheng, both of Lower Gwynedd, Pa., assignors to Rohm and Haas Company, Phila., Pa.

Filed Feb. 16, 1995, Ser. No. 390,389

Int. Cl.[6] C08F *6/14*

U.S. Cl. 528—495 **5 Claims**

1. A method comprising

(i) providing an emulsion comprising at least one emulsion polymer and at least one surfactant having an HLB value below 7 wherein said surfactant is a nonionic surfactant selected from the group consisting of alkylphenoxy ethoxylates, acetylenic polyols, alkylene glycol alkylates, sorbitan alkalates, glycerol esters, polyglycerol esters, and combinations thereof; and

(ii) spray-drying the emulsion.

5,606,016

PROCESS FOR PREPARING COLORLESS ROSINS

Masao Maeda; Yukiharu Yamada, and Yutaka Koba, all of Osaka, Japan, assignors to Arakawa Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP94/00792, § 371 Date Jan. 18, 1995, § 102(e) Date Jan. 18, 1995, PCT Pub. No. WO94/26833, PCT Pub. Date Nov. 24, 1994

PCT Filed May 16, 1994, Ser. No. 373,222

Claims priority, application Japan, May 18, 1993, 5-140159

Int. Cl.[6] C08F *1/00;1/04;1/02*

U.S. Cl. 530—210 **16 Claims**

1. A process for preparing colorless rosins, characterized by dehydrogenating purified hydrogenated rosins in the presence of a dehydrogenating catalyst.

5,606,017

THIOETHER CONJUGATES

David Willner, Hamden; Pamela A. Trail, Farmington; H. Dalton King, Hamden; Sandra J. Hofstead, Middletown; Robert S. Greenfield, Wallingford, and Gary R. Brasiawsky, Glastonbury, all of Conn., assignors to Bristol-Myers Squibb Company, New York, N.Y.

Division of Ser. No. 824,951, Jan. 23, 1992. This application Jun. 6, 1995, Ser. No. 468,162

Int. Cl.[6] C07K *5/00;* **C07H** *15/24;19/00;* **C07D** *475/00*

U.S. Cl. 530—322 **20 Claims**

1. A compound of Formula (IIa):

$$[D]{=}N{-}NHCO(CH_2)_n{-}R \qquad \text{(IIa)}$$

in which

D is a drug moiety;

n is an integer from 1 to 10; and,

R is a Michael Addition Receptor.

5,606,018

Patent Not Issued For This Number

5,606,019

SYNTHETIC PROTEIN AS IMPLANTABLES

Joseph Cappello, San Diego, Calif., assignor to Protien Polymer Technologies, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 609,716, Nov. 6, 1990, Pat. No. 5,514,581, and Ser. No. 53,049, Apr. 22, 1993, abandoned, which is a continuation-in-part of Ser. No. 114,618, Oct. 29, 1987, Pat. No. 5,243,038. This application Mar. 11, 1994, Ser. No. 212,237

Int. Cl.[6] C07K *7/06;* **A61K** *38/00;38/17*

U.S. Cl. 530—329 **4 Claims**

1. A protein polymer of at least 15 kD and comprising alternating blocks of two units each of VPGVG (SEQ ID NO: 02) and GAGAGS (SEG ID NO: 01), wherein at least 15 to 80% of amino acids of said alternating blocks of said protein polymer are present as GAGAGS units.

5,606,020

6 (R)-L-ERYTHRO-5,6,7,8-TETRAHYDROBIOPTERIN RECEPTOR

Yasuyoshi Watanabe; Yumiko Watanabe; Hiroshi Morii, all of Osaka, and Toshio Hayashi, Kanagawa-ken, all of Japan, assignors to Suntory Limited, and Osaka Bioscience Institute, both of Osaka, Japan

PCT No. PCT/JP92/01496, § 371 Date Jul. 15, 1993, § 102(e) Date Jul. 15, 1993, PCT Pub. No. WO92/10550, PCT Pub. Date May 27, 1993

PCT Filed Nov. 16, 1992, Ser. No. 87,802

Claims priority, application Japan, Nov. 16, 1991, 3-300894

Int. Cl.[6] C07K *14/47*

U.S. Cl. 530—350 **4 Claims**

1. An isolated and purified 6(R)-L-erythro- 5,6,7,8-tetrahydrobiopterin (6R-BH4) receptor which specifically binds to 6R-BH4 and which is contained in the cytosol fraction obtained from a homogenate of an animal organ or in the membrane fraction obtained from a homogenate of an animal organ and which is capable of being solubilized from the membrane fraction in the presence of 3-{(3-cholamidopropyl)dimethylammonio}-1-propanesulfonate (CHAPS), characterized in that the binding ability thereof to bind to 6R-BH4 is mostly lost by heating at 100° C. for 10 minutes, the binding ability thereof to bind to 6R-BH 4 is significantly lost by incubating with trypsin at 37° C. for 15 minutes, and said receptor shows substantially a single peak at

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about 340 to 380 kilodaltons when said receptor is solubilized from the membrane fraction in the presence of CHAPS and is specifically bound to tritium-labeled 6R-BH4 and is subjected to gel filtration chromatography.

5,606,021

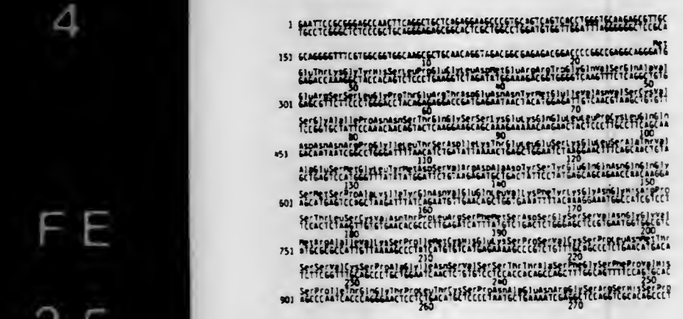
MINERALOCORTICOID RECEPTOR COMPOSITIONS AND METHODS

Ronald M. Evans, San Diego, Calif.; Cary A. Weinberger, Silver Spring, Md.; Vincent Giguere, San Diego, Calif.; Jeffrey Arriza, Carlsbad, Calif.; Catherine C. Thompson, La Jolla, Calif., and Estelita S. Ong, San Diego, Calif., assignors to The Salk Institute For Biological Studies, La Jolla, Calif.

Division of Ser. No. 667,602, Mar. 7, 1991, Pat. No. 5,312,732, which is a division of Ser. No. 108,471, Oct. 20, 1987, Pat. No. 5,071,773, which is a continuation-in-part of Ser. No. 922,585, Oct. 24, 1986, abandoned. This application Dec. 17, 1993, Ser. No. 170,085

Int. Cl.[6] C07K *14/705*

U.S. Cl. 530—350 **8 Claims**



1. Recombinant protein which has the amino acid sequence shown in FIGS. 36A to 36D, wherein said protein has hormone-binding and transcription activating properties characteristic of mineralocorticoid receptor.

5,606,022

CLONING AND IDENTIFICATION OF A TWO COMPONENT SIGNAL TRANSDUCING REGULATORY SYSTEM FROM *BACTEROIDES FRAGILIS*

Beth A. Rasmussen, Nyack, N.Y., assignor to American Cyanamid Company, Wayne, N.J.

Division of Ser. No. 23,764, Feb. 26, 1993. This application Jun. 5, 1995, Ser. No. 462,949

Int. Cl.[6] C07K *1/00;14/00;17/00;* **C12N** *1/00*

U.S. Cl. 530—350 **5 Claims**

1. A purified isolated Regulatory protein X (RprX) protein.

5,606,023

MUTANT TUMOR NECROSIS FACTOR PROTEINS

Mann-Jy Chen, Wayne, and Irene T. Weber, Haverford, both of Pa., assignors to Thomas Jefferson University, Philadelphia, Pa.

Filed May 24, 1994, Ser. No. 249,190

Int. Cl.[6] C07K *14/525;* **A61K** *38/19;* **C12N** *15/28*

U.S. Cl. 530—351 **2 Claims**

1. A mutant human tumor necrosis factor protein wherein human tumor necrosis factor is mutated at position 33 by substitution with isoleucine, leucine, asparagine or valine.

5,606,024

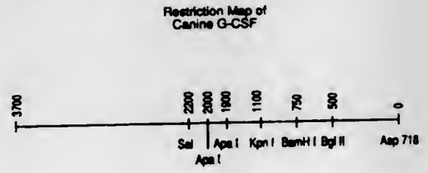
CANINE G-CSF POLYPEPTIDES AND PHARMACEUTICAL COMPOSITIONS COMPRISING SAME

Thomas C. Boone, Newbury Park, and Allan L. Miller, Glendale, both of Calif., assignors to Amgen Inc., Thousand Oaks, Calif.

Division of Ser. No. 255,206, Jun. 7, 1994, abandoned, which is a continuation of Ser. No. 826,288, Jan. 27, 1992, abandoned, which is a continuation of Ser. No. 420,038, Oct. 10, 1989, abandoned. This application Apr. 24, 1995, Ser. No. 428,732

Int. Cl.[6] C07K *14/535;* **A61K** *45/05*

U.S. Cl. 530—351 **4 Claims**



1. A polypeptide product of expression of a DNA molecule set forth in FIGS. 2A–2B (SEQ ID NO. 1), said polypeptide product being free from association with protein of canine origin.

5,606,025

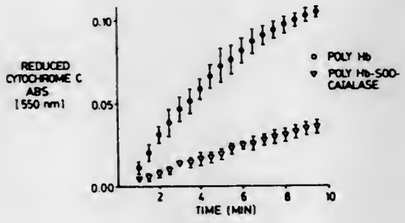
HEMOGLOBIN-ENZYME COMPLEXES

Felice D'Agnillo, 2550 Place Keller, Montreal, Quebec, Canada, and Thomas M. S. Chang, 165 DuBearn Street, St. Lambert, Quebec, Canada

Filed Nov. 15, 1994, Ser. No. 341,873

Int. Cl.[6] A61K *38/42;38/54;35/14;* **C07K** *14/805*

U.S. Cl. 530—385 **8 Claims**



1. A complex of intramolecularly and/or intermolecularly crosslinked hemoglobin, and endogenous enzymes chemically bonded thereto, said endogenous enzymes being superoxide dismutase (SOD) and catalase, the molecular weight of said complex being at least 64 kilodaltons, the oxygen-carrying crosslinked hemoglobin component of the the complex comprising about 90–99.9% by weight thereof and the total weight of bound enzymes in the complex comprising about 0.1–10% by weight thereof.

5,606,026

NATURAL HUMAN IGM ANTIBODIES IMMUNOREACTIVE WITH THE TAT PROTEIN OF HIV-1

Toby C. Rodman, New York, N.Y., assignor to The Institute for Human Genetics and Biochemistry, Geneva, Switzerland

Continuation-in-part of Ser. No. 173,705, Mar. 25, 1988, abandoned, Ser. No. 873,917, Apr. 24, 1992, abandoned, Ser. No. 912,026, Jul. 9, 1992, abandoned, and Ser. No. 924,412, Jul. 30, 1992, abandoned. This application Apr. 26, 1993, Ser. No. 53,079

Int. Cl.[6] C07K *16/00;16/08;16/44*

U.S. Cl. 530—387.9 **1 Claim**

1. An isolated human natural IgM antibody immunoreactive with an epitope present on the HIV-1 Tat protein having the amino acid sequence SEQ ID NO:4, wherein said antibody is isolated from normal non-HIV-1 infected humans.

5,606,027

ANTIBODIES TO A NEUTROPHIL CHEMOTACTIC PROTEIN

Salwa A. Elgebaly, 22 Silo Way, Bloomfield, Conn. 06002

Continuation-in-part of Ser. No. 975,640, Nov. 13, 1992, Pat. No. 5,403,914, which is a continuation-in-part of Ser. No. 852,890, Mar. 3, 1992, abandoned, which is a continuation of Ser. No. 649,154, Feb. 1, 1991, abandoned, which is a continuation of Ser. No. 107,280, Oct. 9, 1987, abandoned. This application Mar. 14, 1995, Ser. No. 404,027

Int. Cl.[6] C07K *16/24*

U.S. Cl. 530—389.2 **4 Claims**

1. An antibody to NOURIN-1, a biological mediator of immune function for stimulating neutrophil activity, said mediator being a protein having the following physico-chemical characteristics: a molecular weight within the range of about 500 to 5,000 daltons, as determined by calibrated gel filtration, protease sensitivity, heat instability, non-leukotriene, non-interleukin, non-serum derived, nonimmune cell derived and will stimulate neutrophil degranulation, said antibody having specificity for said protein.

5,606,028

ANCHIMERIC RADIOMETAL CHELATING COMPOUNDS

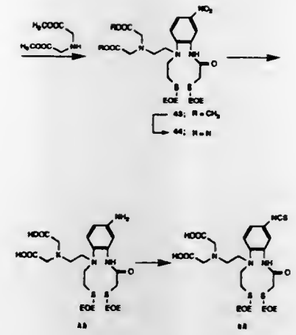
Alan R. Fritzberg, Edmonds, and Ananthachari Srinivasan, Kirkland, both of Wash., assignors to NeoRx Corporation, Seattle, Wash.

Continuation of Ser. No. 221,987, Apr. 1, 1994, abandoned, which is a continuation of Ser. No. 968,048, Oct. 28, 1992, abandoned, which is a division of Ser. No. 157,284, Feb. 17, 1988, Pat. No. 5,202,451. This application Sep. 21, 1995, Ser. No. 532,041

Int. Cl.[6] C07K *17/02;* **A61K** *51/08;51/10*

U.S. Cl. 530—391.5 **25 Claims**

1. A conjugate comprising a protein, protein fragment or polypeptide bound to a chelating compound comprising a first site at which a complex of a radionuclide metal forms, a second site at which a chelate of the radionuclide metal forms, and a conjugation group adapted to bind the chelating compound to the protein, wherein said first site comprises two or more atoms selected from oxygen, nitrogen and phosphorous, said second site comprises a heteroatom chain containing at least one sulfur atom and at least two nitrogen atoms, and the complex formed at said first site has a faster rate of formation and a lower thermodynamic stability than said chelate formed at said second site, such that when a radionuclide metal is combined with said compound, the complex at the first site forms initially, and the radionuclide metal subsequently is transferred to the second site to form the chelate.



5,606,029

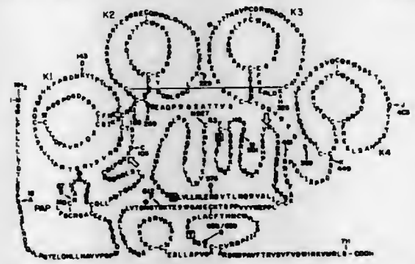
GENE FOR A GROWTH FACTOR AND ITS CDNA AND PROTEIN

Sandra J. Degen, Cincinnati, Ohio, assignor to Children's Hospital Medical Center, Cincinnati, Ohio

Continuation of Ser. No. 882,925, May 14, 1992, Pat. No. 5,315,000. This application Jan. 18, 1994, Ser. No. 184,012

Int. Cl.[6] C07K *14/475;* **A61K** *38/18;* **C12N** *15/12*

U.S. Cl. 530—399 **5 Claims**



1. The recombinant protein coded for by the DNA sequence located at D3F15S2 locus on human chromosome 3 having 18 exons coding for a human growth factor, said human growth factor comprising an approximately 80,000 dalton, single-chain protein containing four Kringle Domains.

5,606,030

COCONJUGATES OF OMPC, HIV RELATED PEPTIDES AND ANIONIC MOIETIES

Emilio A. Emini, Paoli, Pa.; William J. Leanza, Berkeley Heights, N.J.; Stephen Marburg, Metuchen, N.J., and Richard L. Tolman, Warren, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 952,208, Sep. 28, 1992, abandoned, which is a continuation of Ser. No. 715,278, Jun. 19, 1991, abandoned, and Ser. No. 715,276, Jun. 19, 1991, abandoned, which is a continuation-in-part of Ser. No. 555,966, Jul. 19, 1990, abandoned, which is a continuation-in-part of Ser. No. 555,339, Jul. 19, 1990, abandoned. This application Sep. 14, 1994, Ser. No. 305,862

Int. Cl.[6] C07K *17/02;* **A61K** *39/385*

U.S. Cl. 530—404 **2 Claims**

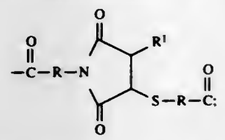
1. A coconjugate comprising the Outer Membrane Protein Complex (OMPC) of *Neisseria meningitidis b* and a Principal Neutralizing Determinant (PND) of Human immunodeficiency Virus (HIV) having the structure:

$$(PEP—A—)—OMPC—(—B—a^-)_n$$ wherein

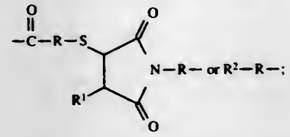
VOL 11 95 ISS 4 FE 25 1997 UMI

j is the peptide loading and is between 1% and 50% of the total coconjugate protein;

—A— consists essentially of the linkage:



—B— consists essentially of the linkage:



—a⁻ is a low molecular weight moiety having an anionic or polyanionic character at physiological pH, and is from one to five residues of the anionic form of the carboxylic, sulfonic, or phosphonic acid;

X is the number of moles of B—a⁻ in the coconjugate and is between 1% and 90% of m;

m is the molar amount of reactive nucleophilic functionalities in the OMPC prior to conjugation;

S is sulfur;

R is lower alkyl, substituted lower alkyl, cycloalkyl, substituted cycloalkyl, or phenyl;

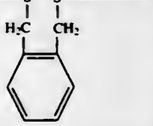
R^1 is hydrogen, lower alkyl or $—SO_3H$;

R^2 is lower alkyl, carbonyl or lower acyl amino;

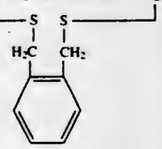
PEP is one or more PND peptides selected from the group consisting of:

NAME STRUCTURE

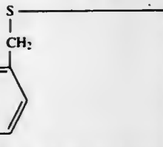
cPND1 r-Nle—C—H—I—G—P—G—R—A—F— C—OH:



cPND2 r-Nle—C—I—G—P—G—R—A—F—C— OH:



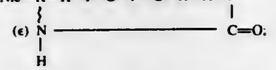
cPND3
r-Nle—C—R—I—Q—R—G—P—G—R—A—F—V—T— C—OH:



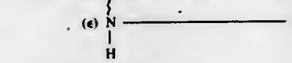
cPND4 r-Nle—C—H—I—G—P—G—R—A—F—C—COOH:

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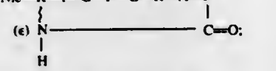
cPND8 r-Nle—K—H—I—G—P—G—R—A—F



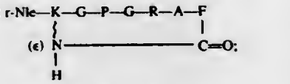
cPND9 r-Ac—Cys—Nle—K—H—I—G—P—G—R—A—F



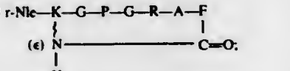
cPND11 r-Nle—K—I—G—P—G—R—A—F



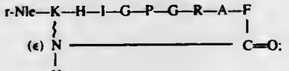
cPND12 r-Nle—K—G—P—G—R—A—F



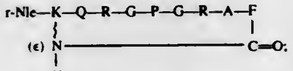
cPND13 r-Nle—K—G—P—G—R—A—F



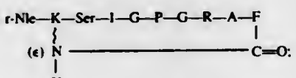
cPND14 r-Nle—K—H—I—G—P—G—R—A—F



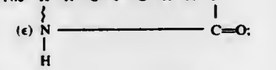
cPND15 r-Nle—K—Q—R—G—P—G—R—A—F



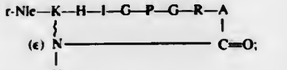
cPND16 r-Nle—K—Ser—I—G—P—G—R—A—F



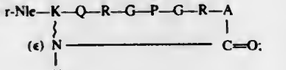
cPND21 r-Nle—K—R—G—P—G—R—A—F



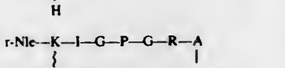
cPND23 r-Nle—K—H—I—G—P—G—R—A



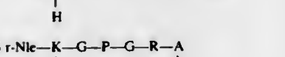
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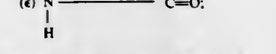
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cPND26 r-Nle—K—G—P—G—R—A

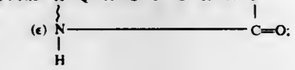


cPND27 r-Nle—K—H—I—G—P—G—R—A—F

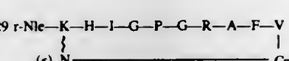


-continued

cPND28 r-Nle—K—Q—R—G—P—G—R—A—F

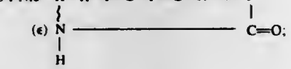


cPND29 r-Nle—K—H—I—G—P—G—R—A—F—V

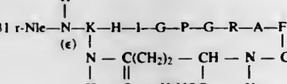


cPND30 r-Nle—K—H—I—G—P—G—R—V—F

cPND31 r-Nle—N—K—H—I—G—P—G—R—A—F



cPND32 r-Nle—N—K—Q—R—G—P—G—R—A—F



PND142
r-Y—N—K—R—K—R—I—H—I—G—P—
G—R—A—F—Y—T—T—K—N—I—I—G—T;

PND-SC
r-N—N—T—T—R—Ser-I—H—I—G—P—G—
R—A—F—Y—A—T—G—D—I—I—G—D—I;

PND135
r-N—N—T—R—K—Ser-I—R—I—Q—R—G—
P—G—R—A—F—V—T—I—G—K—I—G—N;

PND135-18
r-R—I—Q—R—G—P—G—R—A—F—V—T—I—
G—K—I—G—N;

PND135-12
r-R—I—Q—R—G—P—G—R—A—F—V—T;

PND-MN8
r-H—I—G—P—G—R—A—F;

PND-MN6
r-G—P—G—R—A—F;

PND-LAV-1
r-I—Q—R—G—P—G—R—A—F;

PND-SF2
r-I—Y—I—G—P—G—R—A—F;

PND-NY5
r-I—A—I—G—P—G—R—T—L;

-continued

PND-CDC4
r-V—T—L—G—P—G—R—V—W;

PND-RF
r-I—T—K—G—P—G—R—V—I;

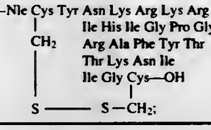
PND-ELI
r-T—P—I—G—L—G—Q—Ser-L;

PND-Z6
r-T—P—I—G—L—G—Q—A—L;

PND-MAL
r-I—H—F—G—P—G—Q—A—L;

PND-Z3
r-I—R—I—G—P—G—K—V—F; and

cPND33 (SEQ.ID.NO:1)



r is the position of the linkage between the peptide and the OMPC, with the proviso that cPND33 may be linked through the amino terminal Nle or one of the internal Lys residues.

5,606,031

PRODUCTION AND PURIFICATION OF BIOLOGICALLY ACTIVE RECOMBINANT NEUROTROPHIC PROTEIN IN BACTERIA

Jack Lile, 947 Casitas Vista Rd., Ventura, Calif. 93001; Tadahiko Kohno, 1557 Hays Ct., Louisville, Colo. 80027; Duane Bonam, 4 Morsecroft La., Amesbury, Mass. 01913, and Mary S. Rosendahl, 310 Fairplay, Broomsfield, Colo. 80020

Continuation-in-part of Ser. No. 240,122, May 9, 1994, abandoned, which is a continuation-in-part of Ser. No. 87,912, Jul. 6, 1993, abandoned, which is a continuation of Ser. No. 680,681, Apr. 4, 1991, abandoned, which is a continuation-in-part of Ser. No. 594,126, Oct. 9, 1990, Pat. No. 5,235,043, Ser. No. 547,750, Jul. 2, 1990, abandoned, and Ser. No. 505,441, Apr. 6, 1990, abandoned. This application Jun. 27, 1994, Ser. No. 266,080

Int. Cl.⁶ C07K *1/18;1/36;* **C12N** *15/12*

U.S. Cl. 530—416 **22 Claims**

1. A process for the production of biologically active recombinant neurotrophic factor wherein said neurotrophic factor is selected from the group consisting of NGF, BDNF, NT3, and NT4, comprising:

a) expressing a gene coding for the neurotrophic factor in a bacterial expression system wherein said neurotrophic factor protein is produced;

b) solubilizing said neurotrophic factor;

c) sulfonylating said solubilized neurotrophic factor;

d) isolating and purifying the sulfonylated neurotrophic factor by anion exchange chromatography;

e) allowing the sulfonylated neurotrophic factor to refold to give the biologically active neurotrophic factor; and

f) purifying the biologically active neurotrophic factor by cation exchange chromatography.

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5,606,032

PROCESS FOR PREPARING GLIAL MITOGENIC FACTORS

Andrew Goodearl, Hertfordshire; Paul Stroobant, London, both of United Kingdom; Luisa Minghetti, Bagnacavallo, Italy; Michael Waterfield, Berkshire, United Kingdom; Mark Marchional; Mario S. Chen, both of Arlington, Mass., and Ian Hiles, London, England, assignors to Ludwig Institute for Cancer Research, New York, N.Y., and Cambridge Neuroscience, Cambridge, Mass.

Division of Ser. No. 36,555, Mar. 24, 1993, which is a continuation-in-part of Ser. No. 863,703, Apr. 3, 1992, abandoned, which is a continuation-in-part of Ser. No. 907,138, Jun. 30, 1992, abandoned, which is a continuation-in-part of Ser. No. 940,389, Sep. 3, 1992, abandoned, which is a continuation-in-part of Ser. No. 965,173, Oct. 23, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 469,569

Claims priority, application United Kingdom, Apr. 10, 1991, 9107566

Int. Cl.[6] C07K *1/16;1/18;1/22;1/36*

U.S. Cl. 530—416 **12 Claims**

1. A method for obtaining a basic polypeptide factor having a molecular weight of from about 30 kD to about 36 kD on SDS-polyacrylamide gel electrophoresis which has mitogenic activity on rat Schwann cells in the presence of fetal calf plasma and, when isolated using reversed-phase HPLC retains at least 50% of its activity after 10 weeks incubation in 0.1% trifluoroacetic acid at 4° C., comprising extracting vertebrate brain material to obtain protein, subjecting said protein to chromatographic purification comprising hydroxylapatite HPLC and thereafter to SDS-polyacrylamide gel electrophoresis, and collecting a fraction therefrom which has an observed molecular weight of about 30 kD to 36 kD which stimulates division of rat Schwann cells against a background of fetal calf plasma.

5,606,033

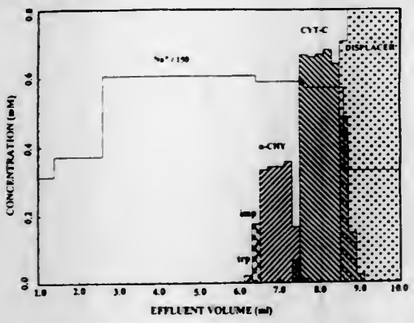
DISPLACEMENT CHROMATOGRAPHY OF PROTEINS USING LOW MOLECULAR WEIGHT ANIONIC DISPLACERS

Steven M. Cramer, 783 Trottingham Dr., Schenectady, N.Y. 12309; James A. Moore, 3 Audrey La., R.D. #4; Amitava Kundu, 77 Eagle St. (Apt. #2), both of Troy, N.Y. 12180; Yufei Li, Institute of Chemistry, Academia Sinica, Beijing, China, and Guhan Jayaraman, A-4 57 Burkitt Road, T. Nagar, Madras, Ind.

Continuation-in-part of Ser. No. 197,146, Feb. 16, 1994, Pat. No. 5,478,924. This application Oct. 19, 1995, Ser. No. 545,457

Int. Cl.[6] C07K *1/14;1/16;1/18*

U.S. Cl. 530—416 **17 Claims**



1. A method for purifying a protein comprising loading said protein in a loading solvent onto an ion exchange stationary phase and displacing said protein from said stationary phase by displacement chromatography using an anionic displacer of molecular weight less than 1620.

5,606,034

PROCESS FOR THE PREPARATION OF AZO DYES

Horst Langfeld, Grenzach-Wyhlen; Karl-Friedrich Haarburger, Lörrach, and Herbert Mauser, Grenzach-Wyhlen, all of Germany, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

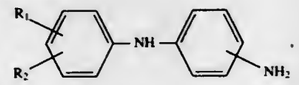
Filed Feb. 16, 1995, Ser. No. 389,371

Claims priority, application Germany, Feb. 21, 1994, 44 05 469.6

Int. Cl.[6] C07C *245/06;* **C09B** *29/08;29/095*

U.S. Cl. 534—573 **13 Claims**

1. A process for the preparation of an azo dye, starting from an amine of formula



(1)

wherein

R_1 is hydrogen or nitro, and

R_2 is hydrogen, sulfo, C_1–C_4alkyl or C_1–C_4alkoxy, which comprises reacting the mine, an alkali metal nitrite and a mineral acid continuously, in the temperature range from 35° to 65° C., to give the diazo compound, using a 3 to 15% excess of the alkali metal nitrite, and subsequently coupling the diazo compound to a coupling component.

5,606,035

SESAMINOL GLUCOSIDES

Shunrou Kawakishi, 70 Aza-Yawata, Oaza-Miyoshi, Miyoshi-cho, Nishikamo-gun, Aichi, Japan, and Toshihiko Osawa, 7-9-8 Osizawadai, Kasugai, Aichi, Japan

Filed Jul. 11, 1994, Ser. No. 273,252

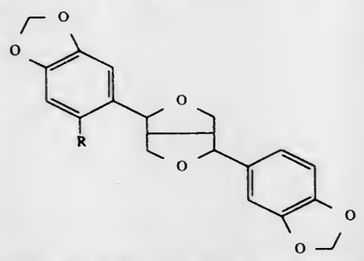
Claims priority, application Japan, Jan. 25, 1994, 6-023828

Int. Cl.[6] C07H *3/02;3/04*

U.S. Cl. 536—4.1 **1 Claim**

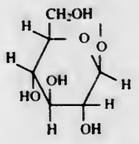
1. A sesaminol glucoside given by Formula (1) given below substantially in pure form:

Formula (1)



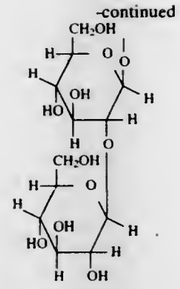
where -R is an organic group given by Formula (2) or (3) given below:

Formula (2)



-continued

Formula (3)



5,606,036

ANTIBIOTIC A 40926 ESTER DERIVATIVES

Rolf H. Hermann, Milan; Romeo Ciabatti, Novate Milanese; Enrico Selva, Gropello Cairoli, and Maurizio Denaro, Opera, all of Italy, assignors to Gruppo Lepetit SpA, Gerenzano, Italy

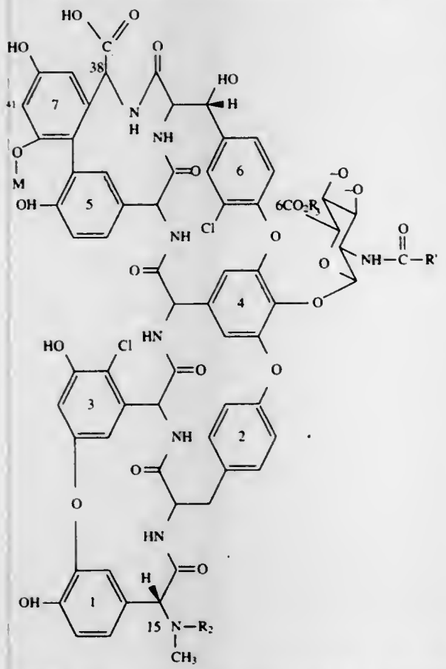
Continuation of Ser. No. 305,615, Sep. 14, 1994, abandoned, which is a continuation of Ser. No. 117,048, Sep. 9, 1993, abandoned. This application May 22, 1995, Ser. No. 447,152

Claims priority, application European Pat. Off., Mar. 27, 1991, 91104857

Int. Cl.[6] C07H *15/20;17/08*

U.S. Cl. 536—4.1 **8 Claims**

1. An antibiotic A 40926 ester derivative of formula 1



1

wherein

R_2 represents hydrogen or a protecting group of the amine function;

M represents hydrogen, α-D-mannopyranosyl or 6-O-acetyl-α-D-mannopyranosyl;

R' represents (C_{10}–C_{11}) alkyl;

R_3 is represented by (C_1–C_6) alkyl, hydroxy (C_1–C_6) alkyl, or halo (C_1–C_6) alkyl;

and the addition salts thereof.

5,606,037

PROCESSES ANTINEOPLASTIC HETERONAPHTHOQUINONES

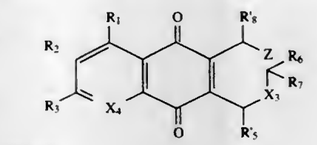
Giorgio Attardo, Laval; Tibor Breining, St. Laurent; Marc Courchesne, Laval-des-Rapides; Serge Lamothe, Boisbriand; Jean-François Lavallée, Laval; Dieu Nguyen, Chomedey; Rabindra Rej; Yves St-Denis, both of Montreal; Wuyi Wang, St- Laurent, all of Canada; Yao-Chang Xu, Indianapolis, Ind.; France Barbeau, St- Thérèse; Elaine Lebeau, Kamloops, both of Canada, and Jean L. Kraus, Marseille, France, assignors to BioChem Pharma Inc., Laval, Canada

Continuation-in-part of Ser. No. 148,251, Nov. 5, 1993, which is a continuation-in-part of Ser. No. 973,233, Nov. 9, 1992, abandoned. This application Mar. 10, 1995, Ser. No. 401,492

Int. Cl.[6] C07H *1/00;* **C07C** *50/22*

U.S. Cl. 536—6.4 **53 Claims**

1. A process for the preparation of a tricyclic compound of formula (1) and pharmaceutically acceptable acid addition salts thereof.



1

wherein;

X_3 is selected from the group consisting of O; S; and SO_2;

X_4 is selected from the group consisting of C—Q; nitrogen; and NO;

z is a single or a double bond with the proviso that if z is a double bond only one of R_6 or R_7 is present;

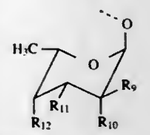
R_1, R_2, R_3 and Q are each independently selected from the group consisting of hydrogen; hydroxy; CN; NO_2; C_{1-16}alkyl; C_{1-16}alkenyl; C_{1-16}alkynyl; C_{1-16}alkoxy; C_{6-16}aryl; C_{7-16}aralkyl; C_{6-16}aryloxy; C_{1-16}alkoxyalkyl; C_{1-16}acyl; amine; amido; sulfono; C_{2-16}acyloxy; and halogen;

R_6 is selected from the group consisting of hydrogen; CN; NO_2; C_{1-16}alkyl; C_{1-16} alkenyl; C_{1-16}alkynyl; C_{1-16}alkoxy; C_{6-16}aryl; C_{7-16}aralkyl; C_{6-16}aryloxy; C_{1-16}acyl; amine; sulfono; C_{2-16}ester; phosphono; and halogen;

R_7 is selected from the group consisting of hydrogen; hydroxy; CN; NO_2; C_{1-16} alkyl; C_{1-16}alkoxy; C_{1-16}acyl; amine; sulfono; C_{2-16}ester; thiol; and halogen;

R_5[40] is selected from the group consisting of hydrogen; hydroxy; C_{1-16}alkyl; C_{1-16} alkoxy; C_{1-16}acyl; amino; amido; sulfono; C_{2-16}ester; azole; phosphono; halogen; morpholino; and a saccharide W of formula (30):

30



wherein:

R_9; R_{10} are independently selected from the group consisting of hydrogen; hydroxy; —NH_2; C_{1-16}alkyl; C_{1-16}alkoxy; amino; amido; C_{2-16}ester; and halogen;

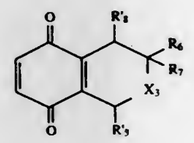
R_{11} is selected from the group consisting of hydrogen; hydroxy; —NH_2; C_{1-16} alkoxy; amino; amido; C_{2-16}ester sulfono;thiol; azido; and halogen; and

R_{12} selected from the group consisting of hydrogen; hydroxy; —NH_2; C_{1-16}alkoxy; amino; amido; C_{1-16}acyl;C_{6-16}aryl;C_{2-16}ester; sulfono; sahharide; and halogen;

R_8' is selected from the group consisting of hydrogen; hydroxy; C_{1-16}alkyl; C_{1-16} alkoxy; C_{1-16}acyl; amino; amido; sulfono; C_{2-16}ester; azole; phosphono; halogen; and morpholino.

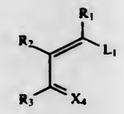
said process comprising the step cycloadding a quinone of formula (2)

2



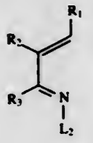
wherein X_3, R_5' R_6, R_7 and R_8' are as defined above; with a diene of formula (3a) or (3 b)

3a



or

3b



wherein R_1, R_2, R_3 and X_4 are as defined above:

each one of L_1; and L_2 are independently a leaving group: with the proviso that z is a single bond;

and, if z is a double bond, the compound obtained in step (1) is further air-oxidized with an organic or inorganic base or a fluoride salt (h) to yield to a tricyclic compound of formula (1).

5,606,038

AMPHIPHILIC POLYENE MACROLIDE ANTIBIOTIC COMPOUNDS

Steven L. Regen, Allentown, Pa., assignor to Competitive Technologies, Inc., Westport, Conn.

Filed Apr. 10, 1995, Ser. No. 419,263

Int. Cl.[6] A61K *31/70*; C07H *17/08*

U.S. Cl. 536—6.5 **14 Claims**

14. A method for improving the antibiotic property of an analogue of Amphotericin B having a —COOH moiety, said analogue having a first critical micelle concentration and that functions by disrupting the cellular membrane of the organism to which it is targeted, said improvement being achieved by altering the chemical structure of said analogue by the substitution of an oligo(ethylene glycol) conjugate in lieu of the OH portion of said —COOH moiety, thereby raising the critical micelle concentration from said first to a second critical micelle concentration.

5,606,039

ETOPOSIDE PHOSPHATE AND PREPARATIVE INTERMEDIATES

Yoshinobu Miyazawa; Hitoshi Sato, both of Saitama-ken; Hiroshi Yoshikawa, Fujioka; Kouichi Ohkawa, Chiba, and Noriko Tomiyoshi, Tokyo, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 43,993, Apr. 8, 1993, abandoned. This application Mar. 27, 1995, Ser. No. 410,811

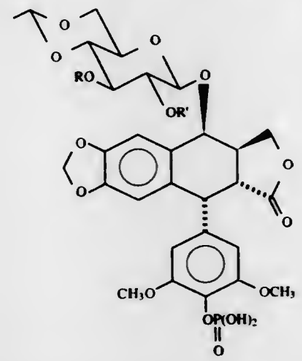
Claims priority, application Japan, Apr. 24, 1992, 4-129764

Int. Cl.[6] C07H *15/24*

U.S. Cl. 536—17.1 **10 Claims**

1. A compound represented by the general formula (2):

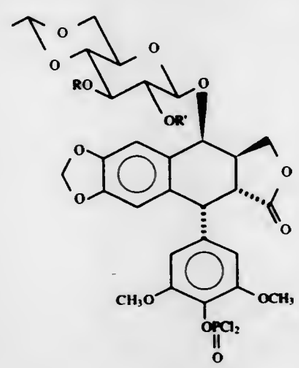
(2)



wherein R and R' may be the same or different from each other and each represents a group represented by the formula: —$COCH_mX_{(3-m)}$(wherein X represents a halogen atom and m is an integer of 0 to 2).

6. A compound represented by the general formula (3):

(3)



wherein R and R' may be the same or different from each other and each represents a group represented by the formula: —$COCH_mX_{(3-m)}$ (wherein X represents a halogen atom and m is an integer of 0 to 2).

5,606,040

ANTITUMOR AND ANTIBACTERIAL SUBSTITUTED DISULFIDE DERIVATIVES PREPARED FROM COMPOUNDS POSSESSING A METHYL-TRITHIO GROUP

William J. McGahren, Demarest, N.J.; Martin L. Sassiver, Spring Valley, and George A. Ellestad, Pearl River, both of N.Y., assignors to American Cyanamid Company, Wayne, N.J.

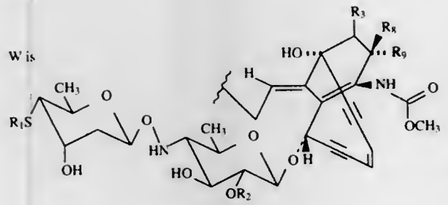
Continuation of Ser. No. 825,248, Jan. 24, 1992, abandoned, which is a continuation of Ser. No. 339,323, Apr. 14, 1989, abandoned, which is a continuation-in-part of Ser. No. 246,247, Sep. 21, 1988, abandoned, which is a continuation-in-part of Ser. No. 114,940, Oct. 30, 1987, abandoned. This application Nov. 15, 1993, Ser. No. 155,179

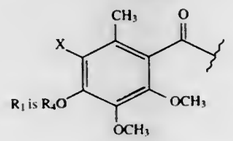
Int. Cl.[6] C07H *15/00*

U.S. Cl. 536—17.6 **33 Claims**

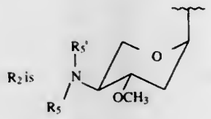
1. A substituted disulfide of formula Q—Sp—SS—W, prepared from a compound of formula CH_3SSS—W and designated as L-E33288α_1-Br, α_1-I, α_2-Br, α_2-I, α_3-Br, α_3-I, α_4-Br, β_1-Br, β_1-I, β_2-Br, β_2-I, γ_1-Br, γ_1-I, δ_1-I, the iodo or bromo pseudoaglycones, their dihydro or N-acyl counterparts, BBM-1675, FR-900405, FR-900406, PD114759, PD115028, CL-1577A, CL-1577B, CL-1577D, CL-1577E, CL-1724, or their N-acetyl counterparts, wherein

W is

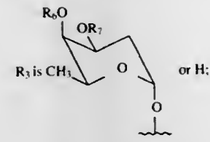




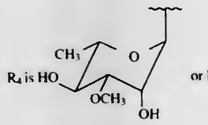
or CH_3;



or H;

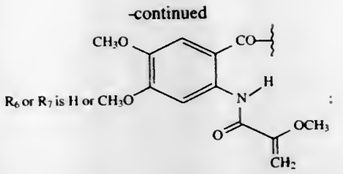


or H;



or H;

-continued



R_5 is CH_3, C_2H_5, or $(CH_3)_2CH$; R_8 is OH and R_9 is H, or R_8 and R_9 together is a carbonyl group; X is an iodine or bromine atom; R_5, is a hydrogen or the group RCO, wherein R is hydrogen, CH_3 or a mono-substituted C_6–C_{11} aryl group; Sp is a straight or branched-chain divalent or trivalent (C_1–C_{18}) radical, divalent or trivalent (C_6–C_{11}) aryl or heteroaryl radical, divalent or trivalent cyclo-alkyl (C_3–C_{18}) radical, divalent or trivalent (C_6–C_{11})aryl- or heteroaryl-alkyl (C_4–C_{18}) radical, divalent or trivalent (C_3–C_{18}) cycloalkyl-alkyl (C_4–C_{18}) radical, or divalent or trivalent (C_2–C_{18}) unsaturated alkyl radical, wherein heteroaryl is (4-methyl-coumarinyl-7-yl)amino; and wherein if Sp is a trivalent radical, it can be additionally substituted by amino, C_1–C_{10} alkylamino, C_6–C_{11} arylamino, heteroarylamino, carboxyl, lower alkoxy, hydroxy, thiol, or lower alkylthio groups; Q is hydrogen, halogen, amino, C_1–C_{10} alkylamino, C_1–C_{10} dialkylamino, piperidino, pyrrolidino, piperazino, carboxyl, carboxaldehyde, lower alkoxy, hydroxy, thiol, lower alkyldicarboxyl, —$CONHNH_2$, —$NHCONHNH_2$, —$CSNHNH_2$, —$NHCSNHNH_2$, or —ONH_2; with the proviso that when Sp is ethylidine, Q cannot be hydrogen.

5,606,041

PROCESS FOR STEROIDAL PERACYL GLYCOSIDES

Frank R. Busch, Gales Ferry; Kathleen D. Goggin, Colchester; John F. Lambert, North Stonington; Russell J. Shine, Waterford, and Stanley W. Walinsky, Mystic, all of Conn., assignors to Pfizer Inc., New York, N.Y.

PCT No. PCT/US93/02812, § 371 Date Dec. 20, 1994, § 102(e) Date Dec. 20, 1994, PCT Pub. No. WO94/00479, PCT Pub. Date Jan. 6, 1994

Continuation of Ser. No. 905,599, Jun. 26, 1992, abandoned. This PCT application Apr. 2, 1993, Ser. No. 351,472

Int. Cl.[6] C07G *3/00*; C07H *15/00*; C07J *9/00*

U.S. Cl. 536—18.5 **10 Claims**

1. A process for the preparation of 1-O-steroidal peracyl-β-glycosides comprising:

reacting heptaacyl-D-cellobiosyl-1-halide, tetraacyl-D-glucosyl-1-halide or tetraacyl-D-galactosyl-1-halide wherein the halide is bromide, fluoride or chloride and the acyl is alkanoyl (C_1-C_6), benzoyl or toluoyl and a compound of the formula



wherein R_1, R_2 and R_3 are each independently alkyl(C_1-C_6), phenyl or phenyl alkyl(C_1-C_6) and X is tigogen-3-O-yl, hecogen-3-O-yl, tigogen-11-keto-3-O-yl, diosgen-3-O-yl or cholester-3-O-yl in the presence of zinc fluoride under conditions capable of forming said 1-O-steroidal peracyl-β-glycosides.

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5,606,042

GLYCINE α-D-GALACTOSIDASES

Daniel S. Smith, and John C. Walker, both of Columbia, Mo., assignors to The Curators of the University of Missouri, Columbia, Mo.

Continuation-in-part of Ser. No. 303,156, Sep. 8, 1994,. This application Jun. 7, 1995, Ser. No. 488,961

Int. Cl.[6] C07H *21/02;* C12Q *1/00;* C12P *21/06;* C12N *9/40*

U.S. Cl. 536—23.1 6 Claims

1. An isolated and purified DNA sequence for Glycine α-D-galactosidase as set forth in SEQ ID No.:2.

5,606,043

METHODS FOR THE DIAGNOSIS OF GLAUCOMA

Thai D. Nguyen; Jon R. Polansky, both of Mill Valley, and Weidong Huang, San Francisco, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Nov. 3, 1994, Ser. No. 336,235

Int. Cl.[6] C07H *21/04;* C12N *15/00*

U.S. Cl. 536—23.5 16 Claims

1. A substantially purified nucleic acid molecule that encodes a mammalian Trabecular Meshwork Induced Glucocorticoid Response (TIGR) protein.

5,606,044

KITS FOR DETECTING AMPLIFICATION OF HUMAN MDM2

Marilee Burrell, Cambridge; David E. Hill, Arlington, both of Mass.; Kenneth W. Kinzler, and Bert Vogelstein, both of Baltimore, Md., assignors to The Johns Hopkins University, Baltimore, Md.

Continuation of Ser. No. 44,619, Apr. 7, 1993, Pat. No. 5,420,263, which is a continuation-in-part of Ser. No. 903,103, Jun. 23, 1992, Pat. No. 5,411,860, which is a continuation-in-part of Ser. No. 867,840, Apr. 7, 1992, abandoned. This application Feb. 17, 1995, Ser. No. 390,546

Int. Cl.[6] C07H *21/02;21/04;* B65D *69/00*

U.S. Cl. 536—24.31 2 Claims

1. A kit for detecting amplification of a human MDM2 gene in a human tissue or body fluid sample comprising:

(a) a nucleic acid probe consisting of nucleotides 1–2372 of human MDM2 gene, as shown in SEQ ID NO:2, or fragments thereof consisting of at least 14 contiguous nucleotides, and

(b) instructions for determining amplification of human MDM2 gene in said sample.

5,606,045

NUCLEIC ACID PROBES AND METHODS

Walter B. Dandliker, La Jolla, and Robert F. Devlin, San Diego, both of Calif., assignors to Diatron Corporation, San Diego, Calif.

Continuation-in-part of Ser. No. 701,449, May 15, 1991, Pat. No. 5,403,928, and Ser. No. 701,465, May 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 524,212, May 15, 1990, abandoned, said Ser. No. 701,449is a continuation-in-part of Ser. No. 523,601, May 15, 1990, abandoned. This application Apr. 21, 1993, Ser. No. 51,446

Int. Cl.[6] C07H *21/02;21/04*

U.S. Cl. 536—25.32 34 Claims

1. A composition-comprising an oligonucleotide linked to a detectably labeled marker component which comprises a fluorophore moiety which is linked to two solubilizing polyoxyhydrocarbyl moieties, one located on either side of the fluorophore moiety, wherein said solubilizing polyoxyhydrocarbyl moieties are selected from a polyether, a polyol, or a water soluble polymer, and wherein said fluorophore moiety is a porphyrin derivative or an azaporphyrin derivative wherein one or more bridging carbon atoms has been replaced by nitrogen.

5,606,046

DNA PURIFICATION BY SOLID PHASE EXTRACTION USING TRIFLUOROMETRIC ACID WASHED GLASS FIBER MEMBRANES

Daniel L. Woodard; Adriann J. Howard, both of Raleigh, and James A. Down, Cary, all of N.C., assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Division of Ser. No. 127,404, Sep. 27, 1993, Pat. No. 5,438,127. This application May 24, 1995, Ser. No. 449,585

Int. Cl.[6] C07H *21/04*

U.S. Cl. 536—25.4 1 Claim

1. A method for purifying DNA comprising the steps of:

(a) contacting a suspension containing DNA with a glass fiber membrane which has been modified by treatment with trifluoroacetic acid, under conditions suitable to bind DNA to said membrane;

(b) washing said membrane having bound DNA; and

(c) eluting the DNA from said membrane.

5,606,047

CHEMICALLY-DEFINED NON-POLYMERIC VALENCY PLATFORM MOLECULES AND CONJUGATES THEREOF

Stephen M. Coutts, Rancho Santa Fe; David S. Jones, San Diego; Douglas A. Livingston, San Diego, and Lin Yu, San Diego, all of Calif., assignors to La Jolla Pharmaceutical Company, San Diego, Calif.

Continuation of Ser. No. 152,506, Nov. 15, 1993, Pat. No. 5,552,391, which is a continuation-in-part of Ser. No. 914,869, Jul. 15, 1992, Pat. No. 5,276,013, which is a continuation-in-part of Ser. No. 494,118, Mar. 13, 1990, Pat. No. 5,162,515, which is a continuation-in-part of Ser. No. 466,138, Jan. 16, 1990, abandoned, and a continuation-in-part of Ser. No. 118,055, Sep. 8, 1993, abandoned, which is a continuation-in-part of Ser. No. 652,648, Feb. 8, 1991, Pat. No. 5,268,454. This application May 30, 1995, Ser. No. 453,254

Int. Cl.[6] C07H *19/04;* A61K *31/70*

U.S. Cl. 536—26.1 1 Claim

1. A method for making a conjugate comprising (a) biological or synthetic molecules reacted with (b) a chemicallly-defined, non-polymeric valency platform molecule of formula:

$$G^{[1]}\{T^{[1]}\}_{n[1]} \qquad \text{Formula 1}$$

$$G^{[2]}\{L^{[2]}\text{—}J^{[2]}\text{—}Z^{[2]}\,(T^{[2]})_{p[2]}\}_{n[2]} \qquad \text{Formula 2}$$

wherein

$G^{[1]}$ is $\{\text{—}C(=O)NH\text{—}(CH_2)_5\text{—}C(=O)NH\text{—}\ CH_2\}_2N\text{—}C(=O)\text{—}O\text{—}CH_2CH_2\text{—}O\text{—}CH_2CH_2\ \text{—}O\text{—}CH_2CH_2\text{—}O\text{—}C(=O)\text{—}N\{CH_2CH_2\text{—}\ NHC(=O)\text{—}(CH_2)_5\text{—}NHC(=O)\text{—}\}_2$;

$G^{[2]}$ is $\text{—}CH_2CH_2\text{—}O\text{—}CH_2CH_2\text{—}O\text{—}CH_2CH_2\text{—}$;

each of the $n^{[1]}$ moieties shown as $T^{[1]}$ and each of the $p^{[2]}$ X $n^{[2]}$ moieties shown as $T^{[2]}$ is $R^{ALK}X$;

each X is independently a halogen of atomic number greater than 16 and less than 54 or other good leaving group;

each R^{ALK} is independently a linear, branched, or cyclic alkyl (1–20C) group;

each of the $n^{[2]}$ moieties shown as $L^{[2]}$ is O;

each of the $n^{[2]}$ moieties shown as $J^{[2]}$ is C(=O);

each of the $n^{[2]}$ moieties shown as $Z^{[2]}$ is $\text{—}N\{CH_2CH_2\text{—}NHC(=O)\text{—}(CH_2)_5\text{—}\ NHC(=O)\text{—}\}_2$;

$n^{[1]}$=4;

$n^{[2]}$=2;

$p^{[2]}$=2; and

and wherein said biological or chemical molecules comprise a polynucleotide duplex, comprising

(1) covalently bonding the analog of the immunogen lacking T cell epitopes to the chemically-defined valency platform molecule to form a conjugate; and

(2) recovering the conjugate from the reaction mixture.

5,606,048

STEREOSELECTIVE GLYCOSYLATION PROCESS FOR PREPARING 2'-DEOXY-2', 2'-DIFLUORONUCLEOSIDES AND 2'-DEOXY-2'-FLUORONUCLEOSIDES

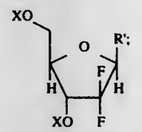
Ta-Sen Chou, Indianapolis; Laurie M. Poteet, Zionsville, and Douglas P. Kjell, West Lafayette, all of Ind., assignors to Eli Lilly and Company, Lilly Corporate Center, Ind.

Continuation-in-part of Ser. No. 44,309, Apr. 7, 1993, abandoned, which is a continuation-in-part of Ser. No. 902,302, Jun. 22, 1992, abandoned. This application Nov. 17, 1994, Ser. No. 340,972

Int. Cl.[6] C07H *1/00;19/00*

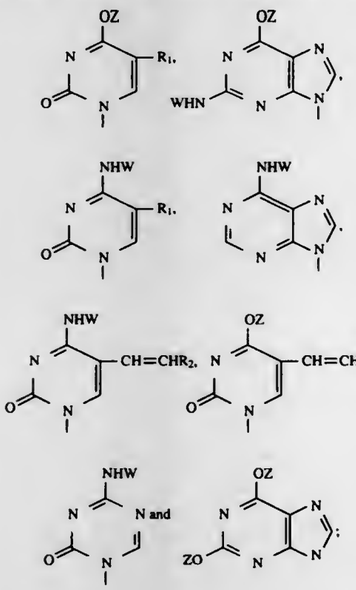
U.S. Cl. 536—27.11 38 Claims

1. A stereoselective glycosylation process for preparing a beta-anomer enriched nucleoside of the formula

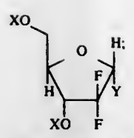


(IB)

wherein each X is independently selected from hydroxy protecting groups and R' is a nucleobase selected from the group consisting of

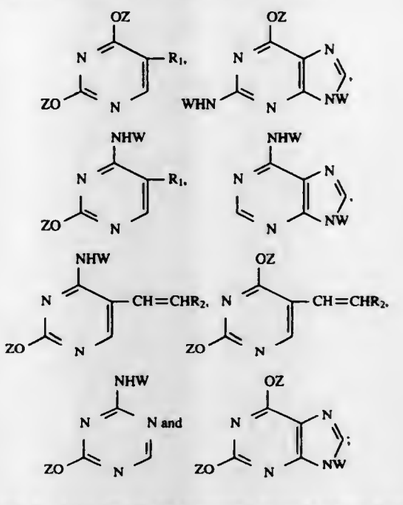


wherein R_1 is selected from the group consisting of hydrogen, alkyl and halo; R_2 is selected from the group consisting of hydrogen, alkyl and halo; Z is a hydroxy protecting group; and W is an amino protecting group; comprising reacting a concentrated alpha-anomer enriched 2,2-difluorocarbohydrate of the formula



(IIA)

wherein Y is selected from the group consisting of alkylsulfonyloxy, arylsulfonyloxy, substituted alkylsulfonyloxy and substituted arylsulfonyloxy, wherein substituted refers to a substitution by one or more of the groups selected from cyano, halo, carboalkoxy, toluoyl, nitro, alkoxy, alkyl and dialkylamino and each X is as defined above; with at least a molar equivalent of a nucleobase derivative, R", selected from the group consisting of



wherein R_1, R_2, Z and W are as defined above; in a high boiling inert solvent.

5,606,049

METHOD OF PREPARING 2'-O-METHYL CYTIDINE MONOMERS USEFUL IN OLIGOMER SYNTHESIS

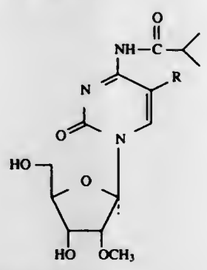
Morteza M. Vaghefi, San Diego, Calif., assignor to Genta Incorporated, San Diego, Calif.

Filed Jun. 3, 1992, Ser. No. 893,374

Int. Cl.[6] C07H *19/06;19/067;19/073*

U.S. Cl. 536—28.5 2 Claims

1. A compound of the formula



wherein R is hydrogen, fluorine or alkyl.

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5,606,050

METHOD FOR SOLUBILIZING POLY(1-3)GLUCOPYRANOSE

Marie C. Fritsch, Paris, and Pierre Peyramaure, Suresnes, both of France, assignors to Institut de Recherches et D'Innovations Scientifiques (I.R.I.S.), Paris, France

PCT No. PCT/FR94/00940, § 371 Date May 9, 1995, § 102(e) Date May 9, 1995, PCT Pub. No. WO95/04107, PCT Pub. Date Feb. 9, 1995

PCT Filed Jul. 27, 1994, Ser. No. 407,022

Claims priority, application France, Jul. 28, 1993, 93 09389

Int. Cl.[6] C08L *5/00;* C08B *37/00;* C08J *3/09*

U.S. Cl. 536—123.1 **9 Claims**

1. A method for solubilizing a non-water soluble powder of poly-(1–3)glucopyranose, comprising mixing said poly-(1–3)glucopyranose with a solvent mixture comprising (1) more than 80% sorbitol, and (2) an additive comprising two compounds selected from among the following three compounds: water, glycerin and propylene glycol.

5,606,051

2-(PYRAZOL-3-YL)CARBAPENEM DERIVATIVES

Steven Coulton; Jeremy D. Hinks, both of Horsham, and Eric Hunt, Betchworth, all of England, assignors to SmithKline Beecham p.l.c., England

Filed Jun. 1, 1995, Ser. No. 457,076

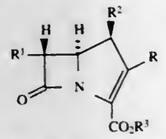
Claims priority, application United Kingdom, Oct. 29, 1993, 9322284; Jun. 1, 1994, 9410929; WIPO, Oct. 25, 1995, PCT/GB94/02347

Int. Cl.[6] C07D *487/00*

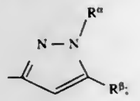
U.S. Cl. 540—302 **3 Claims**

1. A process for the preparation of a compound of formula (I):

(I)



in which R is:



wherein

R^{α} is optionally substituted (C_{1-6})alkyl or optionally substituted aryl;

R^{β} is optionally substituted (C_{1-6})alkyl or optionally substituted aryl; or R^{α} and R^{β} together form an optionally substituted 5 or 6 membered heterocyclic ring with or without additional heteroatoms;

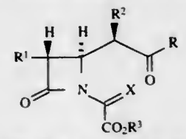
R^1 is (C_{1-6})alkyl which is unsubstituted or substituted by fluoro, a hydroxy group which is optionally protected by a readily removable hydroxy protecting group, or by an amino group which is optionally protected by a readily removable amino protecting group;

R^2 is hydrogen or methyl, and

$—CO_2R^3$ is carboxy or a carboxylate or the group R^3 is a readily removable carboxy protecting group.

which process comprises treating a compound of formula (II):

(II)



in which R, R^1 and R^2 are as hereinbefore defined,

R^3 is a readily removable carboxy protecting group, and

X is oxygen or a group $PR^4R^5R^6$,

wherein R^4, R^5 and R^6 are the same or different and is each an optionally substituted (C_{1-6})alkyl or an optionally substituted aryl group;

under carbapenem ring forming conditions; and thereafter optionally removing any protecting group(s);

and thereafter optionally converting a first group R^1 comprising a hydroxyl substituent into a further group R^1 comprising an amino or fluoro group;

and thereafter optionally forming a pharmaceutically acceptable salt thereof.

5,606,052

SUBSTITUTED ACETOXYAZETIDINONE DERIVATIVES AND PROCESS FOR PREPARING 4-ACYLOXYAZETIDINONE DERIVATIVES

Takao Saito; Hidenori Kumobayashi, both of Tokyo, and Shunichi Murahashi, Osaka, all of Japan, assignors to Takasago International Corporation, Tokyo, Japan

Division of Ser. No. 167,201, Dec. 16, 1993, Pat. No. 5,440,030, which is a division of Ser. No. 869,171, Apr. 16, 1992, Pat. No. 5,288,862. This application May 8, 1995, Ser. No. 436,812

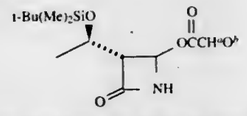
Claims priority, application Japan, Apr. 18, 1991, 3-86588

Int. Cl.[6] C07D *205/08*

U.S. Cl. 540—357 **1 Claim**

1. A substituted acetoxyazetidinone derivative represented by formula (I):

(I)



wherein t-Bu represents a t-butyl group; Me represents a methyl group; D represents a chlorine atom, a bromine atom, or a cyano group; a represents 1 or 2; and b represents 2 when a is 1, or b represents 1 when a is 2.

5,606,053

PROCESS FOR PREPARING 1,1'-[1,4-PHENYLENEBIS-(METHYLENE)]-BIS-1,4,8,11-TETRAAZACYCLOTETRADECANE

Mahavir Prashad, Hopatcong, and Prasad Kapa, Parsippany, both of N.J., assignors to Johnson Matthey PLC, London, England

Filed May 2, 1995, Ser. No. 434,142

Int. Cl.[6] C07D *255/00;255/02*

U.S. Cl. 540—474 **19 Claims**

1. A process for preparing 1,1'-[1,4-phenylenebis-(methylene)]-bis- 1,4,8,11-tetraazacyclotetradecane comprising the steps of:

1) selectively functionalizing an acyclic tetramine in a first step;

2) independently dimerizing/tosylating the ditosyl intermediate prepared in the first step and dimerizing the tritosyl intermediate prepared in the first step;

3) cyclizing the bridged hexatosyl acyclic precursor prepared in the second step; and

4) detosylating the hexatosyl cyclam dimer prepared in the third step and basifying to obtain the 1,1'-[1,4-phenylenebis-(methylene)]-bis-1,4,8,11-tetraazacyclotetradecane.

5,606,054

HETEROCYCLIC-FUSED LACTAMS PROMOTE RELEASE OF GROWTH HORMONE

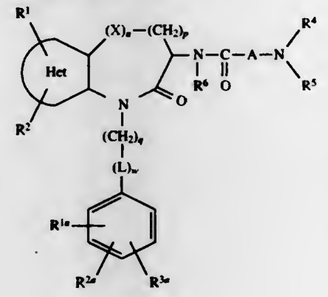
Michael H. Fisher, Ringoes; Helmut Mrozik, Matawan; William R. Schoen; Thomas L. Shih, both of Edison, and Matthew J. Wyvratt, Mountainside, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Dec. 14, 1993, Ser. No. 166,440

Int. Cl.[6] A61K *31/55;* C07D *487/04*

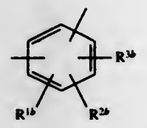
U.S. Cl. 540—521 **6 Claims**

1. A compound of the formula:



wherein:

L is



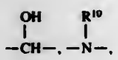
n is 0 or 1;

p is 0 to 3;

q is 0 to 4;

w is 0 or 1;

X is C═O, O, $S(O)_m$,



—CH═CH—;

m is 0 to 2;



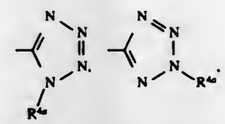
is an R^1, R^2 independently disubstituted five- or six-membered heterocycle containing from one to three heteroatoms selected from nitrogen, oxygen or sulfur, wherein the heterocycle is pyridine;

R^1, R^2, R^{1a}, R^{2a}, R^{1b} and R^{2b} are independently hydrogen, halogen, C_1-C_7 alkyl, C_1-C_3 perfluoroalkyl, C_1-C_3 perfluoroalkoxy, $—S(O)_mR^{7a}$, cyano, nitro, $R^{7b}O(CH_2)_v—$, $R^{7b}COO(CH_2)_v—$, $R^{7b}OCO(CH_2)_v—$, $R^{5b}R^{12b}N(CH_2)_v—$, $R^{5b}R^{12b}NCO(CH_2)_v—$, phenyl or substituted phenyl where the substituents are from 1 to 3 of halogen, C_1-C_6 alkyl, C_1-C_6 alkoxy, or hydroxy; v is 0 to 3 and m is 0 to 2;

R^{7a} and R^{7b} are independently hydrogen, C_1-C_3 perfluoroalkyl, C_1-C_6 alkyl, substituted C_1-C_6 alkyl where the substitutents are phenyl or substituted phenyl; phenyl or substituted phenyl where the phenyl substitutents are from 1 to 3 of halogen, C_1-C_6 alkyl, C_1-C_6 alkoxy or hydroxy;

R^{3a} and R^{3b} are independently hydrogen, R^9, C_1-C_6 alkyl substituted with R^9, phenyl substituted with R^9 or phenoxy substituted with R^9;

R^9 is



$R^{7b}O(CH_2)_v—$, $R^{7b}COO(CH_2)_v—$, $R^{7b}OCO(CH_2)_v—$, $R^{7b}CO(CH_2)_v—$, $R^{7b}O(CH_2)_vCO—$, $R^{5b}R^{12b}N(CH_2)_v—$, $R^{5b}R^{12b}NCO(CH_2)_v—$, $R^{5b}R^{12b}NCS(CH_2)_v—$, $R^{5b}R^{12c}NN(R^{12b})CO(CH_2)_v—$, $R^{5b}R^{12c}NN(R^{12b})CS(CH_2)_v—$, $R^{5b}R^{12b}NCON(R^{12a})(CH_2)_v—$, $R^{5b}R^{12b}NCSN(R^{12a})(CH_2)_v—$, $R^{5b}R^{12c}NN(R^{12b})CSN(R^{12a})(CH_2)_v—$, $R^{5b}R^{12c}NN(R^{12b})CON(R^{12a})(CH_2)_v—$, $R^{5b}R^{12c}NN(R^{12b})COO(CH_2)_v—$, $R^{5b}R^{12b}NCOO(CH_2)_v—$ or $R^{13}OCON(R^{12a})(CH_2)_v—$, where v is 0 to 3;

R^{12a}, R^{12b} and R^{12c} are independently R^{5a}, OR^{5a} or COR^{5a}, R^{12a} and R^{12b}, or R^{12b} and R^{12c}, or R^{12a} and R^{12c}, or R^{12b} and R^{5b}, or R^{12c} and R^{5b}, or R^{13} and R^{12a} can be taken together to form $—(CH_2)_r—B—(CH_2)_s—$ where B is CHR^1, O, $S(O)_m$ or NR^{10}, m is 0, 1 or 2, r and s are independently 0 to 3 and R^1 and R^{10} are as defined;

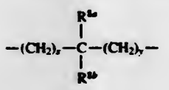
R^{13} is C_1-C_3 perfluoroalkyl, C_1-C_6 alkyl, substituted C_1-C_6 alkyl, where the substitutents are hydroxy, $—NR^{10}R^{11}$, carboxy, phenyl or substituted phenyl; phenyl or substituted phenyl where the substituents on the phenyl are from 1 to 3 of halogen, C_1-C_6 alkyl, C_1-C_6 alkoxy or hydroxy;

R^{10} and R^{11} are independently hydrogen, C_1-C_6 alkyl, phenyl, phenyl C_1-C_6 alkyl, C_1-C_5 alkoxycarbonyl or C_1-C_5 alkanoyl-C_1-C_6 alkyl;

R^4, R^{4a}, R^5, R^{5a} and R^{5b} are independently hydrogen, phenyl, substituted phenyl, C_1-C_{10} alkyl, substituted C_1-C_{10} alkyl, C_3-C_{10} alkenyl, substituted C_3-C_{10} alkenyl, C_3-C_{10} alkynyl or substituted C_3-C_{10} alkynyl where the substituents on the phenyl, alkyl, alkenyl or alkynyl are from 1 to 5 of hydroxy, C_1-C_6 alkoxy, C_3-C_7 cycloalkyl, fluoro, R^1, R^2 independently disubstituted phenyl, R^1, R^2 independently disubstituted phenyl C_1-C_3 alkoxy, C_1-C_{20}-alkanoyloxy, C_1-C_5 alkoxycarbonyl, carboxy, formyl or $—NR^{10}R^{11}$ where R^1, R^2, R^{10} and R^{11} are as defined above; or R^4 and R^5 can be taken together to form $—(CH_2)_r—B—(CH_2)_s—$ where B is CHR^1, O, $S(O)_m$ or $N—R^{10}$, r and s are independently 1 to 3, m is 0, 1 or 2 and R^1 and R^{10} are as defined above;

R^6 is hydrogen, C_1-C_{10} alkyl, phenyl or phenyl C_1-C_{10} alkyl;

A is



where x and y are independently 0–3;

R^{4a} and R^{4b} are independently hydrogen, C_1-C_{10} alkyl, trifluoromethyl, R^1, R^2 independently disubstituted phenyl, substituted C_1-C_{10} alkyl where the substituents are from 1 to 3 of imidazolyl, indolyl, hydroxy, fluoro, $—S(O)_mR^{7a}$, C_1-C_6 alkoxy, C_3-C_7 cycloalkyl, R^1, R^2 independently disubstituted phenyl, R^1, R^2 independently disubstituted phenyl C_1-C_3 alkoxy, C_1-C_5 alkanoyloxy, C_1-C_5 alkoxycarbonyl, carboxy,

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formyl or —$NR^{10}R^{11}$ where R^1, R^2, R^{7a}, R^{10}, R^{11} and m are as defined above; or R^{8a} and R^{8b} can be taken together to form —$(CH_2)_t$— where t is 2 to 6; and R^{8a} and R^{8b} can independently be joined to one or both of R^4 and R5 to form alkylene bridges between the terminal nitrogen and the alkyl portion of the A group wherein the bridge contains from one to five carbon atoms;

and pharmaceutically acceptable salts thereof.

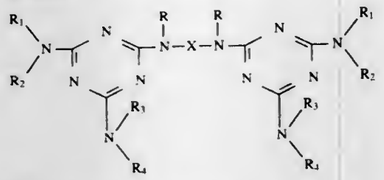
5,606,055

ORGANIC WHITE PIGMENT

Shigekazu Matsumoto, and Takao Yanagisawa, both of Osaka, Japan, assignors to Hakkol Chemical Co., Ltd., Osaka, Japan

Filed Oct. 13, 1993, Ser. No. 135,416
Claims priority, application Japan, Oct. 13, 1992, 4-274370
Int. Cl.[6] C07D *403/12*
U.S. Cl. 544—83 **4 Claims**

1. An alkylenebismelamine derivative represented by the following formula (I):



(I)

wherein

X is an alkylene group containing 2 to 3 carbon atoms;

R is cyclohexyl;

R_1 and R_2 are each lower alkyl containing 1 to 4 carbon atoms, or R_1 and R_2 combine with an adjacent N atom to form a piperidino or morpholino group; and

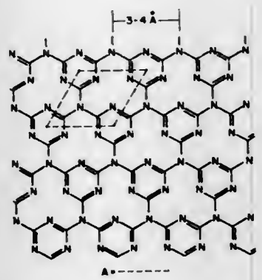
R_3 and R_4 are each lower alkyl containing 1 to 4 carbon atoms, or R_3 and R_4 combine with an adjacent N atom to form a piperidino or morpholino group.

5,606,056

CARBON NITRIDE AND ITS SYNTHESIS

John Kouvetakis, and Michael Todd, both of Tempe, Ariz., assignors to Arizona Board of Regents, Tempe, Ariz.

Filed May 24, 1994, Ser. No. 248,407
Int. Cl.[6] C07D *251/72;* **B32B** *9/00*
U.S. Cl. 544—181 **4 Claims**



1. A compound consisting of carbon nitride having an atomic ratio of carbon to nitrogen in the range of 3:4 to 3.2:4 as a bulk solid.

5,606,057

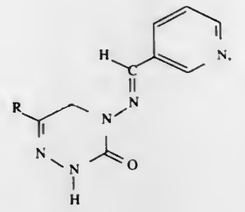
PROCESS FOR THE PREPARATION OF 6-ALKYL-4-(PYRIDIN-3-YL-METHYLENEAMINO)-4,5-DIHYDRO-1,2,4-TRIAZIN-3(2H)-ONE

Thomas Pitterna, Basel; Urs Siegrist, Eiken, and Henry Szczepanski, Wallbach, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 9, 1994, Ser. No. 194,183
Claims priority, application United Kingdom, Mar. 2, 1993, 9304178
Int. Cl.[6] C07D *253/06*
U.S. Cl. 544—182 **12 Claims**

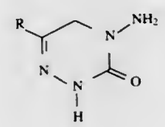
1. A process for the preparation of 6-alkyl-4-(pyridin-3-yl-methyleneamino)-4,5-dihydro- 1,2,4-triazin-3(2H)-one of the formula I

I



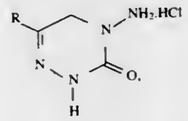
where R is methyl, ethyl, propyl, cyclopropyl, or n- or t-butyl, by the reaction of an aminotriazinone, 4-amino-6-alkyl-3-oxo-2,3,4,5-tetrahydro- 1,2,4-triazine, of the formula II

II



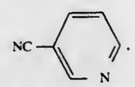
or of the corresponding hydrogen chloride of formula IIa

IIa



in which R is as defined in formula I, with 3-cyanopyridine of the formula III

III



wherein the reaction is carried out under catalytic hydrogenation conditions in the presence of a Raney-nickel catalyst in an aqueous or aqueous alcoholic medium, at a temperature between 0° and 70° C., at a pH of between 2 and 7, and in the presence of a C_1–C_6-carboxylic acid or C_1–C_6-carboxylic acid alkali metal salt or both, whereby the hydrogen pressure is between 0.1 and 10 bar.

5,606,058

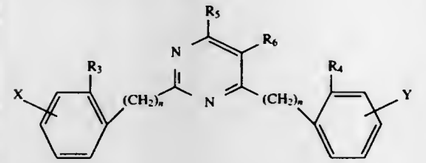
COMPOUNDS FOR THE TREATMENT OF PNEUMOCYSTIS CARINII PNEUMONIA, GIARDIA LAMBLIA, AND CRYPTOSPORDIUM PARNUM

David W. Boykin, Atlanta, Ga.; Christine C. Dykstra, Chapel Hill, N.C.; Richard R. Tidwell, Pittsboro, N.C.; James E. Hall, Chapel Hill, N.C.; W. David Wilson, and Arvind Kumar, both of Atlanta, Ga., assignors to The University of North Carolina at Chapel Hill, Chapel Hill, N.C.

Division of Ser. No. 305,823, Sep. 13, 1994, Pat. No. 5,521,189, which is a continuation-in-part of Ser. No. 238,766, May 6, 1994. This application May 31, 1995, Ser. No. 455,047
Int. Cl.[6] C07D *239/26*
U.S. Cl. 544—242 **1 Claim**

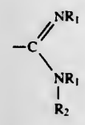
1. A compound according to Formula I:

(I)



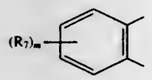
wherein:

X and Y are located in the para or meta positions and are



wherein:

each R_1 is independently selected from the group consisting of loweralkyl, alkoxyalkyl, hydroxyalkyl, aminoalkyl, alkylaminoalkyl, cycloalkyl, aryl, or alkylaryl or two R_1 groups together represent C_2–C_{10} alkyl, hydroxyalkyl, or alkylene, or two R_1 groups together represent



wherein

m is from 1–3 and R_7 is H or —$CONHR_8NR_9R_{10}$, wherein R_8 is loweralkyl, and R_9 and R_{10} are each independently selected from the group consisting of H and lower alkyl;

R_2 is H, hydroxy, loweralkyl, alkoxyalkyl, hydroxyalkyl, aminoalkyl, alkylaminoalkyl, cycloalkyl, aryl, or alkylaryl; n is a number from 0 to 2;

R_3 and R_4 are each independently selected from the group consisting of H, loweralkyl, loweralkoxy, alkylaryl, aryl, oxyaryl, aminoalkyl, aminoaryl, or halogen; and

R_5 and R_6 are each independently selected from the group consisting of H, loweralkyl, aryl, alkylaryl, aminoalkyl, aminoaryl, halogen, oxyalkyl, oxyaryl, or oxyarylalkyl; and pharmaceutically acceptable salts thereof.

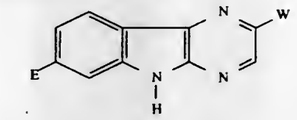
5,606,059

CERTAIN ARYL SUBSTITUTED PYRROLOPYRAZINES; A NEW CLASS OF GABA BRAIN RECEPTOR LIGANDS

Charles Blum, Guilford, and Alan Hutchison, Madison, both of Conn., assignors to Neurogen Corporation, Branford, Conn.

Continuation-in-part of Ser. No. 975,409, Nov. 12, 1992, Pat. No. 5,286,860. This application May 12, 1995, Ser. No. 436,252
Int. Cl.[6] C07D *487/04;487/10;487/14;487/20*
U.S. Cl. 544—345 **11 Claims**

1. A compound of the formula:



W is phenyl, 2- or 3-thienyl, or 2-, 3-, or 4-pyridyl; or phenyl, 2- or 3-thienyl, or 2-, 3-, or 4-pyridyl, each of which is mono or disubstituted with halogen, hydroxy, straight or branched chain lower alkyl having 1–6 carbon atoms, straight or branched chain lower alkoxy having 1–6 carbon atoms, amino, or mono- or dialkylamino where each alkyl portion is straight or branched chain lower alkyl having 1–6 carbon atoms;

and

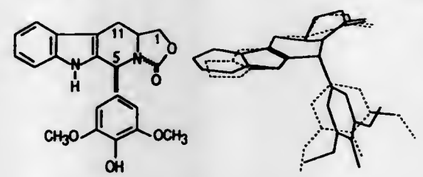
E is hydrogen, or straight or branched chain lower alkyl having 1–6 carbon atoms.

5,606,060

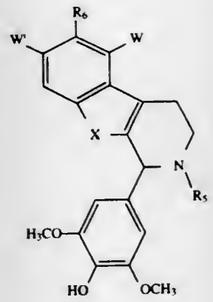
TOPOISOMERASE II INHIBITORS AND THERAPEUTIC USES THEREFOR

Yves Pommier, Bethesda, Md.; Timothy L. MacDonald, and Jose S. Madalengoitia, both of Charlottesville, Va., assignors to The United States of America as represented by the Department of Health & Human Services, Washington, D.C.

Division of Ser. No. 965,922, Oct. 23, 1992, which is a continuation-in-part of Ser. No. 868,408, Apr. 14, 1992, abandoned. This application Jun. 2, 1995, Ser. No. 460,742
Int. Cl.[6] C07D *471/00*
U.S. Cl. 546—85 **7 Claims**



1. A compound that inhibits topoisomerase II catalytic activity and that is represented by the formula of compound:



wherein
(i) R_6 denotes F, Cl, Br, CN, OH, NH_2 or H;
(ii) R_5 denotes $COOCH_3$, $COCH_3$ or, $COCH_2OH$;
(iii) W and W' are the same or different and denote, respectively, H or F; and
(iv) X denotes NH, S or O.

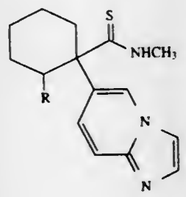
5,606,061

THIOFORMAMIDE DERIVATIVES

Yasuhiro Kabasawa; Fumihiro Ozaki; Keiji Ishibashi; Takashi Hasegawa; Hitoshi Oinuma; Toshiaki Ogawa; Hideyuki Adachi; Hiroshi Katoh; Kohtarou Kodama; Hideto Ohara; Nobuyuki Mori, and Norio Minami, all of Ibaraki, Japan, assignors to Eisai Co., Ltd., Japan

Division of Ser. No. 380,589, Jan. 30, 1995, Pat. No. 5,498,634, which is a division of Ser. No. 211,701, Apr. 26, 1994, Pat. No. 5,444,066. This application Sep. 20, 1995, Ser. No. 531,335
Claims priority, application Japan, Oct. 14, 1991, 3-264622; Jan. 6, 1992, 4-197
Int. Cl.[6] C07D *471/04*
U.S. Cl. 546—121 **2 Claims**

1. A compound of the formula:



wherein R is hydroxy, lower alkyl, lower alkoxy, optionally protected carboxyalkyl or acylalkyl or the pharmaceutically acceptable salts thereof.

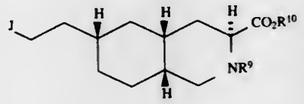
5,606,062

(B) **ISOQUINOLINYL-CARBOXYLIC ACID RECEPTOR ANTAGONISTS COMPOUNDS**

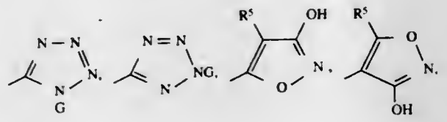
Bret Huff, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

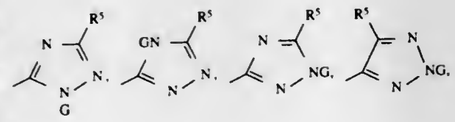
Division of Ser. No. 343,079, Nov. 21, 1994, which is a division of Ser. No. 111,747, Aug. 25, 1993, Pat. No. 5,399,696, which is a division of Ser. No. 939,780, Sep. 3, 1992, Pat. No. 5,284,957. This application Jun. 1, 1995, Ser. No. 457,556
Int. Cl.[6] C07D *217/16*
U.S. Cl. 546—147 **6 Claims**

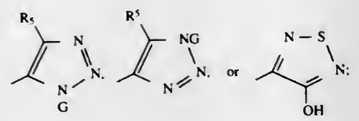
1. A process for the preparation of a compound of the formula



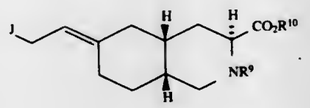
wherein
J is a group of the formula







G is a nitrogen protecting group or hydrogen;
R^5 is hydrogen, C_1–C_4 alkyl, CF_3, phenyl, hydroxy, amino, bromo, iodo, or chloro;
R^9 is alkoxycarbonyl or acyl; and
R^{10} is C_1–C_6 alkyl or phenyl;
which comprises stereoselectively reducing a compound of the formula



5,606,063

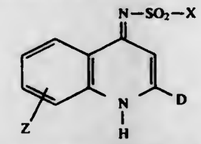
NMDA ANTAGONISTS

Boyd L. Harrison; Bruce M. Baron, both of Cincinnati; David M. Stemerick, Fairfield, and Ian A. McDonald, Loveland, all of Ohio, assignors to Merrell Pharmaceuticals Inc., Cincinnati, Ohio

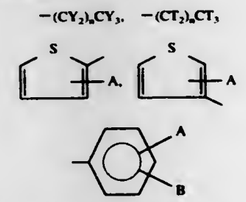
Continuation of Ser. No. 305,614, Sep. 14, 1994, abandoned, which is a continuation of Ser. No. 156,661, Nov. 22, 1993, abandoned, which is a continuation of Ser. No. 832,528, Feb. 7, 1992, abandoned, which is a continuation-in-part of Ser. No. 700,804, May 14, 1991, abandoned, which is a continuation-in-part of Ser. No. 661,780, Feb. 27, 1991, abandoned. This application Jun. 5, 1995, Ser. No. 462,406
Int. Cl.[6] C07D *215/06*
U.S. Cl. 546—159 **82 Claims**

1. A compound of the formula:

Formula I



in which D is represented $C(O)OR_1$, $C(O)NR_1R_2$, wherein R_1 and R_2 are each independently represented by hydrogen or C_1–C_6 alkyl; Z is represented by a substituent selected from the group consisting of hydrogen, OH, halogen, CN, NO_2, C_1–C_6 alkyl, C_1–C_6 alkoxy, OCF_3 and CF_3; X is represented by one of the following substituents:



in which Y is represented by Cl; T is represented by F; n is represented by an integer from 0–3; A is represented by a substituent selected from the group consisting of hydrogen, OH, halogen, CN, NO_2, C_1–C_6 alkyl, C_1–C_6 alkoxy, OCF_3, CF_3; B is represented by one substituent selected from the group consisting of hydrogen, $C(O)OR_1$, $C(O)NR_1R_2$, NH_2, NR_1R_2, $NHC(O)R_3$, $NHC(O)OR_3$, $NHC(O)NHR_3$, $NH—SO_2—CF_3$, $NH—SO_2—C_6H_5$; in which R_1 and R_3 are as defined above and R_3 is C_1–C_6 alkyl; the pharmaceutically acceptable salts thereof and the tautomers thereof, with the proviso: 1) that when D is $C(O)OCH_3$ and X is phenyl in which A is para-methyl and B is hydrogen, then Z is not hydrogen, or a 5,7-dichloro substituent; 2) that when D is $C(O)OC_2H_5$ and X is phenyl in which A is para-methyl and B is hydrogen, then Z is not 6 methoxy, 7-methoxy or 5,8-dimethoxy and 3) that when B is not hydrogen, the total of A plus B may be up to 3 substituents.

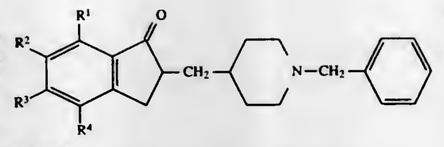
5,606,064

PROCESS FOR THE PREPARATION OF BENZYL-PIPERIDYLMETHYL-INDANONES

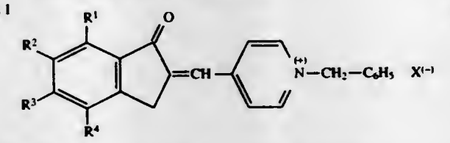
Stephen Lensky, Kürten, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 2, 1995, Ser. No. 552,330
Claims priority, application Germany, Nov. 8, 1994, 44 39 822.0
Int. Cl.[6] C07D *211/02*
U.S. Cl. 546—185 **6 Claims**

1. Process for the preparation of benzyl-piperidylmethyl-indanones of the general formula



in which
R^1, R^2, R^3 and R^4 are identical or different and
represent hydrogen or
represent straight-chain or branched alkyl, alkoxy or alkoxycarbonyl having up to 6 carbon atoms, alkyl- or dialkyl-(C_1–C_6)-aminocarbonyloxy or halogen,
characterized in that
pyridinium salts of the formula (II)



in which
R^1, R^2, R^3 and R^4 have the meaning indicated and
$X^{\ominus}$ represents an anion of the series chloride, bromide, iodide, tosylate, sulphate,
are hydrogenated with hydrogen in the presence of a hydrogenation catalyst, if appropriate in an inert solvent.

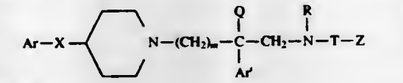
5,606,065

PROCESS FOR PREPARING N-ALKYLENE PIPERIDINO COMPOUNDS AND THEIR ENANTIOMERS

Xavier Emonds-Alt, Combaillaux; Serge Martinez, Montpellier; Vincenzo Proietto, Saint Georges d'Orques, and Didier Van Broeck, Murviel les Montpellier, all of France, assignors to Sanofi, Paris, France

Division of Ser. No. 877,734, May 4, 1992, Pat. No. 5,411,971. This application Mar. 24, 1995, Ser. No. 410,292
Claims priority, application France, May 3, 1991, 91 05486
Int. Cl.[6] C07D *413/12;401/12;211/58*
U.S. Cl. 546—223 **7 Claims**

1. A process for the preparation of compounds having the formula:



in which:
m is equal to 2 or 3;
Ar represents a phenyl, unsubstituted or substituted one or more times with a halogen atom, with a C_1–C_3 alkyl, with a trifluoromethyl, with an alkoxy in which the alkyl is a C_1–C_3 group, with a hydroxyl or with a methylenedioxy; a thienyl, pyridyl or imidazolyl group which is or is not substituted with a C_1–C_3 alkyl;
Ar' represents a phenyl group, unsubstituted or mono- or di-substituted with a halogen atom, with a C_1–C_3 alkyl, with a trifluoromethyl, with an alkoxy in which the alkyl is a C_1–C_3 group, with a hydroxyl or with a methylenedioxy; a thienyl group; an imidazolyl group or a benzothienyl group, each of which is unsubstituted or substituted with a halogen; a naphthyl group unsubstituted or substituted with a halogen; a biphenyl group; an indolyl unsubstituted or substituted on the nitrogen with a benzyl group;
X represents an oxygen atom, a sulphur atom, a sulphone or a sulphoxide, an



group, an



group or an



group in which Alk is a C_1–C_3 alkyl group; an



group in which Alk represents a C_1–C_3 alkylene and X_1 and X_2 represent, independently, hydrogen, a C_1–C_3 alkyl or form, together with the nitrogen atom to which they are bonded, a pyrrolidine or a piperidine heterocycle;

Q represents hydrogen, a C_1–C_4 alkyl group or an aminoalkyl group of formula $-(CH_2)_q-Am'$, where q is 2 or 3 and Am' is a piperidino, 4-benzylpiperidino or di(C_1–C_4)alkylamino group;

R represents hydrogen, a methyl group or a group $(CH_2)_n-L$, where n is an integer from 2 to 6 and L is hydrogen or an amino group;

T represents a group selected from



W being an oxygen or sulphur atom, and

Z represents either M or OM when T represents the



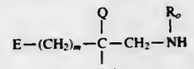
group, or M when T represents the group



M represents hydrogen or a linear or branched C_1–C_6 alkyl; an α-hydroxybenzyl, an α-alkylbenzyl or a phenylalkyl in which the alkyl contains 1 to 3 carbon atoms, in which the phenyl portion is unsubstituted, mono- or polysubstituted on the aromatic ring with a halogen, a hydroxyl, an alkoxy of 1 to 4 carbon atoms, an alkyl of 1 to 4 carbon atoms; a pyridylalkyl in which the alkyl group contains 1 to 3 carbon atoms; a naphthylalkyl in which the alkyl group contains 1 to 3 carbon atoms; a pyridylthioalkyl in which the alkyl group contains 1 to 3 carbon atoms; a styryl; a 1-methyl-2-imidazolylthioalkyl in which the alkyl group contains 1 to 3 carbon atoms; a 1-oxophenyl-3-indan-2-yl; an aromatic or heteroaromatic radical selected from the group consisting of a phenyl which is unsubstituted, mono-or polysubstituted by a halogen, a C_1–C_4 alkyl, a C_1–C_4 alkoxy or a hydroxyl; a naphthyl group which is unsubstituted, mono- or polysubstituted by a halogen, a C_1–C_4 alkyl or a hydroxyl; a pyridyl, a thienyl, an indolyl and a benzothienyl, said pyridyl, thienyl, indolyl and benzothienyl groups being unsubstituted, mono- or polysubstituted by a C_1–C_4 alkyl or hydroxyl;

or a salt thereof with an inorganic or organic acid or a quaternary ammonium salt thereof, comprising:

a) treating a free amine of formula:

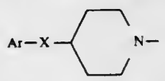


(II)

in which m, Ar', and Q are defined above;

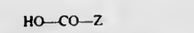
R° represents hydrogen, a methyl group or a group $(CH_2)_n-L^\circ$, whore n is an integer from 2 to 6 and L° is hydrogen or an amino group protected by an N-protecting group hydrolysable in an acidic medium; and

E represents a tetrahydro-2-pyranyloxy group or a group



where Ar and X are defined above;

either with a functional derivative of an acid of formula:

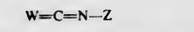


(III)

in which Z is defined above,

when a compound of formula (I) in which T is a —CO— is to be prepared,

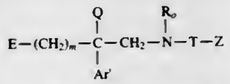
or with an iso(thio) cyanate of formula:



(III')

in which W and Z are defined above;

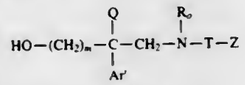
when a compound of formula (I) in which T is —C(W)—NH— is to be prepared, to form the compound of formula:



(IV)

b) removing from the compound of formula (IV) the tetrahydropyranyl group by acid hydrolysis, it alternatively being possible for the hydrolysis to take place in step (a) on the starting amine of formula (II),

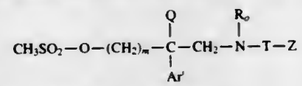
c) treating the N-substituted alkanolamine thereby obtained of formula



(V)

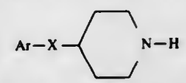
with methanesulphonyl chloride,

d) reacting the mesylate thereby obtained of formula:



(VI)

with a secondary amine of formula:



(VII)

in which Ar and X are defined above,

e) removing the N-protecting groups, where appropriate, and optionally converting the product thereby obtained to one of its salts.

5,606,066

LIGHT ACTIVABLE "CAGED" 1-(2-NITROBENZYL)-SUBSTITUTED 1,4-DIHYDROPYRIDINES

Siegfried Goldmann, Am Osterholz 91, Wuppertal, Germany, and Martin Bechem, Hans-Böckler-Str. 102, Wuppertal, Germany

PCT No. PCT/EP93/01720, § 371 Date May 1, 1995, § 102(e) Date May 1, 1995, PCT Pub. No. WO94/01405, PCT Pub. Date Jan. 20, 1994

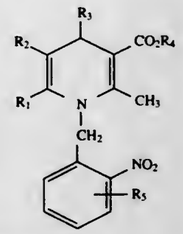
PCT Filed Jul. 3, 1993, Ser. No. 356,410

Claims priority, application Germany, Jul. 10, 1992, 42 22 770.4

Int. Cl.[6] **C07D** *211/86*

U.S. Cl. 546—321 **7 Claims**

1. 1-(2-nitrobenzyl) substituted 1,4-dihydropyridine of formula (I)



(I)

wherein

R_1 represents hydrogen, cyano, formyl, hydroxymethyl, methyl or aminoethoxymethyl,

R_2 represents cyano, nitro or a radical of the formula —CO—O—A, wherein A represents a straight-chain or branched alkyl or alkenyl radical with up to 10 carbon atoms, which is optionally substituted by methylthio, methoxy, ethoxy, hydroxy or a benzyl-N $(CH_3)-CH_2-CH_2$-radical,

R_3 represents an aryl radical with 6 to 10 carbon atoms which is optionally substituted by 1 to 3 identical or different substituents selected from halogen, nitro, trifluoromethyl, cyano, difluoromethoxy, a straight-chain or branched alkyl, alkoxy or alkylthio (each with 1 to 8 carbon atoms), benzyl, benzylthio, benzyloxy or phenoxy,

R_4 represents a straight-chain or branched alkyl or alkenyl radical with up to 10 carbon atoms, which is optionally substituted by methylthio, methoxy, ethoxy, hydroxy or a benzyl-N $(CH_3)-CH_2-CH_2$-radical,

R_5 represents hydrogen, F, Cl, Br, hydroxy, carboxy, a straight-chain or branched alkyl, alkoxy or alkoxycarbonyl radical, each with up to 8 carbon atoms, and a salt thereof.

5,606,067

PREPARATION OF N-ALLYL COMPOUNDS

Bernd Burkhart, Mutterstadt; Alfred Oftring, Bad Durkheim; Rudi Widder, Leimen, and Ulrich Schroeder, Frankenthal, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP93/01090, § 371 Date Oct. 19, 1994, § 102(e) Date Oct. 19, 1994, PCT Pub. No. WO93/23377, PCT Pub. Date Nov. 25, 1993

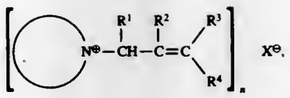
PCT Filed May 5, 1993, Ser. No. 318,743

Claims priority, application Germany, May 16, 1992, 42 16 314.5

Int. Cl.[6] **C07D** *213/127;213/20*

U.S. Cl. 546—347 **8 Claims**

1. A process for the preparation of N-allyl compounds of the general formula I



I

in which



denotes a nitrogen-containing heterocyclic compound,

R^1, R^3, and R^4 independently denote hydrogen or C_1–C_4-alkyl,

R^2 denotes hydrogen or methyl,

n is equal to 1, 2, 3, or 4, and

$X^\ominus$ denotes a water-solubilizing anion,

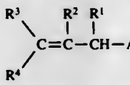
comprising the steps of:

a) contacting a compound of formula II



II

in aqueous medium, with a compound of formula III



III

in which A denotes a radical which can be eliminated as an anion, and

b) removing unconverted portions of compound II and/or compound III by effecting steam distillation or by passing an inert gas through the reaction mixture, during which procedures the pH is kept at a value between 4 and 8.

5,606,068

ACID ANHYDRIDES, THEIR PREPARATION AND THEIR USE

Jean-Manuel Mas, Villeurbanne, France, assignor to Rhone-Poulenc Rorer S.A., Antony, France

PCT No. PCT/FR93/00111, § 371 Date Aug. 3, 1994, § 102(e) Date Aug. 3, 1994, PCT Pub. No. WO93/16058, PCT Pub. Date Aug. 19, 1993

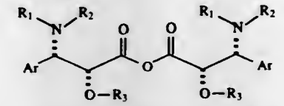
Continuation of Ser. No. 256,739, Aug. 3, 1994, abandoned. This PCT application Feb. 4, 1993, Ser. No. 599,102

Claims priority, application France, Feb. 7, 1992, 92 01380

Int. Cl.[6] **C07D** *263/06;305/14*

U.S. Cl. 548—215 **7 Claims**

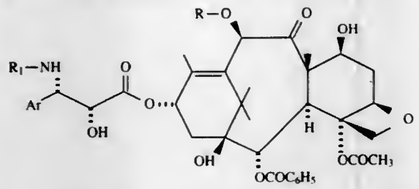
1. Anhydrides of the formula:



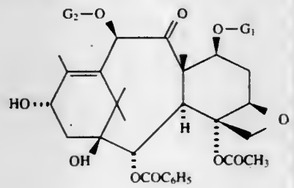
in which Ar represents an aryl radical, and, either R_1 represents a benzoyl or tert-butoxycarbonyl radical, R_2 represents a hydrogen atom and R_3 represents a protecting group of the hydroxyl functional group, or R_1 represents a tert-butoxycarbonyl radical and R_2 and R_3 together form a 5 or 6-membered saturated heterocycle.

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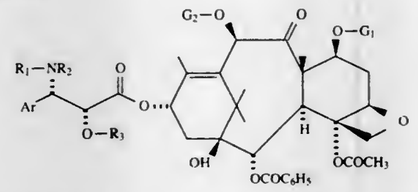
6. Method for the preparation of a product of the formula:



in which R represents a hydrogen atom or an acetyl radical, R_1 represents a benzoyl or tert-butoxycarbonyl radical, and Ar is defined as in claim 1, comprising reacting an anhydride according to claim 1, optionally prepared in situ, for which Ar is defined as in claim 1, R_1 represents a benzoyl or tert-butoxycarbonyl radical, R_2 represents a hydrogen atom and R_3 represents a protecting group of the hydroxyl functional group as defined in claim 1, with a derivative of baccatin III or of 10-deacetylbaccatin III of the formula:



in which G_1 represents a protecting group of the hydroxyl functional group and G_2 represents an acetyl radical or a protecting group of the hydroxyl functional group, to obtain a product of the formula:



in which Ar, R_1, R_2, R_3, G_1 and G_2 are defined as above, and then replacing the protecting groups R_3, G_1 and G_2 by a hydrogen atom.

5,606,069

β_3-ADRENERGIC AGENTS, BENZODIOXOLE DICARBOXYLATES AND THEIR USE IN PHARMACEUTICAL COMPOSITIONS

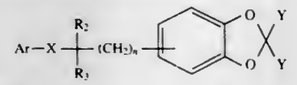
Joseph W. Epstein; Gary H. Birnberg, both of Monroe; Minu D. Dutia, West Nyack, all of N.Y.; Thomas H. Claus, Montvale, N.J., and Elwood E. Largis, Nanuet, N.Y., assignors to American Cyanamid Company, Madison, N.J.

Division of Ser. No. 166,115, Dec. 13, 1993, Pat. No. 5,480,908. This application May 23, 1995, Ser. No. 447,601

Int. Cl.[6] C07D *263/06;413/10*

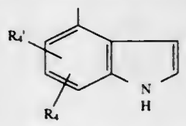
U.S. Cl. 548—229 2 Claims

1. A compound of the formula:

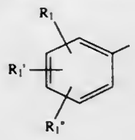


wherein:

Ar is naphth-(1 or 2)-yl; substituted naphth-(1 or 2)-yl wherein the substitution is straight or branched (C_1–C_6) alkyl, bromo, chloro, fluoro, iodo (C_1–C_6)alkoxy, difluoromethyl or trifluoromethyl; 1,2,3,4-tetrahydro-(5 or 6)-naphthyl; substituted 1,2,3,4-tetrahydro-(5 or 6)-naphthyl where the substitution is hydrogen, straight or branched (C_1–C_6) alkyl, bromo, chloro, fluoro, iodo, (C_1–C_6)alkoxy, difluoromethyl or trifluoromethyl; indanyl; a moiety of the formula:



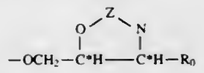
wherein R_4 and R_4, are independently cyano, bromo, chloro, fluoro or iodo; or a moiety of the formula:



wherein R_1, R_1, and R_1, are independently hydrogen, allyl, cyano, straight or branched (C_1–C_6)alkoxy, difluoromethyl, trifluoromethyl, nitro, hydroxy, (C_1–C_6)alkyl, substituted phenyl wherein the substitution is halogen, (C_1–C_6)alkoxy, (C_1–C_6)alkyl, trifluoromethyl or difluoromethyl, sulfonyl, sulfinyl, carboxy, thienylmethyl, pyridinyl, pyridinylmethyl, furanylmethyl, tetrahydrofuranylmethyl, or (C_1–C_6)alkoxycarbonyl, R_2 and R_3 are (C_1–C_4)alkyl;

n is an integer from 0–3; Y is hydrogen; —CO_2R_8 wherein R_8 is hydrogen, straight or branched (C_1–C_{10})alkyl; or $CONR_9R_{10}$ wherein R_9 and R_{10} are hydrogen, straight or branched (C_1–C_{10})alkyl, or methoxymethyl; with the proviso that only one Y may be hydrogen;

X is a divalent radical:



wherein R_0 is hydrogen or (C_1–C_6)alkyl;

Z is carbonyl or thiocarbonyl;

and the pharmaceutically acceptable salts and esters, the enantiomers, the racemic mixtures and diastereomeric mixtures thereof.

5,606,070

PROCESS FOR THE PREPARATION OF ALKOXYTRIAZOLINONES

Heinz-Jürgen Wroblowsky, Langenfeld; Klaus Könlg, Odenthal; Joachim Kluth, Langenfeld, and Klaus-Helmut Müller, Düsseldorf, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

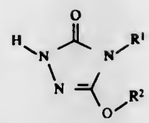
Filed Sep. 15, 1995, Ser. No. 528,585

Claims priority, application Germany, Sep. 23, 1994, 44 33 968.2

Int. Cl.[6] C07D *249/12*

U.S. Cl. 548—263.6 10 Claims

1. A process for the preparation of an alkoxytriazolinone of the formula



in which

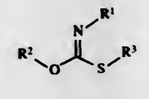
R^1 is optionally halogen or C_1–C_4-alkoxy substituted alkyl, alkenyl or alkinyl wherein each of said groups has up to 6 carbon atoms, optionally halogen or C_1–C_4-alkyl substituted C_3–C_6-cycloalkyl, optionally halogen or C_1–C_4 alkyl substituted C_3–C_4-cycloalkyl-C_1–C_4-alkyl, optionally substituted C_6–C_{10}-aryl, or optionally substituted C_6–C_{10}-aryl-C_1–C_4-alkyl wherein said substituents are selected from the group consisting of carboxyl, cyano, nitro, halogen, C_1–C_4-alkyl, C_1–C_4-halogenoalkyl, C_1–C_4-alkoxy, C_1–C_4-halogenoalkoxy and C_1–C_4-alkoxy-carbonyl, and

R^2 is optionally halogen or C_1–C_4-alkoxy, substituted alkyl, alkenyl or alkinyl wherein each of said groups has up to 6 carbon atoms, optionally halogen or C_1–C_4-alkyl substituted C_3–C_6-cycloalkyl, optionally halogen or C_1–C_4 alkyl substituted C_3–C_4-cycloalkyl-C_1–C_4-alkyl, optionally substituted C_6–C_{10}-aryl, or optionally substituted C_6–C_{10}-aryl-C_1–C_4-alkyl wherein said substituents are selected from the group consisting of carboxyl, cyano, nitro, halogen, C_1–C_4-alkyl, C_1–C_4-halogenoalkyl, C_1–C_4-alkoxy, C_1–C_4-halogenoalkoxy and C_1–C_4-alkoxy-carbonyl,

which comprises

(1) reacting an iminothiocarbonic diester of the formula

(II)



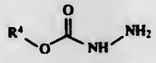
in which

R^1 and R^2 have the abovementioned meanings and

R^3 is C_1–C_4-alkyl which is optionally substituted by carboxyl or C_1–C_4-alkoxy-carbonyl or is phenyl; or benzyl,

with a carbazinic ester of the formula

(III)



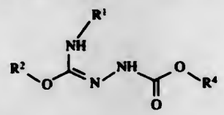
in which

R^4 is C_1–C_4-alkyl which is optionally substituted by C_1–C_4-alkoxy, or is phenyl or benzyl,

or an acid addition product thereof optionally in the presence of a protic acid a polymeric acid, or an acid ion exchanger and a diluent and at a temperature between −20° C. and +50° C.; and

(2) cyclizing the semicarbazide derivative of the formula

(IV)



in which

R^1, R^2 and R^4 have the abovementioned meanings,

or its corresponding tautomer which is formed in step (1) at a temperature between 20° C. and 100° C., optionally in the presence of a base and a diluent and optionally isolating said intermediate before performing the cyclization step.

5,606,071

(I) PROCESS FOR PREPARING 5-ARYLHYDANTOINS USING 5-HYDANTOIN, A HALOGENATING AGENT AND P-PHENOL

Hiroshi Yasuda, Kanagawa, Japan, assignor to Showa Denko K.K., Tokyo, Japan

Filed Oct. 6, 1994, Ser. No. 321,833

Claims priority, application Japan, Oct. 6, 1993, 5-250769; Oct. 6, 1993, 5-250770; Apr. 5, 1994, 6-067378

Int. Cl.[6] C07D *233/76;233/54;233/78;233/72;233/86*

U.S. Cl. 548—321.1 21 Claims

1. A process for producing a 5-arylhydantoin which comprises (i) reacting a 5-unsubstituted hydantoin compound with a halogenating agent and (ii) reacting the resulting product with a p-unsubstituted phenol compound, the hydroxy group of which is protected, or unprotected to substitute the 5-position of the hydantoin compound with the phenol compound at the para position.

5,606,072

PROCESS FOR THE PRODUCTION OF 2-SUBSTITUTED 5-CHLORIMIDAZOLE-4-CARBALDEHYDE

Gareth Griffiths, Visp; René Imwinkelried, Brig-Glis, and Jacques Gostell, Basel, all of Switzerland, assignors to Lonza Ltd., Gampel/Valais, Switzerland

Division of Ser. No. 208,956, Mar. 11, 1994, Pat. No. 5,484,939, which is a continuation-in-part of Ser. No. 283,582, Mar. 1, 1994, abandoned. This application Apr. 7, 1995, Ser. No. 418,463

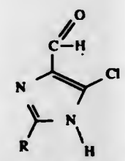
Claims priority, application Switzerland, Mar. 12, 1993, 748/93

Int. Cl.[6] C07D *233/22;233/64*

U.S. Cl. 548—333.5 9 Claims

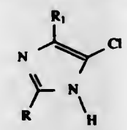
1. A process for the production of a 2-substituted 5-chlorimidazole- 4-carbaldehyde of formula:

II



wherein R is hydrogen, an alkyl group, an alkenyl group, a cycloalkyl group, a benzyl group, a phenyl group or an aryl group, comprising reacting a 2-substituted 5-chlorimidazole of formula:

I



wherein R is hydrogen, an alkyl group, an alkenyl group, a cycloalkyl group, a benzyl group, a phenyl group or an aryl group and R_1 is hydrogen, with phosphoroxy chloride or phosgene in the presence of N,N-dimethylformamide to provide the 2-substituted 5-chlorimidazole- 4-carbaldehyde of formula II.

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5,606,073

DIAZOLE-PROPENOIC ACID COMPOUNDS

Masayuki Matsukura, Tsukuba; Keizoh Satoh, Ushiku; Naoki Yoneda; Makoto Kaino, both of Tsukuba; Kazutoshi Miyake, Ushiku; Yoshiharu Daiku, Tsuchiura; Naoya Kishi, Tsukuba; Fusayo Yoshida, Ushiku; Kenichi Nomoto, Tsukuba; Toshiaki Ogawa, Kitasouma-gun; Tadanobu Takamura, Tsuchiura; Koichi Nose, Kitasouma-gun; Mikio Tomimatsu, Tsukuba; Masanori Mizuno, Kashima-gun; Shigeto Negi, Tsukuba, and Shigeru Souda, Ushiku, all of Japan, assignors to Eisai Co., Ltd., Japan

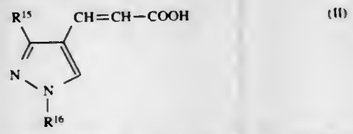
Division of Ser. No. 258,634, Jun. 10, 1994, Pat. No. 5,541,213. This application Apr. 11, 1995, Ser. No. 419,941

Claims priority, application Japan, Jun. 24, 1993, 5-177278; Jul. 23, 1993, 5-202903; Aug. 21, 1993, 5-227924; Aug. 31, 1993, 5-237188

Int. Cl.[6] C07D *231/12;233/54*

U.S. Cl. 548—341.5 **2 Claims**

1. A propenoic acid compound represented by the formula (II) or a pharmacologically acceptable salt thereof:



(II)

wherein R^{15} represents optionally substituted aryl or optionally substituted heteroaryl; and

R^{16} represents hydrogen, lower alkyl, lower alkenyl, lower alkynyl or a group represented by formula —W—Q wherein W is a lower alkyl group, and Q represents optionally substituted aryl, optionally substituted heteroaryl, cycloalkyl, cyano, hydroxyl, lower alkoxy, acyloxy, carboxyl or a group represented by formula $—NR^9R^{10}$ wherein R^9 and R^{10} may be the same or different from each other and each represents hydrogen, lower alkyl, acyl, carbamoyl or alkylcarbanoyl, or alternatively R^9 and R^{10} may represent, together with the nitrogen atom to which they are bonded, a cyclic group; provided that R^{16} is not an optionally substituted aryl when R^{15} is an optionally substituted aryl.

5,606,074

PROCESS FOR THE PREPARATION OF PYRAZOLES

Heinz-Jürgen Wroblowsky, Langenfeld, and Reinhard Lantzsch, Wuppertal, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

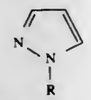
Filed Mar. 4, 1996, Ser. No. 610,773

Claims priority, application Germany, Mar. 7, 1995, 195 07 915.9

Int. Cl.[6] C07D *207/323;207/325*

U.S. Cl. 548—373.1 **1 Claim**

1. A process for the preparation of a pyrazole of the formula

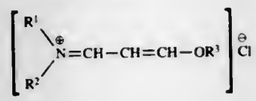


(I)

in which

R represents hydrogen, alkyl, unsubstituted or substituted cycloalkyl, unsubstituted or substituted aryl or unsubstituted or substituted arylalkyl,

which comprises reacting a propenylideneammonium chloride compound of the formula



(II)

in which

R^1 and R^2 are identical or different and represent alkyl and R^3 represents alkyl,

with a hydrazine of the formula

(III)

in which

R has the meaning given above,

in the presence of a base and in the presence of a diluent.

5,606,075

PROCESS FOR THE SYNTHESIS OF BENZO[B]THIOPHENES

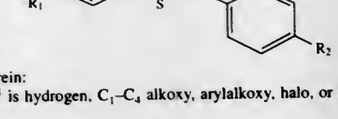
David W. Hoard, Lafayette, and Wayne D. Luke, West Lafayette, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jun. 7, 1995, Ser. No. 481,015

Int. Cl.[6] C07D *333/52;333/56;333/72;405/00*

U.S. Cl. 549—49 **25 Claims**

1. A process for preparing a compound of the formula



I

wherein:

R_1 is hydrogen, C_1-C_4 alkoxy, arylalkoxy, halo, or amino; and

R_2 is hydrogen, C_1-C_4 alkoxy, arylalkoxy, halo, or amino; which comprises cyclizing in the presence of an acid catalyst a compound of the formula

III

wherein:

R_1 and R_2 are as defined above;

R_4 is $OSi(R)_3$, NR_5R_6, or SR_6;

each R is independently C_1-C_6 alkyl, aryl, or arylalkyl;

R_5 and R_6 are independently hydrogen, C_1-C_6 alkyl, arylalkyl, or aryl; or R_5 and R_6 together with the nitrogen atom form a ring selected from piperidine, pyrrolidine, morpholine, and hexamethylimine; and

R_6 is C_1-C_6 alkyl, aryl, or arylalkyl.

5,606,076

PROCESS FOR THE SYNTHESIS OF BENZO[B]THIOPHENES

James A. Aikins, and Tony Y. Zhang, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jun. 7, 1995, Ser. No. 484,536

Int. Cl.[6] C07D *333/52;333/56;333/72;409/00*

U.S. Cl. 549—57 **13 Claims**

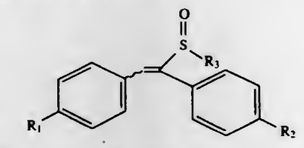
1. A process for preparing a compound of the formula

I

wherein:

R^1 is hydrogen, C_1–C_4 alkoxy, arylalkoxy, halo, or amino; and

R_2 is hydrogen, C_1–C_4 alkoxy, arylalkoxy, halo, or amino; which comprises cyclizing in the presence of an acid catalyst a compound of the formula



wherein:

R_1 and R_2 are as defined above, and

R_3 is a thermally-labile or acid-labile C_2–C_{10} alkyl, C_4–C_{10} alkenyl, or aryl(C_1–C_{10} alkyl) group.

5,606,077

METHOD FOR THE SYNTHESIS OF ORGANOPOLYSILOXANES CONTAINING CARBONATE GROUPS

Peter Lersch, Oberhausen, and Christian Weitemeyer, Essen, both of Germany, assignors to Th. Goldschmidt AG, Essen, Germany

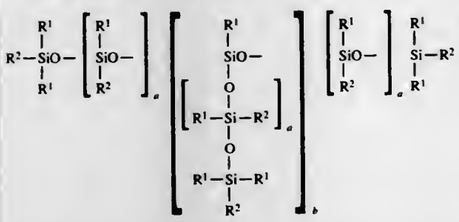
Filed Feb. 21, 1996, Ser. No. 604,541

Claims priority, application Germany, Feb. 21, 1995, 195 05 892.5

Int. Cl.[6] C07F *7/08;* **C07D** *317/10*

U.S. Cl. 549—214 **6 Claims**

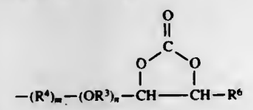
1. A method for the synthesis of polysiloxanes, containing cyclic carbonate groups and having a general, average formula



wherein

R^1 are identical or different groups and represent alkyl groups with 1 to 4 carbon atoms or phenyl groups, at least 90% of the R^1 groups being methyl groups,

R^2 has the same meaning as R^1, with the proviso that at least one R^2 group is a group of the general formula



wherein

R^3 are identical or different alkylene groups with 1 to 4 carbon atoms,

R^4 is an optionally branched alkylene group with 1 to 20 carbon atoms and

R^6 is hydrogen or an alkyl group with 1 to 4 carbon atoms or an alkylene group forming a ring with R^4 and

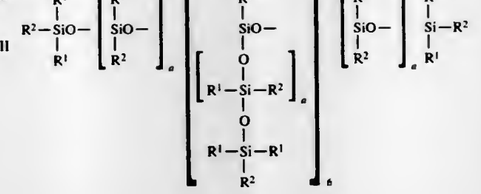
m has a value of 0 or 1,

n has a value of 0 to 20, with the proviso that either m or n is at least 1,

a has a value of 0 to 1000,

b has a value of 0 to 10,

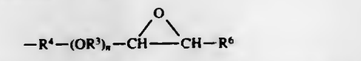
comprising the steps of reacting compounds of a general, average formula



II

in which

R^5 can be R^1, with the proviso that at least one R^5 group is a group of a general formula



and the remaining groups and subscripts have the meaning given above, with carbon dioxide.

5,606,078

3,5-DISUBSTITUTED TETRAHYDROFURAN-2-ONES

Richard Göschke, Bottmingen; Peter Herold, Arlesheim, both of Switzerland; Pascal Rigollier, Sierentz, France, and Jürgen K. Maibaum, Weil-Haltingen, Germany, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

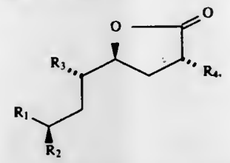
Filed Apr. 4, 1995, Ser. No. 416,237

Claims priority, application Switzerland, Apr. 18, 1994, 1169/94; Jan. 30, 1995, 246/95

Int. Cl.[6] C07D *307/33*

U.S. Cl. 549—321 **7 Claims**

1. A compound of formula I



(I)

wherein

R_1 is free or esterified carboxy, hydroxymethyl or formyl,

R_2 and R_4 are each independently of the other aliphatic, cycloaliphatic-aliphatic, araliphatic or heteroarylaliphatic radicals, and

R_3 is azido, or amino that is aliphatically or araliphatically substituted and/or protected by an amino-protecting group,

or a salt thereof.

5,606,079

PROCESS FOR THE SELECTIVE HYDROFORMYLATION OF TERMINAL OLEFIN GROUPS AND ITS USE IN THE PREPARATION OF 1,4-BUTANEDIAL MONOACETAL

Shuji Ichikawa; Akiko Fujita; Naoko Sumitani, and Yuji Ohgomori, all of Ami-machi, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

Filed May 30, 1995, Ser. No. 453,762

Claims priority, application Japan, May 30, 1994, 6-116690

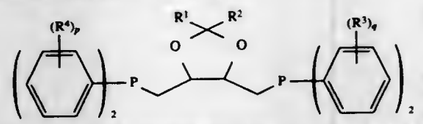
Int. Cl.[6] C07D *319/06*

U.S. Cl. 549—375 **24 Claims**

1. A process for producing 1,4-butanedial monoacetal comprising reacting acrolein acetal with synthesis gas containing carbon

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monoxide and hydrogen in the presence of a rhodium catalyst and an accelerator represented by formula (I)



(I)

wherein R^1 and R^2 each, independently, denote a hydrogen atom, a C_1–C_{20} alkyl group or a C_6–C_{20} aryl group, or R^1 and R^2 together form a —$(CH_2)_n$— group, n is an integer of from 2 to 7, R^3 and R^4 each, independently, denote halogen or a trifluoromethyl group, and p and q are each, independently, an integer of from 0 to 3.

5,606,080

TOCOPHEROL DERIVATIVES

Kazumi Ogata, Toyonaka, and Hidetoshi Nakao, Amagasaki, both of Japan, assignors to Senju Pharmaceutical Co., Ltd., Osaka, Japan

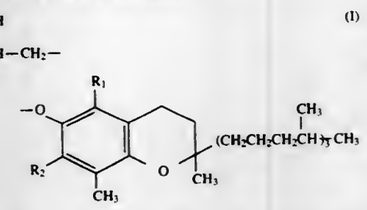
Filed May 11, 1995, Ser. No. 438,971

Claims priority, application Japan, May 20, 1994, 6-106484

Int. Cl.[6] C07D *311/72;405/10*

U.S. Cl. 549—408 **7 Claims**

1. A tocopherol derivative of the following formula (I) or a pharmacologically acceptable salt thereof



(I)

wherein R_1 and R_2 are the same or different and each represents hydrogen or methyl; R_3 represents a member selected from the group consisting of glycine, alanine, proline, cysteine, glutamic acid, aspartic acid, β-alanine, γ-aminobutyric acid, ϵ-aminocaproic acid, 2-aminoethanesulfonic acid, and glutathione.

5,606,081

PREPARATION OF CYCLIC ETHER KETONES

Werner Schnurr, Herxheim, and Rolf Fischer, Heidelberg, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

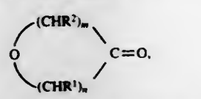
Filed May 12, 1995, Ser. No. 439,901

Claims priority, application Germany, May 20, 1994, 44 17 696.1

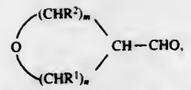
Int. Cl.[6] C07D *309/12;307/20*

U.S. Cl. 549—416 **10 Claims**

1. A process for the preparation of a cyclic ether ketone of the general formula I



in which R^1 and R^2 denote hydrogen or C_1–C_4 alkyl, m and n denote integers from 1 to 5, wherein a cyclic ether aldehyde of the general formula II



(II)

in which have R^1, R^2, m and n have the above meanings, is reacted with an oxygen-containing gas in the presence of a solid or supported catalyst containing copper and/or manganese, at temperatures of from 50° to 300° C. and pressures of from 0.01 to 10 bar.

5,606,082

Patent Not Issued For This Number

5,606,083

PROCESS FOR THE PREPARATION OF TAXANE DERIVATIVES, NEW DERIVATIVES THUS OBTAINED AND THE COMPOSITIONS WHICH CONTAIN THEM

Herve Bouchard, Ivry Sur Seine, and Jean-Dominique Bourzat, Vincennes, both of France, assignors to Rhone-Poulenc Rorer S.A., Antony, France

PCT No. PCT/FR93/01145, § 371 Date May 23, 1995, § 102(e) Date May 23, 1995, PCT Pub. No. WO94/12484, PCT Pub. Date Jun. 9, 1994

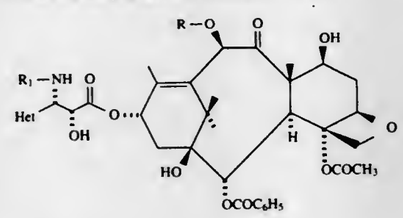
PCT Filed Nov. 22, 1993, Ser. No. 424,512

Claims priority, application France, Nov. 23, 1992, 92 14023

Int. Cl.[6] C07D *305/14*

U.S. Cl. 549—510 **25 Claims**

1. Process for the preparation of products of formula:

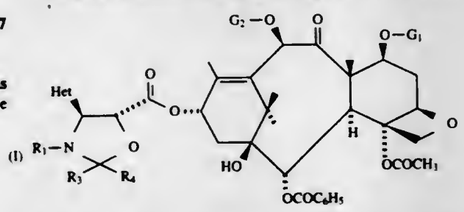


in which:

R represents a hydrogen atom or an acetyl radical,

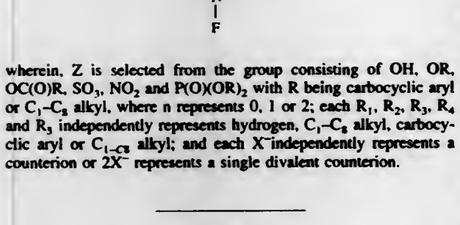
R_1 represents a benzoyl radical or a radical R_2—O—CO— in which R_2 represents an alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkenyl, bicycloalkyl, phenyl or heterocyclyl radical, and

Het represents an optionally substituted aromatic heterocyclyl radical having 5 members and containing at least one heteroatom, which are identical or different, selected from nitrogen, oxygen and sulphur, comprising treating a product of formula:



(I)

in which Het and R_1 are defined as above, G_1 represents a protective group of the hydroxyl functional group, G_2 represents an acetyl radical or a protective group of the hydroxyl functional group, R_3 represents a hydrogen atom or an alkoxy radical or an optionally substituted aryl radical and R_4 represents a hydrogen atom, in acid medium to produce a product of formula:



in which Het and R_1 are defined as above, G'_1 represents a hydrogen atom or a protective group of the hydroxyl functional group and G'_2 represents a hydrogen atom or an acetyl radical or a protective group of the hydroxyl functional group, and then, optionally, the G'_1 and G'_2 protective groups are replaced by hydrogen atoms and the product thus obtained is isolated.

5,606,084

PROCESS OF FLUORINATING ORGANIC COMPOUNDS WITH 1-SUBSTITUTED-4-FLUORO-1,4-DIAZONIABICYCLO OCTANE SALTS

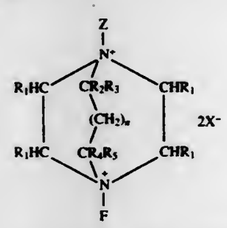
Andrew J. Poss, Kenmore, and George Shia, Amherst, both of N.Y., assignors to AlliedSignal Inc., Morris Township, N.J.

Division of Ser. No. 173,297, Dec. 23, 1993, Pat. No. 5,459,267. This application Jun. 7, 1995, Ser. No. 477,038

Int. Cl.[6] C07J *5/00*

U.S. Cl. 552—600 **3 Claims**

1. A process for the electrophilic fluorination of an organic compound which comprises the step of: reacting an organic compound with a 1-substituted-4-fluoro-1,4-diazoniabicyclo salt of the following formula:



wherein, Z is selected from the group consisting of OH, OR, OC(O)R, SO_3, NO_2 and $P(O)(OR)_2$ with R being carbocyclic aryl or C_1–C_8 alkyl, where n represents 0, 1 or 2; each R_1, R_2, R_3, R_4 and R_5 independently represents hydrogen, C_1–C_8 alkyl, carbocyclic aryl or C_{1-C8} alkyl; and each X^-independently represents a counterion or $2X^-$ represents a single divalent counterion.

5,606,085

THERMALLY ACTIVATED OLEFIN METATHESIS CATALYST PRECURSOR

Andrew Bell, West Grove, Pa., and Tim J. Coffy, Houston, Tex., assignors to Metton America, Inc., Abingdon, Va.

Division of Ser. No. 175,328, Dec. 29, 1993, Pat. No. 5,502,228. This application Oct. 5, 1995, Ser. No. 538,990

Int. Cl.[6] C07F *11/00;* **B01J** *31/00*

U.S. Cl. 556—57 **34 Claims**

1. A method of activating a catalyst precursor having the formula:

$$M(Y)\,(OR^2)_x(R^3)_yL_z$$

wherein M is molybdenum or tungsten; Y is NR^1; R^1 and R^2 are the same or different and are selected from the group consisting of C_6H_3-2,6-i-Pr_2, CMe_3, $C(CF_3)_3$, $CMe(CF_3)_2$, and CH_2CMe_3; and R^3 is selected from the group consisting of CH_2CMe_2Ph and CH_2CMe_3, where Me is a methyl group, Ph is a phenyl group, and i-Pr is an isopropyl group; except when R^2 is CMe_3, then R^3 cannot simultaneously be CH_2CMe_3, and when R^3 is CH_2CMe_3, then y cannot simultaneously be 4; L is a Lewis base; z is 0 or 1; and x+y=4, which comprises the step of contacting the catalyst precursor with sufficient heat, sound, or electromagnetic radiation to cause the catalyst precursor to convert into a catalyst that is capable of metathesizing an olefin, the catalyst having the formula $M(=CHR^4)\,(NR^1)\,(OR^2)_2L_z$, wherein R^4 is an alkyl, aryl, or aralkyl group, or any substituent that results from an initial reaction between M=CHR[4] and the olefin that is being metathesized.

27. A method of activating a catalyst precursor having the formula:

$$M(Y)\,(OR^2)_x(R^3)_yL_z$$

wherein M is molybdenum or tungsten; Y is oxygen; R^1 and R^2 are the same or different and are selected from the group consisting of C_6H_3-2,6-i-Pr_2, CMe_3, $C(CF_3)_3$, $CMe(CF_3)_2$, and CH_2CMe_3; and R^3 is selected from the group consisting of CH_2CMe_2Ph and CH_2CMe_3, where Me is a methyl group, Ph is a phenyl group, and i-Pr is an isopropyl group; except when R^2 is CMe_3, then R^3 cannot simultaneously be CH_2CMe_3, and when R^3 is CH_2CMe_3, then y cannot simultaneously be 4; L is a Lewis base; z is 0 or 1; and x+y=4, which comprises the step of contacting the catalyst precursor with sufficient heat, sound, or electromagnetic radiation to activate the catalyst precursor.

31. A method of activating a catalyst precursor having the formula:

$$M(Y)\,(OR^2)_x(R^3)_yL_z$$

wherein M is molybdenum or tungsten; Y is NR^1; R^1, R^2, and R^3 are the same or different and are selected from the group consisting of alkyl, cycloalkyl, cycloalkenyl, polycycloalkyl, polycycloalkenyl, haloalkyl, haloaralkyl, substituted or unsubstituted aralkyl and aryl groups, and silicon-containing analogs thereof; L is a Lewis base; z is 0 or 1; wherein the two OR^2 groups can be replaced by a chelating ligand $(OR^2)_2$, said method comprising the step of contacting the catalyst precursor, in the absence of a chemical activator for the catalyst precursor, with sufficient heat, sound, or electromagnetic radiation to cause the catalyst precursor to convert into a catalyst that is capable of metathesizing an olefin, the catalyst having the formula $M(=CHR^4)\,(NR^1)\,(OR^2)_2L_z$, wherein R^4 is an alkyl, aryl, or aralkyl group, or any substituent that results from an initial reaction between M=CHR[4] and the olefin that is being metathesized.

5,606,086

IRON LACTOFERRIN COMPLEXES AND PREPARATION THEREOF

Shunichi Dosako; Toshio Sakurai, and Naomichi Kobayashi, all of Saitama, Japan, assignors to Snow Brand Milk Products Co., Ltd., Hokkaido, Japan

PCT No. PCT/JP94/00233, § 371 Date Apr. 24, 1995, § 102(e) Date Apr. 24, 1995, PCT Pub. No. WO94/19375, PCT Pub. Date Sep. 1, 1994

PCT Filed Feb. 16, 1994, Ser. No. 318,778

Claims priority, application Japan, Dec. 16, 1993, 5-050061

Int. Cl.[6] C07F *15/02*

U.S. Cl. 556—138 **14 Claims**

1. A heat resistant carbonate or hydrogencarbonate-iron-lactoferrin complex having one molecule of lactoferrin bound with about 15 to about 1,000 molecules of iron via carbonic or hydrogencarbonic acid.

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4. A process for the preparation of heat resistant carbonate or hydrogencarbonate-iron-lactoferrin complexes comprising the steps of:

mixing an aqueous solution of iron, with an aqueous solution of lactoferrin, thereby forming an iron-lactoferrin solution; and

mixing said solution with an aqueous solution of carbonate or hydrogencarbonate ion, thereby forming an aqueous solution of said complexes.

5,606,087

PROCESS FOR MAKING ALUMINOXANES

John K. Roberg; Robert E. Farritor, and Edward A. Burt, all of Baton Rouge, La., assignors to Albemarle Corporation, Richmond, Va.

Filed Apr. 19, 1996, Ser. No. 635,358

Int. Cl.[6] C07F 5/06

U.S. Cl. 556—179 **6 Claims**

1. An improved process for making aluminoxane compositions by the addition of water to a solvent solution comprising a hydrocarbylaluminum compound and/or an aluminoxane in an organic solvent, the improvement comprising feeding said water through an orifice which is surrounded by a flow of solvent which carries said water into said solvent solution of hydrocarbylaluminum and/or aluminoxane.

5,606,088

PROCESS FOR PREPARATION OF ORGANODISILANES

Howard M. Bank, Freeland; Sean P. Davern, Auburn, and Binh T. Nguyen, Midland, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Mar. 28, 1996, Ser. No. 623,065

Int. Cl.[6] C07F 7/08; 7/12

U.S. Cl. 556—430 **17 Claims**

1. A one-step process for preparation of organodisilanes, the process comprising contacting magnesium metal with a mixture comprising diethylene glycol dibutyl ether, an organic halide described by formula

$$R^1X,$$

and a halodisilane described by formula

$$R^2_aSi_2X_{6-a}$$

at a temperature within a range of about 0° C. to 250° C.; where R^1 is a monovalent hydrocarbon radical comprising about one to 20 carbon atoms, each R^2 is an independently selected monovalent hydrocarbon radical comprising about one to 20 carbon atoms, X is a halogen atom selected from a group consisting of bromine and chlorine, and a=0 to 5.

5,606,089

4-ALKOXY-2, 6-DI-T-BUTYLPHENOL DERIVATIVES

Kunio Tamura; Yoshiaki Kato; Mitsutaka Yoshida; Osamu Cynshi, and Yasuhiro Obba, all of Shizuoka, Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 416,862, Apr. 17, 1995, Pat. No. 5,574,178. This application May 18, 1995, Ser. No. 444,055

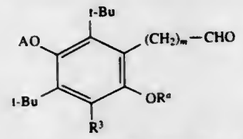
Claims priority, application Japan, Oct. 16, 1992, 4-321101

Int. Cl.[6] C07C 69/773

U.S. Cl. 556—436 **1 Claim**

1. A compound represented by the formula (II):

(II)



where R^3 is a hydrogen atom or a lower alkyl group; A is a protective group; R^a is a hydrogen atom or a lower alkyl group; and m is an integer of 0 or 1.

5,606,090

CONVERSION OF HIGH-BOILING RESIDUE FROM DIRECT PROCESS TO MONOSILANES

Jonathan A. Brinson, LaGrange; Steven K. Freeburne, Edgewood, and Robert F. Jarvis, Jr., Union, all of Ky., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jun. 13, 1996, Ser. No. 663,338

Int. Cl.[6] C07F 7/08

U.S. Cl. 556—467 **23 Claims**

1. A process for converting a high-boiling residue resulting from the reaction of an organochloride with silicon metalloid to monosilanes, the process comprising:

(A) forming a mixture comprising a high-boiling residue resulting from the reaction of an organochloride with silicon metalloid and an organosilane described by formula

$$R_mH_nSiCl_{4-m-n},$$

where each R is independently selected from a group consisting of alkyls comprising one to six carbon atoms, aryls, alkoxys comprising one to six carbon atoms, trimethylsilyl, and trifluoropropyl, m=1 to 4, n=0 to 2, and m+n=2 to 4; and

(B) contacting the mixture with hydrogen gas in the presence of a catalytic amount of a catalyst composition effective in promoting the formation of monosilanes from the high-boiling residue at temperature within a range of about 150° C. to 500° C. and a reactor pressure within a range of about 100 psig to 5,000 psig.

5,606,091

PREPARATION OF SYMMETRICAL OR UNSYMMETRICAL DISUBSTITUTED N-CYANODITHIOIMINOCARBONATES

Lyndon K. Marble, Germantown, Tenn., assignor to Buckman Laboratories International, Inc., Memphis, Tenn.

Filed May 18, 1993, Ser. No. 62,551

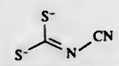
Int. Cl.[6] C07C 329/16

U.S. Cl. 558—2 **32 Claims**

1. A process comprising the step of:

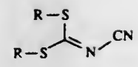
contacting, in a methanolic solvent system, a Group 1 or 2 metal salt of the anion of formula II

II



with at least one compound containing an R-group under conditions sufficient to form a symmetrical or unsymmetrical compound of formula I

I



wherein the R-group is selected from

substituted or unsubstituted, branched or unbranched up to C_{20} alkyl, up to C_{20} alkenyl or up to C_{20} alkynyl groups;

monocyclic or polycyclic, fused or nonfused, carbocyclic substituted or unsubstituted aryl groups; or

hydrogen;

or R—S is selected from

thiosulfonates;

sulfonates;

thioesters; and

thiocarbamates.

5,606,092

MONOAZO COMPOUNDS AND METHOD FOR DYEING OR PRINTING FIBER MATERIALS USING THE SAME

Masayuki Miki, Ashiya; Kingo Akahori, Toyonaka; Yutaka Kayane, Ikoma, and Takeshi Washimi, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Division of Ser. No. 193,646, Feb. 7, 1994, Pat. No. 5,488,098, which is a continuation of Ser. No. 840,560, Feb. 25, 1992, abandoned. This application Oct. 20, 1995, Ser. No. 546,321

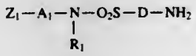
Claims priority, application Japan, Feb. 27, 1991, 3-033047; Feb. 28, 1991, 3-034245

Int. Cl.[6] C07C 317/28; 317/34

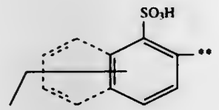
U.S. Cl. 558—33 **3 Claims**

1. A compound represented by the following formula (VIII),

(VIII)



wherein D is



in which the mark ** means a bond linking to $—NH_2$, R_1 is hydrogen, an unsubstituted alkyl group or an alkyl group substituted by at least one substituent selected from the group consisting of hydroxy, cyano, alkoxy, halo, carbamoyl, carboxy, alkoxycarbonyl, alkylcarbonyloxy, sulfo and sulfamoyl; A_1 is phenylene unsubstituted or substituted once or twice by a substituent selected from the group consisting of methyl, ethyl, methoxy, ethoxy, chloro, bromo and sulfo and naphthylene unsubstituted or substituted by sulfo; and Z_1 is $—SO_2CH═CH_2$ or $—SO_2CH_2CH_2Y$ in which Y is a group capable of being split by the action of an alkali.

5,606,093

PROCESS FOR PREPARING N-PHOSPHONOMETHYLGLYCINONITRILE OR DERIVATIVES THEREOF

Ian Hodgkinson, Yorkshire, United Kingdom, assignor to Zeneca Limited, London, United Kingdom

PCT No. PCT/GB94/00501, § 371 Date Oct. 5, 1995, § 102(e) Date Oct. 5, 1995, PCT Pub. No. WO94/22881, PCT Pub. Date Oct. 13, 1994

PCT Filed Mar. 15, 1994, Ser. No. 532,832

Claims priority, application United Kingdom, Apr. 7, 1993, 9307234

Int. Cl.[6] C07F 9/38; 9/40

U.S. Cl. 558—122 **10 Claims**

1. A process for the manufacture of an acid salt of an alkyl ester of N-phosphonomethylglycinonitrile which comprises reacting methyleneaminoacetonitrile trimer with a trialkylphosphite under anhydrous conditions and in the presence of an anhydrous acid and an inert solvent in which the methyleneaminoacetonitrile trimer starting material is at least partially soluble and the acid salt of the alkyl ester of N-phosphonomethylglycinonitrile product is substantially insoluble and thereafter recovering the precipitated acid salt of the alkyl ester of N-phosphonomethylglycinonitrile.

9. A process for the manufacture of N-phosphonomethylglycine which comprises

i) reacting methyleneaminoacetonitrile trimer with a trialkylphosphite under anhydrous conditions and in the presence of an anhydrous acid and an inert solvent in which the methyleneaminoacetonitrile trimer starting material is at least partially soluble and the acid salt of the alkyl ester of N-phosphonomethylglycinonitrile product is substantially insoluble and thereafter

ii) recovering the precipitated acid salt of the alkyl ester of N-phosphonomethylglycinonitrile and

iii) hydrolysing the acid salt of the alkyl ester of N-phosphonomethylglycinonitrile to form N-phosphonomethylglycine.

5,606,094

ACROLEIN SCAVENGERS

Glenn L. Roof, Sugarland, and Dwight Reid, Houston, both of Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Filed Jan. 10, 1995, Ser. No. 370,668

Int. Cl.[6] C07C 255/08

U.S. Cl. 558—463 **2 Claims**

2. A process for removing acrolein from a gaseous or liquid mixture containing acrylonitrile comprising:

(1) contacting the mixture with from about 10 ppm to about 20 wt. %, based on the total mixture, of sodium bisulfite; and

(2) selectively removing substantially all of the acrolein.

5,606,095

2-AMINOOXYMETHYLENEPHENYLACETIC ACID DERIVATIVES

Albert Pfiffner, Bülach, Switzerland; Stephan Trah, Freiburg, Germany, and Hugo Ziegler, Witterswil, Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Division of Ser. No. 156,555, Nov. 23, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 462,259

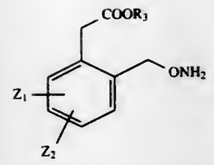
Claims priority, application Switzerland, Dec. 1, 1992, 3683/92

Int. Cl.[6] C07C 229/00

U.S. Cl. 560—42 **3 Claims**

1. A 2-aminooxymethylenephenylacetic acid ester derivative of the formula

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wherein Z_1 and Z_2 are hydrogen, halogen, hydroxy, C_1–C_4alkyl, C_1–C_4alkoxy, C_1–C_4haloalkyl, C_1–C_4haloalkoxy, C_1–C_4alkylcarbonyl, phenoxy, nitro or cyano, or Z_1 and Z_2, together with the linking phenyl radical, are naphthalene or hydrogenated napthalene, and R_3 is hydrogen or C_1–C_{12}alkyl, as the free base or as a protic acid salt.

5,606,096

PRODUCTION OF UNSATURATED CARBAMIC ACID DERIVATIVE

Eiji Yamanaka, Suita; Noriyuki Tsuboniwa, HigashiOsaka; Takao Morimoto, Katano; Masamichi Furukawa, Neyagawa, and Satoshi Urano, Tsuzuki-gun, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Continuation of Ser. No. 20,824, Feb. 19, 1993, abandoned. This application Apr. 3, 1995, Ser. No. 417,431

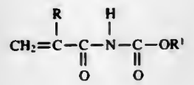
Claims priority, application Japan, Feb. 20, 1992, 4-033139

Int. Cl.[6] C07C *261/00*

U.S. Cl. 560—157 **8 Claims**

1. A process for producing unsaturated carbamic acid derivative consisting essentially of reacting in the absence of a catalyst an unsaturated carbamate represented by:

(A)



wherein R represents a hydrogen atom or an alkyl group having 1 to 8 carbon atoms, R^1 represents a residue of an alcohol from which an OH group is removed,

with an alcohol selected from the group consisting of an alkyl alcohol having 1 to 30 carbon atoms, an alkenyl alcohol having 3 to 20 carbon atoms, an aralkyl alcohol having 7 to 16 carbon atoms, an aralkenyl alcohol having 9 to 18 carbon atoms, an alcohol having at least one hetero atom in molecule and having a molecular weight of 60 to 1,000, at a temperature of 40° to 150° C. to substitute the —OR^1 group in the formula (A).

5,606,097

Patent Not Issued For This Number

5,606,098

AMIDES AND ESTERS OF PERFLUOROPOLYOXAALKYLENE-SULFO- OR PERFLUOROPOLYOXAALKYLENE-CARBOXYLIC ACIDS AND A PROCESS FOR PRODUCING SAME

Nikolai A. Ryabinin, and Aleksandr N. Ryabinin, both of Sankt-Peterburg, Russian Federation, assignors to AO "Avtokoninvest", Moscow, Russian Federation

PCT No. PCT/RU95/00014, § 371 Date Oct. 3, 1995, § 102(e) Date Oct. 3, 1995, PCT Pub. No. WO95/21209, PCT Pub. Date Aug. 10, 1995

PCT Filed Jan. 30, 1995, Ser. No. 530,233

Claims priority, application Russian Federation, Feb. 4, 1994, 94004093

Int. Cl.[6] C07C *69/66;231/00*

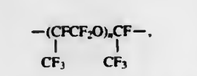
U.S. Cl. 560—184 **4 Claims**

1. Amides and esters of perfluoropolyoxaalkylene-sulfo- or perfluoropolyoxaalkylene-carboxylic acids of the general following formula:

$R_fR_f'ZQ$, where

R_f=CF_3O—, C_2F_5O—, C_3F_7O—, $C_8F_{17}O$—,

R_f'=



—$(CF_2CF_2O—)_nCF_2$—,—$(CF_2CF_2CF_2O)_nCF_2CF_2$—,

where n=8–55;

Z=—CO—, —SO_2—,

Q=—$N(C_mH_{2m}OH)_2$, where m=2, 3, 4, 6, 8, 10

—$N[(C_2H_4O)_4C_3H_6OH]_2$,

—NH—$C_2H_4OR_\eta$, where R_η=CH_3—, C_2H_5—, C_3H_7—,

—$NH(C_2H_4O)_5H$,

—$OC_1H_{21}N(C_1H_{21}OH)_2$, where η=1, 2, 4

$C_kH_{2k+1}O$—, where k=6, 8, 10.

5,606,099

PROCESS FOR THE PREPARATION OF SUCCINIC ACID DIALKYL ESTERS

Gerhard Darsow, Krefeld, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 20, 1996, Ser. No. 603,942

Claims priority, application Germany, Feb. 22, 1995, 195 06 096.2

Int. Cl.[6] C07C *69/34*

U.S. Cl. 560—190 **14 Claims**

1. A process for the continuous preparation of a succinic acid dialkyl ester by catalytic hydrogenation of a maleic acid dialkyl ester, wherein the hydrogenation is carried out in the liquid phase under a H_2 pressure of 50 to 400 bar, with 20 to 60 times the molar amount of H_2, based on the stoichiometric amount, and at a temperature of 30° to 160° C. over an oxygen-free and support-free catalyst which is arranged in a fixed bed, is present in the form of compressed shaped bodies produced from metal powder and having a compressive strength of 20 to 250N and an internal surface area of 10 to 80 m^2/g, and in which the metal powder comprises 60 to 100% by weight of one or more iron metals, 0 to 15% by weight of one or more metals of sub-group VI and 0 to 25% by weight of one or more hydrogenation-inert elements from group consisting of aluminium, silicon, titanium and carbon, all based on the total weight of the metal powder.

5,606,100

PROCESS FOR THE PREPARATION OF TRIALKYL ESTER DERIVATIVES

Elmar Pfammatter, Visp, Switzerland, assignor to Lonza Ltd., Gampel/Valais, Switzerland

Filed Dec. 13, 1995, Ser. No. 571,652

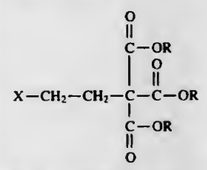
Claims priority, application Switzerland, Dec. 21, 1994, 3868/94

Int. Cl.[6] C07C *69/34*

U.S. Cl. 560—192 **13 Claims**

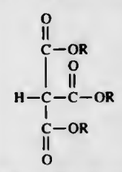
1. A process for the preparation of a trialkyl ester derivative of the general formula:

I

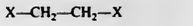


wherein X is chlorine, bromine, iodine, tosyloxy- or mesyloxy- and R is a C_1–C_6-alkyl group, comprising a trialkyl methanetricarboxylate of the general formula:

II



wherein R has the meaning given above, is convened into the trialkyl ester derivative formula I with a disubstituted ethane of formula:



III

wherein the two substituents X are identical or different and have the meaning given above, in the presence of an alkaline earth metal carbonate or an alkali metal carbonate.

5,606,101

SUBSTITUTE AMIC ACID DERIVATIVES

Takashi Nomoto; Masahiro Hayashi; Jun Shibata; Yoshikazu Iwasawa; Morihiro Mitsuya; Yoshiaki Iida; Katsumasa Nonoshita, and Yasufumi Nagata, all of Tsukuba, Japan, assignors to Banyu Pharmaceutical Co., Ltd., Tokyo, Japan

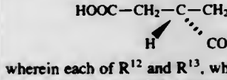
Division of Ser. No. 471,081, Jun. 6, 1995, Pat. No. 5,488,149, which is a continuation of Ser. No. 193,850, Feb. 9, 1994, abandoned. This application Oct. 6, 1995, Ser. No. 540,329

Claims priority, application Japan, Feb. 12, 1993, 5-047364; Sep. 24, 1993, 5-261713; Sep. 24, 1993, 5-261714

Int. Cl.[6] C07C *69/353;69/34*

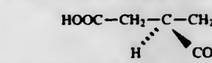
U.S. Cl. 560—193 **6 Claims**

1. A compound of the formula (III-b^1):



(III-b^1)

wherein each of R^{12} and R^{13}, which are the same or different, is a carboxyl-protecting group, or the formula (III-b^2):



(III-b^2)

wherein R^{12} and R^{13} are as defined above; and

wherein said carboxyl-protecting group for both the compounds of the formula (III-b^1) and (III-b^2) is selected from the group consisting of halo-substituted lower alkyl, lower alkanoyloxyalkyl, lower alkoxycarbonyloxyalkyl, lower alkenyl, aralkyl, 5-substituted-2-oxo-1,3-dioxyl-4-yl methyl, lower alkylsilyl, indanyl, phthalidyl and methoxymethyl.

5,606,102

PROCESS FOR THE MANUFACTURE OF BUTYL ACRYLATE BY DIRECT ESTERIFICATION

Michel Fauconet, Valmont; Christian Lacroix, Folkling; Nathalie Hess, and Jacqueline Bessalem, both of Saint-Avold, all of France, assignors to Elf Atochem S.A., Puteaux, France

Filed Jul. 27, 1995, Ser. No. 508,133

Claims priority, application France, Jul. 28, 1994, 94 09371

Int. Cl.[6] C07C *69/52*

U.S. Cl. 560—205 **11 Claims**

1. Process for the manufacture of butyl acrylate by direct esterification of acrylic acid by butanol, the said esterification being catalysed by sulphuric acid, the water of reaction being removed, during all or part of the reaction, in the form of an azeotropic mixture with butanol and butyl acrylate, the crude reaction mixture obtained comprising butyl acrylate, butanol, acrylic acid, butyl hydrogen sulphate and traces of sulphuric acid, characterized in that:

(a) butyl hydrogen sulphate is hydrolysed (in R2) to sulphuric acid using pure water (**18**) or using water (**2**) generated during the reaction;

(b) the medium, after hydrolysis, is separated by settling (in D2) into:

an organic phase containing butyl acrylate, butanol and a part of the unconverted acrylic acid; and

an aqueous phase containing sulpburic acid and the remainder of the unconverted acrylic acid;

(c) the organic phase is washed under alkaline conditions for the purpose of neutralizing the acrylic acid to alkaline acrylate which is soluble in the aqueous phase and the neutralized organic phase is then washed with water;

(d) the acrylic acid present in the alkaline salt form in the aqueous phase of the first basic neutralization is regenerated by addition of the acidic aqueous phase (**8**) resulting from the separation by settling (in D2) of the hydrolysis stage and, optionally, of a complement of sulphuric acid (**9**);

(e) the acrylic acid (**10**) thus regenerated in this aqueous phase is extracted (in C5) by a solvent chosen from butanol, butyl acrylate or a mixture of butyl acrylate and butanol;

(f) the organic phase (**13**) obtained at the head of the extraction column (C5), containing acrylic acid and butanol or butyl acrylate or a mixture of butanol and butyl acrylate, is recycled in the esterification reactor (R1);

(g) the aqueous phase (**15**), recovered at the foot of the solvent extraction column (C5), is conveyed, optionally after neutralization with sodium hydroxide (in **14**), as feed to a distillation column (C6) which makes it possible to recover butanol (**16**) at the head, for the purpose of recycling it upstream in the process, and to discard the spent aqueous liquors, which are virtually free from organic pollution.

5,606,103

ORGANOTIN CATALYZED TRANSESTERIFICATION

Louis E. Trapasso, West Long Branch; Philip L. Meisel, Greenbrook; Lee B. Meisel, Holmdel, all of N.J., and Willy K. Chwang, Germantown, Tenn., assignors to CPS Chemical Company, Inc., Old Bridge, N.J.

Continuation-in-part of Ser. No. 473,188, Jun. 7, 1995, Pat. No. 5,554,785, which is a continuation-in-part of Ser. No. 116,448, Sep. 3, 1993, Pat. No. 5,498,751. This application Dec. 28, 1995, Ser. No. 580,181

Int. Cl.[6] C07C *67/02*

U.S. Cl. 560—217 **19 Claims**

1. A method for transesterifying methyl or ethyl esters of carboxylic acids with alcobols and polyols comprising the steps of:

(A) providing a reaction mixture comprising:

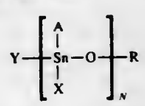
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(1) an alcohol or polyol selected from the group consisting of aralkyl, aliphatic and cycloaliphatic alcohols and polyols; and

(2) a methyl or ethyl ester of a carboxylic acid selected from the group consisting of mono- and polycarboxylic acids;

provided that said reaction mixture does not include a mixture of a polyol with a polycarboxylic acid;

(B) reacting said mixture at a temperature at which said alcohol or polyol and said carboxylic acid are liquid, and in the presence of a catalytically effective amount of an organotin catalyst having the structure:



wherein, for each Sn, A is independently selected from the group B consisting of alkyl groups containing from one to four carbon atoms and X is independently selected from the group consisting of alkyl, chlorine, bromine, hydroxyl, 1 to 18 carbon atom alkoxy and 1 to 18 carbon atom acyloxy groups, provided that when X is alkyl, the total number of carbon atoms in A and X for each Sn is no more than 4, and when X is not alkyl, the total number of carbon atoms in A for each Sn is no more than 4;

Y is selected from the group consisting of chlorine, bromine, hydroxyl, 1 to 18 carbon atom alkoxy and 1 to 18 carbon atom acyloxy groups; R is selected from the group consisting of hydrogen, 1 to 18 carbon atom alkyl and 1 to 18 carbon atom acyl groups or Y, X and -O-R together form a stannanoic acid group or an anhydride thereof; and N is an integer from 1 to 10;

so that an alcohol or a polyol ester of said carboxylic acid and methanol or ethanol are formed;

(C) washing said reaction mixture with aqueous alkali having a pH greater than about 13.2 so as to remove essentially all of said organotin catalysts; and

(D) recovering said alcohol or polyol carboxylic acid ester essentially free of said organotin catalyst.

5,606,104

PROCESS FOR THE PREPARATION OF ACYLOXYBENZENESULFONIC ACID OR SALT THEREOF

Yoshio Hatayama; Katsuhisa Inoue; Hiroshi Danjo, and Kohshiro Sotoya, all of Wakayama, Japan, assignors to Kao Corporation, Tokyo, Japan

PCT No. PCT/JP95/00061, § 371 Date Oct. 5, 1995, § 102(e) Date Oct. 5, 1995, PCT Pub. No. WO95/21816, PCT Pub. Date Aug. 17, 1995

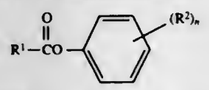
PCT Filed Jan. 20, 1995, Ser. No. 530,184

Claims priority, application Japan, Feb. 10, 1994, 6-016346; Nov. 30, 1994, 6-296786

Int. Cl.[6] C07C *69/52*

U.S. Cl. 560—221 **29 Claims**

1. A process for the preparation of an acyloxybenzenesulfonic acid which comprises sulfonating an acyloxybenzene (1) represented by the general formula (1):



(1)

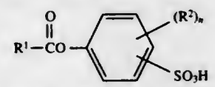
(wherein

R^1: a linear or branched alkyl or alkenyl group which has 1 to 35 carbon atoms in total and may be substituted with a halogen atom or may have an ester group, an ether group, an amido group or a phenylene group inserted thereinto, or a phenyl group.

R^2: a linear or branched alkyl group having 1 to 4 carbon atoms, or a methoxy group or an ethoxy group, and

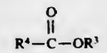
n: a number of 0 to 2 provided when n is 2, the two R^2s may be either the same or different from each other)

with a sulfonating agent to form an acyloxybenzenesulfonic acid represented by the general formula (5):



(5)

(wherein R^1 R^2 and n are each as defined above), characterized by adding at least one additive selected from among carboxylic acids and esters thereof (2) represented by the general formula (2):



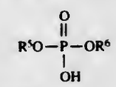
(2)

(wherein

R^3: a hydrogen atom or an alkyl group having 1 to 3 carbon atoms, and

R^4: a linear or branched alkyl or alkenyl group which has 2 to 35 carbon atoms in total and may be arbitrarily substituted with a halogen atom or a sulfo group, a carboxyl group, a hydroxyl group or a phenyl group or may have an ester group, an ether group, an amido group or a phenylene group inserted thereinto, or a phenyl group which may be either unsubstituted or substituted with a carboxyl group or an alkyl group);

alkyl phosphates (3) represented by the general formula (3):



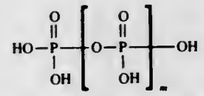
(3)

(wherein

R^5: a linear or branched alkyl group having 1 to 22 carbon atoms, and

R^6: a hydrogen atom or a linear or branched alkyl group having 1 to 22 carbon atoms, which may be either the same as R^5 or different from R^5);

polyphosphoric acids (4) represented by the general formula (4):



(4)

(wherein m represents an average degree of polycondensation of phosphoric acid and satisfies the relationship: $0<m\leqq 10$); amide and like compounds (6) which have a functional group or a linkage represented by the general formula (6):



(6)

(wherein X represents an oxygen atom or a sulfur atom) in the molecule; carbonic esters (7) having a functional group represented by the general formula (7):



(7)

and hydroxy compounds (8) having a functional group represented by the general formula (8):



(8)

with the proviso that the additive (6) must be added after the addition of the sulfonating agent and that the amount of addition is 2.5 to 200 mole % with respect to the additives (2) to (7) and 1 to 100 mole % with respect to the additive (8). each percentage being based on the compound (1).

5,606,105

WATER TREATMENT AGENT

Keith P. Davis; Peter A. T. Hoye, both of West Midlands; Michael J. Williams, Shropshire; Gary Woodward, Hereford & Worcester, and Martin P. Greenhall, Durham, all of England, assignors to Albright & Wilson Limited, West Midlands, England

Division of Ser. No. 947,094, Sep. 17, 1992, Pat. No. 5,386,038, which is a continuation-in-part of Ser. No. 809,960, Dec. 18, 1991, abandoned. This application Aug. 18, 1994, Ser. No. 292,371

Claims priority, application England, Dec. 18, 1990, 9027357; May 8, 1991, 9109861; Nov. 6, 1991, 9123501; Jun. 16, 1992, 9212748

Int. Cl.[6] C07F *9/22*

U.S. Cl. 562—8 **4 Claims**

1. A phosphonated cooligomer having the formula $(CHRCHR)_n$ where R is a COOM, CH_2CH_2OH, sulphono, sulphato or phosphono group, M is a cation, such that the cooligomer is water soluble, which contains at least two (CHRCHR) groups derived from different monomers, and wherein n is as least 3.

5,606,106

HEXAMETHLENE PHOSPHONATE CONCENTRATE

Michel A. O. Ledent, Saint-Marc, Belgium, assignor to Monsanto Europe S.A., Brussels, Belgium

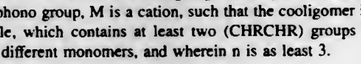
Filed Jul. 28, 1995, Ser. No. 508,501

Claims priority, application European Pat. Off., Sep. 1, 1994, 94870145

Int. Cl.[6] C07F *9/38*

U.S. Cl. 562—14 **4 Claims**

1. Aqueous storage-stable concentrate comprising at least 20% by weight of an aminomethylene phosphonic acid having the formula



wherein X is $—CH_2PO_3H_2$, CH_3, H and mixtures thereof with the proviso that at least one X is $—CH_2PO_3H_2$, n is an integer of 1 through 5 and from at least 18% to 22% by weight of a non-oxidizing mineral acid.

5,606,107

FORMIC ACID AND FORMALDEHYDE DESTRUCTION IN WASTE STREAMS

Lowell R. Smith, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jun. 7, 1995, Ser. No. 474,583

Int. Cl.[6] C02F *1/68;* **C07F** *9/28*

U.S. Cl. 562—17 **25 Claims**

1. A method for destroying formaldehyde and formic acid present in a liquid aqueous stream by converting formaldehyde to formic acid and converting formic acid to carbon dioxide and water, said method comprising the steps of:

(a) contacting said liquid stream with a supported Group VIII metal catalyst at a temperature in the range from room temperature to about 90° C. and at a pressure in the range from atmospheric to about 200 psi; and

(b) introducing air or molecular oxygen into said liquid stream to achieve and maintain the concentration of dissolved oxygen in the range of about 1–7 ppm in the vicinity of said catalyst so as to oxidize a desired amount of formaldehyde to formic acid and formic acid to carbon dioxide and water.

5,606,108

PROCESS FOR PREPARING ANIONIC POLYCARBONATE AND POLYESTER OLIGOMERS HAVING USEFUL ANTIVIRAL PROPERTIES

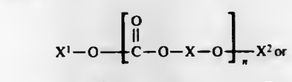
Michael J. Mullins, Midland, Mich., assignor to Merrell Pharmaceuticals Inc., Cincinnati, Ohio, and The Dow Chemical Co., Midland, Mich.

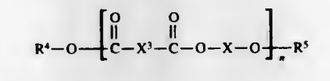
Division of Ser. No. 710,370, Jun. 10, 1991, Pat. No. 5,276,182, which is a continuation-in-part of Ser. No. 549,782, Jul. 9, 1990, abandoned. This application Oct. 6, 1993, Ser. No. 132,551

Int. Cl.[6] C07C *303/32*

U.S. Cl. 562—48 **14 Claims**

1. A process for preparing a polycarbonate or polyester oligomer of the formula:

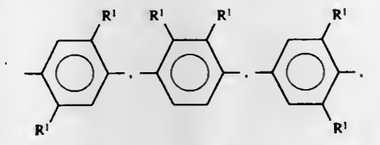


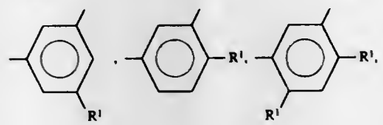


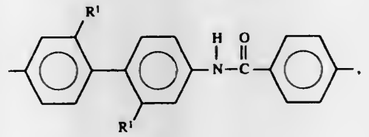
wherein:

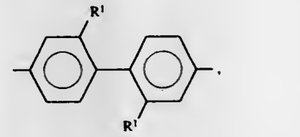
n represents an integer from 3 to 50;

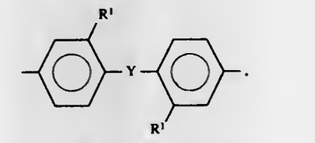
X represents:

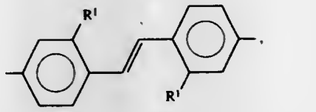






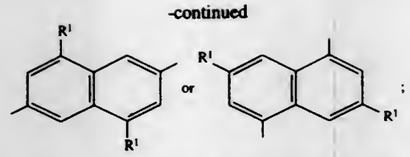






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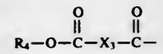


X^1 represents a HO—X group, where X is defined as above, or a C_{1-4} alkyl group, a phenyl group, or a phenyl group substituted with from 1 to 2 R^1 moieties and up to 3 substituents independently selected from a chloro or bromo atom or a C_{1-4} alkyl group;

X^2 represents a hydrogen atom, or $—CO_2X^1$, where X^1 is defined as above;

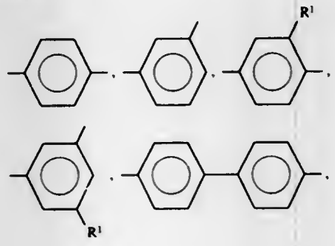
R^4 represents a hydrogen atom, a pharmaceutically-acceptable cation, or X^1 as defined above;

R^5 is defined by the formula:

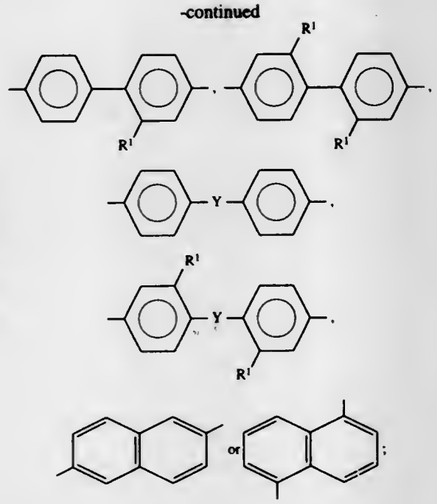


where R^4 is defined as above; and

X^3 represents:



-continued



wherein further:

R^1 represents $—SO_3R^4$, $—CO_2R^4$, $—PO_3(R^4)_2$, or $—OPO_3R^4$, wherein

R^4 is defined as above, and

Y represents $—CO_2—$, $—C{\equiv}C—N—$, $—N{=}N—$,

which comprises a interfacial polymerization reaction between a diphenol with a difunctional electrophile, with stirring in the presence of an acid acceptor, in either a water solvent or a combination solvent of water and an organic solvent, at a pH between about 7 and about 9, at a temperature from about 0° C. to about 40° C. and wherein the oligomer prepared has a number average molecular weight of less than 10,000 and is water-soluble.

5,606,109

LIQUID VOLUME MEASURING APPARATUS

Henry B. Sisk, Sallins; John J. Madden, Dublin; Niall A. O'Sullivan, Dublin; Kieran A. Comerford, Dublin, and Oliver S. Hood, Dublin, all of Ireland, assignors to Burgee Limited, Cork, Ireland

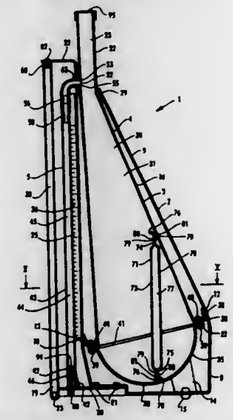
PCT No. PCT/IE93/00043, § 371 Date May 16, 1995, § 102(e) Date May 16, 1995, PCT Pub. No. WO94/03781, PCT Pub. Date Feb. 17, 1994

PCT Filed Jul. 30, 1993, Ser. No. 374,647

Claims priority, application Ireland, Jul. 31, 1992, 92 2520; Apr. 1, 1993, S93 0259

Int. Cl.[6] G01F *25/00*

U.S. Cl. 73—3 **11 Claims**



1. Apparatus for determining volume of a liquid, the apparatus (**1,101**) comprising:

a main vessel (**4,103**) having a main hollow interior region (**34,113**) for holding a predetermined volume of the liquid,

a measuring vessel (**5,122**) having a secondary hollow interior region (**45,121**) for receiving and measuring a volume of the liquid received from the main hollow interior region (**34,113**), the secondary hollow interior region (**45,121**) being of transverse cross-sectional area smaller than the maximum transverse cross-sectional area of the main hollow interior region (**34,113**),

a communicating means (**49,123**) for communicating the measuring vessel (**5,122**) with the main vessel (**4,123**), for accommodating the liquid from the main hollow interior region (**34,113**) to the secondary hollow interior region (**45,121**),

a wear means being formed by the communicating means (**49,123**) over which the liquid passes from the main hollow interior region (**34,113**) to the secondary hollow interior region (**45,121**), the weir means (**55,129**) being positioned for retaining the predetermined volume of liquid in the main hollow interior region (**34,113**), and

a scale means (**26,140**) cooperating With measuring vessel (**5,122**) for determining the volume of liquid in the apparatus (**1,101**), wherein

an inhibiting means (**56,130**) is provided and co-operates with the communicating means (**49,123**) for selectively preventing passage of liquid into the secondary hollow interior region (**45,121**) of the measuring vessel (**5,122**).

5,606,110

DIAPHRAGM CONSTRUCTION FOR FREE PISTON SHOCK TUBE/TUNNEL

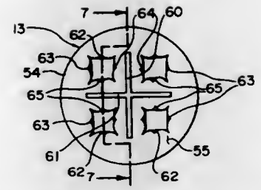
John J. Lacey, Jr., Minnetonka, Minn., assignor to Aero Systems, Engineering, Inc., St. Paul, Minn.

Filed Sep. 13, 1994, Ser. No. 304,917

Int. Cl.[6] G01N *3/30*

U.S. Cl. 73—12.08 **11 Claims**

1. A free piston shock tube comprising:



an elongated compression tube having a piston end and a diaphragm end;

an elongated shock tube having a diaphragm end and a test end, said diaphragm end of said shock tube being connected with said diaphragm end of said compression tube;

a piston within said compression tube adapted for compression movement from said piston end to said diaphragm end of said compression tube; and

a diaphragm positioned in the area of connection between said compression tube and said elongated shock tube, said diaphragm having two or more rupture areas.

5,606,111

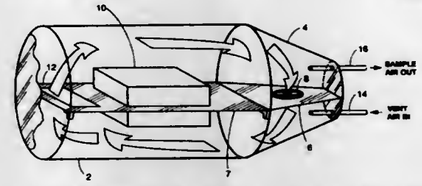
APPARATUS AND METHOD FOR MEASUREMENT OF OFFGASSING RATE

Roland J. Pilié , Williamsville; Thomas M. McMahon, Hamburg, and Michael D. Moskal, Depew, all of N.Y., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 24, 1995, Ser. No. 547,473

Int. Cl.[6] G01N *7/14*

U.S. Cl. 73—19.12 **19 Claims**



1. A cell for measuring gases emitted by a test article which comprises

(a) a hollow, enclosed, gas impermeable chamber having side walls terminating at a closed end and a gas transfer end, which gas transfer end is capable of receiving and emitting a flow of a ventilation gas therethrough;

(b) a platform positioned in said chamber and extending from the closed end to the gas transfer end defining a first chamber portion including a first gas transfer end portion, and a second chamber portion including a second gas transfer end portion, said platform having an opening therethrough at a location proximate to the closed end of the chamber;

(c) means for fixing a test article through the platform such that part of the test article is positioned and exposed within the first chamber portion and another part of the test article is positioned and exposed within the second chamber portion; and

(d) means for continuously moving a gas into the first gas transfer end portion, through the first chamber portion, over that part of the test article exposed within the first chamber portion, through the platform opening proximate to the closed end of the chamber, through the second chamber portion, over that part of the test article exposed within the second chamber portion, and out the second gas transfer end portion.

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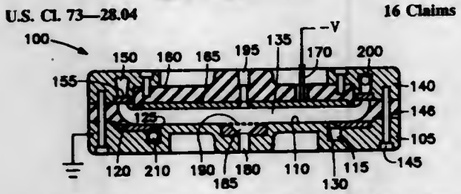
RADIAL DIFFERENTIAL MOBILITY ANALYZER

Richard C. Flagan, and Shou-Hua Zhang, both of Pasadena, Calif., assignors to California Institute of Technology, Pasadena, Calif.

Division of Ser. No. 508,311, Jul. 27, 1995. This application Jul. 15, 1996, Ser. No. 680,160

Int. Cl.[6] G01N *27/60*

U.S. Cl. 73—28.04 16 Claims



1. A differential mobility analyzer for the classification of aerosols, comprising:

a generally arcuate, annular aerosol channel for the introduction of said aerosol into said analyzer, said aerosol channel having an axis of symmetry;

a first electrode provided with an excess flow aperture generally aligned with said axis of symmetry;

a second electrode parallel to, and forming a sampling cavity intermediate to, said first electrode, and provided with a sample flow aperture generally aligned with said axis of symmetry;

a generally arcuate, annular sheath air channel for the introduction of sheath air into said analyzer, having an axis of symmetry generally aligned with said axis of symmetry of said aerosol channel;

means for maintaining an electric potential difference between said electrodes; and

means for introducing sheath air into said sheath air channel, and said aerosol into said aerosol channel, in a tangential manner.

5,606,113

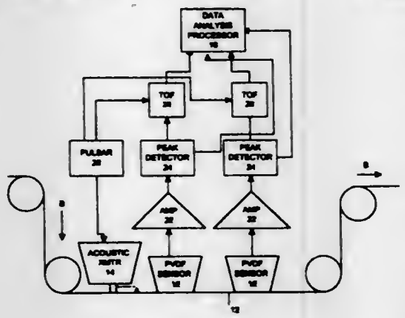
ACOUSTIC METHODS TO MONITOR SLIVER LINEAR DENSITY AND YARN STRENGTH

Shuh-Haw Sheen; Hual-Te Chien, both of Naperville, and Apostolos C. Raptis, Downers Grove, all of Ill., assignors to The University of Chicago, Chicago, Ill.

Filed Sep. 6, 1994, Ser. No. 301,346

Int. Cl.[6] G01N *9/24;29/00*

U.S. Cl. 73—32 A 15 Claims



1. Apparatus for monitoring a sliver or yarn to identify predefined characteristics comprising:

means for generating transverse waves into the sliver or yarn;

sensor means responsive to said transverse waves generating means for detecting transverse wave propagation in the sliver or yarn and for generating a responsive signal; said sensor means including at least two thin film, polyvinylidene fluoride (PVDF) piezoelectric sensors; and

signal processing means responsive to said sensor means for processing said generated responsive signal to identify the predefined characteristics including sliver or yarn linear density, said signal processing means including a respective peak detector coupled to each of said at least two thin film, polyvinylidene fluoride (PVDF) piezoelectric sensors, each said peak detector for detecting peak values in said generated responsive signal, a respective time-of-flight detector coupled each said peak detector for identifying time-of-flight values and a data analysis processor for identifying relative amplitude loss values, and for utilizing both said identified time-of-flight values and said relative amplitude loss values to determine sliver or yarn linear density.

5,606,114

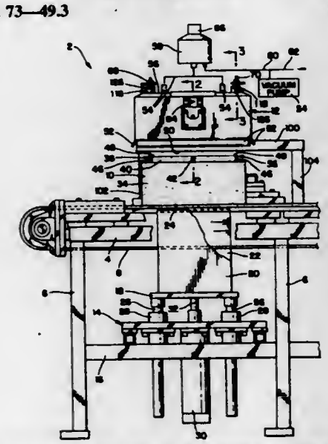
BATTERY LEAK TESTING APPARATUS

William P. Palmer, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 18, 1995, Ser. No. 574,084

Int. Cl.[6] G01M *3/16*

U.S. Cl. 73—49.3 6 Claims



1. Apparatus for leak testing an hydrogen-generating, electric storage battery having a pair of opposite polarity terminals for applying electrical current to said battery, and a vent for exhausting said hydrogen from within said battery comprising: an enclosure adapted to receive said battery therein; a pair of electrical contacts extending into said enclosure to engage said terminals in said enclosure for applying sufficient electrical current to said battery to over-charge said battery and generate hydrogen therein; a coupling for sealingly engaging said vent to prevent escape of said hydrogen from said vent into said enclosure; a pressure sensor; a conduit engaging said coupling for routing hydrogen exiting said vent to said pressure sensor; an exhaust port in said enclosure for extracting gases from near the top of said enclosure; a vacuum pump communicating with said port for extracting said gases from said enclosure via said port; and a sensor communicating with the extracted gases for sensing the presence of hydrogen in said atmosphere.

5,606,115

MEASURES DEVICE FOR MEASURING THE RHEOLOGICAL PROPERTIES OF A SUBSTANCE

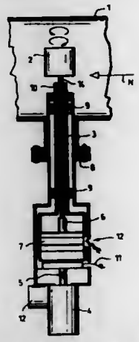
Esko Kamrat, Vantaa, Finland, assignor to Janesko, Oy, Vantaa, Finland

Filed Jun. 5, 1995, Ser. No. 463,034

Claims priority, application Finland, Feb. 27, 1995, 950897

Int. Cl.[6] G01N *11/14*

U.S. Cl. 73—54.28 5 Claims



1. A measuring device for measuring the rheological properties of a substance, said measuring device comprising a sensor arranged along an axis normal to the flow direction in a process flow, a reversible drive and a shaft collocated along said axis for rotating the sensor in the process in one of a first rotational direction and a second rotational direction opposite to the first rotational direction, means for reversing the direction of the drive to rotate the sensor in opposite directions and a measuring element for measuring the torque produced between the sensor and the process flow with the sensor rotating in one of the first and second rotational directions, the sensor being axially symmetric about said axis, the drive and the mechanical connections between the drive and the sensor being axially symmetric about said axis, and the torque-measuring element producing output proportional to the absolute value of the torque in both the opposite directions of rotation of the sensor.

5,606,116

CHROMATOGENOUS TESTING SYSTEM FOR URINALYSIS

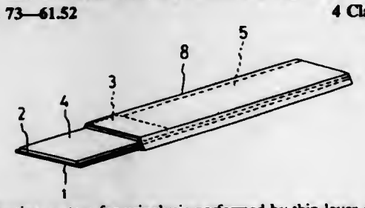
Yuko Yoneda, and Toshiyuki Itooka, both of Toyama, Japan, assignors to Kabushiki Kaisha Nippon Gene, Tokyo, Japan

Filed Oct. 30, 1995, Ser. No. 550,467

Claims priority, application Japan, Oct. 29, 1994, 6-014995 U

Int. Cl.[6] A01N *1/02;* G01N *33/52;* C12Q *1/68*

U.S. Cl. 73—61.52 4 Claims



1. A testing system for urinalysis performed by thin layer chromatography techniques, comprising:

a support member;

a urine applying sector;

a reagent phase layer;

a urine-reagent developing phase layer; and

protective means, applied onto the edges and the outer surfaces of said reagent phase layer and said urine-reagent developing phase layer, for making said edges and outer surfaces waterproof.

5,606,117

PRESSURE SENSOR FOR MEASURING PRESSURE IN AN INTERNAL COMBUSTION ENGINE

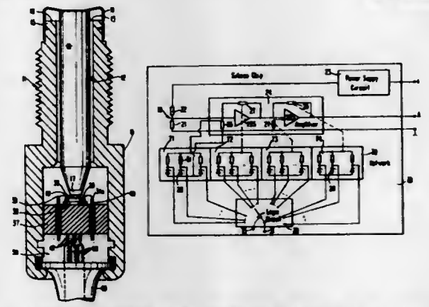
Manfred Vogel, Ditzingen-Heimberdingen; Werner Herden, Gerlingen; Jiri Marek, Reutlingen, and Kurt Weiblen, Metzingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Continuation-in-part of Ser. No. 191,004, Feb. 3, 1994, abandoned, which is a continuation-in-part of Ser. No. 927,650, Sep. 4, 1992, abandoned. This application Dec. 16, 1994, Ser. No. 358,147

Claims priority, application Germany, Feb. 27, 1991, 41 06 102.0

Int. Cl.[6] G01M *15/00*

U.S. Cl. 73—115 20 Claims



1. A pressure sensor for a combustion chamber of an internal combustion engine, said pressure sensor comprising:

a housing having a side facing the combustion chamber;

a membrane closing said housing on said side facing said combustion chamber;

a monocrystalline silicon chip inside said housing, wherein said monocrystalline silicon chip includes sensor circuit means for measuring a pressure in said combustion chamber and said sensor circuit means comprises a bridge circuit device including at least one measuring element made of a piezoresistive material and at least one bridge circuit resistor connected to said at least one measuring element, said at least one measuring element having means for producing an electrical signal in response to an applied pressure;

a plunger positioned between said membrane and said monocrystalline silicon chip to transmit said combustion chamber pressure to be determined to said at least one measuring element;

amplifier means for amplifying said electrical signal from said at least one measuring element, said amplifier means being located on said monocrystalline silicon chip and said amplifier means including means for controlling an offset of said electrical signal and means for controlling sensor sensitivity;

network circuit means for adjusting said means for controlling the offset and said means for controlling the sensor sensitivity, wherein said network circuit means is located on said monocrystalline silicon chip and includes an adjusting circuit for adjusting the offset of the electrical signal, an adjusting circuit for adjusting the sensor sensitivity, an adjusting circuit for adjusting the temperature compensation of the offset and an adjusting circuit for adjusting the temperature compensation

of the sensor sensitivity; and each of said adjusting circuits includes a plurality of adjusting circuit branches connected in parallel with each other, each of said adjusting circuit branches including an adjusting resistor and a semiconductor element connected electrically in series with each other; and

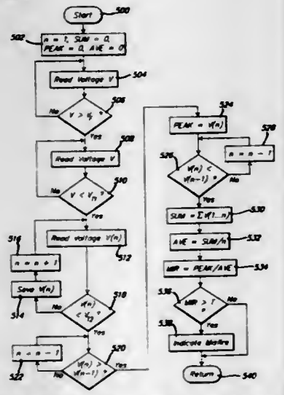
logic means connected electrically with each of said adjusting circuits for making at least one predetermined one of said semiconductor elements electrically conductive so that at least one predetermined one of said adjusting circuit branches can be made conductive with a resistance determined by said adjusting resistor in said at least one predetermined adjusting circuit branch made conductive thereby.

5,606,118

SYSTEM AND METHOD FOR DETECTING MISFIRE IN AN INTERNAL COMBUSTION ENGINE

Michael J. Muth, Grosse Ile, and John W. Platak, Livonia, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sep. 5, 1995, Ser. No. 523,205
Int. Cl.[6] G01M *15/00*
U.S. Cl. 73—116 **11 Claims**



1. A method for detecting misfire in an internal combustion engine having an ignition system including an ignition coil with a primary winding and a secondary winding, at least one spark plug, and ignition control means responsive to engine operating conditions for generating an ignition signal, the ignition coil generating sparking voltage for firing the spark plug in response to the ignition signal; the method comprising the steps of:

sensing sparking voltage;

detecting firing of an ignition spark;

after detecting said firing of said ignition spark, determining an average sparking voltage by comparing said sparking voltage against a first predetermined threshold to determine when to begin sampling said sparking voltage, sampling said sparking voltage to obtain a number of sample sparking voltage values, comparing said sparking voltage against a second predetermined threshold to determine when to end said sampling, and deriving said average sparking voltage by dividing a sum of said sample sparking voltage values by said number;

determining a peak sparking voltage after said firing of said ignition spark; and

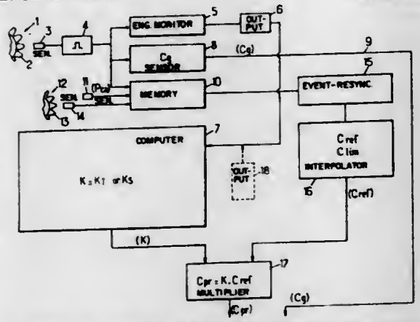
indicating misfire in response to said average sparking voltage and said peak sparking voltage.

5,606,119

METHOD AND APPARATUS FOR DETECTING MISFIRES IN A CONTROLLED IGNITION INTERNAL COMBUSTION ENGINE

Philippe Wallerand, Sartrouville, and Christophe Genin, Noisiel, both of France, assignors to Magneti Marelli France, Nanterre Cedex, France

PCT No. PCT/FR94/00015, § 371 Date Jul. 5, 1995, § 102(e) Date Jul. 5, 1995, PCT Pub. No. WO94/16209, PCT Pub. Date Jul. 21, 1994
PCT Filed Jan. 6, 1994, Ser. No. 481,325
Claims priority, application France, Jan. 8, 1993, 93 00143
Int. Cl.[6] G01M *15/00*
U.S. Cl. 73—117.3 **20 Claims**



1. Method of detecting misfires in a controlled ignition internal combustion engine, comprising the steps of:

a) deriving, for each combustion-expansion phase in each cylinder of the engine, a signal representative of a measure of a gas torque produced in each corresponding cylinder during the corresponding combustion expansion phase,

b) measuring a rotational speed of the engine and deriving (4) a signal representative of this rotational speed during at least an intake phase preceding the combustion-expansion phase of each corresponding cylinder,

c) measuring a pressure at an air inlet manifold for each corresponding cylinder, and deriving a signal representative of this pressure during at least the intake phase preceding the combustion-expansion phase of the corresponding cylinder,

d) entering speed and inlet manifold pressure signals as addresses in a map of reference theoretical gas torque, and deducing therefrom a signal representative of a reference torque,

e) assigning the reference torque a multiplier weighting coefficient associated with each corresponding cylinder and/or a steady-state or transient operating mode of the engine, and deducing therefrom a signal representative of an expected theoretical torque, and

f) comparing the signals of the measured gas torque and of the expected theoretical torque and concluding that there is a misfire when a ratio of the gas torque to the expected theoretical torque becomes less than a defined ratio threshold.

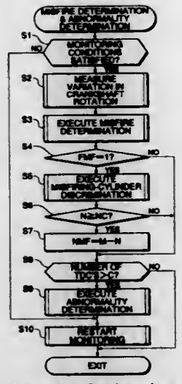
5,606,120

MISFIRE-DETECTING SYSTEM FOR INTERNAL COMBUSTION ENGINES

Hisashi Daicho, and Fumio Hara, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 30, 1995, Ser. No. 550,100
Claims priority, application Japan, Oct. 31, 1994, 6-290698
Int. Cl.[6] F02D *45/00*; G01M *15/00*
U.S. Cl. 73—117.3 **9 Claims**

1. A misfire-detecting system for an internal combustion engine, comprising:



temperature-detecting means for detecting a temperature of said engine;

misfire-detecting means for carrying out detection of a misfire occurring in said engine when said detected temperature falls within a predetermined region;

load-detecting means for detecting a load condition of said engine; and

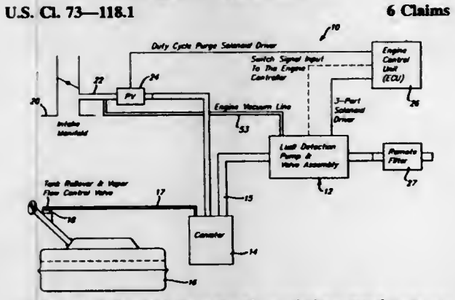
changing means for changing said predetermined region according to said detected load condition of said engine.

5,606,121

METHOD OF TESTING AN EVAPORATIVE EMISSION CONTROL SYSTEM

William B. Blomquist, Clarkston; Gary D. Dawson, Rochester; Roland T. Richardson, Detroit; Glen Tallarek, Grosse Pointe Woods, all of Mich.; John E. Letcher, Glendale, Ariz., and Mark E. Hope, Ann Arbor, Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Mar. 5, 1996, Ser. No. 611,137
Int. Cl.[6] G01M *15/00*
U.S. Cl. 73—118.1 **6 Claims**



1. A method of testing an evaporative emission control system to determine if the evaporative emission control system has reached a predetermined pressure, said method comprising the steps of:

pulsing a leak detection pump at a predetermined rate;

determining if a last pump period is greater than or equal to a predetermined test mode period threshold;

pressurizing the evaporative emission control system if the last pump period is less than a test mode period threshold; and

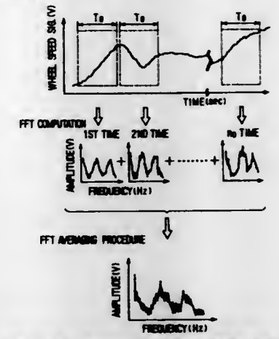
continuing said method if the last pump period is equal to or greater than the test mode period threshold.

5,606,122

TIRE PNEUMATIC PRESSURE DETECTOR

Takeyasu Taguchi, Oobu; Toshiharu Naito, Okazaki; Nobuyoshi Onogi, Nagoya; Ikuo Hayashi, and Yoshihiro Nishikawa, both of Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, and Nippon Soken, Inc., Nishio, both of Japan

Filed Sep. 8, 1995, Ser. No. 525,205
Claims priority, application Japan, Sep. 9, 1994, 6-241975
Int. Cl.[6] B60C *23/00;23/02*
U.S. Cl. 73—146.2 **27 Claims**



1. A tire pneumatic pressure detector comprising:

cruising signal generation means for generating a cruising signal during cruising of a vehicle, said cruising signal including vibration frequency components of a tire installed on said vehicle;

extraction means for extracting an extracted characteristic from said cruising signal, said extracted characteristic being one of a resonance frequency of said tire and a spring constant of said tire;

tire pneumatic pressure prediction means for predicting tire pneumatic pressure based on said extracted characteristic;

signal generation means for generating predetermined signals when said tire is replaced with a tire having a predeterimined pneumatic pressure;

memory means for storing, for a plurality of vehicle types, data representative of a substantially linear relationship of a change in said extracted characteristic with a change in said tire pneumatic pressure;

computation means for, responsive to said predetermined signal, computing a critical characteristic corresponding to a critical pneumatic pressure of a presently installed tire based on said relationship stored in said memory means and said extracted characteristic, said critical characteristic being one of a critical resonance frequency and a critical spring constant; and

determination means for determining tire pneumatic pressure based on said critical characteristic.

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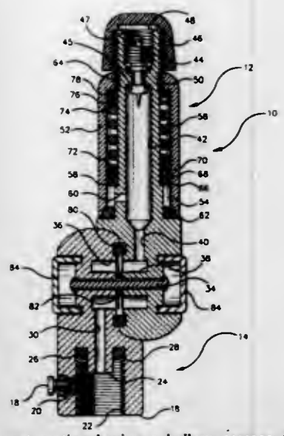
TIRE PRESSURE MONITORING DEVICE CAPABLE OF BEING FOLDED

Masoud Rabizadeh, 23325 Saint Andrews, Mission Viejo, Calif. 92692

Continuation-in-part of Ser. No. 441,729, May 16, 1995, Pat. No. 5,503,012. This application Apr. 2, 1996, Ser. No. 626,501
Int. Cl.[6] B60C *23/02*
U.S. Cl. 73—146.8 **8 Claims**

1. A tire pressure monitoring device for use with a pneumatic wheel assembly mounted to a vehicle, the wheel assembly including a wheel supporting a tire, the tire having an interior filled with air and the air having a pressure, said tire pressure monitoring device comprising:

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an attachment portion having a hollow passage therein, said attachment portion being securable to an existing valve stem such that said hollow passage communicates with the interior of the tire; and

a gauge portion having a central tube with a hollow interior, said gauge portion having a first and a second end, said first end being hingedly attached to said attachment portion such that said hollow interior communicates with said hollow passage, said central tube having a bleeder valve at said second end and said central tube supporting a pressure gauge, whereby said tire pressure monitoring device can be folded so as to reduce a distance to which said tire pressure monitoring device projects from the wheel.

5,606,124

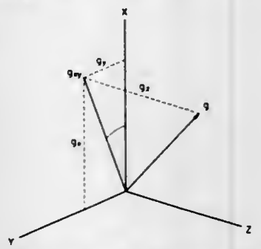
APPARATUS AND METHOD FOR DETERMINING THE GRAVITATIONAL ORIENTATION OF A WELL LOGGING INSTRUMENT

Mark R. Doyle; David M. Chace; Dennis E. Roessler; John T. Evans, and Paul A. Bergren, all of Houston, Tex., assignors to Western Atlas International, Inc., Houston, Tex.

Filed May 20, 1996, Ser. No. 655,304

Int. Cl.[6] E21B *47/00*

U.S. Cl. 73—152.01 **14 Claims**



7. A method for determining the orientation of an instrument with respect to gravity, comprising:

measuring components of said gravity along mutually orthogonal axes, one of said axes substantially parallel to an axis of said instrument;

measuring output of a tilt sensor disposed in said instrument along two orthogonal axes, one of said tilt axes substantially parallel to said instrument axis;

rotating said instrument about said instrument axis;

calculating a roll angle from said measurements of said components of said gravity perpendicular to said instrument axis, said step of calculating said roll angle comprising calculating biases of sensors used to measure said components of said gravity perpendicular to said instrument axis by averaging measurements made by said sensors during said rotating, said step of calculating said roll angle comprising calculating a ratio of gains of said sensors from peak amplitudes of said measurements made during said rotating;

calibrating said output of said tilt sensor perpendicular to said instrument axis by characterizing said output with respect to said roll angle;

calibrating said output of said tilt sensor perpendicular to said axis by multiplexing said outputs from said tilt sensor along and perpendicular to said axis into a signal processing unit, whereby said outputs of said tilt sensor along and parallel to said axis are assumed to be calibrated by substantially identical gain and offset calibration constants;

calibrating gain and offset of all of said sensors used to measure said components of said gravity by scaling said measurements of gravity previously corrected for bias of said sensors with respect to said calibrated tilt sensor outputs; and

calculating said orientation from said gravity measurements after correction for gain and offset of said gravity sensors.

5,606,125

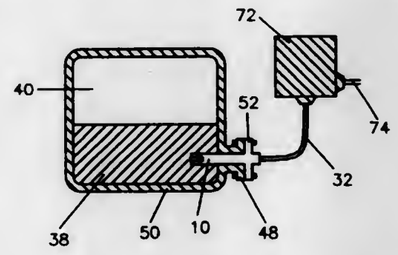
MATERIAL LEVEL-INTERFACE CONTROL SYSTEM

Kevin Lyons, and Steven Lyons, both of 2155 Tree La., Kingwood, Tex. 77339

Filed Jun. 28, 1994, Ser. No. 266,651

Int. Cl.[6] G03F *23/00*

U.S. Cl. 73—293 **5 Claims**



1. A system for sensing material level and interface in a vessel or conduit comprising:

a. a sensor assembly wherein a light emitter communicating with a light detector are apositioned each other, axially, across a channel separating said light emitter and said light detector wherein said light detector provides a means for signaling a value which is a function of material presence within said channel and the intensity of light radiated from said light emitter across said channel through said material to said light detector;

b. a means of housing said light emitter and said light detector to act as a probe for insertion into vessel or conduit;

c. a means of compensating for the effects of thermal fluctuations in the sensed material on said light emitter and said light detector wherein a second light emitter and light detector are affixed within the interior of said probe, apositioned to each other, whereby said light emitter and said light detector are optically isolated from sensed material, yet thermally active;

d. a means of determining an amount of light energy absorbed in said channel by sensed material, wherein said value of said light energy serves as an input value;

e. a means of providing an output upon condition of said material presence at said sensor assembly, whereby said output is generated and changeable with respect to sensed material.

5,606,126

APPARATUS AND A METHOD FOR AUTOMATICALLY MEASURING THE DENSITY OF AN OBJECT

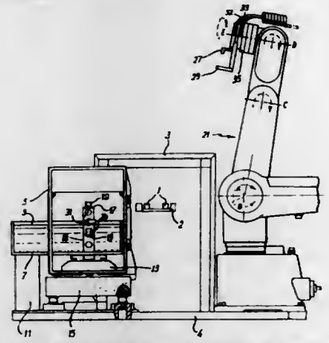
Reginald P. Glenville, Preston, United Kingdom, assignor to British Nuclear Fuels PLC, Warrington, United Kingdom

Filed Feb. 25, 1994, Ser. No. 202,116

Claims priority, application United Kingdom, Feb. 26, 1993, 9303887

Int. Cl.[6] G01N *9/10*

U.S. Cl. 73—433 **19 Claims**



1. Apparatus for automatically measuring the density of an object in a series of objects, said apparatus comprising:

a first weighing means for weighing the object in a first medium which is dry;

an intermediate stage for temporarily receiving said object after being weighed in said dry medium;

a second weighing means for weighing the object in a second medium which is wet, said first and second weighing means comprising respective first and second weighing pans connected to at least one analytical balance;

a robotic pick and place device having a first gripper means for gripping the object when dry and a second gripper means for gripping the object when wet, the device comprising control means for controlling the first gripper means to place the object on and remove the object from the first weighing means and place the object on said intermediate stage and for controlling the second gripper means to pickup said object from said intermediate stage and to place the object on and remove the object from the second weighing means, said at least one balance providing electrical output signals related to the weight of said object on said first and second weighing pans; and

signal processing means, responsive to said electrical output signals, for calculating the density of said object.

5,606,127

METHOD OF SETTING A DISPLAYABLE MACHINE FUNCTION OF A WHEEL BALANCING MACHINE AND CORRESPONDING WHEEL BALANCING MACHINE

Kurt Humber, Griesheim, Germany, assignor to Hofmann Werkstatt-Technik GmbH, Pfungstadt, Germany

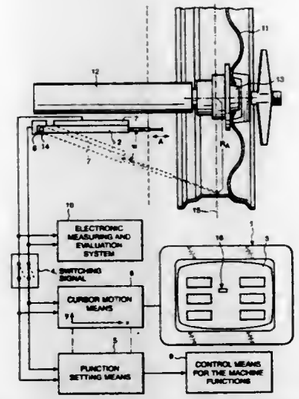
Filed Oct. 20, 1995, Ser. No. 546,310

Claims priority, application Germany, Dec. 9, 1994, 44 43 963.6

Int. Cl.[6] G01M *1/02*

U.S. Cl. 73—462 **3 Claims**

1. A wheel balancing machine comprising a machine housing, a sensing member arranged movably on the machine housing for sensing wheel dimensions of a wheel to be balanced, a function setting means for setting respective machine functions, a display means for displaying a machine function, and connecting means adapted to connect the setting means and the display means to the sensing member in sucb a way that by virtue of the movement of the sensing member a displayed machine function can be set in the function setting means, wherein the connecting means include converter means operable in dependence on movement of the sensing member to generate electrical signals for the function setting means and the display means, and a switching means for connecting the converter means to the function setting means for setting to the displayed machine function.



5,606,128

SEMICONDUCTOR ACCELERATION DETECTING DEVICE

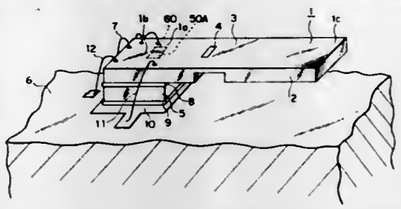
Toru Araki, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 26, 1995, Ser. No. 585,256

Claims priority, application Japan, Jan. 30, 1995, 7-013070

Int. Cl.[6] G01P *15/12;15/09*

U.S. Cl. 73—514.16 **11 Claims**



1. A semiconductor acceleration detecting device comprising:

a substrate for being mounted to an object, said substrate having electrical conducting means provided thereon;

a pedestal mechanically and electrically connected to said conducting means;

a beam mounted on said pedestal;

a weight on said beam;

acceleration detecting means on said beam for detecting an acceleration applied to the object according to deflection of said weight;

a constant current source for feeding a current through a path including said substrate, said pedestal, and said beam; and

detachment means for detecting detachment between said substrate and said pedestal and/or between said pedestal and said beam by detecting the current flowing through the path.

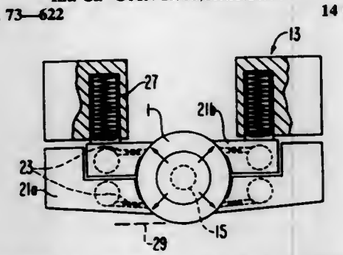
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5,606,129

PROCESS FOR SCANNING INSPECTION OF ROTATIONALLY SYMMETRICAL, PARTICULARLY CYLINDRICAL, RECEPTACLES USING A DYNAMIC GAS BEARING, AND INSPECTION DEVICE FOR SAID PROCESS

Martin Lehmann, Obere Farnbühlstr. 1, 5610 Wohlen, Switzerland

Filed Jan. 19, 1995, Ser. No. 374,904
Claims priority, application Switzerland, Jan. 19, 1994, 153/94
Int. Cl.[6] G01N 29/06;29/26;21/90
U.S. Cl. 73—622 14 Claims



1. A process for scanning inspection of receptacles, the outer surface thereof defining circles in cross-sectional planes perpendicular to an axis which is perpendicular to a bottom surface of said receptacle, comprising the steps of:

introducing a receptacle into a bearing arrangement having bearing surfaces extending along said outer surface of said receptacle and defining in each cross-sectional plane a circle of larger diameter than the circle defined by said outer surface in such a cross-sectional plane;

injecting a gas from said bearing surfaces of said bearing arrangement towards said outer surface of said receptacle so as to floatingly centralize said receptacle between said bearing surfaces of said bearing arrangement;

rotating said outer surface of said receptacle within said bearing arrangement along said bearing surfaces;

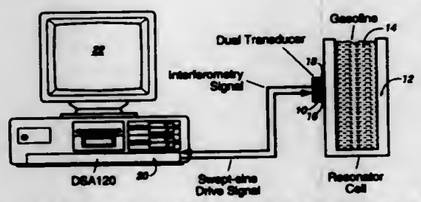
scanning said rotated outer surface by means of a scanning unit provided stationarily with respect to said bearing arrangement.

5,606,130

METHOD FOR DETERMINING THE OCTANE RATING OF GASOLINE SAMPLES BY OBSERVING CORRESPONDING ACOUSTIC RESONANCES THEREIN

Dipen N. Sinha, Los Alamos, N.M., and Brian W. Anthony, Clearfield, Pa., assignors to The Regents of the University of California, Los Alamos, N.M.

Filed Mar. 25, 1994, Ser. No. 218,012
Int. Cl.[6] G01N 9/24
U.S. Cl. 73—627 7 Claims



1. A method for determining the octane rating of a sample of gasoline, said method comprising the steps of:

a. establishing a pattern of acoustic interference peaks in the gasoline sample to be investigated by applying a continuous periodic acoustical signal having a chosen frequency range; and

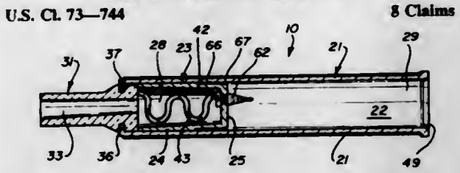
b. measuring the frequency at the peak maximum of the interference peaks in the chosen frequency range.

5,606,131

PISTON MANOMETER WITH SPRING CONSTANT DEPENDENT UPON POSITION

James W. Pope, North Fort Myers, Fla., assignor to Smiths Industries Medical Systems, Inc., Keene, N.H.

Filed Nov. 27, 1995, Ser. No. 562,934
Int. Cl.[6] G01L 7/16; A61B 5/03
U.S. Cl. 73—744 8 Claims



1. Apparatus for providing an indication of the magnitude of a device air pressure present in a device relative to a reference air pressure, said apparatus comprising

(a) a housing forming an internal bore, said bore having first and second end portions;

(b) said first end portion being connectable to said device such that said device air pressure is present in said first end portion, and said second end portion being exposed to said reference air pressure;

(c) a slider movably mounted in said bore and exposed to said device air pressure, said slider being at an at-rest position when said device air pressure is substantially equal to said reference air pressure; and

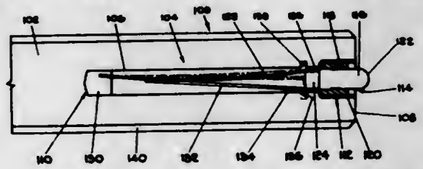
(d) first and second tension springs connected between said slider and said housing, each of said springs having one end thereof connected to said slider and another end thereof connected to said housing, said slider being movable in two ranges of movement, said first range being adjacent said at-rest position and said second range being displaced from said at-rest position, only said first spring restraining movement of said piston in said first range and both said first and second springs restraining movement of said piston in said second range.

5,606,132

STRAIN INDICATOR USING AN OPTICAL INDICATOR MEANS

Neil A. A. Simpson, Burn of Daff Farm, Downies, Portlehen, Aberdeen AB1 4QX, Great Britain

Filed Apr. 28, 1995, Ser. No. 431,912
Claims priority, application United Kingdom, Apr. 29, 1994, 9408536
Int. Cl.[6] G01L 1/24
U.S. Cl. 73—800 25 Claims



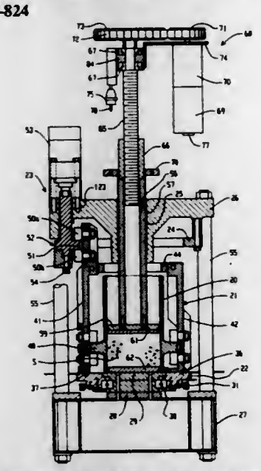
1. A strain indicator for incorporation between a first abutment means and a second abutment means to indicate variations in the mutual separation of said first and said second abutment means, said strain indicator comprising an elongate member having opposite ends adapted to be lodged respectively against said first and second abutment means, said elongate member being deformable in a substantially elastic manner by longitudinal compression applied between said opposite ends, at least part of said elongate member being free to move transversely within said strain indicator, said deformation of said elongate member by said longitudinal compression causing a variation in the curvature thereof between said opposite ends, said elongate member carrying optical indicator means which vary in position substantially in accordance with the variation of said curvature of said elongate member whereby variations in the position of said optical indicator means during use of said strain indicator optically indicate variations in the curvature of said elongate member consequent upon variations in the longitudinal compression thereof induced by variations in said mutual separation of said first and second abutment means.

5,606,133

GYRATORY COMPACTOR WITH MOLD SPECIMEN EXTRUDER

Theodore G. Hines, Grove City, and Roger A. Pyle, Clarion, both of Pa., assignors to Pine Instrument Company, Grove City, Pa.

Filed Oct. 6, 1995, Ser. No. 540,398
Int. Cl.[6] G01N 3/08
U.S. Cl. 73—824 12 Claims



1. A materials testing apparatus for subjecting a material to forces comprising, in combination,

a frame having a mold supporting surface for supporting a mold, a mold carriage, mold carriage rotation means, a mold carriage tilt link assembly, a ram, and a ram driving assembly,

said mold having a cavity for containing a quantity of said material,

said mold in contact with said mold carriage,

said mold carriage further connected to said mold carriage tilt link assembly, said mold carriage tilt assembly operative to lift a portion of said mold carriage to tilt and fixedly position a vertical axis of said mold within said mold carriage,

means for rotating said mold carriage about said mold,

a material compaction ram connected to a ram driving assembly, said ram drivingly insertable into said mold to exert a compressive force upon said material within said mold while said mold carriage is rotated about said mold, and

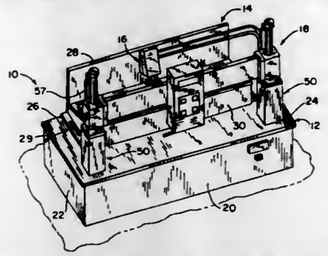
a mold material extruder supported by said frame, said mold material extruder having means for driving a vertically oriented extruder rod upward from said mold supporting surface.

5,606,134

SCORE BEND TESTING APPARATUS AND METHOD

Jeffrey M. Stieber, Green Bay, Wis., assignor to Green Bay Packaging, Inc., Green Bay, Wis.

Filed Jun. 21, 1995, Ser. No. 492,785
Int. Cl.[6] G01N 3/20
U.S. Cl. 73—849 17 Claims



2. A score bend testing apparatus for testing the amount of force required to bend a sheet of material at a longitudinal score, comprising:

a base having an upwardly facing planar support surface and defining an edge, wherein the upwardly facing planar support surface is oriented at an angle to horizontal such that the edge is associated with a forward portion of the support surface which is elevated relative to a rearward portion of the support surface;

a clamp for clamping the sheet of material against the support surface such that the score is located outwardly of the edge;

a force applying arrangement for applying a downward force to the sheet of material outwardly of the score and for continuing application of the downward force until the sheet bends at the score; and

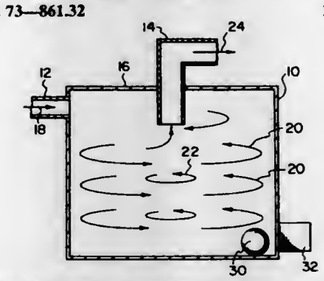
a force measuring arrangement interconnected with the force applying arrangement for determining the amount of force applied to bend the sheet at the score.

5,606,135

CYCLONIC FLOW METERS AND METHOD OF USING SAME

Gary Eldridge, and Rod Eldridge, both of 17978 Glen Meadow La., Salinas, Calif. 93907

Filed May 9, 1995, Ser. No. 438,176
Int. Cl.[6] G01F 1/20
U.S. Cl. 73—861.32 15 Claims



1. A fluid flow detecting apparatus, comprising:

a cylindrical chamber having a peripheral wall and spaced opposed end walls;

an inlet adjacent one of said end walls, and an outlet;

said inlet adapted to cause a cyclonic flow of fluids to circulate in said chamber;

a movable member in said chamber movable vertically in accordance with changes in fluid flow rate, and means for detecting movement of said movable member.

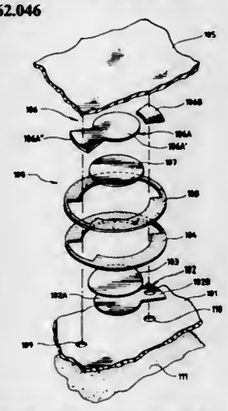
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5,606,136

ELECTRICAL LEAD CROSSOVER, SENSING CELL WITH ELECTRICAL LEAD CROSSOVER, AND METHOD FOR MAKING SAME

Harry C. Kropp, Barrington, Ill., assignor to Breed Automotive Technology, Inc., Lakeland, Fla.

Filed Apr. 10, 1995, Ser. No. 419,374
Int. Cl.[6] G06K *9/00*
U.S. Cl. 73—862.046 24 Claims



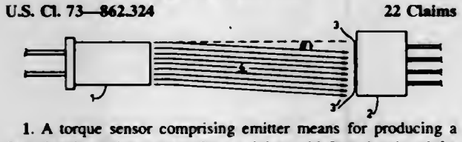
1. An electrical circuit assembly comprising:
a bottom backing sheet having upper and lower surfaces;
a first conductive pattern having a first portion deposited on the upper surface of said bottom backing sheet, with a first opening extending through said sheet and through said first portion of said conductive pattern, and a second opening extending through said sheet at a location displaced outwardly of said first conductive pattern;
a second conductive pattern having first and second spaced portions deposited on a lower surface of a top backing sheet; and
said top and bottom backing sheets being aligned such that said first portions are in confronting relationship, and said first and second conductive portions are electrically accessible, respectively, through said first and second openings.

5,606,137

OPTICAL TORQUE SENSOR

David M. Penketh, Staffordshire, England, assignor to Lucas Industries Public Limited Company, West Midlands, England

PCT No. PCT/GB95/00050, § 371 Date Sep. 12, 1995, § 102(e) Date Sep. 12, 1995, PCT Pub. No. WO95/19557, PCT Pub. Date Jul. 20, 1995
PCT Filed Jan. 11, 1995, Ser. No. 522,315
Claims priority, application United Kingdom, Jan. 12, 1994, 9400511
Int. Cl.[6] G01N *3/00*
U.S. Cl. 73—862.324 22 Claims



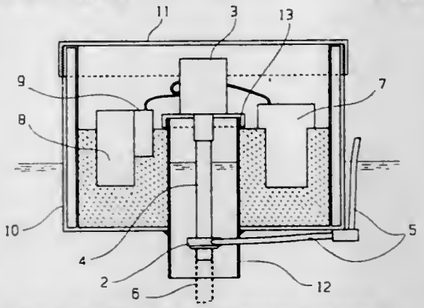
1. A torque sensor comprising emitter means for producing a first signal, receiver means for receiving said first signal and for producing an output signal, said output signal being dependent upon said first signal received by said receiver means, and signal processing means for receiving said output signal from said receiver means, said sensor further comprising an electromagnetic radiation transmitting medium for transmitting said propagated electromagnetic radiation from said emitter means to said receiver means to alter the direction of said propagation through said medium to an extent which is dependent upon the torque applied to said medium, a torsion bar having an input member and an output member, said medium being defined by a generally cylindrical body having a central axis, and means adapted to attach said cylindrical body to both said input member and said output member of said torsion bar, said torsion bar being located on said central axis of said body, and said signal processing means being adapted to process said output signal from said receiver means so as to produce a modified output signal indicative of the torque applied between said input and output members of said torsion bar, wherein said first signal comprises a signal beam of electromagnetic radiation which propagates along an axis parallel to said central axis of said body.

5,606,138

APPARATUS FOR WATER SAMPLING

Tapio Saarenketo, Rovaniemi, Finland, assignor to Tapio Saarenketo Oy, Finland

PCT No. PCT/FI93/00576, § 371 Date Aug. 14, 1995, § 102(e) Date Aug. 14, 1995, PCT Pub. No. WO94/16306, PCT Pub. Date Jul. 21, 1994
PCT Filed Dec. 31, 1993, Ser. No. 464,741
Claims priority, application Finland, Jan. 5, 1993, 930020
Int. Cl.[6] G01N *1/14*
U.S. Cl. 73—864.34 5 Claims



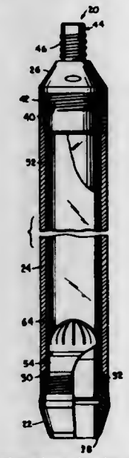
1. A buoyant apparatus for water sampling comprising:
(a) buoyant container (10) capable of being closed watertightly;
(b) in said container, an electric motor (3) and a battery (7) for supplying power to said electric motor;
(c) a pump (2) mounted to said container and driven by said electric motor, said pump having a suction side and a pressure side;
(d) connected to the suction side of said pump, means (6) for communicating with a sampling point;
(e) connected to the pressure side of said pump, means (5) for communicating with a sample receiver; and
(f) in the container, a control unit (8) controlling the operation of said electric motor;
wherein said control unit (8) is programmable to run said electric motor (3) and pump (2) during certain run times at specific intervals for taking samples.

5,606,139

SOIL SAMPLE PROBE WITH RETAINING RING FOR HOLDING CORE-CATCHING STRUCTURE WITHIN THE PROBE

Volker Wittig, Salina; Melvin P. Kejr, Brookville, and Thomas M. Christy, Salina, all of Kans., assignors to Kejr Engineering, Inc., Salina, Kans.

Filed May 2, 1995, Ser. No. 433,874
Int. Cl.[6] G01N *1/04*
U.S. Cl. 73—864.44 18 Claims



1. A soil sampling probe adapted to be driven into the ground on the lower end of a probe rod string, comprising:
an annular cutting shoe for directing soil into the probe, said cutting shoe having a connecting flange with a groove formed on its outer surface;
a sample tube removably attached at is lower end to said cutting shoe and adapted to be removably attached at its upper end to the lower end of a probe rod string;
a retainer having an inner surface and an outer surface, said inner surface having a lip formed thereon, said lip positioned for engagement with said groove of said connecting flange, wherein said lip is securely maintained in said groove by the positioning of said retainer between the inner surface of said sample tube and the outer surface of said connecting flange; and
a liner positioned inside of said sample tube for receiving a soil sample, said liner having an inner surface, said liner inner surface engaging at least a portion of said retainer outer surface in an overlapping relationship so that buckling of said liner due to soil being introduced into the interior of said liner is reduced.

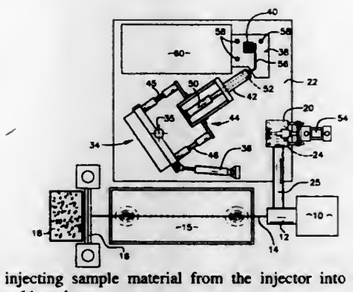
5,606,140

QUALITY CONTROL APPARATUS AND METHOD

James A. Skinner, 14465 Old State Rd., Middlefield, Ohio 44062

Filed Jun. 1, 1995, Ser. No. 456,677
Int. Cl.[6] G01N *1/14*
U.S. Cl. 73—864.81 13 Claims

1. A process of making periodically tested plastic products comprising:
a) ejecting heat softened plastic material from a plastic processing machine;
b) as the material is being ejected allowing the pressure of ejection to divert relatively small samples of the heat softened plastic to an injector via a sampling valve;
c) moving the injector from a position communicating with the sampling valve to a mold communication position;



d) injecting sample material from the injector into a sample mold; and,
e) forming a test piece of the material by cooling the material in the mold.

5,606,141

ELECTRICAL CONDUCTOR IN LAMPS

Gerhard Leichtfried, Reutte, Austria, assignor to Schwarzkopf Technologies Corporation, New York, N.Y.

Filed Jun. 19, 1995, Ser. No. 491,637
Claims priority, application Austria, Jul. 5, 1994, 1323/94
Int. Cl.[6] C22C *29/12*
U.S. Cl. 75—235 8 Claims

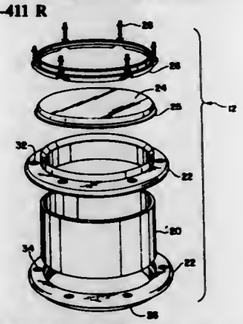
1. An electrical conductor made of etched strip material based on molybdenum-yttrium oxide, as current feeder in lamps with a metal/glass sealing, said strip material comprising, in addition to Mo-Y_2O_3, up to 1.0% by weight cerium oxide, whereby the cerium oxide:yttrium oxide ratio amounts to 0.1 to 1.

5,606,142

SHELL RESONANT MEMBRANOPHONE

Steven Volpp, Meridian, Miss., assignor to Peavey Electronics Corporation, Meridian, Miss.

Continuation-in-part of Ser. No. 2,753, Jan. 13, 1993, Pat. No. 5,353,674. This application Jun. 30, 1994, Ser. No. 269,112
Int. Cl.[6] G10D *13/02*
U.S. Cl. 84—411 R 14 Claims



1. A membranophone comprising:
an annular bridge having a bearing edge for securing a drum head on an outer end thereof, a drum head fitting over the bearing edge such that a peripheral bead on the drum head is positioned radially outwardly from the bearing edge;
a rim that fits over the outer end of the bridge and is slidable axially inwardly with respect to the bridge, the rim engaging the bead on the head and stretching the head taut over the bridge as the rim is moved inwardly on the bridge;
a tension means connected between said annular bridge and said rim for holding the rim in fixed relation to the annular bridge; and

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an annular shell nonreleasably secured to an inner end of the bridge and extending inwardly therefrom.

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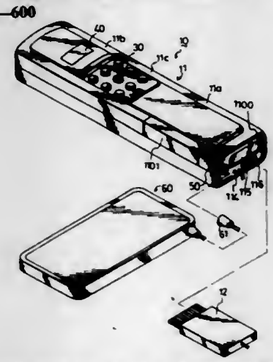
PORTABLE APPARATUS FOR TRANSMITTING WIRELESSLY BOTH MUSICAL ACCOMPANIMENT INFORMATION STORED IN AN INTEGRATED CIRCUIT CARD AND A USER VOICE INPUT

James Young, Taipei, Taiwan, assignor to Artif Technology Corp., Taipei Hsien, Taiwan

Continuation-in-part of Ser. No. 220,536, Mar. 31, 1994, abandoned. This application Aug. 23, 1995, Ser. No. 518,587

Int. Cl.[6] G09B *15/04;* **G10H** *1/36*

U.S. Cl. 84—600 **20 Claims**



1. A portable apparatus capable of transmitting wirelessly both musical accompaniment information stored in an integrated circuit card and a voice input from a user for reception and reproduction by an external speaker unit, the musical accompaniment information including music data of a plurality of music pieces, said portable apparatus comprising:

an elongated casing having a first end portion, a second end portion and an intermediate portion between said first and second end portions, said first and second end portions and said intermediate portion being substantially similar in cross section, said first end portion being adapted to be gripped by one hand of the user and confining a receiving space for receiving removably the integrated circuit card therein;

a microphone unit mounted on said second end portion of said casing for transforming the voice input from the user to a first electrical signal;

a processor unit disposed in said casing and connectable electrically to the integrated circuit card, said processor unit transforming the music data of a selected one of the music pieces into MIDI information;

a keyboard mounted on said intermediate portion of said casing and connected electrically to said processor unit, said keyboard being operable so as to control said processor unit to retrieve the music data of the selected one of the music pieces from the integrated circuit card;

a MIDI sound source module disposed in said casing and connected electrically to said processor unit, said MIDI sound source module receiving said MIDI information from said processor unit and transforming said MIDI information into a second electrical signal;

a mixer disposed in said casing and connected electrically to said microphone unit and said MIDI sound source module, said mixer mixing said first and second electrical signals and generating a third electrical signal; and

a transmitter disposed in said casing and connected electrically to said mixer, said transmitter transmitting wirelessly said third electrical signal for reception and reproduction by the external speaker unit.

5,606,144

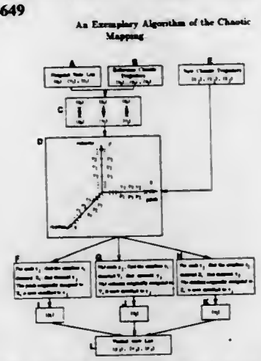
METHOD OF AND APPARATUS FOR COMPUTER-AIDED GENERATION OF VARIATIONS OF A SEQUENCE OF SYMBOLS, SUCH AS A MUSICAL PIECE, AND OTHER DATA, CHARACTER OR IMAGE SEQUENCES

Diana Dabby, 550 Memorial Dr., #14D, Cambridge, Mass. 02139

Filed Jun. 6, 1994, Ser. No. 254,681

Int. Cl.[6] A63H *5/00;* **G10H** *1/26;5/00*

U.S. Cl. 84—649 **18 Claims**



1. A method of producing variations of an original musical composition, constituted of a sequence of successive musical pitches p occuring one after another in such original piece and including, where desired, one or more chord events, said method comprising, generating in a computer a reference chaotic trajectory representing dynamic time-changing states in x, y, and z space; developing a list of successive x-components for the trajectory and pairing the same with corresponding successive pitches p in similar time sequence; plotting each such pitch p at its x-component location to produce successive pitch domains creating a musical land-scape of the original piece along the x axis; generating a second chaotic trajectory initially displaced from the reference chaotic trajectory in x, y, and z space; developing a further list of successive x'-components for the second trajectory; seeking for each such x'-component a corresponding x-component that is close thereto; pairing each such x'-component with the pitch p that was paired with the corresponding close x-component to create a corresponding pitch p' in a resulting sequence of pitches that is modified and represents a variation upon the original piece.

5,606,145

CODE CHANGING METHOD FOR ELECTRONIC MUSIC INSTRUMENT WITH AUTOMATIC ACCOMPANIMENT FUNCTION AND SLUR PROCESSING

Moon K. Kim, Seoul, Rep. of Korea, assignor to LG Electronics Inc., Seoul, Rep. of Korea

Filed Jun. 5, 1995, Ser. No. 464,446

Claims priority, application Rep. of Korea, Jun. 9, 1994, 13027/1994

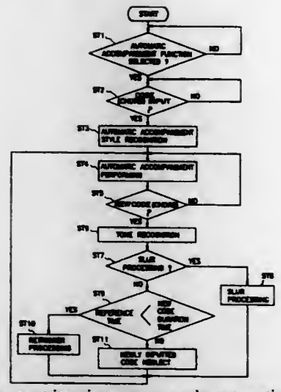
Int. Cl.[6] G10H *1/02;5/00*

U.S. Cl. 84—662 **18 Claims**

1. A code changing method for an electronic musical instrument with an automatic accompaniment function, comprising the steps of:

judging a possibility of a slur processing by recognizing a tone being used in a current automatic accompaniment when a new code information including a chord information is inputted during a play of the current automatic accompaniment;

continuing the automatic accompaniment using a slur processing when the slur processing is judged to be possible in the judging step; and



performing a retriggering process or the automatic accompaniment with the new code information neglected when the slur processing is judged to be impossible in the judging step.

5,606,146

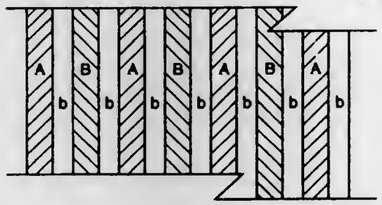
ENERGETIC COMPOSITES AND METHOD OF PROVIDING CHEMICAL ENERGY

Wayne C. Danen, Los Alamos, and Joe A. Martin, Espanola, both of N.M., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation of Ser. No. 774,961, Oct. 8, 1991, Pat. No. 5,266,132. This application Jul. 1, 1993, Ser. No. 84,099

Int. Cl.[6] C06B *45/14*

U.S. Cl. 149—15 **6 Claims**



1. A composition comprised of layers of reactive substance pairs and buffer materials, where each layer has a thickness of from about 10 to about 10,000 Angstroms, where each layer of reactive substance is separated from the dissimilar substance of the reactive substance pair by a layer of buffer material having a thickness of from about 10 to about 10,000 Angstroms, where each reactive substance layer is prevented from exothermically reacting with the dissimilar substance of the reactive pair by the buffer layer, where a reaction between the reactive pair substances will occur upon disruption of the buffer layer separating them, and where said disruption causes contact between the reactive pair substances, where the respective reactive substance pairs are selected from the group consisting of:

$CuClO_4$ and Al,
$Cu(NO_3)_2$ and Al,
CuO and Al,
Fe_2O_3 and Al,
S and Ca,
CuO and Mg,
TiF_4 and Ca,
S and Na,
S and Mg, and
TiF_4 and Li.

5,606,147

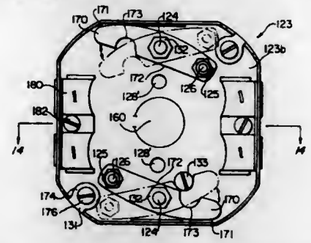
ELECTRICAL OUTLET BOX FOR HANGING AN ELECTRICAL FIXTURE

Bernard F. Deschamps; Henry J. Macuga, both of Ware, Mass., and Stuart S. Cox, Tallahassee, Fla., assignors to Eclipse Manufacturing, Inc., Ware, Mass.

Continuation-in-part of Ser. No. 889,921, Jun. 3, 1992, Pat. No. 5,303,894. This application Apr. 14, 1994, Ser. No. 227,546

Int. Cl.[6] H02G *3/08*

U.S. Cl. 174—48 **24 Claims**



1. An electrical outlet box for hanging a fixture from a ceiling, said outlet box comprising:

a top plate, with said top plate having an outer surface and an inner surface;

a side wall depending from said top plate;

a mounting arm pivotally connected to said top plate with said mounting arm in juxtapositional relationship with said top plate inner surface; and

said mounting arm having means for engagement with a fixture fastener with said means for engagement being spaced from said pivotal connection between said mounting arm and said top plate such that pivotal movement of said mounting arm changes the position of said means for engagement relative to said outlet box side wall.

5,606,148

CABLE JOINT

Thomas A. Escherich; Axel T. Esser, both of Munich, Germany, and Bryan D. Neaves, Stratton St. Margaret, United Kingdom, assignors to Raychem GmbH, Ottobrunn, Germany

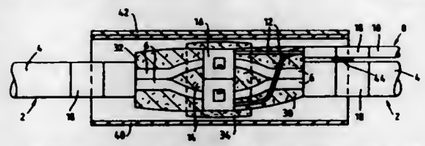
PCT No. PCT/GB94/00070, § 371 Date Jul. 11, 1995, § 102(e) Date Jul. 11, 1995, PCT Pub. No. WO94/16485, PCT Pub. Date Jul. 21, 1994

PCT Filed Jan. 13, 1994, Ser. No. 481,452

Claims priority, application United Kingdom, Jan. 15, 1993, 9300728

Int. Cl.[6] H01R *4/70*

U.S. Cl. 174—88 R **13 Claims**



1. An electric cable joint in which electrical connection is made between respective cores of at least two cables, and in which flow of moisture through the joint is substantially prevented by an electrically insulating sealant material that is at least one of located between the cores and located around the cores, and in which the sealant material is urged between and around the cores by the recovery therearound of a heat recoverable sleeve, characterized in that the sealant material

(a) comprises a non-crystalline polymer whose glass transition temperature is less than –40° C.;

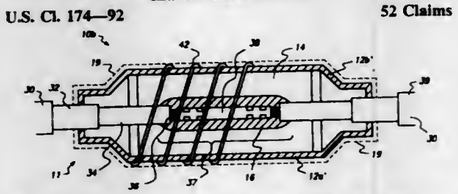
(b) has a viscosity, measured at a shear rate of 0.02 sec^{-1} and at a temperature of 45° C., that is less than 4×10^5 Pa-sec; p1 (c) has a viscosity, measured at a shear rate of 0.02 sec^{-1} and at a temperature of 95° C., that is less than 5×10^3 Pa-sec; and
(d) has a minimum tack value of 140 gm/cm^2.

5,606,149

CLOSURE FOR HIGH VOLTAGE CABLE CONNECTIONS HAVING AN INSULATING GEL TO FORM GEL TO GEL INTERFACE WITH OTHER INSULATING GEL

Harry G. Yaworski, Newark, Del.; Graham J. Clarke, Chads Ford, Pa.; Wolfgang B. Haverkamp, Glonn; Pascal LeCordier, Munich, both of Germany; James E. Jervis, Atherton, and Brian H. Clark, Brisbane, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 138,360, Oct. 18, 1993, abandoned. This application Oct. 13, 1994, Ser. No. 322,822
Int. Cl.[6] H02G *15/113*
U.S. Cl. 174—92 **52 Claims**



21. A joint between a high voltage power cable and other electrical equipment, the cable comprising at least one core conductor, an insulation surrounding each core conductor, and a semiconducting layer surrounding the insulated core conductors, wherein

(a) a connection is formed between an exposed conductor of a stripped core of the cable and an exposed conductor of the other electrical equipment by means of a connector;
(b) an electrical stress control means surrounds the connection and the portions of the cable and the other electrical equipment immediately adjacent thereto to control the distribution of electrical stress;
(c) a housing encompasses the connection and electrical stress control means, the housing having a conductive surface which is electrically connected to the semiconducting layers of the cable and the other electrical equipment to provide an electrically neutral shield for the joint; and
(d) the interior of the housing is filled with at least an insulating gel which forms at least one gel-to-gel interface with other insulating gel, the interface having an interfacial dielectric strength of at least 40% of the bulk dielectric strength of the insulating gel and the insulating gel being disposed within the electrically neutral shield and in close and conforming contact with the interior of the housing, the electrical stress control means and the portions of the cable and the other electrical equipment contained within the housing.

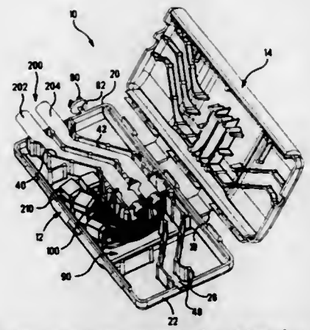
5,606,150

ENCLOSURE FOR SPLICED CABLE

David R. Radliff; Leung M. Shiu; William J. Garver, all of Harrisburg, and Michael P. Green, Mechanicsburg, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Jul. 25, 1995, Ser. No. 506,679
Int. Cl.[6] H02G *15/113;* **H01R** *4/24*
U.S. Cl. 174—92 **28 Claims**

1. An enclosure for being secured about a splice connection of a pair of electrical cables, comprising:



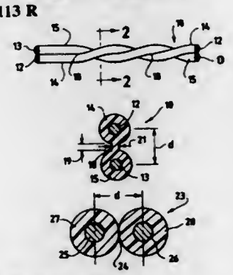
opposed first and second cover members adapted to be secured to each other about a cable splice to define an enclosure therearound extending from first ends to second ends,
at least one of said cover members defining a pair of routing channels adjacent one of said first ends, and a single routing channel adjacent one of said second ends, all extending from respective cable entrances to inner ends adjacent a splice-receiving region between said first and second ends, said first and second cover members include an array of support embossments directed inwardly from side walls thereof and extending from respective inner cover surfaces to free ends dimensioned and positioned to meet embossment free ends of the other said cover member upon closure of said enclosure about said cable splice, providing support against crushing and thereby protecting said cable splice, enhancing suitability for use with underground cable splices,
whereby said enclosure is adapted to receive end portions of both of said cables from at least one of said ends.

5,606,151

TWISTED PARALLEL CABLE

Thomas J. Siekierka, Downers Grove, Ill., and Robert D. Kenny, Oxford, Ohio, assignors to Belden Wire & Cable Company, Richmond, Ind.

Filed Mar. 17, 1993, Ser. No. 32,149
Int. Cl.[6] H01B *11/02*
U.S. Cl. 174—113 R **1 Claim**



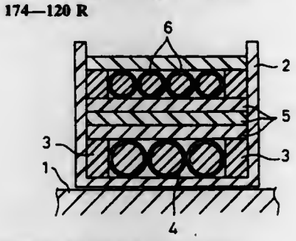
1. A twisted pair cable comprising:
two conductors,
a dielectric layer surrounding each conductor,
said dielectric layers being joined together along the length of said dielectric layers,
said conductors and corresponding dielectric layers being twisted substantially along the length of said cable to provide the twisted pair cable having an adhesion strength between said dielectric layers of from about 0.1 to about 5 lbs. force,
the twisted pair cable has a center-to-center distance at any point along the twisted pair cable that does not vary by more than ±0.03 of an average center-to-center distance with said average center-to-center distance being an average of at least 20 center-to-center distance measurements on each of three randomly selected 1,000 ft. twisted cables of the same size taken with each measurement being taken at least 20 feet apart and taken from at least three separate successive runs with each run being on a separate day, and
said twisted pair cable has a first average impedance of about 90 to 110 ohms when measured at high frequencies of about 10 MHz to about 200 MHz,
an impedance tolerance being no greater than ±0.05 of a second average impedance, and
said second average impedance being an average of at least one impedance measurement on each of at least twenty 1,000 ft. twisted pair cables of the same size, taken from the same run.

5,606,152

MULTILAYER INSULATED WIRE AND A MANUFACTURING METHOD THEREFOR

Atsushi Higashiura; Toshiki Maezono, both of Hiratsuka; Nobuyuki Nakamura, Fujisawa; Shigeo Yamaguchi, Hiratsuka; Mitsuru Inoue, Hiratsuka; Isamu Kobayashi, Hiratsuka, and Fumikazu Sano, Hiratsuka, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Oct. 22, 1993, Ser. No. 142,500
Claims priority, application Japan, Oct. 28, 1992, 4-290160
Int. Cl.[6] H01B *3/00;7/02*
U.S. Cl. 174—120 R **19 Claims**



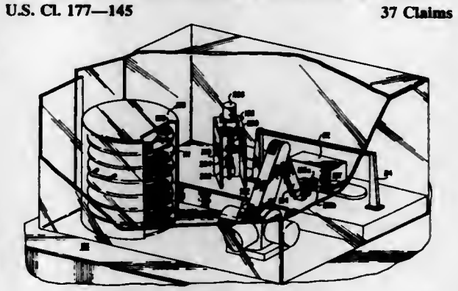
1. A multilayer insulated wire comprising:
(i) a conductor; and
(ii) three or more insulating layers covering the conductor,
each of first and second insulating layers, as counted from the conductor side, being selected from the group consisting of
(a) an extrusion-coating layer of an intimate resin mixture compounded so that an ethylene-based copolymer, having a carboxylic acid or a metal salt of the carboxylic acid on a side chain thereof, accounts for 5 to 40 parts by weight to 100 parts by weight of a thermoplastic straight-chain polyester resin formed by combining an aliphatic alcoholic constituent and an acid constituent,
(b) an extrusion-coating layer comprising a thermoplastic straight-chain polyester resin, the whole or a part of which is formed by combining a cycloaliphatic alcoholic constituent and an acid constituent, and
(c) an extrusion-coating layer of an intimate resin mixture compounded so that an ethylene-based copolymer, having a carboxylic acid or a metal salt of the carboxylic acid on the side chain thereof, accounts for 50 parts or less by weight to 100 parts by weight of a thermoplastic straight-chain polyester resin, the whole or a part of the thermoplastic straight-chain polyester resin is formed by combining a cycloaliphatic alcoholic constituent and an acid constituent, and
a third insulating layer being an extrusion coating layer of a thermoplastic polyamide resin or an intimate resin mixture comprising of the thermoplastic polyamide resin.

5,606,153

ROBOTIC FILTER WEIGHING SYSTEM

Robert J. Fix, Sr., Kernersville; Bain C. McConnell, Clemmons; James T. Atkins, Pfafftown; Philip A. Deal, Winston-Salem; Timothy A. Hobbs, Greensboro; John L. Nelson, Lewisville, and John W. Thompson, Advance, all of N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Apr. 7, 1994, Ser. No. 224,610
Int. Cl.[6] G01G *19/00;13/00;* **B65G** *69/00;* **G05B** *15/00*
U.S. Cl. 177—145 **37 Claims**



1. A method for operating a robotic filter weighing system for weighing filters stored in sample holders, comprising the steps of:
selecting a sample holder containing a filter from a sample cabinet having a rotatable sample holder carousel;
moving said selected sample holder to a filter extraction station using a robotic system;
extracting the filter from said sample holder at said filter extraction station;
moving said extracted filter to a weighing station using said robotic system;
weighing said extracted filter at said weighing station to obtain a weight value;
replacing said extracted filter back into said selected sample holder using said robotic system; and
replacing said selected sample holder containing said weighed filter back in its place in said sample cabinet.

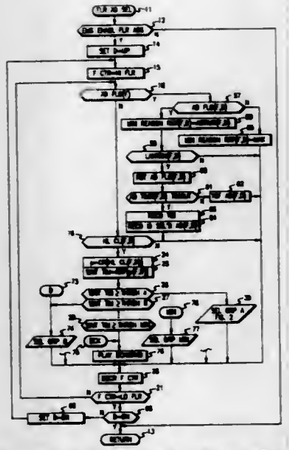
5,606,154

TIMED ADVERTISING IN ELEVATORS AND OTHER SHUTTLES

Lloyd D. Doigan, West Bloomfield, Mich., and Randy G. Henley, Danbury, Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Jan. 13, 1995, Ser. No. 372,625
Int. Cl.[6] B66B *3/00*
U.S. Cl. 187—396 **26 Claims**

1. A method of selecting and playing messages in an elevator system for conveying passengers in which a hall call is initiated by activating a corresponding hall call button, and having a controller for causing elevator cars to respond to such hall call, including providing access to cars through a hall door in an elevator corridor, comprising;
providing a plurality of predetermined messages, at least one of said messages having a duration different from at least another of said messages;
estimating the time remaining before the elevator system will provide access through said hall door;
selecting, from said plurality of messages, a message having a duration less than said estimated remaining time; and



playing the selected message in the vicinity of and within the perception of passengers in said elevator corridor while said hall call registered for said floor is unanswered.

5,606,155

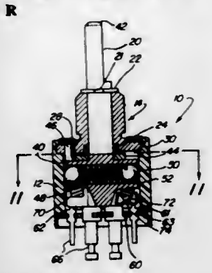
ROTARY SWITCH

Ricardo L. Garcia, 11484 Coriender Ave., Fountain Valley, Calif. 92708

Filed Feb. 6, 1995, Ser. No. 384,157

Int. Cl.[6] H01H *19/54*

U.S. Cl. 200—11 R **14 Claims**



12. A rotary switch comprising:

a tubular housing with opposed inwardly extending shoulders at opposite ends thereof;

a rotor assembly carrying at least one rotor contact disposed within the housing;

a ferrule having an elongated hollow tubular portion and a cylindrical base portion, the base portion being seated on one shoulder of the housing with the tubular portion extending outwardly from the housing, the housing forming a first integral flange extending over the outer periphery of the base portion of the ferrule to hold the ferrule securely in place against the shoulder and within the housing;

a disc-shaped stator seated on the other shoulder of the housing, the housing forming a second integral flange extending over the stator to hold the stator securely against the other shoulder and within the housing, the stator carrying at least two contacts extending therethrough, each of the contacts having an inner end for selective engagement with the rotor contact and an outer terminal end for receiving an electrically conducting wire; and

a shaft rotatably mounted in the ferrule and connected to the rotor, the shaft extending outwardly of the ferrule to allow an operator to rotate the shaft and rotor assembly.

5,606,156

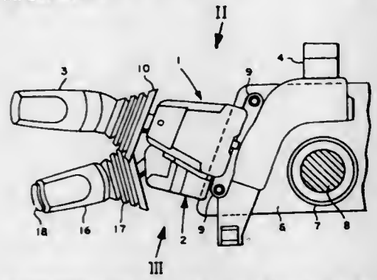
STEERING COLUMN SWITCH FOR AUTOMOBILES

Herrmann Mahr, Waldalgesheim, and Peter Kunz, Breitscheid, both of Germany, assignors to Eaton Corporation, Cleveland, Ohio

Filed Feb. 10, 1995, Ser. No. 386,585

Int. Cl.[6] H01H *9/00*

U.S. Cl. 200—61.54 **12 Claims**



1. An automotive steering column switch arranged on the end of a jacket accommodating the steering column and featuring several separate switches consisting each of a casing with electrical connectors and an actuating member, characterized in that a first switch is slipped on the column jacket and a second separate switch slipped on the first switch against the force of a spring (20) with the interaction of appropriate guiding means (19) and is fixed in its limit position by a releasable clip connector (21).

5,606,157

CASH PROCESSING SYSTEM FOR AUTOMATICALLY PERFORMING CASH HANDLING OPERATIONS ASSOCIATED WITH BANKING SERVICES

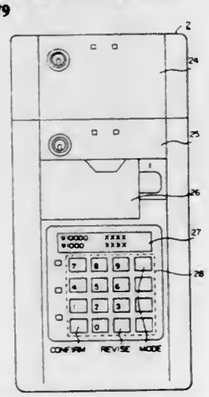
Kiyotaka Awatsu; Masahiko Wada; Akemi Oda, and Yasuko Shibata, all of Utsunomiya, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 813,733, Dec. 27, 1991. This application Jun. 1, 1995, Ser. No. 457,501

Claims priority, application Japan, Dec. 28, 1990, 2-417250; Dec. 28, 1990, 2-417251; Dec. 28, 1990, 2-417252; Dec. 28, 1990, 2-417253; Dec. 28, 1990, 2-417254

Int. Cl.[6] G06F *17/60*

U.S. Cl. 235—379 **2 Claims**



1. A cash handling apparatus comprising:

a cash handling unit for performing services including a cash dispensing service;

a detachable cash safe to be detachably set in said cash handling unit for feeding cash stored therein, said cash safe including

an input section a card reader, a door lock mechanism and a control section having a memory;

said input section accepting entry of a P.I.N. and said card reader receiving a personnel card for reading the content therein, cash setting information being entered through said input section and stored in said memory; and

said door lock mechanism controlled for unlocking depending upon the result of a comparison of said P.I.N. and the content of said personnel card.

5,606,158

COLLECTION AND PROCESSING APPARATUS OF REPEATEDLY USED RECORDING MEDIA

Takatoshi Takemoto, and Hiroyuki Yatsu, both of Tokyo, Japan, assignors to Kabushiki Kaisha Ace Denken, Tokyo, Japan

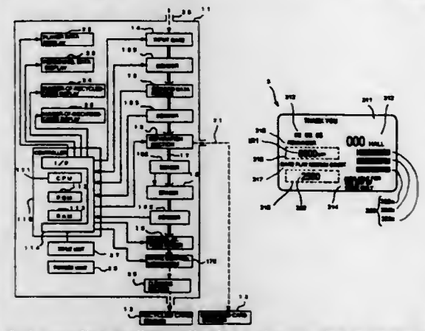
PCT No. PCT/JP93/01087, § 371 Date Feb. 3, 1995, § 102(e) Date Feb. 3, 1995, PCT Pub. No. WO94/03245, PCT Pub. Date Feb. 17, 1994

PCT Filed Aug. 3, 1993, Ser. No. 379,546

Claims priority, application Japan, Aug. 4, 1992, 4-208118

Int. Cl.[6] G06K *5/00;17/00*

U.S. Cl. 235—380 **12 Claims**



1. A recording medium collection and processing apparatus for recycling recording media which are capable of erasably recording data and are repeatedly usable, said apparatus comprising:

a main transport passage for transporting a recording medium taken in from outside;

a record data reader for reading at least data indicating the number of recycle times of the recording medium taken in from the outside, written in a specific area of the recording medium;

a controller for determining whether or not the recording medium is to be reused based on the read data indicating the number of recycle times, if the recording medium is not reused, said controller outputting a discarding command and if it is reused, said controller updating the number of recycle times and outputting data indicating the updated number of recycle times and a number-of-times write command;

a separation section for separating the recording medium for which the discarding command is issued from said main transport passage, leaving the recording medium which has been determined to be reused on said main transport passage;

an erasing section for erasing all record data being erasable written onto the recording medium which has been left on said main transport passage as a recording medium to be reused;

a number-of-times writer for writing data indicating the number of recycle times of the recording medium into a specific area of the recording medium where said record data has been erased upon receipt of the number-of-times write command; and

a first stacker for storing said recording medium which is reusable, onto which said data indicating the number of recycle times is written.

9. An information recording medium on which information can be recorded visibly comprising:

a recording layer on which information is recorded visibly and which is recycled for erasing recorded information and recording new information; and

a number-of-recycle-times recording portion for recording information indicating the number of times said recording layer has been recycled,

said recording layer and said number-of-recycle-times recording portion, respectively, being made of a substance that can be recycled a number of times, and

said number-of-recycle-times recording portion having the information indicating the number of times said recording layer has been recycled in a bar code form.

5,606,159

INFORMATION RECORDING MEDIUM CLEANING MECHANISM

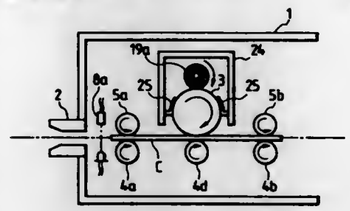
Hideo Kurihara, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 151,851, Nov. 12, 1993, abandoned, which is a division of Ser. No. 858,429, Apr. 8, 1992, abandoned, which is a continuation of Ser. No. 499,580, Mar. 27, 1990, abandoned, which is a continuation of Ser. No. 228,460, Aug. 5, 1988, abandoned. This application Jun. 7, 1995, Ser. No. 473,954

Claims priority, application Japan, Aug. 11, 1987, 62-200296; Aug. 11, 1987, 62-200299; Aug. 11, 1987, 62-200300; Oct. 15, 1987, 62-260647

Int. Cl.[6] G06F *7/00*

U.S. Cl. 235—438 **7 Claims**



1. An information recording-reproducing system including means for cleaning an information recording medium, said system comprising:

recording-reproducing means for recording information on and/or reproducing information from the information recording medium;

means for moving the information recording medium and said recording-reproducing means relative to each other;

cleaning means for cleaning the information recording medium;

a brush for cleaning said cleaning means, said brush always being in contact with said cleaning means, in order to clean said cleaning means;

a dust collector for collecting dust generated when said brush cleans said cleaning means; and

a detachable frame for removably mounting said cleaning means, said brush and said dust collector as a unit.

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5,606,160
SYMBOL READING DEVICE

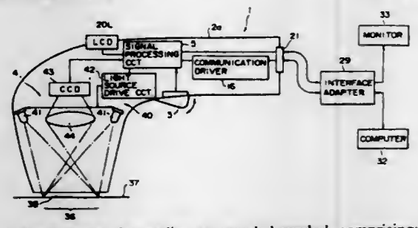
Nobuhiro Tani; Harumi Aoki, and Keiji Sawanobori, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 218,227, Mar. 25, 1994, abandoned. This application Apr. 25, 1995, Ser. No. 428,664

Claims priority, application Japan, Mar. 25, 1993, 5-90620; Mar. 25, 1993, 5-90621; Mar. 25, 1993, 5-90622; Mar. 25, 1993, 5-90623; Mar. 25, 1993, 5-90624; Mar. 25, 1993, 5-90625

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—472 **3 Claims**



1. An apparatus for reading an encoded symbol, comprising:

means for reading an encoded symbol and outputting an image data corresponding to said encoded symbol;

means for decoding said encoded symbol based on said image data:

means for outputting a video signal corresponding to said image data to an external video monitor;

memory means for storing test data;

means for outputting said test data;

means for initiating a test operation; and,

means for controlling said device in such a fashion that, when said test operation is initiated, said means for outputting said test data outputs said test data, and said reading means is disabled.

5,606,161
ELECTRO-OPTICAL MODULE HAVING A Y-SHAPED SPRING ELEMENT

Klaus Schulz, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

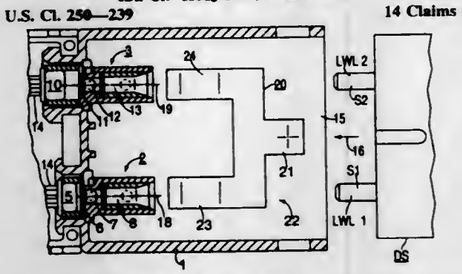
PCT No. PCT/DE94/00119, § 371 Date Sep. 25, 1995, § 102(e) Date Sep. 25, 1995, PCT Pub. No. WO94/18586, PCT Pub. Date Aug. 18, 1994

PCT Filed Feb. 1, 1994, Ser. No. 505,216

Claims priority, application Germany, Feb. 5, 1993, 43 03 780.1

Int. Cl.[6] H01J *5/02*; **G02B** *6/36*

U.S. Cl. 250—239 **14 Claims**



1. An electro-optical module comprising:

a housing having an opening adapted to receive a connecting element;

first and second electro-optical components disposed in said housing, said components each having an optical active surface;

first and second receptacles associated with said first and second components respectively into each of which is insertable an optical-waveguide connector pin of a connecting element that is insertable into said housing opening to enable optical coupling to the active surfaces; and

a spring element, which has a Y-shaped design including a base and two sides, said base attached to said housing and said two sides unattached, said side including radiation impervious surfaces, said spring element disposed in the housing in front of the receptacles in such a way that, in a rest position the restoring force of the spring causes the radiation impervious surfaces, as viewed from said housing opening, to cover the active surfaces of the electro-optical components, and whereby, when a connecting element is inserted into said housing, the unattached sides are displaced out of the rest position in opposition to the restoring force of the spring into a position that moves radiation impervious surfaces away from and clear of the active surfaces to open an optical path from said active surfaces to said connecting element.

5,606,162
MICROPROBE FOR SURFACE-SCANNING MICROSCOPES

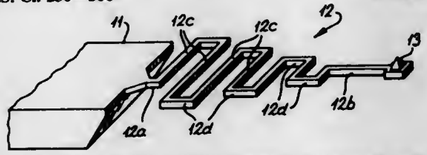
Rudolf A. Buser; Juergen Brugger, and Christian Linder, all of Neuchatel, Switzerland, assignors to British Technology Group Limited, London, England

Continuation of Ser. No. 544,411, Oct. 10, 1995, abandoned, which is a continuation of Ser. No. 162,095, Apr. 26, 1994, abandoned. This application Jul. 1, 1996, Ser. No. 673,023

Claims priority, application United Kingdom, Jun. 13, 1991, 911277

Int. Cl.[6] G01B *7/34*; **G01N** *27/00*

U.S. Cl. 250—306 **6 Claims**



1. A surface-scanning microscope probe comprising a support body (11), a resilient arm or cantilever (12) having one end (12*a*) supported by the support body (11) and another, free, end (12*b*) having thereon a sharp tip or stylus (13), wherein the arm or cantilever (12) comprises a monolithic meander-shaped element.

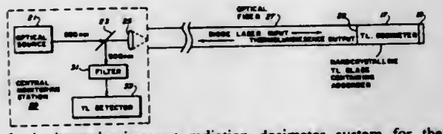
5,606,163
ALL-OPTICAL, RAPID READOUT, FIBER-COUPLED THERMOLUMINESCENT DOSIMETER SYSTEM

Alan L. Huston, and Brian L. Justus, both of Springfield, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 11, 1995, Ser. No. 371,305

Int. Cl.[6] G01T *1/115*; *1/105*

U.S. Cl. 250—337 **12 Claims**



1. A thermoluminescent radiation dosimeter system for the remote monitoring of radiation sources, said system comprising:

a radiation-sensitive thermoluminescent dosimeter disposed at a remote location for storing energy from ionizing radiation when exposed thereto and for releasing the stored energy in the form of thermoluminescence light at a first wavelength when stimulated by exposure to light energy at a predetermined stimulating second wavelength, said thermoluminescent dosimeter including: an optically transparent glass matrix material doped with nanocrystalline semiconductor particles; and a metal activator within said optically transparent glass matrix material for said nanocrystalline semiconductor particles, said metal activator being present in a concentration effective to thermoluminescently activate said nanocrystalline semiconductor particles when said thermoluminescent dosimeter is stimulated by stimulating light energy at the predetermined stimulating second wavelength, said doped glass matrix material being transparent to its thermoluminescent emissions;

an optical source for providing stimulating light energy at the predetermined stimulating second wavelength;

a thermoluminescent detector for measuring thermoluminescent emissions at the first wavelength; and

an optical fiber for passing the predetermined stimulating light energy from said optical source to said thermoluminescent dosimeter to stimulate said thermoluminescent dosimeter to produce thermoluminescence light from stored energy and for passing the thermoluminescence light to said thermoluminescent detector to enable said thermoluminescent detector to measure any thermoluminescent emissions occuring when the thermoluminescent dosimeter is heated by the light energy at the predetermined stimulating second wavelength.

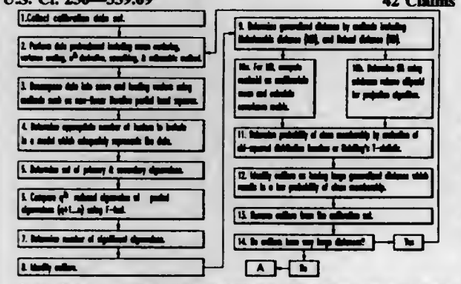
5,606,164
METHOD AND APPARATUS FOR BIOLOGICAL FLUID ANALYTE CONCENTRATION MEASUREMENT USING GENERALIZED DISTANCE OUTLIER DETECTION

John F. Price, McCordsville, and James R. Long, Fishers, both of Ind., assignors to Boehringer Mannheim Corporation, Indianapolis, Ind.

Filed Jan. 16, 1996, Ser. No. 587,017

Int. Cl.[6] G01J *3/457*

U.S. Cl. 250—339.09 **42 Claims**



1. An improved method for forming a calibration model for use in determining concentration of an analyte of a biological fluid of a mammal, comprising the steps of:

collecting a set of calibration samples from a plurality of sources of the biological fluid;

generating near-infrared electromagnetic radiation having a plurality of wavelengths;

irradiating each of the calibration samples with the radiation so that a portion of the radiation at each of the wavelengths is transmitted through each of the calibration samples;

measuring intensity of the radiation transmitted through each of the calibration samples at each of the wavelengths thereby forming a set of calibration data;

processing the set of calibration data, including forming the set of calibration data into a n×p matrix defining a space, wherein n is the number of calibration samples and p is the number of wavelengths at which intensity of transmitted radiation is measured, forming a subspace of the space wherein sources of relatively greater variations within the set of calibration data are represented, projecting the set of calibration data into the subspace, determining a generalized distance within the subspace between each calibration sample and a centroid of a distribution formed by the set of calibration samples, identifying calibration outliers as those calibration samples having a generalized distance greater than a preselected magnitude, forming a reduced set of calibration samples from calibration samples remaining after removal of calibration outliers; and

constructing a calibration model from the reduced set of calibration samples to predict concentration of the analyte in an unknown sample of the biological fluid.

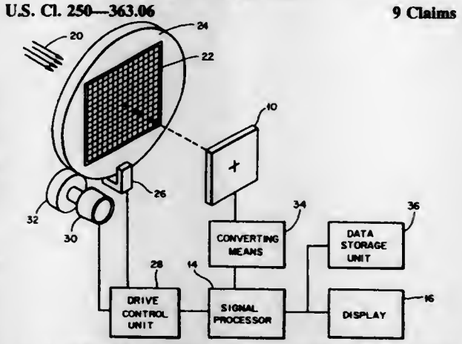
5,606,165
SQUARE ANTI-SYMMETRIC UNIFORMLY REDUNDANT ARRAY CODED APERTURE IMAGING SYSTEM

Walter C. Chiou, North Babylon, and Richard C. Augeri, West Hempstead, both of N.Y., assignors to AIL Systems Inc., Deer Park, N.Y.

Continuation-in-part of Ser. No. 154,733, Nov. 19, 1993. This application Jan. 16, 1996, Ser. No. 586,555

Int. Cl.[6] G01T *1/202*

U.S. Cl. 250—363.06 **9 Claims**



1. A square anti-symmetric uniformly redundant array coded aperture for imaging a source of non-focusable radiation, the coded aperture comprising transparent cells and opaque cells and exhibiting a full mask pattern, the full mask pattern having elements, the elements having values including a first value and a second value, the transparent cells and the opaque cells being respectively assigned locations corresponding to the elements having the first value and the second value, the full mask pattern being generated from a primitive mask pattern of order v, having a center, the primitive mask pattern being defined by a relationship:

$A_{ij}=0$ if i=0

$A_{ij}=1$ if j=0 and i≠0

$A_{ij}=1$ if $B_i=B_j$

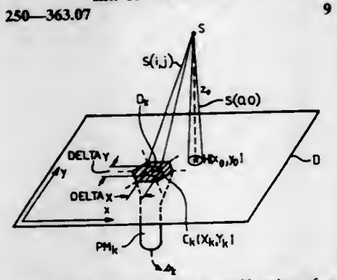
$A_{ij}=0$ otherwise

where A is a uniformly redundant array coding function and B is a skew-Hadamard quadratic residue sequence, the full mask pattern being constructed by repeating the primitive mask pattern diagonally outward from the center of the primitive mask pattern whereby the full mask pattern includes a total of $(2v-1)\times(2v-1)$ elements.

5,606,166
METHOD FOR CORRECTING THE UNIFORMITY OF A GAMMA CAMERA

Michel Tararine, Sceaux, France, assignor to Sopha Medical, Buc Cedex, France

Filed May 18, 1995, Ser. No. 443,539
Claims priority, application France, May 18, 1994, 94 06350
Int. Cl.[6] G01T *1/164*
U.S. Cl. 250—363.07 **9 Claims**



1. A method for correcting the nonuniformity of a gamma camera, said gamma camera comprising a detector giving, for each pixel i,j having coordinates x_i, y_i, a number n_{ij} representing the number of scintillations recorded in said pixel, wherein said method comprises the steps of:

placing a point source at a finite distance from said detector;

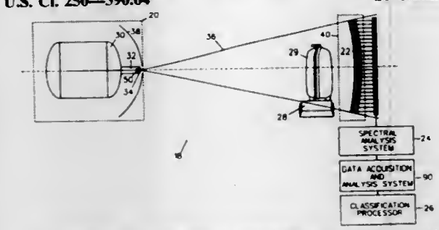
acquiring the number n_{ij} at a concerned pixel i, j; and

multiplying said number n_{ij} at said concerned pixel by the ratio between (1) the solid angle at which a pixel vertical to said point source is seen by said point source and (2) the solid angle at which said concerned pixel is seen by said point source.

5,606,167
CONTRABAND DETECTION APPARATUS AND METHOD

Thomas G. Miller, 254 Brentwood La., Madison, Ala. 35758

Continuation-in-part of Ser. No. 273,404, Jul. 11, 1994. This application Jan. 31, 1995, Ser. No. 380,953
Int. Cl.[6] G01N *23/09*
U.S. Cl. 250—390.04 **20 Claims**



1. Apparatus for detecting a contraband substance internally located in a sample object, wherein all portions of the sample object may be analyzed simultaneously through the use of a single beam of neutrons, the apparatus comprising:

means for producing a pulsed beam of fast white neutrons from a point source, which beam expands to a conical shape and has sufficient intensity in a range over several MeV, so that a plurality of elements have one or more resonance peaks in such energy range;

means for detecting neutrons, which means includes one or more neutron detectors;

means for measuring the time of flight of neutrons from said point source to the said detecting means;

means for situating a sample object between the neutron producing means and the detecting means at a point at which the said neutron beam has expanded sufficiently to allow neutrons in the beam to contact all portions of the sample object sought to be analyzed;

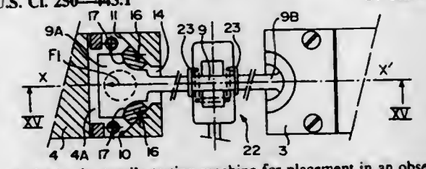
means for determining the neutron attenuation spectra of each portion of the sample object encompassing a solid angle between said point source and a detector of the said detector means; and

means for making a classification determination based upon said neutron attenuation spectra regarding a potential contraband substance located in the sample object.

5,606,168
IN SITU TENSILE TESTING MACHINE AND SAMPLE FOR A SCANNING ELECTRON MICROSCOPE

Rémi Chiron, Groslay; Jacques Fryet, Bobigny, and Patrick Viaris De Lesegno, Saint-Leu-La-Foret, all of France, assignors to Centre National De La Recherche Scientifique, Paris Cedex, France

PCT No. PCT/FR94/00495, § 371 Date Dec. 8, 1995, § 102(e) Date Dec. 8, 1995, PCT Pub. No. WO94/25846, PCT Pub. Date Nov. 10, 1994
PCT Filed Apr. 29, 1994, Ser. No. 537,694
Claims priority, application France, Apr. 30, 1993, 93 05169
Int. Cl.[6] G01N *23/225*
U.S. Cl. 250—443.1 **14 Claims**



1. An in situ tensile testing machine for placement in an observation chamber of a scanning electron microscope and for receipt of a specimen interposed between two anchoring elements capable of allowing traction in one direction of the specimen by the ends thereof, for studying behavior of the specimen, said machine comprising:

a rigid frame;

two traction heads disposed on said rigid frame, at least one of said traction heads being movable and each said traction head defining a cavity for anchoring a respective end of the specimen by means of a pair of shoulders forming a narrowing opposing a sliding end of the specimen in a traction direction;

each said end of the specimen bearing upon said shoulders of a respective one of said traction heads by means of two slugs forming rollers, mounted freely between each said shoulder and a corresponding side part facing an end of the specimen.

5,606,169
ULTRAVIOLET LIGHT STERILIZATION RETROFIT FOR PAPERBOARD PACKAGING FILLING MACHINES

James A. Hiller, Williamsport, Pa.; Richard L. Lewis, Covington, and Thomas S. Williams, III, Richmond, both of Va., assignors to Westvaco Corporation, New York, N.Y.

Filed Sep. 25, 1995, Ser. No. 533,505
Int. Cl.[6] B65B *55/08*; A61L *2/10*
U.S. Cl. 250—455.11 **6 Claims**

1. A retrofit assembly for ultraviolet light sterilization of paper packages, wherein said assembly is comprised of:

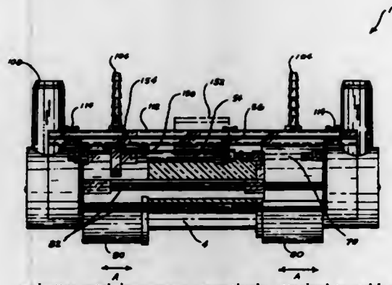
an individual ultraviolet light;

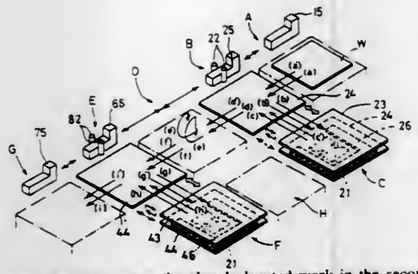
a light retaining means operatively attached to said light means;

a light covering means operatively connected to said light retaining means, wherein said light covering means is further comprised of:

a bracket means;

a pneumatic cylinder actuation means operatively connected to said bracket means;





exposing stage to expose the already located work in the second alignment stage, wherein

said first alignment stage, said reverse stage and said second alignment stage are arranged in a straight line direction, and wherein each of said first and second alignment stages are provided with the first exposing stage and the second exposing stage, respectively, in perpendicular direction to the straight line direction, and an ultraviolet rays irradiation stage is provided between said first exposing stage and the second exposing stage,

said exposing apparatus being provided with a plural number of handlers to transfer the work along the straight line direction from the first alignment stage to the second alignment stage,

an upper printing frame and a lower printing frame of the exposing apparatus form a vacuum frame to perform locating, transfer and exposing of the work and holding said work between the upper printing frame and the lower printing frame, said locating, transfer and exposing of the work being operated between the alignment stage and the exposing stage by means of transferring means to transfer the work with the upper printing frame and the lower printing frame.

5,606,173

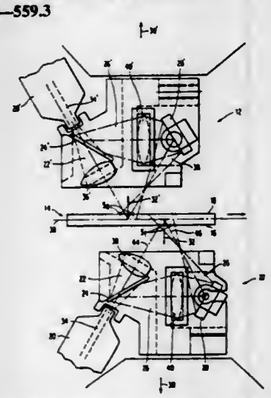
ARRANGEMENT FOR ALIGNING, FOCUSING AND NORMALIZING IMAGING SYSTEM

David J. Concannon, Farmington Hills; Gary B. Copenhaver, Canton, and Clive E. Catchpole, Birmingham, all of Mich., assignors to Unisys Corporation, Blue Bell, Pa.

Division of Ser. No. 181,485, Jan. 14, 1994, Pat. No. 5,420,944, which is a continuation of Ser. No. 790,901, Nov. 12, 1991, abandoned, which is a division of Ser. No. 532,691, Jun. 4, 1990, Pat. No. 5,068,912. This application May 26, 1995, Ser. No. 451,786

Int. Cl.[6] G06K *7/015;9/00*

U.S. Cl. 250—559.3 **12 Claims**



1. A combination gauge for aligning an imaging system in a high-speed document processor and for also focusing images therein with lens means on linear sensor means having a prescribed number of like cells, this gauge comprising depth gauge means and associated focus gauge means;

said depth gauge means having height and width dimensions larger than a rectangular window in a .track of said high speed document processor, said rectangular window allowing said imaging system to image items within said track;

a means for holding said gauge snugly in said track; and at least two plateaus formed in a front portion of said gauge, a first plateau being positioned a first distance from a back portion of said gauge which is a fixed amount less than a second distance between said back portion of said gauge and a plane running through a vertical axis of said gauge, a second plateau being positioned a third distance from said back portion of said gauge which is said fixed amount more than said second distance;

said focus means comprising:

frame means of prescribed width surrounding a reference zone with height and width dimensions larger than a rectangular window in a track of said high speed document processor, said rectangular window allowing said imaging system to image items within said track; said frame means being dimensioned to

hold said gauge snugly within said track;

a plateau formed in a front portion of said gauge, said plateau being positioned a first distance from the back of said gauge which is a fixed amount less than the width of said track; and

a black and white horizontal stripe pattern positioned on; said plateau, said black stripes having a predetermined width related to the size of said sensor cells, whereby precise focussing with said lens means can yield a "Moire" intensity pattern.

5,606,174

METHOD AND DEVICE FOR DETECTING A SHAPE OF OBJECT WITH HIGH RESOLUTION MEASUREMENT OF DISPLACEMENT OF AN OBJECT SURFACE FROM A REFERENCE PLANE

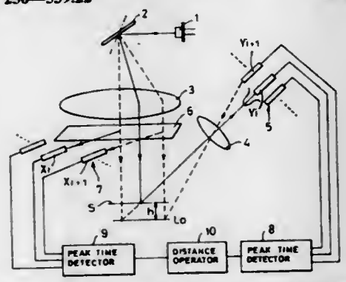
Kazunari Yoshimura; Kuninori Nakamura, and Katsuji Komaki, all of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed May 2, 1995, Ser. No. 434,345

Claims priority, application Japan, May 26, 1994, 6-113167

Int. Cl.[6] G01N *21/86*

U.S. Cl. 250—559.22 **19 Claims**



1. A method for detecting a shape of an object with high resolution measurement of displacement of the surface of the object from a reference plane, comprising the steps of:

A) irradiating a spot of projected light beam on the surface of said object;

B) scanning said projected light spot in a fixed direction on the surface of the object;

C) detecting a position of an image of a spot which is an image of said projected light spot image-formed through a light receiving lens having an optical axis lying in a direction different from an irradiating direction of said projected light beam by means of a first detector including a plurality of first light detecting elements arranged in an array, a width of said first light detecting elements in the direction of said array of the elements being set to be less than a width of the image of a spot in the same direction;

D) obtaining a time difference between a first time when the image of a spot with respect to the object has reached any one of the first light detecting elements and a second time when the projected light beam has reached one of second light detecting elements of a second detector which is at a position of the projected light beam at the time when the image of a spot is made to reach said first light detecting element with respect to said reference plane set by said second light detecting elements with respect to the surface of the object to be detected; and

E) converting said time difference into a displacement of said surface of the object with respect to said reference plane.

5,606,175

MULTIPLE QUANTUM WELL DEVICE

William S. Truscott, Manchester, United Kingdom, assignor to The University of Manchester Institute of Science & Technology, Manchester, United Kingdom

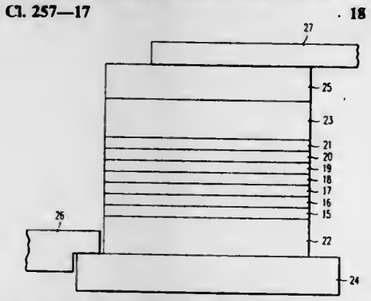
PCT No. PCT/GB94/00406, § 371 Date Nov. 2, 1995, § 102(e) Date Nov. 2, 1995, PCT Pub. No. WO94/20990, PCT Pub. Date Sep. 15, 1994

PCT Filed Mar. 2, 1994, Ser. No. 513,836

Claims priority, application United Kingdom, Mar. 2, 1993, 9304211

Int. Cl.[6] H01L *29/06;31/0328;31/0336*

U.S. Cl. 257—17 **18 Claims**



1. A quantum well device having an active region adapted in use to pass a tunnelling current of charge carriers, the active region comprising layers of material forming alternating potential barriers and potential wells arranged so as to define a first potential .well at one end of the active region having regard to the direction of flow of the tunnelling current and a further structure comprising at least a second potential well, said first potential well defining a first quasi-defined energy level and the further structure defining second and third quasi-defined energy levels, the relative heights and thicknesses of the potential barriers when the device is in use being structured so that the first quasi-defined energy level has a longer lifetime than the second and third quasi-defined energy levels and there is a degree of coupling between the three quasi-defined energy levels which is strongest between the second and third quasi-defined energy levels, the arrangement being such that the transmission coefficient through the active region shows a resonance peak at each of the energies of the three quasi-defined energy levels, the first resonance peak at the energy of the first quasi-defined energy level being greater than the second and third resonance peaks at the energies of the second and third quasi-defined energy levels respectively, and that when the tunneling current is flowing the energy of the first quasi-defined energy level lies between the energies of the second and third quasi-defined energy levels but is one of greater and less than an average of the energies of the second and third energy levels, and such that on application of an A.C. field to the device an alternating current will flow which increases when the frequency of the applied A.C. field corresponds to an energy difference between the first quasi-defined energy levels as a result of a coupling between the first resonance peak and both the second and third resonance peaks.

5,606,176

STRAINED QUANTUM WELL STRUCTURE HAVING VARIABLE POLARIZATION DEPENDENCE AND OPTICAL DEVICE INCLUDING THE STRAINED QUANTUM WELL STRUCTURE

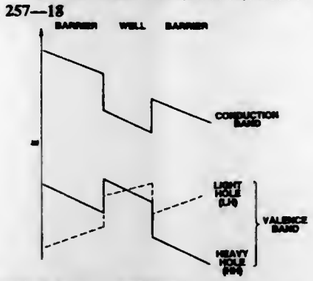
Jun Nitta, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 26, 1994, Ser. No. 312,544

Claims priority, application Japan, Sep. 28, 1993, 5-264340

Int. Cl.[6] H01L *29/06;31/0328;31/0336*

U.S. Cl. 257—18 **12 Claims**



1. An optical device comprising:

a substrate on which a strained quantum well structure is formed;

a strained quantum well structure formed on said substrate, said strained quantum well structure having at least one well layer and a plurality of barrier layers, said well layer being sandwiched between said barrier layers, wherein a lattice constant of said well layer varies within said well layer so that a band end of heavy holes of said well layer and a band end of light holes of said well layer cross in said well layer;

at least one of current injecting means for injecting current into said well layer and reverse-voltage applying means for applying a reverse voltage to said well layer; and

voltage applying means for applying a voltage to said well layer independently from said at least one of current injecting means and reverse-voltage applying means.

5,606,177

SILICON OXIDE RESONANT TUNNELING DIODE STRUCTURE

Robert M. Wallace, Dallas, and Alan C. Seabaugh, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 145,267, Oct. 29, 1993. This application Dec. 6, 1994, Ser. No. 349,866

Int. Cl.[6] H01L *29/88*

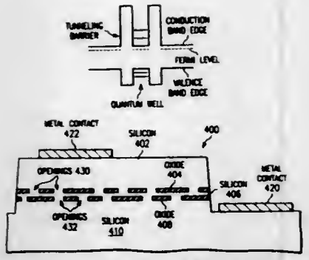
U.S. Cl. 257—25 **9 Claims**

1. A resonant tunneling diode, comprising:

(a) a first terminal, a second terminal, and a quantum well, said quantum well made of a first material; and

(b) first and second tunneling barriers, said first tunneling barrier separating said quantum well from said first terminal and said second tunneling barrier separating said quantum well from said second terminal, said first tunneling barrier characterized by first regions of said first material and which extend from said quantum well through said first tunneling barrier to said first terminal and second regions of a second material which

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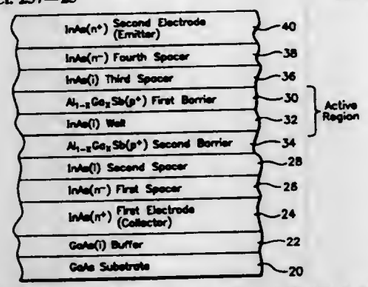
forms a heterojunction with said first material, said first and second regions of complementary nonperiodic patterns.

5,606,178

BIPOLAR RESONANT TUNNELING TRANSISTOR

Joel N. Schulman, Agoura, and David H. Chow, Newbury Park, both of Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Filed Jun. 7, 1995, Ser. No. 477,683
Int. Cl.[6] H01L *29/06*
U.S. Cl. 257—25 **22 Claims**



1. In a resonant tunneling transistor (RTT) including a quantum well region (well region), two barrier regions and two electrodes, the improvement comprising:

a type II energy band alignment for said barrier and well regions in which the minimum conduction band energy levels (Ecs) and the-maximum valance band energy levels (Evs) of said well and barrier regions establish wells for charges of opposite polarities in said well and barrier regions, respectively, and

a controller contacting at least one of said barrier regions to create a charge transfer junction with each contacted barrier region that controls the flow of current between said electrodes.

5,606,179

INSULATED GATE FIELD EFFECT TRANSISTOR HAVING A CRYSTALLINE CHANNEL REGION

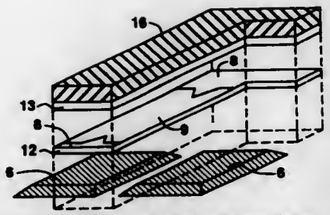
Shunpei Yamazaki, Tokyo, and Yasuhiko Takemura, Kanagawa, both of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Filed Oct. 12, 1995, Ser. No. 542,354
Claims priority, application Japan, Oct. 20, 1994, 6-281409
Int. Cl.[6] H01L *29/04*
U.S. Cl. 257—59 **11 Claims**

1. A semiconductor device comprising:

source and drain semiconductor regions comprising silicon and having a first conductivity type;

a semiconductor film comprising silicon and having a second conductivity type different from said first conductivity type,



said semiconductor film having a first portion as a channel region located between said source and drain semiconductor regions and a second portion not located between said source and drain semiconductor regions:

an insulating film formed on said semiconductor film, wherein said insulating film has peripheral edges substantially aligned with peripheral edges of said semiconductor film; and

a lead including a gate electrode formed on said insulating film, wherein said lead has peripheral edges substantially aligned with the peripheral edges of said insulating film

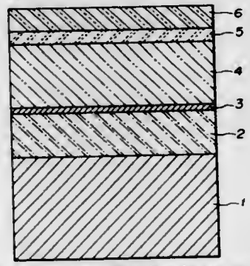
wherein said first portion comprises a crystalline semiconductor and said second portion comprises an amorphous semiconductor.

5,606,180

III-V COMPOUND SEMICONDUCTOR WITH HIGH CRYSTAL QUALITY AND LUMINOUS EFFICIENCY

Nobuyuki Hosoi; Kenji Shimoyama, and Hideki Goto, all of Tsuchiura, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

Filed Sep. 1, 1994, Ser. No. 299,994
Claims priority, application Japan, Sep. 3, 1993, 5-220140; Sep. 3, 1993, 5-220141
Int. Cl.[6] H01L *27/15;31/12;33/00*
U.S. Cl. 257—86 **8 Claims**



1. A Group III-V compound semiconductor comprising:

(1) a thin crystal film of $A_1'''As_wP_{1-w}$, wherein A_1''' represents a Group III element with Al composition of less than 0.3, $0.5<w\leqq 1$, formed on a semiconductor crystal substrate or on an epitaxial film grown on the said substrate,

a thin crystal film of $B'''As$, wherein B''' represents a Group III element with Al composition of not less than 0.45, formed on the $A_1'''As_wP_{1-w}$ film, and

a thin film of $C_1'''As_zP_{1-z}$, wherein C_1''' represents a Group III element with Al composition of less than 0.3, $0\leqq x<0.5$, formed on the $B'''As$ film; or

(2) a thin film of $A_2'''As_uP_{1-u}$, wherein A_2''' represents a Group III element with In composition of not less than 0.3, $0\leqq u\leqq 1$, formed on a semiconductor crystal substrate or on an epitaxial film grown on the said substrate,

a thin crystal film of $B'''As$, wherein B''' represents a Group III element with Al composition of not less than 0.45, formed on the $A_2'''As_uP_{1-u}$ film, and

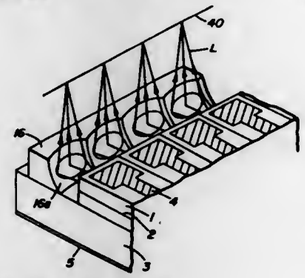
a thin film of $C_2'''As_zP_{1-z}$, wherein C_2''' represents a Group III element, $0\leqq z\leqq 1$, formed on the $B'''As$ film.

5,606,181

EDGE EMITTING TYPE LIGHT EMITTING DIODE ARRAY HEADS

Nobuo Sakuma, Tokyo; Seizo Suzuki; Hiromichi Atsuumi, both of Yokohama; Takeshi Ueda, and Yasutaka Izumi, both of Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Mar. 29, 1995, Ser. No. 413,094
Claims priority, application Japan, Mar. 29, 1994, 6-059236; Jul. 11, 1994, 6-158931; Sep. 20, 1994, 6-223852
Int. Cl.[6] H01L *33/00*
U.S. Cl. 257—88 **41 Claims**



1. An LED array head comprising:

a base plate;

a plurality of edge emitting type LED elements disposed in two rows on said base plate, each of said LED elements having a plane of an active layer, said active layer emitting a luminous flux in a predetermined emitting direction; and

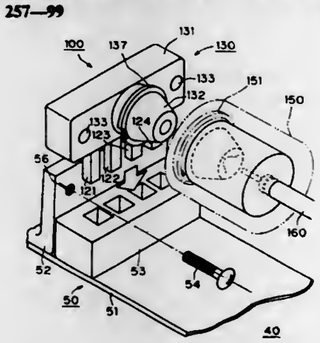
a cylindrical optical element located adjacent to said LED elements and having a refractive power in a direction substantially perpendicular to said emitting direction for refracting said luminous flux before said luminous flux reaches said base plate, said cylindrical optical element having a central axis.

5,606,182

OPTICAL SEMICONDUCTOR DEVICE FOR OPTICAL COMMUNICATIONS WITH INCREASED POSITIONAL ACCURACY OF AN OPTICAL ACCESS AND METHOD OF FABRICATING THE SAME

Masaharu Yoshida, and Masataka Takehara, both of Fukuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 25, 1995, Ser. No. 428,369
Claims priority, application Japan, Apr. 27, 1994, 6-089512
Int. Cl.[6] H01L *33/00;27/14;31/0232;31/0203*
U.S. Cl. 257—99 **16 Claims**



1. An optical semiconductor device comprising:

(a) an optical semiconductor unit, including:

(a-1) an optical semiconductor element,

(a-2) a single-piece light transmittable sealing body, sealing said optical semiconductor element, having a tapered projection, and

(a-3) an electrode having an end being electrically connected to said optical semiconductor element and another end projecting from said sealing body;

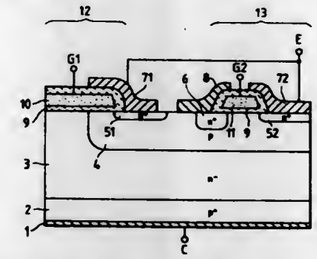
(b) a receptacle being capable of mounting an optical fiber cable and attachable to and detachable from said tapered projection of said optical semiconductor unit, for relaying optical coupling between said optical semiconductor unit and said optical fiber cable.

5,606,183

DOUBLE-GATED TURN-OFF THYRISTOR

Masahito Otsuki, and Katsunori Ueno, both of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 218,200, Mar. 28, 1994, which is a continuation of Ser. No. 96,978, Jul. 27, 1993, abandoned. This application Dec. 9, 1994, Ser. No. 352,956
Claims priority, application Japan, Dec. 10, 1993, 5-309964
Int. Cl.[6] H01L *29/74;31/111*
U.S. Cl. 257—133 **3 Claims**



1. A semiconductor device, comprising:

a first semiconductor region of a first conductivity type;

a second semiconductor region of a second conductivity type formed on said first semiconductor region;

a third semiconductor region of the first conductivity type formed on said second semiconductor region;

a fourth semiconductor region of the second conductivity type formed in said third semiconductor region, said first, second, third and fourth semiconductor regions constituting a thyristor structure;

a first MISFET for injecting majority carriers from a first sub-region of said fourth semiconductor region into said second semiconductor region; and

a second MISFET being turned on and off independently of said first MISFET and extracting majority carriers from said third semiconductor region into a second sub-region of said fourth semiconductor region, said fourth semiconductor region being divided into a first source region, corresponding to the first sub-region, of said first MISFET, a second source region, corresponding to the second sub-region, of said second MISFET electrically connected with said first source region via respective source electrodes, and a drain region of said second MISFET located between said first and second source regions, said first source region being isolated from said drain region, and said drain region electrically connected to said third semiconductor region by a shorting electrode;

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wherein a depth of said second source region of said second MISFET is different from that of said drain region of said second MISFET.

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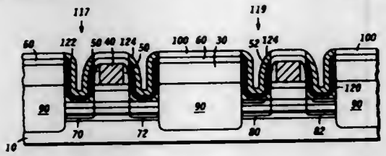
HETEROSTRUCTURE FIELD EFFECT DEVICE HAVING REFRACTORY OHMIC CONTACT DIRECTLY ON CHANNEL LAYER AND METHOD FOR MAKING

Jonathan K. Abrokwah, Tempe; Jenn-Hwa Huang, Gilbert; William J. Ooms, Chandler, all of Ariz.; Carl L. Shurboff, Grayslake, Ill., and Jerald A. Hallmark, Gilbert, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 4, 1995, Ser. No. 434,867

Int. Cl.[6] H01L *31/0328;31/0336;31/072;31/109*

U.S. Cl. 257—192 **20 Claims**



1. A field effect device comprising:
a channel layer;
a barrier layer comprising aluminum, the barrier layer overlying the channel layer, the barrier layer absent over a contact portion of the channel layer;
an undoped cap layer overlying the barrier layer, the undoped cap layer absent over the contact portion of the channel layer; and
a first refractory ohmic contact comprising a first material, the refractory ohmic contact contacting the contact portion of the channel layer.

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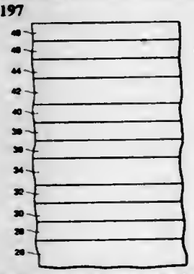
PARABOLICALLY GRADED BASE-COLLECTOR DOUBLE HETEROJUNCTION BIPOLAR TRANSISTOR

Chanh Nguyen, and Takyiu Liu, both of Newbury Park, Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 1, 1994, Ser. No. 349,096

Int. Cl.[6] H01L *31/0328;31/0336;31/072*

U.S. Cl. 257—197 **19 Claims**



1. A double heterojunction bipolar transistor including collector, base, and emitter regions and formed on a substrate, said base and collector separated by a base-collector layer, said collector region comprising a first semiconductor composition having a first bandgap and said base region comprising a second semiconductor composition having a second bandgap, said base-collector layer comprising a plurality of alternating layers of said first and second compositions configured so as to provide a parabolic grading in bandgap from said base region to said collector region.

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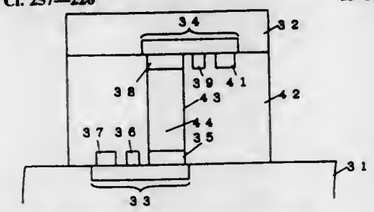
SEMICONDUCTOR INTEGRATED CIRCUIT INCLUDING OPPOSED SUBSTRATES OF DIFFERENT SEMICONDUCTOR MATERIALS AND METHOD OF MANUFACTURING THE SEMICONDUCTOR INTEGRATED CIRCUIT

Minoru Noda, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 9, 1995, Ser. No. 512,916

Int. Cl.[6] H01L *29/78;27/06;27/08;27/00*

U.S. Cl. 257—226 **13 Claims**



1. A semiconductor integrated circuit comprising:
a first semiconductor substrate having a top surface;
a first semiconductor element on the top surface of said first semiconductor substrate;
a first electrode on said first semiconductor element;
a second semiconductor substrate made of a material different from said first semiconductor substrate, having a bottom surface, and arranged with the bottom surface opposite the top surface of said first semiconductor substrate;
a second semiconductor element on the bottom surface of said second semiconductor substrate;
a second electrode on said second semiconductor element;
a solid electrically insulating film disposed between and contacting both the top surface of said first semiconductor substrate and the bottom surface opposite said second semiconductor substrate; and
an electrical conductor extending through said insulating film from and connecting the first electrode to the.

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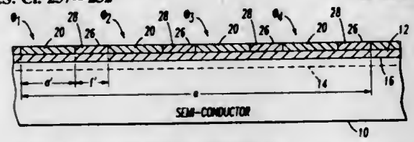
CHARGE COUPLED DEVICE GATE STRUCTURE HAVING NARROW EFFECTIVE GAPS BETWEEN GATE ELECTRODES

Nathan Bluzer, Rockville, and James Halvis, Severna Park, both of Md., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Jun. 19, 1995, Ser. No. 491,666

Int. Cl.[6] H01L *27/148*

U.S. Cl. 257—232 **11 Claims**



1. A charge coupled device, comprising:
a semiconductor substrate having a surface region including a buried channel for translating charge carriers;
a layer of dielectric material located on said substrate adjacent to said surface region;
a plurality of gate electrodes of predetermined width located on an outer surface of said layer of dielectric material and being respectively separated by inter-electrode gaps providing a predetermined separation distance between adjacent gate electrodes; and
dielectric filler means located in said gaps for reducing the effective electrical separation distance between said plurality of gate electrodes relative to the actual physical separation distance, said means comprising dielectric filler material having a relatively high dielectric constant for clock frequency signals applied to said gate electrodes and a relatively low dielectric constant for optical frequency signals impinging on the device.

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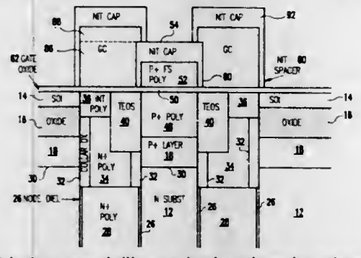
FABRICATION PROCESS AND STRUCTURE FOR A CONTACTED-BODY SILICON-ON-INSULATOR DYNAMIC RANDOM ACCESS MEMORY

Gary B. Bronner, Dutchess County, N.Y.; John K. DeBrosse, Chittenden County, Vt., and Jack A. Mandelman, Dutchess County, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 26, 1995, Ser. No. 428,968

Int. Cl.[6] H01L *27/108;27/01;29/76*

U.S. Cl. 257—301 **13 Claims**



1. A body-contacted silicon-on-insulator dynamic random access memory, comprising:
a substrate including a silicon layer, an insulator layer positioned on said silicon layer, and a silicon-on-insulator layer positioned on said insulator layer;
a conductive material contacting said silicon-on-insulator layer, said conductive material traversing through said silicon-on-insulator layer and said insulator layer and contacting said silicon layer;
a field-shield isolation region positioned on a surface of said substrate above said conductive material; and
deep trench storage capacitors formed in said substrate, wherein said deep trench storage capacitors are laterally adjacent and bound side edges of said conductive material contacting said silicon-on-insulator layer and said silicon layer.

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DYNAMIC RAM TRENCH CAPACITOR DEVICE WITH CONTACT STRAP

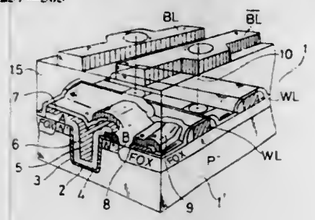
Alberto O. Adan, Tenri, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 786,831, Nov. 1, 1991, abandoned. This application Aug. 26, 1993, Ser. No. 111,967

Claims priority, applicatino Japan, Mar. 13, 1991, 3-048142

Int. Cl.[6] H01L *29/78*

U.S. Cl. 257—303 **6 Claims**



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MICROELECTRONIC CIRCUIT STRUCTURE HAVING IMPROVED STRUCTURAL FINENESS AND METHOD FOR MANUFACTURING SAME

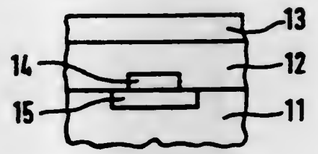
Karl Hofmann, Putzbrunn, and Maximilian Schultz, Weiher, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed May 19, 1994, Ser. No. 246,170

Claims priority, application Germany, May 19, 1993, 43 16 855.8

Int. Cl.[6] H01L *27/20;29/76*

U.S. Cl. 257—316 **17 Claims**



1. Microelectronic circuit structure, comprising:
at least one semiconductor layer, a dielectric layer and a gate electrode, wherein the at least one semiconductor layer and the dielectric layer are arranged neighboring one another forming a boundary surface therebetween, the boundary surface having a surface potential;
said dielectric layer comprises an electrical charge distribution having a maximum charge storage density of 1–100 $\mu c/cm^2$ having localized close to the boundary surface to effect a shift of the local semiconductor surface potential in the semiconductor layer;
wherein said gate electrode is arranged on the surface of the dielectric layer above the electrical charge distribution such that said shift is controllable via the gate electrode.

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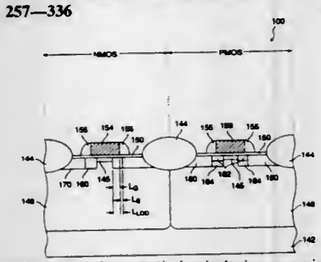
SEMICONDUCTOR DEVICE WITH LIGHTLY DOPED DRAIN REGIONS

Chih-Hsien Wang, Hsinchu, Taiwan, assignor to Mosel Vitelic, Inc., Hsinchu, Taiwan

Division of Ser. No. 357,486, Dec. 16, 1994, Pat. No. 5,516,711. This application Apr. 14, 1995, Ser. No. 422,754

Int. Cl.[6] H01L *27/088*

U.S. Cl. 257—336 **16 Claims**



1. A semiconductor integrated circuit device comprising:

a semiconductor substrate, said semiconductor substrate comprising a first upper surface;

a first well region having first conductivity type impurities defined on said substrate, said first well region comprising:

a first gate electrode formed overlying a gate dielectric, said gate dielectric layer defined overlying said first upper surface on said first well region, said first gate electrode including a first sidewall spacer formed thereon; and

a first source/drain region comprising a first LDD region and a first source/drain, said first source/drain having a portion adjacent to said first upper surface, said first source/drain portion adjacent to said first upper surface underlying a portion of said first sidewall spacer, said first LDD region being formed adjacent to said first gate electrode, said first LDD region including a portion adjacent to said first upper surface, said first LDD region portion adjacent to said upper surface having a portion underlying said first gate electrode and a portion underlying said first sidewall spacer;

wherein said first LDD region portion underlying said first gate electrode is longer in a lateral direction than said first LDD portion underlying said first sidewall spacer; and

a second well region having second conductivity type impurities defined on said substrate, said second well region comprising:

a second gate electrode formed overlying a gate dielectric, said gate dielectric defined overlying said second upper surface on said second well region, said second gate electrode including a second sidewall spacer formed thereon;

a second source/drain region comprising a second LDD region and a second source/drain, said second source/drain having a portion adjacent to said second upper surface, said second source/drain portion adjacent to said second upper surface underlying a portion of said second sidewall spacer, said second LDD region being formed adjacent to said second gate electrode, said second LDD region including a portion adjacent to said second upper surface, said second LDD portion adjacent to said second upper surface having a portion underlying said second gate electrode and a portion underlying said second sidewall spacer;

a pocket region comprising second conductivity type impurities, said pocket region being defined adjacent to said second source/drain, being defined substantially underlying said second LDD region and being defined substantially away from said second upper surface;

a channel region comprising first conductivity type impurities formed underlying a portion of said second gate electrode and adjacent to and connected to said second LDD region, said channel region being substantially free from said pocket region; and

wherein said second LDD region portion underlying said second gate electrode is longer than said second LDD portion underlying said second sidewall spacer.

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SEMICONDUCTOR INTEGRATED CIRCUITS HAVING BIPOLAR TRANSISTORS AND LDD-STRUCTURED MOSFET

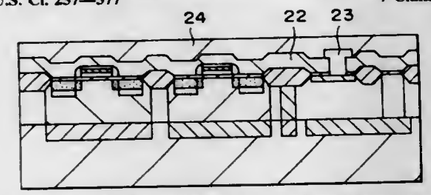
Hiroshi Harada, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 357,199, Dec. 13, 1994, abandoned. This application Jun. 13, 1996, Ser. No. 662,525

Claims priority, application Japan, Dec. 17, 1993, 5-317985

Int. Cl.[6] H01L *29/76;29/94;31/062;31/113*

U.S. Cl. 257—377 **7 Claims**



1. A semiconductor integrated circuit comprising: a semiconductor substrate having a main surface; at least one MOSFET formed on said main surface and having a lightly doped drain, a gate electrode laminate and a sidewall spacer formed on a side of said gate electrode laminate adjacent to said lightly doped drain, said gate electrode laminate including a top layer made of a material containing substantially no refractory metal; an insulating layer formed on said gate electrode laminate and said sidewall spacer; and a bipolar transistor formed on said main surface having an emitter electrode formed on and penetrating said insulating layer, said top layer preventing refractory metal particulates from beneath said top layer from contaminating a base region of said bipolar transistor during formation of said sidewall spacer.

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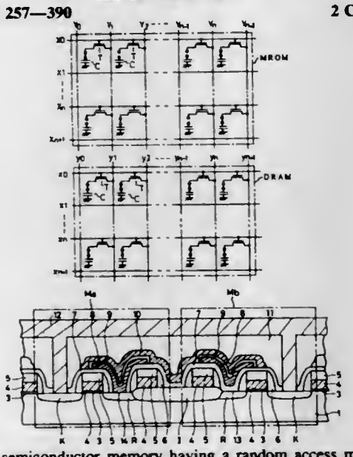
DRAM AND MROM CELLS WITH SIMILAR STRUCTURE

Naoki Ueda, Nara; Yoshimitsu Yamauchi, Nabari, and Kenichi Tanaka, Fukuyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 3, 1994, Ser. No. 316,835

Int. Cl.[6] H01L *29/78*

U.S. Cl. 257—390 **2 Claims**



1. A semiconductor memory having a random access memory (DRAM) and a mask read only memory (MROM) formed on the same semiconductor substrate; each of the DRAM and MROM comprising a plurality of word lines, a plurality of bit lines and a plurality of memory cells:

each of the memory cells included in the DRAM and the MROM comprising:

a switching element including source and drain regions and a gate electrode;

a capacitance element existing at least partially over the switching element and formed of an accumulation node electrode, an insulating film and a plate electrode subsequently laminated in this order,

wherein, in a memory cell included in the DRAM, the switching element is connected to one of the word lines, to the capacitance element, and to one of the bit lines; and

wherein, in a first memory cell included in the MROM which stores a first predetermined value, the switching element is connected to one of the word lines, to the capacitance element, and to one of the bit lines; and

wherein, in a second memory cell included in the MROM which stores a second predetermined value, the switching element is disconnected from at least one of the following: a word line associated with the second memory cell, the capacitance element, and a bit line associated with the second memory cell.

5,606,194

DEVICE FOR ENCAPSULATING AND PASSIVATING A CIRCUIT FOR FLAT SCREENS

Hugues Lebrun, La Tronche, and Laurence Mulatier, Varces, both of France, assignors to Thomson-LCD, Puteaux, France

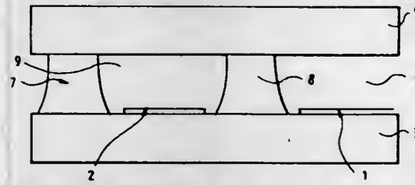
PCT No. PCT/FR93/00641, § 371 Date Feb. 10, 1995, § 102(e) Date Feb. 10, 1995, PCT Pub. No. WO94/00795, PCT Pub. Date Jan. 6, 1994

PCT Filed Jun. 25, 1993, Ser. No. 351,408

Claims priority, application France, Jun. 26, 1992, 92 07887

Int. Cl.[6] H01L *31/0203*

U.S. Cl. 257—433 **8 Claims**



1. Device for encapsulating and passivating electronic circuits, comprising:

a substrate plate;

an electronic circuit mounted on said substrate plate;

an active matrix mounted on said substrate plate; and

a sealing bead deposited on said substrate plate and surrounding said electronic circuit so as to form a sealed enclosure separate from said active matrix.

5,606,195

HIGH-VOLTAGE BIPOLAR TRANSISTOR UTILIZING FIELD-TERMINATED BOND-PAD ELECTRODES

William W. Hooper, Westlake Village; Michael G. Case, Thousand Oaks, and Chanh N. Nguyen, Newbury Park, all of Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Filed Dec. 26, 1995, Ser. No. 578,796

Int. Cl.[6] H01L *29/44;29/52*

U.S. Cl. 257—488 **10 Claims**

1. A high-voltage bipolar transistor comprising:

a substrate;

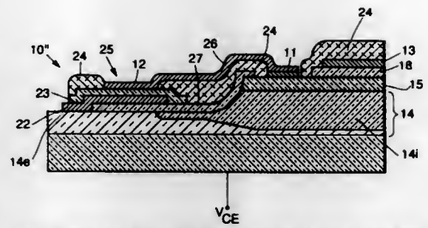
a collector disposed on the substrate;

a base disposed on a first portion of the collector;

an emitter disposed on the base;

an emitter contact disposed on the emitter;

a first support dielectric layer disposed on a second portion of the collector and on a portion of the base;



a field termination electrode disposed on the first support dielectric layer that contacts the collector;

a second dielectric layer disposed over the field termination electrode;

a thick dielectric layer disposed over exposed portions of the second dielectric layer, the first support dielectric layer, the emitter, and the emitter contact, and wherein the thick dielectric layer has openings therein at locations for a bond pad, pad interconnect, and base and emitter contacts; and

a bond pad disposed in an opening above the first support dielectric layer and field termination electrode and which is disposed on the thick dielectric layer and contacts the base to thereby provide a structure in which the bond pad overlaps the field termination electrode with a dielectric layer therebetween whereby electric field is prevented from penetrating into the substrate.

5,606,196

HIGH-FREQUENCY, HIGH-DENSITY SEMICONDUCTOR CHIP PACKAGE WITH SCREENING BONDING WIRES

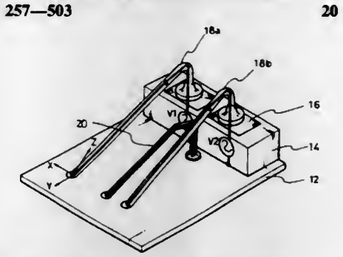
Hai Y. Lee, Suwon; Kyung S. Lee, Kunpo, and Chan M. Han, Yongin-gun, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 29, 1995, Ser. No. 580,719

Claims priority, application Rep. of Korea, Oct. 14, 1995, 1995-35522

Int. Cl.[6] H01L *29/00;23/552;23/48*

U.S. Cl. 257—503 **20 Claims**



1. A semiconductor device package comprising:

a semiconductor chip formed with a plurality of bonding pads, including at least two bonding pads to which signals are transmitted;

a substrate provided with a chip-supporting means and a plurality of conductive means for electrically connecting the chip to external devices;

a plurality of bonding wires for electrically connecting said bonding pads to said conductive means, including bonding wires for electrically connecting said bonding pads to corresponding ones of said conductive means; and

a current looping means for screening magnetic fields generated from said bonding wires so that the magnetic fields cannot interfere each other, said current looping means being located between said bonding wires and bonded to said substrate at both ends.

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5,606,197

HIGH CAPACITANCE CAPACITOR IN AN INTEGRATED FUNCTION BLOCK OR AN INTEGRATED CIRCUIT

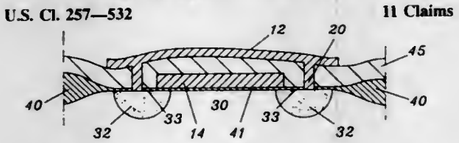
Ted Johansson, Hägersten, and José-Maria Gobbi, Stockholm, both of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Continuation of Ser. No. 84,459, Jul. 1, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 466,448

Claims priority, application Sweden, Jul. 6, 1992, 9202093

Int. Cl.[6] H01L *27/10;29/00;23/58*

U.S. Cl. 257—532 **11 Claims**



1. A MOS capacitor for use in an integrated function block or an integrated circuit comprising:

a p^- substrate;

a gate oxide layer applied on the substrate;

a conductive layer of polysilicon applied on the gate oxide layer, the conductive layer protecting the gate oxide and extending in a first extension direction a length greater than the gate oxide layer, whereby at least one surface of gate oxide extends in a second extension direction a length greater than the conductive layer, such that the surface of the gate oxide is not protected by the conductive layer;

a plurality of p^+ doped islands implanted in the p^- substrate which are not protected by said conductive layer;

an insulating layer formed by depositing an oxide on portions of the gate oxide and the conductive layer, the insulating layer having a first plurality of interconnection openings for interconnection to the doped islands and a second plurality of interconnection openings to the conductive layer at the ends of the conductive layer in the first extension direction, the second plurality of interconnection openings being formed in an area which does not cover the gate oxide layer; and

a first metallization level having a first metallization area connected to the doped islands through the first plurality of interconnection openings, and having at least one second metallization area connected to the conductive layer through the second plurality of interconnection openings,

wherein the first metallization area and the second metallization area each correspond to a respective capacitor terminal, the MOS capacitor being connected by a second metallization level to a desired portion of the function block or integrated circuit, and the MOS capacitor underlying a supply line, bonding pad, or ground connection of the function block or integrated circuit.

5,606,198

SEMICONDUCTOR CHIP WITH ELECTRODES ON SIDE SURFACE

Yukichi Ono, and Katsuhiko Ishida, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Japan

Filed Oct. 12, 1994, Ser. No. 321,924

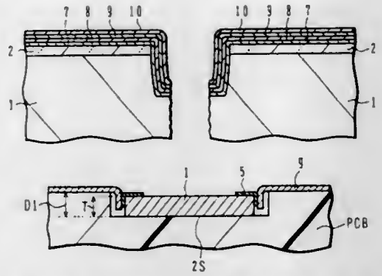
Claims priority, application Japan, Oct. 13, 1993, 5-256170; Oct. 7, 1994, 6-244465

Int. Cl.[6] H01L *23/482;23/495*

U.S. Cl. 257—666 **1 Claim**

1. An electrode circuit device comprising:

a semiconductor chip comprising: a semiconductor substrate having a main surface and side surfaces; an integrated circuit formed on the main surface of said semiconductor substrate;



and metal electrodes formed on the substrate and extending from said integrated circuit to corresponding recesses formed in at least one of the side surfaces of said semiconductor substrate; and

a wiring circuit board having a cavity accommodating said semiconductor chip on the surface thereof and wirings extending into the cavity and contacting said electrodes, said cavity having a rectangular shape and said wirings including electrode leads on at least one side surface of the cavity, said metal electrodes being contacted to said electrode leads by spring force.

5,606,199

RESIN-MOLDED TYPE SEMICONDUCTOR DEVICE WITH TAPE CARRIER CONNECTION BETWEEN CHIP ELECTRODES AND INNER LEADS OF LEAD FRAME

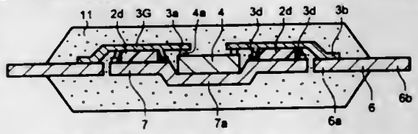
Akira Yoshigai, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Oct. 5, 1995, Ser. No. 539,770

Claims priority, application Japan, Oct. 6, 1994, 6-266070

Int. Cl.[6] H01L *23/495*

U.S. Cl. 257—666 **7 Claims**



1. A resin-molded type semiconductor device having a semiconductor chip and a tape carrier including a base film, said device comprising:

an island which is formed of a lead frame and which is attached to an undersurface of said base film;

a plurality of metal foil leads on said tape carrier, which connect electrode pads respectively to inner leads of the lead frame; and

a plurality of ground leads which are constituted by parts of said metal foil leads, said ground leads being connected at least at inner lead sides of said ground leads to said island.

5,606,200

RESIN SEALED SEMICONDUCTOR DEVICE WITH IMPROVED STRUCTURAL INTEGRITY

Kouichi Haraguchi, and Yuji Ichimura, both of Matsumoto City, Japan, assignors to Fuji Electric Co., Ltd., Japan

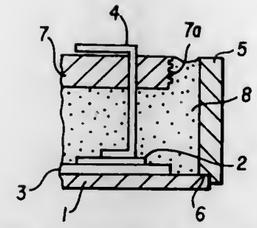
Filed Jan. 12, 1994, Ser. No. 180,481

Claims priority, application Japan, Jan. 13, 1993, 5-003646; May 6, 1993, 5-104849

Int. Cl.[6] H01L *23/22;23/48;23/04;23/053*

U.S. Cl. 257—687 **17 Claims**

1. A resin sealed semiconductor device comprising:



a metallic base plate; a covering case attached to the periphery of the metallic plate at an interface; a semiconductor element fixed on the metallic plate; at least one lead-out terminal connected to a surface electrode on the semiconductor element; and a terminal-supporting plate for supporting the lead-out terminal;

wherein the terminal-supporting-plate has an outer peripheral surface that is roughened across its entire face and a space between the outer peripheral surface of the terminal-supporting plate and the covering case is filled with a sealing resin.

5,606,201

FLUID-COOLED POWER TRANSISTOR ARRANGEMENT

Dieter Lutz, Schweinfurt, Germany, assignor to Mannesmann Aktiengesellschaft, Düsseldorf, Germany

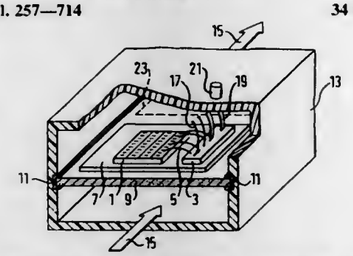
PCT No. PCT/DE93/00465, § 371 Date Nov. 23, 1994, § 102(e) Date Nov. 23, 1994, PCT Pub. No. WO93/24955, PCT Pub. Date Dec. 9, 1993

PCT Filed May 24, 1993, Ser. No. 341,556

Claims priority, application Germany, May 25, 1992, 42 17 289.6

Int. Cl.[6] H01L *23/34*

U.S. Cl. 257—714 **34 Claims**



1. A fluid-cooled IGBT, MOSFET or BIMOS power transistor arrangement for electric valve arrangements, comprising: a board-like transistor semiconductor component having flat sides; a metal plate-shaped electrode having two flat sides, a first one of the flat sides of the electrode being arranged on one of the flat sides of the semiconductor component so as to cover the flat side of the semiconductor component and exceed an area of the semiconductor component, the metal electrode being connected to the semiconductor component in a closed-surface, material-tight manner; an insulating substrate connected to a second of the flat sides of the metal electrode and being dimensioned to extend beyond the semiconductor component, the semiconductor component and the metal electrode being connected to the insulating substrate in a closed-surface and material-tight manner; a fluid channel; means for producing a forced cooling fluid flow in a flow direction within the fluid channel, the insulating substrate having flat sides, at least one of which is within the cooling fluid flow; a plurality of terminals attached to the other flat side of the semiconductor component in a material-tight manner at a distance from one another, whereby the semiconductor component is directly exposed over its common contact surface with the insulating substrate to cooling action of the cooling fluid flow; and a control and protection circuit operatively connected to the semiconductor component and mounted on the insulating substrate.

5,606,202

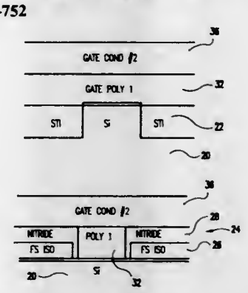
PLANARIZED GATE CONDUCTOR ON SUBSTRATES WITH ABOVE-SURFACE ISOLATION

Gary B. Bronner, and Jack A. Mandelman, both of Dutchess County, N.Y., assignors to International Business Machines, Corporation, Armonk, N.Y.

Filed Apr. 25, 1995, Ser. No. 428,387

Int. Cl.[6] H01L *23/48*

U.S. Cl. 257—752 **6 Claims**



1. A substrate having both above-surface isolation and below-surface isolation in first and second separate regions of said substrate, respectively, comprising:

a first region of said substrate having below surface isolation with a top of said below-surface isolation positioned at or below an uppermost top surface of said substrate, said below-surface isolation extending below said uppermost top surface of said substrate;

a second region of said substrate having above-surface isolation with a bottom of said above-surface isolation positioned at or above said uppermost top surface of said substrate, said above-surface isolation including a plurality of spaced apart isolation members which project above said uppermost top surface of said substrate, said second region of said substrate being separate from said first region;

a first gate conductor portion positioned above said first region of said substrate and between said plurality of spaced apart isolation members in said second portion of said substrate; and

a second gate conductor portion positioned over said first gate conductor portion, said second gate conductor being co-planar in both said first and second regions of said substrate.

5,606,203

SEMICONDUCTOR DEVICE HAVING AL-CU WIRING LINES WHERE CU CONCENTRATION IS RELATED TO LINE WIDTH

Hidemitsu Egawa, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation-in-part of Ser. No. 295,037, Aug. 25, 1994, abandoned, which is a continuation of Ser. No. 142,955, Oct. 29, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 481,160

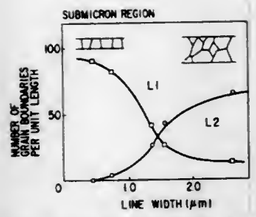
Claims priority, application Japan, Jan. 20, 1993, 5-007505

Int. Cl.[6] H01L *23/48*

U.S. Cl. 257—771 **2 Claims**

1. A semiconductor device comprising:

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wiring lines formed from an electrode wiring layer using, as an electrode material, an Al alloy containing Cu, said wiring lines comprising a first wiring line having a width of a cross section smaller than an average crystal grain diameter of said electrode material and a second wiring line having a width of a cross section larger than the average crystal grain diameter; wherein said first wiring line has a Cu concentration in percent by weight that prevents Cu from being segregated during annealing of said electrode material, and said second wiring line has a Cu concentration in percent by weight that permits Cu to be segregated during annealing of said electrode material.

5,606,204

RESIN-SEALED SEMICONDUCTOR DEVICE

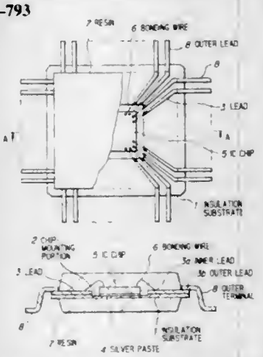
Yukihiro Tsuji, Kumamoto, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 22, 1995, Ser. No. 493,427

Claims priority, application Japan, Jun. 23, 1994, 6-141415

Int. Cl.[6] H01L *23/29;23/28;23/053;23/14*

U.S. Cl. 257—793 **4 Claims**



1. A resin-sealed semiconductor device, comprising:

an insulation substrate having a chip mounting portion;

leads which are disposed on said substrate and extend from said chip-mounting portion, each of said leads having an inner portion proximal to said chip-mounting portion and extending to an outer portion distal from said chip-mounting portion;

an IC chip mounted on said chip-mounting portion and connected by electrical conductors with said inner portion of said leads;

a resin disposed on a top surface of said substrate to extend over said IC chip and said inner leads and devoid over a portion over a perimeter area of said insulation substrate and devoid over said outer portion of said leads;

a resin disposed on a bottom surface of said substrate to seal over an area thereon; and

outer terminals which are connected to said outer portion of said leads at a location devoid of said resin.

5,606,205

INDUCTION MODULE FOR AN ASYNCHRONOUS LINEAR ELECTRIC MOTOR AND METHOD FOR MANUFACTURING SAME

Jean-Claude Defontaine, 9, rue de Tarare, 69400 Villefranche-sur-Saone, and Bernard Defontaine, 238 Chemin de Pinach-`ere, 01700 Beynost, both of France

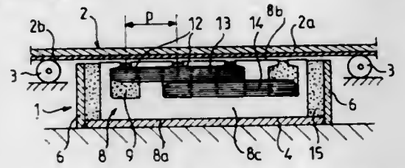
PCT No. PCT/FR93/00183, § 371 Date Oct. 17, 1994, § 102(e) Date Oct. 17, 1994, PCT Pub. No. WO93/17487. PCT Pub. Date Sep. 2, 1993

PCT Filed Feb. 24, 1993, Ser. No. 290,733

Claims priority, application France, Feb. 24, 1992, 92 02324

Int. Cl.[6] H02K *41/025*

U.S. Cl. 310—12 **1 Claim**



1. Induction module for an asynchronous linear electric motor comprising an outer protective shell (7) of parallelepipedic form, constituted by a rectangular horizontal bottom (4), two opposite vertical and longitudinal walls (5) and two opposite vertical and transverse walls (6), a laminated magnetic circuit constituted by a bar (8), of generally parallelepipedic shape, of smaller length and smaller width than the inner length and width of the protective shell (7), extending along the longitudinal axis (xy) of the outer protective shell (7), this bar (8) presenting, in its upper part, a succession of transverse recesses (9) regularly spaced from one another in the longitudinal direction, opening out in the upper face (8*b*) and in the two vertical and longitudinal faces of the bar (8), delimiting therebetween teeth (11) constituting polar pieces, inductor windings (13, 14, 16, 17, 18) housed in the recesses (9) of the magnetic bar (8) and an insulating matter (15) filling the space left free inside the protective shell (7), between the latter and the magnetic bar (8) and the windings that it supports, the height of the magnetic bar (8) being greater than the height of the longitudinal (5) and transverse (6) walls of the protective shell (7), so that, after the insulating matter (15) has been cast, polar faces (8*b*) of the teeth (11) of the magnetic bar emerge from the block of solidified insulating matter (15), the inductor windings (13, 14, 16, 17, 18) being disposed respectively in different horizontal planes, the inductor winding (13) located in an upper plane comprising a number of turns greater than that of the winding (14) located in a plane therebeneath.

5,606,206

DEVICE FOR DETECTING THE POSITION OF AN OPTICAL OR MAGNETIC HEAD USED ON LINEAR MOTORS

Thomas M. Stephany, Churchville, and Edward P. Furlani, Lancaster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 10, 1995, Ser. No. 419,341

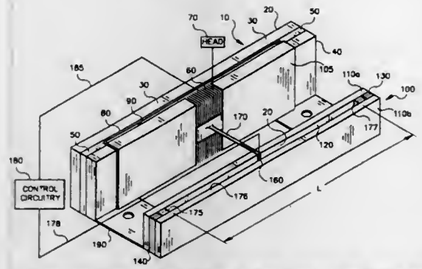
Int. Cl.[6] H02K *41/02;41/00*

U.S. Cl. 310—13 **7 Claims**

1. A device for detecting the position of a head attached to a linear motor, the detection device comprising:

(a) an extension member for guiding and directing flux therein;

(b) a moving coil disposed on said extension member which said coil, when energized, moves along said extension member for positioning the head;



(c) a magnet positioned in a spaced apart relationship with said moving coil for inducing a drive flux which assists in imparting the motion to said coil when said moving coil is energized;

(d) a first wall;

(e) a second wall in a spaced apart relationship with said first wall;

(f) a first and second magnet both having a north and south pole oriented along their cross-sectional dimension for generating a magnetic field substantially between said first and second walls; wherein the south pole of the first magnet is in abutting contact with said first wall and the north pole of the second magnet is in abutting contact with said first wall; wherein the north pole of the first magnet is in abutting contact with said second wall and the south pole of the second magnet is in abutting contact with said second wall; and

(g) a sensor attached to and moving in unison with said coil and positioned between said first and second walls for detecting the magnetic flux between said walls for ultimately determining the position of the magnetic head.

5,606,207

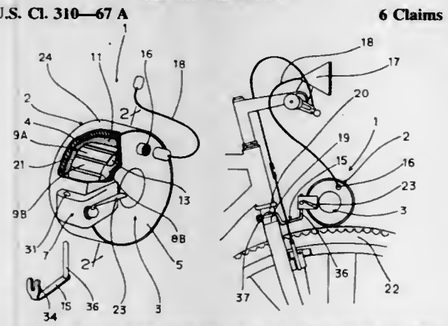
POWER GENERATING APPARATUS FOR A BICYCLE

Kazuhiko Gotoh, 28-204 Wakaba choo Danchi, 4-25-1 Wakaba choo, Tachikawa, Tokyo, Japan

Filed Apr. 11, 1995, Ser. No. 420,283

Int. Cl.[6] H02K *11/00*

U.S. Cl. 310—67 A **6 Claims**



1. A power generating apparatus for a bicycle having a body and tires comprising:

a power generating unit including a stator having a frame, a bearing situated in a center of the frame and a winding assembly fixed to the frame outside the bearing; and a rotor rotatably supported by the bearing of the stator and having a ring shaped magnet surrounding the winding assembly of the stator, and an outer cylindrical surface situated outside the ring shaped magnet so that when the rotor is rotated, the winding assembly generates electricity,

a mount stay having an end portion to be fixed to the body of the bicycle and a mount shaft situated away from the end portion and extending upwardly from the bicycle near one of the tires,

a stator arm fixed to the frame of the stator and including a mount hole extending perpendicularly to the bearing for introducing the mount shaft therein from a lower portion of the mount hole, and a clamp bolt hole with a female thread portion communicating with the mount hole, and

a clamp bolt having a shaft portion with a male thread portion engaging the female thread portion and located in the clamp bolt hole, and a clamp lever fixed to the shaft portion so that when the stator arm is attached to the mount stay by engaging the mount shaft with the mount hole and the clamp bolt in the clamp bolt hole is tightened while the power generating unit is urged onto said one of the tires, a distal end of the clamp bolt abuts against the mount shaft and the power generating apparatus is immovably fixed to the bicycle to thereby detachably fix the power generating apparatus to the bicycle.

5,606,208

BRUSHLESS MOTOR HAVING TERMINALS FOR CONNECTING WINDING ENDS TO CIRCUIT BOARD LANDS

Hiroshi Sakashita, and Eiji Arasaki, both of Komagane, Japan, assignors to Sankyo Seiki Mfg. Co., Ltd., Nagano-ken, Japan

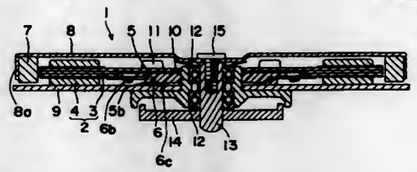
PCT No. PCT/JP92/01572, § 371 Date Aug. 9, 1994, § 102(e) Date Aug. 9, 1994, PCT Pub. No. WO93/11597, PCT Pub. Date Jun. 10, 1993

PCT Filed Nov. 30, 1992, Ser. No. 244,472

Claims priority, application Japan, Nov. 29, 1993, 3-105676 U

Int. Cl.[6] H02K *11/00;5/00*

U.S. Cl. 310—71 **9 Claims**



1. A brushless motor comprising:

a rotor section having a rotor magnet;

a stator section having windings opposed to said rotor magnet in the radial direction of said motor and a stator core around which said windings are wound;

a driving circuit formed on a circuit board electrically connected to said windings wound around said stator core;

terminals, including clipping portions which holds and are electrically connected to said windings and connection portions electrically connected to land parts of said driving circuit formed on said circuit board, which reposition electrical connections between said windings and said driving circuit; and

a core holder for holding said terminals, said terminals being provided to said core holder on a surface opposed to said circuit board;

at least said clipping portions and said connection portions being arranged substantially parallel with said circuit board; and said connection portions being nearer to said circuit board than said clipping portions;

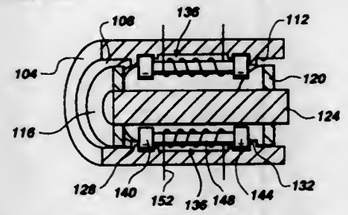
wherein said core holder has first mount parts for mounting and supporting said connection portions of said terminals thereon at positions where said connection portions can be electrically connected to said land parts of said circuit board; and second mount parts for mounting and supporting said clipping portions of said terminals thereon at positions where said clipping portions are apart from said circuit board, and wherein said first and second mount parts are constituted by stand portions having a different height from each other in the thickness direction of said stator core.

5,606,209

MAGNETIC ECCENTRIC MOTION MOTOR

Stephen C. Jacobsen, and Clark C. Davis, both of Salt Lake City, Utah, assignors to Sarcos, Inc., Salt Lake City, Utah

Division of Ser. No. 88,178, Jul. 7, 1993, Pat. No. 5,426,336, which is a division of Ser. No. 663,444, Mar. 1, 1991, Pat. No. 5,252,870. This application Jun. 6, 1995, Ser. No. 468,345
Int. Cl.[6] H02N 7/02
U.S. Cl. 310—82 1 Claim



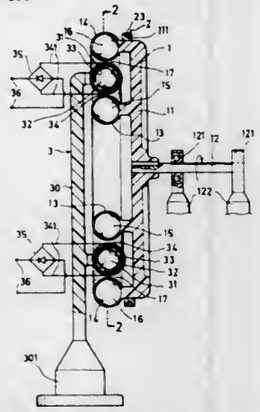
1. An eccentric-motion motor comprising
a stator defining a pair of spaced-apart continuous, generally parallel closed surface tracks circumscribing a stator hollow and having a pair of ridges formed on the interior surface of the stator hollow,
a plurality of electromagnetic elements disposed in an array about the stator hollow,
an armature disposed in the stator hollow and including an elongate bar of ferromagnetic material and a pair of disks mounted at spaced-apart locations on the bar to contact and roll over respective tracks of the stator and being prevented from moving axially by the pair of ridges, and
means for selectively energizing the electromagnetic elements to successively attract the armature and cause it to roll over the tracks about the stator hollow.

5,606,210

POWER GENERATOR BY MAGNETICALLY REPULSING MAGNETIC SHUTTLES

Tieng-Fu Lin, c/o Hung Hsing Patent Service Center, P.O. Box 55-1670, Taipei, Taiwan

Filed Sep. 15, 1995, Ser. No. 528,920
Int. Cl.[6] H02K 21/22
U.S. Cl. 310—153 8 Claims



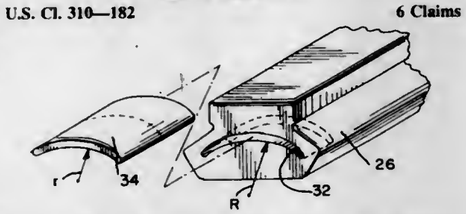
1. A power generater comprising:
a fly wheel means including a fly wheel having at least an extension ring annularly formed on the fly wheel and a plurality of magnetically repulsive magnets circularly secured in said extension ring;
a driving means operatively rotating said fly wheel for rotatably moving said plurality of said repulsive magnets; and
a power generating disk means including a guiding-rail ring formed on a mounting disk mounted on a supporting frame, a plurality of shuttle magnets secured in a carrier ring rotatably slidably engageable in the guiding-rail ring adjacent to said extension ring on said fly wheel, and a plurality of coil windings circularly wound on said guiding-rail ring, said magnetically repulsive magnet operatively approximating said shuttle magnet and having one end of said repulsive magnet having a same magnetic polarity as that of one end of said shuttle magnet to allow said repulsive magnet to magnetically repulse said shuttle magnet, whereby upon a rotation of said fly wheel to approximate each said repulsive magnet to each said shuttle magnet, each said shuttle magnet will be magnetically repulsed by each said repulsive magnet to circularly shuttle in said guiding-rail ring to induce an alternating current from each said coil winding for power generation.

5,606,211

AMORTISSEUR WINDING ARRANGEMENT, IN A ROTOR FOR ELECTRICAL, ROTATING EQUIPMENT

Darrell R. Morrison, Blaine; James L. Nessa, St. Paul, and James J. McClurg, Vadnais Heights, all of Minn., assignors to Dresser-Rand Company, Corning, N.Y.

Continuation of Ser. No. 497,972, Jul. 3, 1995, Pat. No. 5,550,417. This application May 8, 1996, Ser. No. 646,578
Int. Cl.[6] H02K 1/00
U.S. Cl. 310—182 6 Claims



1. In a rotor for electrical, rotating equipment, an amortisseur winding arrangement, comprising:
a rotor having (a) a rotary axis, and (b) axial slots formed in an outer periphery of said rotor;
a plurality of electrically-conductive wedges, set in said slots, for retraining rotor-carried coils against centrifugal-force-induced movement thereof; wherein
said wedges are elongated and serially disposed in said slots so that each of said wedges has an end which substantially abuttingly engages an end of another of said wedges;
said wedge ends have axially-extended grooves formed therein; and
means forceably set in said grooves, for physically joining, and electro-conductively interconnecting, each one of said wedges with at least another one of said wedges.

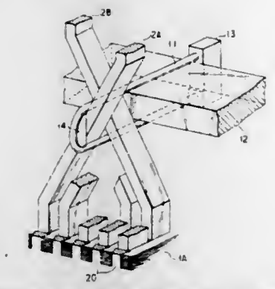
5,606,212

ROTOR OF ROTARY ELECTRIC-MACHINE

Chikage Sasa, Tachikawa; Michiyuki Abe, Tokyo; Akihiro Matumoto, Nishinasuno-machi; Shin-ichi Okazaki, Yokohama; Chisato Shibata, Yokohama, and Yoshikiyo Nishikawa, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 17, 1994, Ser. No. 245,035
Claims priority, application Japan, May 17, 1993, 5-114979
Int. Cl.[6] H02K 3/46
U.S. Cl. 310—270 12 Claims

1. A rotor of a rotary electric-machine, comprising;
rotor core;



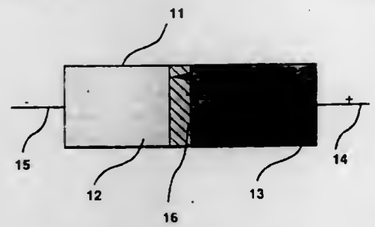
a distributed winding wound around said rotor core;
a plurality of ring members arranged at an end of said rotor core in an axial direction and each having an outside diameter which is substantially equal to an outside diameter of said rotor core; and
a plurality of coupling members each including a U-shaped bolt having a U-shaped portion and rod sections leading an end portion of said distributing winding toward a center of said rotor core, and a fixture fixing end portions of the rod sections into an inner peripheral portion of each of said plurality of ring members, said plurality of coupling members coupling the end portion of said distributed winding to said plurality of ring members,
wherein said rod sections are located within an arbitrary plane including an axis of said rotor core;
a first circumferential pitch between two adjacent coupling members of said plurality of coupling members arranged in a peripheral direction is substantially equal to a second circumferential pitch between the end of said rotor core and one of said plurality of ring members nearest to said rotor core, and the number m of said plurality of ring members is a small multiple of the number n of said plurality coupling members.

5,606,213

NUCLEAR BATTERIES

Nazir P. Kherani, Etobicoke; Walter T. Shmayda, King City, and Stefan Zukotynski, Richmond Hill, all of Canada, assignors to Ontario Hydro, Toronto, Canada

Continuation-in-part of Ser. No. 49,305, Apr. 21, 1993, abandoned. This application Jul. 29, 1994, Ser. No. 282,294
Int. Cl.[6] H01L 31/04; G21H 1/00
U.S. Cl. 310—303 17 Claims



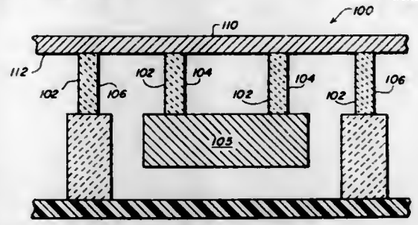
1. An electrical energy source, comprising tritium incorporated within an amorphous semiconductor matrix, in the form of a body of tritiated amorphous semiconductor material, by chemical bonding between the tritium and the amorphous semiconductor material, said body having a p-type conductivity region and an n-type conductivity region with a semiconductor junction therebetween and means for electrically connecting said n-type and p-type regions to a load circuit

5,606,214

SMART ACTUATOR FOR ACTIVE SURFACE CONTROL

Robert D. Corsaro, Waldorf, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 31, 1995, Ser. No. 521,742
Int. Cl.[6] G01P 15/00; H01L 41/08
U.S. Cl. 310—329 8 Claims



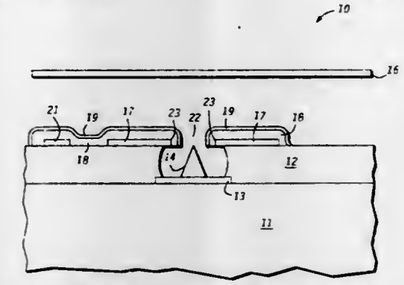
1. An actuator controllable surface, comprising:
a) a first plate;
b) a second plate, essentially parallel with said first plate;
c) at least one accelerometer, disposed between said first plate and said second plate, for sensing acceleration in said first plate, said at least one accelerometer comprising:
i) at least one accelerometer piezoelectric member having an end fixed to said first plate;
ii) a mass fixed to said at least one accelerometer piezoelectric member; and
iii) an output lead, for conducting an output voltage signal from said at least one accelerometer piezoelectric member, responsive to acceleration in said first plate, to output measuring means for measuring said output voltage signal; and
d) at least one actuator, disposed between said first plate and said second plate, adapted for urging said first plate in a normal direction.

5,606,215

FIELD EMISSION DEVICE ARC-SUPPRESSOR

James E. Jaskie; Lawrence N. Dworsky, both of Scottsdale, and Dean Barker, Tempe, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 283,363, Aug. 1, 1994, abandoned. This application May 13, 1996, Ser. No. 644,925
Int. Cl.[6] H01J 1/02
U.S. Cl. 313—309 10 Claims



7. A field emission device arc-suppressor comprising:
a conductive gate layer;
an emission opening through the conductive gate layer for allowing electrons to pass through the conductive gate layer, the emission opening having an inner surface; a resistive layer on the inner surface.

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5,606,216

COLOR CATHODE-RAY TUBE WITH REDUCED MOIRE

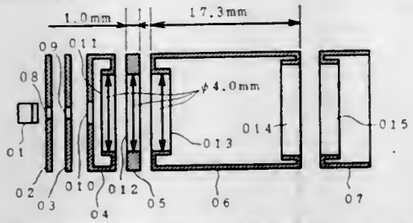
Go Uchida; Shoji Shirai; Takashi Kinami, all of Mobara, and Noboru Mizukami, Isumi-gun, all of Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Device Engineering Co., Ltd., Chiba-ken, both of Japan

Filed Mar. 2, 1995, Ser. No. 397,879

Claims priority, application Japan, Mar. 9, 1994, 6-038371

Int. Cl.[6] H01J *29/50;31/00*

U.S. Cl. 313—412 **6 Claims**



1. A color cathode-ray tube having an in-line type electron gun comprising

electron beam generating means comprising a cathode, a first electrode, and a second electrode for emitting three electron beams toward a phosphor screen,

a sub-main lens formed of a third electrode, a fourth electrode and a fifth electrode, and

a main lens formed of said fifth electrode and a sixth electrode for focusing said three electron beams onto said phosphor screen in cooperation with said sub-main lens,

said cathode and said first to sixth electrodes being arranged in this order, and

said second and fourth electrodes being electrically connected together and said third and fifth electrodes being electrically connected together, wherein a ratio A of an axial length of said fourth electrode to a diameter of an opening of said fourth electrode and a ratio B of an axial length of said fifth electrode to said diameter of said opening of said fourth electrode satisfy the following equations:

$54A-5B+4 \leqq 0$,

$55A-5B+7 \geqq 0$,

$A-0.18 \geqq 0$, and

$95A+10B-73 \leqq 0$.

5,606,217

COLOR CATHODE RAY TUBE OF SHADOW MASK TYPE

Ryoji Hirai, and Yuuichi Inoue, both of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 921,730, Jul. 30, 1992, abandoned. This application Oct. 25, 1994, Ser. No. 328,886

Claims priority, application Japan, Jul. 30, 1991, 3-189772

Int. Cl.[6] H01J *31/00*

U.S. Cl. 313—477 R **3 Claims**

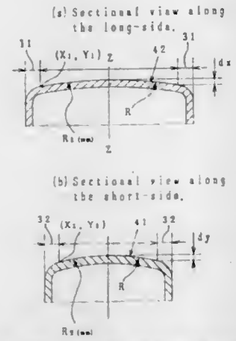
1. A color cathode ray tube of shadow mask type, comprising:

a face plate panel with a long axis and a short axis having an effective screen portion and a peripheral portion,

wherein when the curved outer surface of said face plate panel is expressed by three-dimensional spatial equations in which the X-axis is the long axis of said face plate panel, the Y-axis is the short axis thereof and the Z-axis is the tube axis thereof, the curved outer surface Z_X and Z_Y on the long axis and the short axis are approximated by,

$$Z_X=A_1X^2+A_2X^4+A_3X^6$$

$$Z_Y=A_4Y^2+A_5Y^4+A_6Y^6$$



and when P_X and P_Y of the curved outer surface are defined by,

$$P_X=A_1X_1^2/(A_1X_1^2+A_2X_1^4+A_3X_1^6)$$

$$P_Y=A_4Y_1^2/(A_4Y_1^2+A_5Y_1^4+A_6Y_1^6)$$

at points ($X=X_1$, $Y=Y_1$) which are boundary portions of the effective screen portion on the X-axis and the Y-axis respectively, and the constants A_1,A_2,A_3,A_4,A_5 and A_6 are set to satisfy

$$0.6<P_X(X=X_1) \leqq 0.9$$

$$0.6 \leqq P_Y(Y=Y_1) \leqq 1.0,$$

the curvature radii R (mm) on the boundary portion of the effective screen portion at the short side and at the long side satisfies the relationship:

$$2.0(42.5\ V+45)mm<R \leqq 4.0(42.5\ V+45)mm$$

when the effective diagonal diameter of said face plate panel is V, wherein V is measured in inches.

5,606,218

COLD CATHODE SUBMINIATURE FLUORESCENT LAMP

Daniel J. Cotter, Easton, and Robert Y. Pai, Hamilton, both of Mass., assignors to Osram Sylvania Inc., Danvers, Mass.

Filed Mar. 24, 1995, Ser. No. 410,440

Int. Cl.[6] H01J *61/067*

U.S. Cl. 313—485 **19 Claims**



1. A cold cathode subminiature fluorescent lamp comprising:

a glass envelope;

a pair of lead wires extending from outside said envelope, through said envelope at an entry location and into said envelope, said lead wires being sealed to said envelope at said entry location;

an electrode mounted on said lead wires in said envelope; and

a ceramic-glass bead formed on and around said pair of lead wires in said envelope between said electrode and said entry location.

5,606,219

CATHODE FOR ELECTRONIC FLASH TUBE

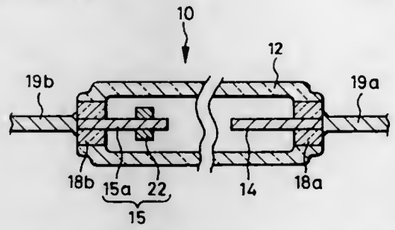
Tsutomu Tobita; Tatsuya Isomura, and Hideaki Takeuchi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 172,745, Dec. 27, 1993, abandoned. This application Oct. 10, 1995, Ser. No. 541,541

Claims priority, application Japan, Dec. 25, 1992, 4-346070; Feb. 3, 1993, 5-016344

Int. Cl.[6] H01J *61/04*

U.S. Cl. 313—632 **15 Claims**



1. A cathode for use in an electronic flash tube, said cathode consisting essentially of a sintered uniform mixture of at least a first material of metal and a second material, wherein:

said second material is a compound including cesium and at least one metal element which is selected from the group consisting of tantalum, zirconium, tungsten, titanium, vanadium, niobium and molybdenum.

5,606,220

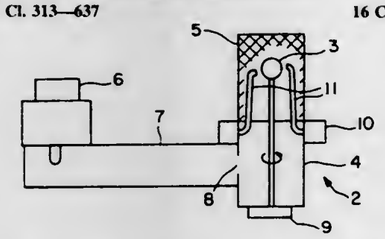
VISIBLE LAMP INCLUDING SELENIUM OR SULFUR

James T. Dolan, Frederick; Michael G. Ury, Bethesda, and Charles H. Wood, Rockville, all of Md., assignors to Fusion Systems Corporation, Rockville, Md.

Continuation of Ser. No. 71,027, Jun. 3, 1993, Pat. No. 5,404,076, which is a continuation of Ser. No. 604,487, Oct. 25, 1990, abandoned. This application Jan. 9, 1995, Ser. No. 370,037

Int. Cl.[6] H01J *17/20;61/12;61/18*

U.S. Cl. 313—637 **16 Claims**



1. A lamp bulb for providing visible radiation, comprising,

a light transmissive envelope, and

a fill in said envelope including elemental selenium in gaseous form which is obtained when said fill is excited by sufficient power in opetation, in an amount such that the excited fill emits radiation from the elemental selenium with substantially all of the radiation from the elemental selenium being emitted in a continuous band principally within the visible range.

5,606,221

ELECTRON BEAM TUBES HAVING A RESONANT CAVITY WITH HIGH FREQUENCY ABSORBING MATERIAL

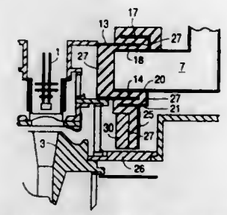
Edward S. Sobieradzki, Chelmsford, and Steven Bardell, Barnston, both of United Kingdom, assignors to EEV Limited, United Kingdom

Filed Jun. 17, 1994, Ser. No. 261,767

Claims priority, application United Kingdom, Jun. 28, 1993, 9313265

Int. Cl.[6] H01J *23/54*

U.S. Cl. 315—5 **14 Claims**



1. An electron beam tube, having a longitudinal axis, comprising:

an electron gun assembly extending along said longitudinal axis;

a wall member defining a substantially annular high frequency resonant input cavity surrounding in part said electron gun assembly and extending in a direction coaxial with said longitudinal axis;

a layer of electrically insulating material affixed to said wall member; and

an absorbing material capable of absorbing high frequency energy affixed to said electrically insulating material.

5,606,222

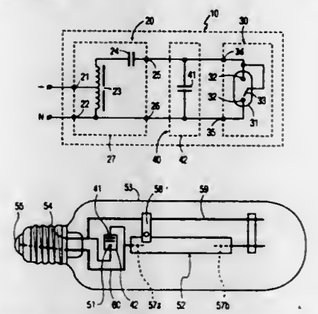
LIGHTING SYSTEM WITH A DEVICE FOR REDUCING SYSTEM WATTAGE

Eduardus J. Cottaar, Hammondsport, N.Y., and Dirk Van Pijkeren, Waalre, Netherlands, assignors to Philips Electronics North America Corporation, New York, N.Y.

Filed Dec. 29, 1994, Ser. No. 366,137

Int. Cl.[6] H01J *7/44*

U.S. Cl. 315—58 **15 Claims**



1. A lighting system comprising a high pressure gas discharge lamp and ballast for controlling the lamp current through said lamp, characterized by further comprising:

a device external to said ballast for reducing current through said lamp during normal lamp operation, said device having lower power dissipation than said ballast and said lamp during system operation and said device having an impedance during normal lamp operation that is between about ten and twenty times higher than the impedance of the lamp during normal lamp operation.

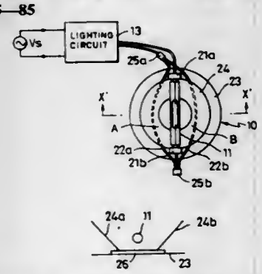
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5,606,223

LUMINAIRE OF REDUCED NOISE WITH MAGNETIC FIELD CANCELLED

Minoru Yamamoto; Hiroyasu Eriguchi, and Takeshi Kamoi, all of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Jun. 23, 1994, Ser. No. 264,713
Claims priority, applicatioo Japan, Jun. 25, 1993, 5-155750; Jul. 15, 1993, 5-175735
Int. Cl.[6] H01J *7/44;61/02;* **H05B** *41/24*
U.S. Cl. 315—85 **5 Claims**



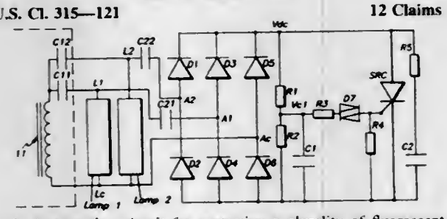
1. A luminaire comprising a power source, a lighting circuit connected to said power source and providing an output containing a high frequency component, a pair of output wires connected to said lighting circuit for receiving said output, a lamp connected to said pair of output wires, a first current loop including one of said pair of output wires and said lamp, and formed for generating a magnetic field, and a second current loop formed for generating a further magnetic field in a direction capable of cancelling said magnetic field generated by said first current loop, and including the other of said pair output wires, one of said output wires connected to said lighting circuit being connected to a first end of said lamp while the other of said output wires being branched into a plurality of branch output wires which extend along said lamp to dispose the lamp between said branch output wires and connected to a second end of said lamp, wherein at least one of said first and second current loops comprises reflector plates of a conductive material and encircling part of said lamp.

5,606,224

PROTECTION CIRCUIT FOR FLUORESCENT LAMPS OPERATING AT FAILURE MODE

Jenkin P. Hua, Plainsboro, N.J., assignor to Osram Sylvania Inc., Danvers, Mass.

Filed Nov. 22, 1995, Ser. No. 561,766
Int. Cl.[6] H05B *37/00*
U.S. Cl. 315—121 **12 Claims**



1. A protection circuit for protecting a plurality of fluorescent lamps connected to a ballast, each fluorescent lamp of said plurality of fluorescent lamps having a first and second terminal, said second terminal of each fluorescent lamp being connected to a common voltage, comprising:

a detecting bridge connected to said plurality of fluorescent lamps, an output of said detecting bridge varying linearly with the highest voltage among said plurality of fluorescent lamps;

a plurality of shunt capacitors, in number equal to a number of said fluorescent lamps, each shunt capacitor of said plurality of shunt capacitors being connected between said detecting bridge and said first terminal of a corresponding fluorescent lamp;

a timer connected to said detecting bridge output;

a trigger connected to an output of said timer, said trigger being responsive to an over-voltage condition of a fluorescent lamp operating at failure mode; and

a controllable switch connected across said plurality of fluorescent lamps, said controllable switch being controlled by an output of said trigger,

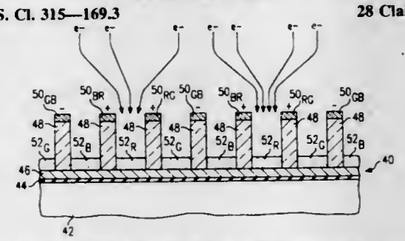
said controllable switch, when closed, coupling each of said plurality shunt capacitors across said first and second terminals of a corresponding fluorescent lamp, when said corresponding fluorescent lamp is operating at failure mode, whereby said corresponding fluorescent lamp operating at failure mode or at the end of its operating life is individually shut down.

5,606,225

TETRODE ARRANGEMENT FOR COLOR FIELD EMISSION FLAT PANEL DISPLAY WITH BARRIER ELECTRODES ON THE ANODE PLATE

Jules D. Levine, and Bruce E. Gnade, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 30, 1995, Ser. No. 520,810
Int. Cl.[6] H01J *31/15*
U.S. Cl. 315—169.3 **28 Claims**



1. An anode plate for collecting electrons emitted from a source, said anode plate comprising:

a substrate;

a conductive layer on a surface of said substrate:

deflection electrodes for directing said electrons toward selected regions and away from unselected regions on said conductive layer; and

means for coupling potentials selectively to said deflection electrodes, wherein an attracting potential is coupled to deflection electrodes bounding said selected region, and a repelling potential is coupled to deflection electrodes adjacent said unselected regions.

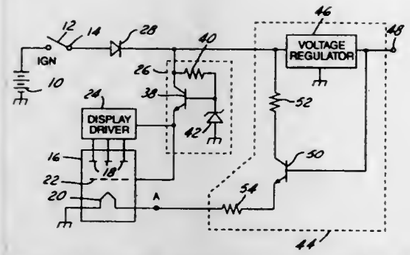
5,606,226

FILAMENT POWER SUPPLY FOR STATIC VACUUM FLUORESCENT DISPLAY

Harold R. Macks, Detroit, and Alan E. Sartori, South Lyon, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 2, 1995, Ser. No. 538,147
Int. Cl.[6] G09G *3/10*
U.S. Cl. 315—169.4 **10 Claims**

1. In a vacuum fluorescent display having a filament that includes one end for connection to ground and the other end for



connection to a DC power supply, a DC power supply for providing a desired filament voltage from a source of ignition voltage having a range of voltage fluctuation comprising:

first power dissipation means coupled to the source of ignition voltage for providing the desired filament voltage during an upper portion in the range of voltage fluctuation of the source of ignition voltage; and

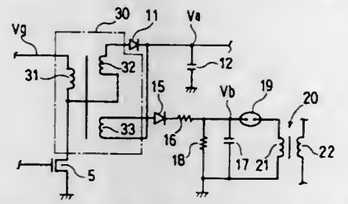
second power dissipation means coupled to the source of ignition voltage for providing the desired filament voltage during a lower portion in the range of voltage fluctuation of the source of ignition voltage.

5,606,227

SURGE GENERATOR HAVING A LOW VOLTAGE TRANSFORMER WINDING CONNECTED TO A HIGH VOLTAGE WINDING

Noboru Yamamoto, Kariya; Masamichi Ishikawa, Hekinan, and Kenji Yoneima, Oobu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Oct. 2, 1995, Ser. No. 538,044
Claims priority, application Japan, Oct. 12, 1994, 6-246560
Int. Cl.[6] H05B *37/02*
U.S. Cl. 315—289 **14 Claims**



1. A lighting system for a high-voltage discharge lamp for supplying lighting power and starting power to said discharge lamp, said system comprising:

a transformer including a first winding as a primary winding, a second winding as a secondary winding and a third winding as an additional secondary winding;

a control circuit, including a semiconductor switching element for intermittently applying a primary current to said primary winding, for regulating output power to said secondary side of said transformer by controlling said semiconductor switching element;

a supply circuit for supplying said lighting power from said second winding to said discharge lamp; and

a start circuit for generating high-voltage starting pulses by receiving power from said third winding and supplying said high-voltage starting pulses to said discharge lamp;

wherein a low-voltage side end part of said third winding is connected to a high-voltage side end part of said second winding, and

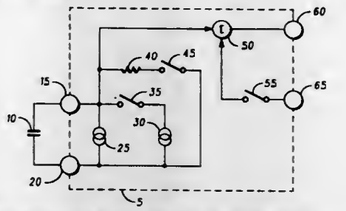
a high-voltage side end part of said third winding is capable of supplying .power to said start circuit.

5,606,228

TELEVISION VERTICAL TIMEBASE CIRCUIT

John A. Shepherd, Blagnac, and Patrick Douziech, Ornex, both of France, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 6, 1994, Ser. No. 318,932
Int. Cl.[6] H01J *29/70;29/76*
U.S. Cl. 315—408 **10 Claims**



1. A television vertical timebase circuit comprising,

means for generating a vertical ramp voltage of first and second slopes corresponding to respective first and second picture aspect ratios in which the second aspect ratio has a smaller picture height than the first, and

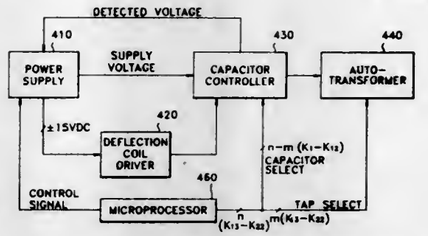
means for adding a predetermined voltage to a predetermined portion of the second ramp voltage to adjust the starting position on the screen of pictures of the second aspect ratio, and means for inhibiting adding the predetermined voltage during the occurrence of unwanted visible signals whereby said unwanted visible signals are positioned outside the visible screen area when displaying pictures of the second aspect ratio.

5,606,229

HORIZONTAL DEFLECTION AMPLIFYING APPARATUS

Kwang-yung Jung, Suwon-city, and Jae-hoon Jeong, Taejeon-city, both of Rep. of Korea, assignors to Samsung Display Devices Co., Ltd., Kyungki-do, Rep. of Korea

Filed May 13, 1996, Ser. No. 645,072
Claims priority, application Rep. of Korea, May 15, 1995, 95-11991
Int. Cl.[6] H01J *29/70;29/76*
U.S. Cl. 315—408 **4 Claims**



1. A horizontal deflection amplifying apparatus comprising:

an autotransformer having a plurality of taps;

a plurality of capacitors selectively connectable to the taps of the autotransformer;

first switching means for selectively connecting the capacitors to and disconnecting capacitors from the taps of the autotransformer;

a deflection coil driver for applying current to the autotransformer through the first switching means;

a power supply for supplying a constant voltage to the capacitors and the deflection coil driver, the power supply including protective means for interrupting the constant voltage to protect the deflection coil driver; and

control means for controlling the first switching means and for supplying a control signal to the protective means to tempo-

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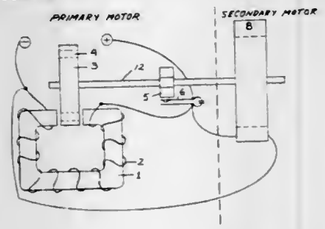
rarily interrupt the constant voltage before connecting and disconnecting operations of the first switching means.

5,606,230

DIRECT CURRENT DRIVE SYSTEM

Chauncey R. Drury, 322 Ring Rd., and Gary W. Eisenmenger, 4503 Fox Run Rd., both of Louisville, Ky. 40207

Filed Jun. 6, 1995, Ser. No. 468,366
Int. Cl.[6] H02K *25/00;49/10*
U.S. Cl. 318—41 **7 Claims**



1. A direct drive system for multiple applications, the drive system comprising:

a hybrid electric motor formed by the synchronous arrangement of two electrical motors, a primary and a secondary, whereby the single input of direct current into the primary motor enables the secondary motor to operate on the alternating current generated by the primary motor, and wherein the electrical connection of said motors provides means for utilizing the transformation of energy that takes place during the collapse of a magnetic field to drive the secondary motor for ½ of its cycle;

a brake/alternator, containing a disc shaped array of electromagnetic coils, and a disc shaped rotor, said rotor having a plurality of permanent magnets mounted about its opposing face, said coils being mounted adjacent said rotor on a common shaft wherein the braking action resulting in a slowing of the turning of said shaft is a function of the controlled proximity of said coils to said rotor.

5,606,231

VIBRATING TABLE FOR MASSES TO BE COMPACTED AND A VIBRATORY METHOD OF COMPACTION FOR THE COMPACTION OF CONCRETE

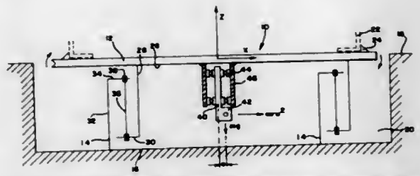
Dietrich Kröger, Wiesbaden, and Arnim Bura, Saulheim, both of Germany, assignors to Netter GmbH, Mainz-Kastel, Germany

Filed Dec. 2, 1994, Ser. No. 348,606
Claims priority, application Germany, Dec. 4, 1993, 43 41 387.0
Int. Cl.[6] B28B *1/00;* **H02P** *5/46*
U.S. Cl. 318—67 **21 Claims**

1. A vibrating table for compacting a mass including:

a table top adapted to support the mass to be compacted;

support means for supporting said table top above a floor, said support means providing said table top with two degrees of freedom of movement in a substantially horizontal principal plane while substantially rigidly supporting said table top



against movement in a direction generally perpendicular to said principal plane; and

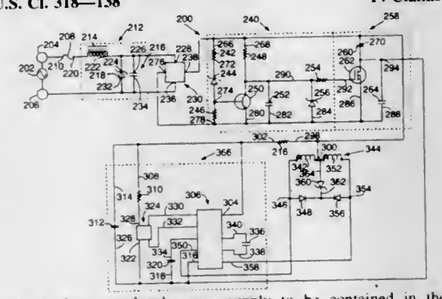
an excitation shaft coupled to said table top, said excitation shaft having an axis of rotation which is generally perpendicular to said principal plane and an unbalanced mass for the creation of an excitation force providing movement of said table top in said principal plane only.

5,606,232

DC ON LINE AC BRUSHLESS MOTOR

George H. Harlan, Weymouth, and John R. Avery, Mansfield, both of Mass., assignors to Nidec Corporation, Torrington, Conn.

Filed Nov. 22, 1994, Ser. No. 343,115
Int. Cl.[6] H02P *3/00*
U.S. Cl. 318—138 **14 Claims**



1. A phase regulated power supply to be contained in the housing of a DC brushless motor for converting alternating current (AC) to direct current (DC) to power the motor, the power supply comprising:

interrupting means for periodically interrupting an AC line source to rectify and regulate voltage from the AC line source to provide DC current for the motor, the interrupting means to be electrically coupled downstream to said AC line source;

a power converter stage having first and second input terminals, the power converter stage being coupled electrically downstream of said interrupting means to supply voltage-regulated DC current to the motor, said power converter stage including:

a voltage level detector coupled to the first and second input terminals of the power converter stage to receive a rectified waveform from the interrupting means, the voltage level detector including a first switch responsive to the voltage across the input terminals of the power converter stage, the first switch being turned off and passing substantially no voltage to an output of the first switch when the voltage across the terminals of the power converter stage is below a first predetermined threshold, and being turned on and passing a voltage above a second predetermined threshold when the voltage across the terminals of the power converter stage is above the first predetermined threshold, a second switch having a control terminal coupled to the output terminal of the first switch for turning on the second switch when the voltage at the control terminal of the second switch is above the second predetermined threshold, the second switch having input and output terminals, the second switch input terminal being coupled to the first

input terminal of the power converter stage via a resistive member, and the second switch output terminal being coupled to the second input terminal of the power converter stage, the voltage level at the input terminal of the second switch being above a third predetermined threshold when the second switch is turned off and below the third predetermined threshold when the second switch is turned on; and

a power switch stage coupled electrically downstream of the power converter stage, the power switch stage including a third switch for charging a voltage-averaging capacitive element, the third switch having a control input responsive to the voltage level of the input terminal of the second switch, the third switch further including input and output terminals, the input terminal of the power switch being coupled to the first terminal of the power converter stage via the voltage-averaging capacitive element, the output terminal of the third switch being coupled to the second terminal of the power converter stage, the third switch being turned on for charging the capacitive element when the voltage at its control input is above the third predetermined threshold, and the third switch being turned off for discharging the capacitive element when the voltage at its control input is below the third predetermined threshold, the capacitive element generating a predetermined average ripple DC voltage based on the capacitance of the capacitive element and the amount of time the third switch is on; and

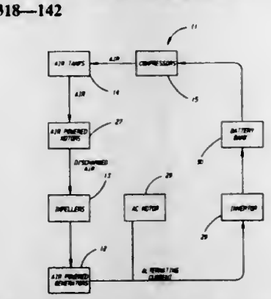
a motor driver stage coupled electrically downstream of the power converter stage for driving the motor in response to the average voltage level generated by the power converter stage.

5,606,233

SYSTEM FOR GENERATING ELECTRICITY IN A VEHICLE

James W. Davis, 277 Kavenish Dr. W., Rancho Mirage, Calif. 92270

Continuation of Ser. No. 286,941, Aug. 8, 1994, abandoned. This application Oct. 19, 1995, Ser. No. 545,107
Int. Cl.[6] H02P *5/20*
U.S. Cl. 318—142 **3 Claims**



1. A system for generating electricity for driving a motor for driving a vehicle, comprising:

compressed air storing means for storing compressed air on said vehicle;

an air powered generator for generating electricity powered by wind, air flow produced by movement of the vehicle, and/or air from said compressed air storing means;

means for storing electrical energy electrically connected to and adapted to receive an electrical charge from said air powered generator;

electric current sensing means for sensing an electric charge produced by the air powered generator connected to the means for discharging air;

air discharging means, connected to said compressed air storing means, for discharging air from said compressed air storing means to power said air powered generator when the wind and the air flow produced by the vehicle movement are insufficient to power said air powered generator to produce electric current to at least a predetermined value;

electric powered means for producing compressed air connected to the compressed air storing means;

air pressure sensing means for sensing an air pressure in the compressed air storing means;

electric charge sensing means for sensing an electric charge in the means for storing electrical energy; and

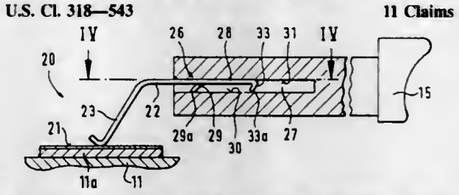
a control unit connected to the air powered generator, the means for storing electrical energy, the compressed air storing means, the electric powered means for producing compressed air, the air pressure sensing means and the electric charge sensing means, the control unit shunting electrical energy to the electric powered means for producing compressed air to charge the compressed air storing means with compressed air when the electrical charge sensed by said electric charge sensing means is at least a first predetermined value and the air pressure sensed by said air pressure sensing means is below a second predetermined value, and the control unit shunting electrical energy from the air powered generator to the means for storing electrical energy to charge the means for storing electrical energy when the air pressure sensed by said air pressure sensing means is at least a third predetermined value and the electric charge sensed by said electric charge sensing means is below a fourth predetermined level.

5,606,234

ELECTRICALLY POWERED HAND TOOL WITH POTENTIOMETER AND PROCESS FOR ADJUSTING THE POTENTIOMETER

Ernst Kraenzler, Leinfelden-Echterdingen; Guillermo Havenstein, Filderstadt; Angelo Fernandes, Heimsheim, and Ottmar Seel, Leinfelden-Echterdingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE95/00406, § 371 Date Nov. 3, 1995, § 102(e) Date Nov. 3, 1995, PCT Pub. No. WO95/26589, PCT Pub. Date Oct. 5, 1995
PCT Filed Mar. 24, 1995, Ser. No. 545,628
Claims priority, application Germany, Mar. 25, 1994, 44 10 312.3
Int. Cl.[6] H02P *7/638;* **H01H** *9/06*
U.S. Cl. 318—543 **11 Claims**



1. Electrically operated handheld machine tool with a potentiometer (**20**) which is arranged in a housing (**11**) of the handheld machine tool and which has an electrical resistance path (**21**) which is secured in the housing (**11**) so as to be stationary and a slider (**22**) which is in pressing contact with the resistance path (**21**) so as to be electrically conducting and forms a displacing unit together with an actuating member (**15**) which is displaceable relative to the housing (**11**), the handheld machine tool being provided with a balancing device for adjusting a desired tap resistance at the potentiometer (**20**) in a determined adjustment position of the actuating member (**15**), characterized in that the

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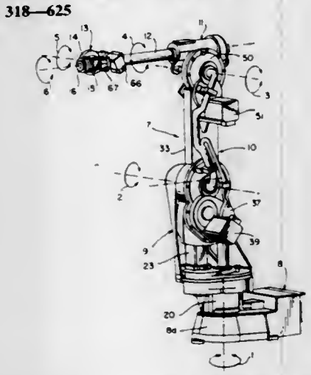
balancing device has means (26) for adjusting the relative position of the slider (22) and actuating member (15) relative to one another after their insertion in the housing (11).

5,606,235

INDUSTRIAL ROBOT WITH INTEGRATED REDUCTION GEAR UNITS

Enrico Mauletti, Collegno, Italy, assignor to COMAU S.p.A., Grugliasco, Italy

Filed Dec. 12, 1994, Ser. No. 355,344
Claims priority, application Italy, Dec. 17, 1993, TO93A0960
Int. Cl.[6] G05B *11/32*
U.S. Cl. 318—625 2 Claims



1. An industrial robot comprising a plurality of elements articulated to each other around respective articulation axes, said elements including a base, a column rotatably mounted around a first vertical axis on the base, an arm rotatably mounted on the column around a second horizontal axis, a forearm rotatably mounted on said arm around a third axis parallel to said second axis, a stem mounted on an extension of the forearm and rotatable around a fourth axis coincident with the longitudinal axis of the forearm and a wrist mounted on an end of the stem and articulated around a fifth and sixth axes which are perpendicular to each other;

said robot further comprising a plurality of electric motors for driving rotation of each articulated element of the robot around the respective articulation axis and a reduction gear unit interposed in the connection between each electric motor and the respective driven element,

wherein each reduction gear unit comprises a casing in which a gear reduction transmission is supported,

wherein at least one of said articulated elements of the robot is provided with a body and the respective reduction gear unit is integrated in the body of the element of the robot, said body constituting the casing of the reduction gear unit for supporting the gear reduction transmission of the reduction gear unit,

wherein each of said reduction gear units comprises an input shaft and an output shaft rotatably mounted within the body of the respective articulated element and at least one pair of straight gears meshing with each other for connecting the input shaft to the output shaft according to a predetermined reduction ratio,

wherein each reduction gear unit comprises at least two gear pairs, and

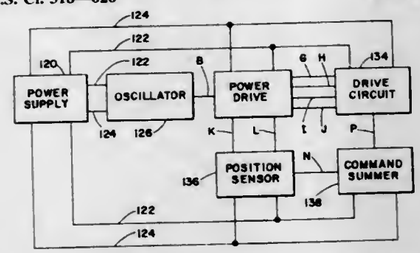
wherein one of the articulated elements of the robot is an arm having both ends articulated to further elements of the robot and with each end of said arm there is associated an electric motor fixed to the body of the arm and a reduction gear unit integrated in the body of the arm.

5,606,236

TWO WIRE POSITION SENSE AND CONTROL OF MODULATING GAS VALVE OR OTHER ELECTROMECHANICAL ACTUATORS

Charles J. Tennies, Waukesha, and Todd L. King, Cedarburg, both of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jan. 17, 1995, Ser. No. 373,168
Int. Cl.[6] G05B *11/06*
U.S. Cl. 318—626 8 Claims



1. A method of controlling an electromechanical actuator assembly including an actuating member associated with an electrical coil, wherein selective energization of the coil with a command signal indicative of a desired position for the actuating member effects a corresponding movement of the member towards a desired position, the method comprising steps of:

energizing the coil with a control signal through an electrical line to effect the corresponding movement of the actuating member from a first position to a second position,

concurrently energizing the coil with a detection signal through the electrical line for generating detectable signals,

sensing the detectable signals through the electrical line for associating a first detectable signal from said detection signal with said first position and for associating a second detectable signal from said detection signal with said second position,

detecting a measurement representative of a difference between the second position and the desired position, and

adjusting the control signal to minimize the difference measurement whereby a position of the actuating member is determined and controlled through the electrical line.

6. A system for adjusting a drive signal to a coil in an electromagnetic actuator assembly comprising:

means for applying the drive signal and a detection signal to the coil through a drive wire;

means for detecting a parameter directly relating to and representing a position of an actuator in the actuator assembly, said position being associated with a particular inductance of the coil and said detecting occurring through said drive wire by which the drive signal is applied to the coil;

a source of command signals representing a predetermined desired position for the actuator;

circuit means coupled to said means for detecting and to said source to provide an output control signal when the detected position bears a predetermined relationship to the desired position; and

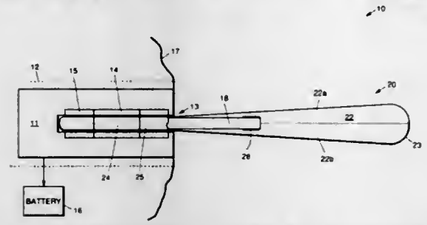
drive signal adjustment means coupled to said circuit means and responsive to said drive signal therefrom for adjusting the drive signal to urge the actuator towards the predetermined desired position.

5,606,237

INDUCTIVE COUPLER CHARACTERISTIC SHAPE

Mark Biasotti, San Jose; Russell M. Abbott, Riverside, and George R. Woody, Redondo Beach, all of Calif., assignors to Delco Electronics Corp., Kokomo, Ind.

Filed Apr. 29, 1994, Ser. No. 237,559
Int. Cl.[6] H01M *10/46*
U.S. Cl. 320—2 12 Claims



1. In an inductive charging apparatus for use in charging a battery, which apparatus comprises a charging coupler that is insertable into a charge port that is coupled to the battery, and wherein the charge port comprises a housing, an opening into which the charging coupler is inserted, and a ferrite core surrounded by secondary windings, wherein said charging coupler comprises:

a housing comprising a hollow disk-shaped section having substantially flat opposed surfaces and a tapered handle extending from the disk section, and having an opening disposed through each of the flat opposed surfaces;

a center magnetic core disposed in the opening and having opposed flat surfaces that are substantially coplanar with the substantially flat opposed surfaces of the housing;

a primary winding disposed in the hollow disk-shaped section around the center magnetic core; and

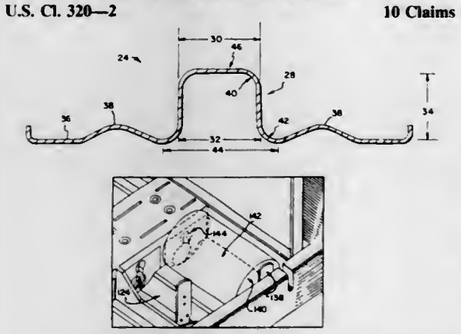
a plastic strip with electrically conductive material incorporated therein disposed along an exterior portion of the coupler between the handle and the primary winding.

5,606,238

DISCRIMINATING BATTERY CHARGING SYSTEM

Patrick J. Spellman, Middleton; El-Sayed A. Megahed; Karl E. Anderson, both of Madison, and Bryan D. Jaedike, Sauk City, all of Wis., assignors to Rayovac Corporation, Madison, Wis.

Filed Jul. 21, 1994, Ser. No. 278,505
Int. Cl.[6] H01M *10/46*; H02J *7/00*
U.S. Cl. 320—2 10 Claims



3. A battery charging system for charging C-size batteries having a predetermined feature, the battery charger preventing batteries not having the predetermined feature from being charged, comprising:

(a) At least one C-size battery having the predetermined feature, the predetermined feature being a cathode terminal having a height G of at least 0.125 inches and substantially equal upper and lower diameters, the diameters being less than those of C-size batteries not having the predetermined feature and further including an F/N to G ratio of no more than 1.250 and no less than 0.700, and

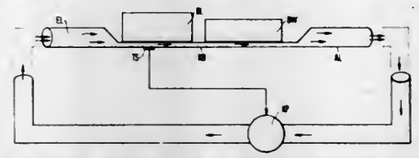
(b) a battery charger comprising a housing having at least one compartment for receiving batteries, the compartment having at least one wall and a floor, the floor having a support element thereon for supporting at least one battery, the wall having at least one first circular recess disposed therein, the at least one C-size battery aligning matingly in respect of and slideably engaging the first circular recess corresponding thereto when positioned on the support element, the first recess having a first diameter slightly larger than the diameter of the cathode terminal of the at least one C-size battery, the battery charger further comprising circuit means for supplying a charging current to the at least one C-size battery having the predetermined feature, and positive and negative charger contacts for connecting the at least one C-size battery having the predetermined feature to the circuit means.

5,606,239

COOLING DEVICE FOR ELECTRIC VEHICLE BATTERY CHARGER AND WIRING CONVERTER

Anton Schumann, Munich, Germany, assignor to Bayerische Motoren Werke AG, Germany

Filed Sep. 9, 1994, Ser. No. 303,827
Claims priority, application Germany, Sep. 9, 1993, 43 30 618.7
Int. Cl.[6] H02J *7/14*
U.S. Cl. 320—3 5 Claims



1. A cooling device for an electric vehicle-internal battery charger and a transformer with an operational period different from that of the battery charger comprising a common cooling panel at which the battery charger and the transformer are operatively mounted.

5,606,240

BATTERY CHARGER

Toshiharu Kokuga; Mikitaka Tamai, and Tetsuya Okada, all of Sumoto, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

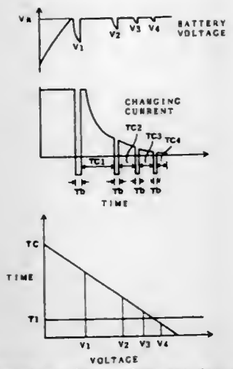
Continuation of Ser. No. 93,872, Jul. 20, 1993, abandoned. This application Sep. 19, 1995, Ser. No. 530,439
Claims priority, application Japan, Jul. 21, 1992, 4-194020; Apr. 26, 1993, 5-099384; Apr. 28, 1993, 5-102574
Int. Cl.[6] H02J *7/04*
U.S. Cl. 320—32 5 Claims

1. A battery charger for charging a battery, said charger comprising:

a power source for supplying a charging current to the battery;

a charging state detector connected to the battery for detecting a charging state of the battery;

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a timer connected to said charging state detector for setting a charging time according to a detection results of said charging state detector; and

a controller connected to said power source for controlling said charging current supplied from said power source to the battery according to said charging time determined by said timer;

wherein said controller temporarily halts charging of the battery and applies a load to the battery and wherein said charging state detector comprises a voltage detector for detecting a battery voltage drop of the battery under load when battery charging is temporarily halted by said controller and a computation circuit for computing said charging state of the battery in response to said detected voltage drop of said voltage detector.

5,606,241

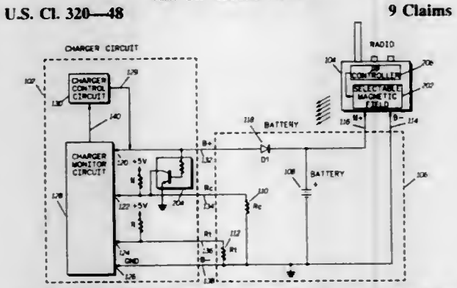
APPARATUS FOR DETERMINING RADIO STATE DURING CHARGING IN ORDER TO PROVIDE CHARGE COMPENSATION

Joseph Patino, Pembroke Pines; Henry A. Bogut, Coral Springs, and Arthur G. Burns, Plantation, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 22, 1994, Ser. No. 292,952

Int. Cl.[6] H01M *10/48*

U.S. Cl. 320—48 **9 Claims**



1. A battery charging system including a battery charger for charging a battery powered radio having a battery, comprising:

at the radio:

a controller, the controller provides a control signal indicative of the state of the radio;

a magnetic field generator for generating a magnetic field in response to the control signal;

at the battery charger:

a magnetic field reception means for receiving the magnetic field generated by the magnetic field generator and providing a signal to the battery charger indicative of the present state of the radio.

5,606,242

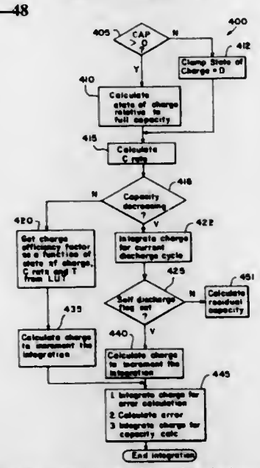
SMART BATTERY ALGORITHM FOR REPORTING BATTERY PARAMETERS TO AN EXTERNAL DEVICE

Matthew P. Hull, Jamestown, R.I.; Alwyn H. Taylor, Wellesley Hills, Mass.; Louis W. Hruska, Northboro, Mass., and Daniel D. Friel, Woburn, Mass., assignors to Duracell, Inc., Bethel, Conn.

Filed Oct. 4, 1994, Ser. No. 318,004

Int. Cl.[6] H02J *7/04*

U.S. Cl. 320—48 **31 Claims**



1. A smart battery which provides electrical power and which reports predefined battery parameters to an external device having a power management system, said smart battery comprising:

(a) at least one rechargeable cell connected to a pair of terminals to provide electrical power to an external device during a discharge mode and to receive electrical power during a charge mode, as provided or determined by said remote device,

(b) a data bus for reporting predefined battery identification and charge parameters to the external device,

(c) an analog means for generating analog signals representative of battery voltage and current at said terminals, and an analog signal representative of battery temperature at said cell,

(d) a hybrid integrated circuit (IC) having a microprocessor for receiving the analog signals and converting them to digital signals representative of battery voltage, current and temperature, and calculating actual charge parameters over time from said digital signals, said calculations including one calculation according to the following algorithm:

$$CAP_{rem}=CAP_{rem}-\Sigma I_d\Delta t_d-\Sigma I_s\Delta t_s+\Sigma\epsilon_c I_c\Delta t_c$$

wherein CAP_{rem} is remaining battery capacity, CAP_{FC} is full charge battery capacity, I_d is battery discharge current, Δt_d is a period of time of the discharge current I_d, I_s is battery self discharge current and is a function of battery temperature and CAP_{FC}, Δt_s is a period of time of the self discharge current I_s, ϵ_c is a charging efficiency factor and is a function of battery current and temperature, I_c is battery charging current, and Δt_c is a period of time of the charging current I_c,

(e) a data memory defined within said hybrid IC for storing said predefined battery identification and actual charge parameters, even when nominally fully discharged, said charge parameters including at least full charge capacity and remaining capacity, and

(f) a bus controller defined within said hybrid IC for sending battery messages to said remote device over said data bus, said messages including said predefined battery identification and said actual charge parameters.

5,606,243

BATTERY STATE JUDGING APPARATUS

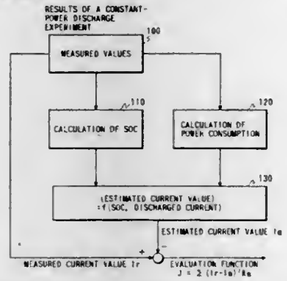
Shoji Sakai, Toyota; Hironori Asa, and Mitsuo Inagaki, both of Okazaki, all of Japan, assignors to Nippon Soken, Inc., Aichi-ken, Japan

Filed Nov. 18, 1994, Ser. No. 341,114

Claims priority, application Japan, Nov. 19, 1993, 5-290598; Mar. 25, 1994, 6-079385

Int. Cl.[6] G01R *31/36*

U.S. Cl. 320—48 **6 Claims**



1. A battery state judging apparatus comprising:

a current detecting means for detecting a charge/discharge current of a battery;

a charge/discharge electric quantity detecting means for adding a current correction coefficient corresponding to the charge/discharge current detected by said current detecting means to said charge/discharge current to detect a charge/discharge electric quantity;

a battery residual capacity calculating means for calculating a battery residual capacity from a reference capacity value and said charge/discharge electric quantity of said battery;

a consumed power detecting means for detecting a consumed power of said battery;

a charge/discharge current estimating means for estimating a charge/discharge current of said battery from said battery residual capacity and said battery consumed power; and

a correcting means for correcting said battery residual capacity on the basis of a correction quantity corresponding to a difference between said estimated charge/discharge current detected by said charge/discharge current estimating means and said charge/discharge current detected by said current detecting means.

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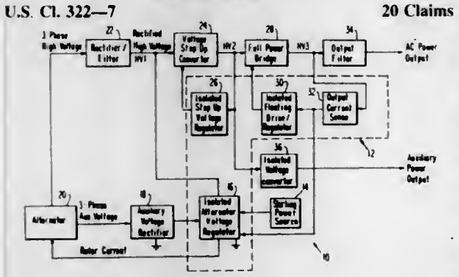
MOBILE AC POWER SOURCE SYSTEM

Victor Migdal, Herzelia, Israel, assignor to Ofer Energies Ltd., Jerusalem, Israel

Filed Aug. 5, 1993, Ser. No. 102,688

Int. Cl.[6] H02J *3/12*

U.S. Cl. 322—7 **20 Claims**



1. A mobile AC power source comprising:

alternator means driven by a rotational driving force from an engine for converting rotational energy supplied by said rotational driving force into electrical energy;

starting means for providing said alternator means with an initial starting current;

rectification means responsive to said alternator means for rectifying the output voltage level of said alternator means to produce a stable DC voltage;

voltage step up means responsive to said rectification means for boosting said DC voltage to a boosted DC voltage when said DC voltage level falls below a predetermined level;

switching means responsive to said rectification means for producing a train of high voltage pulses from said stable DC voltage;

filtering means responsive to said switching means for producing from said train of high voltage pulses stable floating AC power; and

control means comprising first and second control means; said first control means responsive to said stable DC voltage for controlling the output voltage level of said alternator means; and said second control means responsive to said stable floating AC power for controlling said switching means.

5,606,245

POWER SUPPLY SYSTEMS

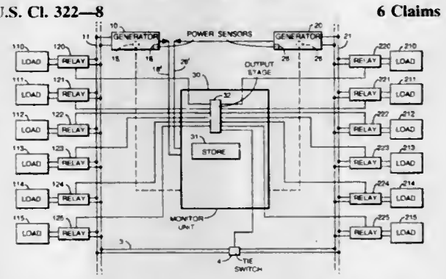
James M. Kirby, Bishops Cleeve, England, assignor to Smiths Industries Public Limited Company, London, England

Filed Apr. 20, 1995, Ser. No. 425,659

Claims priority, application United Kingdom, Jun. 18, 1994, 9412281

Int. Cl.[6] H02P *9/00*

U.S. Cl. 322—8 **6 Claims**



1. A power supply system comprising: at least one power supply generator and a monitor unit, said monitor unit being operative to monitor operation of said generator, said monitor unit being operative to monitor the power drawn from said generator and the time for which it is drawn, said monitor unit including a store containing information as to the thermo-electric performance of said generator relating the power drawn from said generator to the time for which that power can be drawn safely, and also containing a history of operation of said generator comprising information about the power drawn and the time for which power is drawn, said monitor unit being operative to disconnect a load from said generator in the event that power is drawn at a level and for a time that exceeds a safety limit in said store, and said monitor unit being operative to reconnect a load when the power drawn from said generator and its history of operation indicate that the temperature of said generator has fallen to a safe level.

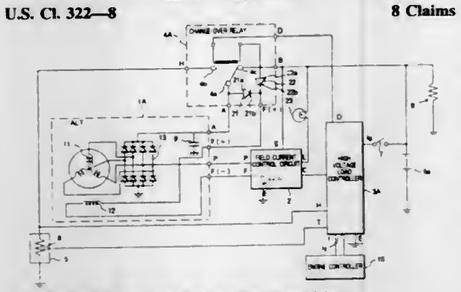
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5,606,246

POWER SUPPLY UNIT FOR VEHICLES

Katsumi Adachi, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 22, 1995, Ser. No. 532,496
Claims priority, application Japan, Sep. 26, 1994, 6-229856
Int. Cl.[6] H02P *9/00*
U.S. Cl. 322—8 **8 Claims**



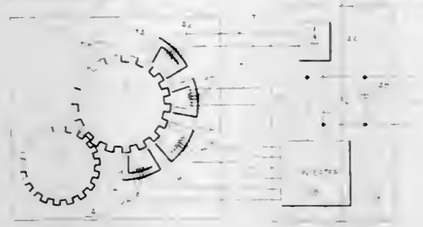
1. A power supply unit for vehicles comprising:
a generator having stator windings and a field winding through which field current flows;
a field current control circuit for controlling the field current;
a change-over relay for switching the connection state of said generator between a first condition in which a high voltage load is connected to said generator and a second condition in which a vehicle system voltage load including a battery is connected to said generator;
a high voltage load controller for controlling said change-over relay and said field current control circuit;
a first diode having an anode connected between an output side of said generator and said change-over relay and a cathode connected to an input side of said field winding; and
a second diode connected between said battery and the input side of said field winding to which the cathode of said first diode is connected, said second diode being directed forward from the battery side to the input side of said field winding.

5,606,247

MECHANICAL GEAR DRIVE SYSTEM HAVING INTEGRAL ELECTRIC POWER GENERATION CAPABILITY

Thomas A. Sutrina, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed May 5, 1995, Ser. No. 436,064
Int. Cl.[6] H02P *9/40*
U.S. Cl. 322—50 **24 Claims**



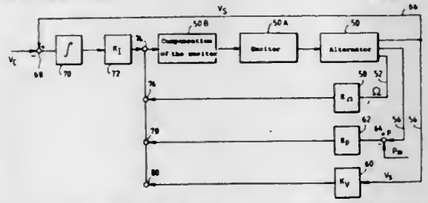
11. A mechanical gear drive system capable of generating electric power, comprising:
a gear having a plurality of teeth, adjacent teeth defining a tooth gap therebetween, said gear being rotated by a source of rotational energy;
a first U-shaped core having two legs and a yoke, said legs defining a distance therebetween of at least one tooth gap, said first core positioned in close proximity to said teeth so as to define a first airgap therebetween;
a first coil wound on said yoke;
a converter having at least a first and a second switching means for coupling said first coil to a source of dc power, and at least a first and a second commutation means for cross-coupling said first coil to said source to allow current flow back when said switching means are disabled.

5,606,248

DEVICE FOR DESENSITIZED REGULATION OF THE STATOR VOLTAGE OF AN ALTERNATOR

Henri Bourlès, Vanves; Annissa Heniche, and Marie-Pierre Houry, both of Paris, all of France, assignors to Electricite De France - Service National, Paris, France

Filed Nov. 29, 1995, Ser. No. 564,019
Claims priority, application France, Nov. 30, 1994, 94 14 400
Int. Cl.[6] H02K *9/10;* **G05B** *13/02*
U.S. Cl. 323—273 **6 Claims**



1. Device for regulating the stator voltage (variable to be regulated V_S) of an alternator (**50**) coupled to an electrical network, this device resulting from a linear approximation of the alternator coupled to the electrical network around a nominal operating point defined by several operating parameters (P, V_S, Q, X) of the alternator and including several feedback loops (**52**, **54**, **56**, **66**) associated with respective gains (K_Ω, K_V, K_P, K_I) acting on several state variables (Ω, V_S, P) measured at the output of the alternator as well as on the integral of a setpoint error (e) defined by the difference between the stator voltage (V_S) and a setpoint value (V_C), in order to define, on the basis of the setpoint value (V_C), a control variable (u) for the alternator, which is applied to the input of the latter to maintain the value of the stator voltage (V_S) close to the setpoint value (V_C), characterized in that the gains (K_Ω, K_V, K_P, K_I) of the device are obtained by minimizing the mathematical expectation of a quadratic criterion (J_2) dependent upon a state vector (x) embracing the derivatives with respect to time of the state variables (Ω, V_S, P) of the alternator and the setpoint error (e) and upon the derivative (u_I) with respect to time of the control variable (u), these variables being respectively the state and the input of a linear model (**3**), termed the augmented system, whose state matrix (A(θ)) and input matrix (B(θ)) depend on several of the parameters (P, V_S, Ω, X) of the alternator, and in that the gains (K_Ω, K_V, K_P, K_I) are determined so as furthermore to minimize the sensitivities of the state vector (x) and of the derivative with respect to time of the control variable (u) relative to small variations in at least one of the said several parameters (P, V_S, Q, X) of the alternator, around the nominal operating point thus creating a desensitization of the regulated alternator with regard to the said several parameters (P, V_S, Q, X).

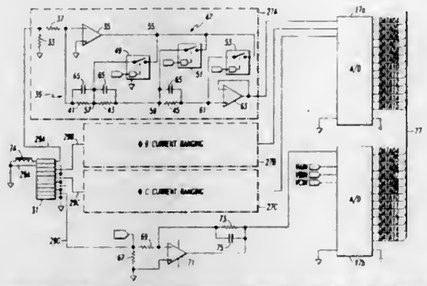
5,606,249

ELECTRICAL APPARATUS WITH WIDE DYNAMIC RANGE FOR MONITORING AND PROTECTING ELECTRIC POWER SYSTEMS

Robert T. Elms, Monroeville, Pa., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jan. 27, 1995, Ser. No. 379,418
Int. Cl.[6] G01R *15/08;1/30*
U.S. Cl. 324—115 **8 Claims**

1. Apparatus for use with an electrical system having at least one power related waveform with a wide dynamic range, said apparatus comprising:



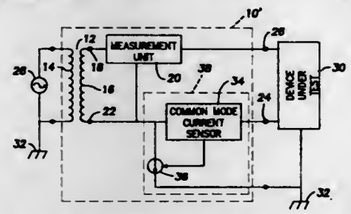
sensing means sensing said power related waveform to generate a sensed signal;
ranging means comprising:
a first operational amplifier having an inverting input, a non-inverting input and an output;
an input resistor applying said sensed signal to said inverting input of said first operational amplifier;
a plurality of precision resistors;
a multiplexer connected to said output of said first operational amplifier and to said plurality of precision resistors to selectively connect a selected number of said precision resistors in a feedback loop between said output of said first operational amplifier and said inverting input of said first operational amplifier, and
a second operational amplifier connected as a follower between said multiplexer and said precision resistors to generate a conditioned sensed signal at a level selected by said multiplexer; and
response means responsive to said conditioned sensed signal to generate an output.

5,606,250

MEASUREMENT DEVICE WITH COMMON MODE CURRENT CANCELLATION

James A. Niemann, Monroe Falls, Ohio, assignor to Keithley Instruments, Inc., Cleveland, Ohio

Division of Ser. No. 23,600, Feb. 26, 1993, Pat. No. 5,414,348.
This application Sep. 18, 1995, Ser. No. 529,571
Int. Cl.[6] G01R *1/20;* **H04B** *3/28*
U.S. Cl. 324—127 **5 Claims**



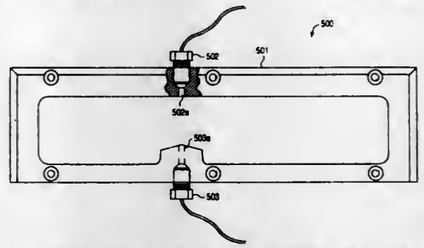
1. An electrical measurement device having a low test terminal and a high test terminal, said terminals being isolated from an earth ground and adapted to be connected to a device under test, said electrical measurement device comprising:
a transformer having a primary winding adapted to be line powered and a secondary winding having a low terminal;
a measurement means adapted to be powered from said secondary winding, said measurement means measuring between said high test terminal and said low terminal;
a current sensor connected in series between said low terminal and said low test terminal for sensing a current between said low terminal and said earth ground; and
a current source connected in parallel with said low test terminal and said earth ground, said current source being adapted to provide a current to said device under test that cancels said sensed current.

5,606,251

METHOD AND APPARATUS FOR DETECTING A SUBSTRATE IN A SUBSTRATE PROCESSING SYSTEM

Lynn S. Ryle, San Jose; Robert M. Ruppell, Cupertino; David L. Thrasher, Santa Clara, and Martin J. McGrath, Sunnyvale, all of Calif., assignors to OnTrak Systems, Inc., San Jose, Calif.

Filed Jul. 15, 1994, Ser. No. 275,637
Int. Cl.[6] G01N *21/86;* **G01R** *27/26*
U.S. Cl. 324—158.1 **14 Claims**



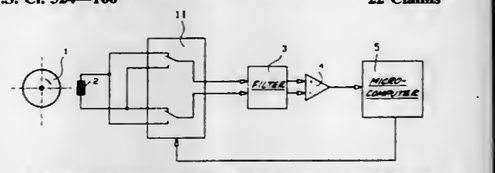
1. A sensor assembly for sensing a substrate in a substrate processing apparatus comprising:
a sender, said sender emitting a signal;
a receiver, said receiver receiving said signal, wherein said sender and said receiver comprise a sensor;
a frame through which a substrate passes, said sender and said receiver mounted in said frame in a fixed relationship with respect to one another and on opposite sides of said frame from one another, said sender substantially aimed at said receiver, said sensor sensing a substrate when said signal between said sender and said receiver is interrupted; and
wherein said sensor assembly is attached to an opening of said processing apparatus such that said substrate may be detected upon entering and/or exiting one station of said processing apparatus to another.

5,606,252

CIRCUIT FOR MOOTING BROKEN OR CHIPPED TEETH OF ENCODER WHEELS VIA COMPARING TEMPORAL FLUCTUATIONS BETWEEN RISING OR FALLING EDGES AND USING EDGE WITH LEAST FLUCTUATION

Günther Gschossmann, Mühldorf, and Peter M. Bielig, München, all of Germany, assignors to Knorr-Bremse System fur Nutzfahrzeuge GmbH, Munich, Germany

Filed May 25, 1995, Ser. No. 450,807
Claims priority, application Germany, May 26, 1994, 44 18 424.7
Int. Cl.[6] G01P *3/48;3/54;3/52;* **G01N** *27/72*
U.S. Cl. 324—166 **22 Claims**



1. A process for detecting the rotational speed of a rotating part comprising:
sensing a magnet wheel connected to the rotating part with a sensor which produces an essentially sinusoidal output signal;
converting the sinusoidal output signal into a square-wave signal having first edges of a first type and second edges of a second type, each of said first edges being separated by temporal intervals within a time span and each of said second edges being separated by temporal intervals within said time span;

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setting a predetermined fluctuation target value corresponding to an amount of temporal interval fluctuation; and

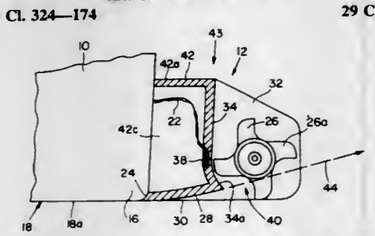
generating a rotating part speed signal based on the edges of the square-wave signal of one type only of said first and second types, the edges upon which the rotating part speed signal is based having temporal intervals which fluctuate by less than the predetermined fluctuation target value during said time span.

5,606,253

GUIDED FLOW MARINE SPEEDOMETER INCLUDING ANGULARLY SHAPED HOUSING FOR GUIDING WATER TO A PADDLEWHEEL SENSOR AT THAT ANGLE

Stephen G. Boucher, Amherst; Maurice P. Lagace, Peterborough, and Robert K. Jeffers, Wilton, all of N.H., assignors to Airmar Technology Corporation, Milford, N.H.

Filed Oct. 4, 1994, Ser. No. 317,727
Int. Cl.[6] G01P *3/44;3/66*
U.S. Cl. 324—174 **29 Claims**



1. A marine speedometer for mounting to the exterior transom of a marine vessel, the marine vessel having a hull with an outer surface that includes a bottom surface, the speedometer comprising:

a housing having an outer periphery, the housing being mounted to the transom such that the housing extends beyond the outer surface of the hull, the outer periphery of the housing extending downwardly no further than the bottom surface of the hull at the transom; and

a paddlewheel affixed to the housing, the paddlewheel having an outer periphery which extends beyond the outer surface of the hull and extends downwardly no further than the bottom surface of the hull of the marine vessel at the transom, a portion of the housing adjacent to the bottom surface of the hull being shaped to direct a flow of water passing by the transom upwardly at an angle relative to the bottom surface of the hull and into the paddlewheel to rotate the paddlewheel, the flow of water engaging the paddlewheel at said angle.

5,606,254

ROTATION SENSOR EMPLOYING COIL WOUND ON ASSEMBLY OF A CORE INTERPOSED BETWEEN TWO MAGNETS

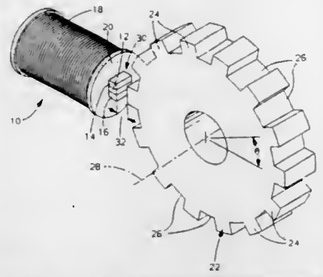
Jinqiang Xie, Anderson, Ind., and Denise A. Quinnette, El Paso, Tex., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 19, 1995, Ser. No. 545,458
Int. Cl.[6] G01P *3/488*
U.S. Cl. 324—174 **3 Claims**

1. A variable reluctance rotation sensor for detecting rotation of a target wheel formed of soft magnetic material and having teeth, separated by slots, angularly spaced along its periphery, the sensor comprising:

an elongated core formed of soft magnetic material;

two elongated permanent magnets positioned in magnetic opposition to one another and between which is interposed the



elongated core, each of the two permanent magnets generating a magnetic flux having a component of which passes longitudinally through the elongated core in a direction (i) aiding that generated at a common end of the other of the two permanent magnets, and (ii) opposing that generated at an opposing end of either of the two permanent magnets; and

an electrical coil wound transversely to a longitudinal dimension about the elongated core and two permanent magnets, the elongated core and two permanent magnets having a first end protruding from the electrical coil and positioned adjacent the target wheel periphery, wherein (i) when the angular position of the target wheel aligns a slot adjacent the first end, the magnitudes of the longitudinal components of magnetic flux generated by opposing ends of each of the permanent magnets are substantially equal, resulting in no net magnetic flux passing longitudinally through the elongated core, and (ii) when the angular position of the target wheel aligns a tooth adjacent the first end, the magnitudes of the longitudinal components of magnetic flux generated by opposing ends of each of the two permanent magnets are unequal, resulting in a net magnetic flux passing longitudinally through the elongated core with a corresponding voltage being developed in the electrical coil having an amplitude proportional to a rate of change of the longitudinal component of magnetic flux and a frequency proportional to the rotational speed of the target wheel.

5,606,255

HALL EFFECT SENSING APPARATUS FOR MOVING OBJECT HAVING AN ADJUSTABLE MAGNETOR YOKE

Nobuyuki Shimbo; Junichi Ishiwata; Takatoshi Oyama; Fumio Ono, and Michio Ishikawa, all of Tokyo, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Mar. 10, 1993, Ser. No. 28,965
Claims priority, application Japan, Mar. 13, 1992, 4-055358; Aug. 25, 1992, 4-225569; Feb. 26, 1993, 5-037183
Int. Cl.[6] G01B *7/14;* **G01R** *33/06;* **G01D** *5/245*
U.S. Cl. 324—207.2 **10 Claims**

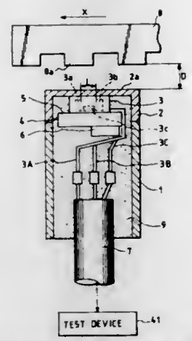
1. A sensing apparatus, comprising:

a moving member made of a magnetic material and having concave and convex segments arranged alternately at its periphery;

a detector including a pair of Hall effect elements for achieving magnetic/electric conversion, said Hall effect elements being arranged to face said concave and convex segments of said moving member;

a first magnet for providing magnetic field to said pair of Hall effect elements and said moving member, said first magnet having a first surface for said detector being fixed directly thereto;

a second magnet arranged on a second surface of said first magnet which is opposite to said first surface, said second magnet being rotatably slid in parallel with said first magnet on said second surface within a surface area of said second surface for adjusting magnetic characteristics in said magnetic field;



a processing circuit for receiving detected signals from said pair of Hall effect elements and generating a processed signal based on the difference between said detected signals and predetermined upper and lower threshold levels; and

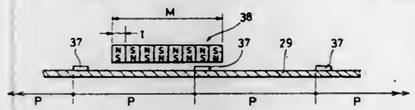
means for adjusting said second magnet in such a way that said processing circuit generate a processed signal at the maximum detectable distance between said moving member and said detector.

5,606,256

LINEAR ENCODER AND A GUIDE UNIT ON WHICH IT IS EQUIPPED

Seiji Takei, Kanagawa-ken, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 67,678, May 26, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 480,942
Claims priority, application Japan, Jun. 8, 1992, 4-173889
Int. Cl.[6] G01B *7/14;7/00;* **H02K** *41/02*
U.S. Cl. 324—207.21 **8 Claims**



1. A linear encoder that performs positional detection of relative motion of two objects, said encoder comprising:

a detecting element comprising a plurality of electromagnetic conversion elements arranged in a row at equal intervals in a direction of relative motion of the two objects on a stationary one of the two objects;

a detected element comprising a multipolar magnet having a plurality of poles arranged in a row in the direction of relative motion and with alternating polarity, said multipolar magnet having a first exposed end surface and a second exposed end surface at opposite ends of said magnet in the direction of relative motion, said multipolar magnet being secured to a moving one of the two objects so as to oppose said electromagnetic conversion elements when the moving one of the two objects is moved in the direction of relative motion, wherein a resistance value of said electromagnetic conversion elements changes with changes in the magnetic field caused by relative movement of the two objects; and

an output signal acquisition device associated with the stationary one of the two objects for detecting a change in an output of each of said electromagnetic conversion elements based on the changes in the magnetic field, wherein

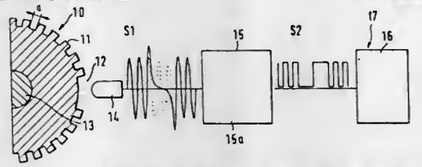
a total length of said multipolar magnet from said first exposed end surface to said second exposed end surface equals a distance between adjacent ones of said electromagnetic conversion elements minus an arrangement pitch of the poles of said multipolar magnet.

5,606,257

DEVICE FOR FORMING A SQUARE-WAVE SIGNAL AND DETECTING A REFERENCE MARK FROM A SINUSOIDAL SIGNAL WITH A SINGULARITY

Immanuel Krauter, Burgstetten, and Davide Buro, Reutlingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE94/00108, § 371 Date Aug. 29, 1994, § 102(e) Date Aug. 29, 1994, PCT Pub. No. WO94/18754, PCT Pub. Date Aug. 18, 1994
PCT Filed Feb. 4, 1994, Ser. No. 302,684
Claims priority, application Germany, Feb. 4, 1993, 43 03 209.5
Int. Cl.[6] H03K *5/153;* **F02P** *7/67;* **G01D** *5/244;* **G01B** *7/30*
U.S. Cl. 324—207.25 **10 Claims**



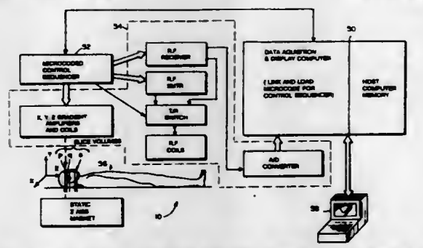
1. A device for forming a square-wave signal (S2) and detecting a reference mark from a sinusoidal signal (S1) with at least one singularity characteristic of the reference mark, said square-wave signal comprising a plurality of square pulses having pulse edges and said sinusoidal signal (S1) comprising a plurality of positive half-waves and negative half-waves, a plurality of zero-axis crossings (N) and at least one singularity; said device including means (21) for testing whether a transition between a positive value and a negative value of the sinusoidal signal (S1) occurs at each of the zero-axis crossings (N) of the sinusoidal signal (S1); means (22) for monitoring said negative half-wave immediately following each of said zero-axis crossings (N) to determine whether said negative half-wave is greater than or less than a predetermined threshold value (SW5); logic means (23) connected ted with Said testing means and said monitoring means and producing a level change to form one of said square pulses when said transition between said positive value and said negative value is detected at one of the zero-axis crossings (N) and when, at the same time, said negative half-wave is greater than said predetermined threshold (SW5) immediately following the detected transition; and means (16) for measuring a time interval between said pulse edges of said square-wave signal (S2) to detect said at least one singularity and thus the reference mark.

5,606,258

CONTROL INTERFACE FOR AN MRI SYSTEM

John C. Hoenninger, III, Oakland, and Lawrence E. Crooks, Richmond, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Mar. 17, 1993, Ser. No. 32,647
Int. Cl.[6] G01V *3/00*
U.S. Cl. 324—309 **28 Claims**



1. In a magnetic resonance imaging (MRI) system having a sequencer which controls generation of at least one of (1) a

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spatially varying magnetic field, and (2) a spatially varying RF field, the system further including a linking computer coupled to the sequencer the linking computer linking code to provide linked executable code for execution by the sequencer, a method for linking code for loading into and execution by the sequencer, said method including:

linking code on a linking computer by performing at least the following steps:

(a) providing, on the host computer, at least one link loop definition associated with plural sets of parameter values, and

(b) generating, with the linking computer, linked executable code in response to said link loop definition and said plural sets of parameter values;

(c) loading the linked code from the linking computer into said sequencer;

(d) executing said provided linked code with said sequencer; and

(e) controlling at least one of (1) a spatially varying magnetic field, and (2) a spatially varying RF field in accordance with said sequencer execution.

5,606,259

ADAPTABLE ANTENNA FOR A MAGNETIC RESONANCE APPARATUS INCLUDING A WIPER CONTACT FOR VARYING THE SIZE OF THE ANTENNA WITHOUT FREQUENCY CHANGE

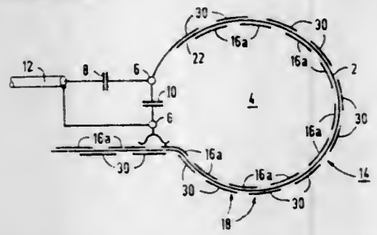
Andreas Potthast, Forchheim, and Wilhelm Duerr, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Apr. 10, 1995, Ser. No. 419,548

Claims priority, application Germany, Apr. 15, 1994, 44 13 209.3; Feb. 15, 1995, 195 05 063.0

Int. Cl.[6] G01R *33/44;33/465*

U.S. Cl. 324—378 **22 Claims**



1. An antenna for transmitting signals into or receiving signals from an examination region in a nuclear magnetic resonance apparatus, said antenna comprising:

first and second antenna terminals;

an antenna conductor divided into a plurality of conductor sections and having a first end connected to said first antenna terminal and a second end;

a plurality of capacitive elements respectively disposed between said conductor sections and electrically connecting said conductor sections in series alternating with said capacitive elements, said capacitive elements and, said conductor sections, in combination, defining a resonant frequency of the antenna; and

releasable electrical connection means for releasably electrically connecting a selected one of said antenna conductor sections and said second antenna terminal for forming a loop of said antenna conductor of selected size defining said examination region without alteration of said resonant frequency.

5,606,260

MICRODEVICE FOR MEASURING THE ELECTROMAGNETIC CHARACTERISTICS OF A MEDIUM INCLUDING A SHIELD

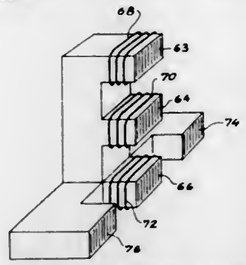
Patrice Giordano, Pertuis; Henri Glenat, Corenc; Jean-Michel Ittel, La Terrasse, and Marcel Locatelli, Montbonnot, all of France, assignors to Commissariat a l'Energie Atomique, France

Filed Dec. 7, 1994, Ser. No. 350,697

Claims priority, application France, Dec. 10, 1993, 93 14871

Int. Cl.[6] G01V *3/26;* **G01N** *27/72;* **G01R** *33/025*

U.S. Cl. 324—339 **33 Claims**



1. A microdevice for logging a medium in a bore hole comprising a transmitting coil and two receiving coils, an E-shaped, electrically insulating, soft magnetic material circuit adjacent the medium and having a median portion and three lateral branches perpendicular to said median portion and parallel to one another, the coils being wound onto said lateral branches in such a way that the receiving coils are located on adjacent lateral branches, said microdevice also comprising means for forming a shield between the transmitting coil and an area lacking interest in the medium.

5,606,261

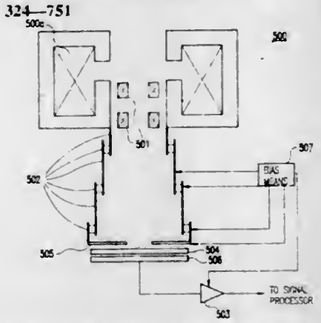
RETARDING FIELD ELECTRON-OPTICAL APPARATUS

Steven D. Golladay, Hopewell Junction, N.Y., assignor to International Business Machines, Corporation, Armonk, N.Y.

Continuation of Ser. No. 329,033, Oct. 25, 1994, abandoned. This application Jun. 6, 1996, Ser. No. 659,546

Int. Cl.[6] G01R *31/305*

U.S. Cl. 324—751 **22 Claims**



1. An electron optical system for irradiating a sample, comprising:

an electron source for producing a first electron beam, wherein said first electron beam has an energy level above 1 kV;

a retarding field objective lens system for receiving and focussing said first energy electron beam to produce a second focussed electron beam, wherein said second focussed electron beam has an energy level below 1 kV; and

a magnetic deflector for deflecting said second focussed electron beam to said sample, thereby to expose said sample to said second focussed electron beam, and simultaneously maintaining a predetermined spot size of said second focussed electron beam, said sample being biased to a predetermined elevated potential,

wherein said magnetic deflector includes a plurality of deflection yokes, wherein a second deflection yoke of said deflection yokes is positioned closer to said sample than a first deflection yoke of said deflection yokes, said second deflection yoke having a higher deflection sensitivity than that of said first deflection yoke and having a deflection direction substantially opposed to that of said first deflection yoke such that a deflected electron beam approaches an optical axis of said system within a retarding field formed in said system.

5,606,262

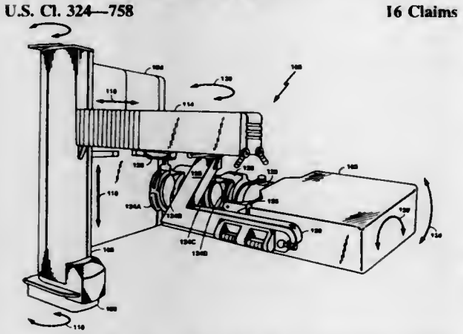
MANIPULATOR FOR AUTOMATIC TEST EQUIPMENT TEST HEAD

Christopher P. Montalbano; Gregory A. Montalbano, both of Great Neck; Anthony P. Montalbano, Shelter Island Hgts., and Eric C. Fleischer, Rockville Centre, all of N.Y., assignors to Teradyne, Inc., Boston, Mass.

Filed Jun. 7, 1995, Ser. No. 481,564

Int. Cl.[6] G01R *31/27*

U.S. Cl. 324—758 **16 Claims**



1. A combination of a test head and a manipulator therefore comprising:

a) a column;

b) a telescoping boom slidably mounted to the column; and

c) a test head assembly suspended below and pivotally mounted to the telescoping boom, the test head assembly comprising:

i) a yoke pivotally mounted to the telescoping boom;

ii) a bearing assembly attached to the yoke, said bearing assembly having an opening therethrough, the test head mounted to the bearing assembly; and

iii) a cradle for supporting;

d) the test head, wherein the test head is pivotally mounted in the cradle through a point between the center of gravity of the test head and the bearing assembly.

5,606,263

PROBE METHOD FOR MEASURING PART TO BE MEASURED BY USE THEREOF AND ELECTRICAL CIRCUIT MEMBER

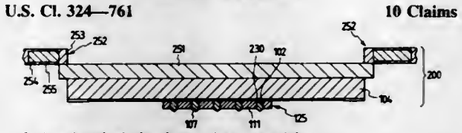
Tetsuo Yoshizawa, Yokohama; Masaaki Imaizumi, Tokyo; Hideyuki Nishida, Kawasaki; Hiroshi Kondo, Ohsaka; Takashi Sakaki, Tokyo; Yasuteru Ichida, Machida, and Masaki Konishi, Ebina, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 178,605, Jan. 7, 1994, abandoned, which is a continuation of Ser. No. 960,286, Oct. 13, 1992, abandoned, which is a continuation of Ser. No. 835,090, Feb. 18, 1992, abandoned, which is a continuation of Ser. No. 652,373, Feb. 7, 1991, abandoned, which is a continuation of Ser. No. 353,800, May 18, 1989, abandoned. This application Mar. 22, 1996, Ser. No. 620,393

Claims priority, application Japan, May 31, 1988, 63-133399; May 31, 1988, 63-133400; May 31, 1988, 63-133402; May 31, 1988, 63-133403; May 18, 1988, 63-119242; May 18, 1988, 63-119243

Int. Cl.[6] G01R *1/073*

U.S. Cl. 324—761 **10 Claims**



1. An electrical circuit member comprising:

an electrical connecting member, said electrical connecting member having a holding member comprising an electrically insulating material, a plurality of electroconductive members embedded at predetermined intervals within said holding member, each of said plurality of electroconductive members being insulated with said electrically insulating material, a first end of each said electroconductive member being exposed on a first surface of said holding member and a second end of each electroconductive member being exposed on a second surface of each electroconductive member;

an electrical circuit substrate, said electrical circuit substrate having connecting portions to be electrically connected to said first ends exposed on said first surface of said holding member, and said electrical circuit substrate being mechanically connected to said first surface of said holding member; and

means for vibrating said second ends of said electroconductive members,

wherein said electrical connecting member directly contacts the electrical circuit substrate and the electrical circuit substrate directly contacts the vibrating means.

5,606,264

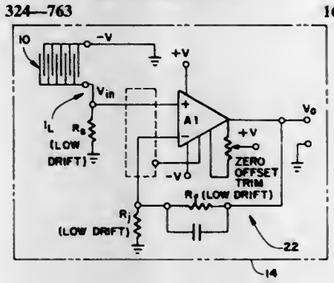
MOISTURE SENSOR FOR ELECTRONIC MODULES

James J. Licari, 15711 Arbela Dr., Whittier, Calif. 90803, and Aram Tanielian, 7013 Cherty Dr., Rancho Palos Verdes, Calif. 92075

Filed Apr. 21, 1995, Ser. No. 426,044

Int. Cl.[6] H01C *13/00*

U.S. Cl. 324—763 **16 Claims**



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15. A method of determining whether or not moisture has breached the seal of a sealed compartment comprising the following steps:

(a) disposing a pair of spaced electrodes, composed primarily of silver, on a substrate within said compartment during manufacture of same;

(b) applying a bias voltage of between two and fifteen volts across said conductor pair for a period of time to enable dendritic growth to substantially bridge between the conductors if there is contaminant-laden moisture in the compartment;

(c) after said period of time has passed, applying a test voltage across said electrodes, determining whether current flows therebetween at a measurable level, and if so declaring said sealed compartment to have been breached.

5,606,265

SEMICONDUCTOR INTEGRATED CIRCUITS WITH POWER REDUCTION MECHANISM

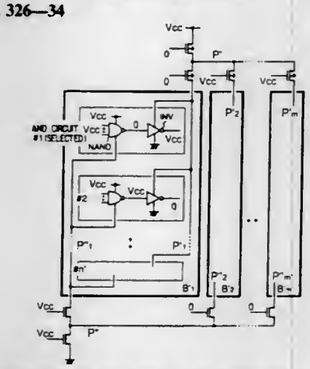
Takeshi Sakata, Kunitachi; Kiyoo Itoh, Higashikurume, and Masashi Horiguchi, Kawasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 374,990, Jan. 19, 1995, Pat. No. 5,521,527, which is a continuation of Ser. No. 178,020, Jan. 6, 1994, Pat. No. 5,408,144. This application Mar. 21, 1996, Ser. No. 620,686

Claims priority, application Japan, Jan. 7, 1993, 5-000973; Feb. 2, 1993, 5-015236

Int. Cl.[6] H03K *17/16*

U.S. Cl. 326—34 **19 Claims**



1. A semiconductor integrated circuit comprising:

a plurality of column lines;

a plurality of row lines;

a plurality of memory cells disposed at desired intersections between said column lines and said row lines; and

a selection circuit for selecting said memory cells comprising:

a first node and a second node supplied with a first operating voltage;

a third node and a fourth node supplied with second operating voltage;

a plurality of first logic gates connected between said first node and said third node;

a plurality of second logic gates connected between said second node and said fourth node;

first current controlling means provided between said first logic gates and said first node; and

second current controlling means provided between said second logic gates and said fourth node,

wherein respective outputs of said first logic gates are connected to respective inputs of said second logic gates,

wherein, in a first condition, a first current path is formed between said first node and an output of at least one of said first logic gates through said first current control means, and a second current path is formed between said fourth node and an output of at least one of said second logic gates through said second current control means, and

wherein, in a second condition, a third current path is formed between said third node and outputs of said first logic gates, respectively, and a fourth current path is formed between said second node and outputs of said second logic gates, respectively, and a first current capacity flowing between said first node and said first logic gates in said second condition is set smaller than said first current capacity in said first condition by said first current control means, and a second current capacity flowing between said fourth node and said second logic gates in said second condition is set smaller than said second current capacity in said first condition by said second current control means.

5,606,266

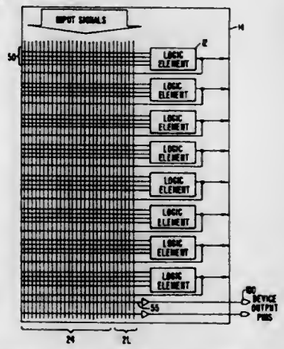
PROGRAMMABLE LOGIC ARRAY INTEGRATED CIRCUITS WITH ENHANCED OUTPUT ROUTING

Bruce B. Pedersen, San Jose, Calif., assignor to Altera Corporation, San Jose, Calif.

Continuation-in-part of Ser. No. 334,879, Nov. 4, 1994, abandoned. This application Jun. 30, 1995, Ser. No. 497,504

Int. Cl.[6] H03K *19/177*

U.S. Cl. 326—41 **28 Claims**



1. A configurable electronic device comprising:

a plurality of logic blocks, at least one logic block comprising outputs to other logic blocks, an array of internal interconnection lines within said block programmably connected to inputs of said block, said at least one logic block performing selected logical operations;

a general interconnect structure programmably connecting the outputs of said logic blocks to said array of internal interconnection lines of another of said logic blocks;

an output pin interconnect line, said output pin interconnect line directly programmably connected to said internal interconnection lines without being routed through said general interconnect or any other of said logic blocks and connected directly to an output pin of said configurable logic device.

5,606,267

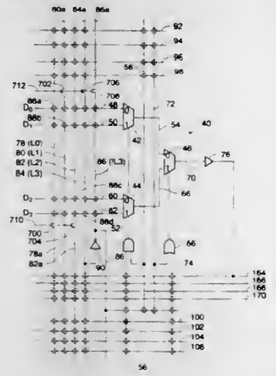
PROGRAMMABLE LOGIC MODULE AND ARCHITECTURE FOR FIELD PROGRAMMABLE GATE ARRAY DEVICE

Khaled A. El Ayat, Cupertino; Gregory W. Bakker, Sunnyvale; Jung-Cheun Lien, San Jose; William C. Plants, Santa Clara; Sinan Kaptanoglu, San Carlos; Runip Gopisetty, Los Gatos; King W. Chan, Los Altos, and Marko Chew, Cupertino, all of Calif., assignors to Actel Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 332,550, Oct. 28, 1994, Pat. No. 5,477,165, which is a continuation-in-part of Ser. No. 246,218, May 19, 1994, Pat. No. 5,451,887, which is a continuation-in-part of Ser. No. 2,873, Jan. 13, 1993, Pat. No. 5,367,208, which is a continuation of Ser. No. 869,488, Apr. 15, 1992, Pat. No. 5,187,393, which is a continuation of Ser. No. 621,452, Jan. 15, 1991, Pat. No. 5,172,014, , which is a continuation-in-part of Ser. No. 195,728, May 18, 1988, Pat. No. 4,873,459, which is a continuation-in-part of Ser. No. 909,261, Sep. 19, 1986, Pat. No. 4,758,745. This application Sep. 1, 1995, Ser. No. 522,945

Int. Cl.[6] H03K *19/177*

U.S. Cl. 326—41 **81 Claims**



1. A programmable logic module comprising:

a first multiplexer having a plurality of data inputs connected to data input conductors, at least one control input connected to a first control input conductor, and an output connected to a first output conductor;

a data flip-flop having a data input, a clock input connected to a clock input conductor, and an output connected to a second output conductor;

a second multiplexer having a first data input connected to the output of said first multiplexer, a second data input connected to a data input conductor, a control input connected to a second control input conductor, and an output;

a third multiplexer having a first data input connected to the output of said data flip-flop, a second data input connected to the output of said second multiplexer, a control input connected to a third control input conductor, and an output connected to said data input of said data flip-flop;

a plurality of general interconnect conductors, at least some of said general interconnect conductors intersecting said first and second output conductors, said data, clock, and control input conductors of said first, second and third multiplexers and said data flip-flop, said plurality of general interconnect conductors selectively connectable to individual ones of said first and second output conductors, said data, clock, and control input conductors by user-programmable interconnect elements; and

an inverter having an input connected to a first one of said general interconnect conductors and an output connected to a second one of said general interconnect conductors.

5,606,268

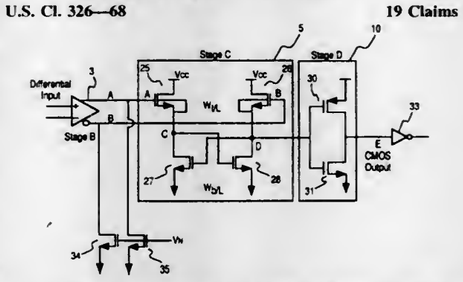
DIFFERENTIAL TO SINGLE-ENDED CMOS CONVERTER

Roger Van Brunt, San Francisco, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 36,137, Mar. 24, 1993, abandoned. This application Feb. 14, 1995, Ser. No. 389,075

Int. Cl.[6] H03K *19/0185;19/0948*

U.S. Cl. 326—68 **19 Claims**



1. An apparatus for converting a small amplitude differential signal to a single-ended signal suitable for use in CMOS logic circuits, said apparatus comprising:

a first cross-coupled level shifting circuit for receiving said differential signal and for outputting a shifted signal, said first cross-coupled level shifting circuit including a cross-coupled feedback loop having a loop gain of less than one;

a first amplification circuit for amplifying said shifted signal to a level suitable for use in CMOS logic circuits; and

a biasing circuit coupled to said first cross-coupled level shifting circuit for biasing said first cross-coupled level shifting circuit and said first amplification circuit, wherein said apparatus is implemented in a CMOS digital logic process.

5,606,269

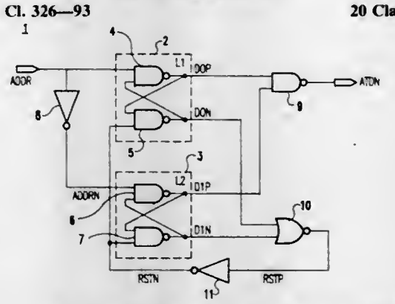
NON-DELAY BASED ADDRESS TRANSITION DETECTOR (ATD)

Dale E. Pontius, Colchester, and Robert Tamlyn, Jerico, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 26, 1995, Ser. No. 548,651

Int. Cl.[6] H03K *19/003*

U.S. Cl. 326—93 **20 Claims**



1. A circuit for detecting an input signal, the circuit having an input node and an output node, comprising:

a first latch having a set input coupled to the input node, for detecting falling transitions at the input node;

a second latch having a set input coupled to the input node, for detecting rising transitions at the input node;

a first logic device, responsive to outputs of the first and second latches, for detecting that an input signal has been received at both the first and second latches; and

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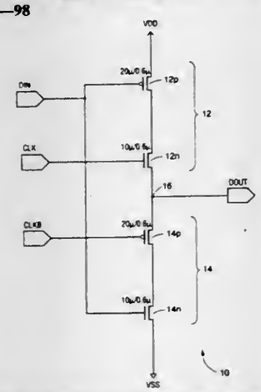
a second logic device, responsive to a complement output of both the first and second latches, for resetting both the first and second latches.

5,606,270

DYNAMIC CLOCKED INVERTER LATCH WITH REDUCED CHARGE LEAKAGE

Godfrey P. D'Souza, Santa Clara; James F. Testa, Mountain View; Douglas A. Laird, Los Gatos, and James B. Burr, Foster City, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Dec. 16, 1994, Ser. No. 357,607
Int. Cl.[6] H03K *19/20*
U.S. Cl. 326—98 **24 Claims**



1. An apparatus including a dynamic logic circuit, said dynamic logic circuit comprising:
a first supply node for operating at a first voltage level;
a second supply node for operating at a second voltage level;
a signal node;
a first circuit, coupled between said signal node and said first supply node, for receiving a first data signal and a first clock signal with first active and inactive clock states and in response thereto coupling said signal node to said first supply node at said first voltage level during said first active clock state; and
a second circuit, coupled between said signal node and said second supply node, for becoming reversed biased and thereby substantially maintaining said first voltage level at said signal node when said first clock signal transitions from said first active clock state to said first inactive clock state.

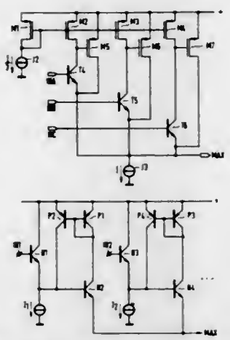
5,606,271

EXTREME LEVEL CIRCUIT

Johannes P. M. Van Lammeren, and Wietze B. Leistra, both of Nijmegen, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 27, 1995, Ser. No. 534,774
Claims priority, application European Pat. Off., Sep. 30, 1994, 94202822.6
Int. Cl.[6] G01R *19/00*
U.S. Cl. 327—62 **6 Claims**

1. An extreme level circuit for determining an extreme level of a plurality of input levels, the extreme level circuit comprising a plurality of independent parallel branches having intercoupled output terminals from which the extreme level can be taken, each of said independent parallel branches having an input terminal for receiving a respective one of the input levels, and a separate distortion compensation circuit which is independent of the distortion compensation circuits of the other independent parallel



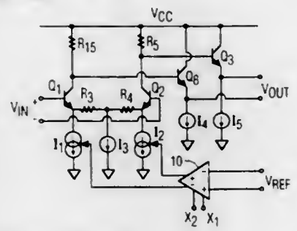
branches, wherein each of said independent parallel branches comprises a first bipolar transistor and a second bipolar transistor, said first and second bipolar transistors each having a base and an emitter, wherein a path between the base and emitter of said first bipolar transistor is connected in series with a path between the base and emitter of said second bipolar transistor between the input and output terminals of said independent parallel branch; a current mirror having an input connected to a collector of the second bipolar transistor and an output connected to a connection point of the base-emitter paths of the first and second bipolar transistors; and a constant current source connected to the emitter of the first bipolar transistor for furnishing a constant sum current to the first bipolar transistor and the output of the current mirror, the input terminal being connected to the base of the first bipolar transistor and the output terminal being connected to the emitter of the second bipolar transistor, wherein said current mirror and said constant current source form the distortion compensation circuit.

5,606,272

COMPARATOR WITH SMOOTH START-UP FOR HIGH FREQUENCIES

Farbod Behbahani, Inglewood; Ali Fotowat-Ahmady, San Rafael, and Nasrollah S. Navid, Saratoga, all of Calif., assignors to Philips Electronics North America Corporation, New York, N.Y.

Filed Oct. 10, 1995, Ser. No. 540,517
Int. Cl.[6] H03K *5/22*
U.S. Cl. 327—65 **15 Claims**



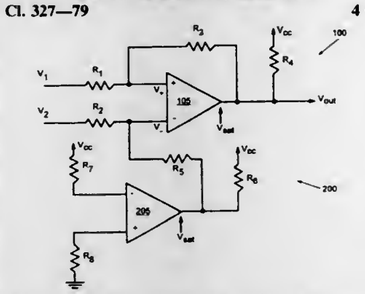
1. A comparator, comprising:
a comparison circuit coupled to receive at least one input signal and generating at least one output signal based on the at least one input signal; and
a control circuit, coupled to said comparison circuit and to receive at least one start-up signal indicating start-up of said comparator, controlling said comparison circuit to generate the output signal with a predetermined value upon receipt of the start-up signal and gradually releasing control of said comparison circuit.

5,606,273

ZERO CROSSING DETECTOR CIRCUIT

Paul C. Gottshall, Washington, and Long T. Le, Peoria, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Mar. 28, 1996, Ser. No. 625,264
Int. Cl.[6] H03K *5/153;* **H03L** *5/00*
U.S. Cl. 327—79 **4 Claims**



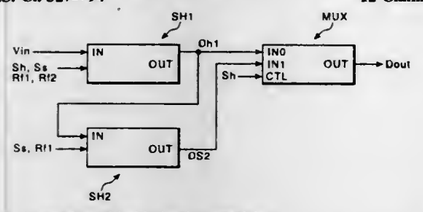
1. A zero crossing detecting circuit, comprising:
a first comparator having an inverting input, a non-inverting input and an output, the non-inverting input being connected to the output to provide a feed forward path, wherein the inverting and non-inverting input are adapted to receive an input signal the non-inverting input being referenced to a reference voltage, the reference voltage being different from ground; and
a second comparator having an inverting input, a non-inverting input and an output, the second comparator output being connected to the first comparator inverting input to provide the inverting input of the first comparator with a reference voltage substantially equal to the reference voltage of the non-inverting input of the first comparator.

5,606,274

SAMPLING AND HOLDING CIRCUIT

Guoliang Shou; Kazunori Motohashi; Makoto Yamamoto, and Sunao Takatori, all of Tokyo, Japan, assignors to Yozan Inc., Tokyo, and Sharp Kabushiki Kaisha, Osaka, both of Japan

Filed Aug. 8, 1995, Ser. No. 512,317
Claims priority, application Japan, Aug. 8, 1994, 6-205978; Nov. 16, 1994, 6-306923
Int. Cl.[6] G11C *27/02*
U.S. Cl. 327—94 **12 Claims**



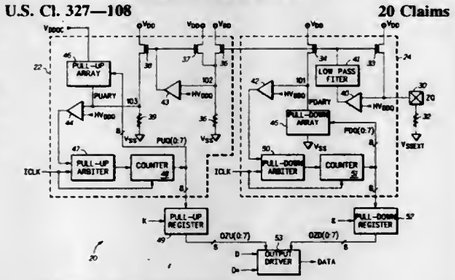
1. A sample and hold circuit comprising:
a first sample and hold circuit having an output for outputting a first output voltage, said first sample and hold circuit being connected to an analog input voltage and receiving a first sampling signal, a first holding signal and a refresh signal, said first sample and hold circuit sampling said analog input voltage in response to said first sampling signal and holding said analog input voltage in response to said first holding signal, said first sample and hold circuit being refreshed for said sampling and holding in response to said refresh signal;
a second sample and hold circuit having an output for outputting a second output voltage, said second sample and hold circuit being connected to said output of said first sample and hold circuit and receiving a second sampling signal, a second holding signal and said refresh signal, said second sample and hold circuit sampling said first output voltage in response to said second sampling signal and holding said first output voltage in response to said second holding signal, said second sample and hold circuit being refreshed for said sampling and holding in response to said refresh signal; and
a multiplexer having an output for outputting a third output voltage, said multiplexer being connected to said outputs of said first and second sample and hold circuits for alternatively providing said first output voltage or said second output voltage to said output as said third output voltage, said multiplexer providing said second output voltage as said third output voltage when said first sample and hold circuit is refreshed, said multiplexer otherwise providing said first output voltage as said third output voltage.

5,606,275

BUFFER CIRCUIT HAVING VARIABLE OUTPUT IMPEDANCE

Ali R. Farhang, Beaverton, Oreg., and Scott G. Nogle, Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 5, 1995, Ser. No. 523,165
Int. Cl.[6] H03K *19/084*
U.S. Cl. 327—108 **20 Claims**



1. A buffer circuit, comprising:
an analog-to-digital converter having an input terminal for receiving a predetermined input voltage, and a plurality of output terminals for providing a digital code corresponding to a voltage level of the predetermined input voltage; and
an output driver circuit having a plurality of binary weighted output transistors, each of the plurality of binary weighted output transistors having a first current electrode coupled to a power supply voltage terminal, a control electrode selectively coupled to receive a data signal in response to a predetermined logic state of a corresponding bit of the digital code, and a second current electrode coupled to an output terminal for providing an output signal.

5,606,276

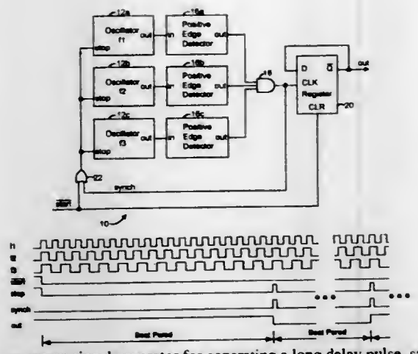
METHOD AND APPARATUS FOR CREATING A LARGE DELAY IN A PULSE IN A LAYOUT EFFICIENT MANNER

Cameron McClintock, Mountain View, Calif., assignor to Altera Corporation, San Jose, Calif.

Filed Oct. 5, 1994, Ser. No. 319,381
Int. Cl.[6] H03K *5/26;* **H03D** *13/00*
U.S. Cl. 327—263 **24 Claims**

1. A circuit for generating a long delay pulse comprising:
at least two oscillators, each having a different characteristic period, each oscillator generating a periodic signal having periodic positive and negative edges, each coupled to one of;
at least two edge detectors, operatively connected to;
a comparator coupled to the edge detectors for detecting when edges of the periodic signals generated by each of the oscillators are coincident in time, operatively connected to;

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an output signal generator for generating a long delay pulse, said long delay pulse having a period many times longer than any of said different characteristic periods of said at least two oscillators

an initiator input for initiating the oscillators; and

a reset input for resynchronizing the oscillators when edges of said periodic signals are coincident in time.

5,606,277

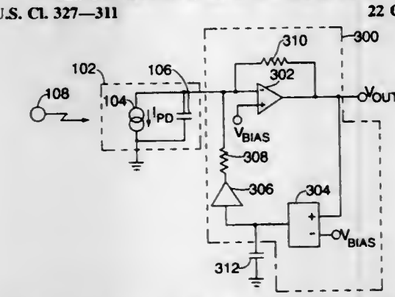
AC COUPLING LOOPS FOR CURRENT-TO-VOLTAGE TRANSIMPEDANCE AMPLIFIERS AND METHODS OF USING SAME

George F. Feliz, San Jose, Calif., assignor to Linear Technology Corporation, Milpitas, Calif.

Filed Jun. 23, 1995, Ser. No. 494,237

Int. Cl.[6] H03F *3/08;* **H03K** *5/08;* **H01J** *40/14*

U.S. Cl. 327—311 **22 Claims**



1. A transimpedance amplifier circuit for converting a current to a voltage at frequencies above one break frequency selected from at least one available break frequency, the amplifier circuit comprising:

a transimpedance circuit coupled between an input terminal and an output terminal, the transimpedance circuit providing an output voltage at the output terminal and having at least one input;

a transconductance circuit coupled to the output terminal, the transconductance circuit providing an output current through an output in response to a comparison of the output voltage and a predetermined reference voltage;

a break frequency setting circuit for setting the one break frequency of the transimpedance amplifier, the break frequency circuit being coupled to a single interface point on the amplifier circuit at the output of the transconductance circuit; and

a correction current generation circuit being coupled to the output of the transconductance circuit and to at least one input of the transimpedance circuits the generation circuit providing a correction current that forces the output of the transimpedance circuit to be substantially equal to the predetermined reference voltage at frequencies below the one break frequency.

5,606,278

CIRCUIT FOR LIMITING THE OUTPUT VOLTAGE OF A POWER TRANSISTOR

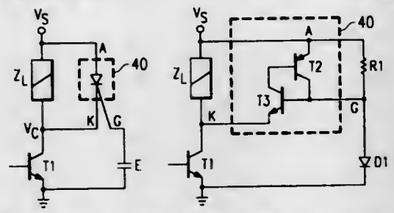
Sergio Palara, Aci Castello, Italy, assignor to SGS-Thomson Microelectronics S.r.l., Agrate, Italy

Filed Aug. 30, 1995, Ser. No. 520,616

Claims priority, application European Pat. Off., Nov. 30, 1994, 94830556

Int. Cl.[6] H03K *5/08;17/00*

U.S. Cl. 327—321 **20 Claims**



15. A circuit for driving a resonant load which has a first end connected to a voltage source and has a second end, the circuit for driving the resonant load comprising:

a power transistors having a control element and a conductive path between the second end of the resonant load and a ground voltage;

a means for controlling the power transistor connected to the control element of the power transistor;

a means for limiting an output voltage of the power transistor having a first, a second, and a third terminals, the first terminal connected to the voltage source, the second terminal connected to a common circuit node between the power transistor and the resonant load, and the third terminal connected to a reference voltage of a predetermined value.

5,606,279

APPARATUS FOR PRODUCING A DIGITAL INPUT TO A RECORDING STATION

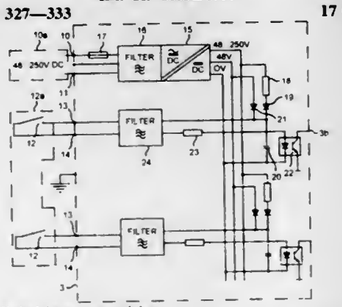
Robert Schilling, Niederrohrdorf, Switzerland, assignor to ABB Management AG, Baden, Switzerland

Continuation of Ser. No. 324,961, Oct. 18, 1994, abandoned. This application Jan. 22, 1996, Ser. No. 589,157

Claims priority, application European Pat. Off., Dec. 1, 1993, 93119342

Int. Cl.[6] H03L *5/00*

U.S. Cl. 327—333 **17 Claims**



1. A digital input comprising:

at least four current terminals, a first two of the current terminals being applied with direct current from an external voltage source, and a second two of the current terminals being connected to an auxiliary contact which outputs a digital signal when a special event occurs;

an electric circuit which is connected to the second two current terminals and which carries the digital signal to an electrical isolating point; and

a device for convening the direct current applied from the external voltage source into a direct current which is electrically isolated therefrom, which converting device is operatively connected to the first two current terminals provided on an input side of the converting device and to the electric circuit on an output side of the converting device, wherein the direct current converting device has at least two outputs, a first one of which outputs an input-side proportional direct current voltage which is proportional to said external voltage source, and a second one of which outputs a direct current voltage having a constant amplitude, with the first and the second outputs of the direct current converting device being connected to the same current terminal of a capacitor in the electric circuit.

5,606,280

BAND-PASS FILTER SYSTEM

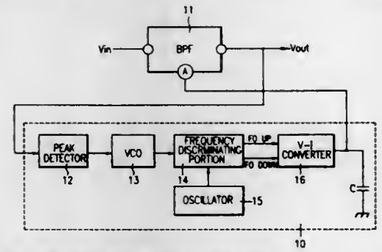
Ki S. Sohn, Kyungki-do, Rep. of Korea, assignor to LG Semicon Co., Ltd., Chungcheongbuk-do, Rep. of Korea

Filed Oct. 6, 1995, Ser. No. 540,394

Claims priority, application Rep. of Korea, Oct. 6, 1994, 25540/1994

Int. Cl.[6] H03K *5/00;* **H03H** *7/12*

U.S. Cl. 327—553 **13 Claims**



1. The band-pass filter system comprising:

a band-pass filter; and

a frequency band controller for controlling which frequency band is passed by the band-pass filter by generating a corresponding up pulse voltage and a down pulse voltage according to a pre-controlled center frequency obtained from an output frequency of the band-pass filter to produce a control frequency for obtaining a desired center frequency of the band-pass filter, wherein the frequency band controller includes:

a peak detector for providing a DC voltage proportional to a peak of the output frequency of the band-pass filter,

a voltage controlled oscillator for providing the pre-controlled center frequency according to the DC voltage provided by the peak detector,

an oscillator for generating a reference clock corresponding to the desired center frequency,

a frequency discriminating portion for comparing the pre-controlled center frequency provided by the voltage controlled oscillator and the desired center frequency corresponding to the reference clock to provide the up pulse voltage and the down pulse voltage,

a V-I converter for converting the up pulse voltage and the down pulse voltage into a current, and

a capacitor for performing charging/discharging according to the current output from the V-I converter and for outputting a result of the charging/discharging to a frequency band-pass filter port of the band-pass filter.

5,606,281

POWER AMPLIFIER STAGE OF THE VOLTAGE FOLLOWER TYPE

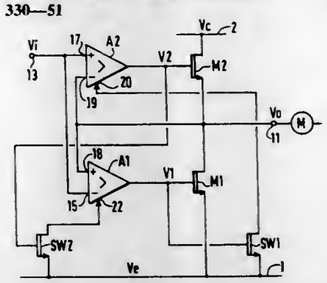
Gilbert Gloaguen, Tourville/Odon, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 20, 1995, Ser. No. 504,816

Claims priority, application France, Aug. 25, 1994, 94 10277

Int. Cl.[6] H03F *3/185;3/30*

U.S. Cl. 330—51 **7 Claims**



1. A power amplifier stage of the voltage follower type which receives an input voltage signal (Vi) and supplies an output signal (Vo), said stage comprising at the output a first MOS power transistor having a source coupled to a common mode line in series with a second MOS power transistor having a drain coupled to a positive supply line, said first and second power transistors being of the same conductivity type and having a common junction point supplying said output signal of the stage; a first amplifier supplying a first control signal to the gate of the first MOS power transistor, a second amplifier supplying a second control signal to the gate of the second MOS power transistor, said first and second amplifier each receiving the input signal at a respective first input and the output signal at a respective second input, wherein to exclude a simultaneous conduction of the two MOS power transistors each of the amplifiers is provided with an inhibiting input and arranged so as to supply a gate control signal equal to the common mode voltage when said inhibiting input is brought to the same common mode voltage, and a first switching transistor of the MOS field effect type having its gate coupled to the gate of the first MOS power transistor, its drain connected to the inhibiting input of the second amplifier and its source coupled to a common mode line, and a second switching transistor of the MOS field effect type having its source coupled to a common mode line, its drain connected to the inhibiting input of the first amplifier and a gate that receives a signal derived from the gate voltage of the second MOS power transistor.

5,606,282

TRANSIMPEDANCE AMPLIFIER

Yuji Yoshida, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 355,199, Dec. 8, 1994, abandoned. This application Apr. 12, 1996, Ser. No. 630,994

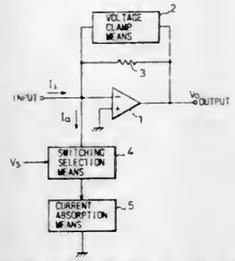
Claims priority, application Japan, Jan. 19, 1994, 6-004187

Int. Cl.[6] H03F *3/08*

U.S. Cl. 330—51 **14 Claims**

1. A transimpedance amplifier having an amplifier unit and a feedback resistor arranged between the output and input ends of the amplifier unit, for amplifying and converting an input current into an output voltage of predetermined level said amplifier unit having a transistor element connected to an input terminal of said amplifier unit, wherein the transimpedance amplifier includes:

voltage clamp means, connected to the opposite ends of the feedback resistor, for clamping a voltage applied to the ends of the feedback resistor, for preventing an input voltage to said transistor element from dropping to a level that deactivates said input transistor, and for preventing the amplifier unit from saturating;



current absorption means, arranged on the input side of the amplifier unit, for absorbing any large input current supplied to the amplifier unit; and

switching selection means for activating or deactivating the current absorption means according to an external control signal.

5,606,283

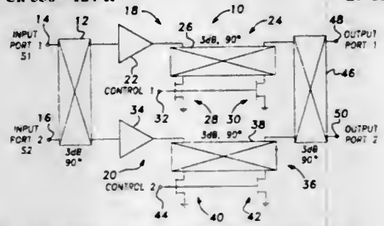
MONOLITHIC MULTI-FUNCTION BALANCED SWITCH AND PHASE SHIFTER

Barry R. Allen, Redondo Beach; Dennis C. Lo, Los Angeles; Huel Wang, La Palma, and Gee S. Dow, Rancho Palos Verdes, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed May 12, 1995, Ser. No. 440,555

Int. Cl.[6] H03F *3/68*

U.S. Cl. 330—124 R **20 Claims**



19. A low noise electronic control device comprising:

an input coupler, said input coupler including at least a first input port, said input coupler coupling input signals at the at least first input port into an input path;

a low noise amplifier in the input path, said low noise amplifier being responsive to the input signal applied to the input path and generating an amplified low noise input signal; and

a phase shifter in the input path, said phase shifter including a coupler and first and second switching devices, said coupler being responsive to the amplified input signal, said first and second switching devices being selectively switched on and off by a common control signal to shift the amplified input signal in phase.

5,606,284

AUTOMATIC GAIN CONTROL DEVICE FOR PRODUCING CONSTANT AMPLITUDE OUTPUT SIGNAL

Kazuhiko Tamesue; Koichi Nagano, both of Fukuoka, and Masuo Nakamura, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

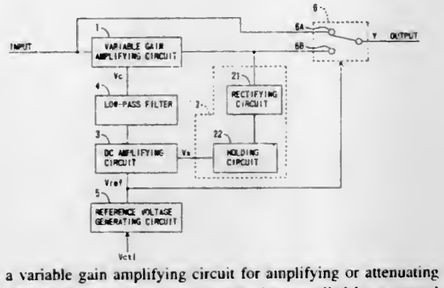
Filed Aug. 24, 1995, Ser. No. 518,977

Claims priority, application Japan, Aug. 26, 1994, 6-202201

Int. Cl.[6] H03G *3/20*

U.S. Cl. 330—129 **13 Claims**

1. An automatic gain control device comprising:



a variable gain amplifying circuit for amplifying or attenuating an input signal depending on a gain controlled by a control voltage;

a rectifying circuit for rectifying an output signal of the variable gain amplifying circuit;

a holding circuit for outputting a peak voltage of the voltage rectified by said rectifying circuit;

a reference voltage generating circuit for outputting a reference voltage which varies in accordance with an external voltage;

a direct-current amplifying circuit for outputting said control voltage based on a difference between said peak voltage and said reference voltage; and

a switching circuit for switching between the output signal of said variable gain amplifying circuit and said input signal on the basis of said reference voltage.

5,606,285

POWER CONTROL CIRCUIT FOR USE WITH TRANSMITTER

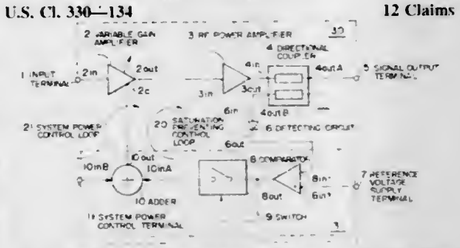
Hefeng Wang, and Tetsuo Onodera, both of Tokyo, Japan, assignors to OKI Electric Industry Co., Ltd., Tokyo, Japan

Filed Jul. 21, 1995, Ser. No. 505,815

Claims priority, application Japan, Jul. 29, 1994, 6-178695

Int. Cl.[6] H03G *3/30*

U.S. Cl. 330—134 **12 Claims**



1. A power control circuit for use with a transmitter, comprising variable gain amplifying means, having an input terminal for receiving an input signal, an output terminal, and a gain control terminal for receiving a gain control signal, said variable gain amplifying means including means for amplifying the input signal to provide a linearly amplified signal at said output terminal with a gain controlled by the gain control signal;

detecting means for detecting a signal level of the amplified signal;

comparing means for comparing the signal level detected by said detecting means with a reference value, to obtain a comparison result indicative of which of the signal level detected by said detecting means and a level of the reference value is larger;

a switch having a signal input terminal connected for receiving the comparison result from said comparing means and an output terminal for providing the comparison result when said switch is closed, said switch having means, responsive to the comparison result, for closing said switch when the comparison result indicates that the signal level detected by said detecting means is larger than the level of the reference value and for opening said switch when the comparison result indicates that the signal level detected by said detecting means is smaller than the level of the reference value; and

a system power control circuit having a first input terminal and having a second input terminal coupled to the output terminal of said switch, said system power control circuit including means for adding a system power control signal at said first input terminal to an addend signal at said second input terminal to produce a sum, and providing the sum to said gain control terminal as the gain control signal, wherein said addend signal is the comparison result when said switch is closed, and is a null signal when said switch is open.

5,606,286

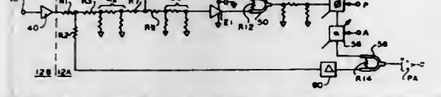
PREDISTORTION LINEARIZATION

Devendar S. Bains, 78 Wescott Rd., Neshanic Station, N.J. 08853

Filed Jul. 27, 1995, Ser. No. 508,163

Int. Cl.[6] H03F *1/26*

U.S. Cl. 330—149 **43 Claims**



1. A linearizer for predistorting a radio frequency signal from a source before subsequent processing, comprising:

a dividing means adapted to be coupled to said source for dividing said radio frequency signal into a first, second and third part;

a first and a second transfer means coupled to said dividing means for receiving said first and said second part, respectively, of said radio frequency signal, said first and said second transfer means each having an output, said first transfer means having a conditioning device for conveying signals with distortion;

a third transfer means having an output and having an input coupled to said dividing means for separately receiving said third part of said radio frequency signal, said first transfer means having higher distortion than said second and third transfer means;

a combining means coupled to the outputs of said first, said second and said third transfer means for producing a predistortion signal corresponding to a combination of signals on the outputs of said first, said second and said third transfer means, said second transfer means having, with respect to undistorted output components reaching said combining means, a transfer characteristic whose output phase and amplitude substantially tracks that of said conditioning device during variations in amplitude; and

a retarding means coupled with said combining means for retarding signals handled at said combining means to produce approximately a 180 degree phase shift between the outputs of said first and said second transfer means and to establish in said predistortion signal distorted components that are inverted with respect to undistorted components, when compared to the relationship between distorted and undistorted components produced by said conditioning device.

5,606,287

OPERATIONAL AMPLIFIER HAVING STABLE OPERATIONS FOR A WIDE RANGE OF SOURCE VOLTAGE, AND CURRENT DETECTOR CIRCUIT EMPLOYING A SMALL NUMBER OF ELEMENTS

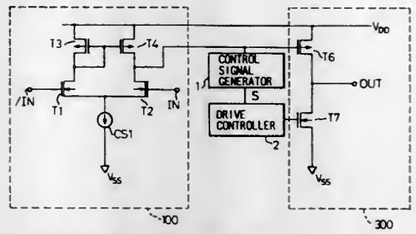
Osamu Kobayashi; Atsushi Matsuda, and Tachio Ynasa, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 29, 1995, Ser. No. 412,561

Claims priority, application Japan, Jun. 17, 1994, 6-135426; Jul. 7, 1994, 6-155875

Int. Cl.[6] H03F *3/26*

U.S. Cl. 330—255 **14 Claims**



1. An operational amplifier comprising:

a differential amplification section;

an output section having a first transistor of a first conductivity type and a second transistor of a second conductivity type that is opposite to said first conductivity type, said first and second transistors being connected in series between a first power source means and a second power source means, said first transistor being driven according to an output of said differential amplification section;

a control signal generation means for detecting a current flowing through said first transistor and generating a control signal in response to the detected current; and

a drive control means for controlling said second transistor to increase a current flowing through said second transistor if the current flowing through said first transistor detected by said control signal generation means decreases.

5,606,288

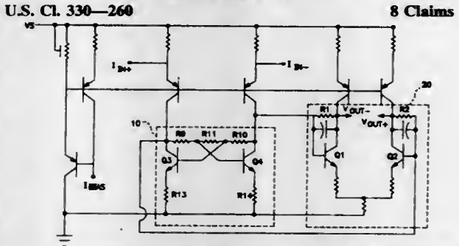
DIFFERENTIAL TRANSIMPEDANCE AMPLIFIER

John S. Prentice, Palm Bay, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Aug. 8, 1995, Ser. No. 512,405

Int. Cl.[6] H03F *3/45*

U.S. Cl. 330—260 **8 Claims**



7. A differential transimpedance amplifier and circuit for setting an input impedance thereto, the differential transimpedance amplifier having a first input node connecting a base of one amplifier transistor and one input current, a second input node connecting a base of a further amplifier transistor and a further input current, and a feedback resistor for each said amplifier transistor, the circuit comprising:

a first transistor having one terminal connected to the first node;

a second transistor having one terminal connected to the second node;

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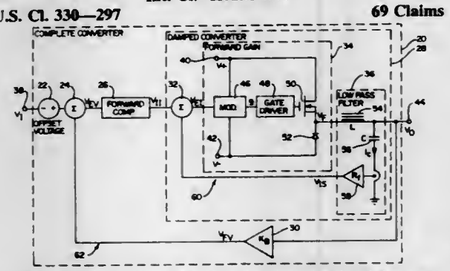
plural resistive elements connecting the first and second nodes;
bases of said first and second transistors being connected to different interconnections of said plural resistive elements; and
second terminals of said first and second transistors being connected to ground through resistive elements;
whereby output impedance of the differential transimpedance amplifier is low to improve transimpedance accuracy and common mode voltage is low.

5,606,289

AUDIO FREQUENCY POWER AMPLIFIERS WITH ACTIVELY DAMPED FILTER

Robert C. Williamson, Mountlake Terrace, Wash., assignor to Carver Corporation, Lynnwood, Wash.

Continuation-in-part of Ser. No. 263,462, Jun. 22, 1994, Pat. No. 5,543,753. This application Jun. 7, 1995, Ser. No. 487,885
Int. Cl.[6] H02M *1/14*
U.S. Cl. 330—297 **69 Claims**



1. An amplifier system for generating an output signal that tracks an audio input signal comprising:
linear amplification means for amplifying an input signal to obtain an amplified output signal, the linear amplification means having at least one supply terminal;
first amplification means for generating a first supply signal and applying the first supply signal to the at least one supply terminal of the linear amplification means, where the first amplification means comprises
first control means for generating a first control signal based on the input signal,
first switch means for generating a first pulsed power signal based on the first control signal, and
first filter means for filtering the first pulsed power signal to obtain the first supply signal, the first filter means comprising a first filter inductor and a first filter capacitor; and
first active damping means for damping perturbations in the first filter means, the first active damping means comprising
current measuring means for generating a second control signal based on a current through the output capacitor, and
means for altering the first control signal based on the second control signal.

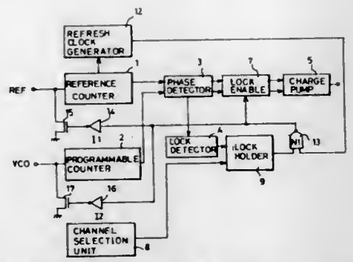
5,606,290

PHASE LOCKED LOOP CIRCUIT HAVING LOCK HOLDER

Dai S. Pang, Seoul, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Cheongju, Rep. of Korea

Filed Dec. 22, 1994, Ser. No. 362,314
Claims priority, application Rep. of Korea, Mar. 31, 1994, 6843-1994
Int. Cl.[6] H03L *7/095*
U.S. Cl. 331—1 A **13 Claims**

6. A circuit for maintaining a lock between first and second signals inputted, respectively, to a reference counter and a program counter in response to a lock signal generated by a phase detector to a lock detector in a phase locked loop circuit, the circuit comprising:



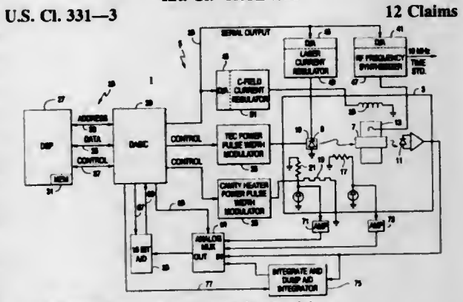
a lock holder circuit coupled to the lock detector;
a generator coupled to the reference counter such that a clock signal is generated in response to a signal from the reference counter;
a first logic gate coupled to said lock holder and said generator such that a logical operation is performed between output signals from said lock holder and said generator;
at least one switch coupled to at least one of the reference counter and programmable counter such that the first and second signals are not inputted to the reference and programmable counters in response to an output signal from said first logic gate.

5,606,291

MINIATURE ATOMIC FREQUENCY STANDARD CONTROLLED BY A DIGITAL PROCESSOR

William R. Verbanets, Plum Borough, Pa., assignor to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Nov. 6, 1995, Ser. No. 554,024
Int. Cl.[6] H03L *7/26*
U.S. Cl. 331—3 **12 Claims**



1. An atomic frequency standard comprising:
a confined volume of a vapor having specified atomic transition frequencies/wavelengths including an optical resonance wavelength and a microwave atomic transition frequency;
frequency synthesizer means generating a microwave signal in a frequency range including said microwave atomic transition frequency;
means coupling said microwave signal to said vapor;
a laser diode optically pumping said vapor with light at a wavelength within a range including said optical resonance wavelength;
detector means generating a detector signal representing light from said laser diode which has passed through said vapor; and
control means comprising digital processing means responsive to said detector signal for operating said frequency synthesizer to regulate said microwave signal as a function of said atomic transition frequency, and for operating said laser diode to stabilize the wavelength of the light generated relative to said optical resonance wavelength wherein said digital processing means comprises means generating a microwave control signal which is applied to said frequency synthesizer and

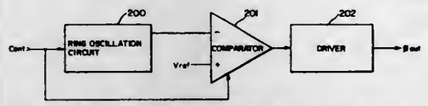
for dithering said microwave control signal to drive said microwave signal generated by said frequency synthesizer to frequencies centered on said microwave atomic transition frequency.

5,606,292

RING OSCILLATOR HAVING ITS OUTPUT AMPLIFIED IN A COMPARATOR

Young N. Oh, Kyoungki-do, Rep. of Korea, assignor to Hyundai Electronic Industries Co., Ltd., Kyoungki-Do, Rep. of Korea

Filed Dec. 18, 1995, Ser. No. 574,134
Claims priority, application Rep. of Korea, Dec. 31, 1994, 94-40569
Int. Cl.[6] H03B *5/02*
U.S. Cl. 331—57 **9 Claims**



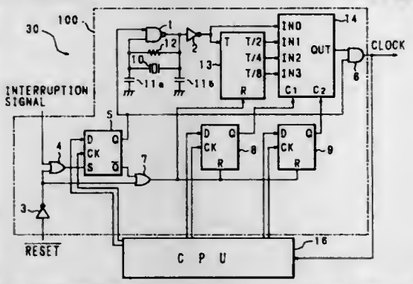
1. A ring oscillator for a semiconductor device comprising:
ring oscillation means for generating a pulse signal according to a logic state of a control signal, said pulse signal having a predetermined period and a reduced operating voltage level; and
comparison means for comparing the pulse signal from said ring oscillation means with a reference voltage signal according to the logic state of the control signal and amplifying it in accordance with the compared result.

5,606,293

CLOCK GENERATOR FOR MICROCOMPUTER HAVING REDUCED START-UP TIME

Hideo Matsui, and Terunori Kubo, both of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 14, 1995, Ser. No. 572,524
Claims priority, application Japan, Dec. 14, 1994, 6-310635
Int. Cl.[6] G06F *1/08;* **H03B** *5/32;* **H03K** *3/012*
U.S. Cl. 331—74 **18 Claims**



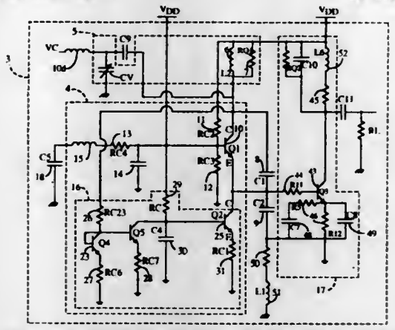
1. A clock generation circuit for generating a clock from oscillation of an oscillator by applying a voltage to the oscillator, comprising:
a frequency divider circuit for dividing a harmonic of a resonance frequency inherent in the oscillator which occurs at an initial stage of the oscillation of the oscillator into a frequency equal to or lower than a frequency of the clock having the resonance frequency or a frequency of the clock which is obtained by dividing the resonance frequency; and
a selector circuit for selecting one output from the frequency divider circuit as the clock while the harmonic occurs.

5,606,294

AUTOMATIC GAIN CONTROL CIRCUIT AND METHOD

Roy Richards, Los Altos, Calif., assignor to IC Works, Inc., San Jose, Calif.

Filed Jan. 29, 1996, Ser. No. 593,748
Int. Cl.[6] H03B *5/12;5/18*
U.S. Cl. 331—109 **10 Claims**



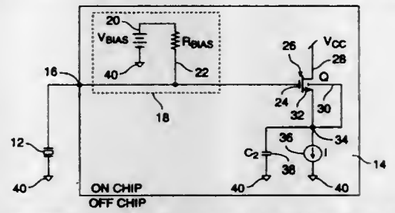
1. An automatic gain control circuit for adapting to a selected resonator circuit, comprising:
an AC base-grounded transistor including a feedback node and a bias node, said AC base-grounded transistor driving a selected resonator circuit connected between said bias and feedback nodes; and
a feedback circuit for detecting voltages at said feedback node and producing bias signals for said AC base-grounded transistor at its bias node in response to voltages detected at said feedback node.

5,606,295

CRYSTAL OSCILLATOR CIRCUITS

Harlan H. Ohara, San Jose, and Lee C. Yiu, Fremont, both of Calif., assignors to SEEQ Technology, Inc., Fremont, Calif.

Filed Apr. 17, 1996, Ser. No. 634,088
Int. Cl.[6] H03B *5/36*
U.S. Cl. 331—116 FE **34 Claims**



1. Apparatus comprising a substrate having a monolithic semiconductor circuit on at least one side thereof, said circuit including an oscillator circuit disposed for coupling to a separate crystal oscillator element at a single pin, said oscillator circuit comprising a transistor having a body, a drain, a gate, and a source, said body being coupled to said source, said drain being coupled to a reference voltage, and said source being coupled to a capacitive element.

5,606,296

PULSE WIDTH MODULATION CONTROL CIRCUIT

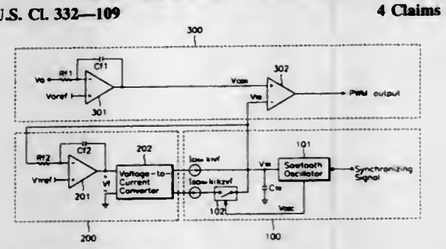
Hwan-Ho Seong, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Feb. 13, 1996, Ser. No. 600,867

Claims priority, application Rep. of Korea, Jul. 27, 1995, 95-22530

Int. Cl.[6] H03B 5/24; H03K 7/08;3/013

U.S. Cl. 332—109 4 Claims



1. A pulse width modulation circuit comprising:

a sawtooth oscillating means for generating a sawtooth voltage after receiving a synchronizing signal;

a sawtooth controller for receiving said sawtooth voltage generated from said sawtooth oscillating means, receiving a reference voltage with respect to said sawtooth voltage, and outputting a current controlling constantly the amplitude of said sawtooth voltage to said sawtooth oscillating means; and

a pulse width modulating means for receiving an output voltage, also receiving a reference voltage with respect to said output voltage, then receiving said sawtooth voltage generated from said sawtooth oscillating means, and modulating pulse width of said sawtooth voltage.

5,606,297

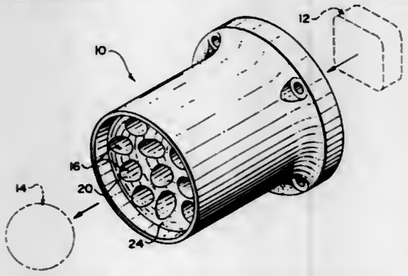
CONICAL ULTRASOUND WAVEGUIDE

William A. Phillips, Delta, Canada, assignor to Novax Industries Corporation, New Westminster, Canada

Filed Jan. 16, 1996, Ser. No. 586,547

Int. Cl.[6] H03H 9/00

U.S. Cl. 333—141 10 Claims



1. A waveguide for projecting a longitudinal acoustic wave having a wavelength λ from a source toward a target area, said waveguide comprising at least one tubular channel, said channel having inwardly tapered, conical inlet and outlet ports separated by a venturi.

5,606,298

ELECTRICAL RELAY

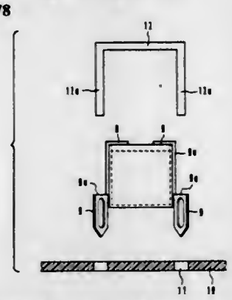
Josef Weiser, Hohenschaeftlarn, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Jun. 29, 1995, Ser. No. 496,516

Claims priority, application Germany, Jul. 15, 1994, 44 25 077.1

Int. Cl.[6] H01H 51/22

U.S. Cl. 335—78 11 Claims



1. An electromagnetic relay, comprising:

an outer housing containing inside thereof a relay, said outer housing having a floor side for placement onto a printed circuit board, and an upper side facing away from the floor side and at which terminal leads emerge to the outside of the housing; and

said terminal leads being bent over edges of the upper side and outside thereof sections extending along sidewalls of the outer housing down into a region of the floor side where they form terminal lugs for contacting with electrical contacts of the printed circuit board.

5,606,299

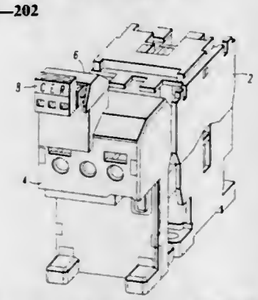
MODULAR SURGE SUPPRESSOR

Mark E. Innes, Asheville, and Nelson R. Palmer, Arden, both of N.C., assignors to Eaton Corporation, Cleveland, Ohio

Filed Nov. 14, 1995, Ser. No. 557,588

Int. Cl.[6] H01H 9/02

U.S. Cl. 335—202 20 Claims



1. An electrical switching device adapted to be controlled through control signals in control wiring, said device comprising:

separable contacts;

means for opening and closing said separable contacts;

first terminal means for interfacing said control signals to said means for opening and closing said separable contacts;

surge suppressor means for suppressing a surge associated with said control signals, said surge suppressor means including second terminal means for engaging said first terminal means and interfacing said control signals thereto; and

means for interfacing said control signals in said control wiring to said surge suppressor means.

5,606,300

SUPERCONDUCTING MAGNET SUPERCONDUCTING MAGNET COIL, AND MANUFACTURING METHOD THEREOF

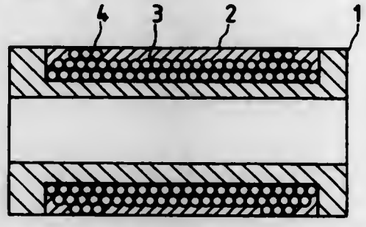
Toru Koyama, Hitachi; Masao Suzuki, Katsuta; Yasuhiro Mizuno, Hitachi; Koo Honjo, Ibaraki; Morimichi Umino, Hitachioota; Shigeo Amagi, Ibaraki, and Shunichi Numata, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 165,920, Dec. 14, 1993, abandoned. This application Jan. 31, 1996, Ser. No. 594,444

Claims priority, application Japan, Dec. 18, 1992, 4-338352

Int. Cl.[6] H01F 1/00;36/00;6/00; H01B 12/00

U.S. Cl. 335—216 21 Claims



1. A superconducting magnet using a superconducting magnet coil manufactured by winding a superconducting wire and fixing the wire with resin, characterized in that said resin has a stress safety factor, which is defined as (strength/cooling restricted thermal stress), in a range of 3–11 when said resin is cooled from the glass transition temperature of said resin to 4.2 K.

5,606,301

MICRO-CHIP FUSE AND METHOD OF MANUFACTURING THE SAME

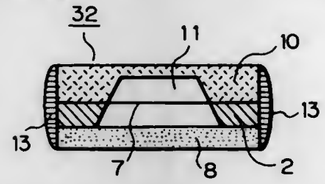
Koh Ishimura, Kanagawa-ken, Japan, assignor to SOC Corporation, Tokyo, Japan

Filed Sep. 30, 1994, Ser. No. 314,287

Claims priority, application Japan, Oct. 1, 1993, 5-277257

Int. Cl.[6] H01H 85/04;85/38;69/02

U.S. Cl. 337—290 8 Claims



1. A micro-chip fuse, comprising:

a main body comprising a plurality of laminated layers including at least two substrates made of heat-resistant, electrically insulating material, said main body defining a space therein;

a fusible element made of a metallic film formed by a deposition process, said fusible element comprising opposite end portions and a middle portion between said opposite end portions, wherein said opposite end portions are sandwiched between said at least two substrates and said middle portion extends within said space;

electrodes provided at opposite ends of said main body and electrically connected to said opposite end portions of said fusible element; and

said at least two substrates comprises three substrates with one of said three substrates being sandwiched between the other two of said three substrates, the one of said three substrates having a through bore therein;

wherein one of the other two of said substrates has a recess therein; and

wherein said space is formed by said recess of the one of the other two of said substrates, said through bore of the one of said three substrates and the other of the two of said three substrates.

5,606,302

PTC CIRCUIT PROTECTION DEVICE WITH NON-OPPOSED SPRING TERMINALS

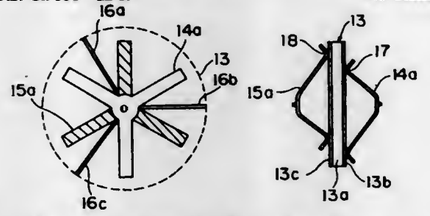
Shigehiro Ichida, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Mar. 28, 1994, Ser. No. 218,665

Claims priority, application Japan, Mar. 29, 1993, 5-014844

Int. Cl.[6] H01C 7/100

U.S. Cl. 338—22 R 48 Claims



1. An electronic component device, comprising:

an electronic component element having first and second opposed conductive surfaces, at least one groove being formed on said first surface and dividing said first surface into a plurality of separate areas; and

first and second spring terminals in contact with said first and second surfaces, respectively, said first and second spring terminals serving by themselves to elastically support said electronic component element between said spring terminals; said first spring terminal having at least two contact sections each of which are in contact with a respective one of said plurality of separate areas of said first surface, said second spring terminal having at least one contact section which is in contact with said second surface, said contact sections of said first spring terminal not being opposed to said at least one contact section of said second spring terminal such that if said electronic component element breaks along said at least one groove, said electronic component element is not supported by said spring terminals and any electrical connection between said first and second spring terminals via said electronic component element is eliminated.

5,606,303

FLEXIBLE PRINTED CIRCUIT SLEEP SWITCH FOR ELECTRONIC DEVICE

Edward D. Suski, Lake Forest, Calif., assignor to AST Research, Inc., Irvine, Calif.

Filed Apr. 28, 1995, Ser. No. 430,475

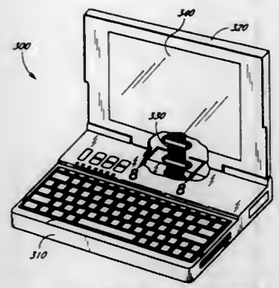
Int. Cl.[6] G01B 7/16

U.S. Cl. 338—210 9 Claims

8. A switch for detecting first and second positions of a first apparatus with respect to a second apparatus, said switch comprising:

a flexible cable which interconnects said first apparatus and said second apparatus, said flexible cable comprising a plurality of signal lines which communicate electrical signals between said first apparatus and said second apparatus, said flexible cable bending when said first apparatus is moved with respect to said second apparatus;

a flexible potentiometer formed on said flexible cable at a location on said flexible cable selected so that said flexible potentiometer bends when said flexible cable bends, said flexible potentiometer having a first degree of bend when said first apparatus is at said first position with respect to said



second apparatus, said flexible potentiometer having a second degree of bend when said first apparatus is at said second position with respect to said second apparatus, said flexible potentiometer having a first resistance when said flexible potentiometer has said first degree of bond, said flexible potentiometer having a second resistance when said flexible potentiometer has said second degree of bend; and

a circuit electrically coupled to said flexible potentiometer, said circuit responsive to said first and second resistances to generate an output signal having a first value when said first apparatus is at said first position with respect to said second apparatus and having a second value when said first apparatus is at said second position with respect to said second apparatus.

5,606,304

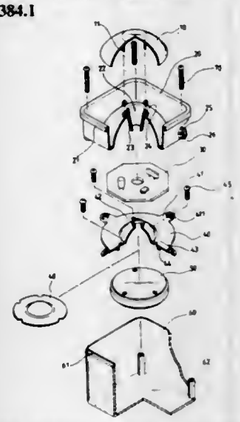
STRUCTURE OF MAGNET TYPE SOUNDER OF AN ELECTRONIC ACOUSTIC ALARM

Ki J. Wan, 4 Fl., No. 13, Alley 1, Lane 212, Sec. 6, Chung Hsiao E. Rd., Taipei, Taiwan

Filed Dec. 14, 1995, Ser. No. 572,448

Int. Cl.[6] G08B *3/00*

U.S. Cl. 340—384.1 **1 Claim**



1. An improved structure of magnet type sounder of electronic acoustic alarms, comprising:

an acoustic resonant lid in the form of a dome with four fixing rods provided there on;

a sound transmitting case having a down bending edge provided on the periphery thereof and having a spherical dome surface protruded at the center thereof, a through hole extending down to form a flared acoustic pipe column being provided at the center of said spherical dome surface, and four fixing holes being provided on said spherical dome surface for fixing said acoustic resonant lid, a positioning sleeve each with a through hole being provided at each of the four corners on the bottom of said sound transmitting case;

a supporting plate in the form of a round plate, at the locations on said round plate corresponding to those positions of said positioning sleeves of said sound transmitting case there being provided with a plurality of protruding plates each having a locating column, said supporting plate having at the center thereof another spherical dome surface which has an acoustic pipe three screw holes being provided on the periphery of said another spherical dome surface, an encircling plate being provided beneath said supporting plate to hold therein a sound-film and a magnet, then a plurality of screws being screwed down in said screw holes on said supporting plate for receiving said sound-film and said magnet beneath said supporting plate;

a main case body having an inserting plate portion for inserting in said down bending edge of said sound transmitting case, four fixing columns being provided at the four corners of said main case body;

said sound emitting circuit board is placed on the acoustic pipe on said another spherical dome surface of said supporting plate, while said sound-film and said magnet are received beneath said supporting plate, the assembled members are placed in said main case body, and said sound transmitting case having said flared acoustic pipe column is placed thereon to render said acoustic pipe column to fit over said acoustic pipe, said acoustic resonant lid then is placed on said acoustic pipe column, as result, the object of volume reducing can be achieved.

5,606,305

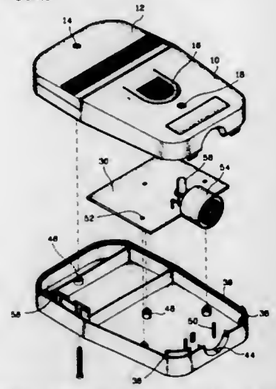
ULTRA-SONIC DOG-EXPELLING DEVICE

Te C. Jan, 24F-1 No. 161, Sung-Teh Rd., Taipei 110, Taiwan

Filed Mar. 25, 1996, Ser. No. 621,236

Int. Cl.[6] G08B *3/10*

U.S. Cl. 340—384.2 **1 Claim**



1. An ultrasonic dog-expelling device to generate an intermittent oscillation frequency to annoy a dog's hearing sense to make it impatient, comprises:

an upper casing including two half portions, of which one having a rectangular battery lid and a screw hole; other half portion thereof formed into a stair case portion, top of said half portion having a push spot, and a small round through hole; inner surface thereof having a screw hole and a stud under said push spot; inner wall thereof having a flange, and inner wall edge thereof having two click grooves and two fastening tongues; a semi-circular arch furnished between said two fastening tongues;

a lower casing including two half portions, of which one being a rectangular member, while other half portion thereof formed into a staircase portion; inner wall thereof having an indented edge; inner wall edge thereof having two click grooves and two fastening tongues corresponding to said click grooves and said fastening tongues on said upper casing; a semi-circular arch furnished between said click grooves to be opposite to said semi-circular arch on said upper casing so as to form into a round opening; inner top surface of said lower casing having a screw hole, three round studs and three studs; outer bottom surface of said lower casing having a clip and a screw hole;

an ultra-sonic oscillation circuit board comprises an unstable multi-oscillator which having two triggering units be able to charge and to discharge repeatedly so as to become an oscillation circuit, and having a capacitor to filter D.C. (direct current) and a transformer for converting resistance into an intermittent ultra-sonic-wave oscillation frequency, and having an amplification transistor to drive a LED for indicating working condition of the said circuit; said circuit board having three round holes;

said upper casing and said lower casing formed into a closed case; and said intermittent oscillation circuit able to generate an intermittent frequency to stimulate and annoy hearing sense of a dog to obtain the effect of repelling the dog.

5,606,306

VEHICLE ANTI-THEFT ENGINE CONTROL DEVICE

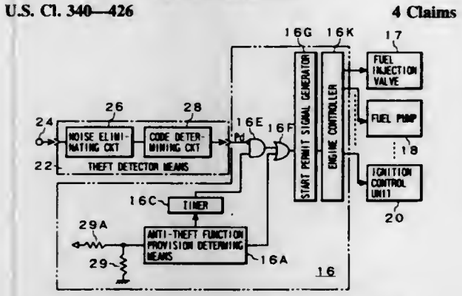
Eiji Mutoh; Susumu Maeda, and Shinichi Kubota, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 5, 1995, Ser. No. 464,376

Claims priority, application Japan, Sep. 28, 1994, 6-257369

Int. Cl.[6] B60R *25/10*

U.S. Cl. 340—426 **4 Claims**



1. A vehicle anti-theft engine control device comprising:

an engine control means for controlling a start of an engine in response to a start permit signal;

an anti-theft function provision determining means for determining whether said engine is equipped with an anti-theft device or not and for issuing a signal indicating the presence of the anti-theft function or a signal indicating the absence of the anti-theft function;

a theft detector means for receiving and checking an ID signal indicating a legitimate starting operation of the engine and issuing a validation signal; and

means for issuing a start permit signal in response to one of the validation signal from said theft detector means and the signal indicating the absence of the anti-theft function; said theft detector means being demountably mounted on a circuit board of said engine control means.

5,606,307

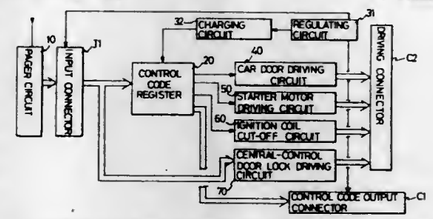
CONTROL CIRCUIT FOR AN AUTOMOBILE

Jack Kuan, 5th Fl., No. 8-4, Lane 30, Wuchuan St., Panchiao City, Taipei Hsien, Taiwan

Filed Nov. 29, 1995, Ser. No. 564,557

Int. Cl.[6] B60R *25/10*

U.S. Cl. 340—426 **7 Claims**



1. A control circuit for an automobile having an ignition switch with an ACC position and a start position, a starter motor, and an ignition coil, comprising:

a pager circuit for receiving a digital signal that includes sequences of control codes from a telephone company resulting from a telephone call made thereto;

a control code register connected with the pager circuit for storing the control codes from the pager circuit;

a power circuit having a regulation circuit for regulating an electric power source from the automobile for supplying the electric power source from the automobile for supplying electric power required by the control circuit;

an alarm driving circuit for outputting audio signals to indicate the automobile is being stolen;

an activating circuit of an automobile door, said activating circuit connected to the alarm driving circuit for receiving a signal from the control code register and activating the alarm driving circuit when the door is opened by an unauthorized person;

a starter motor controlling circuit connected to the alarm driving circuit and the control code register for turning off the starter motor when it receives said signal from the control code register and when the ignition switch is in the ACC position, and activating the alarm driving circuit when the ignition switch is in the start position;

an ignition coil cut-off circuit connected to the control code register for cutting off the ignition coil when it receives said signal from the control code register; and

a central-control door lock activating circuit in connection with the control code register for controlling door locks in response to the signal therefrom.

5,606,308

METHOD AND SYSTEM FOR CONTROLLING THE ILLUMINATION OF A VEHICULAR LAMP AND FOR MONITORING THE STATE OF A SWITCH CONNECTED THERETO

Mark C. Pinkowski, Livonia, Mich., assignor to Kelsey-Hayes Company, Livonia, Mich.

Filed Aug. 7, 1995, Ser. No. 511,685

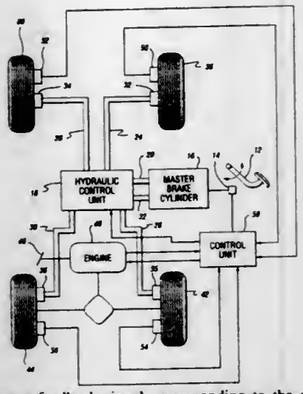
Int. Cl.[6] B60Q *11/00*

U.S. Cl. 340—458 **12 Claims**

1. In an automotive vehicle, a method for controlling the illumination of a lamp and for monitoring a state of a switch associated therewith, the method comprising:

generating a control signal having a drive operating mode and a feedback operating mode;

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generating a feedback signal corresponding to the state of the switch during the feedback operating mode of the control signal;

generating a lamp drive signal during the drive operating mode of the control signal, the lamp drive signal for illuminating the lamp based on the feedback signal; and

providing a single multiplexed connector, the connector establishing a path for the lamp drive signal to the lamp during the drive operating mode of the control signal and establishing a path for the feedback signal from the switch during the feedback operating mode of the control signal.

5,606,309

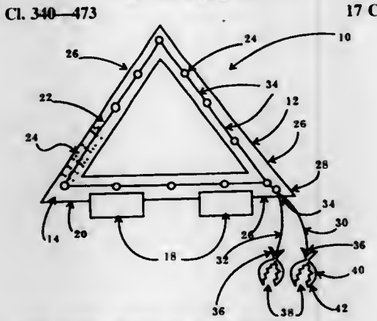
ROAD HAZARD WARNING APPARATUS

Frank Smith, 553 3/4 Washington Blvd., Venice, Calif. 90291

Filed Jan. 31, 1995, Ser. No. 381,645

Int. Cl.[6] B60Q *7/00*

U.S. Cl. 340—473 **17 Claims**



1. A road hazard warning device comprising:

a generally triangular planar member having a front side and a rear side, said planar member being fabricated from a flexible sheet capable of being rolled or folded into a smaller size for storage;

a light reflective coating applied to said front side of said planar member;

a plurality of lights attached adjacent the outer peripheral edges of said generally triangular, planar member by being adhered to the surface of said planar member;

means, connected to said plurality of lights for supplying electrical power to said plurality of lights; and,

means, attached to said rear side of said planar members, for releasably holding, at least a portion of said rear side of said planar member to a vehicle.

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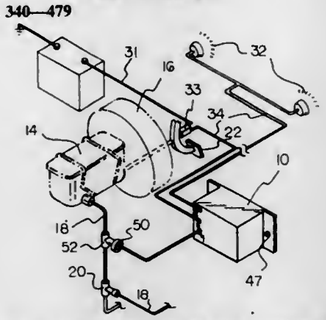
SAFETY BRAKING CONTROL FOR A VEHICLE THAT IS RESPONSIVE TO HARD BRAKING BY A DRIVER OF THE VEHICLE

Christopher M. Egger, and Lori D. Egger, both of 2221 Maple Rose Dr., Las Vegas, Nev. 89134

Filed Sep. 26, 1995, Ser. No. 533,696

Int. Cl.[6] B60Q *1/44*

U.S. Cl. 340—479 **1 Claim**



1. A safety braking control for use with a vehicle, the vehicle having a hydraulic braking system actuateable through a brake pedal and at least one tapable hydraulic brake line, the vehicle further having an electrical braking indication system actuateable through a brake pedal switch that is in operative association with the brake pedal and a set of brake lights that is energized via an electrical power source and controlled through the brake switch, the safety braking control being responsive to hard braking pressure applied by a driver of the vehicle for providing a rapidly flashing visual warning of hard braking to a rearwardly positioned driver of another vehicle, the safety braking control comprising, in combination:

an electrical pressure transducer coupleable to the hydraulic brake line of the hydraulic braking system of the vehicle, the hydraulic pressure transducer having an output for transmitting a lower electrical signal when hydraulic braking pressure within the hydraulic line is raised above a normal level as the driver applies an above normal pressure to the brake pedal of the vehicle, the hydraulic pressure transducer further transmitting a higher electrical signal through the output when the hydraulic braking pressure within the hydraulic line is raised to a level that is no greater than the normal level as the driver applies a normal pressure to the brake pedal; and

a brake light control circuit including:

a braking mode driver transistor having an emitter terminal, a grounded collector terminal, and a base terminal;

a braking flasher driver transistor having an emitter terminal, a grounded collector terminal, and a base terminal;

a mode control comparator having a positive input terminal, a negative input terminal, and an output terminal coupled to the base terminal of the braking mode driver transistor;

a flasher control comparator having a positive input terminal, a negative input terminal, and an output terminal coupled to the base terminal of the braking flasher driver transistor;

a single pole double throw mode electrical relay having a coil with a positive terminal that is coupleable to the brake pedal switch of the braking indication system and a negative terminal coupled to the emitter terminal of the braking mode driver transistor, a normally opened switching contact that is coupleable to the brake pedal switch of the braking indication system, and a normally closed switching contact that is coupleable to the brake pedal switch of the braking indication system and the set of brake lights;

a double pole double throw flasher electrical relay having a coil with a positive terminal coupled to the normally opened switching contacts of the mode electrical relay and a negative terminal coupled to the emitter terminal of the braking flasher drive transistor, a first normally opened switching contact coupled in parallel with the normally closed switching contact of the mode electrical relay, a second normally opened switching contact, and a normally closed switching contact, the flasher electrical relay having an off mode of operation with its normally opened contacts remaining opened and its normally closed contacts remaining closed to thereby prevent energization of the set of brake lights, the flasher electrical relay further having an on mode of operation with its normally closed contacts being opened and its normally opened contacts being closed to thereby deenergize the brake lights,

the mode electrical relay having a normal braking mode of operation with its normally closed contacts remaining closed and its normally opened contacts remaining opened to thereby energize the set of brake lights in a constant manner and further deenergize the flasher electrical relay, the mode electrical relay further having a hard braking mode of operation with its normally closed contacts being opened and its normally opened contacts being closed to thereby deenergize the set of brake lights and energize the flasher electrical relay;

a first discharge resistor and a second discharge resistor with the first discharge resistor coupled between the normally opened contacts of the mode electrical relay and the second discharge resistor coupled to ground and the normally closed switching contact of the flasher electrical relay;

adjustable first voltage divider means coupleable to the brake pedal switch of the braking indication system and further coupled to ground and the negative input of the mode control comparator for providing a first fixed electrical reference signal thereto;

a second voltage divider means coupleable to the brake pedal switch of the braking indication system and further coupled to the pressure transducer and the positive input terminal of the mode control comparator for providing an electrical actuating input signal to the mode control comparator that is based on receipt of one of the electrical signals from the pressure transducer, the mode electrical relay being placed in a normal braking mode by the mode control comparator and braking mode driver transistor when the input signal provided by the second voltage divider means is greater than the first fixed reference signal being provided by the first voltage divider means, the mode electrical relay further being placed in a hard braking mode by the mode control comparator and braking mode driver transistor when the input signal provided by the second voltage divider means is less than the first fixed reference signal being provided by the first voltage divider means;

third voltage divider means coupleable to the brake pedal switch of the braking indication system and further coupled to ground and the positive input of the flasher control comparator for providing a second fixed reference signal thereto;

a timing capacitor coupled to ground, the normally closed contacts of the flasher relay, and the negative input terminal of the flasher control comparator for providing an input signal thereto when charged to a given level, the flasher electrical relay being placed in the off mode of operation when the input signal provided by the timing capacitor via the flasher control comparator is less the second fixed reference signal provided by the third voltage divider means, the flasher electrical relay further being placed in the on mode of operation when the input signal provided by the timing capacitor exceeds the second fixed reference signal generated by the third voltage divider means, thereby creating a discharge circuit for the timing capacitor through the second discharge resistor;

a first timing circuit formed of a capacitor and a resistor coupled in parallel with each other and with the coil of the flasher electrical relay to allow for a temporal delay to be realized to thereby permit the set of brake lights of the vehicle to be flashed on and off at a specific rate; and

a second timing circuit formed of a capacitor and a resistor coupled in parallel with each other and with the coil of the mode electrical relay to allow for a minimum time that the mode electrical relay remains in the hard braking mode.

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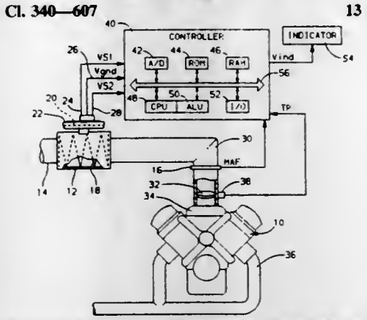
AIR FILTER DIAGNOSTIC

Jeffrey M. Polidan, Fenton; Dennis P. Stenson, West Bloomfield, and Jacqueline A. Jolliffe, Midland, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 30, 1995, Ser. No. 521,254

Int. Cl.[6] G08B *21/00*

U.S. Cl. 340—607 **13 Claims**



1. A method for diagnosing deterioration of an internal combustion engine intake air filter, the deterioration characterized by significant airflow restriction across the intake air filter, comprising the steps of:

defining a minimum degree of airflow restriction across the intake air filter corresponding to a deteriorated intake air filter;

generating a schedule of pressure drop values across a sample air filter having the established minimum degree of airflow restriction, as a function of airflow through the sample air filter;

sensing pressure drop across the intake air filter;

sensing airflow through the intake air filter;

referencing the pressure drop value corresponding to the sensed airflow, from the schedule of pressure drop values;

comparing the referenced pressure drop value to the sensed pressure drop; and

diagnosing a deteriorated intake air filter when the sensed pressure drop exceeds the referenced pressure drop value.

5,606,312

Patent Not Issued For This Number

5,606,313

LOW POWER ADDRESSABLE DATA COMMUNICATION DEVICE AND METHOD

Steven P. Allen, Mesa; Scott T. Demarest, and Thomas R. Troksa, both of Gilbert, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 165,212, Dec. 10, 1993, abandoned. This application Nov. 14, 1995, Ser. No. 558,619

Int. Cl.[6] G08B *5/22;* **H04B** *7/00;* **H04Q** *3/02;9/14*

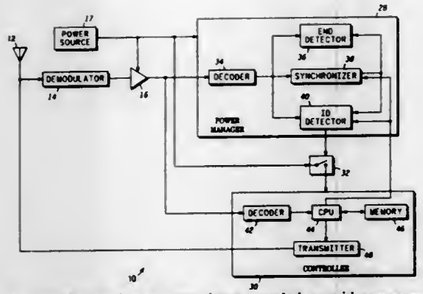
U.S. Cl. 340—825.54 **19 Claims**

1. A low power, addressable data communication device comprising:

means for obtaining a data message having a wake-up section and a session section, said obtaining means including a receiver for continuously monitoring for said data message;

a power manager having an input coupled to said obtaining means and having an output, said power manager for detecting a predetermined identification code from said wake-up section of said data message by continuously monitoring for said identification code and coupling said output to a battery when said predetermined identification code is detected; and

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a controller having a power input coupled to said power manager output and having a data input coupled to said obtaining means, said controller being configured to process said session section of said data message after said power manager detects said predetermined identification code, wherein said wake-up section of said data message combines wake-up data with a clock signal, and said power manager comprises:

a decoder for separating said clock signal from said wake-up data;

a synchronization circuit coupled to said decoder, said synchronization circuit being configured to detect a predetermined preamble code in said wake-up data; and

an ID detection circuit coupled to said synchronization circuit, said ID detection circuit being configured to determine when a predetermined identification code follows said predetermined preamble code in said wake-up data.

5,606,314

INFORMATION PROCESSING SYSTEM CONNECTED BY RADIO COMMUNICATION

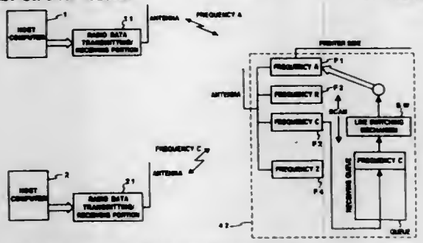
Shunya Mitsuhashi, Tokyo, and Ken Onodera, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 288,736, Aug. 16, 1994, which is a continuation of Ser. No. 790,522, Nov. 12, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 487,563

Claims priority, application Japan, Nov. 14, 1990, 2-306226; Nov. 14, 1990, 2-306229; Nov. 20, 1990, 2-312656; Oct. 11, 1991, 3-290318

Int. Cl.[6] H04Q *1/00*

U.S. Cl. 340—825.69 **17 Claims**



1. A data processing apparatus comprising:

receiving means for receiving a carrier wave which is modulated by data;

identifying means for identifying a frequency of the received carrier wave;

extracting means for extracting the data by demodulating the received carrier wave;

a plurality of data interpreting means; and

table means for storing a correspondence of each data interpreting means to a frequency of the carrier wave,

wherein said apparatus selects one of said plurality of data interpreting means in accordance with the frequency of the received carrier wave identified by said identifying means and a content of said table means, and causing the selected one of said plurality of data interpreting means to interpret the extracted data.

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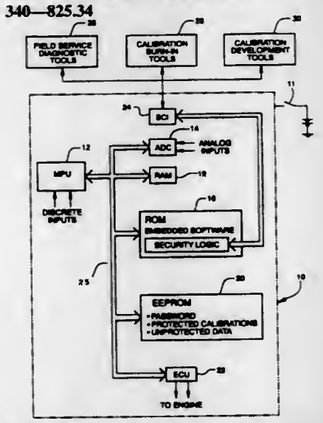
SECURITY METHOD FOR PROTECTING ELECTRONICALLY STORED DATA

Ronald E. Gaskins, Kokomo, Ind., assignor to Delco Electronics Corp., Kokomo, Ind.

Filed Dec. 12, 1994, Ser. No. 353,745

Int. Cl.[6] G01M *15/00*

U.S. Cl. 340—825.34 **9 Claims**



1. In an electronic control module for an internal combustion engine comprising a microprocessor, a ROM containing a controller program and a data security program and a non-volatile memory having data protected addresses including a password address, means for reading and writing protected data to the data protected addresses, and communications means for receiving and sending messages; the method of maintaining secrecy of protected data comprising the steps of:

activating security by writing a password into the data protected password address;

when security is activated, rejecting messages requesting protected data;

deactivating security by supplying a correct password;

complying with requests for reading or writing protected data when security is deactivated;

entering a command for access to protected addresses irrespective of the state of security to recover said electronic control module without use of a password; and

responding to the command by erasing the protected data and then complying with the command, thereby ensuring the secrecy of the protected data.

5,606,316

SIGNAL INPUT SYSTEM FOR AN ELECTRONIC EQUIPMENT

Norio Matsuda, Saitama-ken, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Apr. 3, 1996, Ser. No. 626,945

Claims priority, application Japan, Apr. 4, 1995, 7-078785

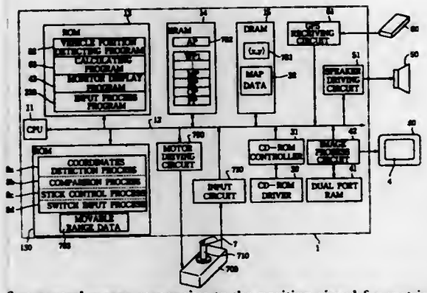
Int. Cl.[6] H03K *17/94*

U.S. Cl. 341—20 **6 Claims**

1. A signal input system for an electronic equipment comprising:

a movable input device provided to be manually moved;

first detector means for detecting the position of the movable input device, and for producing a position signal;



first control means responsive to the position signal for restricting the movement of the movable input device within a predetermined movable range so as to be moved a plurality of predetermined areas;

second detector means for detecting the area in which the movable input device is located, and for producing an area signal;

a memory storing control data for each of said areas;

second control means responsive to the area signal for reading corresponding control data in the memory, and for operating the electronic equipment in accordance with the read out control data.

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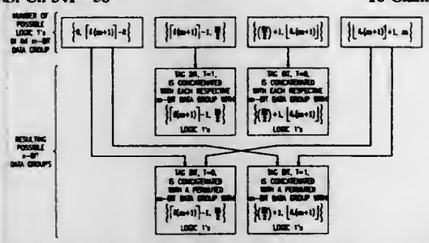
BANDWIDTH EFFICIENCY MBNB CODING AND DECODING METHOD AND APPARATUS

Thomas J. Cloonan, Downers Grove; Robert A. Novotny; Randy M. Olenz, both of Naperville; Gaylord W. Richards, and Michael J. Wojcik, both of Lisle, all of Ill., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 9, 1994, Ser. No. 353,410

Int. Cl.[6] H03M *7/00*

U.S. Cl. 341—58 **16 Claims**



11. A system having an eight-bit parallel input and a serial output which uses a type of 8B9B data encoding for transmission over a serial communication link having a clock recovery circuit at a receiving end, comprising:

a parallel register for temporarily storing each eight-bit parallel group of data bits for encoding;

an octal 2-to 1 multiplexer;

an encoder having eight parallel inputs and eight parallel outputs;

the parallel register having parallel outputs which are connected to eight inputs of the octal 2-to-1 multiplexer and also to the eight inputs of the encoder;

a counter having a serial input and a four bit binary output;

a parallel to serial shift register for temporarily storing each eight-bit parallel group of data bits and serially shifting each eight-bit group to the serial input of the counter;

the counter counts a number of logic 1's in each eight-bit group of data bits and outputs a binary number corresponding to a number of logic 1's in each eight-bit group of data bits;

a tag bit logic circuit is connected to the four bit binary output of the serial counter and receives the binary number corresponding to the number of logic 1's in each eight-bit group of data bits, and also has an output which is one of nine outputs that provide a nine bit group that respectively corresponds to each eight-bit group of data bits;

the tag bit logic circuit outputs a logic 1 if the number of logic 1's in the present eight-bit group of data bits is two, three or four, and outputs a logic 0 if the number of logic 1's in the present eight-bit group of data bits is zero, one, five, six, seven or eight;

the tag bit logic circuit also outputs a select output that is a logic 0 if the number of logic 1's in the present eight-bit group is two, three, four, five, or six, and a logic 1 if the number of logic 1's in the present eight-bit group is zero, one, seven or eight;

the select output is connected to a select output of the octal 2-to-1 multiplexer to select either a first set of eight inputs, which are connected to the parallel register, to switch to an eight line output, or a second set of eight inputs, which are connected to the outputs of the encoder, to switch to the eight line output;

the encoder circuit encodes eighteen eight-bit groups of data bits having a number of logic 1's equal to 0, 1, 7, or 8, to eighteen eight-bit groups having four logic 1's, and

a nine-bit parallel to serial shift register having nine parallel inputs connected to the eight outputs of the octal 2-to-1 multiplexer and the tag bit output and a serial output connected to the system serial output terminal;

wherein each eight-bit group of data bits is translated into a respective nine bit group of data bits and each nine bit groups has at least three logic 1's and no more than six logic 1's contained therein to facilitate clock recovery from the serial data.

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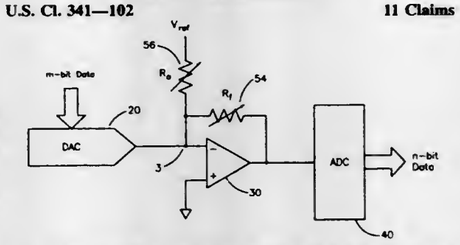
APPARATUS FOR CONVERSION OF SCALED BINARY DATA

Alan S. Feldman, Phoenix, Ariz., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 30, 1994, Ser. No. 316,317

Int. Cl.[6] H03M *1/16;1/20*

U.S. Cl. 341—102 **11 Claims**



1. An apparatus for converting an m-bit digital data having a scale factor of K_1 to an n-bit digital data having a scale factor of K_2, comprising:

a) a digital to analog converter, having an input adapted to receive the m-bit digital data, for outputting a first analog signal representative of a value associated with the m-bit digital data;

b) an amplifier, operatively connected to the digital to analog converter, for receiving the first analog signal to output a

second analog signal, the amplifier having a factor of K_2/K_1, the second analog signal being equal to the first analog multiplied by the factor, such that the second analog signal has a value with the scale factor of K_2 associated therewith; and

c) an analog to digital converter, having an input adapted to receive the second analog signal, for converting the second analog signal to the n-bit digital data, the n-bit digital data having the scale factor of K_2 associated therewith, the value representative of the n-bit digital data being essentially equal to the value representative of the m-bit digital data.

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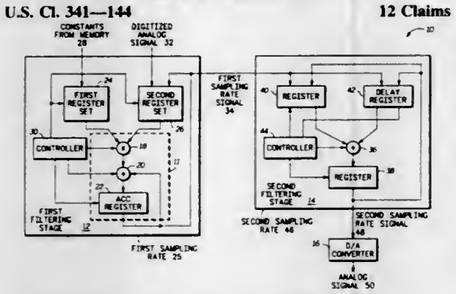
METHOD AND APPARATUS FOR INTERPOLATION AND NOISE SHAPING IN A SIGNAL CONVERTER

David Yatim, and James W. Girardeau, Jr., both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 7, 1995, Ser. No. 512,251

Int. Cl.[6] H03M *1/66*

U.S. Cl. 341—144 **12 Claims**



1. A digital-to-analog converter comprising:

a first filtering stage that receives a digitized analog signal, the first filtering stage includes:

a multiply-accumulator;

a first set of registers that stores coefficient information;

a second set of registers that temporarily stores intermediate resultants;

a controller operably coupled to the multiply-accumulator, the first set of registers, and the second set of registers, wherein the controller controls routing of the digitized analog signal, the coefficient information, and the intermediate resultants to the multiply-accumulator at a first sampling rate to perform an anti-aliasing filter and a first comb filtering function at the first sampling rate, and wherein the first filtering stage produces a first sampling rate signal;

a second filtering stage operably coupled to the first filtering stage, the second filtering stage includes:

an adder;

a third set of registers, wherein a first portion of the third set of registers stores adder results from the adder, and wherein a delay register of the third set of registers stores delay information;

a controller operably coupled to the adder and the third set of registers, wherein the controller controls routing of the first sampling rate signal, the delay information, and the adder results to the adder at a second sampling rate to perform a second comb filtering function and a noise shaping filter at the second sampling rate, wherein the second filtering stage produces a second sampling rate signal; and

a digital-to-analog converter operably coupled to the second filtering stage, wherein the digital-to-analog converter converts the second sampling rate signal into an analog signal.

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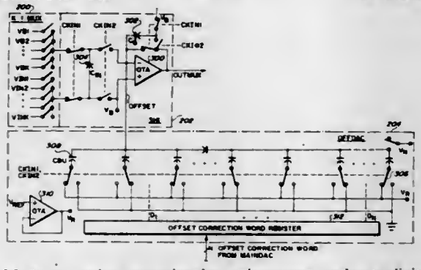
METHOD AND APPARATUS FOR MICROPOWER ANALOG-TO-DIGITAL CONVERSION IN AN IMPLANTABLE MEDICAL DEVICE

Jonathan A. Kleks, Northridge, Calif., assignor to Pacesetter INc., Sylmar, Calif.

Filed Dec. 6, 1994, Ser. No. 349,858

Int. Cl.[6] H03M *1/38*

U.S. Cl. 341—161 **26 Claims**



16. A successive approximation, micropower analog-to-digital converter (ADC) for converting an analog input voltage, the ADC including sampling circuitry for generating a sampled analog input signal, the ADC comprising:

means for generating a reference voltage, a bias voltage, and a ground voltage;

a digital-to-analog converter (DAC) having a plurality of capacitors configured to produce a plurality of binary-weighted DAC analog output signals, each capacitor being coupled through a capacitor switch, wherein each capacitor switch position corresponds to respective bits of an ADC digital output signal, the DAC further including means for producing a plurality of net capacitor voltages corresponding to the difference between the sampled analog input signal and a respective one of the plurality of DAC analog output signals, each net capacitor voltage having a prescribed settling time associated therewith; and

a comparator, having an acquisition phase and a latch phase, for determining the capacitor switch positions, the comparator including:

means for successively comparing each net capacitor voltage to the bias voltage during a respective acquisition phase to produce a difference signal;

conversion means for converting the difference signal to a logic level bit decision during a portion of a respective latch phase; and

means for asychronously updating the ADC digital output signal and for asynchronously updating a next net capacitor voltage as soon as a bit decision results;

whereby the next net capacitor voltage starts to settle within a remaining portion of the latch phase;

whereby utilization of the remaining portion of the latch phase results in a reduction in required acquisition phase duration and a corresponding decrease in power requirements.

5,606,321

SIGNAL-PROCESSING CIRCUIT

Kazuyuki Suga, Tokyo, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

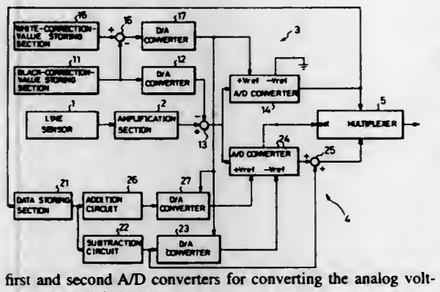
Filed May 12, 1995, Ser. No. 440,483

Claims priority, application Japan, Jun. 22, 1994, 6-140103

Int. Cl.[6] H03M *1/46*

U.S. Cl. 341—161 **6 Claims**

1. A signal-processing circuit, which converts an analog voltage that has been obtained by reading an original document by using a line sensor consisting of a plurality of light-receiving elements that are linearly aligned into digital data and releases the digital data, comprising:



first and second A/D converters for converting the analog voltage into digital data;

a first reference-voltage setting means for setting a lower-limit reference voltage and an upper-limit reference voltage for the first A/D converter;

a data-storing section for storing the digital data obtained by the first A/D converter; and

a second reference-voltage setting means for setting a lower-limit reference voltage for the second A/D converter to a voltage that is lower than the voltage corresponding to the digital data stored in the data-storing section and that is higher than the lower-limit reference voltage set by the first reference-voltage setting means, as well as for setting an upper-limit reference voltage for the second A/D converter to a voltage that is higher than the voltage corresponding to the digital data stored in the data-storing section and that is lower than the upper-limit reference voltage set by the first reference-voltage setting means,

wherein the digital data is released based on the data obtained by the second A/D converter.

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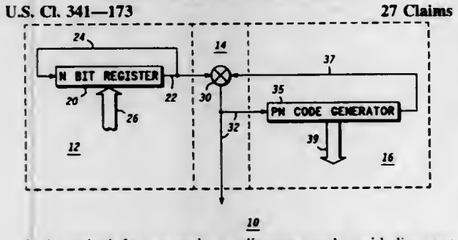
DIVERGENT CODE GENERATOR AND METHOD

Steven P. Allen, and Robert J. Durette, both of Mesa, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 24, 1994, Ser. No. 327,953

Int. Cl.[6] G08C *19/12;* **H04L** *17/02*

U.S. Cl. 341—173 **27 Claims**



1. A method for generating a divergent code, said divergent code, for example, for ensuring that a population of transponders in devices such as RF tags having nominally identical apparatus for generating a delay will generate different delays, said apparatus being responsive to said divergent code, said delay being introduced prior to responding to an interrogation signal for polling said population of transponders, said method comprising steps of:

generating a first bit stream from a number generator;

combining, via a combiner having a first input coupled to an output of a memory, a second input coupled to an output of said number generator and an output coupled to an input of said number generator, a predetermined number from said memory with said first bit stream to provide a second bit stream; and

feeding said second bit stream into a feedback port of said number generator.

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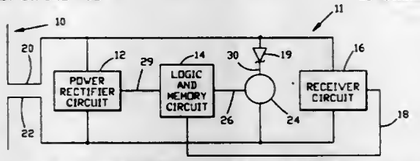
DIODE MODULATOR FOR RADIO FREQUENCY TRANSPONDER

Harley K. Heinrich, Brewster, and Daniel J. Friedman, Tarrytown, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 31, 1995, Ser. No. 521,898

Int. Cl.[6] H04B *1/59;* **H04Q** *1/18*

U.S. Cl. 342—51 **13 Claims**



1. A radio frequency (RF) transponder comprising;

an antenna for receiving power and information transported from a base station to the RF transponder by means of an RF electromagnetic (EM) wave;

a first means for receiving RF power from the antenna and for distributing energy to components of the transponder, said first means comprising an RF current rectification means;

a second means for controlling power radiated from the antenna, said second means for controlling power radiated from the antenna receiving energy only from said first means;

a third means for receiving information from the antenna, said third means for receiving information communicating information to the second means for controlling power; and

a fourth means for RF current rectification, said fourth means for RF current rectification being apart from said first means, said fourth means for RF current rectification controlled by said second means for controlling power to conduct substantial RF current from the antenna in a first state of said second means for controlling power, and to not conduct substantial RF current from the antenna in a second state of said second means for controlling power; thereby modulating the amplitude of the RF current in the antenna and modulating the RF EM radiation backscattered from the antenna.

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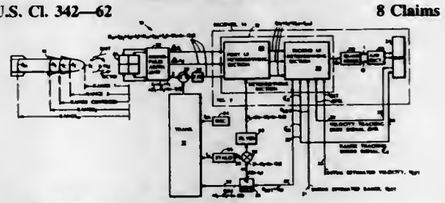
RADAR SYSTEM

Walter S. Justice, Lexington; David A. Marquis, Medford, and Ronald A. Wagner, Chelmsford, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Dec. 7, 1995, Ser. No. 569,374

Int. Cl.[6] G01S *13/66*

U.S. Cl. 342—62 **8 Claims**



1. A radar system, comprising:

a transmitter for transmitting a series of radio frequency (RF) pulses having sequential, incrementally changing carrier frequencies;

a receiver adapted to receive energy from points reflecting such transmitted RF pulses such receiver, comprising:

a heterodyning section, responsive to a range tracking error signal and a velocity tracking error signal for producing a series of pulsed signals for each one of the scattering points, each one of the pulsed signals sequentially changing in phase at a rate related to the range to the scattering point producing such one of the pulsed signals; and

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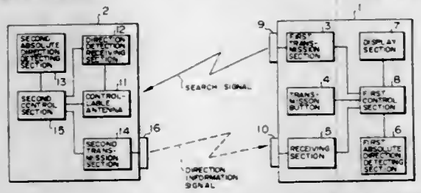
a processor, responsive to each one of the series of pulsed signal produced by the heterodyning section for determining from such frequency spectrum thereof the range tracking error signal and the velocity tracking error signal.

5,606,325

DETECTION OBJECT SEARCHING DEVICE

Hideki Masudaya, Miyagi-ken, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Oct. 11, 1995, Ser. No. 540,859
Claims priority, application Japan, Oct. 31, 1994, 6-267515
Int. Cl.[6] G01S *5/02*
U.S. Cl. 342—357 **6 Claims**



1. A detection object searching device including a portable operation unit and a body unit installed in a detection object, wherein said operation unit includes:

a first transmission section for transmitting a search signal upon operation of a transmission button;

a receiving section for receiving a direction information signal transmitted from said body unit;

a first absolute direction detecting section for generating a first absolute direction signal indicating an absolute direction;

a first control section for generating direction indication information indicating the direction of the current location of said detection object, based on said direction information signal and said first absolute direction signal; and

a display section for displaying the direction indication information;

and wherein said body unit includes:

a direction detection receiving section which searches the incoming direction of the received search signal and generates an incoming direction signal;

a second absolute direction detecting section for generating a second absolute direction signal that indicates an absolute direction;

a second control section which generates said direction information signal indicating the direction of said detection object with respect to said operation unit, based on said incoming direction signal and said second absolute direction signal; and

a second transmission section for transmitting said direction information signal.

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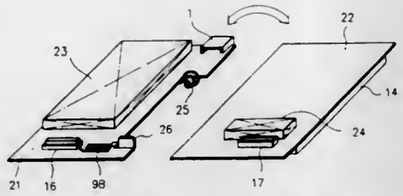
HIGH GAIN PORTABLE RADIO SELECTIVE CALL RECEIVER

Takayuki Asai, Tokyo, and Masaharu Yagi, Shizuoka, both of Japan, assignors to NEC Corporation, Japan

Continuation of Ser. No. 11,177, Jan. 29, 1993, abandoned.
This application Feb. 6, 1995, Ser. No. 384,231
Claims priority, application Japan, Jan. 29, 1992, 4-038826
Int. Cl.[6] H01Q *1/24*
U.S. Cl. 343—702 **7 Claims**

1. A radio selective call receiver, comprising:

a first circuit board on which are mounted an antenna, an antenna tuning circuit connected to the antenna and operating at an antenna tuning frequency, and a high frequency circuit connected to the antenna tuning circuit, the high frequency circuit operating at a first frequency which is resonant with the antenna tuning frequency of the antenna tuning circuit;



a second circuit board having a low frequency circuit mounted thereon and operating at a second frequency lower than the antenna tuning frequency; and

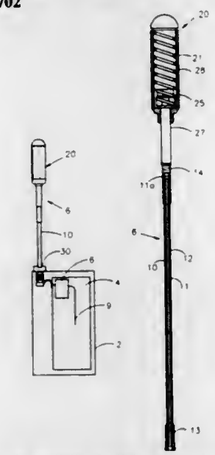
connection means for connecting the first and second circuit boards to each other and for electrically connecting the high frequency circuit and the low frequency circuit to each other, the connection means including a microstrip line in a zigzag pattern along a substantially flat plane to mutually nullify magnetic fields generated when current flows through the microstrip line, the zigzag pattern being formed by only three parallel lengthwise microstrip line portions, the microstrip line having a high impedance with respect to the antenna tuning frequency.

5,606,327

ELECTRICAL ANTENNA ASSEMBLY AND ELECTRICAL DEVICE INCLUDING SAME

Michael Elliott, P.O.B. 3, and Matti Martiskainen, P.O.B. 44, both of Poriya Illit 15208, Israel

Filed Jun. 7, 1995, Ser. No. 485,992
Claims priority, application Israel, Jun. 13, 1994, 110008
Int. Cl.[6] H01Q *1/24; 1/36*
U.S. Cl. 343—702 **17 Claims**



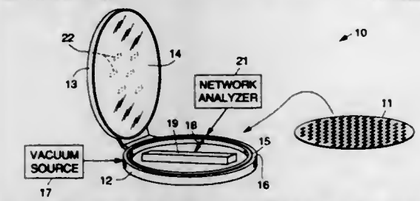
1. An electrical antenna assembly, comprising: a rod antenna having a lower end and an upper end, and a coil antenna carried by the upper end of the rod antenna; said coil antenna including a dielectric core carried by said upper end of the rod antenna and preformed with a helical recess, an electrically-conductive helical coil seated in said recess, an electrical connector connected to one end of said helical coil, a dielectric sleeve enclosing said helical coil; said antenna assembly further comprising a dielectric coupling member formed at one end with a cavity receiving said end of the rod antenna, and secured at its opposite end to said coil antenna, for electrically insulating said coil antenna from said rod antenna, said rod antenna and coil antenna each being of three-eights wavelength; and a common impedance matching circuit connectible either to the rod antenna, or to the coil antenna via said electrical connector.

5,606,328

RF ISOLATION INSPECTION TOOL

Joseph F. Comeau, Thousand Oaks, Calif., assignor to Hughes Electronics, Los Angeles, Calif.

Filed Dec. 26, 1995, Ser. No. 578,841
Int. Cl.[6] H01Q *13/10;* **G01R** *29/08*
U.S. Cl. 343—703 **4 Claims**



1. An RF inspection tool for testing RF leakage of an antenna array comprising a plurality of slot radiator antennas, said RF inspection tool comprising:

a base structure;

a hinged cover coupled to the base structure that comprises a ring that secures a flexible diaphragm at the periphery thereof, and wherein the flexible diaphragm comprises a plurality of flanges disposed at predetermined locations thereon;

an O-ring groove disposed in the base structure at a mating surface between the base structure and the hinged cover;

a vacuum source coupled to the base structure for forming a vacuum within an interior space of the tool when the hinged cover is closed against the base structure;

an RF input connector disposed through the base structure that permits coupling of RF energy to the antenna array;

wherein the antenna array is disposed face up in the interior space of the tool so that the face of the antenna array and the flexible diaphragm is drawn into contact with each other when the vacuum is formed and such that the flexible diaphragm prevents RF leakage out of the radiator slots of the antenna array; and

a network analyzer having an RF output coupled to the RF input connector that is used to couple RF energy to the antenna array and having an RF sensor that is used to probe the flanges disposed on the flexible diaphragm to determine if RF leakage occurs between modules when the antenna is operational.

5,606,329

BUOYANT CABLE ANTENNA

Thomas S. Ramotowski, East Lyme, and Patrick J. Monahan, Gales Ferry, both of Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 22, 1996, Ser. No. 605,779
Int. Cl.[6] H01Q *1/34;* **B22C** *1/22;* **B29C** *39/26*
U.S. Cl. 343—709 **19 Claims**

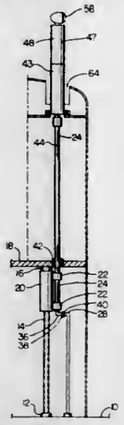
1. A submarine buoyant cable antenna having positive buoyancy comprising a communications antenna electronics package encased in a polymer composition, said polymer composition comprising from about 80 percent to about 85 percent by weight of a room temperature curable thermosetting polymer having a viscosity, before curing, in the range of from about 700 to about 900 centipoise, and from about 15 percent to about 20 percent by weight of microballoons of a size ranging from about 20 to about 100 microns in diameter, the specific gravity of the composition being in the range of from about 0.51 to about 0.65 grams per cubic centimeter to provide said positive buoyancy.

5,606,330

SUBMARINE ANTENNA POSITIONING ASSEMBLY

Edwin H. Wood, North Franklin, and William E. Swanson, North Stonington, Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 22, 1995, Ser. No. 443,912
Int. Cl.[6] H01Q *3/00*
U.S. Cl. 343—766 **5 Claims**



1. An antenna assembly comprising:

an elongated mast slidably mounted in a support structure;

a first rotary electric motor disposed at a proximal end of said mast for moving said mast along the axis of said mast; and

a second rotary electric motor disposed at a distal end of said mast for moving said mast rotatively about said axis;

a stator portion of said first motor being fixed to said mast at said proximal end, and a rotor portion of said first motor being moveable along a shaft parallel to said mast, movement of said first motor rotor portion along said shaft causing corresponding movement of said first motor rotor portion and said mast along said axis;

said shaft extending through the center of said first motor rotor portion; and

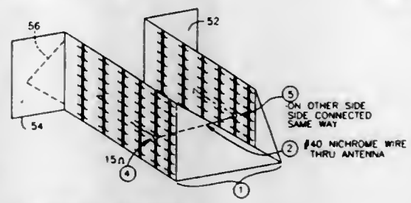
said mast extending through the center of said second motor and comprising a rotatable motor rotor portion of said second motor.

5,606,331

MILLENNIUM BANDWIDTH ANTENNA

John McCorkle, Laurel, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 7, 1995, Ser. No. 418,715
Int. Cl.[6] H01Q *13/02*
U.S. Cl. 343—786 **19 Claims**



1. An antenna comprising:

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a transverse electromagnetic mode antenna section having an input end and an output end;

a resistively loaded parallel plate section connected to said output end of said transverse electromagnetic mode antenna section, said parallel plate section having a plurality of parallel plates;

a plurality of protrusions, each of said protrusions transversely mounted to one of said parallel plates; and

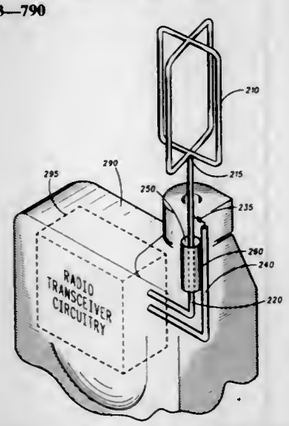
a shunt network electrically connected between said resistively loaded parallel plate section.

5,606,332

DUAL FUNCTION ANTENNA STRUCTURE AND A PORTABLE RADIO HAVING SAME

William H. Darden, IV, Libertyville, Ill.; Kevin M. Thill, Kenosha, Wis., and Christopher N. Kurby, Elmhurst, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 21, 1995, Ser. No. 517,520
Int. Cl.[6] H01Q *9/04*
U.S. Cl. 343—790 **17 Claims**



1. A dual function antenna structure for transceiving a first signal at a first wavelength and a different second signal at a second wavelength, comprising:

a primary antenna element capable of transceiving at the first wavelength;

at least one choke coupled to the primary antenna element and capable of choking at the second wavelength;

a first coaxial feed disposed within the choke and having a center conductor, an inner skin and an outer skin, wherein the center conductor and the inner skin of the first coaxial feed are electrically connected to the primary antenna element to feed therein the first signal having the first wavelength;

a conductive outer surface covering a perimeter of the choke and extending from a second signal connection location in a direction opposite the primary antenna element; and

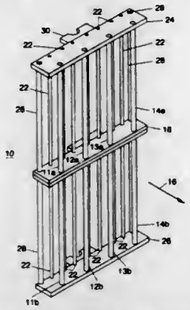
a second feed comprising a first conductor and a second conductor, wherein the first conductor is operatively coupled to the outer skin of the first coaxial feed at the second signal connection location between the primary antenna element and the choke to feed therein the second signal having the second wavelength and wherein the second conductor is operatively connected to the conductive outer surface covering the perimeter of the choke so that at least both the conductive outer surface and the primary antenna element form a secondary antenna element for transceiving the second signal at the second wavelength.

5,606,333

LOW WIND RESISTANCE ANTENNAS USING CYLINDRICAL RADIATING AND REFLECTOR UNITS

Peter W. Hannan, Smithtown, N.Y., assignor to Hazeltine Corporation, Greenlawn, N.Y.

Filed Feb. 17, 1995, Ser. No. 390,735
Int. Cl.[6] H01Q *21/12*
U.S. Cl. 343—813 **23 Claims**



1. An antenna with thin cylindrical radiating and reflector units for low wind resistance, comprising:

a plurality of cylindrical radiating units laterally spaced relative to a forward direction and each having upper and lower radiators, said radiators each including a linear series of nominally one-half wavelength transmission line sections extending in a vertical direction with gaps between said sections and arranged to be fed in series from one end;

said upper and lower radiators of each radiating unit respectively positioned above and below an intermediate level with each said upper radiator configured for lower end excitation feed and each said lower radiator configured for upper end excitation feed;

a beam forming network coupled to said lower end of the upper radiator of each said radiating unit and to said upper end of the lower radiator of each said radiating unit to provide a predetermined multi-beam pattern;

a plurality of laterally spaced cylindrical tuned reflector units positioned behind said radiating units, each said tuned reflector unit including a plurality of conductive segments extending in electrically isolated end-to-end relationship in a vertical direction; and

a support assembly configured to support said radiating units in laterally spaced arrangement and said tuned reflector units in laterally spaced arrangement behind said radiating units.

5,606,334

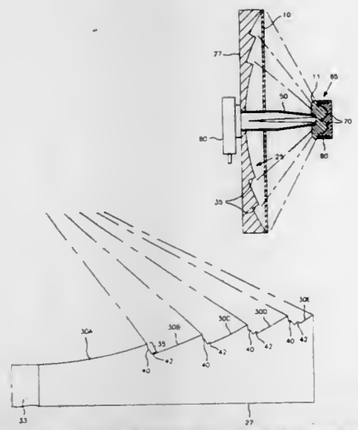
INTEGRATED ANTENNA FOR SATELLITE AND TERRESTRIAL BROADCAST RECEPTION

Sal G. Amarillas, 6404 Salizar Ct., San Diego, Calif. 92111; Edwin D. Bowen, 17523 Rancho De Oro Dr., Ramona, Calif. 92065, and Frederick J. Verd, 2160 Alpine Glen Pl., Alpine, Calif. 91401

Filed Mar. 27, 1995, Ser. No. 410,907
Int. Cl.[6] H01Q *19/12*
U.S. Cl. 343—840 **15 Claims**

1. An integrated antenna system comprising:

a low profile reflector providing a composite outfacing surface comprising a series of concentric, circular, near abutting, parabolic subsurfaces, each one of said subsurfaces being separated from each adjacent one of said subsurfaces by an annular step so that the subsurfaces are positioned in a relatively flat arrangement and shadow areas located between the adjacent reflective subsurfaces, and further each of the parabolic subsurfaces being an annular section of a parabolic dish, shaped and positioned so as to define a common focal point



and having a focal distance shorter than a comparable focal distance for a continuous parabolic dish antenna of comparable diameter;

reflection efficiency improvement means incorporated in said shadow areas to control electromagnetic edge scattering in each successive reflecting surface;

a wave guide fixed at a proximal end thereof to the reflector at a position central to the subsurfaces and extending outwardly therefrom and having an open distal end thereof; and

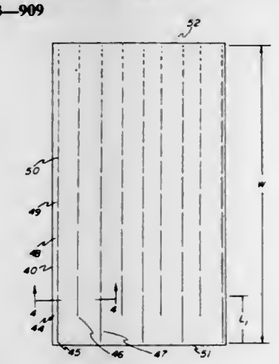
a splash plate and a dielectric lens assembly attached at the distal end of the waveguide in a position to intercept radio waves reflected by the reflector toward the focal point, said assembly directing said radio waves and for amplifying same.

5,606,335

PERIODIC SURFACES FOR SELECTIVELY MODIFYING THE PROPERTIES OF REFLECTED ELECTROMAGNETIC WAVES

Errol K. English, Beaver Creek, and William J. Leeper, Huber Heights, both of Ohio, assignors to Mission Research Corporation, Dayton, Ohio

Filed Apr. 16, 1991, Ser. No. 686,198
Int. Cl.[6] H01Q *15/02*
U.S. Cl. 343—909 **11 Claims**



1. A tapered periodic surface for abutment against a baseline edge of a metal body which metal body is reflective of electromagnetic radiation, said radiation having a frequency, and which metal body at its baseline edge absent a contiguous tapered periodic surface would have a strong diffractive field at said baseline edge, said periodic surface comprising;

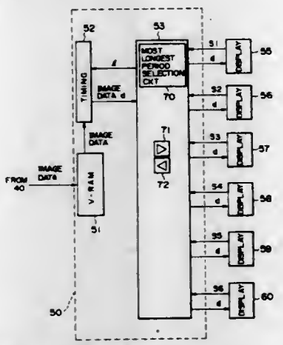
a substrate substantially transparent to said radiation, and having a baseline edge, and a terminal edge, and a face between said edges directly exposed to said radiation, a plurality of reflective conductive metal elements carried by said substrate on its said face, each said element having a dimension of length and width, said elements being arranged in lines, with spaces between lines and spaces between elements in each line, the length of the elements in said lines decreasing as the elements approach the terminal edge, thereby to decrease the reflected proportion of incident rays and increase the transmitted portion of incident rays, gradually from the baseline edge to the terminal edge.

5,606,336

DISPLAY CONTROL APPARATUS

Osamu Yuki, Atsugi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 91,598, Jul. 15, 1993, abandoned.
This application May 2, 1995, Ser. No. 432,718
Claims priority, application Japan, Jul. 16, 1992, 4-210667
Int. Cl.[6] G09G *5/00*
U.S. Cl. 345—1 **4 Claims**



1. A display system, comprising:

an image data generator for generating image data;

a single display control means for controlling the image data generated by said generator; and

a plurality of display devices each having a memory function and each outputting to said display control means a horizontal synchronizing signal using, as a synchronizing signal for image data transferring, a horizontal display timing according to a temperature change therein, with the horizontal synchronizing signal having a horizontal scan period that changes according to the temperature change, wherein

the horizontal synchronizing signal of a maximum period is selected from the horizontal synchronizing signals outputted from said plurality of display devices to said single display control means, the image data transferring is performed according to the horizontal synchronizing signal of the maximum period, and the display device generating the horizontal synchronizing signal of a shorter period than the maximum period is driven in a manner that output voltages to a common driver and a segment driver are made at the same voltage, thereby performing display on said plurality of display devices based on the same image data simultaneously.

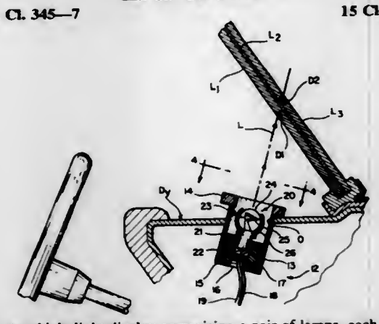
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VEHICLE TURN SIGNAL AND/OR HAZARD LIGHT DISPLAY

Mancelle R. Lloyd, 6111 Briarview Ct., Alexandria, Va. 22310

Filed Aug. 2, 1994, Ser. No. 284,233
Int. Cl.[6] G09G 5/00
U.S. Cl. 345—7 15 Claims



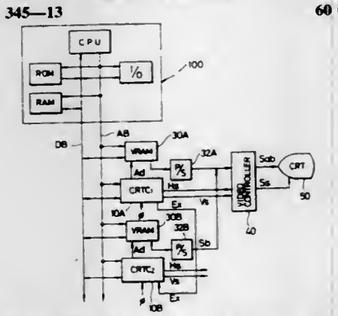
1. A vehicle light display comprising a pair of lamps, each lamp having a filament, each filament having a portion which is rendered incandescet upon being energized by an electric current, each filament portion being of a predetermined configurtion, means for mounting said pair of lamps adjacent a vehicle windshield whereby the light of each incandescent filament portion is projected toward and is replicated as a light display thereupon upon electric current energization of each filament, each filament portion being of a generally V-shaped configuration which creates a generally V-shaped light display, and said mounting means are constructed and arranged for mounting said lamps with said V-shaped filament portions and the light displays thereof being substantially oppositely directed.

5,606,338

DISPLAY CONTROL DEVICE

Hiroshi Takeda, Koganei; Shigeaki Yoshida, Sayama, and Koyo Katsura, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 749,331, Aug. 23, 1991, abandoned, which is a continuation of Ser. No. 454,272, Dec. 21, 1989, abandoned, which is a continuation of Ser. No. 144,279, Jan. 9, 1588, Pat. No. 4,904,990, which is a division of Ser. No. 686,594, Dec. 26, 1984, Pat. No. 4,720,708. This application Sep. 20, 1994, Ser. No. 309,411
Claims priority, application Japan, Dec. 26, 1983, 58-243802
Int. Cl.[6] G09G 1/08
U.S. Cl. 345—13 60 Claims



1. A display control device for use with a display device and a memory, wherein said display control device is formed of a semiconductor integrated circuit, and wherein said display control device accesses the memory to read out image data to be displayed on the display device as an image display formed of horizontal scanning lines with a preselected timing, said display control device comprising:

a terminal;

control means for indicating one of internal and external modes;

counter means, incremented at a rate based on a predetermined timing, for generating a count which is repeated in accordance with a predetermined timing, said counter means being settable to a predetermined value based on a signal applied to said terminal;

address generating means, responsive to said counter means, for generating sequential addresses for accessing said memory;

timing signal generating means, responsive to said counter means, for generating a synchronizing signal; and

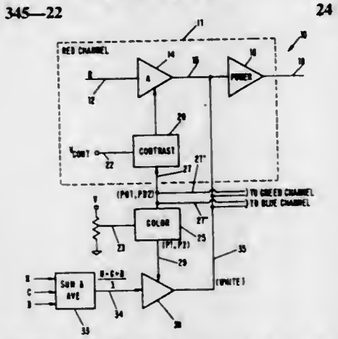
means, responsive to indication of the internal mode by said control means, for providing said synchronizing signal to said terminal, and responsive to indication of the external mode by said control means, for setting the count of said counter means with said predetermined value in accordance with a signal from said terminal.

5,606,339

METHOD AND APPARATUS FOR CONTROLLING THE COLOR SATURATION OF A COLOR MONITOR

Danny Tsong, Taipei; Timothy Chiu, Tao Yuan Hsien, and Johnson Chiang, Nan Tou Hsien, all of Taiwan, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 28, 1994, Ser. No. 234,895
Int. Cl.[6] G09G 1/28
U.S. Cl. 345—22 24 Claims



1. A preamplifier for providing color video signals for application to a color monitor, comprising:

a summing circuit connected to combine respective individual color video signals to provide a combined output video signal;

a plurality of amplifier channels, each connected to receive as inputs respective individual color video signals, each amplifier channel comprising a first amplifier for receiving as input one of said color video signals for producing an amplified color video signal output, and a contrast control circuit connected to control the gain of said first amplifier;

a second amplifier, connected to receive the combined output video signal from said summing circuit for producing a white level output signal, connected to be added to the amplified video signal outputs of said first amplifiers to produce respective color output signals; and

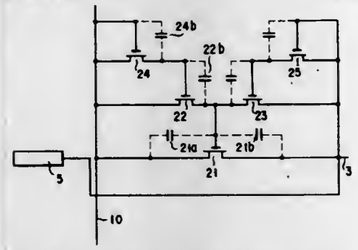
a user adjustable color saturation control circuit connected to control a gain of said second amplifier, and to control the contrast control circuit inversely to the gain of said first amplifier.

5,606,340

THIN FILM TRANSISTOR PROTECTION CIRCUIT

Kouji Suzuki; Shuichi Uchikoga, and Masami Kakinoki, all of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 18, 1994, Ser. No. 292,287
Claims priority, application Japan, Aug. 18, 1993, 5-203902
Int. Cl.[6] G09G 3/36
U.S. Cl. 345—87 17 Claims



1. A thin film transistor protection circuit comprising:

a conductive line formed around a thin film transistor to be protected on a substrate;

a discharging thin film transistor having a gate electrode, and a current path connected between said conductive line and a wiring line connected to the thin film transistor to be protected; and

charging means for charging the gate electrode of said discharging thin film transistor according to a difference in potential between said conductive line and said wiring line,

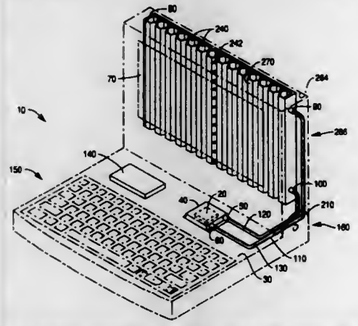
wherein said charging means includes a first charging thin film transistor having a current path connected between said conductive line and the gate electrode of said discharging element thin film transistor and a gate electrode connected to said conducting line, and a second charging thin film transistor having a current path connected between said wiring line and the gate electrode of said discharging thin film transistor and a gate electrode connected to said wiring line.

5,606,341

PASSIVE CPU COOLING AND LCD HEATING FOR A LAPTOP COMPUTER

Rafael E. Aguilera, Simpsonville, S.C., assignor to NCR Corporation, Dayton, Ohio

Filed Oct. 2, 1995, Ser. No. 538,104
Int. Cl.[6] H05K 7/20; G02F 1/133
U.S. Cl. 345—87 20 Claims



1. In a portable computer having a central processor unit (CPU) integrated circuit and a liquid crystal display (LCD), a method for passively warming the LCD with heat generated by the CPU, the method including the following steps:

(a) disposing a heat dissipating coolant-conducting element adjacent a rear surface of said LCD, said element having an inlet port and an outlet port;

(b) surrounding said CPU with a coolant-containing chamber having an inlet port and an outlet port;

(c) providing a first coolant-carrying conductor coupling said outlet port of said coolant-containing chamber with said inlet port of said coolant-conducting element, and providing a second coolant-carrying conductor coupling said outlet port of said coolant-conducting element with said inlet port of said coolant-containing chamber;

(d) providing a biphase coolant in at least a portion of a coolant path defined by said coolant-conducting element, the first and second coolant-carrying conductors, and said coolant-containing chamber;

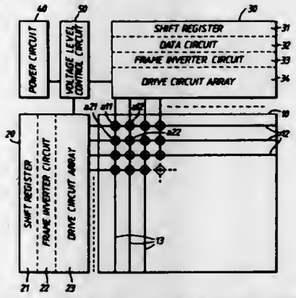
wherein heat generated by said CPU is carried by said coolant in the first conductor to said element where at least a portion of said heat warms said LCD, wherein said coolant changes phase and is returned by the second conductor to said chamber at a lower temperature whereat said CPU is cooled.

5,606,342

LIQUID CRYSTAL DISPLAY SYSTEM

Masato Shoji; Hoko Hirai; Susumu Kondo, and Akio Murayama, all of Kanagawa-ken, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 197,547, Feb. 17, 1994, abandoned, which is a continuation of Ser. No. 837,922, Feb. 20, 1992, abandoned. This application Mar. 6, 1995, Ser. No. 400,014
Claims priority, application Japan, Feb. 20, 1991, 3-047827; Feb. 28, 1991, 3-058197; Apr. 26, 1991, 3-096890; Jan. 31, 1992, 4-015690
Int. Cl.[6] G09G 3/36
U.S. Cl. 345—94 7 Claims



1. A liquid crystal display system driven by RMS voltage, comprising:

a liquid crystal display panel in which a scanning electrode group and a data electrode group, each including multiple electrodes, are positioned facing each other with a gap, liquid crystal is sandwiched between the electrodes and pixels are formed at the positions where the scanning electrode and the data electrodes cross each other, and an electrostatic capacity of the liquid crystal display panel differs depending on whether the liquid crystal is in an ON state or an OFF state;

a scanning electrode drive device directly connected to the scanning electrode group for outputting a pulse wave scanning waveform;

a data electrode drive device directly connected to the data electrode group for outputting a data waveform;

a voltage level control means in which the scanning waveform takes any of the select voltage level Vss, the non-select voltage level Vsn or the intermediate voltage level Vsm, which is a voltage level between select voltage level Vss and non-select voltage level Vsn, and which carries out at least one of switching from select voltage level Vss to non-select voltage level Vsn or switching from non-select voltage level

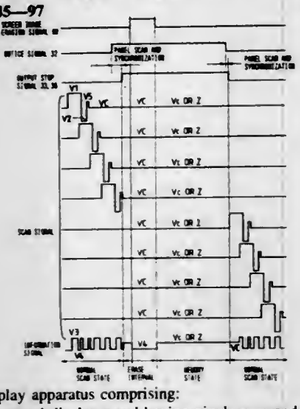
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Vsn to select voltage level Vss of the scanning waveform, stepping, using a series of at least three steps, through intermediate voltage level Vsm.

5,606,343
DISPLAY DEVICE

Akira Tsuboyama, Atsugi; Atsushi Mizutome, Fujisawa, and Mitsuo Iwayama, Odawara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 913,917, Jul. 17, 1992, abandoned. This application Sep. 14, 1994, Ser. No. 302,989
Claims priority, application Japan, Jul. 24, 1991, 3-206184
Int. Cl.[6] G09G *3/36*
U.S. Cl. 345—97 **9 Claims**

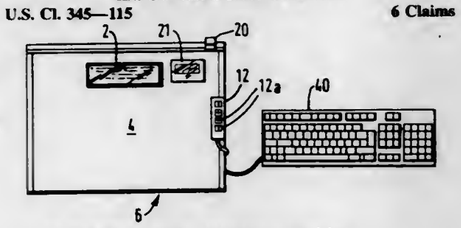


1. A display apparatus comprising:
a liquid crystal display panel having pixels arranged in a matrix of scan electrodes, each defining a scanning line, and information electrodes and having a ferroelectric liquid crystal driven by an electrical field applied through the scan electrodes and the information electrodes;
image information memory means for storing image information to be displayed on said liquid crystal display panel;
change detection means for detecting a change in the image information stored in said image information memory means;
drive means for applying a scan signal to said scan electrodes and an information signal to said information electrodes in accordance with the information stored in said image information memory means to effect a screen display; and
drive control means for controlling said drive means so that said drive means, in response to the stored image information, executes display drive scanning in one of a partial rewriting scan and a full screen refreshing scan, wherein, when a change is detected in the information stored in said image information memory means, the partial rewriting scan is performed by non-interlace scanning for only the scanning lines corresponding to the changed information, and, when no change is detected in the information stored in said image information memory means, the full screen refreshing scan is performed by interlace scanning for the scanning lines of the full screen, said drive means applying a display erasing voltage between a group of the scan electrodes and a group of the information electrodes to erase the screen display when said change detection means detects that the stored image information has not changed over a predetermined time interval, and after applying the display erasing voltage, said drive means either applies a same voltage to the group of scan electrodes and the group of information electrodes or said drive means places the group of scan electrodes and the group of information electrodes into a high impedance state, with said drive means resuming the display drive scanning when said detection means detects that a change in the stored image information has taken place.

5,606,344
INFORMATION DISPLAY APPARATUS

John D. Blaskey, Cheshire, and David Cross, Andover, both of United Kingdom, assignors to Pinewood Associates Limited, Manchester, United Kingdom

Continuation of Ser. No. 221,008, Apr. 1, 1994, abandoned. This application May 31, 1996, Ser. No. 656,602
Claims priority, application United Kingdom, Apr. 2, 1993, 9307025; Feb. 11, 1994, 9402662
Int. Cl.[6] G09G *5/00; G09B 7/00*
U.S. Cl. 345—115 **6 Claims**



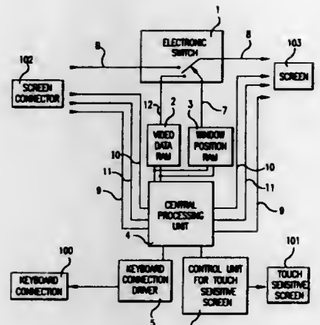
1. An information display apparatus comprising:
a display means for the display of text;
support means for supporting said display means at a suitable height;
a storage device for storing data input thereto;
an electromagnetic radiation transmission means for transmitting operation commands in the form of electromagnetic radiation to at least one external object,
a single input unit for both inputting text to said storage device and inputting said operation commands to said storage device for storage therein in conjunction with said text, and
control means for both (i) controlling said text presented by said display means such that the text and the operation commands are retrieved together, the operation commands are positioned in the text, and the text, when retrieved, is displayed by said display means, and (ii) supplying said operation commands to said transmission means in conjunction with the control of said text displayed on said display means such that operation commands are automatically transmitted to said at least one external object when the text in which the commands are positioned is displayed.

5,606,345
DISPLAY AND INPUT CONTROL DEVICE

Philippe Truchet, 37 Square Anatole France, 91250 Saint Germain Les Corbeil, France

PCT No. PCT/FR92/01065, § 371 Date Jul. 29, 1994, § 102(e) Date Jul. 29, 1994, PCT Pub. No. WO94/11803, PCT Pub. Date May 26, 1994
PCT Filed Nov. 16, 1992, Ser. No. 256,577
Int. Cl.[6] G06F *3/033;3/023*
U.S. Cl. 345—119 **11 Claims**

11. A method for simplifying use of a host computer, wherein a data display and input control device is connected to a host computer and a display terminal, the method comprising:
covering the display terminal with a touch sensitive screen;
interfacing with a second application without interfering with a main application;
generating at least one window to be displayed on the display terminal using the data display and input control device;
switching in real time data to be displayed by the display terminal between the host computer and the data display and input control device;
displaying on the display terminal the at least one generated window so that the at least one window is visible through the touch sensitive screen;
touching the touch sensitive screen at a touched position;
outputting the touched position detected by the touch sensitive screen to a central microprocessing unit;

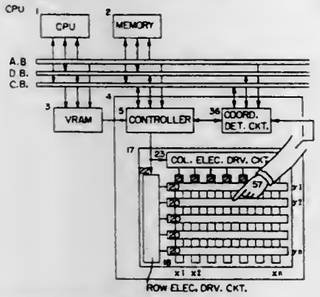


generating at least one keystroke based on the touched position and the at least one window visible through the touch sensitive screen; and
sending to the host computer the at least one keystroke.

5,606,346
COORDINATE INPUT DEVICE

Tsutomu Kai, and Masahito Matsunami, both of Hirakata, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Division of Ser. No. 172,322, Dec. 21, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 467,707
Claims priority, application Japan, Dec. 22, 1992, 4-341886; Feb. 3, 1993, 5-16114; Feb. 23, 1993, 5-33075
Int. Cl.[6] G09G *5/00*
U.S. Cl. 345—173 **2 Claims**

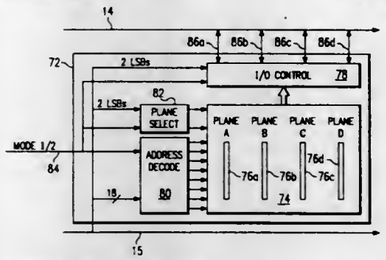


1. A coordinate input device comprising:
a display panel including:
a plurality of row electrodes and a plurality of column electrodes arranged in a matrix; and
a plurality of display elements, each connected to one of the crossings of the plurality of row electrodes and the plurality of column electrodes;
row electrode driving means for, during a display period and a row coordinate detection period, sequentially supplying row electrode driving signals to the plurality of row electrodes to effect scanning of the plurality of row electrodes, and for fixing the potential of the plurality of row electrodes constant during a column coordinate detection period;
column electrode driving means for sequentially supplying display signals to the plurality of column electrodes during the display period, for sequentially supplying column electrode driving signals to the plurality of column electrodes to effect scanning of the plurality of column electrodes during the column coordinate detection period, and for fixing the potential of the plurality of column electrodes constant during the row coordinate detection period;
coordinate detection means for detecting a coordinate value of an indicated position on the display panel;
a back light disposed on the back side of the display panel for illuminating the display panel;
an inverter circuit for generating a back light driving signal for driving the back light;
control means for effecting switching among the display period, the row coordinate detection period, and the column coordinate detection period, the control means controlling the row electrode driving means to supply the row electrode driving signals in Synchronization with the back light driving signals during the row coordinate detection period, and controlling the column electrode driving means to supply the column electrode driving signals in synchronization with the back light driving signals during the column coordinate detection period; and
further comprising status detection means for detecting the oscillating frequency and the amplitude of the back light driving signals correction value calculating means for calculating a correction value of the indicated position based on the detected oscillating frequency and the amplitude, correction means for receiving the coordinate value of the indicated position from the coordinate detection means and the correction value from the correction value calculating means and for subtracting the correction value from the coordinate value.

5,606,347
DEVICES SYSTEMS AND METHODS FOR FLEXIBLE FORMAT DATA STORAGE

Richard D. Simpson, Bedford, England, assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 991,234, Dec. 16, 1992. This application Jun. 7, 1995, Ser. No. 474,640
Int. Cl.[6] G09G *5/04*
U.S. Cl. 345—187 **19 Claims**



1. A memory device comprising:
a plurality of data storage locations, said plurality of data storage locations disposed in a plurality of N planes, each data storage location in each of said N planes having an associated address;
a bidirectional data port; and
control circuitry connected to said plurality of data storage locations and said bidirectional data port, said control circuitry having inputs for receiving an address signal and a mode control signal, said mode control signal indicative of either a first mode or of a second mode, said control circuitry (1) operable in said first mode to transfer data from said bidirectional data port to a data storage location associated with an address corresponding to said received address signal in each of said plurality of N planes during a write access and to transfer data from a data storage location associated with said received address signal in each of said plurality of N planes to said bidirectional data port during a read access, and

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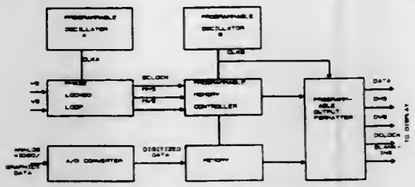
(2) operable in said second mode to transfer data from said bidirectional data port to a plurality of N data storage locations in a selected one of said planes during a write access and to transfer data from a plurality of N data storage locations in a selected one of said planes to said bidirectional data port during a read access.

5,606,348

PROGRAMMABLE DISPLAY INTERFACE DEVICE AND METHOD

Yue T. Chiu, Eatontown, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 13, 1995, Ser. No. 372,405
Int. Cl.[6] G09G 5/00
U.S. Cl. 345—213 **23 Claims**



1. A programmable display interface which comprises

a.) a memory for storing digital data;

b.) means for providing digital video or graphic data signals as an input to the memory through an optional analog to digital converter;

c.) a phase locked loop circuit;

d.) means for providing horizontal and vertical synchronization signals corresponding to the video or graphic data signals and providing said horizontal and vertical synchronization signals as inputs to the phase locked loop circuit;

e.) a first programmable oscillator which generates a first clock signal, having a predetermined frequency the same as that of the input video or graphic data signals as an input to the phase locked loop circuit; the phase locked loop circuit being for phase locking the first clock signal to the horizontal and vertical synchronization signals and generating an output clock signal having a frequency which is substantially the same as the frequency of the video or graphic data signals and having a phase which is substantially the same as the input horizontal and vertical synchronization signals and generating modified horizontal and modified vertical synchronization signals having a frequency which is substantially the same as the frequency of the input horizontal and vertical synchronization signals respectively;

f.) a programmable memory controller for controlling the input and storage of the digital video or graphic data signals in the memory responsive to clock, modified horizontal and modified vertical synchronization signals from the phase locked loop circuit, and the output of timing and synchronization signals to a programmable output formatter responsive to a predetermined clock frequency from a second clock signal generated by a second programmable oscillator; and

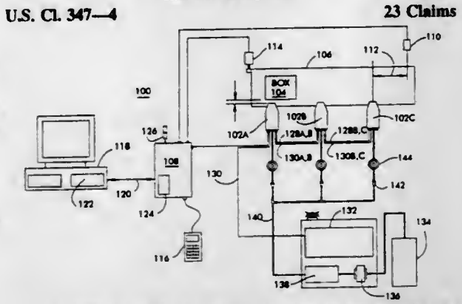
g.) a programmable output formatter for receiving and formatting the digital video or graphic data signals in the memory responsive to inputs from the second clock signal generated by the second programmable oscillator and the timing and synchronization signals from the programmable memory controller and generating output signals comprising formatted data, clocking, timing and blanking signals suitable for operating a target data display.

5,606,349

INK JET SYSTEM WITH SERIAL DATA PRINTHEADS

Jimmy L. Droit, Earth City, Mo.; Ronald J. Johnsen, Cary, N.C.; Mark V. Reinders, St. Louis, and Mark K. Virkus, Ellisville, both of Mo., assignors to Diagraph Corporation, Earth City, Mo.

Filed Mar. 4, 1994, Ser. No. 206,140
Int. Cl.[6] B41J 2/07
U.S. Cl. 347—4 **23 Claims**



1. A system for ink jet printing of messages on articles being fed forward one after another in a path, said system comprising:

a terminal including a keyboard for entering message data representative of the messages;

a controller interconnected with the terminal for processing the message data received from the terminal and storing the message data for the messages, said controller having a serial output port for providing serial output data representative of the messages;

first and second serially connected ink jet printheads positioned adjacent said path to serially print the messages on the articles in response to the output data;

first interconnecting means including a first cable connecting the serial output port of the controller to the first printhead for providing the output data to the first printhead;

second interconnecting means including a second cable connecting the first printhead to the second printhead for providing to the second printhead via the serial output port and the first cable at least some of the serial output data provided to the first printhead such that no cable directly connects the controller to the second printhead; and

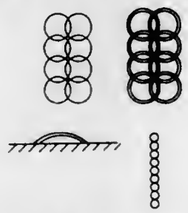
means for supplying ink to the ink jet printheads.

5,606,350

INK JET RECORDING APPARATUS OPERATIVE TO PROVIDE QUALITY PRINTING ON HYDROPHILIC AND HYDROPHOBIC RECORDING MEDIA

Toshio Koyama, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 82,973, Jun. 29, 1993, abandoned. This application Oct. 18, 1995, Ser. No. 544,756
Claims priority, application Japan, Jun. 30, 1992, 4-196063
Int. Cl.[6] B41J 2/01
U.S. Cl. 347—14 **3 Claims**



1. An ink jet recording apparatus comprising:

a plurality of heads for recording by jetting ink droplets a recording medium in accordance with recording information;

moving means for moving the heads relative to the recording medium in a first scan for a first line of printing in a first direction while jetting the ink droplets, and stopping jetting of the ink droplets as the first scan is ended and moving the recording medium relative to the heads in a second direction orthogonal to the first direction for another scan and another line of printing;

selecting means for selecting a recording mode from a light-transmitting recording medium mode and another recording medium mode; and

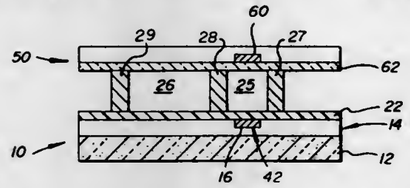
control means for causing the heads to move relative to the recording medium in the first direction more slowly in the light-transmitting recording medium mode than in the another recording mode, thereby reducing improper superposition of the dots recorded by the ink droplets.

5,606,351

ALTERING THE INTENSITY OF THE COLOR OF INK JET DROPLETS

Gilbert A. Hawkins, Mendon, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 20, 1994, Ser. No. 262,414
Int. Cl.[6] B41J 2/205;2/015;2/175
U.S. Cl. 347—15 **6 Claims**



1. A drop on demand ink refill printhead for ejecting ink droplets having a capability of mixing two or more fluid components in a controlled manner so as to alter chemical composition of each ejected droplet without altering size of the ejected droplet comprising:

(a) two or more ink refill channels for containing fluids in preparation for printing;

(b) means for defining an ink chamber for receiving the fluid components from the ink refill channels for containing a quantity of fluid in preparation for expulsion;

(c) means for connecting the ink refill channels to the chamber to deliver the fluid components from the ink refill channels to the chamber during chamber refill;

(d) means for causing expulsion of a drop of fluid from said chamber; and

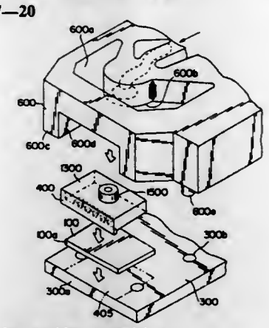
(e) means for changing ratios of volumes of the two or more fluid components that refill said chamber subsequent to the expulsion of said drop, including means for heating the fluid in the ink refill channel connecting one or more of a ink refill channels to the chamber thereby altering the viscosity of the fluid component as the fluid flows to the chamber.

5,606,352

INK JET CARTRIDGE HAVING A CAN FILTERED INK SUPPLY MEMBER AND INK JET APPARATUS INCLUDING THE SAME

Koji Yamakawa; Takahisa Kawamura, both of Yokohama, and Teruo Arashima, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 897,746, Jun. 12, 1992, Pat. No. 5,341,161. This application Dec. 13, 1993, Ser. No. 165,507
Claims priority, application Japan, Jun. 14, 1991, 3-143207; Jul. 15, 1991, 3-173960
Int. Cl.[6] B41J 2/05
U.S. Cl. 347—20 **9 Claims**



1. An ink jet cartridge comprising:

a ceiling plate having an ink receiving port and a plurality of grooves as an ink passage, said grooves being communicated with said ink receiving port;

a base plate having a plurality of discharge energy generating elements for generating sufficient discharge energy to discharge ink;

an ink supply member having a cantilevered ink supply portion with an ink supply port connected with said ink receiving port for supplying ink from said ink supply portion to said ink receiving port; and

a support substrate for supporting said base plate and for fixing said ink supply member,

said ink supply portion including a distal portion with said ink supply port, a base portion connected to said ink supply member, and a neck portion connecting said distal portion and said base portion, said neck portion having a width tapering outwardly from said distal portion to said base portion, wherein said ink supply portion is pressed on said ink receiving port to connect said ink supply port with said ink receiving port and said ceiling plate with said base plate to form said ink passage.

5,606,353

INK JET RECORDING APPARATUS

Seiji Mochizuki; Kazuhisa Kawakami; Masahiro Nakamura, and Keiichi Ohshima, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Mar. 9, 1994, Ser. No. 207,747
Claims priority, application Japan, Mar. 11, 1993, 5-077584
Int. Cl.[6] B41J 2/165
U.S. Cl. 347—23 **20 Claims**

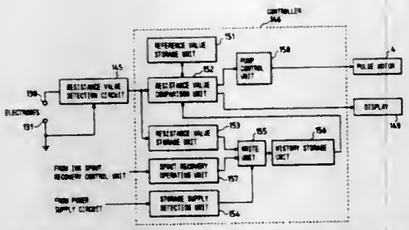
1. An ink jet recording apparatus, comprising:

means for producing a print signal,

a recording head in communication with an ink tank through an ink supply member, said ink tank comprising electrodes for detecting a remaining amount of ink, said recording head being responsive to a print signal for spouting ink drops from nozzle openings to recording paper,

capping means abutting against a front of said recording head for holding the nozzle openings in an airtight state.

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suction means for supplying negative pressure to said capping means and sucking out ink from said capping means into a waste ink tank,

resistance value detection means for detecting electric resistance across the electrodes for detecting a remaining amount of ink,

reference value storage means for storing a resistance value across the electrodes relative to the remaining amount of ink in the ink tank as a reference value,

resistance value comparison means for comparing the resistance across the electrodes with the reference value and computing a resistance value comparison result, and

suction control means responsive to the resistance value comparison result for controlling operations of said suction means.

5,606,354

RECOVERY MECHANISM FOR ADJUSTABLE INK JET HEAD

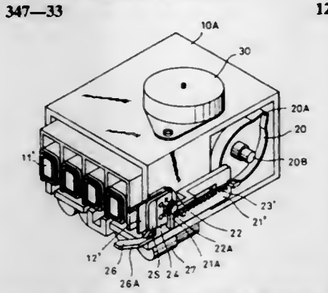
Toshihiko Bekki, Kawasaki; Tsutomu Kawai, Yokohama; Hideo Fukazawa, Chigasaki, and Atsushi Arai, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 1, 1994, Ser. No. 269,754

Claims priority, application Japan, Jul. 6, 1993, 5-191993; Jul. 27, 1993, 5-184867

Int. Cl.[6] B41J *2/165*

U.S. Cl. 347—33 **12 Claims**



1. A recovering mechanism for cleaning a discharge surface of an ink jet head mounted on a recording apparatus having a distance adjusting mechanism for adjusting a distance between a platen which supports a recording medium and said discharge surface in accordance with a kind of said recording medium, said ink jet head having discharge ports arrayed in an orthogonal direction relative to a moving direction of said ink jet head which crosses a feeding direction of said recording medium, said recovering mechanism comprising:

a cleaning blade for rubbing said discharge ports arrayed on said discharge surface and for cleaning said discharge surface;

an arm member connected with a portion of said cleaning blade and contacted with a portion of a carriage having said ink jet head;

a supporting member for supporting said cleaning blade and said arm member; and

a connecting member for connecting said cleaning blade and said arm member with said supporting member at a portion of the opposite side of a contacting surface with said ink jet head and for enabling said cleaning blade to incline so as to match with an adjustment of a distance between said platen and said discharge surface at said connecting portion.

5,606,355

INK JET RECORDING APPARATUS FOR ADJUSTING RECORDING MODE BASED ON NUMBER OF RECORDING HEADS

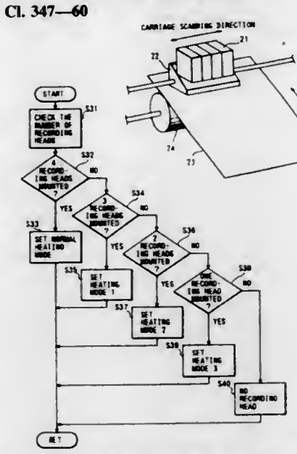
Hiroki Komatsu, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jan. 6, 1994, Ser. No. 177,982

Claims priority, application Japan, Jan. 7, 1993, 5-016893

Int. Cl.[6] B41J *2/05*

U.S. Cl. 347—60 **8 Claims**



1. An ink jet recording apparatus, comprising:

a plurality of recording heads;

means for determining those of said plurality of record heads to be used for a printing operation;

preliminary heating means for preliminarily heating said determined recording heads using a voltage having a drive frequency and a pulse width; and

preliminary heating control means for setting the drive frequency and the pulse width of said voltage according to a number of said determined recording heads.

5,606,356

INK, AND INK-JET RECORDING METHOD AND APPARATUS EMPLOYING THE SAME

Hiromichi Noguchi, Atsugi; Yuko Suga, Tokyo; Katsuhiro Shirota, Inagi; Akio Kashiwazaki, and Aya Takaide, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

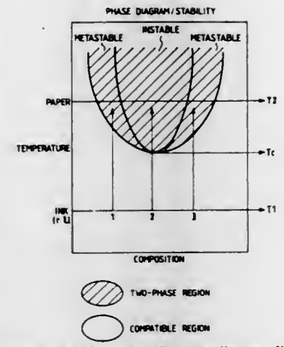
Division of Ser. No. 220,443, Mar. 30, 1994. This application Mar. 10, 1995, Ser. No. 401,782

Claims priority, application Japan, Mar. 31, 1993, 5-074185; Nov. 25, 1993, 5-295446

Int. Cl.[6] B41J *2/05;* **C09D** *11/02*

U.S. Cl. 347—100 **13 Claims**

1. An ink-jet recording method comprising the steps of providing a recording medium and ejecting ink droplets through an



orifice of a recording head onto the recording medium in correspondence with recording signals, said ink containing a coloring material and an aqueous liquid medium for solving or dispersing the coloring material, the liquid medium having a lower critical consolute temperature (Tc) to cause phase separation of the ink at a temperature in a range of from 40° to 100° C., and a copolymer having an N-alkyl-substituted acrylamide as a monomer unit, which gives the liquid medium the lower critical consolute temperature.

5,606,357

SHEET CONVEYING MEANS AND AN INK JET RECORDING APPARATUS HAVING THE SAME

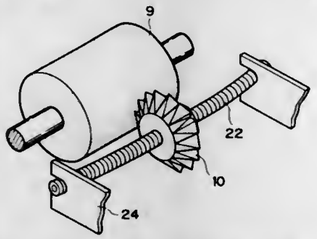
Toshihiko Bekki, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 251,668, May 31, 1994, abandoned, which is a continuation of Ser. No. 731,872, Jul. 18, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 478,826

Claims priority, application Japan, Jul. 20, 1990, 2-192673

Int. Cl.[6] B41J *2/01*

U.S. Cl. 347—104 **94 Claims**



1. Sheet conveying means for conveying a sheet, said sheet conveying means comprising:

a spur for guiding the sheet, said spur being provided opposed to a rotatable member for conveying the sheet; and

a closely wound tension coil spring arcuately provided to support said spur and press said spur to the rotatable member, said closely wound tension coil spring having a first portion, one end of which is movably supported, a second portion, one end of which is movably supported, and an intermediate portion provided between said first and second portions, said first, second and intermediate portions being continuously formed, wherein the closely wound tension coil spring is capable of changing an initial tension by varying a twisting degree applied when a coil is closely wound.

5,606,358

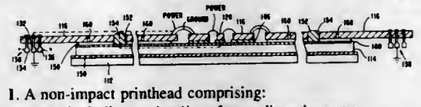
LIGHT-EMITTING DIODE PRINTHEAD

Bryan A. Beaman, Churchville, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 23, 1991, Ser. No. 812,094

Int. Cl.[6] B41J *2/435*

U.S. Cl. 347—237 **10 Claims**



1. A non-impact printhead comprising:

an array including a plurality of recording elements;

means incorporated in an integrated circuit driver chip for generating electrical currents to drive selected ones of said recording elements;

means, including a spreader board having electrical leads, for distributing electrical power, ground and control signals to the driver chip;

a tile having supported on one face thereof the spreader board, the driver chip and the array; and

means defining a ground path between the array and the spreader board, the ground path extending along the face of the tile between the array and the spreader board;

wherein the spreader board includes an electrically conductive via that extends from a back face of the spreader board that is adhered to the tile and the via is filled with an electrically conductive material that electrically connects the via to the tile;

wherein the via extends to an intermediate layer of the spreader board and the intermediate layer is between a first conductive layer of the spreader board that includes means for carrying control signals and a second conductive layer of the spreader board that includes means for carrying data signals.

5,606,359

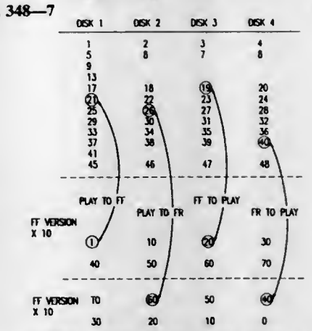
VIDEO ON DEMAND SYSTEM WITH MULTIPLE DATA SOURCES CONFIGURED TO PROVIDE VCR-LIKE SERVICES

John J. Youden, Cupertino; Albert W. Kovalick, Santa Clara; Paolo L. Siccardo, Los Altos; Christopher R. Adams, Menlo Park; James E. Jensen, San Jose; David J. Coggins, Cupertino; Manu Thapar, Fremont, all of Calif., and Kari Santos, Boulder, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 30, 1994, Ser. No. 269,796

Int. Cl.[6] H04N *7/14;7/173*

U.S. Cl. 348—7 **29 Claims**



1. In a computer system having a data storage system and a computer, the computer capable of accessing at least a first movie stored in the data storage system and providing the accessed first movie to a user in a play viewing mode which closely approximates the play mode of a video cassette recorder, a method for displaying the movie in a fast reverse mode and a fast forward

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mode which approximates the fast forward and fast reverse viewing modes of a video cassette recorder, the method comprising the steps of:

editing a first copy of the stored movie to copy one frame from every predetermined number of frames;

storing the frames copied from the first copy in the same order they were copied from the first copy as a second copy in the data storage system;

storing the frames copied from the first copy in the reverse order they were copied from the first copy as a third copy in the data storage system;

displaying the stored second copy if the user request fast forward viewing of the first movie; and

displaying the stored third copy if the user request fast reverse viewing of the first movie.

5,606,360

Patent Not Issued For This Number

5,606,361

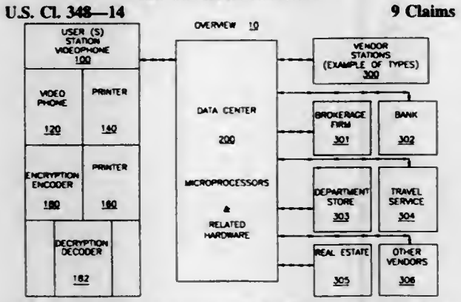
VIDEOPHONE INTERACTIVE MAILBOX FACILITY SYSTEM AND METHOD OF PROCESSING INFORMATION

John Davidsohn, 7 S. Hollow Rd., Dix Hills, N.Y. 11746, and Anthony Cinotti, 410 Hillside Ave., Mahwah, N.J. 07430

Filed May 10, 1995, Ser. No. 438,892

Int. Cl.[6] H04N *11/00;7/12*

U.S. Cl. 348—14 **9 Claims**



1. A videophone interactive mailbox facility system including a central data center for processing of information to conduct a transaction, comprising:

a) a user station having a videophone for viewing transaction information sent or received to conduct a transaction; an encryption encoder and a decryption decoder for safeguarding said transaction information sent or received; and means for inputting said transaction information into said videophone;

b) a vendor station having computer means for the transmission and receipt of vendor-type information to or from said central data center for conducting a transaction; an interface network for making said vendor station computer means compatible with a computer processor at said central data center; database storage components for receiving and storing said transaction information sent from said user station via said central data center; and an encryption encoder and a decryption decoder for message privacy and transaction authentication of said vendor-type information sent or received;

c) said central data center electronically connected to said user station and said vendor station and including a computer processor for centralized transmitting, receipt of and storage of said transaction information and said vendor-type information with said user station and said vendor station; said computer processor being electronically connected to one or more telephones; a display screen for monitoring said transactions; an encryption encoder and a decryption decoder for authentication of said transaction information and said vendor-type information sent or received; and a network interface for electronically connecting and making compatible said computer means at said vendor station.

5,606,362

VARIABLE BIT RATE AUDIO INFORMATION TRANSMITTING APPARATUS, AND METHOD THEREFOR

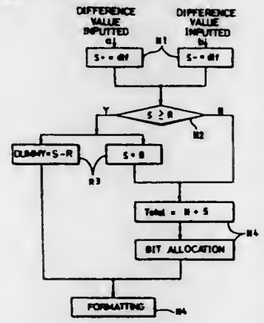
Myung S. Lee, Kyoungki-do, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Rep. of Korea

Filed Jun. 6, 1995, Ser. No. 469,223

Claims priority, application Rep. of Korea, Dec. 30, 1994, 94-39864

Int. Cl.[6] H04N *7/14*

U.S. Cl. 348—17 **2 Claims**



1. A method for transmitting variable bit rate audio information with video information, comprising the steps of:

computing a first bit allocation amount for the audio information for a current frame;

comparing the first bit allocation amount with a second fixed bit allocation amount to obtain a compared result, the comparing step further comprising

outputting the compared result on a first output line connected between a comparator and a bit rate adjuster when the first bit allocation amount is greater than the second fixed bit allocation amount and outputting the compared result on a second output line connected between the comparator and the bit rate adjuster when the first bit allocation amount is less than the second fixed bit allocation amount;

allocating to the current frame an effective bit rate allocation and dummy data based on the compared result, the step of allocating the effective bit rate allocation and the dummy data comprising

a) accumulating a difference value to obtain a final surplus bit amount if said difference value is outputted through the first output line of the comparator, and computing said final surplus bit amount by subtracting said difference value from an accumulated value if said difference value is outputted through the second output line of the comparator,

(b) checking whether a value of said surplus bit amount of step a) is larger than a user defined value smaller than said second fixed bit allocation amount,

c) storing said surplus bit amount minus said user defined value into a dummy variable so as to compute dummy data if said surplus bit amount is equal to or larger than said user defined value, and replacing a surplus bit variable with said user defined value, and

d) computing an effective bit allocation amount to be allocated to the current frame by adding said surplus bit amount to said second fixed bit allocation amount so as to carry out a bit allocation if said surplus bit amount is smaller than said user defined value, and outputting current frame data to a formatting device so as to be formatted; and

encoding and transmitting the audio and video information;

whereby the effective bit allocation is varied in accordance with inputted audio information amount relative to a fixed amount.

5,606,363

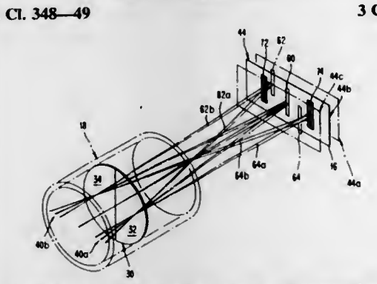
TWO-DIMENSIONAL THREE-DIMENSIONAL IMAGING AND BROADCAST SYSTEM

Jimmie D. Songer, Burleson, Tex., assignor to Magma, Inc., Fort Worth, Tex.

Division of Ser. No. 218,108, Mar. 28, 1994, abandoned. This application May 31, 1995, Ser. No. 454,655

Int. Cl.[6] H04N *13/02*

U.S. Cl. 348—49 **3 Claims**



1. A method for imaging, broadcasting and viewing images of object space, the images simultaneously two-dimensional and three-dimensional, using a camera with a single imaging lens having a unitary, vertically-bifurcated dual-aperture light valve, means for transmitting the simultaneously two-dimensional and three-dimensional images to a remote viewing device for viewing by a viewer, and a pair of viewing glasses for three-dimensional viewing, the pair of viewing glasses having a left-viewing-light valve and a right-viewing-light valve, comprising the steps of:

generating a drive signal for controlling a field rate;

alternatingly and field-sequentially imaging at the field rate, using the single imaging lens with the unitary, vertically-bifurcated dual-aperture light valve, object space as a plurality of left-eye images and a plurality of right-eye images;

converting the plurality of left-eye images and the plurality of right-eye images to an image signal on a single image-space;

transmitting the drive signal and the image signal to the remote viewing device;

converting the image signal, at the remote viewing device, to the plurality of left-eye images and the plurality of right-eye images for display;

receiving the drive signal at the pair of viewing glasses;

opening and closing, synchronized with the field rate, the left-viewing-light valve for viewing the plurality of left-eye images;

opening and closing, synchronized with the field rate and alternatingly from the left-viewing-light valve, the right-viewing-light valve for viewing the plurality of right-eye images;

viewing by the viewer, through the pair of viewing glasses, the plurality of left-eye images and the plurality of right-eye images as a three-dimensional image; and

viewing by the viewer, without the pair of viewing glasses, the plurality of left-eye images and the plurality of right-eye images as a two-dimensional image having clarity and definition like that normally observed on a television screen.

5,606,364

SURVEILLANCE SYSTEM FOR PROCESSING A PLURALITY OF SIGNALS WITH A SINGLE PROCESSOR

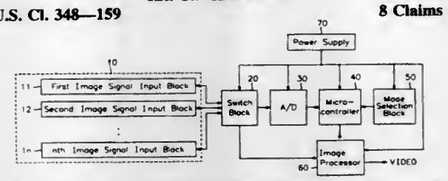
Phil-nam Kim, Kyeongsangnam-do, Rep. of Korea, assignor to Samsung Aerospace Industries, Ltd., Kyeongsangnam-do, Rep. of Korea

Filed Mar. 28, 1995, Ser. No. 412,014

Claims priority, application Rep. of Korea, Mar. 30, 1994, 94-6548

Int. Cl.[6] H04N *7/18*

U.S. Cl. 348—159 **8 Claims**



1. A system for processing a plurality of image signals, comprising:

a power supply for supplying or cutting off power;

a plurality of image signal input means for accepting as inputs the image signals and producing output signals corresponding to the image signals, the output signals being incompatible with display by a video monitor;

a switch connected to the power supply and to the plurality of image signal input means for transmitting the output signals from the plurality of image signal input means and for transmitting power received from the power supply to the image signal input means;

converting means for converting the output signals from the switch into a digital signal;

control means for outputting a control signal to control reproduction of the digital signal into an initial image signal corresponding to the image signal input to one of said plurality of image signal input means; and

means for processing the digital signal, according to the control signal, into image data reproducible by a video monitor to the initial image.

5,606,365

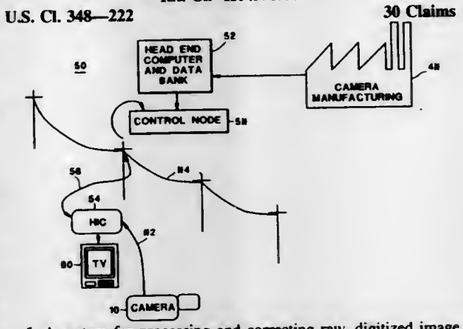
INTERACTIVE CAMERA FOR NETWORK PROCESSING OF CAPTURED IMAGES

Martin A. Maurinus, Rochester, and Wilbert F. Janson, Jr., Shortsville, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 28, 1995, Ser. No. 412,775

Int. Cl.[6] H04N *3/00*

U.S. Cl. 348—222 **30 Claims**



1. A system for processing and correcting raw, digitized image information sets and converting each processed and corrected image information set into a display image format comprising:

an electronic still camera having image capture means uncompensated for image capture defects for capturing a scene image as a raw, digitized image information set and digital

memory for storing one or more information set, the camera having an identification code keyed to an image defect correction map derived at manufacture to map and correct for image capture defects and a data communication controller for transmitting the camera identification code and the raw, digitized image information sets from said memory to a designated receiver; and

an interactive network remote from said camera further comprising:

a receiver for receiving said transmitted, raw, digitized image information sets and said identification code and for communicating on the interactive network to transmit or receive data, including transmission of said raw, digitized image information sets;

a repository on the interactive network for receiving the image defect correction map derived at manufacture keyed to the camera identification code;

processing means responsive to a communication from said receiver for retrieving the image defect correction map unique to the camera identification code and for correcting and processing said each raw, digitized image information set into a display image format for display or reproduction of the captured image; and

means for utilizing the display image format for displaying or reproducing the captured image.

5,606,366

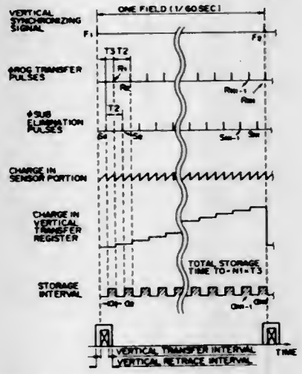
IMAGE SENSOR DRIVING APPARATUS WHEREIN PHOTOELECTRIC CONVERSION OPERATIONS ARE PERFORMED A PLURALITY OF TIMES

Teruo Hieda, Kawasaki; Kenji Kyuma, Yokohama, and Kan Takaiwa, Hachiohji, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 783,352, Oct. 28, 1991, abandoned. This application Sep. 22, 1993, Ser. No. 124,627

Int. Cl.[6] H04N *5/335*

U.S. Cl. 348—297 **17 Claims**



3. An image pickup apparatus comprising:

image sensing means for intermittently accumulating a photoelectrical signal for a predetermined time period and at a predetermined pitch in one field period;

adding means for adding photoelectrical signals accumulated at different timings, and for producing a sum signal for a predetermined sum total storage time period; and

control means for changing at least a width of each of the accumulations of the photoelectrical signals while keeping constant said predetermined sum total storage time.

5,606,367

SOLID STATE IMAGING DEVICE HAVING COMMON OUTPUT COUPLING FOR MONITORING A PHOTOSENSITIVE PIXEL AND PICTURE PHOTOSENSITIVE PIXELS

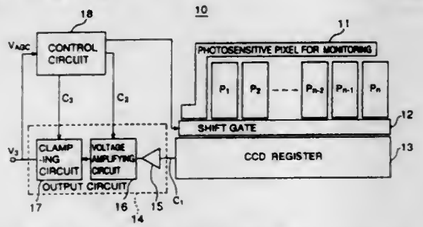
Makoto Monoi, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Filed Dec. 27, 1994, Ser. No. 364,326

Claims priority, application Japan, Dec. 27, 1993, 5-331562

Int. Cl.[6] H04N *5/232*

U.S. Cl. 348—350 **3 Claims**



1. A solid state imaging device comprising:

a plurality of picture photosensitive pixels for generating first signal charges corresponding to an incident light amount;

signal charge transfer means for transferring in an order the first signal charges outputted from the picture photosensitive pixels;

a monitor photosensitive pixel for generating second signal charges in proportion to a mean value of the incident light amount of a predetermined number of picture photosensitive pixels;

common output means for converting both of the first and second signal charges into first and second output signals, the first signal charges generated in the picture photosensitive pixels being transferred to the common output means by the signal charge transfer means, and the second signal charges generated in the monitor photosensitive pixel being transferred to the common output means by the signal charge transfer means; and

a common signal charge path, including a CCD register, and provided between said common output means and said picture photosensitive pixels and said monitor photosensitive pixel;

wherein said monitor photosensitive pixel has a predetermined area substantially the same as each of the plurality of picture photosensitive pixels to have the same sensitivity as each of the plurality of picture photosensitive pixels.

5,606,368

CABLE-DRIVEN PAN AND TILT MECHANISM

John Corradini, Tucson, Ariz., assignor to Boeckeler Instruments, Inc., Tucson, Ariz.

Filed Oct. 4, 1994, Ser. No. 317,876

Int. Cl.[6] H04N *5/225*

U.S. Cl. 348—373 **20 Claims**

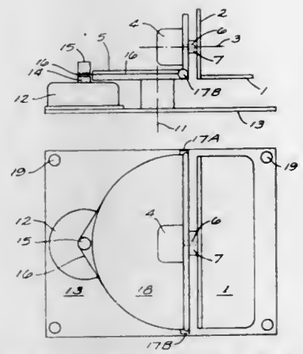
1. A pan and tilt mechanism for the mounting of a camera comprising:

a) a fixed base unit;

b) a pan unit having a curvilinear section lying substantially in a horizontal plane with a cable extending along a peripheral portion of said curvilinear section, said cable having a first end and second end, said first end fixably attached to a first point of said curvilinear section and the second end fixably attached to a second point of said curvilinear section, said pan unit pivotally attached to said base unit, said pan unit rotatable about a vertical axis;

c) a tilt unit upon which said camera is affixed, said tilt unit pivotally attached to said pan unit, said tilt unit rotatable about a horizontal axis;

d) a first motor positionally fixed on said pan unit for controllably rotating said tilt unit about said horizontal axis; and,



e) a second motor positionally fixed on said base unit and in mechanical communication via a cylindrical member in contact with said cable for controllably rotating said pan unit about said vertical axis.

5,606,369

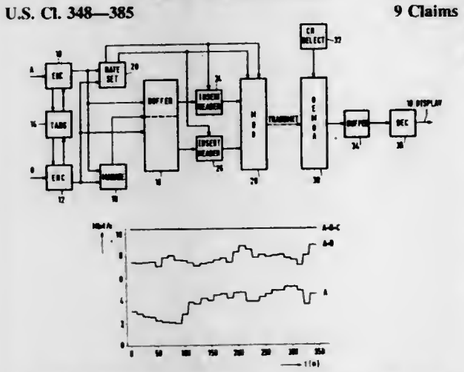
BUFFERING FOR DIGITAL VIDEO SIGNAL ENCODERS USING JOINT BIT-RATE CONTROL

Gerrit J. Keesman, Eindhoven, Netherlands, and Samir N. Hulyalkar, White Plains, N.Y., assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 28, 1994, Ser. No. 366,340

Int. Cl.[6] H04N *7/12;7/24*

U.S. Cl. 348—385 **9 Claims**



1. Video signal encoding apparatus operable to encode for transmission two or more signals received on respective input channels, the apparatus comprising:

an encoder stage for each channel operable to encode the received video signal according to a predetermined coding scheme, as a specified number of data bits per encoded video frame and to output the signal as a data stream having a bit rate determined by the specified number;

target setting means coupled to the encoder stages and arranged to set specified numbers for respective encoder stages per video frame or group of frames, such that the sum of the respective encoder stage output bit rates remains substantially constant; and

respective buffer means coupled to receive the said variable bit-rate data stream from the respective encoder stages and arranged to output buffered data signals at respectively specified output bit rates;

characterised in that the respective buffer means comprise respective areas of memory in a single memory device, and by memory management means arranged to determine buffering requirements of the respective channels from the difference between the respective channel buffering input and output bit rates and to allocate memory area to the channels in a ratio determined by the respective buffering requirements.

5,606,370

SYNC RESTORING METHOD FOR VARIABLE-LENGTH DECODING AND APPARATUS THEREOF

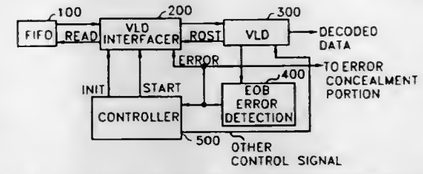
Heon-hee Moon, Suwon-city, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Jul. 11, 1995, Ser. No. 499,900

Claims priority, application Rep. of Korea, Jul. 11, 1994, 94-16620

Int. Cl.[6] H04N *7/26*

U.S. Cl. 348—390 **6 Claims**



1. A sync restoring apparatus for receiving variable-length-coded data on the basis of a data format including a block end signal representing a first block having a predetermined magnitude and a second block larger than the first block, and variable-length-decoding the received data, said sync restoring apparatus comprising:

a first-in-first-out (FIFO) memory for storing the received variable-length-coded data and sequentially outputting a predetermined number of bits of data from firstly stored data every time a read signal is applied to the FIFO memory;

a variable-length-decoder for performing a variable-length-decoding operation on data output from said FIFO memory, outputting the block end signal obtained by the variable-length-decoding operation, and generating a data request signal every time a number of bits of data used in the variable-length-decoding operation becomes a predetermined number;

an error detector for judging whether the block end signal output from the variable-length-decoder is decoded at an exact variable-length-decoding time based on a data format, and generating an error signal when a number of the block end signals which are not decoded at the exact variable-length-decoding time obtained by the judged result is equal to or larger than a predetermined limit value;

an interfacer coupled to transmit the data output from the FIFO memory to the variable-length-decoder according to the read signal, and if the error signal is not generated in the error detector, applying a read signal to the FIFO memory according to the data request signal generated from the variable-length-decoder, while if the error signal is generated in the error detector, applying read signals to the FIFO memory until error-detected second block data is wholly read from the FIFO memory, independently of the data request signal; and

a controller for controlling the variable-length-decoder so as to stop the decoding operation of the variable-length-decoder when the error signal output from the error detector is applied to the controller, while when the second block data following the error-detected second block is supplied to the variable-length-decoder, the decoding operation is performed.

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5,606,371

VIDEO SIGNAL CODING WITH PROPORTIONALLY INTEGRATING QUANTIZATION CONTROL

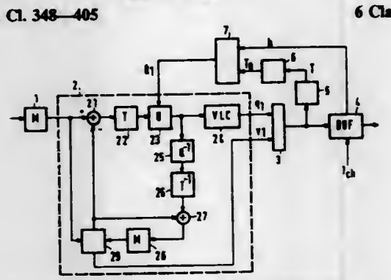
Reinier B. M. Klein Gunnewiek, Eindhoven, Netherlands; Imran A. Shah, Ossining, N.Y., and Gerrit J. Keesman, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 29, 1994, Ser. No. 346,948

Claims priority, application Belgium, Nov. 30, 1993, 09301320

Int. Cl.[6] H04N *7/30*

U.S. Cl. 348—405 **6 Claims**



1. A device for encoding a video signal, comprising:

means for dividing each of a plurality of pictures into a plurality of sub-pictures;

an encoder comprising a picture transformer for transforming each sub-picture into coefficients, and a quantizer for quantizing the coefficients with an applied step size;

control means for controlling the step size in response to a control signal which is representative of the difference between a target value for the number of bits to be produced by the encoder and the number of bits produced by the encoder, the control means including a proportionally integrating control circuit having a proportional control branch having a first control factor for determining a first fraction of the step size and an integrating control branch having a second control factor for determining a second fraction of the step size;

at least one of said first and second control factors being controlled in proportion to the quotient of the average step size with which a plurality of sub-pictures is quantized and the number of bits produced by the encoder for said plurality of sub-pictures.

5,606,372

VIDEO SIGNAL DECODING APPARATUS CAPABLE OF REDUCING BLOCKING EFFECTS

Sang-Ho Kim, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

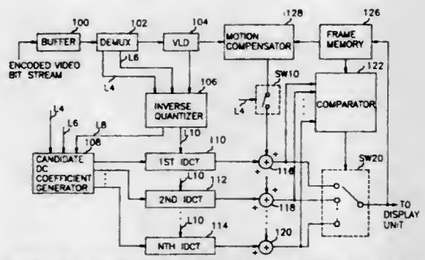
Filed Apr. 28, 1995, Ser. No. 431,524

Claims priority, application Rep. of Korea, Apr. 30, 1994, 94-9476

Int. Cl.[6] H04N *7/30*

U.S. Cl. 348—405 **2 Claims**

1. An apparatus for decoding an encoded digital image signal having a data signal and an information signal, wherein the data signal includes a plurality of blocks of quantized transformed coefficients which are outputs from an encoder performing a discrete cosine transformation(DCT) of a digital image signal and a quantization of the results from the DCT with a quantization step size(QS), each of the blocks including a DC coefficient and a predetermined number of AC coefficients, and said information signal includes each QS for each of the blocks, comprising:



means for performing an inverse quantization on a subjective block with its corresponding QS to produce an inverse quantized DC coefficient and a plurality of inverse quantized AC coefficients;

means, responsive to the inverse quantized DC coefficient and the corresponding QS, for determining a DC coefficient range in which all of the DC coefficients are mapped into the inverse quantized DC coefficient, and altering the value of the inverse quantized DC coefficient within the range to generate a predetermined number of candidate DC coefficients;

means for performing an inverse discrete cosine transformation-(IDCT) on each of the candidate DC coefficients combined with the inverse quantized AC coefficients; and

means for comparing each of the results from the IDCT with previously performed IDCT results, so as to enable the selection of an IDCT result producing a minimum blocking effect which occurs because of a luminance pixel difference between the previously performed IDCT results and the selected IDCT result.

5,606,373

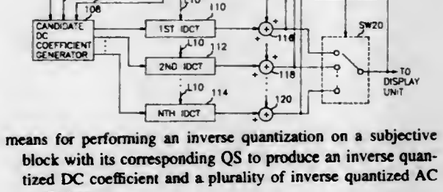
METHODS FOR REPEATED FIELD DETECTION

Cecelia L. Dopp, Austin, Tex.; Charlene A. Gebler, Vestal, N.Y.; Cesar A. Gonzales, Katonah, N.Y.; Elliot N. Linzer, Bronx, N.Y.; Agnes Y. Ngai, Endwell, N.Y.; Prasoon Tiwari, Croton-on-Hudson, N.Y., and Eric Viscito, San Francisco, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 4, 1995, Ser. No. 418,720

Int. Cl.[6] H04N *7/01*

U.S. Cl. 348—459 **12 Claims**



1. A method for detecting repeated fields in a video sequence, comprising the steps of:

examining a given field of a current frame in a video sequence and a previously occurring field of the same parity in the video sequence;

computing a measure of the difference between the given field and the previously occurring field;

comparing the measure to a threshold; and

when it is determined that the measure is below the threshold generating a signal indicating that the given field is a repeat of the previously occurring field;

based on a result of the comparing, selecting another pair of fields for examination.

5,606,374

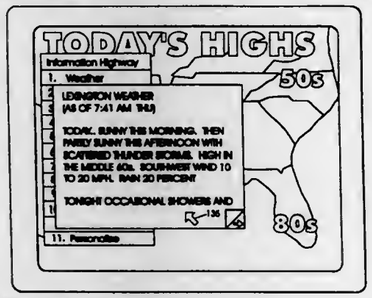
VIDEO RECEIVER DISPLAY OF MENU OVERLAYING VIDEO

Randal L. Bertram, Raleigh, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 31, 1995, Ser. No. 455,787

Int. Cl.[6] H04N *5/45*

U.S. Cl. 348—565 **41 Claims**



7. A combination comprising:

a remote control device usable at some distance of separation from a television receiver which has a video display device having a predetermined screen area, the remote control device having:

a housing sized to be held in the hand of the human observer;

a manually engageable input device mounted in said housing for manipulation by the human observer; and

control transmitter circuitry mounted in said housing and coupled to said input device for transmitting at a frequency which is outside direct sensing by the human observer command signals coordinated in a predetermined manner to manipulation of said input device by the human observer; and

a display controller for coupling to a television receiver video display device and for delivering to a coupled television receiver video display device image directing signals, said display controller having:

command receiver circuitry for receiving said command signals from said command transmitter circuitry and for deriving from said received command signals image directing signals directing modification of visual images displayed to a human observer by the television receiver video display device; and

command processor circuitry coupled to said command receiver circuitry and to the television receiver video display device

(a) for receiving said image directing signals,

(b) for generating a cursor image signal for overlay of a cursor image onto said visual images, and

(c) for displaying over a portion of said visual images a menu element display from which the human observer may select further modifications of said visual images as directed by manipulation of said remote control device by the human observer,

said display controller and said remote control device cooperating for moving said cursor image across the area of said visual images and said menu display to position the cursor image over a displayed element and for directing modification of said visual images in response to selection of a displayed element overlain by the cursor image,

said display controller cooperating with the television video display device for displaying full motion video visual images occupying substantially the entirety of the screen area and a menu display occupying a minor portion of the screen area and overlying said full motion video visual images.

19. A method of displaying visual images to a human observer using a television video display device having a predetermined screen area for displaying visual images to a human observor comprising the steps of:

receiving signals transmitted at frequencies which are outside direct sensing by the human observer;

delivering, to said television video display device, video signals which drive the television video display device to display visual images;

generating, with a manually engageable input device remote from the television video display device and manipulable by the human observer, command signals indicative of desired modifications of the displayed visual images and delivering generated signals to a command transmitter;

transmitting, from the command transmitter and at a frequency which is outside direct sensing by the human observer, command signals coordinated in a predetermined manner to manipulation of the input device by the human observer;

receiving the command signals from the command transmitter and deriving from the received command signals image directing signals directing modification of the visual images;

generating a cursor image signal for overlay of a cursor image onto displayed visual images; and

(a) receiving the image directing signals and cursor image signal and;

(b) displaying full motion video visual images occupying substantially the entirety of said screen area and a menu display occupying a minor portion of said screen area and overlying said full motion video visual images, while

(c) modifying the visual images as directed by manipulation of the remote control device by the human observer to (j) overlay the cursor image onto selected portions of displayed visual images and (ii) move the cursor image across the area of the visual images and the menu display and (iii) facilitate modification of the visual images by the human observor through selection of menu commands overlain by the cursor image.

5,606,375

METHOD FOR ENHANCING DETAIL IN COLOR SIGNALS AND CIRCUITRY FOR IMPLEMENTING THAT METHOD IN COLOR VIDEO EQUIPMENT

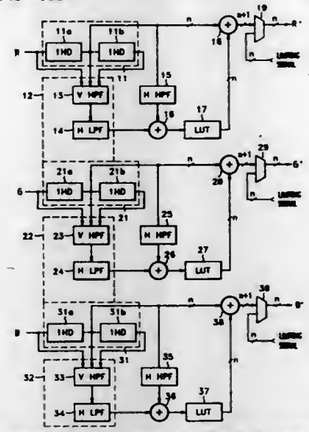
Hyo-seung Lee, Seoul, Rep. of Korea, assignor to Samsung Electronics Co. Ltd., Suwon, Rep. of Korea

Filed Oct. 26, 1994, Ser. No. 330,705

Claims priority, application Rep. of Korea, Aug. 31, 1994, 94-22076

Int. Cl.[6] H04N *5/18;5/21*

U.S. Cl. 348—606 **24 Claims**



1. A method of selectively enhancing detail or suppressing noise in a video signal, which said video signal sometimes includes relatively low horizontal spatial frequencies, which said video signal sometimes includes relatively high horizontal spatial frequencies, which said video signal sometimes includes relatively

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high vertical spatial frequencies, and which said video signal sometimes includes relatively low vertical spatial frequencies, comprising the steps of:

extracting a horizontal detail signal desciptive of said relatively high horizontal spatial frequencies and a vertical detail signal desciptive of said relatively high vertical spatial frequencies from an input signal version of said video signal previous to enhancing detail or suppressing noise of said video signal in an output signal version thereof;

combining said horizontal detail signal and said vertical detail signal to generate a combined detail signal;

combining said combined detail signal with reversed polarity with said input signal version of said video signal to suppress noise within said video signal in said output version thereof, only whenever the magnitude of said combined detail signal is less than a reference value for noise identification; and

combining said combined detail signal additively with said input signal version of said video signal to enhance detail within said video signal in said output version thereof, only whenever the magnitude of said combined detail signal is more than said reference value for noise identification.

5,606,376

DIFFERENTIAL MOTION DETECTION METHOD USING BACKGROUND IMAGE

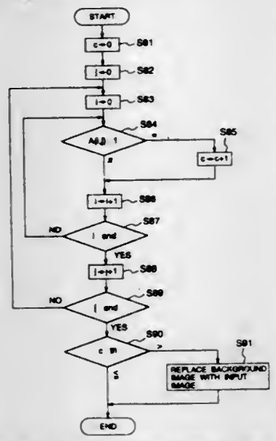
Toshiaki Shinohara, Omiya, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Tokyo, Japan

Filed Jun. 2, 1995, Ser. No. 460,795

Claims priority, application Japan, Jun. 8, 1994, 6-126486

Int. Cl.[6] H04N *5/272;1/41*

U.S. Cl. 348—701 **5 Claims**



1. A differential motion detection method using background image for deriving an image of a moving object by subtracting a background image from an input image which includes said image of the moving object, said background image being obtained by adding the input image and a previous background image both of which are weighted with variable weighting values, respectively, comprising:

a first step of defining a region in which said moving object exists as a moving object existing region, defining a region in which said moving object does not exist as a background region, and defining a region in which a sudden change occurs in said input image as an input image sudden change region;

a second step of calculating an absolute value at each pixel in an image produced by subtracting said background image from said input image in order to derive a differential/absolute value image;

a third step of calculating a mean value and a variance at a pixel in said differential/absolute value image from the levels of pixels included in a small region on said differential/absolute value image, said small region having said pixel located at the center thereof;

a fourth step of distinguishing, from said calculated mean value and variance of said pixel, whether said pixel is included in said moving object existing region, said background region, or said input image sudden change region; and

a fifth step of changing a method of updating said background image in accordance with whether said pixel is included in said moving object existing region, said background region, or said input image sudden change region.

5,606,377

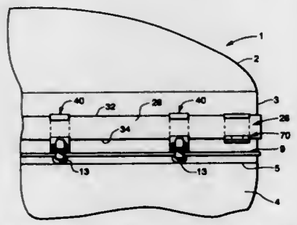
CRT HAVING AN IMPLOSION PROTECTION BAND WITH BRACKETS

Harry R. Swank, Lancaster, Pa., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Oct. 10, 1995, Ser. No. 541,990

Int. Cl.[6] H04N *5/65;5/645;5/68;* **H01J** *29/80*

U.S. Cl. 348—821 **16 Claims**



1. In a cathode-ray tube comprising an evacuated envelope having a faceplate panel with a sidewall joined to a funnel and an implosion protection band surrounding at least a portion of said sidewall and in contact therewith, a plurality of brackets being disposed between said implosion protection band and said sidewall of said panel, each of said brackets having an opening therethrough, the improvement wherein

each of said brackets being detachably attached to said implosion protection band by a resilient clip at one end thereof which overlaps at least a portion of said band.

5,606,378

CONTACT LENS HAVING AN OPTICAL ZONE HAVING AT LEAST ONE FOCAL POINT

Theodorus M. G. Van Meurs, Rotterdam, Netherlands, assignor to ECU Lens v.o.f., Rotterdam, Netherlands

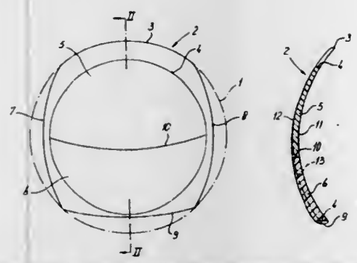
Filed Oct. 28, 1994, Ser. No. 331,171

Claims priority, application Netherlands, Oct. 28, 1993, 9301863

Int. Cl.[6] G02C *7/04*

U.S. Cl. 351—161 **3 Claims**

1. Contact lens having a substantially oval shape, an upper edge, a lower edge, side edges, and being subdivided into at least one distance area located in an upper part of the lens and having at least one focal point, and at least one reading area located in a lower part of the lens and having at least another focal point, said upper edge having a greater curvature than the side edges, said lower edge having a less pronounced curvature than the upper edge and the side edges, said curvature of the lower edge essentially corresponding to the curvature of the lower eyelid of a wearer, and said lower edge including a thickening region, wherein the vertical



dimension of the lens extending from the upper edge to the lower edge is larger than the horizontal dimension extending between the side edges.

5,606,379

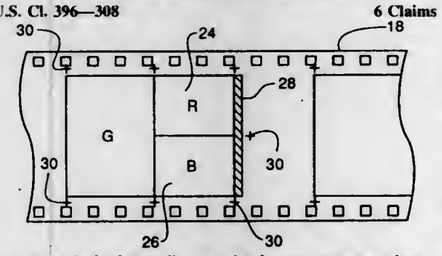
METHOD FOR RECORDING AND STORING COLOR IMAGES

Donald R. Williams, Williamson, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 10, 1996, Ser. No. 630,796

Int. Cl.[6] G03B *33/00;17/32;* **H04H** *1/46*

U.S. Cl. 396—308 **6 Claims**



1. A method of recording a color image on a monochrome photographic recording medium, comprising the steps of:

a. separating the color image into three color components, one luminance component and two chrominance components; and

b. recording the three color components on adjacent areas of the recording medium, the luminance component being recorded on a larger area than either of the two chrominance components.

5,606,380

SHOCK ABSORBING APPARATUS FOR A MIRROR IN AN SLR CAMERA

Hisashi Tatamiya, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 26, 1996, Ser. No. 605,500

Claims priority, application Japan, Feb. 27, 1995, 7-038566

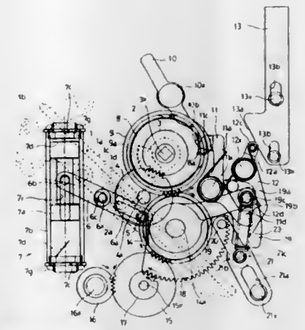
Int. Cl.[6] G03B *19/12*

U.S. Cl. 396—358 **9 Claims**

1. A shock absorbing apparatus of a mirror in a single lens reflex camera, comprising:

a mirror drive mechanism which moves said mirror, which is normally located within a photographing optical path, out of the photographing optical path immediately before a photographing operation; and

a damper which damps a shock caused when said mirror is moved by said mirror drive mechanism;



said damper comprising:

a cylinder;

a piston which is moved in said cylinder and which is connected to said mirror;

a valve mechanism which opens and closes a flow passage in accordance with the movement of said piston; and

an adjusting device which adjusts a surface area of said flow passage of said valve mechanism.

5,606,381

PHOTOGRAPHIC CAMERA

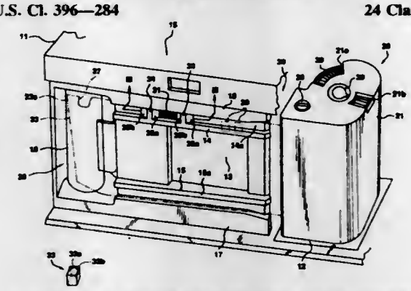
Kiyotaka Kobayashi, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 24, 1995, Ser. No. 449,577

Claims priority, application Japan, May 24, 1994, 6-109499

Int. Cl.[6] G03B *1/18;1/00;17/02*

U.S. Cl. 396—284 **24 Claims**



1. A camera for use with a roll film with a row of perforations formed in at least one lengthwise margin thereof, said film traveling across an exposure window which is formed at a back portion of a camera body and covered by a back cover, said camera comprising:

photoelectric detection means for photoelectrically detecting said perforations during movement of said film in a lengthwise direction past said exposure window, said detecting means comprising at least two separate elements which face each other with a space defined therebetween through which said film travels; and

means for defining a space right below a path of said perforations which receives one of said two separate elements therein so as to maintain said one element mechanically isolated from said margin of said film, said space having, at least at one end in said lengthwise direction thereof, a slope at an acute angle with respect to a plane in which said film travels.

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MANUAL FOCUSING CIRCUIT USING A SIGNAL STABILIZER

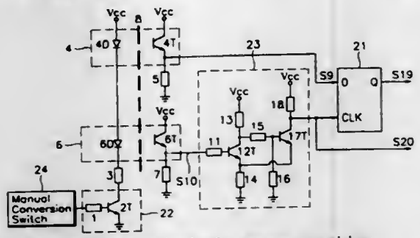
Inh-seok Suh, Kyounggi-do, Rep. of Korea, assignor to Samsung Aerospace Industries, Ltd., Kyeongsangnam-do, Rep. of Korea

Filed Jul. 11, 1995, Ser. No. 500,825

Claims priority, application Rep. of Korea, Jul. 18, 1994, 94-17283

Int. Cl.[6] G03B *1/18*

U.S. Cl. 396—101 **7 Claims**



1. A manual focusing circuit of a camera, comprising:

a focusing ring having a plurality of projections, wherein said ring is manually rotatable clockwise and counterclockwise by a user during a manual focusing mode;

a first sensing element, coupled to one of said projections of said focusing ring, for producing a first signal;

a second sensing element, coupled to another of said projections of said focusing ring, for producing a second signal having a phase difference of 90 degrees relative to said first signal;

a signal stabilizer, coupled to said second sensing element, for removing noise from said second signal to produce a stabilized signal representing a rotation number of said focusing ring;

means, coupled to said first sensing element and said signal stabilizer, for producing an output signal representing a rotation direction of said focusing ring based on said first signal and said stabilized signal;

means for selecting either the manual focusing mode or an automatic focusing mode of said camera; and

means responsive to said selecting means for supplying power to said first and second sensing elements only when the manual focusing mode is selected.

5,606,383

CAMERA CAPABLE OF TRIMMING PHOTOGRAPHING AND HAVING ZOOM FINDER WITH CONVERTER LENSES

Koichi Daitoku, Sagamihara, and Yoshio Imura, Kawasaki, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 533,672, Sep. 26, 1995, abandoned, which is a continuation of Ser. No. 395,186, Feb. 27, 1995, abandoned, which is a continuation of Ser. No. 319,771, Oct. 7, 1994, abandoned, which is a continuation of Ser. No. 169,541, Dec. 20, 1993, abandoned, which is a continuation of Ser. No. 868,039, Apr. 13, 1992, abandoned. This application Apr. 10, 1996, Ser. No. 631,609

Claims priority, application Japan, Apr. 16, 1991, 3-111070; Apr. 16, 1991, 3-111072; May 2, 1991, 3-130664; May 2, 1991, 3-130665; May 10, 1991, 3-135811

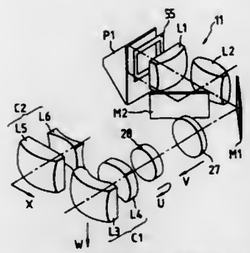
Int. Cl.[6] G03B *13/10*

U.S. Cl. 396—60 **2 Claims**

1. A camera capable of trimming photographing comprising:

photographing means having a normal photographing mode for printing the whole of a photographed picture, and a trimming photographing mode for obtaining a pseudo zoomed-up photograph by partially trimming a photographed picture;

a photographing zoom lens;



drive means for zooming said photographing zoom lens;

a zoom finder zoomed by being interlocked with said drive means to change a finder magnification;

a zoom ring rotatable in each of a normal photographing mode driving range and at least one driving range out of the normal photographing mode driving range, the rotation of said zoom ring in the normal photographing mode driving range causing said drive means to zoom said photographing zoom lens;

a first converter lens movable from a position out of an optical path of said zoom finder to a position in the optical path of said zoom finder in the normal photographing mode to change the finder magnification separately of zooming of said zoom finder;

a second converter lens movable from a position out of the optical path of said zoom finder to a position in the optical path of said zoom finder in the trimming photographing mode to change the finder magnification separately of zooming of said zoom finder;

means for moving one of said first and second converter lenses to a position out of the optical path of said zoom finder by being interlocked with the rotation of said zoom ring in the driving range out of the normal photographing driving range; and

means for moving the other of said first and second converter lenses to a position in the optical path of said zoom finder when said one of said first and second converter lenses is moved to a position out of the optical path of said zoom finder.

5,606,384

LENS BARREL HAVING AN IMAGE BLUR PREVENTION SYSTEM ARRANGED WITH RESPECT TO OTHER LENS BARREL DEVICES TO EFFICIENTLY UTILIZE LENS BARREL SPACE

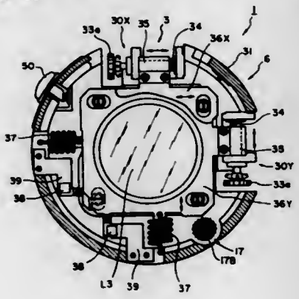
Satoshi Yamazaki, Tokyo; Akira Katayama, Koganei, and Hiroshi Okano, Tokyo, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Jan. 24, 1995, Ser. No. 377,585

Claims priority, application Japan, Jan. 24, 1994, 6-21885

Int. Cl.[6] G03B *17/00*

U.S. Cl. 396—55 **14 Claims**



1. A lens barrel, comprising:

an image blur prevention optical system to prevent image blur, the image blur prevention optical system having an optical axis;

an image blur prevention optical system drive mechanism to drive the image blur prevention optical system, the image blur prevention optical system drive mechanism being arranged around a circumference of the image blur prevention optical system;

a power transfer shaft arranged adjacent the image blur prevention optical system,

wherein the image blur prevention optical system drive mechanism is positioned at approximately an x-axis and a y-axis with respect to the optical axis, and the power transfer shaft is positioned at approximately a 45° angle with respect to the x and y axes, such that the image blur prevention optical system is driven without interference from the image blur prevention optical system drive and power transfer shaft.

5,606,385

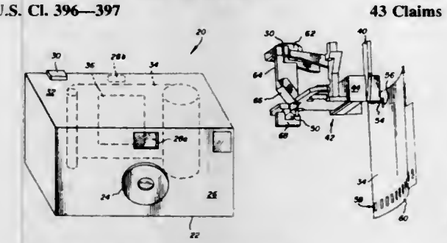
VIEWFINDER WARNING FLAG FOR PHOTOGRAPHIC CAMERA

Roger A. Siekierski, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 5, 1995, Ser. No. 417,410

Int. Cl.[6] G03B *17/00*

U.S. Cl. 396—397 **43 Claims**



1. A film metering mechanism comprising:

a shutter release of a camera that is actuated to initiate an exposure producing sequence during which a frame of a film roll in the camera is exposed, thereby producing an exposed frame, and the film roll is thereafter moved to a new frame position for a next exposure producing sequence;

a metering slide, having an integral warning flag, that is urged away from a ready position in the camera when the shutter release is actuated to initiate a frame producing sequence such that the integral warning flag is moved into a viewfinder of the camera, is engaged with a frame indexing perforation in the film roll in response to movement of the film roll to the new frame position such that the metering slide is moved with the film roll and the warning flag is moved out of the viewfinder, and is automatically halted against a camera stop after the film roll has been moved a distance equal to one frame, thereby returning the metering slide to the ready position;

a driver that pulls the metering slide away from the ready position when the shutter release is actuated; and

a camera track that defines a predetermined path followed by the metering slide as it is pulled by the driver, such that the camera track includes the camera stop against which the metering slide rests when in the ready position and to which the metering slide is returned by proper movement of the film roll after the actuation of the shutter release, wherein the driver includes a drive spring attached at a first end to the metering slide and at a second end to the camera track.

5,606,386

CAMERA VIEWFINDER WITH FRAMING PLATE ILLUMINATION

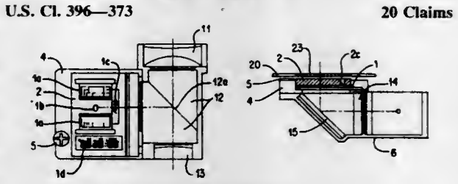
Hitoshi Aoki, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Nov. 22, 1994, Ser. No. 346,224

Claims priority, application Japan, Dec. 2, 1993, 5-302706

Int. Cl.[6] G03B *13/02*

U.S. Cl. 396—373 **20 Claims**



1. A viewfinder for a camera comprising:

a field of vision framing plate including frame components that are to be superimposed with an image of an object being photographed;

at least one light source internal to the camera; and

a light transmissive component disposed adjacent to the field of vision framing plate, the light transmissive component having at least one semitransparent surface that reflects light from the at least one light source, thereby illuminating the field of vision framing plate;

wherein the light transmissive component includes a connecting portion, the connecting portion passing light from the at least one light source to the field of vision framing plate without reflecting the light from the at least one light source.

5,606,387

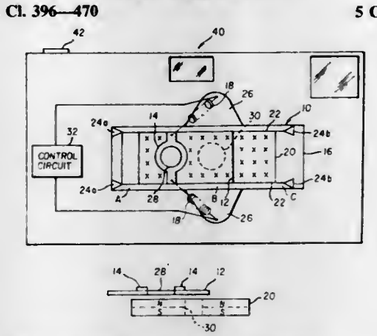
ELECTROMAGNETIC CAMERA SHUTTER WITH A CONDUCTIVE STRIP ON THE BLADE AND A PERMANENT MAGNET APERTURE

Edward P. Furlani, Lancaster, and Thomas M. Stephany, Churchville, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 3, 1996, Ser. No. 627,061

Int. Cl.[6] G03B *9/08;9/36*

U.S. Cl. 396—470 **5 Claims**



1. An electromagnetic camera shutter comprising:

an electrically conductive shutter blade having a hole there through;

electrically conductive spring means connected in series with said electrically conductive shutter blade for urging said shutter blade into a first or a second position from a compressed position between said first and said second position;

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permanent magnet means having a hole there through and positioned in proximity to said shutter blade such that the shutter blade covers the hole in said permanent magnet when the shutter blade is in the first or the second position; and

control means for applying a current through said springs and said shutter blade in a first direction to generate an electromagnetic field between said shutter blade and said permanent magnet so as to move said shutter blade from said first position to said second position and for applying a current through said springs and said shutter blade in a second direction so as move said shutter blade from said second position to said first position such that the hole in the shutter is positioned over the hole in the permanent magnet during transitions of the shutter between positions.

5,606,388

PHOTO FILM CASSETTE FOR LENS-FITTED PHOTO FILM UNIT AND CASSETTE MARKING METHOD

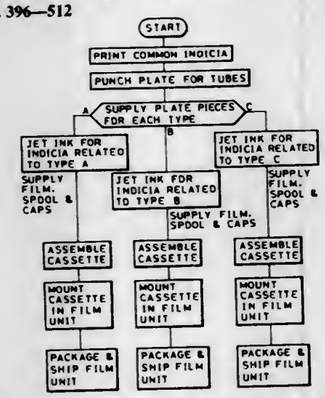
Takuya Arai, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 2, 1994, Ser. No. 336,194

Claims priority, application Japan, Nov. 5, 1993, 5-277123

Int. Cl.[6] G03B *17/26*

U.S. Cl. 396—512 **2 Claims**



1. A method of marking photo film cassettes, which are adapted to plural different types of lens-fitted photo film units, and are pre-contained in selected ones of said types to be used, comprising the steps of:

printing common indicia on plate material supplied for constituting a plurality of said film cassettes before assembly of said film cassettes, said common indicia representing information common to said plural types;

cutting said plate material into separate pieces after printing said common indicia;

distributing said separate pieces into groups for separately printing thereon additional different indicia individual to respective ones of said selected types; and

printing an additional indicium on said separate pieces after printing said common indicia and before inserting said film cassette in said lens-fitted photo film unit, for representing information related to said selected type of said lens-fitted photo film units to be loaded with said cassettes, said additional indicium being the same for all pieces in one said group and different from the indicia of the other said groups.

5,606,389

COMPACT CAMERA DESIGN TO MAKE MORE EFFECTIVE USE OF THE INTERIOR SPACE THEREOF

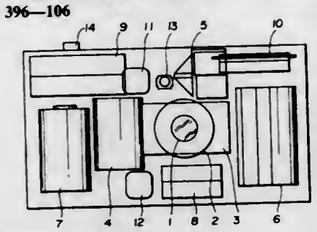
Yukihiko Sugita, Kokubunji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 22, 1994, Ser. No. 362,203

Claims priority, application Japan, Dec. 27, 1993, 5-330142

Int. Cl.[6] G03B *7/099;15/03;13/36;17/02*

U.S. Cl. 396—106 **13 Claims**



1. A camera, comprising:

a photographic optical system;

an aperture formed behind said photographic optical system in order to limit a range of subject light irradiated toward a film surface;

a cartridge chamber lying on one side of said aperture to accommodate a small-sized film cartridge containing film that is smaller than roller film of 35 mm width, said film cartridge being stowed in said cartridge chamber so that a built-in take-up axis of said film cartridge is oriented in parallel with a height of said camera;

a take-up chamber lying on another side of said aperture to wind in a portion of film that has been fed from said film cartridge stowed in said cartridge chamber in a lateral direction of said camera and has passed behind said aperture;

a light projecting optical system lying to one side of said take-up chamber to distribute light for range finding toward an object to be photographed; and

a light receiving optical system lying to another side of said take-up chamber opposite said one side to receive light emanated from said light projecting optical system and reflected from said object to be photographed.

5,606,390

VISUAL-LINE DETECTING DEVICE AND OPTICAL APPARATUS HAVING THE SAME

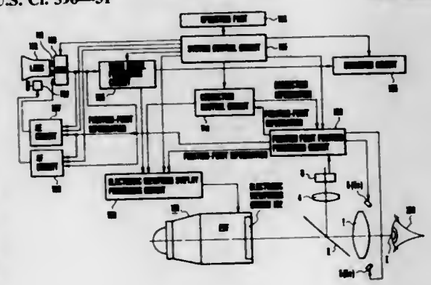
Takashi Arai, Tokyo; Osamu Morita; Kitahiro Kaneda, both of Kanagawa-ken, and Tatsuya Yamazaki, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 949,730, Sep. 23, 1992. This application May 9, 1994, Ser. No. 239,921

Claims priority, application Japan, Sep. 27, 1991, 3-249212; Sep. 27, 1991, 3-249213; Jan. 7, 1992, 4-000507

Int. Cl.[6] G03B *7/00*

U.S. Cl. 396—51 **26 Claims**



1. A camera capable of utilizing a visual line of a photographer for a photographic operation, comprising:

a) visual-line detecting means for detecting a visual-line position of the photographer; and

b) correcting means for correcting a deviation between the visual-line position detected by said visual-line detecting means and an actual visual-line position of the photographer's eye, said correcting means automatically performing the correction operation of the deviation according to an operation for enabling a photographic operation of said camera.

5,606,391

EXPOSURE CONTROL APPARATUS FOR CAMERA

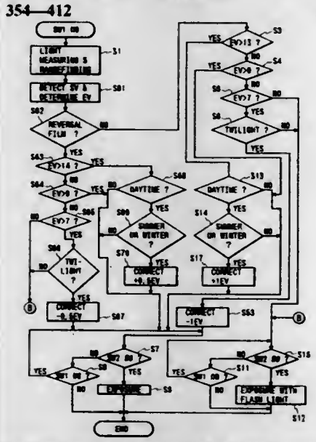
Hitoshi Aoki, Tokyo; Hiroshi Wakabayashi, Yokohama; Daiki Tsukahara, Hiratsuka, and Hidenori Miyamoto, Urayasu, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Division of Ser. No. 288,163, Aug. 10, 1994, Pat. No. 5,483,320, which is a continuation of Ser. No. 131,596, Oct. 5, 1993, abandoned, which is a division of Ser. No. 946,774, Sep. 18, 1992, Pat. No. 5,258,805, which is a continuation of Ser. No. 784,914, Oct. 30, 1991, abandoned, which is a division of Ser. No. 644,232, Jan. 22, 1991, Pat. No. 5,086,314, which is a continuation-in-part of Ser. No. 525,832, May 21, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 482,501

Claims priority, application Japan, May 25, 1989, 1-131894; Dec. 21, 1989, 1-332300; Jan. 22, 1990, 2-10539; Jan. 22, 1990, 2-10540; Jan. 26, 1990, 2-15076; Apr. 19, 1990, 2-101815

Int. Cl.[6] G03B *7/00*

U.S. Cl. 354—412 **36 Claims**



1. An exposure control apparatus for a camera provided with a flash unit, comprising:

an exposure value determining portion which determines an exposure value according to the luminance of an object;

a flash unit controlling portion which controls said flash unit so as to effect a photographing operation with flash emission when said object luminance is equal to or less than a predetermined level;

a time information supplying circuit which supplies information on time;

a discriminating portion which discriminates whether the current time is a twilight time, based on said time information; and

an adjusting portion which reduces said predetermined level of luminance by a predetermined amount when the current time is identified as a twilight time.

5,606,392

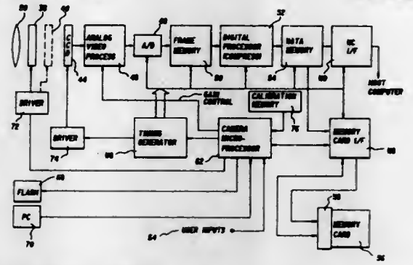
CAMERA USING CALIBRATED APERTURE SETTINGS FOR EXPOSURE CONTROL

Anthony L. Tintera, Rochester, and Jean F. Depatie, Albion, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 28, 1996, Ser. No. 671,835

Int. Cl.[6] G03B *7/00;15/05*

U.S. Cl. 396—161 **18 Claims**



1. A camera comprising:

an aperture mechanism providing two or more aperture sizes for regulation of the intensity of image light gathered by the camera;

a storage device for storing aperture calibration data corresponding to the measured transmissivity of each aperture size;

means for controlling camera exposure according to the value of one or more exposure parameters other than the aperture; and

an exposure circuit that utilizes the stored aperture calibration data in order to establish the value of at least one of the exposure parameters.

5,606,393

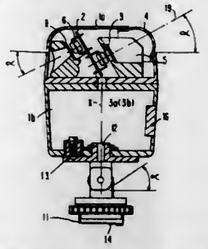
ILLUMINATION MEASURING DEVICE FOR PANORAMIC PHOTOGRAPHY

Hans-Joerg Schoenherr; Hans Zimmet, both of Dresden; Michael Lenk, Pirna; Karl-Heinz Werner, Dresden, and Udo Postel, Dresden, all of Germany, assignors to Kamerawerke Noble GmbH, Dreaden, Germany

Filed Oct. 26, 1995, Ser. No. 548,666

Int. Cl.[6] G03B *7/08;37/00;* **G01J** *1/02;1/42*

U.S. Cl. 396—20 **15 Claims**



1. An illumination measuring device for panoramic picture taking, comprising a first photoelectric illumination intensity receiver which diffusely determines light falling in a first measuring region and illuminating a first panoramic portion: at least one further photoelectric illumination intensity receiver which diffusely determines light falling in a second measuring region and illuminating a further panoramic portion; and an evaluating unit determining a deviation of an illumination intensity determined by said further illumination intensity receiver from an illumination intensity determined by said first illumination intensity receiver.

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5,606,394

CLEANING STRUCTURE FOR OUT-OF-LIQUID CONVEYING PORTION

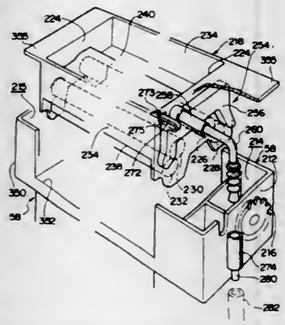
Kouki Nomura, Aichi-ken, and Hiroyuki Satoh, Kanagawa, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 483,270, Jun. 7, 1995, Pat. No. 5,555,072. This application May 15, 1996, Ser. No. 648,444

Claims priority, application Japan, Sep. 5, 1994, 6-211305; Sep. 5, 1994, 6-211306; Sep. 5, 1994, 6-211308

Int. Cl.[6] G03B *27/32;13/08;27/52;29/00*

U.S. Cl. 355—27 **2 Claims**



1. A method of measuring a quantity of cleaning water, which is used in a cleaning structure for an out-of-liquid conveying portion, wherein a crossover rack accommodating therein the out-of-liquid conveying portion for conveying a photosensitive material in an out-of-liquid area is removably provided at an upper portion of a processing rack provided within a processing bath to convey a printed photosensitive material into a processing solution and process the photosensitive material in the processing solution, and cleaning nozzles are removably mounted to the crossover rack such that the cleaning water is expelled to an interior of the crossover rack through the cleaning nozzles, thereby cleaning the out-of-liquid conveying portion, said method comprising the steps of:

mounting, in place of the crossover rack, a measuring rack provided with a nozzle mounting portion having a closed bottom to the upper portion of the processing rack without providing said out-of-liquid conveying portion, said cleaning nozzle being attachable to and detachable from said nozzle mounting portion, and mounting said cleaning nozzles to said nozzle mounting portion;

thereafter expelling the cleaning water from the cleaning nozzles so as to store the cleaning water in said measuring rack; and

thereafter removing said measuring rack from the upper portion of the processing rack so as to measure a quantity of the cleaning water stored in the processing rack.

5,606,395

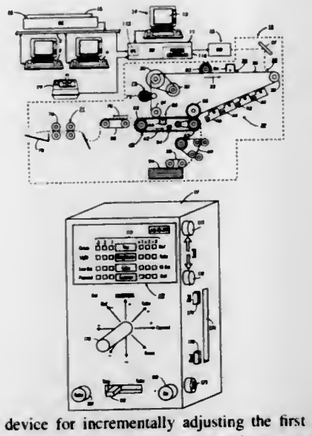
METHOD AND APPARATUS FOR ADJUSTING MACHINE PARAMETERS IN A PRINTING MACHINE TO PROVIDE REAL-TIME PRINT APPEARANCE CONTROL

Eugene L. Yang, and Randolph Parks, both of Fairport, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 11, 1996, Ser. No. 583,827

Int. Cl.[6] G03G *15/36*

U.S. Cl. 399—81 **16 Claims**



1. In a digital printing system with a controller for converging operating characteristics of a first process control module on a first operating point stored in a memory, an apparatus for adjusting print appearance of printer output in real-time, comprising:

a process control sensor for providing feedback from adjustments made to the first process control module, said process control sensor providing an output signal;

an input device for incrementally adjusting the first operating point, said input device overriding the first operating point with a second operating point;

a comparator for determining a difference value between the output signal from said process control sensor and the second operating point, said controller adjusting the first process control module in accordance with the difference value determined by said comparator;

an interaction look up table being stored in the memory; and

means for adjusting a third operating point of a second control module, said adjusting means overriding the third operating point with a fourth operating point, so that adjustments made to the second process control module compensate for the adjustments made to the first process control module.

5,606,396

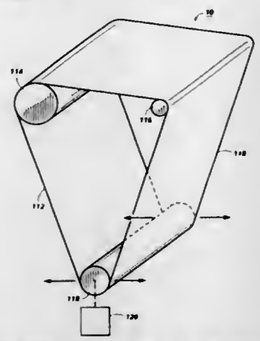
IMAGING PROCESS USING FLEXIBLE ELECTROSTATOGRAPHIC IMAGING MEMBER

Robert C. U. Yu, Webster; Geoffrey M. T. Foley, Fairport; Richard L. Post, Penfield; William W. Limburg, Penfield; Youti Kuo, Penfield; Donald C. Von Hoene, Fairport; Satchidanand Mishra, Webster; David H. Pan, Rochester; Yonn K. Rasmussen, Fairport; Dale S. Renfer, Webster; John F. Yanus, Webster, and Richard L. Schank, Pittsford, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 6, 1995, Ser. No. 369,639

Int. Cl.[6] G03G *5/00*

U.S. Cl. 399—162 **9 Claims**



1. A process comprising providing a flexible electrostatographic imaging belt comprising a substrate layer, a charge generating layer, charge transport layer, and two parallel longitudinal edges, said imaging belt having a charge transport layer tension strain of less than about 0.05 percent across the width of said belt, mounting said imaging belt on at least one support roller and a belt steering and tension applying roller substantially parallel to and spaced from said support roller to guide said belt, transporting said belt around said support roller and said belt steering and tension applying roller, periodically tilting said belt steering roller relative to said support roller to maintain said belt on said support roller, forming an electrostatic latent image on said belt, developing said electrostatic latent image with toner to form a toner image corresponding to said latent image, transferring said toner image to a receiving member, and repeating said forming, developing and transferring steps at least once.

5,606,397

DEVELOPING UNIT FOR DEVELOPING A LATENT IMAGE FORMED ON AN IMAGE CARRIER BY CONTACTING A THIN LAYER OF TONER

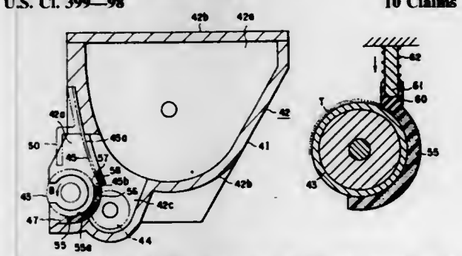
Toshirou Honda, Mishima; Shigeru Fujiwara, Yokohama, and Minoru Tezuka, Kawasaki, all of Japan, assignors to Kabushiki Kaisha TEC, Tokyo, Japan

Filed Jul. 19, 1995, Ser. No. 504,735

Claims priority, application Japan, Jul. 21, 1994, 6-169269

Int. Cl.[6] G03G *15/06*

U.S. Cl. 399—98 **10 Claims**



2. A developing unit for developing a latent image formed on an image carrier by contacting a thin layer of toner, said developing unit comprising:

a housing member having a developer containing section for containing toner;

a toner conveying roller, rotatably provided in said housing member to face a developing area of the image carrier, for conveying toner to said developing area;

a toner layer thickness determining member, having a toner layer thickness determining elastic member having a length which is the same as the length of said toner conveying roller, for forming a toner layer having a predetermined thickness on said toner conveying roller by pressurizing said toner thickness determining elastic member onto a surface of said toner conveying roller; and

a pair of semicircular first sealing members longitudinally arranged on a cylindrical portion of both ends of said toner conveying roller along an outer peripheral surface of said toner conveying roller such that a gap is set between said first sealing members and said toner layer thickness determining member in a frictional state; and

wherein said toner layer thickness determining member further includes at least one pin extended to said toner conveying roller, said elastic member being bridged over said at least one pin, and urging members urging said elastic member to said toner conveying roller, each of said elastic member and said urging members being provided at a position where said at least one pin and said toner conveying roller face each other.

5,606,398

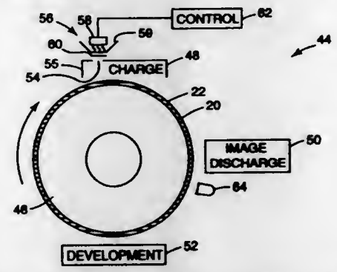
REDUCTION OF RESIDUAL POTENTIAL AND GHOSTING IN A PHOTOCONDUCTOR

David A. Ender, River Falls, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 28, 1995, Ser. No. 430,432

Int. Cl.[6] G03G *15/02*

U.S. Cl. 399—168 **27 Claims**



1. A method for reducing residual electrostatic potential in a photoconductor, said method comprising the steps of:

applying a charge to a surface of said photoconductor, said charge establishing an electric field across said photoconductor; and

exposing said photoconductor to conditioning radiation having wavelengths selected to release charge carriers from trap sites within said photoconductor, wherein said conditioning radiation consists essentially of conditioning radiation having wavelengths greater than an absorption band of said photoconductor, the released charge carriers being transported within said photoconductor under influence of said electric field to reduce residual electrostatic potential in said photoconductor,

wherein said photoconductor moves in a direction of travel during an imaging cycle, and said step of exposing includes exposing said photoconductor at a position after a position at which said charge is applied and before a position at which image discharge radiation is applied to said photoconductor relative to said direction of travel of said photoconductor during said imaging cycle.

5,606,399

DEVICE FOR CORRECTING AN APPLIED VOLTAGE IN AN IMAGE FORMING APPARATUS

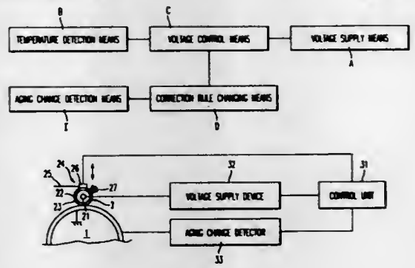
Shinsuke Kikui, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 27, 1995, Ser. No. 534,297

Claims priority, application Japan, Sep. 28, 1994, 6-232600

Int. Cl.[6] G03G *15/02*

U.S. Cl. 399—168 **6 Claims**



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1. An image forming apparatus comprising a photosensitive body rotatable in a predetermined direction, a charging member to be contacted with said photosensitive body to charge a surface of said photosensitive body, voltage supply means for supplying a voltage to said charging member, temperature detection means for detecting temperature of said charging member, and voltage correction means for correcting the voltage to be supplied by said voltage supply means in accordance with a result of detection by said temperature detection means, wherein:

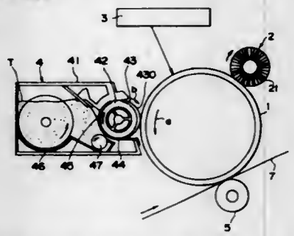
an electric potential to be charged to the surface of said photosensitive body has a plurality of target values, a reference value of a voltage to be supplied by said voltage supply means is set per each of said target values, and said image forming apparatus further comprises a correction rule changing means for changing a correction rule for the supplying voltage to be corrected by said voltage correction means per each reference value for the target value of the electric potential to be charged.

5,606,400

IMAGE FORMING APPARATUS WITH A MEMBER FOR SHAVING THE SURFACE OF A PHOTOSENSITIVE MEMBER

Keiko Nagayasu, Ibaraki, and Akihito Ikegawa, Sakai, both of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Nov. 7, 1995, Ser. No. 551,759
Claims priority, application Japan, Nov. 8, 1994, 6-273607
Int. Cl.[6] G03G *15/02*
U.S. Cl. 399—168 **6 Claims**



1. An image forming apparatus comprising:

a photosensitive member having a hardness such that a conical diamond produces on a surface of the photosensitive member a scratch of 30 μm or greater but no more than 180 μm in width, when the diamond scratches the surface of the photosensitive member under a vertical load of 50 g and relative speed of 100 mm/min, the diamond having a conical angle of 120° and hemisphere shaped leading edge with a radius of 0.2 mm;

a developing device for developing a latent image formed on the photosensitive member, and for cleaning residual toner on the photosensitive member after transferring the developed image onto a paper; and

at least one rotational brush provided in contact with the photosensitive member under the following conditions of:

$$100\ \text{mm} \geq W \times |Vr - Vp|/Vp \geq 10\ \text{mm},$$

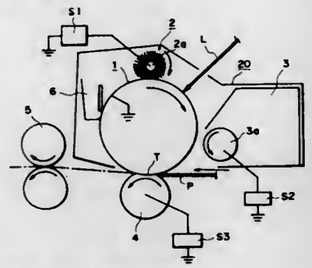
wherein W is a nip width of the brush relative to the photosensitive member, Vr is a rotational speed of the brush and Vp is a rotational speed of the photosensitive member.

5,606,401

CHARGING DEVICE INCLUDING MOVABLE CHARGING BRUSH CONTACTABLE TO MEMBER TO BE CHARGED, AND IMAGE FORMING APPARATUS USING SAME

Hideyuki Yano, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 203,408, Mar. 1, 1994. This application Nov. 13, 1995, Ser. No. 559,180
Claims priority, application Japan, Mar. 1, 1993, 5-066150; Feb. 24, 1994, 6-026811
Int. Cl.[6] G03G *15/02*
U.S. Cl. 355—219 **50 Claims**



1. A charging device comprising:

a movable member to be charged having a surface charge injection layer with a volume resistivity of 1×10^{10}–1×10^{14} Ωcm;

a charging member for charging said member to be charged, said charging member including a movable charging brush comprising fibers contactable with said member to be charged and supplied with a voltage; and

wherein said movable member is driven such that the following relationship is satisfied:

$$N(Vk-Vb)/Vb>4,$$

where Vk (mm/sec) is a movement speed of the surface of said member to be charged, Vb (mm/sec) is a movement speed of an outer peripheral surface of said charging brush, and N (mm) is a contact width between said member to be charged and said charging brush, measured in a movement direction of said member to be charged.

5,606,402

ELECTROSTATIC IMAGE FORMER WITH IMPROVED TONER CONTROL GRID

Hirokazu Fujita, Nara, and Naoki Irisa, Yamatokoriyama, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

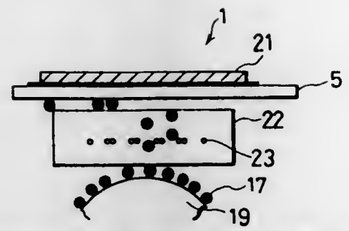
Filed Dec. 16, 1994, Ser. No. 358,785
Claims priority, application Japan, Dec. 27, 1993, 5-332473; Aug. 11, 1994, 6-189393
Int. Cl.[6] G03G *15/06*
U.S. Cl. 399—222 **24 Claims**

1. An image forming apparatus, comprising:

a developing particle holder for holding developing particles by means of either of electric force and magnetic force;

a counter-electrode positioned opposite said developing particle holder;

a control grid, including a matrix of gates arranged with a pitch therebetween, is provided between said developing particle holder and said counter-electrode, in order to regulate passage of developing particles, and, to facilitate individual control of said gates, a distance, between said control grid and said developing particle holder, is shorter than said pitch of the gates;



a power source section, furnishing a potential which generates a prescribed potential difference between said developing particle holder and said counter-electrode and applying a potential to said control grid; and

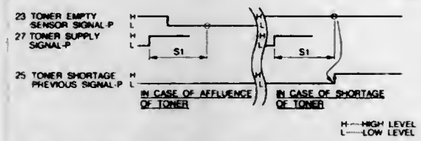
grid potential control means for changing an electric field existing between said developing particle holder and said counter-electrode by changing the potential, applied by said power source section to said control grid, according to image signals, in order to form an image, by controlling flight of developing particles from said developing particle holder through each gate towards said counter-electrode and by adhering the developing particles to a recording medium arranged in a direction toward which the developing particles fly.

5,606,403

TONER SUPPLY CONTROL SYSTEM FOR AN ELECTROPHOTOGRAPHIC APPARATUS

Toru Kikuchi; Shuho Yokokawa; Isao Watanabe; Satoshi Aita; Hidenori Takayasu; Shigeo Nemoto; Osamu Ohuchi; Kunitomo Takahashi; Youichi Takeuchi, and Hidenori Iwanaga, all of Ibaraki, Japan, assignors to Hitachi Koki Co., Ltd., Tokyo, Japan

Filed Nov. 15, 1995, Ser. No. 558,769
Claims priority, application Japan, Dec. 5, 1994, 6-300796
Int. Cl.[6] G03G *21/00*
U.S. Cl. 399—27 **6 Claims**



1. A toner supply control device for use in a electrophotographic apparatus, said device comprising:

a developing unit for developing with a developer containing toner and carrier;

a toner hopper for storing the toner;

a toner empty sensor for detecting a remainder of toner in the toner hopper;

a toner supply drive unit for conveying toner from outside of said electrophotographic apparatus into said toner hopper; and

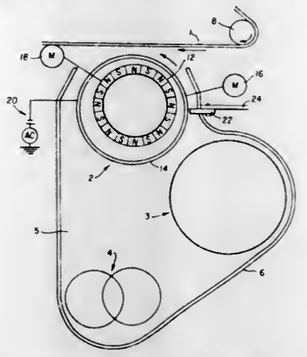
control means for controlling said toner supply drive unit to be driven over a first predetermined period of time to convey toner from the outside into said toner hopper without stopping a developing operation of said electrophotographic apparatus after said toner empty sensor detects over a second predetermined period of time that the remainder of toner in said toner hopper is small, and then for detecting, after said first predetermined period of time, an existence of an output signal output from said toner empty sensor indicating that the remainder of toner is small, to output a previous signal of toner shortage while the developing operation of said electrophotographic apparatus is maintained during the existence of the output signal, and to report a shortage of toner to an operator according to the previous signal of toner shortage.

5,606,404

TONER DEVELOPMENT STATION WITH NON-CONDUCTIVE SKIVE

Thomas K. Hilbert, Spencerport, and Eric C. Stelter, Pittsford, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 22, 1995, Ser. No. 563,246
Int. Cl.[6] G03G *15/09*
U.S. Cl. 399—267 **5 Claims**



1. A development station for applying dry toner to an image member from a developer of dry toner particles and hard magnetic carrier particles, said station comprising:

a rotatable magnetic core,

means for rotating said magnetic core greater than 500 revolutions per minute,

a shell around said core, which shell is rotatable or not rotatable, the combined effect of the rotation of the core and any rotation of the shell being to move the developer through a development zone facing the image member, the developer having a height from the shell as it moves, and

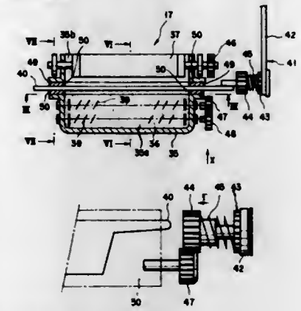
a non-conductive skive positioned upstream from the development zone and spaced from the shell to limit the height of the developer moving into the development zone.

5,606,405

DEVELOPING APPARATUS AND IMAGE FORMING APPARATUS HAVING DEVELOPING APPARATUS

Koji Yukinaga, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 16, 1995, Ser. No. 558,648
Claims priority, application Japan, Nov. 21, 1994, 6-286521
Int. Cl.[6] G03G *15/06*
U.S. Cl. 399—120 **7 Claims**



1. A developing apparatus comprising:

a developing agent storage unit to store a developing agent;

developing agent supply means for supplying the developing agent in the developing agent storage unit;

driving means, provided detachably to the developing agent supply means, for driving said developing agent supply means when said driving means is connected to the developing agent supply means; and

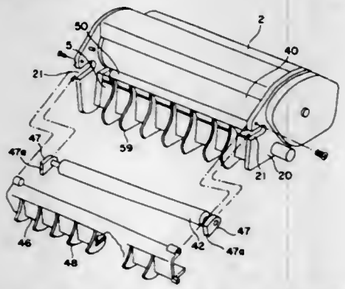
separating means for separating the developing agent supply means from the developing agent storage unit, wherein the separating means has a rigid partition member at a first position between the developing agent storage unit and the developing agent supply means, separates the developing agent supply means and the driving means when said partition member is at the first position, and connects the developing agent supply means and the driving means when said partition member is drawn from the first position.

5,606,406

PROCESS CARTRIDGE PROVIDED WITH AN ACCURATELY POSITIONED TRANSFER ROLLER

Takuzou Ikeyama; Mitsuru Yamazaki, and Masaru Takusagawa, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 10, 1993, Ser. No. 103,785
Claims priority, application Japan, Sep. 28, 1992, 4-257926
Int. Cl.[6] G03G *21/16*
U.S. Cl. 399—111 **30 Claims**



1. An exchangeable process cartridge in an image forming apparatus, comprising:

an endless latent image carrier on which a toner image is formed;

a charger for charging the latent image carrier;

a transfer roller for transferring the toner image from the latent image carrier onto a sheet;

a frame on which said endless latent image carrier and said transfer roller are rotatably provided, said frame having slide grooves by which the transfer roller is slidable in a direction away from a position of contact with said endless image carrier; and

a cover for the transfer roller, said cover having guide ribs for guiding the sheet to a nip between the endless latent image carrier and the transfer roller.

5,606,407

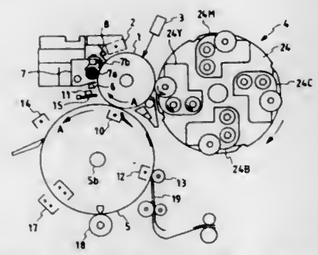
IMAGE FORMING APPARATUS WITH JAM CLEARING MECHANISM

Tomohisa Suzuki, Ebina, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Dec. 15, 1995, Ser. No. 573,536
Claims priority, application Japan, Dec. 19, 1994, 6-334442
Int. Cl.[6] G03G *15/14*
U.S. Cl. 399—303 **4 Claims**

1. An image forming apparatus comprising:

an image carrying body having a circumferential surface on which a latent electrostatic image is to be formed;



a developing device for forming a toner image by depositing toner on the latent electrostatic image;

a transfer drum rotatably supported in proximity to or in contact with the image carrying body, the transfer drum being a cylindrical member holding, on a circumferential surface thereof, a recording sheet on which the toner image is to be transferred, the transfer drum being supported so that it can be pulled out along an axis thereof when the recording sheet is jammed;

drive means for rotationally driving the transfer drum at the time of transferring the toner image;

a cleaning member being in contact with the image carrying body, for eliminating toner remaining on the image carrying body after completion of a transfer operation;

a platelike paper folding member disposed downstream of a position at which the transfer drum confronts the image carrying body, and having a surface that confronts the circumferential surface of the transfer drum substantially in parallel with the axis of the transfer drum, and an edge that projects more to an upstream side at a position of the edge closer to a transfer drum pulling side; and

driving force transmission release means for releasing transmission of a driving force from the drive means to the transfer drum, and for rendering the transfer drum freely rotatable at least in a normal rotational direction thereof when the transfer drum is pulled out.

5,606,408

IMAGE FORMING APPARATUS AND CLEANING DEVICE THEREFOR

Hidetoshi Yano, Yokohama; Hisashi Shoji, Kawasaki; Tsukuru Kai, Fujisawa; Osamu Endo, Kawasaki; Yoshiko Ishii, Tsukuba; Nobuto Yokokawa, Gotenba; Masako Suzuki, Yokohama; Yukiko Iwasaki, Tokyo; Koji Sakamoto, Tokyo; Yasushi Nakazato, Tokyo, and Takayuki Kimura, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

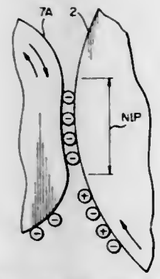
Filed Sep. 29, 1995, Ser. No. 536,205
Claims priority, application Japan, Sep. 30, 1994, 6-261949; Nov. 15, 1994, 6-280720; Nov. 15, 1994, 6-280721; Nov. 15, 1994, 6-280722; Nov. 16, 1994, 6-281949; Feb. 3, 1995, 7-017216; Mar. 24, 1995, 7-066246; Mar. 28, 1995, 7-069125; May 31, 1995, 7-134099; Sep. 14, 1995, 7-262138
Int. Cl.[6] G03G *21/00*
U.S. Cl. 399—343 **35 Claims**

1. An image forming apparatus having a function of removing residual toner remaining on an image carrier after image transfer and collecting said toner, said apparatus comprising:

a developing device for developing a latent image electrostatically formed on said image carrier to thereby produce a corresponding toner image;

an image transferring device for transferring the toner image to a recording medium; and

a cleaning device for applying, during a single image forming process using said image carrier, an electric field in one direction in order to attract and retain the residual toner, and



then switching the direction of said electric field in order to redeposit said toner in an area of said image carrier which does not effect the next image formation, said image carrier conveying said toner to said developing device, whereby said toner is electrostatically collected by said developing device;

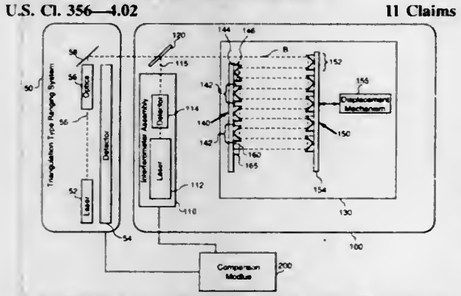
said cleaning device comprising a cleaning member contacting said image carrier and movable together with said image carrier, and for rubbing the residual toner at a nip between said cleaning member and said image carrier to thereby charge said toner to a same polarity and electrostatically attract said toner, and voltage applying means for applying a voltage to said cleaning member.

5,606,409

LASER RANGING SYSTEM CALIBRATION DEVICE

John L. Schneiter, Latham, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 27, 1994, Ser. No. 364,325
Int. Cl.[6] G01C *3/08;5/00*
U.S. Cl. 356—4.02 **11 Claims**



1. A calibration device for a laser ranging system, the calibration device comprising:

an interferometer assembly comprising a calibration beam generator and an interferometer detector; and

a beam path magnifier assembly optically coupled to said interferometer assembly to receive a calibration beam therefrom and to said laser ranging system to receive a laser ranging beam therefrom, said beam path magnifier assembly comprising means for varying a folded calibration optical path length, a retroreflector disposed to reflect said calibration beam to said interferometer assembly, and a target disposed to reflect said laser ranging beam to said laser ranging system, said retroreflector and said target being disposed in said beam path magnifier assembly such that said calibration beam and said laser ranging beam each respectively travel the same distance from entering said beam path magnifier assembly to said corner cube and said target;

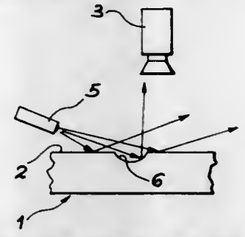
said means for varying said optical path length further comprising displaceable optical components disposed such that said folded calibration optical path length is determined by more than two reflections within said beam path magnifier assembly.

5,606,410

METHOD FOR CONTROLLING THE SURFACE STATE OF ONE FACE OF A SOLID AND THE ASSOCIATED DEVICE

Roger Peclier, Faverges de la Tour; Pierre Laurent, St. Georges de Commiers, and Jean-François Piquard, Montchaboud, all of France, assignors to Compagnie Generale des Matieres Nucleaires, Velizy-Villacoublay, France

PCT No. PCT/FR94/01277, § 371 Date Jul. 26, 1995, § 102(e) Date Jul. 26, 1995, PCT Pub. No. WO95/12810, PCT Pub. Date May 11, 1995
PCT Filed Nov. 4, 1994, Ser. No. 436,349
Claims priority, application France, Nov. 4, 1993, 93 13128
Int. Cl.[6] G01N *21/00*
U.S. Cl. 356—237 **14 Claims**



1. Method for checking the surface state of one face (2) of a solid (1) for locating shape defects which may be present therein, said method comprising the steps of:

observing the face of the solid using photography in order to locate an area that may be a defect;

observing said area using photography and optical magnification means; and

measuring the size of the area with an optoelectronic probe; and

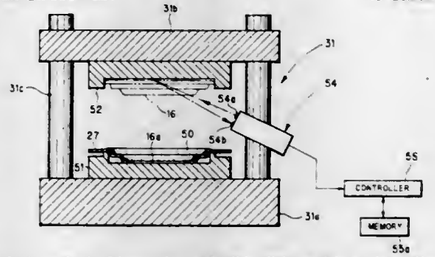
comparing the size of the area with a predetermined size limit to determine whether the area is a defect, said area being considered a defect if the size of the area is larger than the predetermined size limit.

5,606,411

INSPECTING METHOD FOR DISK USED IN PHOTO FILM CASSETTE

Masayuki Kubota, and Yuzo Tsunekawa, both of Minami-Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 7, 1996, Ser. No. 657,592
Claims priority, application Japan, Jun. 9, 1995, 7-143438
Int. Cl.[6] G01N *21/00*
U.S. Cl. 356—237 **43 Claims**



1. A method of inspecting a flexible disk used in a photo film cassette, said photo film cassette having a spool core about which said photo film is wound in a roll form; a cassette shell for containing said spool core in rotatable fashion; said disk being secured to each of two ends of said spool core, for regulating each of edges of said photo film, material of said disk being thermoplastic synthetic resin sheet; said sheet being subjected to vacuum forming, air-pressure forming, or vacuum/air-pressure forming in

combination of said vacuum forming and said air-pressure forming, to form a disk-like portion; said disk being cut out of said disk-like portion by a punch/die set; said disk being returned to a punch hole formed in said disk and conveyed with said sheet; said disk being removed from said punch hole by a disk remover unit before conveyance to a spool core mounting station; said flexible disk inspecting method comprising:

a first inspecting process of inspecting a shape of said disk, to detect said disk acceptable or unacceptable; and/or

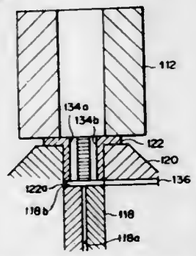
a second inspecting process of inspecting occurrence of overlay of said disk on another disk before said spool core mounting station, to detect said disk unacceptable if said overlay occurs.

5,606,412

FLOW CELL ASSEMBLY

Muneo Saito; Hiroyuki Hakozaki, and Takeshi Kanomata, all of Hachioji, Japan, assignors to Jasco Corporation, Hachioji, Japan

Filed Feb. 5, 1996, Ser. No. 595,466
Claims priority, application Japan, Feb. 7, 1995, 7-043469
Int. Cl.[6] G01N *21/05*
U.S. Cl. 356—246 **7 Claims**



1. A flow cell assembly use for detecting a characteristic of a continuously-flowing fluid, said flow cell comprising a narrow inlet path for said fluid, a flow cell portion having a diameter larger than that of said narrow inlet path, and a flow-regulating portion which is disposed between the narrow inlet path and said flow cell portion, said flow-regulating portion having a diameter substantially the same as that of said flow cell portion and a plurality of flow-regulating holes, said fluid being introduced from said narrow inlet path into said flow cell portion by way of each of the holes of said flow-regulating portion.

5,606,413

REAL TIME SPECTROSCOPIC IMAGING SYSTEM AND METHOD

Peter A. Bellus, Eden Prairie, Minn., and Terry L. McKinney, Severn, Md., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Jan. 19, 1995, Ser. No. 374,055
Int. Cl.[6] G01J *3/28;* **G01N** *21/31;21/35*
U.S. Cl. 356—326 **17 Claims**

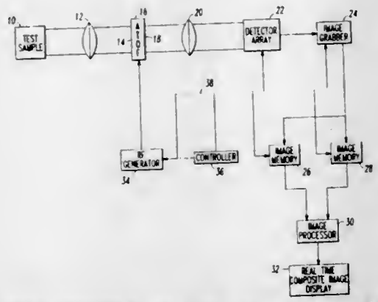
1. A spectroscopic imaging system for analyzing a test sample, the system comprising, in combination:

input optics for receiving and focusing image light from said test sample;

an optical filter for receiving and filtering said focused image light to thereby pass a plane image, said optical filter capable of being selectively tuned to either a single passband wavelength or to multiple passband wavelengths simultaneously, where said filter is alternately tuned to alternately pass a plane image comprising at least a single passband wavelength and a plane image comprising multiple passband wavelengths;

a planar optical detector array for receiving said plane image; and

an image processor connected to the optical detector for receiving first and second image data from said optical detector, said first image data representing said plane image when said optical filter is tuned to said at least a single passband wavelength and said second image data representing said plane image when said optical filter is tuned to said multiple passband wavelengths simultaneously, and for processing said first and second image data to thereby generate a composite plane image permitting real time analysis of the test sample.

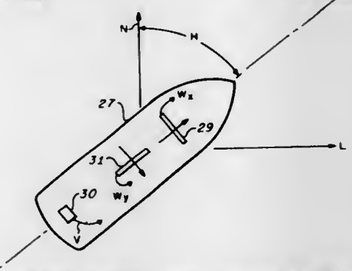


5,606,414

INTERFEROMETRIC SHIP'S HEADING REFERENCE SYSTEM

Henry T. Minden, Concord, Mass., assignor to Unisys Corporation, Blue Bell, Pa.

Filed Apr. 1, 1983, Ser. No. 481,134
Int. Cl.[6] G01B *9/02;* **G01C** *19/00;21/00;* **G01P** *15/08*
U.S. Cl. 356—350 **6 Claims**



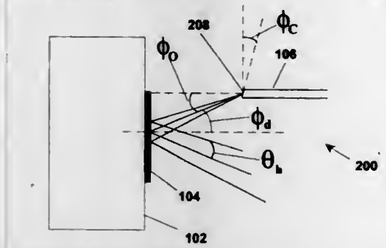
1. A ship's heading reference system comprising first Sagnac interferometer means for detecting total rotational movement in a vertical plane normal to the fore-aft axis of the ship; second Sagnac interferometer means for detecting total rotational movement in a vertical plane parallel to the fore-aft axis of the ship; said first and second Sagnac interferometer means including means for producing electrical signals representative of the detected rotational movement in each of said first and second Sagnac interferometer means; means for providing an electrical signal representative of the ship's forward speed; signal processing means coupled to receive the electrical signals from said first and second Sagnac interferometer means and said forward speed means; means in said signals processing means for eliminating the rotary component resulting from ship's speed from the output signal of said second Sagnac interferometer means; means for dividing the resultant signal by the signal from said first Sagnac interferometer means; and indicating means responsive to the output signal from said dividing means.

5,606,415

FIBER OPTIC GYRO WITH REDUCED READOUT REFLECTION COUPLING CHARACTERISTICS

James H. Doty, Cedar Rapids, Iowa, assignor to Rockwell International, Seal Beach, Calif.

Filed Sep. 23, 1994, Ser. No. 312,242
Int. Cl.[6] G01C *19/64;* **G01B** *9/02*
U.S. Cl. 356—350 **6 Claims**



1. An apparatus comprising:

a sensor having an optical input and an optical output;

a light source having a predetermined coherence length optically coupled to said optical input;

a light receiver optically coupled to said optical output such that reflections into the sensor are minimized;

a birefringent media interposed between said optical output and said light receiver; and,

said predetermined coherence length being shorter than a difference in two optical path lengths in said birefringent media;

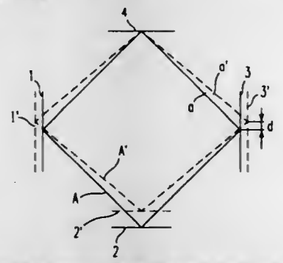
whereby, optical interference at the light receiver is reduced by decorrelation of polarization states of the birefringent media and concomitantly coupling of reflections from the light receiver means into the sensor are reduced.

5,606,416

LASER GYRO HAVING CONTROLLABLE LOCK-IN ZONE WIDTH

Jung Y. Son, Seoul, Rep. of Korea; Yu D. Golyaev, and Alexander V. Melnikov, both of Moscow, Russian Federation, assignors to Korea Institute of Science and Technology, Seoul, Rep. of Korea

Continuation of Ser. No. 365,742, Dec. 29, 1994. This application Apr. 6, 1995, Ser. No. 417,998
Claims priority, application Rep. of Korea, Dec. 30, 1993, 93-31237
Int. Cl.[6] G01C *19/68*
U.S. Cl. 356—350 **12 Claims**



1. Apparatus for controlling the width of a lock-in zone in a laser gyro, comprising:

light resonating means including four mirrors, wherein three of said four mirrors are actuated by means of piezo actuators attached thereto and the other mirror has a coupling prism and two light detectors attached thereto;

amplifying means for amplifying signals from said light detectors;

signal converting means for converting said amplified signals into a circumferential length signal and a lock-in zone signal Z; and

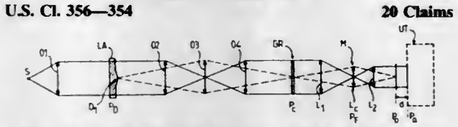
a controller for receiving converted signals from said converting means and supplying actuation signals to said piezo actuators to translate said mirrors by determined distances.

5,606,417

ACHROMATIC OPTICAL INTERFEROMETER, OF THE TRILATERAL SHIFT TYPE FOR ANALYZING THE WAVE SURFACE OF A LIGHT BEAM

Jérôme Primot, Chatillon, and Ludovic Sogno, Paris, both of France, assignors to Office National D'Etudes Et De Recherches Aerospatiales, Chatillon, France

Filed Nov. 16, 1994, Ser. No. 341,162
Claims priority, application France, Nov. 24, 1993, 93 14063
Int. Cl.[6] G01B *9/02*
U.S. Cl. 356—354 **20 Claims**



1. A method for analysing the wave surface of a light beam, comprising the steps of:

(a) placing a diffraction lattice with bidimensional array in a plane perpendicular to the beam, and optically conjugate with the analysis plane of the wave surface, thereby causing a diffraction of the beam into different sub-beams, due to different orders of diffraction, and

(b) creating and observing the image formed by interference of the sub-beams in a plane, an image whose deformations are related to the gradient of the wave surface analysed,

wherein step (b) includes

(b1) focusing the sub-beams issuing from the plane of the lattice, in an intermediate focal plane,

(b2) in the vicinity of the intermediate focal plane, filtering the sub-beams by a mask suitable for selecting there at least three distinct orders of diffraction,

(b3) optically picking up the selected sub-beams, in order to bring them to a so-called nil-sensitivity plane, conjugate with the plane of the lattice, and

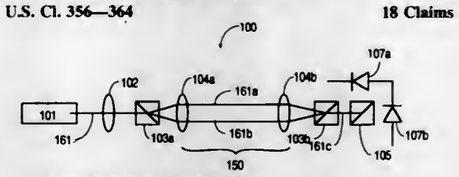
(b4) observing the interference image in a working plane, situated at a chosen distance from the nil-sensitivity plane.

5,606,418

QUASI BRIGHT FIELD PARTICLE SENSOR

Peter G. Borden, San Mateo, and Derek G. Aqui, San Jose, both of Calif., assignors to High Yield Technology, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 41,070, Apr. 1, 1993, abandoned. This application Mar. 29, 1995, Ser. No. 414,145
Int. Cl.[6] G01N *15/02*
U.S. Cl. 356—364 **18 Claims**



1. A particle sensor, comprising:

a laser source for providing a laser beam of a predetermined linear polarization;

an optical component, receiving said laser beam, for focusing said laser beam to pass through an area of space in which particles to be detected are present;

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means, positioned to receive said laser beam from said optical component, for splitting said laser beam into substantially orthogonally polarized first and second component laser beams, said means for splitting said laser beam oriented to provide said second component laser beam with said predetermined linear polarization, such that said first component laser beam has insignificant intensity at said predetermined linear polarization; and

first and second photodetectors positioned for detecting, respectively, intensities of said first and second component laser beams.

5,606,419

SPECTROSCOPIC MEASURING DEVICE HAVING FILTER CONSISTING OF INTERFERENCE FILTER, ONE OR TWO FIXED-MIRROR ETALONS AND A SINGLE MOVABLE -MIRROR ETALON

Trygve Foosnæs, Ardalstangen; Tycho Jæger, Skedsmokorset; Jon Tschudi, Oslo, and Jon K. Hagene, Dilling, all of Norway, assignors to Norsk Hydro a.s., Oslo, Norway

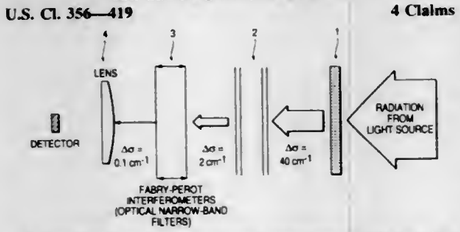
PCT No. PCT/NO93/00170, § 371 Date Aug. 3, 1995, § 102(e) Date Aug. 3, 1995, PCT Pub. No. WO94/11713, PCT Pub. Date May 26, 1994

PCT Filed Nov. 18, 1993, Ser. No. 433,409

Claims priority, application Norway, Nov. 18, 1992, 924443

Int. Cl.[6] G01J *3/51;* **G01N** *21/61*

U.S. Cl. 356—419 **4 Claims**



1. Equipment for the spectroscopic measurement of a gas in a gas mixture, for example a gas in the atmosphere, in which a filter device is used to filter out one spectral line from other spectral lines belonging to other gases and in which the transmitted light is detected by a detector which gives a signal to devices for calculating and displaying the measurement data, characterised in that the filter device consists of an interference filter, at least one fixed etalon having non-movable mirrors spaced apart by a fixed gap and a Fabry-Perot interferometer having movable mirrors spaced apart by an adjustable gap.

5,606,420

CAMERA SYSTEM INCLUDING A CAMERA SECTION AND A REPRODUCTION SECTION SEPARATELY ATTACHABLE TO THE CAMERA SECTION

Yutaka Maeda, Kanagawa-Ken; Yasuhiro Kyoden, Sagamihara; Hirokazu Naruto, Higashiosaka; Yoshito Tanaka; Dai Shintani, both of Sakai, and Katsuyuki Nanba, Osakasayama, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

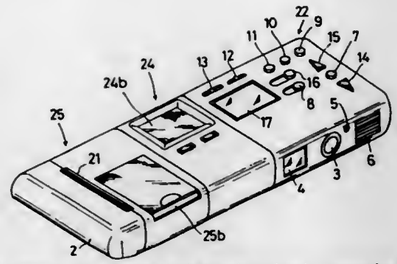
Division of Ser. No. 324,365, Oct. 14, 1994, Pat. No. 5,493,409, which is a continuation of Ser. No. 800,584, Nov. 27, 1991, abandoned. This application Nov. 17, 1995, Ser. No. 558,238

Claims priority, application Japan, Nov. 29, 1990, 2-334687; Nov. 29, 1990, 2-334689; Nov. 29, 1990, 2-334690; Nov. 29, 1990, 2-334691; Nov. 29, 1990, 2-334692; Nov. 29, 1990, 2-334693; Nov. 29, 1990, 2-334694; Nov. 29, 1990, 2-338688

Int. Cl.[6] H04N *1/00;5/225;* **G03F** *3/10;* **G03B** *27/52;29/00*

U.S. Cl. 358—296 **19 Claims**

1. A camera system comprising:



a camera section which includes photoelectric conversion elements and picks up an image of an object to produce image data;

a reproduction section which processes the image data so as to reproduce the picked-up image on a display screen; and

a printer section which prints the picked-up image on printing paper based on the image data, the printer section being separably attachable to either of the camera section and the reproduction section to form an integral body.

5,606,421

METHOD OF AND APPARATUS FOR ENCODING AND DECODING DIGITAL VIDEO SIGNALS BY REPRESENTING ORTHOGONAL TRANSFORM COEFFICIENTS WITH RESPECTIVE GROUP VALUES

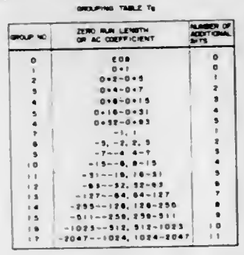
Takao Suzuki, and Shojiro Shibata, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

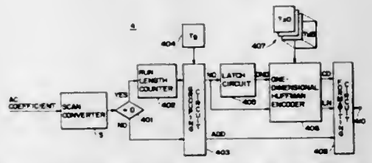
Filed Sep. 12, 1994, Ser. No. 302,464

Claims priority, application Japan, Sep. 14, 1993, 5-252584

Int. Cl.[6] H04N *9/79;5/76;7/12;11/02*

U.S. Cl. 386—33 **46 Claims**





1. A method of encoding digital signals representing at least a portion of a video image, comprising the steps of:

orthogonally transforming said digital signals to generate a plurality of transformation coefficients;

arranging a portion of said transformation coefficients in a predetermined order;

representing each respective transformation coefficient of said portion with a group value corresponding to one of a set of predefined groups, said set of predefined groups including groups formed of respective ranges of values of zero run lengths representing successive transformation coefficients of said portion having a value of zero and including groups formed of respective ranges of values of said transformation coefficients of said portion having a non-zero value;

providing a data table previously generated as a function of a frequency of occurrence of a combination of said group value and a corresponding prior group value representing the group value of a transformation coefficient that immediately precedes said respective transformation coefficient in said predetermined order; and

assigning a respective coding value from said data table to said each respective transformation coefficient as a function of said respective group value and said corresponding prior group value.

5,606,422

METHOD AND APPARATUS FOR RECORDING VIDEO SIGNALS ON A RECORD MEDIUM

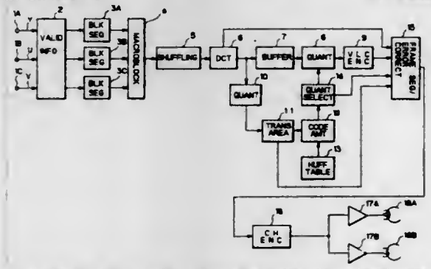
Naofumi Yanagihara, Tokyo; Keiji Kanoto, and Yukio Kubota, both of Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Division of Ser. No. 283,652, Aug. 1, 1994, which is a continuation of Ser. No. 966,888, Oct. 27, 1992, abandoned. This application May 16, 1995, Ser. No. 441,995

Claims priority, application Japan, May 11, 1991, 3-317497; Jun. 30, 1992, 4-196219

Int. Cl.[6] H04N *9/79;* **G11B** *5/00*

U.S. Cl. 386—1 **18 Claims**



1. A method of recording component color video signals representing at least a portion of a video screen in a plurality of tracks on a recording medium, said video screen having a plurality of sections each of the sections including a respective plurality of sub-areas, each of said sub-areas of each said section being located at a position in that section corresponding to the same position in other sections at which is located corresponding sub-areas, the component color signals including a luminance signal and first and second color difference signals, comprising the steps of:

dividing the luminance signal and first and second color difference signals into a plurality of DCT blocks each representing a respective subdivision of the video screen and selected to permit discrete cosine transformation thereof;

collecting the DCT blocks of each of the luminance signal and first and second color difference signals into respective macro blocks including signals representing at least one common respective subdivision of the video screen;

assembling super macro blocks each including a plurality of macro blocks representing adjacent subdivisions of the video screen in a respective sub-area;

arranging the super macro blocks in a sequence such that adjacent super macro blocks in the sequence are assembled from sub-areas in different sections at non-corresponding positions;

carrying out a discrete cosine transformation of each of the DCT blocks; and

recording the transformed DCT blocks assembled in said super macro blocks such that the super macro blocks are arranged in said sequence in the plurality of tracks on the recording medium.

5,606,423

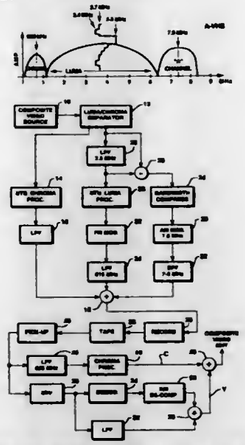
COMPATIBLE HIGH-RESOLUTION VIDEO RECORDING FORMAT

Werner F. Wedam, Lawrenceville, N.J., assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Oct. 18, 1990, Ser. No. 599,566

Int. Cl.[6] H04N *9/79*

U.S. Cl. 386—27 **17 Claims**



1. A recording on magnetic tape made in a manner compatible with another recording format, said recording including the recording of a frequency-multiplexed signal on a helical-scanning track, wherein said frequency-multiplexed signal encodes a chrominance said component recorded in accordance with said other recording format, wherein said frequency-multiplexed signal encodes a luminance signal component that has a given bandwidth, but wherein only a low-frequency portion of said given bandwidth is recorded in accordance with said other recording format, said frequency-multiplexed signal comprising:

a first frequency band containing a first carrier wave modulated in accordance with the chrominance signal component;

a second frequency band adjacent to and above the frequency range of said first frequency band, said second frequency band containing a second carrier wave modulated in accordance with a low-frequency portion of the luminance component of the video signal; and

a third frequency band adjacent to and above the frequency range of said second frequency band, said third frequency band containing a third carrier wave modulated in accordance with the high-frequency portion of the luminance of the video signal, which high-frequency portion comprises the remainder of the luminance information available from the given bandwidth, wherein a bandwidth compression technique is used to compress the bandwidth of the signal in accordance with which the third carrier in said third frequency band is modulated.

5,606,424

SIMPLE HIGH-BAND RECORD MODULATION CIRCUIT IN 8MM VIDEO TAPE RECORDER

Mun-joo Jung, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Jun. 6, 1995, Ser. No. 471,687

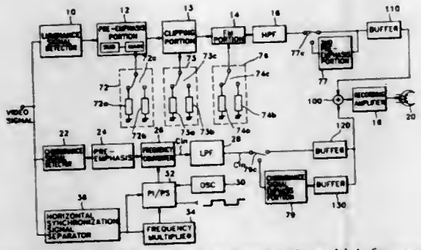
Claims priority, application Rep. of Korea, Jul. 26, 1994, 94-18070

Int. Cl.[6] H04N *5/92*

U.S. Cl. 386—26 **6 Claims**

1. A record modulation circuit in an 8 mm video tape recorder, the record modulation circuit comprising:

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a single pre-emphasis means for emphasizing a high frequency band of an input luminance signal to produce an emphasized luminance signal,

a single clipping means for limiting the level of said input luminance signal emphasized by said pre-emphasis means to produce a limited luminance signal,

a single frequency modulation (FM) means for generating an FM-converted luminance signal which is suitable for a normal recording mode, after receiving said limited luminance signal output from said clipping means, and supplying to a recording head the FM-converted luminance signal,

a frequency converter for receiving a chrominance signal and producing a low-band-converted chrominance signal, and supplying to the recording head the low-band-converted chrominance signal,

a first frequency deviation amount determiner for determining a frequency deviation amount suitable for a normal recording mode of said frequency modulation means, and

a second frequency deviation amount determiner for determining a second frequency deviation amount suitable for a simple high-band recording mode of said frequency modulation means,

wherein said single frequency modulation means modulates each limited luminance signal which is input in the normal recording mode and the simple high-band recording mode, within the limits of the frequency deviation amount determined by one of said first frequency deviation amount determiner and said second frequency amount determiner.

5,606,425

Patent Not Issued For This Number

5,606,426

DIGITAL TIME BASE CORRECTOR FOR REPRODUCING VIDEO SIGNALS

Tadayoshi Kobayashi, Koufu, and Masahiro Nakajima, Tokorozawa, both of Japan, assignors to Pioneer Video Corporation, Yamanashi, and Pioneer Electronic Corporation, Tokyo, both of Japan

Continuation of Ser. No. 135,991, Oct. 14, 1993, abandoned. This application Jun. 16, 1995, Ser. No. 491,536

Claims priority, application Japan, Oct. 16, 1992, 4-278838

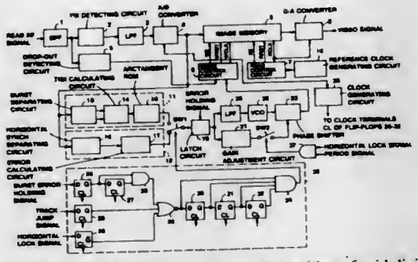
Int. Cl.[6] H04N *5/94;5/95;9/88;9/89*

U.S. Cl. 386—49 **8 Claims**

1. A digital time base corrector comprising:

an A/D converter, operating to convert a reproduction video signal which is read out and reproduced from a recording medium into a digital signal;

an image memory, having a capacity to store two lines of horizontal scanning of said video signal, one stored line of horizontal scanning representing a first video phase of said video signal, and another stored line of horizontal scanning representing a second video phase of said video signal, said first video phase being different from said second video phase;



memory control means (i) for controlling writing of said digital signal into said image memory in a way which is phase-synchronized with a write clock signal, whose phase is synchronized with a time base fluctuation included in said reproduction video signal, such that said first video phase is always stored as one stored line and said second video phase is always stored as another stored line; and (ii) for controlling reading out the digital signal from said image memory in accordance with a read clock signal of a predetermined period such that reading of the digital signal is performed at an address where writing is normally performed substantially at a time corresponding to an even multiple of a horizontal scanning period of said video signal, so that said one stored line is always retrieved during a time of the first video phase, and said another stored line is always retrieved during a time of the second video phase;

D/A converting means for converting the read-out digital signal into an analog video signal; and

drop-out detecting means for determining a proper stored line depending on whether the current video phase corresponds to the video phase of said one stored line or to the video phase of said another stored line, and for generating a drop-out detection signal indicative of the proper stored line when a drop-out occurs in said reproduction video signal,

wherein said memory control means has means for determining a current video phase and means for inhibiting the controlling said writing into the image memory in accordance with said drop-out detection signal.

5,606,427

VIDEO DEVICE FOR RECORDING A HIGH DEFINITION STILL IMAGE

Koichi Sato, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 203,595, Feb. 28, 1994, abandoned, which is a continuation of Ser. No. 913,191, Jul. 14, 1992, abandoned. This application Apr. 4, 1995, Ser. No. 416,471

Claims priority, application Japan, Jul. 16, 1991, 3-268104; Aug. 9, 1991, 3-285382; Aug. 26, 1991, 3-296745; Aug. 26, 1991, 3-296746

Int. Cl.[6] H04N *5/781*

U.S. Cl. 358—342 **38 Claims**

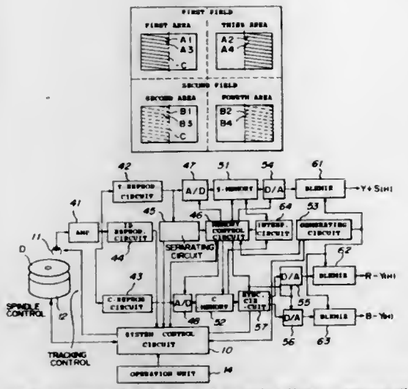
1. A still video device in which high definition image signals are recorded on concentric tracks of a recording disk, said still video device comprising:

means for dividing a high definition image signal corresponding to one frame into a plurality of parts by at least one dividing line that is substantially perpendicular to horizontal scanning lines of said high definition image signal, said one frame comprising a first field and a second field;

means for recording said plurality of parts on separate tracks of said recording disk;

means for adding a distinct reference signal to each of said plurality of parts when said recording means records said plurality of parts on said recording disk; and

means for reproducing said plurality of parts, said plurality of divided parts being combined by said reproducing means in



such a manner that horizontal scanning lines, corresponding to each of said plurality of parts included in a same field, are connected to each other to re-create said high definition image signal, said reproducing means comprising:

means for detecting an amplitude of said distinct reference signal; and

means for adjusting an amplitude of each of said plurality of parts to a same predetermined level in accordance with said detected amplitude of said distinct reference signal.

5,606,428

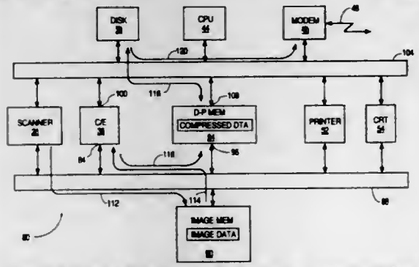
IMAGE COMPRESSION SYSTEMS WITH OPTIMIZED DATA ACCESS

Eric G. Hanselman, Framingham, Mass., assignor to NEC Electronics Inc., Mountain View, Calif.

Continuation of Ser. No. 669,542, Mar. 14, 1991, Pat. No. 5,396,343. This application Jun. 16, 1994, Ser. No. 260,646

Int. Cl.[6] H04N *1/00*

U.S. Cl. 358—404 **4 Claims**



1. An apparatus for processing data in an uncompressed format and data in a compressed format, wherein the data in the uncompressed format are digital data representing a document image and the data in the compressed format are data compressed for facsimile transmission, said apparatus comprising:

a processor for transforming data from one of said formats to the other, said processor having an image bus for accessing data in said compressed and uncompressed formats and also having a host bus for receiving commands and providing status information;

a central processing unit connected to said host bus;

a first memory connected to said image bus, for storing uncompressed digital data representing a document image;

a dual-ported memory having a first port and a second port, for storing compressed data, said first port connected to said image bus to allow said processor to access said dual-ported memory with compressed data through said image bus, wherein an access to said dual-ported memory through said second port with compressed data is allowed to proceed simultaneously with said processor accessing said first memory through said image bus with uncompressed data; and

an arbitration circuit responsive to respective signals at said first and second ports for enabling said first port when said port signals indicate that an access through said first port is requested and that an access through said second port is absent and enabling said second port when said port signals indicate that an access through said second port is requested and that an access through said first port is unsought, so that if an access through both the first and second ports is requested at the same time, said arbitration circuit enables said first port.

5,606,429

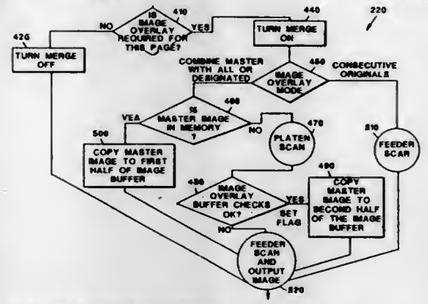
COPIER APPARATUS AND METHOD WITH FLEXIBLE SOURCE DOCUMENT ENTRY SCANNING IN AN IMAGE OVERLAY MODE

Eric G. Sheldon, Holley; Ronald W. Stephens, and George R. Vorhauer, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 2, 1995, Ser. No. 382,547

Int. Cl.[6] H04N *1/387*

U.S. Cl. 358—450 **19 Claims**



1. A copier apparatus comprising:

means including a scanning station for electronically scanning a set of document sheets to be copied as a copy job, the scanning station including a platen for supporting a document sheet to be scanned in a first mode wherein the document sheet is manually positioned on the platen by an operator and the scanning station including means for scanning document sheets in a second mode wherein document sheets are automatically fed;

feeder means for automatically feeding seriatim document sheets to the scanning station for scanning document sheets in the second mode;

recording means for copying images of said document sheets;

means for generating a signal for initiating commencement of a copy job; and

control means responsive to said signal for automatically actuating said scanning station for scanning said document sheet in said first mode and for actuating said feeder means for automatically feeding document sheets to the scanning station for scanning document sheets in the second mode; said control means including memory means for storing image data of said document sheet and means for logically combining the image data of said document sheet with image data of each of at least plural of said document sheets scanned in the second mode; and

said recording means producing a collated copy set of said set of said document sheets with each of at least two pages of said copy set being a combination of an image on the document sheet scanned in said first mode and an image of a document sheet scanned in said second mode.

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5,606,430

IMAGE READING APPARATUS HAVING PROJECTIONS ON SURFACE OF HOPPER NEAR SIDE EDGES OF PAPER FEED PATH TO PREVENT CLOSE CONTACT AND REDUCE STATIC ELECTRICITY

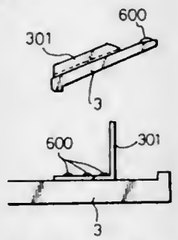
Shuichi Morikawa, Kanazawa; Masahiko Futatsuka, Kahoku-gun; Satoshi Ishida; Yasunori Miyauchi, both of Kanazawa; Minoru Masuda, Kahoku-gun, and Makoto Takagawa, Kanazawa, all of Japan, assignors to Fujitsu Limited, Kanagawa, and PFU Limited, Ishikawa, both of Japan

Division of Ser. No. 140,161, Mar. 7, 1994, Pat. No. 5,453,852. This application Jun. 5, 1995, Ser. No. 464,416

Claims priority, application Japan, Mar. 19, 1992, 4-93746; Apr. 20, 1992, 4-128049; Apr. 20, 1992, 4-128051; Nov. 19, 1992, 4-335574

Int. Cl.[6] B65H *1/06*

U.S. Cl. 358—498 **1 Claim**



1. An image reading apparatus provided with a bottom take-out type automatic paper feeding mechanism wherein documents are sequentially taken out from a lowermost document by coaction of a paper feed roller and a document separation pad elastically pressed against said paper feeding roller, said image reading apparatus comprising:

a hopper on which the documents are placed by stacking; and

projections, preventing close contact of the documents, are provided at least near side edges of one of a document placement surface of the hopper and a paper feeding passage, wherein the projections prevent the documents from being adhered to the hopper which has been electrostatically charged.

5,606,431

VIDEO PRINTER

Geun-Yong Park, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Nov. 1, 1993, Ser. No. 143,641

Claims priority, application Rep. of Korea, Oct. 30, 1992, 92-20106

Int. Cl.[6] H04N *1/46;9/74*

U.S. Cl. 358—503 **13 Claims**



1. A video printer comprising:

image signal memory means for receiving an image signal to store the same;

editing means for editing an index signal;

index information memory means for receiving the index signal from the editing means to store the same;

printing means for receiving a signal from the image signal memory means and index information memory means to print an image corresponding to said image signal and said index signal on a recording medium; and

control means for controlling an output of the image signal memory means to produce a first output within an effective image area of said recording medium and for controlling an output of the index information memory means to produce a second output on a marginal space of the recording medium, said marginal space not overlapping said effective image area.

5,606,432

IMAGE REPRODUCING SYSTEM

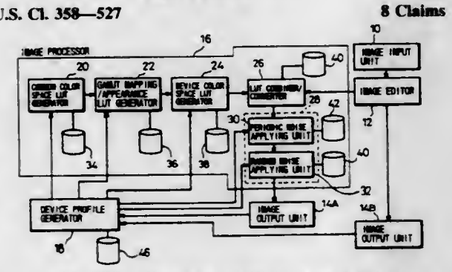
Shuichi Ohtsuka; Akira Yoda, and Yoshinori Usami, all of Kanagawa-ken, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 23, 1994, Ser. No. 362,899

Claims priority, application Japan, Dec. 24, 1993, 5-327339; Aug. 30, 1994, 6-205255

Int. Cl.[6] G03F *3/10*

U.S. Cl. 358—527 **8 Claims**



1. A color image reproducing system for predicting the appearance of an output image with a simulated image, said simulated image produced on a monitor from image data prior to generating said output image from said image data, said system comprising:

output condition storing means for selectively storing output conditions including an output method and an output medium for said output image; and

noise simulating means, responsive to an output of said output condition storing means, for simulating irregularities of said output image in said simulated image, and producing noise according to output conditions specified for said output image, said noise modifying said image data to produce said simulated image.

5,606,433

LAMINATION OF MULTILAYER PHOTOPOLYMER HOLOGRAMS

Khin S. Yin, Alhambra; Kevin H. Yu, Temple City, and John E. Wreede, Azusa, all of Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Filed Aug. 31, 1994, Ser. No. 298,888

Int. Cl.[6] G03H *1/00*

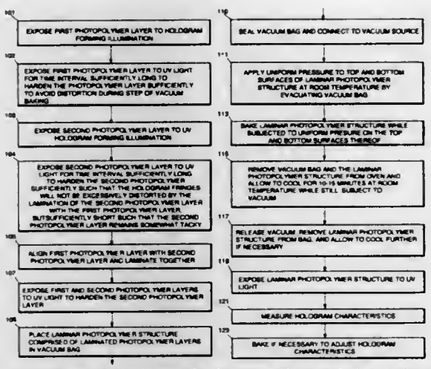
U.S. Cl. 359—1 **4 Claims**

1. A process for making a multilayer photopolymer hologram structure comprising:

(a) exposing a first photopolymer recording layer to hologram forming light;

(b) exposing the holographically exposed first photopolymer recording layer to UV light to partially UV harden the photopolymer recording layer;

(c) exposing a second photopolymer recording layer to hologram forming light;



(d) exposing the holographically exposed second photopolymer recording layer to UV light for a time interval that is sufficiently short to maintain the tackiness of the second photopolymer recording layer;

(e) laminating the second photopolmyer recording layer with the first photopolymer recording layer to form a two layer laminar photopolyer structure having a Top surface and a bottom surface, wherein the second photopolymer layer is in direct laminar contact with the first photopolymer layer;

(f) exposing the second photopolymer recording layer to UV light to partially UV harden the second photopolymer recording layer;

(g) applying a uniform pressure to the top and bottom surfaces of the two layer laminar photopolymer structure, including the steps of

(i) placing the laminar photopolymer structure into a vacuum bag, and

(ii) evacuating the vacuum bag;

(h) baking the two layer laminar photopolymer structure while applying a uniform pressure to the top and bottom surfaces of the two layer laminar photopolymer structure; and

(i) exposing the two layer laminar photopolymer structure to UV light.

5,606,434

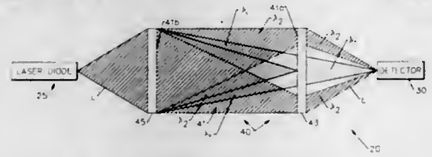
ACHROMATIC OPTICAL SYSTEM INCLUDING DIFFRACTIVE OPTICAL ELEMENT

Michael R. Feldman; Bob T. Kolste; W. Hudson Wiech, and Hedong Yang, all of Charlotte, N.C., assignors to University of North Carolina, Charlotte, N.C.

Filed Jun. 30, 1994, Ser. No. 269,919

Int. Cl.[6] G02B *5/32;5/18;* G03H *1/02;1/08*

U.S. Cl. 359—3 **5 Claims**



1. A diffractive optical element comprising:

a transmissive computer generated hologram formed of hydrogenated amorphous silicon and having a diffractive surface, said computer generated hologram being adapted to receive light emitted from a light source having a wavelength less than 1.0 micrometer and to pass the received light through said diffractive surface.

5,606,435

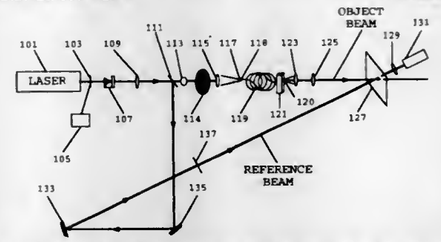
FIBER OPTIC-BASED CORRELATING AND SENSING SYSTEM

Amy S. Kransteuber, and Don A. Gregory, both of Huntsville Madison, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 22, 1995, Ser. No. 578,007

Int. Cl.[6] G03H *1/16;* G02B *27/46*

U.S. Cl. 359—29 **13 Claims**



1. A fiber optic-based correlating and sensing system for recording a given environment and subsequently detecting changes in the environment, said system comprising:

a laser for emitting original beam;

a holographic plate for recording thereon a matched filter;

a beamsplitter, said beamsplitter being positioned between said laser and said plate and being suitable for splitting the original beam into object beam and reference beam, the object and reference beams subsequently combining at said plate to create a matched filter;

a first collimator located between said laser and said beamsplitter to receive and collimate the original beam prior to the original beam's incidence on said beamsplitter;

a first focusing lens for receiving and focusing the object beam that issues from said beamsplitter;

a fiber optic having a first end and a second end;

a microscope objective appropriately positioned to receive the object beam from said first focusing lens and direct the object beam into said first end of said fiber optic to be transmitted therethrough;

a transform lens located between said second end and said plate to perform Fourier transform on the object beam exiting said second end;

a second collimator suitably positioned to receive and re-collimate the object beam exiting said second end prior to the object beam's incidence on said transform lens; and

a means for selectively blocking the reference beam from impinging on said plate, such blockage allowing the formation of a correlation peak.

5,606,436

LIQUID CRYSTAL PROJECTION PANEL CONSTRUCTION AND METHOD OF MAKING SAME

Leonid Shapiro, Lakeside, Calif., assignor to Proxima Corporation, San Diego, Calif.

Continuation-in-part of Ser. No. 342,920, Nov. 21, 1994, abandoned. This application Nov. 28, 1994, Ser. No. 345,601

Int. Cl.[6] G02F *1/1335;1/1333*

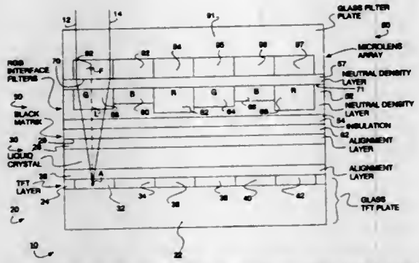
U.S. Cl. 349—59 **24 Claims**

1. A liquid crystal projection panel construction, comprising:

a high resolution liquid crystal display panel means having a plurality of closely spaced apart pixel elements to modulate light passing therethrough for producing an image in response to electrical signals;

an interference filter member being secured in overlying relationship with said panel means and having a plurality of individual colored filter elements disposed in registration with corresponding ones of said pixel elements for passing selectively certain wavelengths of light only to individual ones of said pixel elements;

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a lenticular lenslet array panel in overlying relationship relative to said filter member and having a plurality of lenslets disposed in registration with corresponding ones of said pixel and filter elements for focusing said light toward the aperture of each pixel element to enable substantially all of the light to pass therethrough;

whereby bright colored images are formed for projection purposes; and

a black matrix layer interposed between said filter member and said panel means.

5,606,437

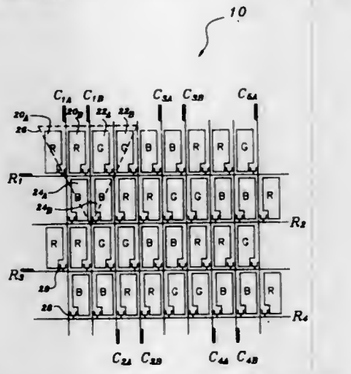
DIRECT DRIVE SPLIT PIXEL STRUCTURE FOR ACTIVE MATRIX LIQUID CRYSTAL DISPLAYS

Donald E. Mosier, Cedar Rapids, Iowa, assignor to Rockwell International, Seal Beach, Calif.

Filed Mar. 31, 1995, Ser. No. 414,894

Int. Cl.[6] G02F *1/1335*

U.S. Cl. 349—106 **16 Claims**



1. A wide viewing angle liquid crystal display comprising:

a plurality of first conductors oriented in a first direction;

a plurality of second conductors oriented substantially parallel to the first direction;

a plurality of third conductors oriented in a second direction substantially perpendicular to the first direction; and

a plurality of pixel elements, each pixel element comprising:

a first pixel sub-element having a color associated therewith, the first pixel sub-element being coupled to one of the plurality of first conductors and to one of the plurality of third conductors, wherein the one of the plurality of first conductors and the one of the plurality of third conductors are used to drive the first pixel sub-element with a first drive voltage to a first gray scale intensity;

a second pixel sub-element having the color associated therewith, the second pixel sub-element being positioned adjacent to the first pixel sub-element, the second pixel sub-element being coupled to one of the plurality of second conductors and to the one of the plurality of third conductors, wherein the one of the plurality of second conductors and the one of the plurality of third conductors are used to drive the second pixel sub-element with a second drive voltage generated separately from the first drive voltage to a second gray scale intensity independent of the first gray scale intensity, each pixel element having an average gray scale intensity which is a function of gray scale intensities of the first and second pixel sub-elements; and

the first drive voltage is any of a plurality of selectable drive voltages corresponding to a plurality of selectable gray scale intensities.

5,606,438

RUGGED LIQUID CRYSTAL DISPLAY AND METHOD OF MANUFACTURE

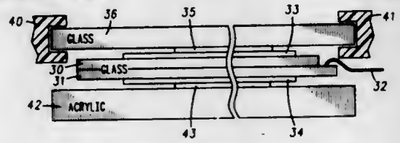
Eli Margalit, Raanana; Yosi Ben-Yosef, Tel Aviv; Boaz Siman Tov, and Yakov Mosseri, both of Ramat Gan, all of Israel, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 12, 1995, Ser. No. 489,519

Claims priority, application United Kingdom, Jun. 11, 1994, 9411772

Int. Cl.[6] G02F *1/1335*

U.S. Cl. 349—60 **14 Claims**



1. A ruggedized liquid crystal display comprising:

a liquid crystal display sandwich,

a layer of adhesive material extending continuously across a surface of the liquid crystal display sandwich, and

a layer of substantially rigid transparent material mounted facing the liquid crystal display sandwich and bonded thereto by the layer of adhesive material which later having a thickness in the range of about 20 micrometers to about 30 micrometers.

5,606,439

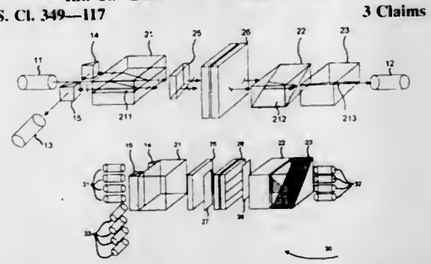
TUNABLE ADD/DROP OPTICAL FILTER

Kuang-Yi Wu, Boulder, Colo., assignor to Macro-Vision Technology , Inc., Boulder, Colo.

Filed Apr. 10, 1996, Ser. No. 629,523

Int. Cl.[6] G02F *1/1335*; G02B *6/12*;*6/26*

U.S. Cl. 349—117 **3 Claims**



1. A tunable add/drop filter which comprises: a non-reciprocal setup for optical channels return to WDM network, a tunable filter for predetermined optical channel selection, and a reciprocal optical add/drop setup for add/drop operations, where, the non-reciprocal optical setup is a combination of an optical birefringent element which has a thickness of d, a Faraday rotator that rotates eigen polarization of input light beams by 45°, a polarization beam combiner and a right angle prism placed at an entrance side of the birefringent element to recombine returned optical signals; the tunable filter for selectively dropping or adding the optical channels; and the reciprocal optical add/drop setup comprises of two optical birefringent elements with thickness of $(1/\sqrt{2})d$, and with their polarization eigen planes oriented at 45° and −45° relatively to a polarization eigen plane of the first birefringent element in the non-reciprocal setup, respectively.

5,606,440

ASSEMBLING METHOD OF FLAT TYPE DISPLAY DEVICE

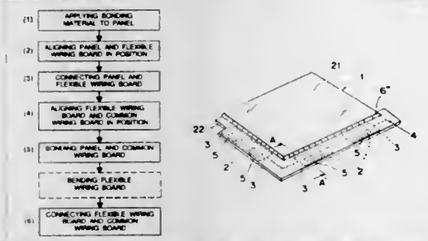
Hisao Kawaguchi; Shigeo Nakabu, both of Nara, and Yasunobu Tagusa, Ikoma, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 54,011, Apr. 29, 1993, Pat. No. 5,528,403. This application Mar. 29, 1996, Ser. No. 623,879

Claims priority, application Japan, Apr. 30, 1992, 4-111036; Oct. 16, 1992, 4-278510; Dec. 28, 1992, 4-349459

Int. Cl.[6] G02F *1/1345*

U.S. Cl. 349—188 **11 Claims**



4. A method of assembling a flat type device, in which a panel has electrode terminals on periphery of one face of the panel, a flexible wiring board has a drive IC mounted on the flexible wiring board for driving the panel, a common wiring board has electrode terminals on one face of the common wiring board, the flexible wiring board is electrically connected to the electrode terminals of the panel, and the common wiring board is electrically connected to the flexible wiring board so as to transmit an input signal, which has been received by the electrode terminals of the common wiring board from external, to the drive IC, the method comprising the steps of:

aligning the flexible wiring board with the face of the panel and then electrically connecting the panel and the flexible wiring board to each other;

applying a protective resin onto the peripheral portion of the panel or onto the common wiring board;

causing the panel and the common wiring board to overlap each other so that the electrode terminals of the common wiring board are located in outer proximity to the peripheral portion of the panel and then aligning the panel or the flexible wiring board with the common wiring board; and

curing the protective resin, thereby bonding and integrating together the panel, the flexible wiring board, and the common wiring board with the protective resin, and then electrically connecting the flexible wiring board and the common wiring board.

5,606,441

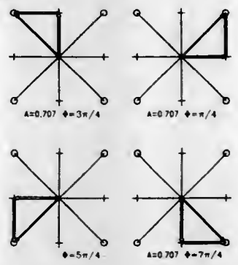
MULTIPLE PHASE LIGHT MODULATION USING BINARY ADDRESSING

James M. Florence, Richardson, and R. Mark Boysel, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 862,933, Apr. 3, 1992, Pat. No. 5,312,513. This application Feb. 24, 1994, Ser. No. 201,307

Int. Cl.[6] G02F *1/137*

U.S. Cl. 349—33 **16 Claims**



6. A multiple phase light modulator having pixels, said pixels comprising:

a first modulating element switchable between at least two addressable states;

a second modulating element, switchable between at least two addressable states, adjacent to said first modulating element and formed such that said second modulating element will effect a phase difference between light incident thereon and light incident on and acted upon by said first modulating element;

addressing circuitry underlying said first and second modulating elements, said addressing circuitry capable of physically altering said modulating elements whereby discrete phase changes may be induced corresponding to said at least two addressable states of said modulating elements; and

a mixer for combining the responses from said first and second modulating elements into a single response having a phase state that is one of a plurality of possible phase states that is dependent upon the addressed states of said first and second modulating elements.

5,606,442

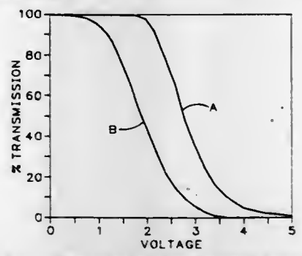
LOW ELECTRO-OPTIC THRESHOLD LIQUID CRYSTAL CELL AND METHOD OF FABRICATING SAME

Philip J. Bos, Beaverton, and Jolly A. Rahman, Portland, both of Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Continuation of Ser. No. 63,180, May 14, 1993, abandoned. This application Mar. 21, 1995, Ser. No. 407,794

Int. Cl.[6] G02F *1/13;1/136*

U.S. Cl. 349—179 **14 Claims**



1. A method of fabricating a twisted nematic liquid crystal cell including liquid crystal material contained between a pair of electrode substrate planes and having a low pretilt alignment angle but

with an electro-optic threshold that is lower than the characteristic electro-optic threshold of the liquid crystal material and that is comparable to the electro-optic threshold of a twisted nematic cell having a high pretilt alignment angle, the lower electro-optic threshold enabling the use of a lower voltage to drive the cell between electro-optic states, comprising:

adding to the liquid crystal material, to form a mixture thereof, a chiral additive in an amount sufficient to prevent reverse twist disclinations and a curable polymer precursor in a predetermined concentration less than that which causes scattering of light propagating through the liquid crystal material, the predetermined concentration being greater than about one percent and less than about four percent of the mixture and together with the chiral additive cooperating with the liquid crystal material contained within the cell for any applied voltage to maintain uniform director orientation in any plane parallel to the electrode substrate planes;

curing the polymer precursor; and

introducing a curing field within the mixture while curing the polymer precursor, the intensity of the curing field cooperating with the mixture to provide for the twisted nematic cell a lower electro-optic threshold than the characteristic electro-optic threshold.

5,606,443

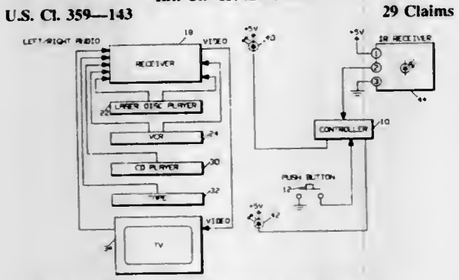
CONTROL CIRCUIT FOR ENTERTAINMENT SYSTEM DEMONSTRATION

William J. Sgambati, Chestnut Ridge, N.Y., assignor to Sony Corporation, Tokyo, Japan, and Sony Electronics, Inc., Park Ridge, N.J.

Continuation of Ser. No. 98,663, Jul. 28, 1993, abandoned. This application Feb. 6, 1996, Ser. No. 597,327

Int. Cl.[6] H04B *10/00*

U.S. Cl. 359—143 **29 Claims**



1. An electronic system, comprising in combination:

a first electronic device outputting an electrical signal;

a second electronic device coupled to said first electronic device for selectively receiving and outputting said electrical signal;

a remote control device operated by a user for generating remote control signals;

a remote control receiver for receiving said remote control signals;

a relay transmitter for retransmitting said received remote control signals to said electronic devices;

a device demonstration controller comprising:

input means for receiving a start signal indicative of starting a demonstration of said electronic system;

first control signal transmission means for sending a first control signal to said first electronic device, wherein said first electronic device outputs said electrical signal in response to said first control signal;

second control signal transmission means for sending a second control signal to said second electronic device, wherein said second electronic device selects said electrical signal and outputs a signal derived from said electrical signal; and

retransmission inhibiting means coupled between said remote control receiver and said relay transmitter for inhibiting said retransmission of said remote control signals for a period of time after said first and second control signals have been sent to said first and second electronic devices.

5,606,444

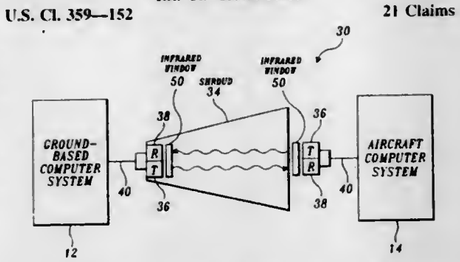
WIDE-ANGLE, HIGH-SPEED, FREE-SPACE OPTICAL COMMUNICATIONS SYSTEM

Bruce E. Johnson, Seattle; Thomas A. Lindsay, Brier; David L. Brodeur, Seattle; Randall E. Morton, deceased, late of Redmond, and Mark A. Regnier, Bothell, all of Wash., assignors to Eldec Corporation, Lynnwood, Wash.

Continuation of Ser. No. 943,328, Sep. 10, 1992, Pat. No. 5,359,446. This application Oct. 20, 1994, Ser. No. 325,965

Int. Cl.[6] H04B *10/00*

U.S. Cl. 359—152 **21 Claims**



17. An optical transceiver adapted to be coupled to an exterior of an aircraft for transmitting and receiving data between an aircraft computer system and a ground-based computer system comprising:

an optical transmitter for producing optical signals that correspond to data to be transmitted from the aircraft computer system to the ground-based computer system, including:

(a) one or more light sources coupled to the aircraft computer system for producing the optical signals corresponding to data that is transmitted from the aircraft computer system to the ground-based computer system;

(b) light distributing means for gathering the optical signals and distributing the optical signals uniformly over a target area;

an optical receiver for receiving optical signals that are transmitted from a second optical transmitter coupled to the ground-based computer system, including:

(a) a photodiode that produces an output signal that is proportional to a received optical signal;

(b) a compound parabolic concentrator bonded to the photodiode that collects optical signals and directs the collected optical signals onto the photodiode; and

(c) a current shunt coupled to the output signal produced by the photodiode that shunts a portion of the output signal due to ambient light collected by the light-collecting means.

5,606,445

OPTICAL TRANSMISSION SYSTEM

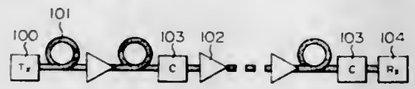
Nobuhiko Kikuchi, Tokyo, and Shinya Sasaki, Kodaira, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 30, 1994, Ser. No. 298,020

Claims priority, application Japan, Sep. 3, 1993, 5-219538

Int. Cl.[6] H04B *10/18*

U.S. Cl. 359—161 **5 Claims**



1. An optical transmission system having a total transmission distance L comprising an optical transmitter transmitting intensity modulated optical signals; an optical fiber transmission line; an optical receiver; and at least one optical dispersion compensator; wherein, denoting light intensity in an optical fiber at a point Z far from said optical transmitter by a distance z by P(z) and an amount of dispersion from the point Z to said optical receiver (including

dispersion of said optical dispersion compensator) by D(z), a position of said optical dispersion compensator and an amount of dispersion are so set that a value obtained by integrating a product P(z)·D(z) from z=0 to L is approximately zero.

5,606,446

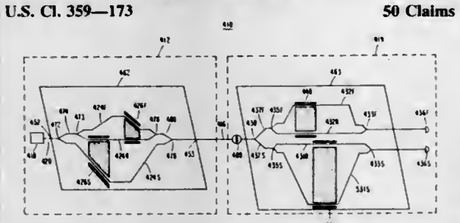
OPTICAL TELECOMMUNICATIONS SYSTEM EMPLOYING MULTIPLE PHASE-COMPENSATED OPTICAL SIGNALS

Charles M. Davis; Marvin W. Ward, both of Centreville, and Clarence J. Zarobila, Leesburg, all of Va., assignors to Optimux Systems Corporation, Centreville, Va.

Continuation-in-part of Ser. No. 207,121, Mar. 8, 1994, Pat. No. 5,459,600. This application Oct. 12, 1995, Ser. No. 542,013

Int. Cl.[6] H04B *10/12*

U.S. Cl. 359—173 **50 Claims**



1. An optical telecommunication system including N transmission units, each comprising:

a source of radiant energy having a coherence length;

separate N+1 optical paths where N is the number of signals to be transmitted and one path is used as a reference and the other N paths are selected so that their lengths differ from the reference path by an amount ΔL_1, ΔL_2, ... ΔL_N where all such path length differences and the differences $\Delta L_k - \Delta L_j$ (where k and j individually and separately take all values between 1 and N but k≠j) are greater than five times the coherence length or less and the differences $\Delta L_k - \Delta L_j$ do not equal any path length difference ΔL_1, ΔL_2, . . . , ΔL_N;

means for dividing radiant energy from said source into N+1 portions for passage respectively along said N+1 optical paths and for recombining said N+1 optical portions after passage along said N+1 optical paths;

a phase modulator in each of said N optical paths operable for applying a telecommunications signal to said N portions;

said N transmission units operably connected to provide said recombined portions with phase differences corresponding to ΔL_1, ΔL_2, . . . , ΔL_N to a transmission path having a first end adjacent said first transmission unit and a second end; and

a first receiver unit operably connected to said second end of said transmission path and having:

N separate pairs of first and second reception paths having path length differences ΔL_1, ΔL_2, . . . , ΔL_N and means for dividing the N portions for passage selectively to the N pairs of first and second reception paths;

each of the first and second reception pairs having a means for dividing that portion of the radiant energy from the source into first and second portions for passage respectively along the first and second paths and for recombining the first and second portions after passage along the first and second paths; and

N first sensors separately and individually connected to the means for reseparating and recombining the N pairs of first and second reception paths, each first sensor operable to sense radiant energy for detection of the telecommunication signal applied to the first transmission unit having the same path length difference;

wherein said first transmission unit, transmission path, and said first receiver unit collectively are N interferometers, and

said means for dividing comprises a tree of 1×2 splitters connected to split the radiant energy separately and individually into N+1 portions and a tree of 2×1 couplers to recombine the N+1 portions.

5,606,447

PLANAR TYPE MIRROR GALVANOMETER AND METHOD OF MANUFACTURE

Norihiro Asada, Saitama-ken, and Masayoshi Esashi, Miyagi-ken, both of Japan, assignors to The Nippon Signal Co., Ltd., Tokyo, Japan

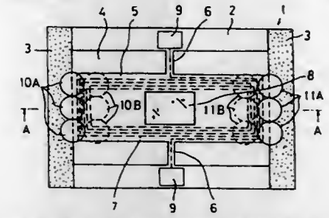
PCT No. PCT/JP94/02062, § 371 Date Oct. 19, 1995, § 102(e) Date Oct. 19, 1995, PCT Pub. No. WO95/17698, PCT Pub. Date Jun. 29, 1995

PCT Filed Dec. 8, 1994, Ser. No. 507,244

Claims priority, application Japan, Dec. 20, 1993, 5-320524

Int. Cl.[6] G02B *26/10*

U.S. Cl. 359—199 **20 Claims**



1. A planar type mirror galvanometer comprising: a semiconductor substrate having a planar movable plate and a torsion bar for axially supporting said movable plate so as to be swingable in a perpendicular direction relative to said semiconductor substrate formed integrally therewith, a planar coil for generating a magnetic field by means of an electric current, laid on an upper face peripheral edge portion of said movable plate, and a reflecting mirror provided on an upper face central portion which is surrounded by said planar coil, and magnets forming pairs with each other arranged so as to produce a magnetic field at planar coil portions on the opposite sides of the movable plate which are parallel with the axis of the torsion bar.

5,606,448

POLYGON SCANNER AND PRODUCTION PROCESS THEREOF

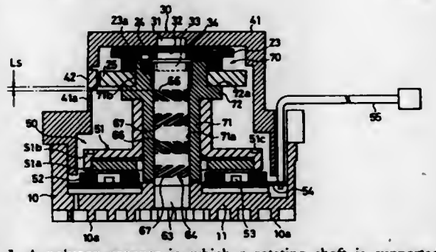
Mitsuo Suzuki, Kita-machi; Yukio Itami, Yokohama; Yoshio Hashimoto, Tokyo; Koji Tsukahara, Sagamihara; Yoshihiro Takahashi, Natori, and Takao Abe, Shibata-machi, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, and Tohoku Ricoh Co., Ltd., Miyagi-ken, both of Japan

Filed Mar. 23, 1993, Ser. No. 35,791

Claims priority, application Japan, Mar. 26, 1992, 4-067695

Int. Cl.[6] G02B *26/08*

U.S. Cl. 359—200 **3 Claims**



1. A polygon scanner in which a rotating shaft is supported through a dynamic pressure air bearing on a fixed shaft and in which a polygon mirror and a rotor magnetic assembly are mounted on said rotating shaft, wherein:

each of said rotating shaft and said polygon mirror is made of an aluminum alloy to match in coefficient of thermal expansion, and wherein an anodic oxide film is formed on a surface of said rotating shaft which said surface is opposite to said fixed shaft; and that anodic oxide film is not formed on a mirror of

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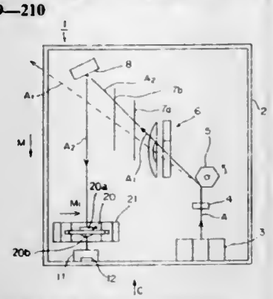
mounting surface of said rotating shaft onto which said polygon mirror is mounted and is not formed on a surface of said polygon mirror faced with said mirror mounting surface of said rotating shaft, and wherein a magnetic member floating means is provided for constantly floating said rotating shaft relative to said fixed shaft upward in an axial direction thereof and a herringbone groove pattern of recesses and protrusions for dynamic pressure generation is formed on a surface of one of said fixed shaft and said rotating shaft.

5,606,449

OPTICAL SCANNING DEVICE

Masataka Nishiyama, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 19, 1995, Ser. No. 545,203
Claims priority, application Japan, Oct. 21, 1994, 6-282845
Int. Cl.[6] G02B *26/08*
U.S. Cl. 359—210 **19 Claims**



1. An optical scanning device comprising:
a laser source;
an optical deflector which deflects scanning beams emitted from the laser source in a main scanning direction toward an object to be scanned;
a reflecting mirror which reflects the scanning beams;
a beam detector which receives the scanning beams reflected by the reflecting mirror;
a correcting lens which is provided between the reflecting mirror and the beam detector and which has a power at least in the main scanning direction; and,
adjusting means for adjusting the position of the correcting lens in the main scanning direction, so that an incident timing of the scanning beams to the beam detector is adjusted.

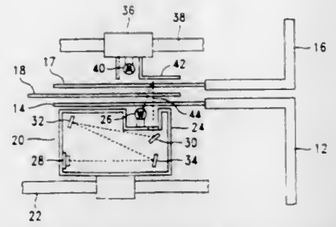
5,606,450

MOVABLE REFLECTIVE PANEL FOR AN OPTICAL SCANNER

Jyh M. Chen, Taoyuan, Taiwan, assignor to Acer Peripherals, Inc., Taoyuan, Taiwan

Filed Apr. 26, 1996, Ser. No. 639,864
Int. Cl.[6] G02B *26/08*
U.S. Cl. 359—223 **3 Claims**

1. An optical scanner comprising:
(1) a base housing having a transparent top;
(2) an upper housing pivotally mounted on the base housing above the transparent top;
(3) a scanning mechanism movably mounted within the base housing for scanning an image-bearing document positioned on the transparent top; the scanning mechanism comprising a light source for emitting light to the document from underside, an optical sensor for transforming light into corresponding electric signals, and optical means for transmitting light reflected from the document along a predetermined optical path to the optical sensor; and
(4) a reflective panel movably mounted within the upper housing which moves in parallel with the scanning mechanism for reflecting light transmitted through the document back to the scanning mechanism along the optical path so as to enhance the light received by the optical sensor.

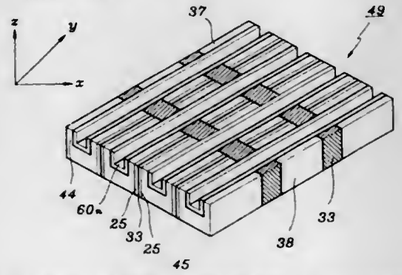


5,606,451

ELECTRODISPLACIVE ACTUATOR ARRAY AND METHOD FOR THE MANUFACTURE THEREOF

Yong-Kwang Kim, and Dong-Kuk Kim, both of Seoul, Rep. of Korea, assignors to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Mar. 23, 1994, Ser. No. 216,756
Claims priority, application Rep. of Korea, Mar. 23, 1993, 93-4518; Aug. 30, 1993, 93-17047
Int. Cl.[6] G02B *26/00*
U.S. Cl. 359—290 **7 Claims**



1. A method for manufacturing an array of electrodisplacive actuators for use in an optical projection system, comprising the steps of:
(a) preparing a first ceramic wafer made of an electrodisplacive material and having a flat surface;
(b) forming on the entirety of said flat surface of the first ceramic wafer a plurality of regularly spaced vertically directional trenches wherein each of said vertically directional trenches has a pair of side surfaces and a bottom surface, and runs parallel to each other;
(c) depositing a first conductive metallic layer on the entirety of said flat surface shaped in step(b), including the side surfaces and the bottom surface of each of said vertically directional trenches, resulting in a ceramic body;
(d) forming on said ceramic body a multiplicity of regularly spaced horizontally directional trenches, wherein each of said trenches has a pair of side surfaces and a bottom, and runs parallel to each other in a direction normal to said plurality of vertically directional trenches;
(e) preparing a second ceramic wafer made of said electrodisplacive material and having a flat surface;
(f) treating said second ceramic wafer in accordance with said steps(b), (c) and (d);
(g) bonding said first and second ceramic wafers treated in accordance with said steps(b), (c), and (d) by using an adhesive to thereby form a ceramic block having a top and a bottom surfaces;

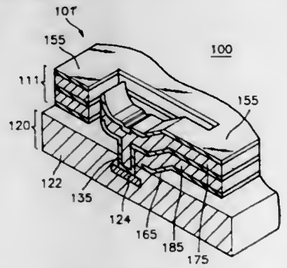
(h) removing said top and bottom surfaces of said ceramic block so as to obtain a pair of flat surfaces thereof until said first conductive metallic layer deposited on the side surfaces of said vertically directional trenches prepared in said step(b) is exposed, resulting in a composite structure, wherein said electrodisplacive material is separated in the vertical direction by said first conductive metallic layer and in the horizontal direction by said adhesive;
(i) forming a series of regularly spaced vertically directional grooves on one of said flat surfaces obtained in said step(h), wherein each of said grooves has a pair of side surfaces and a bottom surface, runs parallel to each other, is separated from the adjacent grooves by a barrier having a top surface and is located at an equidistance from two adjacent layers of said first conductive metallic layers;
(j) depositing a second conductive metallic layer on said side and bottom surfaces of each of said series of grooves and the top surface of each of the barriers; and
(k) removing the second conductive metallic layer on the top surfaces of each of the barriers to thereby form the array of electrodisplacive actuators.

5,606,452

ARRAY OF THIN FILM ACTUATED MIRRORS AND METHOD FOR THE MANUFACTURE THEREOF

Yong-Ki Min, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Oct. 25, 1995, Ser. No. 548,034
Claims priority, application Rep. of Korea, Nov. 14, 1994, 94-29763
Int. Cl.[6] G02B *26/00*
U.S. Cl. 359—295 **11 Claims**



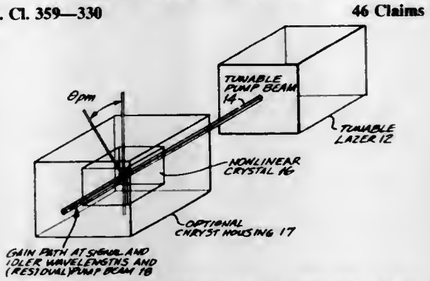
1. An array of M×N thin film actuated mirrors, wherein M and N are integers, for use in an optical projection system, each of the thin film actuated mirrors having a bimorph structure, the array comprising:
an active matrix having a top surface and including a substrate with an array of M×N connecting terminals and an array of M×N transistors; and
an array of M×N actuating structures, each of the actuating structures having a proximal and a distal ends, each of the actuating structures including a second thin film electrode for functioning as a second bias electrode, a lower electrodisplacive member having a top and a bottom surfaces, an intermediate thin film electrode for functioning as a signal electrode, an upper electrodisplacive member having a top and a bottom surfaces and a first thin film electrode for functioning as a mirror as well as a first bias electrode, wherein the upper and the lower electrodisplacive members are separated by the intermediate thin film electrode, the first thin film electrode is placed on the top surface of the upper electrodisplacive member, the second thin film electrode is located on the bottom surface of the lower electrodisplacive member, the intermediate thin film electrode is electrically connected to each of the transistors through each of the connecting terminals, and the proximal end of each of the actuating structures is attached to the top surface of the active matrix to thereby form the thin film actuated mirror having the bimorph structure.

5,606,453

OPTICAL PARAMETRIC AMPLIFIERS AND OSCILLATORS PUMPED BY TUNABLE LASER SOURCES

John C. Walling, Whitehouse Station, N.J.; Jui T. Lin, Winter Springs, Fla.; Mahendrakumar G. Jani, Poquoson, Va.; Richard C. Powell, Tucson, Ariz., and Donald F. Heller, Bound Brook, N.J., assignors to Light Age, Inc., Somerset, N.J.

Filed Apr. 20, 1993, Ser. No. 49,955
Int. Cl.[6] H01S *3/10;* **H03F** *7/00*
U.S. Cl. 359—330 **46 Claims**



1. An optical parametric amplifier (OPA) comprising 1) a birefringent crystal having a second order nonlinear susceptibility substantially different from zero oriented to phasematch incident light over some range of wavelengths, wherein the birefringent crystal is oriented to cause phase matching to occur along a direction that is not at 90° to an optical axis, 2) an optical pumping beam comprising light of suitable intensity from a tunable laser source, said pumping beam having a wavelength selected to be within the phasematch wavelength range of said crystal and propagating substantially along the phasematch direction in said crystal.

5,606,454

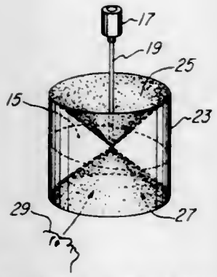
VOLUME DISPLAY SYSTEM AND METHOD FOR INSIDE-OUT VIEWING

Rodney D. Williams, Plano, and Felix Garcia, Jr., Roundrock, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 845,102, Mar. 3, 1992, abandoned, which is a division of Ser. No. 629,806, Dec. 19, 1990, Pat. No. 5,157,546. This application Feb. 17, 1993, Ser. No. 19,998
Int. Cl.[6] G02B *27/22;26/08*
U.S. Cl. 359—462 **4 Claims**

1. A method of viewing a three dimensional display comprising the steps of:
(a) creating a display having a cylindrical exterior surface, said display occupying all but a selected region disposed within said cylindrical exterior surface along the axis of said cylindrical exterior surface; and

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(b) viewing said display from said selected region disposed within said cylindrical exterior surface;

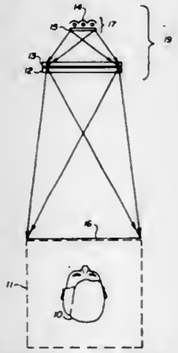
(c) said selected region disposed within said cylindrical exterior surface along the axis of said cylindrical exterior surface being of conical shape.

5,606,455

AUTOSTEREOSCOPIC DISPLAY WITH HIGH POWER EFFICIENCY

Jesse B. Eichenlaub, Penfield, N.Y., assignor to Dimension Technologies, Inc., Rochester, N.Y.

Division of Ser. No. 58,318, May 6, 1993, Pat. No. 5,457,574.
This application Jun. 7, 1995, Ser. No. 478,028
Int. Cl.[6] G02B *27/22;27/10*
U.S. Cl. 359—463 **15 Claims**



1. A method of displaying an autostereoscopic image within a head volume of at least one observer located in front of a transparent display screen having a plurality of odd and even numbered light valve columns wherein the head volume is only slightly larger than the at least one observer's head, comprising the steps of:

forming a plurality of parallel, equidistant lines of light in a plane adjacent the transparent display screen so that one of the lines of light illuminates at least two adjacent light valve columns;

displaying a left eye image on one of the odd and even light valve columns and simultaneously displaying a right eye image on the other of the even and odd light valve columns; and

concentrating the light from the lines of light in a left eye viewing zone and a right eye viewing zone substantially within the head volume of the at least one observer located in front of the display screen;

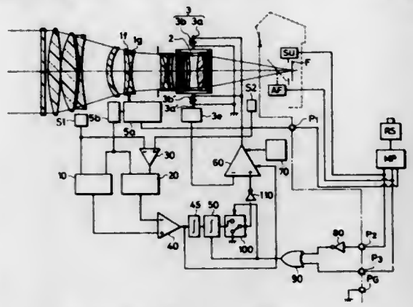
whereby the autostereoscopic image is a half-resolution image of the composite image on the display screen.

5,606,456

IMAGE PROCESSING APPARATUS AND DISPLAY SYSTEM

Toru Nagata, Yokohama, and Hiromi Someya, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 72,859, Jun. 7, 1993, abandoned, which is a continuation of Ser. No. 924,590, Aug. 10, 1992, abandoned, which is a continuation of Ser. No. 627,924, Dec. 17, 1990, abandoned, which is a continuation of Ser. No. 402,993, Sep. 6, 1989, abandoned, which is a continuation of Ser. No. 306,226, Feb. 3, 1989, abandoned, which is a continuation of Ser. No. 896,639, Aug. 15, 1986, abandoned. This application Feb. 16, 1994, Ser. No. 197,454
Claims priority, application Japan, Aug. 23, 1985, 60-185167; Aug. 26, 1985, 60-187089; Aug. 26, 1985, 60-187090; Aug. 28, 1985, 60-187091
Int. Cl.[6] G02B *27/64*
U.S. Cl. 359—554 **13 Claims**



1. An image stabilizing device comprising:

photographic lens means having a first lens unit movable along an optical axis of said photographic lens means and a second lens unit movable in a direction having a component transverse to the optical axis;

first detection means for detecting the position of said first lens unit;

second detection means for detecting a displacement of said photographic lens means;

calculation means for calculating the amount of movement of said second lens unit on the basis of the detection result of said first and second detection means; and

driving means for driving said second lens unit on the basis of the result of the calculations of said calculation means.

5,606,457

HIGH-SPEED OPTICAL IMAGE CORRELATOR

Tien-Heng Chiu, Spotswood; Alastair M. Glass, Rumson, and Afshin Partovi, Edison, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 37,858, Mar. 29, 1993. This application Feb. 6, 1995, Ser. No. 385,995
Int. Cl.[6] G02B *27/46*
U.S. Cl. 359—561 **9 Claims**

1. An optical image correlator, comprising:

a) a source of a coherent input beam of light;

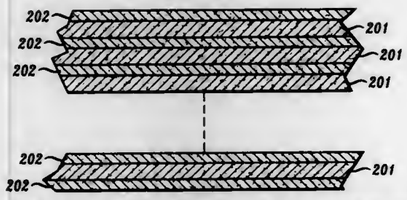
b) a source of a coherent output beam of light;

c) means for impressing on the input beam a spatial, intensity-modulation pattern corresponding to at least a first input image;

d) a lens for creating a Fourier transform of the modulation pattern; and

e) a photorefractive medium for recording the Fourier transform as an intensity modulation pattern, and for modulating the output beam according to the recorded pattern,

CHARACTERIZED IN THAT



f) the photorefractive medium comprises a semi-insulating, multiple quantum well structure that includes, in alternation, plural quantum well layers, and plural barrier layers of a higher bandgap than the quantum well layers;

g) the quantum well structure is enclosed between two dielectric layers;

h) the quantum well structure comprises: a first epitaxially grown portion adjacent one of the dielectric layers, and a second epitaxially grown portion adjacent the first portion and distal said dielectric layer;

i) associated with the first portion is a first carrier lifetime and associated with the second portion is a second carrier lifetime; and

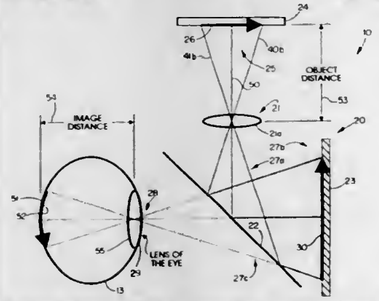
j) the first portion is grown at a lower temperature than the second portion, such that the first carrier lifetime is smaller than the second carrier lifetime, and the first carrier lifetime is less than one picosecond.

5,606,458

HEAD MOUNTED DISPLAY AND VIEWING SYSTEM USING A REMOTE RETRO-REFLECTOR AND METHOD OF DISPLAYING AND VIEWING AN IMAGE

James L. Fergason, 92 Adam Way, Atherton, Calif. 94025

Continuation-in-part of Ser. No. 295,383, Aug. 24, 1994. This application Feb. 3, 1995, Ser. No. 383,466
Int. Cl.[6] G03B *21/28*
U.S. Cl. 359—630 **42 Claims**



1. A head mounted display system for providing images for viewing by at least one eye of a viewer, comprising

a mounting structure for mounting on the head of a viewer,

a liquid crystal display image source carried by the mounting structure for providing images for viewing by one eye of a viewer,

a retro-reflector remotely located relative to said image source and the viewer and having a characteristic of providing a conjugate optical path leading to said eye of a viewer,

focusing optics carried by the mounting structure in position to receive light from the image source to form a real image,

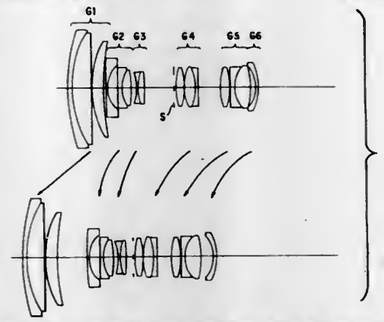
said mounting structure including means for holding said beamsplitter and focusing optics with respect to the head of a viewer to orient said focusing optics and said beamsplitter with respect to said eye of the viewer such that said focusing optics and said beamsplitter are in substantially the same relation to each other as the pupil of said eye of a viewer stands in relation to said beamsplitter to permit said eye to view an image from said image source when light representing that image is reflected in said conjugate optical path.

5,606,459

HIGH MAGNIFICATION ZOOM LENS

Masahiro Nakatsuji, Hokkai-dou, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Jun. 14, 1995, Ser. No. 490,157
Claims priority, application Japan, Aug. 30, 1994, 6-228820
Int. Cl.[6] G02B *15/14*
U.S. Cl. 359—683 **30 Claims**



1. A high-magnification zoom lens having a lens system movable along an optical axis from a wide angle setting to a telephoto setting, said lens system having a focal length of fW in said wide angle setting and a focal length of fT in said telephoto setting, said lens system comprising five lens groups arranged in order from an object side including:

a first lens group having a positive refractive power and a focal length of **f1**;

a second lens group having a negative refractive power and a focal length of **f2**;

a third lens group having a negative refractive power and a focal length of **f3**, wherein a combined focal length of said second lens group and said third lens group in said wide angle setting is **f23**, a distance between said second lens group and said third lens group along said optical axis in said wide angle setting is **DW23**, and a distance between said second lens group and said third lens group along said optical axis in said telephoto setting is **DT23**;

a fourth lens group having a positive refractive power; and

an image composing lens group having a positive refractive power, wherein when said lens system changes from said wide angle setting to said telephoto setting, said first lens group and said fourth lens group move toward said object side such that a distance between said first lens group and said second lens group increases and a distance between said third lens group and said fourth lens group decreases such that:

$$1.1 \leq f1/(fW*fT)^{1/2} \leq 2.3$$

$$0.35 \leq f2/f3 \leq 0.75$$

$$0.18 \leq f23/(fW*fT)^{1/2} \leq 0.32$$

$$0.01 \leq (DT23-DW23)/fW \leq 0.12.$$

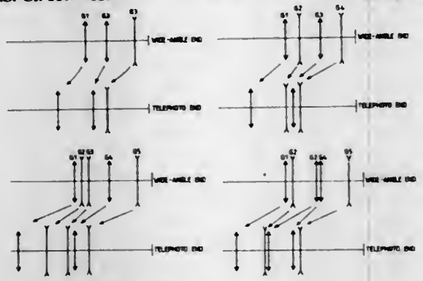
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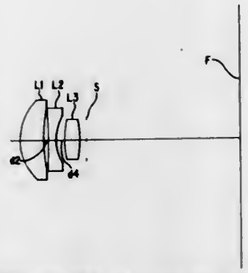
5,606,460

ZOOM LENS

Motoyuki Ohtake, Ohmiya, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Dec. 23, 1994, Ser. No. 363,339
Claims priority, application Japan, Dec. 28, 1993, 5-353454
Int. Cl.[6] G02B *15/14*
U.S. Cl. 359—689 **12 Claims**





1. A zoom lens comprising:

at least three movable lens units including:

a first lens unit disposed closest to an object side and having positive refractive power, said first lens unit including a positive cemented lens having a positive lens element and a negative lens element, a cemented concave surface of the negative lens element facing the object side, and

a last lens unit disposed closest to an image side,

wherein, upon zooming from a wide angle end to a telephoto end, at least said first lens unit and said last lens unit move toward the object side so as to increase an air gap between said first lens unit and a lens unit adjacent to said first lens unit on the image side but to decrease an air gap between said last lens unit and a lens unit adjacent to said last lens unit on the object side,

said zoom lens satisfying the following conditions:

$$0.7<fl/(fw\cdot ft)^{1/2}<1.4$$

$$0.08<fw\cdot(N1n-N1p)/r1m|<0.5$$

where fl is the focal length of said first lens unit, fw is the focal length of the entire lens system at the wide angle end, ft is the focal length of the entire lens system at the telephoto end, N1p is the refractive index of said positive lens element in said first lens unit with respect to the d-line, N1n is the refractive index of said negative lens element in said first lens unit with respect to the d-line, and r1m is the radius of curvature of the cemented concave surface in said first lens unit.

5,606,461

BEHIND STOP TRIPLET LENS

Koichi Ohshita, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Nov. 29, 1995, Ser. No. 564,737
Claims priority, application Japan, Jan. 23, 1995, 7-008455
Int. Cl.[6] G02B *9/14;13/18*
U.S. Cl. 359—790 **19 Claims**

1. A triplet lens including a rear diaphragm for imaging an object, comprising, in order from the object:

a glass lens element having a positive meniscus shape and including a convex surface on the object side;

a first plastic lens element made of a material selected from the group consisting of polycarbonate, polystyrene, and copolymers of polystyrene and methacrylate, said plastic lens element having a biconcave shape with the concave surface on the image side having a larger curvature than the concave surface on the object side;

a second plastic lens made of a copolymer of polystyrene and methacrylate, said plastic lens having a biconvex shape; and

a diaphragm, wherein the following conditions are satisfied:

$$0.57<f1/f<0.72 \quad (1)$$

$$0.5<d2/d4<0.8 \quad (2)$$

$$0.25<\Sigma d/f<0.3 \quad (3)$$

$$0.13<n1-n3<0.26 \quad (4)$$

$$6<v1-v3<18 \quad (5)$$

where

f=focal length of the entire said triplet lens,

f1=focal length of said glass lens element,

d2=distance from the image side surface of said glass lens element to the object side surface of said first plastic lens element along the optical axis,

d4=distance from the image side surface of said first plastic lens element to the object side surface of said second plastic lens element along the optical axis,

Σd=distance from the object side surface of said glass lens element to the image side surface of said second plastic lens element,

n1=refractive index for the d line of said glass lens element,

n3=refractive index for the d line of said second plastic lens element,

v1=Abbe number of said glass lens element, and

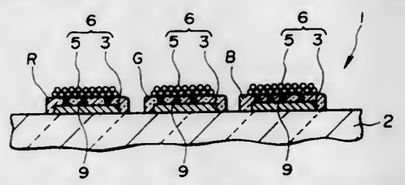
v3=Abbe number of said second plastic lens element.

5,606,462

COLOR FILTER AND FLUORESCENT DISPLAY DEVICE HAVING COLOR FILTERS INCORPORATED THEREIN

Yoshihisa Tsuruoka; Haruhisa Hirakawa; Yoshinari Okamoto, and Eiji Sato, all of Mobara, Japan, assignors to Futaba Denshi Kogyo K.K., Mobara, Japan

Filed Jul. 12, 1994, Ser. No. 273,757
Claims priority, application Japan, Jul. 12, 1993, 5-171708; Jul. 12, 1993, 5-171709
Int. Cl.[6] G02B *5/22*
U.S. Cl. 359—891 **9 Claims**



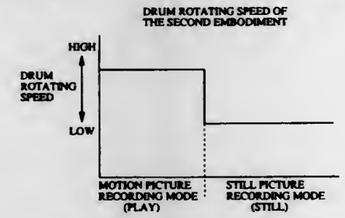
1. A color filter made of a filter substance comprising a mixture of an insulating inorganic pigment and a conductive material, said conductive material being contained in said filter substance in a predetermined amount based upon a thickness of said color filter so as to exhibit anisotropic conductivity, wherein electrical conductivity is substantially only in a direction of the thickness of said color filter.

5,606,463

MAGNETIC RECORDING APPARATUS AND MAGNETIC REPRODUCING APPARATUS

Hirofumi Niwa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 28, 1993, Ser. No. 174,010
Claims priority, application Japan, Dec. 28, 1992, 4-348673
Int. Cl.[6] H04N *5/78*
U.S. Cl. 386—68 **18 Claims**



1. A magnetic reproducing apparatus comprising:

a rotating drum for conveying a magnetic recording medium;

a magnetic head being mounted on said drum and kept in sliding contact with the magnetic recording medium, said magnetic head reproducing signals recorded on the recording medium in a motion picture reproducing mode and not reproducing signals recorded in the recording medium in a still picture reproducing mode in which still pictures are reproduced; and

drum rotation control means controlling the rotating speed of the drum, said control means controlling the rotating speed to rotate the drum at a lower speed during the still picture reproducing mode than during the motion picture reproducing mode.

5,606,464

CANCELLATION OF PRECURSOR INTERSYMBOL INTERFERENCE IN MAGNETIC RECORDING CHANNELS

Oscar E. Agazzi, Florham Park, and Nambirajan Seshadri, Chatham, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jan. 31, 1995, Ser. No. 381,630
Int. Cl.[6] G11B *5/09;5/035*
U.S. Cl. 360—46 **14 Claims**

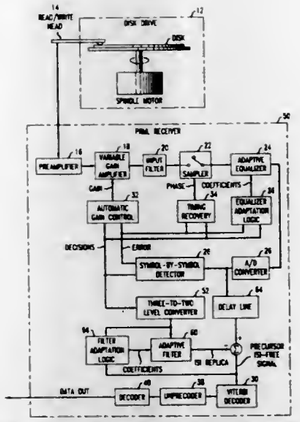
1. A method of decoding an input signal representing information recorded on a magnetic recording medium to produce an output signal comprising a sequence of decoded symbols representing the recorded information, the method comprising the steps of:

generating a first signal based on the input signal;

generating a second signal based on the first signal, wherein the second signal comprises a sequence of tentatively identified decoded symbols;

applying a delay to the first signal to generate a third signal;

filtering the second signal to produce a fourth signal;



subtracting the fourth signal from the third signal to produce a fifth signal; and

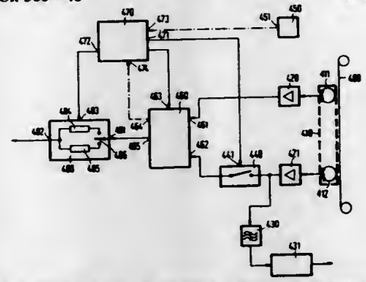
producing the output signal based on the fifth signal.

5,606,465

INFORMATION TRACK FORMAT AND READING AND RECORDING APPARATUSES THEREFOR

Hugo A. J. Cramer, and Albert M. A. Rijckaert, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 13, 1994, Ser. No. 354,566
Claims priority, application European Pat. Off., Dec. 13, 1993, 93203491
Int. Cl.[6] G11B *5/09;5/584*
U.S. Cl. 360—48 **20 Claims**



1. A reading apparatus for reading a first type of digital information recorded on a first longitudinal recording medium in the form of information tracks recorded at an angle to the direction of travel of said first longitudinal recording medium, according to a first format in which said tracks have been recorded on said first longitudinal recording medium at a given angle to said direction of travel, at a first track pitch and have a first track width, said first type of information being readable by said apparatus at a given tape velocity during a normal mode of operation of said reading apparatus, whereby said first type of information can be read from said first longitudinal recording medium at a first bit rate, immediately adjacent tracks exhibiting mutually different azimuth angles, said tracks exhibiting, alternately, a first azimuth angle and a second azimuth angle, a pilot tone having one of at least two different frequencies being recorded in every second information track, the pilot tone frequency cycling through said at least two different frequencies, said reading apparatus comprising at least

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one read head adapted to read tracks having said first azimuth angle and at least one read head adapted to read tracks having said second azimuth angle,

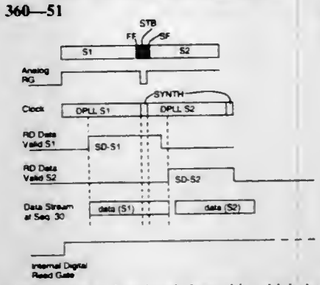
characterized in that said reading apparatus is further adapted to read a second type of digital information recorded on a second longitudinal recording medium in the form of information tracks recorded at an angle to the direction of travel of said second longitudinal recording medium, in accordance with a second format in which the information track pitch is substantially twice said first track pitch, the information track width is greater than said first track width, said tracks are at said given angle to the direction of travel of said second longitudinal recording medium, said tracks on said second longitudinal recording medium being readable by said reading apparatus at said given velocity during a normal mode of operation of said reading apparatus, whereby said second type of information maybe read from said second longitudinal recording medium at substantially half said first bit rate, all of said information tracks on said second longitudinal recording medium exhibiting the same azimuth angle, this angle being one of said first and second azimuth angles, all of said information tracks on said second longitudinal recording medium having a pilot tone recorded therein, immediately adjacent tracks containing pilot tones having mutually different ones of said at least first and second frequencies, wherein, in order to read said second type of information recorded in accordance with said second format, said reading apparatus comprises control means, said control means controlling said apparatus to read information using only the read head or heads exhibiting the same azimuth angle as the information tracks present on the second longitudinal recording medium, and to use the other read head or heads only to provide tracking control.

5,606,466

METHOD FOR OVERLAPPING BLOCK READ EVENTS IN DISK DRIVE

Kevin D. Fisher, Palo Alto, Calif.; Bruce Buch, Westboro, Mass.; Thomas Lau, Sunnyvale, and Pablo A. Ziperovich, Palo Alto, both of Calif., assignors to Quantum Corporation, Milpitas, Calif.

Filed Oct. 23, 1995, Ser. No. 546,628
Int. Cl.[6] G11B *5/09;* **H04N** *5/76*
U.S. Cl. 360—51 **15 Claims**



1. In a data storage and retrieval channel in which data is written to and read from a relatively moving data storage medium, the data being read back as data blocks from the data storage medium in real time as the storage medium moves past a data transducer head, the data blocks being written asynchronously with respect to each other at a nominal data clocking rate and with inter-block gaps between adjacent data blocks, a first data block read from the data storage medium being processed by first data signal processes synchronized to the first data block, and the first block being subsequently processed by second digital signal processes, a method for overlapping first and second data block read events comprising the steps of:

clocking the second digital signal processes by a clock synchronized to the first data block while the first data block is passing by the data transducer head.

clocking the second digital signal processes for the first data block by an asynchronous clock operating at the nominal data clocking rate after the first data block has passed by the data transducer head and before a clock has synchronized to a second data block following the first data block, and

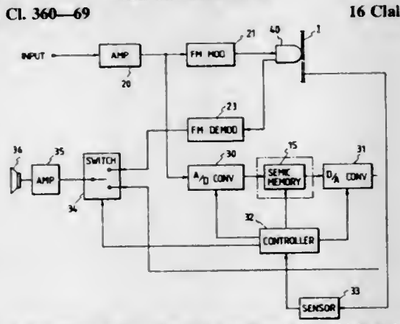
clocking the first data signal processes for the second data block and completing clocking of the second digital signal processes for the first data block by a clock synchronized to the second data block passing by the data transducer head.

5,606,467

APPARATUS FOR CONTINUOUS RECORDING AND REPRODUCING OF DATA FROM A MAGNETIC TAPE CASSETTE COMPRISING A SEMICONDUCTOR MEMORY

Hidetoshi Hirata, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 5, 1991, Ser. No. 755,374
Claims priority, application Japan, Sep. 17, 1990, 2-96463 U
Int. Cl.[6] G11B *27/24*
U.S. Cl. 360—69 **16 Claims**



1. A recording and reproducing apparatus with which at least one of a recording and reproducing operation can be continuously performed through a period before and after the direction of movement of a magnetic tape is reversed, comprising:

a magnetic tape cassette comprising:

a pair of upper and lower case halves defining a hollow space therebetween:

a pair of hubs rotatably supported in said hollow space; a magnetic tape carried by said hubs;

semiconductor memory means installed in said hollow space to enable electric signals transmitted from outside said cassette to be recorded in said semiconductor memory means and reproduced from said semiconductor memory means, said electric

signals representing audio information;

an output terminal by way of which signals recorded in said semiconductor memory means are inputted to at least one of a recording and reproducing unit; and

an input terminal by way of which signals transmitted from said at least one of a recording and reproducing unit are inputted to said semiconductor memory means;

a sensor for detecting a changeover signal indicating a starting and a stopping point of a recording or reproducing operation by said semiconductor memory means, said changeover signal being recorded on said magnetic tape at a position near an end of a recording region of said magnetic tape: and

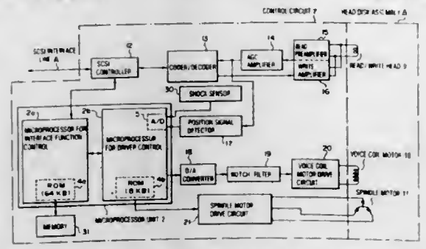
switch means operating in response to an output of said sensor for switching between reproduction from said magnetic tape and reproducing from said semiconductor memory means.

5,606,468

PLURAL DIVERSE PROCESSORS FOR CONTROL OF A DISK APPARATUS

Koji Kodama, Odawara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 21, 1995, Ser. No. 407,823
Claims priority, application Japan, Mar. 28, 1994, 6-057436
Int. Cl.[6] G11B *33/00;* **G05B** *15/02*
U.S. Cl. 360—75 **6 Claims**



4. A control unit of a disk apparatus for exercising at least positioning control of a head of the disk apparatus, control of reading/writing data from/to a disk via the head, and transfer control of data between the disk apparatus and an external device, said control unit comprising:

a first microprocessor capable of mainly exercising positioning control of the head and control for reading/writing data from/into the disk without depending upon control exercised by a second microprocessor different from the first microprocessor and in parallel thereto, so as to perform head positioning by using a servo signal recorded on a data recording surface of the disk or perform head positioning by using both a servo signal recorded on a disk surface dedicated exclusively to servo signal and a servo signal recorded on a data recording disk face;

a second microprocessor for exercising transfer control of data between the disk apparatus and an external device;

said first microprocessor having an instruction execution speed larger than that of said second microprocessor;

said first microprocessor having a first memory for storing information relating to head positioning control and control for reading or writing data from or into the disk;

said second microprocessor having a second memory for storing at least information relating to transfer control of data; and

said second memory having a capacity larger than that of said first memory.

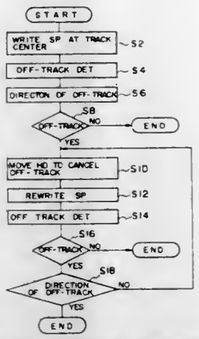
5,606,469

METHOD FOR CORRECTING OFFSET IN A MAGNETIC DISK INCLUDING APPARENT OFFTRACK CANCELLATION

Tatsuhiko Kosugi, and Nobuyuki Suzuki, both of Kawasaki, Japan, assignors to Fujitsu Limited, Japan

Continuation of Ser. No. 20,682, Feb. 22, 1993, abandoned. This application Dec. 23, 1994, Ser. No. 363,983
Claims priority, application Japan, Mar. 30, 1992, 4-074445
Int. Cl.[6] G11B *5/596*
U.S. Cl. 360—77.05 **5 Claims**

1. A method for writing a servo pattern in an information storage device, said information storage device including a servo surface having a first servo pattern for controlling head tracking stored thereupon; a data surface; a servo head for reproducing first servo signals from said servo surface; a data head for reproducing data signals and second servo signals from said data surface; a head position detection unit for detecting positioning of said servo head based upon said first servo signals; and a data head control unit for controlling positioning of said data head based upon positioning of said servo head; said method comprising the steps of:



recording a second servo pattern for controlling head tracking on said data surface by said data head while controlling the positioning of said data head based upon the positioning of said servo head;

reproducing a second servo signal from said data surface using said data head in response to said second servo pattern while controlling the positioning of said data head based upon the positioning of said servo head;

detecting a deviation in said second servo signal that indicates an apparent off-track of said data head from said track while controlling the positioning of said data head based upon the positioning of said servo head; and

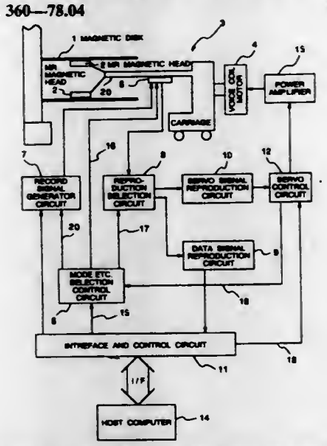
re-recording said second servo pattern on said data surface without re-recording data information while shifting said data head in a radial direction of said data surface with an offset to cancel said apparent off-track.

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METHOD AND APPARATUS FOR CONTROLLING MAGNETORESISTIVE EFFECT ELEMENT HEAD

Akio Shioya, Shizuoka-ken, and Yuji Hata, Odawara, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 2, 1995, Ser. No. 397,522
Claims priority, application Japan, Mar. 18, 1994, 6-048350
Int. Cl.[6] G11B *5/03;5/58;5/596;5/127*
U.S. Cl. 360—78.04 **8 Claims**



1. A method for controlling a magnetic recording and reproducing apparatus having mounted thereon a magnetic head using a

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magnetoresistive effect element and accessing data on a magnetic disk with a data access command, said method comprising the steps of:

detecting whether a data access command has been received in an interface circuit for a feedback control system; and

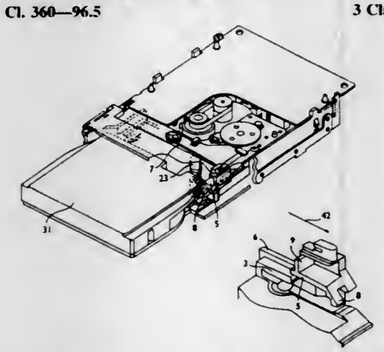
stopping positioning of said magnetic head and stopping a supply of a sense current to the magnetoresistive effect element to impede deterioration and degradation of the magnetoresistive effect element when the step of detecting detects that there is no access command issued from a host computer.

5,606,471

MAGNETIC TAPE CARTRIDGE DRIVER

Yukihiro Inoue, Matsuyama, and Toshiharu Tsubouchi, Onsongun, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 30, 1996, Ser. No. 593,556
Claims priority, application Japan, Aug. 3, 1995, 7-198557
Int. Cl.[6] G11B *15/675*
U.S. Cl. 360—96.5 **3 Claims**



1. A magnetic tape cartridge driver having a magnetic head insertable into an opening of a tape cartridge, the opening exposing a magnetic tape housed inside the tape cartridge, wherein the tape cartridge comprises

a pair of guide grooves formed on each side for engaging with a pair of guide rails of the magnetic tape cartridge driver during insertion of the tape cartridge, and

a tape protecting door for closing the opening to protect the magnetic tape, having an edge protruding over one of the guide grooves,

wherein the magnetic tape cartridge driver comprises:

a slider movable along one of the guide rails, a tip of the slider coming into contact with the protruding edge of the tape protecting door before engagement of the guide rail with the guide groove, thereby opening the tape protecting door and enabling contact between the magnetic head and the magnetic tape.

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DISK UNIT

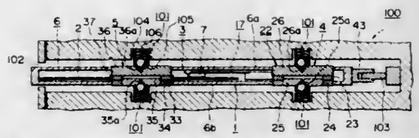
Kyo Akagi, Fuchu; Yasuhiro Kato, Tokyo; Masaaki Matsumoto; Akira Iida, both of Odawara, all of Japan, and Yongkweon Kim, Seoul, Rep. of Korea, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 160,660, Dec. 2, 1993. This application May 5, 1995, Ser. No. 435,716
Int. Cl.[6] G11B *5/012*
U.S. Cl. 360—97.01 **10 Claims**

1. A disk unit comprising:

a recording medium disk;

head means for reading and writing information on said disk;



first actuator means for moving said head means relative to said disk;

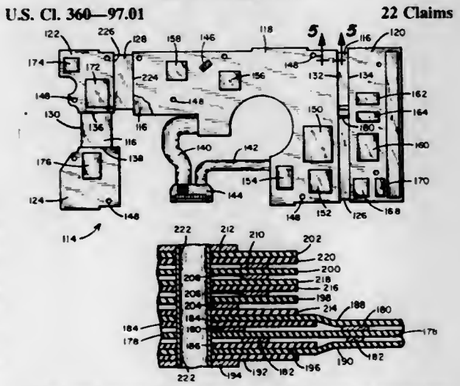
second means for rotating said disk, said second actuator means includes a stator and a moving portion, said stator being fixed to a housing, and an airgap type bearing being provided between said stator and said moving portion.

5,606,473

UNITARY RIGID AND FLEXIBLE CIRCUIT PACKAGE FOR DISK DRIVES

Kent J. Forbord, St. Louis Park; Brian W. Sudman, Eden Prairie; John S. Putnam, Excelsior, and Robert J. Nielsen, Eden Prairie, all of Minn., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Continuation of Ser. No. 146,316, Nov. 2, 1993, abandoned. This application Sep. 21, 1995, Ser. No. 531,395
Int. Cl.[6] G11B *5/12*
U.S. Cl. 360—97.01 **22 Claims**



1. In a data storage device having a rigid housing, a data storage medium inside of the housing, a means for supporting the data storage medium for movement relative to the housing, a data transducer located inside the housing to interact with the data storage medium for reading bit-encoded data stored on the medium or recording bit-encoded data onto the medium: an electrical control circuit for controlling said interaction, said electrical control circuit including:

a pliable electrically insulative substrate and a first electrical circuit layer formed on and supported by the pliable substrate;

a plurality of substantially rigid electrical circuit panels, each electrical circuit panel including a substantially rigid and planar electrically insulative panel substrate and a second electrical circuit layer formed on and supported by the panel substrate, and an electrically insulative adhesive bonding the rigid panel substrates to the pliable substrate and thereby maintaining the rigid panel substrates in spaced apart relation to one another, with each respective one of the second electrical circuit layers separated spatially and electrically from the first electrical circuit layer by a substantially planar first electrically insulative layer formed of said adhesive, wherein the second electrical circuit layer and the first electrical circuit layer are on opposite sides of the first insulative layer, and the first insulative layer is substantially parallel to the rigid panel substrate; and

an electrically conductive coupling means extending through each of the first insulative layers in a direction substantially normal to the planes of the associated first insulative layer and rigid panel substrate, for selectively electrically coupling the second electrical circuit layers with the first electrical circuit layer;

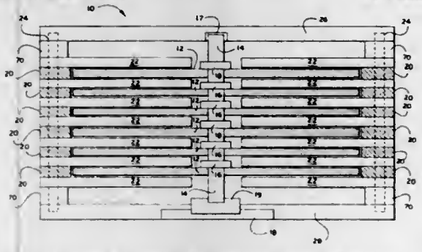
wherein a portion of the pliable substrate and the first circuit layer, disposed between first and second confronting edges of respective first and second adjacent ones of said electrical circuit panels, provides a joinder segment that mechanically couples the first and second electrical circuit panels and enables an electrical coupling of the respective second electrical circuit layers of the first and second electrical circuit panels, said joinder segment being bendable to allow a non-coplanar orientation of the first and second electrical circuit panels relative to one another.

5,606,474

HIGH DENSITY DISK DRIVE WITH ACCELERATED DISK ACCESS

John W. Ketchersid, III, Atlanta, Ga., assignor to Latsu, Inc., Atlanta, Ga.

Filed Jan. 17, 1995, Ser. No. 373,761
Int. Cl.[6] G11B *17/02;5/49;21/16*
U.S. Cl. 360—98.01 **36 Claims**



1. A disk drive for storing and retrieving data comprising:

(a) a spacer ring for enclosing a media disk, said spacer ring having opposite edges and a predetermined spacer ring thickness defined there between;

(b) said media disk rotatably mounted in said spacer ring, said media disk having opposite faces and a disk thickness defined there between, said media disk having a plurality of concentric tracks said spacer ring thickness being greater than said disk thickness by a predetermined spacing distance;

(c) a head mount disk abutting each of said opposite edges of said spacer ring, said head mount disks comprising at least one substantially planer surface disposed toward said media disk, said substantially planer surface being a selected distance above an opposing face of said media disk, and wherein said selected distance is determined by said spacing distance;

(d) a head assembly surface mounted on said substantially planer surface for operative association with an opposing face of said media disk, said head assembly comprising a static array of heads interlaced over said plurality of concentric tracks of said media disk; and

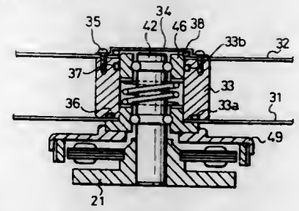
(e) means for rotating said media disk between said head mount disks.

5,606,475

MAGNETIC DISC DRIVE MOTOR INCLUDING A FIXED SHAFT HAVING MOUNTED THEREON A LOWER BEARING MEMBER WITH A PORTION FOR MOUNTING A ROTOR

Yutaka Ishizuka, Nagano, Japan, assignor to Kabushiki Kaisha Sanyo Seiki Seisakusho, Nagano, Japan

Continuation of Ser. No. 133,878, Oct. 12, 1993, abandoned. This application Nov. 8, 1995, Ser. No. 555,307
Claims priority, application Japan, Oct. 12, 1992, 4-298210
Int. Cl.[6] G11B *17/02;* **H02K** *5/16;29/00*
U.S. Cl. 360—99.08 **1 Claim**



1. A magnetic disc drive motor comprising:

a frame;

a fixed shaft mounted on the frame;

a lower bearing member mounted on a lower portion of the fixed shaft, the lower bearing member being provided with an outer roller ring rotating about the fixed shaft, the lower bearing member being provided with a loading portion defined at one end of the outer roller ring;

an upper bearing member mounted on an upper portion of the fixed shaft, the upper bearing member being provided with a cylindrical, outer roller ring;

a spring, for pre-loading the bearings, interposed between the outer roller ring of the lower bearing member and the cylindrical, outer roller ring of the upper bearing member; and

a motor including:

an inverted cup-shaped rotor fixed under a loading surface portion of the loading portion of the lower bearing member, said rotor defining a generally vertical, inner cylindrical surface having a drive magnet mounted thereon; and

a stator disposed inside the rotor so as to face said drive magnet and fixed to the frame,

wherein each of the outer roller rings is fitted in the center hole of a respective magnetic disc and an inner peripheral portion of the magnetic discs is loaded on the loading portion,

further wherein the upper and lower bearing members comprise integral-shaft type bearings so that the upper and lower outer roller rings are mounted on balls disposed in two circumferential grooves formed in the fixed shaft with a predetermined distance, said spring being interposed between the upper and lower outer roller rings, and the loading portion is integrally formed on the lower outer roller ring and projects radially outwardly from the lower outer roller ring so as to be perpendicular with respect to the lower outer roller ring, and the inner peripheral portions of the magnetic discs are loaded on the loading portion.

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ALTITUDE INSENSITIVE AIR BEARING SLIDER

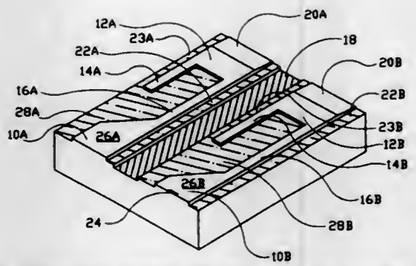
Ciuter Chang, Fremont, and Yiao-Tee Hsia, Pleasanton, both of Calif., assignors to Read-Rite Corporation, Milpitas, Calif.

Filed Jul. 13, 1995, Ser. No. 501,950
Int. Cl.[6] G11B *5/60*
U.S. Cl. 360—103 **11 Claims**

1. An air bearing slider having a leading end and a trailing end comprising:

first and second tapers formed at said leading end;

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a central recess extending from said leading end between said tapers to said trailing end;

first and second side rails disposed on each side of said central recess and extending from said first and second tapers repectively towards said trailing end, said rails configured with substantially similar geometries, each rail having an inverted U-shaped section with a base, and first and second legs stemming from the outer portions of said base, and each rail having a partial trapezoidal section extending from one of said legs of said U-shaped section; and

first and second recesses formed to a depth in the range between 40–160 microinches approximately between said first and second legs of each of said side rails respectively and extending from said base towards said trailing end;

whereby said configured rails and said recesses cause said slider to be effectively insensitive to variations in altitude so that substantially constant flying height of said slider is maintained at different altitudes.

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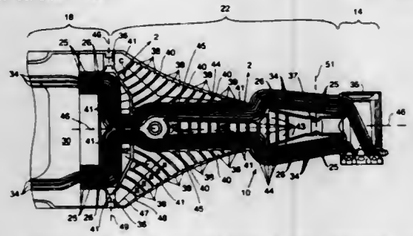
VISCOELASTICALLY DAMPED SLIDER SUSPENSION SYSTEM

A. David Erpelding, and Oscar J. Ruiz, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 213,913, Mar. 15, 1994, abandoned. This application Aug. 16, 1995, Ser. No. 515,936

Int. Cl.[6] G11B *5/48*

U.S. Cl. 360—104 **15 Claims**



1. A suspension system for supporting a data transducer comprising:

a laminated section comprised of a first layer comprised of a metal, a second layer comprised of a dielectric material and positioned over the first layer, and a third layer comprised of an electrically conducting material and positioned over the second layer;

a first land area formed on the laminated section consisting of a four-sided region of the third layer, the first land area having a width c measured between two opposite sides of the first land area, the first land area constraining a first region of the second layer positioned underneath the first land area so that shearing occurs in the first region in response to deformation in the second layer;

a second land area formed on the laminated section consisting of a four-sided region of the third layer, the second land area having a width d measured between two opposite sides of the second land area, the second land area constraining a second region of the second layer positioned underneath the second land area so that shearing occurs in the second region in response to deformation in the second layer;

a third land area formed on the laminated section consisting of a four-sided region of the third layer, the third land area having a width e measured between two opposite sides of the third land area, the third land area constraining a third region of the second layer positioned underneath the third land area so that shearing occurs in the third region in response to deformation in the second layer, with the width c, the width d and the width e all lying parallel to a straight line which intersects the first land area, the second land area and the third land area;

a first channel formed on the laminated section completely surrounding the first land area and isolating the first land area from any other part of the third layer so as to enhance the ability of the first land area to constrain the first region, the first channel extending through the third layer and exposing the second layer;

a second channel formed on the laminated section completely surrounding the second land area and isolating the second land area from any other part of the third layer so as to enhance the ability of the second land area to constrain the second region, the second channel extending through the third layer and exposing the second layer; and

a third channel formed on the laminated section completely surrounding the third land area and isolating the third land area from any other part of the third layer so as to enhance the ability of the third land area to constrain the third region, the third channel extending through the third layer and exposing the second layer.

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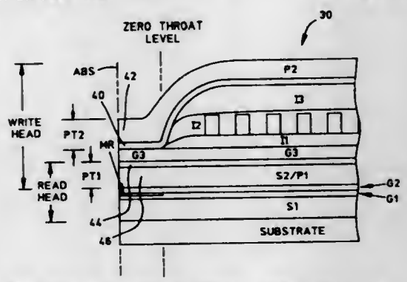
$Ni_{45}FE_{55}$ METAL-IN-GAP THIN FILM MAGNETIC HEAD

Mao-Min Chen, San Jose, and Neil L. Robertson, Campbell, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 8, 1994, Ser. No. 351,996

Int. Cl.[6] G11B *5/39;5/193*

U.S. Cl. 360—126 **30 Claims**



19. A metal-in-gap thin film magnetic head comprising:

a gap layer;

first and second pole pieces which include first and second pole tips respectively, the first and second pole tips being separated by the gap layer;

at least one of the first grid second pole tips including a combination of layers, the combination of layers including first layer of high magnetic moment material and a second layer of low magnetic moment material, said high magnetic moment material having a higher magnetic moment than said low magnetic moment material;

the first layer being closer to the gap layer than the second layer;

one of the first and second layers having a positive magnetostriction and the other of the first and second layers having a negative magnetostriction;

the combination of layers having a thickness ratio which is a thickness of the second layer divided by a thickness of the first layer; and

the thickness ratio being selected to provide the combination of layers with a magnetostriction which is less than said positive magnetostriction.

5,606,479

MAGNETIC HEAD

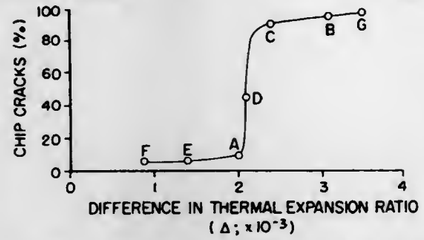
Yasuo Mizuno, Katano; Yoshihiro Hori, Hirakata; Masaki Ikeda, Hirakata, and Akihiko Yoshida, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 49,173, Apr. 19, 1993, abandoned. This application Dec. 13, 1994, Ser. No. 355,066

Claims priority, application Japan, Apr. 21, 1992, 4-100846

Int. Cl.[6] G11B *5/127*

U.S. Cl. 360—126 **11 Claims**



1. A magnetic head comprising a pair of substrates which are formed of ferrite and sealed with sealing glass,

wherein an averaged thermal expansion ratio of said sealing glass in the range of 30° C. to a setting temperature of said sealing glass is smaller than an averaged thermal expansion ratio of the substrate in the range of 30° C. to said setting temperature of said sealing glass; and a difference between a thermal expansion ratio at a glass transition temperature of said sealing glass and a thermal expansion ratio of said sealing glass at a yielding temperature thereof is 2×10^{-3} or less.

5,606,480

DETECTOR FOR MONITORING THE INTEGRITY OF A GROUND CONNECTION TO AN ELECTRICAL APPLIANCE

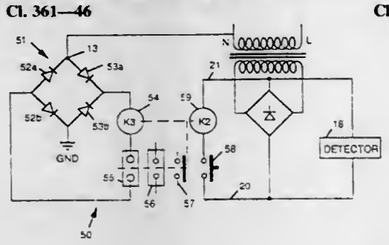
Haim Nevo, Kiryat Bialik, Israel, assignor to "Nevo" Electricity and Electronics Industries (1994) Ltd., Kiryat Bialik, Israel

Filed May 8, 1995, Ser. No. 437,194

Claims priority, application Israel, May 10, 1994, 109607

Int. Cl.[6] H02H *3/16*

U.S. Cl. 361—46 **Claims**



1. A detector for monitoring the integrity of a ground connection to an electrical appliance having live and neutral terminals for feeding current to the appliance from respective live and neutral feeders of an electrical supply having a ground point for connecting to a ground terminal of the appliance, said detector comprising:

differential comparator circuit means for comparing a fractional voltage at the ground terminal with a fractional voltage at the neutral terminal of the appliance, and for producing a fault signal if a difference between said fractional voltages exceeds a predetermined threshold;

wherein the differential comparator circuit means comprises:

low voltage d.c. power supply means having a high and a low voltage rail, said low voltage rail being coupled to the ground terminal of the appliance,

first voltage divider means including a pair of resistors connected in series across the high and the low voltage rails and having a common junction coupled to a first input of a comparator, and

second voltage divider means including a pair of resistors connected in series between the high voltage rail and the neutral terminals of the appliance and having a common junction coupled to a second input of the comparator.

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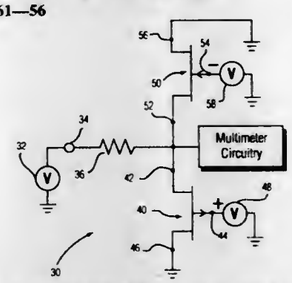
OVERVOLTAGE PROTECTION FOR BATTERY POWERED EQUIPMENT

Jerry J. Heep, Weatherford, Tex., and Douglas R. Curtis, Los Gatos, Calif., assignors to Tandy Corporation, Ft. Worth, Tex.

Continuation of Ser. No. 858,580, Mar. 27, 1992, abandoned. This application Sep. 26, 1994, Ser. No. 311,904

Int. Cl.[6] H02H *9/04*

U.S. Cl. 361—56 **23 Claims**



1. An electronic apparatus having a direct current power supply and an input terminal for receiving input voltages, said apparatus comprising:

a meter circuit, powered by said power supply, coupled to said input terminal and operable to measure an electrical quantity thereat;

a first bias voltage source, separate from said power supply, for supplying a control voltage having potential less than or equal to the power supply voltage;

a first current amplifier having a first terminal coupled to said input terminal, a second terminal coupled to a potential less than the control voltage, and a control terminal coupled to the first bias voltage source for controlling the conduction between the first and second terminals;

said current amplifier conducting current between the first and second terminals when the potential of an input voltage is greater than that of the first bias voltage source.

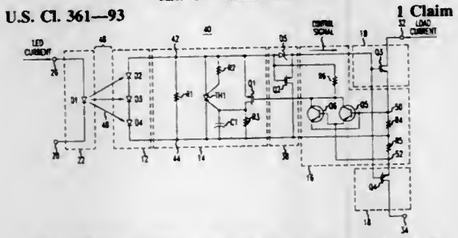
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5,606,482

SOLID STATE CIRCUIT BREAKER

Steven B. Witmer, Spring Township, Berks County, Pa., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Apr. 14, 1995, Ser. No. 422,566
Int. Cl.[6] H02H *9/00*
U.S. Cl. 361—93 **1 Claim**



1. An optically coupled solid state circuit breaker which provides high voltage isolation between a control circuit and a power source, comprising

a light emitting diode having terminals connectable to a control circuit for generating light in response to a current;

a photodiode array for converting light generated by the light emitting diode into a photocurrent across first and second nodes;

a solid state switch comprising

a first field effect transistor with a first gate, first source and first drain, and

a second field effect transistor with a second gate, second source and second drain, the first and second gates connected together and coupled to the first node, the first and second drains having terminals connectable to a power source which generates a load current,

wherein the photocurrent produces a first voltage across the nodes which turns on the first and second field effect transistors thereby allowing the load current to flow;

a current sensor comprising

a first resistor connected between the first source and the second node,

a second resistor connected between the second source and the second node,

a first bipolar transistor with a first base connected to the first source, with a first emitter connected to the second source, and with a first collector,

a second bipolar transistor with a second base connected to the second source, with a second emitter connected to the first source, and with a second collector connected to the first collector, and

a third resistor connected between the first node and the collectors,

such that when the load current flowing from the first source to the second source exceeds the predetermined magnitude then the first bipolar transistor turns on thereby providing a low voltage at the collectors, and when the load current flowing from the second source to the first source exceeds the predetermined magnitude then the second bipolar transistor turns on thereby providing the low voltage at the collectors;

an inhibit circuit comprising

a third field effect transistor with a third gate, third source and third drain, the third gate connected to the collectors, and the third source connected to the first node,

a fourth resistor connected between the second node and the third drain, and

a thyristor with an anode connected to the first node, with a cathode connected to the second node, and with a trigger gate connected to the third drain,

wherein the low voltage at the collectors turns on the third field effect transistor which signals the trigger gate to turn on the thyristor thereby reducing the first voltage to a second voltage across the nodes which causes the first and second field effect transistors to turn off thereby opening the switch and blocking the load current, the thyristor remaining on until the control circuit turns off the light emitting diode; and

a discharge circuit comprising

a second diode with a second anode connected to the first node and with a second cathode connected to the first and second gates, and

a fourth field effect transistor with a fourth gate, fourth source and fourth drain, the fourth gate connected to the first node, the fourth source connected to the first and second gates, and the fourth drain connected to the second node,

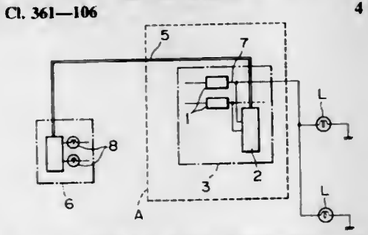
wherein the first voltage turns off the fourth field effect transistor whereas the second voltage turns on the fourth field effect transistor which then rapidly transfers charge stored in the first and second gates to the second node thereby accelerating turning off the switch when the thyristor turns on.

5,606,483

WIRE PROTECTING APPARATUS FOR AUTOMOBILES

Mamoru Sawai; Kaoru Kurita; Tsuyoshi Nakamura; Yasuhiro Hara, and Mitsugu Watanabe, all of Kosai, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Dec. 20, 1994, Ser. No. 359,627
Claims priority, application Japan, Dec. 28, 1993, 5-337557
Int. Cl.[6] H02H *5/04*
U.S. Cl. 361—106 **4 Claims**



1. A wire-protecting apparatus for automobiles comprising:

at least one power-supplying lead for supplying an electric power to a load;

at least one PTC element inserted in series with said power-supplying lead, whereby said PTC element exhibits a high resistance at temperatures higher than a predetermined value when an overcurrent greater than a predetermined value flows through said load, thereby substantially shutting off the electric power to the load; and

a display means for detecting an overcurrent flowing through said PTC element to display an occurrence of an abnormal condition of the load, wherein said display means comprises an LED connected in parallel with said PTC element.

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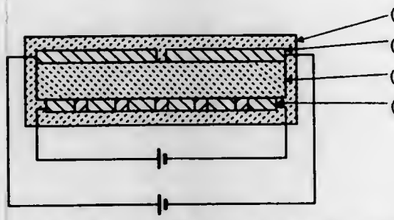
CERAMIC ELECTROSTATIC CHUCK WITH BUILT-IN HEATER

Nobuo Kawada, and Kazuhiro Yamaguchi, both of Gunmaken, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jun. 22, 1994, Ser. No. 263,533
Claims priority, application Japan, Jun. 23, 1993, 5-152015
Int. Cl.[6] H02N *13/00*
U.S. Cl. 361—234 **2 Claims**

1. A ceramic electrostatic chuck with built-in heater which is an integral body comprising:

(a) a base plate having opposing first and second surfaces formed from a composite sintered body of a powder mixture consisting of from 5% to 50% by weight of aluminum nitride and from 95% to 50% by weight of boron nitride;



(b) a layer of pyrolytic graphite to serve as an electrode of the electrostatic chuck formed on the first surface of the base plate;

(c) a layer of pyrolytic graphite to serve as an electric heater element of the built-in heater formed on the second surface of the base plate; and

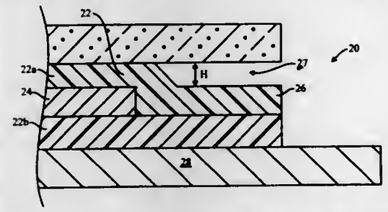
(d) a coating layer of pyrolytic boron nitride as an electric insulator formed on the layers of the pyrolytic graphite.

5,606,485

ELECTROSTATIC CHUCK HAVING IMPROVED EROSION RESISTANCE

Shamouil Shamoullian, San Jose, and John F. Cameron, Los Altos, both of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed Jul. 18, 1994, Ser. No. 276,735
Int. Cl.[6] H02N *13/00*
U.S. Cl. 361—234 **15 Claims**



1. An electrostatic chuck having reduced erosion for holding a substrate in a process chamber containing erosive gas, the chuck comprising:

an insulator comprising (i) an electrode therein, (ii) a raised central insulator portion overlying the electrode, the raised portion adapted to support a substrate thereon, and (iii) a lower peripheral insulator portion extending beyond the electrode, the raised central insulator portion and the lower insulator portion defining a step having a height H,

wherein when a substrate is electrostatically held on the chuck, the raised central insulator portion is substantially covered by the substrate, and the lower peripheral insulator portion is exposed to the erosive gas in the process chamber, and wherein the height H of the step is less than about 10 microns and sized sufficiently small to reduce erosion of the exposed lower peripheral insulator portion.

5,606,486

CAPACITOR EMPLOYING PLURAL MATERIALS FOR DIELECTRIC

J. Peter Moncrieff, 408 Mason Rd., Vista, Calif. 92084

Filed May 15, 1995, Ser. No. 441,526
Int. Cl.[6] H01G *4/018;4/20*
U.S. Cl. 361—312 **8 Claims**

1. A method for ameliorating the temporal lag pattern, in response to an electrical field, of a single material employed as a dielectric in a capacitor,



said method comprising the step of providing a plurality of oppositely facing, distinctly electrically connected electrodes, and a step selected from the group consisting of:

the step of providing a first dielectric or dielectrics between said plurality of oppositely facing electrodes,

wherein said first dielectric or dielectrics comprise a plurality of distinct materials, whereby said distinct materials are substantially separately congregated at distinct locations,

and the step of providing a second dielectric or dielectrics disposed outside the space or spaces between said oppositely facing, distinctly electrically connected electrodes,

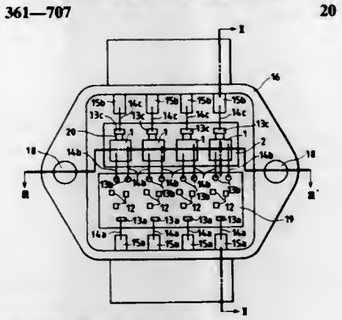
wherein said second dielectric or dielectrics comprise an interspersed plurality of distinct materials, whereby said distinct materials are substantially separately congregated at distinct locations.

5,606,487

ELECTRONIC DEVICE FOR OFFSETTING ADVERSE EFFECTS OF A PLURALITY OF CHIPS WHICH REPETITIVELY PRODUCE LARGE PULSES OF HEAT

Akio Yasukawa, Kashiwa, and Noboru Sugiura, Mito, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 108,940, Aug. 19, 1993, abandoned, which is a continuation of Ser. No. 731,868, Jul. 18, 1991, abandoned. This application May 10, 1995, Ser. No. 438,248
Claims priority, application Japan, Jul. 18, 1990, 2-187906
Int. Cl.[6] H05K *7/20;* **H01L** *23/36*
U.S. Cl. 361—707 **20 Claims**



1. An electronic device comprising:

a heat conducting base;

a single insulating plate bonded to said base;

a plurality of power semiconductor chips mounted on said single insulating plate, said chips repetitively producing a pulse of heat; and

a wiring plate, having a width greater than that of said single insulating plate, being mounted on said base for electrically connecting said chips to a control circuit by wires, said single insulating plate and said wiring plate being so arranged on said base that the centers of said single insulating plate and said wiring plate are aligned with each other along a line corresponding to an axis of said single insulating plate and perpendicular to the width direction thereof, whereby deformation of the single insulating plate from heat produced by said semiconductor chips is avoided.

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MINIATURIZED PRINTED CIRCUIT AND COIL ASSEMBLY

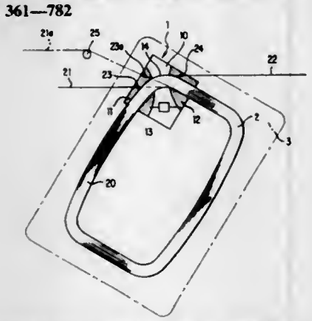
Ake Gustafson, Chatel St-Denis, Switzerland, assignor to Sokymat SA, Granges, Switzerland

Filed Sep. 23, 1992, Ser. No. 948,587

Claims priority, application Switzerland, Apr. 19, 1990, 1329/90

Int. Cl.[6] **H05K** *7/06;7/02*

U.S. Cl. 361—782 **12 Claims**



1. A miniaturized transponder device, comprising:

a printed circuit board having two metallized surfaces;

at least one electronic component physically attached to the printed circuit board and electrically connected to first portions of the metallized surfaces; and

a coil of wire physically attached to the printed circuit board so that second portions of the metallized surfaces extend beyond an outer lateral side of the coil and a portion of the coil is positioned laterally away from the printed circuit board, wherein both ends of the coil of wire remain beyond the outer lateral side of the coil after winding of the coil and in close proximity to the corresponding second portions of the metallized surfaces after winding of the coil and assembly of the coil to the printed circuit board, the ends of the coil of wire being securely electrically connected to said second portions of the metallized surfaces beyond the outer lateral side of the coil before the coil is separated from the wire.

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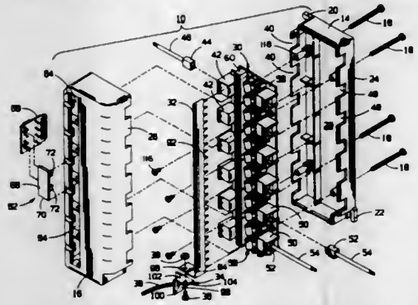
GANGED IROB IN RANGE OUT OF BUILDING PROTECTOR

Richard H. Heidorn, Lombard, and Mohammad Masghati, Addison, both of Ill., assignors to Illinois Tool Works Inc., Glenview, Ill.

Filed May 26, 1995, Ser. No. 451,673

Int. Cl.[6] **H01R** *9/00*

U.S. Cl. 361—824 **23 Claims**



1. A multiple-circuit building protector assembly for protecting telephone communication related equipment and the like, comprising:

a housing formed of co-mating base and cover members, said base and cover members having outer confronting side wall members, said side wall members of said base member being recessed so as to form a cavity;

a printed circuit board sub-assembly disposed within said cavity of said housing;

a plurality of protective circuit devices mounted upon said printed circuit board sub-assembly disposed within said cavity of said housing;

a plurality of first modular jacks mounted upon one side of said printed circuit board sub-assembly for receiving modular plugs connected to incoming telephone lines;

a plurality of second modular jacks mounted upon another side of said printed circuit board sub-assembly for receiving modular plugs connected to individual telephone line cords; and

a plurality of plug-in fuse modules disposed within a top surface portion of said cover member.

5,606,490

CURRENT LIMITER FOR VOLTAGE/FREQUENCY TYPE INVERTER

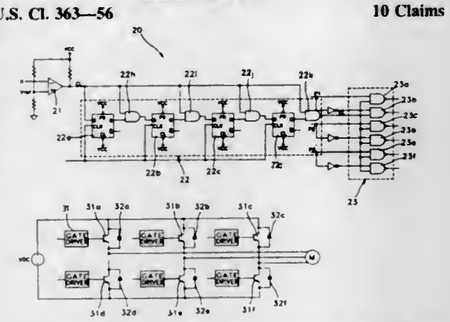
Bok-young Hong, Seoul, Rep. of Korea, assignor to Samsung Aerospace Industries, Ltd., Kyongsangnam-dong, Rep. of Korea

Filed Aug. 9, 1995, Ser. No. 512,934

Claims priority, application Rep. of Korea, Aug. 10, 1994, 94-20211

Int. Cl.[6] **H02H** *7/122*

U.S. Cl. 363—56 **10 Claims**



1. A current limiter of a voltage/frequency type inverter, comprising:

a comparator for comparing an output current to an applied reference value to generate a current comparator output signal;

a delay circuit, coupled to said comparator, for delaying the timing of said current comparator output signal for a predetermined time duration based on the result of the comparison to generate a current limiting signal; and

a pulse output circuit for outputting a predetermined pulse based on said current limiting signal.

5,606,491

MULTIPLYING AND INVERTING CHARGE PUMP

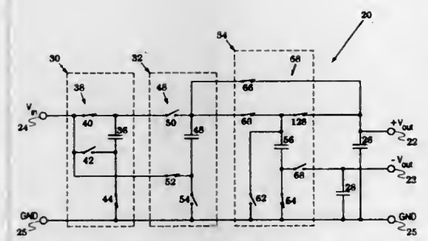
Denis Ellis, Dooradoyle, Ireland, assignor to Analog Devices, Inc., Norwood, Mass.

Filed Jun. 5, 1995, Ser. No. 462,898

Int. Cl.[6] **H02M** *3/07*

U.S. Cl. 363—60 **30 Claims**

1. A charge pump for production of first and second output voltages which are generated in first and second switching phases from an input voltage between first and second input terminals, comprising:



a first pump capacitor having first and second plates;

a first switch network configured to couple:

a) said first pump capacitor's first plate to said first input terminal and said first pump capacitor's second plate to said second input terminal in said first switching phase, and

b) said first pump capacitor's second plate to said first input terminal in said second switching phase;

a second pump capacitor having first and second plates;

a second switch network configured to couple:

a) said second pump capacitor's second plate to said first input terminal in said first switching phase, and

b) said second pump capacitor's first plate to said first pump capacitor's first plate and said second pump capacitor's second plate to said second input terminal in said second switching phase;

a third pump capacitor having first and second plates;

a first reservoir capacitor for storing said first output voltage, said first reservoir capacitor having first and second plates with said second plate coupled to said second input terminal;

a second reservoir capacitor for storing said second output voltage, said second reservoir capacitor having first and second plates with said second plate coupled to said second input terminal; and

a third switch network configured to couple:

a) said third pump capacitor's first plate to said second pump capacitor's first plate, said third pump capacitor's second plate to said second input terminal and said first reservoir capacitor's first plate to said second pump capacitor's first plate in said first switching phase, and

b) said third pump capacitor's first plate to said second input terminal and said second reservoir capacitor's first plate to said third pump capacitor's second plate in said second switching phase.

5,606,492

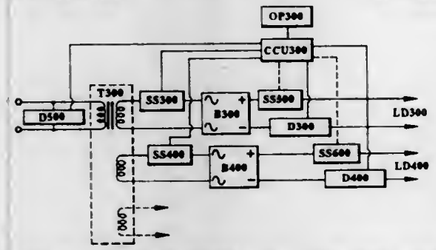
INTERMITTENT ON/OFF REGULATOR TYPE DC POWER SUPPLY

Tai-Her Yang, No. 32 Lane 29, Taipin St., Si-Hu Town Dzan-Hwa, Taiwan

Continuation-in-part of Ser. No. 317,631, Oct. 3, 1994, abandoned. This application May 22, 1996, Ser. No. 650,256

Int. Cl.[6] **H02M** *5/42;7/04;7/68*

U.S. Cl. 363—86 **6 Claims**



1. An intermittent on/off regulator type DC power supply circuit for detecting a current/voltage variation at a power source side of the circuit or an output current variation at a load side of the circuit, and intermittently on/off controlling a drive switch installed between a transformer and a power source, thereby regulating a secondary output side DC power source average output value, comprising:

a transformer having at least one secondary output;

a rectifier connected to said secondary output of the transformer;

a load connected to an output of the rectifier;

one of a voltage detector installed at a primary input side of the transformer to detect a power source voltage and send a signal representative of the power source voltage to a central controller and a current detector installed at an output side of the rectifier to detect an output current and send a signal representative of the output current to the central controller;

a drive switch connected to the central controller and controlled thereby, said drive switch being installed between one of the primary input side of the transformer, the secondary output side of the transformer, and the load;

a central controller; and

an operating unit for inputting commands to the central controller relating to response values for the load current and power source voltage,

wherein the central controller forms a means for performing the following functions, depending on whether the voltage detector or current detector is installed, respectively at the input side of the transformer and at the output of the rectifier:

I. comparing a voltage setting value input by the operating unit with the signal sent by the voltage detecting device and controlling the drive switch based on the comparison of the voltage setting value and the signal sent by the voltage detecting device as follows:

(i) if the detected voltage is higher than the voltage setting value, operating the drive switch to intermittently conduct and cut off an output to the load such that an average voltage value of the output is approximately equal to the voltage setting value;

(ii) if the detected voltage value is approximately equal to the voltage setting value, operating the drive switch to continuously conduct;

II. comparing a current setting value input by the operating unit with the signal sent by the current detecting device and controlling the drive switch based on the comparison between the current setting value and the signal sent by the current setting device, as follows:

(i) if the detected current is higher than the current setting value, operating the drive switch to intermittently conduct and cut off an output to the load such that an average current value of the output is approximately equal to the current setting value;

(ii) if the detected current value is approximately equal to the current setting value, operating the drive switch to continuously conduct; and

III. comparing the voltage and current setting values input by the operating unit with the respective signals sent by the voltage and current detecting devices and controlling the drive switch based on the comparison between the voltage and current setting values and the signals sent by the voltage and current setting devices, as follows:

(i) if the detected voltage or current is higher than the respective voltage or current setting value, operating the drive switch to intermittently conduct and cut off an output of the circuit such that an average voltage or current value of the output is approximately equal to the voltage or current setting value;

(ii) if the detected voltage or current value is approximately equal to the respective voltage or current setting value, operating the drive switch to continuously conduct,

whereby the power supply circuit is intermittently operated based on feedback from the voltage detector, current detector, or both the voltage and current detectors.

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5,606,493
DISTRIBUTED APPLICATIONS PROCESSING NETWORK

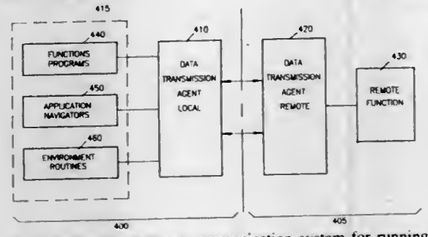
Reinhard Duscher, Boeblingen; Tony Gargya, Tuebingen, and Gerold Kurth, Boeblingen, all of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

PCT No. PCT/EP92/01382, § 371 Date Jan. 13, 1995, § 102(e) Date Jan. 13, 1995, PCT Pub. No. WO93/25962, PCT Pub. Date Dec. 23, 1993

PCT Filed Jun. 18, 1992, Ser. No. 356,394

Int. Cl.[6] G05B *15/00;* **H01J** *13/00*

U.S. Cl. 364—134 **18 Claims**



1. A program-to-program communication system for running a remote task on a remote computer requested by local tasks on a local computer that comprises:

a local data transmission agent within said local computer which transmits requests to said remote computer to initiate operation of said remote task and transmits and receives data during operation of said remote task;

a remote data transmission agent within said remote computer which receives requests from said local computer to initiate operation of said remote task and transmits and receives data during operation of said remote task;

a handle associated with a transaction processing environment created between said local and remote data transmission agents to run said remote task, where said handle is stored in said local computer, shared among said local tasks and used by each local task requesting said remote task to access said remote task;

at least one local shared buffer in said local computer which is accessible by a local task and said local data transmission agent; and

at least one remote shared buffer in said remote computer which is accessible by said remote task and said remote data transmission agent.

5,606,494
SWITCHING APPARATUS

Jun Oshima, Akigawa; Emiko Morooka, Fuchu; Yoshio Kawai, Higashiyamato, and Kaoru Yoshida, Ome, all of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Nov. 21, 1994, Ser. No. 342,714

Claims priority, application Japan, Nov. 25, 1993, 5-295067; Dec. 22, 1993, 5-325338

Int. Cl.[6] G03B *19/18;* **A63F** *9/22*

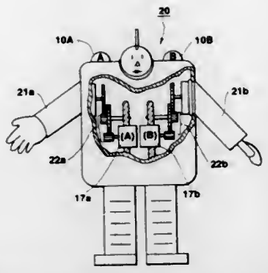
U.S. Cl. 364—167.01 **16 Claims**

1. A switching apparatus for controlling a mechanism, comprising:

driving means for driving said mechanism;

non-contact switching means for performing a switching operation in response to non-contact motion of a user;

position detecting means for obtaining position data from a state of the switching operation of said non-contact switching means, the position data representing a position of the non contact motion by the user relative to said non-contact switching means; and



control means for controlling said driving means to drive said mechanism based on the position data obtained by said position detecting means,

wherein said non-contact switching means includes:

signal transmitting means for transmitting an infrared light signal;

signal receiving means for receiving the infrared light signal of said signal transmitting means reflected in response to the non contact motion made by the user; and

switching means for performing switching operation when said signal receiving means receives the reflected infrared light signal,

and wherein said position detecting means includes:

time counting means for counting a time lapse from a time when said signal transmitting means transmits an infrared light signal to a time when said signal receiving means receives the infrared light signal of said signal transmitting means reflected in response to the non contact motion made by the user, and for obtaining position data from the counted time lapse.

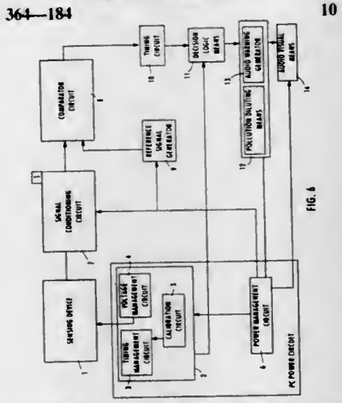
5,606,495
DEVICE FOR CONTROLLING AIR POLLUTION

Sandeep Jaidka, E-185 Eash of Kailash, New Delhi, 110 065, Ind.

Filed Nov. 30, 1994, Ser. No. 351,189

Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—184 **10 Claims**



1. An air pollution control device for controlling ambient air pollution in a predetermined space, comprising:

at least one sensing device for sensing at least one selected polluting gas in said spaee and for generating a corresponding signal;

a signal conditioning circuit for receiving and amplifying said signal generated by said sensing device;

a comparator circuit for comparing the amplified signal with a predetermined reference signal and providing a corresponding output signal;

a timing circuit for receiving the output signal from said comparator circuit and generating a corresponding timing signal;

pollution diluting means for providing at least one diluting gas for diluting the at least one polluting gas present in said space until desired limits are reached;

decision logic means responding to said timing signal for controlling activation of said pollution diluting means; and

audio/visual means for indicating that the at least one pollutant gas is present and needs to be diluted and for responding to said activation of said pollution dilution means.

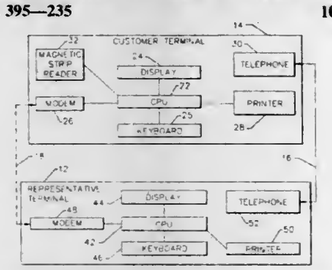
5,606,496
PERSONAL ASSISTANT COMPUTER METHOD

Richard J. D'Agostino, Charlotte, N.C., assignor to Aegis Technologies, Inc., Charlotte, N.C.

Continuation of Ser. No. 236,482, May 2, 1994, abandoned, which is a continuation of Ser. No. 23,609, Feb. 26, 1993, abandoned, which is a division of Ser. No. 567,306, Aug. 14, 1990, Pat. No. 5,231,571. This application May 16, 1995, Ser. No. 442,184

Int. Cl.[6] G06F *17/60;* **G06G** *7/52;* **H04M** *11/00*

U.S. Cl. 395—235 **10 Claims**



1. A method for providing personal financial services over a network of customer terminals and representative terminals, comprising the steps of:

accepting a request at a representative terminal from a customer at a customer terminal;

linking the representative terminal to the customer terminal for data communication therebetween;

seizing control of the customer terminal by the representative terminal so that the representative terminal remotely controls operation of the customer terminal;

verbally obtaining customer supplied information at the representative terminal from the customer;

combining personal financial services information which is stored at the customer terminal and the obtained customer supplied information, under control of the representative terminal;

displaying at the customer terminal, the combined personal financial services information which is stored at the customer terminal and the obtained customer supplied information, under control of the representative terminal; and

providing personal financial services to a customer at the customer terminal under control of the representative terminal using the obtained customer supplied information and the personal financial services information which is stored at the customer terminal;

wherein said seizing control step comprises the step of causing an input device at the representative terminal to remotely control the retrieval of stored personal financial services information at the customer terminal and to display the retrieved personal financial services information at the customer terminal.

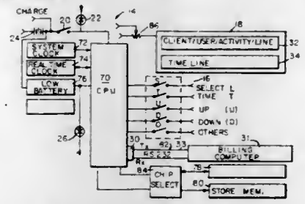
5,606,497
METHOD AND APPARATUS FOR RECORDING BILLABLE TIME AND SERVICES

Milton L. Cramer, Box 455, Torrington, Conn. 06790, and Alfred J. Santos, 8 Tanglewood Rd., Farmington, Conn. 06032

Continuation of Ser. No. 219,998, Mar. 30, 1994, Pat. No. 5,493,492. This application Feb. 16, 1996, Ser. No. 602,455

Int. Cl.[6] G06F *17/60*

U.S. Cl. 395—232 **23 Claims**



1. A method for recording billable times and services of a provider for a client comprising the steps of:

providing a central processing unit including timer, first memory, second memory, a first data selector, a second data selector, and a timer selector, each being operatively coupled to the CPU;

storing in the first memory selectable data entries corresponding to the providers, the clients and the services in each of a plurality of corresponding selectable lists;

storing in the second memory a portion of the selectable data from each of said lists along with corresponding time interval data therefor;

selecting upon each sequential actuation of the first data selector, data stored in the first memory corresponding to a particular list;

selecting upon each sequential actuation of the second data selector, data from each list stored in the second memory corresponding to a particular entry in each respective list to be selected;

actuating the timer selector for starting the timer and then actuating the timer selector for stopping the timer; and

entering concurrently, actuating the timer selector to stop the timer, start and stop times for the timer for the selected data and the selected data into the second memory.

5,606,498
SYSTEM FOR RETRIEVING PHRASES FROM GENERATED RETRIEVAL WORD

Tomoe Maruta; Takayuki Okutsu; Hiroshi Hayashi, and Hisayoshi Mori, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 63,564, May 19, 1993, abandoned. This application Feb. 2, 1995, Ser. No. 384,354

Claims priority, application Japan, May 20, 1992, 4-127392

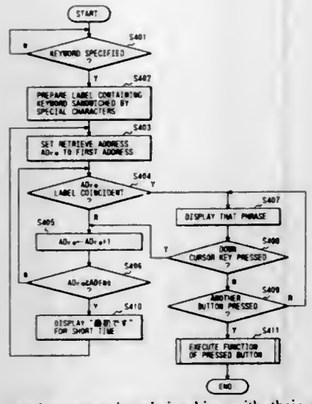
Int. Cl.[6] G06F *17/27*

U.S. Cl. 395—757 **3 Claims**

1. A data processing device comprising:

phrase storing means for storing phrases classified according to scenes selected by a user, each of said phrases having at least one retrieval word attached thereto, said attached retrieval

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words having semantic relationships with their respective phrases and expressed in a first mode using label data, other words than said attached retrieval words being expressed in a second mode;

retrieval word generation means for generating a retrieval word expressed in the first mode using the label data;

retrieving means for retrieving a phrase, from among the stored phrases classified according to the scene selected by the user, having said attached retrieval word according to said generated retrieval word, wherein said attached retrieval word and said generated retrieval word have base word or conjugated word relationships;

displaying means; and

display control means for controlling an operation of said displaying means for displaying the phrase retrieved by said retrieving means.

5,606,499

METHOD AND APPARATUS FOR DETERMINING A ZONE IN AN OBJECT EXHIBITING A HIGHEST LEVEL OF STRUCTURAL ORGANIZATION

Emil Y. Ostrovsky, Moscow, Russian Federation, assignor to Target Strike, Inc.

Continuation-in-part of Ser. No. 127,305, Sep. 27, 1993, abandoned. This application Feb. 13, 1995, Ser. No. 388,158

Int. Cl.[6] G01V *1/00;3/00;5/00;* **G06F** *17/00*

U.S. Cl. 364—420 **34 Claims**



1. A method for analyzing object to determine a zone within the object exhibiting a highest level of structural organization, comprising the steps of:

measuring a physical property of the object at a plurality of different locations to construct a data field; digitizing the data within the data field:

arranging the data within the data field into a matrix;

transforming the data within the matrix to develop transformation matrices;

developing a base dichotomy matrix from each transformation matrix;

developing a full description set of matrices from the base dichotomy matrices;

selecting the roots of the full description set of matrices;

organizing the roots into sequences; and

displaying the root sequences to provide a representation of a zone within the object exhibiting a highest level of structural organization.

5,606,500

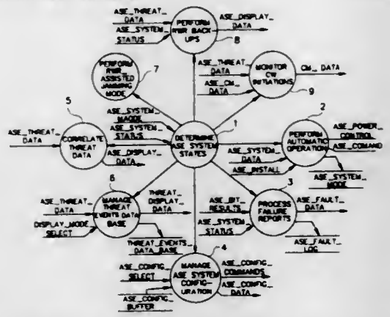
STATE MACHINE FOR INTEGRATED ASE SENSORS

My Tran, Albuquerque, N.M., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 17, 1992, Ser. No. 977,376

Int. Cl.[6] G01S *7/36;7/38*

U.S. Cl. 364—423.098 **11 Claims**



1. A method of generating a complementary threat data base for use by a state controlled aircraft survivability system, wherein the complementary threat data base is used to define the state of new threat, the method comprising the steps of:

(a) generating a unique threat data base comprised of all unique threats, wherein the unique threat data base is generated by removing all converted threat data from a data set corresponding to current threat from a continous wave radar jammer;

(b) generating an uncorrelated threat data base comprised of uncorrelated threats, wherein the uncorrelated threat data base is generated by determining all data common to currently converted jammer threat data and current threat data from a radar warning receiver; and

(c) adding the data from the unique threat data base to the data from the uncorrelated threat data base to generate the complementary threat data base.

5,606,501

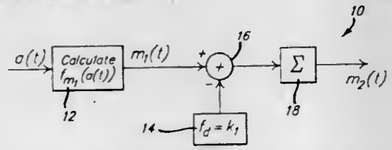
METHOD FOR DAMPING CRASH-DISCRIMINATION MEASURES

Tony Gioutsos, Brighton; Michael A. Piskie, Bloomfield Hills, and Daniel N. Tabar, Troy, all of Mich., assignors to Automotive Systems Laboratory, Inc., Farmington Hills, Mich.

Continuation-in-part of Ser. No. 773,017, Oct. 8, 1991, Pat. No. 5,508,918, and Ser. No. 773,676, Oct. 8, 1991, Pat. No. 5,337,238. This application Aug. 10, 1994, Ser. No. 288,597

Int. Cl.[6] B60R *21/16*

U.S. Cl. 364—424.045 **10 Claims**



6. In a method for controlling actuation of a vehicle passenger safety device, said method including the steps of:

receiving information from the group consisting of vehicle acceleration information and vehicle passenger position information;

calculating a first time-varying measure based on said received information as a function of time;

accumulating said first measure over time to obtain a second time-varying measure;

comparing said second measure to a first threshold value; and

actuating said safety device when said second measure exceeds said first threshold value,

the improvement comprising:

generating a time-varying damping factor based on said received information; and

damping said first measure prior to accumulation thereof by subtracting said damping factor from said first measure.

5,606,502

STEERING ANGLE CONTROL SYSTEM FOR VEHICLE

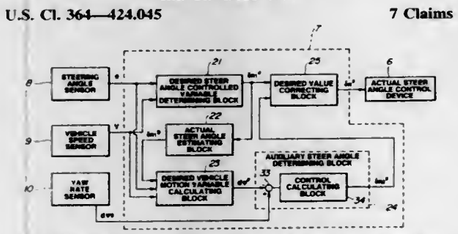
Kazutaka Adachi, Yokohama, and Hideki Sudo, Tokyo, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Dec. 23, 1994, Ser. No. 363,037

Claims priority, application Japan, Dec. 27, 1993, 5-332629

Int. Cl.[6] B62D *5/04*

U.S. Cl. 364—424.045 **7 Claims**



1. A steering angle control system for a vehicle, comprising:

a front wheel steering angle detecting means for detecting one of a steering wheel angle of a steering wheel and a steer angle of a front wheel and outputting a signal indicative of the steering angle;

a vehicle speed detecting means for detecting a speed of the vehicle;

a vehicle motion variable detecting means for detecting a vehicle motion variable of the vehicle;

a steer angle controlled variable determining means for determining a controlled variable of a steer angle according to the signal from said front wheel steer angle detecting means and the signal from said vehicle speed detecting means;

a steering angle correcting means for correcting the signal from said front wheel steering angle detecting means according to a preset map indicative of a characteristic of a steering system including the steering wheel;

a desired vehicle motion variable calculating means for calculating a desired value of the vehicle motion variable according to the corrected steering angle and the vehicle speed;

an auxiliary steer angle controlled variable determining means for determining an auxiliary controlled variable of the steer angle controlled variable according to a difference between the desired vehicle motion variable and the detected vehicle motion variable;

a steer angle controlled variable correcting means for correcting the steer angle controlled variable by adding the auxiliary steer angle controlled variable to the steer angle controlled variable; and

an actual steer angle controlling means for controlling a steer angle of a wheel to be controlled upon receiving the corrected steer angle controlled variable.

5,606,503

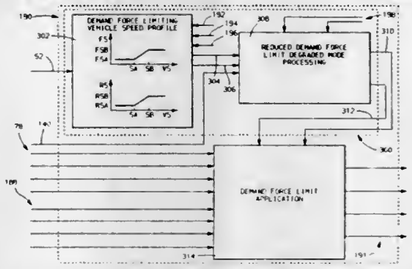
SUSPENSION SYSTEM CONTROL RESPONSIVE TO AMBIENT TEMPERATURE

David A. Shal, Centerville; Perry K. Arnold, Beavercreek, both of Ohio, and Robert J. Reuter, Novi, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 27, 1995, Ser. No. 410,795

Int. Cl.[6] B60G *17/08;* **F16F** *9/44*

U.S. Cl. 364—423.098 **3 Claims**



1. A suspension system control for use in a vehicle according to the steps of:

determining an actuator demand force command;

determining, responsive to vehicle speed, a first signal indicative of a first maximum demand force;

determining, responsive to ambient temperature, a second signal indicative of a second maximum demand force; and

constraining the determined actuator demand force command so that the determined actuator demand force is no greater than the lesser of the first and second maximum demand forces, wherein

vehicle body isolation from suspension events is maintained during low temperature and low speed operation of the vehicle to thereby minimize suspension noise and ride harshness.

5,606,504

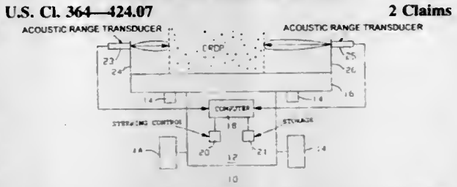
CROP SWATH-WIDTH MEASUREMENT USING ACOUSTIC TRANSDUCERS

David P. Andersen, Burnsville, Minn., assignor to Lockheed Martin Corporation, Bethesda, Md.

Filed Feb. 17, 1995, Ser. No. 389,992

Int. Cl.[6] A01D *45/00;* **G06F** *165/00*

U.S. Cl. 364—424.07 **2 Claims**



1. A method of controlling automatic steering of an agricultural vehicle wherein said vehicle comprises a support structure having opposite ends, a computer, an automatic steering mechanism, a pair of wave-beam transmitters and a pair of wave-beam receivers wherein said transmitters and receivers are mounted so that one transmitter and one receiver are mounted on each of the opposite ends of said support structure wherein said support structure extends beyond the crop end walls, the method comprising the steps of:

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mounting one wave-beam transmitter and one wave-beam receiver on one end of the support structure and another wave-beam transmitter and another wave-beam receiver on the opposite end of the support structure so that they face each other;

activating said transmitters to produce incident wave-beams that are transmitted from each of said transmitters so that said incident wave-beams intercept the crop end wall that is nearest to each one of said transmitters and so that said incident wave-beams become reflected wave-beams off of said crop end walls and travel back to the receiver that is closest to the end wall from which said incident wave-beams were emitted;

receiving said reflected wave-beams at said receivers on the opposite ends of said support structure,

coupling output signals from both of said receivers to said computer;

utilizing said computer to measure the swath width of the crop; and

controlling said automatic steering mechanism with said computer to steer the vehicle into the center of said swath width.

5,606,505

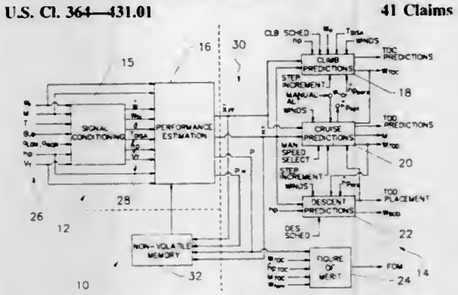
METHOD OF AIRPLANE PERFORMANCE ESTIMATION AND PREDICTION

Joseph A. Smith, Phoenix; Erik A. Ringnes, and Victor F. Tarbutton, both of Glendale, all of Ariz., assignors to Honeywell Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 122,214, Sep. 17, 1993, abandoned. This application May 26, 1995, Ser. No. 451,780

Int. Cl.[6] G05D *1/00*

U.S. Cl. 364—431.01 **41 Claims**



1. An method for controlling the flight profile of an aircraft, said method comprising the steps of:

determining aircraft input parameters;

retrieving aircraft specific data from non-volatile memory;

retrieving learned coefficients from non-volatile memory;

modeling a thrust-minus-drag relationship of the aircraft with a first series expansion using said aircraft specific data, said input parameters, and said learned coefficients which define the performance characteristics;

learning coefficients of said at least one series expansion over at least one flight so that said learned coefficients can be utilized for predicting performance characteristics of subsequent flights;

finding at least one point of interest on curves representative of functions derived from said thrust-minus-drag relationship;

controlling said aircraft responsive to said at least one point of interest; and,

storing said learned coefficients into non-volatile memory for use on subsequent flights.

5,606,506

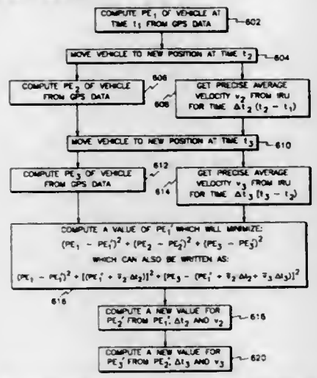
METHOD AND APPARATUS FOR IMPROVING THE ACCURACY OF POSITION ESTIMATES IN A SATELLITE BASED NAVIGATION SYSTEM USING VELOCITY DATA FROM AN INERTIAL REFERENCE UNIT

Christos T. Kyrtsos, Peoria, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Apr. 5, 1993, Ser. No. 42,738

Int. Cl.[6] G06F *165/00*

U.S. Cl. 364—449.1 **3 Claims**



3. A method for determining a position of a receiver at or near the surface of the Earth using an inertial reference unit coupled to the receiver and a satellite-based navigation system including a constellation of navigation satellites, the method comprising the steps of:

(a) receiving, from the constellation of navigation satellites, navigation signals at the receiver located at a first position at a first time;

(b) computing, from said plurality of navigation signals, a first position estimate for the receiver at said first time, said first position estimate representing a single point at or near the surface of the Earth;

(c) moving the receiver to a second position at a second time;

(d) receiving, from the constellation of navigation satellites, navigation signals at the receiver located at said second position at second time;

(e) computing, from said navigation signals, a second position estimate for the receiver at said second time, said second position estimate representing a single point at or near the surface of the Earth;

(f) receiving a first velocity vector from the inertial reference unit for the elapsed time between said first time and said second time;

(g) moving the receiver to a third position at a third time;

(h) receiving, from the constellation of navigation satellites, navigation signals at the receiver located at a third position at a third time;

(i) computing, from said plurality of navigation signals, a third position estimate for the receiver at said third time, said third position estimate representing a single point at or near the surface of the Earth;

(j) receiving a second velocity vector from the inertial reference unit for the elapsed time between said second time and said third time; and

(k) computing a refined value for said third position estimate based on said first, second and third position estimates, said first and second velocity vectors and said elapsed times.

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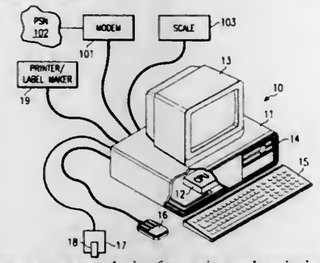
SYSTEM AND METHOD FOR STORING, RETRIEVING AND AUTOMATICALLY PRINTING POSTAGE ON MAIL

Salim G. Kara, Houston, Tex., assignor to E-Stamp Corporation, Houston, Tex.

Continuation-in-part of Ser. No. 176,716, Jan. 3, 1994, Pat. No. 5,510,992. This application Jun. 22, 1994, Ser. No. 263,751

Int. Cl.[6] G07B *17/02*

U.S. Cl. 364—464.18 **19 Claims**



1. A memory storage device for storing and retrieving an authorization for an amount of postage, said storage device comprising:

a memory;

means for limiting access to said memory to an authorized postage granting device;

means for coupling said storage device to said authorized postage granting device wherein said storage device can receive said authorization for said postage;

means for retrievably storing said amount of postage; and

means for coupling said storage device to a general purpose processor-based system, wherein said general purpose processor-based system can handshake with said storage device and retrieve any portion of said authorized amount of postage from said coupled device for formatting by a word processing application executing on said general purpose processor-based system.

5,606,508

ASSEMBLY FOR FRANKING POSTAL MATTER

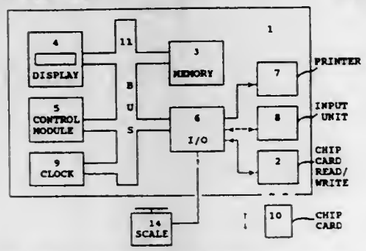
Wolfgang Thiel, Berlin, Germany, assignor to Francotyp Postalia GmbH, Berlin, Germany

Continuation of Ser. No. 49,679, Apr. 16, 1993, abandoned. This application May 19, 1995, Ser. No. 445,355

Claims priority, application Germany, Apr. 16, 1992, 42 13 278.9

Int. Cl.[6] G07B *17/00*

U.S. Cl. 364—464.2 **19 Claims**



1. An assembly for franking postal matter, comprising:

a control module and a printer module;

internal memory means having predetermined memory regions connected to said control module, receiving means communicatingly connected with said internal memory means for receiving complete rate tables transmitted via transmission means;

said receiving means including means for downloading at least one table of data from the transmission means, wherein the table of data contains information linked to at least one condition;

said control module having means for storing the at least one table of data received by said receiving means into one of said predetermined memory regions of said internal memory means when the assembly is put into operation;

said control module including further means for selecting from the at least one table of data a suitable table of data satisfying the at least one condition; and

wherein the at least one table of data includes at least one postal rate table; said downloading and storing means, when the assembly is put into operation, loading the at least one postal rate table from the transmission means, via the receiving means, into one of said predetermined memory regions of said internal memory means; and said control module having further means for reading, from the table stored in said memory regions of said internal memory means, an applicable postage from the postal rate table.

5,606,509

CORRECTION OF A MEASURING SIGNAL OBTAINED FROM A PAIR OF SCANNING ROLLERS AND PERTAINING TO THE THICKNESS OF A TEXTILE FIBER SLIVER

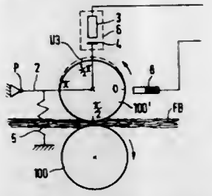
Peter Denz, Hohenwart; Roland Mandl, and Karl Wisspeintner, both of Ortenburg, all of Germany, assignors to Rieter Ingolstadt Spinnereimaschinenbau AG, Ingolstadt, Germany

Continuation of Ser. No. 408,547, Mar. 21, 1995, abandoned. This application Apr. 22, 1996, Ser. No. 635,534

Claims priority, application Germany, Apr. 29, 1994, 44 14 972.7

Int. Cl.[6] G01B *5/06*

U.S. Cl. 364—470.14 **9 Claims**



1. A process for measuring changes in thickness of a textile fiber sliver conveyed through a textile machine, said process comprising:

conveying the textile fiber silver between a pair of scanning rollers rotatably mounted on the textile machine wherein one of the scanning rollers is movably mounted and moves in response to changes in sliver thickness;

detecting movement of the movable roller and generating an actual electrical measuring signal corresponding thereto;

repeatedly generating a constant number of phase position dependent measuring signals for one revolution of the scanning rollers while maintaining the scanning rollers at a relatively constant speed and defining therefrom a mean value set of phase position dependent measuring signals, the set of phase position dependent measuring signals reflecting the occurrence of repetitive periodic deviations in the measuring signal caused by circularity or eccentricity errors in the scanning rollers;

storing the mean value set of phase position dependent measuring signals;

comparing the actual measuring signal from the scanning rollers to the stored mean value set of phase position dependent measuring signals and defining a phase dependent error signal corresponding to differences therebetween;

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applying the phase dependent error signal to the actual measuring signal in phase position synchronization therewith thereby defining an actual measuring signal corrected for circularity or eccentricity errors; and

conveying the corrected measuring signal to a signal processor for further processing by the textile machine.

5,606,510

HIGH SPEED POWER ANALYZER

R. Steven Glaser, and Jeffrey M. Bade, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

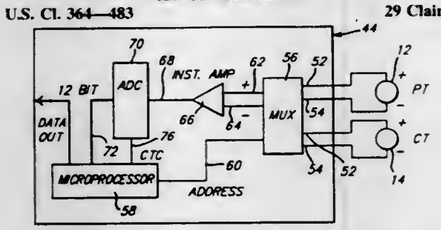
PCT No. PCT/US92/06439, § 371 Date Dec. 21, 1994, § 102(e) Date Dec. 21, 1994, PCT Pub. No. WO94/03818, PCT Pub. Date Feb. 17, 1994

PCT Filed Aug. 3, 1992, Ser. No. 362,471

The portion of the term of this patent subsequent to Mar. 30, 2010, has been disclaimed.

Int. Cl.[6] G01R *21/00*

U.S. Cl. 364—483 **29 Claims**



1. A high speed power analyzer for measuring electrical parameters in an alternating waveform power system, comprising:

input means for receiving a plurality of analog input signals which represent electrical parameters of the power system, where at least one of said analog input signals represents a voltage signal and another of said analog input signals represents a current signal;

multiplexer means connected to said input means for sampling each of said analog input signals by individually transmitting selected ones of said analog input signals;

converter means, connected to said multiplexer means, for converting sampled analog input signals received from said multiplexer means into a digital representation of said analog input signals; and

processor circuit means, coupled to said multiplexer means and said converter means, for controlling the sampling of said analog input signals by said multiplexer means in accordance with a predetermined sampling schedule which is nonsynchronous with the waveform of said power system, and for processing said digital representations of said analog input signals received from said converter means to produce a plurality of output signals which are indicative of predetermined electrical variables related to the power being used in said power systems wherein said predetermined variables include the phase difference between said voltage and current signals, the frequency of said voltage signal, and the RMS values of each of said analog input signals.

5,606,511

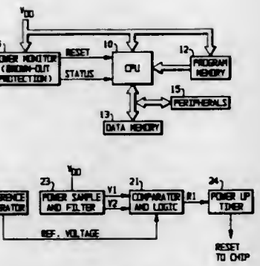
MICROCONTROLLER WITH BROWNOUT DETECTION

Randy L. Yach, Phoenix, Ariz., assignor to Microchip Technology Incorporated, Chandler, Ariz.

Filed Jan. 5, 1995, Ser. No. 368,919

Int. Cl.[6] G01R *19/00*

U.S. Cl. 364—483 **20 Claims**



1. In a microcontroller device fabricated in a semiconductor integrated circuit (IC) chip for controlling an external system with which the device is to be installed in circuit, and having a central processing unit (CPU), a program memory for storing program instructions to be implemented by the CPU, a data memory for storing data including data pertaining to parameters of the external system to be controlled by operation of the CPU according to said instructions, means for providing a supply voltage to operate the IC chip, said supply voltage being defined by a voltage level relative to a ground reference level, and brown-out detection means for monitoring the supply voltage level relative to the ground reference level to reset said device as protection against malfunction thereof in response to reduction of an arithmetic difference between the supply voltage level and the ground reference level to a value less than a predetermined threshold operating voltage level, wherein reset defines a cessation of operation of the device while maintaining status quo of implementation of program instructions by the CPU and data stored in the data memory as at the time of occurrence of the reset, the improvement comprising discrimination means for distinguishing between a reduction representative of a brown-out event warranting invoking a reset of said device and a reduction representative of mere transitory voltage swings commonly occurring in the device operation not warranting invoking a reset of said device, and means for suppressing said brown-out detection means from resetting said device when said reduction of the difference between the supply voltage level and the ground reference level represents a transitory voltage swing not warranting invoking a reset, whereby to avoid both malfunctions and unnecessary resetting of the device in control of the external system.

5,606,512

DETERMINING THE BIODEGRADABILITY OF IMINODIACETIC ACID DERIVATIVES

Alan D. Strickland, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

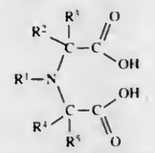
Filed Jul. 27, 1994, Ser. No. 281,054

Int. Cl.[6] G06F *17/00*; G06G *17/98*; G01N *31/00*

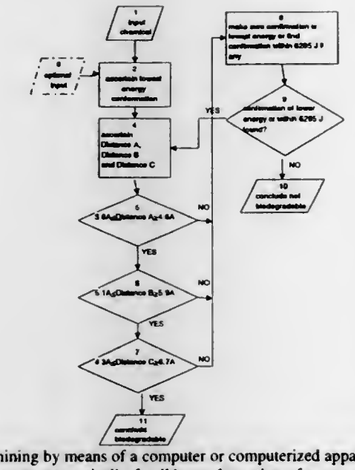
U.S. Cl. 364—499 **3 Claims**

1. An analytical process for predicting biodegradability, as measured by ASTM 2667-89 or ISO 5185 (BOD 5 Test) methods, of compounds of the formula:

Formula Ib



wherein each of R^1, R^2, R^3, R^4, and R^5 is independently hydrogen an alkyl, aryl, alkaryl, or aralkyl group wherein the alkyl, aryl, alkaryl, or aralkyl may be substituted with a hydroxyl, carboxyl, sulfonyl, phosphoryl, amino, imide, or amino group and each alkyl contains from 1 to 15 carbon atoms and each aryl, alkaryl, or aralkyl contains from 5 to 15 carbon atoms, and wherein the distance between the carboxyl carbon atoms is designated "Distance A", the distance between carboxyl double bonded oxygen atoms is designated "Distance B", and the distance between carboxyl hydroxyl groups "Distance C", said process comprising:



determining by means of a computer or computerized apparatus, in at least one energetically feasible conformation of a compound of Formula 1b, the values for Distances A, B and C by semiclassical, semiempirical, or ab initio methods and correlating the values obtained with biodegradability such that a compound is not predicted to be biodegradable when at least one of the following conditions are met:

(a) Distance A is outside a range of from 3.8×10^{-10} m to 4.6×10^{-10} m;

(b) Distance B is outside a range of from 5.1×10^{-10} m to 5.9×10^{-10} m; or

(c) Distance C is outside a range of from 4.3×10^{-10} m to 6.7×10^{-10} m.

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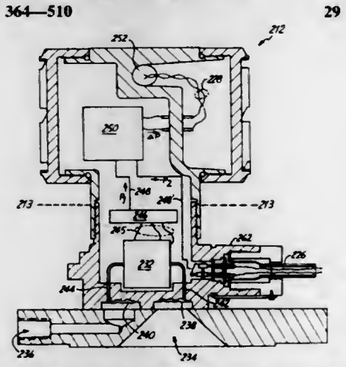
TRANSMITTER HAVING INPUT FOR RECEIVING A PROCESS VARIABLE FROM A REMOTE SENSOR

Bennett L. Louwagie, Plymouth; Gregory S. Munson, Apple Valley; David E. Wiklund, Eden Prairie; Michael J. Zweber, New Prague; David A. Broden, Chanhassen; Brian J. Bischoff, Chaska, all of Minn., and Gary P. Corpron, Nunn, Colo., assignors to Rosemount Inc., Eden Prairie, Minn.

Continuation-in-part of Ser. No. 124,246, Sep. 20, 1993, abandoned. This application Jun. 9, 1994, Ser. No. 258,262

Int. Cl.[6] G01C *25/00*

U.S. Cl. 364—510 **29 Claims**



1. A two-wire transmitter in a process control system for sensing process variables representative of a process, comprising:

a module housing;

a pressure sensor coupled to the module housing for sensing a pressure of the process and providing a sensor pressure output;

a process variable input to the module housing for receiving a process variable signal from an external process variable sensor located outside of a module housing;

an analog to digital converter coupled to the pressure sensor providing a digital pressure output representative of the sensor pressure output;

a first microprocessor in the module housing receiving the digital pressure output and providing a compensated output;

an electronics housing coupled to the module housing;

a data and power bus coupled to the first microprocessor carrying data and power for the first microprocessor from the electronics housing;

a second microprocessor in the electronics housing coupled to the data and power bus for receiving the compensated output from the first microprocessor and the process variable signal and responsively calculating a physical parameter related to the process; and

output circuitry coupled to a two-wire process control loop for receiving the calculated physical parameter from the second microprocessor and responsively transmitting the physical parameter on the two-wire process control loop.

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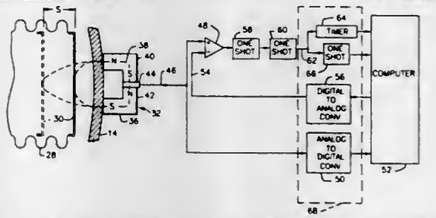
CYCLIC SIGNAL PROCESSING

William R. Blair, Erie, Pa., assignor to American Meter Company, Horsham, Pa.

Filed Aug. 21, 1995, Ser. No. 517,405

Int. Cl.[6] G06F *17/00*

U.S. Cl. 364—569 **10 Claims**



1. An arrangement for processing a cyclically varying signal to determine the time between equivalent points of successive signal cycles, comprising:

a comparator having a pair of differential input terminals and an output terminal;

computer means;

a timer;

first coupling means for coupling the signal to one of said comparator input terminals;

second coupling means for coupling the signal to said computer means;

third coupling means for coupling said computer means to the other of said comparator input terminals to provide a reference voltage thereat;

fourth coupling means for coupling said comparator output terminal to said timer;

wherein the comparator is effective to provide a comparator output signal at a first level on its output terminal when the signal level is less than the reference voltage and to provide a comparator output signal at a second level when the signal level is greater than the reference voltage;

wherein the timer is effective to time an interval commencing when the comparator output signal first changes to its second level and terminating when the comparator output signal next changes to its second level; and

wherein the computer means is effective to sample the signal, to provide the reference voltage at a first predetermined level which is between the minimum and maximum levels of the signal at a time when the signal is below the first predeter-

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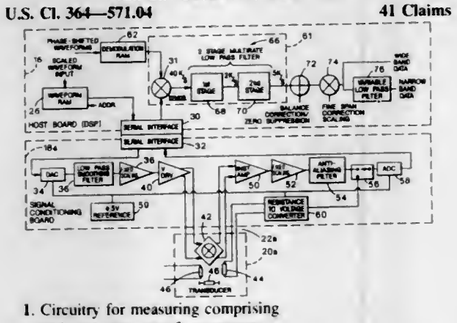
mined level, to change the reference voltage to a second predetermined level which is less than the minimum level of the signal upon the comparator output signal changing to its second level, and to change the reference voltage back to the first predetermined level when the signal level decreases below the first predetermined level.

5,606,515

SENSOR CONDITIONING CIRCUITRY FOR USE WITH ELECTRICALLY EXCITED TRANSDUCERS

Robert F. Mockapetris, Weymouth, and Fred L. Lehman, Sharon, both of Mass., assignors to Instron Corporation, Canton, Mass.

Filed Feb. 3, 1993, Ser. No. 13,066
Int. Cl.[6] G01B *7/16*; **G01L** *1/26*
U.S. Cl. 364—571.04 **41 Claims**



1. Circuitry for measuring comprising

a random access waveform memory,

means to write a table of excitation digital data representing values of an excitation waveform into said random access waveform memory,

an address generator connected to repetitively address said random access waveform memory to repetitively read out said excitation digital data,

a digital-to-analog converter connected to receive said excitation digital data outputted from said random access waveform memory as its input and to output an analog excitation waveform signal,

a transducer that is electrically connected to receive said analog excitation waveform signal as its input and is physically mounted to react to movement, said transducer providing an analog response signal that is a function of said analog excitation waveform signal and said movement,

an analog-to-digital converter that receives said analog response signal and outputs a digital response signal, and

digital demodulator connected to demodulate said digital response signal based on said excitation digital data.

5,606,516

DIGITALLY COMPENSATED HYDRAULIC SCALE SYSTEM

Alec T. Douglas, and Harry J. Keen, both of St. Johnsbury, Vt., assignors to Fairbanks Scales Inc., Kansas City, Mo.

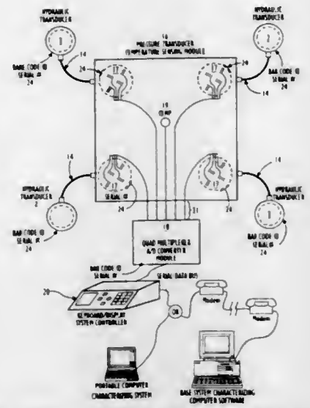
Filed Aug. 7, 1995, Ser. No. 511,732
Int. Cl.[6] G01G *5/04*; **G01L** *19/04*
U.S. Cl. 364—571.04 **52 Claims**

22. A weighing system which comprises:

a weighing platform or structure;

a plurality of hydraulic transducers positioned for measuring the load applied to the weighing platform or structure, each hydraulic transducer generating a hydraulic fluid output at a pressure proportional to the load applied to the hydraulic transducer;

a pre-calibrated pressure transducer module which comprises:



i) a base plate comprising a plurality of cavities;

ii) at least one diaphragm plate sealingly covering the cavities, each hydraulic transducer fluid output being connected to an associated cavity of the pressure transducer module, the diaphragm plate over each cavity deforming generally proportionately to variations in the pressure of the hydraulic fluid in that cavity;

iii) a sensor associated with each cavity for generating an output signal representative of the deformation of the diaphragm plate over that cavity, the sensor comprising strain gauges arranged in a wheatstone bridge, each sensor located adjacent to its associated cavity on the other side of the diaphragm plate from the cavity; and

iv) a temperature sensor for generating a temperature output signal representative of the temperature of the pressure module;

multiplexor/convertor means for multiplexing the sensor output signals and the temperature output signal into a digital data stream;

calibration data storage means for storing pre-calibration data for the pressure transducer module; and

a controller for receiving the digital data stream and for applying the calibration data to calculate the pressure of the hydraulic fluid in each cavity.

5,606,517

VISCOSITY REDUCTION IN PHYSICAL PROCESS SIMULATION

Kenneth R. Traub, Watertown; Thomas F. Knight, Jr., Belmont; Kim Molvig, Concord, and Christopher M. Teixeira, Cambridge, all of Mass., assignors to Exa Corporation, Cambridge, Mass.

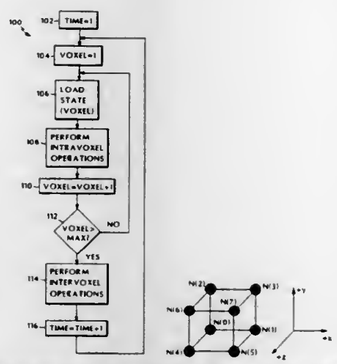
Filed Jun. 8, 1994, Ser. No. 255,409
Int. Cl.[6] G06F *19/00*
U.S. Cl. 364—578 **25 Claims**

1. A computer implemented method for simulating a physical process, comprising the steps of:

(1) storing in a memory state vectors for a plurality of voxels, the state vectors comprising a plurality of integers corresponding to particular momentum states of a plurality of possible momentum states at a voxel, and representing the number of elements having the particular momentum state;

(2) performing interaction operations on the state vectors that model interactions between elements of different momentum states;

(3) performing viscosity modification operations on the state vectors to change the viscosity of the simulated physical process; and



(4) performing move operations on the state vectors that reflect movement of elements to new voxels,

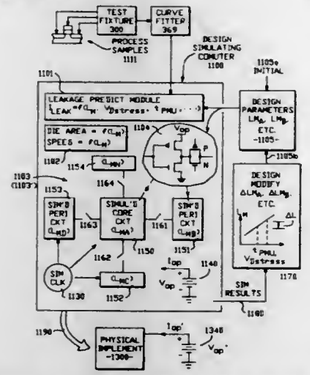
wherein the interaction operations are performed on the state vector of a voxel before the viscosity modification operations are performed.

5,606,518

TEST METHOD FOR PREDICTING HOT-CARRIER INDUCED LEAKAGE OVER TIME IN SHORT-CHANNEL IGFETS AND PRODUCTS DESIGNED IN ACCORDANCE WITH TEST RESULTS

Hao Fang, Cupertino; Peng Fang, Milpitas, and John T. Yue, Los Altos, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Division of Ser. No. 101,251, Aug. 2, 1993. This application May 16, 1995, Ser. No. 442,320
Int. Cl.[6] G01R *19/145;31/28*
U.S. Cl. 364—578 **19 Claims**



1. A product of a design and implementation process, the product having an electronic circuit composed of a plurality of insulated gate field effect devices each with a respective channel length defined by said design and implementation process, the design and implementation process comprising the steps of:

(a) specifying an operational environment in which the product will be used and a desired operational lifetime for the product;

(b) specifying one or more amounts of maximum leakage current allowed in the whole or one or more parts of the product over the desired specified operational lifetime of the product;

(c) specifying a fabrication technology by which the plural insulated gate field effect devices of the product will be fabricated;

(d) using the specified fabrication technology to fabricate a set of sample insulated gate field effect devices having respective and different, manufactured channel lengths ($L_{M1}>L_{M2}>L_{M3}>$ . . . etc.);

(e) stressing the set of sample insulated gate field effect devices each with a same stress environment and nondestructively measuring leakage current through the stressed devices at plural points of accumulated stress time to characterize hot-carrier-induced leakage (HCIL) through each sample device as a function of manufactured channel length (L_M) and accumulated post-manufacture stress time (t_{PMU});

(f) assigning an initial manufactured channel length (L_{MA}–L_{MN}) to each insulated gate field effect device that is to be included in the electronic circuit;

(g) modeling the electronic circuit and the specified operational environment of the product to determine the stress condition and post-manufacture accumulated stress time (t_{PMU}) that each insulated gate field effect device of the product will be subject to over the specified operational lifetime for the product;

(h) using the characterization developed in step (d) to determine the amount of hot-carrier-induced leakage current (HCIL) that will flow through each modeled device of the modeled electronic circuit as a function of its assigned channel length (L_M) and modeled post-manufacture utilization time (t_{PMU});

(i) determining whether leakage current of the modeled product, including said determined amount of hot-carrier-induced leakage current (HCIL), will exceed the specified one or more, corresponding amounts of maximum leakage current allowed in the product over the desired specified operational lifetime of the product; and

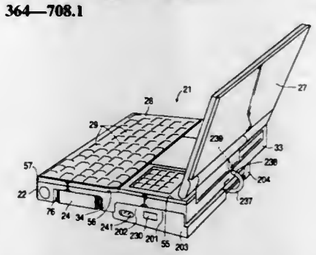
(j) if the result of determination step (i) is no, fabricating the product by means of the specified fabrication technology using the assigned channel length (L_{MA}–L_{MN}) of each insulated gate field effect device as its manufactured channel length.

5,606,519

PORTABLE ELECTRONIC COMPUTER WITH REMOVABLE DISK DRIVE

Giacomo Viletto, Maglione, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Mar. 18, 1994, Ser. No. 214,741
Claims priority, application Italy, Mar. 29, 1993, TO93A0211
Int. Cl.[6] G06F *1/26*
U.S. Cl. 364—708.1 **16 Claims**



1. A portable electronic computer comprising:

a base unit having a bottom surface which is adapted to lie on a support plane and an upper surface opposite to said bottom surface,

a housing located on said base unit adjacent to said bottom surface,

a keyboard disposed on said upper surface for assuming a first position substantially parallel to said support plane, when said bottom surface lies on said support plane,

an electronic unit mounted within said base for managing the computer's functions,

a disk drive unit for reading/writing a disk storage, and

a power supply unit for supplying said electronic unit, said power supply unit comprising a first portion insertable into said housing and a second portion able to project from said bottom surface, when said first portion is inserted into said housing, to lie on said support plane;

wherein said housing is adapted to removably lodge either said disk drive unit or said first portion of said power supply unit; said keyboard assuming an inclined position with respect to said support plane, when said first portion of said power supply unit is inserted into said housing and said second portion of said power supply unit lies on said support plane;

and wherein said power supply unit further comprises an extension extractable from said second portion for cooperating with said bottom surface in an area adjacent to said housing and so improving the stability of said base unit on said support plane.

5,606,520

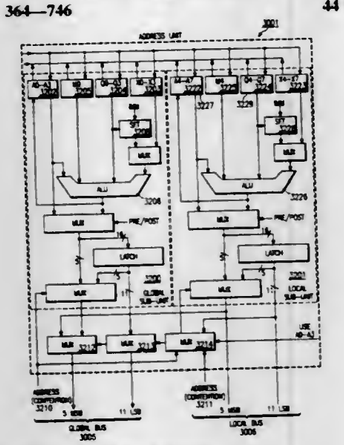
ADDRESS GENERATOR WITH CONTROLLABLE MODULO POWER OF TWO ADDRESSING CAPABILITY

Robert J. Gove, Plano; Karl M. Guttag, Missouri City, both of Tex.; Keith Balmer, and Nicholas K. Ing-Simmons, both of Bedford, England, assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 263,504, Jun. 21, 1994, Pat. No. 5,471,592, which is a continuation of Ser. No. 135,754, Oct. 12, 1993, abandoned, which is a continuation of Ser. No. 933,865, Aug. 21, 1992, abandoned, which is a continuation of Ser. No. 435,591, Nov. 17, 1989, abandoned. This application Jun. 7, 1995, Ser. No. 484,540

Int. Cl.[6] G06F *7/38;12/00*

U.S. Cl. 364—746 **44 Claims**



1. An address generator comprising:

a plurality of address registers;

a plurality of index address registers;

a modulo register storing therein a plurality of carry break indicators;

an arithmetic unit having a first input connected to said plurality of address registers, a second input connected to said plurality of index address registers, said arithmetic unit further connected to said modulo register, said arithmetic unit forming an arithmetic combination of data stored in a selected one of said plurality of address registers and data stored in a selected one of said plurality of index address registers, said arithmetic unit generating a normal carry between a particular bit and a next more significant bit if a corresponding carry break indicator stored in said modulo register has a first digital state and breaking any carry between said particular bit and said next more significant bit if said corresponding carry break indicator stored in said modulo register has a second digital state opposite to said first digital state;

a plurality of data registers for storing data; and

a bus connected to said modulo register and said plurality of data registers for moving data from an instruction specified one of said plurality of data registers to said modulo register in response to a register move instruction specifying one of said plurality of data registers as a source and said modulo register as said destination.

5,606,521

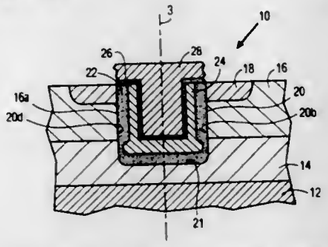
ELECTRICALLY ERASABLE AND PROGRAMMABLE READ ONLY MEMORY WITH NON-UNIFORM DIELECTRIC THICKNESS

Di-Son Kuo, Ardsley; Len-Yuan Tsou, New City; Satyendranath Mukherjee, Yorktown, and Mark Simpson, Ossining, all of N.Y., assignors to Philips Electronics North America Corp., New York, N.Y.

Filed Jun. 28, 1995, Ser. No. 496,104

Int. Cl.[6] G11C *11/00;11/34;* **H01L** *29/788*

U.S. Cl. 365—149 **10 Claims**



1. An electrically erasable and programmable read only memory (EEPROM) cell, comprising:

a first semiconductor layer of a first conductivity type;

a second semiconductor layer of said first conductivity type disposed on said first layer and having a lower doping level than that of said first layer, said first and second layers together forming a source region of said EEPROM cell;

a third semiconductor layer of a second conductivity type opposite that of said first type disposed on said second layer and extending to a surface of said EEPROM cell;

a fourth surface-adjoining semiconductor layer of said first conductivity type provided locally in said third layer and forming a drain region of said EEPROM cell;

a trench extending through said third and fourth layers and partially into said second layer, said trench having a floor and first, second, third and fourth sidewall portions;

a channel region located in a portion of said third layer adjacent a sidewall subportion of said trench and extending from said second region to said fourth region;

a gate dielectric covering each of said sidewalls and said floor of said trench, a portion of said gate dielectric covering a selected sidewall subportion having a thickness different from a thickness of said gate dielectric covering another sidewall subportion;

a floating gate on said gate dielectric and extending adjacent the sidewall and floor of said trench;

an intergate dielectric covering at least an inner sidewall and floor of said floating gate; and

a control gate disposed on said intergate dielectric and separated from said channel region by said floating gate.

5,606,522

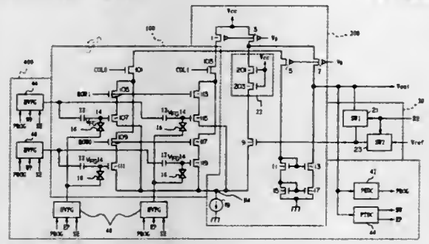
NON-VOLATILE ANALOG MEMORY

Yong-Yoong Chai, Seungnam, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 20, 1995, Ser. No. 575,279

Int. Cl.[6] G11C *11/34*

U.S. Cl. 365—185.03 **6 Claims**



4. An analog memory comprising:

a cell array comprising a plurality of memory cells, each memory cell having a control gate to which a first high-voltage pulse signal is applied, an injector to which a second high-voltage pulse signal is applied, and a floating gate to which charges are injected into or are erased from through the injector, each memory cell being selected in response to an external address signal, the floating gate being one input part of a differential input stage;

comparing means having the differential input stage with a reference voltage acting as a first input and a floating gate voltage signal of a memory cell selected from the plurality of memory cells acting as a second input, the comparing means acting to compare and output the difference between the reference voltage signal and the floating gate voltage signal;

mode selecting means for connecting the output of the comparing means to the first input of the comparing means to cause the comparing means to function as a unit amplifier during a reading mode, and for connecting an external reference voltage signal to the first input of the comparing means during a writing mode; and

controlling means for maintaining a program enable state if the current state of the output signal of the comparing means is the same as that previous state of the output signal of the comparing means, maintaining a program disable state if the current state of the output signal of the comparing means is not the same as the previous state of the output signal of the comparing means, and for generating the first and second high-voltage pulse signals in accordance with the state of the output signal of the comparing means,

wherein during the writing operation, analog information is written into the memory cell by injecting charges into the floating gate or erasing charges from the floating gate and wherein during the reading operation, the floating gate voltage signal is amplified and then output.

5,606,523

NON-VOLATILE PROGRAMMABLE BISTABLE MULTIVIBRATOR IN PREDEFINED INITIAL STATE FOR MEMORY REDUNDANCY CIRCUIT

Jean-Michel Mirabel, Gardanne, France, assignor to SGS-Thomson Microelectronics S.A., Saint Genis Pouilly, France

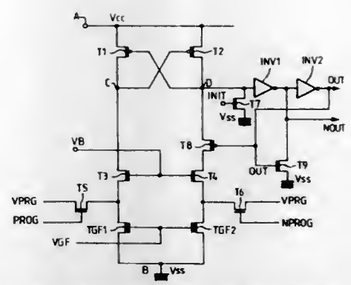
Filed Jan. 30, 1995, Ser. No. 380,737

Claims priority, application France, Jan. 31, 1994, 94 01034

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—185.05 **48 Claims**

1. A programmable memory cell with two floating-gate transistors, of the type constituting a bistable multivibrator whose state is defined by the programming of one of the two transistors, wherein said cell has means to set up an imbalance in said cell when said cell is in a non-programmed state in order to output a predetermined signal before programming, and to prevent a consumption of current of the cell in reading mode even if the cell is not programmed.



5,606,524

NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE CAPABLE OF EFFECTING HIGH-SPEED OPERATION WITH LOW VOLTAGE

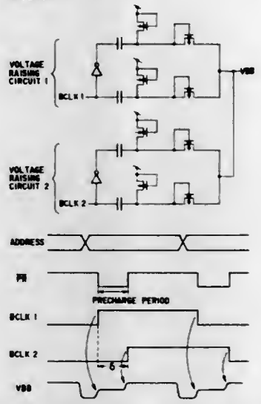
Kouji Ozaki, Yokohama, and Kazuhiko Miki, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 22, 1996, Ser. No. 604,830

Claims priority, application Japan, Feb. 24, 1995, 7-036737

Int. Cl.[6] G11C *11/34*

U.S. Cl. 365—185.23 **2 Claims**



1. A non-volatile semiconductor memory device of precharge/discharge type for raising a word line voltage by use of an edge of a clock to read out memory cell data, comprising:

a plurality of voltage raising circuits connected in parallel, each for raising a power supply voltage;

a level shifter connected to the outputs of said plurality of voltage raising circuits to drive word lines; and

driving means for driving each of said plurality of voltage raising circuits by use of clocks each having only one edge in a period from the address changing time to the memory cell data readout starting time at which the precharging operation is terminated.

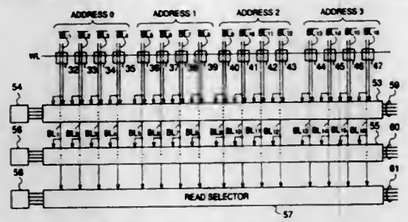
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5,606,525

DATA REGISTER STRUCTURE AND SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE USING THE SAME

Yayoi Fujii, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 231,678, Apr. 25, 1994, abandoned. This application Nov. 9, 1995, Ser. No. 552,459
Claims priority, application Japan, Jun. 4, 1993, 5-134973
Int. Cl.[6] G11C 7/00
U.S. Cl. 365—189.04 13 Claims



1. A data register structure, comprising:

a plurality of memory cells connected to a word line and grouped into groups assigned to respective different addresses, each of the memory cells being connected to a pair of first and second bit lines;

write control means, connected to both the first bit lines and the second bit lines extending from the memory cells, for controlling potentials of the first and second bit lines connected to the memory cells into which data is to be written; and

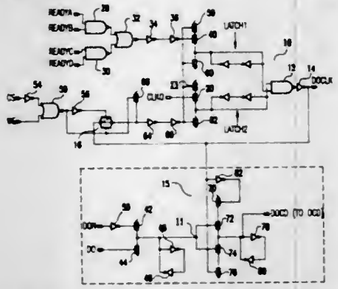
read control means, connected to only one of: (a) the first bit lines and (b) the second bit lines, for detecting potentials of only one of: (a) the first bit lines and (b) the second bit lines connected to the memory cells from which data is to be read.

5,606,526

GLITCH-FREE DUAL CLOK READ CIRCUIT

Harold Pilo, Chittenden County, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 26, 1995, Ser. No. 533,907
Int. Cl.[6] G11C 7/00;8/00
U.S. Cl. 365—189.05 10 Claims



1. A dual clock circuit for reading data from a memory array, comprising:

a first latch, said first latch being set in response to a data ready signal;

a second latch, said second latch being set in response to a first clock signal;

logic means coupled to said first and second latches for generating a second clock signal when the first and second latches are set; and

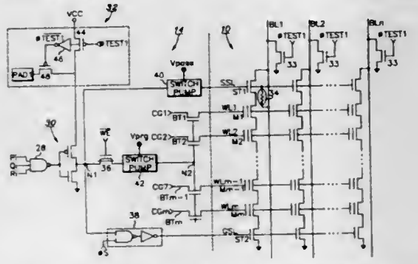
a third latch responsive to said second clock signal for latching the data from the memory array.

5,606,527

METHODS FOR DETECTING SHORT-CIRCUITED SIGNAL LINES IN NONVOLATILE SEMICONDUCTOR MEMORY AND CIRCUITRY THEREFOR

Jin-ho Kwack, and Woung-Moo Lee, both of Seoul, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Continuation of Ser. No. 343,863, Nov. 17, 1994, abandoned. This application Apr. 29, 1996, Ser. No. 639,807
Claims priority, application Rep. of Korea, Nov. 17, 1993, 24482/1993
Int. Cl.[6] G11C 7/00
U.S. Cl. 365—201 21 Claims



1. An electrically erasable and programmable nonvolatile semiconductor memory device including a ground power-supply line and at least one other power-supply line therein, said semiconductor memory device comprising:

first and second test pads, neither of which during normal memory operation connects to any of said power-supply lines in said semiconductor memory device;

a block selection predecoder for decoding each block selection address supplied thereto, to generate a corresponding block selection signal at a respective output connection of said block selection predecoder;

a word line row decoder for decoding each row address supplied thereto, to generate a corresponding word line driving signal at a respective output connection of said word line row decoder;

a plurality of memory blocks, each composed of a predetermined number of NAND cell strings that receive said word line driving signal in common via shared word lines, a respective one of said memory blocks being selectively activated by each said block selection signal; and

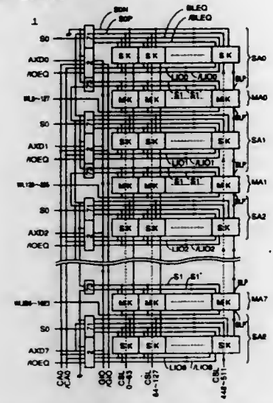
circuitry for detecting short-circuited signal lines by respectively floating first and second signal lines disposed in a first of said memory blocks to interrupt connections selectively made from said first and second signal lines during normal operation of said first memory block, so said first and second signal lines float respective to said power-supply lines in said semiconductor memory device unless referred thereto by connection external to said semiconductor memory device, while connecting said first and second signal lines respectively to said first test pad and to said second test pad to implement checking whether a current path between said test pads is formed, thus to detect any short-circuit between said first and second signal lines.

5,606,528

SEMICONDUCTOR MEMORY DEVICE ALLOWING DATA REWRITING ELECTRICALLY

Yutaka Ikeda, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 6, 1995, Ser. No. 553,910
Claims priority, application Japan, Jan. 10, 1995, 7-001931
Int. Cl.[6] G11C 8/00
U.S. Cl. 365—230.01 3 Claims



1. A semiconductor memory device in which electrical rewriting of data is possible, comprising:

a plurality of memory array blocks arranged in an extending direction of a bit line pair, each memory array block including a plurality of memory cells arranged in a matrix, a word line provided corresponding to each row, and said bit line pair provided corresponding to each column,

a pair of local signal input/output lines provided corresponding to each two adjoining memory array blocks, and in common to an even numbered bit line pair of a memory array block positioned in one direction of corresponding two memory blocks and an odd numbered bit line pair of a memory array block positioned in another direction,

a pair of global signal input/output lines provided in common to said plurality of memory array blocks,

a select circuit responsive to an externally applied address signal for selecting any of said plurality of memory array blocks, and any memory cell belonging to the selected memory array block,

connection means for connecting a bit line pair corresponding to a memory cell selected by said select circuit to one end of a corresponding pair of local signal input/output lines,

switching means provided corresponding to each pair of local signal input/output for connecting the other end of a corresponding pair of local signal input/output lines to one end of said pair of global signal input/output lines in an opposite phase in response to a bit line pair corresponding to a memory cell selected by said select circuit being an even numbered bit line pair of a memory array block positioned in one direction of corresponding two memory array blocks, and for connecting the other end of a corresponding Fair of local signal input/output lines to one end of said pair of global signal input/output lines in response to a bit line pair corresponding to the memory cell selected by said select circuit being an odd numbered bit line pair of a memory array block positioned in another direction of the corresponding two memory array blocks, and

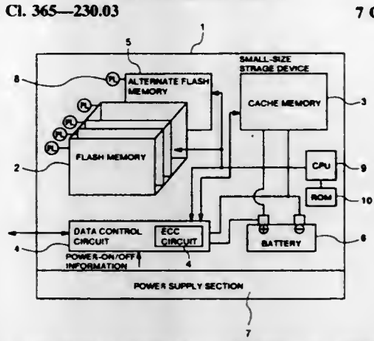
data input/output means for providing a data signal input/output between the other end of said pair of global signal input/output lines and the outside world.

5,606,529

SEMICONDUCTOR DISK STORAGE

Hisao Honma; Kazuo Nakagoshi, both of Odawara; Naoya Takahashi, Yokohama; Makoto Kogai, and Kenichi Takamoto, both of Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 359,787, Dec. 20, 1994. This application Mar. 6, 1996, Ser. No. 612,618
Int. Cl.[6] G11C 13/00
U.S. Cl. 365—230.03 7 Claims



1. A semiconductor storage device for transferring data with an information processing device, said semiconductor storage device comprising:

a non-volatile semiconductor memory in which data is electrically rewritable;

a volatile semiconductor memory connected to said non-volatile semiconductor memory and temporarily storing data of said non-volatile semiconductor memory; and

a CPU coupled to said non-volatile semiconductor memory and said volatile semiconductor memory, said CPU controlling a transfer of data among said non-volatile semiconductor memory, said volatile semiconductor memory, and said CPU;

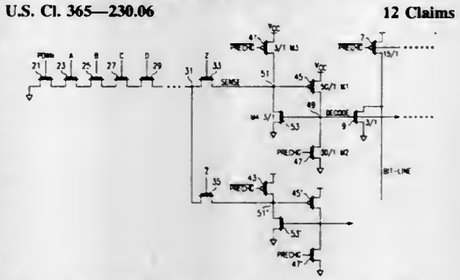
wherein said CPU transfers data with said information processing device in accordance with a fixed-length form for data and, when an access from said CPU to said volatile semiconductor memory makes a miss hit, accesses said non-volatile semiconductor memory.

5,606,530

HIGH SPEED ROM DECODE CIRCUIT

Sami Kiriaki, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 346,716, Nov. 30, 1994, abandoned. This application Mar. 13, 1996, Ser. No. 616,235
Int. Cl.[6] G11C 8/00
U.S. Cl. 365—230.06 12 Claims



1. A decode circuit for a semiconductor memory which comprises:

(a) an address input;

(b) an output;

(c) a first transistor of a first conductivity type having a control electrode to receive a predetermined signal from said address input to provide one of a high or low voltage at said output;

(d) a second transistor of a second conductivity type opposite to said first conductivity type and responsive to the said voltage at said output to provide the other of a high or low voltage at the control electrode of said first transistor;

and

a circuit to reduce the voltage at said output before said predetermined signal is received by said first transistor.

5,606,531

METHOD AND CIRCUIT FOR DETECTING A FAULT IN A CLOCK SIGNAL FOR MICROPROCESSOR ELECTRONIC DEVICES INCLUDING MEMORY ELEMENTS

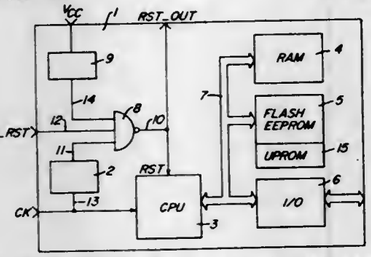
Angelo Moroni, Villanova S. fraz. Bargano; Flavio Scarra', Agrate, and Alberto Taddeo, Arenzano, all of Italy, assignors to SGS-Microelectronics, S.R.L., Agrate Brianza, Italy

Filed Mar. 31, 1995, Ser. No. 414,104

Claims priority, application European Pat. Off., Oct. 27, 1994, 94830504

Int. Cl.[6] G11C *8/00*

U.S. Cl. 365—233 **11 Claims**



1. A non-volatile electrically programmable and erasable memory device including a memory cell matrix and a microprocessor interlocked with a circuit generating at least one oscillating periodic clock signal, comprising:

a circuit for generation of a reset signal for said microprocessor having an input terminal coupled with an output of the circuit generating at least one oscillating clock signal and an output terminal coupled with a reset input of the microprocessor;

wherein said circuit for generation of a reset signal detects a stop in the oscillation of said clock signal.

5,606,532

EEPROM ARRAY WITH FLASH-LIKE CORE

Emil Lambrache, and George Smarandoiu, both of San Jose, Calif., assignors to Atmel Corporation, San Jose, Calif.

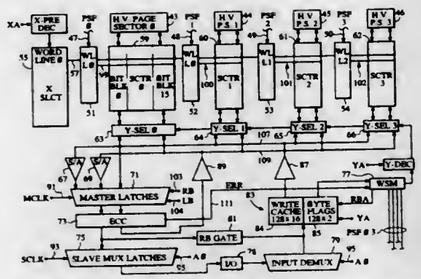
Filed Mar. 17, 1995, Ser. No. 405,884

Int. Cl.[6] G11C *11/40;14/00*

U.S. Cl. 365—238.5 **27 Claims**

1. An electrically erasable programmable read only memory, EEPROM, array comprising:

a main memory core configured as an array of EEPROM memory cells partitioned into erasable and programmable sub-page sectors, each sub-page sector defined by a sector select line coupled through a sector select device to a sector sense line in turn coupled to all storage devices within a sub-page sector, each sub-page sector individually addressable through said sector select device, each sub-page sector being an integral divisor of a memory page, with each sub-page sector being divided into a plurality of individually



read-addressable multi-byte data words, the main memory core having a high voltage supply accessible through a high voltage page,

external input and output data leads, input address leads, a write enable lead and a chip enable lead with the address and data leads internally coupled to a write cache, the write cache being coupled to the main memory core, and

an error correction control, ECC, unit having multiplexed inputs coming from the memory core and the write cache, and multiplexed outputs coupled to the write cache and the memory core, said outputs representing data and parity bits.

5,606,533

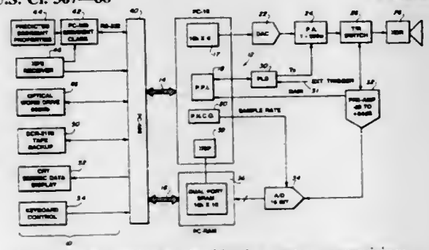
DATA ACQUISITION SYSTEM AND METHOD

John C. Cranford, Slidell; Douglas N. Lambert, Pearl River, both of La., and Michael Crowe, Gulfport, Miss., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 14, 1994, Ser. No. 227,639

Int. Cl.[6] G01S *15/00;* **G11C** *7/00*

U.S. Cl. 367—88 **4 Claims**



1. An acoustic sediment classification system, comprising:

an acoustic means for launching at least one acoustic pulse into water above said sediment, and for receiving echoes from said at least one acoustic pulse and transducing said echoes into corresponding digital electronic signals;

analog to digital means for converting said corresponding digital electronic signals into digital electronic data;

data acquisition computer means for storing and processing said digital electronic data;

dual port digital static RAM memory, having two input/output ports; wherein

one of said ports is adapted to receive said digital electronic data from said analog to digital means; and

the other of said ports is adapted to feed said digital electronic data to memory in said data acquisition computer responsive to commands from said data acquisition computer;

wherein said system further comprises a programmable interface means for operating, responsive to an initiation command from said data acquisition computer, said analog to digital means independently of said data acquisition computer.

5,606,534

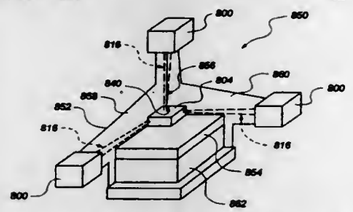
LASER-BASED DIMENSIONING SYSTEM

Bradley J. Stringer, Farmington, and Michael K. Elwood, Salt Lake City, both of Utah, assignors to Quantronix, Inc., Farmington, Utah

Continuation-in-part of Ser. No. 76,391, Jun. 14, 1993, Pat. No. 5,422,861, which is a continuation-in-part of Ser. No. 843,008, Feb. 28, 1992, Pat. No. 5,220,536, which is a continuation-in-part of Ser. No. 671,256, Mar. 18, 1991, Pat. No. 5,105,392, which is a continuation-in-part of Ser. No. 402,213, Sep. 1, 1989, Pat. No. 5,042,015. This application Jun. 5, 1995, Ser. No. 461,309

Int. Cl.[6] G01B *11/00*

U.S. Cl. 367—128 **42 Claims**



31. An apparatus for measuring three substantially mutually orthogonal dimensions of a substantially rectangular object, the apparatus comprising:

at least three measuring devices, each for measuring a different one of the dimensions of the object, at least one of the measuring devices comprising a light transducer having an emitter for emitting a light beam in line with the dimension it is to measure and a receiver offset from the emitter for receiving a reflection of the emitted light beam, the receiver including a light sensor for generating a signal responsive to the angle of reflection of the emitted light beam from the object; and

a processor coupled to the light transducer for converting the signal generated by the transducer's light sensor to a linear distance between the emitter and the object and for computing the dimension the transducer is to measure therefrom.

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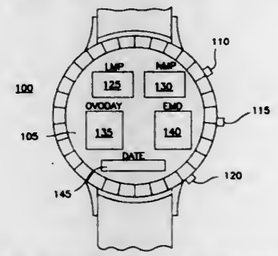
DIGITAL MENSTRUAL WRISTWATCH

Lynn Lynn, 19 W. 10th St. Apartment No. 8, New York City, N.Y. 10011

Filed Nov. 29, 1995, Ser. No. 564,625

Int. Cl.[6] G04B *19/00*

U.S. Cl. 368—223 **46 Claims**



1. A device for monitoring the menstrual cycle of a woman, said device comprising:

a watch housing;

memory means for storing associated dates of the woman's menstrual cycle;

a display disposed on said housing;

display drive means responsive to said memory means for concurrently displaying said associated dates of the woman's menstrual cycle on said display;

means for automatically updating said associated dates of the woman's menstrual cycle on the basis of menstrual data stored in said memory means; and

means for adjusting said menstrual data so as to reflect the woman's particular menstrual cycle.

5,606,536

OPTICAL RECORDING/REPRODUCING APPARATUS WITH VARIABLE CONTROL

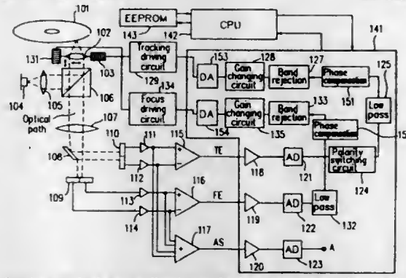
Katsuya Watanabe, Suita, and Hiroshi Idehara, Nara, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed May 18, 1995, Ser. No. 443,629

Claims priority, application Japan, May 20, 1994, 6-105820

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—44.36 **14 Claims**



1. An optical recording/reproducing apparatus for optically recording information onto a recording medium and/or for optically reproducing the information from the recording medium, comprising:

converging means for converging a light beam on the recording medium;

moving means for moving the converging means;

variable control means for obtaining an amount of movement based on a signal obtained from the light beam reflected from the recording medium, and for controlling the moving means to move the converging means by the amount of movement; and

a main control section for defining an operation for obtaining the amount of movement from the signal in accordance with characteristics of the converging means and the moving means and characteristics of the recording medium, and for controlling the variable control means to obtain the amount of movement by performing the defined operation.

5,606,537

METHOD OF ADJUSTING OPTICS OF OPTICAL PICKUP USING ERROR NEGATING SIGNAL PROCESSING TECHNIQUE

Etsufumi Yamamoto, Chiba, Japan, assignor to Sony Corporation, Japan

Filed Jun. 20, 1995, Ser. No. 492,549

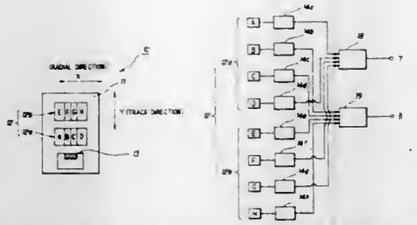
Claims priority, application Japan, Jun. 24, 1994, 6-166382

Int. Cl.[6] G11B *7/09*

U.S. Cl. 369—44.41 **2 Claims**

1. A method of adjusting optics of an optical pickup having a light-emitting-and receiving device and an objective lens, said light-emitting-and-receiving device being equipped with a light-emitting portion and a light-receiving portion on a substrate, said objective lens acting to focus a light beam produced by said light-emitting portion onto a recording surface of an optical disk and to guide returning light reflected by said recording surface

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toward said light-receiving portion, said light-receiving portion consisting of a first array of light-receiving elements and a second array of light-receiving elements, said first and second arrays being in line in a track direction of the optical disk, each of said first and second arrays consisting of a plurality of light-receiving elements arrayed in a radial direction of the disk, said method comprising the steps of:

adding output signals from plural outer light-receiving elements of said first array to output signals from at least one inner light-receiving element of said second array to produce a first sum signal;

adding an output signal from at least one inner light-receiving element of said first array to output signals from plural outer light-receiving elements of said second array to produce a second sum signal; and

moving said light-emitting-and-receiving device in the tracking direction of the optical disk so that the first and second sum signals assume an identical value while comparing said first and second sum signals.

5,606,538

LEARNING TYPE SIGNAL RECORDING AND REPRODUCING APPARATUS

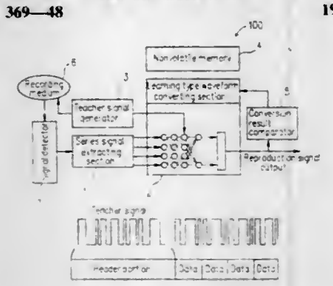
Susumu Maruno, Osaka; Toshiyuki Kouda, Nara, and Taro Imagawa, Kadoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Continuation of Ser. No. 441,396, May 15, 1995, abandoned. This application Mar. 12, 1996, Ser. No. 614,102

Claims priority, application Japan, May 18, 1994, 6-103841

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—48 **19 Claims**



1. A signal recording and reproducing apparatus comprising:

signal detecting means for detecting a teacher signal and an information signal recorded on a recording medium;

converting means for converting the teacher signal and the information signal detected by the signal detecting means into a reproduction teacher signal and a reproduction information signal, respectively, based on a predetermined conversion rule; and

teacher signal generating means for generating a reference teacher signal,

wherein the teacher signal is first detected before the detection of the information signal, and the converting means includes a learning type waveform converting section for automatically establishing the predetermined conversion rule based on the reproduction teacher signal and the reference teacher signal.

5,606,539

METHOD AND APPARATUS FOR ENCODING AND DECODING AN AUDIO AND/OR VIDEO SIGNAL, AND A RECORD CARRIER FOR USE WITH SUCH APPARATUS

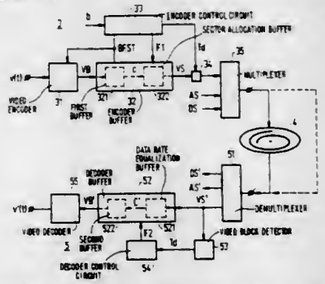
Wiebe De Haan, and Jan van der Meer, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 86,402, Jun. 30, 1993, abandoned, which is a continuation of Ser. No. 711,186, Jun. 5, 1991, abandoned. This application Aug. 31, 1994, Ser. No. 299,027

Claims priority, application United Kingdom, Jun. 5, 1990, 9012538

Int. Cl.[6] H04N *5/76*

U.S. Cl. 369—59 **29 Claims**



1. A method for encoding an audio and/or video signal into an encoded signal which can be decoded by a decoding device including a decoder buffer for receiving the encoded signal and a decoder for decoding the encoded signal, the method comprising:

encoding successive portions of the audio and/or video signal into corresponding successive code blocks making up the encoded signal;

determining a delay time parameter for a code block of the code blocks, which delay time parameter represents a length of time during which the code block is to be stored within the decoder buffer before decoding by the decoder in order to ensure that the decoder buffer will not experience overflow or underflow of the code blocks; and

inserting the delay time parameter into the encoded signal.

5,606,540

DIGITAL SIGNAL REPRODUCING APPARATUS

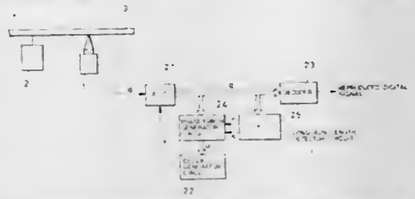
Hideki Hayashi, Tsurugashima, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Dec. 29, 1995, Ser. No. 581,335

Claims priority, application Japan, Jan. 20, 1995, 7-7650

Int. Cl.[6] G11B *5/09*

U.S. Cl. 369—59 **10 Claims**



1. A digital signal reproducing apparatus for reproducing a digital signal based on a read signal read from a recording medium on which signals with limited run lengths are recorded, comprising:

an A/D convertor for sequentially sampling said read signal at a timing of a reproduced clock signal to convert said read signal to sampled values;

decoding means for decoding said reproduced digital signal based on said sampled values;

long run length detecting means for detecting an edge section of said recorded signal in a section in which sampled values corresponding to a recorded signal having said run length longer than a predetermined length are successively read, based on said sampled values;

phase error generating means for extracting a sampled value derived in said edge section from said sampled values and generating a phase error signal corresponding to the extracted sampled value; and

clock generating means for generating a clock signal having a phase which changes based on said phase error signal as said reproduced clock signal.

5,606,541

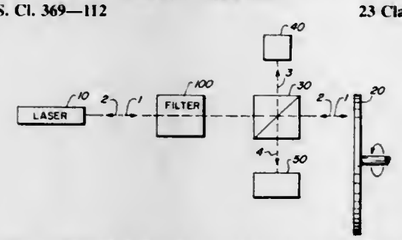
SWITCHABLE FILTER FOR MODULATING LASER INTENSITY AND REDUCING LASER FEEDBACK IN AN OPTICAL DISK DEVICE

Blair I. Finkelstein, and William C. Williams, both of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 13, 1992, Ser. No. 976,436

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—112 **23 Claims**



1. An optical data storage device adapted for use with an optical record storage medium with addressable data storage locations capable of reflecting light, said storage device comprising:

a semiconductor laser, optically coupled with the storage medium; and

a switchable filter, positioned between said semiconductor laser and said storage medium;

wherein said semiconductor laser is adapted for operation at an approximately constant output power and wherein the stability of said semiconductor laser increases with laser power and wherein said constant output power is sufficient for recording data onto said storage medium and wherein said constant output power is used for both recording and sensing data, thereby providing increased semiconductor laser stability during data sensing;

wherein the transmittance of said filter is modulated between a first, high, level and a second, low, level of transmittance for recording data onto said storage medium, said high transmittance level for writing by altering said medium and said low transmittance level for gaps; and

wherein the transmittance of said filter is switched to a third level for sensing data from said storage medium, said third level being less than said first level, thereby reducing the feedback of light reflected from said storage medium to said semiconductor laser.

5,606,542

OPTICAL PICKUP USING THREE BEAM TRACKING METHOD

Seong-Min Kim, Incheon, Rep. of Korea, assignor to Daewoo Electronics Co. Ltd., Seoul, Rep. of Korea

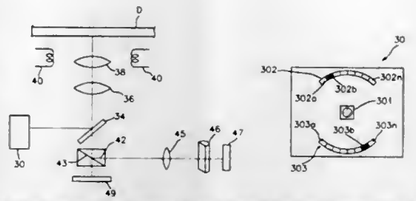
Filed Apr. 26, 1995, Ser. No. 429,147

Claims priority, application Rep. of Korea, Apr. 30, 1994, 94-9416

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—112 **8 Claims**

1. An optical pickup using a three beam tracking method, the optical pickup comprising:



a light source for emitting laser beams having a main beam for reproducing data from a data recording medium, a first movable guide beam and a second movable guide beam, wherein the light source comprises a first laser emitting element for generating the main beam; a plurality of second laser emitting elements among which a laser emitting element located at an appropriate position is selectively energized for controlling a position of the first guide beam which tracks the data recording medium; and a plurality of third laser emitting elements among which a laser emitting element located at an appropriate position is selectively energized for controlling a position of the second guide beam which tracks the data recording medium, and the light source further includes a laser emitting source energizing means for selectively energizing one of the second laser emitting elements and one of the third laser emitting elements;

a lens group for determining optical paths of incident beams which are incident on the data recording medium and reflected beams which are reflected from the data recording medium so as to read out data recorded on the data recording medium by using the laser beams emitted from the light source, the lens group including an objective lens; and

a light-receiving means to receive a part of the reflected beams for detecting a tracking error.

5,606,543

RECORDING MULTIPLEX CODED SIGNALS ON A DISK RECORDING MEDIUM WITH A PRIORITY SWITCHING MEANS

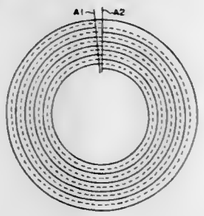
Kenji Sugiyama, Yokosuka, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

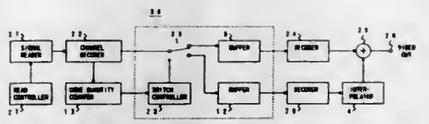
Filed Nov. 17, 1994, Ser. No. 343,922

Claims priority, application Japan, Nov. 19, 1993, 5-314173

Int. Cl.[6] G11B *7/24*; H04N *7/12*

U.S. Cl. 369—124 **5 Claims**





3. A disklike recording medium, wherein a plurality of sorts of signals are recorded thereon so that recording density of the signals which are recorded is constant in a linear direction; and the sorts of the signals are changed at predetermined revolution angles of the disklike recording medium.

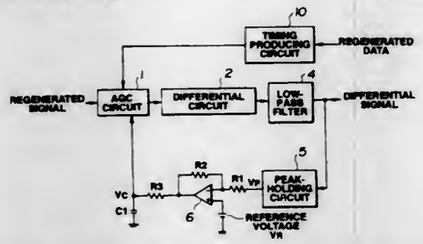
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5,606,544

OPTICAL INFORMATION RECORDING AND REGENERATING APPARATUS WHICH REGULATES THE AMPLITUDE OF A REGENERATED SIGNAL

Wataru Katsuhara, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 28, 1995, Ser. No. 430,486
Claims priority, application Japan, May 23, 1994, 6-108612
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—124 **8 Claims**



1. An optical information recording and regenerating apparatus for optically recording and regenerating information to and from a medium, comprising:

an AGC circuit for controlling the amplitude of a regenerated signal, which is obtained when regenerating information, to a predetermined value;

a differential circuit for differentiating an output signal of said AGC circuit; and

a peak detecting means for detecting the peak value of an output of said differential circuit,

wherein said AGC circuit controls gain in accordance with the output of said peak detecting means so that the peak value of a differential signal of a first regenerated signal in a preformat area, wherein information has been permanently embossed in the medium beforehand, becomes constant,

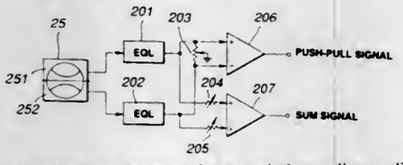
said optical information recording and regenerating apparatus further comprising a timing control means for actuating said AGC circuit only when said first regenerated signal in said preformat area is received.

5,606,545

REPRODUCING APPARATUS HAVING A DETECTOR FOR SIMULTANEOUSLY SCANNING ADJACENT TRACKS OF AN OPTICAL RECORDING MEDIUM

Hideyoshi Horimai, and Goro Fujita, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Division of Ser. No. 292,246, Aug. 17, 1994, which is a division of Ser. No. 133,113, Oct. 12, 1993, abandoned. This application Sep. 21, 1995, Ser. No. 531,628
Claims priority, application Japan, Feb. 19, 1992, 4-069736; May 25, 1992, 4-157434; Jun. 18, 1992, 4-182847
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—124 **1 Claim**



1. A reproducing apparatus for an optical recording medium, comprising:

an optical recording medium wherein an n-th recording track is located at a distance from an (n−1)th recording track preceding said n-th recording track in a recording region, both the (n−1)th recording track and the n-th recording track simultaneously scanned by a light beam radiated onto the recording area, data recorded on the n-th recording track generated by logical operation of input data with data recorded on the (n−1)th recording track;

a detector having first and second light receiving areas having a boundary line extending parallel to a recording track of the optical recording medium;

a first equalizer circuit supplied with an output signal from said first light receiving section;

a second equalizer circuit supplied with an output signal from said second light receiving section;

an addition circuit for summing an output of said first equalizer and an output of said second equalizer;

a subtraction circuit for taking a difference between the output of said first equalizer and the output of said second equalizer;

a first variable resistor connected in series circuit between a first input of said addition circuit and the output of the first equalizer;

a second variable resistor connected in series circuit between a second input of said addition circuit and the output of the second equalizer; and

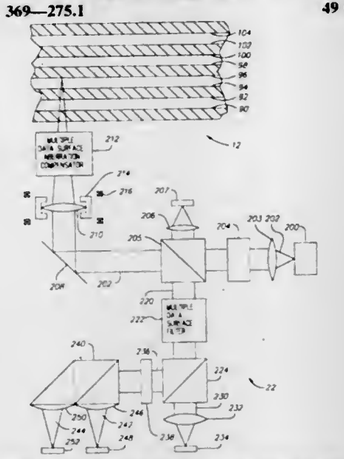
a third variable resistor having a first end, a second end, and a variable tap therebetween, the first end connected to the junction of the output of the first equalizer and a first input of the subtraction circuit, the second end connected to the junction of a second input of the subtraction circuit, and the variable tap connected to common.

5,606,546

OPTICAL DATA STORAGE MEDIUM WITH MULTIPLE WRITABLE DATA LAYERS SEPARATED BY DIELETRIC LAYERS

Margaret E. Best, San Jose; Hal J. Rosen, Los Gatos; Kurt A. Rubin, Santa Clara, and Timothy C. Strand, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 458,578, May 31, 1995, abandoned, which is a division of Ser. No. 378,690, Jan. 26, 1995, Pat. No. 5,513,170, which is a division of Ser. No. 188,613, Jan. 26, 1994, Pat. No. 5,410,530, which is a division of Ser. No. 79,483, Jun. 18, 1993, Pat. No. 5,381,401, which is a division of Ser. No. 710,226, Jun. 4, 1991, Pat. No. 5,255,262. This application May 22, 1996, Ser. No. 651,288
Int. Cl.[6] G11B *7/24*
U.S. Cl. 369—275.1 **49 Claims**



1. An optical data storage medium having multiple data recording layers for use in a laser-based optical data storage system, the medium comprising:

a first light transmissive member having a first surface that supports a first one on the multiple data recording layers and an opposite surface that forms an outer face of the medium and from which laser radiation enters the medium;

a first writable data recording layer overlying the first surface of the first light transmissive member for receipt of focused laser light transmitted through the first light transmissive member;

a dielectric layer overlying the first writable data recording layer;

a light transmissive medium overlying the dielectric layer;

a second writable data recording layer overlying the light transmissive medium for receipt of focused laser light transmitted through the first light transmissive member and the light transmissive medium, the light transmissive medium spacing the second writable data layer from the first writable data layer, whereby when the laser light is focused on the second writable data layer it is not focused on the first writable data layer; and

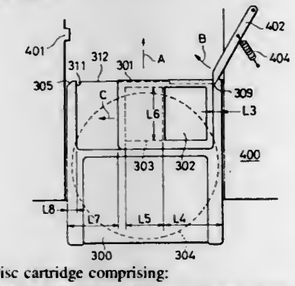
a protective medium overlying the second writable data recording layer.

5,606,547

OPTICAL DISC CARTRIDGE AND MECHANISM FOR PREVENTING AN INCORRECT INSERTION OF A CARTRIDGE

Yasuo Otsuka, Kamakura; Nobuhiro Katase, and Tohru Sasaki, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 224,728, Jul. 27, 1988, Pat. No. 5,297,133. This application Dec. 27, 1993, Ser. No. 173,053
Claims priority, application Japan, Jul. 27, 1987, 62-185471; Nov. 9, 1987, 62-280919
Int. Cl.[6] G11B *23/03*
U.S. Cl. 369—291 **87 Claims**



40. A disc cartridge comprising:

a case having a substantially square shape with first, second, third and fourth edge surfaces delimiting boundaries of the case, the case having a disc therein and having a window for exposing at least a portion of the disc within the case, the first edge surface of the case being delimited by a first corner portion connecting the first edge surface and the second edge surface and a second corner portion connecting the first edge surface and the third edge surface;

a shutter member arranged for sliding movement over the first edge surface from a first position where the window is closed by the shutter member to a second position in a direction toward the first corner portion where the window is opened by movement of the shutter member; and

a spring for biasing the shutter member toward the first position wherein the window is closed, the spring being provided within the case in the region of the first corner portion;

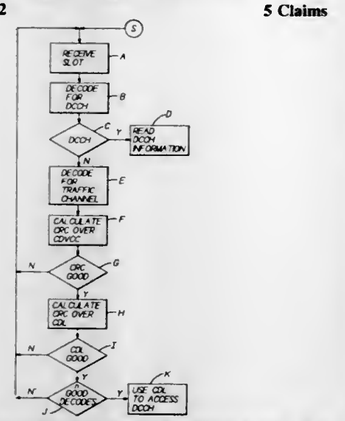
the case having a recess formed by a set back portion set back from the first edge surface of the case in a region of the first corner portion, a surface portion of the set back portion of the recess extending substantially parallel to the first edge surface and below the first edge surface, the shutter member being slidable over the first edge surface and the set back portion, the set back portion delimiting an opening extending through the case, and the case having a chamfer portion extending between the first edge surface and the second edge surface in the region of the first corner portion.

5,606,548

MOBILE TERMINAL HAVING IMPROVED DIGITAL CONTROL CHANNEL (DCCH) SEARCH PROCEDURE

Mika Vayrynen, and Matti Ylitervo, both of Oulu, Finland, assignors to Nokia Mobile Phones Limited, Salo, Finland

Filed Apr. 16, 1996, Ser. No. 632,849
Int. Cl.[6] H04J *3/16*
U.S. Cl. 370—252 **5 Claims**



1. A method for operating a wireless user terminal of a type that receives a TDM signal from a wireless system, the TDM signal being comprised of slots partitioned into fields, one of the fields being a control-related field containing information that is used by the user terminal to locate a radio channel that transmits a control channel required to access the wireless system, comprising the steps of:

(a) receiving a slot and decoding a predetermined first field from the slot, the predetermined first field being a field other than the control-related field;

(b) determining if the decoded first field was correctly received;

(c) only if it is determined that the first field was correctly received, determining if the control-related field from the slot was also correctly received;

(d) if it is determined that the control-related field was also correctly received, determining if the steps (a)–(c) have been executed n times, where n is a positive integer that is equal to or greater than one; and

(e) if yes, using information from the control-related field to locate a radio channel that transmits a control channel required to access the wireless system.

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Patent Not Issued For This Number

5,606,550

ECHO CANCELLER AND METHOD FOR A VOICE NETWORK USING LOW RATE CODING AND DIGITAL SPEECH INTERPOLATION TRANSMISSION

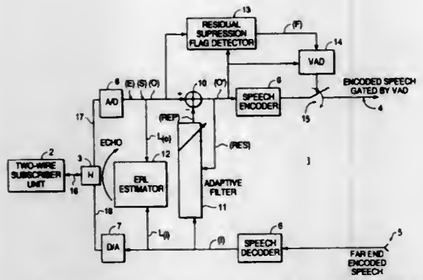
Shrirang Jangi, Germantown, Md., assignor to Hughes Electronics, Los Angeles, Calif.

Filed May 22, 1995, Ser. No. 446,156
Int. Cl.[6] H04B *3/23*
U.S. Cl. 370—289 **29 Claims**

1. An echo canceller for permitting the transmission of near-end speech, comprising:

a subtracting device for cancelling an echo signal, said subtracting device having a pair of inputs and an output, with an input

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of said subtracting device for receiving a speech signal and the other input of said subtracting device for receiving an echo replica signal;

an adaptive filter for adaptively providing and updating a replica echo signal, said adaptive filter having a pair of inputs and an output, with an input of said adaptive filter for receiving a far-end speech signal, the other input coupled to the output of said subtracting device, and the output of said adaptive filter for providing a replica echo signal to said other input of said subtracting device; and

an echo-return loss estimator for estimating an echo-return loss across said an input of said subtracting device and said an input of said adaptive filter for receiving said far-end speech signal and detecting a double-talk condition, said echo-return loss estimator having a pair of inputs, with one input for receiving said far-end speech signal and the another input for receiving a speech signal appearing at said an input of said subtracting device, wherein said echo-return loss estimator calculates the echo-return loss based on a ratio of an instantaneous signal power for the far-end speech signal (L_r) and an instantaneous signal power for a sum of a near-end speech signal and an echo signal (L_e);

wherein said echo-return loss estimator updates the echo-return loss (ERL) in accordance with the relation:

$$ERL=0.9*ERL+0.1*(L_r/L_e);$$ and

wherein, said echo-return loss estimator acts to freeze the replica echo updating function of said adaptive filter upon detecting a double-talk condition.

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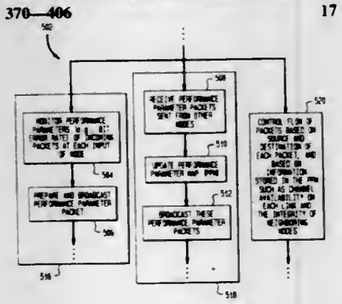
BIDIRECTIONAL MESH NETWORK

Stamatios V. Kartalopoulos, Annandale, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 21, 1994, Ser. No. 360,517

Int. Cl.[6] H04B *7/185;* **H04J** *3/24*

U.S. Cl. 370—406 **17 Claims**



1. A communication network, comprising:

a first communication loop comprising a plurality of nodes interconnected to one another by bidirectional communication links; and

a second communication loop comprising a plurality of nodes interconnected to one another by bidirectional communication links, said second communication loop connected to said first communication loop at a common node which is common to both said first and second communication loops;

said common node comprising a switch to transfer packets from said first communication loop to said second communication loop, and vice versa, as a function of destination addresses contained in said packets,

wherein each of said nodes comprises,

a plurality of input ports connected to communication links which are also connected to nodes in said first and second communication loops which are adjacent to said each node;

means for monitoring performance parameters of said input ports;

means for generating a performance parameter packet containing an identifier of said each node and said performance parameters; and

means for broadcasting said performance parameter packet to all other nodes in said first and second communication loops.

5,606,552

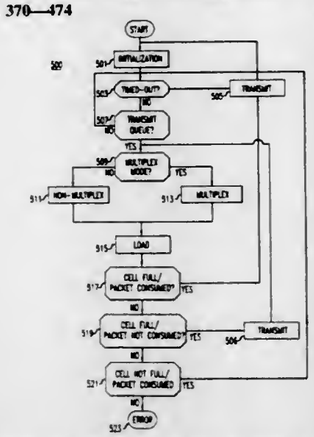
BROADBAND ADAPTATION PROCESSING

John H. Baldwin, Morristown, and Subrahmanyam Dravida, Somerset, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Oct. 17, 1994, Ser. No. 323,958

Int. Cl.[6] H04L *12/56;* **H04Q** *11/04*

U.S. Cl. 370—474 **10 Claims**



1. A method for generating a cell payload based on a user packet comprising N octets (where N is a positive integer), said method comprising:

building a basic control octet which comprises:

(1) an additional control bit that indicates if a supplemental control octet accompanies said basic control octet, and

(2) a length indicator based on N;

packing said basic control octet and said user packet into said cell payload; and

padding any unused portion of said cell payload with copies of said basic control octet.

5,606,553

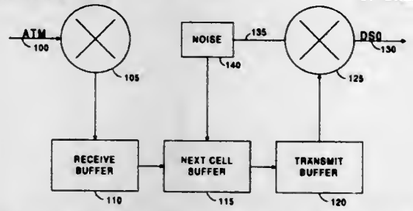
CELL PROCESSING FOR VOICE TRANSMISSION

Joseph M. Christie, 536 Green Ave., San Bruno, Calif. 94066, and Albert D. Duree, 16913 Cogan Rd., Independence, Mo. 64055

Filed Feb. 28, 1995, Ser. No. 395,745

Int. Cl.[6] H04L *12/66*

U.S. Cl. 370—394 **17 Claims**



1. A method for operating a system that supplies information bits received in packet format from a first link to a second link which transmits digital data at a continuous bit rate, the system comprising buffer space that stores groups of information bits from packets that are received from the first link, the method comprising:

(a) reading information bits in a first group of information bits from the buffer space and supplying the information bits to the second link at the continuous bit rate;

(b) identifying a time period in which the last bit of the first group is being read from the buffer space;

(c) providing a second group of information bits during the time period, the second group to be read from the buffer space to supply the second link; and

(d) automatically providing compensation bits to be read from the buffer space if a third group of information bits is not available in the buffer space.

5,606,554

TELECONFERENCE TERMINAL EQUIPMENT AND TELECONFERENCE MODULE

Yoji Shibata, Yokosuka; Masaaki Takizawa, Tokyo; Hitoshi Matsushima, Tachikawa; Kiyoshi Ishida, Yokohama; Atsuo Yoshida; Atsushi Ishibashi, both of Kokubunji, and Takehiko Yamada, Chigasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 913,489, Jul. 15, 1992, Pat. No. 5,477,546. This application May 25, 1995, Ser. No. 450,997

Claims priority, application Japan, Jul. 15, 1991, 3-174046; Jan. 29, 1992, 4-014173

Int. Cl.[6] H04L *12/18;* **H04N** *7/14*

U.S. Cl. 370—260 **9 Claims**

4. A teleconference module comprising:

communication control means for controlling transmission and reception of video data through a digital communication channel;

a communication terminal for said digital communication channel;

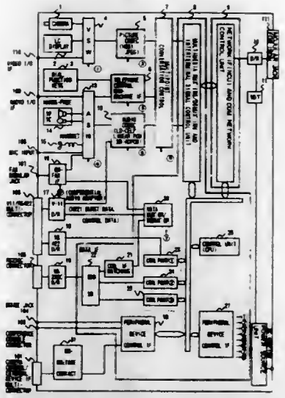
an external video output terminal for an external display unit;

a picture codec which decodes a picture signal from said video data received by said communication control means and then outputs said picture signal to said external video output terminal, and which codes an input picture signal to-be-coded into said video data and then transfers said video data to said communication control means;

a camera which photographs an external subject, and by which a picture signal produced by photographing is transferred as said picture signal to-be-coded to said picture codec; and

a box-shaped housing in which said communication control means, said picture codec and said camera are housed, said box-shaped housing accommodating no internal display for displaying a picture indicated by said picture signal therein;

wherein said camera is arranged in a central position of said box-shaped housing with respect to a horizontal direction, so



as to photograph an external subject through a window provided in a central position, with respect to a horizontal direction, of a front panel of said box-shaped housing;

said communication terminal and said external video output terminal are provided on a panel of said box-shaped housing other than said front panel;

said box-shaped housing has a size permitting said teleconference module to be placed on top of the external display unit; and

said teleconference module constitutes, in combination with the external display unit, a teleconference terminal for exchanging pictures with an opposite communicating equipment through the communication channel in combination with the external display when said teleconference module is placed on top of the external display unit, said external output video terminal connects with the external display unit and said communication terminal connects with the digital communication channel.

5,606,555

APPARATUS AND METHOD FOR OPERATING AND CONSTRUCTING AN OPTICAL TDM/TDMA SYSTEM HAVING ENHANCED RANGE

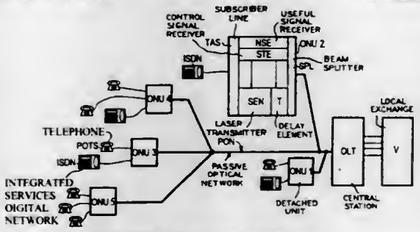
Josef Singer, Buchloe, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed May 22, 1995, Ser. No. 445,755

Claims priority, application Germany, May 20, 1994, 44 17 771.2

Int. Cl.[6] H04J *1/16*

U.S. Cl. 370—465 **6 Claims**



1. An optical TDM/TDMA system comprising:

central station means for emitting optical TDM signal blocks in a predetermined first transmission cycle of TDM signal blocks in a frame format and for receiving optical TDMA signal blocks;

a plurality of subscriber-proximate, detached means, each disposed at a transmission distance from said central station means, for receiving said TDM signal blocks from said cen-

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tral station means in a reception cycle and for emitting said TDMA signal blocks in reply to said TDM signal blocks, said plurality of detached means collectively emitting said TDMA signal blocks in a second transmission cycle of said TDMA signal blocks in said frame format with each detached means emitting a signal block into said second transmission cycle at a position in said second transmission cycle dependent on the transmission distance of that detached means from said central station means, said plurality of detached means including at least two detached means respectively disposed at different transmission distances from said central station means;

an optical branch network connecting said central station means to each detached means via which said TDM and TDMA signal blocks are transmitted;

said central station means including means for defining an anticipation window for each detached means during which a TDMA signal from that detached means is expected to be present in said second transmission cycle;

said plurality of detached means being divided into at least two range zones of respectively different transmission distances;

all detached means in each range zone including delay means for delaying emission of a TDMA signal block from that detached means, following reception of a TDM signal block, by a delay dependent on the range zone, with all detached means in a range zone at a longest transmission distance having a first delay and all detached means respectively in other range zones having further respective delays longer than said first delay; and

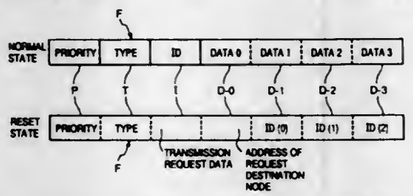
means for introducing a frame offset between said first and second transmission cycles equal to a duration of said anticipation window multiplied by the plurality of range zones decremented by one, and for initiating the second transmission cycle in reply to the first transmission cycle only after completion of said reception cycle.

5,606,556

MULTIPLEX TRANSMISSION SYSTEM

Toshiaki Kawanishi, Akishima, and Koji Terayama, Hiroshima, both of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Dec. 29, 1994, Ser. No. 365,862
Claims priority, application Japan, Dec. 30, 1993, 5-351245
Int. Cl.[6] H04J *3/00*
U.S. Cl. 370—471 **27 Claims**



9. A multiplex transmission apparatus which is connected to a multiplex transmission path and transmits a communication frame in which its own event data is written onto the multiplex transmission path, comprising:

detection means for detecting a predetermined condition at a transmitting side;

frame generation means for generating a communication frame to be transmitted from the transmitting side, by changing a data format of the communication frame and writing data representing that the communication frame is a data transmission request frame and an address of a receiving side which is to receive the communication frame in an existing area of the communication frame, on the basis of the detection result; and

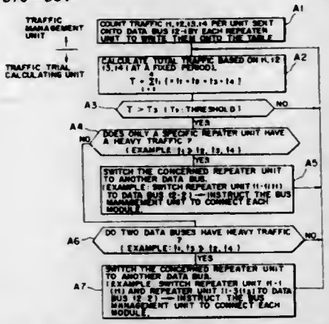
frame transmission means for transmitting the communication frame.

5,606,557

BUS LOAD DISTRIBUTING METHOD SUITABLE FOR DATA COMMUNICATIONS EQUIPMENT AND BUS SWITCHING CONTROL DEVICE FOR DATA COMMUNICATIONS EQUIPMENT

Kazumasa Kuroshita; Toshihiro Ishida, and Osamu Sekihata, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Continuation of Ser. No. 298,039, Aug. 30, 1994, abandoned. This application Feb. 9, 1996, Ser. No. 599,663
Claims priority, application Japan, Mar. 10, 1994, 6-040004
Int. Cl.[6] H04J *3/02;* **H04L** *12/40*
U.S. Cl. 370—364 **11 Claims**



11. A bus switching control device for data communications equipment including plural modules, plural buses connected to said plural modules and arranged in parallel to perform data communications between said plural modules, and a control device for selectively and physically connecting each module to one bus among said plural buses, the device comprising:

bus switching control means for selecting a bus to be connected among said plural buses in accordance with a traffic of each of said modules and switching to said selected bus, to optimize a load on said buses;

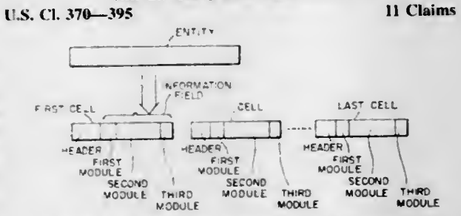
said bus switching control means including counting means for counting an amount of data transmitted from each module to said selected bus, and bus switching means for switching a bus to a concerned module, based on data amount information from said counting means.

5,606,558

METHOD OF AND DEVICES FOR TRANSMITTING IN ATM CELLS INFORMATION SUPPLIED IN THE FORM OF A SERIES OF DISTINCT ENTITIES FOR A GIVEN APPLICATION

Patrick Daniel, and Piotr Szychowiak, both of Illkirch, France, assignors to Alcatel N.V., Amsterdam

Filed Oct. 11, 1994, Ser. No. 320,744
Claims priority, application France, Oct. 12, 1993, 93 12116
Int. Cl.[6] H04J *3/26;* **H04L** *12/56*
U.S. Cl. 370—395 **11 Claims**



1. A method of transmitting an entity from a source application to a destination application over an asynchronous transfer mode (ATM) network, said entity being a modular unit of information independently usable by the destination application and comprising a set of digital data bits representing samples of analog information from the source application, the data bits of said entity being transmitted using a plurality of ATM cells, including a first cell and a last cell, each of said cells containing: a header indicating a destination; and an information field, the method comprising the steps of:

dividing the information field of each of said cells into at least first, second and third modules;

inserting into the first module of each of said cells, a cell continuity index which is incremented modulo p for each successive cell, where p is an integer;

inserting into the second module of each successive cell a portion of the data bits of the entity, such that said plurality of cells contains the set of data bits;

inserting into the third module of each of said cells an error detecting/correcting code calculated from bits contained in other modules of the information field;

including in the second module of the first cell a staff of entity marker;

including in the second module of the last cell an end of entity marker; and

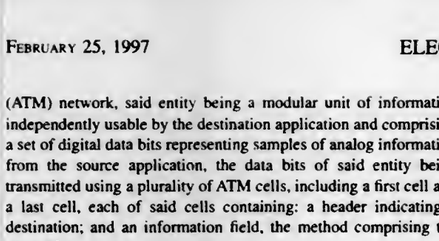
transmitting said cells over the ATM network.

5,606,559

SYSTEM AND METHOD FOR AN EFFICIENT ATM ADAPTER/DEVICE DRIVER INTERFACE

Ryan L. Badger, Wake Forest; Kenneth J. Barker, Cary; Paul H. Nichols; Russell E. Schroter, both of Raleigh; John K. Stacy, Cary, and Mark C. Wartski, Raleigh, all of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 11, 1995, Ser. No. 515,183
Int. Cl.[6] H04L *12/54*
U.S. Cl. 370—395 **17 Claims**



1. In an ATM communications network, a system processor including a device driver, a system memory and an adaptor coupled together at an interface for increased system processing performance and memory utilization, comprising:

a) adapter processor and control memory means included in the adapter,

b) means for establishing transmit and receive control registers in the control memory;

c) means for receiving data cells from the network for storage as frames on received ready lists in system memory;

d) means for establishing a transmit ready queue (TRQ) in the control memory; the TRQ identifying frames for transmission on a received ready list;

e) means for establishing in system memory a transmit complete list (TCL); and

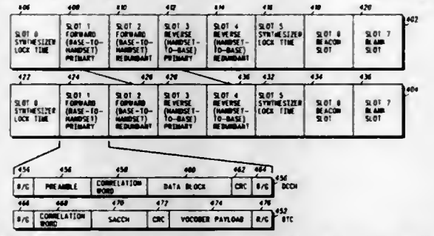
f) means for generating an interrupt to the device driver indicating frame transmission complete and updating the TCL.

5,606,560

METHOD FOR INCREASING SPECTRUM EFFICIENCY IN A TDMA COMMUNICATION SYSTEM HOPPER FREQUENCY BETWEEN A BASE STATION AND A PORTABLE DEVICE

Charles J. Malek, Crystal Lake, and David L. Weigand, Buffalo Grove, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 23, 1994, Ser. No. 311,309
Int. Cl.[6] H04J *3/06;3/12*
U.S. Cl. 370—347 **8 Claims**



8. A method for increasing spectrum efficiency in a time division multiple access (TDMA) frequency hopper communication system having a base station and a portable device adapted to communicate with said wireless base station, said method comprising the steps of:

maintaining radio frequency (RF) silence at said base station and said portable device;

periodically monitoring, at said portable device, for a page signal transmitted by said base station;

establishing said portable device as a synchronization master upon originating a call from said portable device;

transmitting a signal from said portable device to said base station to establish a communication link;

establishing the base station as a synchronization slave upon receiving said signal from said portable device;

establishing a communication link between said portable device and said base station;

transmitting an acknowledge signal from said base station to said portable device;

re-establishing the base station as synchronization master;

re-establishing said portable device as synchronization slave; and

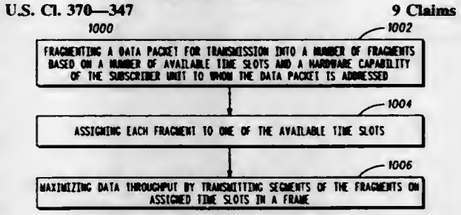
continuing communication.

5,606,561

METHOD, DEVICE/MICROPROCESSOR, AND COMPUTER SOFTWARE FOR PROVIDING PACKET FRAGMENTATION FOR FAIR, EFFICIENT DOWNLINK TRANSMISSION WITH LOW PACKET DELAY

Robert C. Scheibel, Jr., Chicago; Jeffrey C. Smolinske, Hoffman Estates, and Phieu M. Tran, Lincolnwood, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 28, 1995, Ser. No. 508,497
Int. Cl.[6] H04J *3/16*
U.S. Cl. 370—347 **9 Claims**



1. A method for efficient utilization by a base site, of available time slots of the base site, of a downstream channel in a TDMA packet communication system having at least one multiple time slot subscriber unit, providing packet fragmentation for fair, efficient downlink transmission with low packet delay supporting both

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single slot subscriber units and multiple slot subscriber units which both use a same air-interface protocol, comprising the steps of:

A) fragmenting a data packet for transmission into a number of fragments based on a number of available time slots and a hardware capability of the at least one multiple time slot subscriber unit to which the data packet is addressed;

B) assigning each fragment to one of the available time slots; and

C) maximizing data throughput by transmitting segments of the fragments on assigned time slots in a frame.

5,606,562

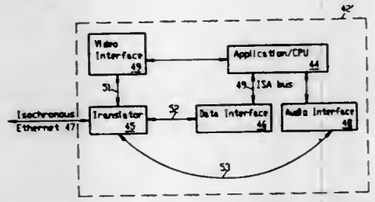
METHOD AND APPARATUS FOR TRANSMITTING DATA ISOCHRONOUSLY AT A RATE LESS THAN THE ISOCHRONOUS DATA RATE

Mark Landguth, La Jolla, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 386,969, Feb. 10, 1995, abandoned. This application Jul. 17, 1996, Ser. No. 682,484

Int. Cl.[6] H04J *3/07*

U.S. Cl. 370—506 **8 Claims**



1. In a node of a network, wherein a first subsystem of the node is connectable isochronously to a second subsystem of the node, via one or more B-channels, such that the second subsystem receives data from the first subsystem at a first, predetermined, actual rate, the method for transmitting an amount of substantive data from the first subsystem to the second subsystem at a second, effective, rate which is less than the predetermined rate, in a predetermined amount of time, comprising:

a. determining, from the amount of substantive data to be transmitted, an amount of null data required to be transmitted via the one or more B-channels at the first rate along with the substantive data such that the second rate is achieved;

b. transmitting the substantive data via the one or more B-channels at the first rate such that each of the one or more B-channels includes at least a portion of the substantive data; and

c. transmitting the null data via the one or more B-channels at the first rate for a period of time equal to the predetermined amount of time minus the amount of time required to transmit the substantive data at the first rate.

5,606,563

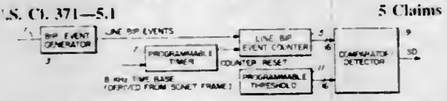
PROGRAMMABLE JUMP WINDOW FOR SONET COMPLIANT BIT ERROR MONITORING

Rick G. Dorbolo, Burnaby; David Wong, Vancouver, and Chris E. Lee, Burnaby, all of Canada, assignors to Pmc-Sierra, Inc., Burnaby, Canada

Filed May 18, 1995, Ser. No. 444,307

Int. Cl.[6] G06F *11/00*

U.S. Cl. 371—5.1 **5 Claims**



1. A method of determining an error level of a data channel comprising:

(a) receiving channel parity error data indicating when bit errors occur within a set of data carried on the channel (channel error events).

(b) successively integrating the channel error events data over successive accumulation periods,

(c) comparing the integrated channel error events data with a threshold,

(d) indicating an alarm in the event the integrated channel error events data exceeds the threshold, and

(e) said integrating step comprising integrating the detected channel error events data over accumulation periods each of which is one-half of a predetermined detection interval.

5,606,564

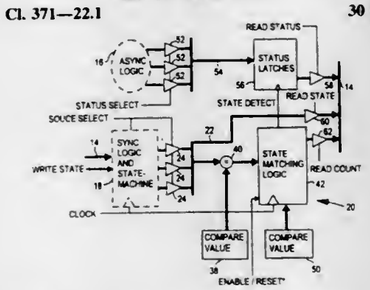
TEST LOGIC CIRCUIT AND METHOD FOR VERIFYING INTERNAL LOGIC OF AN INTEGRATED CIRCUIT

Son H. Ho, Sunnyvale, and Hien Nguyen, San Jose, both of Calif., assignors to Cirrus Logic Inc., Fremont, Calif.

Filed May 19, 1995, Ser. No. 444,589

Int. Cl.[6] G01R *31/28*

U.S. Cl. 371—22.1 **30 Claims**



1. A test logic circuit for testing a circuit containing asynchronous logic and synchronous logic and state machines, comprising:

a comparison circuit that compares state numbers produced by one of the state machines to a defined target value and asserting a signal when one of the state numbers is equal to the defined target value; and

status latches, coupled to the comparison circuit, that latch a status of the asynchronous logic in response to the assertion of the signal by the comparison circuit.

5,606,565

METHOD OF APPLYING BOUNDARY TEST PATTERNS

Christopher L. Edler, Los Angeles; William D. Farwell, Thousand Oaks; Ian Herman, Hermosa Beach; Tuan M. Hoang, La Mirada; Brian F. Keish, Stanford, and Alida G. Mascitelli, Thousand Oaks, all of Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Filed Feb. 14, 1995, Ser. No. 388,655

Int. Cl.[6] H04B *17/00*

U.S. Cl. 371—22.3 **4 Claims**

1. A boundary scan cell comprising:

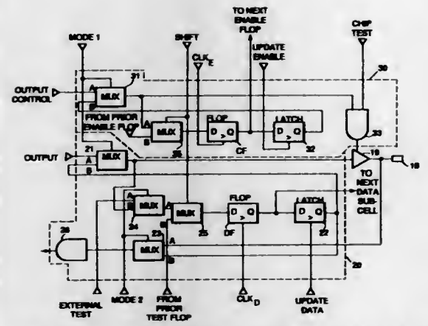
a three-state output buffer;

a test data scan flip-flop for providing an input to said three-state buffer;

test data multiplexing means responsive to the output of said test data scan flip-flop and a serial test data input for providing an input to said test data scan flip-flop;

a control data scan flip-flop for receiving a serial control data input;

clocking means for clocking said test data scan flip-flop and said control data scan flip-flop independently of each other; and



control means for controllably providing the output of said control data scan flip-flop to said three-state output driver such that the enabled state of said three-state output buffer is controlled by the output of said control data scan flip-flop;

whereby the enabled state of said three-state output driver is controlled independently of the test data in the test data scan flip-flop.

5,606,566

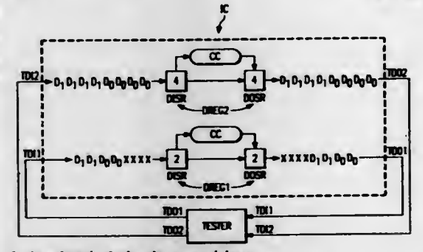
METHOD AND APPARATUS FOR STREAMLINED CONCURRENT TESTING OF ELECTRICAL CIRCUITS

Lee D. Whetsel, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 375,080, Jan. 17, 1995, abandoned, which is a continuation of Ser. No. 101,504, Jul. 30, 1993, abandoned. This application Sep. 6, 1995, Ser. No. 523,918

Int. Cl.[6] G06F *11/267*

U.S. Cl. 371—22.3 **20 Claims**



1. An electrical circuit, comprising:

first and second functional circuits which perform desired functions during normal operation of the electrical circuit;

first and second separate serial scan paths respectively coupled to said first and second functional circuits to support testing of said first and second functional circuits, said serial scan paths being connectable to a test controller to permit serial data transfer between the test controller and the electrical circuit;

selection circuitry for operatively enabling said first serial scan path while said second serial scan path is also operatively enabled to permit concurrent scan testing of said first and second functional circuits; and

first and second control circuits respectively connected to said first and second serial scan paths and connectable to the test controller for, when connected to the test controller, respectively permitting test signals to be transferred between said first serial scan path and said first functional circuit and between said second serial scan path and said second functional circuit while serial test data is being transferred between the test controller and said first and second serial scan paths in respective first and second continuous serial data streams.

5,606,567

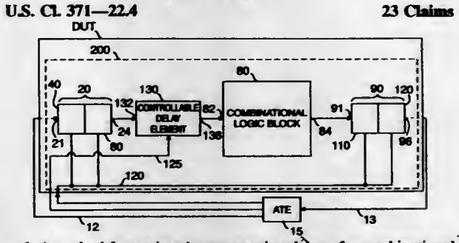
DELAY TESTING OF HIGH-PERFORMANCE DIGITAL COMPONENTS BY A SLOW-SPEED TESTER

Vishwani D. Agrawal, New Providence, and Tapan J. Chakraborty, Mercerville, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Oct. 21, 1994, Ser. No. 327,338

Int. Cl.[6] G06F *11/00*

U.S. Cl. 371—22.4 **23 Claims**



1. A method for testing the propagation delay of a combinational logic block in a combinational signal path of a high speed circuit utilizing a test clock rate less than the rated frequency of the circuit to test the ability of the circuit to operate properly at the rated frequency, comprising the steps of:

calculating a delay value, wherein the delay value is equal to the amount of delay that must be added to the combinational signal path during testing utilizing the test clock rate less than the rated frequency of the circuit, such that testing of the combinational logic block at the rated frequency is simulated in a manner that produces substantially the same signal values in the same sequence at all nodes in the circuit as would be produced in the normal high speed operation of the circuit;

applying a test stimulus to the signal path at the test clock rate;

adding the calculated delay to the signal path such that the test stimulus propagates through the combinational logic block of the circuit subject to the calculated delay;

recording the output response of the circuit; and,

comparing the output response with an expected correct response.

5,606,568

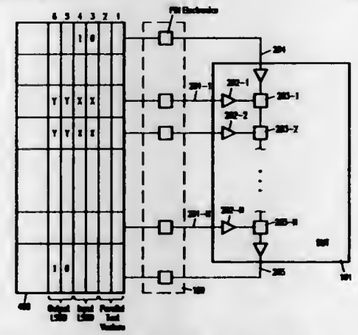
METHOD AND APPARATUS FOR PERFORMING SERIAL AND PARALLEL SCAN TESTING ON AN INTEGRATED CIRCUIT

Bruce D. Sudweeks, San Jose, Calif., assignor to Megatest Corporation, San Jose, Calif.

Filed Nov. 30, 1995, Ser. No. 565,337

Int. Cl.[6] G06F *11/00*

U.S. Cl. 371—27 **14 Claims**



1. An integrated circuit test apparatus, comprising:

a first memory section configured to store processor procedures;

a second memory section configured to simultaneously store parallel integrated circuit test vectors and serial integrated circuit test vectors;

a processor coupled to said first memory section and to said second memory section, said processor configured to execute said processor procedures to simultaneously manipulate said parallel integrated circuit test vectors and said serial integrated circuit test vectors located in said second memory section to test an integrated circuit.

5,606,569

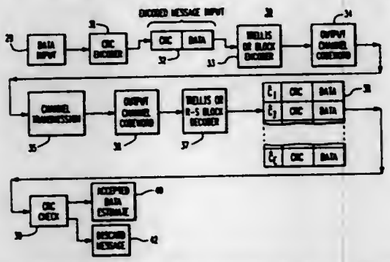
ERROR CORRECTING DECODER AND DECODING METHOD FOR RECEIVERS IN DIGITAL CELLULAR COMMUNICATION SYSTEMS

Andrew J. MacDonald, Damascus, and Stanley E. Kay, Rockville, both of Md., assignors to Hughes Electronics, Los Angeles, Calif.

Continuation of Ser. No. 8,431, Jan. 25, 1993, abandoned. This application Feb. 15, 1996, Ser. No. 601,890

Int. Cl.[6] H03M *13/00;13/12*

U.S. Cl. 371—37.7 **22 Claims**



1. A receiver in a wireless radio communication system comprising:

means for receiving and demodulating a transmitted signal representing a code word containing a message encoded in an outer code with an error detecting code and encoded in an inner code with an error correcting Reed-Solomon code;

means for decoding the demodulated signal including;

means for generating a list of estimates of the code word from the demodulated signal;

means for operating an error correcting decoder with the error correcting Reed-Solomon code to decode estimates of the code word;

means for operating an error detecting decoder with the error detecting code to process decoded code word estimates and determine whether an error exists in each decoded code word estimate that is processed;

means for generating as an output signal any decoded code word estimate detected to be error-free; and

means for generating a code word error if no decoded code word estimate is detected to be error-free.

5,606,570

HIGH POWER ANTIGUIDED SEMICONDUCTOR LASER WITH INTERELEMENT LOSS

Dan Botez, Madison, Wis.; Charles A. Zmudzinski, Redondo Beach, Calif., and Luke J. Mawst, Sun Prairie, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

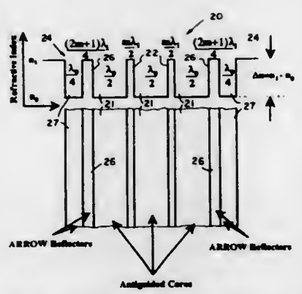
Filed May 8, 1995, Ser. No. 435,598

Int. Cl.[6] H01S *3/19*

U.S. Cl. 372—50 **37 Claims**

1. A semiconductor laser comprising:

(a) a semiconductor structure including a substrate, an active region, cladding layers surrounding the active region, and



outer faces, electrodes on the outer faces by which voltage can be applied across the semiconductor structure, and means for providing optical feedback for the semiconductor structure;

(b) an array of spaced antiguide elements formed in the semiconductor structure and containing the

active region where light generation occurs, the number of antiguide elements in the range of 2 to 10, each antiguide element having a selected effective refractive index to the laser light, and interelement structures between the antiguide elements, the interelement structures having a higher effective refractive index than the antiguide elements and formed to provide an optical mode loss coefficient at least about 100 cm^{-1}; and

(c) edge reflectors formed at edges of the array of elements to reflect light back to the array.

5,606,571

MICROWAVE POWERED GAS LASER APPARATUS

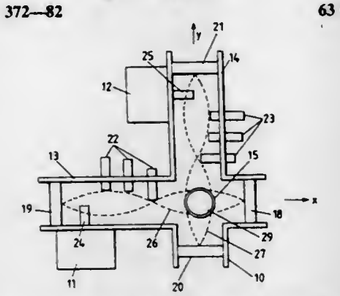
Nobuaki Furuya; Makoto Kato, both of Kawasaki; Koichi Saito, Yokohama; Minoru Kimura, Zama, and Kimikatsu Sato, Sagamihara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 20, 1995, Ser. No. 407,158

Claims priority, application Japan, Mar. 23, 1994, 6-051799; Dec. 12, 1994, 6-307409; Jan. 24, 1995, 7-009083; Feb. 17, 1995, 7-029415

Int. Cl.[6] H01S *3/97*

U.S. Cl. 372—82 **63 Claims**



1. A microwave powered gas laser apparatus comprising:

a gas medium; and

means for exciting the gas medium to a high energy state by a plurality of microwaves being simultaneously present, said exciting means including,

means for causing the plurality of microwaves to be propagated to the gas medium along respective directions different from each other, so that the plurality of microwaves cross each other at a place occupied by the gas medium to provide spatially even excitation of the gas medium.

5,606,572

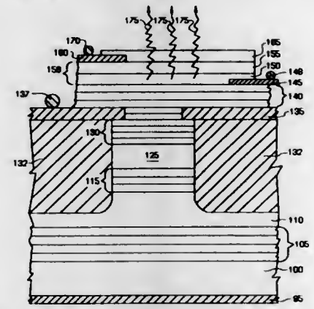
INTEGRATION OF LASER WITH PHOTODIODE FOR FEEDBACK CONTROL

Stanley E. Swirhun, and William E. Quinn, both of Boulder, Colo., assignors to Vixel Corporation, Broomfield, Colo.

Filed Mar. 24, 1994, Ser. No. 217,531

Int. Cl.[6] H01S *3/18;* **H01L** *31/153*

U.S. Cl. 372—96 **15 Claims**



1. An integrated optoelectronic device comprising:

a substrate;

a surface light emitting device formed on the substrate, the surface light emitting device emitting optical radiation through an optical aperture;

a photodiode formed on the surface light emitting device with an isolation layer therebetween;

wherein the photodiode comprises materials having an energy bandgap equal to or smaller than the energy of the optical radiation, the photodiode intercepting an amount of the optical radiation sufficient to monitor optical output power of the surface light emitting device; and

wherein the photodiode generates an electrical signal proportional to the optical output power.

5,606,573

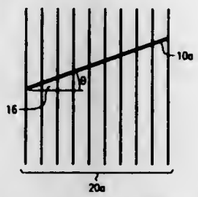
METHOD AND APPARATUS FOR CONTROL OF LASING WAVELENGTH IN DISTRIBUTED FEEDBACK LASERS

Won-Tien Tsang, Holmdel, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 114,125, Aug. 30, 1993, abandoned. This application Feb. 29, 1996, Ser. No. 608,984

Int. Cl.[6] H01S *3/08;* **H04J** *14/02;* **H01L** *21/20;* **G02B** *6/12*

U.S. Cl. 372—96 **16 Claims**



1. A method for operating an optical fiber transmission system comprising:

using a plurality of lasers to transmit information in the form of optical signals wherein at least two of the lasers comprise a substrate layer further comprising a first and a second end face and a periodic structure defining a plurality of grating lines, wherein the grating lines are parallel to said end faces, and an epilayer layer in parallel relation to the substrate layer wherein said epilayer has an active stripe, the entirety of which active stripe is oriented at a single nonzero angle with respect to a line perpendicular to the grating lines of the periodic structure with said nonzero angle being different for each of said at least two of the plurality of lasers;

operating said plurality of lasers such that each laser operates at a single, unique, precisely determined wavelength, the angle of the active stripes of said at least two lasers causing said at least two lasers to attain a precise difference in operating wavelength.

5,606,574

MOBILE UNIT IDENTIFYING SYSTEM AND METHOD OF DEMODULATING FOR THE SAME

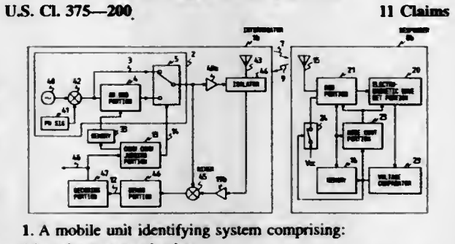
Makoto Hasegawa; Masahiro Mimura, both of Tokyo; Hirohide Hirabayashi, Yokohama; Naoki Adachi, Kawasaki; Yasuaki Namura, and Hideko Sakai, both of Yokohama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Sep. 13, 1994, Ser. No. 305,513

Claims priority, application Japan, Sep. 13, 1993, 5-226952; Jul. 8, 1994, 6-157361

Int. Cl.[6] H04B *7/26;* **G01S** *13/78*

U.S. Cl. 375—200 **11 Claims**



1. A mobile unit identifying system comprising:

(a) an interrogator having:

spread spectrum signal generation means for generating a spread spectrum coded signal using a predetermined pseudo noise signal;

modulation means for amplitude-modulating said spread spectrum coded signal in accordance with first data;

transmission means for transmitting either said spread spectrum coded signal from said spread spectrum signal generator in a first mode or said amplitude modulated spread spectrum coded signal from said modulation means in a second mode;

receiving means for receiving a responding signal;

demodulation means for demodulating said responding signal including a communication request signal and data with said spread spectrum coding signal from said spread spectrum signal generation means in said first mode;

first detection means for detecting said communication request signal from said demodulation means; and

first control means responsive to said detected communication request signal for operating said modulation means and transmission means in said second mode and for operating said transmission means in said first mode before said detection means detects said communication request signal; and

(b) a responder having;

antenna means for receiving said spread spectrum coded signal from said transmission means in a third mode and for transmitting said responding signal with modulation of said spread spectrum signal from said transmission means through reflecting and absorbing said transmitted spread coded signal in a fourth mode;

second detection means for detecting said spread spectrum coded signal from said antenna means in said third mode;

comparing means responsive to said second detection means for detecting whether or not an amplitude of said detected spread spectrum coded signal exceeds predetermined value;

storing means for storing second data;

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second control means responsive to said comparing means for generating said communication requesting signal when the amplitude of said received spread spectrum coded signal exceeds the predetermined value, for transmitting said communication request signal by operating said antenna means in said fourth mode; and

third control means responsive to said second control means for operating said antenna means, second detection means and comparing means for receiving said spread spectrum coded signal amplitude modulated with said first data in said third mode, and for detecting said received first data and storing said first data in said storing means as said second data.

5,606,575

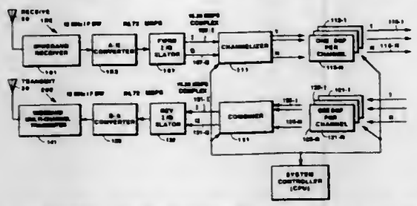
FFT-BASED CHANNELIZER AND COMBINER EMPLOYING RESIDUE-ADDER-IMPLEMENTED PHASE ADVANCE

Terry L. Williams, Melbourne Beach, Fla., assignor to AirNet Communications Corporation, Melbourne, Fla.

Continuation of Ser. No. 146,364, Oct. 29, 1993, Pat. No. 5,535,240. This application Feb. 1, 1996, Ser. No. 595,106

Int. Cl.[6] **H04B** *1/38;* **H04L** *5/16*

U.S. Cl. 375—219 **24 Claims**



1. A wideband cellular-telephone-receiver circuit for receiving a composite signal comprising a plurality of different-frequency carriers modulated by respective modulation signals and for extracting a plurality of channel output signals representing respective ones of the modulation signals, the receiver circuit comprising:

A) a digitizing circuit for processing the composite signal to produce digital-sequence signals representing a digital input sample sequence;

B) a discrete-Fourier-transform circuit for performing a sequence of overall Fourier-transform operations, each overall Fourier-transform operation comprising constituent Fourier-transform computations executed in successive passes through respective passes' computation values to compute as computation values of the last pass the discrete Fourier transform of a K-element transform input record consisting of computation values of the first pass, where K=JK' and J, K, and K' are positive integers, and for generating a plurality of channel output signals, each of which represents corresponding elements of discrete Fourier transforms computed in successive overall Fourier-transform operations;

C) a coefficient-multiplication circuit for receiving successive input-sequence segments of the input sample sequence, each input-sequence segment being offset from the previous segment by M samples, where M is a non-zero integer, for multiplying the elements of each input-sequence segment by corresponding coefficients of a base finite-impulse-response filter and so time-aliasing the products as to produce the computation values of the first pass, and for generating multiplication-circuit output signals representing those transform-input-record elements, whereby each channel signal is indicative of the response, to the input-sequence segment, of a respective finite-impulse-response filter whose frequency response is that of the base finite-impulse-response filter translated by a respective different frequency offset;

D) memory circuitry, comprising addressable memory locations, for receiving memory address signals representing addresses for respective computation values, receiving the computation values, and, between uses thereof, storing the computation values in and fetching the computation values from memory locations designated by the memory-address signals; and

E) address-generation circuitry, including address-computation circuitry for determining the memory addresses to be used for storing and fetching respective computation values for each pass, for generating and applying to the memory circuitry memory-address signals representing those memory addresses, the circuitry for generating the addresses for storing or fetching one pass's computation values comprising:

i) a base-address generator for generating, for each computation value, base-address signals representing a base address that is the same in successive overall Fourier-transform operations for corresponding elements of corresponding passes;

ii) a modulo-K' adder, responsive to the base-address signals and adapted to receive offset-address signals, for computing, as the relative memory address for each of the computation values of that pass in a given overall Fourier-transform operation, the sum, modulo K', of the base address for that computation value and the offset address for that overall Fourier-transform operation; and

iii) an offset-address generator for generating and applying to the modulo-K' adder, for each overall Fourier-transform operation, an offset-address signal representing a quantity that so progresses between successive overall Fourier-transform operations that each channel signal represents the output of its respective finite-impulse-response filter translated to a common frequency band.

5,606,576

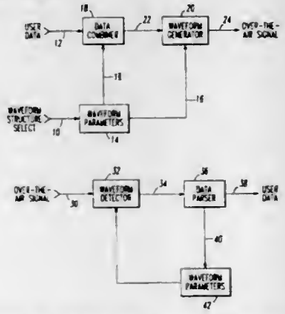
ADAPTIVE MODE CONTROL SYSTEM FOR AM COMPATIBLE DIGITAL BROADCAST

Mark J. Dapper, Cincinnati; Michael J. Geile, Loveland, and Barry W. Carlin, Greenhills, all of Ohio, assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Jan. 23, 1995, Ser. No. 376,987

Int. Cl.[6] **H03C** *5/00;* **H04L** *25/03;25/06;27/06*

U.S. Cl. 375—268 **7 Claims**



1. A system for adaptive mode control of an amplitude modulated compatible digital broadcast signal comprising:

(a) a transmitter having:

i) means for inputting format information regarding the waveform parameters of said amplitude modulated compatible digital broadcast signal;

ii) means for inputting user data;

iii) means for selecting said waveform parameters in response to said format information and producing control channel information;

iv) means for combining said user data and said control channel information to produce composite data; and

v) means for generating an over-the-air signal waveform using said composite data and said waveform parameters; and

b) at least one receiver having:

i) means for detecting said over-the-air signal waveform and said composite data produced by said transmitter;

ii) means for parsing said composite data into said user data and said control channel information;

iii) means for generating said waveform parameters from said control channel information; and

iv) means for folding said waveform parameters into said means for detecting said over-the-air signal waveform, wherein said waveform parameters configure said receiver for receipt of subsequent transmissions.

5,606,577

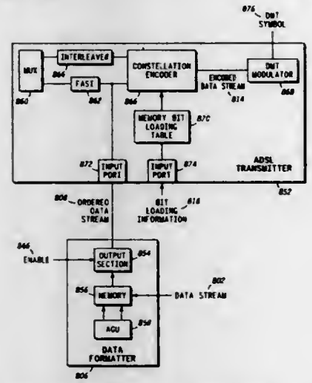
METHOD AND APPARATUS FOR A DMT TRANSMITTER HAVING A DATA FOR MATTER COUPLED DIRECTLY TO A CONSTELLATION ENCODER

Gary W. Grube, Barrington, Ill.; Timothy W. Markison, Austin, Tex.; Matthew A. Pendleton, Cedar Park, Tex., and Mathew A. Rybicki, Austin, Tex., assignors to Motorola Inc., Schaumburg, Ill.

Filed Jan. 26, 1995, Ser. No. 378,847

Int. Cl.[6] **H04L** *5/06;27/36;* **H04J** *11/00*

U.S. Cl. 375—295 **20 Claims**



1. A discrete multi-tone transmitter comprising:

a discrete multi-tone encoder that receives an ordered data stream and produces an encoded data stream based on bit loading information;

a fast path having an output coupled to an input of the discrete multi-tone encoder, and an input;

an interleave path having an output coupled to the input of the of the discrete multi-tone encoder, and an input;

a multiplexer having a first output coupled to the input of the fast path, and a second output coupled to the input of the interleave path;

a data interface, coupled to the discrete multi-tone encoder, for supplying the ordered data stream, the data interface comprising:

a constellation encoder simulator for ordering a plurality of carrier channels based on a constellation encoding function to produce a simulated encoded order of carrier channels; and

a processor, coupled to the constellation encoder simulator, for determining carrier channel allocation information based on the bit loading information and the simulated encoded order of carrier channels; and

a data formatter having an output directly coupled to the input of the discrete multi-tone encoder, wherein the data formatter receives transmit data entries and produces the ordered data stream based on the carrier channel allocation information.

5,606,578

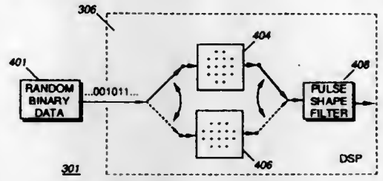
RADIO WITH PEAK POWER AND BANDWIDTH EFFICIENT MODULATION USING ASYMMETRIC SYMBOL CONSTELLATIONS

Robert J. O'Dea, Ft. Lauderdale, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 26, 1995, Ser. No. 494,506

Int. Cl.[6] **H04L** *27/36*

U.S. Cl. 375—298 **8 Claims**



1. A digital modulator for use in a communication device with improved peak to average power ratio, comprising:

a digital information generator;

a processor responsive to the digital information generator to alternately map the digital information onto a first or a second constellation diagram to produce data symbols each having a symbol interval, the first and second constellation diagrams are asymmetric; and

means for processing the data symbols alternately from the first and second constellation diagrams in order to minimize the peak to average power ratio.

5,606,579

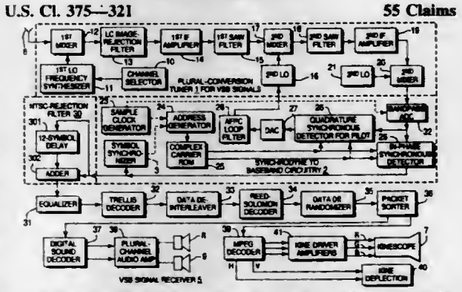
DIGITAL VSB DETECTOR WITH FINAL IF CARRIER AT SUBMULTIPLE OF SYMBOL RATE, AS FOR HDTV RECEIVER

Chandrakant B. Patel, Hopewell, and Allen L. Limberg, Ringoes, both of N.J., assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed May 23, 1994, Ser. No. 247,753

Int. Cl.[6] **H03D** *1/24*

U.S. Cl. 375—321 **55 Claims**



1. A radio receiver for receiving vestigial sideband (VSB) signals including symbol codes descriptive of digital signals and including a pilot carrier having an amplitude related to signal levels in said symbol codes, said symbol codes changing at a symbol frequency, said radio receiver comprising:

a tuner, including

means for selecting one of channels at different locations in a frequency band used for transmitting VSB signals, including

a succession of mixers for performing respective conversions in the frequency of signal received in the selected channel, thus to generate a final intermediate-frequency (IF) signal disposed within a final intermediate-frequency band, including

a respective frequency-selective amplifier stage between each earlier one of said mixers in said succession and each next one of said mixers in said succession, and including

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a respective local oscillator for supplying oscillations to each of said mixers, the oscillations from one of said local oscillators being controlled in frequency and in phase responsive to a first automatic frequency and phase control signal;

a sample clock generator for generating a sample clock signal comprising recurrent pulses, said recurrent pulses being generated at a sample rate controlled responsive to a second automatic frequency and phase control signal;

an address counter for counting said recurrent pulses to generate an address count;

means combining a symbol phase correction with said address count for generating read-only memory addressing;

read-only memory addressed by said read-only memory addressing for generating digital descriptions of in-phase and quadrature-phase carriers of a submultiple frequency that is a submultiple of said sample rate;

an analog-to-digital converter responsive to said sample clock signal for recurrently sampling a lowpass response to the signal from the final one of said mixers in said succession thereof included in said tuner, and for digitizing the resulting samples to generate a digitized final intermediate frequency signal;

means synchronously detecting, in accordance with the digital descriptions of said quadrature-phase carrier of said submultiple frequency, a pilot carrier component of said digitized final intermediate frequency signal for generating a digital quadrature synchronous detection result;

means for generating said first automatic frequency and phase control signal as a narrowband lowpass filter response to said digital quadrature synchronous detection result, thereby locking the carrier of said final intermediate frequency signal and said submultiple of said sample rate together in frequency and phase;

means synchronously detecting, in accordance with the digital descriptions of said in-phase carrier of said submultiple frequency, said digitized final intermediate frequency signal for generating a fullband digital in-phase synchronous detection result; and

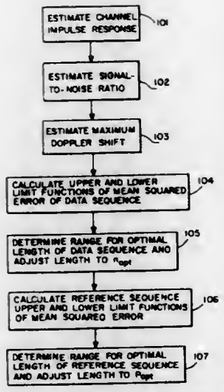
means, responsive to components of said fullband digital in-phase synchronous detection result that are equal to and substantially equal to said symbol frequency, for controlling the rate of the recurrent pulses of said sample clock signal supplied by said sample clock generator.

5,606,580

METHOD OF ADJUSTING THE LENGTH OF A DATA BLOCK IN A TIME-DIVISION MULTIPLE ACCESS COMMUNICATION SYSTEM

Christophe Mourot, Asnieres; Vinod Kumar, Paris; Jean-Claude Dany, and Armelle Wautier, both of Gif Sur Yvette, all of France, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed Jul. 19, 1994, Ser. No. 275,732
Claims priority, application France, Jul. 20, 1993, 93 08874
Int. Cl.[6] H03D *1/00;* **H03H** *7/30*
U.S. Cl. 375—340 **7 Claims**



1. A method of adjusting the length of a data block (BD) in accordance with time-varying behavior of a communication channel, the data block being transmitted as a signal on the time-varying communication channel of a time-division multiple access (TDMA) communication system, the signal being received at a receiver, said data block (BD) comprising: a training sequence (SA) including a reference sequence (SR) of length P; and a data sequence (D) of length n_s containing data symbols having a symbol interval (T_s), said communication channel having an impulse response of finite length K, the method comprising the steps of:

estimating the impulse response of the communication channel from received symbols of the reference sequence (SR);

estimating a signal-to-noise ratio from the channel impulse response;

estimating a maximum doppler shift of the signal at the receiver;

calculating, from the signal-to-noise ratio, the doppler shift, the length K of the impulse response, the length P of the reference sequence (SR) and the symbol interval (T_s), lower and upper limit functions of normalized estimate mean squared error ($E_{min}(n_s)$, $E_{max}(n_s)$) as a function of the length n_s of the data sequence (D);

determining a range for an optimal length of the data sequence (D) from the upper and lower limit functions and from a predetermined range of mean squared error which is acceptable in the communication system; and

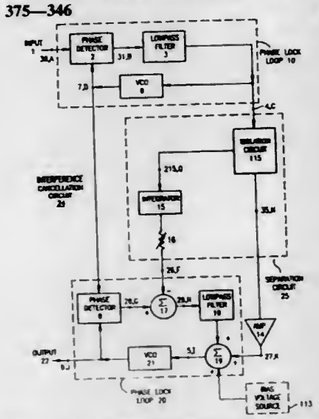
adjusting the length n_s of the data sequence (D) to a length n_{opt} which lies within said range for an optimal length of the data sequence.

5,606,581

METHOD AND APPARATUS FOR THE CANCELLATION OF INTERFERENCE IN ELECTRICAL SYSTEMS

Glen A. Myers, 279 Laurles Grade Rd., Salinas, Calif. 93908

Filed Mar. 17, 1994, Ser. No. 214,378
Int. Cl.[6] H03D *3/00;3/02;1/00;1/04*
U.S. Cl. 375—346 **24 Claims**



1. Apparatus for cancelling interference comprising:

a first demodulator coupled for receiving an input signal and for providing a first output and a second output, the second output being a voltage to frequency conversion of the first output, the first demodulator including a first modulator for converting the first output to provide the second output;

a separation circuit coupled to the first demodulator for receiving the first output, the separation circuit including an isolation circuit for isolating interference in the first output, the separation circuit for providing a third output and an isolated interference output; and

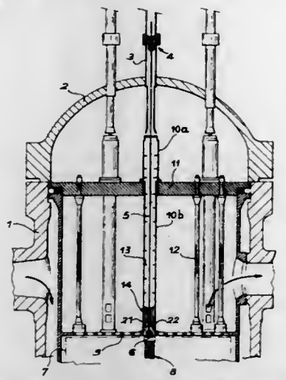
a second demodulator coupled to the first demodulator for receiving the second output and coupled to the separation circuit for receiving the third output and the isolated interference output, the second demodulator for cancelling an interference component of the second output signal using the isolated interference output for providing an intermediate signal, the second demodulator for combining the third output with the intermediate signal to provide a fourth output, the fourth output being a phase-shifted, near replica of the input signal, the near replica of the input signal having approximately none of the interference, the second demodulator including a second modulator for providing a voltage to frequency conversion of the near replica of the input signal.

5,606,582

DEVICE FOR THE AUTOMATIC DISCONNECTION OF A CONTROL ROD AND A NUCLEAR REACTOR ABSORBER CLUSTER

Yves Bergamaschi, Aix en Provence, France, assignor to Commissariat a l'Engergie Atomique, Paris, France

Filed Jun. 24, 1996, Ser. No. 669,587
Claims priority, application France, Jul. 12, 1995, 95 08438
Int. Cl.[6] G21C *7/12*
U.S. Cl. 376—233 **6 Claims**



1. Automatic uncoupling device between the pommel (**18**) of an absorber cluster (**6**) for introduction into the fuel elements (**8**) of the core (**7**) of a pressurized water nuclear reactor and a control rod (**5**) transmitting to the absorber cluster (**6**) movements induced by a control mechanism (**4**) located in a tight enclosure placed above the sealing cover (**2**) of the reactor vessel (**1**), said uncoupling device incorporating an attachment head (**37**), a mobile locking member (**32**), able to occupy a locked state and an unlocked state and whereof an axial displacement leads to a change of state, and a thermal module, characterized in that the thermal module deforms axially under the effect of the temperature and is placed between the attachment head (**37**) and the locking member (**32**) in order to form an assembly mobile in the axial direction and comprising a tight, water-filled bellows (**35**) and the attachment head (**37**) comprises at least one radial attachment finger (**47**) projecting by means of a small spring (**48**) and sliding within a cylinder (**49**) fitted in the sheath (**28**) of the control rod (**5**), said cylinder having an internal portion and from top to bottom a chamfered widening (**53**), as well as an axial notch (**54**) having a U-shaped section over part of its height, in order to receive the attachment finger (**47**), a second spring (**44**) placed above the attachment head (**37**) and tending to permanently push downwards so that the absorber cluster (**6**) is automatically uncoupled in the case of a reduction in the temperature of the water of the reactor vessel (**1**) below a first given temperature, the attachment finger (**47**) then abutting in the axial notch (**54**) and the locking member (**32**) rising under the effect of the shortening of the bellows (**35**), due to the contraction of the water to the upper position permitting the radial engagement of the balls (**31**) in the annular groove (**30**) of the locking member (**32**), the recoupling of the control rod (**5**) with the pommel (**18**) of the absorber cluster (**6**) taking place when a pressure is exerted on the top of the control rod (**5**), the latter firstly being downwardly displaced by a height equal to the axial portion (**64***a*) of the slot (**64**) of the cylinder (**49**) and then, under the action of the helical portion (**64***b*) of the slot (**64**) on the guide pin (**51**) rotating the cylinder (**49**) by a fraction of a turn freeing the attachment finger (**47**) from the U-shaped notch (**54**), thus permitting a downward displacement of the assembly of the attachment head (**37**) of the thermal module of the locking member (**32**).

5,606,583

GUIDE TUBE FOR A NUCLEAR FUEL ASSEMBLY, AND A METHOD OF MANUFACTURING SUCH A TUBE

Michel Verdier, Villeurbanne, France, assignor to Framatome, Courbevoie, and Compagnie Generale des Matières Nuclaires, Belizy Villacoublay, both of France

Filed Dec. 29, 1994, Ser. No. 366,298
Claims priority, application France, Dec. 29, 1993, 93 15826
Int. Cl.[6] G21C *21/00;7/20*
U.S. Cl. 376—260 **6 Claims**



1. A method of manufacturing a guide tube for a control rod in a nuclear reactor fuel assembly, comprising the steps of: providing a tubular blank of substantially constant thickness; reducing the thickness of the blank over a fraction of its length lying in the range 70% to 90% while maintaining a constant inside diameter, and forming a section of the blank that has retained its original thickness inwardly to constitute a tube of constant outside diameter and variable thickness.

5,606,584

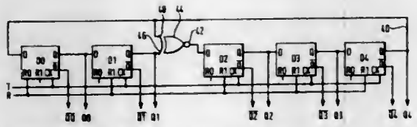
TIMING CIRCUIT

Robert Beat, Bristol, United Kingdom, assignor to SGS-Thomson Microelectronics Limited, Bristol, United Kingdom

Filed Aug. 25, 1995, Ser. No. 519,314
Claims priority, application United Kingdom, Aug. 26, 1994, 9417270
Int. Cl.[6] G06M *3/00*
U.S. Cl. 377—26 **24 Claims**

1. A timing circuit for timing a plurality of time periods, the timing circuit comprising:

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a timing pulse input for receiving timing pulses;

a set of state outputs each providing a logic state at one of two logic values, the logic values of the set of logic states changing at each timing pulse;

a plurality of timing outputs, each providing a signal at the expiry of a predetermined time period;

a resetting signal for resetting the timing circuit and for defining an initial set of logic states, characterised in that the set of logic states follows a first sequence of sets of logic values, beginning at the initial set of logic values, wherein all of the logic states within each set are at a first logic value except at least one logic state, which is at a second logic value, different state outputs carrying the excepted state(s) in each of the sets of logic values within the first sequence of sets of logic values;

a first timing signal generator for generating a first timing signal at one of said timing outputs to indicate the expiry of a first time period by detecting the first occurrence of the second logic values at a predetermined subset of said state outputs; and

a second timing signal generator for generating a second timing signal at another of said timing outputs to indicate the expiry of a second time period by detecting a predetermined combination of logic values at the set of state outputs.

5,606,585

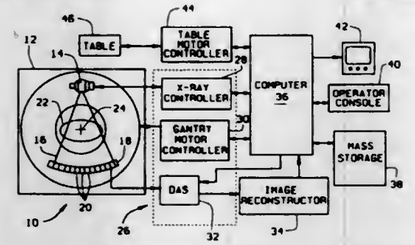
METHODS AND APPARATUS FOR MULTISLICE HELICAL IMAGE RECONSTRUCTION IN A COMPUTER TOMOGRAPHY SYSTEM

Hui Hu, Waukesha, Wis., assignor to General Electric Company, Milwaukee, Wis.

Filed Dec. 21, 1995, Ser. No. 576,765

Int. Cl.[6] A61B *6/03*

U.S. Cl. 378—15 **16 Claims**



7. A method for generating a modified weighting factor to be utilized in weighting projection data acquired in a multislice helical scan, said method comprising the steps of:

identifying a modified weighting factor based on a helical weighting factor, the helical weighting factor based on gantry angle and detector angle, and identifying the modified weighting factor comprising the step of shifting the helical weighting factor in the view angle direction, the modified weighting factor being dependent upon a detector row index; and

applying the modified weighting factor to the projection data.

5,606,586

X-RAY EXPOSURE METHOD AND APPARATUS AND DEVICE MANUFACTURING METHOD

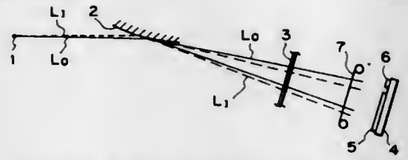
Mitsuaki Amemiya, Isehara; Yasuaki Fukuda, Hadano; Yutaka Watanabe, and Akira Miyake, both of Isehara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 120,341, Sep. 14, 1993, abandoned. This application Jul. 11, 1996, Ser. No. 678,784

Claims priority, application Japan, Sep. 14, 1992, 4-270973; Jun. 29, 1993, 5-159495; Jun. 30, 1993, 5-161789

Int. Cl.[6] G21K *5/00*

U.S. Cl. 378—34 **11 Claims**



1. An exposure method for transferring a pattern onto a substrate using synchrotron radiation, said method comprising:

directly measuring a luminous intensity distribution of the synchrotron radiation, by a radiation detector, at least in a predetermined area where the pattern is to be transferred;

determining a relationship between the luminous intensity distribution of the synchrotron radiation and an exposure amount distribution absorbed by the substrate, at least in the predetermined area where the pattern is to be transferred; and

effecting an exposure operation while controlling a dose amount for respective positions in the predetermined area using the determined relationship.

5,606,587

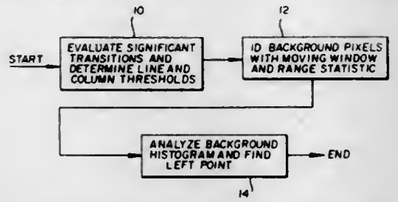
DETERMINATION OF DIRECT X-RAY EXPOSURE REGIONS IN DIGITAL MEDICAL IMAGING

Lori L. Barski, Mendon, and Robert A. Senn, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 21, 1996, Ser. No. 620,074

Int. Cl.[6] G01N *23/04*

U.S. Cl. 378—62 **13 Claims**



1. A method of determining direct x-ray exposure regions in digital medical imaging comprising the steps of:

providing a digital medical image including a matrix of lines and columns of pixels;

evaluating significant transitions in line and column profiles to determine appropriate line and column thresholds;

evaluating all pixels which exceed the line/column threshold for structure by computing the variation within a moving window using a range statistic;

accumulating within a histogram pixels which exceed a threshold for that particular line or column and which contain variation indicative of direct x-ray exposure; and

analyzing the background histogram to determine the beginning intensity or code value (left point) of the background region.

5,606,588

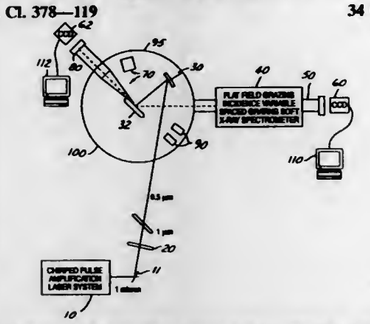
METHOD AND APPARATUS FOR GENERATING LASER PLASMA X-RAYS

Donald Umstadter; Jonathan Workman; Anatoly Maksimchuk, and Xinbing Liu, all of Ann Arbor, Mich., assignors to The Regents of the University of Michigan, Ann Arbor, Mich.

Filed Jul. 28, 1995, Ser. No. 508,482

Int. Cl.[6] H01J *35/22*

U.S. Cl. 378—119 **34 Claims**



1. A method for generating x-rays which comprises controlling pulse time duration of x-rays emitted from plasma-forming matter, said x-rays obtained by bombarding said matter with a laser beam to produce a plasma from which said x-rays are emitted, said method comprising the steps of:

a. generating a beam of one or more laser pulses;

b. adjusting the intensity of said laser pulse to obtain a desired intensity incident at a surface of said plasma-forming matter; and

c. directing said pulse onto said surface of said plasma-forming matter to generate said x-rays having pulse time duration which changes in proportion to a change in said incident laser pulse intensity.

5,606,589

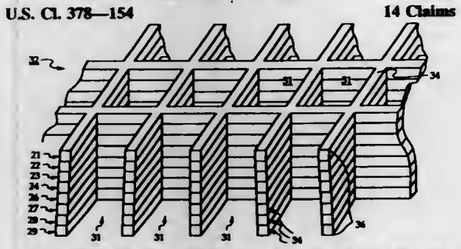
AIR CROSS GRIDS FOR MAMMOGRAPHY AND METHODS FOR THEIR MANUFACTURE AND USE

Anthony J. Pellegrino, New Fairfield; Daniel N. Lyke, New Milford, both of Conn.; David P. Lieb, Lexington; Joseph A. Buturlia, West Boxford, both of Mass., and Michael P. Appleby, Charlottesville, Va., assignors to Thermo Trex Corporation, San Diego, Calif.

Filed May 9, 1995, Ser. No. 438,172

Int. Cl.[6] G21K *1/00*

U.S. Cl. 378—154 **14 Claims**



1. An air cross grid shaped as a flat panel to be interposed between the image receptor and the patient's breast spanning the X-ray beam traveling from an X-ray source to the image receptor in an X-ray mammography machine, absorbing scattered secondary radiation while transmitting primary radiation traveling from the X-ray source toward the image receptor, characterized by

a first large plurality of closely spaced partition walls generally parallel to each other and arrayed across the width of the flat panel,

a second large plurality of closely-spaced partition walls generally parallel to each other and arrayed across the length of the flat panel in a direction substantially transverse to the first partition walls,

said transverse pluralities of partition walls intersecting each other at a large plurality of cross junctions and defining between themselves a large plurality of independent open air passages extending completely through the thickness of said flat panel,

said panel comprising a stacked plurality of metallic foil sheets bonded together forming a laminated integral stack,

each foil sheet having a large plurality of air passage openings extending therethrough defined by intersecting partition segments positioned to comprise the portions of said partition walls formed by that foil sheet,

the partition segments in each foil sheet being substantially aligned with the partition segments of the adjacent foil sheet in said stack at a focal point centrally located near one edge of said panel, and slightly offset in progressively increasing misalignment at progressively greater distances from said focal point,

said open air passages having central axes generally perpendicular to said panel and all converging at an X-ray source focus positioned on a line perpendicular to said panel passing through said focal point thereon,

whereby said bonded foil sheets form a sturdy, rigid air cross grid panel presenting said large plurality of unobstructed open independent air passages all having central axes converging at said source focus and said air passages thus all transmit therethrough primary radiation from said source focus to said image receptor without attenuation, while the intersecting metallic partition walls bounding said air passages absorb scattered secondary radiation traveling along paths not parallel to said converging central axes.

5,606,590

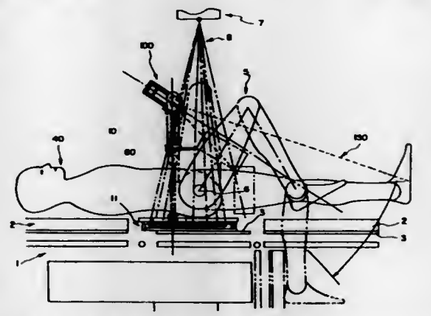
SURGICAL LASER BEAM-BASED ALIGNMENT SYSTEM AND METHOD

Thomas D. Petersen, 9680 Alto Dr., La Mesa, Calif. 91941, and Richard J. Harp, 2122 Subida Ter., Carlsbad, Calif. 92009

Filed Jan. 18, 1995, Ser. No. 375,425

Int. Cl.[6] A61B *6/08*

U.S. Cl. 378—177 **25 Claims**



1. A surgical alignment device, comprising:

a) a cassette holder adapted to be placed upon a patient supporting surface in underlying relation to a patient;

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b) a pair of straps attached to said cassette holder, said straps being adapted to fixedly fasten a patient to said cassette holder;

c) a rod on one side of said cassette holder extending generally vertically therefrom, said rod carrying a base, said base carrying a pointer adjustable thereon;

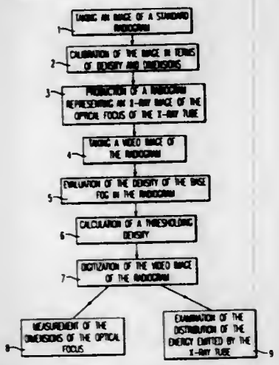
d) a bracket on said base for supporting a light beam generating device for generating a visible light beam, said bracket including adjustment means for adjusting orientation of said light beam generating device with respect to a patient, said light beam generating device generating a thin planar beam adapted to display an elongated line of visible light on a patient to permit determination of proper patient alignment for performance of surgery.

5,606,591

PROCEDURE FOR MEASURING THE DIMENSIONS OF THE OPTICAL FOCUS OF AN X-RAY TUBE

Etienne C. Montel, Vanves, and Veronique H. M. P. Prejean-Lefevre, Sceaux, both of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, Paris, France

Filed Dec. 15, 1995, Ser. No. 573,259
Int. Cl.[6] G01D *18/00*
U.S. Cl. 378—207 **5 Claims**



1. A method of measuring the dimensions of the optical focus of an X-ray tube, comprising the steps of:

(a) taking a first video image of a standard radiogram having regions of progressive and known different densities;

(b) producing a dimensional calibration curve for said first video image and also a density calibration curve;

(c) producing a radiogram representing an X-ray image of the optical focus of said X-ray tube;

(d) taking a second video image of said radiogram representing the X-ray image of said optical focus;

(e) determining the density of the base fog in said radiogram representing the X-ray image of said optical focus;

(f) calculating a threshold density and using said density calibration curve to determine the corresponding grey level in said second video image of said radiogram representing the X-ray image of said optical focus;

(g) digitizing said second video image at a threshold value equal to said grey level determined in step (f); and

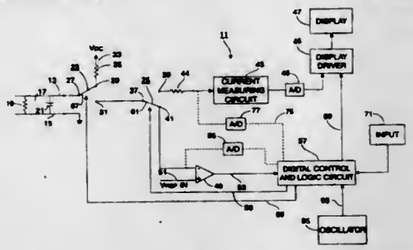
(h) measuring the dimensions of said optical focus of said X-ray tube from said digitized second video image by using said dimensional calibration curve.

5,606,592

METHOD AND APPARATUS FOR ANALYZING RESISTIVE FAULTS ON TELEPHONES CABLES

George G. Galloway, Mineral Wells, and Paul R. Siglinger, Weatherford, both of Tex., assignors to Industrial Technology, Inc., Mineral Wells, Tex.

Continuation of Ser. No. 78,593, Jun. 16, 1993. This application May 2, 1995, Ser. No. 432,667
Int. Cl.[6] H04M *1/24;3/08;3/22*
U.S. Cl. 379—30 **6 Claims**



1. A method of analyzing a resistive fault on a telephone conductor, comprising the steps of:

a) charging said telephone conductor to an initial charge, said step of charging said telephone conductor to an initial charge further comprises the step of charging said telephone conductor to an initial voltage;

b) after charging said telephone conductor to said initial charge, discontinuing the charging of said telephone conductor and floating said telephone conductor without a load for an amount of time; and

c) at the end of said amount of time, determining if any charge has leaked from said telephone conductor, wherein the leakage of charge from said telephone conductor indicates the presence of a resistive fault on said telephone conductor;

d) said step of determining if any charge has leaked from said telephone conductor further comprises the steps of determining the charge on said telephone conductor at the end of said amount of time and comparing said determined charge to said initial charge;

e) said step of determining the charge on said telephone conductor further comprises the step of determining the voltage on said telephone conductor; and

f) said step of comparing said determined charge to said initial charge further comprises the step of comparing said determined voltage to said initial voltage.

5,606,593

APPARATUS AND METHOD FOR AUTOMATICALLY RETURNING A TELEPHONE SET TO AN ON-HOOK CONDITION

David B. Smith, Hinsdale, Ill., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Nov. 18, 1994, Ser. No. 342,187
Int. Cl.[6] H04M *3/22;15/00;1/00;3/00*
U.S. Cl. 379—33 **3 Claims**

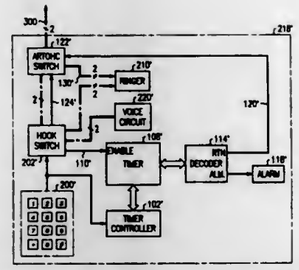
1. An apparatus for connection to a local telecommunication switch via a telephone line, comprising:

a timer;

a controller connected to the timer for setting a time period to be timed out by the timer;

a hook-switch having a terminal that is connected to the timer, the terminal changes state if the hook-switch goes to an off-hook position and enables the timer to begin timing out the time period;

a decoder connected to the timer to decode an output of the timer to determine that the time period has been timed out, the decoder having an output terminal that changes state when the time period has been timed out;



an automatic-return-to-an-on-hook-condition switch having switched terminals which are connected in series between the telephone line and the hook-switch, the automatic-return-to-an-on-hook-condition switch also has a control terminal which is connected to the decoder output, if the time period has been timed out, the decoder output controls the automatic-return-to-an-on-hook-condition switch to disconnect the hook-switch from the telephone line; and

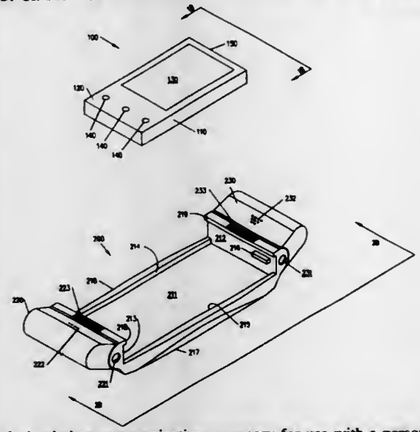
a user input device connected to said controller for setting the time period.

5,606,594

COMMUNICATION ACCESSORY AND METHOD OF TELECOMMUNICATING FOR A PDA

David S. Register, and Clint H. O'Connor, both of Austin, Tex., assignors to Dell USA, L.P., Austin, Tex.

Filed Jan. 27, 1994, Ser. No. 187,931
Int. Cl.[6] H04M *1/00;11/00;* **H04B** *1/38;1/08*
U.S. Cl. 379—58 **54 Claims**



1. A wireless communication accessory for use with a personal digital assistant (PDA), said PDA having a chassis of particular dimensions and input/output (I/O) circuitry on a front surface of said PDA chassis, said PDA chassis containing processing circuitry coupled to said I/O circuitry, said communication accessory comprising:

a body portion having an external surface adapted to removably receive said PDA chassis; and

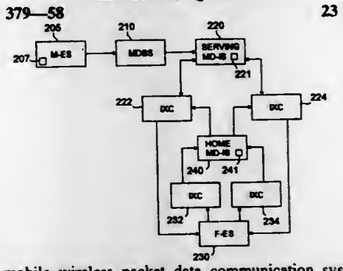
communications circuitry capable of being coupled to said processing circuitry in said PDA chassis when said PDA chassis is removably received by said external surface on said body portion, said communications circuitry including a communications transceiver capable of coupling said processing circuitry to remote processing circuitry via a communications link.

5,606,595

EQUAL ACCESS TO INTER-EXCHANGE CARRIERS IN A MOBILE WIRELESS PACKET DATA COMMUNICATION SYSTEM

Richard P. Ejzak, Wheaton, Ill., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Aug. 19, 1994, Ser. No. 293,274
Int. Cl.[6] H04Q *7/20*
U.S. Cl. 379—58 **23 Claims**



1. A mobile wireless packet data communication system for communicating in a connectionless manner comprising:

a mobile wireless end system, having a fixed home area, for sending and receiving data in a connectionless manner and which allows a subscriber to specify a preferred inter-exchange carrier for carrying data to and from said mobile wireless end system during a particular session;

a serving mobile data intermediate system for receiving from said mobile wireless end system information identifying said preferred inter-exchange system and for sending information identifying said preferred inter-exchange carrier to a home mobile data intermediate system associated with said mobile wireless end system;

a home mobile data intermediate system, which must be accessed before the subscriber is permitted to use services provided by said communication system, where said home mobile data intermediate system confirms the subscriber's preferred inter-exchange carrier for the particular session to the serving mobile data intermediate system; and

a plurality of inter-exchange carriers for transmitting data in a connectionless manner between components of said communication system,

wbere the serving mobile data intermediate system routes reverse traffic during the particular session via said preferred inter-exchange carrier;

and where the home mobile data intermediate system routes forward traffic during the particular session via said preferred inter-exchange carrier if the mobile wireless end system is located outside its fixed home area.

5,606,596

METHOD AND SYSTEM UTILIZING A POINTER STRATEGY TO LOCATE NOMADIC USERS IN A COMMUNICATION SERVICES SYSTEM

Ravi K. Jain, Morristown; Charles N. Lo, Madison, and Seshadri Mohan, Basking Ridge, all of N.J., assignors to Bell Communications Research, Inc., Morristown, N.J.

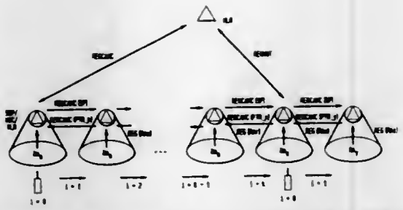
Division of Ser. No. 97,148, Jul. 26, 1993, Pat. No. 5,490,203. This application May 5, 1995, Ser. No. 435,571
Int. Cl.[6] H04Q *7/38*
U.S. Cl. 379—59 **6 Claims**

1. A method for locating nomadic users in a personal Commmunication Services (PCS) system having a plurality of registration area wherein each user is identified with a home database and each registration area is identified with a visiting database, the method comprising the steps of:

(a) collecting data based on the user's location in a first registration area obtained during a first PCS call to the user from a second registration area;

(b) storing the data in the home database;

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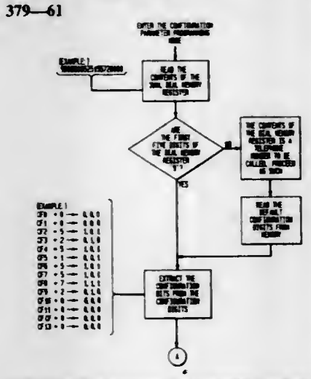
(c) detecting movement of the user from the first registration area to a third registration area;
(d) generating and storing a pointer in a visiting database identified with the first registration area, the pointer identifying the location of the user in the third registration area;
(e) detecting a second PCS call;
(f) retrieving the data from the home database based on the second PCS call to identify the first registration area;
(g) utilizing the data to access the pointer in the visiting database of the first registration area;
(h) utilizing the pointer to determine the user's correct current location in the third registration area; and
(i) generating routing data to route the second PCS call to the third registration area.

5,606,597

USER PROGRAMMABLE CONFIGURATION OF A TELEPHONE

Paul B. Newland, Middletown, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Apr. 25, 1994, Ser. No. 233,156
Int. Cl.[6] H04Q *7/32*
U.S. Cl. 379—61 **16 Claims**



1. A configuration parameter programming system comprising: means for storing configuration parameter data; means for inputting said configuration parameter data into the means for storing the configuration parameter data; and means for interpreting the configuration parameter,

wherein said means for storing said configuration parameter data is a single memory location dual dial memory register the memory register used for the dual purpose of providing a user an accessible storage medium for storing telephone configuration parameter data and dialing digits of a commonly called telephone number, said dual dial memory register comprising a first and second subset of user defined digits, the first subset comprising special sequence digits used to indicate how the second subset is to be used, the second subset comprising user defined digits interpreted as a commonly called telephone number or configuration digits depending on the special sequence,

wherein said means for storing said configuration parameter data comprises at least one of location specific configuration parameter data; user specific configuration parameter data; and cordless telephone specific configuration parameter data, and

wherein said at least one of location specific configuration parameter data; user specific configuration parameter data; cordless telephone specific configuration parameter data are user and manufacturer accessible and programmable without requiring equipment other than the equipment other than the equipment of said configuration parameter programing system, and

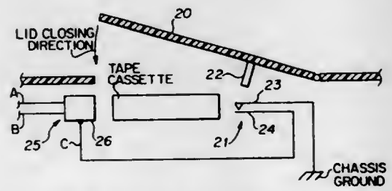
wherein said means for inputting said configuration parameter data into said means for storing the configuration parameter data is a keypad.

5,606,598

TELEPHONE ANSWERING DEVICE WITH DIRECT TELEPHONE LINE INTERFACE

Mark J. Karnowski, Garden Grove, and Stephen B. Knuth, Mission Viejo, both of Calif., assignors to Casio PhoneMate, Inc., Torrance, Calif.

Filed Nov. 24, 1992, Ser. No. 980,744
Int. Cl.[6] H04M *1/64;1/00*
U.S. Cl. 379—79 **37 Claims**



13. A telephone answering device comprising:

a power source for supplying electrical power to the telephone answering device, said power source comprising at least a user-replaceable battery which is connectable with battery terminals in an electrically insulating housing of said telephone answering device, one of said battery terminals being connected to chassis common ground, and said battery terminals being located in a recess which is arranged within an interior portion of said electrically insulating housing;

a message recording and playback unit, in said electrically insulating housing, for recording a message and for playing back a message, said message recording and playback unit comprising a tape recorder unit;

a line interface circuit in said electrically insulating housing, with direct transformerless connection to a telephone line; and

a controller, in said electrically insulating housing, for controlling said message recording and playback unit; and

wherein said tape recorder unit comprises:

a tape head having a metal casing and a magnetic member in said metal casing;

a tape cassette receiving opening in said electrically insulating housing of said telephone answering device;

an openable lid for selectively permitting access to an interior of said tape cassette receiving opening ;and

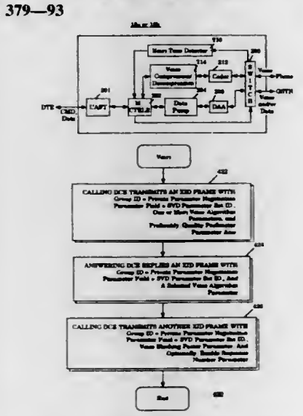
a switch coupled between said metal casing of said tape head and chassis common ground, said switch being operatively coupled to said lid such that said switch is closed when said lid is in a closed position to connect said metal casing of said tape head to chassis common ground, and said switch is opened to interrupt the connection of said metal casing of said tape head to chassis common ground when said lid is in an open position to permit access to said tape cassette receiving opening.

5,606,599

METHOD AND APPARATUS FOR AUTOMATICALLY CONVERTING FROM AN ANALOG VOICE MODE TO A SIMULTANEOUS VOICE AND DATA MODE FOR A MULTI-MODAL CALL OVER A TELEPHONE LINE

Barry O'Mahony, Banks, and Narjala Bhasker, Portland, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jun. 24, 1994, Ser. No. 265,314
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—93 **18 Claims**



4. An improved micro-controller of a data circuit terminating equipment (DCE), wherein the improvements comprise:

(a) first control logic for selecting a voice compression/decompression algorithm from a plurality of voice compression/decompression algorithms nominations contained in a first at least one information frame received from another DCE coupled to the DCE through an analog-loop telephone line, the first at least one information frame being transmitted from the other DCE to the DCE in accordance to a frame based transmission protocol that provides for a plurality of logical channels, the selected voice compression/decompression algorithm being used in association with a voice transmission protocol for subsequent transmission of voice between the two DCEs through one of the logical channels;

(b) second control logic for transmitting a second at least one information frame to the other DCE to inform the other DCE of the selected voice compression/decompression algorithm; and

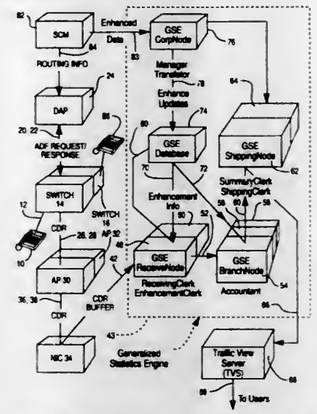
(c) third control logic for initializing the DCE to transmit voice to the other DCE in accordance to the voice transmission protocol using the selected voice compression/decompression algorithm and a voice blocking factor, responsive to receiving the voice blocking factor through a third at least one information frame from the other DCE.

5,606,600

GENERALIZED STATISTICS ENGINE FOR TELEPHONE NETWORK EMPLOYING A NETWORK INFORMATION CONCENTRATOR

Isaac K. Elliott; Richard D. Terpstra, both of Colorado Springs; James H. Richards, Monument; Phillip Catalano, Colorado Springs; Mark A. Campbell, Colorado Springs, and Timothy F. Uttormark, Colorado Springs, all of Colo., assignors to MCI Communications Corporation, Washington, D.C.

Filed May 10, 1995, Ser. No. 438,926
Int. Cl.[6] H04M *3/08;15/00;3/42;7/00*
U.S. Cl. 379—112 **7 Claims**



1. A system for selectively obtaining telephone network call statistics, comprising:

service control management means (SCM) for conveying routing information, regarding virtual phone numbers, to a data access point (DAP);

a adjunct processor (AP) for storing call records generated by an originating switch;

a network information concentrator for creating buffers for call detail records (CDRs) from an originating switch of the telephone network, the network information concentrator further including—

(a) a receiver section for receiving AP call records;

(b) a distributor section for identifying the type of record being processed;

(c) a match/merge section for merging the call records generated by various network elements handling a particular call, and forwarding the result as a matched record CDR buffer; and

(d) a send section to output the CDR buffer downstream of the network information concentrator;

a distributed processor serving as a generalized statistics engine and including—

(e) a receive node, receiving CDR buffers, for executing a first process that unbundles individual CDRs from received buffers, and a second process that checks each unbundled CDR against a look up table stored in a database for selecting the calls to be tracked by the system, the second process further obtaining from a database, preselected statistics for which tracked call counts are to be updated;

(f) a branch node for receiving decisional rules from the database and determining the existence of preselected statistical network events for each tracked call unbundled CDR, a count for the statistical network event being incremented upon determination of its occurrence;

(g) a shipping node for formatting statistical count information into a preselected message format;

(h) a corporate node having a first process for signaling the end of a statistic acquisition cycle for the receive node, the SCM further providing predetermined enhanced data,

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absent from an unbundled CDR, to the corporate node during a second process;

means for transferring updated enhanced data to the database from where it is further distributed to the receive node; and

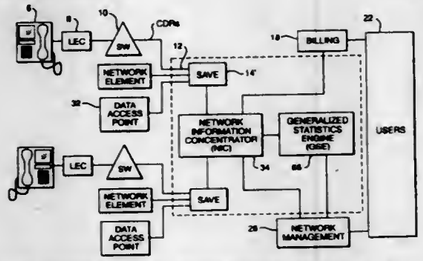
server means for receiving the statistical count information in the preselected message format and making the statistical count information available to downstream users.

5,606,601

CENTRALIZING STORAGE AND VERIFICATION ELEMENT FOR TELEPHONE NETWORK

Kevin R. Witzman, Monument; Isaac K. Elliott, Colorado Springs; Robert A. Smout, Divide; Arlene M. Plaza, and Richard A. Sostheim, both of Colorado Springs, all of Colo., assignors to MCI Communications Corporation, Washington, D.C.

Filed May 10, 1995, Ser. No. 438,913
Int. Cl.[6] H04M *3/08;15/00;3/42*
U.S. Cl. 379—113 **7 Claims**



1. In a telephone network having elements that generate network data in the form of (1) application data field (ADF) requests to data access points, requesting routing information for telephone calls, the data access points responding with application data field (ADF) records, a request and responding record constituting an ADF message pair; or (2) call detail records generated by network elements during a call, a storage and verification system (SAVE) comprising:

means for buffering the network data;

means for formatting the network data into data blocks, identified by corresponding sequence numbers;

means for buffering the blocks of network data and corresponding sequence numbers;

means for storing the network data blocks and corresponding sequence numbers;

interface means for providing bi-directional data communication between the SAVE and an external information concentration means;

a first input of the interface means connected to an output of the network data buffering means for transferring network data to the external information concentration means;

a second input of the interface means connected to an output of the storing means for retrieving network data when communication of such data to the external information concentration means is incomplete, and retransmission is requested by the external information concentration means; and

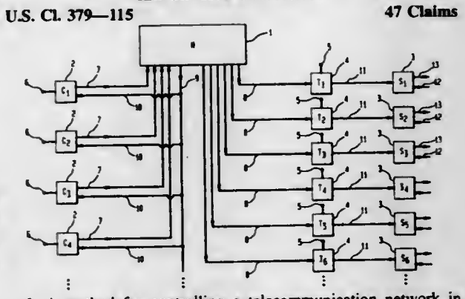
means connected between the storing means and the interface means for verifying the correctness of the requested data for retransmission, thus connecting only verified retransmitted network data to the interface means for retransmission to the external information concentration means.

5,606,602

BIDDING FOR TELECOMMUNICATIONS TRAFFIC

Jack J. Johnson, and William F. Coyle, both of Summit, N.J., assignors to Summit Telecom Systems, Inc., Summit, N.J.

Filed Nov. 6, 1995, Ser. No. 553,889
Int. Cl.[6] H04M *15/00;7/00*
U.S. Cl. 379—115 **47 Claims**



1. A method for controlling a telecommunication network in which a moderating computer collects economic incentive data from each carrier of a plurality of telecommunication carriers, processes the economic incentive data and distributes processed data to a plurality of telecommunications switches, each switch associated with an originating point, thereby enabling each telecommunication switch of the plurality of telecommunication switches to make an economic choice as to which carrier of the plurality of telecommunication carriers each call attempt presented to each telecommunication switch shall be routed, wherein the method comprises:

a. receiving in the moderating computer, economic incentive data specifying the economic incentive each carrier will place on a call from each originating point of a plurality of originating points to each terminating point of a plurality of terminating points, processing the economic incentive data to determine which of the economic incentive data correspond to a first originating point, and storing the economic incentive data in a data base of the moderating computer as first originating point data;

b. identifying a first set of telecommunication switches of the plurality of switches, each switch associated with the first originating point, and transmitting the first originating point data to each of the first set of telecommunication switches; and

c. transmitting the first originating point data to each carrier of the plurality of telecommunication carriers.

5,606,603

SYSTEM AND APPARATUS FOR RECORDING AND DISPLAYING RECEIVED INFORMATION AT A REMOTE LOCATION USING PREMISES RECORDING UNIT

Theodore Sizer, II, Little Silver, and Gregory A. Wright, Colts Neck, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

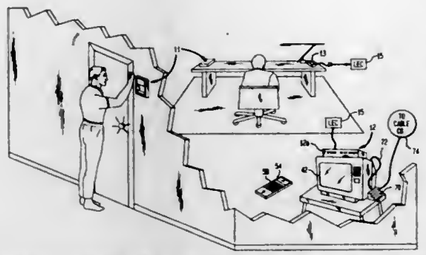
Filed Jan. 5, 1995, Ser. No. 369,064
Int. Cl.[6] H04M *15/00*
U.S. Cl. 379—142 **20 Claims**

1. A system for recording and displaying information received from a telephone network comprising:

premises recording means located within a premises for storing telephone information and messages received from a telephone network,

means for connecting said premises recording means to a telephone network,

said premises recording means further including wireless transmission means for generating and transmitting a packet of at least a portion of the telephone information and messages received from the telephone network, and



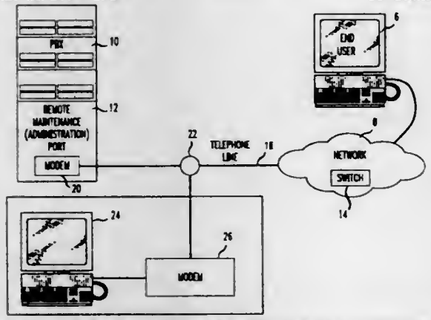
a packet receiver spaced distant from said premises recording means but within range of a packet transmitted from said wireless transmission means for receiving and storing said packet of telephone information and messages, said packet receiver including a display for displaying at least a portion of said packet of telephone information and messages, wherein said packet receiver is a size for placement in a compact location including the door jam of an entrance to the premises.

5,606,604

SYSTEM AND METHOD FOR PREVENTING FRAUD UPON PBX THROUGH A REMOTE MAINTENANCE OR ADMINISTRATION PORT

Roberta S. Rosenblatt, East Brunswick, and Joseph C. Lai, Metuchen, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 13, 1993, Ser. No. 166,414
Int. Cl.[6] H04M *1/66*
U.S. Cl. 379—198 **33 Claims**



6. A system for preventing the fraudulent use of a computer data system dial-up remote login facility, comprising:

a device for passively monitoring calling activity conducted through the dial-up remote login facility of the computer data system after call set-up has been completed between any remote end user of the computer data system and the computer data system;

a modem means for routing calling activity data to said device for passively monitoring without interfering with information transmission to and from said computer data system;

said device capable of distinguishing between authorized and unauthorized calling activity of any remote end user of the computer data system by comparing the monitored calling activity data with a set of conditions governing authorized and unauthorized uses of the computer data system; and

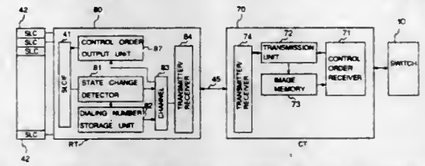
means for disconnecting an unauthorized call from the computer data system.

5,606,605

REMOTE SUBSCRIBER CONTROL SYSTEM OF A CENTRAL OFFICE DIGITAL SWITCHING SYSTEM

Saburo Inoue, and Yuzo Matsumoto, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Nov. 5, 1992, Ser. No. 972,005
Claims priority, application Japan, Nov. 7, 1991, 3-291590
Int. Cl.[6] H04M *3/00*
U.S. Cl. 379—334 **10 Claims**



1. A remote subscriber control system, provided between a switching system having a processor and a subscriber line interface circuit coupled to a plurality of remote subscriber terminals, for controlling communications between said remote subscriber terminals and said switching system, said remote subscriber control system comprising a remote subscriber side transmitter coupled to said subscriber line interface circuit, a switch side transmitter coupled to said switching system, and a digital transmission path connecting said remote subscriber side transmitter to said switch side transmitter so that multiplexed signals including speech signals and control signals are transmitted through said digital transmission path, wherein said remote subscriber side transmitter comprises:

state change detection means for detecting which remote subscriber terminal of said remote subscriber terminals has changed a state thereof and outputting a detection signal;

state storage means for storing state information indicating a state of each remote subscriber terminal;

dialing number storage means for storing a dialing number specifying a called terminal in response to the detection signal output from said state charge detection means; and

first transmitter/receiver means; and

wherein said switch side transmitter comprises:

control order receiving means for receiving control orders from said switching system;

said first transmitter/receiver means transmitting state information stored in said state storage means, as subscriber control information, and the dialing number stored in said dialing number storage means, to said switch side transmitter via said digital transmission path and receiving said control orders supplied from said switch side transmitter via said digital transmission path, each control order being information for controlling one of said remote subscriber terminals;

said remote subscriber side transmitter further comprising:

order output means for outputting a control order, received by said first transmitter/receiver means, to said subscriber line interface circuit;

said switch side transmitter further comprising:

output means for storing control orders received by said control order receiving means and for outputting the control orders in the same order in which the control orders were received by said order receiving means;

second transmitter/receiver means for transmitting the control orders, outputted from said output means, to said remote subscriber side transmitter via said digital transmission path and for receiving subscriber control information and the dialing number, supplied from said remote subscriber side transmitter via said digital transmission path; and

storage means for storing subscriber control information and the dialing number received by said second transmitter/receiver means, the subscriber control information and said dialing number stored being supplied to said processor of said switching system, said processor generating control orders based on said subscriber control information and said dialing number.

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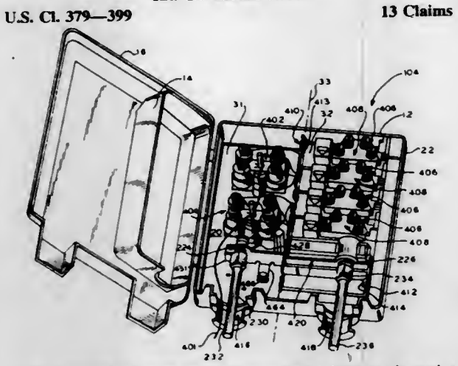
COMBINATION TELEPHONE NETWORK INTERFACE AND CABLE TELEVISION APPARATUS AND CABLE TELEVISION MODULE

Pina Schneider, Holmdel; Eric J. Hermsen, Howell; Frank S. Siano, Spotswood, and Avraham Tuvy, Oakhurst, all of N.J., assignors to Antec Corp., Rolling Meadows, Ill.

Continuation of Ser. No. 300,417, Sep. 2, 1994, abandoned, which is a continuation-in-part of Ser. No. 18,327, Feb. 16, 1993, Pat. No. 5,394,466. This application Jun. 14, 1996, Ser. No. 658,426

Int. Cl.[6] H04M *11/00*

U.S. Cl. 379—399 **13 Claims**



11. Combination apparatus for connecting at least one incoming telephone line to at least one telephone subscriber's line and for connecting incoming coaxial cable signals to a receiver of the coaxial cable signals, comprising:

telephone network interface apparatus for connecting at least one incoming telephone line to the at least one telephone subscriber's line, said telephone network interface apparatus including a telephone company compartment portion, a telephone subscriber compartment portion, first ground connecting means for connecting said telephone network interface apparatus to earth ground, first coaxial cable access means for permitting at least a first coaxial cable carrying the incoming coaxial cable signals to be inserted therethrough and into said telephone company compartment portion, and second coaxial cable access means for permitting at least a second coaxial cable connected to the receiver of the coaxial cable signals to be inserted therethrough and into said telephone subscriber compartment portion to carry the coaxial cable signals to the receiver;

coaxial cable module means mounted to said telephone network interface apparatus and including first and second module portions generally residing respectively in said telephone company compartment portion and said telephone subscriber compartment portion and said first and second module portions respectively disposed generally adjacent to and spaced from said first and second coaxial cable access means;

first coaxial cable connector means mounted to said module means and second coaxial cable connector means mounted to said module means, said first coaxial cable connector means for being connected to said first coaxial cable and said second coaxial cable connector means for being connected to said second coaxial cable;

interconnecting means interconnecting said first and second coaxial cable connector means to carry said incoming coaxial cable signals from said first coaxial cable connector means to said second coaxial cable connector means;

second ground connecting means for being connected to said first ground connecting means to connect said first and said second coaxial cable connector means to earth ground; and

mounting means for mounting said coaxial cable module means to said telephone network interface apparatus.

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TWO-WAY COMMUNICATIONS EARSET

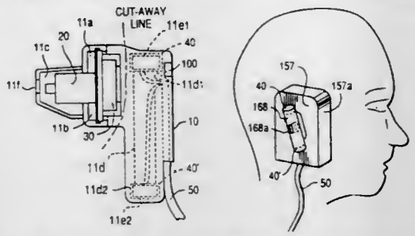
Noboru Yamaguchi, Yokohama, and Masao Konomi, Tokyo, both of Japan, assignors to Pan Communications, Inc., Tokyo, Japan

Division of Ser. No. 413,928, Mar. 30, 1995, Pat. No. 5,448,637, which is a continuation of Ser. No. 45,057, Apr. 9, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 459,878

Claims priority, application Japan, Oct. 20, 1992, 4-306453; Mar. 17, 1993, 5-082783

Int. Cl.[6] H04M *1/00*

U.S. Cl. 379—430 **3 Claims**



1. A one piece two-way simultaneous voice transmitting and receiving device comprising:

a receiver for emitting sound primarily to the ear canal of a user; and

a transmitter, coupled to the receiver, comprising:

a first microphone for sound pickup adapted to be located outside the ear canal at a first position relative to the mouth of the user and outputting a first signal; and

a second microphone for sound pickup spaced from the first microphone and adapted to be located outside the ear canal at a second position relative to the mouth of the user farther from the mouth of the user than the first position and outputting a second signal;

subtracting means, coupled to the first and second microphones, for subtracting one of the first and second signals from the other and for outputting a third signal with a degree of amplification; and

reducing means, coupled to the subtracting means, for reducing the degree of amplification of the third signal to a first extent if a sound level at said transmitter means is greater than a selected threshold and for reducing the degree of amplification of the third signal to a greater extent than the first extent when the sound level is less than the selected threshold.

5,606,608

CELLULAR PHONE SUPPORTING DEVICE

Gerald M. Krutke, 1423 Columbus Ave., Sheboygan, Wis. 53083

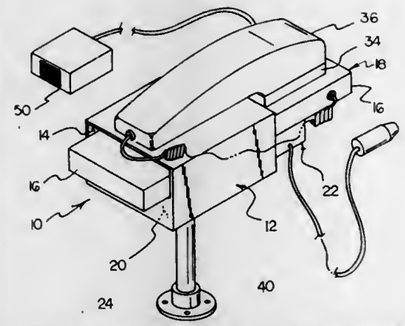
Filed Jul. 14, 1995, Ser. No. 502,380

Int. Cl.[6] H04M *1/00*

U.S. Cl. 379—446 **1 Claim**

1. A cellular phone supporting device comprising:

a housing having an upper compartment form receiving a main body of a cellular telephone, the housing being further shaped so as to define a lower compartment positioned beneath the upper compartment for receiving a battery pack of the cellular telephone; the housing including a top wall spaced from a bottom wall, with lateral walls extending between aligned lateral edges of the top and bottom walls, the housing further including a dividing wall secured to interior surfaces of the lateral walls and spaced between the top wall and the bottom wall so as to separate an interior of the housing into the upper compartment and the lower compartment, the upper compartment extending completely through the housing so as to



permit a projection of the main body of the telephone therethrough, the lower compartment of the housing including a rear wall extending between the dividing wall and the bottom wall so as to close an end of the lower compartment and precluding a sliding of the battery pack therethrough;

a support means extending from the housing for mounting the housing relative to a supporting surface, the support means comprising a base mount securable to a support surface; a support stanchion removably secured to the base mount and projecting upwardly therefrom to removably couple within the housing;

a pair of space channels mounted to an exterior surface of the bottom wall of the housing; a mounting plate slidably positioned between the spaced channels, the mounting plate being secured to the adjustable angle coupler to permit coupling at various angles, the mounting plate including angled lateral edges, with the spaced channels extending at an oblique angle relative to one another such that the mounting plate being received within the spaced channels and limited from sliding separation therefrom by an engagement of the angled lateral edges with the spaced channels.

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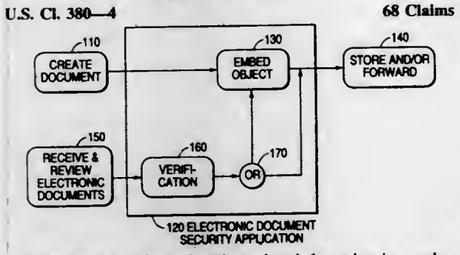
ELECTRONIC DOCUMENT VERIFICATION SYSTEM AND METHOD

Peter B. Houser, Poway, and James M. Adler, Ocean Beach, both of Calif., assignors to Scientific-Atlanta, Norcross, Ga.

Filed Sep. 19, 1994, Ser. No. 306,447

Int. Cl.[6] H04L *9/00*

U.S. Cl. 380—4 **68 Claims**



1. An apparatus for embedding select information in an electronic document, comprising:

an information assembler, responsive to a user's request, for assembling said select information into a predetermined format; and

an object embedder for embedding said select information and information for invoking a predetermined application for processing said select information in an electronic document.

5,606,610

APPARATUS AND METHOD FOR STORING DATA

Jan Johansson, Torslanda, Sweden, assignor to Anonymity Protection In Sweden AB, Sweden

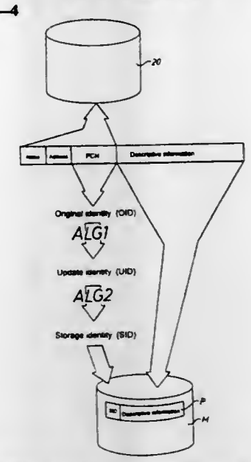
PCT No. PCT/SE94/00882, § 371 Date Jun. 28, 1995, § 102(e) Date Jun. 28, 1995, PCT Pub. No. WO95/15628, PCT Pub. Date Jun. 8, 1995

PCT Filed Sep. 23, 1994, Ser. No. 464,891

Claims priority, application Sweden, Nov. 30, 1994, 9303984

Int. Cl.[6] H04L *9/00*

U.S. Cl. 380—4 **21 Claims**



1. An apparatus for storing data comprising an original identity (OID) and associated descriptive information (DI), characterised by

a first encrypting means (**50**) which is arranged, by means of a first algorithm (ALG1), to encrypt the original identity (OID) to an update identity (UID),

a second encrypting means (**50**) which is arranged, by means of a reversible algorithm (ALG2), to encrypt the update identity (UID) to a storage identity (SID), which is to be stored along with associated descriptive information (DI) as a record (P) on a storage medium (**30**, **40**), and

a decrypting means (**50**) which is arranged, at times when the storage identities (SID) of selected stored records (P) are to be replaced with new storage identities (SID'), to decrypt these storage identities (SID) in order to recreate the corresponding update identities (UID),

the second encrypting means (**50**) being arranged, at said times and by means of an altered reversible algorithm (ALG2'), to encrypt the recreated update identities (UID) to new storage identities (SID'), which are to replace the previous storage identities (SID).

5,606,611

RECEIVING STATION MANAGEMENT APPARATUS

Yasumasa Kitada, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Dec. 27, 1994, Ser. No. 364,294

Claims priority, application Japan, Dec. 27, 1993, 5-333027

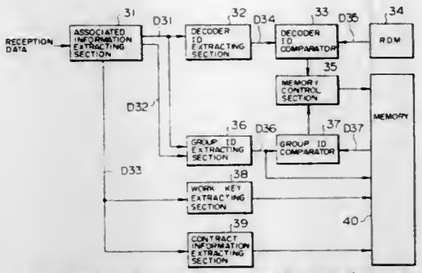
Int. Cl.[6] H04N *7/167*; H04L *9/00*

U.S. Cl. 380—10 **2 Claims**

2. A receiving station management apparatus including receiving stations for outputting images and sounds in accordance with received signals, each of said receiving units comprising:

an information extracting section for extracting information from received frame data;

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a group identification extracting section for extracting a group identification included in group information received upon reception of the group information, and outputting data of the group identification;

a work key extracting section for extracting a work key and outputting data of the work key;

a contract information extracting section for extracting contract information and outputting data of the contract information;

a memory for storing the group identification, the work key, and the contract information;

a group identification comparator for receiving an output from said group identification extracting section, reading out the group identification written in said memory of each of said receiving stations, comparing the two groups identification to determine whether the group identifications coincide with each other; and

a memory control section for receiving an output from said group identification comparator and controlling said memory, and for rewriting contents of said memory only when the group identification comparator indicates that the group identifications coincide with each other.

5,606,612

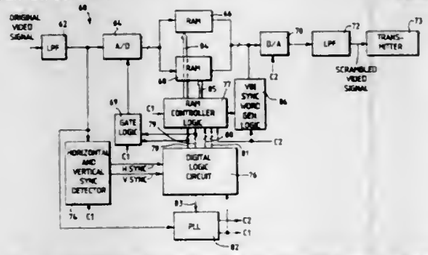
METHOD AND APPARATUS FOR TELEVISION SIGNAL SCRAMBLING USING A LINE EXPANSION TECHNIQUE

John T. Griffin; David Grubb, III, and Jeffrey S. Hamilton, all of Doylestown, Pa., assignors to General Instrument Corporation, Jerrold Communications Division, Hatboro, Pa.

Filed Jul. 25, 1994, Ser. No. 279,514

Int. Cl.[6] H04N 7/167

U.S. Cl. 380—14 **37 Claims**



36. An apparatus for transmitting a video signal having first and second time continuous components, comprising:

eliminating means for eliminating the first time continuous component from the video signal;

first sampling means for sampling the second time continuous component at a first rate to produce a plurality of time contiguous video samples;

expanding means connected to the sampling means for time expanding the plurality of time contiguous video samples by an expansion rate to produce a time expanded digital scrambled video signal;

first converting means for converting the time expanded digital scrambled video signal into an analog scrambled video signal at a second rate which is less than the first rate;

transmitting means for transmitting the analog scrambled video signal;

receiving means for receiving the transmitted analog scrambled video signal;

second sampling means connected to the receiving means for sampling the received analog scrambled video signal at the second rate to produce a digital scrambled video signal;

compressing means for time compressing the digital scrambled video signal by a compression rate dependent on the expansion rate to produce a time compressed digital video signal;

second converting means for converting the time compressed digital video signal into an analog video signal at the first rate; and

inserting means for inserting a replica of the first component into one of the time compressed digital video signal and the analog video signal to produce the video signal.

5,606,613

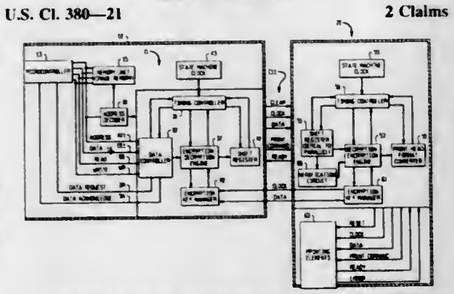
METHOD FOR IDENTIFYING A METERING ACCOUNTING VAULT TO DIGITAL PRINTER

Young W. Lee, Orange; Sungwon Moh, Wilton, and Arno Muller, Westport, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 22, 1994, Ser. No. 361,409

Int. Cl.[6] H04L 9/00

U.S. Cl. 380—21 **2 Claims**



2. A postage metering system having a postage meter remote from a digital printer used to print postage indicia, comprising:

said postage meter having a micro controller and encryption-decryption means for encrypting and decrypting data pursuant to an encryption key in response to command signals from said micro controller;

said digital printer having encryption-decryption means for encrypting and decrypting data pursuant to an encryption key in response to command signals from said micro controller;

communication means for communicating data between said postage meter and said digital printer;

said digital printer having means for generating a random number and causing said random number to be encrypted and causing said communication means to communicate said random number to said meter encryption-decryption means;

said micro controller having means for causing said meter encryption-decryption means to decrypt said random number and means for encoding said random number in a desired relationship and causing said meter encryption-decryption means to encrypt said encoded random number and said relationship and to cause said communication means to communicate said encoded random number and said relationship to said printer encryption-decryption means;

said digital printer having an encryption key manager means for generating a new encryption key, when desired, as a function of said random number and said relationship and for generating a token as a function of said random number and said relationship;

communication means for electronically communicating said token to said postage meter encryption key manager;

said postage meter having an encryption key manager means for generating an encryption key in response to said token; and

said printer encryption-decryption means having verification means for verifying said decrypted encoded random number and said relationship and enabling said digital printer if verification is successful.

5,606,614

PERSONAL IDENTIFICATION SYSTEMS

Patrick S. Brady, London; Michael J. Kenning; David A. Roberts, both of Suffolk; Robert E. V. Semos, Kent; Mark J. Stirland, and Richard B. Ward, both of Ipswich, all of England, assignors to British Telecommunications public limited company, London, England

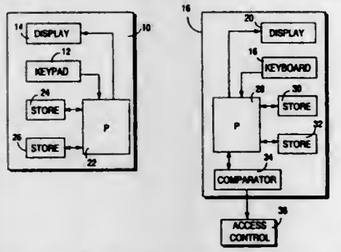
Continuation of Ser. No. 213,019, Mar. 15, 1994, abandoned.

This application Apr. 19, 1996, Ser. No. 635,281

Claims priority, application United Kingdom, Oct. 15, 1993, 9321357

Int. Cl.[6] H04L 9/32; G06K 5/00

U.S. Cl. 380—23 **19 Claims**



1. A user device for use in a personal identification system, the device comprising:

actuation means for providing a command signal upon actuation by a user;

a pointer store for storing a pointer;

a password store for storing a list of passwords;

means responsive to receipt of said command signal to retrieve a stored pointer from said pointer store, to retrieve a stored password from a location of said password store in accordance with the retrieved pointer and to increment the contents of said pointer store; and

means to provide the retrieved password to a verification computer of the system.

5,606,615

COMPUTER SECURITY SYSTEM

Brian K. Lapointe, 53 Jerdens La., Rockport, Mass. 01966, and James A. Lapointe, 43 Ledgewood Dr., Danvers, Mass. 01923

Filed May 16, 1995, Ser. No. 442,302

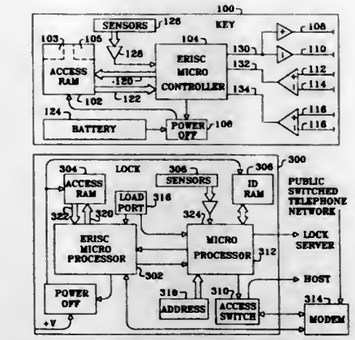
Int. Cl.[6] H04L 9/00

U.S. Cl. 380—25 **2 Claims**

1. A security device for a computer system, comprising:

A. a key having means for storing security codes therein in at least first and second locations;

B. means for communicating with a host computer lock for initiating the transmission to said key of a session address and a lock password;



C. means associated with said key for comparing said session address and said lock password with a lock password stored in said key and the location given by said session address;

D. means in said key responsive to matching said session address and said lock password for retrieving a key password and transmitting it to said host lock;

E. means at said host lock for comparing said second password and the location at which it is stored in said key with corresponding information in said lock and granting or denying access to the host based on the presence or absence of a match.

5,606,616

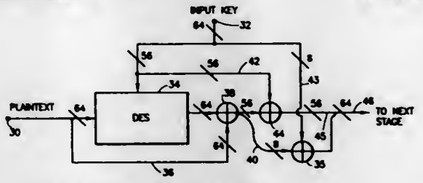
CRYPTOGRAPHIC APPARATUS WITH DOUBLE FEEDFORWARD HASH FUNCTION

Eric Sprunk, Carlsbad; Paul Moroney, Olivenhain, and Candace Anderson, Encinitas, all of Calif., assignors to General Instrument Corporation of Delaware, Chicago, Ill.

Filed Jul. 3, 1995, Ser. No. 497,880

Int. Cl.[6] H04L 9/00; 9/06

U.S. Cl. 380—29 **20 Claims**



1. Cryptographic apparatus comprising:

a cryptographic processor having a first input for receiving eight parallel bytes F_1–F_8 of first input data, a second input for receiving eight parallel bytes S_1–S_8 of second input data, and an output for outputting eight parallel bytes C_1–C_8 of ciphertext generated by cryptographically processing said first and second input data;

first means for processing said ciphertext and said first input data to produce a first ciphertext derivative comprising eight parallel bytes FD_1–FD_8; and

second means for processing said first ciphertext derivative and said second input data for outputting a second ciphertext derivative comprising eight parallel bytes SD_1–SD_8;

wherein:

said first means logically processes each of said ciphertext bytes C_1–C_8 with the like numbered first input data byte F_1–F_8 to produce said first ciphertext derivative; and

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said second means logically processes each of said first ciphertext derivative bytes FD_1–FD_8 with the like numbered second input data byte S_1–S_8 to produce said second ciphertext derivative.

5,606,617

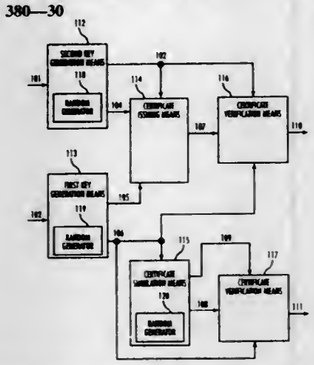
SECRET-KEY CERTIFICATES

Stefanus A. Brands, Ina Boudier-Bakkerlaan 143 (iii), XW Utrecbt, Netherlands

Filed Oct. 14, 1994, Ser. No. 321,855

Int. Cl.[6] H04L *9/30*

U.S. Cl. 380—30 **21 Claims**



1. Apparatus for implementing a cryptographic system in which a first party certifies a key pair of a second party, the apparatus comprising:

first key generation means that, on being given as input at least a security parameter, outputs a pair consisting of a secret key and a matching public key, to be used by the first party;

second key generation means that, on being given as input at least a security parameter, outputs a pair consisting of a secret key and a matching public key, to be used by the second party;

certificate verification means that, on being given as input the public key of the first party and a pair consisting of a public key and a presumed certificate on the public key, responds affirmatively or negatively, depending on whether the presumed certificate on the public key is a secret-key certificate on the public key or not;

certificate issuing means that, on being given as input the secret key of the first party and a pair consisting of the secret key and the public key of the second party, outputs a digital signature on the secret key of the second party, such that the digital signature is a secret-key certificate on the public key of the second party; and

certificate simulating means that, on being given as input the public key of the first party, outputs a pair consisting of a public key and a secret-key certificate on this public key,

where the probability distribution of the output of the certificate simulating means is substantially indistinguishable from the probability distribution that applies when the public key is generated by the second key generation means and the secret-key certificate is generated by the certificate issuing means.

5,606,618

SUBBAND CODED DIGITAL TRANSMISSION SYSTEM USING SOME COMPOSITE SIGNALS

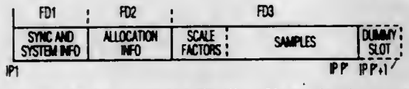
Gerardus C. P. Lokhoff, Eindhoven, Netherlands; Y. F. Dehery, Cedex, France; G. Stoll, and G. Theile, both of Munich, Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 997,158, Dec. 21, 1992, Pat. No. 5,323,396, which is a continuation of Ser. No. 532,462, Jun. 1, 1990, abandoned. This application Dec. 27, 1993, Ser. No. 173,850

Claims priority, application Netherlands, Jun. 2, 1989, 8901402; Feb. 13, 1990, 9000338

Int. Cl.[6] H04H *5/00; G10L 1/06*

U.S. Cl. 381—2 **6 Claims**



1. An encoder for encoding a plurality of input signals, comprising

steering means responsive to said plurality of input signals for generating at least one individual signal and a composite signal, said composite signal having a frequency spectrum in one frequency band, and said at least one individual signal having at least one respective frequency spectrum in a plurality of frequency bands excluding said one frequency band, said plurality of frequency bands respectively representing a corresponding one of said plurality of input signals within the plurality of frequency bands, and

control means responsive to said steering means for generating a steering control signal having at least one component relating to said frequency band of said composite signal.

5,606,619

CIRCUIT ARRANGEMENT FOR DERIVING A SIGNAL INDICATING NOISE IN A RECEIVED STEREO MULTIPLEX SIGNAL

Djahanyar Chahabadi; Matthias Herrmann; Lothar Vogt, all of Hildesheim, and Juergen Kaesser, Diekholzen, all of Germany, assignors to Blaupunkt-Werke GmbH, Hildesheim, Germany

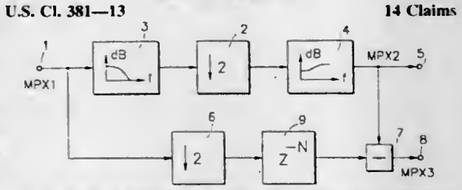
PCT No. PCT/DE94/00322, § 371 Date Feb. 13, 1995, § 102(e) Date Feb. 13, 1995, PCT Pub. No. WO94/22230, PCT Pub. Date Sep. 29, 1994

PCT Filed Mar. 22, 1994, Ser. No. 343,416

Claims priority, application Germany. Mar. 24, 1993, 43 09 518.6

Int. Cl.[6] H04H *5/00*

U.S. Cl. 381—13 **14 Claims**



1. A circuit arrangement for deriving a noise signal indicating noise in a digital stereo multiplex signal, comprising:

a first circuit for receiving the digital stereo multiplex signal at a first sampling rate, the first sampling rate being at least as great as a first predetermined rate, the first circuit including a low pass filter coupled to a first decimation circuit for generating a first output signal at a second sampling rate, the second sampling rate being lower than the first sampling rate and at least as great as a second predetermined rate;

a second circuit for receiving the stereo multiplex signal at the first sampling rate, the second circuit including a second decimation circuit for generating a second output signal at the second sampling rate; and

a subtractor circuit coupled to the first circuit and the second circuit for generating the noise signal as a function of the first output signal and the second output signal.

5,606,620

DEVICE FOR THE ADAPTATION OF PROGRAMMABLE HEARING AIDS

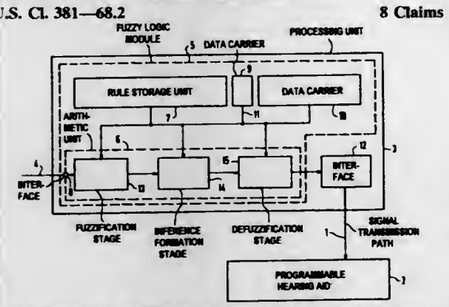
Oliver Weinfurtner, Erlangen, Germany, assignor to Siemens Audiologische Technik GmbH, Erlangen, Germany

Filed Feb. 24, 1995, Ser. No. 393,825

Claims priority, application European Pat. Off., Mar. 23, 1994, 94104617

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—68.2 **8 Claims**



1. A device for use with a programmable hearing aid for supplying operating parameters to the hearing aid to set the operation of the hearing aid, said device comprising:

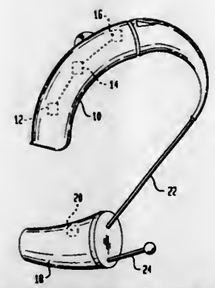
data processing means for developing a set of operating parameters for a programmable hearing aid matched to at least one of a hearing impairment of a user of the hearing aid and selected auditory conditions;

means for entering data into said data processing means characterizing said hearing impairment;

means for entering data into said hearing aid which identify operating characteristics of said hearing aid;

fuzzy logic means contained in said data processing means for operating on said data characterizing the hearing impairment and the data identifying operating characteristics of the hearing aid using a set of processing rules and applying fuzzy logic for producing setting data for said programmable hearing aid; and

means for establishing a signal transmission path from said data processing unit to said programmable hearing aid for supplying said setting data to said programmable hearing aid.



a completely-in-canal component, the completely-in-canal component being mechanically isolated from the behind-the-ear component, being shaped to fit into the ear canal of the patient in such a manner as to touch the bony portion of the ear canal, the completely-in-canal component containing a hearing aid receiver and being operatively connected to the amplifier means.

5,606,622

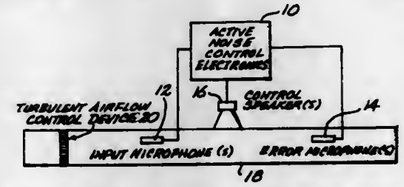
ACTIVE NOISE CONTROL IN A DUCT WITH HIGHLY TURBULENT AIRFLOW

Terry N. Christenson, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 29, 1994, Ser. No. 315,011

Int. Cl.[6] G10K *11/16*

U.S. Cl. 381—71 **3 Claims**



1. In combination in an active noise cancellation system in a duct having an input microphone, a control speaker, and an error microphone:

a turbulent airflow control device disposed upstream in said duct from said input microphone;

said input microphone and said error microphone having bullet shaped profiles;

the combination wherein said turbulent airflow control device comprises a perforated plate wherein a honeycomb section is attached to said perforated plate.

5,606,621

HYBRID BEHIND-THE-EAR AND COMPLETELY-IN-CANAL HEARING AID

James J. Reiter, Champlin, and Gordon Berkholcs, Minneapolis, both of Minn., assignors to Siemens Hearing Instruments, Inc., Piscataway, N.J.

Filed Jun. 14, 1995, Ser. No. 490,214

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—68.6 **3 Claims**

1. A hearing aid, comprising:

a behind-the-ear component, the behind-the-ear component being shaped to fit behind the ear of a patient and containing a microphone, battery receiving means and amplifier means, the amplifier means being operatively connected to the microphone and a battery received in the battery receiving means, and producing an amplified electrical signal in response to sound at the microphone; and

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5,606,623

OVERHEAD VEHICULAR LOUD SPEAKER CABINET

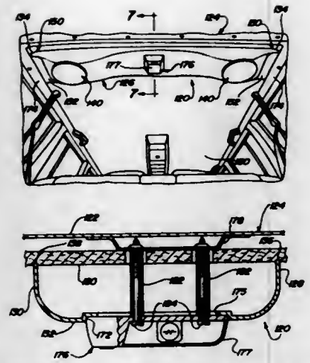
Jackson L. Bahm, III, Bloomfield Hills; Mark J. Bartlett, Lakeport, and Daniel K. Hinske, Canton, all of Mich., assignors to Top Source Technologies, Palm Beach Gardens, Fla.

Continuation of Ser. No. 59,824, May 7, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 462,782

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—86 **7 Claims**

1. A loud speaker cabinet assembly for interior, overhead attachment beneath the headliner portion in a motor vehicle having a roof and garnish moldings along the interior edges of the roof, said assembly comprising: housing means for disposition beneath the headliner, said housing means including a bottom face and two spaced ends; end mounting means on each of said ends for supporting said housing means beneath the headliner; a loud speaker



extending through said bottom face; an aperture in said bottom face generally midway between said ends; and fastener means received in said aperture for maintaining said housing means contiguous to the headliner; and a dome/cargo light assembly secured to said bottom face by said fastener means.

5,606,624

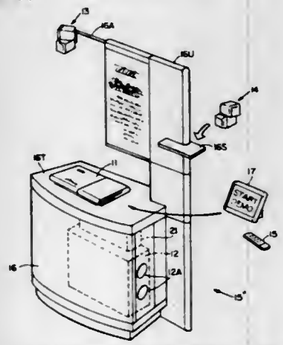
AUDIO APPARATUS DEMONSTRATING

Joseph A. Damato, Shrewsbury, Mass., assignor to Bose Corporation, Framingham, Mass.

Continuation-in-part of Ser. No. 61,202, May 13, 1993. This application Sep. 12, 1994, Ser. No. 304,794

Int. Cl.[6] H04R *1/02*

U.S. Cl. 381—90 **9 Claims**



1. Audio system demonstrating apparatus comprising,

an audio system to be demonstrated,

display structure supporting said audio system and a digital computer controller,

a CD-ROM coupled to said audio system and said digital computer controller having sound signals recorded thereon for audible reproduction by said audio system in response to selection signals furnished by said digital computer controller,

a start demonstration switch coupled to said digital computer controller, and

a proximity sensor for providing a signal to said digital computer controller when a person enters a predetermined zone around said apparatus to cause said computer controller to select a change in the recorded signal reproduced by said audio system from a first signal to a second signal which second signal encourages the person within said zone to actuate said start demonstration switch and initiate a demonstration of said audio system including audibly reproducing sound signals recorded on said CD-ROM.

5,606,625

DIGITAL CIRCUIT TO REGULATE THE GAIN OF AN AMPLIFIER STAGE

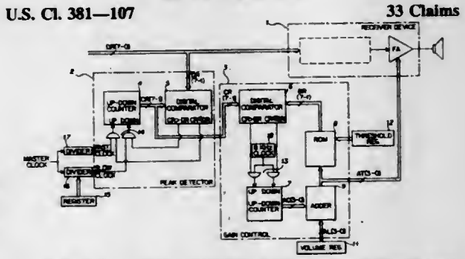
Carlo Dallavalle, Vimercate; Carlo Crippa, Merate, and Pierangelo Confalonieri, Canonica Diadda, all of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Filed May 26, 1994, Ser. No. 249,316

Claims priority, application European Pat. Off., May 31, 1993, 93830244.5

Int. Cl.[6] H03G *3/00*

U.S. Cl. 381—107 **33 Claims**



1. A digital circuit for controlling the gain of an amplifier stage of a coded signal receiving channel having at least one signal input terminal, at least one gain control terminal of the amplifier stage, and at least one output terminal for coupling to an electroacoustic device, the digital circuit comprising:

a digital peak detector coupled to the input terminal of the receiving channel through a coded signal rectifying circuit; and

a gain control stage including;

a memory containing coded peak values dependent on predetermined gain control values, the memory having an output;

a first digital comparator having at least first and second input terminals respectively connected to an output terminal of said digital peak detector and to the memory output;

first and second logic AND gate circuits, each having an input terminal connected to a clock signal generator and an output terminal;

a first up/down counter having first and second count select input terminals that are respectively coupled to the output terminals of the first and second logic AND gate circuits, said first up/down counter having at least one output terminal coupled to at least one address select input terminal of the memory and to said gain control terminal of the amplifier stage.

5,606,626

SPEAKER SYSTEM WITH AN ANION GENERATOR AND TELEVISION USING THE SPEAKER SYSTEM

Chan H. Kim, Daeku; Deog J. Lee, Kyungsangbook-do, and Kyong S. Hwang, Daeku, all of Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Continuation of Ser. No. 192,816, Feb. 7, 1994, abandoned. This application May 16, 1995, Ser. No. 437,836

Claims priority, application Rep. of Korea, Dec. 21, 1993, 1993/28796; Jan. 28, 1994, 1994/1568

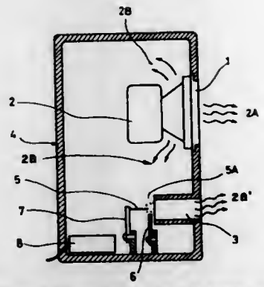
Int. Cl.[6] H04R *25/00;7/00;* H05K *5/00*

U.S. Cl. 381—159 **26 Claims**

1. A speaker system with an anion generator, comprising: a speaker provided at a predetermined position in a speaker box;

a sound output hole, provided at a front face of said speaker box, for outputting forwardly generated sound from the speaker to a forward direction;

a port, provided below said sound output hole, for outputting rearwardly generated sound from the speaker within said speaker box to the forward direction; and



anions generating means for generating anions such that sound pressure of the rearwardly generated sound from the speaker spreads said anions through said port.

5,606,627

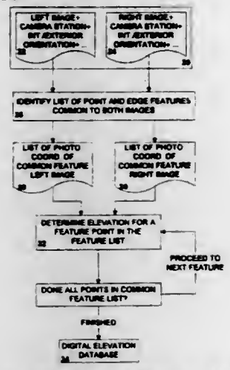
AUTOMATED ANALYTIC STEREO COMPARATOR

Shihjong Kuo, Slidell, La., assignor to Eotek Inc., Red Oak, Tex.

Filed Jan. 24, 1995, Ser. No. 378,257

Int. Cl.[6] H04N *13/00*

U.S. Cl. 382—154 **14 Claims**



1. A method of extracting topographic elevation from two partially overlapping images of terrain and two corresponding sets of airborne control data including respective camera stations, a set of camera parameters, respective roll angles, respective pitch angles, respective yaw angles, respective flight bearing angle, associated with each image stored in a random access memory device comprising the steps of:

(a) identifying point and edge features in both the left image and the right image of said pair of images,

(b) constructing a list of common features containing a first list of left photograph coordinates of common features in said left image and a second list of right photograph coordinates of common features in said right image,

(c) projecting a common feature point in said left image from a left camera station onto a horizontal plane at a height h above a reference Datum plane,

(d) calculating a first space coordinate of the projection of said common feature point onto said horizontal plane from said left image using the first set of airborne control data associated with said left image,

(e) projecting said common feature point in said right image from a right camera station onto said horizontal plane,

(f) calculating a second space coordinate of the projection of said common feature point onto said horizontal plane from said right image using the second set of airborne control data associated with said right image,

(g) calculating an object space parallax between said first space coordinate and said second space coordinate,

(h) estimating the true elevation h' of said common feature point from said object-space parallax, a base length, and the attitude of said left camera station,

(i) repeating the steps (c) and (d) where said feature point is projected onto a new horizontal plane at height h' above said reference Datum to obtain a best three dimensional space coordinate of said feature point at elevation h',

(j) repeating the steps (c) through (i) for each common feature point in said list of common features.

5,606,628

APPARATUS AND METHOD FOR GENERATING BIT-MAPPED PATTERNS OF PRINT CHARACTERS

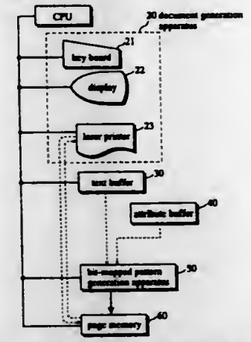
Yoshiyuki Miyabe, Osaka; Masaru Nakai, Moriguchi; Katsuyuki Morita, Ikeda; Taketo Yoshii, Amagasaki, and Mika Matsui, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 5, 1994, Ser. No. 349,394

Claims priority, application Japan, Dec. 6, 1993, 5-305495

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—183 **20 Claims**



1. An apparatus for generating a bit-mapped pattern by embedding embedding-patterns on and inside of outlines of a character to be printed by a printer, said apparatus comprising:

an outline bit-mapped pattern generation means for generating a bit-mapped pattern of outlines of a character, said bit-mapped pattern being expressed by x and y coordinates;

an embedding-pattern generation means for generating embedding-patterns which include predetermined information in a form of a bar code; and

an internal embedding means for embedding the embedding-patterns inside the bit-mapped pattern, the embedding patterns being embedded at every predetermined width in one of an x direction and a y direction, wherein said bar code includes information on any one of a position of a character on printing paper, a page of the printing paper, a title of a document containing the character, and a generator of the document.

5,606,629

FIGURE RECOGNITION APPARATUS

Takahisa Shirakawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 15, 1994, Ser. No. 340,384

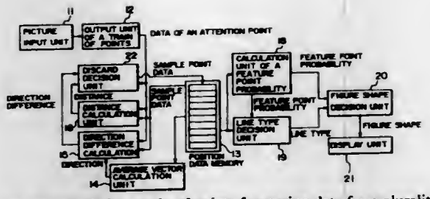
Claims priority, application Japan, Nov. 22, 1993, 5-313965

Int. Cl.[6] G06K *9/48*

U.S. Cl. 382—203 **10 Claims**

1. A figure recognition apparatus comprising:

a picture input unit for converting a figure of lines into electrical signals;



an output unit for a train of points for storing data for a plurality of points, said data at least including position coordinate data for a plurality of points representing said figure of lines in a memory, and for reading out the data for the plurality of points sequentially from said memory;

a position data memory for storing at least a predetermined number of sample points;

an average vector calculation unit for calculating an average value of directions for a predetermined number of sample point vectors stored in said position data memory, wherein a sample point vector is a vector starting from a sample point of attention and terminating at a sample point immediately following said sample point;

a direction difference calculation unit for calculating an absolute value of a direction difference between said average value of directions and a vector starting from a sample point most recently stored in said position data memory and terminating at an attention point, said attention point being defined as a point currently read out from said output unit of a train of points;

a discard decision unit for registering an attention point as a sample point in said position data memory when said direction difference of an attention point calculated by said direction difference calculation unit is larger than a predetermined first threshold value Dth1 and smaller than a predetermined second threshold value Dth2;

a calculation unit for calculating a feature point probability of each sample point stored in said position data memory, and for selecting feature points from sample points in accordance with said feature point probability;

a line type decision unit for deciding, for each feature point, whether a line segment between said feature point and a next feature point is a straight line segment or an arc of a circle; and

a figure shape decision unit for deciding a figure shape of said figure of line input from said picture input unit, in accordance with the output of said calculation unit of a feature point probability and said line type decision unit;

wherein said calculation unit determines feature point probability of a sample point of attention as an angle between two vectors, one vector of said two vectors starting from a newest sample point of sample points which are older than a sample point of attention having a distance larger than a predetermined value La, and terminating at said sample point of attention, the other vector of said two vectors starting from said sample point of attention and terminating at an oldest sample point of sample points which are newer than said point of attention having a distance larger than La.

5,606,630

PHOTOGRAPHED IMAGE REPRODUCING APPARATUS

Yukari Maeda, Osaka; Hiroaki Kubo, Kyoto, and Toshiyuki Tanaka, Amagasaki, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

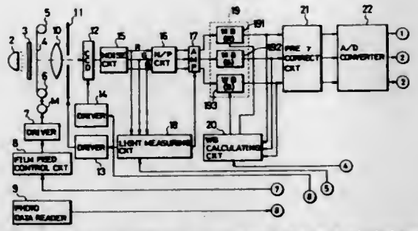
Filed Dec. 28, 1993, Ser. No. 174,354

Claims priority, application Japan, Dec. 28, 1992, 4-349443; May 25, 1993, 5-122879

Int. Cl.[6] G03B *35/00*

U.S. Cl. 382—254 **5 Claims**

1. An image reproducing apparatus for reproducing a photographed image recorded on a film, wherein the film carries a plurality of kinds of magnetically recorded photographic information about the photographed image, the apparatus comprising:



reproducing means for reproducing the photographed image recorded on the film;

reading means for reading the plurality of kinds of photographic information from the film;

determining means for determining the priority order of the plurality of kinds of photographic information; and

setting means for setting a correction for the photographed image based on the priority order determined by the determining means.

5,606,631

METHOD FOR DETECTING AND REMOVING ERRORS EXCEEDING A SPECIFIC CONTRAST IN DIGITAL VIDEO SIGNALS

Peter Weiss, Hägersten, and Björn Christensson, Bandhagen, both of Sweden, assignors to DV Sweden AB, Stockholm, Sweden

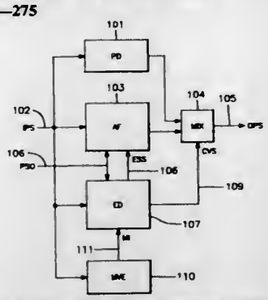
PCT No. PCT/SE93/00314, § 371 Date Oct. 13, 1994, § 102(e) Date Oct. 13, 1994, PCT Pub. No. WO93/21728, PCT Pub. Date Oct. 28, 1993

PCT Filed Apr. 8, 1993, Ser. No. 318,733

Claims priority, application Sweden, Apr. 13, 1992, 9201182

Int. Cl.[6] G06K *9/40;* **H04N** *5/21*

U.S. Cl. 382—275 **12 Claims**



1. A method for detecting and removing errors in pictures associated with a picture sequence in digital video signals, by using an error detector and an adaptive filter for continuous processing of pixels associated with said pictures, said method comprising the steps of:

comparing pixel intensities of corresponding pixels belonging to at least two of said pictures, using said error detector;

detecting, using said error detector, whether there is an error in one of said pictures, by determining whether there is a specific contrast, i.e. difference in pixel intensities, between corresponding pixels in said at least two pictures in said picture sequence;

determining, using said error detector, an error shape defined by a continuous picture domain wherein every pixel belonging to said continuous picture domain exhibits at least said specific contrast;

replacing, via said adaptive filter, an intensity of each pixel within said error shape with an intensity that is a mathematical function of pixel intensities of pixels within and outside said error shape; and

bypassing through said adaptive filter any pixels that are not included in said error shape.

5,606,632

DEVICE AND METHOD FOR REDUCING THE SIZE OF A COLOR IMAGE TO DISPLAY SEPARATE COLOR IMAGES SIMULTANEOUSLY ON A SCREEN

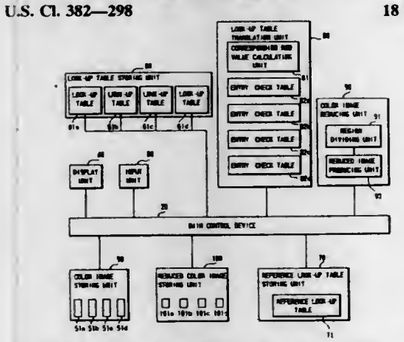
Hitoshi Matsumoto; Takahiro Kii; Seiki Shibata; Fumio Honda, and Hitomi Baba, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 68,125, May 27, 1993, abandoned. This application May 31, 1995, Ser. No. 455,724

Claims priority, application Japan, May 28, 1992, 4-137078

Int. Cl.[6] G06K *9/42*

U.S. Cl. 382—298 **18 Claims**



1. A device for reducing the size of an original color image as a reduced color image and expressing a plurality of reduced color images with predetermined colors simultaneously, each of the original and reduced color images comprising a plurality of pixels, each pixel having a respective pixel value, said device comprising:

look-up table storing means for storing a plurality of look-up tables, each of the look-up tables being prepared for a respective one of the original color images and for storing the table entry and a corresponding RGB value of each pixel of a corresponding original color image expressing same with the predetermined colors, a number of the plurality of look-up tables being equal to a number of the plurality of reduced color images and to a number of the original color images;

reference look-up table storing means for storing a reference look-up table having a number of reference table entries equal to a number of the pixel values, the reference look-up table storing the RGB values, as reference RGB values, assigned previously to corresponding table entries expressing the reduced color images with the predetermined colors;

look-up table translating means for calculating the reference RGB values closest to the RGB values of the look-up tables for creating entry check tables, each entry check table corresponding to one of the plurality of look-up tables and for use in translating the table entries of the look-up tables into the reference table entries;

color image reducing means for reducing a size of the original color images by accessing one of the entry check tables and generating the reduced color images, the reference RGB values being calculated and each entry check table being created before the size of the original color images is reduced; and

display means for displaying the reduced color images simultaneously on the screen reduced by said color image reducing means using the reference look-up table.

5,606,633

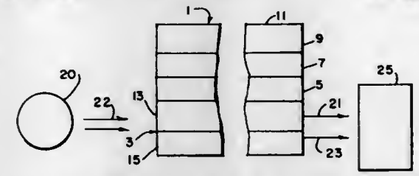
CHEMICAL DETECTOR EMPLOYING SURFACE PLASMON RESONANCE EXCITED USING AN OPTICAL WAVEGUIDE CONFIGURED AS AN ASYMMETRIC WAVEGUIDE COUPLER

Howard P. Groger, Gainesville; Martin Weiss, New Port Richey, both of Fla.; Peter Lo, Blacksburg, and Bruce L. Thomas, Radford, both of Va., assignors to American Research Corporation of Virginia, Radford, Va.

Filed Jun. 26, 1995, Ser. No. 495,764

Int. Cl.[6] G02B *6/10*

U.S. Cl. 385—12 **28 Claims**



1. A surface plasmon sensor apparatus comprising a waveguide, the waveguide having a low refractive index substrate and a high refractive index material deposited on the substrate, a low refractive index buffer layer positioned on the waveguide, a high refractive index tuning layer positioned on the buffer layer, a metallic layer positioned on the tuning layer, a light source for propagating light signals through the waveguide, and a detector for monitoring output signals from the waveguide.

5,606,634

DISPLAY UNIT FOR CONVERSION OF A LASER BEAM INTO VISIBLE AND INCOHERENT LIGHT

André LeBihan, des Chardonnerets, France, assignor to Commissariat a l'Energie Atomique, Paris, France

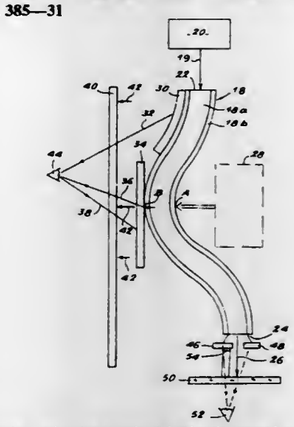
PCT No. PCT/FR94/01034, § 371 Date Mar. 4, 1996, § 102(e) Date Mar. 4, 1996. PCT Pub. No. WO95/06931, PCT Pub. Date Mar. 9, 1995

PCT Filed Sep. 2, 1994, Ser. No. 602,793

Claims priority, application France, Sep. 3, 1993, 93 10514

Int. Cl.[6] G02B *6/26;* **F21V** *7/04;* **G09F** *13/18*

U.S. Cl. 385—31 **12 Claims**



1. Display unit, characterized in that it comprises:

an optical waveguide for transmitting a laser beam,

at least one element for converting the laser beam into visible and incoherent light, said conversion element being placed in front of the optical waveguide and

at least one safety element placed in front of the said conversion element and which is transparent to the visible and incoherent

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light and able to stop the residual laser beam liable to emerge from the conversion element,

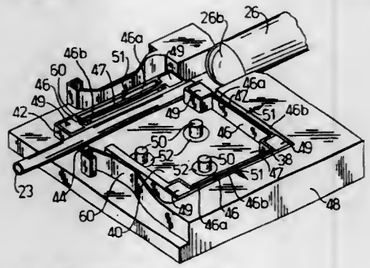
so that the visible and incoherent light can be observed through the safety element.

5,606,635

FIBER OPTIC CONNECTOR HAVING AT LEAST ONE MICROACTUATOR FOR PRECISELY ALIGNING AN OPTICAL FIBER AND AN ASSOCIATED FABRICATION METHOD

John M. Haake, St. Charles, Mo., assignor to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Jun. 7, 1995, Ser. No. 486,242
Int. Cl.[6] G02B *6/36*
U.S. Cl. 385—53 **29 Claims**



1. A fiber optic connector comprising:

a substrate;

a lens element disposed in a fixed relation to said substrate; and

at least one microactuator mounted on said substrate and adapted for relative movement therewith, said at least one microactuator including a carrier comprising:

a carrier body;

optical fiber holding means for receiving an optical fiber and for maintaining the optical fiber in a fixed position relative to said carrier body; and

at least one bimorphic actuator having first and second layers comprised of first and second different materials, respectively, wherein the first and second materials respond differently to electrical stimuli such that the first and second layers change in size in different manners, and wherein said bimorphic actuator is deflected by the electrical stimuli and urged against a portion of said substrate to thereby controllably move said carrier relative to said substrate from an initial position to an aligned position in which the optical fiber which is fixed in position relative to said carrier body is precisely aligned with said lens element.

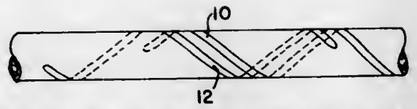
5,606,636

OPTICAL CABLE FOR AVOIDING DRY-BAND ARCING

Simon M. Rowland, Tarporley; Colin A. Platt, Neston, and John Richards, Liverpool, all of England, assignors to BICC Public Limited Company, London, England

PCT No. PCT/GB94/00860, § 371 Date Oct. 23, 1995, § 102(e) Date Oct. 23, 1995, PCT Pub. No. WO94/24596, PCT Pub. Date Oct. 27, 1994
PCT Filed Apr. 22, 1994, Ser. No. 537,795
Claims priority, application United Kingdom, Apr. 22, 1993, 9308361
Int. Cl.[6] G02B *6/44*
U.S. Cl. 385—101 **20 Claims**

1. An optical cable which comprises one or more optical fibres and an electrically insulating jacket, wherein the cable includes an array of elongate conductive elements each of which extends along a portion of the cable, adjacent conductive elements axially overlapping each other with overlapping portions thereof circumferentially spaced apart to form a composite conductive path that extends along the cable and is interrupted when the cable is dry, adjacent conductive elements being resistively coupled to each other when the surface of the cable is wet to form a continuous electrically conductive path along the cable.

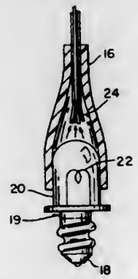


5,606,637

DECORATIVE FIBER OPTIC LIGHT FIXTURE AND METHODS OF MAKING SAME

Timothy S. Dolby, P.O. Box 991, Salida, Colo. 81201

Filed Jul. 21, 1995, Ser. No. 505,680
Int. Cl.[6] G02B *6/04*; F21V *7/04*
U.S. Cl. 385—115 **5 Claims**



I. A fiber optic light fixture, comprising:

a) a substantially conically-shaped tube having a cylindrically-shaped portion with a diameter and an open wide end, and a tapered portion having a tapered shape and being integral with, and extending smoothly and coaxially from, said cylindrically-shaped portion of said substantially conically-shaped tube; said tapered portion of said substantially conically-shaped tube having an open narrow end being displaced from, and narrower than, said open wide end of said cylindrically-shaped portion of said substantially conically-shaped tube;

b) a bundle of fiber optic strands having a first end passing through said open narrow end of said tapered portion of said substantially conically-shaped tube and entering coaxially into, and being in optical communication with, said tapered portion of said substantially conically-shaped tube; said at least one fiber optic strand further having a free second end displaced from said first end of said bundle of fiber optic strands;

c) a light bulb passing through said open wide end of said cylindrically-shaped portion of said substantially conically-shaped tube and entering coaxially into, and being in optical communication with, said cylindrically-shaped portion of said substantially conically-shaped tube, so that when said light bulb is illuminated light therefrom passes through said cylindrically shaped portion of said substantially conically-shaped tube into said tapered portion of said substantially conically-shaped tube where the light is concentrated without dispersion as a result of said tapered shape of said tapered portion of said substantially conically-shaped tube and directed to said bundle of fiber optic strands where the light is transmitted therealong to said free second end of said at least one fiber optic strand; said light bulb having a substantially cylindrically-shaped envelope with an outer diameter equal to said inner diameter of said cylindrically-shaped portion of said substantially conically-shaped tube, so that said light bulb can be easily slid out of, and slide into, said cylindrically-shaped portion of said substantially conically-shaped tube when replacement thereof is necessary without damage to said substantially cylindrically-shaped envelope of said light bulb; and

wherein said substantially conically-shaped tube is a heat shrink tubing subsequently to being shrunk to conform to said first end of said bundle of fiber optic strands and said substantially cylindrical-shaped envelope of said light bulb.

5,606,638

ORGANIC SCINTILLATOR SYSTEMS AND OPTICAL FIBERS CONTAINING POLYCYCLIC AROMATIC COMPOUNDS

Jacob R. Tymianski, and James K. Walker, both of Gainesville, Fla., assignors to Nanoptics Incorporated, Gainesville, Fla.

Filed Dec. 26, 1995, Ser. No. 579,636
Int. Cl.[6] G02B *6/16*
U.S. Cl. 385—143 **45 Claims**

1. A scintillator system for detecting incident penetrating radiation, comprising:

A) a scintillator composition for converting the incident penetrating radiation to visible light, comprising:

1) a matrix material; and dissolved therein,

2) a polycyclic aromatic compound which is an alkyl substituted naphthalene, aryl substituted naphthalene, or a compound containing at least three fused rings, wherein the polycyclic aromatic compound is present at about 5, or more, percent of the scintillator weight; and

3) 0 to about 3% of the scintillator weight of a fluorescent material; and

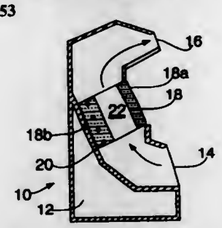
B) a detection system for recording the visible light.

5,606,639

STATIONARY CERAMIC GLASS ELECTRIC BASEBOARD HEATER

Michael C. Lehoe, P.O. Box 5781, Hauppauge, N.Y. 11788; James S. Lehoe, P.O. Box 314, Nesconset, N.Y. 11767, and James A. Lehoe, P.O. Box 41, Cabot, Vt. 05647

Filed Jan. 10, 1995, Ser. No. 370,690
Int. Cl.[6] F24D *19/04*
U.S. Cl. 392—353 **14 Claims**



1. An electric baseboard heater comprising:

a) a housing having a lower air inlet and an upper air outlet;

b) a ceramic glass block mounted in said housing between said lower air inlet and said upper air outlet, said ceramic glass block having at least one through hole for allowing air entering said lower air inlet to pass through said ceramic glass block and out of said upper air outlet;

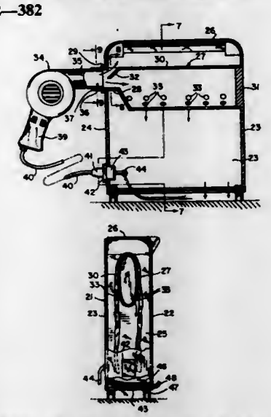
c) an electric heating element insert molded in said ceramic glass block.

5,606,640

TOWEL WARMING CABINET WITH HEATED AIR FROM ATTACHED HAIR DRYER CIRCULATING THROUGH TOWEL RACK AND DOWNWARDLY OVER THE TOWEL

Willard J. Murphy, 611 S. 22nd St., St. Cloud, Minn. 56301

Filed Nov. 21, 1995, Ser. No. 561,408
Int. Cl.[6] H05B *3/02*; F26B *9/00*
U.S. Cl. 392—382 **5 Claims**



1. An apparatus for warming articles such as a towel, comprising an outer cabinet including a pair of generally parallel side walls and a pair of end walls connecting said side walls together, a tubular rack extending generally horizontally between said end walls, said rack having an inlet end extending through one of said end walls, air supply means for supplying heated air to the inlet end of the rack, baffle means located adjacent said inlet end and extending inwardly of said rack for directing a portion of said heated air into an upper portion of said cabinet above said rack and for directing a second portion of said heated air into said rack, said article being draped over the rack with opposite sides of said article extending downwardly over the rack in spaced parallel relation, port means in the rack for discharging heated air from the rack into contact with the inner surface of the article draped on the rack, said second portion of the heated air flowing downwardly across the outer surface of said article, and vent means located in the lower portion of said cabinet for venting air from said cabinet, said rack including an upper tubular section and a lower tubular section communicating with said upper section, said upper tubular section having a greater horizontal width than the lower tubular section, said port means being disposed in said lower section, said article being spaced laterally from said port means, whereby heated air can freely be discharged from said port means into contact with the inner surface of said article.

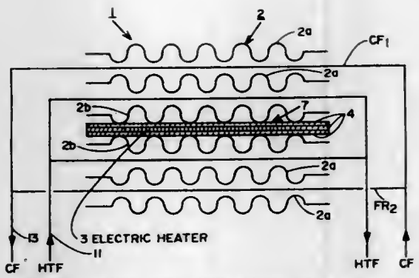
5,606,641

DEVICE FOR THERMAL REGULATION OF A CIRCULATING FLUID COMPRISING A STACKED CORRUGATED PLATE HEAT EXCHANGER WITH HEAT TRANSFER AND COOLING PATHS AND ELECTRICAL HEATING ELEMENT THEREBETWEEN

Joël Bucaille, 12 rue de la Croix Blanche, 27120 Jouy Sur Eure, France

Continuation of Ser. No. 146,055, Nov. 2, 1993, abandoned. This application Sep. 1, 1995, Ser. No. 522,854
Int. Cl.[6] F24H *1/12*; F28F *27/00*; *3/08*; G05D *23/19*
U.S. Cl. 392—495 **6 Claims**

1. A device, adapted for use with a source of cooling liquid and a source of electrical energy, for regulating the temperature of a fluid, said device comprising at least one elementary assembly, each elementary assembly, including, in combination:



a plurality of ribbed plates joined together into a stack;

a plurality of seals;

said ribbed plates and seals together defining a first circulation circuit for conducting a flow of said cooling liquid, said first circulation circuit being divided into two parallel sub-circuits each bounded by two ribbed plates;

said ribbed plates and seals also together defining a second circulation circuit for conducting a flow of said fluid, said second circulation being divided into two parallel sub-circuits each bounded by two ribbed plates;

an electrical heating element thermally coupled to both of the sub-circuits of said second circulation circuit, said heating element being positioned between two of the ribbed plates which bound the sub-circuits of said second circulation circuit;

each of the sub-circuits of said first circulation circuit being thermally coupled to a respective one of the sub-circuits of said second circulation circuit through one of the ribbed plates which bound that respective sub-circuit;

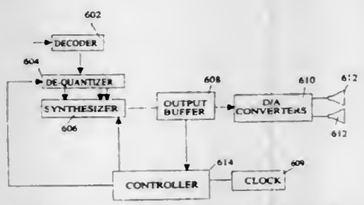
whereby said fluid may absorb heat from said electric heating element and deliver heat to said source of cooling liquid as necessary for the temperature regulation thereof.

5,606,642

AUDIO DECOMPRESSION SYSTEM EMPLOYING MULTI-RATE SIGNAL ANALYSIS

John P. Stautner, Wellesley Hills; William R. Morrell, Somerville, and Sriram Jayasimha, Boston, all of Mass., assignors to Aware, Inc., Bedford, Mass.

Division of Ser. No. 948,147, Sep. 21, 1992, Pat. No. 5,408,580.
This application Sep. 16, 1994, Ser. No. 307,331
Int. Cl.[6] G10L *7/04*
U.S. Cl. 395—2.14 **5 Claims**



1. An audio decompression apparatus for generating a first time domain audio signal comprising a first set of time domain audio signal values from a plurality of sets of first frequency components, each said first frequency component representing the average amplitude of said time domain audio signal in a corresponding frequency band over a corresponding time period, said apparatus comprising:

means for receiving a compressed audio signal comprising said sets of first frequency components, the number of frequency components in each said set being M;

synthesis means for generating M time domain audio signal values from each said received set of first frequency components, said synthesis means comprising means for generating 2M polyphase components from said set of first frequency components; means for generating a W entry array from said polyphase phase components, and multiplying each entry in said array by a corresponding weight value derived from a prototype filter;

FIFO buffer means for storing said time domain audio signal values and for outputting the same to a D/A converter, said FIFO buffer means further comprising level indicator means for generating a signal indicative of the number of time domain audio signal values stored therein;

clock means for controlling the rate at which said FIFO buffer means outputs said time domain audio signal values; and

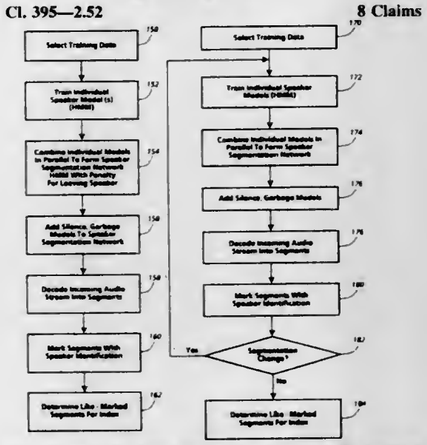
control means responsive to said level indicator means for causing said synthesis means to generate an approximation to said time domain audio signal values if said indicator means indicates that the number of time domain samples stored in said FIFO buffer means is less than a first predetermined value, said approximation requiring a lower number of computations than would be required to generate said time domain audio signal values.

5,606,643

REAL-TIME AUDIO RECORDING SYSTEM FOR AUTOMATIC SPEAKER INDEXING

Vijay Balasubramanian, Princeton, N.J.; Francine R. Chen; Philip A. Chou, both of Menlo Park, Calif.; Donald G. Kimber; Alex D. Poon, both of Mountain View, Calif.; Karon A. Weber, San Francisco, Calif., and Lynn D. Wilcox, Portola Valley, Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 12, 1994, Ser. No. 226,580
Int. Cl.[6] G01L *9/00*
U.S. Cl. 395—2.52 **8 Claims**



1. A processor controlled system for electronically indexing audio data being recorded in real time, said audio data comprising speech from a plurality of individual speakers, the processor controlled system electronically indexing the audio data according to speaker, the system comprising:

a training data source for providing spectral feature training data for each of the plurality of individual speakers;

a system processor for receiving the training data and producing a speaker model for each of the plurality of individual speakers, each speaker model having an associated speaker identifier, said system processor further combining said speaker models into a speaker network;

an audio input system for providing real time audio data comprising speech from the plurality of individual speakers;

an audio processor for receiving said audio data and converting said audio data into spectral feature data;

a recording device for receiving said audio data and recording said audio data on a storage medium according to a received time;

memory for storing data, the data stored in the memory including instruction data indicating instructions the processor executes;

said system processor further accessing the data stored in the memory;

said system processor, in executing the instructions, receiving said spectral feature data from said audio processor and, using said speaker network, determining segments of said audio data which correspond to different individual speaker models;

said system processor further determining at the start of each segment a timestamp, said timestamp corresponding to the received time for that segment on said storage medium, said system processor storing said timestamp in said memory;

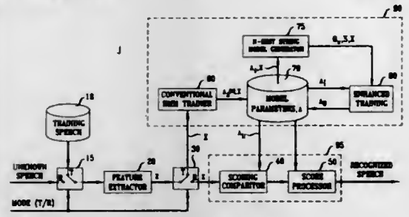
said system processor further storing said speaker identifier of said individual speaker model for each segment in said memory in conjunction with said storage medium location address for that segment.

5,606,644

MINIMUM ERROR RATE TRAINING OF COMBINED STRING MODELS

Wu Chou, Berkeley Heights; Bling-Hwang Juang, Warren, and Chin-Hui Lee, New Providence, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 96,142, Jul. 22, 1993, abandoned.
This application Apr. 26, 1996, Ser. No. 638,408
Int. Cl.[6] G10L *5/06;9/00*
U.S. Cl. 395—2.52 **21 Claims**



20. A speech recognition system comprising:

a. a feature extractor for receiving an unknown speech signal and generating feature signals characterizing the unknown speech signal;

b. a memory for storing a plurality of sets of speech recognition models, one or more of the speech recognition models generated in accordance with a process of

modifying parameters of predetermined speech recognition models to enhance the probability that a correct string model will have a rank order higher than one or more confusable string models,

wherein each of at least two of said sets of speech recognition models corresponds to different characteristics of speech and wherein said confusable string models are models which, if selected to represent a training speech utterance, would result in a misrecognition of the training speech utterance,

and wherein the modification of said parameters is based on a comparison of a likelihood of correctly recognizing a training speech utterance and a likelihood of incorrectly recognizing the training speech utterance, the likelihood of correctly recognizing the training speech utterance based on a first scoring signal and the likelihood of incorrectly recognizing the training speech utterance based on one or more second scoring signals,

the first scoring signal generated based on the training speech utterance and a string model for that utterance, the string model for the utterance comprising a plurality of said speech recognition models from said at least two of said sets of said speech recognition models, and

each of the second scoring signals generated based on the training speech utterance signal and one of said confusable string models; and

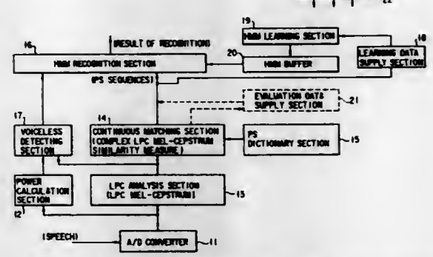
c. a scoring processor, coupled to the feature extractor and the memory, for comparing a string model with features of the unknown speech signal, the string model comprising one or more of said speech recognition models from each of the plurality of said sets of speech recognition models, and for recognizing the unknown speech signal based on one of a plurality of string models which most closely compares with the features of the unknown speech signal.

5,606,645

SPEECH PATTERN RECOGNITION APPARATUS UTILIZING MULTIPLE INDEPENDENT SEQUENCES OF PHONETIC SEGMENTS

Hiroshi Matsuura, Kamakura, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 843,117, Feb. 28, 1992, abandoned.
This application Feb. 8, 1994, Ser. No. 193,636
Int. Cl.[6] G10L *5/06;9/00*
U.S. Cl. 395—2.65 **12 Claims**



1. A pattern recognition apparatus comprising:

analyzing means for analyzing a learning pattern and obtaining feature parameters;

dictionary means for storing a relationship between predetermined feature parameters and phonetic segments (PSs),each said PS being a unit having a predetermined one meaning phonetically;

means for obtaining PS sequences estimated to correspond to the feature parameters obtained by said analyzing means based on the relationship stored in said dictionary means, said means obtaining a first sequence of the PSs that are most analogous to the feature parameters, through an nth sequence, the nth sequence being less analogus to the feature parameters than the first sequence, where n is an integer greater than 1;

supply means for supplying the obtained first through nth PS sequences as independent learning PS sequences, respectively; and

learning means for learning the first through nth PS sequences supplied from said supply means as PS sequences corresponding to said learning pattern.

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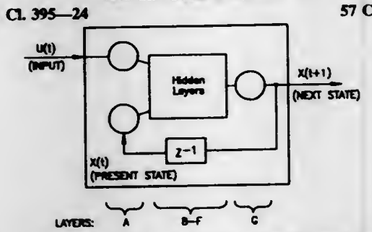
RECURRENT NEURAL NETWORK-BASED FUZZY LOGIC SYSTEM

Emdadur R. Khan, San Jose, and Faith A. Unal, Sunnyvale, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 36,634, Mar. 24, 1993. This application Jun. 24, 1994, Ser. No. 265,194

Int. Cl.[6] G06E *1/00;3/00*

U.S. Cl. 395—24 **57 Claims**



1. A neural network-based, fuzzy logic finite state machine comprising:

a neural network which includes a plurality of signal ports for receiving a plurality of input signals, including an external input signal and a present state signal, and providing in accordance therewith a next state signal; and

a feedback path, coupled to multiple ones of said plurality of signal ports, for receiving and time-delaying said next state signal to provide said present state signal.

5,606,647

LASER MARKING DEVICE FOR CONTINUOUS MARKING AND FOR COMPENSATING FOR INERTIAL FORCE OF OPTICAL SCANNING DEVICES

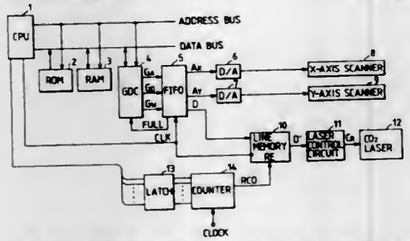
Hiroyasu Hasebe, Hyogo; Makoto Sakai, and Katsuhiko Yasui, both of Osaka, all of Japan, assignors to Keyence Corporation, Osaka, Japan

Filed Dec. 7, 1994, Ser. No. 351,529

Claims priority, application Japan, Dec. 8, 1993, 5-065567 U

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—107 **9 Claims**



4. A laser marking device for describing geometric forms, including at least one graphic element, on a surface that is being irradiated with a laser light using two-dimensional scanning, said device comprising:

a laser source;

scanning optics for deflecting the laser light from said laser source; and

a control system for controlling the ON/OFF operation of said laser source and the deflecting operation of said scanning optics based on graphic data for each graphic element of the geometric form, said control system further comprising,

a delay means by which a control signal for controlling the ON/OFF operation of said laser source is delayed to substantially correspond with a delay time in the mechanical response of the scanning optics, due to inertia of the scanning optics, to a deflecting command sent to said scanning optics, to coordinate the operation of said laser source with the scanning optics.

5,606,648

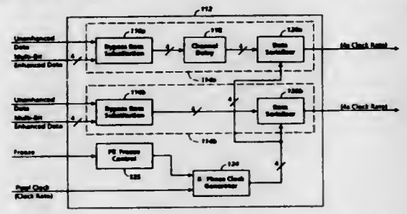
APPARATUS AND METHOD FOR MODULATING IMAGE SIGNALS IN A HIGH ADDRESSABILITY PRINTING MACHINE

Lawrence E. Walther, Macedon; Isaak Rivshin, Pittsford, and Leon C. Williams, Walworth, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 8, 1994, Ser. No. 352,404

Int. Cl.[6] G06K *15/02;15/14;* **H04N** *1/405;1/29*

U.S. Cl. 395—107 **28 Claims**



1. A printing system for printing an image on a substrate, the image being represented by a set of words with each word being modulated so as to produce a single bit stream, each of the words including M bits, comprising:

a multi-phase clock generator, responsive to a clock signal with a first clock rate, for producing N phase signals;

a data serializer, communicating with said multi-phase clock generator, for receiving the N phase signals and the word set, said data serializer processing each word of the word set, with the N phase signals, to produce the single bit stream, the single bit stream being outputted at a second clock rate with the second clock rate being greater than the first clock rate; and

a print engine communicating with said data serializer and receiving the single bit stream, said print engine imaging the image on the substrate.

5,606,649

METHOD OF ENCODING A DOCUMENT WITH TEXT CHARACTERS, AND METHOD OF SENDING A DOCUMENT WITH TEXT CHARACTERS FROM A TRANSMITTING COMPUTER SYSTEM TO A RECEIVING COMPUTER SYSTEM

Kuang-Cheng Tai, Taipei Hsien, Taiwan, assignor to Dynalab, Inc., Taipei, Taiwan

Filed Sep. 8, 1995, Ser. No. 525,908

Int. Cl.[6] C06K *15/00*

U.S. Cl. 395—110 **22 Claims**

1. A method of encoding a document with text characters, comprising the steps of:

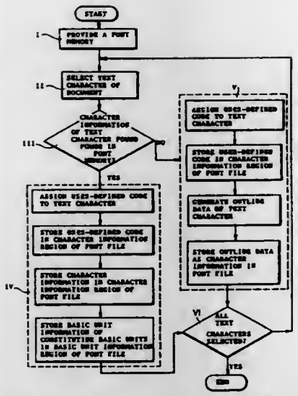
(a) providing a font memory with a first memory region for storing a plurality of basic unit information and a second memory region for storing a plurality of character information;

(b) selecting a text character of the document;

(c) if it is determined that the character information corresponding to the selected text character is found in the font memory:

(c1) assigning a corresponding user-defined code to the selected text character, and storing the corresponding user-defined code in a character information region of a font file;

(c2) storing the character information corresponding to the selected text character in the character information region of the font file; and



(c3) storing the basic unit information of the constituting basic units that constitute the selected text character in a basic unit information region of the font file; and

(d) repeating steps (b) and (c) for succeeding ones of the text characters of the document until the character information of all of the text characters of the document have been stored in the font file.

5,606,650

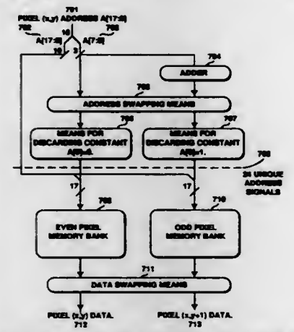
METHOD AND APPARATUS FOR STORAGE AND RETRIEVAL OF A TEXTURE MAP IN A GRAPHICS DISPLAY SYSTEM

Michael W. Kelley, San Mateo, and Stephanie L. Winner, Santa Clara, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 51,471, Apr. 22, 1993. This application Jun. 7, 1995, Ser. No. 477,276

Int. Cl.[6] G06T *11/40*

U.S. Cl. 395—130 **25 Claims**



14. A computer system having a texture map circuit, said texture map circuit comprising:

a memory operative to store a plurality of texture maps, said memory having an N bit address input, each texture map of said plurality of texture maps being in modified MIP map form, said memory operative to store corresponding pages between said plurality of texture maps at contiguous memory addresses;

an address circuit having a pixel address input and an address output, wherein said address output is coupled to said address input, said address output operative to output L addresses responsive to receiving a pixel identifier for said address input and said pixel address input.

5,606,651

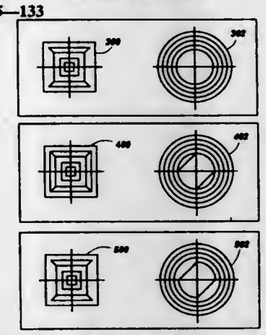
PROCESS FOR MERGING CAD VECTOR FILES AND AUTOMATICALLY REMOVING DUPLICATE AND OBSOLETE PATTERNS

Jerry R. Brown, Gardiner, and Paul J. Rich, Hyde Park, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 269,858, Jun. 30, 1994. This application Apr. 2, 1996, Ser. No. 630,723

Int. Cl.[6] G06T *11/00*

U.S. Cl. 395—133 **18 Claims**



1. A process for merging computer-aided-design (CAD) drawing files, comprising the steps of:

(a) providing an original drawing file having at least one original drawing entity;

(b) assigning a first attribute to the original drawing entity;

(c) providing a modified drawing file based on the original drawing file and having at least one modified drawing entity;

(d) assigning a second attribute to the modified drawing entity;

(e) merging the original drawing file with the modified drawing file to form a common drawing file that includes the original drawing entity and the modified drawing entity;

(f) searching the common drawing file for and retrieving an entity having the first attribute;

(g) searching the common drawing file for and retrieving an entity having the second attribute;

(h) comparing the entity having the first attribute with the entity having the second attribute; and

(i) automatically deleting from the common drawing file the entity having the second attribute if it is a duplicate of the entity having the first attribute.

5,606,652

REAL-TIME PROCESSING SYSTEM FOR ANIMATION IMAGES TO BE DISPLAYED ON HIGH DEFINITION TELEVISION SYSTEMS

Kia Silverbrook, Woollahra, Australia, assignor to Canon Kabushiki Kaisha, Japan, and Canon Information Systems Research Australia Pty Limited, Australia

Filed Apr. 28, 1993, Ser. No. 53,216

Claims priority, application Australia, Apr. 29, 1992, PL 2146

Int. Cl.[6] G06T *1/00*

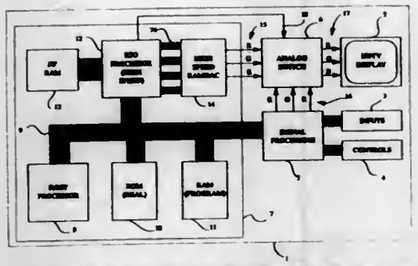
U.S. Cl. 395—135 **21 Claims**

1. A real-time interactive entertainment device comprising:

communication means for receiving object-based data;

a host processor for controlling the operation of said device and for generating display list information incorporating said received object-based image data and object-based image data stored within said device;

a real-time object processor connected to said host processor for rendering in real-time animation image data from said object-based image data in said display list information, said real-time object processor rendering said animation image data in



a rasterized display order and at a rate sufficient for display in a high-definition television (HDTV) system; and

generating means connected to said real-time object processor for generating HDTV signals from said animated image data.

5,606,653

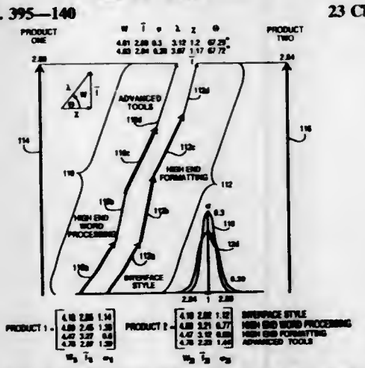
METHOD OF DISPLAYING DESCRIPTIVE DATA REPRESENTING A CANDIDATE AS A PLURALITY OF LINES ON AN OUTPUT DEVICE

John T. Gilmore, Jr., Amherst, N.H., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Jul. 27, 1990, Ser. No. 559,278

Int. Cl.[6] G06F *17/00*

U.S. Cl. 395—140 **23 Claims**



I. A method for displaying descriptive data on an output device of a data processing system, the descriptive data relating to a candidate, the candidate having a plurality of groups of features, the method comprising the steps of:

(1) assigning a functional value to each of the features of the candidate;

(2) assigning an importance weight to each of the features of the candidate;

(3) for each group, computing in the data processing system an average weighted functional score for the features of the group using the functional value and importance weight of each feature associated with the group;

(4) assigning an importance weight to each group;

(5) displaying on the output device of the data processing system a first line having a length corresponding to the average weighted functional score of a first group and the line displaced at an angle corresponding to the importance weight of the first group;

(6) displaying on the output device of the data processing system a succeeding line having a length corresponding to the average weighted functional score of the next group and extending from a tip of the preceding line at an angle corresponding to the importance weight of the next group; and

(7) repeating the preceding step for each remaining group.

5,606,654

COMPUTER SCREEN AND MEMORY ORGANIZATION ENABLING PRESENTATION OF A TREE

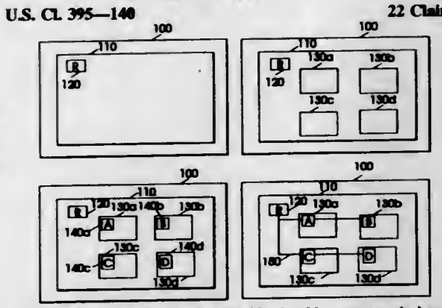
Adrianus Schuur, Herrenberg, Germany, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 21, 1993, Ser. No. 173,286

Claims priority, application European Pat. Off., Dec. 22, 1992, 92121758

Int. Cl.[6] G06T *11/00*

U.S. Cl. 395—140 **22 Claims**



1. A method for displaying a N_H by N_V tree graph having vertically and horizontally related nodes defined vertically and horizontally by N levels where N is a whole number of 3 or greater on a display screen comprising the steps of:

dividing the display screen into multiple equally sized portions; and

displaying in said display screen portions at most one node of said N_H by N_V tree graph;

displaying in the same display screen portion as the node, all of the child nodes of said node of said N_H by N_V tree graph, wherein symbols corresponding to said node or said child nodes thereof are displayed in said display screen portions, and wherein said symbols incorporate visual icons to indicate that said child nodes have grandchild nodes which cannot be displayed.

5,606,655

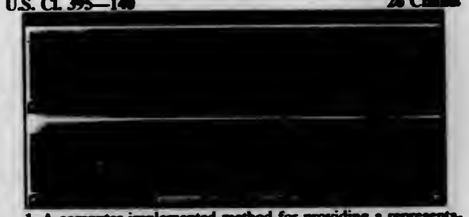
METHOD FOR REPRESENTING CONTENTS OF A SINGLE VIDEO SHOT USING FRAMES

Farshid Arman, Hamilton Square; Arding Hsu, Kendall Park, and Ming-Yee Chiu, Princeton Junction, all of N.J., assignors to Siemens Corporate Research, Inc., Princeton, N.J.

Filed Mar. 31, 1994, Ser. No. 221,225

Int. Cl.[6] G06T *7/00*

U.S. Cl. 395—140 **26 Claims**



1. A computer implemented method for providing a representative frame (Rframe) for a group of frames in a video sequence, said method comprising:

(a) selecting a reference frame from said group of frames;

(b) storing said reference frame in a computer memory;

(c) defining a peripheral motion tracking region along an edge of said reference frame; and

(d) successively tracking movement of boundary pixels in said tracking region.

5,606,656

IMAGE DATA PROCESSING UNIT FOR FORMING A PLURALITY OF IDENTICAL IMAGES IN A SINGLE OUTPUT IMAGE AREA

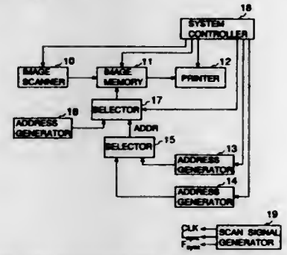
Yukio Yamaguchi, Yotsukaido, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 124,039, Sep. 21, 1993, abandoned. This application Jun. 2, 1995, Ser. No. 459,693

Claims priority, application Japan, Sep. 25, 1992, 4-256046

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—501 **14 Claims**



1. An image data processing unit which can output image data to an image forming apparatus so that a plurality of identical images are formed in a single output image area, the image data-processing unit comprising:

memory means for storing image data corresponding to said identical images, said image data being supplied by an external source;

reading signal generating means for generating a plurality of reading signals used for reading out said image data in said memory means, each of said reading signals providing information for an area in said single output image in which area one of said identical images is to be formed;

selecting means for selecting one of said reading signals supplied by said reading signal generating means, the selection being performed when said areas, in each of which one of said identical images are to be formed, are at least partially superimposed on each other; wherein said memory means outputs image data stored therein in accordance with said selected reading signal supplied by said selecting means;

detecting means for detecting a superimposed portion of said identical images; and

image data processing means for processing the image data output from said memory means so that a portion of image data corresponding to said superimposed portions of said identical images is processed so that said superimposed portions are distinguishable from non-superimposed portions of said identical images by a predetermined technique applied to said superimposed portions but not to said non-superimposed portions.

5,606,657

VIRTUAL GRAPHICS PROCESSOR FOR EMBEDDED REAL TIME DISPLAY SYSTEMS

Tamara G. Dennison, Palm Harbor, Fla.; Jesse G. Fisher, Albuquerque, N.M.; Steven E. Lindsley, Albuquerque, N.M., and Thomas A. Weingartner, Albuquerque, N.M., assignors to Honeywell Inc., Minneapolis, Minn.

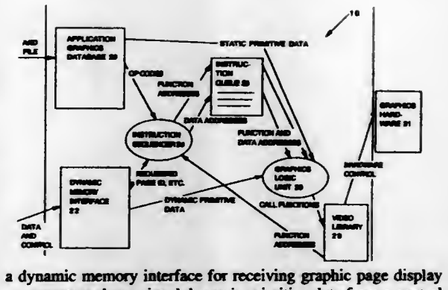
Continuation of Ser. No. 132,727, Oct. 6, 1993, abandoned. This application Jan. 22, 1996, Ser. No. 589,533

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—501 **12 Claims**

1. A virtual graphics processor for an embedded, real-time video display system, comprising:

a graphics database structure for storing graphic primitives and associated static primitive data defining one or more graphic pages in a display application;



a dynamic memory interface for receiving graphic page display requests and associated dynamic primitive data from a control source;

an image control interface which includes graphic functions for a plurality of display systems, said image control interface associates graphic primitives in a requested graphic page with graphics functions of a particular display system of said plurality of display systems, which is currently in use, the interface including the graphics functions and addresses for the graphics functions;

an instruction sequencer responsive to a request to display a graphic page, for obtaining the graphic primitives and addresses of associated static data of a requested graphic page from the graphics database and addresses for the associated graphics functions from the image control interface;

an instruction queue for storing the addresses of the associated graphics functions and of the static data obtained by the instruction sequencer; and

a graphics logic unit in communication with the instruction queue and image control interface for calling the associated graphics functions in the queue and providing each called function with associated static and dynamic data, the display system responsive to the called graphics functions for displaying a requested graphic page with dynamic data.

5,606,658

TEXT PROCESSING DEVICE FOR PRINTING CHARACTER STRINGS IN VARIOUS CHARACTER STRING SHAPES

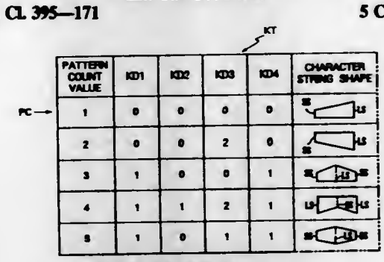
Kazuhisa Hirono, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jan. 16, 1994, Ser. No. 261,103

Claims priority, application Japan, Jun. 16, 1993, 5-169583

Int. Cl.[6] G06T *3/40*

U.S. Cl. 395—171 **5 Claims**



PC	PATTERN COUNT VALUE	KD1	KD2	KD3	KD4	CHARACTER STRING SHAPE
→	1	0	0	0	0	
	2	0	0	2	0	
	3	1	0	0	1	
	4	1	1	2	1	
	8	1	0	1	1	

KD1 : CHANGE POINT DETERMINATION DATA
KD2 : INCREASE/DECREASE DETERMINATION DATA
KD3 : ALIGNMENT POSITION DATA
KD4 : FORMULA NUMBER DATA

1. A text processing device comprising:

input means for inputting text data composed of at least one of symbols and characters;

text data memory means for storing the text data inputted by said input means;

character generator storing data regarding dot patterns of symbols and characters for a selected font;

printing means for printing the symbols and characters;

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shape designation data memory means for storing a plurality of pieces of shape designation data, each of the plurality of pieces of shape designation data designating an outline contour shape of a character string;

shape setting means for setting to a character string represented by the text data one of a plurality of outline contour shapes corresponding individually to the plurality of pieces of shape designation data, and for setting a maximum character size and a minimum character size for the character string represented by the text data, set data representative of set outline contour shape, set maximum character size and set minimum character size being output from said shape setting means;

size determination means for retrieving a piece of shape designation data corresponding to the set outline contour shape from said shape designation data memory means based on the set data output from said shape setting means, and for determining a size of each character or symbol making up of the character string represented by the text data, size data representative of the size of each character or symbol thus determined being output from said size determination means; and

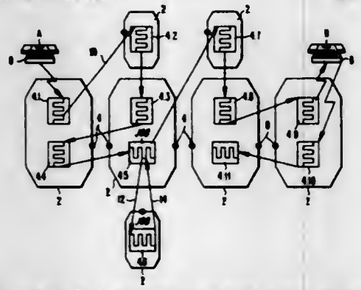
dot pattern data development means for producing dot pattern data for the each character or symbol making up of the character string represented by the text data based on the size data output form said size determination means and the data stored in said character generator, wherein said printing means performs printing based on the dot pattern data, said shape designation data memory means storing a table identifying the outline contour shape of the character string with a pattern count value, the pattern count value being characterized by a first parameter indicating whether there exists in the character string a change point where increasing character size changes to decreasing character size, a second parameter indicating whether the character size in the character string increases or decreases, a third parameter indicating a line with which the character string is aligned, and a fourth parameter indicating formulas for determining a character size of each character or symbol in the character string.

5,606,659

METHOD AND SYSTEM FOR DEMOUNTING A CHAIN OF LINKED PROCESSES IN A DISTRIBUTED OPERATING SYSTEM

Jon P. Mållöy, Solna, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Feb. 9, 1994, Ser. No. 193,844
Claims priority, application Sweden, Feb. 10, 1993, 9300431
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—183.01 **14 Claims**



1. A method in a distributed operating system for enabling demounting of a chain of linked processes, wherein each process is a resource for executing applications in said operating system, and for use by a job in order to enable execution of program code in process, the job being a phenomenon which is directed to said process in order to cause execution of a method in an object owned by the process, the job also being able to create new jobs directed to other processes or towards an own process, and wherein said process provides the job with resources and synchronizes jobs by only allowing one job at a time to execute, said method comprising the steps of:

providing communication links between said processes by associating communication ports as a property of the processes, wherein the communication ports are operating system resources for enabling the processes to be linked together to form a link picture in which each port of a process has a reference to a port of another process, and wherein knowledge of the link picture is limited to each port's information formed by the references;

using said distributed operating system for keeping up with processes of the link picture, and using said ports for transferring termination-related information if a corresponding process is terminated;

detecting an error in a faulty one of the processes and terminating the faulty process;

transferring information via said ports regarding a process or computer failure, and propagating the transferred information through a whole chain of linked processes in the link picture; and

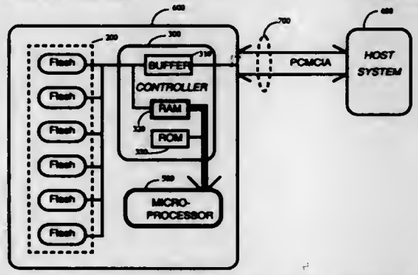
reporting the transferred information to running applications being executed in said linked processes for enabling the running applications to perform application specific recoveries.

5,606,660

METHOD AND APPARATUS FOR COMBINING CONTROLLER FIRMWARE STORAGE AND CONTROLLER LOGIC IN A MASS STORAGE SYSTEM

Petro Estakhri, Pleasanton; Robert Reid, Fremont, and Berhanu Iman, Sunnyvale, all of Calif., assignors to Lexar Microsystems, Inc., Fremont, Calif.

Filed Oct. 21, 1994, Ser. No. 326,884
Int. Cl.[6] G06F *11/30*
U.S. Cl. 395—183.14 **19 Claims**



1. A method for transferring firmware code for execution in a microprocessor controlled solid state storage device including a non-volatile memory storing executable firmware code, a microprocessor, an interface and a controller-semiconductor-chip for controlling access to the non-volatile memory by an external host computer, the controller-semiconductor-chip having first memory for storing the firmware code to be transferred and executed by the microprocessor and second memory for storing primitive code for downloading the firmware code from the non-volatile memory to the first memory, and for checking integrity of the transferred firmware code, said method comprising the steps of:

(a) transferring the firmware code from first storage locations in the non-volatile memory to the first memory while the microprocessor executes the primitive firmware code from said second memory;

(b) verifying the validity of the transferred firmware code, and upon successful verification thereof, causing the microprocessor to execute the transferred firmware code;

(c) and if verification of the transferred firmware code is unsuccessful, repeating steps (a) and (b) a predetermined number of times on firmware code transferred from alternate storage locations in the non-volatile memory, and upon successful verification of any of the repetitions, beginning execution of the verified firmware code;

(d) if verification of transferred firmware code during all of said repetitions of step (c) is unsuccessful, waiting to receive a special command from the host computer through the interface while executing codes from the second memory; and

(e) upon reception of said special command, transferring new firmware code through the interface from the host computer to the non-volatile memory.

7. A microprocessor controlled solid state storage device comprising:

a microprocessor;

at least one non-volatile memory having reserved blocks assigned therein and storing firmware code in said assigned blocks;

a controller semiconductor chip having an interface for controlling access to the non-volatile memory from a host computer, and including

a first memory receiving and storing firmware code transferred thereto from said non-volatile memory under control of said microprocessor; and

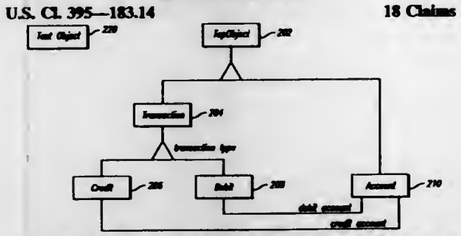
a second memory including primitive firmware code for causing said microprocessor to transfer said firmware code, to be executed by said microprocessor, from said reserved blocks into said first memory during initialization of said storage device, said primitive firmware code for further causing said microprocessor to calculate a checksum for verification of the integrity of said transferred firmware code.

5,606,661

APPARATUS AND METHOD FOR SCAN-BASED TESTING IN AN OBJECT-ORIENTED PROGRAMMING ENVIRONMENT

Larry L. Wear, Sacramento, and Diana L. Magrey, San Jose, both of Calif., assignors to Tandem Computers Incorporated, Cupertino, Calif.

Filed Jun. 7, 1995, Ser. No. 472,306
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—183.14 **18 Claims**



1. A method of testing individual objects in an object-oriented programming environment, comprising the steps, performed by a data processing system, of:

establishing a container object that will be updated to contain a pointer to each newly instantiated object;

establishing a function for the TopObject class that places in the container object a pointer to each newly created object when each new object is created;

creating a new object that belongs to the TopObject class, thereby causing the function to add a pointer in the container object for the new object, wherein the new object contains a respective testing function; and

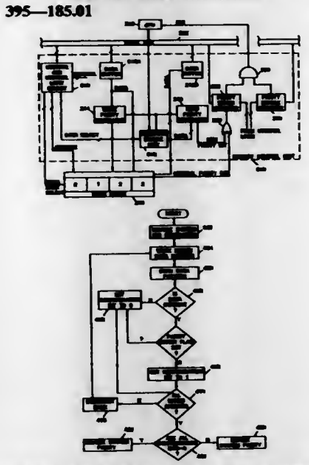
performing a global testing function that will traverse the object pointers in the container object and will invoke the respective testing function within each object pointed to, in accordance with the object pointers in the container object.

5,606,662

AUTO DRAM PARITY ENABLE/DISABLE MECHANISM

Michael T. Wisor, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Mar. 24, 1995, Ser. No. 410,217
Int. Cl.[6] G06F *11/34;11/10*
U.S. Cl. 395—185.01 **16 Claims**



1. A computer system wherein said memory control unit comprising:

a central processing unit capable of executing a predetermined instruction set;

a bus coupled to said central processing unit;

a plurality of memory banks for storing data;

a memory control unit coupled to said bus and configured to orchestrate a transfer of data between said central processing unit and said plurality of memory banks, wherein said memory control unit includes:

an address and control logic circuit connected to said bus and configured to provide a bank select signal indicative of a particular memory bank being accessed;

a parity generator unit connected to said plurality of memory banks and configured to selectively cause an indication of a parity error depending upon said bank select signal; and

a selective enable unit for selectively enabling and disabling said indication of a parity error for each of said plurality of memory banks.

5,606,663

PASSWORD UPDATING SYSTEM TO VARY THE PASSWORD UPDATING INTERVALS ACCORDING TO ACCESS FREQUENCY

Etsuko Kadooka, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 15, 1994, Ser. No. 340,390
Claims priority, application Japan, Dec. 24, 1993, 5-326761
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—188.01 **2 Claims**

1. A password updating system for a computer system, comprising:

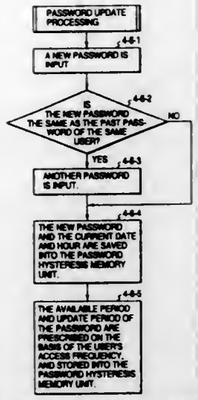
chronometric means for counting and providing date and hour information;

input means for inputting user information and passwords, and password validating instructions for cancelling password invalidation;

display means for displaying a password change requesting message and a password reentry requesting message;

password hysteresis memory means for memorizing and managing a plurality of passwords so far set including a currently

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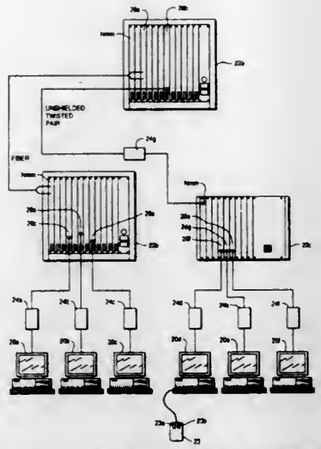


used password, and an available period and an update period for each of said passwords on a user-by-user basis;

comparator means for comparing, when a password is entered into a computer system, a current date and hour from said chronometric means and the available period of the currently used password stored in said password hysteresis memory means, and during the updating period of the currently used password, providing an update request to update the password;

update processing means responsive to the update request from the comparator means for giving a request for display of the password change requesting message to said display means, receiving an updated password from said input means, searching the plurality of passwords stored in said password hysteresis memory means to check whether or not the updated password exists among the plurality of passwords, displaying the password reentry requesting message if it does or updating the password if it does not, invalidating the current password if the updating period of the password has expired, and validating invalidated passwords; and

period setting means for analyzing a frequency of accesses to the computer system by each user by receiving a date and hour of access to the system from said chronometric means and receiving the user information from said input means at the date and hour of access, prescribing upon setting of each password the available period and the update set period of the password, and conveying the available period and the update set period to said password hysteresis memory means.



(1) transmit means at each of the hubs for transmitting hub messages over the local area network, said transmit means including

(a) originate means for transmitting said hub messages which originate at an associated hub and contain an identifying address of said associated hub;

(b) repeat means for transmitting said hub messages received by said associated hub over the local area network which originated from other ones of said hubs of the network, said repeat means comprising a timing unit for retiming data to account for transmission distortion;

(2) port identifying means at each of the hubs for identifying which of said data ports of said associated hub has received which of said hub messages transmitted by other of said hubs of the local area network;

(3) control means coupled to said local area network for receiving topology data reported from each of said hubs, said topology data reported for each data port of a particular reporting hub, said topology data identifying a particular one of said data ports of said particular reporting hub and said topology data identifying addresses associated with other hubs which originated network messages received by said particular reporting hub over said particular one of said data ports; and

(4) processing means for determining the overall topology of the local area network by utilizing and combining said received topology data from each of said reporting hubs.

5,606,664

APPARATUS AND METHOD FOR AUTOMATICALLY DETERMINING THE TOPOLOGY OF A LOCAL AREA NETWORK

Brian Brown; Shabbir A. Chowdhury, both of San Jose, Calif.; Jean-Luc Fontaine, Maisons Laffitte, France; Chao-Yu Liang, San Jose, Calif.; Ronald V. Schmidt, Portola Valley, Calif., and Chang-Jung Wang, Cupertino, Calif., assignors to Bay Networks, Inc., Santa Clara, Calif.

Division of Ser. No. 526,567, May 21, 1990, Pat. No. 5,226,120. This application Apr. 12, 1993, Ser. No. 46,405

Int. Cl.[6] G06F *15/16;15/177;* **H04L** *12/28*

U.S. Cl. 395—200.1 **31 Claims**

1. Apparatus for automatically determining the topology of a local area network of interconnected hubs which utilize contention control, with individual hubs having at least three data ports, each of which is for coupling the hub in a star configuration to either a data terminal device or another hub in the local area network, said apparatus comprising:

5,606,665

BUFFER DESCRIPTOR PREFETCH IN NETWORK AND I/O DESIGN

Henry S. Yang, Andover; Shirish S. Sathaye, North Chelmsford, both of Mass.; Michael Ben-Nun; Moshe De-Leon, both of Jerusalem, Israel, and Simoni Ben-Michael, Givat Zeev, Israel, assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jul. 1, 1994, Ser. No. 269,595

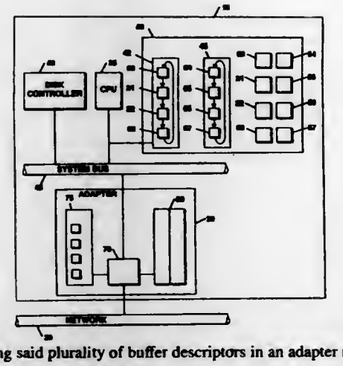
Int. Cl.[6] G06F *15/173;* **H04L** *12/00*

U.S. Cl. 395—200.2 **6 Claims**

1. A method for receiving one or more data packets, comprising the steps of:

receiving a data packet at a network adapter;

fetching a plurality of buffer descriptors from a shared memory during a bus transaction, said buffer descriptors having associated buffers in said shared memory, said shared memory connected to said network adapter over a shared bus supporting said bus transaction;



holding said plurality of buffer descriptors in an adapter memory in said network adapter;

determining availability of the associated buffer of a one of said plurality of buffer descriptors;

writing at least a first part of said data packet to an associated buffer of said one of said plurality of buffer descriptors in response to a determination of availability; and,

continuing to write a further part of said data packet to a buffer associated with a next said buffer descriptor.

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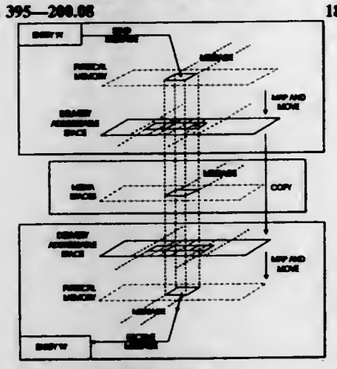
METHOD AND APPARATUS FOR DISTRIBUTING CONTROL MESSAGES BETWEEN INTERCONNECTED PROCESSING ELEMENTS BY MAPPING CONTROL MESSAGES OF A SHARED MEMORY ADDRESSABLE BY THE RECEIVING PROCESSING ELEMENT

Carl H. Grant; Jace W. Krull; Charles E. Kuhlmann, all of Boca Raton, Fla.; Shahram Salamian, Austin, Tex.; Eugene M. Thomas, Clermont, and James T. Tsevdos, Ft. Lauderdale, both of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 19, 1994, Ser. No. 277,394

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.08 **18 Claims**



1. A computer system, comprising:

a plurality of processing elements, each of said processing elements performing one or more functions through the execution of one or more programs, each of said programs operating asynchronously with respect to executing programs on other processing elements in the system;

interconnection media for interconnecting said plurality of processing elements;

inter-processing communication logic located on each of said processing elements for permitting communication between executing programs on any one of said processing elements; and

inter-delivery support hardware located between said interconnection media and said inter-processing communication logic, said inter-delivery support hardware operating asynchronously with respect to said executing programs on said processing elements for (i) enqueuing a control message obtained by a first program on a first processing element from physical memory on said first processing element which is addressable only by programs operating on said first processing element; (ii) temporarily storing said enqueued control message in a first memory device associated with said first processing element; (iii) mapping said temporarily stored control message to first delivery addressable space associated with said first processing element which is addressable by programs operating on a second processing element; (iv) copying over said interconnection media via a copy transaction said mapped control message from said first delivery addressable space to second delivery addressable space associated with said second processing element; (v) moving said copied control message from said second delivery addressable space to a second memory device associated with said second processing element which is addressable only by programs operating on said second processing element; and (vi) dequeuing said moved control message to physical memory on said second processing element.

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Patent Not Issued For This Number

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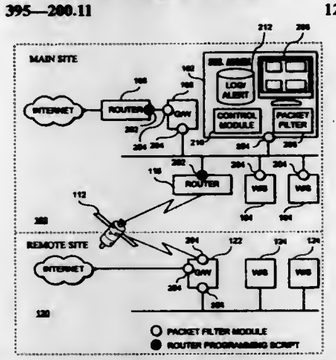
SYSTEM FOR SECURING INBOUND AND OUTBOUND DATA PACKET FLOW IN A COMPUTER NETWORK

Gil Shwed, Jerusalem, Israel, assignor to Checkpoint Software Technologies Ltd., Jerusalem, Israel

Filed Dec. 15, 1993, Ser. No. 168,041

Int. Cl.[6] G06F *13/36;15/401*

U.S. Cl. 395—200.11 **12 Claims**



1. A method of inspecting inbound and outbound data packets in a computer network, the inspection of said data packets occurring according to a security rule, the method comprising the steps of:

a) generating a definition of each aspect or the computer network inspected by said security rule;

b) generating said security rule in terms of said aspect definitions, said security rule controlling as least one of said aspects;

c) converting said security rule into a set of packet filter language instructions for controlling the operation of a packet filtering module which inspects said data packets;

d) providing a packet filter module coupled to said computer network for inspecting said data packets in accordance with said security rule, said packet filter module implementing a virtual packet filtering machine; and

e) said packet filter module executing said packet filter language instructions for operating said virtual packet filtering machine to either accept or reject the passage of said data packets into and out of said computer network.

5,606,669

SYSTEM FOR MANAGING TOPOLOGY OF A NETWORK IN SPANNING TREE DATA STRUCTURE BY MAINTAINING LINK TABLE AND PARENT TABLE IN EACH NETWORK NODE

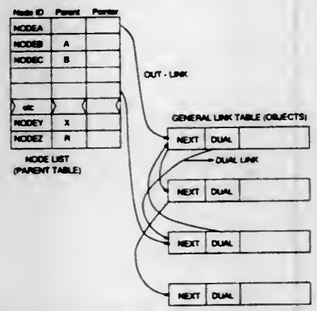
Olivier Bertin, Nice; Jean-Paul Chobert, Carros, and Alain Pruvost, Valauris, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 23, 1995, Ser. No. 447,999

Claims priority, application European Pat. Off., May 25, 1994, 94480048

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.15 **8 Claims**



1. In a data communication network having a plurality of nodes and a plurality of bi-directional links, each of said nodes being connected to at least one other node through one of said bi-directional links to enable data to be exchanged between the nodes, said network being defined by at least one spanning tree comprising a root node and one or more children nodes, each of said children nodes except the root node having a single parent node, a topology manager located in at least one of said nodes comprising:

a) a link table memory containing a link table for each node in the current spanning tree, each link table identifying the node with which the link table is associated and each of the links from the identified node to other nodes in the network, each link entry in a link table including a spanning tree entry which indicates whether the link is currently included in the current spanning tree,

b) a parent table memory containing a node entry for each node in the current spanning tree, each node entry other than the entry for the root node further containing the address of the node's parent node, the address of the link table for the node and the identification of dual links which are common to the link table for the node and link tables for other nodes; and

c) spanning tree update logic for updating the link tables and the parent table upon a change in network topology affecting the current spanning tree, said spanning tree update logic further including

i) means for scanning the parent table memory to detect an entry identifying a first node for which no parent node is identified, said means assigning the root position in a new spanning tree to the first node,

ii) means for reading the parent table and link table for the first node to identify at least one adjacent node which satisfies predetermined criteria for a parent node to the first node, marking the adjacent node as a parent to the first node and amending the parent tables and link tables accordingly, and

iii) means for repeating the operations performed by said reading means with each identified adjacent node being assigned the role as a first node until all nodes have a parent and amending the parent tables and link tables accordingly.

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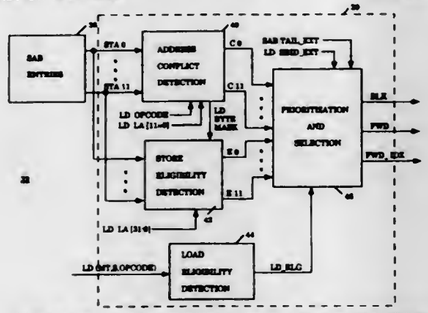
METHOD AND APPARATUS FOR SIGNALLING A STORE BUFFER TO OUTPUT BUFFERED STORE DATA FOR A LOAD OPERATION ON AN OUT-OF-ORDER EXECUTION COMPUTER SYSTEM

Jeffrey M. Abramson, Aloha; Haitham Akkary, Portland; Andrew F. Glew, Hillsboro; Glenn J. Hinton; Kris G. Konigsfeld, both of Portland; Paul D. Madland, and David B. Papworth, both of Beaverton, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 176,111, Dec. 30, 1993, abandoned. This application Apr. 22, 1996, Ser. No. 636,173

Int. Cl.[6] G06F *9/22*

U.S. Cl. 395—250 **32 Claims**



1. In an out-of-order execution computer system comprising a store buffer for buffering a plurality of memory store operations issued over a period of time during operation, wherein each memory store operation includes a store opcode, a store address, store control information including information on execution state, and store data, an apparatus for conditionally outputting selected ones of said buffered store data in response to a memory load operation issued in a particular instant in time, said memory load operation having a load opcode, a load address and load control information, said apparatus comprising:

a) selection circuitry coupled to said store buffer for generating a first and a second control signal for said store buffer based on a first plurality of received store eligibility signals and a received third control signal,

said first control signal signaling said store buffer to output buffered store data of one of its buffered memory store operations in response to said memory load operation, whereas said second control signal identifying for said store buffer the buffered memory store operation whose store data are to be output, and

said received store eligibility signals correspondingly denoting for said selection circuitry whether said buffered memory store operations are eligible to have their store data output by said store buffer in response to said memory load operation, whereas said received third control signal denoting for said selection circuitry the youngest buffered memory store operation that is older than said memory load operation, and having addressing conflict with said memory load operation;

(b) eligibility detection circuitry coupled to said store buffer and said selection circuitry for receiving execution state signals denoting executing states of said buffered memory store operations from said store buffer, and generating said store eligibility signals for said selection circuitry based on said received execution state signals.

5,606,671

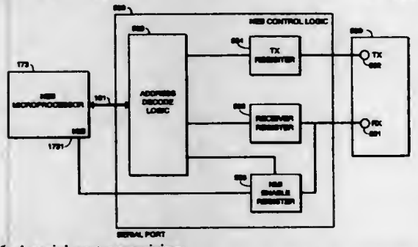
SERIAL PORT USING NON-MASKABLE INTERRUPT TERMINAL OF A MICROPROCESSOR

Robert D. Wadsworth, Costa Mesa; Tony K. Ip, Trabuco Canyon; Daniel A. Danknick, Orange, and William C. Russell, Laguna Hills, all of Calif., assignors to Canon Information Systems, Inc., Costa Mesa, Calif.

Filed Nov. 4, 1994, Ser. No. 336,102

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—286 **9 Claims**



1. A serial port comprising:

a processor adapted to execute process steps for information processing, said processor including a non-maskable interrupt (NMI) pin, which in response to activation of the NMI pin said processor suspends on-going information processing steps and initiates execution of interrupt process steps;

a receive bit signal line for carrying a receive bit readable by said processor, said receive bit signal line being connectable to a receive terminal of the serial port and said receive bit being set to a binary 1 or 0 state in correspondence with voltage levels at the receive terminal;

an NMI enable switch, connectable between the receive terminal and the NMI pin of said processor, said NMI enable switch being operable under control of said processor so as to transmit signals at the receive terminal to the NMI pin when said NMI enable switch is enabled, and so as to block transmission of signals to the NMI pin when disabled;

wherein the interrupt process steps which are initiated by said processor in response to activation of the NMI pin include process steps to (a) disable said NMI enable switch, (b) wait for a serial transmission period and thereafter read a received bit so as to obtain a transmitted data bit, (c) repeat (b) until at least eight transmitted data bits are obtained, (d) assemble the eight transmitted data bits into an 8-bit byte and store the 8-bit byte, (e) enable the NMI enable switch, and (f) resume execution of the suspended on-going information processing steps.

5,606,672

METHOD AND APPARATUS FOR MULTIPLEXING SIGNALS FROM A BUS BRIDGE TO AN ISA BUS INTERFACE AND AN ATA BUS INTERFACE

Nicholas D. Wade, Cameron Park, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Jan. 27, 1995, Ser. No. 380,020

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—308 **6 Claims**

3. A computer system comprising:

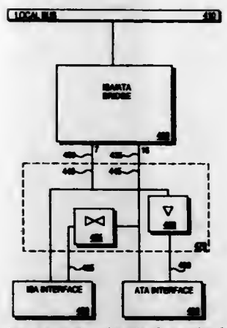
a microprocessor;

a local bus coupled to the microprocessor;

an ISA bus;

an ATA bus

a bus bridge, coupling the local bus with the ISA bus and ATA bus;



an apparatus that transmits signals from the bus bridge to the ISA bus and the ATA bus including

a first direct connection that transmits latched address signals from the bus bridge to the ISA bus;

a second direct connection that transmits disk data signals from the bus bridge to the ATA bus;

a first buffered connection from the first direct connection that transmits disk addresses and chip select signals to the ATA bus; and

a second buffered connection from the second direct connection that transmits system address and system byte high enable signals to and from the ISA bus.

5,606,673

SMALL COMPUTER SYSTEM INTERFACE (SCSI) CONTROLLER

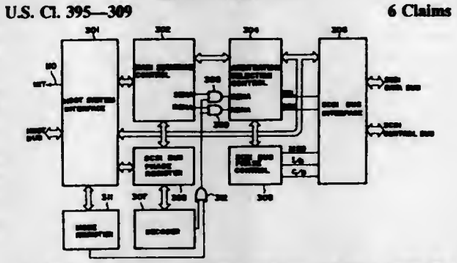
Tamotsu Chounan, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Feb. 19, 1993, Ser. No. 19,608

Claims priority, application Japan, Feb. 19, 1992, 4-031188

Int. Cl.[6] G06F *13/14*

U.S. Cl. 395—309 **6 Claims**



1. A Small Computer System Interface ("SCSI") controller adapted to perform an auto-target-command defined by an SCSI protocol and for carrying out standard operations in a selection phase, which is an SCSI bus phase when a target capable of responding to a request for performing an operation is selected, and in each of further SCSI bus phases, said SCSI controller comprising:

a phase register means which automatically stores each SCSI bus phase code which is determined by a status of an SCSI control bus in the selection phase;

a decoder means which, after the auto-target-command is issued to the SCSI controller selected as a target, decodes the phase stored by said phase register means to detect a selection waiting phase and outputs a detection signal;

an arbitration/selection control means which controls Function of asserting a busy ("BSY") signal for responding to selection of the SCSI controller as a target; and

a signal control means which causes the BSY signal to be asserted when, in the selection phase, the selection of the

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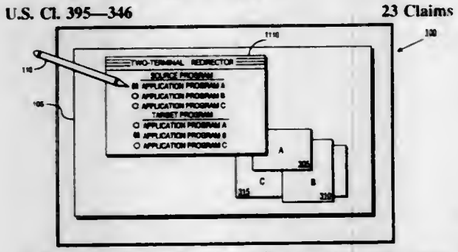
SCSI controller is detected after the issuance of the auto-target-command which intends to select the SCSI controller as a target.

5,606,674

GRAPHICAL USER INTERFACE FOR TRANSFERRING DATA BETWEEN APPLICATIONS THAT SUPPORT DIFFERENT METAPHORS

Kenneth A. Root, Portland, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Jan. 3, 1995, Ser. No. 367,934
Int. Cl.[6] G06F *3/00*
U.S. Cl. 395—346 **23 Claims**



1. A user interface method for use in a computer system transferring data between a source program and a target program, comprising the steps of:

selecting a source program by a user;

selecting a target program by the user;

selecting a portion of data in the source program for transfer to the target program by the user;

requesting transfer of the data to the target program by the user; and

transferring the portion of data to the target program as at least one input message by a processor, wherein each input message corresponds to a keystroke of a keyboard.

5,606,675

DATA PROCESSOR FOR INVALIDATING PREFETCHED INSTRUCTION OR BRANCH HISTORY INFORMATION

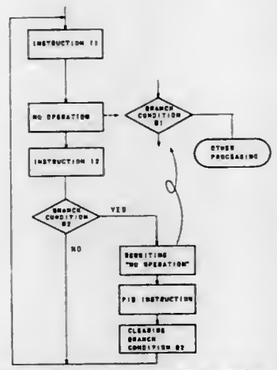
Ken Sakamura, Tokyo, and Akira Ohtsuka, Itami, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 668,316, Mar. 13, 1991, abandoned, which is a continuation of Ser. No. 171,624, Mar. 22, 1988, abandoned. This application Apr. 21, 1992, Ser. No. 873,525
Claims priority, application Japan, Sep. 30, 1987, 62-246622
Int. Cl.[6] G06F *9/30*
U.S. Cl. 395—584 **7 Claims**

1. A data processor which is provided with a main memory and a cache memory storing parts of the contents of said main memory, and which executes an operating system and user programs, and executes instructions divided into at least a low priority privilege level group and a higher priority privilege level group said data processor comprising:

means for preliminarily fetching instructions in a program from the main memory to the cache memory;

means for executing a predetermined instruction, included in a user program and being in the low priority privilege group, where the predetermined instruction always invalidates the contents of said cache memory whenever the predetermined instruction is executed so that instructions following said predetermined instruction must be fetched from said main memory when the data processor is executing said user program.

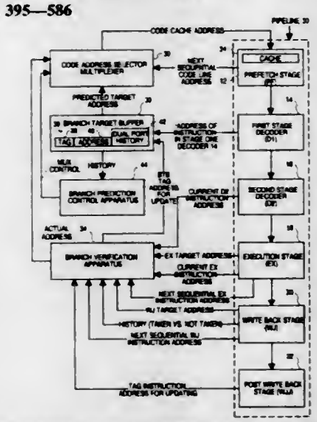


5,606,676

BRANCH PREDICTION AND RESOLUTION APPARATUS FOR A SUPERSCALAR COMPUTER PROCESSOR

Edward T. Grochowski, San Jose; Donald B. Alpert, Santa Clara; Jack D. Mills, Mountain View, all of Calif., and Uri C. Weiser, Haifa, Israel, assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 922,855, Jul. 31, 1992, Pat. No. 5,442,756. This application Feb. 9, 1995, Ser. No. 386,066
Int. Cl.[6] G06F *9/38*
U.S. Cl. 395—586 **13 Claims**



13. In a microprocessor, a computer circuit for verifying a target location of a branch instruction supplied in a sequence of instructions, said computer circuit comprising:

a pipeline for receiving said sequence of instructions;

a branch prediction circuit coupled to said pipeline for predicting a branch target address responsive to said branch instruction wherein said branch prediction circuit further comprises a branch target buffer for storing a tag address of an instruction previous in said instruction sequence to said branch instruction; and

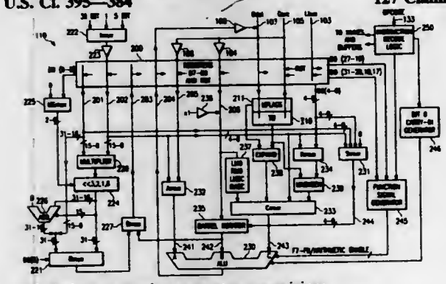
a verification circuit coupled to said pipeline to compare an actual target address computed in the execution stage with an address of an instruction following said branch instruction in said pipeline.

5,606,677

PACKED WORD PAIR MULTIPLY OPERATION FORMING OUTPUT INCLUDING MOST SIGNIFICANT BITS OF PRODUCT AND OTHER BITS OF ONE INPUT

Keith Balmer, Bedford, England, and Christopher J. Read, Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 160,302, Nov. 30, 1992. This application Jun. 7, 1995, Ser. No. 472,828
Int. Cl.[6] G06F *7/44*
U.S. Cl. 395—384 **127 Claims**



12. A data processing apparatus comprising:

a first input bus of N bits;

a second input bus of N bits;

a multiplier having a first input of L bits connected to a first set of L bits of said first input bus, L being less than N, a second input of L bits connected to a first set of L bits of said second input bus, and a product output of 2L bits producing a product of data supplied to said first and second inputs; and

an output bus of N bits connected to said first input bus and said product output of said multiplier, said output bus including a first portion identical to a second set of M bits of said first input bus which differ from said first set of L bits of said first input bus, said first portion selected independently of a second set of M bits of said second input bus which differ from said first set of L bits of said second input bus, and independently of said product output, and a second portion identical to a most significant half of L bits of said product output of 2L bits.

5,606,678

Patent Not Issued For This Number

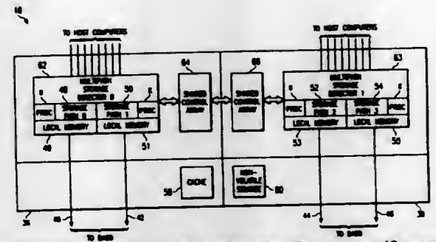
5,606,679

METHOD FOR OPTIMAL RETRIEVAL OF NON-VOLUME-SPECIFIC DATA

Oded Cohn, Haifa, Israel; William F. Micka, Tucson, Ariz.; Yosef Moatti, Haifa, Israel; Kenneth Nagin, Nazareth, Israel; Yoram Novick, Haifa, Israel, and Efraim Zeidner, Kiryat Haim, Israel, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 28, 1995, Ser. No. 396,038
Int. Cl.[6] G06F *13/14;12/02*
U.S. Cl. 395—404 **22 Claims**

1. In a data processing system having at least one host system, a storage controller attached to said host system, and a plurality of data storage devices connected to said storage controller, said host system maintaining a host unit control block for each said data storage device of said plurality of data storage devices and said storage controller maintaining a controller unit control block for each of said data storage devices, at least one data storage device being selected as a current Utility Volume, a method for selecting a new Utility Volume for servicing a session generating a non-specific read request for a data record from said host system comprising the steps of:



interrogating said session generating the non-specific read request at said host system for said data record, wherein said data record resides on a first data storage device of said plurality of data storage devices having a first host control block corresponding with said non-specific read request;

determining whether a selection must be made for selecting the new Utility Volume;

if a new Utility Volume selection is required, selecting the new Utility Volume from said plurality of data storage devices based upon weighted load conditions of said plurality of data storage devices, the new Utility Volume having a lowest weighted load condition and a second host unit control block being associated therewith, wherein said second host unit control block corresponds to a second data storage device of said plurality of data storage devices, said second data storage device different than said first device;

locking said second host unit control block; and

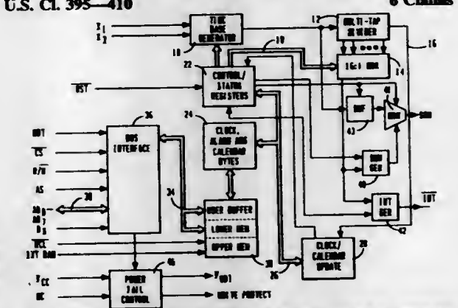
transmitting said non-specific read request to said storage controller, said non-specific read request including said second host unit control block.

5,606,680

REALTIME CLOCK WITH PAGE MODE ADDRESSING

Jehangir Parvereshi, Carrollton, and Frederick G. Broell, Plano, both of Tex., assignors to Benchmarq Microelectronics, Dallas, Tex.

Filed Nov. 22, 1994, Ser. No. 343,755
Int. Cl.[6] G06F *12/00;12/02;9/34;9/26*
U.S. Cl. 395—410 **6 Claims**



1. A realtime clock for interfacing with a personal computer having a first I/O port operable to interface with the realtime clock for being multiplexed to transmit and receive eight data bits in a first operation and transmit seven address bits in a second operation, comprising:

a memory having a plurality of addressable storage locations for storage of data therein and reading of data therefrom, each of said storage locations addressable, said memory receiving an 8-bit address input;

Read/Write circuitry for controlling said memory to either Read data from the addressed one of said storage locations or Write data to the addressed one of said storage locations;

a first address latch for receiving the transmitted seven address bits from a first PC bus external to the realtime clock through

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the first I/O port and latching the seven address bits therein for output on a latched address bus as the least seven significant bits of the address input to said memory, said first address latch operating in response to an address latch control signal;

a second address latch for receiving at least the eighth most significant address bit for said memory from a second PC bus separate from said first PC bus through a second I/O port external to the realtime clock and associated with the personal computer and latching the eighth most significant address bit and outputting it to said latched address bus as the eighth address bit to said memory, said second address latch operating in response to said address latch control signal;

said Read/Write circuitry operable to generate said address latch control signal during a multiplex operation, said multiplex operation operating in a first operation to receive said address and control said first and second address latches to latch said address and, in a second operation, to Read or Write data from said memory;

a clock/calendar circuit for generating data for storage in said memory as clock/calendar data, said clock/calendar circuit operable to periodically update said clock/calendar data; and

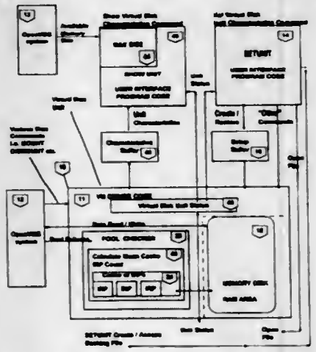
a battery backup circuit for connecting to an external battery to render the realtime clock nonvolatile.

5,606,681

METHOD AND DEVICE IMPLEMENTING SOFTWARE VIRTUAL DISK IN COMPUTER RAM THAT USES A CACHE OF IRPS TO INCREASE SYSTEM PERFORMANCE

Peter Smith, Llanelly Hill, United Kingdom; Eric S. Dickman, Newton, Mass., and Ian Percival, Ilminster, United Kingdom, assignors to EEC Systems, Inc., Sudbury, Mass.

Filed Mar. 2, 1994, Ser. No. 205,287
Int. Cl.[6] G06F *13/14;12/08*
U.S. Cl. 395—413 **19 Claims**



1. A method for implementing a software virtual disk on a computer system comprising the steps of:

(a) creating a structure in RAM for acting as a virtual disk;

(b) designating the structure in RAM as a write through unit;

(c) allocating a plurality of IRP's to a cache;

(d) initiating an I/O write of data to the structure in RAM;

(e) identifying the structure in RAM as a write through unit;

(f) cloning the data into one of the IRP's to form a cloned I/O data packet;

(g) writing the cloned I/O data packet to a backing disk in response to identification of the structure as a write through unit;

(h) after writing the cloned I/O data packet to a backing disk, returning said one of the IRP's to the cache;

(i) writing the data into the structure in RAM; and

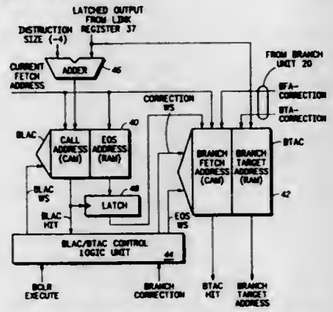
(j) signalling completion of the I/O write upon completion of steps (g) and (i).

5,606,682

DATA PROCESSOR WITH BRANCH TARGET ADDRESS CACHE AND SUBROUTINE RETURN ADDRESS CACHE AND METHOD OF OPERATION

Ralph C. McGarity, Austin, Tex., assignor to Motorola Inc., Schaumburg, Ill.

Filed Apr. 7, 1995, Ser. No. 418,049
Int. Cl.[6] G06F *12/08*
U.S. Cl. 395—414 **7 Claims**



1. A data processor with a branch target address cache, the data processor comprising:

a branch target address cache storing a plurality of sets, each one of the plurality of sets comprising a fetch address stored in a fetch address field and a target address stored in a target address field, the branch target address cache outputting a target address of a selected one of the plurality of sets if the fetch address of the selected one of the plurality of sets is logically equivalent to an input address, the input address indexing an instruction processed by the data processor, the data processor fetching an instruction indexed by the target address of the selected one;

a subroutine return address cache storing a plurality of sets, each one of the plurality of sets comprising a subroutine call address stored in a subroutine call address field and an end-of-subroutine ("EOS") address stored in an EOS address field, the subroutine call address indexing a subroutine call instruction, the EOS address indexing a subroutine return instruction associated with the subroutine call instruction, the subroutine return address cache outputting an EOS address of a selected one of the plurality of sets if the subroutine call address of the selected one of the plurality of sets is logically equivalent to the input address; and

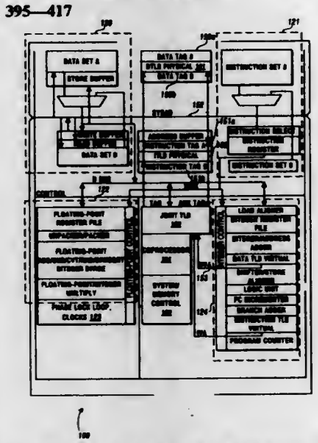
a control unit coupled to the branch target address cache and to the subroutine return address cache, the control unit storing a call address and an EOS address of a subroutine call instruction in a subroutine call address field and in an EOS address field, respectively, of an entry of the branch target address cache upon the data processor processing a subroutine call instruction, the control unit storing an EOS address output by the subroutine return address cache and an operand of a subroutine, return instruction in a fetch address and a target address, respectively, of an entry of the branch target address cache upon the data processor processing a subroutine return instruction, the subroutine return instruction comprising the operand.

5,606,683

STRUCTURE AND METHOD FOR VIRTUAL-TO-PHYSICAL ADDRESS TRANSLATION IN A TRANSLATION LOOKASIDE BUFFER

Thomas J. Riordan, Los Altos, Calif., assignor to Quantum Effect Design, Inc., Santa Clara, Calif.

Filed Jan. 28, 1994, Ser. No. 189,007
Int. Cl.[6] G06F *12/00*
U.S. Cl. 395—417 **4 Claims**



1. A computer including a translation lookaside buffer, said translation lookaside buffer translating a virtual memory address to a physical memory address, said translation lookaside buffer comprising:

(i) a plurality of buffer entry circuits, each entry circuit comprising:

a matching unit for comparing components of a current virtual memory address computation to corresponding components of a previous virtual memory address computation, said matching unit providing a signal when said components of said current virtual memory address computation matches said components of said previous virtual memory address computation; and

a storage unit for storing a physical address corresponding to the result of said previous virtual memory address computation; and

(ii) a multiplexer, said multiplexer selecting as output data, when said signal is received from said matching unit of an entry circuit within said plurality of entry circuits, said physical address of said storage unit of said entry circuit;

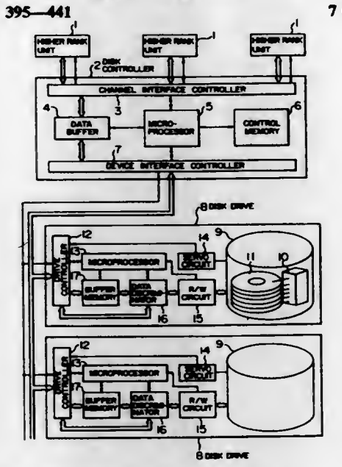
wherein said previous and said current virtual memory computations each includes a step of adding a n_1-bit base address, to an n_1-bit offset, said n_1-bit offset being obtained by sign-extending an n_2-bit signed offset value, where $n_1 > n_2$, said matching unit comparing, in said previous and current virtual memory computations, the leading (n_1-n_2) bits of said n_1-bit base addresses, the sign bits of said n_2-bit signed offset values, bits n_2 through n_3 of the partial results of said steps of summing, where $n_2 > n_3 \geq 0$, and the carry bits at bit position n_2 of said steps of summing, n_1, n_2 and n_3 being integers.

5,606,684

ON-LINE DUMPING SYSTEM AND DISK SUB-SYSTEM

Toshio Nakano; Masafumi Nozawa; Kiyoshi Hisano, all of Odawara; Akihito Ogino, Kanagawa-ken; Akira Kurano, Odawara; Hiroyuki Kitajima, and Akihiko Togawa, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 583,311, Sep. 17, 1990, Pat. No. 5,410,666. This application Oct. 7, 1994, Ser. No. 319,775
Claims priority, application Japan, Sep. 22, 1989, 1-247320
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—441 **7 Claims**



1. A data storing method comprising the steps of:

(a) issuing from a higher rank unit a request for dump processing adding thereto a prefetch command in which a range designating parameter for designating a range of data to be copied is set upon occurrence of a request for dump processing to copy data stored in a disk drive to another storage unit;

(b) receiving the request for dump processing adding the prefetch command in a disk controller, checking whether or not data in the range designated by the range designating parameter of the prefetch command exists in a buffer memory for dump processing in said disk drive or said disk controller and reporting a result of checking to the higher rank unit which issued the request for dump processing;

(c) continuing execution of the requested dump processing to copy data in the buffer memory to said another storage unit, when the data in the range designated by said range designating parameter exists in the buffer memory;

(d) interrupting execution of the request for dump processing in a queue in said disk controller and storing data designated by the range designating parameter in the buffer memory, when the data in the range designated by said range designating parameter does not exist in the buffer memory;

(e) checking whether there exists continuing on-line processing having a higher priority than the request for dump processing when the data stored in said buffer memory is completed and an interrupt of the completion of the data store is reported to said higher rank unit;

(f) reporting an interrupt of a request for continuing the on-line processing prior to the interrupt of the completion of the data storing when the continuing on-line processing exists; and

(g) reporting the interrupt of the completion of the data store to said higher rank unit and requesting said higher rank unit to

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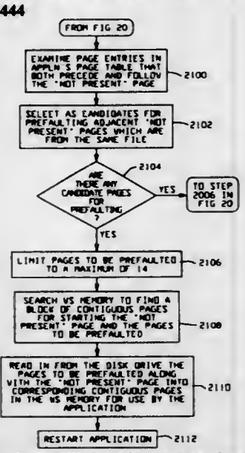
reissue the request for dump processing being interrupted when the continuing on-line processing does not exist.

5,606,685

COMPUTER WORKSTATION HAVING DEMAND-PAGED VIRTUAL MEMORY AND ENHANCED PREFAULTING

James W. Frandeen, Soquel, Calif., assignor to Unisys Corporation, Blue Bell, Pa.

Filed Dec. 29, 1993, Ser. No. 174,855
Int. Cl.[6] G06F *12/08*
U.S. Cl. 395—444 **11 Claims**



1. A method of controlling paging on a workstation capable of concurrently running a plurality of applications, said method comprising the steps of:

providing a workstation memory;

dividing said workstation memory into a plurality of pages having files stored therein;

maintaining a page table for each running application indicating corresponding files and pages and also whether each page is present;

providing non-volatile storage for storing not present pages;

assigning pages of said workstation memory to each running application;

providing a page fault when a running application requests access to a page which said page table indicates is not present;

determining whether a free page is available for storing the not present page of the page faulting application;

when a free page is determined to be available to store the not present page, then examining the page table of the page faulting application with respect to adjacent pages both preceding and following the not present page which caused the page fault;

selecting as candidate pages for prefaulting consecutive not present adjacent pages both following and preceding said not present page which are also from the same file as the not present page;

searching said workstation memory to find an available block of contiguous pages for storing the not present page and the adjacent candidate pages; and

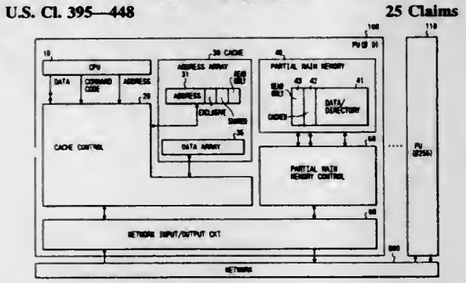
reading in from said non-volatile storage the not present page which produced the page fault and the maximum number of adjacent candidate pages that can be accommodated by the block found by said searching.

5,606,686

ACCESS CONTROL METHOD FOR A SHARED MAIN MEMORY IN A MULTIPROCESSOR BASED UPON A DIRECTORY HELD AT A STORAGE LOCATION OF DATA IN THE MEMORY AFTER READING DATA TO A PROCESSOR

Toshiaki Tarui; Naonobu Sukegawa, both of Kokubunji; Hiroaki Fujii, Hadano, and Katsuyoshi Kitai, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 24, 1994, Ser. No. 328,759
Claims priority, application Japan, Oct. 22, 1993, 5-287403
Int. Cl.[6] G06F *12/08*
U.S. Cl. 395—448 **25 Claims**



24. A computer system, including:

a plurality of processing units; and

a network for connecting said plurality of processing units for transfer of plural data therebetween;

wherein each processing unit includes:

a processor,

one of a plurality of partial main memories which are distributed in said plurality of processing units and realizes a main memory shared by said plurality of processing units;

a partial main memory access control circuit which controls accesses to said one partial main memory, and

a cache memory which holds a part of data held in said one partial main memory;

wherein said partial main memory control circuit includes:

a partial main memory access control circuit which responds to data read requests and data write requests provided by said plurality of processing units and accesses said main memory, and

a directory information generation circuit which responds to operations of said partial main memory access control circuit and generates either one of directory information for each storage location of said partial main memory and renewed directory information of directory information generated by said directory generation circuit for said each storage location, said directory information for each storage location indicating each of every at least one of a plurality of processing units which has cached a data line held in said each storage location;

wherein said partial main memory access control circuit includes:

an access circuit responsive to a data read request provided by one of said plurality of processing units, for reading a data line requested by said read request from a storage location for said data line within said partial main memory when there is no processing unit which has already cached said data line, and transferring said read data line to said one processing unit,

a write circuit responsive to said transferring of said data line for writing directory information generated by said directory generation circuit for said data line into said storage location for said data line in place of said data line, and

a data transfer request circuit responsive to another data read request given by another of said plurality of processing units for said data line after said data line has been transferred to said one processing unit, for detecting said one processing unit as a processing unit which has cached said requested data line, based upon said directory information

stored in said storage location for said data line, and requesting said one processing unit to transfer said data line which has been transferred thereto from a cache memory of said one processing unit to said another processing unit,

wherein said directory information generation circuit further generates renewed directory information of said directory information generated for said storage location and stored therein by said write circuit, when said data line is requested by another data read request and has been transferred from said one processing unit to said another processing unit by said data transfer request circuit,

said renewed directory information for said storage location indicating said one processing unit and said another processing unit as having cached said data line held in said storage location,

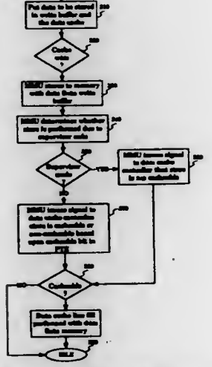
wherein said write circuit further rewrites said directory information written into said storage location by said write circuit by said renewed directory information.

5,606,687

METHOD AND APPARATUS FOR OPTIMIZING SUPERVISOR MODE STORE OPERATIONS IN A DATA CACHE

Peter A. Mehring, Sunnyvale, and Herbert Lopez-Aguado, Mountain View, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Oct. 7, 1993, Ser. No. 132,795
Int. Cl.[6] G06F *12/08*
U.S. Cl. 395—466 **11 Claims**



6. In a computer system comprising a processor and memory hierarchy, said memory hierarchy including a main memory and a data cache, said processor executing code including memory operations while in one of a plurality of modes, said modes including a supervisor mode, a method for performing conditional cache allocate operations on data when a cache miss on a store operation occurs, said method comprising the steps of:

storing cacheable status indicative of whether data is cacheable;

storing mode status indicative of whether the operation is being performed while the processor is in supervisor mode;

if a miss to the data cache occurs during a store operation;

checking the mode status indicative of whether the operation is being performed while the processor is in supervisor mode,

if the processor is in supervisor mode, issuing a cacheable signal indicating that the data is not cacheable, and

if the processor is not in supervisor mode,

checking the cacheable status to determine whether the data is cacheable,

if the data is cacheable, issuing a cacheable signal indicating that the data is cacheable, and

if the data is not cacheable, issuing a cacheable signal indicating that the data is not cacheable; and performing a write allocate operation if the data is cacheable;

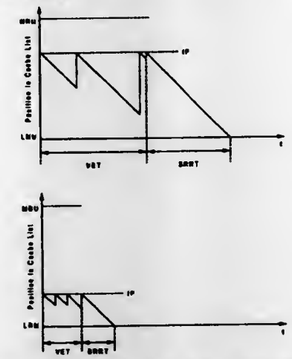
wherein cache allocate operations are eliminated while the processor in supervisor mode.

5,606,688

METHOD AND APPARATUS FOR DYNAMIC CACHE MEMORY ALLOCATION VIA SINGLE-REFERENCE RESIDENCY TIMES

Bruce McNutt, Gilroy, and Brian J. Smith, San Jose, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 31, 1994, Ser. No. 298,826
Int. Cl.[6] G06F *12/08*
U.S. Cl. 395—497.01 **30 Claims**



1. A cache within a staged hierarchical memory system of a data processing system, the cache comprising:

a cache memory for storing a plurality of data blocks, each block belonging to one of a plurality of data sets;

a cache directory having a list of entries associated with data blocks stored in the cache memory, wherein the list is configured as an ordered list having a top position to a bottom position, and further wherein each entry corresponds to an individual data block and has fields for storing information including a designation of the data set to which the corresponding data block belongs;

a directory controller which generates an entry corresponding to a data block of a given data set when the data block is loaded in the cache, the directory controller inserts the generated entry into the list at an insertion point for the given data set corresponding to a calculated optimal single-reference residency time for the given data set, and removes the bottom entry from the list, which is at the bottom position of the list, when an entry is inserted in the list, and further wherein the directory controller moves an entry in the list to an insertion point for the given data set of a corresponding data block when the corresponding data block is referenced in the cache; and

a storage control unit for storing data blocks within the cache memory, which replaces the data block corresponding to the bottom entry with the data block corresponding to the entry inserted into the list.

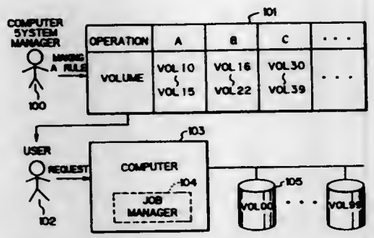
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5,606,689

DATA PROCESSING APPARATUS INCLUDING EXTERNAL STORAGE PREVIOUSLY RESERVED TO BE ALLOCATED TO JOB GROUPS

Akio Nakagawa, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 23, 1992, Ser. No. 996,176
Claims priority, application Japan, Dec. 24, 1991, 3-340565
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—622 **9 Claims**



1. A data processing apparatus comprising:

an external storage device including a plurality of storage units, said plurality of storage units being previously classified into a plurality of storage unit groups, and said plurality of storage unit groups being previously reserved for a plurality of job groups corresponding to a plurality of normal operations, respectively;

storage reservation rule storing means for storing storage reservation rules expressing a relationship between partial character strings of job names respectively corresponding to said plurality of job groups and said plurality of storage unit groups; and

storage allocation means for selecting one of said plurality of storage unit groups corresponding to one of said partial character strings of job names which is input with a storage request of a file of one of said corresponding job groups based on a corresponding one of said storage reservation rules, and for allocating at least one of said plurality of storage units included in said selected one storage group to said one job group.

5,606,690

NON-LITERAL TEXTUAL SEARCH USING FUZZY FINITE NON-DETERMINISTIC AUTOMATA

Kenneth M. Hunter, San Francisco; Michael G. Roberts, Mountain View, and Harry T. Garland, Los Altos, all of Calif., assignors to Canon Inc., Tokyo, Japan

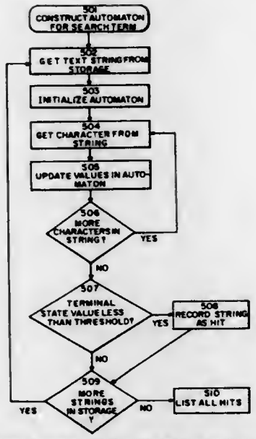
Continuation-in-part of Ser. No. 110,093, Aug. 20, 1993, abandoned. This application Oct. 28, 1994, Ser. No. 330,968
Int. Cl.[6] G06F *17/30;7/04*
U.S. Cl. 395—605 **26 Claims**

1. A computer-implemented method for selectively retrieving information, including a plurality of stored text strings that do not have to be presorted, said stored text strings contained in a document set stored on a data storage medium and accessible by a computer processor, the method comprising the steps of:

A. transmitting a user-defined text string query to the processor;

B. constructing a fuzzy finite non-deterministic fixed-size automaton corresponding to said query, wherein said automaton has at least two states, each state can have more than two values, and more than one state can be active simultaneously;

C. applying each distinct stored text string individually and sequentially to said automaton just once and generating thereby an accumulated dissimilarity metric associated with each distinct text string in the stored document set; and



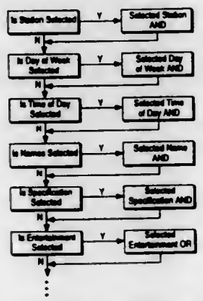
D. displaying a subset of the distinct stored text strings, said subset based upon values of the accumulated dissimilarity metrics.

5,606,691

METHOD OF SEARCHING A DATABASE USING SELECTED CRITERION HAVING IMPLICIT LOGICAL OPERATION

Michael Watts, Morgan Hill; Robert Nazarenus, San Jose; Kathleen Lane, Los Altos; Fai-To Leung, and Alan Steinhauer, both of Sunnyvale, all of Calif., assignors to Harman Interactive Inc., San Jose, Calif.

Filed Nov. 10, 1994, Ser. No. 337,285
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—604 **18 Claims**



1. A method of searching a database using selected criteria selected from a plurality of search criteria, by the use of a computer having a display device having a pointing device for visually indicating a position through a cursor means, on the display device said method comprising the steps of:

for each of a plurality of search criteria, displaying on a first portion of said display device a plurality of search sub-criteria;

moving the cursor means on the display device, through the use of the pointing device to a desired one of said plurality of displayed search sub-criteria on said first portion of said display device;

selecting one or more of said plurality of displayed search sub-criteria activating the pointing device when said cursor means is positioned over said desired sub-criterion;

moving the selected sub-criterion from the first portion of said display device to a second portion of said display device;

automatically selecting all displayed search sub-criteria for any of said search criteria having an AND logical operation associated therewith and for which no search sub-criteria is otherwise selected by the user activating the pointing device;

searching said database after said selecting step by the computer using said selected sub-criteria displayed in said second portion of said display device and said automatically selected sub-criteria, based upon a predefined logical operation associated with said selected sub-criteria displayed in said second portion and said automatically selected sub-criteria, without the user inputting any logical operation; and

displaying on said display device the results of said search.

5,606,692

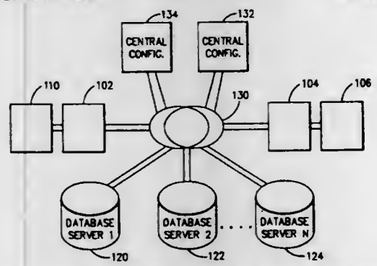
Patent Not Issued For This Number

5,606,693

DISTRIBUTED DATABASE MANAGEMENT OVER A NETWORK

Kenneth Nilsen, Chappaqua, N.Y., and David Garcia, Danbury, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 259,376, Jun. 14, 1994, which is a continuation of Ser. No. 770,056, Oct. 2, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 473,154
Int. Cl.[6] G06F *11/34;17/30*
U.S. Cl. 395—610 **4 Claims**



1. A computer implemented method for handling a request for the retrieval of specified data in a distributed database environment having a plurality of data requestors and a plurality of database servers, each of said database servers having data storage associated therewith, said request originating from one of said requestors, said data requestors and said database servers being located at respective nodes of a communications network, said method comprising the steps of:

maintaining configuration information regarding said database servers in a plurality of configuration controllers connected to said data requestors and to said database servers via said network, said controllers providing a redundant control system for said network, said configuration information identifying a particular subset of said plurality of database servers storing specified data;

transmitting said request for the retrieval of specified data from the originating data requestor via said network to one of said configuration controllers;

determining the particular subset of said plurality of database servers storing said specified data using said configuration information;

transmitting database server access information identifying said particular subset of said plurality of database servers from said configuration controller via said network to said originating data requestor; and

accessing from said originating data requestor the data storage of the subset of said plurality of database servers identified by said access information to retrieve said data.

5,606,694

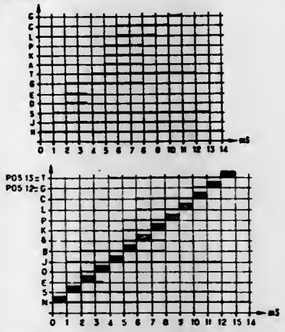
Patent Not Issued For This Number

5,606,695

METHOD OF SCHEDULING SUCCESSIVE TASKS SUBJECT ONLY TO TIMING CONSTRAINTS

Jozef Dworzecki, Fontenay le Fleury, France, assignor to Cegelec, Levallois Perret, France

Filed Aug. 2, 1995, Ser. No. 510,533
Claims priority, application France, Aug. 11, 1994, 9409952
Int. Cl.[6] G06F *9/46*
U.S. Cl. 395—208 **1 Claim**



1. Method for scheduling successive tasks by means of a computer, said tasks being subject only to timing constraints, a timing constraint requiring that the execution start time be in at least one predetermined time interval relative to an absolute reference time;

said method comprising the following successive steps in this order:

calculating for each task upper and lower limits of the interval in which execution of that task must start;

constructing a first series in which all said tasks are scheduled in increasing order of their lower limit, and are scheduled in increasing order of their upper limit when several tasks have a same lower limit;

constructing a second series in which all said tasks are scheduled in increasing order of their upper limit, and are scheduled in decreasing order of their lower limits when several tasks have a same upper limit and have different lower limits;

constructing a current permutation, first by scheduling all said tasks in the order of said first series;

verifying if said current permutation satisfies all said constraints supplying to said tasks, the tasks being considered one by one in the order corresponding to said current permutation, to check whether each task satisfies all the constraints applying to said task;

concluding that the scheduling succeeds if all said constraints are satisfied;

otherwise, determining in said current permutation the first ill-placed task for which a constraint is not satisfied;

determining in said second series a candidate task immediately following said ill-placed task in said second series that also precedes said ill-placed task in said current permutation, said candidate being a task which has already been verified, all the tasks following said candidate task in said current permutation being not considered as satisfying all the constraints, any more;

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verifying that if said candidate task is shifted to a position immediately after said ill-placed task all said constraints applying to all said tasks shifted in this way are then satisfied; and

if at least one constraint is not satisfied, concluding that said candidate task is not suitable and then determining in said second series another candidate task and repeating the previous verification; and, if this is not possible, concluding that the scheduling fails;

if all said constraints are satisfied, concluding that the scheduling succeeds.

5,606,696

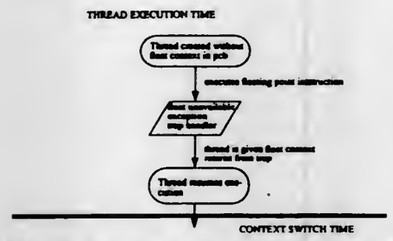
EXCEPTION HANDLING METHOD AND APPARATUS FOR A MICROKERNEL DATA PROCESSING SYSTEM

Dennis F. Ackerman, Boynton Beach; Himanshu H. Desai, Boca Raton; Ram K. Gupta, Boca Raton, and Ravi R. Srinivasan, Boca Raton, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 303,796, Sep. 9, 1994, Pat. No. 5,481,719. This application Sep. 25, 1995, Ser. No. 533,455

Int. Cl.[6] G06F *9/46*

U.S. Cl. 395—678 **2 Claims**



1. An article of manufacture for use in a data processing system including a memory and a processor that has a plurality of fixed point registers and a plurality of floating point registers, comprising:

a computer useable medium having computer readable program code means embodied therein for providing a method for managing process threads that are to be executed by the processor, the computer readable program code means in said article of manufacture comprising:

computer readable program code means for causing a computer to create a process thread in the memory to be executed by the processor, and a process control block in the memory to store thread information;

computer readable program code means for causing a computer to store in the process control block a non-floating point indication that the process thread is not enabled to perform floating point operations;

computer readable program code means for causing a computer to execute during a first occurring session, only fixed point operations with the process thread in the processor using the plurality of fixed point registers;

computer readable program code means for causing a computer to remove the process thread from the processor at a termination of the first session and storing first values of the fixed point registers in the process control block and, in response to said non-floating point indication, not storing the contents of the plurality of floating point registers in the process control block;

computer readable program code means for causing a computer to restore the execution of the thread in the processor in a second occurring session by detecting said non-floating point indication in the process control block, and in response thereto, performing a lazy context restore operation by loading said first values from the process control block into the plurality of fixed point registers and not loading the plurality of floating point registers of the processor;

computer readable program code means for causing a computer to execute during said second occurring session, fixed point operations with the process thread in the processor using the plurality of fixed point registers;

computer readable program code means for causing a computer to attempt to execute a floating point instruction in the process thread during said second session, and in response thereto, calling an exception handler;

computer readable program code means for causing a computer to use said exception handler to store an alternate floating point indication in the process control block, to indicate that the process thread is enabled to perform floating point operations;

computer readable program code means for causing a computer to resume execution of said floating point instruction in the process thread;

computer readable program code means for causing a computer to remove the process thread from the processor at a termination of said second session and storing second values of the plurality of floating point registers in the process control block in response to said alternate floating point indication; and

computer readable program code means for causing a computer to restore the execution of the process thread in the processor in a third occurring session by detecting said alternate floating point indication, and in response thereto, performing a lazy context restore operation by loading said second values from the process control block into the plurality of floating point registers of the processor.

5,606,697

COMPILER SYSTEM FOR LANGUAGE PROCESSING PROGRAM

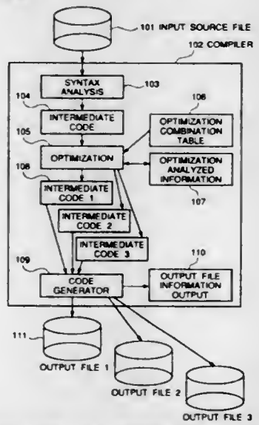
Hirohiko Ono, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 30, 1994, Ser. No. 312,904

Claims priority, application Japan, Sep. 30, 1993, 5-243428

Int. Cl.[6] G06F *9/45*

U.S. Cl. 395—707 **3 Claims**



1. A compiler system for a language processing program, comprising means for analyzing an input source program and converting the input source program into a first intermediate information, means having a plurality of optimizing functions, for optimizing the first intermediate information into a second intermediate information, information holding means for holding a plurality of optimizing function combinations to the optimizing means, a code generator means for converting the second intermediate information obtained by the optimizing function combination, into a machine language instruction, file information output means for outputting an output file information when the second intermediate information obtained by the optimizing function combination was converted into a machine language instruction, and means for outputting a plurality of output files based on the optimizing function combinations.

5,606,698

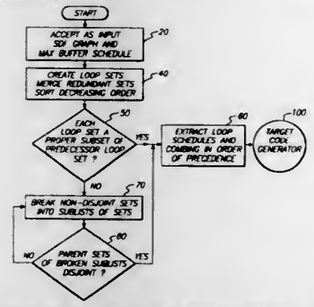
METHOD FOR DERIVING OPTIMAL CODE SCHEDULE SEQUENCES FROM SYNCHRONOUS DATAFLOW GRAPHS

Douglas B. Powell, San Francisco, Calif., assignor to Cadence Design Systems, Inc., San Jose, Calif.

Continuation of Ser. No. 53,607, Apr. 26, 1993, abandoned. This application Mar. 7, 1995, Ser. No. 400,540

Int. Cl.[6] G06F *9/45*

U.S. Cl. 395—709 **5 Claims**



1. A method for deriving code schedule sequences for a target code generator from an input ordering of nodes and prime factors of their respective ordered invocation rates from an SDF graph representative of a system, comprising the steps of:

creating a loop set for each prime factor wherein the elements of each loop set are the actors, the invocation frequency from which are factorable by that prime factor and are ordered;

merging redundant created loop sets so as to eliminate those sets with identical nodes;

sorting the merged loop sets in decreasing order by the total number of node elements in each set;

determining whether each loop set is a proper subset of its sorted ordered predecessor loop set with which it intersects and, if not, then performing the substeps of:

(a) breaking the non-disjoint sets into sublists of sets which are proper subsets of their predecessor sets; and

(b) determining whether the parent sets of the broken sublists are then disjoint from one another and, if not, repeating substeps (a) and (b);

extracting a loop schedule for each sublist; and

combining the extracted loop schedules in accordance with the sorted precedence ordering of the nodes in each of said loop sets to generate the code schedule sequences.

5,606,699

STORING AND QUERYING EXECUTION INFORMATION FOR OBJECT-ORIENTED PROGRAMS

Wim De Pauw, Scarborough, and John M. Vlissides, Mohegan Lake, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 28, 1995, Ser. No. 431,226

Int. Cl.[6] G06F *9/455*

U.S. Cl. 395—683 **16 Claims**

1. A method for storing and accessing information about the execution of one or more object-oriented programs executing on a computer system, comprising the steps of:

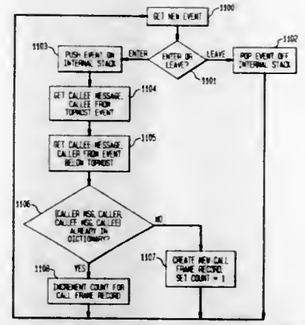
a. executing one or more object-oriented programs on a central processing unit, each program having one or more objects, each object being an instance of a class, and one or more of the objects communicating with one another during the execution;

b. collecting one or more events to create an event stream, the event stream representing the communications between objects;

c. extracting information from the event stream using an execution model;

d. storing zero or more communication entries in a dictionary, each communication entry comprising a representation of a communication to one or more objects, where communications are extracted by the execution model; and

e. accessing information about the objects during execution by one or more queries that cause a client program to perform dictionary search with parameters that satisfy the query.



5,606,700

COMPUTER PROGRAM PRODUCT AND PROGRAM STORAGE DEVICE FOR OBJECT ORIENTED PROGRAMMING PLATFORM

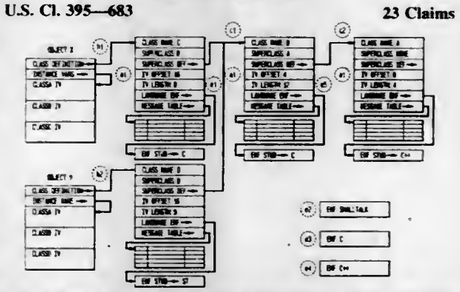
Tefcros Anthias, Romsey, and Andrew M. West, Winchester, both of England, assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 386,193, Feb. 9, 1995, Pat. No. 5,511,199, which is a continuation of Ser. No. 817,856, Jan. 6, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 478,798

Claims priority, application European Pat. Off., Jan. 18, 1991, 91300413.1

Int. Cl.[6] G06F *9/40*

U.S. Cl. 395—683 **23 Claims**



1. A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform method steps for performing a target function by sending a message from a first computer program written in a first computer language to a target object of a target class in a second computer program written in a second computer language, said method steps comprising:

locating a predetermined description of said target class;

locating said target function from within said target class by reading said description;

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mapping said message into a format required by said second language; and
sending said message to said target object.

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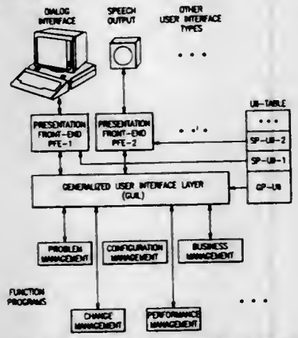
Patent Not Issued For This Number

5,606,702

METHOD FOR SPECIFYING USER INTERFACES AND PROGRAMMING SYSTEM RUNNING A MULTIPLE USER INTERFACE COMPUTER

Hans H. Diel; Hans G. Dockweiler, both of Sindelfingen, and Martin Welsch, Herrenberg, all of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 122,551, Sep. 30, 1993, abandoned. This application Nov. 20, 1995, Ser. No. 560,947
Int. Cl.[6] G06F 9/45
U.S. Cl. 395—682 **12 Claims**



1. In a computer, an adaptable user interface system for integrating a number of different user interface types, each of said number of different user interface types being used by a different presentation front-end program, said system comprising:

means for storing in a form of a directed graph user interface information comprising sets of information, each set of information being associated with a node of said directed graph and comprising a first part common to said number of different user interface types and at least two second parts, each second part assigned to a different one of said number of different user interface types;

means for selecting a user interface type by accessing the user interface information of at least one of said nodes, said selecting being under the control of said different presentation front-end programs, each presentation front-end program representing one of said different user interface types and accessing its corresponding second part of said at least one of said nodes.

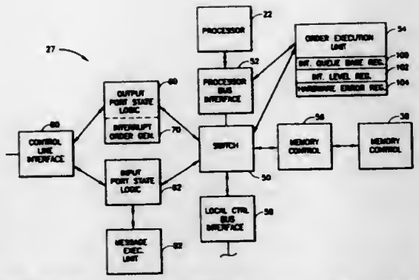
5,606,703

INTERRUPT PROTOCOL SYSTEM AND METHOD USING PRIORITY-ARRANGED QUEUES OF INTERRUPT STATUS BLOCK CONTROL DATA STRUCTURES

James T. Brady, and Damon W. Finney, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 6, 1995, Ser. No. 567,940
Int. Cl.[6] G06F 9/46;13/26
U.S. Cl. 395—737 **11 Claims**

6. A method for performing interrupt actions in a data processing system which includes software means for controlling performance



of an interrupt action and plural subsystems, each subsystem including means for manifesting occurrence of a related event, said method comprising the steps of:

a. responding to said manifesting by issuing an order to construct an Interrupt Status Block (ISB) data structure having a determined priority ranking among a plurality of priority rankings;

b. constructing said ISB data structure to at least include a pointer value indicating a next ISB having a same priority ranking, interrupt data identifying an interrupt procedure to be used by said software means, and information indicating a source of said manifesting;

c. arranging said ISB data structure in an interrupt queue of ISB's having a same determined priority;

d. signalling said software means to commence performance of an interrupt action only if said order requires such action; and

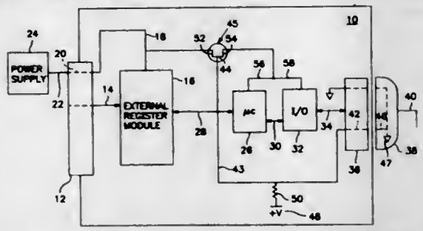
e. causing said software means to read contents of said ISB data structure and to perform operations in accordance with data contained therein.

5,606,704

ACTIVE POWER DOWN FOR PC CARD I/O APPLICATIONS

Michael E. Pierce, Orangevale, Calif., and David C. Scheer, Boca Raton, Fla., assignors to Intel Corporation, Santa Clara, Calif.

Filed Oct. 26, 1994, Ser. No. 330,250
Int. Cl.[6] G06F 1/32
U.S. Cl. 395—750 **18 Claims**



1. A system for controlling the power consumption of a PC card coupled to a host computer providing all power to said PC card, wherein said PC card includes a microcontroller connected to an I/O sub system and an I/O connector having a first side connected to said I/O sub system and a second side connected to a source of I/O signals external to said host computer, said system comprising:

an external register module connected to said microcontroller and communicating with said host computer said external register module indicating the status of said PC card to said host computer;

a status detector located on said PC card and adapted to detect whether said I/O sub system is processing I/O information and supplying a status signal indicative thereof; and

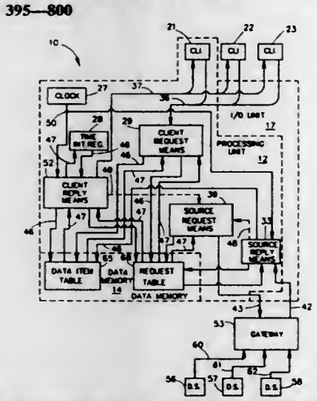
a power management module connected to said status detector for receiving said status signal, said power management module controlling, application of power to said I/O sub system in response to said status signal said power management module supplying power to said external register module regardless of whether said I/O sub system is processing I/O information.

5,606,705

COMMUNICATION COORDINATOR FOR MESSAGES TO BE SENT FROM AT LEAST ONE DATA SOURCE TO A PLURALITY OF CLIENTS

Jeffrey C. Randall, Minneapolis; Anil K. Gowda, Eden Prairie; Timothy F. McCarthy, Plymouth, and Edward L. Schwarz, Minneapolis, all of, assignors to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 15, 1994, Ser. No. 228,057
Int. Cl.[6] G06F 15/00
U.S. Cl. 395—800 **14 Claims**



1. An improvement in a communication system for supplying values provided by at least one data source for a plurality of data items each having assigned to it, its own data item identity code and each data item having its value available from a single data source, to each of a plurality of clients each having its own client identity code, each client supplying on a client data link, client request signals encoding a data item identity code and the client identity code and receiving on the client data link, client reply signals encoding values of data items in association with the respective data item identity codes thereof, said communication system including a server comprising i) a processing unit connected to at least one client data link and at least one source data link, and ii) a data memory in which data may be recorded and retrieved by the processing unit and in which may be recorded by the processing unit a data item table comprising a plurality of entries where in each entry may be recorded a client identity code, a data item identity code, and a data item value and wherein each data item table entry is designated by an identifier, and wherein each said data source is connected to a source data link allowing two way communication between the data source and the processing unit, each said data source providing a source reply signal to the server on the source data link to which it is connected responsive to a source request signal provided on the source data link by the processing unit, each said source request signal encoding a data item identity code, and said source reply signal encoding a value for the data item whose identity code was encoded in the source request signal for which the source reply signal is the response, wherein the processing unit includes the improved apparatus comprising:

a) client request means connected to a client data link and receiving client request signals thereon, for recording in a data item table entry for a client request signal, the identity code for the client supplying that client request signal and the identity code of the data item in that client request signal;

b) source request means connected to a preselected source data link and receiving from the data memory, the data recorded in selected entries in the data item table, for issuing source request signals to a data source on the preselected source data link, said source request signals encoding the data item identity codes recorded in the selected data item table entries;

c) a clock providing a clock signal encoding a time value comprising the current time of day wherein the source reply means further comprises means receiving the clock signal;

d) source reply means connected to each source data link and receiving the source reply signals therefrom, and connected to the clock and receiving the clock signal therefrom, i) for recording in an entry in the data item table in which is recorded the data item identity code encoded in the source request signal for which each source reply signal is a response, the data item value encoded in that source reply signal, and ii) for recording in the data item table in the entry whose data item value is provided by a source reply signal, a time stamp value equal to the time value encoded in the clock signal at the time that source reply signal was received;

e) client reply means connected to each client data link, for scanning the data item table, and for issuing a client reply signal on a client data link to at least two of the plurality of clients, each client reply signal encoding data item value and the data item identity code recorded in an entry of the data item table and wherein each client reply signal is provided to a client whose identity code is recorded in a data item table entry in which the data item identity code encoded in the client reply signal is also recorded;

f) data item selection means for selecting a data item table entry in which is recorded a time stamp value; and

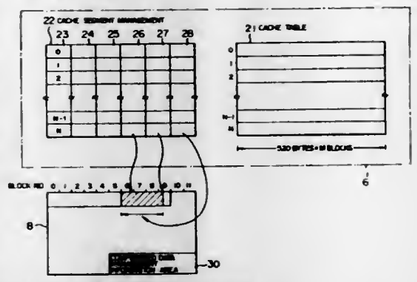
g) valid time means receiving the valid interval signal and the clock signal for calculating a valid data time value as a function of i) the time stamp value recorded in the selected data item table entry and ii) the valid data time interval encoded in the valid interval signal, and for issuing a client reply signal encoding the data item value recorded in the selected data item table entry responsive to the valid data time value exceeding the time value in the clock signal.

5,606,706

DATA STORING SYSTEM AND DATA TRANSFER METHOD

Ken-ichi Takamoto; Kazuo Nakagoshi, both of Odawara; Naoya Takahashi, Yokohama; Makoto Kogai, and Minoru Yoshida, both of Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 89,144, Jul. 7, 1993. This application Aug. 22, 1994, Ser. No. 293,624
Claims priority, application Japan, Jul. 9, 1992, 4-182383
Int. Cl.[6] G06F 15/00
U.S. Cl. 395—800 **10 Claims**



1. A data storing system comprising:

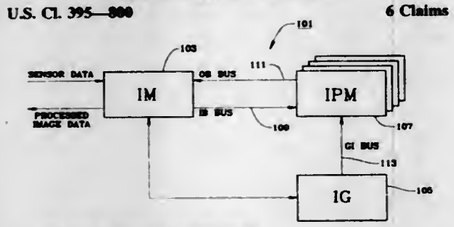
a) a channel adaptor;

b) a disk adaptor coupled to said channel adaptor; and

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c) more than two disk units coupled to a host computer through said channel adaptor and said disk adaptor each disk unit including:
(i) a disk controller having (a) a nonvolatile cache memory with a first storage area, and (b) a data compressing and restoring device compressing data read from the nonvolatile cache memory and generating management information for the compressed data; and
(ii) a disk having a second storage area for storing the management information for the compressed data stored therein, wherein said disk controller stores the management information in both the first and second storage areas;
d) means for outputting a first WRITE command for data stored in the large volume cache memory from the host computer to one disk unit of the more than two disk units through the disk adaptor;
e) means for transferring data stored in the large volume cache memory to one cache memory provided in the one disk unit, based on the first WRITE command;
f) means for notifying termination of transferring to the one cache memory to the disk adaptor;
g) means for outputting a second WRITE command for data stored in the large volume cache memory to another disk unit of the more than two disk units through the disk adaptor;
h) means for transferring data stored in the large volume cache memory to another cache memory provided in another disk unit, based on said second WRITE command;
i) means for notifying termination of transferring to another cache memory to the disk adaptor;
j) means for transferring the data stored in the one cache memory to one data compressing and restoring device to compress the data and generate first management information for the compressed data;
k) means for transferring the first management information to the one cache memory;
l) means for transferring the compressed data with the first management information to one disk;
m) means for transferring the data stored in another cache memory to another data compressing and restoring device to compress the data and generate second management information for the compressed data;
n) means for transferring the second management information to another cache memory; and
o) means for transferring the compressed data with the other management information to another disk independently regardless of transferring the compressed data to the one disk.

5,606,707
REAL-TIME IMAGE PROCESSOR
Mark S. Tomassi, Orlando, and Andrew P. Abercrombie, Winter Park, both of Fla., assignors to Martin Marietta Corporation, Bethesda, Md.
Filed Sep. 30, 1994, Ser. No. 312,926
Int. Cl.[6] G06F *3/14;3/05;13/10*
U.S. Cl. 395—800 **6 Claims**

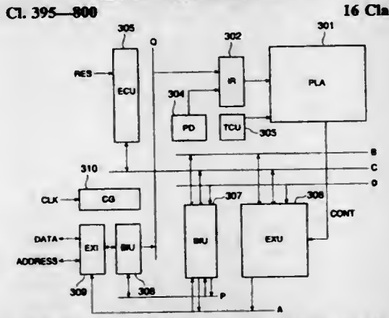


1. An image processor comprising:
image processing means for processing a subframe of a sensor image in accordance with image processing commands, the subframe constituting a predetermined quantity of sensor data, and the processing including at least one of non-data movement analysis and modification of the subframe of the sensor image;
an instruction generator for generating the image processing commands in response to receipt of a message including a subframe ready indicator and an algorithm designator, the image processing commands being determined by the algorithm designator;
an image manager, coupled to the image processing means and the instruction generator means, and having an input for receiving a stream of sensor data constituting an image frame, the image frame comprising at least one subframe,
wherein the image manager detects receipt of a subframe of sensor data, and in response thereto sends the subframe of sensor data to the image processing means, and sends a message to the instruction generator, the message comprising the subframe ready indicator, and the algorithm designator.

5,606,708

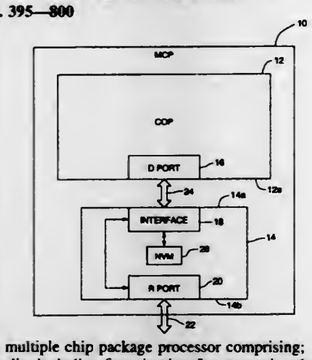
Patent Not Issued For This Number

5,606,709
IMPROVED REGISTER GROUP CIRCUIT FOR DATA PROCESSING SYSTEM
Keiichi Yoshioka, Sanda; Shinichi Yamaura, Kobe; Kazuhiko Hara, and Takao Katayama, both of Ikeda, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Nov. 23, 1994, Ser. No. 344,365
Claims priority, application Japan, Nov. 26, 1993, 5-296412
Int. Cl.[6] G06F *13/20;13/40*
U.S. Cl. 395—800 **16 Claims**



1. A general-purpose register group circuit provided in a data processing system, said general-purpose register group circuit comprising:
a plurality of register groups connected to a first bus and a second bus, data being written into the plurality of register groups via the first bus according to a first control signal and being read therefrom via the second bus according to a second control signal, wherein the first bus is used to write data into the plurality of register groups and not to read data therefrom and wherein the second bus is used to read data from the plurality of register groups and not to write data thereto; and
an output register group connected to the plurality of register groups via the first and second buses, the data read from the plurality of register groups being written into the output register group according to a third control signal, data read from the output register group being sent to an inner bus of the data processing system according to a fourth control signal,
each of the plurality of register groups comprising a plurality of unit registers, each of which registers comprises first means for setting the second bus to either a high-impedance state or a reference level according to data latched therein and the second control signal,
said output register group comprising second means for driving the inner bus according to a state of the second bus.

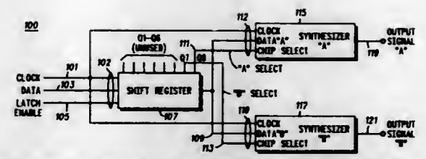
5,606,710
MULTIPLE CHIP PACKAGE PROCESSOR HAVING FEED THROUGH PATHS ON ONE DIE
Christopher M. Hall, Redwood City; Gary D. Phillips, San Jose; William E. Miller, Los Gatos; David W. Weinrich, San Jose; Robert M. Salter, III, Saratoga, and Richard E. Crippen, Mountain View, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.
Filed Dec. 20, 1994, Ser. No. 359,417
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—800 **13 Claims**



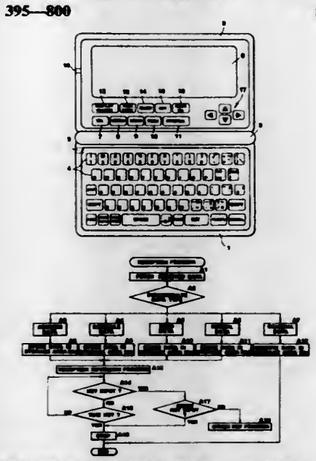
10. A multiple chip package processor comprising;
a first die, including first circuitry for processing data,
a second die, including second circuitry for processing data,
a package enclosing said first and second dies, said package having package pads for coupling to external devices to provide electrical communication paths between said multiple chip package and said external devices,
a first electrical connection coupled between said first die and said second die,
a second electrical connection coupled between said second die and a package pad,
a feed-through path on said second die coupling said first electrical connection to said second electrical connection without passage through circuitry on said second die, and
gate means having a first terminal coupled to said feed-through path and a second terminal coupled to said second circuitry on said second die, said gate means having a first condition in which they inhibit signals from passing therethrough and a second condition in which they allow signals to pass therethrough.

5,606,711
APPARATUS AND METHOD FOR PROVIDING MULTIPLE OUTPUT SIGNALS FROM A SINGLE PROGRAMMING LINE GROUP
John A. Swenson, and Dale R. Anderson, both of Fort Worth, Tex., assignors to Motorola, Inc., Schaumburg, Ill.
Continuation of Ser. No. 903,299, Jun. 24, 1992, abandoned.
This application Jan. 20, 1995, Ser. No. 376,479
Int. Cl.[6] G06F *1/02*
U.S. Cl. 395—800 **8 Claims**

1. A method of programming an apparatus to provide multiple output signals from a single programming line group, the apparatus having a shift register having the single programming line group as an input and first and second programming line groups as outputs, the first and second programming line groups being input into first and second programmable synthesizers for generation of first and second output signals, said shift register including a first input receiving a clock signal and a second input receiving a data signal, said shift register producing a first output to select said first programmable synthesizer, a second output to select said second programmable synthesizer, and a third output transmitting programming data responsive to said data signal to program the selected programmable synthesizer, said first programming line group comprising said clocking signal and a first data signal and said second programming line group comprising said clocking signal and a second data signal, the method comprised of the steps of:
initializing the outputs of the shift register utilizing a first control word;
sending a programming word to a selected one of the first and second programmable synthesizers responsive to the outputs of the shift register;
loading a second control word into the shift register;
latching said programming word into said selected programmable synthesizer following the loading of the second control word; and
re-initializing said outputs of the shift register utilizing said second control word.



5,606,712
INFORMATION MANAGING APPARATUS CAPABLE OF UTILIZING RELATED INFORMATION IN DIFFERENT FUNCTION MODES
Shinji Hidaka, Oome, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 94,607, Jul. 19, 1993, abandoned.
This application Mar. 17, 1995, Ser. No. 407,403
Claims priority, application Japan, Jul. 20, 1992, 4-215541
Int. Cl.[6] G06F *15/30*
U.S. Cl. 395—800 **80 Claims**



1. An information managing apparatus comprising:
information inputting means for inputting various types of information, each of said various types of information including a plurality of data items in a predetermined format;

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a plurality of storing means, each storing means having storage areas in which said plurality of data items of one type of information are stored, and for storing information which is input from said information inputting means;

first designating means for designating one of said storing means so as to display selectively information having given data items of information and which are stored in storage areas of a designated one of said storing means;

means for displaying said information stored in that one of said storing means designated by said first designating means;

second designating means for designating selectively a mode in which registration of a specified given data item of information which is designated by said first designating means and being displayed into another of said storing means is to be executed and a mode in which retrieval of information corresponding to the specified given data item of information which is designated by said first designating means and being displayed from another of said storing means is to be executed while said displaying means is displaying said information stored in said one of said storing means and designated by said first designating means; and

means for executing both registration of said a specified given data item of informatioo which is being displayed into said another of said storing means and retrieval of said specified given data item of information from said another of said storing means in accordance with said mode designated by said second designating means while said displaying means is displaying said information stored in said one of said storing means which was designated by said first designatiog means.

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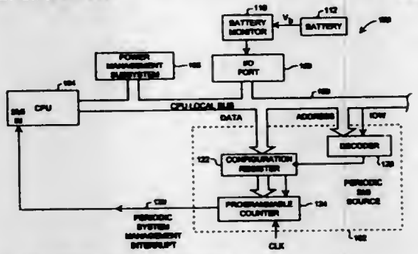
SYSTEM MANAGEMENT INTERRUPT SOURCE INCLUDING A PROGRAMMABLE COUNTER AND POWER MANAGEMENT SYSTEM EMPLOYING THE SAME

Michael T. Wisor, and Rita M. O'Brien, both of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 190,597, Feb. 2, 1994, abandoned. This application Nov. 6, 1995, Ser. No. 554,396

Int. Cl.[6] G06F *1/28;1/30;13/18;13/22*

U.S. Cl. 395—800 **5 Claims**



1. A computer system comprising:

a microprocessor including a system management interrupt input terminal and a general purpose interrupt input terminal, wherein said microprocessor is configured to process an interrupt received at said system management interrupt input terminal with a higher priority and with precedence over an interrupt simultaneously received at said general purpose interrupt input terminal;

a system management interrupt source coupled to said system management interrupt input terminal, wherein said system management interrupt source includes:

a programmable counter capable of asserting a system management interrupt signal at a predetermined periodic rate independent of other system activity as long as an enable bit is set;

a configuration register coupled to said programmable counter and capable of receiving a count value indicative of said predetermined periodic rate during an I/O write cycle generated by said microprocessor, wherein said configuration register includes a storage location for storing said enable bit, and wherein an output of said storage location is coupled to said programmable counter whereby said enable bit selectively enables said programmable counter;

a decoder coupled to said configuration register for decoding an address signal during said I/O write cycle and for causing said count value to be stored within said configuration register;

a battery for providing power to said computer system;

a battery monitor coupled to said battery for monitoring an output voltage level of said battery;

an I/O port coupled to said battery monitor for reading a digital value indicative of said output voltage level; and

a power management subsystem associated with said microprocessor, wherein said microprocessor causes said power management subsystem to read said digital value indicative of said output voltage level from said I/O port in response to the assertion of said system management interrupt signal.

5,606,714

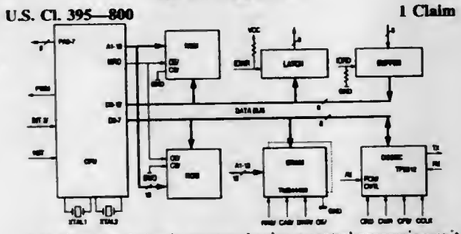
INTEGRATED DATA PROCESSING SYSTEM INCLUDING CPU CORE AND PARALLEL, INDEPENDENTLY OPERATING DSP MODULE AND HAVING MULTIPLE OPERATING MODES

Gideon Intrater, Tel-Aviv; Moshe Doron, Givataim, and Lev Epstein, Holon, all of Israel, assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 307,402, Sep. 16, 1994, abandoned, which is a continuation of Ser. No. 68,119, May 27, 1993, abandoned, which is a division of Ser. No. 806,082, Dec. 6, 1991, abandoned. This application Dec. 1, 1995, Ser. No. 566,254

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—800 **1 Claim**



1. An integrated circuit structure having a central processing unit (CPU) formed as a part thereof, the integrated circuit structure comprising:

an execution unit that executes instructions to perform data processing operations to process data items;

a plurality of general purpose input/output pins, each of which can be connected to provide external signals and/or receive external signals from an external element;

configuration circuitry connected to the CPU to configure the CPU for operation in an operating mode selected from a plurality of possible operating modes, the possible operating modes including

(i) a first operating mode wherein the CPU is connected via an internal bus to an internal memory storage element formed as part of the integrated circuit structure and retrieves instructions and data items for use by the execution unit exclusively from the internal memory storage element, whereby all of the plurality of general purpose input/output pins remain available to provide and/or receive the external signals;

(ii) a second operating mode wherein the CPU retrieves instructions and data items for use by the execution unit from an external memory storage element that is not formed as part of the integrated circuit structure and the external memory storage element being coupled to the execution unit via a first external bus that is connected to a first portion of the plurality of general purpose input/output pins remains available to provide and/or receive the external signals; and

(iii) a third operating mode wherein the central processing unit retrieves instructions and data items for use by the execution unit from at least one external storage element not formed as part of the integrated circuit structure, the at least one external storage element being coupled to the execution unit via a second external bus that is connected to a third portion of the plurality of general purpose input/output pins such that the external signals can be provided and/or received by the integrated circuit structure only if external input/output circuitry is connected to the second external bus.

5,606,715

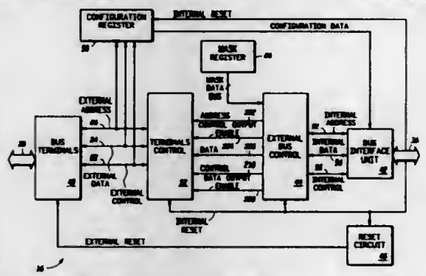
FLEXIBLE RESET CONFIGURATION OF A DATA PROCESSING SYSTEM AND METHOD THEREFOR

Oded Yishay; Daniel W. Pechonis, and Joseph Jelemensky, all of Austin, Tex., assignors to Motorola Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 494,664, Jun. 26, 1995. This application Apr. 29, 1996, Ser. No. 639,461

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—800 **15 Claims**



1. A data processing system, comprising:

a mask register for storing a first configuration value;

a plurality of bus terminals, a first portion of the plurality of bus terminals receiving a second configuration value;

a reset circuit for providing an internal reset signal to indicate the data processing system is executing a reset operation;

an external bus control circuit coupled to the reset circuit for receiving the internal reset signal and coupled to the mask register for receiving the first configuration value, the external bus control circuit providing the first configuration value; and

a terminals control circuit coupled to the reset circuit for selectively receiving the internal reset signal, coupled to the external bus control circuit for receiving the first configuration value, and coupled to the plurality of bus terminals for selectively receiving the second configuration value, the terminals control circuit providing a modified configuration value wherein each bit of the modified configuration value corresponds to each bit of the first configuration value which has not been overwritten by a corresponding bit of the second configuration value provided by a corresponding portion of the plurality of bus terminals.

5,606,716

DEVICE FOR DETECTING THE CONNECTIVITY OF A MONITOR AND INHIBITING A DATA REPRODUCING OPERATION

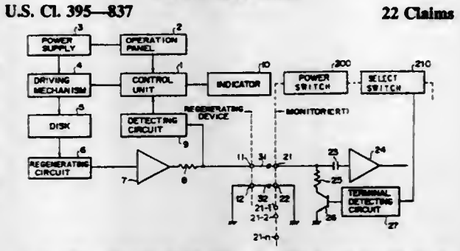
Shunichi Miyadera, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 599,082, Oct. 17, 1990, abandoned. This application Jun. 3, 1992, Ser. No. 892,500

Claims priority, application Japan, Oct. 18, 1989, 1-272036

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—837 **22 Claims**



1. A data reproducing device providing a connection to an external device, said data reproducing device reproducing data which is stored in a recording medium coupled to said data reproducing device in a predetermined manner, said data reproducing device comprising at least one terminal for allowing transmission of reproduced data at a predetermined voltage by said data reproducing device, to said external device, said data reproducing device further comprising:

judging means, coupled to said at least one terminal, for judging, based upon a voltage value of said reproduced data being attenuated from said predetermined voltage at said at least one terminal, whether said external device is able to receive the reproduced data; and

inhibiting means for inhibiting the transmission of the reproduced data when said judging means judges that said external device is not able to receive the reproduced data.

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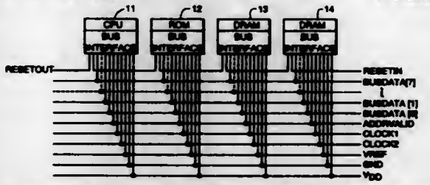
MEMORY CIRCUITRY HAVING BUS INTERFACE FOR RECEIVING INFORMATION IN PACKETS AND ACCESS TIME REGISTERS

Michael Farmwald, Berkeley, and Mark Horowitz, Palo Alto, both of Calif., assignors to Rambus, Inc., Mountain View, Calif.

Division of Ser. No. 510,898, Apr. 18, 1990. This application Mar. 5, 1992, Ser. No. 847,651

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—856 **6 Claims**



1. An interface circuitry for accessing a semiconductor memory circuit, comprising:

(A) receiver circuitry coupled to a multiline bus for receiving data, addresses, and control information that are multiplexed and transmitted in a form of packets via the multiline bus, wherein the multiline bus has a total number of lines less than a total number of bits in any single address, wherein the computer system includes a plurality of semiconductor circuits, including the memory circuit, wherein all circuitry of the interfacing circuitry resides inside the memory circuit;

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(B) decoder circuitry coupled to the receiver circuitry for decoding the packets received in the receiver circuitry to identify the data, addresses, and control information;

(C) control logic circuitry coupled to the decoder circuitry for controlling device operation of the memory circuit in accordance with the data, addresses, and control information received from the multiline bus and for transmitting reply information through the multiline bus in response to the data, addresses, and control information received, the reply information generated in response to accessing the memory circuit; and;

(D) register circuitry coupled to the control logic circuitry for storing a first value corresponding to a first predetermined time period during which the interfacing circuitry must wait before transmitting the reply information through the multiline bus, wherein the register circuitry applies the first value to the control logic circuitry to cause the control logic circuitry to wait for the first predetermined time period before accessing the multiline bus for transmitting the reply information, wherein the register circuitry allows modification of the first value by the control logic circuitry under control of the data, addresses, and control information received from the multiline bus.

5,606,718

Patent Not Issued For This Number

5,606,719

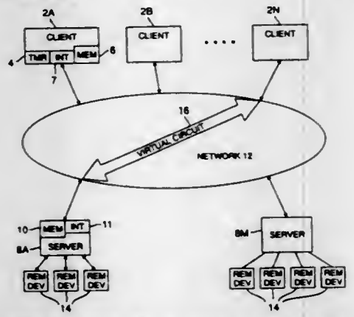
TEMPORARY STATE PRESERVATION FOR A DISTRIBUTED FILE SERVICE

William G. Nichols, Harvard, and Dennis E. Phillips, Littleton, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Division of Ser. No. 377,670, Jan. 24, 1995, Pat. No. 5,530,905, which is a continuation of Ser. No. 115,354, Sep. 2, 1993, abandoned, which is a continuation of Ser. No. 663,207, Feb. 28, 1991, abandoned, which is a continuation of Ser. No. 198,956, May 26, 1988, abandoned. This application Jun. 7, 1995, Ser. No. 473,138

Int. Cl.[6] G06F *15/16*

U.S. Cl. 395—876 **6 Claims**



1. A distributed digital data processing system including a server and a client that transmit messages over a network,

A. said server including:

i. server memory means for storing server message transfer control information, said server message transfer control information including server virtual circuit control information and server sessions control information;

ii. server interface means for engaging in message transfers over said network using the server message transfer control information in said server memory means;

B. said client including:

i. client memory means for storing client message transfer control information, said client virtual circuit control information and client sessions control comprising:

ii. client interface means comprising:

(a) client message transfer means for engaging in message transfers over said network using the client message transfer control information in said client memory means;

(b) virtual circuit information control means for conditioning client virtual circuit control information in said client memory means and for enabling said client message transfer means to engage in an exchange of messages to enable said server interface means to condition server virtual circuit control information in said server memory means, said client virtual circuit control information and said server virtual circuit control information jointly serving to define a virtual circuit;

(c) session information control means for conditioning client session control information in said client memory means in connection with client virtual circuit control information in said client memory means, and for enabling said client message transfer means to engage in an exchange of messages to enable said server interface means to condition server session control information in said server memory means in connection with server virtual circuit control information in said server memory means, said server session control information and said client session control information jointly serving to define a session defined in connection with a virtual circuit;

(d) session timing means for determining when a virtual circuit has had no sessions defined in connection with the virtual circuit for a predetermined period of time; and

(e) means responsive to a positive determination by said session timing means in connection with a virtual circuit for enabling said client message transfer means to transfer a message to enable said server interface means to eliminate said server virtual circuit control information relating to said virtual circuit.

5,606,720

PHOTOGRAPHIC PROCESSING APPARATUS

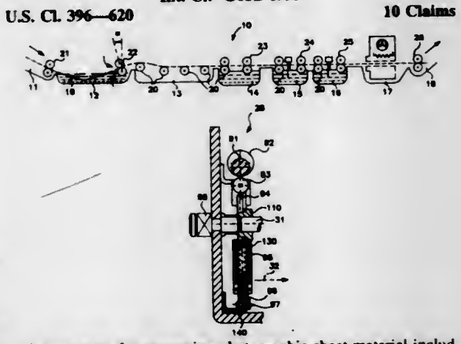
Bart Verboest, Kontich; Jan Claes, Mortsel, and Freddy van Humbeeck, Keerbergen, all of Belgium, assignors to AGFA-Gevaert N. V., Mortsel, Belgium

Filed Jun. 15, 1994, Ser. No. 260,913

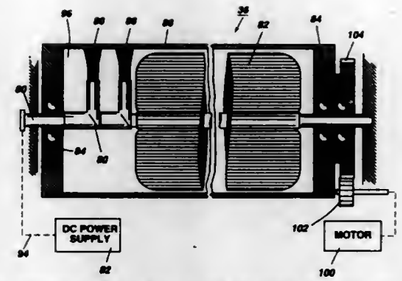
Claims priority, application European Pat. Off., Jul. 5, 1993, 93201957

Int. Cl.[6] G03D *3/08*

U.S. Cl. 396—620 **10 Claims**



1. Apparatus for processing photographic sheet material including first and second processing rollers each being mounted on a roller shaft, said first and second processing rollers being arranged with the first roller is superposed position generally above the second roller, biasing means normally biasing said second roller into contact with the first roller, each of said processing rollers having opposite ends of its shaft journaled for relative rotation in bearings supported in corresponding subframes, drive means at one end of the shaft of said first roller for rotating said first roller to transport said sheet material in a processing direction. and at each end of the shaft of said second roller, a displacement means operative to displace the shaft of said second roller bodily in a generally vertical direction against said biasing means to thus move said second roller out of contact with said first processing roller, at least one end of the first roller shaft being engaged in generally telescoping relation in its bearing and the shaft of said first roller being axially slidable in the bearings therefor a sufficient distance to disengage said one end from its bearing for manual removal of the shaft of said first roller from said bearings.



an essentially sealed cavity in said developer structure; and

an electrical slip-ring like structure supported entirely in said cavity for providing an electrical path between said electrically conductive shaft and said electrically conductive shell.

5,606,721

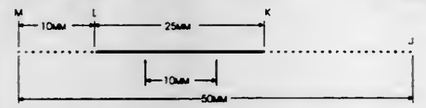
DIAGNOSTIC PROCEDURE TO IDENTIFY CLEANER RETRACTION TIMING FAULTS

Bruce E. Thayer, and Dennis G. Gerbasi, both of Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 15, 1996, Ser. No. 648,467

Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—34 **9 Claims**



1. A method for removing particles from a surface with a retractable cleaner to determine the engagement and retraction timing of the retractable cleaner, comprising:

retracting the retractable cleaner from the surface, having movement, while developing a toner image thereon, having a first measurable length;

engaging the retractable cleaner with the surface to remove a first predetermined measurable portion of the first measurable length of the toner image;

retracting the, retractable cleaner and maintaining the retractable cleaner in a retracted state over a distance equivalent to a second predetermined measurable portion of the first measurable length of the toner image remaining on the surface;

re-engaging the retractable cleaner to remove the particles remaining on the surface from a third measurable portion of the first measurable length after passing the distance equivalent to the second predetermined measurable portion; and

measuring a second measurable length of the toner image remaining on the surface, the second measurable length comprising the second predetermined measurable portion plus a length of the toner image remaining on the surface that occurs as the retractable cleaner retracts away from and engages with the surface.

5,606,722

INTERNAL ELECTRICAL CONTACT FOR MAGNETIC DEVELOPMENT ROLLS

Steven C. Hart, Webster, and Daniel M. Bray, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 25, 1995, Ser. No. 533,577

Int. Cl.[6] G03G *15/09*

U.S. Cl. 399—270 **10 Claims**

1. A developer structure for presenting toner to latent electrostatic images, said structure comprising:

an electrically conductive; shaft member;

a magnet structure carried by said shaft;

non-electrically conductive bearing structure supported by said shaft;

a tubular, electrically conductive shell supported by said bearing structure;

means for moving said electrically conductive shell in an endless path;

an electrically conductive shell supported by said bearing structure;

means for moving said electrically conductive shell in an endless path;

an essentially sealed cavity in said developer structure; and

an electrical slip-ring like structure supported entirely in said cavity for providing an electrical path between said electrically conductive shaft and said electrically conductive shell.

5,606,723

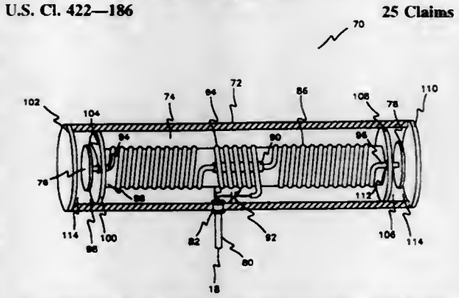
APPARATUS FOR DELIVERING ELECTROMAGNETIC ENERGY INTO A SOLUTION

Dwain E. Morse; James H. Cook, both of Santa Barbara; Thomas G. Matherly, Lompoc, and Howard M. Ham, Jr., Santa Ynes, all of Calif., assignors to ZPM, Inc., Goleta, Calif.

Filed Jan. 25, 1995, Ser. No. 378,462

Int. Cl.[6] B01J *19/12*

U.S. Cl. 422—186 **25 Claims**



1. Apparatus for delivering electromagnetic energy into a solution, comprising:

a first housing having closed ends defining a first water-tight chamber;

coil means contained within said first chamber; said coil means delivering a magnetic field into the solution;

voltage probe means coupled to said coil means for delivering an electric field into the solution; and

means for coupling an electromagnetic signal to said coil means.

5,606,724

EXTRACTING METALS DIRECTLY FROM METAL OXIDES

Chien M. Wai; Nell G. Smart, and Cindy Phelps, all of Moscow, Id., assignors to Idaho Research Foundation, Inc., Moscow, Id.

Filed Nov. 3, 1995, Ser. No. 552,941

Int. Cl.[6] C01G *43/00*

U.S. Cl. 423—3 **46 Claims**

1. A method for extracting a metal from a metal oxide, comprising exposing the metal oxide to a supercritical fluid solvent containing a chelating agent capable of donating a proton to the metal

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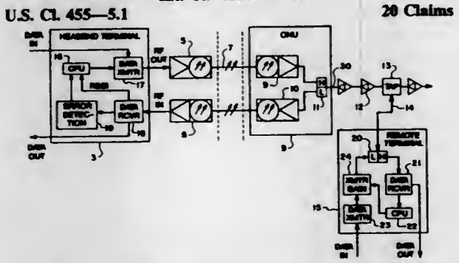
oxide, for a period of time sufficient for the chelating agent to form chelates with the metal, the chelates being soluble in the supercritical fluid.

5,606,725

BROADBAND NETWORK HAVING AN UPSTREAM POWER TRANSMISSION LEVEL THAT IS DYNAMICALLY ADJUSTED AS A FUNCTION OF THE BIT ERROR RATE

Gaylord A. Hart, Parker, Colo., assignor to XEL Communications, Inc., Aurora, Colo.

Filed Nov. 29, 1994, Ser. No. 346,497
Int. Cl.[6] H04N *7/14*
U.S. Cl. 455—5.1 **20 Claims**



1. In a broadband network for two-way communications between a headend and at least one remote terminal including downstream data transmitted from the headend to the remote terminal and upstream data transmitted from the remote terminal to the headend, the improvement comprising:

said remote terminal having:

(a) receiving means for receiving signals from said headend, including control signals; and

(b) transmitting means for transmitting said upstream data to said headend as digital signals including error detection bits, said transmitting means having a transmitting power level adjustably controlled by said control signals from said headend; and

said headend having:

(a) receiving means for receiving said digital signals from said remote terminals;

(b) error detection means for detecting errors in said digital signals received by said receiving means from each of said remote terminals using said error detection bits;

(c) transmitting means for transmitting signals to said remote terminals, including said control signals; and

(d) a processor associated with said error detection means for calculating the rate at which errors are detected by said error detection means for each remote terminal, said processor directing said transmitting means to transmit control signals to increase said transmitting power level of any remote terminal having an error rate exceeding a predetermined limit.

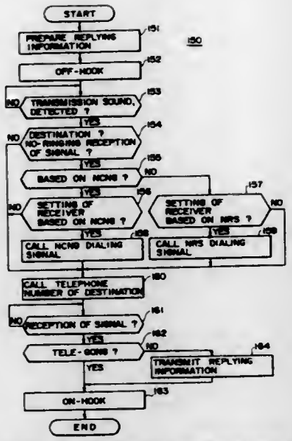
5,606,726

RECEIVING UNIT FOR A TWO-WAY BROADCASTING SYSTEM

Hitoshi Yoshinobu, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 28, 1995, Ser. No. 395,730
Claims priority, application Japan, Mar. 4, 1994, 6-060214; Jun. 24, 1994, 6-166194
Int. Cl.[6] H04N *7/173*
U.S. Cl. 455—5.1 **4 Claims**

1. In a two-way broadcasting system in which a broadcasting side broadcasts a broadcasting program requesting replies of viewers, and a receiving side transmits said replies, including reply information to a specified destination by way of a telephone line, said specified destination having a telephone number associated therewith, wherein:



said broadcasting side broadcasts a main broadcast signal multiplexed with identifying information for detecting the presence or absence of a no-ringing responsive function of said specified destination said no-ringing responsive function having a specified number associated therewith, and,

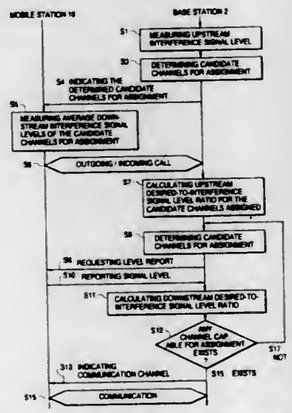
said receiving side receives said broadcast signal and separates said identifying information from said received broadcast signal, and dials specified number corresponding to said no-ringing responsive function before the telephone number of said destination.

5,606,727

METHOD AND APPARATUS FOR ADAPTIVE CHANNEL ASSIGNMENT IN A MOBILE COMMUNICATION SYSTEM

Tetsuro Ueda, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 15, 1994, Ser. No. 356,724
Claims priority, application Japan, Dec. 22, 1993, 5-324852
Int. Cl.[6] H04B *7/26*
U.S. Cl. 455—34.1 **8 Claims**



6. A mobile communication method between a mobile station and a base station having a plurality of sector antennas for respectively providing radio communications within a plurality of zones, the method comprising the steps of:

a) measuring, at the base station, upstream interference signal levels for a plurality of communication channels;

b) determining, at the base station, candidate channels for assignment based on the measured upstream interference signal levels;

c) indicating the candidate channels for assignment to the mobile station;

d) measuring, at the mobile station, an average downstream interference signal level for each of the candidate channels for assignment;

e) establishing one of an outgoing call and an incoming between the mobile station and the base station;

f) calculating, at the base station, an upstream desired-to-interference signal level ratio for each of the candidate levels for assignment using the upstream interference signal levels measured during the step a);

g) determining, at the base station, which, if any, of the candidate channels for assignment have a corresponding upstream desired-to-interference signal level ratio which exceeds a first signal level ratio;

h) sending a request, by the base station to the mobile station, to report the average downstream interference signal level measured during the step d) for designated ones of the candidate channels for assignment, the designated ones having a corresponding upstream desired-to-interference signal level ratio calculated at the step f) which exceeds the first signal level ratio;

i) sending a report, from the mobile station to the base station, of the average downstream interference signal level measured at the step d) for each of the designated ones of the candidate channels for assignment;

j) calculating, at the base station, a downstream desired-to-interference signal level ratio for each of the designated ones of the candidate channels for assignment by using a received level of the report sent from the mobile station at the step i);

k) determining, at the base station, whether any of the calculated downstream desired-to-interference signal level ratios exceed a second signal level ratio; and

l) if any of the calculated downstream desired-to-interference signal level ratios exceed the second signal level ratio, indicating a usable communication channel to the mobile station as one of the designated one of the candidate channels for assignment that has a corresponding calculated downstream desired-to-interference signal level ratio that exceeds the second signal level ratio.

5,606,728

METHOD AND APPARATUS FOR REDUCING POWER CONSUMPTION IN A SELECTIVE CALL RADIO

James M. Keba, Wellington, Fla., and Leon Jasinski, Clontarf, Australia, assignors to Motorola, Inc., Schaumburg, Ill.

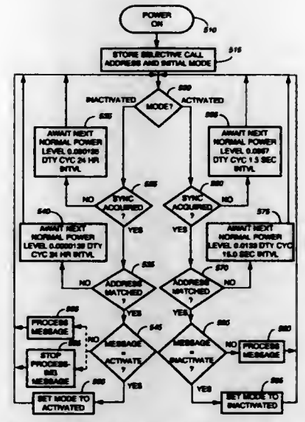
Filed Jun. 5, 1995, Ser. No. 463,535
Int. Cl.[6] H04B *7/00;* **H04Q** *3/02;9/14*
U.S. Cl. 455—38.3 **16 Claims**

1. A method used within a selective call radio for substantially reducing power consumption of the selective call radio while the selective call radio is in an inactivated state, wherein the selective call radio is for receiving digital signals having a periodic protocol, and wherein said digital signals are transmitted by radio signals in a radio system, said method comprising the steps of:

storing a selective call address within the selective call radio;

setting an activation mode of the selective call radio to the inactivated state during which a power state of the selective call radio is cycled at an inactivated duty cycle, and during which a first selective call message having the selective call address is received and processed; and

setting the activation mode of the selective call radio to an activated state during which the power state of the selective call radio is cycled at an activated duty cycle which is substantially greater than the inactivated duty cycle, in response to an activation command generated during the inactivated state set in said step of setting the activation mode to the inactivated state.

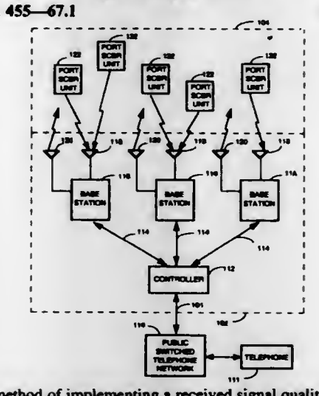


5,606,729

METHOD AND APPARATUS FOR IMPLEMENTING A RECEIVED SIGNAL QUALITY MEASUREMENT IN A RADIO COMMUNICATION SYSTEM

Thomas V. D'Amico, Boca Raton, Fla., and Jheroen Dorenbosch, Waxahachie, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 21, 1995, Ser. No. 493,041
Int. Cl.[6] H04B *17/00*
U.S. Cl. 455—67.1 **27 Claims**



1. A method of implementing a received signal quality measurement in a radio communication system for delivering a message portion intended for a portable subscriber unit in a coverage zone of a plurality of coverage zones, the method comprising in a fixed portion of the radio communication system the steps of:

(a) making, for each coverage zone of a group comprising the coverage zone and other coverage zones that are first tier co-channel interferers of the coverage zone, an assignment of a silence slot in one of a plurality of predetermined synchronized signal quality measurement (SQM) slots, wherein the assignment is made such that within the group no two coverage zones have the silence slot assigned to an identical one of the plurality of predetermined synchronized SQM slots;

(b) transmitting a silent modulation signal from each of selected ones of the coverage zones of the group in the silence slot assigned thereto, and transmitting a predetermined modula-

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tion signal from the selected ones of the coverage zones of the group in a remainder of the plurality of predetermined synchronized SQM slots not assigned thereto as the silence slot; and

(c) transmitting from the coverage zone the message portion intended for the portable subscriber unit, wherein the message portion is transmitted proximate the SQM slots.

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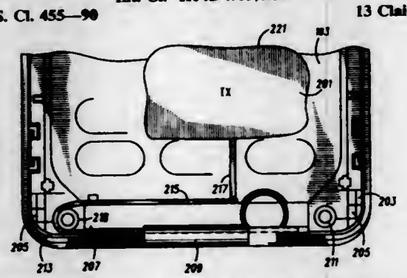
ELECTRONIC DEVICE HAVING AN ELECTRONIC COUPLER FOR COUPLING BETWEEN TWO ELECTRONIC COMPONENTS AND METHOD OF ASSEMBLING SAME

Tonya A. Rush, Barrington; Glenn C. Goergen, Lake Zurich, and Mike M. Albert, Chicago, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 148,710, Nov. 8, 1993, abandoned. This application Feb. 16, 1996, Ser. No. 603,027

Int. Cl.[6] H04B *1/03;1/38*

U.S. Cl. 455—90 **13 Claims**



7. An electronic device having a housing and a movable element, the movable element movable between a first position and a second position, the electronic device comprising:

a hinge for coupling the movable element to the housing, the hinge providing a single axis of rotation and including a knuckle;

a first electronic component disposed in the housing;

a flex having a first end, a body, and a second end, the first end of the flex including a second electronic component disposed thereon, the body of the flex inserted through the knuckle of the hinge, the second end of the flex coupled to the first electronic component, the body of the flex torsionally twisting and untwisting during movement of the movable element between the first and second positions about the single axis of rotation.

5,606,731

ZEROX-IF RECEIVER WITH TRACKING SECOND LOCAL OSCILLATOR AND DEMODULATOR PHASE LOCKED LOOP OSCILLATOR

Gary L. Pace; Vance H. Peterson, and Edgar H. Callaway, Jr., all of Boca Raton, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 7, 1995, Ser. No. 399,805

Int. Cl.[6] H04B *1/30*

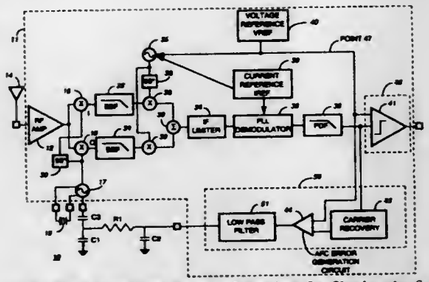
U.S. Cl. 455—260 **20 Claims**

1. A zero-intermediate frequency receiver circuit for receiving a radio frequency signal detected by an antenna, the receiver circuit comprising:

an amplifier for amplifying the radio frequency signal detected by the antenna and generating an amplified signal;

a first local oscillator circuit for generating a first local oscillator signal;

a first mixer coupled to the first local oscillator circuit and to the amplifier for mixing the amplified signal with the first local oscillator signal and generating a first mixed signal;



a base band filter coupled to the first mixer for filtering the first mixed signal and generating a filtered signal;

a voltage reference for providing a voltage reference signal;

a current reference for providing first and second current reference signals which are substantially equal;

a second local oscillator circuit coupled to the voltage reference and coupled to the current reference for receiving the first current reference signal, for generating a second local oscillator signal;

a second mixer coupled to the second local oscillator circuit and to the base band filter for mixing the filtered signal and generating at an output a second mixed signal;

a phase locked loop demodulator having an oscillator circuit coupled to the current reference for receiving the second current reference signal and coupled to the output of the second mixer for generating a phase locked loop oscillator signal, the phase locked loop demodulator for demodulating the second mixed signal to generate at an output a demodulated signal;

wherein a functional relationship between inputs and output of the second local oscillator circuit is substantially equal to a functional relationship between inputs and output of the oscillator circuit of the phase locked loop demodulator; and

a signal processor having at least a threshold input and a signal input, and an output, the threshold input of the signal processor coupled to the voltage reference, the signal input of the signal processor being coupled to the output of the phase locked loop demodulator, the signal processor generating at the output an output signal based on signals at the threshold input and signal input.

5,606,732

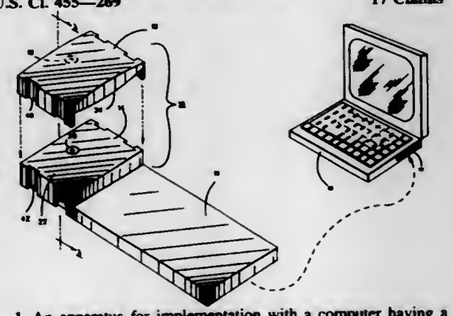
DIRECT CONNECT RADIO AND ANTENNA ASSEMBLY

Edward J. Vignone, Sr., San Clemente, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Apr. 26, 1994, Ser. No. 233,289

Int. Cl.[6] H04B *1/08*

U.S. Cl. 455—269 **17 Claims**



1. An apparatus for implementation with a computer having a data interface slot, the apparatus for determining a user's position coordinates according to GPS satellite tracking data, comprising:

an antenna comprising a substantially flat conductive element for receiving the GPS satellite tracking data;

a GPS receiver for converting the GPS satellite tracking data into digital data, wherein the substantially flat conductive element is mechanically coupled to the GPS receiver, such that the substantially flat conductive element lies directly over the GPS receiver during operation while receiving the GPS satellite tracking data; and

a data interface card (PC card) having a first end and a second end, wherein

the first end is adapted for insertion into the computer data interface slot,

the GPS receiver and the antenna having the substantially flat conductive element mechanically coupled thereto are affixed to the second end, and

the PC card includes a serial data interface bus for conducting the digital data from the GPS receiver to the first end of the card.

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PORTABLE RADIO RECEIVER

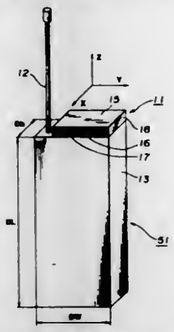
Yoshiki Kanayama, Saitama, and Ichiro Toriyama, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 25, 1994, Ser. No. 248,960

Claims priority, application Japan, May 28, 1993, 5-127520

Int. Cl.[6] H04B *1/06;7/00*

U.S. Cl. 455—273 **8 Claims**



1. A portable radio receiver for diversity reception comprising

a metal casing,

at least one external antenna mounted on an upper surface of the metal casing, and

a single-side shorted microstrip antenna mounted on a lateral surface of the metal casing so that a shorted surface thereof is parallel to the main polarization of the external antenna.

5,606,734

STRUCTURE GENERATED COMPOSITE REFERENCE SIGNAL FOR INTERFERENCE SUPPRESSION IN AN ADAPTIVE LOOP

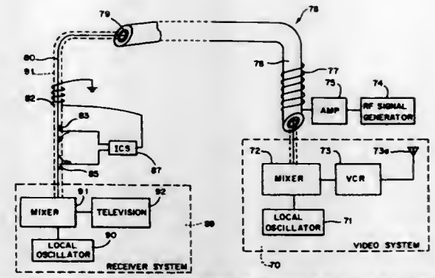
Mark B. Bahu, Ventura, Calif., assignor to American Nucleonics Corporation, Westlake Village, Calif.

Filed Mar. 2, 1993, Ser. No. 25,036

Int. Cl.[6] H04B *1/10*

U.S. Cl. 455—303 **5 Claims**

4. A method for obtaining a reference signal for suppressing a plurality of interfering signals received by a radio receiver system mounted on an aircraft, the aircraft having an outer skin, at least a portion of the outer skin being electrically conducting, the radio receiver system having means for receiving a desired signal on



which are present the desired signal and the plurality of interfering signals, comprising the steps of:

locating a portion of the electrically conducting outer skin portion of the aircraft on which a composite sample signal is present, the composite sample signal corresponding to a composite of the plurality of interfering signals, the portion of the electrically conducting outer skin portion of the aircraft being different from the means of the radio receiver system for receiving the desired signal;

sampling the composite sample signal present on the portion of the electrically conducting outer skin portion of the aircraft to obtain a reference signal corresponding to the composite sample signal; and

providing the reference signal to an adaptive interference cancellation system and generating a cancellation signal to cancel the plurality of interfering signals received by the radio receiver system.

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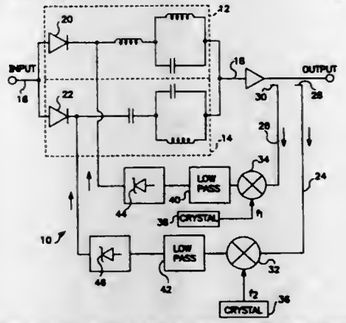
SLOPE EQUALIZER USING BASEBAND DETECTION

Nick Ierfino, Montreal, Canada, assignor to Harris Corporation, Melbourne, Fla.

Filed Jun. 29, 1995, Ser. No. 496,679

Int. Cl.[6] H04B *1/10*

U.S. Cl. 455—307 **9 Claims**



5. A device for correcting an amplitude slope in an input signal comprising:

first means for controlling an amplitude slope in an input signal;

parallel feedback means for providing an output from said first means to a pair of slope correction means,

each of said slope correction means comprising,

a mixer for converting the input signal to one of two boundary frequencies between which the amplitude slope is measured, and

means for providing a voltage indicative of the energy at the boundary frequencies to said first means, the voltage causing said first means to reduce the amplitude slope.

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5,606,736

HETERODYNE RADIO RECEIVER WITH PLURAL VARIABLE FREQUENCY LOCAL OSCILLATOR SIGNALS

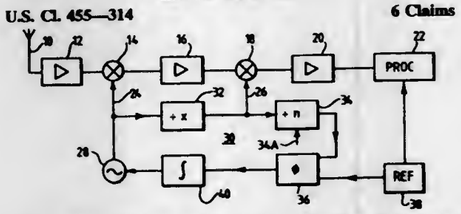
Raymond J. Hasler, Milton Maisor, and Oliver P. Leisten, Northampton, both of England, assignors to SymmetriCom, Inc., San Jose, Calif.

Continuation of Ser. No. 913,291, Jul. 14, 1992. This application Nov. 9, 1994, Ser. No. 336,794

Claims priority, application United Kingdom, Jul. 16, 1991, 9115350

Int. Cl.[6] H04B 1/26

U.S. Cl. 455—314 **6 Claims**



1. A superheterodyne radio receiver comprising at least two successive frequency down-converters arranged to be fed by respective first and second local oscillator signal sources, and further comprising a frequency synthesizer providing signal sources and a reference oscillator coupled to said synthesizer, said reference oscillator operable at a reference oscillator frequency, wherein, for tuning the receiver to a plurality of different receiving frequencies separated by the predetermined equal frequency spacing of a series of transmission channels, the frequencies of the said sources are variable and related by the expression $f_{LO1}=X_1f_{LO2}$, where f_{LO1} and f_{LO2} are the frequencies of said first and said second of the said sources, respectively, and x is a fixed integer in at least one mode of operation of the receiver, and means for varying the frequency f_{LO2} of said second source in a series of frequency increments Δf_{LO2} associated with said equal frequency increments and equal to a factor common to said equal frequency spacing and said reference oscillator frequency, having only two frequency down-converters, wherein said frequency synthesizer is arranged such that the frequencies of said local oscillator signal sources are variable in respective increments Δf_{LO1} and Δf_{LO2} such that the sum $(\Delta_{fLO1}+\Delta_{fLO2})$ is equal to the predetermined frequency spacing, and wherein the integer X is equal to 8.

5,606,737

OSCILLATOR MIXER AND A MULTIPLIER MIXER FOR OUTPUTTING A BASEBAND SIGNAL BASED UPON AN INPUT AND OUTPUT SIGNAL

Hiroshi Suzuki; Hiroyuki Segou; Kenichi Kudo, all of Kawasaki; Yoshihiro Miura; Kiyokazu Sugai, both of Sendai; Masayoshi Shono, Kobe, and Hideki Shiratori, Sendai, all of Japan, assignors to Fujitsu Limited, Kawasaki, and Fujitsu Ten Limited, Kobe, both of Japan

Filed Mar. 8, 1993, Ser. No. 28,552

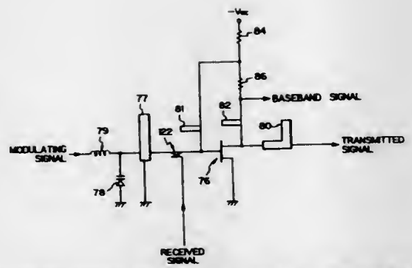
Claims priority, application Japan, Mar. 9, 1992, 4-050812; Mar. 12, 1992, 4-053778; Mar. 16, 1992, 4-057946; Mar. 16, 1992, 4-058133

Int. Cl.[6] H04B 1/26

U.S. Cl. 455—319 **12 Claims**

1. An oscillator mixer for providing an output signal having a specified frequency modulated in accordance with a modulating signal and for outputting a baseband signal having a frequency corresponding to a difference in frequency between an input signal and the output signal, comprising:

a voltage-controlled oscillator including an element having a non-linear characteristic, and providing an output signal having the specified frequency which varies in accordance with the voltage of the modulating signal;



a coupling member inserted into the voltage-controlled oscillator so as to couple the input signal with a line on which the output signal resides, whereby said element generates the baseband signal: and

a baseband signal output port connected to the voltage-controlled oscillator via a member for blocking a signal having the specified frequency and through which the baseband signal is fetched.

5,606,738

FREQUENCY CONVERSION CIRCUIT WITH LINEAR FEEDBACK

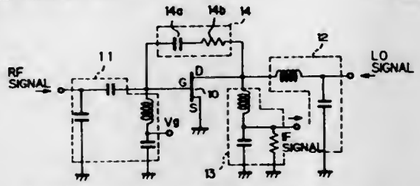
Kiyoaitsu Onodera, and Masahiro Muraguchi, both of Kanagawa, Japan, assignors to Nippon Telegraph and Telephone Corp., Tokyo, Japan

Filed Feb. 17, 1995, Ser. No. 390,522

Claims priority, application Japan, Feb. 24, 1994, 6-026748; Mar. 29, 1994, 6-059209

Int. Cl.[6] H04B 1/28

U.S. Cl. 455—333 **22 Claims**



1. A frequency conversion circuit comprising:

at least one transistor with an input terminal and an output terminal, one of (a) a frequency signal to be converted and (b) a local oscillator signal being input to said input terminal, a converted frequency signal being output from said output terminal; and

a linear feedback circuit for feeding back at least one of (a) a radio frequency signal and (b) the local oscillator signal to improve linear property, said linear feedback circuit being directly connected across said input and output terminals.

5,606,739

RADIO COMMUNICATION APPARATUS HAVING A BATTERY SAVING FUNCTION

Hiroyuki Goto, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

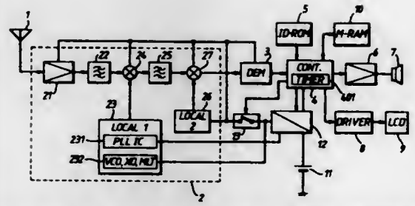
Filed Apr. 17, 1992, Ser. No. 870,662

Claims priority, application Japan, Apr. 19, 1991, 3-113983

Int. Cl.[6] H04B 1/16

U.S. Cl. 455—343 **46 Claims**

1. A radio communication apparatus intermittently powered in synchronism with radio frequency signals transmitted from a base station, comprising:



a receiver for receiving radio frequency signals intermittently transmitted from a base station, said receiver comprising a local oscillator for generating oscillation signals having a first frequency and a signal processor for processing the received radio frequency signals and the oscillation signals to produce processed signals, wherein said local oscillator comprises a synthesizer including a phase locked loop and an oscillator circuit coupled to said phase locked loop;

power supply means for supplying power to said receiver;

controlling means for controlling said power supply means to supply power to said local oscillator at a first predetermined time before the radio frequency signals are received and to supply power to said signal processor at a second predetermined time after the first predetermined time, wherein said controlling means controls said power supply means to supply power to said phase locked loop at said first predetermined time and to further supply power to said oscillator circuit at a third predetermined time after said first predetermined time;

a demodulator coupled to said signal processor for demodulating the processed signals to produce demodulated signals;

a memory device for storing an identification code;

comparing means, coupled to said demodulator and said memory device, for comparing an identification code included in the demodulated signals and the identification code stored in said memory device; and

an indicator responsive to said comparing means for indicating if the identification code in the demodulated signals matches the identification code stored in said memory device.

5,606,740

TIME DELAY CONTROLLED SWITCHING FOR A DC/DC CONVERTER IN A SELECTIVE CALL DEVICE FOR REDUCING RIPPLE

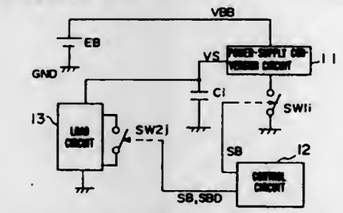
Kimitoshi Niratsuka; Noriaki Shirai, and Hirokazu Tanaka, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 2, 1994, Ser. No. 190,524

Claims priority, application Japan, Mar. 22, 1993, 5-062030

Int. Cl.[6] H04B 1/16

U.S. Cl. 455—343 **13 Claims**



13. A control circuit controlling a system comprising a power-supply conversion circuit, a load circuit connected to an output of the power-supply conversion circuit, a capacitor coupled to the power-supply conversion circuit and the load circuit, and a switching element activating and inactivating the load circuit, said control circuit comprising:

a signal generator generating a first signal activating the power-supply conversion circuit to charge the capacitor and controlling the switching element to inactivate the load circuit, and a second signal inactivating the power-supply conversion circuit and controlling the switching element to activate the load circuit thereby driving the load circuit with electric charges accumulated on the capacitor, wherein the signal generator generates the first signal and the second signal alternately, so that a first control by the first signal to activate the power-supply conversion circuit and to control the switching element to inactivate the load circuit, and a second control by the second signal to inactivate the power-supply conversion circuit and to control the switching element to activate the load circuit are executed alternately, and wherein a period in which the second signal is activating the load circuit is longer than a period in which the first signal is inactivating the power-supply conversion circuit, and, as a result, a period occurs in which the load circuit and the power-supply conversion circuit are activated simultaneously.

5,606,741

DIGITAL AUTOMOBILE TELEPHONE HAVING ADJUSTABLE RECEIVING PERIOD

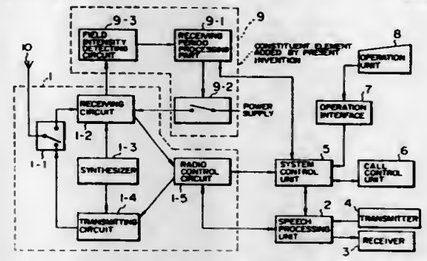
Shuji Yamamoto, Tokyo, Japan, assignor to Kyocera Corporation, Kyoto, Japan

Filed Mar. 17, 1994, Ser. No. 214,812

Claims priority, application Japan, Mar. 24, 1993, 5-090650

Int. Cl.[6] H04B 1/16

U.S. Cl. 455—343 **5 Claims**



1. In an automobile telephone mobile station having a waiting control type receiver and a receiver power supply, a digital automobile telephone comprising:

field intensity detecting means for detecting a field intensity of a radio wave received by the mobile station,

receiving period control means connected to the receiver and comprising a receiving period processor for setting a receiving period having a duration and for adjusting the duration of the receiving period in response to the detected field intensity, the receiving period processor comprising

means for increasing the duration of the receiving period in response to an increase in the detected field intensity, and

means for decreasing the duration of the receiving period in response to a decrease in the detected field intensity, and

switching means responsive to the receiving period processor for controlling on/off switching of the power supply in response to the receiving period.

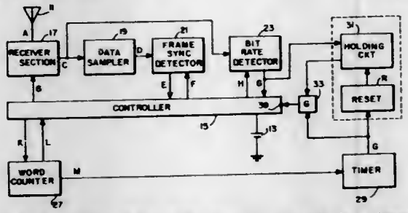
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5,606,742

SELECTIVELY CALLED RADIO RECEIVER WITH BIT RATE DETECTION FOR BATTERY AT SHORTER THAN A FRAME PERIOD

Toru Kido, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 7, 1994, Ser. No. 351,022
Claims priority, application Japan, Dec. 16, 1993, 5-316226
Int. Cl.[6] H04B 1/16; H04J 3/06
U.S. Cl. 455—343 **28 Claims**



9. A selectively called radio receiver, operable in a battery saving mode, for receiving a radio signal having a bit rate and comprising successive frame periods, said radio receiver comprising:

a receiver section put in an intermittently activated state while waiting for reception of said radio signal as a reception signal to establish bit synchronism between said receiver section and the bit rate of said reception signal, and wherein said receiver section is put in a temporary continually activated state to establish frame synchronism with frame periods of said reception signal following establishment of said bit synchronism;

bit rate detecting means for detecting, when said receiver section is put in a repeatedly activated state of being activated for a bit rate detection period spaced by a bit rate detection interval when an error occurs in bit synchronism, the bit rate of said reception signal as a detected bit rate in said bit rate detection period to produce a bit rate detection signal upon coincidence of said detected bit rate with said signal bit rate; and

control means for switching said section to a temporary continuously activated state to establish said frame synchronism before lapse of a frame synchronism establishing interval immediately following activation of said receiver section into said repeatedly activated state, wherein aid control means comprises:

determining means for determining a unit time interval shorter than each of said frame periods; and

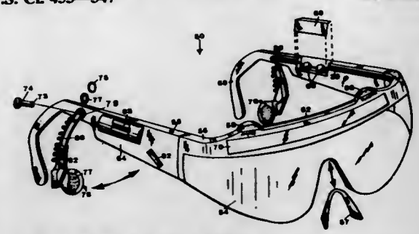
using means for using said unit time interval repeatedly as said bit rate detection interval.

5,606,743

RADIO EYEWEAR

Paul A. Vogt, 1058 Ottawa Ave., West St. Paul, Minn. 55118, and James D. Denney, 10481 Joliet Ave., Stillwater, Minn. 55082

Continuation-in-part of Ser. No. 644,275, Jan. 22, 1991. This application Dec. 13, 1993, Ser. No. 168,064
Int. Cl.[6] H04B 1/08
U.S. Cl. 455—347 **26 Claims**



17. Eyewear apparatus comprising:

a) a framework including a brow portion, lens means mounted to said brow portion, and first and second bow portions mounted to project from said brow portion;

b) first and second speakers;

c) radio receiver means including a first housing supporting said first speaker and further including means for pivotally coupling said first housing to said first bow portion; and

d) power supply means coupled to said radio receiver means and including a second housing supporting said second speaker and further including means for pivotally coupling said second housing to said second bow portion.

DESIGNS

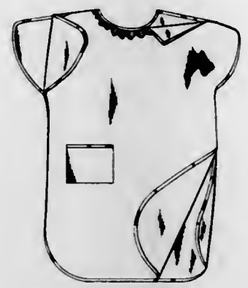
FEBRUARY 25, 1997

378,157

FEMALE PATIENT GARMENT

Joyce V. Jagger, P.O. Box 1927, Binghamton, N.Y. 13902

Filed Mar. 27, 1995, Ser. No. 36,735
Term of patent 14 years
U.S. Cl. D2—720

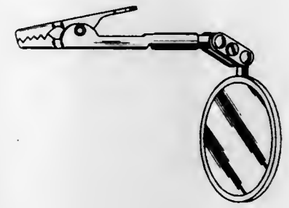


378,159

MIRROR FOR HEADGEAR

Lynn Mulkey, 13391 State Rte. 4, Marysville, Ohio 43040

Filed Dec. 27, 1995, Ser. No. 48,376
Term of patent 14 years
U.S. Cl. D2—891

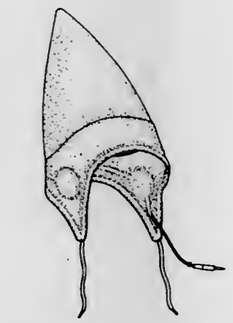


378,158

SKI CAP WITH STEREO HEADPHONE FLAPS

Timothy K. Casey, 11745 - 8th Ave. NE., Seattle, Wash. 98125

Filed Feb. 27, 1995, Ser. No. 35,391
Term of patent 14 years
U.S. Cl. D2—339



378,160

WOMAN'S DENIM SHOE

Tammy Wells, and Tommy E. Wells, both of 16824 Lacanada Rd., Madera, Calif. 93638

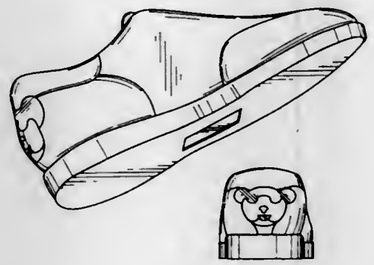
Filed Jan. 19, 1994, Ser. No. 17,675
Term of patent 14 years
U.S. Cl. D2—897



174-413 O.G.-97-21: QL3

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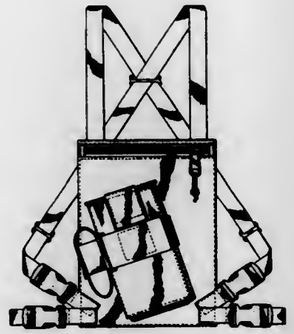
378,161
LIGHTED SHOE
Mark Waff, 3210 Middleton Dr., Rockvale, Tenn. 37153
Filed Feb. 12, 1996, Ser. No. 50,249
Term of patent 14 years
U.S. Cl. D2—897



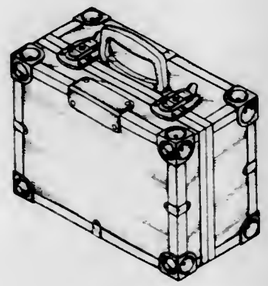
378,162
HOLDER FOR A SOCK
Shirley Chewick, 125 Russell Ave., Ottawa, Ontario, Canada
Filed Jan. 16, 1996, Ser. No. 49,852
Term of patent 14 years
U.S. Cl. D2—980



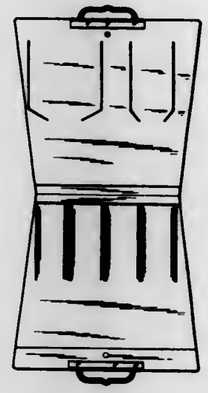
378,163
VIDEO CHEST PACK
Joanne L. Clissold, Box 1906 Banff, Alta, Canada
Filed Oct. 30, 1995, Ser. No. 45,800
Term of patent 14 years
U.S. Cl. D3—218



378,164
TOOL BOX
Li-hwa Lee, 8th Fl., No. 101, Sec. 2, Nanking E. Rd., Taipei, Taiwan
Filed Jan. 19, 1996, Ser. No. 49,197
Term of patent 14 years
U.S. Cl. D3—276



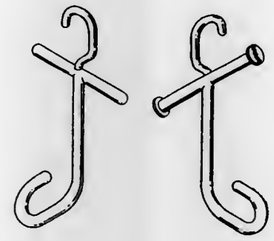
378,165
PAINTER'S TOOL BAG
Malcolm G. Tucker, 9 Westburn Terrace, Christchurch, New Zealand
Filed Dec. 12, 1994, Ser. No. 32,019
Claims priority, application New Zealand, Jun. 16, 1994, 25976
Term of patent 14 years
U.S. Cl. D3—319



378,166
TOOTHBRUSH
Jonathan A. Savitt, London, and Charles E. Taylor, Cornwall, both of United Kingdom, assignors to Mariax Limited, London, England
Filed Feb. 14, 1996, Ser. No. 50,298
Claims priority, application United Kingdom, Sep. 15, 1995, 2050408
Term of patent 14 years
U.S. Cl. D4—111



378,167
CLOTHES HANGER HOLDER
Burnia B. Jones, Jr., 230 W. Alabama, No. 313, Houston, Tex. 77006
Filed Jul. 17, 1995, Ser. No. 41,472
Term of patent 14 years
U.S. Cl. D6—317



378,168
OPERA CHAIR
Sally S. Lewis, 8727 Melrose Ave., Los Angeles, Calif. 90069-5086
Division of Ser. No. 20,477, Mar. 28, 1994, Pat. No. Des. 369,029. This application Jan. 19, 1996, Ser. No. 49,219
Term of patent 14 years
U.S. Cl. D6—334



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378,169

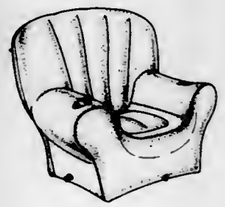
INFLATABLE SOFA

Shan-Lin Yu, 6F, No. 104, Sec. 2, An-Ho Rd., Taipei City, Taiwan

Filed Feb. 23, 1996, Ser. No. 50,689

Term of patent 14 years

U.S. Cl. D6—334



378,170

CHAIR

Jocelyn Beaulieu, Newmarket, Canada, assignor to Global Upholstery Company, Downsview, Canada

Filed Jun. 27, 1995, Ser. No. 40,781

Claims priority, application Canada, Apr. 18, 1995, 1995-0827

Term of patent 14 years

U.S. Cl. D6—366



378,171

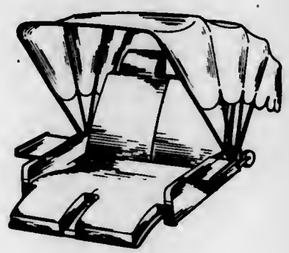
BEACH CHAIR WITH SHADE CANOPY

Tian B. Liu, P.O. Box 7565, Alhambra, Calif. 91802-7565, assignor to Tian B. Liu, Los Angeles, Calif.

Filed Oct. 17, 1995, Ser. No. 45,340

Term of patent 14 years

U.S. Cl. D6—368



378,172

CHAIR

Rory Rehmert, Birmingham, Ala., assignor to Meadowcraft, Inc., Birmingham, Ala.

Filed Apr. 4, 1994, Ser. No. 20,911

Term of patent 14 years

U.S. Cl. D6—376



378,173

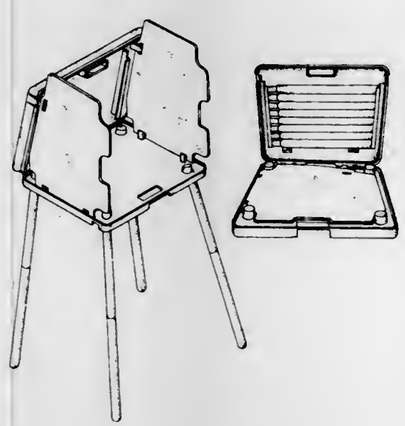
VOTING BOOTH

Derry L. Hobson, Tulare County, Calif., assignor to Smurfit Packaging Corporation, St. Louis, Mo.

Filed Mar. 8, 1996, Ser. No. 51,389

Term of patent 14 years

U.S. Cl. D6—421



378,174

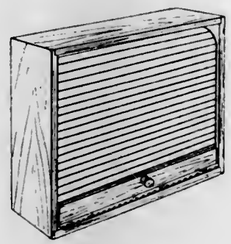
STORAGE ENCLOSURE

Gene L. Kamin, 7217 S. Julie La., Evergreen, Colo. 80439, and Robert D. Schmitt, 5995 S. Bannock St., Littleton, Colo. 80120

Filed Nov. 22, 1995, Ser. No. 46,977

Term of patent 14 years

U.S. Cl. D6—433



378,175

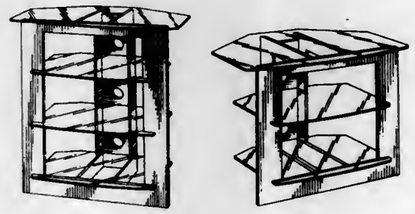
AUDIO/VIDEO STORAGE UNIT

Demir Hamami, Bethesda, Md., assignor to BDI, Becker Designed Inc., Chantilly, Va.

Filed Apr. 4, 1996, Ser. No. 52,634

Term of patent 14 years

U.S. Cl. D6—479



378,176

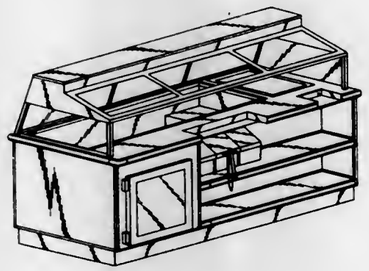
BAR FOR FOOD

Carl B. Feldman, #4 Five Oaks Ct., Owings Mills, Md. 21117

Filed Dec. 7, 1993, Ser. No. 16,093

Term of patent 14 years

U.S. Cl. D6—481



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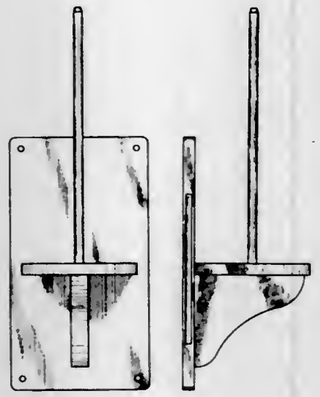
GARBAGE BAG ROLL DISPENSER

Jeffrey A. Zapp, and Carla K. Zapp, both of 387 N. Center, Addieville, Ill. 62214

Filed Dec. 4, 1995, Ser. No. 47,424

Term of patent 14 years

U.S. Cl. D6—521



378,178

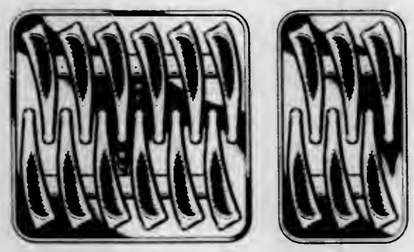
SHRIMP STEAMING TRAY

Derrell Sawyer, Caddo Mills, Tex., assignor to Microperfect, Inc., Caddo Mills, Tex.

Continuation of Ser. No. 254,785, Jun. 6, 1994. This application Oct. 30, 1995, Ser. No. 45,777

Term of patent 14 years

U.S. Cl. D7—359



378,179

GRILL

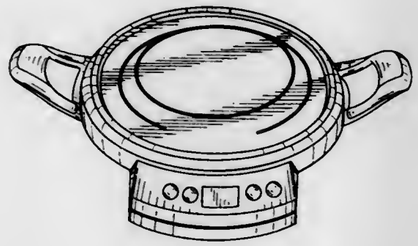
Lutz Gebhardt, Immensee, and Karl-Erich Koch, Cham, both of Switzerland, assignors to AMC International ALFA Metalcraft Corporation AG, Switzerland

Filed Jan. 27, 1994, Ser. No. 18,039

Claims priority, application Hague Agreement, Aug. 5, 1993, DMA/002,248

Term of patent 14 years

U.S. Cl. D7—363



378,180

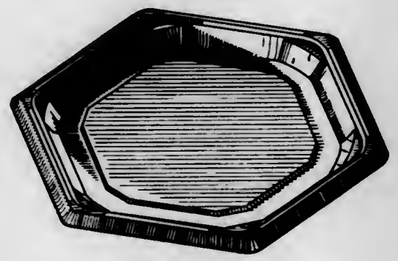
CATERING TRAY

Thomas J. Hayes, Wauconda; Thomas T. Taber, Park Ridge, and Michael J. A. Sagan, Batavia, all of Ill., assignors to Packaging Corporation of America, Evanston, Ill.

Filed Aug. 14, 1995, Ser. No. 42,618

Term of patent 14 years

U.S. Cl. D7—552



378,181

SPOON

Colin Richmond, Vernon Center, N.Y., assignor to Oneida Ltd., Oneida, N.Y.

Filed Jan. 2, 1996, Ser. No. 48,525

Term of patent 14 years

U.S. Cl. D7—653



378,182

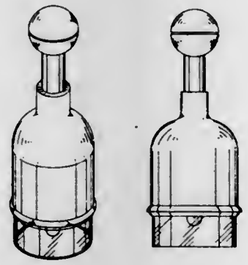
FOOD CHOPPER

Yan K. Wong, Unit 17 10/F, Metro Centre 11, 21 Lam Hing Street, Kowloon Bay, Kowloon, Hong Kong

Filed Apr. 12, 1996, Ser. No. 53,036

Term of patent 14 years

U.S. Cl. D7—693



378,183

SMALL ANGLE GRINDER

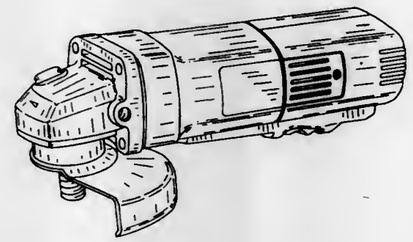
Amedeo Dognini, Milan, Italy, assignor to Black & Decker Inc., Newark, Del.

Filed Mar. 14, 1995, Ser. No. 36,191

Claims priority, application United Kingdom, Sep. 14, 1994, 2041801

Term of patent 14 years

U.S. Cl. D8—62



378,184

MOTOR SAW

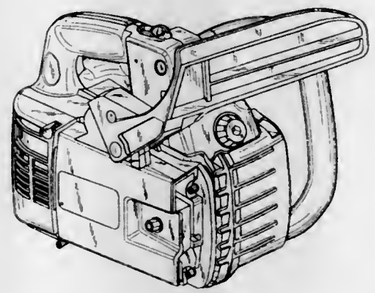
Ulf Näslund; Niels Hartz, both of Huskvarna; Göran Dahlberg, Gränna, and Tomas Nyqvist, Huskvarna, all of Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Jan. 16, 1996, Ser. No. 48,969

Claims priority, application Sweden, Jul. 14, 1995, 95-1386

Term of patent 14 years

U.S. Cl. D8—64



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378,185

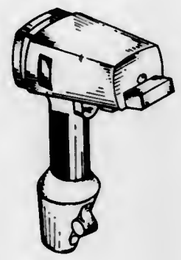
FASTENER TOOL

Park Liu, No. 15, Lane Nan-Chien, Ting-Tai Tsun, Wu-Feng Hsiang, Taichung Hsien, Taiwan

Filed Jul. 25, 1995, Ser. No. 41,821

Term of patent 14 years

U.S. Cl. D8—68



378,186

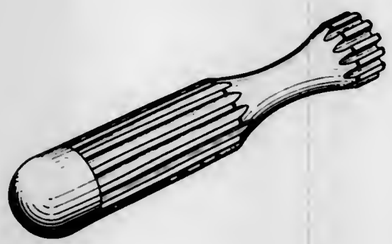
SCREWDRIVER HANDLE

John A. Braun, Kenilworth, N.J., assignor to Snap-on Technologies, Inc., Crystal Lake, Ill.

Filed Jun. 28, 1995, Ser. No. 40,834

Term of patent 14 years

U.S. Cl. D8—83



378,187

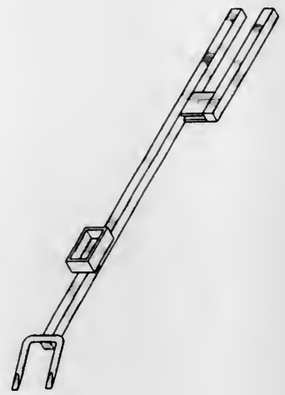
MULTI-PURPOSE HAND TOOL

Rod Eddie, 14 Bridge St., Cornwall, N.Y. 12518

Filed Mar. 18, 1996, Ser. No. 51,749

Term of patent 14 years

U.S. Cl. D8—88



378,188

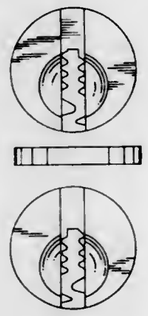
FRONT FACE OF A KEY PLUG

Joanne M. Aston, Wolverhampton, England, assignor to Yale Security Inc., Monroe, N.C.

Filed Jan. 19, 1996, Ser. No. 49,164

Term of patent 14 years

U.S. Cl. D8—343



378,189

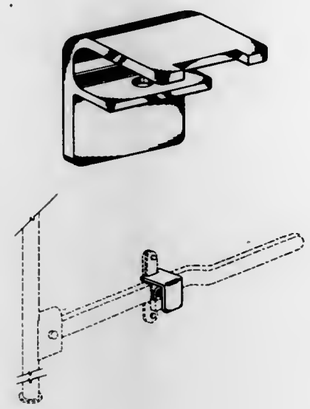
PADLOCK PROTECTIVE GUARD

Michael H. Small, 4966 Red Bluff Rd., Riverside, Calif. 92503, and Kevin E. Small, 270 Main St., Cedarville, Calif. 96104

Filed Jun. 29, 1995, Ser. No. 40,866

Term of patent 14 years

U.S. Cl. D8—346



378,190

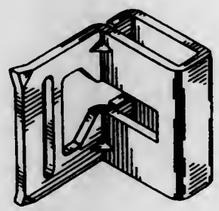
BUCKLE ELEMENT

Isaac Sachs, Dollard-Des-Ormeaux, Canada, assignor to Diamond Communication Products, Inc., Garwood, N.J.

Filed Dec. 13, 1995, Ser. No. 47,851

Term of patent 14 years

U.S. Cl. D8—383



378,191

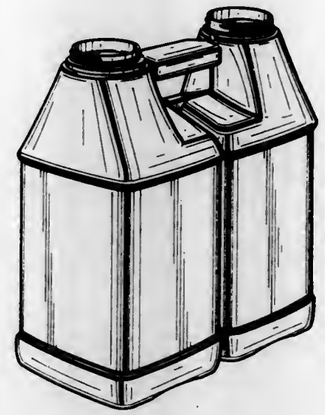
INTEGRAL DUAL COMPARTMENT CONTAINER

William R. Wehrle, Chapel Hill; Neil P. Stapensea, Raleigh, both of N.C.; Douglas J. Mattson, Liberty, Mo.; Ted E. Platt, Apex, N.C., and Joseph P. Quinn, Whippany, N.J., assignors to BASF Corporation, Mt. Olive, N.J.

Continuation of Ser. No. 37,718, Apr. 18, 1995, abandoned. This application Nov. 30, 1995, Ser. No. 47,251

Term of patent 14 years

U.S. Cl. D9—341



378,192

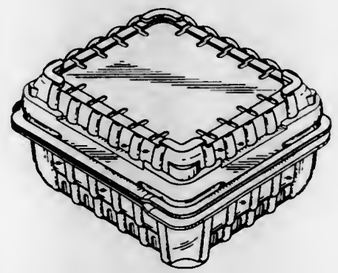
STACKABLE BERRY CONTAINER WITH HINGED LID

Calvin S. Krupa, Medina, and Robert Knoss, Anoka, both of Minn., assignors to Ultra Pac, Inc., Rogers, Minn.

Filed Oct. 16, 1995, Ser. No. 45,297

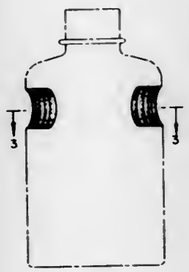
Term of patent 14 years

U.S. Cl. D9—425



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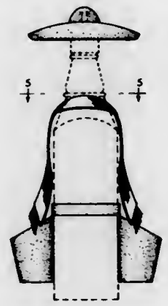
378,193
PAIR OF SURFACE DETAILS FOR AN OVAL BOTTLE
Marc Gobe, New York, N.Y., assignor to Bath & Body Works, Inc., Columbus, Ohio
Filed Mar. 28, 1995, Ser. No. 36,873
Term of patent 14 years
U.S. Cl. D9—434



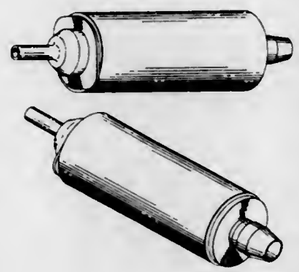
378,194
ADJUSTABLE APPARATUS FOR DELIVERING DRINKS ON DEMAND
Karen Dupuis, 135 W. Merrimack St., Apt. #1, Manchester, N.H. 03102
Filed May 9, 1994, Ser. No. 22,568
Term of patent 14 years
U.S. Cl. D9—436



378,195
TEQUILA BOTTLE COVER SET
Darrell D. Bird, P.O. Box 740181, Houston, Tex. 77274
Filed Oct. 13, 1995, Ser. No. 45,216
Term of patent 14 years
U.S. Cl. D9—444



378,196
PUMP FOR A SOAP DISPENSER
Warren S. Daansen, P.O. Box 614, Nashua, N.H. 03061
Filed Nov. 2, 1995, Ser. No. 45,933
Term of patent 14 years
U.S. Cl. D9—448



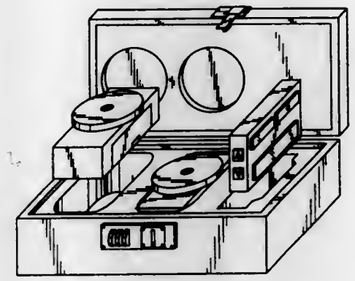
378,197
DISPENSING VALVE FOR A BEVERAGE BOTTLE INCORPORATED IN A HEAD FIGURINE WEARING A BASEBALL CAP
Michael F. Leverette, 1966 E. Maryland Pl., and James Powell, 5410 Seneca Pl., both of Simi Valley, Calif. 93063
Filed Oct. 2, 1995, Ser. No. 44,879
Term of patent 14 years
U.S. Cl. D9—451



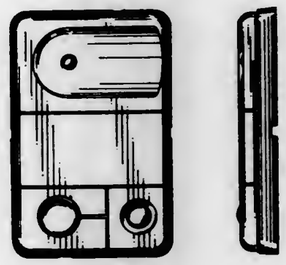
378,198
WRIST WATCH
Akemi Tomita, Kawagoe, Japan; Richard W. Seymour, Kingston upon Thames, and David H. Powell, Loxwood, both of United Kingdom, assignors to Casio Computer Co., Ltd., Tokyo, Japan
Filed Oct. 13, 1995, Ser. No. 45,242
Claims priority, application United Kingdom, Aug. 30, 1995, 2049954
Term of patent 14 years
U.S. Cl. D10—38



378,199
PORTABLE TRUCK SCALE
Michael Simonelli, 61 Green St., Huntington, N.Y. 11743
Filed Feb. 21, 1995, Ser. No. 35,103
Term of patent 14 years
U.S. Cl. D10—87

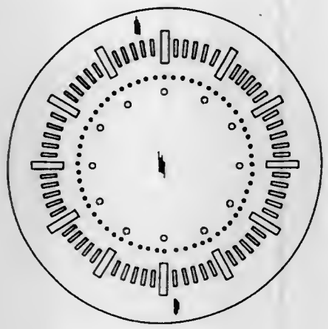


378,200
WALL MOUNTED GARAGE DOOR CONTROL
Loren E. Doppelt, Palatine; Jeff Condon, Chicago; Gary Prokop, Wheaton; Mark D. Dziersk, and Marianne Grisdale, both of Chicago, all of Ill., assignors to The Chamberlain Group, Inc., Elmhurst, Ill.
Filed Jan. 11, 1996, Ser. No. 48,973
Term of patent 14 years
U.S. Cl. D10—108



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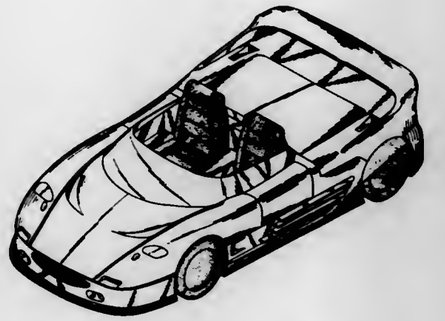
378,201
CLOCK FACE
Geno Svast, 2113 S. Gunderson, Berwyn, Ill. 60402
Division of Ser. No. 20,677, Mar. 30, 1994, Pat. No. Des. 366,852. This application Oct. 23, 1995, Ser. No. 45,493
Term of patent 14 years
U.S. Cl. D10—126



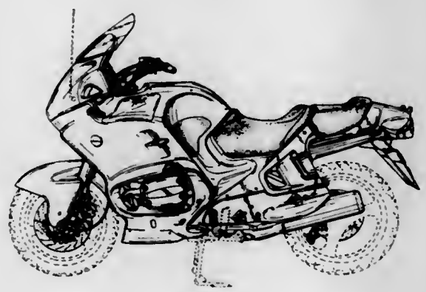
378,202
BOY ANGEL FIGURE
Vivian A. S. Scott, Westbriar Apt. No. 201, 3710 N. Rosser St., Alexandria, Va. 22311, and Raymond J. Goldstein, Box 11045, Arlington, Va. 22210
Filed Nov. 1, 1994, Ser. No. 30,115
Term of patent 14 years
U.S. Cl. D11—131



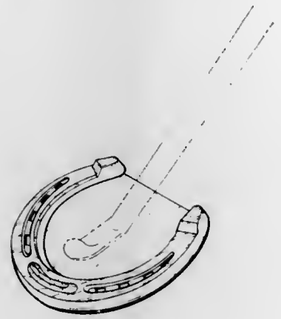
378,203
AUTOMOBILE
Chi-Chun Huang, No. 14, 120 Lane, Dong-Ning Road, Tainan, Taiwan
Filed Apr. 14, 1994, Ser. No. 21,288
Term of patent 14 years
U.S. Cl. D12—92



378,204
MOTORCYCLE BODY
Edgar G. Heinrich, Freising, and Dietmar W. Finger, Seefeld/Meiling, both of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Munich, Germany
Filed Feb. 3, 1995, Ser. No. 34,417
Claims priority, application Germany, Aug. 3, 1994, 94 06 113.0
Term of patent 14 years
U.S. Cl. D12—110



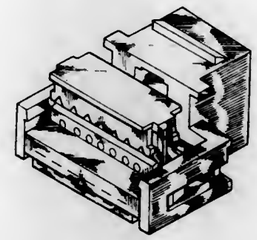
378,205
KICKSTAND SUPPORT PAD
Manly L. Hiltz, Jr., R.R. 6 Box 3280, Gardiner, Me. 04345
Filed Feb. 14, 1994, Ser. No. 18,677
Term of patent 14 years
U.S. Cl. D12—120



378,206
SUN SCREEN FOR A MOTOR VEHICLE
Matthias Kulla, Stuttgart, Germany, assignor to Dr. Ing. h.c.F. Porsche AG, Weissach, Germany
Filed Jan. 30, 1995, Ser. No. 34,192
Claims priority, application Germany, Jul. 30, 1994, 94 05 957.8
Term of patent 14 years
U.S. Cl. D12—191



378,207
DATA CONNECTOR
Kan-Shu Wu, Taipei, and Jin-Rei Tsai, 30, Menan Villa, Chiko, Chiayi County, Taiwan 62304, both of Taiwan, assignors to Jin-Rei Tsai, Taipei, Taiwan, and Douglas Hugh Knox, Mississauga, Canada
Filed May 30, 1990, Ser. No. 529,269
Term of patent 14 years
U.S. Cl. D13—147



378,208
ELECTRICAL CONNECTOR
Masaaki Saito, Yotsukaido, Japan, assignor to Yamaichi Electronics Co., Ltd., Tokyo, Japan
Filed Sep. 15, 1995, Ser. No. 44,069
Term of patent 14 years
U.S. Cl. D13—147



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PLUG FOR CABLE CONNECTOR

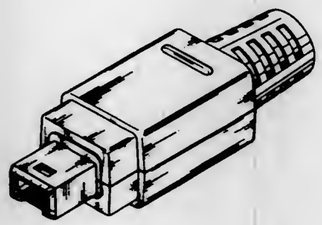
Seiichi Morikawa, and Naoyuki Ono, both of Tokyo, Japan, assignors to Sony Corporation, and SMK Corporation, both of Tokyo, Japan

Filed Sep. 22, 1995, Ser. No. 44,314

Claims priority, application Japan, Mar. 29, 1995, 7-8315

Term of patent 14 years

U.S. Cl. D13—147



378,210

WRIST SUPPORT FOR A COMPUTER MOUSE

Andrew San Gabriel, 16 Hedge La., Merrick, N.Y. 11566

Filed Mar. 25, 1994, Ser. No. 20,396

Term of patent 14 years

U.S. Cl. D14—114



378,211

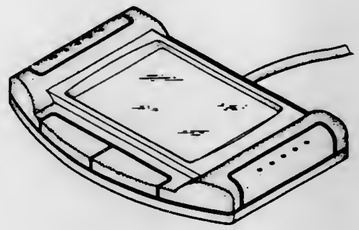
TOUCH-SENSITIVE CURSOR CONTROLLER

Chunn-Cherh Kuo, Taipei Hsien, Taiwan, assignor to Silitek Corporation, Taipei, Taiwan

Filed Oct. 14, 1995, Ser. No. 46,767

Term of patent 14 years

U.S. Cl. D14—114



378,212

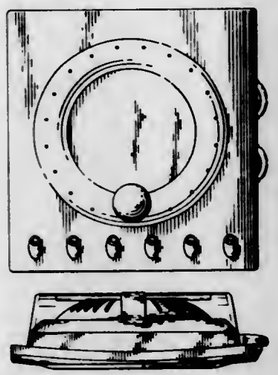
AUDIO SYSTEM PLAYING PRESELECTED SOUNDS OF NATURE

Michael G. Sirois; Stéfane E. Barbeau, and Rudy A. Vandenbelt, all of Ottawa, Canada, assignors to Headwaters Research & Development Inc., Ottawa, Canada

Filed Sep. 22, 1995, Ser. No. 44,364

Term of patent 14 years

U.S. Cl. D14—124



378,213

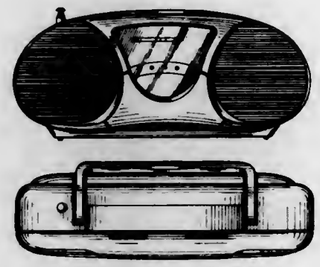
MINIATURE BOOM BOX RADIO

James L. Hanig, Highland Park; Richard L. Ettelson, Chicago, both of Ill., and Leung Y. Ming, Victoria, Australia, assignors to Hanig & Co., Inc., Lincolnwood, Ill.

Filed Jan. 2, 1996, Ser. No. 48,523

Term of patent 14 years

U.S. Cl. D14—194



378,214

CYLINDER

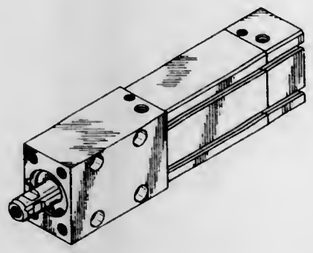
Taishi Ikumi, Ibaraki-ken, Japan, assignor to SMC Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 18, 1996, Ser. No. 51,735

Claims priority, application Japan, Sep. 22, 1995, 7-28313

Term of patent 14 years

U.S. Cl. D15—7



378,215

FOOD DISPENSER

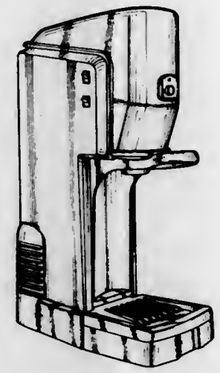
Terence W. Gander, Roman Hill, England, assignor to Unice International Limited, Coventry, England

Filed Oct. 3, 1995, Ser. No. 44,911

Claims priority, application United Kingdom, Apr. 21, 1995, 2046888

Term of patent 14 years

U.S. Cl. D15—82



378,216

BINOCULARS

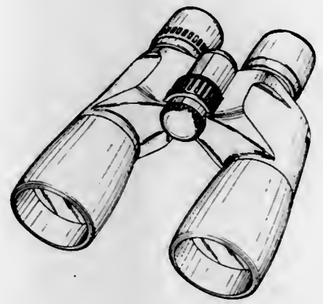
Akio Takahashi, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 27, 1995, Ser. No. 40,814

Claims priority, application Japan, Dec. 28, 1994, 6-40207

Term of patent 14 years

U.S. Cl. D16—133

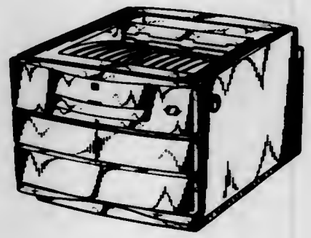


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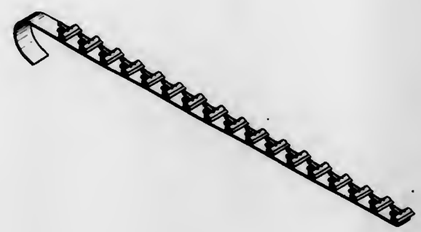
378,217
HINGE FOR TEMPLE OF SPECTACLES
Chun-Chu Huang, P.O. Box 90, Tainan, Taiwan
Filed Mar. 29, 1996, Ser. No. 52,414
Term of patent 14 years
U.S. Cl. D16—334



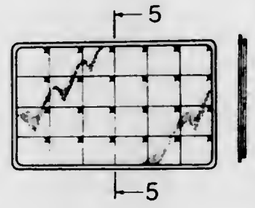
378,218
COLOR PRINTER
Yun K. Hong, Suwon, and Byung S. Jung, Seoul, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyunggi Do, Rep. of Korea
Filed Jun. 9, 1995, Ser. No. 40,075
Claims priority, application Rep. of Korea, Dec. 10, 1994, 26642
Term of patent 14 years
U.S. Cl. D18—55



378,219
INVOICE HOLDER
Dane G. Marshlack, 2515 Bay Blvd. - Unit C, Indian Rocks Beach, Fla. 34635
Filed Nov. 21, 1995, Ser. No. 47,087
Term of patent 14 years
U.S. Cl. D19—65



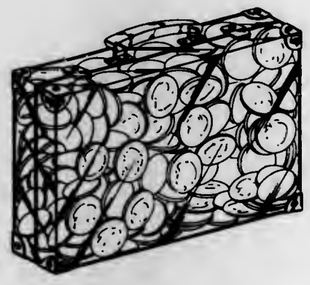
378,220
PACKAGE OF PEEL OFF COUPON FOR A SECURITY TRACKING SYSTEM
Kenneth Thompson, 2368 Eastman Ave., Suite 3, Ventura, Calif. 93003
Filed May 12, 1992, Ser. No. 881,542
Term of patent 14 years
U.S. Cl. D20—11



378,221
STETHOSCOPE IDENTIFICATION TAG
James E. Issler, Westport, Conn., assignor to H. H. Brown Shoe Company, Inc., Greenwich, Conn.
Filed Aug. 4, 1995, Ser. No. 42,252
Term of patent 14 years
U.S. Cl. D20—22



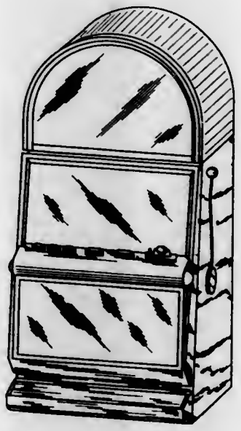
378,222
GOLD CHOCOLATE COIN DISPLAY
Maria Svrcek, 11253 Grandview Ave., Wheaton, Md. 20902
Filed Sep. 20, 1995, Ser. No. 44,207
Term of patent 14 years
U.S. Cl. D20—29



378,223
GOLF COURSE INFORMATION STAND
Tim Goodwin, 111 Autumn Ridge Trail, Roswell, Ga. 30076
Filed Oct. 16, 1995, Ser. No. 45,267
Term of patent 14 years
U.S. Cl. D20—41

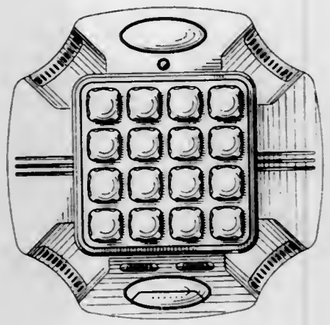


378,224
VIDEO SLOT MACHINE
Dirk I. Brettschneider, Lübbecke, Germany, assignor to adp Gauselmann GmbH, Lübbecke, Germany
Filed May 24, 1995, Ser. No. 39,230
Claims priority, application Germany, Dec. 5, 1994, 94 09 371.7
Term of patent 14 years
U.S. Cl. D21—37



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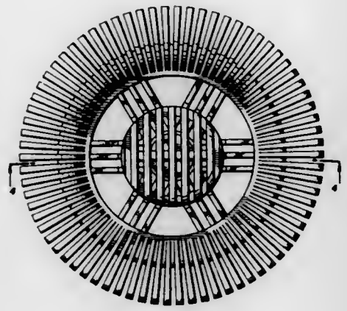
378,225
ELECTRONIC GAME
Kam F. Wong, Kowloon, Hong Kong, assignor to Tiger Electronics, Inc., Vernon Hills, Ill.
Filed Jan. 16, 1996, Ser. No. 48,961
Term of patent 14 years
U.S. Cl. D21—48



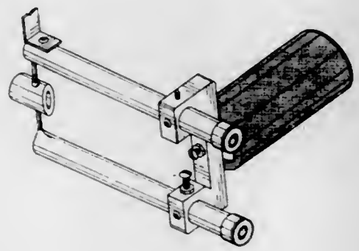
378,226
TOY CAR
Jan Sundqvist, Landvetter, Sweden, assignor to Ing. Firma Johan Ryderbeck AB, Gothenburg, Sweden
Filed Feb. 27, 1995, Ser. No. 35,410
Claims priority, application Sweden, Aug. 25, 1994, 941706
Term of patent 14 years
U.S. Cl. D21—76



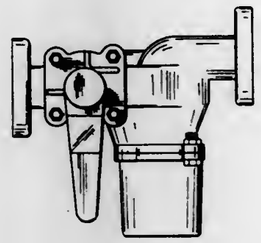
378,227
COMBINED TOY WHEEL AND HUB
Uri Barzani, 15 Mendes St., Tel Hashomer, Ramat-Gan 52653, Israel
Filed Nov. 10, 1994, Ser. No. 31,183
Claims priority, application Israel, May 10, 1994, 22613
Term of patent 14 years
U.S. Cl. D21—108



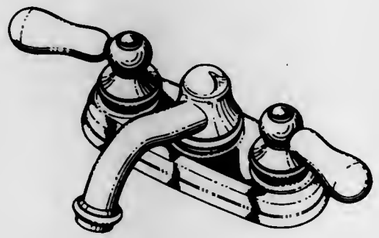
378,228
SLING BOW WITH RIGID GUIDE TUBES FOR PROPELLING A CONVENTIONAL ARROW
James O. Kysilka, P.O. Box 1581, Fargo, N. Dak. 58107-1581
Continuation-in-part of Ser. No. 35,997, Mar. 10, 1995, abandoned. This application Nov. 6, 1995, Ser. No. 46,039
Term of patent 14 years
U.S. Cl. D22—107



378,229
COMBINED DIRT COLLECTOR AND CUT-OUT COCK
Robert P. Gayfer, Watertown, N.Y., and Martin A. Petzoldt, Hanover, Pa., assignors to New York Air Brake Corporation, Watertown, N.Y.
Filed Jul. 14, 1994, Ser. No. 25,855
Term of patent 14 years
U.S. Cl. D23—233



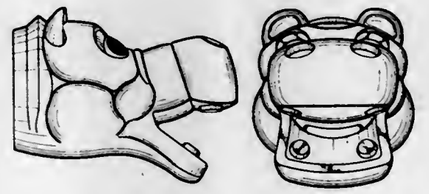
378,230
FAUCET
Frederic C. Doughty, S. Pasadena, and Darren M. Mark, Castaic, both of Calif., assignors to Emhart Inc., Newark, Del.
Filed Apr. 4, 1996, Ser. No. 52,682
Term of patent 14 years
U.S. Cl. D23—241



378,231
KNOBS FOR LAVATORY FAUCETS AND FIXTURES
Alfred R. Dubin, Los Angeles, Calif., assignor to Phylrich International, Los Angeles, Calif.
Filed May 10, 1994, Ser. No. 22,644
Term of patent 14 years
U.S. Cl. D23—252



378,232
COMBINATION SPOUT COVER AND LIQUID SOAP DISPENSER
Gail B. Frankel, 5710 Glen Heather Dr., Dallas, Tex. 75252
Filed Nov. 6, 1995, Ser. No. 46,130
Term of patent 14 years
U.S. Cl. D23—256



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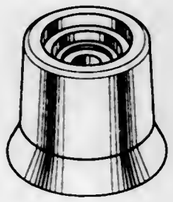
STYLET HOLDER

Henry A. Warner, Lake Forest, Ill., assignor to BioSafe Diagnostics Corporation, Lincolnshire, Ill.

Filed Nov. 8, 1995, Ser. No. 47,291

Term of patent 14 years

U.S. Cl. D24—130



378,235

MICROBRUSH HOLDER

Phillip Mark, 6417 Marlberry Dr., Orlando, Fla. 32819

Filed Mar. 30, 1995, Ser. No. 36,909

Term of patent 14 years

U.S. Cl. D24—152



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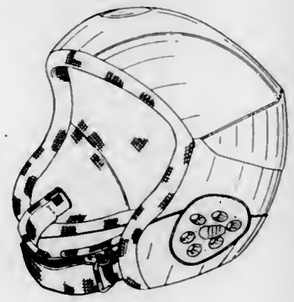
HELMET

Paolo Zanotto; Renata Fusi, and Silvana Rosti, all of Milan, Italy, assignors to Brico s.r.l., Italy

Filed Jan. 18, 1995, Ser. No. 33,695

Term of patent 14 years

U.S. Cl. D29—106



378,234

TONGUE CLEANSER

Elvin Sanichar, 157 Beacon Ave., Jersey City, N.J. 07036

Filed May 30, 1996, Ser. No. 55,146

Term of pateot 14 years

U.S. Cl. D21—147



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Abbott, Russell M.: *See*—
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Abbruzzese, Steven W.: *See*—
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Abe, Michiyuki: *See*—
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Abe, Shigeru: *See*—
Suzuki, Masanori; Itoh, Hiroyuki; Sumi, Koichi; Kamoshida, Yoichi; Abe, Shigeru; Atomori, Seiichi; and Furuyama, Tateki, 5,605,962, Cl. 525-70.000.

Abe, Takao: *See*—
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Abe, Yugaku: *See*—
Yamagata, Shin-ichi; Takano, Yoshishige; Hayashi, Tetsuya; and Abe, Yugaku, 5,605,558, Cl. 75-230.000.

Abercrombie, Andrew P.: *See*—
Tomassi, Mark S.; and Abercrombie, Andrew P., 5,606,707, Cl. 395-800.000.

Abiko, Toshiya; and Nakacho, Kenji, to Idemitsu Petrochemical Co., Ltd. Process for producing polyolefin. 5,605,990, Cl. 526-128.000.

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Ozawa, Sanji; Yokose, Chikara; and Ishikawa, Yoichi, 5,605,611, Cl. 204-242.000.

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Hurskainen, Oiva, 5,605,066, Cl. 70-278.000.

Abo, Arie; and Martin, George A., to Onyx Pharmaceuticals, Inc. Human PAK65. 5,605,825, Cl. 435-194.000.

Abplanalp, Robert H. Improved two-piece aerosol valve for vertical or tilt action. 5,605,258, Cl. 222-402.100.

Abrahamov, Abraham: *See*—
Mechoulam, Raphael; and Abrahamov, Abraham, 5,605,928, Cl. 514-454.000.

Abramovitz, Mark; Adam, Mohammed; Bastien, Lison; Grygorczyk, Richard; Metters, Kathleen; Rushmore, Thomas H.; and Sawyer, Nicole, to Merck Frosst Canada Inc. DNA encoding human prostaglandin receptor EP2. 5,605,814, Cl. 435-69.100.

Abramson, Jeffrey M.; Akkary, Haitham; Glew, Andrew F.; Hinton, Glenn J.; Konigsfeld, Kris G.; Madland, Paul D.; and Papworth, David B., to Intel Corporation. Method and apparatus for signalling a store buffer to output buffered store data for a load operation on an out-of-order execution computer system. 5,606,670, Cl. 395-250.000.

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Biocca, Peter M., 5,605,383, Cl. 300-21.000.

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Henriksson, Bengt-Åke, 5,605,299, Cl. 242-247.000.

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El Ayat, Khaled A.; Bakker, Gregory W.; Lien, Jung-Cheun; Plants, William C.; Kaptanoglu, Sinan; Gopisetty, Runip; Chan, King W.; and Chew, Marko, 5,606,267, Cl. 326-41.000.

Adachi, Hideyuki: *See*—
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Hasegawa, Makoto; Mimura, Masahiro; Hirabayashi, Hirohide; Adachi, Naoki; Namura, Yasuaki; and Sakai, Hideko, 5,606,574, Cl. 375-200.000.

Adam, Mohammed: *See*—
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Kogure, Kiyoshi; Agata, Hiroshi; and Tanaka, Naoyuki, 5,605,518, Cl. 475-344.000.

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Ahad, Elie, to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Branched energetic azido polymers. 5,605,975, Cl. 525-403.000.
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Aihara, Masami: *See*—
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Hayashi, Susumu; and Matsumoto, Hitoshi, to Max Co., Ltd. Portable motor-driven staple machine. 5,605,268, Cl. 227-8.000.

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Heebner, Gerald W., to Union Camp Corporation. Heat-resistant adhesive for use especially in making sterilizable packaging. 5,605,944, Cl. 523-404.000.

Heep, Jerry J.; and Curtis, Douglas R., to Tandy Corporation. Overvoltage protection for battery powered equipment. 5,606,481, Cl. 361-56.000.

Heep Tung Manufactory Limited: *See*—
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Yoshinobu, Hitoshi, to Sony Corporation. Receiving unit for a two-way broadcasting system. 5,606,726, Cl. 455-5.100.
Yoshioka, Keiichi; Yamaura, Shinichi; Hara, Kazuhiko; and Katayama, Takao, to Ricoh Company, Ltd. Improved register group circuit for data processing system. 5,606,709, Cl. 395-800.000.
Yoshioka, Nobuyuki: *See*—
Isao, Akihiko; Kawada, Susumu; Hayashi, Atsushi; Yoshioka, Nobuyuki; and Maetoko, Kazuyuki, 5,605,776, Cl. 430-5.000.
Yoshizawa, Hidekazu: *See*—
Inoue, Tadashi; Yoshizawa, Hidekazu; Tsuru, Kiyoshi; Shimizu, Yoshiaki; and Okita, Tomoyoshi, 5,605,582, Cl. 148-320.000.
Yoshizawa, Tetsuo; Imaizumi, Masaaki; Nishida, Hideyuki; Kondo, Hiroshi; Sakaki, Takashi; Ichida, Yasuteru; and Konishi, Masaki, to Canon Kabushiki Kaisha. Probe method for measuring part to be measured by use thereof and electrical circuit member. 5,606,263, Cl. 324-761.000.
Yotsuji, Akira: *See*—
Imaizumi, Hiroyuki; Kajita, Tetsuya; Takashima, Kenichi; Yotsuji, Minako; Takakura, Keiko; Yotsuji, Akira; Mitsuyama, Junichi; Shimizu, Katsumi; Sakai, Hiroshi; and Narita, Hirokazu, 5,605,921, Cl. 514-383.000.
Yotsuji, Minako: *See*—
Imaizumi, Hiroyuki; Kajita, Tetsuya; Takashima, Kenichi; Yotsuji, Minako; Takakura, Keiko; Yotsuji, Akira; Mitsuyama, Junichi; Shimizu, Katsumi; Sakai, Hiroshi; and Narita, Hirokazu, 5,605,921, Cl. 514-383.000.
Youden, John J.; Kovalick, Albert W.; Siccardo, Paolo L.; Adams, Christopher R.; Jensen, James E.; Coggins, David J.; Thapar, Manu; and Santos, Kari, to Hewlett-Packard Company. Video on demand system with multiple data sources configured to provide vcr-like services. 5,606,359, Cl. 348-7.000.
Young, Hartley F., to Pandrol Limited. Elastic rail clamps. 5,605,284, Cl. 238-351.000.
Young, James, to Artif Technology Corp. Portable apparatus for transmitting wirelessly both musical accompaniment information stored in an integrated circuit card and a user voice input. 5,606,143, Cl. 84-600.000.
Young, Jonathan P.: *See*—
Oberrecht, David; Stephenson, Stephen J.; Scott, Sean; Frederick, Curtis E.; and Young, Jonathan P., 5,605,182, Cl. 141-94.000.
Young, Nigel D., to U.S. Philips Corporation. Manufacture of electronic devices comprising thin-film transistors having self-aligned plural gates. 5,605,845, Cl. 437-21.000.
Young, Richard. Dental articulator. 5,605,456, Cl. 433-60.000.
Yourd, Raymond A.: *See*—
Lee, Bin; Pielartzik, H.; Kumpf, Robert J.; Lau, Clifford J.; Yourd, Raymond A.; and Wiggins, Jeffrey S., 5,605,961, Cl. 525-66.000.
Yozan Inc.: *See*—
Shou, Guoliang; Motohashi, Kazunori; Yamamoto, Makoto; and Takatori, Sunao, 5,606,274, Cl. 327-94.000.
Yu, Kevin H.: *See*—
Yin, Khin S.; Yu, Kevin H.; and Wreede, John E., 5,606,433, Cl. 359-1.000.
Yu, Lin: *See*—
Counts, Stephen M.; Jones, David S.; Livingston, Douglas A.; and Yu, Lin, 5,606,047, Cl. 536-26.100.
Yu, Robert C. U.; Foley, Geoffrey M. T.; Post, Richard L.; Limburg, William W.; Kuo, Youti; Von Hoene, Donald C.; Mishra, Satchidanand; Pan, David H.; Rasmussen, Yonn K.; Renfer, Dale S.; Yanus, John F.; and Schank, Richard L., to Xerox Corporation. Imaging process using flexible electrostatographic imaging member. 5,606,396, Cl. 399-162.000.
Yu, Yeung J. Coffee cup. 5,605,089, Cl. 99-306.000.
Yu, Yeung S.: *See*—
Karimi, Saker A.; McGarraugh, Geoffrey; and Yu, Yeung S., 5,605,837, Cl. 436-14.000.
Yuasa, Tachio: *See*—
Kobayashi, Osamu; Matsuda, Atsushi; and Yuasa, Tachio, 5,606,287, Cl. 330-255.000.
Yuda, Atsuhiko: *See*—
Higashimura, Minoru; Yuda, Atsuhiko; and Shibayama, Masakazu, 5,605,876, Cl. 504-103.000.
Yue, John T.: *See*—
Fang, Hao; Fang, Peng; and Yue, John T., 5,606,518, Cl. 364-578.000.
Yui, Toshitake; Chujo, Akihiko; Endo, Yasuharu; Hiraoka, Eisuke; Kojima, Hitoshi; Suzuki, Atsushi; and Hashimoto, Ken, to Fuji Xerox Co., Ltd. Ink for ink jet recording and ink jet recording process. 5,605,566, Cl. 106-22.00R.
Yuki, Osamu, to Canon Kabushiki Kaisha. Display control apparatus. 5,606,336, Cl. 345-1.000.
Yukimoto, Koji; Nishiumi, Kenji; and Shimizu, Kanesue, to Kabushiki Kaisha Nippon Conlux. Banknote processor. 5,605,214, Cl. 194-348.000.
Yukinaga, Koji, to Kabushiki Kaisha Toshiba. Developing apparatus and image forming apparatus having developing apparatus. 5,606,405, Cl. 399-120.000.
Yun, Dong H.: *See*—
Park, Hyeon S.; Lee, Kyu C.; Kwon, Chul H.; Yun, Dong H.; Shin, Hyun W.; and Hong, Hyung K., 5,605,612, Cl. 204-429.000.
Yusa, Masami; Takeda, Shinji; Masuko, Takashi; Miyadera, Yasuo; and Yamazaki, Mitsuo, to Hitachi Chemical Company Ltd. Electrically conductive bonding films. 5,605,763, Cl. 428-473.500.
Yuzawa, Chikayoshi: *See*—

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Fujioka, Yoshio; Osada, Masakazu; and Yuzawa, Chikayoshi, 5,605,153, Cl. 128-653.100.

Zagger, Raymond A.: *See*—
Rausch, William E., Sr.; and Zagger, Raymond A., 5,605,246, Cl. 220-555.000.

Zander, Charles: *See*—
Nowosielski, Albert; Mantell, Robert; Manzie, Peter; and Zander, Charles, 5,605,545, Cl. 604-118.000.

Zapparoli, Ivo: *See*—
Cucchi, Massimo; Ripamonti, Oscar; and Zapparoli, Ivo, 5,605,393, Cl. 362-97.000.

Zarobila, Clarence J.: *See*—
Davis, Charles M.; Ward, Marvin W.; and Zarobila, Clarence J., 5,606,446, Cl. 359-173.000.

Zaviska, Dalibor; and Linhoff, Paul, to ITT Automotive Europe GmbH. Hydraulic brake system with brake slip and traction slip control. 5,605,385, Cl. 303-116.200.

ZBB Technologies, Inc.: *See*—
Eidler, Phillip A.; and Loppnow, Eric, 5,605,771, Cl. 429-72.000.

Zehnder, James W., II: *See*—
Johnston, Gary L.; Kruckemeyer, William C.; Zehnder, James W., II; and Oliver, Michael L., 5,605,384, Cl. 303-113.100.

Zehner, Georgia L.; VanGompel, Paul T.; Roessler, Thomas H.; and Huang, Yung H., to Kimberly-Clark Corporation. High-peel tab fastener. 5,605,735, Cl. 428-100.000.

Zeidner, Efaim: *See*—
Cohn, Oded; Micka, William F.; Moatti, Yosef; Nagin, Kenneth; Novick, Yoram; and Zeidner, Efaim, 5,606,679, Cl. 395-404.000.

Zeleznick, Glenn. Interproximal toothbrush. 5,604,952, Cl. 15-167.100.

Zelin, Michael P.: *See*—
Lauks, Imants R.; Pierce, Raymond J.; Rogers, Joseph W.; and Zelin, Michael P., 5,605,664, Cl. 422-83.000.

Zeneca Limited: *See*—
Hodgkinson, Ian, 5,606,093, Cl. 558-122.000.

Zepp, Charles M., to VersiCor, Inc. Reversible charge-based sequestration on solid support. 5,605,616, Cl. 205-688.000.

Zeuner, Hermann: *See*—
Pfefferle, Joachim; Roth, Michael; Scheuble, Peter; and Zeuner, Hermann, 5,605,080, Cl. 81-456.000.

Zexel Corporation: *See*—
Eto, Yoshihisa; Tsubakida, Toshio; and Sugita, Takashi, 5,605,191, Cl. 165-176.000.

Zhang, Hongyong, to Semiconductor Energy Laboratory Co., Ltd. Process for fabricating a TFT by selectively oxidizing or nitriding a light shielding layer. 5,605,847, Cl. 437-24.000.

Zhang, Hongyong: *See*—
Ohtani, Hisashi; Miyanaga, Akiharu; Zhang, Hongyong; and Yamaguchi, Naoaki, 5,605,846, Cl. 437-21.000.

Zhang, Jinyou: *See*—
Chartrain, Michel M.; Connors, Neal C.; Garrity, George M.; Olewinski, Roger C., Jr.; Verhoeven, Thomas R.; and Zhang, Jinyou, 5,605,819, Cl. 435-123.000.

Zhang, Shou-Hua: *See*—
Flagan, Richard C.; and Zhang, Shou-Hua, 5,606,112, Cl. 73-28.040.

Zhang, Tony Y.: *See*—
Aikins, James A.; and Zhang, Tony Y., 5,606,076, Cl. 549-57.000.

Zhao, Qiuyan: *See*—
Agrawal, Sudhir; Zhao, Qiuyan; and Habus, Ivan, 5,605,890, Cl. 514-44.000.

Zheng, Yu. Three-dimensional model structures. 5,605,486, Cl. 446-114.000.

Ziegler, Ewald; Holzgrefe, Volker; and Mittwollen, Norbert, to Robert Bosch GmbH. Solenoid valve for slip-controlled hydraulic brake systems in motor vehicles. 5,605,386, Cl. 303-119.200.

Ziegler, Hugo: *See*—
Pfiffner, Albert; Trah, Stephan; and Ziegler, Hugo, 5,606,095, Cl. 560-42.000.

Zierick Manufacturing Corporation: *See*—
Legrady, Janos, 5,605,430, Cl. 414-412.000.

Zilberman, Lina: *See*—
Sanduja, Mohan L.; Sugathan, Kenneth; Horowitz, Carl; and Zilberman, Lina, 5,605,756, Cl. 428-318.000.

Zimmer, Michael T.; Kakoczki, Richard J.; Davis, James A.; Pratt, Jerrold A.; and Reinbold, Edward O., to Dresser Industries, Inc. Turbocharger control management system. 5,605,044, Cl. 60-602.000.

Zimmerman, Bruce; Campise, George, Jr.; Styles, Charles; Rudzinski, David; Jones, Russell; and Thomas, Richard, to Avtec Industries, Inc. Article conveyor system. 5,605,219, Cl. 198-495.000.

Zimmet, Hans: *See*—
Schoenherr, Hans-Joerg; Zimmet, Hans; Lenk, Michael; Werner, Karl-Heinz; and Postel, Udo, 5,606,393, Cl. 396-20.000.

Zingel, Heinz: *See*—
Balz, Jürgen; Bill, Karlheinz; Krämer, Horst; Drott, Peter; Bauer, Jurgen; Zingel, Heinz; Von Havn, Holger; Harth, Ralf; Schonlau, Jürgen; and Ritter, Wolfgang, 5,605,088, Cl. 91-369.100.

Ziperovich, Pablo A.: *See*—
Fisher, Kevin D.; Buch, Bruce; Lau, Thomas; and Ziperovich, Pablo A., 5,606,466, Cl. 360-51.000.

Zmudzinski, Charles A.: *See*—
Botez, Dan; Zmudzinski, Charles A.; and Mawst, Luke J., 5,606,570, Cl. 372-50.000.

Zohar, Avi; and Armstrong, William E., to Decoma International Inc. Composite belt weatherstrip moulding. 5,605,736, Cl. 428-122.000.

Zomer, Eliezer, to Charm Sciences, Inc. Test kit and method for the quantitative determination of coliform bacteria and *E. coli*. 5,605,812, Cl. 435-38.000.

ZPM, Inc.: *See*—
Morse, Dwain E.; Cook, James H.; Matherly, Thomas G.; and Ham, Howard M., Jr., 5,606,723, Cl. 422-186.000.

Zucker, Jerry, to Daramic, Inc. Battery electrolyte pad with gelling agents and method. 5,605,549, Cl. 29-623.100.

Zuckermann, Ronald N.: *See*—
Ng, Simon; Warne, Robert L.; Zuckermann, Ronald N.; Martin, Eric J.; and Simon, Reyna J., 5,605,932, Cl. 514-553.000.

Zukotynski, Stefan: *See*—
Kherani, Nazir P.; Shmayda, Walter T.; and Zukotynski, Stefan, 5,606,213, Cl. 310-303.000.

Zweber, Michael J.: *See*—
Louwagie, Bennett L.; Munson, Gregory S.; Wiklund, David E.; Zweber, Michael J.; Broden, David A.; Bischoff, Brian J.; and Corpron, Gary P., 5,606,513, Cl. 364-510.000.

3 i Research Exploitation Ltd.: *See*—
Canick, Jacob A.; Wald, Nicholas J.; Cuckle, Howard S.; and Haddow, James E., 5,605,843, Cl. 436-510.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 25th DAY OF FEBRUARY, 1997

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Brownlee, Michael: *See*—
Vlassara, Helen; Brownlee, Michael; and Cerami, Anthony, Re. 35,465, Cl. 514-402.000.

Caulfield, Daniel F.: *See*—
Klungness, John H.; Caulfield, Daniel F.; Sachs, Irving B.; Sykes, Marguerite S.; Tan, Freya; and Shilts, Richard W., Re. 35,460, Cl. 162-9.000.

Cerami, Anthony: *See*—
Vlassara, Helen; Brownlee, Michael; and Cerami, Anthony, Re. 35,465, Cl. 514-402.000.

Consortium fur elekochemische Ind. GmbH: *See*—
Haas, Wolfgang; Häberle, Norman; Winkler, Rainer; and Kreuzer, Franz-Heinrich, Re. 35,462, Cl. 252-299.600.

Exxon Research and Engineering Company: *See*—
Marsh, John F.; and Swietlik, Joseph M., Re. 35,461, Cl. 508-322.000.

Fukumochi, Yoji: *See*—
Suzuki, Hitoshi; Shiotani, Shinobu; Tokunaga, Shinji; Hirai, Tokuyuki; Fukumochi, Yoji; Kugimiya, Shuzo; and Sata, Ichiko, Re. 35,464, Cl. 395-752.000.

Grootaert, Werner M., to Minnesota Mining and Manufacturing Company. Fluorine-containing polymers and preparation and use thereof. Re. 35,466, Cl. 526-194.000.

Haas, Wolfgang; Häberle, Norman; Winkler, Rainer; and Kreuzer, Franz-Heinrich, to Consortium fur elekochemische Ind. GmbH. Silylated benzoic acid derivatives. Re. 35,462, Cl. 252-299.600.

Häberle, Norman: *See*—
Haas, Wolfgang; Häberle, Norman; Winkler, Rainer; and Kreuzer, Franz-Heinrich, Re. 35,462, Cl. 252-299.600.

Hirai, Tokuyuki: *See*—
Suzuki, Hitoshi; Shiotani, Shinobu; Tokunaga, Shinji; Hirai, Tokuyuki; Fukumochi, Yoji; Kugimiya, Shuzo; and Sata, Ichiko, Re. 35,464, Cl. 395-752.000.

Klungness, John H.; Caulfield, Daniel F.; Sachs, Irving B.; Sykes, Marguerite S.; Tan, Freya; and Shilts, Richard W., to United States of America, Agriculture. Method for fiber loading a chemical compound. Re. 35,460, Cl. 162-9.000.

Kreuzer, Franz-Heinrich: *See*—
Haas, Wolfgang; Häberle, Norman; Winkler, Rainer; and Kreuzer, Franz-Heinrich, Re. 35,462, Cl. 252-299.600.

Kugimiya, Shuzo: *See*—
Suzuki, Hitoshi; Shiotani, Shinobu; Tokunaga, Shinji; Hirai, Tokuyuki; Fukumochi, Yoji; Kugimiya, Shuzo; and Sata, Ichiko, Re. 35,464, Cl. 395-752.000.

Marsh, John F.; and Swietlik, Joseph M., to Exxon Research and Engineering Company. Lubricating oil additives. Re. 35,461, Cl. 508-322.000.

Minnesota Mining and Manufacturing Company: *See*—
Grootaert, Werner M., Re. 35,466, Cl. 526-194.000.

Rockefeller University, The: *See*—
Vlassara, Helen; Brownlee, Michael; and Cerami, Anthony, Re. 35,465, Cl. 514-402.000.

Sachs, Irving B.: *See*—
Klungness, John H.; Caulfield, Daniel F.; Sachs, Irving B.; Sykes, Marguerite S.; Tan, Freya; and Shilts, Richard W., Re. 35,460, Cl. 162-9.000.

Sata, Ichiko: *See*—
Suzuki, Hitoshi; Shiotani, Shinobu; Tokunaga, Shinji; Hirai, Tokuyuki; Fukumochi, Yoji; Kugimiya, Shuzo; and Sata, Ichiko, Re. 35,464, Cl. 395-752.000.

Sharp Kabushiki Kaisha: *See*—
Suzuki, Hitoshi; Shiotani, Shinobu; Tokunaga, Shinji; Hirai, Tokuyuki; Fukumochi, Yoji; Kugimiya, Shuzo; and Sata, Ichiko, Re. 35,464, Cl. 395-752.000.

Shilts, Richard W.: *See*—
Klungness, John H.; Caulfield, Daniel F.; Sachs, Irving B.; Sykes, Marguerite S.; Tan, Freya; and Shilts, Richard W., Re. 35,460, Cl. 162-9.000.

Shiotani, Shinobu: *See*—
Suzuki, Hitoshi; Shiotani, Shinobu; Tokunaga, Shinji; Hirai, Tokuyuki; Fukumochi, Yoji; Kugimiya, Shuzo; and Sata, Ichiko, Re. 35,464, Cl. 395-752.000.

Suzuki, Hitoshi; Shiotani, Shinobu; Tokunaga, Shinji; Hirai, Tokuyuki; Fukumochi, Yoji; Kugimiya, Shuzo; and Sata, Ichiko, to Sharp Kabushiki Kaisha. Apparatus and method for translating sentences containing punctuation marks. Re. 35,464, Cl. 395-752.000.

Swietlik, Joseph M.: *See*—
Marsh, John F.; and Swietlik, Joseph M., Re. 35,461, Cl. 508-322.000.

Sykes, Marguerite S.: *See*—
Klungness, John H.; Caulfield, Daniel F.; Sachs, Irving B.; Sykes, Marguerite S.; Tan, Freya; and Shilts, Richard W., Re. 35,460, Cl. 162-9.000.

Tan, Freya: *See*—
Klungness, John H.; Caulfield, Daniel F.; Sachs, Irving B.; Sykes, Marguerite S.; Tan, Freya; and Shilts, Richard W., Re. 35,460, Cl. 162-9.000.

Tokunaga, Shinji: *See*—
Suzuki, Hitoshi; Shiotani, Shinobu; Tokunaga, Shinji; Hirai, Tokuyuki; Fukumochi, Yoji; Kugimiya, Shuzo; and Sata, Ichiko, Re. 35,464, Cl. 395-752.000.

Truth Hardware Corporation: *See*—
Vetter, Gregory J.; Tucker, Daniel G., deceased, Re. 35,463, Cl. 292-48.000.

Tucker, Daniel G., deceased (by Sabrina Tucker, legal representative): *See*—
Vetter, Gregory J.; Tucker, Daniel G., deceased, Re. 35,463, Cl. 292-48.000.

Tucker, Sabrina, legal representative: *See*—
Vetter, Gregory J.; Tucker, Daniel G., deceased, Re. 35,463, Cl. 292-48.000.

United States of America
Agriculture: *See*—
Klungness, John H.; Caulfield, Daniel F.; Sachs, Irving B.; Sykes, Marguerite S.; Tan, Freya; and Shilts, Richard W., Re. 35,460, Cl. 162-9.000.

Vetter, Gregory J.; Tucker, Daniel G., deceased (by Sabrina Tucker, legal representative), to Truth Hardware Corporation. Sash lock. Re. 35,463, Cl. 292-48.000.

Vlassara, Helen; Brownlee, Michael; and Cerami, Anthony, to Rockefeller University, The. Method and agents for removing advanced glycosylation endproducts. Re. 35,465, Cl. 514-402.000.

Winkler, Rainer: *See*—
Haas, Wolfgang; Häberle, Norman; Winkler, Rainer; and Kreuzer, Franz-Heinrich, Re. 35,462, Cl. 252-299.600.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Albermarle Corporation: *See*—
Strickler, Jamie R., B1 5,367,085, Cl. 549-206.000.

Alkhimov, Anatoly P.; Papyrin, Anatoly N.; Kosarev, Vladimir F.; Nesterovich, Nikolai I.; and Shushpanov, Mikahil M., to Papyrin, Anatoly Nikiforovich. Gas-dynamic spraying method for applying a coating. B1 5,302,414, Cl. 427-192.000.

Applied Materials, Inc.: *See*—
Chang, Mei; and Wang, David N., B1 5,043,299, Cl. 437-192.000.

Brightbill, Keith E.: *See*—
Hanna, Thomas E.; and Brightbill, Keith E., B1 5,193,706, Cl. 220-324.000.

Chang, Mei; and Wang, David N., to Applied Materials, Inc. Process for selective deposition of tungsten on semiconductor wafer. B1 5,043,299, Cl. 437-192.000.

Chevron, Inc.: *See*—
Nespor, Ronald R., B1 5,061,147, Cl. 414-563.000.

Fujikawa, Takumi; and Kondo, Motoji, to Furuno Electric Company, Limited. Radar apparatus. B1 5,351,055, Cl. 342-184.000.

Furuno Electric Company, Limited: *See*—
Fujikawa, Takumi; and Kondo, Motoji, B1 5,351,055, Cl. 342-184.000.

Hanna, Thomas E.; and Brightbill, Keith E., to Rubbermaid Incorporated. Toolbox. B1 5,193,706, Cl. 220-324.000.

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Hester, Robert L. Method for detecting undesired dialysis recirculation. B1 5,312,550, Cl. 210-646.000.
Kabushiki Kaisha Toshiba: *See—*
Waatanabe, Junji, B1 4,710,016, Cl. 355-326.00R.
Kondo, Motoji: *See—*
Fujikawa, Takumi; and Kondo, Motoji, B1 5,351,055, Cl. 342-184.000.
Kosarev, Vladimir F.: *See—*
Alkhimov, Anatoly P.; Papyrin, Anatoly N.; Kosarev, Vladimir F.; Nesterovich, Nikolai I.; and Shushpanov, Mikahil M., B1 5,302,414, Cl. 427-192.000.
LSL, Inc.: *See—*
Nahum, Kedar, B1 4,843,186, Cl. 800-200.000.
Martin, Geoffrey S., to Med-Pro Design, Inc. Infusion catheters. B1 5,207,650, Cl. 604-173.000.
McKinney, Jerry L. Apparatus for treating waste water. B1 5,221,470, Cl. 210-151.000.
Med-Pro Design, Inc.: *See—*
Martin, Geoffrey S., B1 5,207,650, Cl. 604-173.000.
Nahum, Kedar, to LSL, Inc. Long shelf life heterozygous tomato plant. B1 4,843,186, Cl. 800-200.000.
Nespor, Ronald R., to Chevron, Inc. Vehicle carrier with wheel lift. B1 5,061,147, Cl. 414-563.000.
Nesterovich, Nikolai I.: *See—*
Alkhimov, Anatoly P.; Papyrin, Anatoly N.; Kosarev, Vladimir F.; Nesterovich, Nikolai I.; and Shushpanov, Mikahil M., B1 5,302,414, Cl. 427-192.000.
Papyrin, Anatoly N.: *See—*
Alkhimov, Anatoly P.; Papyrin, Anatoly N.; Kosarev, Vladimir F.; Nesterovich, Nikolai I.; and Shushpanov, Mikahil M., B1 5,302,414, Cl. 427-192.000.
Papyrin, Anatoly Nikiforovich: *See—*
Alkhimov, Anatoly P.; Papyrin, Anatoly N.; Kosarev, Vladimir F.; Nesterovich, Nikolai I.; and Shushpanov, Mikahil M., B1 5,302,414, Cl. 427-192.000.
Rubbermaid Incorporated: *See—*
Hanna, Thomas E.; and Brightbill, Keith E., B1 5,193,706, Cl. 220-324.000.
Shushpanov, Mikahil M.: *See—*
Alkhimov, Anatoly P.; Papyrin, Anatoly N.; Kosarev, Vladimir F.; Nesterovich, Nikolai I.; and Shushpanov, Mikahil M., B1 5,302,414, Cl. 427-192.000.
Strickler, Jamie R., to Albermarle Corporation. Preparation of $TiCl_3$ coordination complexes. B1 5,367,085, Cl. 549-206.000.
Waatanabe, Junji, to Kabushiki Kaisha Toshiba. Developing apparatus. B1 4,710,016, Cl. 355-326.00R.
Wang, David N.: *See—*
Chang, Mei; and Wang, David N., B1 5,043,299, Cl. 437-192.000.

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adp Gauselmann GmbH: *See—*
Brettschneider, Dirk I., 378,224, Cl. D21-37.000.
Aktiebolaget Electrolux: *See—*
Näslund, Ulf; Hartz, Niels; Dahlberg, Göran; and Nyqvist, Tomas, 378,184, Cl. D8-64.000.
AMC International ALFA Metalcraft Corporation AG: *See—*
Gebhardt, Lutz; and Koch, Karl-Erich, 378,179, Cl. D7-363.000.
Angie Leung, aka: *See—*
Hanig, James L.; Ettelson, Richard L.; Ming, Leung Y., 378,213, Cl. D14-194.000.
Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Takahashi, Akio, 378,216, Cl. D16-133.000.
Aston, Joanne M., to Yale Security Inc. Front face of a key plug. 378,188, Cl. D8-343.000.
Barbeau, Stéfane E.: *See—*
Sirois, Michael G.; Barbeau, Stéfane E.; and Vandenbelt, Rudy A., 378,212, Cl. D14-124.000.
Barzani, Uri. Combined toy wheel and hub. 378,227, Cl. D21-108.000.
BASF Corporation: *See—*
Wehrle, William R.; Stapensea, Neil P.; Mattson, Douglas J.; Piatt, Ted E.; and Quinn, Joseph P., 378,191, Cl. D9-341.000.
Bath & Body Works, Inc.: *See—*
Gobe, Marc, 378,193, Cl. D9-434.000.
Bayerische Motoren Werke Aktiengesellschaft: *See—*
Heinrich, Edgar G.; and Finger, Dietmar W., 378,204, Cl. D12-110.000.
BDI, Becker Designed Inc.: *See—*
Hamami, Demir, 378,175, Cl. D6-479.000.
Beaulieu, Jocelyn, to Global Upholstery Company. Chair. 378,170, Cl. D6-366.000.
BioSafe Diagnostics Corporation: *See—*
Warner, Henry A., 378,233, Cl. D24-130.000.
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	720	378,157		421	378,173		343	378,188	D12—	92	378,203	D18—	55	378,218		256	378,232
	891	378,159		433	378,174		346	378,189		110	378,204	D19—	65	378,219	D24—	130	378,233
	897	378,160		479	378,175		383	378,190		120	378,205	D20—	11	378,220		152	378,235
		378,161		481	378,176	D9—	341	378,191		191	378,206		22	378,221	D29—	106	378,236
	980	378,162		521	378,177		425	378,192	D13—	147	378,207		29	378,222			
D3—	218	378,163	D7—	359	378,178		434	378,193			378,208		41	378,223			
	276	378,164		363	378,179		436	378,194			378,209	D21—	37	378,224			
	319	378,165		552	378,180		444	378,195	D14—	114	378,210		48	378,225			
D4—	111	378,166		653	378,181		448	378,196			378,211		76	378,226			
D6—	317	378,167		693	378,182		451	378,197		124	378,212		108	378,227			
	334	378,168	D8—	62	378,183	D10—	38	378,198		194	378,213		147	378,234			
		378,169		64	378,184		87	378,199	D15—	7	378,214	D22—	107	378,228			
	366	378,170		68	378,185		108	378,200		82	378,215	D23—	233	378,229			
	368	378,171		83	378,186		126	378,201	D16—	133	378,216		241	378,230			

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01	:	5,604,933	5,605,162	5,605,666	5,606,195	5,606,664	5,605,889
		5,605,005	5,605,169	5,605,667	5,606,233	5,606,671	5,605,986
		5,605,262	5,605,179	5,605,673	5,606,237	5,606,672	5,605,999
		5,605,457	5,605,181	5,605,684	5,606,251	5,606,676	5,606,013
		5,605,458	5,605,226	5,605,689	5,606,258	5,606,683	5,606,017
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		5,606,167	5,605,237	5,605,700	5,606,266	5,606,687	5,606,041
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		5,605,615	5,605,307	5,605,802	5,606,295	5,606,723		5,605,760
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		5,606,184	5,605,313	5,605,811	5,606,320	5,043,299		5,605,936
		5,606,215	5,605,316	5,605,816	5,606,328	08 :	5,604,970		5,605,956
		5,606,313	5,605,325	5,605,817	5,606,334	5,605,069		5,606,149
		5,606,318	5,605,328	5,605,823	5,606,359	5,605,248	11 :	5,605,160
		5,606,322	5,605,333	5,605,824	5,606,418	5,605,292		5,605,885
		5,606,368	5,605,336	5,605,825	5,606,433	5,605,380	12 :	5,604,992
		5,606,505	5,605,349	5,605,826	5,606,436	5,605,397		5,605,046
		5,606,511	5,605,365	5,605,828	5,606,458	5,605,526		5,605,052
		5,606,541	5,605,372	5,605,837	5,606,466	5,605,769		5,605,102
		5,606,679	5,605,387	5,605,849	5,606,476	5,605,842		5,605,111
05	:	5,604,961	5,605,391	5,605,852	5,606,477	5,605,935		5,605,326
		5,605,216	5,605,396	5,605,866	5,606,478	5,606,439		5,605,374
		5,605,244	5,605,398	5,605,883	5,606,485	5,606,572		5,605,427
		5,605,357	5,605,399	5,605,893	5,606,486	5,606,600		5,605,441
		5,605,361	5,605,431	5,605,902	5,606,518	5,606,601		5,605,450
06	:	5,604,938	5,605,463	5,605,915	5,606,532	5,606,637		5,605,531
		5,604,944	5,605,473	5,605,932	5,606,546	5,606,725		5,605,584
		5,604,945	5,605,486	5,606,019	5,606,553	09 :	5,605,027		5,605,744
		5,604,948	5,605,510	5,606,021	5,606,562	5,605,082		5,605,940
		5,604,951	5,605,511	5,606,024	5,606,564	5,605,143		5,606,131
		5,604,952	5,605,533	5,606,031	5,606,565	5,605,167		5,606,241
		5,604,955	5,605,539	5,606,043	5,606,568	5,605,209		5,606,288
		5,604,993	5,605,540	5,606,045	5,606,581	5,605,224		5,606,575
		5,605,004	5,605,546	5,606,047	5,606,590	5,605,257		5,606,578
		5,605,011	5,605,550	5,606,049	5,606,598	5,605,290		5,606,633
		5,605,045	5,605,579	5,606,112	5,606,609	5,605,362		5,606,638
		5,605,079	5,605,599	5,606,123	5,606,616	5,605,474		5,606,657
		5,605,091	5,605,613	5,606,135	5,606,646	5,605,639		5,606,666
		5,605,152	5,605,634	5,606,155	5,606,650	5,605,657		5,606,696
		5,605,157	5,605,637	5,606,178	5,606,660	5,605,707		5,606,707
		5,605,158	5,605,662	5,606,185	5,606,661	5,605,815		5,606,728

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	5,606,729		5,605,903		5,605,484		5,605,856		5,606,262	41	:	5,604,976
	5,606,731		5,606,139		5,605,501		5,605,887		5,606,323			5,604,997
13	: 5,605,056	21	: 5,605,072		5,605,517		5,605,909		5,606,333			5,605,213
	5,605,100		5,605,140		5,605,554		5,605,913		5,606,351			5,605,221
	5,605,107		5,605,254		5,605,577		5,605,914		5,606,358			5,605,390
	5,605,228		5,605,435		5,605,762		5,605,918		5,606,361			5,605,411
	5,605,381		5,605,738		5,605,797		5,605,925		5,606,365			5,606,275
	5,605,706		5,606,090		5,605,822		5,605,933		5,606,369			5,606,442
	5,605,720		5,606,230		5,605,949		5,605,960		5,606,371			5,606,599
	5,605,739	22	: 5,605,124		5,605,965		5,605,976		5,606,379			5,606,670
	5,605,749		5,605,366		5,605,974		5,606,040		5,606,385			5,606,674
	5,605,944		5,605,534		5,606,088		5,606,053		5,606,387	42	:	5,604,941
	5,606,058		5,605,587		5,606,108		5,606,054		5,606,392			5,604,949
	5,606,474		5,606,087		5,606,118		5,606,103		5,606,395			5,604,966
16	: 5,604,946		5,606,533		5,606,121		5,606,224		5,606,396			5,604,987
	5,604,989		5,606,627		5,606,154		5,606,286		5,606,404			5,605,009
	5,605,002		5,367,085		5,606,173		5,606,348		5,606,409			5,605,049
	5,605,142	23	: 5,605,564		5,606,226		5,606,423		5,606,429			5,605,095
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	5,605,857		5,605,023		5,606,311		5,606,457		5,606,455			5,605,315
	5,605,864		5,605,217		5,606,501		5,606,464		5,606,521			5,605,382
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17	: 5,604,996		5,605,252		5,606,588		5,606,552		5,606,587			5,605,419
	5,604,999		5,605,530		5,606,623		5,606,567		5,606,639			5,605,467
	5,605,006		5,605,809	27	: Re.35,463		5,606,573		5,606,648			5,605,569
	5,605,012		5,605,930		Re.35,466		5,606,579		5,606,651			5,605,664
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	5,605,025		5,606,187		5,605,129		5,606,597		5,606,699			5,605,757
	5,605,026		5,606,214		5,605,207		5,606,602		5,606,721			5,605,814
	5,605,084		5,606,220		5,605,222		5,606,603		5,606,722			5,605,830
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	5,605,165		5,606,550		5,605,446		5,606,606		5,604,936			5,605,900
	5,605,171		5,606,569		5,605,481		5,606,643		5,605,060			5,605,917
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	5,605,196		5,604,983		5,605,627		5,606,655		5,605,164			5,605,937
	5,605,205		5,604,988		5,605,640	35	: 5,605,010		5,605,420			5,605,950
	5,605,219		5,605,231		5,605,642		5,605,059		5,605,477			5,605,961
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	5,605,289		5,605,356		5,605,761		5,605,647		5,605,495			5,605,995
	5,605,309		5,605,388		5,605,829		5,606,130		5,605,593			5,606,010
	5,605,314		5,605,466		5,605,835		5,606,146		5,605,730			5,606,015
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	5,605,338		5,605,532		5,605,904	36	: Re.35,465		5,605,872			5,606,030
	5,605,339		5,605,598		5,606,110		5,604,958		5,606,046			5,606,038
	5,605,370		5,605,616		5,606,211		5,604,960		5,606,153			5,606,085
	5,605,423		5,605,623		5,606,413		5,604,974		5,606,299			5,606,133
	5,605,545		5,605,654		5,606,473		5,604,975		5,606,374			5,606,150
	5,605,636		5,605,672		5,606,504		5,604,978		5,606,434			5,606,169
	5,605,687		5,605,721		5,606,513		5,604,980		5,606,496			5,606,249
	5,605,728		5,605,795		5,606,621		5,604,982		5,606,559			5,606,291
	5,605,873		5,605,798		5,606,640		5,605,008	38	: 5,605,144			5,606,377
	5,605,888		5,605,812		5,606,743		5,605,063	39	: 5,604,937			5,606,482
	5,605,929		5,605,820	28	: 5,605,570		5,605,185		5,604,947			5,606,514
	5,605,931		5,605,843		5,606,142		5,605,249		5,605,071			5,606,612
	5,605,934		5,605,890		5,312,550		5,605,258		5,605,103			5,061,147
	5,605,943		5,605,978	29	: 5,604,971		5,605,274		5,605,117	44	:	5,605,624
	5,605,970		5,606,032		5,605,029		5,605,277		5,605,151			5,606,242
	5,605,996		5,606,044		5,605,085		5,605,278		5,605,182	45	:	5,604,991
	5,606,113		5,606,144		5,605,159		5,605,305		5,605,212			5,605,000
	5,606,136		5,606,147		5,605,364		5,605,323		5,605,246			5,605,108
	5,606,151		5,606,218		5,605,389		5,605,378		5,605,272			5,605,469
	5,606,247		5,606,232		5,605,487		5,605,383		5,605,273			5,605,549
	5,606,273		5,606,324		5,605,671		5,605,425		5,605,287			5,605,578
	5,606,317		5,606,414		5,605,695		5,605,429		5,605,304			5,605,734
	5,606,332		5,606,428		5,605,748		5,605,430		5,605,350			5,605,743
	5,606,489		5,606,515		5,605,911		5,605,438		5,605,358			5,606,341
	5,606,506		5,606,517		5,605,938		5,605,442		5,605,384	46	:	5,605,312
	5,606,560		5,606,615		5,606,042		5,605,447		5,605,452			5,605,331
	5,606,561		5,606,624		5,606,107		5,605,480		5,605,456	47	:	5,605,359
	5,606,577		5,606,642		5,606,349		5,605,536		5,605,471			5,605,460
	5,606,593		5,606,665		5,606,635		5,605,574		5,605,555			5,605,764
	5,606,595		5,606,681	32	: 5,605,334		5,605,590		5,605,556			5,605,767
	5,606,730		5,606,719		5,605,506		5,605,600		5,605,589			5,606,091
18	: 5,604,965	26	: 5,604,932		5,606,310		5,605,625		5,605,596	48	:	5,604,959
	5,605,034		5,604,981	33	: 5,605,267		5,605,629		5,605,597			5,604,968
	5,605,113		5,605,001		5,605,476		5,605,646		5,605,607			5,604,977
	5,605,211		5,605,030		5,605,659		5,605,685		5,605,658			5,605,022
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	5,605,413		5,605,074	34	: 5,604,950		5,605,756		5,605,792			5,605,116
	5,605,701		5,605,099		5,605,019		5,605,780		5,605,827			5,605,149
	5,605,741		5,605,133		5,605,156		5,605,781		5,605,832			5,605,161
	5,605,810		5,605,137		5,605,230		5,605,783		5,605,951			5,605,172
	5,605,886		5,605,147		5,605,321		5,605,785		5,605,982			5,605,194
	5,605,897		5,605,175		5,605,444		5,605,787		5,606,003			5,605,243
	5,605,908		5,605,176		5,605,485		5,605,789		5,606,029			5,605,264
	5,605,924		5,605,200		5,605,490		5,605,804		5,606,063			5,605,271
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	5,606,062		5,605,263		5,605,508		5,605,988		5,606,335			5,605,449
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	5,606,076		5,605,337		5,605,565		5,606,026		5,606,576			5,605,461
	5,606,114		5,605,344		5,605,575		5,606,033		5,193,706			5,605,468
	5,606,164		5,605,346		5,605,605		5,606,069	40	: 5,604,931			5,605,489
	5,606,254		5,605,347		5,605,653		5,606,084		5,605,193			5,605,503
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19	: 5,605,134		5,605,352		5,605,676		5,606,165		5,605,415			5,605,537
	5,605,236		5,605,353		5,605,682		5,606,188		5,605,416			5,605,592
	5,606,415		5,605,363		5,605,683		5,606,202		5,605,496			5,605,602
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20	5,605,105		5,605,377		5,605,813		5,606,222		5,605,773			5,605,661
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	5,606,125		5,606,680	51	: 5,604,939		5,605,280		5,605,033			5,606,238
	5,606,177		5,606,682		5,605,016		5,605,319		5,605,044			5,606,398
	5,606,225		5,606,711		5,605,197		5,605,448		5,605,109			5,606,570
	5,606,319		5,606,713		5,605,241		5,605,523		5,605,115			5,606,585
	5,606,363		5,606,715		5,605,406		5,605,528		5,605,130			5,606,608

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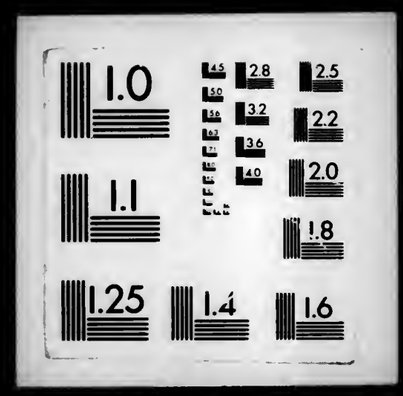
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